Modem Silver Bullet Project

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目录

[Modem Silver Bullet Project 1](#_Toc87714583)

[目录 2](#_Toc87714584)

[1 介绍 11](#_Toc87714585)

[1.1 文档目的 11](#_Toc87714586)

[1.2 术语和缩写 11](#_Toc87714587)

[1.3 参考文档 11](#_Toc87714588)

[2 Modem FAQ 12](#_Toc87714589)

[2.1 待办事项： ！！！！！！！！！ 12](#_Toc87714590)

[2.2 常见问题问答 12](#_Toc87714591)

[2.3 工作中常见术语 12](#_Toc87714592)

[2.3.1 开发平台/测试/JIRA相关 12](#_Toc87714593)

[2.3.2 稳定版命名规则 12](#_Toc87714594)

[2.3.3 项目开发有关简称 17](#_Toc87714595)

[2.4 高通项目相关 17](#_Toc87714596)

[2.4.1 高通Modem软件相关术语 17](#_Toc87714597)

[2.5 MTK项目相关缩写 17](#_Toc87714598)

[2.6 通信相关术语 17](#_Toc87714599)

[2.7 常见问题的分析步骤 18](#_Toc87714600)

[2.7.1 高通平台 18](#_Toc87714601)

[2.7.2 搜网/注册 18](#_Toc87714602)

[2.7.3 短息 18](#_Toc87714603)

[2.7.4 彩信 18](#_Toc87714604)

[2.7.5 MTK平台常见问题分析 20](#_Toc87714605)

[3 协议相关的流程梳理 20](#_Toc87714606)

[3.1 常用流程的协议整理 20](#_Toc87714607)

[3.2 SRB、DRB的作用和配置流程 20](#_Toc87714608)

[3.3 CDMA Paging周期 20](#_Toc87714609)

[3.4 信号强度的计算整理 21](#_Toc87714610)

[3.5 MIUI 5G信号强度划分标准 24](#_Toc87714611)

[4 JIRA解决问题归纳整理 25](#_Toc87714612)

[4.1 丢Paging问题归纳 25](#_Toc87714613)

[4.1.1 副卡大概率丢Paging 25](#_Toc87714614)

[4.2 VoLTE呼叫过程中掉VoLTE 26](#_Toc87714615)

[4.2.1 MO起呼过程中掉VoLTE SRVCC 26](#_Toc87714616)

[4.2.2 MO在通话过程中掉VoLTE SRVCC 27](#_Toc87714617)

[4.2.3 MO在起呼过程中掉VoLTE 副卡随机接入失败 28](#_Toc87714618)

[4.2.4 MO Silent Retry CS 29](#_Toc87714619)

[4.2.5 MT在呼叫接通时掉落VoTLE 29](#_Toc87714620)

[4.2.6 MO起呼过程中被网络Detach导致掉VoLTE 30](#_Toc87714621)

[4.2.7 TAU过程中不处理ESM消息导致承载建立失败 31](#_Toc87714622)

[4.3 VoLTE隐式去激活 32](#_Toc87714623)

[4.3.1 网络删除IMS DRB导致的掉VoLTE 32](#_Toc87714624)

[4.3.2 网络删除IMS DRB导致掉VoLTE（5s定时器后重建） 33](#_Toc87714625)

[4.3.3 EPSFallback过程中掉VoLTE 33](#_Toc87714626)

[4.4 VoLTE起呼无提示失败 34](#_Toc87714627)

[4.4.1 INVITE消息发送失败 34](#_Toc87714628)

[4.5 VoLTE呼叫流程不完整导致的呼叫建立失败 34](#_Toc87714629)

[4.5.1 网络侧不发送PRACK导致的MT失败 34](#_Toc87714630)

[4.5.2 网络侧没有激活专有承载导致资源预留失败 35](#_Toc87714631)

[4.5.3 网络侧释放专有承载drb导致的资源预留失败 35](#_Toc87714632)

[4.6 VoLTE视频通话相关问题 36](#_Toc87714633)

[4.6.1 VoLTE视频通话过程中出现的窗口尺寸变化 36](#_Toc87714634)

[4.6.2 升级视频通话出现短暂黑屏 37](#_Toc87714635)

[4.6.3 升级为视频通话后短暂视频卡顿 37](#_Toc87714636)

[4.6.4 升级视频通话提示“对方不支持视频通话” 38](#_Toc87714637)

[4.7 VoLTE注册相关问题 39](#_Toc87714638)

[4.7.1 VoLTE注册流程被呼叫业务打断后回复慢（大概2min左右） 39](#_Toc87714639)

[4.8 通话无声问题 39](#_Toc87714640)

[4.8.1 VoLTE 20s通话无声，无任何下行RTP包(高通) 39](#_Toc87714641)

[4.8.2 MO收到接听消息晚于MT导致的无声问题 40](#_Toc87714642)

[4.8.3 下行丢RTP包持续20s导致的挂机 40](#_Toc87714643)

[4.9 数据图标问题-注册相关 43](#_Toc87714644)

[4.9.1 Service Reject导致的掉数据图标 43](#_Toc87714645)

[4.9.2 TAU Reject导致掉数据图标和丢寻呼 44](#_Toc87714646)

[4.9.3 出飞行模式后注册LTE失败-RRCConnectionRelease 45](#_Toc87714647)

[4.10 掉5G问题归纳 46](#_Toc87714648)

[4.10.1 NSA 5G VoLTE通话结束后掉到4G 46](#_Toc87714649)

[4.10.2 双卡热插拔后主卡不驻留5G-副卡Attach影响主卡上报NR测报 46](#_Toc87714650)

[4.10.3 双卡5G，副卡不开VoLTE时在重启后不驻留5G 47](#_Toc87714651)

[4.10.4 亮屏触发5G能力开启导致来电无法接通 48](#_Toc87714652)

[4.11 CSFB通话结束后回LTE时间长 49](#_Toc87714653)

[4.11.1 CSFB到WCDMA回LTE慢 49](#_Toc87714654)

[4.11.2 CSFB到GSM回LTE慢 49](#_Toc87714655)

[4.12 GSM通过过程中掉话整理 50](#_Toc87714656)

[4.12.1 上行达到最大重传次数 50](#_Toc87714657)

[4.12.2 GSM信噪比达到最差发生掉话 50](#_Toc87714658)

[4.12.3 GSM网络临时错误导致呼叫中止 51](#_Toc87714659)

[4.13 CDMA 1X呼叫相关问题 52](#_Toc87714660)

[4.13.1 收不到Page Response的确认Order 52](#_Toc87714661)

[4.13.2 CDMA 1X通话下行接收出现噪音分析 53](#_Toc87714662)

[4.14 CDMA驻网相关问题 53](#_Toc87714663)

[4.14.1 从CDMA重选到LTE时间长 53](#_Toc87714664)

[4.15 WCDMA相关问题 54](#_Toc87714665)

[4.15.1 WCDMA在通话过程中不能并发数据业务 54](#_Toc87714666)

[4.15.2 WCDMA RLF导致的掉话 55](#_Toc87714667)

[4.16 主叫呼叫失败各类原因整理 56](#_Toc87714668)

[4.17 被叫收不到Paging消息 56](#_Toc87714669)

[4.17.1 TMSI变化导致收不到Paging消息 56](#_Toc87714670)

[4.18 多方通话问题 57](#_Toc87714671)

[4.18.1 多方通话合并失败 57](#_Toc87714672)

[4.19 双卡Paging Sharing 58](#_Toc87714673)

[4.20 脱网问题 58](#_Toc87714674)

[4.20.1 设置4G优先后出现了将近30s的脱网 58](#_Toc87714675)

[4.21 IRAT问题 58](#_Toc87714676)

[4.21.1 LTE空闲态重选到WCDMA分析 58](#_Toc87714677)

[4.22 短信收发问题 59](#_Toc87714678)

[4.22.1 修改短信中心号码，短信可以发送成功 59](#_Toc87714679)

[4.22.2 短信发送，界面提示失败，但是对端已接收 60](#_Toc87714680)

[4.23 紧急呼叫相关问题 62](#_Toc87714681)

[4.23.1 经验知识点 62](#_Toc87714682)

[4.23.2 K11R国际版手机电信VoLTE呼叫112,911必现失败 62](#_Toc87714683)

[5 数据专项测试 62](#_Toc87714684)

[5.1 切数据导致的切卡后数据卡顿 62](#_Toc87714685)

[5.2 只有上行数据，没有下行数据 63](#_Toc87714686)

[5.3 数据异常断开 64](#_Toc87714687)

[5.3.1 AP改变Modem RAT能力导致数据临时断开 64](#_Toc87714688)

[5.4 信号跳变问题 65](#_Toc87714689)

[6 UIM专题 66](#_Toc87714690)

[6.1 UIM卡的类型 66](#_Toc87714691)

[6.2 UIM卡结构 66](#_Toc87714692)

[6.3 UIM通信的APDU 66](#_Toc87714693)

[6.4 开机过程中，UIM数据读取 66](#_Toc87714694)

[6.5 使用AT命令读取SIM卡 66](#_Toc87714695)

[7 高通平台相关问题 66](#_Toc87714696)

[7.1 高通常见Log搜索 66](#_Toc87714697)

[7.1.1 信号强度搜索的关键字 66](#_Toc87714698)

[7.2 MT端无法接通问题整理 66](#_Toc87714699)

[7.2.1 LTE收不到Paging消息 66](#_Toc87714700)

[7.2.2 CDMA收不到Paging查看 – 掉网 67](#_Toc87714701)

[7.3 高通Feature相关JIRA 67](#_Toc87714702)

[7.3.1 三次RRC建立后直接被网络释放，触发重新Attach 67](#_Toc87714703)

[7.3.2 卡1紧急呼叫导致的卡2掉网 68](#_Toc87714704)

[7.3.3 高通Tput测试的Log抓取要求 69](#_Toc87714705)

[7.3.4 PC拨号问题 69](#_Toc87714706)

[7.3.5 高通DPL Full Log抓取方法 70](#_Toc87714707)

[7.4 搜网问题 70](#_Toc87714708)

[7.4.1 手动搜网 70](#_Toc87714709)

[7.4.2 选择手动搜网列表中的RAT 71](#_Toc87714710)

[7.4.3 FR问题 72](#_Toc87714711)

[7.5 高通注册相关问题整理 -TD 73](#_Toc87714712)

[7.5.1 LTE注册流程-TD 73](#_Toc87714713)

[7.5.2 热插拔后长时间不驻网 73](#_Toc87714714)

[7.5.3 LTE系统获取状态无法正常接收Paging消息 74](#_Toc87714715)

[7.6 数据业务断流相关 74](#_Toc87714716)

[7.6.1 打开数据开关，数据业务激活失败 75](#_Toc87714717)

[7.6.2 高通短/彩信重发机制 76](#_Toc87714718)

[7.7 SIM相关问题 77](#_Toc87714719)

[7.7.1 SIM读取时间长问题 77](#_Toc87714720)

[7.7.2 SIM卡不识别问题 77](#_Toc87714721)

[7.8 GSM通话问题分析 79](#_Toc87714722)

[7.8.1 GSM接入问题 79](#_Toc87714723)

[7.9 高通重要的消息整理 80](#_Toc87714724)

[7.9.1 IMS丢包统计 80](#_Toc87714725)

[7.9.2 LTE PDSCH统计信息 B173 80](#_Toc87714726)

[7.9.3 LTE邻区重选消息 B186 80](#_Toc87714727)

[7.9.4 CDMA信号和帧解码统计 119D 80](#_Toc87714728)

[7.10 CDMA的搜网 81](#_Toc87714729)

[7.11 DRB\_REESTABLISH\_REJECT\_IND 82](#_Toc87714730)

[7.12 By Design的问题 83](#_Toc87714731)

[7.12.1 三方通话过程中，AB保持，AC通话，C挂断电话，AB不会自动恢复仍然未保持状态 83](#_Toc87714732)

[8 高通Modem相关 83](#_Toc87714733)

[8.1 高通平台常用工具 83](#_Toc87714734)

[8.1.1 QPCAT 84](#_Toc87714735)

[8.1.2 QXDM 86](#_Toc87714736)

[8.1.3 QCAT 87](#_Toc87714737)

[8.1.4 QCAP 87](#_Toc87714738)

[8.1.5 QUTS 87](#_Toc87714739)

[8.2 什么是QShrink4？ 87](#_Toc87714740)

[8.3 高通常见QMI消息 87](#_Toc87714741)

[8.3.1 发短信：收/发 Pending 87](#_Toc87714742)

[8.3.2 开机/关机 87](#_Toc87714743)

[8.3.3 彩信：收/发 87](#_Toc87714744)

[8.3.4 拨打电话 voice\_dial\_call 87](#_Toc87714745)

[8.3.5 ENDC开关开启和关闭 nas\_set\_endc\_config 88](#_Toc87714746)

[8.3.6 5G注册状态上报 wds\_data\_bearer\_type 89](#_Toc87714747)

[8.3.7 UI界面显示5G的通知消息 dsd\_ui\_info 90](#_Toc87714748)

[8.3.8 IMS注册状态上报 imsa\_registration\_status 91](#_Toc87714749)

[8.3.9 关机/开机 91](#_Toc87714750)

[8.3.10 进入/退出飞行模式 92](#_Toc87714751)

[8.3.11 绑定数据操作卡号 93](#_Toc87714752)

[8.3.12 网络注册状态 93](#_Toc87714753)

[8.3.13 热插卡拔卡/开卡、关卡 97](#_Toc87714754)

[8.3.14 切换数据卡 98](#_Toc87714755)

[8.3.15 开关双4G 100](#_Toc87714756)

[8.3.16 卡能力变更 100](#_Toc87714757)

[8.3.17 激活/去激活数据业务 101](#_Toc87714758)

[8.3.18 开数据/关数据 102](#_Toc87714759)

[8.3.19 数据当前状态查看 103](#_Toc87714760)

[8.3.20 数据低延迟模式设置 103](#_Toc87714761)

[8.3.21 数据连接状态 104](#_Toc87714762)

[8.3.22 DTMF发送 104](#_Toc87714763)

[8.3.23 VoLTE DTMF 对应到RTP报文 105](#_Toc87714764)

[8.3.24 VoLTE开关打开和关闭 106](#_Toc87714765)

[8.3.25 VoLTE升级和降级 107](#_Toc87714766)

[8.3.26 网络模式变化，如设置4G网络优先操作 111](#_Toc87714767)

[8.3.27 关闭自动选择网络-手机返回可用网络列表 115](#_Toc87714768)

[8.3.28 省电模式 117](#_Toc87714769)

[8.3.29 手动搜网 117](#_Toc87714770)

[8.3.30 开关VoLTE开关—待补充 117](#_Toc87714771)

[8.3.31 设置SIM的固定拨号 117](#_Toc87714772)

[8.4 信号强度上报 118](#_Toc87714773)

[8.4.1 NR信号强度上报 118](#_Toc87714774)

[8.4.2 LTE信号状态上报 118](#_Toc87714775)

[8.4.3 WCDMA信号状态上报 119](#_Toc87714776)

[8.4.4 GSM信号状态上报 120](#_Toc87714777)

[8.4.5 CDMA 1X信号强度获取 120](#_Toc87714778)

[8.5 注册状态查看 120](#_Toc87714779)

[8.5.1 IMS注册状态查看 120](#_Toc87714780)

[8.6 双卡情况RF不可用关键字搜索 124](#_Toc87714781)

[8.7 NV整理 124](#_Toc87714782)

[8.7.1 NV2508-EDGE关闭方法 124](#_Toc87714783)

[8.7.2 NV74460-紧急电话后测量SA的延迟定时器设置 124](#_Toc87714784)

[8.8 5G随机接入超时 124](#_Toc87714785)

[8.9 设置呼叫转移/等待/限制 125](#_Toc87714786)

[8.10 游戏模式 125](#_Toc87714787)

[8.11 手机云控权限添加 126](#_Toc87714788)

[9 MTK平台相关问题整理 127](#_Toc87714789)

[9.1 MTK IMS customization 127](#_Toc87714790)

[9.1.1 IMC parameter customization path by engineer mode 127](#_Toc87714791)

[9.1.2 WO parameter customization path by engineer mode 127](#_Toc87714792)

[9.1.3 IMS parameter customization path by AT command; 128](#_Toc87714793)

[9.2 MTK Modem Log抓取 128](#_Toc87714794)

[9.2.1 MTK离线Log抓取方法 128](#_Toc87714795)

[9.2.2 MTK在线Log抓取方法 128](#_Toc87714796)

[9.2.3 MTK抓取Modem Dump方法 129](#_Toc87714797)

[9.3 MTK常用的Log关键字搜索！！！ 130](#_Toc87714798)

[9.3.1 MTK常用的Log Mask说明 130](#_Toc87714799)

[9.4 IMEI签名相关问题 130](#_Toc87714800)

[9.4.1 CTS测试 替换了system.img文件，不能使用暗码抓Modem Log 130](#_Toc87714801)

[9.5 MTK信号强度的查看 130](#_Toc87714802)

[9.5.1 CDMA信号强度查看 130](#_Toc87714803)

[9.5.2 CDMA解码统计查看 131](#_Toc87714804)

[9.6 MTK用户反馈断流问题分析！！！ 131](#_Toc87714805)

[9.6.1 断流问题分析步骤 131](#_Toc87714806)

[9.6.2 assertion failed at sched\_avg.c:1001 134](#_Toc87714807)

[9.7 MTK主叫的域选过程—TD 135](#_Toc87714808)

[9.7.1 MTK主叫域选失败 136](#_Toc87714809)

[9.8 MTK驻网相关问题 136](#_Toc87714810)

[9.8.1 手动选网失败后自动返回上次驻留的PLMN，但是AP自动选择运营商的开关不会自动打开 136](#_Toc87714811)

[9.8.2 IMS注册403响应处理 136](#_Toc87714812)

[9.8.3 WorldMode 137](#_Toc87714813)

[9.8.4 HPPLMN Search 137](#_Toc87714814)

[9.9 5G相关问题 139](#_Toc87714815)

[9.9.1 手机无法驻留到双5G 139](#_Toc87714816)

[9.9.2 AP侧开关ENDC能力 139](#_Toc87714817)

[9.9.3 主卡NSA ENDC连接状态下，CSFB后仍然显示5G 140](#_Toc87714818)

[9.10 DSDA 141](#_Toc87714819)

[9.10.1 DSDA介绍 141](#_Toc87714820)

[9.10.2 相关的AT命令 141](#_Toc87714821)

[9.10.3 DSDA触发流程和问题Debug步骤 141](#_Toc87714822)

[9.10.4 DSDA的全流程，可以查看如下JIRA：AGATE-5549 – 待办 142](#_Toc87714823)

[9.10.5 示例Log 142](#_Toc87714824)

[9.10.6 DSDS/DSDA组合支持的Log查看 142](#_Toc87714825)

[9.10.7 参考文档 143](#_Toc87714826)

[9.11 MTK SS 143](#_Toc87714827)

[9.12 呼叫相关问题 143](#_Toc87714828)

[9.12.1 VoLTE被叫时无下行RTP包导致无声 143](#_Toc87714829)

[9.12.2 VoLTE通话过程中20s无下行RTP包自动挂断 144](#_Toc87714830)

[9.13 Meta工具问题 145](#_Toc87714831)

[9.13.1 Meta备份K11T NV数据发生Modem SLA is not verified 145](#_Toc87714832)

[9.14 MTK编译相关问题 146](#_Toc87714833)

[9.14.1 查看目前所有定义过的宏 146](#_Toc87714834)

[9.15 MTK工程模式相关 146](#_Toc87714835)

[9.15.1 锁频点 146](#_Toc87714836)

[9.15.2 如何通过工程模式发送AT命令 146](#_Toc87714837)

[9.15.3 将测试SIM卡强制识别为正常USIM卡 147](#_Toc87714838)

[9.16 MTK锁卡流程 148](#_Toc87714839)

[9.16.1 锁卡和解锁的流程 148](#_Toc87714840)

[9.16.2 AT命令整理 148](#_Toc87714841)

[9.16.3 J22锁卡项目介绍 148](#_Toc87714842)

[9.16.4 锁卡变化NVRAM空间的副作用 148](#_Toc87714843)

[9.17 SIM相关问题 148](#_Toc87714844)

[9.17.1 SIM卡掉卡问题 148](#_Toc87714845)

[9.17.2 测试卡强制设置为实际SIM卡 149](#_Toc87714846)

[9.18 MTK掉网上报 149](#_Toc87714847)

[9.19 MTK补充服务 149](#_Toc87714848)

[9.20 WCDMA通话过程中彩信发送失败 150](#_Toc87714849)

[10 MTK AT命令 151](#_Toc87714850)

[10.1 驻网相关命令 151](#_Toc87714851)

[10.1.1 AT+ERAT 驻网模式切换命令 151](#_Toc87714852)

[10.1.2 AT+EREG 驻网状态 152](#_Toc87714853)

[10.1.3 AT+CESQ 信号强度计算 153](#_Toc87714854)

[10.1.4 AT+ECSQ RAT信号强度上报 154](#_Toc87714855)

[10.1.5 AT+EFUN 双卡RadioON/OFF设置 155](#_Toc87714856)

[10.1.6 AT+E5GOPT 5G支持能力设置 155](#_Toc87714857)

[10.1.7 AT+EFD Fast Dormancy设置 156](#_Toc87714858)

[10.1.8 AT+EIAREG 初始附着注册是否发送URC 156](#_Toc87714859)

[10.1.9 AT+ESIMS 查看SIM卡状态 156](#_Toc87714860)

[10.1.10 AT+ESIMPOWER 启用和关闭SIM卡 157](#_Toc87714861)

[10.1.11 AT+ESADM 单AP双卡设置 157](#_Toc87714862)

[10.1.12 +ESMLSTATUS 上报SIM ME Lock Rule 157](#_Toc87714863)

[10.1.13 +CGMR 上报当前Modem的版本号 158](#_Toc87714864)

[10.1.14 使能或禁止WIFI 158](#_Toc87714865)

[10.1.15 +EGREG NSA 5G图标显示 159](#_Toc87714866)

[10.1.16 Telephony 5G显示规则 159](#_Toc87714867)

[10.1.17 AT+CIREG IMS注册状态查询 160](#_Toc87714868)

[10.1.18 EGMC 161](#_Toc87714869)

[10.1.19 AT+ECUSD补充业务 – 待补充 161](#_Toc87714870)

[10.1.20 AT+EAPNACT PDN激活/去激活 161](#_Toc87714871)

[10.1.21 DSDA 162](#_Toc87714872)

[10.1.22 +EIRAT RAT间切换的状态上报 163](#_Toc87714873)

[10.2 数据相关命令 164](#_Toc87714874)

[10.2.1 AT+ECNCFG 164](#_Toc87714875)

[10.3 呼叫相关命令 165](#_Toc87714876)

[10.3.1 AT+EVVS 语音域状态变化指示 165](#_Toc87714877)

[10.3.2 AT+EHVOLTE 为silent redial更新hVoLTE模式 165](#_Toc87714878)

[10.3.3 ATD 166](#_Toc87714879)

[10.3.4 ATH 166](#_Toc87714880)

[10.3.5 CHLD 166](#_Toc87714881)

[10.3.6 CHUP 166](#_Toc87714882)

[10.3.7 ECPI 166](#_Toc87714883)

[10.3.8 ATA 166](#_Toc87714884)

[10.3.9 EUSIM SIM卡相关问题 166](#_Toc87714885)

[10.4 VoLTE相关的AT命令 166](#_Toc87714886)

[10.4.1 EIMSPDN 166](#_Toc87714887)

[10.4.2 AT+EIMSCFG IMS相关能力设置 166](#_Toc87714888)

[10.4.3 +EIMSVCAP 上报video能力 166](#_Toc87714889)

[10.5 短信相关 166](#_Toc87714890)

[10.5.1 AT+CMGS Text Mode短信发送 166](#_Toc87714891)

[10.5.2 使能或禁止WIFI 167](#_Toc87714892)

[11 数据业务问题专项分析 167](#_Toc87714893)

[11.1 数据业务问题的测试方法 167](#_Toc87714894)

[11.2 数据业务分析的基本步骤 167](#_Toc87714895)

[11.2.1 APP的网络协议使用情况初步分析 167](#_Toc87714896)

[11.2.2 UE IP的确认 168](#_Toc87714897)

[12 Bugreport常用信息搜索 168](#_Toc87714898)

[12.1 数据业务相关 168](#_Toc87714899)

[12.1.1 设置数据卡 168](#_Toc87714900)

[12.1.2 获取SIM卡状态 168](#_Toc87714901)

[12.1.3 发起数据链路建立 168](#_Toc87714902)

[12.1.4 显示数据图标 168](#_Toc87714903)

[12.1.5 5G数据性能优化 168](#_Toc87714904)

[12.2 驻网 169](#_Toc87714905)

[12.2.1 CS域驻留信息 169](#_Toc87714906)

[12.2.2 PS驻留信息 169](#_Toc87714907)

[12.2.3 regstate和rat的枚举 169](#_Toc87714908)

[12.2.4 查看信号强度 170](#_Toc87714909)

[12.2.5 查看PS驻留的小区信息 170](#_Toc87714910)

[12.2.6 设置网络模式 170](#_Toc87714911)

[12.3 电话 172](#_Toc87714912)

[12.3.1 CS呼叫过程 172](#_Toc87714913)

[12.3.2 IMS的呼叫过程 172](#_Toc87714914)

[12.4 Crash信息 172](#_Toc87714915)

[12.5 RIL消息 172](#_Toc87714916)

[13 待解问题 172](#_Toc87714917)

[13.1 平时问题收集 172](#_Toc87714918)

[13.1.1 如果LTE掉网，是否还会接收到Paging消息？ 172](#_Toc87714919)

[13.1.2 高通各层消息过滤方法 172](#_Toc87714920)

[13.1.3 高通注册、掉网的查看方法 172](#_Toc87714921)

[13.1.4 LTE小区切换过程中，原有的SRB和DRB如何配置 172](#_Toc87714922)

[13.1.5 pcap文件解析为AMR文件 172](#_Toc87714923)

[13.1.6 GSM在什么场景下会发起LU流程 172](#_Toc87714924)

[13.1.7 5G SA NAS消息学习整理 172](#_Toc87714925)

[13.1.8 高通MMCP代码走读 172](#_Toc87714926)

[14 J22项目问题记录 173](#_Toc87714927)

[14.1 J22 Softbank定制机 173](#_Toc87714928)

[14.1.1 J22 Softbank定制机不能驻留到4G 173](#_Toc87714929)

[15 K11T项目问题归纳 174](#_Toc87714930)

[15.1 Modem相关问题 174](#_Toc87714931)

[15.1.1 MTK平台Modem侧功能适配列表 174](#_Toc87714932)

[15.1.2 日本地区B41窄带需求 175](#_Toc87714933)

[15.1.3 驻网类问题 176](#_Toc87714934)

[15.1.4 手机信号塔测试 179](#_Toc87714935)

[15.2 SAR配置 179](#_Toc87714936)

[15.3 通话类问题 179](#_Toc87714937)

[15.4 签名相关 180](#_Toc87714938)

[15.5 Meta相关 180](#_Toc87714939)

[15.5.1 要求MIUI开机进Meta 180](#_Toc87714940)

[15.5.2 Meta口不枚举 180](#_Toc87714941)

[15.5.3 K11R P1.1不进Meta问题 181](#_Toc87714942)

[15.6 SpeechAnalyzer 181](#_Toc87714943)

[16 国内认证相关问题 181](#_Toc87714944)

[16.1 L3A入库测试问题 181](#_Toc87714945)

[16.1.1 CU SA发起VoLTE通话30s不回落4G 181](#_Toc87714946)

[16.2 AS层相关问题 182](#_Toc87714947)

[16.2.1 N28/N41切换问题 182](#_Toc87714948)

[16.2.2 ShortDRX支持问题 – VoNR郑州联通联调问题 182](#_Toc87714949)

[16.2.3 VoNR能力支持设置 183](#_Toc87714950)

[16.3 IMS EVS参数配置 183](#_Toc87714951)

[16.3.1 配置文件位置 183](#_Toc87714952)

[16.3.2 参数配置 183](#_Toc87714953)

[16.3.3 修改注意事项 184](#_Toc87714954)

[16.3.4 参数含义解释 184](#_Toc87714955)

[16.3.5 导入方法 186](#_Toc87714956)

[16.3.6 常见问题 186](#_Toc87714957)

# 介绍

## 文档目的

整理在解决Modem各种问题的思路和步骤，用于为所有的Modem问题提供现有的解决思虑和方法，最大限度的降低重复问题反复问题带来的时间成本。

复杂的问题简单化。

繁琐的问题流程化。

## 术语和缩写

Silver Bullet：银色子弹，是一种由[白银](https://zh.wikipedia.org/wiki/%E9%8A%80)制成的[子弹](https://zh.wikipedia.org/wiki/%E5%AD%90%E5%BC%B9)，有时也被称为银弹。在西方的宗教信仰和传说中作为一种武器，是唯一能和[狼人](https://zh.wikipedia.org/wiki/%E7%8B%BC%E4%BA%BA)、[女巫](https://zh.wikipedia.org/wiki/%E5%A5%B3%E5%B7%AB)及其他怪物对抗的利器。**银色子弹也可用于比喻强而有力、一劳永逸地适应各种场合的解决方案。**

## 参考文档

《TS 38.331》NR Radio Resource Control (RRC) protocol specification R15

# Modem FAQ

## 待办事项： ！！！！！！！！！

<https://blog.csdn.net/ZhongGuoRenMei/article/details/114850106>

<https://jira.n.xiaomi.com/browse/PSYCHE-4452>

WCDMA的信令分析流程！！！

## 常见问题问答

目前已经拆解为FAQ分配给各位应届生同学

## 工作中常见术语

<https://xiaomi.f.mioffice.cn/docs/dock4z9FKau8ePl8XtR7Xn37dOd>

### 开发平台/测试/JIRA相关

1. JIRA:项目任务管理软件，JIRA是Atlassian公司的产品。
2. MIUI： 由小米基于Android原生ROM修改之后的系统。
3. BB: Build Break，编译中止。指的是由于某笔change提交导致整个版本编译失败。
4. 284 Log：通过\*#\*#284#\*#\*暗码抓取的Bugreport Log文件。只需要在问题出现后执行一次即可得到Bugreport Log文件。
5. 995 Log：通过\*#\*#995995#\*#\*开始抓取，结束后需要再执行一遍此暗码。这个过程抓取的是Modem Log，需要在问题出现前开始抓取，问题结束后再执行一遍结束抓取。
6. DUT：Device Under Test，被测试设备。
7. REF：Reference，参考。项目测试中指的是参考机设备。
8. ASAP：As Soon As Possible，尽快。常用语邮件和Note留言，表示需要尽快处理。
9. MTBF：Mean Time Between Failure，平均无故障工作时间，是衡量一个产品（尤其是电器产品）的可靠性指标。 单位为“小时”。 它反映了产品的时间质量，是体现产品在规定时间内保持功能的一种能力。
10. Sanity Test：可用性测试。测试新特性的有限正常功能，深入测试。
11. Smoke Testing：测试新特性有关的所有方面 (广度) ，但不深入，用以判断我们是否需要执行进一步的测试。
12. Regression testing：回归新特性所有相关功能，避免引入代码变更存在问题以及引入新问题，深入全面。

### 稳定版命名规则

参考如下WIKI，很详细。

<https://wiki.n.miui.com/pages/viewpage.action?pageId=308568747>

文档具体内容如下：

#### ****新版版本号规则 2018年12月18日开始执行****

版本号格式：**<MIUI大版本号>.<稳定版branch号>.<内部编译版本号1>.<内部编译版本号2>.<Android版本代码><机型编码><地区代码(占两位字符串)><运营商代码(占两位字符串)>**

地区/运营商代码：<https://wiki.n.miui.com/pages/viewpage.action?pageId=247108799>

其中，

MIUI大版本号：由字母V和数字组成。比如，V10表示MIUI 10

稳定版branch号:由数字组成。比如，2表示stable2x

内部编译版本号1：由数字组成，表示某个branch的第n个版本，累加计算，但稳定branch版本号变动会置0

内部编译版本号2：由数字组成，累加计算。非0表示内部测试版本(小数版)，0表示计划外发版本（整数版）

Android版本代码：由一位字母组成。比如， P表示Android 9.0

机型编码：由两位字母组成。比如，EA表示小米8。更多机型编码请参考[打包分支信息-查看详情](http://husky.pt.miui.com/device/info)，[版本号机型编码与项目代号对应关系表](https://wiki.n.miui.com/pages/viewpage.action?pageId=573586383)

地区代码：国内版本采用CN，国际通用版本采用MI，各地区版本采用两位字符缩写如俄罗斯采用RU、印度采用IN、EEA地区采用EU等

运营商代码：非运营商定制版本，最后两位字符采用XM（小米的缩写），各运营商采用两位字符缩写，如Orange采用OR、H3G采用HG

例如：

如C3C 国内通用版本，版本命名为：V10.0.1.0.OCBCNXM；

如C3C 国际通用版本，版本命名为：V10.0.1.0.OCBMIXM；

如C3C H3G全网定制版本，版本命名为：V10.0.1.0.OCBMIHG；

如C3C 英国H3G定制版本，版本命名为：V10.0.1.0.OCBUKHG；

其中“V10.0.1.0.OCBUKHG”详细表示以下信息

MIUI-V10

在stable0x上编译的第1个外发版本 – 0.1.0

Android版本是8.0 - O

机型是小米C3C – CB

英国地区-H3G运营商版本 – UKHG

#### Android版本号

|  |  |  |
| --- | --- | --- |
| Android数字版本号 | Android字母简称 | 升级年份 |
| 8 | Android O | 2017 |
| 9 | Android P | 2018 |
| 10 | Android Q | 2019 |
| 11 | Android R | 2020 |
| 12 | Andorid S | 2021 |
| 13 | Andorid T |  |
| 14 | Android U |  |

#### 现有运营商

|  |  |  |  |
| --- | --- | --- | --- |
| Index | code | buildCode | name |
| 1 | AI | ai | Airtel |
| 2 | AL | al | Altan |
| 3 | AS | as | AIS |
| 4 | AT | at | AT&T |
| 5 | BY | by | Bouygues |
| 6 | CR | cr | Claro |
| 7 | DC | dc | DTAC |
| 8 | DG | dg | DIGI |
| 9 | DT | dt | DTAG |
| 10 | EE | ee | EE |
| 11 | EL | el | Elisa |
| 12 | EN | en | Entel |
| 13 | FE | fe | Free |
| 14 | FK | Fk | *Flipkart* |
| 15 | GU | gu | LG U+ |
| 16 | HG | h3g | H3G |
| 17 | JO | jo | JIO |
| 18 | KD | kd | KDDI |
| 19 | KN | kn | KPN |
| 20 | KT | kt | KT |
| 21 | LG | lg | UPC |
| 22 | ME | me | MEO |
| 23 | MS | movistar | Movistar |
| 24 | MT | mt | MTN |
| 25 | NT | nt | ntel |
| 26 | OR | orange | Orange |
| 27 | PL | pl | Play |
| 28 | PU | pu | Plus |
| 29 | RF | rf | Refresh |
| 30 | RL | rl | Reliance |
| 31 | SA | sa | Safaricom |
| 32 | SE | se | Seatel |
| 33 | SF | sfr | SFR |
| 34 | SK | sk | SKT |
| 35 | SM | sm | Smart |
| 36 | TC | telcel | Telcel |
| 37 | TE | te | TRUE |
| 38 | TF | tf | Telefonica |
| 39 | TG | tg | Tigo |
| 40 | TI | tim | TIM |
| 41 | TK | tk | Telekom |
| 42 | TL | tl | Telia |
| 43 | TM | tm | T-Mobile |
| 44 | TN | tn | Telenor |
| 45 | TU | turkcell | Turkcell |
| 46 | VC | vc | Vodacom |
| 47 | VF | vodafone | Vodafone |
| 48 | WO | wom | WOM |
| 49 | YG | yg | Yoigo |

#### 现有国家地区表

|  |  |  |  |
| --- | --- | --- | --- |
| Inex | Code | name\_cn | name\_en |
| 1 | eea | 欧盟 |  |
| 2 | global | 国际地区 |  |
| 3 | cn | 中国大陆 | China |
| 4 | al | 阿尔巴尼亚 | Albania |
| 5 | dz | 阿尔及利亚 | Algeria |
| 6 | as | 美属萨摩亚 | American Samoa |
| 7 | ad | 安道尔共和国 | Andorra |
| 8 | ao | 安哥拉 | Angola |
| 9 | ai | 安圭拉 | Anguilla |
| 10 | ag | 安提瓜和巴布达 | Antigua & Barbuda |
| 11 | ar | 阿根廷 | Argentina |
| 12 | am | 亚美尼亚 | Armenia |
| 13 | aw | 阿鲁巴 | Aruba |
| 14 | au | 澳大利亚 | Australia |
| 15 | at | 奥地利 | Austria |
| 16 | az | 阿塞拜疆 | Azerbaijan |
| 17 | bs | 巴哈马 | Bahamas |
| 18 | bh | 巴林王国 | Bahrain |
| 19 | bd | 孟加拉国 | Bangladesh |
| 20 | bb | 巴巴多斯 | Barbados |
| 21 | by | 白俄罗斯 | Belarus |
| 22 | be | 比利时 | Belgium |
| 23 | bz | 伯利兹 | Belize |
| 24 | bj | 贝宁 | Benin |
| 25 | bt | 不丹 | Bhutan |
| 26 | bo | 玻利维亚 | Bolivia |
| 27 | ba | 波黑 | Bosnia & Herzegovina |
| 28 | bw | 博茨瓦纳 | Botswana |
| 29 | br | 巴西 | Brazil |
| 30 | vg | 英属维尔京群岛 | British Virgin Islands |
| 31 | bn | 文莱达鲁萨兰国 | Brunei |
| 32 | bg | 保加利亚 | Bulgaria |
| 33 | bf | 布基纳法索 | Burkina Faso |
| 34 | bi | 布隆迪 | Burundi |
| 35 | kh | 柬埔寨 | Cambodia |
| 36 | cm | 喀麦隆 | Cameroon |
| 37 | ca | 加拿大 | Canada |
| 38 | cv | 佛得角 | Cape Verde |
| 39 | bq | 荷兰加勒比区 | Caribbean Netherlands |
| 40 | ky | 开曼群岛 | Cayman Islands |
| 41 | td | 乍得 | Chad |
| 42 | cl | 智利 | Chile |
| 43 | co | 哥伦比亚 | Colombia |
| 44 | km | 科摩罗 | Comoros |
| 45 | cd | 刚果（金） | Congo (DRC) |
| 46 | ck | 库克群岛 | Cook Islands |
| 47 | cr | 哥斯达黎加 | Costa Rica |
| 48 | ci | 科特迪瓦 | Côte d'Ivoire |
| 49 | hr | 克罗地亚 | Croatia |
| 50 | cu | 古巴 | Cuba |
| 51 | cy | 塞浦路斯 | Cyprus |
| 52 | cz | 捷克 | Czech Republic |
| 53 | dk | 丹麦 | Denmark |
| 54 | dj | 吉布提 | Djibouti |
| 55 | dm | 多米尼克 | Dominica |
| 56 | do | 多米尼加 | Dominican Republic |
| 57 | ec | 厄瓜多尔 | Ecuador |
| 58 | eg | 埃及 | Egypt |
| 59 | sv | 萨尔瓦多 | El Salvador |
| 60 | gq | 赤道几内亚 | Equatorial Guinea |
| 61 | er | 厄立特里亚 | Eritrea |
| 62 | ee | 爱沙尼亚 | Estonia |
| 63 | et | 埃塞俄比亚 | Ethiopia |
| 64 | fk | 福克兰群岛 | Falkland Islands (Islas Malvinas) |
| 65 | fo | 法罗群岛 | Faroe Islands |
| 66 | fj | 斐济 | Fiji |
| 67 | fi | 芬兰 | Finland |
| 68 | fr | 法国 | France |
| 69 | gf | 法属圭亚那 | French Guiana |
| 70 | pf | 法属波利尼西亚 | French Polynesia |
| 71 | ga | 加蓬 | Gabon |
| 72 | gm | 冈比亚 | Gambia |
| 73 | ge | 格鲁吉亚 | Georgia |
| 74 | de | 德国 | Germany |
| 75 | gh | 加纳 | Ghana |
| 76 | gi | 直布罗陀 | Gibraltar |
| 77 | gr | 希腊 | Greece |
| 78 | gl | 格陵兰 | Greenland |
| 79 | gd | 格林纳达 | Grenada |
| 80 | gu | 关岛 | Guam |
| 81 | gt | 危地马拉 | Guatemala |
| 82 | gg | 格恩西岛 | Guernsey |
| 83 | gn | 几内亚 | Guinea |
| 84 | gw | 几内亚比绍 | Guinea-Bissau |
| 85 | gy | 圭亚那 | Guyana |
| 86 | ht | 海地 | Haiti |
| 87 | hn | 洪都拉斯 | Honduras |
| 88 | hk | 中国香港 | Hong Kong |
| 89 | hu | 匈牙利 | Hungary |
| 90 | is | 冰岛 | Iceland |
| 91 | in | 印度 | India |
| 92 | id | 印度尼西亚 | Indonesia |
| 93 | ir | 伊朗 | Iran |
| 94 | iq | 伊拉克 | Iraq |
| 95 | ie | 爱尔兰 | Ireland |
| 96 | im | 曼岛 | Isle of Man |
| 97 | il | 以色列 | Israel |
| 98 | it | 意大利 | Italy |
| 99 | jm | 牙买加 | Jamaica |
| 100 | jp | 日本 | Japan |
| 101 | je | 泽西岛 | Jersey |
| 102 | jo | 约旦 | Jordan |
| 103 | kz | 哈萨克斯坦 | Kazakhstan |
| 104 | ke | 肯尼亚 | Kenya |
| 105 | ki | 基里巴斯 | Kiribati |
| 106 | kw | 科威特 | Kuwait |
| 107 | kg | 吉尔吉斯坦 | Kyrgyzstan |
| 108 | la | 老挝 | Laos |
| 109 | lv | 拉脱维亚 | Latvia |
| 110 | lb | 黎巴嫩 | Lebanon |
| 111 | ls | 莱索托 | Lesotho |
| 112 | lr | 利比里亚 | Liberia |
| 113 | ly | 利比亚 | Libya |
| 114 | li | 列支敦士登 | Liechtenstein |
| 115 | lt | 立陶宛 | Lithuania |
| 116 | lu | 卢森堡 | Luxembourg |
| 117 | mo | 中国澳门 | Macau |
| 118 | mk | 马其顿 | Macedonia (FYROM) |
| 119 | mg | 马达加斯加 | Madagascar |
| 120 | mw | 马拉维 | Malawi |
| 121 | my | 马来西亚 | Malaysia |
| 122 | mv | 马尔代夫 | Maldives |
| 123 | ml | 马里 | Mali |
| 124 | mt | 马耳他 | Malta |
| 125 | mh | 马绍尔群岛 | Marshall Islands |
| 126 | mr | 毛里塔尼亚 | Mauritania |
| 127 | mu | 毛里求斯 | Mauritius |
| 128 | yt | 马约特岛 | Mayotte |
| 129 | mx | 墨西哥 | Mexico |
| 130 | fm | 密克罗尼西亚联邦 |  |
| 131 | md | 摩尔多瓦 | Moldova |
| 132 | mn | 蒙古国 | Mongolia |
| 133 | me | 黑山 | Montenegro |
| 134 | ms | 蒙特塞拉特 | Montserrat |
| 135 | ma | 摩洛哥 | Morocco |
| 136 | mz | 莫桑比克 | Mozambique |
| 137 | mm | 缅甸 | Myanmar (Burma) |
| 138 | na | 纳米比亚 | Namibia |
| 139 | nr | 瑙鲁 | Nauru |
| 140 | np | 尼泊尔 | Nepal |
| 141 | nl | 荷兰 | Netherlands |
| 142 | nc | 新喀里多尼亚 | New Caledonia |
| 143 | nz | 新西兰 | New Zealand |
| 144 | ni | 尼加拉瓜 | Nicaragua |
| 145 | ng | 尼日利亚 | Nigeria |
| 146 | nu | 纽埃岛 | Niue |
| 147 | nf | 诺福克岛 | Norfolk Island |
| 148 | kp | 朝鲜 | North Korea |
| 149 | mp | 北马里亚纳群岛 | Northern Mariana Islands |
| 150 | no | 挪威 | Norway |
| 151 | om | 阿曼 | Oman |
| 152 | pk | 巴基斯坦 | Pakistan |
| 153 | pw | 帕劳 | Palau |
| 154 | ps | 巴勒斯坦 | Palestine |
| 155 | pa | 巴拿马 | Panama |
| 156 | pg | 巴布亚新几内亚 | Papua New Guinea |
| 157 | py | 巴拉圭 | Paraguay |
| 158 | pe | 秘鲁 | Peru |
| 159 | ph | 菲律宾 | Philippines |
| 160 | pl | 波兰 | Poland |
| 161 | pt | 葡萄牙 | Portugal |
| 162 | pr | 波多黎各 | Puerto Rico |
| 163 | qa | 卡塔尔 | Qatar |
| 164 | ro | 罗马尼亚 | Romania |
| 165 | ru | 俄罗斯 | Russia |
| 166 | rw | 卢旺达 | Rwanda |
| 167 | sh | 圣赫勒拿岛 | St. Helena |
| 168 | kn | 圣卢西亚 | St. Kitts & Nevis |
| 169 | lc | 圣卢西亚岛 | St. Lucia |
| 170 | pm | 圣皮埃尔和密克隆 |  |
| 171 | vc | 圣文森特和格林纳丁斯 |  |
| 172 | ws | 萨摩亚 | Samoa |
| 173 | sm | 圣马力诺 | San Marino |
| 174 | st | 圣多美和普林西比 |  |
| 175 | sa | 沙特阿拉伯 | Saudi Arabia |
| 176 | sn | 塞内加尔 | Senegal |
| 177 | rs | 塞尔维亚 | Serbia |
| 178 | sc | 塞舌尔群岛 | Seychelles |
| 179 | sl | 塞拉利昂 | Sierra Leone |
| 180 | sg | 新加坡 | Singapore |
| 181 | sk | 斯洛伐克 | Slovakia |
| 182 | si | 斯洛文尼亚 | Slovenia |
| 183 | sb | 所罗门群岛 | Solomon Islands |
| 184 | so | 索马里 | Somalia |
| 185 | za | 南非 | South Africa |
| 186 | gs | 南乔治亚岛和南桑威齐群岛 |  |
| 187 | kr | 韩国 | South Korea |
| 188 | ss | 南苏丹 | South Sudan |
| 189 | es | 西班牙 | Spain |
| 190 | lk | 斯里兰卡 | Sri Lanka |
| 191 | sd | 苏丹 | Sudan |
| 192 | sr | 苏里南 | Suriname |
| 193 | sz | 斯威士兰 | Swaziland |
| 194 | se | 瑞典 | Sweden |
| 195 | ch | 瑞士 | Switzerland |
| 196 | sy | 叙利亚 | Syria |
| 197 | tw | 中国台湾 | Taiwan |
| 198 | tj | 塔吉克斯坦 | Tajikistan |
| 199 | tz | 坦桑尼亚 | Tanzania |
| 200 | th | 泰国 | Thailand |
| 201 | tl | 东帝汶 | Timor-Leste |
| 202 | tg | 多哥 | Togo |
| 203 | tk | 托克劳 | Tokelau |
| 204 | to | 汤加群岛 | Tonga |
| 205 | tt | 特立尼达和多巴哥 |  |
| 206 | tn | 突尼斯 | Tunisia |
| 207 | tr | 土耳其 | Turkey |
| 208 | tm | 土库曼斯坦 | Turkmenistan |
| 209 | tv | 图瓦卢 | Tuvalu |
| 210 | ug | 乌干达 | Uganda |
| 211 | ua | 乌克兰 | Ukraine |
| 212 | ae | 阿拉伯联合酋长国 |  |
| 213 | gb | 英国 | United Kingdom |
| 214 | us | 美国 | United States |
| 215 | uy | 乌拉圭 | Uruguay |
| 216 | uz | 乌兹别克斯坦 | Uzbekistan |
| 217 | vu | 瓦努阿图 | Vanuatu |
| 218 | ve | 委内瑞拉 | Venezuela |
| 219 | vn | 越南 | Vietnam |
| 220 | ye | 也门 | Yemen |
| 221 | zm | 赞比亚 | Zambia |
| 222 | zw | 津巴布韦 | Zimbabwe |
| 223 | lm | 拉丁美洲 | Latin America |

### 项目开发有关简称

1. DI：DI:Defect Index(缺陷率)，定义：DI值是衡量软件质量的高低的指标之一。计算公式：DI= 致命级别的问题个数\*10+严重级别的问题个数\*3+一般级别的问题个数\*1+提示级别的问题个数\*0.1
2. FC： Feature Complete，是软件开发的一个阶段，用于完成计划中的所有Feature。根据经验，我司在P1阶段完成。

## 高通项目相关

1. MBN：Modem BiNary，调制解调器二进制，是高通的NV编译生成文件
2. TLV：Type-Length-Value，类型-长度-值，是消息的一种编码方案，使用灵活，但是需要预定义Type的具体含义。
3. DDS：有多种解释，含义都是数据卡。全称有Data Default Subscription，默认数据卡，Dedicated Data Subscription，专用数据卡，还有Designated Data Subscription，指定的数据卡，高通文档中用的是这个解释。
4. Scons：一种软件开发工具程序，功能类似于UNIX上的make、autoconf与automake工具。它是一个开放源代码计划，采用MIT许可，原作者是史蒂芬·奈特（Steven Knight），使用Python语言开发。第一个正式版本在2010年3月23日发布。与Linux中常见的Makefile有相同的作用，用于指定程序编译的对应的源文件、生成文件等。
5. MPSS：Modem Processor Subsystem ，Modem处理器子系统
6. HLOS：High Level OS， 高层操作系统，与Non-HLOS对应。包括三个方面：Linux Android 编译、Linux 内核、Android OS（用户空间）
7. Non-HLOS：Basically Non-HLOS can be considered the core BSP and other supported software package, which performs the bare minimum functionalities at system boot-up including loading the HIgh Level OS(Linux/ Android/ Windows). Non HLOS is typically provided by the vendors owning the HW platform.

### 高通Modem软件相关术语

1. QMI：Qualcomm Messaging Interface，高通消息接口
2. CM：Call Manager，呼叫管理模块。属于Modem NAS层的模块。

## MTK项目相关缩写

eService：

## 通信相关术语

1. Modem：调制解调器，完成信号的发送和接收处理，用于承载用户的移动数据、电话、短信业务。
2. ESIM：Embedded-SIM，eSIM卡的概念就是将传统SIM卡直接嵌入到设备芯片上，而不是作为独立的可移除零部件加入设备中，用户无需插入物理SIM卡。
3. SGSN：Serving GPRS Support Node，业务GPRS支撑节点。SGSN属于GPRS数据核心网络的网元。SGSN负责在它的地理位置服务区域内从移动台接收或向其发送数据包。类似于LTE核心网络中的S-GW中的功能。
4. RFC：Request for Comments，请求意见稿。又翻译作意见征求，意见请求，请求评论是由互联网工程任务组（IETF）发布的一系列备忘录。文件收集了有关互联网相关信息，以及UNIX和互联网社群的软件文件，以编号排定。目前RFC文件是由互联网协会（ISOC）赞助发行。
5. RAT：Radio Access Technology, 无线接入技术。目前已有的无线接入技术有GSM、WCDMA、CDMA1X、EVDO、LTE、NR、WIFI、蓝牙等。

## 常见问题的分析步骤

### 高通平台

#### 呼叫流程存在问题

呼叫流程与标准的正常流程存在差异的问题处理过程，例如呼叫失败、异常挂断等等。基本思路是先确定发生问题的时间点、然后从AP、OTA逐步排查确认问题发生的具体流程，确定问题原因。

1. 确定问题流程

首先过滤得到QMI相关的消息。

在QMI消息中，通过Match Items（设置Options:Include Full Parsed Text，Content to Search：Payload），搜索字符串“**ServiceId = VOICE**”。得到所有与呼叫相关的QMI消息。

呼叫发起的QMI：VOICE\_DIAL\_CALL\_REQ

呼叫状态上报QMI：VIOICE\_ALL\_CALL\_STATUS\_IND，其中的call\_state指示了呼叫所处的阶段：

1. CALL\_STATE\_CC\_IN\_PROGRESS（呼叫处理过程中还未发出到OTA）、
2. CALL\_STATE\_ORIGINATING（呼叫已发出），
3. CALL\_STATE\_INCOMING（被叫收到呼叫消息后的第一个状态）
4. CALL\_STATE\_ALERTING（收到CALL PROCESS后状态设置为Alerting）、
5. CALL\_STATE\_CONVERSATION（收到CONNECT，电话接通）、
6. CALL\_STATE\_DISCONNECTING（发送DISCONNECT，未收到RELEASE）、
7. CALL\_STATE\_END（收到RELEASE）

呼叫挂断的QMI：VOICE\_END\_CALL\_REQ

呼叫应答的QMI：VOICE\_ANSWER\_CALL\_REQ

1. 确认流程的异常点

确认流程中哪个消息不符合正常的流程。

1. 查看对应的OTA消息，确认异常原因

根据QMI异常点，确认OTA消息中那条存在异常。确认异常的原因，如未收到接通响应、呼叫消息未发出等。

1. 其他模块消息如RRC，NAS需要根据经验和代码确认具体问题。

### 搜网/注册

对应的QMI模块：ServiceId = NAS

#### 网络模式切换

自动选网：net\_sel\_pref = NAS\_NET\_SEL\_PREF\_AUTOMATIC

手动选网： net\_sel\_pref = NAS\_NET\_SEL\_PREF\_MANUAL

|  |
| --- |
| Service\_NAS {  ServiceNASV1 {  nas\_set\_system\_selection\_preference {  nas\_set\_system\_selection\_preference\_reqTlvs[0] {  Type = 0x16  Length = 5  net\_sel\_pref {  net\_sel\_pref = NAS\_NET\_SEL\_PREF\_MANUAL  mcc = 460  mnc = 0  }  }  nas\_set\_system\_selection\_preference\_reqTlvs[1] {  Type = 0x22  Length = 1  rat {  rat = NAS\_RADIO\_IF\_GSM  } |

### 短息

### 彩信

#### 彩信收发问题

彩信收发的步骤：

1. 建立运营商对应彩信APN的PDN连接。

**移动：cmwap，电信：ctwap，联通：3gwap**

|  |
| --- |
| SYS 1786379 9809660 16:44:49:279 NIL [AT\_RX p58,ch0]AT+EAPNACT=1,"3gwap","mms",0  => Decode:PDP context activate or deactivate without the cid +EAPNACT  <state> : 1(activated)  <apn\_name> : "3gwap"  <apn\_type> : "mms",0    OTA 1788010 9809800 16:44:49:279 VGSM [MS->NW] VGSM\_PDU\_SESSION\_ESTABLISHMENT\_REQUEST (PTI:4, PSI:6)  OTA 1796422 9814241 16:44:49:679 VGSM [NW->MS] VGSM\_PDU\_SESSION\_ESTABLISHMENT\_ACCEPT (PTI:4, PSI:6) |

1. 查看tcp log确认彩信数据是否发送正常

MTK Log查看debuglogger目录下的netlog目录中的tcpdup文件。

根据三大运营商的彩信服务器IP地址过滤得到彩信TCP流是否正常。

联通和移动的彩信代理ip 是[10.0.0.172](http://10.0.0.172)

电信是[10.0.0.200](http://10.0.0.200)

参考JIRA

[AGATE-8035](https://jira.n.xiaomi.com/browse/AGATE-8035) [FT][K11R][Singapore][StarHub] [Subject Feature Test-3010]测试机收到彩信点击下载按钮超过两分钟未下载完成，对比机K191次超过2分钟未下载完成

分析要点：

MMS接收是否成功，需要查看HTTP GET请求是否返回了200 OK消息。根据IP地址过滤wireshark的报文。

|  |
| --- |
| **// 接收失败**  SYS 6355480 153297942 20:52:03:356 NIL [AT\_RX p58,ch0]AT+EAPNACT=1,"3gwap","mms",0  OTA 6357250 153298105 20:52:03:356 ESM [MS->NW] ESM\_MSG\_PDN\_CONNECTIVITY\_REQUEST (PTI:53, EBI:0)  OTA 6359508 153299991 20:52:03:356 ESM [NW->MS] ESM\_MSG\_ACTIVATE\_DEFAULT\_EPS\_BEARER\_CONTEXT\_REQUEST (PTI:53, EBI:6)  OTA 6359825 153300027 20:52:03:356 ESM [MS->NW] ESM\_MSG\_ACTIVATE\_DEFAULT\_EPS\_BEARER\_CONTEXT\_ACCEPT (PTI:0, EBI:6)  **// UE端发起TCP连接，但是MMS服务器没有正确响应，多次发送RST包。MMS服务器存在异常。**  8602 2021-07-19 20:52:03.936380 10.19.3.44 10.0.0.172 TCP 76 37816 → 80 [SYN] Seq=0 Win=65535 Len=0 MSS=1360 SACK\_PERM=1 TSval=1088231543 TSecr=0 WS=256  8604 2021-07-19 20:52:03.939770 10.19.3.44 10.0.0.172 TCP 76 37818 → 80 [SYN] Seq=0 Win=65535 Len=0 MSS=1360 SACK\_PERM=1 TSval=1088231546 TSecr=0 WS=256  8619 2021-07-19 20:52:04.966910 10.19.3.44 10.0.0.172 TCP 76 [TCP Retransmission] 37816 → 80 [SYN] Seq=0 Win=65535 Len=0 MSS=1360 SACK\_PERM=1 TSval=1088232573 TSecr=0 WS=256  8621 2021-07-19 20:52:04.970909 10.19.3.44 10.0.0.172 TCP 76 [TCP Retransmission] 37818 → 80 [SYN] Seq=0 Win=65535 Len=0 MSS=1360 SACK\_PERM=1 TSval=1088232577 TSecr=0 WS=256  8624 2021-07-19 20:52:05.060122 10.0.0.172 10.19.3.44 TCP 56 80 → 37816 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0  8625 2021-07-19 20:52:05.065146 10.0.0.172 10.19.3.44 TCP 56 80 → 37818 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0  8651 2021-07-19 20:52:05.774745 10.19.3.44 10.0.0.172 TCP 76 37824 → 80 [SYN] Seq=0 Win=65535 Len=0 MSS=1360 SACK\_PERM=1 TSval=1088233381 TSecr=0 WS=256  8656 2021-07-19 20:52:05.957700 10.19.3.44 10.0.0.172 TCP 76 37826 → 80 [SYN] Seq=0 Win=65535 Len=0 MSS=1360 SACK\_PERM=1 TSval=1088233564 TSecr=0 WS=256  8657 2021-07-19 20:52:06.057267 10.0.0.172 10.19.3.44 TCP 56 80 → 37826 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0  8660 2021-07-19 20:52:06.197300 10.19.3.44 10.0.0.172 TCP 76 37828 → 80 [SYN] Seq=0 Win=65535 Len=0 MSS=1360 SACK\_PERM=1 TSval=1088233803 TSecr=0 WS=256  8661 2021-07-19 20:52:06.284237 10.0.0.172 10.19.3.44 TCP 56 80 → 37828 [RST, ACK] Seq=1 Ack=1 Win=0 Len=0  OTA 7685405 157387848 20:56:25:003 ESM [MS->NW] ESM\_MSG\_PDN\_DISCONNECT\_REQUEST (PTI:54, EBI:0)  OTA 7687618 157389581 20:56:25:204 ESM [NW->MS] ESM\_MSG\_DEACTIVATE\_EPS\_BEARER\_CONTEXT\_REQUEST (PTI:54, EBI:6)  OTA 7687809 157389594 20:56:25:204 ESM [MS->NW] ESM\_MSG\_DEACTIVATE\_EPS\_BEARER\_CONTEXT\_ACCEPT (PTI:0, EBI:6)  Telephony Bugreport Log  行 162629: 07-19 20:52:03.932 radio 2251 24297 I MmsService: [DownloadRequest@c4cbb6b messageId: 0] Using APN [type=mms mmsc=http://mmsc.myuni.com.cn mmsproxy=10.0.0.172 mmsport=80 name=联通彩信 apn=3gwap bearer\_bitmask=0 protocol=IPV4V6 roaming\_protocol=IPV4V6 authtype=-1 proxy=10.0.0.172 port=80]  行 162632: 07-19 20:52:03.932 radio 2251 24297 D MmsService: [DownloadRequest@c4cbb6b messageId: 0] HTTP: GET http://10.74.15.10[31], proxy=10.0.0.172:80, PDU size=0  行 162648: 07-19 20:52:03.933 radio 2251 24297 I MmsService: [DownloadRequest@c4cbb6b messageId: 0] HTTP: IPv4 provisioned  行 162650: 07-19 20:52:03.933 radio 2251 24297 I MmsService: [DownloadRequest@c4cbb6b messageId: 0] HTTP: User-Agent=Android-Mms/0.1  行 162651: 07-19 20:52:03.933 radio 2251 24297 I MmsService: [DownloadRequest@c4cbb6b messageId: 0] HTTP: UaProfUrl=http://www.google.com/oha/rdf/ua-profile-kila.xml, UaProfUrlTagName=x-wap-profile  行 163436: 07-19 20:52:05.061 radio 2251 24297 E MmsService: [DownloadRequest@c4cbb6b messageId: 0] HTTP: IO failure  **// 本次彩信接收成功**  SYS 7710290 157548194 20:56:35:414 NIL [AT\_RX p58,ch0]AT+EAPNACT=1,"3gnet","default",100  9700 2021-07-19 20:56:43.552954 10.19.7.16 10.0.0.172 HTTP 379 GET <http://10.74.15.10/TUuqpWXzkdnG> HTTP/1.1  9920 2021-07-19 20:56:47.041070 10.19.7.16 10.0.0.172 MMSE 465 MMS m-acknowledge-ind  **9924 2021-07-19 20:56:47.505062 10.0.0.172 10.19.7.16 HTTP 157 HTTP/1.1 200 OK**  SYS 7739622 157648995 20:56:41:785 NIL [AT\_RX p58,ch0]AT+EAPNACT=1,"3gwap","mms",0  OTA 7741275 157649117 20:56:41:785 ESM [MS->NW] ESM\_MSG\_PDN\_CONNECTIVITY\_REQUEST (PTI:55, EBI:0)  OTA 7743488 157651304 20:56:41:986 ESM [NW->MS] ESM\_MSG\_ACTIVATE\_DEFAULT\_EPS\_BEARER\_CONTEXT\_REQUEST (PTI:55, EBI:6)  OTA 7743967 157651350 20:56:41:986 ESM [MS->NW] ESM\_MSG\_ACTIVATE\_DEFAULT\_EPS\_BEARER\_CONTEXT\_ACCEPT (PTI:0, EBI:6)  OTA 7781315 157733788 20:56:47:212 ESM [MS->NW] ESM\_MSG\_PDN\_DISCONNECT\_REQUEST (PTI:56, EBI:0)  OTA 7783344 157735507 20:56:47:212 ESM [NW->MS] ESM\_MSG\_DEACTIVATE\_EPS\_BEARER\_CONTEXT\_REQUEST (PTI:56, EBI:6)  OTA 7783560 157735524 20:56:47:212 ESM [MS->NW] ESM\_MSG\_DEACTIVATE\_EPS\_BEARER\_CONTEXT\_ACCEPT (PTI:0, EBI:6) |

参考JIRA：

<https://jira.n.xiaomi.com/browse/ARES-5074>

### MTK平台常见问题分析

#### 呼叫

#### 搜网/注册

#### 短息

#### 彩信

# 协议相关的流程梳理

## 常用流程的协议整理

可参考MTK官网整理的文档。

<https://online.mediatek.com/QuickStart/QS00145#QSS01552>

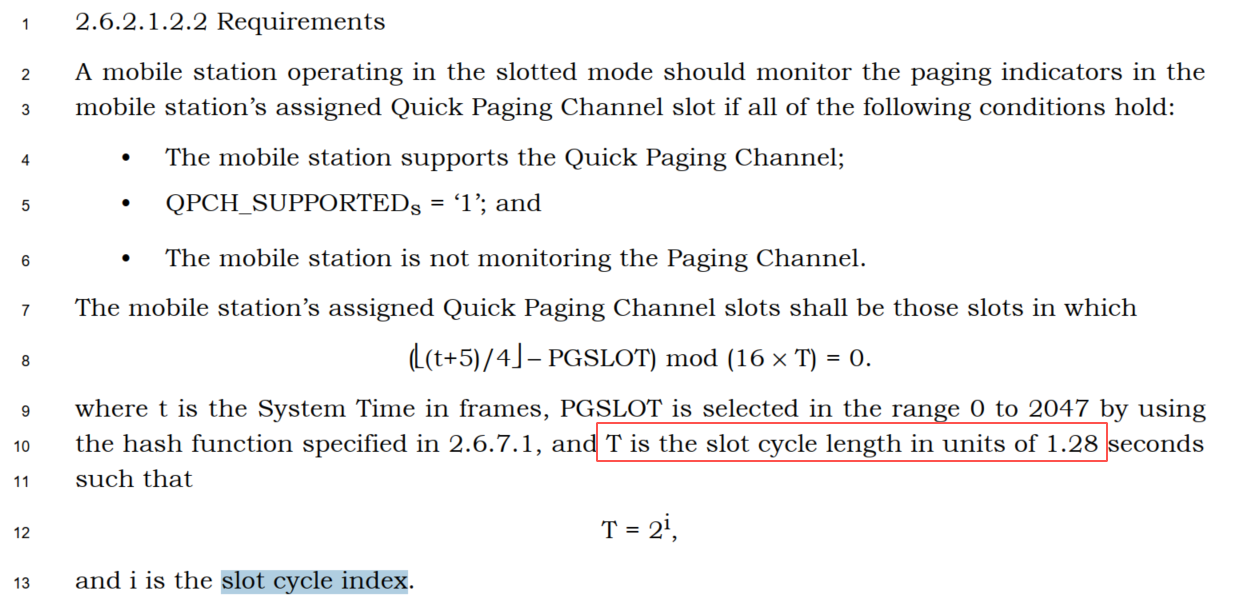
## SRB、DRB的作用和配置流程

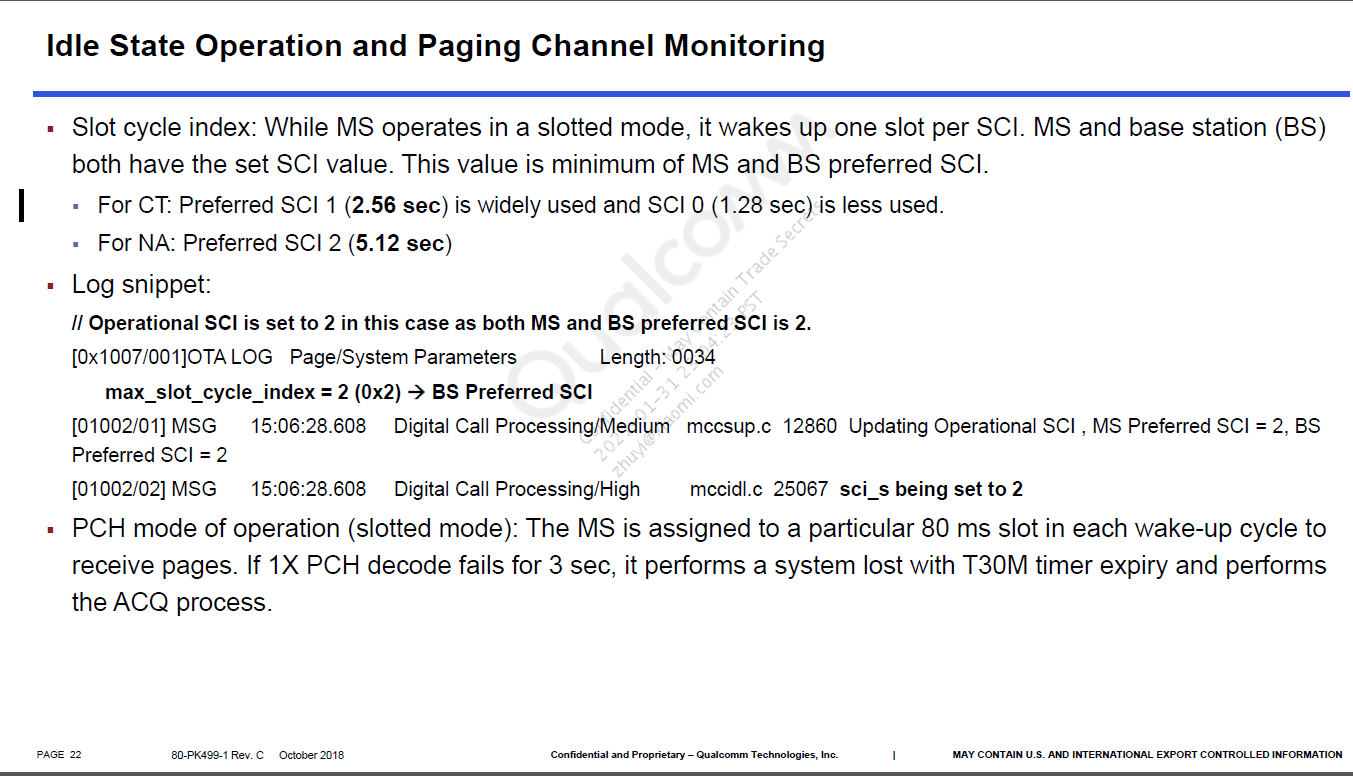
## CDMA Paging周期

**PCH的周期为20ms**

**QPCH的周期为1.28\*2^i , i是slot cycle index，是UE和基站协商出来的值。最小周期1.28s**

关于QPCH的要求的协议原文：C.S0005 P55





## 信号强度的计算整理

#### GSM rxlev

<rxlev>: integer type, received signal strength level (see 3GPP TS 45.008 [20] subclause 8.1.4).

0 rssi < -110 dBm

1 -110 dBm < rssi < -109 dBm

2 -109 dBm < rssi < -108 dBm

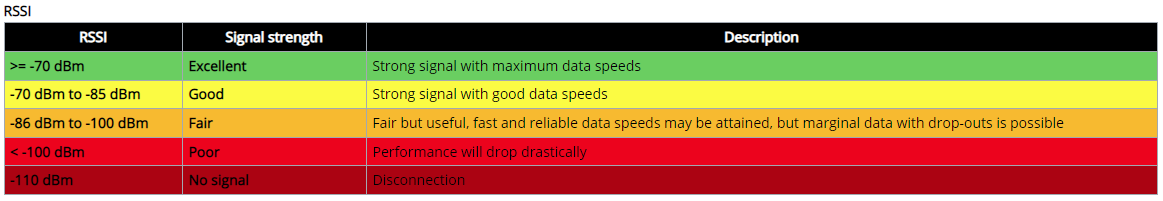
: : : :

61 -50 dBm < rssi < -49 dBm

62 -49 dBm < rssi < -48 dBm

63 -48 dBm < rssi

99 not known or not detectable



#### GSM ber

<ber>: integer type; channel bit error rate (in percent)

0...7 as RXQUAL values in the table in 3GPP TS 45.008 [20] subclause 8.2.4

99 not known or not detectable

RXQUAL各个值代表的含义如下。值越大，表示误码率越高，例如7表示下行误码率已经达到了12.8~18.1%之间。

RXQUAL\_0 BER < 0,2 % Assumed value = 0,14 %

RXQUAL\_1 0,2 % < BER < 0,4 % Assumed value = 0,28 %

RXQUAL\_2 0,4 % < BER < 0,8 % Assumed value = 0,57 %

RXQUAL\_3 0,8 % < BER < 1,6 % Assumed value = 1,13 %

RXQUAL\_4 1,6 % < BER < 3,2 % Assumed value = 2,26 %

RXQUAL\_5 3,2 % < BER < 6,4 % Assumed value = 4,53 %

RXQUAL\_6 6,4 % < BER < 12,8 % Assumed value = 9,05 %

RXQUAL\_7 12,8 % < BER Assumed value = 18,10 %

#### UMTS rscp

<rscp>: integer type, received signal code power (see 3GPP TS 25.133 [95] subclause 9.1.

and 3GPP TS 25.123 [96] subclause 9.1.1.1.3).

0 rscp < -120 dBm

1 -120 dBm < rscp < -119 dBm

2 -119 dBm < rscp < -118 dBm

: : : :

94 -27 dBm < rscp < -26 dBm

95 -26 dBm < rscp < -25 dBm

96 - 25 dBm < rscp

255 not known or not detectable

#### CMA ecn0

<ecn0>: integer type, ratio of the received energy per PN chip to the total received power spectral density (see 3GPP TS 25.133 [95] subclause)

0 Ec/Io < -24 dB

1 -24 dB < Ec/Io < -23.5 dB

2 -23.5 dB < Ec/Io < -23 dB

: : : :

47 -1 dB < Ec/Io < -0.5 dB

48 -0.5 dB < Ec/Io < 0 dB

49 0 dB < Ec/Io

255 not known or not detectable

#### UMTS和CDMA的信号优劣的判断表

参考文档：<https://wiki.teltonika-networks.com/view/Mobile_Signal_Strength_Recommendations>



#### LTE rsrq

<rsrq>: integer type, reference signal received quality (see 3GPP TS 36.133 [96] subclause 9.1.7).

0 rsrq < -19.5 dB

1 -19.5 dB < rsrq < -19 dB

2 -19 dB < rsrq < -18.5 dB

: : : :

32 -4 dB < rsrq < -3.5 dB

33 -3.5 dB < rsrq < -3 dB

34 -3 dB < rsrq

255 not known or not detectable

#### LTE rsrp

**RSRP value = Reported Value – 140(dBm)**

<rsrp>: integer type, reference signal received power (see 3GPP TS 36.133 [96] subclause 9.1.4).

0 rsrp < -140 dBm

1 -140 dBm < rsrp < -139 dBm

2 -139 dBm < rsrp < -138 dBm

: : : :

95 -46 dBm < rsrp < -45 dBm

96 -45 dBm < rsrp < -44 dBm

97 -44 dBm < rsrp

255 not known or not detectable





#### NR RSRP

##### 测量报告的上报

在5G NR系统中，RSRP的测量在L1(Physical Layer)和Layer3(RRC Layer)中执行和上报。例如5G设备可以在Layer1发送CSI(Channel State Information)是提供SS-RSRP测量，Layer3在发送Measurement Report给gNB时提供。

##### RSRP测量的执行

为了产生SS-RSRP测量报告，5G UE允许测量PBCH-DMRS信号。DMRS和SS信号以相同的功率传输，所以结果可以取平均。在L1执行SS-RSRP测量时，UE也可以配置测量CSI-RS。CSI-RS可能与SS(Sync Signals)和PBCH-DMRS传输的功率不同。在这种场景下，gNB应提供偏移信息给UE，以便在测量过程中予以考虑。

NR有两种RSRP类型：SS-RSRP和CSI-RSRP。通常使用SS-RSRP表示当前5G的信号强度。

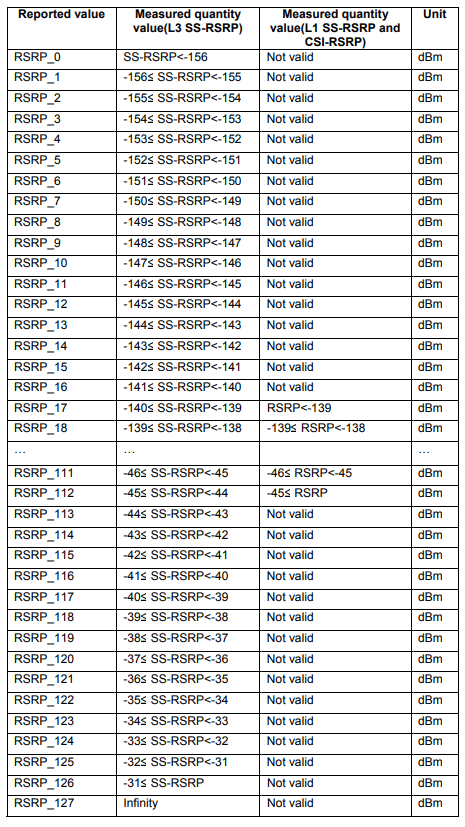
**RSRP value = Reported Value – 156 (dBm)**

L3的SS-RSRP的测量范围：-156 dBm到-31dBm，分辨率为1dBm。

L1的SS-RSRP和CSI-RSRP的范围为-140dBm到-40dBm。上报的值中0-16和113-127在L1测量中为无效值。

0表示-156dBm

126表示-31dBm



## [MIUI 5G信号强度划分标准](https://wiki.n.miui.com/pages/viewpage.action?pageId=169360748)

国内版本

| **5G** | **显示要求x** | **空** | **1格** | **2格** | **3格** | **4格** | **5格** |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | rsrp | x < -140 | -140 <=x<-125 | -125 <=x<-115 | -115 <=x<-110 | -110 <=x<-102 | -102 <=x<=-44 |

国际版本

| **zero bar** | **1 bar** | **2 bars** | **3 bars** | **4 bars** | **5 bars** |
| --- | --- | --- | --- | --- | --- |
| rsrp < -120 | -120 <= rsrp < -115 | -115 <= rsrp < -110 | -110 <= rsrp < -105 | -105 <= rsrp < -97 | -97 <= rsrp |

Qcom和MTK 状态栏5G信号强度显示逻辑区别：

1. Qcom：

     （1）连接态且有SCG时：显示NR 的信号强度

     （2）非上述场景时时  ： 显示LTE的信号强度

        缺点：NR的信号不一定比LTE强

2. MTK：

        LTE信号强度数值正常时，就使用LTE信号强度；否则尝试使用NR的信号强度

        缺点：在NSA网络下，几乎都显示的LTE，即便NR信号更强

# JIRA解决问题归纳整理

## 丢Paging问题归纳

### 副卡大概率丢Paging

副卡在被叫的过程中无法正常接通，查看现象是未收到CS/PS Paging消息。有一种可能性是副卡TAU请求网络释放RRC连接，让出RF给主卡使用。但是网络未按照TAU Request消息中的active flag为0的设置来释放RRC连接，此时Modem会先将副卡RRC Local release，10s后做TAU与网络同步。这10s内，副卡和网络的RRC状态不同步，大概率会丢Paging。

分析流程：查看副卡在TAU Request（ ACTIVE flag 为false）后，是否存在网络下发RRCConnectionRelease消息，若未发送，则UE侧副卡会local release RRC连接导致UE侧副卡与网络RRC的连接状态不同步，从而产生丢寻呼消息。

A[GATE-6627](https://jira.n.xiaomi.com/browse/AGATE-6627) FT\_K11T\_XiaMen\_联通5G NSA VoLTE主卡+移动5G NSA VoLTE副卡,副卡通话，高概率Call Fail(4/5)\_0622

|  |
| --- |
| Analysis of logs with log prints：  //MT  Type Index Time Local Time Module Message Comment Time Differences  SYS 725856 55540528 14:44:31:228 NIL [AT\_RX p58,ch0]AT+EDATASIM=2  PS 725871 55540531 14:44:31:228 D2AM receive datasim default sim\_slot = 2  PS 725876 55540531 14:44:31:228 D2AM NVRAM set prefered sim slot = 2  OTA 781954 55567934 14:44:32:829 ERRC\_MOB\_2 [MS->NW] ERRC\_MeasurementReport (EARFCN[3750], PCI[297]) (measID[7] periodic earfcn[3750])  OTA 791609 55574122 14:44:33:230 EMM\_NASMSG [MS->NW] EMM\_Tracking\_Area\_Update\_Request(EPS update type="EMM\_UPDATE\_TYPE\_COMBINED\_TAU", active flag="KAL\_FALSE") ACTIVE flag 带false  OTA 795545 55576363 14:44:33:431 EMM\_NASMSG [NW->MS] EMM\_Tracking\_Area\_Update\_Accept(EPS update result="EMM\_UPDATE\_RESULT\_COMBINED\_UPDATED")  OTA 795999 55576387 14:44:33:431 EMM\_NASMSG [MS->NW] EMM\_Tracking\_Area\_Update\_Complete  PS 797300 55576640 14:44:33:431 EMM [EMM TIMER] TIMER ID: EMM\_T\_PROTECT\_ERRC\_FAKE\_PROCEDURE is started by EMM (timer value:1)  OTA 806318 55587229 14:44:34:234 ERRC\_CONN [MS->NW] ERRC\_RRCConnectionReconfigurationComplete(EARFCN[1300], PCI[314])  PS 806472 55587570 14:44:34:234 MSPM [MSPM] Current RF owner : MSPM\_SIM1, RF owner priority : 11, Dominator : MSPM\_EMM\_TAU  PS 806480 55587570 14:44:34:234 MSPM [MSPM] Ongoing proc : MSPM\_SIM1, MSPM\_EMM\_TAU  PS 806483 55587570 14:44:34:234 MSPM [MSPM] Ongoing proc : MSPM\_SIM2, MSPM\_DATA\_SIM  PS 809564 55592836 14:44:34:450 EMM [EMM TIMER] TIMER ID: EMM\_T\_PROTECT\_ERRC\_FAKE\_PROCEDURE is expired  PS 809568 55592837 14:44:34:450 EMM\_TIMERMNG - EMM\_REG MSG\_ID\_EMM\_TIMERMNG\_REG\_T\_PROTECT\_ERRC\_FAKE\_PROCEDURE\_TIMEOUT\_IND  PS 809587 55592838 14:44:34:450 EMM - MSPM MSG\_ID\_MSPM\_SESSION\_END\_NTF  PS 809588 55592839 14:44:34:450 MSPM [MSPM] Current RF owner : MSPM\_SIM1, RF owner priority : 11, Dominator : MSPM\_EMM\_TAU  PS 809600 55592839 14:44:34:450 MSPM [MSPM] End session : MSPM\_SIM1, MSPM\_EMM\_TAU end sim1 tau procedure，延迟10s再做，sim1 准备local release  PS 809612 55592841 14:44:34:450 MSPM [MSPM] Start session : MSPM\_SIM1, MSPM\_GEMINI\_ABORT\_4G\_PROTECT, Priority : 11  PS 809616 55592841 14:44:34:450 MSPM [MSPM] Setting : MSPM\_GEMINI\_ABORT\_4G\_PROTECT, MSPM\_PROC\_ATTR\_PREEMPTED\_BY\_PEER\_NOT\_ALLOWED : KAL\_TRUE  PS 809617 55592841 14:44:34:450 MSPM [MSPM] Setting : MSPM\_GEMINI\_ABORT\_4G\_PROTECT, MSPM\_PROC\_ATTR\_OCCUPY\_RF\_IMMEDIATELY : KAL\_TRUE  PS 809631 55592844 14:44:34:450 MSPM - RSVAS MSG\_ID\_MSPM\_RSVAS\_GEMINI\_STATE\_ASSIGN\_REQ idle, vc  PS 809636 55592845 14:44:34:450 RSVAS - ERRC MSG\_ID\_RSVAS\_EAS\_ABORT\_SERVICE\_REQ  PS 809693 55592856 14:44:34:450 ERRC - EMM MSG\_ID\_EMM\_ERRC\_RELEASE\_IND cause = ENASAS\_REL\_GEMINI\_ABORT (enum 4)  PS 810377 55592902 14:44:34:450 EMM [EMM TIMER] TIMER ID: EMM\_T\_NAS\_RECOVERY\_BACKOFF is started by EMM (timer value:10) 起10s timer，准备10s后做tau  PS 814752 55593787 14:44:34:650 MSPM [MSPM] Current RF owner : MSPM\_SIM1, RF owner priority : 11, Dominator : MSPM\_GEMINI\_ABORT\_4G\_PROTECT  PS 817465 55597529 14:44:34:898 MSPM - RSVAS MSG\_ID\_MSPM\_RSVAS\_GEMINI\_STATE\_ASSIGN\_REQ virtual, connected  PS 817470 55597530 14:44:34:898 RSVAS - NRRC MSG\_ID\_RSVAS\_NRRC\_VIRTUAL\_SUSPEND\_SERVICE\_REQ sim1 被virtual suspend，让给sim2 做业务  PS 817471 55597531 14:44:34:898 RSVAS - ERRC MSG\_ID\_RSVAS\_EAS\_VIRTUAL\_SUSPEND\_SERVICE\_REQ  PS 818294 55598040 14:44:34:898 RSVAS - ERRC\_2 MSG\_ID\_RSVAS\_EAS\_VIRTUAL\_CONNECTED\_RESUME\_REQ resume\_action = RSVAS\_CONNECTED\_AFTER\_VC\_RESUME (enum 0)  PS 818530 55598334 14:44:34:898 MSPM [MSPM] Current RF owner : MSPM\_SIM2, RF owner priority : 29, Dominator : MSPM\_DATA\_SIM  OTA 819948 55598834 14:44:34:898 ERRC\_SYS\_2 [NW->MS] MasterInformationBlock (EARFCN[3750], PCI[297])  OTA 824536 55600419 14:44:34:898 NRRC\_2 [NW->MS] NR\_RRCReconfiguration (secondaryCellGroup[1], SCGreconfigurationWithSync[1], measConfig[1])  PS 1012398 55749152 14:44:44:498 EMM [EMM TIMER] TIMER ID: EMM\_T\_NAS\_RECOVERY\_BACKOFF is expired 10s timer 超时，sim1做tau  PS 1012882 55749178 14:44:44:498 MSPM - RSVAS MSG\_ID\_MSPM\_RSVAS\_GEMINI\_STATE\_ASSIGN\_REQ connected, vc  OTA 1015496 55749684 14:44:44:498 ERRC\_CONN [MS->NW] ERRC\_RRCConnectionRequest(EARFCN[1300], PCI[314])  OTA 1016957 55750197 14:44:44:498 EMM\_NASMSG [MS->NW] EMM\_Tracking\_Area\_Update\_Request(EPS update type="EMM\_UPDATE\_TYPE\_COMBINED\_TAU", active flag="KAL\_FALSE")  Root Cause / Suspected Root Cause：  SIM2 是data card，sim1上做tau，带的flag是false，但是tau做完之后，nw没有release errc connection。此时把sim1 local release，是为了把rf让给sim2 做业务，sim1 10s后再做tau和nw sync。 sim1 local release 到再次tau 之间10s的时间内，是跟nw 不sync的，会漏收call。此做法是双卡单通的design。主要原因是，带active flag false的时候，nw应该release ue。  这4次call 漏掉都是这个原因  Next Action： |

## VoLTE呼叫过程中掉VoLTE

该专题主要用于整理MO/MT在呼叫前驻留在IMS VoLTE，在呼叫过程中或者呼叫建立之后掉VoLTE的案例。

### MO起呼过程中掉VoLTE SRVCC

MO在VoLTE通话建立过程中上报B2测量事件，网络将MO Handover到WCDMA，完成通话建立过程中的RAT变化。主要原因为LTE的信号强度和信噪比变差，邻区WCDMA信号强度良好。此类问题为LTE网络信号差导致。

示例JIRA：UPGR5G-4012 FT\_G7-R\_ShenZhen\_卡1主卡联通4V+卡2副卡电信4V\_idle&ps态，偶现起呼及通话时掉VOLTE（rate：3/60）\_0115

|  |
| --- |
| #2 Log分析  Type Index Time Local Time Module Message Comment Time Differences  SIP 16 68240232 11:23:07:195 [MS->NW][P1][S1]INVITE tel:18027442476;phone-context=ims.mnc001.mcc460.3gppnetwork.org SIP/2.0  SIP 17 68240940 11:23:07:395 [NW->MS][P1][S1]SIP/2.0 100 Trying  SIP 18 68249899 11:23:07:795 [NW->MS][P1][S1]SIP/2.0 183 Session Progress  SIP 23 68299686 11:23:10:995 [NW->MS][P1][S1]SIP/2.0 180 Ringing  SIP 24 68299794 11:23:10:995 [MS->NW][P1][S1]PRACK sip:[2408:8142:6001:0501:0000:0000:0000:0000]:9900;Hpt=8f22\_16;CxtId=3;TRC=ffffffff-ffffffff SIP/2.0  SIP 25 68302513 11:23:11:195 [NW->MS][P1][S1]SIP/2.0 200 OK  **// VoLTE呼叫过程中，网路配置UTRA测量配置，MO上报B2事件**  OTA 1586300 68352856 11:23:14:395 ERRC\_CONN [NW->MS] ERRC\_RRCConnectionReconfiguration(EARFCN[3740], PCI[176])(measCfg:[1],mobCtrlInfo:[0],dedInfoNASList:[0],radioresCfgDed:[0],secCfgHO:[0])  OTA 1595172 68359873 11:23:14:996 ERRC\_MOB [MS->NW] ERRC\_MeasurementReport (EARFCN[3740], PCI[176]) (measID[5] **eventB2** UMTS ncell[10663/203] rslt[-277][-17] pcell[3740/176] rslt[-383][-47])  **// 网络查询UMTS能力**  OTA 1595651 68360228 11:23:14:996 ERRC\_RCM [NW->MS] UECapabilityEnquiry (EARFCN[3740], PCI[176])(EUTRA[0], UTRA[1], GERAN-CS[0], GERAN-PS[0], C2K-1xRTT[0])  OTA 1595669 68360231 11:23:14:996 ERRC\_RCM [MS->NW] UECapabilityInformation (EARFCN[3740], PCI[176])(EUTRA[0], UTRA[1], GERAN-CS[0], GERAN-PS[0], C2K-1xRTT[0])  **// 网络发起RAT切换，从LTE切换至WCDMA**  OTA 1612755 68375447 11:23:15:996 ERRC\_CONN [NW->MS] ERRC\_MobilityFromEUTRACommand(EARFCN[3740], PCI[176])(CSFB:[0],purpose:[MobilityFromEUTRACommand\_r8\_IEs\_purpose\_handover\_selected],targetRAT:[Handover\_targetRAT\_Type\_utra])  OTA 1612777 68375455 11:23:15:996 RRCE\_FDD [NW->MS] RRC\_\_HANDOVER\_TO\_UTRAN\_COMMAND  OTA 1615955 68378401 11:23:16:196 ADR\_FDD [MS->NW] FDD\_RRC\_\_HANDOVER\_TO\_UTRAN\_COMPLETE  OTA 1625149 68385417 11:23:16:596 ADR\_FDD [NW->MS] FDD\_RRC\_\_UE\_CAPABILITY\_ENQUIRY  OTA 1625196 68385425 11:23:16:596 ADR\_FDD [MS->NW] FDD\_RRC\_\_UE\_CAPABILITY\_INFORMATION  OTA 1629701 68394167 11:23:17:196 ADR\_FDD [NW->MS] FDD\_RRC\_\_UE\_CAPABILITY\_INFORMATIONCONFIRM  OTA 1630000 68394792 11:23:17:196 ADR\_FDD [NW->MS] FDD\_RRC\_\_UTRAN\_MOBILITY\_INFORMATION  OTA 1630254 68394825 11:23:17:196 MM [MS->NW] GMM\_\_ROUTING\_AREA\_UPDATE\_REQUEST  OTA 1631720 68395419 11:23:17:196 ADR\_FDD [MS->NW] FDD\_RRC\_\_UTRAN\_MOBILITY\_INFORMATION\_CONFIRM  OTA 1634074 68399792 11:23:17:396 ADR\_FDD [NW->MS] FDD\_RRC\_\_SECURITY\_MODE\_COMMAND  OTA 1634203 68399812 11:23:17:396 ADR\_FDD [MS->NW] FDD\_RRC\_\_SECURITY\_MODE\_COMPLETE  OTA 1637538 68406669 11:23:17:996 MM [NW->MS] MM\_\_TMSI\_REALLOCATION\_COMMAND  OTA 1637556 68406672 11:23:17:996 MM [MS->NW] MM\_\_TMSI\_REALLOCATION\_COMPLETE  OTA 1638821 68409169 11:23:17:996 CC [NW->MS] CC\_\_CONNECT  OTA 1638823 68409170 11:23:17:996 CC [MS->NW] CC\_\_CONNECT\_ACKNOWLEDGE  OTA 1717340 68541813 11:23:26:596 CC [MS->NW] CC\_\_DISCONNECT  OTA 1721252 68547926 11:23:26:996 CC [NW->MS] CC\_\_RELEASE  OTA 1721255 68547928 11:23:26:996 CC [MS->NW] CC\_\_RELEASE\_COMPLETE  OTA 1726068 68556046 11:23:27:396 ADR\_FDD [NW->MS] FDD\_RRC\_\_RRC\_CONNECTION\_RELEASE\_DCCH  **// 呼叫结束后AFR，在收到RRC Connection Release后，UE立即返回原来驻留的LTE小区**  PS 1729135 68558240 11:23:27:596 ERRC\_CEL [CEL\_DI/LV] IR to LTE begin, type[IR\_TYPE\_REDIRECT(AFR)], source\_RAT[RAT\_TYPE\_UAS\_FDD]  OTA 1730178 68559383 11:23:27:596 ERRC\_SYS [NW->MS] SystemInformationBlockType1 (EARFCN[3740], PCI[176])  PS 1732440 68560978 11:23:27:796 ERRC\_CEL [CEL\_DI/LV] IR to LTE end--, type[IR\_TYPE\_REDIRECT(AFR)], source\_RAT[RAT\_TYPE\_UAS\_FDD], result[IR\_RESULT\_SUCCESS]  OTA 1737207 68562934 11:23:27:996 EMM\_NASMSG [MS->NW] EMM\_Tracking\_Area\_Update\_Request(EPS update type="EMM\_UPDATE\_TYPE\_COMBINED\_TAU\_IMSI\_ATTACH", active flag="KAL\_TRUE")  OTA 1745543 68573423 11:23:28:598 EMM\_NASMSG [NW->MS] EMM\_Tracking\_Area\_Update\_Accept(EPS update result="EMM\_UPDATE\_RESULT\_COMBINED\_UPDATED")  OTA 1745777 68573468 11:23:28:598 EMM\_NASMSG [MS->NW] EMM\_Tracking\_Area\_Update\_Complete |

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| #1 Log分析  Type Index Time Local Time Module Message Comment Time Differences  SYS 1571345 44317862 10:56:18:165 NIL [AT\_RX p35,ch3]ATD18124209483;  SIP 88 44320950 10:56:18:372 [MS->NW][P1][S1]INVITE tel:18124209483;phone-context=ims.mnc001.mcc460.3gppnetwork.org SIP/2.0  SIP 89 44326649 10:56:18:773 [NW->MS][P1][S1]SIP/2.0 100 Trying  SIP 90 44339223 10:56:19:573 [NW->MS][P1][S1]SIP/2.0 183 Session Progress  **// 网路配置了UTRA的邻区测量**  OTA 1641045 44387429 10:56:22:777 ERRC\_CONN [NW->MS] ERRC\_RRCConnectionReconfiguration(EARFCN[3740], PCI[198])(measCfg:[1],mobCtrlInfo:[0],dedInfoNASList:[0],radioresCfgDed:[0],secCfgHO:[0])  SIP 95 44387496 10:56:22:777 [NW->MS][P1][S1]SIP/2.0 180 Ringing  **// MO端收到MT端的200 OK后，通话建立成功**  SIP 98 44432678 10:56:25:577 [NW->MS][P1][S1]SIP/2.0 200 OK  SIP 99 44432883 10:56:25:577 [MS->NW][P1][S1]ACK sip:[2408:8142:6001:0101:0000:0000:0000:0000]:9900;Hpt=9082\_16;CxtId=3;TRC=ffffffff-ffffffff SIP/2.0  **// UE上报B2事件(UMTS cell信息和测量结果)**  OTA 1716658 44456850 10:56:27:177 ERRC\_MOB [MS->NW] ERRC\_MeasurementReport (EARFCN[3740], PCI[198]) (measID[9] eventB2 UMTS ncell[10663/271] rslt[-369][-25] pcell[3740/198] rslt[-448][-61])  **// 网络查询UE的UTRA能力**  OTA 1716864 44457066 10:56:27:177 ERRC\_RCM [NW->MS] UECapabilityEnquiry (EARFCN[3740], PCI[198])(EUTRA[0], UTRA[1], GERAN-CS[0], GERAN-PS[0], C2K-1xRTT[0])  OTA 1716881 44457070 10:56:27:177 ERRC\_RCM [MS->NW] UECapabilityInformation (EARFCN[3740], PCI[198])(EUTRA[0], UTRA[1], GERAN-CS[0], GERAN-PS[0], C2K-1xRTT[0])  **// IRAT Handover**  OTA 1740149 44474444 10:56:28:177 ERRC\_CONN [NW->MS] ERRC\_**MobilityFromEUTRACommand**(EARFCN[3740], PCI[198])(CSFB:[0],purpose:[MobilityFromEUTRACommand\_r8\_IEs\_purpose\_handover\_selected],**targetRAT:[Handover\_targetRAT\_Type\_utra]**)  **// WCDMA上的能力信息、鉴权、TMSI重分配等流程**  OTA 1740173 44474448 10:56:28:177 RRCE\_FDD [NW->MS] RRC\_\_HANDOVER\_TO\_UTRAN\_COMMAND  OTA 1742509 44477259 10:56:28:377 ADR\_FDD [MS->NW] FDD\_RRC\_\_HANDOVER\_TO\_UTRAN\_COMPLETE  OTA 1750083 44485218 10:56:28:978 ADR\_FDD [NW->MS] FDD\_RRC\_\_UE\_CAPABILITY\_ENQUIRY  OTA 1750142 44485233 10:56:28:978 ADR\_FDD [MS->NW] FDD\_RRC\_\_UE\_CAPABILITY\_INFORMATION  OTA 1751843 44492717 10:56:29:378 ADR\_FDD [NW->MS] FDD\_RRC\_\_UE\_CAPABILITY\_INFORMATIONCONFIRM  OTA 1752117 44493968 10:56:29:578 ADR\_FDD [NW->MS] FDD\_RRC\_\_UTRAN\_MOBILITY\_INFORMATION  OTA 1752397 44494033 10:56:29:578 MM [MS->NW] GMM\_\_ROUTING\_AREA\_UPDATE\_REQUEST  OTA 1753647 44494596 10:56:29:578 ADR\_FDD [MS->NW] FDD\_RRC\_\_UTRAN\_MOBILITY\_INFORMATION\_CONFIRM  OTA 1756667 44506468 10:56:30:378 ADR\_FDD [NW->MS] FDD\_RRC\_\_SECURITY\_MODE\_COMMAND  OTA 1756811 44506504 10:56:30:378 ADR\_FDD [MS->NW] FDD\_RRC\_\_SECURITY\_MODE\_COMPLETE  OTA 1762019 44527722 10:56:31:578 MM [NW->MS] MM\_\_TMSI\_REALLOCATION\_COMMAND  OTA 1762043 44527730 10:56:31:578 MM [MS->NW] MM\_\_TMSI\_REALLOCATION\_COMPLETE  OTA 1763335 44532722 10:56:31:978 CC [NW->MS] CC\_\_DISCONNECT  OTA 1763356 44532727 10:56:31:978 CC [MS->NW] CC\_\_RELEASE  **// WCDMA释放RRC的方法：发送SIGNALLING\_CONNECTION\_RELEASE\_INDICATION消息给网络触发RRC Release**  OTA 1815000 44782192 10:56:48:014 ADR\_FDD [MS->NW] FDD\_RRC\_\_SIGNALLING\_CONNECTION\_RELEASE\_INDICATION  OTA 1820674 44785841 10:56:48:214 ADR\_FDD [NW->MS] FDD\_RRC\_\_RRC\_CONNECTION\_RELEASE\_DCCH  OTA 1820708 44785847 10:56:48:214 ADR\_FDD [MS->NW] FDD\_RRC\_\_RRC\_CONNECTION\_RELEASE\_COMPLETE  OTA 1820787 44786468 10:56:48:214 ADR\_FDD [MS->NW] FDD\_RRC\_\_RRC\_CONNECTION\_RELEASE\_COMPLETE  WCDMA RRC不释放，无法AFR到LTE  **// AFR重定向到LTE**  **PS 1822592 44787953 10:56:48:414 ERRC\_CEL [CEL\_DI/LV] IR to LTE begin, type[IR\_TYPE\_REDIRECT(AFR)], source\_RAT[RAT\_TYPE\_UAS\_FDD]**  OTA 1824070 44789226 10:56:48:414 ERRC\_SYS [NW->MS] SystemInformationBlockType1 (EARFCN[3740], PCI[198])  PS 1829354 44793105 10:56:48:620 ERRC\_CEL [CEL\_DI/LV] IR to LTE end--, type[IR\_TYPE\_REDIRECT(AFR)], source\_RAT[RAT\_TYPE\_UAS\_FDD], result[IR\_RESULT\_SUCCESS]  OTA 1836498 44794949 10:56:48:821 EMM\_NASMSG [MS->NW] EMM\_Attach\_Request(EPS attach type="EMM\_ATTACH\_TYPE\_COMBINED\_ATTACH")  OTA 1846084 44810585 10:56:49:821 EMM\_NASMSG [NW->MS] EMM\_Attach\_Accept(EPS attach result="EMM\_ATTACH\_RESULT\_COMBINED\_ATTACHED")  OTA 1846630 44810698 10:56:49:821 EMM\_NASMSG [MS->NW] EMM\_Attach\_Complete  **SIP 101 44824726 10:56:50:624 [MS->NW][P1][S1]REGISTER sip:ims.mnc001.mcc460.3gppnetwork.org SIP/2.0**  SIP 102 44828717 10:56:51:024 [NW->MS][P1][S1]SIP/2.0 401 Unauthorized  SIP 103 44831479 10:56:51:024 [MS->NW][P1][S1]REGISTER sip:ims.mnc001.mcc460.3gppnetwork.org SIP/2.0  SIP 104 44834865 10:56:51:424 [NW->MS][P1][S1]SIP/2.0 200 OK |

### MO在起呼过程中掉VoLTE 副卡随机接入失败

副卡在发起VoLTE呼叫时，需要发起Service Request，先要通过随机接入建立RRC连接然后发送INVITE消息。但是如果在随机接入过程中一直失败导致RRC连接无法正常建立，则UE会尝试以CS方式重新发起此次呼叫。这会产生掉VoLTE现象。

示例JIRA：[PSYCHE-6201](https://jira.n.xiaomi.com/browse/PSYCHE-6201) FT\_L3A\_Jinan\_卡一主卡CU SA+卡二副卡CT NSA VOLTE，PS态，MO卡2呼叫MT卡1，MO端在呼出时卡2出现掉G现象(1/20)\_1008

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| **MO端在Physical Cell ID = 46，Freq = 1650小区上发起Service Request，尝试发出INVITE消息但是解析接入一直发生Failure at MSG2导致VoTLE呼叫无法正常发出。LTE基站存在问题。**  [0x156E] 01:31:24.114680 IMS SIP Message Length: 2580 2  INVITE tel:18580344843;phone-context=ims.mnc011.mcc460.3gppnetwork.org SIP/2.0  [0xB0ED] 01:31:24.116762 LTE NAS EMM Plain OTA Outgoing MessageService Request Msg 2  [0xB0C0] 01:31:24.117049 UL\_CCCH / RRCConnectionRequestRadio Bearer ID: 0, Freq: 1650, SFN: 02  **// 随机接入一直发生 Failure at MSG2**  [0xB061] 01:31:24.117096 LTE MAC Rach Trigger Length: 76 2  [0xB062] 01:31:24.213324 LTE MAC Rach Attempt Length: 72 2  **Rach result = Failure at MSG2**  Contention procedure = Contention Based RACH procedure  [0xB062] 01:31:25.198616 LTE MAC Rach Attempt Length: 72 2  **Retx counter = 64**  Rach result = **Aborted**  **// 重试一次**  [0xB0C0] 01:31:25.228091 UL\_CCCH / RRCConnectionRequestRadio Bearer ID: 0, Freq: 1650, SFN: 02  [0xB062] 01:31:26.273607 LTE MAC Rach Attempt Length: 72 2  **// 重试第三次**  [0xB0C0] 01:31:26.303977 UL\_CCCH / RRCConnectionRequestRadio Bearer ID: 0, Freq: 1650, SFN: 02  [0xB061] 01:31:26.304681 LTE MAC Rach Trigger Length: 76 2  [0xB062] 01:31:27.348608 LTE MAC Rach Attempt Length: 72 2  **// LTE小区随机接入失败导致VoLTE呼叫请求无法成功发出，继续在CDMA上重试**  [0x1006/001] 00:23:36.486098 SYNC CHANNEL/Sync Channel MsgLength: 44  **[0x1004/004] 01:31:29.110037 ACCESS CHANNEL/Origination MsgLength: 68**  [0x1007/021] 01:31:30.121271 PAGING CHANNEL/Extended Channel Assignment MsgLength: 45  [0x1008/020] 01:31:30.642683 FORWARD FCH/Service Connect MsgLength: 47  [0x1005/014] 01:31:30.744050 REVERSE FCH/Service Connect Complete MsgLength: 22  [0x1008/001] 01:31:43.122697 FORWARD FCH/Order Msg Length: 24  [0x1005/001] 01:31:43.143752 REVERSE FCH/Order Msg Length: 23 |

### MO Silent Retry CS

MO端驻留在VoLTE，呼叫发起时，发送INVITE消息，但是在6s内收不到网络侧的100 Trying响应导致MO端自动回落到CS域重试呼叫。MO侧流程是正常的，这就是HVoLTE。IMS网络不回复100 Trying消息导致的掉VoTLE。

示例JIRA：UPGR5G-4062 FT\_G7-R\_NanJing\_卡一：联通4G，主卡；卡二：电信VoLTE；卡2打卡1，在通话中MO端手机卡2信号回落2G\_1/25\_0119

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| MO端呼叫开始尝试通过VoLTE呼出，但是INVITE消息发出后，6s没有收到网络的100 Trying响应。UE通过回落CS方式重试呼叫。IMS网络未响应导致的信号回落。UE侧正常。  // MO CT VoLTE  Type Index Time Local Time Module Message Comment Time Differences  SIP 151 52877160 10:36:32:147 [MS->NW][P2][S2]INVITE tel:13168022107;phone-context=ims.mnc011.mcc460.3gppnetwork.org SIP/2.0  OTA 2929294 52878211 10:36:32:347 EMM\_NASMSG\_2 [MS->NW] EMM\_Service\_Request  **// 掉VoLTE到CDMA 1X，从VoLTE模式到SRLTE模式**  OTA 2977914 52980455 10:36:38:775 CPSW [NW->MS] C2K1XRTT Sync Message  OTA 2983485 52997266 10:36:39:776 CPSW [MS->NW] C2K1XRTT CP\_ACH\_ORIGINATION  OTA 2985782 53008516 10:36:40:576 CPSW [MS->NW] C2K1XRTT CP\_ACH\_ORIGINATION  OTA 2991017 53032130 10:36:42:176 CPSW [MS->NW] C2K1XRTT CP\_RTC\_ORDER\_MESSAGE  SYS 3273507 53522012 10:37:13:382 NIL [AT\_RX p40,ch14]ATD13168022107; |

### MT在呼叫接通时掉落VoTLE

网络以CS Service Notification方式寻呼连接态的MT导致MT须要CSFB到CS域来接听电话，网络侧对MT端被叫域选到CS导致的回落。

电话结束后，MT端重新Attach到LTE和重新注册IMS。

示例JIRA：UPGR5G-4012 FT\_G7-R\_ShenZhen\_卡1主卡联通4V+卡2副卡电信4V\_idle&ps态，偶现起呼及通话时掉VOLTE（rate：3/60）\_0115

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| #3 Log分析  Type Index Time Local Time Module Message Comment Time Differences  OTA 146831 73961091 11:29:13:831 EMM\_NASMSG [NW->MS] **EMM\_CS\_Service\_Notification**(paging identity="TMSI\_PAGING\_TYPE")  OTA 147455 73961149 11:29:13:831 EMM\_NASMSG [MS->NW] **EMM\_Extended\_Service\_Request**(service type="MT\_CSFB", CSFB response="CSFB\_ACCEPTED\_BY\_UE")  PS 150245 73962841 11:29:14:031 ERRC\_CEL [CEL\_DI/LV] IR from LTE begin, type[IR\_TYPE\_REDIRECT], target\_RAT[RAT\_TYPE\_UAS\_FDD]  OTA 151943 73975630 11:29:14:676 MM [MS->NW] MM\_\_PAGING\_RESPONSE  PS 152977 73975742 11:29:14:876 ERRC\_CEL [CEL\_DI/LV] IR from LTE end--, type[IR\_TYPE\_REDIRECT], target\_RAT[RAT\_TYPE\_UAS\_FDD], result[IR\_RESULT\_SUCCESS]  OTA 161298 74004616 11:29:16:677 CC [NW->MS] CC\_\_SETUP  OTA 161595 74004705 11:29:16:677 CC [MS->NW] CC\_\_CALL\_CONFIRMED  OTA 163125 74011814 11:29:17:077 CC [MS->NW] CC\_\_ALERTING  SYS 169048 74053955 11:29:19:878 NIL [AT\_RX p35,ch3]ATA  OTA 169077 74053964 11:29:19:878 CC [MS->NW] CC\_\_CONNECT  OTA 283853 74228222 11:29:30:888 CC [MS->NW] CC\_\_DISCONNECT  OTA 286396 74231800 11:29:31:088 CC [NW->MS] CC\_\_RELEASE  OTA 286400 74231802 11:29:31:088 CC [MS->NW] CC\_\_RELEASE\_COMPLETE  PS 298496 74241817 11:29:31:888 ERRC\_CEL [CEL\_DI/LV] IR to LTE begin, type[IR\_TYPE\_REDIRECT(AFR)], source\_RAT[RAT\_TYPE\_UAS\_FDD]  OTA 299395 74242806 11:29:31:888 ERRC\_SYS [NW->MS] SystemInformationBlockType1 (EARFCN[3740], PCI[14])  PS 300530 74243150 11:29:31:888 ERRC\_CEL [CEL\_DI/LV] IR to LTE end--, type[IR\_TYPE\_REDIRECT(AFR)], source\_RAT[RAT\_TYPE\_UAS\_FDD], result[IR\_RESULT\_SUCCESS]  PS 307844 74245081 11:29:32:088 EMM [EMM TIMER] TIMER ID: EMM\_T3410 is started by EMM  OTA 307896 74245093 11:29:32:088 EMM\_NASMSG [MS->NW] EMM\_Attach\_Request(EPS attach type="EMM\_ATTACH\_TYPE\_COMBINED\_ATTACH")  OTA 314157 74257471 11:29:32:890 EMM\_NASMSG [NW->MS] EMM\_Attach\_Accept(EPS attach result="EMM\_ATTACH\_RESULT\_COMBINED\_ATTACHED")  OTA 314751 74257597 11:29:32:890 EMM\_NASMSG [MS->NW] EMM\_Attach\_Complete  OTA 327663 74264802 11:29:33:290 ESM [NW->MS] ESM\_MSG\_ACTIVATE\_DEFAULT\_EPS\_BEARER\_CONTEXT\_REQUEST (PTI:6, EBI:6)  OTA 327798 74264828 11:29:33:290 ESM [MS->NW] ESM\_MSG\_ACTIVATE\_DEFAULT\_EPS\_BEARER\_CONTEXT\_ACCEPT (PTI:0, EBI:6)  SIP 1 74274713 11:29:33:890 [MS->NW][P1][S1]REGISTER sip:ims.mnc001.mcc460.3gppnetwork.org SIP/2.0  SIP 2 74277967 11:29:34:090 [NW->MS][P1][S1]SIP/2.0 401 Unauthorized  SIP 3 74284549 11:29:34:490 [MS->NW][P1][S1]REGISTER sip:ims.mnc001.mcc460.3gppnetwork.org SIP/2.0  SIP 4 74287425 11:29:34:690 [NW->MS][P1][S1]SIP/2.0 200 OK |

### MO起呼过程中被网络Detach导致掉VoLTE

VoLTE呼叫建立过程中，收到了网络端的Detach，Detach Type值为Re-attach not required (2)。网络要求MO重新Attach，Attach成功后，立即通过CSFB方式将电话呼出，这是VoLTE业务还未注册，所以出现了掉VoLTE。

示例JIRA：UPGR5G-4295 FT\_J22\_BeiJing\_主卡卡一CMCC 5G VOLTE + 副卡卡二CMCC 5G VOLTE，IDLE，MO端卡1打MT端卡2，电话接通后，mo端提示电话正在通话中请稍后再拨，mt端接通5秒后自动挂断（1/20）\_0127

**结论：VoLTE呼叫过程中，网络要求重注册，导致VoLTE呼叫流程异常中止，重注册后立即以CSFB方式呼出电话导致的掉VoLTE。**

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| Type Index Time Local Time Module Message Comment Time Differences  SYS 291095 272821170 14:20:07:278 NIL [AT\_RX p46,ch14]ATD18822429519;  SIP 0 272821824 14:20:07:278 [MS->NW][P2][S1]INVITE tel:18822429519;phone-context=ims.mnc007.mcc460.3gppnetwork.org SIP/2.0  SIP 1 272826061 14:20:07:478 [NW->MS][P2][S1]SIP/2.0 100 Trying  **// 激活语音专有承载**  OTA 328292 272846534 14:20:08:878 ESM\_2 [NW->MS] ESM\_MSG\_ACTIVATE\_DEDICATED\_EPS\_BEARER\_CONTEXT\_REQUEST (PTI:0, EBI:6)  OTA 329159 272846569 14:20:08:878 ESM\_2 [MS->NW] ESM\_MSG\_ACTIVATE\_DEDICATED\_EPS\_BEARER\_CONTEXT\_ACCEPT (PTI:0, EBI:6)  SIP 2 272867207 14:20:10:078 [NW->MS][P2][S1]SIP/2.0 183 Session Progress  SIP 3 272867472 14:20:10:078 [MS->NW][P2][S1]PRACK sip:[2409:8010:8C10:0001:1005:1005:0000:0000]:9900;Hpt=8f72\_16;CxtId=3;TRC=ffffffff-ffffffff SIP/2.0  SIP 4 272874048 14:20:10:478 [NW->MS][P2][S1]SIP/2.0 200 OK  SIP 5 272874222 14:20:10:678 [MS->NW][P2][S1]UPDATE sip:[2409:8010:8C10:0001:1005:1005:0000:0000]:9900;Hpt=8f72\_16;CxtId=3;TRC=ffffffff-ffffffff SIP/2.0  SIP 6 272883127 14:20:11:078 [NW->MS][P2][S1]SIP/2.0 200 OK  SIP 7 272883412 14:20:11:078 [NW->MS][P2][S1]UPDATE sip:+8618822430814@[2409:8100:1A80:0419:165D:FA12:8D17:100A]:50014 SIP/2.0  SIP 8 272883756 14:20:11:278 [MS->NW][P2][S1]SIP/2.0 200 OK  **// 激活视频专有承载**  OTA 346883 272885424 14:20:11:278 ESM\_2 [NW->MS] ESM\_MSG\_ACTIVATE\_DEDICATED\_EPS\_BEARER\_CONTEXT\_REQUEST (PTI:0, EBI:7)  OTA 347698 272885507 14:20:11:278 ESM\_2 [MS->NW] ESM\_MSG\_ACTIVATE\_DEDICATED\_EPS\_BEARER\_CONTEXT\_ACCEPT (PTI:0, EBI:7)  SIP 9 272886470 14:20:11:278 [MS->NW][P2][S1]UPDATE sip:[2409:8010:8C10:0001:1005:1005:0000:0000]:9900;Hpt=8f72\_16;CxtId=3;TRC=ffffffff-ffffffff SIP/2.0  **// 去激活视频专有承载**  OTA 355822 272888056 14:20:11:478 ESM\_2 [NW->MS] ESM\_MSG\_DEACTIVATE\_EPS\_BEARER\_CONTEXT\_REQUEST (PTI:0, EBI:7)  OTA 355940 272888069 14:20:11:478 ESM\_2 [MS->NW] ESM\_MSG\_DEACTIVATE\_EPS\_BEARER\_CONTEXT\_ACCEPT (PTI:0, EBI:7)  **// 网络去激活MO端LTE注册状态**  OTA 357245 272889288 14:20:11:478 EMM\_NASMSG\_2 [NW->MS] EMM\_Detach\_Request(Detach type="MT\_REATTACH\_NOT\_REQUIRED", EMM cause="EMM\_CAUSE\_NO\_EPS\_CTXT\_ACT")  .... .010 = Detach Type: Re-attach not required (2)  EMM cause  Element ID: 0x53  Cause: No EPS bearer context activated (40)  OTA 357478 272889313 14:20:11:478 EMM\_NASMSG\_2 [MS->NW] EMM\_Detach\_Accept  **// 重新注册**  OTA 375587 272891915 14:20:11:678 EMM\_NASMSG\_2 [MS->NW] EMM\_Attach\_Request(EPS attach type="EMM\_ATTACH\_TYPE\_COMBINED\_ATTACH")  OTA 385368 272906899 14:20:12:678 EMM\_NASMSG\_2 [NW->MS] EMM\_Attach\_Accept(EPS attach result="EMM\_ATTACH\_RESULT\_COMBINED\_ATTACHED")  OTA 386696 272906975 14:20:12:678 EMM\_NASMSG\_2 [MS->NW] EMM\_Attach\_Complete  **// 通过CSFB方式重新呼出电话**  OTA 390577 272908145 14:20:12:678 EMM\_NASMSG\_2 [MS->NW] EMM\_Extended\_Service\_Request(service type="MO\_CSFB", CSFB response="CSFB\_UNUSED")  OTA 412090 272970012 14:20:16:679 CC\_2 [MS->NW] CC\_\_SETUP  OTA 417084 272981044 14:20:17:479 CC\_2 [NW->MS] CC\_\_CALL\_PROCEEDING  OTA 424760 272994435 14:20:18:288 CC\_2 [NW->MS] CC\_\_ALERTING  OTA 427534 273020991 14:20:19:888 CC\_2 [NW->MS] CC\_\_PROGRESS  OTA 464051 273266308 14:20:35:688 CC\_2 [MS->NW] CC\_\_DISCONNECT  OTA 464306 273268780 14:20:35:888 CC\_2 [NW->MS] CC\_\_RELEASE  OTA 464314 273268780 14:20:35:888 CC\_2 [MS->NW] CC\_\_RELEASE\_COMPLETE |

### TAU过程中不处理ESM消息导致承载建立失败

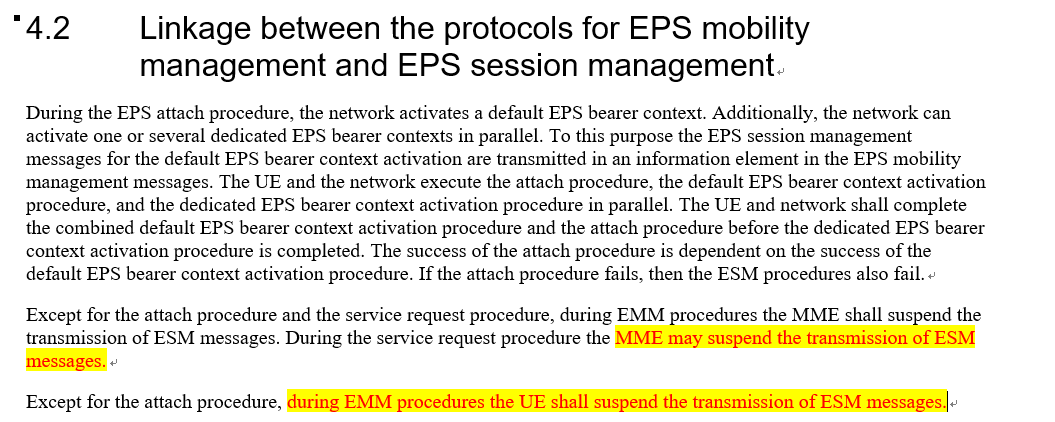
在UE侧，除了Attach流程，在EMM流程中，UE将中止ESM消息的传输，当然接收也会被中止。

在MME侧，除了Attach流程和Service Request流程，MME应当中止ESM消息的传输。

协议设定的原因推测：

EMM流程包括有如下5种(ATTACH REQUEST、DETACH REQUEST、TRACKING AREA UPDATE REQUEST、SERVICE REQUEST、EXTENDED SERVICE REQUEST)，这5种都涉及到UE的注册状态变化、网络标识的变化、驻留网络变化等影响UE驻网参数。如果这个过程中激活了ESM相关的资源/承载(ESM component：the activation, deactivation and modification of EPS bearer contexts; and the request for resources (IP connectivity to a PDN or dedicated bearer resources) by the UE.)则大概率可能出现不可用。ESM需要在EMM流程成功的基础上执行，所以TAU过程中的ESM流程被UE认为是无效消息，直接忽略是有据可依的！

Spec statement: 24.301协议原文：



示例JIRA：

[PSYCHE-5562](https://jira.n.xiaomi.com/browse/PSYCHE-5562) FT\_L3A\_Jinan\_卡一主卡CU\_SA VOLTE +卡二副卡CU\_5G ,idle,MO卡2呼叫MT卡1，MT端在呼入时卡1出现掉G现象，附截图(1/10)\_0928

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| // MT端收到呼叫INVITE消息  [0x156E] 03:35:01.709040 IMS SIP Message Length: 1994 1  INVITE sip:679a806b-8bec-41f9-adaf-459869548e84@[2408:8517:10:fdc:c449:d9b4:d5d3:cbeb]:44401 SIP/2.0  // 呼叫过程中发起TAU Request  [0xB0ED] 03:35:02.149191 LTE NAS EMM Plain OTA Outgoing MessageTracking area update request Msg1  [0xB0C0] 03:35:02.885951 DL\_DCCH / RRCConnectionReconfigurationRadio Bearer ID: 1, Freq: 1650, SFN: 4021  // TAU未结束，但是收了网络下发的ESM消息：Activate dedicated EPS bearer context request Msg  [0xB0E2] 03:35:02.893107 LTE NAS ESM Plain OTA Incoming MessageActivate dedicated EPS bearer context request Msg1  // 收到了网络下发的TAU Accept消息  [0xB0EC] 03:35:02.893484 LTE NAS EMM Plain OTA Incoming MessageTracking area update accept Msg1  [0xB0ED] 03:35:02.895897 LTE NAS EMM Plain OTA Outgoing MessageTracking area update complete Msg1  [0x1830] 03:35:08.838671 IMS VoLTE Session Setup Length: 223 1  // UE发送580消息，原因值设置为Media bearer loss // 这里网络明明发送了Activated dedicated EPS bearer context request但是还是出现了资源预留失败，原因就是UE收到专有承载激活消息后，RRC丢弃了并未上传给ESM。 - 协议规定  [0x156E] 03:35:08.844263 IMS SIP Message Length: 1239 1  Direction = UE\_TO\_NETWORK  SIP/2.0 580 Precondition Failure  Reason: RELEASE\_CAUSE ;cause=3 ;text="Media bearer loss"    // MT端再次收到了网络的CS Service Notification，MT端回落到CS域继续接听电话  [0xB0EC] 03:35:09.268323 LTE NAS EMM Plain OTA Incoming MessageCS Service Notification Msg1  [0xB0ED] 03:35:09.268802 LTE NAS EMM Plain OTA Outgoing MessageExtended service request Msg1  [0x7B3A/006/039] 03:35:10.147584 PAGING\_RESPONSE Subscription ID: 1 Direction: MS To Network Length: 33291  [0x7B3A/003/005] 03:35:11.060158 SETUP Subscription ID: 1 Direction: MS To Network Length: 64001  [0x7B3A/003/008] 03:35:11.061200 CALL\_CONFIRMED Subscription ID: 1 Direction: MS To Network Length: 64011  [0x7B3A/003/001] 03:35:11.743884 ALERTING Subscription ID: 1 Direction: MS To Network Length: 5131  [0x7B3A/003/007] 03:35:17.661698 CONNECT Subscription ID: 1 Direction: MS To Network Length: 5131  [0x7B3A/003/015] 03:35:18.070130 CONNECT\_ACKNOWLEDGE Subscription ID: 1 Direction: MS To Network Length: 5121  [0x7B3A/003/037] 03:35:37.590056 DISCONNECT Subscription ID: 1 Direction: MS To Network Length: 12801  [0x7B3A/003/045] 03:35:37.590447 RELEASE Subscription ID: 1 Direction: MS To Network Length: 5131  // 高通内部RRC处理  03:35:02.149191 LTE NAS EMM Plain OTA Outgoing MessageTracking area update request Msg1  03:35:02.893107 LTE NAS ESM Plain OTA Incoming MessageActivate dedicated EPS bearer context request Msg1  **// RRC收到EPS\_SESSION\_MANAGEMENT\_MESSAGES，但是不会继续上传给ESM**  03:35:02.893204 MM/LowFreq/High/MM [ emm\_rrc\_handler.c 5503] DS: SUB 0 =EMM= Recvd EPS\_SESSION\_MANAGEMENT\_MESSAGES message id=197 emm\_state=4, emm\_sub\_state=31 0  03:35:02.893206 MM/HighFreq/High/MM [ emm\_rrc\_handler.c 5609] DS: SUB 0 =EMM= do not send message to ESM msg\_id 1971  03:35:02.893484 LTE NAS EMM Plain OTA Incoming MessageTracking area update accept Msg1 |

## VoLTE隐式去激活

### 网络删除IMS DRB导致的掉VoLTE

UPGR8150R-2103 FT\_F1-R\_Hangzhou\_卡1联通4G VoLTE+卡2电信4G VoLTE，idel，卡2打卡1，MT端卡2电信掉VoLTE(1/30)\_0309

**卡2上网络通过RRC重配消息，删除了drb为1的IMS的默认承载导致IMS被隐式去激活了。卡2尝试通过重建IMS PDN，但是此时卡1来电话，到时卡2重新注册IMS的时间点后移。网络侧异常删除IMS drb导致的问题。**

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| // MT CT4G VoLTE Sub2  1982 Mar 4 03:11:31.248 [93] 0xB0C0 LTE RRC OTA Packet -- DL\_DCCH / RRCConnectionReconfiguration  Subscription ID = 2  drb-ToAddModList  {  { **------> IMS的eps bearID为6，drb为1**  eps-BearerIdentity 6,  drb-Identity 1,  pdcp-Config  {  discardTimer infinity,  rlc-AM  {  statusReportRequired TRUE  },  headerCompression notUsed : NULL  },  // 网络此时删除了drb为1和3的无线承载导致IMS被隐式去激活了。这里开始卡2掉VoLTE了。  1982 Mar 4 03:11:45.988 [08] 0xB0C0 LTE RRC OTA Packet -- DL\_DCCH / RRCConnectionReconfiguration  radioResourceConfigDedicated  {  drb-ToReleaseList  {  1,  3 // 3为卡2之前呼叫建立时添加的drb  },  // 卡2 重新发起IMS的PDN建立，但是RRC建立请求被网络侧拒绝了。  1982 Mar 4 03:11:47.611 [93] 0xB0E3 LTE NAS ESM Plain OTA Outgoing Message -- PDN connectivity request Msg  acc\_pt\_name\_val[1] = 73 (0x49) (I)  acc\_pt\_name\_val[2] = 77 (0x4d) (M)  acc\_pt\_name\_val[3] = 83 (0x53) (S)  1982 Mar 4 03:11:48.711 [5E] 0xB0C0 LTE RRC OTA Packet -- UL\_CCCH / RRCConnectionReestablishmentRequest  1982 Mar 4 03:11:49.804 [04] 0xB0C0 LTE RRC OTA Packet -- DL\_CCCH / RRCConnectionReestablishmentReject  // MT卡1被叫电话来了  1982 Mar 4 03:11:54.846 [4E] 0x156E IMS SIP Message -- IMS\_SIP\_INVITE/INFORMAL\_RESPONSE  1982 Mar 4 03:12:09.625 [5E] 0x156E IMS SIP Message -- IMS\_SIP\_BYE/INFORMAL\_RESPONSE  // MT卡2发起SR，重新发起IMS PDN建立流程  1982 Mar 4 03:12:10.471 [41] 0xB0ED LTE NAS EMM Plain OTA Outgoing Message -- Service Request Msg  1982 Mar 4 03:12:10.620 [4C] 0xB0E3 LTE NAS ESM Plain OTA Outgoing Message -- PDN connectivity request Msg  acc\_pt\_name\_val[1] = 73 (0x49) (I)  acc\_pt\_name\_val[2] = 77 (0x4d) (M)  acc\_pt\_name\_val[3] = 83 (0x53) (S)  1982 Mar 4 03:12:10.809 [37] 0xB0E2 LTE NAS ESM Plain OTA Incoming Message -- Activate default EPS bearer context request Msg  1982 Mar 4 03:12:10.816 [95] 0xB0E3 LTE NAS ESM Plain OTA Outgoing Message -- Activate default EPS bearer context accept Msg  // 卡2 的IMS注册流程  1982 Mar 4 03:12:11.461 [99] 0x156E IMS SIP Message -- IMS\_SIP\_REGISTER/INFORMAL\_RESPONSE  1982 Mar 4 03:12:11.635 [D9] 0x156E IMS SIP Message -- IMS\_SIP\_REGISTER/UNAUTHORIZED  1982 Mar 4 03:12:11.899 [DD] 0x156E IMS SIP Message -- IMS\_SIP\_REGISTER/INFORMAL\_RESPONSE  1982 Mar 4 03:12:12.062 [9D] 0x156E IMS SIP Message -- IMS\_SIP\_REGISTER/OK |

### 网络删除IMS DRB导致掉VoLTE（5s定时器后重建）

[UPGR7150R-4501](https://jira.n.xiaomi.com/browse/UPGR7150R-4501) [F4\_R\_CN\_XA\_RH][Modem]主卡联通副卡电信，双卡注册IMS后，联通HD概率丢失\_2/5\_V12.5.0.1.RFDCNXM

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| This is related to a network side issue that network removes the DRB for IMS, so IMS has to do PDN recovery after 5s timer expiry.  Please refer to following log.  Thanks  // here IMS PDN is connected and the DRB is 2  [0xB0C0/020/007/001] OTA LOG 2 09:58:38.151 DL\_DCCH / RRCConnectionReconfigurationRadio Bearer ID: 1, Freq: 100, SFN: 888  drb-ToAddModList  {  {  eps-BearerIdentity 6,  drb-Identity 2,  [0xB0E2] OTA LOG 2 09:58:38.153 LTE NAS ESM Plain OTA Incoming MessageActivate default EPS bearer context request Msg  eps\_bearer\_id\_or\_skip\_id = 6 (0x6)  [0xB0E3] OTA LOG 2 09:58:38.157 LTE NAS ESM Plain OTA Outgoing MessageActivate default EPS bearer context accept Msg  // but here network remove DRB 2  [0xB0C0/020/007/001] OTA LOG 1 09:58:49.861 DL\_DCCH / RRCConnectionReconfigurationRadio Bearer ID: 1, Freq: 1650, SFN: 543  drb-ToReleaseList  {  2  }  // so DS report failure to IMS and IMS starts 5s recovery timer  [ 51/ 2] MSG 1 09:58:49.871 IMS/High [ qpDcm.c 5749] qpDcmProcessNetEvent - [202] event occurred for AppId [1383] iFaceid [0x0]  [ 51/ 2] MSG 1 09:58:50.383 IMS/High [ PDPRATHandler.cpp 543] StartTimer: iDelay:5000, ID:1  [ 51/ 2] MSG 1 09:58:50.383 IMS/High [PDPRATHandlerVoLTE.cpp 3703] SRLTEPDNRecoveryNeeded IsPDNRecoveryNeeded 1  // after 5s, IMS trigger REG again  [ 51/ 2] MSG 1 09:58:55.383 IMS/High [PDPRATHandlerVoLTE.cpp 3473] PDNRecoveryTimerFired: 1: PDPstate (0): RegType[0]  [ 51/ 2] MSG 1 09:58:55.384 IMS/High [ RegisterManager.cpp 6567] CheckRegistrationNeeded Passed with all validations  [ 51/ 2] MSG 1 09:58:55.384 IMS/High [PDPRATHandlerVoLTE.cpp 2845] PdpActivate enter, pdp state:0 RegType[0] APNtype[1] m\_ePDPActivatedRAT[10] |

### EPSFallback过程中掉VoLTE

EPSFallback过程中，UE发起TAU更新在LTE上的注册状态，网络在TAU Accept消息中指示IMS PDN承载被去激活导致VoLTE不可用。

AGATE-3397 FT\_K11T\_ShenZhen\_SA\_卡1主卡移动SA+卡2副卡联通3G，PS态，MO卡1打MT卡2，MO卡1异常回落3G（Fail rate:1/3）\_0428

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| Type Index Time Local Time Module Message Comment Time Differences  SYS 4200282 15272837 16:07:00:458 NIL [AT\_RX p61,ch3]ATD18898582330;  SIP 60 15273428 16:07:00:458 [MS->NW][P1][S1]INVITE tel:18898582330;phone-context=ims.mnc000.mcc460.3gppnetwork.org SIP/2.0  // MO卡1 5G SA模式下发起呼叫，网络重定向到LTE  OTA 4206178 15274559 16:07:00:458 NRRC [NW->MS] NR\_RRCRelease (NARFCN[504990], PCI[231]) (redirectedCarrierInfo[1], suspendConfig[0])  **// 从SA网络EPSFallBack到LTE时，网络在TAU ACCEPT中携带了\*..0. .... = EBI(5): BEARER CONTEXT-INACTIV， 导致UE的IMS PDN被去激活了。所以继续回落到CS域继续呼叫。**  OTA 2167379 15278053 16:07:00:097 EMM\_NASMSG [MS->NW] EMM\_Tracking\_Area\_Update\_Request(EPS update type="EMM\_UPDATE\_TYPE\_COMBINED\_TAU", active flag="KAL\_TRUE") .1.. .... = EBI(6): BEARER CONTEXT-ACTIVE  ..1. .... = EBI(5): BEARER CONTEXT-ACTIVE // TAU Request中的EBI6为Active  OTA 2173596 15283518 16:07:00:497 EMM\_NASMSG [NW->MS] EMM\_Tracking\_Area\_Update\_Accept(EPS update result="EMM\_UPDATE\_RESULT\_COMBINED\_UPDATED") .1.. .... = EBI(6): BEARER CONTEXT-ACTIVE  ..0. .... = EBI(5): BEARER CONTEXT-INACTIV // TAU Accept消息中将EBI6的状态修改为Inactive，指示网络已经去激活了IMS PDN  OTA 2174031 15283556 16:07:00:497 EMM\_NASMSG [MS->NW] EMM\_Tracking\_Area\_Update\_Complete  // 回落至LTE后，发现当前IMS未注册，需要继续回落到CS域进行呼叫  PS 4234141 15284569 16:07:01:260 VDM\_ADS [VDM ADS] ADS algo: IMS domain not allowed (IMS domain unregistered)  PS 4234145 15284569 16:07:01:260 VDM\_ADS [VDM ADS] ADS algo: LTE IMS domain is not allowed to use  OTA 4234843 15284585 16:07:01:260 EMM\_NASMSG [MS->NW] EMM\_Extended\_Service\_Request(service type="MO\_CSFB", CSFB response="CSFB\_UNUSED")  // 回落至CS域  OTA 4237669 15285485 16:07:01:260 ERRC\_CONN [NW->MS] ERRC\_RRCConnectionRelease(EARFCN[1300], PCI[262])(cause:[ReleaseCause\_other], redirectInfo:[1])  OTA 4273204 15337820 16:07:04:666 CC [MS->NW] CC\_\_SETUP  OTA 4277865 15348853 16:07:05:266 CC [NW->MS] CC\_\_CALL\_PROCEEDING  OTA 4295225 15387376 16:07:07:666 CC [NW->MS] CC\_\_ALERTING  OTA 4322883 15451775 16:07:11:866 CC [NW->MS] CC\_\_CONNECT  OTA 4322886 15451775 16:07:11:866 CC [MS->NW] CC\_\_CONNECT\_ACKNOWLEDGE  OTA 4380248 15559736 16:07:18:866 CC [MS->NW] CC\_\_DISCONNECT  OTA 4381959 15562968 16:07:19:066 CC [NW->MS] CC\_\_RELEASE  OTA 4381967 15562969 16:07:19:066 CC [MS->NW] CC\_\_RELEASE\_COMPLETE |

### SA发起紧急呼叫结束后返回SA导致掉

电信卡专属问题。问题发生时间：2021-11-18

### 开关5G主卡掉VoLTE

联通卡在开关5G操作过程中，当打开5G开关后，UE回到5G SA，发起重注册，网络在Registration Accept消息中将IMS PDU的PSI状态设置为0，导致IMS注册状态被隐式去激活。

[PSYCHE-6006](https://jira.n.xiaomi.com/browse/PSYCHE-6006) FT\_L3A\_GuangZhou\_5G静态功能测试\_卡1副卡 CU 4V+卡2主卡CU SA ，开关5G操作后卡2主卡长时间（50s以上）不驻VOLTE（1/3）\_1004

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| **在回5G SA注册过程中，网络在Registration Accept消息中没有带IMS承载激活的信息。所有的PSI均为0，导致卡2掉VoLTE。从Log看到经过4s， VoLTE重新驻留成功。**  **// 关闭5G开关**  [0x1544] 09:57:54.989435 QMI\_MCS\_QCSI\_PKT Length: 49  nas\_set\_system\_selection\_preference {  nas\_set\_system\_selection\_preference\_reqTlvs[0] {  Type = 0x11  Length = 2  mode\_pref  **{ mode\_pref = QMI\_NAS\_RAT\_MODE\_PREF\_GSM | QMI\_NAS\_RAT\_MODE\_PREF\_UMTS | QMI\_NAS\_RAT\_MODE\_PREF\_LTE }**  **// 卡2重新发起Attach流程**  [0xB0ED] 09:57:55.938073 LTE NAS EMM Plain OTA Outgoing MessageAttach request Msg 2  [0xB0EC] 09:57:56.620006 LTE NAS EMM Plain OTA Incoming MessageAttach accept Msg 2  [0xB0ED] 09:57:56.624993 LTE NAS EMM Plain OTA Outgoing MessageAttach complete Msg 2  **// IMS注册成功**  [0x1832] 09:57:58.247766 IMS Registration Length: 177 2  **// 打开5G开关**  [0x1544] 09:58:00.561489 QMI\_MCS\_QCSI\_PKT Length: 49  nas\_set\_system\_selection\_preference {  nas\_set\_system\_selection\_preference\_reqTlvs[0] {  Type = 0x11  Length = 2  mode\_pref  { mode\_pref = QMI\_NAS\_RAT\_MODE\_PREF\_GSM | QMI\_NAS\_RAT\_MODE\_PREF\_UMTS | QMI\_NAS\_RAT\_MODE\_PREF\_LTE | **QMI\_NAS\_RAT\_MODE\_PREF\_NR5G** }  }  [0xB0ED] 09:58:00.877862 LTE NAS EMM Plain OTA Outgoing MessageTracking area update request Msg2  **// 在回5G SA注册过程中，网络在Registration Accept消息中没有带IMS承载激活的信息。所有的PSI均为0，导致卡2掉VoLTE**  [0xB80B] 09:58:00.881644 Registration request Registration request 2  [0xB80A] 09:58:01.531817 Registration accept Registration accept 2  pdu\_session\_status  length = 2 (0x2)  **PSI[0] = 0 (0x0)**  **PSI[1] = 0 (0x0)**  **PSI[2] = 0 (0x0)**  PSI[3] = 0 (0x0)  PSI[4] = 0 (0x0)  PSI[5] = 0 (0x0)  PSI[6] = 0 (0x0)  PSI[7] = 0 (0x0)  PSI[8] = 0 (0x0)  [0xB80B] 09:58:01.532650 Registration complete Registration complete 2  **// 卡2重新注册VoLTE**  [0x1832] 09:58:03.895928 IMS Registration Length: 178 2  [0x1832] 09:58:04.316056 IMS Registration Length: 178 2 |

## VoLTE起呼无提示失败

此类问题中，VoLTE发起呼叫，发送INVITE消息，但是由于INVITE消息发送失败、网络侧无响应、网络侧拒绝等原因导致MO端自动失败。

### INVITE消息发送失败

INVITE消息没有成功的发送到IMS网络导致的VoLTE起呼失败。

示例JIRA：UPGR5G-3990 FT\_G7-R\_NanJing\_卡一：电信VoLTE，主卡；卡二：电信VoLTE;卡2打卡1，MO端主叫失败无任何提示音自动结束通话\_1/30\_0115

**结论：MO端发送INVITE消息，RRC建立请求被网络侧拒绝，导致INVITE发送失败，通话自动断开。MTK提示需要注意到失败的小区(EARFCN[1850], PCI[37])可能存在临时不可用的问题。**

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| // MO  Type Index Time Local Time Module Message Comment Time Differences  SIP 38 67994722 10:49:38:087 [MS->NW][P2][S2]INVITE tel:19906413092;phone-context=ims.mnc011.mcc460.3gppnetwork.org SIP/2.0  OTA 1247107 67995044 10:49:38:087 ERRC\_CONN\_2 [MS->NW] ERRC\_RRCConnectionRequest(EARFCN[1850], PCI[37])  **// 发送INVITE消息时，建立RRC连接被网络侧拒绝**  OTA 1249706 67997704 10:49:38:288 ERRC\_CONN\_2 [NW->MS] ERRC\_RRCConnectionReject(EARFCN[1850], PCI[37])  rrcConnectionReject-r8  waitTime: 2s  **// 重新小区重选，选择到(EARFCN[1850], PCI[10])上，第二次呼叫，发送INVITE消息成功**  OTA 1267251 68028118 10:49:40:179 ERRC\_SYS\_2 [NW->MS] SystemInformationBlockType1 (EARFCN[1850], PCI[108])  OTA 1281471 68069993 10:49:42:890 ERRC\_SYS\_2 [NW->MS] SystemInformationBlockType1 (EARFCN[1850], PCI[304])  OTA 1365653 68171873 10:49:49:370 ERRC\_SYS\_2 [NW->MS] SystemInformationBlockType1 (EARFCN[1850], PCI[10])  OTA 1377992 68177686 10:49:49:772 ERRC\_CONN\_2 [MS->NW] ERRC\_RRCConnectionRequest(EARFCN[1850], PCI[10])  OTA 1378269 68178221 10:49:49:772 ERRC\_CONN\_2 [NW->MS] ERRC\_RRCConnectionSetup(EARFCN[1850], PCI[10])  OTA 1378962 68178427 10:49:49:772 EMM\_NASMSG\_2 [MS->NW] EMM\_Service\_Request  OTA 1379020 68178437 10:49:49:772 ERRC\_CONN\_2 [MS->NW] ERRC\_RRCConnectionSetupComplete(EARFCN[1850], PCI[10])  SIP 39 68194232 10:49:50:773 [MS->NW][P2][S2]INVITE tel:19906413092;phone-context=ims.mnc011.mcc460.3gppnetwork.org SIP/2.0  Note：关于底层发送失败上层是否重试呼叫的问题？  如果是由TCP connection fail导致的invite发送失败，会retry用udp重新发送，但是此题是由于底层报的**lower layer error**导致的reset call，就无法再retry发invite了。lower layer error，LTE的小区拒绝接入，换用UDP也不行，所以直接重置呼叫，不再Retry。 |

## VoLTE呼叫流程不完整导致的呼叫建立失败

在VoLTE MO/MT流程中，由于在特定时间内收不到某条VoLTE SIP消息而导致的呼叫建立失败。

### 网络侧不发送PRACK导致的MT失败

目前MT端收到INVITE消息除了发送100 Trying消息，还会发送183 Session Process消息。该消息用于资源预留的协商。通常在该消息的Require头域中会带有100rel参数，表示当前1XX消息需要reliable（可靠）传输，是需要网络收到该消息后发送PRACK确认的。若网络侧长时间未下发PRACK消息给MT端，则MT端呼叫可能被网络侧取消。

示例JIRA：UPGR5G-4138 FT\_G7-R\_ShenZhen\_卡1主卡联通4+卡2副卡移动4V\_PS态 MO卡1打MT卡2，起呼后无法拨通，提示“您所拨打的电话暂时无法接通，请稍后再拨”（rate：1/25）\_0121

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| **// MO CU CSFB WCDMA**  Type Index Time Local Time Module Message Comment Time Differences  SYS 1108691 197579787 13:22:46:545 NIL [AT\_RX p40,ch14]ATD13534172652;  OTA 1111744 197580564 13:22:46:545 EMM\_NASMSG\_2 [MS->NW] EMM\_Extended\_Service\_Request(service type="MO\_CSFB", CSFB response="CSFB\_UNUSED")  OTA 1113045 197581774 13:22:46:545 ERRC\_CONN\_2 [NW->MS] ERRC\_RRCConnectionRelease(EARFCN[1650], PCI[21])(cause:[ReleaseCause\_other], redirectInfo:[1])  OTA 1118594 197593699 13:22:47:273 MM\_2 [MS->NW] MM\_\_LOCATION\_UPDATING\_REQUEST (LU type: MM\_NORMAL\_LU)  OTA 1130740 197615364 13:22:48:673 MM\_2 [NW->MS] MM\_\_LOCATION\_UPDATING\_ACCEPT  OTA 1133720 197617244 13:22:48:873 CC\_2 [MS->NW] CC\_\_SETUP  OTA 1134789 197619115 13:22:48:873 CC\_2 [NW->MS] CC\_\_CALL\_PROCEEDING  OTA 1148303 197642243 13:22:50:473 CC\_2 [NW->MS] CC\_\_ALERTING  OTA 1480396 198111623 13:23:20:478 CC\_2 [NW->MS] CC\_\_DISCONNECT  .001 0010 = DTAP Cause: Cause: (18) No user responding  OTA 1723104 198674744 13:23:56:482 CC\_2 [NW->MS] CC\_\_RELEASE  OTA 1723108 198674746 13:23:56:482 CC\_2 [MS->NW] CC\_\_RELEASE\_COMPLETE  OTA 1735467 198691500 13:23:57:687 ERRC\_SYS\_2 [NW->MS] SystemInformationBlockType1 (EARFCN[3740], PCI[64])  OTA 1742227 198694329 13:23:57:687 EMM\_NASMSG\_2 [MS->NW] EMM\_Tracking\_Area\_Update\_Request(EPS update type="EMM\_UPDATE\_TYPE\_COMBINED\_TAU\_IMSI\_ATTACH", active flag="KAL\_FALSE")  OTA 1749805 198704797 13:23:58:487 EMM\_NASMSG\_2 [NW->MS] EMM\_Tracking\_Area\_Update\_Accept(EPS update result="EMM\_UPDATE\_RESULT\_COMBINED\_UPDATED")  OTA 1750144 198704865 13:23:58:487 EMM\_NASMSG\_2 [MS->NW] EMM\_Tracking\_Area\_Update\_Complete  **// MT CM VoLTE**  Type Index Time Local Time Module Message Comment Time Differences  SIP 13 195912219 13:22:52:682 [NW->MS][P1][S2]INVITE sip:[2409:8809:84E3:9848:57CB:572C:BED7:F40A]:50007 SIP/2.0  From: <tel:18565728953;noa=subscriber;srvattri=national;phone-context=+86>;tag=5f675907eb.rqoryyotyoruu-vqxs  To: <sip:+8613534172652@[2409:8054:5002:1A2B:0000:0000:0000:0008];user=phone>  SIP 14 195912295 13:22:52:682 [MS->NW][P1][S2]SIP/2.0 100 Trying  SIP 15 195912309 13:22:52:682 [NW->MS][P1][S2]INVITE sip:[2409:8809:84E3:9848:57CB:572C:BED7:F40A]:50007 SIP/2.0  OTA 902276 195918158 13:22:53:083 ESM [NW->MS] ESM\_MSG\_ACTIVATE\_DEDICATED\_EPS\_BEARER\_CONTEXT\_REQUEST (PTI:0, EBI:7)  OTA 902669 195918215 13:22:53:083 ESM [MS->NW] ESM\_MSG\_ACTIVATE\_DEDICATED\_EPS\_BEARER\_CONTEXT\_ACCEPT (PTI:0, EBI:7)  **// MT端发送183消息，网络未发送PRACK消息确认导致MT端流程异常，28s后收到网络侧CANCEL消息，中止了呼叫建立流程**  **SIP 16 195913597 13:22:52:682 [MS->NW][P1][S2]SIP/2.0 183 Session Progress**  **Require: 100rel, precondition**  **SIP 17 196353728 13:23:20:904 [NW->MS][P1][S2]CANCEL sip:[2409:8809:84E3:9848:57CB:572C:BED7:F40A]:50007 SIP/2.0**  **Reason: Q.850;cause=18;text="No user responding"**  SIP 19 196353946 13:23:20:904 [MS->NW][P1][S2]SIP/2.0 487 Request Terminated  SIP 20 196354669 13:23:20:904 [NW->MS][P1][S2]ACK sip:[2409:8809:84E3:9848:57CB:572C:BED7:F40A]:50007 SIP/2.0  OTA 1208857 196354805 13:23:20:904 ESM [NW->MS] ESM\_MSG\_DEACTIVATE\_EPS\_BEARER\_CONTEXT\_REQUEST (PTI:0, EBI:7)  OTA 1208923 196354816 13:23:20:904 ESM [MS->NW] ESM\_MSG\_DEACTIVATE\_EPS\_BEARER\_CONTEXT\_ACCEPT (PTI:0, EBI:7) |

### 网络侧没有激活专有承载导致资源预留失败

当网络收到MO端的INVITE消息和网络收到MT端的183 Session Process消息后，网络应当为MO/MT激活语音/视频专有承载。如果6s内，MO/MT没有收到激活专有承载的消息，则MO/MT将发送580 Precondition Failure消息，中止当前的MO/MT呼叫建立流程。网络侧建立专有承载异常。

示例JIRA：UPGR5G-4140 FT\_G7-R\_ShenZhen\_卡1主卡电信4+卡2副卡移动4V\_ps态\_MO卡1拨打MT卡2，MO提示“您所拨打的电话暂时无法接通，请稍后再拨”（rate：1/25）\_0121

结论：MT端发送183消息后，网络一直没有激活QCI=1的语音专有承载导致MT端资源预留失败，网络侧问题。

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| **// MO CDMA1X**  SYS 2627946 99024293 11:27:00:276 NIL [AT\_RX p35,ch3]ATD13528879417;  OTA 2658596 99070254 11:27:03:283 CPSW [MS->NW] C2K1XRTT CP\_ACH\_ORIGINATION  OTA 2664520 99082207 11:27:04:083 CPSW [NW->MS] C2K1XRTT CP\_MEID\_EXT\_CHANNEL\_ASSIGN\_MESSAGE  OTA 2667437 99088513 11:27:04:483 CPSW [NW->MS] C2K1XRTT CP\_FTC\_SERVICE\_CONNECT\_MESSAGE  OTA 2667475 99088523 11:27:04:483 CPSW [MS->NW] C2K1XRTT CP\_RTC\_SERVICE\_CONNECT\_COMPLETION\_MESSAGE  OTA 2917744 99765383 11:27:47:688 CPSW [NW->MS] C2K1XRTT CP\_FTC\_ORDER\_MESSAGE  OTA 2927462 99791052 11:27:49:299 ERRC\_SYS [NW->MS] SystemInformationBlockType1 (EARFCN[100], PCI[183])  OTA 2932444 99792979 11:27:49:500 EMM\_NASMSG [MS->NW] EMM\_Tracking\_Area\_Update\_Request(EPS update type="EMM\_UPDATE\_TYPE\_TAU", active flag="KAL\_TRUE")  OTA 2932512 99792990 11:27:49:500 ERRC\_CONN [MS->NW] ERRC\_RRCConnectionSetupComplete(EARFCN[100], PCI[183])  OTA 2937650 99801370 11:27:50:101 EMM\_NASMSG [NW->MS] EMM\_Tracking\_Area\_Update\_Accept(EPS update result="EMM\_UPDATE\_RESULT\_TA\_UPDATED")  OTA 2937863 99801413 11:27:50:101 EMM\_NASMSG [MS->NW] EMM\_Tracking\_Area\_Update\_Complete  **// MT VoLTE**  Type Index Time Local Time Module Message Comment Time Differences  SIP 12 99363008 11:27:14:051 [NW->MS][P2][S2]INVITE sip:[2409:8155:2C22:C099:1CBA:08C5:E0D4:215E]:50000 SIP/2.0  SIP 13 99363055 11:27:14:051 [MS->NW][P2][S2]SIP/2.0 100 Trying  SIP 14 99363117 11:27:14:051 [NW->MS][P2][S2]INVITE sip:[2409:8155:2C22:C099:1CBA:08C5:E0D4:215E]:50000 SIP/2.0  SIP 15 99363335 11:27:14:051 [NW->MS][P2][S2]INVITE sip:[2409:8155:2C22:C099:1CBA:08C5:E0D4:215E]:50000 SIP/2.0  SIP 16 99363434 11:27:14:051 [NW->MS][P2][S2]INVITE sip:[2409:8155:2C22:C099:1CBA:08C5:E0D4:215E]:50000 SIP/2.0  SIP 17 99364602 11:27:14:051 [MS->NW][P2][S2]SIP/2.0 183 Session Progress  OTA 2194318 99372228 11:27:14:651 EMM\_NASMSG\_2 [NW->MS] EMM\_CS\_Service\_Notification(paging identity="TMSI\_PAGING\_TYPE")  **// MT端发送183消息后，网络一直没有激活QCI=1的语音专有承载导致MT端资源预留失败，网络侧问题。**  SIP 18 99458582 11:27:20:055 [MS->NW][P2][S2]SIP/2.0 580 Precondition Failure  m=audio 0 RTP/AVP 0  a=curr:qos local none  a=curr:qos remote none  a=des:qos failure local sendrecv  a=des:qos mandatory remote sendrecv  SIP 19 99459574 11:27:20:055 [NW->MS][P2][S2]ACK sip:[2409:8155:2C22:C099:1CBA:08C5:E0D4:215E]:50000 SIP/2.0 |

### 网络侧释放专有承载drb导致的资源预留失败

MO在发送INVITE起呼消息和MT在收到INVITE起呼消息后，网络根据当前的通话类型分别为MO和MT端建立专有承载用于通话业务。但是在建立通话的过程中，存在网络异常释放专有承载对应的drb的情况，这会导致MO/MT端的资源预留失败。这种场景下，MO或者MT向网络侧发送SIP 580响应码指示。这类问题为网络异常导致。

示例JIRA：UPGR8250-11670 FT\_J3S-R\_ShenZhen\_卡1主卡电信5G VOLTE+卡2副卡移动4G VOLTE\_idle态\_MO端卡1打MT端的卡2时，MO端提示无法连接服务器然后自动挂断，MT端显示未接来电\_1/30

**结论：MT端由于网络删除了语音传输的专有承载，发送580消息给网络导致呼叫建立失败。MT端网络问题。**

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| [0x156E] 02:31:31.701215 IMS SIP Message Length: 2434 1  [0xB821] 02:31:32.008679 NR5G RRC OTA Packet DL\_DCCH / RRC Release 1  [0xB0E2] 02:31:33.050453 LTE NAS ESM Plain OTA Incoming MessageActivate dedicated EPS bearer context request Msg 1  [0xB0E3] 02:31:33.057099 LTE NAS ESM Plain OTA Outgoing MessageActivate dedicated EPS bearer context accept Msg 1  [0x156E] 02:31:33.376742 IMS SIP Message Length: 487 1  [0x156E] 02:31:38.456084 IMS SIP Message Length: 1268 1  SIP/2.0 580 Precondition Failure  [0xB0E2] 02:31:38.479178 LTE NAS ESM Plain OTA Incoming MessageDeactivate EPS bearer context request Msg 1  [0xB0E3] 02:31:38.479422 LTE NAS ESM Plain OTA Outgoing MessageDeactivate EPS bearer context accept Msg 1  // MT  [0x156E] 02:31:34.770118 IMS SIP Message Length: 2130 2  INVITE sip:[240e:57c:30a0:384:5105:dad:7918:d24c]:40018 SIP/2.0  **// 网络激活专有承载，QCI=1，drb为3**  [0xB0C0/026/009/000] 02:31:34.913877 DL\_DCCH / RRCConnectionReconfigurationRadio Bearer ID: 1, Freq: 1850, SFN: 691 2  radioResourceConfigDedicated  {  drb-ToAddModList  {  {  eps-BearerIdentity 7,  drb-Identity 3,  [0xB0E2] 02:31:34.918807 LTE NAS ESM Plain OTA Incoming MessageActivate dedicated EPS bearer context request Msg 2  [0xB0E3] 02:31:34.921754 LTE NAS ESM Plain OTA Outgoing MessageActivate dedicated EPS bearer context accept Msg 2  **// 网络删除了drb id为3的承载导致MT端没有承载用于呼叫**  [0xB0C0/026/009/000] 02:31:35.124639 DL\_DCCH / RRCConnectionReconfigurationRadio Bearer ID: 1, Freq: 1850, SFN: 712 2  radioResourceConfigDedicated  {  drb-ToReleaseList  {  3  },  **// MT端发送580资源预留失败响应消息，中止了此次呼叫**  [0x156E] 02:31:38.131112 IMS SIP Message Length: 1193 2  Direction = UE\_TO\_NETWORK  **SIP/2.0 580 Precondition Failure** |

## VoLTE视频通话相关问题

### VoLTE视频通话过程中出现的窗口尺寸变化

窗口尺寸变换一般为网络根据当前的上行速率进行尺寸调整以保证在当前网络环境下能够顺利进行视频通话。此类问题对Modem透明，需要Modem确认下当前的网络状态的丢包情况。

还有分析的JIRA，需要查找

**ALIOTH-5456 FT\_K11A\_ShenZhen\_卡1副卡移动4GVolte+卡2主卡电信5GVolte\_高概率必现卡1视频画面拉伸，花屏\_0207**

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| Bugreport Log  02-07 14:23:45.708 10092 24041 24041 I InCall : VideoCallPresenter - onUpdatePeerDimensions: width= 720 height= 1280  02-07 14:24:25.928 10092 24041 24041 I InCall : VideoCallPresenter - onUpdatePeerDimensions: width= 480 height= 640  // 高通Log查看PDCP的UL Discard SDU  2021 Feb 26 05:52:49.449 [A8] 0xB0B4 LTE PDCP UL Statistics Pkt  RBs[3]  Rb Cfg Idx = 4, Mode = UM, PDCP Hdr Len = 2, Num RST = 0  Num Pdcp Ul Buffer Pkt = 35, Num Pdcp Ul Buf Pkt Bytes = 40139  UDC Comp State = DISABLE COMP  Cumulative Total,  PDCP UL Stats, 4, Num Flow Ctrl Trigger = 0  PDCP UL Stats, 4, Num Data PDU Tx = 78  PDCP UL Stats, 4, Num Data PDU Tx Bytes = 91624  PDCP UL Stats, 4, Num Data Bytes from Ps = 91468  PDCP UL Stats, 4, Num Discard SDU = 39  PDCP UL Stats, 4, Num Discard SDU Bytes = 44300 |

### 升级视频通话出现短暂黑屏

VoLTE语音通话过程中，升级为视频通话，出现了短暂的黑屏后，恢复为视频通话。

此类问题的分析步骤：

1. 升级为视频通话，所触发的视频专有承载是否成功建立。延迟建立在延迟时间内也会出现黑屏。QCI=2
2. 升级为视频通话后，是否有大量的下行RTP包丢失。查看下行RTP包的Sequence是否连续。

示例JIRA：

[AGATE-6003](https://jira.n.xiaomi.com/browse/AGATE-6003) FT\_K11T\_XiAn\_卡1副卡电信5GVolte+卡2主卡电信5G SA\_卡2MO视频起呼，视频降为语音后重新升级视频，对端黑屏约4s（1/3）\_0608

结论：MT端升级为视频通话后，视频专用承载QCI=2建立的时间比发起升级的时间晚了6s，网络侧延迟导致。

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| // MO  // 升级为视频通话  SIP 68 12358009 11:12:17:967 [NW->MS][P1][S2]INVITE sip:+8618926932251@[240E:0556:0020:26CE:1686:7C57:157E:0E2E]:50046 SIP/2.0  SIP 70 12378405 11:12:19:367 [MS->NW][P1][S2]SIP/2.0 200 OK  OTA 1999524 12379734 11:12:19:367 ESM [NW->MS] ESM\_MSG\_ACTIVATE\_DEDICATED\_EPS\_BEARER\_CONTEXT\_REQUEST (PTI:0, EBI:8)  OTA 2000357 12379826 11:12:19:367 ESM [MS->NW] ESM\_MSG\_ACTIVATE\_DEDICATED\_EPS\_BEARER\_CONTEXT\_ACCEPT (PTI:0, EBI:8)  SIP 71 12384923 11:12:19:767 [NW->MS][P1][S2]ACK sip:+8618926932251@[240E:0556:0020:26CE:1686:7C57:157E:0E2E]:50046 SIP/2.0  PS 2007698 12385337 11:12:19:767 LTECSR [RTP][VOICE][UL] send ok sn=284, pt=98, ts=0x28640, ssrc=0x554502a2, len=19, call\_id=1  PS 2009648 12387837 11:12:19:967 LTECSR [RTP][VOICE][UL] send ok sn=285, pt=98, ts=0x29040, ssrc=0x554502a2, len=19, call\_id=1  PS 2011654 12390312 11:12:20:167 LTECSR [RTP][VOICE][UL] send ok sn=286, pt=98, ts=0x29a40, ssrc=0x554502a2, len=19, call\_id=1  PS 2013870 12392806 11:12:20:367 LTECSR [RTP][VOICE][UL] send ok sn=287, pt=98, ts=0x2a440, ssrc=0x554502a2, len=19, call\_id=1  PS 2014096 12393135 11:12:20:367 LTECSR [RTP][VOICE][UL] send ok sn=288, pt=98, ts=0x2a580, ssrc=0x554502a2, len=73, call\_id=1  PS 2014433 12393449 11:12:20:367 LTECSR [RTP][VOICE][UL] send ok sn=289, pt=98, ts=0x2a6c0, ssrc=0x554502a2, len=73, call\_id=1  PS 2014770 12393762 11:12:20:367 LTECSR [RTP][VOICE][UL] send ok sn=290, pt=98, ts=0x2a800, ssrc=0x554502a2, len=73, call\_id=1  PS 2015002 12394063 11:12:20:367 LTECSR [RTP][VOICE][UL] send ok sn=291, pt=98, ts=0x2a940, ssrc=0x554502a2, len=73, call\_id=1  PS 2015224 12394385 11:12:20:367 LTECSR [RTP][VOICE][UL] send ok sn=292, pt=98, ts=0x2aa80, ssrc=0x554502a2, len=73, call\_id=1  PS 2015598 12394706 11:12:20:367 LTECSR [RTP][VOICE][UL] send ok sn=293, pt=98, ts=0x2abc0, ssrc=0x554502a2, len=73, call\_id=1  // MT  // 升级为视频通话，网络建立视频承载有6s延迟  SIP 52 8112775 11:12:17:838 [MS->NW][P1][S1]INVITE sip:[240E:0067:5000:0000:0000:0000:0003:2002]:9900;Hpt=8ed2\_16;CxtId=4;TRC=ffffffff-ffffffff SIP/2.0  SIP 54 8139985 11:12:19:638 [NW->MS][P1][S1]SIP/2.0 200 OK  SIP 55 8140238 11:12:19:638 [MS->NW][P1][S1]ACK sip:[240E:0067:5000:0000:0000:0000:0003:2002]:9900;Hpt=8ed2\_16;CxtId=4;TRC=ffffffff-ffffffff SIP/2.0  OTA 1521142 8223824 **11:12:25:038 ESM [NW->MS] ESM\_MSG\_ACTIVATE\_DEDICATED\_EPS\_BEARER\_CONTEXT\_REQUEST (PTI:0, EBI:8)  /// 这里延迟了6s建立转载**  OTA 1522341 8223937 11:12:25:038 ESM [MS->NW] ESM\_MSG\_ACTIVATE\_DEDICATED\_EPS\_BEARER\_CONTEXT\_ACCEPT (PTI:0, EBI:8)  // 下行无丢包  PS 1437138 8140311 11:12:19:638 LTECSR [RTP][VOICE][DL] recv ok, sn=277, pt=98, ts=0x27b00, ssrc=0x554502a2, len=73, call\_id=1, DSCP=0xb8  PS 1437490 8140624 11:12:19:638 LTECSR [RTP][VOICE][DL] recv ok, sn=278, pt=98, ts=0x27c40, ssrc=0x554502a2, len=73, call\_id=1, DSCP=0xb8  PS 1437768 8140936 11:12:19:638 LTECSR [RTP][VOICE][DL] recv ok, sn=279, pt=98, ts=0x27d80, ssrc=0x554502a2, len=73, call\_id=1, DSCP=0xb8  PS 1438129 8141249 11:12:19:638 LTECSR [RTP][VOICE][DL] recv ok, sn=280, pt=98, ts=0x27ec0, ssrc=0x554502a2, len=73, call\_id=1, DSCP=0xb8  PS 1438472 8141561 11:12:19:638 LTECSR [RTP][VOICE][DL] recv ok, sn=281, pt=98, ts=0x28000, ssrc=0x554502a2, len=73, call\_id=1, DSCP=0xb8  PS 1438759 8141874 11:12:19:638 LTECSR [RTP][VOICE][DL] recv ok, sn=282, pt=98, ts=0x28140, ssrc=0x554502a2, len=73, call\_id=1, DSCP=0xb8  PS 1438987 8142186 11:12:19:638 LTECSR [RTP][VOICE][DL] recv ok, sn=283, pt=98, ts=0x28280, ssrc=0x554502a2, len=19, call\_id=1, DSCP=0xb8  PS 1439922 8143124 11:12:19:838 LTECSR [RTP][VOICE][DL] recv ok, sn=284, pt=98, ts=0x28640, ssrc=0x554502a2, len=19, call\_id=1, DSCP=0xb8  PS 1442175 8145624 11:12:20:038 LTECSR [RTP][VOICE][DL] recv ok, sn=285, pt=98, ts=0x29040, ssrc=0x554502a2, len=19, call\_id=1, DSCP=0xb8 |

### 升级为视频通话后短暂视频卡顿

[AGATE-9219](https://jira.n.xiaomi.com/browse/AGATE-9219) K11R-R\_NJ\_电信5G 视频通话降级和升级后MT端画面卡顿\_一次\_V12.5.3.0.RKWEUXM

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| **MT端专有承载建立有延迟，从按下升级到专有承载建立延迟2s，网络RTCP握手包在延迟1s后下发。整理看，Modem流程正常。网络激活专有承载和网络握手存在端在延迟，导致视频短时间卡顿。**  // MO端  Type Index Time Local Time Module Message Comment Time Differences  SIP 46 17949171 17:36:16:485 [NW->MS][P1][S1]INVITE sip:+8619951956186@[240E:0579:0410:3E88:16A0:F6A2:5008:E818]:50009 SIP/2.0  SIP 48 17969584 17:36:17:685 [MS->NW][P1][S1]SIP/2.0 200 OK  OTA 1907223 17971433 17:36:17:885 ESM [NW->MS] ESM\_MSG\_ACTIVATE\_DEDICATED\_EPS\_BEARER\_CONTEXT\_REQUEST (PTI:0, EBI:7)  IPv6 address: 240e:2e:8201:c000:8::12  OTA 1907691 17971470 17:36:17:885 ESM [MS->NW] ESM\_MSG\_ACTIVATE\_DEDICATED\_EPS\_BEARER\_CONTEXT\_ACCEPT (PTI:0, EBI:7)  SIP 49 17972094 **17:36:17:885** [NW->MS][P1][S1]ACK sip:+8619951956186@[240E:0579:0410:3E88:16A0:F6A2:5008:E818]:50009 SIP/2.0  **// 网络侧下行包延迟**  102555 2021-09-02 17:36:19.050050 **240e:579:410:3e88:16a0:f6a2:5008:e818** 240e:2e:8201:c000:8::12 RTP 1264 PT=DynamicRTP-Type-114, SSRC=0x1C33DE63, Seq=1, Time=104440863  102554 2021-09-02 17:36:19.050025 240e:579:410:3e88:16a0:f6a2:5008:e818 240e:2e:8201:c000:8::12 RTP 111 PT=DynamicRTP-Type-114, SSRC=0x1C33DE63, Seq=0, Time=104440863  // MT  **// MT端升级为视频电话后，从升级按钮按下到专有承载建立成功耗时2s，网络延迟0.5s下发**  Type Index Time Local Time Module Message Comment Time Differences  SIP 32 17903958 **17:36:16:956** [MS->NW][P1][S1]INVITE sip:[240E:002E:8201:C000:000A:0000:0000:0001]:9900;Hpt=9162\_16;CxtId=4;TRC=ffffffff-ffffffff SIP/2.0  OTA 1197764 17929881 **17:36:18:556** ESM [NW->MS] ESM\_MSG\_ACTIVATE\_DEDICATED\_EPS\_BEARER\_CONTEXT\_REQUEST (PTI:0, EBI:7)  IPv6 address: 240e:2e:8201:c000:a::c  OTA 1198214 17929918 17:36:18:556 ESM [MS->NW] ESM\_MSG\_ACTIVATE\_DEDICATED\_EPS\_BEARER\_CONTEXT\_ACCEPT (PTI:0, EBI:7)  SIP 34 17930844 17:36:18:756 [NW->MS][P1][S1]SIP/2.0 200 OK  SIP 35 17930994 17:36:18:756 [MS->NW][P1][S1]ACK sip:[240E:002E:8201:C000:000A:0000:0000:0001]:9900;Hpt=9162\_16;CxtId=4;TRC=ffffffff-ffffffff SIP/2.0  **// 网络下行  延迟**  92761 2021-09-02 17:36:19.472127 **240e:579:400:1eaa:16a0:f6a3:3cd:8f01** 240e:2e:8201:c000:a::c RTCP 100 Receiver Report Source description  92759 2021-09-02 17:36:19.348335 240e:2e:8201:c000:a::c 240e:579:400:1eaa:16a0:f6a3:3cd:8f01 RTCP 100 Receiver Report Source description |

### 升级视频通话提示“对方不支持视频通话”

升级视频通话，提示对方不支持视频通话。这种问题需要查看对端发过来的能力是否带有video能力。如果是MT端，则需要查看收到的INVITE消息的Contact头域中是否包含video能力。如果是MO端，可以通过183，UPDATAE消息来查看MT端是否支持video能力。

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| Direction = NETWORK\_TO\_UE  Sip Message = INVITE sip:61e17fc3-b1ce-4d8e-a179-f88bfcecfb8b@[2409:8155:0CD0:7C86:C504:F22F:A53B:4B32]:40009 SIP/2.0  Call-ID: asbch05xGjiLPqyDE6SjlqVfAg..  From: <sip:18823779101@[2409:8054:5002:125D:0000:0000:0000:0004]:9900;user=phone>;tag=7c843a49eb.rqoryzorvxou-vrqq  To: <sip:+8615167105349@[2409:8054:5002:125D:0000:0000:0000:0004]:9900;user=phone>  CSeq: 1 INVITE  Accept: application/sdp,application/vnd.3gpp.state-and-event-info+xml  Contact: <sip:[2409:8054:5002:125D:0000:0000:0000:0004]:9900;Dpt=eb0a-200;Hpt=8f92\_16;CxtId=4;TRC=ffffffff-ffffffff>;video;audio;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mmtel";+g.3gpp.mid-call  Max-Forwards: 66 |

高通的Log中，也可以在来电上报的QMI消息中确认对端是否支持video能力。

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| ServiceId = VOICE  MsgId = 0x0000002E  Service\_VOICE {  ServiceVOICEV2 {  voice\_all\_call\_status {  voice\_all\_call\_status\_indTlvs[0] {  Type = 0x01  Length = 8  call\_info {  num\_of\_instances = 1  call\_info[0] {  call\_id = 1  call\_state = CALL\_STATE\_INCOMING  call\_type = CALL\_TYPE\_VOICE\_IP  direction = CALL\_DIRECTION\_MT  mode = CALL\_MODE\_LTE  is\_mpty = 0  als = ALS\_LINE1  }  }  }  voice\_all\_call\_status\_indTlvs[3] {  Type = 0x22  Length = 26  peer\_call\_capabilities\_info {  num\_instances = 1  peer\_call\_capabilities\_info[0] {  call\_id = 1  audio\_attrib = VOICE\_CALL\_ATTRIB\_TX | VOICE\_CALL\_ATTRIB\_RX // 这里仅支持语音  audio\_cause = VOICE\_RESTRICT\_CAUSE\_NONE  video\_attrib = 0  video\_cause = VOICE\_RESTRICT\_CAUSE\_DISABLED // 不支持video能力  }  }  }  **// 支持voice和video能力的上报消息内容如下**  voice\_all\_call\_status\_indTlvs[4] {  Type = 0x22  Length = 26  peer\_call\_capabilities\_info {  num\_instances = 1  peer\_call\_capabilities\_info[0] {  call\_id = 1  audio\_attrib = VOICE\_CALL\_ATTRIB\_TX | VOICE\_CALL\_ATTRIB\_RX  audio\_cause = VOICE\_RESTRICT\_CAUSE\_NONE  video\_attrib = VOICE\_CALL\_ATTRIB\_TX | VOICE\_CALL\_ATTRIB\_RX  video\_cause = VOICE\_RESTRICT\_CAUSE\_NONE  }  }  } |

## VoLTE注册相关问题

### VoLTE注册流程被呼叫业务打断后回复慢（大概2min左右）

UE发送REGISTER后，启动Timer F，默认的时长为128s，超时后，在启动一个50s重注册定时器，定时时长50s。从打断IMS注册到最后恢复需要等待128s。这是SIP协议的规定，参考RFC 3261。

timer F是SIP事务中的定时器。

[UPGR710R-2199](https://jira.n.xiaomi.com/browse/UPGR710R-2199) [F3B\_R\_CN\_RH][Modem]电信卡切网后在未注册到VOLTE时MO电话，结束通话后电信VOLTE驻网时间慢\_偶现\_V12.5.0.3、21.3.25

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| [ 51/ 2] 06:11:12.322005 IMS/High [ qpSipDispatcher.cpp 5722] QpSipDispatcher::TCP\_MAX\_BACKOFF set to 120000 and timer F 1280001  [0x156E] 06:11:14.171017 IMS SIP Message Length: 751 1  [0x1832] 06:11:14.172086 IMS Registration Length: 177 1  [ 51/ 2] 06:13:15.145000 IMS/High [RegistrationHandler.cpp 1520] HandleRegistrationFailureStatus err code 408: RegType[0]1  [ 51/ 2] 06:13:15.145990 IMS/High [RegistrationHandlerVoLTE.cpp 7879] WaitBeforeNextAttemptMethod3 current:60 timer:50 RegType[0]1 |

## 通话无声问题

### VoLTE 20s通话无声，无任何下行RTP包(高通)

RTP协议运行过程中，高通设置了RTP Inactive Timer用于监听RTP是否有活跃的下行包。定时器时长为20s，若20s内都未收到网络侧的RTP数据包，则该定时器超时，自动挂断电话。

示例JIRA：[UPGR8150R-2138](https://jira.n.xiaomi.com/browse/UPGR8150R-2138) FT\_F1X-R\_WuXi\_MO端卡一CT VOLTE呼叫MT端卡一CMCC VOLTE， ping状态下，MT端呼入20秒无声，且自动挂断。（1/20）\_0310

网络问题,MO端电话建立以后，有正常的数据收发,但是MT端只有上行RTP数据，网络未发任何下行RTP数据，导致timer超时,MT发起挂断

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| mo side:  2021 Mar 10 06:04:24.706 [A8] 0x156E IMS SIP Message – IMS\_SIP\_ACK/INFORMAL\_RESPONSE  //有正常的数据收发  2021 Mar 10 06:04:24.806 [0B] **0x1568 IMS RTP SN and Payload**  Direction = UE\_TO\_NETWORK  2021 Mar 10 06:04:24.811 [A8] 0x1568 IMS RTP SN and Payload  Direction = NETWORK\_TO\_UE  mt side:  2021 Mar 10 06:04:19.002 [E6] 0x156E IMS SIP Message – IMS\_SIP\_INVITE/INFORMAL\_RESPONSE  2021 Mar 10 06:04:24.433 [D0] 0x156E IMS SIP Message – IMS\_SIP\_ACK/INFORMAL\_RESPONSE  **//NW未下发任何RTP数据,导致超时挂断**  1980 Jan 6 02:25:47.571 [00] 0x1805 ADSP Core Voice Driver Stream Rx  **Frame Header = 0x77 ( NO Data 12.2kbps )**  **// 启动定时器**  [ 51/ 1] MSG 06:04:24.232083 IMS/Medium [ qipcallrtp.c 1931] Audio:qipcallrtp\_configure\_rtp\_monitoring | **qvp\_rtp\_link\_alive\_timer\_start timer started successfully timer 20.**stream-id:01  // 定时器超时，UE发送BYE消息，text为No Media  [ 51/ 2] MSG 06:04:44.248229 IMS/High [ qipcallrtp.c 1389] **qipcallrtp\_process\_rtp\_inactivity\_timeout : stream-id : 01**    [0x1831] OTA LOG 06:04:44.248234 IMS VoLTE Session End Length: 350 1  **End Cause = RTP inactivity**  2021 Mar 10 06:04:44.255 [F5] 0x156E IMS SIP Message – IMS\_SIP\_BYE/INFORMAL\_RESPONSE  **Reason: SIP;text="No Media"** |

### MO收到接听消息晚于MT导致的无声问题

MO收到CONNECT/200 OK(INVITE)等接听消息比MT发送的时间晚了数秒，到时MO端呼叫未建立，MT通话已经开始。

这是MT端是持续无声，直到MO端接通成功并发送语音数据。这是网络转发延迟，或MO端接收延迟造成的MO和MT接听不同而导致的无声问题。

[UPGR5G-4291](https://jira.n.xiaomi.com/browse/UPGR5G-4291) FT\_J22-R\_Shenzhen\_卡1联通5G+卡2联通5G VoLTE,idle,在滨河大道中医院附近，卡1通话建立成功后，MO与MT端前5秒无声(1/20)

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| **MT端在15:10:04:070按下接通按键，但是MO端在15:10:13:912才收到接听消息，比MT端晚了9s，这导致MO和MT端接听时间点不同步。网络转发延迟导致的无声。**  // MO CU5G CSFB WCDMA  Type Index Time Local Time Module Message Comment Time Differences  SYS 927944 289741417 15:09:50:899 NIL [AT\_RX p41,ch3]ATD18664931832;  OTA 942645 289745244 15:09:51:101 EMM\_NASMSG [MS->NW] EMM\_Extended\_Service\_Request(service type="MO\_CSFB", CSFB response="CSFB\_UNUSED")  OTA 948335 289747619 15:09:51:301 ERRC\_CONN [NW->MS] ERRC\_RRCConnectionRelease(EARFCN[100], PCI[175])(cause:[ReleaseCause\_other], redirectInfo:[1])  OTA 960862 289774273 15:09:52:911 CC [MS->NW] CC\_\_SETUP  OTA 961348 289776762 15:09:53:111 CC [NW->MS] CC\_\_CALL\_PROCEEDING  OTA 997429 289967389 15:10:05:311 CC [NW->MS] CC\_\_ALERTING  OTA 1034325 290085535 15:10:12:912 ADR\_FDD [MS->NW] FDD\_RRC\_\_CELL\_UPDATE  **cellUpdateCause: radiolinkFailure (5)**  OTA 1038154 290100737 **15:10:13:912** CC [NW->MS] CC\_\_CONNECT  OTA 1038158 290100738 15:10:13:912 CC [MS->NW] CC\_\_CONNECT\_ACKNOWLEDGE  OTA 1089461 290234364 15:10:22:312 CC [MS->NW] CC\_\_DISCONNECT  OTA 1090594 290237609 15:10:22:512 CC [NW->MS] CC\_\_RELEASE  OTA 1090602 290237610 15:10:22:512 CC [MS->NW] CC\_\_RELEASE\_COMPLETE  // MT  Type Index Time Local Time Module Message Comment Time Differences  OTA 894097 289869806 15:09:59:026 ERRC\_CEL [NW->MS] ERRC\_Paging(EARFCN[1650], PCI[275])([ERRC\_SIM1][PCELL], PagingRecordList[KAL\_TRUE], SIB Modification[KAL\_FALSE], ETWS[KAL\_FALSE], CMAS[KAL\_FALSE], EAB Modification[KAL\_FALSE])  OTA 899236 289871139 15:09:59:026 EMM\_NASMSG [MS->NW] EMM\_Extended\_Service\_Request(service type="MT\_CSFB", CSFB response="CSFB\_ACCEPTED\_BY\_UE")  OTA 903996 289873834 15:09:59:226 ERRC\_CONN [NW->MS] ERRC\_RRCConnectionRelease(EARFCN[1650], PCI[275])(cause:[ReleaseCause\_other], redirectInfo:[1])  OTA 909783 289885923 15:10:00:061 MM [MS->NW] MM\_\_PAGING\_RESPONSE  OTA 915785 289904278 15:10:01:064 CC [NW->MS] CC\_\_SETUP  OTA 916090 289904403 15:10:01:064 CC [MS->NW] CC\_\_CALL\_CONFIRMED  OTA 916932 289910065 15:10:01:470 CC [MS->NW] CC\_\_ALERTING  // MT端在15:10:04:070按下接通按键，但是MO端在15:10:13:912才收到接听按键，这导致MO和MT端接听时间点不同步。网络转发延迟导致的无声。  OTA 922696 289949644 **15:10:04:070**CC [MS->NW] CC\_\_CONNECT  OTA 924062 289953807 15:10:04:270 CC [NW->MS] CC\_\_CONNECT\_ACKNOWLEDGE  OTA 1058178 290241761 15:10:22:673 CC [MS->NW] CC\_\_DISCONNECT  OTA 1059336 290245057 15:10:22:873 CC [NW->MS] CC\_\_RELEASE  OTA 1059345 290245058 15:10:22:873 CC [MS->NW] CC\_\_RELEASE\_COMPLETE |

### 下行丢RTP包持续20s导致的挂机

下行RTP包丢包时间持续20s，导致丢包侧的UE发起挂机。这是正常处理。Root Cause为网络丢包。

[THYME-4075](https://jira.n.xiaomi.com/browse/THYME-4075) J2S\_R\_NJ\_【Modem】测试机双端通话MO无声calldrop\_once\_V12.5.0.3.RGACNXM

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| **MO端和MT端都有正常发送RTP语音包，MO在08:15:38.877收到最后一个有效语音包，MT在08:15:40.271收到最后一个有效语音包。MO端在20s后自动挂断了电话。**  **MO和MT端的RSRP和SNR正常，不影响数据收发。看起来是网路端故障导致MO和MT端的语音上行包没有正确转发，导致MO和MT丢失大量的下行包。**  // MO  **// MO端收到的最后一个有效的下行语音包，距离MO端挂机时间为20s**  **2021 Apr 6 08:15:38.877 [E7] 0x1568 IMS RTP SN and Payload**  Subscription ID = 2  Version = 13  Direction = NETWORK\_TO\_UE  Rat Type = LTE  Sequence = 57500  Ssrc = 1988042476  Rtp Time stamp = 54322560  CodecType = AMR-WB  mediaType = AUDIO  PayLoad Size = 73  Logged Payload Size = 61  Audio AMR-WB  Marker = 0  Codec mode Request = 15  isMoreFrame = false  **Frame Type Index = AMR-WB 23.85 KBIT/S**  isFrameGood = true  Mode = BANDWIDTH EFFICIENT  Latency Info Present = 0  Latency Block None  Rtp Raw Payload =  { 244, 92, 18, 75, 9, 27, 194, 47, 252, 92, 202, 5, 255, 132, 28, 160, 195, 223, 247, 108, 107, 212, 196, 94, 161, 3, 100, 202, 155, 160, 33, 91, 45, 35, 82, 161, 123, 55, 170, 197, 23, 157, 20, 125, 24, 23, 75, 73, 56, 246, 247, 30, 58, 205, 129, 9, 183, 209, 169, 22, 134 }  Rtp Redundant Indicator = Original RTP Packet  **2021 Apr 6 08:15:59.145 [FE] 0x1569 IMS RTP Packet Loss**  Subscription ID = 2  Version = 9  Number Lost = 0  Sequence Number = 57503  SSRC = 767F1EEC  codecType = AMR-WB  LossType = RTP NETWORK LOSS  Num of Frame = 0  **Total Lost = 51 // AMR 丢包**  Total Packets Count = 122967  **// MO端RSRP和信噪比良好**  2021 Apr 6 08:15:39.288 [97] 0xB193 LTE ML1 Serving Cell Meas Response  Subscription ID = 2  Version = 1  Number of SubPackets = 1  SubPacket ID = 25  Serving Cell Measurement Result  Version = 48  SubPacket Size = 156 bytes  E-ARFCN = 1650  Num of Cell = 1  Valid Rx = RX0\_RX1  Logical To Physical Rx Map =  { 0, 1, NA, NA }  Cells[0]  Physical Cell ID = 451  Serving Cell Index = PCell  **Inst RSRP Rx[0] = -81.25 dBm**  **Inst RSRP Rx[1] = -91.56 dBm**  **FTL SNR Rx[0] = 28.40 dB**  **FTL SNR Rx[1] = 26.60 dB**  **// MO主动挂机**  2021 Apr 6 08:15:59.144 [117/0x75] 0x156E IMS SIP Message – IMS\_SIP\_BYE/INFORMAL\_RESPONSE  Subscription ID = 2  Version = 1  Direction = UE\_TO\_NETWORK  **Reason: RELEASE\_CAUSE ;cause=2 ;text="RTP/RTCP time-out"   // 20s收不到下行RTP包导致的挂断**  User-Agent: Xiaomi\_Mi 10S\_V12.5.0.3.RGACNXM  Content-Length: 0  **// MT端收到的最后一个有效的RTP包**  **2021 Apr 6 08:15:40.271 [09] 0x1568 IMS RTP SN and Payload**  Subscription ID = 2  Version = 13  Direction = NETWORK\_TO\_UE  Rat Type = LTE  Sequence = 59919  Ssrc = 602512479  Rtp Time stamp = 54279360  CodecType = AMR-WB  mediaType = AUDIO  PayLoad Size = 73  Logged Payload Size = 61  Audio AMR-WB  Marker = 0  Codec mode Request = 15  isMoreFrame = false  **Frame Type Index = AMR-WB 23.85 KBIT/S**  isFrameGood = true  Mode = BANDWIDTH EFFICIENT  Latency Info Present = 0  Latency Block None  Rtp Raw Payload =  { 244, 88, 71, 30, 208, 154, 180, 158, 173, 4, 137, 10, 119, 180, 51, 205, 129, 255, 244, 147, 128, 58, 194, 63, 186, 113, 217, 149, 107, 91, 205, 77, 58, 213, 17, 138, 111, 36, 76, 100, 16, 25, 169, 62, 19, 118, 32, 106, 34, 161, 67, 109, 65, 160, 95, 225, 78, 126, 119, 93, 50 }  Rtp Redundant Indicator = Original RTP Packet  **// 下行丢包**  2021 Apr 6 08:16:47.804 [DC] 0x1569 IMS RTP Packet Loss  Subscription ID = 2  Version = 9  Number Lost = 0  Sequence Number = 59919  SSRC = 23E99C5F  codecType = AMR-WB  LossType = RTP NETWORK LOSS  Num of Frame = 0  **Total Lost = 64**  Total Packets Count = 125446  **// RSRP和信噪比良好**  2021 Apr 6 08:15:39.404 [A9] 0xB193 LTE ML1 Serving Cell Meas Response  Subscription ID = 2  Version = 1  Number of SubPackets = 1  SubPacket ID = 25  Serving Cell Measurement Result  Version = 48  SubPacket Size = 156 bytes  E-ARFCN = 100  Num of Cell = 1  Valid Rx = RX0\_RX1  Logical To Physical Rx Map = { 0, 1, NA, NA }  Cells[0]  Physical Cell ID = 376  Serving Cell Index = PCell  **Inst RSRP Rx[0] = -71.06 dBm**  **Inst RSRP Rx[1] = -77.25 dBm**  **FTL SNR Rx[0] = 30.00 dB**  **FTL SNR Rx[1] = 30.00 dB**  CINR RX 3 = NA |

## 数据图标问题-注册相关

在数据业务发生的过程中，出现数据图标消失的异常情况将在本章节收集和分析。常见的数据图标消失一般和当前主卡的驻网状态有关。数据图标消息可以优先查看当前的主卡驻留状态是否正常，默认承载建立是否存在问题。

### Service Reject导致的掉数据图标

在主卡通过Service Request请求上行数据业务时，被网络以Servie Reject拒绝，且带有Cause: Implicitly detached (10)原因值时，主卡需要重新Attach。这期间主卡无法进行数据业务，导致丢数据图标。

UPGR5G-4322 FT\_J22-R\_NanJing\_卡一主卡移动5G VOLTE，卡二副卡联通4G VOLTE，ping，MO卡2呼叫MT卡1，MO端通话结束后主卡移动数据图标消失，出现断流 (rate:1/30)

**结论：副卡卡2的电话结束后，主卡卡1在做Service Request时被网络拒绝，主卡重新发起Attach流程，这导致卡1短暂掉数据和VoLTE**

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| Type Index Time Local Time Module Message Comment Time Differences  SYS 580028 101870794 11:03:50:306 NIL [AT\_RX p46,ch14]ATD19805174504;  SIP 14 101871125 11:03:50:306 [MS->NW][P2][S2]INVITE tel:19805174504;phone-context=ims.mnc001.mcc460.3gppnetwork.org SIP/2.0  SIP 15 101875048 11:03:50:508 [NW->MS][P2][S2]SIP/2.0 100 Trying  OTA 601426 101875945 11:03:50:508 ESM\_2 [NW->MS] ESM\_MSG\_ACTIVATE\_DEDICATED\_EPS\_BEARER\_CONTEXT\_REQUEST (PTI:0, EBI:7)  OTA 601870 101875967 11:03:50:508 ESM\_2 [MS->NW] ESM\_MSG\_ACTIVATE\_DEDICATED\_EPS\_BEARER\_CONTEXT\_ACCEPT (PTI:0, EBI:7)  SIP 16 101882802 11:03:50:911 [NW->MS][P2][S2]SIP/2.0 183 Session Progress  SIP 21 101930175 11:03:54:116 [NW->MS][P2][S2]SIP/2.0 180 Ringing  SIP 26 102381100 11:04:22:921 [MS->NW][P2][S2]BYE sip:Anonymous@[2408:8141:8000:1:2::118]:5062;transport=TCP;zte-did=11-2-20481-3240-12-896-1180;zte-uid=200000+8613236402983 SIP/2.0  SIP 27 102382924 11:04:22:921 [NW->MS][P2][S2]SIP/2.0 200 OK  OTA 1026002 102383447 11:04:23:121 ESM\_2 [NW->MS] ESM\_MSG\_DEACTIVATE\_EPS\_BEARER\_CONTEXT\_REQUEST (PTI:0, EBI:7)  OTA 1026090 102383458 11:04:23:121 ESM\_2 [MS->NW] ESM\_MSG\_DEACTIVATE\_EPS\_BEARER\_CONTEXT\_ACCEPT (PTI:0, EBI:7)  // 副卡卡2的电话结束后，主卡卡1在做Service Request时被网络拒绝  OTA 1446111 102678173 11:04:41:998 EMM\_NASMSG [MS->NW] EMM\_Service\_Request  **OTA 1449502 102679078 11:04:41:998 EMM\_NASMSG [NW->MS] EMM\_Service\_Reject(EMM cause="EMM\_CAUSE\_IMPLICIT\_DETACH", T3442 value=0)**  **Cause: Implicitly detached (10) // 隐式去附着，需要立即重新附着**  **// 主卡重新发起Attach流程，这导致卡1短暂掉数据和VoLTE**  OTA 1462157 102680394 11:04:41:998 ESM [MS->NW] ESM\_MSG\_PDN\_CONNECTIVITY\_REQUEST (PTI:8, EBI:0)  OTA 1468314 102681858 11:04:42:198 EMM\_NASMSG [MS->NW] EMM\_Attach\_Request(EPS attach type="EMM\_ATTACH\_TYPE\_COMBINED\_ATTACH")  OTA 1478832 102692179 11:04:42:799 EMM\_NASMSG [NW->MS] EMM\_Attach\_Accept(EPS attach result="EMM\_ATTACH\_RESULT\_COMBINED\_ATTACHED")  OTA 1480153 102692253 11:04:42:799 EMM\_NASMSG [MS->NW] EMM\_Attach\_Complete  OTA 1510594 102710501 11:04:44:002 ESM [NW->MS] ESM\_MSG\_ACTIVATE\_DEFAULT\_EPS\_BEARER\_CONTEXT\_REQUEST (PTI:9, EBI:6)  OTA 1510966 102710533 11:04:44:002 ESM [MS->NW] ESM\_MSG\_ACTIVATE\_DEFAULT\_EPS\_BEARER\_CONTEXT\_ACCEPT (PTI:0, EBI:6)  **// VoLTE重新注册**  SIP 28 102720388 11:04:44:605 [MS->NW][P1][S1]REGISTER sip:ims.mnc002.mcc460.3gppnetwork.org SIP/2.0  SIP 29 102723101 11:04:44:805 [NW->MS][P1][S1]SIP/2.0 401 Unauthorized  SIP 30 102729066 11:04:45:205 [MS->NW][P1][S1]REGISTER sip:ims.mnc002.mcc460.3gppnetwork.org SIP/2.0  SIP 31 102737486 11:04:45:805 [NW->MS][P1][S1]SIP/2.0 200 OK |

### TAU Reject导致掉数据图标和丢寻呼

UE在位置移动TAU的过程中，发生网络拒绝TAU的情况，并且带有Cause: UE identity cannot be derived by the network (9)的原因值，指示UE需要重新Attach。在重新Attach过程中，UE将丢驻网图标和丢寻呼消息。

示例JIRA：UPGR5G-4328 FT\_J22\_BeiJing\_主卡卡一CMCC 5G + 副卡卡二CU 4G VOLTE，PS，MO端卡1打MT端卡2，mo端提示语音助理（1/20）\_0128

**结论：MT端Sub2在呼叫时间点附近发生TAU Reject，立即重新Attach，影响被叫的寻呼。**

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| // MO CM 5G CSFB GSM  Type Index Time Local Time Module Message Comment Time Differences  SYS 975065 340289422 15:33:57:567 NIL [AT\_RX p46,ch14]ATD18514648187;  OTA 978826 340289907 15:33:57:567 EMM\_NASMSG\_2 [MS->NW] EMM\_Extended\_Service\_Request(service type="MO\_CSFB", CSFB response="CSFB\_UNUSED")  OTA 979592 340290979 15:33:57:567 ERRC\_CONN\_2 [NW->MS] ERRC\_RRCConnectionRelease(EARFCN[1350], PCI[312])(cause:[ReleaseCause\_other], redirectInfo:[1])  OTA 991678 340316195 15:33:59:182 CC\_2 [MS->NW] CC\_\_SETUP  OTA 992590 340327229 15:33:59:982 CC\_2 [NW->MS] CC\_\_CALL\_PROCEEDING  OTA 995411 340355928 15:34:01:784 CC\_2 [NW->MS] CC\_\_ALERTING  OTA 1000099 340405896 15:34:04:997 CC\_2 [NW->MS] CC\_\_PROGRESS  OTA 1033424 340590883 15:34:16:816 CC\_2 [MS->NW] CC\_\_DISCONNECT  OTA 1033878 340593402 15:34:17:016 CC\_2 [NW->MS] CC\_\_RELEASE  OTA 1033887 340593403 15:34:17:016 CC\_2 [MS->NW] CC\_\_RELEASE\_COMPLETE  // MT  Type Index Time Local Time Module Message Comment Time Differences  OTA 1065415 238709367 15:34:02:557 ERRC\_SYS\_2 [NW->MS] SystemInformationBlockType1 (EARFCN[575], PCI[501])  OTA 1071776 238711147 15:34:02:759 EMM\_NASMSG\_2 [MS->NW] EMM\_Tracking\_Area\_Update\_Request(EPS update type="EMM\_UPDATE\_TYPE\_COMBINED\_TAU", active flag="KAL\_FALSE")  **// TAU被网络拒绝，提示UE ID无法通过网络导出，需要立即重新Attach**  **OTA 1073732 238712409 15:34:02:759 EMM\_NASMSG\_2 [NW->MS] EMM\_Tracking\_Area\_Update\_Reject(EMM cause="EMM\_CAUSE\_UE\_ID\_NOT\_DERIVED\_BY\_NW")**  **Cause: UE identity cannot be derived by the network (9)**  OTA 1096286 238715698 15:34:02:959 ESM\_2 [MS->NW] ESM\_MSG\_PDN\_CONNECTIVITY\_REQUEST (PTI:19, EBI:0)  **// MT端Sub2重新Attach，这影响被叫的寻呼**  OTA 1100017 238716823 15:34:03:159 EMM\_NASMSG\_2 [MS->NW] EMM\_Attach\_Request(EPS attach type="EMM\_ATTACH\_TYPE\_COMBINED\_ATTACH")  OTA 1106565 238725931 15:34:03:560 EMM\_NASMSG\_2 [NW->MS] EMM\_Attach\_Accept(EPS attach result="EMM\_ATTACH\_RESULT\_COMBINED\_ATTACHED")  OTA 1107830 238726013 15:34:03:560 EMM\_NASMSG\_2 [MS->NW] EMM\_Attach\_Complete  OTA 1112960 238726745 15:34:03:760 ESM\_2 [MS->NW] ESM\_MSG\_PDN\_CONNECTIVITY\_REQUEST (PTI:20, EBI:0)  OTA 1116000 238728501 15:34:03:760 ESM\_2 [NW->MS] ESM\_MSG\_ACTIVATE\_DEFAULT\_EPS\_BEARER\_CONTEXT\_REQUEST (PTI:20, EBI:6)  OTA 1116310 238728539 15:34:03:760 ESM\_2 [MS->NW] ESM\_MSG\_ACTIVATE\_DEFAULT\_EPS\_BEARER\_CONTEXT\_ACCEPT (PTI:0, EBI:6)  **SIP 24 238738545 15:34:04:376 [MS->NW][P2][S2]REGISTER sip:ims.mnc001.mcc460.3gppnetwork.org SIP/2.0**  SIP 25 238742914 15:34:04:778 [NW->MS][P2][S2]SIP/2.0 401 Unauthorized  SIP 26 238746063 15:34:04:979 [MS->NW][P2][S2]REGISTER sip:ims.mnc001.mcc460.3gppnetwork.org SIP/2.0  SIP 27 238751652 15:34:05:382 [NW->MS][P2][S2]SIP/2.0 200 OK  OTA 1339444 239001678 15:34:21:254 ERRC\_SYS\_2 [NW->MS] SystemInformationBlockType1 (EARFCN[375], PCI[167])  OTA 1344546 239002814 15:34:21:454 EMM\_NASMSG\_2 [MS->NW] EMM\_Tracking\_Area\_Update\_Request(EPS update type="EMM\_UPDATE\_TYPE\_COMBINED\_TAU", active flag="KAL\_FALSE")  OTA 1346138 239003609 15:34:21:454 EMM\_NASMSG\_2 [NW->MS] EMM\_Tracking\_Area\_Update\_Accept(EPS update result="EMM\_UPDATE\_RESULT\_COMBINED\_UPDATED")  OTA 1346677 239003649 15:34:21:454 EMM\_NASMSG\_2 [MS->NW] EMM\_Tracking\_Area\_Update\_Complete |

### 出飞行模式后注册LTE失败-RRCConnectionRelease

在发送Attach请求的过程中，UE请求建立RRC连接，连接建立完成后，RRC连接立即被网络侧释放，cause为other。RRC连接释放导致Attach请求发送失败，导致临时无法驻网。

[AGATE-4462](https://jira.n.xiaomi.com/browse/AGATE-4462) FT\_K11T\_ChongQing\_卡一副卡CT4G+卡二主卡CMCCSA\_在使用卡一副卡做MO外呼时，卡二发生脱网\_0520

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| **卡2注册过程中，RRC链路建立成功，但是立即被网络释放。在卡1电话结束后重新注册成功。网络RRC异常释放导致的问题。**  **// 进出飞行模式**  SYS 274383 20021212 10:04:14:419 NIL [AT\_RX p82,ch8]AT+EFUN=0,2  => Decode:Set functionaliy for multiple SIM project (Proprietary command) +EFUN  <efun\_state> : 0(ALL SIM Radio OFF)  SYS 305486 20034350 10:04:15:262 NIL [AT\_RX p82,ch8]AT+EFUN=3  => Decode:Set functionaliy for multiple SIM project (Proprietary command) +EFUN  <efun\_state> : 3(SIM 1 2 Radio ON)  **// 主卡卡2开始注册，发送Attach请求，RRC链路建立，但是立即被网络释放了RRC导致注册请求发送失败**  OTA 324434 20040032 10:04:15:662 ESM [MS->NW] ESM\_MSG\_PDN\_CONNECTIVITY\_REQUEST (PTI:8, EBI:0)  OTA 326908 20040910 10:04:15:662 ERRC\_CONN [MS->NW] ERRC\_RRCConnectionRequest(EARFCN[1850], PCI[94])  OTA 327267 20041424 10:04:15:862 ERRC\_CONN [NW->MS] ERRC\_RRCConnectionSetup(EARFCN[1850], PCI[94])  OTA 328630 20041722 10:04:15:862 ERRC\_CONN [MS->NW] ERRC\_RRCConnectionSetupComplete(EARFCN[1850], PCI[94])  **// 链路被网络释放**  **OTA 330584 20046326 10:04:16:062 ERRC\_CONN [NW->MS] ERRC\_RRCConnectionRelease(EARFCN[1850], PCI[94])(cause:[ReleaseCause\_other], redirectInfo:[0])**  **releaseCause: other (1)**  **// 卡1注册过程**  OTA 328191 20041632 10:04:15:862 EMM\_NASMSG [MS->NW] EMM\_Attach\_Request(EPS attach type="EMM\_ATTACH\_TYPE\_EPS\_ATTACH")  OTA 350864 20058524 10:04:16:867 EMM\_NASMSG\_2 [MS->NW] EMM\_Attach\_Request(EPS attach type="EMM\_ATTACH\_TYPE\_COMBINED\_ATTACH")  OTA 358770 20069990 10:04:17:669 EMM\_NASMSG\_2 [NW->MS] EMM\_Attach\_Accept(EPS attach result="EMM\_ATTACH\_RESULT\_COMBINED\_ATTACHED")  OTA 359977 20070109 10:04:17:669 EMM\_NASMSG\_2 [MS->NW] EMM\_Attach\_Complete  **// 卡1拨打电话**  SYS 435852 20169364 10:04:24:074 NIL [AT\_RX p66,ch14]ATD13121253970;  SIP 23 20169884 10:04:24:074 [MS->NW][P2][S1]INVITE tel:13121253970;phone-context=ims.mnc000.mcc460.3gppnetwork.org SIP/2.0  SIP 30 20254546 10:04:29:478 [NW->MS][P2][S1]SIP/2.0 180 Ringing  SIP 33 20256646 10:04:29:478 [NW->MS][P2][S1]SIP/2.0 180 Ringing  SIP 38 20636817 10:04:53:878 [NW->MS][P2][S1]SIP/2.0 487 Request Terminated  SIP 39 20636820 10:04:53:878 [MS->NW][P2][S1]ACK tel:13121253970;phone-context=ims.mnc000.mcc460.3gppnetwork.org SIP/2.0  **// 卡1电话结束后，立即重新尝试注册。卡2重新发送Attach请求，成功注册。**  OTA 719253 20654608 10:04:55:115 ERRC\_SYS [NW->MS] SystemInformationBlockType1 (EARFCN[1850], PCI[94])  OTA 723022 20655146 10:04:55:115 ESM [MS->NW] ESM\_MSG\_PDN\_CONNECTIVITY\_REQUEST (PTI:9, EBI:0)  OTA 730630 20657409 10:04:55:315 EMM\_NASMSG [MS->NW] EMM\_Attach\_Request(EPS attach type="EMM\_ATTACH\_TYPE\_EPS\_ATTACH")  OTA 742276 20665299 10:04:55:715 EMM\_NASMSG [NW->MS] EMM\_Attach\_Accept(EPS attach result="EMM\_ATTACH\_RESULT\_EPS\_ONLY\_ATTACHED")  OTA 743529 20665394 10:04:55:715 EMM\_NASMSG [MS->NW] EMM\_Attach\_Complete  OTA 751474 20666082 10:04:55:715 ESM [MS->NW] ESM\_MSG\_PDN\_CONNECTIVITY\_REQUEST (PTI:10, EBI:0) |

## 掉5G问题归纳

UE在某些业务过程中、结束后，或者静置过程中掉5G的所有问题的整理。所有的掉5G的场景：

1. NSA 5G VoLTE通话过程中/通话结束后，掉5G，可能为连接态下网络指导的小区Handover导致UE被切换到非锚点小区从而掉5G图标。

### NSA 5G VoLTE通话结束后掉到4G

通话前，UE驻留在5G NSA，通话过程中/通话结束后掉到4G。此类问题一般为网络侧执行小区切换，目标小区不支持ENDC能力导致UE暂时无法添加NR SCG连接。网络部署问题。

示例JIRA：UPGR5G-4212 FT\_J22-R\_ShenZhen\_NSA\_卡一主卡联通5V+卡二副卡电信5V，主卡MT Call挂断后掉4G，10点50分，概率：3/10\_20210126

结论：呼叫结束时刻，网络将UE Handover到[1850], PCI[161])，该小区不支持ENDC能力。

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| Type Index Time Local Time Module Message Comment Time Differences  SIP 0 8693091 10:48:42:241 [NW->MS][P1][S1]INVITE sip:[\*\*\*\*:\*\*\*\*:\*\*\*\*:\*\*\*\*:\*\*\*\*:\*\*\*\*:\*\*\*\*:\*\*\*\*]:50038 SIP/2.0 \*\*\*  SIP 1 8693222 10:48:42:241 [MS->NW][P1][S1]SIP/2.0 100 Trying  SIP 7 8710292 10:48:43:556 [MS->NW][P1][S1]SIP/2.0 180 Ringing  SYS 1206848 8775989 10:48:47:587 NIL [AT\_RX p41,ch3]ATA    SIP 8 8776044 10:48:47:587 [MS->NW][P1][S1]SIP/2.0 200 OK \*\*\*  SIP 9 8777849 10:48:47:787 [NW->MS][P1][S1]ACK sip:+\*\*\*\*\*\*\*\*\*\*\*\*\*@[\*\*\*\*:\*\*\*\*:\*\*\*\*:\*\*\*\*:\*\*\*\*:\*\*\*\*:\*\*\*\*:\*\*\*\*]:50038 SIP/2.0 \*\*\*  // UE在小区(EARFCN[1850], PCI[161])上驻留成功NR SCG。  OTA 1571391 8956423 10:48:59:085 ERRC\_MOB [MS->NW] ERRC\_MeasurementReport (EARFCN[1850], PCI[161]) (measID[8] eventB1\_NR NR ncell[627264-1/662] rslt[-249][18])  OTA 1573522 8957622 10:48:59:334 ERRC\_CONN [NW->MS] ERRC\_RRCConnectionReconfiguration(EARFCN[1850], PCI[161])(measCfg:[0],mobCtrlInfo:[0],dedInfoNASList:[0],radioresCfgDed:[1],secCfgHO:[0])  SYS 1574968 8957966 10:48:59:334 NIL [AT\_URC p39,ch1]+EREG: 1,"\*\*\*\*24","\*\*\*\*9B535",16384,0,0,0,0  SIP 14 8961309 10:48:59:534 [MS->NW][P1][S1]BYE sip:[\*\*\*\*:\*\*\*\*:\*\*\*\*:\*\*\*\*:\*\*\*\*:\*\*\*\*:\*\*\*\*:\*\*\*\*]:9900;Dsp=edba-200;Hpt=8f02\_16;CxtId=4;TRC=ffffffff-ffffffff SIP/2.0 \*\*\*  // 呼叫结束时刻，网络将UE Handover到[1850], PCI[161])，该小区不支持ENDC能力。  OTA 1585103 8962419 10:48:59:534 ERRC\_CONN [NW->MS] ERRC\_RRCConnectionReconfiguration(EARFCN[1850], PCI[161])(measCfg:[1],mobCtrlInfo:[1],dedInfoNASList:[0],radioresCfgDed:[1],secCfgHO:[1])  OTA 1586952 8962826 10:48:59:534 ERRC\_CONN [MS->NW] ERRC\_RRCConnectionReconfigurationComplete(EARFCN[1650], PCI[160])  SYS 1587041 8962829 10:48:59:534 NIL [AT\_URC p39,ch1]+EREG: 1,"\*\*\*\*24","\*\*\*\*9B535",8192,0,0,0,0  SIP 15 8963282 10:48:59:741 [NW->MS][P1][S1]SIP/2.0 200 OK \*\*\* |

### 双卡热插拔后主卡不驻留5G-副卡Attach影响主卡上报NR测报

热插拔场景下，主卡先Attach，Attach流程完成后。网络配置NR测量配置。Modem开始副卡的Attach流程，这时主卡的NR测量配置无法正常上报，如果副卡Attach流程加IMS注册流程超过了3s，则主卡将会收到网络侧的删除测量配置消息导致添加NR连接失败。这是双卡限制导致的不驻留5G。主卡可以根据后续网络发送的NR测量配置，重新驻留到5G。

示例JIRA：UPGR5G-4270 FT\_J22-R\_BeiJing\_主卡卡1移动5GVoLTE+副卡卡2联通5GVoLTE, 飞模热插拔卡后5G被释放(1/5)\_0127

结论：副卡Attach和IMS注册影响了主卡发送NR测量报告，3s后网络删除NR测量配置导致驻留NR失败。

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| **在卡1配置NR测量的3s内，卡2正在执行Attach流程，占用RF，导致卡1无法上报**  Type Index Time Local Time Module Message Comment Time Differences  **// SIM卡插入**  PS 1490265 92369205 11:01:56:442 SIM\_HISR - SIM MSG\_ID\_SIM\_PLUG\_IN\_IND  PS 1490267 92369205 11:01:56:442 SIM\_HISR - SIM\_2 MSG\_ID\_SIM\_PLUG\_IN\_IND  OTA 1580544 92397458 11:01:58:245 EMM\_NASMSG [MS->NW] EMM\_Attach\_Request(EPS attach type="EMM\_ATTACH\_TYPE\_COMBINED\_ATTACH")  OTA 1615824 92419962 11:01:59:646 EMM\_NASMSG [NW->MS] EMM\_Attach\_Accept(EPS attach result="EMM\_ATTACH\_RESULT\_COMBINED\_ATTACHED")  OTA 1617381 92420047 11:01:59:646 EMM\_NASMSG [MS->NW] EMM\_Attach\_Complete  **// 网络配置卡1 NR测量配置**  OTA 1617942 92420332 11:01:59:646 ERRC\_CONN [NW->MS] ERRC\_**RRCConnectionReconfiguration**(EARFCN[1350], PCI[103])(measCfg:[1],mobCtrlInfo:[0],dedInfoNASList:[0],radioresCfgDed:[0],secCfgHO:[0])  Item 1  MeasObjectToAddMod  measObjectId: 2  measObject: measObjectNR-r15 (5)  measObjectNR-r15  carrierFreq-r15: 504990  rs-ConfigSSB-r15  measTimingConfig-r15  periodicityAndOffset-r15: sf20-r15 (2)  sf20-r15: 3  ssb-Duration-r15: sf5 (4)  subcarrierSpacingSSB-r15: kHz30 (1)  threshRS-Index-r15  nr-RSRP-r15: -121dBm <= SS-RSRP < -120dBm (36)  maxRS-IndexCellQual-r15: 8  quantityConfigSet-r15: 1  ..1. .... deriveSSB-IndexFromCell-r15: True  bandNR-r15: setup (1)  setup: 41  **// SIM2 Attach和添加NR连接**  OTA 1637859 92423087 11:01:59:846 EMM\_NASMSG\_2 [MS->NW] EMM\_Attach\_Request(EPS attach type="EMM\_ATTACH\_TYPE\_COMBINED\_ATTACH")  OTA 1664416 92435281 11:02:00:647 EMM\_NASMSG\_2 [NW->MS] EMM\_Attach\_Accept(EPS attach result="EMM\_ATTACH\_RESULT\_COMBINED\_ATTACHED")  OTA 1665833 92435399 11:02:00:647 EMM\_NASMSG\_2 [MS->NW] EMM\_Attach\_Complete  OTA 1700607 92446752 11:02:01:447 ERRC\_CONN\_2 [NW->MS] ERRC\_RRCConnectionReconfiguration(EARFCN[375], PCI[485])(measCfg:[0],mobCtrlInfo:[0],dedInfoNASList:[0],radioresCfgDed:[1],secCfgHO:[0])  OTA 1700791 92446806 11:02:01:447 NRRC\_2 [NW->MS] NR\_RRCReconfiguration (secondaryCellGroup[1], SCGreconfigurationWithSync[1], measConfig[1])  OTA 1700794 92446809 11:02:01:447 NRRC\_2 [NW->MS] NR\_RadioBearerConfig IE 2  OTA 1703391 92447160 11:02:01:447 NRRC\_SCG\_2 [MS->NW] SRB1\_NR\_RRCReconfiguration\_Complete  **// 卡1没有在3s内上报NR测量报告，网络删除NR测量配置**  OTA 1781276 92476435 11:02:03:253 ERRC\_CONN [NW->MS] ERRC\_RRCConnectionReconfiguration(EARFCN[1350], PCI[103])(measCfg:[1],mobCtrlInfo:[0],dedInfoNASList:[0],radioresCfgDed:[0],secCfgHO:[0])  measConfig  measObjectToRemoveList: 3 items  Item 0  **MeasObjectId: 2**  Item 1  MeasObjectId: 4  Item 2  MeasObjectId: 3  reportConfigToRemoveList: 1 item  Item 0  ReportConfigId: 3  measGapConfig: release (0)  release: NULL  s-Measure: -70dBm (70)  **// 在卡1配置NR测量的3s内，卡2正在执行Attach流程，占用RF，导致卡1无法上报**  PS 1631998 92422029 11:01:59:846 IMC\_2 [IMC-MNGR] Current RF owner: MSPM\_SIM2  PS 1759812 92472911 11:02:03:050 MSPM [MSPM] Current RF owner : MSPM\_SIM2, RF owner priority : 10, Dominator : MSPM\_IMS\_REG\_INITIAL |

### 双卡5G，副卡不开VoLTE时在重启后不驻留5G

示例JIRA：[UPGR5G-4334](https://jira.n.xiaomi.com/browse/UPGR5G-4334) FT\_J22-R\_NanJing\_卡1主卡移动5G VOLTE+卡2副卡联通5G，测试机重启后，副卡联通无法附着5G，切换数据主副卡恢复(偶现)(附录屏)\_0128

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| Type Index Time Local Time Module Message Comment Time Differences  SYS 2902666 2907531 15:55:15:257 NIL [AT\_RX p62,ch8]AT+EFUN=3  => Decode:Set functionaliy for multiple SIM project (Proprietary command) +EFUN  <efun\_state> : 3(SIM 1 2 Radio ON)  // 副卡Attach  OTA 2940752 2919552 15:55:16:057 EMM\_NASMSG\_2 [MS->NW] EMM\_Attach\_Request(EPS attach type="EMM\_ATTACH\_TYPE\_COMBINED\_ATTACH")  OTA 2954421 2931534 15:55:16:657 EMM\_NASMSG\_2 [NW->MS] EMM\_Attach\_Accept(EPS attach result="EMM\_ATTACH\_RESULT\_COMBINED\_ATTACHED")  OTA 2955805 2931657 15:55:16:857 EMM\_NASMSG\_2 [MS->NW] EMM\_Attach\_Complete  **// NR测量配置下发**  OTA 2956316 2931765 15:55:16:857 ERRC\_CONN\_2 [NW->MS] **ERRC\_RRCConnectionReconfiguration**(EARFCN[1650], PCI[451])(measCfg:[1],mobCtrlInfo:[0],dedInfoNASList:[0],radioresCfgDed:[0],secCfgHO:[0])  MeasObjectToAddMod  measObjectId: 2  measObject: measObjectNR-r15 (5)  measObjectNR-r15  carrierFreq-r15: 633984  rs-ConfigSSB-r15  measTimingConfig-r15  periodicityAndOffset-r15: sf20-r15 (2)  sf20-r15: 0  ssb-Duration-r15: sf5 (4)  subcarrierSpacingSSB-r15: kHz30 (1)  threshRS-Index-r15  nr-RSRP-r15: -140dBm <= SS-RSRP < -139dBm (17)  offsetFreq-r15: 0dB  quantityConfigSet-r15: 1  bandNR-r15: setup (1)  setup: 78  OTA 2970656 2935550 15:55:17:057 EMM\_NASMSG\_2 [MS->NW] EMM\_Tracking\_Area\_Update\_Request(EPS update type="EMM\_UPDATE\_TYPE\_COMBINED\_TAU", active flag="KAL\_FALSE")  OTA 2979329 2943597 15:55:17:457 EMM\_NASMSG\_2 [NW->MS] EMM\_Tracking\_Area\_Update\_Accept(EPS update result="EMM\_UPDATE\_RESULT\_COMBINED\_UPDATED")  OTA 2979773 2943638 15:55:17:457 EMM\_NASMSG\_2 [MS->NW] EMM\_Tracking\_Area\_Update\_Complete  **// RRC连接释放，在释放前副卡也未上报NR测量报告，需要MTK查看不上报NR测量报告的原因**  OTA 2982079 2944293 15:55:17:657 ERRC\_CONN\_2 [NW->MS] **ERRC\_RRCConnectionRelease**(EARFCN[1650], PCI[451])(cause:[ReleaseCause\_other], redirectInfo:[0]) |

### 亮屏触发5G能力开启导致来电无法接通

亮屏触发网络模式发生变化，会导致Modem重新搜网。这是小米内部的5G省电优化

[UPGR8250-11671](https://jira.n.xiaomi.com/browse/UPGR8250-11671) FT\_J3S-R\_ShenZhen\_卡1主卡电信5G VOLTE+卡2副卡联通4G VOLTE\_idle态\_MO端卡1打MT端的卡2时，MO端无提示然后自动挂断，MT端显示未接来电\_1/30

网络模式变化需要立即触发搜网，这是注册相关的流程比通话具有更高的优先级。

亮屏开5G这个功能不论在何时触发5G开关打开都有可能会遇到来电的场景，优化复杂，事倍功半。

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| Created By: Lulu Zheng (3/17/2021 6:00 AM)  Dear customer,  Whether Modem could abort this kind of system\_selection\_preference\_req when call is incoming or dialing?  >>no, phcmd 1 "CM\_PH\_CMD\_SYS\_SEL\_PREF" about mode\_pref change or here on nr5g\_disable\_mode change will triger service req is legacy design.  Our AP Screen on cause endc enable msg to Modem. AP may not know the calling state.  >>why app will set "CM\_PH\_CMD\_SYS\_SEL\_PREF" to change nr5g\_disable\_mode?  check log again, app set tdscdma\_band\_pref but without nr5g\_disable\_mode.  but log pint "qmi\_nas.c 16865] SA\_NSA switch hack here, use some specific values to indicate SA/NSA switch" seems your owner code change to let app change nr5g\_disable\_mode.  //nr5g\_disable\_mode change caused service req  03:10:31.405267 QMI\_MCS\_QCSI\_PKT Length: 55  nas\_set\_system\_selection\_preference\_reqTlvs[0] {  Type = 0x1D  Length = 8  tdscdma\_band\_pref {  tdscdma\_band\_pref = NAS\_TDSCDMA\_BAND\_A | NAS\_TDSCDMA\_BAND\_B | NAS\_TDSCDMA\_BAND\_C | NAS\_TDSCDMA\_BAND\_D | NAS\_TDSCDMA\_BAND\_E | NAS\_TDSCDMA\_BAND\_F | 0x40 | 0x80 | 0x100 | 0x200 | 0x400 | 0x800 | 0x1000 | 0x2000 | 0x4000 | 0x8000 | 0x10000 | 0x20000 | 0x40000 | 0x80000 | 0x100000 | 0x200000 | 0x400000 | 0x800000 | 0x1000000 | 0x2000000 | 0x4000000 | 0x8000000 | 0x20000000 | 0x40000000 | 0x80000000  03:10:31.405326 MMODE/STRM/Error/CM [ qmi\_nas.c 16865] SA\_NSA switch hack here, use some specific values to indicate SA/NSA switch/////////////////////  03:10:31.405337 MMODE/STRM/High/CM [ cm.c 24511] sys\_sel\_pref(), req\_id 0, CSG ID -1, CSG RAT -1 ,voice\_domain\_pref 4, emerg\_mode 2, nr5g\_disable\_mode 02  03:10:31.405360 MMODE/DEBUG/Low/CM [ cmdbg.c 5230] >>CMphcmd 1 : 17  03:10:31.405542 MMODE/STRM/High/CM [ cmph\_nr5g.c 1367] nr5g\_disable\_mode: current 1, new 0, sub 1 |

## CSFB通话结束后回LTE时间长

UE驻留在LTE（联合注册），未驻留VoLTE，拨打电话时通过ESR(Extended Service Request)消息通知网络，需要回落到CS域，向网络索要可用的CS域的频点，回落到CS域执行呼叫流程，呼叫结束后快速返回到LTE。接听电话时，MT端收到CS Paging或者是连接态下的CS Service Notification消息，MT端同样发送ESR消息，执行与MO端相同的回落流程，电话结束后同样要快速回到LTE。注意电信卡在SRLTE模式下，回落到CDMA 1X时也要发送ESR消息，但是不需要网络下发CDMA1X频点。

CSFB通话后，从CS域快速回到LTE的流程成为AFR。

AFR：Auto Fast Return，自动快速返回。

### CSFB到WCDMA回LTE慢

网络端下发RRC\_Signaling\_Connection\_Released或者RRC\_CONNECTION\_RELEASE慢导致AFR慢。只有处于空闲态的UE才能执行IRAT流程！！！

示例JIRA：UPGR5G-4064 FT\_G7-R\_NanJing\_卡一：移动VoLTE，主卡；卡二：联通4G；卡1打卡1，短通通话结束后MT端卡1返回LTE时间约为7秒\_1/20\_0119

从WCDMA挂断，到WCDMA到LTE的重选，中间经过了6s才开始。

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| Type Index Time Local Time Module Message Comment Time Differences  OTA 323689 292522763 14:44:08:361 CC\_2 [NW->MS] CC\_\_DISCONNECT  OTA 323707 292522768 14:44:08:361 CC\_2 [MS->NW] CC\_\_RELEASE  OTA 327029 292529013 14:44:08:761 CC\_2 [NW->MS] CC\_\_RELEASE\_COMPLETE // 这里挂断的  OTA 333901 292537761 14:44:09:161 ADR\_FDD\_2 [NW->MS] FDD\_RRC\_\_RADIO\_BEARER\_RELEASE  // 从WCDMA挂断，到WCDMA到LTE的重选，中间经过了6s才开始。  PS 354635 292622153 14:44:14:569 CSCE\_FDD\_2 [CSCE IR] IR to LTE is allowed  OTA 356342 292623010 14:44:14:769 ADR\_FDD\_2 [MS->NW] FDD\_RRC\_\_CELL\_UPDATE  **// AFR慢的原因是，WCDMA网络下发RRC Connection Release消息慢导致，需要该消息提供LTE频点，才能触发AFR流程。**  OTA 357300 292625640 14:44:14:970 ADR\_FDD\_2 [NW->MS] FDD\_RRC\_\_RRC\_CONNECTION\_RELEASE\_CCCH  PS 359881 292626261 14:44:14:970 ERRC\_CEL\_2 [CEL\_DI/LV] IR to LTE begin, type[IR\_TYPE\_REDIRECT(AFR)], source\_RAT[RAT\_TYPE\_UAS\_FDD]  OTA 362097 292629735 14:44:15:170 ERRC\_SYS\_2 [NW->MS] SystemInformationBlockType1 (EARFCN[1650], PCI[397])  PS 363212 292629980 14:44:15:170 ERRC\_CEL\_2 [CEL\_DI/LV] IR to LTE end--, type[IR\_TYPE\_REDIRECT(AFR)], source\_RAT[RAT\_TYPE\_UAS\_FDD], result[IR\_RESULT\_SUCCESS]  OTA 367927 292631570 14:44:15:170 EMM\_NASMSG\_2 [MS->NW] EMM\_Tracking\_Area\_Update\_Request(EPS update type="EMM\_UPDATE\_TYPE\_COMBINED\_TAU\_IMSI\_ATTACH", active flag="KAL\_TRUE")  OTA 374552 292640281 14:44:15:770 EMM\_NASMSG\_2 [NW->MS] EMM\_Tracking\_Area\_Update\_Accept(EPS update result="EMM\_UPDATE\_RESULT\_COMBINED\_UPDATED")  OTA 374811 292640333 14:44:15:770 EMM\_NASMSG\_2 [MS->NW] EMM\_Tracking\_Area\_Update\_Complete  **MTK补充Note：**  call end回到4G慢的原因是网络没有及时下发RRC\_Signaling\_Connection\_Released或者RRC\_CONNECTION\_RELEASE，造成重选启动的时机靠后以及无法启动敝司AFR快速回到4G。目前看是网络的原因，谢谢。  OTA 2141446 292529013 14:44:08:419 CC\_2 [NW->MS] CC\_\_RELEASE\_COMPLETE  OTA 2151666 292545292 14:44:09:419 ADR\_FDD\_2 [MS->NW] FDD\_RRC\_\_RADIO\_BEARER\_RELEASE\_COMPLETE  OTA 2171717 292625640 14:44:14:630 ADR\_FDD\_2 [NW->MS] FDD\_RRC\_\_RRC\_CONNECTION\_RELEASE\_CCCH |

### CSFB到GSM回LTE慢

GSM的RR连接长时间不被网络释放导致CSFB后会到LTE的时间长。只有处于空闲态的UE才能执行IRAT流程！！！

[UPGR7150R-4662](https://jira.n.xiaomi.com/browse/UPGR7150R-4662) F10\_R\_XA【Modem】关闭VOLTE，拨打电话CSFB回落GSM挂断电话后未快速返回到TD-LTE网络\_偶现\_V12.1.1.1.RFJMIXM

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| [0xB0ED] 10:13:50.365033 LTE NAS EMM Plain OTA Outgoing MessageExtended service request Msg1  [0x713A/005/036] 10:13:51.575040 CM\_SERVICE\_REQUEST Direction: MS To Network Length: 141  [0x713A/003/005] 10:13:52.843004 SETUP Direction: MS To Network Length: 341  [0x713A/003/002] 10:13:53.313217 CALL\_PROCEEDING Direction: Network To MS Length: 21  [0x713A/003/001] 10:13:57.035012 ALERTING Direction: Network To MS Length: 61  [0x713A/003/037] 10:14:13.728002 DISCONNECT Direction: MS To Network Length: 51  // 呼叫挂机  [0x713A/003/045] 10:14:13.959527 RELEASE Direction: Network To MS Length: 21  **[0x713A/003/042] 10:14:13.960002 RELEASE\_COMPLETE Direction: MS To Network Length: 21**  **// 挂机后，网络并未立即释放RR信道**  **// 呼叫结束后，收到网络侧短信**  [0x713A/009/001] 10:14:18.206013 SMS\_CP\_DATA Direction: Network To MS Length: 1681  [0x713A/009/004] 10:14:18.206013 SMS\_CP\_ACK Direction: MS To Network Length: 21  [0x713A/009/001] 10:15:09.464003 SMS\_CP\_DATA Direction: MS To Network Length: 91  [0x713A/009/001] 10:15:15.387306 SMS\_CP\_DATA Direction: Network To MS Length: 1681  [0x713A/009/004] 10:15:15.388022 SMS\_CP\_ACK Direction: MS To Network Length: 21  [0x713A/009/001] 10:15:15.469008 SMS\_CP\_DATA Direction: MS To Network Length: 91  [0x713A/009/004] 10:15:16.347306 SMS\_CP\_ACK Direction: Network To MS Length: 21  **// 网络释放RR信道，UE自此开始重回LTE**  **[0x5B2F/001/128] 10:15:16.956531 RR/DSDS RR/DCCH DL/Channel ReleaseLength: 24 1**  [0xB0C0/020/002/002] 10:15:17.260071 BCCH\_DL\_SCH / SystemInformationBlockType1Radio Bearer ID: 0, Freq: 3590, SFN: 5381  [0xB0ED] 10:15:17.296013 LTE NAS EMM Plain OTA Outgoing MessageTracking area update request Msg1  [0xB0EC] 10:15:17.484099 LTE NAS EMM Plain OTA Incoming MessageTracking area update accept Msg1  [0xB0ED] 10:15:17.488022 LTE NAS EMM Plain OTA Outgoing MessageTracking area update complete Msg1 |

## GSM通过过程中掉话整理

### 上行达到最大重传次数

MO GSM发送端发生多次重传没有收到网络响应而造成的掉话。MO端下行信噪比良好，上行消息网络未收到或者没有响应导致的掉话。GSM的发射或者网络问题。这里的相关概念需要查看GSM协议TS 44006等规范。

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| 1. UE initiated CSFB call at time 11:58:13:847 and call is also connected successfully but further N200 timeout occurred because L2 connection is not established.  2. Checked RX status, the average antenna power is ~-8x dbm which is good and RXQual is also good and also able to decode FACCH blocks successfully .  3.Checked TX status and observed that UE transmitting with TX power 33dbm and Timing Advance value is 4QB which indicates it is far from network point.  5.Due to bad TX quality, N200 timeout happened which leads to MO call drop .  It seems to be temporary network issue.  DUT Snippets:  Type Index Time Local Time Module Message Comment Time Differences  OTA 2895758 135051591 11:58:13:847 EMM\_NASMSG [MS->NW] EMM\_Extended\_Service\_Request(service type="MO\_CSFB", CSFB response="CSFB\_UNUSED")  OTA 2899636 135053680 11:58:13:847 ERRC\_CONN [NW->MS] ERRC\_RRCConnectionRelease(EARFCN[40940], PCI[438])(cause:[ReleaseCause\_other], redirectInfo:[1])  OTA 2917099 135156136 11:58:20:471 CC [MS->NW] CC\_\_SETUP  OTA 2923071 135203942 11:58:23:480 CC [NW->MS] CC\_\_CALL\_PROCEEDING  OTA 2929444 135251756 11:58:26:695 RRM\_TDD [NW->MS] RR\_\_ASSIGNMENT\_COMMAND  OTA 2929551 135252689 11:58:26:695 RRM\_TDD [MS->NW] RR\_\_ASSIGNMENT\_COMPLETE  OTA 2934973 135296576 11:58:29:502 CC [NW->MS] CC\_\_ALERTING  OTA 2939553 135332201 11:58:31:721 CC [NW->MS] CC\_\_CONNECT  OTA 2939555 135332202 11:58:31:721 CC [MS->NW] CC\_\_CONNECT\_ACKNOWLEDGE  PS 2940401 135335662 11:58:31:921 L1 - GISE\_TDD MSG\_ID\_MPHC\_SERV\_DEDI\_MEAS\_IND (rlac\_full\_in\_quarter\_dbm = -81dbm）  PS 2940948 135338111 11:58:32:122 L1 - GL1\_PCORE MSG\_ID\_MPHC\_MPAL\_FACCH\_DOWNLINK (is\_bad\_frame = 0x00 (KAL\_FALSE))  PS 2954703 135410662 11:58:36:723 GISE\_TDD - MPAL\_TDD MSG\_ID\_MPHC\_SERV\_DEDI\_MEAS\_IND (rlac\_full\_in\_quarter\_dbm = -80dbm)  PS 2957016 135422503 11:58:37:523 L1HISR - RRM\_TDD MSG\_ID\_LAPDM\_RR\_ERROR\_IND error\_cause = 0x02 (ERROR\_TIMER\_EXPD\_N200\_ABNORMAL\_REL) |

### GSM信噪比达到最差发生掉话

GSM的信噪比和信号强度通过UE上报的RR\_\_MEASUREMENT\_REPORT消息查看。

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| GSM A-I/F DTAP - Measurement Report  Protocol Discriminator: Radio Resources Management messages (6)  .... 0110 = Protocol discriminator: Radio Resources Management messages (0x6)  0000 .... = Skip Indicator: No indication of selected PLMN (0)  DTAP Radio Resources Management Message Type: Measurement Report (0x15)  Measurement Results  0... .... = BA-USED: 0  .0.. .... = DTX-USED: DTX was not used  ..01 1001 = RXLEV-FULL-SERVING-CELL: -86 <= x < -85 dBm (25)  0... .... = 3G-BA-USED: 0  .0.. .... = MEAS-VALID: The measurement results are valid  ..01 1001 = RXLEV-SUB-SERVING-CELL: -86 <= x < -85 dBm (25)  0... .... = SI23\_BA\_USED: 0  .111 .... = RXQUAL-FULL-SERVING-CELL: BER > 12.8%, Mean value 18.10% (7)  .... 111. = RXQUAL-SUB-SERVING-CELL: BER > 12.8%, Mean value 18.10% (7)  .... ...1 10.. .... = NO-NCELL-M: 6 neighbour cell measurement result (6)  ..10 0101 = RXLEV-NCELL: 37  0110 1... = BCCH-FREQ-NCELL: 13  .... .100 101. .... = BSIC-NCELL: 37  ...1 0001 0... .... = RXLEV-NCELL: 34  .000 10.. = BCCH-FREQ-NCELL: 2  .... ..00 1110 .... = BSIC-NCELL: 14  .... 1000 01.. .... = RXLEV-NCELL: 33  ..01 111. = BCCH-FREQ-NCELL: 15  .... ...1 0111 0... = BSIC-NCELL: 46  .... .011 110. .... = RXLEV-NCELL: 30  ...0 0110 = BCCH-FREQ-NCELL: 6  0011 11.. = BSIC-NCELL: 15  .... ..01 1101 .... = RXLEV-NCELL: 29  .... 1001 0... .... = BCCH-FREQ-NCELL: 18  .101 101. = BSIC-NCELL: 45  .... ...0 1110 1... = RXLEV-NCELL: 29  .... .010 10.. .... = BCCH-FREQ-NCELL: 10  ..01 0110 = BSIC-NCELL: 22 |

示例JIRA：UPGR5G-4219 FT\_J22-R\_Shenzhen\_卡1移动5G VoLTE+卡2移动5G,idle,南山大道桃园地铁站附近，卡二通话建立失败，MO端提示暂时无法接通(1/30)

结论：MT端卡2 CSFB到GSM后，信噪比达到最差，发送Paging Response后，网络未响应。MT中止被叫流程。MT端GSM网络信号差导致。

// MO CM CSFB GSM

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| // MT CM CSFB GSM  Type Index Time Local Time Module Message Comment Time Differences  OTA 1342237 142218007 12:13:55:097 EMM\_NASMSG\_2 [MS->NW] EMM\_Extended\_Service\_Request(service type="MT\_CSFB", CSFB response="CSFB\_ACCEPTED\_BY\_UE")  OTA 1346711 142220184 12:13:55:297 ERRC\_CONN\_2 [NW->MS] ERRC\_RRCConnectionRelease(EARFCN[1300], PCI[218])(cause:[ReleaseCause\_other], redirectInfo:[1])  OTA 1352639 142226340 12:13:55:747 RRM\_FDD\_2 [MS->NW] RR\_\_PAGING\_RESPONSE  // GSM信噪比达到最差  OTA 1360032 142383763 12:14:05:747 RRM\_FDD\_2 [MS->NW] RR\_\_MEASUREMENT\_REPORT  .111 .... = RXQUAL-FULL-SERVING-CELL: BER > 12.8%, Mean value 18.10% (7)  .... 111. = RXQUAL-SUB-SERVING-CELL: BER > 12.8%, Mean value 18.10% (7)  OTA 1360797 142413186 12:14:07:547 RRM\_FDD\_2 [MS->NW] RR\_\_MEASUREMENT\_REPORT  // MT端卡2 LU后终止了被叫呼叫建立流程  OTA 1379702 142510189 12:14:13:810 MM\_2 [MS->NW] MM\_\_LOCATION\_UPDATING\_REQUEST (LU type: MM\_NORMAL\_LU)  OTA 1385335 142543531 12:14:15:855 MM\_2 [NW->MS] MM\_\_LOCATION\_UPDATING\_ACCEPT  OTA 1445173 142675902 12:14:24:523 ERRC\_SYS\_2 [NW->MS] SystemInformationBlockType1 (EARFCN[1300], PCI[382])  OTA 1455592 142680125 12:14:24:723 EMM\_NASMSG\_2 [MS->NW] EMM\_Attach\_Request(EPS attach type="EMM\_ATTACH\_TYPE\_COMBINED\_ATTACH")  OTA 1463149 142690552 12:14:25:327 EMM\_NASMSG\_2 [NW->MS] EMM\_Attach\_Accept(EPS attach result="EMM\_ATTACH\_RESULT\_COMBINED\_ATTACHED")  OTA 1464599 142690622 12:14:25:327 EMM\_NASMSG\_2 [MS->NW] EMM\_Attach\_Complete |

### GSM网络临时错误导致呼叫中止

GSM呼叫过程中，网络异常发送DISCONNECT消息中止呼叫流程。此类问题为网络临时异常导致的呼叫失败。

示例JIRA：UPGR5G-4222 FT\_J22-R\_Shenzhen\_卡1移动5G VoLTE+卡2移动5G,PS，文新二路，卡二通话建立失败，MO端无提示自动挂断(1/20)

MO端GSM网路临时错误导致的呼叫挂断

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| // MO  Type Index Time Local Time Module Message Comment Time Differences  SYS 1698616 226797707 13:36:50:073 NIL [AT\_RX p46,ch14]ATD13715068430;  OTA 1702812 226798773 13:36:50:273 EMM\_NASMSG\_2 [MS->NW] EMM\_Extended\_Service\_Request(service type="MO\_CSFB", CSFB response="CSFB\_UNUSED")  OTA 1707752 226801080 13:36:50:273 ERRC\_CONN\_2 [NW->MS] ERRC\_RRCConnectionRelease(EARFCN[1300], PCI[447])(cause:[ReleaseCause\_other], redirectInfo:[1])  OTA 1721714 226853448 13:36:53:703 CC\_2 [MS->NW] CC\_\_SETUP  OTA 1723000 226868151 13:36:54:703 CC\_2 [NW->MS] CC\_\_CALL\_PROCEEDING  OTA 1734982 226948804 13:36:59:713 RRM\_FDD\_2 [MS->NW] RR\_\_MEASUREMENT\_REPORT  **// GSM网路临时错误导致的呼叫挂断**  OTA 1735770 226958967 13:37:00:513 CC\_2 [NW->MS] CC\_\_DISCONNECT  .010 1001 = DTAP Cause: Cause: (41) Temporary failure  OTA 1735798 226958970 13:37:00:513 CC\_2 [MS->NW] CC\_\_RELEASE  OTA 1736157 226961202 13:37:00:513 CC\_2 [NW->MS] CC\_\_RELEASE\_COMPLETE  OTA 1740968 226968156 13:37:01:113 ERRC\_SYS\_2 [NW->MS] SystemInformationBlockType1 (EARFCN[1300], PCI[447])  OTA 1750204 226969816 13:37:01:113 EMM\_NASMSG\_2 [MS->NW] EMM\_Tracking\_Area\_Update\_Request(EPS update type="EMM\_UPDATE\_TYPE\_COMBINED\_TAU", active flag="KAL\_FALSE")  OTA 1752467 226970805 13:37:01:113 EMM\_NASMSG\_2 [NW->MS] EMM\_Tracking\_Area\_Update\_Accept(EPS update result="EMM\_UPDATE\_RESULT\_COMBINED\_UPDATED") |

## CDMA 1X呼叫相关问题

### 收不到Page Response的确认Order

MT端收到Paging消息后，将发送Page Response给网络用于发起MT端的CDMA 1X呼叫建立。但是一直收不到网络侧对Page Response的确认响应Order(ack Page Response)，MT端总共发送18次，最后中止呼叫建立流程。

示例JIRA：UPGR5G-4141 FT\_G7-R\_ShenZhen\_MO卡1联通4G与MT卡1电信4G短通测试\_MO卡1拨打MT卡1，MO提示“您所拨打的电话暂时无法接通，请稍后再拨”（rate：2/20）\_0121

结论：**MT端收到了Paging消息，发送给网络的Page Response，一直收不到网络侧的Ack Order，MT重发18次，均未收到网络侧的确认消息。MT端CDMA网络问题。**

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| // MO CU CSFB WCDMA  Type Index Time Local Time Module Message Comment Time Differences  SYS 41383 286164027 14:46:29:227 NIL [AT\_RX p35,ch3]ATD13371755297;  OTA 43094 286164431 14:46:29:227 EMM\_NASMSG [MS->NW] EMM\_Extended\_Service\_Request(service type="MO\_CSFB", CSFB response="CSFB\_UNUSED")  OTA 57847 286184652 14:46:30:641 CC [MS->NW] CC\_\_SETUP  OTA 58831 286186508 14:46:30:641 CC [NW->MS] CC\_\_CALL\_PROCEEDING  OTA 138645 286332915 14:46:40:042 CC [NW->MS] CC\_\_ALERTING  OTA 450646 286823310 14:47:11:446 CC [MS->NW] CC\_\_DISCONNECT  OTA 451686 286826048 14:47:11:646 CC [NW->MS] CC\_\_RELEASE  OTA 451689 286826050 14:47:11:646 CC [MS->NW] CC\_\_RELEASE\_COMPLETE  OTA 460181 286835755 14:47:12:246 ERRC\_SYS [NW->MS] SystemInformationBlockType1 (EARFCN[1650], PCI[252])  OTA 466464 286837404 14:47:12:446 EMM\_NASMSG [MS->NW] EMM\_Tracking\_Area\_Update\_Request(EPS update type="EMM\_UPDATE\_TYPE\_COMBINED\_TAU\_IMSI\_ATTACH", active flag="KAL\_FALSE")  OTA 481441 286883053 14:47:15:249 EMM\_NASMSG [NW->MS] EMM\_Tracking\_Area\_Update\_Accept(EPS update result="EMM\_UPDATE\_RESULT\_COMBINED\_UPDATED")  OTA 481761 286883109 14:47:15:249 EMM\_NASMSG [MS->NW] EMM\_Tracking\_Area\_Update\_Complete  // MT CT CDMA 1X  Type Index Time Local Time Module Message Comment Time Differences  OTA 73589 286209950 14:46:39:987 CPSW [NW->MS] C2K1XRTT CP\_GENERAL\_PAGE\_MESSAGE  OTA 74579 286210036 14:46:39:987 EMM\_NASMSG [MS->NW] EMM\_Extended\_Service\_Request(service type="MT\_CSFB", CSFB response="CSFB\_ACCEPTED\_BY\_UE")  OTA 78842 286212496 14:46:40:188 CPSW [MS->NW] C2K1XRTT CP\_ACH\_PAGE\_RESPONSE  OTA 80002 286221862 14:46:40:791 CPSW [MS->NW] C2K1XRTT CP\_ACH\_PAGE\_RESPONSE  OTA 81602 286237503 14:46:41:792 CPSW [MS->NW] C2K1XRTT CP\_ACH\_PAGE\_RESPONSE  OTA 82959 286250006 14:46:42:592 CPSW [MS->NW] C2K1XRTT CP\_ACH\_PAGE\_RESPONSE  OTA 84583 286265629 14:46:43:593 CPSW [MS->NW] C2K1XRTT CP\_ACH\_PAGE\_RESPONSE  OTA 85566 286275003 14:46:44:193 CPSW [MS->NW] C2K1XRTT CP\_ACH\_PAGE\_RESPONSE  OTA 88148 286296881 14:46:45:593 CPSW [MS->NW] C2K1XRTT CP\_ACH\_PAGE\_RESPONSE  OTA 89176 286306254 14:46:46:193 CPSW [MS->NW] C2K1XRTT CP\_ACH\_PAGE\_RESPONSE  OTA 91085 286321878 14:46:47:201 CPSW [MS->NW] C2K1XRTT CP\_ACH\_PAGE\_RESPONSE  OTA 92434 286331255 14:46:47:806 CPSW [MS->NW] C2K1XRTT CP\_ACH\_PAGE\_RESPONSE  OTA 94079 286346881 14:46:48:807 CPSW [MS->NW] C2K1XRTT CP\_ACH\_PAGE\_RESPONSE  OTA 95670 286356253 14:46:49:407 CPSW [MS->NW] C2K1XRTT CP\_ACH\_PAGE\_RESPONSE  OTA 98462 286381255 14:46:51:007 CPSW [MS->NW] C2K1XRTT CP\_ACH\_PAGE\_RESPONSE  OTA 99522 286390628 14:46:51:607 CPSW [MS->NW] C2K1XRTT CP\_ACH\_PAGE\_RESPONSE  OTA 101176 286406254 14:46:52:612 CPSW [MS->NW] C2K1XRTT CP\_ACH\_PAGE\_RESPONSE  OTA 103124 286421878 14:46:53:612 CPSW [MS->NW] C2K1XRTT CP\_ACH\_PAGE\_RESPONSE  OTA 104118 286431253 14:46:54:212 CPSW [MS->NW] C2K1XRTT CP\_ACH\_PAGE\_RESPONSE  OTA 105789 286446878 14:46:55:212 CPSW [MS->NW] C2K1XRTT CP\_ACH\_PAGE\_RESPONSE  OTA 110863 286465383 14:46:56:420 ERRC\_SYS [NW->MS] SystemInformationBlockType1 (EARFCN[2452], PCI[355])  OTA 115140 286467015 14:46:56:420 EMM\_NASMSG [MS->NW] EMM\_Tracking\_Area\_Update\_Request(EPS update type="EMM\_UPDATE\_TYPE\_TAU", active flag="KAL\_TRUE")  OTA 116991 286468121 14:46:56:621 EMM\_NASMSG [NW->MS] EMM\_Tracking\_Area\_Update\_Accept(EPS update result="EMM\_UPDATE\_RESULT\_TA\_UPDATED")  OTA 117367 286468185 14:46:56:621 EMM\_NASMSG [MS->NW] EMM\_Tracking\_Area\_Update\_Complete |

### CDMA 1X通话下行接收出现噪音分析

CDMA 1X通话下行出现明显噪音，对端发送语音正常。需要查看CDMA 1X异常端的FCCH解码是否正常。

示例JIRA：[UPGR5G-4331](https://jira.n.xiaomi.com/browse/UPGR5G-4331) FT\_J22\_BeiJing\_主卡卡一CT 5G + 副卡卡二CT 4G VOLTE，PS，MO端卡1打MT端卡2，MO端通话有杂音(1/20)\_0128

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| // MO CT5G CSFB CDMA 1X  Type Index Time Local Time Module Message Comment Time Differences  SYS 2814887 195477675 15:10:10:570 NIL [AT\_RX p41,ch3]ATD17710919041;  OTA 2819338 195478460 15:10:10:570 EMM\_NASMSG [MS->NW] EMM\_Extended\_Service\_Request(service type="MO\_CSFB", CSFB response="CSFB\_UNUSED")  OTA 2827027 195487575 15:10:11:173 CPSW [MS->NW] C2K1XRTT CP\_ACH\_ORIGINATION  OTA 2831491 195499752 15:10:11:979 CPSW [MS->NW] C2K1XRTT CP\_ACH\_ORIGINATION  OTA 2833203 195508863 15:10:12:582 CPSW [NW->MS] C2K1XRTT CP\_MEID\_EXT\_CHANNEL\_ASSIGN\_MESSAGE  OTA 2834348 195515169 15:10:12:983 CPSW [NW->MS] C2K1XRTT CP\_FTC\_SERVICE\_CONNECT\_MESSAGE  OTA 2834403 195515175 15:10:12:983 CPSW [MS->NW] C2K1XRTT CP\_RTC\_SERVICE\_CONNECT\_COMPLETION\_MESSAGE  OTA 2922738 195776028 15:10:29:586 CPSW [MS->NW] C2K1XRTT CP\_RTC\_ORDER\_MESSAGE  SYS 2922929 195776056 15:10:29:586 NIL [AT\_URC p39,ch1]+ECPI: 1,133,0,0,0,40,"17710919041",129,"",29  => Decode:Call Progress Information +ECPI  <call\_id> : 1  <msg\_type> : 133(State: Disconnected)  <is\_ibt, in band tone> : 0(NO)  <is\_tch> : 0(NO)  <dir> : 0(MO Call)  <call\_mode> : 40(UNKNOW)  <number> : "17710919041"  <call\_type> : 129(National)  <pau, P asserted URI> : ""  <disconnect cause> : 29  **从modem处理来看1x 前向接收FFCH译码完全正常，整通1x call只错了6帧FFCH，不会影响到语音质量的. 1x modem侧处理无异常.**  629382, 2628645, 195775793, 15:10:29:497 2021/01/28, MOD\_LMD, MOD\_SYSTEM, INVALID\_SAP, **MSG\_ID\_UTS\_LMD\_FWD\_STATS\_MSG**      Local\_Parameter --> Len = 36, Addr = 0x29B5AFF8          uts\_lmd\_fwd\_stats\_msg\_struct = (struct)              ref\_count = 0x01              lp\_reserved = 0x45              msg\_len = 0x0024              msg = (struct)                  FSYNCT = 0x00000000                  FPAGET = 0x00000001                  FFCHT = 0x00000351  即849 // FFCH的总帧数                  FSCHT = 0x00000000                  FSYNCB = 0x00000000                  FPAGEB = 0x00000000                  FFCHB = 0x00000006   即6 // FFCH的错误帧数                  FSCHB = 0x00000000      Peer\_Message --> Len = 0, Addr = 0x00000000  OTA 2924426 195779544 15:10:29:986 CPSW [NW->MS] C2K1XRTT CP\_FTC\_ORDER\_MESSAGE |

## CDMA驻网相关问题

### 从CDMA重选到LTE时间长

从CDMA到LTE，没有互操作的接口。CDMA的系统消息中没有LTE相关的邻区相关消息。只能通过RAT的高优先级重选来达到切换到LTE驻留的目的。高通的Modem中，从CDMA重选到LTE，设置了3min的定时器，定时器到了才会发起LTE重选。

示例JIRA：[UPGR710R-1387](https://jira.n.xiaomi.com/browse/UPGR710R-1387) [F3B\_R\_CN][Modem]偶现\_电信卡由3G环境下回网到4G环境，回网时间过长，约3min

**结论：需要等待CDMA上驻留时间达到3min才会发起向LTE的重选。**

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| [0x1006/001] 07:36:01.316978 SYNC CHANNEL/Sync Channel MsgLength: 44  [0x1006/001] 07:36:14.783655 SYNC CHANNEL/Sync Channel MsgLength: 44  [ 15/ 2] 07:36:15.245000 CDMA System Determination/High[ sdss.c 21185] \*\* Activate internal script = ssscr\_int\_resel\_none \*\* on sub 1 stk 0 2  [ 15/ 2] 07:36:15.245000 CDMA System Determination/High[ sdss.c 39687] \*\* Activate called script = ssscr\_called\_resel\_none \*\* on sub 1 stk 0 2  [ 15/ 2] 07:36:15.246016 CDMA System Determination/High[ sdss.c 39687] \*\* Activate called script = ssscr\_called\_resel\_init\_to\_norm \*\* on sub 1 stk 0 2  **// 开启180s定时器**  **[ 15/ 2] 07:36:15.246016 CDMA System Determination/High[ sdcmd.c 10300] =SD= Timerset: SS-Timer on ss0:=180s or 180000ms, uptime=2375s, exp=2555s, sub 1 2**  [0x1004/001] 07:36:42.770014 ACCESS CHANNEL/Registration MsgLength: 44  [0x1007/007] 07:36:43.242504 PAGING CHANNEL/Order Msg Length: 30  [0xB0C0/020/002/002] 07:37:26.906254 BCCH\_DL\_SCH / SystemInformationBlockType1Radio Bearer ID: 0, Freq: 1650, SFN: 370 1  [0xB0ED] 07:37:43.752001 LTE NAS EMM Plain OTA Outgoing MessageService Request Msg 1    **//  SS(System Selection) Timer 180s超时后，Sub2重选到LTE**  [0xB0C0/020/002/002] 07:39:15.396012 BCCH\_DL\_SCH / SystemInformationBlockType1Radio Bearer ID: 0, Freq: 100, SFN: 596 2    [ 15/ 2] 07:41:09.943025 CDMA System Determination/High[ sdcmd.c 10300] =SD= Timerset: SS-Timer on ss0:=180s or 180000ms, uptime=2669s, exp=2849s, sub 1 2 |

## WCDMA相关问题

### WCDMA在通话过程中不能并发数据业务

#### 网络未配置数据DRB

**网络通过Radio Bearer Setup消息指示当前是否支持数据收发，如果将NumberOfTransportBlocks设置为0，则表示当前不支持数据收发。**

**搜索方法：**

**在PS Integrated界面中搜索**：HSDPA reception 。HSDPA reception stops地方存在网络删除HSDPA和HSUPA的操作。

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| Type Index Time Local Time Module Message Comment Time Differences  PS 54370 4267095023 18:13:57:242 RRCE\_FDD\_2 HSDPA reception starts.  OTA 180591 4267881560 18:14:47:649 CC\_2 [NW->MS] CC\_\_CALL\_PROCEEDING  OTA 183213 4267897186 18:14:48:649 ADR\_FDD\_2 [NW->MS] FDD\_RRC\_\_RADIO\_BEARER\_SETUP  PS 183252 4267897207 18:14:48:649 RRCE\_FDD\_2 HSDPA reception stops. // 这里网络停止了数据传输  PS 422617 4268642205 18:15:36:253 RRCE\_FDD\_2 HSDPA reception starts. |

示例JIRA：[UPGR5G-2910](https://jira.n.xiaomi.com/browse/UPGR5G-2910) FT\_J10-R\_HangZhou\_卡1联通5G或者3G，卡2联通4GVolte，卡1通话中数据无法使用，挂断电话后数据正常,必现

W是可以数据和语音并发，并发需要通过网络配置才可行。

打电话过程中无法使用数据是因为网络在此时将上下行速率配置为0了。

电话挂断之后进行重配之后恢复，属于网络问题，可以使用对比机做对比验证。最后对比机也是无法上网。

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| Type Index Time Local Time Module Message Comment Time Differences  OTA 1154594 22875741 13:02:54:680 SM [MS->NW] SM\_\_ACTIVATE\_PDP\_CONTEXT\_REQUEST  OTA 1155073 22880887 13:02:55:080 ADR\_FDD [NW->MS] FDD\_RRC\_\_RADIO\_BEARER\_SETUP rb-Identity = 5  OTA 1155737 22886122 13:02:55:280 ADR\_FDD [MS->NW] FDD\_RRC\_\_RADIO\_BEARER\_SETUP\_COMPLETE  OTA 1157359 22894791 13:02:55:882 SM [NW->MS] SM\_\_ACTIVATE\_PDP\_CONTEXT\_ACCEPT  OTA 1305661 23230707 13:03:17:299 MM [MS->NW] MM\_\_CM\_SERVICE\_REQUEST  OTA 1312749 23249174 13:03:18:499 CC [MS->NW] CC\_\_SETUP  **// 通话过程中，网络将MO端WCDMA的Radio Bearer的上下行速率设置为0，禁止了数据业务的并发行为**  OTA 1324868 23279166 13:03:20:499 ADR\_FDD [NW->MS] FDD\_RRC\_\_RADIO\_BEARER\_SETUP UL-AddReconfTransChInformation-r8: dch-usch (0)  dch-usch  ul-TransportChannelType: dch (0)  transportChannelIdentity: 21  transportFormatSet: **dedicatedTransChTFS** (0)  dedicatedTransChTFS  tti: tti40 (2)  tti40: 1 item  Item 0  DedicatedDynamicTF-Info  rlc-Size: octetModeType1 (1)  octetModeType1: sizeType2 (1)  sizeType2  part1: 2  numberOfTbSizeList: 1 item  Item 0  NumberOfTransportBlocks: zero (0)  zero: NULL  logicalChannelList: allSizes (0)  allSizes: NULL  semistaticTF-Information  channelCodingType: turbo (2)  turbo: NULL  rateMatchingAttribute: 140  crc-Size: crc16 (3)  dl-CommonTransChInfo  modeSpecificInfo: fdd (0)  fdd  dl-Parameters: sameAsUL (1)  sameAsUL: NULL  PS 1327273 23289297 13:03:21:099 SLCE\_FDD - URLC\_FDD MSG\_ID\_FDD\_CRLC\_PS\_RATE\_INFO\_REQ UL\_rate[0] = 0x00000000 DL\_rate[0] = 0x00000000  OTA 1327360 23289301 13:03:21:099 ADR\_FDD [MS->NW] FDD\_RRC\_\_RADIO\_BEARER\_SETUP\_COMPLETE  OTA 1330638 23294797 13:03:21:499 CC [NW->MS] CC\_\_CONNECT  OTA 1330641 23294797 13:03:21:499 CC [MS->NW] CC\_\_CONNECT\_ACKNOWLEDGE  OTA 1370034 23450963 13:03:31:499 CC [MS->NW] CC\_\_DISCONNECT  OTA 1371303 23455422 13:03:31:699 CC [NW->MS] CC\_\_RELEASE  OTA 1386650 23491042 13:03:34:099 ADR\_FDD [NW->MS] FDD\_RRC\_\_RADIO\_BEARER\_RECONFIGURATION  OTA 1388053 23498625 13:03:34:499 ADR\_FDD [MS->NW] FDD\_RRC\_\_RADIO\_BEARER\_RECONFIGURATION\_COMPLETE |

#### 网络去激活了PDP导致W上不并发PS

[UPGRADE845-9257](https://jira.n.xiaomi.com/browse/UPGRADE845-9257) [E5\_Q\_CN\_XA\_RH][Modem]联通卡CSFB通话出现断流现象\_1/5\_V12.5.0.1.QEECNXM

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| 2021 Apr 28 03:38:26.276 [2B] 0xB0ED LTE NAS EMM Plain OTA Outgoing Message -- Extended service request Msg  2021 Apr 28 03:38:26.304 [45] 0xB0C0 LTE RRC OTA Packet -- DL\_DCCH / RRCConnectionRelease  2021 Apr 28 03:38:27.078 [C1] 0x713A UMTS UE OTA -- CM\_SERVICE\_REQUEST  2021 Apr 28 03:38:27.554 [F1] 0x713A UMTS UE OTA -- SETUP  2021 Apr 28 03:38:27.703 [00] 0x713A UMTS UE OTA -- CALL\_PROCEEDING  2021 Apr 28 03:38:28.825 [70] 0x713A UMTS UE OTA -- ALERTING  // 振铃期间，网络去激活了PDP承载  2021 Apr 28 03:38:29.985 [E4] 0x713A UMTS UE OTA -- SM\_DEACTIVATE\_PDP\_CONTEXT\_REQUEST  sm\_cause\_val = 32 (0x20) (SO not supported)  2021 Apr 28 03:38:29.985 [E4] 0x713A UMTS UE OTA -- SM\_DEACTIVATE\_PDP\_CONTEXT\_ACCEPT  2021 Apr 28 03:38:35.585 [14] 0x713A UMTS UE OTA -- CONNECT  2021 Apr 28 03:38:35.586 [14] 0x713A UMTS UE OTA -- CONNECT\_ACKNOWLEDGE  // 请求激活PDP  2021 Apr 28 03:38:40.946 [2C] 0x713A UMTS UE OTA -- SM\_ACTIVATE\_PDP\_CONTEXT\_REQUEST  acc\_pt\_name\_val[1] = 51 (0x33) (3)  acc\_pt\_name\_val[2] = 71 (0x47) (G)  acc\_pt\_name\_val[3] = 78 (0x4e) (N)  acc\_pt\_name\_val[4] = 69 (0x45) (E)  acc\_pt\_name\_val[5] = 84 (0x54) (T)  2021 Apr 28 03:38:47.944 [E8] 0x713A UMTS UE OTA -- SM\_ACTIVATE\_PDP\_CONTEXT\_ACCEPT  2021 Apr 28 03:38:52.505 [B0] 0x713A UMTS UE OTA -- DISCONNECT  2021 Apr 28 03:38:52.506 [B0] 0x713A UMTS UE OTA -- RELEASE |

### WCDMA RLF导致的掉话

在WCDMA RAT上通话过程中，W的信噪比非常差发生RLF，最后导致的掉话问题，这属于W的网络覆盖问题。

示例JIRA：UPGR5G-4301 FT\_J22\_BeiJing\_主卡卡一CU 5G VOLTE + 副卡卡二CU 5G VOLTE，PS，MO端卡1打MT端卡1进行通话长保，MO端和MT端同时掉话(1/40min)\_0127

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| MT端CSFB到WCMA上进行电话业务，由于W信号差发生RLF导致了掉话。网络发送BYE给MO端，终止MO端的通话。  // MO CU VoLTE  Type Index Time Local Time Module Message Comment Time Differences  SYS 432438 337029480 15:36:48:420 NIL [AT\_RX p41,ch3]ATD18514648187;  SIP 8 337029992 15:36:48:620 [MS->NW][P1][S1]INVITE tel:18514648187;phone-context=ims.mnc001.mcc460.3gppnetwork.org SIP/2.0  SIP 9 337033109 15:36:48:820 [NW->MS][P1][S1]SIP/2.0 100 Trying  SIP 26 338462341 15:38:20:228 [NW->MS][P1][S1]BYE sip:+8615501230283@[2408:8509:2400:360A:165E:0688:B931:B790]:50042 SIP/2.0  SIP 27 338462586 15:38:20:228 [MS->NW][P1][S1]SIP/2.0 200 OK  // MT  MT端网络通过CS Service Notification通知来电，以CSFB的方式进行接听  OTA 416722 337059419 15:36:50:023 EMM\_NASMSG [NW->MS] EMM\_CS\_Service\_Notification(paging identity="TMSI\_PAGING\_TYPE")  OTA 417648 337059476 15:36:50:023 EMM\_NASMSG [MS->NW] EMM\_Extended\_Service\_Request(service type="MT\_CSFB", CSFB response="CSFB\_ACCEPTED\_BY\_UE")  OTA 428225 337076011 15:36:51:047 MM [MS->NW] MM\_\_PAGING\_RESPONSE  OTA 435913 337090531 15:36:52:048 CC [NW->MS] CC\_\_SETUP  OTA 436213 337090634 15:36:52:048 CC [MS->NW] CC\_\_CALL\_CONFIRMED  OTA 438847 337106007 15:36:53:049 CC [MS->NW] CC\_\_ALERTING  OTA 446643 337145082 15:36:55:450 CC [MS->NW] CC\_\_CONNECT  OTA 447397 337148497 15:36:55:650 CC [NW->MS] CC\_\_CONNECT\_ACKNOWLEDGE  **//EcN0非常差，小于-15**  PS 997409 338416947 15:38:16:859 MEME\_FDD MEME: PSC 111, RSCP -79 (-78), EcN0 -21 (-20), RRC\_FDD\_DB\_CellType\_monitored, SyncInfo(1), TM(32267), OFF(148), CIO 0, dbIdx 93, active 1  PS 999479 338421635 15:38:17:259 MEME\_FDD MEME: PSC 111, RSCP -74 (-74), EcN0 -15 (-15), RRC\_FDD\_DB\_CellType\_monitored, SyncInfo(1), TM(32269), OFF(148), CIO 0, dbIdx 93, active 1  PS 999480 338421635 15:38:17:259 MEME\_FDD MEME: PSC 297, RSCP -75 (-75), EcN0 -17 (-15), RRC\_FDD\_DB\_CellType\_monitored, SyncInfo(1), TM(29945), OFF(144), CIO 0, dbIdx 134, active 1  **// MT端信号差，发生了RLF导致掉话**  PS 1000043 338422880 15:38:17:259 UL1 - RRCE\_FDD MSG\_ID\_FDD\_CPHY\_RL\_FAILURE\_IND  OTA 1005616 338430804 15:38:17:859 ADR\_FDD [MS->NW] FDD\_RRC\_\_CELL\_UPDATE  cellUpdateCause: radiolinkFailure (5)  OTA 1009896 338447355 15:38:18:859 ADR\_FDD [MS->NW] FDD\_RRC\_\_CELL\_UPDATE  cellUpdateCause: radiolinkFailure (5)  **// RRC信道释放，MT端掉话**  OTA 1010292 338449220 15:38:18:859 ADR\_FDD [NW->MS] FDD\_RRC\_\_RRC\_CONNECTION\_RELEASE\_CCCH  SYS 1011368 338449592 15:38:19:059 NIL [ATP\_U\_0]+ECPI: 1,133,,,,0,"",,"",2165  => Decode:Call Progress Information +ECPI  <call\_id> : 1  <msg\_type> : 133(State: Disconnected)  <is\_ibt, in band tone> : (NO INPUT)  <is\_tch> : (NO INPUT)  <dir> : (NO INPUT)  <call\_mode> : 0(CS\_VOICE\_CALL)  <number> : ""  <call\_type> : (NO INPUT)  <pau, P asserted URI> : ""  <disconnect cause> : 2165  OTA 1014552 338451611 15:38:19:059 ERRC\_SYS [NW->MS] SystemInformationBlockType1 (EARFCN[1650], PCI[126])  OTA 1025418 338454365 15:38:19:259 EMM\_NASMSG [MS->NW] EMM\_Tracking\_Area\_Update\_Request(EPS update type="EMM\_UPDATE\_TYPE\_COMBINED\_TAU", active flag="KAL\_TRUE")  OTA 1034806 338461962 15:38:19:859 EMM\_NASMSG [NW->MS] EMM\_Tracking\_Area\_Update\_Accept(EPS update result="EMM\_UPDATE\_RESULT\_COMBINED\_UPDATED")  OTA 1035268 338462006 15:38:19:859 EMM\_NASMSG [MS->NW] EMM\_Tracking\_Area\_Update\_Complete |

## 主叫呼叫失败各类原因整理

## 被叫收不到Paging消息

### TMSI变化导致收不到Paging消息

网络寻呼MT端UE是通过TMSI/5G-TMSI来寻呼，如果在呼叫时间点附近正好发生了TAU/5G移动性更新注册，且发生了TMSI变化，则网络大概率无法成功寻呼到MT端UE。

举例：例如UE在TAC A中注册成功且网络下发的TA List中只有TAC A。如果UE此时移动到了TAC B，TAC B不在TA List中，UE需要发起TAU/5G Registration，此时UE还未更新位置TAC B到网络，所以网络只会在之前UE注册的TAC A中寻呼，这时UE在TAC B中肯定无法接收到Paging消息。

所在区域

注册区域

UE

UE

此类问题是UE侧与网络侧存储的UE TMSI不相同导致的协议固有问题，无法避免。

示例JIRA：UPGR5G-4214 FT\_J22-R\_Shenzhen\_卡1移动5G VoLTE+卡2移动5G,idle,主卡卡一通话建立失败，MO端提示暂时无法接通(3/30)

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| MT端在呼叫时间点附近执行了注册更新流程，网络重新分配了5G-TMSI，这导致MT端卡1无法使用老的5G-TMSI寻呼成功。  // MO CM VOLTE  SYS 137390 129437753 11:52:59:002 NIL [AT\_RX p41,ch3]ATD19892871273;  SIP 0 129446220 11:52:59:457 [MS->NW][P1][S1]INVITE tel:19892871273;phone-context=ims.mnc007.mcc460.3gppnetwork.org SIP/2.0  SIP 1 129450973 11:52:59:857 [NW->MS][P1][S1]SIP/2.0 100 Trying  SIP 7 129816939 11:53:23:091 [NW->MS][P1][S1]SIP/2.0 181 Call Is Being Forwarded // 呼叫转接到服务台  SIP 10 129836111 11:53:24:491 [NW->MS][P1][S1]SIP/2.0 180 Ringing  SIP 13 129976154 11:53:33:291 [MS->NW][P1][S1]CANCEL tel:19892871273;phone-context=ims.mnc007.mcc460.3gppnetwork.org SIP/2.0  SIP 14 129976809 11:53:33:491 [NW->MS][P1][S1]SIP/2.0 200 OK  SIP 15 129976902 11:53:33:491 [NW->MS][P1][S1]SIP/2.0 487 Request Terminated  SIP 16 129976904 11:53:33:491 [MS->NW][P1][S1]ACK tel:19892871273;phone-context=ims.mnc007.mcc460.3gppnetwork.org SIP/2.0  // MT端在呼叫时间点附近执行了注册更新流程，网络重新分配了5G-TMSI，这导致MT端卡1无法使用老的5G-TMSI寻呼成功。  Type Index Time Local Time Module Message Comment Time Differences  OTA 387797 122462212 11:52:51:192 VGMM [MS->NW] 5GMM\_REGISTRATION\_REQUEST (registration type: MOBILITY\_REGISTRATION\_UPDATING, FOR bit: 0, ng\_ran\_rcu: 0, NAS message container included: KAL\_TRUE)  .... .010 = 5GS registration type: mobility registration updating (2)  5G-TMSI: 0x458d6ed5  OTA 391167 122463841 11:52:51:393 VGMM [NW->MS] 5GMM\_REGISTRATION\_ACCEPT  5G-TMSI: 0x5ca6ca1d  OTA 391245 122463851 11:52:51:393 VGMM [MS->NW] 5GMM\_REGISTRATION\_COMPLETE  OTA 392763 122464303 11:52:51:393 NRRC [NW->MS] NR\_RRCRelease (NARFCN[504990], PCI[186]) (redirectedCarrierInfo[0], suspendConfig[0]) |

## 多方通话问题

### 多方通话合并失败

多方通话合并失败问题排查逻辑：

1. 确认合并过程中是否存在拒绝等消息。
2. 确认合并过程中的专有承载建立情况是否正常。

[UPGR7150R-5213](https://jira.n.xiaomi.com/browse/UPGR7150R-5213) [F4L\_R\_EU\_XA\_RH][Modem]合并通话失败后，测试机A(电信)与辅助机C通话无声，恢复后电话自动挂断，A与B继续通话\_偶现\_V12.5.1.0.RFNEUXM

合并过程中，网络给C端发送183消息，其中**Reason: Q.850;cause=21;text="Call rejected",SIP;cause=403，导致合并失败。**

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| **n/w reject it by text="Call rejected",SIP;cause=403, in 183 message when DUT A merge call. hence conference call failed.**  Did you try REF with same card in same place?  131719 2021 Jun 11 08:07:42.798062 [4B] 0x1544 QMI\_MCS\_QCSI\_PKT Service\_VOICE voice\_manage\_ip\_calls  131721 MsgType = Request  131732 voice\_manage\_ip\_calls\_reqTlvs[0] {  131736 sups\_type = VOIP\_SUPS\_TYPE\_MAKE\_CONFERENCE\_CALL  2021 Jun 11 08:07:43.913082 [59] 0x156E IMS SIP Message – IMS\_SIP\_INVITE/SESSION\_PROGRESS  Subscription ID = 1  Version = 1  Direction = NETWORK\_TO\_UE  SDP Presence = 1  SIP Call ID Length = 61  SIP Message Length = 1153  SIP Message Logged Bytes = 1154  Message ID = IMS\_SIP\_INVITE  **Response Code = SESSION\_PROGRESS (183)**  CM Call ID = 7  SIP Call ID = 1764005573\_3102829196@240e:557:1000:1dd3:8a64:f1dc:dd31:cc2d  Sip Message = SIP/2.0 183 Session Progress  Via: SIP/2.0/TCP [240E:0557:1000:1DD3:8A64:F1DC:DD31:CC2D]:43337;branch=z9hG4bK2382167643  Record-Route: <sip:[240E:0067:5000:0000:0000:0000:0003:2003]:9900;transport=tcp;lr;Hpt=8ec2\_116;CxtId=3;TRC=ffffffff-ffffffff;X-HwB2bUaCookie=20059>  Call-ID: 1764005573\_3102829196@240e:557:1000:1dd3:8a64:f1dc:dd31:cc2d  From: <sip:+8618114039394@js.ims.mnc011.mcc460.3gppnetwork.org>;tag=1764005578  To: <sip:mmtel@conf-factory.ims.mnc011.mcc460.3gppnetwork.org>;tag=k8bxx8b4  CSeq: 690263749 INVITE  Contact: <sip:[240E:0067:5000:0000:0000:0000:0003:2003]:9900;Hpt=8ec2\_16;CxtId=3;TRC=ffffffff-ffffffff>  Require: 100rel  RSeq: 1  **Reason: Q.850;cause=21;text="Call rejected",SIP;cause=403**  P-Early-Media: sendrecv  Content-Length: 361  Content-Type: application/sdp  289669 08:07:43.917161 1 qimfif.cpp 11879 qimfif\_extract\_reason\_header: reason\_header = Q.850;cause=21;text="Call rejected"  289672 08:07:43.917161 1 qipcallh.c 9181 [qipcallh\_chg\_state\_to\_null] [call\_id: 7] [state: 12], end\_reason = 0, end\_request\_type = 4 |

## 双卡Paging Sharing

高通有此优化处理，副卡的Paging消息在主卡上接收。

## 脱网问题

### 设置4G优先后出现了将近30s的脱网

分析思路：首先要确定网络模式设置的时间点在哪里，然后确定掉网的原因，和重新驻留的时间点。

PSYCHE-4271 FT\_L3A\_SuZhou\_卡2单卡电信5G SA，手动选网，切4G优先，脱网30秒左右（1/5）\_0911

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| NW didn't response UE's TAU request which triggled by set work mode to 4G preference.  After 25s UE sent TAU request again and NW rejected this time.  UE perform Attach procedure again. This procedure cost 3s.  The total procedure cost 28s to re-gain LTE registration. The about 30s Out of service of UE was due to NW's abnormal behavior.  this is no abvioud problem in UE side.  // Set 4G preference  [0x1544] 07:50:15.260606 QMI\_MCS\_QCSI\_PKT Length: 49  nas\_set\_system\_selection\_preference {  nas\_set\_system\_selection\_preference\_reqTlvs[0] {  Type = 0x11  Length = 2  mode\_pref {  mode\_pref = QMI\_NAS\_RAT\_MODE\_PREF\_CDMA2000\_1X | QMI\_NAS\_RAT\_MODE\_PREF\_CDMA2000\_HRPD | QMI\_NAS\_RAT\_MODE\_PREF\_GSM | QMI\_NAS\_RAT\_MODE\_PREF\_UMTS | QMI\_NAS\_RAT\_MODE\_PREF\_LTE  }  }  [0xB0ED] 07:50:15.613501 LTE NAS EMM Plain OTA Outgoing MessageTracking area update request Msg2  // After 25s, TAU request not responsed by NW, so UE send again.  [0xB0ED] 07:50:40.615846 LTE NAS EMM Plain OTA Outgoing MessageTracking area update request Msg2  // Unfortunately, NW reject the TAU request with the casue value 9 (0x9) (UE identity cannot be derived by the network). UE context was release by NW.  [0xB0EC] 07:50:40.749462 LTE NAS EMM Plain OTA Incoming MessageTracking area update reject Msg2  cause\_value = 9 (0x9) (UE identity cannot be derived by the network)  // UE perform Attach procedure again. This procedure cost 3s.  [0xB0ED] 07:50:40.939324 LTE NAS EMM Plain OTA Outgoing MessageAttach request Msg 2  [0xB0EC] 07:50:43.936644 LTE NAS EMM Plain OTA Incoming MessageAttach accept Msg 2  [0xB0ED] 07:50:43.944041 LTE NAS EMM Plain OTA Outgoing MessageAttach complete Msg 2 |

## IRAT问题

### LTE空闲态重选到WCDMA分析

UE驻留在LTE，空闲态下自动重选到WCDMA。正常情况下，LTE小区的重选优先级要高于WCDMA小区优先级，如果网络配置了重选优先级较高的WCDMA小区，则UE需要按照协议重选到WCDMA小区，现象上就是出现了掉LTE的现象。

示例JIRA：[PSYCHE-5881](https://jira.n.xiaomi.com/browse/PSYCHE-5881) FT\_L3A\_GuangZhou\_卡1主卡电信5G NSA+卡2副卡联通4G VOLTE，DDS到卡1后，卡2掉落一下3G（1/5）\_0930

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| **卡2的RSRP测量值很差，空闲态下发起重选，WCDMA小区优先级高于LTE候选小区导致UE重选到WCDMA小区，出现掉3G现象。网络端配置问题。**  [0xB0EC] 07:41:06.435359 LTE NAS EMM Plain OTA Incoming MessageTracking area update accept Msg2  [0xB0ED] 07:41:06.436443 LTE NAS EMM Plain OTA Outgoing MessageTracking area update complete Msg2  **// RSRP很差**  [0xB193] 07:41:12.578681 LTE ML1 Serving Cell Meas ResponseLength: 176 2  **Inst RSRP Rx[0] = -110.06 dBm**  **Inst RSRP Rx[1] = -112.56 dBm**  [0xB193] 07:41:12.898675 LTE ML1 Serving Cell Meas ResponseLength: 176 2  **// WCDMA小区的候选优先级为4，而LTE小区的候选优先级为6。数值越低，优先级越高，优选选网到WCDMA小区。**  **[0xB186] 07:41:13.079519 LTE ML1 Reselection CandidatesLength: 60 2**  Serving E-ARFCN = 1650  Serving Cell ID = 274  Num Reselection Candidates = 2  Candidates[0] {  **Candidate Priority = 4.0**  RAT Type = UTRAN  WCDMA Resel Cell Data  { U ARFCN = 10763 PSC = 39 }  }  Candidates[1] {  **Candidate Priority = 6.0**  RAT Type = EUTRAN  LTE Candidate  { E-ARFCN = 300 Cell ID = 169 }  }  [2520] 07:41:13.079779 EVENT\_LTE\_ML1\_SEARCH\_IDLE Wake.Triggered Rude Wake Up = 0, Wake.Offline = 0, Panic.Intra Panic = 0, Panic.Nserv DRX Panic = 0, memory instance = 12  [1889] 07:41:13.093637 **EVENT\_LTE\_RRC\_IRAT\_RESEL\_FROM\_EUTRAN\_STARTRAT** = WCDMA, Freq band Indicator = 22, Frequency = 10763, Cell ID = 392  [0x412F/004/007] 07:41:13.238874 DL\_BCCH\_BCH Complete SIB ListRadio Bearer ID: 40, Length: 312  **// WCDMA LU成功**  [0x7B3A/005/008] 07:41:14.279378 LOCATION\_UPDATE\_REQUEST Subscription ID: 2 Direction: MS To Network Length: 53772  [0x7B3A/005/002] 07:41:16.411643 LOCATION\_UPDATE\_ACCEPT Subscription ID: 2 Direction: MS To Network Length: 48642 |

## 短信收发问题

### 修改短信中心号码，短信可以发送成功

此问题需要确认修改的短信中心号码是否正确设置到了短信的RP Destion Address中。若设置成功，还能发送成功，那就是网络侧的行为。可以找对比机查看。

[MIUIROM-131579](https://jira.n.xiaomi.com/browse/MIUIROM-131579) J10\_R\_NJ 修改短信中心号码后移动卡依然可以成功发送短信\_必现\_21.6.8

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| **发送短信时已经使用了修改后的短信中心的号码，网络依然能够正常转发。应该是网络侧的问题。请帮忙看一下对比机的行为。**  **UE侧未见问题**  1 2021-06-16 18:20:06.011000 2408:853e:500:5b7d:1689:7ed:98fd:3b40 2408:8141:8000:1:3::118 GSM SMS 928 Request: MESSAGE sip:+8613010341500@ims.mnc001.mcc460.3gppnetwork.org;user=phone | (RP) RP-DATA (MS to Network)  Message Body  GSM A-I/F RP - RP-DATA (MS to Network)  Message Type RP-DATA (MS to Network)  RP-Message Reference  RP-Originator Address  **RP-Destination Address - (8613010341500123456) // 发送短信时已经使用了修改后的短信中心的号码**  RP-User Data  GSM SMS TPDU (GSM 03.40) SMS-SUBMIT  0... .... = TP-RP: TP Reply Path parameter is not set in this SMS SUBMIT/DELIVER  .0.. .... = TP-UDHI: The TP UD field contains only the short message  ..1. .... = TP-SRR: A status report is requested  ...0 0... = TP-VPF: TP-VP field not present (0)  .... .0.. = TP-RD: Instruct SC to accept duplicates  .... ..01 = TP-MTI: SMS-SUBMIT (1)  TP-MR: 9  TP-Destination-Address - (17612576568)  TP-PID: 0  TP-DCS: 8  TP-User-Data-Length: (16) depends on Data-Coding-Scheme  TP-User-Data  **SMS text: 计算机你想你辛苦** |

### 短信发送，界面提示失败，但是对端已接收

此类问题为短信发送端MO已经发送了短信消息MESSAGE，但是没有收到网络侧的响应202 Accept。MO端将在间隔时间后重复发送，直到收到202 Accept。此时可能出现网络将MO端的短信转发给MT端，但是不给MO端响应202 Accept的情况。请看如下JIRA示例。

[MIUIROM-137569](https://jira.n.xiaomi.com/browse/MIUIROM-137569) J22\_R\_NJ\_信息发送成功，信息界面显示信息发送失败，状态栏弹框提示信息未发送\_一次\_V12.5.0.4.RJEEUVF

MTK的VoLTE短信问题分析，可以将在ELT中将短信的SIP流程导出到pcap文件，通过wireshark查看SIP短信流程。

好处：可以看到短信的内容解码！当然，也可以通过SIP消息的重传情况，但不直观。

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| **B端发送短信内容：789，总共尝试了11次，但是一直收不到网络侧的202的响应，导致B端认为短信一直发送失败。B端IMS网络问题。**  // A端情况  **// 1. 发送短信456**  72 2021-06-12 16:44:59.307176 2409:8124:c30:331:1687:c943:e7dc:27c1 2409:8020:5002:93f::4 GSM SMS 984 Request: MESSAGE sip:+8613800250500@ims.mnc007.mcc460.3gppnetwork.org;user=phone | (RP) RP-DATA (MS to Network)  RP-Destination Address - (8613800250500)  TP-User-Data  SMS text: 456  **// 2. 接收短信789，并发送接收报告**  76 2021-06-12 16:45:19.436904 2409:8020:5002:93f::4 2409:8124:c30:331:1687:c943:e7dc:27c1 GSM SMS 812 Request: MESSAGE sip:[2409:8124:0C30:0331:1687:C943:E7DC:27C1]:50049 | (RP) RP-DATA (Network to MS)  GSM SMS TPDU (GSM 03.40) SMS-DELIVER  TP-Originating-Address - (8618251950590)  TP-User-Data  SMS text: 789  // 接收报告  78 2021-06-12 16:45:19.530856 2409:8124:c30:331:1687:c943:e7dc:27c1 2409:8020:5002:93f::4 GSM SMS 992 Request: MESSAGE sip:jsipsmgw1bzx.ipsmgw.js.chinamobile.com | (RP) RP-ACK (MS to Network)  **// 再次接收789**  80 2021-06-12 16:46:05.422888 2409:8020:5002:93f::4 2409:8124:c30:331:1687:c943:e7dc:27c1 GSM SMS 812 Request: MESSAGE sip:[2409:8124:0C30:0331:1687:C943:E7DC:27C1]:50049 | (RP) RP-DATA (Network to MS)  GSM SMS TPDU (GSM 03.40) SMS-DELIVER  TP-Originating-Address - (8618251950590)  TP-User-Data  SMS text: 789  82 2021-06-12 16:46:05.479976 2409:8124:c30:331:1687:c943:e7dc:27c1 2409:8020:5002:93f::4 GSM SMS 988 Request: MESSAGE sip:jsipsmgw1bzx.ipsmgw.js.chinamobile.com | (RP) RP-ACK (MS to Network)  **// 发送WWE，发送成功，收到SUBMIT REPORT**  84 2021-06-12 16:46:21.714536 2408:853e:580:b65:1687:c942:e993:8671 2408:8141:8000:1:3::118 GSM SMS 912 Request: MESSAGE sip:+8613010341500@ims.mnc001.mcc460.3gppnetwork.org;user=phone | (RP) RP-DATA (MS to Network)  GSM SMS TPDU (GSM 03.40) SMS-SUBMIT  TP-Destination-Address - (18251950590)  TP-User-Data  SMS text: WWE  **// 接收短息：789，并发送DELIVER REPORT**  96 2021-06-12 16:46:53.425192 2409:8020:5002:93f::4 2409:8124:c30:331:1687:c943:e7dc:27c1 GSM SMS 812 Request: MESSAGE sip:[2409:8124:0C30:0331:1687:C943:E7DC:27C1]:50049 | (RP) RP-DATA (Network to MS)  GSM SMS TPDU (GSM 03.40) SMS-DELIVER  TP-Originating-Address - (8618251950590)  TP-User-Data  SMS text: 789  **// 接收短信：黄家驹，并发送DELIVER REPORT**  209 2021-06-12 16:52:14.165032 2409:8020:5002:93f::4 2409:8124:c30:331:1687:c943:e7dc:27c1 GSM SMS 820 Request: MESSAGE sip:[2409:8124:0C30:0331:1687:C943:E7DC:27C1]:50049 | (RP) RP-DATA (Network to MS)  GSM SMS TPDU (GSM 03.40) SMS-DELIVER  TP-Originating-Address - (8618251950590)  TP-User-Data  SMS text: 黄家驹  **// B端 11次发送短息：789，但是一直没有收到网络侧的响应消息。发送的时间间隔为：2,4,8,16,16,16,16,16,16,16。这里B端认为A端没有收到短信，因为没有收到202的网络响应。**  **// 问题点**  75 2021-06-12 16:45:19.113208 2409:8124:c14:454:1687:c944:6874:5d49 2409:8020:5002:93d::14 GSM SMS 984 Request: MESSAGE sip:+8613800250500@ims.mnc002.mcc460.3gppnetwork.org;user=phone | (RP) RP-DATA (MS to Network)  77 2021-06-12 16:45:21.111992 2409:8124:c14:454:1687:c944:6874:5d49 2409:8020:5002:93d::14 GSM SMS 984 Request: MESSAGE sip:+8613800250500@ims.mnc002.mcc460.3gppnetwork.org;user=phone | (RP) RP-DATA (MS to Network)  82 2021-06-12 16:45:25.112056 2409:8124:c14:454:1687:c944:6874:5d49 2409:8020:5002:93d::14 GSM SMS 984 Request: MESSAGE sip:+8613800250500@ims.mnc002.mcc460.3gppnetwork.org;user=phone | (RP) RP-DATA (MS to Network)  85 2021-06-12 16:45:33.112056 2409:8124:c14:454:1687:c944:6874:5d49 2409:8020:5002:93d::14 GSM SMS 984 Request: MESSAGE sip:+8613800250500@ims.mnc002.mcc460.3gppnetwork.org;user=phone | (RP) RP-DATA (MS to Network)  87 2021-06-12 16:45:49.111992 2409:8124:c14:454:1687:c944:6874:5d49 2409:8020:5002:93d::14 GSM SMS 984 Request: MESSAGE sip:+8613800250500@ims.mnc002.mcc460.3gppnetwork.org;user=phone | (RP) RP-DATA (MS to Network)  89 2021-06-12 16:46:05.112056 2409:8124:c14:454:1687:c944:6874:5d49 2409:8020:5002:93d::14 GSM SMS 984 Request: MESSAGE sip:+8613800250500@ims.mnc002.mcc460.3gppnetwork.org;user=phone | (RP) RP-DATA (MS to Network)  96 2021-06-12 16:46:21.112056 2409:8124:c14:454:1687:c944:6874:5d49 2409:8020:5002:93d::14 GSM SMS 984 Request: MESSAGE sip:+8613800250500@ims.mnc002.mcc460.3gppnetwork.org;user=phone | (RP) RP-DATA (MS to Network)  109 2021-06-12 16:46:37.111992 2409:8124:c14:454:1687:c944:6874:5d49 2409:8020:5002:93d::14 GSM SMS 984 Request: MESSAGE sip:+8613800250500@ims.mnc002.mcc460.3gppnetwork.org;user=phone | (RP) RP-DATA (MS to Network)  118 2021-06-12 16:46:53.111992 2409:8124:c14:454:1687:c944:6874:5d49 2409:8020:5002:93d::14 GSM SMS 984 Request: MESSAGE sip:+8613800250500@ims.mnc002.mcc460.3gppnetwork.org;user=phone | (RP) RP-DATA (MS to Network)  127 2021-06-12 16:47:09.111992 2409:8124:c14:454:1687:c944:6874:5d49 2409:8020:5002:93d::14 GSM SMS 984 Request: MESSAGE sip:+8613800250500@ims.mnc002.mcc460.3gppnetwork.org;user=phone | (RP) RP-DATA (MS to Network)  129 2021-06-12 16:47:25.112056 2409:8124:c14:454:1687:c944:6874:5d49 2409:8020:5002:93d::14 GSM SMS 984 Request: MESSAGE sip:+8613800250500@ims.mnc002.mcc460.3gppnetwork.org;user=phone | (RP) RP-DATA (MS to Network)  **接收到WWE，并发送DELIVER REPORT**  516 2021-06-12 16:51:29.236920 2409:8020:5002:93d::1c 2409:8124:c14:454:1687:c944:6874:5d49 GSM SMS 812 Request: MESSAGE sip:[2409:8124:0C14:0454:1687:C944:6874:5D49]:50019 | (RP) RP-DATA (Network to MS)  GSM SMS TPDU (GSM 03.40) SMS-DELIVER  TP-Originating-Address - (8618501409975)  TP-User-Data  **SMS text: WWE**  **//发送短信：黄家驹**  520 2021-06-12 16:52:13.576184 2409:8124:c14:454:1687:c944:6874:5d49 2409:8020:5002:93d::1c GSM SMS 988 Request: MESSAGE sip:+8613800250500@ims.mnc002.mcc460.3gppnetwork.org;user=phone | (RP) RP-DATA (MS to Network)  GSM SMS TPDU (GSM 03.40) **SMS-SUBMIT**  TP-Destination-Address - (18851942163)  TP-User-Data  **SMS text: 黄家驹** |

## 紧急呼叫相关问题

### 经验知识点

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| 1. 无卡情况下，只有在CDMA 1X上呼叫国内的紧急号码：110,119,120,122,112才会呼叫到人工服务台，通过GSM或者WCDMA只能呼叫到自动语音查号台。 2. VoLTE上的紧急呼叫的支持情况，需要通过Attach Accept或者TAU Accept中的指示确认网络是否支持。（.... ..1. = Emergency bearer services in S1 mode: Supported） 3. 国际版手机不支持CDMA，如果国际版手机在国内测试紧急呼叫。需要留意：紧急呼叫时，如果插入电信卡，IMS拒绝，就不会继续尝试CDMA，可能插移动卡能拨通，电信卡无法拨通。这是正常情况。 4. 根据3GPP spec, 有插卡时只有112/911是紧急号码. 5. 移动网络110/120/119要用ATD才能拨到紧急服务台. |

### K11R国际版手机电信VoLTE呼叫112,911必现失败

[AGATE-9442](https://jira.n.xiaomi.com/browse/AGATE-9442) K11R-R\_NJ\_电信4G VoLTE拨打112、911无法接通，长时间显示正在呼叫\_必现\_V12.5.4.3.RKWEUXM

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| Type Index Time Local Time Module Message Comment Time Differences  SYS 2943356 41769166 17:21:52:666 NIL [AT\_RX p61,ch3]ATDE112;  SIP 114 41794601 17:21:54:266 [MS->NW][P1][S1]INVITE urn:service:sos SIP/2.0  SIP 115 41795117 17:21:54:266 [NW->MS][P1][S1]SIP/2.0 100 Trying  **SIP 116 41795197 17:21:54:266 [NW->MS][P1][S1]SIP/2.0 403 Forbidden**  **Warning: 399 03077.09081.A.005.433.228.0.8.02097.00000000.00000 "Non-emergency call rejected for emergency registered user"**  SIP 117 41795200 17:21:54:266 [MS->NW][P1][S1]ACK urn:service:sos SIP/2.0  SYS 3317678 42259109 17:22:24:085 NIL [AT\_RX p61,ch3]ATDE911; \*\*  SIP 130 42285227 17:22:25:685 [MS->NW][P1][S1]INVITE urn:service:sos SIP/2.0 \*\*  SIP 131 42285922 17:22:25:685 [NW->MS][P1][S1]SIP/2.0 100 Trying \*\*  SIP 132 42285962 17:22:25:685 [NW->MS][P1][S1]SIP/2.0 403 Forbidden \*\*  SIP 133 42285964 17:22:25:685 [MS->NW][P1][S1]ACK urn:service:sos SIP/2.0 \*\* |

# 数据专项测试

## 切数据导致的切卡后数据卡顿

**数据业务中的主卡被切换为副卡后，网络可能还有下行的数据要继续发送给副卡，导致切卡后，副卡频繁收到网络的PS Paging和发起Service Request流程。**

示例JIRA：[ALIOTH-5126](https://jira.n.xiaomi.com/browse/ALIOTH-5126) FT\_K11A\_ShenZhen\_卡1主卡电信5GVolte+卡2副卡电信4GVolte\_数据切换到卡2，直播卡顿，期间卡1频繁发起SR（2/3）\_0126

**结论：切卡同时断开non-dds数据连接有时会断不干净，网络侧继续传没传完的数据。**

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| **// 数据卡切换到卡2**  [0x1544] 08:57:22.505226 QMI\_MCS\_QCSI\_PKT Length: 58  dsd\_switch\_dds\_reqTlvs[0] {  Type = 0x01  Length = 4  subscription {  subscription = DSD\_SECONDARY\_SUBS  }  }  **// 卡1 TAU断开RRC连接和清除DCNR标识**  [0xB0ED] 08:57:23.435881 LTE NAS EMM Plain OTA Outgoing MessageTracking area update request Msg 1  active\_flag = 0 (0x0)  DCNR = 0 (0x0)  [0xB0EC] 08:57:36.547970 LTE NAS EMM Plain OTA Incoming MessageTracking area update accept Msg 1  [0xB0ED] 08:57:36.549918 LTE NAS EMM Plain OTA Outgoing MessageTracking area update complete Msg 1  **// 卡2添加DCNR能力**  [0xB0ED] 08:57:36.997436 LTE NAS EMM Plain OTA Outgoing MessageTracking area update request Msg 2  active\_flag = 1 (0x1)  DCNR = 1 (0x1)  [0xB0EC] 08:57:37.228174 LTE NAS EMM Plain OTA Incoming MessageTracking area update accept Msg 2  [0xB0ED] 08:57:37.230362 LTE NAS EMM Plain OTA Outgoing MessageTracking area update complete Msg 2  **// 激活卡2默认承载，用于收据业务**  [0xB0E3] 08:57:37.257650 LTE NAS ESM Plain OTA Outgoing MessagePDN connectivity request Msg 2  access\_pt\_name\_  num\_acc\_pt\_val = 6 (0x6)  acc\_pt\_name\_val[0] = 5 (0x5) (length)  acc\_pt\_name\_val[1] = 99 (0x63) (c)  acc\_pt\_name\_val[2] = 116 (0x74) (t)  acc\_pt\_name\_val[3] = 110 (0x6e) (n)  acc\_pt\_name\_val[4] = 101 (0x65) (e)  acc\_pt\_name\_val[5] = 116 (0x74) (t)  [0xB0E2] 08:57:37.464297 LTE NAS ESM Plain OTA Incoming MessageActivate default EPS bearer context request Msg 2  [0xB0E3] 08:57:37.465782 LTE NAS ESM Plain OTA Outgoing MessageActivate default EPS bearer context accept Msg 2  **// 卡2添加NR连接**  [0xB0C0/026/009/000] 08:57:37.786004 DL\_DCCH / RRCConnectionReconfigurationRadio Bearer ID: 1, Freq: 1850, SFN: 996 2  [0xB821] 08:57:37.786903 NR5G RRC OTA Packet RRC\_RECONFIG 2  [0xB821] 08:57:37.786915 NR5G RRC OTA Packet RADIO\_BEARER\_CONFIG 2  [0xB821] 08:57:37.799293 NR5G RRC OTA Packet RRC\_RECONFIG\_COMPLETE 2  **// 卡1 PS Paging接收和处理**  [0xB0C0/026/007/002] 08:57:41.940318 PCCH / Paging Radio Bearer ID: 0, Freq: 1850, SFN: 387 1  [0xB0ED] 08:57:41.940540 LTE NAS EMM Plain OTA Outgoing MessageService Request Msg 1  [0xB0ED] 08:57:46.429717 LTE NAS EMM Plain OTA Outgoing MessageTracking area update request Msg 1  [0xB0EC] 08:57:46.525509 LTE NAS EMM Plain OTA Incoming MessageTracking area update accept Msg 1  [0xB0ED] 08:57:46.526330 LTE NAS EMM Plain OTA Outgoing MessageTracking area update complete Msg 1  **// 卡1 PS Paging接收和处理**  [0xB0C0/026/007/002] 08:57:47.060311 PCCH / Paging Radio Bearer ID: 0, Freq: 1850, SFN: 899 1  [0xB0ED] 08:57:47.060526 LTE NAS EMM Plain OTA Outgoing MessageService Request Msg 1  [0xB0ED] 08:57:51.525576 LTE NAS EMM Plain OTA Outgoing MessageTracking area update request Msg 1  [0xB0EC] 08:57:51.611493 LTE NAS EMM Plain OTA Incoming MessageTracking area update accept Msg 1  [0xB0ED] 08:57:51.612272 LTE NAS EMM Plain OTA Outgoing MessageTracking area update complete Msg 1  **// 卡1 PS Paging接收和处理**  [0xB0C0/026/007/002] 08:57:52.180527 PCCH / Paging Radio Bearer ID: 0, Freq: 1850, SFN: 387 1  [0xB0ED] 08:57:52.180743 LTE NAS EMM Plain OTA Outgoing MessageService Request Msg 1  [0xB0ED] 08:57:56.650628 LTE NAS EMM Plain OTA Outgoing MessageTracking area update request Msg 1  [0xB0EC] 08:57:56.726712 LTE NAS EMM Plain OTA Incoming MessageTracking area update accept Msg 1  [0xB0ED] 08:57:56.727647 LTE NAS EMM Plain OTA Outgoing MessageTracking area update complete Msg 1 |

## 只有上行数据，没有下行数据

问题发生的场景：

1. 切数据卡
2. 出飞行模式
3. 副卡VoLTE电话结束后

切换数据卡后，UE主卡正常驻留，默认承载建立成功。但是，用户面UE主卡只有上行数据，没有任何下行数据，上行数据发生大量重传。信令面，UE主卡可以正常接收下行控制信令。此问题可能为单个APP服务器存在下行问题，双工变单工，可以重启APP，或者测试其他APP是否能够正常上网。

示例JIRA：[UPGR5G-4188](https://jira.n.xiaomi.com/browse/UPGR5G-4188) FT\_J22-R\_ShenZhen\_NSA\_卡一单卡电信5V**，第二次飞模后数据断流两分钟**，期间只有上行图标，再次飞模后恢复，15点17分，概率：2次/天\_20210125

**进出飞行模式后，UE只有上行数据，没有任何的下行数据。**

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| Type Index Time Local Time Module Message Comment Time Differences  SYS 1994312 292266473 15:14:50:927 NIL [AT\_RX p62,ch8]AT+EFUN=0,2  => Decode:Set functionaliy for multiple SIM project (Proprietary command) +EFUN  <efun\_state> : 0(ALL SIM Radio OFF)  OTA 2022500 292279650 15:14:51:727 EMM\_NASMSG [MS->NW] EMM\_Detach\_Request(Detach type="MO\_EPS\_DETACH", switch-off="KAL\_TRUE")  SYS 2035153 292287021 15:14:52:297 NIL [AT\_RX p62,ch8]AT+EFUN=1  => Decode:Set functionaliy for multiple SIM project (Proprietary command) +EFUN  <efun\_state> : 1(SIM 1 Radio ON)  OTA 2052450 292294468 15:14:52:699 EMM\_NASMSG [MS->NW] EMM\_Attach\_Request(EPS attach type="EMM\_ATTACH\_TYPE\_EPS\_ATTACH")  OTA 2073160 292352772 15:14:56:501 EMM\_NASMSG [NW->MS] EMM\_Attach\_Accept(EPS attach result="EMM\_ATTACH\_RESULT\_EPS\_ONLY\_ATTACHED")  OTA 2073554 292352804 15:14:56:501 ESM [NW->MS] ESM\_MSG\_ACTIVATE\_DEFAULT\_EPS\_BEARER\_CONTEXT\_REQUEST (PTI:32, EBI:5)  OTA 2073988 292352837 15:14:56:501 ESM [MS->NW] ESM\_MSG\_ACTIVATE\_DEFAULT\_EPS\_BEARER\_CONTEXT\_ACCEPT (PTI:0, EBI:5)  OTA 2074409 292352882 15:14:56:501 EMM\_NASMSG [MS->NW] EMM\_Attach\_Complete  OTA 2081507 292353733 15:14:56:501 ESM [MS->NW] ESM\_MSG\_PDN\_CONNECTIVITY\_REQUEST (PTI:33, EBI:0)  OTA 2086407 292355466 15:14:56:702 ESM [NW->MS] ESM\_MSG\_ACTIVATE\_DEFAULT\_EPS\_BEARER\_CONTEXT\_REQUEST (PTI:33, EBI:6)  OTA 2086707 292355490 15:14:56:702 ESM [MS->NW] ESM\_MSG\_ACTIVATE\_DEFAULT\_EPS\_BEARER\_CONTEXT\_ACCEPT (PTI:0, EBI:6)  OTA 2718814 292726290 15:15:20:303 ERRC\_CONN [NW->MS] ERRC\_RRCConnectionReconfiguration(EARFCN[1850], PCI[161])(measCfg:[0],mobCtrlInfo:[0],dedInfoNASList:[0],radioresCfgDed:[1],secCfgHO:[0])  OTA 3175257 292987536 15:15:37:103 ERRC\_CONN [NW->MS] ERRC\_RRCConnectionReconfiguration(EARFCN[1850], PCI[161])(measCfg:[0],mobCtrlInfo:[0],dedInfoNASList:[0],radioresCfgDed:[1],secCfgHO:[0])  OTA 5758327 294565037 15:17:18:124 ERRC\_CONN [NW->MS] ERRC\_RRCConnectionReconfiguration(EARFCN[1850], PCI[161])(measCfg:[0],mobCtrlInfo:[0],dedInfoNASList:[0],radioresCfgDed:[1],secCfgHO:[0])  **// Pcap文件中都是上行的重传，**  16892 15:15:01.096849 10.18.0.115 121.32.236.32 TCP 76 [TCP Retransmission] 57818 → 443 [SYN] Seq=0 Win=65535 Len=0 MSS=1360 SACK\_PERM=1 TSval=3605334465 TSecr=0 WS=256  16893 15:15:01.096877 10.18.0.115 119.147.20.148 TCP 76 [TCP Retransmission] 54720 → 443 [SYN] Seq=0 Win=65535 Len=0 MSS=1360 SACK\_PERM=1 TSval=1052930272 TSecr=0 WS=256  16894 15:15:01.096904 10.18.0.115 119.147.20.148 TCP 76 [TCP Retransmission] 54724 → 443 [SYN] Seq=0 Win=65535 Len=0 MSS=1360 SACK\_PERM=1 TSval=1052930273 TSecr=0 WS=256  16896 15:15:01.128846 10.18.0.115 121.32.236.32 TCP 76 [TCP Retransmission] 57828 → 443 [SYN] Seq=0 Win=65535 Len=0 MSS=1360 SACK\_PERM=1 TSval=3605334497 TSecr=0 WS=256  16897 15:15:01.128872 10.18.0.115 121.32.236.32 TCP 76 [TCP Retransmission] 57824 → 443 [SYN] Seq=0 Win=65535 Len=0 MSS=1360 SACK\_PERM=1 TSval=3605334497 TSecr=0 WS=256  16898 15:15:01.128877 10.18.0.115 121.32.236.32 TCP 76 [TCP Retransmission] 57826 → 443 [SYN] Seq=0 Win=65535 Len=0 MSS=1360 SACK\_PERM=1 TSval=3605334497 TSecr=0 WS=256  16899 15:15:01.132789 10.18.0.115 121.32.236.32 TCP 76 [TCP Retransmission] 57822 → 443 [SYN] Seq=0 Win=65535 Len=0 MSS=1360 SACK\_PERM=1 TSval=3605334501 TSecr=0 WS=256  16900 15:15:01.160826 10.18.0.115 121.32.236.32 TCP 76 [TCP Retransmission] 57830 → 443 [SYN] Seq=0 Win=65535 Len=0 MSS=1360 SACK\_PERM=1 TSval=3605334529 TSecr=0 WS=256 |

Note：切数据卡导致的用户数据只有上行，没有下行的JIRA。Log现象类似。其他参考JIRA。

UPGR5G-4208 FT\_J22-R\_ShenZhen\_卡1副卡电信5GVOLTE，卡2主卡联通5GVOLTE，数据卡从卡2切到卡1，无下行数据图标并且数据不可用（rate：1/5）\_0126

**其他参考JIRA：副卡VoLTE电话结束后，主卡只有上行数据，无任何下行包**

UPGR5G-4217 FT\_J22-R\_ShenZhen\_NSA\_卡一主卡联通5V+卡二副卡电信4V，副卡MO call挂断后，直播卡顿，点击菜单键切换至虎牙直播，点击任意直播间，显示网络不可用，15点35分，概率：必现\_20210126

## 数据异常断开

### AP改变Modem RAT能力导致数据临时断开

小米的优化处理：当15秒内，只存在Tx数据而接收不到任何的下行数据，则会强制执行一次reAttach，Modem重新驻网。

[THYME-4004](https://jira.n.xiaomi.com/browse/THYME-4004) J2S\_R\_NJ\_Modem\_卡1移动5GVOLTE SA+卡2移动4GVOLTE数据使用过程中断开又恢复\_仅一次\_V12.0.10.0

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| **监听到Rx数据报为0，且累计达Hit: 15，触发evaluatePossiblePolicy。**  **03-28 16:47:47.077 radio 3042 3233 D FiveGDataOptimize: TxRx: 473, Tx: 473, Rx: 0, Hit: 15**  03-28 16:47:47.078 radio 3042 3234 D FiveGDataOptimize: evaluatePossiblePolicy, isLteTech: false, isFiveGTech: true  重新触发驻网  03-28 16:47:47.079 radio 3042 3234 D FiveGDataOptimize: activiateNrPolicy reRegisterNetwork for 5G    03-28 16:47:47.090 radio 3042 3234 D RILJ : [0][4706]> REQUEST\_GET\_PREFERRED\_NETWORK\_TYPE [SUB0]  03-28 16:47:47.133 radio 3042 3081 D RILJ : [0][4706]< REQUEST\_GET\_PREFERRED\_NETWORK\_TYPE {26} [SUB0]  **AP set mode pref to C/H/G/W, NR/LTE are removed**  03-28 16:47:47.136 radio 3042 3042 D RILJ : [0][4707]> REQUEST\_SET\_PREFERRED\_NETWORK\_TYPE networkType = 7 [SUB0]  **AP set mode pref to G/W/L/NR, add L/NR back**  03-28 16:47:47.593 radio 3042 3042 D RILJ : [0][4718]> REQUEST\_SET\_PREFERRED\_NETWORK\_TYPE networkType = 26 [SUB0]    UI 短暂图标变化  03-28 16:47:47.926 radio 3042 3042 D DisplayInfoController: TelephonyDisplayInfo[0] changed from TelephonyDisplayInfo {network=NR, override=NONE} to TelephonyDisplayInfo {network=UNKNOWN, override=NONE}  03-28 16:47:48.162 radio 3042 3042 D DisplayInfoController: TelephonyDisplayInfo[0] changed from TelephonyDisplayInfo {network=UNKNOWN, override=NONE} to TelephonyDisplayInfo {network=NR, override=NONE}    结论：  临时性网络问题导致，不是问题。 |

## 信号跳变问题

信号跳变导致频繁的小区间重选。该问题定位为消息信号波动。

[**MIUIROM-156155**](https://jira.n.xiaomi.com/browse/MIUIROM-156155) **K11R\_R\_NJ\_sim卡状态栏信号格数持续跳变\_必现\_V12.5.0.8.RKWEUXM**

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| Dear customer：    [Analysis of logs with log prints]：  Type Index Time Local Time Module Message Comment Time Differences  PS 22140 36507347 10:05:13:611 ERRC\_SYS\_2 - ERRC\_SYS\_2 MSG\_ID\_ERRC\_SIB3\_DATA cell\_resel\_pri = 0x06  PS 22141 36507348 10:05:13:611 ERRC\_SYS\_2 - ERRC\_SYS\_2 MSG\_ID\_ERRC\_SIB5\_DATA inter\_freq\_carrier\_freq\_inf[1] = (struct)  dl\_carrier\_freq = 1506  cell\_resel\_pri = 0x06    PS 22899 36507833 10:05:13:611 ERRC\_MOB\_2 [COM][ENDC] EARFCN[1506] is ENDC frequency: KAL\_TRUE in sim\_index[1]  PS 26275 36520023 10:05:14:489 ERRC\_MOB\_2 [MRM] store PCell: earfcn[300] pci[458] rsrp[-306] rsrq[-14] sinr[524287] snr[99] rs\_sinr[100] cell\_off[0] cell\_state[0] rsrq\_on\_all\_symbols=[KAL\_FALSE] rsrq\_wideband=[KAL\_FALSE]  PS 27549 36540026 10:05:15:769 ERRC\_MOB\_2 [COM] Srxlev[55] = RSRP[-457] - (q\_rxlevmin[-512] + q\_rxlevmin\_offset[0]) - pcomp[0] - offset\_temp[0]  PS 27585 36540029 10:05:15:769 ERRC\_MOB\_2 [CJDG] LCell[1506/360] Srx[55] Squ[32767] R[-457] RESEL[P, State[MOB\_CJDG\_CELL\_STATUS\_CND] Tresel\_cnt[1246] H\_Prio[?Srx>th\_high\_p[48]]  PS 27759 36540049 10:05:15:769 ERRC\_MOB\_2 - ERRC\_CEL\_2 MSG\_ID\_ERRC\_MOB\_CEL\_RESEL\_IND 300/458---1506/360  PS 32977 36557352 10:05:16:875 ERRC\_MOB\_2 [MRM] store PCell: earfcn[1506] pci[360] rsrp[-464] rsrq[-49] sinr[3] snr[11] rs\_sinr[123] cell\_off[0] cell\_state[0] rsrq\_on\_all\_symbols=[KAL\_FALSE] rsrq\_wideband=[KAL\_FALSE]  PS 36990 36597352 10:05:19:435 ERRC\_MOB\_2 [COM] Srxlev[47] = RSRP[-465] - (q\_rxlevmin[-512] + q\_rxlevmin\_offset[0]) - pcomp[0] - offset\_temp[0]  PS 37198 36597372 10:05:19:435 ERRC\_MOB\_2 [CJDG] LCell[100/376] Srx[205] Squ[32767] R[-307] RESEL[P, State[MOB\_CJDG\_CELL\_STATUS\_CND] Tresel\_cnt[1280] Lower Prio[?Serv\_Srx<th\_s\_low\_p[48], srx="">th\_low\_p[64]]</th\_s\_low\_p[48],>  PS 37483 36597390 10:05:19:435 ERRC\_MOB\_2 - ERRC\_CEL\_2 MSG\_ID\_ERRC\_MOB\_CEL\_RESEL\_IND 1506/360---100/376  PS 47115 36637882 10:05:21:908 ERRC\_MOB\_2 [CJDG] LCell[300/458] Srx[222] Squ[32767] R[-274] RESEL[P, State[MOB\_CJDG\_CELL\_STATUS\_TEMP] Tresel\_cnt[1313] S\_Prio[R higher]]  PS 47735 36657372 10:05:23:278 ERRC\_MOB\_2 - ERRC\_CEL\_2 MSG\_ID\_ERRC\_MOB\_CEL\_RESEL\_IND 100/376---300/458  PS 52728 36660037 10:05:23:278 ERRC\_MOB\_2 [CJDG] LCell[1506/360] Srx[54] Squ[32767] R[-458] RESEL[P, State[MOB\_CJDG\_CELL\_STATUS\_TEMP] Tresel\_cnt[0] H\_Prio[?Srx>th\_high\_p[48]]  PS 59208 36760037 10:05:29:849 ERRC\_MOB\_2 - ERRC\_CEL\_2 MSG\_ID\_ERRC\_MOB\_CEL\_RESEL\_IND 300/458---1506/360  [Root Cause / Suspected Root Cause]：  1.@10:05:13:611 MD驻留在LTE 300/458。因异频频率1506为ENDC频点，所以会调高当前频率的重选优先级。  2.@10:05:15:769 1506/360小区Srxlev[55]，满足高优先级重选条件，触发了300/458到1506/360的小区重选。  3.@10:05:19:425 1506/360小区信号质量降低，Srxlev[47]，触发了1506/360到100/376到300/458的重选。  4.@10:05:23:278 1506/360小区信号质量变好，又触发了300/458到1506/360的小区重选。    [Next Action]：  频繁重选主要是因为1506/360小区信号质量不稳定引起的。    以上，谢谢！ |

# UIM专题

待整理

## UIM卡的类型

## UIM卡结构

## UIM通信的APDU

<https://gist.github.com/hemantvallabh/d24d71a933e7319727cd3daa50ad9f2c>

APDU List

参考文档：3GPP TS 11.11

高通Modem Log中所有的APDU交互流程和数据，通过0x19B7过滤得到。

## 开机过程中，UIM数据读取

## 使用AT命令读取SIM卡

Description

AT+CGLA AT command allows a direct control of the currently selected UICC by a distant application on the TE.

Usage Command Possible response(s)

+CGLA=<sessionid>,<length>,<command> +CGLA: <length>,<response> +CME ERROR: <err>

+CGLA=?

Examples

Keywords AT+CGLA syntax, examples, parameters, error, input, response.

# 高通平台相关问题

## 高通常见Log搜索

### 信号强度搜索的关键字

## MT端无法接通问题整理

### LTE收不到Paging消息

LTE接收Paging的行为可以通过搜索summary中的PO env确定接收PCH的起始时间点和结束时间点。以及确定两个接收时间点之间的时间间隔是否为一个Paging period。Paging Period通过SIB2配置，通常为1.28s, 0.64s, 0.32s这几个中的一个。

正常情况为：PO监听PCH正常，是网络没发paging导致的call失败。如果规定的PO没有开始执行PO env start cb则为出现abort，异常情况。需要高通查看。

[LISA-4582](https://jira.n.xiaomi.com/browse/LISA-4582) FT\_K9D\_ShiJiaZhuang\_主卡电信NSA+副卡移动5G VoLTE，IDLE态，MO端卡2拨打MT端卡1，MO端提示您拨打的用户暂时无法接听（rate：2/15）\_0610

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| // 通过搜索PO env得到Modem在每个寻呼周期是否有正常执行接收Paging的动作。  // 第一处标黄的Log中启动了一次Paging接收，时间02:50:47.338， 发起接收的System Fram为587  02:50:47.338 [B7] => I lte\_ml1\_dlm\_page.c 1493 H Sub-ID:1 Misc-ID:0 PO env start cb: current\_obj = 24, envelope start sf\_now: 587  02:50:47.353 [00] => I lte\_ml1\_dlm\_page.c 1544 H Sub-ID:1 Misc-ID:0 PO env end cb: current\_obj = 24, sf\_now: 592  02:50:47.354 [CF] => I lte\_ml1\_dlm\_page.c 2469 H Sub-ID:1 Misc-ID:0 DLM Page: user 0, po env obj start time type 2 start sf 1867 win size 5  // 第二处标黄的Log中启动了一次Paging接收，时间02:50:48.618， 发起接收的System Fram为1867  第一次和第二次Paging接收中间间隔的时间为：02:50:48.618 - 02:50:47.338 = 1.28s，也可以通过SubFram(子帧)的间隔查看是否为一个寻呼周期：1867 – 587 = 1280，每个子帧是1ms，这里就是1.28s  02:50:48.618 [E3] => I lte\_ml1\_dlm\_page.c 1493 H Sub-ID:1 Misc-ID:0 PO env start cb: current\_obj = 24, envelope start sf\_now: 1867  02:50:48.633 [77] => I lte\_ml1\_dlm\_page.c 1544 H Sub-ID:1 Misc-ID:0 PO env end cb: current\_obj = 24, sf\_now: 1872  02:50:48.634 [06] => I lte\_ml1\_dlm\_page.c 2469 H Sub-ID:1 Misc-ID:0 DLM Page: user 0, po env obj start time type 2 start sf 3147 win size 5  02:50:49.898 [56] => I lte\_ml1\_dlm\_page.c 1493 H Sub-ID:1 Misc-ID:0 PO env start cb: current\_obj = 24, envelope start sf\_now: 3147  02:50:49.913 [A6] => I lte\_ml1\_dlm\_page.c 1544 H Sub-ID:1 Misc-ID:0 PO env end cb: current\_obj = 24, sf\_now: 3152  02:50:49.914 [9B] => I lte\_ml1\_dlm\_page.c 2469 H Sub-ID:1 Misc-ID:0 DLM Page: user 0, po env obj start time type 2 start sf 4427 win size 5  02:50:49.915 [F5] => lte\_rrc\_paging.c 1878 H Sub-ID:1 Misc-ID:0 is\_cmas\_supported : 0, cmas\_sib\_read\_active\_other\_sub: 0, lock\_for\_cmas: 1  02:50:49.915 [92] => lte\_rrc\_paging.c 1973 H Sub-ID:1 Misc-ID:0 Sending dlm\_processed\_indi  02:50:51.178 [7A] => I lte\_ml1\_dlm\_page.c 1493 H Sub-ID:1 Misc-ID:0 PO env start cb: current\_obj = 24, envelope start sf\_now: 4427  02:50:51.193 [C6] => I lte\_ml1\_dlm\_page.c 1544 H Sub-ID:1 Misc-ID:0 PO env end cb: current\_obj = 24, sf\_now: 4432  02:50:51.194 [83] => I lte\_ml1\_dlm\_page.c 2469 H Sub-ID:1 Misc-ID:0 DLM Page: user 0, po env obj start time type 2 start sf 5707 win size 5  02:50:51.195 [B1] => lte\_rrc\_paging.c 1878 H Sub-ID:1 Misc-ID:0 is\_cmas\_supported : 0, cmas\_sib\_read\_active\_other\_sub: 0, lock\_for\_cmas: 1  02:50:51.195 [4A] => lte\_rrc\_paging.c 1973 H Sub-ID:1 Misc-ID:0 Sending dlm\_processed\_indi  02:50:52.468 [C2] => I lte\_ml1\_dlm\_page.c 1493 H Sub-ID:1 Misc-ID:0 PO env start cb: current\_obj = 24, envelope start sf\_now: 5707  02:50:52.473 [38] => I lte\_ml1\_dlm\_page.c 1544 H Sub-ID:1 Misc-ID:0 PO env end cb: current\_obj = 24, sf\_now: 5712  02:50:52.474 [EB] => I lte\_ml1\_dlm\_page.c 2469 H Sub-ID:1 Misc-ID:0 DLM Page: user 0, po env obj start time type 2 start sf 6987 win size 5  02:50:53.738 [E9] => I lte\_ml1\_dlm\_page.c 1493 H Sub-ID:1 Misc-ID:0 PO env start cb: current\_obj = 24, envelope start sf\_now: 6987  02:50:53.753 [9B] => I lte\_ml1\_dlm\_page.c 1544 H Sub-ID:1 Misc-ID:0 PO env end cb: current\_obj = 24, sf\_now: 6992  02:50:53.754 [97] => I lte\_ml1\_dlm\_page.c 2469 H Sub-ID:1 Misc-ID:0 DLM Page: user 0, po env obj start time type 2 start sf 8267 win size 5 |

### CDMA收不到Paging查看 – 掉网

CDMA的Paging消息通过General Page Msg消息下发，如果收不到Paging消息需要查看当前是否存在CDMA的系统丢失，也就是掉网。

示例JIRA：[PSYCHE-6108](https://jira.n.xiaomi.com/browse/PSYCHE-6108) FT\_L3A\_Guangzhou\_卡1主卡CT 4G+卡2副卡CM NSA VoLTE PS态，MO端卡1拨打MT端卡1时，出现连续多次被叫失败（2/10）\_1006

|  |
| --- |
| // MO call setup here  [0x1004/004] OTA LOG 06:33:21.330 ACCESS CHANNEL/Origination MsgLength: 64  [0x1008/020] OTA LOG 06:33:22.442 FORWARD FCH/Service Connect MsgLength: 47  [0x1005/014] OTA LOG 06:33:22.543 REVERSE FCH/Service Connect Complete MsgLength: 22  **// suppose network should page MT UE after several seconds**  **// but on MT side, we can see that MT UE lost network due to bad Rx condition**  // so MT UE doesn't receive the page, so the MT call fail  [1002/ 2] MSG 06:32:38.592 Digital Call Processing/High[ mccidl.c 16037] Lost Paging Channel, timer 0 expired  [1002/ 2] MSG 06:32:38.614 Digital Call Processing/High[ mccdma.c 5817] **SYSTEM LOST EXIT** |

## 高通Feature相关JIRA

### 三次RRC建立后直接被网络释放，触发重新Attach

高通KBA文档：kba-200107230402\_1\_optimization\_for\_frequent\_rrc\_release\_without\_drb

示例JIRA：THYME-2772 FT\_J2S\_BeiJing\_\_卡一联通5G VOLTE+卡二移动4G VOLTE，卡二在等待来电时脱网1min，附录屏。（1/5）\_0112

|  |
| --- |
| [0xB0C0/026/008/014] 03:34:13.586151 DL\_CCCH / RRCConnectionSetupRadio Bearer ID: 0, Freq: 38400, SFN: 462  [0xB0C0/026/011/000] 03:34:13.589464 UL\_DCCH / RRCConnectionSetupCompleteRadio Bearer ID: 1, Freq: 38400, SFN: 02  [0xB0C0/026/009/000] 03:34:15.589111 DL\_DCCH / RRCConnectionReleaseRadio Bearer ID: 1, Freq: 38400, SFN: 2462  **// conn\_rel\_wo\_drb\_cnt: connection released without drb count**  [ 13/ 0/2] 03:34:15.589197 LRRC/HighFreq/High/LRRC [ lte\_rrc\_crp.c 3075] CRP: Increment conn\_rel\_wo\_drb\_cnt 1 2  [0xB0C0/026/008/014] 03:34:16.786298 DL\_CCCH / RRCConnectionSetupRadio Bearer ID: 0, Freq: 38400, SFN: 3662  [0xB0C0/026/011/000] 03:34:16.790399 UL\_DCCH / RRCConnectionSetupCompleteRadio Bearer ID: 1, Freq: 38400, SFN: 02  [0xB0C0/026/009/000] 03:34:18.789303 DL\_DCCH / RRCConnectionReleaseRadio Bearer ID: 1, Freq: 38400, SFN: 5662  [ 13/ 0/2] 03:34:18.789376 LRRC/HighFreq/High/LRRC [ lte\_rrc\_crp.c 3075] CRP: Increment conn\_rel\_wo\_drb\_cnt 2 2  [0xB0C0/026/007/002] 03:34:19.846638 PCCH / Paging Radio Bearer ID: 0, Freq: 38400, SFN: 6722  [0xB0ED] 03:34:19.846867 LTE NAS EMM Plain OTA Outgoing MessageService Request Msg 2  [0xB0C0/026/010/000] 03:34:19.846987 UL\_CCCH / RRCConnectionRequestRadio Bearer ID: 0, Freq: 38400, SFN: 02  [0xB0C0/026/008/014] 03:34:19.955356 DL\_CCCH / RRCConnectionSetupRadio Bearer ID: 0, Freq: 38400, SFN: 6822  [0xB0C0/026/011/000] 03:34:19.959377 UL\_DCCH / RRCConnectionSetupCompleteRadio Bearer ID: 1, Freq: 38400, SFN: 02  [0xB0C0/026/009/000] 03:34:21.960302 DL\_DCCH / RRCConnectionReleaseRadio Bearer ID: 1, Freq: 38400, SFN: 8832  [ 13/ 0/2] 03:34:21.960386 LRRC/HighFreq/High/LRRC [ lte\_rrc\_crp.c 3075] CRP: Increment conn\_rel\_wo\_drb\_cnt 3 2  [ 13/ 0/2] 03:34:22.056507 LRRC/HighFreq/High/LRRC [ lte\_rrc\_csp.c 9477] CSP: Set detach\_reqd to TRUE as conn rel count is 3 2  [ 13/ 0/2] 03:34:22.056508 LRRC/HighFreq/High/LRRC [ lte\_rrc\_crp.c 476] CRP: reset conn\_rel\_wo\_drb\_cnt 2  // 三次RRC连接被网络释放，且网络没有配置任何drb。此时UE重新发起Attach。  [0xB0ED] 03:34:22.074074 LTE NAS EMM Plain OTA Outgoing MessageAttach request Msg 2  [0xB0C0/026/010/000] 03:34:22.074364 UL\_CCCH / RRCConnectionRequestRadio Bearer ID: 0, Freq: 38400, SFN: 02  [0xB0C0/026/008/014] 03:34:22.185346 DL\_CCCH / RRCConnectionSetupRadio Bearer ID: 0, Freq: 38400, SFN: 9052  [0xB0C0/026/011/000] 03:34:22.189388 UL\_DCCH / RRCConnectionSetupCompleteRadio Bearer ID: 1, Freq: 38400, SFN: 02  [0xB0C0/026/009/000] 03:34:24.176252 DL\_DCCH / RRCConnectionReleaseRadio Bearer ID: 1, Freq: 38400, SFN: 812  [0xB0ED] 03:34:34.267624 LTE NAS EMM Plain OTA Outgoing MessageAttach request Msg 2  [0xB0C0/026/010/000] 03:34:34.267956 UL\_CCCH / RRCConnectionRequestRadio Bearer ID: 0, Freq: 38400, SFN: 02  [0xB0C0/026/008/014] 03:34:34.355310 DL\_CCCH / RRCConnectionSetupRadio Bearer ID: 0, Freq: 38400, SFN: 742  [0xB0C0/026/011/000] 03:34:34.359506 UL\_DCCH / RRCConnectionSetupCompleteRadio Bearer ID: 1, Freq: 38400, SFN: 02  [0xB0C0/026/009/000] 03:34:36.346218 DL\_DCCH / RRCConnectionReleaseRadio Bearer ID: 1, Freq: 38400, SFN: 2742  [0xB0ED] 03:34:46.437707 LTE NAS EMM Plain OTA Outgoing MessageAttach request Msg 2  [0xB0C0/026/010/000] 03:34:46.438066 UL\_CCCH / RRCConnectionRequestRadio Bearer ID: 0, Freq: 38400, SFN: 02  [0xB0C0/026/008/014] 03:34:46.536212 DL\_CCCH / RRCConnectionSetupRadio Bearer ID: 0, Freq: 38400, SFN: 2692  [0xB0C0/026/011/000] 03:34:46.540424 UL\_DCCH / RRCConnectionSetupCompleteRadio Bearer ID: 1, Freq: 38400, SFN: 02  [0xB0C0/026/009/000] 03:34:48.526178 DL\_DCCH / RRCConnectionReleaseRadio Bearer ID: 1, Freq: 38400, SFN: 4682  [0xB0ED] 03:34:58.618941 LTE NAS EMM Plain OTA Outgoing MessageAttach request Msg 2  [0xB0C0/026/010/000] 03:34:58.619287 UL\_CCCH / RRCConnectionRequestRadio Bearer ID: 0, Freq: 38400, SFN: 02  [0xB0C0/026/008/014] 03:34:58.716171 DL\_CCCH / RRCConnectionSetupRadio Bearer ID: 0, Freq: 38400, SFN: 4632  [0xB0C0/026/009/000] 03:35:00.716124 DL\_DCCH / RRCConnectionReleaseRadio Bearer ID: 1, Freq: 38400, SFN: 6632  [0xB0ED] 03:35:10.801764 LTE NAS EMM Plain OTA Outgoing MessageAttach request Msg 2  [0xB0C0/026/010/000] 03:35:10.802091 UL\_CCCH / RRCConnectionRequestRadio Bearer ID: 0, Freq: 38400, SFN: 02  [0xB0C0/026/008/014] 03:35:10.895160 DL\_CCCH / RRCConnectionSetupRadio Bearer ID: 0, Freq: 38400, SFN: 6562  [0xB0C0/026/011/000] 03:35:10.899321 UL\_DCCH / RRCConnectionSetupCompleteRadio Bearer ID: 1, Freq: 38400, SFN: 02  [0xB0EC] 03:35:13.487441 LTE NAS EMM Plain OTA Incoming MessageAttach accept Msg 2  [0xB0ED] 03:35:13.490799 LTE NAS EMM Plain OTA Outgoing MessageAttach complete Msg 2 |

### 卡1紧急呼叫导致的卡2掉网

在卡1紧急呼叫的过程中，卡2会收到STOP MODE REQ消息用于Suspend卡2的任何业务进程。卡1紧急呼叫结束后，卡2需要重新搜网。

示例JIRA：THYME-2838 FT\_J2S\_Xiamen\_CU-SA\_卡一主卡联通5V+卡二副卡移动4V，卡二发起EC call(112)，信号栏显示卡二脱网1s，15点03分，概率：2/5\_20210113

|  |
| --- |
| **// CM request stop mode which lead service lost in sub 1**  07:03:59.812 MM/LowFreq/High/REG [ reg\_state.c 10466] DS: SUB 1 =REG= **CM\_STOP\_MODE\_REQ stop\_mode\_reason 12**  **// 30s later request service for GSM**  07:04:31.150 MM/LowFreq/High/REG [ reg\_state.c 2360] DS: SUB 1 =REG= CM\_SERVICE\_REQ Scan Scope type=0 network\_selection\_mode 0 Additional\_info=1 RAT Enabled BM = 0x208, BST BM = 0x8  07:04:31.150 MM/HighFreq/High/REG [ reg\_mode.c 2200] DS: SUB 1 =REG= Rat priority list num\_items = 2  07:04:31.150 MM/HighFreq/High/REG [ reg\_mode.c 2204] DS: SUB 1 =REG= sys\_mode = 9  07:04:31.150 MM/HighFreq/High/REG [ reg\_mode.c 2234] DS: SUB 1 =REG= LTE BST band Capability bst\_rat\_acq\_required = 0  07:04:31.150 MM/HighFreq/High/REG [ reg\_mode.c 2204] DS: SUB 1 =REG= sys\_mode = 3  07:04:31.150 MM/HighFreq/High/REG [ reg\_mode.c 2247] DS: SUB 1 =REG= BST band Capability bst\_rat\_acq\_required = 1  07:04:31.150 MM/LowFreq/High/REG [ reg\_send.c 2174] DS: SUB 1 =REG= MMR\_REG\_REQ PLMN(460-0) RAT(0-GSM,1-W,2-LTE,3-TDS,4-NR5G) = 0 trans\_id 126, scan\_scope=0  07:04:31.204 MM/LowFreq/High/MM [ mmplmnsel.c 709] DS: SUB 1 =MM= MM sent RR\_PLMN\_SELECT\_REQ with service request cause 0 scan\_scope 0 RAT Enabled BM = 0x208, BST BM = 0x8  **卡1紧急呼叫过程中，卡2被suspend了，到时卡2在卡1建立紧急呼叫过程中掉网。卡1紧急呼叫失败转到卡2继续紧急呼叫时，卡2上报了丢网然后立即驻留到GSM开始紧急电话的流程。**  **卡1紧急呼叫过程中，卡2无服务这是高通设计，流程合理。**  [ 42/ 1/0] QTRACE 07:03:59.809984 MMODE/DEBUG/Low/CM [ cmdbg.c 5252] >>CMcallcmd 0 : 17 // CMcallcmd:0表示Originate a call  [ 42/ 0/2] QTRACE 07:03:59.809989 MMODE/STRM/High/CM [ I cmcall\_msim.c 1709] CALL\_CMD\_PROC: subs 0, internal\_standby\_pref 2, ph active\_subs 3, active\_subs 0, cmd 0  [ 42/ 0/2] QTRACE 07:03:59.810419 MMODE/STRM/High/CM [ cmcc.c 3293] e call, gw categ 0, elenl\_only 0, eenlv 0  [ 42/ 0/2] QTRACE 07:03:59.810420 MMODE/STRM/High/CM [ cmcc.c 3303] e call, cdma categ 0  **// 卡1执行紧急呼叫，触发卡2无服务。但是此时不会上报，因为卡1在紧急呼叫中，卡2不会上报任何驻留状态。**  [ 42/ 0/2] QTRACE 07:03:59.811381 MMODE/STRM/High/CM [ mmoc.c 16185] SUSPEND\_RESUME: SUSPEND\_STACK: enter susp\_reason 15 deact\_reason 15 sub 1 stk 0, state 5  [ 42/ 0/2] QTRACE 07:03:59.811402 MMODE/STRM/High/CM [ mmoc.c 5796] MMOC->PROT: DEACT\_REQ to ACTIVE protocol: 5, reason: 15, sub 1 stk 0, insanity\_count 0, ps\_enabled 0  [0xB0ED] 07:04:01.011158 LTE NAS EMM Plain OTA Outgoing MessageExtended service request Msg 1  [0xB0C0/026/009/000] 07:04:01.509071 DL\_DCCH / RRCConnectionReleaseRadio Bearer ID: 1, Freq: 1650, SFN: 765 1  [0xB0ED] 07:04:02.487563 LTE NAS EMM Plain OTA Outgoing MessageTracking area update request Msg 1  [0xB80B] 07:04:02.489455 NR5G NAS MM5G Plain OTA Outgoing MsgRegistration request 1  [0xB80A] 07:04:03.327089 NR5G NAS MM5G Plain OTA Incoming MsgRegistration accept 1  [0xB80B] 07:04:03.327701 NR5G NAS MM5G Plain OTA Outgoing MsgRegistration complete 1  [0xB821] 07:04:27.524379 NR5G RRC OTA Packet DL\_DCCH / RRC Release 1  **// 卡1紧急呼叫失败，AP通过卡2再次拨打紧急电话。卡2重新找网，在驻留GSM到LU成功的过程中，上报当前的Limited Service状态**  [ 42/ 1/0] QTRACE 07:04:31.129554 MMODE/DEBUG/Low/CM [ cmdbg.c 5252] >>CMcallcmd 0 : 17  [ 42/ 1/0] QTRACE 07:04:31.130100 MMODE/DEBUG/Low/CM [ cmdbg.c 5252] >>CMcallcmd 12 : 17  [ 42/ 1/0] QTRACE 07:04:31.131548 MMODE/DEBUG/Low/CM [ cmdbg.c 5382] <<CM2 callevt=0, call\_id 12, info\_type 2, sub 1, call\_type 9  **// 卡2尝试驻留到GSM**  [ 47/ 0/2] QTRACE 07:04:31.150361 MM/LowFreq/High/REG [ reg\_send.c 2174] DS: SUB 1 =REG= MMR\_REG\_REQ PLMN(460-0) RAT(0-GSM,1-W,2-LTE,3-TDS,4-NR5G) = 0 trans\_id 126, scan\_scope=0  [ 47/ 1/2] QTRACE 07:04:33.120203 MM/HighFreq/High/MM [ reg\_send.c 509] DS: SUB 1 =REG= CM\_CAMPED\_IND PLMN (460 - 0) Primary PLMN (460 - 0)  [ 42/ 1/0] QTRACE 07:04:33.120654 MMODE/DEBUG/Low/CM [ cmdbg.c 6020] CM<<SD 501 : 0  **// 驻网的过程中，上报了掉网**  [ 42/ 1/0] QTRACE 07:04:33.120666 MMODE/DEBUG/Low/CM [ cmdbg.c 4048] CM\_SRV\_IND\_INFO\_F:as\_id 1,stk\_id 0, srv\_status 1,srv domain 4 mode 3 is\_stable\_in\_svc 0  **// 因为当前卡2处于紧急呼叫过程中，所以不会阻塞limited service的上报**  [ 42/ 0/2] QTRACE 07:04:33.120687 MMODE/STRM/High/CM [ cmss.c 13396] skip limited servcie buffering during emergency call  [ 42/ 0/1] QTRACE 07:04:33.121059 MMODE/STRM/Medium/CM [ cmss.c 5088] last\_system OPER sub 1 stack 0 mode 3, status 1  **// 卡2 LU成功后，执行了紧急电话的流程**  [0x7B3A/005/008] 07:04:33.120641 LOCATION\_UPDATE\_REQUEST Subscription ID: 2 Direction: MS To Network Length: 4097 2  [0x7B3A/005/002] 07:04:34.568226 LOCATION\_UPDATE\_ACCEPT Subscription ID: 2 Direction: MS To Network Length: 2048 2  [0x7B3A/003/014] 07:04:47.533003 EMERGENCY\_SETUP Subscription ID: 2 Direction: MS To Network Length: 2817 2  [0x7B3A/003/002] 07:04:48.238970 CALL\_PROCEEDING Subscription ID: 2 Direction: MS To Network Length: 1536 2  [0x7B3A/003/001] 07:04:49.058842 ALERTING Subscription ID: 2 Direction: MS To Network Length: 1536 2  [0x7B3A/003/037] 07:04:55.855183 DISCONNECT Subscription ID: 2 Direction: MS To Network Length: 1281 2  [0x7B3A/003/045] 07:04:56.278223 RELEASE Subscription ID: 2 Direction: MS To Network Length: 512 2  [0x7B3A/003/042] 07:04:56.278609 RELEASE\_COMPLETE Subscription ID: 2 Direction: MS To Network Length: 513 2  [0xB0ED] 07:04:57.288649 LTE NAS EMM Plain OTA Outgoing MessageTracking area update request Msg 2  [0xB0EC] 07:04:57.409771 LTE NAS EMM Plain OTA Incoming MessageTracking area update accept Msg 2  [0xB0ED] 07:04:57.410606 LTE NAS EMM Plain OTA Outgoing MessageTracking area update complete Msg 2 |

### 高通Tput测试的Log抓取要求

  目前Tput的问题请测试的兄弟除了提供284 LOG以外，一般尽量提供下面要求的三种LOG，分别是QXDM LOG，TCP dump log，adb log（可选，因为284 LOG中包含了，但是高通AP有时候会要求提供）



1．  Logmask换成附件没有DPL的logmask。

2．  UE tcpdump with snaplen 100. （TCP dump log在测试开始之前抓取，测试完成后手动结束）

adb shell tcpdump -i any -nnXSs 100 -w /data/shared/any.pcap

3．  Adb and kernel logs from boot up. （adb log从开机开始抓取，测试完成后手动结束 ）

adb wait-for-device

adb root

adb logcat -b all -v threadtime > adblog.txt

### PC拨号问题

高通手机连接PC抓Log时，可能会出现无法正常使用数据业务。需要禁止PC windows中的WWAN AutoConfig服务。

问题的识别条件：

在QMI的wds\_start\_network\_interface\_resp中，call\_end\_reason设置为241。

verbose\_call\_end\_reason

**{ call\_end\_reason\_type = WDS\_VCER\_TYPE\_INTERNAL call\_end\_reason = 241}**

[UPGR7150R-4826](https://jira.n.xiaomi.com/browse/UPGR7150R-4826) [G7B\_R\_CN\_XA\_RH][Modem]打开数据开关移动卡数据业务启动失败，出现时必现\_5/5\_V12.5.0.1.RGHCNXM

|  |
| --- |
| 在start\_network\_interface的QMI消息中看到失败的信息，call end reason为241。**241表示PC拨号失败。需要关闭Win10 PC端的WWAN AutoConfig。**  **复测建议：**  disable Windows10 auto connnect  Steps: Presess Search Windows --> Type 'Services.msc' --> Locate 'WWAN AutoConfig' -->  Change startup type to 'Disable' or 'Manua    **QMI消息**  06:39:50.224003 [0x1544] QMI\_MCS\_QCSI\_PKT  packetVersion = 2  MsgType = Response  Counter = 4  ServiceId = WDS  MajorRev = 1  MinorRev = 155  ConHandle = 0x00000175  MsgId = 0x00000020  QmiLength = 26  Service\_WDS {  ServiceWDSV1 {  wds\_start\_network\_interface {  wds\_start\_network\_interface\_respTlvs[0] {  Type = 0x02  Length = 4  resp  { result = QMI\_RESULT\_FAILURE error = QMI\_ERR\_CALL\_FAILED }  }  wds\_start\_network\_interface\_respTlvs[1] {  Type = 0x01  Length = 4  pkt\_data\_handle  { pkt\_data\_handle = 0 }  }  wds\_start\_network\_interface\_respTlvs[2] {  Type = 0x10  Length = 2  call\_end\_reason  { call\_end\_reason = WDS\_CER\_UNSPECIFIED }  }  wds\_start\_network\_interface\_respTlvs[3] {  Type = 0x11  Length = 4  verbose\_call\_end\_reason  **{ call\_end\_reason\_type = WDS\_VCER\_TYPE\_INTERNAL call\_end\_reason = 241}**  } |

### 高通DPL Full Log抓取方法

麻烦使用PC连接手机，通过QXDM抓一份Log。

抓log需求：

在DMC配置中，将Logpackets->Common->DataService中的Data Protocol Logging Interface Full, Data Protocol Logging Physical Link Full勾选上.

取消勾选Data Protocol Logging Interface Partial, Data Protocol Logging Physical Link Partial。

## 搜网问题

### 手动搜网

相对于自动搜网，用于搜网当前地点的所有可用的网络。用户可以根据返回的可用网络列表选择一个需要驻留的网络。

这个过程有点类似于打开WIFI，然后WIFI返回一个可用的WIFI列表，然后用户根据需求，选择连接到其中一个WIFI网络。

#### 手动搜网发起的QMI消息

ServiceId = NAS，MsgId = 0x00000085，nas\_perform\_incremental\_network\_scan。

与此同时也存在两条RRC消息：0xB0C3和0xB0C4，用于确定手动搜网的状态。

#### JIRA示例

[PSYCHE-5572](https://jira.n.xiaomi.com/browse/PSYCHE-5572) FT\_L3A\_GuangZhou\_卡1联通5G NSA，手动搜网失败（1/5）\_0928

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| [0x1544] 03:56:12.614469 QMI\_MCS\_QCSI\_PKT Length: 48  nas\_perform\_incremental\_network\_scan {  nas\_perform\_incremental\_network\_scan\_reqTlvs[0] { // 发起手动搜网请求  Type = 0x10  Length = 1  network\_type { // 需要搜索的网络类型  network\_type = NAS\_NETWORK\_TYPE\_GSM\_ONLY | NAS\_NETWORK\_TYPE\_WCDMA\_ONLY | NAS\_NETWORK\_TYPE\_LTE\_ONLY  }  }  [0x1544] 03:56:12.615044 QMI\_MCS\_QCSI\_PKT Length: 51  [0xB0C3] 03:56:12.678185 LTE PLMN Search Request Length: 2128 1  Network Select Mode = Manual  Search Type = None  Num RATs = 3  RAT List[0] {  RAT = LTE  Band Cap = 0x0000000000000095  Band Cap 65-128 = 0x0000000000000000  Band Cap 129-192 = 0x0000000000000000  Band Cap 193-256 = 0x0000000000000000  }  RAT List[1] {  RAT = WCDMA  Band Cap = 0x000200000EE80180  }  RAT List[2] {  RAT = GSM  Band Cap = 0x000200000EE80180  }  [0xB0C4] 03:59:12.678604 LTE PLMN Search Response Length: 344 1  RAT = LTE  Search Status = Timed out // 3min超时  Num PLMNs = 2  PLMN List[0] {  RAT = LTE  MCC0 = 4  MCC1 = 6  MCC2 = 0  MNC0 = 0  MNC1 = 1  MNC2 = 15  EARFCN {  EARFCN = 1650  }  }  PLMN List[1] {  RAT = LTE  MCC0 = 4  MCC1 = 6  MCC2 = 0  MNC0 = 0  MNC1 = 0  MNC2 = 15  EARFCN {  EARFCN = 3590  } |

### 选择手动搜网列表中的RAT

#### QMI\_NAS\_SET\_SYSTEM\_SELECTION\_PREFERENCE

用于设置UE不同的系统选择优先级。该命令有请求和响应两个消息：QMI\_NAS\_SET\_SYSTEM\_SELECTION\_PREFERENCE\_REQ/RESP。

该命令用于将系统选择的优先级写入到设备中，该设置是全局的，该优先级写入到persistent storage(永久存储)中，即使重启也不会清空。但是会通过重新设置来覆盖。

此类QMI消息中有个状态上报的QMI：QMI\_NAS\_SYSTEM\_SELECTION\_PREFERENCE\_IND，用于指示当前的系统选择设置。

**RAT 枚举值**

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| 0x04 – NAS\_RADIO\_IF\_GSM – GSM  • 0x05 – NAS\_RADIO\_IF\_UMTS – UMTS  • 0x08 – NAS\_RADIO\_IF\_LTE – LTE  • 0x09 – NAS\_RADIO\_IF\_TDSCDMA –TD-SCDMA  • 0x0A – NAS\_RADIO\_IF\_LTE\_M1 – LTE-M1  • 0x0B – NAS\_RADIO\_IF\_LTE\_NB1 – LTE-NB1  • 0x0C – NAS\_RADIO\_IF\_NR5G – NR5G |

示例：手动选择手动选网返回列表中的中国电信5G触发的QMI消息

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| 04:00:40.788397 [0x1544] QMI\_MCS\_QCSI\_PKT  packetVersion = 2  V2 {  MsgType = Request  Counter = 1156  ServiceId = NAS  MajorRev = 1  MinorRev = 347  ConHandle = 0x00000059  MsgId = 0x00000033  QmiLength = 12  Service\_NAS {  ServiceNASV1 {  nas\_set\_system\_selection\_preference {  nas\_set\_system\_selection\_preference\_reqTlvs[0] {  Type = 0x16  Length = 5  net\_sel\_pref {  net\_sel\_pref = NAS\_NET\_SEL\_PREF\_MANUAL  mcc = 460  mnc = 11  }  }  nas\_set\_system\_selection\_preference\_reqTlvs[1] {  Type = 0x22  Length = 1  rat {  rat = 12  }  }  }  }  }  } |

### FR问题

#### L2NR问题-EPSFallback电话结束后不返回SA

EPSFallback电话结束后，UE有数据业务正在进行导致重选到NR的进程Block，重选需要在空闲态下进行！

示例JIRA：PSY[CHE-5884](https://jira.n.xiaomi.com/browse/PSYCHE-5884) FT-L3A-Jinan-卡1主卡CM SA+卡2CM 5G volte，动态，卡1通话结束后不返回SA (1/10）\_0930

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| [0x1831] 04:10:06.359109 IMS VoLTE Session End Length: 274 1  [0xB0E2] 04:10:06.668992 LTE NAS ESM Plain OTA Incoming MessageDeactivate EPS bearer context request Msg1  [0xB0E3] 04:10:06.669239 LTE NAS ESM Plain OTA Outgoing MessageDeactivate EPS bearer context accept Msg1  **// After Call ended, UE stayed in LTE**  [0xB0C0] 04:10:06.669434 UL\_DCCH / ULInformationTransferRadio Bearer ID: 2, Freq: 40936, SFN: 01  **// after call ends, there are still many data transmission. L2NR Fast Return crit is not meet.**  2021 Sep 30 04:10:06.069 [1C] 0x1831 IMS VoLTE Session End  Subscription ID = 1  **2021 Sep 30 04:10:06.281 [8D] 0xB0B3 LTE PDCP UL Cipher Data PDU**  Subscription ID = 1  ...  **2021 Sep 30 04:10:07.226 [0A] 0xB0B3 LTE PDCP UL Cipher Data PDU**  Subscription ID = 1  04:10:06.359109 IMS VoLTE Session End 1 Length: 274  04:10:07.418284 LRRC/HighFreq/High/LRRC 1 [lte\_rrc\_controller.c 9477] RRCC: Handle delay Conn Rel tmri expired.  04:10:07.418306 LRRC/HighFreq/High/LRRC 1 [lte\_rrc\_controller.c 9534] RRCC: Sent **GET\_FAST\_RETURN\_CRITERIA\_REQ** to DS  04:10:07.418379 LRRC/HighFreq/High/LRRC 1 [lte\_rrc\_controller.c 9618] RRCC: Receive FR crit response from DS.  04:10:07.418385 LRRC/HighFreq/High/LRRC 1 [lte\_rrc\_controller.c 9660] RRCC: **L2NR Fast Return crit is not meet, Tput status:0, nr\_deprio:0, fr\_eval\_in\_prog:1, silence\_act:0**  **// Until this timestamp, UE return back to NR SA**  [0xB0ED] 04:11:34.008938 LTE NAS EMM Plain OTA Outgoing MessageTracking area update request Msg1  [0xB80B] 04:11:34.011085 NR5G NAS MM5G Plain OTA Outgoing MsgRegistration request 1  [0xB80A] 04:11:34.861289 NR5G NAS MM5G Plain OTA Incoming MsgRegistration accept 1  [0xB80B] 04:11:34.862165 NR5G NAS MM5G Plain OTA Outgoing MsgRegistration complete 1 |

## 高通注册相关问题整理 -TD

### LTE注册流程-TD

[UPGR8250-11675](https://jira.n.xiaomi.com/browse/UPGR8250-11675) FT\_J3S-R\_ShenZhen\_卡1主卡电信5G VOLTE+卡2副卡联通4G VOLTE\_idle态\_MO端卡2打MT端的卡1时，MO端与MT端通话结束后，MT端副卡脱网大概20秒\_1/30

AP侧去激活了默认承载导致LTE没有任何激活的承载，触发了Modem重新注册。

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| as L no bearer exist so need attach req but not tau is expected as lte is always on. tks!  **1)ebi6 deactive by app so L no bearer active**  2)when ondemand data caused service req , so need detach and attach to setup a default bearer as lte is always on  //ebi6 deactive by app  03:46:16.717998 LTE NAS EMM Plain OTA Incoming MessageTracking area update accept Msg1  ebi\_6 = 1 (0x1)  ebi\_5 = 0 (0x0)  03:46:19.594091 QMI\_MCS\_QCSI\_PKT Length: 51  wds\_stop\_network\_interface\_reqTlvs[0] {///  Type = 0x01  Length = 4  pkt\_data\_handle {  pkt\_data\_handle = 1649465600  03:46:19.596204 MMODE/DEBUG/Low/CM [ cmdbg.c 5252] >>CMcallcmd 2 : 2  03:46:19.596355 MM/HighFreq/High/SM [ smcm.c 1168] DS: SUB 0 PDP De-Activate Req for NSAPI = 6; Changing PDP state to: INACTIVE\_PENDING1  **//so L no bearer active**  03:46:19.596578 MM/LowFreq/High/SM [ esmtask.c 1749] DS: SUB 0 ESM: No def BC left. Setting on\_attach\_flag from 2 to NONE1  //2)when on demand data caused service req , so need detach and attach to setup a default bearer as lte is always on  03:46:31.596556 MM/HighFreq/Error/SM [ esmtask.c 1758] DS: SUB 0 ESM: Bearer doesn't exists in LTE during W-->L i-RAT1  03:46:31.669315 MMODE/STRM/High/CM [ cmcall\_msim.c 218] DUAL\_LTE: MMS: DATA ACTIVITY data\_activity 3 on sub 0, DDS 1, srv\_domain\_pref 2  03:46:31.670516 MMODE/STRM/High/CM [ cmregprx.c 3831] SRV\_REQ: mode\_pref 5 net\_sel\_mode 0 srv\_domain 5, req\_id = 0 band\_pref =0x20000 0x4001801  03:46:31.670954 MM/LowFreq/High/REG [ reg\_send.c 2174] DS: SUB 0 =REG= MMR\_REG\_REQ PLMN(460-1) RAT(0-GSM,1-W,2-LTE,3-TDS,4-NR5G) = 2 trans\_id 195, scan\_scope=01  03:46:33.176555 MM/HighFreq/High/MM [ mm5g\_sm\_handler.c 2770] DS: SUB 0 =MM5G= Send NAS\_MM5G\_DETACH\_IND to SM1  03:46:33.182767 LTE NAS EMM Plain OTA Outgoing MessageAttach request Msg 1 |

### 热插拔后长时间不驻网

此类问题大部分为Attach流程不完整导致注册进程被block。一般通过OTA消息即可看出。

[PSYCHE-4766](https://jira.n.xiaomi.com/browse/PSYCHE-4766) FT\_L3A\_Suzhou\_卡1主卡电信5G VOLTE-NSA+卡2副卡电信5G VOLTE-NSA，热插拔后卡1长时间不驻网（附录屏)(1/10)\_20210917

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| // UE卡1在第一次发起Attach Request时，起ESM MSG Container中设置的trans\_id为36。3s后，网络未响应此Attach Request，UE重新发送Attach Request，trans\_id递增为37，2s后收到网络的Attach accept，但是此消息中的trans\_id为36。UE收到后不会继续处理此消息。  网络后续未针对trans\_id为37的Attach Request进行响应，导致注册流程被Block。  [0xB0ED] 03:42:24.933633 LTE NAS EMM Plain OTA Outgoing MessageAttach request Msg 1  trans\_id = 36 (0x24)  [0xB0ED] 03:42:27.645374 LTE NAS EMM Plain OTA Outgoing MessageAttach request Msg 1  trans\_id = 37 (0x25)  **[0xB0EC] 03:42:29.895241 LTE NAS EMM Plain OTA Incoming MessageAttach accept Msg 1**  esm\_msg\_container  eps\_bearer\_id\_or\_skip\_id = 5 (0x5)  prot\_disc = 2 (0x2) (EPS session management messages)  trans\_id = 36 (0x24)  **[0xB0E2] 03:42:29.895274 LTE NAS ESM Plain OTA Incoming MessageActivate default EPS bearer context request Msg1**  trans\_id = 36 (0x24) |

### LTE系统获取状态无法正常接收Paging消息

读取SIB失败，导致长时间处于系统获取的状态，这个时间段内无法正常接收paging消息。常见原因为网络侧系统消息编码问题。

[UPGR8150R-2069](https://jira.n.xiaomi.com/browse/UPGR8150R-2069) FT\_F1-R-Hangzhou\_卡一主卡移动4Gvolte+卡二副卡移动4G\_PS\_SIM1呼叫SIM2，MO端提示暂时无法接通（1/30） \_0308

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| 由于卡1处于呼叫中，导致卡2无服务。卡1呼叫结束后，卡2需要恢复业务，重新获取消息。  UE was in the middle of ACQ procedure, it detect different cells on freq 38544, but couldn't camp on them because SIB read error.  At last, UE camped on cell (41134,351)  MT side log: diag\_log\_20210308\_1256331615179393198.qmdl  **// MIB读取成功，但是SIB读取失败，到时长时间处于系统获取状态**  04:56:33.177 lte\_rrc\_csp.c 29372 L CSP: Acq succeeded on physical cell ID 190 on earfcn 38544, MIB SFN 952 Sub-ID:2  04:56:33.498 lte\_rrc\_csp.c 33400 H CSP: Continuing with cell selection after SIB read error Sub-ID:2  04:56:35.147 lte\_rrc\_csp.c 29372 L CSP: Acq succeeded on physical cell ID 468 on earfcn 38544, MIB SFN 124 Sub-ID:2  04:56:35.469 lte\_rrc\_csp.c 33400 H CSP: Continuing with cell selection after SIB read error Sub-ID:2  04:56:37.147 lte\_rrc\_csp.c 29372 L CSP: Acq succeeded on physical cell ID 482 on earfcn 38544, MIB SFN 324 Sub-ID:2  04:56:37.468 lte\_rrc\_csp.c 33400 H CSP: Continuing with cell selection after SIB read error Sub-ID:2  04:56:39.127 lte\_rrc\_csp.c 29372 L CSP: Acq succeeded on physical cell ID 310 on earfcn 38544, MIB SFN 524 Sub-ID:2  04:56:39.448 lte\_rrc\_csp.c 33400 H CSP: Continuing with cell selection after SIB read error Sub-ID:2  //Now UE camped on cell (41134,351)  04:56:44.907 lte\_rrc\_csp.c 29372 L CSP: Acq succeeded on physical cell ID 351 on earfcn 41134, MIB SFN 76 Sub-ID:2  04:56:46.542 lte\_rrc\_csp.c 27108 L CSP: Camped on physical cell ID 351 on earfcn 41134 Sub-ID:2 |

## 数据业务断流相关

数据断流问题分析流程：

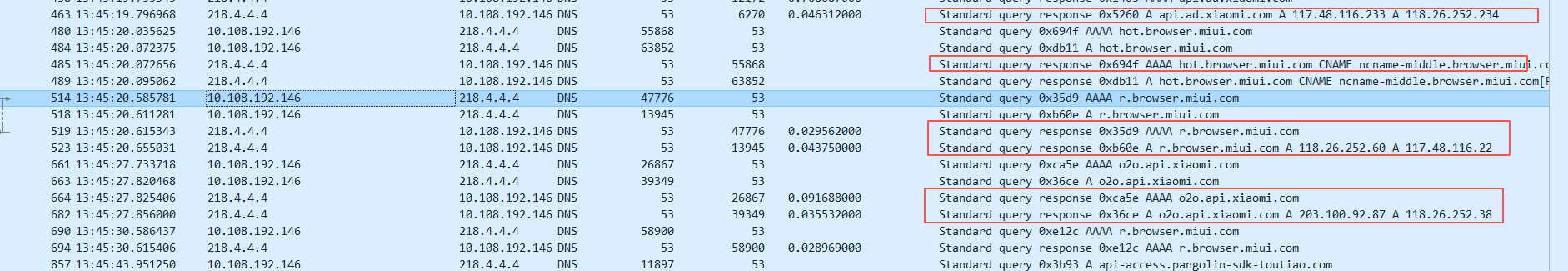
1. 查看当前数据主卡的注册状态
2. 查看当前断流时间段是否存在数据上行和下行-> 确定Modem是否有suspend UL或者DL流
3. 查看是否只有特定的APP才会出现断流，其他APP能够正常上网
4. 查看DPL(Wireshark) Log确定是否在TCP链路上存在故障

[THYME-3871](https://jira.n.xiaomi.com/browse/THYME-3871) J2S\_R\_NJ\_Modem\_测试机插卡卡1电信4G+卡2联通3G,放置屏蔽盒2分钟后浏览器出现断流\_仅一次\_V12.5.0.2

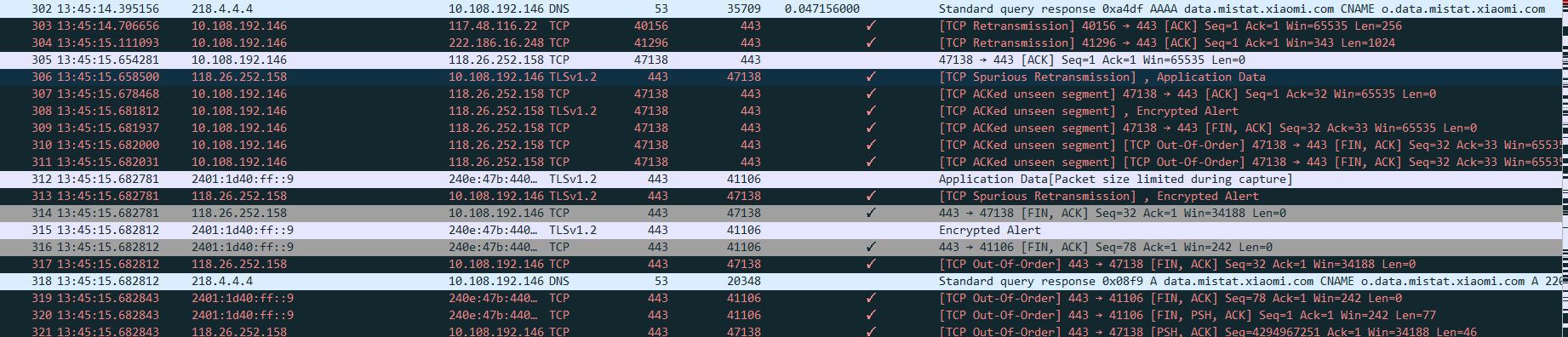
|  |
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| **// 这里data suspend由1变为0，表示当前不存在data suspend情况**  **[ 42/ 0/2] 05:44:58.974162 MMODE/STRM/High/CM [ cmss.c 23650] RPT: PROC\_DATA\_SUSPEND: sub 0 stk 0 data\_suspend 1->0, stt -1**  **// 存在TAU流程表示当前的注册状态正常**  [0xB0ED] 05:45:00.984428 LTE NAS EMM Plain OTA Outgoing MessageTracking area update request Msg1  [0xB0EC] 05:45:01.190246 LTE NAS EMM Plain OTA Incoming MessageTracking area update accept Msg1  [0xB0ED] 05:45:01.193707 LTE NAS EMM Plain OTA Outgoing MessageTracking area update complete Msg1  **// ENL2DL表示链路下行可以正常接收包**  [ 76/ 4/0] 05:45:13.053774 QSH/ANALYSIS/Low/ENL2DL [ **enl2\_dl\_qsh.c 1489] ENL2DL | LT | DL since last |4gPHY| 19 Kbps |4gMAC| 4 Kbps (pad: 14 Kbps) |4gRLC| 4 Kbps |4gPDCP| 4 Kbps |IPA| 4 Kbps (0 Kbps) |AP (MDM) | TPUT**  [ 76/ 4/0] 05:45:15.053831 QSH/ANALYSIS/Low/ENL2DL [ **enl2\_dl\_qsh.c 1489] ENL2DL | LT | DL since last |4gPHY| 20 Kbps |4gMAC| 3 Kbps (pad: 16 Kbps) |4gRLC| 3 Kbps |4gPDCP| 2 Kbps |IPA| 2 Kbps (0 Kbps) |AP (MDM) | TPUT**  [ 76/ 4/0] 05:45:17.053933 QSH/ANALYSIS/Low/ENL2DL [ **enl2\_dl\_qsh.c 1489] ENL2DL | LT | DL since last |4gPHY| 52 Kbps |4gMAC| 13 Kbps (pad: 38 Kbps) |4gRLC| 13 Kbps |4gPDCP| 14 Kbps |IPA| 14 Kbps (0 Kbps) |AP (MDM) | TPUT**  [ 76/ 4/0] 05:45:19.053989 QSH/ANALYSIS/Low/ENL2DL [ enl2\_dl\_qsh.c 1489] **ENL2DL** | LT | DL since last |4gPHY| 7 Kbps |4gMAC| 0 Kbps (pad: 6 Kbps) |4gRLC| 0 Kbps |4gPDCP| 0 Kbps |IPA| 0 Kbps (0 Kbps) |AP (MDM) | TPUT  [ 76/ 4/0] 05:45:21.054112 QSH/ANALYSIS/Low/ENL2DL [ enl2\_dl\_qsh.c 1489] **ENL2DL** | LT | DL since last |4gPHY| 162 Kbps |4gMAC| 86 Kbps (pad: 75 Kbps) |4gRLC| 85 Kbps |4gPDCP| 85 Kbps |IPA| 85 Kbps (0 Kbps) |AP (MDM) | TPUT  **// ENL2UL表示上行可以接收包**  **[ 76/ 4/0] 05:45:13.053891 QSH/ANALYSIS/Low/ENL2UL [ lte\_rlcul\_qsh.c 817] ENL2UL | LT | UL since last |IPA| 9 Kbps (DNE: 0 Kbps) |L2UL| 9 Kbps |MACpad| 10 Kbps |PHY| 21 Kbps | L2buffDelay: 0 ms | avgRLCrtt: 7 ms | WM: 0 bytes | txWin: 0 bytes | TPUT**  [ 76/ 4/0] 05:45:15.053935 QSH/ANALYSIS/Low/ENL2UL [ lte\_rlcul\_qsh.c 817] ENL2UL | LT | UL since last |IPA| 18 Kbps (DNE: 0 Kbps) |L2UL| 18 Kbps |MACpad| 19 Kbps |PHY| 38 Kbps | L2buffDelay: 0 ms | avgRLCrtt: 31 ms | WM: 0 bytes | txWin: 0 bytes | TPUT  [ 76/ 4/0] 05:45:17.054091 QSH/ANALYSIS/Low/ENL2UL [ lte\_rlcul\_qsh.c 817] ENL2UL | LT | UL since last |IPA| 39 Kbps (DNE: 0 Kbps) |L2UL| 39 Kbps |MACpad| 25 Kbps |PHY| 66 Kbps | L2buffDelay: 0 ms | avgRLCrtt: 24 ms | WM: 0 bytes | txWin: 0 bytes | TPUT  [ 76/ 4/0] 05:45:19.054084 QSH/ANALYSIS/Low/ENL2UL [ lte\_rlcul\_qsh.c 817] ENL2UL | LT | UL since last |IPA| 13 Kbps (DNE: 0 Kbps) |L2UL| 13 Kbps |MACpad| 7 Kbps |PHY| 22 Kbps | L2buffDelay: 0 ms | avgRLCrtt: 5 ms | WM: 0 bytes | txWin: 0 bytes | TPUT  [ 76/ 4/0] 05:45:21.054240 QSH/ANALYSIS/Low/ENL2UL [ lte\_rlcul\_qsh.c 817] ENL2UL | LT | UL since last |IPA| 148 Kbps (DNE: 0 Kbps) |L2UL| 149 Kbps |MACpad| 107 Kbps |PHY| 259 Kbps | L2buffDelay: 0 ms | avgRLCrtt: 14 ms | WM: 0 bytes | txWin: 0 bytes | TPUT  [ 76/ 4/0] 05:45:23.054275 QSH/ANALYSIS/Low/ENL2UL [ lte\_rlcul\_qsh.c 817] ENL2UL | LT | UL since last |IPA| 33 Kbps (DNE: 0 Kbps) |L2UL| 33 Kbps |MACpad| 13 Kbps |PHY| 58 Kbps | L2buffDelay: 0 ms | avgRLCrtt: 20 ms | WM: 0 bytes | txWin: 0 bytes | TPUT |

pcap文件查看

1. DNS查询是否能够正常返回APP服务器地址



1. **TCP连接数据查看。大量异常传输的报文。只需要确定收发正常，流程问题为APP内部实现问题导致。**



### 打开数据开关，数据业务激活失败

PC拨号问题。

[UPGR7150R-4826](https://jira.n.xiaomi.com/browse/UPGR7150R-4826) [G7B\_R\_CN\_XA\_RH][Modem]打开数据开关移动卡数据业务启动失败，出现时必现\_5/5\_V12.5.0.1.RGHCNXM

在start\_network\_interface的QMI消息中看到失败的信息，call end reason为241。241表示PC拨号失败。需要关闭Win10 PC端的WWAN AutoConfig。

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| **复测建议：**  disable Windows10 auto connnect  Steps: Presess Search Windows --> Type 'Services.msc' --> Locate 'WWAN AutoConfig' -->  Change startup type to 'Disable' or 'Manua  **QMI消息**  06:39:50.224003 [0x1544] QMI\_MCS\_QCSI\_PKT  packetVersion = 2  MsgType = Response  Counter = 4  ServiceId = WDS  MajorRev = 1  MinorRev = 155  ConHandle = 0x00000175  MsgId = 0x00000020  QmiLength = 26  Service\_WDS {  ServiceWDSV1 {  wds\_start\_network\_interface {  wds\_start\_network\_interface\_respTlvs[0] {  Type = 0x02  Length = 4  resp {  result = QMI\_RESULT\_FAILURE  error = QMI\_ERR\_CALL\_FAILED  }  }  wds\_start\_network\_interface\_respTlvs[1] {  Type = 0x01  Length = 4  pkt\_data\_handle {  pkt\_data\_handle = 0  }  }  wds\_start\_network\_interface\_respTlvs[2] {  Type = 0x10  Length = 2  call\_end\_reason {  call\_end\_reason = WDS\_CER\_UNSPECIFIED  }  }  wds\_start\_network\_interface\_respTlvs[3] {  Type = 0x11  Length = 4  verbose\_call\_end\_reason {  call\_end\_reason\_type = WDS\_VCER\_TYPE\_INTERNAL  call\_end\_reason = 241  }  } |

### 高通短/彩信重发机制

**卡1呼叫过程中，卡2发起短信发送请求，一轮发送重复5次（每秒尝试1次），5次均失败后，间隔两秒，再尝试一轮。总共尝试4轮，共尝试20次。**

[UPGR7150R-4659](https://jira.n.xiaomi.com/browse/UPGR7150R-4659) [F4L\_R\_EU\_XA\_RH][短信]主卡移动通话，副卡电信MO短信，电话挂断后短信发送失败\_2/3\_V12.1.4.1.RFNEUXM

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| **卡1呼叫过程中，卡2发起短信发送请求，一轮发送重复5次（每秒尝试1次），5次均失败后，间隔两秒，再尝试一轮。总共尝试4轮，共尝试20次，均失败。**  **短信尝试的时间段： 08:35:27.753255到 08:35:53.907003，尝试时长26s。**  **在卡1呼叫过程中，卡2无法正常发起短信。如果在尝试的时间范围，从发起短信到短信发送返回失败的26s内挂断了卡1的电话，则可能成功。如果在26s内都没有挂断电话，则短信不会发送成功。**  // 卡1发起VoLTE呼叫  [0x156E] 08:33:49.102487 IMS SIP Message Length: 2189 1  [0xB0E2] 08:33:49.370003 LTE NAS ESM Plain OTA Incoming MessageActivate dedicated EPS bearer context request Msg1  [0xB0E3] 08:33:49.373008 LTE NAS ESM Plain OTA Outgoing MessageActivate dedicated EPS bearer context accept Msg1  [0x1830] 08:33:55.907006 IMS VoLTE Session Setup Length: 236 1  **// 第一次尝试，耗时5s**  [0x1544] 08:35:27.753255 QMI\_MCS\_QCSI\_PKT Length: 88  [0x1544] 08:35:32.815063 QMI\_MCS\_QCSI\_PKT Length: 65  **// 第二次尝试，耗时5s。与上一次间隔2s。**  [0x1544] 08:35:34.847474 QMI\_MCS\_QCSI\_PKT Length: 88  [0x1544] 08:35:39.848018 QMI\_MCS\_QCSI\_PKT Length: 60  // 呼叫中，卡2短信发送请求。第三次尝试耗时5s，与上一次间隔2s。  [0x1544] 08:35:41.882495 QMI\_MCS\_QCSI\_PKT Length: 88  wms\_raw\_send {  wms\_raw\_send\_reqTlvs[0] {  Type = 0x01  Length = 37  raw\_message\_data {  format = WMS\_MESSAGE\_FORMAT\_GW\_PP  len = 34  raw\_message =  { 0, 5, 80, 11, 129, 49, 80, 103, 66, 48, 246, 0, 8, 20, 89, 39, 105, 130, 95, 136, 89, 125, 128, 198, 86, 250, 145, 135, 103, 81, 94, 114, 144, 232 }  }  }  wms\_raw\_send\_reqTlvs[1] {  Type = 0x13  Length = 1  sms\_on\_ims  { sms\_on\_ims = false }  }  **// 每一秒尝试一次，尝试5次，均超时无法发送**  [ 18/ 2] 08:35:42.882839 Wireless Messaging Services/High[ wmsmsg.c 19624] got WMS\_MO\_RETRY\_TIMER\_SIG  [ 18/ 2] 08:35:43.882734 Wireless Messaging Services/High[ wmsmsg.c 19624] got WMS\_MO\_RETRY\_TIMER\_SIG  [ 18/ 2] 08:35:44.882865 Wireless Messaging Services/High[ wmsmsg.c 19624] got WMS\_MO\_RETRY\_TIMER\_SIG  [ 18/ 2] 08:35:45.882969 Wireless Messaging Services/High[ wmsmsg.c 19624] got WMS\_MO\_RETRY\_TIMER\_SIG  [ 18/ 2] 08:35:46.882995 Wireless Messaging Services/High[ wmsmsg.c 19624] got WMS\_MO\_RETRY\_TIMER\_SIG  **// 返回失败**  [0x1544] 08:35:46.883008 QMI\_MCS\_QCSI\_PKT Length: 60  wms\_raw\_send\_respTlvs[0] {  Type = 0x02  Length = 4  resp  { result = QMI\_RESULT\_FAILURE error = \*QMI\_ERR\_MESSAGE\_DELIVERY\_FAILURE\* }  **//第四次尝试，与上一次间隔2s。**  [0x1544] 08:35:48.906033 QMI\_MCS\_QCSI\_PKT Length: 88  [ 18/ 2] 08:35:49.905990 Wireless Messaging Services/High[ wmsmsg.c 19624] got WMS\_MO\_RETRY\_TIMER\_SIG  [ 18/ 2] 08:35:50.905990 Wireless Messaging Services/High[ wmsmsg.c 19624] got WMS\_MO\_RETRY\_TIMER\_SIG  [ 18/ 2] 08:35:51.906068 Wireless Messaging Services/High[ wmsmsg.c 19624] got WMS\_MO\_RETRY\_TIMER\_SIG  [ 18/ 2] 08:35:52.906016 Wireless Messaging Services/High[ wmsmsg.c 19624] got WMS\_MO\_RETRY\_TIMER\_SIG  [ 18/ 2] 08:35:53.905990 Wireless Messaging Services/High[ wmsmsg.c 19624] got WMS\_MO\_RETRY\_TIMER\_SIG  [ 18/ 2] 08:35:53.906979 Wireless Messaging Services/High[ wmsmsg.c 17332] MO SMS Failure Cause Value = 31  [ 18/ 2] 08:35:53.906979 Wireless Messaging Services/High[ wmsmsg.c 17356] MO SMS OTA\_REJECT\_TYPE = 3 , OTA\_REJECT\_CAUSE = 169  **[0x1544] 08:35:53.907003 QMI\_MCS\_QCSI\_PKT Length: 60   // 最后返回失败**  [0x1831] 08:38:07.260025 IMS VoLTE Session End Length: 191 1  [0xB0E2] 08:38:07.638104 LTE NAS ESM Plain OTA Incoming MessageDeactivate EPS bearer context request Msg1  [0xB0E3] 08:38:07.638104 LTE NAS ESM Plain OTA Outgoing MessageDeactivate EPS bearer context accept Msg1 |

## SIM相关问题

### SIM读取时间长问题

SIM卡文件过大导致读取慢，高通需要申请CR#2804881进行优化

[THYME-3268](https://jira.n.xiaomi.com/browse/THYME-3268) FT\_J2S\_ShenZhen\_单卡电信5G VOLTE，热拔插后，识别到卡并注册上5G，大约需要20秒时间，时间过长，带录屏\_2/2\_0128

SIM初始化的时间可以根据如下三个Log确定时长。

|  |
| --- |
| MSG 02:26:21.710944 User Identity Module/High[ mmgsdi.c 8630] MMGSDI\_CARD\_INSERTED\_EVT, slot: 0x1  MSG 02:26:28.720703 User Identity Module/High[ mmgsdi.c 8569] MMGSDI\_SUBSCRIPTION\_READY\_EVT, app: 0x3, slot: 0x1  MSG 02:26:35.827319 User Identity Module/High[ mmgsdi.c 8569] MMGSDI\_SUBSCRIPTION\_READY\_EVT, app: 0x4, slot: 0x1 |

### SIM卡不识别问题

目前见到的绝大多数SIM卡不识别问题为SIM卡贴片与SIM卡座之间的接触问题。Modem的常规处理为反复尝试以1.8V和3.0V的电压重新激活SIM的读卡流程。如果一直处于尝试阶段，或者一直收不到SIM的APDU消息，则认为卡接触存在问题。

此问题需要测试同事确定必现问题还是偶现问题，必现问题需要SIM负责的组继续查看硬件设计问题。偶现问题需要先换卡，确定是否存在卡的接触问题。

搜索的步骤以及关键字推荐：

1. 选中所有消息，Alt+R，在Message Packets中，选择User Identity Module，过滤这个模块的所有消息。
2. 选中过滤得到的所有User Identity Module消息，Alt+M，在Match栏中输入**uim power on|uim power down|uim\_reset| UIM\_MAX\_NUM\_ATTEMPTS记得在RegEx Engine中选中Perl**
3. **如果发现\_NUM\_ATTEMPTS多次出现，则表示Modem存在多次尝试救卡的动作。可判断为硬件接触存在问题。**
4. **也可以通过Log packets中的APDU来查看对应的APDU消息流程是否正常。异常情况下，COLD\_RESET会多次出现，且对应卡的APDU包几乎都是空的。**

示例JIRA：

[PSYCHE-4767](https://jira.n.xiaomi.com/browse/PSYCHE-4767) FT\_L3A\_Suzhou\_卡1主卡电信5GVOLTE-NSA+卡2副卡电信5G VOLTE-NAS，热插拔后卡1只识别一张SIM卡（附录屏)(2/10)\_20210917

|  |
| --- |
| **Modem多次尝试以1.8V和3V电压拉起卡2，但是卡2一直没有响应。这里判断为硬件接触问题，需要更换SIM卡重新看下复现概率。**    **// 设置1.8V冷重启**  [0x19B7] 03:10:33.954840 UIM APDU SLOT\_2 Type =  Slot Id = SLOT\_2  **Message Type = COLD\_RESET**  Control byte = 106  Cold Reset  { Clock = CLOCK\_4P8\_MHz \*Voltage = VOLTAGE\_1P8 }  \*  **[ 21/ 2] 03:10:33.954840 User Identity Module/High[ uimdrv\_hal\_iso.c 248] UIM\_2: uim power up @ 1.8 v**  [ 21/ 0] 03:10:33.976923 User Identity Module/Low [ uimdrv\_hal\_iso.c 461] UIM\_2: **uim\_reset**  [ 21/ 2] 03:10:33.977861 User Identity Module/High[ uimdrv\_hal\_iso.c 338] UIM\_2\*: uim power down @ 1.8 v\*  [0x19B7] 03:10:33.979475 UIM APDU SLOT\_2 Type =  Message Type = **POWER\_OFF**  **// 重新以3V重启卡2激活流程**  [0x19B7] 03:10:34.015543 UIM APDU SLOT\_2 Type =  Slot Id = SLOT\_2  Message Type = **COLD\_RESET**  Control byte = 0  Cold Reset  { Clock = CLOCK\_4P8\_MHz Voltage = \*VOLTAGE\_3P0 }  \*  [ 21/ 2] 03:10:34.015569 User Identity Module/High[ uimdrv\_hal\_iso.c 255] UIM\_2\*: uim power up @ 3 v\*  [ 21/ 0] 03:10:34.037600 User Identity Module/Low [ uimdrv\_hal\_iso.c 461] UIM\_2: **uim\_reset**  [ 21/ 2] 03:10:34.038538 User Identity Module/High[ uimdrv\_hal\_iso.c 342] UIM\_2: **uim power down @ 3 v**  [0x19B7] 03:10:34.040126 UIM APDU SLOT\_2 Type =  [0x19B7] 03:10:34.052496 UIM APDU SLOT\_2 Type =  [ 21/ 2] 03:10:34.052496 User Identity Module/High[ uimdrv\_hal\_iso.c 248] UIM\_2: uim power up @ 1.8 v  [ 21/ 0] 03:10:34.074501 User Identity Module/Low [ uimdrv\_hal\_iso.c 461] UIM\_2: uim\_reset  [ 21/ 2] 03:10:34.075621 User Identity Module/High[ uimdrv\_hal\_iso.c 338] UIM\_2: uim power down @ 1.8 v  [0x19B7] 03:10:34.077184 UIM APDU SLOT\_2 Type =  [ 21/ 2] 03:10:34.113303 User Identity Module/High[ uimdrv\_hal\_iso.c 255] UIM\_2: uim power up @ 3 v  [ 21/ 0] 03:10:34.135335 User Identity Module/Low [ uimdrv\_hal\_iso.c 461] UIM\_2: uim\_reset  [ 21/ 2] 03:10:34.136455 User Identity Module/High[ uim\_sigs.c 1677] UIM\_2: Entering **UIM\_MAX\_NUM\_ATTEMPTS**  [ 21/ 2] 03:10:34.136455 User Identity Module/High[ uimdrv\_hal\_iso.c 342] UIM\_2: uim power down @ 3 v  [ 21/ 0] 03:10:44.172822 User Identity Module/Low [ uimdrv\_hal\_iso.c 461] UIM\_2: uim\_reset  [ 21/ 2] 03:11:04.826255 User Identity Module/High[ uimdrv\_hal\_iso.c 338] UIM\_2: uim power down @ 1.8 v  [ 21/ 2] 03:11:05.090050 User Identity Module/High[ uimdrv\_hal\_iso.c 248] UIM\_2: uim power up @ 1.8 v  [ 21/ 0] 03:11:05.112178 User Identity Module/Low [ uimdrv\_hal\_iso.c 461] UIM\_2: uim\_reset  [ 21/ 2] 03:11:05.116727 User Identity Module/High[ uimdrv\_hal\_iso.c 338] UIM\_2: uim power down @ 1.8 v  [ 21/ 2] 03:11:05.380532 User Identity Module/High[ uimdrv\_hal\_iso.c 248] UIM\_2: uim power up @ 1.8 v  [ 21/ 0] 03:11:05.402668 User Identity Module/Low [ uimdrv\_hal\_iso.c 461] UIM\_2: uim\_reset  [ 21/ 2] 03:11:05.407245 User Identity Module/High[ uimdrv\_hal\_iso.c 338] UIM\_2: uim power down @ 1.8 v  [ 21/ 2] 03:11:05.921056 User Identity Module/High[ uimdrv\_hal\_iso.c 248] UIM\_2: uim power up @ 1.8 v  [ 21/ 0] 03:11:05.943221 User Identity Module/Low [ uimdrv\_hal\_iso.c 461] UIM\_2: uim\_reset  [ 21/ 2] 03:11:05.947791 User Identity Module/High[ uimdrv\_hal\_iso.c 338] UIM\_2: uim power down @ 1.8 v  [ 21/ 2] 03:11:05.961564 User Identity Module/High[ uimdrv\_hal\_iso.c 248] UIM\_2: uim power up @ 1.8 v  [ 21/ 2] 03:11:05.983551 User Identity Module/High[ uim\_sigs.c 1677] UIM\_2: Entering **UIM\_MAX\_NUM\_ATTEMPTS**  [ 21/ 2] 03:11:05.983560 User Identity Module/High[ uimdrv\_hal\_iso.c 338] UIM\_2: uim power down @ 1.8 v  [ 21/ 2] 03:11:10.997836 User Identity Module/High[ uimdrv\_hal\_iso.c 248] UIM\_2: uim power up @ 1.8 v  [ 21/ 0] 03:11:11.019911 User Identity Module/Low [ uimdrv\_hal\_iso.c 461] UIM\_2: uim\_reset  [ 21/ 2] 03:11:11.020833 User Identity Module/High[ uimdrv\_hal\_iso.c 338] UIM\_2: uim power down @ 1.8 v  [ 21/ 2] 03:11:11.058636 User Identity Module/High[ uimdrv\_hal\_iso.c 255] UIM\_2: uim power up @ 3 v  [ 21/ 0] 03:11:11.080775 User Identity Module/Low [ uimdrv\_hal\_iso.c 461] UIM\_2: uim\_reset  [ 21/ 2] 03:11:11.081698 User Identity Module/High[ uimdrv\_hal\_iso.c 342] UIM\_2: uim power down @ 3 v  [ 21/ 2] 03:11:11.095647 User Identity Module/High[ uimdrv\_hal\_iso.c 248] UIM\_2: uim power up @ 1.8 v  [ 21/ 0] 03:11:11.117704 User Identity Module/Low [ uimdrv\_hal\_iso.c 461] UIM\_2: uim\_reset  [ 21/ 2] 03:11:11.118810 User Identity Module/High[ uimdrv\_hal\_iso.c 338] UIM\_2: uim power down @ 1.8 v  [ 21/ 2] 03:11:11.156581 User Identity Module/High[ uimdrv\_hal\_iso.c 255] UIM\_2: uim power up @ 3 v  [ 21/ 0] 03:11:11.178737 User Identity Module/Low [ uimdrv\_hal\_iso.c 461] UIM\_2: uim\_reset  [ 21/ 2] 03:11:11.179854 User Identity Module/High[ uim\_sigs.c 1677] UIM\_2: Entering **UIM\_MAX\_NUM\_ATTEMPTS**  [ 21/ 2] 03:11:11.179858 User Identity Module/High[ uimdrv\_hal\_iso.c 342] UIM\_2: uim power down @ 3 v  [ 21/ 2] 03:11:21.194101 User Identity Module/High[ uimdrv\_hal\_iso.c 248] UIM\_2: uim power up @ 1.8 v  [ 21/ 0] 03:11:21.216164 User Identity Module/Low [ uimdrv\_hal\_iso.c 461] UIM\_2: uim\_reset  [ 21/ 2] 03:11:21.217095 User Identity Module/High[ uimdrv\_hal\_iso.c 338] UIM\_2: uim power down @ 1.8 v  [ 21/ 2] 03:11:21.254840 User Identity Module/High[ uimdrv\_hal\_iso.c 255] UIM\_2: uim power up @ 3 v  [ 21/ 0] 03:11:21.276979 User Identity Module/Low [ uimdrv\_hal\_iso.c 461] UIM\_2: uim\_reset  [ 21/ 2] 03:11:21.277920 User Identity Module/High[ uimdrv\_hal\_iso.c 342] UIM\_2: uim power down @ 3 v  [ 21/ 2] 03:11:21.292024 User Identity Module/High[ uimdrv\_hal\_iso.c 248] UIM\_2: uim power up @ 1.8 v  [ 21/ 0] 03:11:21.314172 User Identity Module/Low [ uimdrv\_hal\_iso.c 461] UIM\_2: uim\_reset  [ 21/ 2] 03:11:21.315302 User Identity Module/High[ uimdrv\_hal\_iso.c 338] UIM\_2: uim power down @ 1.8 v  [ 21/ 2] 03:11:21.353317 User Identity Module/High[ uimdrv\_hal\_iso.c 255] UIM\_2: uim power up @ 3 v  [ 21/ 0] 03:11:21.375764 User Identity Module/Low [ uimdrv\_hal\_iso.c 461] UIM\_2: uim\_reset  [ 21/ 2] 03:11:21.376965 User Identity Module/High[ uim\_sigs.c 1677] UIM\_2: Entering **UIM\_MAX\_NUM\_ATTEMPTS** |

## GSM通话问题分析

### GSM接入问题

GSM的SABM发生多次重传，反映出接入存在问题。

[UPGR8150R-1845](https://jira.n.xiaomi.com/browse/UPGR8150R-1845) FT\_F1-R-Shanghai\_卡一主卡移动4Gvolte+卡二副卡移动4G\_idle\_SIM1呼叫SIM2，MO端提示暂时无法接通（1/20） \_0226

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Created By: Guibing Gu (3/9/2021 8:39 PM)**  Dear Customer,  **MT call failed as very bad RF condition**  //Start RACH for Page  MSG 05:35:27.289 GSM GPRS GRR/High [ rr\_conn\_establish.c 1609] gs2:StartRA(0x9E) for Paging Response (reason=11, chan=6)  MSG 05:35:27.493 GSM GPRS GRR/High [ rr\_conn\_establish.c 2514] gs2:Immediate Assignment (CS) is for mobile  //Received IA, but as the very bad RF condition, cannto decode SDCCH and cannot send SABM frame to n/w to establish L2 link  **MSG 05:35:27.915 GSM L2/High [ l2\_establish.c 448] SABM Retransmission= 1**  **MSG 05:35:28.857 GSM L2/High [ l2\_establish.c 448] SABM Retransmission= 5**  MSG 05:35:28.150 GSM L1/Error [ l1\_sdcch.c 1767] gs2:SDCCH decode failed  **05:35:28.150 [0x5A6C] GSM DSDS L1 Burst Metrics**  Channel = SDCCH   |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  | Number | ARFCN | Band | RSSI | (dBm) | Channel | Channel | Estimate | Estimate | SNR (dB) | Gain State |   --------------------------------------------------------------------------------------------------------------------------------   |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | 0 | 2599474 | 57 | GSM 900 | 26281 | -103.44 | 17 | -10 | 0 | 0 | 1.04 | Not Initialized | | 1 | 2599475 | 57 | GSM 900 | 20704 | -104.50 | -7 | -15 | 0 | 0 | 0.23 | Not Initialized | | 2 | 2599476 | 57 | GSM 900 | 22997 | -104.00 | 0 | -1 | 0 | 0 | 3.09 | Not Initialized | | 3 | 2599477 | 57 | GSM 900 | 31107 | -102.69 | -94 | -13 | 14 | 0 | 5.23 | Not Initialized |   MSG 05:35:28.385 GSM L1/Error [ l1\_sdcch.c 1767] gs2:SDCCH decode failed  **MSG 05:35:29.092 GSM GPRS GRR/High [ rr\_conn\_establish.c 6499] gs2:L2 link failed flush the SI cache**  MSG 05:35:29.101 GSM GPRS GRR/High [ rr\_conn\_establish.c 6759] gs2:Timer T200 Expired force reselection  MSG 05:35:29.101 GSM GPRS GRR/High [ rr\_conn\_establish.c 931] gs2:Abort IA proc.(cause=0, fail=0, back to idle=0) |

## 高通重要的消息整理

### IMS丢包统计

**2021 Mar 17 03:19:42.670 [11] 0x1569 IMS RTP Packet Loss**

Subscription ID = 2

Version = 9

Number Lost = 1

Sequence Number = 28212

SSRC = 3D96

codecType = AMR

LossType = RTP NETWORK LOSS

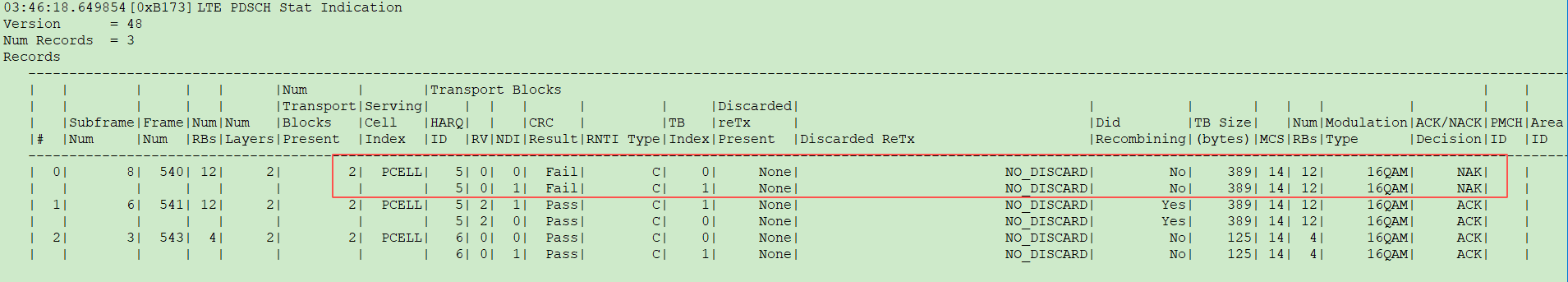
Num of Frame = 0

Total Lost = 1

Total Packets Count = 579

### LTE PDSCH统计信息 B173

该消息可以看到当前下行的接收情况，CRC Result若为Fail则会响应NACK，否则为ACK。根据NACK的比例确认下行的BLER。



### LTE邻区重选消息 B186

03:31:59.870061 [0xB186] LTE ML1 Reselection Candidates

Version = 41

Serving E-ARFCN = 1350

Serving Cell ID = 191

Num Reselection Candidates = 1

Candidates[0]

Candidate Priority = 7.0 // 重选的优先级 – 注意，优先级的数值越小，则优先级越高！！

RAT Type = EUTRAN // RAT名称

LTE Candidate

E-ARFCN = 39148 // 频点

Cell ID = 252 // 小区

### CDMA信号和帧解码统计 119D

该消息需要通过QCAT解析查看

参考文档：KBA-161024211115

Customer may hope to know the CDMA signal and frame demod statistics. we have log packet 0x119d to show these information.

Note: please select Paring Options as "QCAT, Parsing DLLs, Default DB, User's DB" through menu "Options->Parsing Options".

Below is one example, only some critical fields are explained here.

[0x119D] LOG 11:58:54.876 Srch TNG Demod Status Length: 0672

Sub-packet (1)

ID = Searcher Status

Searcher State = 8 (Operation on traffic chan) <-----------------This is searcher state

Sub-packet (2)

ID = RF

TX Power = -2.80 dBm <-----------------This is tx power

TX Power Limit = 24.67 dBm

Client (0)

Band Class = 0 (800 MHz)

Channel = 283

RX AGC = -77.61 dBm <-----------------This is RxAGC, i.e. Rx power

Client (1)

Band Class = 255 (Disabled)

Channel = 0

RX AGC = -20.83 dBm <-----------------This is RxAGC for Rx Diversity if enabled

Sub-packet (3)

ID = Active Info <-----------------This is Active Set info

Reference PN = 22

Active (1)

Pilot PN = 22

Peak Info

-------------------------------------------

| Peak| Position| Energy|

-------------------------------------------

| 0| 111026| -12.86| <-----------------This is PN energy, i.e. EcIo for PN#22

| 1| 111071| -17.07|

| 2| 111263| -23.43|

| 3| 110940| -24.17|

| 4| 111086| -25.54|

| 5| 110887| -26.08|

Active (2)

Pilot PN = 322

Peak Info

-------------------------------------------

| Peak| Position| Energy|

-------------------------------------------

| 0| 111044| -11.08| <-----------------This is PN energy, i.e. EcIo for PN#322

| 1| 111083| -19.62|

| 2| 111059| -22.95|

| 3| 111026| -23.48|

| 4| 111302| -24.38|

| 5| 111332| -26.40|

Active (3)

......

Active (4)

......

Sub-packet (5)

ID = Traffic Demod Status <-----------------This is Traffic Demod Status sub-packet

Decode rate = 1 (EIGHTH\_RATE) <-----------------This is PN frame rate

Erasure = 0

Frame Rate Count - Erasure = 2 <-----------------This is total erause frames received totally – 这个是统计的解码错误的个数

Frame Rate Count - Eigthth = 195 <-----------------This is total 1/8 frames received totally

Frame Rate Count - Quarter = 0 <-----------------This is total 1/4 frames received totally

Frame Rate Count - Half = 1 <-----------------This is total 1/2 frames received totally

Frame Rate Count - Full = 43 <-----------------This is full frames received totally

Total Frames = 241 <-----------------This is total frames received

## CDMA的搜网

驻留到CDMA后若要重新搜索LTE，需要等3min之后才开始进行。

[THYME-3564](https://jira.n.xiaomi.com/browse/THYME-3564) J2S\_R\_NJ\_Modem\_测试机插卡卡1移动5GVOLTE+卡2电信4GVOLTE放置屏蔽盒后拿出电信上VOLTE时间过长\_仅一次\_21.3.1

At 02:55:47, SUB1 already went to CDMA. At 02:55:26, SUB1 LTE reported no service.

So I doubt it's a probable issue. It depends how long the device is put into shield box.

// Request LTE, but no service is reported

02:55:19.024,reg\_send.c,2174,2,DS: SUB 1 =REG= MMR\_REG\_REQ PLMN(460-11) RAT(0-GSM,1-W,2-LTE,3-TDS,4-NR5G) = 2 trans\_id 123, scan\_scope=0,Sub-ID:2,

02:55:26.782,emm\_rrc\_handler.c,3485,2,DS: SUB 1 =EMM= RRC\_SERVICE\_IND -PLMN (0 - 0), TAC 0 SRV REQ pending 16973947, state = 3 sub\_state = 4,Sub-ID:2,

// register CDMA

02:55:45.897,sdss.c,21083,2,>>>> Proc CDMA acq event=304 >>>>,Sub-ID:2,

// Start BSR timer 180s

02:55:46.483,sdss.c,21087,2,>>>> Proc CDMA opr event=401 >>>>,Sub-ID:2,

02:55:46.483,sdcmd.c,10220,2,Timerset: SS-Timer on ss0:=180s or 180000ms, uptime=4520s, exp=4700s, sub 1,Sub-ID:2,

## DRB\_REESTABLISH\_REJECT\_IND

[UPGR710R-2501](https://jira.n.xiaomi.com/browse/UPGR710R-2501) F3B\_R\_NJ\_移动主卡主叫时掉VoLTE\_偶现\_21.6.8

|  |
| --- |
| Dear customer,   * summary: * tau with active flag 0 and tau accept start t3440 to wait nw send rrcrelease * **during this time esm ota canot send so always DRB\_REESTABLISH\_REJECT\_IND** * later volte call end redial over csfb , Caching esr during t3440 active * till t3440 time out locally release,camped on, esr can be send and irat to G do mo call * next step: * ue is follow spec, the root is nw no send rrcrelease when tau req with active flag 0 till t3440 timeout. * you can monitor and do comparison test sides by sides and if dut high probability while ref 0%, you can provide dut/ref log with default.dmc from lpm->online-> insert sim ->issue happen to check . tks!   //tau with active flag 0 and tau accept start t3440 to wait nw send rrcrelease  09:51:56.929005 LTE NAS EMM Plain OTA Outgoing MessageTracking area update request Msg1  active\_flag = 0 (0x0)  09:51:57.071039 LTE NAS EMM Plain OTA Incoming MessageTracking area update accept Msg1  09:51:57.386068 NAS MM/High [ mmtimers.c 548] DS: SUB 2 =MM= Start 80, timeout 10:0  09:51:57.072005 NAS MM/High [ emm\_update\_lib.c 8884] DS: SUB 1 =EMM= T3440 timer started  //during this time esm ota canot send so always DRB\_REESTABLISH\_REJECT\_IND  09:51:57.678021 Call Manager/Medium [ cmltecall.c 3543] =CM= DS->CM: RAB\_REESTAB: call\_id=12, connection\_id=0, bearer\_id=5, asubs\_id 0  09:51:57.678021 NAS MM/High [ emm\_esm\_handler.c 2316] DS: SUB 1 =EMM= Sent NAS\_ESM\_FAILURE\_IND  09:51:57.678021 Call Manager/Medium [ cmltecall.c 994] =CM= emm cause 1, detailed cause 2, acc\_barr\_time 0, depri 0  09:51:57.678021 NAS SM/High [ esm\_utils.c 1788] DS: SUB 1 ESM: ESM sent MM\_CM\_DRB\_REESTABLISH\_REJECT\_IND  09:51:57.727188 BCCH\_DL\_SCH / SystemInformationBlockType1Radio Bearer ID: 0, Freq: 38950, SFN: 9061  ```  //later volte call end redial over csfb , Caching esr during t3440 active  09:52:06.573516 Call Manager/High [ cmipapp.c 5573] =CM= CM->IMS: CMIPAPP: Sending IP END EXT, call\_id 1, app\_id 1, as\_id 0 end\_cause 620, unwanted\_call 0  09:52:06.975000 Call Manager/High [ cmcall.c 8822] =CM= AS\_ID 0, PROC\_REDIAL: SRFailed EndStatus=202 Redial act=17, call\_id=1, OK=1, voip\_sr.is\_valid=11  09:52:06.979010 NAS MM/High [emm\_service\_request\_lib.c 1608] DS: SUB 1 =EMM= T3440 active - Caching ESR  //till t3440 time out locally release  09:52:07.948984 NAS SM/High [ esm\_utils.c 1788] DS: SUB 1 ESM: ESM sent MM\_CM\_DRB\_REESTABLISH\_REJECT\_IND  09:52:07.072448 NAS MM/High [ emm\_update\_lib.c 3884] DS: SUB 1 =EMM= T3440 timer expired, sending abort connection to RRC  09:52:07.085000 NAS MM/High [emm\_connection\_handler.c 1862] DS: SUB 1 =EMM= Received LTE\_RRC\_CONN\_REL\_IND (4)  //camped on, esr can be send  09:52:07.170990 NAS MM/High [ emm\_rrc\_if.c 1135] DS: SUB 1 =EMM= Sent LTE\_RRC\_CONN\_EST\_REQ w/ cause 4  09:52:07.171002 LTE NAS EMM Plain OTA Outgoing MessageExtended service request Msg1  09:52:07.172110 UL\_CCCH / RRCConnectionRequestRadio Bearer ID: 0, Freq: 38950, SFN: 01  09:52:07.993003 CM\_SERVICE\_REQUEST Subscription ID: 1 Direction: Network To MS Length: 35851  09:52:09.164285 SETUP Subscription ID: 1 Direction: Network To MS Length: 87051  BRs!  lulu  0755-23631622 or 18680346312 |

## By Design的问题

### 三方通话过程中，AB保持，AC通话，C挂断电话，AB不会自动恢复仍然未保持状态

场景设置：

A与B建立呼叫，A收到C的来电，AB保持，A挂断AC通话，AB直接进入通话状态。

A与B建立呼叫，A收到C的来电，AB保持，C挂断AC通话，AB直接进入通话保持状态。 -- By Design

[UPGR7150R-4470](https://jira.n.xiaomi.com/browse/UPGR7150R-4470) F4\_R \_XA【Modem】3方通话过程中，第三方挂断后双方通话是保持状态\_必现\_V12.5.0.1.RFDCNXM

从现有代码看，只有本地发起的挂断，才会将后台的那通hold的call激活，而对方挂断是不会unhold剩下的call的。

从用户角度看，也是防止多方通话时，A端跟B、C通话信息出现错乱，引起隐私或者其他信息问题。

而且这个设计应该是一直以来google原生设计如此。请用对比机做相同前置条件的对比测试看看。

测试机跟对比机行为应该是一致的。

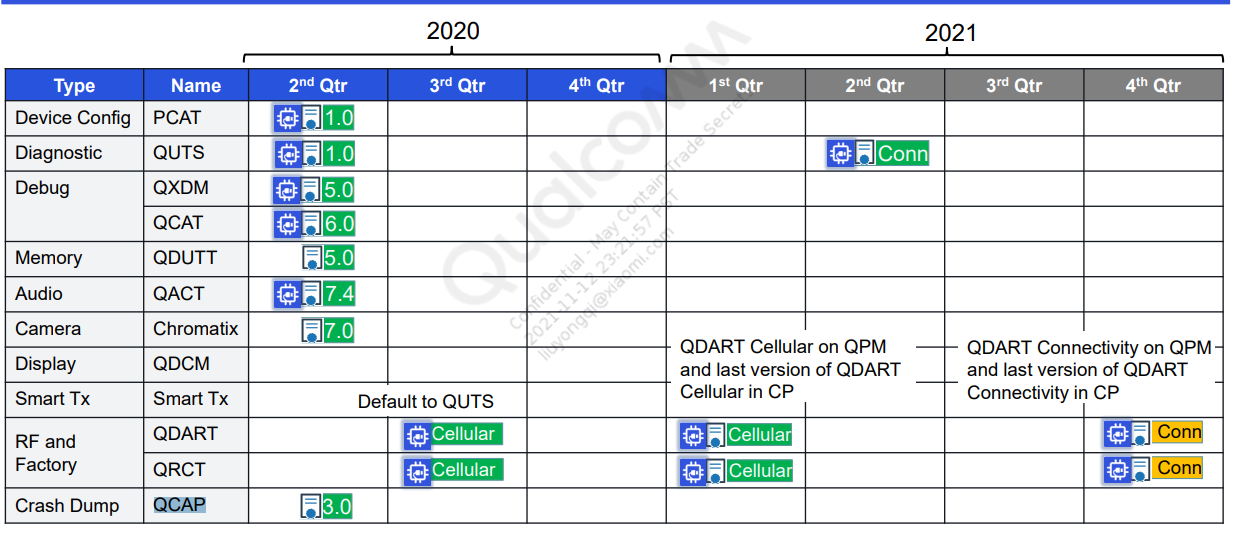
综上，won't fix。

|  |
| --- |
| void markCallAsRemoved(Call call) {  mInCallController.getBindingFuture().thenRunAsync(() -> {  call.maybeCleanupHandover();  removeCall(call);  Call foregroundCall = mCallAudioManager.getPossiblyHeldForegroundCall();  // 本地发起的disconnect会将另一通电话unhold  if (mLocallyDisconnectingCalls.contains(call)) {  boolean isDisconnectingChildCall = call.isDisconnectingChildCall();  Log.v(this, "markCallAsRemoved: isDisconnectingChildCall = "  + isDisconnectingChildCall + "call -> %s", call);  mLocallyDisconnectingCalls.remove(call);  // Auto-unhold the foreground call due to a locally disconnected call, except if the  // call which was disconnected is a member of a conference (don't want to auto  // un-hold the conference if we remove a member of the conference).  if (!isDisconnectingChildCall && foregroundCall != null  && foregroundCall.getState() == CallState.ON\_HOLD) {  foregroundCall.unhold();  }  // 或者另一通电话不支持hold能力，也会unhold  } else if (foregroundCall != null &&  !foregroundCall.can(Connection.CAPABILITY\_SUPPORT\_HOLD) &&  foregroundCall.getState() == CallState.ON\_HOLD) {  // The new foreground call is on hold, however the carrier does not display the hold  // button in the UI. Therefore, we need to auto unhold the held call since the user  // has no means of unholding it themselves.  Log.i(this, "Auto-unholding held foreground call (call doesn't support hold)");  foregroundCall.unhold();  }  }, new LoggedHandlerExecutor(mHandler, "CM.mCAR", mLock));  } |

# 高通Modem相关信息整理

## 高通平台常用工具

高通平台针对旗下的产品开发给OEM的工具列表如下图。



Modem侧常用工具为PCAT（NV，EFS，overideconfig的在线修改），QXDM（Modem Log查看），QCAT（Modem Log查看，Pcap，Audio文件转换），QCAP（Modem Crash解析），QUTS（替换了原有的QPST，以支持QDSS）。

工具说明中，很多地方提到QDSS，QDSS为Qualcomm Debug SubSystem，高通调试子系统。

工具的依赖关系：

* 1. QXDM目前用的是Version5，需要提前 QUTS工具
  2. QPCAT在线修改NV等参数前，必选要先安装QUD([QUD.WIN.1.1 Installer](https://createpoint.qti.qualcomm.com/tools/#suite/190/41888)):Qualcomm USB Driver，否则连接会报异常。

### QPCAT

#### 工具介绍

Qualcomm Product Configuration Assistant Tool：高通产品配置助手工具。

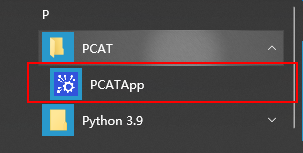
Note：QPCAT在线修改NV等参数前，必选要先安装QUD([QUD.WIN.1.1 Installer](https://createpoint.qti.qualcomm.com/tools/#suite/190/41888)):Qualcomm USB Driver，否则连接会报异常。

#### 基本使用

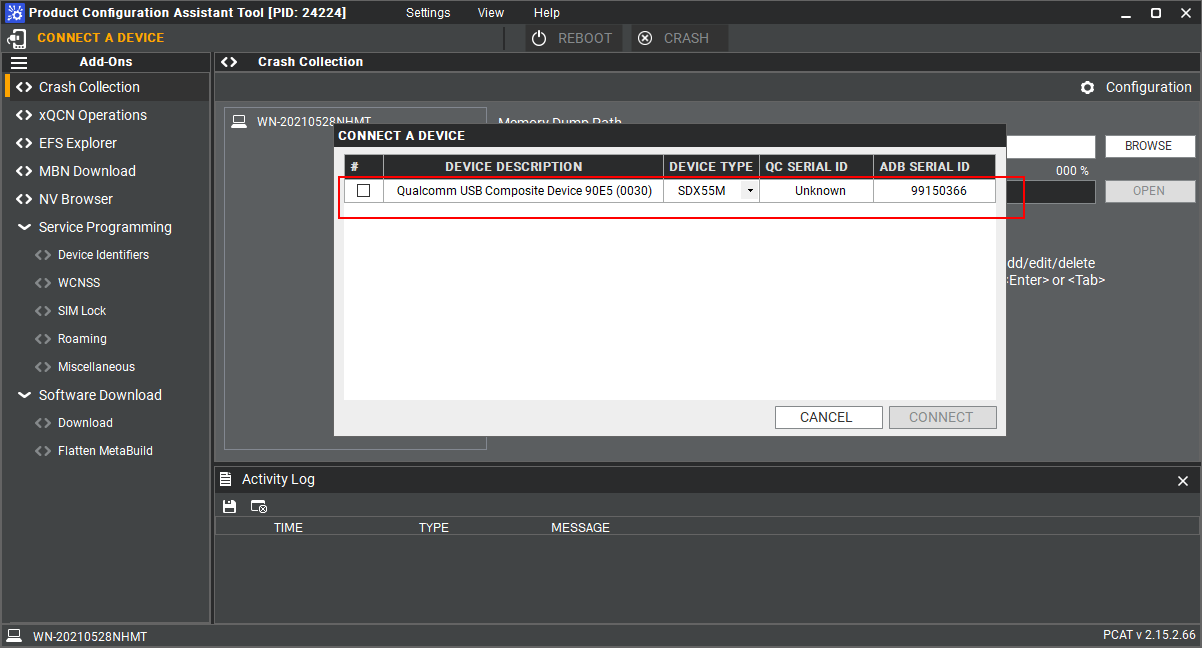
1. 该工具目前已经集成到QXDM5中，可以在QXDM5的工具栏中通过点击NV按钮启动QPCAT，如下图。



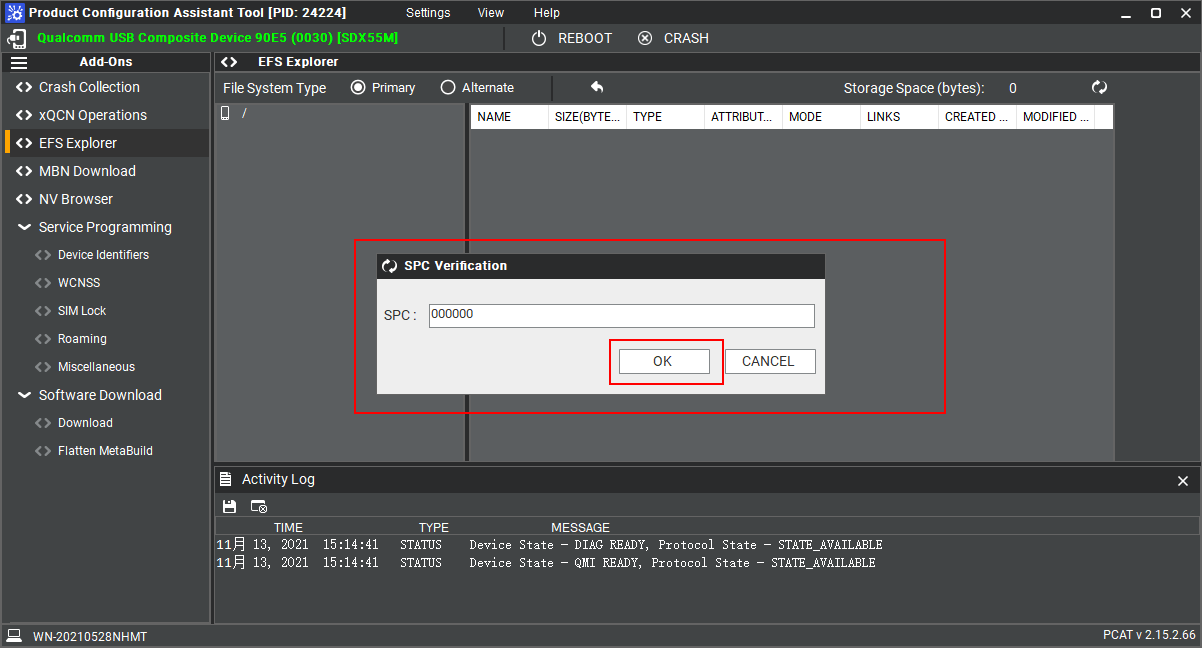
1. 或者在安装的程序列表中，找打QPCAT打开即可。



1. 在弹窗中选择Device Type为SDX55（8250平台），点击CONNECT按钮。

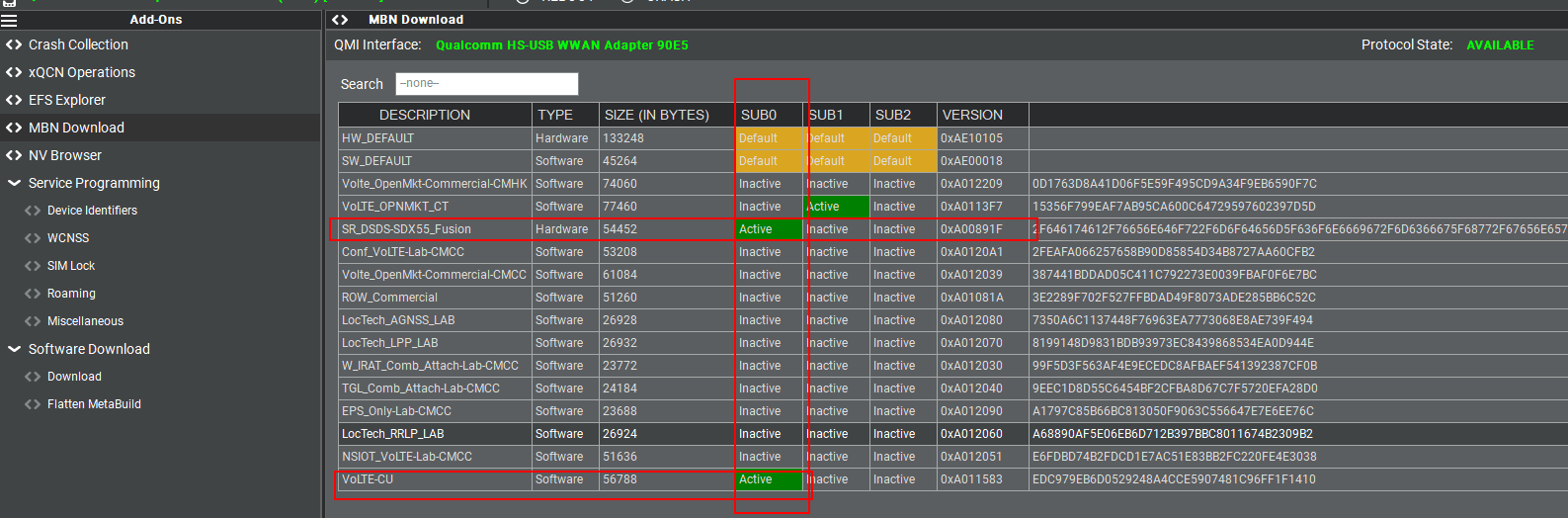


1. 在弹出的SPC Verification中，点击OK完成验证过程



##### MBN的激活查看与激活指定MBN

1. 查看MBN激活情况。点击左侧菜单栏中的MBN Download确认当前默认情况下，卡1和卡2激活的Hardware MBN和Software MBN。
2. 也可以手动进行选择。先去激活需要设置卡号的默认的MBN，然后选中需要激活的MBN，右键点击-> Select Config-> Subx(选择对应的卡号)

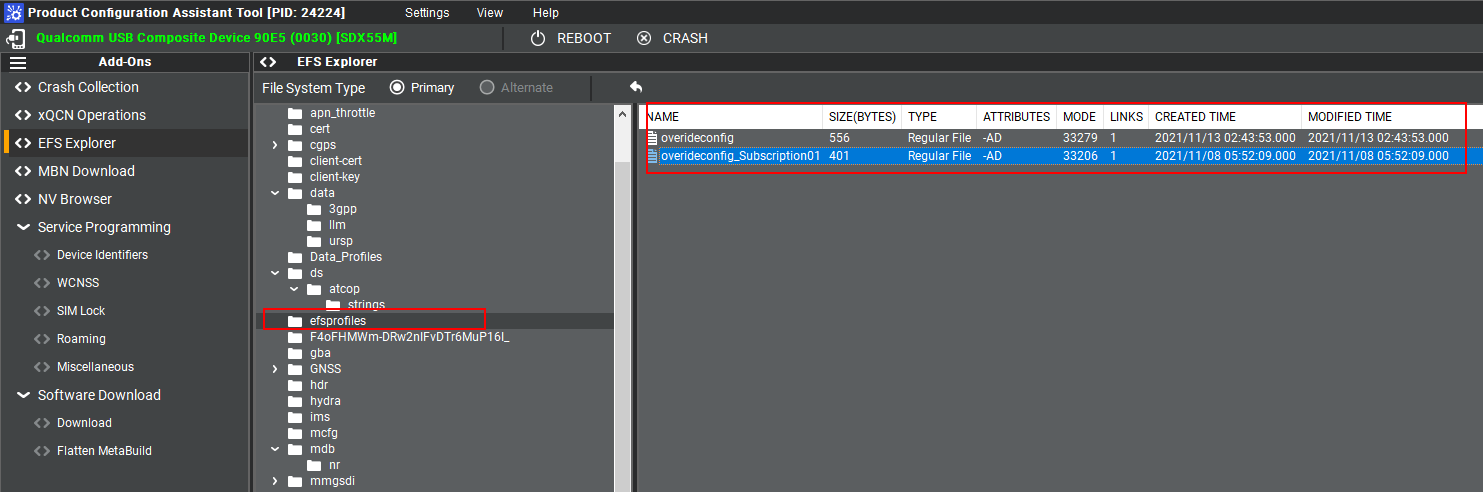


##### EFS Explorer

EFS Explorer用于修改激活装态下的EFS文件、overideconfig文件、xml配置文件。配置文件都是对应到卡的，如果看到带有Subscription01命名的文件，则表示文件为卡2的文件，否则为卡1的配置文件。如下图中的两个overideconfig文件，第一个是卡1的配置文件，第二个是卡2的配置文件。

修改方法：可以将EFS Explorer中的配置文件导出，修改后，将原EFS Explorer中的配置文件删除，然后将新修改的配置文件拉到对应的位置。（直接使用鼠标拉）

Note：使用EFS Explorer修改后，需要重启手机才能生效。

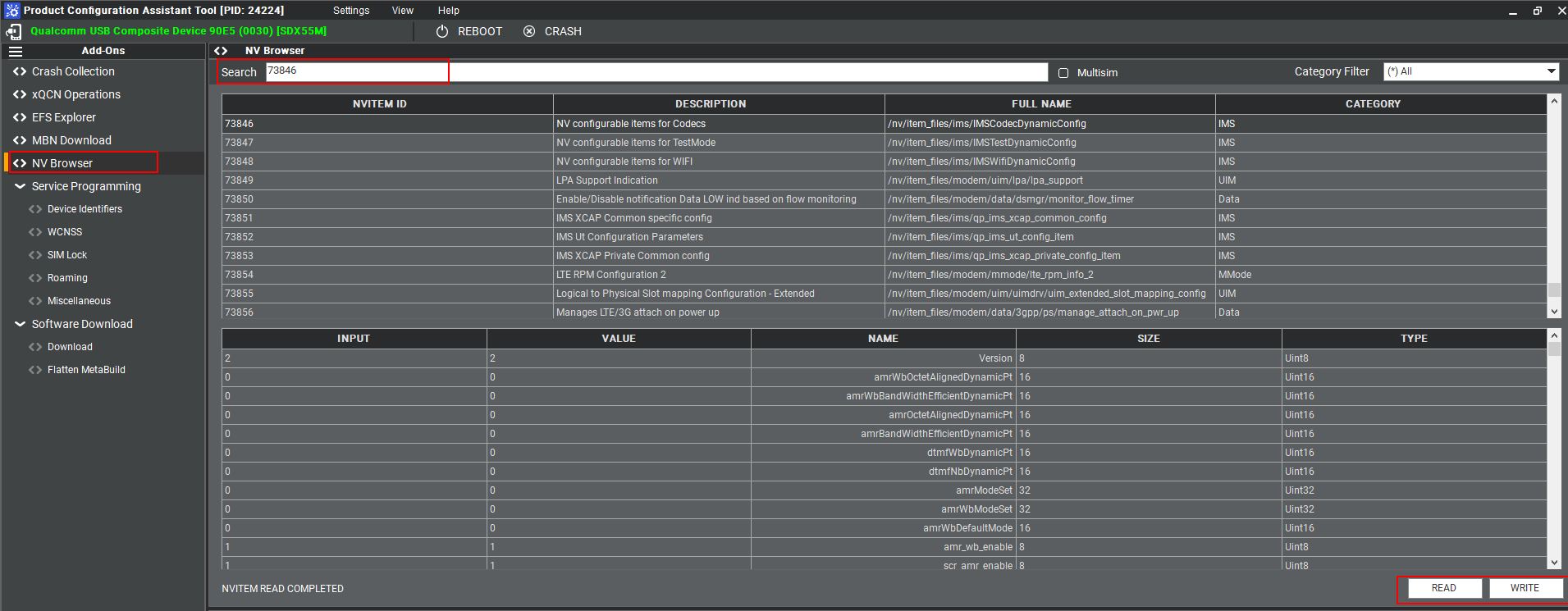


##### NV Browser

该菜单用于查看和修改NV值。

操作方法：

1. 通过一直的NV编号搜索到对应的NV项，或者通过搜索右上角的Category Filter过滤到所在的大类，然后查找。
2. 选中需要修改的NV，点击Read才能得到实际的配置值。有些场景下，Read操作返回NvItem Read Status = FAILED，表示此NV在当前操作手机中不存在。
3. 修改NV值时，在INPUT列中输入新值，需要点击WRITE才能实际写入。
4. 为了确保NV生效，重启手机后再次查看确认一遍。

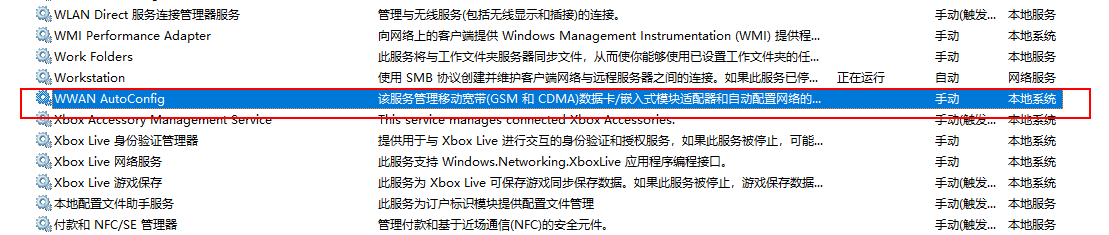


#### 常见问题

1. PCAT工具无法连接手机的解决办法？

先要确定手机为高通平台的手机，再确定当前Windows是否已经禁用了WWAN AutoConfig，该服务会占用端口造成连接失败。查看方法如下：

1. Win+R->输入services.msc
2. 弹窗的服务列表中找到WWAN AutoConfig
3. 双击该服务弹出配置窗口
4. 将启动类型设置为手动或者禁用
5. 点击停止按钮停止此服务。

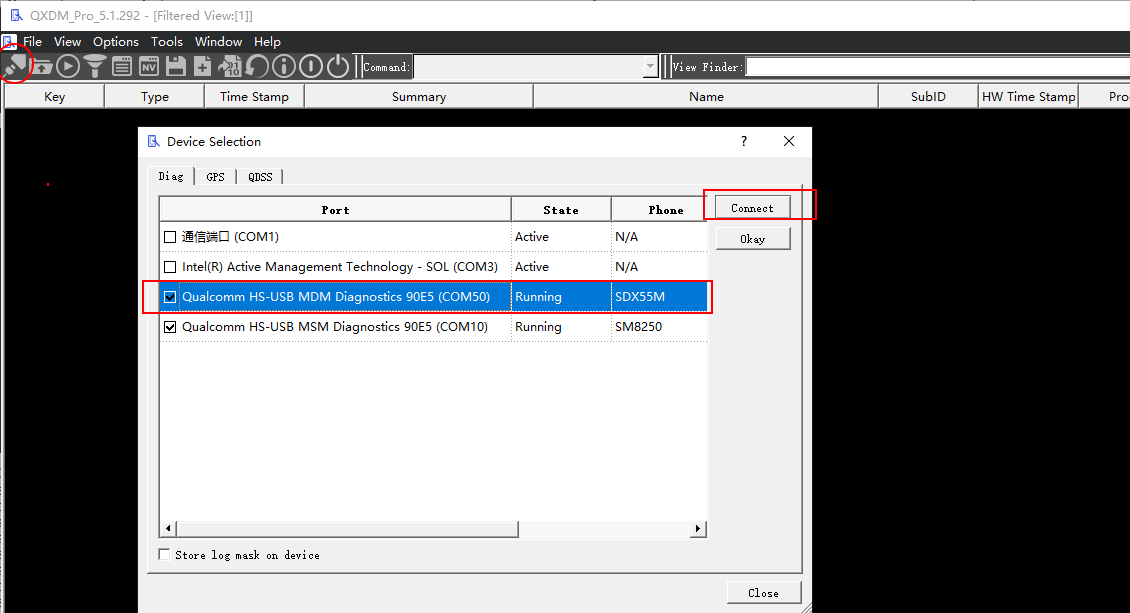


### QXDM

Qualcomm eXtensible Diagnostic Monitor：Qualcomm可扩展诊断监视器，用于分析高通Modem Log、在线抓取Modem Log的工具。

#### 在线抓取Modem Log

1. 首先需要设置Log Mask
2. 需要将QXDM工具连接到手机，点击左上角工具栏中的针状图标如下图所示，或者直接按F6，弹出Device Selection的窗口，选择需要录制Log的Phone（下图中选择SDX55M）并点击CONNECT按钮。



### QCAT

Qualcomm Commercial Analysis Toolkit

### QCAP

Qualcomm Crash Analysis Portal

### QUTS

Qualcomm Unified Tools Service (QUTS)

## 高通文档获取

### KBA文档获取方式

什么是KBA：Knowledge Base Articles，知识库文章。

KBA, Knowledge Base Articles work as complementing of technical documents, provide quick technical solutions for:

1. Answers of frequent asked questions.
2. Technical features clarification.
3. Common issues identification and fix.
4. Design highlights and tips.
5. Customization guide and suggestion.
6. Test procedures and steps.
7. Performance tuning methods.
8. Entrance and index for detailed documentations.

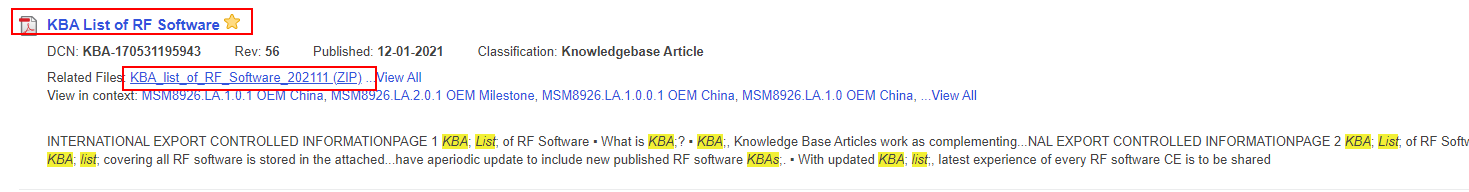
#### Modem KBA

KBA-170301212759 包含重要的modem KBA，且每周更新。CreatePoint搜索KBA-170301212759， 可以看到以下结果， 请标注为  
favorite以收到版本更新邮件。



#### RF Software KBA

KBA-170531195943包含了RF Software所有的KBA文档列表。点击文档名称右侧五角星用于收藏，可收到KBA list变更的邮件提醒。



#### 最近最火的KBA

在网站主页通过Support-> Hot Items获取到当前访问量最多的KBA列表，或者通过如下网址来查看。

<https://createpoint.qti.qualcomm.com/dashboard/#hotItems>

## 什么是QShrink4？

shrink：v&n 缩小，收缩，缩水。

QShrink4模块扫描完整的目标代码，提取所有调试消息(调试打印相关内容)字符串，创建一个哈希表，并最终修改代码以使用新的散列值而不是字符串，以传递给QXDM或其他工具。哈希值是根据调试字符串和文件名计算的。新添加了用于优化调试消息的宏。

kba-160804190932\_6\_what's\_qshrink4.0.pdf

## 高通常见QMI消息

### 发短信：收/发 Pending

短信收发相关的Service ID

ServiceId = WMS

### 开机/关机

### 彩信：收/发

### 查看信号强度上报

查看各个RAT上报的测量服务小区信号强度。

#### 特征

ServiceId = NAS，MsgId = 0x0000006C，字符串：nas\_sig\_info\_indTlvs。

#### 信号强度上报消息

nas\_sig\_info\_ind

示例：

|  |
| --- |
| 02:46:37.848513 [0x1544] QMI\_MCS\_QCSI\_PKT  packetVersion = 2  MsgType = Indication  Counter = 78  ServiceId = NAS  MajorRev = 1  MinorRev = 343  ConHandle = 0x00000016  MsgId = 0x00000051  QmiLength = 12  Service\_NAS {  ServiceNASV1 {  nas\_sig\_info {  nas\_sig\_info\_indTlvs[0] {  Type = 0x17  Length = 4  nr5g\_sig\_info {  rsrp = -74  snr = -32768 // 无效值  }  }  nas\_sig\_info\_indTlvs[1] {  Type = 0x18  Length = 2  nr5g\_rsrq {  nr5g\_rsrq = -11  }  }  } |

#### 设置信号强度的上报频率

nas\_config\_sig\_info2\_req

示例：

|  |
| --- |
| 02:47:36.177114 [0x1544] QMI\_MCS\_QCSI\_PKT  packetVersion = 2  MsgType = Request  Counter = 545  ServiceId = NAS  MajorRev = 1  MinorRev = 343  ConHandle = 0x00000016  MsgId = 0x0000006C  QmiLength = 10  Service\_NAS {  ServiceNASV1 {  nas\_config\_sig\_info2 {  nas\_config\_sig\_info2\_reqTlvs[0] {  Type = 0x27  Length = 2  lte\_rsrq\_delta {  lte\_rsrq\_delta = 65535  }  }  nas\_config\_sig\_info2\_reqTlvs[1] {  Type = 0x2A  Length = 2  lte\_sig\_rpt\_config {  rpt\_rate = NAS\_LTE\_SIG\_RPT\_RATE\_3\_SEC // Report Rate上报的速率  avg\_period = NAS\_LTE\_SIG\_AVG\_PRD\_5\_SEC // 平均周期  }  }  }  }  } |

### 拨打电话 voice\_dial\_call

拨号，呼出电话。QMI消息中过滤“voice\_dial\_call”字符串可快速定位到所有呼叫相关的Log时间点，方便快速定位呼叫类问题。

#### 特征

ServiceId = 9，MsgId = 0x00000020，字符串：voice\_dial\_call

#### 参数说明

**call\_type枚举及说明**

|  |
| --- |
| 0x00 – CALL\_TYPE\_VOICE – Voice (automatic selection)  0x01 – CALL\_TYPE\_VOICE\_FORCED –Avoid modem call classification  0x02 – CALL\_TYPE\_VOICE\_IP – Voice call over IP  0x03 – CALL\_TYPE\_VT – Videotelephony call over IP  0x04 – CALL\_TYPE\_VIDEOSHARE –Videoshare  0x08 – CALL\_TYPE\_NON\_STD\_OTASP –Nonstandard OTASP\*  0x09 – CALL\_TYPE\_EMERGENCY –Emergency  0x0C – CALL\_TYPE\_ECALL – eCall  0x0D – CALL\_TYPE\_EMERGENCY\_VT –Emergency videotelephony call over IP |

**service\_type枚举及说明**

|  |
| --- |
| 0x01 – VOICE\_DIAL\_CALL\_SRV\_TYPE\_AUTOMATIC – Automatic  0x02 – VOICE\_DIAL\_CALL\_SRV\_TYPE\_GSM – GSM  0x03 – VOICE\_DIAL\_CALL\_SRV\_TYPE\_WCDMA – WCDMA  0x04 – VOICE\_DIAL\_CALL\_SRV\_TYPE\_CDMA\_AUTOMATIC – CDMA automatic  0x05 – VOICE\_DIAL\_CALL\_SRV\_TYPE\_GSM\_WCDMA – GSM or WCDMA  0x06 – VOICE\_DIAL\_CALL\_SRV\_TYPE\_LTE – LTE  0x07 – VOICE\_DIAL\_CALL\_SRV\_TYPE\_TDSCDMA – TD-SCDMA  0x08 – VOICE\_DIAL\_CALL\_SRV\_TYPE\_GSM\_WCDMA\_TDSCDMA – GSM or WCDMA or TD-SCDMA  0x09 – VOICE\_DIAL\_CALL\_SRV\_TYPE\_CS\_ONLY – Circuit-switched domain |

#### Example

|  |
| --- |
| 09:42:37.947  09:42:37.947 [0x1544] MCS QCSI Payload Packet  packetVersion = 2  MsgType = Request  Counter = 32  ***ServiceId = 9***  MajorRev = 2  MinorRev = 113  ConHandle = 0x0000001E  ***MsgId = 0x00000020***  QmiLength = 58  Service\_VOICE {  ServiceVOICEV2 {  voice\_dial\_call {  voice\_dial\_call\_reqTlvs[0] {  Type = 0x01  Length = 11  calling\_number {  ***calling\_number = 13001142339***  }  }  voice\_dial\_call\_reqTlvs[1] {  Type = 0x10  Length = 1  call\_type {  ***call\_type = CALL\_TYPE\_VOICE***  }  }  voice\_dial\_call\_reqTlvs[2] {  Type = 0x16  Length = 4  service\_type {  ***service\_type = VOICE\_DIAL\_CALL\_SRV\_TYPE\_AUTOMATIC***  }  }  voice\_dial\_call\_reqTlvs[3] {  Type = 0x18  Length = 8  audio\_attrib {  ***audio\_attrib = VOICE\_CALL\_ATTRIB\_TX | VOICE\_CALL\_ATTRIB\_RX***  }  } |

### ENDC开关开启和关闭 nas\_set\_endc\_config

ENDC能力可在手机注册成功后重新被AP设置。AP侧有如下优化，为了终端省电，在没有5G NR连接的时候，AP会关闭ENDC功能，用于降低功耗。通过搜索QMI消息中的nas\_set\_endc\_config确定当前的ENDC打开和关闭状态。

#### 特征

ServiceId = 3，MsgId = 0x000000E7，特征字符串：nas\_set\_endc\_config

#### 参数说明

enable\_endc，该参数的true和false表示NR是否打开和关闭。

#### Example

|  |
| --- |
| 07:42:38.928 [0x1544] MCS QCSI Payload Packet  packetVersion = 2  MsgType = Request  Counter = 107  **ServiceId = 3**  MajorRev = 1  MinorRev = 273  ConHandle = 0x0000005A  MsgId = **0x000000E7**  QmiLength = 4  Service\_NAS {  ServiceNASV1 {  nas\_set\_endc\_config {  nas\_set\_endc\_config\_reqTlvs[0] {  Type = 0x01  Length = 1  enable\_endc {  **enable\_endc = true // 通过设置true或者false来打开或者关闭ENDC能力**  }  }  }  }  } |

### 5G注册状态上报 wds\_data\_bearer\_type

#### 特征

ServiceId=1，MsgId=0xF4，关键字符串为：wds\_data\_bearer\_type

#### 参数说明

承载类型的枚举：

WDS\_DATA\_BEARER\_TYPE\_4G\_5G\_SPLIT // 4G/5G NSA注册

WDS\_DATA\_BEARER\_TYPE\_4G // 4G Only

WDS\_DATA\_BEARER\_TYPE\_5G // 5G SA

#### Example

|  |
| --- |
| // 5G SA注册成功  MsgType = Indication  Counter = 14  ServiceId = WDS  MajorRev = 1  MinorRev = 217  ConHandle = 0x000002E4  MsgId = 0x000000F4  QmiLength = 12  Service\_WDS {  ServiceWDSV1 {  wds\_data\_bearer\_type {  wds\_data\_bearer\_type\_indTlvs[0] {  Type = 0x10  Length = 9  bearer\_type\_info {  bearer\_id = 69  ul\_direction = WDS\_DATA\_BEARER\_TYPE\_5G  dl\_direction = WDS\_DATA\_BEARER\_TYPE\_5G  }  }  **// ENDC**  11:00:19.858 [0x1544] MCS QCSI Payload Packet  packetVersion = 2  MsgType = Indication  Counter = 9  ***ServiceId = 1***  MajorRev = 1  MinorRev = 176  ConHandle = 0x000000F6  ***MsgId = 0x000000F4***  QmiLength = 12  Service\_WDS {  ServiceWDSV1 {  wds\_data\_bearer\_type {  wds\_data\_bearer\_type\_indTlvs[0] {  Type = 0x10  Length = 9  bearer\_type\_info {  bearer\_id = 33  ***ul\_direction = WDS\_DATA\_BEARER\_TYPE\_4G\_5G\_SPLIT***  ***dl\_direction = WDS\_DATA\_BEARER\_TYPE\_4G\_5G\_SPLIT***  }  }  }  }  } |

### UI界面显示5G的通知消息 dsd\_ui\_info

通知UI界面显示5G图标。

#### 特征

ServiceId=1，MsgId=0x0000006A，关键字符串为：dsd\_ui\_info

#### 参数说明

**根据global\_ui\_info中的ui\_mask的值确定当前显示的图标。**

Ui\_mask的枚举值如下：

|  |
| --- |
| QMI\_DSD\_UI\_MASK\_UNSPECIFIED(0x0000000000000000) – Unspecified // 上报此值，将显示4G  QMI\_DSD\_UI\_MASK\_3GPP\_5G\_BASIC (0x0000000000000001) –5G basic // 常用这种值表示5G显示  QMI\_DSD\_UI\_MASK\_3GPP\_5G\_UWB (0x0000000000000002) – 5G ultrawide band // 5G超带宽，  QMI\_DSD\_UI\_MASK\_3GPP\_SIB2\_PLMN\_R15(0x0000000000000004) – SIB2 PLMN R15  QMI\_DSD\_UI\_MASK\_3GPP\_SIB2\_ULI (0x0000000000000008) –SIB2 upper layer indication // SIB2 带有ULI，表示接入ENDC的锚点小区  QMI\_DSD\_UI\_MASK\_3GPP\_RESTRICT\_DCNR(0x0000000000000010) – Restrict decoded channel number register |

对应的代码处理位置：

|  |
| --- |
| it use ui\_mask.  you can refer to AP code:  **/vendor/qcom/proprietary/qcril-data-hal/endpoints/src/DSDModemEndPointModule.cpp**  459 void DSDModemEndPointModule::processUiInfoInd(dsd\_ui\_info\_ind\_msg\_v01 \*ind\_data)  460 {  467 if (ind\_data->global\_ui\_info\_valid) {  468 rildata::NrIconEnum\_t iconType = convertUiMask(ind\_data->global\_ui\_info.ui\_mask); -----> note this  469 if (ind\_data->tx\_info\_valid) {  470 std::shared\_ptr<rildata::UiInfoFragmentMessage> msg =  471 std::make\_shared<rildata::UiInfoFragmentMessage>(iconType);  472 segmentTracker.addSegment(QMI\_DSD\_UI\_INFO\_IND\_V01, ind\_data->tx\_info.transaction\_id,  473 ind\_data->tx\_info.segment\_index, ind\_data->tx\_info.num\_segments, msg);  474 } |

#### Example

|  |
| --- |
| 07:13:03.906 [0x1544] MCS QCSI Payload Packet  packetVersion = 2  MsgType = Indication  Counter = 120  ServiceId = 42  MajorRev = 1  MinorRev = 60  ConHandle = 0x00000062  MsgId = 0x0000006A  QmiLength = 201  Service\_DSD {  ServiceDSDV1 {  dsd\_ui\_info {  ***dsd\_ui\_info\_ind***Tlvs[0] {  Type = 0x10  Length = 24  global\_ui\_info {  technology = DSD\_SYS\_NETWORK\_3GPP  rat\_value = DSD\_SYS\_RAT\_EX\_3GPP\_5G  so\_mask = QMI\_DSD\_3GPP\_SO\_MASK\_5G\_TDD | QMI\_DSD\_3GPP\_SO\_MASK\_5G\_SUB6 | QMI\_DSD\_3GPP\_SO\_MASK\_5G\_NSA  ***ui\_mask = QMI\_DSD\_UI\_MASK\_3GPP\_5G\_BASIC –显示5G图标***  } |

### IMS注册状态上报 imsa\_registration\_status

#### 特征

ServiceId=33，MsgId=0x23，标识字符串：imsa\_registration\_status

#### 参数说明

ims\_registered只有false和true表示当前的IMS的注册状态。

#### Example

|  |
| --- |
| 08:44:22.710 [0x1544] MCS QCSI Payload Packet  packetVersion = 2  MsgType = Indication  Counter = 44  ***ServiceId = 33***  MajorRev = 1  MinorRev = 36  ConHandle = 0x00000025  ***MsgId = 0x00000023***  QmiLength = 16  Service\_IMSA {  ServiceIMSAV1 {  imsa\_registration\_status {  imsa\_registration\_status\_indTlvs[0] {  Type = 0x01  Length = 1  ***ims\_registered = false***  }  imsa\_registration\_status\_indTlvs[1] {  Type = 0x10  Length = 2  ims\_registration\_failure\_error\_code = 999  }  imsa\_registration\_status\_indTlvs[2] {  Type = 0x11  Length = 4  ***ims\_reg\_status = IMSA\_STATUS\_NOT\_REGISTERED***  }  }  }  } |

### 关机/开机

#### QMI\_UIM\_POWER\_DOWN

关机的特征QMI消息。

1. 特征

ServiceId = 11, MsgId = 0x00000030，特征字符串：***uim\_power\_down***

1. 参数
2. Example

|  |
| --- |
| 06:39:58.539 [0x1544] MCS QCSI Payload Packet  packetVersion = 2  MsgType = Request  Counter = 1202  ServiceId = 11  MajorRev = 1  MinorRev = 92  ConHandle = 0x0000001C  MsgId = 0x00000030  QmiLength = 4  Service\_UIM {  ServiceUIMV1 {  ***uim\_power\_down {***  uim\_power\_down\_reqTlvs[0] {  Type = 0x01  Length = 1  slot {  slot = UIM\_SLOT\_1  }  }  }  }  } |

#### QMI\_UIM\_POWER\_UP

开机指示

1. 特征

ServiceId = 11, MsgId = 0x00000031，特征字符串：***uim\_power\_up***

1. 参数
2. Example

未见Log

### 进入/退出飞行模式

1. **进入飞行模式**

ServiceId = 2，MsgId = 0x0000002E，字符串：dms\_set\_operating\_mode

08:44:22.720 [0x1544] MCS QCSI Payload Packet

packetVersion = 2

MsgType = Request

Counter = 51

***ServiceId = 2***

MajorRev = 1

MinorRev = 71

ConHandle = 0x0000003C

***MsgId = 0x0000002E***

QmiLength = 4

Service\_DMS {

ServiceDMSV1 {

dms\_set\_operating\_mode {

dms\_set\_operating\_mode\_reqTlvs[0] {

Type = 0x01

Length = 1

operating\_mode {

***operating\_mode = DMS\_OP\_MODE\_LOW\_POWER***

}

}

}

}

}

1. **退出飞行模式**

ServiceId = 2，MsgId = 0x0000002E，字符串：dms\_set\_operating\_mode

08:44:25.463 [0x1544] MCS QCSI Payload Packet

packetVersion = 2

MsgType = Request

Counter = 53

***ServiceId = 2***

MajorRev = 1

MinorRev = 71

ConHandle = 0x0000003C

***MsgId = 0x0000002E***

QmiLength = 4

Service\_DMS {

ServiceDMSV1 {

dms\_set\_operating\_mode {

dms\_set\_operating\_mode\_reqTlvs[0] {

Type = 0x01

Length = 1

operating\_mode {

operating\_mode = ***DMS\_OP\_MODE\_ONLINE***

}

}

}

}

}

进出飞行模式的CM代码打印如下

|  |
| --- |
| 进出飞行的CM Log打印如下：  [0005/0002] 0 MSG 16:20:41.233 Call Manager/High [ cm.c 7702] =CM= PH CMD - cm\_ph\_cmd\_oprt\_mode(), mode=5, uptime=83053, client\_id=28, cmd\_cb\_func=-658235152, data\_block\_ptr=1571406896  其中，mode的枚举值如下：  5是出飞行，6是进飞行 |

### 绑定数据操作卡号

用于设置数据卡号，后续所有相关的操作均应用于此卡号。

ServiceId = 1，MsgId=0x00AF，字符串：wds\_bind\_subscription

1. QMI\_WDS\_BIND\_SUBSCRIPTION

**Request - QMI\_WDS\_BIND\_SUBSCRIPTION\_REQ-设置控制点卡号**

Subscription to which the client is bound. Values:

• WDS\_DEFAULT\_SUBS (0x0000) –Default data subscription

• WDS\_PRIMARY\_SUBS (0x0001) –Primary

• WDS\_SECONDARY\_SUBS (0x0002)– Secondary

• WDS\_TERTIARY\_SUBS (0x0003) –Tertiary

• WDS\_DONT\_CARE\_SUBS (0x00FF)– Default value used in the absence ofexplicit binding

**Response - QMI\_WDS\_BIND\_SUBSCRIPTION\_RESP-设置结果**

07:11:51.800 [0x1544] MCS QCSI Payload Packet

packetVersion = 2

MsgType = Request

Counter = 2

ServiceId = 1

MajorRev = 1

MinorRev = 176

ConHandle = 0x0000012D

MsgId = 0x000000AF

QmiLength = 7

Service\_WDS {

ServiceWDSV1 {

wds\_bind\_subscription {

wds\_bind\_subscription\_reqTlvs[0] {

Type = 0x01

Length = 4

subscription {

***subscription = WDS\_PRIMARY\_SUBS***

}

}

}

}

}

1. QMI\_WMS\_BIND\_SUBSCRIPTION
2. 绑定当前控制点到某个卡上。类似于QMI\_WDS\_BIND\_SUBSCRIPTION只不过所处理的业务不同。

QMI\_WMS\_BIND\_SUBSCRIPTION\_REQ

QMI\_WMS\_BIND\_SUBSCRIPTION\_RSP

### 网络注册状态

#### QMI\_WMS\_TRANSPORT\_NW\_REG\_INFO\_IND

Indicates a change in the transport network registration information

注册状态枚举值

0x00 – No service

0x01 – In process

0x02 – Failed

0x03 – Limited service

0x04 – Full service

对应于如下枚举字符串：

WMS\_TRANSPORT\_NW\_REG\_STATUS\_NO\_SERVICE

WMS\_TRANSPORT\_NW\_REG\_STATUS\_IN\_PROGRESS

WMS\_TRANSPORT\_NW\_REG\_STATUS\_IN\_FAILED

WMS\_TRANSPORT\_NW\_REG\_STATUS\_IN\_LIMITED\_SERVICE

WMS\_TRANSPORT\_NW\_REG\_STATUS\_FULL\_SERVICE

**Example**

|  |
| --- |
| 06:29:41.662 [0x1544] MCS QCSI Payload Packet  packetVersion = 2  MsgType = Indication  Counter = 10  ***ServiceId = 5***  MajorRev = 1  MinorRev = 36  ConHandle = 0x0000005C  ***MsgId = 0x0000004B***  QmiLength = 4  Service\_WMS {  ServiceWMSV1 {  wms\_transport\_nw\_reg\_info {  wms\_transport\_nw\_reg\_info\_indTlvs[0] {  Type = 0x01  Length = 1  transport\_nw\_reg\_status {  ***transport\_nw\_reg\_status = WMS\_TRANSPORT\_NW\_REG\_STATUS\_NO\_SERVICE***  }  }  }  }  } |

#### QMI\_NAS\_SYS\_INFO\_IND

网络注册状态上报。

特征：

***ServiceId = 3，MsgId = 0x0000004E，***搜索字符串：nas\_sys\_info\_ind

1. 参数释义

**srv\_status**

* 0x00 – SYS\_SRV\_STATUS\_NO\_SRV – No service
* 0x01 – SYS\_SRV\_STATUS\_LIMITED – Limited service
* 0x02 – SYS\_SRV\_STATUS\_SRV – Service
* 0x03 – SYS\_SRV\_STATUS\_LIMITED\_REGIONAL – Limited regional service
* 0x04 – SYS\_SRV\_STATUS\_PWR\_ SAVE – Power save

**is\_pref\_data\_path**

* 0x00 – Not preferred
* 0x01 – Preferred

**true\_srv\_status**

系统真实服务状态，不适用于CDMA

* 0x00 – SYS\_SRV\_STATUS\_NO\_SRV – No service
* 0x01 – SYS\_SRV\_STATUS\_LIMITED – Limited service
* 0x02 – SYS\_SRV\_STATUS\_SRV – Service
* 0x03 – SYS\_SRV\_STATUS\_LIMITED\_REGIONAL – Limited regional service
* 0x04 – SYS\_SRV\_STATUS\_PWR\_ SAVE – Power save

**srv\_domain**

注册在系统上的服务域。

* 0x00 – SYS\_SRV\_DOMAIN\_NO\_SRV – No service
* 0x01 – SYS\_SRV\_DOMAIN\_CS\_ONLY – Circuit-switched only
* 0x02 – SYS\_SRV\_DOMAIN\_PS\_ONLY – Packet-switched only
* 0x03 – SYS\_SRV\_DOMAIN\_CS\_PS – Circuit-switched and packet-switched
* 0x04 – SYS\_SRV\_DOMAIN\_CAMPED – Camped

**srv\_capability**

当前系统服务能力。

* 0x00 – SYS\_SRV\_DOMAIN\_NO\_SRV – No service
* 0x01 – SYS\_SRV\_DOMAIN\_CS\_ONLY – Circuit-switched only
* 0x02 – SYS\_SRV\_DOMAIN\_PS\_ONLY – Packet-switched only
* 0x03 – SYS\_SRV\_DOMAIN\_CS\_PS – Circuit-switched and packet-switched
* 0x04 – SYS\_SRV\_DOMAIN\_CAMPED – Camped

**roam\_status**

• 0x00 – SYS\_ROAM\_STATUS\_OFF – Off

• 0x01 – SYS\_ROAM\_STATUS\_ON – On

• 0x02 – SYS\_ROAM\_STATUS\_BLINK – Blinking

• 0x03 – SYS\_ROAM\_STATUS\_OUT\_OF\_NEIGHBORHOOD – Out of the neighborhood

• 0x04 – SYS\_ROAM\_STATUS\_OUT\_OF\_BLDG – Out of the building

• 0x05 – SYS\_ROAM\_STATUS\_PREF\_SYS – Preferred system

• 0x06 – SYS\_ROAM\_STATUS\_AVAIL\_SYS – Available system

• 0x07 – SYS\_ROAM\_STATUS\_ALLIANCE\_PARTNER – Alliance partner

• 0x08 – SYS\_ROAM\_STATUS\_PREMIUM\_PARTNER – Premium partner

• 0x09 – SYS\_ROAM\_STATUS\_FULL\_SVC – Full service

• 0x0A – SYS\_ROAM\_STATUS\_PARTIAL\_SVC – Partial service

• 0x0B – SYS\_ROAM\_STATUS\_BANNER\_ON – Banner is on

• 0x0C – SYS\_ROAM\_STATUS\_BANNER\_OFF – Banner is off

1. Example

|  |
| --- |
| 09:26:40.463 [0x1544] MCS QCSI Payload Packet  packetVersion = 2  MsgType = Indication  Counter = 1163  ***ServiceId = 3***  MajorRev = 1  MinorRev = 261  ConHandle = 0x00000043  ***MsgId = 0x0000004E***  QmiLength = 112  Service\_NAS {  ServiceNASV1 {  nas\_sys\_info {  nas\_sys\_info\_indTlvs[0] {  Type = 0x10  Length = 2  ***cdma\_srv\_status\_info*** {  srv\_status = NAS\_SYS\_SRV\_STATUS\_NO\_SRV  is\_pref\_data\_path = false  }  }  nas\_sys\_info\_indTlvs[1] {  Type = 0x11  Length = 2  hdr\_srv\_status\_info {  srv\_status = NAS\_SYS\_SRV\_STATUS\_NO\_SRV  is\_pref\_data\_path = false  }  }  nas\_sys\_info\_indTlvs[2] {  Type = 0x12  Length = 3  ***gsm\_srv\_status\_info*** {  srv\_status = NAS\_SYS\_SRV\_STATUS\_LIMITED  true\_srv\_status = SYS\_SRV\_STATUS\_LIMITED\_REGIONAL  is\_pref\_data\_path = false  }  }  nas\_sys\_info\_indTlvs[3] {  Type = 0x13  Length = 3  ***wcdma\_srv\_status\_info*** {  srv\_status = NAS\_SYS\_SRV\_STATUS\_NO\_SRV  true\_srv\_status = SYS\_SRV\_STATUS\_NO\_SRV  is\_pref\_data\_path = false  }  }  nas\_sys\_info\_indTlvs[4] {  Type = 0x14  Length = 3  ***lte\_srv\_status\_info*** {  srv\_status = NAS\_SYS\_SRV\_STATUS\_NO\_SRV  true\_srv\_status = SYS\_SRV\_STATUS\_NO\_SRV  is\_pref\_data\_path = false  }  }  nas\_sys\_info\_indTlvs[5] {  Type = 0x17  Length = 30  gsm\_sys\_info {  common\_sys\_info {  srv\_domain\_valid = true  srv\_domain = SYS\_SRV\_DOMAIN\_CAMPED  srv\_capability\_valid = true  srv\_capability = SYS\_SRV\_DOMAIN\_CS\_ONLY  roam\_status\_valid = false  roam\_status = NAS\_SYS\_ROAM\_STATUS\_OFF  is\_sys\_forbidden\_valid = true  is\_sys\_forbidden = false  }  threegpp\_specific\_sys\_info {  lac\_valid = true  lac = 6166  cell\_id\_valid = true  cell\_id = 8197  reg\_reject\_info\_valid = false  reg\_reject\_info {  reject\_srv\_domain = SYS\_SRV\_DOMAIN\_NO\_SRV  rej\_cause = 0  }  network\_id\_valid = true  network\_id {  mcc = { 4, 6, 0 }  mnc = { 0, 0, (invalid) }  }  }  gsm\_specific\_sys\_info {  egprs\_supp\_valid = true  egprs\_supp = false  dtm\_supp\_valid = true  dtm\_supp = false  }  }  }  nas\_sys\_info\_indTlvs[6] {  Type = 0x1C  Length = 6  gsm\_sys\_info2 {  geo\_sys\_idx = 65535  cell\_broadcast\_cap = NAS\_CELL\_BROADCAST\_CAP\_OFF  }  }  nas\_sys\_info\_indTlvs[7] {  Type = 0x1F  Length = 8  gsm\_sys\_info3 {  cs\_bar\_status = NAS\_CELL\_ACCESS\_ALL\_CALLS  ps\_bar\_status = NAS\_CELL\_ACCESS\_ALL\_CALLS  }  }  nas\_sys\_info\_indTlvs[8] {  Type = 0x22  Length = 1  gsm\_cipher\_domain {  gsm\_cipher\_domain = SYS\_SRV\_DOMAIN\_NO\_SRV  }  }  nas\_sys\_info\_indTlvs[9] {  Type = 0x28  Length = 4  sim\_rej\_info {  sim\_rej\_info = NAS\_SIM\_AVAILABLE  }  }  nas\_sys\_info\_indTlvs[10] {  Type = 0x30  Length = 4  srv\_reg\_restriction {  srv\_reg\_restriction = NAS\_SRV\_REG\_RESTRICTION\_UNRESTRICTED  }  }  nas\_sys\_info\_indTlvs[11] {  Type = 0x34  Length = 4  gsm\_reg\_domain {  gsm\_reg\_domain = NAS\_POSSIBLE\_REG\_DOMAIN\_NA  }  }  nas\_sys\_info\_indTlvs[12] {  Type = 0x4C  Length = 3  nr5g\_srv\_status\_info {  srv\_status = NAS\_SYS\_SRV\_STATUS\_NO\_SRV  true\_srv\_status = SYS\_SRV\_STATUS\_NO\_SRV  is\_pref\_data\_path = false  }  }  }  }  } |

### 热插卡拔卡/开卡、关卡

可以根据Event查看。

675221 10:23:09.708 0x1FEB mmgsdi.c 8354 H MMGSDI\_CARD\_INSERTED\_EVT, slot: 0x1

681134 10:23:13.030 0x1FEB mmgsdi.c 8427 H MMGSDI\_CARD\_ERROR/REMOVED\_EVT, condition: 0x2, slot: 0x2

QMI\_UIM\_STATUS\_CHANGE\_IND

QMI\_UIM\_SWITCH\_SLOT

The indication is sent in one of the following cases:

• The physical slot to logical slot mapping has changed as a result of switching the slot

• A card has been removed from, or inserted to, the physical slot

• A physical slot is powered up or down.

#### 插入SIM卡

**ServiceId=11，MsgId=0X48，字符串：**uim\_slot\_status\_change

|  |
| --- |
| 10:17:31.823 [0x1544] MCS QCSI Payload Packet  packetVersion = 2  MsgType = Indication  Counter = 15  ServiceId = 11  MajorRev = 1  MinorRev = 92  ConHandle = 0x0000001E  MsgId = 0x00000048  QmiLength = 116  Service\_UIM {  uim\_slot\_status\_change\_indTlvs[3] {  Type = 0x10  Length = 41  physical\_slot\_status {  physical\_slot\_status\_len = 2  physical\_slot\_status[0] {  ***physical\_card\_status = UIM\_PHYSICAL\_CARD\_STATE\_PRESENT***  ***physical\_slot\_state = UIM\_PHYSICAL\_SLOT\_STATE\_ACTIVE***  ***logical\_slot = UIM\_SLOT\_1***  iccid\_len = 10  iccid = {  152, 104, 16, 81, 24, 1, 21, 1,  137, 32  }  }  physical\_slot\_status[1] {  ***physical\_card\_status = UIM\_PHYSICAL\_CARD\_STATE\_PRESENT***  ***physical\_slot\_state = UIM\_PHYSICAL\_SLOT\_STATE\_ACTIVE***  ***logical\_slot = UIM\_SLOT\_2***  iccid\_len = 10  iccid = {  152, 104, 32, 28, 16, 65, 15, 0,  8, 52  }  }  } |

#### SIM卡被拔出

|  |
| --- |
| uim\_slot\_status\_change\_indTlvs[3] {  Type = 0x10  Length = 21  physical\_slot\_status {  physical\_slot\_status\_len = 2  physical\_slot\_status[0] {  ***physical\_card\_status = UIM\_PHYSICAL\_CARD\_STATE\_ABSENT***  ***physical\_slot\_state = UIM\_PHYSICAL\_SLOT\_STATE\_ACTIVE***  ***logical\_slot = UIM\_SLOT\_1***  iccid\_len = 0  }  physical\_slot\_status[1] {  ***physical\_card\_status = UIM\_PHYSICAL\_CARD\_STATE\_ABSENT***  ***physical\_slot\_state = UIM\_PHYSICAL\_SLOT\_STATE\_ACTIVE***  ***logical\_slot = UIM\_SLOT\_2***  iccid\_len = 0  }  QMI\_UIM\_POWER\_DOWN、QMI\_UIM\_POWER\_UP、QMI\_UIM\_STATUS\_CHANGE\_IND  QMI\_UIM\_SWITCH\_SLOT  QMI\_UIM\_GET\_SLOTS\_STATUS  QMI\_UIM\_SLOT\_STATUS\_CHANGE\_IND |

### 切换数据卡

|  |  |  |  |
| --- | --- | --- | --- |
| **消息** | **消息ID** | **Description** | **作用** |
| QMI\_DSD\_SWITCH\_DDS | 0x004E | Sets the DDS (Default Data Subscription) to specified subscription | 包含REQ和RESP消息 |
| QMI\_DSD\_SWITCH\_DDS\_IND | 0x004E | Indicates the result of the DDS Switch operation requested using QMI\_DSD\_SWITCH\_DDS\_REQ | 指示切数据卡结果 |
| QMI\_DSD\_GET\_CURRENT\_DDS | 0x004F | Retrieves the current DDS | 获取当前数据卡 |
| QMI\_DSD\_CURRENT\_DDS\_IND | 0x0050 | Indicates the current default data subscription of the UE | 上报当前数据卡 |

#### QMI\_DSD\_SWITCH\_DDS

切换数据卡设置。

1. 特征

ServiceId = 42，MsgId = 0x0000004E。搜索字符串：dsd\_switch\_dds

1. 参数解释

参数有subscription和dds\_switch\_type

其中subscription的枚举值如下：

DSD\_PRIMARY\_SUBS (0x0001) –Primary // 数据切换到卡1

DSD\_SECONDARY\_SUBS (0x0002)– Secondary // 数据切换到卡2

DSD\_TERTIARY\_SUBS (0x0003) –Tertiary // 数据切换到卡3

dds\_switch\_type的枚举值如下：

DSD\_DDS\_SWITCH\_PERMANENT(0x00) – Permanent(Default) // 永久切换

DSD\_DDS\_SWITCH\_TEMPORARY(0x01) – Temporary // 临时切换

1. Example

07:10:36.222 [0x1544] MCS QCSI Payload Packet

packetVersion = 2

MsgType = Request

Counter = 133

***ServiceId = 42***

MajorRev = 1

MinorRev = 50

ConHandle = 0x0000001B

***MsgId = 0x0000004E***

QmiLength = 14

Service\_DSD {

ServiceDSDV1 {

dsd\_switch\_dds {

dsd\_switch\_dds\_reqTlvs[0] {

Type = 0x01

Length = 4

subscription {

***subscription = DSD\_SECONDARY\_SUBS // 数据业务切换到哪个卡上面***

}

}

dsd\_switch\_dds\_reqTlvs[1] {

Type = 0x10

Length = 4

dds\_switch\_type {

***dds\_switch\_type = DSD\_DDS\_SWITCH\_PERMANENT***

}

}

}

}

}

#### QMI\_DSD\_SWITCH\_DDS\_IND

指示数据卡请求切换的结果，指示消息。

1. 特征

ServiceId = 42，MsgId = 0x0000004E。搜索字符串：dsd\_switch\_dds\_ind

1. 参数解释

参数：dds\_switch\_result

其枚举值为：

DSD\_DDS\_SWITCH\_ALLOWED(0x00) // 切换成功

DSD\_DDS\_SWITCH\_NOT\_ALLOWED(0x01) // 失败

DSD\_DDS\_SWITCH\_FAILED (0x02) // 失败

1. **Example**

07:10:36.222 [0x1544] MCS QCSI Payload Packet

packetVersion = 2

MsgType = Indication

Counter = 167

***ServiceId = 42***

MajorRev = 1

MinorRev = 50

ConHandle = 0x0000001B

***MsgId = 0x0000004E***

QmiLength = 7

Service\_DSD {

ServiceDSDV1 {

dsd\_switch\_dds {

dsd\_switch\_dds\_indTlvs[0] {

Type = 0x01

Length = 4

dds\_switch\_result {

***dds\_switch\_result = DSD\_DDS\_SWITCH\_ALLOWED***

}

}

}

}

}

1. QMI\_DSD\_GET\_CURRENT\_DDS
2. QMI\_DSD\_CURRENT\_DDS\_IND

### 开关双4G

开关双4G通过上设置selection\_preference实现。

ServiceId = 3，MsgId = 0x00000033，字符串：nas\_set\_system\_selection\_preference

1. 关双4G开关

nas\_set\_system\_selection\_preference {

nas\_set\_system\_selection\_preference\_reqTlvs[0] {

Type = 0x11

Length = 2

mode\_pref {

mode\_pref = QMI\_NAS\_RAT\_MODE\_PREF\_GSM | QMI\_NAS\_RAT\_MODE\_PREF\_UMTS | QMI\_NAS\_RAT\_MODE\_PREF\_TDSCDMA // 将LTE从mode\_pref移除

}

}

}

1. 开双4G

nas\_set\_system\_selection\_preference {

nas\_set\_system\_selection\_preference\_reqTlvs[0] {

Type = 0x11

Length = 2

mode\_pref {

mode\_pref = QMI\_NAS\_RAT\_MODE\_PREF\_GSM | QMI\_NAS\_RAT\_MODE\_PREF\_UMTS | QMI\_NAS\_RAT\_MODE\_PREF\_LTE | QMI\_NAS\_RAT\_MODE\_PREF\_TDSCDMA | QMI\_NAS\_RAT\_MODE\_PREF\_NR5G // 将LTE添加到mode\_pref中。

}

}

}

### 卡能力变更

卡支持的RAT能力变更会通过nas\_set\_system\_selection\_preference QMI消息下发给Modem。或者通过QTRACE中的MMODE Trace查看。具体的Trace如下。

|  |
| --- |
| 07:14:21.346906 [0x1544] QMI\_MCS\_QCSI\_PKT  packetVersion = 2  V2 {  MsgType = Request  Counter = 620  ServiceId = NAS  MajorRev = 1  MinorRev = 316  ConHandle = 0x00000079  MsgId = 0x00000033  QmiLength = 5  Service\_NAS {  ServiceNASV1 {  nas\_set\_system\_selection\_preference {  nas\_set\_system\_selection\_preference\_reqTlvs[0] {  Type = 0x11  Length = 2  mode\_pref {  mode\_pref = QMI\_NAS\_RAT\_MODE\_PREF\_GSM | QMI\_NAS\_RAT\_MODE\_PREF\_UMTS | QMI\_NAS\_RAT\_MODE\_PREF\_LTE | QMI\_NAS\_RAT\_MODE\_PREF\_NR5G  }  }  }  [ 42/ 0/2] QTRACE 07:14:21.347050 MMODE/STRM/High/CM [ cm.c 24492] sys\_sel\_pref(), mode\_pref 0x1228, pref\_term 0, acq\_order 3, sub 1, roam\_pref 256, hybr\_pref 2  [ 42/ 0/2] QTRACE 07:14:21.347321 MMODE/STRM/High/CM [ cmph.c 8823] CHECK SYS\_SEL\_PREF: DS: SUB 2 current mode\_pref: ph 0x28 cmd 0x1228, srv\_domain\_pref: ph 2 cmd 4, get\_net\_auto\_mode 0 |

### 激活/去激活数据业务

|  |  |  |
| --- | --- | --- |
| **分组数据** | **ID** | **Description** |
| QMI\_WDS\_START\_NETWORK\_INTERFACE | 0x0020 | Activates a packet data session (if not already started) on behalf of the requesting control point. |
| QMI\_WDS\_STOP\_NETWORK\_INTERFACE | 0x0021 | Deactivates a packet data session(unless in use by other control points) on behalf of the requesting control point. |
| QMI\_WDS\_GET\_PKT\_SRVC\_STATUS | 0x0022 | Queries the current packet data connection status. |
| QMI\_WDS\_PKT\_SRVC\_STATUS\_IND | 0x0022 | Indicates a change in the current packet data connection status. |

1. QMI\_WDS\_START\_NETWORK\_INTERFACE

请求开启数据服务。

消息过滤：

ServiceId = 1，MsgId = 0x00000021字符串：wds\_start\_network\_interface

10:16:15.429 [0x1544] MCS QCSI Payload Packet

packetVersion = 2

MsgType = Request

Counter = 4

ServiceId = 1

MajorRev = 1

MinorRev = 176

ConHandle = 0x000000F3

***MsgId = 0x00000020***

QmiLength = 22

Service\_WDS {

ServiceWDSV1 {

***wds\_start\_network\_interface*** {

wds\_start\_network\_interface\_reqTlvs[0] {

Type = 0x14

Length = 3

apn\_name {

apn\_name = ims

}

}

1. QMI\_WDS\_STOP\_NETWORK\_INTERFACE

Deactivates a packet data session (unless in use by other control points) on behalf of the requesting control point.

消息过滤：

ServiceId = 1，MsgId = 0x00000021字符串：wds\_stop\_network\_interface

10:16:14.499 [0x1544] MCS QCSI Payload Packet

packetVersion = 2

MsgType = Request

Counter = 6

ServiceId = 1

MajorRev = 1

MinorRev = 176

ConHandle = 0x000000E1

MsgId = 0x00000021

QmiLength = 7

Service\_WDS {

ServiceWDSV1 {

***wds\_stop\_network\_interface*** {

wds\_stop\_network\_interface\_reqTlvs[0] {

Type = 0x01

Length = 4

pkt\_data\_handle {

pkt\_data\_handle = 1805796960

}

}

}

}

}

1. QMI\_WDS\_GET\_PKT\_SRVC\_STATUS

查询当前分组数据连接状态。

过滤条件：

ServiceId = 1，MsgId = 0x00000022字符串：wds\_get\_pkt\_srvc\_status

Current link status. Values:

• WDS\_CONNECTION\_STATUS\_DISCONNECTED (0x01) –Disconnected

• WDS\_CONNECTION\_STATUS\_CONNECTED (0x02) – Connected

• WDS\_CONNECTION\_STATUS\_SUSPENDED (0x03) – Suspended

• WDS\_CONNECTION\_STATUS\_AUTHENTICATING (0x04) –Authenciating

10:16:14.538 [0x1544] MCS QCSI Payload Packet

packetVersion = 2

MsgType = Indication

Counter = 24

ServiceId = 1

MajorRev = 1

MinorRev = 176

ConHandle = 0x00000049

MsgId = 0x00000022

QmiLength = 21

Service\_WDS {

ServiceWDSV1 {

wds\_get\_pkt\_srvc\_status {

wds\_pkt\_srvc\_status\_indTlvs[0] {

Type = 0x01

Length = 2

status {

***connection\_status = WDS\_CONNECTION\_STATUS\_DISCONNECTED***

reconfiguration\_required = false

}

}

1. QMI\_WDS\_PKT\_SRVC\_STATUS\_IND

此消息没有在Log中看到。

### 开数据/关数据

1. **开数据**

ServiceId = 42，MsgId = 0x00000034，搜索字符串：data\_service\_switch

**Example**

12:52:08.087 [0x1544] MCS QCSI Payload Packet

packetVersion = 2

MsgType = Request

Counter = 12

ServiceId = 42

MajorRev = 1

MinorRev = 50

ConHandle = 0x00000025

MsgId = 0x00000034

QmiLength = 4

Service\_DSD {

ServiceDSDV1 {

dsd\_notify\_data\_settings {

dsd\_notify\_data\_settings\_reqTlvs[0] {

Type = 0x10

Length = 1

data\_service\_switch {

***data\_service\_switch = true // 开数据***

}

}

}

}

}

1. **关数据**

12:52:08.087 [0x1544] MCS QCSI Payload Packet

packetVersion = 2

MsgType = Request

Counter = 12

***ServiceId = 42***

MajorRev = 1

MinorRev = 50

ConHandle = 0x00000025

***MsgId = 0x00000034***

QmiLength = 4

Service\_DSD {

ServiceDSDV1 {

dsd\_notify\_data\_settings {

dsd\_notify\_data\_settings\_reqTlvs[0] {

Type = 0x10

Length = 1

data\_service\_switch {

***data\_service\_switch = false // 关数据***

}

}

}

}

}

### 数据当前状态查看

查看当前数据连接状态处于激活状态，还是休眠状态。通过此状态可以判断当前主卡卡顿的原因。

1. 特征

ServiceId = 1，MsgId = 0x00000001，字符串：wds\_event\_report\_ind

1. 参数解析

**dormancy\_status**

WDS\_DORMANCY\_STATUS\_DORMANT (0x01) – Traffic channel dormant

WDS\_DORMANCY\_STATUS\_ACTIVE (0x02) – Traffic channel active

1. Example

|  |
| --- |
| 07:52:43.716  07:52:43.716 [0x1544] MCS QCSI Payload Packet  packetVersion = 2  MsgType = Indication  Counter = 121  ServiceId = 1  MajorRev = 1  MinorRev = 176  ConHandle = 0x000000B3  MsgId = 0x00000001  QmiLength = 4  Service\_WDS {  ServiceWDSV1 {  wds\_set\_event\_report {  wds\_event\_report\_indTlvs[0] {  Type = 0x18  Length = 1  dormancy\_status {  ***dormancy\_status = WDS\_DORMANCY\_STATUS\_DORMANT***  }  }  }  }  } |

### 数据低延迟模式设置

设置数据业务的低延迟模式。使用的QMI\_WDS\_SET\_DATA\_LOW\_LATENCY\_MODE消息设置。

#### QMI\_WDS\_SET\_DATA\_LOW\_LATENCY\_MODE

此命令用于设置Modem数据业务中上行和下行的延迟等级。

ul\_latency\_level

dl\_latency\_level

枚举值：

WDS\_LATENCY\_NORMAL (1) –Default

WDS\_LATENCY\_LOW (2) – Low

WDS\_LATENCY\_VERY\_LOW (3) –Very low

WDS\_LATENCY\_SUPER\_LOW (4) –Super low

WDS\_LATENCY\_CONFIGURABLE\_1 (5) – Configurable level 1

WDS\_LATENCY\_CONFIGURABLE\_2 (6) – Configurable level 2

使能数据业务优先级开关：

prioritize\_ps\_data

搜索字段：

ServiceId=1，MsgId=0x00E1

Example

07:10:36.222 [0x1544] MCS QCSI Payload Packet

packetVersion = 2

MsgType = Request

Counter = 133

ServiceId = 42

MajorRev = 1

MinorRev = 50

ConHandle = 0x0000001B

MsgId = 0x0000004E

QmiLength = 14

### 数据连接状态

用于查看当前的数据连接状态。

两个QMI消息QMI\_WDS\_GET\_PKT\_SRVC\_STATUS和QMI\_WDS\_PKT\_SRVC\_STATUS\_IND。

|  |
| --- |
| 08:43:59.394 [0x1544] MCS QCSI Payload Packet  packetVersion = 2  MsgType = Response  Counter = 377  ServiceId = 1  MajorRev = 1  MinorRev = 176  ConHandle = 0x00000027  MsgId = 0x00000022  QmiLength = 11  Service\_WDS {  ServiceWDSV1 {  wds\_get\_pkt\_srvc\_status {  wds\_get\_pkt\_srvc\_status\_respTlvs[0] {  Type = 0x02  Length = 4  resp {  result = QMI\_RESULT\_SUCCESS  error = QMI\_ERR\_NONE  }  }  wds\_get\_pkt\_srvc\_status\_respTlvs[1] {  Type = 0x01  Length = 1  connection\_status {  connection\_status = WDS\_CONNECTION\_STATUS\_DISCONNECTED  }  }  }  }  } |

### DTMF发送

在一次通话的过程中发送DTMF，通过QMI\_VOICE\_START\_CONT\_DTMF开始一个字符的传输，并使用QMI\_VOICE\_STOP\_CONT\_DTMF消息中止该字符。

#### QMI\_VOICE\_START\_CONT\_DTMF

该消息中包括请求和响应

ServiceId = 9，MsgId = 0x00000029(voice)，搜索字符串：cont\_dtmf\_info

1. **Example**

|  |
| --- |
| 03:35:54.889 [0x1544] MCS QCSI Payload Packet  packetVersion = 2  MsgType = Request  Counter = 387  ***ServiceId = 9***  MajorRev = 2  MinorRev = 106  ConHandle = 0x00000018  ***MsgId = 0x00000029***  QmiLength = 5  Service\_VOICE {  ServiceVOICEV2 {  voice\_start\_cont\_dtmf {  voice\_start\_cont\_dtmf\_reqTlvs[0] {  Type = 0x01  Length = 2  ***cont\_dtmf\_info*** {  call\_id = 255  ***digit = 49 -- ASCII转换后未1***  }  }  }  }  } |

#### QMI\_VOICE\_STOP\_CONT\_DTMF

该消息中包括请求和响应，用于终止发送的字符已经发送完成。

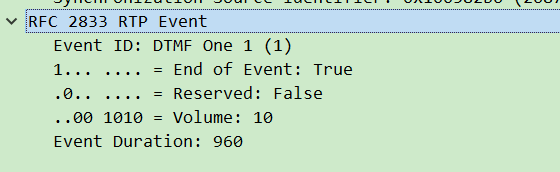
ServiceId = 9(voice)，MsgId = 0x0000002A，搜索字符串：voice\_stop\_cont\_dtmf

**Example**

|  |
| --- |
| 03:35:54.987 [0x1544] MCS QCSI Payload Packet  packetVersion = 2  MsgType = Request  Counter = 388  ServiceId = 9  MajorRev = 2  MinorRev = 106  ConHandle = 0x00000018  MsgId = 0x0000002A  QmiLength = 4  Service\_VOICE {  ServiceVOICEV2 {  ***voice\_stop\_cont\_dtmf*** {  voice\_stop\_cont\_dtmf\_reqTlvs[0] {  Type = 0x01  Length = 1  call\_id {  call\_id = 255  }  }  }  }  } |

### VoLTE DTMF 对应到RTP报文

VoLTE中发送DTMF时，通过RTP协议发送，在RTP中的内容中包括





### VoLTE开关打开和关闭

QMI\_IMS\_SETTINGS\_SET\_IMS\_SERVICE\_ENABLE\_CONFIG

设置IMS使能配置参数。

1. 特征

ServiceId = 18，***MsgId = 0x0000008F，***字符串：ims\_settings\_set\_ims\_service\_enable\_config

1. 参数释义

**volte\_enabled**

Voice是否在LTE上支持。

* TRUE – Enable
* FALSE – Disable (default)

**videotelephony\_enabled**

设备是否支持Video Telephony Call.

* TRUE – Enable
* FALSE – Disable (default)

**ims\_service\_enabled**

使能/禁止IMS正常的注册模式。

* TRUE – Enable
* FALSE – Disable (default)

1. Example

|  |
| --- |
| // 使能VoLTE功能  11:46:41.553 [0x1544] MCS QCSI Payload Packet  packetVersion = 2  MsgType = Request  Counter = 37  ***ServiceId = 18***  MajorRev = 1  MinorRev = 71  ConHandle = 0x00000022  ***MsgId = 0x0000008F***  QmiLength = 4  Service\_IMSS {  ServiceIMSSV1 {  ims\_settings\_set\_ims\_service\_enable\_config {  ims\_settings\_set\_ims\_service\_enable\_config\_reqTlvs[0] {  Type = 0x10  Length = 1  ***volte\_enabled = true***  }  }  }  }  11:46:41.555 [0x1544] MCS QCSI Payload Packet  packetVersion = 2  MsgType = Request  Counter = 38  ServiceId = 18  MajorRev = 1  MinorRev = 71  ConHandle = 0x00000022  MsgId = 0x0000008F  QmiLength = 4  Service\_IMSS {  ServiceIMSSV1 {  ims\_settings\_set\_ims\_service\_enable\_config {  ims\_settings\_set\_ims\_service\_enable\_config\_reqTlvs[0] {  Type = 0x11  Length = 1  ***videotelephony\_enabled = true***  }  }  }  }  11:46:41.576 [0x1544] MCS QCSI Payload Packet  packetVersion = 2  MsgType = Request  Counter = 39  ServiceId = 18  MajorRev = 1  MinorRev = 71  ConHandle = 0x00000022  MsgId = 0x0000008F  QmiLength = 4  Service\_IMSS {  ServiceIMSSV1 {  ims\_settings\_set\_ims\_service\_enable\_config {  ims\_settings\_set\_ims\_service\_enable\_config\_reqTlvs[0] {  Type = 0x18  Length = 1  ***ims\_service\_enabled = true***  }  }  }  } |

### VoLTE升级和降级

#### QMI\_VOICE\_MANAGE\_IP\_CALLS

特征：

***ServiceId = 9，MsgId = 0x0000004E，字符串：***voice\_manage\_ip\_calls

在呼叫的过程中，使用补充业务。

1. QMI\_VOICE\_MANAGE\_IP\_CALLS\_REQ

sups\_type

* VOIP\_SUPS\_TYPE\_RELEASE\_HELD\_OR\_WAITING (0x01) – Release the held or waiting call
* VOIP\_SUPS\_TYPE\_RELEASE\_ACTIVE\_ACCEPT\_HELD\_OR\_WAITING(0x02) – Release the active call and accept the held or waiting call
* VOIP\_SUPS\_TYPE\_HOLD\_ACTIVE\_ACCEPT\_WAITING\_OR\_HELD (0x03) – Hold the active call and accept the waiting or held call
* VOIP\_SUPS\_TYPE\_MAKE\_CONFERENCE\_CALL (0x04) – Make a conference call
* VOIP\_SUPS\_TYPE\_END\_ALL\_CALLS(0x05) – End all existing calls
* VOIP\_SUPS\_TYPE\_MODIFY\_CALL (0x06)– **Downgrade/upgrade** of existing VT/IP calls
* VOIP\_SUPS\_TYPE\_MODIFY\_ACCEPT(0x07) – Accept the call **upgrade** of existing IP calls后者接受降级请求
* VOIP\_SUPS\_TYPE\_MODIFY\_REJECT(0x08) – **Reject the call upgrade** of existing IP calls
* VOIP\_SUPS\_TYPE\_RELEASE\_SPECIFIED\_CALL\_FROM\_CONFERENCE(0x09) – Release a party from a conference call
* VOIP\_SUPS\_TYPE\_ADD\_PARTICIPANT(0x0A) – Add a participant to a call
* VOIP\_SUPS\_TYPE\_CALL\_DEFLECTION(0x0B) – Deflect the call
* VOIP\_SUPS\_TYPE\_CALL\_HOLD (0x0C) –Hold the call with a specific call ID
* VOIP\_SUPS\_TYPE\_CALL\_RESUME (0x0D)– Resume the call with a specific call ID
* VOIP\_SUPS\_TYPE\_MODIFY\_SPEECH\_CODEC (0x0E) – Modify the speech codec with a specific call ID
* VOIP\_SUPS\_TYPE\_EXPLICIT\_CALL\_TRANSFER (0x0F) – Transfer the call to a new UE

**call\_type**

* 0x02 – CALL\_TYPE\_VOICE\_IP – Voice call over IP
* 0x03 – CALL\_TYPE\_VT – Videotelephony call over IP
* 0x0B – CALL\_TYPE\_EMERGENCY\_IP – Emergency VoIP
* 0x0D – CALL\_TYPE\_EMERGENCY\_VT –Emergency videotelephony call over IP

**audio\_attrib**

表示当前的收发状态（与呼叫保持、等待相关）

* Bit 0 (0x01) – VOICE\_CALL\_ATTRIB\_TX – Transmission
* Bit 1 (0x02) – VOICE\_CALL\_ATTRIB\_RX – Receiving

**ect\_type**

* ECT\_TYPE\_BLIND\_TRANSFER (0x0000) – Blind transfer // 忙转
* ECT\_TYPE\_ASSURED\_TRANSFER(0x0001) – Assured transfer
* ECT\_TYPE\_CONSULTATIVE\_TRANSFER(0x0002) – Consultative // 询问转
* ECT\_TYPE\_CALL\_PUSH (0x0003) – Call push

**reject\_cause**

* VOICE\_REJECT\_CAUSE\_USER\_BUSY(0x01) – User is busy
* VOICE\_REJECT\_CAUSE\_USER\_REJECT(0x02) – User has rejected the call
* VOICE\_REJECT\_CAUSE\_LOW\_BATTERY(0x03) – Call was rejected due to a low battery
* VOICE\_REJECT\_CAUSE\_BLACKLISTED\_CALL\_ID (0x04) – Call was rejected because the number was blacklisted
* VOICE\_REJECT\_CAUSE\_DEAD\_BATTERY (0x05) – Call was rejected due to a dead battery
* VOICE\_REJECT\_CAUSE\_UNWANTED\_CALL (0x06) – Call was rejected because the call was an unwanted robo call

**Example**

|  |
| --- |
| 08:50:14.762 [0x1544] MCS QCSI Payload Packet  packetVersion = 2  MsgType = Request  Counter = 354  ***ServiceId = 9***  MajorRev = 2  MinorRev = 106  ConHandle = 0x00000019  ***MsgId = 0x0000004E***  QmiLength = 41  Service\_VOICE {  ServiceVOICEV2 {  voice\_manage\_ip\_calls {  voice\_manage\_ip\_calls\_reqTlvs[0] {  Type = 0x01  Length = 1  sups\_type {  sups\_type = ***VOIP\_SUPS\_TYPE\_MODIFY\_ACCEPT // 接受语音通话升级视频***  }  }  voice\_manage\_ip\_calls\_reqTlvs[1] {  Type = 0x10  Length = 1  call\_id {  call\_id = 1  }  }  voice\_manage\_ip\_calls\_reqTlvs[2] {  Type = 0x11  Length = 1  call\_type {  call\_type = ***CALL\_TYPE\_VT // 通话类型，视频***  }  }  voice\_manage\_ip\_calls\_reqTlvs[3] {  Type = 0x12  Length = 8  audio\_attrib { // 语音通信方式：收发双工 ---修改的结果  audio\_attrib = ***VOICE\_CALL\_ATTRIB\_TX | VOICE\_CALL\_ATTRIB\_RX***  }  }  voice\_manage\_ip\_calls\_reqTlvs[4] {  Type = 0x13  Length = 8  video\_attrib { // 视频通信方式：收发双工 ---修改的结果  video\_attrib = ***VOICE\_CALL\_ATTRIB\_TX | VOICE\_CALL\_ATTRIB\_RX***  }  }  voice\_manage\_ip\_calls\_reqTlvs[5] {  Type = 0x1A  Length = 4  rtt\_mode { // 不使用1X  rtt\_mode = RTT\_MODE\_DISABLED  }  }  }  }  }  **拒绝升级为Video Call**  09:31:53.725 [0x1544] MCS QCSI Payload Packet  packetVersion = 2  MsgType = Request  Counter = 365  ServiceId = 9  MajorRev = 2  MinorRev = 106  ConHandle = 0x00000019  MsgId = 0x0000004E  QmiLength = 41  Service\_VOICE {  ServiceVOICEV2 {  voice\_manage\_ip\_calls {  voice\_manage\_ip\_calls\_reqTlvs[0] {  Type = 0x01  Length = 1  sups\_type {  sups\_type = ***VOIP\_SUPS\_TYPE\_MODIFY\_REJECT // 拒绝升级***  }  }  voice\_manage\_ip\_calls\_reqTlvs[1] {  Type = 0x10  Length = 1  call\_id {  call\_id = 1  }  }  voice\_manage\_ip\_calls\_reqTlvs[2] {  Type = 0x11  Length = 1  call\_type {  call\_type = ***CALL\_TYPE\_VOICE\_IP // 语音类型呼叫***  }  }  voice\_manage\_ip\_calls\_reqTlvs[3] {  Type = 0x12  Length = 8  audio\_attrib {  audio\_attrib = VOICE\_CALL\_ATTRIB\_TX | VOICE\_CALL\_ATTRIB\_RX  }  }  voice\_manage\_ip\_calls\_reqTlvs[4] {  Type = 0x13  Length = 8  video\_attrib {  ***video\_attrib = 0 // 视频类型***  }  }  voice\_manage\_ip\_calls\_reqTlvs[5] {  Type = 0x1A  Length = 4  rtt\_mode {  rtt\_mode = RTT\_MODE\_DISABLED  }  }  }  }  } |

#### QMI\_VOICE\_MODIFIED\_IND

通知Client，VoIP或者VT call升级或者降级。

**call\_modified\_cause**

* VOICE\_CALL\_MODIFIED\_CAUSE\_NONE(0x00) – No call modify cause information
* VOICE\_CALL\_MODIFIED\_CAUSE\_UPGRADE\_DUE\_TO\_LOCAL\_REQ (0x01) –Upgrade due to a local request --请求发起者是谁，本端
* VOICE\_CALL\_MODIFIED\_CAUSE\_UPGRADE\_DUE\_TO\_REMOTE\_REQ (0x02)– Upgrade due to a remote request--请求发起者是谁，远端
* VOICE\_CALL\_MODIFIED\_CAUSE\_DOWNGRADE\_DUE\_TO\_LOCAL\_REQ(0x03) – Downgrade due to a local request
* VOICE\_CALL\_MODIFIED\_CAUSE\_DOWNGRADE\_DUE\_TO\_REMOTE\_REQ(0x04) – Downgrade due to a remote request
* VOICE\_CALL\_MODIFIED\_CAUSE\_DOWNGRADE\_DUE\_TO\_RTP\_TIMEOUT(0x05) – Downgrade due to an RTP timeout
* VOICE\_CALL\_MODIFIED\_CAUSE\_DOWNGRADE\_DUE\_TO\_QOS (0x06) –Downgrade due to QOS
* VOICE\_CALL\_MODIFIED\_CAUSE\_DOWNGRADE\_DUE\_TO\_PACKET\_LOSS(0x07) – Downgrade due to a packet loss
* VOICE\_CALL\_MODIFIED\_CAUSE\_DOWNGRADE\_DUE\_TO\_LOW\_THRPUT(0x08) – Downgrade due to low throughput
* VOICE\_CALL\_MODIFIED\_CAUSE\_DOWNGRADE\_DUE\_TO\_THERM\_MITIGATION (0x09) – Downgrade due to thermal mitigation
* VOICE\_CALL\_MODIFIED\_CAUSE\_DOWNGRADE\_DUE\_TO\_GENERIC\_ERROR (0x0A) – Downgrade due to a general error
* VOICE\_CALL\_MODIFIED\_CAUSE\_DOWNGRADE\_DUE\_TO\_LIPSYNC (0x0B) –Downgrade due to lipsync

**audio\_cause**

* VOICE\_RESTRICT\_CAUSE\_ NONE (0x00) – No call restriction
* VOICE\_RESTRICT\_CAUSE\_ DISABLED(0x01) – Corresponding call attribute is disabled
* VOICE\_RESTRICT\_CAUSE\_ RAT (0x02) –Call attribute is not supported by the RAT
* VOICE\_RESTRICT\_CAUSE\_ HD (0x03) –Call attribute is not supported because there is no HD support

**video\_cause**

* VOICE\_RESTRICT\_CAUSE\_ NONE (0x00) – No call restriction
* VOICE\_RESTRICT\_CAUSE\_ DISABLED(0x01) – Corresponding call attribute is disabled
* VOICE\_RESTRICT\_CAUSE\_ RAT (0x02) – Call attribute is not supported by the RAT
* VOICE\_RESTRICT\_CAUSE\_ HD (0x03) – Call attribute is not supported because there is no HD support

**Example**

|  |
| --- |
| 09:31:53.732 [0x1544] MCS QCSI Payload Packet  packetVersion = 2  MsgType = Indication  Counter = 77  ***ServiceId = 9***  MajorRev = 2  MinorRev = 106  ConHandle = 0x00000006  ***MsgId = 0x00000051***  QmiLength = 124  Service\_VOICE {  ServiceVOICEV2 {  voice\_modified {  voice\_modified\_indTlvs[0] {  Type = 0x01  Length = 1  call\_id {  call\_id = 1  }  }  voice\_modified\_indTlvs[1] {  Type = 0x10  Length = 1  call\_type {  ***call\_type = CALL\_TYPE\_VOICE\_IP***  }  }  voice\_modified\_indTlvs[2] {  Type = 0x11  Length = 8  audio\_attrib {  audio\_attrib = VOICE\_CALL\_ATTRIB\_TX | VOICE\_CALL\_ATTRIB\_RX  }  }  voice\_modified\_indTlvs[3] {  Type = 0x12  Length = 8  video\_attrib {  ***video\_attrib = 0 // 没有视频***  }  }  voice\_modified\_indTlvs[4] {  Type = 0x14  Length = 1  media\_id {  media\_id = 17  }  }  voice\_modified\_indTlvs[5] {  Type = 0x15  Length = 4  call\_attrib\_status {  call\_attrib\_status = VOICE\_CALL\_ATTRIB\_STATUS\_OK  }  }  voice\_modified\_indTlvs[6] {  Type = 0x16  Length = 4  call\_modified\_cause {  call\_modified\_cause = VOICE\_CALL\_MODIFIED\_CAUSE\_NONE  }  }  voice\_modified\_indTlvs[7] {  Type = 0x17  Length = 24  local\_call\_capabilities {  audio\_attrib = VOICE\_CALL\_ATTRIB\_TX | VOICE\_CALL\_ATTRIB\_RX  audio\_cause = VOICE\_RESTRICT\_CAUSE\_NONE  video\_attrib = VOICE\_CALL\_ATTRIB\_TX | VOICE\_CALL\_ATTRIB\_RX  video\_cause = VOICE\_RESTRICT\_CAUSE\_NONE  }  }  voice\_modified\_indTlvs[8] {  Type = 0x18  Length = 24  peer\_call\_capabilities {  audio\_attrib = VOICE\_CALL\_ATTRIB\_TX | VOICE\_CALL\_ATTRIB\_RX  audio\_cause = VOICE\_RESTRICT\_CAUSE\_NONE  video\_attrib = VOICE\_CALL\_ATTRIB\_TX | VOICE\_CALL\_ATTRIB\_RX  video\_cause = VOICE\_RESTRICT\_CAUSE\_NONE  }  }  voice\_modified\_indTlvs[9] {  Type = 0x19  Length = 4  rtt\_mode {  rtt\_mode = RTT\_MODE\_DISABLED  }  }  voice\_modified\_indTlvs[10] {  Type = 0x1A  Length = 8  rtt\_capabilities {  local\_rtt\_cap = RTT\_MODE\_DISABLED  peer\_rtt\_cap = RTT\_MODE\_DISABLED  }  }  voice\_modified\_indTlvs[11] {  Type = 0x1B  Length = 1  is\_secure\_call {  is\_secure\_call = false  }  }  }  }  } |

### 网络模式变化，如设置4G网络优先操作

切换各个网络模式的优先级。用于关闭某些优先级较高的RAT。

如设置4G优先，则表示当前Modem可以驻留4G以及低于4G的其他RAT，如GSM，WCDMA和CDMA。

#### QMI\_NAS\_SET\_SYSTEM\_SELECTION\_PREFERENCE

设置设备的不同系统选择首选项。

1. 特征

ServiceId = 3，MsgId = 0x00000033，字符串：nas\_set\_system\_selection\_preference

1. 参数释义

**mode\_pref**

* Bit 0 (0x01) – QMI\_NAS\_RAT\_MODE\_PREF\_CDMA2000\_1X – cdma2000® 1X
* Bit 1 (0x02) – QMI\_NAS\_RAT\_MODE\_PREF\_CDMA2000\_HRPD – cdma2000® HRPD(1xEV-DO)
* Bit 2 (0x04) – QMI\_NAS\_RAT\_MODE\_PREF\_GSM – GSM
* Bit 3 (0x08) – QMI\_NAS\_RAT\_MODE\_PREF\_UMTS – UMTS
* Bit 4 (0x10) – QMI\_NAS\_RAT\_MODE\_PREF\_LTE – LTE
* Bit 5 (0x20) – QMI\_NAS\_RAT\_MODE\_PREF\_TDSCDMA – TD-SCDMA
* Bit 6 (0x40) – QMI\_NAS\_RAT\_MODE\_PREF\_NR5G – NR5G

**roam\_pref**

* 0x01 – ROAMING\_PREF\_OFF – Acquire only systems for which the roaming indicator is off
* 0x02 – ROAMING\_PREF\_NOT\_OFF – Acquire a system as long as its roaming indicator is not off
* 0x03 – ROAMING\_PREF\_NOT\_FLASING – Acquire only systems for which the roaming indicator is off or solid on, i.e., not flashing; CDMA only
* 0xFF – ROAMING\_PREF\_ANY – Acquire systems, regardless of their roaming indicator

1. Example

|  |
| --- |
| 08:13:27.168 [0x1544] MCS QCSI Payload Packet  packetVersion = 2  MsgType = Request  Counter = 8197  ServiceId = 3  MajorRev = 1  MinorRev = 261  ConHandle = 0x00000011  MsgId = 0x00000033  QmiLength = 5  Service\_NAS {  ServiceNASV1 {  nas\_set\_system\_selection\_preference {  nas\_set\_system\_selection\_preference\_reqTlvs[0] {  Type = 0x11  Length = 2  mode\_pref {  ***mode\_pref = QMI\_NAS\_RAT\_MODE\_PREF\_GSM***  }  }  }  }  } |

#### QMI\_NAS\_GET\_SYSTEM\_SELECTION\_PREFERENCE

获取系统选择的首选系统。

1. 特征

ServiceId = 3，MsgId = 0x00000034，字符串：nas\_get\_system\_selection\_preference

1. 参数释义

**usage\_setting**

* NAS\_USAGE\_UNKNOWN (0) – Unknown
* NAS\_USAGE\_VOICE\_CENTRIC (1) – Voice centric
* NAS\_USAGE\_DATA\_CENTRIC (2) – Data centric

**srv\_reg\_restriction**

* 0x00 – NAS\_SRV\_REG\_RESTRICTION\_UNRESTRICTED – Device follows the **normal registration process**
* 0x01 – NAS\_SRV\_REG\_RESTRICTION\_CAMPED\_ONLY – Device camps on the network according to its provisioning, **but does not register**
* 0x02 – NAS\_SRV\_REG\_RESTRICTION\_LIMITED – Device selects the network fo**r limited service**

1. Example

|  |
| --- |
| 08:13:27.447 [0x1544] MCS QCSI Payload Packet  packetVersion = 2  MsgType = Indication  Counter = 2143  ServiceId = 3  MajorRev = 1  MinorRev = 261  ConHandle = 0x00000011  MsgId = 0x00000034  QmiLength = 215  Service\_NAS {  ServiceNASV1 {  nas\_get\_system\_selection\_preference {  nas\_system\_selection\_preference\_indTlvs[0] {  Type = 0x10  Length = 1  emergency\_mode {  ***emergency\_mode = false***  }  }  nas\_system\_selection\_preference\_indTlvs[1] {  Type = 0x11  Length = 2  mode\_pref {  ***mode\_pref = QMI\_NAS\_RAT\_MODE\_PREF\_GSM***  }  }  nas\_system\_selection\_preference\_indTlvs[2] {  Type = 0x12  Length = 8  band\_pref {  band\_pref = QMI\_NAS\_BAND\_CLASS\_0\_A\_SYSTEM | QMI\_NAS\_BAND\_CLASS\_0\_B\_AB\_GSM850 | QMI\_NAS\_BAND\_CLASS\_1\_ALL\_BLOCKS | QMI\_NAS\_BAND\_CLASS\_2\_PLACEHOLDER | QMI\_NAS\_BAND\_CLASS\_3\_A\_SYSTEM | QMI\_NAS\_BAND\_CLASS\_4\_ALL\_BLOCKS | QMI\_NAS\_BAND\_CLASS\_5\_ALL\_BLOCKS | QMI\_NAS\_GSM\_DCS\_1800\_BAND | QMI\_NAS\_E\_GSM\_900\_BAND | QMI\_NAS\_P\_GSM\_900\_BAND | QMI\_NAS\_BAND\_CLASS\_6 | QMI\_NAS\_BAND\_CLASS\_7 | QMI\_NAS\_BAND\_CLASS\_8 | QMI\_NAS\_BAND\_CLASS\_9 | QMI\_NAS\_BAND\_CLASS\_10 | QMI\_NAS\_BAND\_CLASS\_11 | QMI\_NAS\_GSM\_BAND\_450 | QMI\_NAS\_GSM\_BAND\_480 | QMI\_NAS\_GSM\_BAND\_750 | QMI\_NAS\_GSM\_BAND\_850 | QMI\_NAS\_GSM\_BAND\_RAILWAYS\_900\_BAND | QMI\_NAS\_GSM\_BAND\_PCS\_1900\_BAND | QMI\_NAS\_WCDMA\_EU\_J\_CH\_IMT\_2100\_BAND | QMI\_NAS\_WCDMA\_US\_PCS\_1900\_BAND | QMI\_NAS\_EU\_CH\_DCS\_1800\_BAND | QMI\_NAS\_WCDMA\_US\_1700\_BAND | QMI\_NAS\_WCDMA\_US\_850\_BAND | QMI\_NAS\_WCDMA\_JAPAN\_800\_BAND | QMI\_NAS\_BAND\_CLASS\_12 | QMI\_NAS\_BAND\_CLASS\_14 | QMI\_NAS\_RESERVED | QMI\_NAS\_BAND\_CLASS\_15 | 0x100000000 | 0x200000000 | 0x400000000 | 0x800000000 | 0x1000000000 | 0x2000000000 | 0x4000000000 | 0x8000000000 | 0x10000000000 | 0x20000000000 | 0x40000000000 | 0x80000000000 | 0x100000000000 | 0x200000000000 | 0x400000000000 | 0x800000000000 | QMI\_NAS\_WCDMA\_EU\_2600\_BAND | QMI\_NAS\_WCDMA\_EU\_J\_900\_BAND | QMI\_NAS\_WCDMA\_J\_1700\_BAND | 0x8000000000000 | 0x10000000000000 | 0x20000000000000 | 0x40000000000000 | 0x80000000000000 | QMI\_NAS\_BAND\_CLASS\_16 | QMI\_NAS\_BAND\_CLASS\_17 | QMI\_NAS\_BAND\_CLASS\_18 | QMI\_NAS\_BAND\_CLASS\_19 | QMI\_NAS\_WCDMA\_JAPAN\_850\_BAND | QMI\_NAS\_WCDMA\_JAPAN\_1500\_BAND | 0x4000000000000000  }  }  nas\_system\_selection\_preference\_indTlvs[3] {  Type = 0x13  Length = 2  prl\_pref {  prl\_pref = NAS\_PRL\_PREF\_ANY  }  }  nas\_system\_selection\_preference\_indTlvs[4] {  Type = 0x14  Length = 2  roam\_pref {  roam\_pref = NAS\_ROAMING\_PREF\_ANY  }  }  nas\_system\_selection\_preference\_indTlvs[5] {  Type = 0x15  Length = 8  lte\_band\_pref {  lte\_band\_pref = E\_UTRA\_OPERATING\_BAND\_1 | E\_UTRA\_OPERATING\_BAND\_2 | E\_UTRA\_OPERATING\_BAND\_3 | E\_UTRA\_OPERATING\_BAND\_4 | E\_UTRA\_OPERATING\_BAND\_5 | E\_UTRA\_OPERATING\_BAND\_6 | E\_UTRA\_OPERATING\_BAND\_7 | E\_UTRA\_OPERATING\_BAND\_8 | E\_UTRA\_OPERATING\_BAND\_9 | E\_UTRA\_OPERATING\_BAND\_10 | E\_UTRA\_OPERATING\_BAND\_11 | E\_UTRA\_OPERATING\_BAND\_12 | E\_UTRA\_OPERATING\_BAND\_13 | E\_UTRA\_OPERATING\_BAND\_14 | E\_UTRA\_OPERATING\_BAND\_17 | E\_UTRA\_OPERATING\_BAND\_18 | E\_UTRA\_OPERATING\_BAND\_19 | E\_UTRA\_OPERATING\_BAND\_20 | E\_UTRA\_OPERATING\_BAND\_21 | E\_UTRA\_OPERATING\_BAND\_23 | E\_UTRA\_OPERATING\_BAND\_24 | E\_UTRA\_OPERATING\_BAND\_25 | E\_UTRA\_OPERATING\_BAND\_26 | 0x4000000 | E\_UTRA\_OPERATING\_BAND\_28 | E\_UTRA\_OPERATING\_BAND\_29 | E\_UTRA\_OPERATING\_BAND\_32 | 0x40000000 | E\_UTRA\_OPERATING\_BAND\_30 | E\_UTRA\_OPERATING\_BAND\_33 | E\_UTRA\_OPERATING\_BAND\_34 | E\_UTRA\_OPERATING\_BAND\_35 | E\_UTRA\_OPERATING\_BAND\_36 | E\_UTRA\_OPERATING\_BAND\_37 | E\_UTRA\_OPERATING\_BAND\_38 | E\_UTRA\_OPERATING\_BAND\_39 | E\_UTRA\_OPERATING\_BAND\_40 | E\_UTRA\_OPERATING\_BAND\_41 | E\_UTRA\_OPERATING\_BAND\_42 | E\_UTRA\_OPERATING\_BAND\_43 | E\_UTRA\_OPERATING\_BAND\_46 | E\_UTRA\_OPERATING\_BAND\_47 | E\_UTRA\_OPERATING\_BAND\_48 | E\_UTRA\_OPERATING\_BAND\_49  }  }  nas\_system\_selection\_preference\_indTlvs[6] {  Type = 0x16  Length = 1  net\_sel\_pref {  ***net\_sel\_pref = NAS\_NET\_SEL\_PREF\_AUTOMATIC***  }  }  nas\_system\_selection\_preference\_indTlvs[7] {  Type = 0x18  Length = 4  srv\_domain\_pref {  ***srv\_domain\_pref = QMI\_SRV\_DOMAIN\_PREF\_CS\_PS***  }  }  nas\_system\_selection\_preference\_indTlvs[8] {  Type = 0x19  Length = 4  gw\_acq\_order\_pref {  gw\_acq\_order\_pref = NAS\_GW\_ACQ\_ORDER\_PREF\_WCDMA\_GSM  }  }  nas\_system\_selection\_preference\_indTlvs[9] {  Type = 0x1A  Length = 8  tdscdma\_band\_pref {  tdscdma\_band\_pref = NAS\_TDSCDMA\_BAND\_A | NAS\_TDSCDMA\_BAND\_F  }  }  nas\_system\_selection\_preference\_indTlvs[10] {  Type = 0x1C  Length = 7  acq\_order {  acq\_order\_len = 6  acq\_order = { 12, NAS\_RADIO\_IF\_LTE, NAS\_RADIO\_IF\_UMTS, NAS\_RADIO\_IF\_GSM, NAS\_RADIO\_IF\_CDMA\_1X, NAS\_RADIO\_IF\_CDMA\_1XEVDO }  }  }  nas\_system\_selection\_preference\_indTlvs[11] {  Type = 0x1D  Length = 4  srv\_reg\_restriction {  srv\_reg\_restriction = NAS\_SRV\_REG\_RESTRICTION\_UNRESTRICTED  }  }  nas\_system\_selection\_preference\_indTlvs[12] {  Type = 0x1F  Length = 4  usage\_setting {  usage\_setting = NAS\_USAGE\_VOICE\_CENTRIC  }  }  nas\_system\_selection\_preference\_indTlvs[13] {  Type = 0x20  Length = 4  voice\_domain\_pref {  voice\_domain\_pref = NAS\_VOICE\_DOMAIN\_PREF\_PS\_PREF  }  }  nas\_system\_selection\_preference\_indTlvs[14] {  Type = 0x22  Length = 2  rat\_disabled\_mask {  rat\_disabled\_mask = 0  }  }  nas\_system\_selection\_preference\_indTlvs[15] {  Type = 0x23  Length = 32  lte\_band\_pref\_ext {  bits\_1\_64 = 536561672208383  bits\_65\_128 = 78  bits\_129\_192 = 0  bits\_193\_256 = 5332261958806667264  }  }  nas\_system\_selection\_preference\_indTlvs[16] {  Type = 0x28  Length = 64  nr5g\_band\_pref {  bits\_1\_64 = 1831657674377431  bits\_65\_128 = 4193891  bits\_129\_192 = 0  bits\_193\_256 = 0  bits\_257\_320 = 31  bits\_321\_384 = 0  bits\_385\_448 = 0  bits\_449\_512 = 0  }  }  nas\_system\_selection\_preference\_indTlvs[17] {  Type = 0x2B  Length = 4  DefaultTlv {  Hex dump = { 1, 0, 0, 0 }  }  }  }  }  } |

### 关闭自动选择网络-手机返回可用网络列表

关闭自动选择运营商之后，返回可用网络列表。手动选择注册到某个RAT上。

#### QMI\_NAS\_PERFORM\_NETWORK\_SCAN\_REQ\_MSG

执行一个可见网络的搜索。

1. 特征

ServiceId = 3，MsgId = 0x00000021，nas\_perform\_network\_scan

1. 参数解析

**network\_type**

Bitmask representing the network type to scan.

Values:

Bit 0 – GSM

Bit 1 – UMTS

Bit 2 – LTE

Bit 3 – TD-SCDMA

Any combination of the bit positions can be used

**scan\_type**

NAS\_SCAN\_TYPE\_PLMN (0x00) – PLMN(default)

NAS\_SCAN\_TYPE\_CSG (0x01) – Closed subscriber group

NAS\_SCAN\_TYPE\_MODE\_PREF (0x02) – Mode preference

NAS\_SCAN\_TYPE\_PCI (0x03) – Physical cell ID

1. Example

|  |
| --- |
| 03:04:26.166  03:04:26.166 [0x1544] MCS QCSI Payload Packet  packetVersion = 2  MsgType = Request  Counter = 728  **ServiceId = 3**  MajorRev = 1  MinorRev = 261  ConHandle = 0x00000010  **MsgId = 0x00000021**  QmiLength = 4  Service\_NAS {  ServiceNASV1 {  nas\_perform\_network\_scan {  nas\_perform\_network\_scan\_reqTlvs[0] {  Type = 0x10  Length = 1  network\_type {  ***network\_type = NAS\_NETWORK\_TYPE\_GSM\_ONLY | NAS\_NETWORK\_TYPE\_WCDMA\_ONLY | NAS\_NETWORK\_TYPE\_LTE\_ONLY | NAS\_NETWORK\_TYPE\_TDSCDMA\_ONLY***  }  }  }  }  } |

#### QMI\_NAS\_PERFORM\_NETWORK\_SCAN\_RESP\_MSG

网络搜索响应消息。

1. 特征
2. 参数解释
   1. **num\_network\_info\_instances**

**表示当前找网结果的个数。**

* 1. mobile\_country\_code

MCC值

* 1. mobile\_network\_code

MNC值。

* 1. network\_status

网络状态。为BitMask形式。具体如下：

Bits 0-1 – QMI\_NAS\_NETWORK\_IN\_USE\_STATUS\_BITS – In-use status

• 0 – QMI\_NAS\_NETWORK\_IN\_USE\_STATUS\_UNKNOWN – Unknown

• 1 – QMI\_NAS\_NETWORK\_IN\_USE\_STATUS\_CURRENT\_SERVING – Current serving

• 2 – QMI\_NAS\_NETWORK\_IN\_USE\_STATUS\_AVAILABLE – Available

Bits 2-3 – QMI\_NAS\_NETWORK\_ROAMING\_STATUS\_BITS – Roaming status

• 0 – QMI\_NAS\_NETWORK\_ROAMING\_STATUS\_UNKNOWN – Unknown

• 1 – QMI\_NAS\_NETWORK\_ROAMING\_STATUS\_HOME – Home

• 2 – QMI\_NAS\_NETWORK\_ROAMING\_STATUS\_ROAM – Roam

Bits 4-5 – QMI\_NAS\_NETWORK\_FORBIDDEN\_STATUS\_BITS – Forbidden status

• 0 – QMI\_NAS\_NETWORK\_FORBIDDEN\_STATUS\_UNKNOWN – Unknown

• 1 – QMI\_NAS\_NETWORK\_FORBIDDEN\_STATUS\_FORBIDDEN – Forbidden

• 2 – QMI\_NAS\_NETWORK\_FORBIDDEN\_STATUS\_NOT\_FORBIDDEN – Not forbidden

Bits 6-7 – QMI\_NAS\_NETWORK\_PREFERRED\_STATUS\_BITS – Preferred status

• 0 – QMI\_NAS\_NETWORK\_PREFERRED\_STATUS\_UNKNOWN – Unknown

• 1 – QMI\_NAS\_NETWORK\_PREFERRED\_STATUS\_PREFERRED – Preferred

• 2 – QMI\_NAS\_NETWORK\_PREFERRED\_STATUS\_NOT\_PREFERRED – Not preferred

例如：170的是二进制为0b1010, 1010,

* 1. network\_description

网络描述，一般为运营商的简写。

* 1. rat

Radio access technology. Values:

0x04 – GERAN

0x05 – UMTS

0x08 – LTE

0x09 – TD-SCDMA

### 省电模式

省电模式由AP侧开启和关闭。

1. 特征

ServiceId=WDA，MsgId = 0x0000002E，字符串：wda\_set\_powersave\_mode

1. 参数解析

powersave\_control\_flag指示当前节能控制的标识符。

1. Enable
2. Disable
3. Example

由于开启了节能控制，导致注册后，UE立即发送了Detach消息，去激活了注册状态。

|  |
| --- |
| [0xB0ED] 04:44:22.244597 LTE NAS EMM Plain OTA Outgoing MessageAttach request Msg 1  [0xB0EC] 04:44:23.505130 LTE NAS EMM Plain OTA Incoming MessageAttach accept Msg 1  [0xB0ED] 04:44:23.510375 LTE NAS EMM Plain OTA Outgoing MessageAttach complete Msg 1  [0x1544] 04:44:47.865737 QMI\_MCS\_QCSI\_PKT Length: 48  ServiceWDAV1 {  wda\_set\_powersave\_mode {  wda\_set\_powersave\_mode\_reqTlvs[0] {  Type = 0x01  Length = 1  powersave\_control\_flag {  powersave\_control\_flag = true  }  }  }  [0xB0ED] 04:44:56.487933 LTE NAS EMM Plain OTA Outgoing Message Detach request Msg 1 |

### 手动搜网

### 开关VoLTE开关—待补充

### 设置SIM的固定拨号

在电话界面->电话设置->高级设置->固定拨号。此业务设置后，手机只能拨出有限的几个号码啦，也只能接听FDN中的号码。但是，紧急呼叫是不受该限制。

1. 特征

ServiceId = 11，MsgId = 0x00000037，字符串：uim\_set\_service\_status

1. 参数解析

fdn\_status：FDN状态（Fixed dialer number），true开启固定拨号，false取消固定拨号。

1. Example

|  |
| --- |
| 07:53:49.546  07:53:49.546 [0x1544] MCS QCSI Payload Packet  packetVersion = 2  MsgType = Request  Counter = 1584  **ServiceId = 11**  MajorRev = 1  MinorRev = 92  ConHandle = 0x0000001D  **MsgId = 0x00000037**  QmiLength = 9  Service\_UIM {  ServiceUIMV1 {  uim\_set\_service\_status {  uim\_set\_service\_status\_reqTlvs[0] {  Type = 0x01  Length = 2  session\_information {  session\_type = UIM\_SESSION\_TYPE\_PRIMARY\_GW  aid\_len = 0  }  }  **uim\_set\_service\_status\_req**Tlvs[1] {  Type = 0x10  Length = 1  fdn\_status {  **fdn\_status = true**  }  }  }  }  } |

## 信号强度上报

### NR信号强度上报

通过Measurement Report中将RSRP减去156，或者通过如下消息判断信号测量值0xB97F。

|  |
| --- |
| [0xB97F] 02:45:04.292701 NR5G ML1 Searcher Measurement Database Update ExtLength: 316 1  Cells[0] {  PCI = 205  PBCH SFN = 1000  Num Beams = 4  CellQualityRsrp {  Cell Quality RSRP = -95.453  }  CellQualityRsrq {  Cell Quality RSRQ = -10.391  } |

### LTE信号状态上报

B193

|  |
| --- |
| 03:17:09.317 [0xB193] LTE ML1 Serving Cell Meas Response  Version = 1  Number of SubPackets = 1  SubPacket ID = 25  Serving Cell Measurement Result  Version = 48  SubPacket Size = 156 bytes  E-ARFCN = 2452  Num of Cell = 1  Valid Rx = RX0\_RX1  Logical To Physical Rx Map = { 0, 1, NA, NA }  Cells[0]  Physical Cell ID = 196  Serving Cell Index = PCell  Is Serving Cell = 1  Current SFN = 551  Current Subframe Number = 9  Is Restricted = false  Cell Timing[0] = 32352  Cell Timing[1] = 32352  Cell Timing SFN[0] = 551  Cell Timing SFN[1] = 551  Inst RSRP Rx[0] = -107.63 dBm  Inst RSRP Rx[1] = -113.88 dBm  Inst RSRP Rx[2] = NA  Pathloss RSRP Rx[2] = NA  Pathloss RSRP Rx[3] = NA  Inst RSRP Rx[3] = NA  Inst Measured RSRP = -107.63 dBm  Filtered RSRP = -107.63 dBm  Inst RSRQ Rx[0] = -13.50 dB  Inst RSRQ Rx[1] = -13.31 dB  Inst RSRQ Rx[2] = NA  Inst RSRQ Rx[3] = NA  Inst RSRQ = -13.31 dB  Filtered RSRQ = -13.31 dB  Inst RSSI Rx[0] = -77.13 dBm  Inst RSSI Rx[1] = -83.56 dBm  Inst RSSI Rx[2] = NA  Inst RSSI Rx[3] = NA  Inst RSSI = -77.13 dBm  Residual Frequency Error = 24680  FTL SNR Rx[0] = -1.20 dB  FTL SNR Rx[1] = -0.90 dB  FTL SNR Rx[2] = NA  FTL SNR Rx[3] = NA  Projected Sir = 0 dB  Post Ic Rsrq = 4294967295 dB  CINR RX 0 = 3446  CINR RX 1 = -32768  CINR RX 2 = NA  CINR RX 3 = NA |

### WCDMA信号状态上报

搜索的Log Packet关键字：4176

|  |
| --- |
| [0x4176] LOG 03:22:09.118 WCDMA AGC Edition 2 Length: 1880  03:22:09.118 [0x4176] WCDMA AGC Edition 2  Version = 2  Number of Subpacket = 1  Subpacket[0]  **Subpacket ID = 1**  Subpacket Version = 2  Subpacket Size = 1876  Number of samples = 34  Start CFN = 225  -------------  | |RxAGC  | |(C0Ch0)  |CFN|(dBm)  -------------  |225| -106.00  |226| -106.00  |227| -106.00  |228| -106.00  |229| -106.00 |

从RxAGC的数据看当前WCDMA信号强度，若是小于-103Bm则表示信号差，高于-103dBm表示信号强度好。

信号强度差，可能触发从新找网。

搜索ACQ REQ，确定合适触发了WCDMA的 找网。

|  |
| --- |
| [3001/0004] MSG 03:22:09.388 WCDMA L1/Fatal [srchacq.c 3708] ACQ REQ:Rx AGC -106 Chan 10713 band 10242  [3001/0004] MSG 03:22:12.268 WCDMA L1/Fatal [srchacq.c 3708] ACQ REQ:Rx AGC -106 Chan 10713 band 10242 |

通过Trace信息也可以查看到WCDMA的RSCP和ECNO。

过滤方法：

**Message Packets-> Diagnostics Service**

[ 7/ 2] 06:39:15.464351 Diagnostics Services/High[ wsrch.c 8191] UI display: L1M\_STATE: 6 is\_data\_valid: 1 use\_ecio: 1 ECIO: -10 RSCP: -76 RSSI: -66 Pathloss: 109 SIR: 5

[ 7/ 2] 06:39:18.464795 Diagnostics Services/High[ wsrch.c 8191] UI display: L1M\_STATE: 6 is\_data\_valid: 1 use\_ecio: 1 ECIO: -23 RSCP: -84 RSSI: -61 Pathloss: 109 SIR: 2

[ 7/ 2] 06:39:21.465161 Diagnostics Services/High[ wsrch.c 8191] UI display: L1M\_STATE: 6 is\_data\_valid: 1 use\_ecio: 1 ECIO: -20 RSCP: -82 RSSI: -62 Pathloss: 109 SIR: 4

[ 7/ 2] 06:39:24.465526 Diagnostics Services/High[ wsrch.c 8191] UI display: L1M\_STATE: 6 is\_data\_valid: 1 use\_ecio: 1 ECIO: -25 RSCP: -121 RSSI: -59 Pathloss: 109 SIR: -10

[ 7/ 2] 06:39:27.443222 Diagnostics Services/High[ wsrch.c 8191] UI display: L1M\_STATE: 13 is\_data\_valid: 1 use\_ecio: 0 ECIO: 0 RSCP: -57 RSSI: -50 Pathloss: 255 SIR: 255

### GSM信号状态上报

GSM的信号强度通过0x5A6C查看。

**05:35:28.150 [0x5A6C] GSM DSDS L1 Burst Metrics**

Channel = SDCCH

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Number | ARFCN | Band | RSSI | (dBm) | Channel | Channel | Estimate | Estimate | SNR (dB) | Gain State |

--------------------------------------------------------------------------------------------------------------------------------

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 2599474 | 57 | GSM 900 | 26281 | -103.44 | 17 | -10 | 0 | 0 | 1.04 | Not Initialized |
| 1 | 2599475 | 57 | GSM 900 | 20704 | -104.50 | -7 | -15 | 0 | 0 | 0.23 | Not Initialized |
| 2 | 2599476 | 57 | GSM 900 | 22997 | -104.00 | 0 | -1 | 0 | 0 | 3.09 | Not Initialized |
| 3 | 2599477 | 57 | GSM 900 | 31107 | -102.69 | -94 | -13 | 14 | 0 | 5.23 | Not Initialized |

### CDMA 1X信号强度获取

过滤方法：

1. 在Inter View窗口中选中全部，Alt+R，勾选中Qtrace->MMCP->MMODE中的所有子项，点击OK。
2. 选中1中过滤的所有结果，Alt+M(如果弹不出，则右键选择Match Items)，在Search For中输入C:cmss\_report\_rssi，Options中勾选Case Sensitive Search，Contents to Search中仅勾选Summary，点击Match，即可得到所有的CDMA 1X的信号强度上报的Log。

参数说明：

1. rssi为上一次上报的RSSI，current\_rssi为本次上报的RSSI
2. ecio为上一次上报的ECIO，current\_ecio为本次上报的ECIO

Note：

RSSI越大，表示信号越差，最差为124

ECIO也是越大越差，最差为64

|  |
| --- |
| [0042/00/1] QTRACE 06:49:16.609 MMODE/STRM/Medium/CM [cmss.c 9935] RSSI: C:cmss\_report\_rssi(), rssi = 111, current\_rssi=123 report\_rssi=1, ecio=37, current\_ecio=46, sub 0 =CM=  [0042/00/1] QTRACE 06:49:18.849 MMODE/STRM/Medium/CM [cmss.c 9935] RSSI: C:cmss\_report\_rssi(), rssi = 123, current\_rssi=124 report\_rssi=1, ecio=46, current\_ecio=56, sub 0 =CM=  [0042/00/1] QTRACE 06:49:20.891 MMODE/STRM/Medium/CM [cmss.c 9935] RSSI: C:cmss\_report\_rssi(), rssi = 124, current\_rssi=124 report\_rssi=1, ecio=56, current\_ecio=45, sub 0 =CM=  [0042/00/1] QTRACE 06:49:23.329 MMODE/STRM/Medium/CM [cmss.c 9935] RSSI: C:cmss\_report\_rssi(), rssi = 124, current\_rssi=124 report\_rssi=1, ecio=45, current\_ecio=49, sub 0 =CM=  [0042/00/1] QTRACE 06:49:23.892 MMODE/STRM/Medium/CM [cmss.c 9935] RSSI: C:cmss\_report\_rssi(), rssi = 124, current\_rssi=124 report\_rssi=1, ecio=49, current\_ecio=53, sub 0 =CM=  [0042/00/1] QTRACE 06:49:25.569 MMODE/STRM/Medium/CM [cmss.c 9935] RSSI: C:cmss\_report\_rssi(), rssi = 124, current\_rssi=124 report\_rssi=1, ecio=53, current\_ecio=41, sub 0 =CM=  [0042/00/1] QTRACE 06:49:26.893 MMODE/STRM/Medium/CM [cmss.c 9935] RSSI: C:cmss\_report\_rssi(), rssi = 124, current\_rssi=124 report\_rssi=1, ecio=41, current\_ecio=49, sub 0 =CM=  [0042/00/1] QTRACE 06:49:29.893 MMODE/STRM/Medium/CM [cmss.c 9935] RSSI: C:cmss\_report\_rssi(), rssi = 124, current\_rssi=124 report\_rssi=1, ecio=49, current\_ecio=57, sub 0 =CM=  [0042/00/1] QTRACE 06:49:30.049 MMODE/STRM/Medium/CM [cmss.c 9935] RSSI: C:cmss\_report\_rssi(), rssi = 124, current\_rssi=124 report\_rssi=1, ecio=57, current\_ecio=63, sub 0 =CM=  [0042/00/1] QTRACE 06:49:32.289 MMODE/STRM/Medium/CM [cmss.c 9935] RSSI: C:cmss\_report\_rssi(), rssi = 124, current\_rssi=124 report\_rssi=1, ecio=63, current\_ecio=31, sub 0 =CM=  [0042/00/1] QTRACE 06:49:32.894 MMODE/STRM/Medium/CM [cmss.c 9935] RSSI: C:cmss\_report\_rssi(), rssi = 124, current\_rssi=96 report\_rssi=1, ecio=31, current\_ecio=32, sub 0 =CM= |

## 注册状态查看

### 搜网的发起和搜网结果

过滤方法：

* + 1. 选择QTrace-> MMCP-> NAS中的所有过滤选项。
    2. 在过滤出来的NAS QTrace中，过滤summary中的MMR\_REG\_|RRC\_SERVICE\_IND（需要设置RegEx Engin为Perl）
    3. 搜索出的结果很多，主要查看MMR\_REG\_REQ消息和RRC\_SERVICE\_IND消息。

MMR\_REG\_|RRC\_SERVICE\_IND

|  |
| --- |
| // MMR\_REG\_REQ消息中带了当前搜网的RAT类型，如下为2-LTE  [ 47/ 0/2] QTRACE 03:25:10.395422 MM/LowFreq/High/REG [ reg\_send.c 2197] DS: SUB 0 =REG= MMR\_REG\_REQ PLMN(0-0) RAT(0-GSM,1-W,2-LTE,3-TDS,4-NR5G) = 2 trans\_id 26, scan\_scope=01  // RRC\_SERVICE\_IND可以指示当前的搜网结果，如果PLMN是0-0则表示当前未搜到任何可用网络。  [ 47/ 0/2] QTRACE 03:25:14.895903 MM/LowFreq/High/MM [ emm\_rrc\_handler.c 3543] DS: SUB 0 =EMM= RRC\_SERVICE\_IND -PLMN (0 - 0), TAC 0 SRV REQ pending 16973832, state = 3 sub\_state = 51  [ 47/ 0/2] QTRACE 03:25:14.898869 MM/LowFreq/High/REG [ reg\_send.c 2197] DS: SUB 0 =REG= MMR\_REG\_REQ PLMN(460-11) RAT(0-GSM,1-W,2-LTE,3-TDS,4-NR5G) = 4 trans\_id 27, scan\_scope=01  [ 47/ 0/2] QTRACE 03:25:40.203277 MM/LowFreq/High/MM [ mm5g\_rrc\_handler.c 2077] DS: SUB 0 =MM5G= NR5G\_RRC\_SERVICE\_IND - PLMN (0 - 0), TAC 0 0 0 state=3, sub\_state = 41  [ 47/ 0/2] QTRACE 03:25:40.204354 MM/LowFreq/High/REG [ reg\_send.c 2197] DS: SUB 0 =REG= MMR\_REG\_REQ PLMN(460-11) RAT(0-GSM,1-W,2-LTE,3-TDS,4-NR5G) = 2 trans\_id 28, scan\_scope=01  [ 47/ 0/2] QTRACE 03:25:40.491327 MM/LowFreq/High/MM [ emm\_rrc\_handler.c 3543] DS: SUB 0 =EMM= RRC\_SERVICE\_IND -PLMN (460 - 11), TAC 16436 SRV REQ pending 16973833, state = 3 sub\_state = 41 |

### IMS注册状态查看

有时候在OTA信令中并未看到有IMS明显的去注册的流程，但是Modem上报了IMS无服务。这种问题可以查看如下的Log确定掉IMS服务的时间点和原因。

#### QMI消息查看

在QMI 中过滤IMSA得到所有的IMS相关的QMI消息，或者搜索ims\_registration确定IMS注册状态。

|  |
| --- |
| 03:18:49.422146 [0x1544] QMI\_MCS\_QCSI\_PKT  packetVersion = 2  MsgType = Indication  Counter = 51  ServiceId = IMSA  MajorRev = 1  MinorRev = 44  ConHandle = 0x00000073  MsgId = 0x00000023  QmiLength = 97  Service\_IMSA {  ServiceIMSAV1 {  imsa\_registration\_status {  imsa\_registration\_status\_indTlvs[0] {  Type = 0x01  Length = 1  ims\_registered {  ims\_registered = true  }  } |

#### Qtrace过滤MMODE，搜索IMS\_REG\_STATUS\_IND

|  |
| --- |
| // status指示当前IMS的注册状态：0-未注册，1-注册  [ 42/ 0/2] QTRACE 03:17:44.265307 MMODE/STRM/High/CM [ cmsds.c 3884] AS\_ID 0, IMS->CM: IMS\_REG: RXD: IMS\_REG\_STATUS\_IND, status 0 call\_type\_mask= 0x9, sys\_mode= 0x9 [ 42/ 0/2] QTRACE 03:17:44.265315 MMODE/STRM/High/CM [ cmsds.c 3534] AS\_ID 0, IMS\_REG: IMS\_REG\_STATUS\_IND, status 0, call\_type\_mask= 0x9, sys\_mode= 9, trans\_id=6, end\_cause=1  [ 42/ 0/2] QTRACE 03:18:47.511704 MMODE/STRM/High/CM [cmsds.c 3884] AS\_ID 1, IMS->CM: IMS\_REG: RXD: IMS\_REG\_STATUS\_IND,status 1 call\_type\_mask= 0x9, sys\_mode= 0xc |

End cause对应枚举类型在如下枚举结构中

|  |
| --- |
| /\*\* Error cause codes for IMS registration. \*/  typedef enum  {  /\*\* @cond  \*/  SYS\_IMS\_REG\_END\_CAUSE\_NONE = -1, /\* Internal use. \*/  /\*\* @endcond  \*/  SYS\_IMS\_REG\_END\_CAUSE\_NORMAL = 0,  /\*\*< No failure to report. \*/  SYS\_IMS\_REG\_END\_CAUSE\_FAIL = 1,  /\*\*< Generic failure from IMS \*/  SYS\_IMS\_REG\_END\_CAUSE\_TEMPORARY = 2,  /\*\*< Temporary failure from IMS \*/  SYS\_IMS\_REG\_END\_CAUSE\_BLOCK\_TILL\_PWR\_CYCLE = 3,  /\*\*< permanent failure from IMS, block PLMN until power cycle, LPM, SIM refresh etc \*/  /\*\* @cond  \*/  SYS\_IMS\_REG\_END\_CAUSE\_VOLTE\_OFF = 4,  /\*\*<when user switch VOLTE OFF\*/  SYS\_IMS\_REG\_END\_CAUSE\_VONR\_OFF= 5,  /\*\*<when user switch VONR OFF\*/  SYS\_IMS\_REG\_END\_CAUSE\_TEMPORARY\_IMMEAD\_RETRY = 6,  /\*\*< Temporary failure from IMS and IMS will perform immeadiate retry  EX: IMS receives PDN down indication with RS RA failues\*/  SYS\_IMS\_REG\_END\_CAUSE\_MAX /\* Internal use. \*/  /\*\* @endcond \*/  } sys\_cm\_domain\_sel\_ims\_reg\_end\_cause\_e\_type; |

Sys\_mode的枚举列表如下

|  |
| --- |
| \*/  /\*\* System modes.  \*/  typedef enum  {  /\*\* @cond  \*/  SYS\_SYS\_MODE\_NONE = -1, /\* FOR INTERNAL USE ONLY! \*/  /\*\* @endcond  \*/  SYS\_SYS\_MODE\_NO\_SRV=0,  /\*\*< No service; NV\_MODE\_INACTIVE. \*/  SYS\_SYS\_MODE\_AMPS=1,  /\*\*< Analog Mobile Phone System (AMPS) mode. \*/  SYS\_SYS\_MODE\_CDMA=2,  /\*\*< CDMA mode. \*/  SYS\_SYS\_MODE\_GSM=3,  /\*\*< GSM mode. \*/  SYS\_SYS\_MODE\_HDR=4,  /\*\*< HDR mode. \*/  SYS\_SYS\_MODE\_WCDMA=5,  /\*\*< WCDMA mode. \*/  SYS\_SYS\_MODE\_GPS=6,  /\*\*< GPS mode. \*/  SYS\_SYS\_MODE\_GW=7,  /\*\*< GSM and WCDMA mode. \*/  SYS\_SYS\_MODE\_WLAN=8,  /\*\*< WLAN mode. \*/  SYS\_SYS\_MODE\_LTE=9,  /\*\*< LTE mode. \*/  SYS\_SYS\_MODE\_GWL=10,  /\*\*< GSM, WCDMA, and LTE mode. \*/  SYS\_SYS\_MODE\_TDS=11,  /\*\*< TDS mode. \*/  SYS\_SYS\_MODE\_NR5G=12,  /\*\*< NR5G mode. \*/  SYS\_SYS\_MODE\_NO\_CHANGE=13,  /\*\*< mmode internal. \*/    /\*\* @cond  \*/  SYS\_SYS\_MODE\_MAX /\* FOR INTERNAL USE ONLY! \*/  /\*\* @endcond  \*/  } sys\_sys\_mode\_e\_type; |

call\_type\_mask为当前UE支持的能力，能力表示为一个bitmask，各个bit的含义如下枚举表。从Log中的call\_type\_mask为0x09，则表示bit0和bit3为1，表示当前支持VOICE和SMS

|  |
| --- |
| typedef enum cm\_call\_type\_e {  /\*\* @cond  \*/  CM\_CALL\_TYPE\_NONE=-1, /\* FOR INTERNAL CM USE ONLY! \*/  /\*\* @endcond  \*/  CM\_CALL\_TYPE\_VOICE=0,  /\*\*< Voice call type.\n  @note1 Answering with this type is only successful if the  incoming call is a VOICE call type. \*/  CM\_CALL\_TYPE\_CS\_DATA=1,  /\*\*< Circuit-Switched data call type -- (for modem, fax, etc., calls).\n  @note1 Answering with this call is only successful if the  incoming call is a DATA or VOICE call type (with AMPS service). \*/  CM\_CALL\_TYPE\_PS\_DATA=2,  /\*\*< Packet-Switched data call type. \*/  CM\_CALL\_TYPE\_SMS=3,  /\*\*< SMS call type (SMS SO-6 and SO-14). CDMA only.\n  @note1 Answering with this call type is only successful  if the incoming call is an SMS call type. \*/  CM\_CALL\_TYPE\_PD=4,  /\*\*< Position Determination call type (SO-35 and 36). CDMA only. This call  type is used to exchange IS-801 messages. \*/  CM\_CALL\_TYPE\_TEST=5,  /\*\*< Test call type (for Markov, Loopback, etc). CDMA only.\n  @note1 Answering with this call type is only successful if the incoming  call is a TEST call type. \*/  CM\_CALL\_TYPE\_OTAPA=6,  /\*\*< OTAPA call type (OTAPA SO-18 and SO-19). CDMA only.\n  @note1 Answering with this call type is only successful  if the incoming call is an OTAPA call type. \*/  /\* The following are call types that are automatically assigned by the call  manager when detecting an origination dial string that matches one of the  special numbers that are stored in the phone book.  NOTE: These call types should not be used to originate or answer calls.  \*/  CM\_CALL\_TYPE\_STD\_OTASP=7,  /\*\*< Standard OTASP call type. CDMA only. This call type is  automatically assigned by the call manager when an origination  dial string is detected that matches one of the standard OTASP  numbers that are stored in the phone book.\n  @note1 This call type should not be used to originate or answer calls. \*/  CM\_CALL\_TYPE\_NON\_STD\_OTASP=8,  /\*\*< Non-standard OTASP call type. CDMA only. This call type is  automatically assigned by the call manager when an origination  dial string is detected that matches one of the non-standard OTASP  numbers that are stored in the phone book.\n  @note1 This call type should not be used to originate or answer calls. \*/  CM\_CALL\_TYPE\_EMERGENCY=9,  /\*\*< Emergency call type. This call type is automatically assigned by the  CM when detecting an origination dial string that matches one of the  Emergency numbers that are stored in the phone book. This call type  can be also used by clients to originate calls.  @note1 If the CM assigned this call type, the mode preference is forced  to Emergency before origination. If at the end of the call the phone is  not in Emergency Callback mode, the mode is automatically restored to  its original selection. Otherwise, the Emergency mode stays in effect  until changed by a client or power cycle. \*/  CM\_CALL\_TYPE\_SUPS=10,  /\*\*< A Supplementary Services (SUPS) command is in progress. This call type  facilitates call control, where a SUPS command can be turned into a  voice call, or vice-versa. \*/  CM\_CALL\_TYPE\_VT=11,  /\*\*< Video Telephony call type. Currently applicable for GSM/WCDMA/TDS only. \*/  CM\_CALL\_TYPE\_VT\_LOOPBACK=12,  /\*\*< Video Telephony Loopback call type. Currently applicable for GSM/WCDMA/TDS  only. \*/  CM\_CALL\_TYPE\_VS=13,  /\*\*< Used for Video Share calls. This call type differs from VT in the sense  that voice does not have to be synchronized with video, and it is  generally only transmitted in one direction -- from user A to user B.  Clients must check for CM\_API\_VIDEOSHARE before using this call  type. \*/  CM\_CALL\_TYPE\_PS\_DATA\_IS707B=14,  /\*\*< IS-707B Addendum call type. CDMA only. Used to suppress 1X  registration and send an originating (SO-33, DRS=0) message. \*/  CM\_CALL\_TYPE\_UNKNOWN=15,  /\*\*< Call type added to map to the RRC paging cause. Call type will  not be known at the when page is received for GSM/TDS/LTE. The  Paging cause will therefore be mapped to Call\_Type\_Unknown\*/  CM\_CALL\_TYPE\_EXT=16,  /\*\*< Calls external to modem \*/  CM\_CALL\_TYPE\_EMERG\_SMS=17,  /\*\*< Call type added to map to CM\_ACT\_TYPE\_EMERG\_SMS \*/  /\*\* @cond  \*/  CM\_CALL\_TYPE\_MAX /\* FOR INTERNAL CM USE ONLY! \*/  /\*\* @endcond  \*/  } cm\_call\_type\_e\_type; |

## 双卡情况RF不可用关键字搜索

|  |
| --- |
| **// 卡1处于RF不可用状态**  [ 13/ 0/2] QTRACE 03:18:53.718988 LRRC/HighFreq/High/LRRC [ lte\_rrc\_cep.c 8517] RRC CEP\_DSDS: LTE\_CPHY\_RF\_UNAVAILABLE\_IND received1 [ 13/ 0/2] QTRACE 03:18:53.719005 LRRC/HighFreq/High/LRRC [ lte\_rrc\_config.c 1975] LTE\_CPHY\_RF\_UNAVAILABLE\_IND received1  **// 卡1处于RF可用状态**  [ 13/ 0/2] QTRACE 03:18:54.747017 LRRC/HighFreq/High/LRRC [ lte\_rrc\_ueinfo.c 5446] UEINFO : lte\_rrc\_ueinfo\_sm\_rf\_available\_ind\_handler1 [ 13/ 0/2] QTRACE 03:18:54.747037 LRRC/HighFreq/High/LRRC [ lte\_rrc\_cep.c 8433] RRC CEP\_DSDS: LTE\_CPHY\_RF\_AVAILABLE\_IND received1 |

## NV整理

### NV2508-EDGE关闭方法

EDGE是英文Enhanced Data Rate for GSM Evolution 的缩写，即增强型数据速率GSM演进技术。EDGE是一种从GSM到3G的过渡技术，它主要是在GSM系统中采用了一种新的调制方法，即最先进的多时隙操 作和8PSK调制技术。由于8PSK可将现有GSM网络采用的GMSK调制技术的信号空间从2扩展到8，从而使每个符号所包含的信息是原来的4倍。

设置方法：**将NV2508设置为0。**

### NV74460-紧急电话后测量SA的延迟定时器设置

JIRA：[PSYCHE-7887](https://jira.n.xiaomi.com/browse/PSYCHE-7887) 【L3A】【CT自测】SA模式下拨打紧急电话，电话挂断时会掉HD重新驻网\_必现

此问题中，紧急电话挂机后会立即搜索SA网路，在SA网络上重注册的过程中，网络通过Registration Accept消息去激活了IMS默认承载（通过将对应的PSI设置为0）导致紧急电话挂断后立即掉VoLTE的现象。

处理方法：将NV 74460（emerg\_end\_enable\_ps\_timer），从0修改为120。挂机后120s再开始搜网SA。避免掉VoLTE的现象与紧急电话发生强关联。

## 5G随机接入超时

//RACH failure

03:33:06.039 [0xB88A] NR5G MAC RACH Attempt

MAC Version

Major.Minor = 2. 3

Log Fields Change BMask = 0x0

Sub ID = 0

Header

Num Records = 1

Num Attempt = 2

SSB ID = 4

CSI RS ID = 0

Carrier ID = 0

***RACH Result = FAILURE\_MSG2\_RA\_TIMER\_EXP***

Contention Type = CONT\_FREE

Contention Type Value = 0

RACH Msg Bitmask = 0x01

Msg1 SCS = 1\_25 KHz

UL BWP SCS = 30KHZ

//RACH failure multiple times 随机接入失败多次，最终Abort了随机接入流程。

//RACH aborted

03:33:06.171 [0xB88A] NR5G MAC RACH Attempt

MAC Version

Major.Minor = 2. 3

Log Fields Change BMask = 0x0

Sub ID = 0

Header

Num Records = 1

Num Attempt = 11

SSB ID = 4

CSI RS ID = 0

Carrier ID = 0

***RACH Result = ABORTED***

Contention Type = CONT\_FREE

Contention Type Value = 0

RACH Msg Bitmask = 0x01

Msg1 SCS = 1\_25 KHz

UL BWP SCS = 30KHZ

## 设置呼叫转移/等待/限制

设置补充业务

1. 特征

ServiceId = 9，MsgId = 0x00000033，字符串：voice\_set\_sups\_service

1. 参数说明

reason为设置的原因，呼叫转移、等待都会原因。

voice\_service为设置类型，注册，激活，去激活等。

1. Example

|  |
| --- |
| 09:15:03.842 [0x1544] MCS QCSI Payload Packet  packetVersion = 2  MsgType = Request  Counter = 41  ServiceId = 9  MajorRev = 2  MinorRev = 113  ConHandle = 0x0000002B  MsgId = 0x00000033  QmiLength = 29  Service\_VOICE {  ServiceVOICEV2 {  voice\_set\_sups\_service {  voice\_set\_sups\_service\_reqTlvs[0] {  Type = 0x01  Length = 2  supplementary\_service\_info {  ***voice\_service = VOICE\_SERVICE\_REGISTER***  ***reason = VOICE\_REASON\_FWD\_UNCONDITIONAL***  }  }  voice\_set\_sups\_service\_reqTlvs[1] {  Type = 0x10  Length = 1  service\_class {  service\_class = 1  }  }  voice\_set\_sups\_service\_reqTlvs[2] {  Type = 0x12  Length = 17  number {  number = +***8618519795935555***  }  }  }  }  } |

## 游戏模式

游戏模式，也称为Data Low Latency Mode，数据低延迟模式。

应用场景：主卡在游戏的数据业务台，副卡要降低与网络信令交互的频率。如果频繁的TAU会导致主卡频繁卡顿。

云控快速生效

1云控同步前提：连接wifi，打开安全中心-》设置-》允许联网

2有root权限手机（root版本-推荐）

adb shell

rm -rf /data/data/com.xiaomi.joyose/

rm -rf /data/system/job/jobs.xml

重启手机后三分钟左右自动同步

查看云控同步成功方法：

adb shell dumpsys xiaomi.joyose |grep -i version

the Cloud Version is 2019052301 （不为null）

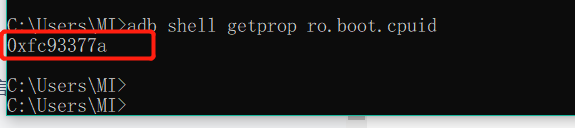
游戏云控是否开启的查看方法

在bugreport Log中搜索DataLowLatencyService，如果找到了setLevel success 0UL2DL2，则说明已经设置成功。

## 手机云控权限添加

Note：首先需要找代琳开研发人员的云控权限cpuid添加权限。

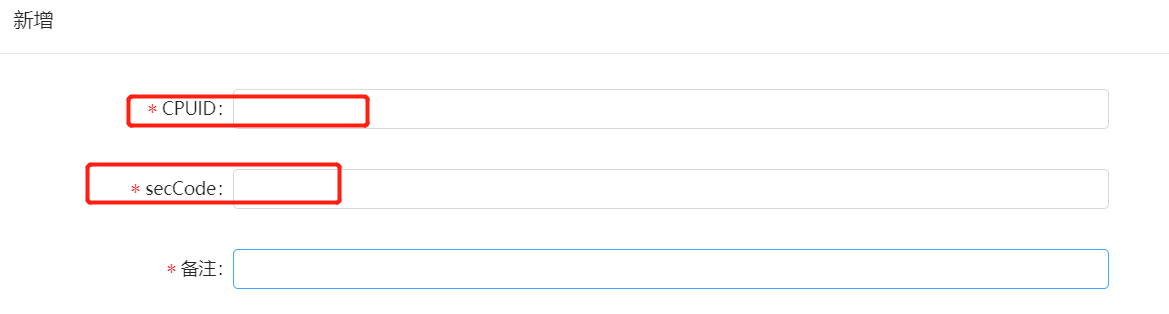
1. 手机连接到PC，手机上打开开发者模式，并将USB调试功能打开。
2. 打开cmd控制台窗口，通过命令adb shell getprop ro.boot.cpuid获取手机的CPUID。如下图所示。



1. 内网中访问：<http://preview.sys.pt.miui.com/mqsas/home.html#/modem>
2. 网页内容如下图所示，点击新增。



1. 新增设置如下图所示。将需要开启特定功能的手机的cpuid, secCode和备注填入到对应数据框中，点击确定，则立即开启了secCode对应的功能。



关于secCode的说明，Modem同事史双利邮件中描述很清楚，见下。

|  |
| --- |
| Tue 1/14/2020 3:46 PM  今天修改了8250平台产品Modem工具的权限审核规则，同步入库到了8250所有产品的大部分分支（除工厂分支）。具体变更情况如下：   1. 内网权限审核规则变更（江呈提供）   修改前：需要与内网相关服务器进行命令交互。  修改后：原则上只要ping通即可。  变更原因：现在三地内网权限审核服务器没人维护了，导致鉴权失败，鉴于维护也比较麻烦，弃用原方案。   1. 云控权限规则变更：   修改前：添加待控制手机的cpuid，并制定secCode，其中secCode取值为0（无权限），1（读权限），>1（读写删权限）  修改后：添加待控制手机的cpuid，并制定secCode，其中secCode取值意义如下：  0：所有权限  0x1：SMART测试配置  0x2：网络信息显示  0x4：NV/EFS配置管理工具  0x8：MBN配置管理工具  0x10：射频天线器件端口配置  0x20：射频天线器件信息配置  0x40：天线发射接收模式配置  0x80：SAR调试工具  0x100：屏幕MIPI调频测试工具  0x200：通信数据的备份与恢复  0x400：运营商需求工具  0x800：CDMA能力管理  变更原因：由于工具较多，且很多工具可以修改一些敏感参数，我们在外给外网用户提供这些工具时，要尽可能少的开放给他们，避免风险引入。  PS：由于云控指定的secCode值最大范围是255，因此>255的功能位暂时无法单独指定，后续会扩展，届时再知会大家。  我们平时开发测试时，就直接指定为0即可。   1. MBN配置管理工具 权限审核规则变更（江呈提出）   介于“MBN配置管理工具”在外网使用量较大，因此在root版本上放开了“MBN配置管理工具”的限制。  补充说明：   1. 以上权限变更，已经验证user 非root版本，所有权限均是禁用的。 2. 7250平台产品权限审核规则暂未做变更，变更后再知会大家。 3. 有需要云控权限cpuid添加权限的同学，可以找代老板申请，目前北京南京深圳三地都有同学申请了添加云控cupid权限。 4. Modem工具暗码：\*#\*#663368378#\*#\*（数字是九宫格上modemtest的拼写） |

# MTK平台相关问题整理

MTK的所有Modem相关的FAQ：

<https://online.mediatek.com/FAQ#/Modem/FAQ23419>

## MTK IMS customization

参考链接：https://online.mediatek.com/QuickStart/QS00145#QSS01568

MTK IMS客制化各个运营商各个参数的修改涉及到的文件：

vendor/mediatek/proprietary/modem/mt6853/mcu/custom/protocol/common/ps/custom\_imc\_config.c

vendor/mediatek/proprietary/modem/mt6853/mcu/custom/protocol/common/ps/ custom\_iwlan\_config.c

vendor/mediatek/proprietary/modem/mt6853/mcu/custom/protocol/common/ps/ custom\_wo\_config.c

### IMC parameter customization path by engineer mode

\*#\*#3646633#\*#\*->telephony->IMS->SIM 1/SIM 2

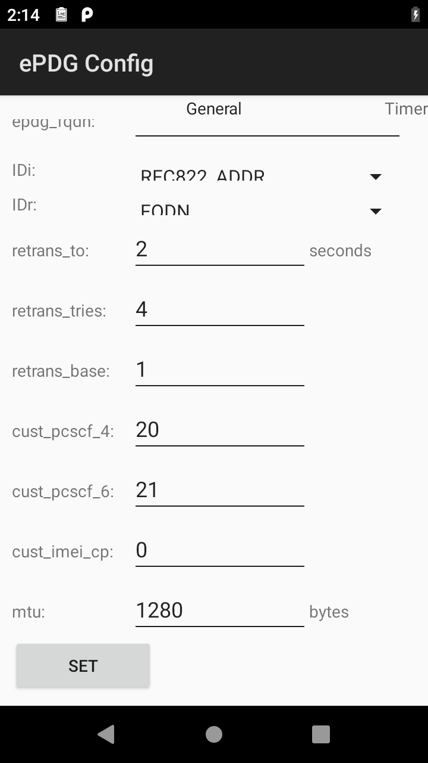
After changes, need Volte off/on or flight mode to work.



### WO parameter customization path by engineer mode

\*#\*#3646633#\*#\*->telephony->ePDG config-> Phone 1/2

After changes, need Volte off/on or flight mode to work.



### IMS parameter customization path by AT command;

\*#\*#3646633#\*#\*->Connectivity->CSD information->Radio information->Phone 1or 2

IMC parameter

AT+ECFGSET=“parameter\_name",“value“

Parameter\_name can be found in custom\_imc\_config.c without ua\_config or imc\_config.

AT+ECFGSET="default\_fallback\_support",“0“

IWLAN parameter

AT+EIWLCFGSET=“parameter\_name",“value“

Parameter\_name can be found in custom\_iwlan\_config.c. without cfg.wans\_cfg.

AT+EIWLCFGSET=**"wans\_ims\_roaming\_barring\_enable"**,"0"

After changes, need Volte off/on or flight mode to work

常用的各个Payload值对应的媒体类型：

## MTK Modem Log抓取

### MTK离线Log抓取方法

服务与反馈中Modem日志 提示开启日志抓取失败无法抓取

请进入MTKLogger应用进行抓取

(1).打开拨号盘输入\*#\*#98685#\*#\*进入MTKLogger应用，在右上角有设置的选项，进入最下面有日志存储路径点击后选择“内部存储设备”

(2)开启ModemLog，直接点击最下方红色的开始按钮启动log录制，启动成功后退出应用到后台开始复现问题，结束后再次输入暗码\*#\*#98685#\*#\*进入MTKLogger应用，点击左方红色按钮，停止log录制后自动保存。

(3).将手机文件管理里面的debuglogger/文件夹中的文件打包，连接电脑导出压缩后上传到提交的反馈中

抓取modemlog完毕后，同时抓取284log补充到反馈下。

### MTK在线Log抓取方法

1. 进入拨号盘输入\*#\*#3646633#\*#\* 进入工程模式

2. 左划屏幕，直到手机正中间的显示为“Log and Debugging”

3. 点击第三行DebugLoggerUI

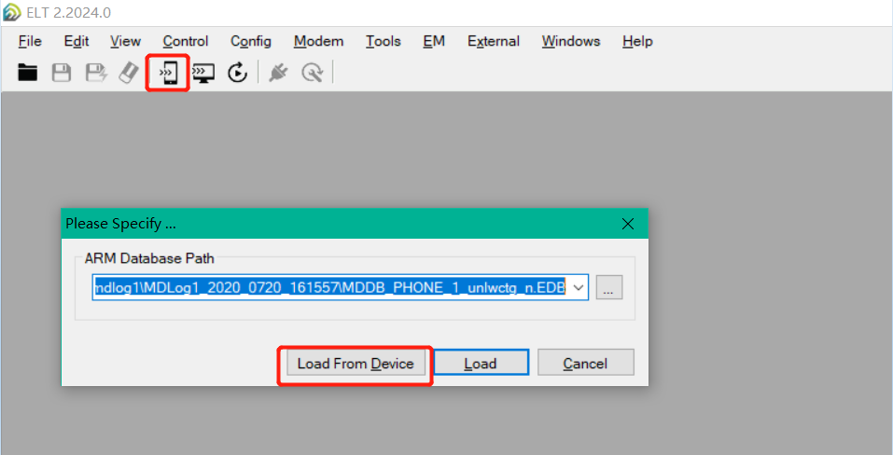
4. 如果有弹窗，全点允许

5. 右上角设置，点一下ModemLog，将Md1日志模式设置为：USB模式

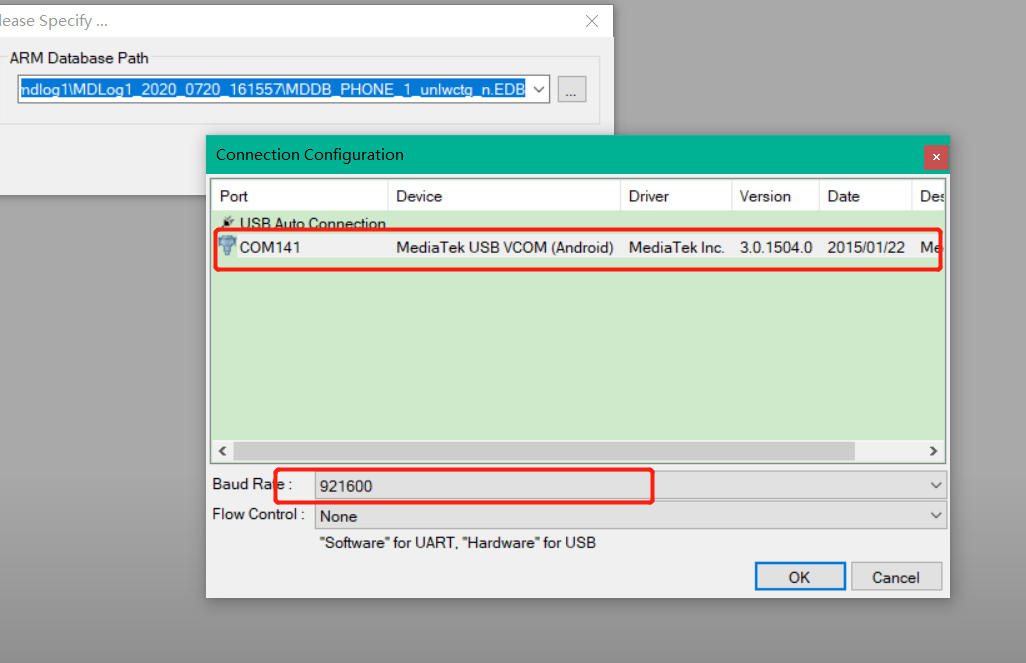


6. 开启DebugLoggerUI界面中的开始抓取（最下侧的播放形状按钮）

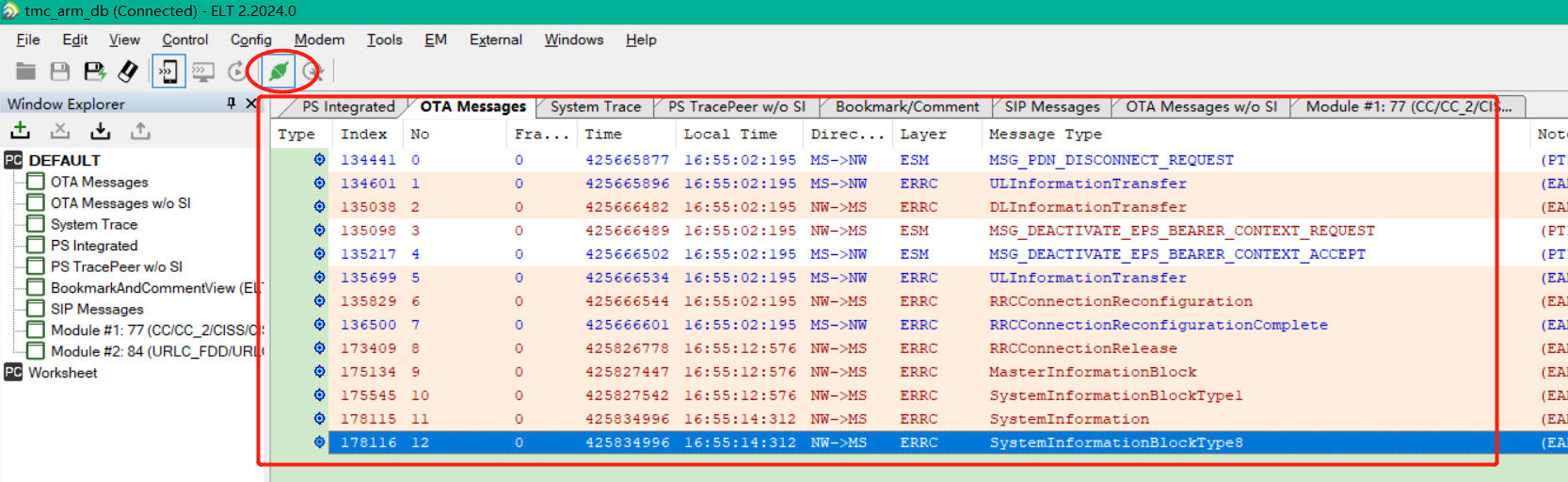
7. PC连接Phone，打开ELT，连接操作见下图。



8.在弹窗中选择MediaTek USB VCOM（如果出现多个，请多尝试一下），Baud Rate中选择921600，Flow Control确认为None，点击OK。



9.连接成功后，在OTA Messages、PS Integrated、System Trace中均会有Log滚动。同时，工具栏中的插头图标也会变绿。



10.如果需要临时关闭Log录制。可以拔掉USB，需要录制Modem Log时重新再插上即可。这样不需要连接时的EDB文件再次导入。

### MTK抓取Modem Dump方法

MTK平台的手机在发生Crash时，无法通过离线或者在线方法抓取Log，因为Modem发生了Crash，Debuglogger无法开启Modem Log抓取的开关。这种情况下，可行的操作如下：

如果有root 权限，用如下方式重写mdlog1\_config文件，然后重启手机抓取Modem Log。

|  |
| --- |
| adb root  adb shell echo -n "\x02\x00\x00\x00" > /data/mdlog/mdlog1\_config |

## MTK常用的Log关键字搜索！！！

常用的Log mask，并贴上对应的config文件。

### MTK常用的Log Mask说明

#### Modem中所有SBP的状态

在Message Type中选中Primitive，然后搜索\_SBP\_就可以找到所有SBP的状态上报消息MSG\_ID\_NWSEL\_NWSEL\_SBP\_DUMP\_IND。

|  |
| --- |
| PS 247359 11122562 10:37:41:108 NWSEL - NWSEL MSG\_ID\_NWSEL\_NWSEL\_SBP\_DUMP\_IND  nwsel\_nwsel\_sbp\_dump\_ind\_struct = (struct)  ref\_count = 0x01  lp\_reserved = 0x01  msg\_len = 0x1280  nwsel\_sbp\_array = Array[1183]  nwsel\_sbp\_array[0] = (struct)  sbp\_name = SBP\_PERMANENT\_AUTO\_SEL\_MODE (enum 0)  value = KAL\_FALSE (enum 0)  nwsel\_sbp\_array[1] = (struct)  sbp\_name = SBP\_UMTS\_CB\_OFF (enum 1)  value = KAL\_FALSE (enum 0)  nwsel\_sbp\_array[2] = (struct)  sbp\_name = SBP\_MM\_TRY\_ABNORMAL\_LAI\_ONCE\_MORE (enum 2)  value = KAL\_TRUE (enum 1)  nwsel\_sbp\_array[3] = (struct)  sbp\_name = SBP\_MM\_DISABLE\_RETRY\_ABNORMAL\_LAI (enum 3)  value = KAL\_FALSE (enum 0)  … |

## IMEI签名相关问题

### CTS测试 替换了system.img文件，不能使用暗码抓Modem Log

[UPGR5G-5898](https://jira.n.xiaomi.com/browse/UPGR5G-5898) J22\_R\_JP\_NJ\_ODC\_GSI \_GSI手机插入SIM卡不识别，SIM卡相关测项测试fail\_必现\_V12.5.0.5.RJEJPSB

该问题中



### 通过SN Writer写入签名失败

查看SN Writer Log

|  |
| --- |
| 12/07/21 17:42:33.457 SNWriter[20520][26984]: SmartPhoneSN::RunVerifyMdSla()... (SPexc.cpp:5113)  12/07/21 17:42:33.520 SNWriter[20520][26984]: ERROR: SmartPhoneSN::RunVerifyMdSla():META\_VerifySla\_r failed(Invalid input arguments) (SPexc.cpp:5117)  12/07/21 17:42:33.520 SNWriter[20520][26984]: SmartPhoneSN::MDSLA\_Connect(): end. (SPexc.cpp:4037)  12/07/21 17:42:33.520 SNWriter[20520][26984]: SmartPhoneSN::LoadModemDatabase(): start... (SPexc.cpp:4039)  12/07/21 17:42:33.520 SNWriter[20520][26984]: SmartPhoneSN::META\_NVRAM\_Init\_Ex\_Mdtype\_r(): start to init MD[0] database, DB path = "C:\SNWriter\_LOG\2021-12-07-17-41-41\MDDB.META.ODB\_MT6893\_S00\_MOLY\_NR15\_R3\_TC8\_PR2\_SP\_V2\_1\_P1.XML.GZ"... (SPexc.cpp:3435)  12/07/21 17:42:36.257 SNWriter[20520][26984]: ERROR: SmartPhoneSN::META\_NVRAM\_Init\_Ex\_Mdtype\_r(): Init MD[0] database Fail, MetaResult = [NVRAM] MAUI and DB is INCONSISTENT (SPexc.cpp:3455)  12/07/21 17:42:36.257 SNWriter[20520][26984]: ERROR: SmartPhoneSN::LoadModemDatabase() : MetaResult = [NVRAM] MAUI and DB is INCONSISTENT (SPexc.cpp:4044)  12/07/21 17:42:36.433 SNWriter[20520][26984]: SmartPhoneSN::ExitAPMeta(): Exit meta mode by SP\_META\_DisconnectWithTarget\_r() successfully! MetaResult = Success (SPexc.cpp:3486) |

问题原因：Modem的版本号与原始ROM中的Modem版本号不一致导致了Database不匹配的问题。

解决方法：

可以修改SN Writer tool目录下的SN\_Setup.ini中Ignore Database Inconsistent = True

或者基于原始的Build label重新编一个Modem img文件再刷入。

## MTK信号强度的查看

可以参考以下几个FAQ来确认当前的网络环境

4G，5G：

FAQ14037  [LTE]How to check 4G LTE serving cell and Signal strength

FAQ21427  how to check the serving cell signal status of RSRP,RSRQ,SINR,SNR in LTE

3G：

FAQ02243  [WCDMA]从log中查看当前服务小区的信息

FAQ19224  [TDSCDMA]How to check 3G TD-SCDMA Serving cell and the related information

2G：

FAQ18050   如何获取2G服务小区信号强度和信号质量

### CDMA信号强度查看

#### ECIo查看

1. MSG\_ID\_UTS\_PSW\_MEASUREMENT\_RESULT\_MSG

Active[0] = (struct)

Valid = KAL\_TRUE (enum 1)

PnPhase = 0x1340

PnOffset = 0x4d

EcIo = 0x10

中EcIo = 0x10 ->除以-2  也就是ECIO:-8dbm

1. MSG\_ID\_EM\_XL1\_MEAS\_INFO\_IND

PS 960801 268647285 14:31:28:421 L1D\_MDM - DHL MSG\_ID\_EM\_XL1\_MEAS\_INFO\_IND

ActiveMeasRslt[0] = (struct)

PnOffset = 0x00c0

PnPhase = 0x2fff

PnStrength = 0x000b

Otd = 0x0000

此消息中也可以通过PnStrength除以-2得到Ecio

#### RSSI查看

rxpower查看：MSG\_ID\_EM\_XL1\_MAIN\_RXAGC\_INFO\_IND  中RSSI

PS 795494 268008943 14:30:47:655 L1D\_MDM - DHL MSG\_ID\_EM\_XL1\_MAIN\_RXAGC\_INFO\_IND

xl1\_rxagc\_info[0] = (struct)

rssi = 0xffbf // 0xffbf – 0xffff = -64dBm

agc\_state = EM\_XL1\_RXAGC\_STATE\_STEADY (enum 1)

power\_mode = EM\_CL1D\_RF\_HPM (enum 0)

dc = 0x0000

band = 0x0000

channel = 0x00f2

frc\_cnt = 0xfdeb8419

### CDMA解码统计查看

PS 495860 267185472 14:29:54:863 LMD - SYSTEM MSG\_ID\_UTS\_LMD\_FWD\_STATS\_MSG

uts\_lmd\_fwd\_stats\_msg\_struct = (struct)

ref\_count = 0x01

lp\_reserved = 0x45

msg\_len = 0x0024

msg = (struct)

FSYNCT = 0x00000000

FPAGET = 0x00000001

FFCHT = 0x000001ca // FFCH传输的总帧数，限于当前通话时段内

FSCHT = 0x00000000

FSYNCB = 0x00000000

FPAGEB = 0x00000000

FFCHB = 0x00000129 // FFCH的错帧个数

FSCHB = 0x00000000

## MTK用户反馈断流问题分析！！！

### 断流问题分析步骤

#### 确定是WIFI连接，还是数据连接

在bugreport中搜索AT+EWIFIEN，确定当前是WIFI连接还是移动数据连接。

WIFI连接Log打印：

Line 164266: 02-26 08:41:30.149 radio 1218 1267 I AT : [0] AT> AT+EWIFIEN="wlan0",1,0 (RIL\_CMD\_READER\_3 tid:521965763920)

Line 164330: 02-26 08:41:32.667 radio 1218 1267 I AT : [0] AT> AT+EWIFISIGLVL="wlan",-69,"unknow" (RIL\_CMD\_READER\_3 tid:521965763920)

Line 164332: 02-26 08:41:32.677 radio 1218 1267 I AT : [0] AT> AT+EWIFISIGLVL="wlan",-69,"unknow" (RIL\_CMD\_READER\_3 tid:521965763920)

#### AT+EWIFIEN 打开或关闭WIFI

使用格式如下：

AT+EWIFIEN=<ifname>,<en>[,<reason>]

ifname: wlan name，16个英文字母包括结束符

en:1 activate wifi, 0 deactive wifi

reason: flight mode

#### AT+EWIFISIGLVL 更新WIFI RSSI信号值

更新WIFI信号值给Modem。是从上往下报告的。

使用格式：

AT+EWIFISIGLVL=<ifname>,<rssi>,<snr>

ifname: wifi名称，32个英文字母包括结束符

rssi: 整型，信号值单位为dBm

snr：字符串，永久设置为"unknow"

RSSI的强度等级按照如下表格理解。也可以简单的以-70dBm为分界。

|  |  |  |  |
| --- | --- | --- | --- |
| Signal Strength | TL;DR |  | Required for |
| -30 dBm | Amazing | Max achievable signal strength. The client can only be a few feet from the AP to achieve this. Not typical or desirable in the real world. | N/A |
| -67 dBm | Very Good | Minimum signal strength for applications that require very reliable, timely delivery of data packets. | VoIP/VoWiFi, streaming video |
| -70 dBm | Okay | Minimum signal strength for reliable packet delivery. | Email, web |
| -80 dBm | Not Good | Minimum signal strength for basic connectivity. Packet delivery may be unreliable. | N/A |
| -90 dBm | Unusable | Approaching or drowning in the noise floor. Any functionality is highly unlikely. | N/A |

#### AT+CGACT PDP上下文激活或去激活

使用格式如下。

|  |  |  |
| --- | --- | --- |
| Command | Possible Response(s) | 作用 |
| +CGACT=[<state>[,<cid>]] | OK/ERROR <cause> | 用于设置对应cid的PDP状态 |
| +CGACT？ | +CGACG:<cid>,<state>[<CR><LF>+CGACT:<cid>,<state>] | 用于查询当前卡所有的cid状态 |
| +CGACT=？ | +CGACG: (list of supported <state>) | 查询当前支持的所有state |

<state>: 指示PDP上下文的激活状态

1. deactivated
2. activated

其他值是保留值，设置后将会报错。

<cid>: 一个数字，指示一个特定的PDP上下文定义。

MTK设计中，除了cid=0以外，其他的所有的cid都必须先通过AT+CGDCONT设置cid的内容，然后使用AT+CGACT=1,<cid>来激活对应的PDP上下文。

CGACT

Line 164921: 02-26 08:41:47.571 radio 1218 1269 I AT : [0] AT> AT+CGACT? (RIL\_CMD\_READER\_4 tid:521963691344)

Line 164922: 02-26 08:41:47.572 radio 1218 1268 I AT : [0] AT< +CGACT: 0,0 (RIL\_CMD\_READER\_4, tid:521964727632)

Line 164923: 02-26 08:41:47.572 radio 1218 1268 I AT : [0] AT< +CGACT: 1,1 (RIL\_CMD\_READER\_4, tid:521964727632)

Line 164924: 02-26 08:41:47.572 radio 1218 1268 I AT : [0] AT< +CGACT: 2,0 (RIL\_CMD\_READER\_4, tid:521964727632)

Line 164925: 02-26 08:41:47.572 radio 1218 1268 I AT : [0] AT< +CGACT: 3,0 (RIL\_CMD\_READER\_4, tid:521964727632)

Line 164926: 02-26 08:41:47.572 radio 1218 1268 I AT : [0] AT< +CGACT: 4,0 (RIL\_CMD\_READER\_4, tid:521964727632)

Line 164927: 02-26 08:41:47.572 radio 1218 1268 I AT : [0] AT< +CGACT: 5,0 (RIL\_CMD\_READER\_4, tid:521964727632)

Line 164928: 02-26 08:41:47.572 radio 1218 1268 I AT : [0] AT< +CGACT: 6,0 (RIL\_CMD\_READER\_4, tid:521964727632)

Line 164929: 02-26 08:41:47.572 radio 1218 1268 I AT : [0] AT< +CGACT: 7,0 (RIL\_CMD\_READER\_4, tid:521964727632)

Line 164930: 02-26 08:41:47.572 radio 1218 1268 I AT : [0] AT< +CGACT: 8,0 (RIL\_CMD\_READER\_4, tid:521964727632)

#### 查看当前的上网网络类型

**Active default network: 145 // 根据145找到对应的网络类型**

Current Networks:

NetworkAgentInfo{ ni{[type: MOBILE[LTE], state: CONNECTED/CONNECTED, reason: (unspecified), extra: cmnet, failover: false, available: true, roaming: false]}  **network{145}** nethandle{626175954957} lp{{InterfaceName: ccmni1 LinkAddresses: [ 10.106.251.115/32,2409:893c:1870:4ec9:1:2:b7:3542/64 ] DnsAddresses: [ /2409:803c:2000:2::27,/2409:803c:2000:4::131,/211.137.191.27,/218.201.96.131 ] Domains: null MTU: 1400 TcpBufferSizes: 2097152,6291456,16777216,512000,2097152,8388608 Routes: [ 0.0.0.0/0 -> 10.106.251.115 ccmni1,::/0 -> :: ccmni1,10.106.251.115/32 -> 0.0.0.0 ccmni1,2409:893c:1870:4ec9::/64 -> :: ccmni1 ]}} nc{[ Transports: CELLULAR Capabilities: SUPL&XCAP&INTERNET&NOT\_RESTRICTED&TRUSTED&NOT\_VPN&VALIDATED&NOT\_ROAMING&FOREGROUND&NOT\_CONGESTED&NOT\_SUSPENDED LinkUpBandwidth>=816Kbps LinkDnBandwidth>=772Kbps Specifier: <1>]} Score{50} everValidated{true} lastValidated{true} created{true} lingering{false} explicitlySelected{false} acceptUnvalidated{false} everCaptivePortalDetected{false} lastCaptivePortalDetected{false} captivePortalValidationPending{false} partialConnectivity{false} acceptPartialConnectivity{false} clat{mBaseIface: null, mIface: null, mState: IDLE} }

Requests: REQUEST:2 LISTEN:12 BACKGROUND\_REQUEST:0 total:14

#### PS注册的RAT变化

181094: 09-05 21:23:30.336 radio 2021 2131 D RILJ : [6285]< DATA\_REGISTRATION\_STATE {.regState = REG\_HOME, .**rat = 6,** .reasonDataDenied = 114, .maxDataCalls = 1, .cellIdentity = {...}} [SUB0]

182225: 09-05 21:24:18.600 radio 2021 2131 D RILJ : [6329]< DATA\_REGISTRATION\_STATE {.regState = REG\_HOME, .rat = 6, .reasonDataDenied = 114, .maxDataCalls = 1, .cellIdentity = {...}} [SUB0]

182521: 09-05 21:24:19.198 radio 2021 2131 D RILJ : [6336]< DATA\_REGISTRATION\_STATE {.regState = REG\_HOME, .**rat = 14**, .reasonDataDenied = 0, .maxDataCalls = 1, .cellIdentity = {...}} [SUB0]

各个RAT的定义如下。（所在的文件[hardware](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-cannon-dev/hardware/)/[ril](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-cannon-dev/hardware/ril/)/[include](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-cannon-dev/hardware/ril/include/)/[telephony](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-cannon-dev/hardware/ril/include/telephony/)/[ril.h](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-cannon-dev/hardware/ril/include/telephony/ril.h) line:245）

typedef enum {

RADIO\_TECH\_UNKNOWN = 0,

RADIO\_TECH\_GPRS = 1,

RADIO\_TECH\_EDGE = 2,

RADIO\_TECH\_UMTS = 3,

RADIO\_TECH\_IS95A = 4,

RADIO\_TECH\_IS95B = 5,

RADIO\_TECH\_1xRTT = 6,

RADIO\_TECH\_EVDO\_0 = 7,

RADIO\_TECH\_EVDO\_A = 8,

RADIO\_TECH\_HSDPA = 9,

RADIO\_TECH\_HSUPA = 10,

RADIO\_TECH\_HSPA = 11,

RADIO\_TECH\_EVDO\_B = 12,

RADIO\_TECH\_EHRPD = 13,

RADIO\_TECH\_LTE = 14,

RADIO\_TECH\_HSPAP = 15, // HSPA+

RADIO\_TECH\_GSM = 16, // Only supports voice

RADIO\_TECH\_TD\_SCDMA = 17,

RADIO\_TECH\_IWLAN = 18,

RADIO\_TECH\_LTE\_CA = 19

} RIL\_RadioTechnology;

#### 查看当前激活RAT的信号强度

在bugreport中搜索notifySignalStrength，得到所有的信号值。primary=CellSignalStrengthLte，primary指示的是当前激活的RAT类型。然后查看当前打印Log中对应的RAT的信号强度值。

02-26 08:40:18.667 radio 1791 1791 D DefaultPhoneNotifier: notifySignalStrength: ss=SignalStrength:{mCdma=CellSignalStrengthCdma: cdmaDbm=2147483647 cdmaEcio=2147483647 evdoDbm=2147483647 evdoEcio=2147483647 evdoSnr=2147483647 miuiLevel=0 level=0,mGsm=CellSignalStrengthGsm: rssi=2147483647 ber=2147483647 mTa=2147483647 miuiLevel=0 mLevel=0,mWcdma=CellSignalStrengthWcdma: ss=2147483647 ber=2147483647 rscp=2147483647 ecno=2147483647 miuiLevel=0 level=0,mTdscdma=CellSignalStrengthTdscdma: rssi=2147483647 ber=2147483647 rscp=2147483647 miuiLevel=0 level=0,mLte=CellSignalStrengthLte: rssi=-85 rsrp=-96 rsrq=-12 rssnr=65 cqi=0 ta=0 miuiLevel=5 level=3,mNr=CellSignalStrengthNr:{ csiRsrp = 2147483647 csiRsrq = 2147483647 csiSinr = 2147483647 ssRsrp = -94 ssRsrq = -3 ssSinr = 11 miuiLevel = 5 level = 0 },primary=CellSignalStrengthLte} phoneId=0 subId=1

#### 查看Modem是否出现了Crash

搜索系统属性md1.status确定是否有crash。

[vendor.mtk.md1.status]: [ready]

搜索Assert确认crash信息

#### 网络连接断开

09-16 12:05:51.643 1000 1321 1721 D MtkConnectivityService: NetworkAgentInfo [WIFI () - 3200] EVENT\_NETWORK\_INFO\_CHANGED, going from CONNECTED to DISCONNECTED

rec[141]: time=09-09 20:18:33.345 processed=MtkDcActiveState org=MtkDcActiveState dest=DcInactiveState what=EVENT\_LOST\_CONNECTION

#### 网络延迟

DNS网络时延比较大，怀疑还是网络问题

09-10 21:41:21.088 new default network : MOBILE[LTE] ccmni1 , id=283, SIM=2147483647, sub=1

ConnectivityMetricsEvent(21:41:22.159, netId=283, CELLULAR): ValidationProbeEvent(PROBE\_DNS:1 FIRST\_VALIDATION, 1078ms)

ConnectivityMetricsEvent(21:41:22.307, netId=283, CELLULAR): ValidationProbeEvent(PROBE\_HTTP:204 FIRST\_VALIDATION, 148ms)

ConnectivityMetricsEvent(21:41:22.313, netId=283, CELLULAR): NetworkEvent(NETWORK\_FIRST\_VALIDATION\_SUCCESS, 1233ms)

#### DNS解析是否正常

如下Log中出现了大量的DNS解析失败。搜索时搜rec[，不要使用正则表达式搜索。

Line 361282: rec[921]: 08:41:11 1339 1000 c\*.com= <get addr info failed>

Line 361283: rec[922]: 08:41:11 1339 1000 v\*.com= <get addr info failed>

Line 361284: rec[923]: 08:41:14 30136 1000 d\*.com= <get addr info failed>

Line 361285: rec[924]: 08:41:17 1339 1000 c\*.com= <get addr info failed>

Line 361286: rec[925]: 08:41:17 1339 1000 w\*.com= <get addr info failed>

Line 361287: rec[926]: 08:41:19 30639 9802 d\*.com= <get addr info failed>

Line 361288: rec[927]: 08:41:20 30650 1000 a\*.com= <get addr info failed>

Line 361289: rec[928]: 08:41:20 30650 1000 f\*.com= <get addr info failed>

Line 361290: rec[929]: 08:41:21 30650 1000 d\*.com= <get addr info failed>

Line 361291: rec[930]: 08:41:29 18401 10261 t\*.com= <get addr info failed>

Line 361292: rec[931]: 08:41:29 18401 10261 t\*.com= <get addr info failed>

Line 361293: rec[932]: 08:41:32 1339 1000 c\*.com= <get addr info failed>

Line 361294: rec[933]: 08:41:32 1339 1000 w\*.com= <get addr info failed>

Line 361295: rec[934]: 08:41:32 1339 1000 c\*.com=203.\*,118.\*,

Line 361296: rec[935]: 08:41:32 3596 10099 r\*.net=118.\*,203.\*,

#### RIL出现Exception

09-08 07:55:55.884 radio 2876 2876 E GsmCdmaPhone[1]: [1] EVENT\_REQUEST\_VOICE\_RADIO\_TECH\_DONE: exception=com.android.internal.telephony.CommandException: RADIO\_NOT\_AVAILABLE

09-08 07:55:56.239 root 19576 19576 E RILMUXD : 3842:main(): Enter

09-08 07:55:56.462 root 19576 19576 I RILMUXD : 3584:watchdog(): ril-daemon stopped!

09-08 07:55:56.462 root 19576 19576 I RILMUXD : 3588:watchdog(): ril-daemon-mtk started!

09-08 07:55:56.586 radio 3365 3365 E IMS\_RILA: getMtkRadioProxy getService/setResponseFunctions: java.util.NoSuchElementException [SUB1]

09-08 07:55:56.639 radio 19656 19656 E RILC : RIL\_register: RIL version 15

09-08 07:55:56.774 radio 2876 2876 D MtkRilOp: handleMessage: EVENT\_RADIO\_PROXY\_DEAD cookie = 33 mRadioProxyCookie = 33

[persist.vendor.aee.fatal\_db.count]: [4]

### assertion failed at sched\_avg.c:1001

【用户反馈JIRA：MIUIROM-72534】在查看用户反馈的Bugreport时，发现有如下assert的打印：

|  |
| --- |
| <4>[    0.000000] -(0)[0:swapper]\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  <4>[    0.000000] -(0)[0:swapper]\*\*   NOTICE NOTICE NOTICE NOTICE NOTICE NOTICE NOTICE   \*\*  <4>[    0.000000] -(0)[0:swapper]\*\*                                                      \*\*  <4>[    0.000000] -(0)[0:swapper]\*\* trace\_printk() being used. Allocating extra memory.  \*\*  <4>[    0.000000] -(0)[0:swapper]\*\*                                                      \*\*  <4>[    0.000000] -(0)[0:swapper]\*\* This means that this is a DEBUG kernel and it is     \*\*  <4>[    0.000000] -(0)[0:swapper]\*\* unsafe for production use.                           \*\*  <4>[    0.000000] -(0)[0:swapper]\*\*                                                      \*\*  <4>[    0.000000] -(0)[0:swapper]\*\* If you see this message and you are not debugging    \*\*  <4>[    0.000000] -(0)[0:swapper]\*\* the kernel, report this immediately to your vendor!  \*\*  <4>[    0.000000] -(0)[0:swapper]\*\*                                                      \*\*  <4>[    0.000000] -(0)[0:swapper]\*\*   NOTICE NOTICE NOTICE NOTICE NOTICE NOTICE NOTICE   \*\*  <4>[    0.000000] -(0)[0:swapper]\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  <6>[    0.000000] -(0)[0:swapper/0]sched-energy: CPU0: update cpu\_capacity 366  <6>[    0.000000] -(0)[0:swapper/0]sched-energy: CPU1: update cpu\_capacity 366  <6>[    0.000000] -(0)[0:swapper/0]sched-energy: CPU2: update cpu\_capacity 366  <6>[    0.000000] -(0)[0:swapper/0]sched-energy: CPU3: update cpu\_capacity 366  <6>[    0.000000] -(0)[0:swapper/0]sched-energy: CPU4: update cpu\_capacity 366  <6>[    0.000000] -(0)[0:swapper/0]sched-energy: CPU5: update cpu\_capacity 366  <6>[    0.000000] -(0)[0:swapper/0]sched-energy: CPU6: update cpu\_capacity 1024  <6>[    0.000000] -(0)[0:swapper/0]sched-energy: CPU7: update cpu\_capacity 1024  <6>[    0.000000] -(0)[0:swapper/0]Preemptible hierarchical RCU implementation.  <6>[    0.000000] -(0)[0:swapper/0]    Tasks RCU enabled.  <6>[    0.000000] -(0)[0:swapper/0]NR\_IRQS: 64, nr\_irqs: 64, preallocated irqs: 0  <6>[    0.000000] -(0)[0:swapper/0]GICv3: GIC: Using split EOI/Deactivate mode  <6>[    0.000000] -(0)[0:swapper/0]GICv3: no VLPI support, no direct LPI support  <6>[    0.000000] -(0)[0:swapper/0]GICv3: CPU0: found redistributor 0 region 0:0x000000000c040000  <4>[    0.000000] -(0)[0:swapper/0]### gic-v3 init done. ###  <6>[    0.000000] -(0)[0:swapper/0]arch\_timer: cp15 timer(s) running at 13.00MHz (phys).  <6>[    0.000000] -(0)[0:swapper/0]clocksource: arch\_sys\_counter: mask: 0xffffffffffffff max\_cycles: 0x2ff89eacb, max\_idle\_ns: 440795202429 ns  <6>[    0.000003] -(0)[0:swapper/0]sched\_clock: 56 bits at 13MHz, resolution 76ns, wraps every 4398046511101ns  <6>[    0.000281] -(0)[0:swapper/0]base=0xffffff8008005000, irq=6  <6>[    0.000290] -(0)[0:swapper/0]stmr0, base=0xffffff8008005040  <6>[    0.000316] -(0)[0:swapper/0]stmr0, mult=55834574, shift=32, hz=250, freq=13000000  <6>[    0.000327] -(0)[0:swapper/0]clkevt, freq=13000000  <5>[    0.000925]  (0)[0:swapper/0]ram\_console:[DT] 0x800@0x11d000, 0x1(0xec0)  <5>[    0.000944]  (0)[0:swapper/0]ram\_console: [DT] 0xe0000@0x4d010000-0x10000@0x4d0f0000  <6>[    0.000960]  (0)[0:swapper/0]ram\_console: using sram:0x11d000  <5>[    0.000969]  (0)[0:swapper/0]ram\_console: buffer start: 0xffffff8008015000, size: 0x800  <5>[    0.001285]  (0)[0:swapper/0]pmic & external buck: 0xff  <5>[    0.001292]  (0)[0:swapper/0]ram\_console: CPU notifier status: 0, 0, 0x0, 0  <5>[    0.001299]  (0)[0:swapper/0]ram\_console: CPU HPS footprint: 0, 0x0, 0, 0  <5>[    0.001305]  (0)[0:swapper/0]ram\_console: last init function: 0xffffffffffffffff  <6>[    0.001445]  (0)[0:swapper/0]Calibrating delay loop (skipped), value calculated using timer frequency.. 26.00 BogoMIPS (lpj=52000)  <6>[    0.001457]  (0)[0:swapper/0]pid\_max: default: 32768 minimum: 301  <6>[    0.001521]  (0)[0:swapper/0]Security Framework initialized  <6>[    0.001532]  (0)[0:swapper/0]SELinux:  Initializing.  <7>[    0.001574]  (0)[0:swapper/0]SELinux:  Starting in permissive mode  <6>[    0.001614]  (0)[0:swapper/0]Mount-cache hash table entries: 16384 (order: 5, 131072 bytes)  <6>[    0.001637]  (0)[0:swapper/0]Mountpoint-cache hash table entries: 16384 (order: 5, 131072 bytes)  <4>[    0.002254] -(0)[0:swapper/0]assertion failed at /home/work/cannon-q-stable-build/kernel-4.14/drivers/misc/mediatek/sched/sched\_avg.c:1001  <4>[    0.002295] -(0)[0:swapper/0]assertion failed at /home/work/cannon-q-stable-build/kernel-4.14/drivers/misc/mediatek/sched/sched\_avg.c:1001  <4>[    0.002308] -(0)[0:swapper/0]assertion failed at /home/work/cannon-q-stable-build/kernel-4.14/drivers/misc/mediatek/sched/sched\_avg.c:1001  <4>[    0.002312] -(0)[0:swapper/0]assertion failed at /home/work/cannon-q-stable-build/kernel-4.14/drivers/misc/mediatek/sched/sched\_avg.c:1001  <4>[    0.002328] -(0)[2:kthreadd]assertion failed at /home/work/cannon-q-stable-build/kernel-4.14/drivers/misc/mediatek/sched/sched\_avg.c:1001  <4>[    0.002333] -(0)[2:kthreadd]assertion failed at /home/work/cannon-q-stable-build/kernel-4.14/drivers/misc/mediatek/sched/sched\_avg.c:1001  <4>[    0.002341] -(0)[2:kthreadd]assertion failed at /home/work/cannon-q-stable-build/kernel-4.14/drivers/misc/mediatek/sched/sched\_avg.c:1001  <4>[    0.002348] -(0)[2:kthreadd]assertion failed at /home/work/cannon-q-stable-build/kernel-4.14/drivers/misc/mediatek/sched/sched\_avg.c:1001  <4>[    0.002352] -(0)[2:kthreadd]assertion failed at /home/work/cannon-q-stable-build/kernel-4.14/drivers/misc/mediatek/sched/sched\_avg.c:1001  <4>[    0.002356] -(0)[2:kthreadd]assertion failed at /home/work/cannon-q-stable-build/kernel-4.14/drivers/misc/mediatek/sched/sched\_avg.c:1001  <4>[    0.002363] -(0)[2:kthreadd]assertion failed at /home/work/cannon-q-stable-build/kernel-4.14/drivers/misc/mediatek/sched/sched\_avg.c:1001  <4>[    0.002367] -(0)[2:kthreadd]assertion failed at /home/work/cannon-q-stable-build/kernel-4.14/drivers/misc/mediatek/sched/sched\_avg.c:1001  <4>[    0.002371] -(0)[2:kthreadd]assertion failed at /home/work/cannon-q-stable-build/kernel-4.14/drivers/misc/mediatek/sched/sched\_avg.c:1001  <4>[    0.002376] -(0)[2:kthreadd]assertion failed at /home/work/cannon-q-stable-build/kernel-4.14/drivers/misc/mediatek/sched/sched\_avg.c:1001  <4>[    0.002380] -(0)[2:kthreadd]assertion failed at /home/work/cannon-q-stable-build/kernel-4.14/drivers/misc/mediatek/sched/sched\_avg.c:1001 |

根据打印提示，提交EService给MTK，MTK提到为正常开机的打印，不需要Care。

“这个只是系统刚开机的时候，因为条件没有初始化，所以，打印的Log，等后面条件初始化好了就不会有问题，建议不用care.”

## MTK主叫的域选过程—TD

[UPGR5G-4321](https://jira.n.xiaomi.com/browse/UPGR5G-4321)

FT\_J22-R\_NanJing\_卡一主卡电信5G VOLTE ，卡二副卡电信5G VOLTE，ping，MO卡1呼叫MT卡2，MO端起呼掉1X (rate:2/30)

[UPGR5G-4330](https://jira.n.xiaomi.com/browse/UPGR5G-4330)

FT\_J22\_BeiJing\_主卡卡一CT 5G + 副卡卡二CT 4G VOLTE，PS，MO端卡2打MT端卡1，MO端自动挂断(1/20)\_0128

UPGR5G-4330 FT\_J22\_BeiJing\_主卡卡一CT 5G + 副卡卡二CT 4G VOLTE，PS，MO端卡2打MT端卡1，MO端自动挂断(1/20)\_0128

// MO

TAU被拒绝后，MO端立即重新Attach ，Attach Requet再次被拒绝。此时发起呼叫，再次Attach Request成功。但是主叫的域选失败，提示没有可用的呼叫域。

Type Index Time Local Time Module Message Comment Time Differences

OTA 2083114 189010225 15:03:16:199 EMM\_NASMSG\_2 [MS->NW] EMM\_Tracking\_Area\_Update\_Request(EPS update type="EMM\_UPDATE\_TYPE\_TAU", active flag="KAL\_FALSE")

OTA 2086344 189011474 15:03:16:399 EMM\_NASMSG\_2 [NW->MS] EMM\_Tracking\_Area\_Update\_Reject(EMM cause="EMM\_CAUSE\_UE\_ID\_NOT\_DERIVED\_BY\_NW")

OTA 2114181 189016394 15:03:16:599 EMM\_NASMSG\_2 [MS->NW] EMM\_Attach\_Request(EPS attach type="EMM\_ATTACH\_TYPE\_EPS\_ATTACH")

OTA 2115612 189017116 15:03:16:599 EMM\_NASMSG\_2 [NW->MS] EMM\_Attach\_Reject(EMM cause="EMM\_CAUSE\_NO\_SUITABLE\_CELL\_IN\_TA")

SYS 2149250 189027162 15:03:17:399 NIL [AT\_RX p46,ch14]ATD15311738693;

OTA 2152500 189028050 15:03:17:399 EMM\_NASMSG\_2 [MS->NW] EMM\_Attach\_Request(EPS attach type="EMM\_ATTACH\_TYPE\_EPS\_ATTACH")

OTA 2162770 189035774 15:03:17:800 EMM\_NASMSG\_2 [NW->MS] EMM\_Attach\_Accept(EPS attach result="EMM\_ATTACH\_RESULT\_EPS\_ONLY\_ATTACHED")

OTA 2164118 189035896 15:03:17:800 EMM\_NASMSG\_2 [MS->NW] EMM\_Attach\_Complete

PS 2170412 189036527 15:03:18:000 VDM\_TRK\_2 - VDM\_ADS\_2 MSG\_ID\_VDM\_TRK\_ADS\_SELECT\_REQ

// 没有可允许的呼叫注册域

PS 2170523 189036534 15:03:18:000 VDM\_ADS\_2 - VDM\_TRK\_2 MSG\_ID\_VDM\_TRK\_ADS\_SELECT\_CNF

abort\_reason = VDM\_ADS\_ABORT\_REASON\_NO\_ALLOWED\_DOMAIN (enum 1)

SYS 2170575 189036536 15:03:18:000 NIL [AT\_URC p44,ch12]+ECPI: 1,133,0,0,0,20,"15311738693",129,"",63

=> Decode:Call Progress Information +ECPI

<call\_id> : 1

<msg\_type> : 133(State: Disconnected)

<is\_ibt, in band tone> : 0(NO)

<is\_tch> : 0(NO)

<dir> : 0(MO Call)

<call\_mode> : 20(IMS\_VOICE\_CALL)

<number> : "15311738693"

<call\_type> : 129(National)

<pau, P asserted URI> : ""

<disconnect cause> : 63

// 注册VoLTE

SIP 33 189047741 15:03:18:602 [MS->NW][P2][S2]REGISTER sip:ims.mnc011.mcc460.3gppnetwork.org SIP/2.0

SIP 34 189051051 15:03:18:803 [NW->MS][P2][S2]SIP/2.0 401 Unauthorized

SIP 35 189054416 15:03:19:003 [MS->NW][P2][S2]REGISTER sip:ims.mnc011.mcc460.3gppnetwork.org SIP/2.0

SIP 36 189059366 15:03:19:403 [NW->MS][P2][S2]SIP/2.0 200 OK

### MTK主叫域选失败

注意点：

MTK主叫域选定时器32s，域选过程中VDM需要NRRC读取SIB1。这需要确认。

[UPGR5G-4446](https://jira.n.xiaomi.com/browse/UPGR5G-4446) FT\_J22\_NanJing\_卡1主卡移动5GVolte，卡2副卡电信4G，PS，卡1打卡2，MO端呼出后界面显示“第1次重拨”（1/40）\_0201

**从log看，UE一开始打call，VDM在46:45触发一个32s的mo call guard timer之后进行选域，选域过程中VDM想要从NRRC获得UAC参数，但NRRC因为SIB1读取失败，而造成获取UAC失败，直到47:17 32s timer 超时vdm abrt call。**

稍后L1会继续check SIB1读取失败的原因。

谢谢

faillog:

Type Index Time Local Time Module Message Comment Time Differences

SYS 954240 295631490 14:46:45:197 NIL [AT\_RX p41,ch3]ATD15380858114;

PS 957311 295631979 14:46:45:197 VDM\_TRK - VDM\_ADS MSG\_ID\_VDM\_TRK\_ADS\_SELECT\_REQ

PS 957320 295631981 14:46:45:197 VDM\_ADS [VDM ADS] Service status: current RAT = RAT\_NR

PS 957341 295631983 14:46:45:197 VDM - L4C MSG\_ID\_VDM\_L4C\_UAC\_PARAM\_CHECK\_REQ status = IMS\_SERVICE\_STATUS\_START (enum 0)

PS 957343 295631983 14:46:45:197 VDM\_ADS [VDM ADS] State changed to VDM\_ADS\_STATE\_WAIT\_VOICE\_UAC\_PARAM

PS 957364 295631986 14:46:45:197 L4C - RAC MSG\_ID\_L4CRAC\_UAC\_PARAM\_CHECK\_REQ

PS 957376 295631987 14:46:45:197 RAC - VGMM MSG\_ID\_RAC\_VGMM\_IMS\_UAC\_REQ

PS 957388 295631988 14:46:45:197 VGMM - NRRC MSG\_ID\_VGMM\_NRRC\_UAC\_CHECK\_REQ

PS 957391 295631989 14:46:45:197 NRRC - VGMM MSG\_ID\_VGMM\_NRRC\_UAC\_CHECK\_CNF uac\_result = NRRC\_UAC\_RESULT\_FAIL\_NO\_SYSINFO (enum 2)

PS 1216019 296131522 14:47:17:053 VDM\_ADS [VDM ADS] Timer: expiry (name = VDM\_ADS\_TIMER\_GUARD\_MO\_CALL)

PS 1216020 296131522 14:47:17:053 VDM\_ADS [VDM ADS] Call context: set aborting = KAL\_TRUE

PS 1216021 296131522 14:47:17:053 VDM\_ADS [VDM ADS] Call context: set abort\_reason = VDM\_ADS\_ABORT\_REASON\_TIMEOUT

PS 1227847 296146156 14:47:18:058 VGMM - NRRC MSG\_ID\_VGMM\_NRRC\_UAC\_CHECK\_REQ

PS 1227856 296146156 14:47:18:058 NRRC - VGMM MSG\_ID\_VGMM\_NRRC\_UAC\_CHECK\_CNF uac\_result = NRRC\_UAC\_RESULT\_ACCESS\_ALLOWED (enum 1)

PS 1227965 296146165 14:47:18:058 VGMM - RAC MSG\_ID\_RAC\_VGMM\_IMS\_UAC\_CNF

PS 1227970 296146165 14:47:18:058 RAC - L4C MSG\_ID\_L4CRAC\_UAC\_PARAM\_CHECK\_CNF

PS 1227976 296146166 14:47:18:058 L4C - VDM MSG\_ID\_VDM\_L4C\_UAC\_PARAM\_CHECK\_CNF result = IMS\_SERVICE\_UAC\_RESULT\_OK (enum 1)

PS 1227977 296146167 14:47:18:058 VDM\_ADS [VDM ADS] ADS resume: call aborted (state = VDM\_ADS\_STATE\_WAIT\_VOICE\_UAC\_PARAM, event = VDM\_ADS\_ALG\_INPUT\_TRK\_SELECT\_REQ)

PS 1227978 296146167 14:47:18:058 VDM\_ADS - VDM\_TRK MSG\_ID\_VDM\_TRK\_ADS\_SELECT\_CNF

## MTK驻网相关问题

### 手动选网失败后自动返回上次驻留的PLMN，但是AP自动选择运营商的开关不会自动打开

UPGR5G-4194 FT\_J22-R\_NanJing\_单卡联通4G volte，手动搜网，关闭“自动选择网络”开关，手动选择非法网络，测试机提示无法注册后不会自动打开自动选择开关但可以正常注册合法网络(必现)(附录屏)

modem侧，是因为SBP\_DISABLE\_AUTO\_RETURN\_PRE\_RPLMN是false，因此会auto return RPLMN, 因此UE会在手动注册失败后，自动回到之前成功注册的RPLMN上。

R上这里有修改, 如果贵司期望手选失败后立即切换为自动模式，请修改下面默认值, 将1->0 ，

请贵司帮忙验证并反馈结果。

谢谢！

vendor/mediatek/proprietary/frameworks/opt/telephony/src/java/com/mediatek/internal/telephony/MtkGsmCdmaPhone.java

case EVENT\_SET\_NETWORK\_MANUAL\_COMPLETE:

super.handleMessage(msg);

if (isPhoneTypeGsm()) {

ar = (AsyncResult) msg.obj;

boolean disable\_auto\_return\_rplmn = // default is disable

//请将1->0

SystemProperties.getInt(PROPERTY\_DISABLE\_AUTO\_RETURN\_RPLMN, 1) > 0 ?

### IMS注册403响应处理

UPGR5G-4368 FT\_J22-R\_NanJing\_卡一主卡移动5G VOLTE，卡二副卡联通4G VOLTE，ping，MO卡1呼叫MT卡2，MO端主卡通话结束后副卡联通掉volte (rate:1/30)

// IMS注册，网络响应403 Forbidden

SIP 21 63925385 11:05:16:761 [MS->NW]REGISTER

SIP 22 63927155 11:05:16:961 [NW->MS]SIP/2.0 403 Forbidden

上一通call 的过程中dut做re-reg，register发出之后，NW回应了403 Forbideen给拒绝掉，导致掉了IMS，并且IMS rereg被锁住了。

随后IMS一直是未注册状态，在11:06:30拨出call 时，因为IMS reg被锁，所以VDM选域时只能走cs，因此MO主动做了csfb去打这通call。

主要问题就是，ims reg unlocked触发的条件是什么？如果不是定时器，肯定还有其他的需要满足的条件

【MTK】这里的触发条件是DUT重新做了TAU，DUT发生这种情况与这条NV配置有关。

not\_auto\_reg\_403 CU我们配置的参数是1，If UE stops registration retry (until power cycled or enter/leave filght mode) when NW replies 403 response for REGISTER 1:Enable for all

配置的是1，也就是说除了until power cycled or enter/leave filght mode情形之外，IMS会一直锁死不会retry

这个处理是协议规定还是贵司内部处理？用Retry Timer来触发下一次IMS注册不应该更合适吗？

[MTK]这是协议的规范，请知悉。

RFC3261上有此解读： 21.4.4 403 Forbidden The server understood the request, but is refusing to fulfill it. Authorization will not help, and the request SHOULD NOT be repeated.

### WorldMode

查看当前设置的网络模式。

| **Type** | **Index** | **Time** | **Local Time** | **Module** | **Message** | **Comment** | **Time Differences** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| PS | 5656 | 1185335930 | 11:18:22:021 | L4C\_2 | WORLD\_MODE: 0x79 (Format: 0|N|Lf|Lt|W|C|T|G) |  |  |

### HPPLMN Search

HPPLMN：Higher Priority PLMN，更高优先级的PLMN。

UE尝试更高优先级的PLMN搜网的步骤如下描述，来自TS 23.122 R16版本。

|  |
| --- |
| The attempts to access the HPLMN or an EHPLMN or higher priority PLMN shall be as specified below:  a) The periodic attempts shall only be performed in automatic mode when the MS is roaming, and not while the MS is attached for emergency bearer services, is registered for emergency services, has a PDU session for emergency services or has a PDN connection for emergency bearer services;  b) The MS shall make the first attempt after a period of at least 2 minutes and at most T minutes:  - only after switch on if Fast First Higher Priority PLMN search is disabled; or  - after switch on or upon selecting a VPLMN if Fast First Higher Priority PLMN search is enabled.  c) The MS shall make the following attempts if the MS is on the VPLMN at time T after the last attempt;  d) Periodic attempts shall only be performed by the MS while in idle mode or 5GMM-CONNECTED mode with RRC inactive indication (see 3GPP TS 24.501 [64]);  d1) Periodic attempts may be postponed while the MS is in power saving mode (PSM) (see 3GPP TS 23.682 [27A]).  d2) Periodic attempts may be postponed while the MS is receiving eMBMS transport service in idle mode (see 3GPP TS 23.246 [68]).  d3) Periodic attempts may be postponed till the next eDRX occasion while the MS is configured with eDRX.  d4) Periodic attempts may be postponed while the MS is in relaxed monitoring (see 3GPP TS 36.304 [43]).  e) If the HPLMN (if the EHPLMN list is not present or is empty) or a EHPLMN (if the list is present) or a higher priority PLMN is not found, the MS shall remain on the VPLMN.  f) In steps i), ii) and iii) of clause 4.4.3.1.1 the MS shall limit its attempts to access higher priority PLMN/access technology combinations to PLMN/access technology combinations of the same country as the current serving VPLMN, as defined in Annex B.  g) Only the priority levels of Equivalent PLMNs of the same country as the current serving VPLMN, as defined in Annex B, shall be taken into account to compare with the priority level of a selected PLMN.  h) If the PLMN of the highest priority PLMN/access technology combination available is the current VPLMN, or one of the PLMNs in the "Equivalent PLMNs" list, the MS shall remain on the current PLMN/access technology combination. |

重要点提及：

1. 更高优先级的PLMN选择，只能发生在RRC\_IDLE或者5G的RRC\_INACTIVE状态下。连接态下无法执行更高优先级PLMN搜索。
2. 如当前不存在HPLMN、EHPLMN、HPPLMN，则MS维持在VPLMN。

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **EFHPPLMN (Higher Priority PLMN search period)  details**  This EF contains the interval of time between searches for a higher priority PLMN (see 3GPP TS 23.122 [31]).   |  |  |  |  | | --- | --- | --- | --- | | Identifier: ‘6F31’ | Structure: transparent | | Mandatory | | SFI: ’12’ |  | | | | File size: 1 byte | Update activity: low | | | | Access Conditions:  READ PIN  UPDATE ADM  DEACTIVATE ADM  ACTIVATE ADM | | | | | Bytes | Description | M/O | Length | | 1 | Time interval | M | 1 byte |   ‑ Time interval.  Contents:  the time interval between two searches.  Coding:  For UEs not using any of the following at the time of starting the timer: NB-IoT, GERAN EC-GSM-IoT and Category M1 of E-UTRAN enhanced-MTC as specified in 3GPP TS 36.306 [85], the time interval is coded in integer multiples of n minutes. The range is from n minutes to a maximum value. The encoding is:  ‑ ’00’: No higher priority PLMN search attempts;  ‑ ’01’: n minutes;  ‑ ’02’: 2n minutes;  ‑ : :  ‑ ‘YZ’: (16Y+Z)n minutes (maximum value).  For UEs using any of the following at the time of starting the timer: NB-IoT, GERAN EC-GSM-IoT and Category M1 of E-UTRAN enhanced-MTC as specified in 3GPP TS 36.306 [85], the time interval is coded as follows. The range is from n hours to a maximum value. The encoding is:  ‑ ’00’: No higher priority PLMN search attempts;  ‑ ’01’: n hours (2 hours);  ‑ ’02’ to ’28’: 2n hours (i.e. range from 4 hours to 80 hours with step of 2 hours);  ‑ ’29’ to ’50’: 4n-80 hours (i.e. range from 84 hours to 240 hours with step of 4 hours).  – All other values shall be interpreted by the ME as a default period.  For specification of the integer timer interval n, the maximum value and the default period refer to 3GPP TS 23.122 [31].  NOTE: Care should be taken in the configuration of this EF, as the value stored can be interpreted in different ways depending on the type of device used. |

[AGATE-9158](https://jira.n.xiaomi.com/browse/AGATE-9158) 【LT-Beijing-K11R-Movistar】sim卡PLMN 21407, 两个LTE小区，PLMN为21407和21401，手机注册21407LTE小区后关闭本小区信号，手机注册到21401漫游小区，打开21407小区等待6分钟，手机没有重新选择到21407小区。（必现）0830

|  |
| --- |
| After camping on VPLMN, High priority timer of 2 mins is started. After expiry of 2mins timer of 6mins will be started. This is normal MTK behavior If you do not wish to start 2mins then you can disable below SBP.  SBP\_DISABLE\_2MIN\_MINIMUM\_HPPLMN\_TIMER- Disable 2-minute minimum HPPLMN timer  This SBP is to start the timer of higher priority PLMN search with 6-minute instead of 2-minute for the 1st higher priority PLMN search.  Type Index Time Local Time Module Message Comment Time Differences  OTA 149363 46035179 17:13:45:923 EMM\_NASMSG [MS->NW] EMM\_Tracking\_Area\_Update\_Request(EPS update type="EMM\_UPDATE\_TYPE\_COMBINED\_TAU", active flag="KAL\_FALSE")  OTA 151762 46040558 17:13:46:123 EMM\_NASMSG [NW->MS] EMM\_Tracking\_Area\_Update\_Accept(EPS update result="EMM\_UPDATE\_RESULT\_COMBINED\_UPDATED")  PS 153522 46041068 17:13:46:323 NWSEL NWSEL\_HIGH\_PRIO\_SEARCH\_TIMER\_ID Timer starts, period = 120 seconds 2mins  PS 153711 46041100 17:13:46:323 NWSEL [NWSEL] NWSEL 21401f is not HPLMN  SYS 154132 46041150 17:13:46:323 NIL [AT\_URC p59,ch1]+EREG: 5,"000002","000000001",4096,0,0,0,0  PS 207280 47916069 17:15:46:342 NWSEL NWSEL\_HIGH\_PRIO\_SEARCH\_TIMER\_ID Timer expires when current is action NWSEL\_COMM\_NO\_ACTION  PS 207281 47916069 17:15:46:342 NWSEL NWSEL\_HIGH\_PRIO\_SEARCH\_TIMER\_ID Timer starts, period = 360 seconds 6mins  PS 207286 47916069 17:15:46:342 NWSEL [NWSEL Context] NWSEL\_EHPLMN[0]: 21407f , RAT\_NONE  PS 207327 47916072 17:15:46:342 NWSEL - NAS\_SV MSG\_ID\_NWSEL\_NAS\_SV\_PLMN\_LIST\_REQ  PS 208989 47918865 17:15:46:342 NWSEL [NWSEL][Fast Roaming Search]: found [0] 21407f RAT\_LTE  PS 209289 47918907 17:15:46:342 NAS\_SV - NWSEL MSG\_ID\_NWSEL\_NAS\_SV\_PLMN\_LIST\_CNF  PS 209872 47918986 17:15:46:342 NWSEL - NAS\_SV MSG\_ID\_NWSEL\_NAS\_SV\_PLMN\_SEARCH\_REQ 21407  PS 215269 47923739 17:15:46:742 NAS\_SV - NWSEL MSG\_ID\_NWSEL\_NAS\_SV\_PLMN\_SEARCH\_CNF  PS 223170 47932317 17:15:47:345 NWSEL NWSEL\_HIGH\_PRIO\_SEARCH\_TIMER\_ID Timer stopped  SYS 223740 47932396 17:15:47:345 NIL [AT\_URC p59,ch1]+EREG: 1,"000001","000000000",4096,0,0,0,0 |

[AGATE-9327](https://jira.n.xiaomi.com/browse/AGATE-9327) 【LT-Beijing-K11R-Movistar】sim卡PLMN 21407, 两个LTE小区，PLMN为21407和20801，手机注册21407LTE小区后关闭本小区信号，手机注册到20801漫游小区并处于IDLE态，打开21407小区等待6分钟，手机没有重新选择到21407小区。（必现）0910

|  |
| --- |
| 在SIM卡中可以设置HPLMN的重选时间  HPLMN Search Period Timer (EFHPPLMN) set to 6 minutes ("01")  有的是2min，有的是6min，这个差别还在找MTK确认是否正常。  Type Index Time Local Time Module Message Comment Time Differences  **PS 145436 147313619 12:00:21:171 NWSEL NWSEL\_HIGH\_PRIO\_SEARCH\_TIMER\_ID Timer starts, period = 120 seconds**  PS 350397 149188648 12:02:21:343 NWSEL NWSEL\_HIGH\_PRIO\_SEARCH\_TIMER\_ID Timer expires when current is action NWSEL\_COMM\_NO\_ACTION  **PS 350398 149188648 12:02:21:343 NWSEL NWSEL\_HIGH\_PRIO\_SEARCH\_TIMER\_ID Timer starts, period = 360 seconds**  PS 703933 154813684 12:08:21:345 NWSEL NWSEL\_HIGH\_PRIO\_SEARCH\_TIMER\_ID Timer expires when current is action NWSEL\_COMM\_NO\_ACTION  PS 703934 154813684 12:08:21:345 NWSEL NWSEL\_HIGH\_PRIO\_SEARCH\_TIMER\_ID Timer starts, period = 360 seconds  PS 1076677 160438689 12:14:21:337 NWSEL NWSEL\_HIGH\_PRIO\_SEARCH\_TIMER\_ID Timer expires when current is action NWSEL\_COMM\_NO\_ACTION  PS 1076678 160438690 12:14:21:337 NWSEL NWSEL\_HIGH\_PRIO\_SEARCH\_TIMER\_ID Timer starts, period = 360 seconds  23122协议里有描述，第一次搜索是Fast First Higher Priority PLMN search，用的是SIM里的MinimumPeriodicSearchTimer 2分钟，后续的搜索用的是SIM里的Higher Priority PLMN search period 6分钟  4.4.3.3.1 Automatic and manual network selection modes    b) The MS shall make the first attempt after a period of at least 2 minutes and at most T minutes:   * only after switch on if Fast First Higher Priority PLMN search is disabled; or * after switch on or upon selecting a VPLMN if Fast First Higher Priority PLMN search is enabled. |

## 5G相关问题

### 手机无法驻留到双5G

AP侧已经设置了双5G的能力给Modem，但是注册时，Modem副卡不上报DCNR能力给网络。这里的问题是Modem双5G的NV没有打开。

CANNON-8683 J22-Q-CN-NJ 【Modem】手机无法注册双5G\_ 单机必现\_V12.0.9.0.QJECNXM

|  |
| --- |
| Type Index Time Local Time Module Message Comment Time Differences  PS 1715 24323268 10:26:52:998 EMM\_2 [EMM COMMON] current RAT mode:ERAT\_LTE\_UMTSFDD\_GSM || active RAT: EMM\_RATCHG\_NCTXT\_LTE  OTA 1736 24323269 10:26:52:998 EMM\_NASMSG\_2 [MS->NW] EMM\_Attach\_Request(EPS attach type="EMM\_ATTACH\_TYPE\_COMBINED\_ATTACH")  OTA 13390 24339515 10:26:54:000 EMM\_NASMSG\_2 [NW->MS] EMM\_Attach\_Accept(EPS attach result="EMM\_ATTACH\_RESULT\_COMBINED\_ATTACHED")  // 从log看联通卡没有开5g功能  PS 44708 24367878 10:26:55:801 EMM [EMM COMMON] current RAT mode: ERAT\_NR\_LTE\_UMTSFDD\_GSM || active RAT: EMM\_RATCHG\_NCTXT\_LTE  OTA 44735 24367880 10:26:55:801 EMM\_NASMSG [MS->NW] EMM\_Attach\_Request(EPS attach type="EMM\_ATTACH\_TYPE\_COMBINED\_ATTACH")  OTA 49733 24377879 10:26:56:403 EMM\_NASMSG [NW->MS] EMM\_Attach\_Accept(EPS attach result="EMM\_ATTACH\_RESULT\_COMBINED\_ATTACHED") |

双5G设置：

NVRAM的配置有可能是单NR配置。

请连meta tool修改**NVRAM\_EF\_RAC\_PREFERENCE\_LID的NR allowed字段（正常应该为255表示双NR，**如果是1表示单NR，会注册不上双5G）。

### AP侧开关ENDC能力

Reference：MTK FAQ25536

有时候手机回不到5G状态，是因为AP侧关闭了ENDC能力。此功能用于block UE上报B1/B2事件给网络。这导致网络不会分配UE NR SCG Leg或者将UE重定向到SA。

|  |
| --- |
| // AP侧关闭了ENDC能力  SYS 1019199 63084043 15:08:18:077 NIL [AT\_RX p60,ch2]AT+EGMC=1,"endc\_deactivation",1,1 deactivate ENDC  PS 1019227 63084056 15:08:18:077 SASE\_CLIENT - ERRC MSG\_ID\_SASE\_ERRC\_ENDC\_DEACTIVATE\_REQ  PS 2991170 64878183 15:10:12:901 ERRC\_MOB [RPT] skip meas rpt judge for measId[3] eventB1\_NR ncell since EN-DC deactivated  // AP侧打开了ENDC能力  SYS 3313413 65103986 15:10:27:501 NIL [AT\_RX p60,ch2]AT+EGMC=1,"endc\_deactivation",0,1 activate ENDC  PS 3313439 65103999 15:10:27:501 SASE\_CLIENT - ERRC MSG\_ID\_SASE\_ERRC\_ENDC\_ACTIVATE\_REQ |

### 主卡NSA ENDC连接状态下，CSFB后仍然显示5G

NSA模式ENDC连接情况下，拨打CSFB电话，UE发送ESR消息，若网络未响应RRCConnectionRelease重定向消息，则UE启动T3417定时器定时4s，等待4s时间结束后，UE主动断开ENDC连接回落到CS域发起CS呼叫。

[Xiaomi][J22][FT][Shenzhen] UPGR5G-4213 FT\_J22-R\_ShenZhen\_NSA\_卡一主卡联通5V+卡二副卡电信5V，主卡发起CFSB Call，接通后信号栏主卡仍显示5G约5s，14点16分，概率：1/10\_20210126

|  |
| --- |
| check了贵司的log，解释如下。  一开始UE在LTE上配置SCG cell，所以显示5G。 然后开始起call，此时网络并没有给redirect 资讯，因此会启动T3417. 等T3417超时后，才会通知ERRC释放AS connection。ERRC通知NRRC disconnect SCG status.  然后上报给RAC，RAC再通知L4C 切换注册状态到LTE。需要指出的是，这个过程并非在CSFB之后，而是在CSFB期间。具体log如下，这是normal 行为。  Type Index Time Local Time Module Message Comment Time Differences  PS 4066646 202206063 14:15:07:102 RAC - L4C MSG\_ID\_L4CRAC\_REG\_STATE\_IND  PS 4066723 202206069 14:15:07:102 L4C - L4BNW MSG\_ID\_L4BNW\_L4C\_REG\_STATE\_IND cell\_data\_speed\_support = ENDC\_SUPPORT (enum 16384)  SYS 4067042 202206082 14:15:07:102 NIL [AT\_URC p39,ch1]+EGREG: 1,"\*\*\*\*24","\*\*\*\*9B535",16384,"FF",0,0,0,2,1,0,0  PS 4362032 202439825 14:15:22:120 MM - EMM MSG\_ID\_MM\_EMM\_CSFB\_REQ  PS 4362126 202439834 14:15:22:120 EMM [EMM TIMER] TIMER ID: EMM\_T3417EXT is started by EMM (timer value:4)  PS 4362128 202439834 14:15:22:120 EMM\_CALL [EMM CALL] Timer T3417Ext Start, 4  OTA 4362210 202439839 14:15:22:120 EMM\_NASMSG [MS->NW] EMM\_Extended\_Service\_Request(service type="MO\_CSFB", CSFB response="CSFB\_UNUSED")  SYS 4393457 202459420 14:15:23:422 NIL [AT\_URC p39,ch1]+EGREG: 1,"\*\*\*\*24","\*\*\*\*9B535",16384,"FF",0,0,0,2,1,0,0  PS 4462535 202502332 14:15:26:215 EMM\_TIMERMNG - EMM\_CALL MSG\_ID\_EMM\_TIMERMNG\_CALL\_T3417EXT\_TIMEOUT\_IND  PS 4462804 202502392 14:15:26:215 EMM - ERRC MSG\_ID\_EMM\_ERRC\_RELEASE\_REQ  PS 4462906 202502396 14:15:26:215 ERRC - EMM MSG\_ID\_EMM\_ERRC\_RELEASE\_CNF  PS 4462923 202502397 14:15:26:215 ERRC - NRRC MSG\_ID\_ERRC\_NRRC\_RELEASE\_REQ  PS 4462938 202502397 14:15:26:215 NRRC\_MAIN - NRRC\_SCG MSG\_ID\_NRRC\_MAIN\_SCG\_RELEASE\_REQ  PS 4463033 202502401 14:15:26:215 RAC - L4C MSG\_ID\_L4CRAC\_REG\_STATE\_IND  PS 4463253 202502411 14:15:26:215 L4C - L4BNW MSG\_ID\_L4BNW\_L4C\_REG\_STATE\_IND  PS 4464578 202502849 14:15:26:215 NRRC - NAS\_SV MSG\_ID\_NAS\_SV\_NRRC\_NRRC\_STATE\_IND scg\_status = INDICATED\_NR\_SCG\_STATUS\_DISCONNECTED (enum 1)  PS 4464597 202502850 14:15:26:215 NAS\_SV - RAC MSG\_ID\_RAC\_NAS\_SV\_NRRC\_STATE\_IND  PS 4464610 202502850 14:15:26:215 RAC - L4C MSG\_ID\_L4CRAC\_REG\_STATE\_IND  PS 4464649 202502854 14:15:26:215 L4C - L4BNW MSG\_ID\_L4BNW\_L4C\_REG\_STATE\_IND cell\_data\_speed\_support = LTE\_SUPPORT (enum 4096)  SYS 4464802 202502860 14:15:26:215 NIL [AT\_URC p39,ch1]+EGREG: 1,"\*\*\*\*24","\*\*\*\*9B535",4096,"FF",0,0,0,2,1,0,0  PS 4473417 202509774 14:15:26:656 EMM - MM MSG\_ID\_MM\_EMM\_CSFB\_CNF  Telephony侧发生Icon变化的通知上报消息为：  01-26 14:15:06.902 radio 2016 2172 D RILJ : [UNSL]< RIL\_UNSOL\_PHYSICAL\_CHANNEL\_CONFIG [  {mConnectionStatus=PrimaryServing,mCellBandwidthDownlinkKhz=20000,mRat=LTE,mFrequencyRange=LOW,mChannelNumber=2147483647,mContextIds=[],mPhysicalCellId=\*\_}  ,  {mConnectionStatus=SecondaryServing,mCellBandwidthDownlinkKhz=20000,mRat=LTE,mFrequencyRange=LOW,mChannelNumber=2147483647,mContextIds=[],mPhysicalCellId=\_\*}  , {mConnectionStatus=SecondaryServing,mCellBandwidthDownlinkKhz=20000,mRat=NR,mFrequencyRange=LOW,mChannelNumber=2147483647,mContextIds=[],mPhysicalCellId=\*\*\*}] [PHONE0]      01-26 14:15:45.053 radio 2016 2172 D RILJ : [UNSL]< RIL\_UNSOL\_PHYSICAL\_CHANNEL\_CONFIG [{mConnectionStatus=PrimaryServing,mCellBandwidthDownlinkKhz=5000,mRat=UMTS,mFrequencyRange=LOW,mChannelNumber=2147483647,mContextIds=[],mPhysicalCellId=}] [PHONE0]  01-26 14:16:03.494 radio 2016 2172 D RILJ : [UNSL]< RIL\_UNSOL\_PHYSICAL\_CHANNEL\_CONFIG [{mConnectionStatus=PrimaryServing,mCellBandwidthDownlinkKhz=5000,mRat=UMTS,mFrequencyRange=LOW,mChannelNumber=2147483647,mContextIds=[],mPhysicalCellId=}] [PHONE0]a |

## DSDA

### DSDA介绍

DSDA：Dual Subscription Dual Active，双卡双通。双卡情况下，可以双卡都进行业务而互不影响。常用场景为主卡游戏模式下，副卡可以正常接听电话而不影响游戏体验。

实现原理：目前仅支持SA+LTE的主副卡组合DSDA，原理类似于ENDC工作原理。主卡和副卡均需要处于RRC连接状态。副卡RRC连接被释放则直接退出了DSDA。

### 相关的AT命令

#### EEDSDA

##### Description

The command set mode is used to enable / disable URC +EDSDAU which report the current status of Dual SIM Dual Active.

The command read mode reports current status of Dual SIM Dual Active immediately.

##### Format

|  |  |
| --- | --- |
| **Command** | **Possible response(s)** |
| +EDSDA=<n> | OK  ERROR |
| +EDSDA? | +EDSDA: <x>,<y>, |

##### Field

<n>: integer, control the report mode for URC，设置是否主动上报

0 disable (default)

1 enable DSDA URC : +EDSDAU: ,

<x>bool, indicate whether DSDA is allowed

**0 DSDA is not allowed**

1 DSDA is allowed

<y>integer, indicate the DSDA state

0 DSDA is ongoing

1 DSDA is possible

2 DSDA is not possible

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Type | SIM1 state | SIM2 state | Meaning |  |
| DSDA | Connected | Connected | DSDA ongoing | 0 |
| Connected | Idle | DSDA is possible | 1 |
| Idle | Connected |
| Idle | Idle |
| DSDS | Connected | Idle | DSDA is not possible | 2 |
| Idle | Connected |
| Idle | Idle |

#### AT+EICPG=”gwsd”,x

X=0, 禁止来电不断网

X=1，开启来电不断网，来电由用户挂断

X=2，Silent reject，需要配置默认的时间。

### DSDA触发流程和问题Debug步骤

#### DSDA的触发

DSDA默认情况下是关闭状态。开启DSDA的步骤如下：

设置-> 特色功能 -> 游戏加速 -> 开启游戏

Log流程如下

|  |
| --- |
| Type Index Time Local Time Module Message Comment Time Differences  SYS 116895 10004402 14:26:14:282 NIL [AT\_RX p62,ch4]AT+EICPG="gwsd",1    SYS 118093 10004509 14:26:14:282 NIL [ATCI\_AT\_U\_0 s83]+EDSDAU: 1, 0  OTA 119735 10005269 14:26:14:483 ERRC\_CONN\_2 [MS->NW] ERRC\_RRCConnectionRequest(EARFCN[300], PCI[458])  OTA 120332 10005701 14:26:14:483 ERRC\_CONN\_2 [NW->MS] ERRC\_RRCConnectionSetup(EARFCN[300], PCI[458])  OTA 121124 10005816 14:26:14:483 EMM\_NASMSG\_2 [MS->NW] EMM\_Service\_Request // 副卡发起Service Request建立RRC连接  OTA 121451 10005863 14:26:14:483 ERRC\_CONN\_2 [MS->NW] ERRC\_RRCConnectionSetupComplete(EARFCN[300], PCI[458])  OTA 351879 10246707 14:26:29:884 EMM\_NASMSG\_2 [NW->MS] EMM\_CS\_Service\_Notification(paging identity="TMSI\_PAGING\_TYPE")  SYS 352133 10246724 14:26:29:884 NIL [ATCI\_AT\_U\_1 s83]+EICPGU: "gwsd",0,"008618805143494" |

### DSDA的全流程，可以查看如下JIRA：[AGATE-5549](https://jira.n.xiaomi.com/browse/AGATE-5549) – 待办

[AGATE-5549](https://jira.n.xiaomi.com/browse/AGATE-5549) K11T-R\_NJ\_5G SA VoLTE联通+LTE联通玩游戏被呼叫副卡时断网、不自动拒接\_偶现\_V12.5.0.4.RKWCNXM

### 示例Log

[MIUIROM-92104](https://jira.n.xiaomi.com/browse/MIUIROM-92104) K11T-R\_NJ\_移动5G SA VoLTE+联通4G，开启来电不断网，联通来电时断网\_必现\_21.4.26

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **从当前log来看，MD不支持N41+B40的endc组合，所以无法进入DSDA。**    还请帮忙使用MD支持的endc的组合来测试。     |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | **Type** | **Index** | **Time** | **Local Time** | **Module** | **Message** | **Comment** | **Time Differences** | | PS | 89660 | 11125538 | 11:16:23:256 | NRRC\_MAIN | [MAIN][CAP] CA idx [19], NL1 CA band comb, band num[2], DL:B3A\_N41A\_*0*\_*0*\_*0*, UL: B3A\_N41A\_*0*\_*0*\_*0*, FSC[14] |  |  | | PS | 89672 | 11125539 | 11:16:23:256 | NRRC\_MAIN | [MAIN][CAP] CA idx [31], NL1 CA band comb, band num[2], DL:B39A\_N41A\_*0*\_*0*\_*0*, UL: B39A\_N41A\_*0*\_*0*\_*0*, FSC[14] |  |  | | PS | 964585 | 11852626 | 11:17:09:932 | MSPM | [MSPM] DSDA MODE QUERY result : [MRS\_GEMINI\_DSDS\_MODE],  query by TEST RFDB? [KAL\_FALSE], test\_rfdb\_sim : [MSPM\_SIM2] |  |  | | OTA | 1018989 | 11903795 | 11:17:13:120 | NRRC\_SI | **[NW->MS] SIB1 (DL\_FREQ\_BAND[41], SSB\_ARFCN[[504990], PCI[369], SCS[NR\_SCS\_30])** |  |  | | PS | 1319684 | 12342576 | 11:17:41:270 | MRS\_2 | **[MRS\_EAS] earfcn 38950 is in band 40** |  |  |   以上，谢谢！ |

### DSDS/DSDA组合支持的Log查看

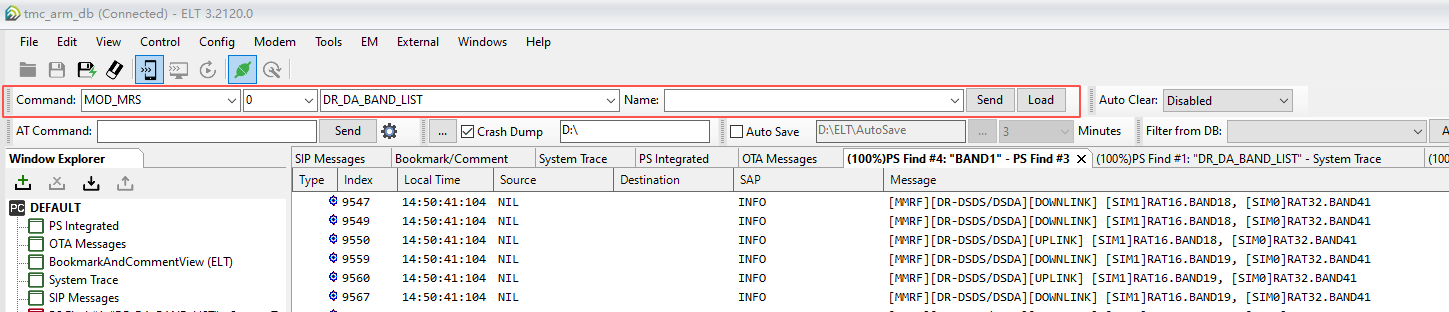
需要勾选View->Windows Layout->Command，然后在命令栏中出现Command输入框。

在输入框的第一项中输入:Mod\_MRS

第二栏中输入：0（任意值）

第三栏中输入：DR\_DA\_BAND\_LIST

Name框中不用输入。点击Send，则会出现



在System Trace中则会出现如下打印：

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | **Type** | **Index** | **Time** | **Local Time** | **Module** | **Message** | **Comment** | **Time Differences** | | --- | --- | --- | --- | --- | --- | --- | --- | | SYS | 9539 | 5442181 | 14:50:41:104 | NIL | [MMRF][DR-DSDS/DSDA][DOWNLINK] [SIM1]RAT16.BAND38, [SIM0]RAT32.BAND78 |  |  | | SYS | 9540 | 5442181 | 14:50:41:104 | NIL | [MMRF][DR-DSDS/DSDA][UPLINK] [SIM1]RAT16.BAND38, [SIM0]RAT32.BAND78 |  |  | | SYS | 9541 | 5442182 | 14:50:41:104 | NIL | [MMRF][DR-DSDS/DSDA][DOWNLINK] [SIM1]RAT16.BAND39, [SIM0]RAT32.BAND77 |  |  | | SYS | 9542 | 5442182 | 14:50:41:104 | NIL | [MMRF][DR-DSDS/DSDA][UPLINK] [SIM0]RAT32.BAND77 |  |  | |

其中RAT16为RAT LTE，RAT32为RAT NR。

### 参考文档

**CS0070-JAA2EF-TND-V1.0EN\_Modem\_Training\_DR\_DSDS\_Analysis\_SOP\_For\_Customer.pdf**

## MTK SS

参考文档TS 23.038

## 呼叫相关问题

### VoLTE被叫时无下行RTP包导致无声

[UPGR5G-4385](https://jira.n.xiaomi.com/browse/UPGR5G-4385) FT\_J22\_BeiJing\_主卡卡一CMCC 5G VOLTE + 副卡卡二CU 4G VOLTE，PS，MO端卡2打MT端卡1，mt端听不见声音（1/30）\_0129

MT端LTE信噪比良好，但是没有收到任何的下行RTP包。

|  |
| --- |
| **// MO CU VoLTE**  Type Index Time Local Time Module Message Comment Time Differences  OTA 463761 92403247 11:11:33:187 EMM\_NASMSG [MS->NW] EMM\_Tracking\_Area\_Update\_Request(EPS update type="EMM\_UPDATE\_TYPE\_COMBINED\_TAU", active flag="KAL\_FALSE")  SYS 464883 92404022 11:11:33:187 NIL [AT\_RX p41,ch3]ATD15701366284;  OTA 466985 92404680 11:11:33:388 EMM\_NASMSG [NW->MS] EMM\_Tracking\_Area\_Update\_Reject(EMM cause="EMM\_CAUSE\_UE\_ID\_NOT\_DERIVED\_BY\_NW")  OTA 484177 92410084 11:11:33:588 EMM\_NASMSG [MS->NW] EMM\_Attach\_Request(EPS attach type="EMM\_ATTACH\_TYPE\_COMBINED\_ATTACH")  OTA 493775 92419697 11:11:34:189 EMM\_NASMSG [NW->MS] EMM\_Attach\_Accept(EPS attach result="EMM\_ATTACH\_RESULT\_COMBINED\_ATTACHED")  OTA 495110 92419829 11:11:34:189 EMM\_NASMSG [MS->NW] EMM\_Attach\_Complete  OTA 502555 92421413 11:11:34:389 EMM\_NASMSG [MS->NW] EMM\_Extended\_Service\_Request(service type="MO\_CSFB", CSFB response="CSFB\_UNUSED")  OTA 503321 92421829 11:11:34:389 ERRC\_CONN [NW->MS] ERRC\_RRCConnectionRelease(EARFCN[1650], PCI[396])(cause:[ReleaseCause\_other], redirectInfo:[1])  OTA 516405 92452282 11:11:36:398 CC [MS->NW] CC\_\_SETUP  OTA 516968 92454616 11:11:36:599 CC [NW->MS] CC\_\_CALL\_PROCEEDING  OTA 522054 92477432 11:11:38:001 CC [NW->MS] CC\_\_ALERTING  OTA 543987 92568057 11:11:43:801 CC [NW->MS] CC\_\_CONNECT  OTA 543990 92568057 11:11:43:801 CC [MS->NW] CC\_\_CONNECT\_ACKNOWLEDGE  OTA 703986 92912239 11:12:05:801 CC [MS->NW] CC\_\_DISCONNECT  OTA 705580 92917430 11:12:06:201 CC [NW->MS] CC\_\_RELEASE  OTA 705591 92917431 11:12:06:201 CC [MS->NW] CC\_\_RELEASE\_COMPLETE  OTA 711102 92927427 11:12:06:801 ADR\_FDD [NW->MS] FDD\_RRC\_\_RRC\_CONNECTION\_RELEASE\_DCCH  OTA 723605 92934937 11:12:07:207 EMM\_NASMSG [MS->NW] EMM\_Tracking\_Area\_Update\_Request(EPS update type="EMM\_UPDATE\_TYPE\_COMBINED\_TAU\_IMSI\_ATTACH", active flag="KAL\_FALSE")  OTA 725190 92935555 11:12:07:207 EMM\_NASMSG [NW->MS] EMM\_Tracking\_Area\_Update\_Accept(EPS update result="EMM\_UPDATE\_RESULT\_COMBINED\_UPDATED")  OTA 725660 92935600 11:12:07:207 EMM\_NASMSG [MS->NW] EMM\_Tracking\_Area\_Update\_Complete  **// MT CM VoLTE**  Type Index Time Local Time Module Message Comment Time Differences  SIP 34 92595908 11:11:39:156 [NW->MS][P1][S1]INVITE sip:[2409:8100:0C90:09B3:165E:935C:89BA:C63A]:50013 SIP/2.0  SIP 35 92596064 11:11:39:156 [MS->NW][P1][S1]SIP/2.0 100 Trying  SIP 36 92597000 11:11:39:356 [MS->NW][P1][S1]SIP/2.0 183 Session Progress  SIP 41 92623090 11:11:40:960 [MS->NW][P1][S1]SIP/2.0 180 Ringing  SYS 702512 92665500 11:11:43:569 NIL [AT\_RX p41,ch3]ATA  SIP 42 92665661 11:11:43:569 [MS->NW][P1][S1]SIP/2.0 200 OK  SIP 43 92667734 11:11:43:769 [NW->MS][P1][S1]ACK sip:+8615701366284@[2409:8100:0C90:09B3:165E:935C:89BA:C63A]:50013 SIP/2.0  **// MT端信噪比良好，但是搜索[RTP][VOICE][DL]没有发现在时间点11:11:43:769之后的任何下行RTP包，需要MTK查看异常原因！！！！**  PS 426099 92465525 11:11:30:945 LTECSR [RTP][VOICE][DL] recv ok, sn=12259, pt=108, ts=0x3c53d468, ssrc=0x7f902e05, len=44, call\_id=1, DSCP=0x30  PS 903120 92982009 11:12:03:971 LTECSR [RTP][VOICE][DL] call\_id=1 no\_dl\_ms(20000) > threshold(96)  PS 712890 92670065 11:11:43:969 ERRC\_MOB [MRM] store PCell: earfcn[41134] pci[25] rsrp[-352] rsrq[-29] sinr[96] snr[95] rs\_sinr[91] cell\_off[0] cell\_state[0] rsrq\_on\_all\_symbols=[KAL\_FALSE] rsrq\_wideband=[KAL\_FALSE]  PS 713364 92670674 11:11:43:969 ERRC\_MOB [MRM] store PCell: earfcn[41134] pci[25] rsrp[-351] rsrq[-29] sinr[102] snr[97] rs\_sinr[91] cell\_off[0] cell\_state[0] rsrq\_on\_all\_symbols=[KAL\_FALSE] rsrq\_wideband=[KAL\_FALSE]  SIP 48 93020063 11:12:06:371 [MS->NW][P1][S1]BYE sip:[2409:8010:8C10:0001:1005:1005:0000:0000]:9900;Hpt=9112\_16;CxtId=4;TRC=ffffffff-ffffffff SIP/2.0  SIP 49 93021301 11:12:06:371 [NW->MS][P1][S1]SIP/2.0 200 OK  MTK分析  接通后主叫3G端信号质量良好，底层无异常上报，对端MT这边LTE CSR没有收到DL RTP语音包，底层检查对应时间点层二接收状态连续，目前来看属于网络下行漏发语音包。  MO:  Type Index Time Local Time Module Message Comment Time Differences  OTA 502555 92421413 11:11:34:389 EMM\_NASMSG [MS->NW] EMM\_Extended\_Service\_Request(service type="MO\_CSFB", CSFB response="CSFB\_UNUSED")  OTA 516405 92452282 11:11:36:398 CC [MS->NW] CC\_\_SETUP  OTA 516968 92454616 11:11:36:599 CC [NW->MS] CC\_\_CALL\_PROCEEDING  OTA 522054 92477432 11:11:38:001 CC [NW->MS] CC\_\_ALERTING  OTA 531567 92520557 11:11:40:801 CC [NW->MS] CC\_\_PROGRESS  OTA 543987 92568057 11:11:43:801 CC [NW->MS] CC\_\_CONNECT  OTA 543990 92568057 11:11:43:801 CC [MS->NW] CC\_\_CONNECT\_ACKNOWLEDGE  **PS 652089 92813691 11:11:59:401 MEME\_FDD MEME: PSC 248, RSCP -65 (-66), EcN0 -9 (-8), RRC\_FDD\_DB\_CellType\_monitored, SyncInfo(1), TM(26112), OFF(2), CIO 0, dbIdx 115, active 1**  PS 669196 92840254 11:12:01:201 MEME\_FDD MEME: PSC 241, RSCP -62 (-62), EcN0 -3 (-3), RRC\_FDD\_DB\_CellType\_monitored, SyncInfo(1), TM(26369), OFF(2), CIO 0, dbIdx 128, active 1  PS 688077 92876191 11:12:03:401 MEME\_FDD MEME: PSC 241, RSCP -57 (-57), EcN0 -2 (-2), RRC\_FDD\_DB\_CellType\_monitored, SyncInfo(1), TM(26368), OFF(2), CIO 0, dbIdx 128, active 1  PS 697375 92890254 11:12:04:401 MEME\_FDD MEME: PSC 241, RSCP -70 (-70), EcN0 -5 (-5), RRC\_FDD\_DB\_CellType\_monitored, SyncInfo(1), TM(26368), OFF(2), CIO 0, dbIdx 128, active 1  PS 701105 92902755 11:12:05:201 MEME\_FDD MEME: PSC 241, RSCP -73 (-72), EcN0 -6 (-6), RRC\_FDD\_DB\_CellType\_monitored, SyncInfo(1), TM(26368), OFF(2), CIO 0, dbIdx 128, active 1  OTA 703986 92912239 11:12:05:801 CC [MS->NW] CC\_\_DISCONNECT  MT:  \*\*\*SIP 160 92595908 11:11:39:251 [NW->MS][P1][S1]INVITE sip:[2409:8100:0C90:09B3:165E:935C:89BA:C63A]:50013 SIP/2.0  OTA 3185295 92616739 11:11:40:654 ESM [NW->MS] ESM\_MSG\_ACTIVATE\_DEDICATED\_EPS\_BEARER\_CONTEXT\_REQUEST (PTI:0, EBI:7)  \*\*\*SIP 170 92667861 11:11:43:864 [NW->MS][P1][S1]INVITE sip:+8615701366284@[2409:8100:0C90:09B3:165E:935C:89BA:C63A]:50013 SIP/2.0  **// MTK查看下行语音接收正确的方式是确定下行UM包是否连续- RLC UM包连续，则说明接收不存在丢包问题**  **PS 3224362 92668172 11:11:43:864 ERRC\_CHM [CHM] ENDC: is\_ext\_inf[0] [DRB\_1] rb\_idx[2], epsid[7], BearerType[MCG\_BEARER\_LTE\_PDCP]**  **\*\*\*L2 1005953 92670604 11:11:44:128 [ERLCDL][PDU] rx UM10 PDU (rb\_idx=2,sn=0,len=5,e=0,fi=0)**  **\*\*\*L2 1006081 92670917 11:11:44:128 [ERLCDL][PDU] rx UM10 PDU (rb\_idx=2,sn=1,len=6,e=0,fi=0)**  **\*\*\*L2 1006187 92671151 11:11:44:128 [ERLCDL][PDU] rx UM10 PDU (rb\_idx=2,sn=2,len=6,e=0,fi=0)**  **\*\*\*L2 1006388 92671386 11:11:44:128 [ERLCDL][PDU] rx UM10 PDU (rb\_idx=2,sn=3,len=9,e=0,fi=0)**  \*\*\*L2 1023506 92716073 11:11:46:989 [ERLCDL][PDU] rx UM10 PDU (rb\_idx=2,sn=4,len=9,e=0,fi=0)  \*\*\*L2 1033231 92740136 11:11:48:622 [ERLCDL][PDU] rx UM10 PDU (rb\_idx=2,sn=5,len=9,e=0,fi=0)  \*\*\*L2 1036123 92748495 11:11:49:057 [ERLCDL][PDU] rx UM10 PDU (rb\_idx=2,sn=6,len=6,e=0,fi=0)  \*\*\*L2 1049933 92784823 11:11:51:431 [ERLCDL][PDU] rx UM10 PDU (rb\_idx=2,sn=7,len=9,e=0,fi=0)  \*\*\*L2 1063752 92820760 11:11:53:597 [ERLCDL][PDU] rx UM10 PDU (rb\_idx=2,sn=8,len=9,e=0,fi=0)  \*\*\*L2 1086581 92877948 11:11:57:402 [ERLCDL][PDU] rx UM10 PDU (rb\_idx=2,sn=9,len=9,e=0,fi=0)  \*\*\*L2 1097758 92905777 11:11:59:072 [ERLCDL][PDU] rx UM10 PDU (rb\_idx=2,sn=10,len=9,e=0,fi=0)  \*\*\*L2 1108103 92932323 11:12:00:751 [ERLCDL][PDU] rx UM10 PDU (rb\_idx=2,sn=11,len=9,e=0,fi=0)  \*\*\*L2 1128379 92985760 11:12:04:199 [ERLCDL][PDU] rx UM10 PDU (rb\_idx=2,sn=12,len=9,e=0,fi=0)  \*\*\*SIP 174 93020063 11:12:06:466 [MS->NW][P1][S1]BYE sip:[2409:8010:8C10:0001:1005:1005:0000:0000]:9900;Hpt=9112\_16;CxtId=4;TRC=ffffffff-ffffffff SIP/2.0  OTA 3445954 93022799 11:12:06:666 ESM [NW->MS] ESM\_MSG\_DEACTIVATE\_EPS\_BEARER\_CONTEXT\_REQUEST (PTI:0, EBI:7) |

### VoLTE通话过程中20s无下行RTP包自动挂断

MTK设计：20s无RTP包，自动发送BYE。

[AGATE-3968](https://jira.n.xiaomi.com/browse/AGATE-3968) FT\_K11T\_Nanjing\_卡1单卡NSA CU 5V，视频通话时MO端翻转手机画面卡顿随后掉话\_(rate:1/3)\_0513

|  |
| --- |
| **MO端20s收不到下行RTP语音和视频包，自动挂断通话。MT端有正常收发RTP包。网络侧转发问题。如果高概率发生，请使用对比机在相同条件下复测。**  // MO  Type Index Time Local Time Module Message Comment Time Differences  SYS 928178 1572665 14:56:17:632 NIL [AT\_RX p61,ch3]ATD17512528105;  SIP 23 1572837 14:56:17:632 [MS->NW][P1][S1]INVITE tel:17512528105;phone-context=ims.mnc001.mcc460.3gppnetwork.org SIP/2.0  SIP 30 1602719 14:56:19:633 [NW->MS][P1][S1]SIP/2.0 180 Ringing  SIP 31 1638346 14:56:21:835 [NW->MS][P1][S1]SIP/2.0 200 OK  SIP 32 1638491 14:56:21:835 [MS->NW][P1][S1]ACK sip:Anonymous@[2408:8141:8000:1:1::118]:5062;transport=TCP;zte-did=6-1-20481-3388-12-929-2772;zte-uid=200000+8617602533951 SIP/2.0  // 最后一包下行的语音包  **PS 1937533 3116001 14:57:56:467 LTECSR [RTP][VOICE][DL] recv ok, sn=1468, pt=96, ts=0xc2380, ssrc=0x7a98d717, len=19, call\_id=1, DSCP=0xb8**  **// 20s没有再收到任何下行RTP包，MO端自动发送BYE挂机**  **SYS 2236519 3584953 14:58:26:467 NIL [AT\_URC p59,ch1]+ECPI: 1,133,0,0,0,20,"17512528105",129,"",16**  => Decode:Call Progress Information +ECPI  <call\_id> : 1  <msg\_type> : 133(State: Disconnected)  <is\_ibt, in band tone> : 0(NO)  <is\_tch> : 0(NO)  <dir> : 0(MO Call)  <call\_mode> : 20(IMS\_VOICE\_CALL)  <number> : "17512528105"  <call\_type> : 129(National)  <pau, P asserted URI> : ""  <disconnect cause> : 16  **SIP 77 3585002 14:58:26:467 [MS->NW][P1][S1]BYE sip:+8617512528105@[2408:8141:8000:1:1::118]:5062;transport=TCP;zte-did=6-1-20481-3388-12-929-2772;zte-uid=200000+8617602533951 SIP/2.0**  **Reason: RELEASE\_CAUSE;cause=2;text="RTP/RTCP Timeout"**  SIP 78 3616134 14:58:28:468 [MS->NW][P1][S1]BYE sip:+8617512528105@[2408:8141:8000:1:1::118]:5062;transport=TCP;zte-did=6-1-20481-3388-12-929-2772;zte-uid=200000+8617602533951 SIP/2.0  SIP 79 3678634 14:58:32:469 [MS->NW][P1][S1]BYE sip:+8617512528105@[2408:8141:8000:1:1::118]:5062;transport=TCP;zte-did=6-1-20481-3388-12-929-2772;zte-uid=200000+8617602533951 SIP/2.0  SIP 80 3803633 14:58:40:472 [MS->NW][P1][S1]BYE sip:+8617512528105@[2408:8141:8000:1:1::118]:5062;transport=TCP;zte-did=6-1-20481-3388-12-929-2772;zte-uid=200000+8617602533951 SIP/2.0  **// MT**  Type Index Time Local Time Module Message Comment Time Differences  SIP 16 1591480 14:56:17:841 [NW->MS][P1][S2]INVITE sip:[2408:853e:580:ad8:167e:8ddb:2690:71ca]:50001 SIP/2.0  SIP 18 1592591 14:56:17:841 [MS->NW][P1][S2]SIP/2.0 183 Session Progress  SYS 867739 1644870 14:56:21:244 NIL [AT\_RX p61,ch3]ATA  SIP 25 1652259 14:56:21:644 [NW->MS][P1][S2]ACK sip:+8617512528105@[2408:853e:580:ad8:167e:8ddb:2690:71ca]:50001 SIP/2.0  PS 2454622 3581379 14:58:25:086 LTECSR [RTP][VOICE][UL] send ok sn=1948, pt=96, ts=0xfb4a0, ssrc=0x7a98d717, len=19, call\_id=1  PS 2456039 3583879 14:58:25:286 LTECSR [RTP][VOICE][UL] send ok sn=1949, pt=96, ts=0xfb9a0, ssrc=0x7a98d717, len=19, call\_id=1  PS 2458910 3588881 14:58:25:686 LTECSR [RTP][VOICE][UL] send ok sn=1951, pt=96, ts=0xfc3a0, ssrc=0x7a98d717, len=19, call\_id=1  PS 2460368 3591382 14:58:25:686 LTECSR [RTP][VOICE][UL] send ok sn=1952, pt=96, ts=0xfc8a0, ssrc=0x7a98d717, len=19, call\_id=1  **PS 2461591 3593165 14:58:25:886 LTECSR [RTP][VOICE][DL] recv ok, sn=2087, pt=96, ts=0xfc4e0, ssrc=0x8b00abb9, len=19, call\_id=1, DSCP=0xb8**  PS 2462031 3593885 14:58:25:886 LTECSR [RTP][VOICE][UL] send ok sn=1953, pt=96, ts=0xfcda0, ssrc=0x7a98d717, len=19, call\_id=1  **PS 2463477 3596381 14:58:26:086 LTECSR [RTP][VOICE][UL] send ok sn=1954, pt=96, ts=0xfd2a0, ssrc=0x7a98d717, len=19, call\_id=1**  **SIP 70 3596630 14:58:26:086 [NW->MS][P1][S2]BYE sip:+8617512528105@[2408:853e:580:ad8:167e:8ddb:2690:71ca]:50001 SIP/2.0**  **Reason: RELEASE\_CAUSE;cause= 2;text= "RTP/RTCP Timeout"**  SIP 71 3596908 14:58:26:086 [MS->NW][P1][S2]SIP/2.0 200 OK |

## Meta工具问题

### Meta备份K11T NV数据发生Modem SLA is not verified

相关的MTK case：ALPS05726156

如果需要消除此提示，需要将make/projects/XIAOMI\_R0MP2\_K6893PV1\_64(NLWCG\_CUSTOM).mak文件中做如下修改。

META\_SLA\_ENHANCEMENT = SLA\_BIND\_TO\_AP\_SBC // 默认值

修改为：

META\_SLA\_ENHANCEMENT = OFF

 META\_SLA\_ENHANCEMENT=ON

这是为了防止工具乱修改重要NV  值， 所以会对tool进行校验。需要过了meta modem SLA 鉴权，才会被处理，用于保护meta modem cmd，

## MTK编译相关问题

### 查看目前所有定义过的宏

编译Modem后，在如下目录文件中搜索

mcu/build/XIAOMI\_R0MP2\_K6893PV1\_64/NLWCG\_CUSTOM/bin/log/info.log

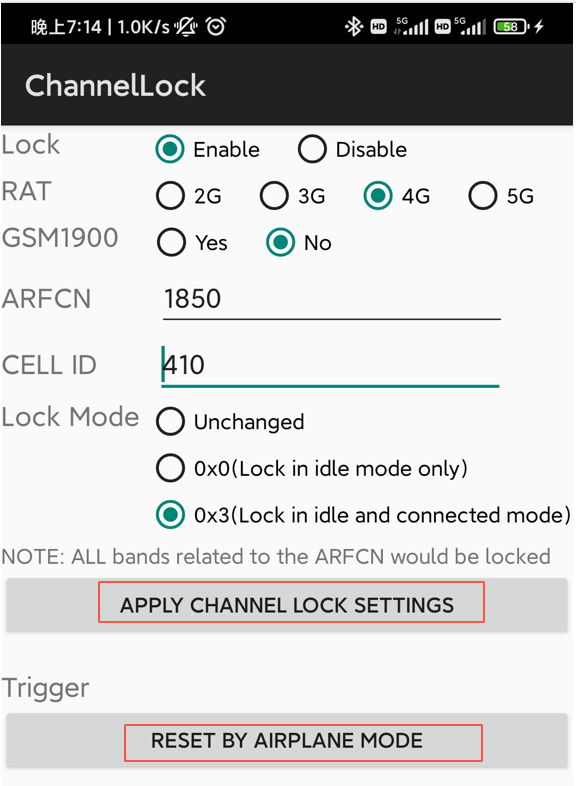
## MTK工程模式相关

### 锁频点

\*#\*#3646633#\*#\* -> Telephony -> Channel Lock-> 选择SIM卡 -> 按照下述界面设置。

Lock状态，RAT选择，ARFCN设置，Cell ID设置(即Log中的PCI)，Lock Mode设置。

设置参数完成后，先点击Apply Channel lock settings,然后点击Reset by airplane mode,使配置生效。



### 如何通过工程模式发送AT命令

#### CDS方式

#### AT Command Tool

打开MTK工程模式，在Telephony菜单-> AT Command Tool-> 右上角三个点-> Choose config file.



看到的文件是：/storage/emulated/0/config.txt

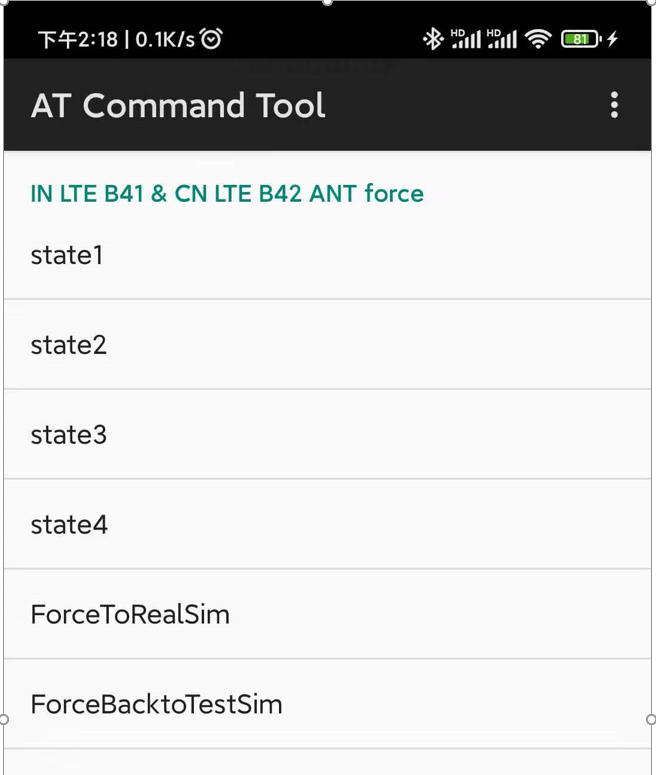
这个文件和位置只能通过编辑的方式修改，为了不引入其他问题，这里直接将此文件从手机内导出。

执行命令：adb pull /storage/emulated/0/config.txt . (注意后面有个点，表示当前目录)

文件打开后内容如下。

|  |
| --- |
| IN LTE B41 & CN LTE B42 ANT force  state1  AT+EGMC=1,"lte\_tdd\_tx\_rx",1,1,0  state2  AT+EGMC=1,"lte\_tdd\_tx\_rx",1,2,0  state3  AT+EGMC=1,"lte\_tdd\_tx\_rx",1,3,0  state4  AT+EGMC=1,"lte\_tdd\_tx\_rx",1,4,0  ForceToRealSim  AT+ETESTSIM=2,1  ForceBacktoTestSim  AT+ETESTSIM=2,0 |

上述格式在AT Command Tool中加载后为如下界面。



顶格书写，表示标题。

空一格：按钮

空两格：AT命令

将需要执行的AT命令以这种形式填入到config.txt文件中。

然后通过adb再次推入到之前的目录中。

adb push config.txt /storage/emulated/0/

#### ELT在线方式

#### 串口工具

### 将测试SIM卡强制识别为正常USIM卡

MTK提供了两种方法。

#### [FAQ25184] How to enable force test sim?

By following above procedure test sim can be detected as real sim.

To revert the changes, tester can follow the following procedure:

Use keystring app to enter EM menu --> UE Setting & Info --> Setting --> Protocol --> GCF --> Force Real Sim Mode --> Reboot.

该设置方法目前工程模式中找不到对应的按钮。

#### AT命令设置

我內部有看到另外一種作法:

AT+ETESTSIM=2,1  // force real sim

不過請注意，測試完，請把值改回來。不然之後在儀器測驗，會被當作real SIM，很可能會有不預期錯誤。

AT+ETESTSIM=2,0  // force real sim

测试Log

|  |
| --- |
| // 需要查看sim type是否为SIM\_TYPE\_USIM，2g4 afr status是否为1  OTA 232459 2807098 16:10:58:796 RRM\_FDD [NW->MS] RR\_\_CHANNEL\_RELEASE  PS 233235 2809338 16:10:58:997 MRS [AFR\_NR][MRS] 2g4 afr status now[1] (0: inactive, 1: active), test mode[PS\_CONF\_TEST\_NONE], sim type[SIM\_TYPE\_USIM], 2g4\_afr\_enable\_in\_test\_mode[0]  PS 233239 2809338 16:10:58:997 MRS [AFR\_NR][MRS] 2g4 afr status now[1] (0: inactive, 1: active), test mode[PS\_CONF\_TEST\_NONE], sim type[SIM\_TYPE\_USIM], 2g4\_afr\_enable\_in\_test\_mode[0]  PS 233541 2809349 16:10:58:997 MRS [AFR\_NR][MRS] 2g4 afr status now[1] (0: inactive, 1: active), test mode[PS\_CONF\_TEST\_NONE], sim type[SIM\_TYPE\_USIM], 2g4\_afr\_enable\_in\_test\_mode[0]  PS 233550 2809349 16:10:58:997 MRS [AFR\_NR][MRS] 2g4 afr status now[1] (0: inactive, 1: active), test mode[PS\_CONF\_TEST\_NONE], sim type[SIM\_TYPE\_USIM], 2g4\_afr\_enable\_in\_test\_mode[0]  OTA 235643 2811237 16:10:58:997 ERRC\_SYS [NW->MS] SystemInformationBlockType1 (EARFCN[1400], PCI[409])  OTA 246815 2812685 16:10:59:211 EMM\_NASMSG [MS->NW] EMM\_Tracking\_Area\_Update\_Request(EPS update type="EMM\_UPDATE\_TYPE\_COMBINED\_TAU\_IMSI\_ATTACH", active flag="KAL\_TRUE")  **// 测试卡的Log**  Type Index Time Local Time Module Message Comment Time Differences  PS 548652 282741099 16:47:49:242 MRS [AFR\_NR][MRS] 2g4 afr status now[0] (0: inactive, 1: active), test mode[PS\_CONF\_TEST\_NONE], sim type[SIM\_TYPE\_TEST\_USIM], 2g4\_afr\_enable\_in\_test\_mode[0]  PS 548656 282741099 16:47:49:242 MRS [AFR\_NR][MRS] 2g4 afr status now[0] (0: inactive, 1: active), test mode[PS\_CONF\_TEST\_NONE], sim type[SIM\_TYPE\_TEST\_USIM], 2g4\_afr\_enable\_in\_test\_mode[0]  PS 548660 282741099 16:47:49:242 MRS [AFR\_NR][MRS] 2g4 afr status now[0] (0: inactive, 1: active), test mode[PS\_CONF\_TEST\_NONE], sim type[SIM\_TYPE\_TEST\_USIM], 2g4\_afr\_enable\_in\_test\_mode[0] |

## MTK锁卡流程

### 锁卡和解锁的流程

### AT命令整理

### J22锁卡项目介绍

该流程需要整理。

03-03 15:04:46.743537 1202 1279 I AT : [1] AT< +ESMLSTATUS: 3, 1, 0, 1, 1

+ESMLSTATUS: <lock\_rule>, <lock\_sub\_rule>, <dev\_lock\_state>, <curr\_rule\_policy>, <sim\_validity>

第一个参数是 lock\_rule：

第二个参数是 lock\_sub\_rule ：

MTN operator lock 使用的规则是 9,0 这个是固定的

第三个参数dev\_lock\_state 锁的状态：

0 LOCKED

1 UNLOCKED

第四个参数：显示当前协议的最大可能能力

0 Unknown

1 Full Service

2 CS Only

3 PS Only

4 ECC Only

5 No Service

第5个参数是sim\_validity，你可以根据这参数判断是 MTN 卡 还是 non MTN 卡

0 Unknown

1 Valid

2 Invalid

3 No SIM inserted

### 锁卡变化NVRAM空间的副作用

ALPS05390575

## SIM相关问题

### SIM卡掉卡问题

[MIUIROM-135030](https://jira.n.xiaomi.com/browse/MIUIROM-135030) J22\_R\_NJ\_通话过程中手机自动关机\_一次\_V12.5.0.14.RJEJPSB

|  |
| --- |
| 从 Log：MDLog1\_2021\_0610\_161358 看，发生了 “[ERR]CMD\_TOUT” 掉卡，因为后续救卡一直是 “[ERR]No ATR”，说明发生了真正的掉卡。  结合下面的 SOP，此次掉卡后，一直收不到 ATR，符合第 2 点的掉卡情况。需要HW 进来参考如下方向排查硬件问题。    出现掉卡通常是 HW 引起的问题：  1. 若每次救卡都可以收到卡回的 ATR 数据，一直在掉卡和救卡之间反复，很大可能是 IO 受到干扰导致，可以尝试一些抗干扰的方法来解决；  2. 若每次救卡连卡的 ATR 都收不到，很有可能是真正出现了“掉卡”，即卡与卡槽接触不良，可以尝试在卡背面贴几张纸片，确保卡与卡槽紧密接触再来测试。  Type Index Time Local Time Module Message Comment Time Differences  PS 161907 271399351 16:14:16:836 SIM APDU\_tx 0: 80 F2 00 00 00  PS 172473 271420912 16:14:18:236 SIM\_DRV [SIM\_DRV:0][ERR]CMD\_TOUT  PS 172491 271420916 16:14:18:236 SIM\_DRV turn off vsim0  PS 173673 271423259 16:14:18:436 SIM SIM Card lost detected from driver  SYS 173674 271423259 16:14:18:436 NIL SIM: 0000  PS 173695 271423265 16:14:18:436 SIM - BIP\_SIM\_MGR MSG\_ID\_SIM\_ERROR\_IND SIM\_FAST\_RECOVERY\_START  PS 173696 271423265 16:14:18:436 SIM SIM reset - reset vol:4 warm reset: 0 !!  PS 174100 271424214 16:14:18:436 SIM\_DRV [SIM\_DRV:0][ERR]No ATR  PS 178817 271433665 16:14:19:036 SIM SIM\_Fast\_Recovery fail  PS 178820 271433665 16:14:19:036 SIM SIM reset - reset vol:4 warm reset: 0 !!  PS 179393 271434615 16:14:19:036 SIM\_DRV [SIM\_DRV:0][ERR]No ATR  PS 183846 271444072 16:14:19:636 SIM SIM\_Fast\_Recovery fail  PS 183849 271444072 16:14:19:636 SIM SIM reset - reset vol:4 warm reset: 0 !!  PS 189416 271454477 16:14:20:436 SIM SIM\_Fast\_Recovery fail  PS 189551 271454486 16:14:20:436 SIM - SIMMNGR MSG\_ID\_SIM\_ERROR\_IND SIM\_CARD\_REMOVED  PS 189563 271454486 16:14:20:436 SIM sim\_start\_recovery\_timer()  PS 237690 271589031 16:14:29:085 SIM\_DRV [SIM\_DRV:0][ERR]No ATR    Thanks |

### 测试卡强制设置为实际SIM卡

目前在测试国际运营商入库测试用例时，都是使用测试SIM进行。但是MTK有些功能在测试卡上不支持，需要通过额外设置将测试卡强制转换为实际SIM测试。

#### 如何确认当前插入卡为测试卡

* + - 1. 通过system trace中上报的AT命令判断

|  |
| --- |
| SYS 37876 51458 11:26:08:628 NIL [ATCI\_AT\_U\_0 s68]+ETESTSIM: 1  SYS 41625 53672 11:26:08:830 NIL [ATCI\_AT\_U\_1 s68]+ETESTSIM: 0  Note:  +ETESTSIM: 1 means Test SIM |

* + - 1. 在PS Integrated中搜索

|  |
| --- |
| PS 2729 9789823 10:36:15:967 D2AM test sim = 1 // 1为test SIM |

#### 如何强制将Test SIM转换为Real SIM

通过如下AT命令将可将Test SIM强制转换为Real SIM。使用完成后需要恢复。

|  |
| --- |
| ForceToRealSim  AT+ETESTSIM=2,1 // 将Test SIM强制转换为Real SIM  ForceBacktoTestSim  AT+ETESTSIM=2,0 // 恢复Test SIM的识别 |

## MTK掉网上报

[AGATE-5803](https://jira.n.xiaomi.com/browse/AGATE-5803) FT\_K11T\_XiaMen\_移动5G主卡（非Volte）+移动5G NSA VoLTE副卡，关闭主卡的Volte开关，第一次进行主卡CSFB通话，MO和MT端主卡高概率通话结束后显示脱网4-5s（5/6）\_0604

CSFB结束后，AFR在注册LTE时，网络RRCConnectionRelease导致Modem上报掉网。

|  |
| --- |
| Type Index Time Local Time Module Message Comment Time Differences  SYS 244274 459727514 19:27:19:482 NIL [AT\_RX p61,ch3]ATD15022589711; 19.431232  SYS 335203 460025952 19:27:38:554 NIL [AT\_URC p59,ch1]+EGREG: 1,"006025","000001D63",1,"00",0,0,12,2,1,0,0 00.331200  OTA 341645 460027557 19:27:38:554 EMM\_NASMSG [MS->NW] EMM\_Attach\_Request(EPS attach type="EMM\_ATTACH\_TYPE\_COMBINED\_ATTACH") 00.228480  OTA 348994 460030666 19:27:38:754 ERRC\_CONN [NW->MS] ERRC\_RRCConnectionRelease(EARFCN[1300], PCI[314])(cause:[ReleaseCause\_other], redirectInfo:[0]) 00.029504  PS 349405 460030946 19:27:38:754 EMM [EMM COMMON] EMM mainstate: EM\_EMM\_MAINSTATE\_EMM\_DEREGISTERED || EMM substate: EM\_EMM\_SUBSTATE\_ATTEMPTING\_TO\_ATTACH 00.011584  SYS 351736 460031127 19:27:38:754 NIL [AT\_URC p59,ch1]+EGREG: 0,"006025","00436974B",4096,"FF",0,0,0,2,1,0,0 00.000000(base)  PS 375226 460191455 19:27:49:099 EMM [EMM COMMON] EMM mainstate: EM\_EMM\_MAINSTATE\_EMM\_REGISTERED\_INITIATED || EMM substate: EM\_EMM\_SUBSTATE\_INVALID 10.260992  OTA 375295 460191458 19:27:49:099 EMM\_NASMSG [MS->NW] EMM\_Attach\_Request(EPS attach type="EMM\_ATTACH\_TYPE\_COMBINED\_ATTACH") 10.261184  OTA 384038 460203940 19:27:49:901 EMM\_NASMSG [NW->MS] EMM\_Attach\_Accept(EPS attach result="EMM\_ATTACH\_RESULT\_COMBINED\_ATTACHED") 11.060032  SYS 389625 460204815 19:27:49:901 NIL [AT\_URC p59,ch1]+EGREG: 1,"006025","00436974B",4096,"FF",0,0,0,2,1,0,0 11.116032 |

## MTK补充服务

<https://online.mediatek.com/QuickStart/QS00136#QSS01396>

Dear Customer:

补充服务问题分析思路固定且单一

通过分析 fail log, 确认参数(对比机 log 或询问运营商)，修改对应参数，即可解决大部分测项 fail 问题

我司已准备丰富详尽的学习资料 (eCourse/QuickStart)，请自行学习解决

运营商参数配置确认类问题请参考：<https://online.mediatek.com/QuickStart/QS00136#QSS02649>

**Debug SOP (log 分析步骤)**

<https://online.mediatek.com/QuickStart/QS00136#QSS01409>

**运营商 UT 配置 (运营商配置表格与 code 对应关系)**

<https://online.mediatek.com/QuickStart/QS00136#QSS02649>

**Domain Selection (补充服务 CS/PS/TB Solution 客制化方法)**

<https://online.mediatek.com/QuickStart/QS00136#QSS01387> (LR12A LR13)

<https://online.mediatek.com/QuickStart/QS00136#QSS01393> (NR15)

<https://online.mediatek.com/QuickStart/QS00136#QSS02641> (CS/PS/TB 同步说明)

**XCAP APN 配置**

<https://online.mediatek.com/QuickStart/QS00136#QSS01396>

**XCAP(UT) 参数**

<https://online.mediatek.com/QuickStart/QS00136#QSS02653> (XCAP XML 分析方法)

<https://online.mediatek.com/QuickStart/QS00136#QSS01394> (UT 参数配置方法)

**XCAP Error Code (Server 回 409/404 等)**

<https://online.mediatek.com/QuickStart/QS00136#QSS01402>

**eCourse : MediaTek On-Line > eCourse Home > SW > Modem-Protocol > Call**

<https://online.mediatek.com/Pages/eCourse.aspx?001=002&002=002012&003=002012001>

  [IMS SS][SSDS XCAP 简介 LR12A]

  [IMS SS][SSDS XCAP 简介 NR15]

  [IMS SS][SSDS Domain Decision]

  [IMS SS][APN SELECTION]

  [IMS SS]SSDS\_XCAP\_Configure\_NR15

  [IMS SS]SSDS\_XCAP\_Configure\_LR12A

  [IMS SS]XCAP\_XML\_Analysis

Thanks,

MediaTek

## WCDMA通话过程中彩信发送失败

[AGATE-7163](https://jira.n.xiaomi.com/browse/AGATE-7163) K11R-R\_NJ\_WCDMA连接态时，通话中无法收发彩信\_必现\_V12.5.0.10.RKWEUXM

|  |
| --- |
| Dear customer,    目前看应该是已知的网络issue\*。当通话后，部分网络因为带宽受限。优先语音业务。把HS 链路删掉了。可以看到HSDPA stop。语音挂点后恢复。 HSDPA starts\*      另外因为删掉HS后，UL 速率只有8kbps。带宽给UE分配的PS速率非常低。如果稍微大一点彩信文件 或者网页都有可能打不开的。  Type Index Time Local Time Module Message Comment Time Differences  PS 52167 335479291 15:04:24:013 RRCE\_FDD HSDPA reception stops.  OTA 65442 335526770 15:04:27:013 CC [NW->MS] CC\_\_ALERTING  OTA 160027 335786986 15:04:43:815 SM [MS->NW] SM\_\_ACTIVATE\_PDP\_CONTEXT\_REQUEST APN: 3gwap  OTA 167321 335799270 15:04:44:615 ADR\_FDD [NW->MS] FDD\_RRC\_\_RADIO\_BEARER\_SETUP numberOfTbSizeList: 2 items  Item 0  NumberOfTransportBlocks: zero (0)  zero: NULL  Item 1  NumberOfTransportBlocks: one (1)  one: NULL  PS 173466 335809271 15:04:45:215 SLCE\_FDD - URLC\_FDD MSG\_ID\_FDD\_CRLC\_PS\_RATE\_INFO\_REQ 8400  OTA 176600 335814270 15:04:45:415 SM [NW->MS] SM\_\_ACTIVATE\_PDP\_CONTEXT\_ACCEPT  SYS 178737 335814417 15:04:45:415 NIL [AT\_TX p58,ch0]+CGEV: ME PDN ACT 2,2  SYS 178760 335814418 15:04:45:415 NIL [AT\_TX p58,ch0]OK  OTA 357963 336378423 15:05:21:615 CC [MS->NW] CC\_\_DISCONNECT  OTA 358901 336381147 15:05:21:815 CC [NW->MS] CC\_\_RELEASE  OTA 358909 336381147 15:05:21:815 CC [MS->NW] CC\_\_RELEASE\_COMPLETE  PS 368542 336412414 15:05:23:816 RRCE\_FDD HSDPA reception starts. |

# MTK AT命令

参考文档：TS 27.007

《CS6001-DAM1A-UMD-V2.1EN\_Modem\_SW\_Feature\_AT\_Cmd\_Description.pdf》

## 驻网相关命令

### AT+ERAT 驻网模式切换命令

#### Description

AT+ERAT命令为MTK内部私有命令，用于获取当前RAT模式和GSPRS/EDGE的状态，或者设置MS的RAT模式。

#### Format

|  |  |  |
| --- | --- | --- |
| Command | Possible Response(s) | 作用 |
| +ERAT? | +ERAT:<Act>,<GPRS status>,<RAT mode>,<pref\_rat> | 查询当前的工作模式，GPRS状态和优先使用的RAT模式。查询命令不常用。 |
| +ERAT=<RAT mode>[,<prefer\_rat>[,<lock>]] | OK/ERROR | 用于设置MS工作模式和优先驻留的RAT |

#### Field

各个参数的含义

**<Act>: Access technology of current register PLMN - 当前的MS的接入技术、RAT类型、**

0 GSM

2 UTRAN

3 GSM w/EGPRS

4 UTRAN w/HSDPA

5 UTRAN w/HSUPA

6 UTRAN w/HSDPA and HSUPA

7 E-UTRAN

8 EC-GSM-IoT (A/Gb mode)

9 E-UTRAN (NB-S1 mode)

10 E-UTRA connected to a 5GCN

11 NR connected to a 5GCN

12 NR connected to an EPS core

13 NG-RAN

14 E-UTRA-NR dual connectivity

255 unknown

<GPRS status>: 驻留的GPRS的类型

0:GPRS

1:EDGE

<RAT mode>: RAT mode setting of MS – **MS的工作模式，当前工作的那几个模式下，这些模式可以通过选网模块切换**

**0: GSM only**

1: UMTS only

2: GSM + UMTS

3: LTE only

4: GSM + LTE

5: UMTS + LTE

6: GSM + UMTS + LTE // 非电信卡不开5G为此模式

7: C2K only

8: GSM + C2K

9: UMTS + C2K

10: GSM + UMTS + C2K

11:LTE + C2K

12: GSM + LTE + C2K

14: GSM + UMTS + LTE + C2K

15: NR

16: GSM + NR

17: UMTS + NR

18: GSM + UMTS + NR

19: LTE + NR

20: GSM + LTE + NR

21: UMTS + LTE +NR

22: GSM + UMTS + LTE + NR // 非电信卡全模配置

23: NR + C2K

24: GSM + NR + C2K

25: UMTS + NR +C2K

26: LTE + NR + C2K

27: GSM + UMTS + NR + C2K

28: GSM + LTE + NR + C2K

29: UMTS + LTE + NR + C2K

30: GSM + UMTS + LTE + NR + C2K // 支持目前所有的模式

<prefer\_rat>: the field is discarded, please use AT+EPRATL to set prefer RAT list – **设置需要优先驻留的RAT**

0: No prefer

1: GSM prefer

2: UMTS prefer

4: LTE prefer

32: 3GPP2 1xRTT

64: 3GPP2 HRPD

128: NR prefer

<lock> - **是否锁定RAT**

0: unlock ERAT (default)

1: lock ERAT, i.e. cannot set RAT

### AT+EREG 驻网状态

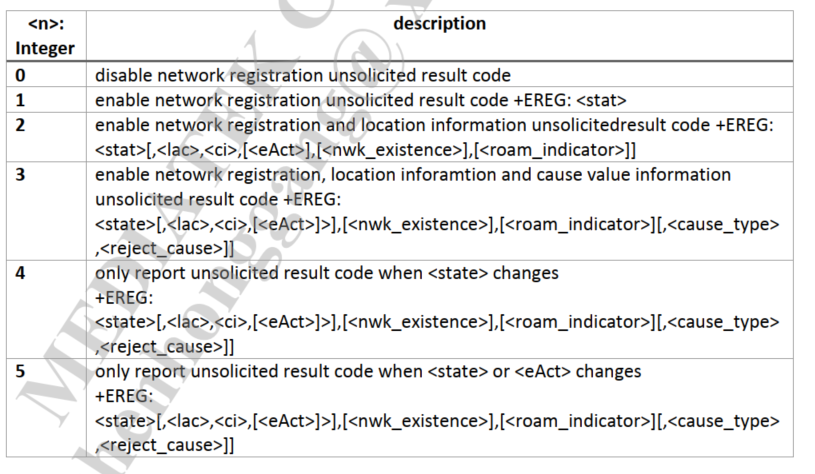
Global Network Registration(Proprietary Command for 3GPP and 3GPP2 Reg status)，全局的注册状态，覆盖到3GPP和3GPP2的注册状态。

#### Format

|  |  |  |
| --- | --- | --- |
| Command | Possible Response(s) | 作用 |
| +EREG=[<n>] |  |  |
| +EREG? | +ERAT:<n>,<stat>[,[<lac>],[<ci>],[eAct],[<nwk\_existence>],[<roaming\_indicator>]  [,<cause\_type>,<reject\_cause>]] | 查询当前的工作模式，GPRS状态和优先使用的RAT模式。查询命令不常用。 |
| +EREG=? | OK/ERROR | 用于设置MS工作模式和优先驻留的RAT |

#### Field

<n>用于设置



<State>：注册以及搜网状态

|  |  |
| --- | --- |
| Integer | description |
| 0 | not registered, MT is not currently searching a new operator to register to |
| 1 | registered, home network (applicable also when <eAct> indicates 1xRTT) |
| 2 | not registered, but MT is currently searching a new operator to register to |
| 3 | registration denied |
| 4 | unknown |
| 5 | registered, roaming (applicable also when <eAct> indicates 1xRTT) |
| 6 | registered for "SMS only", home network (applicable only when <eAct> indicates EUTRAN) |
| 7 | registered for "SMS only", roaming (applicable only when <eAct> indicates EUTRAN) |
| 8 | attached for emergency bearer services only (see NOTE 2) (not applicable) |
| 9 | registered for "CSFB not preferred", home network (applicable only when <eAct> indicates E-UTRAN) |
| 10 | registered for "CSFB not preferred", roaming (applicable only when <eAct> indicates E-UTRAN) |
| 101 | 1xRTT normal service, yet it wait to perform registration. (Mapping”+VSER:0”) |
| 102 | 1xRTT no service, MT is currently searching a new operator to register to (mapping to C2K AT Command “+VSER:1”) |
| 103 | 1xRTT out of service area, MT is not currently searching a new operator to register to (mapping to C2K AT Command “+VSER: 2”) |
| 104 | 1xRTT limited service (mapping to C2K AT Command “+VSER: 3”) |

<lac>：字符串类型，两个字节的位区域码，十六进制格式表示，例如：00C3相当于十进制的195

<ci>：字符串类型，32bit(非5G)或者36bit(5G)的小区ID，以十六进制格式表示。

<eAct>：RAT类型，列表如下。

|  |  |  |
| --- | --- | --- |
| RAT | HEX | DEC |
| L4C\_NONE\_SPECIFIED | 0x0000 | 0 |
| L4C\_GPRS\_SUPPORT | 0x0001 | 1 |
| L4C\_EDGE\_SUPPORT | 0x0002 | 2 |
| L4C\_UMTS\_SUPPORT | 0x0004 | 4 |
| L4C\_HSDPA\_SUPPORT | 0x0008 | 8 |
| L4C\_HSUPA\_SUPPORT | 0x0010 | 16 |
| L4C\_HSDPA\_UPA\_SUPPORT | 0x0018 | 24 |
| L4C\_HSDPAP\_SUPPORT | 0x0020 | 32 |
| L4C\_HSDPAP\_UPA\_SUPPORT | 0x0030 | 48 |
| L4C\_HSUPAP\_SUPPORT | 0x0040 | 64 |
| L4C\_HSUPAP\_DPA\_SUPPORT | 0x0048 | 72 |
| L4C\_HSPAP\_SUPPORT | 0x0060 | 96 |
| L4C\_DC\_DPA\_SUPPORT | 0x0088 | 136 |
| L4C\_DC\_DPA\_UPA\_SUPPORT | 0x0098 | 152 |
| L4C\_DC\_HSDPAP\_SUPPORT | 0x00a0 | 160 |
| L4C\_DC\_HSDPAP\_UPA\_SUPPORT | 0x00b0 | 176 |
| L4C\_DC\_HSUPAP\_DPA\_SUPPORT | 0x00c8 | 200 |
| L4C\_DC\_HSPAP\_SUPPORT | 0x00e0 | 224 |
| L4C\_1XRTT\_SUPPORT | 0x0100 | 256 |
| L4C\_HRPD\_SUPPORT | 0x0200 | 512 |
| L4C\_EHRPD\_SUPPORT | 0x0400 | 1024 |
| L4C\_LTE\_SUPPORT | 0x1000 | 4096 |
| L4C\_LTE\_CA\_SUPPORT | 0x2000 | 8192 |
| L4C\_ENDC\_SUPPORT | 0x4000 | 16384 |
| L4C\_NR\_SUPPORT | 0x8000 | 32768 |
| L4C\_NOT\_CHANGE | 0xffff | 65535 |

<roam\_indicator>: integer type; roam indicator; only valid when <eAct> belongs to C2K

0 roaming on

1 roaming off

### AT+CESQ 信号强度计算

AT+CESQ – Extended Signal Quality (Sec 8.69)

执行命令用于返回信号质量参数。如果当前的服务小区不是GERAN小区，则<rxlev>和<ber>都将设置为99。如果带给你钱的服务小区不是UTRA FDD或者UTRA TDD小区，则<rscp>设置为255。如果当前的服务小区不是UTRA FDD，则<ecno>设置为255。如果当前的服务小区不是E-UTRA小区，则<rsrq>和<rsrp>都设置为255。

Command Possible response(s)

+CESQ +CESQ: <rxlev>,<ber>,<rscp>,<ecno>,<rsrq>,<rsrp>

+CME ERROR: <err>

+CESQ=? +CESQ: (list of supported <rxlev>s),(list of supported

<ber>s),(list of supported <rscp>s),(list of supported

<ecno>s),(list of supported <rsrq>s),(list of supported <rsrp>s)

Field

<rxlev>: integer type, received signal strength level (see 3GPP TS 45.008 [20] subclause 8.1.4).

0 rssi < -110 dBm

1 -110 dBm < rssi < -109 dBm

2 -109 dBm < rssi < -108 dBm

: : : :

61 -50 dBm < rssi < -49 dBm

62 -49 dBm < rssi < -48 dBm

63 -48 dBm < rssi

99 not known or not detectable

<ber>: integer type; channel bit error rate (in percent)

0...7 as RXQUAL values in the table in 3GPP TS 45.008 [20] subclause 8.2.4

99 not known or not detectable

<rscp>: integer type, received signal code power (see 3GPP TS 25.133 [95] subclause 9.1.

and 3GPP TS 25.123 [96] subclause 9.1.1.1.3).

0 rscp < -120 dBm

1 -120 dBm < rscp < -119 dBm

2 -119 dBm < rscp < -118 dBm

: : : :

94 -27 dBm < rscp < -26 dBm

95 -26 dBm < rscp < -25 dBm

96 - 25 dBm < rscp

255 not known or not detectable

<ecn0>: integer type, ratio of the received energy per PN chip to the total received power spectral density (see 3GPP TS 25.133 [95] subclause)

0 Ec/Io < -24 dB

1 -24 dB < Ec/Io < -23.5 dB

2 -23.5 dB < Ec/Io < -23 dB

: : : :

47 -1 dB < Ec/Io < -0.5 dB

48 -0.5 dB < Ec/Io < 0 dB

49 0 dB < Ec/Io

255 not known or not detectable

<rsrq>: integer type, reference signal received quality (see 3GPP TS 36.133 [96] subclause 9.1.7).

0 rsrq < -19.5 dB

1 -19.5 dB < rsrq < -19 dB

2 -19 dB < rsrq < -18.5 dB

: : : :

32 -4 dB < rsrq < -3.5 dB

33 -3.5 dB < rsrq < -3 dB

34 -3 dB < rsrq

255 not known or not detectable

<rsrp>: integer type, reference signal received power (see 3GPP TS 36.133 [96] subclause 9.1.4).

0 rsrp < -140 dBm

1 -140 dBm < rsrp < -139 dBm

2 -139 dBm < rsrp < -138 dBm

: : : :

95 -46 dBm < rsrp < -45 dBm

96 -45 dBm < rsrp < -44 dBm

97 -44 dBm < rsrp

255 not known or not detectable

### AT+ECSQ RAT信号强度上报

目前MTK的信号上报使用的AT命令是+ECSQ，AT+ECSQ命令的使用格式如下：

设置命令：设置+ECSQ主动上报结果码的使能状态。

设置命令的格式：

+ECSQ= <flag>[,<number of RSRP threshold>, <RSRP threshold1>[,…, <RSRPthresholdn>]]

主动上报的两种格式：

GSM/UMTS/LTE/C2K

+ECSQ:<sig1>,<sig2>,<rssi\_in\_qdbm>,<rscp\_in\_qdbm>,<ecn0\_in\_qdbm>,<rsrq\_in\_qdb>,<rsrp\_in\_qdbm> ,<eAct>[,<sig3>[,<serv\_band>]]

<sig1>：类似于CESQ中的rsrp，驻留在C2K则为RSSI。

<sig2>：类似于CESQ中的ber，ecn0

NR

<sig1>,<sig2>,<rssi\_in\_qdbm>,<rscp\_in\_qdbm>,<ecn0\_in\_qdbm>,<ssRsrq\_in\_qdb>,<ssRsrp\_in\_qdbm> ,<eAct>,<ssSinr\_in\_qdb>[,<csiRsrq\_in\_qdb>,<csiRsrp\_in\_qdbm>,<csiSinr\_in\_qdb>]

两种上报格式，根据当前驻留的RAT确定。

sig1和sig2参数意义：

<rsrq\_in\_qdb>,<rsrp\_in\_qdbm>此值需要除以4，取负值得到实际的RSRQ和RSRP。

### AT+EFUN 双卡RadioON/OFF设置

#### Description

此命令用于设置多SIM卡的工作模式。

#### Format

设置命令：

|  |  |  |
| --- | --- | --- |
| Command | Possible Response(s) | 作用 |
| +EFUN=<efun\_state>[,<cause>] | OK/ERROR | 用于设置多卡的工作状态，飞行/在线。 |
| +EFUN? | +EFUN:<efun\_state>  OK | 用于查询当前的多卡工作状态 |

#### Field

efun\_state：每个bit代表一个对应的SIM卡的无线状态。

如果bit值为1，则表示Radio ON，否则表示Radio OFF。

cause：表示RF off的原因值。此原因值将会传递给协议层。

0: unspecified (default value)

1: duplex mode change

2: power off

3: SIM switch

示例：

AT+EFUN=3 // bit0和bit1都设置为1，表示双卡Radio ON

AT+EFUN=0,3 // 双卡Radio OFF，原因值为切换数据卡

### AT+E5GOPT 5G支持能力设置

#### Description

此命令用于设置或者查询5G能力配置。

#### Format

|  |  |  |
| --- | --- | --- |
| Command | Possible Response(s) | 作用 |
| AT+E5GOPT=<N> | OK/ERROR | 用于设置支持的能力 |
| AT+E5GOPT=? | +E5GOPT:<5G\_option> | 用于查询当前卡的5G支持状态 |

#### Field

<N >: integer, sum of bitmap value as bellow.

0x01 LTE

0x02 Option 2 // SA模式

0x05 Option 3 // NSA组网模式，这个模式下必须要支持LTE

Example:

AT+E5GOPT=1 LTE only

AT+E5GOPT=2 enable Opion 2 only without LTE supported

AT+E5GOPT=3 enable Opion 2 only with LTE supported

AT+E5GOPT=5 enable Option 3 only or LTE only // 没有打开SA，都设置为5

AT+E5GOPT=7 enable Option 2 and Option 3

关于此命令后续的优化

MTK case：ALPS05592969

问题点：开启SA+NSA时/切主卡后，AP发送AT+E5GOPT=7，而不是AT+E5GOPT=7,2。关于E5GOPT的描述如下。

         以下為AT+E5GOPT的說明:

         AT+E5GOPT=7,0 : 相當於AT+E5GOPT=7，僅會開啟vg option 2，如果當下有連結，會等到連結被釋放(e.g., NW端主動釋放)，預期連結釋放後，可以透過reselection回到SA。

         AT+E5GOPT=7,1 : 開啟vg option 2的同時會在條件允許下(e.g., 沒有call ongoing)由UE強迫切斷連結，不會等到NW來釋放，預期連結釋放後，可以透過reselection回到SA。

         AT+E5GOPT=7,2 : 開啟vg option 2後，在條件允許下(e.g., 沒有call ongoing, NR為最高priority)主動觸發找網，預期透過找網而非reselection的方式回到SA。回SA网络速度最快。// 目前在UI上开启SA+NSA/切数据主卡后，需要通过此AT命令通知Modem主动搜索SA NR网络。

需要AP侧的修改：

<http://gerrit.pt.mioffice.cn/c/platform/packages/services/MiuiTelephony/+/1363876>

### AT+EFD Fast Dormancy设置

#### Description

此命令用于设置快速休眠功能。

设置命令可以使能/禁止Fast Dormancy，设置定时器，或者通知Modem屏幕的状态。

测试命令用于返回支持的模式。如果返回ERROR，则表示此命令当前不支持。

读取命令用于返回当前Fast Dormancy的模式。

#### Format

|  |  |  |
| --- | --- | --- |
| Command | Possible Response(s) | 作用 |
| AT+EFD=<mode>[,<param1>[,<param2>]] | OK/ERROR | 用于设置Fast Dormancy功能 |
| AT+EFD=? | +E5GOPT:<5G\_option> | 用于查询当前卡的5G支持状态 |
| AT+EFD? |  |  |

<mode>: integer

0 disable modem Fast Dormancy

1 enable modem Fast Dormancy

2 set Fast Dormancy inactivity timer

3 inform modem the screen status

#### Field

### AT+EIAREG 初始附着注册是否发送URC

设置初始注册时是否上报URC。

#### Format

|  |  |  |
| --- | --- | --- |
| Command | Possible Response(s) | 作用 |
| +EIAREG=<Parameter> | +EIAREG:ME ATTACH  <APN>,<PDP\_TYPE>,<APN\_INDEX>  OK  ERROR | 设置初始注册状态发送URC |

#### Field

Parameter:

0 – Will not send URC

1 – Will send Response Message.

### AT+ESIMS 查看SIM卡状态

读取命令返回SIM卡插入的状态。

#### Format

|  |  |  |
| --- | --- | --- |
| Command | Possible Response(s) | 作用 |
| AT+ESIMS? | +ESIMS:<SIM\_INSERTED>  OK | 查看SIM卡插入状态 |
| AT+ESIMS | +ESIMS:<SIM\_INSERTED>  OK | 查看SIM卡插入状态 |
| AT+ESIMS=<mode> | OK | 设置ESIMS是否发送URC |

#### Field

SIM\_INSERTED：

0 – No SIM

1 – Detected

mode：

0 – Disable+ESIMS URC

1 – Disable+ESIMS URC

### AT+ESIMPOWER 启用和关闭SIM卡

开启和关闭SIM卡通过此AT命令下发给Modem。

#### Format

|  |  |  |
| --- | --- | --- |
| Command | Possible Response(s) | 作用 |
| +ESIMPOWER=<sim\_power\_mode > | OK  ERROR/+CME ERROR:<err> | 设置SIM的开启和关闭状态 |

#### Field

<sim\_power\_mode>：整型数据。

0 ： power down SIM – ignore any plug in

1 ： power up SIM for normal behavior

2-9 : reserved for future use

10: disable SIM

11: enable SIM

#### Example

|  |
| --- |
| Type Index Time Local Time Module Message Comment Time Differences  SYS 243032 3748197888 08:07:29:413 NIL [ATCI\_AT\_I\_1 s20]AT+ESIMPOWER=10    PS 243035 3748197889 08:07:29:413 L4C\_2 - SIM\_2 MSG\_ID\_SIM\_AP\_SIMPOWER\_REQ  PS 243036 3748197889 08:07:29:413 SIM\_2 - L4C\_2 MSG\_ID\_SIM\_AP\_SIMPOWER\_CNF  OTA 249983 3748199667 08:07:29:613 EMM\_NASMSG\_2 [MS->NW] EMM\_Service\_Request  OTA 258362 3748204760 08:07:30:013 EMM\_NASMSG\_2 [MS->NW] EMM\_Detach\_Request(Detach type="MO\_COMBINED\_EPS\_IMSI\_DETACH", switch-off="KAL\_TRUE")  OTA 264851 3748205727 08:07:30:013 ERRC\_CONN\_2 [NW->MS] ERRC\_RRCConnectionRelease(EARFCN[1650], PCI[265])(cause:[ReleaseCause\_other], redirectInfo:[0]) |

### AT+ESADM 单AP双卡设置

AP设置Modem支持单卡还是双卡，如果设置的事单卡，则不会激活第二个协议栈。

#### Format

|  |  |  |
| --- | --- | --- |
| Command | Possible Response(s) | 作用 |
| +ESADM? | +ESADM:<mode> | 查询当前的双卡支持状态 |
| +ESDAM=<mode> | OK | 设置Modem支持单卡还是双卡 |

#### Field

mode：

1 - Single SIM Modem

3 - Single SIM Modem

注意：该命令需要在AT+EFUN之前发送，且只需要发送到SIM1 channel

### +ESMLSTATUS 上报SIM ME Lock Rule

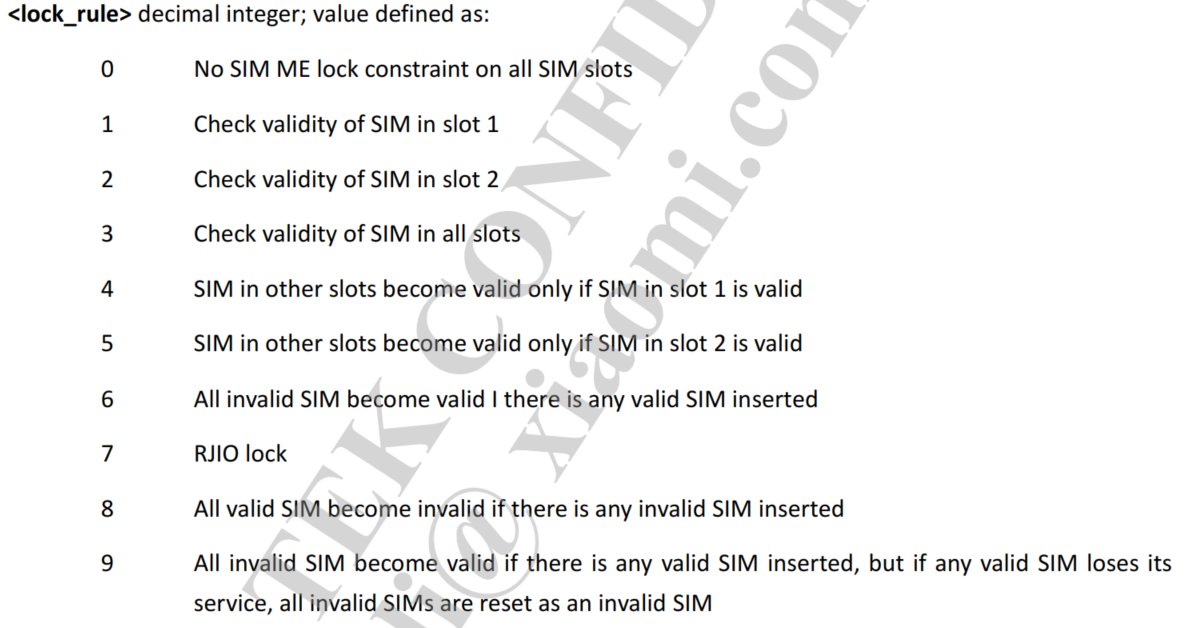
此URC用于上报SIM ME锁的规则设置和当前的锁状态。

#### Format

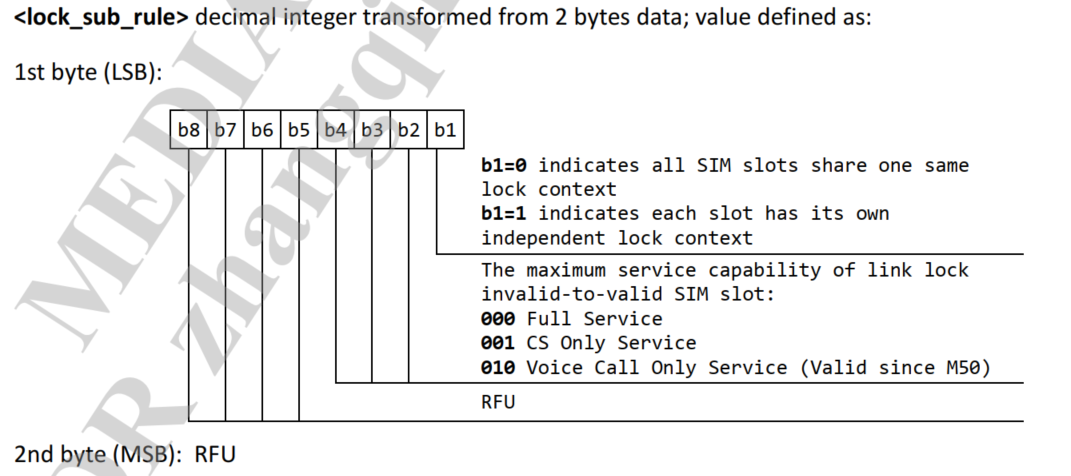
|  |  |
| --- | --- |
| Command | 作用 |
| +ESMLSTATUS:<lock\_rule>,<lock\_sub\_rule>,<dev\_lock\_state>,<curr\_rule\_policy>,<sim\_validity> | 返回当前的锁规则和状态 |

#### Field

<lock\_rule>



<lock\_sub\_rule>



<dev\_lock\_state>:十进制整数，表示当前设备的锁定状态。

0 – Locked

1 – Unlocked

<curr\_rule\_policy>:十进制整数，表示当前协议最大可能的能力

0 – Unknown

1 – Full Servie

2 – CS Only

3 – PS Only

4 – ECC Only

5 – No Service

<sim\_validity>:十进制整数，表示SIM在当前协议规则下是否有效

0 – Unknown

1 – Valid

2 – Invalid

3 – No SIM inserted

### +CGMR 上报当前Modem的版本号

返回一串字符串

AT< +CGMR: MOLY.NR15.R3.TC8.PR1.SP.V1.1.P80, 2021/02/05 10:33 (RIL\_CMD\_READER\_1, tid:515728067920)

### 使能或禁止WIFI

#### Description

此命令用于使能或者禁止WIFI。

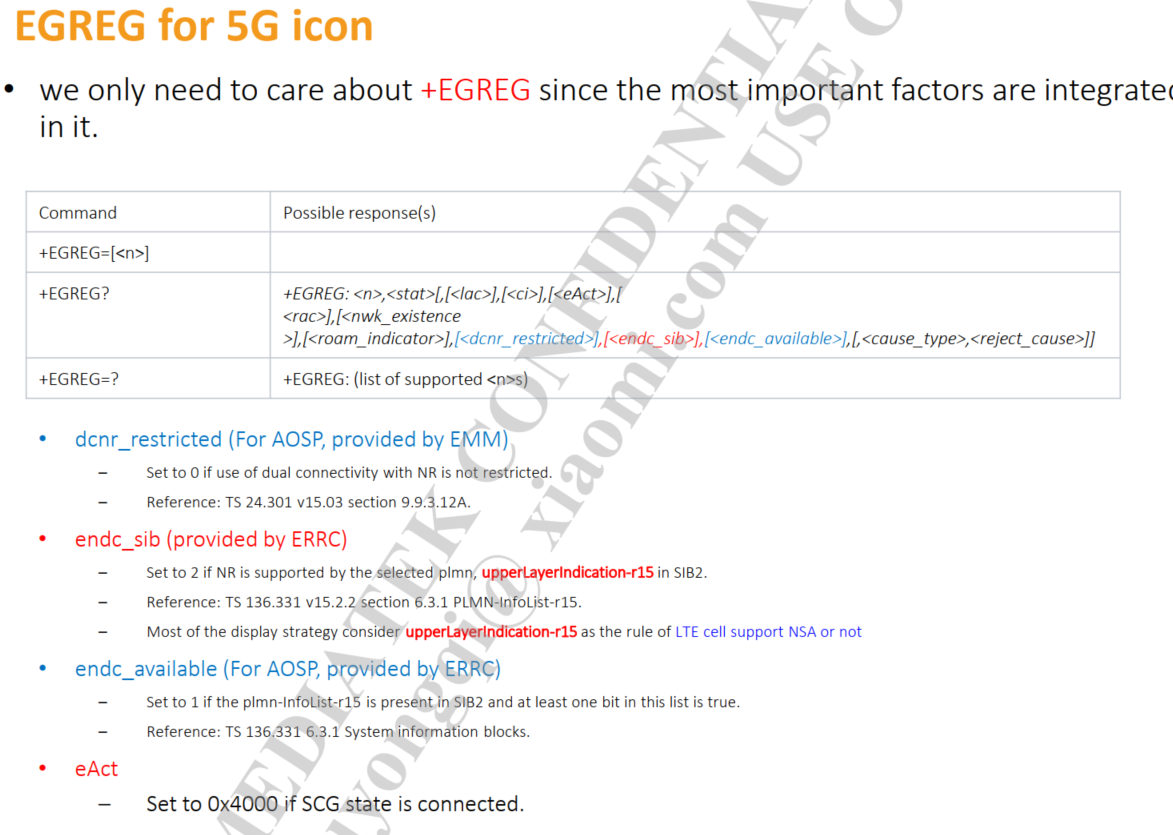
AT> AT+EWIFIEN="wlan0",1,0

**AT+EIMSWIFISTA –WIFI state notification**

### +EGREG NSA 5G图标显示

EGREG用于上报当前的驻网类型，包括5G相关的信息SIB2等用于指示当前5G图标的显示。

#### Field



<n>:需要查看EREG中的n的定义，指示当前的上报格式

<stat>:参考+EREG中的定义

<lac>:字符串类型，两个字节的位置区域码，以十六进制格式。eg.00C3

<ci>:string type：32-bit(without 5G load) or 36-bit(with 5G load)Cell ID，以十六进制格式表示。

<eAct>:参考+EREG

<rac>:字符串类型，一个字节长度的路由区域码，十六进制格式。

<roam\_indicator>:只有在eAct为C2K才生效，默认为255

<nwk\_existence>:整型，只有在eAct为C2K才生效

0 network not exist

1 network exist

255 unknow

<dcnr\_restricted>:整型，只有eAct为LTE或者NR时才有效。

0 使用NR双连接non-restricted

1 使用NR双连接restricted

<endc\_sib>：指示当前选择的PLMN是否支持NR，只有在eAct为LTE或者NR时才有效。

0 unknown

1 not support

2 support

<endc\_available>：整型，如果plmn-InfoList-r15出现在SIB2中且至少该列表中有一bit为true则设置为1，否则设置为0。只有在eAct为LTE或者NR时才有效。

<cause\_type>:整型，指示<reject\_cause>的类型。

0 指示<reject\_cause>包含一个GMM cause value。查看3GPP TS 24.008的Annex G。

1 指示<reject\_cause>包含一个制造商指定的cause。

<reject\_cause>:整型，包含一个注册失败的cause值。

#### Example

|  |
| --- |
| SYS 598402 389285898 18:35:22:616 NIL [AT\_URC p59,ch1]+EGREG: 1,"009538","0000A720D",4096,"FF",0,0,0,2,1,0,0 |

### Telephony 5G显示规则

[AGATE-3508](https://jira.n.xiaomi.com/browse/AGATE-3508) FT\_K11T\_NanJing\_主卡联通SA+卡2副卡电信SA，后台播放斗鱼直播，关闭副卡电信SA开关，必现副卡不显示5G，同一环境下对比机正常显示\_0430

此问题分析步骤：

1. 首先根据Modem上报的EGREG确定当前小区是否在SIB2中包含了ULI，如果不包含，则查看Radio Log中是否在RIL侧有锚点小区的缓存信息。
2. 在debuglogger目录中的mobilelog/ApLog中打开radio log，搜索dumpLteEndcMaxCapability，确定是否存在相应小区的ULI缓存。根据cid和lacTac匹配。

|  |
| --- |
| 看起来应该是正常的行为。  从贵司的log看，对比机和测试机都是用的config D + Cache。  disable SA后，两部手机都驻留在相同cell： lac=\***34, ci=**\*\*9637的LTE小区，endc\_sib=1 （代表ULI=false）。  如果没有cache机制，那两部手机应该都会显示4G。  **但是在加上cache机制后，对比机应该之前有过其他的操作，添加过scg能力，可以看到cache队列里面有记录。**  **所以对比机能够显示5G，而测试机因为没有cache，所以只能显示4G。**  综上，贵司所遇到的UE行为是正常的。    //测试机  **04-30 16:37:16.021359  1381  1424 D RmcOemHandler: [1] OEM\_HOOK\_STRINGS : receive AT+E5GOPT=5**  04-30 16:37:17.165763  1381  1396 D RmcNwHdlr: [1] [handlePsNetworkStateChanged] mMdEgreg n=0, stat=1, lac=\***34, ci=**\***9637, eAct=4096, rac=255, nwk\_existence=0, roam\_indicator=0, cause\_type=0, reject\_cause=0, dcnr\_restricted=0, \*endc\_sib=1, endc\_available=0.**  04-30 16:37:17.191089  1381  1434 V RmcNwHdlr: [1] dumpLteEndcMaxCapability[1][0] cid=**,lacTac=**,dcnr\_restricted=0\*,endc\_sib=0,endc\_available=0\*  04-30 16:37:17.191097  1381  1434 V RmcNwHdlr: [1] dumpLteEndcMaxCapability[1][1] cid=**,lacTac=**,dcnr\_restricted=0,endc\_sib=0,endc\_available=0  04-30 16:37:17.191103  1381  1434 V RmcNwHdlr: [1] dumpLteEndcMaxCapability[1][2] cid=**,lacTac=**,dcnr\_restricted=0,endc\_sib=0,endc\_available=0  04-30 16:37:17.191110  1381  1434 V RmcNwHdlr: [1] dumpLteEndcMaxCapability[1][3] cid=**,lacTac=**,dcnr\_restricted=0,endc\_sib=0,endc\_available=0  04-30 16:37:17.191117  1381  1434 V RmcNwHdlr: [1] dumpLteEndcMaxCapability[1][4] cid=**,lacTac=**,dcnr\_restricted=0,endc\_sib=0,endc\_available=0  04-30 16:37:17.191123  1381  1434 V RmcNwHdlr: [1] dumpLteEndcMaxCapability[1][5] cid=**,lacTac=**,dcnr\_restricted=0,endc\_sib=0,endc\_available=0  04-30 16:37:17.191130  1381  1434 V RmcNwHdlr: [1] dumpLteEndcMaxCapability[1][6] cid=**,lacTac=**,dcnr\_restricted=0,endc\_sib=0,endc\_available=0  04-30 16:37:17.191136  1381  1434 V RmcNwHdlr: [1] dumpLteEndcMaxCapability[1][7] cid=**,lacTac=**,dcnr\_restricted=0,endc\_sib=0,endc\_available=0  04-30 16:37:17.191142  1381  1434 V RmcNwHdlr: [1] dumpLteEndcMaxCapability[1][8] cid=**,lacTac=**,dcnr\_restricted=0,endc\_sib=0,endc\_available=0  04-30 16:37:17.191148  1381  1434 V RmcNwHdlr: [1] dumpLteEndcMaxCapability[1][9] cid=**,lacTac=**,dcnr\_restricted=0,endc\_sib=0,endc\_available=0    //对比机 测试机和对比机驻留的是相同的小区，对比机可以驻留5G，从Telephony Log看，对比机有添加5G的缓存，这是显示5G的原因。  **04-30 16:40:19.764675  1354  1414 I AT      : [1] AT> AT+E5GOPT=5 (RIL\_CMD2\_READER\_1 tid:500446272704)**  04-30 16:40:20.861263  1354  1382 D RmcNwHdlr: [1] [handlePsNetworkStateChanged] mMdEgreg n=0, stat=1, lac=\***34, ci=**\***9637, eAct=4096, rac=255, nwk\_existence=1, roam\_indicator=1, cause\_type=0, reject\_cause=0, dcnr\_restricted=0, \*endc\_sib=1, endc\_available=0.**    04-30 16:40:21.040151  1354  1428 V RmcNwHdlr: [1] dumpLteEndcMaxCapability[1][0] cid=\***F9,lacTac=**\*\*0AD1,dcnr\_restricted=0,endc\_sib=1,endc\_available=1  04-30 16:40:21.040179  1354  1428 V RmcNwHdlr: [1] dumpLteEndcMaxCapability[1][1] cid=\***34,lacTac=**\*\*9637,dcnr\_restricted=0,endc\_sib=1,endc\_available=1  04-30 16:40:21.040205  1354  1428 V RmcNwHdlr: [1] dumpLteEndcMaxCapability[1][2] cid=\***36,lacTac=**\*\*3313,dcnr\_restricted=0,endc\_sib=1,endc\_available=1  04-30 16:40:21.040231  1354  1428 V RmcNwHdlr: [1] dumpLteEndcMaxCapability[1][3] cid=\***34,lacTac=**\*\*6712,dcnr\_restricted=0,endc\_sib=1,endc\_available=1  04-30 16:40:21.040257  1354  1428 V RmcNwHdlr: [1] dumpLteEndcMaxCapability[1][4] cid=\***F9,lacTac=**\*\*0ACC,dcnr\_restricted=0,endc\_sib=1,endc\_available=1 |

其他参考JIRA：[AGATE-3584](https://jira.n.xiaomi.com/browse/AGATE-3584) FT\_K11T\_Nanjing\_卡1主卡联通5G VOLTE(NSA)+卡2副卡电信5G VOLTE(NSA)，重启手机副卡电信未驻网NSA，开关下飞模后恢复(偶现)\_0507

### AT+CIREG IMS注册状态查询

该AT命令为3GPP标准的AT命令。用于设置IMS注册上报格式和查询IMS注册状态。

#### Format

|  |  |
| --- | --- |
| Command | Possible response(s) |
| +CIREG=[<n>] | *+CME ERROR: <err>* |
| +CIREG? | +CIREG: <n>,<reg\_info>[,<ext\_info>] |
| +CIREG=? | +CIREG: (list of supported <n>s) |

设置命令AT+CIREG=[<n>]，用于设置主动上报+CIREGU:<reg\_info>[,<ext\_info>]是否使能和格式形式。

查询命令AT+CIREG?返回值中的n指示当前的主动上报是否被使能。

#### Field

<n>:整型类型，使能或者禁止当IMS注册状态变化时上报IMS注册信息。

0 disable reporting.

1 enable reporting (parameter <reg\_info>).

2 enable extended reporting (parameters <reg\_info> and <ext\_info>).

<reg\_info>: integer type. Indicates the IMS registration status. The UE is seen as registered as long as one or more of its public user identities are registered with any of its contact addresses, see 3GPP TS 24.229 [89].

0 not registered.

1 registered.

<ext\_info>: numeric value in hexadecimal format. The value range is from 1 to FFFFFFFF. It is a sum of hexadecimal values, each representing a particular IMS capability of the MT. The MT can have IMS capabilites not covered by the below list. This parameter is not present if the IMS registration status is "not registered".

1 RTP-based transfer of voice according to MMTEL, see 3GPP TS 24.173 [87]. This functionality can not be indicated if the UE is not available for voice over PS, see 3GPP TS 24.229 [89].

2 RTP-based transfer of text according to MMTEL, see 3GPP TS 24.173 [87]. // 基于RTP协议传输文本。目前国内不使能

4 SMS using IMS functionality, see 3GPP TS 24.341 [101].

8 RTP-based transfer of video according to MMTEL, see 3GPP TS 24.173 [87].

The hexadecimal values 10, 20, 40 … 80000 are reserved by the present document.

#### Example

|  |
| --- |
| SYS 1236327 2156234 15:39:58:822 NIL [ATCI\_AT\_I\_0 s9]AT+CIREG? // 查询当前IMS注册状态  SYS 1236330 2156236 15:39:58:822 NIL [ATCI\_AT\_R\_0 s9]+CIREG: 2,1,d // 上报形式为2，注册信息1 registered，ext\_info为d，是1,4,8的异或结果。  SYS 5918800 4815559 15:42:48:919 NIL [ATCI\_AT\_U\_1 s83]+CIREGU: 1,d // 主动上报IMS注册状态  SYS 5022615 4046670 15:41:59:673 NIL [ATCI\_AT\_U\_1 s83]+CIREGU: 0 // 只返回0表示当前IMS未注册 |

### EGMC

CANNON-3717FT\_J22\_ShenZhen\_卡一副卡电信1x，卡二主卡移动5Gvolte，热插拔后不附着5G

AP侧通知ENDC关闭。

AP关闭了ENDC，导致Modem无法上报NR测量报告，请解决。  Line 13645: 08-06 16:11:35.952491 1242 1280 I AT : [0] AT> AT+EGMC=1,"endc\_deactivation",1,1 (RIL\_CMD\_READER\_1 tid:527408356688)

Line 13646: 08-06 16:11:35.955743 1841 2291 D MtkRILJ : [0501]> OEM\_HOOK\_STRINGS strings = AT+EGMC=1,"endc\_deactivation",1,1 [SUB1]

Line 13647: 08-06 16:11:35.957535 1242 1269 D RpOemCtlr: onHandleOemHookString, data[0] = AT+EGMC=1,"endc\_deactivation",1,1

Line 13649: 08-06 16:11:35.958644 1242 1305 I AT : [1] AT> AT+EGMC=1,"endc\_deactivation",1,1

### AT+ECUSD补充业务 – 待补充

#### Description

将SS/USSD命令发送给Modem。

AT+ERAT命令为MTK内部私有命令，用于获取当前RAT模式和GSPRS/EDGE的状态，或者设置MS的RAT模式。

#### Format

|  |  |  |
| --- | --- | --- |
| Command | Possible Response(s) | 作用 |
| +ERAT? | +ERAT:<Act>,<GPRS status>,<RAT mode>,<pref\_rat> | 查询当前的工作模式，GPRS状态和优先使用的RAT模式。查询命令不常用。 |
| +ERAT=<RAT mode>[,<prefer\_rat>[,<lock>]] | OK/ERROR | 用于设置MS工作模式和优先驻留的RAT |

#### Field

各个参数的含义

**<Act>: Access technology of current register PLMN - 当前的MS的接入技术、RAT类型、**

0 GSM

2 UTRAN

3 GSM w/EGPRS

4 UTRAN w/HSDPA

5 UTRAN w/HSUPA

|  |
| --- |
| SYS 1037296 1404553408 10:49:44:657 NIL [AT\_RX p68,ch5]AT+ECUSD=1,1,"\*#21#"  SYS 1044099 1404568725 10:49:45:657 NIL [AT\_RX p68,ch5]AT+ECUSD=1,1,"\*#67#"  SYS 1044493 1404569272 10:49:45:657 NIL [AT\_RX p68,ch5]AT+ECUSD=1,1,"\*#61#"  SYS 1044795 1404569472 10:49:45:657 NIL [AT\_RX p68,ch5]AT+ECUSD=1,1,"\*#62#"  SYS 1093816 1404863828 10:50:04:600 NIL [AT\_RX p68,ch5]AT+ECUSD=1,1,"\*\*21\*17798545150\*11#",,11  SYS 1106009 1404877363 10:50:05:403 NIL [AT\_RX p68,ch5]AT+ECUSD=1,1,"\*\*21\*17798545150\*11#",,11  SYS 1118149 1404899971 10:50:06:804 NIL [AT\_RX p68,ch5]AT+ECUSD=1,1,"\*\*21\*17798545150\*11#",,11  SYS 1123905 1404911519 10:50:07:606 NIL [AT\_RX p68,ch5]AT+ECUSD=1,1,"\*#21#"  SYS 1213170 1405184299 10:50:25:006 NIL [AT\_RX p68,ch5]AT+ECUSD=1,1,"\*\*21\*17798545150\*11#",,11  SYS 1219568 1405196531 10:50:25:806 NIL [AT\_RX p68,ch5]AT+ECUSD=1,1,"\*\*21\*17798545150\*11#",,11  SYS 1231437 1405219522 10:50:27:206 NIL [AT\_RX p68,ch5]AT+ECUSD=1,1,"\*\*21\*17798545150\*11#",,11  SYS 1237430 1405230284 10:50:28:007 NIL [AT\_RX p68,ch5]AT+ECUSD=1,1,"\*#21#"  SYS 1302708 1405431591 10:50:40:816 NIL [AT\_RX p68,ch5]AT+ECUSD=1,1,"\*\*67\*18013865850\*11#",,11  SYS 1308963 1405443375 10:50:41:616 NIL [AT\_RX p68,ch5]AT+ECUSD=1,1,"\*#67#"  SYS 1341007 1405539304 10:50:47:824 NIL [AT\_RX p68,ch5]AT+ECUSD=1,1,"#67\*\*11#"  SYS 1347408 1405552079 10:50:48:626 NIL [AT\_RX p68,ch5]AT+ECUSD=1,1,"\*#67#"  SYS 1374281 1405632406 10:50:53:629 NIL [AT\_RX p68,ch5]AT+ECUSD=1,1,"\*#43#"  SYS 1385668 1405668564 10:50:56:029 NIL [AT\_RX p68,ch5]AT+ECUSD=1,1,"#43\*11#"  SYS 1386100 1405669549 10:50:56:029 NIL [AT\_RX p68,ch5]AT+ECUSD=1,1,"\*#43#"  SYS 1404091 1405726781 10:50:59:829 NIL [AT\_RX p68,ch5]AT+ECUSD=1,1,"\*43\*11#"  SYS 1404412 1405727772 10:50:59:829 NIL [AT\_RX p68,ch5]AT+ECUSD=1,1,"\*#43#" |

### AT+EAPNACT PDN激活/去激活

激活/去激活特定的PDN上下文。

#### Format

|  |  |
| --- | --- |
| Command | Possible response(s) |
| +EAPNACT=<state>,<parameter> | *OK*  *ERROR +CME:ERROR <cause>* |

#### Field

<state>:指示PDP激活状态

0 – deactivated

1 – activated

其他值会导致执行命令错误。

<parameter>

|  |  |
| --- | --- |
| State | parameter |
| 1 | <apn\_name>,<apn\_type> |
| 0 | <aid> |

<apn\_name>：字符串类型，指示当前需要建立连接的外部PDN网络

<apn\_type>：字符串类型，支持的类型。unknown, default, ims, mms, supl, dun, hipri, fota, cbs, emergency, ia, dm, wap, net, cmmail,tethering,rcse,xcap,rcs

<aid>：数字参数，指示特定的PDP上下文定义。

#### Example

Type Index Time Local Time Module Message Comment Time Differences

SYS 529794 11839749 10:42:21:256 NIL [AT\_RX p63,ch11]AT+EAPNACT=0,1,1

=> Decode:PDP context activate or deactivate without the cid +EAPNACT

<state> : 0(deactivated)

<aid> : 1(a numeric parameter which specifies a particular PDP context definition)

SYS 529872 11839761 10:42:21:256 NIL [AT\_TX p63,ch11]+CGEV: ME PDN DEACT 1

### +EPDNHANDOVER上报PDN handover

此自动上报的AT命令用于通知AP Handover的过程。

#### Description

|  |
| --- |
| **Command** |
| +EPDNHANDOVER:<pdn\_type>,<status>,<src\_rat>,<dst\_rat> |

#### Field

**<pdn\_type>: Integer**

0 IMS

1 SMS

2 MMS

**<status>: Interger**

0 Start

1 Success

-1 Failed

**<src\_rat>: Integer. Soruce RAT.**

1 LTE

2 WIFI

**<des\_rat>: Integer. Destination RAT**

1 LTE

* + - WIFI

#### Example

参考JIRA：

[PISSARRO-10363](https://jira.n.xiaomi.com/browse/PISSARRO-10363) FT-K16U-Netherlands-[FT] [Hilversum] [NL] [KPN] [vowifi] DUT drops call while changing vowifi preference.(10/10)

|  |
| --- |
| Type Index Time Local Time Module Message Comment Time Differences  SIP 84 2719045 14:19:38:905 [MS->NW][P1][S1]INVITE tel:+31652599501 SIP/2.0  SIP 89 2740475 14:19:40:306 [NW->MS][P1][S1]SIP/2.0 183 Session Progress  SIP 92 2741643 14:19:40:506 [NW->MS][P1][S1]SIP/2.0 180 Ringing  **// IMS PDN从LTE切换到WIFI**  SYS 2612194 2980567 14:19:55:710 NIL [AT\_URC p37,ch1]+EPDNHANDOVER: 0, 0, 1, 2  SYS 2634341 2997077 14:19:56:710 NIL [AT\_URC p37,ch1]+EPDNHANDOVER: 0, 1, 1, 2  SIP 97 2997717 14:19:56:910 [MS->NW][P1][S1]REGISTER sip:ims.mnc008.mcc204.3gppnetwork.org SIP/2.0  SIP 98 3001767 14:19:57:110 [NW->MS][P1][S1]SIP/2.0 200 OK  // **IMS PDN从WIFI切换到LTE**  SYS 2669309 3021863 14:19:58:311 NIL [AT\_URC p37,ch1]+EPDNHANDOVER: 0, 0, 2, 1  OTA 2670839 3022001 14:19:58:311 ESM [MS->NW] ESM\_MSG\_PDN\_CONNECTIVITY\_REQUEST (PTI:8, EBI:0)  SIP 99 3022860 14:19:58:511 [NW->MS][P1][S1]BYE sip:+31630630469@[2a02:a420:d2:c529:2:1:5788:779b]:50014;transport=tcp SIP/2.0  SIP 100 3022939 14:19:58:511 [MS->NW][P1][S1]SIP/2.0 200 OK  SYS 2673456 3023236 14:19:58:511 NIL [AT\_URC p37,ch1]+ECPI: 1,133,0,0,0,20,"+31652599501",145,"",16  OTA 2674912 3023667 14:19:58:511 ESM [NW->MS] ESM\_MSG\_ACTIVATE\_DEFAULT\_EPS\_BEARER\_CONTEXT\_REQUEST (PTI:8, EBI:6)  OTA 2675061 3023677 14:19:58:511 ESM [MS->NW] ESM\_MSG\_ACTIVATE\_DEFAULT\_EPS\_BEARER\_CONTEXT\_ACCEPT (PTI:0, EBI:6)  SYS 2677569 3024200 14:19:58:511 NIL [AT\_URC p37,ch1]+EPDNHANDOVER: 0, 1, 2, 1 |

### DSDA

#### Description

The command set mode is used to enable / disable URC +EDSDAU which report the current status of Dual SIM Dual Active.

The command read mode reports current status of Dual SIM Dual Active immediately.

#### Format

|  |  |
| --- | --- |
| **Command** | **Possible response(s)** |
| +EDSDA=<mode> | OK  ERROR |
| +EDSDA? | +EDSDA: <is\_dsda\_allowed>,<dsda\_state> |

#### Field

<mode>: integer, control the report mode for URC

0 disable (default)

1 enable DSDA URC : +EDSDAU: <is\_dsda\_allowed>,<dsda\_state>

<is\_dsda\_allowed> bool, indicate whether DSDA is allowed

0 DSDA is not allowed

1 DSDA is allowed

<dsda\_state> integer, indicate the DSDA state

0 DSDA is ongoing

1 DSDA is possible

2 DSDA is not possible

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Type** | **SIM1 state** | **SIM2 state** | **Meaning** | **<dsda\_state>** |
| DSDA | Connected | Connected | DSDA ongoing | 0 |
| Connected | Idle | DSDA is possible | 1 |
| Idle | Connected |
| Idle | Idle |
| DSDS | Connected | Idle | DSDA is not possible | 2 |
| Idle | Connected |
| Idle | Idle |

#### Example

如果band组合支持并且是SA+LTE的，飞模或者开机，两张卡第一次在什么时候会上报AT< +EDSDAU: 1,x（x的取值为0或者1）？

比如一张卡注册完成，另外一张卡在第一次rrc setup 完成之后就会上报？还是要等volte都注册完成？或者其他的？

[MTK] 只要gemini state 改变就会上报+EDSDAU ，所以当第一张卡进入RRC connected 状态就会上报 。

这条urc 只和gemini state 有关，可以简单理解成connected /idle 切换， 与volte 或者其他的都没有关系。

[CHOPIN-4878](https://jira.n.xiaomi.com/browse/CHOPIN-4878) FT\_K10A\_Shenzhen\_来电不断网\_来电不断网开关默认打开，主卡卡一联通SA（N78）+副卡卡二联通4G非VoLTE(B1), 副卡来电后游戏网络马上中断（必现）\_0323。

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ALPS05632075   |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | **Type** | **Index** | **Time** | **Local Time** | **Module** | **Message** | **Comment** | **Time Differences** | | OTA | 93118 | 142416363 | 17:34:03:856 | ERRC\_CEL\_2 | [NW->MS] ERRC\_Paging(EARFCN[100], PCI[414])([ERRC\_SIM2][PCELL], PagingRecordList[KAL\_TRUE], SIB Modification[KAL\_FALSE], ETWS[KAL\_FALSE], CMAS[KAL\_FALSE], EAB Modification[KAL\_FALSE]) | 副卡来电CS |  | | SYS | 93989 | 142416410 | 17:34:03:856 | NIL | [AT\_URC p64,ch12]+EDSDAU: 1, 0 | DSDA态 |  | | OTA | 97518 | 142417918 | 17:34:03:856 | EMM\_NASMSG\_2 | [MS->NW] EMM\_Extended\_Service\_Request(service type="MT\_CSFB", CSFB response="CSFB\_ACCEPTED\_BY\_UE") |  |  | | SYS | 166098 | 142480633 | 17:34:07:898 | NIL | [ATCI\_AT\_U\_0 s83]+EDSDAU: 0, 2 | 退出DSDA |  | | OTA | 235334 | 142695311 | 17:34:21:483 | CC\_2 | [NW->MS] CC\_\_RELEASE\_COMPLETE |  |  | | OTA | 252114 | 142706088 | 17:34:22:381 | EMM\_NASMSG\_2 | [MS->NW] EMM\_Tracking\_Area\_Update\_Request(EPS update type="EMM\_UPDATE\_TYPE\_COMBINED\_TAU\_IMSI\_ATTACH", active flag="KAL\_FALSE") |  |  | | OTA | 254070 | 142707087 | 17:34:22:381 | EMM\_NASMSG\_2 | [NW->MS] EMM\_Tracking\_Area\_Update\_Accept(EPS update result="EMM\_UPDATE\_RESULT\_COMBINED\_UPDATED") |  |  | | OTA | 258741 | 142708174 | 17:34:22:381 | ERRC\_CONN\_2 | [NW->MS] ERRC\_RRCConnectionRelease(EARFCN[100], PCI[414])(cause:[ReleaseCause\_other], redirectInfo:[0]) |  |  | | SYS | 262235 | 142709395 | 17:34:22:381 | NIL | [AT\_URC p64,ch12]+EDSDAU: 0, 2 |  |  | | SYS | 269875 | 142711565 | 17:34:22:620 | NIL | [ATCI\_AT\_U\_0 s83]+EDSDAU: 1, 1 |  |  | |

DSDA触发的Log：

DSDA MODE QUERY result : [MRS\_GEMINI\_DSDA\_MODE]

退出的Log

[MSPM] DSDA MODE QUERY result : [MRS\_GEMINI\_DSDA\_MODE], query by TEST RFDB? [KAL\_FALSE], test\_rfdb\_sim : [MSPM\_SIM1]

|  |  |
| --- | --- |
| MSG\_ID\_RSVAS\_NRRC\_GEMINI\_MODE\_UPDATE\_REQ | is\_enter\_dsda = KAL\_FALSE (enum 0) |

### +EIRAT RAT间切换的状态上报

RAT间切换的状态上报。

#### Format

+EIRAT:<irat\_status>[,<is\_successful>]

#### Field

<irat\_status>

0: Idle(inter-RAT end)

1:Inter-RAT from LTE to GSM start

2:Inter-RAT from LTE to UMTS start

3:Inter-RAT from GSM to LTE start

4:Inter-RAT from UMTS to LTE start

5:Inter-RAT from LTE to GSM\_UMTS(TBD) start

6:Inter-RAT from GSM\_UMTS(TBD) to LTE start

<is\_successful>整型，仅当<irat\_status>为0时设置。

0:Inter-RAT procedure failed

1:Inter-RAT procedure is successful

#### Example

1. 从LTE IRAT到GSM，如下示例为VoLTE呼叫过程中的SRVCC过程。

|  |
| --- |
| Type Index Time Local Time Module Message Comment Time Differences  OTA 952031 13558347 08:57:21:310 ERRC\_CONN [NW->MS] ERRC\_MobilityFromEUTRACommand(EARFCN[38950], PCI[435])(CSFB:[0],purpose:[MobilityFromEUTRACommand\_r8\_IEs\_purpose\_handover\_selected],targetRAT:[Handover\_targetRAT\_Type\_geran])  SYS 953714 13558617 08:57:21:310 NIL [ATCI\_AT\_U\_0 s83]+EIRAT: 1  SYS 953973 13558624 08:57:21:310 NIL [ATP\_U\_0]+EIRAT: 1  OTA 956088 13560395 08:57:21:310 RRM\_FDD [NW->MS] RR\_\_PHYSICAL\_INFORMATION  OTA 956096 13560397 08:57:21:310 RRM\_FDD [MS->NW] RR\_\_HANDOVER\_COMPLETE  SYS 957942 13563007 08:57:21:510 NIL [ATCI\_AT\_U\_0 s83]+EIRAT: 0,1  // 挂机后，FR到LTE的过程  Type Index Time Local Time Module Message Comment Time Differences  OTA 980224 13745380 08:57:33:310 RRM\_FDD [NW->MS] RR\_\_CHANNEL\_RELEASE // **GSM RR连接释放**  SYS 982533 13750128 08:57:33:510 NIL [ATP\_U\_0]+EIRAT: 3 // **从GSM IRAT到LTE**  OTA 984931 13751193 08:57:33:510 ERRC\_SYS [NW->MS] SystemInformationBlockType1 (EARFCN[38950], PCI[435])  SYS 987266 13751456 08:57:33:710 NIL [ATCI\_AT\_U\_0 s83]+EIRAT: 0,1 /**/ IRAT完成**  OTA 997438 13752638 08:57:33:710 EMM\_NASMSG [MS->NW] EMM\_Tracking\_Area\_Update\_Request(EPS update type="EMM\_UPDATE\_TYPE\_COMBINED\_TAU\_IMSI\_ATTACH", active flag="KAL\_FALSE")  OTA 1007557 13764403 08:57:34:510 EMM\_NASMSG [NW->MS] EMM\_Tracking\_Area\_Update\_Accept(EPS update result="EMM\_UPDATE\_RESULT\_COMBINED\_UPDATED")  OTA 1007960 13764437 08:57:34:510 EMM\_NASMSG [MS->NW] EMM\_Tracking\_Area\_Update\_Complete |

## 数据相关命令

### AT+ECNCFG

常见应用场景：数据开关的打开和关闭。

#### Format

|  |  |
| --- | --- |
| Command | 作用 |
| AT+ECNCFG=<mobile\_data>[,[<data\_roaming>],[<volte>],<ims\_test\_mode>[,<data\_domestic\_roaming>,<data\_international\_roaming>]] | 通知Modem语音状态变化 |

#### Field

<mobile\_data>：0-disable， 1-enable

<data\_roaming>：UI操作，允许/禁止数据漫游接入

<volte>：0-disable， 1-enable

<ims\_test\_mode>:是否处于IMS测试模式

<data\_domestic\_roaming>:是否允许国内数据漫游，与data\_roaming一起使用。

<data\_international\_roaming>：是否允许数据国际漫游

#### Example

|  |
| --- |
| Type Index Time Local Time Module Message Comment Time Differences  SYS 1729 16891315 14:07:39:806 NIL [AT\_RX p58,ch0]AT+ECNCFG=1,0,,0  => Decode:Cellular Network Config +ECNCFG  <mobile\_data> : 1(On) // 开启数据业务  <data\_roaming> : 0(Off)  <volte> : (NO INPUT)  <ims\_test\_mode> : 0(Off)  // NR建立PDU Session  OTA 3989 16892514 14:07:39:806 VGSM [MS->NW] VGSM\_PDU\_SESSION\_ESTABLISHMENT\_REQUEST (PTI:6, PSI:8)  OTA 11650 16898960 14:07:40:207 VGSM [NW->MS] VGSM\_PDU\_SESSION\_ESTABLISHMENT\_ACCEPT (PTI:6, PSI:8)  // 关闭数据开关  SYS 3591920 22476656 14:13:37:100 NIL [AT\_RX p58,ch0]AT+ECNCFG=0,0,,0  => Decode:Cellular Network Config +ECNCFG  <mobile\_data> : 0(Off)  <data\_roaming> : 0(Off)  <volte> : (NO INPUT)  <ims\_test\_mode> : 0(Off)  // 关闭PDU Session  OTA 3593254 22476775 14:13:37:100 VGSM [MS->NW] VGSM\_PDU\_SESSION\_RELEASE\_REQUEST (PTI:7, PSI:8)  OTA 3595213 22477499 14:13:37:300 VGSM [NW->MS] VGSM\_PDU\_SESSION\_RELEASE\_COMMAND (PTI:7, PSI:8, 5GSM cause:"VGSM\_CAUSE\_REGULAR\_DEACTIVATION")  OTA 3595285 22477509 14:13:37:300 VGSM [MS->NW] VGSM\_PDU\_SESSION\_RELEASE\_COMPLETE (PTI:7, PSI:8) |

## 呼叫相关命令

### AT+EVVS 语音域状态变化指示

AT+EVVS

此命令用于指示当前语音状态的变化，指示发给Modem协议栈。

#### Format

|  |  |
| --- | --- |
| Command | 作用 |
| AT+EVVS=<voice\_status>,<is\_emergency> | 通知Modem语音状态变化 |

#### Field

<voice\_status>:

0 – start

1 – stop

<is\_emergency>:

0 – false

1 – true

此命令被VDM使用。

### AT+EHVOLTE 为silent redial更新hVoLTE模式

#### Format

|  |  |  |
| --- | --- | --- |
| Command | Respose | 作用 |
| AT+EHVOLTE=<mode>,<n> | OK  ERROR | 更新hVolte，用于silent redial |

#### Field

<mode>:

0 – SRLTE mode

<n>:

0 – not used

1 – set hVolte mode to SRLTE due to 1XRTT MO call attempt after VoLTE call fail(silent redial)

2 – set hVolte mode to SRLTE due to 1XRTT MO call end

4 – set hVoLTE mode to SRLTE due to 1XRTT MO call attempt directly

**Note:**

在VoLTE呼叫失败且决定在1XRTT上重试时，发送AT+EHVOLTE=0,1，在呼叫结束后，发送AT+EHVOLTE=0,2

当MO直接在1XRTT上尝试拨打电话发送AT+EHVOLTE=0,4，在呼叫结束后，发送AT+EHVOLTE=0,2

### ATD

### ATH

### CHLD

### CHUP

### ECPI

### ATA

### EUSIM SIM卡相关问题

<https://jira.n.xiaomi.com/browse/AGATE-6415>

## VoLTE相关的AT命令

### EIMSPDN

| Type | Index | Time | Local Time | Module | Message | Comment | Time Differences |
| --- | --- | --- | --- | --- | --- | --- | --- |
| SYS | 4228293 | 15283771 | 16:07:01:059 | NIL | [AT\_URC p59,ch1]+EIMSPDN: "notify", 1, 0, "ims" |  |  |
| SYS | 4231058 | 15284289 | 16:07:01:059 | NIL | [AT\_RX p83,ch9]AT+EIMSPDN= "confirm", 1, 0 |  |  |
| SYS | 4444855 | 15608739 | 16:07:21:868 | NIL | [AT\_RX p83,ch9]AT+EIMSPDN= "confirm", 1, 0 |  |  |
| SYS | 4468411 | 15622270 | 16:07:22:868 | NIL | [ATCI\_AT\_U\_0 s83]+CIREGU: 1,d |  |  |

### AT+EIMSCFG IMS相关能力设置

IMS相关的能力设置命令。

#### Format

|  |  |
| --- | --- |
| Command | 作用 |
| AT+EIMSCFG:<volte\_cfg >,<vilte\_cfg>,<vowifi\_cfg>,<viwifi\_cfg>,<ims\_sms\_cfg>,<eims\_cfg> | 设置VoLTE的相关能力 |

#### Field

volte\_cfg: IMS Voice over LTE语音呼叫功能当eims\_cfg使能的条件下，才能使能。

vilte\_cfg: IMS Video over LTE。只有在volte\_cfg使能的条件下才能使能。

vowifi\_cfg：WIFI语音呼叫功能，当eims\_cfg使能的条件下，才能使能。

#### Example

|  |
| --- |
| SYS 6267492 5038539 15:43:03:328 NIL [ATCI\_AT\_I\_1 s35]AT+EIMSCFG=1,1,0,0,1,1  => Decode:Integrated IMS related capability and functionality +EIMSCFG  <volte> : 1(Enable)  <vilte> : 1(Enable)  <vowifi> : 0(Disable)  <viwifi> : 0(Disable)  <ims\_sms> : 1(Enable)  <eims> : 1(Enable) |

### +EIMSVCAP 上报video能力

此URC用于在IMS呼叫建立后，通知AP IMS呼叫video的能力。当+ECPI的msg\_type设置为132(CSMCC\_STATE\_CHANGE\_ACTIVE)时，上报此URC。

#### Format

+EIMSVCAP=<call\_id>,<local\_video\_cap>,<remote\_video\_cap>

<call\_id>：为当前呼叫的会话ID。一个整数，用于标识通话的唯一。

<local\_video\_cap>：1表示UE具备video通话能力，否则设置0。如果AP开启了通过LTE或者WIFI的视频通话能力，则应该设置为1

<local\_video\_cap>：1表示UE具备video通话能力，否则设置0。如果video的feature tag出现在了SIP消息中，则将此值设置为1.

### +ESIPCPI

用于通知AP当前收到的网络SIP消息，该主动上报的消息将在呼叫过程中更新。

#### Format

|  |  |
| --- | --- |
| Command | 作用 |
| +ESIPCPI:<call\_id>,<dir>,<SIP\_msg\_type>,<method>,<response\_code>,”<reason\_text>” | 用于在呼叫过程中上报接收到的网络侧SIP消息 |

#### Field

<call\_id> : integer

0~255, call identifier

<dir> : integer

0 Send

1 Receive

<SIP\_msg\_type>: integer

0 Request

1 Response

<method>: integer

0 SIP REGISTER

1 SIP INVITE

2 SIP REFER

3 SIP UPDATE

4 SIP CANCEL

5 SIP MESSAGE

6 SIP ACK

7 SIP BYE

8 SIP OPTIONS

9 SIP SUBSCRIBE

10 SIP NOTIFY

11 SIP PUBLISH

12 SIP INFO

13 SIP PRACK

<response\_code>: integer

0 Only used when SIP\_msg\_type is 0(request)

100~600 (sip response code)

<reason\_text>: string

Reason header filed in SIP message

#### Example

|  |
| --- |
| Type Index Time Local Time Module Message Comment Time Differences  SYS 5021029 430163753 17:53:17:929 NIL [AT\_URC p59,ch1]+ESIPCPI: 1,1,0,3,0,""  SYS 5021169 430163902 17:53:17:929 NIL [AT\_URC p59,ch1]+ESIPCPI: 1,0,1,3,200,""  SYS 5025986 430166451 17:53:18:129 NIL [AT\_URC p59,ch1]+ESIPCPI: 1,0,0,3,0,""  SYS 5029095 430171746 17:53:18:331 NIL [AT\_URC p59,ch1]+ESIPCPI: 1,1,1,3,200,""  SYS 5031444 430173016 17:53:18:532 NIL [AT\_URC p59,ch1]+ESIPCPI: 1,1,1,1,180,""  SYS 5057144 430228626 17:53:22:135 NIL [AT\_URC p59,ch1]+ESIPCPI: 1,1,0,3,0,""  SYS 5057418 430228762 17:53:22:135 NIL [AT\_URC p59,ch1]+ESIPCPI: 1,0,1,3,200,""  SYS 5062572 430233630 17:53:22:335 NIL [AT\_URC p59,ch1]+ESIPCPI: 1,1,1,1,200,""  SYS 5062608 430233674 17:53:22:335 NIL [AT\_URC p59,ch1]+ESIPCPI: 1,0,0,6,0,"" |

## 短信相关

### AT+CMGS Text Mode短信发送

文本格式的短信发送。

#### Format

|  |  |
| --- | --- |
| Command | 响应 |
| if text mode (+CMGF=1)  AT+CMGS=<da>[,<toda>]<CR>  输入短信后需要按下Ctrl+Z/ESC | 发送成功：+CMGS:<mr>[,<scts.]  发送失败：+CMS ERROR:<err> |

volte\_cfg: IMS Voice over LTE语音呼叫功能当eims\_cfg使能的条件下，才能使能。

vilte\_cfg: IMS Video over LTE。只有在volte\_cfg使能的条件下才能使能。

vowifi\_cfg：WIFI语音呼叫功能，当eims\_cfg使能的条件下，才能使能。

### 使能或禁止WIFI

#### Description

此命令用于使能或者禁止WIFI。

AT> AT+EWIFIEN="wlan0",1,0

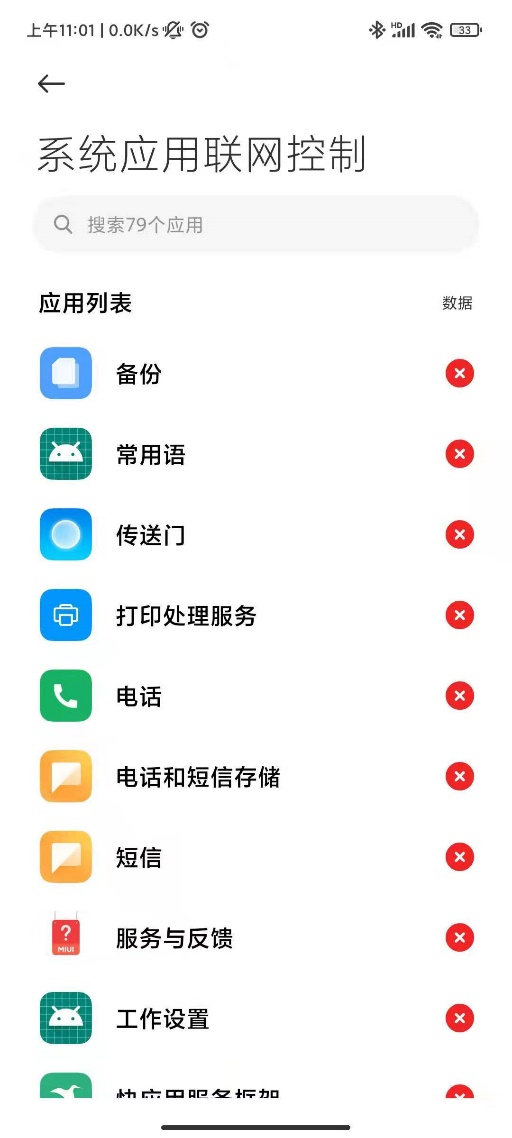
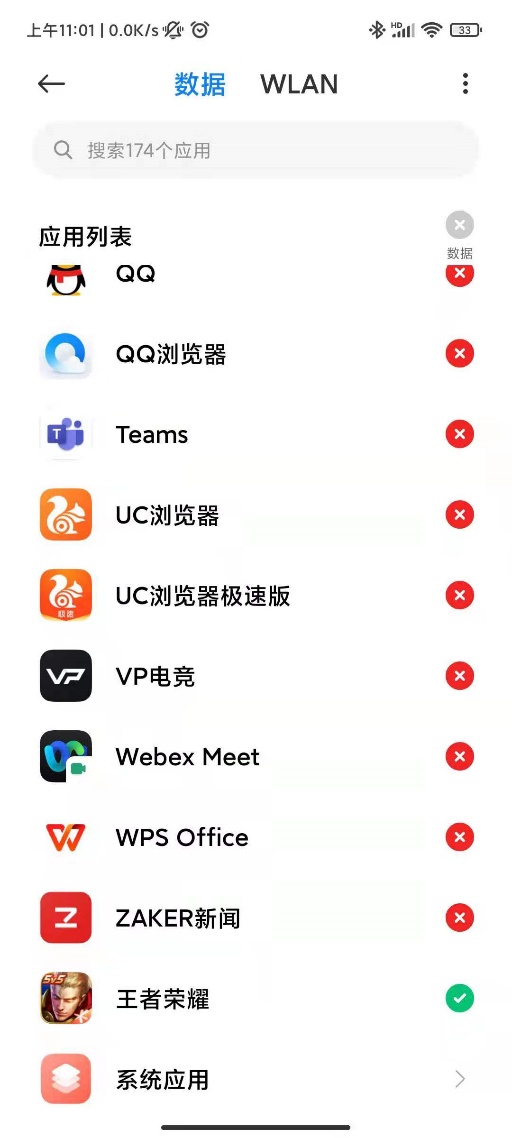
# 数据业务问题专项分析

## 数据业务问题的测试方法

需要在关闭所有其他不相关APP联网的前提下进行特定APP的测试能够最大程度的减少对分析的干扰。

1. 关闭其他APP联网功能的方法：
2. 在小米手机上找到小米的系统APP“手机管家”
3. 进入后，点击手机管家，进入到手机管家的菜单页
4. 在系统工具中，点击网络助手
5. 在网络助手页面，点击联网控制
6. 在“数据”的应用列表中，先取消勾选应用列表后的数据，禁用所有的APP数据联网，然后搜索需要测试的APP，勾选数据状态
7. 应用列表的最后一个“系统应用”，点击进入后，禁止所有的所有应用的数据功能
8. 在开启测试前开启Modem Log，并在手机连接PC后通过ADB命令抓取全量的流量报文。正常通过adb shell *tcpdump –i any –s 0 –w Test.pcap*，如果提示系统为Read-Only系统，则依次通过如下几条命令完成pcap文件的抓取。*adb root; adb shell; cd storage; tcpdump –i any –s 0 –w Test.pcap*

**Example：如下为仅开启王者荣耀APP的数据联网功能的设置界面。系统应用联网控制记得全部禁止掉。（图中开启了WIFI，在测试Modem数据业务时，一定要关闭WIFI）**



## 数据业务分析的基本步骤

确定APP的网络协议使用情况。如视频类APP使用TCP协议，游戏类协议使用UDP协议。

根据测试同事提供的数据确认卡顿的时间点或时间段。

确定UE使用的IP地址，用于pcap文件的过滤。

确定APP服务器的地址，服务端一般存在多个地址，需要确定数据业务量最大的那个。

特定IP流的卡顿问题分析

### APP的网络协议使用情况初步分析

不同的APP使用的网络协议不同，这主要是受业务对延迟和丢包的影响决定。

APP从大类上划分有游戏类、视频类、新闻类、聊天类、购物类、导航类等。但是根据业务的特点以及与网络的依赖程度，主要分为两大类：

1. 对延迟敏感、对丢包轻微敏感
2. 对延迟轻微敏感、对对包敏感

第一类为主要是实时对战的游戏类，如王者荣耀、绝地求生等手游。

第二类直接归纳为非游戏类。所有的视频、文本、图片等资源都需要可靠接收，不能丢包，存在延迟影响不大。

TCP因为重传、接收端重组等处理，会造成手机端的延迟处理，不适用于实时对战的游戏类使用，但是适用于所有非游戏类需要可靠接收的APP使用。

UDP因为不用重传、不用组包，接收可以直接处理，适用于实时对战的游戏类APP使用。

### UE IP的确认

目前可行的有三种办法：注册网络时分配、pcap中的SYN请求的发起方IP、DNS请求的发起方IP。

#### 注册时的IP地址分配

在UE注册LTE、NR时，网络为UE激活数据默认承载的时候，由网络分配给UE的

#### SYN的发起方IP

由于TCP是以一个CS模型，TCP连接必须要有客户机发起，所以发起TCP三次握手的一方为UE端。SYN报文的源IP地址为UE的IP地址。

直接在pcap文件中通过过滤(tcp.flags.syn == 1) && (tcp.flags.ack == 0)得到所有发起SYN的报文，其中SYN发起方的IP地址为UE的IP地址。

#### DNS发起方的IP

DNS查询为客户端的行为，需要UE主动查询，所以也可以通过DNS报文确定UE的IP地址。DNS请求的源IP和DNS响应的目标IP地址都是UE的IP地址。

在wireshark中直接过滤DNS即可。

# Bugreport常用信息搜索

## 数据业务相关

### 设置数据卡

02-05 14:58:40.165 radio 2941 2941 D PhoneSwitcher: sendRilCommands: setPreferredDataModem - phoneId: 0

02-05 14:58:40.165 radio  2941  2941 D RadioConfig: [4446]> SET\_PREFERRED\_DATA\_MODEM

02-05 14:58:40.166 radio  2941  3104 D RadioConfigResponse: [4446]< SET\_PREFERRED\_DATA\_MODEM

### 获取SIM卡状态

02-05 14:58:39.322 radio 2941 3104 D RILJ : [0][4394]< GET\_SIM\_STATUS IccCardState {CARDSTATE\_ABSENT,PINSTATE\_UNKNOWN,num\_apps=0,gsm\_id=-1,cdma\_id=-1,ims\_id=-1,physical\_slot\_id=0,atr=,iccid=,eid=} [SUB0]

02-05 14:58:41.805 radio 2941 3104 D RILJ : [0][4476]< GET\_SIM\_STATUS IccCardState

{CARDSTATE\_PRESENT,PINSTATE\_UNKNOWN,num\_apps=1,gsm\_id=-1,cdma\_id=-1,ims\_id=-1,physical\_slot\_id=0,atr=3b9f96801fc78031e073fe21135747440e01004301a6,iccid=89860040191933161742,eid=}

[SUB0]

### 发起数据链路建立

02-05 14:58:46.837 radio 2941 3603 D RILJ : [0][4641]> SETUP\_DATA\_CALL,accessNetworkType=NGRAN,isRoaming=false,allowRoaming=false,DataProfile=-1/2/0/\*//\*\*/0/0/0/0/true/21/2/0/0/0/false/true,addresses=[],dnses=[] [SUB0]

02-05 14:59:03.582 radio 2941 3104 D RILJ : [0][4641]< SETUP\_DATA\_CALL DataCallResponse:

{ cause=0 retry=-1 cid=0 linkStatus=2 protocolType=0 ifname=rmnet\_data31x.x.x.20x/27] dnses=[/12x.19x.16x.x,/22x.17x.3x.x gateways=[/10.9.5.208] pcscf=[] mtu=1500 mtuV4=1500 mtuV6=0} [SUB0]

### 显示数据图标

02-05 14:59:03.603  1000  1645 10913 D TelephonyRegistry: onDataConnectionStateChanged(**CONNECTED**, NR) subId=2, phoneId=0

### 5G数据性能优化

[MIUIROM-105952](https://jira.n.xiaomi.com/browse/MIUIROM-105952) [用户反馈APP提交]连续出现弹窗，3到5秒一次，网速慢

通过AP侧log关于网络监测log看，确实存在一定的网络问题，如下：**其中TX表示上行数据，Rx表示下行数据**。Hit 表示一个警戒阈值，即在一定时间（单位时间1s）内，只有上行数据没有下行数据。当达到15（即15s），上层就会发起重新驻网请求。通过log看，存在间接的无下行数据现象。

05-16 11:36:19.279 radio 2886 3110 D FiveGDataOptimize: TxRx: 741, Tx: 741, Rx: 0, Hit: 1

05-16 11:36:20.285 radio 2886 3110 D FiveGDataOptimize: TxRx: 1175, Tx: 1175, Rx: 0, Hit: 2

05-16 11:36:21.290 radio 2886 3110 D FiveGDataOptimize: TxRx: 1192, Tx: 1192, Rx: 0, Hit: 3

05-16 11:36:22.297 radio 2886 3110 D FiveGDataOptimize: TxRx: 59, Tx: 59, Rx: 0, Hit: 4

05-16 11:36:23.302 radio 2886 3110 D FiveGDataOptimize: TxRx: 1203, Tx: 1203, Rx: 0, Hit: 5

05-16 11:36:24.310 radio 2886 3110 D FiveGDataOptimize: TxRx: 59, Tx: 59, Rx: 0, Hit: 6

05-16 11:36:25.315 radio 2886 3110 D FiveGDataOptimize: TxRx: 1112, Tx: 1112, Rx: 0, Hit: 7

05-16 11:36:26.321 radio 2886 3110 D FiveGDataOptimize: TxRx: 59, Tx: 59, Rx: 0, Hit: 8

05-16 11:36:27.328 radio 2886 3110 D FiveGDataOptimize: TxRx: 59, Tx: 59, Rx: 0, Hit: 9

05-16 11:36:28.335 radio 2886 3110 D FiveGDataOptimize: TxRx: 59, Tx: 59, Rx: 0, Hit: 10

05-16 11:36:28.783 radio 2886 3116 D FiveGDataOptimize: onNrIconType: slotId = 0 token = Token: -1 statusStatus: 1 NrIconType = NrIconType: 1

05-16 11:36:28.858 radio 2886 3116 D FiveGDataOptimize: onNrIconType: slotId = 0 token = Token: -1 statusStatus: 1 NrIconType = NrIconType: 1

05-16 11:36:29.341 radio 2886 3110 D FiveGDataOptimize: TxRx: 1145, Tx: 1145, Rx: 0, Hit: 11

05-16 11:36:30.347 radio 2886 3110 D FiveGDataOptimize: TxRx: 1172, Tx: 1172, Rx: 0, Hit: 12

05-16 11:36:31.354 radio 2886 3110 D FiveGDataOptimize: TxRx: 59, Tx: 59, Rx: 0, Hit: 13

05-16 11:36:32.361 radio 2886 3110 D FiveGDataOptimize: TxRx: 2490, Tx: 2490, Rx: 0, Hit: 14

05-16 11:36:33.369 radio 2886 3110 D FiveGDataOptimize: TxRx: 0, Tx: 0, Rx: 0, Hit: 0 // Hit 14后，重新从0开始

05-16 11:36:38.378 radio 2886 3110 D FiveGDataOptimize: TxRx: 1876, Tx: 1580, Rx: 295, Hit: 0

05-16 11:36:42.774 radio 2886 3116 D FiveGDataOptimize: onNrIconType: slotId = 0 token = Token: -1 statusStatus: 1 NrIconType = NrIconType: 1

05-16 11:36:42.780 radio 2886 3116 D FiveGDataOptimize: onAnyNrBearerAllocation: slotId = 0 token = Token: -1 statusStatus: 1 bearerStatus = 1

05-16 11:36:43.388 radio 2886 3110 D FiveGDataOptimize: TxRx: 453, Tx: 453, Rx: 0, Hit: 1

05-16 11:36:44.392 radio 2886 3110 D FiveGDataOptimize: TxRx: 193, Tx: 116, Rx: 76, Hit: 0

05-16 11:36:49.402 radio 2886 3110 D FiveGDataOptimize: TxRx: 715, Tx: 715, Rx: 0, Hit: 1

05-16 11:36:50.409 radio 2886 3110 D FiveGDataOptimize: TxRx: 1113, Tx: 1113, Rx: 0, Hit: 2

05-16 11:36:51.417 radio 2886 3110 D FiveGDataOptimize: TxRx: 0, Tx: 0, Rx: 0, Hit: 0

05-16 11:36:54.492 radio 2886 3116 D FiveGDataOptimize: onNrIconType: slotId = 0 token = Token: -1 statusStatus: 1 NrIconType = NrIconType: 1

05-16 11:36:56.429 radio 2886 3110 D FiveGDataOptimize: TxRx: 453, Tx: 453, Rx: 0, Hit: 1

05-16 11:36:57.437 radio 2886 3110 D FiveGDataOptimize: TxRx: 1191, Tx: 1191, Rx: 0, Hit: 2

## 驻网

### CS域驻留信息

Line 327626: 03-10 11:37:16.957 radio 2970 3096 D RILJ : [0][4107]< VOICE\_REGISTRATION\_STATE {.regState = REG\_HOME, .rat = 6, .cssSupported = false, .roamingIndicator = 1, .systemIsInPrl = 1, .defaultRoamingIndicator = -1, .reasonForDenial = 0, .cellIdentity = {...}} [SUB0]

Line 327651: 03-10 11:37:16.975 radio 2970 3096 D RILJ : [1][4112]< VOICE\_REGISTRATION\_STATE {.regState = REG\_HOME, .rat = 14, .cssSupported = true, .roamingIndicator = 1, .systemIsInPrl = -1, .defaultRoamingIndicator = -1, .reasonForDenial = 0, .cellIdentity = {...}} [SUB1]

Line 327658: 03-10 11:37:16.980 radio 2970 3096 D RILJ : [1][4115]< VOICE\_REGISTRATION\_STATE {.regState = REG\_HOME, .rat = 14, .cssSupported = true, .roamingIndicator = 1, .systemIsInPrl = -1, .defaultRoamingIndicator = -1, .reasonForDenial = 0, .cellIdentity = {...}} [SUB1]

### PS驻留信息

Line 327622: 03-10 11:37:16.953 radio 2970 3096 D RILJ : [0][4106]< DATA\_REGISTRATION\_STATE {.regState = NOT\_REG\_MT\_NOT\_SEARCHING\_OP, .rat = 0, .reasonDataDenied = 0, .maxDataCalls = 20, .cellIdentity = {...}} [SUB0]

Line 327662: 03-10 11:37:16.996 radio 2970 3096 D RILJ : [1][4109]< DATA\_REGISTRATION\_STATE {.regState = REG\_HOME, .rat = 19, .reasonDataDenied = 0, .maxDataCalls = 20, .cellIdentity = {...}} [SUB1]

Line 327664: 03-10 11:37:16.996 radio 2970 3096 D RILJ : [1][4114]< DATA\_REGISTRATION\_STATE {.regState = REG\_HOME, .rat = 19, .reasonDataDenied = 0, .maxDataCalls = 20, .cellIdentity = {...}} [SUB1]

Line 327702: 03-10 11:37:18.771 radio 2970 3489 D RILJ : [0][4117]> DATA\_REGISTRATION\_STATE [SUB0]

### regstate和rat的枚举

**枚举所在的文件ril.h(miui-r-cannon-dev/device/generic/goldfish/radio/ril/ril.h)**

regstate

|  |
| --- |
| [1075](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "1075)/\*  [1076](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "1076) \* Please note that registration state UNKNOWN is  [1077](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "1077) \* treated as "out of service" in the Android telephony.  [1078](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "1078) \* Registration state REG\_DENIED must be returned if Location Update  [1079](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "1079) \* Reject (with cause 17 - Network Failure) is received  [1080](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "1080) \* repeatedly from the network, to facilitate  [1081](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "1081) \* "managed roaming"  [1082](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "1082) \*/  [1083](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h#1083)typedef enum {  [1084](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "1084) [RIL\_NOT\_REG\_AND\_NOT\_SEARCHING](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RIL_NOT_REG_AND_NOT_SEARCHING&project=miui-r-umi-dev) = 0, // Not registered, MT is not currently searching  [1085](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "1085) // a new operator to register  [1086](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "1086) [RIL\_REG\_HOME](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RIL_REG_HOME&project=miui-r-umi-dev) = 1, // Registered, home network  [1087](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "1087) [RIL\_NOT\_REG\_AND\_SEARCHING](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RIL_NOT_REG_AND_SEARCHING&project=miui-r-umi-dev) = 2, // Not registered, but MT is currently searching  [1088](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "1088) // a new operator to register  [1089](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "1089) [RIL\_REG\_DENIED](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RIL_REG_DENIED&project=miui-r-umi-dev) = 3, // Registration denied  [1090](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "1090) [RIL\_UNKNOWN](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RIL_UNKNOWN&project=miui-r-umi-dev) = 4, // Unknown  [1091](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "1091) [RIL\_REG\_ROAMING](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RIL_REG_ROAMING&project=miui-r-umi-dev) = 5, // Registered, roaming  [1092](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "1092) [RIL\_NOT\_REG\_AND\_EMERGENCY\_AVAILABLE\_AND\_NOT\_SEARCHING](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RIL_NOT_REG_AND_EMERGENCY_AVAILABLE_AND_NOT_SEARCHING&project=miui-r-umi-dev) = 10, // Same as  [1093](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "1093) // RIL\_NOT\_REG\_AND\_NOT\_SEARCHING but indicates that  [1094](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "1094) // emergency calls are enabled.  [1095](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "1095) [RIL\_NOT\_REG\_AND\_EMERGENCY\_AVAILABLE\_AND\_SEARCHING](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RIL_NOT_REG_AND_EMERGENCY_AVAILABLE_AND_SEARCHING&project=miui-r-umi-dev) = 12, // Same as RIL\_NOT\_REG\_AND\_SEARCHING  [1096](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "1096) // but indicates that  [1097](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "1097) // emergency calls are enabled.  [1098](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "1098) [RIL\_REG\_DENIED\_AND\_EMERGENCY\_AVAILABLE](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RIL_REG_DENIED_AND_EMERGENCY_AVAILABLE&project=miui-r-umi-dev) = 13, // Same as REG\_DENIED but indicates that  [1099](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "1099) // emergency calls are enabled.  [1100](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "1100) [RIL\_UNKNOWN\_AND\_EMERGENCY\_AVAILABLE](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RIL_UNKNOWN_AND_EMERGENCY_AVAILABLE&project=miui-r-umi-dev) = 14, // Same as UNKNOWN but indicates that  [1101](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "1101) // emergency calls are enabled.  [1102](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "1102)} [RIL\_RegState](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RIL_RegState&project=miui-r-umi-dev); |

rat

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| [245](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "245)typedef enum {  [246](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "246) [RADIO\_TECH\_UNKNOWN](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RADIO_TECH_UNKNOWN&project=miui-r-umi-dev) = 0,  [247](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "247) [RADIO\_TECH\_GPRS](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RADIO_TECH_GPRS&project=miui-r-umi-dev) = 1,  [248](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "248) [RADIO\_TECH\_EDGE](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RADIO_TECH_EDGE&project=miui-r-umi-dev) = 2,  [249](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "249) [RADIO\_TECH\_UMTS](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RADIO_TECH_UMTS&project=miui-r-umi-dev) = 3,  [250](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "250) [RADIO\_TECH\_IS95A](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RADIO_TECH_IS95A&project=miui-r-umi-dev) = 4,  [251](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "251) [RADIO\_TECH\_IS95B](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RADIO_TECH_IS95B&project=miui-r-umi-dev) = 5,  [252](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "252) [RADIO\_TECH\_1xRTT](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RADIO_TECH_1xRTT&project=miui-r-umi-dev) = 6,  [253](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "253) [RADIO\_TECH\_EVDO\_0](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RADIO_TECH_EVDO_0&project=miui-r-umi-dev) = 7,  [254](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "254) [RADIO\_TECH\_EVDO\_A](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RADIO_TECH_EVDO_A&project=miui-r-umi-dev) = 8,  [255](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "255) [RADIO\_TECH\_HSDPA](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RADIO_TECH_HSDPA&project=miui-r-umi-dev) = 9,  [256](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "256) [RADIO\_TECH\_HSUPA](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RADIO_TECH_HSUPA&project=miui-r-umi-dev) = 10,  [257](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "257) [RADIO\_TECH\_HSPA](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RADIO_TECH_HSPA&project=miui-r-umi-dev) = 11,  [258](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "258) [RADIO\_TECH\_EVDO\_B](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RADIO_TECH_EVDO_B&project=miui-r-umi-dev) = 12,  [259](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "259) [RADIO\_TECH\_EHRPD](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RADIO_TECH_EHRPD&project=miui-r-umi-dev) = 13,  [260](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "260) [RADIO\_TECH\_LTE](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RADIO_TECH_LTE&project=miui-r-umi-dev) = 14,  [261](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "261) [RADIO\_TECH\_HSPAP](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RADIO_TECH_HSPAP&project=miui-r-umi-dev) = 15, // HSPA+  [262](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "262) [RADIO\_TECH\_GSM](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RADIO_TECH_GSM&project=miui-r-umi-dev) = 16, // Only supports voice  [263](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "263) [RADIO\_TECH\_TD\_SCDMA](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RADIO_TECH_TD_SCDMA&project=miui-r-umi-dev) = 17,  [264](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "264) [RADIO\_TECH\_IWLAN](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RADIO_TECH_IWLAN&project=miui-r-umi-dev) = 18,  [265](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "265) [RADIO\_TECH\_LTE\_CA](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RADIO_TECH_LTE_CA&project=miui-r-umi-dev) = 19,  [266](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-cannon-dev/device/generic/goldfish/radio/ril/ril.h#266) [RADIO\_TECH\_NR](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RADIO_TECH_NR&project=miui-r-cannon-dev) = 20  [267](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-umi-dev/hardware/ril/include/telephony/ril.h" \l "266)} [RIL\_RadioTechnology](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=RIL_RadioTechnology&project=miui-r-umi-dev); |

### 查看信号强度

在bugreport中搜索notifySignalStrength，得到所有的信号值。primary=CellSignalStrengthLte，primary指示的是当前激活的RAT类型。然后查看当前打印Log中对应的RAT的信号强度值。

02-26 08:40:18.667 radio 1791 1791 D DefaultPhoneNotifier: notifySignalStrength: ss=SignalStrength:{mCdma=CellSignalStrengthCdma: cdmaDbm=2147483647 cdmaEcio=2147483647 evdoDbm=2147483647 evdoEcio=2147483647 evdoSnr=2147483647 miuiLevel=0 level=0,mGsm=CellSignalStrengthGsm: rssi=2147483647 ber=2147483647 mTa=2147483647 miuiLevel=0 mLevel=0,mWcdma=CellSignalStrengthWcdma: ss=2147483647 ber=2147483647 rscp=2147483647 ecno=2147483647 miuiLevel=0 level=0,mTdscdma=CellSignalStrengthTdscdma: rssi=2147483647 ber=2147483647 rscp=2147483647 miuiLevel=0 level=0,mLte=CellSignalStrengthLte: rssi=-85 rsrp=-96 rsrq=-12 rssnr=65 cqi=0 ta=0 miuiLevel=5 level=3,mNr=CellSignalStrengthNr:{ csiRsrp = 2147483647 csiRsrq = 2147483647 csiSinr = 2147483647 ssRsrp = -94 ssRsrq = -3 ssSinr = 11 miuiLevel = 5 level = 0 },primary=CellSignalStrengthLte} phoneId=0 subId=1

### 查看PS驻留的小区信息

搜索handlePsNetworkStateChanged和handleCsNetworkStateChanged

06-04 15:07:25.409 radio 1514 1528 D RmcNwHdlr: [1] [handleCsNetworkStateChanged] mMdEreg n=0, stat=1, lac=\*\*84, ci=\*\*\*CDB4, eAct=4096, nwk\_existence=0, roam\_indicator=0, cause\_type=0, reject\_cause=0 mMdEcell act=0, cid=\*, mcc=0, mnc=0, lacTac=\*, pscPci=\*\*\*\*FFFF, sig1=0, sig2=0, rsrp=0, rsrq=0, timingAdvance=0, rssnr=0, cqi=0, bsic=255, arfcn=2147483647

06-04 15:07:25.410 radio 1514 1528 D RmcNwHdlr: [1] [handlePsNetworkStateChanged] mMdEgreg n=0, stat=1, lac=\*\*84, ci=\*\*\*CDB4, eAct=4096, rac=255, nwk\_existence=0, roam\_indicator=0, cause\_type=0, reject\_cause=0, dcnr\_restricted=0, endc\_sib=1, endc\_available=0. mMdEcell act=0, cid=\*, mcc=0, mnc=0, lacTac=\*, pscPci=\*\*\*\*FFFF, sig1=0, sig2=0, rsrp=0, rsrq=0, timingAdvance=0, rssnr=0, cqi=0, bsic=255, arfcn=2147483647

06-04 15:07:25.410 radio 1514 1528 D RmcNwHdlr: [1] handleScgConnectionChange old=0, pre=0, new=0

### 设置网络模式

06-21 16:02:19.909014  2254  2714 D MtkGsmCdmaPhone[0][1]: **setPreferredNetworkType**: networkType = 33 modemRaf = 561157 rafFromType = 916479 allowedNetworkTypes = -1 filteredType = 26

NetworkType枚举的定义位置：RILConstants.java

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| --- |
| [133](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "133) /\* NETWORK\_MODE\_\* See ril.h RIL\_REQUEST\_SET\_PREFERRED\_NETWORK\_TYPE \*/  [134](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "134) /\*\* GSM, WCDMA (WCDMA preferred) \*/  [135](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "135) **int** **[NETWORK\_MODE\_WCDMA\_PREF](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_WCDMA_PREF&project=miui-r-ares-dev)** = 0;  [136](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "136)  [137](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "137) /\*\* GSM only \*/  [138](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "138) **int** **[NETWORK\_MODE\_GSM\_ONLY](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_GSM_ONLY&project=miui-r-ares-dev)** = 1;  [139](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "139)  [140](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "140) /\*\* WCDMA only \*/  [141](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "141) **int** **[NETWORK\_MODE\_WCDMA\_ONLY](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_WCDMA_ONLY&project=miui-r-ares-dev)** = 2;  [142](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "142)  [143](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "143) /\*\* GSM, WCDMA (auto mode, according to PRL) \*/  [144](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "144) **int** **[NETWORK\_MODE\_GSM\_UMTS](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_GSM_UMTS&project=miui-r-ares-dev)** = 3;  [145](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "145)  [146](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "146) /\*\* CDMA and EvDo (auto mode, according to PRL) \*/  [147](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "147) **int** **[NETWORK\_MODE\_CDMA](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_CDMA&project=miui-r-ares-dev)** = 4;  [148](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "148)  [149](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "149) /\*\* CDMA only \*/  [150](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "150) **int** **[NETWORK\_MODE\_CDMA\_NO\_EVDO](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_CDMA_NO_EVDO&project=miui-r-ares-dev)** = 5;  [151](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "151)  [152](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "152) /\*\* EvDo only \*/  [153](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "153) **int** **[NETWORK\_MODE\_EVDO\_NO\_CDMA](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_EVDO_NO_CDMA&project=miui-r-ares-dev)** = 6;  [154](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "154)  [155](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "155) /\*\* GSM, WCDMA, CDMA, and EvDo (auto mode, according to PRL) \*/  [156](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "156) **int** **[NETWORK\_MODE\_GLOBAL](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_GLOBAL&project=miui-r-ares-dev)** = 7;  [157](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "157)  [158](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "158) /\*\* LTE, CDMA and EvDo \*/  [159](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "159) **int** **[NETWORK\_MODE\_LTE\_CDMA\_EVDO](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_LTE_CDMA_EVDO&project=miui-r-ares-dev)** = 8;  [160](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "160)  [161](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "161) /\*\* LTE, GSM and WCDMA \*/  [162](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "162) **int** **[NETWORK\_MODE\_LTE\_GSM\_WCDMA](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_LTE_GSM_WCDMA&project=miui-r-ares-dev)** = 9;  [163](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "163)  [164](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "164) /\*\* LTE, CDMA, EvDo, GSM, and WCDMA \*/  [165](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "165) **int** **[NETWORK\_MODE\_LTE\_CDMA\_EVDO\_GSM\_WCDMA](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_LTE_CDMA_EVDO_GSM_WCDMA&project=miui-r-ares-dev)** = 10;  [166](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "166)  [167](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "167) /\*\* LTE only mode. \*/  [168](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "168) **int** **[NETWORK\_MODE\_LTE\_ONLY](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_LTE_ONLY&project=miui-r-ares-dev)** = 11;  [169](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "169)  [170](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "170) /\*\* LTE and WCDMA \*/  [171](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "171) **int** **[NETWORK\_MODE\_LTE\_WCDMA](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_LTE_WCDMA&project=miui-r-ares-dev)** = 12;  [172](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "172)  [173](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "173) /\*\* TD-SCDMA only \*/  [174](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "174) **int** **[NETWORK\_MODE\_TDSCDMA\_ONLY](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_TDSCDMA_ONLY&project=miui-r-ares-dev)** = 13;  [175](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "175)  [176](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "176) /\*\* TD-SCDMA and WCDMA \*/  [177](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "177) **int** **[NETWORK\_MODE\_TDSCDMA\_WCDMA](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_TDSCDMA_WCDMA&project=miui-r-ares-dev)** = 14;  [178](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "178)  [179](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "179) /\*\* LTE and TD-SCDMA\*/  [180](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "180) **int** **[NETWORK\_MODE\_LTE\_TDSCDMA](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_LTE_TDSCDMA&project=miui-r-ares-dev)** = 15;  [181](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "181)  [182](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "182) /\*\* TD-SCDMA and GSM \*/  [183](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "183) **int** **[NETWORK\_MODE\_TDSCDMA\_GSM](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_TDSCDMA_GSM&project=miui-r-ares-dev)** = 16;  [184](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "184)  [185](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "185) /\*\* TD-SCDMA, GSM and LTE \*/  [186](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "186) **int** **[NETWORK\_MODE\_LTE\_TDSCDMA\_GSM](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_LTE_TDSCDMA_GSM&project=miui-r-ares-dev)** = 17;  [187](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "187)  [188](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "188) /\*\* TD-SCDMA, GSM and WCDMA \*/  [189](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "189) **int** **[NETWORK\_MODE\_TDSCDMA\_GSM\_WCDMA](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_TDSCDMA_GSM_WCDMA&project=miui-r-ares-dev)** = 18;  [190](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "190)  [191](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "191) /\*\* LTE, TD-SCDMA and WCDMA \*/  [192](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "192) **int** **[NETWORK\_MODE\_LTE\_TDSCDMA\_WCDMA](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_LTE_TDSCDMA_WCDMA&project=miui-r-ares-dev)** = 19;  [193](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "193)  [194](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "194) /\*\* LTE, TD-SCDMA, GSM, and WCDMA \*/  [195](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "195) **int** **[NETWORK\_MODE\_LTE\_TDSCDMA\_GSM\_WCDMA](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_LTE_TDSCDMA_GSM_WCDMA&project=miui-r-ares-dev)** = 20;  [196](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "196)  [197](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "197) /\*\* TD-SCDMA, CDMA, EVDO, GSM and WCDMA \*/  [198](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "198) **int** **[NETWORK\_MODE\_TDSCDMA\_CDMA\_EVDO\_GSM\_WCDMA](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_TDSCDMA_CDMA_EVDO_GSM_WCDMA&project=miui-r-ares-dev)** = 21;  [199](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "199)  [200](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "200) /\*\* LTE, TDCSDMA, CDMA, EVDO, GSM and WCDMA \*/  [201](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "201) **int** **[NETWORK\_MODE\_LTE\_TDSCDMA\_CDMA\_EVDO\_GSM\_WCDMA](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_LTE_TDSCDMA_CDMA_EVDO_GSM_WCDMA&project=miui-r-ares-dev)** = 22;  [202](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "202)  [203](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "203) /\*\* NR 5G only mode \*/  [204](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "204) **int** **[NETWORK\_MODE\_NR\_ONLY](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_NR_ONLY&project=miui-r-ares-dev)** = 23;  [205](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "205)  [206](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "206) /\*\* NR 5G, LTE \*/  [207](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "207) **int** **[NETWORK\_MODE\_NR\_LTE](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_NR_LTE&project=miui-r-ares-dev)** = 24;  [208](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "208)  [209](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "209) /\*\* NR 5G, LTE, CDMA and EvDo \*/  [210](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "210) **int** **[NETWORK\_MODE\_NR\_LTE\_CDMA\_EVDO](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_NR_LTE_CDMA_EVDO&project=miui-r-ares-dev)** = 25;  [211](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "211)  [212](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "212) /\*\* NR 5G, LTE, GSM and WCDMA \*/  [213](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "213) **int** **[NETWORK\_MODE\_NR\_LTE\_GSM\_WCDMA](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_NR_LTE_GSM_WCDMA&project=miui-r-ares-dev)** = 26;  [214](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "214)  [215](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "215) /\*\* NR 5G, LTE, CDMA, EvDo, GSM and WCDMA \*/  [216](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "216) **int** **[NETWORK\_MODE\_NR\_LTE\_CDMA\_EVDO\_GSM\_WCDMA](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_NR_LTE_CDMA_EVDO_GSM_WCDMA&project=miui-r-ares-dev)** = 27;  [217](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "217)  [218](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "218) /\*\* NR 5G, LTE and WCDMA \*/  [219](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "219) **int** **[NETWORK\_MODE\_NR\_LTE\_WCDMA](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_NR_LTE_WCDMA&project=miui-r-ares-dev)** = 28;  [220](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "220)  [221](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "221) /\*\* NR 5G, LTE and TDSCDMA \*/  [222](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "222) **int** **[NETWORK\_MODE\_NR\_LTE\_TDSCDMA](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_NR_LTE_TDSCDMA&project=miui-r-ares-dev)** = 29;  [223](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "223)  [224](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "224) /\*\* NR 5G, LTE, TD-SCDMA and GSM \*/  [225](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "225) **int** **[NETWORK\_MODE\_NR\_LTE\_TDSCDMA\_GSM](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_NR_LTE_TDSCDMA_GSM&project=miui-r-ares-dev)** = 30;  [226](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "226)  [227](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "227) /\*\* NR 5G, LTE, TD-SCDMA, WCDMA \*/  [228](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "228) **int** **[NETWORK\_MODE\_NR\_LTE\_TDSCDMA\_WCDMA](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_NR_LTE_TDSCDMA_WCDMA&project=miui-r-ares-dev)** = 31;  [229](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "229)  [230](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "230) /\*\* NR 5G, LTE, TD-SCDMA, GSM and WCDMA \*/  [231](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "231) **int** **[NETWORK\_MODE\_NR\_LTE\_TDSCDMA\_GSM\_WCDMA](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_NR_LTE_TDSCDMA_GSM_WCDMA&project=miui-r-ares-dev)** = 32;  [232](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "232)  [233](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "233) /\*\* NR 5G, LTE, TD-SCDMA, CDMA, EVDO, GSM and WCDMA \*/  [234](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-ares-dev/frameworks/base/telephony/java/com/android/internal/telephony/RILConstants.java" \l "234) **int** **[NETWORK\_MODE\_NR\_LTE\_TDSCDMA\_CDMA\_EVDO\_GSM\_WCDMA](https://opengrok.pt.xiaomi.com/opengrok3/s?refs=NETWORK_MODE_NR_LTE_TDSCDMA_CDMA_EVDO_GSM_WCDMA&project=miui-r-ares-dev)** = 33; |

## 电话

### CS呼叫过程

GET\_CURRENT\_CALL

### IMS的呼叫过程

UNSOL\_RESPONSE\_CALL\_STATE\_CHANGED：呼叫过程中的每个状态变化。

CallTC：类似于Historical Events，可以看到电话的整个过程，查看时local 挂机还是remote挂机

REQUEST\_HOLD：呼叫保持

REQUEST\_RESUME：从呼叫保持状态下恢复到呼叫状态

### 电话挂断异常判断

**CS call通话底层返回值关键字：LAST\_CALL\_FAIL\_CAUSE**

（通话正常结束）返回值：

1 ：未接来电

2：对方挂断

3：本地挂断

16 ：来电拒接

**Sip call 通话底层返回值关键字 ：Sip callFailCause**

（通话正常结束）返回值：

501 ：本地挂断

503 ：未接来电

504：来电拒接

510 ：对方挂断

## Crash信息

## RIL消息

# 待解问题

## 平时问题收集

### 如果LTE掉网，是否还会接收到Paging消息？

### 高通各层消息过滤方法

### 高通注册、掉网的查看方法

### LTE小区切换过程中，原有的SRB和DRB如何配置

### pcap文件解析为AMR文件

### GSM在什么场景下会发起LU流程

### 5G SA NAS消息学习整理

### 高通MMCP代码走读

Case Number:  05117042

Case Contact: yongqi liu

Account: Xiaomi Communications Co., Ltd.

Customer Project: J2S

Case Type: Bug/Issue

Subject: "THYME-3564 Sub2 CT card fail to camp on LTE after take out from shielding box."

New Comment from Qualcomm engineer: "Hi LTE,

UE request LTE, but no service, then reqeust and reigter CDMA, could you check if LTE no service is expected at below timepoint?

log:

20210301\_103120.zip

diag\_log\_20210301\_1054331614567273245.qmdl2

diag\_log\_20210301\_1055441614567344867.qmdl2

// Acquire service

02:55:19.017,sdcmd.c,6342,2,<<<< Returned Action=16384, ss=0, asubs\_id=1 <<<<,Sub-ID:2,

02:55:19.017,sdss.c,21241,2,ACQ\_GWL: num\_items 2, net\_sel 0, srv\_req\_type 4, scan\_scope 0, addl 0x0, sub 1,Sub-ID:2,

02:55:19.017,sdss.c,21267,2,ACQ\_GWL:sys\_mode = 9, acq\_reqd = 1 bst\_band\_cap && band\_cap, sub 1,Sub-ID:2,

02:55:19.017,sdss.c,21258,2,ACQ\_GWL:sys\_mode = 2, acq\_reqd = 0 bst\_band\_cap = 0x00000000 00000000. band\_cap     = 0x00000000 00000003 ,Sub-ID:2,

// Request LTE, but no service is reported

02:55:19.024,reg\_send.c,2174,2,DS: SUB 1 =REG= MMR\_REG\_REQ PLMN(460-11) RAT(0-GSM,1-W,2-LTE,3-TDS,4-NR5G) = 2 trans\_id 123,  scan\_scope=0,Sub-ID:2,

02:55:26.782,emm\_rrc\_handler.c,3485,2,DS: SUB 1 =EMM= RRC\_SERVICE\_IND -PLMN (0 - 0), TAC 0  SRV REQ pending 16973947,   state = 3  sub\_state = 4,Sub-ID:2,

// register CDMA

02:55:45.897,sdss.c,21083,2,>>>> Proc CDMA acq event=304 >>>>,Sub-ID:2,

BR."

**sdcmd.c和reg\_send.c**

# J22项目问题记录

## J22 Softbank定制机

### J22 Softbank定制机不能驻留到4G

需要注意：

软银卡有两种：

1.软银定制版； 2.软银公开版。

目前J22 Softbank定制机只能在插入软银定制版SIM卡才能正常驻网到4/5G，软银公开版SIM卡只能驻留到3G。

<https://jira.n.xiaomi.com/browse/CANNON-8834>

[CANNON-8834](https://jira.n.xiaomi.com/browse/CANNON-8834) Local\_J22\_Japan\_Sim softbank 5G Volte, sim can’t register on 5g&4g network(all times)\_6/22\_2021

|  |
| --- |
| J22使用的APN和对比机不相同。请检查。   APN设置为：plus.acs.jp.v6，对比机  Type Index Time Local Time Module Message Comment Time Differences  OTA 17850 4920635 11:41:32:941 EMM\_NASMSG [MS->NW] EMM\_Attach\_Request(EPS attach type="EMM\_ATTACH\_TYPE\_COMBINED\_ATTACH")  OTA 24206 4929164 11:41:33:341 ESM [NW->MS] ESM\_MSG\_ESM\_INFORMATION\_REQUEST (PTI:3, EBI:0)  OTA 24288 4929177 11:41:33:341 ESM [MS->NW] ESM\_MSG\_ESM\_INFORMATION\_RESPONSE (PTI:3, EBI:0)  **APN: plus.acs.jp.v6**  OTA 25894 4932008 11:41:33:541 EMM\_NASMSG [NW->MS] EMM\_Attach\_Reject(EMM cause="EMM\_CAUSE\_ESM\_FAILURE")       对比机： plus.4g  2021 Jul 13 08:42:15.817 [4F] 0xB0E3 LTE NAS ESM Plain OTA Outgoing Message – ESM information response Msg  Subscription ID = 1  pkt\_version = 1 (0x1)  rel\_number = 9 (0x9)  rel\_version\_major = 5 (0x5)  rel\_version\_minor = 0 (0x0)  eps\_bearer\_id\_or\_skip\_id = 0 (0x0)  prot\_disc = 2 (0x2) (EPS session management messages)  trans\_id = 16 (0x10)  msg\_type = 218 (0xda) (ESM information response)  lte\_esm\_msg  esm\_info\_res  acc\_pt\_name\_incl = 1 (0x1)  access\_point\_name  num\_acc\_pt\_val = 8 (0x8)  acc\_pt\_name\_val[0] = 4 (0x4) (length)  **acc\_pt\_name\_val[1] = 112 (0x70) (p)**  **acc\_pt\_name\_val[2] = 108 (0x6c) (l)**  **acc\_pt\_name\_val[3] = 117 (0x75) (u)**  **acc\_pt\_name\_val[4] = 115 (0x73) (s)**  acc\_pt\_name\_val[5] = 2 (0x2) (length)  **acc\_pt\_name\_val[6] = 52 (0x34) (4)**  **acc\_pt\_name\_val[7] = 103 (0x67) (g)** |

# K11T项目问题归纳

## Modem相关问题

### MTK平台Modem侧功能适配列表

#### factoryAta命令适配

JIRA问题：<https://jira.n.xiaomi.com/browse/AGATE-2609>

工厂报的问题：KEY站查询PhoneSN指令不支持，支持的指令为"factoryAta query CustorNv"。PhoneSN已经写入到手机，且可以正常通过adb命令读取到。需要智能制造部 刘国福([liuguofu1@xiaomi.com](mailto:liuguofu1@xiaomi.com))或者胡志飞([huzhifei@xiaomi.com](mailto:huzhifei@xiaomi.com))适配该命令。

<http://gerrit.pt.mioffice.cn/c/device/xiaomi/agate/+/1464997>

#### 工厂版本default IMEI填过IMEI check

标黄区域额代码只能出现的工厂版本中，工厂手机写入IMEI之前开机是默认值0xFF，如果不跳过IMEI Check则无法通过。在开发版和稳定版本中不能带有此change，否则默认的0xff也能通过IMEI check。

<http://gerrit.pt.mioffice.cn/c/alps/vendor/mediatek/proprietary/modem/mt6893/+/1464941>

|  |
| --- |
| kal\_bool custom\_nvram\_read\_and\_check\_signed\_critical\_data()  {  kal\_bool ret\_val;  kal\_int32 idx = 0, chk\_val = 0;  kal\_uint8 \*data\_buff = get\_ctrl\_buffer(NVRAM\_EF\_CUSTOMER\_SIGNED\_CRITICAL\_DATA\_SIZE);    ASSERT(data\_buff != NULL);  //check if skip IMEI check  if (isOLDVersion() || (!isMPVersion() && checkNVdata())) {  kal\_prompt\_trace(MOD\_NVRAM, "skip IMEI check");  free\_ctrl\_buffer(data\_buff);  return KAL\_TRUE;  }  // Only check when IMEI is not empty  ret\_val = nvram\_external\_read\_data(NVRAM\_EF\_IMEI\_IMEISV\_LID, 1, data\_buff, NVRAM\_EF\_IMEI\_IMEISV\_SIZE);  if (ret\_val != KAL\_TRUE) {  free\_ctrl\_buffer(data\_buff);  kal\_prompt\_trace(MOD\_NVRAM, "custom\_nvram\_read\_and\_check\_signed\_critical\_data read imei fail");  return KAL\_FALSE;  }  // check if default value, default value is all FF.Disable this process in Dev and stable Version.  #if 0  chk\_val = 0xFF;  for (idx = 0; idx < NVRAM\_EF\_IMEI\_IMEISV\_SIZE; idx++) {  chk\_val &= data\_buff[idx];  }    if (chk\_val == 0xFF) {  free\_ctrl\_buffer(data\_buff);  kal\_prompt\_trace(MOD\_NVRAM, "custom\_nvram\_read\_and\_check\_signed\_critical\_data imei is default value, bypass check");  return KAL\_TRUE;  }  #endif |

### 日本地区B41窄带需求

目前日本地区B41/N41为窄带，其他地区B41/N41为FullBand的处理。

SBP\_ENABLE\_PARTIAL\_BAND\_IN\_JAPAN

Feature could be enabled by enabling compiler option \_\_ENABLE\_PARTIAL\_BAND\_IN\_JAPAN\_\_ .

Please make sure that the custom configuration is correct in CUSTOM\_PARTIAL\_BAND\_INFO\_TBL in custom\_eas\_config.c

Also, this feature conflict with the existing feature (SBP\_DISABLE\_LTE\_B41).

Enable Partial Band setting under JAPAN mcc

If the serving mcc is JAPAN mcc, UE will enable the partial band according to custom setting table(CUSTOM\_PARTIAL\_BAND\_INFO\_TBL) in custom\_eas\_config.c

SBP\_DISABLE\_LTE\_B41

This SBP is used to decide if need to disable the LTE Band41 when UE stay out side of Japan.

When SBP enable, The UE will disable LTE Band 41 when stay out side of Japan.

When SBP disable, The UE keep original behavior when stay out side of Japan.

**修改处理： -- 此修改仅针对B41，N41需要申请Patch完成。**

日本地区为窄带，打开SBP\_ENABLE\_PARTIAL\_BAND\_IN\_JAPAN

其他地区B41/N41 FullBand，关闭SBP\_DISABLE\_LTE\_B41

关于CUSTOM\_PARTIAL\_BAND\_INFO\_TBL in custom\_eas\_config.c的说明

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

 \* Allowed to customize pratial supported band frequency by plmn

 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

const eas\_custom\_partial\_band\_info\_config CUSTOM\_PARTIAL\_BAND\_INFO\_TBL[] =

{

#ifdef UNIT\_TEST

    {"00200F", {41, 39650, 41500, 39650, 41500}},

    {"00200F", {41, 39650, 41589, 39650, 41589}},

    {"00200F", {41, 39650, 41589, 39650, 41589}},

    {"00200F", {41, 39900, 41589, 39900, 41589}},

    {"00200F", {40, 38650, 39649, 38650, 39649}},

#endif

    {"440FFF", {41, 40140, 41190, 40140, 41190}},  // shuz

    {"FFFFFF",{255,0,0,0,0}}   // END (don't touch and put your new entry above this line)

};

数组中的各个域的含义：

{"440FFF", {41, 40140, 41190, 40140, 41190}}

参数含义依序为：

{ “PLMN\_ID”, {band, downlink\_lower\_earfcn, downlink\_upper\_earfcn , uplink\_lower\_earfcn , uplink\_upper\_earfcn }}

这个只能配置B41

### 驻网类问题

#### NSA注册失败必现

[AGATE-2040](https://jira.n.xiaomi.com/browse/AGATE-2040) 【K11T】【P0.1】【国内】【研发测试】【RF一致性】 NSA注册Fail

Log现象如下，Native版本注册过程中，DCNR能力设置为0导致网络不会为UE添加NR Leg。

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Native版本注册失败**  Type Index Time Local Time Module Message Comment Time Differences  OTA 26176 10591780 03:04:37:457 ERRC\_SYS [NW->MS] **SystemInformationBlockType1** (EARFCN[1575], PCI[0])  plmn-Identity  mcc: 3 items  Item 0  MCC-MNC-Digit: 0  Item 1  MCC-MNC-Digit: 0  Item 2  MCC-MNC-Digit: 1  mnc: 2 items  Item 0  MCC-MNC-Digit: 0  Item 1  MCC-MNC-Digit: 1  **// 注册请求DCNR能力并未打开，导致后续无法添加ENDC**  OTA 33135 10593675 03:04:37:657 EMM\_NASMSG [MS->NW] EMM\_Attach\_Request(EPS attach type="EMM\_ATTACH\_TYPE\_COMBINED\_ATTACH")  **...0 .... = Dual connectivity with NR: Not supported**  OTA 37769 10598388 03:04:38:058 EMM\_NASMSG [NW->MS] EMM\_Attach\_Accept(EPS attach result="EMM\_ATTACH\_RESULT\_COMBINED\_ATTACHED")  OTA 39255 10598536 03:04:38:058 EMM\_NASMSG [MS->NW] EMM\_Attach\_Complete  MTK分析：  请检查是否有enable nr band，谢谢   | **Type** | **Index** | **Time** | **Local Time** | **Module** | **Message** | **Comment** | **Time Differences** | | --- | --- | --- | --- | --- | --- | --- | --- | | PS | 102084 | 2024928370 | 19:14:34:307 | MRS | [MRS\_NRAS] band 78 is not endc nr supported band |  |  | |

#### 切换到SA+NSA后长时间不驻SA

[AGATE-3352](https://jira.n.xiaomi.com/browse/AGATE-3352) K11T\_R\_NJ\_【modem】切换到SA+NSA模式后，长时间不驻SA，飞行模式打开关闭后才能注网SA\_必现\_21.4.28

[AGATE-3396](https://jira.n.xiaomi.com/browse/AGATE-3396) FT\_K11T\_ShenZhen\_SA\_卡1主卡移动SA+卡2副卡联通5G，PS态，UE做DDS切换到卡2再DDS回卡1，5s内卡1数据图标闪了1下恢复（Fail rate:1/3）\_0428

MTK case：ALPS05592969

问题点：开启SA+NSA时/切主卡后，AP发送AT+E5GOPT=7，而不是AT+E5GOPT=7,2。关于E5GOPT的描述如下。

         以下為AT+E5GOPT的說明:

         AT+E5GOPT=7,0 : 相當於AT+E5GOPT=7，僅會開啟vg option 2，如果當下有連結，會等到連結被釋放(e.g., NW端主動釋放)，預期連結釋放後，可以透過reselection回到SA。

         AT+E5GOPT=7,1 : 開啟vg option 2的同時會在條件允許下(e.g., 沒有call ongoing)由UE強迫切斷連結，不會等到NW來釋放，預期連結釋放後，可以透過reselection回到SA。

         AT+E5GOPT=7,2 : 開啟vg option 2後，在條件允許下(e.g., 沒有call ongoing, NR為最高priority)主動觸發找網，預期透過找網而非reselection的方式回到SA。回SA网络速度最快。

需要AP侧的修改：

<http://gerrit.pt.mioffice.cn/c/platform/packages/services/MiuiTelephony/+/1363876>

需要支持此特征的项目，需要在此判断中添加判断：

注意：Build.DEVICE为[**ro.product.device**]:[amber]



另外需要的Patch：

[Release Info]

- Check-in date (YYYY/MM/DD): 2021/02/18

- Patch ID: MOLY00618335 (MOLY.NR15.R3.MP.V1.6)

- Compiler/feature option change (if any):

enable SBP : SBP\_TRIGGER\_SEARCH\_WHEN\_OPTION2\_ON or add compile option : \_\_TRIGGER\_SEARCH\_WHEN\_OPTION2\_ON\_\_

[Root Cause]

MTK prefer to wait for NW release connection and reselect to NR, so do not trigger search after turn on vg option 2.

[Solution]

Trigger search when turn on vg option 2

[Suggested test scenarios to customer]

Turn off and on vg option 2.

Please verify the patch and update the test result on eService.

Thanks

**SA开启的相关问题：**

1.UE侧开启了Option2，是否需要通知到网络？如何通知？

[MTK]开启SBP\_TRIGGER\_SEARCH\_WHEN\_OPTION2\_ON之后在条件允许的情况下（如：没有正在进行的call）直接断开连接触发搜网，如果找到NR小区，则直接在NR小区上发起注册；否则，在LTE上发起TAU过程，其中也会将SA能力通知给NW。

2.网络配置NR测量配置时，UE上报NR的B1事件，网络添加NR leg或者是执行到NR的重定向（RRCConnectionRelease）是网络控制的，还是有参数标识？

[MTK]在收到B1事件后由NW来决定是否添加SCG或是重定向。

#### hVoLTE配置

hVoLTE, or hybrid VoLTE is a mode of operation that allows LTE networks and existing circuit-switched networks to coexist.

目前的默认hVoLTE配置为3，自动检测是否支持CDMA，若支持则为hVoLTE，否则为LTE VoLTE only。

**如果是CT入库测试，需要设置为1。**

**相关的MTK Case：ALPS04713043**

可以通过下面两种方式检查：persist.vendor.mtk\_ct\_volte\_support的value为2，即为hVoLTE；为1，即为LTE only，感谢！

1.adb shell getprop persist.mtk\_ct\_volte\_support

2.device/mediatek/common/device.mk

# Add for MTK\_CT\_VOLTE\_SUPPORT

ifeq ($(strip $(MTK\_CT\_VOLTE\_SUPPORT)), yes)

  PRODUCT\_PROPERTY\_OVERRIDES += persist.vendor.mtk\_ct\_volte\_support=2

endif

**[FAQ24984] Configure mtk\_ct\_volte\_support =3 when UE doesn't support CDMA**

[DESCRIPTIOIN]

Configure mtk\_ct\_volte\_support =3 when UE doesn't support CDMA

[Solution]

When the UE configure "mtk\_ct\_volte\_support =3", it means the hvolte function is turned on. The terminal will automatically switch between VoLTE/LTE only mode and SRLTE to ensure that voice can work normally. The ''mtk\_ct\_volte\_support =3'' is only vaild for CT.

If UE doesn't support CDMA, UE will not retry C2K call when ims call fail in China. Turnning on hvolte is not necessary in the circumstances.

However, if UE activates international roaming service, it is allowed to retry cs domain.

#### 暗码打开VoLTE开关并关闭后，热插拔自动打开VoLTE开关

[AGATE-3458](https://jira.n.xiaomi.com/browse/AGATE-3458) FT\_K11T\_NanJing\_卡一主卡CU 5V+卡2副卡CM 5G，热插拔后卡2Volte开关自动开启且能成功注册，附录屏（rate:必现)\_0429

|  |
| --- |
| [郭必忠](https://jira.n.xiaomi.com/secure/ViewProfile.jspa?name=guobizhong) added a comment - Yesterday - edited  这个问题设计如此。  5G机型在新版本都隐藏了中国三大运营商的volte开关，且默认开启volte。  同时为了防止通过OTA升级到隐藏volte开关版本前，用户手动已经关闭volte，从而导致OTA后无法开启volte，上层做了需求，5G机型在OTA到隐藏volte开关的版本后，强制打开用户手动关闭的volte。  K11T应该默认不显示三大运营商volte开关的。所以该问题在正常情况下不会复现。  看log应该是测试时通过暗码强制打开了volte开关，导致第一次手动关闭volte后，热插拔重新插入了，触发了原本OTA升级才会走的逻辑，引起问题。  同样的sim，按照测试手法，第二次手动关闭volte后，再热插拔不会强制打开volte。  [钱建林](https://jira.n.xiaomi.com/secure/ViewProfile.jspa?name=v-qianjianlin) 这个测试手法不适用这个问题。 |

#### 关闭VoLTE，无法驻留到SA网络

MTK的设计如此，SA必须要开启VoLTE才能驻留，目前不存在SA与2/3G的联合注册，无法CSFB到2/3G CS域。

[AGATE-3305](https://jira.n.xiaomi.com/browse/AGATE-3305) K11R-R\_NJ\_关闭VoLTE开关，会由5G降至4G\_必现\_21.4.27

|  |
| --- |
| **// 关闭VoLTE**  SYS 271153 44475459 14:27:40:723 NIL [AT\_RX p62,ch4]AT+EIMSCFG=0,1,0,0,1,1  => Decode:Integrated IMS related capability and functionality +EIMSCFG  <volte> : 0(Disable)  <vilte> : 1(Enable)  <vowifi> : 0(Disable)  <viwifi> : 0(Disable)  <ims\_sms> : 1(Enable)  <eims> : 1(Enable)  **// 回落到LTE**  OTA 290948 44480984 14:27:41:123 EMM\_NASMSG [MS->NW] **EMM\_Tracking\_Area\_Update\_Request**(EPS update type="EMM\_UPDATE\_TYPE\_COMBINED\_TAU\_IMSI\_ATTACH", active flag="KAL\_FALSE")  OTA 298069 44490099 14:27:41:724 EMM\_NASMSG [NW->MS] **EMM\_Tracking\_Area\_Update\_Accept**(EPS update result="EMM\_UPDATE\_RESULT\_COMBINED\_UPDATED")  OTA 298548 44490142 14:27:41:724 EMM\_NASMSG [MS->NW] **EMM\_Tracking\_Area\_Update\_Complete**  **SYS 300995 44490441 14:27:41:724 NIL [AT\_URC p59,ch1]+EGREG: 1,"0051F9","007602391",4096,"FF",1,1,0,1,0,0,0** |

#### 双电信卡场景，副卡电信卡强制开启VoLTE开关

[AGATE-3586](https://jira.n.xiaomi.com/browse/AGATE-3586) FT\_K11T\_NanJing，卡1副卡电信5G+卡2主卡电信5V，数据切换卡1后正常，切回卡2后卡1自动打开HD开关，再从新切换到卡1后卡1HD图标自动关闭(必现/rate)\_0507

|  |
| --- |
| **电信卡1X+NSA模式下，数据卡切走会自动打开VoLTE开关，需要AP侧同事继续查看。**  // 切数据卡到卡2，会自动打开卡1的VoLTE开关  **SYS 2937094 301387331 14:29:30:391 NIL [ATCI\_AT\_I\_0 s35]AT+EIMSCFG=1,0,0,0,1,1 // 卡1 VoLTE开关打开**  => Decode:Integrated IMS related capability and functionality +EIMSCFG  <volte> : 1(Enable)  <vilte> : 0(Disable)  <vowifi> : 0(Disable)  <viwifi> : 0(Disable)  <ims\_sms> : 1(Enable)  <eims> : 1(Enable)  **SYS 2950667 301393240 14:29:30:791 NIL [AT\_RX p58,ch0]AT+EDATASIM=2 // 切数据卡到卡2**  // 卡1 注册VoLTE  SIP 70 301511714 14:29:38:397 [MS->NW][P2][S1]REGISTER sip:ims.mnc011.mcc460.3gppnetwork.org SIP/2.0  SIP 71 301516914 14:29:38:598 [NW->MS][P2][S1]SIP/2.0 401 Unauthorized  SIP 73 301521774 14:29:38:998 [MS->NW][P2][S1]REGISTER sip:ims.mnc011.mcc460.3gppnetwork.org SIP/2.0  SIP 74 301525707 14:29:39:199 [NW->MS][P2][S1]SIP/2.0 200 OK  **// 手动关闭VoLTE**  SYS 3477179 301640714 14:29:46:606 NIL [AT\_RX p67,ch15]AT+EIMSCFG=0,1,0,0,1,1  => Decode:Integrated IMS related capability and functionality +EIMSCFG  <volte> : 0(Disable)  <vilte> : 1(Enable)  <vowifi> : 0(Disable)  <viwifi> : 0(Disable)  <ims\_sms> : 1(Enable)  <eims> : 1(Enable)  **// 切数据卡到卡1，卡1驻留在1X + NSA模式**  SYS 3677910 301710519 14:29:51:011 NIL [AT\_RX p63,ch11]AT+EDATASIM=1  **// 切数据卡到卡2**  SYS 4274058 301987618 14:30:08:837 NIL [AT\_RX p58,ch0]AT+EDATASIM=2  **// 卡1 VoLTE自动打开**  SYS 4275327 301987804 14:30:08:837 NIL [ATCI\_AT\_I\_0 s35]**AT+EIMSCFG=1,1,0,0,1,1**  => Decode:Integrated IMS related capability and functionality +EIMSCFG  **<volte> : 1(Enable)**  **<vilte> : 1(Enable)**  <vowifi> : 0(Disable)  <viwifi> : 0(Disable)  <ims\_sms> : 1(Enable)  <eims> : 1(Enable)  SIP 107 302129126 14:30:17:915 [MS->NW][P2][S1]REGISTER sip:ims.mnc011.mcc460.3gppnetwork.org SIP/2.0  SIP 108 302133552 14:30:18:115 [NW->MS][P2][S1]SIP/2.0 401 Unauthorized  SIP 110 302138430 14:30:18:515 [MS->NW][P2][S1]REGISTER sip:ims.mnc011.mcc460.3gppnetwork.org SIP/2.0  SIP 111 302142784 14:30:18:715 [NW->MS][P2][S1]SIP/2.0 200 OK |

### 手机信号塔测试

<https://wiki.n.miui.com/pages/viewpage.action?pageId=300385625>

需要使用的工具：[signed\_PLATFORM\_TelephonyDebugTool.apk](http://corgi.pt.miui.com/api/build/module/task/2077215/out/signed_PLATFORM_TelephonyDebugTool_d754a482503840ec84a8a092d82781ea.apk)



点击各个信号格的按钮，界面的信号塔会显示对应的信号塔的个数。如果不变化，则需要找Telephony黄存刚查看原因。此工具为Telephony工具。相关JIRA：[AGATE-2797](https://jira.n.xiaomi.com/browse/AGATE-2797) K11T\_R\_NJ\_手机信号塔测试，信号值无变化\_必现\_21.4.21

## SAR配置

// LTE和NR SAR通过EZtool中的Excel配置

mcu/custom/l1/el1\_rf/MT6891\_LTE\_MT6190\_EVB\_CUSTOM/DRDI/Set5/Toolgen/lte\_custom\_rf\_sar.h

mcu/custom/l1/nl1\_rf/MT6891\_NR\_MT6190\_EVB\_CUSTOM/DRDI/Set5/Toolgen/nr\_custom\_rf\_sar.h

// GSM & WCDMA需要修改代码中的SAR值

mcu/custom/l1/gl1\_rf/MT6891\_2G\_MT6190\_EVB\_CUSTOM/DRDI/Set5/l1d\_custom\_feature.c

mcu/custom/l1/ul1\_rf/MT6891\_UMTS\_FDD\_MT6190\_EVB\_CUSTOM/DRDI/Set5/u12193.c

// 射频调试之后的功率回退

mcu/custom/l1/gl1\_rf/MT6891\_2G\_MT6190\_EVB\_CUSTOM/DRDI/Set5/l1d\_custom\_rf.h

// 需要打开SAR使能开关

mcu/custom/l1/mml1\_rf/MT6891\_MMRF\_MT6190\_EVB\_CUSTOM/DRDI/Set5/mml1\_custom\_rf.h

## 通话类问题

[MIUIROM-82912](https://jira.n.xiaomi.com/browse/MIUIROM-82912) K11T\_R\_NJ\_【电话】测试机起呼界面切换到视频彩铃画面的过程中出现纵向拉伸\_必现\_20.4.13

类似问题：

[AGATE-4357](https://jira.n.xiaomi.com/browse/AGATE-4357) FT\_K11T\_ChongQing\_VOLTE视频呼叫，起呼时屏幕异常（视频界面人物瞬间会变宽一下，然后恢复正常）\_必现\_0519

|  |
| --- |
| 彩铃建立过程中，网络修改了一次视频窗口的比例，导致窗口尺寸变化。     // 出现过一次网络侧UPDATE消息，修改尺寸比例，从默认比例修改为：720:1280  **SIP 95 193854289 14:19:22:276 [NW->MS][P1][S1]UPDATE sip:+8618251955387@[2409:8124:0C05:01C7:1675:4B4D:3293:A1E0]:50041 SIP/2.0**  m=video 15454 RTP/AVP 114  a=content:g.3gpp.cat  a=rtpmap:114 H264/90000  a=fmtp:114 max-br=2174;profile-level-id=42C01F;packetization-mode=1;sprop-parameter-sets=Z0LAHtkAtAoaEAAAAwAQAAADA8DxgySA,aMuB8sg=  a=framerate:30  **a=framesize:114 720-1280**  a=curr:qos remote none  a=des:qos optional remote sendrecv  a=conf:qos remote sendrecv  a=curr:qos local sendrecv  a=des:qos optional local sendrecv  **SIP 96 193854730 14:19:22:276 [MS->NW][P1][S1]SIP/2.0 200 OK**  m=video 65386 RTP/AVP 114  b=AS:2162  b=RS:8000  b=RR:6000  a=rtpmap:114 H264/90000  a=fmtp:114 profile-level-id=42C01F;packetization-mode=1;sprop-parameter-sets=Z0LAH42NQFoFDTUFAgIHhEIpwA==,aMpDyA==  a=curr:qos local sendrecv  a=curr:qos remote sendrecv  a=des:qos optional remote sendrecv  a=des:qos mandatory local sendrecv  a=sendrecv |

## 签名相关

## Meta相关

### 要求MIUI开机进Meta

K11T MIUI版本开机进Meta需要带的change：

// 在用户版本中设置MTK\_ATM\_SUPPORT为yes，之前是判断FACTORY\_BUILD为1才开启

<http://gerrit.pt.mioffice.cn/c/alps/vendor/mediatek/proprietary/bootable/bootloader/lk/+/1318292>

// 添加DMTK\_ATM\_SUPPORT编译选项，之前是判断FACTORY\_BUILD为1才开启

<http://gerrit.pt.mioffice.cn/c/alps/vendor/mediatek/proprietary/hardware/meta/+/1318302>

// 去温控的change

<http://gerrit.pt.mioffice.cn/c/platform/frameworks/native/+/1278302>

// disable power key

<http://gerrit.pt.mioffice.cn/c/alps/kernel-4.14/+/1282807>

<http://gerrit.pt.mioffice.cn/c/alps/vendor/mediatek/proprietary/bootable/bootloader/preloader/+/1282788>

<http://gerrit.pt.mioffice.cn/c/alps/vendor/mediatek/proprietary/bootable/bootloader/preloader/+/1282771>

### Meta口不枚举

路径：[miui-r-cannon-dev/vendor/mediatek/proprietary/hardware/meta/common/src/tst\_main.cpp#43](https://opengrok.pt.xiaomi.com/opengrok3/xref/miui-r-cannon-dev/vendor/mediatek/proprietary/hardware/meta/common/src/tst_main.cpp#43) 这一段被注释掉了？

需要查看43行到53行是否被USB组的同事注释掉了。



### K11R P1.1不进Meta问题

如果K11R P1.1 手机无法关机链接meta工具，可以使以下方法尝试：

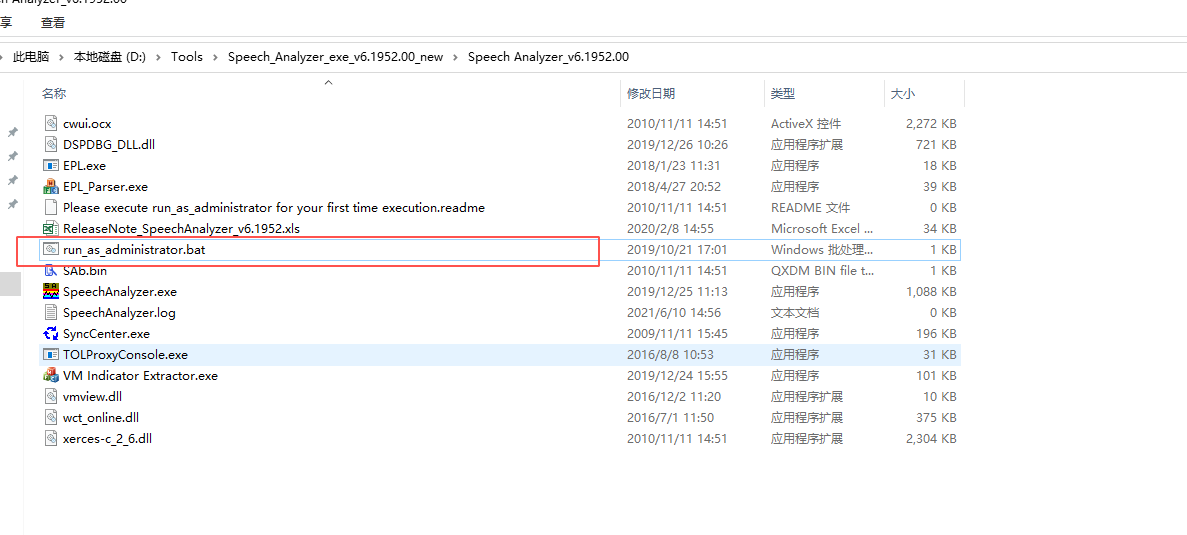
不连接电源或者USB线，手机电量充足情况下手动重启手机后，静置3分钟，然后再次连接meta工具。

此方法操作一次即可，成功后无需再次按照上述步骤操作。但是手机需要有root权限。

## SpeechAnalyzer

打开SpeechAnalyzer.exe，加载xxx.vm文件，总是提示无效值指针？

试试在SpeechAnalyzer目录中以管理员权限运行run\_as\_administrator.bat，然后再试一次。



# 国内认证相关问题

## 线上记录文档

<https://xiaomi.f.mioffice.cn/sheets/shtk4uKXL7YjXWW1I83pEH0Zxud>

<https://xiaomi.f.mioffice.cn/docs/dock4QBlqtNpUF1MIagsBEu54Ib>

## L3A入库测试问题

### CU SA发起VoLTE通话30s不回落4G

JIRA：[MIUIROM-344496](https://jira.n.xiaomi.com/browse/MIUIROM-344496)【L3A】【CU自测】通话时主被叫不能在30秒内回落4G\_必现

<http://gerrit.pt.mioffice.cn/c/vendor/qcom/proprietary-sm8350-la10/+/1741395>

[commonsys/telephony-fwk/opt/telephony/src/java/com/qualcomm/qti/internal/nrNetworkService/MainServiceImpl.java](http://gerrit.pt.mioffice.cn/c/vendor/qcom/proprietary-sm8350-la10/+/1741395/2/commonsys/telephony-fwk/opt/telephony/src/java/com/qualcomm/qti/internal/nrNetworkService/MainServiceImpl.java)

该change用于去掉承载的分配通知延迟和5G图标显示的延迟。

生效的bugreport打印：

11-01 10:48:37.894 radio 3129 3374 D MainServiceImpl: delayNotifyNrIcon, mcc mnc in exception list, no delay, operator = 46001

Modem侧也有5G显示的延迟处理，分别为两个Timer：Timer1和Timer2。

Timer1：

Timer2：从显示5G的空闲态到进入到4G连接后延迟Timer2的时长后再显示4G。

Modem的修改：<http://gerrit.pt.mioffice.cn/c/vendor/qcom/non-hlos/sdx55m_modem/+/1756102>

将Timer1和Timer2两个延迟的定时器都设置为0，掉4G后立即显示4G，取消延迟。

## AS层相关问题

### N28/N41切换问题

高通项目需要使能如下NV：

**LTE\_FEATURE\_L2NR\_PS\_HANDOVER\_FDD\_FR1\_138**

**LTE\_FEATURE\_L2NR\_PS\_HANDOVER\_TDD\_FR1\_139**

irat-ParametersNR-v1540

eutra-EPC-HO-ToNR-FDD-FR1-r15: supported (0)

eutra-EPC-HO-ToNR-TDD-FR1-r15: supported (0)

sa-NR-r15: supported (0)

supportedBandListNR-SA-r15: 6 items

Item 0

SupportedBandNR-r15

bandNR-r15: 1

Item 1

SupportedBandNR-r15

bandNR-r15: 3

Item 2

SupportedBandNR-r15

bandNR-r15: 28

Item 3

SupportedBandNR-r15

bandNR-r15: 41

Item 4

SupportedBandNR-r15

bandNR-r15: 77

Item 5

SupportedBandNR-r15

bandNR-r15: 78

### ShortDRX支持问题 – VoNR郑州联通联调问题

1. JIRA：[HAYDN-10144](https://jira.n.xiaomi.com/browse/HAYDN-10144) FT\_K11\_Zhengzhou\_郑州联通VoNR联调，UE能力未上报shortDRX\_1029
2. [VENUS-19863](https://jira.n.xiaomi.com/browse/VENUS-19863) FT\_K2\_Zhengzhou\_郑州联通VoNR联调，UE能力未上报shortDRX\_1029

NR的ShortDRX支持问题，需要在能力上报消息UeCapabilityInformation中确认是否有ShortDRX的支持。

|  |
| --- |
| MAC-ParametersXDD-Diff ::= SEQUENCE {  skipUplinkTxDynamic ENUMERATED  {supported} OPTIONAL,  logicalChannelSR-DelayTimer ENUMERATED {supported}  OPTIONAL,  longDRX-Cycle ENUMERATED {supported} OPTIONAL,  shortDRX-Cycle ENUMERATED {supported} OPTIONAL,  multipleSR-Configurations ENUMERATED {supported} OPTIONAL,  multipleConfiguredGrants ENUMERATED {supported} OPTIONAL,  ...  } |

联调测试JIRA：[HAYDN-10144](https://jira.n.xiaomi.com/browse/HAYDN-10144) FT\_K11\_Zhengzhou\_郑州联通VoNR联调，UE能力未上报shortDRX\_1029

|  |
| --- |
| [0xB821] 07:50:15.328901 UL\_DCCH / UeCapabilityInformationUL\_DCCH / UeCapabilityInformation1  },  mac-Parameters  {  mac-ParametersXDD-Diff  { logicalChannelSR-DelayTimer supported,  longDRX-Cycle supported,  multipleSR-Configurations supported }  }, |

shortDRX-Cycle capability is not enabled on 4.1/4.3 due to lack of IODT/FT. if is default off on those build.

临时测试打开ShortDRX的功能，将如下efs文件推入到目录：/nv/item\_files/modem/nr5g/RRC/



### VoNR能力支持设置

VoNR能力通过UeCapabilityInformation上报给网络。高通通过NV74233设置是否开启VoNR能力。

IMS-ParametersFRX-Diff ::= SEQUENCE {

voiceOverNR ENUMERATED {supported} OPTIONAL,

...

}

打开VoNR开关的能力上报中会多出如下的能力项：

|  |
| --- |
| nonCriticalExtension  {  ims-Parameters  {  ims-ParametersFRX-Diff  {  voiceOverNR supported  }  }  }  irat-ParametersNR-v1540  {  ims-VoiceOverNR-FR1-r15 supported,  sa-NR-r15 supported,  …  } |

高通关于VoNR能力的开关设置的修改：

<http://gerrit.pt.mioffice.cn/c/vendor/qcom/non-hlos/modem_proc/+/1852209>

### VoNR编码方案配置

中国联通VoNR外场测试用例中提到了VoNR编码互通的测试用例，包括如下场景。

#### Test1：5.1 VoNR语音通话编解码 AMR-WB。全程使用ARM-WB不需要编解码转换。

1. 呼叫成功接通，语音清晰；
2. 检查各网元的编码协商信令流程符合协议，全程使用AMR WB，不需要编解码转换；

#### Test2：5.2.1 EVS SWB互通

终端能力设置检查

1、检查终端应支持EVS WB和SWB语音编码。验证UE A在发送的invite消息中应至少支持以下EVS配置之一：

• EVS 配置A1: br=5.9-13.2; bw=nb-swb.

• EVS 配置A2: br=5.9-24.4; bw=nb-swb.

• EVS 配置B0: br=13.2; bw=swb.

• EVS 配置B1: br=9.6-13.2; bw=swb.

• EVS 配置B2: br=9.6-24.4; bw=swb.

2、呼叫成功接通，语音清晰；

3、检查各网元的编码协商信令流程符合协议，语音编解码使用EVS SWB

#### Test3：5.2.2 主叫支持EVS SWB，被叫仅支持EVS WB，则选择EVS WB

1、检查终端应支持EVS WB和SWB语音编码。验证UE A在发送的invite消息中应至少支持以下EVS配置之一：

• EVS 配置A1: br=5.9-13.2; bw=nb-swb.

• EVS 配置A2: br=5.9-24.4; bw=nb-swb.

2、呼叫成功接通，语音清晰；

3、检查各网元的编码协商信令流程符合协议，语音编解码使用EVS WB。

#### Test4：5.2.3主叫支持EVS SWB，被叫仅支持AMR WB时，选择AMR WB进行呼叫

VoNR用户EVS和AMR互通

处理流程：

1. 网络中各网元系统及操作维护台运行正常，支持VoNR功能；

2. 主叫支持EVS SWB，被叫不支持EVS SWB但支持AMR WB；

3. 终端的EVS配置为A1或者A2；

4. VoNR终端处于SA NR组网模式下，5QI=1为IMS默认承载；

5. VoNR UE A和VoNR UE B在IMS注册成功。

#### Test5: 5.3.1 VoNR视频通话编解码H.264 CBP3.1

1. 验证UE A在发送的invite消息中内容包含支持H.264视频编码模式信息及profile-level-id前8位为0x42，后8位值为1F（1F换算成10进制就是31）

2. 呼叫成功建立，业务正常

#### Test6: 5.3.2 VoNR视频通话编解码（H.265 Main Profile Level 3.1）

1. 验证UE A在发送的invite消息中内容包含invite消息中SDP中内容为：

2. H265：level-id=93；H264：profile-level-id前8位为0x64，后八位值为1F（1F换算成10进制就是31）；

3. 呼叫成功建立，业务正常。

#### Test7: 5.3.3 VoNR视频通话编解码（H.264 CHP 3.1）

1. 预期结果：验证UE A在发送的invite消息中内容包含支持H.264视频编码模式信息及profile-level-id前8位为0x64，后8位值为1F（1F换算成10进制就是31）；

2. 呼叫成功建立，业务正常

## IMS EVS参数配置

### 配置文件位置

默认配置：dataims/Configuration/ConfigFramework/OEM\_OVERRIDE\_FILES/sdx55.rmtefs.prodQ/

客制化：modem\_proc/dataims/Configuration/NVConfigGroups/SIP

NV#73846：modem\_proc/dataims/Configuration/NVConfigGroups/VT\_VoLTE\_VoWiFi/

### 参数配置

高通在dataims/Configuration/ConfigFramework/OEM\_OVERRIDE\_FILES/sdx55.rmtefs.prodQ/提供了各个运营商的IMS默认参数配置文件，该文件保持不修改。如果该文件中的配置参数不能满足运营商的要求，则需要在该运营商对应的modem\_proc/dataims/Configuration/NVConfigGroups/SIP /XXX/overideconfig中进行客制化。

步骤的步骤：

* + 1. 检查默认的配置是否符合要求。
    2. 符合要求则查看客制化中是否对默认参数有过修改，有修改则删除。
    3. 不符合要求，则在客制化overideconfig中对不符合要求的参数进行修改。

NOTE：NV#73846中的evs\_prim\_mode大于等于0才会激活EVS。(EVS\_PRIMARY\_MODE [EVS mode, IO or Primary Mode])

### 修改注意事项

参考文件：《kba-170531044543\_8\_how\_to\_configure\_ims\_items\_in\_the\_overideconfig\_file.pdf》

OEM需要在客制化目录下修改对应的overideconfig文件(modem\_proc/dataims/Configuration/NVConfigGroups/SIP)，不要修改默认配置中的配置参数(dataims/Configuration/ConfigFramework/OEM\_OVERRIDE\_FILES/sdx55.rmtefs.prodQ/)

修改注意事项：

* + - * 1. 修改需要基于运营商默认的overideconfig，若有改动则修改否则保持不变。
        2. 修改的参数需要在参数名称前添加星号\*，星号表示该项参数由OEM修改，没有星号则不会生效。
        3. Overideconfig的第一行的空行不可删除！！！
        4. Overideconfig的结尾需要留至少一个空行(这里直接留三个空行不会出错)
        5. 每个参数配置项的前后都必须要留空行！！！
        6. 每个配置的参数必须要填写在所属的Group Name下才能生效。
        7. #符号用于注释行，行首一个#即可，多个#不推荐
        8. 如果在overideconfig中找不到某个IMS配置项，则表明该配置项对OEM不开放且无法被OEM自行修改。
        9. 新增加的配置域和配置参数最好从overideconfig的中间添加，减少出错的概率。
        10. 修改后的overideconfig文件放到/efsprofiles/目录中，注意名称后面带了s。

### 参数含义解释

在默认配置文件overideconfig\_IR92\_OVERRIDE-XX中，有各种参数的配置，参数的配置说明如下：

#### 配置域

配置域通过英文中括号进行标识，如编码方式的配置域[QIPCALL:ImsMediaProfileConfig]

#### 编码列表的配置语法解析

AudioProfile1 = "AMR\_1\_104;AMR\_4\_103;AMR\_0\_102;AMR\_2\_101"，AMR\_1为编码的配置项，这是通过[QIPCALL:AMR\_1]来对AMR\_1进行参数配置的。

AMR\_0-对应 [QIPCALL:AMR\_0]的配置

AMR\_1-对应 [QIPCALL:AMR\_1]的配置

AMR\_2-对应 [QIPCALL:AMR\_2]的配置

AMR\_1后面的\_104表示在SDP中表示时的Payload Type的代号。如下图展示的SDP内容，104代表的是AMR-WB/1600/1。

\_106，\_127，\_126是按照运营商需求a=fmtp进行配置的，若没有需求就按照高通默认的配置，例如：EVS\_0\_106默认的需要和高通默认的overideconfig文件里保持一致。



#### BandWidth

BandWidth支持类型

FB bitrate范围：16.4-128，目前不支持FB

SWB bitrate 范围：9.6-24.4(max bitrate=120)，

WB bitrate 范围5.9-24.4(max bitrate=127)，

NB  bitrate 范围5.9-24.4(max bitrate=127)

#Possible INTEGER values for Bandwidth are as follows:

 //常用

#0 --> BandWidth\_NB //5.9-24.4

#1 --> BandWidth\_WB//5.9-24.4

#2 --> BandWidth\_SWB//9.6-24.4

#3 --> BandWidth\_FB //高通目前不支持

#4 --> BandWidth\_NB\_WB

#5 --> BandWidth\_NB\_SWB

#6 --> BandWidth\_NB\_FWB

#7 --> BandWidth\_MAX

#### BitRate

各个整数代表的速率枚举如下：

1 - 2.8 kbps

2 -7.2 kbps

4 - 8.0 kbps

8 - 9.6 kbps

16 -13.2 kbps

32 - 16.4 kbps

64 - 24.4 kbps

128 - 32.0 kbps

256 - 48.0 kbps

512 - 64.0 kbps

1024 - 96.0 kbps

2048 - 128.0 kbps

例如Bitrate=120表示：64+32+16+8，也就是支持9.6、13.2、16.4、24.4这个四个速率，也可以表示成9.6- 24.4 kbps，因为中间不可能还要其他速率存在。

\*BitRate = 120  //最大BitRate 1111000  SWB只支持9.6,13.2,16.4,24.4

//\*BitRate=127可以满足\*BitRate = 120的需求，如果运营商要求BitRate = 120，按照默认的配成127也是可以满足条件的

#### evs\_prim\_mode/ ch\_aw\_recv

这些参数已经移动到NV#73846中。

NV#73846 配置了如下4项：

1. evs\_prim\_mode // evs\_prim\_mode大于等于0才会激活EVS。
2. default\_evs\_bit\_rate
3. default\_evs\_bw
4. evs\_ch\_aw\_recv\_offset // Channel Aware channel mode, 2- channel aware mode, -1 - channel unaware mode

其中，default\_evs\_bit\_rate 和 default\_evs\_bw只用于TTA运营商（韩国），这块没有具体文档的说明，提case得到的消息。

#### profile-level-id

关于此参数可参考网文：<https://blog.csdn.net/epubcn/article/details/102802108>

<https://en.wikipedia.org/wiki/Advanced_Video_Coding#Profiles>

<https://en.wikipedia.org/wiki/Advanced_Video_Coding#Levels>

该参数用于指示H.264媒体的格式。

简要内容如下：

Profile-level-id为三个字节的值。其中第一个字节为Profile的类型，目前有四种Profile类型：

|  |
| --- |
| **Baseline Profile (BP, 66)**  Primarily for low-cost applications that require additional data loss robustness, this profile is used in some videoconferencing and mobile applications. This profile includes all features that are supported in the Constrained Baseline Profile, plus three additional features that can be used for loss robustness (or for other purposes such as low-delay multi-point video stream compositing). The importance of this profile has faded somewhat since the definition of the Constrained Baseline Profile in 2009. All Constrained Baseline Profile bitstreams are also considered to be Baseline Profile bitstreams, as these two profiles share the same profile identifier code value.  **Extended Profile (XP, 88)**  Intended as the streaming video profile, this profile has relatively high compression capability and some extra tricks for robustness to data losses and server stream switching.  **Main Profile (MP, 77)**  This profile is used for standard-definition digital TV broadcasts that use the MPEG-4 format as defined in the DVB standard.[[49]](https://en.wikipedia.org/wiki/Advanced_Video_Coding#cite_note-49) It is not, however, used for high-definition television broadcasts, as the importance of this profile faded when the High Profile was developed in 2004 for that application.  **High Profile (HiP, 100)**  The primary profile for broadcast and disc storage applications, particularly for high-definition television applications (for example, this is the profile adopted by the [Blu-ray Disc](https://en.wikipedia.org/wiki/Blu-ray_Disc) storage format and the [DVB](https://en.wikipedia.org/wiki/Digital_Video_Broadcasting) HDTV broadcast service). |

Note：视频编码格式在sdp中通过profile-level-id的第一个字节指定，默认采用的是十六进制表示。即

视频编解码格式的设置，仅需要根据profile-level-id的后8位的值设置level的值。

|  |
| --- |
| H.264视频编码模式信息及profile-level-id前8位为0x42，后8位值为1F（1F换算成10进制就是31）  2. H265：level-id=93；H264：profile-level-id前8位为0x64，后八位值为1F（1F换算成10进制就是31）；  只需要设置profile-level-id的后8位  #Codec level. possible values:  #INVALID\_LEVEL = 0x00,  #Level 1 = 0x01,  #Level 1B = 0x02,  #Level 11 = 0x03,  #Level 12 = 0x04,  #Level 13 = 0x05,  #Level 2 = 0x06,  #Level 21 = 0x07,  #Level 22 = 0x08,  #Level 3 = 0x09,  #Level 31 = 0x0A,  #Level 32 = 0x0B,  #Level 4 = 0x0C,  #Level 41 = 0x0D,  #Level 42 = 0x0E,  #Level 5 = 0x0F,  #Level 51 = 0x10  **level = 10** |

### 导入方法

参考《80-pp068-2\_c\_ims\_configuration\_user\_guide.pdf》文档中提到的验证步骤：

1. Connect a device to a PC.

2. Run EFS explorer, and create the following path: /efsprofiles.

3. Place a copy of overideconfig file into the /efsprofiles path.

4. Power cycle the device.

5. Perform the test for the VoLTE call.

### 常见问题

#### 配置的overideconfig不生效

可能的原因：

1. Overideconfig文件的格式填写不规范，须要按照“修改注意事项”中提到的要点检查
2. Overideconfig未成功激活。检查项如下：
   1. 是否将overideconfig推入到了正确的路径:/efsprofiles/
   2. 卡1的配置文件名称为：overideconfig，卡2的配置文件名称为：overideconfig\_Subscription01
   3. EVS配置生效的前提条件是NV#73846中的evs\_prim\_mode大于等于0才会激活EVS

#### H264 CHP profile不生效

高通目前仅DE平台开始支持CHP模式。

## Lab测试问题

### 锁band

锁Band，每个RAT的锁定的NV都不一样，根据需要设置如下NV的值。

NV (74213 – nr\_nsa\_band\_pref; 74087 – nr\_band\_pref; 65633 - LTE band pref).

|  |
| --- |
| [ 87/ 0/2] QTRACE 10:25:18.577 RRC/HighFreq/High/NR5GRRC[ nr5g\_rrc\_csp.c 6303] CSP: Scan scope is Band1  [ 87/ 0/2] QTRACE 10:25:18.578 RRC/HighFreq/High/NR5GRRC[ nr5g\_rrc\_csp.c 5508] CSP: Bands supported = 41  [ 87/ 0/2] QTRACE 10:25:18.578 RRC/HighFreq/High/NR5GRRC[ nr5g\_rrc\_csp.c 5514] CSP: Bands = 41 scs mask =3 num\_scs supported = 21  [ 87/ 0/2] QTRACE 10:25:18.578 RRC/HighFreq/High/NR5GRRC[ nr5g\_rrc\_csp.c 5514] CSP: Bands = 78 scs mask =2 num\_scs supported = 11  [ 87/ 0/2] QTRACE 10:25:18.578 RRC/HighFreq/High/NR5GRRC[ nr5g\_rrc\_csp.c 5514] CSP: Bands = 1 scs mask =1 num\_scs supported = 11  [ 87/ 0/2] QTRACE 10:25:18.578 RRC/HighFreq/High/NR5GRRC[ nr5g\_rrc\_csp.c 5514] CSP: Bands = 28 scs mask =1 num\_scs supported = 11  QTRACE 01:23:17.821 RRC/HighFreq/High/NR5GRRC[ nr5g\_rrc\_csp.c 5348] CSP: nr5g\_band\_preference  QTRACE 01:23:17.821 RRC/HighFreq/High/NR5GRRC[nr5g\_rrc\_band\_utils.c 813] bits\_1\_64 0x00000120 0x080000d5 bits\_65\_128 0x00000000 0x00006000 bits\_129\_192 0x00000000 0x00000000 bits\_193\_256 0x00000000 0x00000000  QTRACE 01:23:17.821 RRC/HighFreq/High/NR5GRRC[nr5g\_rrc\_band\_utils.c 819] bits\_257\_320 0x00000000 0x00000000 bits\_321\_384 0x00000000 0x00000000 bits\_385\_448 0x00000000 0x00000000 bits\_449\_512 0x00000000 0x00000000  QTRACE 01:23:17.821 RRC/HighFreq/High/NR5GRRC[ nr5g\_rrc\_csp.c 5350] CSP: nr5g\_bst\_band\_preference  QTRACE 01:23:17.821 RRC/HighFreq/High/NR5GRRC[nr5g\_rrc\_band\_utils.c 813] bits\_1\_64 0x00000120 0x080000d5 bits\_65\_128 0x00000000 0x00006000 bits\_129\_192 0x00000000 0x00000000 bits\_193\_256 0x00000000 0x00000000  QTRACE 01:23:17.821 RRC/HighFreq/High/NR5GRRC[nr5g\_rrc\_band\_utils.c 819] bits\_257\_320 0x00000000 0x00000000 bits\_321\_384 0x00000000 0x00000000 bits\_385\_448 0x00000000 0x00000000 bits\_449\_512 0x00000000 0x00000000    QTRACE 01:23:02.105 RRC/HighFreq/High/NR5GRRC[ nr5g\_rrc\_csp.c 4188] CSP: Bands supported = 10  QTRACE 01:23:02.105 RRC/HighFreq/High/NR5GRRC[ nr5g\_rrc\_csp.c 4194] CSP: Bands = 78 scs mask =2 num\_scs supported = 1  QTRACE 01:23:02.105 RRC/HighFreq/High/NR5GRRC[ nr5g\_rrc\_csp.c 4194] CSP: Bands = 7 scs mask =1 num\_scs supported = 1  QTRACE 01:23:02.105 RRC/HighFreq/High/NR5GRRC[ nr5g\_rrc\_csp.c 4194] CSP: Bands = 3 scs mask =1 num\_scs supported = 1  QTRACE 01:23:02.105 RRC/HighFreq/High/NR5GRRC[ nr5g\_rrc\_csp.c 4194] CSP: Bands = 1 scs mask =1 num\_scs supported = 1  QTRACE 01:23:02.105 RRC/HighFreq/High/NR5GRRC[ nr5g\_rrc\_csp.c 4194] CSP: Bands = 5 scs mask =3 num\_scs supported = 2  QTRACE 01:23:02.105 RRC/HighFreq/High/NR5GRRC[ nr5g\_rrc\_csp.c 4194] CSP: Bands = 8 scs mask =1 num\_scs supported = 1  QTRACE 01:23:02.105 RRC/HighFreq/High/NR5GRRC[ nr5g\_rrc\_csp.c 4194] CSP: Bands = 28 scs mask =1 num\_scs supported = 1  QTRACE 01:23:02.105 RRC/HighFreq/High/NR5GRRC[ nr5g\_rrc\_csp.c 4194] CSP: Bands = 38 scs mask =3 num\_scs supported = 2  QTRACE 01:23:02.105 RRC/HighFreq/High/NR5GRRC[ nr5g\_rrc\_csp.c 4194] CSP: Bands = 41 scs mask =3 num\_scs supported = 2  QTRACE 01:23:02.105 RRC/HighFreq/High/NR5GRRC[ nr5g\_rrc\_csp.c 4194] CSP: Bands = 79 scs mask =2 num\_scs supported = 1 |

## 设置Modem Band支持情况

CT: modem\_proc/mmcp/policyman/configurations/Carrier/CT/1xSRLTE/openMarket/carrier\_policy.xml 0,77

CU: modem\_proc/mmcp/policyman/configurations/Carrier/CU/openMarket/carrier\_policy.xml 0,77

CM: modem\_proc/mmcp/policyman/configurations/Carrier/CMCC/openMarket/carrier\_policy.xml 27,40,78

版本号加1：

modem\_proc/mcfg/mcfg\_gen/groups/mcfg\_trl/China/CU/mcfg\_sw\_gen\_VoLTE-Commercial.xml

modem\_proc/mcfg/mcfg\_gen/groups/mcfg\_trl/China/CT/ mcfg\_sw\_gen\_hVoLTE\_OpenMkt-Commercial.xml

modem\_proc/mcfg/mcfg\_gen/groups/mcfg\_trl/China/CMCC/ mcfg\_sw\_gen\_Volte\_OpenMkt-Commercial.xml

[modem\_proc/mcfg/mcfg\_gen/groups/mcfg\_trl/China/CMCC/mcfg\_sw\_gen\_Volte\_OpenMkt-Commercial.xml](http://gerrit.pt.mioffice.cn/c/vendor/qcom/non-hlos/sdx55m_modem/+/1756005/4/modem_proc/mcfg/mcfg_gen/groups/mcfg_trl/China/CMCC/mcfg_sw_gen_Volte_OpenMkt-Commercial.xml)