

# VOLTE路测分析报告

## 1 概述

### 1.1 测试区域

### 1.2 测试方式

2部MATE7互拨语音拉网测试，拨打时长180S，拨打间隔30S。

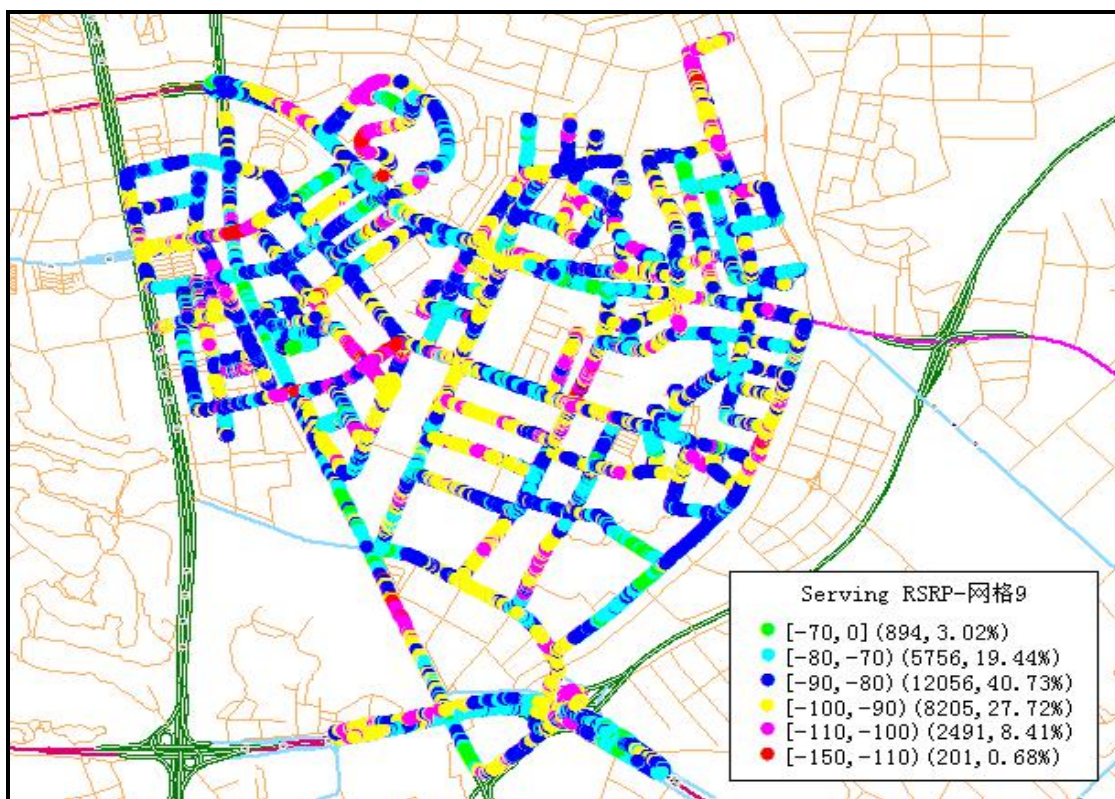
## 2 VOLTE 测试结果

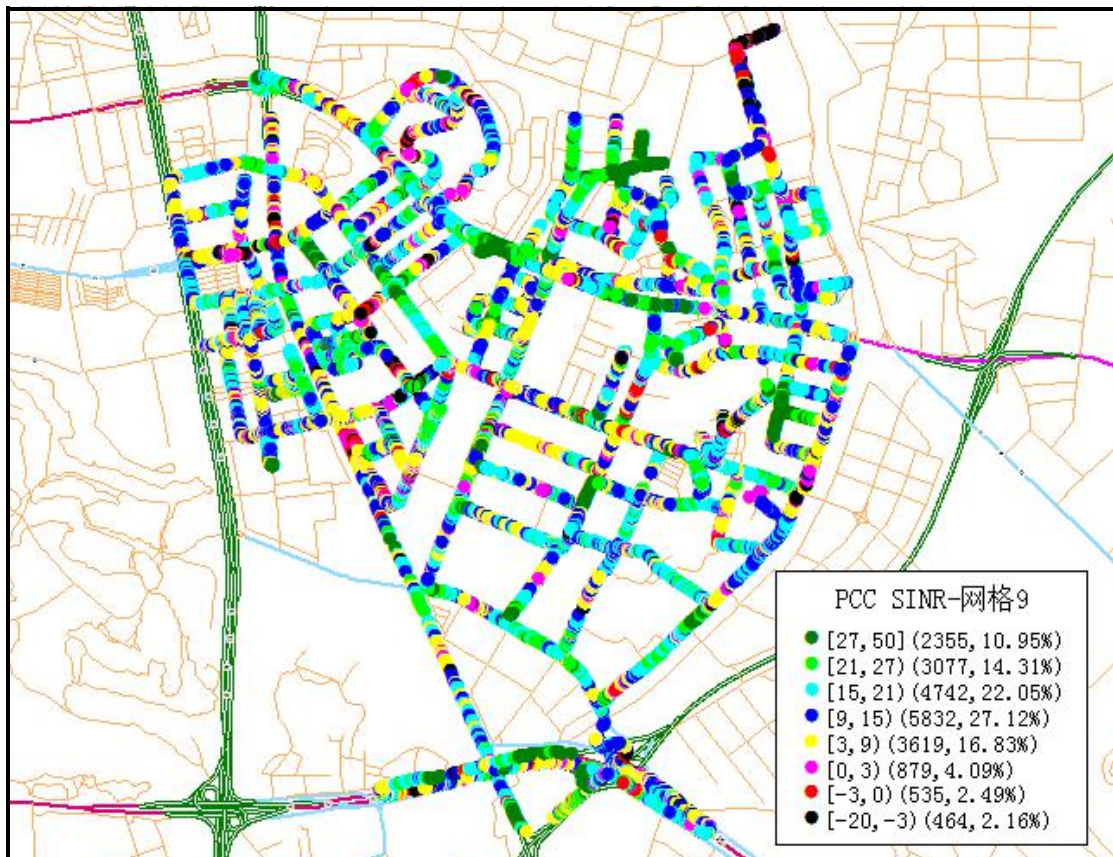
### 2.1 总体指标概览

网格	9
测试工具	Probe+Mate7 (102T)
测试里程(Km)	179.54
测试时长(分钟)	261.45
覆盖率 (RSRP>=-110&SINR>-3)	94.98%
平均 RSRP	-87.15
平均 SINR	14.62
VOLTE 拨打次数	73
未接通次数	2
VOLTE 接通率 (基准值 88%/挑战值 93%)	97.26%
呼叫时延(s) (基准值 6s/挑战值 5s)	5.46
VOLTE 掉话次数	1
VOLTE 掉话率 (基准值 8%/挑战值 3.5%)	0.71%
VOLTE 系统内切换次数	1930
切换失败次数	5
切换成功率	99.74%
eSRVCC 成功次数	1
eSRVCC 失败次数	0
eSRVCC 成功率	100.00%
eSRVCC 时延(ms)	211

## 2.2 关键指标分析

### 1) RSRP&SINR





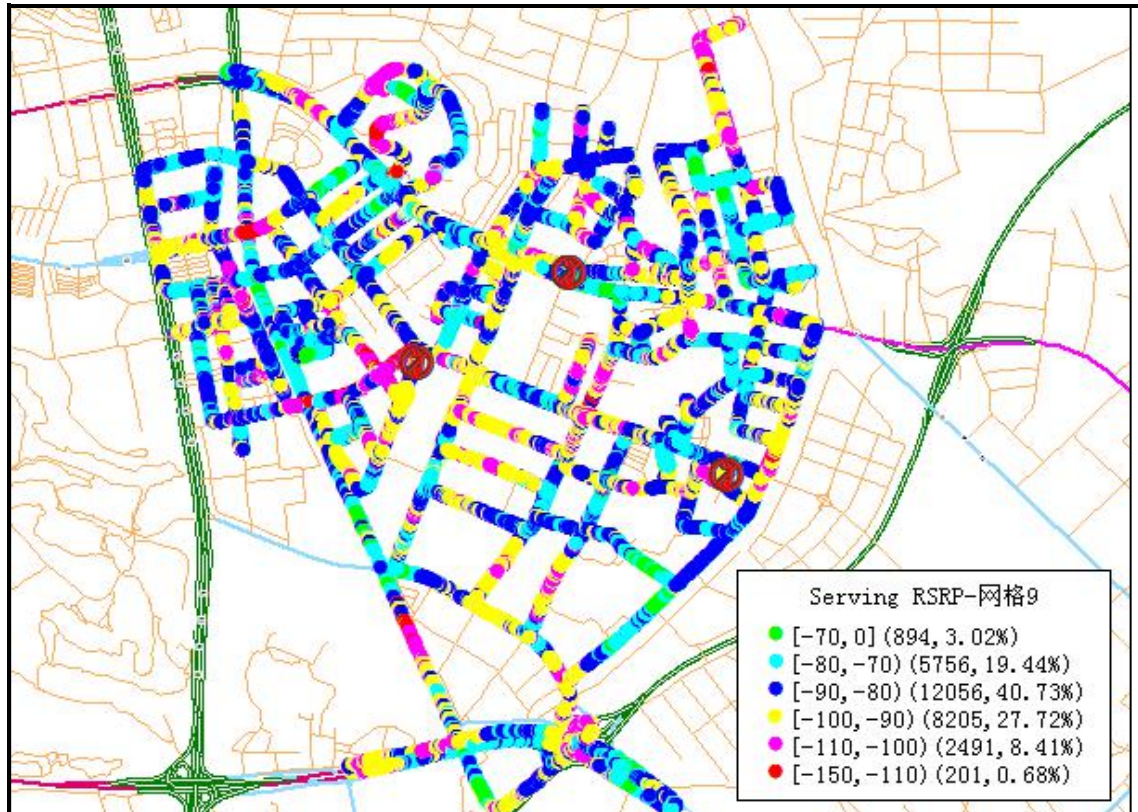
## 2) MOS评分

# 3 重点问题分析

## 3.1 VOLTE 呼叫建立失败问题

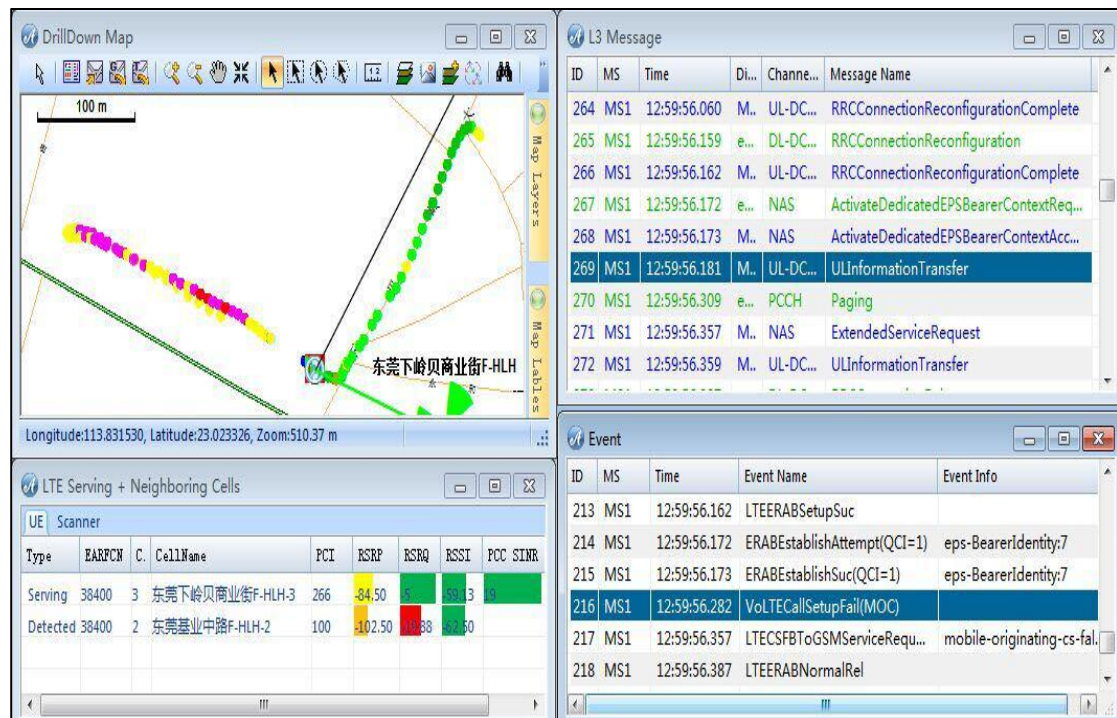
本轮网格9拉网测试中，主叫VOLTE呼叫建立失败2次，被叫VOLTE呼叫建立失败1次，问题点分布如下所示。





### 3.1.1 EPC 不发 QCI 建立导致未接通

问题分析:



SIP Message-All Logs-On Sheet					
Index	Source	Time	Direction	Event	Information
303	MS1	12:59:23.848	Network->UE	IMS_SIP_BYE	SIP: Response: SIP/2.0 BYE: 200 ok
304	MS2	12:59:24.341	Network->UE	IMS_SIP_BYE	SIP: Request: SIP/2.0 BYE
305	MS2	12:59:24.348	UE->Network	IMS_SIP_BYE	SIP: Response: SIP/2.0 BYE: 200 ok
306	MS1	12:59:53.955	UE->Network	IMS_SIP_INVITE	SIP: Request: SIP/2.0 INVITE
307	MS1	12:59:54.105	Network->UE	IMS_SIP_INVITE	SIP: Response: SIP/2.0 INVITE: 100 trying
308	MS1	12:59:56.282	Network->UE	IMS_SIP_INVITE	SIP: Response: SIP/2.0 INVITE: 503 service unavailable
309	MS1	12:59:56.284	UE->Network	IMS_SIP_ACK	SIP: Request: SIP/2.0 ACK
310	MS1	13:03:44.041	UE->Network	IMS_SIP_INVITE	SIP: Request: SIP/2.0 INVITE
311	MS1	13:03:44.101	Network->UE	IMS_SIP_INVITE	SIP: Response: SIP/2.0 INVITE: 100 trying
312	MS2	13:03:45.110	Network->UE	IMS_SIP_INVITE	SIP: Request: SIP/2.0 INVITE
313	MS2	13:03:45.125	UE->Network	IMS_SIP_INVITE	SIP: Response: SIP/2.0 INVITE: 100 trying
314	MS2	13:03:45.182	UE->Network	IMS_SIP_INVITE	SIP: Response: SIP/2.0 INVITE: 183 session progress

车辆沿下贝岭大道由西向东行驶时，主叫UE终端在12:59:53.955占用东莞下岭贝商业街F-HLW-3起呼，RSRP=-84.50dBm，SINR=14dB，无线环境良好，但主叫在层3消息qci1已建立，最后转CSFB，导致接入失败。在SIP消息上，主叫发INVITE消息1s后，网络侧向主叫下发invite消息，3s后网络侧向主叫发送503service unavailable，主叫呼叫建立失败。

解决方案：

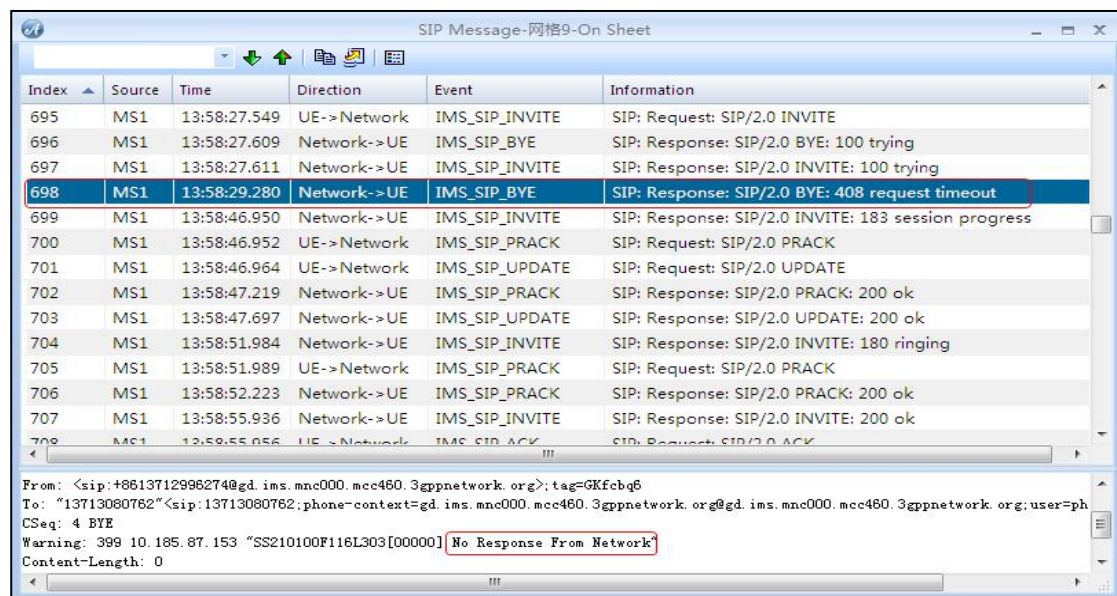
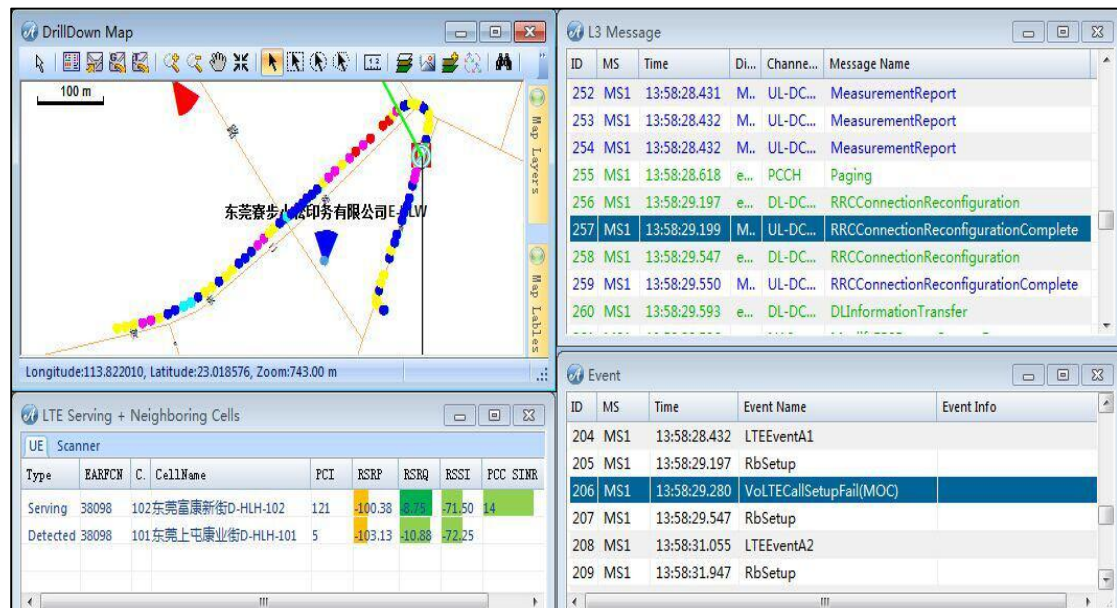
- 1、 需要EPC定位不下发QCI1建立请求的原因
- 2、 待复测时跟踪epc信令

复测验证：

### 3.1.2 EPC 不发 QCI 建立导致未接通

问题分析：





车辆沿横东一路由东往西行驶时，主叫UE终端占用东莞富康新街D-HLH-102小区13: 58:27:549起呼，起呼时RSRP=-100.38dBm, SINR=14dB，呼叫过程中主叫未收到QCII的建立请求，2s后网络侧向主叫下发BYE: 408 request timeout，网络侧没有响应，从SIP消息上看，主叫发送invite消息后网络侧没有向主叫发送update建立QCII，最终主叫显示VoLTE的呼叫建立失败。

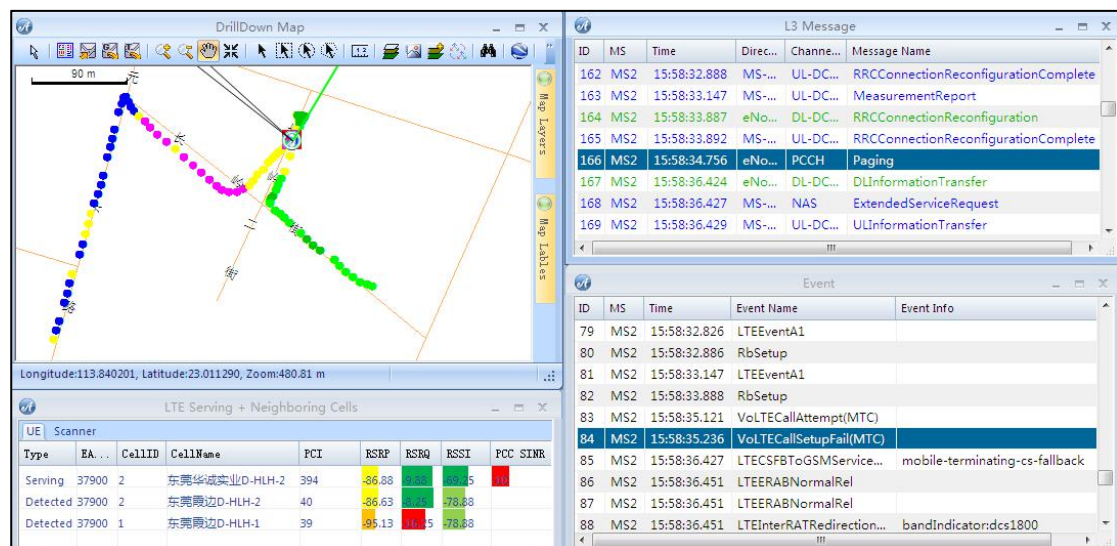
解决方案：

1、epc未给主叫下发qci1建立请求，需要epc核查原因

复测验证：

### 3.1.3 被叫 QCI=1 承载未建立导致未接通

问题分析：



SIP Message-网格9-On Sheet					
Index	Source	Time	Direction	Event	Information
1551	MS1	15:58:18.626	UE->Network	IMS_SIP_INVI...	SIP: Request: SIP/2.0 INVITE
1552	MS1	15:58:18.823	Network->UE	IMS_SIP_INVI...	SIP: Response: SIP/2.0 INVITE: 100 trying
1553	MS2	15:58:35.121	Network->UE	IMS_SIP_INVI...	SIP: Request: SIP/2.0 INVITE
1554	MS2	15:58:35.130	UE->Network	IMS_SIP_INVI...	SIP: Response: SIP/2.0 INVITE: 100 trying
1555	MS2	15:58:35.194	UE->Network	IMS_SIP_INVI...	SIP: Response: SIP/2.0 INVITE: 183 session progress
1556	MS2	15:58:35.207	Network->UE	IMS_SIP_CAN...	SIP: Request: SIP/2.0 CANCEL
1557	MS2	15:58:35.227	UE->Network	IMS_SIP_CAN...	SIP: Response: SIP/2.0 CANCEL: 200 ok
1558	MS2	15:58:35.236	UE->Network	IMS_SIP_INVI...	SIP: Response: SIP/2.0 INVITE: 487 request terminated
1559	MS2	15:58:35.275	Network->UE	IMS_SIP_ACK	SIP: Request: SIP/2.0 ACK
1560	MS1	15:58:36.673	Network->UE	IMS_SIP_INVI...	SIP: Response: SIP/2.0 INVITE: 183 session progress
1561	MS1	15:58:36.677	UE->Network	IMS_SIP_PRA...	SIP: Request: SIP/2.0 PRACK
1562	MS1	15:58:36.701	UE->Network	IMS_SIP_UPD...	SIP: Request: SIP/2.0 UPDATE
1563	MS1	15:58:36.962	Network->UE	IMS_SIP_PRA...	SIP: Response: SIP/2.0 PRACK: 200 ok
1564	MS1	15:58:37.524	Network->UE	IMS_SIP_UPD...	SIP: Response: SIP/2.0 UPDATE: 200 ok

车辆沿长岭二街由南向北行驶时，被叫 UE 占用东莞华诚实业 D-HLH-2(PCI=394)小区，RSRP=-86.88dBm，SINR=-10dB，邻区里东莞霞边 D-HLH-2（PCI=40）小区 RSRP=-86.63dBm，该路段存在 MOD3 干扰。当被叫在回复 183 Session Progress 后，向 IMS 发起了 CANCEL 消息，随后主叫终端由于 QCI=1 承载导致 TQOS 定时器超时，MS1 向 SBC 发起了 CANCEL 消息，被叫此时收到主叫在 GSM 的寻呼，转到 CSFB，长时间寻呼不到被叫，IMS 侧定时器超时导致被叫被释放，导致被叫此次呼叫失败。

解决方案：

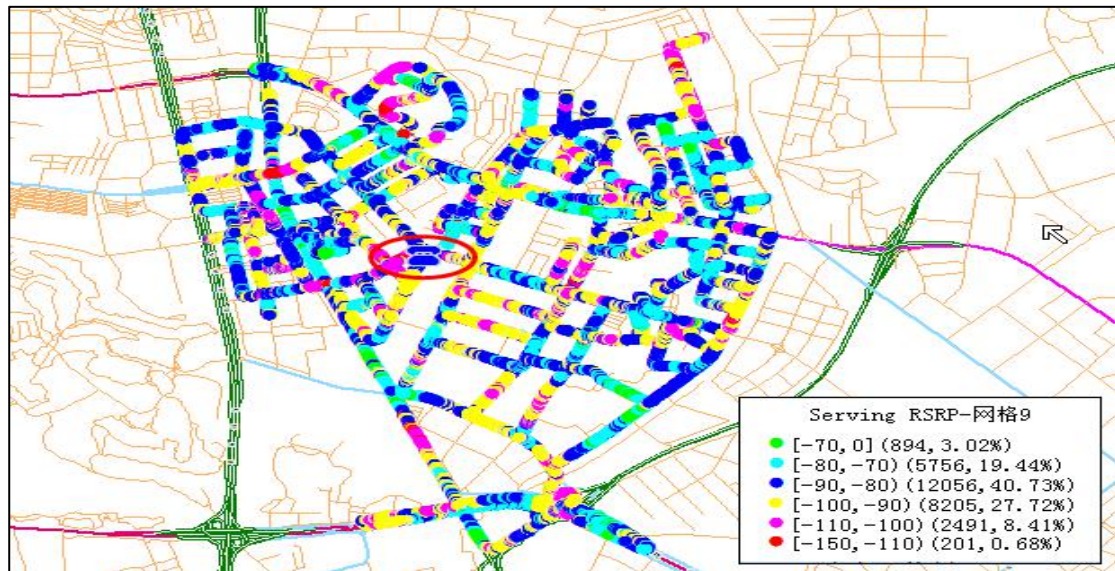
- 1、 东莞华诚实业 D-HLH-2 小区 PCI=394 更改为 PCI=395
- 2、 东莞华诚实业 D-HLH-3 小区 PCI=395 更改为 PCI=394

复测验证：

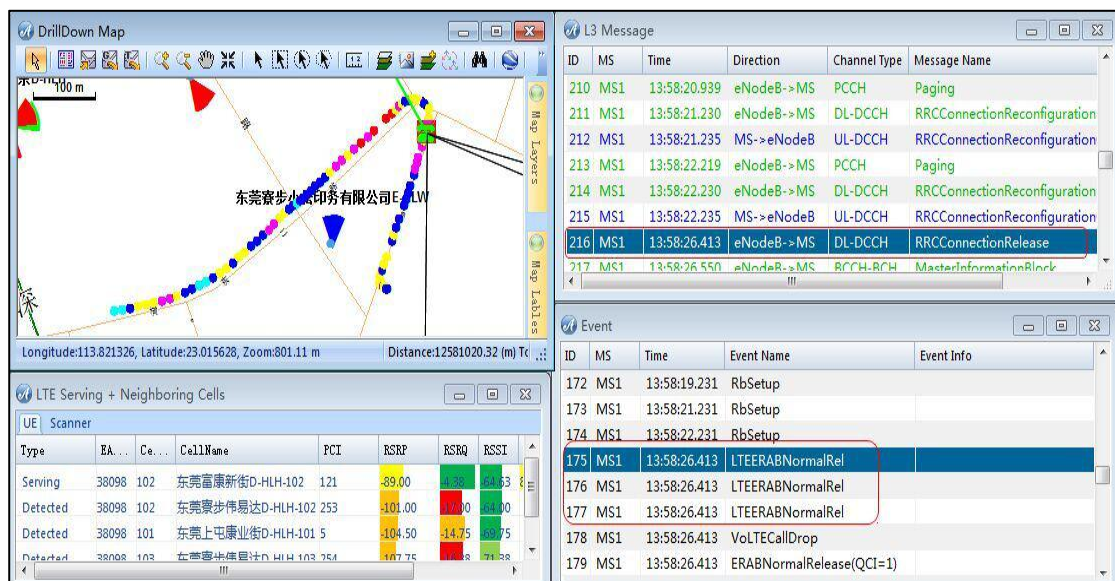


## 3.2 VOLTE 掉话问题

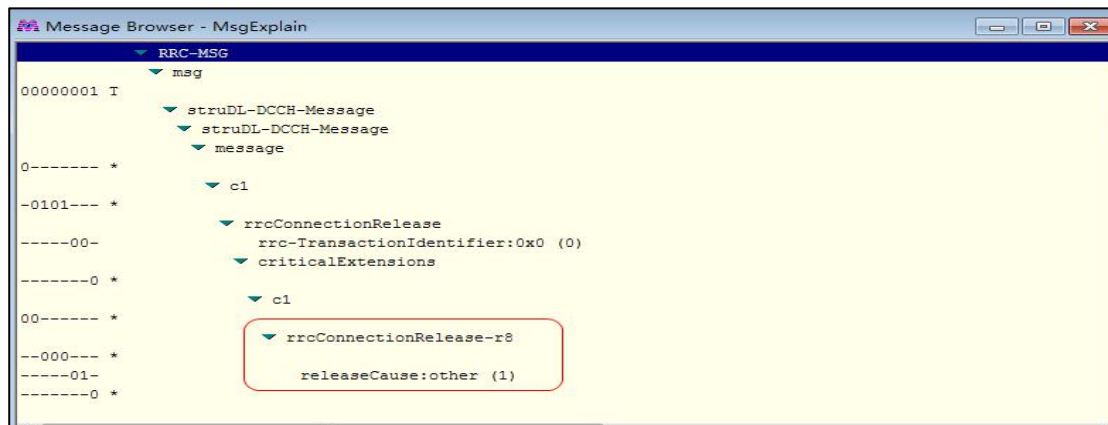
本轮网格1拉网测试中，总共掉话次数为1次，具体掉话问题点分布如下所示。



### 3.2.1 MME 释放上下文导致掉话







Index	Source	Time	Direction	Event	Information
688	MS2	13:57:56.639	UE->Network	IMS_SIP_BYE	SIP: Response: SIP/2.0 BYE: 200 ok
689	MS2	13:57:57.127	Network->UE	IMS_SIP_BYE	SIP: Request: SIP/2.0 BYE
690	MS1	13:57:57.220	UE->Network	IMS_SIP_BYE	SIP: Request: SIP/2.0 BYE
691	MS2	13:57:58.090	Network->UE	IMS_SIP_BYE	SIP: Request: SIP/2.0 BYE
692	MS2	13:58:01.330	Network->UE	IMS_SIP_BYE	SIP: Request: SIP/2.0 BYE
693	MS1	13:58:11.435	Network->UE	IMS_SIP_BYE	SIP: Response: SIP/2.0 BYE: 100 trying
694	MS2	13:58:26.763	UE->Network	IMS_SIP_REGI...	SIP: Request: SIP/2.0 REGISTER
695	MS1	13:58:27.549	UE->Network	IMS_SIP_INVI...	SIP: Request: SIP/2.0 INVITE
696	MS1	13:58:27.609	Network->UE	IMS_SIP_BYE	SIP: Response: SIP/2.0 BYE: 100 trying
697	MS1	13:58:27.611	Network->UE	IMS_SIP_INVI...	SIP: Response: SIP/2.0 INVITE: 100 trying
698	MS1	13:58:29.280	Network->UE	IMS_SIP_BYE	SIP: Response: SIP/2.0 BYE: 408 request timeout
699	MS1	13:58:46.950	Network->UE	IMS_SIP_INVI...	SIP: Response: SIP/2.0 INVITE: 183 session progress
700	MS1	13:58:46.952	UE->Network	IMS_SIP_PRA...	SIP: Request: SIP/2.0 PRACK
701	MS1	13:58:46.964	UE->Network	IMS_SIP_UPD...	SIP: Request: SIP/2.0 UPDATE

## 问题分析:

车辆沿横东一路由东往西行驶时，主叫UE终端占用东莞富康新街D-HLH-102小区起呼，起呼时

RSRP=-89.00dBm, SINR=8dB, 13: 58: 26: 413 MME给基站下发了上下文释放命令，导致网络给终端下发了rrc connection rel消息。查看终端L3信令如下，终端在业务建立后，网络下发了rrc connection rel消息给终端，原因为other。

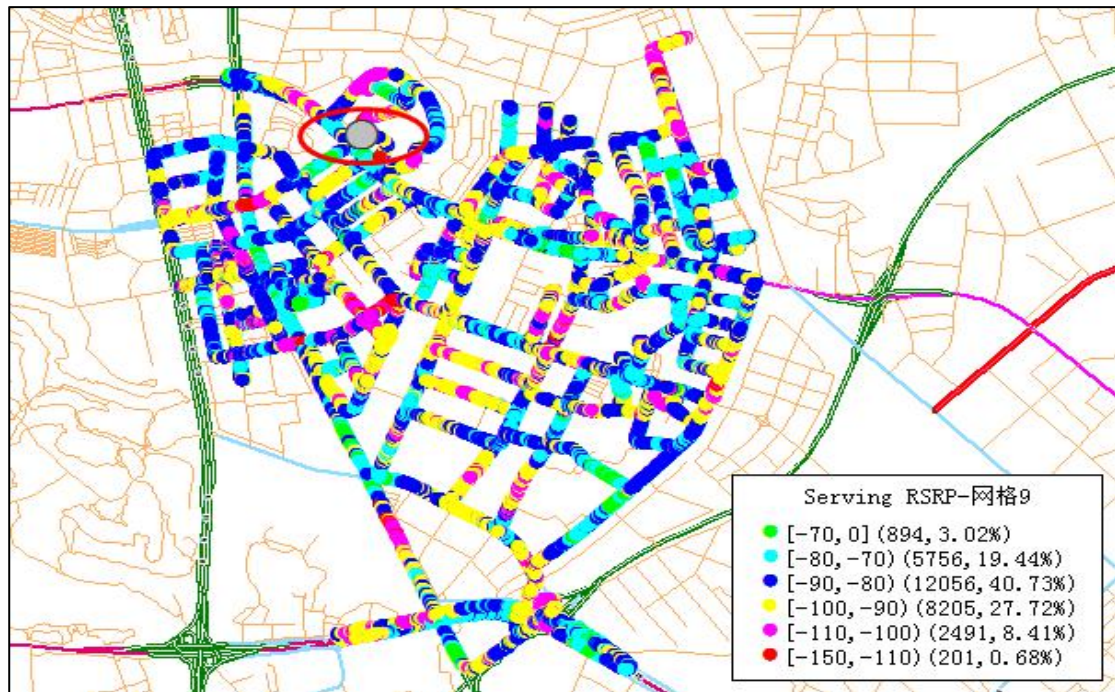
## 解决方案:

1、复测需要核心网协助定位MME异常下发上下文释放的原因。

复测验证:

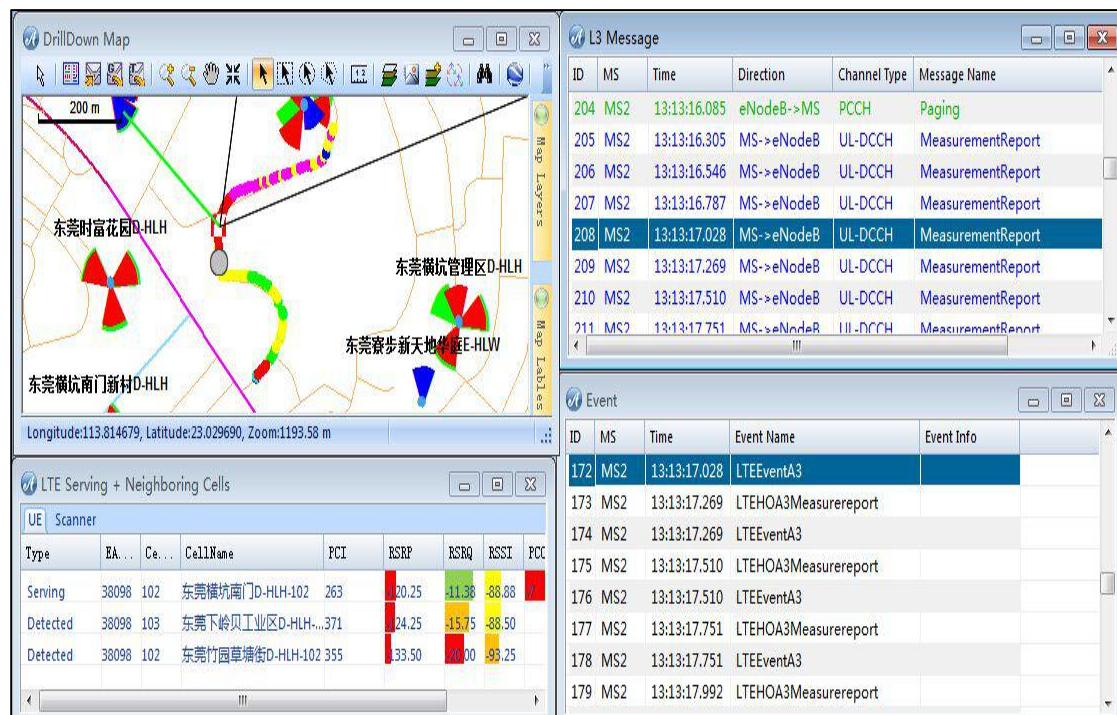
### 3.3 ESRVCC 问题

本轮网格1拉网测试中，总eSRVCC建立成功1次，具体问题点分布如下所示。



#### 3.3.1 弱覆盖导致 eSRVCC

问题分析：





Index	Source	Time	Direction	Event	Information
374	MS1	13:11:07.399	Network->UE	IMS_SIP_UPDATE	SIP: Response: SIP/2.0 UPDATE: 200 ok
375	MS1	13:11:07.405	Network->UE	IMS_SIP_INVITE	SIP: Response: SIP/2.0 INVITE: 180 ringing
376	MS2	13:11:08.108	UE->Network	IMS_SIP_INVITE	SIP: Response: SIP/2.0 INVITE: 200 ok
377	MS2	13:11:08.532	Network->UE	IMS_SIP_ACK	SIP: Request: SIP/2.0 ACK
378	MS1	13:11:09.190	Network->UE	IMS_SIP_INVITE	SIP: Response: SIP/2.0 INVITE: 200 ok
379	MS1	13:11:09.212	UE->Network	IMS_SIP_ACK	SIP: Request: SIP/2.0 ACK
380	MS2	13:13:26.416	UE->Network	IMS_SIP_BYE	SIP: Request: SIP/2.0 BYE
381	MS1	13:14:09.523	UE->Network	IMS_SIP_BYE	SIP: Request: SIP/2.0 BYE
382	MS1	13:14:09.783	Network->UE	IMS_SIP_BYE	SIP: Response: SIP/2.0 BYE: 200 ok
383	MS2	13:14:11.451	Network->UE	IMS_SIP_BYE	SIP: Response: SIP/2.0 BYE: 481 call/transaction does not exist
384	MS1	13:14:39.765	UE->Network	IMS_SIP_INVITE	SIP: Request: SIP/2.0 INVITE
385	MS1	13:14:39.909	Network->UE	IMS_SIP_INVITE	SIP: Response: SIP/2.0 INVITE: 100 trying
386	MS2	13:14:41.977	Network->UE	IMS_SIP_INVITE	SIP: Request: SIP/2.0 INVITE
387	MS2	13:14:41.980	UE->Network	IMS_SIP_INVITE	SIP: Response: SIP/2.0 INVITE: 100 trying
388	MS2	13:14:41.990	Network->UE	IMS_SIP_INVITE	SIP: Request: SIP/2.0 INVITE
389	MS2	13:14:42.015	UE->Network	IMS_SIP_INVITE	SIP: Response: SIP/2.0 INVITE: 183 session progress

被叫行驶至东莞横坑南门D-HLH-102附近300m路段时，被叫一直上报测量报告，主服务RSRP电平在-120dBm左右，邻区RSRP也在-120dbm，由于东莞时富花园D-HLH用户面承载链路故障告警，导致该路段一直占用东莞横坑南门D-HLH-102小区信号，导致该路段存在弱覆盖问题。

微信扫描以下二维码，免费加入【5G 俱乐部】，还赠送整套：5G 前沿、NB-IoT、4G+ (VoLTE) 资料。

