



Internal Use Only

MOBILE PHONE SERVICE MANUAL

CAUTION

BEFORE SERVICING THE UNIT, READ THE "SAFETY PRECAUTIONS" IN THIS MANUAL

DIGITAL
BOARD
ESQUEMAS DIGITALIZADOS

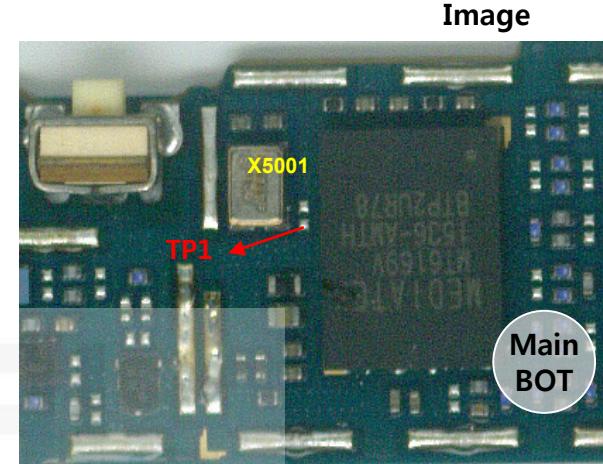
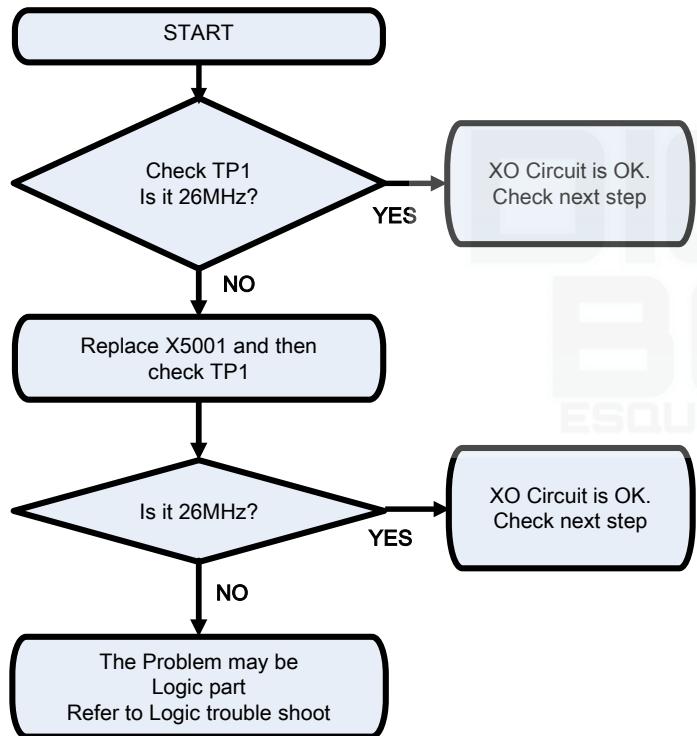
MODEL : **LG-K130F**

3. TROUBLE SHOOTING

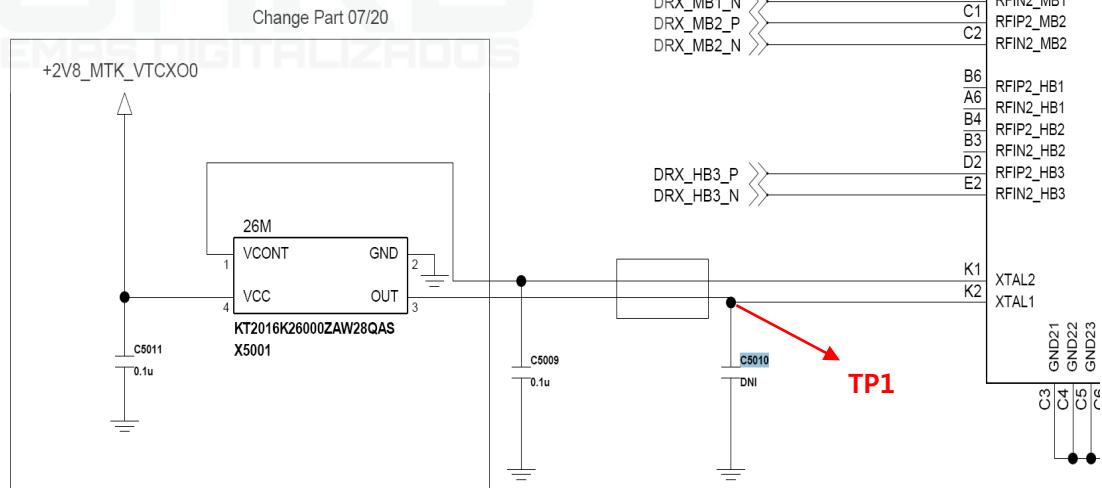
3.1 Checking XO Block

The output frequency(26MHz) of VTCXO(X5001) is used as the reference one of MT6169

Checking Flow



Circuit Diagram

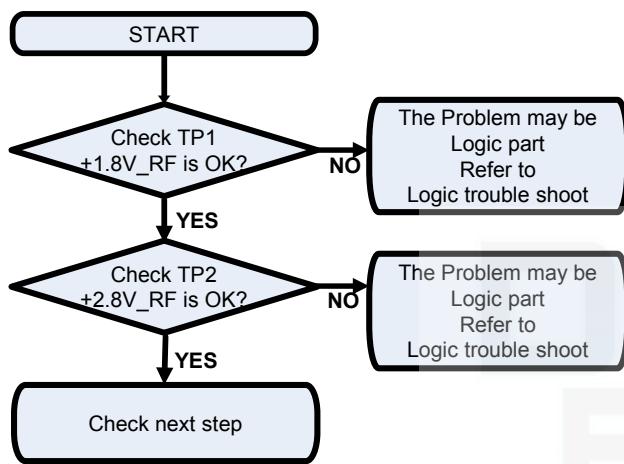


3. TROUBLE SHOOTING

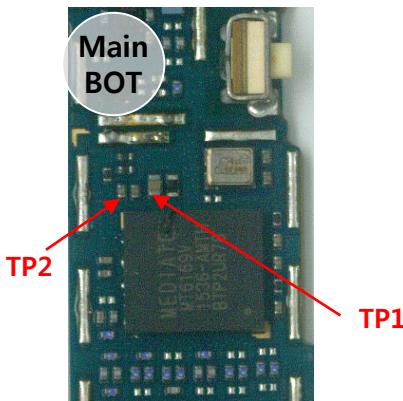
3.2 Checking Transceiver DC Power Supply Circuit Block

The MT6169 operating voltages used two voltage sources 1.8V and 2.8V

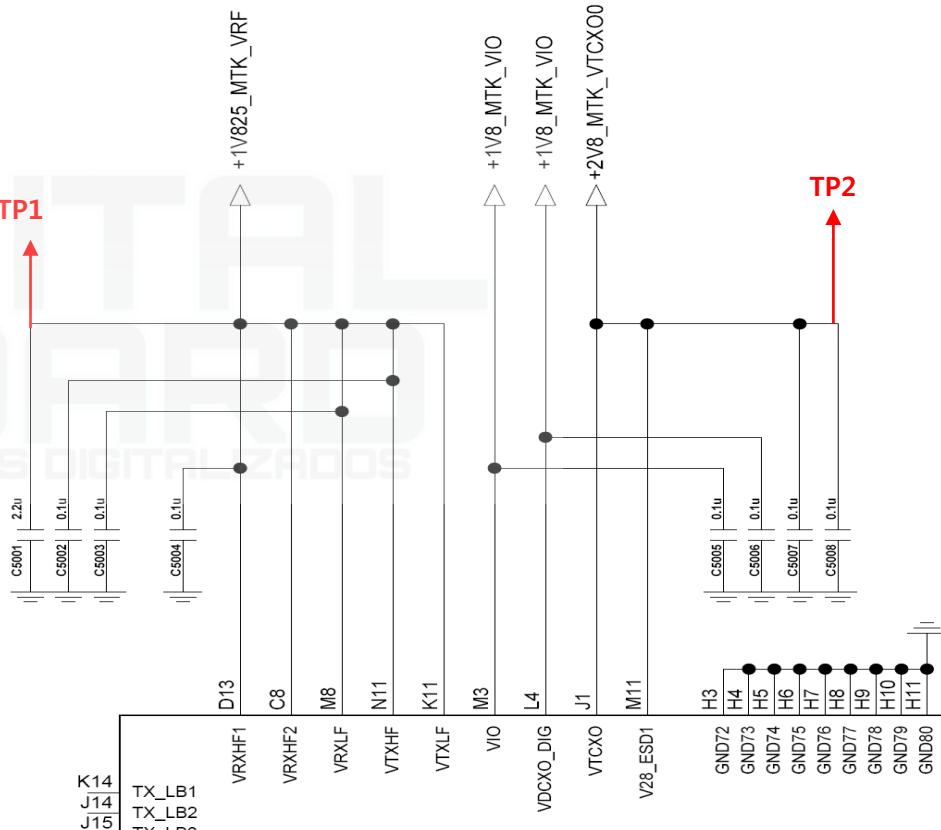
Checking Flow



Image



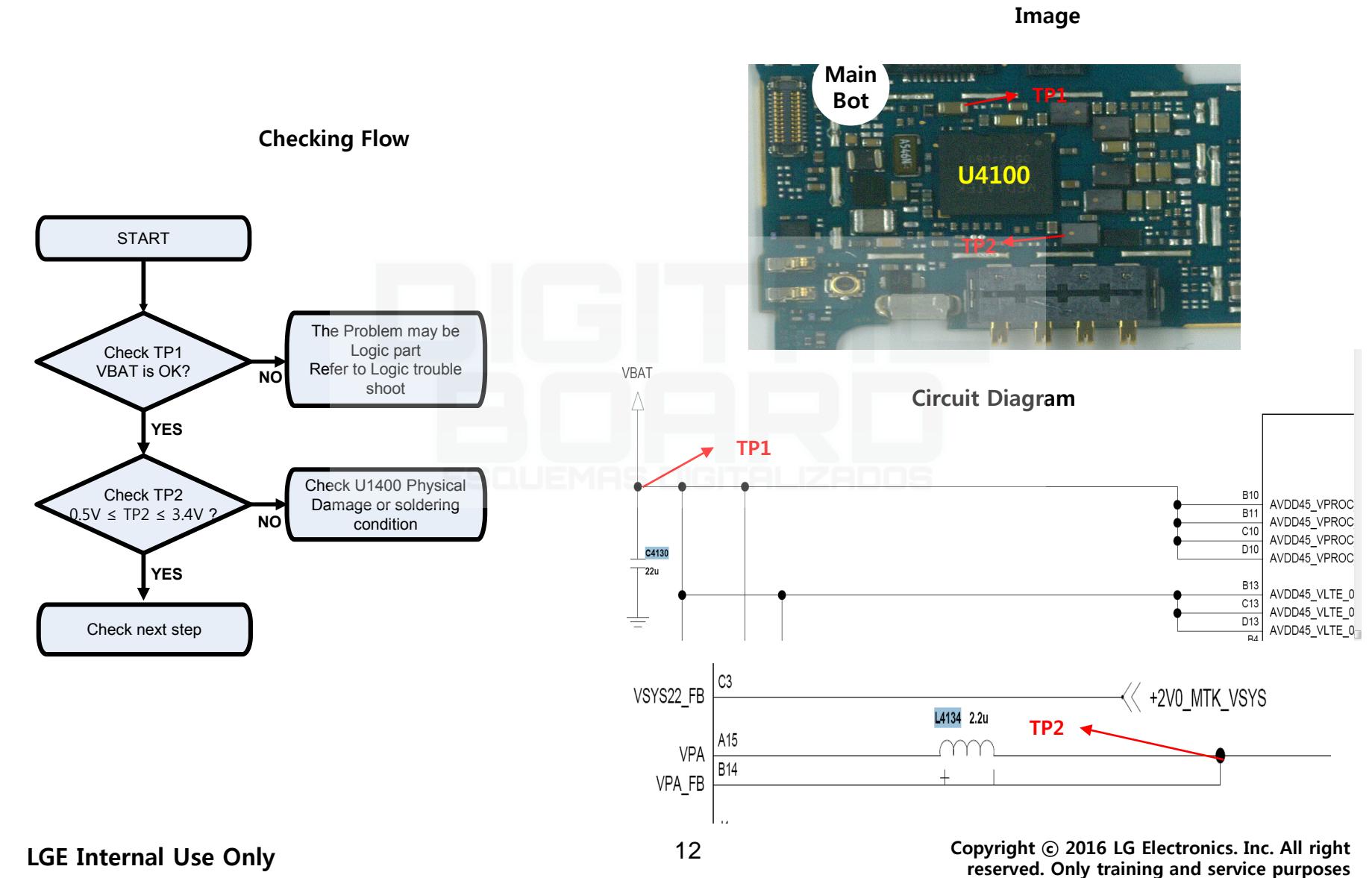
Circuit Diagram



3. TROUBLE SHOOTING

3.3 Checking DC-DC Block

The DC-DC(MT6325, U4100) output voltages is used as the reference one of SKY77621

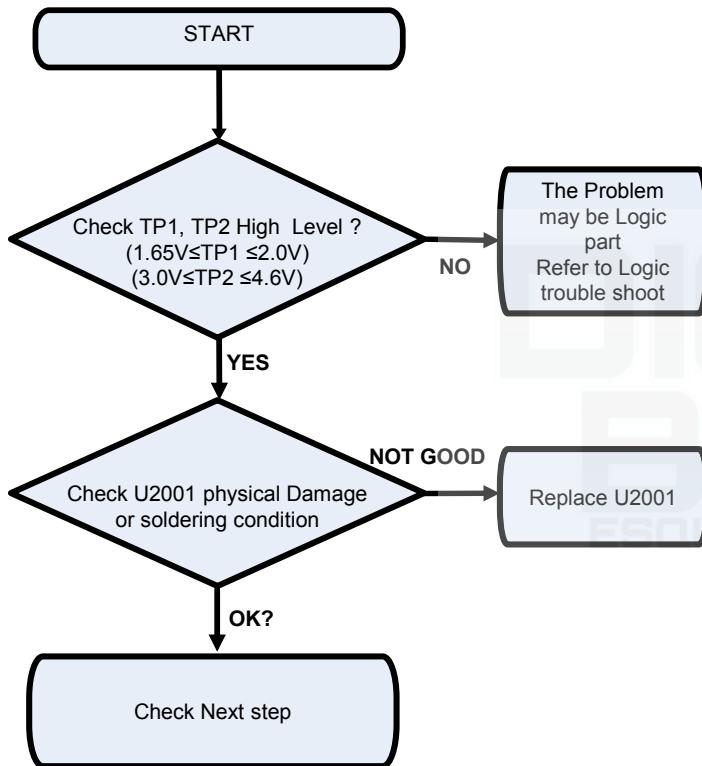


3. TROUBLE SHOOTING

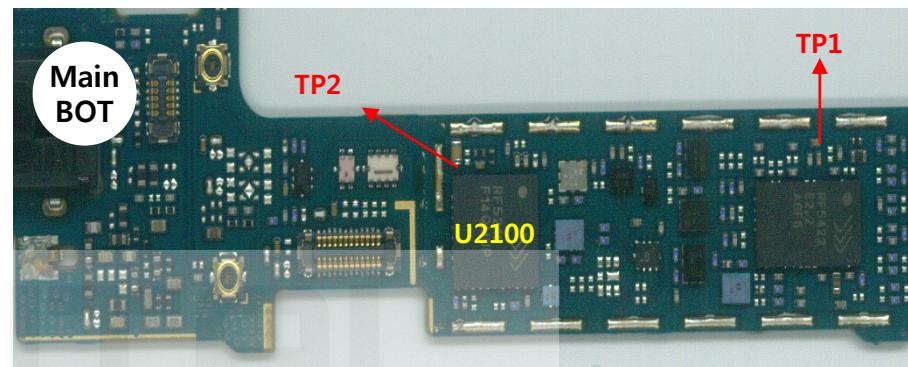
3.4 ASM(Antenna Switch Module) Block

3.4.1 Checking ANT #1 ASM (GSM 850/900/1800/1900), W B1/5/8, LTE B1/3/7/8/20)

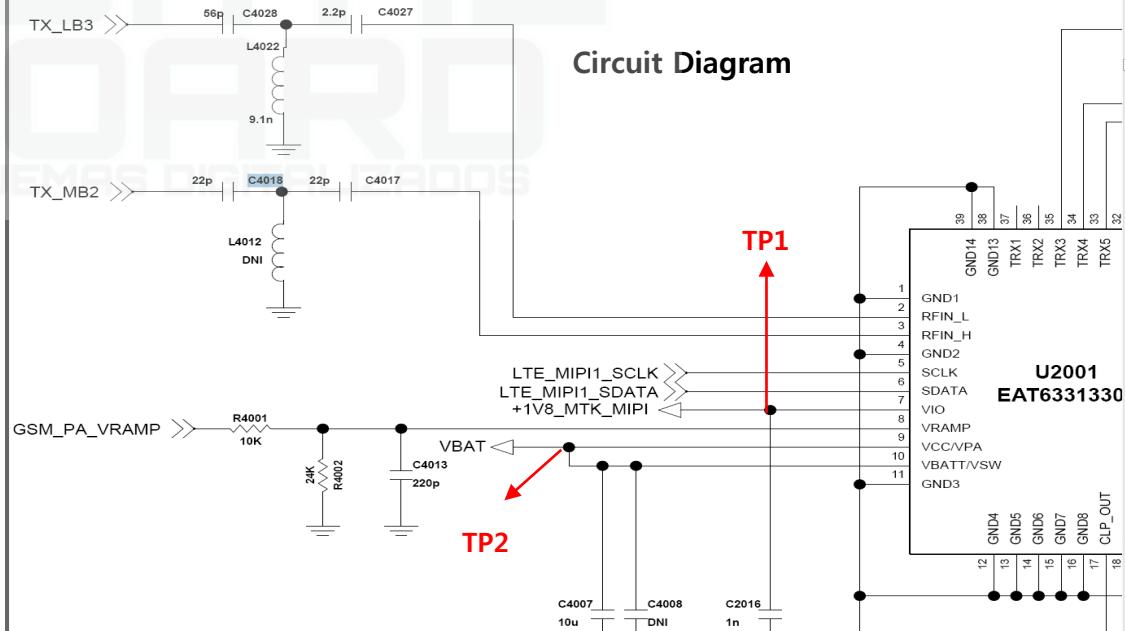
Checking Flow



Image



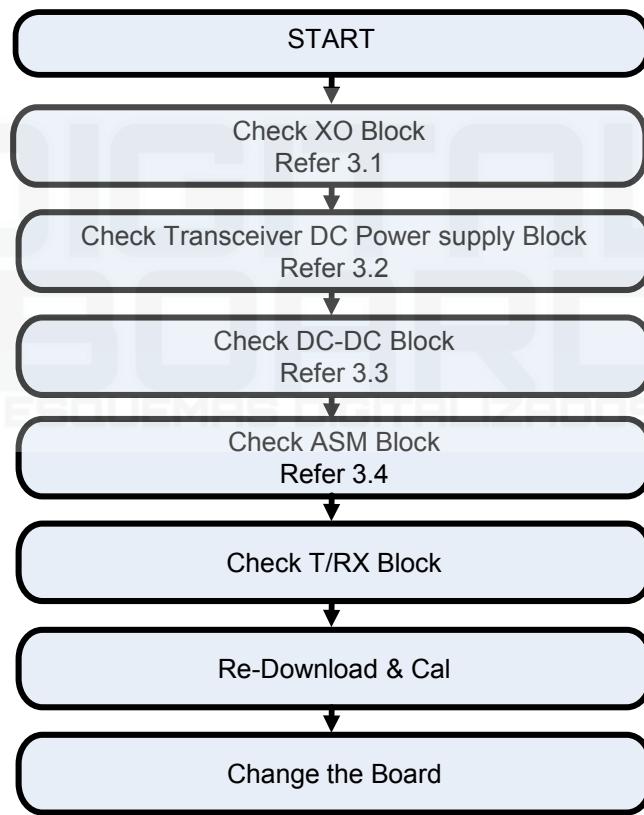
Circuit Diagram



3.5 GSM RF PART

GSM RF Part support GSM850/900/1800/1900 with ASM, PAM, Transceiver component

Checking Flow

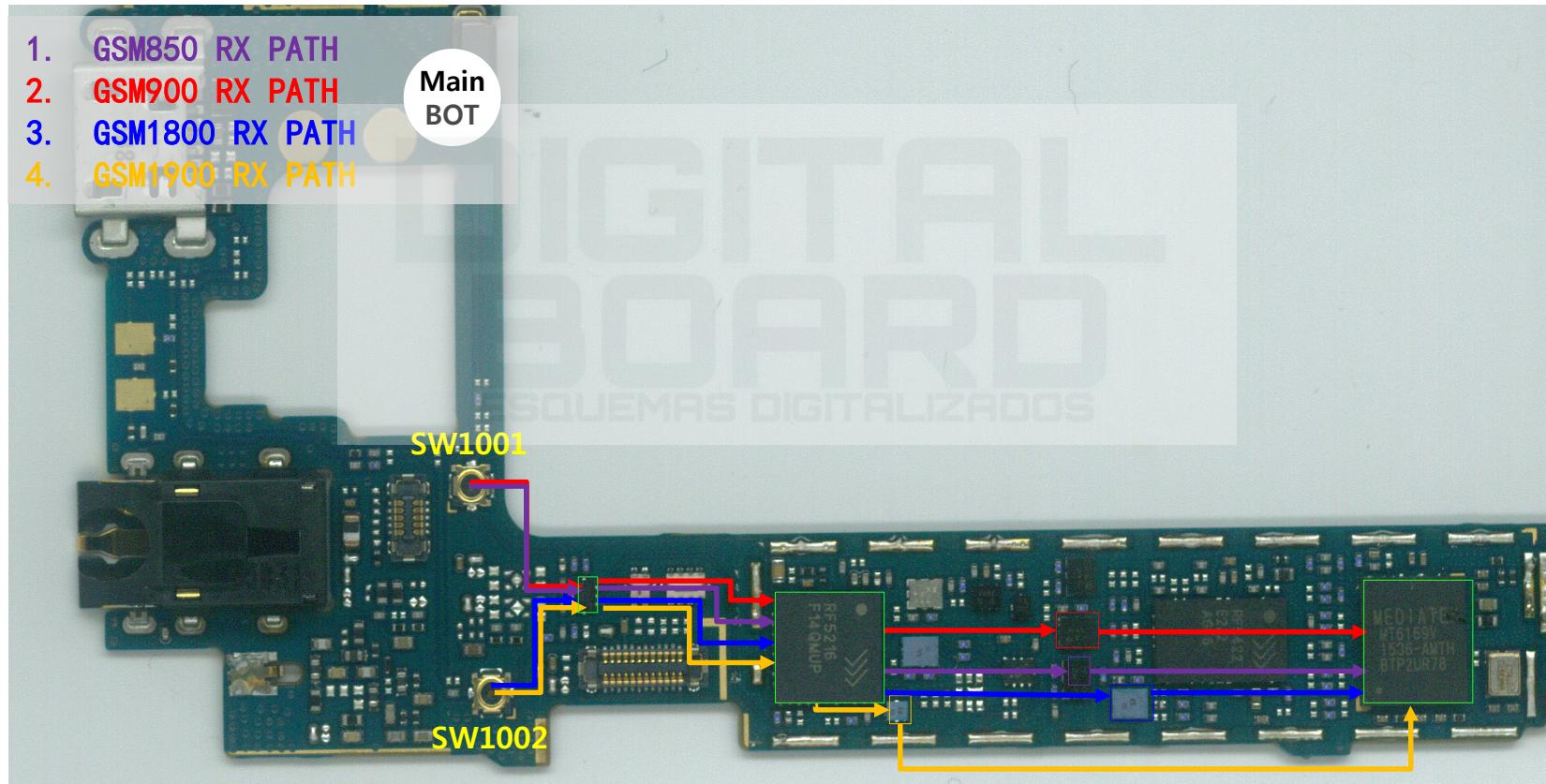


3. TROUBLE SHOOTING

3.5 GSM RF PART

3.5.1 GSM RF Part RX RF PATH

Image

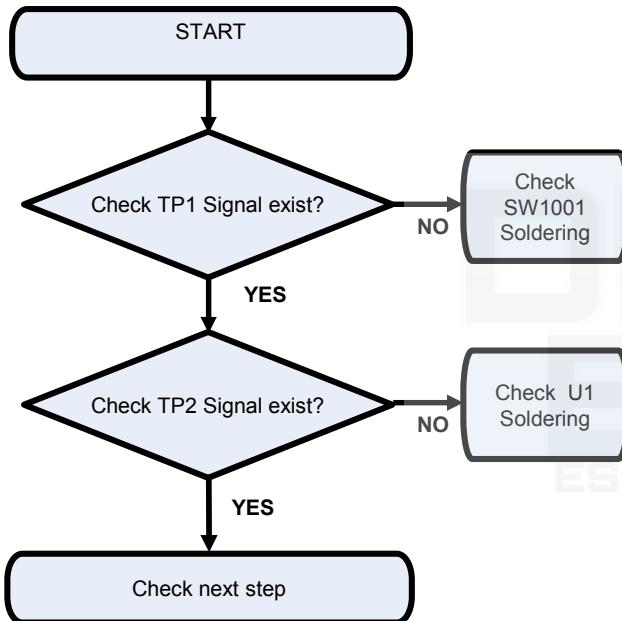


3. TROUBLE SHOOTING

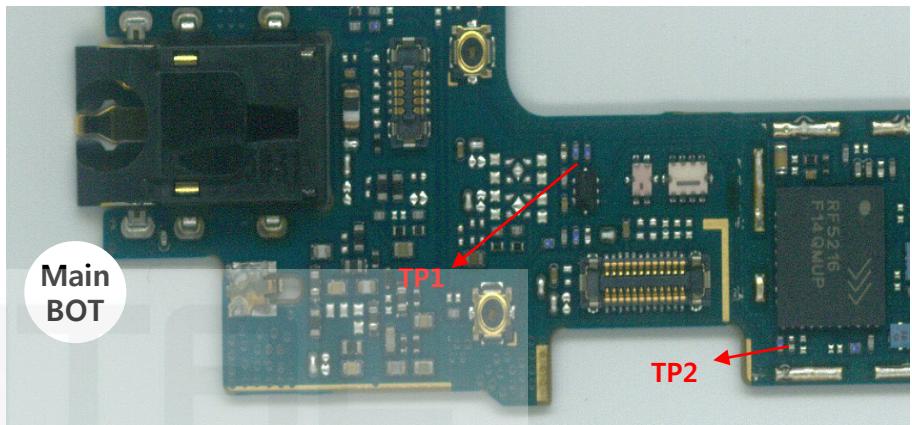
3.5 GSM RF PART

3.5.2 Checking RF Signal RX path(SW, GSM850/900)

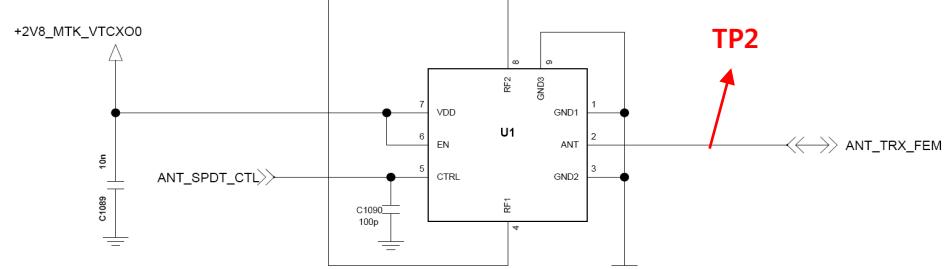
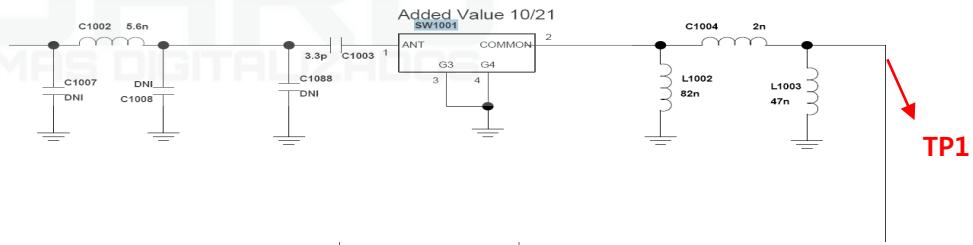
Checking Flow



Image



Circuit Diagram

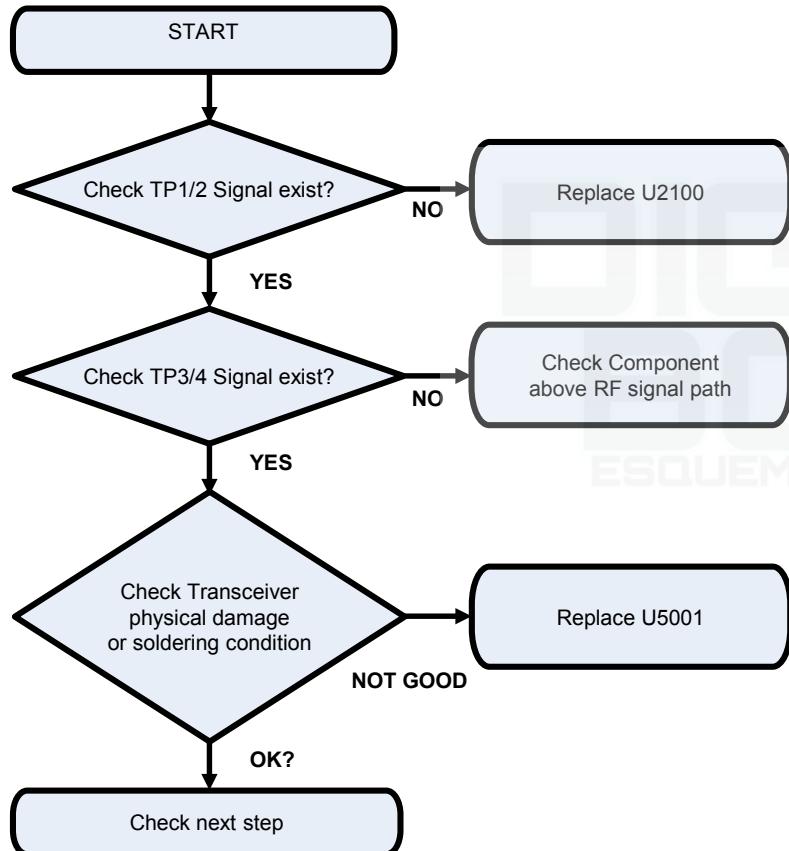


3. TROUBLE SHOOTING

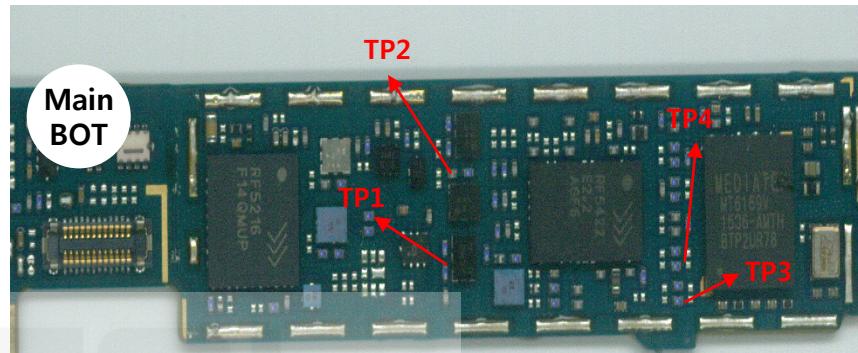
3.5 GSM RF PART

3.5.3 Checking RF Signal RX path(GSM850/900)

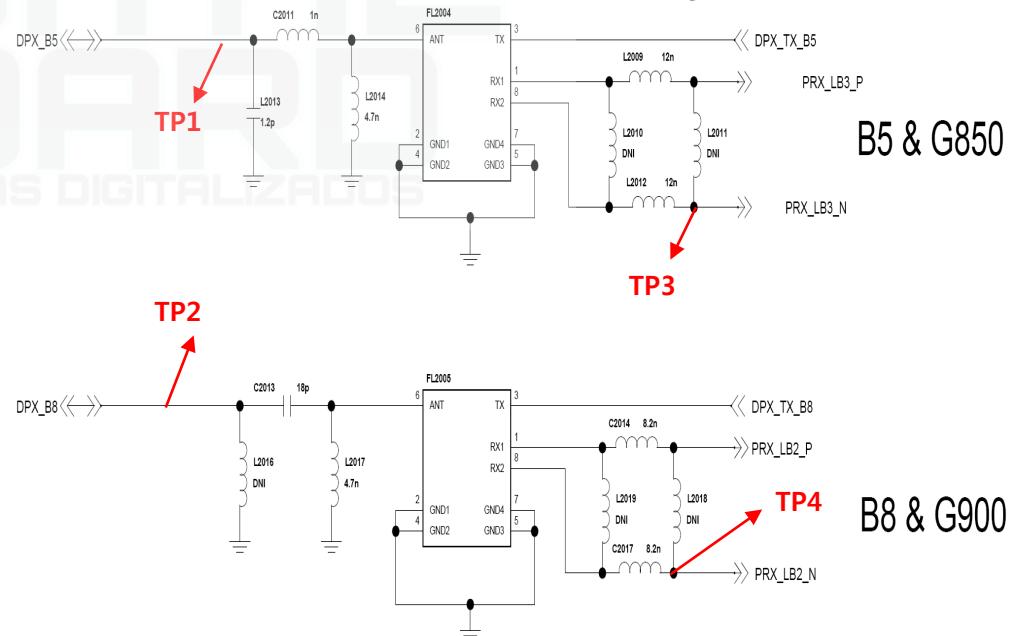
Checking Flow



Image



Circuit Diagram



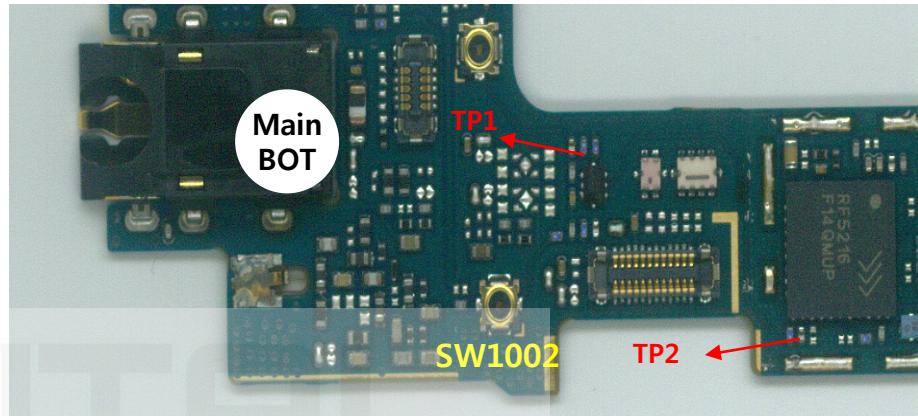
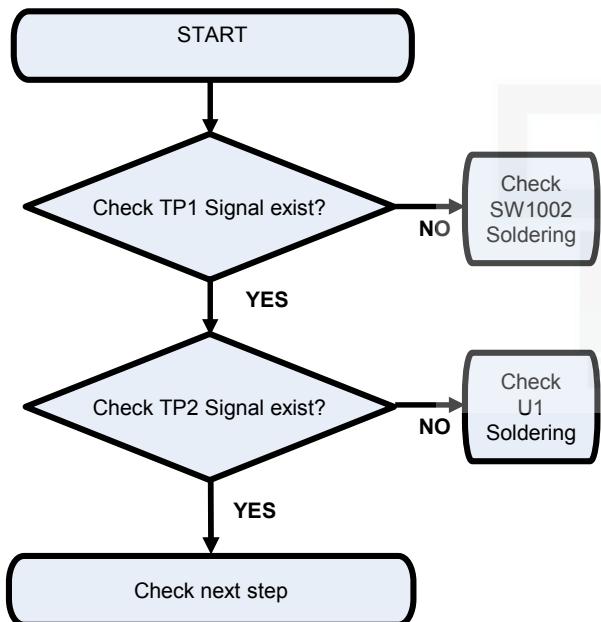
3. TROUBLE SHOOTING

3.5 GSM RF PART

3.5.4 Checking RF Signal RX path(SW, GSM1800/1900)

Image

Checking Flow



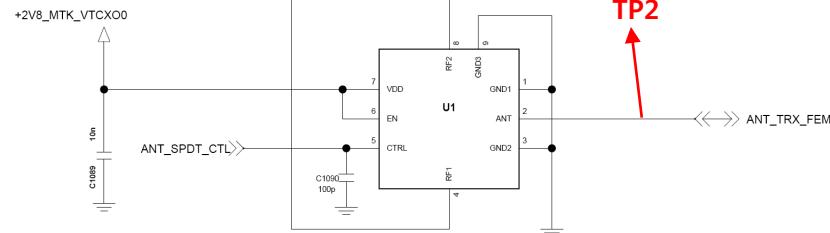
Circuit Diagram



ANT6 TUNER

Mode	EN	CTI
RF1	1	0
RF2	1	1

Mode	CTL	EN
RF1	1	1
RF2	0	1

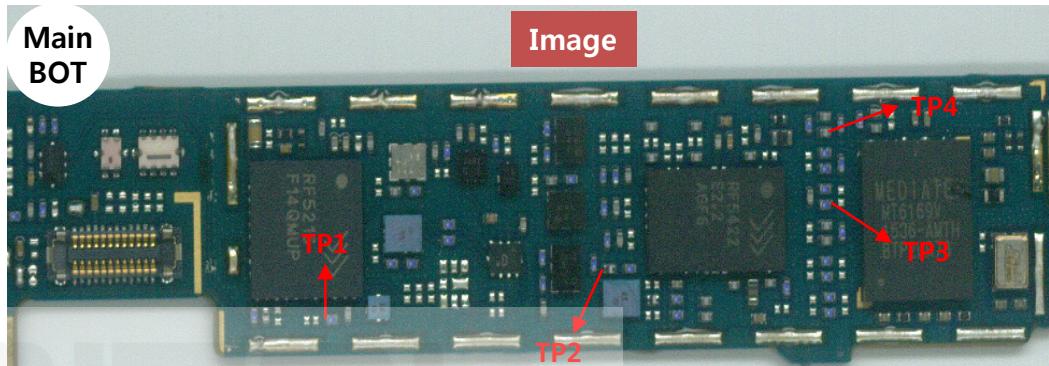
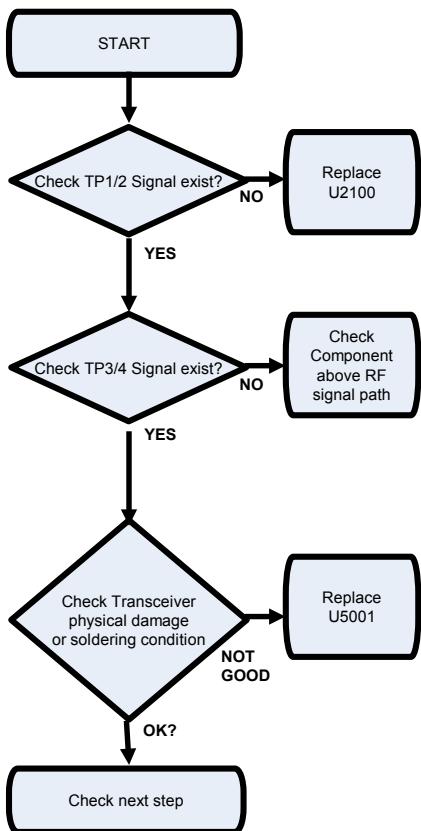


3. TROUBLE SHOOTING

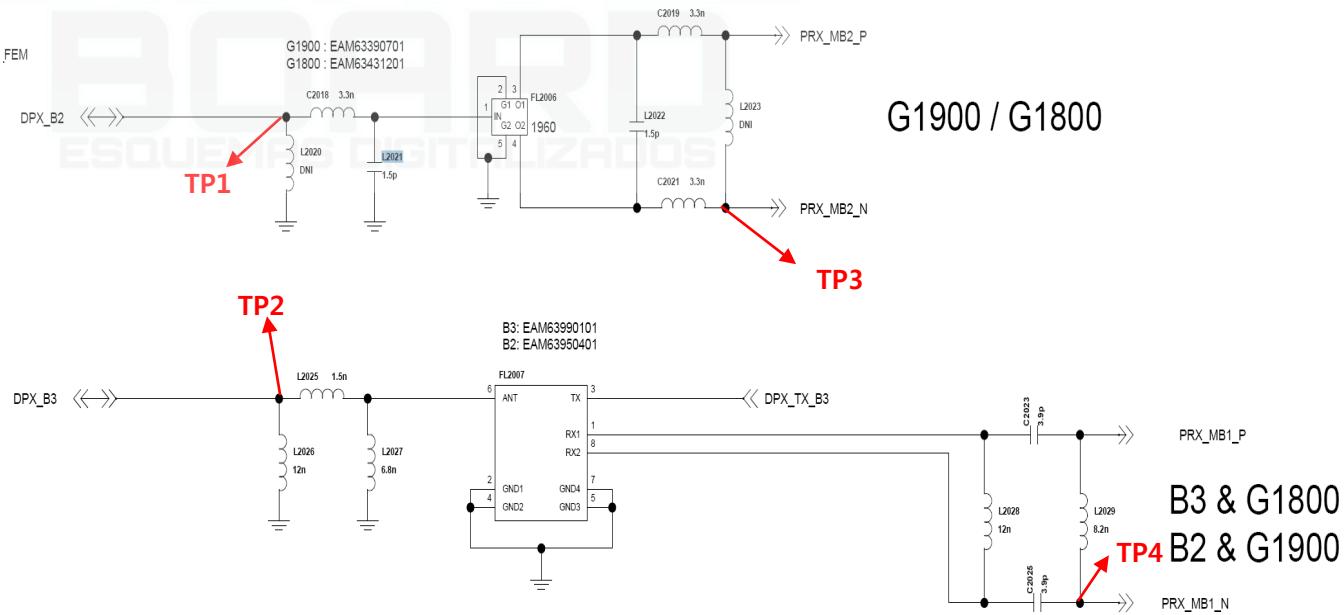
3.5 GSM RF PART

3.5.5 Checking RF Signal RX path(GSM1800/1900)

Checking Flow

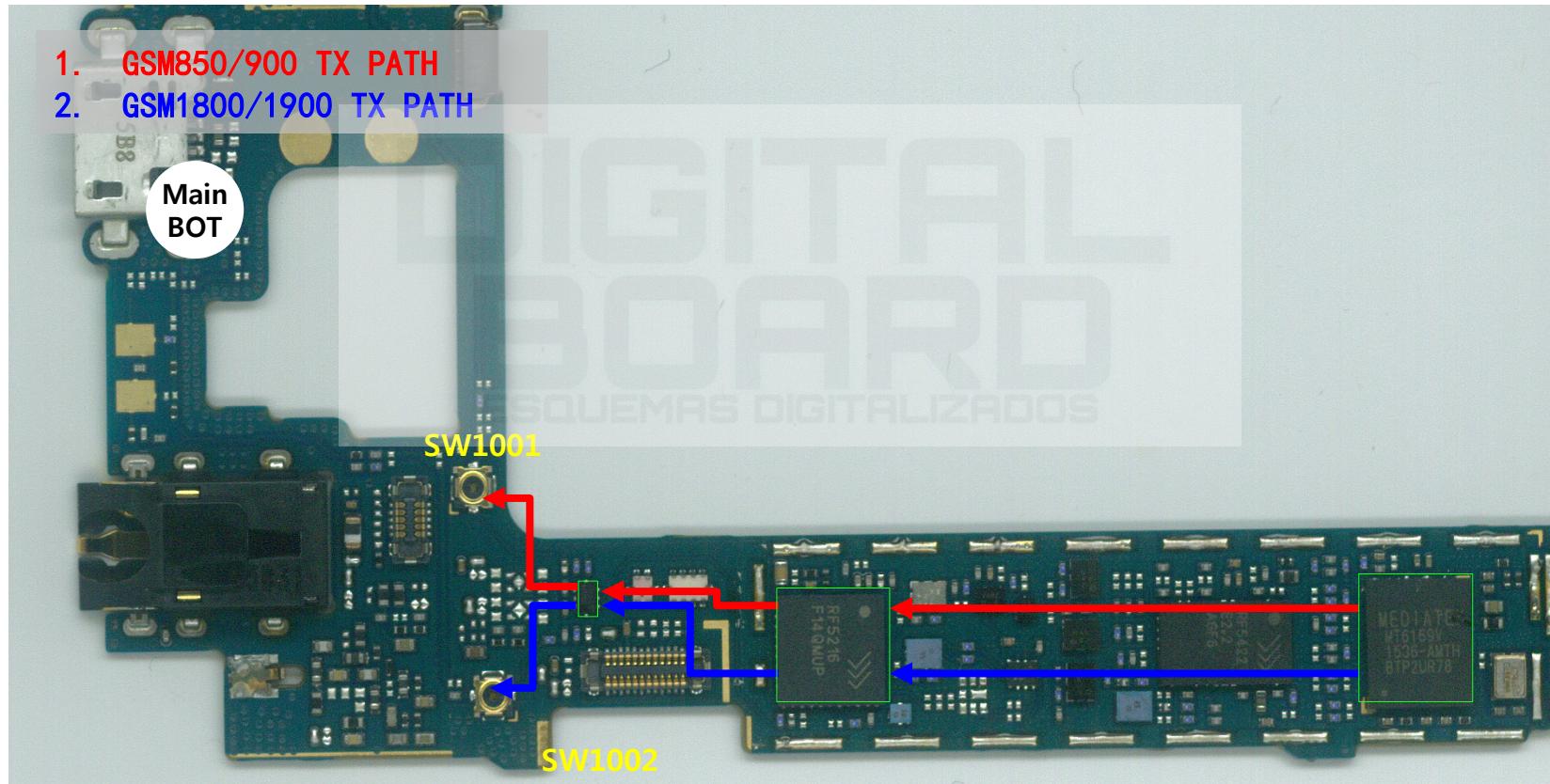


Circuit Diagram



3.5 GSM RF PART

3.5.6 GSM RF Part TX RF PATH

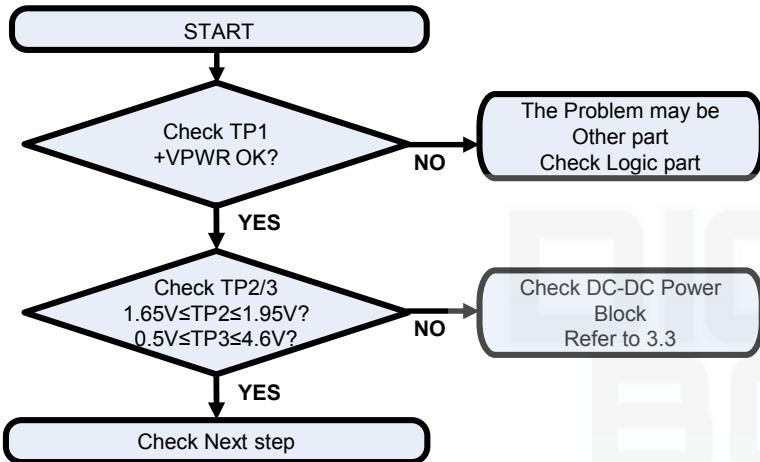


3. TROUBLE SHOOTING

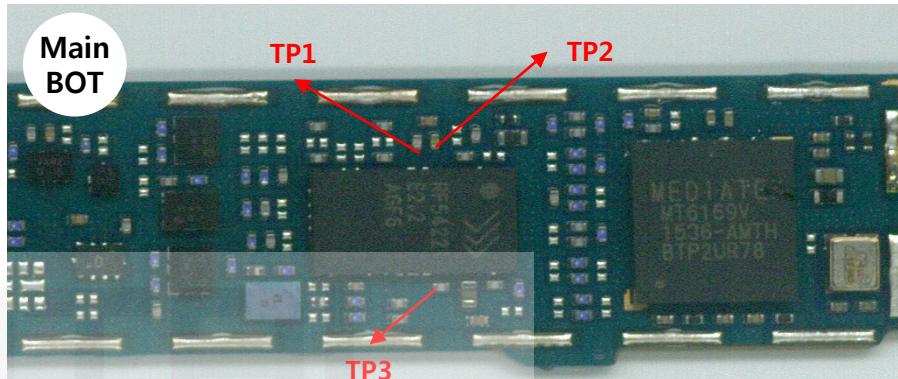
3.5 GSM RF PART

3.5.7 Checking GSM PAM DC Power Circuit

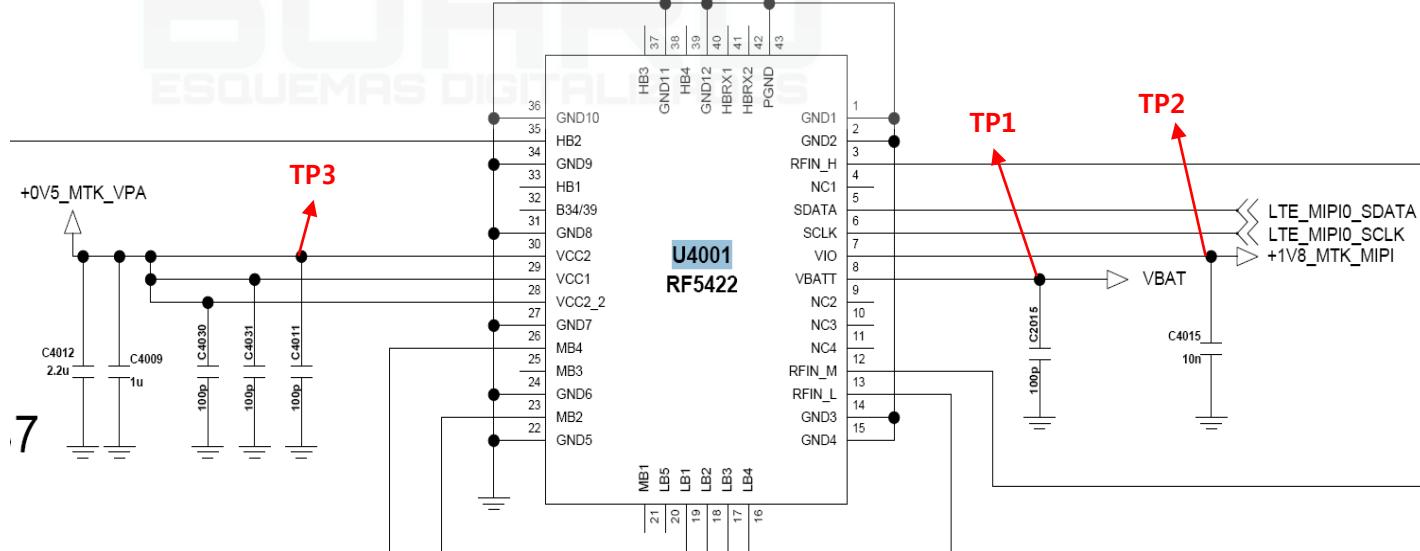
Checking Flow



Image



Circuit Diagram



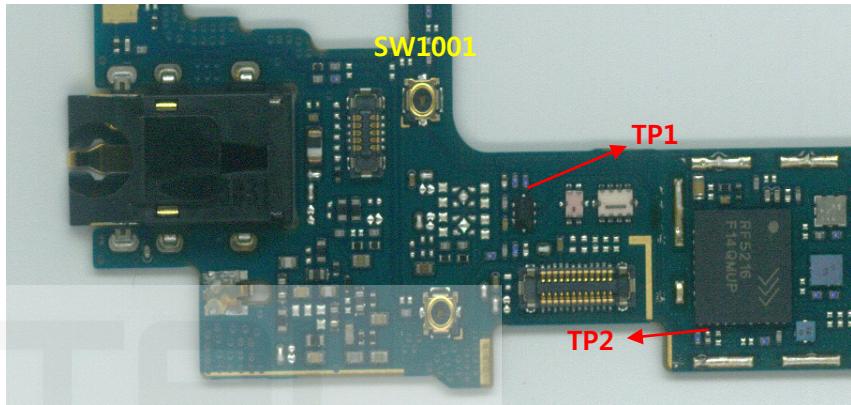
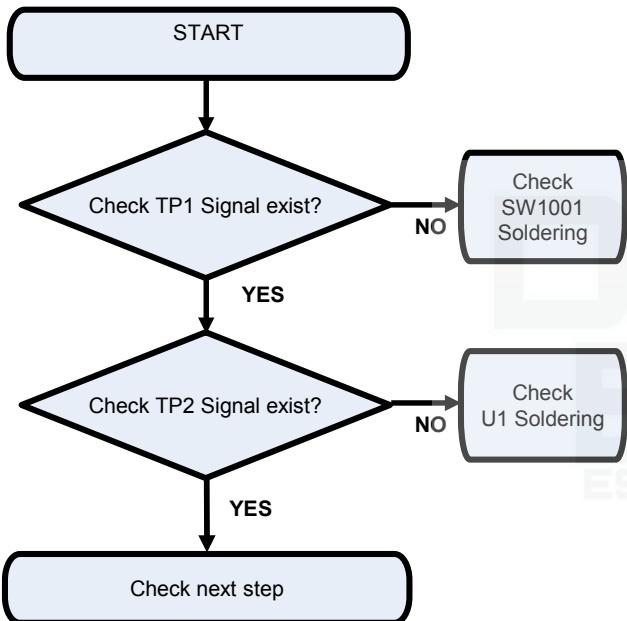
3. TROUBLE SHOOTING

3.5 GSM RF PART

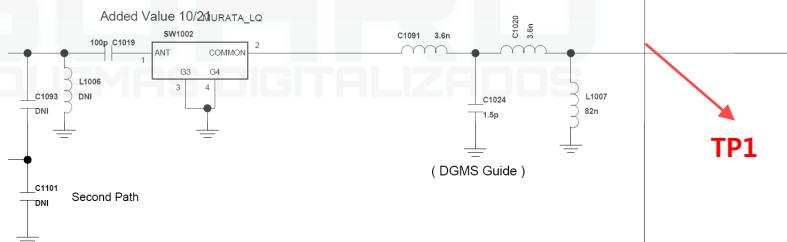
3.5.8 Checking RF Signal TX path(SW, GSM850/900)

Image

Checking Flow



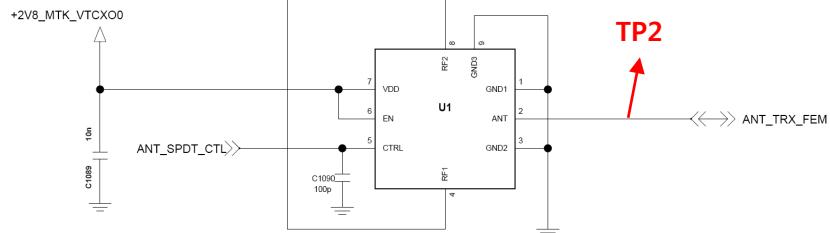
Circuit Diagram



ANT6 TUNER

Mode	EN	CTI
RF1	1	0
RF2	1	1

Mode	CTL	EN
RF1	1	1
RF2	0	1



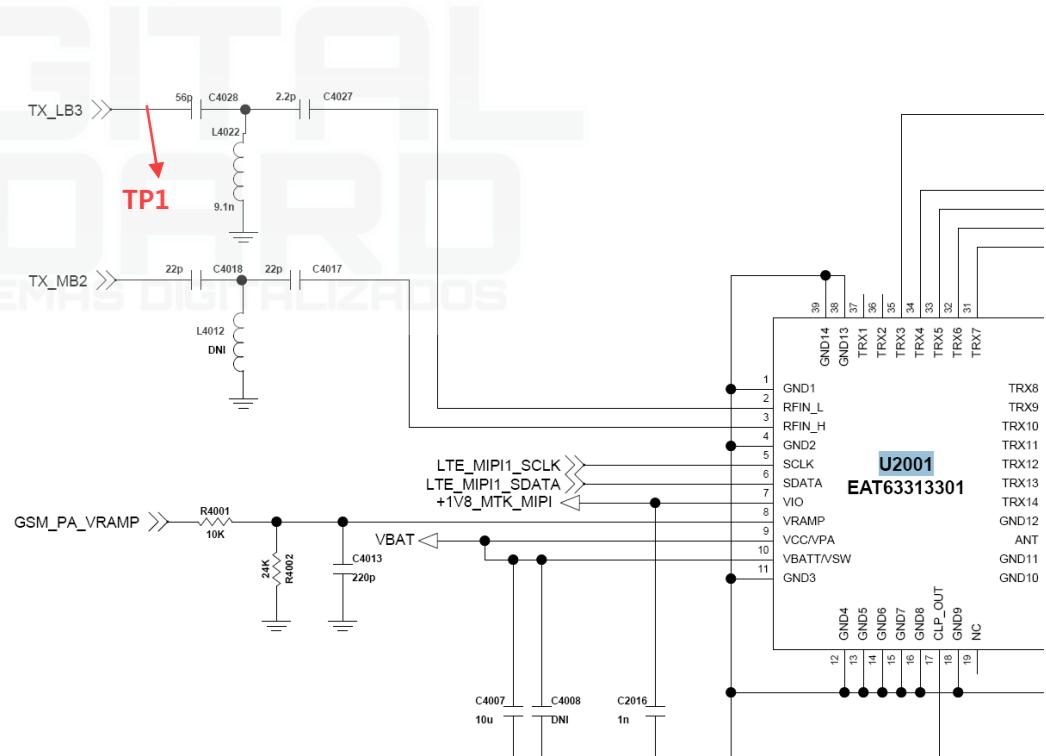
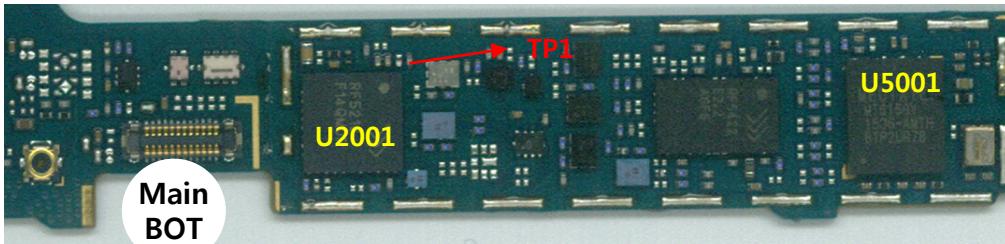
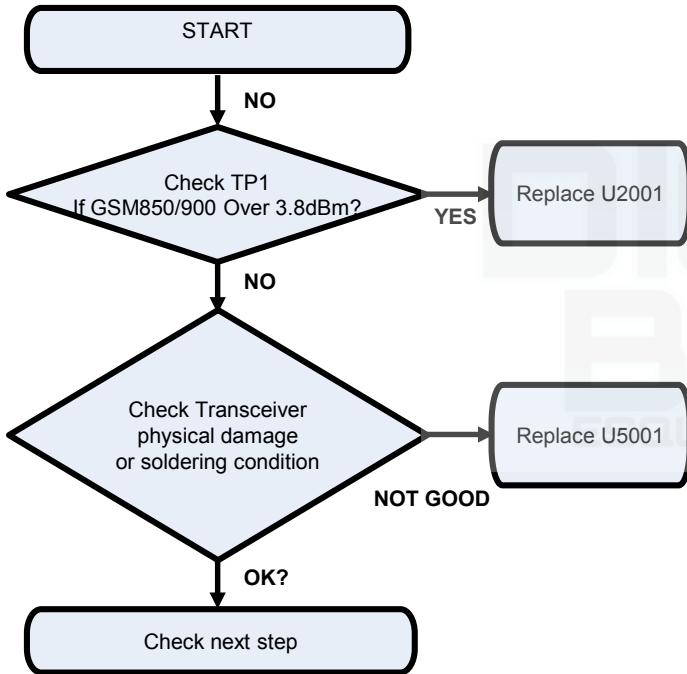
3. TROUBLE SHOOTING

3.5 GSM RF PART

3.5.9 Checking RF Signal TX path(GSM850/900)

Image

Checking Flow

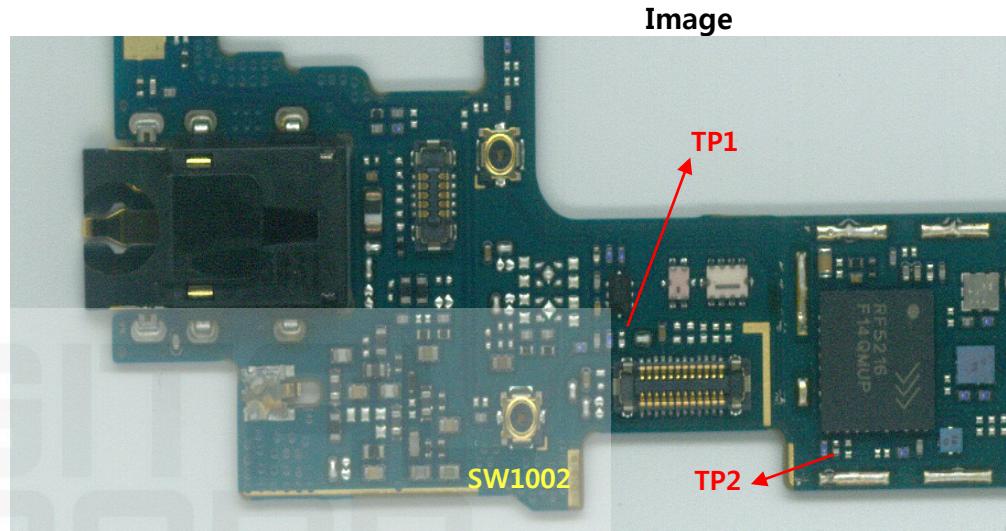
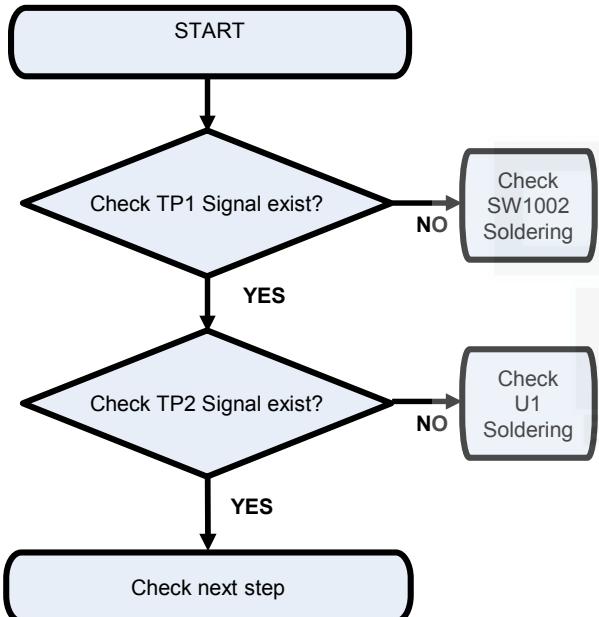


3. TROUBLE SHOOTING

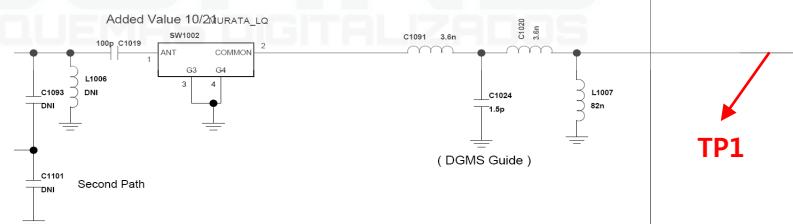
3.5 GSM RF PART

3.5.10 Checking RF Signal TX path(SW, GSM1800/1900)

Checking Flow



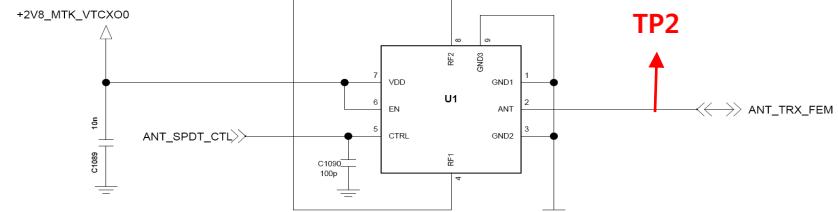
Circuit Diagram



Mode	CTL	EN
RF1	1	1
RF2	0	1

ANT6 TUNER

Mode	EN	CTI
RF1	1	0
RF2	1	1

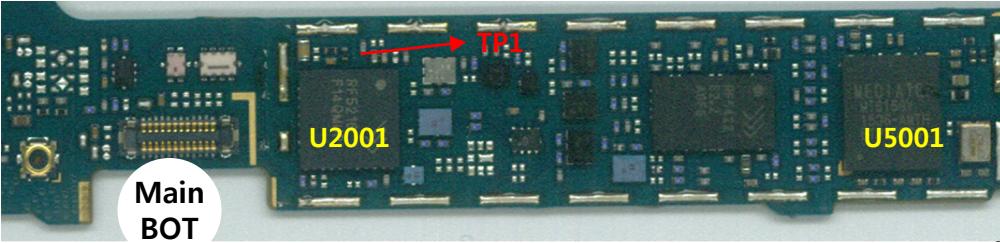
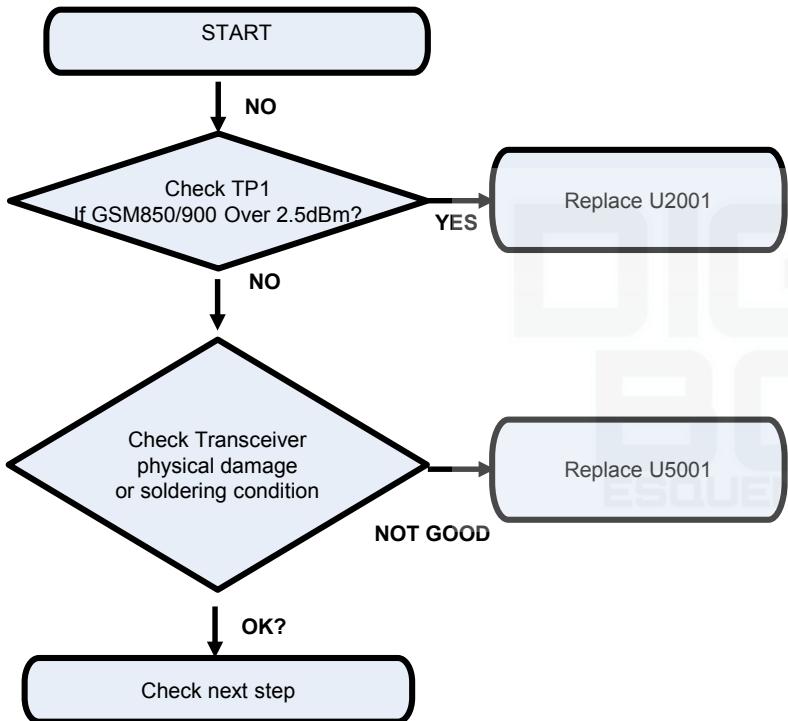


3. TROUBLE SHOOTING

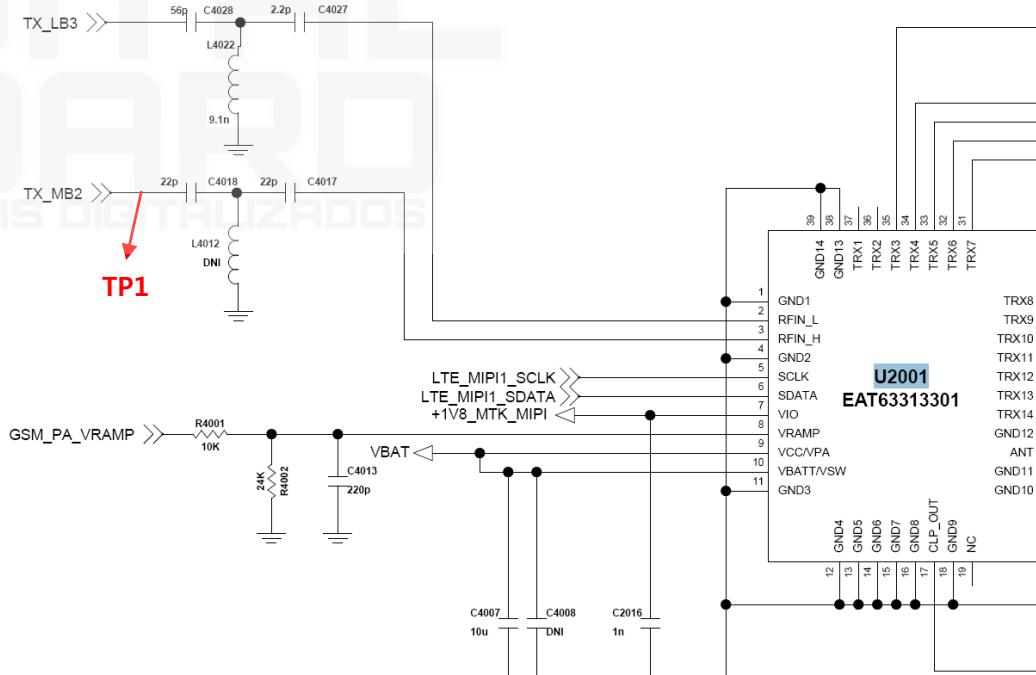
3.5 GSM RF PART

3.5.11 Checking RF Signal TX path(GSM1800/1900)

Image

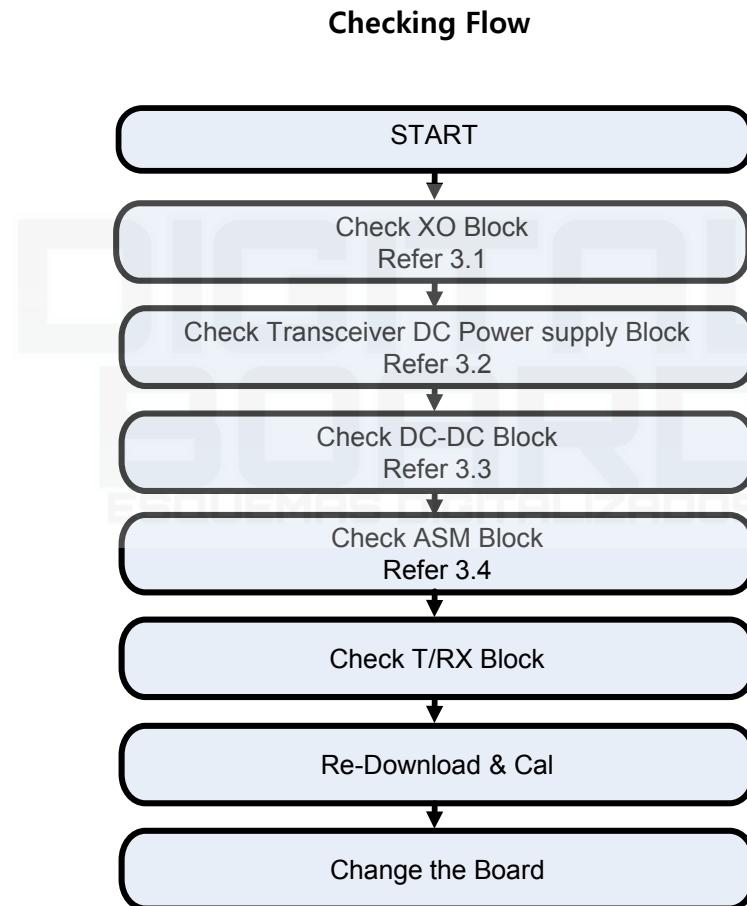


Circuit Diagram



3.6 WCDMA RF PART

WCDMA RF Part support WCDMA B1/5/8 with ASM, PAM, Transceiver component



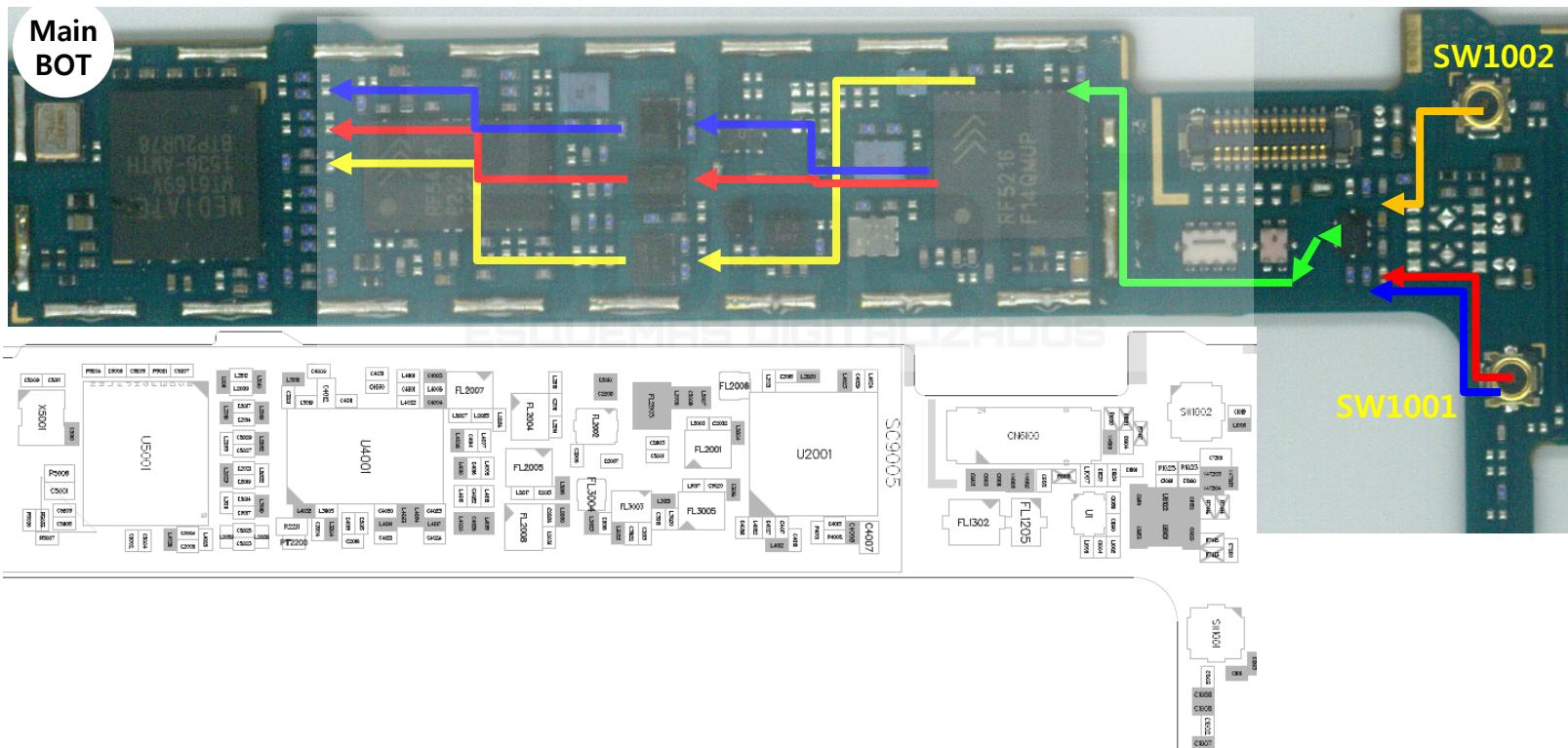
3. TROUBLE SHOOTING

3.6 WCDMA RF PART

3.6.1 WCDMA RF Part RX RF PATH

Image

1. WCDMA B1 RX PATH
2. WCDMA B5 RX PATH
3. WCDMA B8 RX PATH
4. RX COMMON PATH

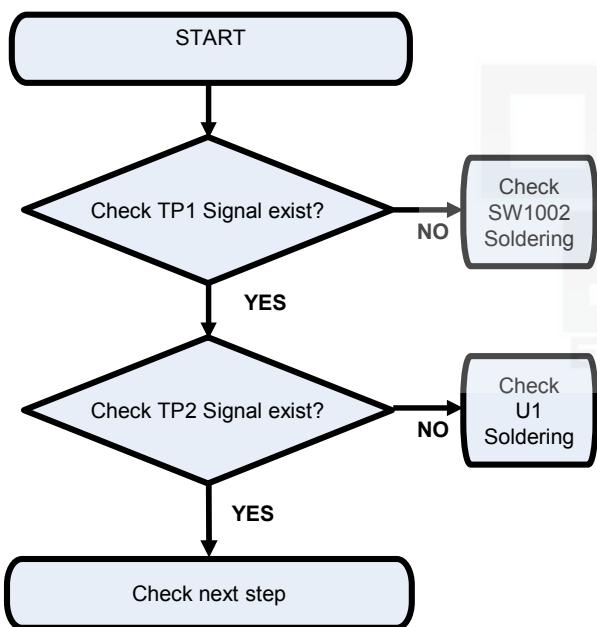


3. TROUBLE SHOOTING

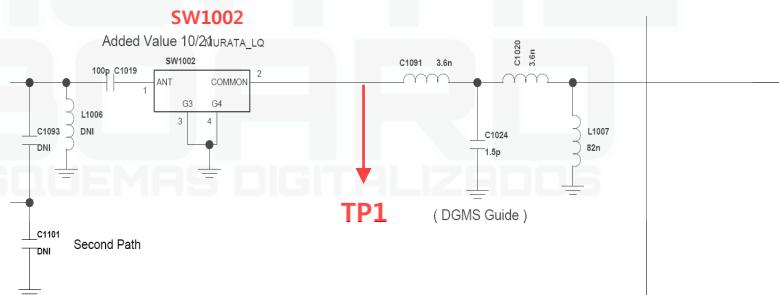
3.6 WCDMA RF PART

3.6.2 Checking RF Signal RX path(SW, WCDMA B1)

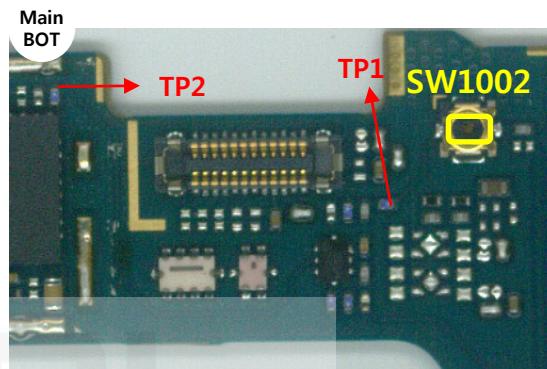
Checking Flow



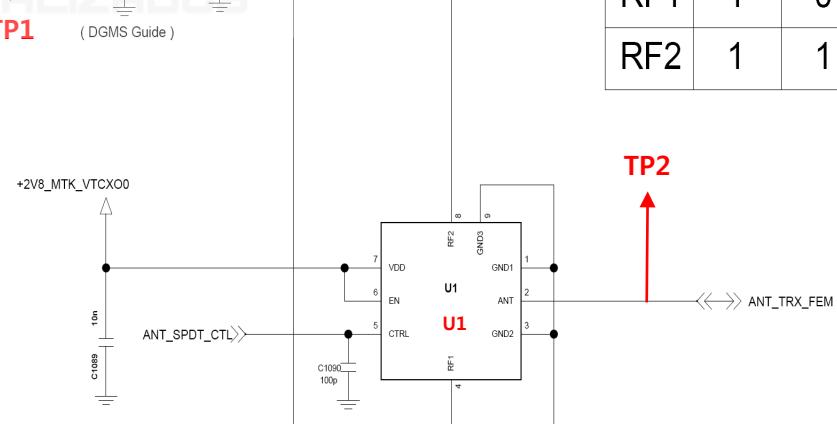
Mode	CTL	EN
RF1	1	1
RF2	0	1



Image



Circuit Diagram



ANT6 TUNER

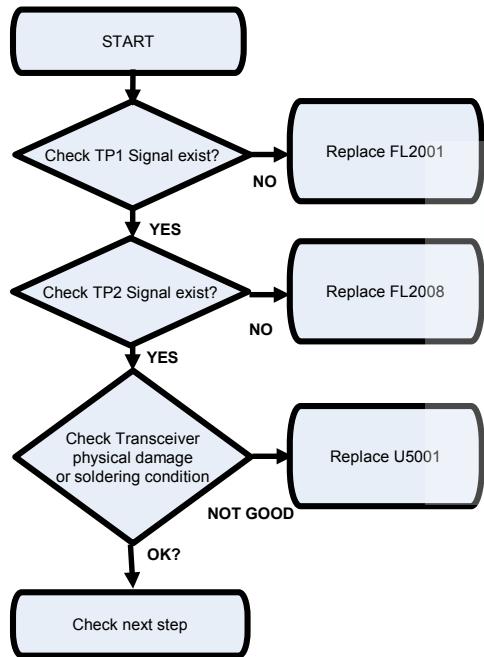
Mode	EN	CTI
RF1	1	0
RF2	1	1

3. TROUBLE SHOOTING

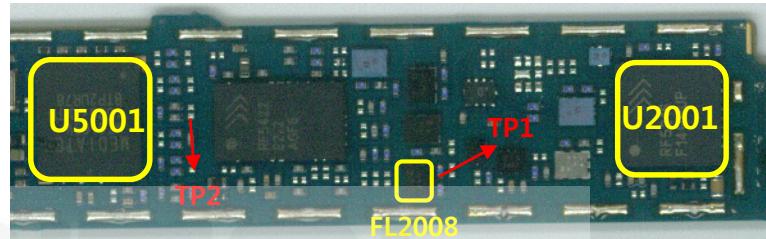
3.6 WCDMA RF PART

3.6.3 Checking RF Signal RX path(WCDMA B1)

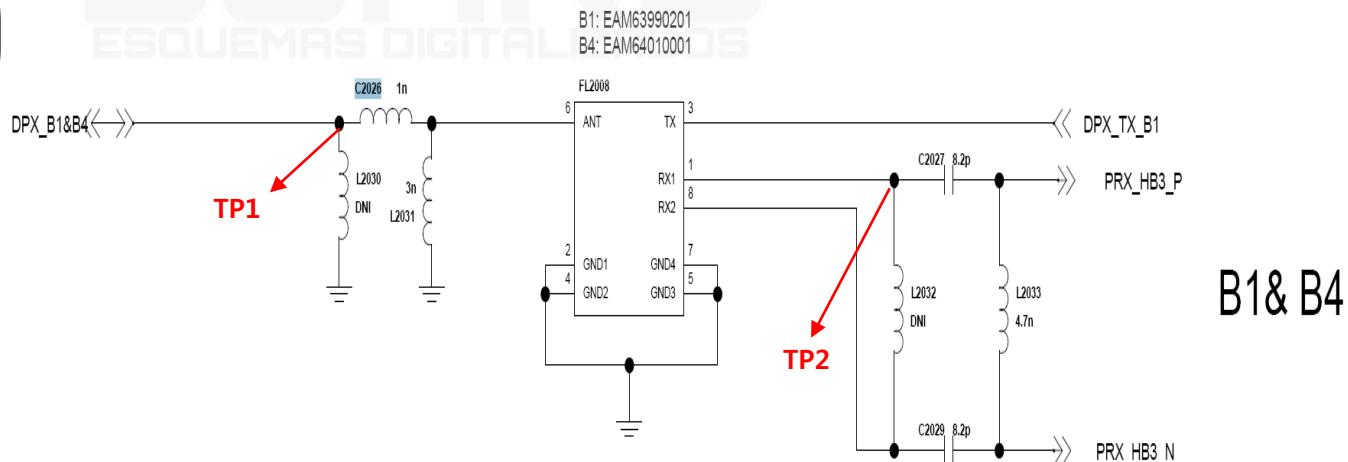
Checking Flow



Image



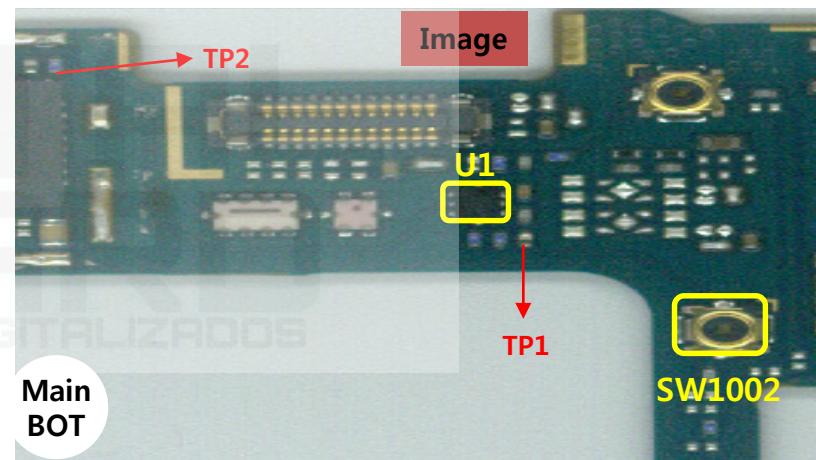
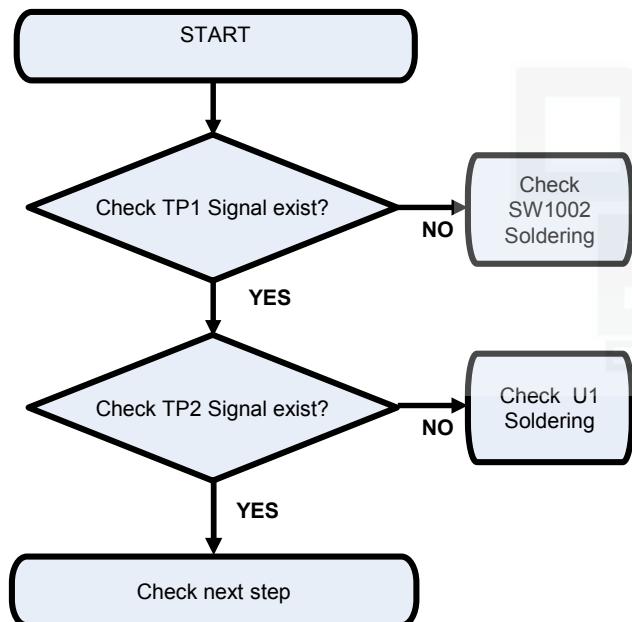
Circuit Diagram



3.6 WCDMA RF PART

3.6.4 Checking RF Signal RX path(SW, WCDMA B5/8)

Checking Flow

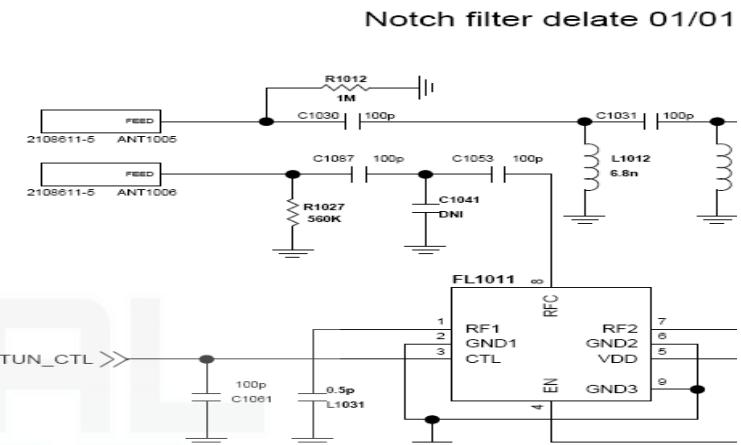
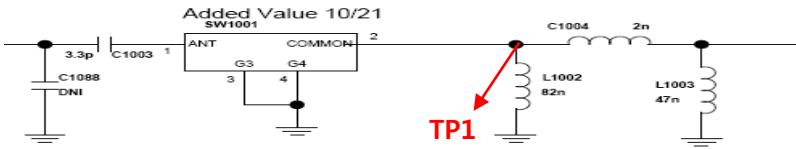


3. TROUBLE SHOOTING

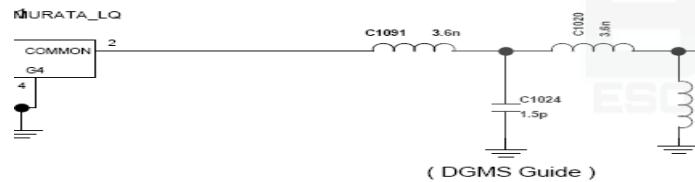
3.6 WCDMA RF PART

3.6.4 Checking RF Signal RX path(SW, WCDMA B5/8)

Circuit Diagram

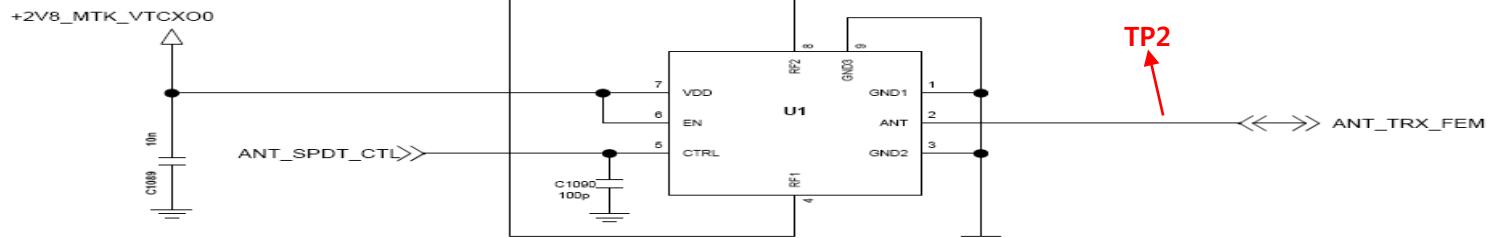


/B4, LTE_B1/B2/B3/B4)



ANT6 TUNER

Mode	EN	CTI
RF1	1	0
RF2	1	1

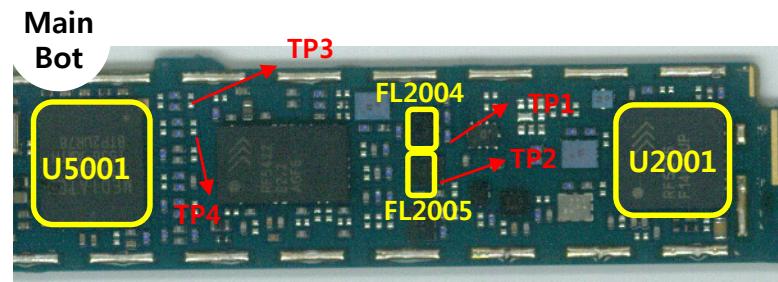
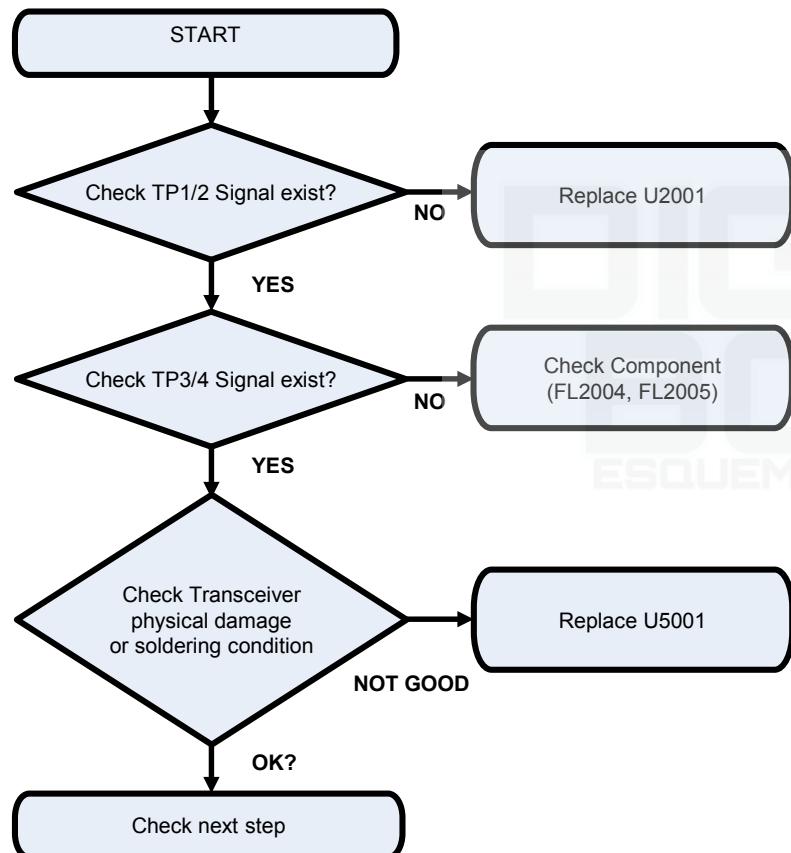


3. TROUBLE SHOOTING

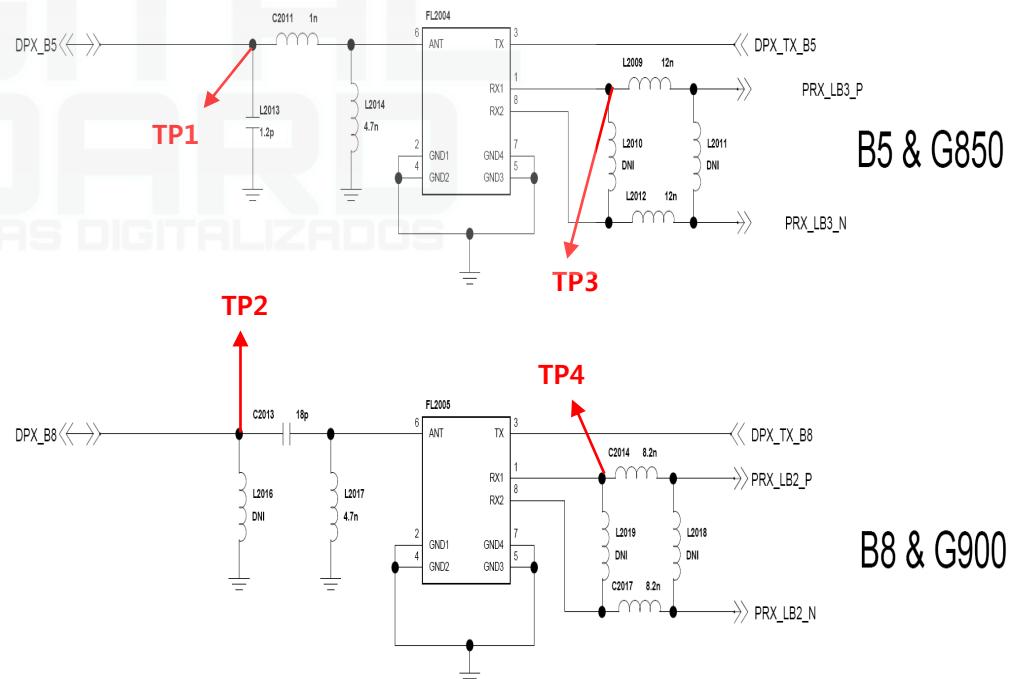
3.6 WCDMA RF PART

3.6.5 Checking RF Signal RX path(WCDMA B5/8)

Checking Flow



Circuit Diagram

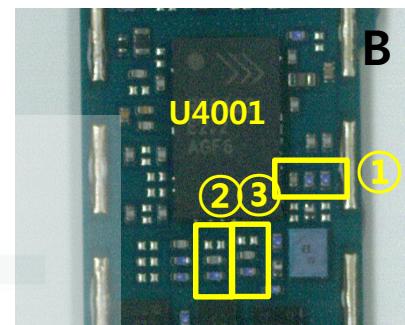
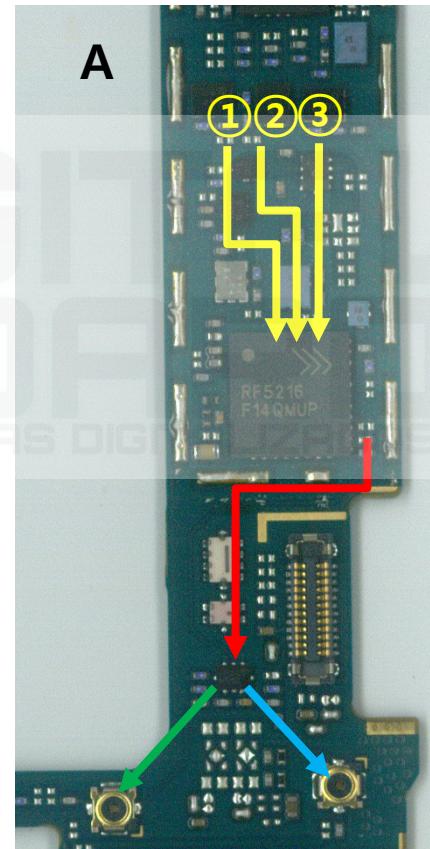
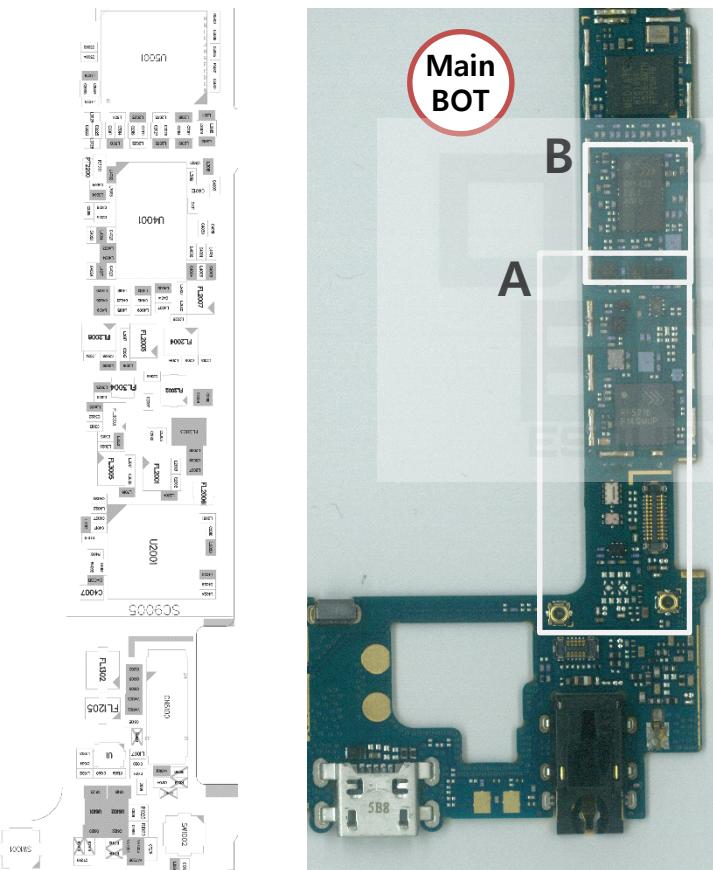


3. TROUBLE SHOOTING

3.6 WCDMA RF PART

3.6.6 WCDMA RF Part TX RF PATH

Image



Low/High Band Common TX Path
Mid. Band Common TX Path
Common TX Path

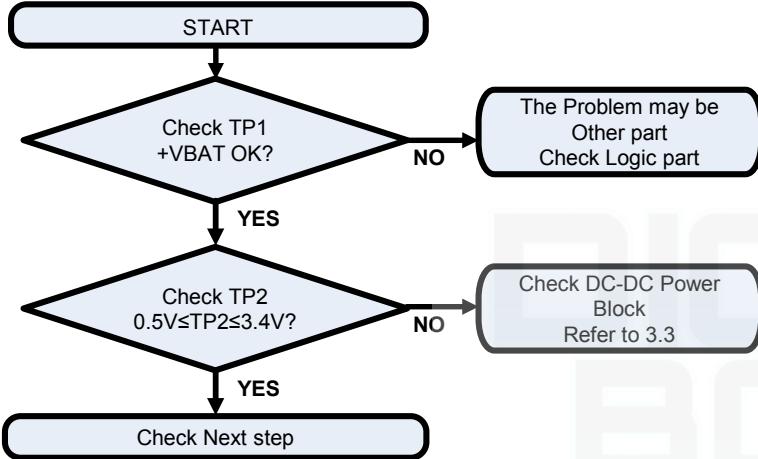
1. LTE B1 TX Path
2. LTE B8 TX Path
3. LTE B5 TX Path

3. TROUBLE SHOOTING

3.6 WCDMA RF PART

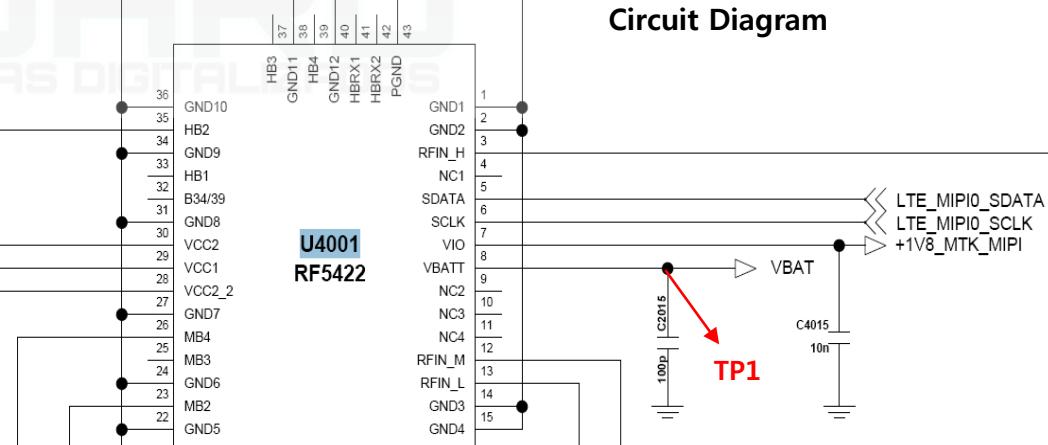
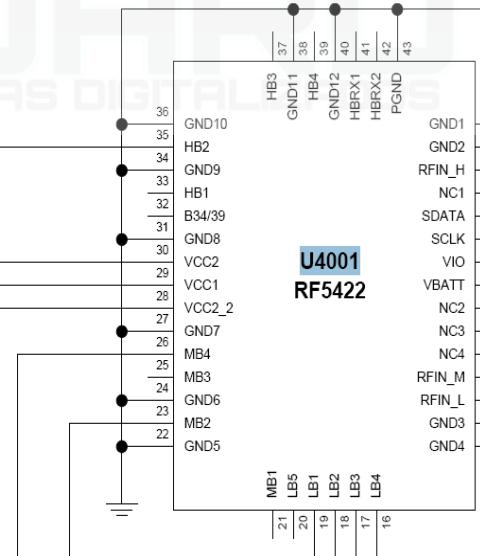
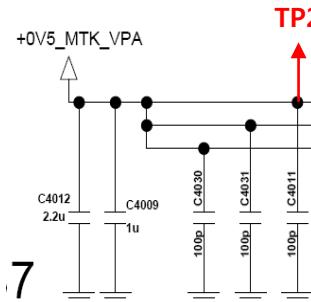
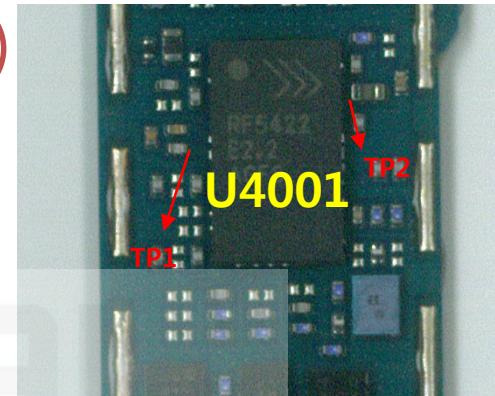
3.6.7 Checking WCDMA PAM DC Power Circuit

Checking Flow



Image

Main
Bot

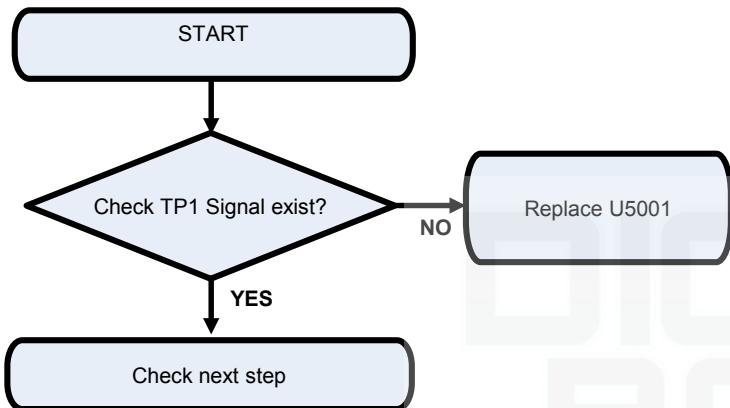


3. TROUBLE SHOOTING

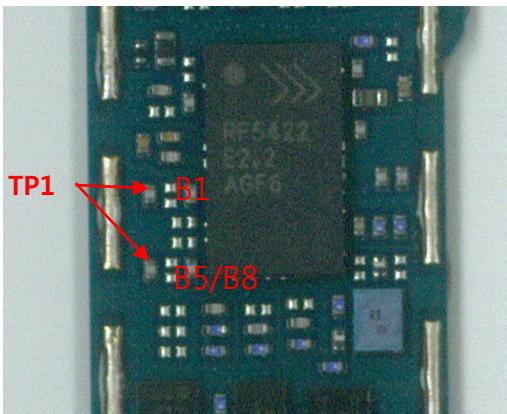
3.6 WCDMA RF PART

3.6.8 Checking RF Signal TX path(SW, WCDMA B1)

Checking Flow

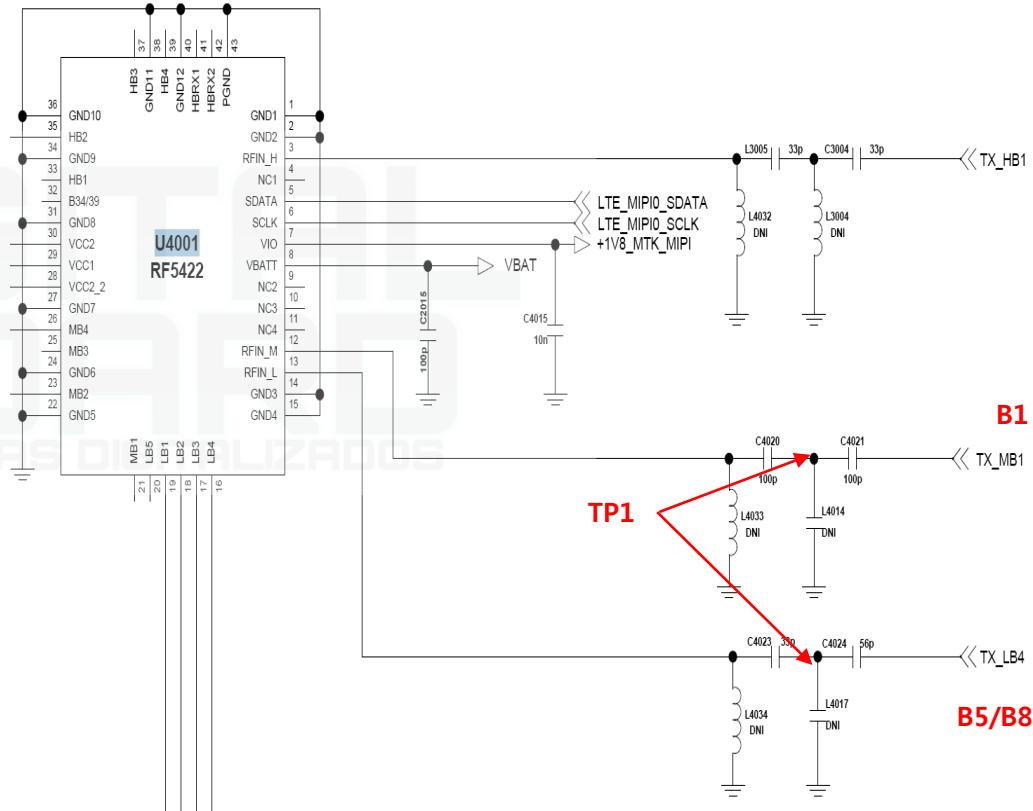


Image



Main
BOT

Circuit Diagram

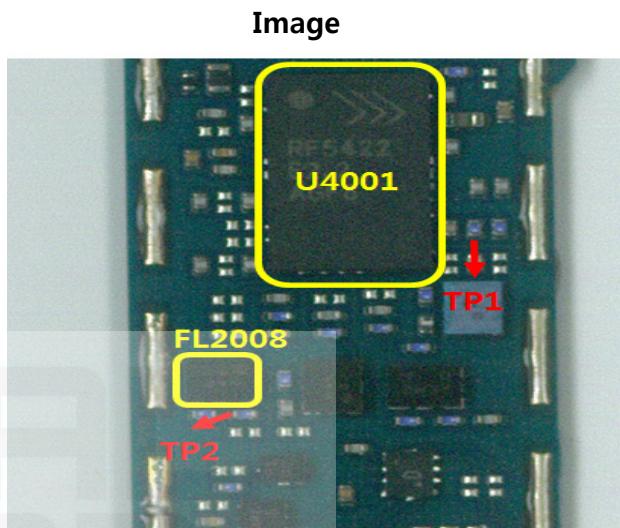
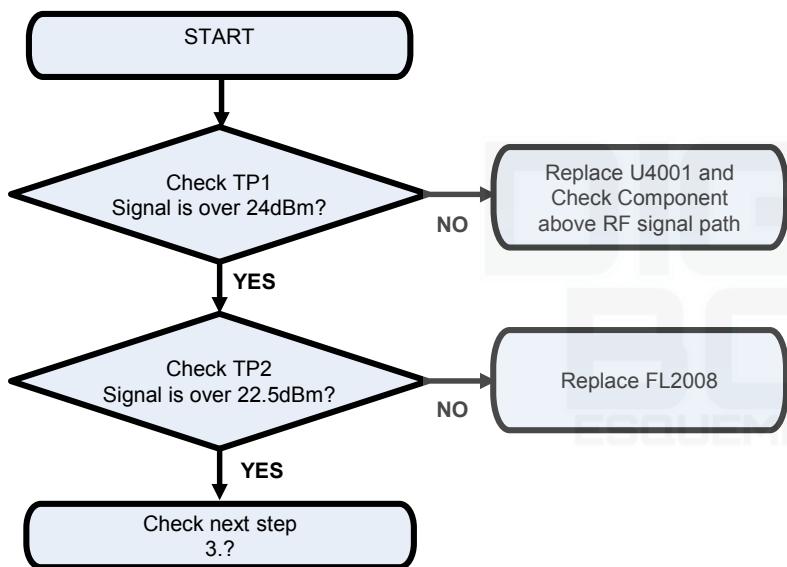


3. TROUBLE SHOOTING

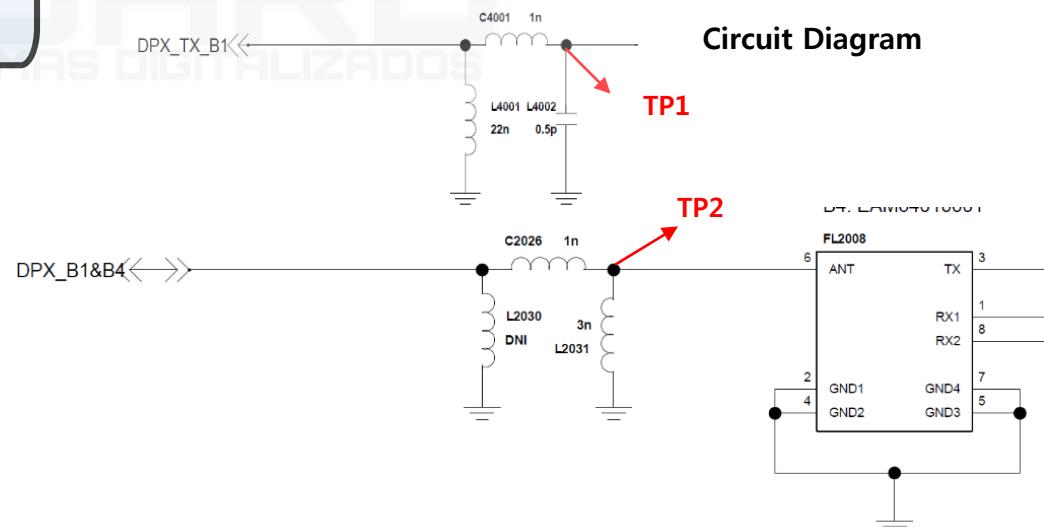
3.6 WCDMA RF PART

3.6.9 Checking RF Signal TX path(WCDMA B1)

Checking Flow



Circuit Diagram

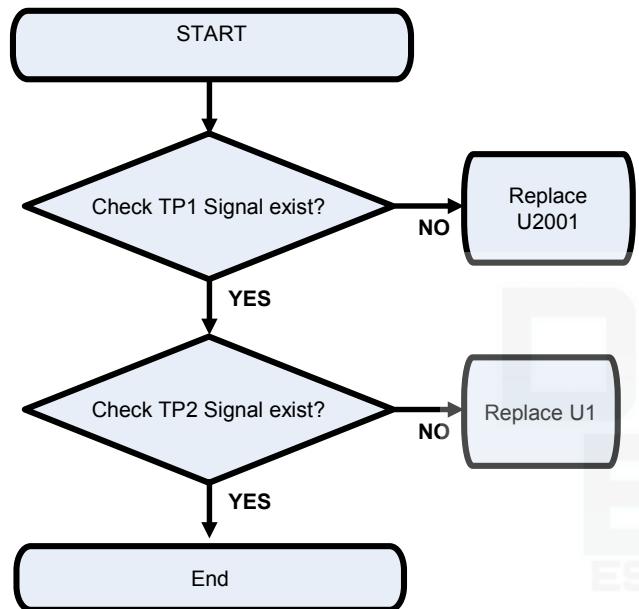


3. TROUBLE SHOOTING

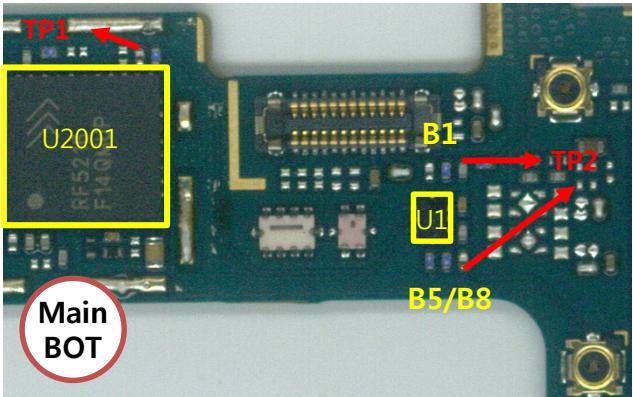
3.6 WCDMA RF PART

3.6.10 Checking RF Signal TX path(SW, WCDMA B5/8)

Checking Flow

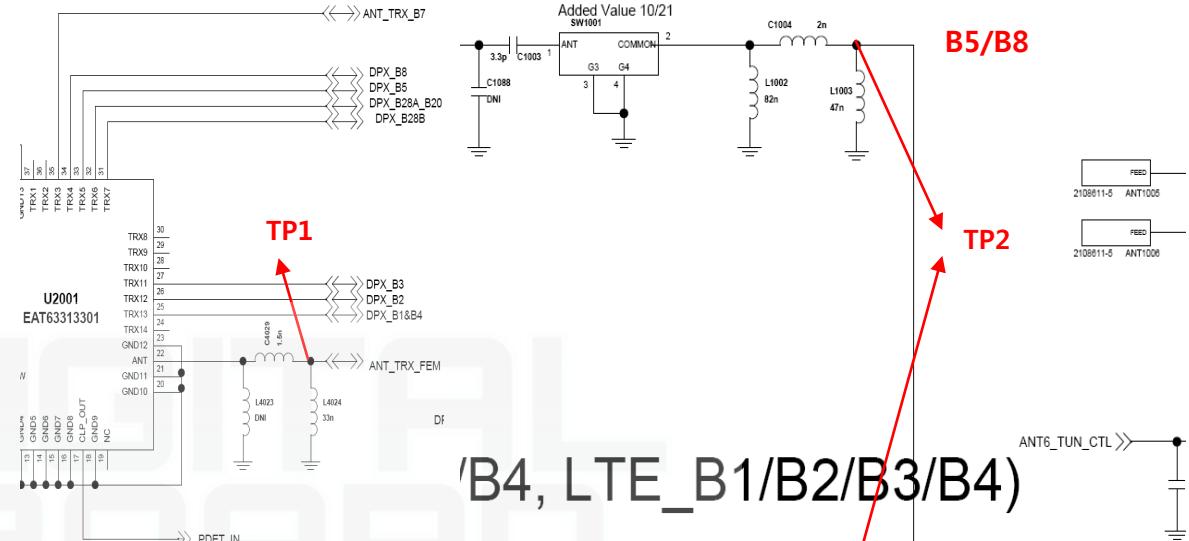


Image



LGE Internal Use Only

Circuit Diagram



'B4, LTE_B1/B2/B3/B4)

B5/B8

TP2

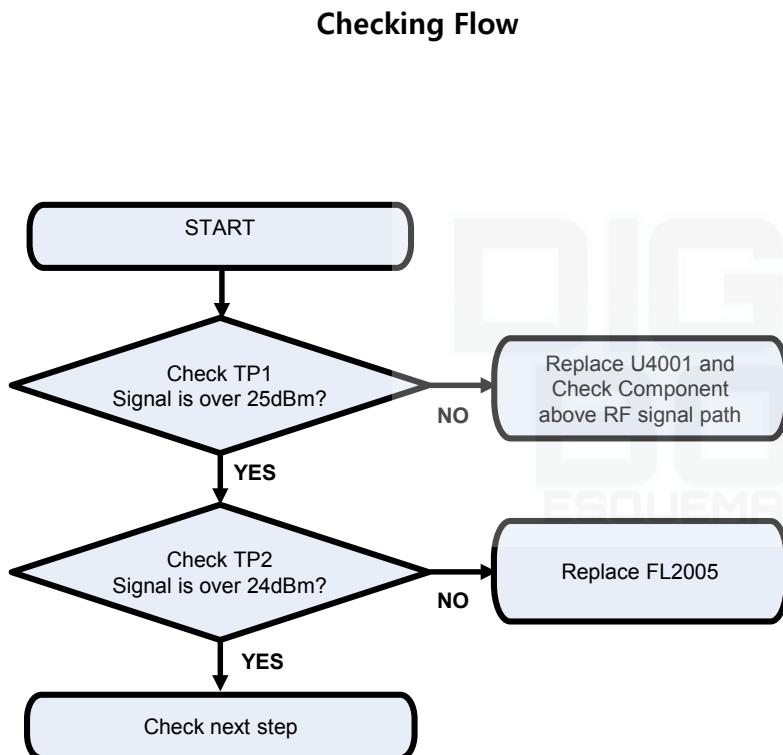
B1

+2V8_MTK_VTCXO0

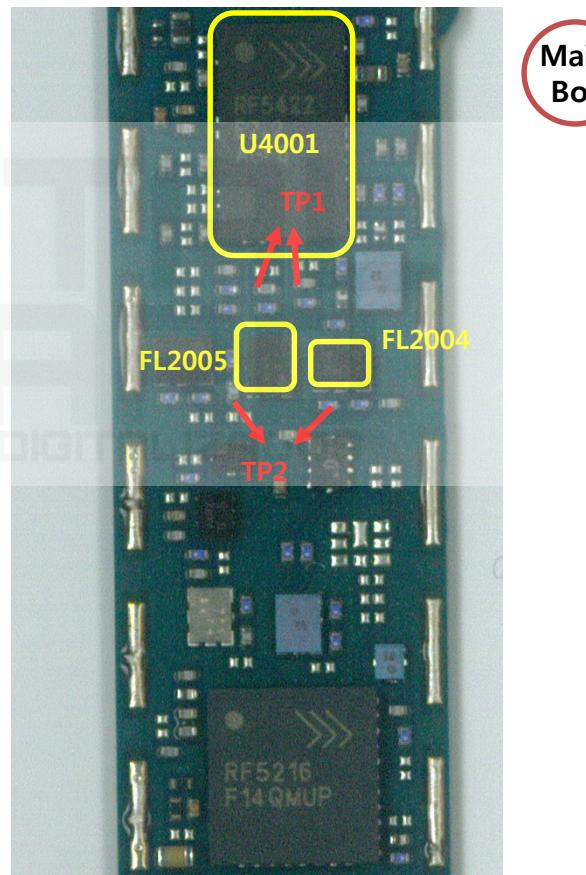
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3.6 WCDMA RF PART

3.6.11 Checking RF Signal TX path(WCDMA B5/8)



Image

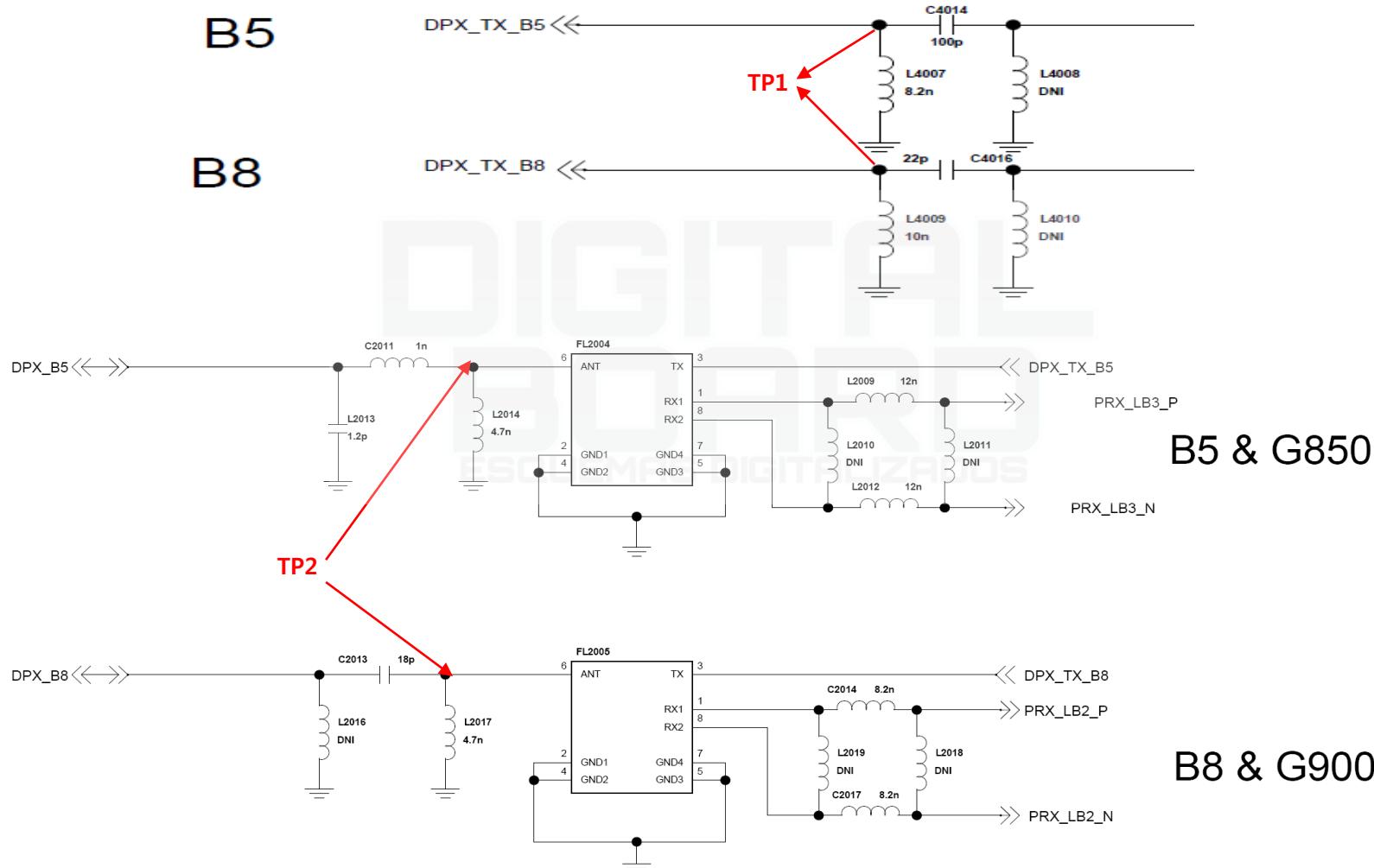


3. TROUBLE SHOOTING

3.6 WCDMA RF PART

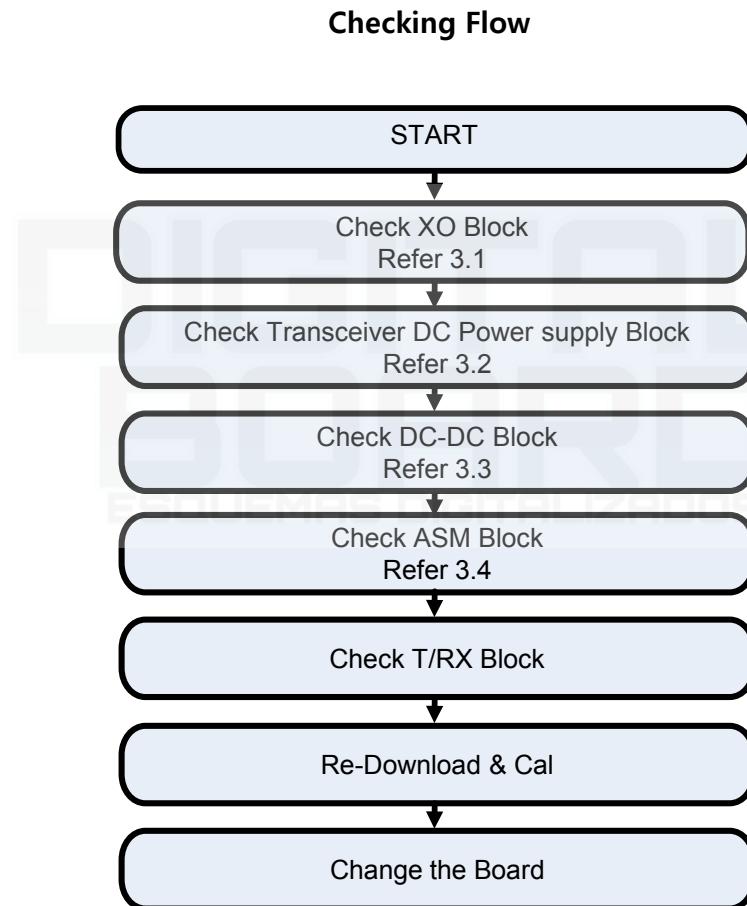
3.6.11 Checking RF Signal TX path(WCDMA B5/8)

Circuit Diagram



3.7 LTE RF PART

LTE RF Part support LTE B3/7/28B with ASM, PAM, Transceiver component

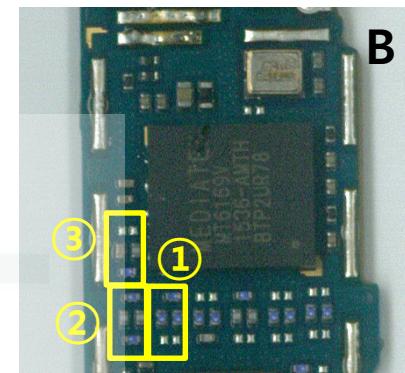
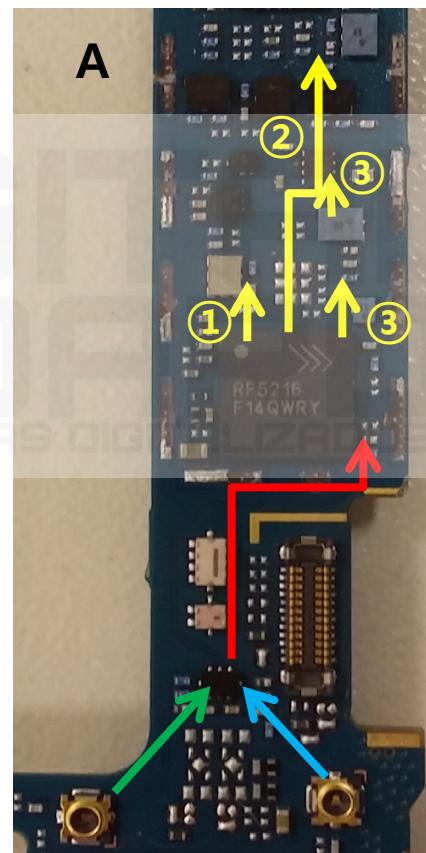
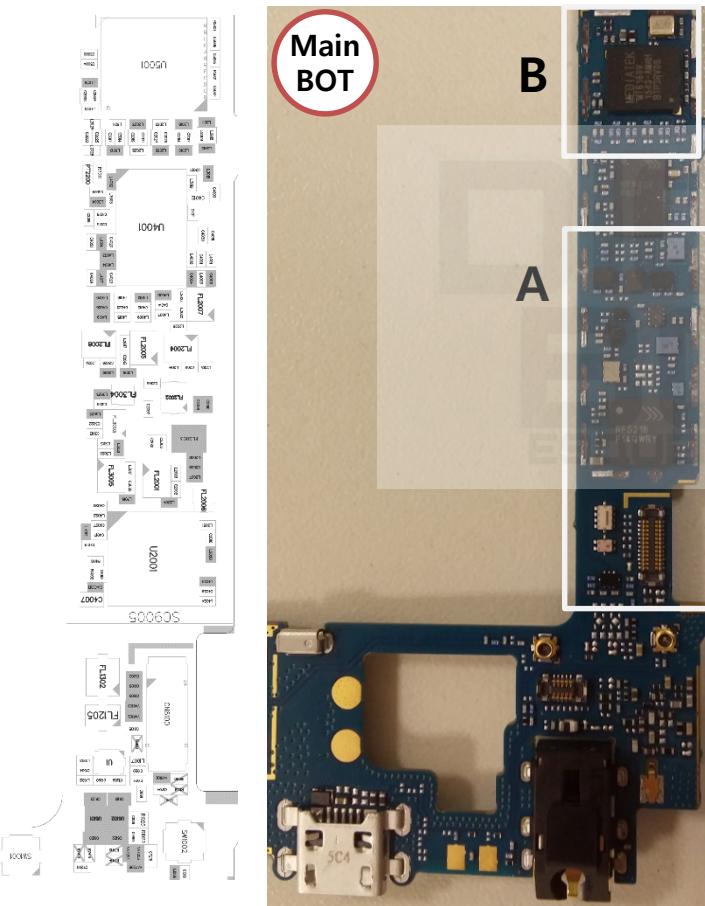


3. TROUBLE SHOOTING

3.7 LTE RF PART

3.7.1 LTE RF Part - RX PATH

Image



Low/High Band Common RX Path

Mid. Band Common RX Path

RX Common Path

1. LTE B7 RX Path
2. LTE B3 RX Path
3. LTE B28B RX Path

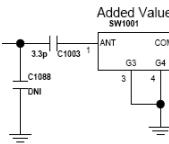
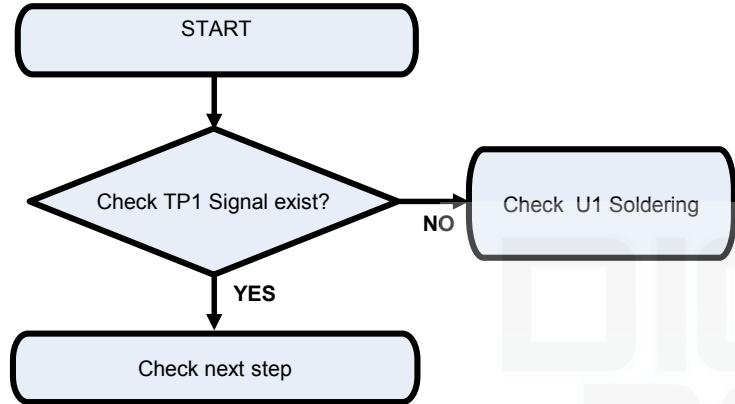
3. TROUBLE SHOOTING

3.7 LTE RF PART

3.7.2 Checking RF Signal RX path(SW, LTE All)

Circuit Diagram

Checking Flow



B7/28B

TP2

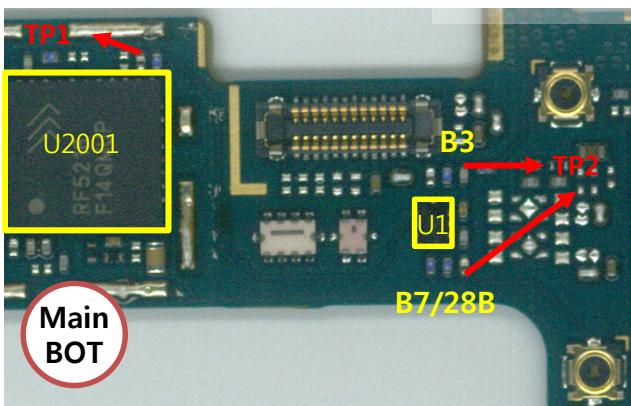
TP1

'B4, LTE_B1/B2/B3/B4)



B3

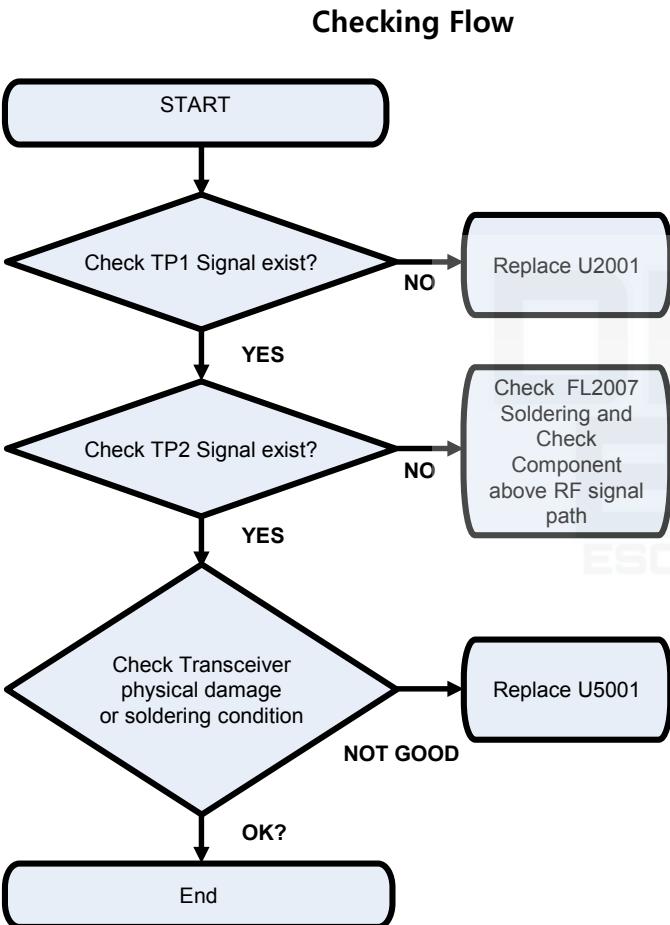
+2V8_MTK_VTCXO0



3. TROUBLE SHOOTING

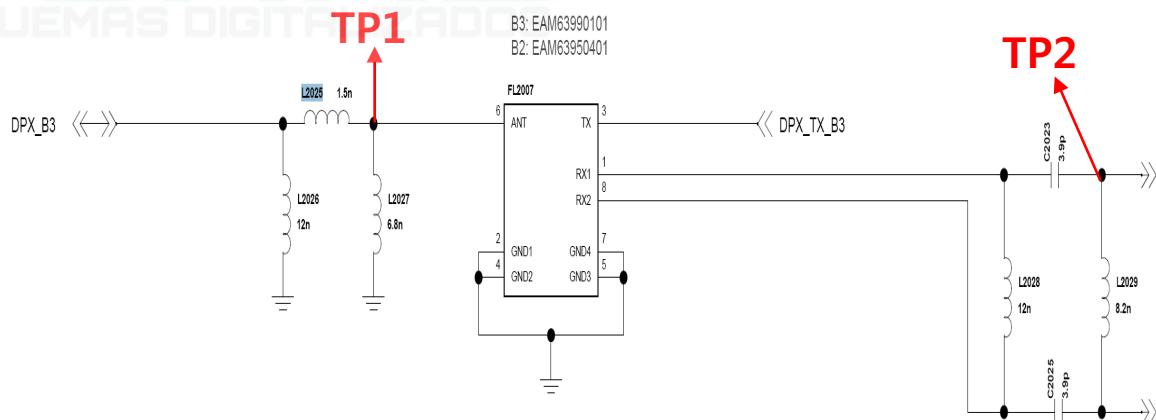
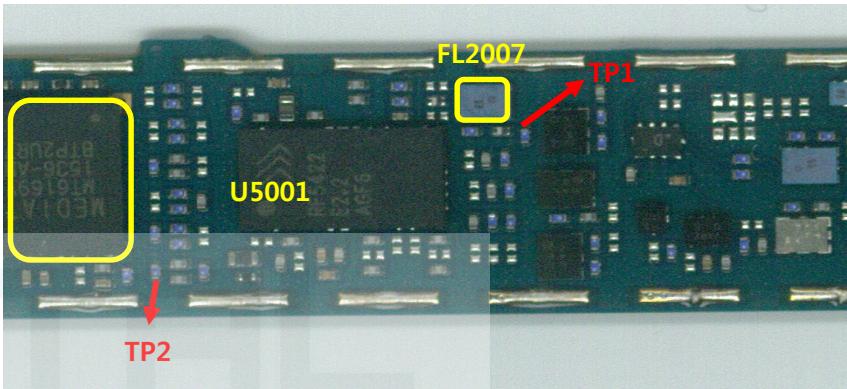
3.7 LTE RF PART

3.7.3 Checking RF Signal RX path(SW, LTE B3)



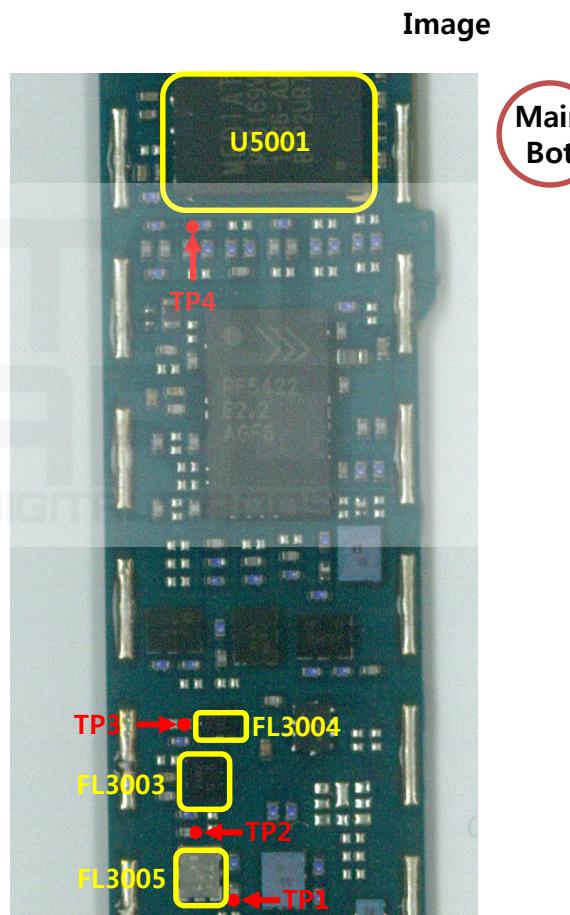
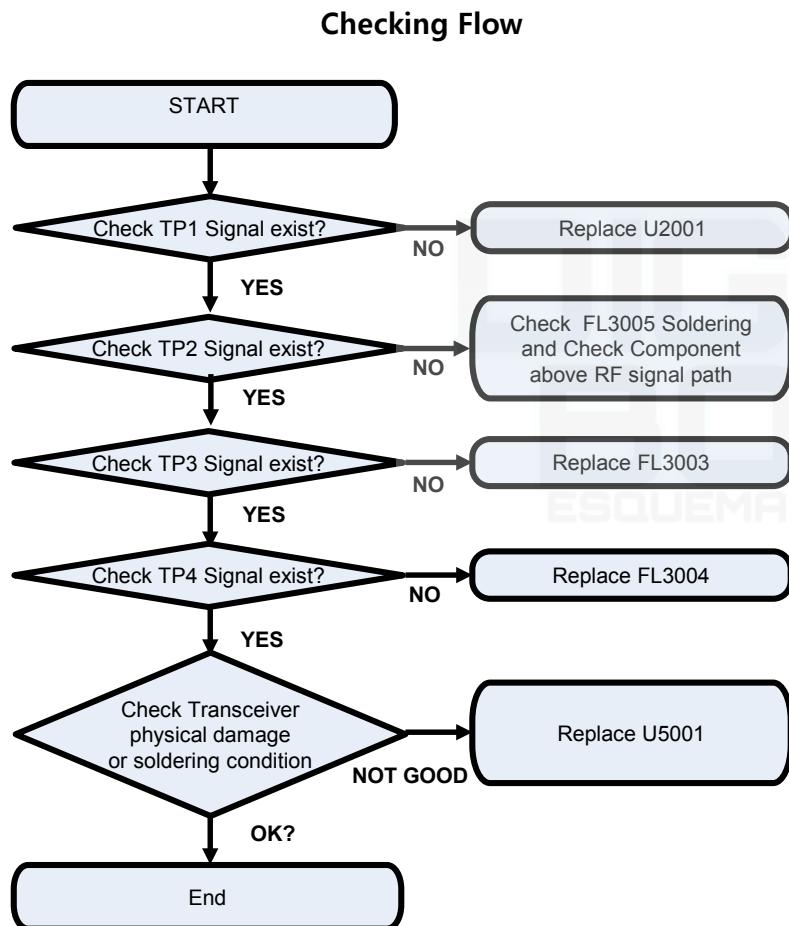
Main
Bot

Image



3.7 LTE RF PART

3.7.4 Checking RF Signal RX path(SW, LTE B7)

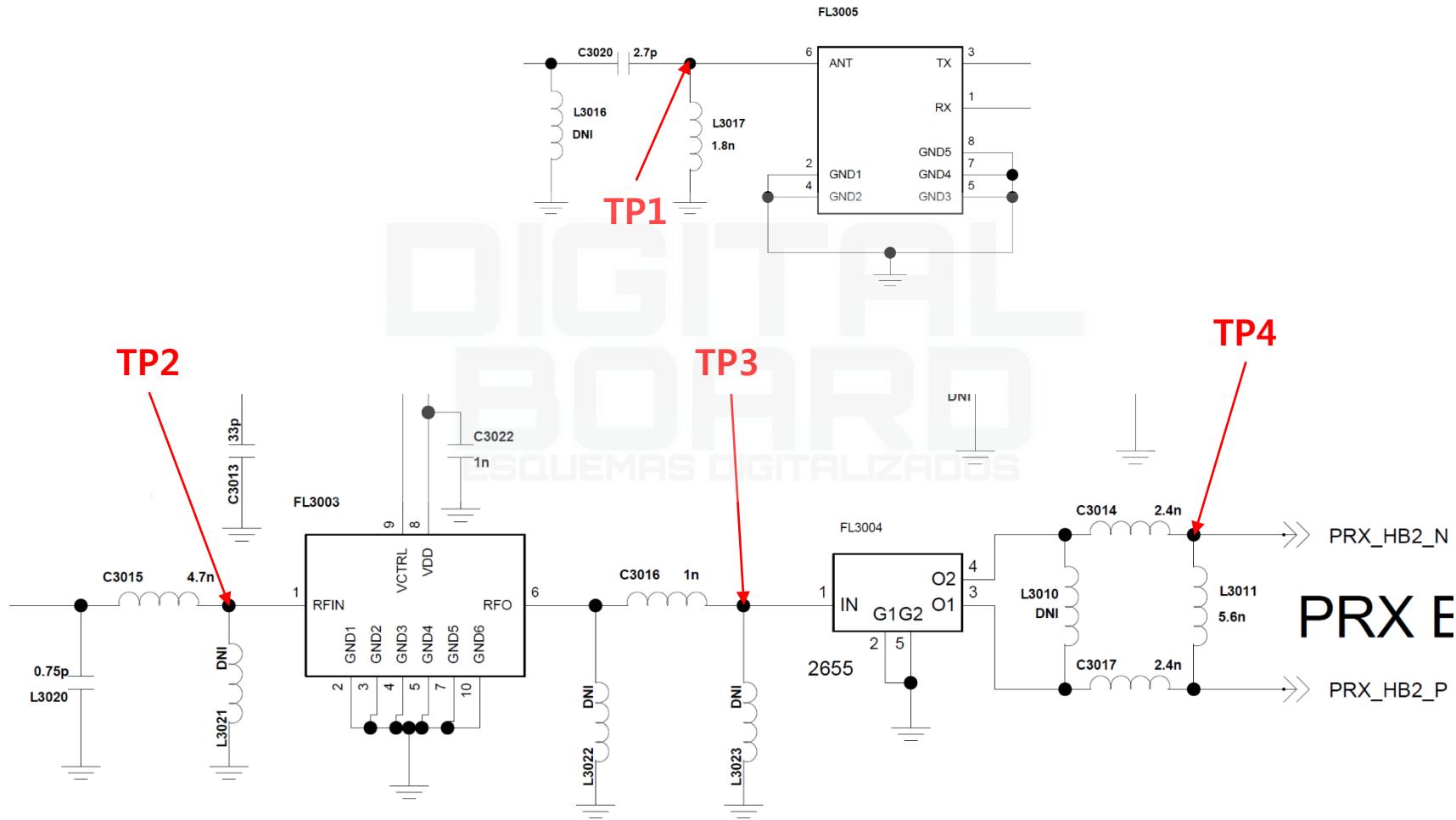


3. TROUBLE SHOOTING

3.7 LTE RF PART

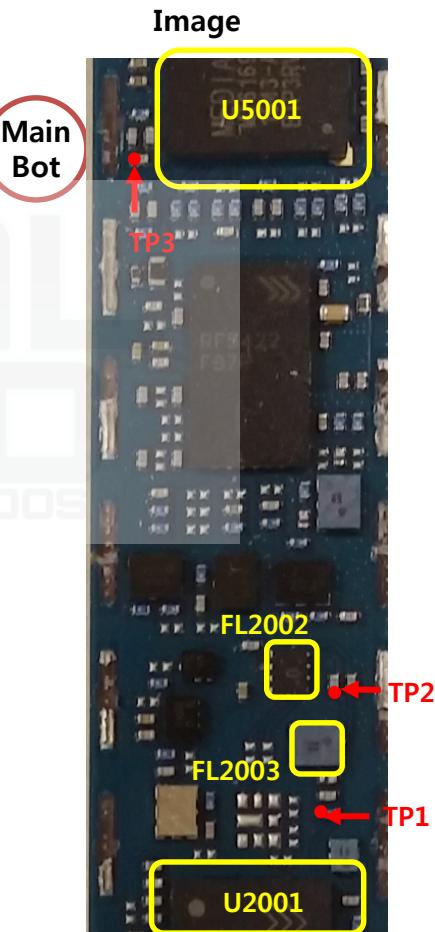
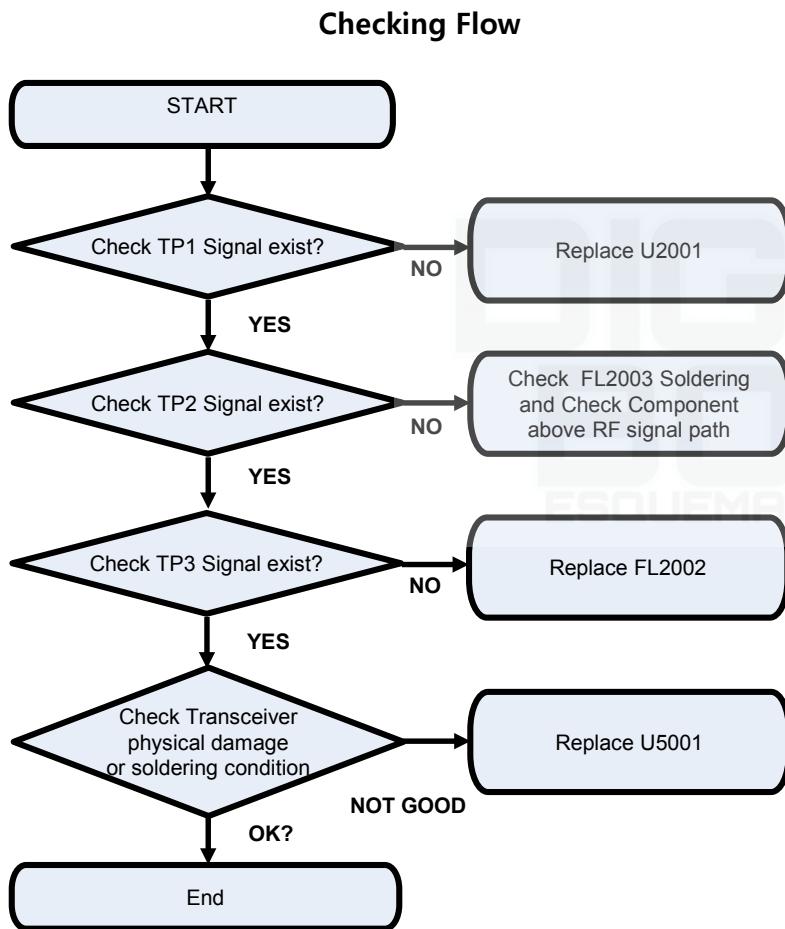
3.7.4 Checking RF Signal RX path(LTE B7)

Circuit Diagram



3.7 LTE RF PART

3.7.5 Checking RF Signal RX path(SW, LTE B28B)

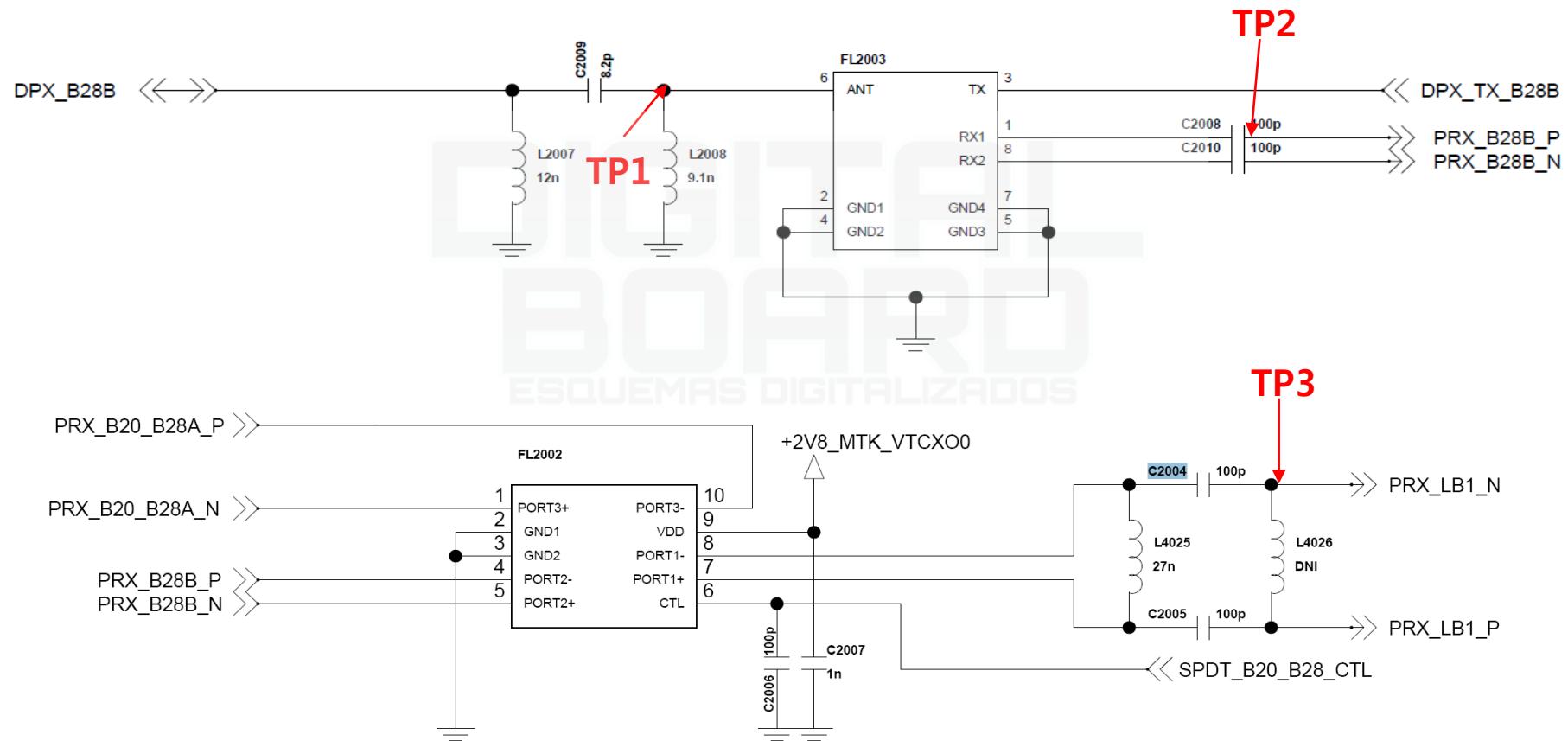


3. TROUBLE SHOOTING

3.7 LTE RF PART

3.7.5 Checking RF Signal RX path(LTE B28B)

Circuit Diagram



3.7 LTE RF PART

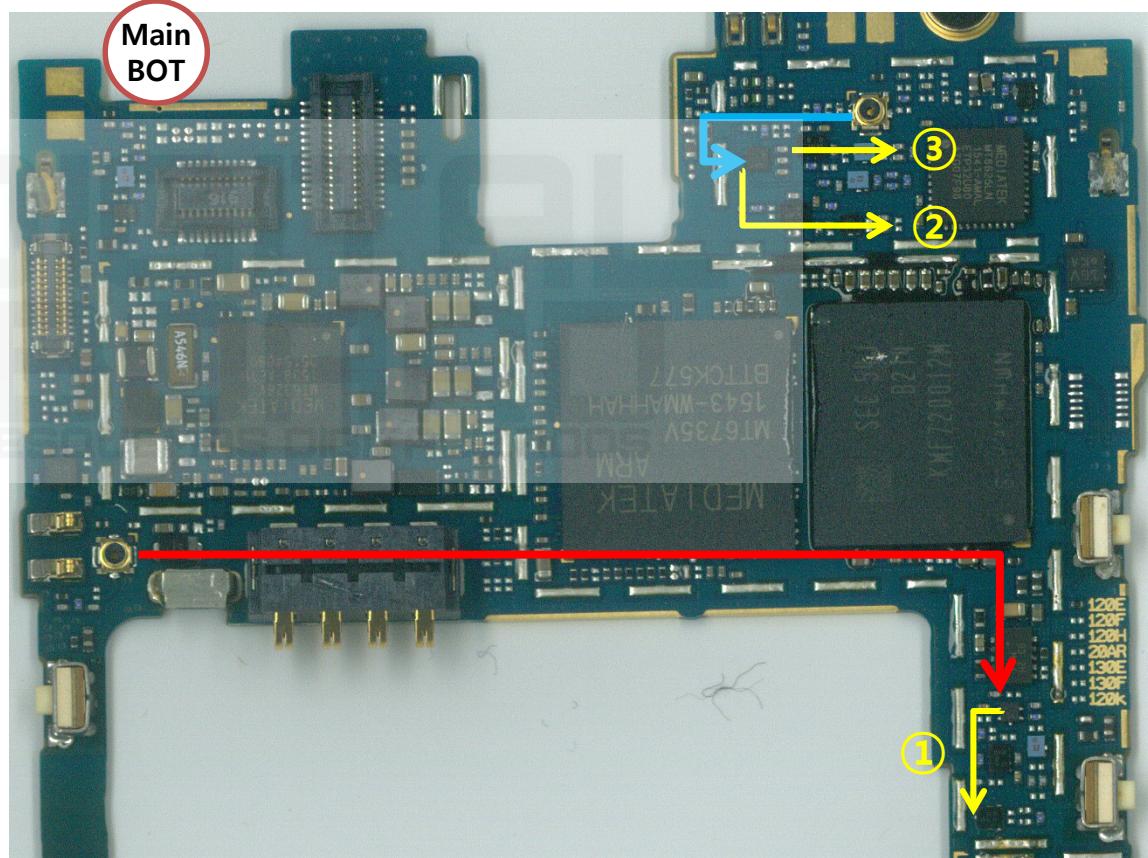
3.7.6 LTE RF Part DRX PATH

Image

Mid/High Band Common DRX PATH

Low Band DRX PATH

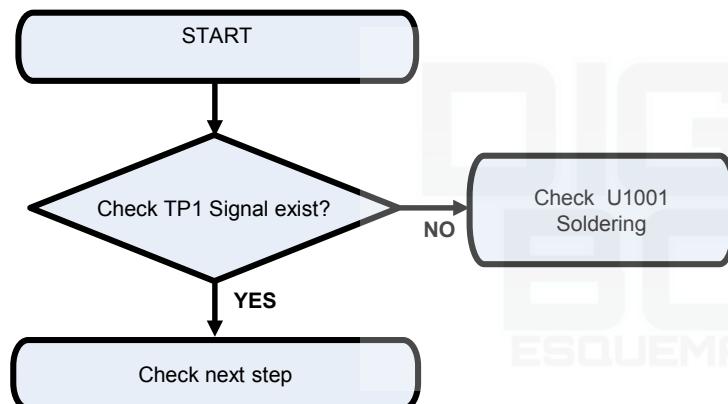
1. LTE B28B DRX Path
2. LTE B7 DRX Path
3. LTE B3 DRX Path



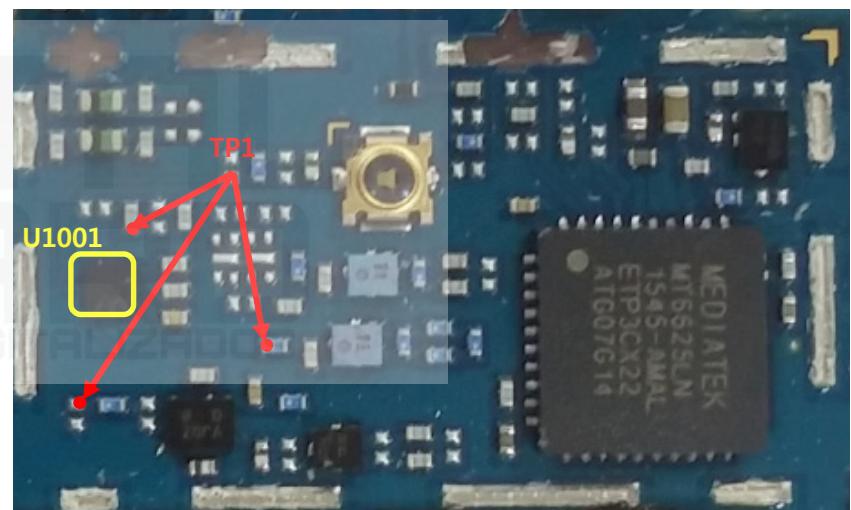
3.7 LTE RF PART

3.7.6 Checking RF Signal DRX path(High/Mid Band Common)

Checking Flow



Image

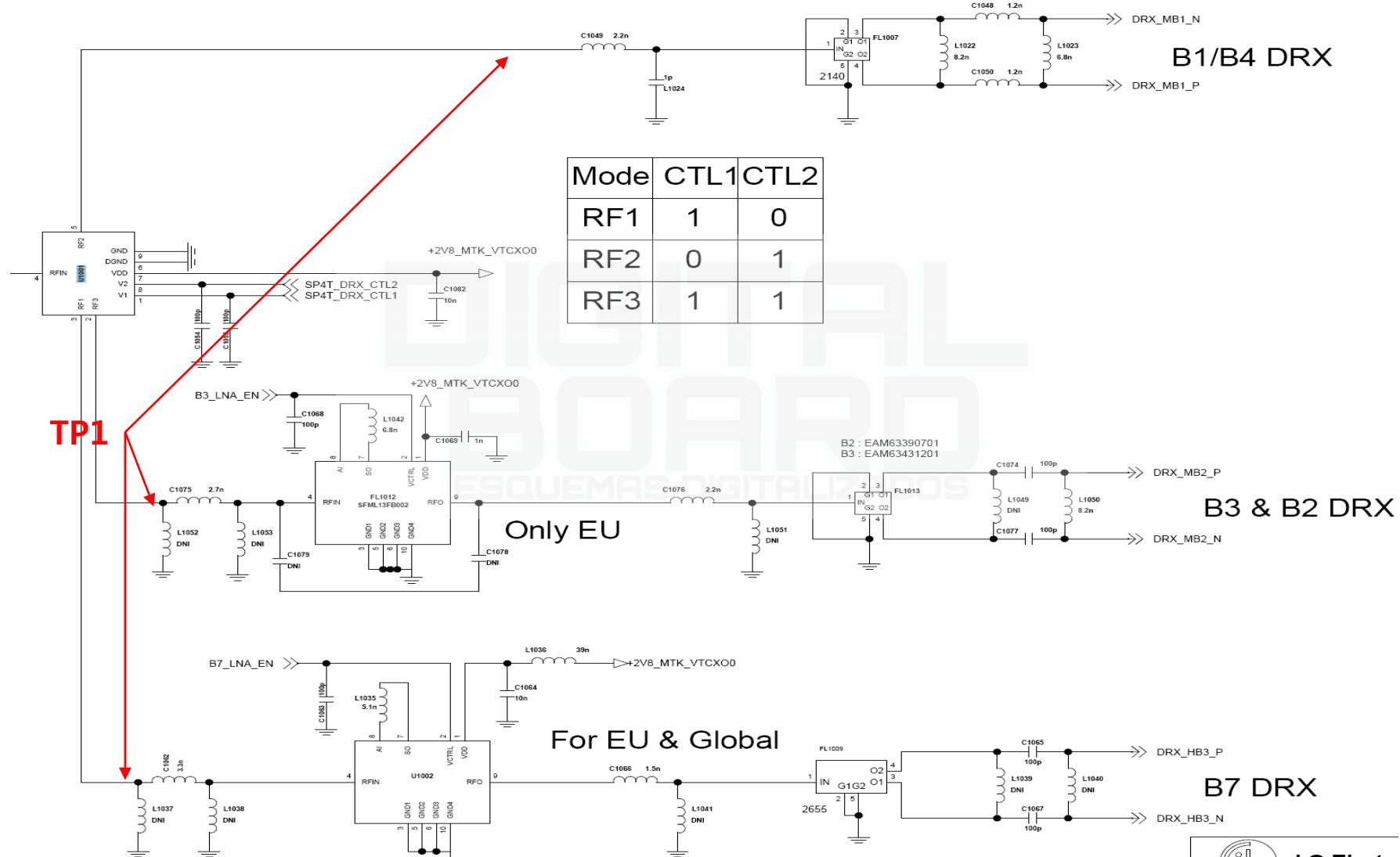


3. TROUBLE SHOOTING

3.7 LTE RF PART

3.7.6 Checking RF Signal DRX path(High/Mid Band Common)

Circuit Diagram

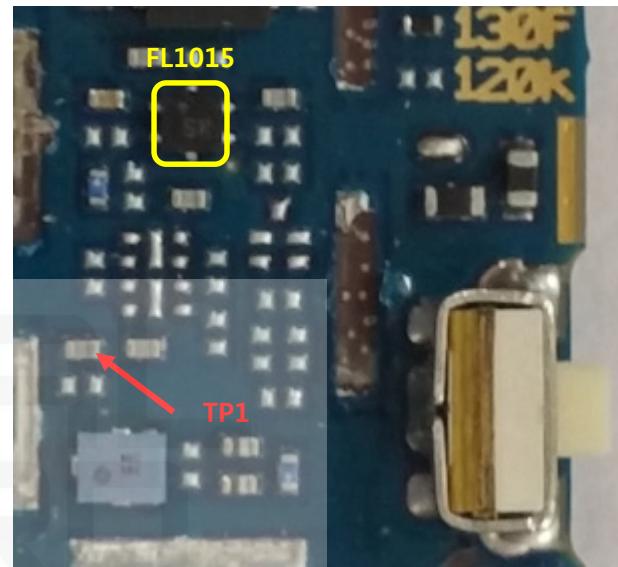
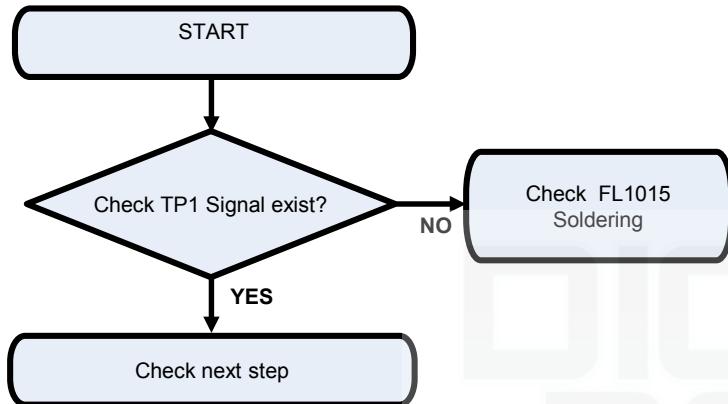


3. TROUBLE SHOOTING

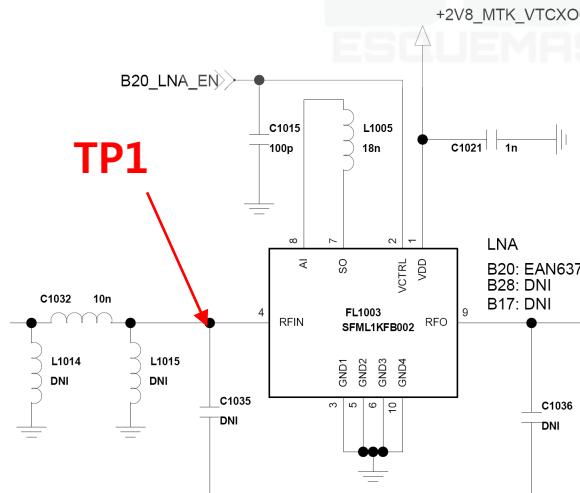
3.7 LTE RF PART

3.7.6 Checking RF Signal DRX path(Low Band Common)

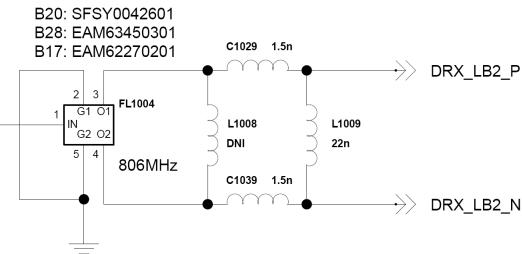
Checking Flow



Circuit Diagram



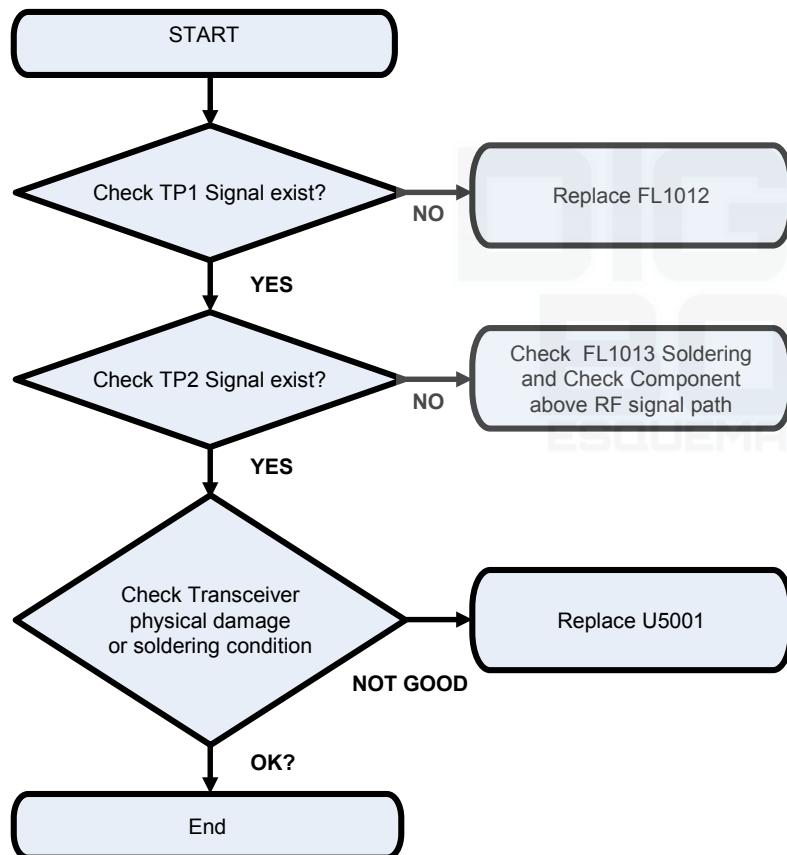
B17/B20/B28 DRX



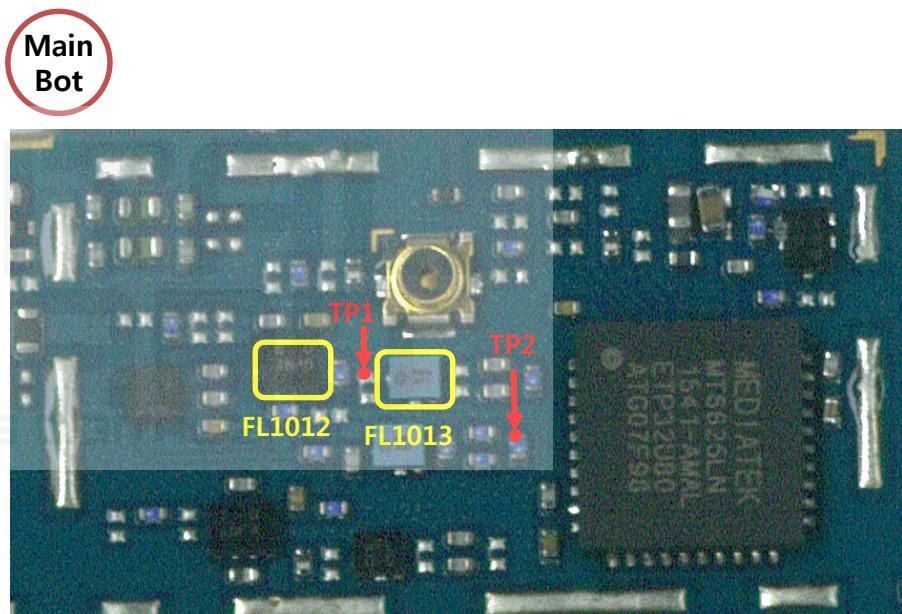
3.7 LTE RF PART

3.7.7 Checking RF Signal DRX path(SW, LTE B3)

Checking Flow



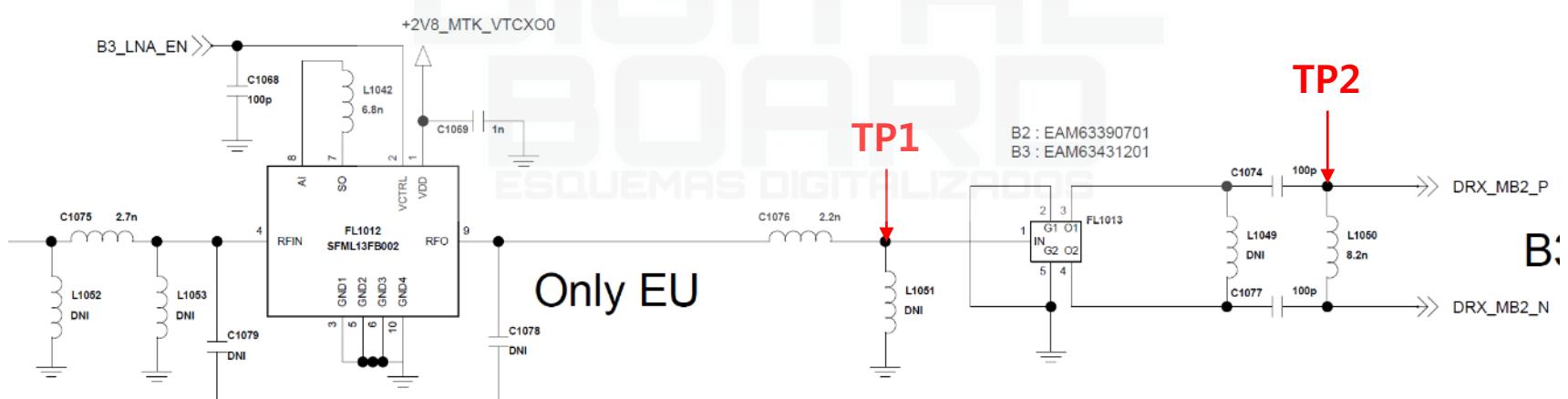
Image



3.7 LTE RF PART

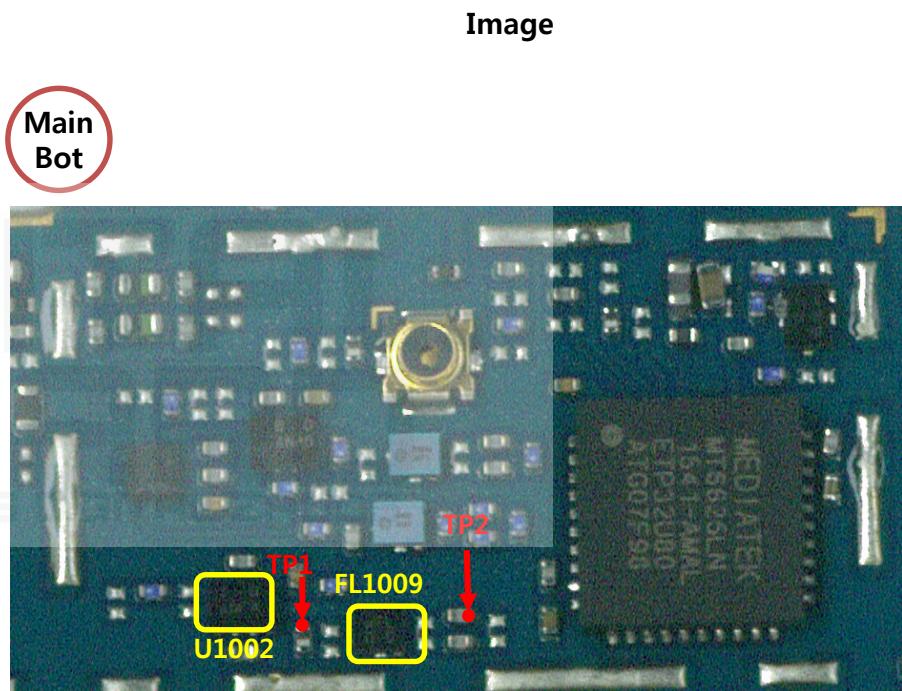
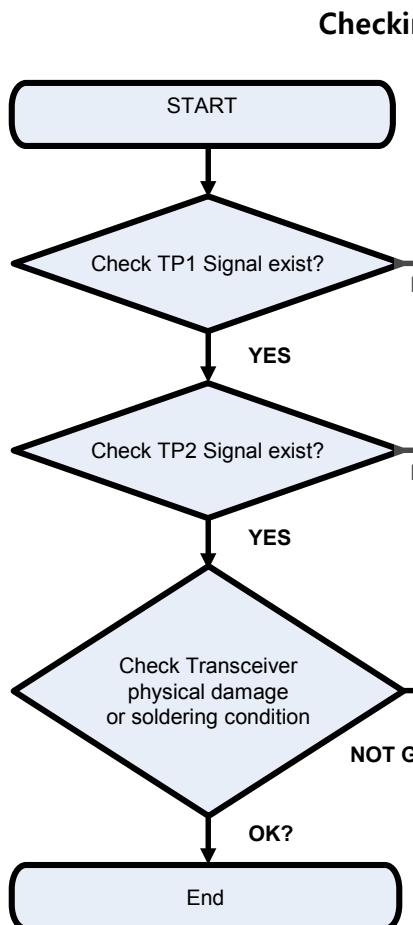
3.7.7 Checking RF Signal DRX path(SW, LTE B3)

Circuit Diagram



3.7 LTE RF PART

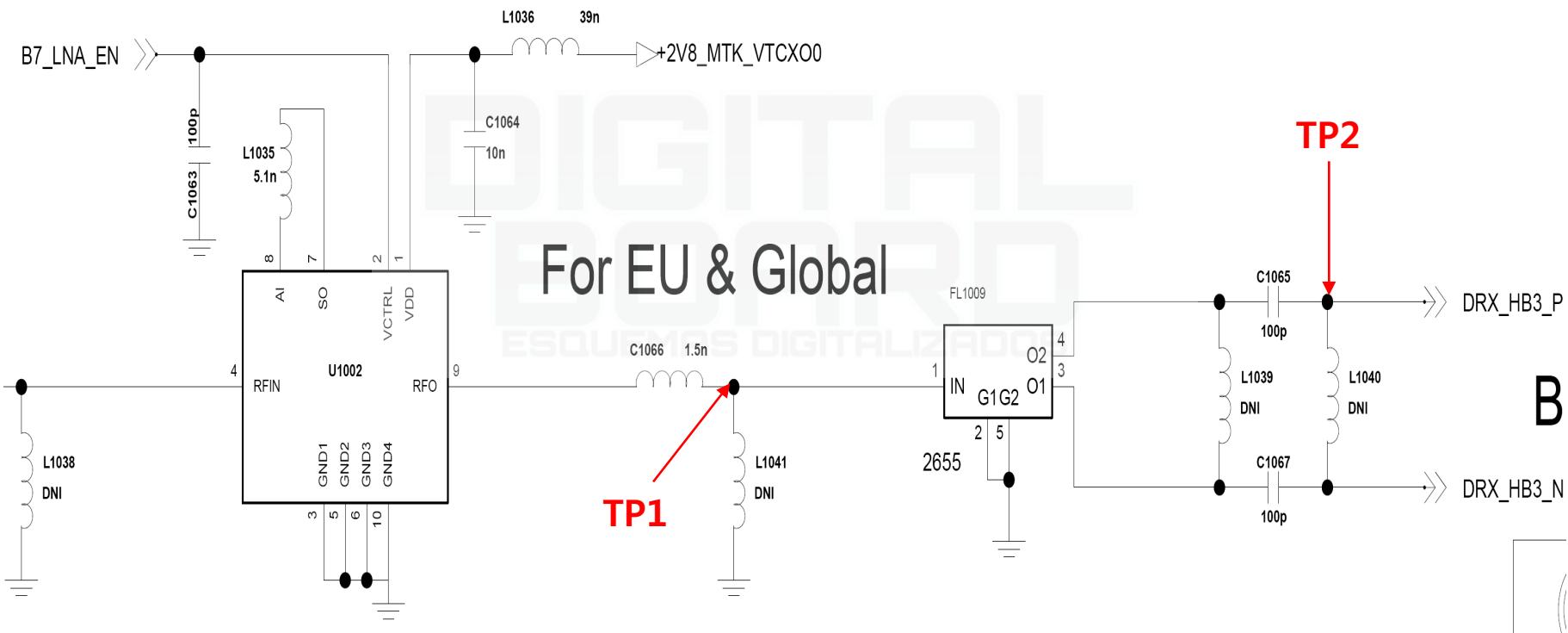
3.7.8 Checking RF Signal DRX path(SW, LTE B7)



3.7 LTE RF PART

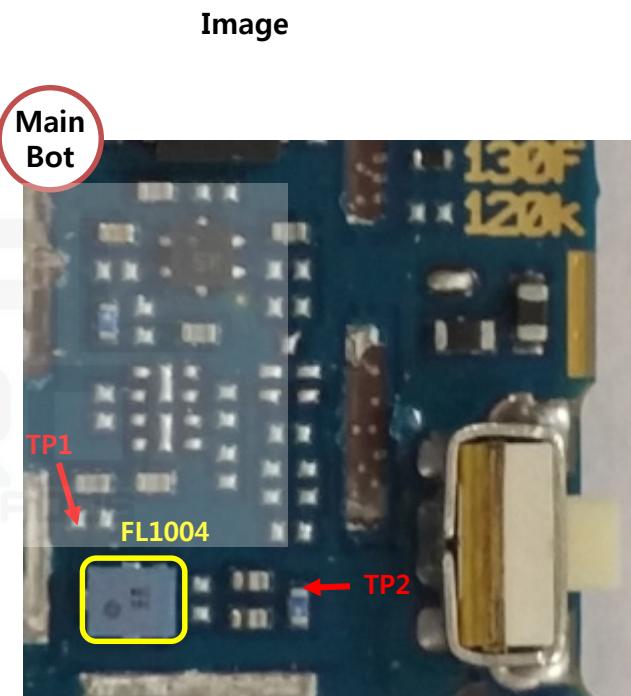
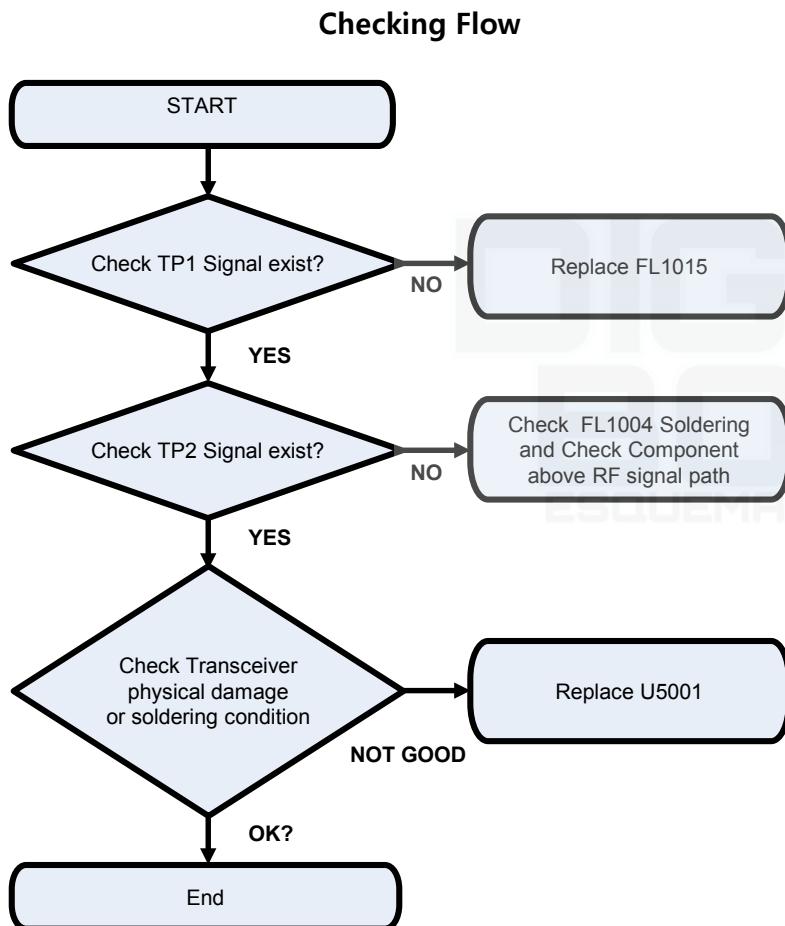
3.7.8 Checking RF Signal DRX path(SW, LTE B7)

Circuit Diagram



3.7 LTE RF PART

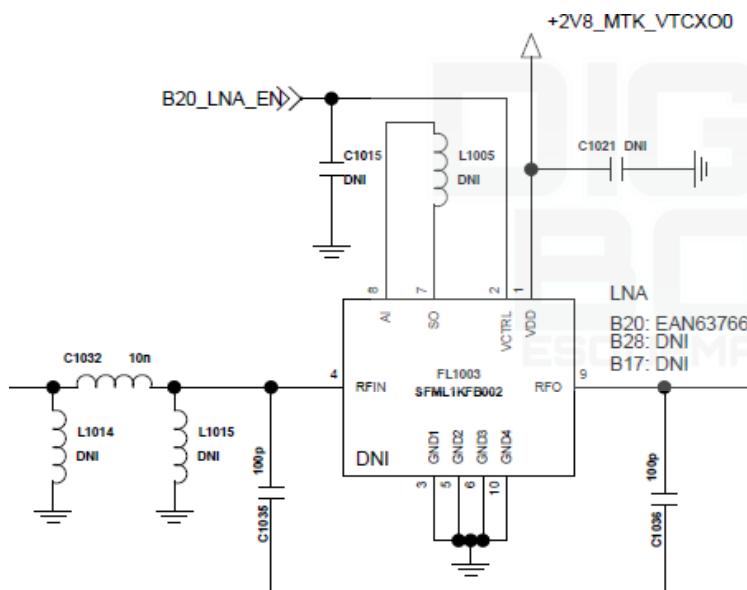
3.7.9 Checking RF Signal DRX path(SW, LTE B28B)



3.7 LTE RF PART

3.7.9 Checking RF Signal DRX path(SW, LTE B28B)

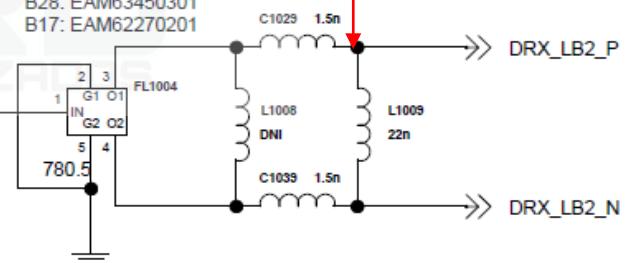
Circuit Diagram



B17/B20/B28 DRX

TP2

B20: SFSY0042601
B28: EAM63450301
B17: EAM62270201

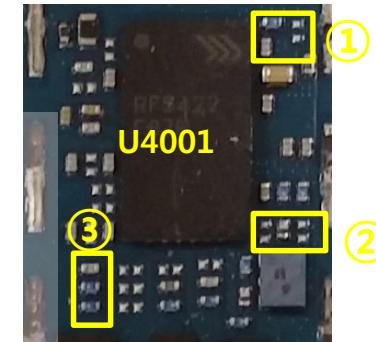
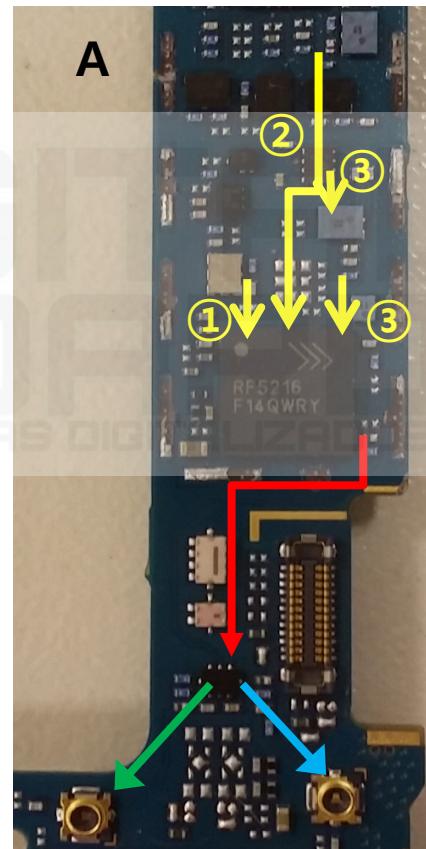
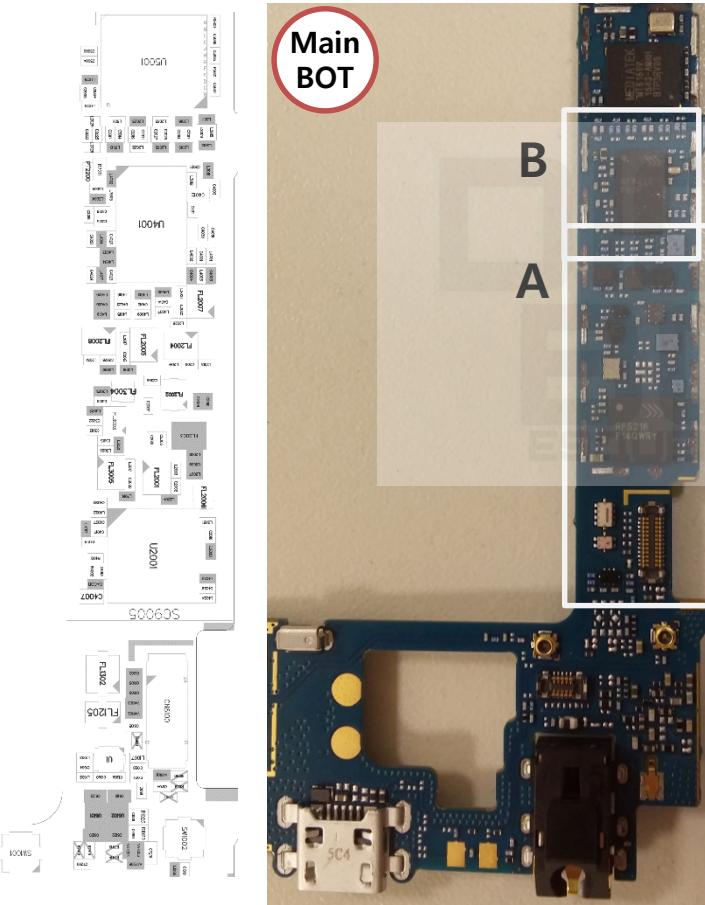


3. TROUBLE SHOOTING

3.7 LTE RF PART

3.7.10 LTE RF Part TX PATH

Image



Low/High Band Common RX Path

Mid. Band Common RX Path

RX Common Path

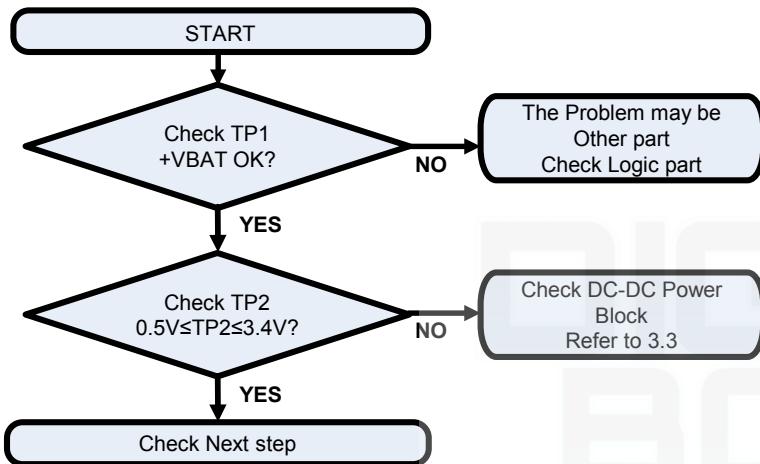
1. LTE B7 TX Path
2. LTE B3 TX Path
3. LTE B28B TX Path

3. TROUBLE SHOOTING

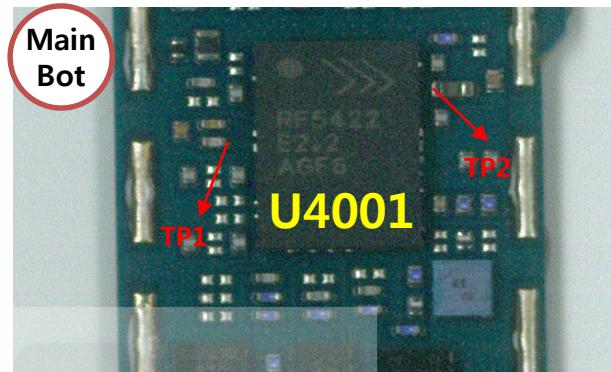
3.7 LTE RF PART

3.7.11 Checking LTE PAM DC Power Circuit

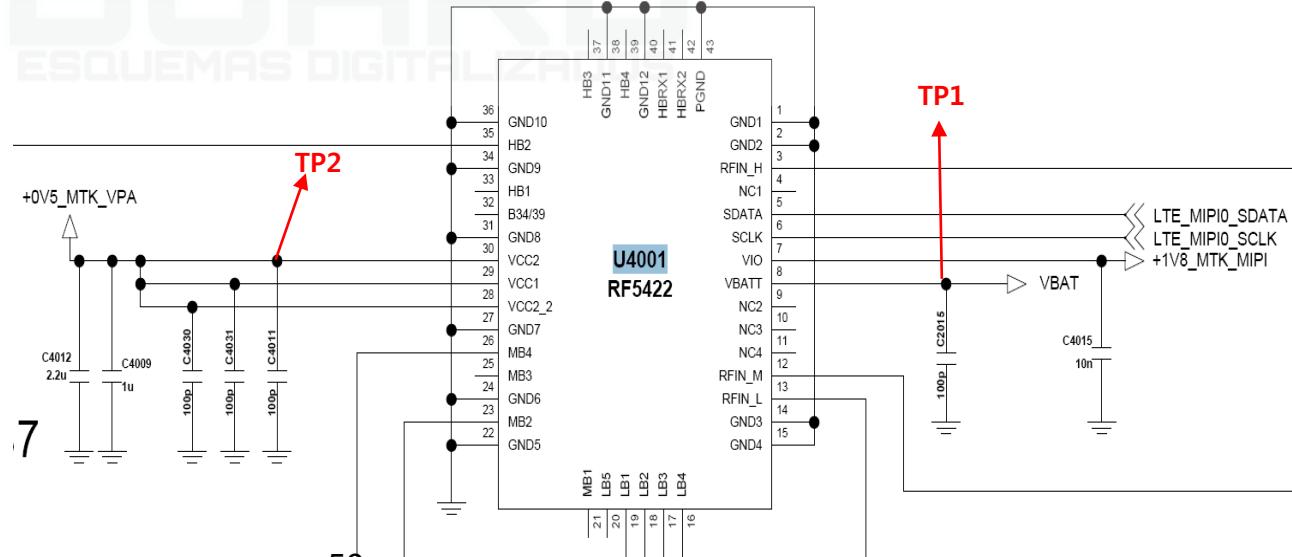
Checking Flow



Image



Circuit Diagram



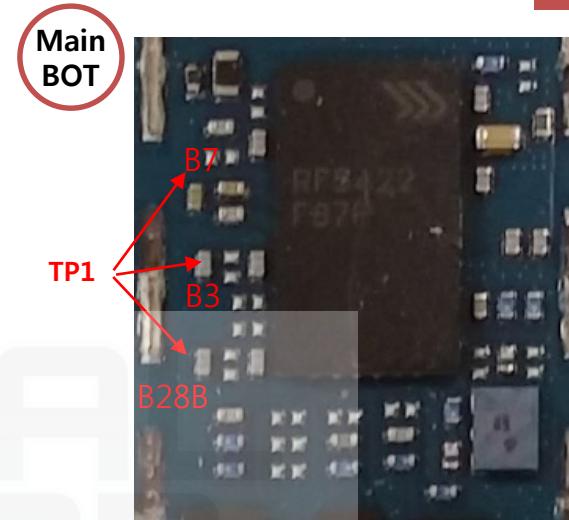
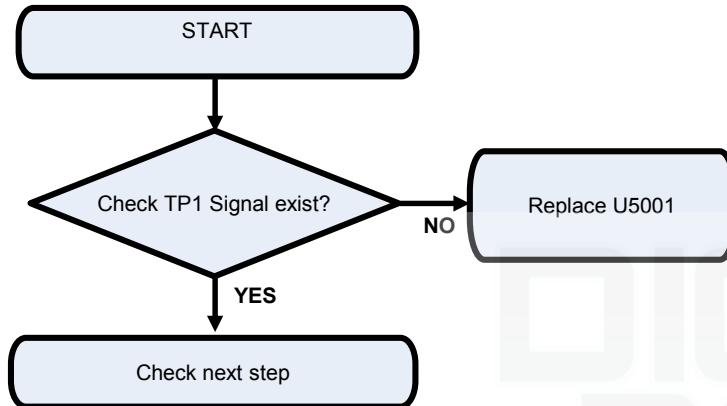
3. TROUBLE SHOOTING

3.7 LTE RF PART

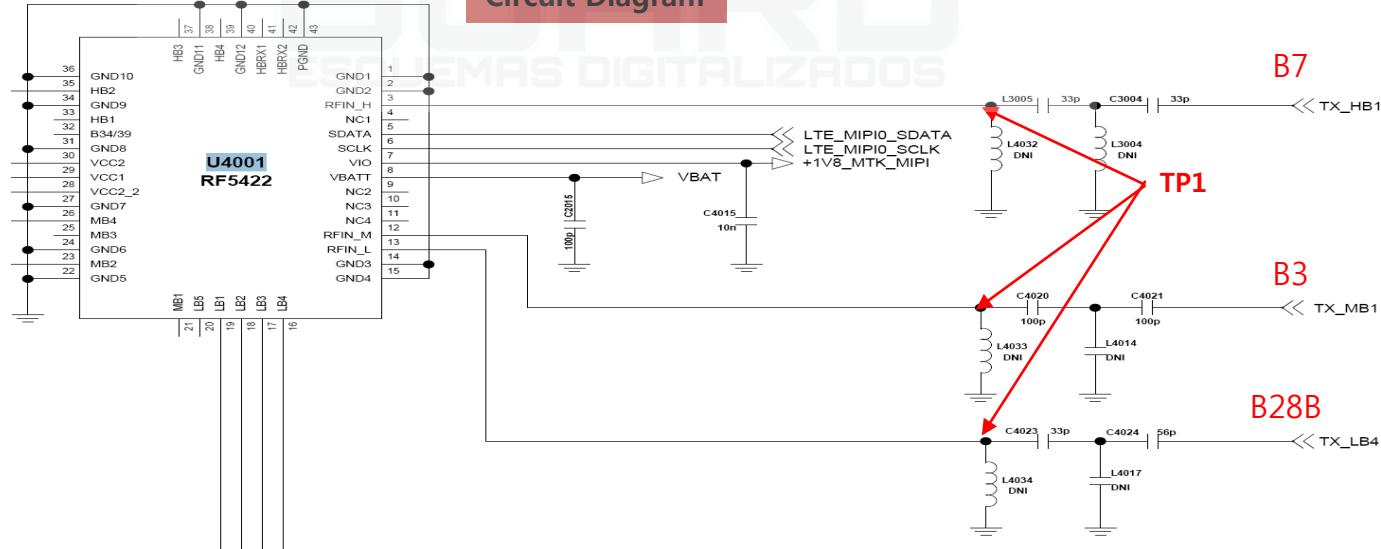
3.7.12 Checking RF Signal TX path(RFIC, Common)

Image

Checking Flow



Circuit Diagram

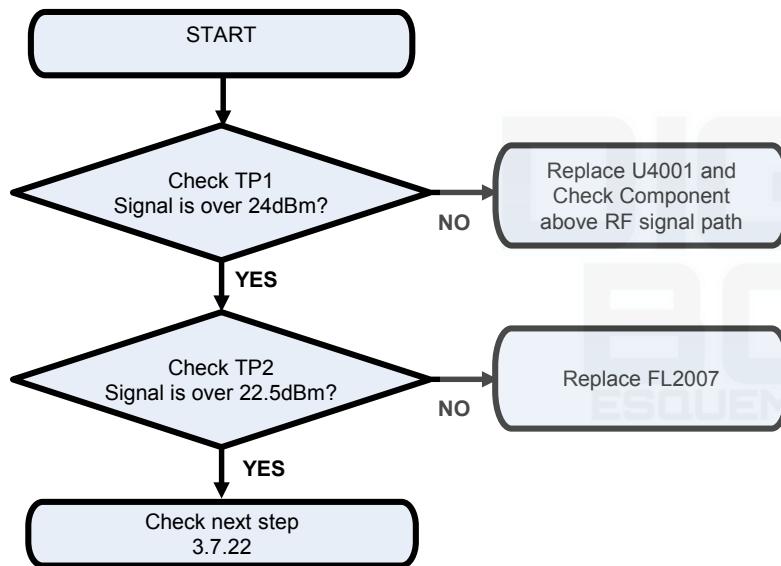


3. TROUBLE SHOOTING

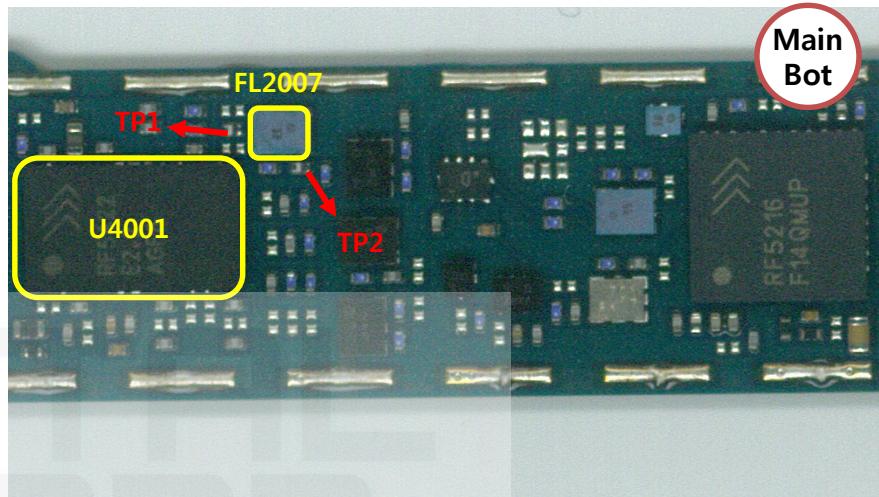
3.7 LTE RF PART

3.7.13 Checking RF Signal TX path(LTE B3)

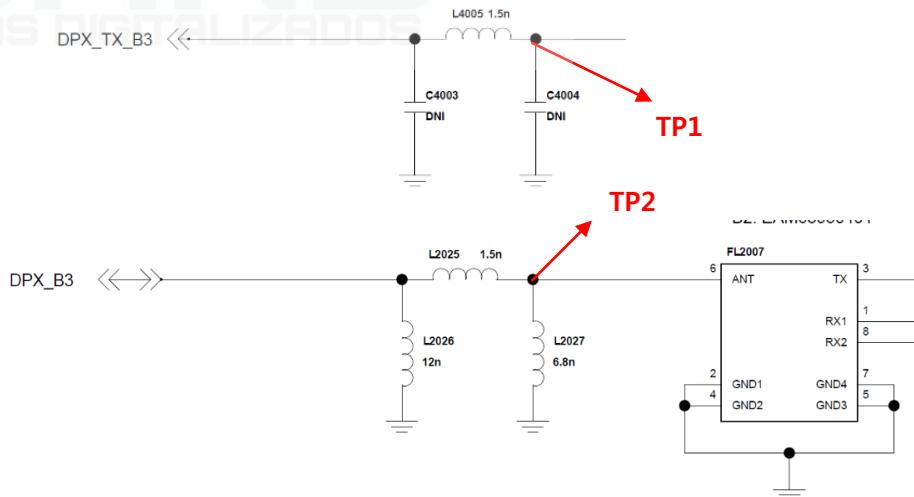
Checking Flow



Image



Circuit Diagram

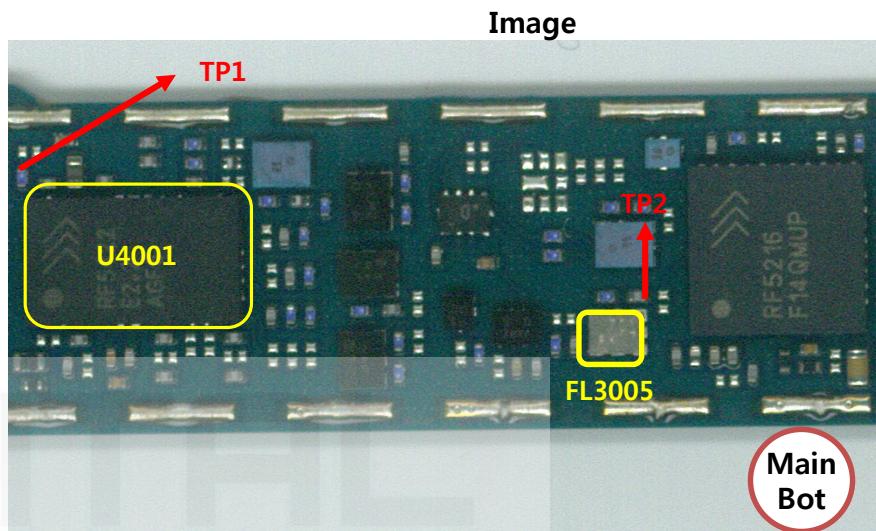
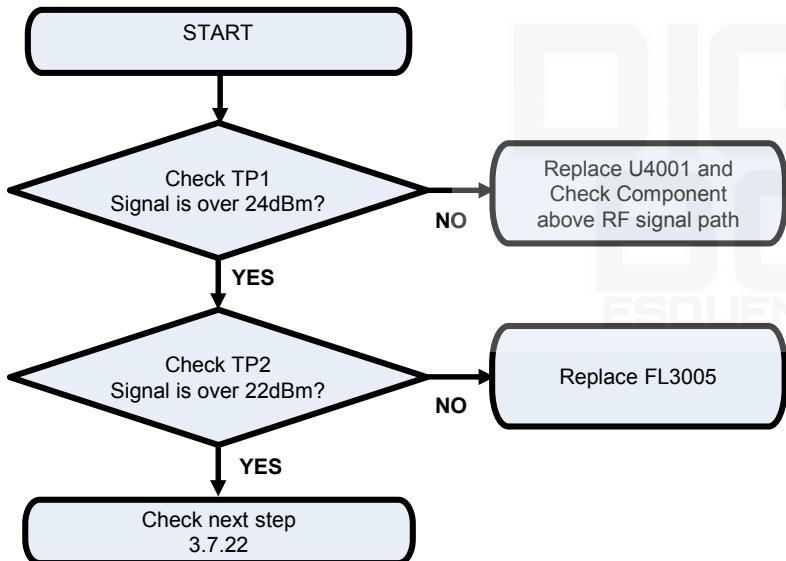


3. TROUBLE SHOOTING

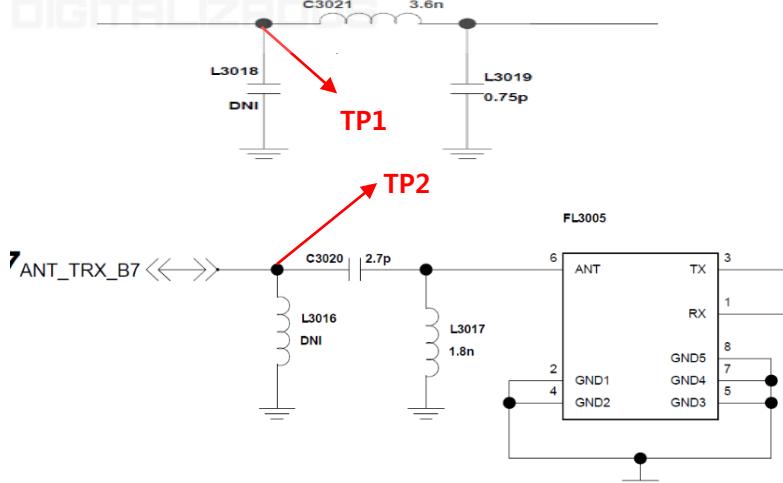
3.7 LTE RF PART

3.7.14 Checking RF Signal TX path(LTE B7)

Checking Flow



Circuit Diagram

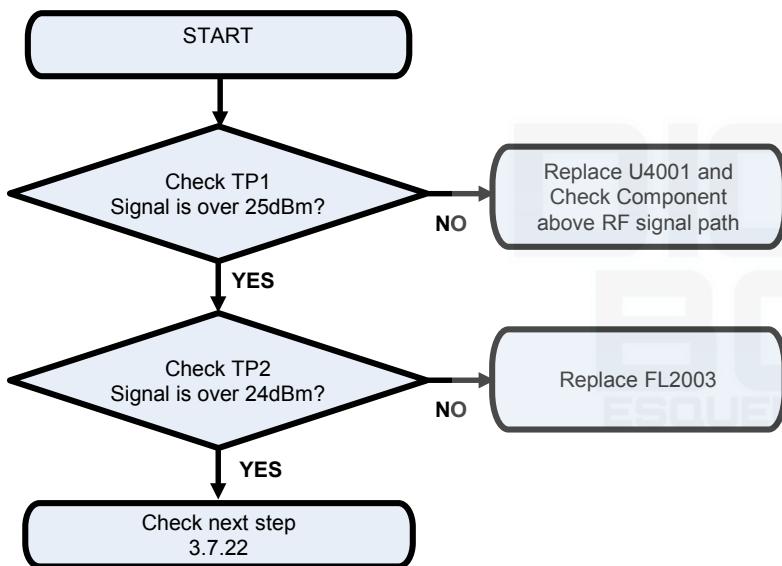


3. TROUBLE SHOOTING

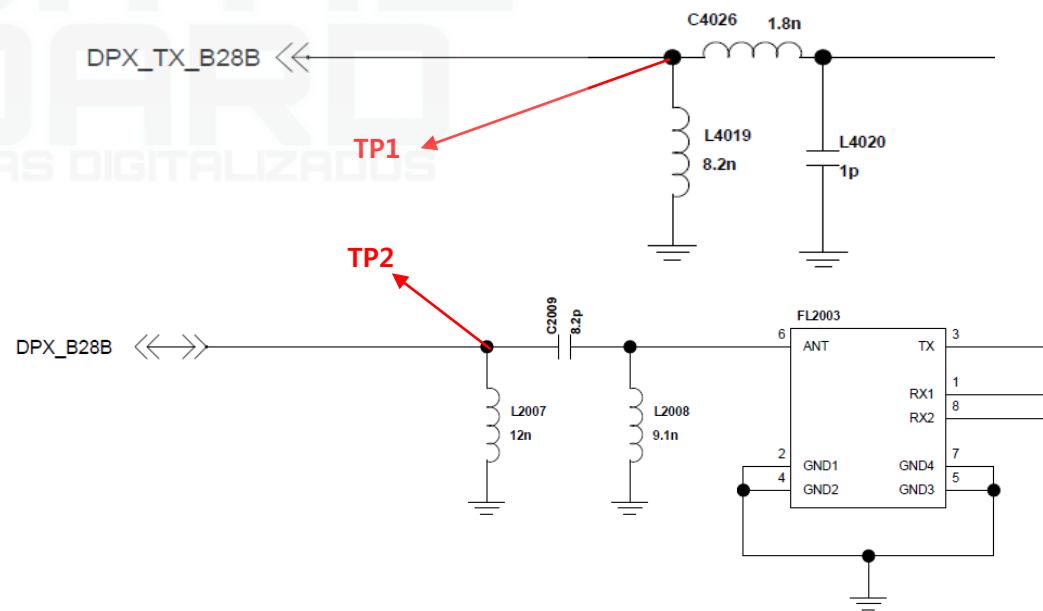
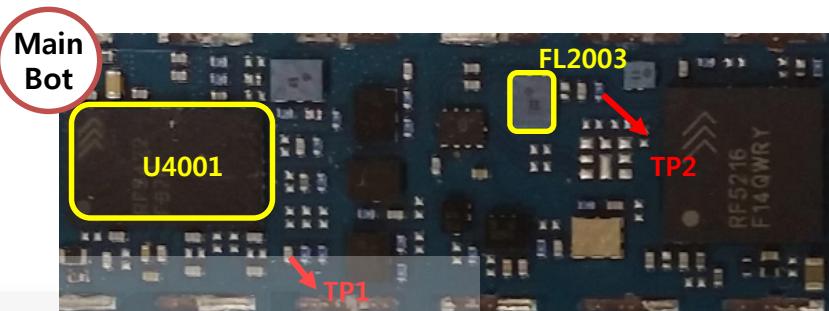
3.7 LTE RF PART

3.7.15 Checking RF Signal TX path(LTE B28B)

Checking Flow



Image

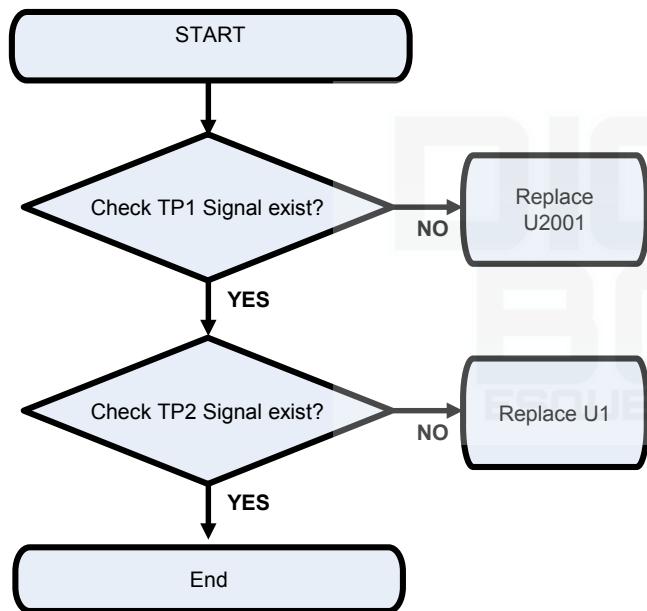


3. TROUBLE SHOOTING

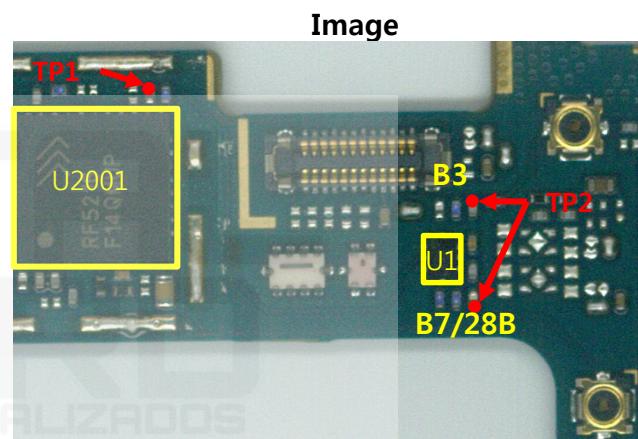
3.7 LTE RF PART

3.7.16 Checking RF Signal TX path(SW, LTE ALL)

Checking Flow



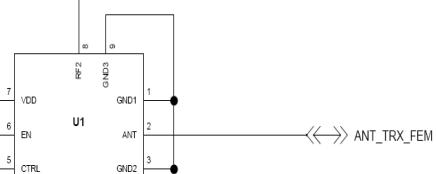
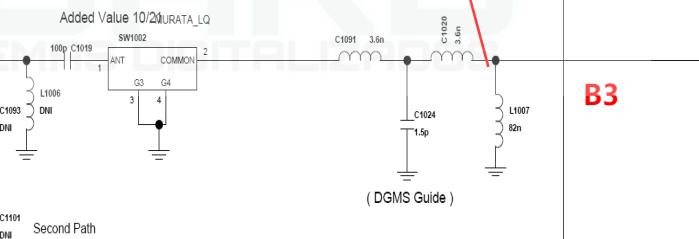
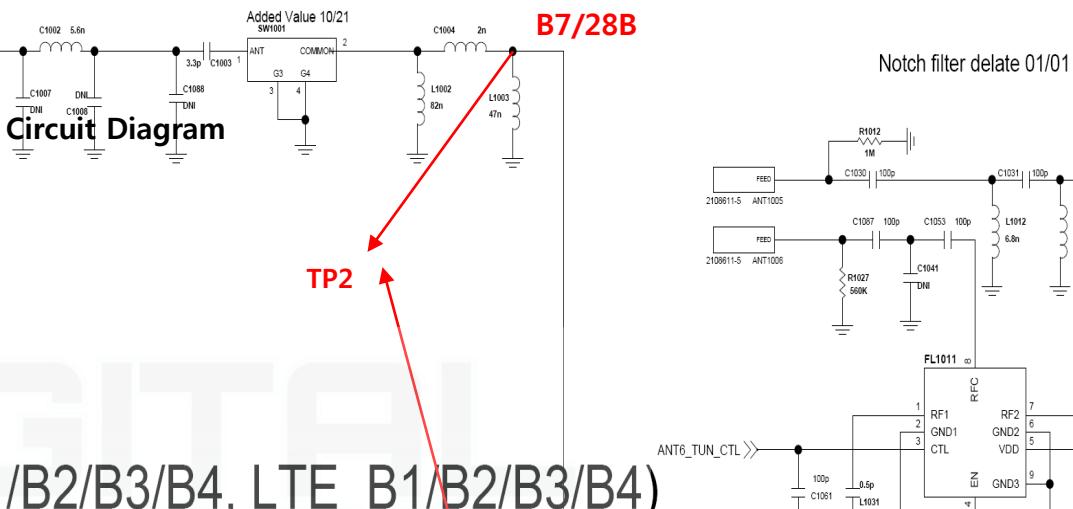
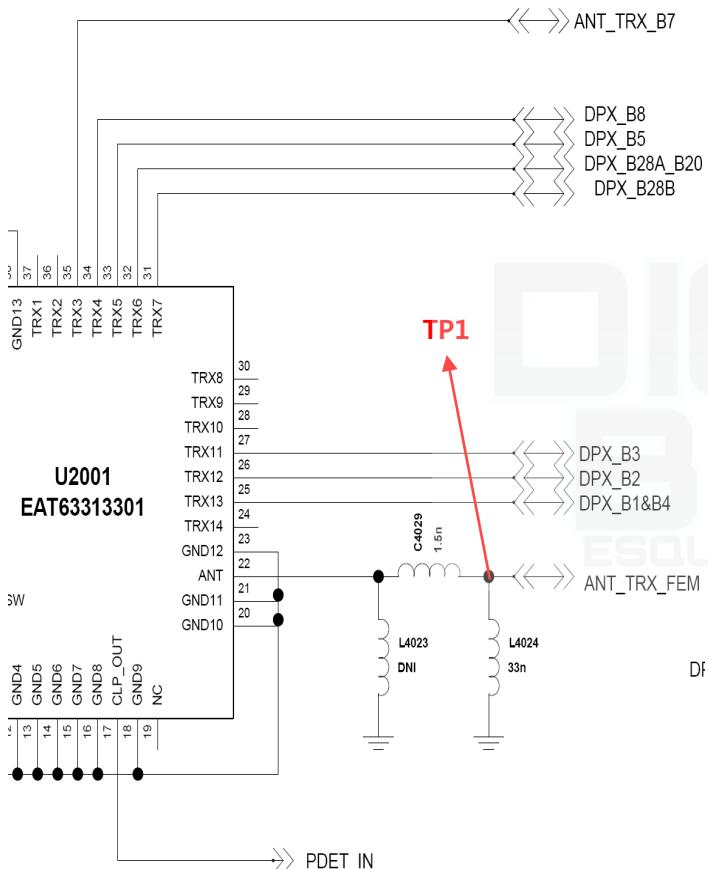
Main
BOT



3. TROUBLE SHOOTING

3.7 LTE RF PART

3.7.16 Checking RF Signal TX path(SW, LTE ALL)



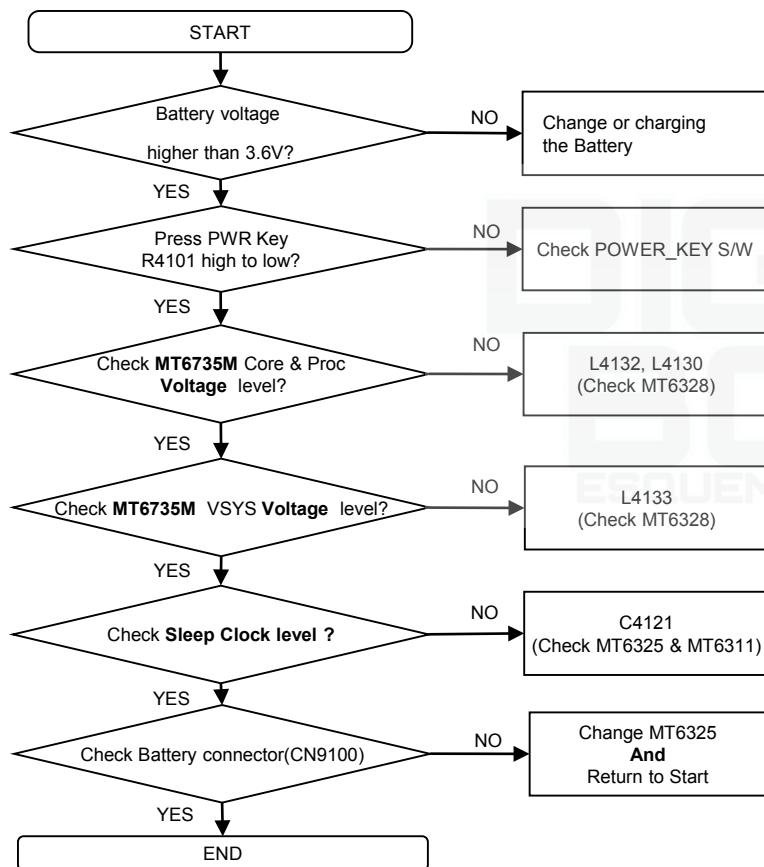
Mode	EN	CTL
RF1	1	0
RF2	1	1

3. TROUBLE SHOOTING

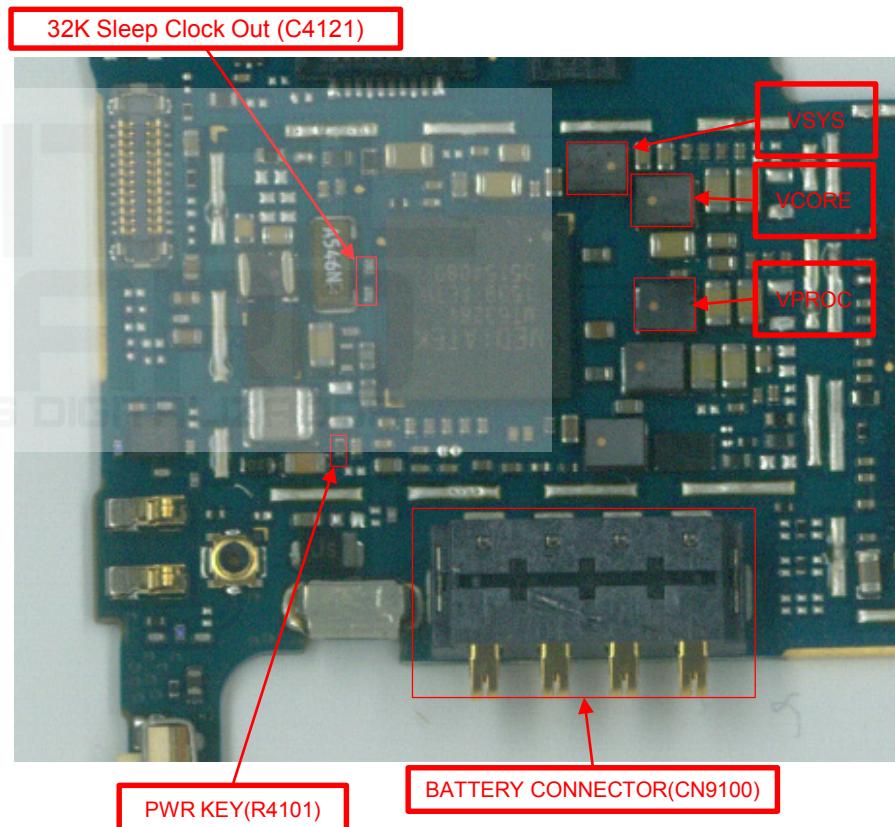
3.8 Power

Checking Power signal (Battery connector, Power Key, PMIC Regulator)

Checking Flow



Image

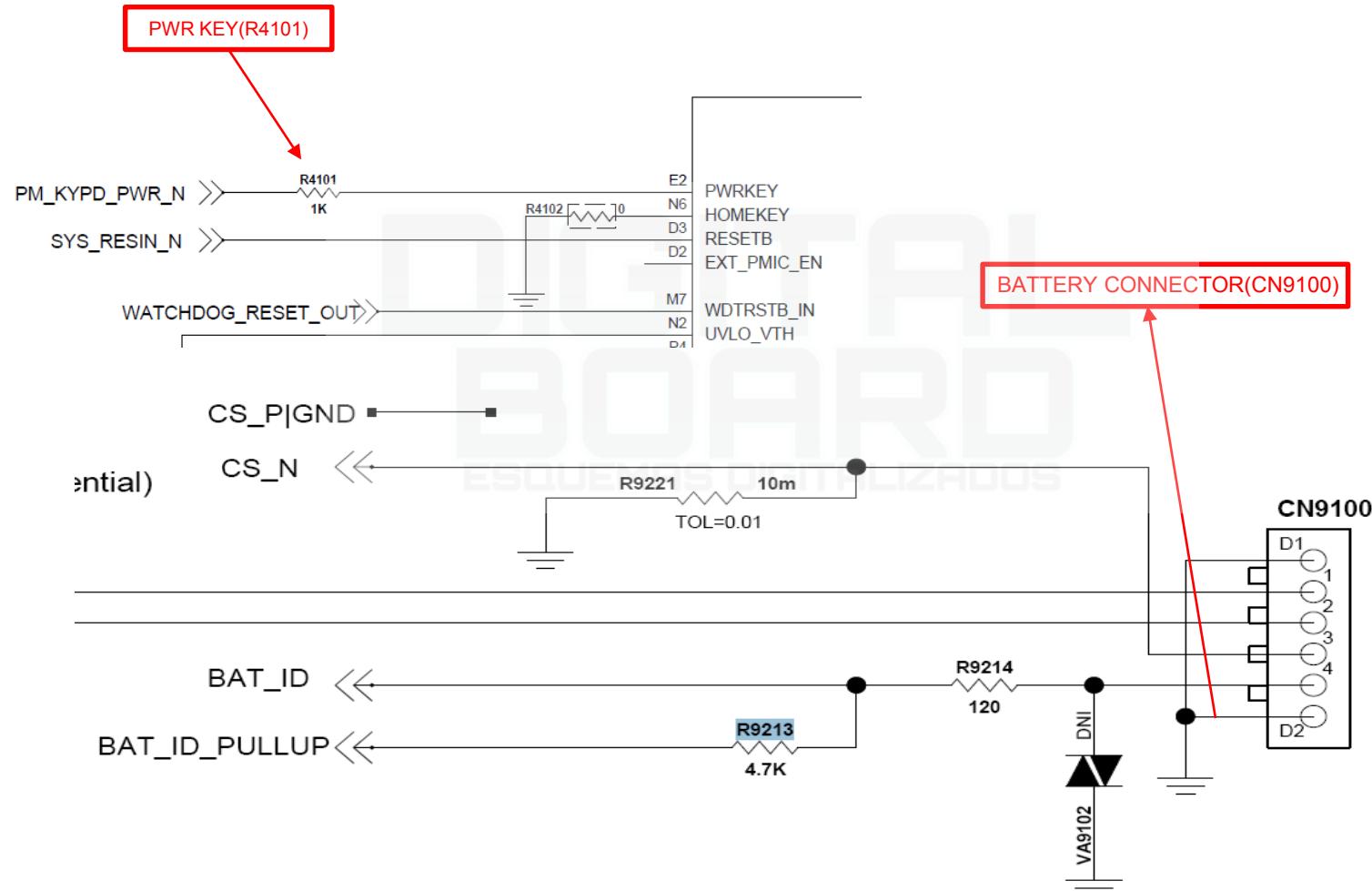


3. TROUBLE SHOOTING

3.8 Power

Checking Power signal (Battery connector, Power Key, PMIC Regulator)

Circuit Diagram

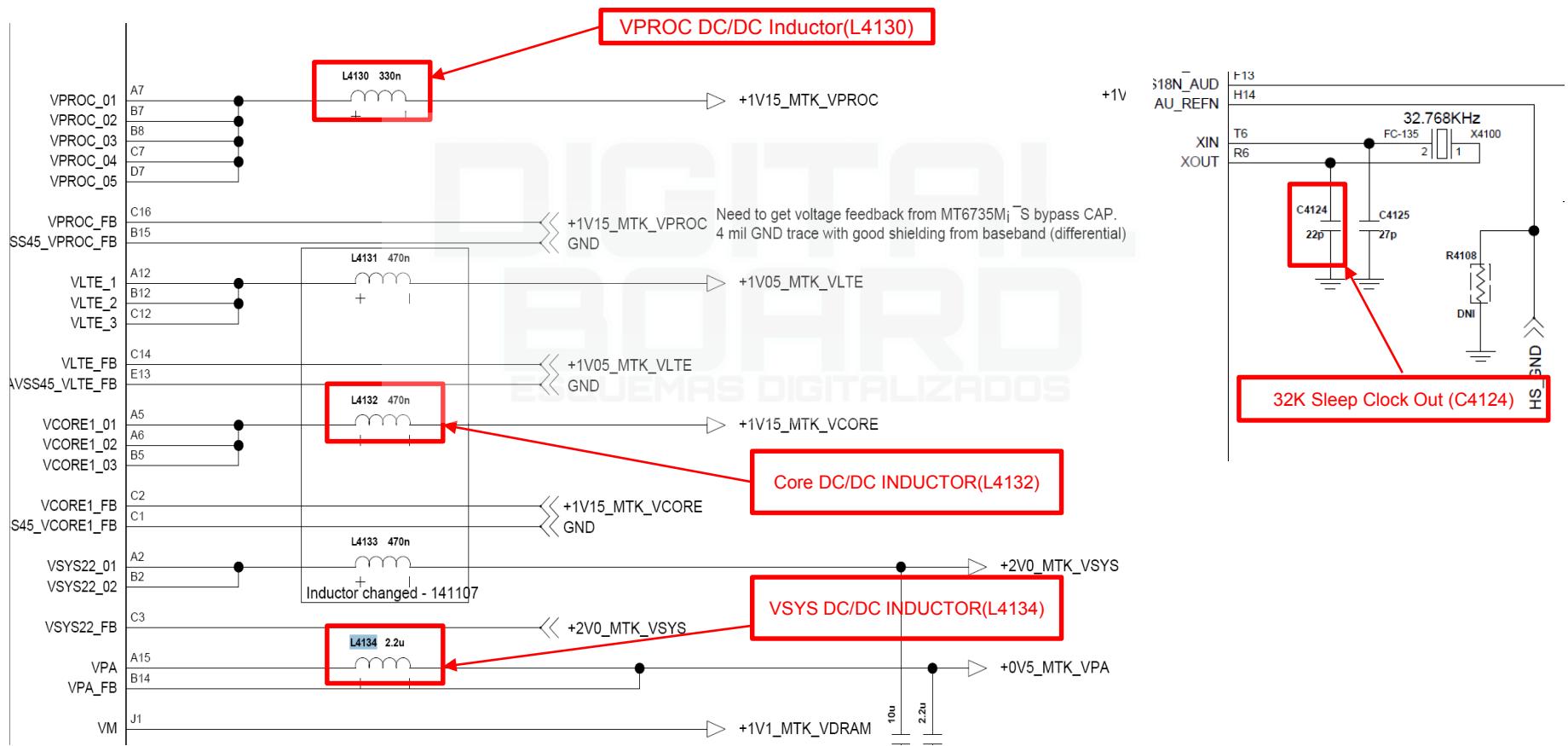


3. TROUBLE SHOOTING

3.8 Power

Checking Power signal (Battery connector, Power Key, PMIC Regulator)

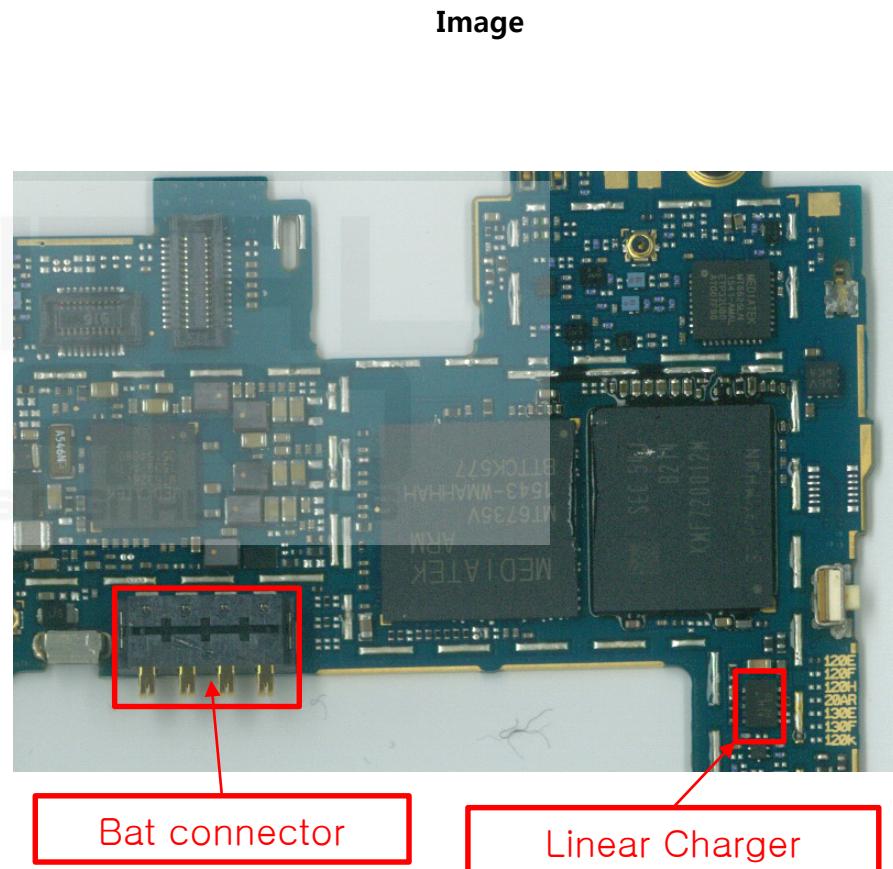
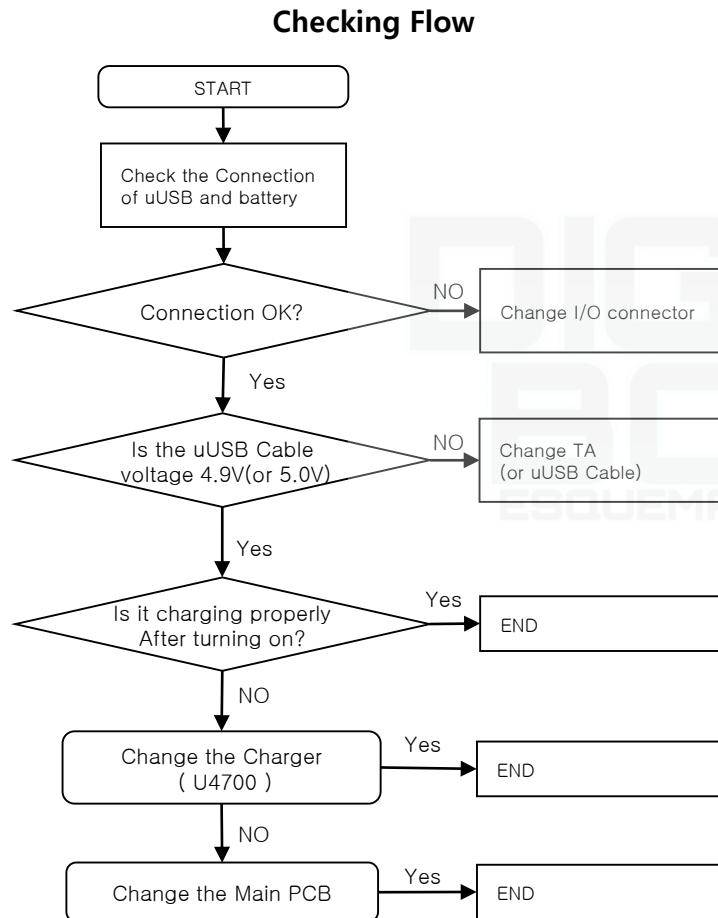
Circuit Diagram



3. TROUBLE SHOOTING

3.9 Charger

The I/O connector and uUSB cable voltage(5.0V) is used as the reference one of PMIC for charging.



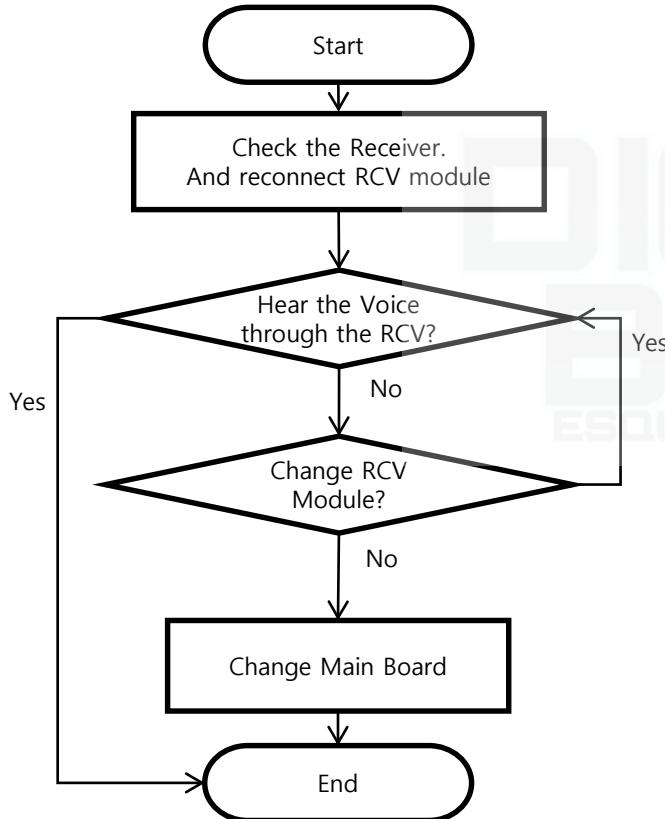
3. TROUBLE SHOOTING

3.10 Audio Block(3.10.1 Audio receiver)

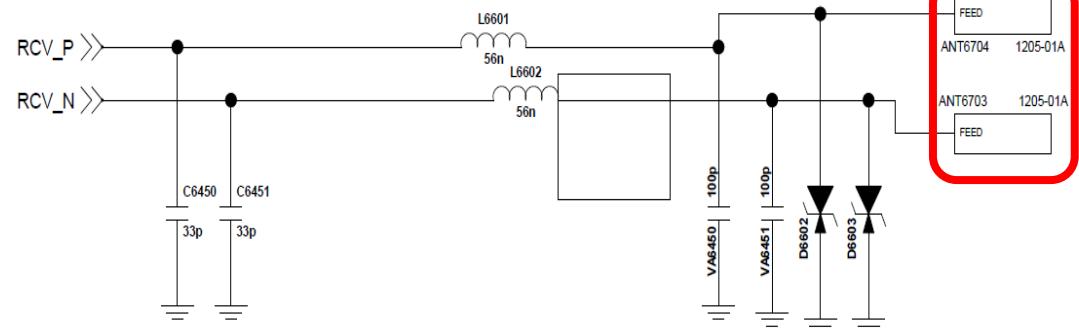
The receiver control signals are generated by MT6325(U4100), the MT6325 chip and the receiver are to be checked out.

Image

Checking Flow



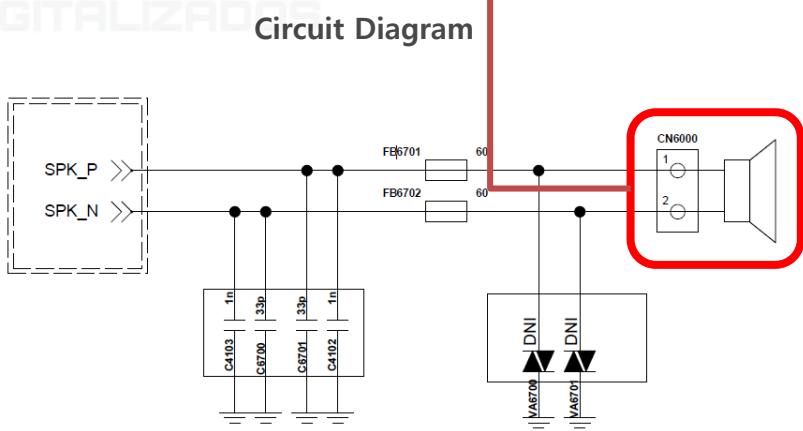
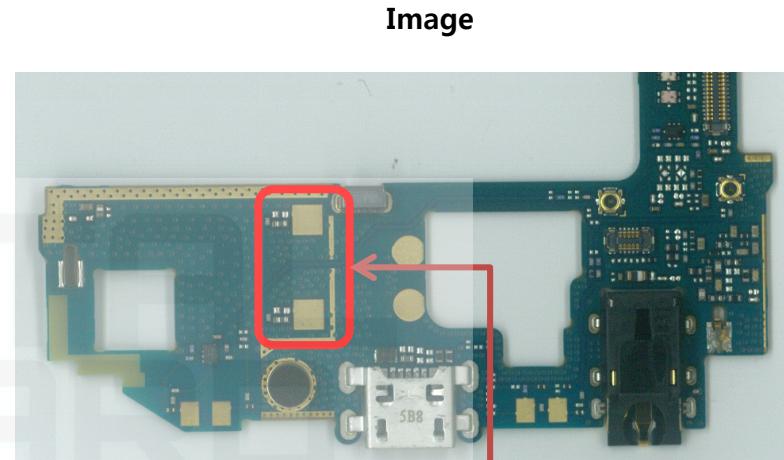
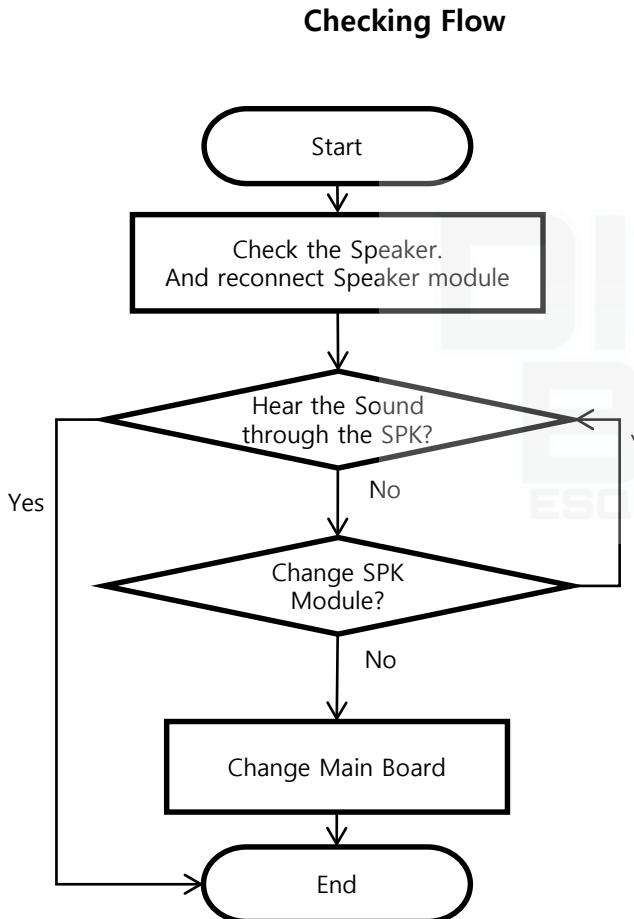
Circuit Diagram



3. TROUBLE SHOOTING

3.10.2 Audio_speaker

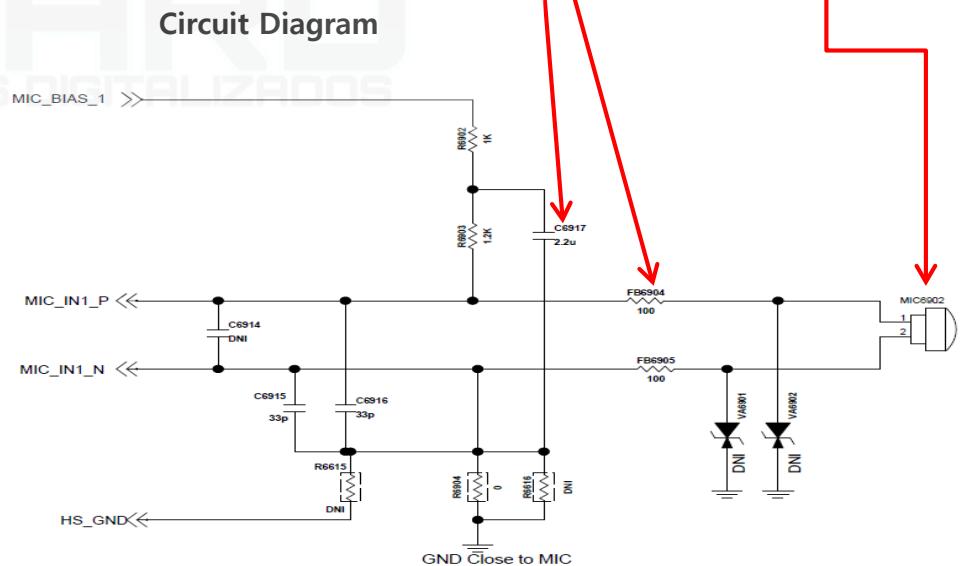
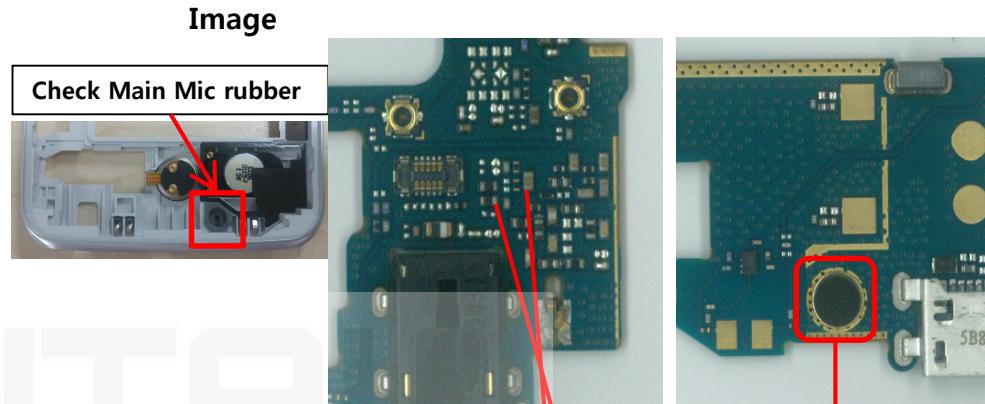
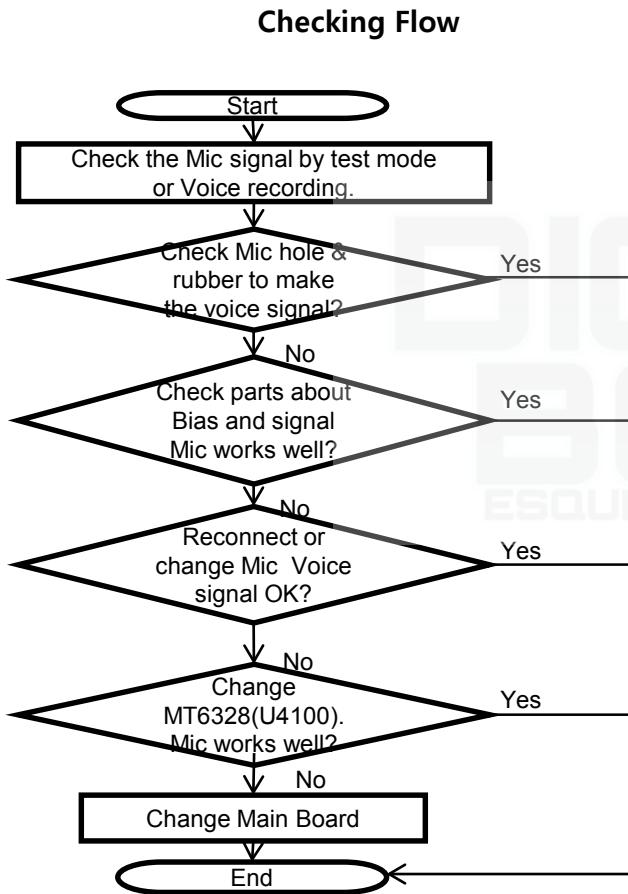
The Speaker control signals are generated by MT6325(U4100), the MT6325 chip and the speaker are to be checked out.



3. TROUBLE SHOOTING

3.10.3 Audio_Main MIC

It's operating voice call(except speakerphone), voice recording, camcorder recording.

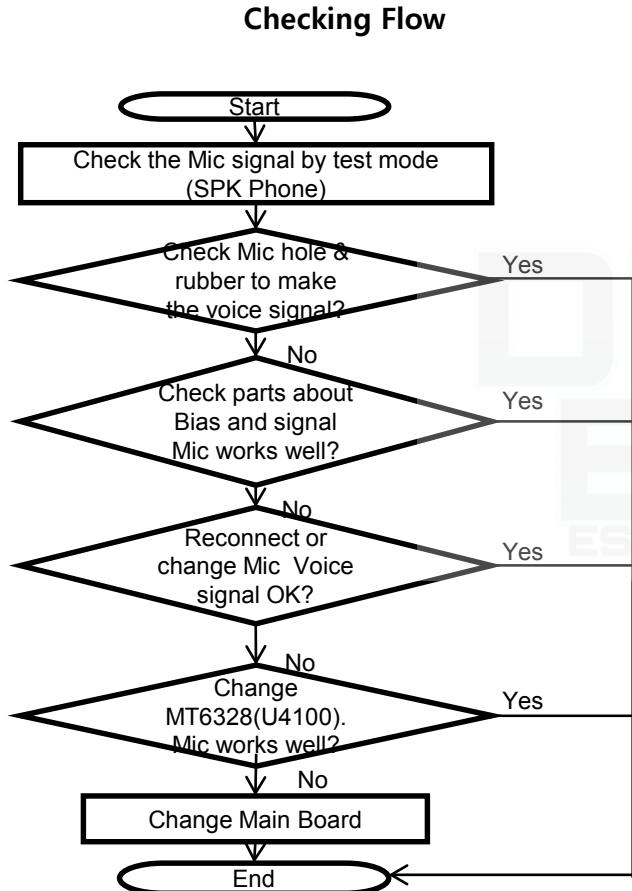


3. TROUBLE SHOOTING

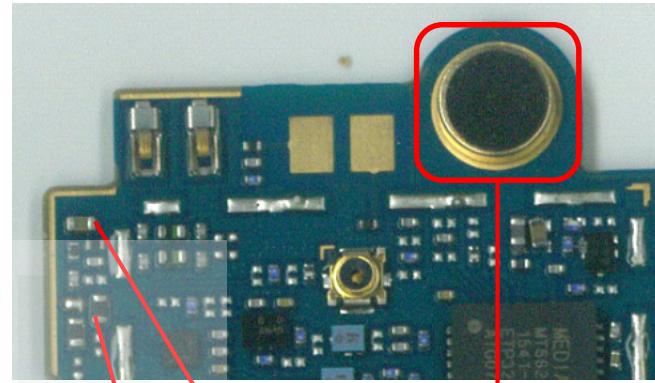
3.10.4 Audio_sub MIC

It's operating Speakerphone call.

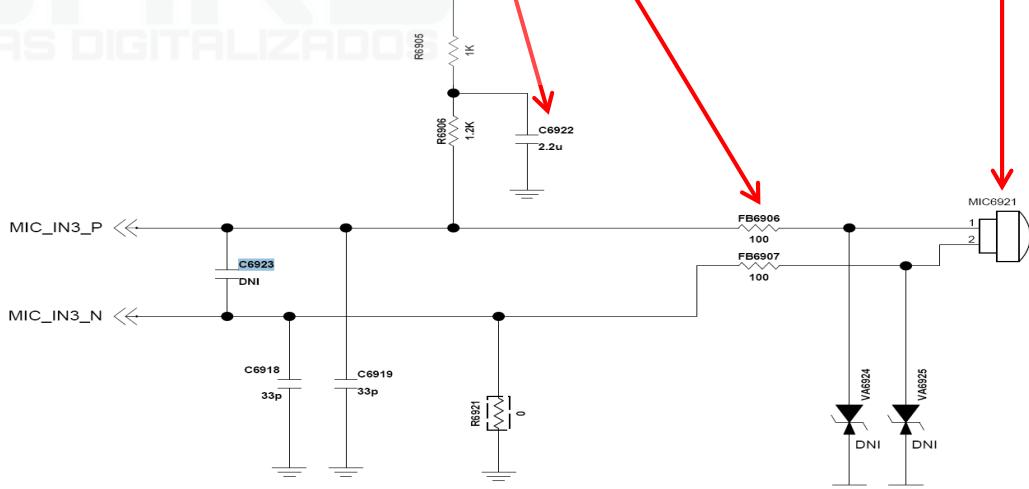
Image



Check SUB Mic rubber



Circuit Diagram
MIC_BIAS_1 >>

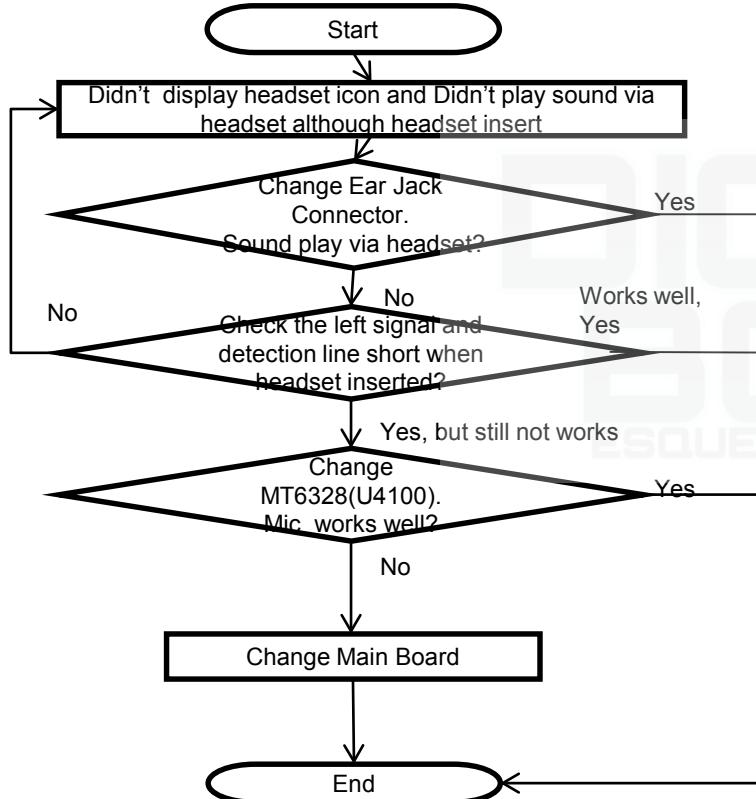


3. TROUBLE SHOOTING

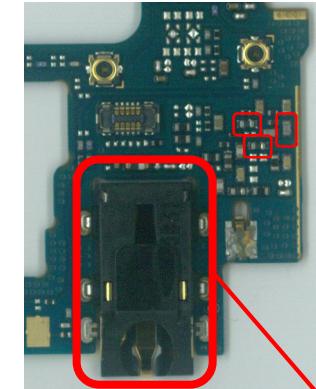
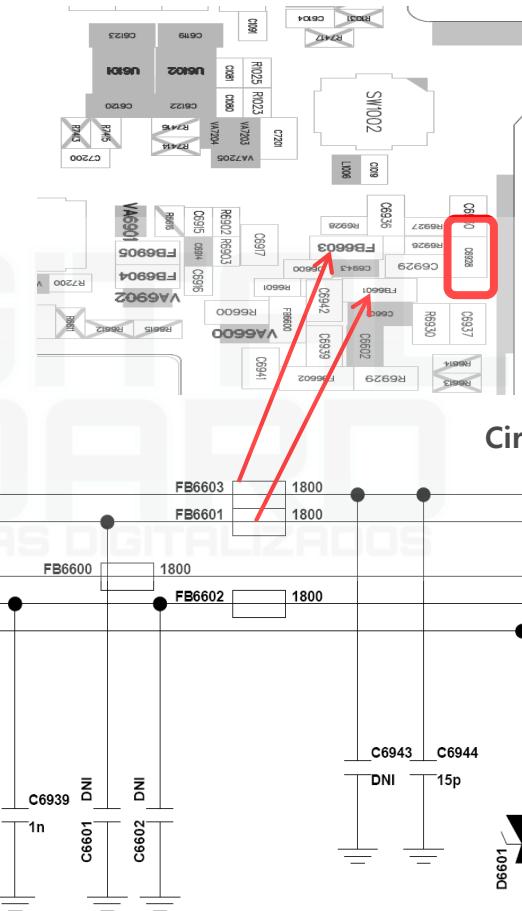
3.10.5 Audio_Ear MIC Jack

Disable detecting headset insert or No sound from Earphone, Check the Ear Mic and MT6325

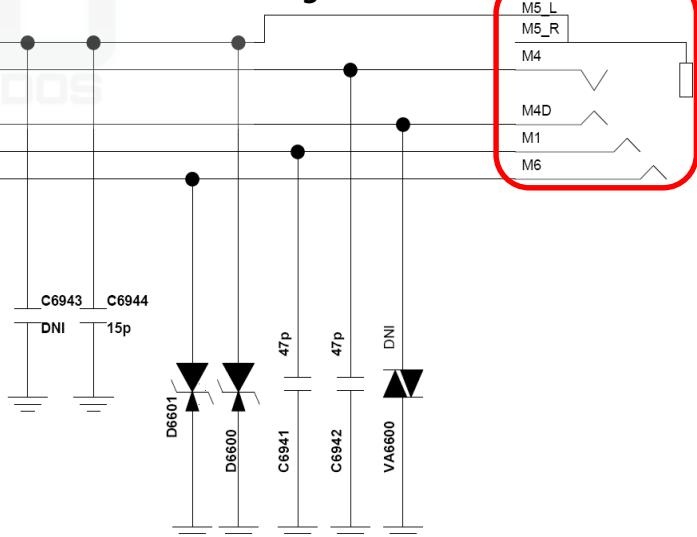
Checking Flow



Image



Circuit Diagram

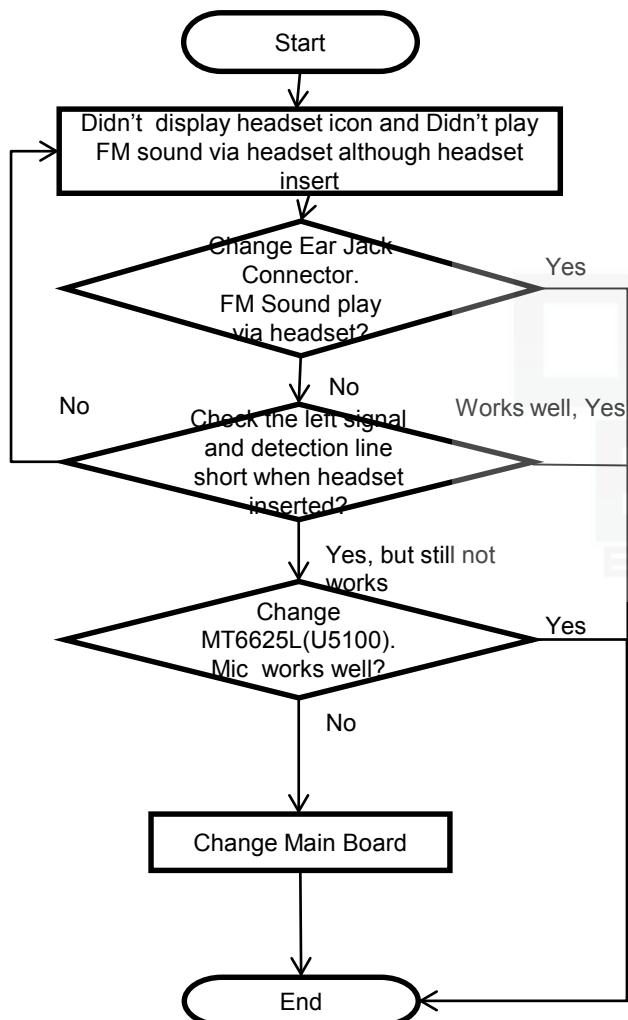


3. TROUBLE SHOOTING

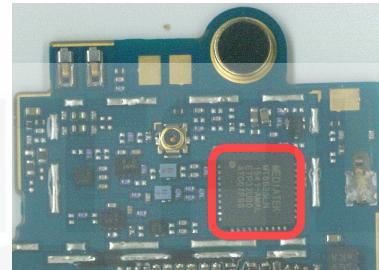
3.10.6 FM_Radio

Disable detecting headset insert or No FM sound from Earphone, Check the Ear Mic and MT6625L

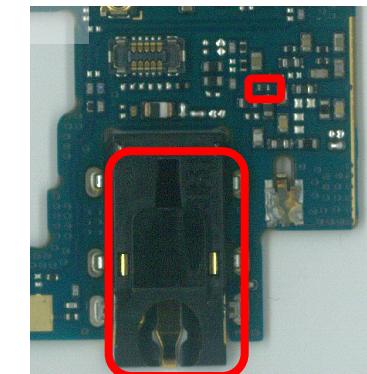
Checking Flow



Image



Jack detect
Voltage Level Check at R6201
- 1.8V(before insert)
- low(after insert)

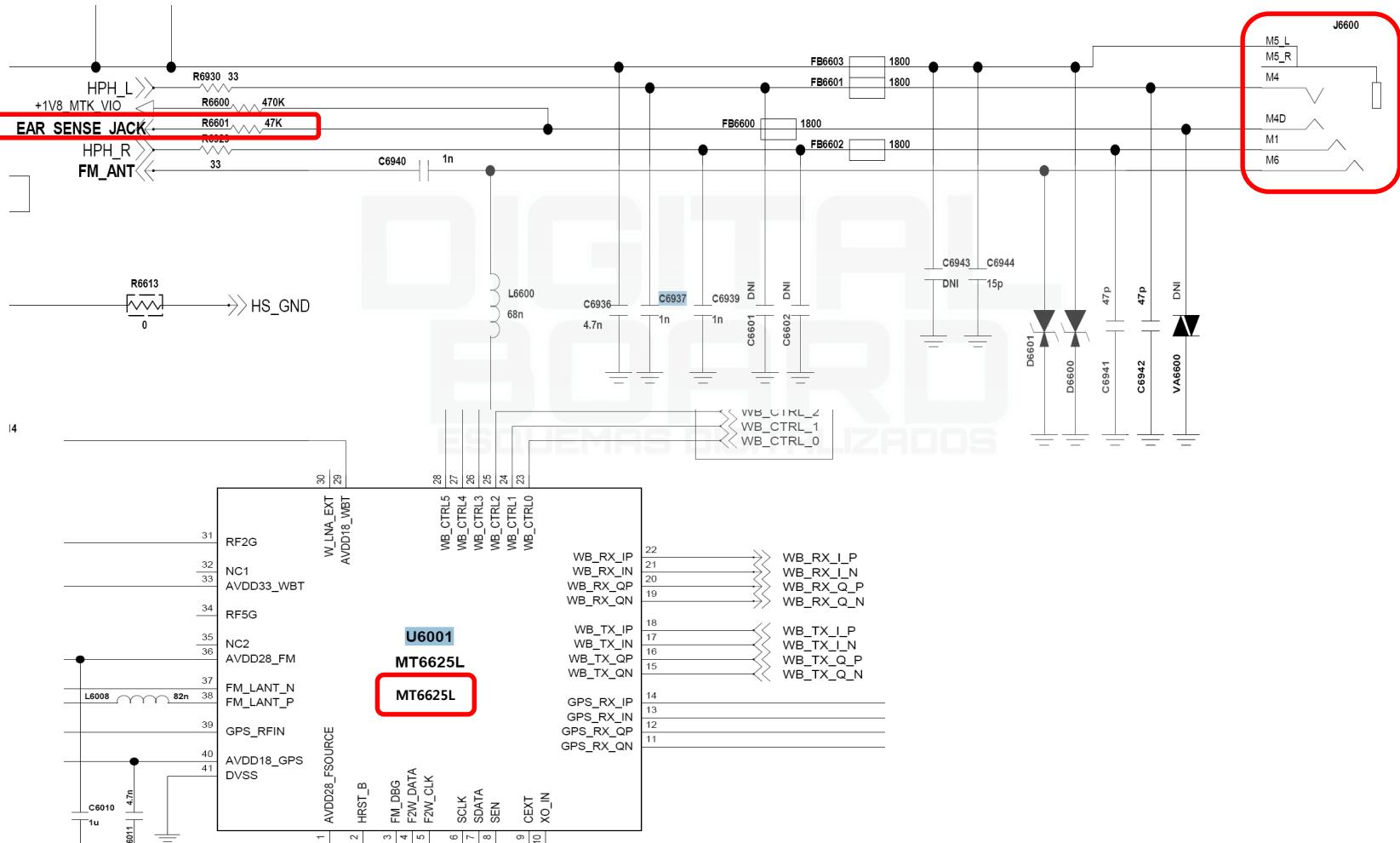


3. TROUBLE SHOOTING

3.10.6 FM_Radio

Disable detecting headset insert or No FM sound from Earphone, Check the Ear Mic and MT6625L

Circuit Diagram

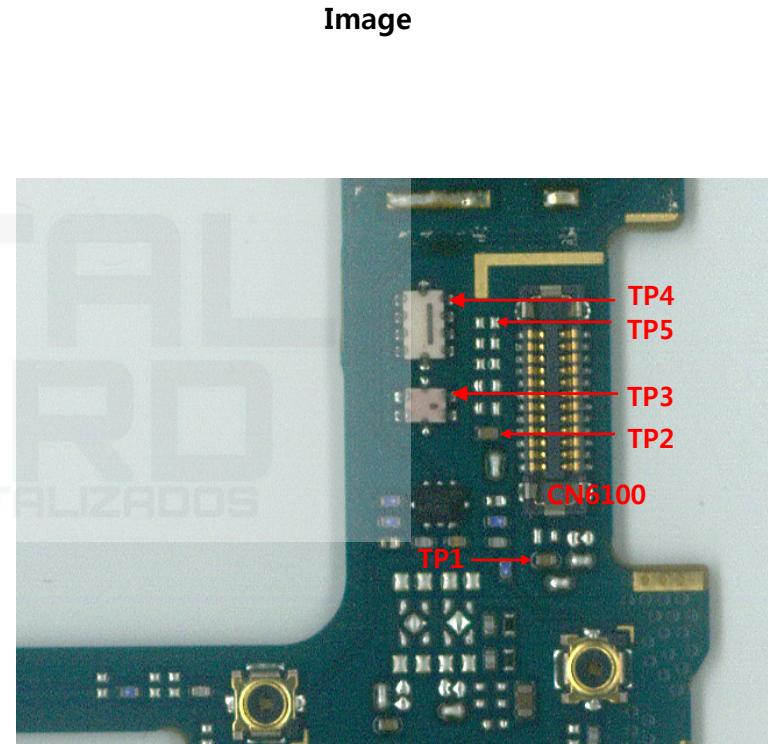
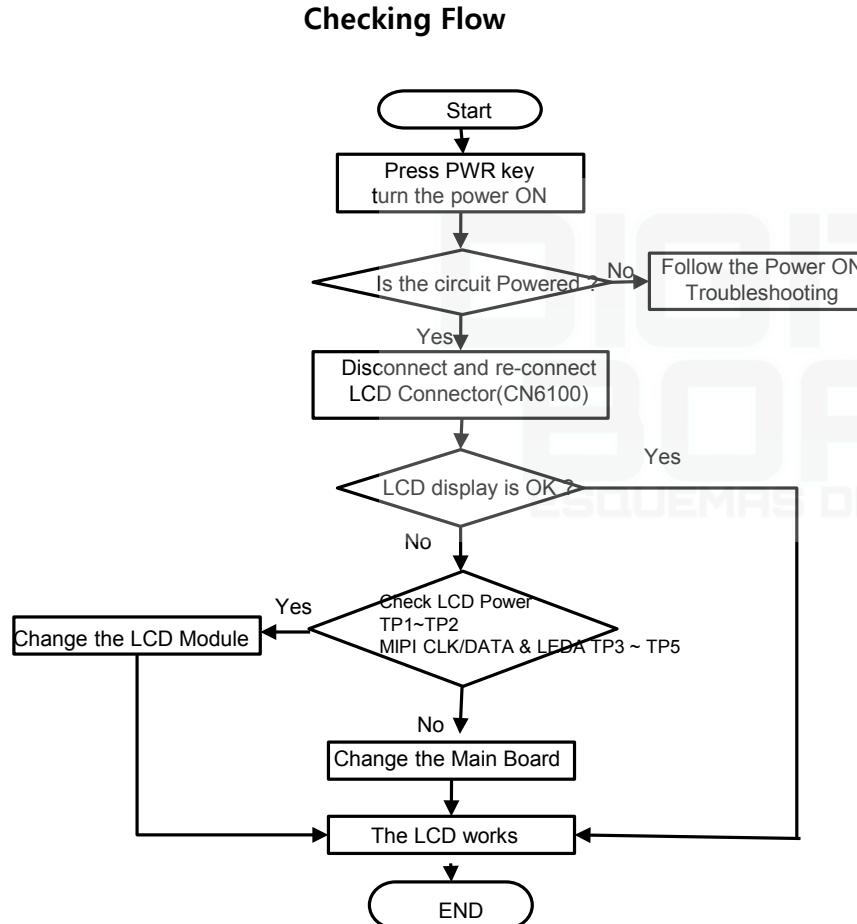


LGE Internal Use Only

3. TROUBLE SHOOTING

3.11 Checking LCD Block

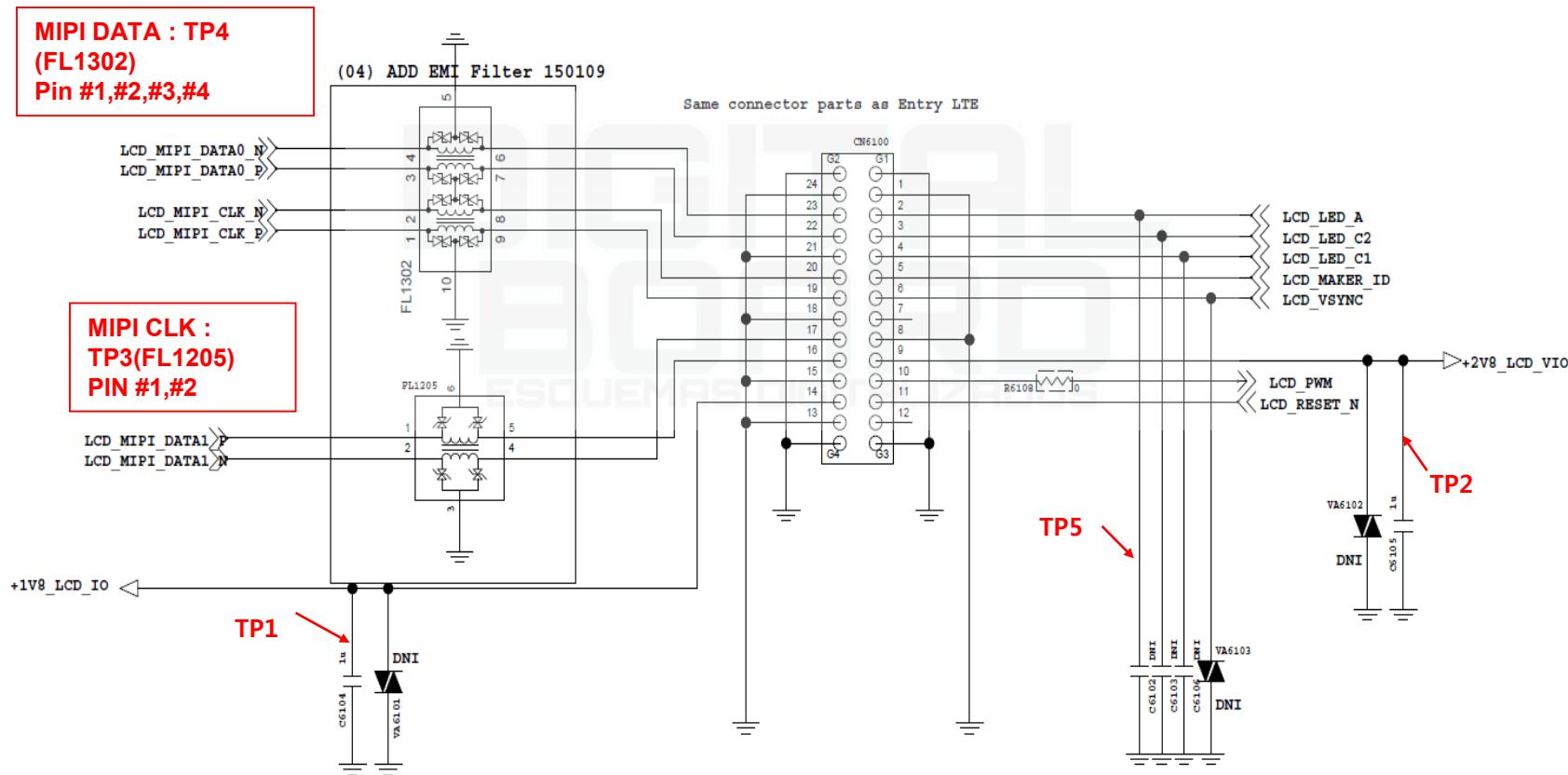
The LCD control signals are generated by MT6735M. Its interface is MIPI having four data lanes and one clock lane.



3.11 Checking LCD Block

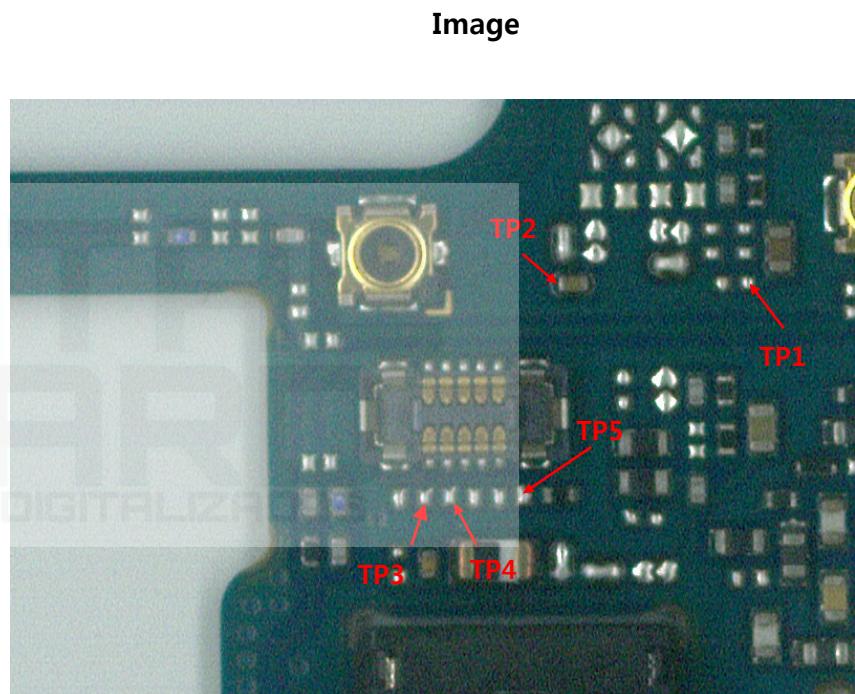
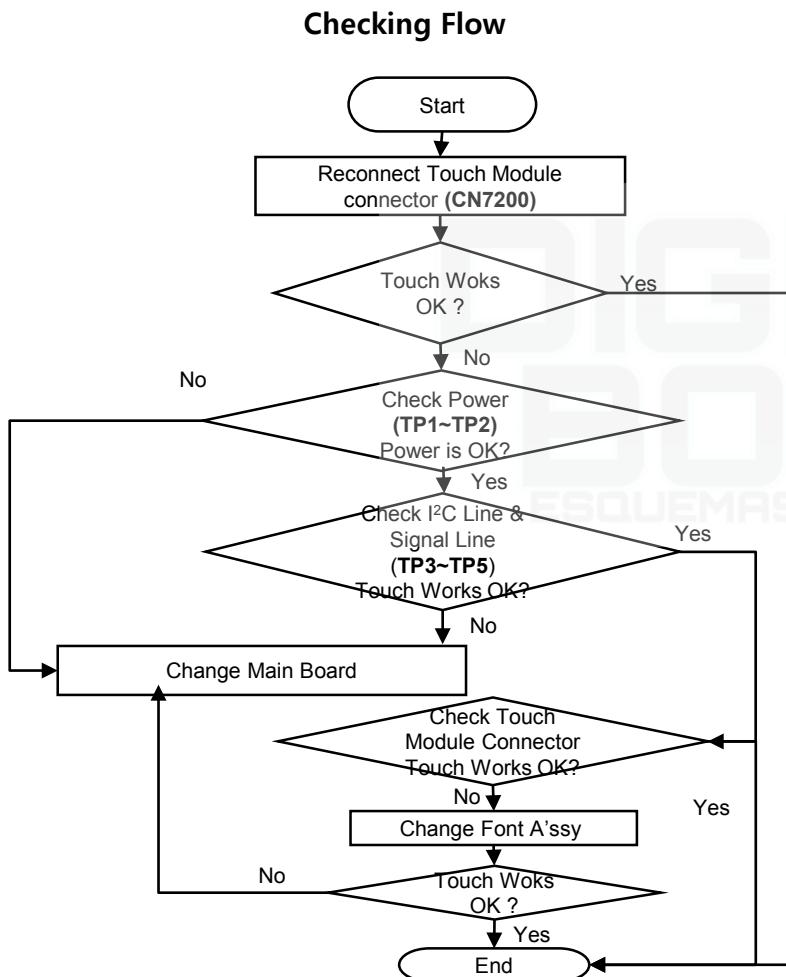
The LCD control signals are generated by MT6735M. Its interface is MIPI having four data lanes and one clock lane.

Circuit Diagram



3.12 Checking Touch Block

The Touch control signals are generated by MT6735M.

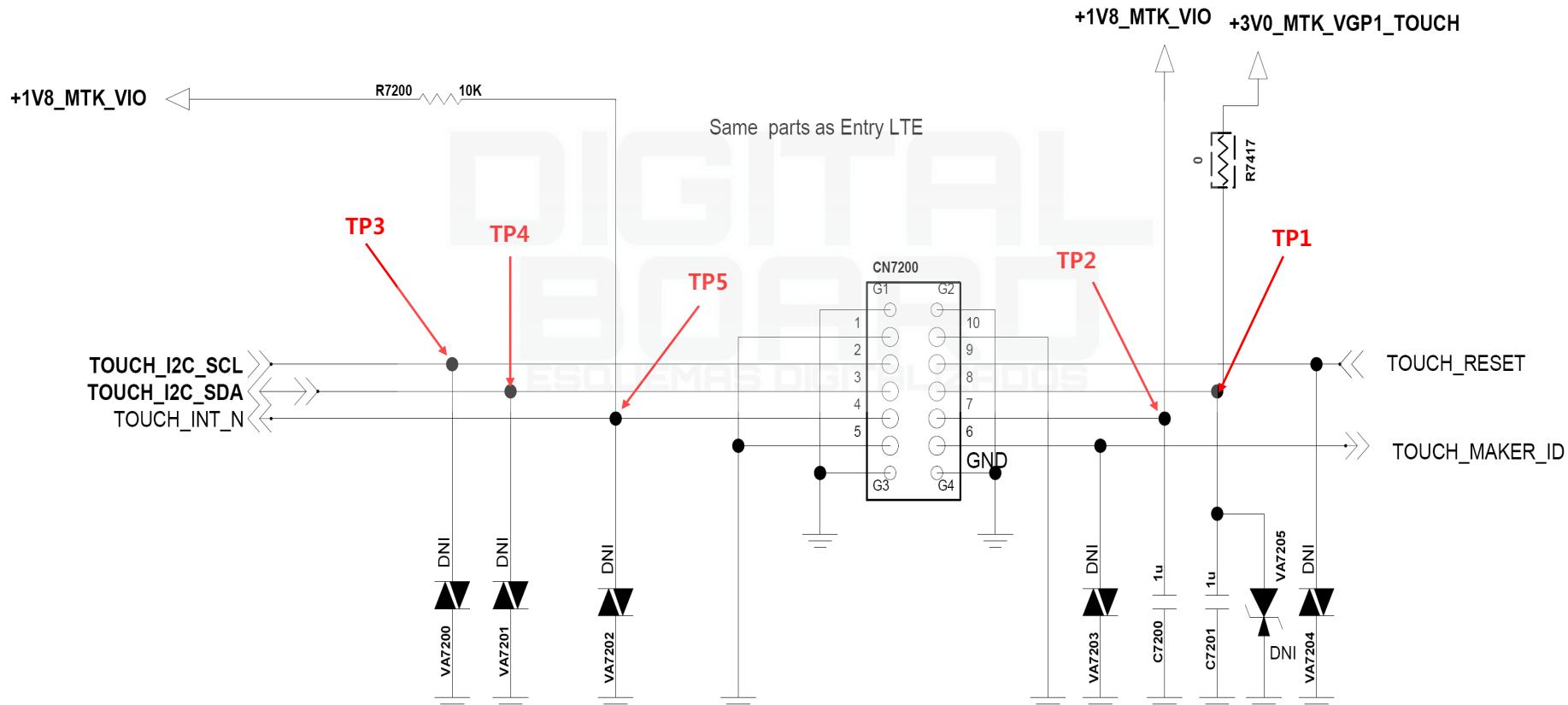


3. TROUBLE SHOOTING

3.12 Checking Touch Block

The Touch control signals are generated by MT6735M.

Circuit Diagram



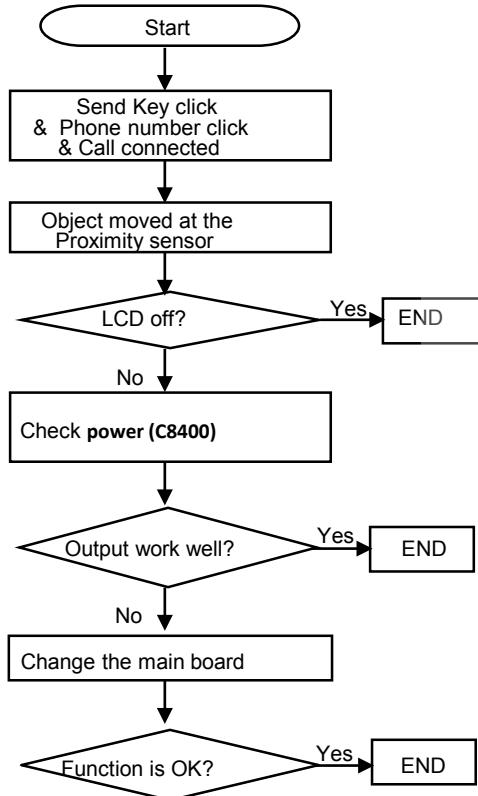
3. TROUBLE SHOOTING

3.13 Checking proximity sensor Block

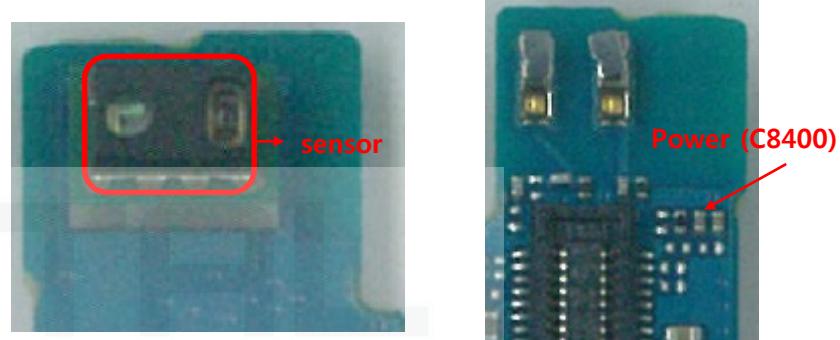
Proximity Sensor is worked as below: Send Key click → Phone number click → Call connected

→ Object moved at the sensor → Control the screen's on/off operation automatically

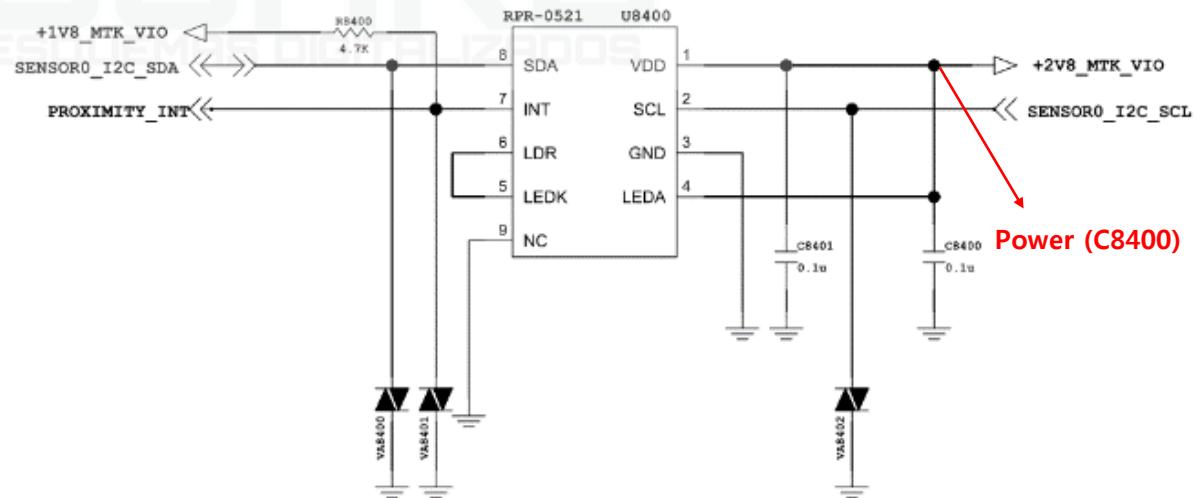
Checking Flow



Image



Circuit Diagram

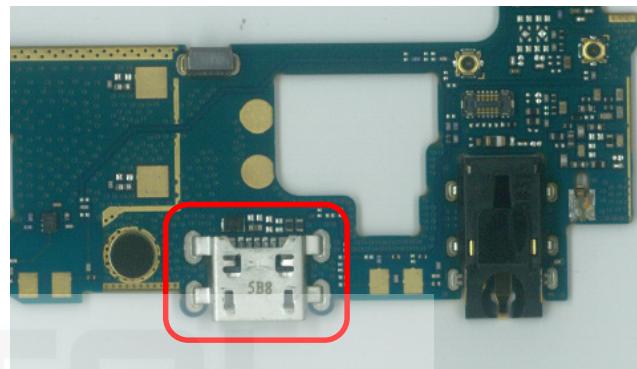
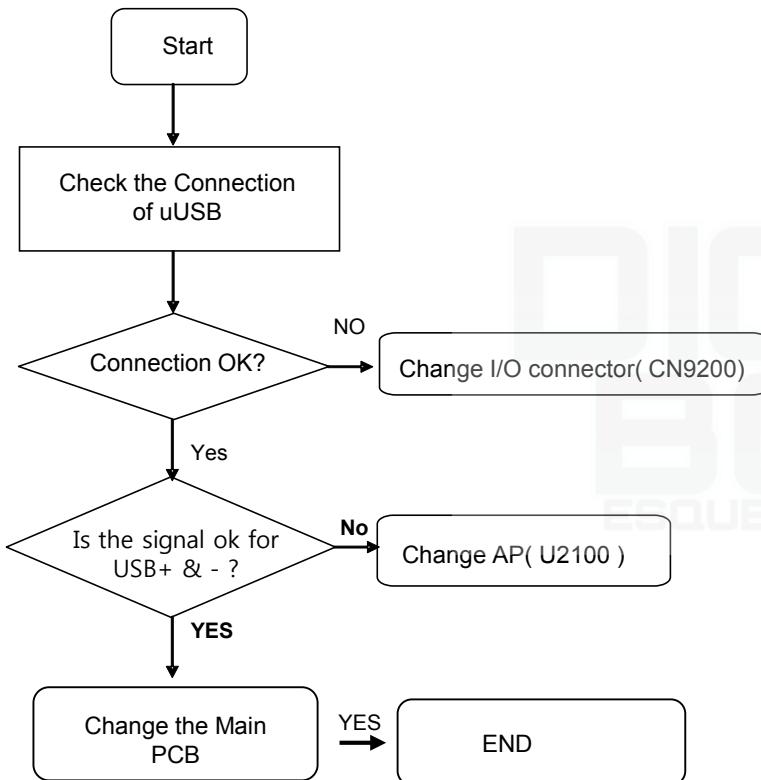


3. TROUBLE SHOOTING

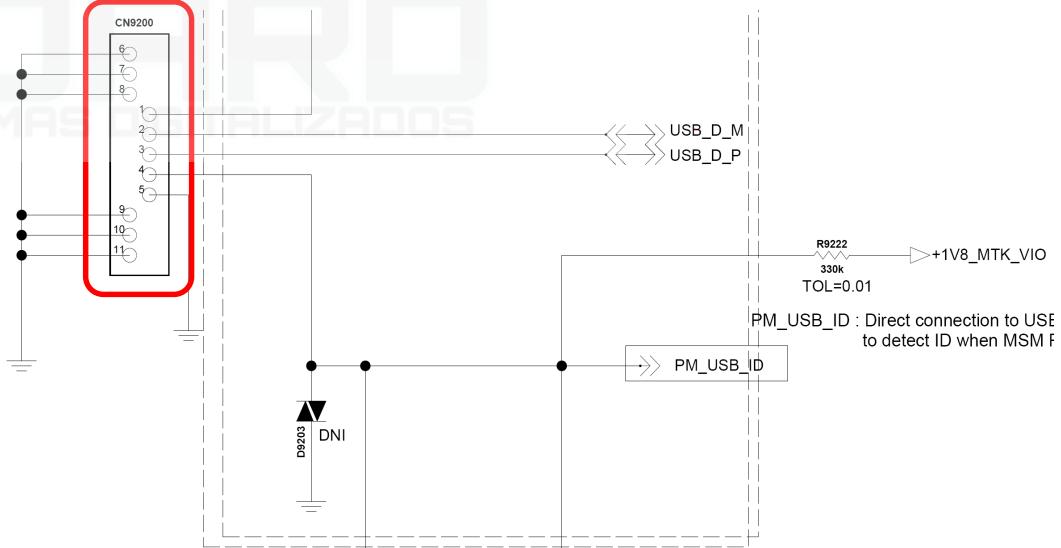
3.14 Checking USB Block

I/O connector is used as the USB port.

Checking Flow

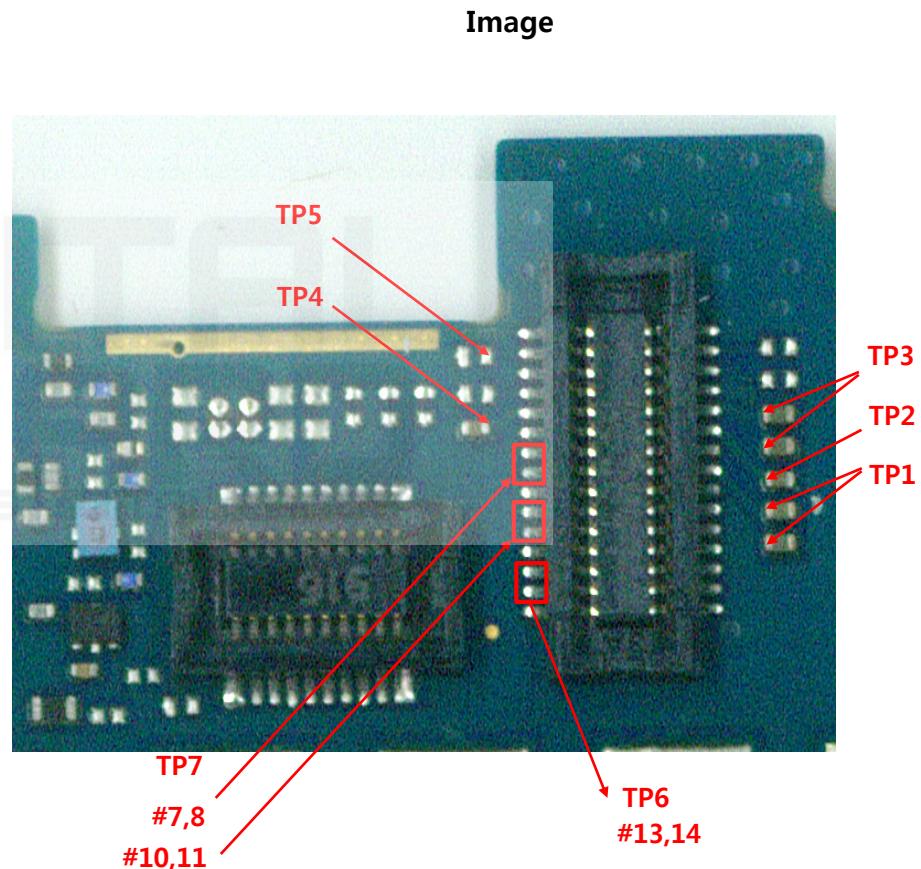
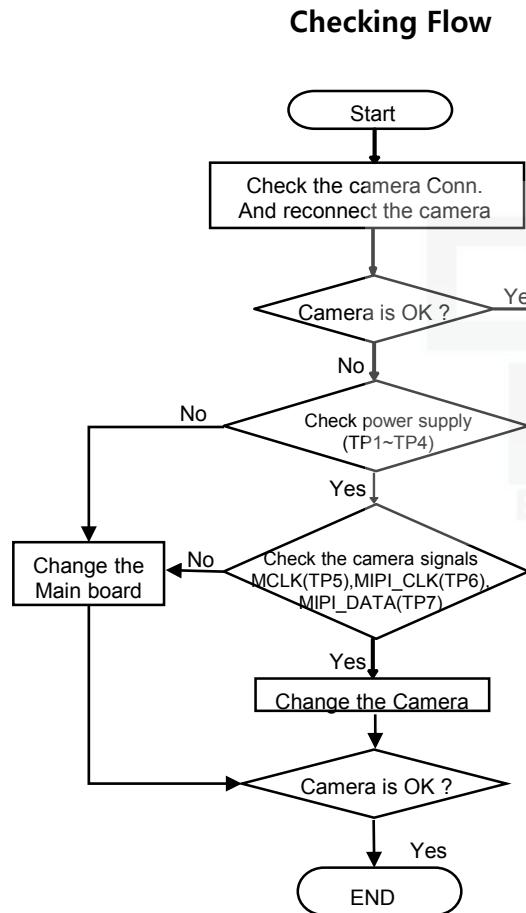


Circuit Diagram



3.15 Checking Main camera Block

5M camera control signals are generated by MT6735M (U2100 : Main Chipset). And powered by MT6328(U4100 : PMIC).

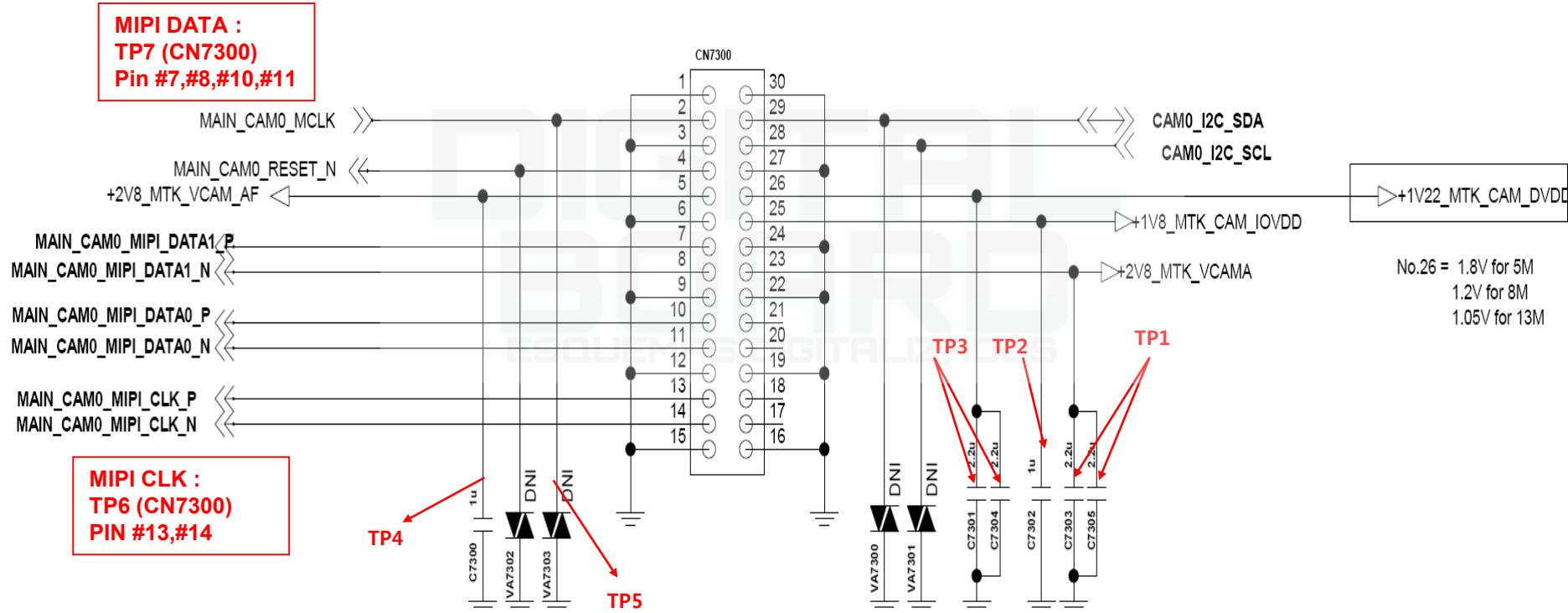


3. TROUBLE SHOOTING

3.15 Checking Main camera Block

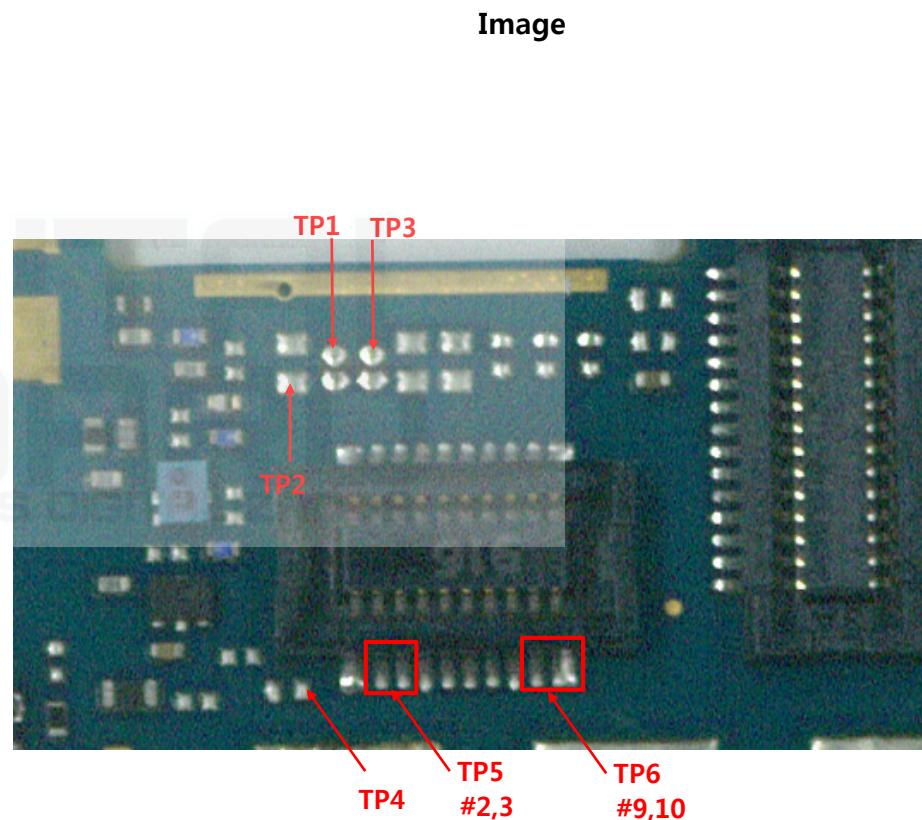
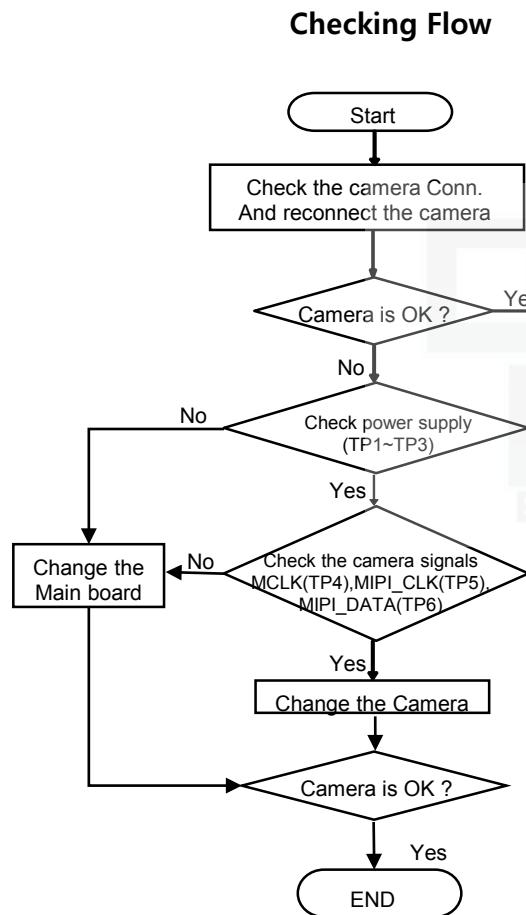
5M camera control signals are generated by MT6735M (U2100 : Main Chipset). And powered by MT6328 (U4100 : PMIC).

Circuit Diagram



3.15 Checking VT camera Block

2M camera control signals are generated by MT6735M (U2100 : Main Chipset). And powered by MT6328 (U4100 : PMIC).

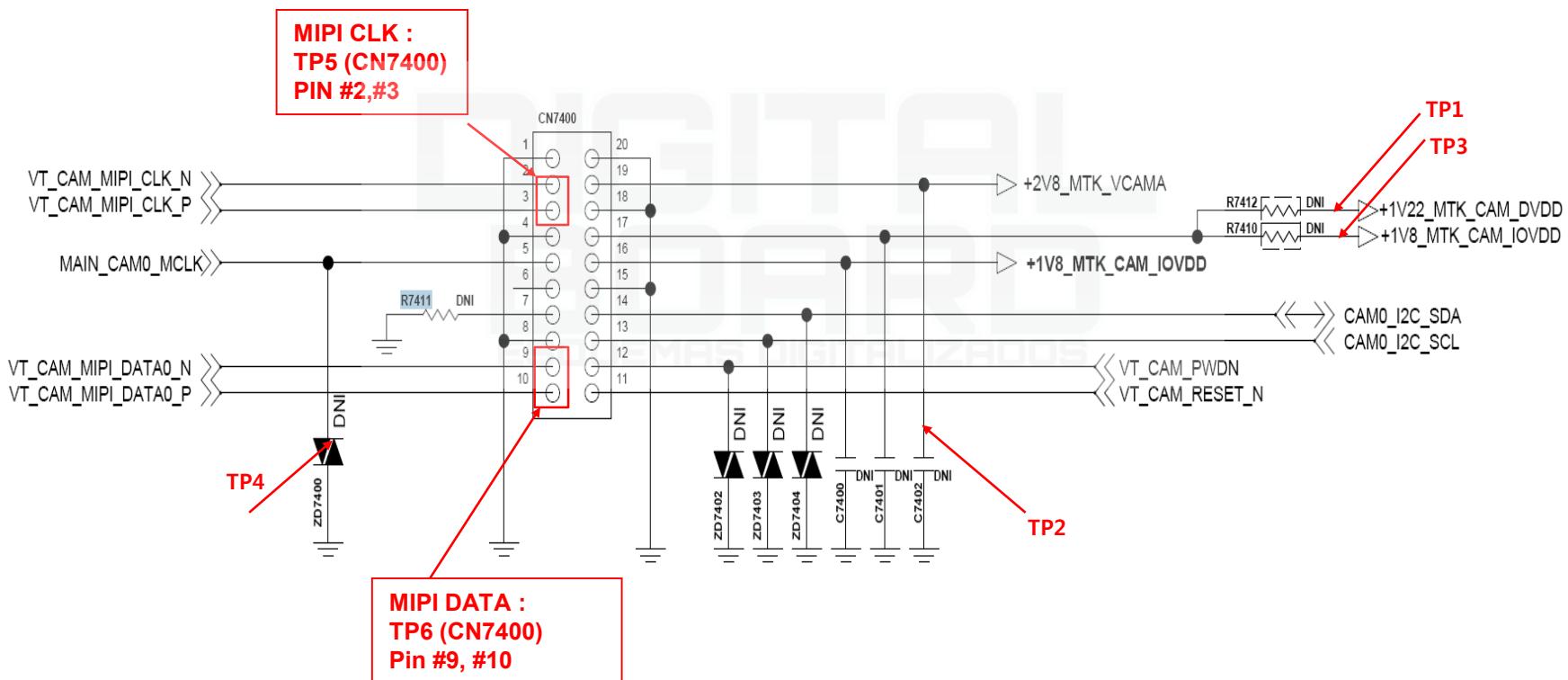


3. TROUBLE SHOOTING

3.15 Checking VT camera Block

2M camera control signals are generated by MT6735M (U2100 : Main Chipset). And powered by MT6328 (U4100 : PMIC).

Circuit Diagram



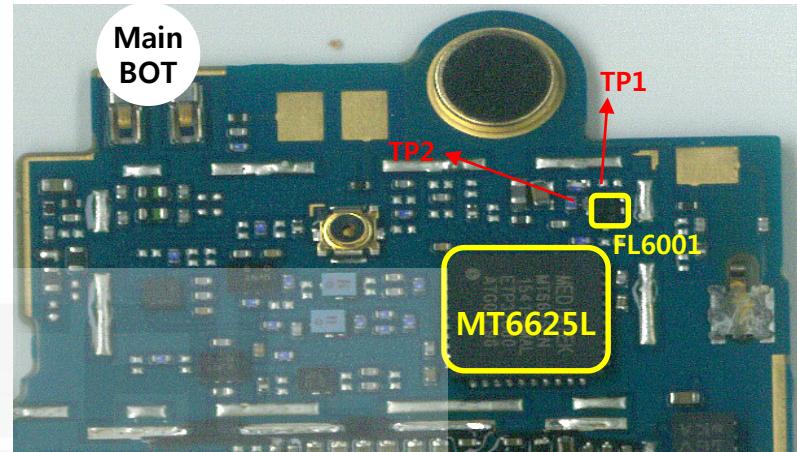
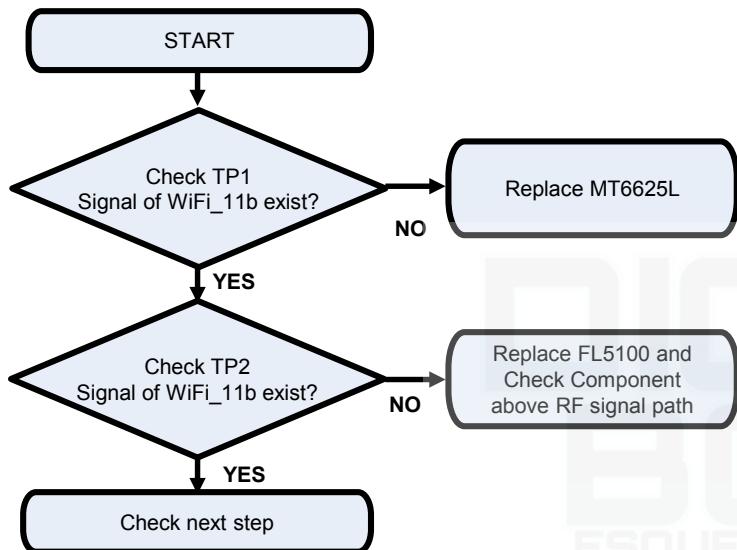
3. TROUBLE SHOOTING

3.16 Connectivity RF PART

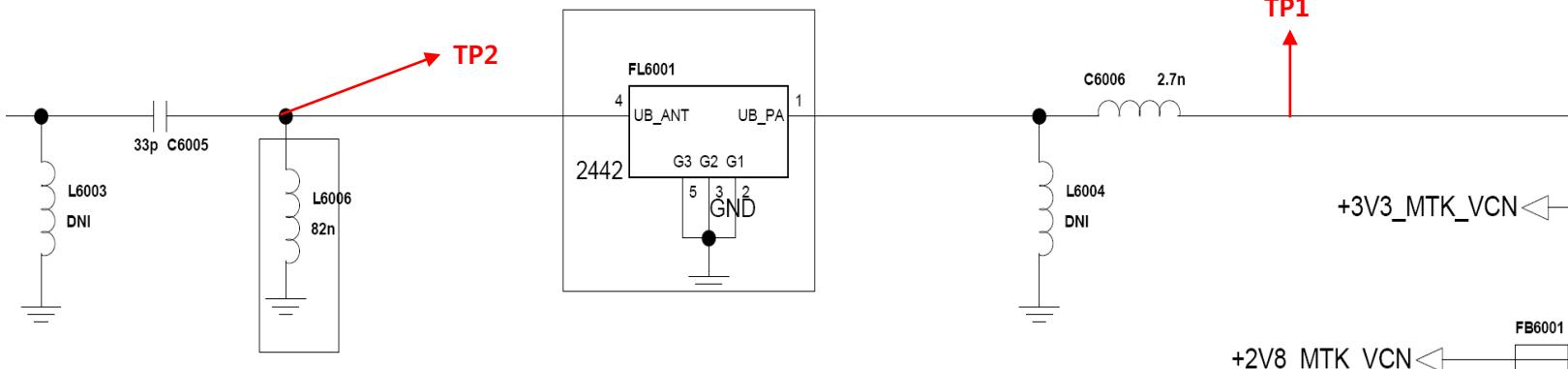
3.16.1 Checking RF Signal TRX path(WiFi, BT)

Image

Checking Flow



Circuit Diagram

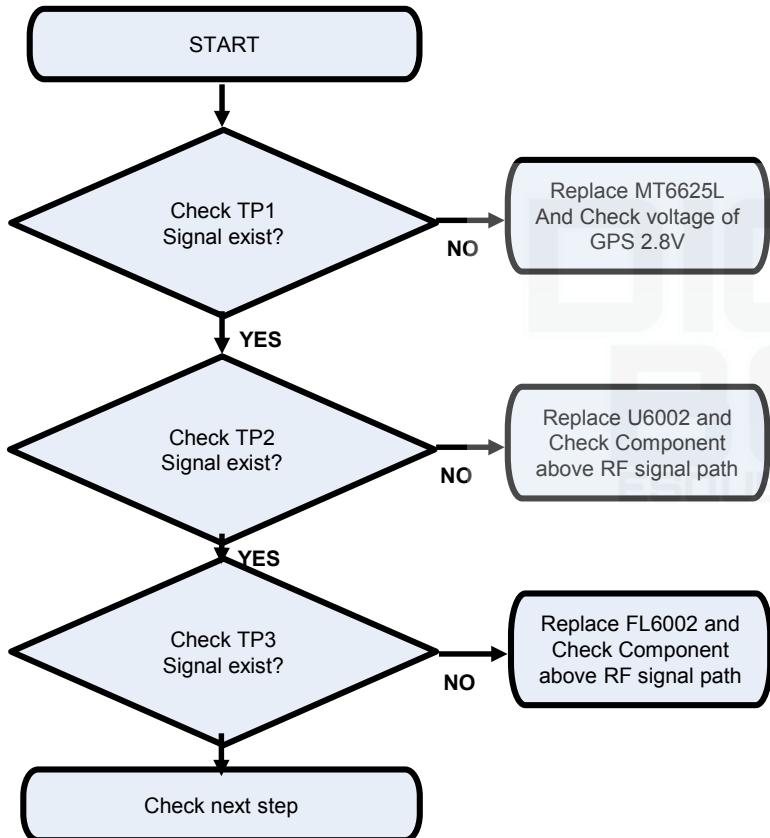


3. TROUBLE SHOOTING

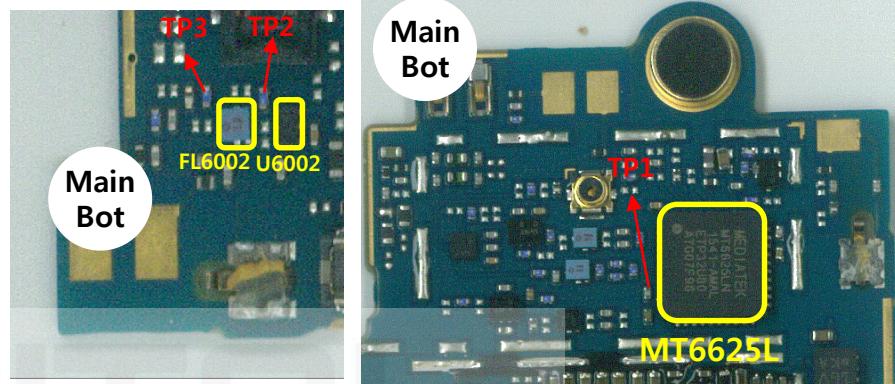
3.16 Connectivity RF PART

3.16.2 Checking RF Signal TRX path(GPS)

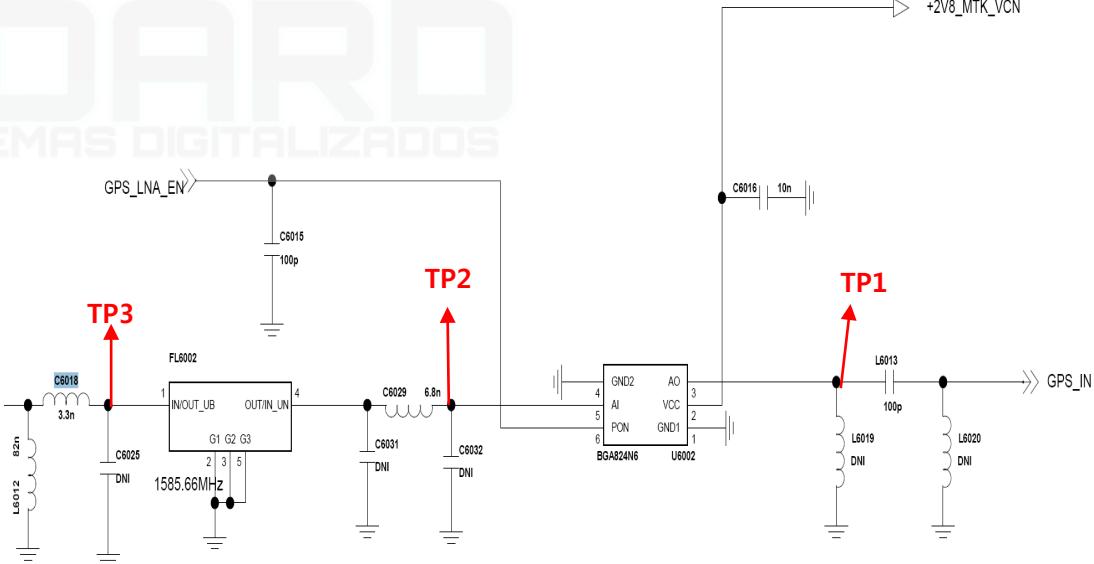
Checking Flow



Image



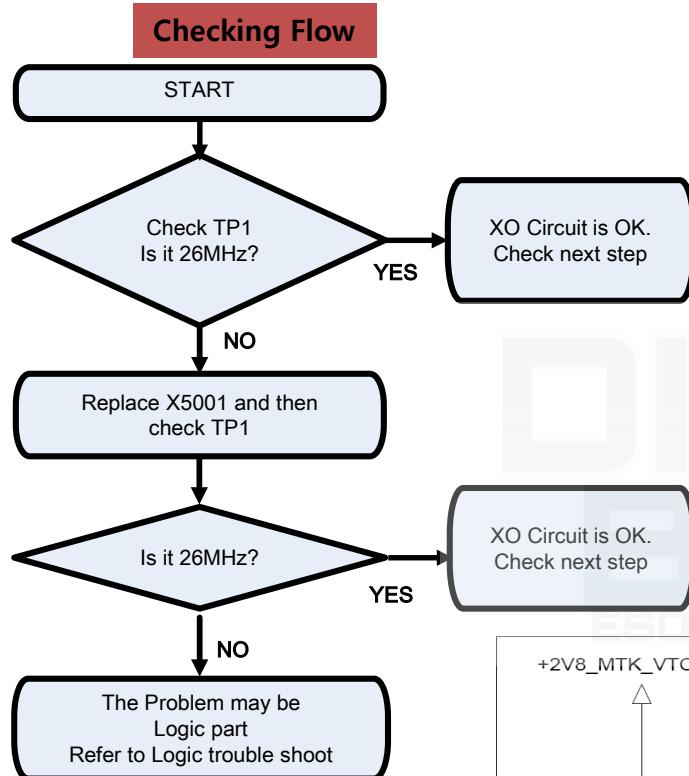
Circuit Diagram



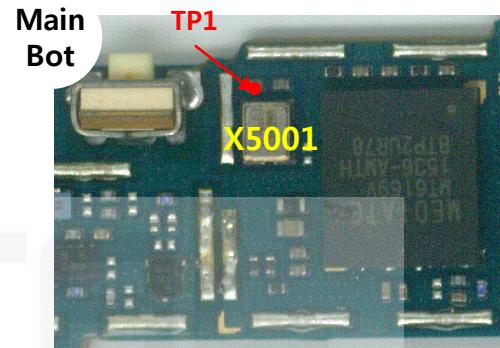
3. TROUBLE SHOOTING

3.16 Connectivity RF PART

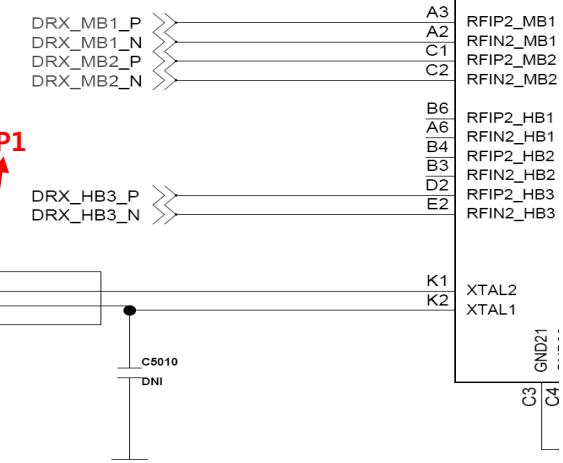
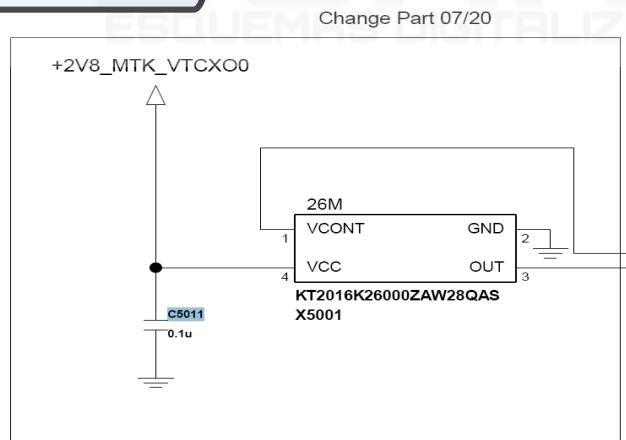
3.16.3 The out put frequency(26MHz) of TCXO(X5001) is used as the reference of MT6625L(Connectivity-WLAN, GPS, BT)



Image



Circuit Diagram





P/N : FLXXXXXXXXXX(XX)
(165)