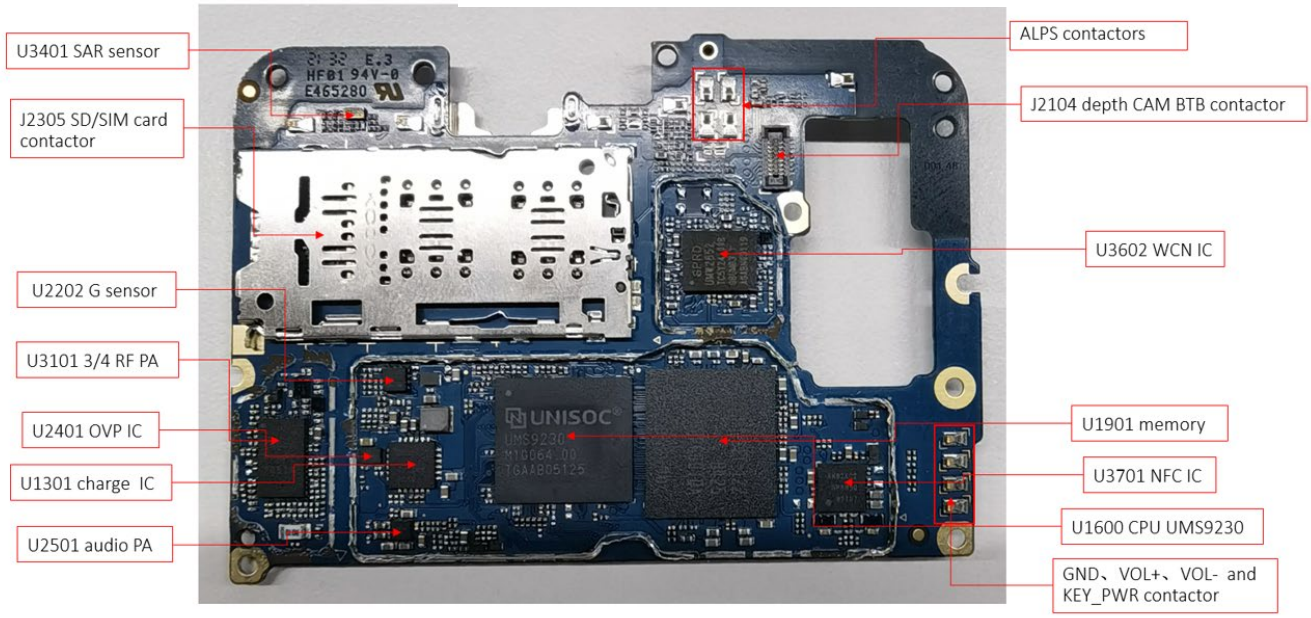
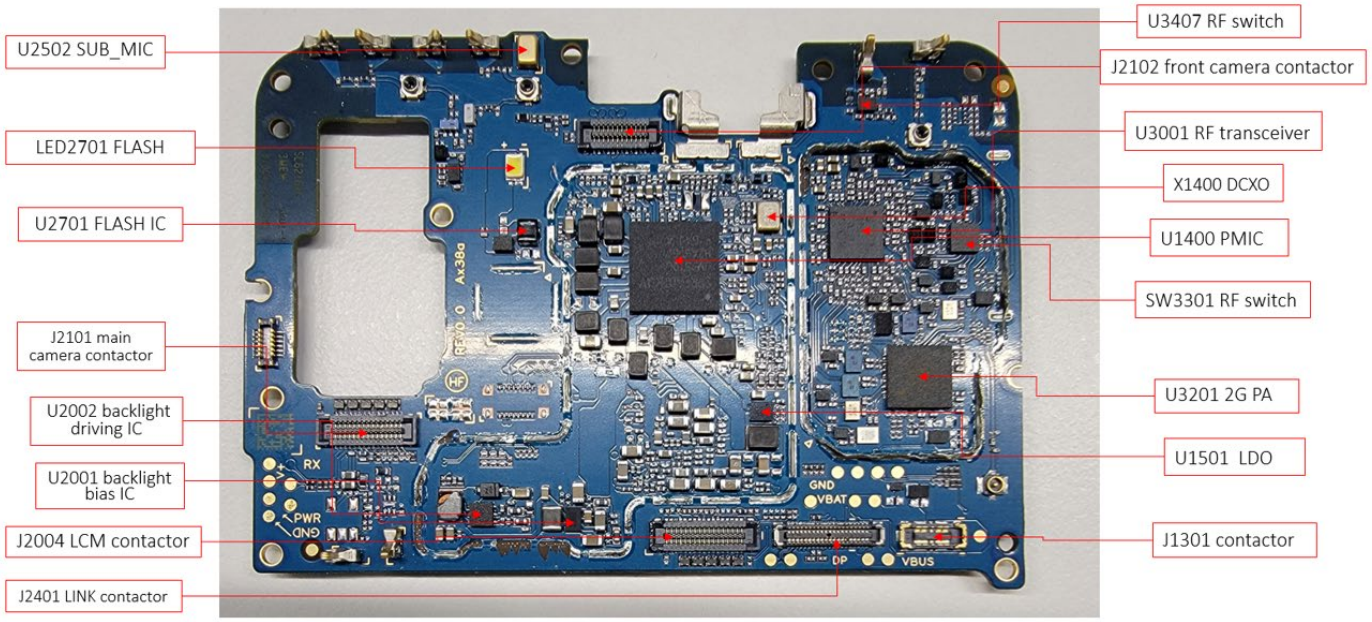
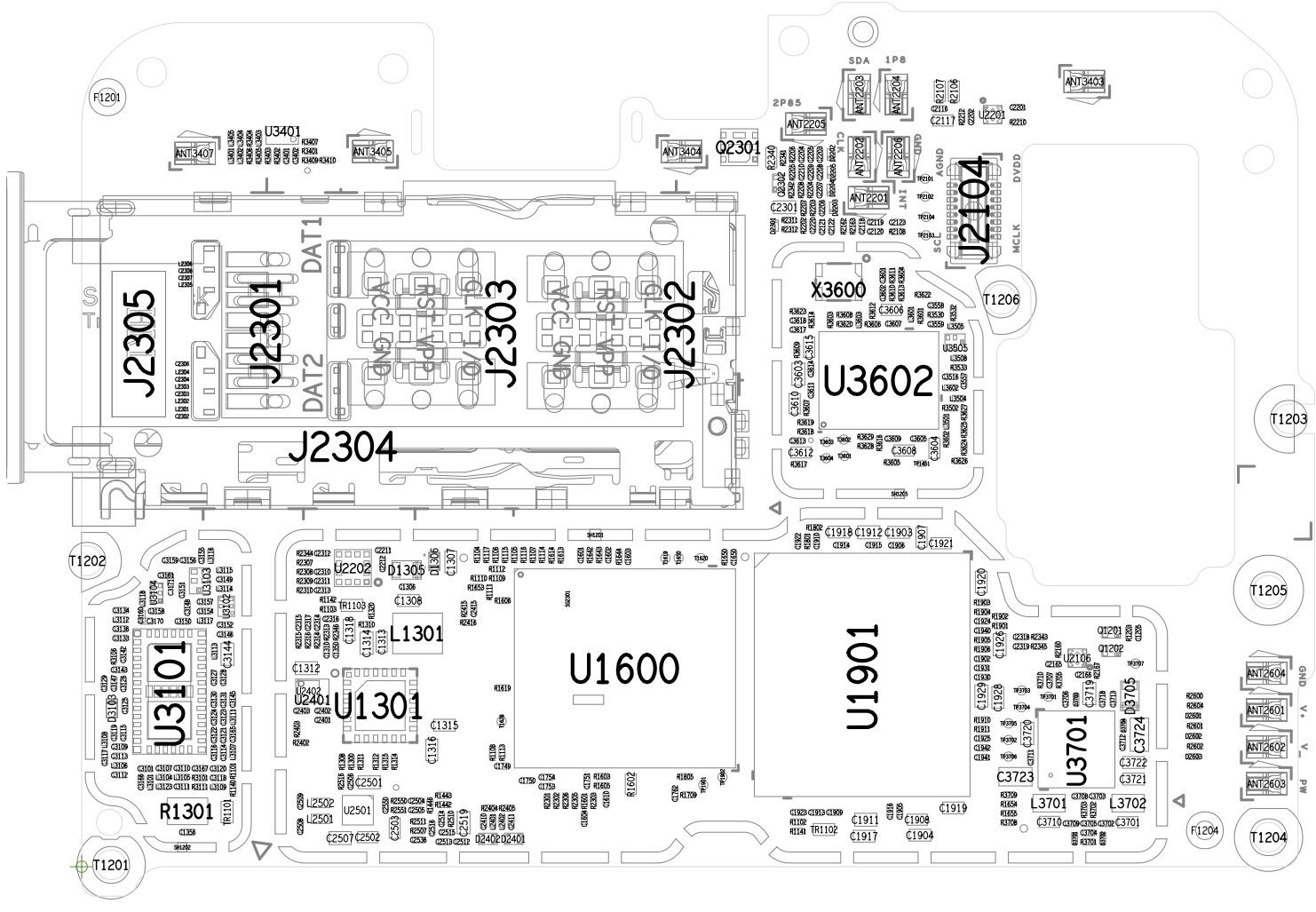
## 8-1. Components Layout

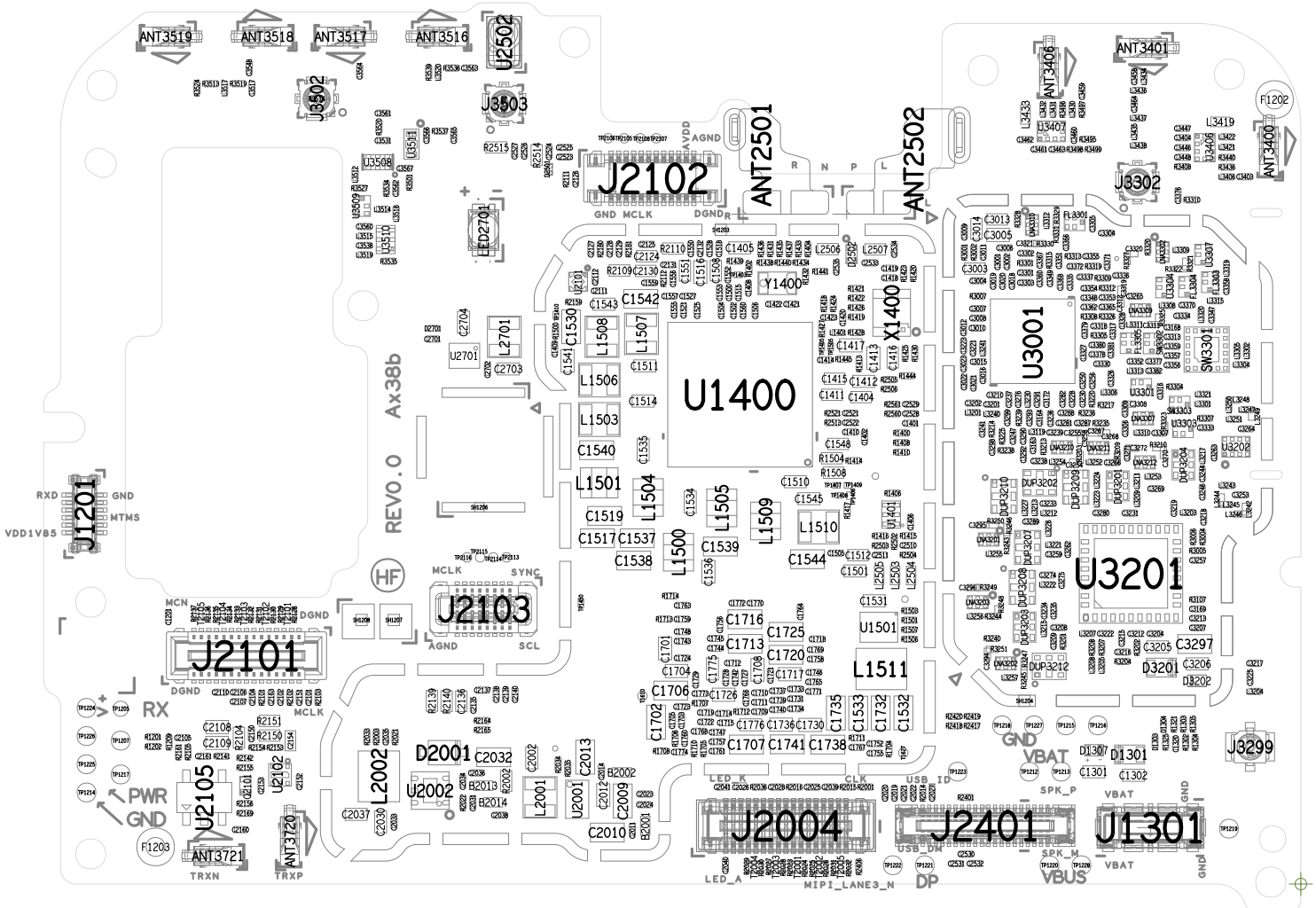
### PBA ( TOP )



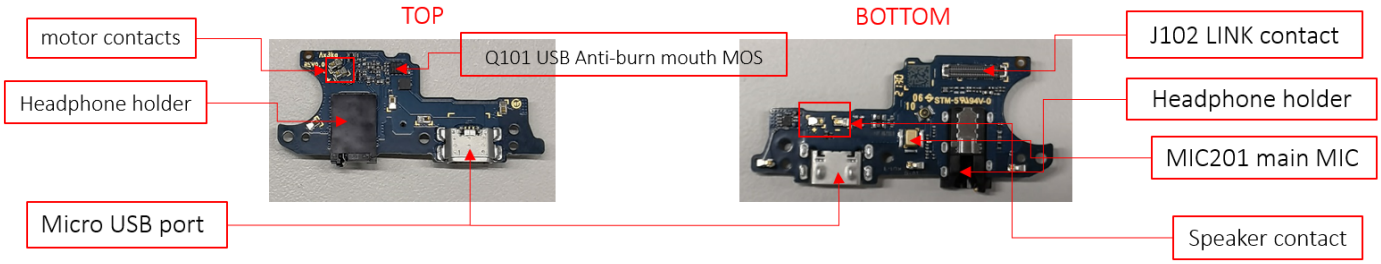

### PBA BOTTOM

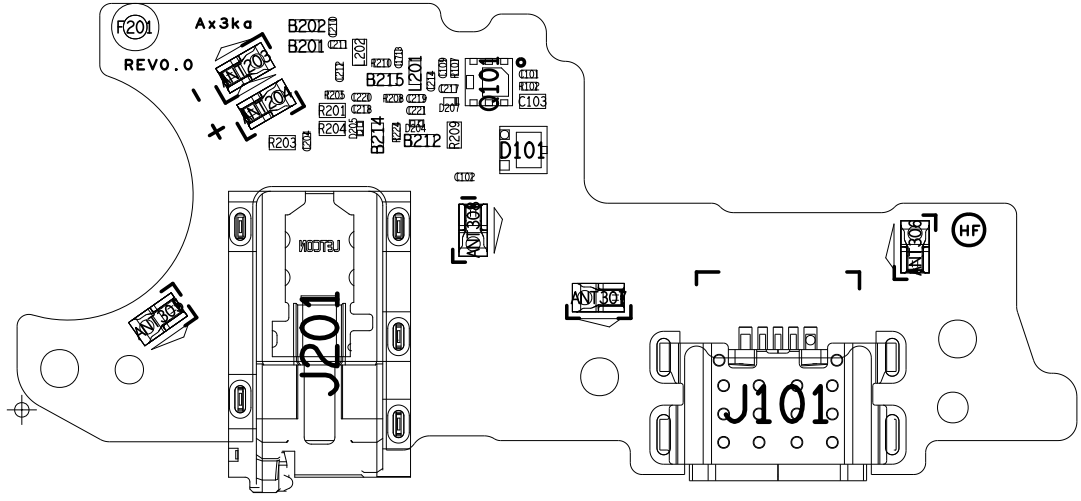


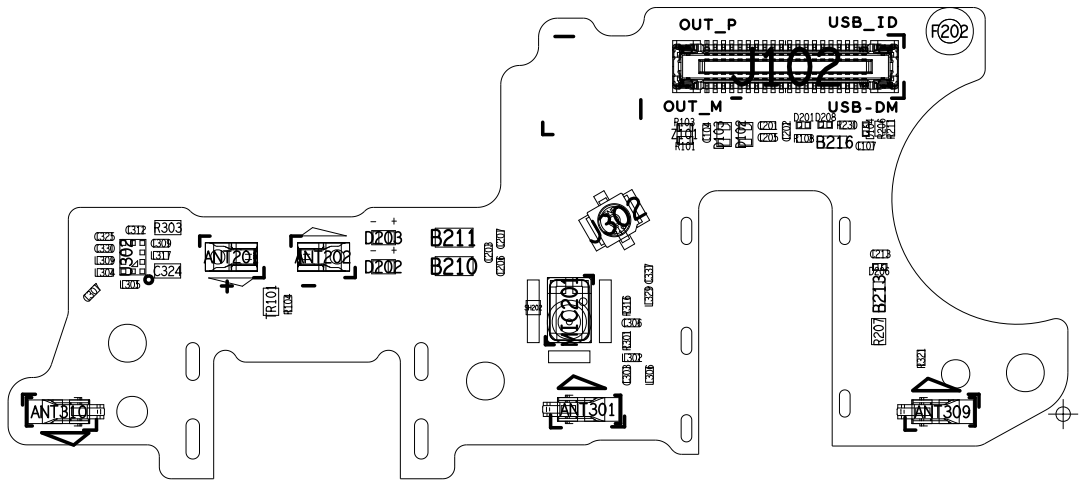

J2305
J2301
J2303
J2302
J2304
J2104
U3602
U1600
U1901
U3101
U1301
U3701
X3600
Q2301
U3401
U2202
U2401
U2201
L1301
R1301
T1201
T1202
T1203
T1204
T1205
T1206
F1201
F1204
ANT3407
ANT3405
ANT3404
ANT3403
ANT2205
ANT2204
ANT2203
ANT2202
ANT2201
ANT2604
ANT2603
ANT2602
ANT2601
DAT1
DAT2
CLK
CMD
VCC
GND
SDA
SCL
INT
MCLK
DVDD
AGND
GND
VBAT
PWM


ANT3519
ANT3518
ANT3517
ANT3516
U2502
U3502
J3503
J2102
ANT2501
ANT2502
ANT3406
ANT3401
F1202
ANT3400
J3302
U3001
U3201
U1400
X1400
Y1400
J1201
RXD
GND
MTMS
VDD1V85
REVO.0
Ax38b
HF
J2103
MCLK
SYNC
AGND
SCL
J2101
DGND
MCN
RX
PWR
GND
U2105
F1203
ANT3721
ANT3720
TRXN
TRXP
D2001
U2002
L2002
U2001
L2001
J2004
J2401
U1301
J3299
LED_K
LED_A
MIPI_LANE3_N
USB_DM
DP
SPK_P
SPK_M
VBUS
VBAT
U1501
L1511
D3201
D3202
D1307
D1301
C1301
C1302

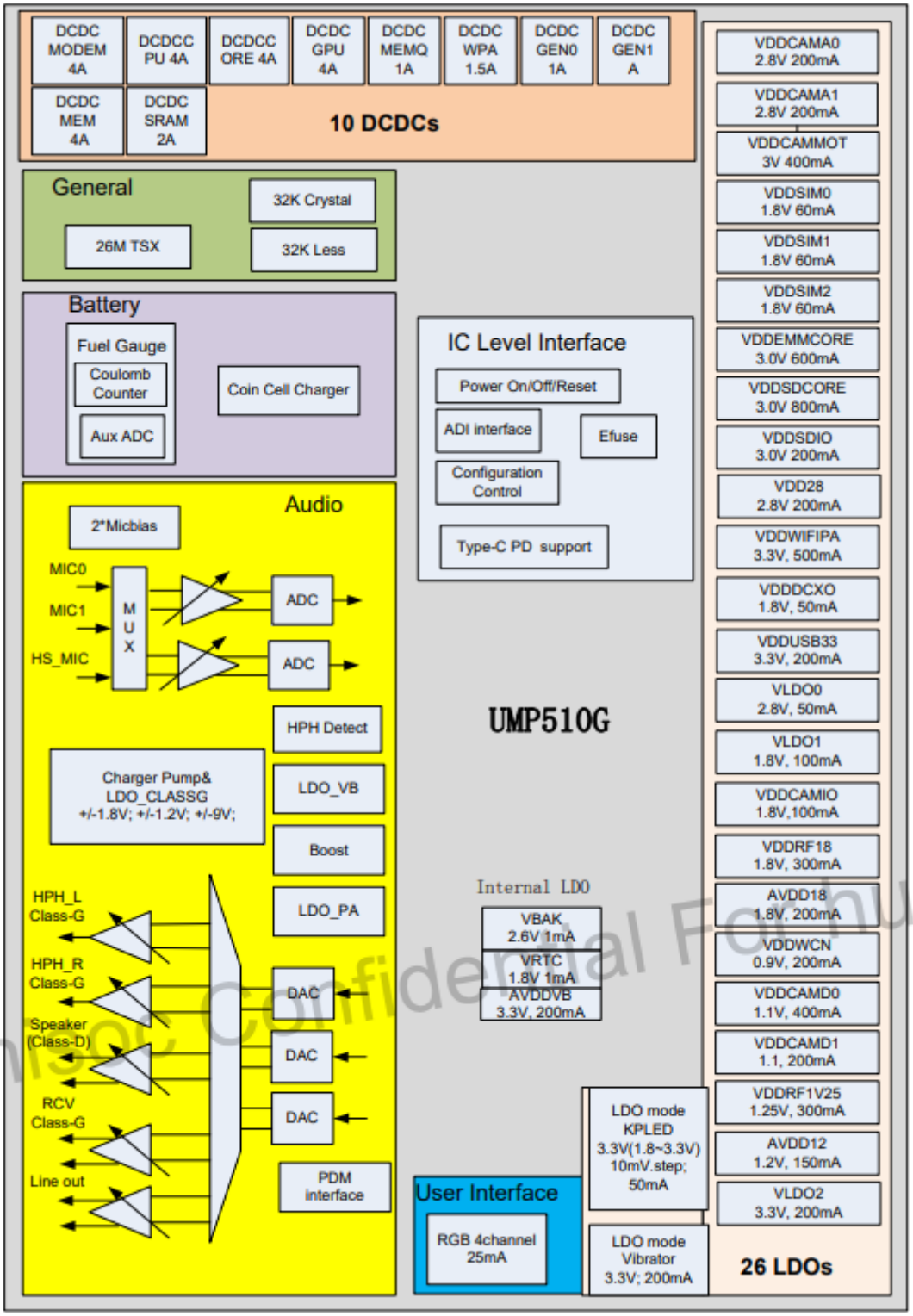
# 8. Level 3 Repair



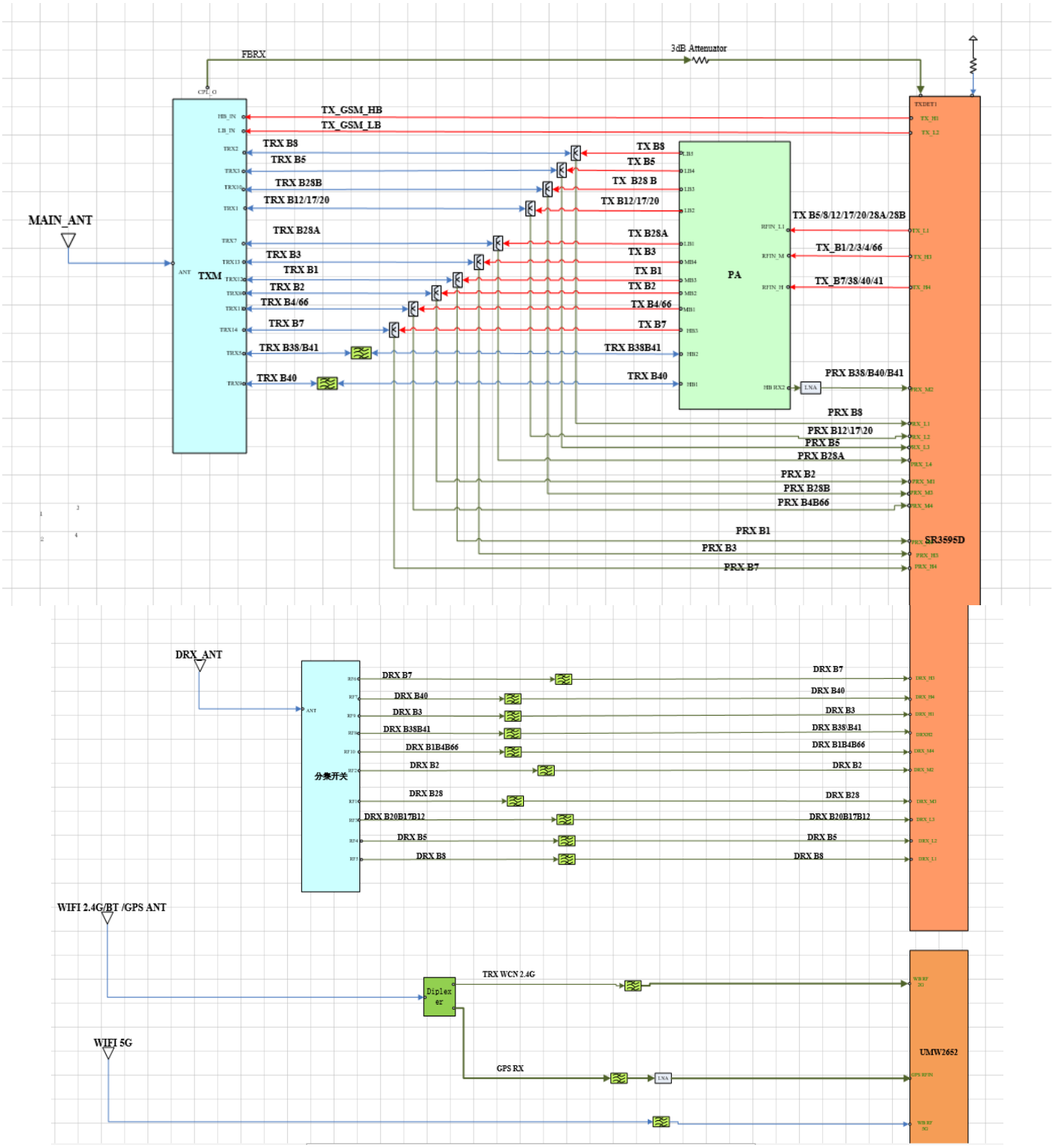

F201
Ax3ka
REV0.0
B202
B201
L202
B215
L201
Q101
C103
R201
R204
R203
B214
B212
R209
D101
ANT203
ANT204
ANT302
ANT303
ANT304
ANT301
HF
J201
J101


OUT_P
USB_ID
F202
J102
OUT_M
USB-DM
B216
J302
R303
C324
ANT201
ANT202
D203
D202
B211
B210
IC201
ANT310
ANT301
ANT309
R207
B213

# 8. Level 3 Repair

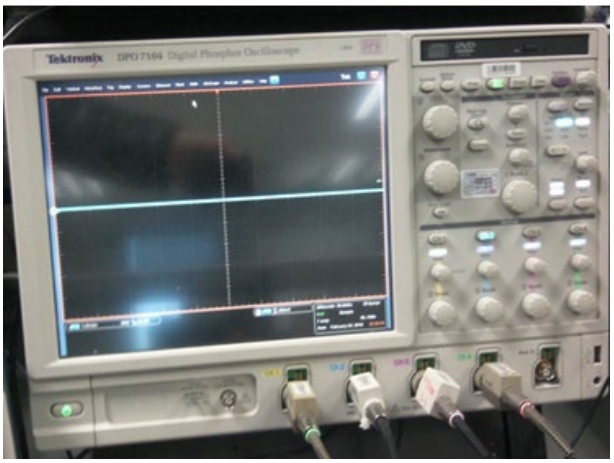
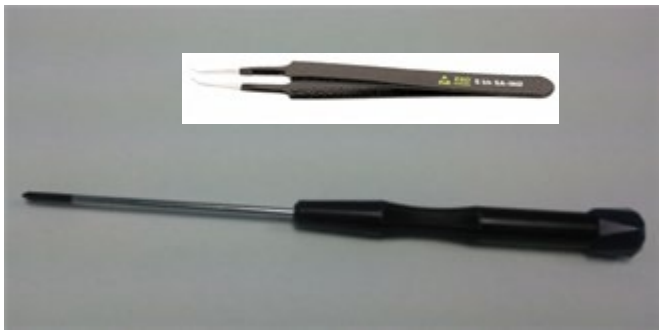
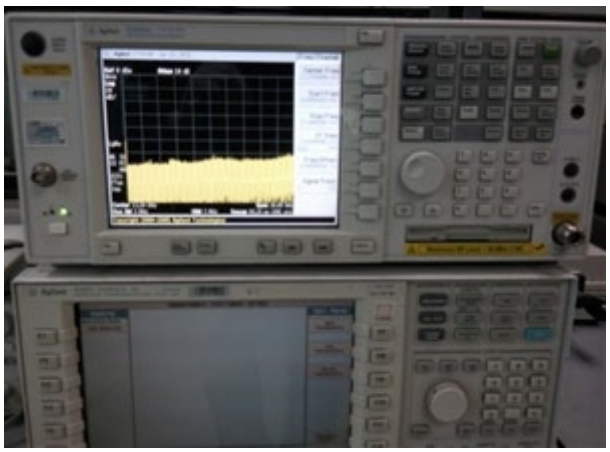


# 8. Level 3 Repair



# 8. Level 3 Repair

## 8-2. Flow chart of Troubleshooting.

| | |
|---|---|
|  |  |
| **Oscilloscope** | **Digital Multimeter** |
|  |  |
| **Power Supply** | **+ driver, ESD Safe Tweezer** |
|  |  |
| **8960 & Spectrum Analyzer** | **Soldering iron** |

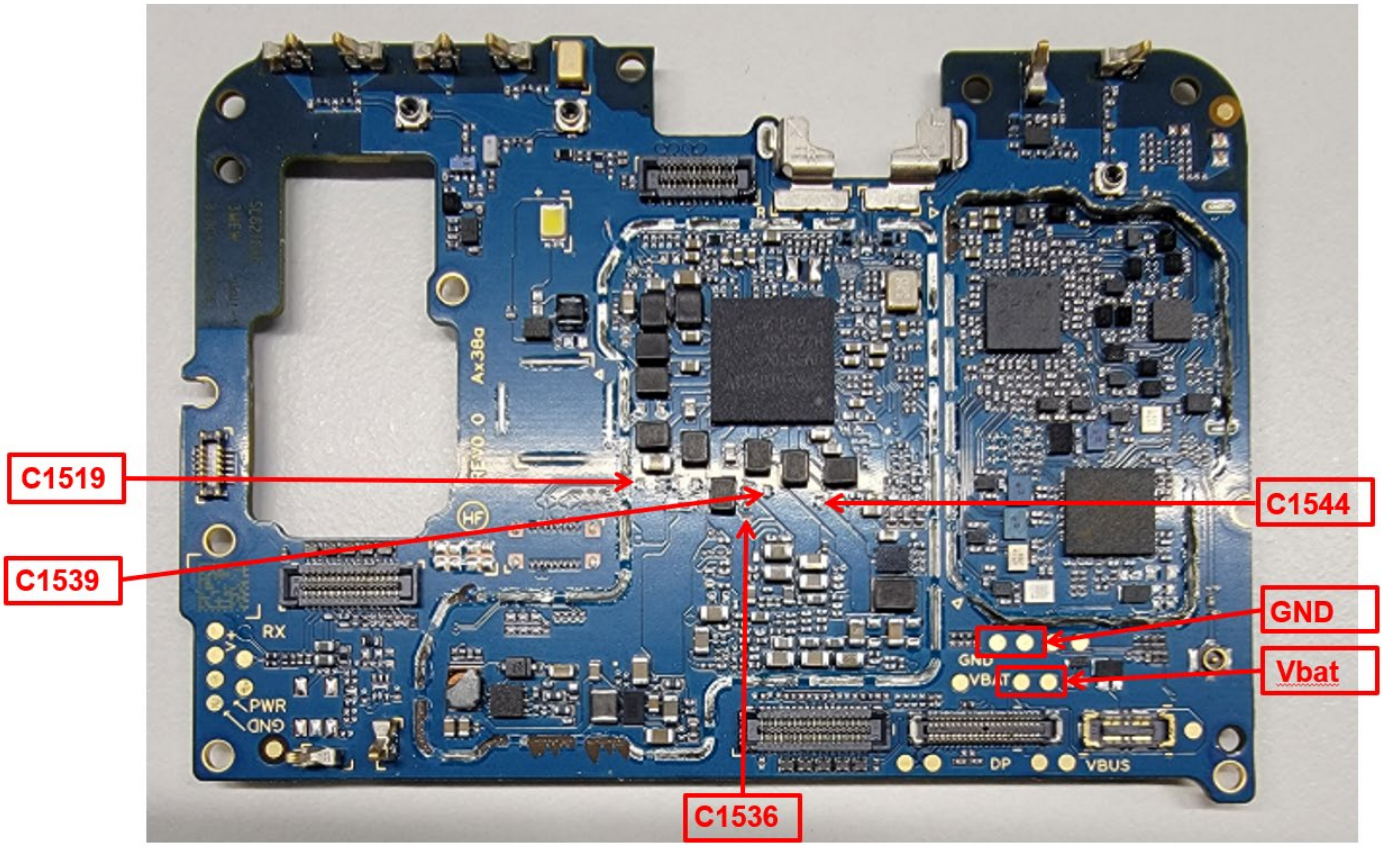
# 8. Level 3 Repair

## 8-3-1. No Power

### No Power

| Step | Check point | Result value | Defect point |
|---|---|---|---|
| 1 | Confirm the defect symptom.<br>(Do not confuse the screen problem.) | - | - |
| 2 | Check the Power button working physically | Normal | Go to the step 3 |
| | | Get Stuck / Sticky | Cleaning, Reassembly |
| 3 | Can USB charge normally ? | Yes | Go to the step 3.1 |
| | | No | Replace the battery |
| 3.1 | Can start the machine normally after charging ? | Yes | Cell phone under voltage, c ontinue charging |
| | | No | Go to the step 4 |
| 4 | Check the voltage level at Vbat and GND these t wo points is greater than 3.6V | Yes | Go to the step 5 |
| | | No | Replace the battery |
| 5 | Check the output voltage of U1000，C1536=0.8 V，C1539=0.8V，C1519=0.8V，C1544=0.8V | If the output voltage is not normal,<br>Change the U1400 | |

### No Power (cont')

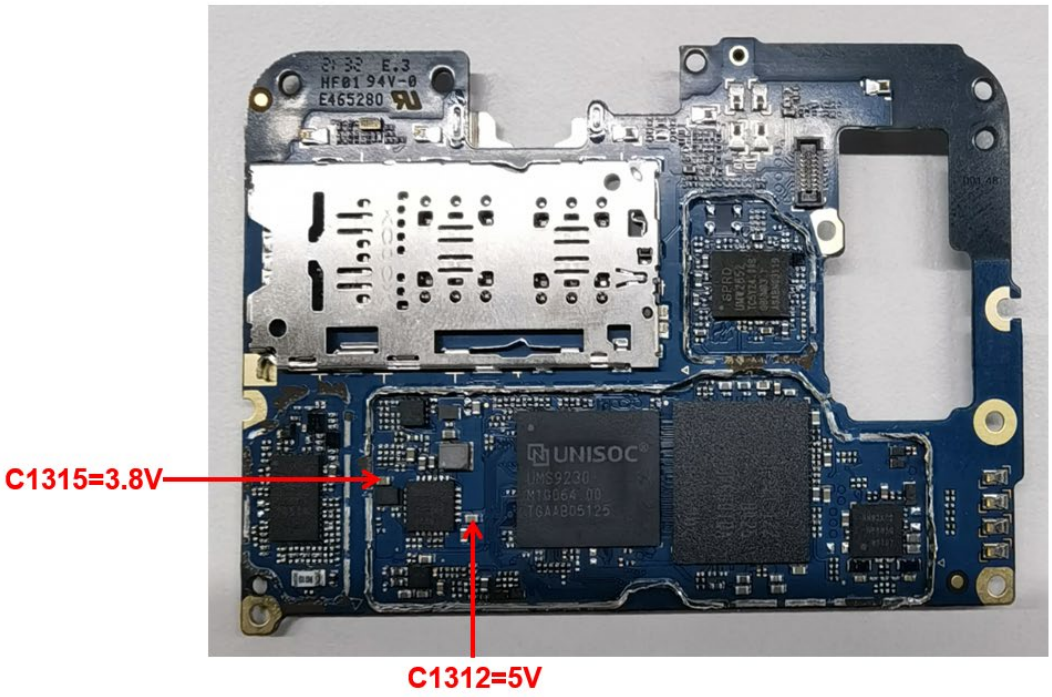


## 8-3-2. Charging

### No Charging

| Step | Check point | Result value | Defect point |
|---|---|---|---|
| 1 | Confirm the defect symptom | - | - |
| 2 | Replace a battery. | Solved | Go to the step 2.1 |
| | | Not solved | Go to the step 3 |
| 2.1 | Charge the customer battery during 5min at least. | Solved | Totally discharged battery |
| | | Not solved | Go to the step 3 |
| 3 | Disassemble and check I/F connector visually | Dust | Clean I/F connector |
| | | Damage | Replace I/F connector |
| | | Normal | Go to the step 4 |
| 4 | Check the VBUS_USB_IN(C1312)=5V | C1312 = 5V | Go to the step 6 |
| | | If not the correct value | Replace U2401 |
| 5 | Battery is Charging nomal | No | Replace U1301 |
| 6 | Check whether the voltage at both ends of C13 15 capacitor is greater than 3.6V | If the output voltage is not normal, Change the U1301 | |

### No Charging

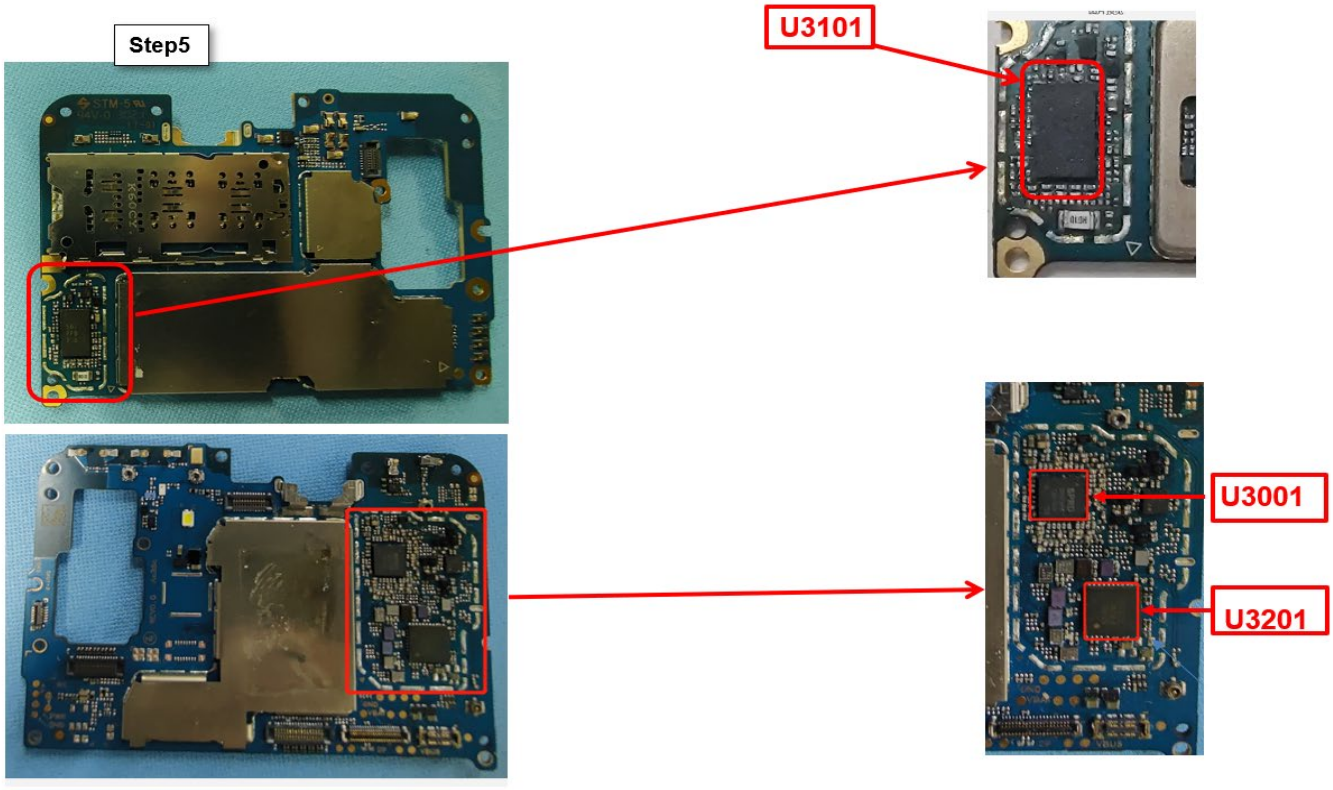


## 8-3-3. Call problem

### Call Problem (with RF test equipment)

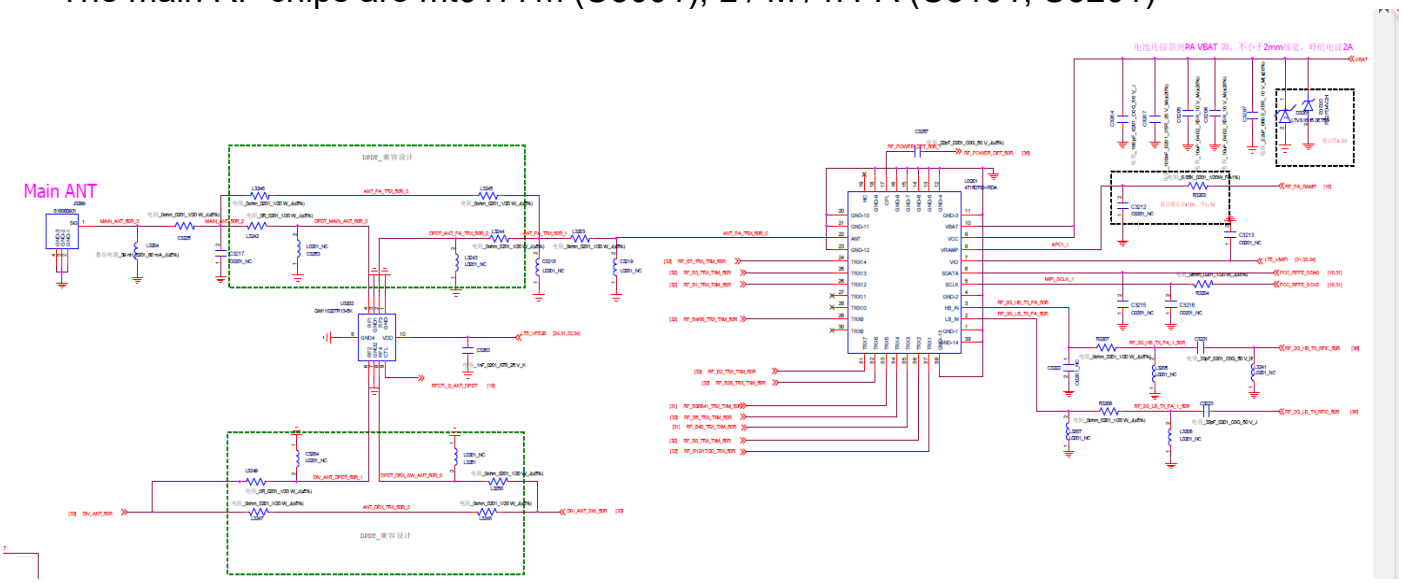
| Step | Check point | Result value | | Defect point |
|---|---|---|---|---|
| 1 | Confirm the defect symptom | - | | - |
| 2 | RF radiation test | Pass | | Network or Settings |
| | | Fail | | Go to the next step |
| 3 | RF calibration | Pass | | Go to the step 4 |
| | | Fail | | Go to the step 5 |
| 4 | RF radiation test | Pass | | Repaired |
| | | Fail | | Except PBA<br>(Coaxial cable, Antenna, Shielding condition) |
| 5 | A type of failure | TX | 2G | TXM(U3201)<br>TRANSCEIVER(U3001) |
| | | | 3G/LTE | PA(U3101)<br>TXM(U3201)<br>TRANSCEIVER(U3001) |
| | | RX | 2G | TRANSCEIVER(U3001)<br>TXM(U3201) |
| | | | 3G/LTE | TRANSCEIVER(U3001)<br>TXM(U3201) |

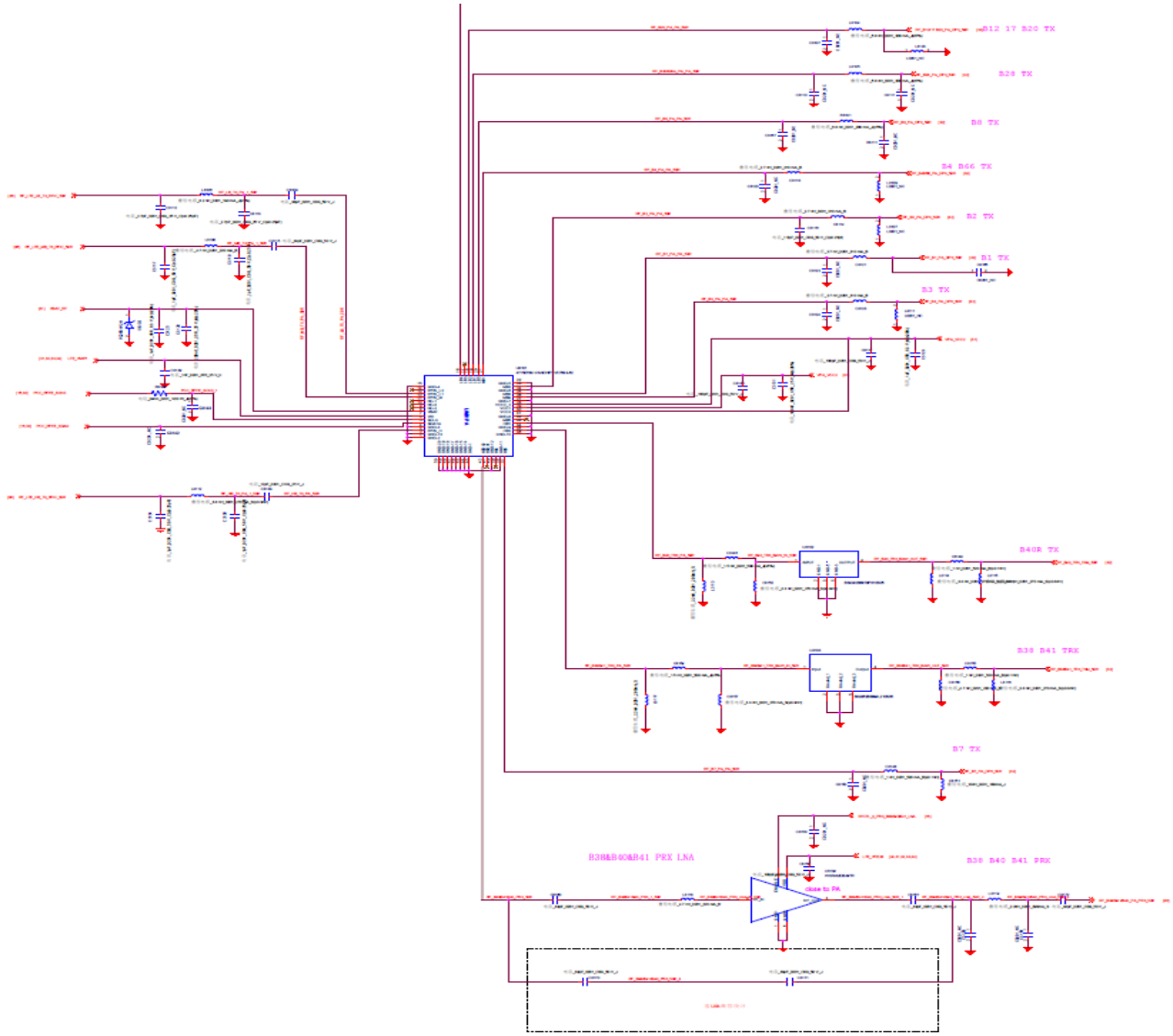
### Call Problem



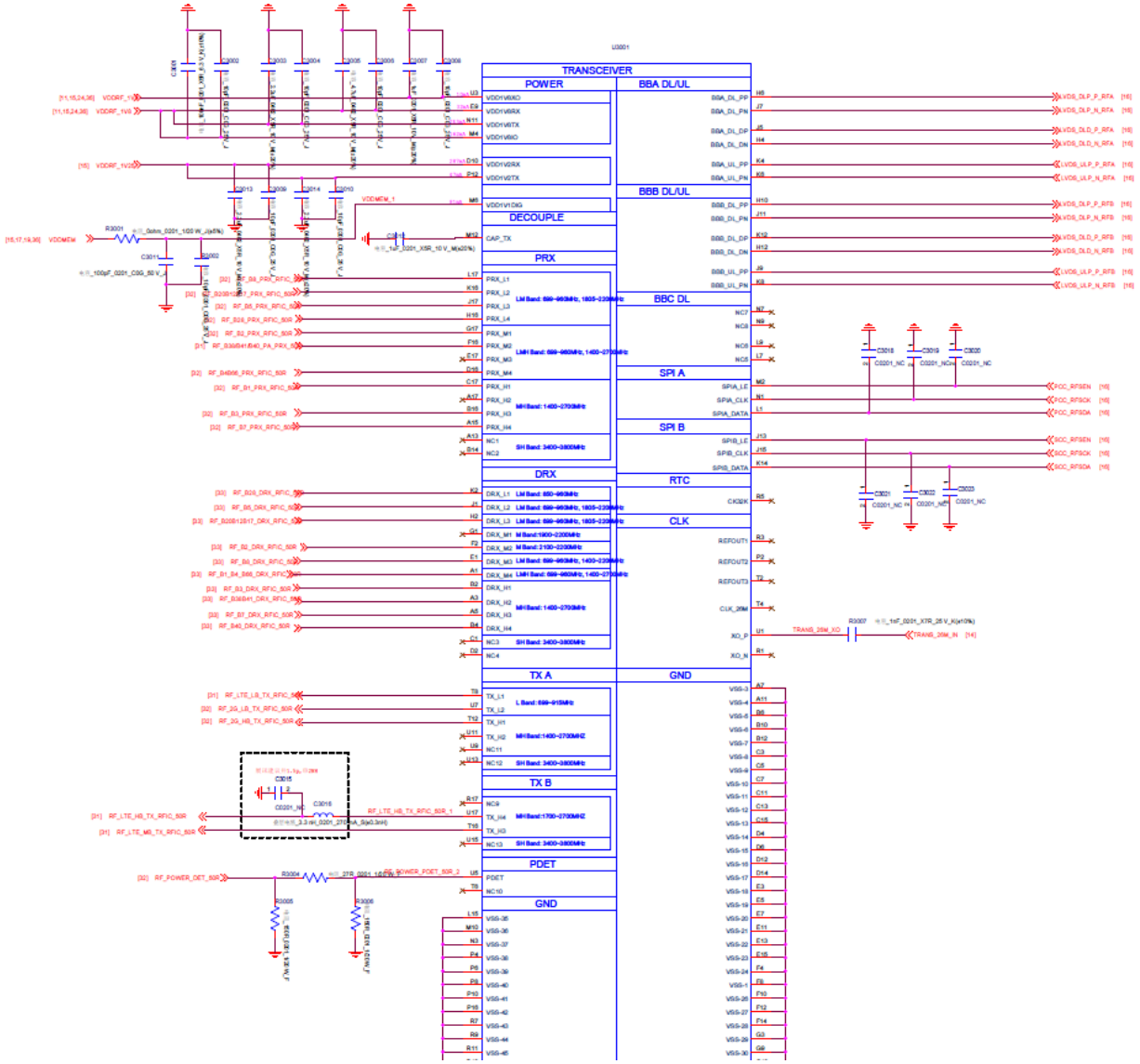
# 8. Level 3 Repair

- The main RF chips are mt6177m (U3001), L / M / h PA (U3101, U3201)



# 8. Level 3 Repair

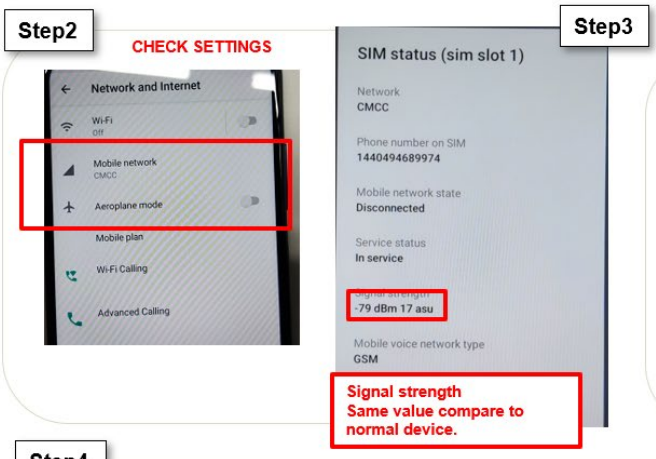


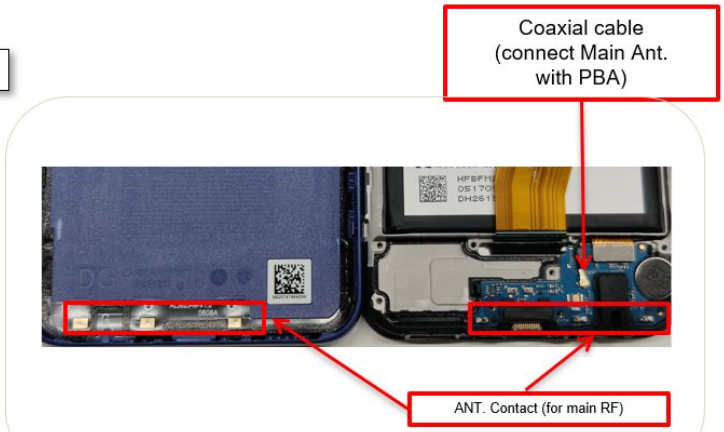
# 8. Level 3 Repair

## Call Problem (without RF test equipment)

| Step | Check point | Result value | Defect point |
|---|---|---|---|
| 1 | Confirm the defect symptom | - | - |
| 2 | Check the settings<br>(airplane mode, Mobile networks) | Abnormal | Settings |
| | | Normal | Go to the next step |
| 3 | Check the signal strength of the device.Settings-><br>About phone->SIM status->Signal strength.<br>(Compare to normal device) | Abnormal | Go to the next step |
| | | Normal | Network |
| 4 | Check the RF parts except PBA.<br>(Coaxial cable, Antenna, Shielding condition, etc..) | Broken, dust, corrosion | RF parts |
| | | Loose fitting | Connection |
| | | Normal | Go to the next step |
| 5 | Check the status visually(crack, missing, Corrosion..etc) of RF components.<br>(compare to normal PBA)<br><br>TRANSCEIVER(U3001)<br>TXM(U3201)<br>PA(U3101)<br>DUP3201,DUP3202,DUP3204 etc. | Abnormal | 4G PA MMBPA (U3101)<br>2G PA TXM(U3201)<br>TRANSCEIVER(U3001) |
| | | Normal | CP(Call Processor)<br>(U1600)<br>PMIC(U1400) |

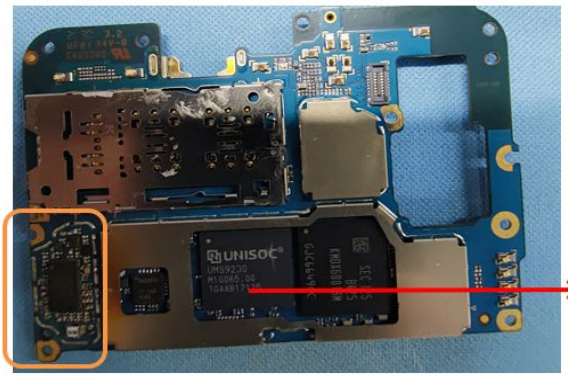
## Call Problem

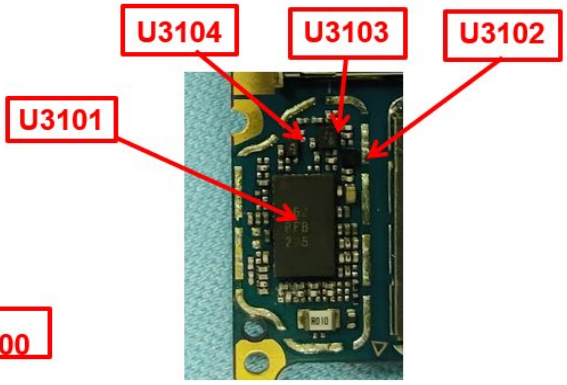


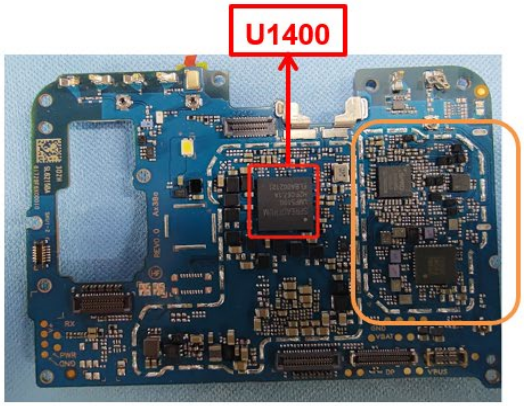



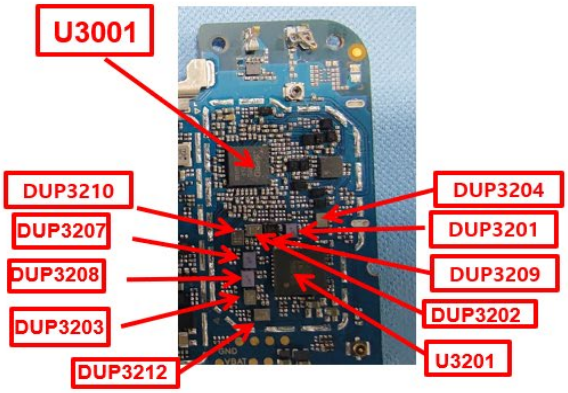

## Call Problem

Step5



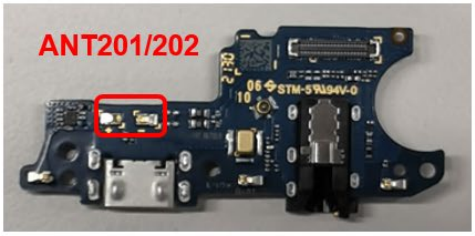



# 8. Level 3 Repair

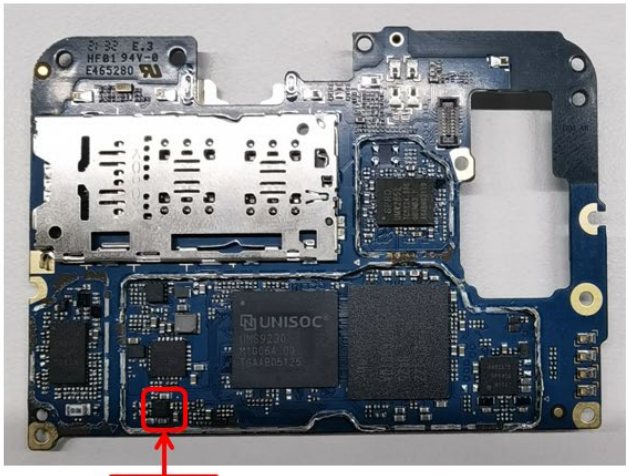
## Sound Problem

| Step. | Check point | Result value | Defect point |
|---|---|---|---|
| 1 | Confirm the defect symptom. | - | - |
| 2 | *#88*# → speaker | No sound | Go to the next step |
| | | Normal | S/W or Settings |
| 3 | Replace the speaker, and also replace the Assy case-rear to use a new speaker tape. | Solved | speaker |
| | | Not solved | Go to the next step |
| 4 | Activate the speaker path. (*#0*# → Speaker) | - | - |
| 5 | Check C-clips of Sub PBA ANT201,ANT202 | normal | Go to step 6 |
| | | defect | Replace C-Clip |
| 6 | Check the PWM output at ANT201 | Yes | Go to step 7 |
| | | No | Replace Link FPCB |
| 7 | Check the PWM output at ANT201 | Yes | Go to step 8 |
| | | No | Replace SUB PBA |
| 8 | Check the PWM output at U2501 | Yes | Replace speaker module |
| | | No | Replace U2501 on MAIN PCB |

## Sound Problem







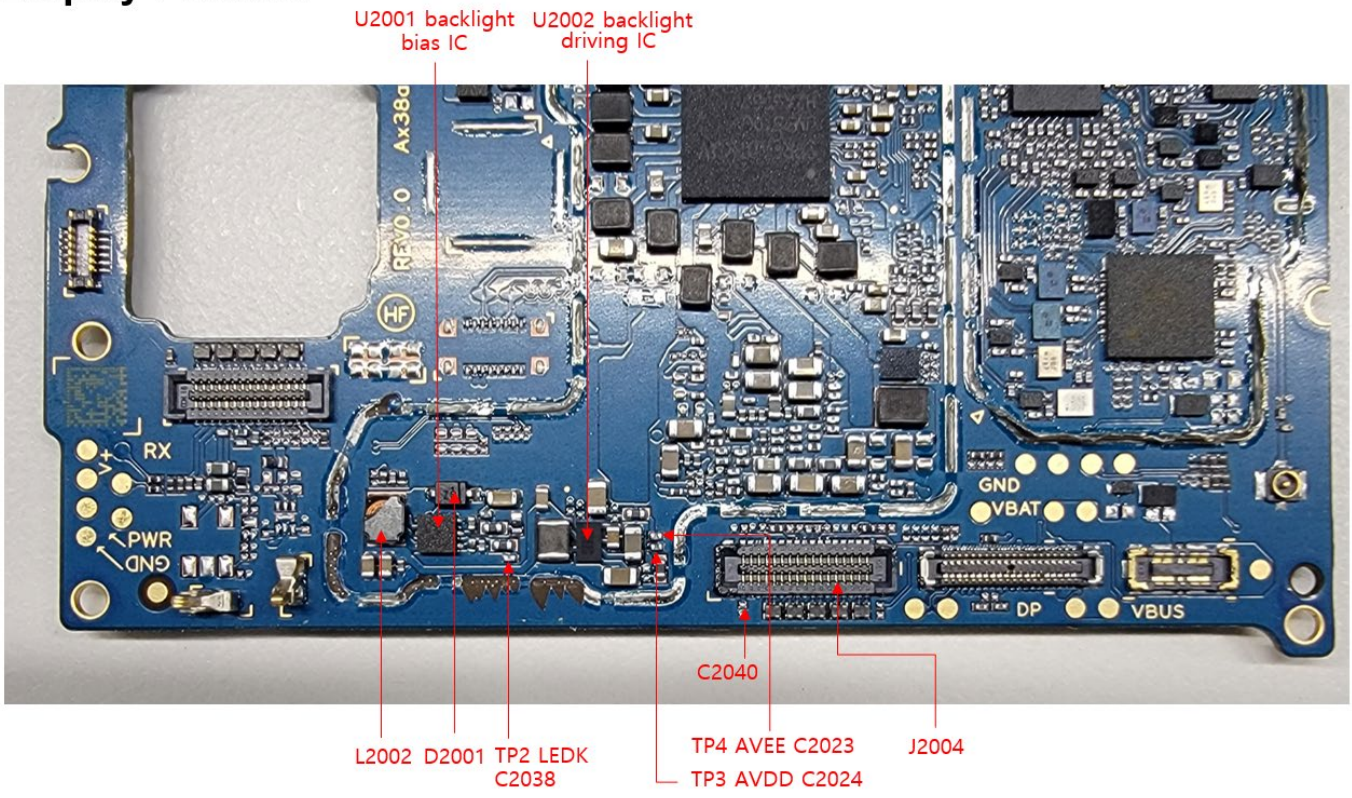

# 8. Level 3 Repair

## 8-3-5. Display Problem

## Display Problem

| Step | Check point | Result value | Defect point |
|---|---|---|---|
| 1 | Confirm the defect symptom | - | - |
| 2 | Check the LCD connector (J2004) | Broken, dust, corrosion | LCD connector (J2004) |
| | | Loose fitting | Connection |
| | | Normal | Go to the next step |
| 3 | Replace the LCD | Solved | LCD |
| | | Not solved | Go to the next step |
| 4 | Connect a LCD, and display on with a power supply (power supply voltage : 4.0V) | - | - |
| 5 | Check LCM_AVDD = 6.0V (C2024) LCM_AVEE = -6.0V (C2023) | No | Replace the U2201 |
| | | Yes | Go to step 6 |
| 6 | Check LCD_LEDA = 22V (C2040) LCD_LEDK= 0.2(C2038) | No | Replace the U2002，L2002，D2001 |
| | | Yes | Replace the Display module |

## Display Problem



# 8. Level 3 Repair

## 8-4. Service Schematics

### ■ U1400 _BB chip IC , Digital Baseband Processor(Top)

**2.2 FCBGA Pinout**

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | NC | EXT XTL_ EN1 | FB_ WP A | VBAT DRV_ 1 | LX_W PA | LX SRA M | VBA TDR V_1 | ADI_ D | AUD _DA SYN C | | AUD _SC LK | VSS DRV | LX_M ODE M | VBA TDR V_3 | VBA TDR V_3 | LX_C ORE | VSS DRV | VSS DRV | NC |
| B | EXT_ XTL_ EN2 | T_DI G | FB_ WP A | VBAT DRV_ 1 | LX_W PA | LX_ SRA M | VBA TDR V_1 | AUD DAD0 | AUD AD SYN C | DCD C_CP U_EN | AUD _AD D0 | VSS DRV | LX_M ODE M | VBA TDR V_3 | VBA TDR V_3 | LX_C ORE | VSS DRV | VSS DRV | VSS DRV |
| C | EXT_ XTL_ EN0 | EXT_ XTL_ EN3 | | | | | FB_ SRA M | ADI_ SCLK | | | CHI P_S LEE P | VSS DRV | LX_M ODE M | VBA TDR V_3 | LX_ COR E | | | LX_C PU | LX_C PU |
| D | VSS DRV _BST | VSSD RV_B ST | SP K_ N | VSS_ PA | SPK_ P | | | DCD C_GP U_EN | | ANA_ INT | EXT _RS T_B | | | | | | LX_ CPU | VBA TDR V_3 | VBA TDR V_3 |
| E | LX_B ST | LX_B ST | | VSEN _P | IVSE N_N | ISEN _P | | VSSD RV | AUD _DA D1 | CLK3 2K | PTE STO | FB_ MOD EM | | FB_ CO RE_ N | | | VBA TDR V_3 | VBA TDR V_3 | VBA TDR V_3 |







| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F | VBA T_BS T | VBAT _BST | | | VBST _PA | | | VSSD RV | WPA _AP CIN | | | FB_ MOD EM N | | FB CO RE | FB CPU _N | FB_ CPU | VBA TDR V_3 | LX_ GPU | LX_ GPU |
| G | MIC2 _BIA S | MIC2 _N | | | VBST _PA | | | VSSD RV | | | | | | | | | LX_ GP U | VSS DRV | VSS DRV |
| H | | MIC2 _P | MIC 1_B IAS | HEAD SET_L _INT | GND_ DET | AGN D_A NA1 | AGN D_A NA2 | VSS | | | VSS | VSS | | | FB_ GPU | FB_ GPU _N | VSS DRV | VSS DRV | VSS DRV |
| J | AVD D_V B | HEA DMIC BIA S | | HEAD MIC_I N_DE T | HEAD MIC_ N | AGN D_V B | MIC 1_P | VSS | DPIN | DMIN | | VBA TB | PROD T | | | VPP | | LX_ MEM | LX_ MEM |
| K | CP_ CAP _P | CP_C AP_N | VB AT AU D | | HEAD MIC_ P | | MIC 1_N | VSS | DPO UT | DMO UT | VCH G | VBA T_SE NSE | | | | PBIN T | VBA TDR V_2 | VBA TDR V_2 | VBA TDR V_2 |
| L | | VDD_ CG GEN1 | | VDD_ CP | | VSS | | | | VSS | CHG _PD | BAT_ DET | SENS E_P | SEN SE N | | FB_ MEM | | LX_ MEM Q | LX_ MEM Q |
| M | VNE G_C P | VDD CG_ GEN0 | RC V_P | RCV N | HP_R | DNS _D0 | DNS _D1 | | | | | | EXTR STN | | PBIN T2 | FB MEM Q | VSS DRV | VSS DRV | VSS DRV |
| N | | AMP G_VC OM | HP _L | | | | CLK 26M | | | | | | | | | | VBA TDR V_2 | LX_ GEN 1 | LX_ GEN 1 |
| P | VNE G_D RV | CC1 | | | | VSS | | VBAT A | VBA TA | | VBA TA | VBA TA | | | | VDC DC_ GEN 1 | | VBA TDR V_2 | VBA TDR V_2 |
| R | | CC2 | SW | OPTIO N3 | OPTI ON4 | OPTI ON1 | VCO NN | VDDL DO0 | VDD VIB | | VBA TA | RGB _IB0 | VDDC AMIO | ADC I1 | | | | LX_ GEN 0 | LX_ GEN 0 |
| T | VSS _TSX _B | VSS_ TSX_ A | RE F_ OU T3 | VSS_T SX_A | OPTI ON2 | VBA T_B K | VDD RTC | | VDD LDO 1 | VDD USB3 3 | RGB _IB1 | RGB _IB2 | | ADC I4 | ADC I6 | | | VSS DRV | VSS DRV |
| U | | REF_ OUT0 | RE F_ OU T2 | VSS_T SX_A | DCXO LOW CUR | | OPT ION 6 | | | VDD CAM A1 | | VDD KPL ED | | | ADC I2 | ADC I3 | VDD CA MD1 | VDC DC_ GEN 0 | VDC DC_ GEN 0 |
| V | REF _OU T1 | VSS TSX_ A | RE F_ OU T4 | TSEN _VRE FN | TSEN _IN | RTC _32K _KO | OPT ION 5 | VDDS IM1 | VDD SIM0 | VDDL DO2 | VDD 28 | VDD SDIO | VDDE MMC CORE | VDD WIFI PA | AVD D18 | VDD RF18 | AVD D12 | VDD WCN | VIN WCN |
| W | NC | XO_N | XO_ P | | TSEN _VRE FP | RTC _32K _KI | | VDD1 8_DC XO | VDD SIM2 | | VDD CAM A0 | | VDDC AMM OT | | VDD SDC ORE | | VDD RF1 V25 | VDD CAM D0 | NC |