E365 Trouble Shooting

Service Manual

Compal Communications, Inc.

△ Baseband Descriptions

1. **The mobile phone can't boot after inserting the battery?**

· STEP1. Check the energy of battery greater than 3.8v.(>3.8v)

a. to charge the battery. b. change the battery.

· STEP2. Check the battery connector

a. recombination. b.change the battery connector

· STEP3. Check the BTB connector between M/B and MMI

a. recombination

· STEP4. Check the MMI whether in normal

a. recombination

· STEP5. Check the software in correct

a. Re D/L

2. The mobile phone turn off automatically after turn on?

· STEP 1.Check battery if voltage enough greater than(>3.8v)

a. recombination b. Change battery

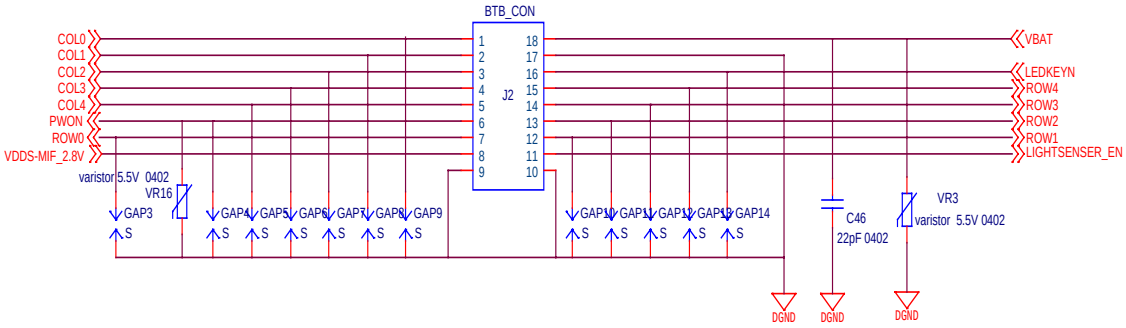
· STEP 2.Check ADC(3.4v) is correct

a. Re-adjustment ADC(3.4v)

·STEP 3.IF above-mentioned are all in normal condition then the problem could be caused by M/B.

STEP3.1check J2.Row4 and GND maybe short.

STEP3.2.check J2 Pwon and GND maybe short.



3. **The screen display can't search SIM card when insert SIM after turn on.**

· STEP 1.Check the SIM card whether to louse.

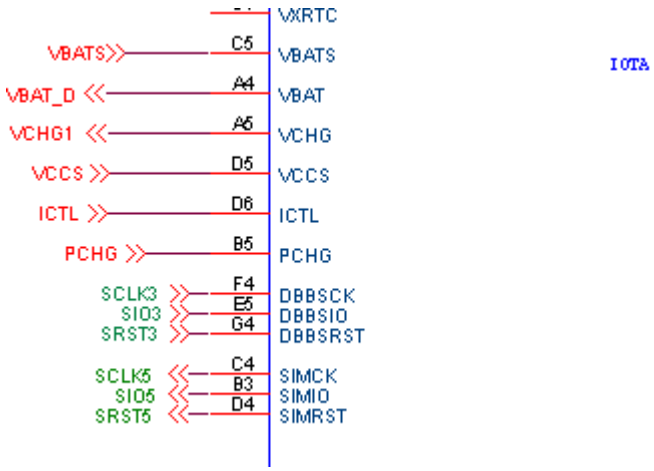
a. Change SIM card.

· STEP 2.Check the SIM connecter.

a. Change SIM connector.

·STEP 3.IF above-mentioned are all in normal condition then the problem could be caused by M/B.

a. if change SIM connector isn't ok,then change a new IOTA.



5. No display on LCD after turn on?

· STEP 1.Check the connector of LCD and FPC

a. recombination

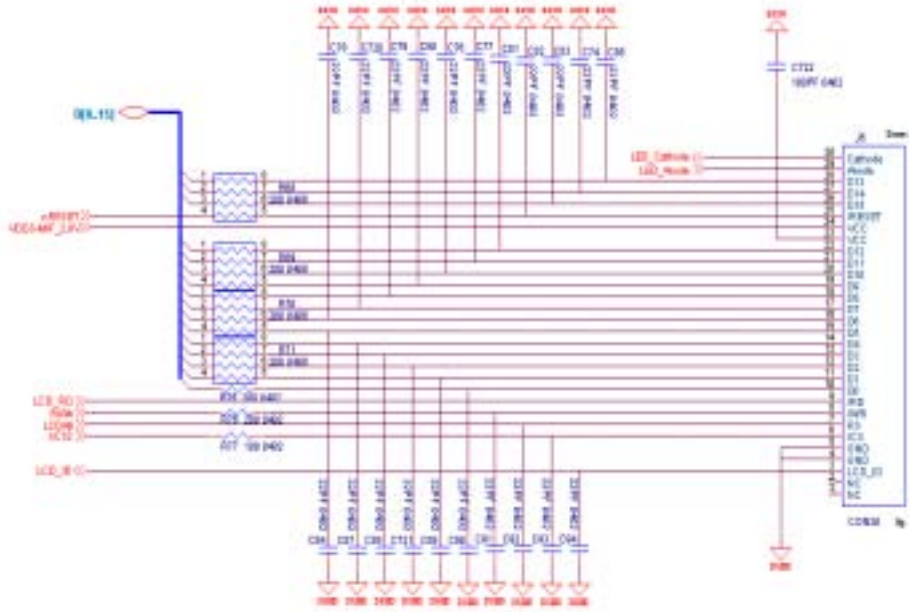
· STEP 2.Check the LCD whether to louse

a. Change LCD

·STEP 3.IF above-mentioned are all in normal condition then the problem could be caused by M/B.

STEP 3.1.checkVDDS-MIF_2.8V =2.8V (if VRMEM<2.7V, the LCD will not work)

STEP 3.2. check J6 every PIN's impedance, then you can find one of them has problem



6. Has not LCM backlight :

· STEP 1. Check SET is correct

a. To set up LCD light bright mode.

· STEP 2. Check LCD and M/B whether to connect

a. Recombination.

· STEP 3. Check LCD failure

a. Change LCD.

· STEP 4.IF above-mentioned are all in normal condition then the problem could be caused by M/B

STEP 1.Check U11 is slant.

STEP 2. when you press the keypad ,measure U11.4=2.7V

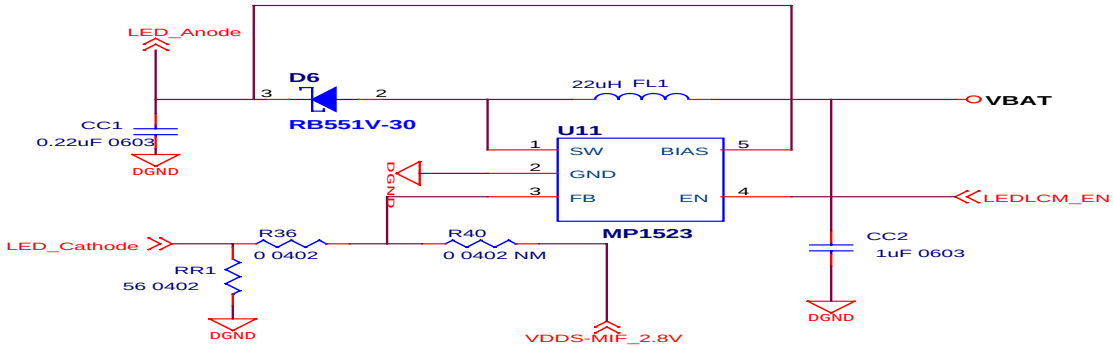
STEP 3. if RR1 have about 0.4V,then change U11.

STEP 4.if U11.4 < 2.7V,then change a new G2.

STEP 5.if step1 to step4 is ok, then check U6.3 about 10V

STEP 6.if U11.1<8V ,then change a new U11 or FL1、D6.

.



7. Has not Keypad Backlight ?

· STEP 1 Check the BTB connector between M/B and MMI

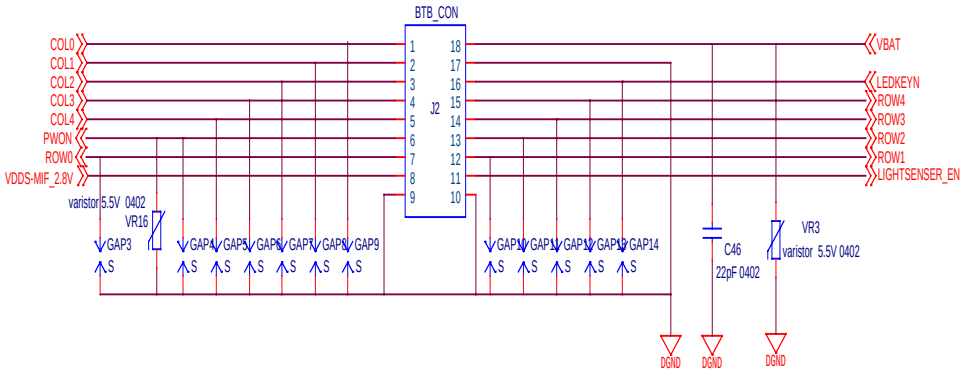
a. Recombination

· STEP 2.Check MMI whether to have problem

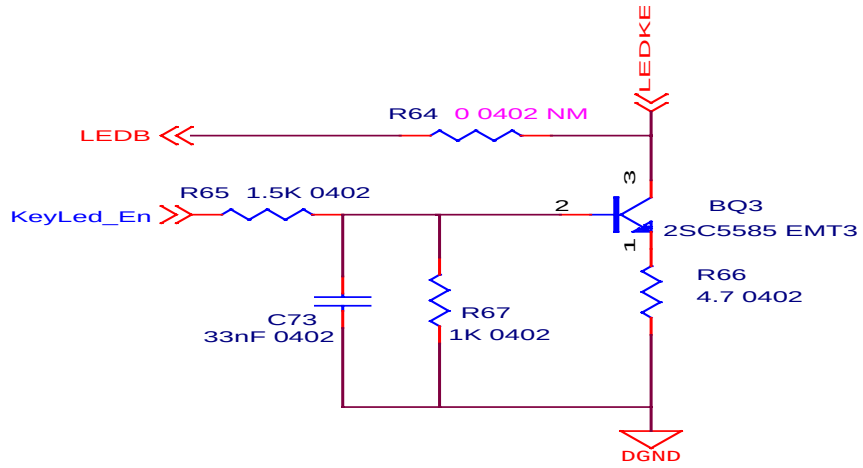
a. Change MMI

· STEP 3.IF above-mentioned are all in normal condition then the problem could be caused by M/B.

STEP3.1.use meter to check J2 every PIN impedance, then you can find one of them has problem.



Step3.2 LEDKEY_EN= 1.4 ~ 2.8V, BQ3.pin3 = 1V DC



8. Receiver has no key tone or sound.

· STEP 1.Check SET is correct

a. set up to key tone mode.

· STEP 2.Check Receiver pin is that slanting or sag

a. To adjust the Receiver pin.

· STEP 3.Check Receiver whether in normal

a. Change Receiver.

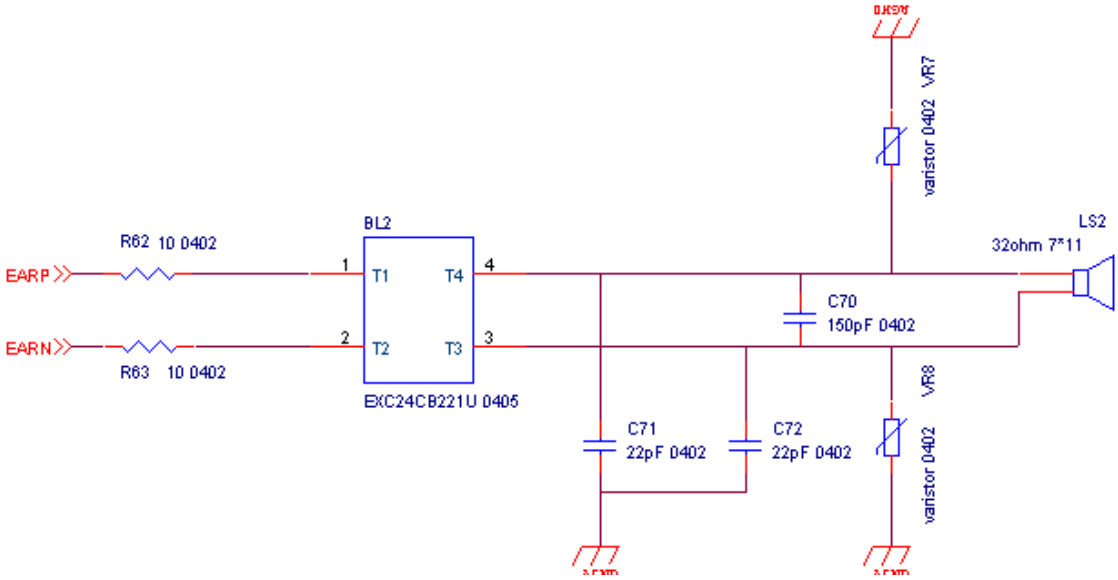
· STEP 4.Check M/B pad is that oxidation or dirty

a. Use a eraser to clean the pad.

·STEP 5.IF above-mentioned are all in normal condition then the problem could be caused by M/B

STEP 5.1.check every part impedance (R62、R63、C70、C71,C72、VR7、VR8).

STEP 5.2.if every part is ok, then change a new IOTA.



9. No ring tone

· STEP 1.Check SET is correct

a. Set up to ring mode.

· STEP 2.Check speaker hold has screwed

a. lock up a screw.

· STEP 3.Check speaker failure?

a. Change Speaker.

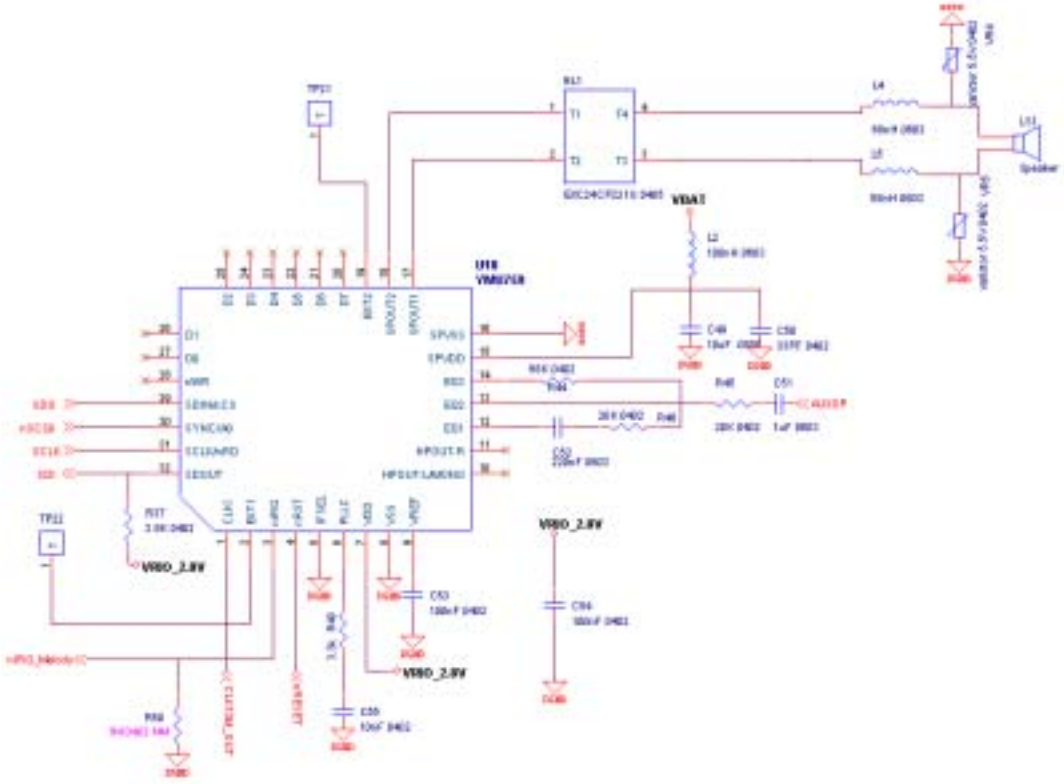
· STEP 4.Check speaker Connector damage?

a. Changed Speaker Connector.

· STEP 5.IF above-mentioned are all in normal condition then the problem could be caused by M/B.

STEP5.1.check MELODY “Pin17、Pin18” impedance.

STEP5.2.if step1 is ok, measure L2, C49, C50, R45, R46, R44,C51,C52,R37,C53,C54,C55,R48 impedance. Then you can find one of them has problem.



10. Can not charging:

· STEP 1.Check if you use the right adaptor

a. Change right adaptor.

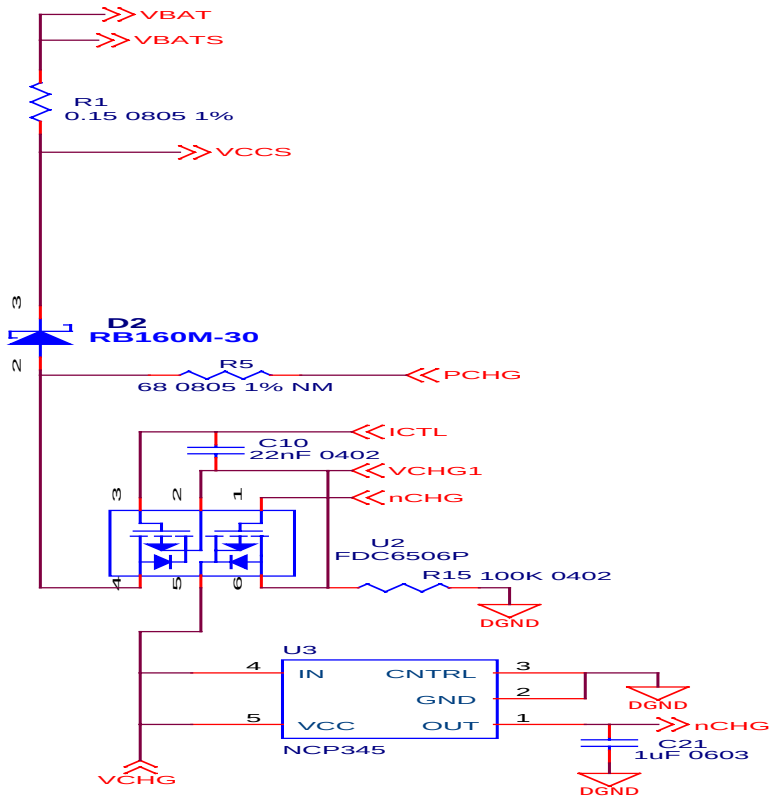
· STEP 2.Check I/O Connector failure?

a. Change I/O Connector.

· STEP 3.Check I/O Connector Pin1&Pin2 solder creak?

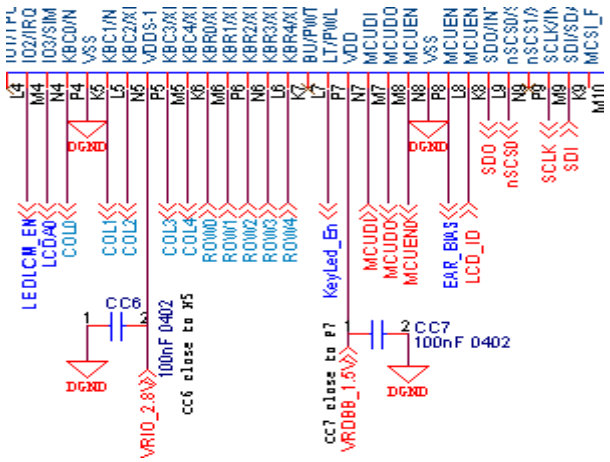
a. I/O Connector Pin1&Pin2 re-soldering.

· STEP 4.IF above-mentioned are all in normal condition then the problem could be caused by M/B. STEP 4.1.if U2.4 <5.8v,then change a new U2.
STEP 4.2.if step1 is ok, then change a new IOTA.



11. Key has not function

· STEP 1. Check the BTB connector between M/B and MMI is well?
a. Recombination.
· STEP 2. Check MMI whether to have problem
a. Change MMI.
· STEP 3.Check MMI Pad whether to oxidize and dirty
a. Use a eraser to clean the pad.
· STEP 4. .IF above-mentioned are all in normal condition then the problem could be caused by M/B.
STEP 4.1.check BTB connector is short.
STEP 4.2.if not short, then change a new G2



12. Has not vibration or vibrator can not stop.

· STEP 1.Check SET is correct

a. Set up to vibrate mode.

· STEP 2.Check Vibrator Pin is that slanting and sag

a. To adjust the Vibrator Pin.

· STEP 3. Check Vibrator failure?

a. Change Vibrator.

· STEP 4. Check M/B pad is that oxidation or dirty

a. Use a eraser to clean the pad.

· STEP 5.IF above-mentioned are all in normal condition then the problem could be caused by M/B.

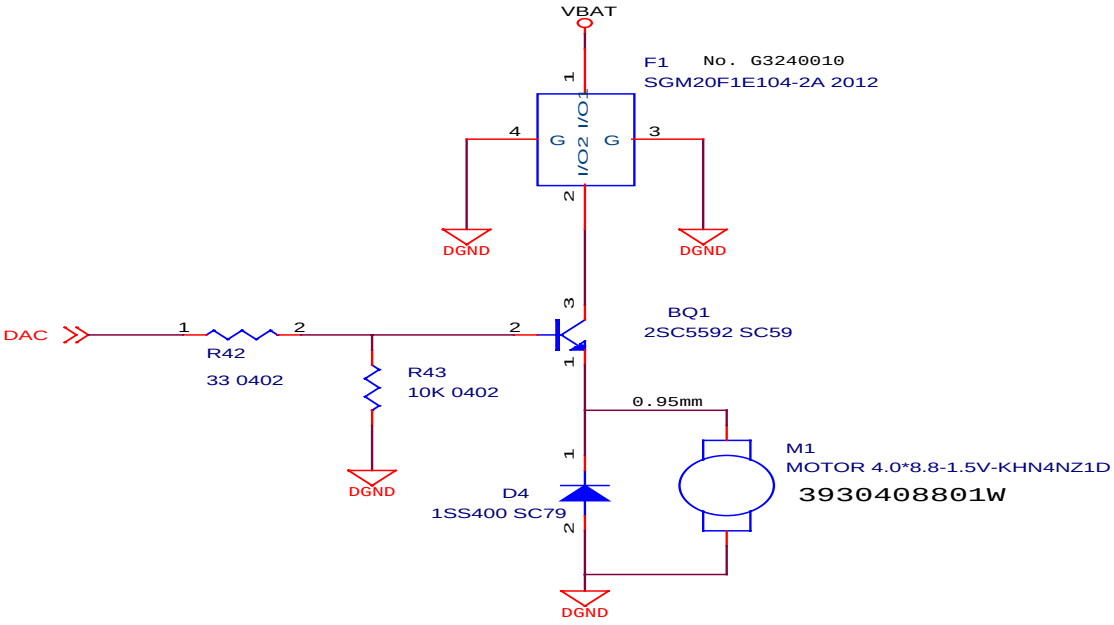
STEP 5.1.check F1 ,BQ1 ,R42, R43, D4 maybe slant.

STEP 5.2.check the voltage of BQ1.3 > 3.4V.

STEP 5.3.measure R42, R43 impedance is ok.

STEP 5.4.if step1 to step3 is ok, then change new BQ1

STEP 5.5.if above mention all in normal, then change a new IOTA.



13. Micphone can not work:

· STEP 1.Check MIC failure?

a. Change MIC.

· STEP 2.Check M/B pad is that oxidation or dirty

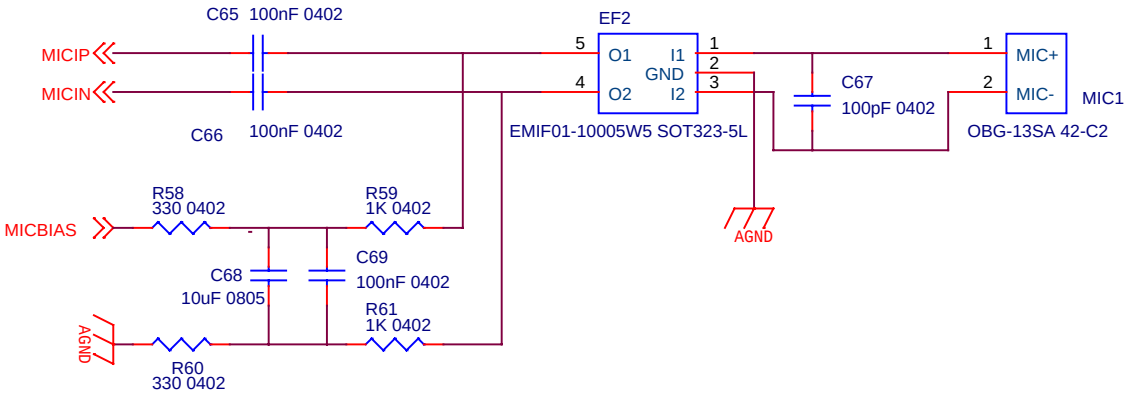
a. Use a eraser to clean the pad.

· STEP 3.IF above-mentioned are all in normal condition then the problem could be caused by M/B.

STEP 3.1.check EF2 is slant.

STEP 3.2.check C65、C66、C67、R59、R61、C68、C69、R58、R60 impedance.

STEP 3.3.if above mention all in normal, then change a new IOTA.



14. No sound on earphone?

· STEP 1.Check use Earphone is failure?

a. Change right Earphone.

· STEP 2. Check Earphone Jack is failure?

a. Change Earphone Jack.

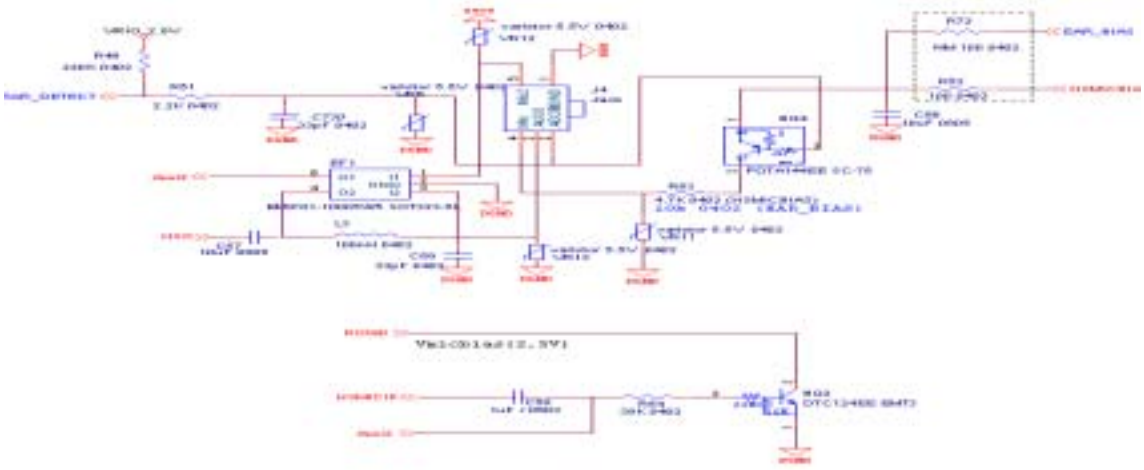
· STEP 3.IF above-mentioned are all in normal condition then the problem could be

caused by M/B.

STEP 3.1.if the earphone has no sound, check the soldering of SPACE R51.

STEP 3.2.if step1 is ok, then check EF1、L3、C57 soldering.

STEP 3.3.if above mention all in normal, then change a new SPACE IOTA



15. Has big Leakage current :

If leakage current > 100mA , battery on for a long time , we can touch the surface of component , If the component heat more than other , It may be fail .

If leakage current <100mA , replace component.

16. Can not record Time

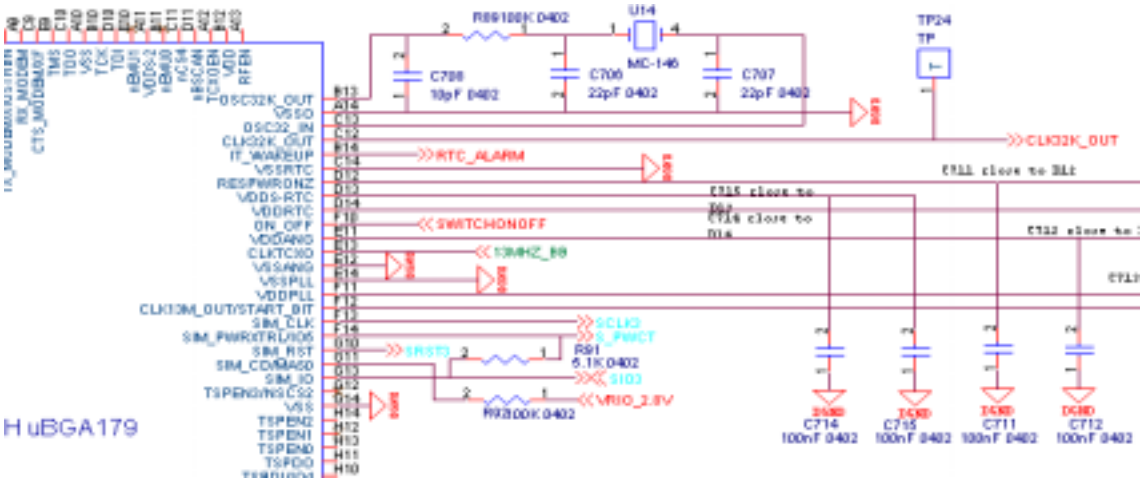
· STEP 1.Check RTC battery whether powerful or failure

a. Change RTC battery.

· STEP 2.IF above-mentioned are all in normal condition then the problem could be caused by M/B.

STEP 2.1.if TP24 <> 32.768K,then change a new U2.

STEP 2.2.if change a new U2 isn't ok ,then change a new G2.



17. Can not Download

· STEP 1.Check Download Tool SET

a. Reset.

· STEP 2.Check use right Data cable or failure

a. Change Data cable.

· STEP 3.Check I/O Connector failure

a. Change I/O Connector.

· STEP 4.Check I/O Connector Pin3-Pin16 solder creak

a. I/O Connector Pin3-Pin16 re-soldering.

· STEP 5.IF above-mentioned are all in normal condition then the problem could be caused by M/B.

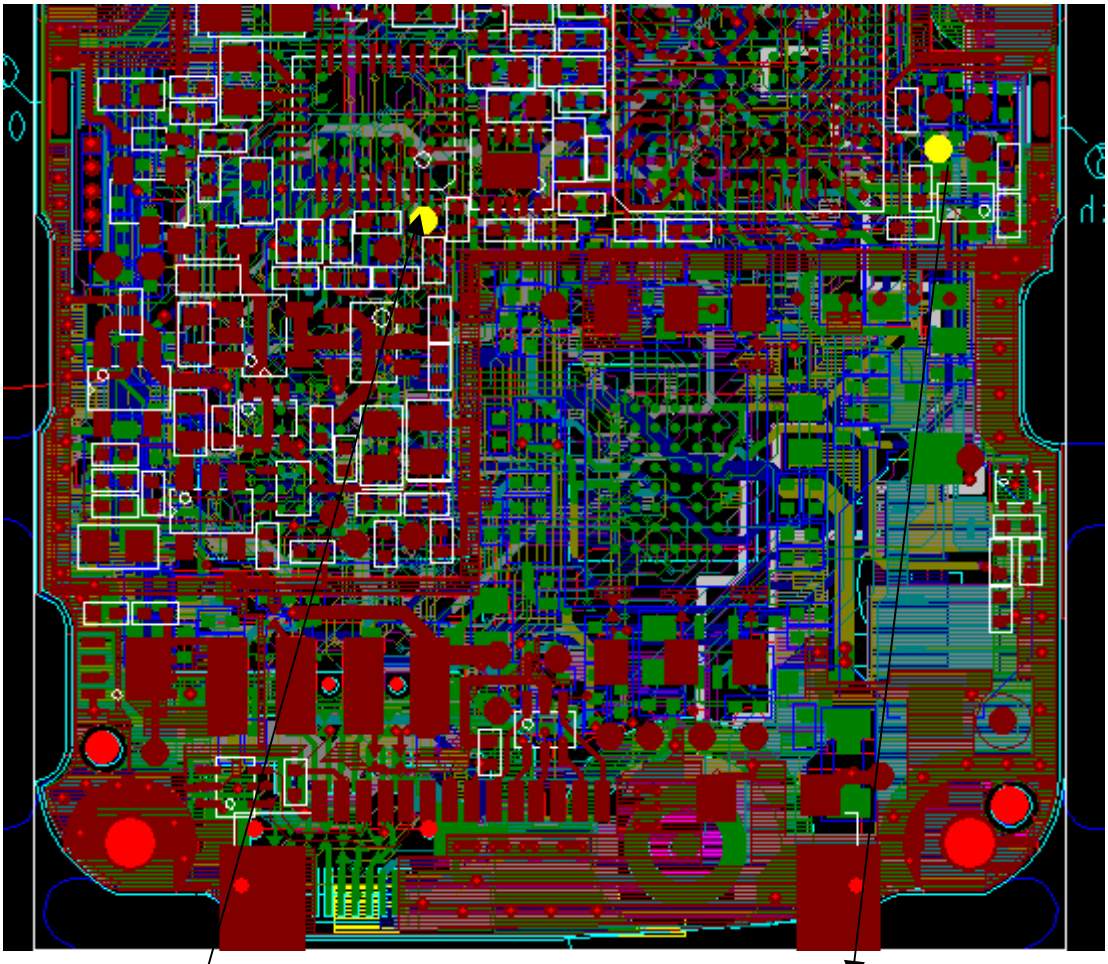
STEP5.1.if TP4<>13M,then change a new 13M.

STEP5.2. if TP24=32.768k,then change a new flash.

STEP5.3.if TP24<>32.768k,then change G2.

STEP5.4.if TP24<>32.768k,then pull out G2.measure IOTA's 5 modules voltage whether in normal.

STEP5.5.if IOTA is ok, then change a new G2. Space final, you can download software.



TP4(13M) TP24(32K)

18 DSC no function

STEP 1..Check the connector of DSC and FPC

a. recombination

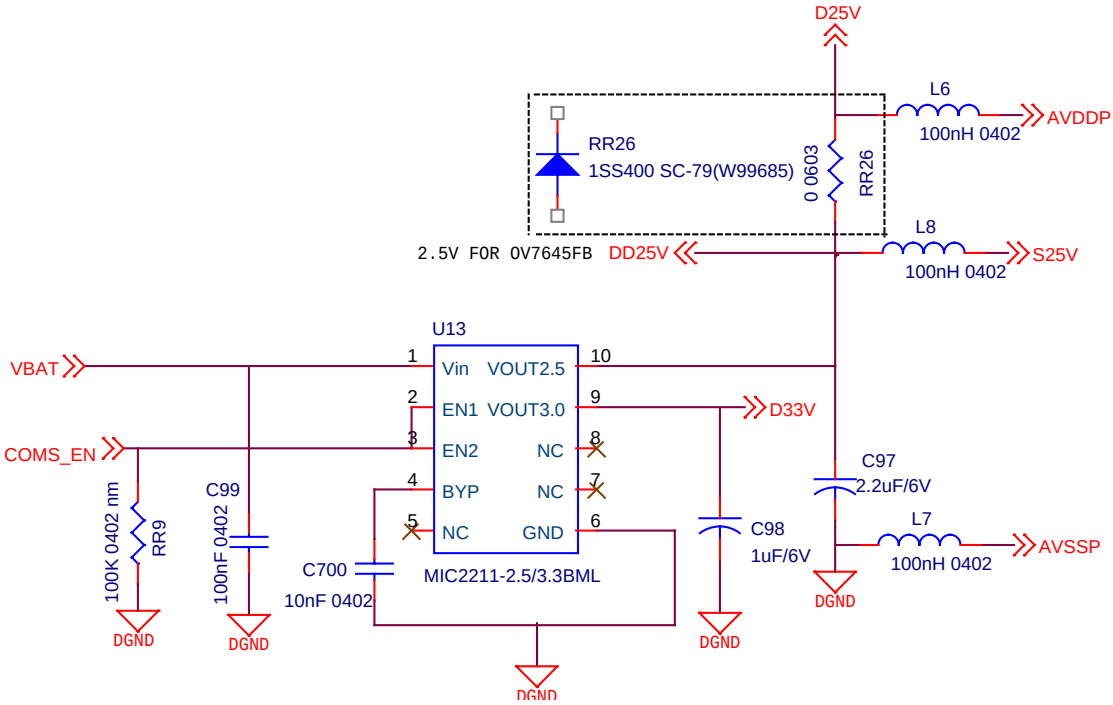
STEP 2.Check the DSC whether to louse

a. Change DSC

STEP 3 . check the DSC's LDO whether have output voltage.

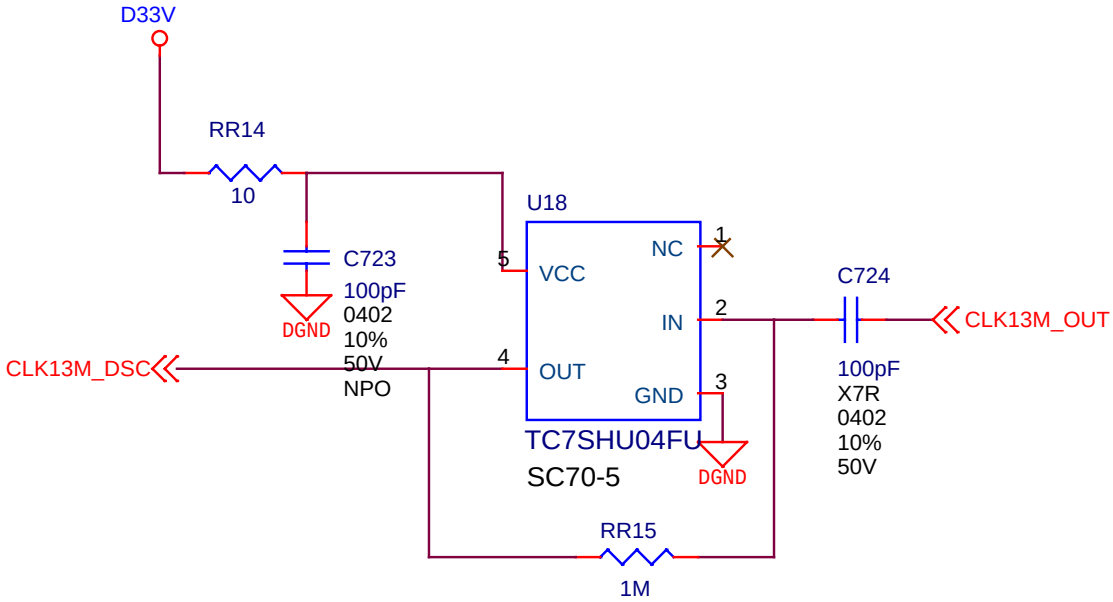
STEP3.1 If the COMS_EN <2.5V, then change the G2

STEP3.2 If the LDO (U13) has no voltage output, then change U13



STEP 4. CLK13M_DSC have no 13MHz

a. Change the inverter U18.



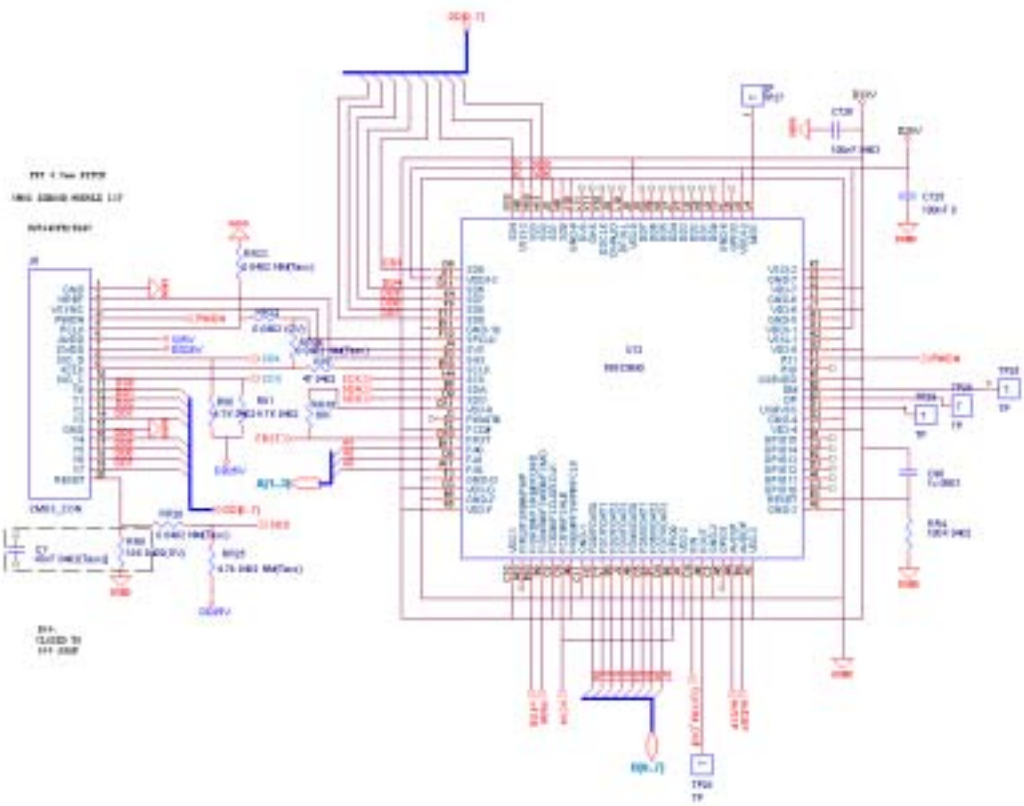
STEP5. check the U12.E10 have no 13MHz

a. change the U12

STEP6 move the CMOS sensor , then power on the handset and press #02#.

If it can't get the firmware version such as 1.08 . the U12's data bus or control bus could have some trouble

a. change the U12



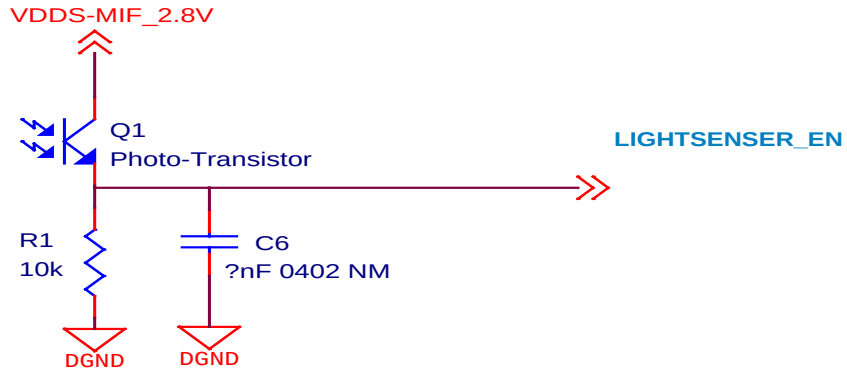
19. light sensor no function

step 1. check the VDDS-MIF-2.8V whether have 2.8V.

a. Check the BTB connector between M/B and MMI

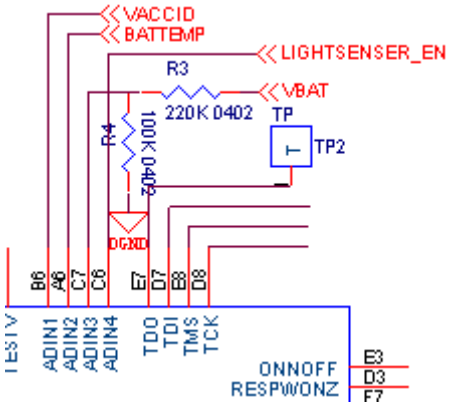
step 2. check the LIGHTSENSER_EN whether have variably voltage

a. please change Q1 or R1.



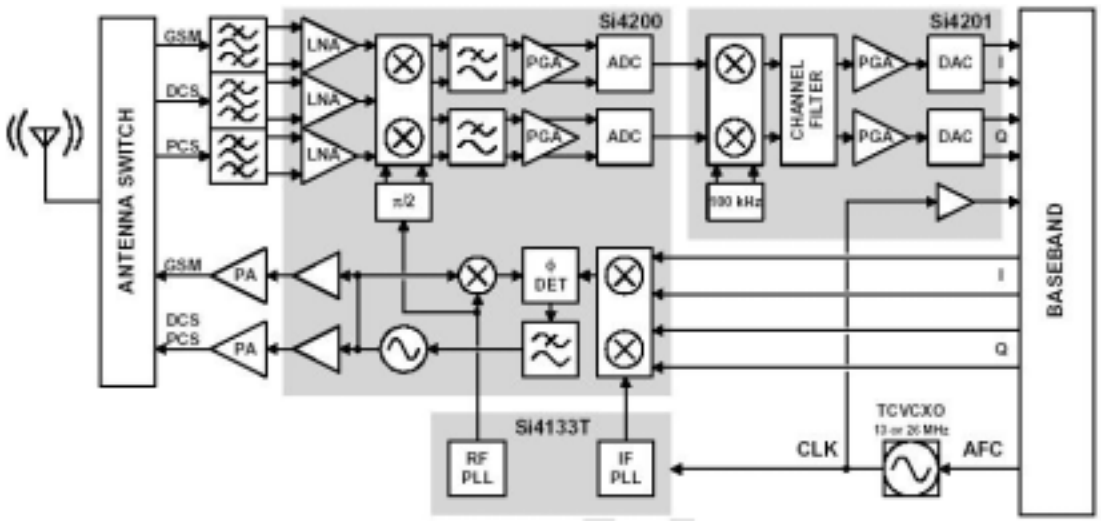
Step 3 check the LIGHTSENSER_EN have variably voltage

a. please change the IOTA.



△ Radio Frequency Descriptions

E365 RF Block Diagram :

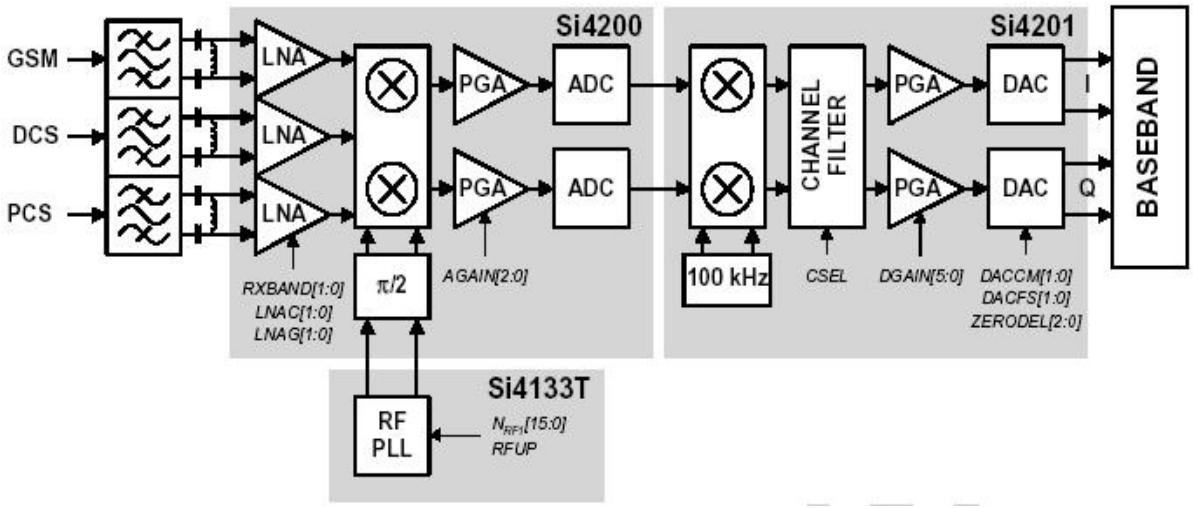


The Aero transceiver consists of the Si4200 GSM transceiver, Si4201 universal baseband interface, and Si4133T dual RF synthesizer. The highly integrated solution eliminates the IF SAW filter, low noise amplifiers (LNAs) for three bands, transmit and RF voltage controlled oscillator (VCO) modules, and more than 60 other discrete components found in conventional designs.

The receive section uses a digital low-IF architecture which avoids the difficulties associated with directconversion while delivering lower solution cost and reduced complexity. The universal baseband interface is compatible with any supplier's baseband subsystem.

The transmit section is a complete up conversion path from the baseband subsystem to the power amplifier, and uses an offset phase locked loop (PLL) with a fully integrated transmit VCO. The frequency synthesizer uses Silicon Laboratories' proven technology, which includes integrated RF and IF VCOs, varactors and loopfilters.

Receiver Block Diagram :

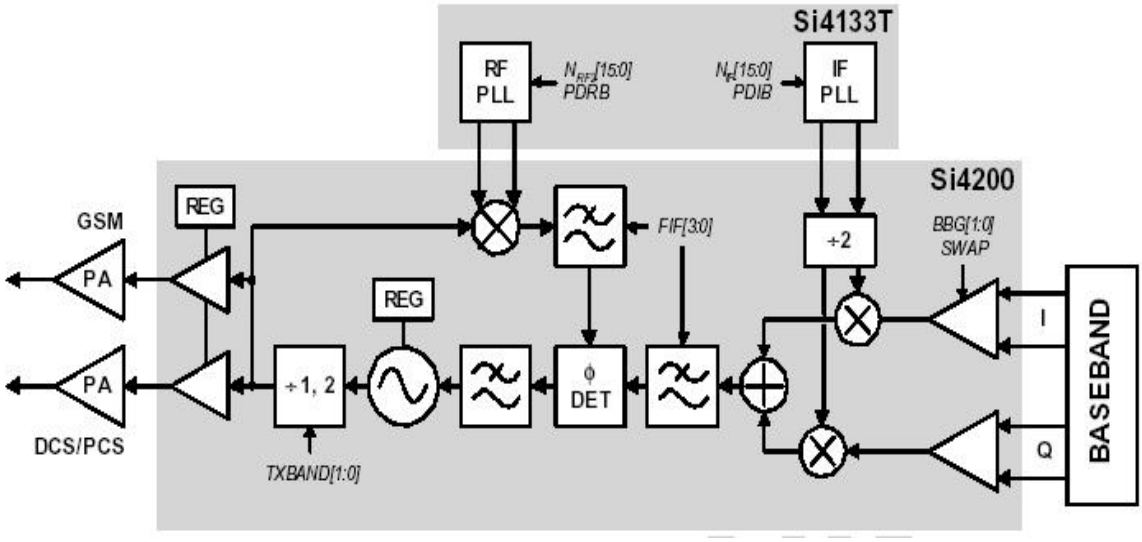


The Aero transceiver uses a low-IF receiver architecture that allows for the on-chip integration of the channel selection filters. The Si4200 integrates three differential-input LNAs. The LNA inputs are matched to the 200 Ohm balanced output SAW filters through external LC matching networks.

A quadrature image-rejeject mixer downconverts the RF signal to a 100kHz intermediate frequency (IF) with the RFLO from the Si4133T frequency synthesizer. The mixer output is amplified with an analog programmable gain amplifier (PGA). The quadrature IF signal is digitized with high resolution A/D converters (ADCs).

The Si4201 downconverts the ADC output to baseband with a digital 100kHz quadrature LO signal. Digital decimation and IIR filters perform channel selection to remove blocking and reference interference signals. After channel selection, the digital output is scaled with a digital PGA. DACs drive a differential analog signal onto the RXIP, RXIN, RXQP and RXQN pins.

Transmitter Block Diagram :



The transmit (TX) section consists of an I/Q baseband upconverter, an offset phase-locked loop (OPLL) and two 50 Ohm output buffers that can drive external poweramplifiers (PA).

A quadrature mixer upconverts the differential in-phase (TXIP, TXIN) and quadrature (TXQP, TXQN) signals with the IFLO to generate a SSB IF signal which is filtered and used as the reference input to the OPLL. The Si4133 generates the IFLO frequency between 766MHz and 896 MHz. The IFLO is divided by two to generate the quadrature LO signals for the quadrature modulator, resulting in an IF between 383 and 448MHz.

The OPLL consists of a feedback mixer, a phase detector, a loop filter, and a fully integrated TXVCO. The TXVCO is centered between the DCS1800 and PCS1900 bands, and its output is divided by two for the GSM 850 and E-GSM 900 bands. The Si4133T generates the RFLO frequency between 1272 and 1483 MHz. Low-pass filters before the OPLL phase detector reduce the harmonic content of the quadrature modulator and feedback mixer outputs.

Frequency Plan of Aero

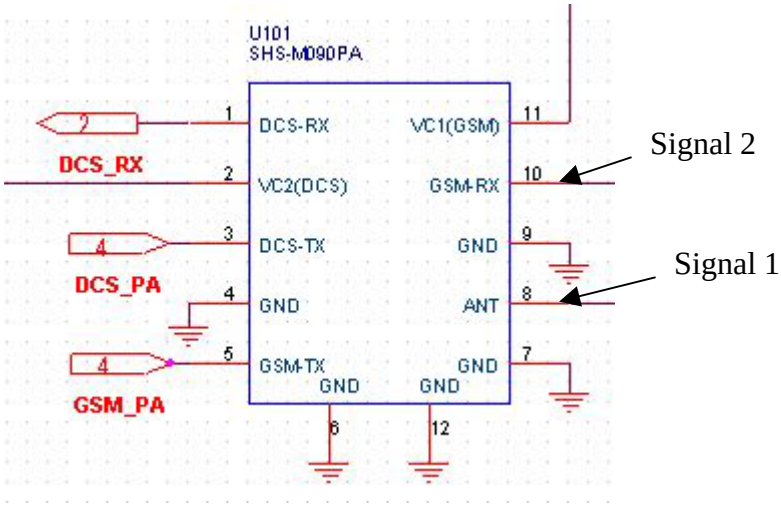
For Tx and Rx intermediate frequency plan

Tx intermediate frequency			
Band	IF frequency (MHz)	Channel	LO frequency (MHz)
E-GSM	399*2	975~1023	(890+0.2*(ARFCN-1024))+IF/2
	399*2	0~24	(890+0.2*ARFCN)+IF/2
	395*2	25~49	(890+0.2*ARFCN)+ IF/2
	399*2	50~124	(890+0.2* ARFCN)+ IF/2
DCS	383*2	512~885	(1710.2+0.2*(ARFCN -512))-IF/2
E-GSM : $f_{LO}=f_{RF} + f_{IF}/2$ DCS/PCS : $f_{LO}=f_{RF} - f_{IF}/2$			
Rx intermediate frequency 100kHz			
Band	Channel		LO frequency (MHz)
E-GSM	975~1023		((935+0.2*(ARFCN-1024))-0.1)*2
	0~124		((935+0.2*ARFCN)-0.1)*2
DCS	512~885		(1805.2+0.2*(ARFCN-512))-0.1
E-GSM: $f_{LO}/2 = f_{RF} – 0.1$ DCS / PCS: $f_{LO} = f_{RF} – 0.1$			

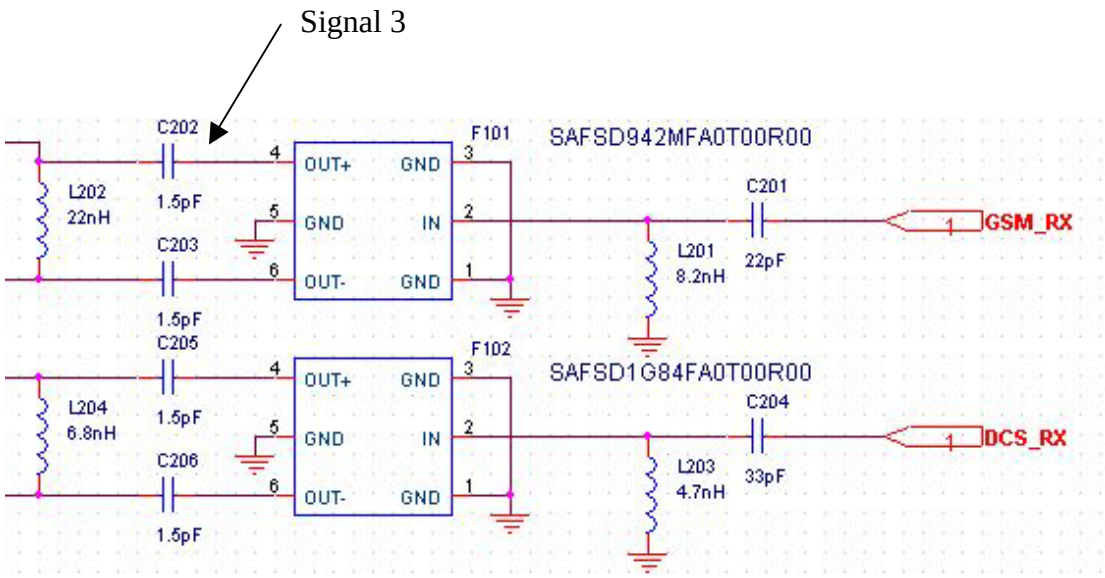
Tx (Low, Mid, High channel)			
Band	IF frequency(MHz)	LO frequency (MHz)	Channel
E-GSM	399*2	1279.2	975
	399*2	1301.4	62
	399*2	1313.8	124
DCS	383*2	1327.2	512
	383*2	1364.6	699
	383*2	1401.8	885
Rx (Low, Mid, High channel)			
Band	LO frequency (MHz)		Channel
E-GSM	1850.2		975
	1894.6		62
	1919.4		124
DCS	1805.1		512
	1842.5		699
	1879.7		885

RX : GSM900

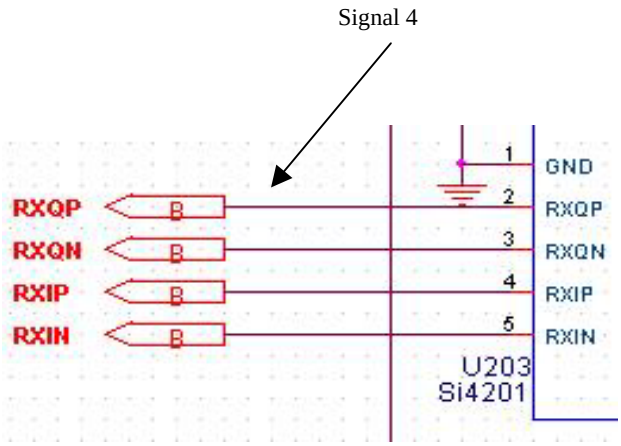
1. Set HP8960 or HP8922 : Operating mode : Test mode , Test function : BCH+TCH
2. Ch 62 : 947.4MHz , cell power : -60dBm
3. Press RX_900(62)



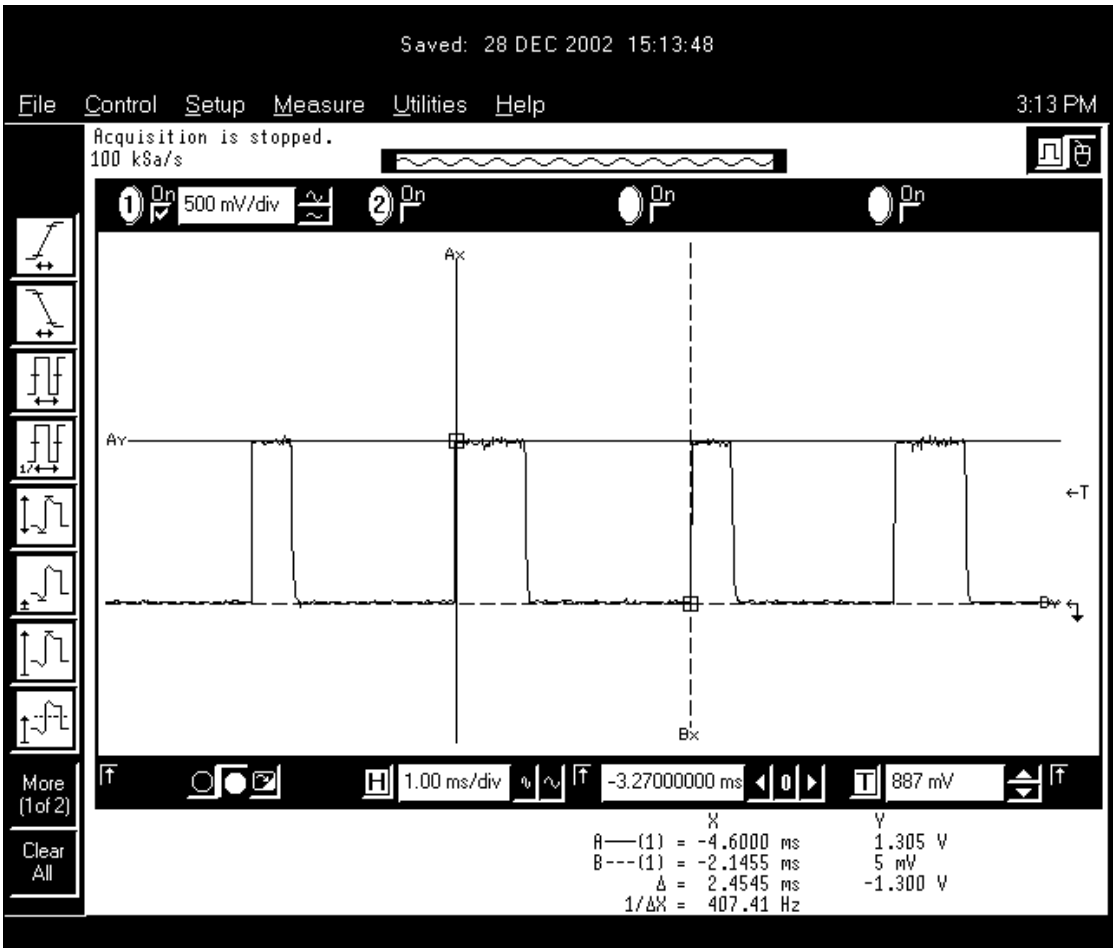
4. RX 900 signal 1 : Use probe to touch U101 pin 8 (freq = 947.4MHz)
5. RX 900 signal 2 : Use probe to touch U101 pin 10 (freq = 947.4MHz)



6. RX 900 signal 3 : Use probe to touch F101 pin 4/6 (freq = 947.4MHz)

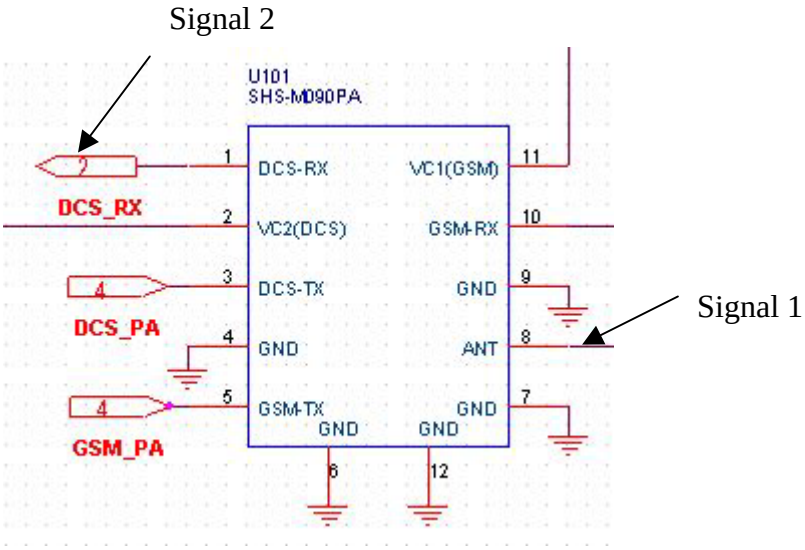


7. RX 900 signal 4 : Use oscilloscope probe to touch RXQP, RXQN, RXIP, RXIN from U203 pin 2~5 and you can find that (For Example : The RXIP signal)

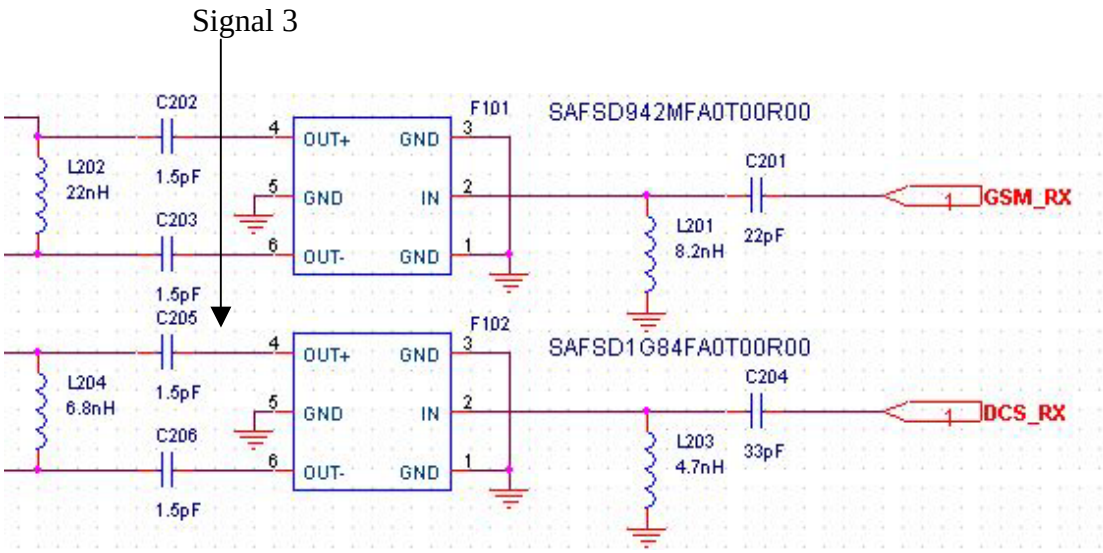


RX : DCS1800

1. Set HP8960 or HP8922 : Operating mode : Test mode , Test function : BCH+TCH
2. Ch 699 : 1842.6MHz , cell power : -60dBm
3. Press RX_1800(699)



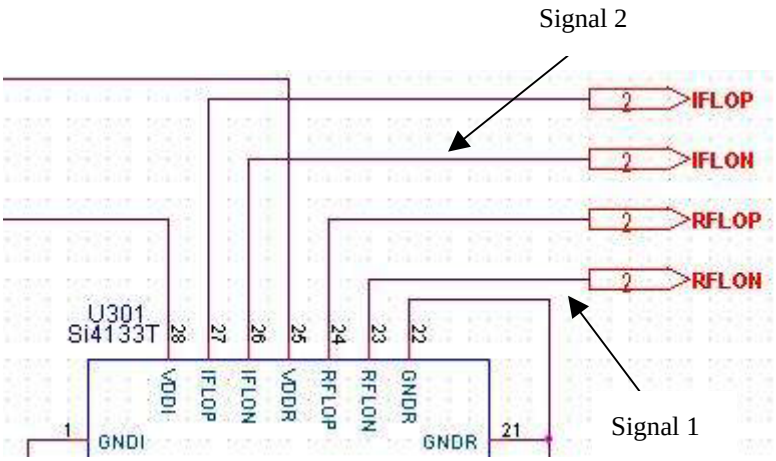
4. RX 1800 signal 1 : Use probe to touch U101 pin 8 (freq = 1842.6MHz)
5. RX 1800 signal 2 : Use probe to touch U101 pin 1 (freq = 1842.6MHz)



6. RX 1800 signal 3 : Use probe to touch F102 pin 4/6 (freq = 1842.6MHz)

TX : GSM900

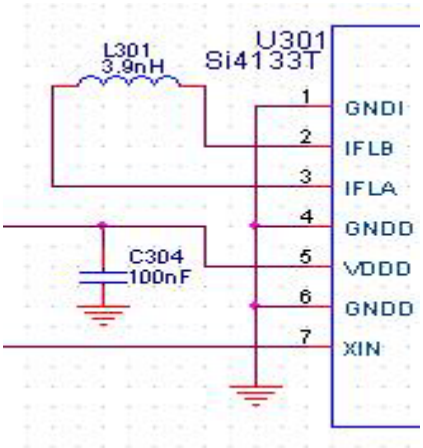
1. Set HP8960 or HP8922 : Operating mode : Test mode , Test function : BCH+TCH
2. Ch 62 : 902.4MHz , cell power : -60dBm , MS_TX_level : 5
3. Press TX_900(62)

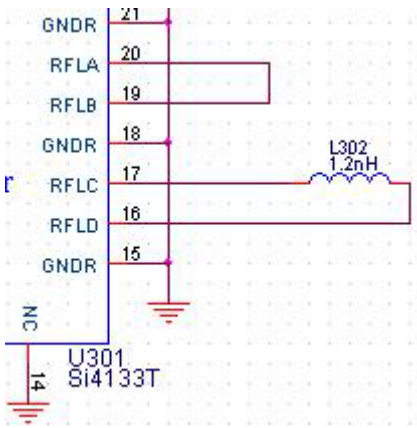


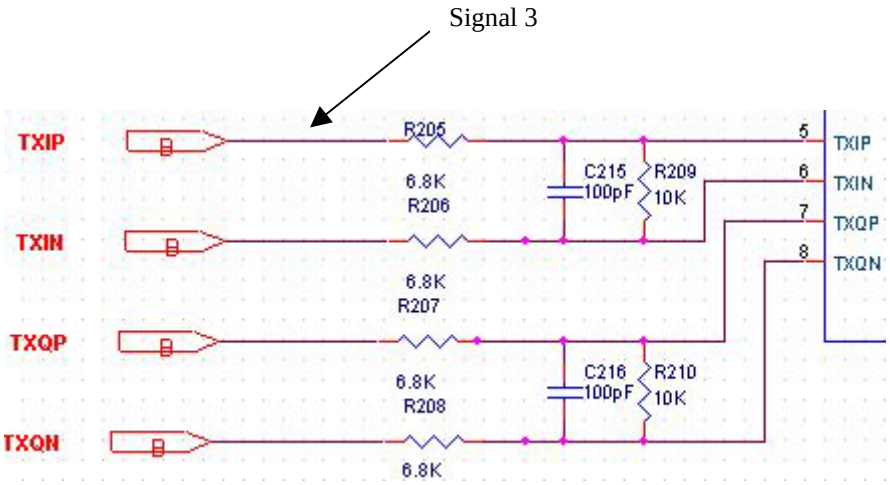
4. TX 900 signal 1 : Use probe to touch U301 pin 23/24 (freq = 1301.4MHz)
5. TX 900 signal 2 : Use probe to touch U301 pin 26/27 (freq = 798MHz)

(If signal 1 and 2 are OK, synthesizer and tranceiver are OK

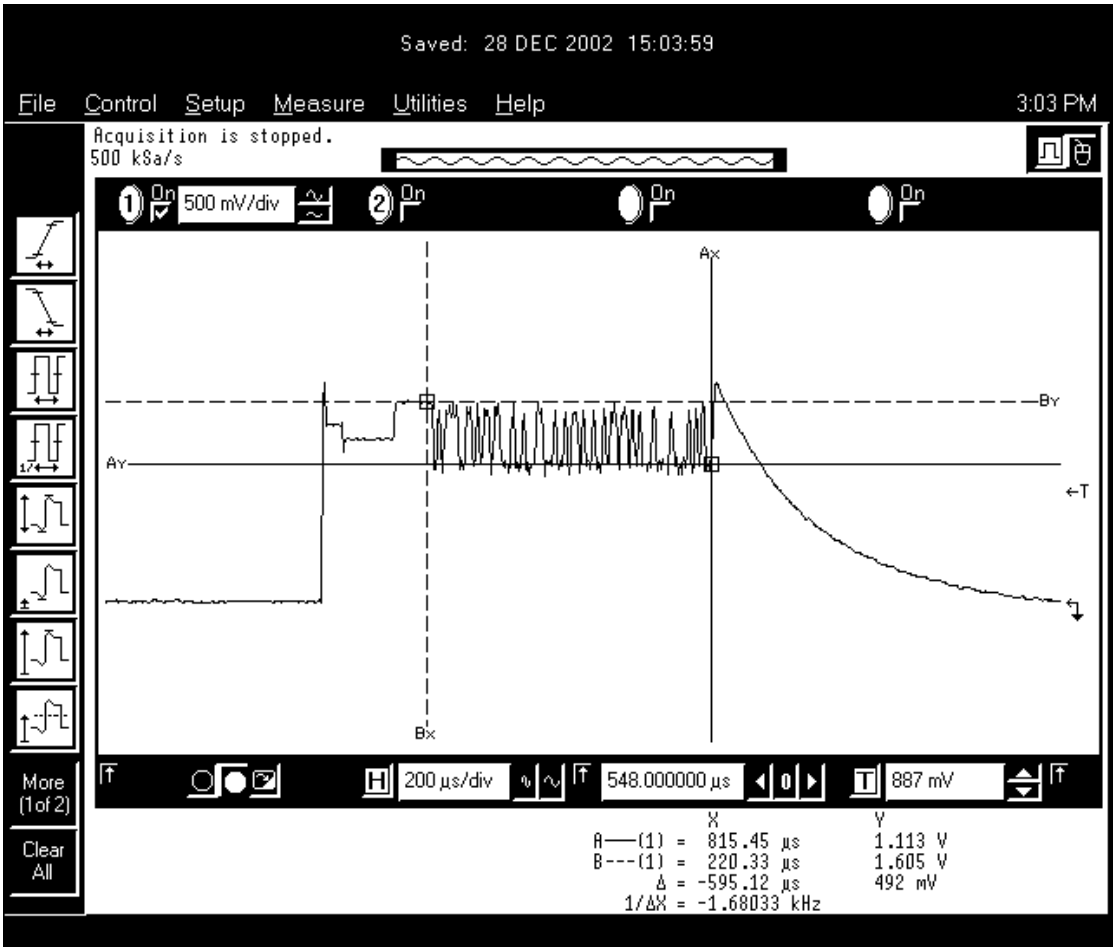
If there are not then we have to check the inductor (L302 or L301) value and solder)

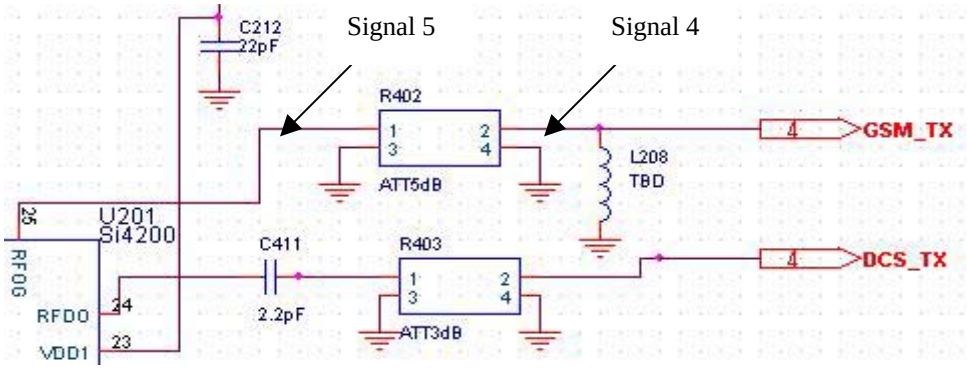




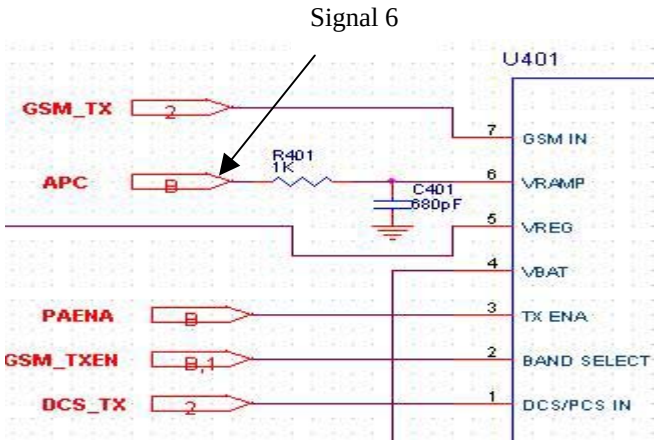


6. TX 900 signal 3 : Use oscilloscope probe to touch R205/6/7/8 pin 4/3 and you can find that (For Example : The TXIP signal)

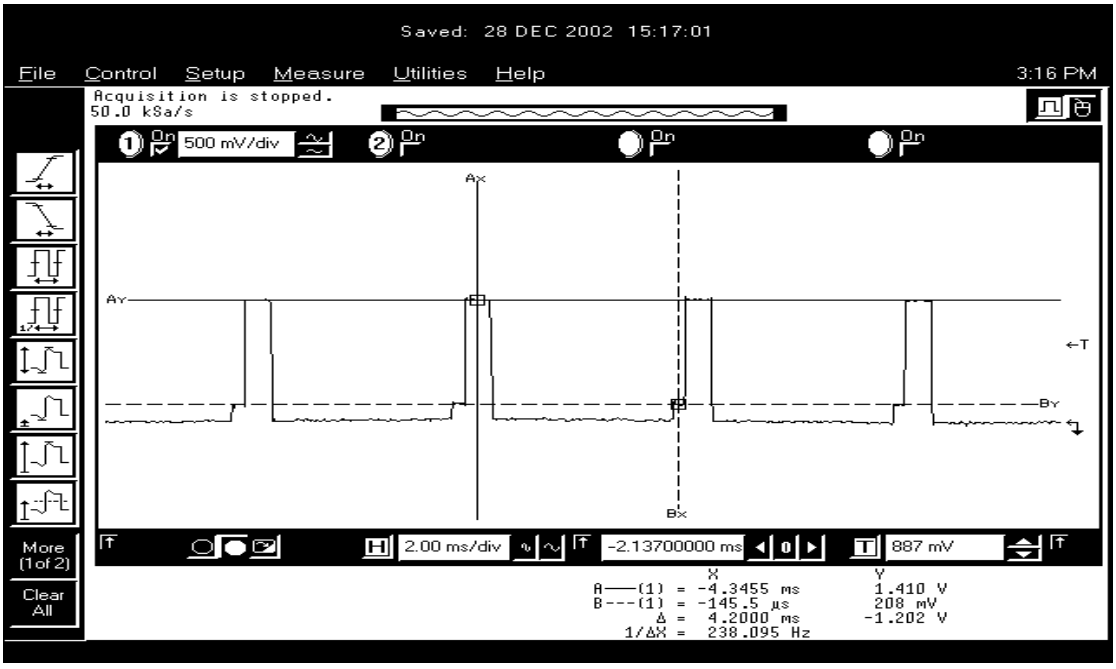


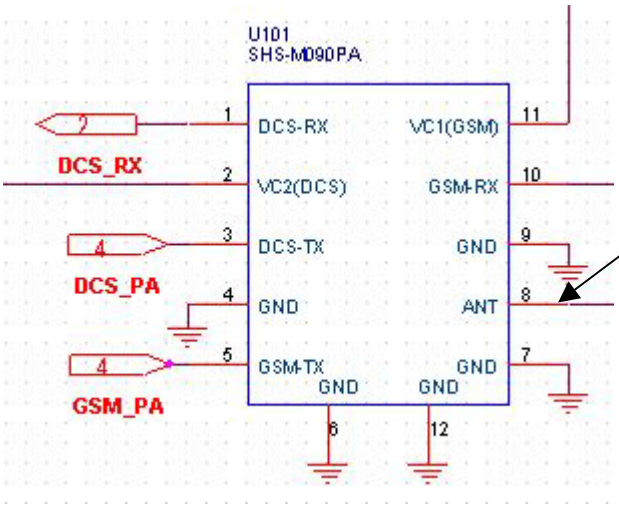


7. TX 900 signal 4 : Use probe to touch R402 pin 2 (frequency 902.4MHz)
8. TX 900 signal 5 : Use probe to touch R402 pin 1 (frequency 902.4MHz)
   (If signal 4 and 5 are OK, TXVCO is OK.)



9. TX 900 signal 6 : Use oscilloscope probe to touch R401 and we can find that

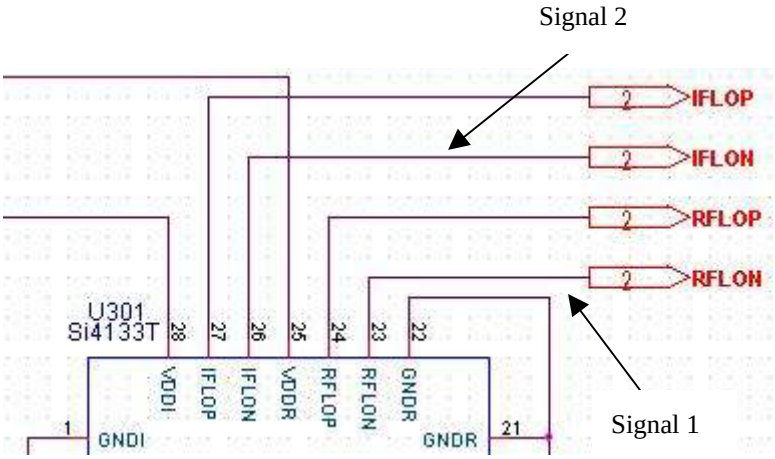




10. TX 900 signal 7 : If 8960 or 8922 could show output power, PA is OK. If 8960 or 8922 show Freq_error, Peak_phase_error, RMS_phase_error are inside the standard, Tx is OK.

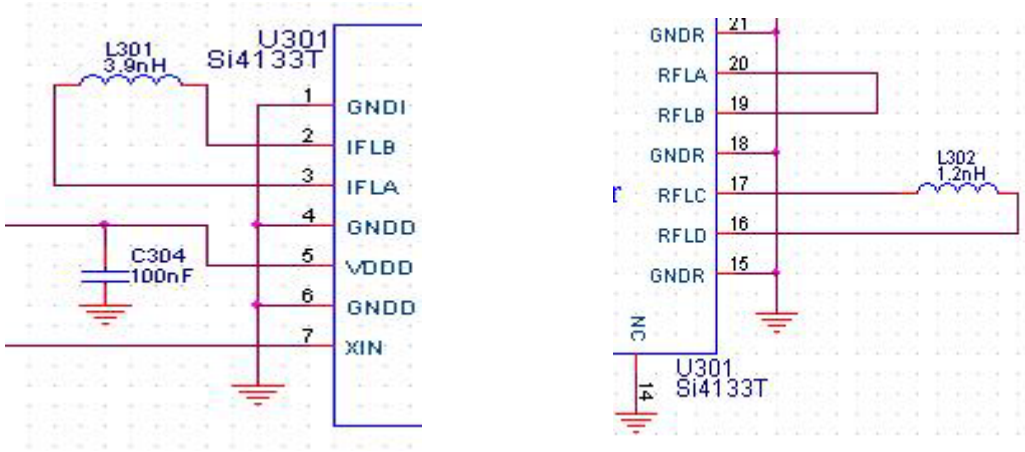
TX : DCS1800

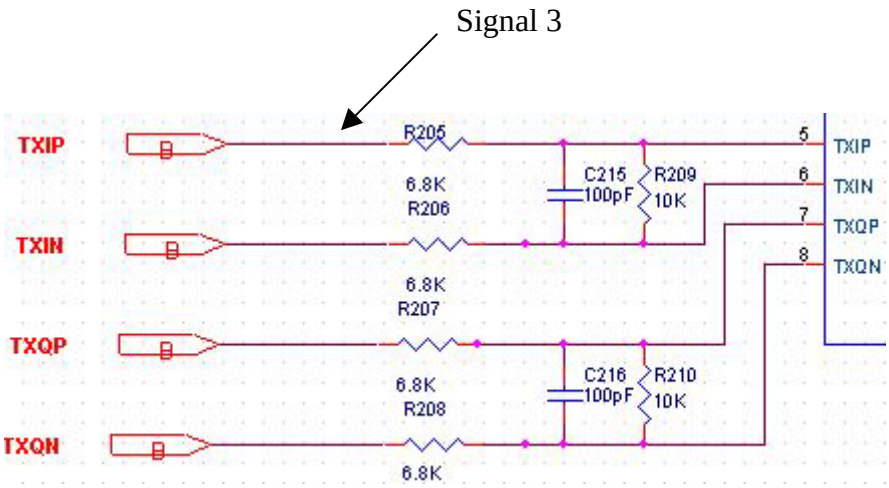
1. Set HP8960 or HP8922 : Operating mode : Test mode , Test function : BCH+TCH
2. Ch 699 : 1747.6MHz , cell power : -60dBm , MS_TX_level : 0
3. Press TX_1800(699)



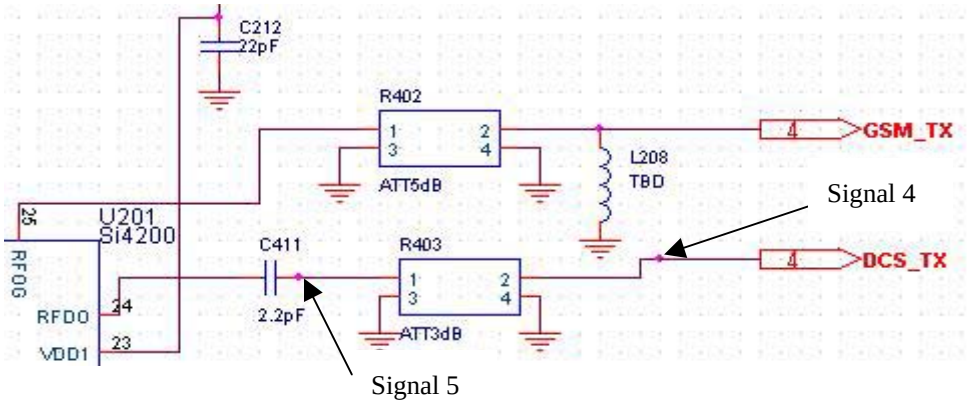
4. TX 1800 signal 1 : Use probe to touch U301 pin 23/24 (freq = 1364.6MHz)
5. TX 1800 signal 2 : Use probe to touch U301 pin 26/27 (freq = 766MHz)
   (If signal 1 and 2 are OK, synthesizer and tranceiver are OK

If there are not then we have to check the inductor (L302 or L301) value and solder)



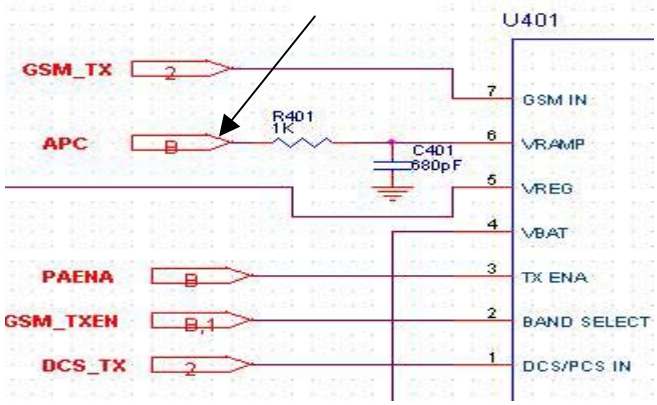


6. TX 1800 signal 3 : Use oscilloscope probe to touch R205/6/7/8 pin 4 (3) and the result is similar to the GSM TXIQ.

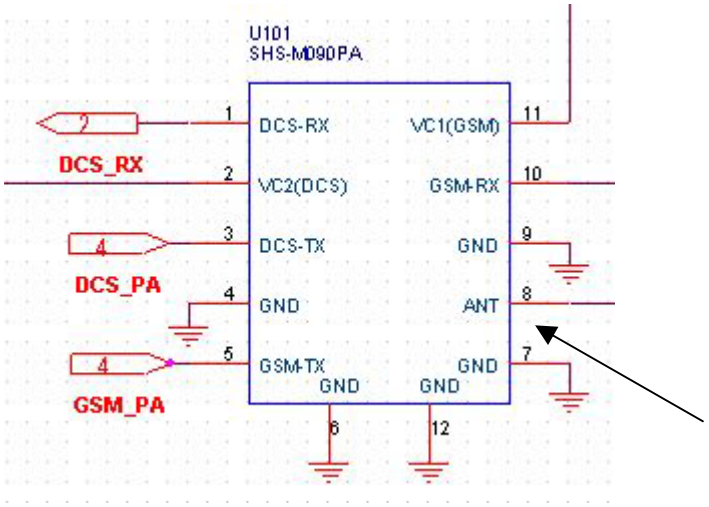


7. TX 1800 signal 4 : Use probe to touch R403 pin 2 (frequency 1747.6MHz)
8. TX 1800 signal 5 : Use probe to touch R403 pin 1 (frequency 1747.6MHz)
   (If signal 4 and 5 are OK, TXVCO is OK.)

Signal 6



9. TX 1800 signal 6 : Use oscilloscope probe to touch R401 and the diagram is similar to GSM APC.



Signal 7

10. TX 1800 signal 7 : If 8960 or 8922 could show output power, PA is OK. If 8960 or 8922 show Freq_error, Peak_phase_error, RMS_phase_error are inside the standard, Tx is OK.