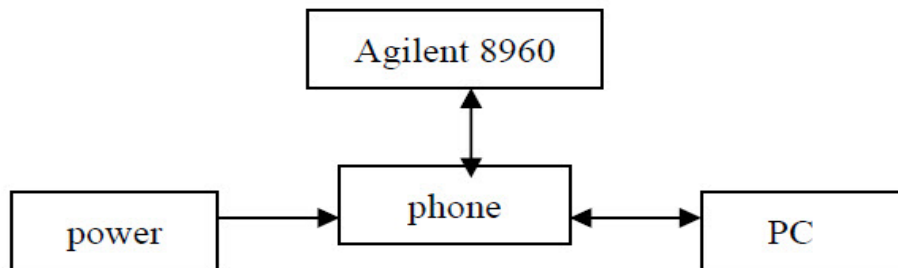# RF debug procedure

Test no signal mode connect chart

RX test result :No signal mode , 8960 set -90dBm PC set -90dBm, loss less than -1.5dBm Signal mode , call 8960 sensitiving less than -102dBm Confirm the analyzer station has been set up：

For example, have some problem in EGSM Rx Level check. Connect the product to Agilent 8960 by RF cable. The RF cable is plugged to the RF connector. Configure the Agilent 8960 in Output on the channel, band and the RX level defective; make the same thing for the product in Meta tool. Note: Test on a good radio to get reference signal when you don't know if the signal is right.

Step1: Measure the output signal from FEM to check if the signal is right, GSM850 signal: measured from pin 12(Measure at C158); PCS signal: measured from pin1 (measure at C161), If wrong signal was detected, measured the input signal to FEM U103. If input signal to FEM U103 was wrong, it maybe C120，SA100 value issue or soldering issue. If input signal to FEM U103 was right, we should check whether it was caused by FEM U103 poor soldering or control signal (measure at C134,C136) have some problem. If control signal was wrong, it maybe CPU soldering issue or component defect.

Step2: If the output signal from FEM U103 was right, we should measure the signal to transceiver (U102). If wrong signal was detected, we should check U108(DUALSAW), C140 (GSM900/850), C130(PCS) or parts around them.

Step3: If the output signal fromC140 (GSM900/850), C130(PCS) was right, we should measured the signal of I&Q output from transceiver (U102), If wrong signal was detected, if maybe transceiver (U102) soldering issue or value issue.

Step4: If no clear issue was found, we should downloading SW again or

replace CPU (U200) and rewrite RF data in Meta.

When repair RX QUALITY、BER，if RX LEVER was right , commonly, we will replace transceiver (U102), CPU（U200）。

TX test result:

Key parameter of TX circuit are "MAX POWER", "TX-CURRENT", "Time Mask", "Phase Error" ,"Freq. error" etc. Following is normal analysis of the circuit. Confirm the instrument for analysis is Ok (for example GSM850: Channel 128, Level=10)

Power on radio, press 'TX command' button, setting up the channel (128) and power level (10).

Set the right frequency (824.2MHZ) and sweeping time on spectrum analyzer.

Set up the voltmeter and oscilloscope.

Step 1: Measure the I/Q signals that from CPU（U200）to transceiver (U102). If the I&Q signals have some problem be fund，check the transceiver (U102) and CPU（U201）solder issue or value of the two component。

Step 2: If the I/Q signals is good, measure the TXOP_LOsignal that output by transceiver (U102).If any abnormity be fund , check transceiver (U102) solder issue and component value or check the voltage of VCCRF.

Step 3: If TXOGSM signal is good，measure GSM850 TX pin（pin 3）in PA. If the input signal for U103 have some problem be fund, check the component value and solder issue of C121,R105,R106,R118

Step 4: If the signal is natural. Continue measure the U103 output signal in pin14, if abnormity. Measure the control signals of CTRL0、CTRL1、PA_EN、VAPC. If the control have some problem be fund , check the component of R107,R119,C149,R104,C148 and CPU（U200）（BANDSW、PAEN、VAPC）solder issue or value. If the control signals are good, check the component of U103 solder issue and value.

Step 5: If the signal is good that output by U103，measure the signal that input to SA100, if have any problem be fund ,check the component of C120 solder issue and if the component mistake.

PCS1900: Channel 512, Level=10

Power on radio, press 'TX command' button, setting up the channel (512) and power level (10).

Set the right frequency (1850.2MHZ) and sweeping time on spectrum analyzer.

Set up the voltmeter and oscilloscope.

Step 1: Measure the I/Q signals that from CPU（U200）to transceiver (U102). If the I&Q signals have some problem be fund，check the transceiver (U102) and CPU（U201）solder issue or value of the two component。

Step 2: If the I/Q signals is good, measure the TXOP_HI signal that output by transceiver (U102).If any abnormity be fund , check transceiver (U102) solder issue and component value or check the voltage of VCCRF.

Step 3: If TXOP_HI signal is good，measure PCS1900 TX pin（pin 5）in PA. If the input signal for U103 have some problem be fund, check the component value and solder issue of C127,R103.

Step 4: If the signal is natural. Continue measure the U103 output signal in pin14, if abnormity. Measure the control signals of CTRL0、CTRL1、PA_EN、VAPC. If the control have some problem be fund , check the component of R107,R119,C149,R104,C148 and CPU（U200）（BANDSW、PAEN、VAPC）solder issue or value. If the control signals are good, check the component of U103 solder issue and value.

Step 5: If the signal is good that output by U103，measure the signal that input to SA100, if have any problem be fund ,check the component of C120 solder issue and if the component mistake.

Note： component position reference schematic L110b_SCHEMATIC.pdf