BM-150R Tune-up Procedure

The mass production test process of communication modes.

1. CDMA

We measure 5515C Agilent test set when we test a PDA, which required specification is as followed.

1) In a conduction test,

(center frequency channel=> CDMA US Cellular: 384ch

CDMA Cellular : Rx sensitivity　Min-104dBm,　　Tx power :24± 0.5dBm

2) radiation test　in a temcell is the same as conduction test spec.

We use RF module in a PDA. therefore most of PDA satisfy the US Cellular standard (e.g ETSI). But If PDA is below the spec, it regards as an inferior goods. and then we retest a repaired product after we analyze and repair it.

The factor for a poor goods　is various. For example, poor antenna, board to RF module cable and　noise (CPU, clock, codec ..) etc. So we take the appropriate measures in accordance with the major cause.

Measurement set up

a) set up frequency band (US Cellular)

b) set up frequency channel (US Cellular 384ch)

c) set up measurement menu (Rx sensitivity and Tx transmit power)

d) connect a PDA

e) measurement.

Measurement/Instrument Screen		
Control	**Frame Error Rate**	**Call Parms**
Frame Error Rate Setup ▽	Confidence **Pass** FER **0.00** %	Cell Power −104.00 dBm/1.23 MHz
	Frame Error Count: 0	Cell Band
	Frames Tested: 606	US Cellular
	Maximum Frame Count: 5000	
AWGN Power	Eb/Nt: ---- dB	Channel
Off	FER Requirement: 0.50 %	384
	Continuous	
	Channel Power	Protocol Rev
		6 (IS-2000)
	Channel Power **23.81** dBm/1.23 MHz	Radio Config (Fwd1, Rvs1)
Swap Window Positions	Expected Mobile Power: 23.00 dBm/1.23 MHz Measurement Speed: Normal	302 (Loopback)
	Continuous	FCH Service Option Setup ▽
	⊟ Background ‖ Active Cell **Connected** ‖ Sys Type: IS-2000	
1 of 2	‖IntRef‖Offset‖	1 of 3

2.wireless LAN

We measure MT8860B WLAN test set Anritsu. required specification is as followed

1)In a coduction test, (center frequency:2437MHz   6ch)

Rx sensitivity - 80dBm @ 11Mbps   - 65dBm@ 54Mbps

Tx power   14dBm± 2dBm @ 11Mbps   12dBm± 2dBm @ 55Mbps

2)radiation test is measured for real condition (we confirm the state of data communication.)

We use RF module in a PDA. therefore most of PDA satisfy the WLAN standard But If PDA is below the spec, it regards as an inferior goods. and then we retest a repaired product after we analyze and repair it.

The factor for a poor goods is various. For example, poor antenna, nd noise (CPU, clock, codec ..) and so on. So we take the appropriate measures in accordance with the major cause.

Measurement set up (digonistic program is provided by Anritsu)

1) Rx sensitivity test
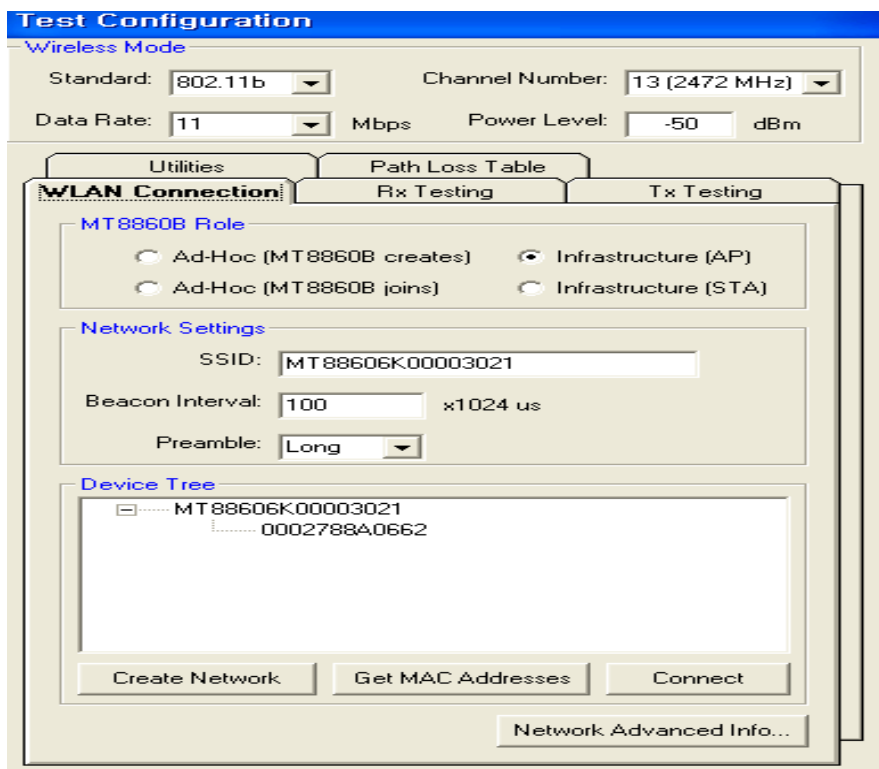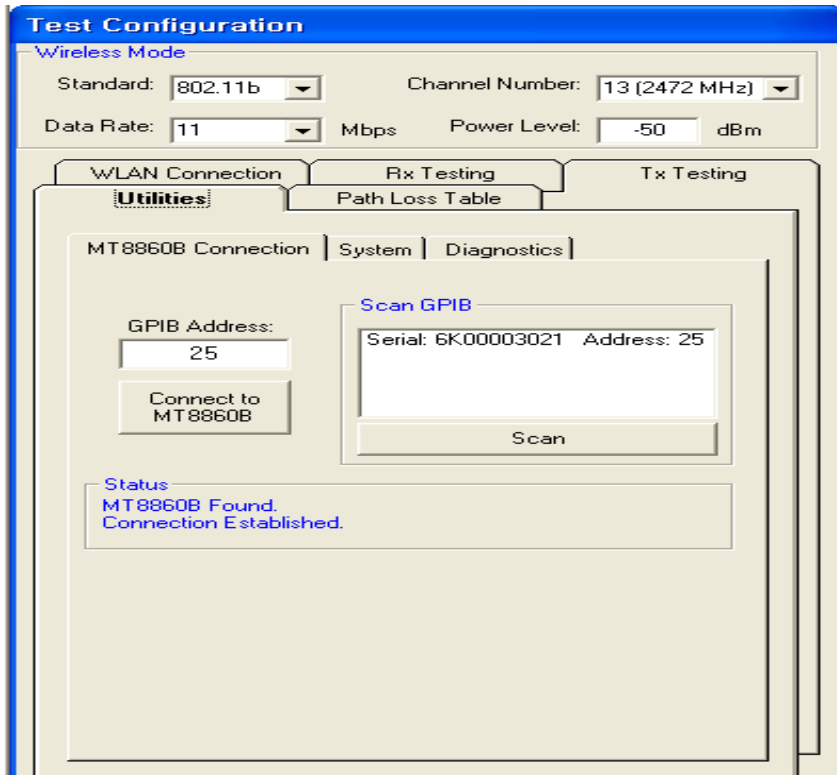
Change the channel 6 in Utilities

   Set up item=> packet length; 1000 byte, preamble: Long, payload : PN9, num packet: 100, data rate: 11Mbps and then searching the GPIB - > connect.

   Check the infrastructure(AP) of WLAN connection

     Create Network=>Get MAC Addresses=>Connect

   activate RX testing - > run

2)TX power test

    Change a setting value.

Insert a PDA IP address, subnet Mask.

    (ex : DUT IP=> 169.254.222.15   MT8860B IP => 169.254.222.1)

 Execute RUN

3. bluetooth.

We measure TC- 3000B Bluetooth tester TESCOM. required specification is as followed
1)In a coduction test, (center frequency)
 Rx sensitivity: - 75dBm
 Tx power: - 4dBm± 2dBm
2)radiation test is measured for real condition (we confirm the state of data communication.)

PDA is below the spec, it regards as an inferior goods. and then we retest a repaired product after we analyze and repair it.
The factor for a poor goods is various. For example, poor antenna, and noise (CPU, clock, codec ..) and so on. So we take the appropriate measures in accordance with the major cause.
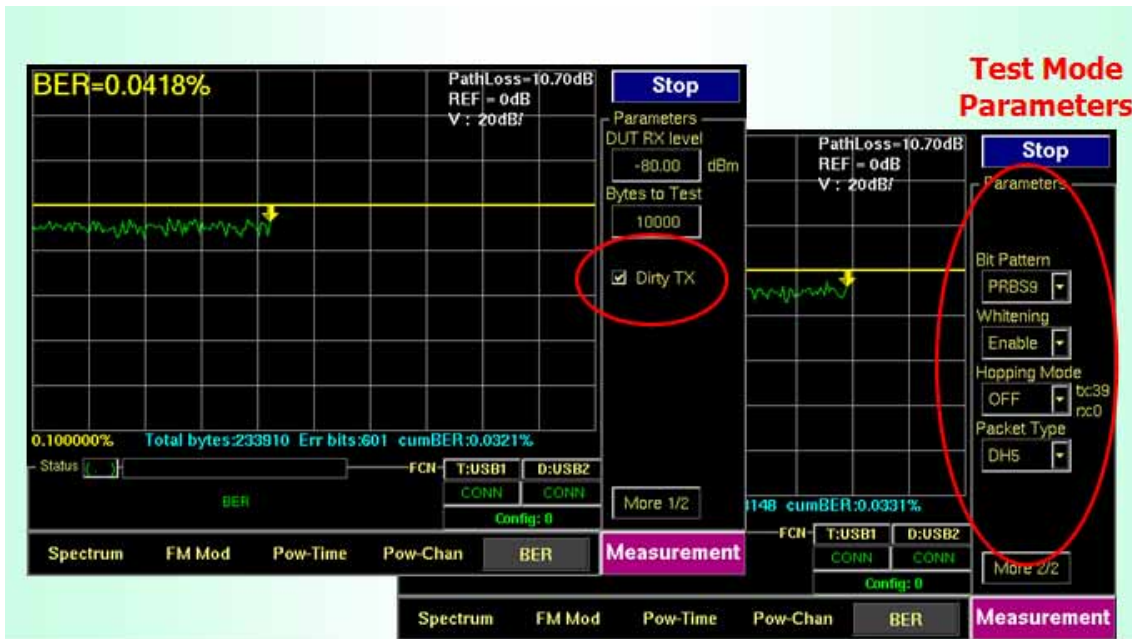
Measurement set up
 1) Tx test
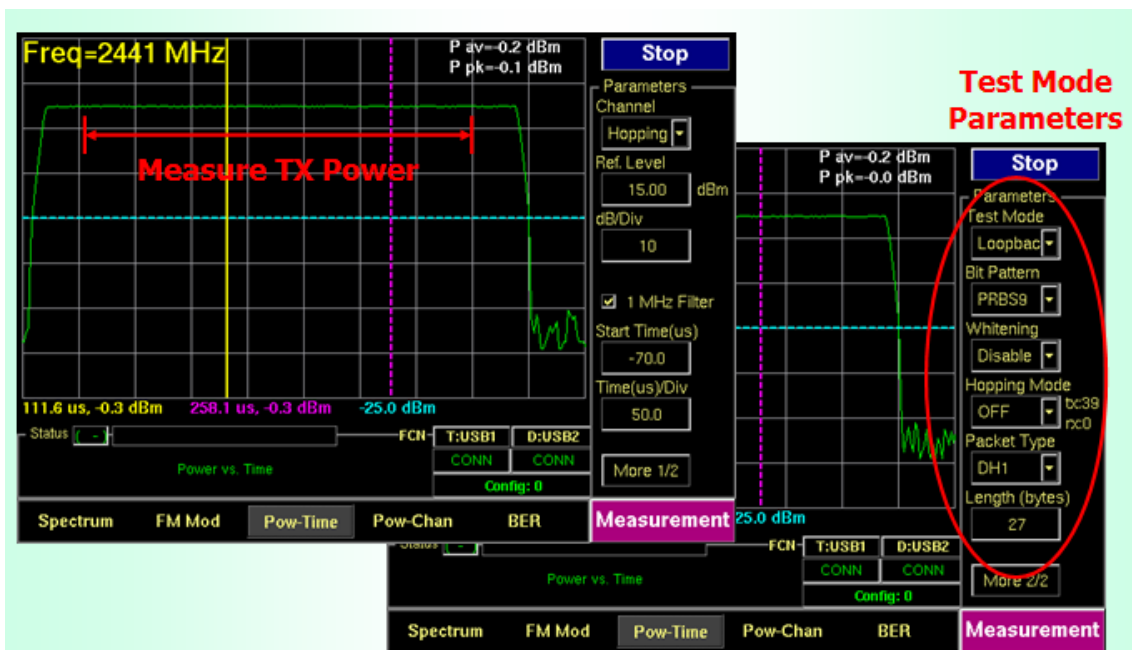
BT channels: 39
Packet Type: DH5
Test Mode: Transmitter
Hopping Mode: On

 2)Rx test

BT channels: 39

Hopping Mode: On

Dirty TX Mode: On

Packet Type: DH1

RX power in dBm: - 75

Number of samples in bytes: 200000

In conclusion, the flow is as followed.

1. PDA test
2. the criterion of PDA   - > Pass or fail for a required spec.

   If the PDA is failed   - > analyze a PDA

   (we use RF module for CDMA, Wireless LAN. If they are out of order, we will change a RF module. But if another problem is happened , we check the following condiotion.

   1) check the power supply. (CDMA: 4V   WLAN, Bluetooth:3.2V)
   2) Check the state of combination with main board.
   3) Check   the Matching circuit.
   4) Check the noise source.
   5) Check another part(SMT, component etc)

3. Retest after a product is repaired.

4. repeat 1. ~ 3.

4. FM Transmitter.

We measure using for SI4721(FM Transiver) EVKIT. required specification is as followed.
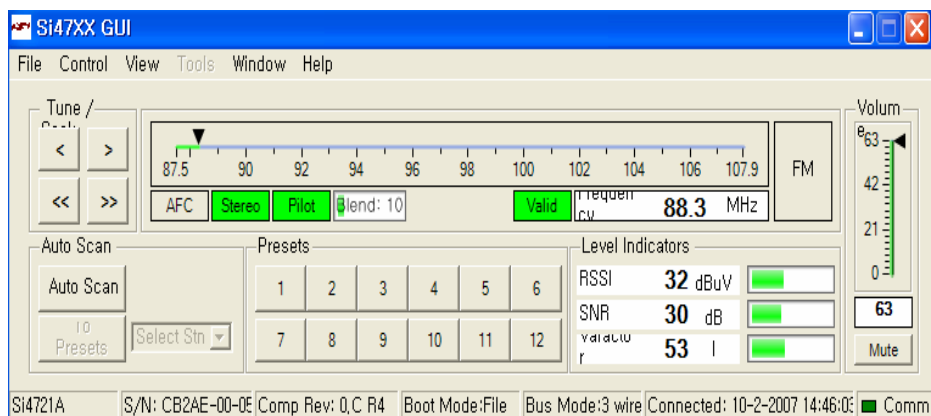
1) radiation test is measured for real condition

  - RSSI : over 20dBuV

  - SNR : over 3dB

1. Test setup

  1) distance PDA to TEST EVKIT : 1m

  2) Test program screen capture

5. GPS

We measure using for VisualGPS program. required specification is as followed.

    1) radiation test is measured for real condition

      - fix time : under 120sec

      - number of fixed satellites : over 4

1. Test setup

    1) Test place

      open sky in outdoor

    2) Test program screen capture