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.

	lie	asurement/Inst	rument S	creen		
Control		Frame Error Rate				Call Parms
Frame Error Rate Setup _V	Confi Pa	idence BSS	0	FER . 00 ;	4	Cell Pouer -104.00 dBm/1.23 fHz
AUGN Pover	F	rame Error Count: rames Tested: laximum Frame Coun b/Nt: 50 Decuments	nt: 50 	0 606 000 dB		Cell Band US Cellular Channel
Off	F	EK Kequirenent:	U	0.50 %		384
Suap Windou Positions	Channel Power Channel Power 23.81 dBm/1.23 MHz Expected Mubile Power: 23.00 dBm/1.23 MHz Heasurement Speed: Normal					Protocol Rev 6 (IS-2000) Radio Config (Fud1, Rvs1) 302 (Loopback) FCH Service Option Setup
	Background	Active Cell Connected		Sys Typ	e: IS-2000	
1 of 2		IntRef Of	fset			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

Test Configuration							
- Wireless Mode							
Standard: 802.116 Channel Number: 13 (2472 MHz)	I						
Data Rate: 11 Mbps Power Level: -50 dBm							
WLAN Connection Rx Testing Tx Testing							
Utilities Path Loss Table							
MT8860B Connection System Diagnostics	Н						
	н						
Scan GPIB	н						
GPIB Address: Serial: 6K00003021 Address: 25	н						
25	н						
Connect to	н						
Scan	н						
	н						
Status MT8860B Found	н						
Connection Established.	н						
	н						
	н						
	н						
	н						
	11						
	Ц						

Test Configuration						
- Wireless Mode						
Standard: 802.11b Channel Number: 13 (2472 MHz)						
Data Rate: 11 Mbps Power Level: -50 dBm						
Utilities Path Loss Table						
WLAN Connection Rx Testing Tx Testing						
MT8860B Role						
○ Ad-Hoc (MT8860B creates)						
C Ad-Hoc (MT8860B joins) C Infrastructure (STA)						
Network Settings						
SSID: MT88606K00003021						
Beacon Interval: 100 x1024 us						
Preamble: Long -						
Device Tree						
□ MT88606K00003021						
000278840662						
Create Network Get MAC Addresses Connect						
Network Advanced Info						

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

Execute RUN

MT8860B IP => 169.254.222.1)

Test Configuration							
Wireless Mode							
Standard: 802.11b Channel Number: 13 (2472 MHz)							
Data Rate: 11							
Utilities Path Loss Table							
WLAN Connection Rx Testing Tx Testing							
Mode							
Packet Loopback Configure Loopback							
C Continuous Tx							
Analysis Configuration							
Bange Mode: Automas Link (20 to 55 JDw)							
Source: RF Pre-Trigger: .0.02 ms							
Edge: Rise Vidth: 0.22 ms							
Level: .50 dBm Averaging: 1							
Measurements							
Window 1: Power Profile							
Window 2: Exercise Dealer							
Window 3: Created Bastlas							
Tx Advanced Settings							
Run Run Continuous Stop							

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: <u>Transmitter</u> 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 condiction.

- 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

🕶 Si47XX GUI					
File Control View Tools W	'indow Help				
Tune /	90 92 94	96 98	100 102 104 100	5 107.9 FM	
<< >> AFC Ste	reo Pilot Blend	j: 10	Valid Cv 88.	3 MHz	*
Auto Scan	Presets		Level Indicators)	21-
Auto Scan	1 2	3 4 5	6 RSSI 32	dBuV 💻	IE 0
		-	SNR 30	dB	63
Presets Str	7 8	9 10 11	12 r 41 auto 53		Mute
Si4721A S/N: CB2AE-00-0)5 Comp Rev: 0,C F	R4 Boot Mode:File	Bus Mode:3 wire Connec	cted: 10-2-2007 14:46:05	Comm

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

