
Trinity

Service Manual



HTC Proprietary

Confidential Treatment Requested

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HTC Corp.

Engineering Mobility

Revision Control Table

Rev	Date	Contents	Dept.	Revised	App Dept	Stage/Per
AX01	2006/9/28	First Draft	PSE	Jerry W. Lin	GSD	PVT
AX02	2006/9/29	Fix the description and picture	PSE	Jerry W. Lin	GSD	PVT
A01	2006/10/5	First release	PSE	Jerry W. Lin	GSD	PVT
A02	2006/10/25	Add board level	PSE	Jerry W. Lin	GSD	MV

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CHAPTER 1 – INTRODUCTION

This manual provides the technical information to support the service activities of the PPCP. This document contains highly confidential information, so any or all of this document should not be revealed to any third party.

1.1 Production Specification

- Platform
 - Dual-Mode PDA form factor
 - OS: Microsoft Windows Mobile 5.0-PocketPC Phone Edition
- Dimension
 - 108mm (L) x 58.2mm (W) x 18.4mm (T), 150g with battery
- Processor/Chipset
 - CPU + Base band: Samsung with 400MHz + Qualcomm 6275
- Memory
 - Flash ROM: 128MB (for program and users' storage)
 - SDRAM: 64MB DDR SDRAM
- LCD Module
 - Main LCD Module
 - 2.8", 240x320 dots resolution
 - 65K-color TFT Transmarine LCD with white LED backlight
 - Sensitive Touch Screen
- HSDPA/WCDMA/GPRS/EDGE/GSM Functional
 - Internal Antenna
 - Dual mode: HSDPA/WCDMA and GSM//GPRS/EDGE
 - HSDPA/UMTS:
 - Tri-band (2100MHz and 850MHz/1900MHz)
 - GSM/GPRS/EDGE:
 - Quad-band (850/900/1800/1900MHz)
 - Auto Band Switching
 - Global roaming
 - Handover and cell selection between 2G and 3G
 - Audio codec: AMR, EFR, FR, HR
 - SMS (MO, MT), concatenated SMS (640 characters)
 - Generic services
 - Call holding, waiting, forwarding and barring
 - CLI (Call Line Identity)
 - Display own number
 - Network selection
 - Cell broadcast
 - Multi-party conference capability
 - Spool icon
 - Network lock
 - Phase 2+ unstructured supplementary service data
 - CPHS
 - HSDPA/UMTS Function
 - UMTS R99 compliant, HSDPA Release 5
 - UE category 12/6, QPSK, 1.8/3.6Mbps peak rate
 - PS RAB on HSDPA channel and CS data call(VT call)
 - EDGE/GPRS/GSM Function
 - (E)GPRS Class B

- Multi-slot Standard Class 10
- WAP over (E)GPRS
- (E)GPRS indicator
- Coding Scheme
- (E)GPRS PBCCH
- USIM/SIM
 - 1.8V/3V of UICC
 - USIM application
 - SIM application tool kit
 - Over the Air (OTA) programming
 - FDN (Fixed Dialing Number)
 - ADN (Abbreviated Dialing Number)
 - Security PIN 1&2 control
 - Mega-SIM(SIM+)/EAP-SIM
- GPS
 - Acquisition time
 - Hot start 8 seconds
 - Warm start 35 seconds
 - Cold start 45 seconds
 - Update rate is user configurable once/1,10,30 sec continuous
 - GPS Accuracy
 - Position: < 15 meters, 95% typical
 - Velocity: 0.05 meter/sec steady state
- Keyboard/Button
 - Button
 - Power button, 5-way navigate d-pad, Send/Hands-free button, End button, Ok button
 - Full-Scrolling Jog Wheel/Volume up & down (left side)(wake-up key)
 - Voice command / Voice record button
 - 2 soft-keys button (Calendar and Contact)
 - Start button
 - Back button(Below Jog Wheel, left hand side)
 - Camera capture button(right hand side)
 - Reset
- Notification
 - One bi-color(red & green) LED for UMTS/GSM standby, UMTS/GSM message, UMTS/GSM network status, and charging status
 - Two respective (blue and green) LEDs for Bluetooth/Wi-Fi notification
 - Notification by LED, sound, Vibration, message on the display
- Audio
 - Build-in Microphone
 - Receiver
 - Loud speaker for Hands-free supported
 - Full duplex
 - WAV/WMA/AMR/AAC/MP3 codec
 - 16 bits with 8KHz, 11KHz, 22KHz, 44.1KHz and 48KHz
- Camera
 - Main camera 2 mega-pixel CMOS
 - Second camera VGA CMOS
 - Lighting min 5 LUX
 - Continuous Digital Zoom
 - Night Mode
- Bluetooth
 - Compliant with V2.0

- Class 2 transmit power
- Co-exist with WLAN
- Supported profiles:
 - Generic Access Profile
 - Serial Port Profile
 - Object Push Profile
 - Generic Object Exchange Profile
 - ActiveSync legacy application via SPP
 - Headset Profile
 - Heads-free Profile
 - Advanced Audio Distribution Profile (A2DP)
 - Audio/Video Remote Control Profile (AVRCP)
 - Service discovery application profile
 - Human Interface Device Profile
- WiFi
 - IEEE 802.11b/g supported
 - Internal WLAN antenna
- Interface
 - Infrared IrDA SIR
 - 1.8V/3V USIM/SIM card
 - 11-pin min-USB (USB 1.1)/audio jack in one
 - Mini SD card
- Power
 - Removable rechargeable Lithium Polymer battery
 - Capacity: 1500mAh
 - Charging time: 3.5 hours
 - GSM Talk-Time: 4~5 hours
 - UMTS Talk-Time: 2~4 hours
 - GSM Standby Time: 200+ hours
 - UMTS Standby Time: 180~250 hours
 - Playing WMV 8 hours
 - Playing WMA 12 hours
 - AC Adapter.
 - AC input rating: 100-240Vac, 50-60 Hz.
 - DC output: 5V / 1A
- Hanger Hole
 - Stylish hanger on the cover to wear phone with neck strap as pendant or to attach various phone hangers.
 - Lanyard support.
- Accessories
 - Inbox
 - AC adapter with mini-USB power plug
 - Sync. Cable (mini-USB)
 - Battery (rechargeable and replaceable)
 - Stylus
 - Carrying case
 - Stereo-wired headset with microphone
 - Option
 - Car adapter.
 - Cradle
 - 11-pin to 3.5 connector
 - TTY adapter
 - Battery Charger

- Microsoft Windows Mobile 5.0 Applications
 - Pocket Outlook: Calendar, Contacts, Messaging, Tasks, and Voice Notes
 - Push Mail
 - Internet Explorer Mobile
 - Office Mobile: Word, Excel & PowerPoint Mobile
 - Windows Media Player 10 Mobile
 - Pictures & Videos
 - ActiveSync Client
 - Pocket MSN
 - Device Management
 - OTA Provisioning
 - Terminal Service Client
 - Calculator
 - Games
- Value Added Application
 - Camera/Camcorder
 - Picture Enhancement for Pictures & Videos
 - Polyphonic MIDI Ringtone
 - Audio/Video enhancement for WMP
 - 3G-324M Video Telephony
 - ZIP
 - Smart Dialing
 - MMS Client: MMS 1.1 supported
 - Java virtual machine (J2ME, CLDC 1.1, MIDP 2.0)
 - Voice Dial & Command
 - Document Viewer – PDF
 - OMA DRM 1.0 supported
 - SIM Manager
 - Comm. Manager
 - Wireless Modem
 - BlackBerry Web Client
 - Smart Dial
 - Voice over IP Client(SIP)
 - GPS Navigation Software
- Carrier Specific Applications
 - 3GPP(T-mobile, CHT, Vodafone)
 - Java-VFX Phase I (Vodafone)
 - Visto (Vodafone)
 - SEVEN(Cingular)
 - WAP Push OTA(Vodafone)
 - TTY for US Market
- Regulatory
 - PTCRB
 - R&TTE
 - FCC
 - BQB (Bluetooth Qualification Body) certification
 - Windows Mobile Logo (NTSL)
 - USB certification
 - GCF certification
 - WiFi certification

CHAPTER 2 – SERVICING TOOLS

2.1 Repair Level Definition

Unit

- L0 Accessory test and unit swap
- L1 Unit Test and ROM Re-flash
- L2 Refurbishment and Module Swap +L1
- L2.5 M/B Repair(connector, button, MIC...) +L2

2.2 List of Servicing Tools

level	No.	Item	Use for	Remark
L 1	1	Mini USB DATA interface Cable	Check for mini USB communication; RUU re-flash	
	2	Earphone Headset	For Audio test.	
	3	AC Adapter	Transfer AC to DC for Unit	
	4	WLAN AP	For WiFi test	
	5	Mini SD Card with Diagnostic test program (must be encoded by HTC)	For unit diagnostic test	HTC design
	6	128MB mini SD memory card (must be encoded by HTC)	For unit ROM code transfer to SD card for re-flash	HTC design
	7	Unit current consumption test fixture	Measure Unit current consumption	HTC design
	8	Power supply		
	9	Current Meter		
	10	Mobile tester	For RF test	
L 2	11	Special Made Plastic Stick	Assembly & Disassembly	HTC special tools
	12	Hand tools	Assembly & Disassembly	
	13	Label printer	Print agency label if replacing M/B	
L 2.5	14	Lead-free Soldering station	Board level repair	
	15	Air heater	Board level repair	

CHAPTER 3 – ASSEMBLING AND DISASSEMBLING

3.1 Disassembling

	<p>Tools needed for Assembling and Disassembling</p> <ol style="list-style-type: none"> 1. Glove & Lens Cleaning Tissue. 2. Plastic type tweezers. 3. Philip Screw Driver 000X40. 4. Philip Screw Driver T6X40 5. Flat Plastic Stick
	<ol style="list-style-type: none"> 1. Eject the Stylus. 2. Eject the mini SD card if available.
	<p>Push battery cover to remove.</p>



Remove the battery.



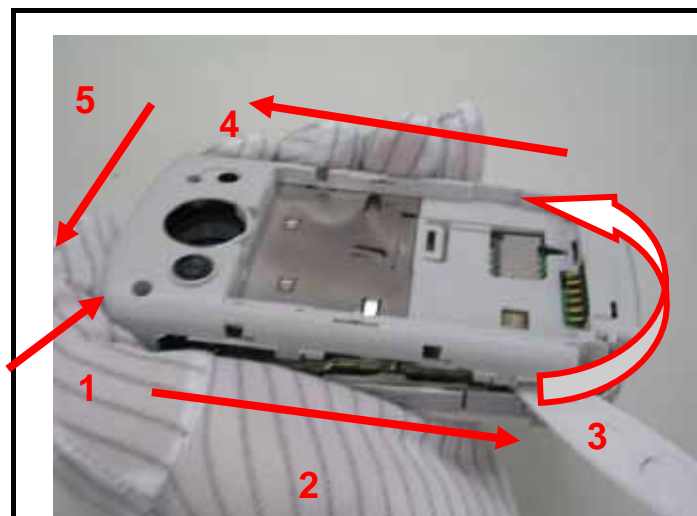
Warning: To reduce risk of fire or burns, do not disassemble, crush, puncture, short external contacts, or dispose of in fire or water. Replace only with specified batteries. Recycle or dispose of used batteries properly



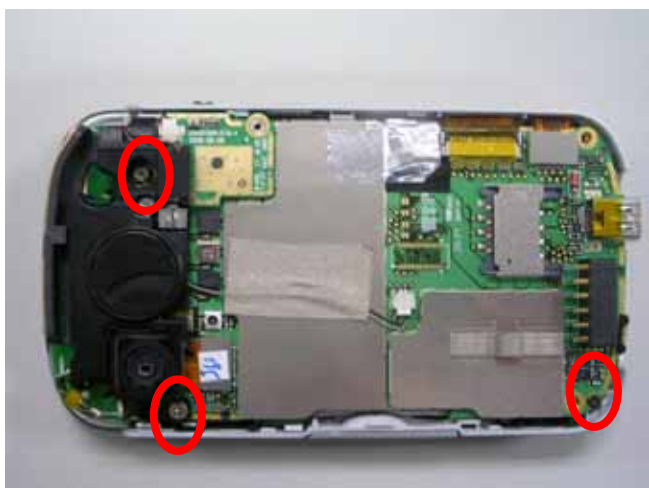
Release 5 screws on housing.



Use screwdriver insert tophook and release the top side of housing.



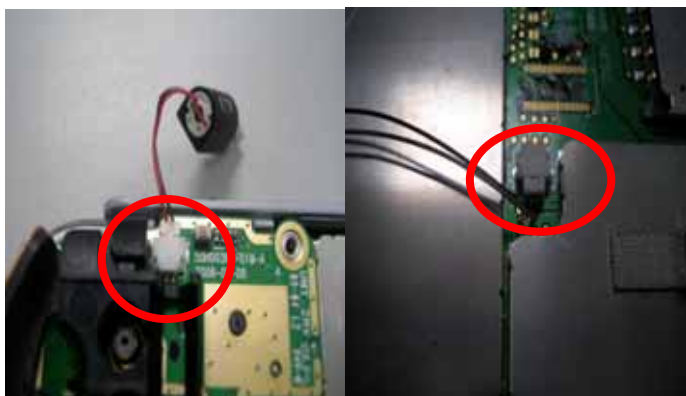
1. Insert plastic stick into the gap.
2. Release the hooks around the sides of unit to remove the housing.



Release 2 screws of speaker and 1 screw of main board.



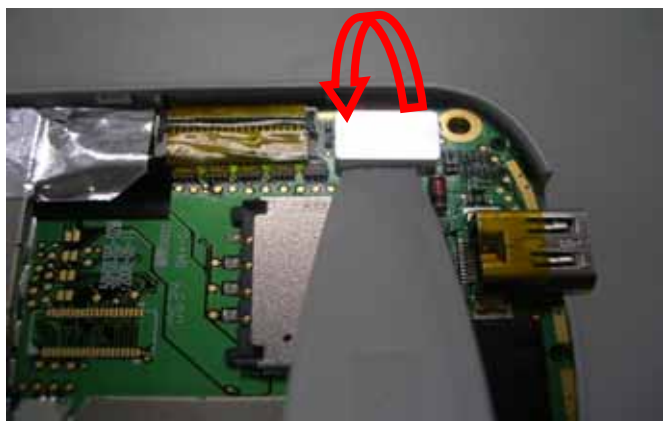
Rip off the gasket from main board.



Disconnect the connector of vibrator and speaker.



Remove main camera module and rubber.



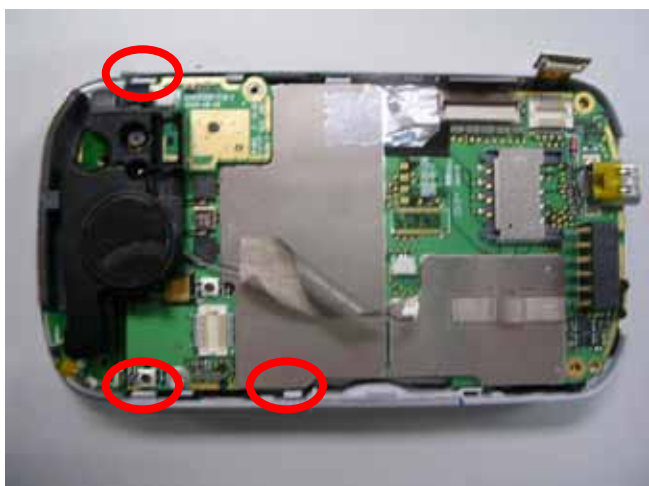
Remove keypad connector.



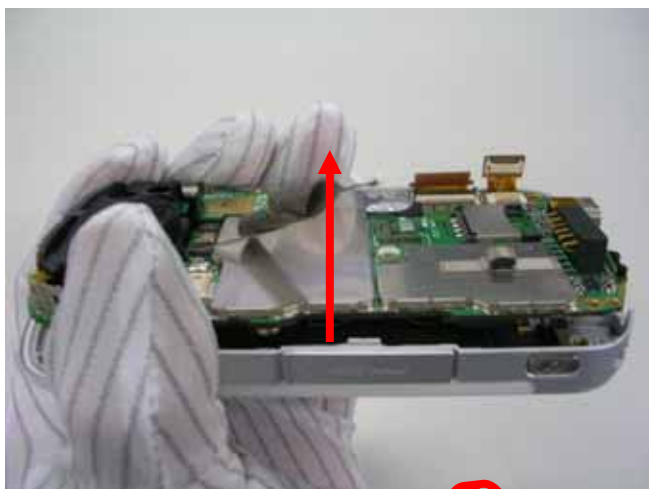
Remove the LCM connector Tape.



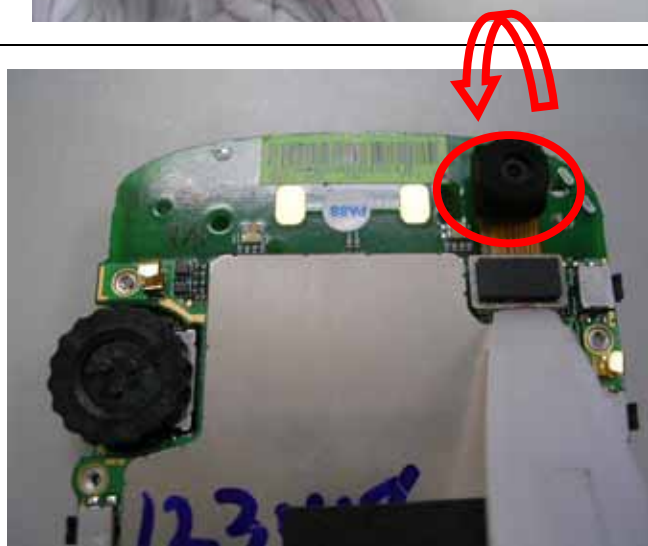
Open the LCM connector cover .



Release the hook.



Lift the main board to take it out.



Disconnect camera module and rubber



Release the hook of speaker and take it out.





Remove rubber cap of microphone.



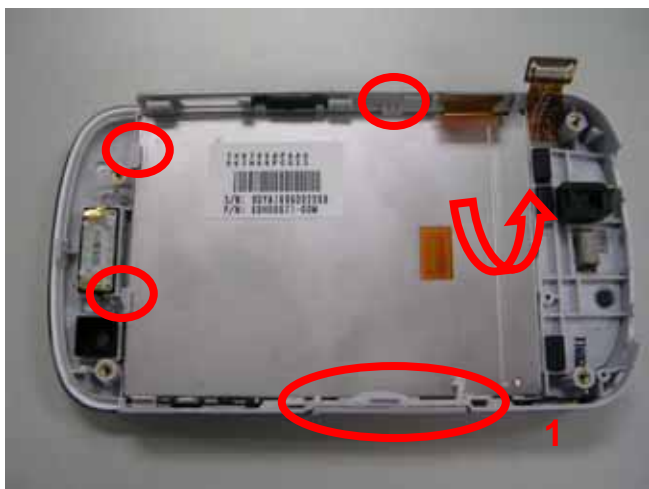
1. Release 1 screw of Jog wheel board.
2. Remove the Jog wheel board.



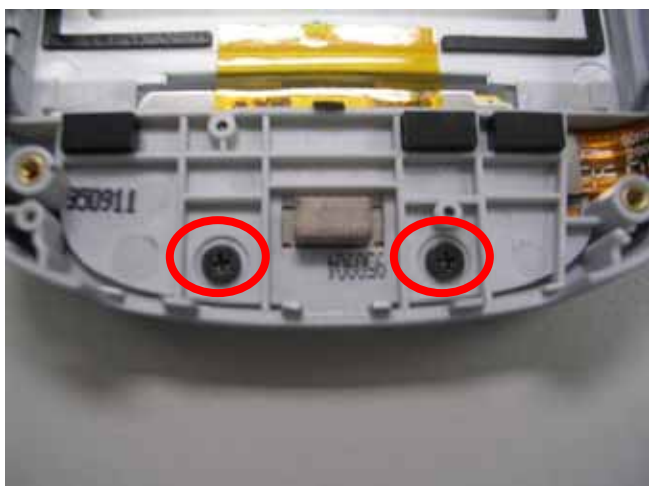
Release the receiver from the bezel .

*****Be informed to avoid the pin deforme .**





1. Remove the SD cover.
2. Release the hook and take out the LCM.



1. Release 2 screws of bezel.
2. Take out the keypad.

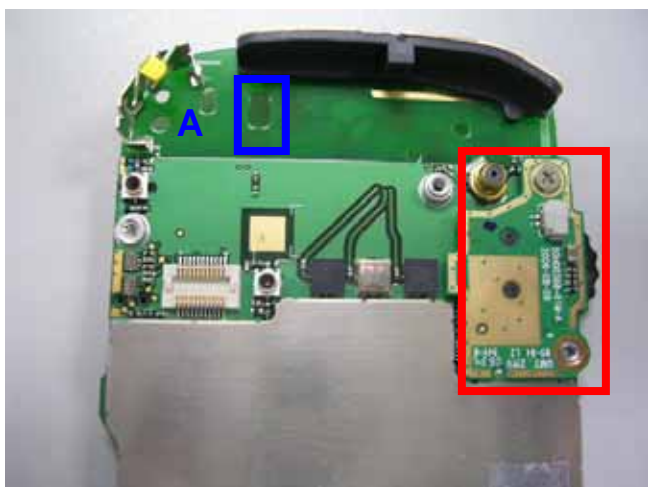


1. Release 2 screws of FPC.
2. Take off the FPC.

The disassembly procedure is finished.



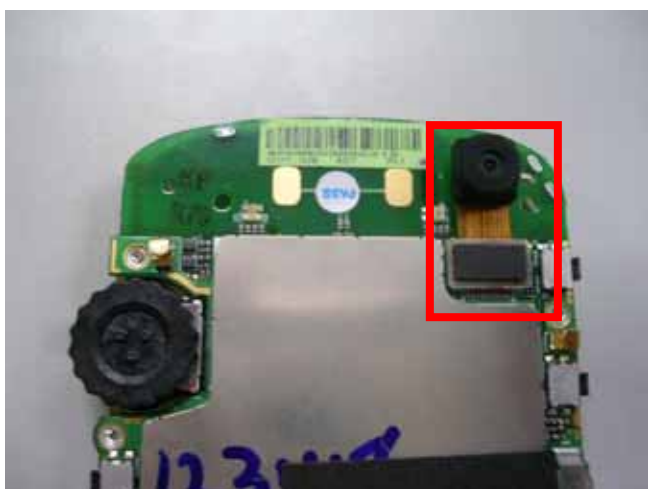
3.2 Assembling



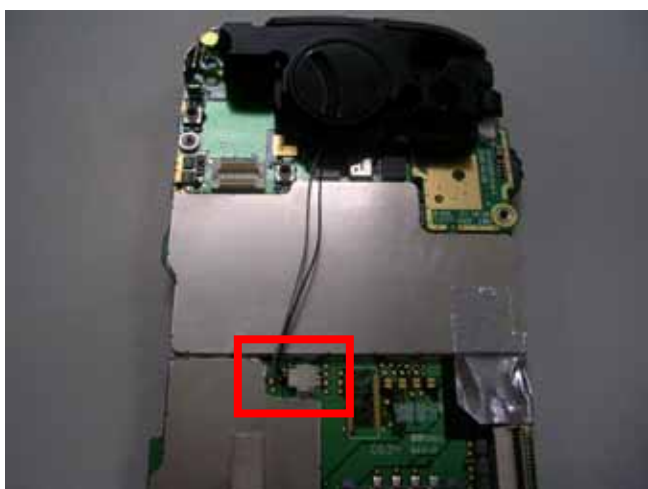
1. Connect the Jog wheel board.
 2. Fasten 1 screw to fix the Jog wheel board.
- Note point A in picture is fix point for speaker insertion

Screw:72H00800-00M

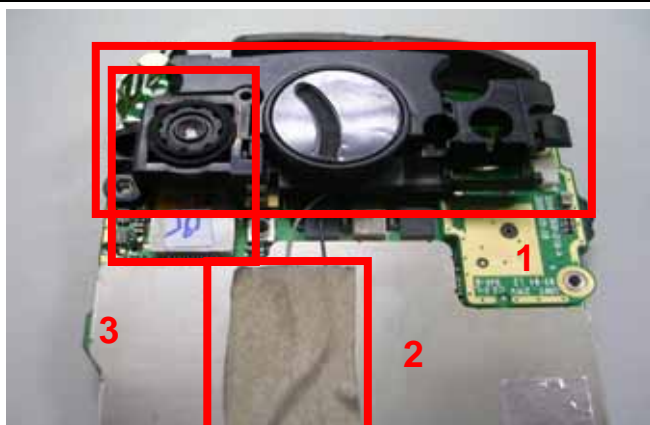
Torque:1.1+0.1 kgf-cm



Connect the Camera module.



Connect the speaker.



1. Insert the speaker into main board and make sure it is fixed into hook "A".
2. Stick the gasket on main board.
3. Assemble the main camera on main board.



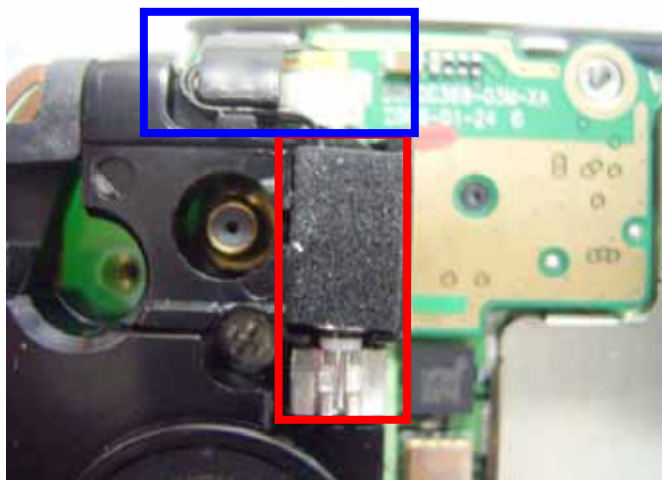
Fasten 2 screws to fix it.

Screw: 72H00800-00M

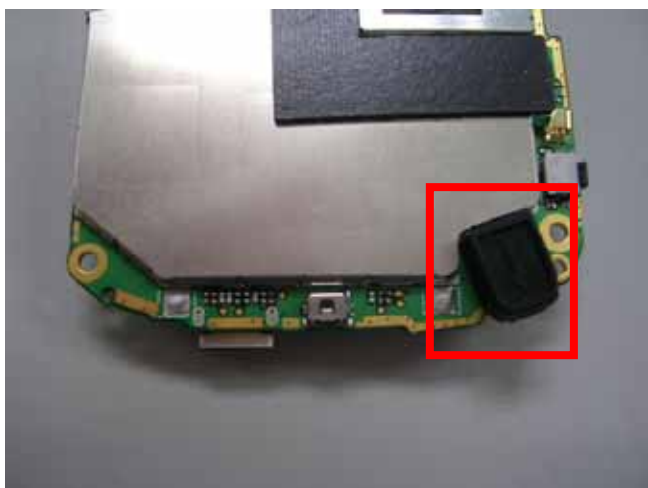
Torque: 1.1+-0.1 kgf-cm



Connect the vibrator.



Insert the vibratory into main board and route its cable along as shown in picture.
The vibrator is placed between Jog wheel board and speaker module as shown in picture.



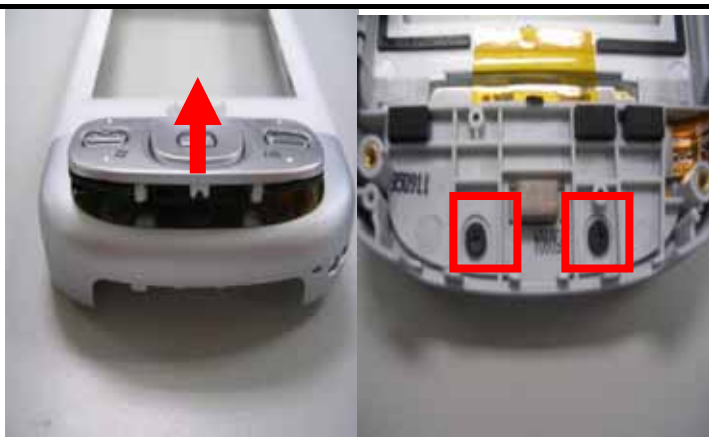
Assemble microphone rubber on the main board.



1. Insert the FPC into bezel.
2. Fasten 2 screws to fix it.

Screw: 72H00459-00M

Torque: 0.4 +0.1 kgf-cm



1. Assemble the keypad into the bezel.
2. Fasten 2 screws to fix it.

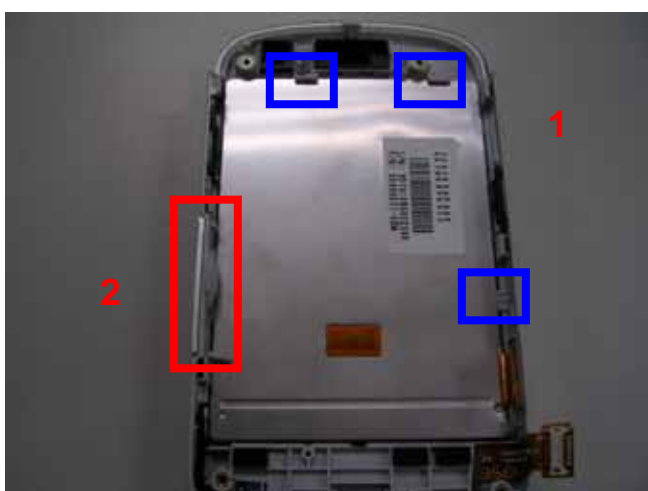
Screw: 72H01588-00M

Torque: 0.7+-0.1 kgf-cm

When assembling is done, check keypad, navigation key and keypad click feeling, especially key stuck isn't allowed.



Assemble receiver to the bezel.

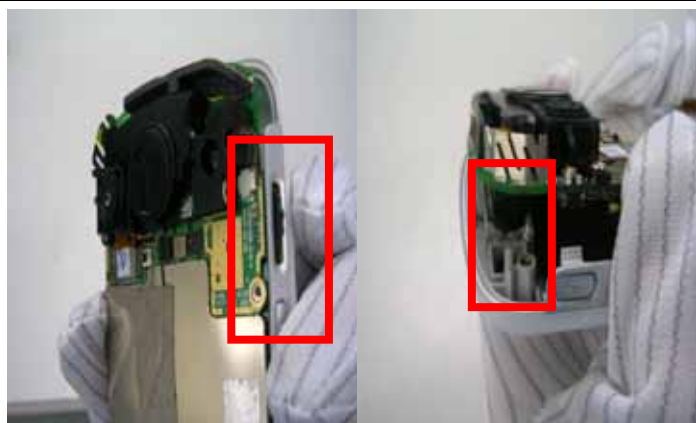


1. Assemble LCM into bezel starting from its bottom side; ensure it is fixed in three hooks as shown in picture.

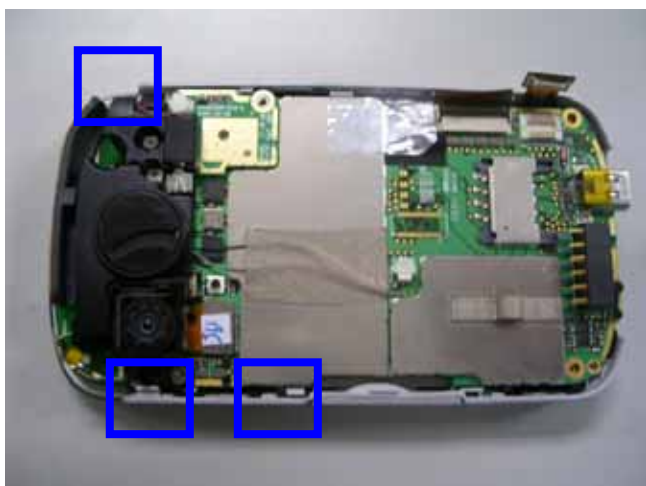
2. Assemble SD cover into bezel.



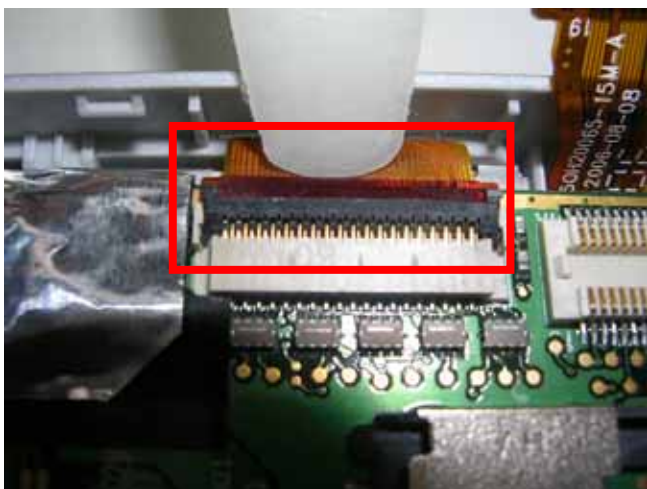
Assemble the LCM and the main board.



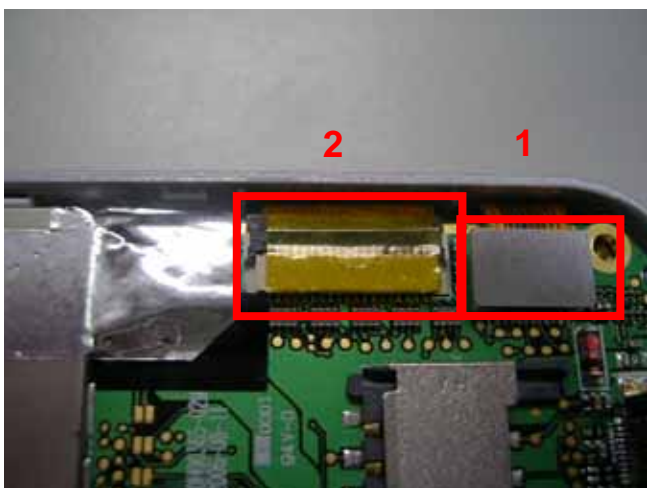
Assemble the Jog wheel and camera module.
Ensure it is placed into bezel as shown in picture.



Ensure main board is fixed in three hooks as shown in picture.



Assemble the connector of LCM to main board.

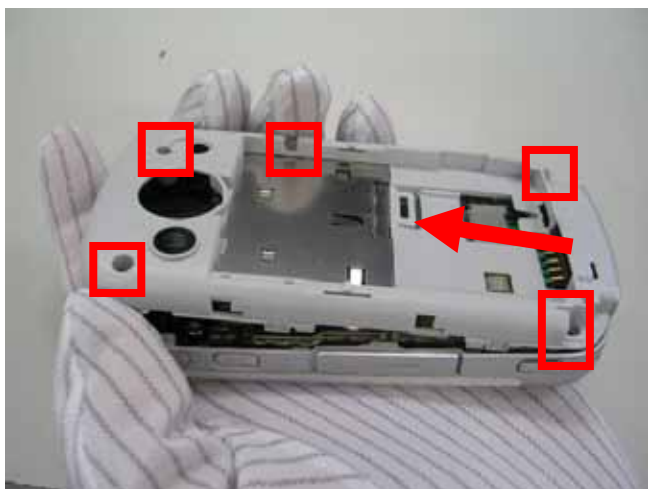


1. Connect keypad connector to main board.
2. Stick a tape on the top.



Fasten 1 screw to fix main board.

Screw: 72H00459-00M
Torque: 0.4+-0.1 kgf-cm



1. Assemble the housing on the bezel
2. Fasten 5 screws to fix it.

Screw:72H01059-00M
Torque: 1.1+-0.1 kgf-cm



Assemble the battery, follow direction shown in picture.



1. Assemble the battery cover on the housing.
 2. Assemble the stylus on the housing.
- The assembly process is finished.

CHAPTER 4 – FUNCTION TEST PROCEDURE

4.1 List of Diagnostic / WinCE Test Items

Mode	No	Item	Description	Remark
Diagnostic	Function Test			
	1	SDRAM Test	RAM memory test.	
	2	Display Test	Color bar/R/G/B/Black/White/Gray pattern.	
	3	Touch Screen Test	Align screen test.	
	4	LED Test	Green/Red/Blue/Key Pad.	
	5	Button Test	Send/End/Soft1,2/Start/OK/Up/Down/Left/Right/Action /Power/Record//Camera/Jog Up, Act, Dn/Back	
	6	B. L Test	Front light test (On/Dim/Off).	
	7	Timer Test	RTC (Real time clock) test.	
	8	SD Card Test	SD card Read/Write test.	
	9	Mega SIM Test	Mega SIM card test.	
	10	Checksum Test	ROM checksum test.	
	11	Battery Test	Battery info check.	
	12	Vibrator Test	Vibrator on test.	
	13	Speaker Play Test	Speaker out test.	
	14	Receiver Play Test	Receiver out test.	
	15	Headset Play Test	Headset out test.	
	16	Int. Rec-Spk out Test	Internal MIC record and play to Speaker test.	
	17	Int. Rec-Rev out Test	Internal MIC record and play to Receiver test.	
	18	Int. Rec-HST out Test	Internal MIC record and play to Headset test.	
	19	HST Rec-HST out Test	External MIC record and play to Headset test.	
Run-in Test				
1	1 Hour	1 Hour Run-in Test/Press UP key.	Option	
2	2 Hours	2 Hours Run-in Test/Press DN key.	Option	
3	4 Hours	4 Hours Run-in Test/Press LF key.	Option	
4	8 Hours	8 Hours Run-in Test/Press RG key.	Option	
Format FAT / Clear PIN (Personal information, talk times)				
Unit Information				

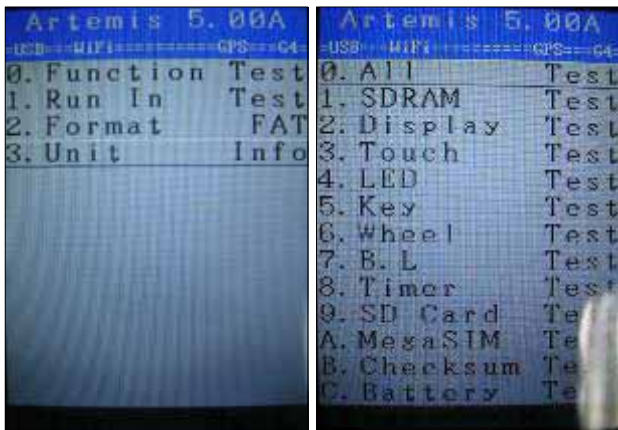

WinCE	1	USB Test	USB link test (Microsoft ActiveSync).	
	2	Camera Test	Camera test.	
	3	Bluetooth Test	Bluetooth test.	
	4	WLAN Test	WLAN test.	
	5	GPS Test	GPS test.	





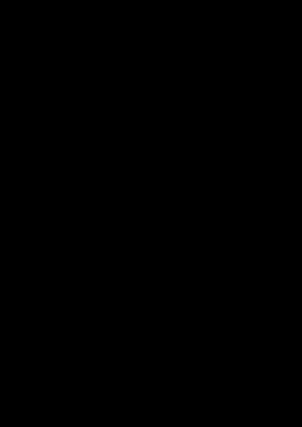
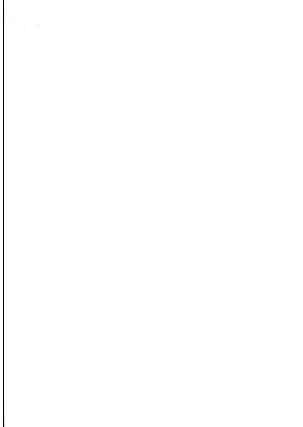
4.2 Test Procedure

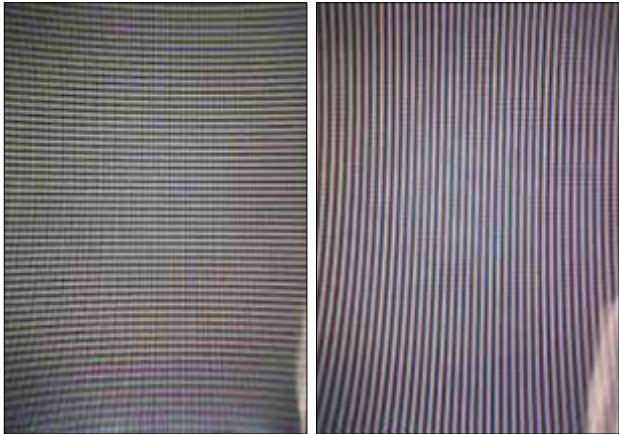
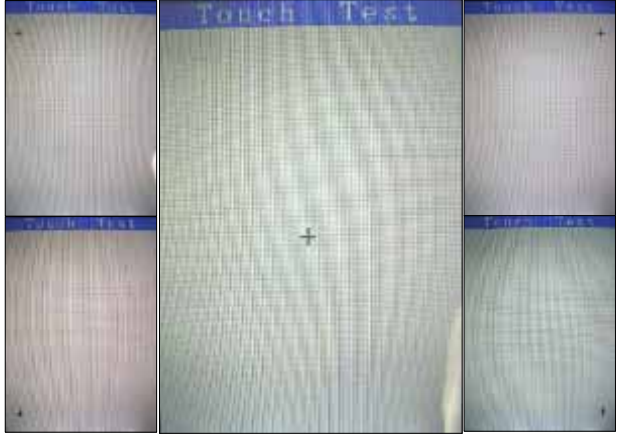

How to select test item: Using navigation button -"Up" or "Down" or "Jog Wheel" to select the test items

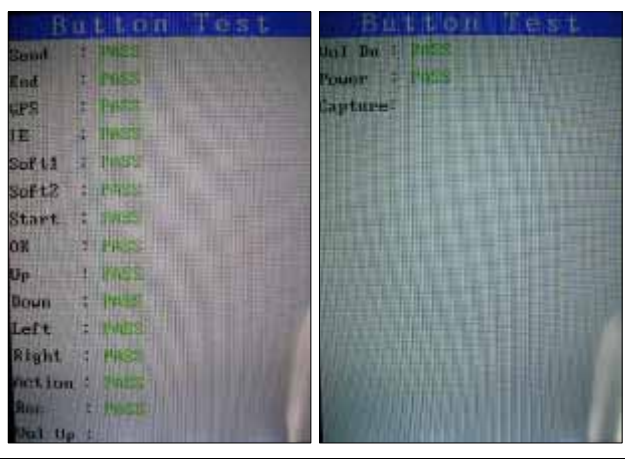


How to execute the test program: Press "Action" button to start each of test items.


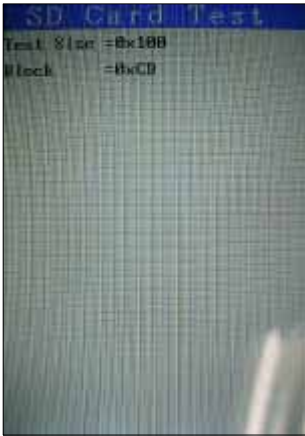

4.2.1 Diagnostic Test


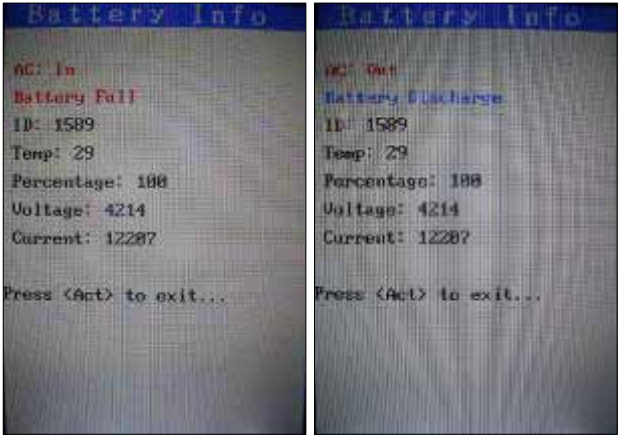
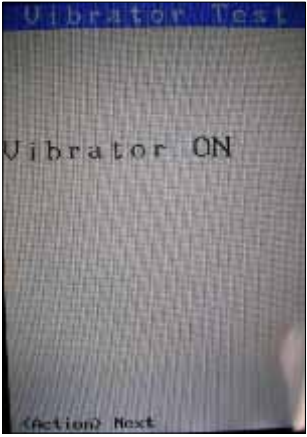
Main Menu/Function Test Menu	
<ol style="list-style-type: none"> Turn the device power off and insert Diagnostic SD card. Press and hold Power + Capture button, including Reset button, and then enter Diagnostic mode. Using Jog-wheel to select the test item and move to next page as well. Select item "Function Test" to find the Function test menu. 	
SDRAM Test	
<ol style="list-style-type: none"> Press Action key (Jog-ball) to select SDRAM Test on Function test menu. The program will test SDRAM block automatically. The screen will return to Function test menu after the test is finished. 	
Display Test (Color bar and RED pattern)	

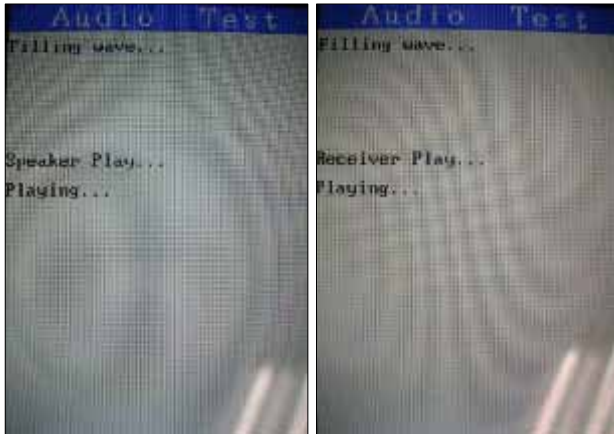
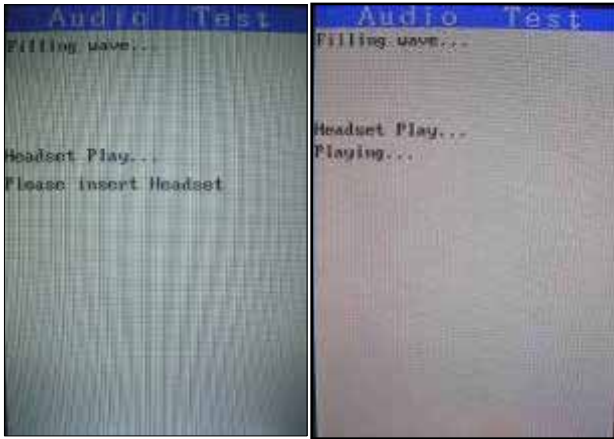
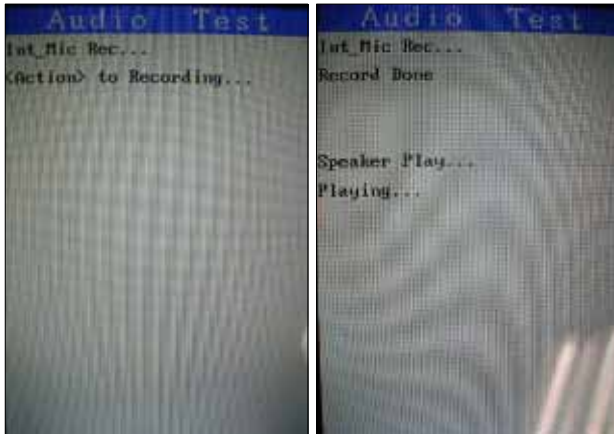
<p>I. Press Action key (Jog-ball) to select <u>Display Test</u> on Function test menu.</p> <p>II. After the test pattern is show up, please check the pattern if any un-uniform color or chromatist.</p> <p>III. Press Action key (Jog-ball) to go next test pattern.</p>		
Display Test (GREEN/BLUE pattern)		
<p>V. Press Action key (Jog-ball) to go next test pattern.</p>		
Display Test (BLACK/WHITE pattern)		
<p>VI. Press Action key (Jog-ball) to go next test pattern.</p>		
Display Test (Crabwise/Straight lines pattern)		

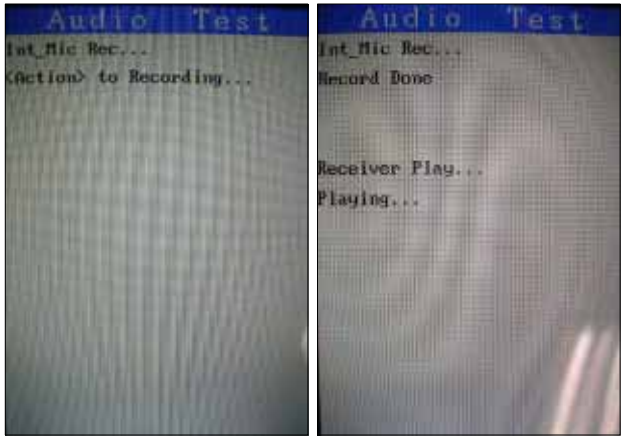
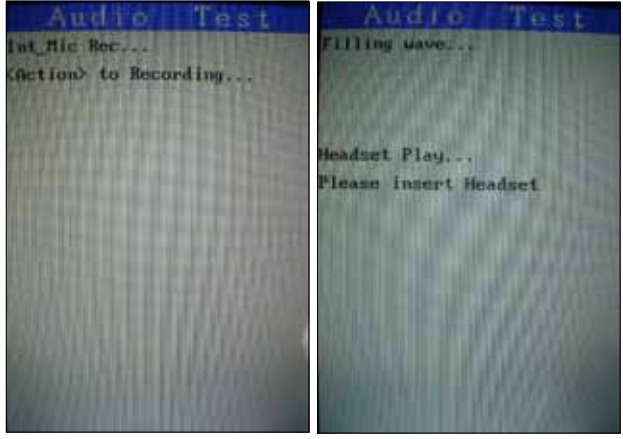
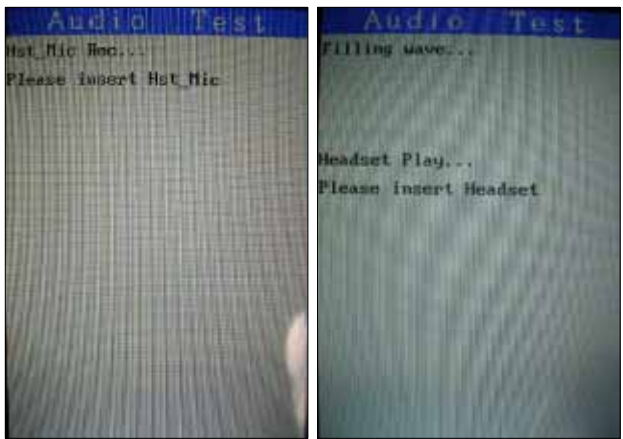
<p>VII. Press Action key (Jog-ball) to exit and return to Function test menu.</p>	
Touch Screen Test	
<p>I. Press Action key (Jog-ball) to select <u>Touch Screen Test</u> on Function test menu.</p> <p>II. Using Stylus to tap and follow the symbol “+” at Center, Up-left, Down-left, Down-right position of the screen to perform the test.</p> <p>III. The screen will return to Function test menu after the test is finished.</p>	
LED Test	
<p>I. Press Action key (Jog-ball) to select <u>LED Test</u> on Function test menu.</p> <p>II. Press Action key (Jog-ball) and follow the instruction on screen to perform the LED inspection test (<u>Green, Red, Blue, WLAN, GPS, and Keypad</u>).</p> <p>III. Press Action key (Jog-ball) to exit and return to Function test menu.</p>	
Key Test	




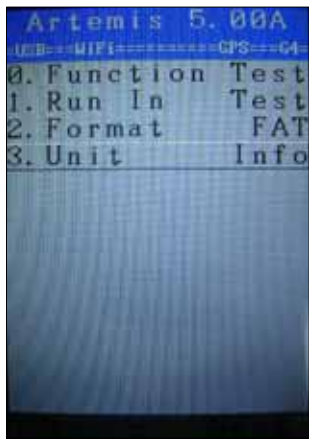
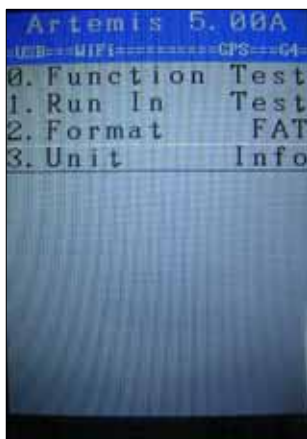

<ol style="list-style-type: none"> I. Press Action key (Jog-ball) to select <u>Key Test</u> on Function test menu. II. Follow the instruction on screen to perform the Key/Button test (<u>Send, End, Soft1/2, Start, OK, Up/Down/Left/Right, Action, Record, Volume Up/Down, Power, and Camera</u>). III. The screen will return to Function test menu after the test is finished. 	
Wheel Test	
<ol style="list-style-type: none"> I. Press Action key (Jog-ball) to select <u>Wheel Test</u> on Function test menu. II. Wheeled the dial scale clockwise from scale1 to 10 to check the acting area is functional. III. Wheeled the dial scale anti clockwise from scale1 to 10 to check the acting area is functional. IV. The screen will return to Function test menu after the test is finished. 	
LCD Back Light Test	
<ol style="list-style-type: none"> I. Press Action key (Jog-ball) to select <u>B.L Test</u> on Function test menu. II. Press Action key (Jog-ball) to switch the LCD backlight level from <u>Super (100%) -> Typical (75%) -> High (50%) -> Low (25%) -> Off (0%)</u>. III. Press Action key (Jog-ball) to exit and return to Function test menu. 	
Timer (RTC) Test	

<ol style="list-style-type: none"> I. Press Action key (Jog-ball) to select <u>Timer Test</u> on Function test menu. II. The screen will return to Function test menu after the test is finished. 	
SD Card Test	
<ol style="list-style-type: none"> I. Press Action key (Jog-ball) to select <u>SD Card Test</u> on Function test menu. II. The screen will return to Function test menu after the test is finished. 	
Mega SIM Test (Option by Model)	
<ol style="list-style-type: none"> I. Please inset Mega SIM card to the device before test. II. Press Action key (Jog-ball) to select <u>Mega SIM Test</u> on Function test menu. III. The screen will return to Function test menu after the test is finished. 	
ROM Checksum Inspection	



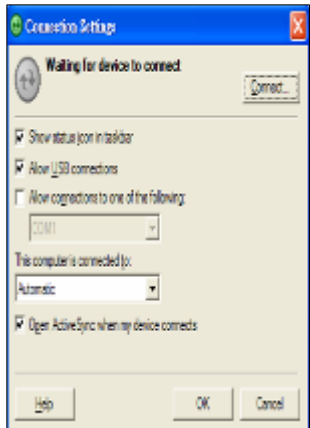

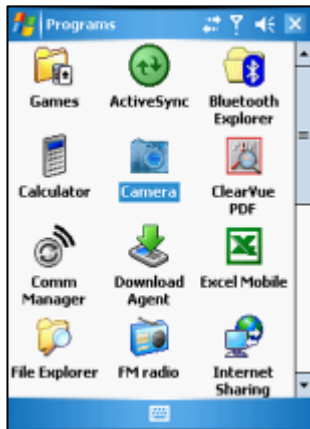



<ol style="list-style-type: none"> I. Press Action key (Jog-ball) to select <u>ROM Checksum Inspection</u> on Function test menu. II. Press Action key (Jog-ball) to exit and return to Function test menu. 	
Battery Test	
<ol style="list-style-type: none"> I. Press Action key (Jog-ball) to select <u>Battery Test</u> on Function test menu. II. Plug In/Out the AC-Adapter to check the battery charging/discharging status. III. Press Action key (Jog-ball) twice time to exit and return to Function test menu. 	
Vibrator Test	
<ol style="list-style-type: none"> I. Press Action key (Jog-ball) to select <u>Vibrator Test</u> on Function test menu. II. Press Action key (Jog-ball) to exit and return to Function test menu. 	
Speaker Play, Receiver Play Test	

<ol style="list-style-type: none"> I. Press Action key (Jog-ball) to select <u>Speaker Play Test</u> on Function test menu. II. Press Action key (Jog-ball) to select <u>Receiver Play Test</u> on Function test menu. III. The screen will return to Function test menu after the test is finished. 	
Headset Play Test	
<ol style="list-style-type: none"> I. Press Action key (Jog-ball) to select <u>Headset Play Test</u> on Function test menu. II. Insert Headset and hear the sound from device. III. The screen will return to Function test menu after the test is finished. 	
Internal Record Speaker Out Test	
<ol style="list-style-type: none"> I. Press Action key (Jog-ball) to select <u>Internal Record Speaker Out Test</u> on Function test menu. II. Press Action key (Jog-ball) to record the sound. III. Check the voice quality after the sound playback from speaker. IV. The screen will return to Function test menu after the test is finished. 	
Internal Record Receiver Out Test	

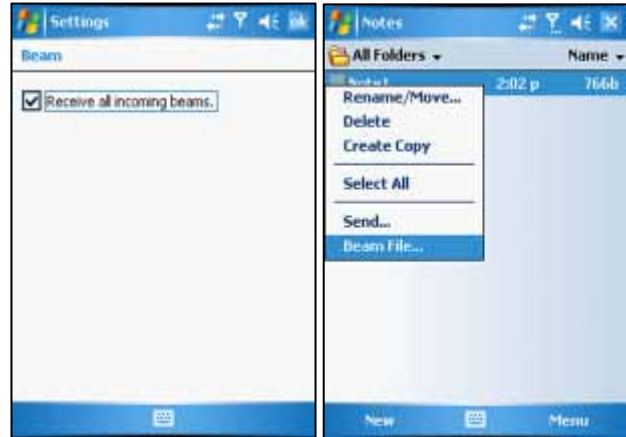
<ol style="list-style-type: none"> I. Press Action key (Jog-ball) to select <u>Internal Record Receiver Out Test</u> on Function test menu. II. Press Action key (Jog-ball) to record the sound. III. Check the voice quality after the sound playback from receiver. IV. The screen will return to Function test menu after the test is finished. 	
Internal Record Headset Out Test	
<ol style="list-style-type: none"> I. Press Action key (Jog-ball) to select <u>Internal Record Headset Out Test</u> on Function test menu. II. Press Action key (Jog-ball) to record the sound. III. Inset headset and check the voice quality when the sound playback from device. IV. The screen will return to Function test menu after the test is finished. 	
Headset Record Headset Out Test	
<ol style="list-style-type: none"> I. Press Action key (Jog-ball) to select <u>Headset Record Headset Out Test</u> on Function test menu. II. Inset headset and press Action key (Jog-ball) to record the sound. III. Check the voice quality after the sound playback from device. IV. The screen will return to Function test menu after the test is finished. 	
Run-In Test	

<ol style="list-style-type: none"> I. Return to Main Menu and press Action key (Jog-ball) to select <u>Run In Test</u>. II. Insert AC-adapter and press Start key to setup Run-In hour to 4. III. The program will perform cycling test (Vibrator, SDRAM, LED, Display, BL, Timer, and Audio) within 4 hours. 	 
Format FAT / Clear PIN (Personal information, talk times)	
<ol style="list-style-type: none"> I. Return to Main Menu and press Action key (Jog-ball) to select <u>Format FAT</u>. II. The screen will return to Function test menu after the test is finished. 	 
Unit Information	
<ol style="list-style-type: none"> I. Return to Main Menu and press Action key (Jog-ball) to select <u>Unit Information</u>. II. Press Action key (Jog-ball) to exit and return to Main menu. 	 

4.2.2 WinCE Test

USB Test	
<ol style="list-style-type: none"> I. Start up the Microsoft® ActiveSync® program in the PC. II. Insert USB cable and connect unit to desktop/ or laptop. III. The USB to PC icon -> is appears on the Today screen when your device is connected to your desktop/ or laptop. 	 
Camera Test	
<ol style="list-style-type: none"> I. Tap <u>Start->Program->Camera</u> or Press Camera button to turn on the Camera. II. Make sure the device will present and enter the preview display. III. Check camera pre-view and image quality. 	 
Bluetooth Test - 1	
<ol style="list-style-type: none"> I. Tap icon <u>Comm Manager</u> on the Today screen and turn on Bluetooth. II. Tap the icon “Settings” down-right the corner of the screen and select the “Make this device...” Checkbox. III. Press Action key (Jog-ball) to go next test pattern. 	 
Bluetooth Test - 2	

- V. Tap Start->Settings->Connections->Beam and select “Receive all...” Checkbox.
- VI. To create a file, tap Start->Programs ->Notes->New.
- VII. Tap and select the “Beam file...”



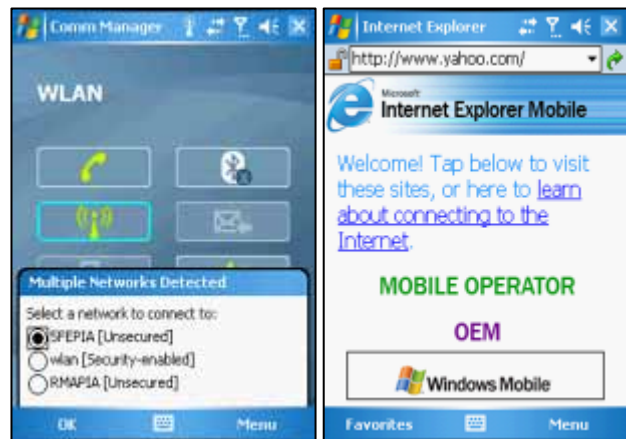
Bluetooth Test - 3

- VIII. Once device is searched, tap the device to send the file.
- IX. Return to Today screen and tap Start->Program->Comm Manager ->Bluetooth to turn off Bluetooth.



WLAN Test

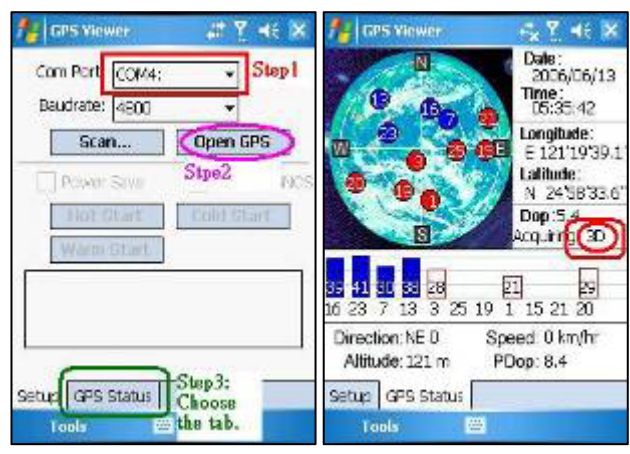
- I. Tap icon Comm Manager on the Today screen and turn on WLAN.
- II. Select the hot-spot/ or access point which searchable and appears on screen.
- III. Once the hot-spot (access point) is connected, press the IE button and logon Internet.



GPS Test

- I. Install GPS tool to device and execute the program.
- II. Setup the COM port to COM4.
- III. Place device in GPS receptor coverage area and tap the icon "Open GPS".
- IV. Check the GPS status as picture shown.

[Note]: Please build up similar GPS test station in repair center.



CHAPTER 5 –SOFTWARE UPGRADE PRCEDURE

System Requirement:

- Windows 2000/XP
- USB Cable
- ActiveSync 4.0 above
- Master Unit
- 128 MB Mini SD card

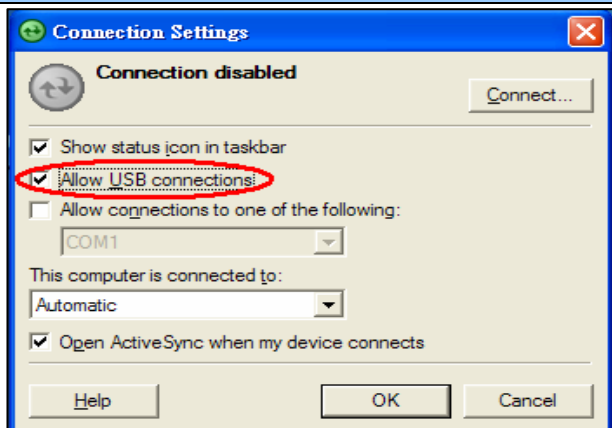
Caution: The unit must have at least 70% of battery capacity before starting the re-flash process. Charge the battery in advance if necessary.

For the master unit, you could prepare it in the following ways:

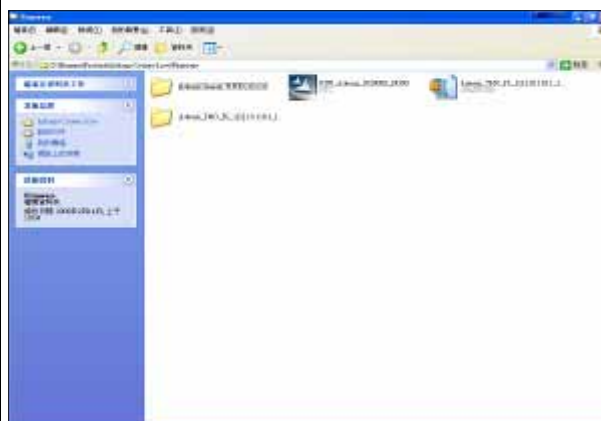
- Take one from Swap unit with the most up to date Rom Code.
- Build one first by connecting to SDO for OS Upgrade/ Download via RUU.

HTC RMAIII – Service Document Online: <https://rma.htc.com.tw/rmaiii/home/index.asp>

5.1 RUU (Re-flash Upgrade Utility)

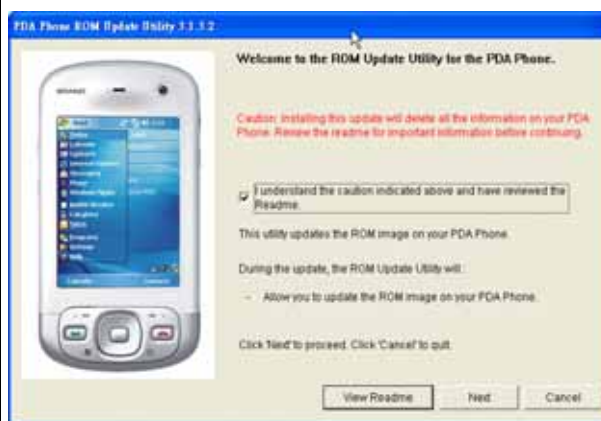
Connect device to PC	
<ol style="list-style-type: none">I. Setting and allow USB connections in Microsoft ActiveSync.II. Connect your device and desktop/ or laptop via USB cable.III. Check the pop-up message from Microsoft ActiveSync when device is synchronized with PC.	
Download OS Image from SDO	

- IV. Download OS image from SDO.
<http://htcscm10.htc.com.tw/SDO>
- V. Un-zip the file and execute RUU program.



RUU - 1

- VI. Read the pop-up message form ROM update utility and select the “I understand...” checkbox.
- VII. Click “Next” to proceed.






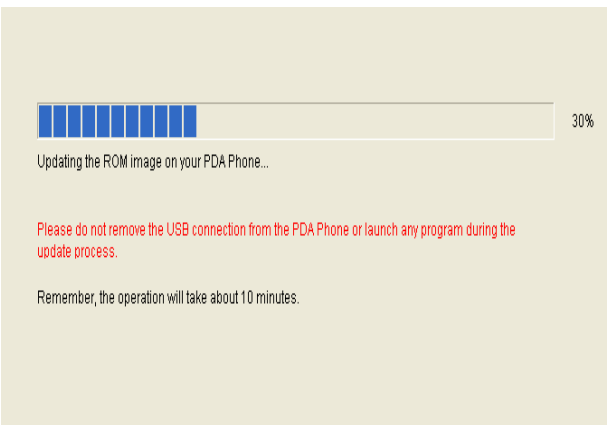
RUU - 2

- VIII. Read the pop-up message form ROM update utility to follow and perform the instructions and select the “I completed...” checkbox.
- IX. Click “Next” to proceed.




RUU - 3

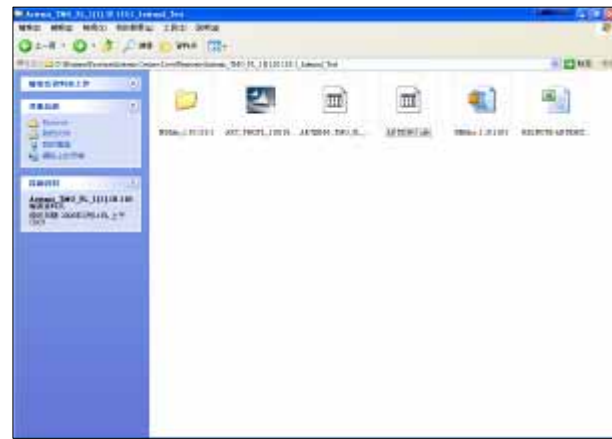
<p>X. Current image version confirmation. XI. Click "Update" to proceed.</p>	
RUU - 4	
<p>XII. Double verify the ROM revision which you want to update before re-flash procedure. XIII. Click "Next" to proceed.</p>	
RUU - 5	
<p>XIV. Read the information from pop-up message and the OS update procedure will take 10 minutes long. XV. Click "Next" to proceed.</p>	
RUU - 6	


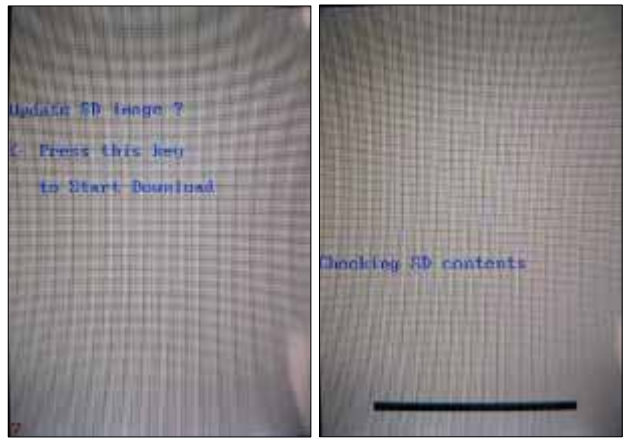
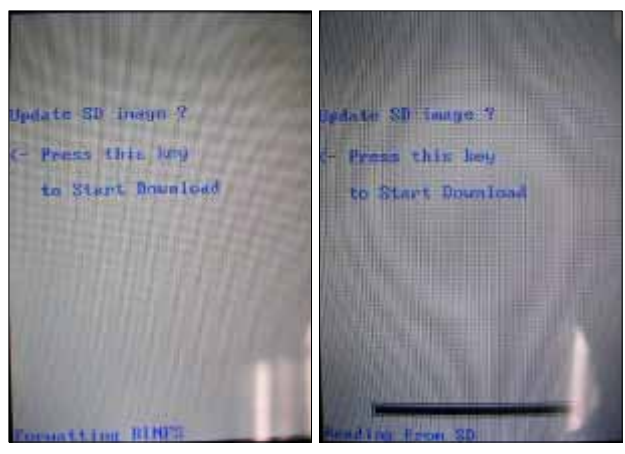
<p>XVI. You can see the update progress from your PC and in your device.</p>	 <p>Updating the ROM image on your PDA Phone...</p> <p>Please do not remove the USB connection from the PDA Phone or launch any program during the update process.</p> <p>Remember, the operation will take about 10 minutes.</p>
--	---

RUU - 7

<p>XVII. The OS upgrade is finished, click "Finish" to close the utility.</p>	 <p>PDA Phone ROM Update Utility 3.3.1.2</p> <p>Congratulations! Your ROM update is now complete. Your PDA Phone is ready for use.</p> <p>Follow the instructions on your host PC to re-establish a partnership and synchronize your data using ActiveSync.</p> <p>Click "Finish" to close the utility.</p> <p>Finish</p>
---	--

5.2 SD card upgrade

Download OS Image from SDO	
<ol style="list-style-type: none"> I. Download OS image from SDO. http://htcscm10.htc.com.tw/SDO II. Un-zip the image file. 	
Format SD card and copy image file to SD card	

<p>III. Select file system and format the SD card to FAT32 mode.</p> <p>IV. Copy the image file XXX.nbh to Mini SD card and rename to TRINIMG.NBH.</p>	
<p>SD Upgrade - 1</p>	
<p>V. Turn the device power off and insert Diagnostic SD card.</p> <p>VI. Press and hold Power +Capture button, and Reset button to entry Boot loader mode.</p> <p>VII. Press power key to start upgrade procedure.</p> <p>[Note]: This process will takes 5 mins, please don't power off the device.</p>	
<p>SD Upgrade - 2</p>	
<p>VIII. Take out the SD card.</p> <p>IX. Cold boot the device.</p>	

Now the upgrade is done!

Note: Due to security issue, it is not allowed to re-flash different customer ID.

CHAPTER 6 –LEAKAGE CURRENT MEASUREMENT

This is a quick method to measure if any abnormal leakage current on main board which caused high power consumption compare to GOOD main board.

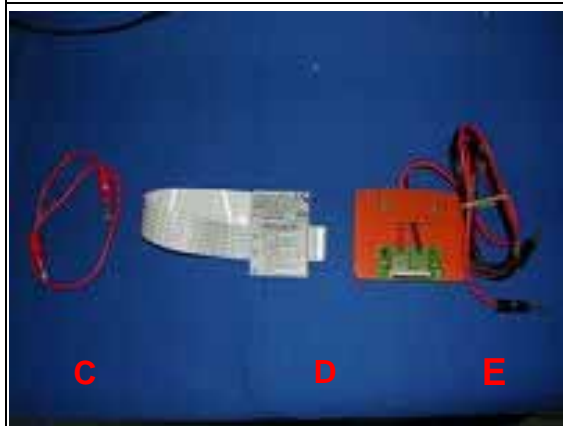
(1) Requirement :

- Power Supply
- Micro-current Meter
- Current series JIG
- CABLE
- Battery JIG



1. Equipment need:

- A. Power Supply (set at 4 V /1A).
- B. Micro-Current Meter (support 0.5mA ~ 1A).

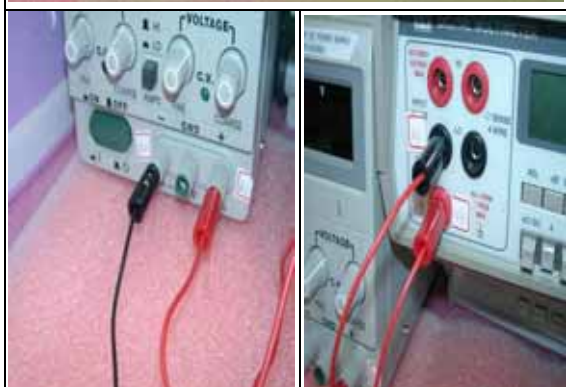


2. Fixture needed

- C. Cable
- D. Battery with extension cable
- E. Current series jig.(with black and red cable)

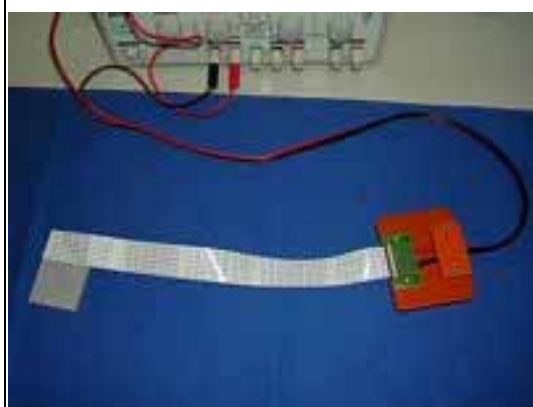


3. Connect cable (D) to positive polarity of power supply (A) and current meter (B)



4. Connect cable of fixture(C) to negative polarity of power supply (A) and current meter (B)

Note : black cable to power supply (A) and red cable to current meter (B)




5. Setting is **Ready for testing**

Assemble Battery into device.

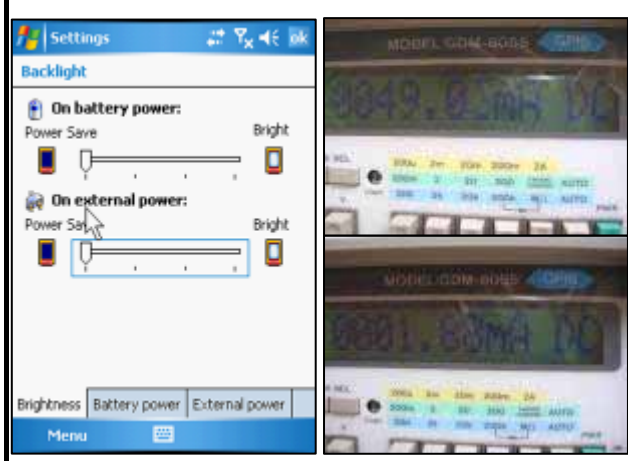
(Don't turn the power on at this moment)

Assemble Battery into device.



- I. Tap the icon  on the Today screen.
 - II. Turn off Phone.
 - III. Turn off WLAN, Bluetooth.
- Note: Need to put SIM card first on the unit.**

Leakage current measurement when Backlight off/Sleep mode



- Tap Start->System->Backlight.
- IV. Adjust the backlight level to 0% and checks the current from current meter. **[Note1]**
 - V. Press power button to initial device enter sleep mode and checks the current from current meter. **[Note2]**
- [Note1]:** 49mA (Spec TBDmA).
[Note2]: 1.88mA (Spec TBDmA).

Conclusion

- I. If current consumption test PASS when UUT in Flight and Sleep mode, it means that the M/B works normal.
- II. If current consumption test FAIL when UUT in Flight or Sleep mode, it means that the M/B works abnormal, please replace M/B and re-test again.

CHAPTER 7 – COSMETIC INSPECTION CRITERIA

7.1 Definition

- Examination of the device shall be made with workbench light turned on.
- Ambient illumination is to be 500-1000 Lux.
- The inspector shall examine the device at a distance of 30cm ±45degrees.
- Inspection time: 2 seconds per surface.

7.2 Inspection Defects and Area

- Scratch : A linear cut that penetrated beyond the surface of the material/ A scratch can be felt by running your finger over it.
- Dot / Dent : A recessed spot or void in the surface of the material.
- Lint : A linear foreign object beyond the surface of the LCD.
- D: Diameter/ L: Length/ W: Width/ Number: Number of defects/ S: Distance of dot to dot.
- Class A area: The front side of main unit involves all buttons and LED lens except LCD.
- Class C area: Four sides and back views of main unit.
- Class D area: Socket of battery, inner side of battery cover and back side of upper sliding part.

Figure 1: Photo of inspection areas



7.3 Criteria Table

➤ Main unit inspection:

Description	Accept criteria
Class A	Exposure of substratum is not acceptable Scratch : L 3mm ,W 0.2mm ,N 2
Class B & C	Exposure of substratum is not acceptable Scratch : L 7mm ,W 0.25mm ,N 3 Unconscious scratch on IR window is ignorable. IR window conscious scratch: L 3mm,W 0.2mm,N 3 Bright mark area should be less than 1 mm x 10 mm
Class D	Label area could be ignorable. Exposure of substratum is not acceptable. Scratch : L 10mm ,W 0.4mm ,N 5

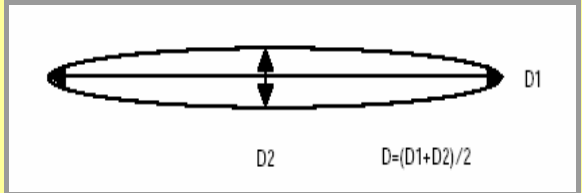
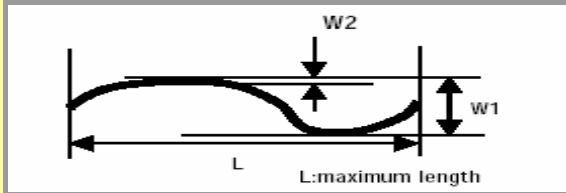
➤ LCM inspection:

- Electrical characteristic inspection standard

Symptom		Standard	Distance between defect dots
Bright Dots	Single	Red+ Green+ Blue 3	S 5 mm
	2 adjacent	N=0	
	3 or more adjacent	N=0	
Dark Dots	Single	Total Number 2	S 5 mm
	2 adjacent	N=0	
Dark or Bright lines		N=0	
All Allowable Dots Defects		Total Number 3	S 5 mm

* The total of LCM defect number must be less than 4 counts.

- Cosmetic/ Visual defect inspection standard

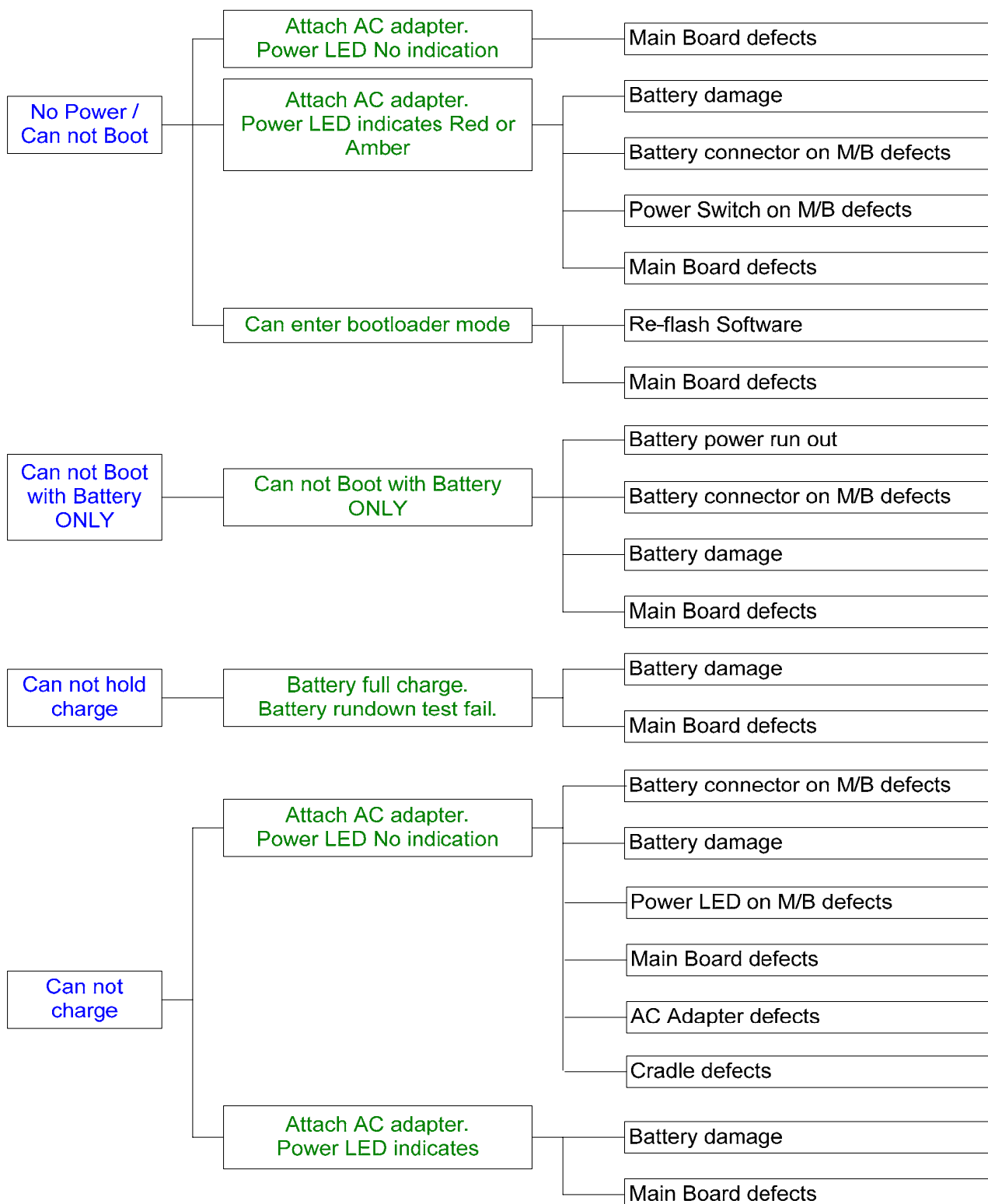
Definition of Dent, bubble and Spot	Definition of Scratch, Lint and Hair
	

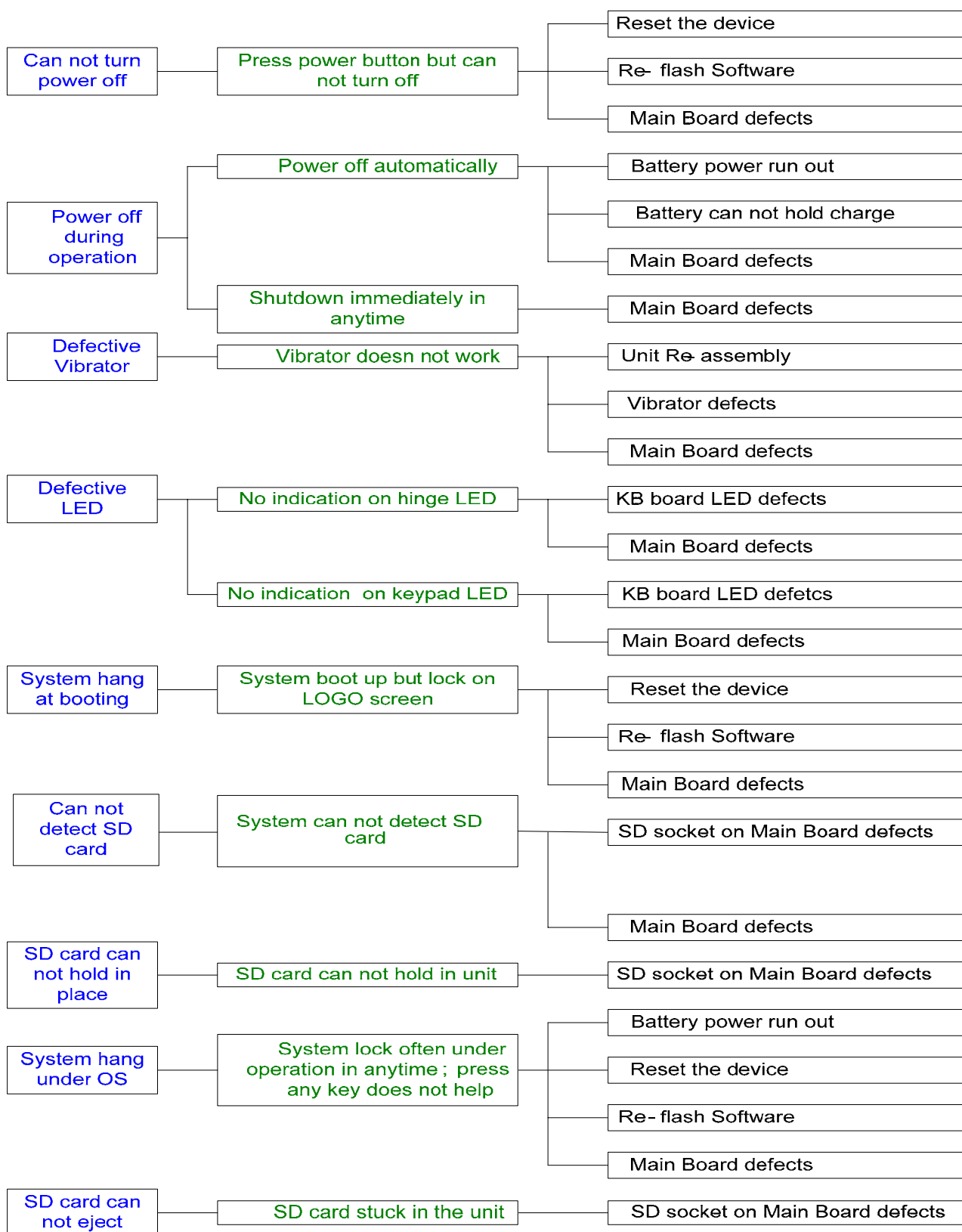
Symptom	Standard	Accept N	Check pattern
(Dark/ White Spot)	D 0.1mm	Ignore	Backlight turned on
	0.1mm< D 0.25mm	N 2	
Bright/Dark Line (Lint/Hair)	W1 0.1mm W2 0.03mm and L 1.0mm	N 2	Backlight turned on
Cosmetic spot	0.1mm< D 0.2mm	N 3	Power turned off.
	0.2mm< D 0.3mm	N 3	
	Total Number 5		
Lint/ Scratch	0.02mm<W2 0.03mm and L 3mm	N 3	Power turned off.
	0.03mm<W2 0.05mm and L 2mm	N 3	
Dents	D 0.15mm	N 5	Power turned off.
Bubble	0.1mm< D 0.15mm	N 3	Power turned off.
Breakage on film surface	Not acceptable	N=0	
LCM light leakage	Not acceptable	N=0	

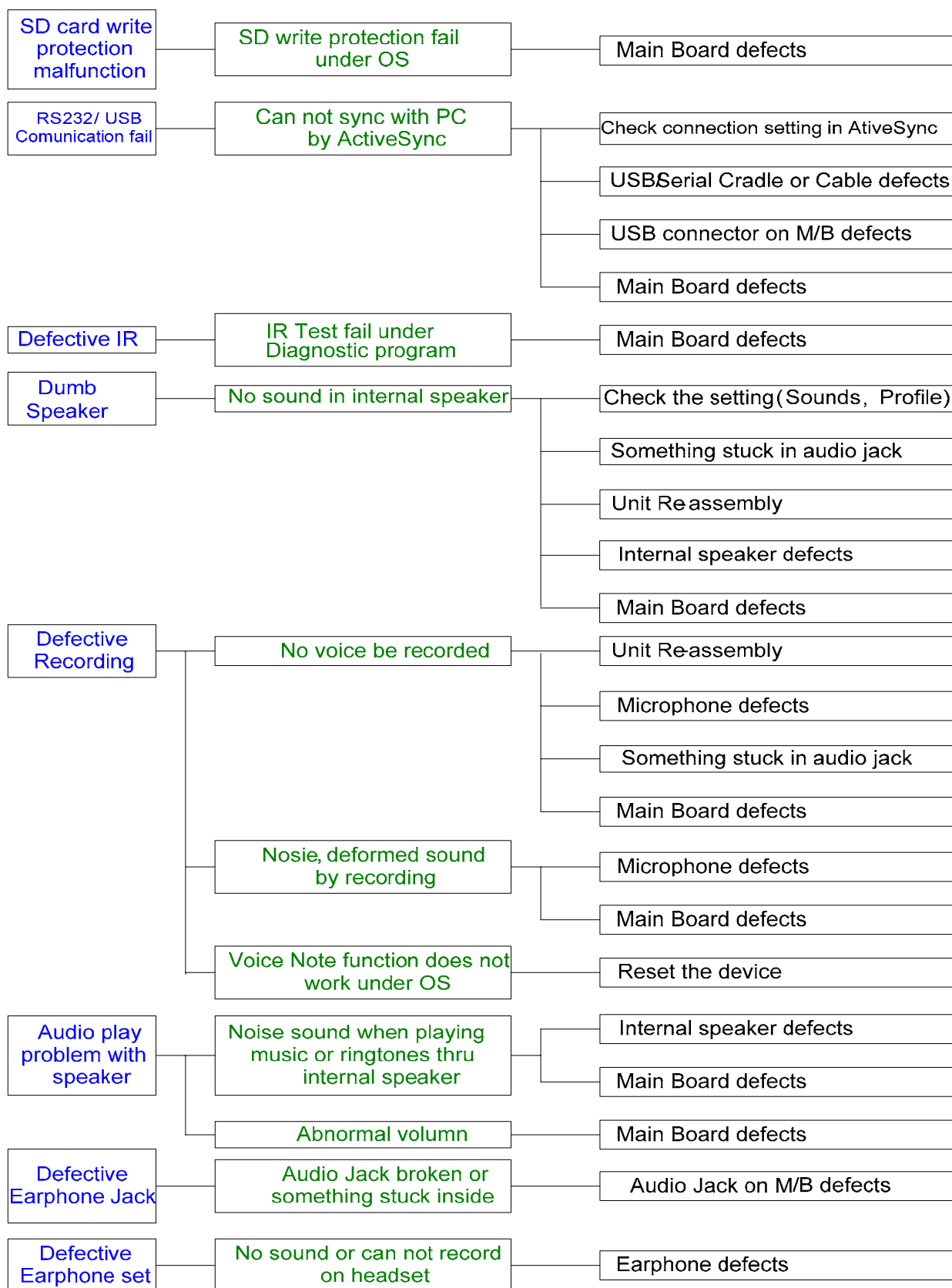
➤ Gap inspection standard

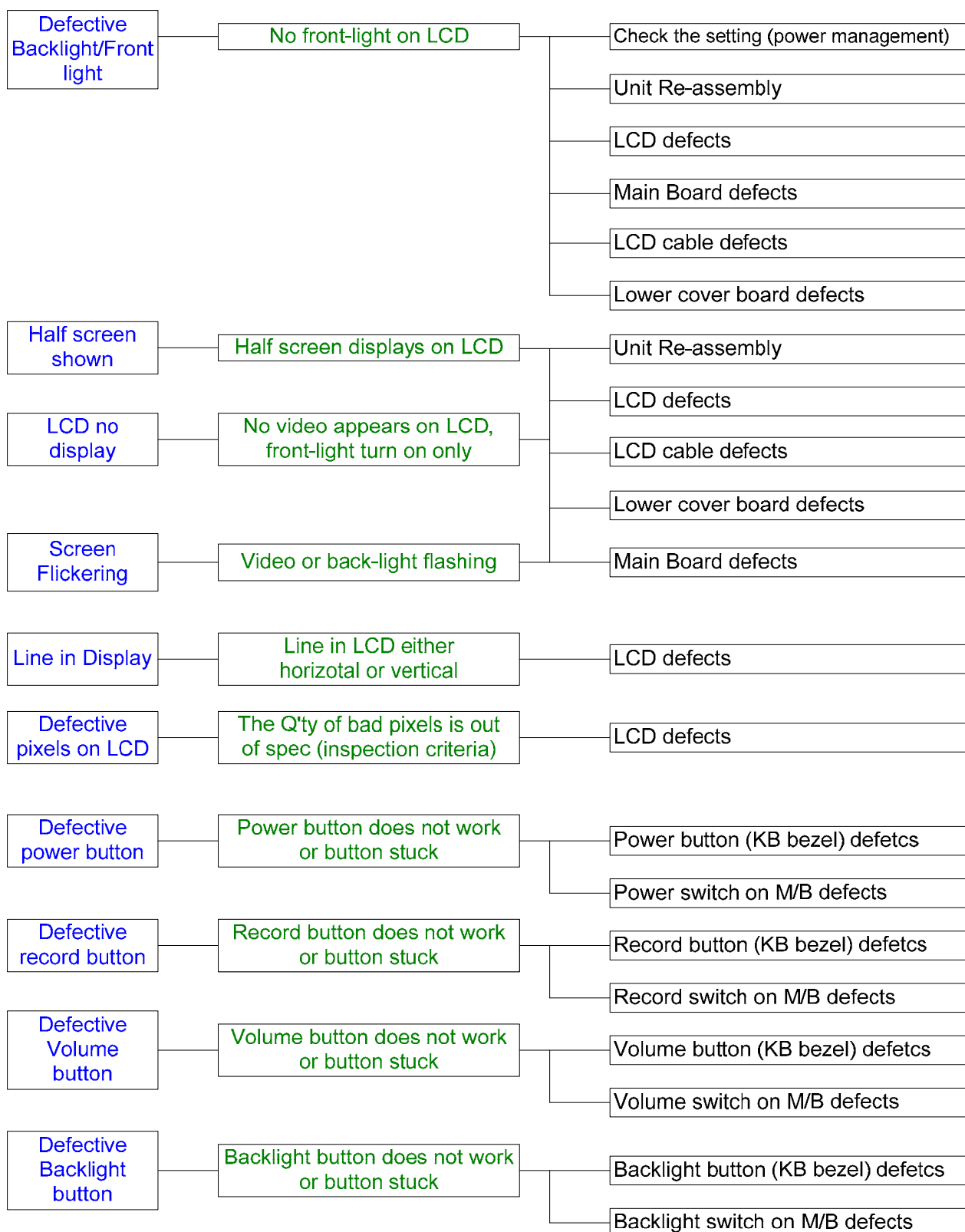
Description		Accept Criteria
1	Gap between each key and mechanical parts	Can't stuck up or no click feeling
2	Gap between all generic mechanical parts	Gap between all generic ME parts < 0.4 mm
3	Stylus	Stylus assembly protruding, loose, missing, falling and deformed is not allowed

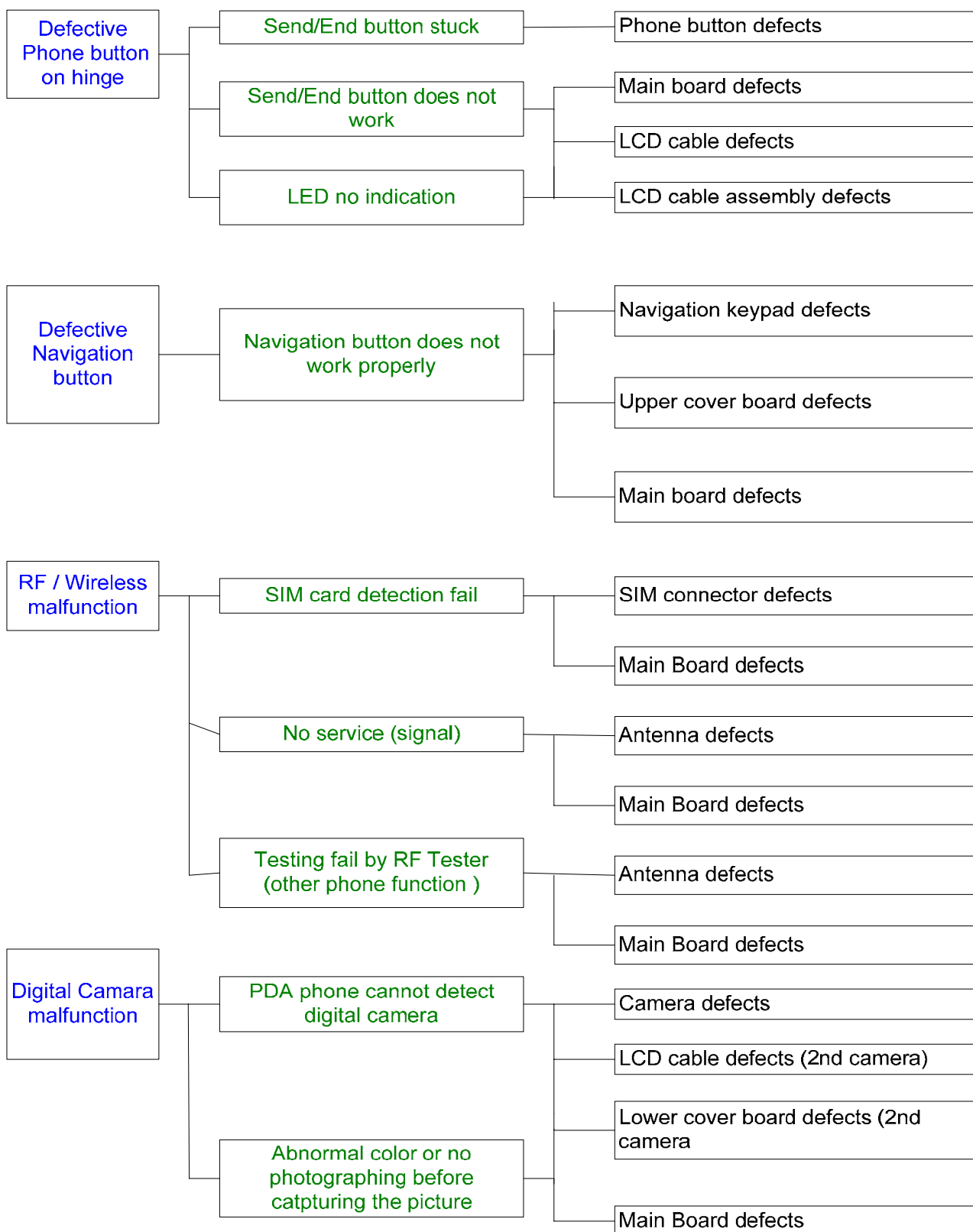
CHAPTER 8 – FAULT TREE ANALYSIS

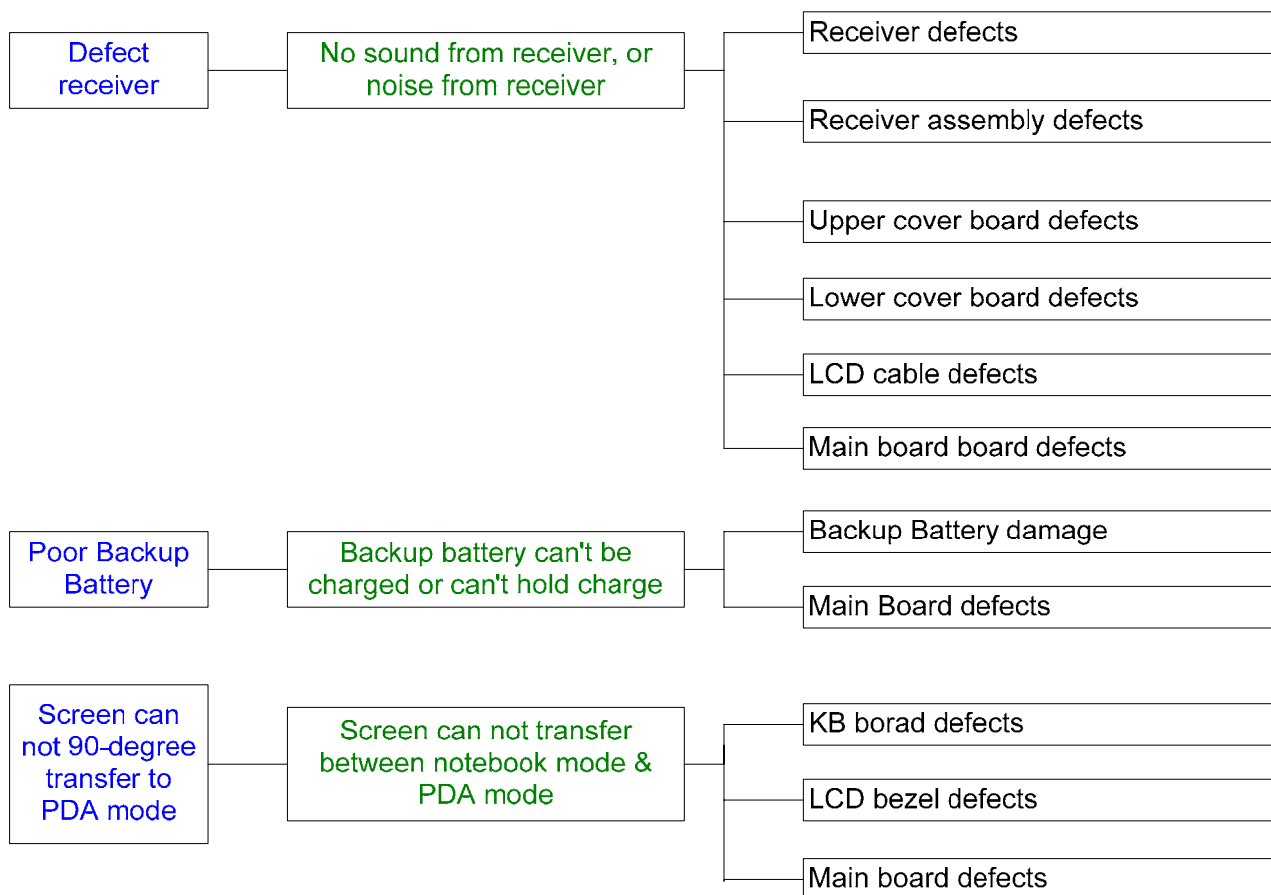












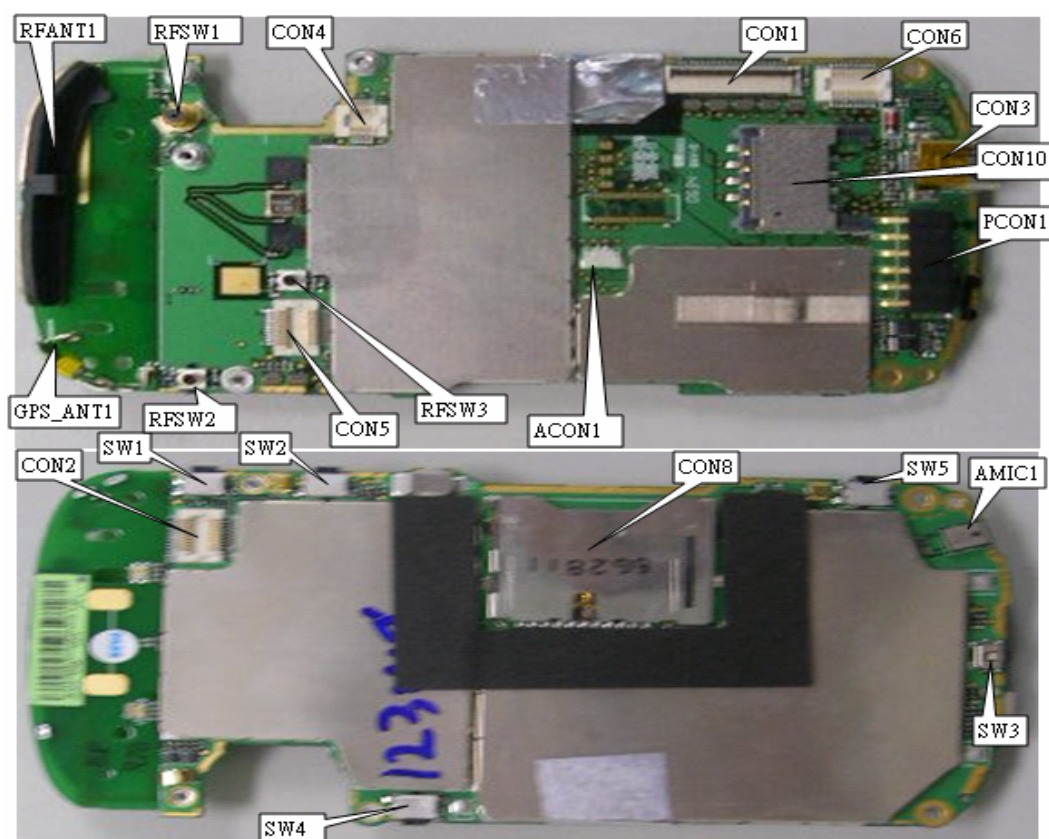
CHAPTER 9 –GENERIC SPARE PART LIST

9.1 SPL for Repair

Item	HTC P/N	Description	Using Qty
1	35H00077-00M	BATTERY_LIION SONY Li-Polymer cell 45426.1590mAh,3.7VDYNAP4	1
2	36H00226-00M	Receiver_EASG1D501E2_NAIS	1
3	36H00475-00M	Vibrator_A4A-05-WBS-2_CIKASEI	1
4	36H00476-00M	Antenna-W/O Elec Inspection,WiFi & BT antenna.ACCON	1
5	36H00479-00M	Speaker_SBI001538P-CC01M_SAMBU	1
6	51H00365-00M	PCBA-MAIN BOARD.TRINITY	1
7	51H00368-00M	PCBA,Log wheel board	1
8	54H00184-00P	Module Assy_Camera06PE02 LITEON 2MP/FF with Samsung sensor. CER9	1
9	54H00185-00P	Module Assy_Camera06P014 LITEON OV7670 sensor.CER523	1
10	60H00071-00M	LCD Module.TX07D05VM0&PA.HITACHI 73.7*52.9*3.51mm	1
11	71H01604-01M	Cover SD Black (White)	1
12	72H00459-00M	SCREW_KH-B12X3 BZ.AISI-1018	3
13	72H00600-00M	SCREW M1.6*3.I.L.F.D.I.NI.鍍鉻	3
14	72H01059-00M	Screw POINT Mechanical.P.1.6*4.5 BZ+NYLOK	5
15	72H01539-00M	EMI Gasket.Gasket tape for speaker cable.25*13*0.12mm	1
16	72H01588-00M	Screw KH-B12*2.5 BZ-TC.black	2
17	72H01613-00M	Aluminium foil 25*20*0.1mm	1
18	73H20065-15M	FPC Pre-Assy AFLEX	1
19	74H00707-01M	Stylus Pre-Assy Black (White)	1
20	74H00708-01M	Keypad Pre-Assy Black (White)	1
21	74H00728-01M	Housing Pre-Assy Black (White)	1
22	74H00730-03M	Bezel Pre-Assy Black.HTC logo KEYPAD (White)	1
23	74H00731-03M	Cover Pre-Assy BATTERY Black.HTC logo (White)	1
24	76H01438-00M	Robber CAMERA	1
25	76H01439-00M	Robber 2nd CAMERA	1
26	76H01440-00M	Robber MIC	1
27	76H01445-00M	Tape KAPTON_LCM_FPC	1
28	76H01538-00M	Robber LCM.SILICON	2
29	76H01560-00M	Form.NINI_SD.TRINITY	1
30	77H00116-00M	LCD Film for EULA.PDA.E/S/R/G/TD.85*55mm.V0 2.Himalayas	1
31	77H00203-00M	Water Sensitive Label.4*2.5mm.Ming Jye.BlueAngels	1
32	77H00314-00M	Warranty Label.LABLE.SECURITY.HERMES	1
33	77H00439-00M	Regulation Label.P3600.FRN Made in Taiwan.MING JYE.15*40mm	1
34	77H00444-00M	Anti-counterfeit Layer Label.For Jupiter.RUS.30*20mm.CHENG MAY	1

9.2 Board Level

Item	HTC P/N	Description	Using Q'ty	Location	Remark
1	36H00129-00M	SWITCH BUTTON,PTS-106,HCH,4.7*4.5*1.65,70/-20degC,BLUE ANGELS	4	(SW1,2,5,4)	command, Capture, OK
2	36H00230-00M	SWITCH,SOH-213HST,MITSUMI,70/-20degC	1	(SW3)	Reset
3	36H00395-00M	Antenna-W/O Elec Inspection,GPS ANTENNA,ACON	1	(GPS_ANT1)	GPS antenna
4	36H00440-00M	Microphone,SPMD208HE5-SB,KNOWLES,100/-40degC,4.72*3.76*1.25mm	1	(AMIC1)	Mic
5	36H00477-00M	Antenna,main_antenna,ACON	1	(RFANT1)	RF antenna
6	75H00228-00M	Connector Others,SMD2B-SURS-TF(LF),JST	1	(ACON1)	Speaker connector
7	75H00321-00M	Connector RF,4P,LPC TP-1,120220-0129,ITT Cannon,Pb-FREE	1	(RFSW1)	RF connector
8	75H00372-00M	Connector FPC,39P,0.3PITCH,FH23-39S-0.3SHW(05),HIROSE,50mohm,0.3A,30V	1	(CON1)	FPC connector
9	75H00396-00M	Connector,Battery,6PIN,Pitch=2.5mm,R-angle,BTR1M-6K2000,Acon	1	(PCON1)	Battery connector
10	75H00432-00M	Connector SD Card,mini-SD,CIM-F07N,11pin,Pitch=1.3mm,MITSUMI,0.0*0.0*2.2mm	1	(CON8)	Mini SD Cardr
11	75H00465-10M	Connector I/O,Reverse,11P,0.4pitch,302-11101-01,ACT,Vera	1	(CON3)	Mini USB
12	75H00482-00M	Connector B to B,10P,0.5Pitch,AXK5F10347Y,MATSUSHITA	1	(CON4)	Jog Wheel Switch Board
13	75H00491-00M	Connector B to B,20P,0.5PITCH,AXK5F20347Y,MATSUSHITA	2	(CON2), (CON6)	Connector,Camera Module
14	75H00494-00M	Connector B to B,22P,0.5PITCH,AXK5F22347Y,MATSUSHITA	1	(CON5)	Main Camera Module
15	75H00591-00M	Connector SIM Card,8P,2.54Pitch,1A,500V,100mohm,4250819-SINR02,HAMBURG	1	(CON10)	Connector SIM Card



APPENDIX

A. Generic Labeling Plan

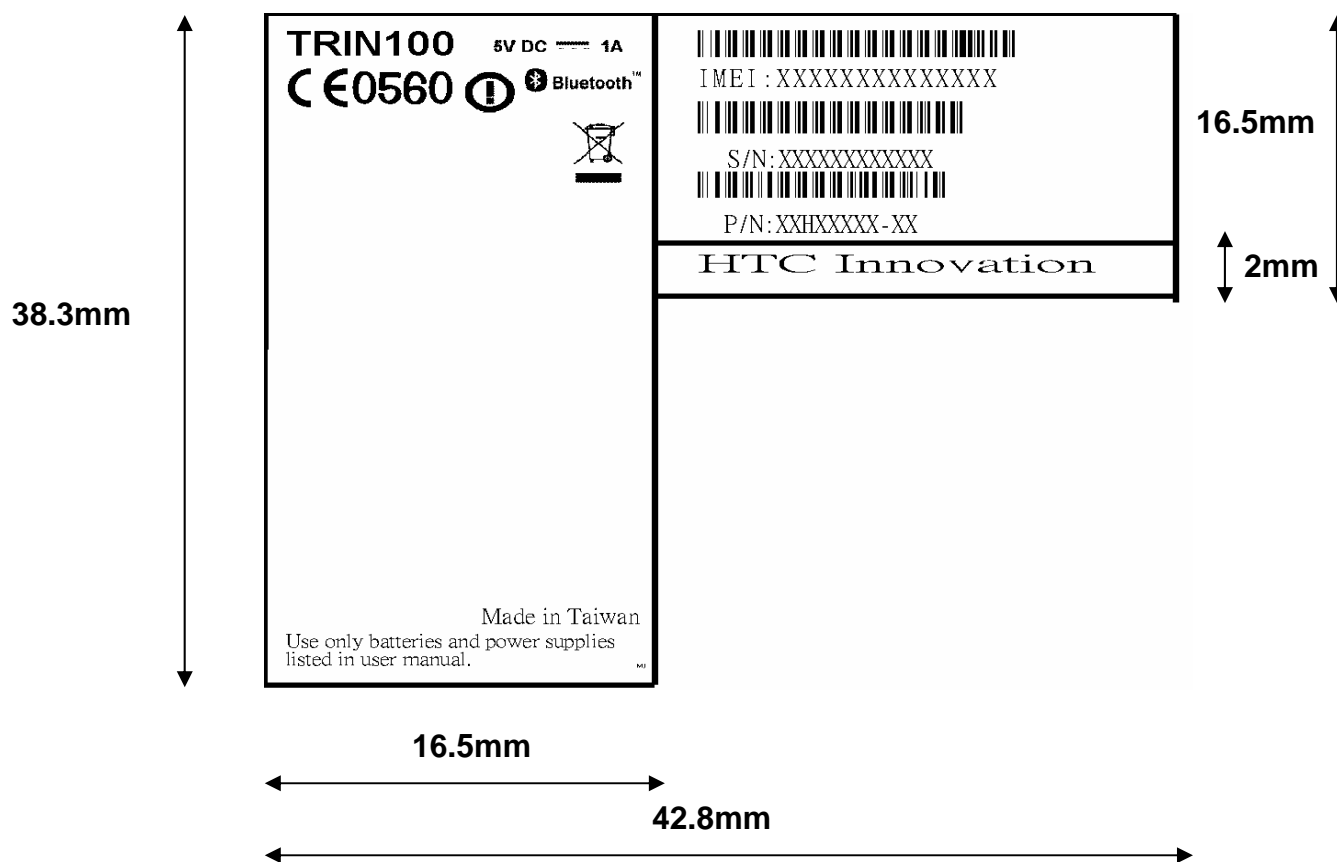
Main unit Regulatory label (on the rear housing of main unit)

HTC P/N: 77H00439-00M

Image file name: Main_Unit_Regulation

Please note: 1. The brand name is shown on bezel.

2. All bar codes must be code 128 symbology.



S/N: SSYWWPPZZZZZ	MODEL ID: TRIN100
SS: SITE CODE --> HT	Label Characteristic:
Y: Year Last Digital of the Year.	Material: polyester
WW: Week Code : 01 ~ 54	Color: pantone 422c
PP: Product Code : E6	Ink: pantone 425c
ZZZZZ: Serial Number (00001 ~ 99999) Use Base 10	

B. RF Antenna Test Specification

GSM Antenna Test Specification					
Items	Test Name	Tx Level	TCH	1st Downlink Cell Power	Note
1	Camp @ DCS Band	0	512	-75	BCCH=600
2	BS Originate Call	0	512	-75	
E-GSM 900 Receiver Test					
3	Fast Bit Error Rate	5	975	-104	$\leq 2\%$
4	Fast Bit Error Rate	5	37	-104	
5	Fast Bit Error Rate	5	124	-104	
E-GSM 900 Transmitter Test					
5	Check TX Power	5	975	-75	≥ 29 dBm
6	Check TX Power	5	37	-75	
7	Check TX Power	5	124	-75	
DCS 1800 Receiver Test					
8	Fast Bit Error Rate	0	512	-104	$\leq 2\%$
9	Fast Bit Error Rate	0	698	-104	
10	Fast Bit Error Rate	0	885	-104	
DCS 1800 Transmitter Test					
11	Check TX Power	0	512	-75	≥ 26 dBm
12	Check TX Power	0	698	-75	
13	Check TX Power	0	885	-75	
PCS 1900 Receiver Test					
14	Fast Bit Error Rate	0	512	-104	$\leq 2\%$
15	Fast Bit Error Rate	0	662	-104	
16	Fast Bit Error Rate	0	810	-104	
PCS 1900 Transmitter Test					
17	Check TX Power	0	512	-75	≥ 26 dBm
18	Check TX Power	0	662	-75	
19	Check TX Power	0	810	-75	
GSM 850 Receiver Test					
20	Fast Bit Error Rate	5	128	-104	$\leq 2\%$
21	Fast Bit Error Rate	5	189	-104	

22	Fast Bit Error Rate	5	251	-104	
GSM 850 Transmitter Test					
23	Check TX Power	5	128	-75	>=29 dBm
24	Check TX Power	5	189	-75	
25	Check TX Power	5	251	-75	

WCDMA Antenna Test Specification					
Items	Test Name	Power Level	Uplink/Downlink UARFCN	1st Downlink Cell Power	Note
1	Camp @ W-CDMA Band I (2100)	3	9613/10563	-60	
2	BS Originate Call	3	9613/10563	-60	
Receiver Test					
3	Bit Error Rate	3	9613/10563	-104	<= 0.1 %
4	Bit Error Rate	3	9750/10700	-104	
5	Bit Error Rate	3	9887/10837	-104	
Transmitter Test					
6	Check TX_Max Power	3	9613/10563	-60	>= 18 dBm
7	Check TX_Max Power	3	9750/10700	-60	
8	Check TX_Max Power	3	9887/10837	-60	
Items	Test Name	Power Level	Uplink/Downlink UARFCN	1st Downlink Cell Power	Note
1	Camp @ W-CDMA Band II (1900)	3	9263/9663	-60	
2	BS Originate Call	3	9263/9663	-60	
Receiver Test					
3	Bit Error Rate	3	9263/9663	-104	<= 0.1 %
4	Bit Error Rate	3	9400/9800	-104	
5	Bit Error Rate	3	9537/9937	-104	
Transmitter Test					
6	Check TX_Max Power	3	9263/9663	-60	>= 18 dBm
7	Check TX_Max Power	3	9400/9800	-60	
8	Check TX_Max Power	3	9537/9937	-60	

Items	Test Name	Power Level	Uplink/Downlink UARFCN	1st Downlink Cell Power	Note
1	Camp @ W-CDMA Band VI (850)	3	4133/4358	-60	
2	BS Originate Call	3	4133/4358	-60	
Receiver Test					
3	Bit Error Rate	3	4133/4358	-104	<= 0.1 %
4	Bit Error Rate	3	4175/4400	-104	
5	Bit Error Rate	3	4232/4457	-104	
Transmitter Test					
6	Check TX_Max Power	3	4133/4358	-60	>= 18 dBm
7	Check TX_Max Power	3	4175/4400	-60	
8	Check TX_Max Power	3	4232/4457	-60	