Service Manual
For Universal

HTC Proprietary
Confidential Treatment Requested

Rev. A03
Sep. 2005

HTC Corp.
Engineering Mobility

TITLE: Service Manual

REV. NO.	DATE	CONTENTS	DEP.	REVISED	APP´D	STGE.PER.
A01	Jul. 25,2005	First Draft	Technical Support	Tracy_Sung		
A02	Aug. 4,2005	Add Exploded Diagram, M/B Pre-assy, Screws torque value, RF spec	Technical Support	Tracy_Sung		
A03	Sep. 9,2005	P71: change 64M to 128M. P72: Add USB>task 32	Technical Support	Tracy_Sung		

Table of contents

1. Introduction

This manual provides the technical information to support the service activities of Universal.

This document contains highly confidential information, so any or all of this document should not be revealed to any third party.

2. Product Specification

Platform

- Data-centric wireless PDA with full voice capability and clamshell form factor with 180-degree pivot screen.
- Microsoft Windows Mobile Pocket PC Phone Edition (Magneto)
- Dimension (Typical): 81mm x 127.7mm x 25mm
- Weight (Typical): 285g with battery

Processor/Chipset

- QCT Platinum + Intel Bulverde 520MHz

Memory

- Flash ROM: 128 MB
- RAM: 64 MB SDRAM

LCD Module

- 3.6" 640x480 transflective TFT-LCD with back-light LEDs
- 65K-color
- Sensitive Touch Screen
- Support portrait/landscape (touch screen input) and landscape (QWERTY keyboard input) modes

Dual Mode GSM/WCDMA Function

- Internal antenna
- Dual-Mode UMTS/GSM
- Tri-Band GSM/GPRS (900/1800/1900) + WCDMA (UMTS) (2100MHz)
- Audio codec: AMR, EFR, FR, HR
- SMS (MO, MT), concatenated SMS (640 Characters)
- Supplementary Services
  - ◆ Call holding/ waiting/ forwarding
  - ◆ CLI (Calling Line Identity
  - ◆ Display own number
  - ◆ Multi-party conference call
  - ◆ Phase 2+ unstructured supplementary service data
- Network Lock
- Network selection
- Cell broadcast
- GPRS Functionality
  - ◆ GPRS class B
  - ◆ Multi-slot standard class 10
  - ◆ PBCCH
  - ◆ MO/MT SMS over GPRS
- USIM
  - ◆ 3V of UICC
  - ◆ USIM Application Toolkit
  - ◆ SIM Application Toolkit Release 99
  - ◆ Over the air programming

Stylus

- Lock Type Mechanism

Keyboard/Button/Switch

- Built-in 62 keys QWERTY Keyboard (including two soft keys, one start button, one OK button, one send call key, one end call key, and 56 alphanumeric and symbol keys)
- One POWER button
- One Backlight button
- One Camera shutter
- Volume control (up and down)
- One 5-way Navigation button – key orientation shall be adjusted after view changed.
- Two phone buttons (hinge): SEND & END
- RESET switch

Notification

- 1st lenses - bi-color (green and red) LED for network standby, network message, network status, notification, and charging status
- 2nd lenses - bi-color (green and blue) LED for WiFi and bluetooth notification
- Notification by Sound, Vibration, and Message on the display

Audio

- Dual Receivers
- Dual speakers for Hands-Free supported
- Built-in Microphone
- Full duplex
- Audio sampling rate
    - 16-bits with 8KHz, 11KHz, 22KHz, 44.1KHz,

Camera

- Main Image Sensor: 1.3 Mega Pixels CMOS
- Second Image Sensor: CIF CMOS
- Operating above 5 Lux
- Flash/Video Light
- Portrait mode default (Full screen preview)

Interface

- 3V USIM card
- One mini-USB connector
- SDIO/MMC card slot
- 3.5 Ø stereo earphone/microphone jack
- 2 External antenna connectors (WCDMA and GSM/GPRS)

Power

- Battery
  - ♦ Removable rechargeable Lithium Polymer battery (Typical capacity: 1620mAh)
  - ♦ Battery life
    - ✓ Standby time
      - − GSM: 220~260 hours
      - − WCDMA 190~250 hours
    - ✓ Talk time (Screen off):
      - − GSM: 5~8 hours
      - − WCDMA: 2~4 hours
- AC Adapter
  - ♦ AC input: 100~240Vac, 50/60Hz
  - ♦ AC input current: 0.2Aac (max).
  - ♦ Output voltage: 5Vdc (typical)
  - ♦ Output current: 1A (typical)
- USB charging
- Ambient light sensor detecting ambient light for keyboard to save power.

Device-to-Device Connectivity

- Infrared IrDA FIR
- Bluetooth
  - ♦ Compliant with v1.2
  - ♦ Class 2 transmit power
- WiFi 802.11b (manufacture option)
  - ♦ IEEE 802.11b compliant

♦ WLAN Antenna: internal

♦ 11, 5.5, 2 and 1 Mbps per channel, auto fallback for extended range

♦ Encryption: 64-, 128- bit WEP standard data encryption

- USB 1.1
- SDIO/MMC

Accessories

- Standard
  - ♦ AC adapter
  - ♦ USB Sync. Cable
  - ♦ Stereo wired headset - stereo earpiece, mono microphone, Volume Control, and pick up/drop calls
  - ♦ Standard Battery
  - ♦ User Manual, Quick Start Guide & Software CD
  - ♦ Pouch
  - ♦ Stylus
- Option
  - ♦ Car adapter
  - ♦ Battery charger
  - ♦ High Quality Carrying Case

Pocket PC Phone Edition Applications

- Microsoft Pocket Outlook: Inbox, Contacts, Calendar, Tasks
- Microsoft Windows Media Player
- Microsoft Pictures
- Microsoft MSN Messenger
- Microsoft Pocket Internet Explorer
- Pocket Office
- Microsoft ActiveSync
- Games
- Calculator
- Voice Notes
- Photo Contact ID

Value Added Applications

- Ring tone
  - ♦ SW polyphonic MIDI ring tones
  - ♦ SMF/ SP MIDI
  - ♦ MP3, AAC, ring tone
- DirectShow Filter for WMP
- Camera / Camcorder
- Video Telephony
- ZIP
- Smart Dialing
- Pictures Enhancement
- T9 Phone Pad
- Wireless Modem
- Wireless data manager (UMTS/GSM/GPRS, Bluetooth, 802.11b)
- MMS with video clip support
- DRM: OMA 1.0 engine
- Java virtual machine (J2ME, CLDC 1.1, MIDP 2.0, JTWI)
- PDF Viewer

Regulatory

- R&TTE
- WiFi Certification
- BQB (Bluetooth Qualification Body) certification
- Microsoft Pocket PC 2004 Logo (NSTL)
- USB certification

2. Exploded Diagram

3. Assembling and Disassembling
3.1 Disassembling

	Tools needed for Assembling and Disassembling the Universal. 1. Anti-static glove 2. Cleaning Tissue 3. T6 screw driver 4. Philip screw driver (PH00 * 40) 5. Tweezers 6. Plastic disassembling tool Tweezers(Recommended material: Plastic)
	Take out the stylus
	Unlock battery cover and remove it.

	Release the battery lock
	Remove the battery. ⚠ **WARNING:** **To reduce risk of fire or burns.** 1. Do not attempt to open , disassemble , or service the battery pack. 2. Do not crush , puncture , short external contacts , or dispose of in fire or water. 3. Do not expose to temperatures above 60°C (140°F). 4. Replace only with the battery pack designated for this product. Li-ion ♻ 🗑✕ 廢電池請回收
	Unfasten 4 screws on housing.
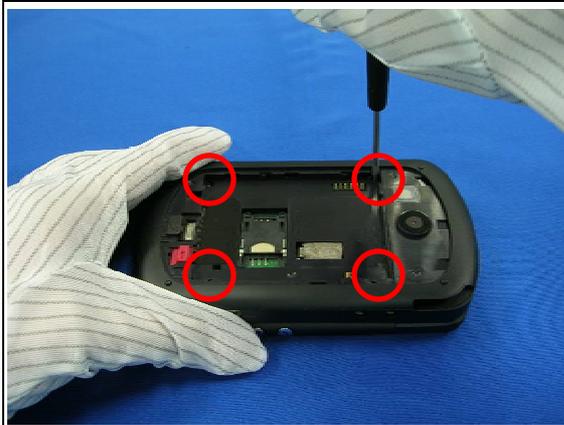
	1. Insert the plastic stick in the gap between the bezel and housing deep inside. 2. Move the stick carefully around the device to unlock the hooks.
	Follow the indicator to move the stick to release hooks.
	Follow the indicator to move the stick to release hooks.

	Follow the indicator to move the stick to release hooks.
	Remove the housing.
	Release the vibrator connector, then remove the vibrator.
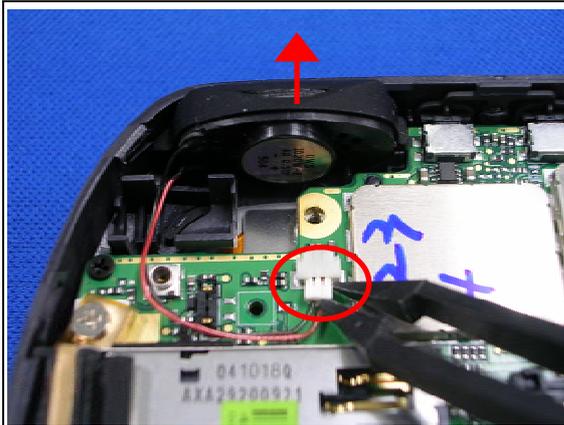
	Release speaker's connector, then remove the left speaker.
	Peel off the Mylar, release speaker's connector, then remove the right speaker.
	Release the flashlight connector, then remove the flashlight.
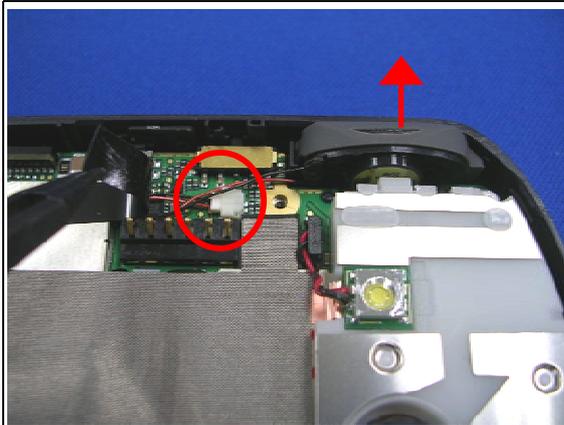
	Unfasten 3 screws on antenna.
	Remove the antenna.
	Remove the main camera.
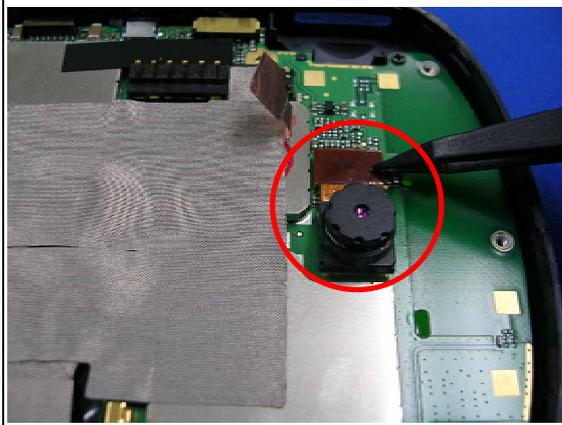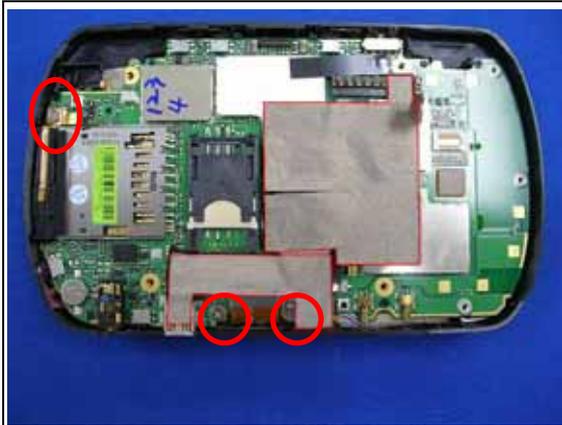
	Remove 2 conducting tapes and unfasten 3 screws.
	Release cable cover.
	Release WiFi antenna.
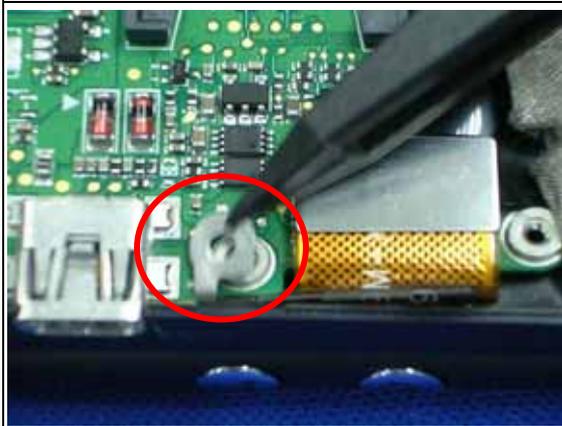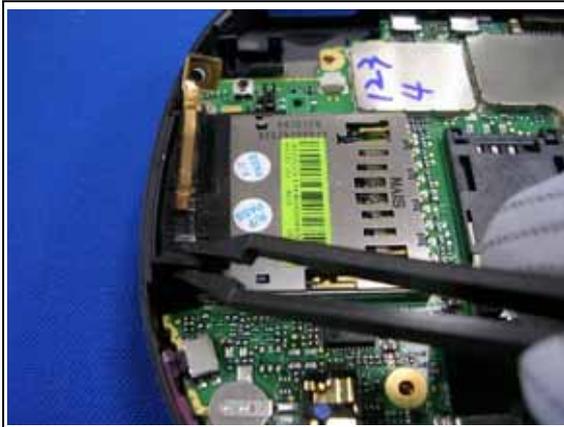
	Release SD rubber.
	Unfasten 3 screws on M/B.
	Pull out LCD coaxial cable (Display).
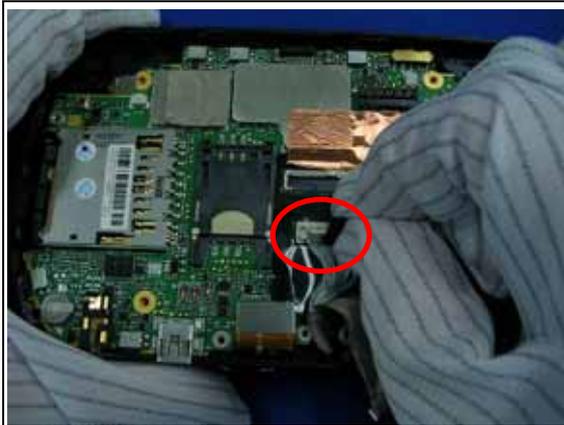
	Pull out LCD coaxial cable (functional).
	Disassemble KB board FPC
	Release 2 hooks, then take out the M/B.
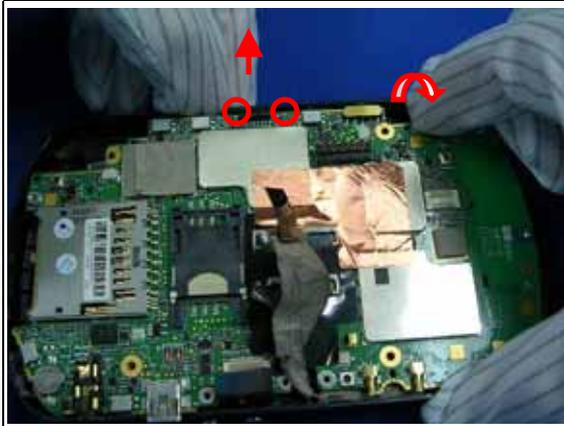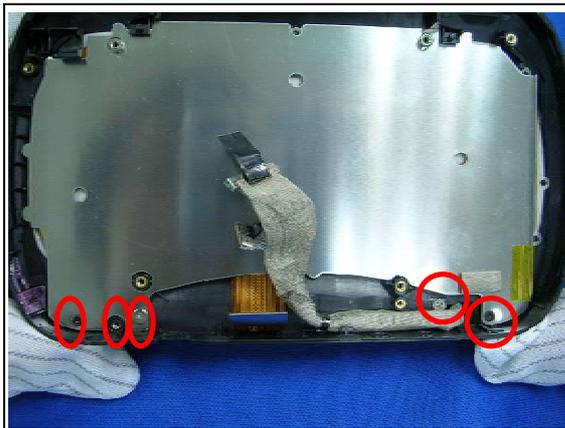
	Release 5 screws on keypad bezel.
	To fold LCD cable slightly and properly as indicated, then separate it from keypad bezel. Note: Don't fold the LCD cable in the red area.
	Remove FPC KB board.
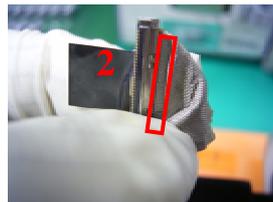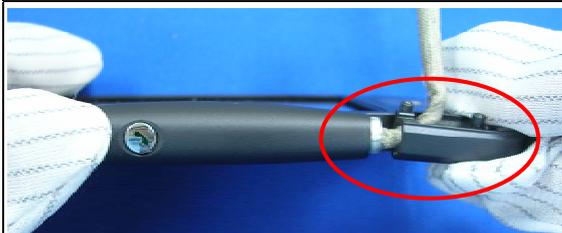
	Remove the keypad.
	Disassemble cover hinge-Right.
	Disassemble cover hinge-Left.
	Unfasten 6 screws on LCD module.
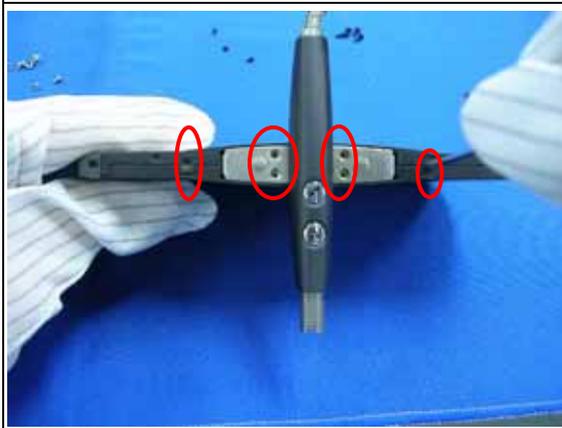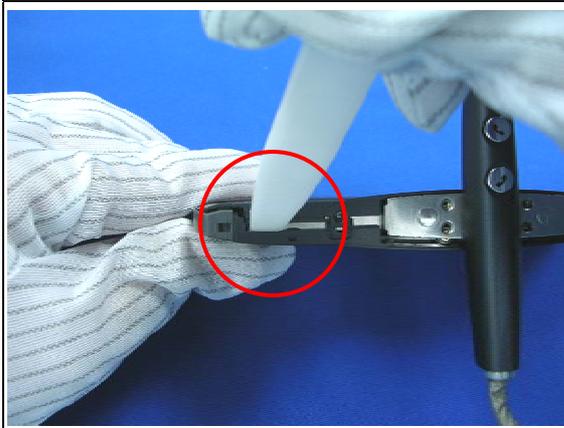
	Insert screw driver into the hole and press to release the hook.
	Insert plastic stick into the left side gap between LCD housing and bezel.
	Insert screw driver into the hole and press to release the hook.

	Insert plastic stick into the right side gap between LCD housing and bezel.
	Follow the sequence to release 8 hooks between LCD bezel and housing, then remove LCD housing.
	Release the receiver.
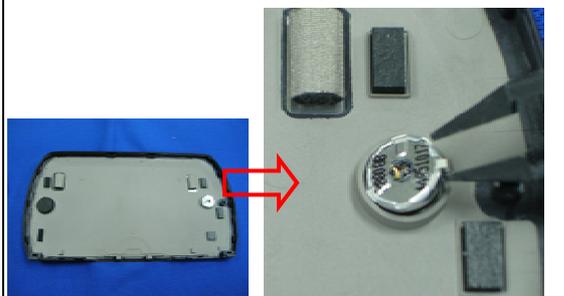
	Unfasten 2 screws on bracket.
	Pull out the left side cable.
	Pull out the right side cable.

	Remove LCD coaxial cable module.
	Unfasten one screw to release hinge.
	Unfasten one screw to remove LED board.

	Release the cable from cover hinge.
	Release phone button from cover hinge.
	Disconnect camera FPC, then remove camera.
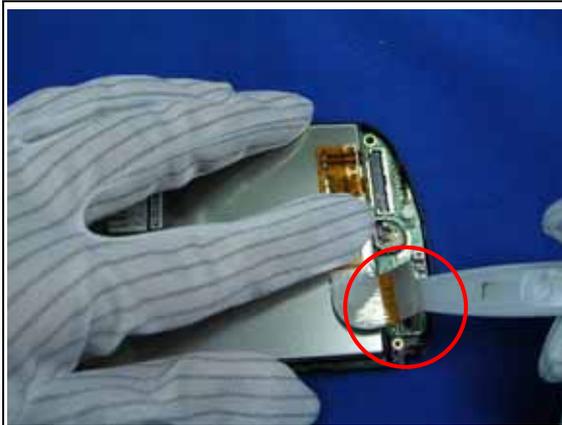
	Disconnect LCD FPC.
	Remove the LCD.
	Unfasten one screw and disconnect receiver cable.
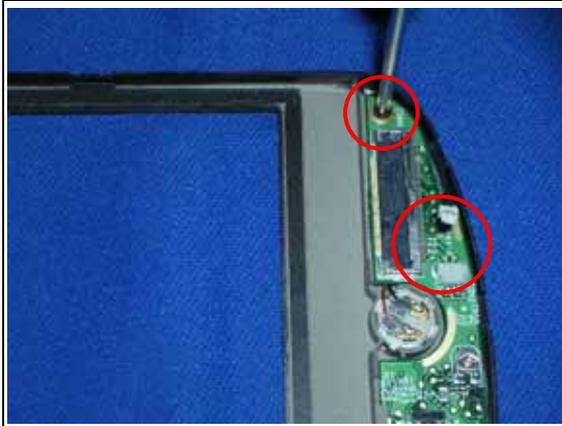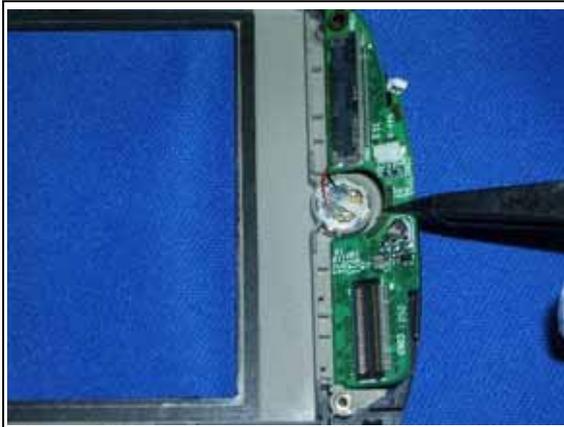
	Remove lower cover board
	Remove the receiver.
	Unfasten 2 screws on upper cover board.
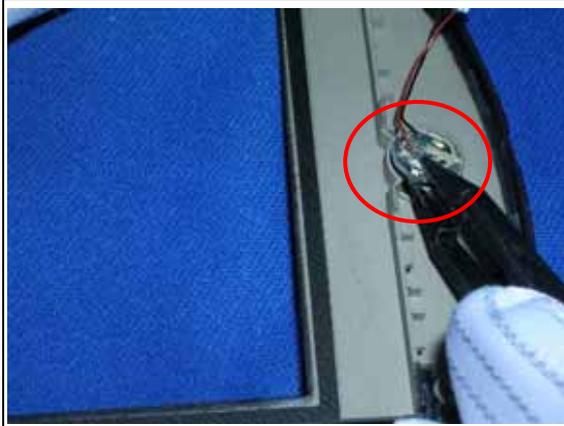
	Remove upper cover board.
	Remove the navigation button.
	LCD bezel

Disassembly process is done.

3-2 Assembling

	Assemble navigation button to LCD bezel.
	Assemble upper cover board, and fasten 2 screws to fix it. **Torque: 0.6±0.05kgf-cm**
	Assemble the receiver.
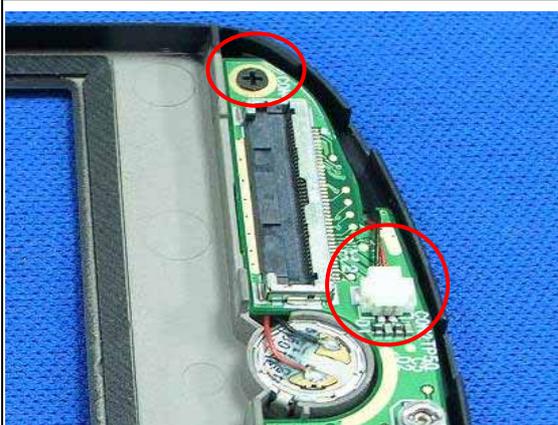
Assemble lower cover board and fasten one screw to fix it.

Connect receiver cable.

Torque: 0.6±0.05kgf-cm

Assemble LCD into bezel.

Connect LCD FPC
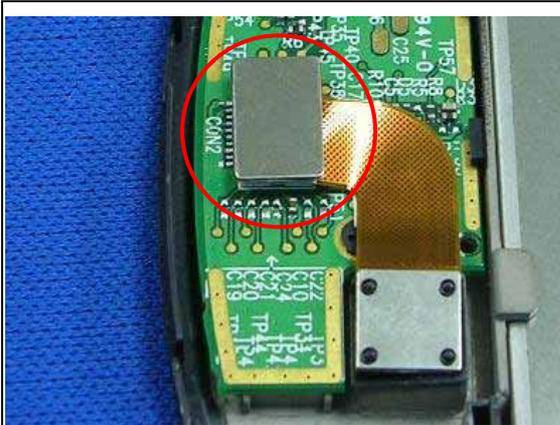
	Assemble video camera and connect FPC.
	Put on phone button.
	Assemble LCD cable into cover hinge.
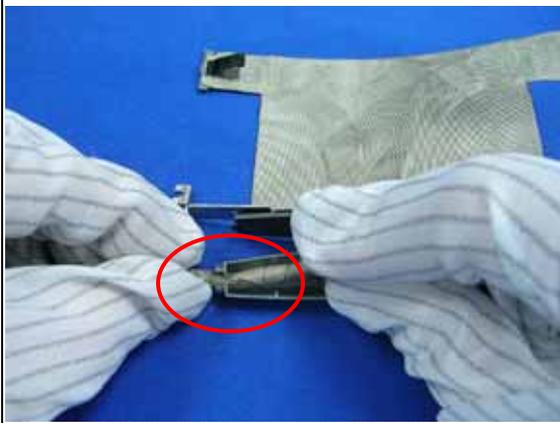
| | Fasten one screw to fix LED board.

Torque : 0.8 ± 0.05 kgf-cm |
| | Fasten one screw to fix LCD cable with cover hinge.

Torque : 0.8 ± 0.05 kgf-cm |
| | Assemble LCD coaxial cable module with LCD bezel. |

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	Connect cable with upper cover board and lower cover board. Fasten 2 screws to fix bracket. **Torque : 0.8 ± 0.05 kgf-cm**
	Put on the receiver.
	Assemble LCD housing with bezel.
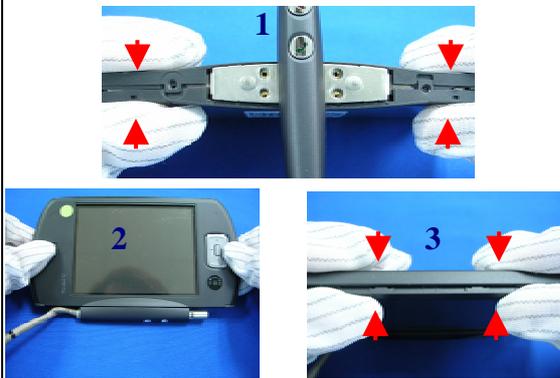
	Fasten 6 screws on LCD module. **Torque: 0.8 ± 0.05 kgf-cm**
	Assemble cover hinge-Right.
	Assemble cover hinge-Left.
	Assemble keypad into bezel.

	Assemble FPC KB board. **Torque: 1.5 ± 0.05 kgf-cm**
	To fold LCD coaxial cable carefully and properly as indicated. Note: Don't fold the LCD cable in the red area.
	Assemble LCD coaxial cable through into keypad bezel.
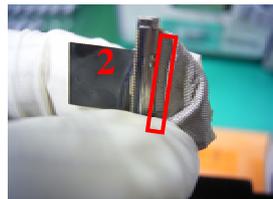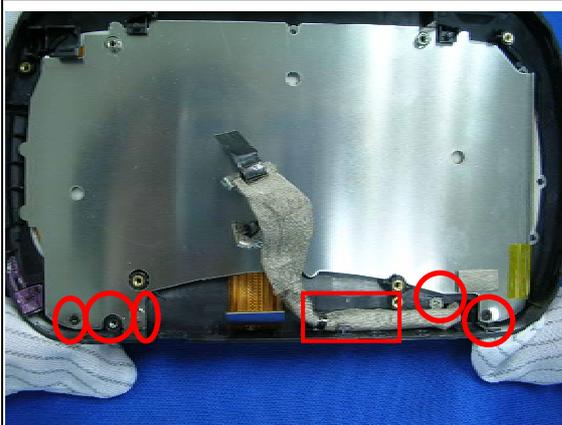
	Fix LCD coaxial cable on Keypad bezel properly, and fasten 5 screws on bezel.
	Assemble M/B from connector side.
	Assemble M/B into 2 hooks.
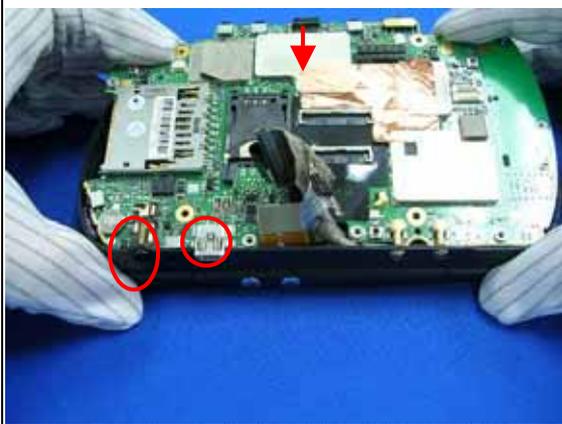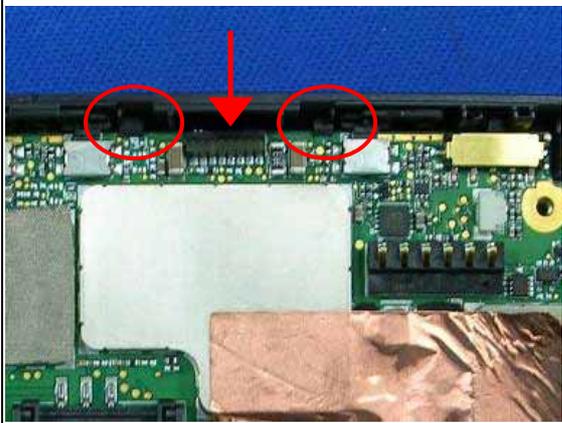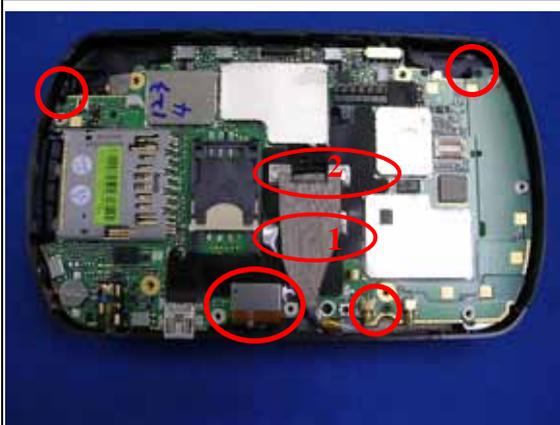
	1. Connect LCD coaxial cable (1 &2) to M/B. 2. Fasten 3 screws on M/B. 3. Connect KB FPC. **Torque : 0.8 ± 0.05 kgf-cm**
	Assemble WiFi antenna and fasten one screw to fix it. **Torque : 1.0 ± 0.05 kgf-cm**
	Assemble LCD coaxial cable cover and fasten one screw to fix it. **Torque : 1.0 ± 0.05 kgf-cm**
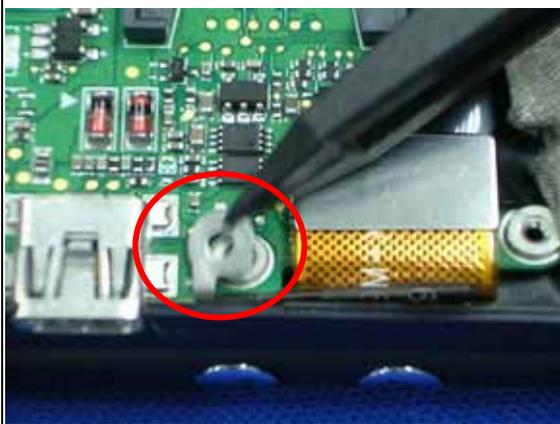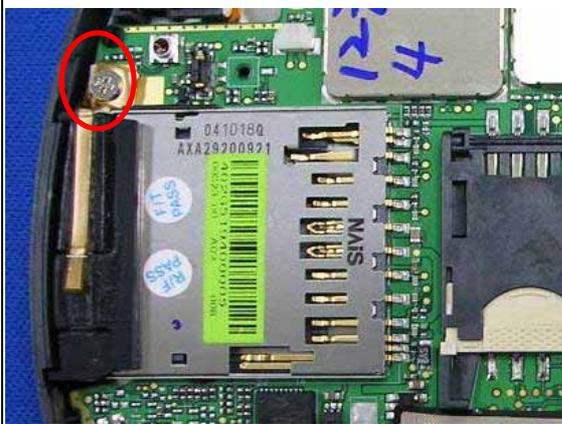
	Assemble SD rubber.
	Stick on BT antenna and fasten one screw to fix it. **Torque : 1.0 ± 0.05 kgf-cm**
	Assemble the main camera.
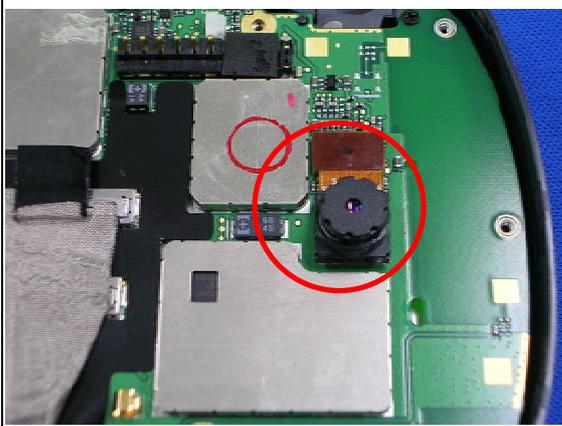
	Assemble the antenna and fasten 3 screws to fix it. **Torque: 0.8±0.05kgf-cm**
	Stick copper foil on.
 Red	Connect flashlight connector, then stick flashlight on antenna. Note: The position can't be reversed; otherwise, flashlight will be damaged.
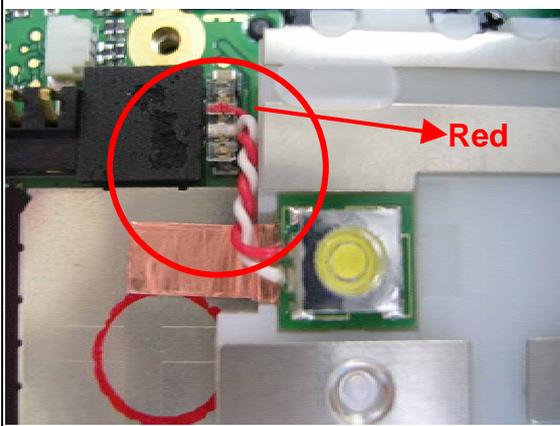
	Stick 2 conducting tapes on M/B.
	Connect the cable and assemble the right speaker. After that, stick the Mylar on it.
	Connect the cable and assemble the left speaker.
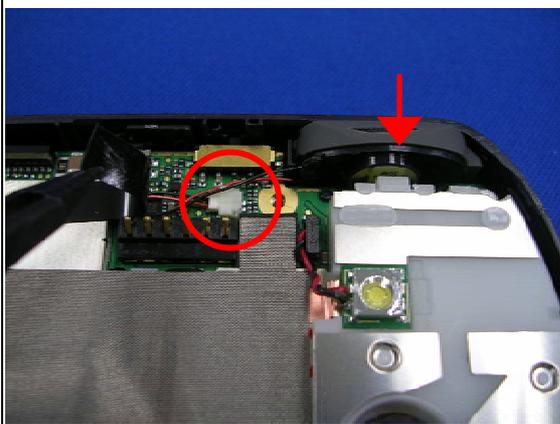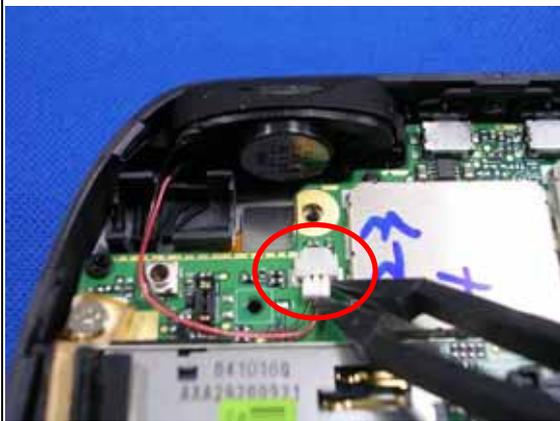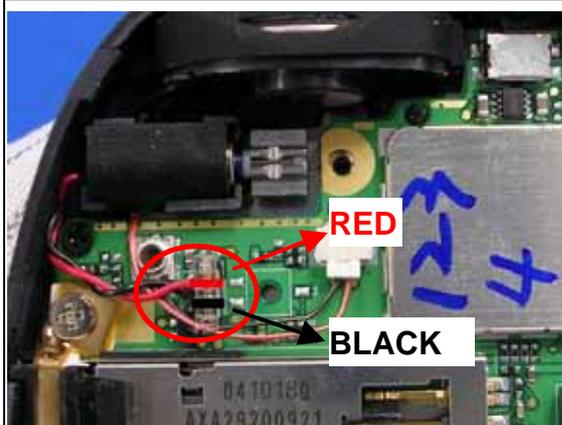
RED **BLACK**	Connect the cable and assemble the vibrator. Note: The position can't be reversed; otherwise, the vibrator will be damaged.
	Assemble keypad housing with bezel, and fasten 4 screws on housing. **Torque : 1.2 ± 0.05 kgf-cm**
	Assemble the battery.
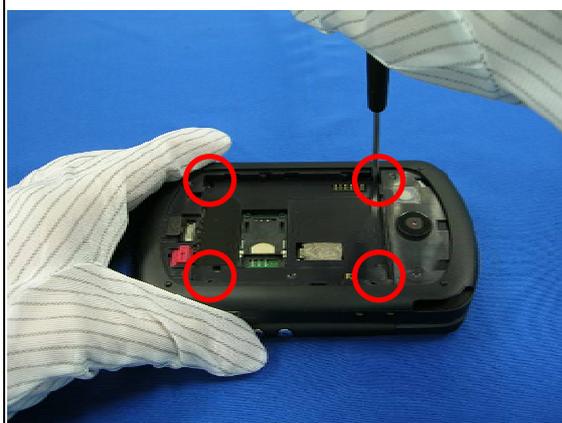
	Lock battery.
	Assemble battery cover.
	Insert the stylus.

The assembling process is done.

M/B Pre-Assembly:
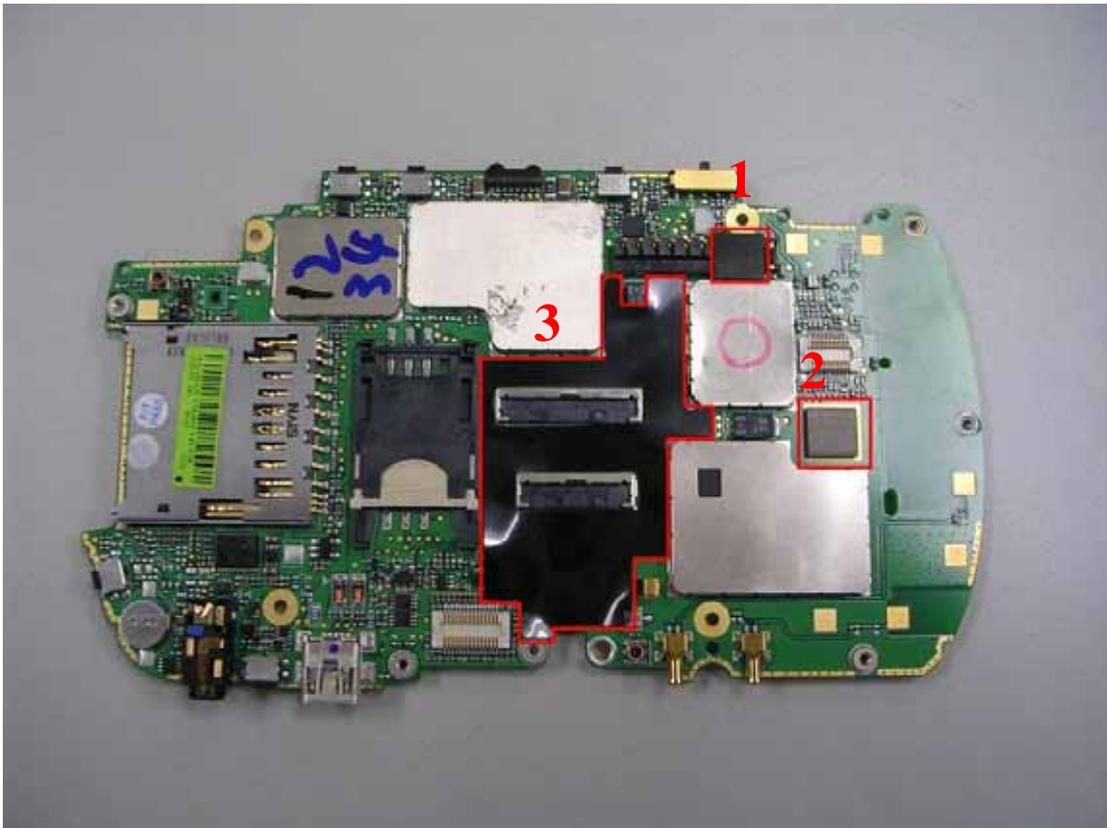
1. Poron (P/N : 76H00990-00M)
2. Gasket,7x7xT1.5 (P/N: 72H00952-00M)
3. Mylar (P/N: 76H00873-00M)

4. Diagnostic Program and Win CE test item

4.1 Tools required

SD card with Diagnostic program loaded.

4.2 How to enter Diagnostic Program

(1) Insert SD card with Diagnostic program loaded to the unit.

(2) Press and hold Power +Backlight + Reset to enter diagnostic mode to perform the test.

4.3 List of Diagnostic / WinCE Test Items

	No.	Item	Description	Remark
Diag. Program mode	1	Audio Test	Audio test with speaker, earphone, receiver, MIC	
	2	Vibrator Test	Test the function of vibrator	
	3	Button Test	All buttons press/release test.	
	4	Keyboard Test	Keyboard button press/release test	
	5	RAM Test	Check SDRAM Size/Write/Read	
	6	Checksum Test	Calculation ROM checksum Test.	
	7	SD Card Test	SD card read/write/lock/unlock test.	
	8	Battery Test	Main Battery test	
	9	Timer Test	RTC/OST check	
	10	Flash ROM info.	Show flash ROM information	
	11	Light Sensor Test	Test the function of Light Sensor	
	12	Flashlight Test	Red/green/amber/key LED on/off test.	
	13	LED Test	Test the function of LED	
	14	Backlight Test	3 Levels backlight test	
	15	Audio Jack Test	Insert/Remove earphone to test Audio Jack	
	16	Show Device Info	Show device information	
	17	Clear talk Time	Clear call duration (Talk Time)	
	18	LCM Test	Display/Backlight/Touch Panel test	
	19	Upload To SD	For HTC Service Center upload Diagnostic to SD card.	

	No.	Item	Description	
Win CE	1	USB Test	Suggest to test in Windows CE	
	2	BT Test	Suggest to test in Windows CE	
	3	Infrared Test	Suggest to test in Windows CE	
	4	UMTS Test	Suggest to test in Windows CE	

4.4 Test Items Operation

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

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

	No.	Item	Description	Remark
Diag. Program mode	1	Audio Test	UP: Playback to speaker Down: Playback to 3-ring earphone Left: Playback with Audio Lookback Right: Playback to Receiver Capture: Internal record & playback Record: External record & playback	
	2	Vibrator Test	Press Action to test vibrator function	
	3	Button Test	Follow the indication on device to press buttons for test.	
	4	Keyboard Test	Up: All buttons test Down: All keys test Left: Debug keyboard test	
	5	RAM Test	Press Action to process SDRAM test	
	6	Checksum Test	Press Action to calculate ROM checksum.	
	7	SD Card Test	Lock SD card and insert to unit, then remove SD card	
	8	Battery Test	Check battery capacity, current, voltage	
	9	Timer Test	Press Action to check if it shows "Test OK".	
	10	Flash ROM info.	Press Action to check Flash ROM information	
	11	Light Sensor Test	Cover the light sensor to test if it is sensitive.	

	12	Flashlight Test	Backlight button: Turn off Capture button: Video mode Record button: Capture mode	
	13	LED Test	Left LED: Blue→ Bluetooth, Green→ WiFi Right LED: Green→ GSM/WCDMA, RED→ Battery Low Check Phone button LED & Keypad LED	
	14	Backlight Test	Press Capture→Record→ Volume-Up→ Volume-Down to test 3 levels backlight.	
	15	Audio Jack Test	Insert/Remove earphone to test Audio Jack	
	16	Show Device Info	Show device information	
	17	Clear talk Time	Clear call duration (Talk Time)	
	18	LCM Test	Display/Backlight/Touch Panel test	
	19	Upload To SD	For HTC Service Center upload Diagnostic to SD card.	
Win CE	1	USB Test	Connect PC with USB cable, copy files from PC to the device	
	2	BT Test	Enable BT function and discover other BT device, the send a file to test functionality.	
	3	Infrared Test	Send a file by infrared to test functionality	
	4	UMTS Test	Surfer the internet to test functionality	

5. Main Battery Re-certify Procedure

5.1 Flow Chart

Under 3.75V — Measure battery voltage ? — Above 3.75V

Charge ? — Charge to 3.75V above

Charge fail

Fail — Voltage check by Ds2760K ?

OK

Fail — Currect check by Ds2760K ?

OK

Fail — ACR check by Ds2760K ?

OK

Fail — Parameter check by Ds2760K ?

OK

Fail — Whole unit charge test

OK

Fail — Whole unit discharge test ?

OK

Battery is NG

Battery is OK
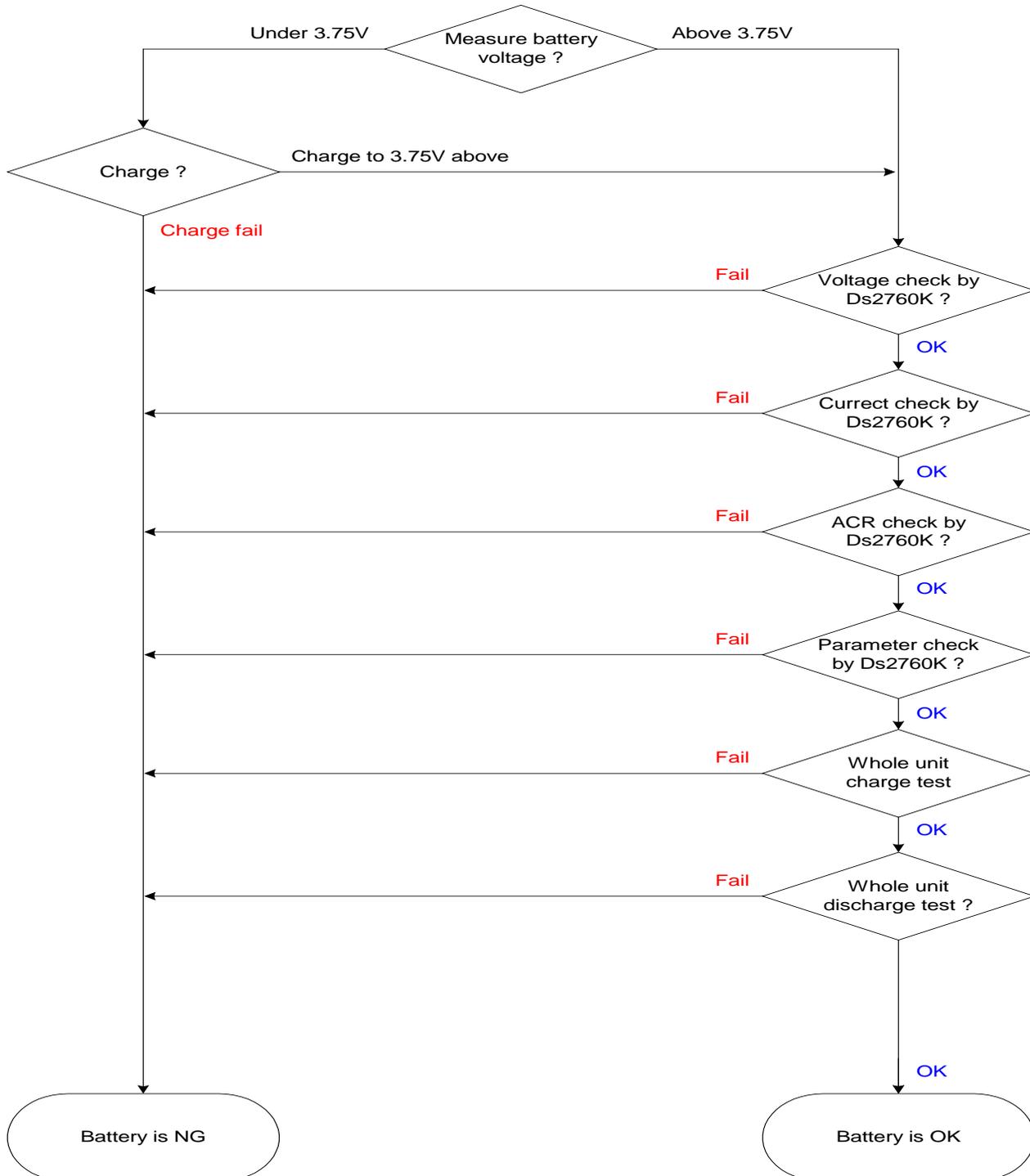
5.2 Measurement Procedure

	Tools requirement: A. Battery testing fixture B. Multi-meter with battery detecting plug C. Win2000 or above OS PC system D. Ds2760K battery testing program. Note: The Ds2760K program needs to install onto PC in advance.
	Step 1: Main battery voltage check a. To detect battery voltage by multi-meter through battery connector.
	b. The battery voltage will appear on the multi-meter, make sure the voltage >= 3.75V above **If the voltage < 3.75V please charge the main battery and then re-check the battery voltage must > 3.75V.**

Step 2: Parameter check by DS2760K test program

Contact battery to detect battery parameter by DS2760K program

The battery's core parameter areas as follows:

Voltage must > 3.75 V And = step 1 (+-0.15 V)

should have the value within + 3.125 ~ -3.125 mAmps

If current is not between + 3.125~ -3.125 mAmps, Must to Click "Calibrate Offset " button, , the value will be calibrated automatically. (it takes about 15 seconds) Purpose: make the current of sleep mode correct.

Compare Voltage and ACR value
Voltage must >= 3.75 V
Accumulated charge must >= 300 mAhs
If < 300mAhr, Must to Click "Set ACR " button then re-fill out ACR value to be 300mAhrs

ITEM	Description	Measurement status
1	Battery **VOLTAGE**	Voltage should be **3.75 V** Above. If the voltage is under 3.75, it means that the battery is over discharged and defective.
2*	Battery **Current**	Current should be between **–3.125 ~ + 3.125 mAH**
3	**CC & DC** Pins status	Both should be on **LOW**. If on HIGH, means the battery is defective.

Note: * If the current value is incorrect, Please click "Calibrate offset" to calibrate the value (it takes about 15 seconds) and check again.
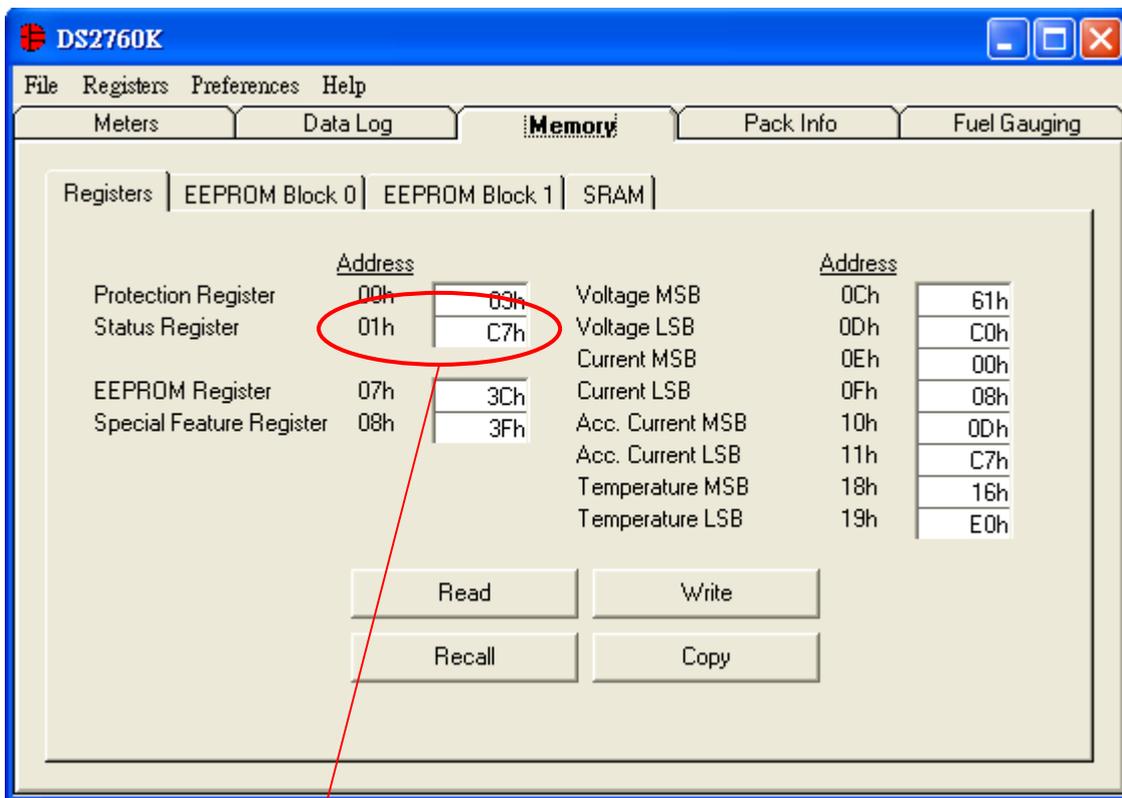
Check address of 01h
Must
01h = C7h

DS2760K

File   Registers   Preferences   Help

| Meters | Data Log | **Memory** | Pack Info | Fuel Gauging |

Registers | EEPROM Block 0 | EEPROM Block 1 | SRAM

Address

	Address			Address	
Protection Register	30h	93h	38h	40h
Status Register	31h	06h	39h	A2h
	32h	A2h	3Ah	00h
Current Offset Register	33h	FFh	3Bh	33h
	34h	00h	3Ch	25h
	35h	7?h	3Dh	3Eh
	36h	87h	3Eh	05h
	37h	C5h	3Fh	0Ah

Read   Write

Recall   Copy

Permanently Lock Block 1

Check address of
30h/31h/32h
Must
30h = 93h
31h = 06h
32h = A2h

Check address of 34h
Must
34 = 00h

Check address of
Bh/3Ch/3Dh/3Eh/3Fh
Must
3Bh = 25h
3Ch = 3Eh
3Dh = 05h
3Eh = 0Ah

ITEM	Description	Measurement status
1	Address **31h**	Register address Should be **06h**
2	Address **34h**	Register address Should be **00h**

If the register address is incorrect, it means that the EEPROM is defective.

If you still have the misgiving for the battery you can execute rundown test to verify.

5.3 Battery Rundown Test Procedure

(A) Tool Requirement: (1) Windows 2000 or above (2) Battery Rundown Software
(3) USB Cable or Cradle (4) ActiveSync4.0 or above

(B) Please charge your unit to full capacity for battery (4 hours) before doing the test.

Step 1: It is required to save powerdetect.exe and model.txt in the same folder under WinCE via ActiveSync.
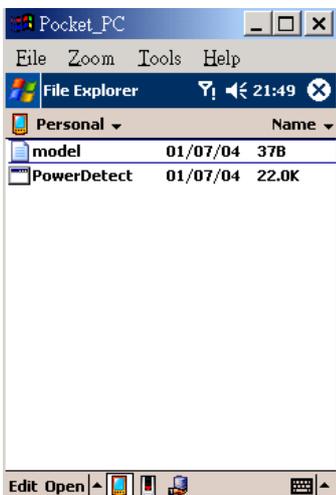
Step 2: It is unnecessary to adjust power management setting by using rundown test program.

Step 3: Execute powerdetect.exe under WinCE, it will enter Sleep Mode after one Hour and generate a file named powercap.txt log.

Time	Cap	Volt	Count
00:00:00	99%	4.152	1

01:51
00:59:51
Reset
Record

1 - 1   Power Detect 1.6

100
50
0

Capacity 99%   Voltage 4.152 v

Sleep	Record	BrightNess
60 min	120 Sec	Level 10

Model Universal   Hide   Quit   →**Record every two minutes & Brightness is maximum.**

File Explorer ⚡ 📶 🔊 2:02 ❌

📱 Personal ▾   Name ▾

📄 model   10/26/04   36B
📑 PowerDetect   10/26/04   22.0K
▓ **PowerCap**   10/26/04   212B

Pocket Word ⚡ 📶 🔊 2:01 ok

Power Status Record 26 13:51:27
================================
===
00:00:00 100%   4.162
00:02:00 99% 4.157
00:04:01 99% 4.152
00:06:01 99% 4.148
00:08:01 98% 4.143

Edit Open ▲ 📱 🔋 🖥   ⌨ ▲

New Edit View Tools ↑↓   ⌨ ▲

Powercap.txt   **Benchmark is 75%**

Step 4: Tap powercap.txt log to check if the rest battery capacity. If under

75%, please replace a new battery.

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

	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)
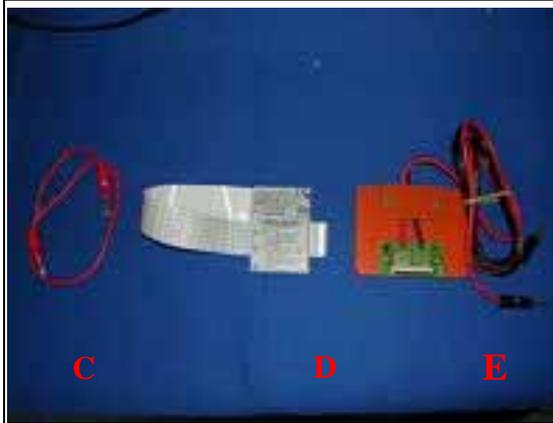
	3. Connect cable (D) to positive polarity of power supply (A) and current meter (B)
	4. Connect cable of fixture(C) to negative polarity of power supply (A) and current meter (B) Note : black cable to power supply (A) and red cable to current meter (B)
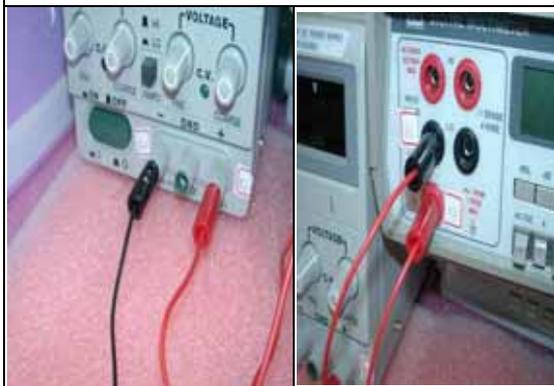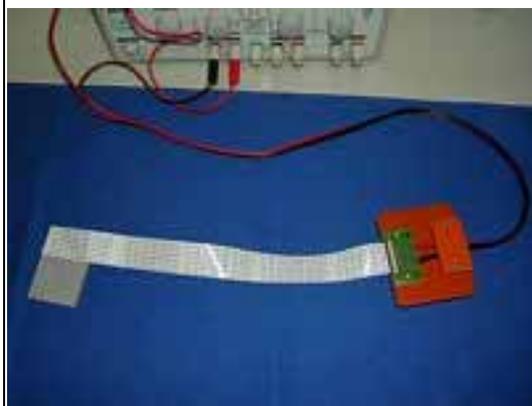
	5. Setting is **Ready now for testing**
	    Assemble Battery into device.
	     (Don't turn the power on at this moment)
	
	  Assemble Battery into device.
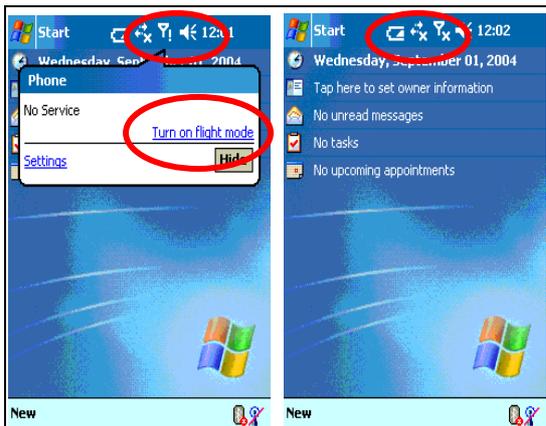
6.Turn on power supply (4V) and current meter (2A)

Set the unit to :

* Flight mode

* Turn off Bluetooth

Note : Need to put SIM card first on the unit.

7. Measure flight mode current

Wait about 1 minutes, display will be off, in this condition, please check current value on the current meter,
Current value must under **105 mA**, if over, it means M/B failed, please replace M/B for repair.

Unit is turn on and no back Light

8. Switch OFF the unit.
Measure power off current
Check current value on the current meter,
Current value must under 3 mA, if over, it means M/B failed, please replace M/B for repair.

Unit is turn off and no display

Conclusion:
If current consumption are passed at both of flight and power off mode, it means M/B is GOOD.

If there is any item FAILED at flight or power off mode, it means M/B is failed, please replace M/B for repair.

Measurement parameter

Measurement mode	Measured Current	REMARK
Flight Mode (Idle mode)	Under 105 mA	MB is good
	Over 105 mA	Fail, MB need to be futher repaired
POWER OFF (Sleeping mode)	Under 3 mA	MB is good
	Over 3 mA	Fail, MB need to be further repaired

7. Cosmetic Inspection Criteria

7.1. Definition of Cosmetic Standard

Standard is for refurbishment inspection.

7.2. Visual Inspection Requirements

2.1 Examination of the device shall be made with workbench light turned on.

Ambient illumination is to be 500-1000 lux.

2.2 The inspector shall examine the device at a distance of 30cm ±45degrees.

Inspection time: 2 secs per surface.

7.3. Definitions of Inspection Defects and Areas

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.

Bump：A hump in the surface of material.

D: Diameter/ L: Length/ W: Width/ Number: Number of defects/ S: Distance of dot to dot

Remark: 1. Crack is not allowed.   2. All dimensions in millimeters..

Class 1 area =>LCM, Bezel-LCM, Housing-LCM, Hinge (left, right, middle), Keypad, Bezel-keypad,
camera lens.

Class 2 area => Housing-keypad, outside of battery cover, release button, stylus and side buttons,
flash light, this area exclude hinge area and camera lens.

Class 3 area => The area under battery cover(exculde Camera and Flash light), Inner side of battery cover,
inside of SD connector, inside of USB port, inside of Earphone jack, SIM connector.

*. Figure

Class 1	Class 2	Class 3

7.4. Cosmetic Criteria Table

1. **Main unit inspection:**

Description	Accept criteria
Class 1	Exposure of substratum is not acceptable Scratch : L　3mm ,W　0.2mm ,N　2
Class 2	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 3	Label area could be ignorable. Exposure of substratum is not acceptable. Scratch : L　10mm ,W　0.4mm ,N　5

2. **LCM inspection:**

2.1 Electrical characteristic inspection standard

不良現象 **Symptom**		判定標準 **Standard**	不良點之間距 **(Distance between defect dots)**
亮點 **Bright Dots**	單點 **Single**	紅點+綠點+藍點 ≦ 4 **Red+ Green+ Blue ≦4**	**S≧5 mm**
	兩個相鄰點 **2 adjacent**	**N≦1**	
	三個或三個以上的相鄰點 **3 or more adjacent**	**N=0**	
暗點 **Dark Dots**	單點 **Single**	總數 ≦ 5 **Total Number ≦ 5**	**S≧5 mm**
	兩個相鄰點 **2 adjacent**	**N≦1**	

暗或亮線 **Dark or Bright lines**	N=0	
所有可允許的點 **All Allowable Dots Defects**	總數 ≦8 **Total Number ≦ 8**	S≧5 mm
黑點及亮點相鄰應被計算爲 **1** 個亮點. **2 adjacent of dark dot and bright dot shall be counted as 1 bright dot.**		

* **The total of LCM defect number must be less than 8 counts.**

甲、 Cosmetic/ Visual defect inspection standard

A. 凹痕，氣泡及污點的定義: **(Definition of Dent, bubble and Spot)**	**B.** 刮傷，毛屑及毛髮的定義: **(Definition of Scratch, Lint and Hair)**
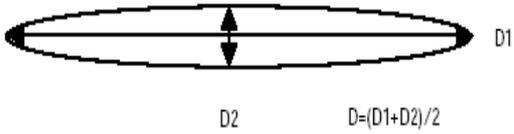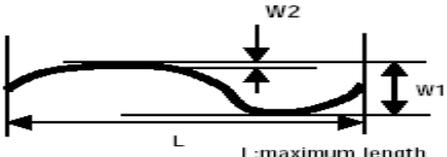
不良現象 **Symptom**	判定標準 **Standard**	允收數 **Accept N**	檢驗畫面 **(Check pattern)**
黑/白點 **(Dark/ White Spot)**	D≦0.1mm	視而不見 **(Ignore)**	背光亮 **Backlight turned on**
	0.1mm< D ≦ 0.25mm	N≦2	
亮/黑 線(毛屑/毛髮) **Bright/Dark Line** **(Lint/Hair)**	W1 ≦ 0.1mm W2 ≦ 0.03mm and L ≦ 1.0mm	N≦2	背光亮 **Backlight turned on**
表面髒污的點 **(Cosmetic spot)**	0.1mm< D ≦ 0.2mm	N≦3	關機狀態 **Power turned off.**
	0.2mm< D ≦ 0.3mm	N≦3	
	總數 ≦5 **Total Number ≦ 5**		
毛屑/刮傷 **(Lint/ Scratch)**	0.02mm<W2≦0.03mm and L≦3mm	N≦3	關機狀態 **Power turned off.**
	0.03mm<W2 ≦ 0.05mm and L≦2mm	N≦3	

凹痕 (Dents)	D≦0.15mm	N≦5	關機狀態 Power turned off.
氣泡 (Bubble)	0.1mm< D ≦0.15mm	N≦3	關機狀態 Power turned off.
表面破裂 Breakage on film surface	Not acceptable	N=0	
LCM 漏光(LCM light leakage)	Not acceptable	N=0	

8. OS, GSM Image Re-flash Procedure
System Requirement:

-Windows 2000/XP

-USB Cable

-MTTY.exe

-ActiveSync 4.0 above

-Master unit with the most update Rom Code

-128 MB SD/MMC card 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://rma3.htc.com.tw/rmaiii

8.1 Execute RUU to re-flash the master unit

1. Boot up device into OS mode.
2. Allow USB connections in ActiveSync connection settings.
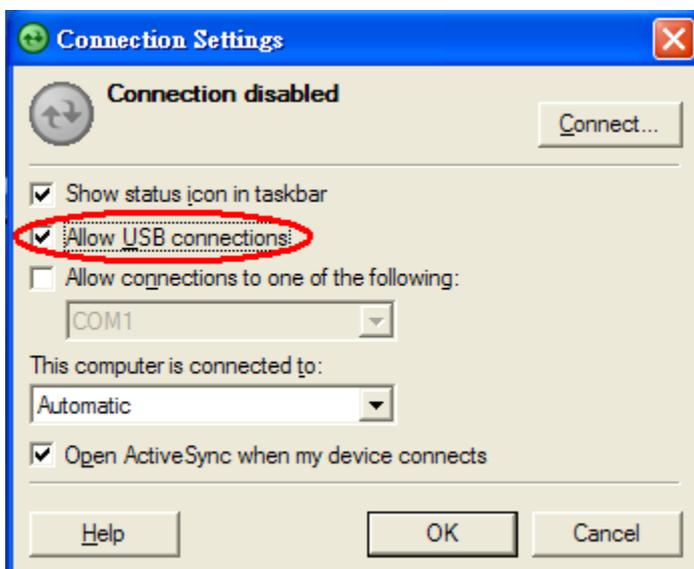
3. Connect with PC by USB cable.

4. Execute RUU program to re-flash ROM code.

Click Next

Device Software Update Utility - R:3020 D:21000 U:1300 P:857873

Welcome to the Device Software Update Utility

This program will take you through the installation of the software update.

Before you continue, please ensure that:

1. Perform a normal reset by pressing the reset button .

2. Your device is also synchronised with your PC via ActiveSync and the USB cable/cradle. Depending on your settings, please check that some of your personal data, such as contacts, emails and tasks are backed up.

3. Close all other applications on the device and host PC.

Click Next to continue. Click Cancel to quit.

Next   Cancel

Click Next

Checking the information on your device ... Please wait ...

Please don't disconnect your device from your PC until the update is completed.

Device will show as below, click "Yes".

Click Update.

Device Software Update Utility - R:3020 D:21000 U:1300 P:857873

Congratulations

You have now almost completed your device software update.

To finish, please complete the following important steps:

1. Take your device out of the cradle so that it is no longer connected to your PC
   - don't be alarmed if the screen looks strange.

2. Cold boot system(as left picture show).

You can now continue to use your device as usual, with the increased benefits
 of the updated software.

Click Finish to exit this program.

Finish

5. Cold boot the device - Press & Hold two "━"key, **and use stylus to reset device.**

   After display on, release two "━"key, and press "0" to restore factory default.

Press 0 to restore
factory default

Press X to exit

ROM code re-flash process is done.

8.2 Upload the most update code from master unit to SD /MMC card

(You Only need to do this ONCE when New Update is received, and the SD card need with HTC special setting)

Requirement:

(1) Mtty.exe tool ver1.16

(2) USB cable

(3) Window2000 or above

(4) Master unit with the most update ROM image

(5) 128MB SD card with HTC special setting.

1. Disable USB connection in ActiveSync connection settings.

2. Set the Unit into Bootloader Mode (Press & Hold **Power Button + Backlight Button + Reset**), wait for Serial on display.

    Message is showing on Device Screen:
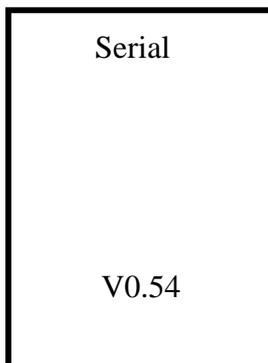
3. Connect the unit to the PC with **USB cable**, unit display will change to **USB**, and then open MTTY116.exe to select USB port.
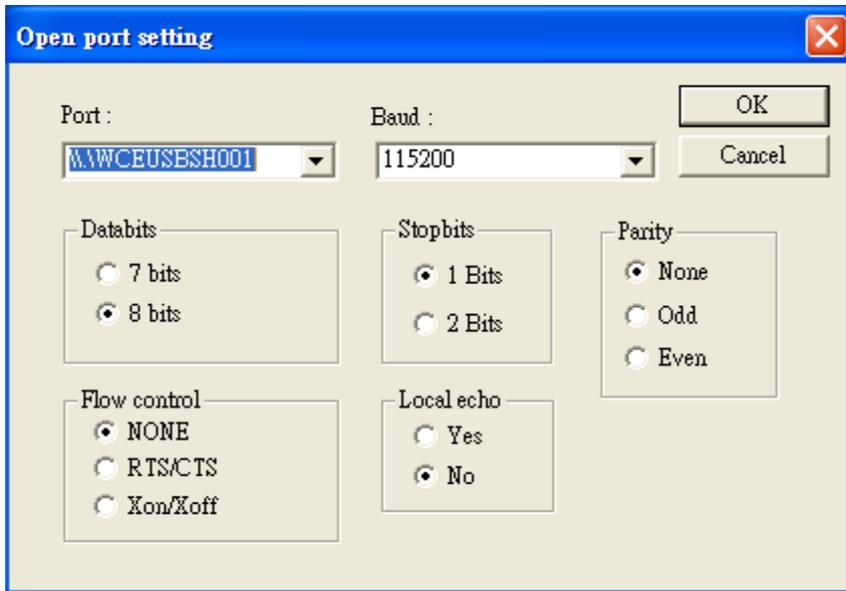
4. Insert 128 MB SD or MMC card into SD slot of PDA Phone
5. On the PC side, Select **OK and press ENTER.**

   Following display will be shown:

6. UPLOAD **Bootloader** to SD card

Type:

USB>task 32

USB>d2s 70000000 80000

(Please notice the blank space between d2s and address, sd)

Then press ENTER, following display will be shown:

PDA phone will show message： **Checksum is OK!**

7. UPLOAD **WINCE+Splash** to SD card

  Type:

USB>d2s 70100000 3FA0000 sd a

(Please notice the blank space between d2s and address, sd, a)

Then press ENTER, following display will be shown:


```
Multi-Port/USB TTY Ver1.16 - [\\.\WCEUSBSH001 115200  N...
 File  Edit  View  Auto  Window  Download  Help

USB>d2s 70100000 3FA0000 sd a
SD:Waiting for card insert.........

CMD3 for SD, it's OK, ready to get RCA from response.

SD:Detected one card

SD:ready for transfer OK

d.total_lba=3C100
d.block_size=200
d.RCA=A95C
d.drv_type=40000000
d.busWidth=1
Total card size=7820000
```

8. The process begins and waits for 7 or 8 minute until it shows **"Store image to SD/MMC card successful"**.


```
DOCInfoTableinitHW+
Binary0 Size: 0x100000
FAT0 Size: 0x4000000
FAT1 Size: 0xA00000
FAT2 Size: 0x2C70000
All Size: 0x7770000
FAT0_ADDR=0x100000,FAT1_ADDR=0x4100000,FAT2_ADDR=0x4B(
***********************************************************
Store image to SD/MMC card successful.
```

  PDA phone will show message： **Checksum is OK!**

9. Upload **Extended ROM** to SD card

   TYPE:

   USB>d2s 74100000 A00000 sd a

   Then press ENTER, and then the display will be shown:

10. The process begins and waits for 1 minutes until it shows **"Store image to SD/MMC card successful"**.

   PDA phone will show message： **Checksum is OK!**

11. Upload **Radio Stack** to SD card

TYPE:

USB>d2s 60000000 a24200 sd a

Then press ENTER, and then the display will be shown:
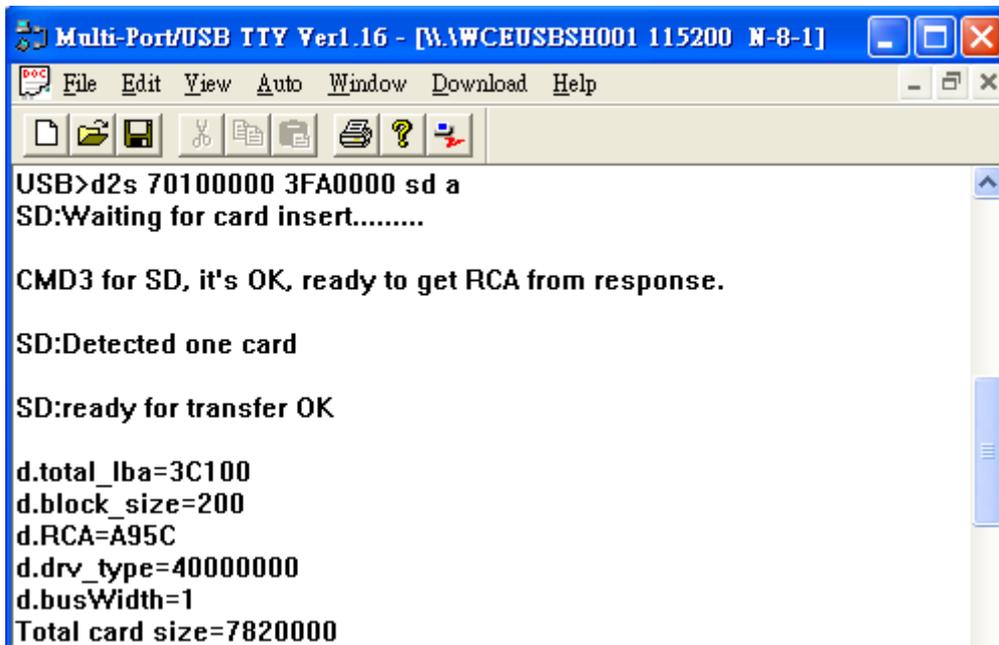
```
Multi-Port/USB TTY Ver1.16 - [\\WCEUSBSH001 115200  N-8-1]
File  Edit  View  Auto  Window  Download  Help

USB>d2s 60000000 a24200 sd a
SD:Waiting for card insert.........

CMD3 for SD, it's OK, ready to get RCA from response.

SD:Detected one card

SD:ready for transfer OK

d.total_lba=3C100
d.block_size=200
d.RCA=A95C
d.drv_type=40000000
d.busWidth=1
Total card size=7820000
```
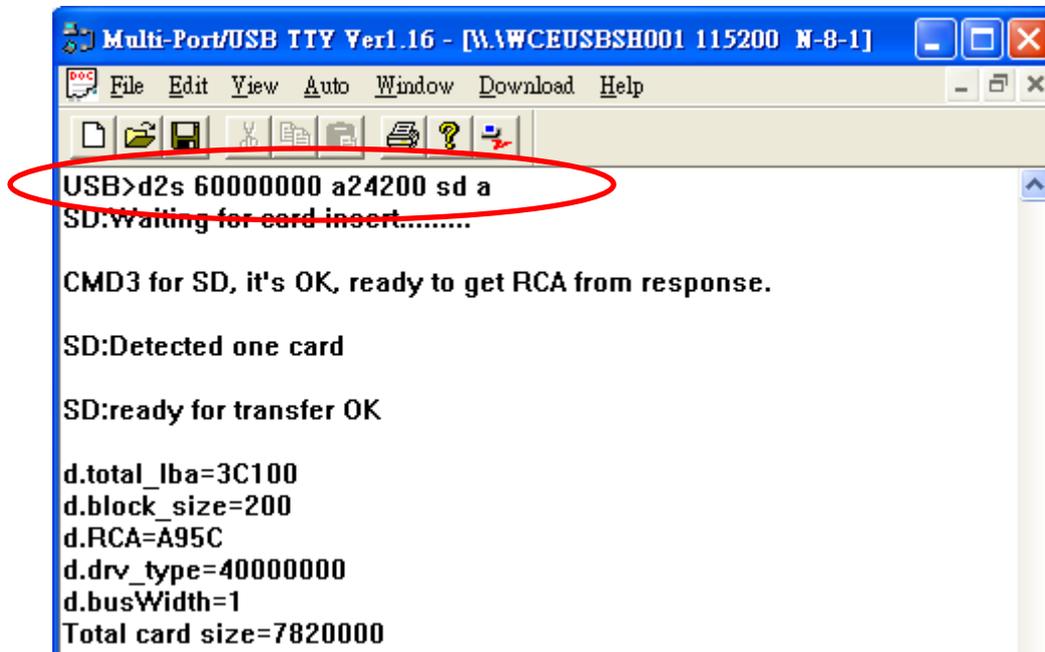
12. The process begins and waits for 17 or 18 minutes until it shows **"Store image to SD/MMC card successful".**

```
*
*
*

Store image to SD/MMC card successful.

USB>

Ready
```
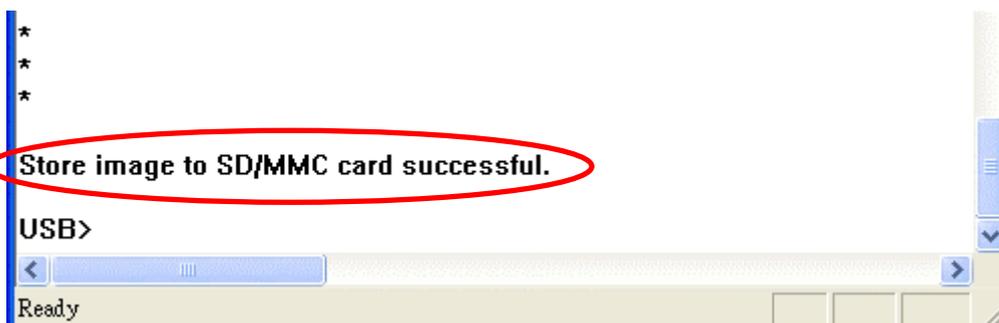
Now the upload to SD card is done!

Take out the SD card from PDA phone and mark it according to the Language you build for.

*CAUTION! DO NOT REMOVE THE USB CABLE FROM THE PC OR PDA, FAIL TO
    DO SO MAY CAUSE DEVICE UNIT FAIL TO BOOT.*

8.3 Use Pre-loaded SD card to Re-flash Unit

1. Insert Pre-loaded SD card to the unit.

2. Reset the unit and enter the bootloader mode (Press & Hold **Power Button + Backlight Button + Reset**).

   Display will show….

| SD Download

Sections=4
Press Power
To Flash…….. | → | SD Download

Sections=0

Please Wait
for
Downloading

XX%
DOCUpdating… | → | SD Download

Sections=0

Please Wait
for
Downloading
Checksum….

100% |
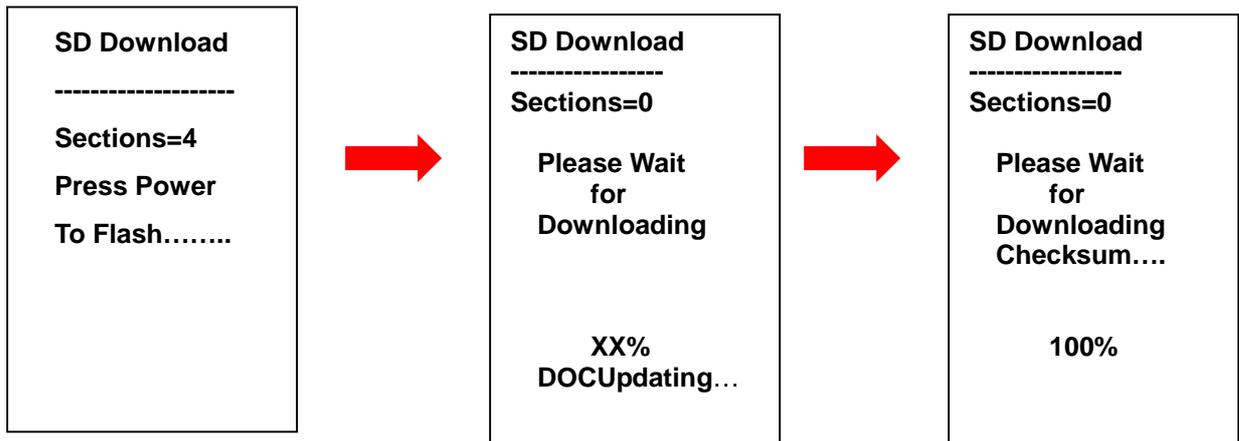
3. Following the instruction on PDA phone by pressing Power to start flash.

4. Once it is done, display will show…

| SD Download

Sections=1

Please Wait
for
Downloading

XX%
DOCUpdating… | → | SD Download

Sections=3

Please Wait
for
Downloading

XX%
RadioUpdating… | → | SD Download

Sections=3

Please Wait
for
Downloading
Checksum….

100% |
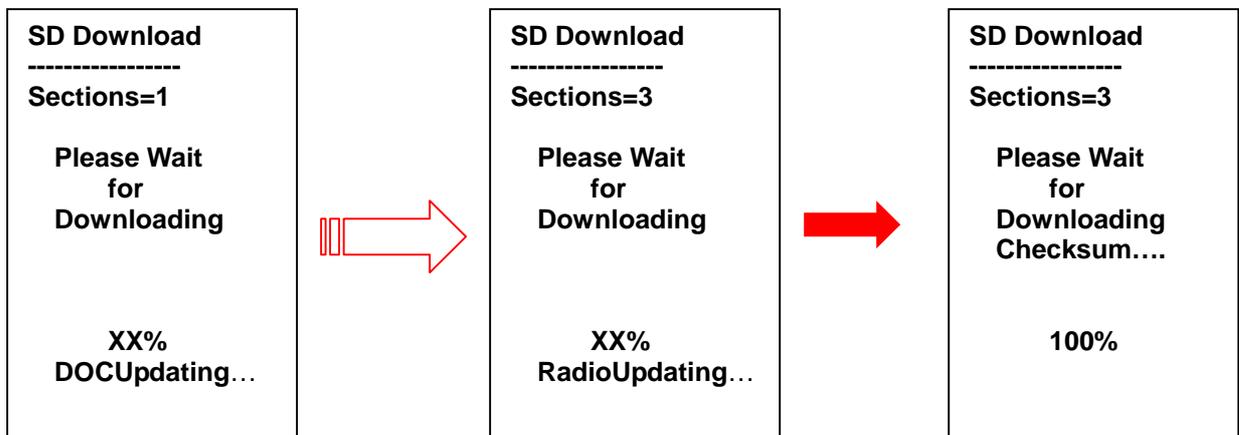
5. Take out the SD card.

6. Cold boot the device (Press & Hold two "—"key, and use stylus to reset device, the press "0")

Now the upgrade is done!

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

9.FTA (Faulty Tree Analysis)

No Power / Can not Boot
- **Attach AC adapter. Power LED No indication**
  - Main Board defects
- **Attach AC adapter. Power LED indicates Red or Amber**
  - Battery damage
  - Battery connector on M/B defects
  - Power Switch on M/B defects
  - Main Board defects
- **Can enter bootloader mode**
  - Re-flash Software
  - Main Board defects

Can not Boot with Battery ONLY
- **Can not Boot with Battery ONLY**
  - Battery power run out
  - Battery connector on M/B defects
  - Battery damage
  - Main Board defects

Can not hold charge
- **Battery full charge. Battery rundown test fail.**
  - Battery damage
  - Main Board defects

Can not charge
- **Attach AC adapter. Power LED No indication**
  - Battery connector on M/B defects
  - Battery damage
  - Power LED on M/B defects
  - Main Board defects
  - AC Adapter defects
  - Cradle defects
- **Attach AC adapter. Power LED indicates**
  - Battery damage
  - Main Board defects

Can not turn power off	Press power button but can not turn off	Reset the device
		Re- flash Software
		Main Board defects

Power off during operation	Power off automatically	Battery power run out
		Battery can not hold charge
		Main Board defects
	Shutdown immediately in anytime	Main Board defects

Defective Vibrator	Vibrator doesn not work	Unit Re assembly
		Vibrator defects
		Main Board defects

Defective LED	No indication on hinge LED	KB board LED defects
		Main Board defects
	No indication on keypad LED	KB board LED defetcs
		Main Board defects

System hang at booting	System boot up but lock on LOGO screen	Reset the device
		Re- flash Software
		Main Board defects

Can not detect SD card	System can not detect SD card	SD socket on Main Board defects
		Main Board defects

SD card can not hold in place	SD card can not hold in unit	SD socket on Main Board defects

System hang under OS	System lock often under operation in anytime ; press any key does not help	Battery power run out
		Reset the device
		Re- flash Software
		Main Board defects

SD card can not eject	SD card stuck in the unit	SD socket on Main Board defects

| SD card write protection malfunction | SD write protection fail under OS | Main Board defects |

RS232/ USB Comunication fail	Can not sync with PC by ActiveSync	Check connection setting in AtiveSync
		USB,Serial Cradle or Cable defects
		USB connector on M/B defects
		Main Board defects

| Defective IR | IR Test fail under Diagnostic program | Main Board defects |

Dumb Speaker	No sound in internal speaker	Check the setting(Sounds, Profile)
		Something stuck in audio jack
		Unit Reassembly
		Internal speaker defects
		Main Board defects

Defective Recording	No voice be recorded	Unit Reassembly
		Microphone defects
		Something stuck in audio jack
		Main Board defects
	Nosie, deformed sound by recording	Microphone defects
		Main Board defects
	Voice Note function does not work under OS	Reset the device

Audio play problem with speaker	Noise sound when playing music or ringtones thru internal speaker	Internal speaker defects
		Main Board defects
	Abnormal volumn	Main Board defects

| Defective Earphone Jack | Audio Jack broken or something stuck inside | Audio Jack on M/B defects |

| Defective Earphone set | No sound or can not record on headset | Earphone defects |

Defective Backlight/Front light	No front-light on LCD	Check the setting (power management)
		Unit Re-assembly
		LCD defects
		Main Board defects
		LCD cable defects
		Lower cover board defects

Half screen shown	Half screen displays on LCD	Unit Re-assembly
		LCD defects
LCD no display	No video appears on LCD, front-light turn on only	LCD cable defects
		Lower cover board defects
Screen Flickering	Video or back-light flashing	Main Board defects

| Line in Display | Line in LCD either horizotal or vertical | LCD defects |

| Defective pixels on LCD | The Q'ty of bad pixels is out of spec (inspection criteria) | LCD defects |

Defective power button	Power button does not work or button stuck	Power button (KB bezel) defetcs
		Power switch on M/B defects
Defective record button	Record button does not work or button stuck	Record button (KB bezel) defetcs
		Record switch on M/B defects
Defective Volume button	Volume button does not work or button stuck	Volume button (KB bezel) defetcs
		Volume switch on M/B defects
Defective Backlight button	Backlight button does not work or button stuck	Backlight button (KB bezel) defetcs
		Backlight switch on M/B defects

Defective Phone button on hinge	Send/End button stuck	Phone button defects
	Send/End button does not work	Main board defects
		LCD cable defects
	LED no indication	LCD cable assembly defects

Defective Navigation button	Navigation button does not work properly	Navigation keypad defects
		Upper cover board defects
		Main board defects

Defective Keyboard (Qwerty)	Keypad button does not work properly	Keypad defects
		Main board defects
		KB board defects

RF / Wireless malfunction	SIM card detection fail	SIM connector defects
		Main Board defects
	No service (signal)	Antenna defects
		Main Board defects
	Testing fail by RF Tester (other phone function)	Antenna defects
		Main Board defects

Digital Camara malfunction	PDA phone cannot detect digital camera	Camera defects
		LCD cable defects (2nd camera)
		Lower cover board defects (2nd camera
	Abnormal color or no photographing before catpturing the picture	Main Board defects

Defect receiver — No sound from receiver , or noise from receiver

- Receiver defects
- Receiver assembly defects
- Upper cover board defects
- Lower cover board defects
- LCD cable defects
- Main board board defects

Poor Backup Battery — Backup battery can't be charged or can 't hold charge

- Backup Battery damage
- Main Board defects

Screen can not 90-degree transfer to PDA mode — Screen can not transfer between notebook mode & PDA mode

- KB borad defects
- LCD bezel defects
- Main board defects

10. Spare Part List

Item	HTC P/N	Description	Q'ty
1	35H00058-00	BATTERY_LI-ION,Main Battery,1490mAh,3.7V	1
2	36H00248-00M	8mm receiver,2403 995 20384,PHILIPS,8.1*8.1*3.7mm	1
3	36H00253-01M	Receiver,8mm receiver with tape,WD20398/32	1
4	36H00340-00M	Speaker,OWS-1020CW-8,OLE WOLFF,20*10*4.4mm	2
5	36H00287-00M	Vibrator,A4B-12-WBS-3,C.I.KASEI,Universal	1
6	36H00289-00M	ANTENNA,WIFI,JUN-YEN,Universal	1
7	73H20042-09M	FPC Pre-Assy,CAREER,BT-Borard,Universal	1
8	36H00293-00M	Antenna,AFM50-000015,ACON	1
9	51H00266-00M	PCB ASSY,Upper Cover Board,Universal	1
10	51H00267-00M	PCB ASSY,Lower Cover Board,Universal	1
12	54H00108-00M	Module Assy,Camera,LT9650FCG-HT-P2Pr	1
13	54H00112-00	Module Assy,59-14BUWD/TR8 ,EVERLIGHT	1
14	54H00113-00M	Module Assy,camera,LITEON,LT6650FT-HT-P5r	1
15	60H00026-00	LCD Module,SONY,ACX526AKM-7,VGA,BALI	1
16	71H01058-XXM	Button,NAVIGATION,UNIVERSAL	1
17	71H01059-00M	Button,Phone Button,TopBound,Universal	1
18	72H01059-00M	Screw,POINT Mechanical,P,1.6*4.5,BZ+NYLOK	4
19	72H00724-00M	Screw, PH, FD,T1.4*2.9, Nickel,Black,AISI 1018	3
20	72H01057-00M	Screw,Mechanical,F,1.6*2.8,Ni+Nylok,	6
21	72H00800-00M	SCREW,M1.6*3.1L,FD,T,NI,鑫笙	12
22	72H00840-00M	SCREW,M1.6*4,PH,FLAT,BK,鑫笙	3
23	72H00846-00M	Gasket,10*5*1mm,Beetles	1
24	72H00868-00M	Screw,M1.4*3L,POINT SCREW	3
25	72H00869-00M	Conductive Fabric,SHEET_COAXIAL_GROUNDING	1
26	72H00952-00M	Gasket,7x7xT1.5,CATERON,UNIVERSAL	1
27	72H00968-00M	Copper Foil,17X4XT0.085,Universal	1
28	73H00233-01M	Cable,WANSHIH,Coaxial Cable Pre-assy	1

29	73H20014-XX	FPC Pre-Assy,QWERTY KB Board,Universal	1
30	74H00418-XXM	Bezel Pre-Assy,Keypad,Universal-O3	1
31	74H00419-XXM	Cover Hinge-R Pre-Assy,Universal	1
32	74H00420-XXM	Cover Hinge-L Pre-Assy,Universal	1
33	74H00421-XXM	Housing Pre-Assy,Keypad,Universal	1
34	74H00422-XXM	Battery Cover Pre-Assy,UNIVERSAL	1
36	74H00424-XXM	Bezel Pre-Assy,LCM,UNIVERSAL-O3	1
37	74H00425-XXM	Housing Pre-Assy,LCM,UNIVERSAL-O3	1
38	76H00859-00M	Rubber-R,HOUSING LCM,駿熠,UNIVERSAL	1
39	76H00860-00M	Rubber-L,HOUSING LCM,駿熠,UNIVERSAL	1
40	74H00485-XXM	Cover Pre-Assy,Cover Hinge Middle,Universal	1
41	74H00486-XXM	Keypad Pre-Assy,WWE,Universal	1
42	76H00842-00M	Rubber,CAMERA,駿熠,UNIVERSAL	1
43	76H00845-00M	Rubber,SPEAKER_L,駿熠,UNIVERSAL	1
44	76H00846-00M	Rubber,SPEAKER_R,駿熠,UNIVERSAL	1
45	76H00848-01M	Rubber,Silicone,SD ENTRANCE 2,UNITEL,UNIVERSAL	1
46	76H00856-00M	Rubber,MICROPHONE,駿熠,UNIVERSAL	1
47	76H00873-00M	Mylar,ISOLATION,T-TEK	1
48	76H00955-00M	Mylar,Mylar Speaker,Universal	1
51	76H00987-00M	Tape,CONDUCTIVE_FABRIC_TAPE_MB2,Universal	1
52	76H01058-00M	Tape,Kapton_Lcm,T-TEK,Universal	1
54	76H00990-00M	Poron,PORON_PROTECTION,Universal	1
55	76H00909-00M	Screen Protector,UNP05,T-TEK,75*56.8*0.1mm	1
56	76H00843-00M	Rubber,ANTENNA-PLUG,駿熠,UNIVERSAL	2
57	77H00119-00	Warning Label of SIM Connector,Himalayas	1
58	77H00193-00	Liquid Damage Indicator, ONTARIO	1
59	77H00209-00M	Warranty Label,3*3mm,Sausalito	2
60	77H00251-XXM	Regulation Label,MAIN UNIT,Universal-O3	1

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TOTAL 111   CONT.ON. 85   PAGE NO.
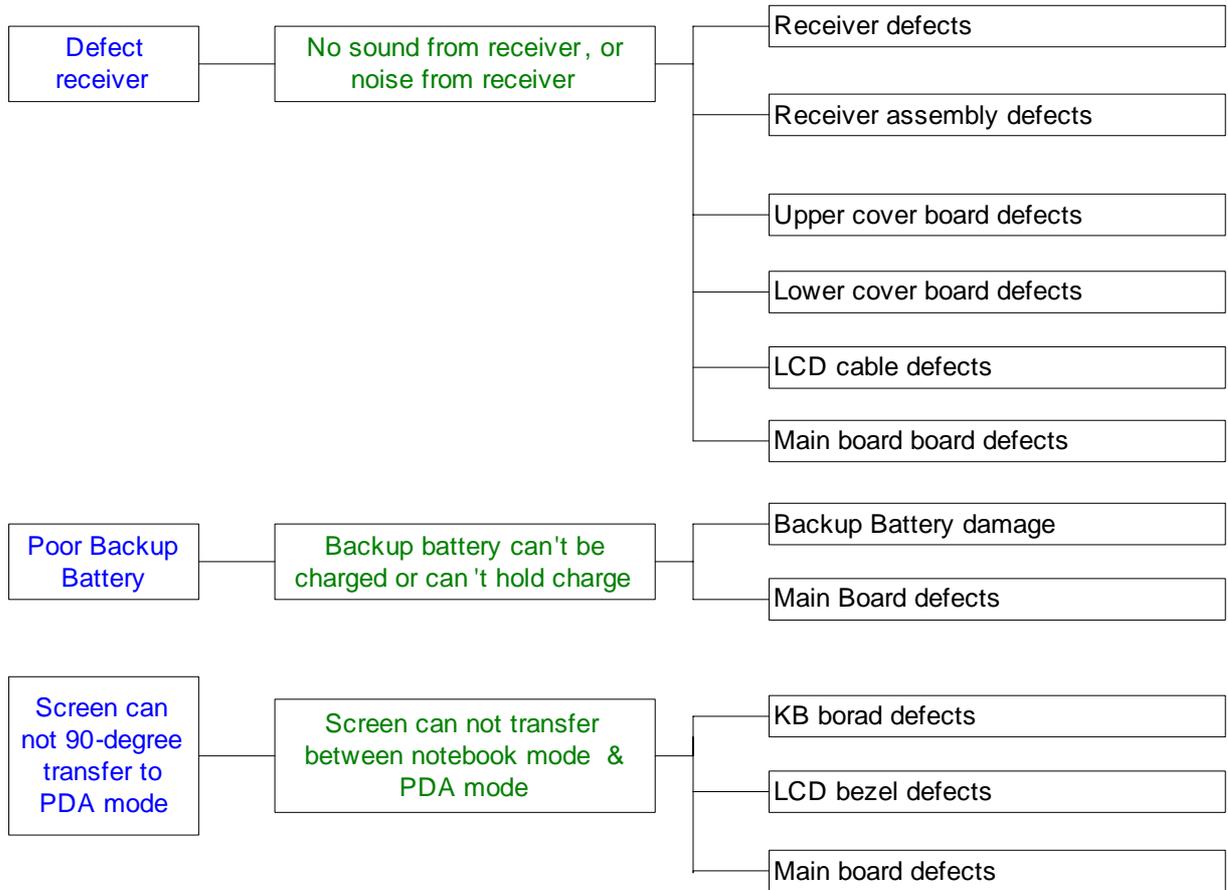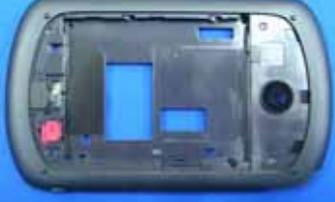
11. Spare Part Photo

Picture of SPL(Please check customer code before taking this part no.)		
(Part no. on picture is for reference only, please check SPL for detail per customer)		
74H00424-XXM	74H00418-XXM	74H00421-XXM
Bezel Pre-Assy,LCM	Bezel Pre-Assy,Keypad	Housing Pre-Assy,Keypad
Q'ty: 1	Q'ty: 1	Q'ty: 1
74H00425-XXM	73H20014-00	51H00266-00M
Housing Pre-Assy,LCM	FPC Pre-Assy, KB Board	Upper Cover Board
Q'ty: 1	Q'ty: 1	Q'ty: 1
51H00267-00M	35H00058-00M	71H01058-XXM
Lower Cover Board	BATTERY_LI-ION	Button,NAVIGATION

Q'ty: 1	Q'ty: 1	Q'ty: 1
36H00293-00M	74H00423-00M	74H00486-XXM
GSM Antenna	Stylus	Keypad Pre-Assy
Q'ty: 1	Q'ty: 1	Q'ty: 1
74H00422-XXM	60H00026-00M	76H00848-01M
BATTERY COVER	LCD Module,SONY	Rubber,SD ENTRANCE
Q'ty: 1	Q'ty: 1	Q'ty: 1
36H00248-00M	36H00253-01M	54H00112-00M
8mm receiver with cable	Receiver,8mm	Flashlight / Everlight
Q'ty: 1	Q'ty: 1	Q'ty: 1

54H00113-00M	74H00420-XXM	74H00419-XXM
Video Camera,LT6650FT	Cover Hinge-L	Cover Hinge-R
Q'ty: 1	Q'ty: 1	Q'ty: 1
76H00845-00M	76H00846-00M	36H00340-00M
Rubber,SPEAKER_L	Rubber,SPEAKER_R	Micro-speaker
Q'ty: 1	Q'ty: 1	Q'ty: 2
54H00108-00M	36H00287-00M	72H01059-00M
Main Camera,LT9650FCG	Vibrator	SCREW,M1.6X4.5mm
Q'ty: 1	Q'ty: 1	Q'ty: 4

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72H00724-00M	72H00868-00M	72H00840-00M
Screw, PH, FD,T1.4*2.9	Screw,M1.4*3L	SCREW,M1.6*4
Q'ty: 3	Q'ty: 3	Q'ty: 3
72H00800-00M	72H01057-00M	72H00800-00M
SCREW,M1.6*3.1L	Screw,M1.6*2.8	SCREW,M1.6*3.1L
Q'ty: 12	Q'ty: 6	Q'ty: 12
36H00289-00M	74H00485-XXM	99HAU0XX-02
ANTENNA,WIFI	COVER, HINGE MIDDLE	FRU Main Board
Q'ty: 1	Q'ty: 1	Q'ty: 1

76H00856-00M	73H00233-01M	71H01059-00M
Rubber,MICROPHONE	Coaxial Cable Pre-assy	Phone Button
Q'ty: 1	Q'ty: 1	Q'ty: 1
73H20042-09M	76H00987-00M	76H00986-00M
BT-Antenna	CONDUCTIVE_FABRIC	CONDUCTIVE_FABRIC
Q'ty: 1	Q'ty: 1	Q'ty: 1
76H00990-00M	76H00955-00M	72H00968-00M
PORON_PROTECTION	Mylar Speaker	Copper Foil,17X4XT0.085
Q'ty: 1	Q'ty: 1	Q'ty: 1

76H00859-00M	76H00860-00M	
Rubber-R,HOUSING LCM	Rubber-L,HOUSING LCM	
Q'ty: 1	Q'ty: 1	

Appendix

A. Customer, Retailer Misjudgment

Before attempt repairing the unit, make sure the type of reported failure could be clearly reproduced; otherwise, check with the customer or distributor once again to identify the problem correctly.

The following are failure symptoms that are typical by misjudgment

No.	Item	Possibility
1	No Power even the power button is pressed	Main Battery low power exhausted.
		While Back Light is turned OFF, the surrounding lighting will be reflected on the panel and in a dim location, it looks like the unit is turned OFF.
		According to the Power Management settings, the units will be switched OFF automatically.
2	Battery discharges quickly	The battery life depends on the devices being used in SD Card Slot, and frequency of use of the Backlight. These functions consume a lot of energy.
		Operating with front light ON, or using high-energy consumption devices such as SD Memory Card will drain out the battery pack faster.
3	Battery cannot be charged	Using AC adapter that is NOT supplied with the unit.
		Charging the battery while operating the unit with heavy loadings could cause the temperature inside the unit to build up which could cause the unit stop charging. At this moment, the LED indicator will flash Yellow to notify user that the charging has been stopped. Or the temperature is extremely low will also stop charging. Since the extreme high or low temperature will cause the battery to discharge quickly, it has been designed to cut battery charge below $0°C$ and above $35~40°C$ to protect the battery pack.
4	Cannot make communications via mobile phones through exclusive cable.	If the unit could pass the test with Loop back Interface card, the possibility of unit malfunction becomes low. Then the following items could be the reason of problem such as location, timing, signal strength, service provider's mixed up, or problem with the mobile itself. Or could be incompatibility issue.
5	Cannot use SD Memory Card	Card is not being pre-formatted.
		SD card has been switched to Write Protect mode.
		Card not inserted completely, or bad contact between connector contacts.
6	Black or White dot on the screen.	For LCD panel's normal behavior, it is hard to find a panel without any bad pixel. Once the numbers of dots and the distance between them are within the specifications, it is allowed.

7	Touch Screen or Program Buttons are not reacting.	Could be wrong operation.
		Screen not properly aligned with the stylus calibration.
8	Front Light dim, cannot turn ON, or shuts OFF automatically.	Check the Front Light settings in Power Management settings
9	Cannot playback music, No sound or volume is low.	When Battery low, the music playback becomes difficult and the volume could become lower.
10	Cannot execute installed application programs	Could be an incompatible software
11	Operation is slow in response	Could be insufficient memory. Check amount of system memory.
12	Hang up	Software being used sometimes is not fully compatible with the system.
		Execute many application programs simultaneously
		Software that requires big amount of memory spaces or the system memory is low or the files being used is fragmented.
13	System Memory is enough, but is shows insufficient.	Software that requires big amount of memory spaces or the system memory is low or the files being used is fragmented.

*Note: Nevertheless, the above symptoms could be solved by a warm boot or cold boot, make sure the warm/cold boot has been executed and try to reproduce the symptom reported.

How to perform Warm Boot and Cold Boot:

Warm Boot: Reset the unit by pressing reset button.

Cold Boot: Press Power + Backlight+ Reset the unit simultaneously.

B. Labeling Plan (Generic)

1. Regulation label-main unit

1.1 Regulation Label (on the rear housing of main unit)

HTC P/N: **77H00251-00M**

Size:35.6 × 31.6 mm

Barcode Type: Code 128 symbology
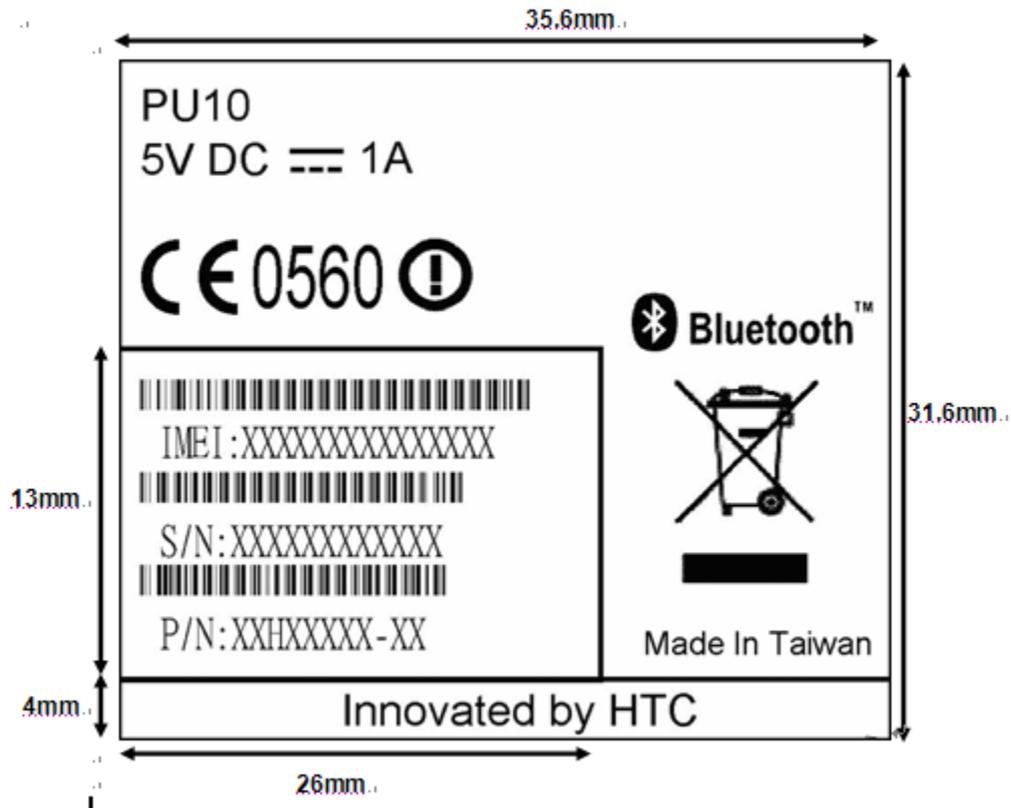
Label Characteristic

Material: Polyester

Color: pantone PMS422C

Ink: pantone PMS425C

2. Battery Label

2.1 Main Battery label

    HTC P/N: 35H00058-00

    Size: 58.3 x 41.5 mm

   Manufacture by battery vendor.

3. Packing Label

3.1 Overpack Box label 1

HTC P/N: 77H00187-00

Size:93.0 × 48.0 mm

Label Characteristic:

Material: Hi Fi printing paper

Color: pantone White

Ink: B110

3.2 Overpack Box label 2 (on 6-in-1 box)

HTC P/N: 77H30026-00

Size:152.4 × 101.6 mm

Label Characteristic:

Material: Hi Fi printing paper

Color: pantone White

Ink: B110

4. Pallet label

4.1 Pallet ID label

HTC P/N: 77H30026-00

Size:101.6 × 152.4 mm

Label Characteristic:

Material: Hi Fi printing paper

Color: pantone White

Ink: B110

4.2 Pallet ID label for Incomplete Pallet

HTC P/N: 77H30026-00

Size:101.6 × 152.4 mm

Label Characteristic:

Material: Hi Fi printing paper

Color: pantone White

Ink: B110

C. RF Antenna Test Specification

1. GSM antenna test specification

Items	Test Name	TxLevel	TCH	lst Downlink CellPower	Note
1	Camp @ DCS Band	0	512	-75	BCCH=600
2	BS Originate Call	0	512	-75	
E-GSM 900 ReceiverTest					
3	Fast Bit Error Rate	5	975	-104	
4	Fast Bit Error Rate	5	40	-104	
5	Fast Bit Error Rate	5	124	-104	
E-GSM 900 Ttansmitter Test					
6	TX Phase RMS Error	5	975	-75	
7	TX Phase Peak Error	5	975	-75	
8	TX Frequency Error	5	975	-75	
9	TX Phase RMS Error	5	40	-75	
10	TX Phase Peak Error	5	40	-75	
11	TX Frequency Error	5	40	-75	
12	TX Phase RMS Error	5	124	-75	
13	TX Phase Peak Error	5	124	-75	
14	TX Frequency Error	5	124	-75	
15	Check TX Power	5	975	-75	
16	Check TX Power	5	40	-75	
17	Check TX Power	5	124	-75	
DCS 1800 ReceiverTest					
1	Fast Bit Error Rate	0	512	-104	
2	Fast Bit Error Rate	0	698	-104	
3	Fast Bit Error Rate	0	8885	-104	
DCS 1800 Ttansmitter Test					
4	TX Phase RMS Error	0	512	-75	

5	TX Phase Peak Error	0	512	-75	
6	TX Frequency Error	0	512	-75	
7	TX Phase RMS Error	0	698	-75	
8	TX Phase Peak Error	0	698	-75	
9	TX Frequency Error	0	698	-75	
10	TX Phase RMS Error	0	885	-75	
11	TX Phase Peak Error	0	885	-75	
12	TX Frequency Error	0	885	-75	
13	Check TX Power	0	512	-75	
14	Check TX Power	0	698	-75	
15	Check TX Power	0	885	-75	
PCS 1900 ReceiverTest					
1	Fast Bit Error Rate	0	512	-104	
2	Fast Bit Error Rate	0	662	-104	
3	Fast Bit Error Rate	0	810	-104	
PCS 1900 Ttansmitter Test					
4	TX Phase RMS Error	0	512	-75	
5	TX Phase Peak Error	0	512	-75	
6	TX Frequency Error	0	512	-75	
7	TX Phase RMS Error	0	662	-75	
8	TX Phase Peak Error	0	662	-75	
9	TX Frequency Error	0	662	-75	
10	TX Phase RMS Error	0	810	-75	
11	TX Phase Peak Error	0	810	-75	
12	TX Frequency Error	0	810	-75	
13	Check TX Power	0	512	-75	
14	Check TX Power	0	662	-75	
15	Check TX Power	0	810	-75	

2. UMTS/WCDMA antenna test specification

| Items	Test Name	TxLevel	TCH	Ist Downlink CellPower	Note
1	Camp @ W-CDMA Band I	3	9613	-60	
2	BS Originate Call	3	9613	-60	
E-GSM 900 ReceiverTest					
3	Bit Error Rate	3	9613	-104	BER < 0.1
4	Bit Error Rate	3	9750	-104	
5	Bit Error Rate	3	9887	-104	
E-GSM 900 Ttansmitter Test					
6	Check TX_Max Power	3	9613	-60	TXP_Max > 18
7	Check TX_Max Power	3	9750	-60	
8	Check TX_Max Power	3	9887	-60	

D. Board Level 2.5 Repairs

A. Components to be replaced

I. Main Board: ONLY the following items have been allowed to replace for M/B.

Obverse side
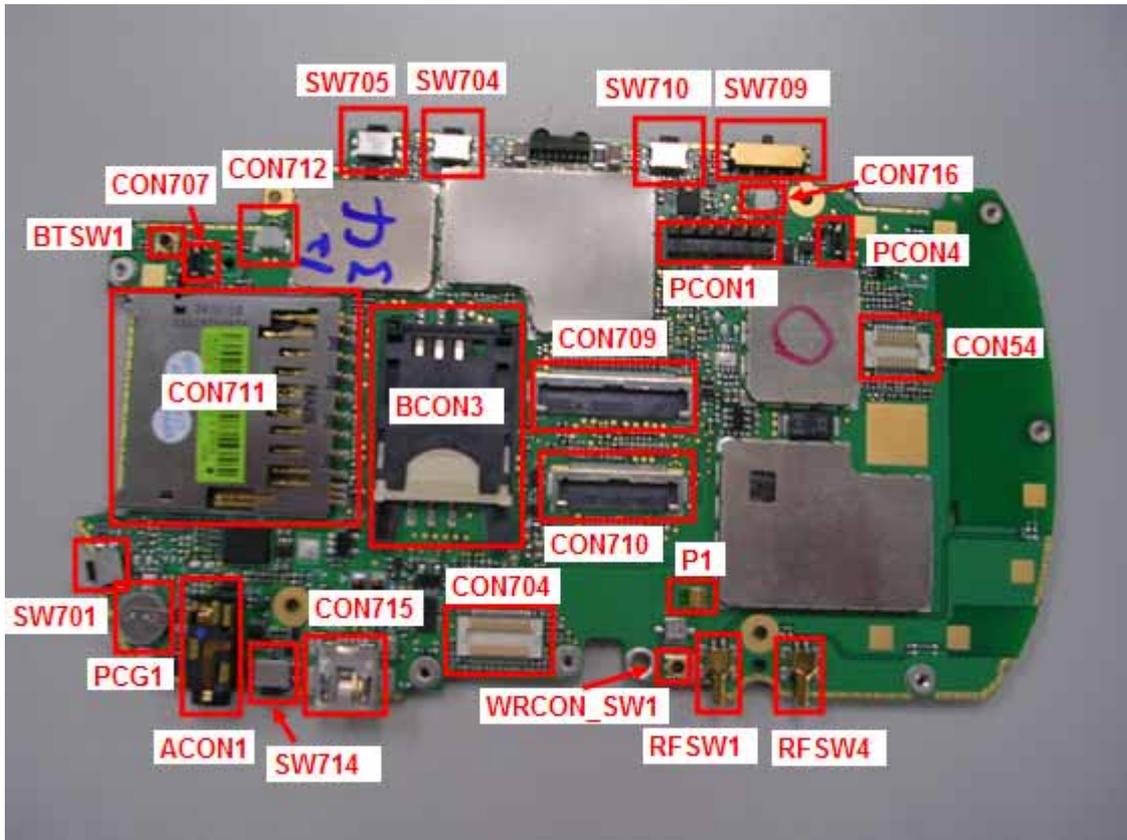
Item	Part Number	Description	Location
1	16H00005-00M	Goledn Capacitor	PCG1
2	36H00129-00M	Power Switch	SW701
3	36H00129-00M	Record Switch	SW704
4	36H00129-00M	Camera Switch	SW705
5	36H00129-00M	Backlight Switch	SW710
6	36H00129-00M	Reset Switch	SW714
7	36H00160-00M	Volume Switch	SW709
8	36H00218-10M	Audio Jack	ACON1
9	72H00856-00M	Spring	P1
10	75H00228-00M	Speaker Connector	CON712
11	75H00228-00M	Speaker Connector	CON716
12	75H00248-00M	Coaxial RF Connector	BTSW1
13	75H00248-00M	Coaxial RF Connector	WRCON_SW1

14	75H00269-00M	SD Card Slot	CON711
15	75H00279-00M	Battery Connector	PCON1
16	75H00319-00	SIM Connector	BCON3
17	75H00379-00M	USB Connectotr	CON715
18	75H00397-00M	Camera Connector	CON54
19	75H00407-00M	LCD cable Connector 30P	CON710
20	75H00408-00M	LCD cable Connector 40P	CON709
21	75H00417-00M	RF Connector	RFSW1
22	75H00417-00M	RF Connector	RFSW4
23	75H03005-00M	KB Connector	CON704
24	75H12002-00	Flashlight Connector	PCON4
25	75H12002-00	Vibrator Connector	CON707

Reverse side
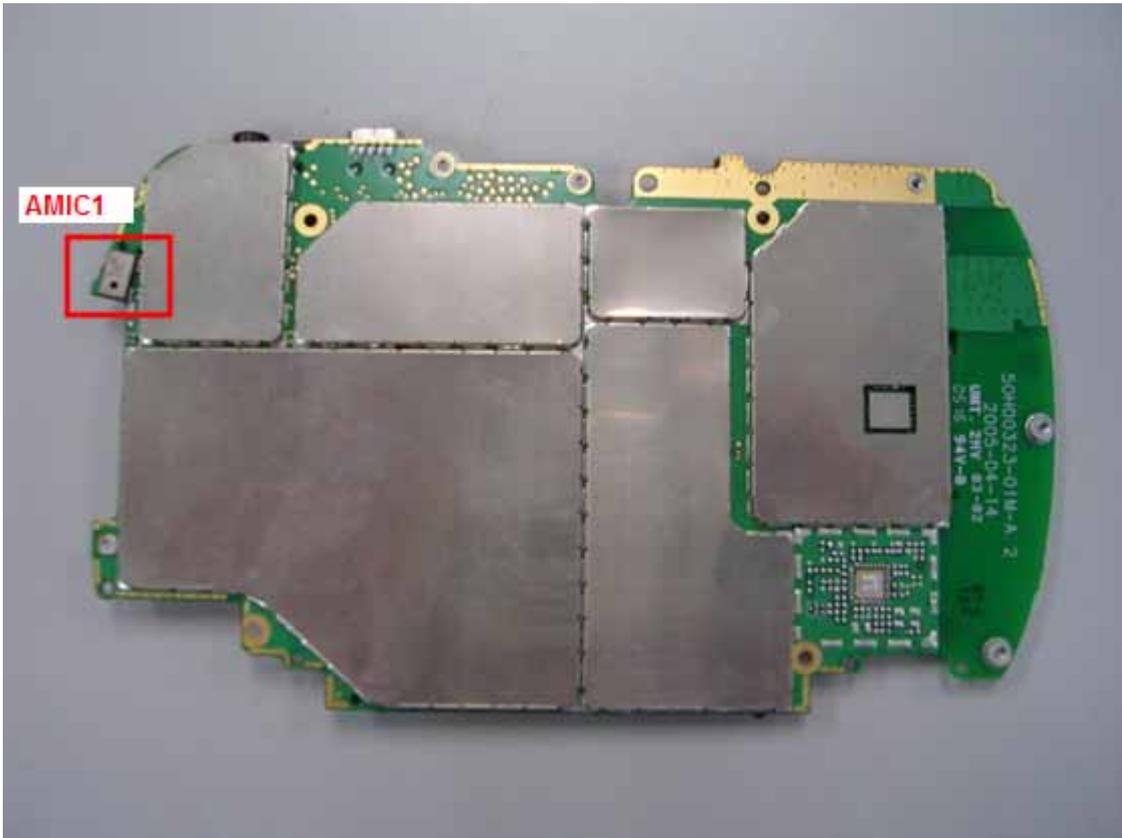
Item	Part Number	Description	Location
1	36H00208-00M	Microphone	AMIC1

Upper cover board
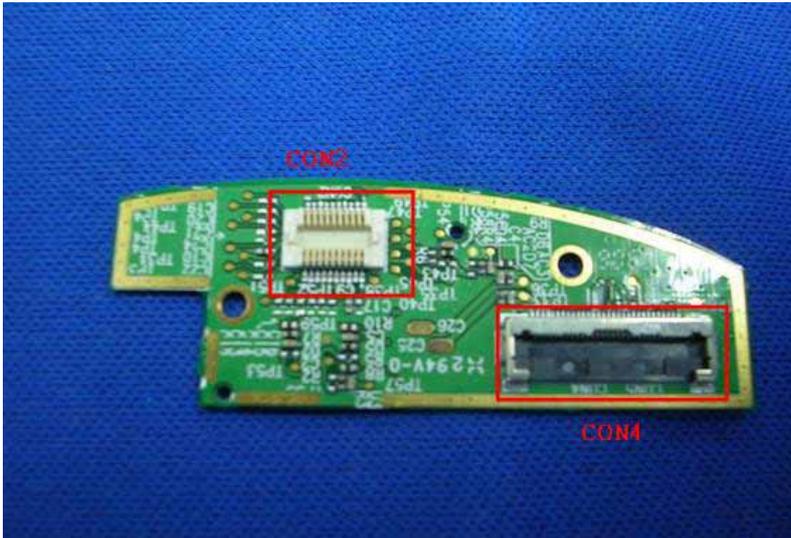
Item	Part Number	Description	Location
1	75H00337-00M	Camera Connector (Upper cover board)	CON2
2	75H00407-00M	LCD Connector (Upper cover board)	CON4

Lower cover board
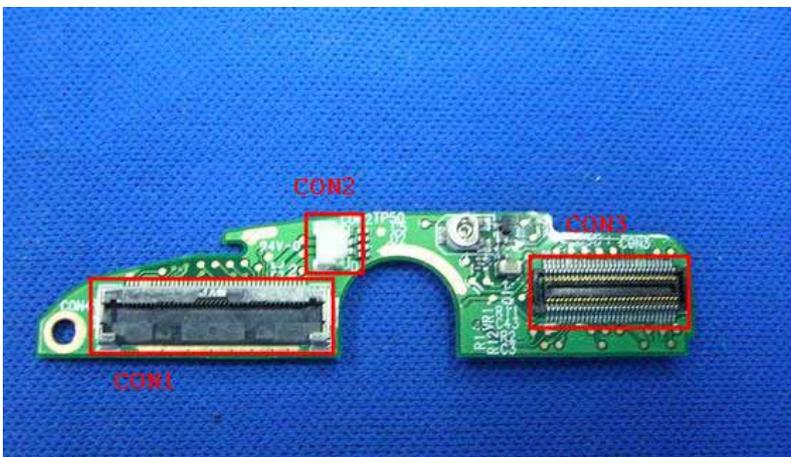
Item	Part Number	Description	Location
1	75H00228-00M	Receiver Connector	CON2
2	75H00328-00M	LCD FPC Connector (Lower cover board)	CON3
3	75H00408-00M	LCD cable Connector (Lower cover board)	CON1

B. Problem Identification & Troubleshooting

I. Basic Repair Instructions for Component Replacement:

Step 1.   Place the solder-proof tape to cover the surrounding area of the components which being replaced.

*Warning：**DO NOT** overheat the tape and components to avoid the tape melted and make the component*

damage.

Step 2   Use Heater Gun (HAKO850B, set the temperature between

350℃, Air Speed 3~5) to remove the components.

Step 3   It has to wait the temperature cool down before the damaged components been removed. Or, the

others components could be gone when the solder-proof tape been taken off.

Step 4   After the damaged components has been replaced; clean the surroundings for solder and flux

residues.

II. Main Board: The following items have been allowed to replace for Main Board

1. Recording Switch (SW701), Camera Switch (SW704), Reset Switch (SW705), Power Switch (SW710), Backlight Switch (SW714)

1.1 If the switch is broken, warp or doesn't work properly (measure by scope), replace it.

1.2 If the switch still doesn't work properly after replace new one, please replace the M/B.

2. Camera Connector (CON54)

2.1 If the connector is broken, warp or doesn't work properly (measure by scope), replace it.

2.2 If the connector still doesn't work properly after replace new one, please replace the M/B.

3. Mini-USB Connector (CON715)

3.1 If the connector is broken, warp or doesn't work properly (measure by scope), replace it.

3.2 If the connector still doesn't work properly after replace new one, please replace the M/B.

4. Audio Jack (ACON1)

4.1 If the jack is broken, warp or doesn't work properly (measure by scope), replace it.

4.2 If the jack still doesn't work properly after replace new one, please replace the M/B.

5. LCD Cable Connector 40P (CON709), LCD Cable Connector 30P (CON710)

5.1 If the connector is broken, warp or doesn't work properly (measure by scope), replace it.

5.2 If the connector still doesn't work properly after replace new one, please replace the M/B.

5.3 Place solder-proof tape on CON709/CON710 to prevent it melted when using heater gun to remove CON709/CON710.

6. KB Connector (CON704)

6.1 If the connector is broken, warp or doesn't work properly (measure by scope), replace it.

6.2 If the connector still doesn't work properly after replace new one, please replace the M/B.

6.3 Place solder-proof tape on CON704 to prevent it melted when using heater gun to remove CON704.

7. Battery Connector (PCON1)

7.1 If the connector is broken, warp or doesn't work properly (measure by scope), replace it.

7.2 If the connector still doesn't work properly after replace new one, please replace the M/B.

8. SIM Card Connector (BCON3)

8.1 If the connector is broken, warp or doesn't work properly (measure by scope), replace it.

8.2 If the connector still doesn't work properly after replace new one, please replace the M/B.

8.3 Use solder iron only to replace new component. DO NOT use Heater Gun to remove the component to prevent next connector melted.

9. RF Connector (RFSW1/RFSW4)

9.1 If the connector is broken, warp or doesn't work properly (measure by scope), replace it.

9.2 If the connector still doesn't work properly after replace new one, please replace the M/B.

10. Flashlight Connector (PCON4), Vibrator Connector (CON707)

10.1 If the connector is broken, warp or doesn't work properly (measure by scope), replace it.

10.2 If the connector still doesn't work properly after replace new one, please replace the M/B.

11. Volume Switch (SW709)

11.1 If the switch is broken, warp or doesn't work properly (measure by scope), replace it.

11.2 If the switch still doesn't work properly after replace new one, please replace the M/B.

12. SD Card Slot (CON711)

12.1 If the slot is broken, warp or doesn't work properly (measure by scope), replace it.

12.2 If the slot still doesn't work properly after replace new one, please replace the M/B.

13. Speaker Connector (CON712 / CON716)

13.1 If the connector is broken, warp or doesn't work properly (measure by scope), replace it.

13.2 If the connector still doesn't work properly after replace new one, please replace the M/B.

14. Coaxial RF Connector (BTSW1 / WRCON_SW1)

14.1 If the connector is broken, warp or doesn't work properly (measure by scope), replace it.

14.2 If the connector still doesn't work properly after replace new one, please replace the M/B.

15. Microphone (AMIC1)

15.1 If the MIC is broken, warp or doesn't work properly (measure by scope), replace it.

15.2 If the MIC still doesn't work properly after replace new one, please replace the M/B.

16. Golden Capacitor (PCG1)

16.1 If the golden capacitor is broken, warp or doesn't work properly (measure by scope), replace it.

16.2 If the golden capacitor doesn't work properly after replace new one, please replace the M/B.

C. Spare Part List For Board Level Repair
Universal BOARD LEVEL Spare part List

Item	Part Number	Description	Location	Description
1	16H00005-00M	Gold Cap,0.2F,+80/-20%,3.3V	PCG1	Goledn Capacitor
2	36H00129-00M	SWITCH BUTTON,PTS-106,HCH	SW701	Power Switch
3	36H00129-00M	SWITCH BUTTON,PTS-106,HCH	SW704	Record Switch
4	36H00129-00M	SWITCH BUTTON,PTS-106,HCH	SW705	Camera Switch
5	36H00129-00M	SWITCH BUTTON,PTS-106,HCH	SW710	Backlight Switch
6	36H00129-00M	SWITCH BUTTON,PTS-106,HCH	SW714	Reset Switch
7	36H00160-00M	Slide_Switch,HSS112,HCH	SW709	Volume Switch
8	36H00208-00M	MIC,SP0103NC3,EMKAY	AMIC1	Microphone
9	36H00218-10M	Audio Jack with Mylar,DTJ-0390-AM	ACON1	Audio Jack
10	72H00856-00M	Spring,ATE-C-027	P1	Spring
11	75H00228-00M	Connector Others,SM02B-SURS-TF(LF)	CON712	Speaker Connector
12	75H00228-00M	Connector Others,SM02B-SURS-TF(LF)	CON716	Speaker Connector
13	75H00248-00M	COAXIAL CONNECTOR,RF	BTSW1	Coaxial RF Connector
14	75H00248-00M	COAXIAL CONNECTOR	WRCON_SW1	Coaxial RF Connector
15	75H00269-00M	Connector SD Card,AXA29200921	CON711	SD Card Slot
16	75H00279-00M	Connector Device(Battery), 6Pin	PCON1	Battery Connector
17	75H00319-00	Connector SIM Card,ID1A-6S-2.54SF	BCON3	SIM Connector
18	75H00379-00M	Connector I/O,Mini USB AB,5P	CON715	USB Connectotr
19	75H00397-00M	Connector B to B,22P,0.5pitch	CON54	Camera Connector
20	75H00407-00M	Connector Docking,JAM, 30p	CON710	LCD cable Connector 30P
21	75H00408-00M	Connector Docking,JAM, 40p	CON709	LCD cable Connector 40P
22	75H00417-00M	Connector RF,Female,6pin	RFSW1	RF Connector
23	75H00417-00M	Connector RF,Female,6pin	RFSW4	RF Connector
24	75H03005-00M	CONNECTOR-F,0.5mmP,30PIN	CON704	KB Connector
25	75H12002-00	CONNECTOR-F,SMD,1.27mm,2P	PCON4	Flashlight Connector
26	75H12002-00	CONNECTOR-F,SMD,1.27mm,2P	CON707	Vibrator Connector
27	75H00337-00M	Connector B to B,20P,0.5mmPitch	CON2	Camera Connector (Upper cover board)
28	75H00407-00M	Connector Docking, JAM, 30p	CON4	LCD Connector (Upper cover board)

29	75H00228-00M	Connector Others,SM02B-SURS-TF(LF)	CON2	Receiver Connector
30	75H00328-00M	Connector B to B,60P,0.4mm,female	CON3	LCD FPC Connector (Lower cover board)
31	75H00408-00M	Connector Docking, JAM, 40p	CON1	LCD cable Connector (Lower cover board)