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HTC Proprietary


Confidential Treatment Requested

Rev. A03

Jul ,14, 2008


HTC Corp.

Engineering Mobility


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Revision Control Table

REV	DATE	CONTENTS	DEP.	REVISED	APP'D	STGE
AX01	2007/1/26	Fist Draft (Per customer request)	PSE	Jason.CI_Lee	PSE	PVT
A01	2008/1/15	1. Revise OS re-flash process and diagnostic test items 2. Revise board level 2.5 SPL	PSE	Jason.CI_Lee	PSE	MV
A02	2008/4/17	1. Revise 6.3 WinCE test procedure 2. Revise combination keys of cold boot in page 23.	PSE	Jason.CI_Lee	PSE	MV
A03	2008/7/14	1. Add LDI label and tamper evident label in the labeling plan.	PSE	Jason.CI_Lee	PSE	MV

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2.2 MAIN UNIT REGULATORY LABEL (ON THE TOP OF THE MAIN UNIT AS ILLUSTRATED BELOW)	8
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1. Product Overview

- **Top View and Bottom View**



- **Side View**



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- **Bottom View**



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2 Labeling Plan

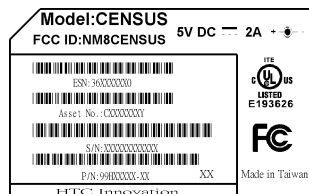
2.1 Main unit Regulatory label (on the inside behind the battery)

HTC P/N: 77H00417-00M

Image file name: Main_Unit_Regulation

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

2. All bar codes must be code 39 symbology.



Size: W25*L40





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Model: CENSUS
FCC ID: NM8CENSUS

5V DC — 2A



Asset No.: CXXXXXXXX



ESN: 36XXXXXX



S/N: TYXXXXXXXXXX



Customer P/N: 2017002-101

Vendor P/N: 99HCT000-00

A01




Made in Taiwan

MJ

HTC Innovation

20mm



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2.2 Main unit Regulatory label (on the top of the main unit as illustrated below)


HTC P/N: 77H00422-00M

Image file name: Main_Unit_Upper Regulation

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

2. All bar codes must be code 39 symbology.



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For Asset No.: CXXXXXXXY

C: Census

XXXXXX: Range from 1,300,000 to 2,299,999

Y: Check digit-Mod 137

For S/N: SSYWWPPZZZZZ

SS: SITE CODE --> TY

Y: Year Last Digital of the Year.

WW: Week Code: **01 ~ 54**

PP: Product Code: **F2**

ZZZZZ: Serial Number (00001 ~ 99999) Use Base 10

MODEL ID: CENSUS

Label Characteristic:

Material: polyester

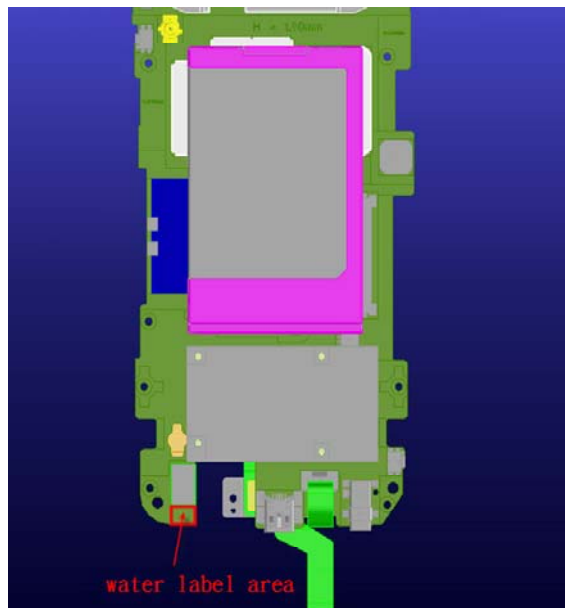
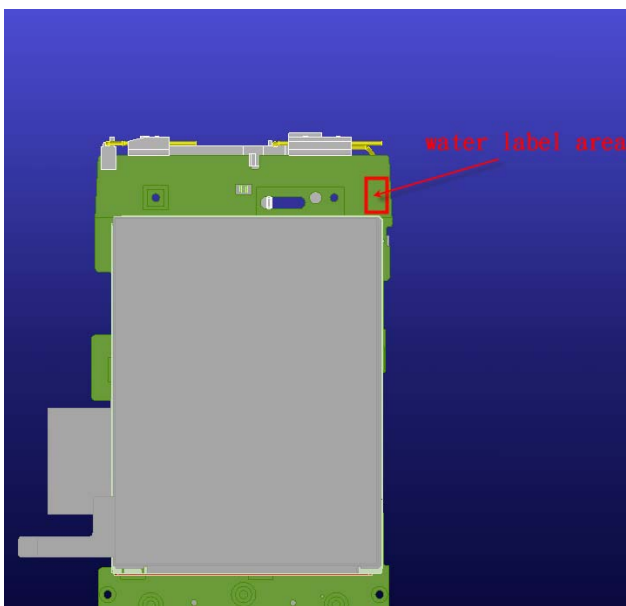
Color: pantone 422c


Ink: pantone 425c

LDI label

P/N: 77H00488-00M

Main board area:



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Unit area:




2.4 Tamper Evident Label

P/N: 77H00460-01M



Location:

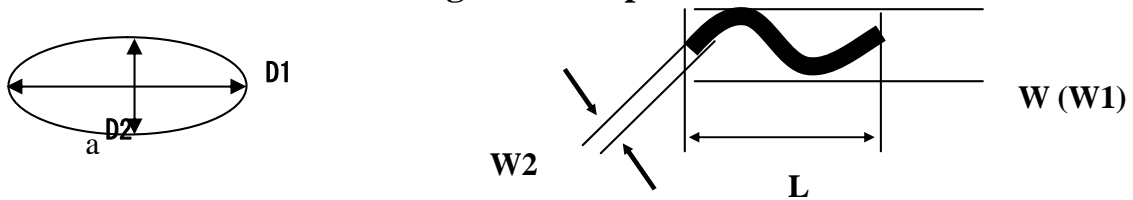


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3. LCM inspection criteria (for new LCM)

Definition:


D : diameter , W : width , L : length , S : separation



$$D = (D1 + D2) / 2$$


LCM Electrical Characteristic inspection standard

Inspection Defects			Accept Level
Electrical Characteristic Defects	Bright Dots	Single	Red+ Green+ Blue ≤ 3 $S \geq 5$ mm
		2 adjacent	0
		3 or more adjacent	0
	Dark Dots	Single	Total number ≤ 2 $S \geq 5$ mm
		2 adjacent	0
	Dark or Bright lines		0
	All Allowable Dots Defects		Total Number ≤ 3 $S \geq 5$ mm
Shift and tilt of screen viewed area		The black edge around display area must be detected by front view	
Foreign scratch, objects or lint on power off status	Scratch	$0.03 < W \leq 01\text{mm}$ $L \leq 5$ mm $N \leq 2$	

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	Lint(linear foreign objects)	$0.03 < W \leq 0.1 \text{ mm}$ $0.3 < L \leq 3.0$ $N \leq 5$
	Spots	$0.1 < D \leq 0.3 \text{ mm}$ $N \leq 4$
	Fish eye on film	$0.1 < D \leq 0.4 \text{ mm}$ $N \leq 4$
	Breakage on film surface	Not acceptable
	Total acceptable defect quantity ≤ 10	

* The LCM criteria follow Document IS-3364, Issued date: 16 May, 06'

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4. Unit Disassembly/Assembly Procedure

4.1 Disassembly procedure

	<p>Tools needed for Assembling and Disassembling.</p> <ol style="list-style-type: none"> 1. Lens Cleaning Tissue. 2. Plastic Knife. 3. Torex Screw Driver T5X40. 4. Philip Screw Driver 000X40. 5. Tweezers.(Suggest to use plastic made)
	<p>Remove stylus.</p>
	<p>Press battery cover with your two thumbs to move battery cover forward.</p>



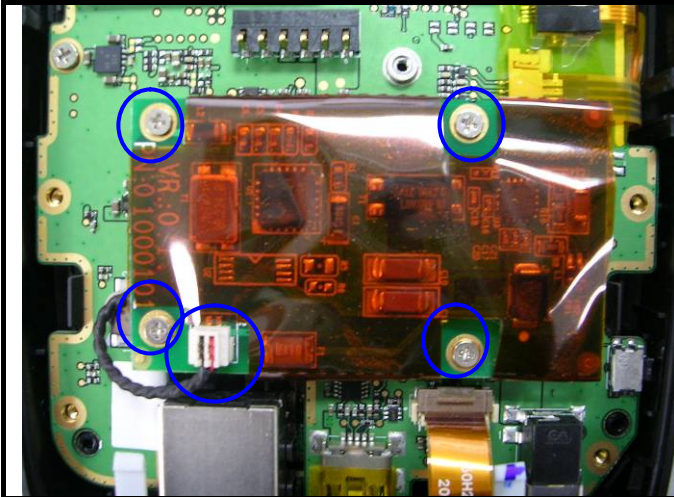
Unhook battery hook to take battery out.



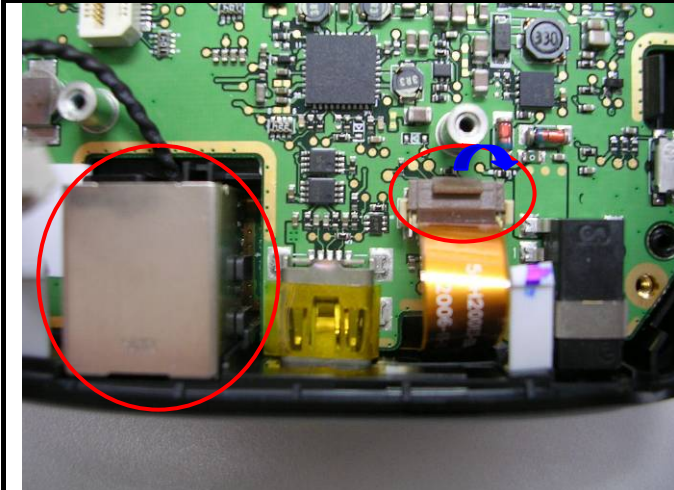
Remove six screws (M1.6*6 mm) and one screw (M1.6*3.4).



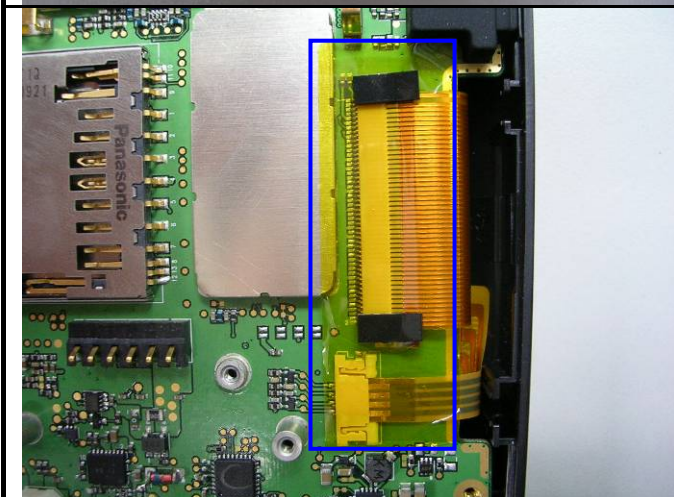
Use the plastic stick to insert and gently twist into the gap between LCD bezel and housing.



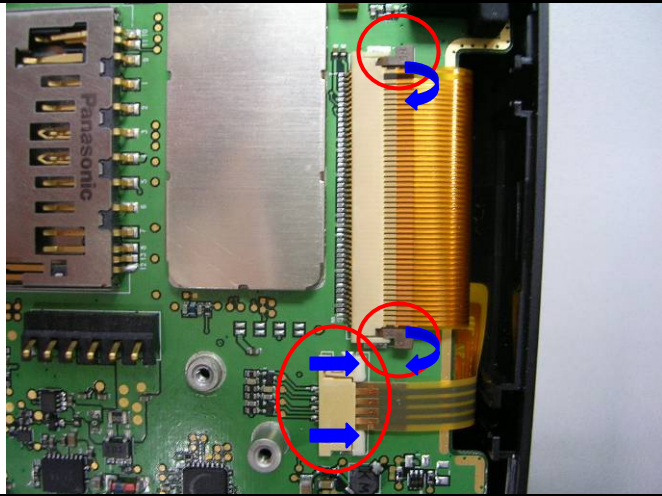
Remove four screws (M1.6*3.4), disconnect modem cable and then take modem board out.



Take RJ11 connector with cable out and open hook of key pad connector to disconnect key pad cable.



Remove one tape that paste on LCM FPC cable and touch screen FPC cable.



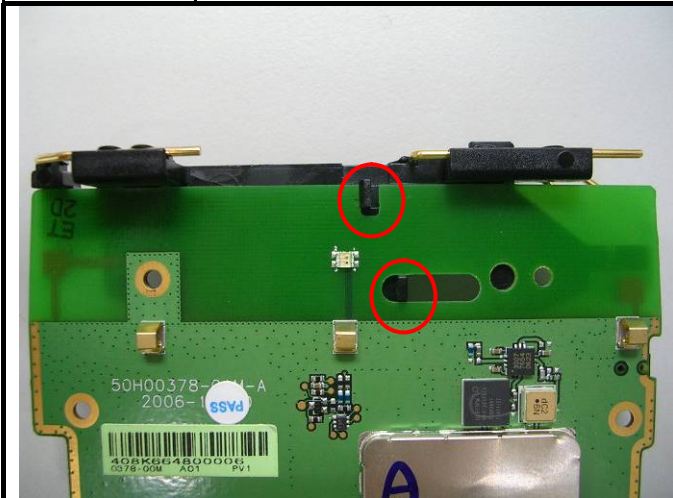
1. Pull two hooks up to disconnect LCM FPC cable.
2. Push hook toward right side to disconnect touch screen FPC cable.



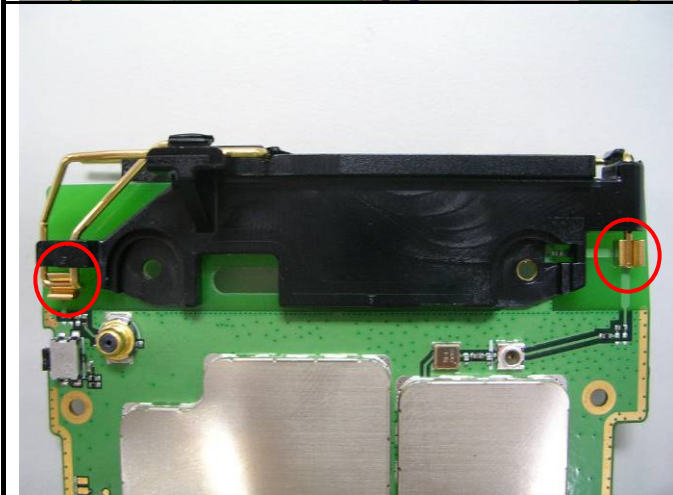
Unfasten three screws (M1.4*1.8*1.5).



Use plastic stick to loosen three hooks and then take main board out from bezel.



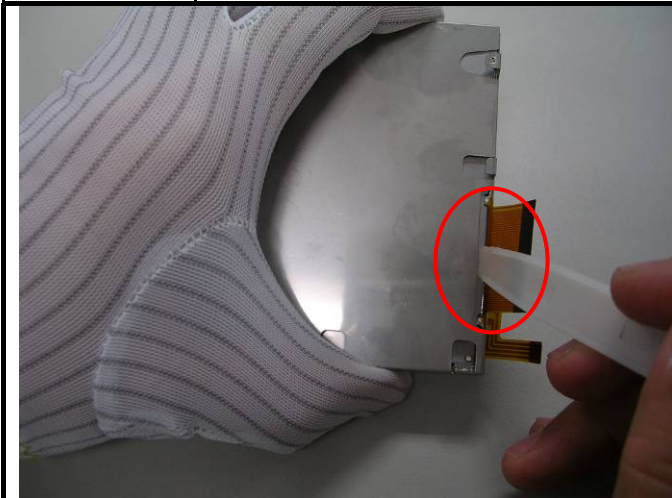
Loosen two hooks.



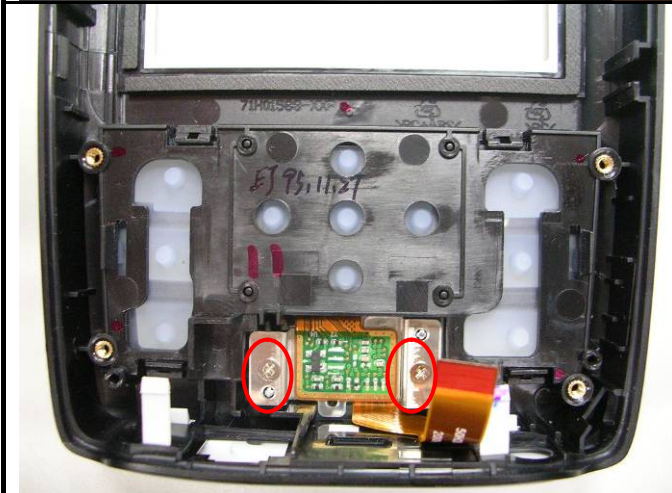
Loosen two metal sticks to separate antenna module from main board.



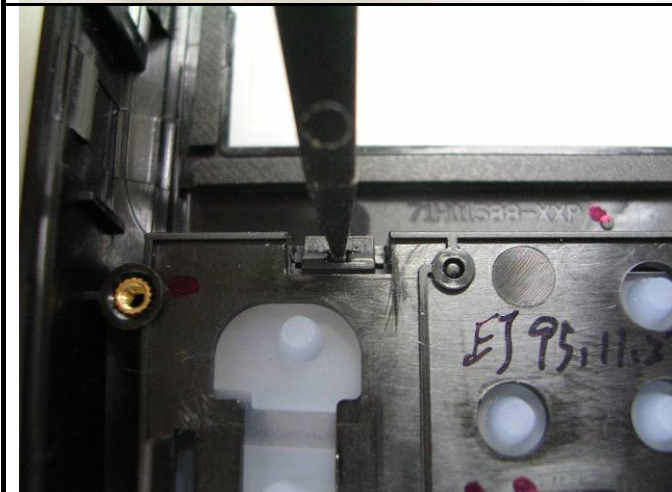
Use plastic stick to take LCM module with holder out.



Use plastic stick to press LCM module and then separate LCM module from holder



Remove two screws to take finger print out and rubber of finger print.



Use tweezers to loosen four key pad hooks and then take key pad out.



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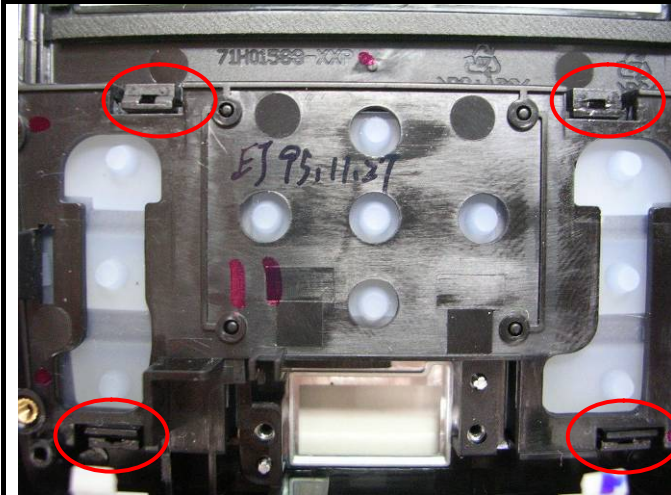
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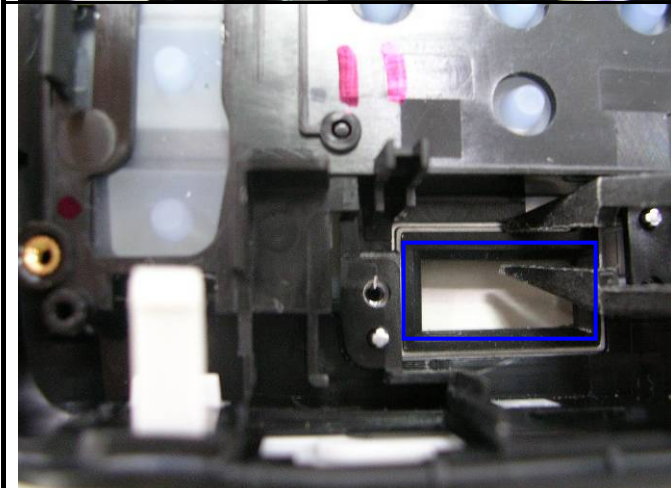


Disassembly procedure is completely.

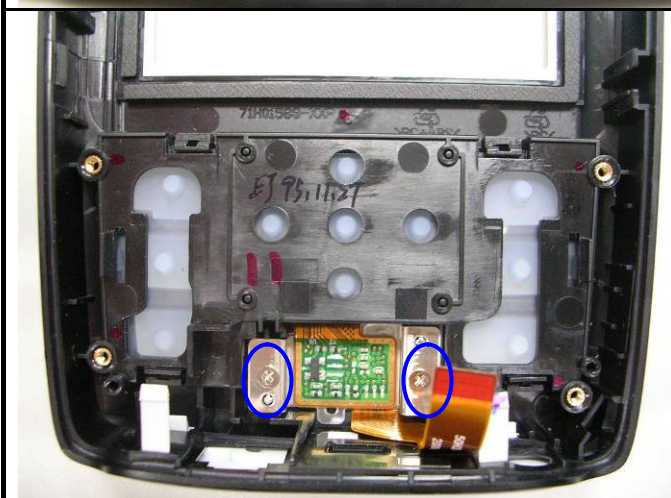
4.2 Assembly Procedure



Assembly key pad module into the bezel and ensure four hooks that are locked completely.

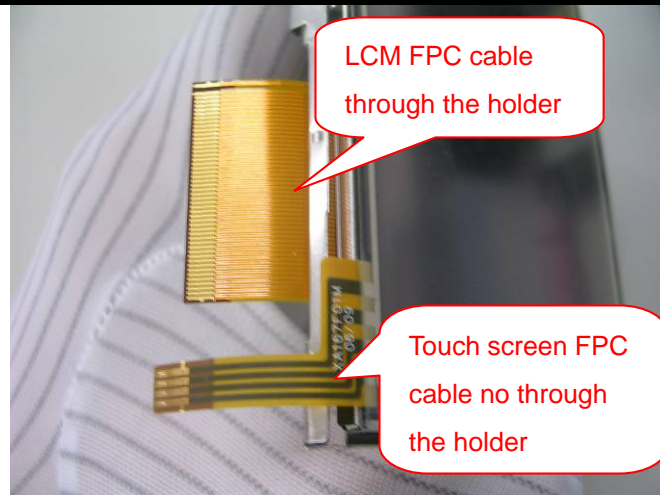


Use tweezers to place finger print rubber into the bezel.



Place finger print module into the bezel and then fasten two screws.

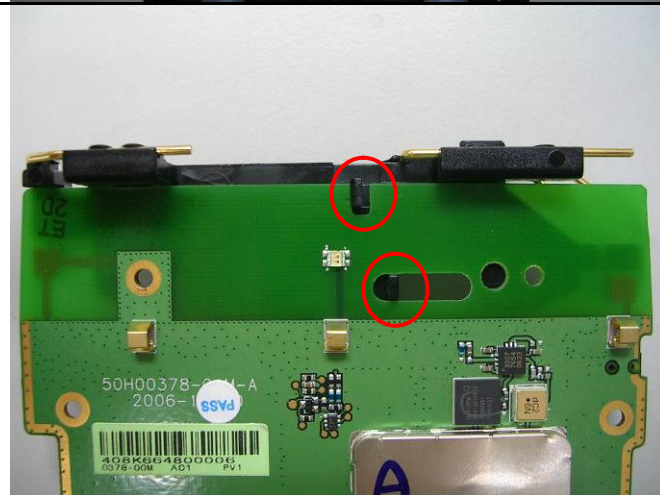
Torque: 0.5 ± 0.1 kgf / cm²



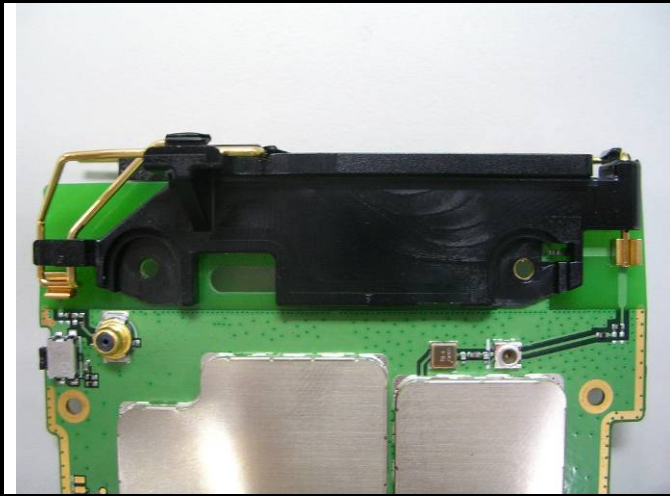
Place LCM module into the holder and ensure position of two cables correctly.



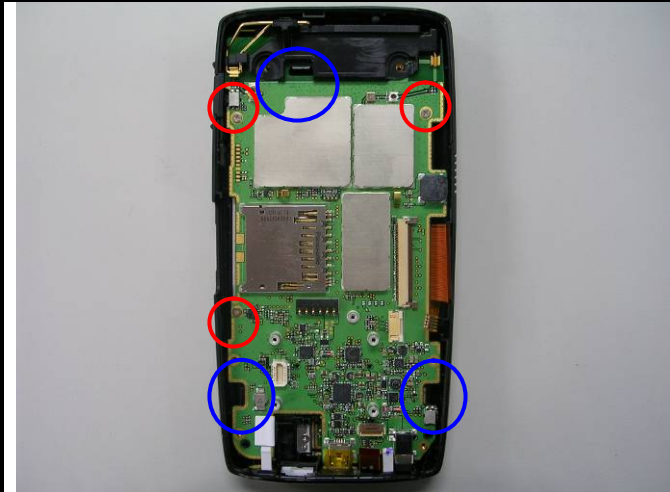
Place LCM module with holder into the bezel.



Assemble antenna module on main board and ensure two hooks are lock completely.



Ensure two metal sticks are locked completely.

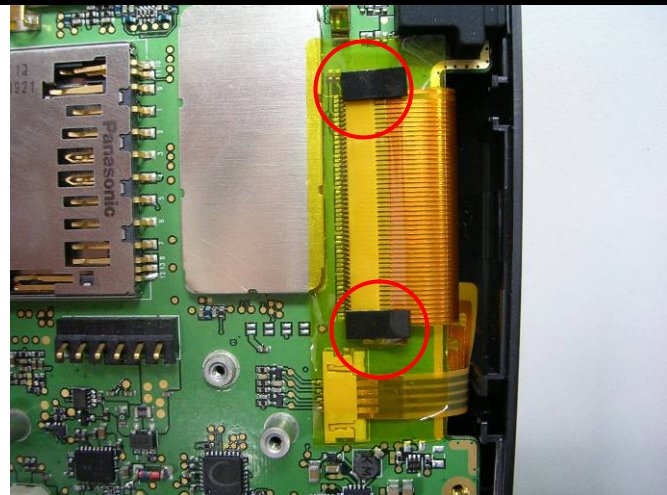


Place main board into bezel and ensure three hooks are locked completely then fasten three screws.

Torque: 0.3 ± 0.1 kgf / cm²

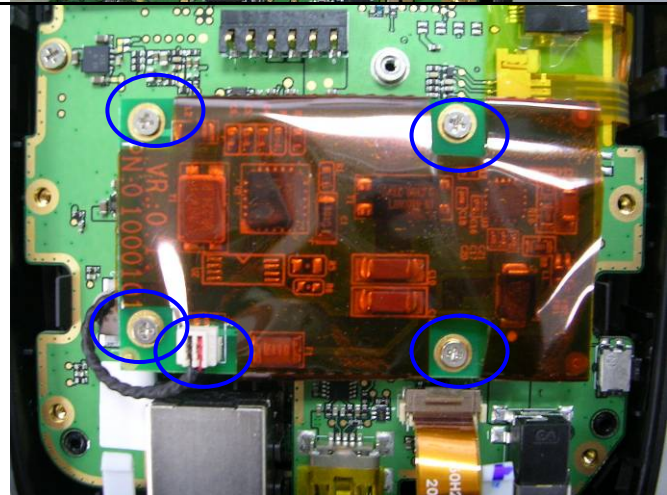


Place RJ11 connector into bezel and connect key pad cable.



1. Connect LCM FPC cable and touch screen FPC cable.
2. Paste one yellow tape, two rubbers and ensure two rubbers are right upper two hooks.

Yellow tape P/N:76H01563-00M
Rubber P/N: 76H01703-00M



Assemble modem module on the main board, fasten four screws and connect cable.

Torque: $0.5 \pm 0.05 \text{ kgf / cm}^2$



Combine bezel with housing and then fasten six screws (M1.6*6 mm) and one screw (M1.6*3.4).

Torque: $1 \pm 0.05 \text{ kgf / cm}^2$



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Place battery into housing and lock battery hook.



Assemble battery cover and insert stylus.



Assembly procedure is completely.

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5. OS re-flash Procedure

Boot loader mode: Press and hold APP5 + Reset


Cold boot: Press and hold APP3 + APP4 + APP6 + Reset



Step 1: Please prepare one SD (128 MB above) then format it with FAT 32.

Step 2:

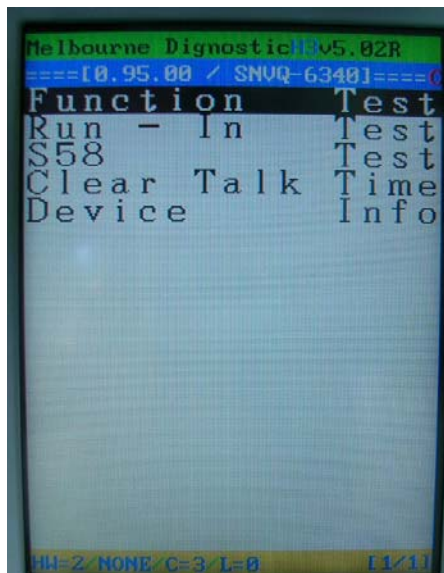
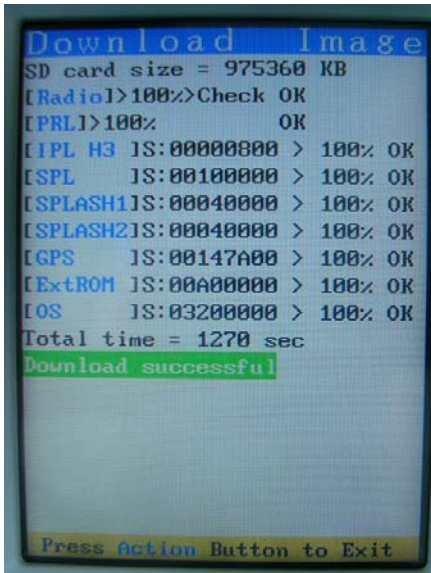
- a. Copy diagnostic program **melbdiag.nbh** into SD card.
- b. Copy three files from ROM code into SD card and then rename the file name.
 1. **melbimg.nbh**
 2. PRL_20225_for_all_EVDO_devices.prl.....> rename to **melbprl.prl**
 3. MFG_Melbourne_RSv0.95.00_HARRIS_PRIv0.96_BLv1.81_EVT.nb.....>rename to **melbimg.nb**
- c. Insert SD into device and then go into boot loader mode (APP5+Reset).

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Step 3: Press power button to re-flash image. The re-flash process will perform about twenty minutes.



Step 4: After finishing the re-flash process, please press action button and then choice function test to check checksum.





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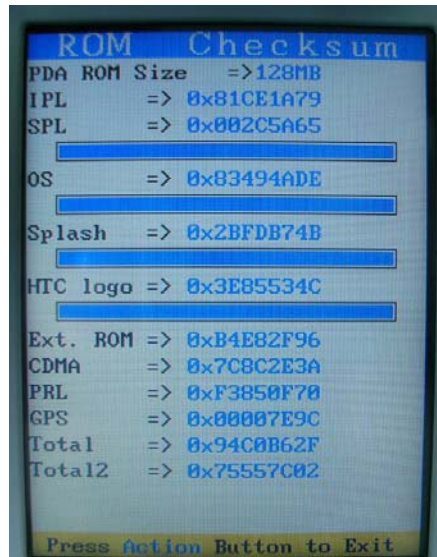
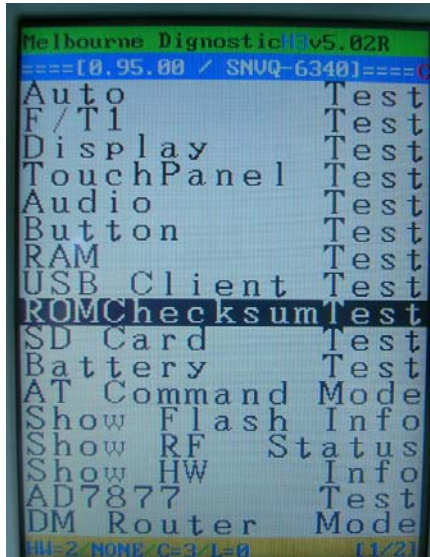
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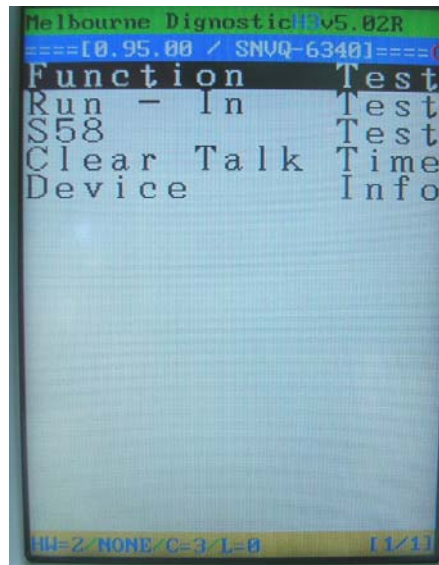
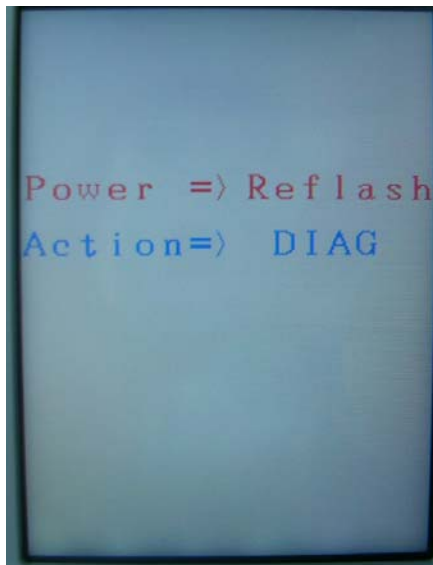


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6. Function Test Procedure

6.1 How to go into Diagnostic mode

Step1: Please refer step 3 of OS upgrade process and then press action button to go into diagnostic mode.



6.2 List of diagnostic test items

No.	Test Item	Description	Remark
1	Function Test		
1-1	Auto	All manual test items for 1 loop	
1-2	F/T1		
1-3	Display	LCM display test	
1-4	Touch panel	Touch panel calibration test	
1-5	Audio	Internal speaker test	



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1-6	Button	Button function test	
1-7	RAM	SDRAM read / write test	
1-8	USB Client	USB connection test	
1-9	ROM Checksum	Display all data checksum value	
1-10	SD card	SD card write/read test	
1-11	Battery	Display battery information	
1-12	AT Command Mode		
1-13	Show Flash info		
1-14	Show RF Status		
1-15	Show HW Info		
1-16	AD7877 Test		
1-17	DM Router mode		
1-18	Timer	Timer test	
1-19	LED	LED Green, red and key backlight test	
1-20	Backlight	LCD backlight level 3 ~ 1 test	
1-21	Exit	Exit function test page	
2	Run in Test		
3	S58 Test		
4	Clear Talk Time		
5	Device info		

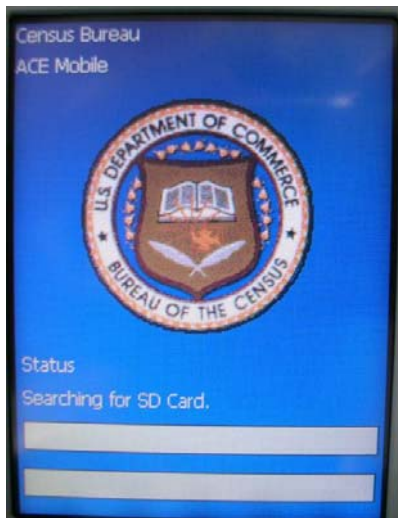
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6.3 List of Win CE test items


No.	Test Item	Description	Remark
1	Finger	Finger print test	
2	Modem test	Modem test	

Step 1: Please prepare one SD (128MB above) then format it with FAT 32. Copy MceInstall.zip, MceSupport.zip and FingerPrint_ModemTest_100.exe to SD card. **(Please download these three files in the Win CE application program pool of RMA 3)**

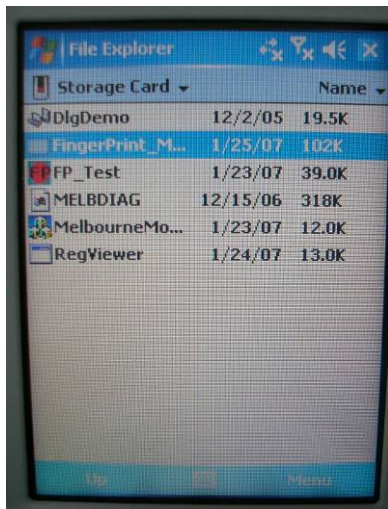
Step 2: Power on the device. The device will stop at searching for SD card.



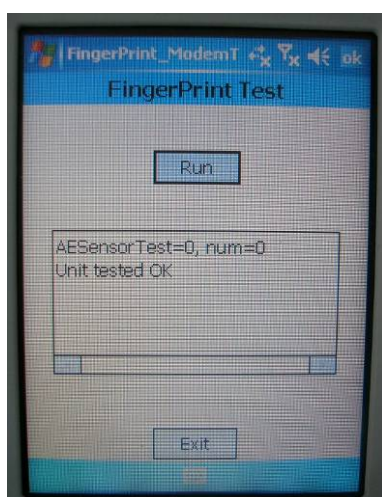
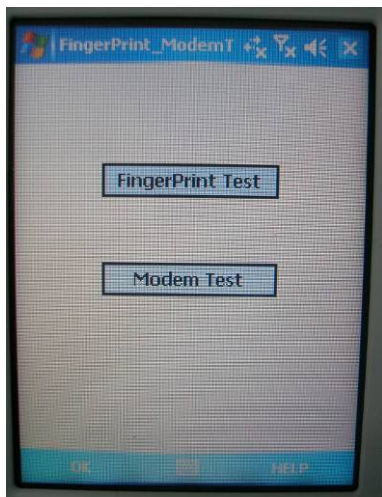
Step 3: Inset the SD into device. The device will go into Win CE mode automatically.

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Step 4: Execute FingerPrint_ModemTest.exe program in storage card.



Step 5: Tap Fingerprint Test button and then tap Run button to test Fingerprint function. In the middle of the screen will display unit tested OK. It means the function of fingerprint is ok. **(Please be noticed that you don't need to put your finger on the fingerprint scanner)**



Step 6: Tap Exit button to leave Fingerprint Test function and then tap Modem Test button.

Step 7: Please connect phone cable and dial one number to execute the Modem test function. If the network is connection, it means the modem function of device is ok.



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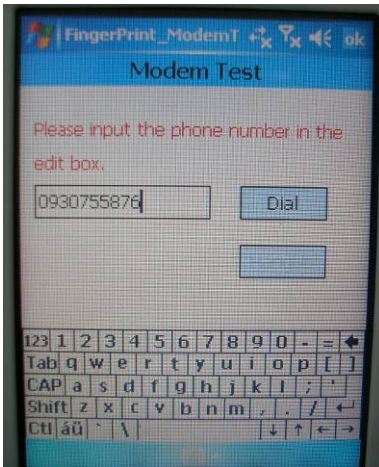
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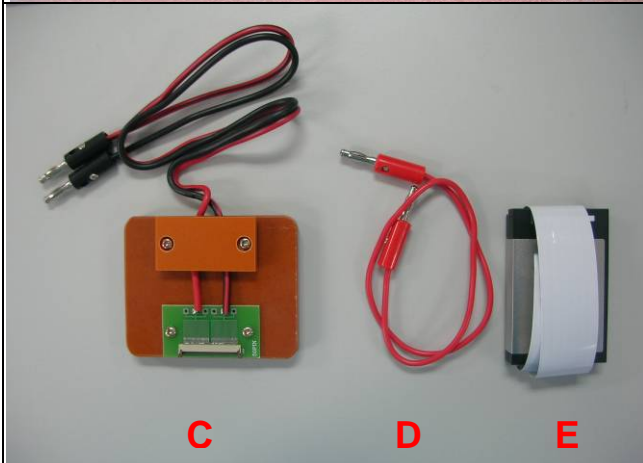
6.4 Leakage current measurement

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.



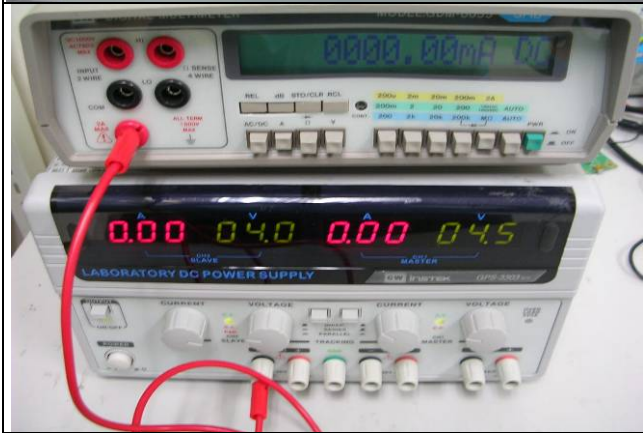
Equipment :

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



Fixture :

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



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



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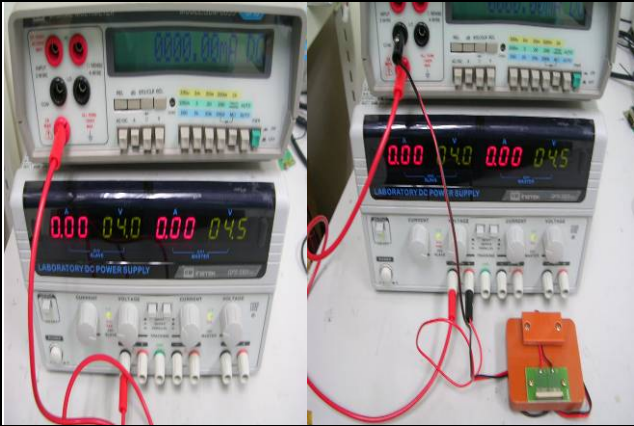
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Connect cable of fixture (C) to negative polarity of power supply (A) and current meter (B).



Setting is Ready now for testing.(Don't turn the power on at this moment)



Turn on power supply (4V) and current meter (2A). Unit is still turned on but no LCD back light




Measure Idle mode current. Current value must under 50mA, if over, it means M/B failed, please replace M/B for repair.



Switch OFF the unit. Unit is turn off and no display. Measure power off current check current value on the current meter, current value must less than 4 mA, if over, it means M/B failed, please replace M/B for repair.


Conclusion:

If current consumption is passed at both of idle mode, it means M/B is GOOD. If there is any item FAILED at idle mode, it means M/B is failed, please replace M/B for repair.

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6.5 RF antenna measurement specification

Items	Test Name	TCH	Ist Downlink CellPower	Note
US_Cellular Ttransmitter Test				
1	Check TX Output Power	384	-104	
2	Check TX Output Power	777	-104	
3	Check TX Output Power	1013	-104	
US_Cellular Ttransmitter Test				
4	FER (Frame error rate)	384	-104	
5	FER (Frame error rate)	777	-104	
6	FER (Frame error rate)	1013	-104	
7	ERRS	384	-104	
8	ERRS	777	-104	
9	ERRS	1013	-104	
US_PCS Ttransmitter Test				
10	Check TX Output Power	25	-104	
11	Check TX Output Power	600	-104	
12	Check TX Output Power	1175	-104	
US_PCS Ttransmitter Test				
13	FER	25	-104	
14	FER	600	-104	
15	FER	1175	-104	
16	ERRS	25	-104	
17	ERRS	600	-104	
18	ERRS	1175	-104	

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7. Generic Troubleshooting

1 – A · Main Unit Does Not Respond to Power Button


- (1) Connect the AC adapter, maybe the battery pack is exhaust and wait for few minutes if unit boot.
- (2) Check if battery installed well.
- (3) Check the Power Button if any damage.
- (4) Try with another battery pack.
- (5) Try if unit can enter boot-loader mode, if so, Try to re-flash ROM if can solve the problem.
- (6) Check all connections including LCD FPC to Main Board.
- (7) Replace Main Board if necessary.
- (8) Once the defective part has been identified, verify it again with the defective part whether the symptom could be duplicated.

2 – A · Touch Panel Does Not Respond to Screen Tap

- (1) Check hold switch is enabling.
- (2) Check the connection of LCM FPC cable whether is properly connected.
- (3) Try to cold boot the unit then tries again.
- (4) Try with another LCM.
- (5) Try with another Main Board.
- (6) Replace LCM if necessary
- (7) Replace Main Board if necessary.
- (8) Once the defective part has been identified, verify it again with the defective part whether the symptom could be duplicated.

3 – A · Unusual Vertical / Horizontal lines or partial display

- (1) Check the connection of LCM FPC whether is properly connected.
- (2) Try to cold boot the unit then tries again.
- (3) Try to re-flash the ROM code.
- (4) Try with another LCM.
- (5) Try with another Main Board.
- (6) Replace LCM if necessary
- (7) Replace Main Board if necessary.
- (8) Once the defective part has been identified, verify it again with the defective part whether the symptom could be duplicated.

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3 – B · Back Light Does Not Turn ON/OFF

- (1) Check “Display” setting first.
- (2) Check the connection of LCM FPC whether is properly connected.
- (3) Try to re-flash the ROM code.
- (4) Try with another LCM.
- (5) Try with another Main Board.
- (6) Replace LCM if necessary
- (7) Replace Main Board if necessary.
- (8) Once the defective part has been identified, verify it again with the defective part whether the symptom could be duplicated.

4 – A · SD Card cannot be used


- (1) Check whether CF/SD Card is fully inserted to the slot until you hear a click.
- (2) Try to re-flash the ROM code.
- (3) Try with another CF/SD Card.
- (4) Try with another Main Board.
- (5) Replace Main Board if necessary.
- (6) Once the defective part has been identified, verify it again with the defective part whether the symptom could be duplicated.

5 – A · PC Connection not possible

- (1) Check whether it connects with other cables, customer’s cable might be damaged.
- (2) Check the external appearance of the connector on the unit whether it is physically damaged.
- (3) Try to re-flash the ROM code.
- (4) Replace Main Board if necessary.
- (5) Once the defective part has been identified, verify it again with the defective part whether the symptom could be duplicated.

6 – A · Battery Pack does not start

- (1) Make sure the battery cover is closed properly.
- (2) Connect to the AC Adapter and see if it takes charge. Also check AC Adapter condition.
- (3) Check whether AC Adapter is functioning properly.
- (4) Check whether the condition of Battery Charging status is correct.
- (5) Check the appearance of Battery Pack if any abnormal.
- (6) Try with another Battery Pack or Replace Battery Pack if necessary
- (7) Try with another Main Board or Replace Main Board if necessary.

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(8) Once the defective part has been identified, verify it again with the defective part whether the symptom could be duplicated.

(9) Follow "main battery re-certifies procedure to check battery.

6 – B · Battery discharges quickly even after fully charged

(1) Make sure the Battery Pack takes fully charge with AC Adapter.

(2) Check whether the condition of Battery Charging status is correct.

(3) Check the appearance of Battery Pack.

(4) Try with another Battery Pack or Replace Battery Pack if necessary

(5) Try with another Main Board or Replace Main Board if necessary.

(6) Once the defective part has been identified, verify it again with the defective part whether the symptom could be duplicated.

(7) Follow main battery re-certifies procedure to check battery.

6 – C · Battery Pack does not recharge

(1) Make sure the Battery Pack takes fully charge with AC Adapter.

(2) Check whether the condition of Battery Charging status is correct. Charge should be done no more than 4 hours.

(3) Check the appearance of Battery Pack.

(4) Try with another Battery Pack or Replace Battery Pack if necessary

(5) Try with another Main Board or Replace Main Board if necessary.

(6) Once the defective part has been identified, verify it again with the defective part whether the symptom could be duplicated.

(7) Follow main battery re-certifies procedure to check battery.

7 – A · No Sound from Speaker or Distorted sound

(1) Check "Audio" Settings first.

(2) Make sure it's not MUTED.

(3) Try to re-flash the ROM code.


(4) Clean up the speaker connection side on MB if there is any contamination.

(5) Dismantle and Check whether the Speaker is properly installed (Orientation)

(6) Replace Speaker if necessary.


(7) Replace Main Board if necessary.

(8) Once the defective part has been identified, verify it again with the defective part whether the symptom could be duplicated.


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7 – B · No Recorded Sound or Distorted sound


- (1) Check "Audio" Settings first.
- (2) Make sure it's not MUTED.
- (3) Try to re-flash the ROM code.
- (4) Dismantle and Check whether the Microphone is properly installed.
- (5) Replace Microphone if necessary.
- (6) Replace Main Board if necessary.
- (7) Once the defective part has been identified, verify it again with the defective part whether the symptom could be duplicated.


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8. Photo for 80H & 99H Level

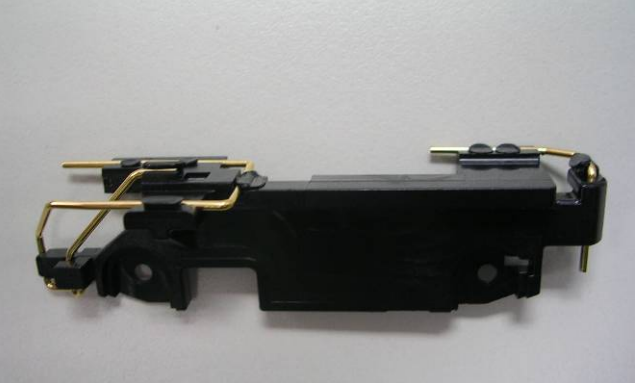
Part No	35H00083-02M	
Description	BATTERY_LI-POLYMER, 3000mAh,3.7V	
Q'ty	1	

Part No	74H00710-00M	
Description	Stylus Pre-Assy	
Q'ty	1	


Part No	72H30037-01M	
Description	Screw,PT,P,M1.6*6 mm, Coating with Ni & Nylok	
Q'ty	6	

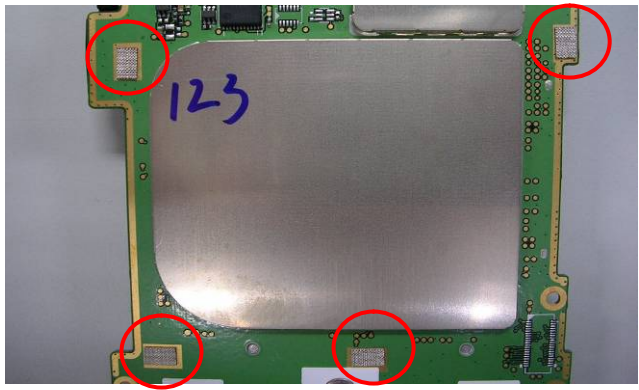
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Part No	76H01427-00M	
Description	Rubber, PCEC, Finger_Printer	
Q'ty	1	

Part No	36H00470-00M	
Description	Antenna,ACON,AMM00-000 00	
Q'ty	1	


Part No	74H00737-00P	
Description	Bezel Pre-Assy	
Q'ty	1	


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Part No	72H01669-00M	
Description	EMI Gasket,5*3*0.5mm	
Q'ty	4	

Part No	71H01594-00M	
Description	Cover, Battery	
Q'ty	1	


Part No	74H00736-00M	
Description	Housing Pre-Assy	
Q'ty	1	

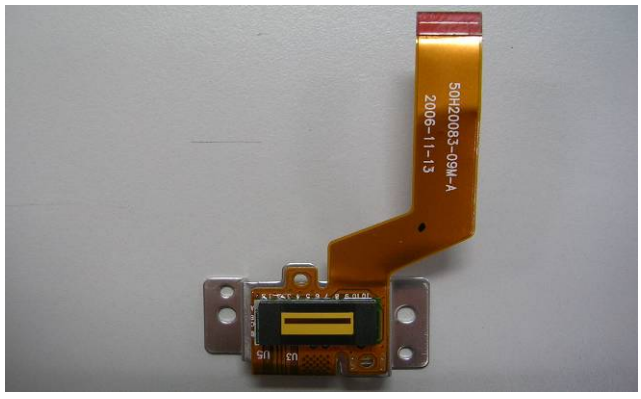
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Part No	72H01585-00M	
Description	Screw, with Nylok, M1.4*1.8*1.5, PH, POINT SCREW	
Q'ty	3	

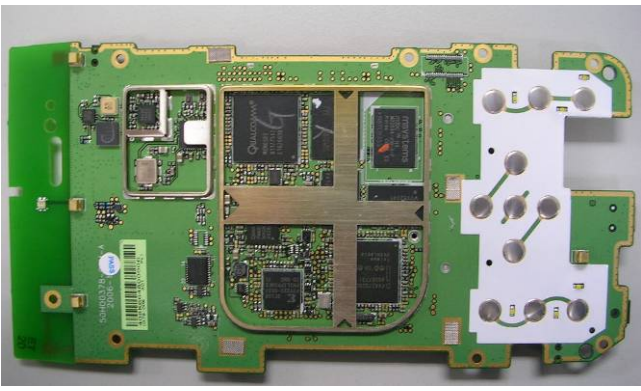
Part No	60H00082-00M	
Description	TFT-LCD Module, LQ035Q7DH06, 3.5 inch	
Q'ty	1	


Part No	72H01586-00M	
Description	Screw, M1.4x4, PT, +, NI-PLATED, POINT SCREW	
Q'ty	2	

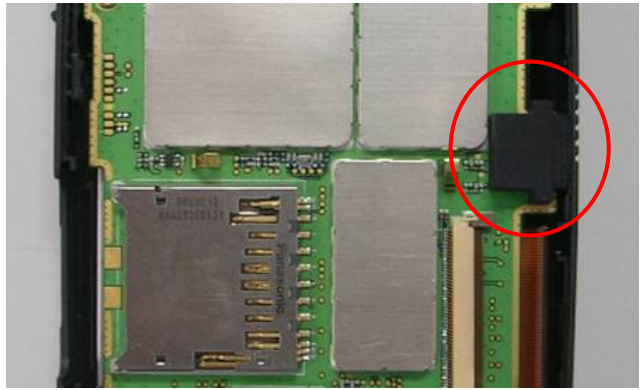
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Part No	73H20083-09M	
Description	FPC Pre-Assy, CAREER, Finger print	
Q'ty	1	


Part No	73H00253-00M	
Description	Cable, SUYIN, CBL00068-004	
Q'ty	1	


Part No	51H00378-00M	
Description	PCBA-MAIN BOARD, Melbourne	
Q'ty	1	

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Part No	76H01430-00M	
Description	Rubber, PCEC, Buzzer	
Q'ty	1	

Part No	72H01058-00M	
Description	Screw,PH,FD,M1.6*3.4,NICK EL+NYLOK	
Q'ty	5	

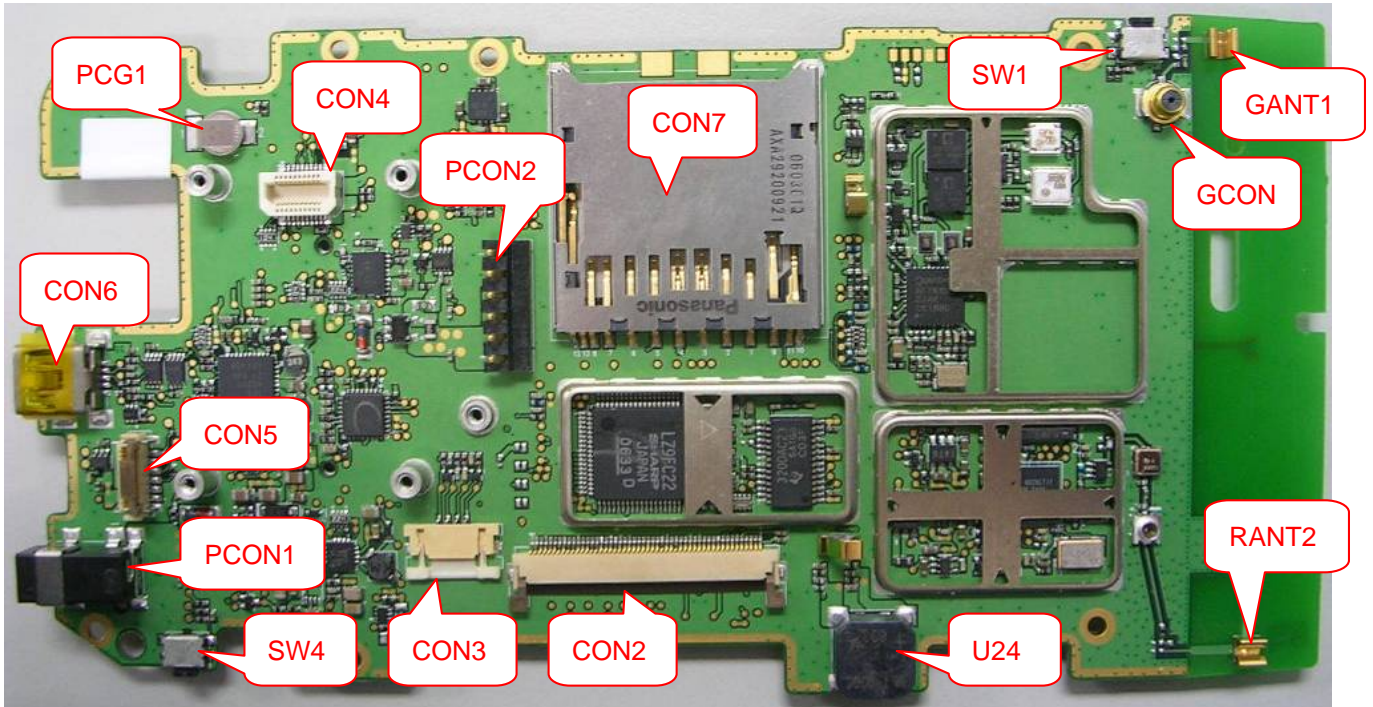
Part No	72H01582-00M	
Description	Holder, LCD	
Q'ty	1	

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Part No	76H01429-00M	
Description	Rubber, Antenna	
Q'ty	1	

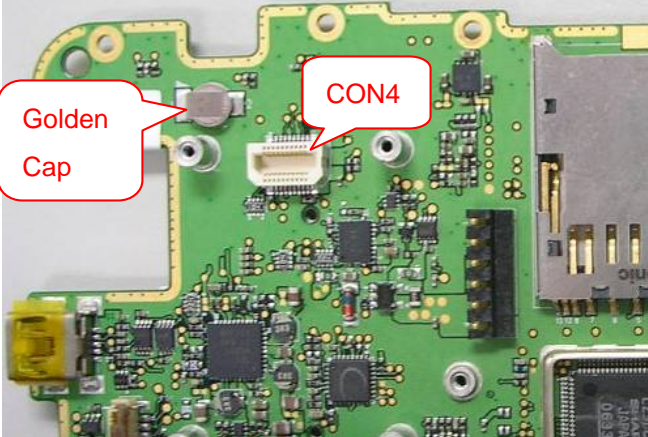



9. Board Level 2.5 Repairs Introduction

- Location of component and list



P/N	Description	Quantity	Location
16H00012-00M	Gold Cap,0.07F,70ohm,3.3V,-25/+50%,XH414H I102E,SEIKO,7.6*4.8*1.72mm,,70/-25degC	1	PCG1,
36H00129-00M	SWITCH BUTTON,PTS-106,HCH,4.7*4.5*1.65,70/-20degC,BLUE ANGELS	2	SW1,SW4,
36H00300-00M	Fuse,046702.5,2.5A/32V,LITTLEFUSE,Apache	3	PF1,PF2,PF3,
36H00450-00M	Buzzer,8.5*8.5*4.0mm,STAR,MLT-03GC	1	U24,
36H00485-00M	DC Jack,SINGATRON,2DC-S061-I01	1	PCON1,
75H00152-00M	Connector FPC,0.5A,50V,50P,0.5mm Pitch,FH12A-50S-0.5SH(55),HIROSE	1	CON2,
75H00248-00M	COAXIAL CONNECTOR,RF,WITH SWITCH,SMD,MM8430-2600RA1,MURATA	1	GCON,
75H00269-00M	Connector SD Card,AXA29200921,SDIO CONNECTOR,13PIN,MATSUSHITA	1	CON7,
75H00279-00M	Connector Device(Battery),AXB79300602,6Pin,2.5Pitch,MATSUSHITA	1	PCON2,
75H00321-00M	Connector RF,4P,LPC TP-1,120220-0129,ITT Cannon,Pb-FREE	1	RSW1,
75H00379-00M	Connector I/O,Mini USB AB,5P,0.8Pitch,1A,30V,67803-8040,MOLEX	1	CON6,
75H00453-00M	Connector Antenna Clip,1P,GT417001EU,AMPHENOL	2	GANT1,RANT1,
75H00496-00M	Connector FPC,DELL,4P,1Pitch,04(1.0)9FLH-SM1-GB(LF)(SN),JST,0.5A,50V,60mohm	1	CON3,
75H00544-00M	Connector B to B,20P,0.5Pitch,AXK5S20037YG,MATSUSHITA	1	CON4,
75H00545-00M	Connector FPC,12P,0.5Pitch,FH12-12S-0.5SV(55),HIROSE	1	CON5,

Notification

	<p>Golden cap is easy to be damage during board level repair. Before replacing CON4, please remove Golden Cap first and never re-use original Golden Cap. Please replace new one.</p> <p>The temperature of solder iron must be less than 350 degrees and heating time must be within 5 seconds.</p>
<div style="display: flex; justify-content: space-around;"> <div data-bbox="148 882 426 1207">  <p>Hakko-850D</p> </div> <div data-bbox="528 882 799 1207">  <p>Hakko-882</p> </div> </div>	<ol style="list-style-type: none"> 1. Perform temperature profile setup for lead-free product. 2. Two kind of hot air machine to apply for different dimension of Lead-Free component. 3. Hot air machine supporting fixture is used to avoid workmanship damaged issue. <p>[Note]: The temperature profile of Hakko-850D/882, please refer to Appendix.</p>
<div style="text-align: center;">  <p>PS-800</p> </div>	<ol style="list-style-type: none"> 1. For lead-free hand soldering is being able to solder heat sensitive components (the melting point of solder joint: 215-220 °C), without causing damage. 2. It allows the higher temperature requirements of lead-free alloys to be met without increasing the tip temperature. Thus, the risk of thermal damage is eliminated. 3. Checking list for regular functional checkup.



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● Temperature Profile for Hakko-850D

- Condition: Measure at a point **2cm** from the nozzle (Type: A1130) by recorder.

