Service Manual
for Excalibur

HTC Proprietary

Confidential Treatment Requested

Rev. A01

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HTC Corp.

Engineering Mobility

TITLE: Service Manual for Excalibur

REV. NO.	DATE	CONTENTS	DEP.	REVISED	APP′D	STGE.PER.
AX01	2006/09/14	First reversion	PSE	Edwin Chen		PVT1
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Table of Contents

1. Introduction

- This manual provides the technical information to support the service activities of the **Excalibur**. 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**
  - Messaging centric Smartphone with integrated QWERTY keyboard, Microsoft Windows Mobile5.0.
- **Dimension**
  - 111.5 mm(L) x 62.5 mm(W) x 12.6mm(T)
- **Processor**
  - TI OMAP 850
- **Memory**
  - ROM:128 MB(for programs ad users' storage)
  - RAM: 64 MB DDR
- **LCD Module**
  - 2.4" 320 x 240 dots resolution
  - 64K-colot Transmissive LCD with white LED bacl light
- **GSM/E-GPRS Function**
  - Interanl antenna
  - Quad-band (850/900/1800/1900)
  - Audio codec: AMR, EFR, FR, HR
  - SMS (MO, MT), concatenated SMS (640 characters)
  - Supplement services:
    - Call holding/waiting/forwarding
    - Call barring
    - CLI (Call Line Identity)
    - Display own number
    - Network selection
    - Cell broadcast
    - Multi party capability conference call

- Spool icon

- Phase 2+ unstructured supplementary service data

- Network Lock

  ➢ EDGE Functionality

- EGPRS class B

- Multi-slot class 10

- PBCCH

- Incremental Redundancy

  ➢ SIM:

- 1.8V/3V of UICC

- SIM Application Tool Kit release 98 class 3

- Over the Air (OTA) programming

- FDN

- ADN

- SDN

- Security PIN 1 & 2 control

- **Keyboard/Button/Switch**

  ➢ Power Key

  ➢ Send/Hands-free Key

  ➢ End/Key Lock Key

  ➢ 2 soft Key

  ➢ Home Key

  ➢ 2 AP keys on QAWERTY

- T-zone or PIE or operator portal(by request)

- Camera (2nd layer key)

  ➢ Jog bar (including 3 portions)

- Top key – function as Comm. manager

- Middle area – sliding area with up/down and action functions

- Bottom key – function as Back/Cancel key

  ➢ 5 – way navigator

  ➢ 10 – column QWERTY keyboard

- **Notification**

- One bi-color LED for UMTS/GSM standby, GSM message, GSM network status, Notification, and charging status

- ➢ Two respective (blue and green) LEDs for Bluetooth/Wi-Fi notification
- ➢ Vibration for notification
- ➢ Notification by sound and message on the display

- **Audio**
  - ➢ Built-in Nicrophone
  - ➢ Receiver
  - ➢ Lound speaker for Hands-Free supported
  - ➢ Full duplex
  - ➢ Audio sampling rate
    - 16 – bits with 8KHz, 11KHZ, 22KHZ, 44.1KHz
  - ➢ AMR/AAC/WAV/WMA/MP3 codec

- **Camera**
  - ➢ CMOS 1.3MP with fixed lens

- **Interface**
  - ➢ Micro-SD
  - ➢ External antenna connector
  - ➢ 1.8V/3V SIM card
  - ➢ Mini – USB connector (11 pins)

- **Power**
  - ➢ Battery
    - Removable and chargeable Lithium ion polymer battery, 970mAh
    - Charging times: less than 4 hours
  - ➢ Battery life:
    - WMA: 12 hours(Magneto test case)
    - WMV: 8 hours (Magneto test case)
    - Talk time: 3.5~5 hours
    - Standby time: 125 ~ 188 hours
  - ➢ AC adaptor
    - AC input: 100~ 240V AC, 50/60 HZ
    - DC output: 5V and 1A

- **Device – to – Device Connectivity Power**
  - ➢ Bluetooth
    - Complaint with v2.0
    - Class 2 transmit power

- - Supported profiles:
    - ○ Generic Access profile
    - ○ Serial Port profile
    - ○ Headset profile
    - ○ Object Push profile
    - ○ Generic Access profile
    - ○ DUN profile
    - ○ Hands-free profile
    - ○ Generic Object Exchange profile
    - ○ HID profile
    - ○ A2DP profile
    - ○ AVRCP profile
    - ○ SIM Access profile
    - ○ Service Discovery profile
  - Co-exist with WiFi

- **Accessories**
  - ➢ AC adapter w/mini-USB plug
  - ➢ Carrying Case
  - ➢ Sync. Cable(mini-USB/USB)
  - ➢ Battery(rechargable adn replaceable)
  - ➢ Stereo wired headset with microphone(11 pn mini-USB)

- **MSFT Windows Mobile Applications**
  - ➢ Microsoft Outlook Mobile: Message(SMS/E-mail), Contacts, Calendar, Tasks
  - ➢ Microsoft Windows Media Player
  - ➢ Microsoft MSN Message
  - ➢ Microsoft Internet Explorer Mobile
  - ➢ Microsoft ActiveSync
  - ➢ Pictures & Video
  - ➢ Device Management
  - ➢ MSFP Push E-mail
  - ➢ Games
  - ➢ Calculator
  - ➢ Voice Notes
  - ➢ File Manager

> Smart Dialer for QWERTY keyboard as search input

- **Value Added Applications**
  - WMP 10 DirectShow plug in to support playing more audio/video format
    - Audio decode
      - MP3/AAC/AAC+/VMAS/AMR
    - Video Codec
      - MPEG4/H.263/Motion JPG
  - Camera capture utility
  - Camcorder
    - Frame rate per second
      - min 8 fps encoding for QCIF resolution
    - Recoding format
      - H.263 + AMR – NB
      - MPEG4 + AMR – NB
  - Polyphonic MIDI Ringtone Engine and Plugin
  - Real Music Tone – MP3/ AAC
  - MMS with video clip support
  - Battery(rechargable adn replaceable)
  - JAVA virtual machine(J2ME, CLDC1.1, MIDP 2.0)
  - Microsoft Word, Excel, and PPT, and PDF Viewer
  - Voice Dial on both wired & Bluetooth headset
  - OMA DRM 1.0/2.0 when available
  - MMS with video clip support

- **Regulatory**
  - R&TTE: EMC/EMI, CEM, Safety
  - PTCRB
  - FCC
  - Microdsoft Windows Mobile version 5.0 logo
  - BQB (Bluetooth Qualification Body) certification
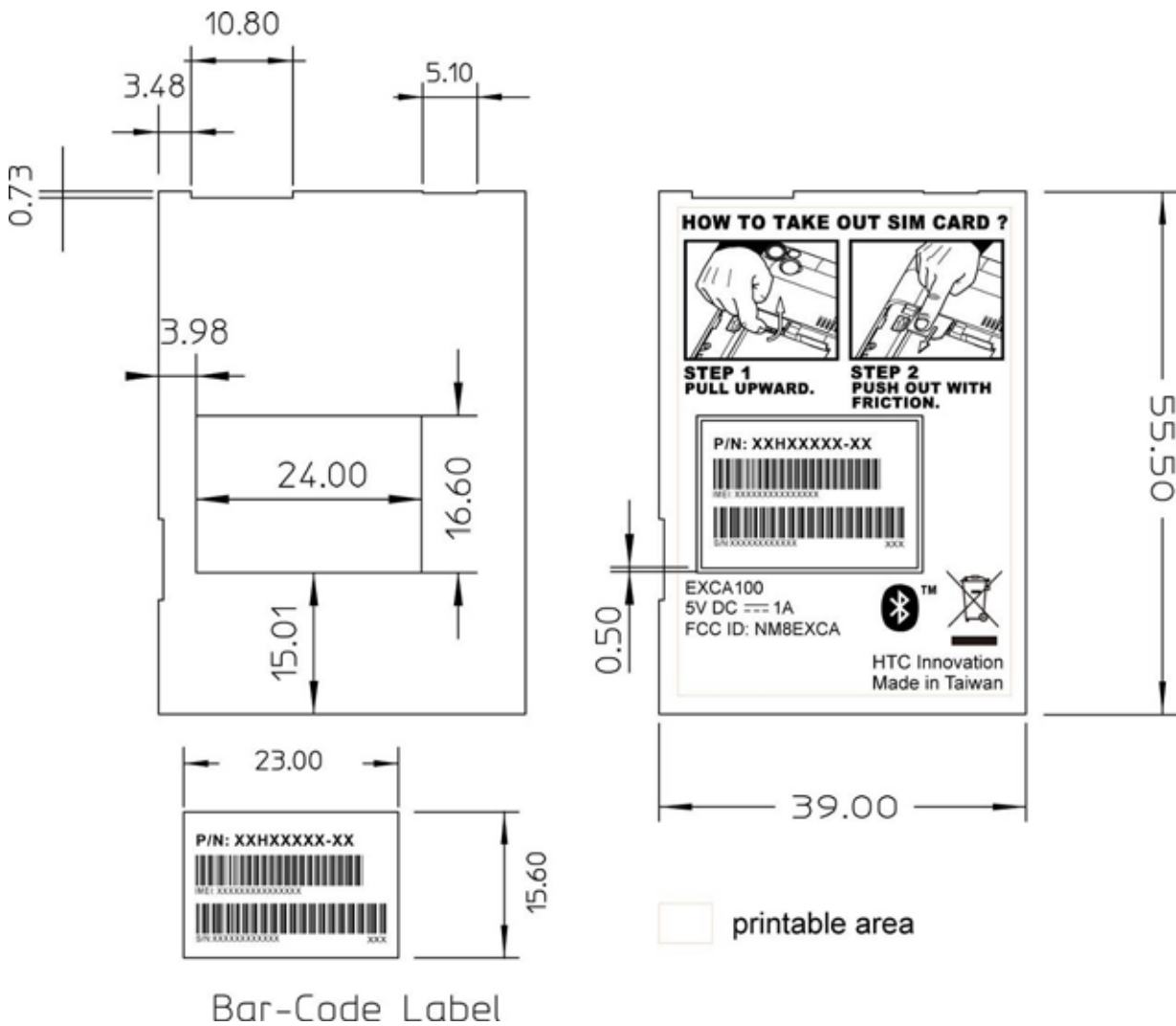 - WiFi certification

3. Labeling Plan

3.1 Agency label-US

HTC P/N: 77H00384-00M

Size: 39.0 X 55.5mm

The brand name is shown on Excalibur

Barcode label

HTC P/N: 77H00395-00M

Size: 23.0X15.6mm

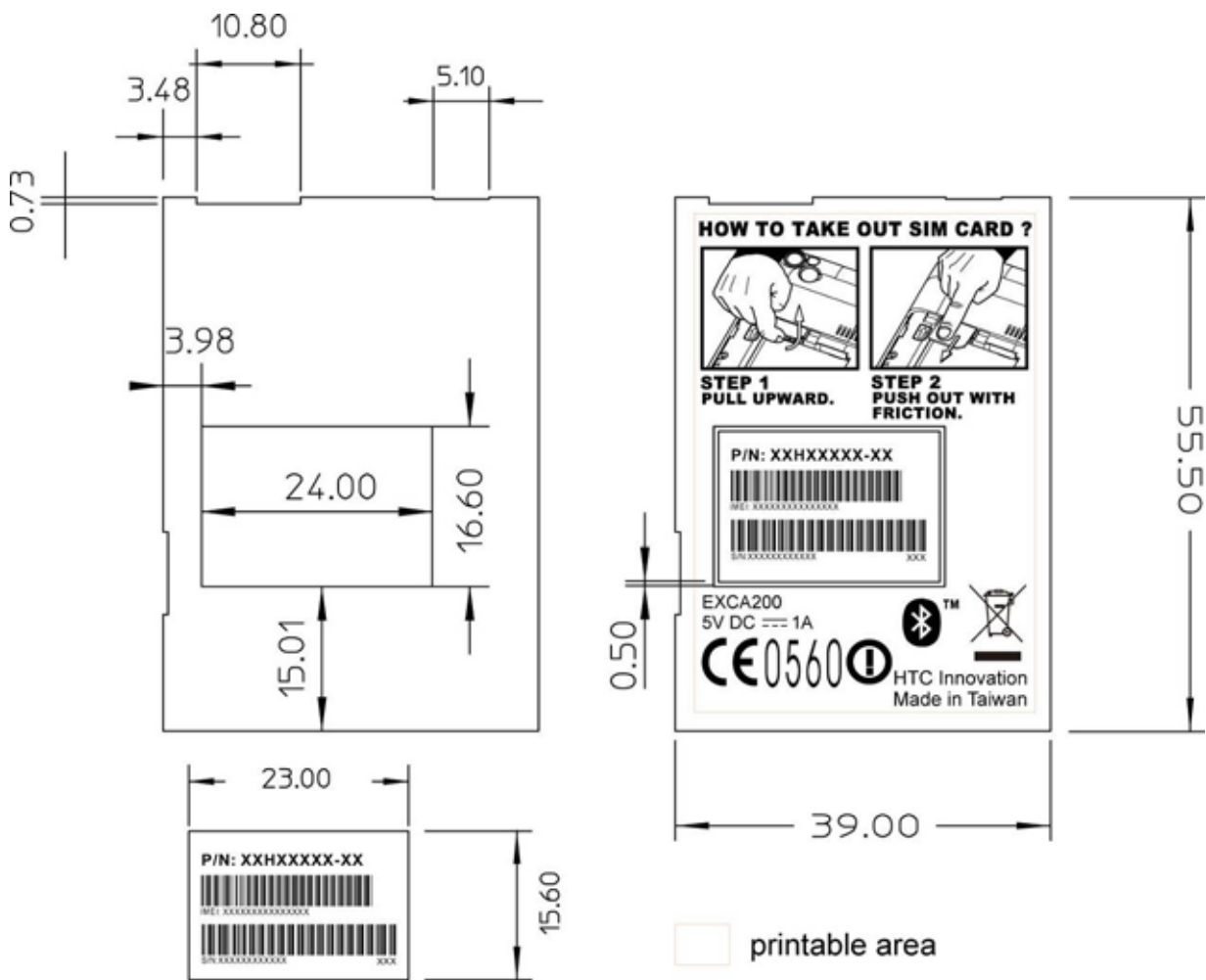Bar-Code Label

3.2 Agency label-EU

HTC P/N: 77H00384-01M

Size: 39.0 X 55.5mm

Barcode label

HTC P/N: 77H00395-00M

Size: 23.0X15.6mm
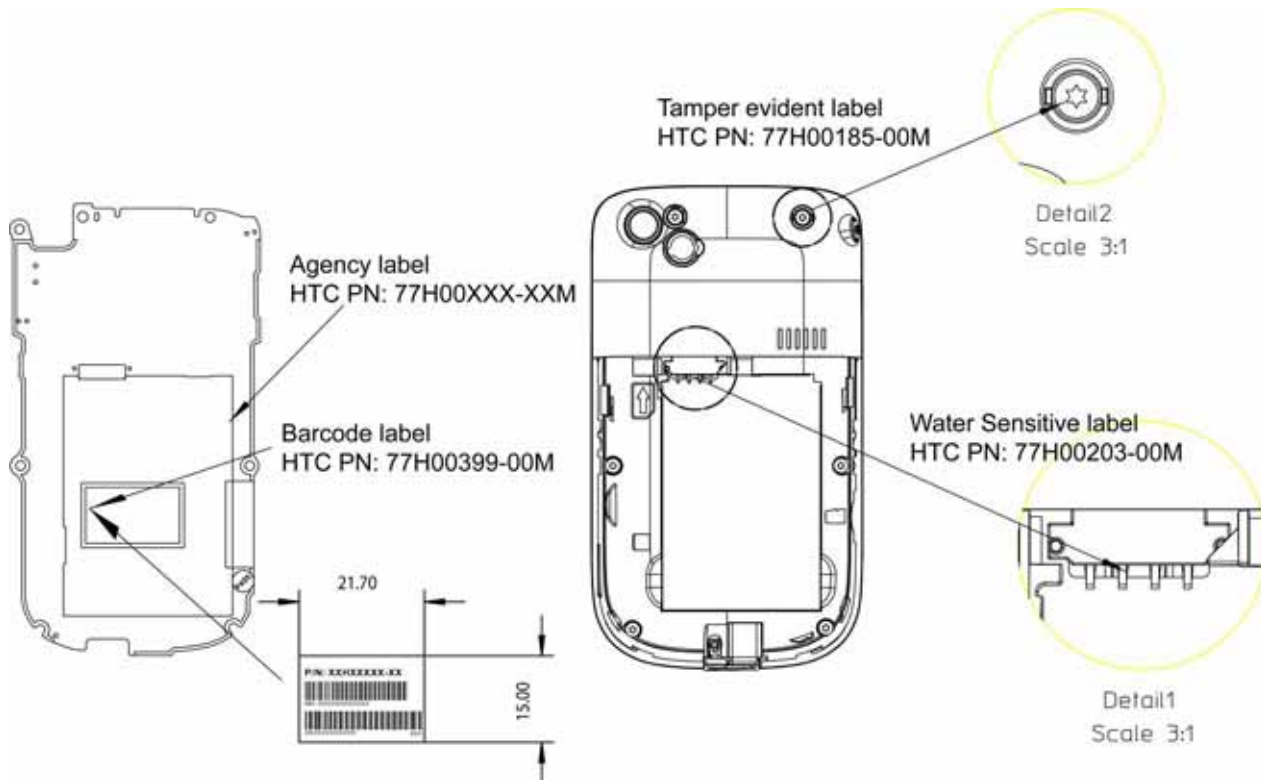

Bar-Code Label

3.3 Unit label location explanation

Tamper evident label: 77H00185-00M X 1

Water sensitive label: 77H00203-00M X 1
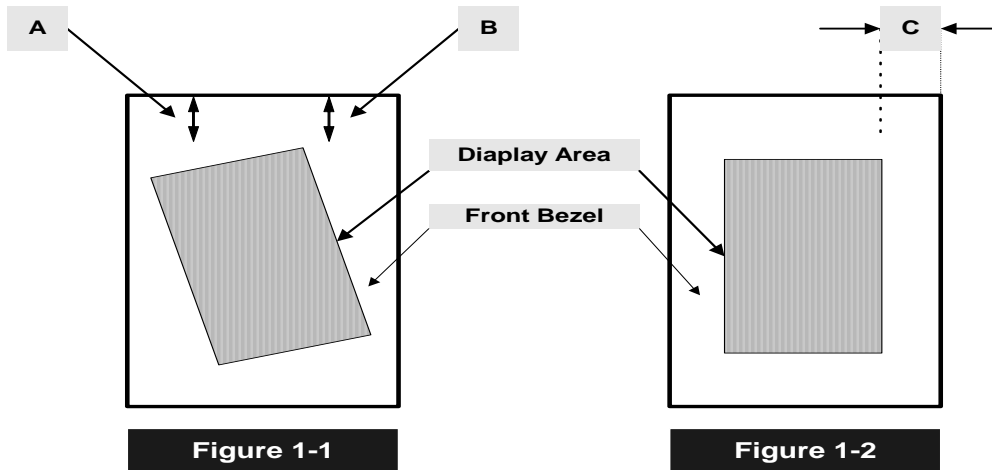
4. Inspection Criteria

● **Definition**

➢ This document based on the experience of customer's requirements is designated as HTC internal quality inspection standard of "Excalibur" series products.

➢ The definition product inspection area: (Main Unit)

    a. Class 1: Front view of main unit.

    b. Class 2: Except Front view of main unit.

    c. Class 3: Inner side of battery cover, area covered by battery cover and stylus.

➢ The definition product inspection area: (Cradle)

    a. Class 1: Front view of Cradle.

    b. Class 2: Top /Side/Back view of Cradle.

    c. Class 3: Bottom view of Cradle.

➢ Description

a. **D**: Diameter/**L**: Length/**W**: Width/**N**: Number of defects/**S**: Distance between Defects /**H**: Height.

b. Viewing distance/time of each surface is, approximately: 30 cm/ 5sec per surface.

c. Ambient illumination is to be 700~800lux / (200±20 FL).

d. Inspectors should hold the part 30 degrees from the horizontal plane and rotate the part 30 degrees to the left and right along the vertical axis. Each side must be considered as a separate plane to be inspected.

● **Main unit Inspection Standard**

➢ LCM inspection standard

a. Definition (D：Diameter，W：Width，L：Length)
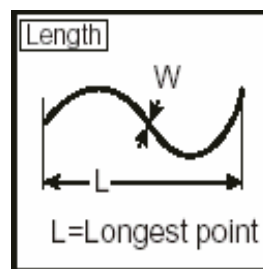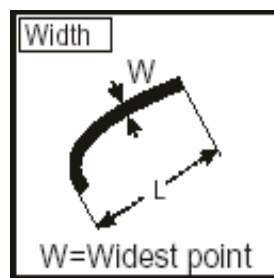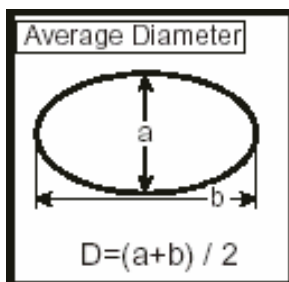
b. The inclination of LCD must be within the table below/shown in figure 1-1.
Measured the distance between WINCE pattern & Front bezel and catch the maximal to subtract the minimum distance. The distance couldn't over 0.4mm.

c. The criteria of location must be followed as figure 1-2 and table shown below.

Figure 1-1   **Figure 1-2**

Symptom	Criteria	MA/MI
View area /location(Figure 1-2)	D= 1.41±0.35mm acceptable	MI

➢ Product Cosmetic inspection standard

    a.   Unit Mechanical / Cosmetic inspection standard

Symptom	Standard		Accept N	Defect Mode
Scratch	**Damage the texture surface**		**N≦0**	**Minor**
	Class A	L　3mm, W　0.1mm, S　30 mm	**N≦2**	
	Class B	L　9mm, W　0.2mm , S　30 mm	**N≦2**	
	Class C	L　50 mm, W　0.5mm	**N≦2**	
Dent / Sink ; **Inclusion / Dark dots / Blow hole**	**Damage the texture surface / Peeled Paint / Bubble**		**N≦0**	**Minor**
	Class A	D≦0.2mm	**Ignore**	**Minor**
		0.2mm＜D≦0.5mm	**N≦2, S≧30mm**	
		D≧0.5mm	**≦0**	
	Class B	D≦0.2mm	**Ignore**	
		0.2mm＜D≦0.6mm	**N≦2, S≧30mm**	
		D≧0.6mm	**≦0**	
	Class C	D≦0.3mm	**Ignore**	
		0.3mm＜D≦1mm	**N　2, S　10mm**	
		D　1mm	**0**	
Bad structure	**Splits / Short Shot**		**N　0**	**Minor**

Burr	**Sharp Burr that will damage human body**	**N 0**	**Minor**
Printing	**Letters and symbols not readable or incomplete**	**N 0**	**Minor**
Cosmetic	**Color differences / Color fade / Uneven paint(By limit sample)**	**N 0**	**Minor**
Gap	**Gap between Bezel and LCD**	**gap≦ 0.7mm**	**Minor**
	Gap between Bezel and Housing	**gap≦ 0.4mm**	**Minor**
Step	**Step between assembly parts**	**Step≦ 0.3mm**	**Minor**
Buttons	**Buttons jammed / Sink**	**N≦0**	**Minor**
LED	**Sink / Shift**	**N≦0**	**Minor**
Stylus	**Stuck / Unlocked**	**N≦0**	**Minor**
Screw	**Missing / Incorrect assembled and loose fixation**	**N≦0**	**Major**
Battery cover	**Stuck / Incorrect assembled and loose fixation**	**N≦0**	**Minor**
Foreign material	**Foreign materials such like additional screw, label, etc.**	**N≦0**	**Minor**

b.   Unit Electrical Function inspection standard

Symptom	Standard	Accept N	Defect Mode
LED	**Functionality not work properly**	**N≦0**	**Major**
	Incorrect color in LED	**N≦0**	**Major**
Button	**No reaction / mis-reaction**	**N≦0**	**Major**
Sound	**No sound, low sound level to speaker spec., intermittently**	**N≦0**	**Major**
Battery	**Not Chargeable & dischargeable**	**N≦0**	**Major**
	Battery load ＜50%	**N≦0**	**Major**
Please refer to Dresden CDIT SIP for detailed electrical function inspections.			

- **Main unit & Cradle inspection standard**
  - a.   Main Unit

Charging Model	Standard	Defect Mode
On Charging	**Flashing Orange for charging status**	**Major**
Charging completely	**Orange solid for charging completely**	**Major**
Alarm or Notification	**No light**	**Major**

b. Cradle

Charging Model	Standard	Defect Mode
On Charging	**Orange light**	**Major**
Charging completely	**Green light**	**Major**

5. Unit Disassembly/Assembly Procedure

- **Disassembly procedure**

	Tools needed for Assembling and Disassembling. 1. Lens Cleaning Tissue. 2. Plastic Stick. 3. Torex Screw Driver T6X40. 4. Philip Screw Driver 000X40. 5. Tweezers.(Suggest to use plastic made)
	Remove the battery cover
	Take out battery

	Unfasten 2 screws of antenna position and 4 screws on housing as indicator
	1. Insert the plastic stick to the gap between bezel and housing deep inside 2. Move the stick slightly around the device to unlock the hooks
	Follow the indicator to move the stick to release hooks

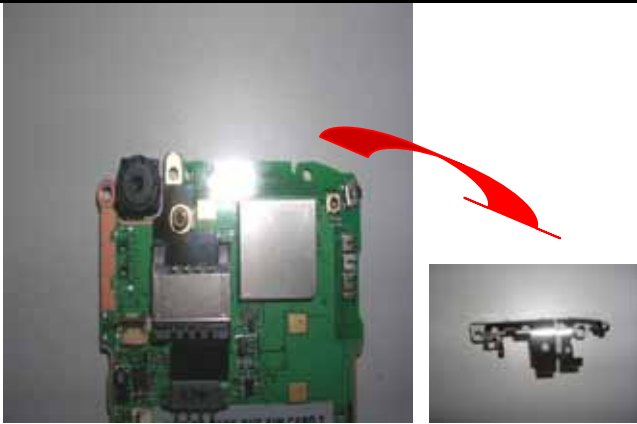|	
	You will see separation between bezel and housing
	Use plastic stick to Remove FPC of the switch board on the connector
	Remove the LCD connector from the main board

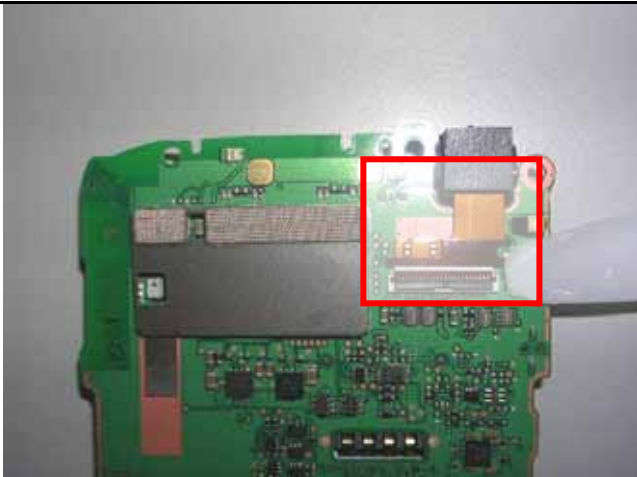|	Remove JOG connector from the main board
	Unfasten screw from main board
	Separate main board and housing

	Remove antenna from main board
	Remove Camera module connector form main board
	Take off Camera module from main board

	Follow the indicator to move the stick to release frame and bezel
	You will see separation between bezel and frame
	Unfasten 3 screws from bezel

	Take off receiver from bezel
	Take off LCD from the LCD's holder
	Take off FPC Pre-Ass keyboard,
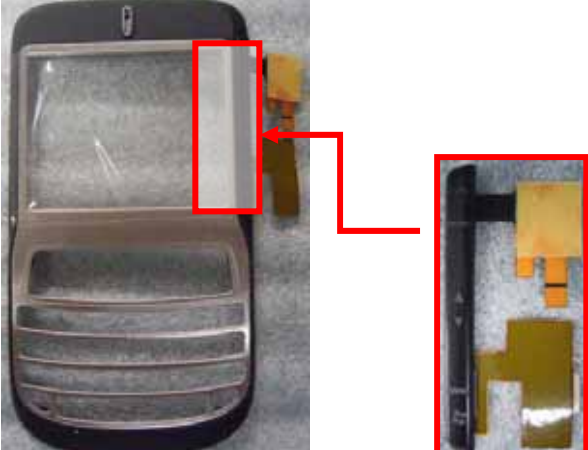
	Take off keypad from bezel
	Disassemble Cover Decor-bar from bezel

● **Assembly Procedure**

	Assemble the camera on the M/B **Camera pre-assy: 54H00176-00P(Q'ty:1)**
	Stick a sponge on connector **Poron,Suppert-LCD,Lower, L32,10*5*2mm: 76H01023-00M(Q'ty:1) Mylar,15*15*0.1mm, Kapton: 76H01290-00M**
	To tear off rear tape of bezel & assemble the touch sensor FPC into the bezel **Cover,Decor-bar: 71H01578-01M(Q'ty:1) FPC Pre-Assy,GLOBAL FLEX,Touch sensor: 73H20082-41M (Q'ty:1)**

Assemble the Qwerty keypad on the bezel, Assemble the AP Keypad on the bezel

Keypad, AP key: 74H00697-00M(Q'ty:1)
Keypad, Qwerty key: 74H00709-00M(Q'ty:1)

Assemble the FPC Pre-Assy on the bezel

FPC Pre-Assy , QWERTYKEY FPC ,GLOBAL FLEX: 73H20073-41M(Q'ty:1)

Set the keypad board into the bezel and fasten 3 screws to fix it with low speed. When assembling finish, turn over Front panel if it is O.K.
Note: Please set up the TORQUE of electrical screw driver to 0.5±0.05kgf-cm

Screw,PH,FD,T1.4*2.9, Nickel,Black: 72H00724-00M(Q'ty:3)

Assemble the LCD on the Bezel. To tear off rear tape of FPC & stick it on the LCD

LCD Module Sony: 60H00067-00M(Q'ty:1)

Assemble the antenna on the bezel

Antenna: 36H00430-00M(Q'ty:1)

When assembling frame, first load touch sensor of FPC in a row of line

Frame Pre-Assy,Middle: 74H00701-00M(Q'ty:1)

	Assemble main board to bezel and inspect main board at exactly 2 locating points
	Fasten screw to main board Note: Please set up the TORQUE of electrical screw driver to 2.55±0.5kgf-cm **Screw ,PH(T6) 20*5 Delta PT Ni: 72H01547-00M(Q'ty:1)**
	Insert LCD connector on main board

|	
	Insert the keypad FPC connector on main board
	Assemble the housing on the bezel **Housing Pre-Assy: 74H00691-01M(Q'ty:1)**
	Fasten six screws to fix housing order Note: Please set up the TORQUE of electrical screw driver to 2.55±0.5kgf-cm **Screw, PH (T6) 2.0*7L DELTA PT Zn: 72H01546-00M(Q'ty:2)** **Screw, PH(T6) 2.0*6L NR/B1: 72H01545-00M(Q'ty:4)**

6. OS Upgrade Procedure

6.1 OS upgrade thru RUU

(1) System Requirement：

　　　- Windows 2000 or XP on PC

　　　- USB Cable

　　　- **RUU** tool for Smart phone

(2) Software upgrades procedure

(a) Enable the USB Connection Settings in ActiveSync.

(b)Set the Smartphone into **OS** Mode (SIM card must be inside).

(c)Sync Smartphone to PC via **USB cable** and synchronize with PC.

(d)Run "**RUU**" tool under Window XP. Then Click "Next" to continue.

(e)On the **Welcome Screen**, click **Next** to begin the ROM update installation
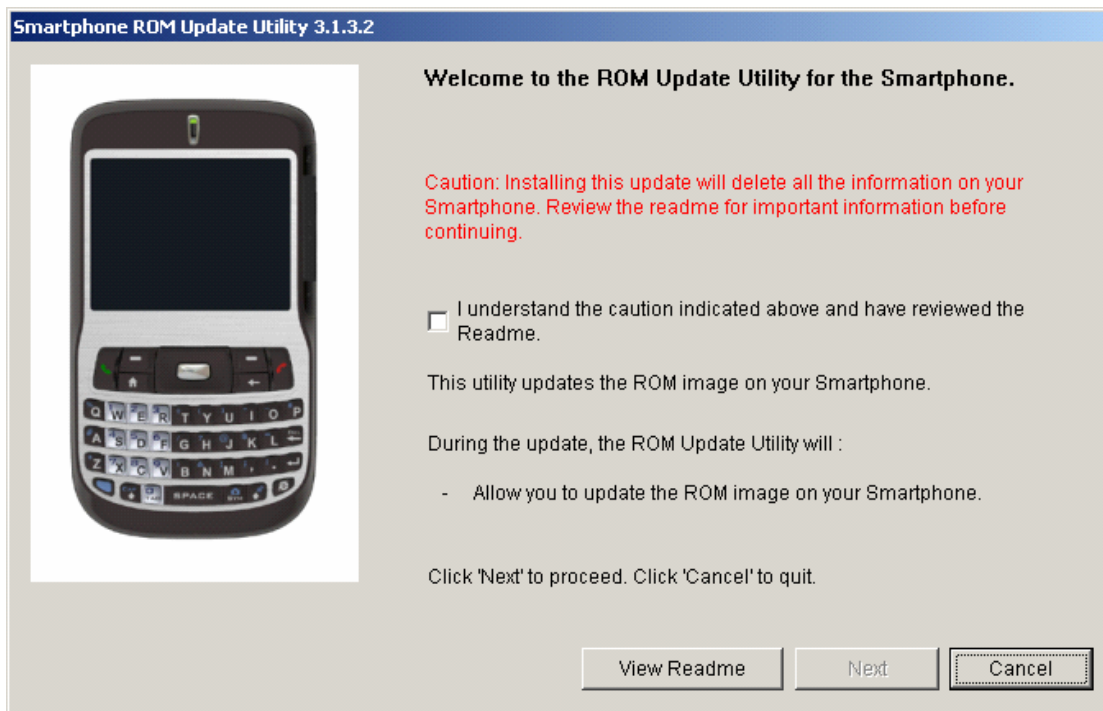
(f)On the next screen, follow the listed instructions in the dialog box first. When you are done, click **Next** to proceed

Note: You should read and follow all the instructions listed before clicking **Next**.

(g) The following message will then be displayed, indicating that the utility is verifying and acquiring information about the device as preparation for the update process. Wait for this verification process to finish.
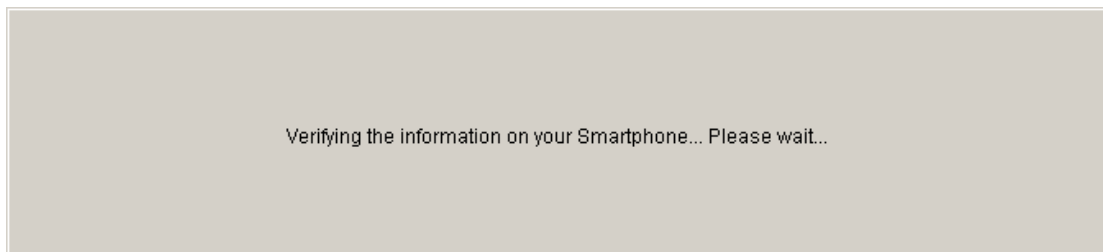
(h)Current information about the device, such as the model ID, image version and language will then be displayed. Click **Update** to proceed

(i)Below the device information, information about the new ROM update will then be displayed. If you are certain that you want to install the Mobile Device with the new ROM update, click **Next** to proceed.

(j)A confirmation message then appears and shows the length of time it will take to copy the necessary files (including radio image) to the device. Click **Next** to begin the update.
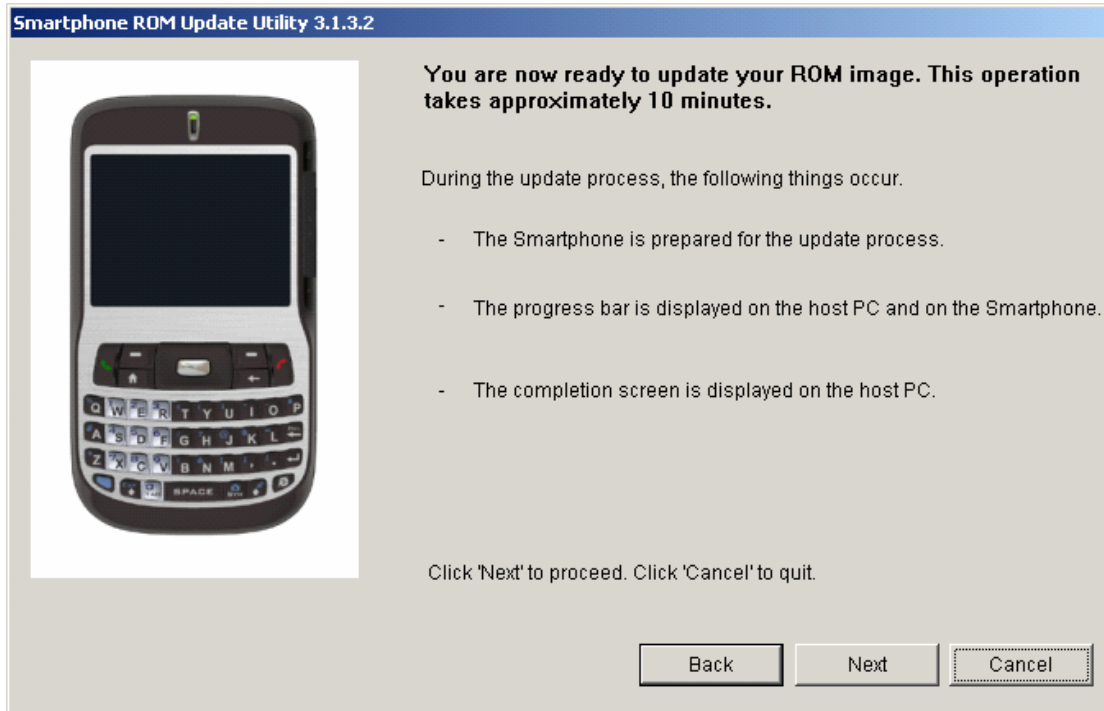
A progress bar will run through the screen during the update process.
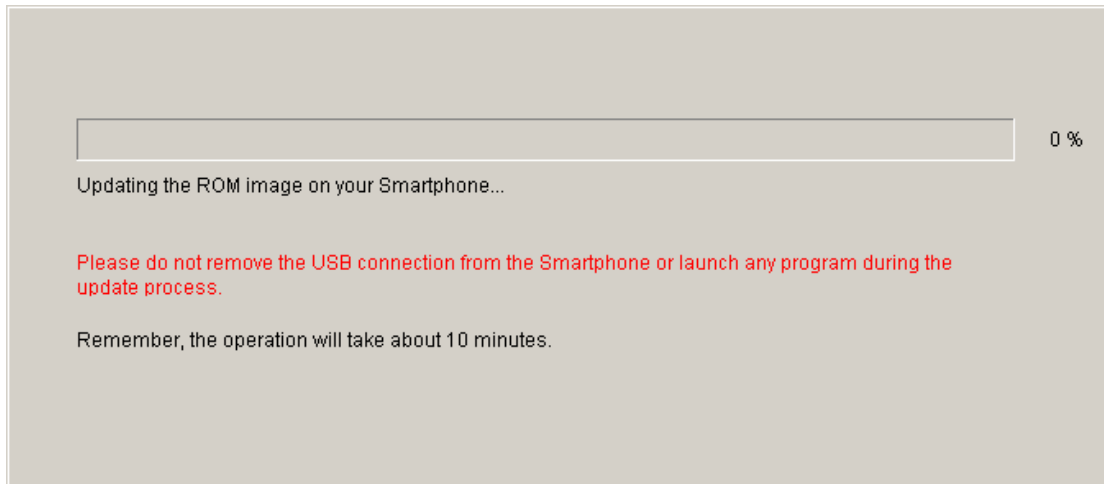
Note: In the middle of the update process, the progress bar may stop running. This is normal as the RUU is adjusting itself to complete the update process automatically.

Smartphone ROM Update Utility 3.1.3.2

Congratulations ! Your ROM update is now complete. Your Smartphone is ready for use.

Follow the instructions on your host PC to re-establish a partnership and synchronize your data using ActiveSync.

Click 'Finish' to close the utility.

Finish

6.2 OS SD card upgrade procedure

(1)Prepare a micro SD card and format to FAT32 by your PC.

(2)Copy image file XXX.nbh to the micro SD card and rename to excaimg.nbh.

(3)Put this micro SD card in your device and enter Boot-Loader.

(4)Press " SYM+Power" button, release the buttons after hold for 2 seconds, and then the device will enter boot-loader mode.

(5)When enter boot-loader mode and see the download message.

7. Function Test Procedure

7.1 List of Test Item

- You will see HTC Copy right on the first page of Diagnostic program.
- Totally there are 19 items content of Diagnostic test.

No.	Item	Description	Remark
*	**Function test**		
1	All Test	Functional test automatically	
2	SDRAM TEST	RAM Memory Test	
3	Display TEST	Color bar/R/G/B/Black/White/Gray pattern	
4	LED Test	RED/GREEN/BLUE/KeyPad test	
5	Key Test	Keypad & soft-key pressing test	
6	Flight Test	Front light test	
7	Checksum. Test	Calculate checksum of Flash-ROM	
8	Timer Test	RTC timer test	
9	SD Card TEST	SD card read / write test	
10	MegaSIM Test	MegaSIM card test	
11	Vibrator Test	Vibrator on test	
12	Battery Test	Batter info check	
13	Spk Play Test	Speaker out test	
14	Rev Play Test	Receiver out test	
15	Hst Play Test	Headset out test	
16	IntRec-SpkOut	Internal MIC record and play to Speaker test	
17	IntRec-RevOut	Internal MIC record and play to Receiver test	
18	IntRec-HstOut	Internal MIC record and play to Headset test	
19	HstRec-HstOut	External MIC record and play to Headset test	
*	**RUN IN Test**		
	Some items need to test under OS Mode		
25	USB TEST	Link with PC/Notebook to check USB Link function	
26	SIR Test	Infrared port test	Test with second unit
27	Camera Test	Test Camera Function	
28	Bluetooth	Test Bluetooth function	

7.2 Test procedure

(a) Power OFF.

(b) Insert Diagnostic Mini SD card (provide by HTC) to Smart phone Unit

(c) Set the Unit into Boot loader Mode (Press & Hold **Capture**, then press **Power** button, then release power button first). Then press volume down button to download diagnostic to unit. Wait for "HTC logo" appears on screen, press Action key into Diagnostic test.

(d) On test menu, use Navigation button to select the item then press Action key for testing, you could also use numeric key to select the test item. Use Right/Left to change to other page.

(e) Remove the battery directly to exit the Diagnostic program when finish the testing.

(f) If the system fails while testing, please also remove the battery directly to turn off power.

IMPORTANT NOTICE:

1.   Please do not leave the mini SD diagnostic card left on the unit while booting to Windows mode. Because mini SD card do not have lock mechanism, easily to be formatted accidentally.

2.   Once the unit has been entering Windows mode (HOME SCREEN), the SD card might be formatted already and once executing the diagnostic will stop on "CHECKSUM ERROR "without successfully entering the Diagnostic.

3.   Once happen, you might need to ask HTC assistance for card replacement.

4.   Please use one of SD card with diagnostic program pre-loaded as your master sd card ,in case of your

     SD card accidentally formatted, use it to restore the diagnostic software.

5.   Before download the diagnostic program ,please format the sd card with FAT32 type first

      under the WINDOWS system

6. Copy the diagnostic program to SD card directly to use.

8. 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 · 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.

2－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.

3－A‧Micro 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.

4－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.

5－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.

(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.

5－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.

5－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.

6－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.

6－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.

7－A · GPS connection not possible

    (1) Make sure the GPS environment is OK before your checking.

    (2) Make sure the GPS connection setting has been properly set.

    (3) Make a life connection with artificial satellite.

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

    (5) Try with another 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.

9. Photo for 80H & 99H Level

Part No	35H00080-01M
Description	Battery
Q'ty	1

Part No	36H00233-00M
Description	Receiver assy
Q'ty	1

Part No	36H00430-00M
Description	Antenna
Q'ty	1
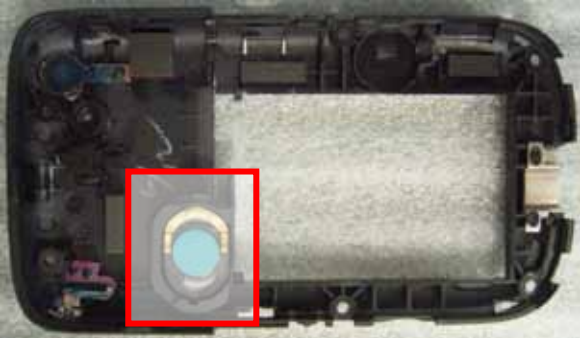
Part No	36H00444-00M	
Description	Vibrator,3V	
Q'ty	1	

Part No	36H00448-00M	
Description	Speaker,MERRY	
Q'ty	1	

Part No	54H00176-00P	
Description	Camera pre-assy	
Q'ty	1	
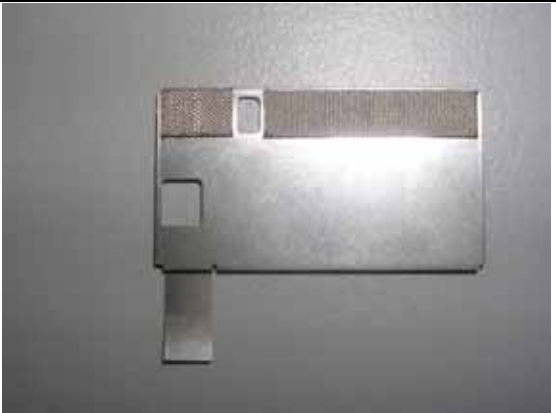
Part No	**60H00067-00M**	
Description	**LCD Module Sony**	
Q'ty	**1**	

Part No	**71H01558-00M**	
Description	**Battery cover**	
Q'ty	**1**	

Part No	**71H01578-01M**	
Description	**Cover,Decor-bar**	
Q'ty	**1**	

Part No	72H00724-00M	
Description	**Screw,PH,FD, T1.4*2.9, Nickel,Black**	
Q'ty	3	

Part No	72H01524-03M	
Description	**Shielding cover**	
Q'ty	1	

Part No	72H01545-00M	
Description	**Screw, PH(T6) 2.0*6L NR/B1**	
Q'ty	4	

Part No	72H01546-00M
Description	Screw, PH (T6) 2.0*7L DELTA PT Zn
Q'ty	2

Part No	72H01547-00M
Description	Screw ,PH(T6) 20*5 Delta PT Ni
Q'ty	1

Part No	73H20073-41M
Description	FPC Pre-Assy , QWERTYKEY FPC,GLOBAL FLEX
Q'ty	1

Part No	73H20082-41M	
Description	FPC Pre-Assy,GLOBAL FLEX,Touch sensor	
Q'ty	1	
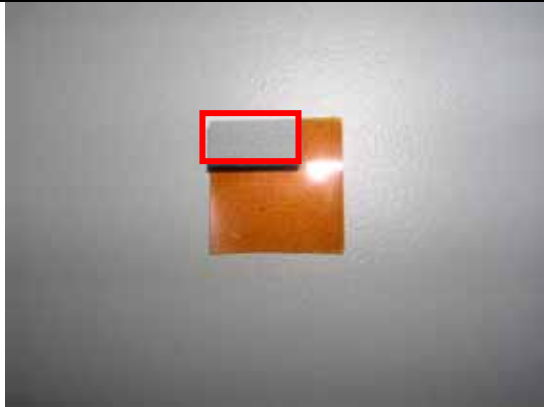
Part No	74H00691-01M	
Description	Housing Pre-Assy	
Q'ty	1	
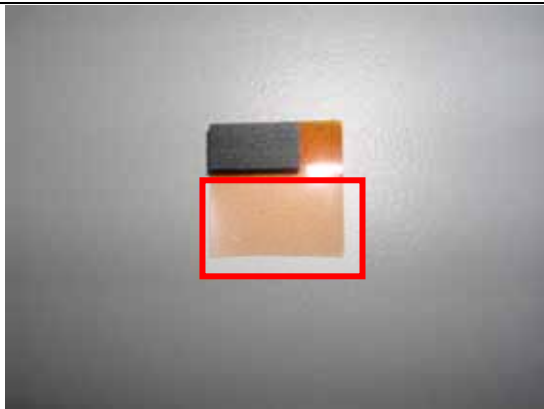
Part No	74H00696-06M	
Description	Bezel Pre-Assy, T-MOBILE US	
Q'ty	1	

Part No	74H00697-00M
Description	**Keypad, AP key**
Q'ty	1

Part No	74H00701-00M
Description	**Frame Pre-Assy,Middle**
Q'ty	1

Part No	74H00709-00M
Description	**Keypad, Qwerty key**
Q'ty	1

Part No	76H01023-00M	
Description	Poron,Suppert-LCD, Lower,L32,10*5*2mm	
Q'ty	1	

Part No	76H01290-00M	
Description	Mylar,15*15*0.1mm, kapton	
Q'ty	1	
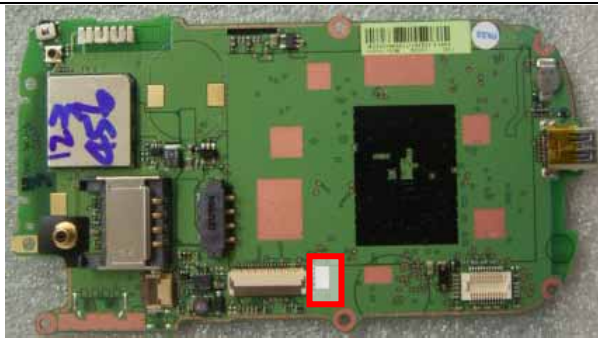
Part No	76H01376-00M	
Description	Sponge,Support SIM Card	
Q'ty	1	
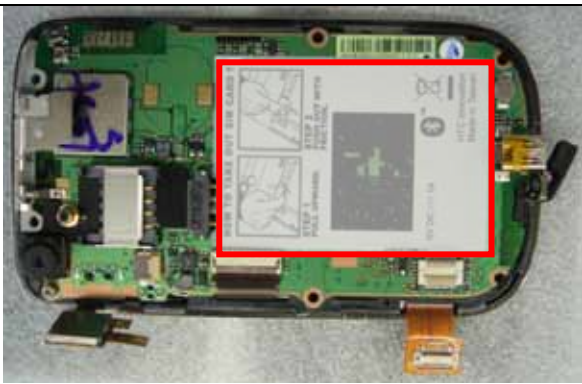
Part No	76H01386-00M	
Description	Rubber,Silicone rubber,Plug,screw-L	
Q'ty	1	

Part No	76H01387-00M	
Description	Rubber,Silicone rubber,Plug,screw-R	
Q'ty	1	

Part No	76H01410-00M	
Description	Black rubber	
Q'ty	1	

Part No	76H01415-00M	
Description	**Mylar**	
Q'ty	1	

Part No	77H00203-00M	
Description	**Water Sensitive Label,4*2.5mm**	
Q'ty	1	

Part No	77H00384-00M	
Description	**Regulation Label**	
Q'ty	1	

10. Board Level Repair

If you are authorized by HTC to perform board level repair, you could ask below material/parts from HTC .

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 component has been replaced, clear the surroundings for solder and flux residues.
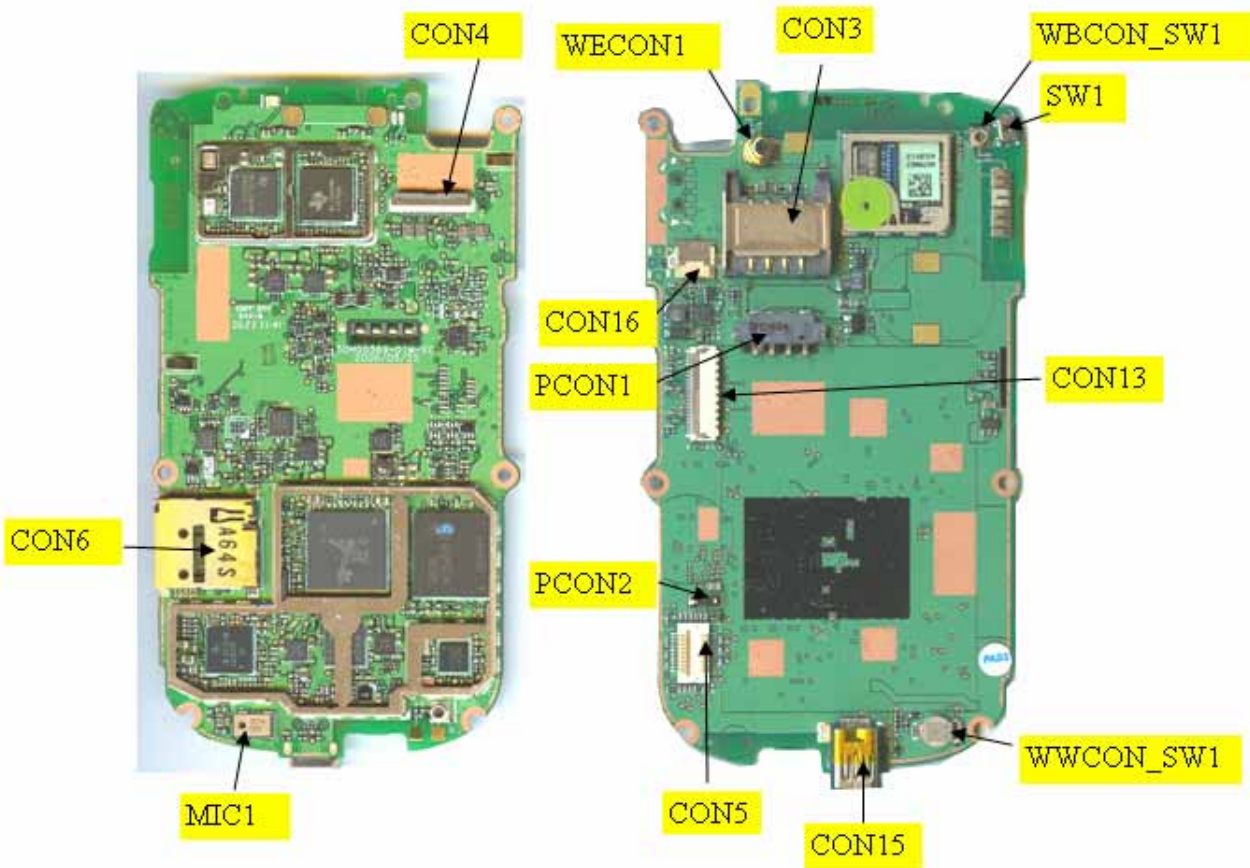
Item	HTC P/N	Description	Location	Using Q'ty
1	36H00208-00M	MIC,SP0103NB3-SB-3,EMKAY,Pb-FREE,100/-40degC,6.15*3.76*1.45 mm	MIC1	1
2	36H00230-00M	SWITCH,SOH-213HST,MITSUMI,70/-20degC	SW1	1
3	75H00248-00M	COAXIAL CONNECTOR,RF,WITH SWITCH,SMD,MM8430-2600RA1,MURATA	WBCON_SW1 WWCON_SW1	2
4	75H00276-00P	Connector RF,5.8*5.4*3.9,Female,MS-147(06),4pin,HRS	WECON1	1
5	75H00360-00M	Connector B to B,Female,24P,0.5 Pitch,AXK5F24345Y,9*5.8*1.35	CON5	1
6	75H00465-10M	Connector I/O,Reverse,11P,0.4pitch,302-11101-01,ACT,Vera	CON15	1
7	75H00502-00M	Connector FPC,39P,0.3Pitch,0.2A,50V,50mohm,SD-54393-3981,MOLEX	CON13	1
8	75H00519-00M	Connector Device,4P,2.5Pitch,2A,BA100-0000-059,WINCONN,battery	PCON1	1
9	75H00560-00M	Connector SIM Card,8P,2.54Pitch,ICC-437_H4.5mm,HAMBURG,Excalibur	CON3	1
10	75H00561-00M	Connector FPC,22P,0.5Pitch,FH19SC-22S-0.5SH-05,HIROSE,Excalibur	CON4	1
11	75H00562-00M	Connector FPC,6P,0.5Pitch,FH12-6S-0.5SH-55,Touch sensor,HIROSE,Excalibur	CON16	1
12	75H00563-00M	Connector SD Card,15P,0.8Pitch,0.5A,3.6V,SCHA2B0301,ALPS	CON6	1
13	75H12002-00P	CONNECTOR-F,SMD,1.27mm,2P,8005-002-000-867,ELCO	PCON2	1

11. Leakage current measurement

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

(1) Requirement：

- Power Supply

- Micro-current Meter

- Current series JIG

- CABLE

- Battery JIG

	1.Equipment need: A. Power Supply (set at 4 V). B. Micro-Current Meter (support 0.5mA ~ 2A).
	2. Fixture needed C. Current series jig.(with black and red cable) D. Cable E. Battery with extension cable
	3. Connect cable (D) to positive polarity of power supply (A) and current meter (B)
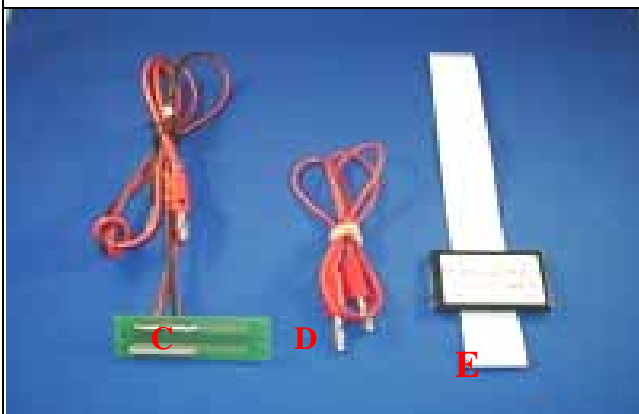
4. Connect cable of fixture(C) to negative polarity of power supply (A) and current meter (B)
Note : black cable to power supply (A) and red cable to current meter (B)

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

6. Turn on power supply (4V) and current meter (2A)
Set the unit to :
* Flight mode
* Turn on 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 5 mA, if over, it means M/B failed, please replace M/B for repair.
	8. Switch OFF the unit. 9. Measure power off current Check current value on the current meter, Current value must under 0.3 mA, if over, it means M/B failed, please replace M/B for repair.

<div align="center">

Conclusion:

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

</div>

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	Under 5mA	MB is good
	Over 5mA	Fail, MB need to be further repaired
POWER OFF	Under 0.3 mA	MB is good
	Over 0.3 mA	Fail, MB need to be further repaired

12. RF Antenna test spec and criteria

Items	Test Name	TxLevel	TCH	1st 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	42	-104	
5	Fast Bit Error Rate	5	124	-104	
	E-GSM 900 Ttansmitter Test				
6	TX Phase RMS Error	5	975	-104	
7	TX Phase Peak Error	5	975	-104	
8	TX Frequency Error	5	975	-104	
9	TX Phase RMS Error	5	42	-104	
10	TX Phase Peak Error	5	42	-104	
11	TX Frequency Error	5	42	-104	
12	TX Phase RMS Error	5	124	-104	
13	TX Phase Peak Error	5	124	-104	
14	TX Frequency Error	5	124	-104	
15	Check TX Power	5	975	-104	
16	Check TX Power	5	42	-104	
17	Check TX Power	5	124	-104	

	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	885	-104	
	DCS 1800 Ttansmitter Test				
4	TX Phase RMS Error	0	512	-104	
5	TX Phase Peak Error	0	512	-104	
6	TX Frequency Error	0	512	-104	
7	TX Phase RMS Error	0	698	-104	
8	TX Phase Peak Error	0	698	-104	
9	TX Frequency Error	0	698	-104	
10	TX Phase RMS Error	0	885	-104	
11	TX Phase Peak Error	0	885	-104	
12	TX Frequency Error	0	885	-104	
13	Check TX Power	0	512	-104	

14	Check TX Power	0	698	-104	
15	Check TX Power	0	885	-104	

PCS 1900 ReceiverTest					
1	Fast Bit Error Rate	0	512	-104	
2	Fast Bit Error Rate	0	661	-104	
3	Fast Bit Error Rate	0	810	-104	
PCS 1900 Ttansmitter Test					
4	TX Phase RMS Error	0	512	-104	
5	TX Phase Peak Error	0	512	-104	
6	TX Frequency Error	0	512	-104	
7	TX Phase RMS Error	0	661	-104	
8	TX Phase Peak Error	0	661	-104	
9	TX Frequency Error	0	661	-104	
10	TX Phase RMS Error	0	810	-104	
11	TX Phase Peak Error	0	810	-104	
12	TX Frequency Error	0	810	-104	
13	Check TX Power	0	512	-104	
14	Check TX Power	0	661	-104	
15	Check TX Power	0	810	-104	

GSM 850 ReceiverTest					
1	Fast Bit Error Rate	5	128	-104	
2	Fast Bit Error Rate	5	189	-104	
3	Fast Bit Error Rate	5	251	-104	
GSM 850 Ttansmitter Test					
4	TX Phase RMS Error	5	128	-104	
5	TX Phase Peak Error	5	128	-104	
6	TX Frequency Error	5	128	-104	
7	TX Phase RMS Error	5	189	-104	
8	TX Phase Peak Error	5	189	-104	
9	TX Frequency Error	5	189	-104	
10	TX Phase RMS Error	5	251	-104	
11	TX Phase Peak Error	5	251	-104	
12	TX Frequency Error	5	251	-104	
13	Check TX Power	5	128	-104	
14	Check TX Power	5	189	-104	
15	Check TX Power	5	251	-104	