Technical Service Manual for Service Center

glofiish® DX900

Rev 1.0

November 14, 2008

ETEN Information System Corp.

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INTRODUCTION

This manual provides technical information necessary to maintain and support repair service of Pocket PC Phone glofiish® DX900. Information contained in this document is copyrighted by E-TEN Information Systems Co., Ltd. It is intended for use of E-TEN's authorized service providers and clients. Service technicians may reproduce this document as needed for repair uses only. Reproduction for any other activities may be illegal to copy certain materials without permission, including documents and images. If you are not sure whether you have permission, seek legal advice.

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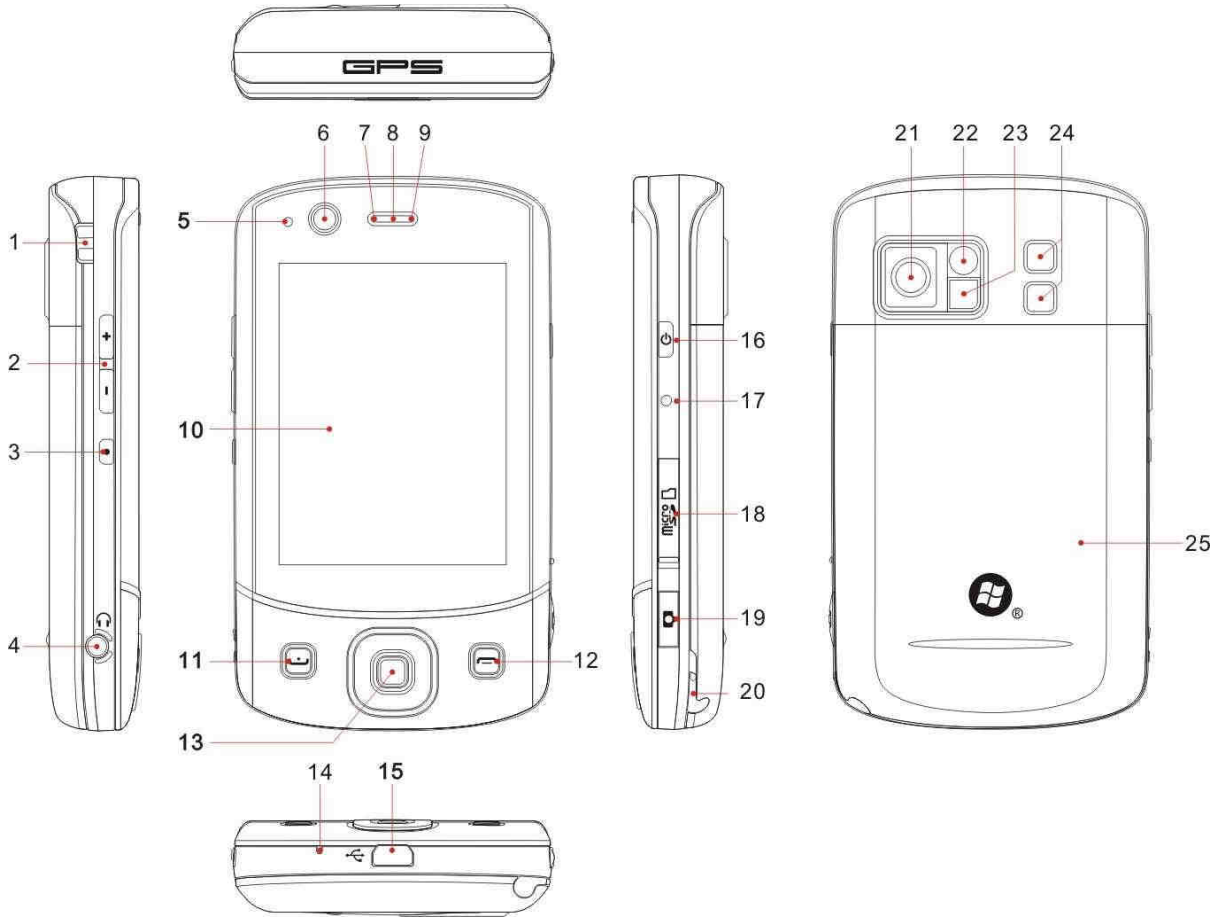
CHAPTER 1. PRODUCT SPECIFICATION

1.1 Product Specification

Operating System	Windows Mobile™ 6.1 Professional (Pocket PC Phone Edition)
Processor	Samsung S3C 6400, 533MHz
Memory	128MB SDRAM, 256MB Flash ROM
Display	2.8" VGA, 65,536 colors TFT LCD with touch window (Resolution：480 x 640)
Dimensions	106 (L) x 60.5 (W) x 17 (H) mm
Weight	147 g (with battery & stylus)
Communications (Dual Modules)	(1) 3.5G HSDPA / UMTS: 2100/1900/850 MHz GSM Quad Band: 850/900/1800/1900 MHz GPRS/EGPRS Class B, Multi-slot Class 10 (2) 2.75G GSM Tri-Band: 900/1800/1900 MHz GPRS/EGPRS Class B, Multi-slot Class 10
GPS	Built-in, SiRF Star III
WLAN	WiFi IEEE 802.11b/g
Bluetooth	Bluetooth v2.0, Class 2 + EDR
Camera	3.0 Mega pixels auto-focus with LED flashlight, up to 2048x1536 resolution 0.3 Mega pixels fixed-focus camera for video call used
Light Sensor	To senses ambient light and support lower power consumption.
Gravity Sensor	To senses tilt, motion, with friendly interface.
Expansibility	Micro-SD Card Slot
Interface/ Audio	Built-in microphone, speaker, receiver and external stereo headset jack.
Interface/ Data	Mini USB 2.0 Sync
Battery	Rechargeable Li-ion Polymer Battery, 1,530 mAh
Power	DC Adaptor, 5V 1A
Certificate	CE / R&TTE / FCC/ NCC / GOST-R / BQB / WiFi / USB-IF / NSTL-LTK

1.2 Overview

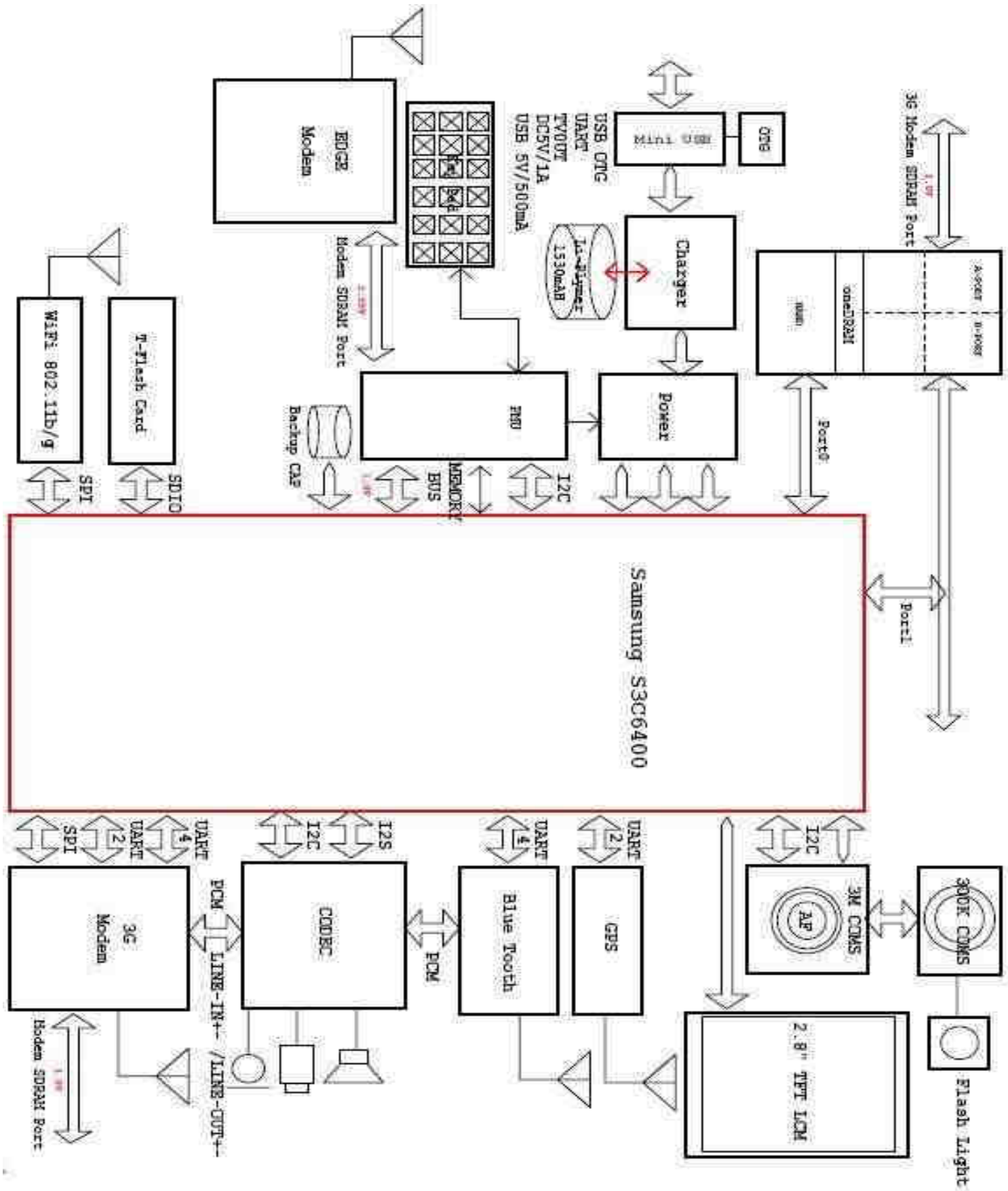


1	Lanyard	10	LCD/Touch Window	19	Camera Shutter Key
2	Volume Control Key	11	Send / Hang On	20	Stylus
3	Recorder Key	12	End / Hang IUp	21	3M Camera Lens
4	Headset Jack	13	Navigation Key	22	Mirror
5	Light Sensor	14	Microphone	23	Flashlight LED
6	VGA Camera Lens	15	Mini-USB Connector	24	Speaker Hole
7	Power/Phone LED Indicator	16	Power Key	25	Battery Cover
8	Receiver	17	Reset Key		
9	WiFi/Bluetooth/GPS LED Indicator	18	Micro SD Slot		

1.1.1 CHAPTER 2. TOOLING FOR REPAIR

Item	Purpose
Cleaning Wipers T5 Screwdriver Tweezers Plastic Stick	Disassembly & Assembly
Blower Soft Brush	Camera cens / Touch lens clean
Mini USB Cable	Synchronization test to PC
Micro SD Card	SD Read / Write test
Headset	Headset Audio / Recording / FM test
AC Adapter Battery	Main battery charging
Software Upgrade tools	Software upgrade (EUU, ActiveSync)
Test program (2577)	Power consumption test program
Dummy Battery	Power consumption test
GSM SIM Card Bluetooth Headset	Phone function live test
Barcode Label Printer	IMEI label printing (300 dpi or above)
Clear Bench or Clean Box / HEPA Class 10,000	Prevent particle stuck between LCD and touch lens while assembly.

CHAPTER 3. BLOCK DIAGRAM



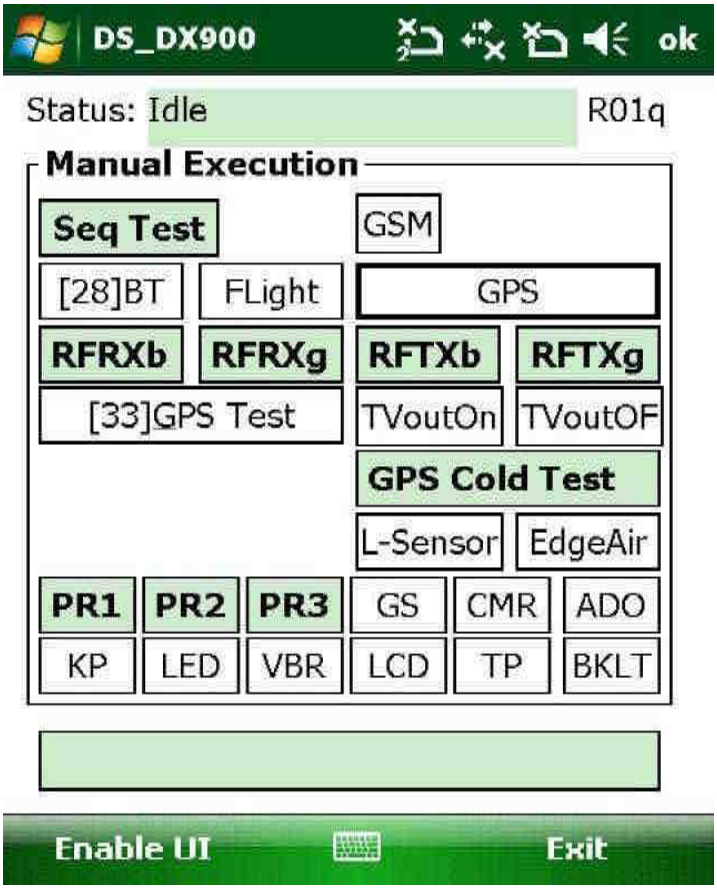
CHAPTER 4. MODE SWITCHING

Function	Procedure
Soft-Reset	1. Press and hold POWER button. 2. Press RESET button and release both (power & reset) buttons at the same time.
Download Mode	1. Press and hold RECORD button immediately after doing a soft-reset. 2. Release RECORD button after the USBDL screen shows up on the screen.
Clean-boot Option	1. Perform once soft-reset, device reboot. 2. Press and hold RECORD button after logo screen appears. 3. When the message “Erase all data and load default?” “Yes [press Camera button]” pop-up, press camera button immediately to perform clean-boot.

CHAPTER 5. DIAGNOSTICS

5.1 Function Test Under “DebugSwitcher” Program

Install “DX900 DebugSwitcher” program to the phone for function test. The screen of DebugSwitcher program is shown as below.



NOTE. Always tap the up-right corner [ok] to exit when finished.

Item	Description	Procedure / Criteria
TV Out	TV Out test	Plug in TV Out cable. Tap “TVoutOn” to test if phone screen output to TV screen. Tap “TVoutOF” to close it.
KP	Keypad test	Follow the instruction in “Message” box and press the corresponding buttons in order. *Tap up-right corner to exit if passed all pad test*
L-Sensor	L-Sensor test	Put phone under the light source (or lamp) and tap “Start”. After hearing sound, put the phone into dark place. When sound finishes, check if the result is PASS. *Tap up-right corner to exit*
TP	Touch Panel test	Take stylus to draw few lines slowly around the screen rims and center. Breaking lines or screen un-alignment is not allowed. *Tap up-right corner then tap “Pass” or “Fail” to exit*
ADO	Audio test	1. Tap “SPK Recording” icon and talk to microphone for 1~2 seconds. The voice will reply the recorded sound automatically or tap “SPK Playing” to reply the sound. 2. Tap “ReceiverTest”. After hearing a tone by phone generated, tap “stop Receiver” 3. Plug in headset. The “headset iron” on screen should switch to red color. Then press Answer Key on headset to check if the circle icon appears on screen. *Tap up-right corner to exit*
LCD	LCD color test	Tap screen repeatedly. Check colors if normal or any defective pixels on it.
BKLT	LCD backlight test	Tap “Backlight ON/Off” and tap “UP/DOWN” to test backlight. *Tap up-right corner to exit*
LED	LED indication test	Tap “ALL ON” then “ALL OFF” to check all LED’s colors if active. *Tap up-right corner to exit*
VBR	Vibration test	Select “VBR On then Off” to check if device is vibrating. *Tap up-right corner to exit*
FLight	FlashLight test	Select “FlashLight On then Off” to test FlashLight. *Tap up-right corner to exit*
GS	Gsensor test	Follow the instruction in “Message” box and press the corresponding buttons in order. *Tap up-right corner to exit if passed all pad test*
CMR	Built-in camera access test	Tap “CMR” to check the screen comes with live video by 3Mega camera. Then press “Camera button” to switch the screen to another live video by VGA camera. Press “Camera button” again to close the test.

5.2 Function Test Under OS

Testing Item	Procedures	Guidelines
Phone Live Test	Test phone dial and receive function 1. Device over device to testing 2. Use wired Headset to answer call 3. Use Bluetooth headset to answer call	Check Dial/Answer the phone call's voice is clear enough.
USB connection	Synchronize PDA with PC	Connected USB to check PDA can be communicate with PC's ActiveSync.
Camera with Micro SD card Read/Write Test	Snap shot a photo then delete it. Save the file in Micro SD card.	1. Check Camera function and photo appear normal. 2. Check read, write & delete the storage file by Micro SD card.
WiFi Test	1. Enable Wireless 2. Execute Internet Explore to check if the Wireless LAN works well	Must be able to open a website
	Note: Problems regarding to Firewall and set Proxy, please contact your IT specialists	
GPS Test	1. Execute the application as GPS Viewer 2. Check the contents of application	Satellite searching status 1. No time limitation 2. Fix: 3D Fixed
Power Consumption Test	1. Turn off power button, check SI 2. Insert SD card (with program "2577") to device. Then execute the program under OS 3. Select Backlight ON/OFF to test TI. 4. Finally, select Clean Boot to reboot. Once windows welcome appears, turn off power then remove dummy battery. Tool: 1. Dummy battery 2. Power consumption program (2577) 3. Power supply 4. Micro SD card	SI: current □12mA TI: Backlight ON (GSM/BT/WLAN/GPS ALL OFF) current □180mA TI: Backlight OFF (GSM/BT/WLAN/GPS ALL OFF) current □100mA

CHAPTER 6. DISASSEMBLY

	P/N
A	B
C	D
E	F

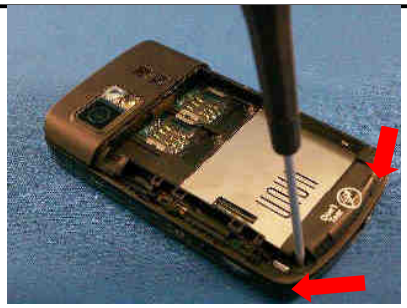
Ref. Illustration Sequences

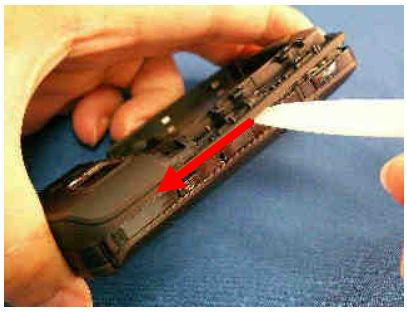
Main Unit → Stylus, Battery Cover & Battery, SIM Card (if has)	Stylus 40011960 Battery Cover 40011950 Battery 49005800

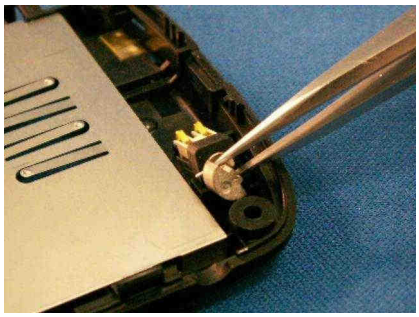
A. Pull out the Stylus.
B. Remove Battery-cover from the unit, bottom side go first.
C. Tear up the strap of battery then remove battery from the unit.
D. Finish.

Main Unit → Rear Cover → Vibrator

Screw (2pcs)：44001330
Rear Cover：64042060
Vibrator：49005260





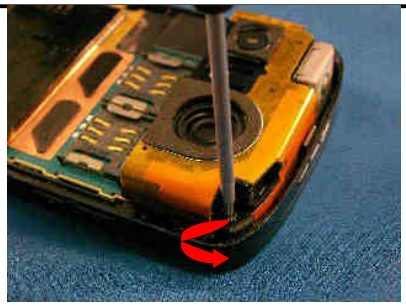
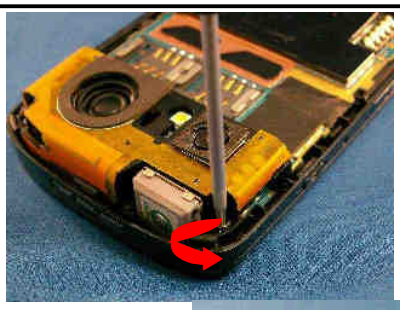



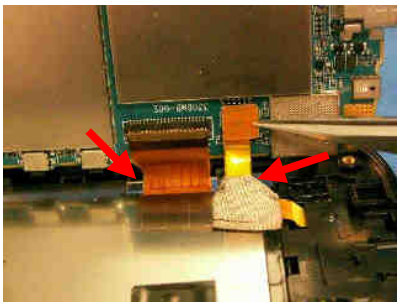
A. Unscrew two M1.6x4 screws located on bottom side by T5 screwdriver.
B. Use plastic-stick to poke a bit near the USB connector, lift it up with a little strength.
C. Unfasten all hooks then remove rear cover.
D. Remove vibrator from rear cover by using tweezers.
E. Finish.

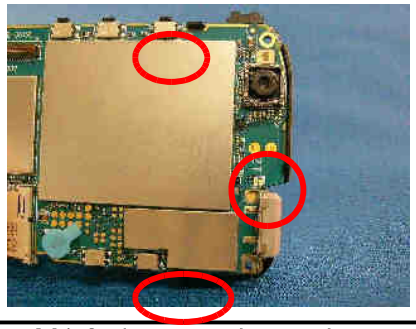
Caution!! The surface of the Cover may easily been cut or get injury, keep alert if use any sharp tools.

Main Unit → M/B → Antenna Cover

Screw (2pcs)：44001330
M/B：64042040
Antenna Cover：64042070





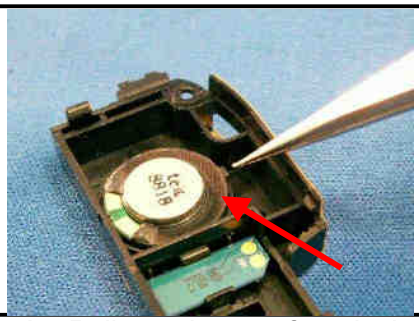
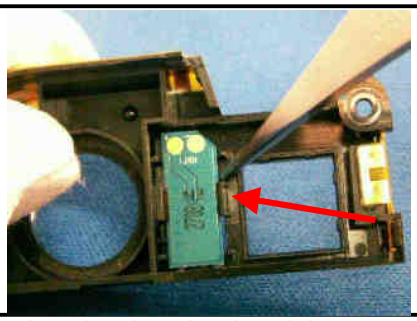
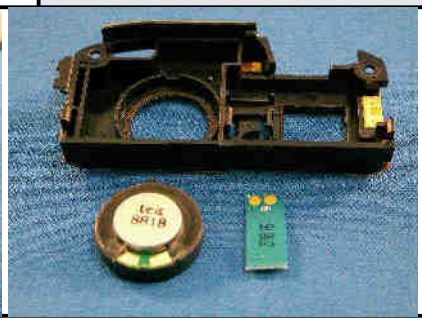

A. Unscrew two M1.6x4 screws located on topside by T5 screwdriver.
B. Gently unfasten M/B from power button side then hold MB at 60 degrees angle with LCD.
C. Use tweezers to release LCD and keypad FPC cables then remove M/B.
D. Unfasten the hooks of antenna cover at three edges on top of M/B.
E. Separate antenna cover and M/B.
F. Finish.

Watch pogo-pins around the corner while removing the antenna cover.

WARNING. Do not insert plastic-stick into Micro-SD slot.

Antenna Cover → Speaker, Flash LED board

Speaker 49005290
Flash LED board 67006970

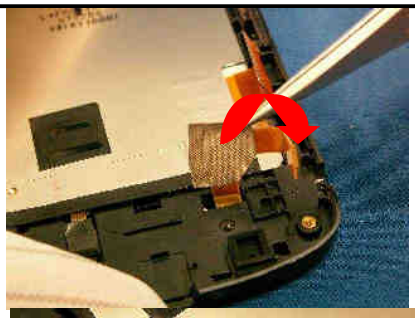
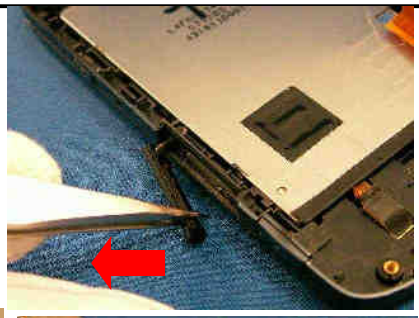
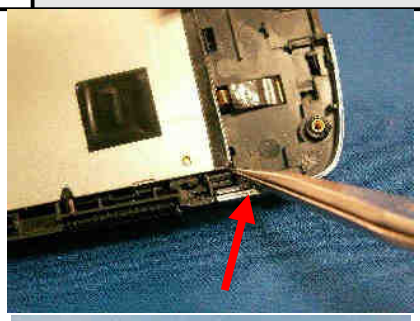
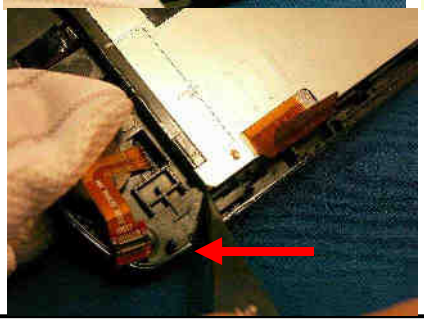
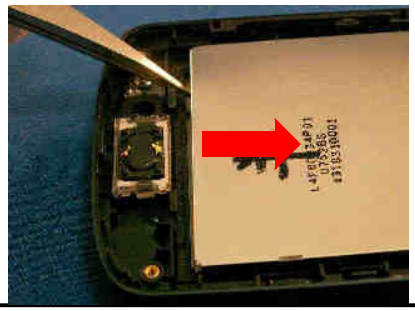




A. Pull speaker out from its beetle edge by plastic-stick.
B. Gently pull the hooks that held on Flash LED board. Once it has gap between hooks and board, take out Flash LED board carefully by using tweezers.
C. Finish.

Note. Hooks on Flash LED board might be cracked if pull it roughly.

Front Cover → LCD

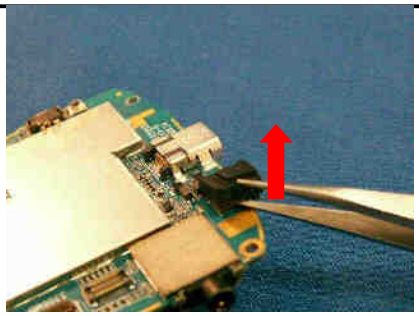
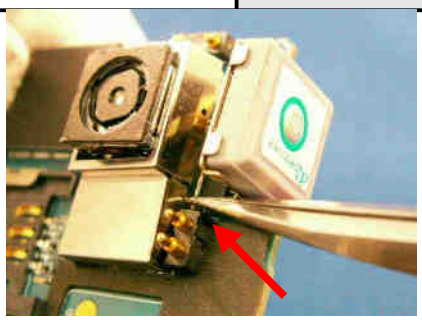
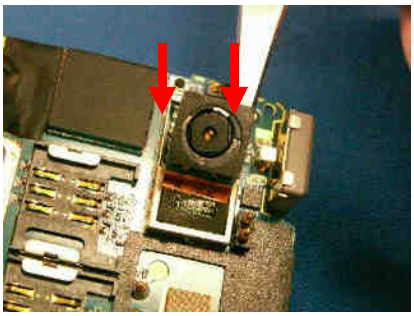
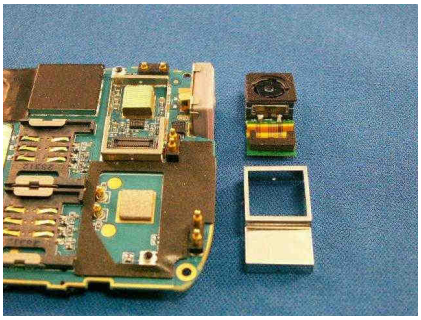
LCD Ass'y 64042080
Front Cover 64042050
Gasket 33002330


A. Tear the gasket from LCD then remove SD cover.
B. Insert tweezers into two corners on bottom side of LCD then pull it up as 20 degrees angle.
C. Gently push LCD topside to bottom side by using tweezers.
D. After LCD topside released from two hooks on front cover, remove LCD.
E. Finish.

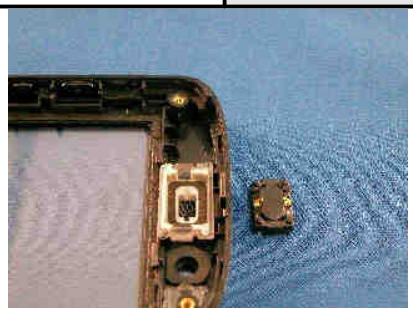
Note. Move or pass the LCM with care, it can be damaged by dropped, or by indiscreet disassembly.

M/B → MIC Cap, Camera Shielding & 3M Camera	MIC Cap 43001200 Camera shielding 41003240 3M Camera 03040290

A. Peel off the MIC cap from M/B.
B. Gently poke a lifting spot along the edge of shielding by using Tweezers.
C. Balance the strength to both sides of shielding when picking up.
D. Remove camera module from its socket on M/B.
E. Finish.

Front Cover → Receiver	Receiver 49005280

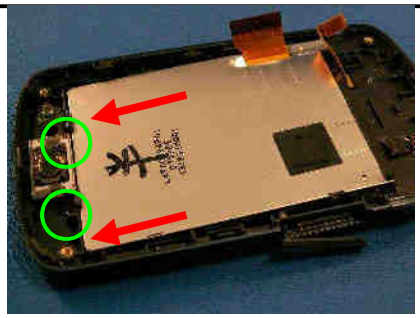
A. Remove receiver by using tweezers.
Finish.

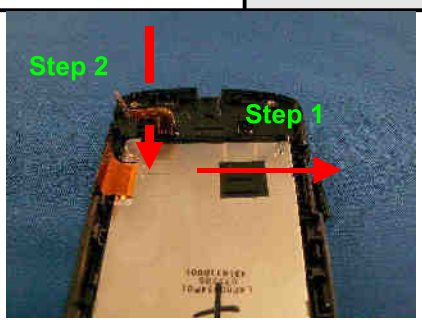
CHAPTER 7. ASSEMBLY

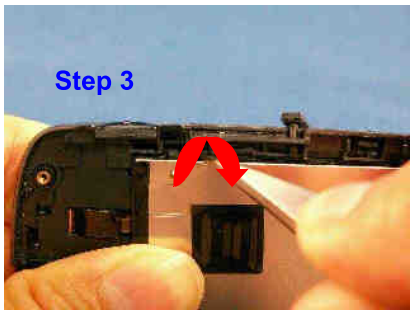
Receiver → Front Cover	Receiver：49005280 Front Cover：64042050

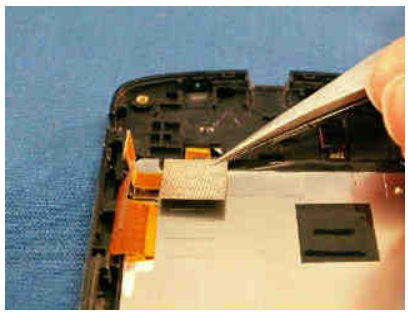
Place receiver to front cover by using tweezers.

LCD → Front Cover	LCD Ass'y：64042080 Gasket：33002330









A. Clean LCD and front cover in clean bench/box first.

B. Take LCD and push it forward to topside of front cover. Fix LCD topside at two hooks.

C. Install bottom side of LCD

Step 1：Push bottom edge of LCD to right side and hold it.

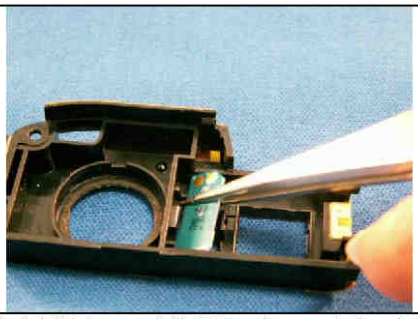
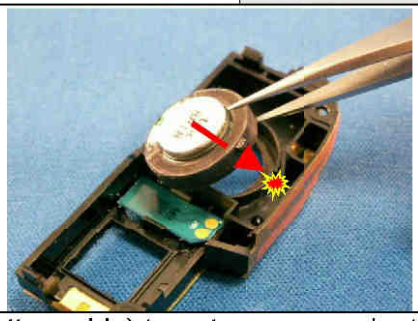
Step 2：Push downward the corner of LCD then fix it at the hook.

Step 3：Insert tweezers between LCD and front cover (right side of hook) then pull downward to let LCD fix at hook.

D. Stick gasket to keypad FPC cable behind LCD (need to change new gasket if LCD exchange).

Note. Slide the LCD with care. Indiscreet assembly could damage LCD.

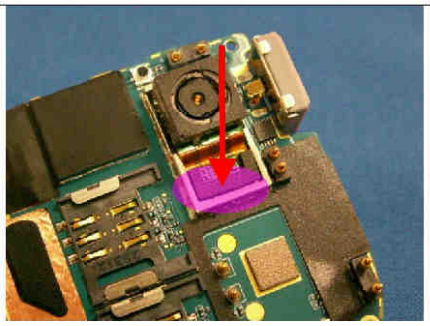
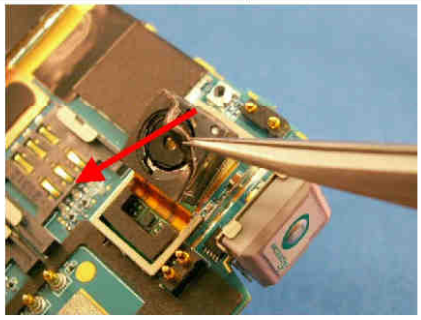
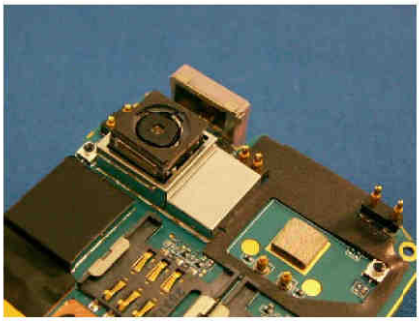
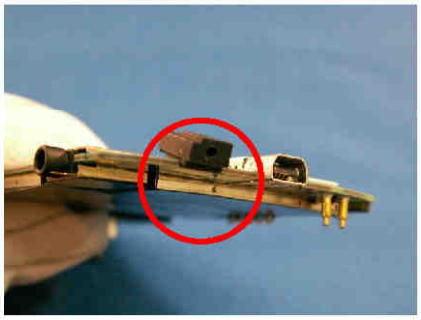
Speaker, Flash LED board → Antenna cover	Flash LED board□67006970 Speaker□49005290

A. Place Flash LED board (LED aims at the bottom side) to antenna cover by tweezers.
B. Beetle edge of speaker should aim at the indentation then place speaker on antenna cover by using tweezers.

Note. Hooks on Flash LED board might be cracked if pull it roughly.

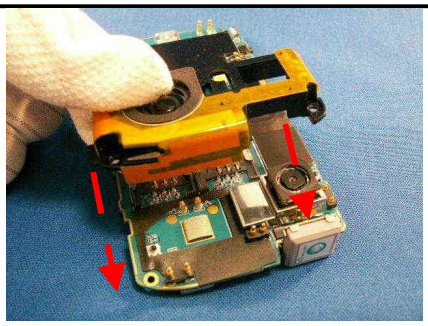
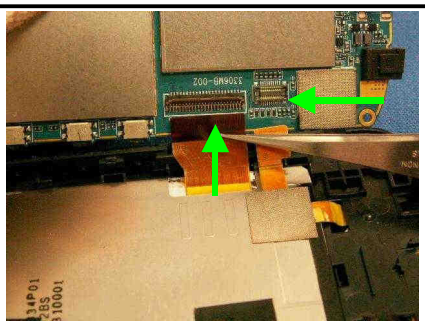
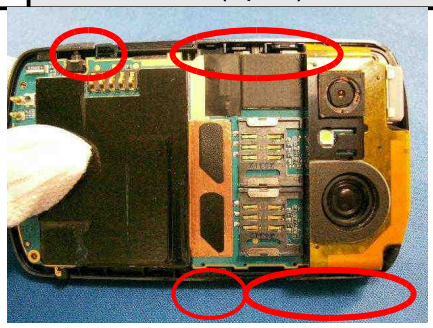
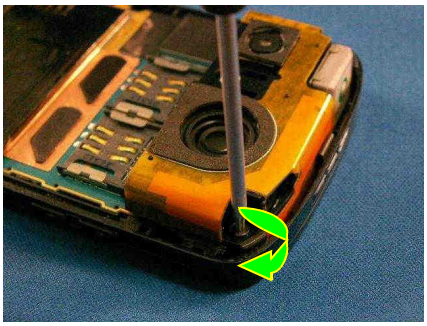
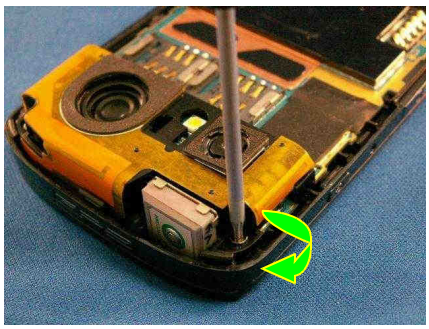
MIC Cap, 3M Camera, Camera shielding, Sponge_ Camera → M/B	MIC Cap□43001200 Sponge_Camera□ 58000970Camera shielding□ 41003240 3M Camera□03040290

A. Place camera module. Aim its connector to the socket on M/B.
B. Stick new sponge if camera exchange.
C. Place camera shielding the frame. Checking if it mounts well around the frame edge.
D. Put on the MIC cap to its body on the M/B.

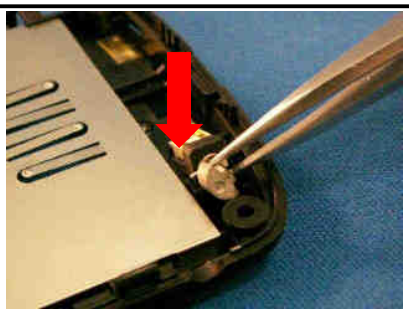
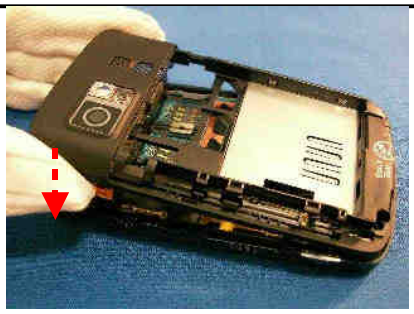
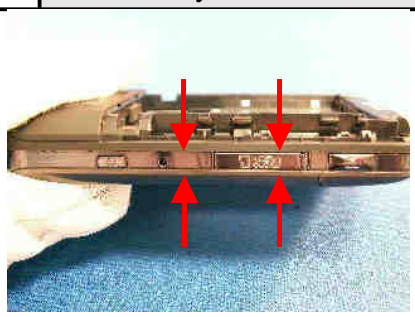
Antenna Cover → M/B → Front Cover

Antenna Cover：64042070
M/B：64042040
Screw (2pcs)：44001330

A. Install antenna cover on M/B. Watch the pogo pins while installation.
B. Insert LCD FPC cable to its connector on MB. Then attach keypad FPC connector to its socket on M/B.
C. Place M/B on front cover. Before fixing two screws, check all buttons (red circles in above photo) on front cover are not getting stuck.
D. Fixing two T5 screws on MB topside.

Vibrator → Rear Cover → Front Cover	Vibrator 49005260 Rear Cover 64042060 Screw (2pcs) 44001330 Warranty Sticker 53005560

A. Install vibrator into rear cover.
B. Place rear cover on front cover. Gently push the covers to fix them together. Both covers should close without any gaps.
C. Fix two T5 screws.
D. Stick warranty sticker on the screw that at stylus side.

Stylus, Battery Cover & Battery → Main Unit	Stylus：40011960 Battery Cover：40011950 Battery：49005800




A. Install battery into PDA.
B. Attach battery cover on PDA.
C. Insert stylus back to PDA.
D. Turn power on. Test all functions as chapter 5 before return device back.
E. Finish.

CHAPTER 8. SPARE PARTS LIST

8.1 Spare Parts For Repair

E-TEN P/N	Description	Usage Q'ty	Picture
03040290	Camera_3M, DX900	1	
33002330	Gasket_Phone Jack, DX900	1	
40011950	Battery Cover, DX900	1	
41003240	Shield CMOS, DX900	1	
43001200	MIC cap, DX900	1	

E-TEN P/N	Description	Usage Q'ty	Picture
44001330	Screw, M1.6*4_T5, DX900	4	
49005260	Vibrator, DX900	1	
49005280	Receiver, DX900	1	
49005290	Speaker, DX900	1	
53007060	Regulation Label_WWE, DX900	1	
58000970	Sponge_Camera, DX900	1	

E-TEN P/N	Description	Usage Q'ty	Picture
64042040	MB Assy, DX900	1	
64042050	Front Cover Assy, DX900	1	
64042060	Rear Cover Assy, DX900	1	
64042070	Antenna Cover Assy, DX900	1	
64042080	LCD Assy, DX900	1	
67006970	Flash board, DX900	1	

8.2 Accessory List

E-TEN P/N	Description	Picture
31301040	USB cable	
40011960	Stylus, DX900	
47000510	Pouch, DX900	
49003940	AC Plug-US	
49004260	AC Plug-AU	

E-TEN P/N	Description	Picture
49005040	AC Adapter	
49005410	Headset	
49005800	Battery	
49090020	AC Plug-EU	
49090030	AC Plug-UK	

CHAPTER 9. SOFTWARE UPGRADE

9.1 System Requirement

- Microsoft® Windows XP or above
- Latest version of EUU (End-user Upgrade Utility / EUU_xxx.exe) or Bin files for DX900
- Latest version of ActiveSync v4.5 or above
- Tool: USB Cable

Note: E-ten releases both EUU and Bin file for an authorized Service Center. Distributors and local service agent shall only receive EUU software.

9.2 Software Upgrade Steps

- **Via BIN (For service center only)**

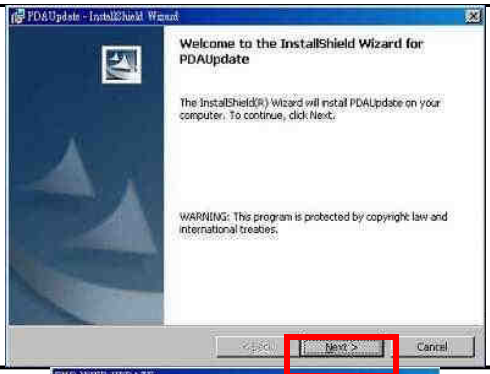
1. Save the bin file in Micro SD card
2. Insert the Micro SD card into the device
3. Press the device into DOWNLOAD mode (refer to Chapter 4)
4. The device will be upgrading the file automatically

- **Via EUU (For distributor or service center)**

1. Execute ActiveSync
2. Connect with PC
3. Execute EUU_xxx.exe
4. Follow the UI's instruction (refer to next page)

9.3 Procedure of EUU

a.



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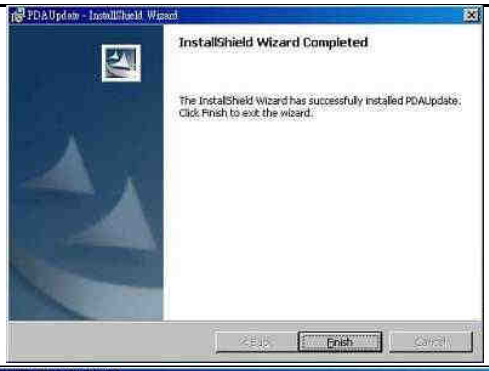

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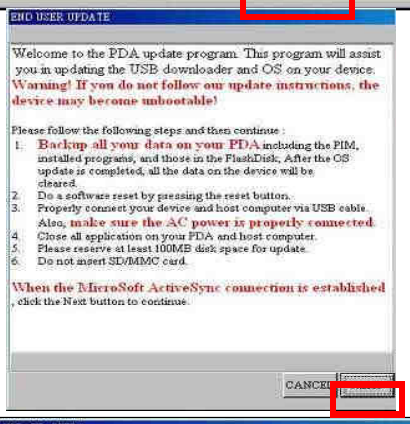

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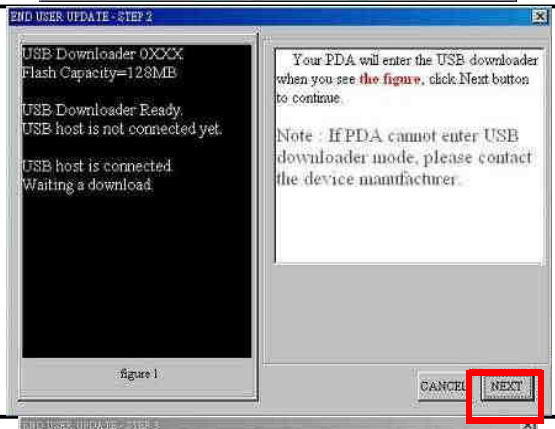

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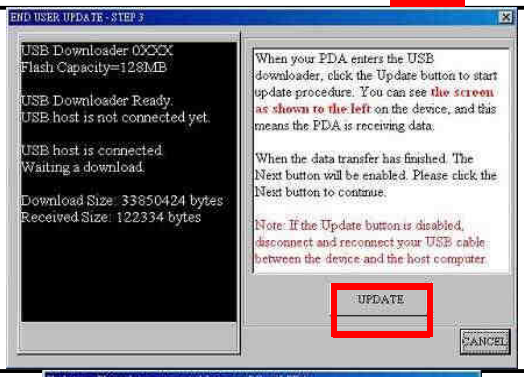

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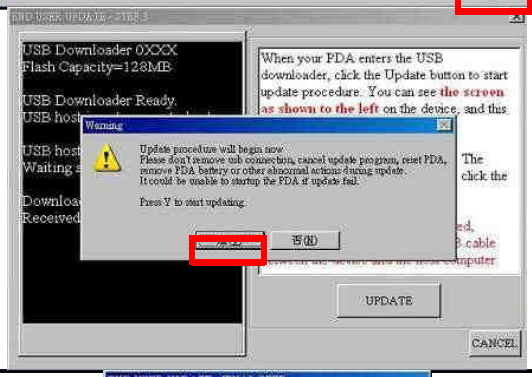
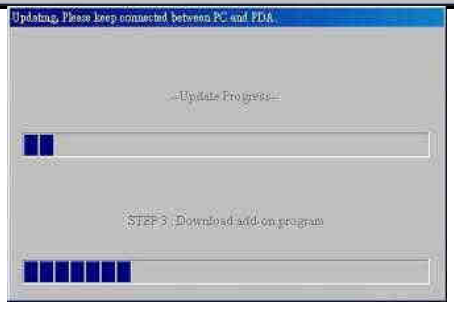
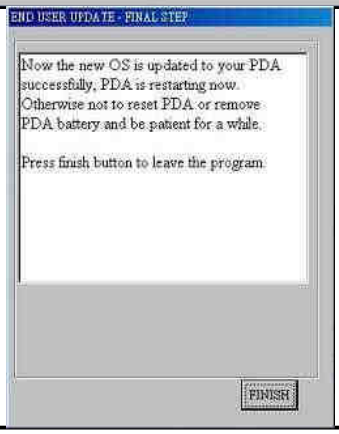


g.



h.



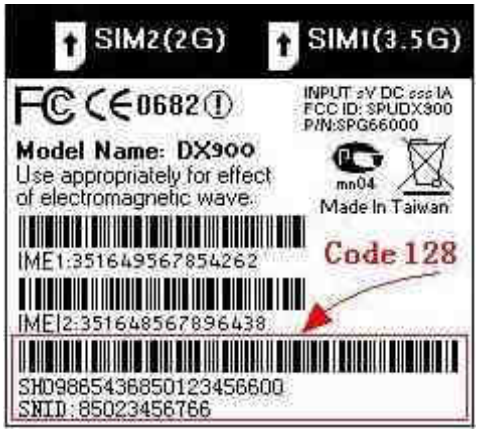
CHAPTER 10. DEFINITION OF SERIAL NUMBER

S/N SPG620xx00YWWSSSSSMMVV

Handset Label Serial Number consists of 22 codes as following format:

SPG620xx00	Y	WW	SSSSS	MM	VV
Model Code	Manufacturing Code		Serial number	Manufacturer Code	Language Code
DX900	Year	Week	5 unique hexadecimal code (0~9, A~F)		

Sample



Year	0=2000 1=2001 2=2002 3=2003 4=2004 5=2005 6=2006 7=2007 8=2008 9=2009
Week	01 = WW 1 02 = WW 2 03 = WW 3 04 = WW 4 05 = WW 5 … 52 = WW52

CHAPTER 11. INSPECTION CRITERIA (LCM)

Defective Pixels on LCM

Service technicians must test by the LCD color test in the build-in diagnostic program.
The maximum of allowable defective dot is Three (3) for criteria 1 and 2.

Criteria 1 **:** If service technicians see more than 3 bright dots under the black screen, it means changing LCM is required

Criteria 2 **:** If service technicians see more than 3 black dots under the bright screen, it means changing LCM is required

Criteria 3 **:** If service technicians see 2 or more dots are connected to each other under either black or bright screen, it means changing LCM is required

ANNEX. REVISION HISTORY

Date	Version	Update
Nov. 14, 2008	1.0	First Edition by Amei Huang & James Kao