NP700G7C

700G7C

SERVICE MANUAL

70G7C

Contents

1. Precaution
2. Introduction
3. Desassembly and Reassembly
4. Trouble shooting
5. System Wire Diagram

Refer to the service manual in the GSPN (see the rear cover) for more information.

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1. Precaution

1.1. General After-Sales Service Precautions

1) Do not let customers repair the product themselves..

   › There is a danger of injury and the product life time may be shortened.

2) Make sure to disconnect the power cord from the wall outlet before repairing the product (especially for after-sales service of electric parts).

   › There is a danger of electric shock.

3) Do not let customers plug several electric home appliances into a single wall outlet at the same time.

   › There is a danger of fire due to overheating.

4) Check if the power plug or wall outlet are damaged in any way.

   › If a defect is found, repair or replace it immediately.
   (There is a danger of electric shock or fire)

5) Make sure that it is properly grounded.
   (Check the ground of the wall outlet)

   › Electricity leakage may cause electric shock.

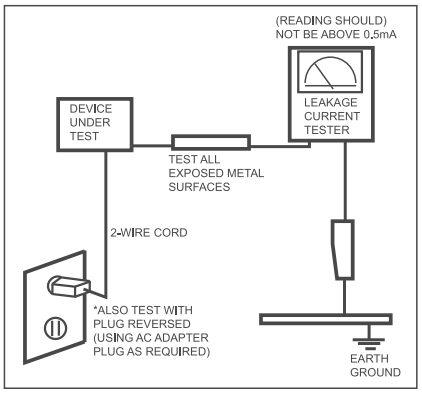

Figure 1.1 Leakage Current Test Circuit

6) Do not spray water on to the product to clean it.

   › There is a danger of electric shock or fire and it may shorten the lifetime of the product..

7) Check the assembly status of the product after the after-sales service..

   › The assembly status of the product must be the same as before the after-sales service.

8) Unplug the power cord holding the power plug (and not the cord).

   › If the cord is disconnected, it may cause electric shock or fire.

9) Repair the product using only authorized parts

10) Keep the product away from heating devices such as heaters.

   › Exposure to heaters may cause deformation of the product or fire.

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1.2. Safety Precautions

1) **EMI**

This device has been registered regarding EMI for residential use. It can be used in all areas.

2) **Circuit Test (Logic Test) Precautions**

The LSI and MSI used in this product are semiconductor integrated circuits based on MOS-FET or CMOS. Since these types of devices are highly susceptible to static electricity or current leakage, an isolation break may be caused. Therefore read and follow the instructions below.

a) When handling an LSI or MSI, make sure your body is grounded through a few mega-ohms of resistance. In addition, wear gloves and a jacket made of cotton and not of synthetic fibers that easily generate static electricity.

b) When repairing the product, place a conductive material (e.g. aluminum foil) grounded to the earth on the worktable.

c) You must use a soldering iron without a leakage current.

d) Do not touch the pin of an IC and carefully insert the IC into the black plastic package.

e) When inserting an IC into a PCB, be careful with the direction of the IC. When installing an IC in the wrong direction, it might become damaged.

f) When carrying an IC, package the IC with conducting material such as aluminum foil or conducting sponge so as to keep the voltage level of each of the terminals the same.

g) Since the storage temperature of an IC is between -20 ~ +70 degrees, keep it at room temperature, if possible.

h) Since the storage temperature of an IC is between -20 ~ +70 degrees, keep it at room temperature, if possible.

i) When soldering an IC, solder it in as short a time as possible so that unnecessary heat is not applied to the device.

j) Avoid leaving excessive amounts of flux within a custom IC or between the pins when soldering a custom IC.

k) Take care to not damage the board when installing or separating an Option Board.

l) Take care to not break the printed circuit pattern on the PCB when separate an IC.

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1.3. Ground

The product must be grounded to protect it from static electricity and other dangers. When using a multitap, please use a multi tap with a ground terminal only.

If you use a 220V wall outlet with a ground terminal, you do not need to ground it additionally. Avoid using wall outlets if they are not grounded even if they have a ground terminal.

To ground the product, connect the ground to an exclusive ground terminal or metal water pipe. Connect the ground cable to the ground terminal at the rear of the main body. To ground the product, connect the ground terminal of the product to a metal water pipe, wall outlet or exclusive ground terminal with an electric wire equal to or thicker than #18.

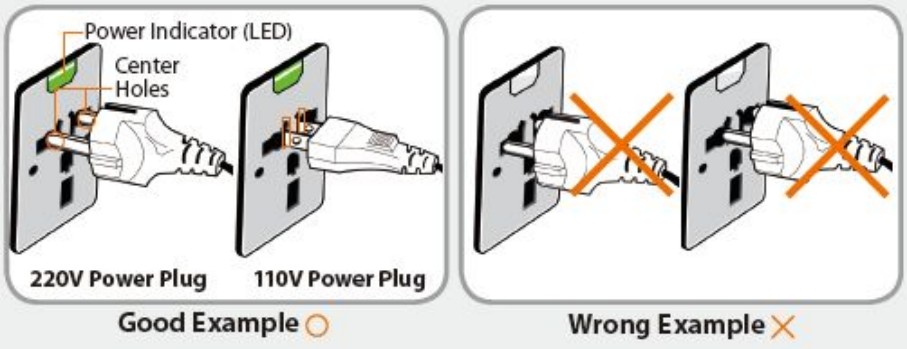
Never ground the product to a PVC water pipe, phone line, TV, radio antenna, aluminum window or gas pipe, because this does not actually ground the product and may be dangerous.

※ If the productis damaged by grounding unused : Paid service response

When using the AC power plug

Connect the power plug pins perpendicular into the center of the power outlet.

- If the plug pins are not inserted into the center of the holes, the plug pins are only inserted up to half their length. In this case, reconnect the power plug.
- You have to insert the power plug into the outlet when the power indicator (LED) of the power outlet is lit green. If the power is connected properly, the power indicator (LED) remains green.
  Otherwise, the power indicator (LED) is turned off. In this case, unplug the power, check if the power indicator (LED) is green, and then reconnect the power plug.



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1.4. Static Electricity Precautions

Many parts of the system are susceptible to static electricity. Using an electrostatic discharge (ESD) device is very important for the safety of the user and the user's surroundings. Using an ESD device increases the probability of a successful repair and lowers the expenses for damaged parts.

To prevent static electricity, follow the instructions below.

1) Perform the repair in a location without static electricity.
2) Touch your hands to a metal water pipe or some metal object connected to the ground to discharge any static Electricity from your body before handling the parts.
3) Touch only the edges of the board, if possible.
4) Do not touch any parts unless absolutely necessary
5) Disassemble the parts on the anti-static-electricity pad.
6) When a board is not installed in the system, package the board with an anti-static-electricity packaging.

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2. Introduction

2.1. Product Features

- **Gamers for PC**

- 20% performance compared to existing Gfx Upgrade!!
- Desire for Performance
-20s(46%), Students, Young Gamers

Smarter Tablet for Tech Trend Setters

Turbo Cooling Mode
- Control thermal by turbo cooling

Ultimate Gaming PC
- Can play any games with full Option.

Work
- Support Library Mode for silent use

Ultimate Gaming PC for Gamers

Powerful as Premium Gaming PC
- Core i7, Express Cache(8G), 16GB RAM(Max),

Support Turbo Gaming Mode
-When playing games, change a mode to Game Mode
(Touch pad off / Turbo cooling enable, ETC...)

Best Key board adopted
- D/T Like Arrow key / Backlit support / High Key stroke

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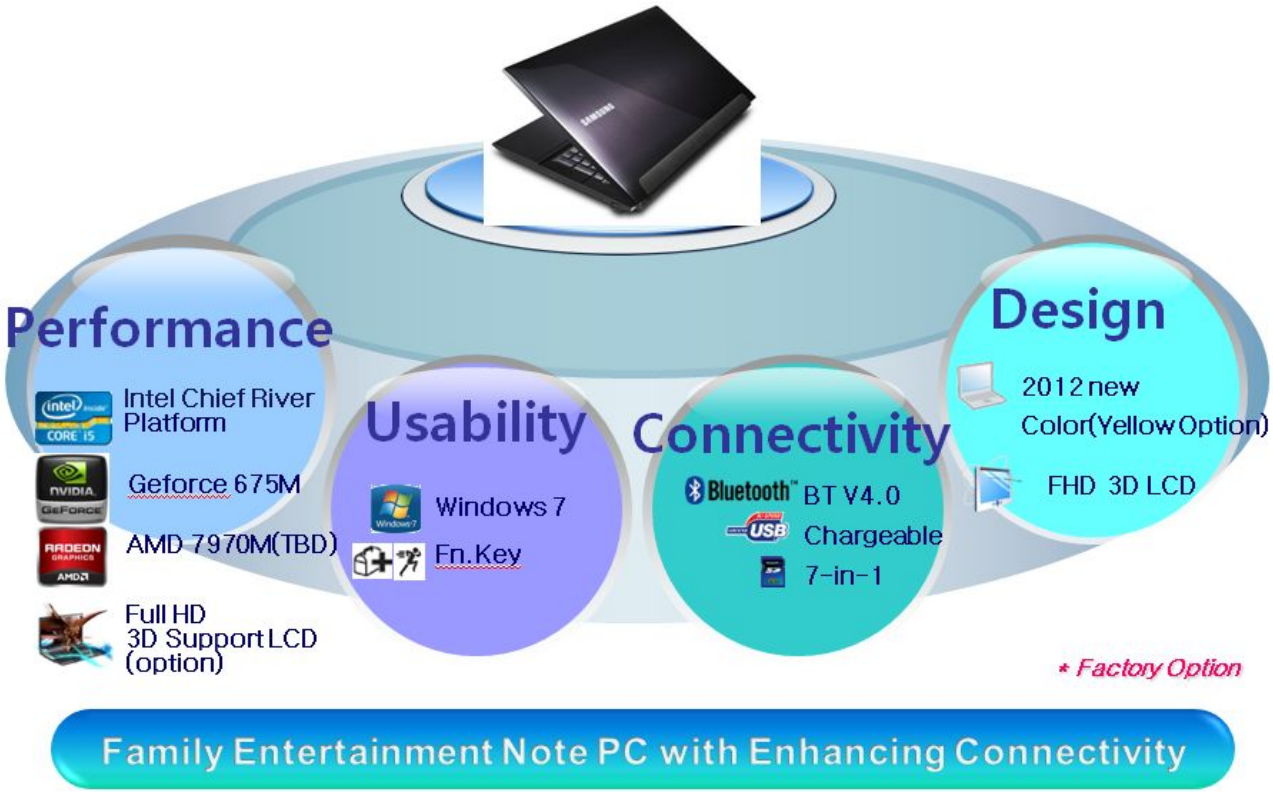

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2.2. Specification

Processor and Motherboard	
CPU* **(Upgrade Not, Use one kind of)**	Intel® Core™ i7 Processor 3610QM (2.30 GHz, 6 MB)
	Intel® Core™ i7 Processor 3720QM (2.60 GHz, 6 MB)
	Intel® Core™ i7 Processor 3820QM (2.70 GHz, 6 MB)
Socket	Socket G2(rPGA988B)
Manufacturing process	0.022 micron
Cache	L2 : 6MB
Intel Turbo Boost	i7-3610QM - Max 3.3Ghz
	i7-3720QM - Max 3.6Ghz
	i7-3610QM - Max 3.7Ghz
Chipset	Intel HM76
BIOS	64 Mbit SPI flash
Thermal Design Performance	MAX. 45W
Memory	
Memory* / Max. Memory**	MAX. 16GB (Max 4GB per SODIMM)
Memory type	PC3-12800(1600MHz) DDR3 SODIMM
	※ PC3-10600(1333Mhz) Memory reliability / compatibility verification is complete
Memory Modules	4 GB SODIMM 8 GB SODIMM 16 GB SODIMM
Sockets	4-slot SODIMMs
Display and Graphics	
LCD* **	17.3" FHD+ (16:9) Glare
Vendor	Samsung LCD
Type	LED LCD with Glare
LCD Viewable Area	381.888 (H) x 214.812 (V) (17.3 ”diagonal)
LCD Panel	TN
LCD Resolution	FHD (1920 x 1080)
Pixel Pitch	0.2175 (H) x 0.2088 (V) (TYP.)
Viewing angle	Horizontal 65°/65° , Vertical 45°/50°(TYP.)
Color Gamut	72%(TYP.)
Brightness	400 cd/m2
Response time	5ms (typ)
The maximum opening angle LCD	145º
Graphics Controller* **	nVidia 675M (N13E-GS1, MXM)
Video Memory	2GB gDDR5 Descreted graphic memory
GPU TDP	Max. 75W
Max.Resolution for LFP LVDS	dual link resolution of 1920 X 1200 per link / a maximum theoretical pixel rate of 224 MP/s

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Max. resolution for VGA	Max resolution of 2,048 x 1,536 at 85Hz refresh rate (ext.) (640x480,800x600, 1024x768, 1152x864, 1280x800,1280x960, 1280x1024, 1400x1050, 1440x900,1600x1024,1600x1200, 1680x1050, 1920x1200, 1920x1440, 2048x1536) [Ext.monitor resolutions Supported by EDID information]
Max. resolution for HDMI	Support v1.4a compliant / a resolution of 2048x1536pixels with 32-bit color at 75 Hz [Ext.monitor resolutions Supported by EDID information]
Max. resolution for Display Port	Support DP++ / a resolution of 2048x1536pixels with 32-bit color at 75 Hz [Ext.monitor resolutions Supported by EDID information]
3D Function	Not support
Audio and Video	
Sound	
Chipset	REALTEK ALC269Q-VB2-GR
Codec	HD Audio Codec, ALC269Q-VB2-GR
Conversion	Built-in high performance 24-bit ADC & 24-bit DAC
Sound effect	Dolby
Internal Interfaces	Embedded stereo speakers & integrated mono microphone
Speaker Power Rating	2 speakers x 2 W with enclosure each + Woofer 3W
External Interfaces	Microphone, Headphone, SPDIF NOT SUP
Controls	Keyboard volume control
Microphone	
Type	1 integrated mono microphone
Sensitivity	.-42dB [0dB=1V/Pa, at 1KHz]
Output impedace	Max. 2,200 Ohm at 1KHz
Noise supression	Noise supression
Camera	
Type	2.0 FHD Web-Cam (interface : USB 2.0)
Chipset	SC_20FHL11146M(MCNEX)
Image sensor	.1/6” Color CMOS 2.0M FHD(1920X1080)
Still Image Capture Resolution	1920 x 1080(FullHD 1080P), 1280 x 720 (HD 720P), 800 x 600 (SVGA), 640 x 480 (VGA), 352 x 288 (CIF), 320 x 240 (QVGA), 176 x 144 (QCIF) 160 x 120 (QQVGA)
Video Capture Resolution	1920 x 1080(FullHD 1080P), 1280 x 720 (HD 720P), 800 x 600 (SVGA), 640 x 480 (VGA), 352 x 288 (CIF), 320 x 240 (QVGA), 176 x 144 (QCIF) 160 x 120 (QQVGA)
Output Video Format	Uncompressed –based on Camera H/W
UVC Support	Supproted
Storage	

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Hard Disk Drive-7200rpm* **	9.5mmH 2.5" SATA HDD, Removable
HDD Vendor	HGST, Fujitsu, Samsung Storage, Toshiba , WD
Type	9.5 mm Height 2.5" S-ATA
Supports	SATA host controller support 48bit LBA (HDD Interface supports SATA1 - 1st HDD / SATA2 - 2nd HDD)
Average Access Time	13m sec.
Speed	5400rpm/7200rpm SATA
Capacity	500GB, 750GB, 1TB, 1.5TB, 2TB(F.option)
	* SSD Support (1st HDD : SATA 3 / 2nd HDD : SATA2 Support)
2nd HDD Assy Unit	BA96-05817A - included in bundle UNIT_BRACKET-HDD_SUPPORT RUBBER-HDD SCREW-MACHINE MANUAL-1SHEET_GUIDE LABEL-PPID_E
Express Cache (ISSD)	Sandisk Express Cache i100 adpot (Interface : P5 : SATA3, P4 : SATA2)
Speed	Maximum Host trasfer Rate 6Gb/s
Capacity	8GB
Optical Driver Modules	
Optical Disk Driver* **	Blue-ray Combo Drive 1(Blue-ray Read only) - SATA2 Interface
Vendor	TSST / PLDS
Module type	12.7 mm Fixed type, S-ATA
Speed	4x BD-R/ BD-RE, 2x BD-R DL/ BD-RE DL, 5x DVD-RAM, 8x DVD±R, 6x DVD±R DL, 8x DVD+RW, 6x DVD-RW, 24x CD-R/RW, 8xDVD, 24x CD
Average Access Time	BD 250~400ms, DVD 150~350ms., CD 150~170ms.
Weight	175g +/- 5g
S/W Supplied	Cyberlink Media Suite 8 Bluray Disc 3D , Bluray, Supermulti(F. option)
Security	RPC-II Regional Encoding
Optical Disk Driver* **	Super Multi Dual Layer
Vendor	TSST / TEAC / PLDS
Module type	12.7 mm, S-ATA, Fixed type
Speed	Writing(CD-R 24X/CD-RW 24X/DVD±R 8X/DVD+RW 8X(4X)/DVD-RW 6X/DVD-RAM 5X), Reading(CD 24X/DVD 8X)
Average Access Time	DVD 130~160ms Typ, CD 130~160ms Typ
Weight	max.140g
S/W Supplied	Cyberlink DVD Solution
Security	RPC-II Regional Encoding

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Network Tools	
LAN* **	Integrated 10/100/1000 Mbps Ethernet
Chipset	RTL8111E
Features	RJ45 Output
Combo module* **	Intel Jacksonpeak2 WLAN+BT Combo
Type	Intel Jackson Peak2, 802.11a/g/n 2x2 WiFi _ Bluetooth(4.0) Combo card (Vendor : Intel)
MaxSpeed	300Mbps (Link Speed is only standard value, Actually value will decided by each environmant)
Interface	Half Mini card type
Chipset	1. Jackson-Peak2 MAC/BB Silicon 2. Jackson-Peak2 2x2 Wi-Fi-BT Radio Silicon
Antenna	2 Antenna Support : WLAN (2TX, 2RX), BT(1TX/RX)
Bluetooth Module	
Type	Intel 802.11agn (2x2) + Bluetooth 4.0 (Half MiniCard STD)
Vendor	Intel
Interface	PCIe(WLAN) + USB(Bluetooth)
I/O Interface	
Memory card slot Memory card chip	7-in-1 RTS5209
Vendor	Realtek
Support	(SD / SDHC / SDXC / XD / MMC / Memorystick / Memorystick Pro) tested up to 32GB
Size	27mm * 5mm
I/O Ports	
USB Port	2 x USB 2.0 ports and 2 x USB 3.0 ports (incl. 1 Chargeable)
VGA Port	1 CRT
Audio Jacks	HeadPhone-out, MIC-in
LAN	RJ45
TV	1 HDMI(15mm * 6mm), 1DP(16mm*7mm)
Security	Kensington Lock (8mm * 3mm)
Power	1x DC-in jack for AC adapter (12.8 pie)
Input Devices	
Key board	"100 (KOR, RUS, UKR, US) 101 (UK, FR, GM, SP)"
└ Num Keypad	Yes
Touchpad	ELAN touchpad (with gesture function)
Power and Power Management	
System power management	
Power management features	ACPI V2.0 compliant, Standby(S3), Hibernate(S4)
Standard battery* **	
Model code	AA-PBAN8AB

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Type	Li-ion
Details of cell	8 cells
Battery capacity	5,900 mAh
Voltage	15.1 V
Battery rating	89Wh
Color	Black / Yellow
Dimension	140 x 85 x 30.0 mm (W x H x D)
Weight	Max. 400 g
Recharge time	Approx. 3.0 hours
AC Adapter* **	A11-200P1A
Output Power	200W
Dimension	170 X 85 X 35 mm (W x H x D)
Weight (AC Adapter)	Typ. 750g
Worldwide Compatibility	Auto-sensing 110 - 240 VAC
Line Frequency	50 Hz / 60Hz
Adapter Rating - Input	100 VAC ~ 240 VAC, 1.5A
Adapter Rating - Output	19.0 VDC, 10.5A
System Dimensions	
Dimensions (W X D X H)	W409.84 x L284.8 x H32.99~52.6
Weight	3.81KG(3.4KG without battery)
Condition	SM-DL , 8cell battery, 2.5" 500GB HDD
Package Dimensions (W X D X H)	
Package Weight	6.6 kg
Condition	SM-DL , 8cell battery, 2.5" 500GB HDD
Materials	PC/ABS
Design	
LCD Back	NCVM Safe plastic film support
LCD Front	UV Coat
System Top	UV Molding
System Bottom	PC+ABS
Protect Film	
System Top	Yes
System	Yes
LCD - BACK	YES
O/S	
XP Driver	N/A (Because 3D function)
Label Location	

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	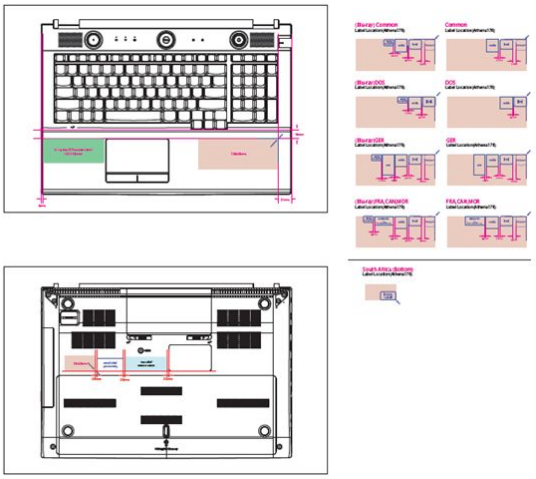
Accessories	
Accessories in the box	Battery, Adapter, Power Code, Installation Guide(paper), OS CD, S/W Media, TCO Sheet, **3D glasses(option, rechargeable)**

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2.3. Comparing product specifications

ITEM	700G7A	700G7C
	Ext. Gfx.	Ext. Gfx.
Processor	Huron River i7	Chief River i7
Chipset	HM65	HM76
Memory	DDR3 4GB~16GB (Max Clock 1333Mhz)	DDR3 4GB~16GB (Max Clock 1600Mhz)
LCD	17.3” FHD LED (Glare, 400nit)	←
Gfx.	AMD Radeon HD 6970M	nVIDIA Geforce 675M (N13E – GS1) AMD 7970M(TBD)
HDD	500GB ~ 1.5TB (SATA 5400, 7200rpm)	500GB ~ 2TB (SATA 5400, 7200rpm)
ODD	Super Multi / Bluray	←
LAN / WLAN	Gigabit Mbps , abg/n	←
BT	Bluetooth v.3.0 High Speed	Bluetooth v.4.0 High Speed
I/O Port	USB3.0 x 2(USB2.0x2) , 7-in-1	←
Convergence	Easy Content share (3Screen), Easy file share (PC-PC)	←
Size / Weight	W409.84 x L284.8 x H32.99~52.6/3.81kg	←
AV Button	Power on/off,Wireless on/off Lighting On/OffMute, Volumn Up/Down Mode Dial	←
Design	**A : LCD Back Pattern IMR / B : RTCM / C : Vacuum Plating IMR / D : Spray**	

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2.4. Option part List

❑ Front

Front View

- The pictures used for the cover and the main body in the User Manual are those of the representative model of each series. Therefore the colors and appearance of the pictures may differ from the actual appearance of the product depending on the model.
- The actual color and appearance of the computer may differ from the pictures used in this guide.
- This may not be supported for some devices.

1	Camera (Optional)	Using this camera, you can take still pictures and record video.
2	LCD	The screen images are displayed here.
3	Power Button ⏻/I	Turns the computer on and off.
4	Speaker	A device used to generate sound.
5	Keyboard	A device to enter data by pressing the keys.
6	Touchpad/ Touchpad Buttons	The touchpad and touchpad buttons provide functions similar to the mouse ball and buttons.
7	Status Indicators	Shows the operating status of the computer. The corresponding operating LED is lit when the corresponding function operates.
8	Microphone	You can use the built-in microphone.
9	Touch sensor buttons	Touch them with your finger slightly to configure the corresponding functions.

Using the camera, web cam

Using the Cyberlink YouCam program (optional), you can take pictures or record video by using the computer's built-in camera by adding the balloon talk or frame effect.

❑ Status Indicators

Status Indicators

1	HDD/ODD	This turns when either the HDD or ODD is being accessed.
2	Caps Lock	This turns on when the Caps Lock key is pressed allowing capital letters to be typed without holding the Shift button down. **On**: Upper-case alphabetic input **Off**: Lower-case alphabetic input
3	Charge Status	This shows the power source and the battery charge status. ● **Green:** When the battery is fully charged or the battery is not installed. ● **Orange:** When the battery is being charged. ● **Off:** When the computer is running on battery power without being connected to AC adapter.
4	Power ⏻	This shows the computer operating status. **On:** When the computer is operating. **Blinks:** When the computer is in Sleep mode.

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❑ Touch sensors buttons

Touch sensors buttons

1	Volume control	Controls the volume.
2	Mute	Mutes the sound.
3	Wireless Network	Easily turns on or off the several wireless network settings at the same time. - You also can set up a specific wireless network device with the Fn + F12 key combination. **On** : Shows that any wireless network devices are turned on. **Off** : Shows that no wireless network device is turned on. If the device cannot search wireless network while this button shows **On**, press the Fn + F12 key combination to search and configure it manually.
4	Keyboard backlit	Turns the keyboard backlit on or off. The red LED blinks whenever you touch this.

❑ Right Side

Right View

1	USB Port	You can connect USB devices to the USB port such as a keyboard/mouse, digital camera, etc.
2	CD Drive (ODD) (Optional)	Plays CD or DVD titles. Since an ODD(Optical Disk Drive) is optional, the installed drive depends on the computer model.
3	Jog dial	You can configure the various computer modes. • **Gaming Mode:** High-performance mode • **Balanced Mode:** Samsung-optimized mode • **Library Mode:** Silent mode • **Green Mode:** Maximum power-saving mode

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❑ Left Side

Left View

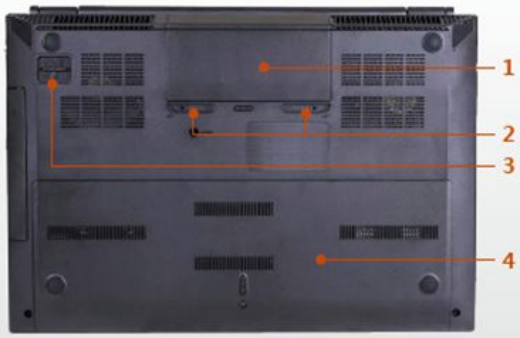
What is a Chargeable USB port?

- USB device accessing and charging functions are supported.
- The USB charging function is supported regardless of whether the power is turned on or off.
- Charging a device through a Chargeable USB port may take longer than general charging.
- Using the Chargeable USB function when the computer is running on battery power reduces the battery usage time.
- The user cannot evaluate the charging status of the USB device from the computer.
- This may not be supported for some USB devices.

1	Security Slot	You can secure the computer by connecting a lock and cable to the Security Slot.
2	DC Jack	A jack to connect the AC adapter that supplies power to the computer.
3	Wired LAN Port (Optional)	Connect the Ethernet cable to this port.
4	Monitor Port	A port used to connect a monitor, TV or projector supporting a 15pin D-SUB interface.
5	HDMI port	You can connect an HDMI cable to this port. Using this port, you can enjoy digital video and audio on the TV.
6	Display port	You can connect an Display Cable to this port. Using this port, you can enjoy digital video and audio on the TV.
7	USB 3.0 Port or Chargeable USB Port (Optional)	USB ports to which you can connect USB devices as well as a Chargeable USB port are provided. Using a Chargeable USB port, you can access or charge a USB device. The port can be distinguished by the figure (or) printed on the port of the product.
8	Multi Card Slot (Optional)	A card slot supports multi cards.
9	Microphone Jack	A jack used to connect the microphone.
10	Headphone Jack	A jack used to connect the headphones.

❑ Back

Back View



1	Battery	This is a Lithium-Ion rechargeable battery that supplies power to the computer.
2	Battery Latches	The latch used to remove or install the battery.
3	Sub-Woofer Speaker (Optional)	A device used to produce mid and low frequency sound louder.
4	Memory Compartment Cover/Hard Disk Drive Compartment Cover	The main memory and hard disk drive is installed inside the cover.

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▶KBD

Keyboard arrangement and size can differ to by each country

KBD Water Check sheet Location

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2.5. Function of Product

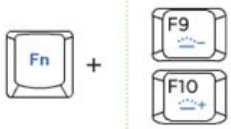
▶KBD Backlit

KBD Backlit

Default Lighting Scenario
- **Gaming Mode : Blue light On (W,A,S,D with RED)**
- **Balanced Mode : White Light ON**
- **Library / ECO Mode : Light Off (User can adjust On/Off)**

In Easy Setting, User can modify KBD Backlit's brightness & time
: Easy setting → General → Keyboard backlit

How to change brightness with KBD



Keyboard Backlit Brightness Control	Controls the brightness of the keyboard Backlit.

▶Mode Shift

ModeShift is pre-installed on Samsung laptops. ModeShift program is automatically launched in the background at the startup.

To select a particular mode, roll the Mode Dial up or down. When the mode is selected, the corresponding icon is flashed on the screen.

Note: Mode Dial is situated above the keypad on the right hand side. Refer to the above figure to know the exact location of Mode Dial.

Table below gives the different modes available and their corresponding icons that are flashed when the mode is selected.

Mode	ICON/Screen	Mode Description
Game Mode		Game Mode is ideal when you are gaming. With this mode of operation, you can configure the desktop background, screen transition, and cursor design of your laptop. With its variety of screen transition animations, life-like graphics, amazing sounds, and LED keyboard light, Game Mode guarantees you a wonderful gaming experience.
Balanced Mode		Balanced Mode is Samsung laptop-optimized mode. In this mode, white keyboard Backlit is turned on.
Library Mode		Library Mode reduces the noise from your system so that your laptop functions without any disturbance to the surrounding environment. To reduce the system noise, this mode reduces the fan speeds and CPU speeds. In Library Mode, sound and keyboard Backlit feature is deactivated.
Green Mode		Green Mode allows you to change power option settings and turn Bluetooth and Wireless LAN devices off. You can perform simple tasks such as document management in this mode.

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The different options available in Game Mode are:
Input Device: To control the functioning of the keyboard and touchpad
Keyboard LED: To switch the keyboard LED light on or off
Visual Effects: To apply different visual effects to the display
Service: To control functioning of services
Screen Color: To optimize color

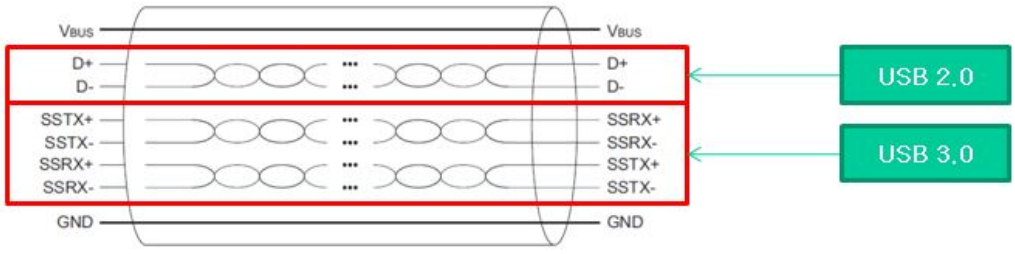
Caution
- Mode Shift Function work with Mode Dial(Jog Dial) .
  It only support for Athena model. If uninstall Mode Shift, it doesn't work.
  If you want to reinstall, use the SW Media DVD in Bundle.

- In Mode Shift User can modify Touch Pad On/Off on Game mode.
  If user told like this " I can't use the T/P in Gaming Mode ",
  let them know it can be modified in Mode shift Program.

- KBD Backlit can turn on and off,
  But in Gaming mode support only Blue LED,
  in other mode, not support Blue LED but also White LED.

	USB3.0 (SuperSpeed USB)	USB2.0
Speed (Data rate)	5.0 Gbps	Low-speed (1.5 Mbps) Full-speed (12 Mbps) High-Speed (480 Mbps)
Data Interface	. 4-wire differential signaling separate from USB2.0 signaling . Simultaneous bi-directional data flows	. 2-wire differential signaling . Uni-directional data flow with negotiated directional bus transactions
Cable Signal Count	4 for SuperSpeed data 2 for non-SuperSpeed data	2 for low/full/high-speed data

- USB 3.0 Cable
  -



- USB 3.0 has the backward compatibility for USB 2.0

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▶Jog Dial

Turn the jog dial up and down to select a computer mode. To play games, select Gaming Mode.

Mode	Icon	Major Functions
Gaming Mode		This is a high-performance gaming mode. This mode configures the settings as follows. • The keyboard backlit is turned on: Blue, Red(W, A, S, D) • The Desktop and icons are changed. • The Turbo Mode LED, Sound EQ LED and Touchpad LED are turned on. • The Touchpad and Windows keys are locked. You can configure the major functions by clicking **Start** > **All Programs** > **Samsung** > **Mode Shift**.
Balanced Mode		This is Samsung-optimized mode. The keyboard backlit is turned on white.
Library Mode		This is silent mode. The sound is muted and the keyboard backlit is turned off so that users can use the computer quietly.
Green Mode		This is the maximum power-saving mode. All major functions are turned off.

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▶Using 3D

Using the 3D function

You can use the 3D function of the Samsung 3D computer after connecting the 3D glasses to the computer through a Bluetooth connection.

1 In the 3D program, run a 3D video, 3D game or 3D photo.

For the battery-operated glasses, insert the battery and remove the protective film before use.

The 3D function is only provided in full screen mode. (The 3D function does not work in window mode.)

(The TriDef 3D Portal screen)

3D/2D Mode Selection and 3D Display Settings Button

(CyberLink Media Suite screen)

3D/2D Mode Selection and 3D Display Settings Button

2 If you put on the 3D active glasses and press the 3D button, the data exchange begins between the glasses and the software (hereafter, referred to as pairing).

- Only when a 3D video or 3D game is executed can the pairing process be done.
- More than one person can watch pictures in 3D at the same time using more than one pair of glasses.
- A chargeable pair of 3D active glasses may not work if the battery is discharged. In this case, charge the glasses before use.
- For chargeable 3D active glasses, if the glasses do not start working immediately when you put them on in 3D mode, lightly touch the 'sensor pad' of the glasses or press and hold the 3D button for 3~5 seconds to reattempt pairing.
- For battery-operated 3D active glasses, you have to press and hold the 3D button for 4~5 seconds or longer when you perform pairing for the first time.

3 Now, you can enjoy videos or games in 3D.

The LED indicator for the battery-operated 3D active glasses

On	If you press the power button, the LED turns yellow for 3 seconds and then turns off.
Off	If you press the power button, the LED turns red for 3 seconds and then turns off.
When the pairing process is in progress	The LED blinks yellow.
When the pairing progress has been completed	The LED alternates between blinking yellow and red for 3 seconds each.
When the battery needs to be replaced	The LED blinks red continuously.

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The LED indicator for the chargeable 3D active glasses

The LED indicator of the glasses changes depending on the operating conditions.

Turning the power on	If you put the glasses on, the power is automatically turned on and the LED is lit green for 3 seconds.
Turning the power off	If you take the glasses off, the power is automatically turned off and the LED is lit red for 3 seconds.
When pairing is in progress	The LED alternates between green and red.
When charging the battery is necessary	The LED blinks red at 2 second intervals. In this case, charge the glasses with the micro USB cable.
When the battery is being charged	The LED blinks amber at 1 second intervals.
When the battery is fully charged	The LED blinks green at 2 second intervals.

Charging the chargeable 3D glasses

If the LED blinks red at a 2 second interval, charge the glasses witl the micro USB cable.

When the battery is fully charged, the LED blinks green at a 2 second interval.

SAFETY PRECAUTIONS

Warning

Failure to follow instructions marked with this symbol may cause personal injury and even fatality.

- A parent or child minder should keep an eye on any children or infirm persons on a regular basis while they watch 3D content. Children and even some adults may experience eye strain, headaches, dizziness or nausea while watching 3D content. In this case, stop watching 3D content and take a rest.
- Do not use the 3D glasses for any purpose other than watching 3D TV, such as general eyeglasses, sunglasses, protective goggles, etc.
- Watching 3D images for an extended period of time may cause eye strain. If you feel eye strain, stop viewing the 3D content, remove the 3D glasses and take a rest.
- Do not use the 3D function or 3D glasses while walking or moving around. Using the 3D function or 3D Active Glasses while moving around may result in an injury due to running into objects, tripping, and/or falling.
- Take care that your children do not touch or swallow the battery installed in the battery-operated 3D glasses.

Caution

Failure to follow instructions marked with this symbol may cause slight injury or damage to the product.

- Do not apply force to the lenses of the 3D glasses. Do not drop or bend the product. This may result in a product malfunction.
- Never disassemble, repair or modify the 3D glasses yourself. Do not use the glasses when they are out of order or broken.
- When wearing the 3D glasses, take care that you do not bump into other persons.
- When cleaning the glasses, do not spray water or cleaner directly onto the surface of the product. This may result in fire or electric shock, damage to the product surface, or result in the indication labels peeling from the product surface.
- When you wear the 3D glasses over normal glasses, take care of contact between each set of lenses.
- When you watch 3D content under inconsistent illumination (blinking fluorescent), fluorescent light (50~60Hz) or 3-wavelength light, you may notice that the screen flickers.

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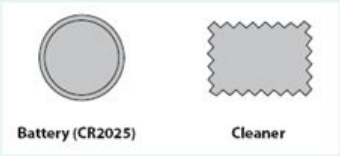
▶3D glassed

Model	SSG-3100GB	SSG-M3750CR
Drawing		
Package		
Power	Lithium/Manganese Battery 3V (CR2025)	Built-in 3.7V Lithium/polymer battery
Type	Battery exchange	Rechargeable battery
Weight	35.8g (Including Battery : 35.1g)	30g

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2.6. Hardware – New H/W

►ISSD (Express Cache)

The SanDisk® integrated Solid State Drive (iSSD)

A fast, light weight and affordable storage solution for Smartbooks, Ultra-thin PCs and Tablets that require high performance combined with an innovative form factor and low cost.

As social networking increases, a market need has developed for a storage solution that will not only provide mobile benefits such as smaller designs, cooler and quiet operation and lower power consumption, but one that will also deliver enhanced user performance.

The SanDisk iSSD drive delivers all the benefits of SSD: It is rugged and reliable, power efficient and small in size. In addition, being an SSD in a BGA form factor and tiny in size, enables the SanDisk iSSD drive to be embedded into a larger variety of new thinner and slicker devices, such as smartbooks, Ultra-thin PCs and media tablets, with surprising and new innovative designs.

Such thinner and lighter computing devices are also enabled due to SanDisk iSSD drive's embedded design which allows manufactures to avoid the additional weight and thickness required by a connector based SSD solution. Thinner storage solutions like the SanDisk iSSD drive also enable fan less designs and greater airflow contributing to a cooler device operation, an additional benefit for the user on the go.

Moreover, with a SATA interface, commonly found in PC devices, the SanDisk iSSD drive enables easy system integration with mobile PC devices as well as high productivity capabilities. Thus, allowing end users to reap the benefits of optimized PC performance and user experience even in the smallest computing devices and when they are away from home.

Product highlights

- Cost Efficient
- Performance: Sequential R/W up to 160 MB/s / 100 MB/s [1,2]
- Size:16 mm x 20 mm x 1.85 mm
- Form Factor: 157 ball BGA with 0.5 mm pitch
- Weight: As low as 0.83g
- Capacity: 4GB, 8GB, 16GB, 32GB, 64GB[2]
- Interface: SATA
- Quiet and cool operation

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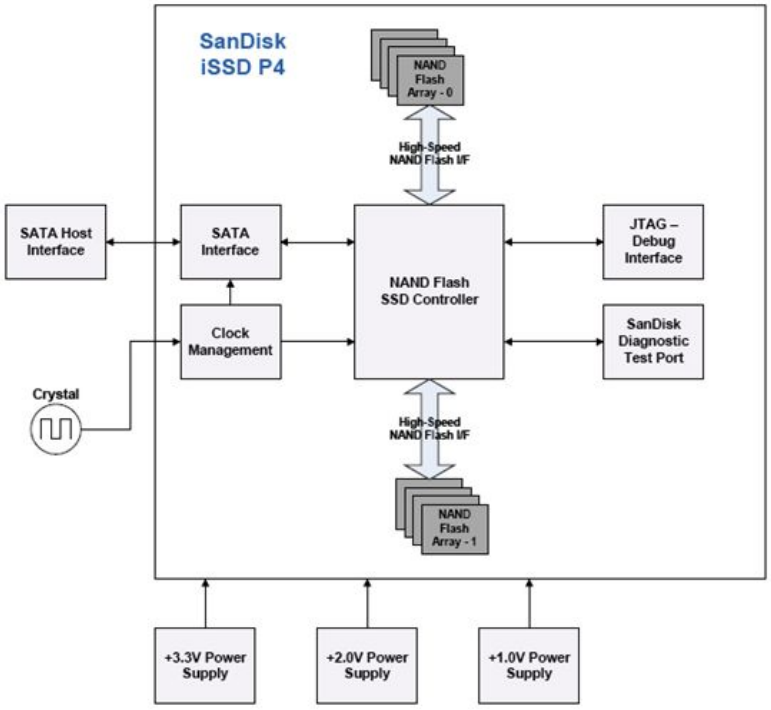

ISSD (Summary)

- Advantage : More faster booting speed.(up to 25%)

Table	With ISSD	Without ISSD
BIOS Post	4.88	4.87
Boot complete	16.73	30.1
Boot time (BIOS Post + Boot complete)	21.61	34.88

- More faster application speed
- –Control & work
  - Express Cache Driver Control by self, User can only turn on/off/On Easy Setting, can turn on/off /Default setting is ON.(Game,Balance,Library,Eco)
- If it eliminated in device manager, there is no problem on system .But to use Express Cache again, reinstall the Driver.(included in SW MEDIA DVD)
- -Caution

  On the BIOS,don't change the booting sequence.
  - ISSD is only cache . It's not an HDD for OS.

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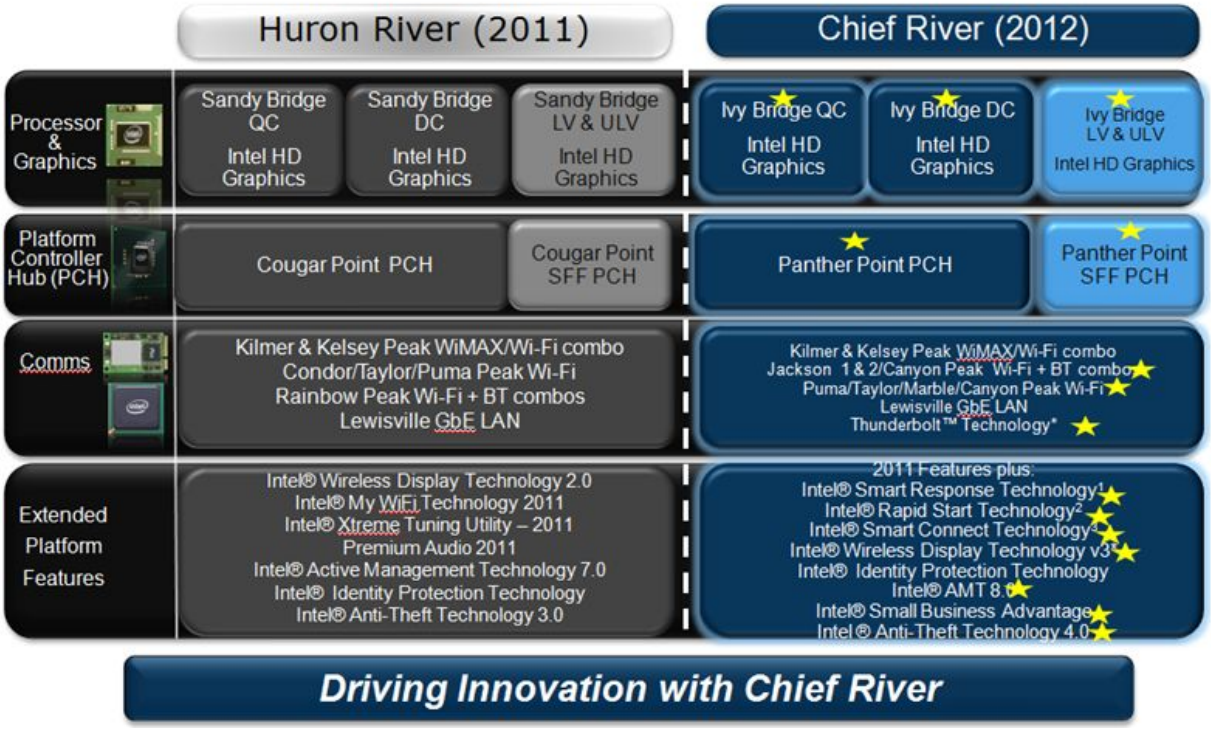
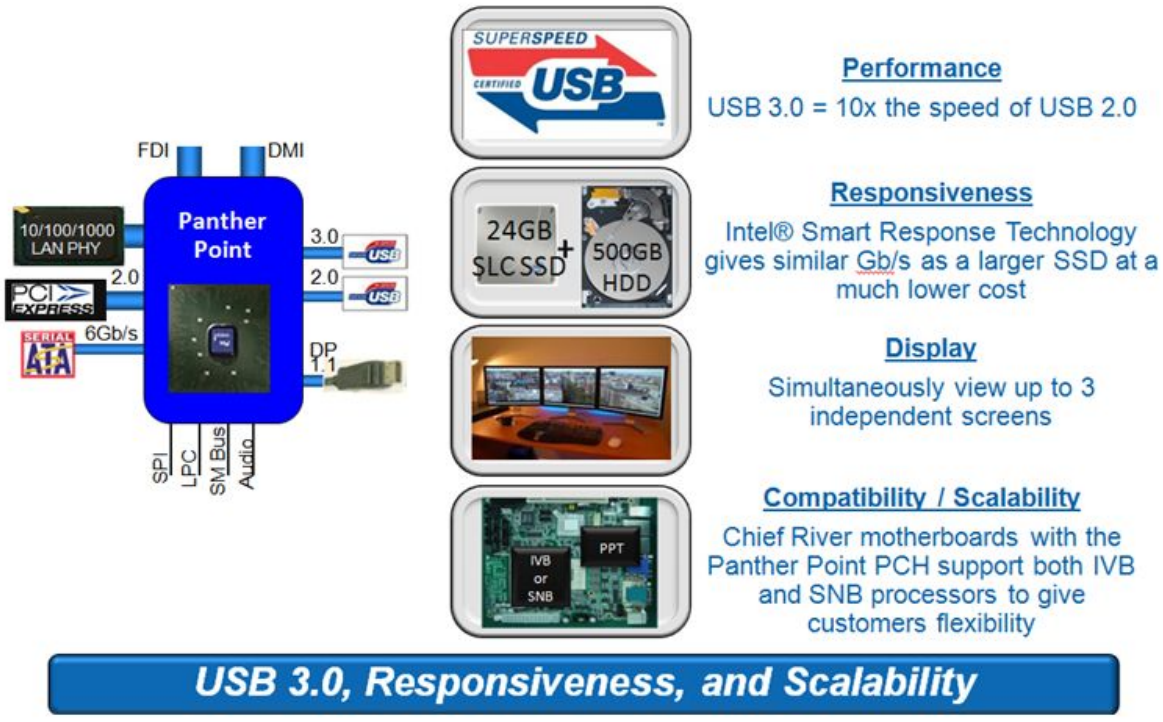
NEW H/W Platform

(1) Intel's 2012 Mobile Platform : Chief River



(1) Intel's 2012 Mobile Platform : key point of Panther Point (PCH)



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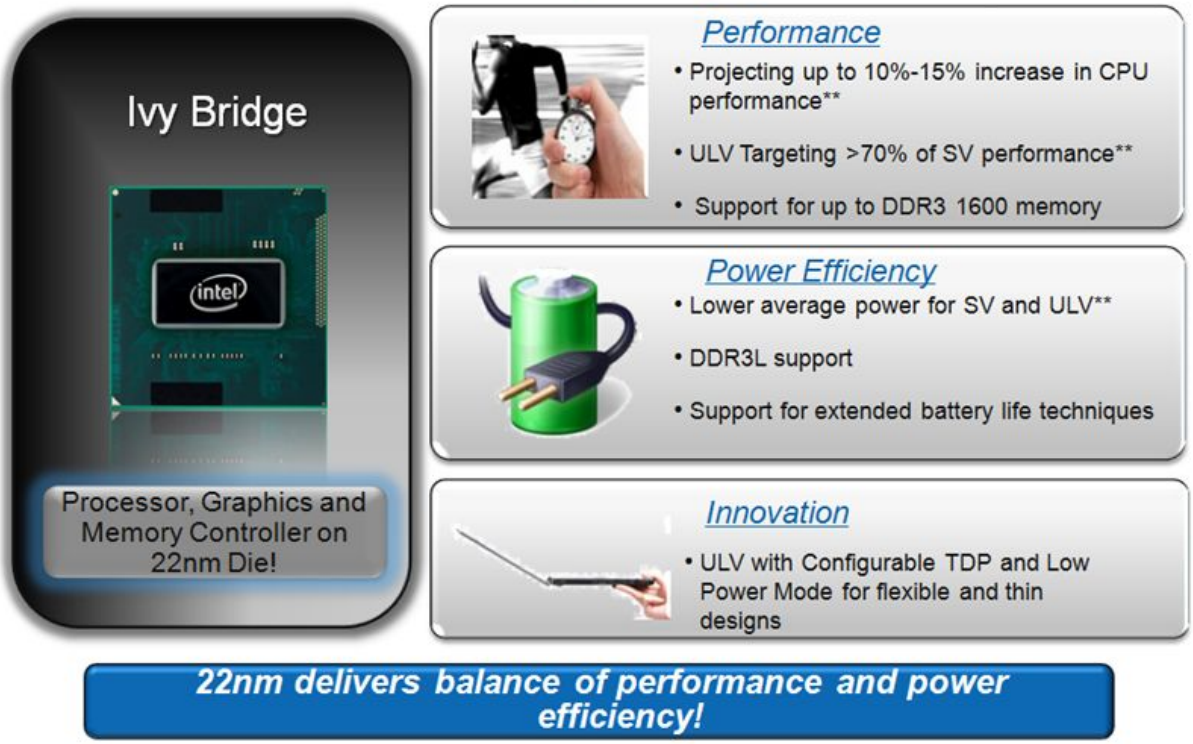
(1) Intel's 2011 Mobile Platform : Ivy Bridge(CPU)



(1) Intel's 2012 Mobile Platform : Chief River

Chief River Platform Summary

- Performance & Media Capabilities
- Sleek Form Factors
- Long Battery Life
- Fast System Response

- Chief River enables platform innovation
  - Expecting up to 10-%15% Ivy Bridge IA performance gain over Sandy Bridge**
  - Targeting lower average power vs. Sandy Bridge** plus Configurable TDP for ULV
  - Next generation Intel processor graphics delivers faster media processing and 3D graphics** plus DX11, OCL1.1 and OGL3.1 support
  - Faster peripheral connections with USB 3.0 & Thunderbolt™ Technology*
  - Extended platform features speed up system response

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NEW H/W Graphic

- nVIDIA 675M (N13E-GS1)

Chipset Specification

Specification	Description
Chip	NVIDIA N13E-GS1/GS1-LP
MXM module	P1314
Core clock	N13E-GS1: 620 MHz (see Note)
	N13E-GS1-LP: 598 MHz (see Note)
Memory clock	N13E-GS1: 1500 MHz (see Note)
	N13E-GS1-LP: 1500 MHz (see Note)
Frame buffer	1.5 GB/2GB/3GB/4GB
Memory I/O	192 bit/256 bit
Memory type	12/16 pcs of 64M × 16 or 128M × 16 GDDR5
Maximum module power	See Table 3 for details
Connector	MXM v 3.0
Mean time between failures (MTBF)	• Controlled environment: TBD hours at 35 °C • Uncontrolled environment: TBD hours at 35 °C

Note:
Preliminary frequencies, final values may change.

NVIDIA Confidential_2012.

H/W WLAN

- **Jackson Peak 802.11abg/n (2x2) Combo**

  Form factor: Mini Card haft size

  Chipset: Intel Jackson Peak (2X2) N6235

TOP

Bottom

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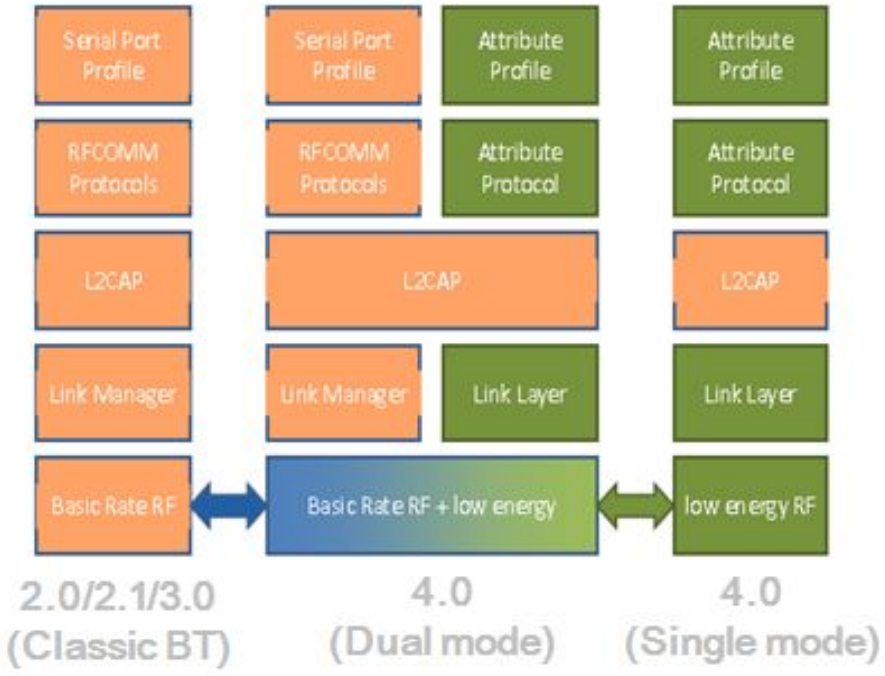
WLAN (Bluetooth)

qBT 4.0

- PC Side: BLE Device in connection with the existing BT 3.0 features were added.
- Device Side: This model is applied not only BT 3.0 but also BLE(Bluetooth Low Energy) only.
- Device characteristics of BLE only
  - The controller is implemented as a simple structure. Chip/Device(Affordable price)
  - Low power consumption. The device's battery life increased dramatically.
    (For example) A number of Coin Cell can use the BT Keyboard with BLE Technology more than a year months)
  - The device with BLE only is not compatible with Classic Bluetooth(BT 3.0)
- Single Mode
  - BLE supports only
  - Simple structure, Affordable price, It is easy to apply.
  - Peripheral device is used.
    Ex) BT KBD, MOUSE, Heart Rate Monitor
- Dual Mode
  - Classic BT and simultaneous support BLE.
  - HOST device uses
    §Ex) PC, Phone



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H/W BT

	2.0+EDR	3.0	3.0+HS
Max Throughput	3Mbps	3Mbps	24Mbs if using AMP
Unicast connectionless data	Not support	Support	Support
Read Encryption key size	Not support	Support	Support
Enhanced power control	1 level change Increase 1 level Decrease 1 level	New command added Increase to Max Decrease to Min	New command added Increase to Max Decrease to Min

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H/W USB 3.0

USB 3.0 HOST CONTROLLER

FEATURES

- Compliant with Universal Serial Bus 3.0 specification Revision 1.0, which is released by USB Implementers Forum, Inc
  - Supports the following speed data rate as follows; Low-speed (1.5 Mbps) / Full-speed (12 Mbps) / High-speed (480 Mbps) / Super-speed (5 Gbps)
  - Supports 2 downstream ports for all speeds
  - Supports all USB compliant data transfer type as follows; Control / Bulk / Interrupt / Isochronous transfer
- Compliant with Intel's eXtensible Host Controller Interface (xHCI) Specification Revision 0.96
- Support USB legacy function
- Compliant with PCI Express Base Specification Revision 2.0
- Supports ExpressCard™ Standard Release1.0
- Supports PCI Express Card Electromechanical Specification Revision 2.0
- Supports PCI Bus Power Management Interface Specification Revision 1.2
- Operational registers are direct-mapped to PCI memory space
- Supports Serial Peripheral Interface (SPI) type ROM
- System clock: 24 MHz crystal or 48 MHz external clock.
- 3.3 V and 1.05 V power supply

Characteristic	Super Speed USB 3.0	USB 2.0
Data rate	Super Speed(5G.0bit/s)	Low-speed(1.5Mbit/s), Full-speed(12Mbit/s) And High-Speed(480Mbit/s)
Signaling	Dual-simplex four wire differential signaling	Unidirectional data flow + negotiated directional bus transitions
Data Flows	Simultaneous bi-directional data flow	Unidirectional data flow + negotiated directional bus transitions
Cables	6 Total 4 x SuperSpeed 2 x non-SuperSpeed	2 x low,full,high-speed
Traffic Flow	Asynchronous	Polled
Packet Traffic	Explicitly routed	Broadcast to all devices
Power Management	Multi-level which supports idle, sleep, and suspend.	Port-level that has two levels of entry/ exit latency
Bus Power	50% more than USB 2.0 80% more with configured power	

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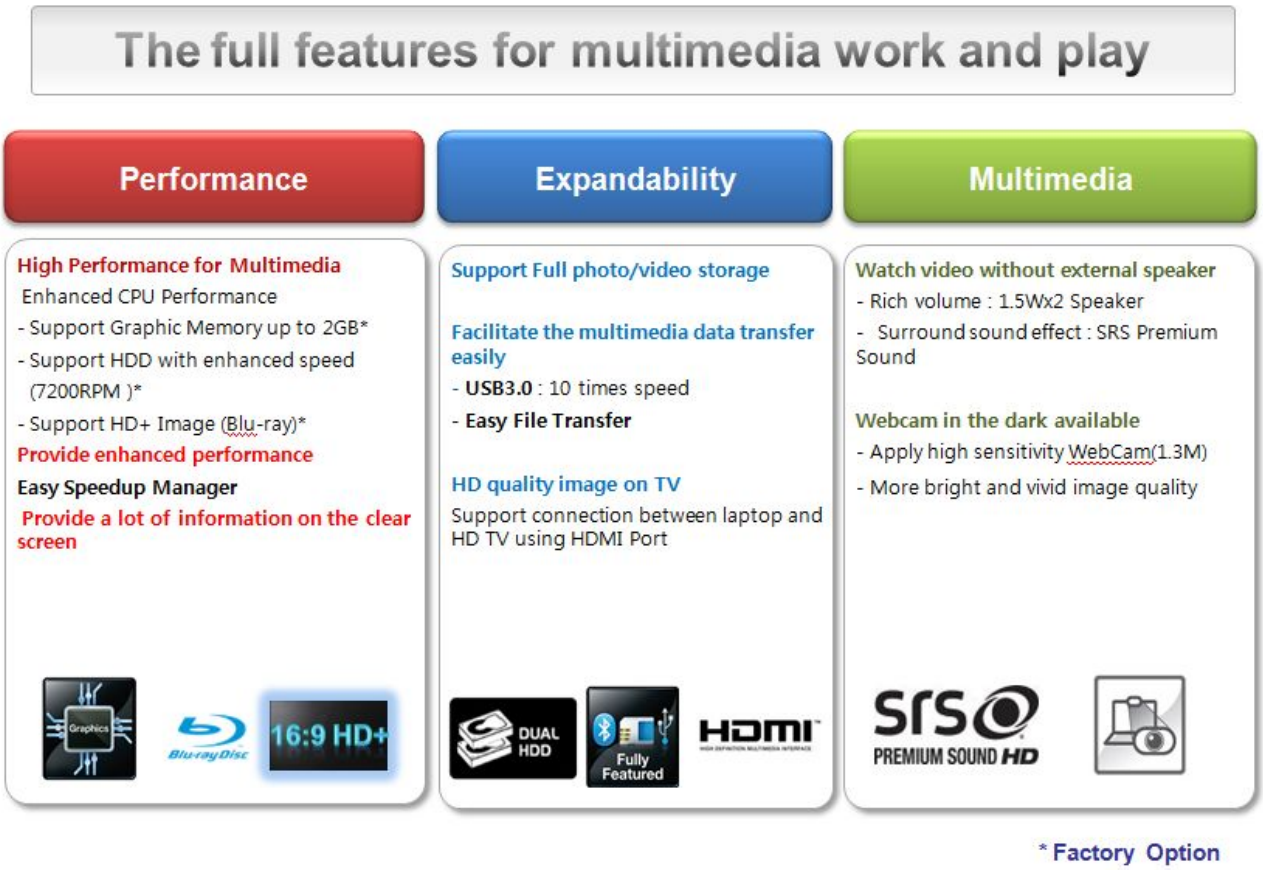
Software: Enhanced functions



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2.7. SW List

Driver List	Version
Windows7-Marvell LAN Driver[GbE Fast]	5.60.350.21
Chipset(Huron-River)	5.60.350.21
Intel Rapid Storage Technology	6.3.0.7000_PSTOBE_MM2007
ASMEDIA USB 3.0 Host Controller Driver	9.2.0.1016
Elan Touch Pad Driver	2.0.30.0 (U1U2 Disable)
Universal Scan Driver	8.17.12.6598 No-WHQL
Universal Print Driver	8.17.12.6598-No WHQL
Realtek ALC26X Windows7 Sound Driver	6.0.1.6264LogoSRS10.3
Realtek RTS5209 CardReader driver	8.0.7.1_WHQL
AMD Windows7 HDMI Sound Driver	7.33.1125.2010
SW List	**Version**
WildTangent Game Console	9.1.0.163
Microsoft Office Starter 2010	1.0.0.11
Windows Live	1.3.0.0(32,64bit)
MS Bing Toolbar	13
MSN Homepage	1.0.6
Norton Internet Security (EXP: 60 days Trial, KOR : 1Year Trial)	3.1.0.3509
Norton Online Backup (30-day Trial)	2.2.01
Skype	3.2.5.9
Adobe Reader	4.0.4.6
Absolute Data Protection	2.2.3.2
Far filed Pick Up Solution	2.1.1.1
Kindle for PC(Amazon Reader)	10.0.0.1046PV
Intel Appup	18.0.0.128
CJ	18.1.0.37
Kies	-
All Share	20101114
Intel Compute Continuum	3.1.5
Samsung Support Center	2.2.2
Samsung Recovery Solution (KOR) Samsung Recovery Solution (EXP) -Updated	5.0.0.8
Samsung Internet Service Short cut	1.1.2.1
Easy Partition Manager	1.0.0.2
Electronic Manual (E-Manual)	3.0.0.17
Samsung Theme (Samsung Wall Paper)	1.2.0.8
Samsung Theme (Samsung Screen Saver)	v.7600
Survey Icon	2.0.82.0
AnyWeb	1.0.1.4

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Universal Printer/Sacnner Driver	1.0
MultiMedia POP	1.0.2.0
Phone Share	1.0.0.11
Smartview (TV share)	20101114
Easy File Share (PC Share)	3.1.5
Easy Migration	2.2.2
Easy Software Manager	5.0.0.8
Software Launcher	1.1.2.1
Cyberlink Media Suite (3D or non 3D)	1.0.0.2
DDD Tridef Shell	3.0.0.17
Cyberlink Youcam	1.2.0.8
Dolby 3D	v.7600
Easy Settings (Control center)	2.0.82.0
Mode Shift (Mode Change with Jog Dial)	1.0.1.4

S/W (Previous SW/New SW): [For more information, product descriptions and installation training manuals refer to Chap.2]

S/W (Consultation stage of development) : Please refer that [Consulting Script] -> [Consultation]

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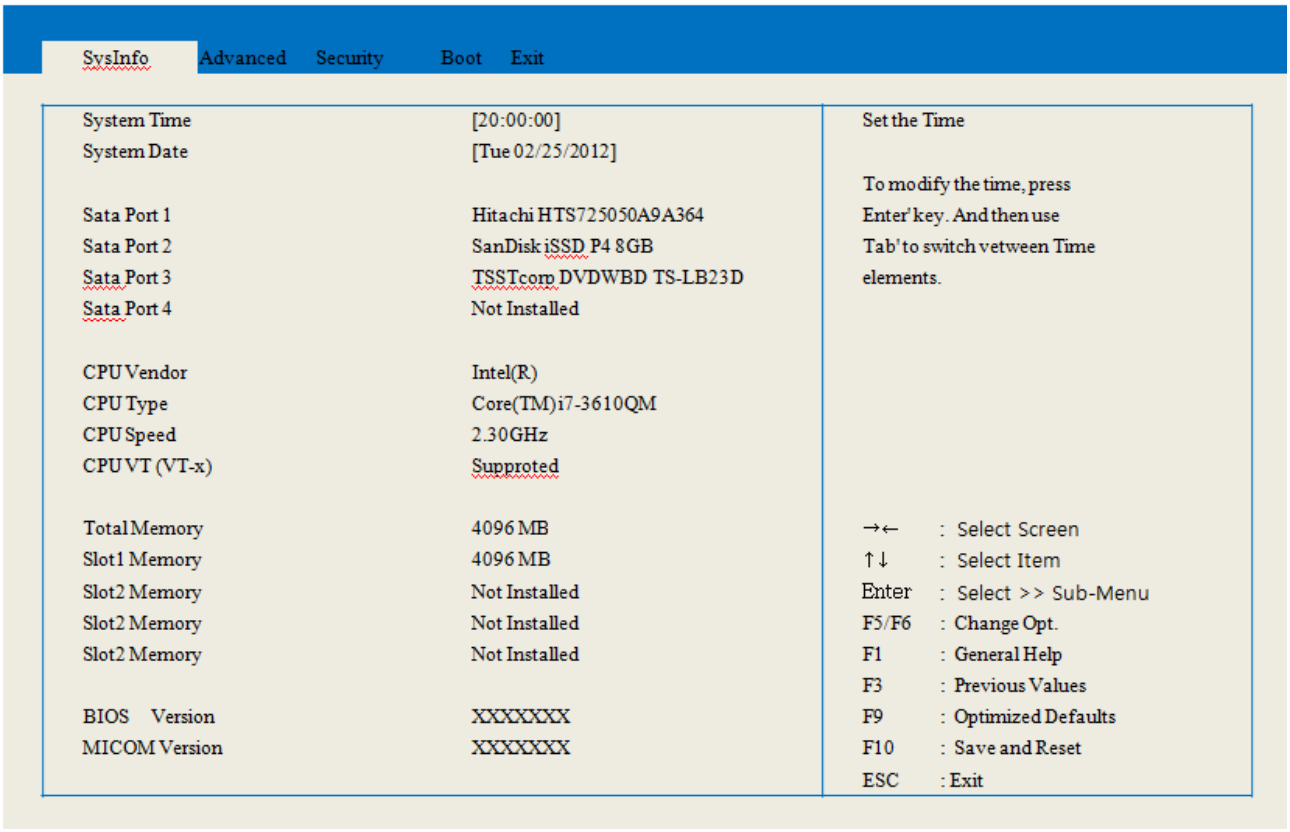
2.8. System Setup (Bios Setup)



SATA Port 1

=> HDD model name is displayed in this item for SATA Port 1.

SATA Port 2

=> Express Cache Memory model name is displayed in this item for SATA Port 2.

SATA Port 3

=> HDD Or ODD model name is displayed in this item for SATA Port 3.

SATA Port 4

=> HDD Or ODD model name is displayed in this item for SATA Port 4.

Total Memory

=> Total memory size of the system.

Slot1 Memory

=> Memory size of the slot 1

Slot2 Memory

=> Memory size of the slot 2

Slot3 Memory

=> Memory size of the slot 3

Slot4 Memory

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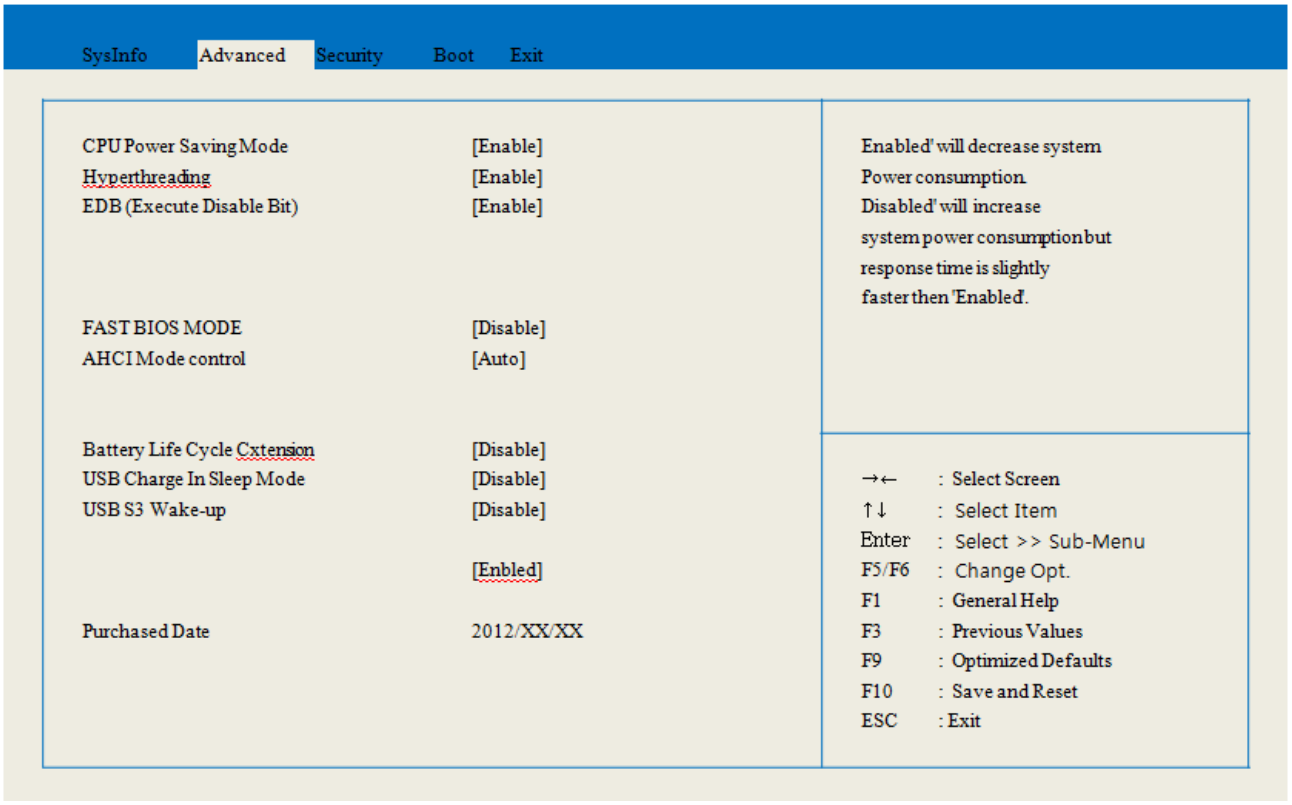
=> Memory size of the slot 4

ISSD

1.User can not setting. (Sata port2), SMT type

2.ISSD to speed the execution of the basic program will allow



CPU Power Saving Mode

=> 'Enabled' will decrease system power consumption.

Hyperthreading

=> This selects whether Intel® CPU performance will improve.

EDB (Execute Disable Bit)

=> supports the Data Execution Prevention (DEP) feature. DEP is a set of H/W & S/W technologies that perform additional checks on memory to help prevent malicious code from running on a system.

FASST BIOS MODE

=> Legacy Universal Serial Bus (USB), SATA CD does not enable support for.

It is to reduce the BIOS POST hours

=> Not boot DOS mode. (Default ODD and USB memory.) The default setting when you purchase the [Disable]

AHCI Mode Control

=> AHCI mode. When you select Auto Mode, OS will automatically select AHCI mode.

(Win7-Enable, WinXP-Disable)

When you select Manual Mode, Set AHCI Mode allows the user to specify.

(Enable: Always use AHCI Mode, Disable: Always AHCI Mode disable)

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Battery Life Cycle Extension

=> 'Enabled' means that the system will charge the battery up to 80% for extending the battery life cycle.

=> 'Disabled' means that the system will charge the battery up to 100%

USB Charge In Sleep Mode

=> 'Enabled' means that the system supports the USB charge feature at the port which has the special icon, in the sleep mode.

=> 'Disabled' means that the system doesn't support the USB charge feature in the sleep mode.

USB S3 Wake-up

=> Select Enabled to support that system can be waked up from ACPI S3 state by USB activities.

=> Select Disabled not to use USB wake-up capability from ACPI S3 state.

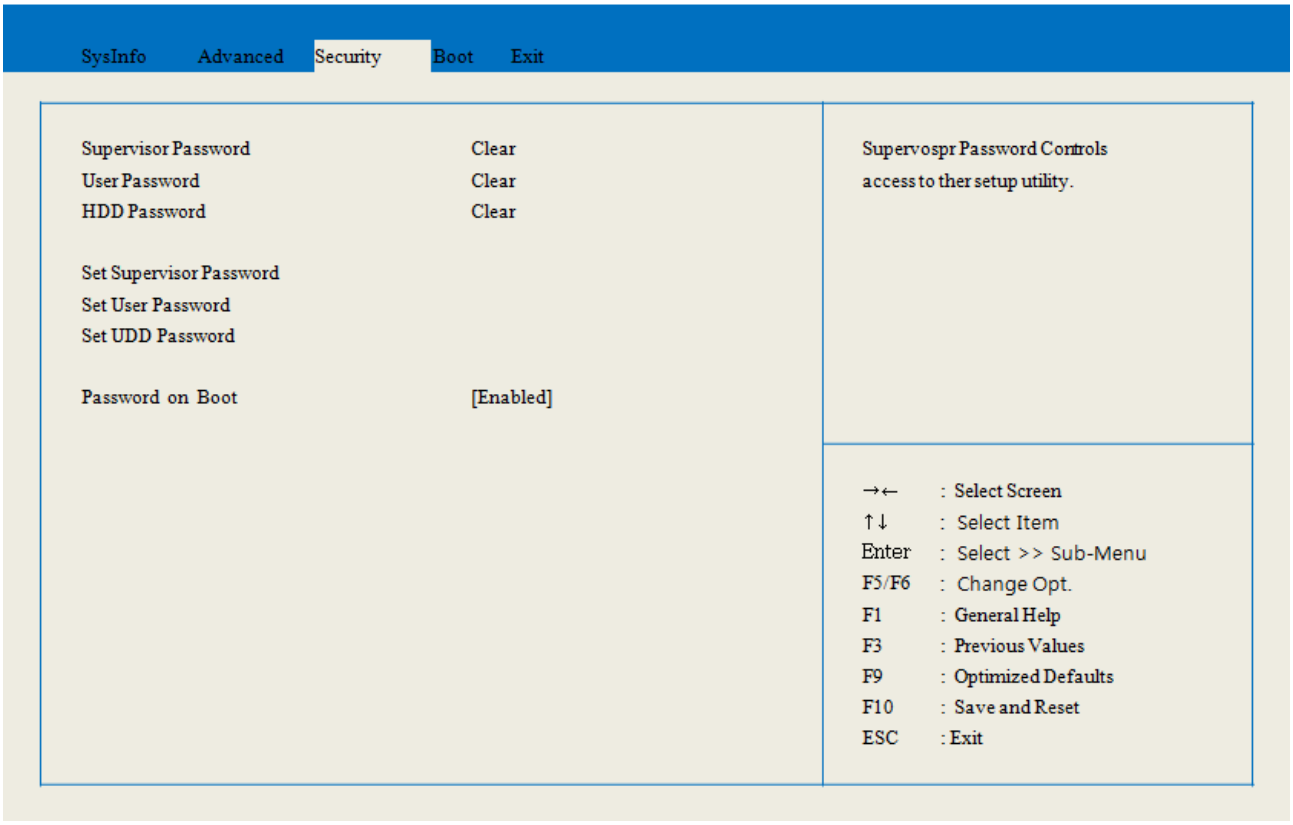
(Vista/Win7 Only.)

Software Manager Auto-Install

=>Easy Software Manager is an application for effortless software and driver installation. 'Enabled' Supports auto-installation of Easy Software Manager 'Disabled' turns off the auto – installation of Easy Software Manager.

Purchased Date

=> Purchased date is displayed after 10 times boot.



Set Supervisor Password

=>Supervisor Password controls access to the setup utility.

Set User Password

=> User Password controls access to a few items in the setup utility.

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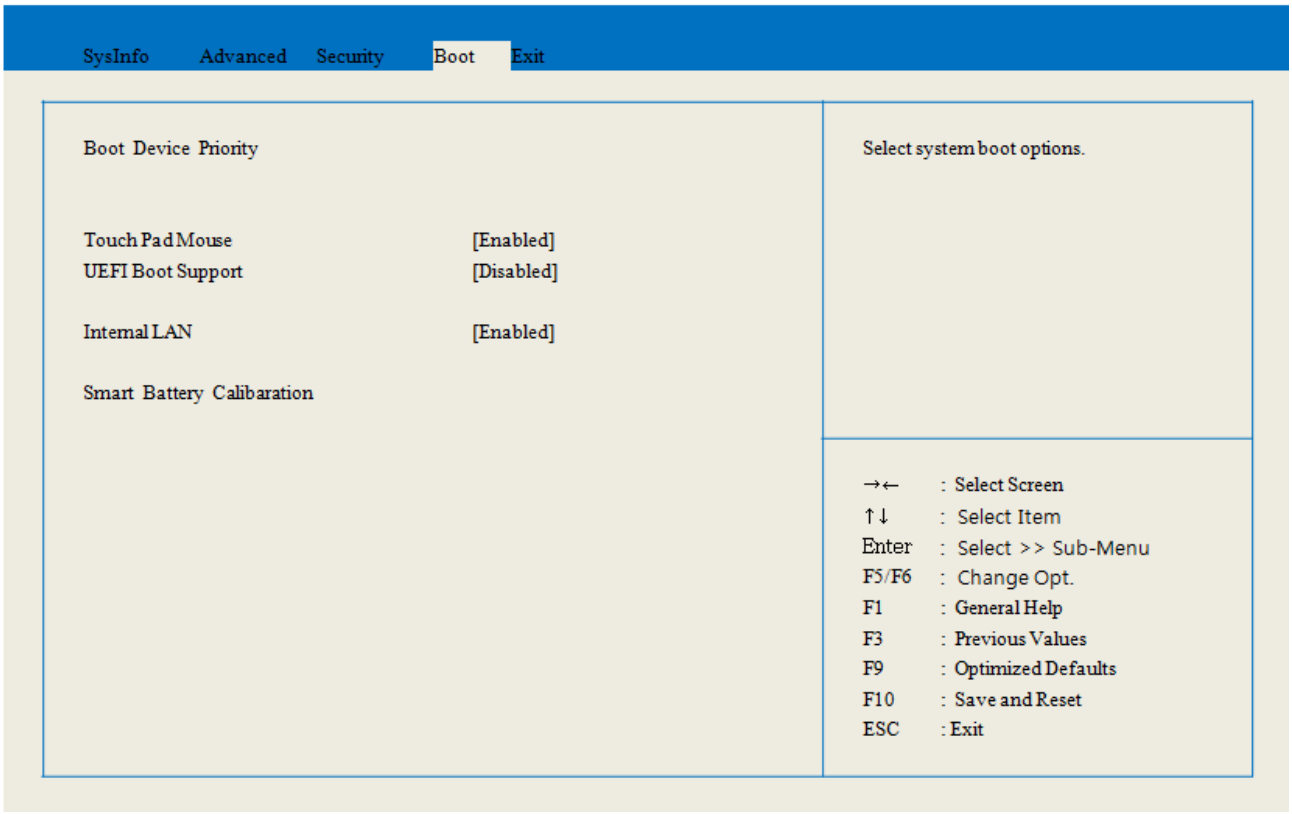
Set HDD Password

=> User can set a password of a HDD.

Password on Boot

=> Supervisor Password controls access to system boot.



Boot Device Priority

=> Select system boot options.

Touch Pad Mouse

=> 'Disabled' prevents installed Touch Pad mouse from functioning, but frees up IRQ 12. 'Enabled' forces the Touch Pad mouse to be enabled.

UEFI Boot Support

=> Enabled means that the system can boot Legacy PS or UEFI OS.

Disabled means that the system can boot Legacy OS only.

Internal LAN

=> "Enabled" will allow the internal LAN to operate correctly.

Smart Battery Calibration

=> If you select this option, the system battery will be discharged completely for more accurate battery level detection. This option only works with SMART battery.

ISSD

1.When setting the boot option is raised to a higher ISSD cursor is blinking.

2. Please set up the boot option is set to a sub

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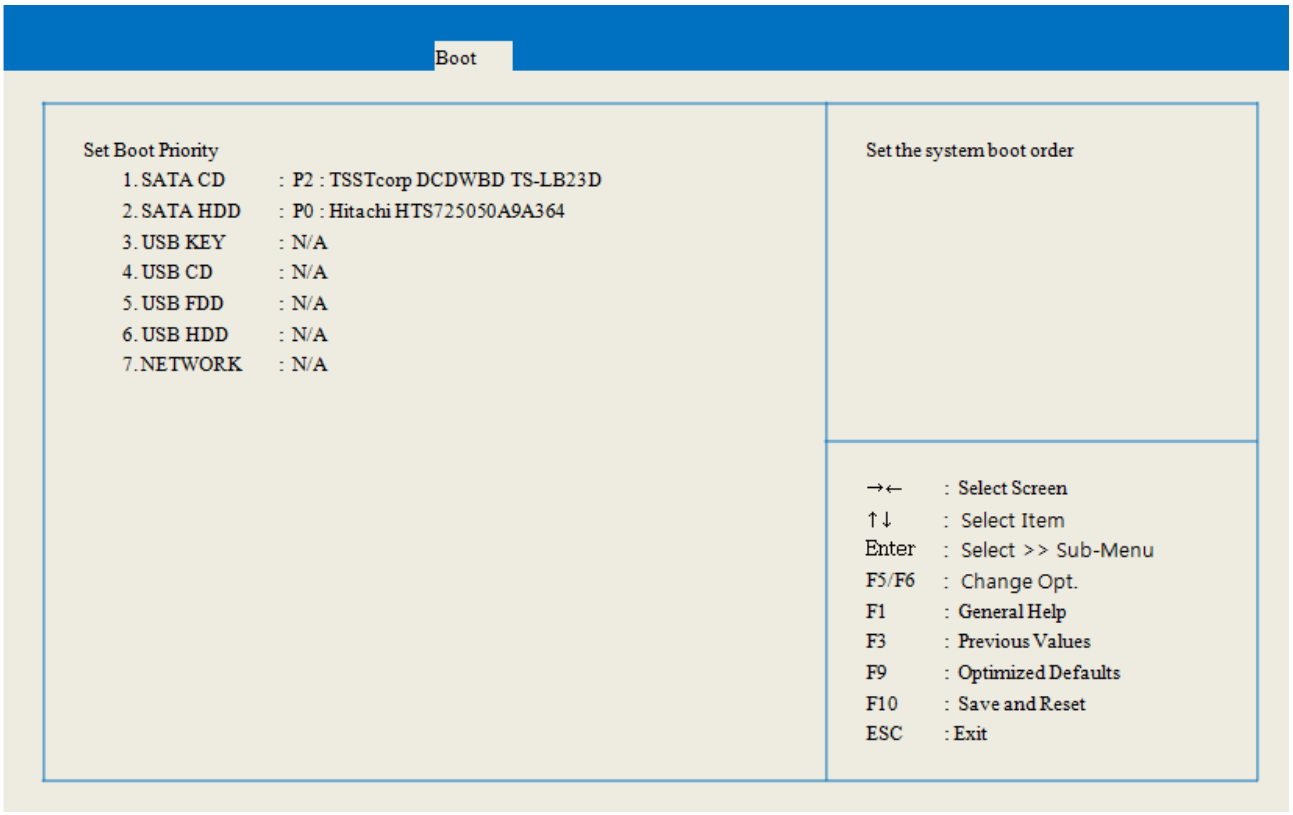

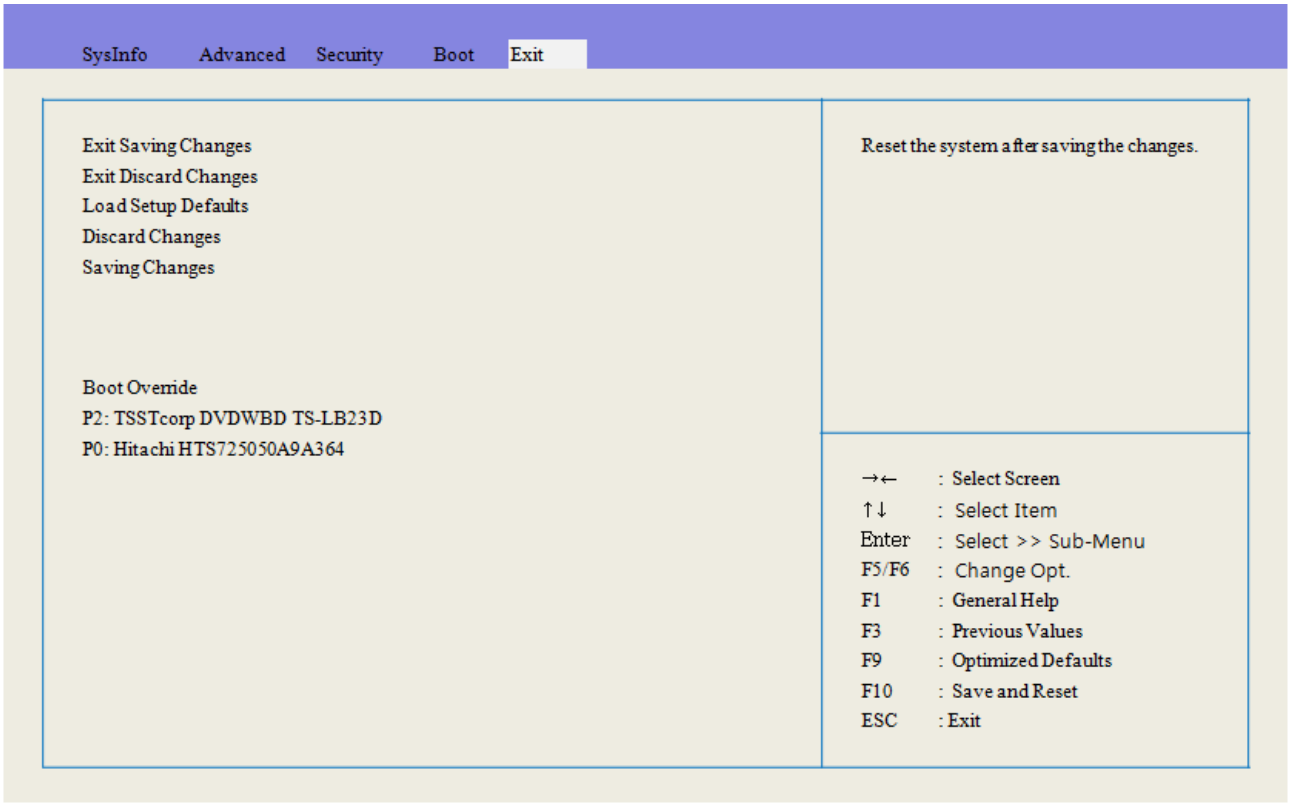

Exit Saving changes

=> Exit System Setup and save your changes to CMOS.

Exit Discarding Changes

=>Exit utility without saving Setup data to CMOS.

Load Setup Defaults

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=> Load default values for all SETUP items.

Discard Changes

=> Load previous values from CMOS for all SETUP items.

Save Changes

=> Save Setup Data to CMOS.

Boot Override

=> Boot with selected device

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2.9. Main Board Information

H/W Basic

Basic Items / Eléments livrés de série / Hauptkomponenten / Elementos básicosa / Componenti principali

Computer
Ordinateur
Computer
Ordenador(computador)
Computer

Standard Battery
Batterie standard
Standardakku
Batería estándar
Batteria standard

AC Adapter
Adaptateur CA
Wechselstromadapter
Adaptador CA/CC
(Fuente de alimentación)
Adattatore CA

Power Cable
Cordon d'alimentation
Netzkabel
Cable de alimentación
Cavo di alimentazione

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	PIC	ITEM	CODE	Q'ty	Ver
MANUAL		Battery	BA43-00319A (5900mAh)	1	BLK
		Power Code	3903-000452	1	
		AC Adapter	BA44-00280A 200W	1	
		Installation Guide	BA81-08874A	1	
		CDS Sheet	BA99-14999A	1	

H/W Option Component

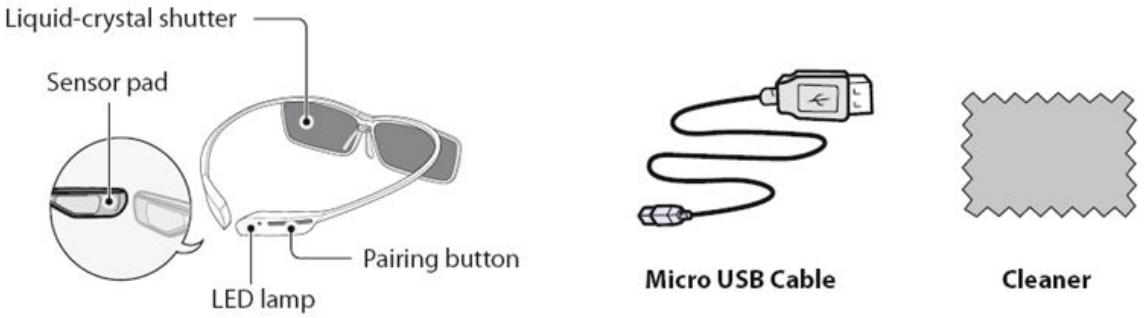
700G7C the following optional components to add or replace.

The type of component can be added later.

- **3D glasses(option)**
- HDD
- ODD
- LCD
- CPU
- MEMORT
- WLAN

3D glasses : BA68-07572A

Package Contents



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HDD		
BA59-02873A	500G(7.2_HGST)	500GB,HTS725050A9A364,S16,383,H16,C63,9.5mm,2.5inch,SATA,7200RPM,250G/P,FDB
BA59-02980A	750GB(7.2_HGST)	750GB,HTS547575A9E384,S16,383,H16,C63,9.5mmH,2.5inch,SATA,5400RPM,375G/P,FDB

ODD		
DVD		
BA59-02834A	DVD-SUPERMULTI	TS-L633J,8X,170,SATA,1.5MB,6.5W,5V
BA59-02828A	DVD-SUPERMULTI	DS-8A5SH,8X,130ms,SATA,1.5MB,6.5W,5V
Blue-ray Combo		
BA59-02991A	BD-COMBO	TS-LB23D,6X,250MS,SATA,2M,9.6W,5V

LCD PANEL		
BA59-02996A	LCD PANEL-173FHD	LCD PANEL-173FHD_3D;LTN173HT02-C,3D,17.3

CPU		
0902-002710	IC-MICROPROCESSOR	FF8062700999401,2.1GHz,rPGA,988P,TR,Plastic,1.05V,45W,0to+100C,6MB,i7-2630M

Memory		
1105-002211	IC-DRAM MODULE	M471B5273CH0-CH9,DDR3 4G SODIMM,4GByte,512Mx64bits,SODIMM,204P,67.6x30mm,8ns,1.5V,+-0.075V,0to+95C,320mA,TR
1105-002217	IC-DRAM MODULE	M471B5773CH8-CH9,DDR3 2G SODIMM,2GByte,256Mx64bits,SODIMM,204P,67.6x30.00mm,-,1.5V,+-0.075V,0to95C,280mA,TR

WLAN Combo. Module

TOP Bottom

BA59-02889A	IEEE 802.11 bgn Standard 2x2 WLAN/BT Combo	INTEL

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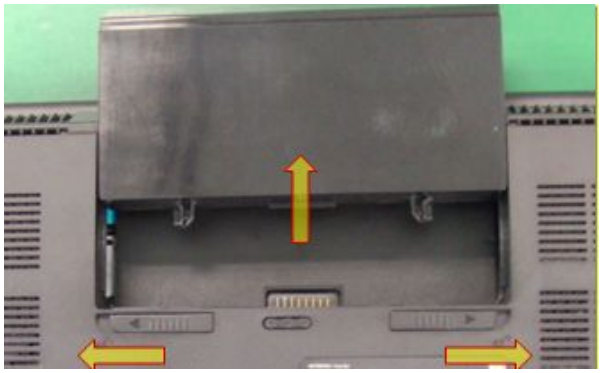
3. Desassembly and Reassembly

3.1. MainSystem

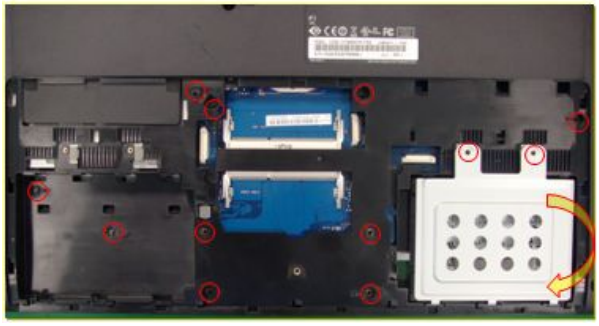
1. Turn off the power and remove the Battery before disassembling the system.



2. Remove the dummy-SD CARD before disassembling.

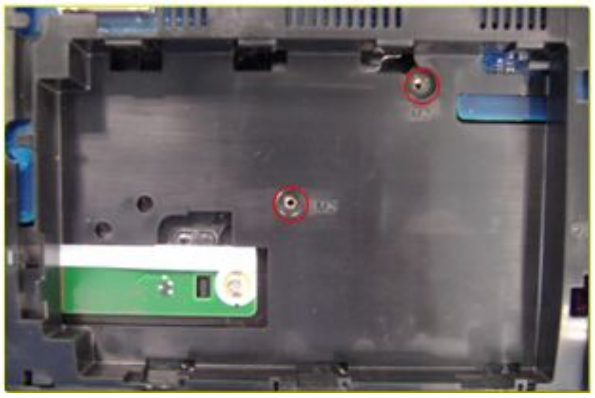
3. At the bottom side, Remove 10 Screw to disassemble .

4. Open the HDD door to disassemble. And remove 12 Screw & HDD protect cover.



5. HDD Removal : Disconnect the HDD Cable and remove the HDD from system.

5–1. Remove remain 2 screws to disassemble.



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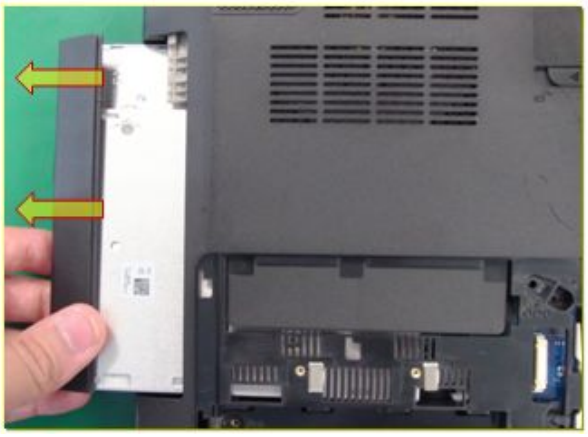
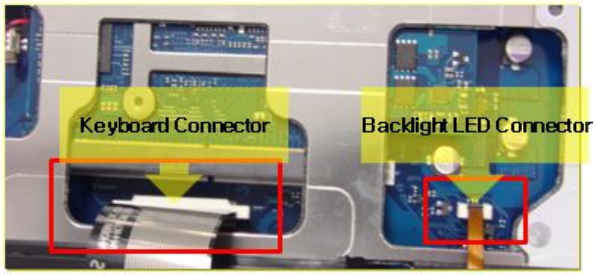
6. Disassemble ODD from system. Pull ODD to left.



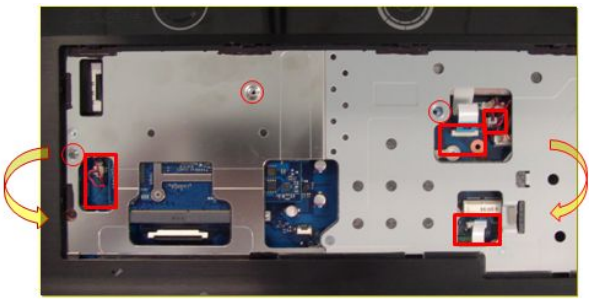
6–1. Remove the 2 remain screw.

7. Push each point with pinset, and flip the keyboard to disconnect the FFC Cable.

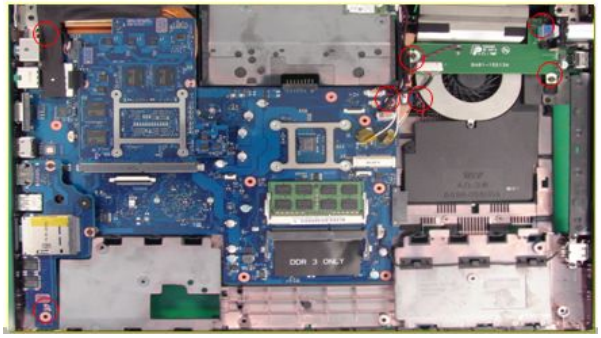
7-1. After Reverse the Keyboard, Disconnect two FFC Cable. This connector is straight type. Before remove FFC Cable, pull the connector.



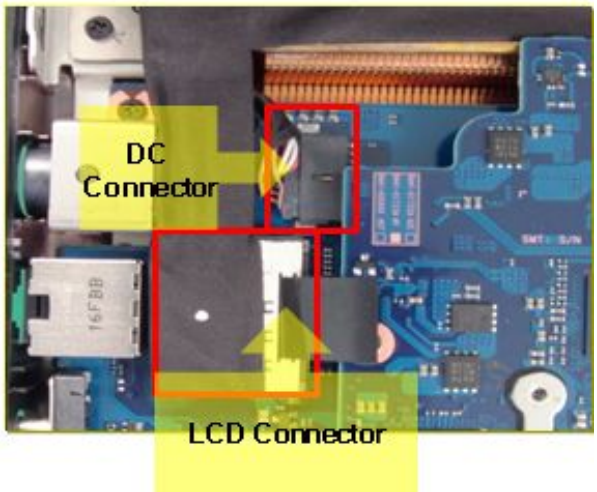
8. Remove 3 screws, at ○ point. Disconnect 2 FFC Cable & 2 speaker Cable, at □ Point. After this, open the top assy from bottom.



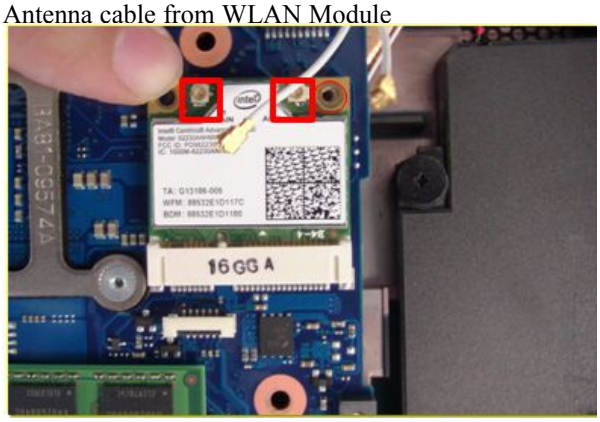
9. Remove 7 screw to disassemble.



10. Remove 2 Cables, DC Cable & LCD Cable



11. Remove 1 screw to disassemble. and Disconnect Antenna cable from WLAN Module



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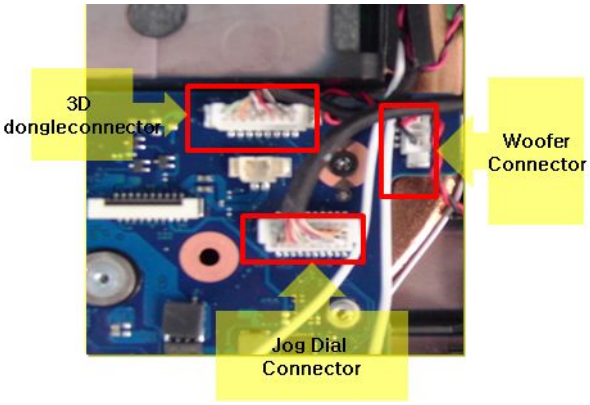
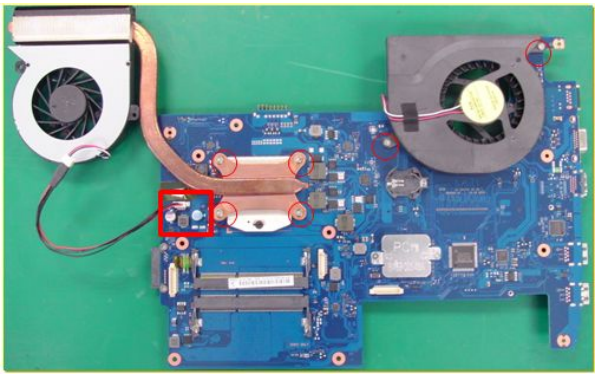
12. Disconnect 3 cable from M/B.



13. After disconnect, you can seprate M/B from Bottom ASSY. And Disconnct Fan Cable and Heat Sin.



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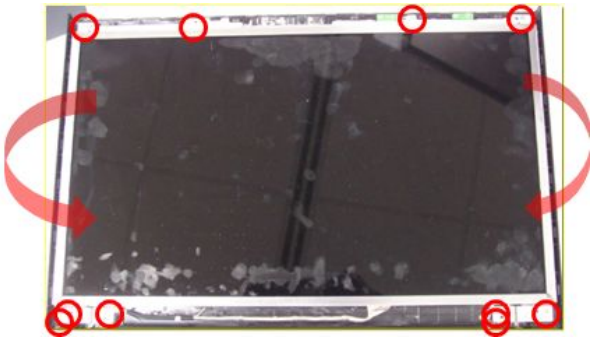
3.2. LCD Part

1. First remove 2 rubber and remove 2 screw.

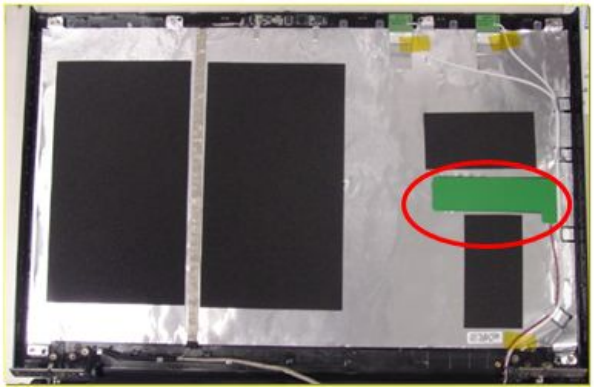
2. Pull the LCD bezel from top side, then it can be Separated from LCD Assy.

3. Remove all screw and remove LCD Bracket. And Lift the LCD From LCD BACK ASSY.



4. Disconnect the LCD Cable from LCD. And disassemble LCD Bracket from LCD.

5. To disassemble the SAMSUNG LOGO lighting Sub Board, just dispatch it from LCD BACK.



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4. Trouble shooting

4.1. General spec

Tools used for repairing the product.

- System Diagnostics Disk
- MS-DOS Booting Disk
- System Diagnostics Card
- Screwdrivers (+, —)
- Tweezers
- Multi-meter
- Oscilloscope
- Logic Analyzer

Replace Units (FRU: Field Replaceable Unit)

- DDR3 RAM Module
- 2.5" SATA HDD
- ODD – Super multi Dual layer drive or DVD Combo Drive or Etc.
- Wireless LAN Module
- Key Board
- System Fan
- Touch Pad
- LCD Panel
- Camera Module
- Main Board
- Harness Cable
- - Touchpad FFC, MainboardFFC, LCD+Camera Cable, Wireless LAN Antenna 2types, Mic, Power-in

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4.2. Debugging Flow Chart

※Training manual how to use the side of the fault diagnosis please refer.

Debugging Flow of our company computer product does same as between product universally.

Refer to attachment Debugging Flowchart more content

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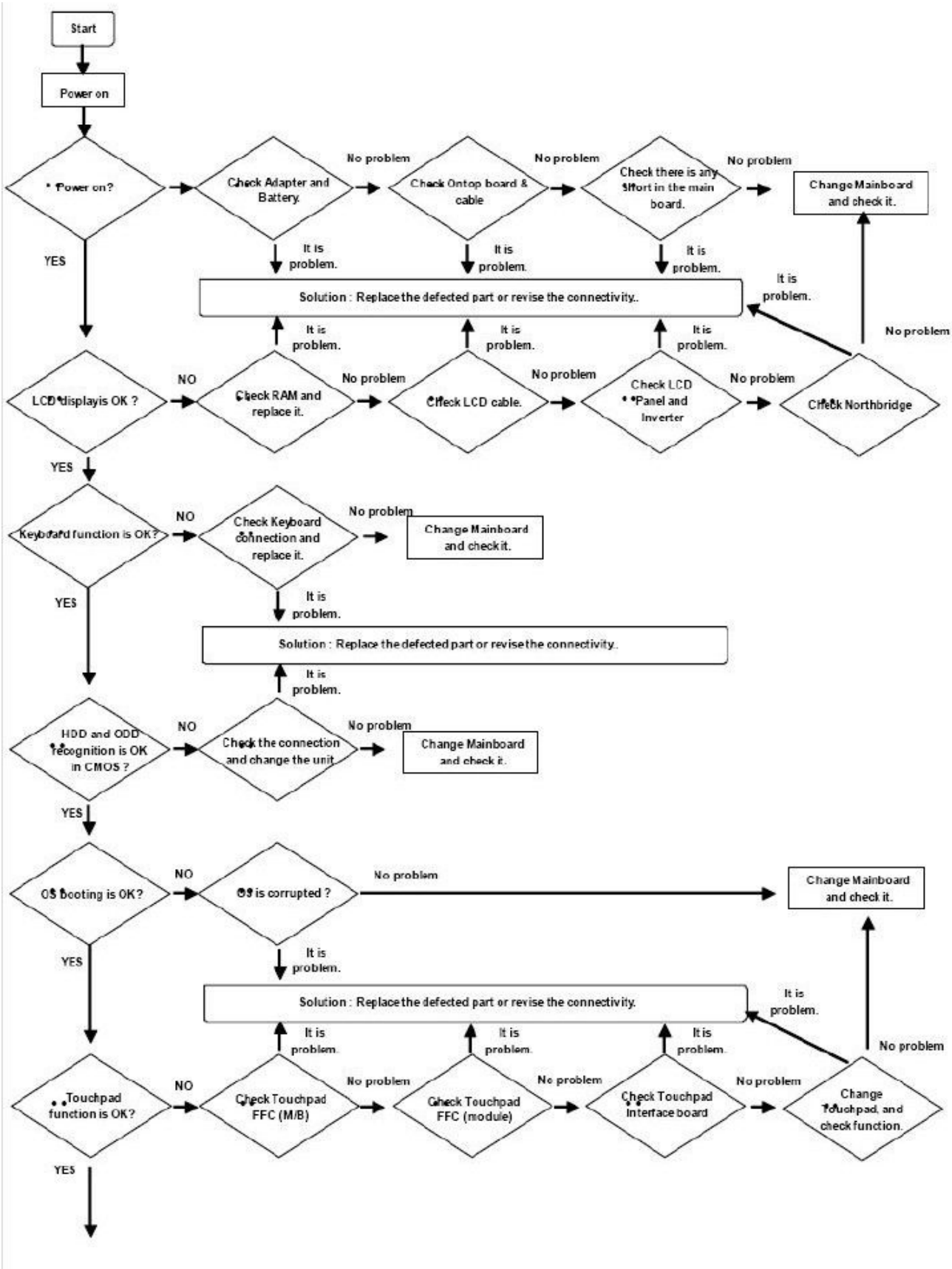

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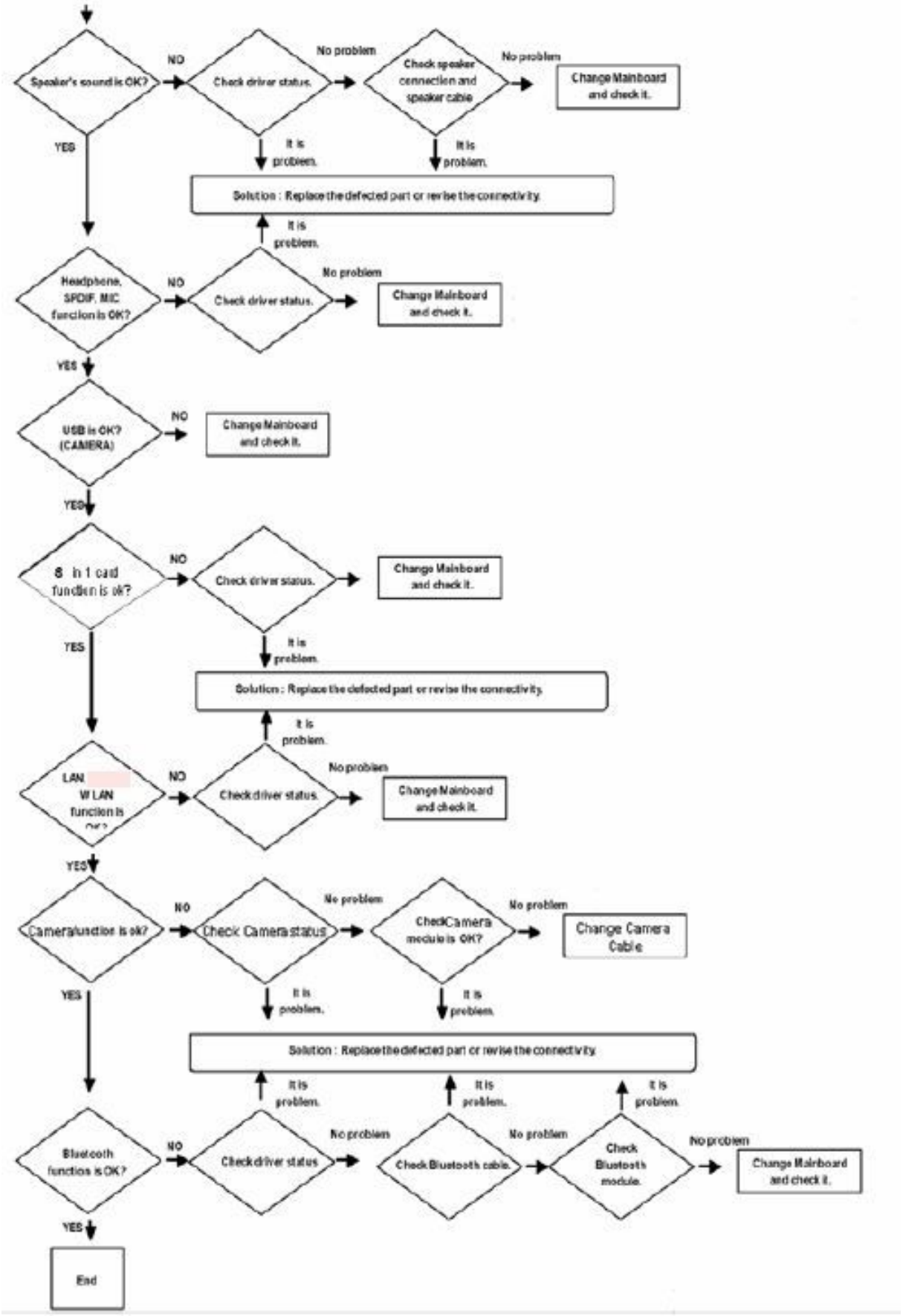

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4.3. System Diagnosis

System Diagnostics Card

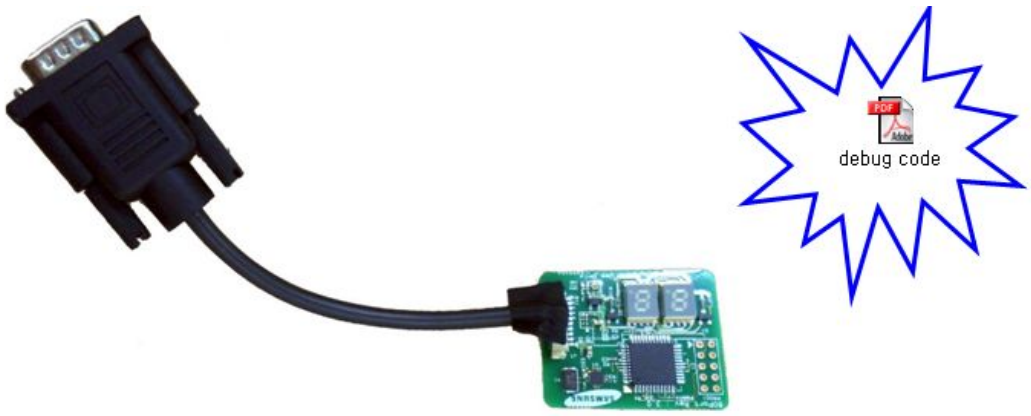
The Diagnostics Card shows the system operations during the POST (Power On Self Test) in a 2 digit hexadecimal number by connecting the cable to the 10 pin connector below the PCMCIA slot after separating the Top part. The card is used to evaluate the reason for the malfunction without disassembling the system when the system malfunctions and to test if the system operates normally after replacing a defective FRU.

How to use

<VGA Port VGA Dongle plugged in and then connect to the 80 Port.>

Debugging Code

In general, if a defect of the circuit or part is detected during the system test, the system stops at a particular code. The error codes for each part of the system are listed in the following table



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4.4. Diagnostic Program

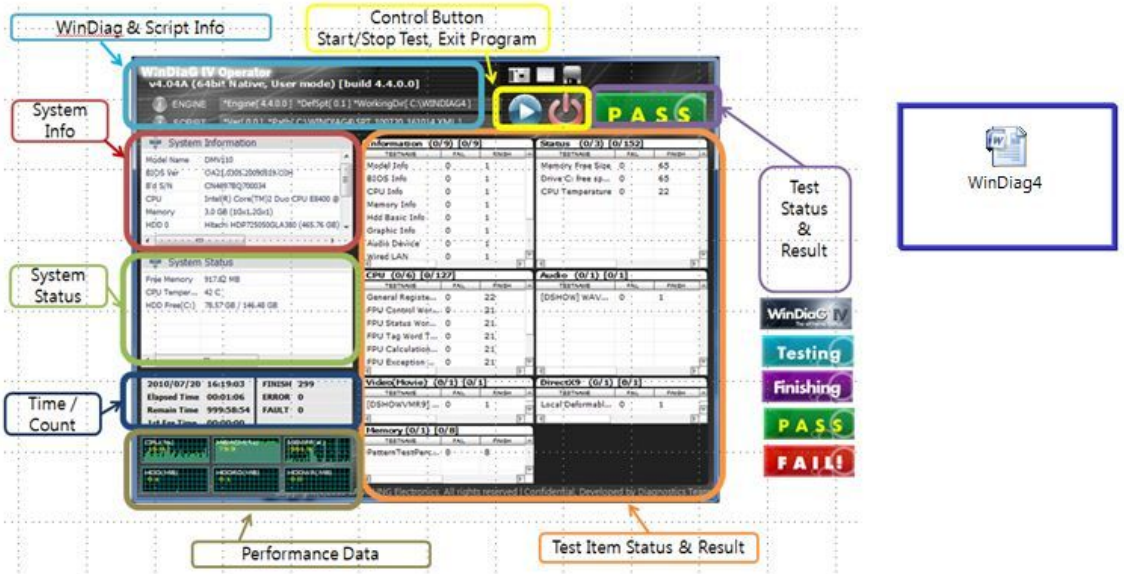
□ **WinDiag4** (lease Refer to the Training manual chapter4. Trouble Shooting.)

1) WinDiag4 is a Diagnostic tool that tests overall computer's H/Ws and functions for Windows 7.

2) Precondition : UAC(User Account Control) should be disabled.

3) Installation : When you double-click SvcDiag.bat file, this program will be installed in C:\WinDiag4. After installation, WinDiag4 will automatically start testing the system.

4) Uninstallation : After terminating the program, Just delete C:\WinDiag4 folder.



◈ Group Info : It displays Group Item Name and Test Count. If there is any FAIL or FAULT in the Group Item, the color of title will be changed to Red.

◈ Test Item : It displays Test items included in this Group. If there is any FAIL or FAULT in this test item, the color of the test item will be changed to Red.

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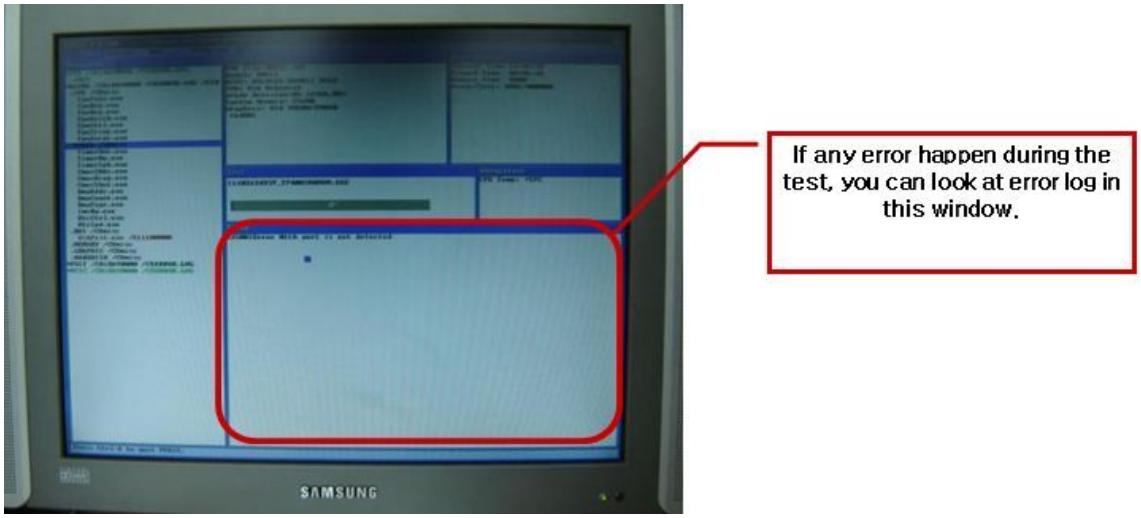
□ **Pyxis** (lease Refer to the Training manual chapter4. Trouble Shooting.)

1) Pyxis is a software that diagnose computer's H/W components in DOS environment.

2) How to use Pyxis

- First, make Dos bootable USB memory or CD.
- Copy all released files to the Dos bootable device.
- After you boot using the Dos bootable device, Select the menu that you want to execute.



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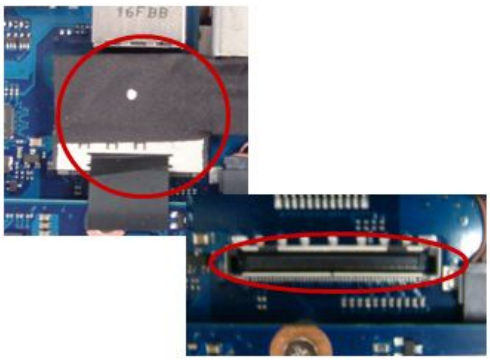
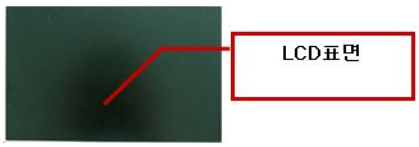
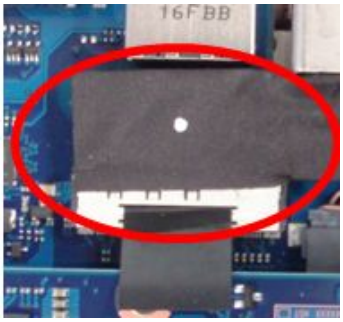
4.5. Hardware Troubleshooting

4.5.1. LCD

1. The screen is dark or the colors of the screen are distorted.	
1) Check the connection status • LCD Module LCD Cable • LCD Cable and Main board LCD Connector → Connect Cable and Connector perfectly	
2. Replace the LCD cable	Defectiveness confirmation
3. Check if there is a part of the LCD that is bent or broken due to impact → Replace the LCD	
2. No picture appears on the screen.	
1) Check the connection status • LCD Module LCD Cable • LCD Cable and Main board LCD Connector → Connect Cable and Connector perfectly → LCD cable replace	
2. Check if the System LED of the main board is blinking	
3. Check if the memory module is out of order	Re-fixation or Replacement other Memory Card .
4. Check if the Power button can be normally pressed.	Check operating or not

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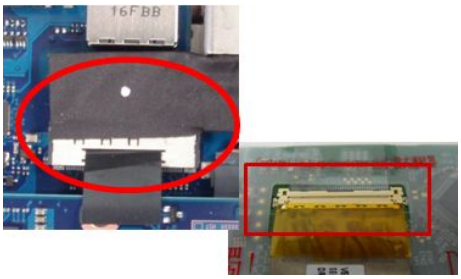
3. The LCD blinks while the system is in operation.	
1. Check if there is a magnetic body near the touch pad button or the system or check if there is an exterior defect to the LCD.	
2. Replace the LCD cable	Defectiveness confirmation

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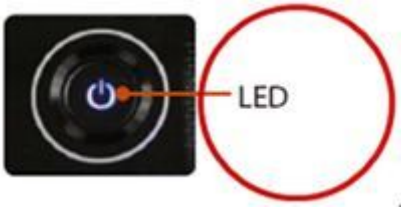
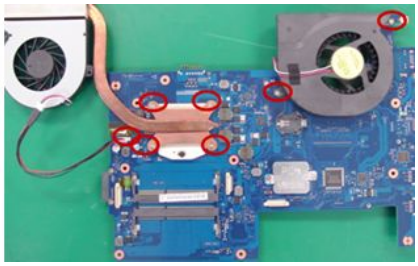
4.5.2. Main System

1. The system is not turned on.	
1. Check if the AC adapter LED is lit and if the adapter is properly connected to the system.	Check the adapter LED.
2. If the AC adapter is not connected, check the charge status of the battery. Even if the battery is charged, if the remaining battery charge is too low, the system may not be turned on.	Check the AC Adapter connection the remain of battery
3. Check if there are any alien substances in the Power switch. if have, change the LED.	
4. Replace Main Board	Check operating or not.
2. the system does not boot or immediately turns off after being turned on.	
1. Since this may be a short circuit in the system.	Disconnect the power immediately, disassemble the system and check if there are any conducting alien objects such as a screw inside.
2. Check the connection status between the CPU and the RHE.	
3. Replace the memory module.	* Check if it is out of order.
4. RTC Reset.	* Check if it is out of order.
5. Replace Main Board.	* Check if it is out of order.
3. There is no sound from the speaker.	

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1. Check if the sound is muted after booting up Windows. → Fn + F6 (Mute cancellation)	
2. Control panel confirmation. → Speaker Setting.	
3. Check the connection status of the speaker cable and check if the speaker is out of order. 4. Check if there is a magnetic object near the speaker.	
5. Replace Main Board.	* Check if it is out of order.
4. I cannot hear sound through the headphones.	
1. Check if the sound is muted after booting up Windows. → Fn + F6 (Mute cancellation)	
2. Control panel confirmation → Speaker Setting.	
3. Turn the volume up. → Fn key volume adjustment	

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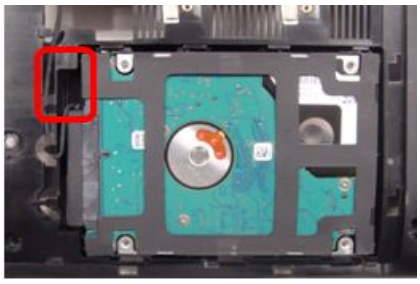
4. Check the Headphone jack.	
5. Replace Main Board.	* Check if it is out of order.
5. external/Internal microphone does not work normally.	
1. Check the audio driver settings and change them if necessary	
2. Check the connection status of the MIC connector and check if the speaker is out of order	
3. Check the Mic jack.	
4. Replace Main Board.	* Chck if it is out of order.
6. The HDD is not recognized.	
1. Check the connection status of the HDD connector. fixup HDD, check whether the system can be found. if not,change the connector on the motherboard and check again.	
2. If the 'Operating system not found' message appears during the booting process even though the HDD is recognized by CMOS, the operating system of the HDD may be corrupted or the HDD is out of order	Format the HDD and reinstall the operating System Replace the HDD with a new one.
7. HDMI port does not work normally.	
System manager confirmation . (Video / Sound / Controller confirmation) → HDMI driver Re-install.	

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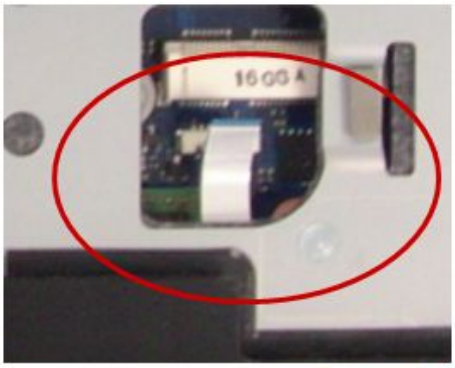
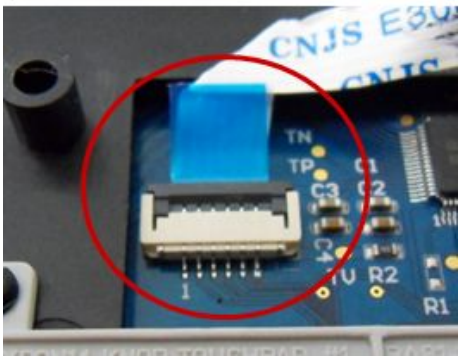
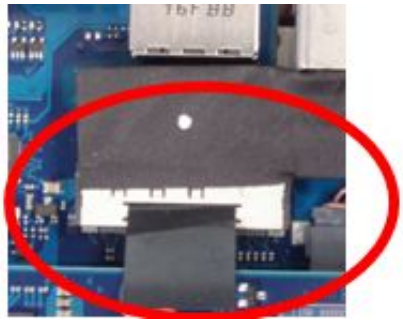
2. Check the Display Manager work normally. → Display Manager program Re-install.	
3. Check the Control panel. → Check HDMI section enable.	
Replace Main Board.	* Check if it is out of order.
8. Touch Pad does not work normally.	
1. Check the connection status of Touch Pad FFC. 2. Check the connection status of Touch Pad cable. 3. Check the connection status of Touch Pad Module. 4. Replace Touch-Pad Module.	 
9. Camera does not work normally.	
1. Check the driver status of Camera (Check the system manager)	
2. Check the connection status between LCD Cable and main board.	

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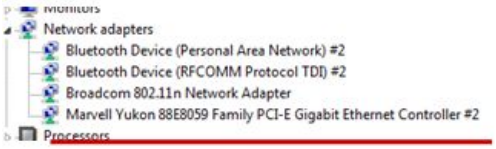
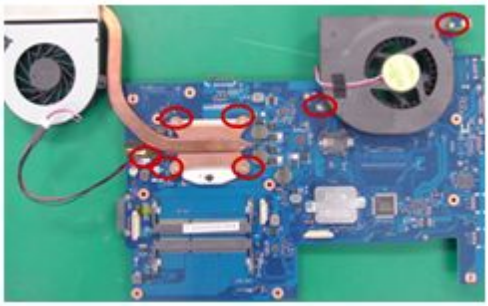
3. Check the connection between Camera cable and Camera module	
4. Replace Camera module	* Check if it is out of order.
5. Replace Main Board	* Check if it is out of order.
10.WLAN does not work normally.	
1. Check the damage status of WLAN Cable → Replace WLAN Cable	
2. Check the driver status of WLAN → Re-Install WLAN driver.	
3. Check the damage status of WLAN Jack. → Replace WLAN module.	
4. Replace Main Board.	* Check if it is out of order.
11. The Fan does not work normally.	
1. Check the system by using SAFC(Samsung Advanced Fan Control)program.	* Tool Program referance
2. Check the connection status of Heat sink → Screw fixation 6EA	

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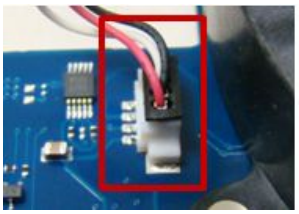
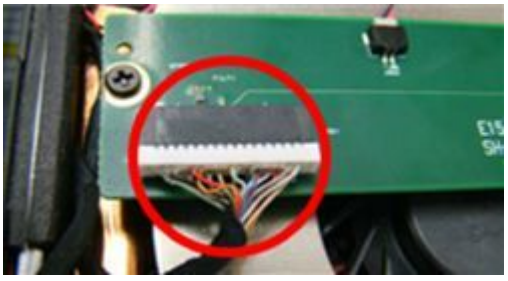
3. Check the connection status of FAN	
4. Replace FAN	* Check if it is out of order.
5. Replace Main Board.	* Check if it is out of order.

3D Function error

3D Function does not work normally.	
1. Check the connecting status between cable and 3D BT Module.	
2. Check the connection status between cable and Main Board .	
Change Module	* Check if it is out of order.
Check the 3D glasses battery	* Check if it is out of order.

Mode dial error

Mode dial does not work normally.	
1. Check the connecting status between cable and Mode dail board	

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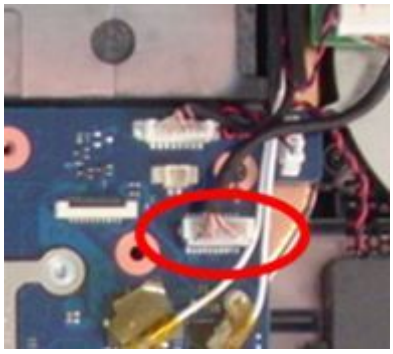
2. Check the connection status between cable and Main Board	
3. Change Module	* Check if it is out of order.
4. Check the cable	* Check if it is out of order.

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4.6. RTC Battery Reset

RTC Reset

- Disassemble the system.
- Find RST Reset node next to the Mainboard Memory slot.
- Using the tool like as tweezer, connect two nodes for about 20~30sec. Then Bios rom will be reseted.

Caution

password is not released when remove and reconnect the cable
(Chipset limitation)
If you lose your password, AS A separate contact centers.

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4.7. CPU FAN Control

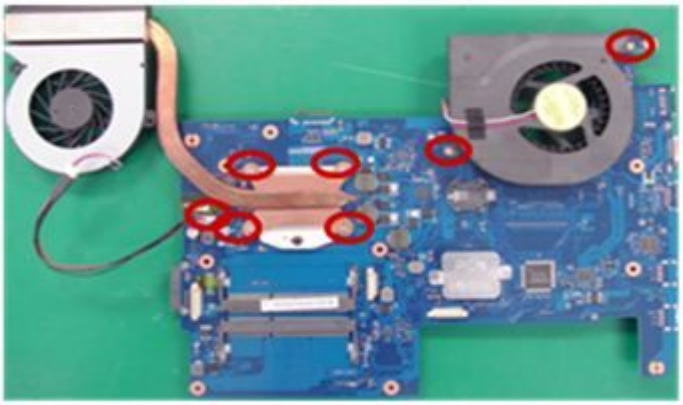
CPU FAN Troubleshooting

If FAN doesn't work well

1) Check thermal Fan locked well

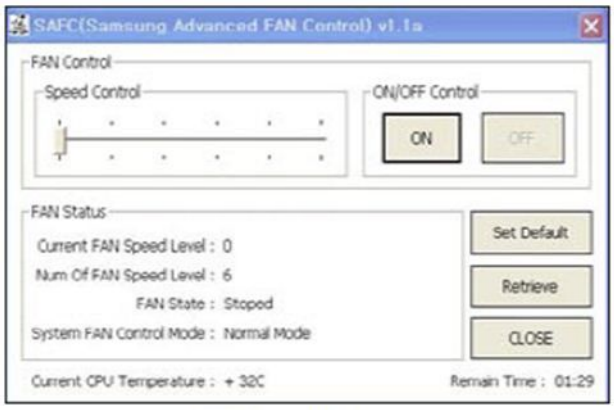
2) Check FAN cable plugged well

3) change FAN.

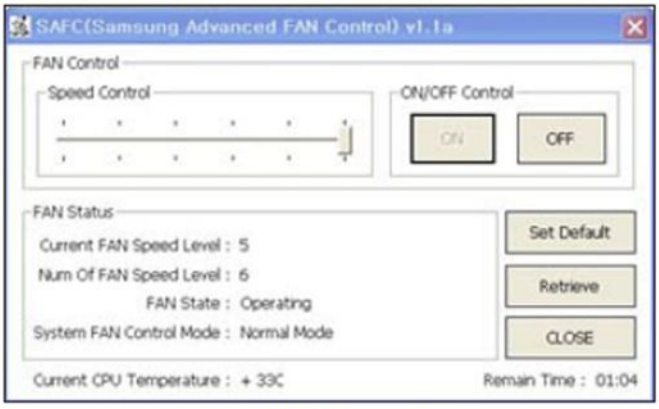


CPU FAN Troubleshooting

One can turn the fan on & off and check the fan's operational conditions without system disassembly.



그림(1) Fan off 상태



그림(2) Fan on 상태

- SAFC's default setting is "Fan off" or "Minimum Fan Speed".
  - Press "ON" in "ON/OFF Control" Fan is turned on to maximum fan speed
  - Press "OFF" in "ON/OFF Control" Fan returns to default setting.

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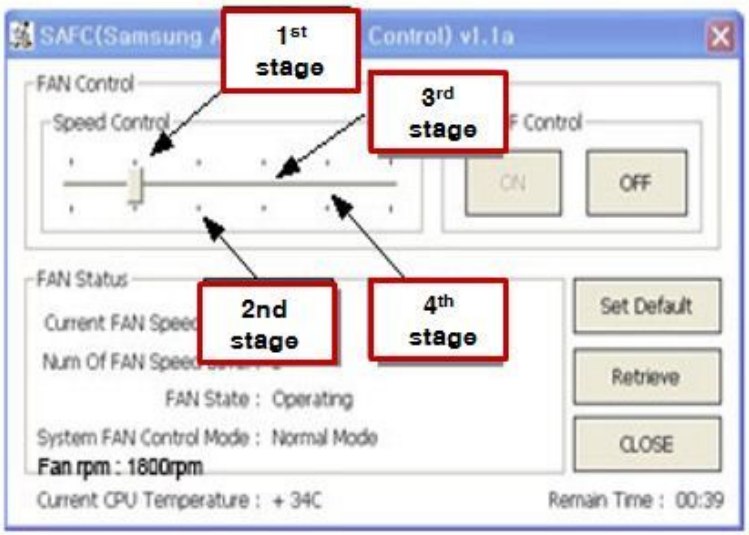

Fan Voltage Measurement

- Read Fan RPM indicated in SAFC.

Fan Voltage Pass/Fail determination

- If Fan RPM satisfies "rpm spec +/-10%", then Fan test is "PASS" .

CPU FAN Troubleshooting

(1) Normal mode

Mode	14" Fan Speed	15"/17" Fan Speed
OFF	0	0
Low	2048	2119
Middle1	2318	2297
Middle2	2587	2482
Middle3	2926	2700
Middle4	-	2926
High	3511	3321

(2) Silent Mode (Auto)

Mode	14" Fan Speed	15"/17" Fan Speed
OFF	0	0
Low	2048	2119
Middle1	2318	2297
Middle2	2587	2482
Middle3	2926	2700

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(3) Silent mode (Low)

Mode	14" Fan Speed	15"/17" Fan Speed
OFF	0	0
Low	2048	2119
Middle1	2318	2297
Middle2	2587	2482
Middle3	2926	2700

(4) Battery Mode

Mode	14" Fan Speed	15"/17" Fan Speed
OFF	0	0
Low	2048	2119
Middle1	2318	2297
Middle2	2587	2482
Middle3	2926	2700
High	3511	2926

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4.8. Battery Use time

Battery Use Time

Check the following check lists for systems where the battery use time is too short to diagnose problems.

Check the battery

Check if the battery is out of order referring to the Battery check program distributed to Service

1) Battery Check List

Please mark "✓" in the box (☐) of each applicable items, after checking the battery status with the "battery checking program"

1. Does the battery communicate normally with system?
   - ✓ PASS
   - ☐ FAIL
2. Is the battery charged normally?
   - ✓ PASS
   - ☐ FAIL
3. Is the battery discharged normally?
   - ✓ PASS
   - ☐ FAIL
4. Is the battery still in warranty?
   - ☐ Excess than 6 months : Out of warranty
   - ✓ Excess than 300 Cycles : Out of warranty
   - ✓ Less than 6 months : PASS
   - ☐ Less than 6 months : FAIL

2) Criteria for each of the check lists

1. Does the battery communicate normally with system?

☐ PASS

①: Data displayed in the data window.

②: Available capacity displayed : 0 ~ 100%

☐ FAIL

①: The code 65535 displayed

②: Displayed the error message in Korean "통신이 원할 하지 않습니다"

☞ recommended : When the communication failed, please set a normal battery to the system and check first which -battery or system- has the problem.

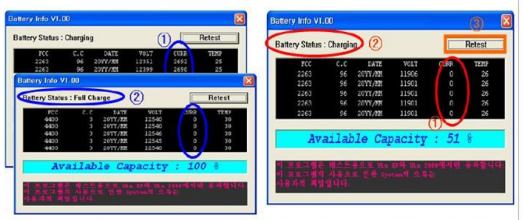
2. Is the battery charged normally?

☐ PASS

①: Pass, if the CURR values are within 35 ~ 3500

☐ FAIL

①,②: Fail, if the CURR values are 0 and the battery status is in Charging.



②: Pass, even if the CURR value is 0 but the battery is in status of Full Charge

③: if the CURR value is 0 and in status of Charging, please reconfirm the "fail" after 2~3 times of Retest.

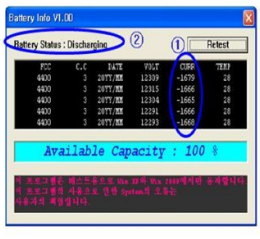
3. Is the battery discharged normally?

☐ PASS

①,②: Pass, if the CURR values are within -50 ~ -5000 and the battery status is in Discharging.

☐ FAIL

Fail, if the System is off status when the adaptor is removed from the System



4. Is the battery still in warranty?

☐ Excess than 6 months : Out of warranty

☐ Excess than 300 cycles : Out of warranty

☞ **Warranty period : Within 6 months after sales date, more than 60% of initial electric capacity after 300 cycles.**

*** Reference :** If a battery is out of warranty, the battery can not be considered as "defected". So if a customer requests to exchange his battery in this case, the battery should be provided onerously with sales price. So please persuade customer to use continuously his battery, with the explanation of effective capacity of his battery, if the battery have no defect but only small decrease of capacity.

☐ Less than 6 months : PASS

☐ Less than 6 months : FAIL

☞ **①Please refer to "Capacity Standard Table" (or ②Capacity Standard Graph). Please judge Pass or Fail after checking the sales date of a battery. Pass, if the capacity of the battery is over than the value of corresponded date of "Available Capacity" column in the Table. Fail, if the capacity is lower than the value.**

* Reference : The battery capacity can have individual error according to the user's circumstance of the battery. So it is recommended that the battery should be checked (with Battery Check Program) after calibration (Smart Battery Calibration: Full charge/discharge or Full discharge/charge)

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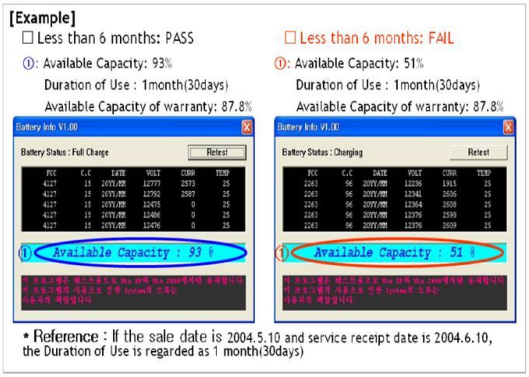


3) Battery capacity Table.

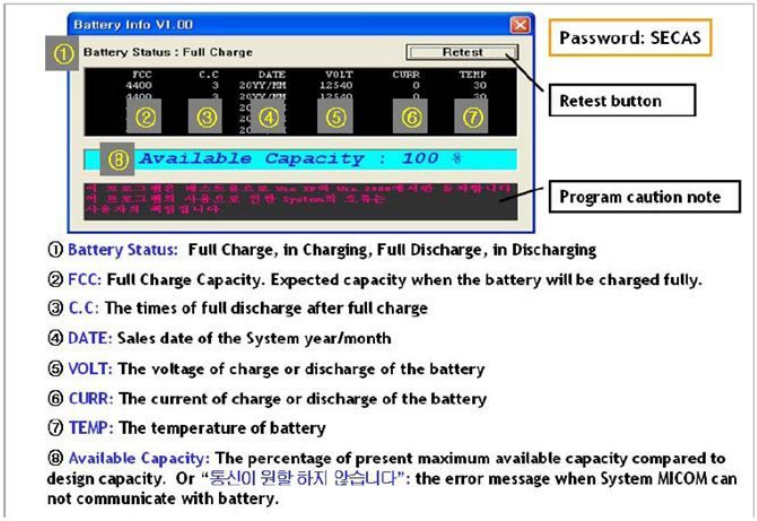
Duration of Use	Available Capacity(%)
Within 0.5month (15days)	More than 93.6 %
Within 1.0month (30days)	More than 87.8 %
Within 1.5month (45days)	More than 82.5 %
Within 2.0month (60days)	More than 77.8 %
Within 2.5month (75days)	More than 73.6 %
Within 3.0month (90days)	More than 70.0 %
Within 3.5month (105days)	More than 66.9 %
Within 4.0month (120days)	More than 64.4 %
Within 4.5month (135days)	More than 62.5 %
Within 5.0month (150days)	More than 61.1 %
Within 5.5month (165days)	More than 60.3 %
Within 6.0month (180days)	More than 60.0 %

* Reference

Duration of Use : The using period from the sales date of the system (with battery)

Available Capacity(%) : The real capacity of the battery, decreased from the design capacity by the user's circumstance, keeping status or etc.

4) Batterycheck program



① Battery Status: Full Charge, in Charging, Full Discharge, in Discharging

② FCC: Full Charge Capacity. Expected capacity when the battery will be charged fully.

③ C.C: The times of full discharge after full charge

④ DATE: Sales date of the System year/month

⑤ VOLT: The voltage of charge or discharge of the battery

⑥ CURR: The current of charge or discharge of the battery

⑦ TEMP: The temperature of battery

⑧ Available Capacity: The percentage of present maximum available capacity compared to design capacity. Or "통신이 원할 하지 않습니다": the error message when System MICOM can not communicate with battery.

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Battery Troubleshooting

1) Generally, the battery usage time in advertisements by notebook manufacturers refers to the maximum battery use time. Since the system specifications and the usage environment may differ, the user's battery usage time may differ from the advertisement even if there is no problem with the system.

   .

2) Conditions for the company's maximum battery use time

   - Minimum LCD brightness, base system, the wireless LAN R/F is turned off, BatteryManager-Maximum Battery Mode
   - Measuring Tool: BatteryMark v.4.0.1

3) If a customer complains about the battery usage time, let them know that the battery usage time may differ depending on the model specifications and the usage environment and recommend the following usage environment for longer battery time.

   - Use the company's power-saving program, BatteryManager, and set BatteryManager to Maximum Battery Mode.
   - . LCD brightness: Set to the minimum level as long as the user does not experience inconvenience.
   - . Disable unnecessary devices : Turn the wireless LAN R/F switch off and disable USB devices (DMB, fingerprint recognition and Bluetooth)

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4.9. Bios Update

Set-up Method

1) DOS Mode Update
   a) Make a Dos booting disk -> Copy Packing file to Disk -> boot from DOS disk ->
      BIOS update: C:\>amiflash XXXX.rom /c /x /bbl /force
      MICOM update : C:\>up111m XXXX.bin
      Packing fie : C:\>XXXX.exe /s /c
      (XXXX.exe is the packing file merging BIOS and MICOM -> ABXX.exe)
2) update in the Windows
   Windows boot -> Run Samsung update plus -> check update profile -> Click 'BIOS update'
3) BIOS setup guide
4) Delete Password

RTC Reset
• Disassemble the system.

• Find RST Reset node next to the Mainboard Memory slot.

• Using the tool like as tweezer, connect two nodes for about 20~30sec. Then Bios rom will be reseted.

Caution
password is not released when remove and reconnect the cable
(Chipset limitation)
If you lose your password, AS A separate contact centers.

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4.10. H/W Upgrade

HDD

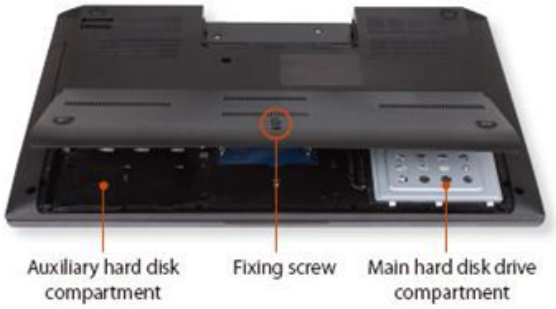
This computer may have one or two hard disk drives depending on the product.

If there is only one hard disk drive, you can add a hard disk drive to the auxiliary hard disk drive compartment.

- The pictures used for the descriptions are those of a representative model and may differ from the actual product.
- You can only install a 2.5-inch 9.5mmH S-ATA2 type hard disk drive for a note PC. (You have to purchase the drive separately.)
- When you install an additional hard disk drive, you have to use the separately provided parts, i.e. the rubber case, connector, fixing cover and fixing screws.

1 Shut the computer down completely and separate the AC adapter and the battery from the main body.

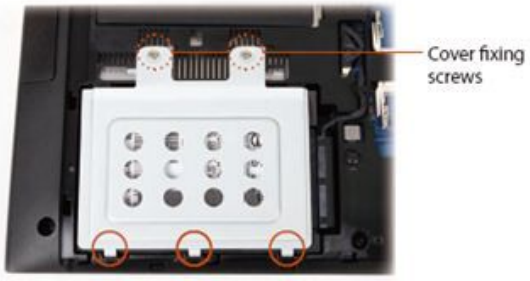
2 Remove the screw fixing the hard disk drive compartment cover at the bottom of the computer with a screw driver to separate the cover.



3 Insert the hard disk drive to be added into the rubber cover and connect one end of the connector to the hard disk drive.

4 Insert the hard disk drive into the auxiliary hard disk compartment and connect the connector to the connector port of the computer so that the white mark faces in the right-hand direction.

5 Insert the fixing cover aligning the one side of the cover with the three holes of the main body and fix the other side of the cover by fastening 2 fixing screws.



6 Close the hard disk drive compartment cover and fasten the screw.

After installing a separately purchased hard disk drive, format the drive referring to the hard disk drive manual, if necessary.

HDD		
BA59-02873A	500G(7.2_HGST)	500GB,HTS725050A9A364,S16,383,H16,C63,9.5mm,2.5inch,SATA,7200RPM,250G/P,FDB
BA59-02980A	750GB(7.2_HGST)	750GB,HTS547575A9E384,S16,383,H16,C63,9.5mmH,2.5inch,SATA,5400RPM,375G/P,FDB

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Memory

One or more memory modules are installed on the computer.

There are 4 memory slots in total. Users can replace the memory modules or add new memory modules using 2 of the slots.

- Replace or install new memory only after shutting the computer down completely. Do not replace or install memory when the computer is in Sleep mode.
  Disconnect main power plug and remove the battery before continuing.
- To utilize the dual channel feature, using memory modules with the same specifications (of the same capacity and from the same manufacturer) is recommended.
- The images used for the illustration are of a representative model, therefore the images may differ from the the actual product.

Adding or Replacing Memory Modules

1 Remove the screw on the memory compartment cover at the bottom of the computer using a screw driver.

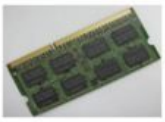
2 Insert a new memory module into the memory slot at an angle of approximately 30 degrees aligning it to the angle of the memory slot.

3 Push the memory module down so that it is completely fixed. If the memory does not fit easily, push the memory module down while pulling the memory module latches outward.

4 Close the memory compartment cover and fasten the screw.

Removing a memory module

Pull the memory module latches outward.
The memory module will pop up.
Remove the memory module out at an angle of 30 degrees.

Memory		
		
1105-002211	IC-DRAM MODULE	M471B5273CH0-CH9,DDR3 4G SODIMM,4GByte,512Mx64bits,SODIMM,204P,67.6x30mm,8ns,1.5V,+-0.075V,0to+95C,320mA,TR
1105-002217	IC-DRAM MODULE	M471B5773CHS-CH9,DDR3 2G SODIMM,2GByte,256Mx64bits,SODIMM,204P,67.6x30.00mm,-,1.5V,+-0.075V,0to95C,280mA,TR

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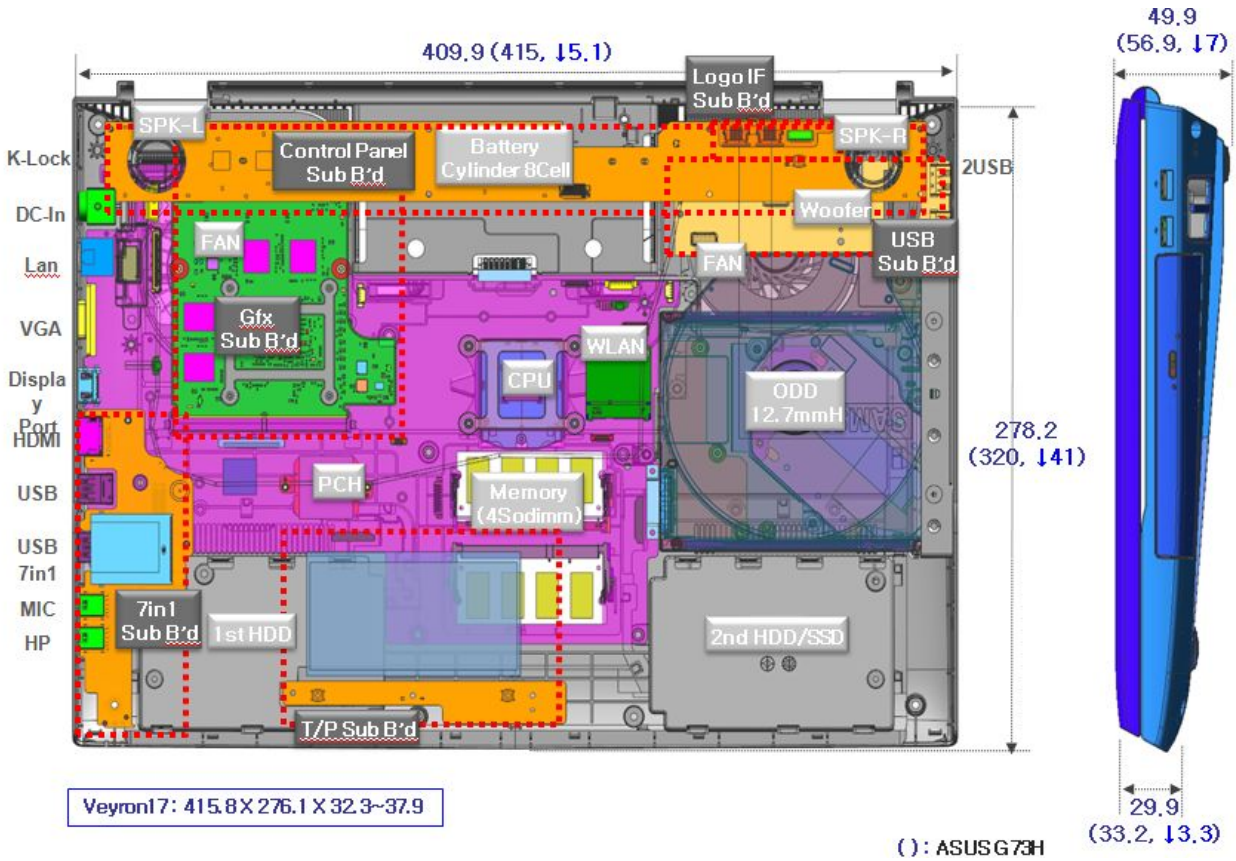
5. System Wire Diagram

5.1. System Layout



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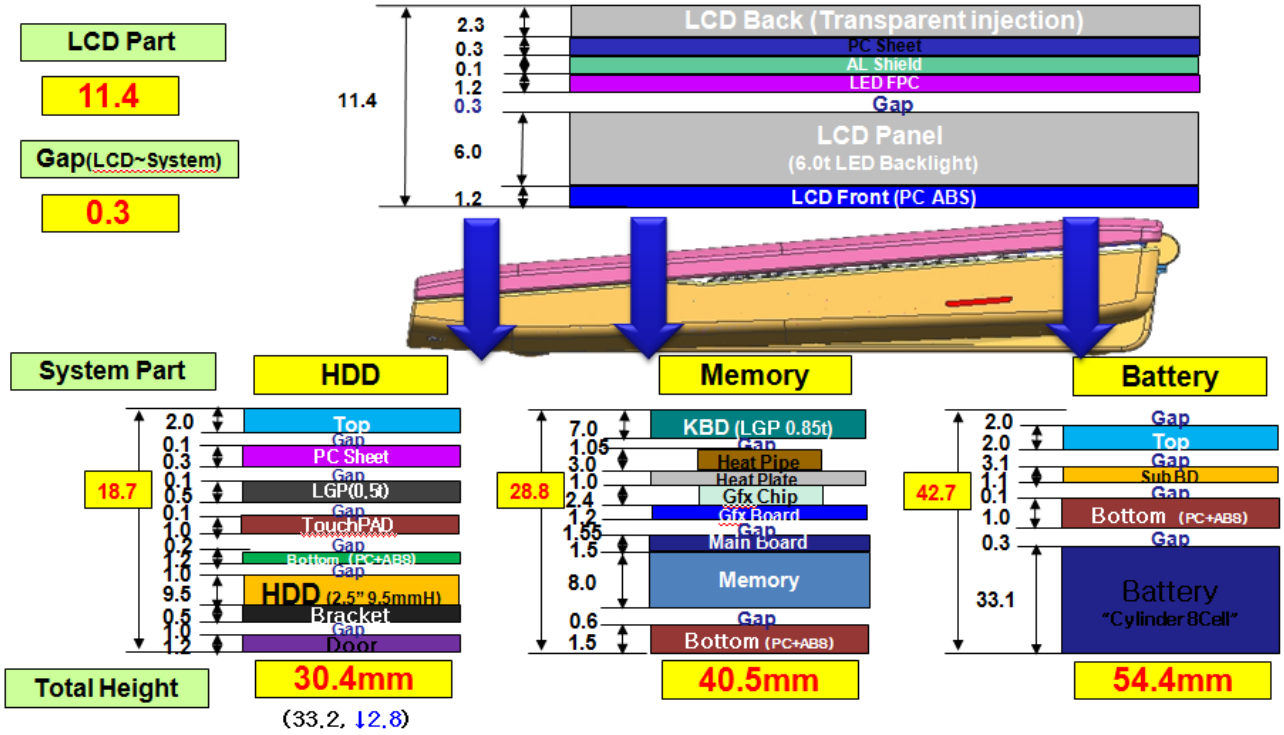

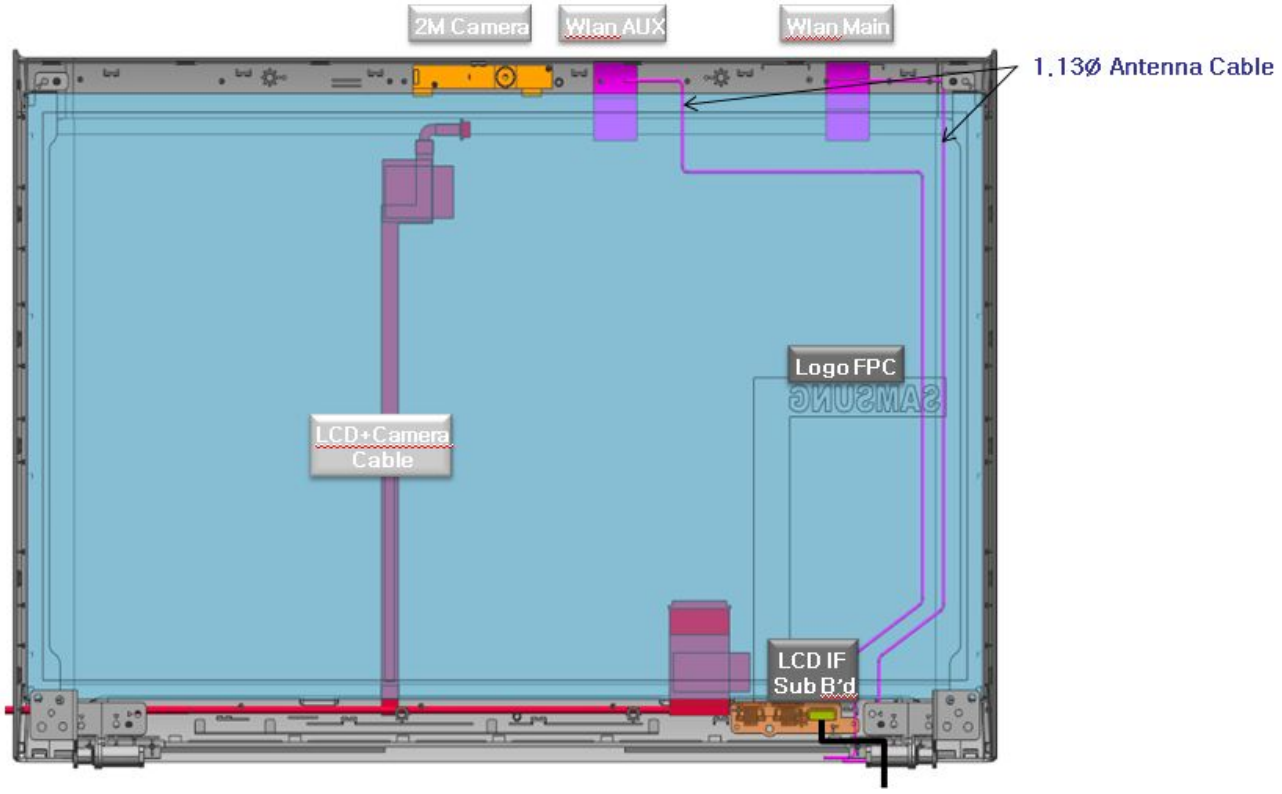

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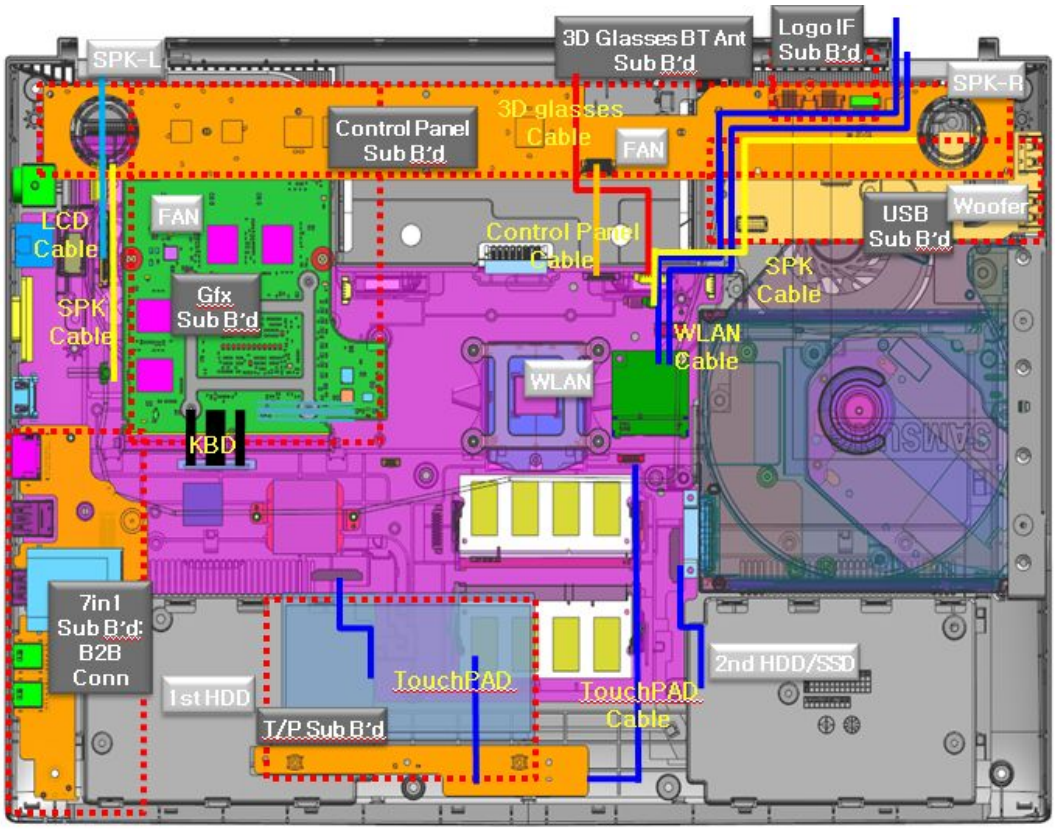

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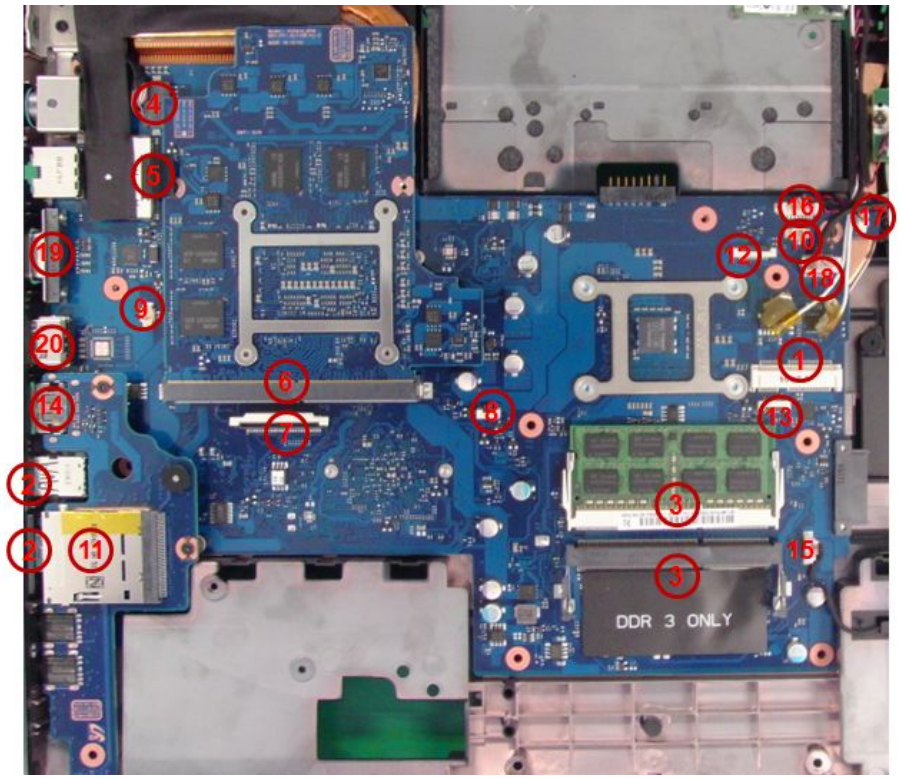
5.2. Board Component

Board Component- Bottom



1.WLAN Conn.
2.USB3.0 Conn.
3.SoDIMMConn.
4.DC Conn
5.LCD Conn
6.MXM Conn
7.KBD Conn.
8.KBD Backlit Conn
9.Speaker Conn(Left).
10.Speaker Conn(Right)
11.7-in-1 slot
12.Human I/F Connector
13.Touch Pad Sub B'D
14.Display Port Conn
15.USB 2.0 Sub B'D Conn
16.3D Dongle Connector
17.Woofer Conn
18.Jog Sub B'D Conn
19.VGA Conn
20.HDMI Conn

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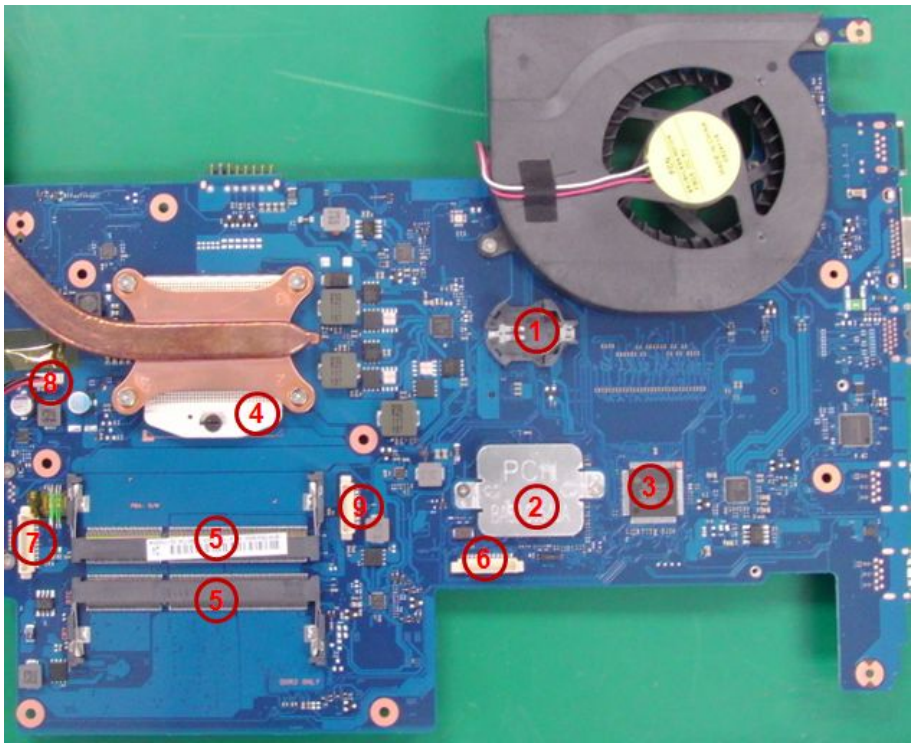
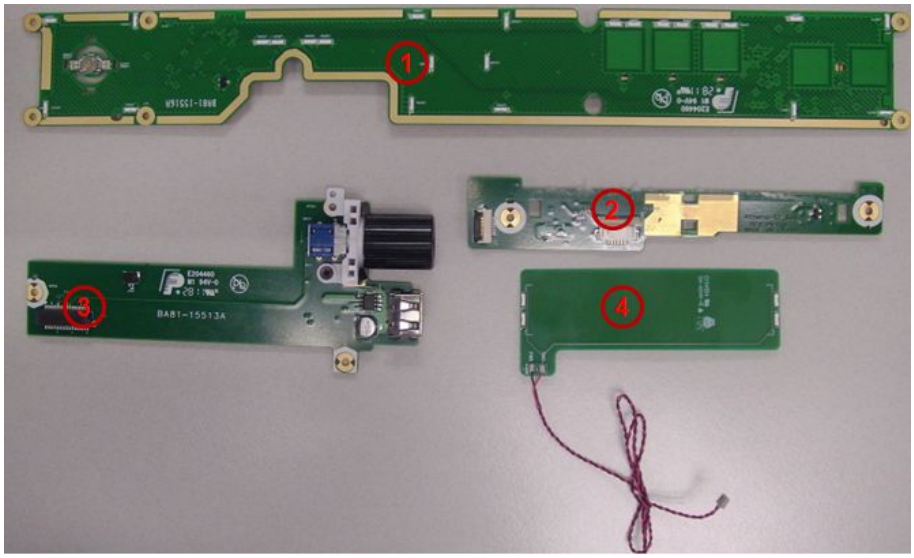
Board Component- Top



1.RTC BATTERY Conn
2.PCH Chipset
3.Micom
4.CPU Socket
5.SodimmSocket
6.HDD Connector(1st)
7.HDD Connector(2nd)
8.CPU Fan Conn
9.Debug Conn

Board Component- Sub board



1.Human I/F Sub B'D
2.Touch Pad Sub B'D
3.Jog Dial Sub B'D(including USB 2.0 X 1 Port)
4.Logo Sub Board

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KBD

Keyboard layout and size can vary by each country.

KBD Water Check sheet Location

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GSPN (GLOBAL SERVICE PARTNER NETWORK)

Area	Web Site
Europe, MENA, CIS, Africa	https://gspn1.samsungcsportal.com
E.Asia, W.Asia, China, Japan	https://gspn2.samsungcsportal.com
N.America, S.America	https://gspn3.samsungcsportal.com

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