

55" Medical Panel Module Specification

1. Summary

This display is mainly designed for the operating room use environment. The software is equipped with LG LD550EQE-FPA1 model 55-inch LCD screen, to achieve 3840x2160 resolution.

2. Electrical Characteristics

2.1. Screen Characteristics

Panel Screen Model	LG: LD550EQE-FPA1
Size	55-inch
Effective Display Area	1209.6(H)×680.4(V) mm
Display Color	1.07B colors (10bit)
Maximum Resolution	3840*2160@60Hz
Dot Pitch	0.315x0.315mm
Brightness	700cd/m ² (TYP); 560cd/m ² (Minimum)
Contrast Ratio	1100: 1 (TYP) ; 800:1 (Minimum)
Response Time	8ms (G to G)
Viewing Angle	LEFT-UP: 89° LEFT-DOWN: 89°
Display Surface Treatment	AG Haze28%
Backlight Type	LCD
Surface Hardness	2H

2.2. Display Characteristics

Signal Input Interface		DVI/DP/HDMI/VGA/RJ45
Output Interface		DC*5 (only for power supply, 5V*1A)
Built-in Power Supply	Input Interface	Chinese standard 220V top and twin-side bottom interface
	Input Voltage	100~240V,50~60Hz
	Output Power	400W
	Power Factor	≥0.95
	Redundant power source	Contains a redundant power supply, which can be seamlessly switched to the redundant power supply when the current working power supply is damaged.
Power Consumption	Normal	105W (not considering the 5V power supply interface load)
	Maximum	120W
Factory Brightness		350cd/m ²
Factory Color Temperature		9300K
Gray Level		14Bit
Glass	Surface Treatment	AR+AF+Non-air-gap bonding
	Light Transmittance	≥96%
	Hardening Treatment	Thermal tempering
	Thickness	3mm

2.3. Interfaces



2.3.1. Signal Technical Specification

Signal		Specification
HDMI	HDMI1.4	Bandwidth: <300MHz Supports up to 2560x1600@60Hz
DP	DP1.2	Bandwidth: < 21.6Gbps; Supports up to 4K (4096 x 2160) @ 60Hz
DVI	Dui-link	Bandwidth: < 268.5MHz Supports up to 2560x1600@60Hz
VGA	Video Graphics Array	Dot frequency: < 205MHz Supports up to 1920x1200@60Hz

2.3.2. Input Signal

2.3.2.1. HDMI Terminal



Pin	Signal	Pin	Signal	Pin	信号
1	TMDS Data 2+	8	TMDS Data 0 shield wire	15	DDC clock signal(SCL)
2	TMDS Data 2shield wire	9	TMDS Data 0-	16	DDC Data (SDA)
3	TMDS Data 2-	10	TMDS Clock+	17	Ground
4	TMDS Data 1+	11	TMDS Clock shield wire	18	+5VPower
5	TMDS Data 1 shield wire 线	12	TMDS Clock-	19	Hot Plug Detect
6	TMDS Data 1-	13	/		
7	TMDS Data 0 +	14	/		

2.3.2.2. DP Terminal

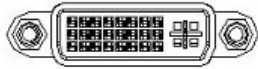


Pin	Signal	Pin	Signal	Pin	Signal
1	Lane 0(p)	8	Lane 2-GND	15	AUX_CH(p)
2	Lane 0-GND	9	Lane2(n)	16	AUX-GND

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3	Lane 0(n)	10	Lane 3(p)	17	AUX_CH(n)
4	Lane 1(p)	11	Lane 3-GND	18	Hot Plug
5	Lane 1-GND	12	Lane 3 (n)	19	DP_PWR Return
6	Lane1 (n)	13	GND	20	DP_PWR
7	Lane 2(p)	14	GND		

2.3.2.3. DVI Terminal



Pin	Signal	Pin	Signal	Pin	Signal
1	TMDS Data 2-	9	TMDS Data 1-	17	TMDS Data 0-
2	TMDS Data 2+	10	TMDS Data 1+	18	TMDS Data 0+
3	TMDS Data2/4 shield wire	11	TMDS Data 1/3 shield wire	19	TMDS Data 0/5 shield wire
4	TMDS Data 4-	12	TMDS Data 3-	20	TMDS Data 5-
5	TMDS Data 4+	13	TMDS Data 3+	21	TMDS Data 5+
6	DDC Clock (SCL)	14	+5V Power	22	TMDS Clock shield wire
7	DDC Data (SDA)	15	Ground (For +5V)	23	TMDS Clock+
8	NC	16	Hot Plug Detect	24	TMDS Clock-

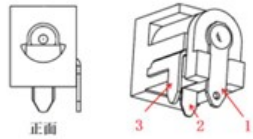
2.3.2.4. RJ45 Terminal



Pin	Signal	Pin	Signal	Pin	Signal
1	TX_D1+	4	BI_D3+	7	BI_D4+
2	TX_D1-	5	BI_D3-	8	BI_D4-
3	RX_D2+	6	RX_D2-	9	

Purpose: Used for communication remote control signals, control instructions need to be customized, do not have RJ45 network connection function.

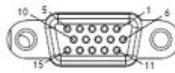
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Pin	Signal	Pin	Signal	Pin	Signal
1	5V	2	GND	3	GND

Purpose: Only used to provide 5V DC power supply with a maximum current of 1A.

2.3.2.6. VGA Terminal



Pin	Signal	Pin	Signal
1	Red signal input	9	PC_5V
2	Green signal input	10	VGA_DE signal identification
3	Blue signal input	11	Ground
4	Ground	12	DDC serial data (SDA)
5	Ground	13	Line synchronizing signal
6	Red Ground	14	Field synchronizing signal
7	Green Ground	15	DDC serial clock (SCL)
8	Blue Ground		

2.4. Environmental Requirements

Testing Environment	
Preheating Time	> 20 minutes
Power Supply	100~240V,50~60Hz

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Ambient Temperature	20°C~25°C
Relative Humidity	30%~80% (Non-condensing)
Video Signal	3840 x 2160 @ 60Hz; DP
Surroundings	Darkroom
Set Up	Reset to factory defaults
Optical Tester (Chromathermograph)	Minolta CA-410 or equivalent
Operating Environment	
Operating Temperature	0°C-50°C
Humidity Range	20%-85% (Non-condensing)
Operating Air Pressure	84KPa-106KPa
Storage Environment	
Storage Temperature	-20°C-60°C
Storage Humidity	10%-90%

2.5. GAMMA, Brightness and Color Temperature Specifications

Factory Default	Gamma	Color Temperature		Brightness
	gamma2.2	9300K	X: 0.312±0.010 Y: 0.317±0.010	Default brightness: 350±30cd/m ²

Note: This model has 10 sets of Gamma curves: DICOM1, DICOM2, LINEAR, 1.8, 2.0, 2.2, 2.4, CRT, DSA, DSI

Center point test on liquid crystal surface. **(Note1)**

1. Viewing Angle

Left/right/up/down 178° **(Note2)**

2. Uniformity

Deviation less than 25% **(Note 3)**

3. Response Time

Typical value(GTG): 8ms **(Note 4)**

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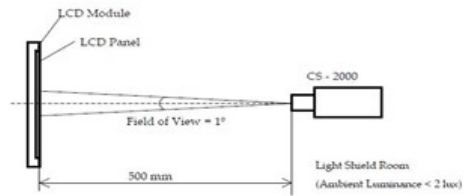
4. Light Leakage Detection Standard for the Whole Machine

Under the ambient brightness of 200LUX, the full-screen display area gray level 30 not visible.

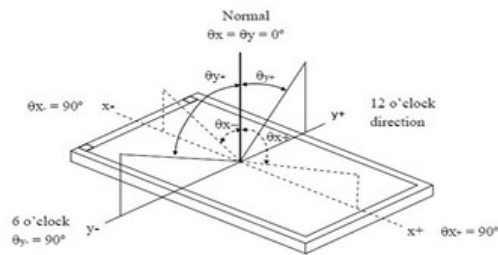
5. Testing Equipment Installation

Measuring equipment should be placed in a draft-free and dark room. The test probe must be kept perpendicular to the monitor screen and aligned with the center of the screen (Note 5).

Note 1:



Note 2: Viewing angle measurements are as follows



Special note: Due to the protective glass on the display surface, the side viewing angle will be attenuated to a certain extent. Please refer to the screen specifications for the side viewing angle.

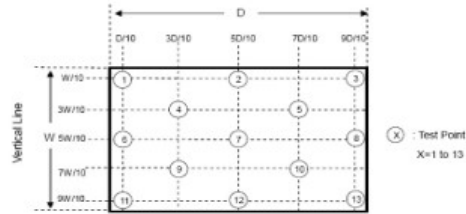
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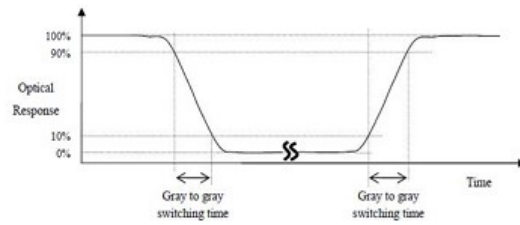
Note 3: Definition of brightness uniformity

Measure the luminance of gray level 2023 at 7 points

$$\begin{aligned}
 \text{Maximum} &= [L(1), L(1), L(2), L(2), L(4), L(5), L(6), L(7), L(8), L(9), L(10), L(11), L(12), L(13)] \\
 \text{Min} &= [\text{Minimum}(L(1), L(1), L(2), L(2), L(4), L(5), L(6), L(7), L(8), L(9), L(10), L(11), L(12), L(13))]
 \end{aligned}$$

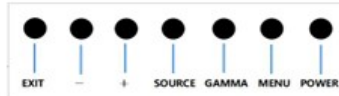


Note 4: Response time is defined as follows



3. OSD Menu

3.1. Button Definition



Icon	Function
MENU	OSD main menu related functions adjust options, and select the current menu when entering the menu.
UP	OSD current menu selects up or decrease functions.
DOWN	OSD current menu selects down or add functions.
EXIT	Current menu exit function key.
SOURCE	Signal selection shortcut key.
GAMMA	Gamma switching shortcut key.
POWER	Power warm-start switch shortcut key.
—	Power indicator light (refer to Schedule 1)

Key lock & unlock: Under normal display conditions, the keys will automatically lock (excluding "POWER") after approximately 10 minutes of no key operation. After the keys are locked, you can press and hold the "MENU" key to unlock.

3.2. Power Light

Indicator color	Status of Display
Lights off	POWER OFF, and the power is connected
Steady Green	Has a signal access and normal operation
Steady Red	Stand by

Schedule 1

3.3. OSD Menu Function

Main Menu Items	Secondary Menu Items	Secondary Submenu Items	Factory Default
Input	VGA	N/A	N/A

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	DVI	N/A	
	HDMI	N/A	
	DP	N/A	
Brightness/ Contrast Ratio	Brightness	0-100	50
	Contrast Ratio	0-100	50
	Signal Brightness	0-100	50
	Dynamic Contrast	On/Off	Off
Color	Gamma	LINEAR/1.8/2.0/2.2/2.4/CRT/ DICOM1/DICOM2/DSA/DSI	2.2
	Color Temperature	Warm color temperature/Cool color temperature/User	Cool color temperature
	Chromacity	0-100	50
	Saturation	0-100	50
PQ Settings	Definition	0-100	50
	Response time	Off/High/Medium/Low	Off
	Noise reduction	Off/High/Medium/Low	Off
	Super-resolution	Off/High/Medium/Low	Off
	Dynamic brightness	On/Off	Off
Display	Image format	Widescreen/4:3/1:1/Auto	Widescreen
	Horizontal position (Only VGA is available)	0-100	50
	Vertical position (Only VGA is available)	0-100	50
	Phase	0-100	50
	Clock	0-100	50
	Auto-adjust	N/A	N/A
Menu	Language	Chinese/English	Chinese
	Menu horizontal position	0-100	98
	Menu vertical position	0-100	2
	Menu transparency	0-100	20
	Menu display time	5-100	20
	Menu rotation	Normal/90/180/270	Normal

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Other settings	DP version	DP1.2	DP1.2
	FreeSync (Adaptive Sync)	Off	Off
	USB Update FW	Idle	Idle
	other	Reset	N/A

3.4. Signal Input

Before connecting: Before connecting the monitor to computer, please adjust computer display settings (resolution and refresh rate) to match the display modes in the table below.

Note: Lower resolution display modes, such as 640x480, will automatically enlarge to full screen display in some cases, and some characters may be distorted. If both the computer and monitor support VESA DDC, no manual settings are required. Simply connect the monitor to the computer to set the optimal resolution and refresh rate.

The monitor supports the following display modes:

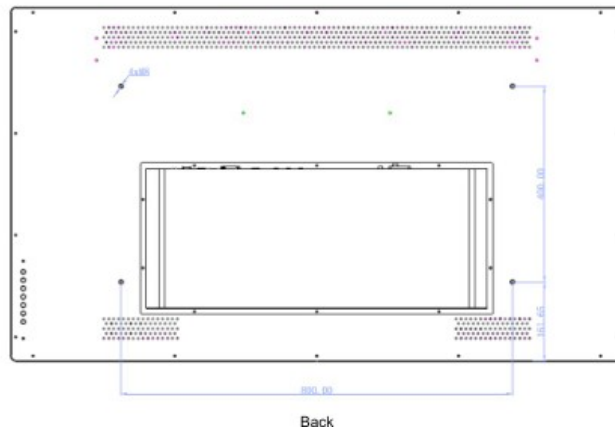
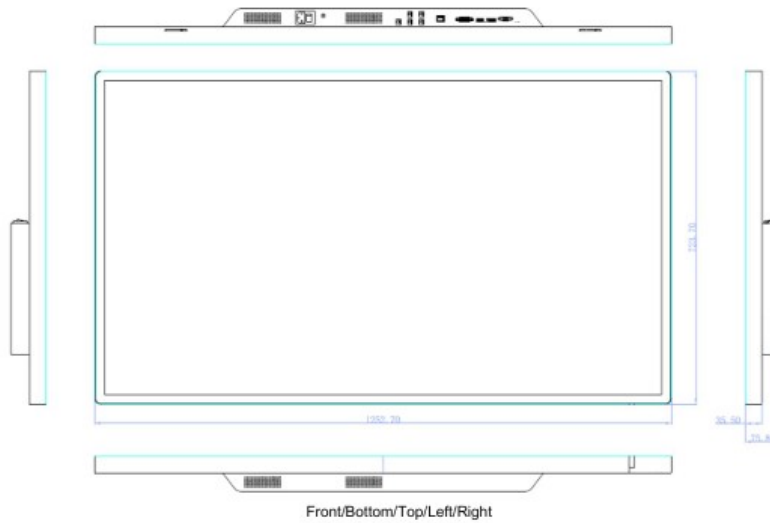
Name	Resolution	Refresh Rate
DOS Mode	720×400	70Hz
SVGA	800×600	60 Hz
	800×600	72 Hz
	800×600	75 Hz
XGA	1024×768	60 Hz
	1024×768	75 Hz
SXGA	1280×1024	60 Hz
	1280×1024	75Hz
Full HD	1920×1080	60 Hz
N/A	1920×2160	60 Hz
QHD	3840×2160	30Hz
	3840×2160	60Hz

Cable connecting: Plug the signal cable into the interface on the back of the monitor, and then plug the other end into the computer's display interface. After connecting, please tighten the screws.

Note: Connect the signal cable first, and then connect the power supply after confirming that the signal cable is connected.

4. Structural Specification

4.1. Appearance Schematic Diagram

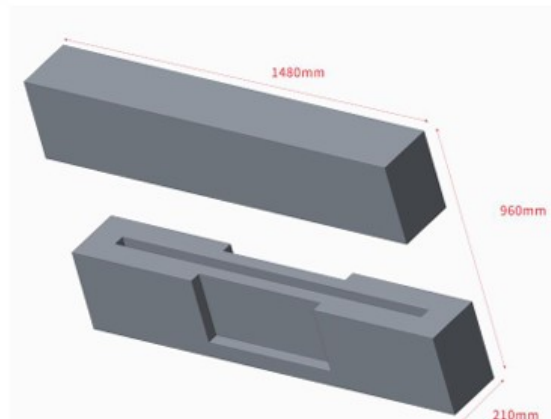


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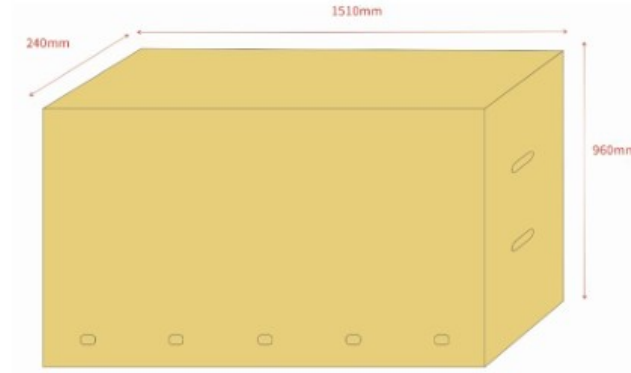
Items	Description	
Overall Dimension	Length	1252.7mm
	Width	723.7mm
	Thickness	75.8 mm
Shell Assembly	Aluminum+Sheet metal	
Color Standard	space gray	
Screen Viewable Area	1209.6(H)×680.4(V) mm	
Heat Dissipation	Aluminum covered edge + honeycomb hole integrated heat dissipation system	
Surface protection parameter	Material	Physically tempered glass
	Thickness	3mm
	Surface Treatment	AR+AF+Non-air-gap bonding
	Light Transmittance	≥96%
Base or wall mount connection	VESA 800x400mm	

4.2. Packaging

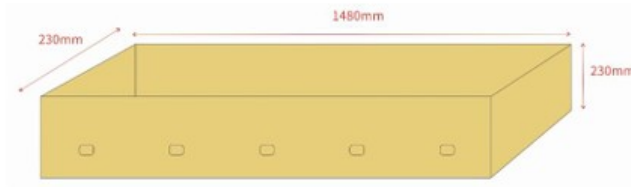
4.2.1. Packaging Drawing of The Display



4.2.2. Package Dimension, Weight and Storage Condition



Carton canopy



Carton base

Carton Size	Depth (mm)	1510
	Width (mm)	240
	Height (mm)	960

Net Weight	35KG	Base or stand not included
Gross Weight	45KG	

Storage/Transportation Temperature	-20°C ~+60°C
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Storage/Transportation Humidity	0% ~90%, Non-condensing
Storage/Transportation Temperature Gradient	Max. 10°C/h, Non-condensing
Storage/Transportation Air Pressure	84KPa-106KPa

5. Safety Regulations Certification

No.	Certification Program	Certification Standard	Model
1	TBD	TBD	55" Monitor

6. PANEL Quality(IIS)

6.1. Inspection Standard

3.1.1. Bright Dot

Dots (sub-pixels) which appeared brightly in the screen when the LCM displayed with dark pattern.

Item	32"~55" HD/FHD	60~65" FHD	43"~65" UHD	72~98" FHD	72~98" UHD
R,G or B 1 dot	Max 2	Max 3	Max 6	Max 6	Max 8
Adjacent 2 dots	0	0	1	1	2
Adjacent 3 dots	0	0	0	0	0
Total amount of Bright dots	Max 2	Max 3	Max 6	Max 6	Max 10

3.1.2. Partial Bright Dot

Among Bright dots, the size of Dots(sub-pixels) which appeared less than half size of sub-pixel is defined as partial bright dot.

Inspection Pattern	32"~65" HD/FHD	60~65" FHD	43"~65" UHD	72~98" FHD	72~98" UHD
Qty @ 64 Gray	Max 15	Max 15	Max 15	Max 20	Max 25

3.1.3. Dark Dot

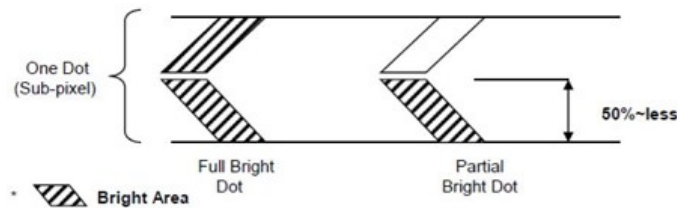
Dots (sub-pixels) which appeared darkly in the screen when the LCM displayed with bright pattern.

Item	32"~55" HD/FHD	60~65" FHD	43"~65" UHD	72~98" FHD	72~98" UHD
1 dot	Max 8	Max 9	Max 10	Max 16	Max 18
Adjacent 2 dots	Max 2	Max 2	Max 3	Max 4	Max 6
Adjacent 3 dots	0	0	0	Max 2	Max 3
Total amount of Dark dot	Max 8	Max 9	Max 10	Max 16	Max 18

3.1.4. Total amount of Dot Defects (Combination)

Item	32"~55" HD/FHD	60~65" FHD	43"~65" UHD	72~98" FHD	72~98" UHD
Qty	Max 10	Max 12	Max 16	Max 22	Max 26

- Note) a. Every dot herein means Sub-Pixel(Each Red, Green, or Blue Color)
 b. Dots smaller than half sub-pixel are not counted as a defect dots.
 c. The Dot defect is inspected on Red , Green, Blue , white, or Black pattern
 d. Defects which is on the Black Matrix (outside of Active Area) are not considered as a defect.



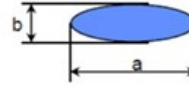
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3.2. Polarizer Defects

Item	32~65" HD/FHD		60~65" FHD		43"~65" UHD		72~98" FHD		72~98" UHD	
	Size	Q'ty	Size	Q'ty	Size	Q'ty	Size	Q'ty	Size	Q'ty
Linear	0.05≤W≤0.3 0.3≤L≤8.0	N≤8	0.05≤W≤0.3 0.3≤L≤8.0	N≤8	0.05≤W≤0.3 0.3≤L≤8.0	N≤8	0.1≤W≤4.0 0.5≤L≤15.0	N≤15	0.1≤W≤4.0 0.5≤L≤15.0	N≤15
Circular	0.3≤D≤1.0	N≤8	0.3≤D≤1.0	N≤8	0.3≤D≤1.0	N≤8	0.3≤D≤7.0	N≤15	0.3≤D≤7.0	N≤15

Where, W : Width
L : Length
D : Average diameter $= (a+b)/2$



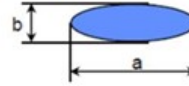
Note)

- 1.Linear : $a > 2b$, Circular : $a \leq 2b$
- 2.Extraneous substances which can be wiped out, like Finger Print, Particles are not considered as a defect.
- 3.Defects which is on the Black Matrix (outside of Active Area) are not considered as a defect.

3.3 Foreign Material

Item	32~65" HD/FHD		60~65" FHD		43"~65" UHD		72~98" FHD		72~98" UHD	
	Size	Q'ty	Size	Q'ty	Size	Q'ty	Size	Q'ty	Size	Q'ty
Linear	0.05≤W≤0.3 0.3≤L≤8.0	N≤8	0.05≤W≤0.3 0.3≤L≤8.0	N≤8	0.05≤W≤0.3 0.3≤L≤8.0	N≤8	0.1≤W≤4.0 0.5≤L≤15.0	N≤15	0.1≤W≤4.0 0.5≤L≤15.0	N≤15
Circular	0.3≤D≤1.0	N≤8	0.3≤D≤1.0	N≤8	0.3≤D≤1.0	N≤8	0.3≤D≤7.0	N≤15	0.3≤D≤7.0	N≤15









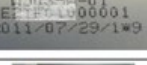


Where, W : Width
L : Length
D : Average diameter $= (a+b)/2$



Note)

- 1.Linear : $a > 2b$, Circular : $a \leq 2b$
- 2.Extraneous substances which can be wiped out, like Finger Print, Particles are not considered as a defect.
- 3.Defects which is on the Black Matrix (outside of Active Area) are not considered as a defect.

6.2. Appearance Inspection Standards

location	Items	Criterion for Defects		Type	scope
All	Stain		Removable stain is OK	-	All
Be related to PNL	Crack		Not Allowed	Major	Shipment status: Single Cell/FOG /MDL Production
	Side Chipping		Function and assembly are not affected	Minor	
	Corner Chipping		Function and assembly are not affected	Minor	
	Burr		Function and assembly are not affected	Minor	
	Scratch		PNL with POL , based on point/line foreign (scratch) standard to determine,	Minor	
Be related to FPC/PCB	short circuit / open circuit		Not Allowed	Major	Shipment status: FOG/MDL Production
	components and parts		Component missing is not allowed	Minor	
Be related to Backlight	Code-spurting		Key information can be identified is OK	Minor	Shipment status: MDL Production
	Scratch		Limit Sample	Minor	
	Stain		Removable stain is OK	Minor	