

## 14 Reference Information

### 14-1 Technical Terms

#### **-TFT-LCD**

##### **(Thin film Transistor Liquid Crystal Display)**

ADC(Analog to Digital Converter)

This is a circuit that converts from analog signal to digital signals.

#### **-PLL(Phase Locked Loop)**

During progressing ADC, Device makes clock synchronizing HSYNC with Video clock

#### **-Inverter**

Device that supply Power to LCD panel lamp. this device generate about 1,500~2,000V.

#### **AC Adapter**

Device that converts AC(90V~240V) to DC(+12V or 14V)

#### **-SMPS(Switching Mode Power Supply)**

Switching Mode Power supply. This design technology is used to step up/down the input power by switching on/off

#### **-FRC(Frame Rate Controller)**

Technology that change image frame quantity displayed on screen for one second.

Actually TFT-LCD panel require 60 pcs of frame for one second.

so, this technology is needed to convert input image to 60 pcs regardless input frame quantity.

#### **-Image Scaler**

Technology that convert various input resolution to other resolution.(ex. 640\* 480 to 1024\*768)

#### **-Auto Configuration(Auto adjustment)**

This is an algorithm to adjust monitor to optimum condition by pushing one key.

#### **-OSD(On Screen Display)**

On screen display. customer can control the screen easily with this.

#### **-FINE**

"Fine" adjustment is used to adjust visibility by control phase difference.

#### **-COARSE**

This is a adjustment by tuning with Video clock and PLL clock.

#### **-DVI (Digital Visual Interface)**

This provides a high speed digital connection for visual data types that is display technology independent. this interface is primarily focused at providing a connection between a computer and its display device.

#### **-L.V.D.S.(Low Voltage Differential Signaling)**

a kind of transmission method for Digital. It can be used from Main PBA to Panel.

#### **-T.M.D.S**

##### **(Transition minimized Differential Signaling)**

a kind of transmission method for Digital.

It can be used from Video card to Main PBA.

#### **-DDC(Display data channel)**

It is a communication method between Host Computer and related equipment.

It can make it Plug and Play between PC and Monitor.

#### **-EDID**

Extended Display Identification Data PC can recognize the monitor information as Product data, Product name, Display mode, Serial number and Signal source, etc through DDC Line communicating with PC and Monitor.

#### **-Dot Pitch**

The image on a monitor is composed of red, green and blue dots. The closer the dots, the higher the resolution. The distance between two dots of the same color is called the 'Dot Pitch'. Unit: mm

### **-Vertical Frequency**

The screen must be redrawn several times per second in order to create and display an image for the user. The frequency of this repetition per second is called Vertical Frequency or Refresh Rate. Unit: Hz  
Example: If the same light repeats itself 60 times per second, this is regarded as 60 Hz.

### **-Horizontal Frequency**

The time to scan one line connecting the right edge to the left edge of the screen horizontally is called Horizontal Cycle. The inverse number of the Horizontal Cycle is called Horizontal Frequency.  
Unit: kHz

### **-Interlace and Non-Interlace Methods**

Showing the horizontal lines of the screen from the top to the bottom in order is called the Non-Interlace method while showing odd lines and then even lines in turn is called the Interlace method. The Non-Interlace method is used for the majority of monitors to ensure a clear image. The Interlace method is the same as that used in TVs.

### **-Plug & Play**

This is a function that provides the best quality screen for the user by allowing the computer and the monitor to exchange information automatically. This monitor follows the international standard VESA DDC for the Plug & Play function.

### **-Resolution**

The number of horizontal and vertical dots used to compose the screen image is called 'resolution'. This number shows the accuracy of the display. High resolution is good for performing multiple tasks as more image information can be shown on the screen.

**Example:** If the resolution is 1280 x 1024 , this means the screen is composed of 1280 horizontal dots (horizontal resolution) and 1024 vertical lines (vertical resolution).

## 14-2 Pin Assignments

<div> <div>Sync Type</div> <div>Pin No.</div> </div>	15-Pin D-Sub Signal Cable Connector		
	Separate	Composite	Sync-on-green
1	Red	Red	Red
2	Green	Green	Green + H/V Sync.
3	Blue	Blue	Blue
4	GND	GND	GND
5	DDC Return (GND)	DDC Return (GND)	DDC Return (GND)
6	GND-R	GND-R	GND-R
7	GND-G	GND-G	GND-G
8	GND-B	GND-B	GND-B
9	DDC Power Input (+5V)	DDC Power Input (+5V)	DDC Power Input (+5V)
10	Self Raster	Self Raster	Self Raster
11	GND	GND	GND
12	Bi-Dr Data (SDA)	Bi-Dr Data (SDA)	Bi-Dr Data (SDA)
13	H-Sync.	H/V-Sync.	Not Used
14	V-Sync.	Not Used	Not Used
15	DDC Clock (SCL)	DDC Clock (SCL)	DDC Clock (SCL)

## 14-3 Timing Chart

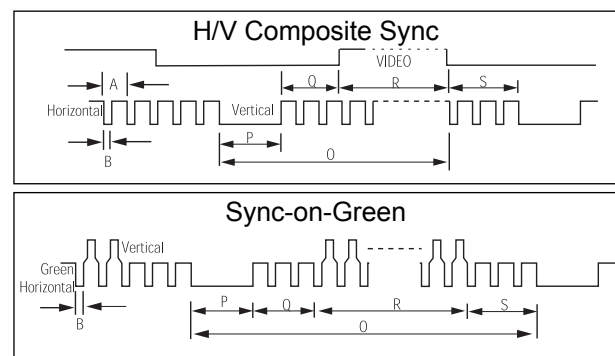
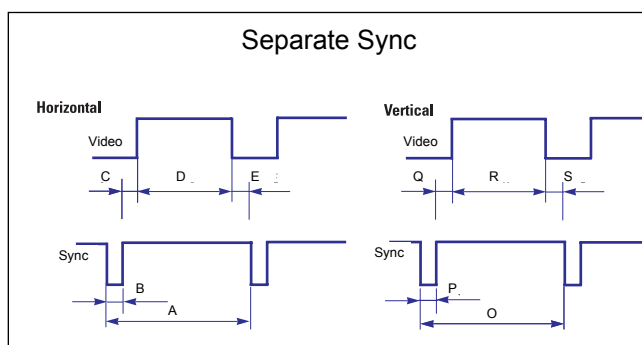
This section of the service manual describes the timing that the computer industry recognizes as standard for computer-generated video signals.

Table 1. Timing Chart

Mode  Timing	IBM		VESA						
	VGA2/ 70 Hz 720 x 400	VGA3/ 60 Hz 640 x 480	640/75 Hz 640x480	800/60 Hz 800x600	800/75 Hz 800x600	1024/60 Hz 1024x768	1024/75 Hz 1024x768	1280/60 Hz 1280x1024	1280/75 Hz 1280x1024
fH (kHz)	31.469	31.469	37.500	37.879	46.875	48.363	60.023	63.981	79.975
A $\mu$ sec	31.777	31.778	26.667	26.400	21.333	20.677	16.660	11.852	12.504
B $\mu$ sec	3.813	3.813	2.032	3.200	1.616	2.092	1.219	1.037	1.067
C $\mu$ sec	1.589	1.589	3.810	2.200	3.232	2.462	2.235	2.296	1.837
D $\mu$ sec	26.058	26.058	20.317	20.000	16.162	15.754	13.003	9.259	9.481
E $\mu$ sec	0.318	0.318	0.508	0.000	0.323	0.369	0.203	0.000	0.119
fV (Hz)	70.087	59.940	75.000	60.317	75.000	60.004	75.029	60.020	75.025
O msec	14.268	16.683	13.333	16.579	13.333	16.666	13.328	16.005	13.329
P msec	0.064	0.064	0.080	0.106	0.064	0.124	0.050	0.047	0.038
Q msec	0.858	0.794	0.427	0.607	0.448	0.600	0.466	0.594	0.475
R msec	13.155	15.761	12.800	15.840	12.800	15.880	12.795	15.630	12.804
S msec	0.191	0.064	0.027	0.0261	0.021	0.062	0.017	0.016	0.013
Clock Freq. (MHz)	28.322	26.175	31.500	40.000	49.500	75.000	78.750	108.000	135.000
Polarity H.Sync	Negative	Negative	Negative	Positive	Positive	Negative	Positive	Positive	Positive
V.Sync	Positive	Negative	Negative	Positive	Positive	Negative	Positive	Positive	Positive
Remark	Separate	Separate	Separate	Separate	Separate	Separate	Separate	Separate	Separate

Table 2. Timing Chart

Mode Timing	IBM	
	1440/60 Hz 1440x900	1440/75 Hz 1440x900
fH (kHz)	55.935	70.635
A $\mu$ sec	17.878	14.157
B $\mu$ sec	1.427	1.112
C $\mu$ sec	2.178	1.814
D $\mu$ sec	13.521	10.530
E $\mu$ sec	0.751	0.702
fV (Hz)	59.887	74.984
O msec	16.698	13.336
P msec	0.107	0.085
Q msec	0.447	0.467
R msec	16.090	12.741
S msec	0.054	0.042
Clock Freq. (MHz)	106.500	136.750
Polarity H.Sync	Negative	Negative
V.Sync	Positive	Positive
Remark	Separate	Separate



A : Line time total	B : Horizontal sync width	O : Frame time total	P : Vertical sync width
C : Back porch	D : Active time	Q : Back porch	R : Active time
E : Front porch	S : Front porch		

## 14-4 Preset Timing Modes

-If the signal transferred from the computer is the same as the following Preset Timing Modes, the screen will be adjusted automatically. However, if the signal differs, the screen may go blank while the power LED is on. Refer to the video card manual and adjust the screen as follows.

Table 1. Preset Timing

Display Mode	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)
IBM, 640 x 350	31.469	70.086	25.175	+/-
IBM, 640 x 480	31.469	59.940	25.175	-/-
IBM, 720 x 400	31.469	70.087	28.322	-/+
MAC, 640 x 480	35.000	66.667	30.240	-/-
MAC, 832 x 624	49.726	74.551	57.284	-/-
MAC, 1152 x 870	68.681	75.062	100.000	-/-
VESA, 640 x 480	37.500	75.000	31.500	-/-
VESA, 640 x 480	37.861	72.809	31.500	-/-
VESA, 800 x 600	35.156	56.250	36.000	-/-
VESA, 800 x 600	37.879	60.317	40.000	+/+
VESA, 800 x 600	46.875	75.000	49.500	+/+
VESA, 800 x 600	48.077	72.188	50.000	+/+
VESA, 1024 x 768	48.363	60.004	65.000	-/-
VESA, 1024 x 768	56.476	70.069	75.000	-/-
VESA, 1024 x 768	60.023	75.029	78.750	+/+
VESA, 1152 x 864	67.500	75.000	108.000	+/+
VESA, 1280 x 1024	60.000	60.000	108.000	+/+
VESA, 1280 x 1024	79.976	75.025	135.000	+/+
VESA, 1440 x 900	55.935	59.887	106.500	-/+
VESA, 1440 x 900	70.635	74.984	136.750	-/+

### Horizontal Frequency

The time to scan one line connecting the right edge to the left edge of the screen horizontally is called Horizontal Cycle and the inverse number of the Horizontal Cycle is called Horizontal Frequency. Unit: kHz

### Vertical Frequency

Like a fluorescent lamp, the screen has to repeat the same image many times per second to display an image to the user. The frequency of this repetition is called Vertical Frequency or Refresh Rate. Unit: Hz

## 14-5 Panel Description

Maker	VENDOR P/N	PANEL_CODE	PANEL_ABB	STICKER_CODE	Remarks
SEC	LT140X1-002	BN07-00004A	SA	BN68-00239H	-
SEC	LT150XS-L01	BN07-00009A	SB		-
SEC	LT150XS-L01-B	BN07-00022A	SC		-
SEC	LTM150XS-L02	BN07-00005A	SD		-
SEC	LT181E2-132	BN07-00001A	SE		-
SEC	LT150XS-T01	BN07-00010A	SF		-
SEC	LTM181E3-132	BN07-00019A	SG		-
SEC	LT170E2-131	BN07-10001D	SH		-
SEC	LT181E2-131	BN07-10001E	SJ		-
SEC	LTM170E4-L01	BN07-00018A	SK		-
SEC	LTM240W1-L01	BN07-00015A	SL		-
SEC	LTM213U3-L01	BN07-00016A	SM		-
SEC	LTM150XH-L01	BN07-00026A	SN		-
SEC	LTM150XH-L03	BN07-00027A	SP		-
SEC	LTM150XS-L01	BN07-00032A	SQ		DELL(ZPD)
SEC	LTM181E4-L01	BN07-00034A	SR		PVA
SEC	LTM170EH-L01	BN07-00036A	SS		TN
SEC	LTM170E5-L01	BN07-00037A	SU		PVA
SEC	LTM150XH-L11	BN07-00041A	SV		-
SEC	LTM213U4-L01	BN07-00039A	SW		PVA
SEC	LTM150XH-L01(ZPD)	BN07-00045A	SX		ZPD
SEC	LTM150XH-L04	BN07-00046A	SY		New panel with high brightness
SEC	LTM170W1-L01	BN07-00047A	SZ		Panel for TV
SEC	LTM150XH-L06	BN07-00053A	EA		Panel for TV/High luminance for 450cd_SONY&EOS Team Panel for TV
SEC	LTM153W1-L01	BN07-00054A	EB		Use NIKE MODEL
SEC	LTM170EH-L05	BN07-00055A	EC		Panel EOS proj. for high brightness of 17" EH-L05
SEC	LTM170E5-L03	BN07-00056A	ED		Dell 1702FP pro. E4. EH mechanical Compatible
SEC	LTM190E1-L01	BN07-00057A	EE		DELL 1900 FP
SEC	LTM181E5-L01	BN07-00061A	EF		18" narrow bezel GH18PS
SEC	LTM150XP-L01	BN07-00065A	EG		AMLCD PVA PANEL
SEC	LTM240W1-L02	BN07-00062A	EH		Panel for 15" Wide TV
SEC	LTM170EU-L01	BN07-00071A	EJ		Slim design, TN
SEC	LTM170E5-L04	BN07-00072A	EK		E5-L04 6 bits FRC... for IBM
SEC	LTA220W1-L01	BN07-00074A	EL		Panel for 22" TV
SEC	LTM170E6-L02	BN07-00075A	EM		AMLCD Narrow & slim design 17" PVA mode
SEC	LTM170W1-L01	BN07-00082A	EN		LTM170W1-L01 ZPD panel
SEC	LTM170EH-L01	BN07-00080A	EP		LTM170EH-L01 ZPD panel
SEC	LTM170E5-L01	BN07-00081A	EQ		LTM170E5-L01 ZPD panel
SEC	LTM170EH-L05	BN07-00083A	ER		LTM170EH-L05 ZPD panel
SEC	LTM170E5-L03	BN07-00084A	ES		LTM170E5-L03 ZPD panel
SEC	LTM170EU-L01	BN07-00085A	ET		LTM170EU-L01 ZPD panel
SEC	LTM170E5-L04	BN07-00086A	EU		LTM170E5-L04 ZPD panel
SEC	LTM170E6-L02	BN07-00087A	EV		LTM170E6-L02 ZPD panel
SEC	LTM150XH-L06	BN07-00091A	EW		Color coordinates change for LCD TV
SEC	LTM153W1-L01	BN07-00092A	EX		AMLCD WIDE 15",9/10
SEC	LTM170W1-L01	BN07-00100A	EY		Color Coordinates change code management
SEC	LTM170EH-L05	BN07-00097A	EZ		LTM170E5-L05 Color Coordinates Change Panel Code
SEC	LTA400W1-L01	BN07-00109A	S1		PANEL of AMLCD 40" TV
SEC	LTM153W1-L01	BN07-00110A	S2		Color coordinates change 0.280/0.290, 10000k & ZPD Panel
SEC	LTM150XH-L06	BN07-00111A	S3		Color coordinates change 0.280/0.290, 10000k & ZPD Panel
SEC	LTM170W1-L01	BN07-00112A	S4		Color coordinates change 0.280/0.290, 10000k & ZPD Panel
SEC	LTM170EH-L05	BN07-00113A	S5		Color coordinates change 0.280/0.290, 10000k & ZPD Panel
SEC	LTM220W1-L01	BN07-00114A	S6		ZPD Panel for AMLCD 22" TV
SEC	LTM150XH-L06	BN07-00117A	S7		ZPD Panel code
SEC	LTM153W1-L01	BN07-00118A	S8		ZPD Panel code
SEC	LTM170WP-L01	BN07-00119A	S9		PVA Panel for NIKE
SEC	LTM213U4-L01	BN07-00039A	E1		21.3" NARROW
SEC	LTA260W1-L01	BN07-00121A	E2		VENUS
SEC	LTA220W1-L01	BN07-00074B	E3		Panel B-level panel code for 22" TV Panel

## 14 Reference Infomation

Maker	VENDOR P/N	PANEL_CODE	PANEL_ABB	STICKER_CODE	Remarks
SEC	LTA320W1-L01	BN07-00108A	E4		Panel for AMLCD 32" TV
SEC	LTM213U4-L01	BN07-00124A	E5		NARROW BEZEL 21 " PANEL
SEC	LTM170E6-L04	BN07-00129A	E6		HIGHLAND 17" LOW PANEL (Panel only for TCO03)
SEC	LTM190E1-L01	BN07-00088A	E7		LTM190E1-L01 ZPD panel
SEC	M150X4-L06	BN07-00137A	E8		15" Narrow & Slim panel
SEC	LTA170V1	BN07-00139A	E9		17" Panel for Muse 4:3 VGA TV
SEC	LTM190E1-L02	BN07-00128A	E10		New Panel from AMLCDI, Specification : 6bit Driver IC
SEC	LTM170EX-L01	BN07-00143A	E11		Development new Panel from AMLCD
SEC	LTM170E8-L01	BN07-00144A	E12		Development new Panel from AMLCD
SEC	LTM170E6-L04	BN07-00129B	E13		ZPD panel for AMLCD (Panel only for TCO03)
SEC	LTA320W1-L02	BN07-00108B	E14		Creat B-level Panel code for AMLCD 32" TV
SEC	LTM190E1-L03	BN07-00151A	E15		Development new 19" Panel form AMLCD (Panel only for TCO03)
SEC	LTM240W1-L03	BN07-00134A	E16		AMLCD 24" panel development
SEC	LTM190E1-L02	BN07-00128B	E17		New Panel from AMLCD, Specification : 6bit Driver IC(ZPD)
SEC	LTM190E4-L01	BN07-00145A	E18		AMLCD 24" new panel development
SEC	LTM170E8-L01	BN07-00158A	E19		ZPD code derivation
SEC	LTM170EX-L01	BN07-00159A	E20		ZPD code derivation
SEC	LTM190E1-L03	BN07-00151B	E21		Creat new panel code for AMLCD 19" (Panel only for TCO03)
SEC	LTA460H1-L01	BN07-00157A	E22		creat panel code for AMLCD 46" TV
SEC	LTM170EU-L11	BN07-00160A	E23		creat new panel code for AMLCD 17" (Panel only for TCO03)
SEC	LTM240W1-L03	BN07-00134B	E24		24" panel ZPD code derivation
SEC	LTM190E4-L01	BN07-00145B	E25		AMLCD 19" ZPD Panel code derivation
SEC	LTM240W1-L03	BN07-00134B	E26		24" panel ZPD code derivation
SEC	LTM150XO-L01	BN07-00164A	E27		AMLCD 15" XO-L01 new panel development
SEC	LTM150XO-L01	BN07-00164B	E28		AMLCD 15" XO-L01 ZPD code derivation
SEC	LTM170EU-L11	BN07-00160B	E29		AMLCD 17" NEW panel code derivation
SEC	LTA320W2-L01	BN07-00172A	SPZ		AMLCD 32" NEW panel
SEC	LTM213U4-L01	BN07-00124B	SPZ		21.3" Narrow PANEL ZPD Panel derivation
SEC	LTM170EU-L11	BN07-00189A	STH		AMLCD EU-L11 Pb free panel code derivation
SEC	LTM170EU-L11	BN07-00189B	STZ		AMLCD EU-L11 Pb free panel ZPD code derivation
SEC	LTM240W1-L04	BN07-00188A	SPH		24" A-DCC NEW panel
SEC	LTM240W1-L04	BN07-00188B	SPZ		24" A-DCC panel ZPD code derivation
SEC	LTM190EX-L01	BN07-00191A	STH		AMLCD 19" TN NEW Panel
SEC	LTM190EX-L02	BN07-00191B	STZ		AMLCD 19" TN NEW Panel ZPD
SEC	LTA230W1-L02	BN07-00184A	SPZ		AMLCD 23" 16:9 NEW Panel
SEC	LTA260W2-L01	BN07-00185A	SPZ		AMLCD 26" 16:9 NEW Panel
SEC	LTA400W2-L01	BN07-00186A	SPZ		AMLCD 40" 16:9 NEW Panel
SEC	LTM240M1-L01	BN07-00195A	SPH		24" high brightness panel
SEC	LTM150XO-L01	BN07-00197A	STH		AMLCD 15" XO-L01 Pb free panel code
SEC	LTM150XO-L01	BN07-00197B	STZ		AMLCD 15" XO-L01 Pb free panel ZPD code
SEC	LTM170EU-L21	BN07-00202A	STZ		AMLCD EU-L21 ZPD NEW code derivation
SEC	LTA460W2-L03	BN07-00187A	SPZ		BEETOVEN 46"ZPD NEW Panel
SEC	LTM240M1-L01	BN07-00195B	SPZ		24" high brightness panel ZPD code derivation
SEC	M170EX-L21	BN07-00206A	STZ		AMLCD LTM170EX-L21 ZPD NEW code derivation
SEC	LTA460H3-L01	BN07-00200A	SPZ		AMLCD 46" LED BLU panel
SEC	LTM170EU-L15	BN07-00214A	STZ		High brightness For AMLCD EU-L15 TV ZPD NEW code derivation
SEC	LTM170E8-L21	BN07-00218A	SPZ		AMLCD LTM170E8-L21 PVA ZPD NEW code derivation
SEC	LTM190EX-L21	BN07-00222A	STZ		DISPLAY LCD
SEC	LTM201U1-L01	BN07-00190B	SPZ		AMLCD 20.1" Normal panel ZPD code derivation
SEC	LTM190E4-L21	BN07-00223A	SPZ		HAYDN 17" PZD code PANELderivation
SEC	LTA570H1-L01	BN07-00196A	SPZ		AMLCD 57" NEW Panel
SEC	LTM150XO-L21	BN07-00229A	STZ		AMLCD 15" XO-L21 8ms panel code
SEC	LTA260W2-L11	BN07-00239A	SPZ		AMLCD 26" 16:9 7Line NEW Panel
SEC	LTA400WS-LH1	BN07-00245A	SPZ		AMLCD 40" 16:9 SPVA 90% NEW Panel
SEC	LTM213U6-L01	BN07-00231A	SPZ		AMLCD 21.3" PVA NEW Panel Code
SEC	LTM213U6-L01	BN07-00231B	SPH		AMLCD 21.3" PVA Panel HPD Code
SEC	LTA320WS-LH2	BN07-00244A	SPZ		AMLCD 32" 16:9 SPVA 90% NEW Panel
SEC	LTA400WS-LH1	BN07-00245A	SPZ		AMLCD 40" 16:9 SPVA 90% NEW Panel
SEC	LTM190M2-L01	BN07-00227A	STZ		AMLCD 19" TN Wide NEW Panel Code



Maker	VENDOR P/N	PANEL_CODE	PANEL_ABB	STICKER_CODE	Remarks
SEC	LTM201UX-L01	BN07-00249A	STZ		AMLCD 20.1" TN NEW Panel Code
SEC	LTM240M1-L02-A05	BN07-00250A	SPZ		24" High brightness Slim panel ZPD code derivation
SEC	LTA320W3-L02	BN07-00219A	SPZ		AMLCD 32" NEW FFL Panel
SEC	LTA320W2-L11	BN07-00259A	SPZ		IP Board for AMLCD 32" 16:9 NEW Panel
SEC	LTA460WS-L02	BN07-00252A	SPZ		AMLCD 46" 16:9 SPVA 72% NEW Panel
SEC	LTA400WT-L01	BN07-00264A	SPZ		-
SEC	LTM240M2-L02	BN07-00267A	SPZ		All LCD Monitor 24" wide SPVA ZPD NEW code derivation
SEC	LTM210M2-L02	BN07-00230A	SPZ		-
SEC	LTA320WT-L11	BN07-00257A	SPZ		-
SEC	LTM190EX-L21-G	BN07-00274A	STZ		AMLCD 19" TN Glare NEW Panel Code
SEC	LTA320WT-L14	BN07-00247A	SPZ		-
SEC	LTM190M2-L01-D016	BN07-00280A	STZ		AMLCD 19" TN Wide change Gamma Panel Code
SEC	LTM190EX-L31	BN07-00279A	STZ		AMLCD 19" TN NEW Panel Code
SEC	LTM190M2-L02	BN07-00287A	STZ		AMLCD 19" TN Wide High brightness NEW Panel Code
SEC	LTA400WS-L01	BN07-00246A	SPZ		Display-LCD (Div) 07AH
SEC	LTA460WS-L01	BN07-00311A	SPZ		-
SEC	LTM190E4-L31	BN07-00316A	SPZ		-
SEC	LTM170EX-L31	BN07-00278A	STZ		AMLCD LTM170EX-L31 ZPD
SEC	LTA460HS-LH1	BN07-00291A	SPZ		AMLCD 46" 16:9 FHD / 60Hz / 8bit / SPVA 92%
SEC	LTA320WT-LF1	BN07-00323A	SPZ		-
SEC	LTA460WT-L02	BN07-00284A	SPZ		AMLCD 46" 16:9 HD / 60Hz / 8bit / SPVA 72% /
SEC	LTA400WH-LH1	BN07-00271A	SPZ		AMLCD 40" 16:9 SPVA 92% 10bit 120Hz
SEC	LTM240M1-L02-D015	BN07-00331A	SPZ		-
SEC	LTM300M1-P01	BN07-00326A	SPZ		
SEC	LTM201UX-L01	BN07-00249B	STH		
SEC	LTM201M2-L01	BN07-00262A	STZ		All LCD Monitor 20.1" wide PVA ZPD NEW code derivation
SEC	LTM220M1-L01	BN07-00346A	STZ		
SEC	LTM240M2-L03 V01	BN07-00377A	SPZ		
SEC	LTM170EU-L31	BN07-00375A	STZ		
SEC	LTM270M1-L01	BN07-00373A	SPZ		
SEC	LTM170EX-L31-D	BN07-00379A	STZ		
SEC	LTM190EX-L31-D	BN07-00380A	STZ		
CPT	CLAA150XG09	BN07-00141A	PA		CPT 15" Monitor new panel development
CPT	CLAA170EA02	BN07-00148A	PB		17" CPT NEW development panel
CPT	CLAA170EA02	BN07-00148B	PC		17" CPT ZPD panel code derivation
CPT	CLAA150XG09	BN07-00141B	PTZ		CPT 15" panel ZPD code derivation (GOYA-PJT)
CPT	CLAA150XP01	BN07-00173A	PTH		CPT 15" PSWG code derivation
CPT	CLAA150XP01	BN07-00173B	PTZ		CPT 15" PSWG panel ZPD code derivation
CPT	CLAA170EA07	BN07-00174A	PTH		CPT 17" PSWG code derivation
CPT	CLAA170EA07	BN07-00174B	PTZ		CPT 17" PSWG type New Panel code
CPT	CLAA170EA07Q	BN07-00220A	PTZ		CPT 17" PSWG R/T 8msec code derivation
CPT	CLAA170EA07Q	BN07-00220B	PTH		CPT 17" PSWG R/T 8msec HPD code derivation
CPT	CLAA150XP01F	BN07-00236A	PTZ		CPT 15" PSWG panel ZPD & Lead free code derivation
CPT	CLAA201WA03Q	BN07-00269A	PTZ		CPT 20.1" wide TN ZPD New code derivation
CPT	CLAA320WA01	BN07-00276A	PMZ		CPT 32" 16:9 MVA 8bit 60Hz / Panel brown
CPT	CLAA170ES01	BN07-00261A	PTZ		CPT 17" Slim TN ZPD Type New code derivation
CPT	CLAA070VA02	BN07-00265A	PTZ		CPT Panel code derivation for Digital Album
CPT	CLAA201WA03S	BN07-00269B	PTH		
TOSHIBA	LTM15C419(A)	BN07-00002A	TA		-
TOSHIBA	LTM15C423(B)	BN07-00006A	TB		-
TOSHIBA	LTM18C161	BN07-00008A	TC		-
TOSHIBA	LTM15C443	BN07-00031A	TD		-
TOSHIBA	LTM15C458	BN07-00043A	TE		-
TOSHIBA	LTM15C458S	BN07-00077A	TF		TSB 15" high brightness Panel
TOSHIBA	LTM15C458	BN07-00078A	TG		Toshiba ZPD panel
IBM	LTM15C458S	BN07-00099A	TH		TSB LTM15C458S ( ZPD )

## 14 Reference Infomation

Maker	VENDOR P/N	PANEL_CODE	PANEL_ABB	STICKER_CODE	Remarks
HANNSTAR	HSD150MX41A(A)	BN07-00020A	NA		TTL type
HANNSTAR	HSD150MX12	BN07-00030A	NB		TTL type
HANNSTAR	HSD170ME13	BN07-00180A	NTH		Hannstar 17" TN new panel development
HANNSTAR	HSD170ME13	BN07-00180B	NTZ		Hannstar 17" TN new panel development ZPD code deriva- tion
HANNSTAR	HSD190ME12	BN07-00210A	NTZ		Hannstar 19" TN new panel development
HANNSTAR	HSD150MX17-A	BN07-00226A	NTZ		Hannstar 15" slim panel ZPD code derivation
HANNSTAR	HSD190ME12-A10	BN07-00256A	NTZ		Hannstar 19" TN PSWG 8ms new panel development
HANNSTAR	HSD190ME13-D11	BN07-00270A	NTZ		Hannstar 19" TN Slim 5ms new panel development
HANNSTAR	HSD190ME13-A13	BN07-00317A	NTZ		
HANNSTAR	HSD190MGW1	BN07-00338A	NTZ		
HANNSTAR	HSD190MEN2-A	BN07-00341A	NTZ		
TORISAN	TM150XG-22L03(A)	BN07-00021A	RA		-
TORISAN	TM150XG-26L06	BN07-00042A	RB		-
TORISAN	TM181SX-76N01	BN07-00048A	RC		-
TORISAN	TM150XG-26L06	BN07-00059A	RD		15" XGA TN MODE(ZPD)
TORISAN	TM290WX-71N31	BN07-00063A	RE		RS24NS (TORISAN 29" NEW PANEL)
TORISAN	TM396WX-71N31	BN07-00064A	RF		RS24NS (TORISAN 40" NEW PANEL)
TORISAN	TM150XG-26L09	BN07-00073A	RG		Panel for 15" TV
TORISAN	TM150XG-26L10	BN07-00089A	RH		L10(change except D/I/C) ZPD
TORISAN	TM150XG-26L10	BN07-00090A	RJ		L10 NORMAL
TORISAN	TM190SX-70N01	BN07-00098A	RK		Torisan 19" Panel
TORISAN	TM181SX-76N01	BN07-00106A	RL		ZPD Panel code
TORISAN	TM190SX-70N01	BN07-00107A	RM		ZPD Panel code
TORISAN	TM290WX-71N31	BN07-00115A	RN		Color Coordinates change panel for TORISAN 29" TV
TORISAN	TM396WX-71N31	BN07-00116A	RP,Q		Color Coordinates change panel for TORISAN 40" TV
TORISAN	TM220WX-71N31	BN07-00125A	RR		Development TORISAN 22" TV PANEL (ZPD)
TORISAN	TM220WX-71N31	BN07-00127A	RS		Development TORISAN 22" TV PANEL (HPD)
TORISAN	TM396WX-71N32A	BN07-00150A	RT		120V inverter Exclusive panel
TORISAN	TM190SX-70N02	BN07-00154A	RMH		Torisan 6bit panel code Derivation
TORISAN	TM190SX-70N02	BN07-00154B	RMZ		Torisan 6bit panel code Derivation
TORISAN	TM150XG-A01	BN07-00162A	RTH		Torisan 15" Narrow & Slim panel development
TORISAN	TM150XG-A01	BN07-00162B	RTZ		Torisan 15" N&S panel ZPD code derivation
SHARP	LQ181E1DG11(A)	BN07-10001C	PA		-
SHARP	LQ150X1LW71	BN07-00067A	PB		SHARP 15" PVA PANEL
SHARP	LQ370T3LZ41	BN07-00216A	FAZ		Rome2
HITACHI	TX38D12VC0CAA(A)	BN07-00003A	HA		-
HITACHI	TX43DVCOCAB	BN07-00060A	HB		17" SXGA PVA MODE
HITACHI	TX43D15VC0CAB	BN07-00101A	HC		ZPD Panel
HITACHI	TX51D11VC0CAB	BN07-00122A	HD		20.1" NARROW
HITACHI	TX54D11VC0CAB	BN07-00123A	HE		21.3" NARROW
HITACHI	TX80D12VC0CAB	BN07-00169A	HIZ		Development new panel for Hitachi 32" TV (ZPD)
HITACHI	TX54D11VC0CAB	BN07-00123B	HIZ		Hitachi 21.3"ZPD panel
IBM	ITSX94S BN07-00017A	IA		-	
UNIPAC	UM170E0 BN07-00028A	UA		Loaded by cisdba	
HYUNDAI	HT15X13 BN07-00035A	DA		-	
HYUNDAI	HT17E11-200	BN07-00049A	DB		TN MODE
HYUNDAI	HT17E11-300	BN07-00093A	DC		HT17E11-300 ZPD panel
HYUNDAI	HT17E11-400	BN07-00094A	DD		HT17E11-400 normal panel
HYUNDAI	HT17E11-400	BN07-00095A	DE		HT17E11-400 ZPD panel code
HYUNDAI	HT17E12 BN07-00096A	DF		HT17E12 ( Narrow & slim Design )	
HYUNDAI	HT17E12 BN07-00105A	DG		ZPD Panel code	

Maker	VENDOR P/N	PANEL_CODE	PANEL_ABB	STICKER_CODE	Remarks
HYUNDAI	HT15X15-D00	BN07-00146A	DH	TN(ADT)	Development for Ares 15" Hydys TV
HYUNDAI	HT15X15-D01	BN07-00146B	DJ		Derivation panel HPD for Ares 15" Hydys TV
HYUNDAI	HT17E13-100	BN07-00167A	DTH		PINEHURST-2(IBM) PJT 17" HYDIS PANEL Derivation
HYUNDAI	HT17E13-100	BN07-00167B	DTZ		PINEHURST-2(IBM) Hydys 17" ZPD code Derivation
HYUNDAI	HT170EX1-100	BN07-00240A	DTZ		17" EX compatible Hydys Slim panel development
HYUNDAI	HT201V01-100	BN07-00263A	DTZ		Hydis 20.1" 4:3 VGA Mode TN NEW Panel
HYUNDAI	HT170EX1-101	BN07-00266A	DTZ		17" EX compatible Hydys Slim panel multi channel IC NEW
Derivation					
ACER	L170E3 BN07-00044A	AA		TN(ADT)	
ACER	M170EN05	BN07-00076A	AB		AU 17" Panel ( Narrow & slim design )
ACER	M170EN05	BN07-00102A	AC		ZPD Panel code
ACER	M190EN02	BN07-00170A	AMH		AU Monitor 19" new panel development (P19-1S)
ACER	M190EN02	BN07-00170B	AMZ		AU 19" ZPD code derivation (ZPD)
ACER	M170EN06	BN07-00171A	ATH		AU Monitor 17" New panel development
ACER	T260XW01	BN07-00163A	AMZ		AU 26" new panel development (NF26EO)
ACER	A201SN01	BN07-00177A	ATZ		AU TV panel 20.1" TN SVGA new panel development
ACER	M170EN06	BN07-00171B	ATZ		AU Monitor 17" ZPD code Derivation
ACER	T315XW01	BN07-00194A	AMZ		New AU 32"
ACER	M170EG01	BN07-00192A	ATH		AU TN PSWG type New Panel code
ACER	M170EG01	BN07-00192B	ATZ		AU TN PSWG type New Panel ZPD Derivation code
ACER	M190EN04	BN07-00203A	ATH		AU Monitor 19" ZPD New code Derivation
ACER	T260XW02	BN07-00208A	AMZ		AUO 26"
ACER	M170EG01 V8	BN07-00221A	ATZ		AU TN PSWG type New Panel (8msec) ZPD Derivation code
ACER	T260XW02	BN07-00233A	AMZ		AUO 26" New Panel (Cosmetic spec down grade)
ACER	T315XW01	BN07-00234A	AMZ		AUO 32" New Grade (Cosmetic spec down grade)]
ACER	M190EN03	BN07-00224A	AMZ		AU Monitor 19" MVA New code Derivation
ACER	T315XW01	BN07-00237A	AMZ		New LCD TV VE project : delete DBEF sheet * Panel, model
division ve					
ACER	T315XW01	BN07-00238A	AMZ		New LCD TV VE project : delete DBEF sheet + &#039;A-&#039; grade * Panel
ACER	M201UN02 V3	BN07-00168A	AMZ		-
ACER	M201UN02 V3	BN07-00168B	AMH		-
ACER	M190EN04 V7	BN07-00248A	ATZ		AU Monitor 19" TN Glare ZPD New code Derivation
ACER	A070VW01	BN07-00235A	ATZ		New Panel code Derivation for Digital Album
ACER	T315XW01	BN07-00253A	AMZ		LCD TV VE item model * Panel, Model division add version:
T315XW01					
ACER	T260XW02	BN07-00254A	AMZ		AUO 26" VE item apply model
ACER	M170EU01	BN07-00260A	ATZ		AUO 17" Slim TN ZPD Type New code Derivation
ACER	T370XW01	BN07-00255A	AMZ		for ROME 37" model development
ACER	T315XW02(V3),	BN07-00324A	AMZ		-
ACER	A201SN02 V5	BN07-00314A	ATZ		
ACER	M201UN03	BN07-00332A	AMZ		
ACER	M190PW01 V0	BN07-00350A	ATZ		
CHIMEI	M170E3-L01	BN07-00050A	CA		TN PANEL
CHIMEI	M150X3-L01	BN07-00051A	CB		COMPATIBLE
CHIMEI	M170E4-L01	BN07-00052A	CC		MVA PANEL
CHIMEI	M150X2-L01	BN07-00066A	CD		CHIME 15" PVA PANEL
CHIMEI	M150X3-L01	BN07-00079A	CE		Chimei ZPD panel
CHIMEI	M170E3-L01	BN07-00103A	CF		ZPD Panel code
CHIMEI	M170E4-L01	BN07-00104A	CG		ZPD Panel code
CHIMEI	V296W1-L01	BN07-00120A	CH		MVA
CHIMEI	M170E6-L02	BN07-00126A	CJ		HIGHLAND 17" LOW PANEL
CHIMEI	M190E2-L01	BN07-00131A	CK		GH19AS,BS CHIMEI PANEL
CHIMEI	M150X4-L06	BN07-00137A	CL		15" Narrow & Slim panel
CHIMEI	M170E6-L01	BN07-00133A	CM		2003-03-11 vendor change
CHIMEI	M170E6-L01	BN07-00133B	CN		ZPD derivation panel
CHIMEI	V201V1-T01	BN07-00135A	CP		CHIMEI 20.1" panel development
CHIMEI	M170E6-L02	BN07-00126B	CQ		HIGHLAND 17" LOW PANEL ZPD derivation panel

## 14 Reference Infomation

Maker	VENDOR P/N	PANEL_CODE	PANEL_ABB	STICKER_CODE	Remarks
CHIMEI	M170E6-L05	BN07-00152A	CR		CMO 17" new panel development code
CHIMEI	M170E6-L05	BN07-00152B	CS		CMO 17" ZPD panel code derivation
CHIMEI	M150X4-L06	BN07-00137B	CT		Chimei 15" Narrow & Slim panel ZPD derivation
CHIMEI	M170E5-L05	BN07-00165A	CTH		CMO 17" new panel development code (GOYA2-PJT)
CHIMEI	M170E5-L05	BN07-00165B	CTZ		CMO 17" ZPD panel(GOYA2-PJT)
CHIMEI	V230W1-L02	BN07-00209A	CMZ		CMO 23" new development
CHIMEI	V320B1-L01	BN07-00207A	CMZ		CMO 32" new development
CHIMEI	V270W1-L01	BN07-00136A	CMZ		CHI MEI 27" panel development
CHIMEI	M190E5-L0A	BN07-00213A	CTZ		-
CHIMEI	M190E3-L0A	BN07-00212A	CMZ		CMO M190E3-L0A MVA Type New code derivation
CHIMEI	M170E7-L01	BN07-00232A	CTZ		CMO 17" Slim TN ZPD Type New code derivation
CHIMEI	M190A1-L01	BN07-00228A	CTZ		CMO 19" Wide TN ZPD Type New code derivation
CHIMEI	V201V1-T03	BN07-00275A	CTZ		CMO 20.1" (V201V1-T01) VE model
CHIMEI	M201P1-L01	BN07-00268A	CTZ		CMO 20.1" TN ZPD derivation
CHIMEI	M220Z1-L01	BN07-00321A	CTZ		
CHIMEI	M190E5-L0G	BN07-00337A	CTZ		
CHIMEI	M190A1-L02	BN07-00330A	CTZ		
CHIMEI	M220Z1-L02	BN07-00354A	CTZ		
NEC	SVA150XG04TB	BN07-00225A	BTZ		SVA NEC 15" panel ZPD code
NEC	SVA170SX01TB	BN07-00272A	BTZ		SVA NEC 17" panel ZPD code Brown