Chroma

Video Pattern Generator

2238

User's Manual

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Version 1.0
September 2017

Legal Notices

The information in this document is subject to change without notice.

Chroma ATE INC. makes no warranty of any kind with regard to this manual, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Chroma ATE INC. shall not be held liable for errors contained herein or direct, indirect, special, incidental or consequential damages in connection with the furnishing, performance, or use of this material.

CHROMA ATE INC.
66 Huaya 1st Road, Guishan, Taoyuan 33383, Taiwan

Warranty

All of Chroma's instruments are warranted against defects in material and workmanship for a period of one year from date of shipment. Chroma agrees to repair or replace any assembly or component found to be defective, under normal use during this period. Chroma's obligation under this warranty is limited solely to repairing any such instrument, which in Chroma's sole opinion proves to be defective within the scope of the warranty when returned to the factory or to an authorized service center. Purchaser is responsible for the shipping and cost of the service item to Chroma factory or service center. Shipment should not be made without prior authorization by Chroma.

This warranty does not apply to any products repaired or altered by persons not authorized by Chroma, or not in accordance with instructions furnished by Chroma. If the instrument is defective as a result of misuse, improper repair, or abnormal conditions or operations, repairs will be billed at cost.

Chroma assumes no responsibility for its product being used in a hazardous or dangerous manner either alone or in conjunction with other equipment. High voltage used in some instruments may be dangerous if misused. Special disclaimers apply to these instruments. Chroma assumes no liability for secondary charges or consequential damages and in any event, Chroma's liability for breach of warranty under any contract or otherwise, shall not exceed the purchase price of the specific instrument shipped and against which a claim is made.

Any recommendations made by Chroma regarding the use of its products are based upon tests believed to be reliable; Chroma makes no warranty of the results to be obtained. This warranty is in lieu of all other warranties, expressed or implied, and no representative or person is authorized to represent or assume for Chroma any liability in connection with the sale of our products other than set forth herein.

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Material Contents Declaration

The recycling label shown on the product indicates the Hazardous Substances contained in the product as the table listed below.


: See **<Table 1>**.


: See **<Table 2>**.

<Table 1>

Part Name	Hazardous Substances					
	Lead	Mercury	Cadmium	Hexavalent Chromium	Polybrominated Biphenyls/ Polybromodiphenyl Ethers	Selected Phthalates Group
	Pb	Hg	Cd	Cr^{6+}	PBB/PBDE	DEHP/BBP/DBP/DIBP
PCBA	O	O	O	O	O	O
CHASSIS	O	O	O	O	O	O
ACCESSORY	O	O	O	O	O	O
PACKAGE	O	O	O	O	O	O

“O” indicates that the level of the specified chemical substance is less than the threshold level specified in the standards of SJ/T-11363-2006 and EU Directive 2011/65/EU.

“×” indicates that the level of the specified chemical substance exceeds the threshold level specified in the standards of SJ/T-11363-2006 and EU Directive 2011/65/EU.

Remarks: The CE marking on product is a declaration of product compliance with EU Directive 2011/65/EU.

Disposal

Do not dispose of electrical appliances as unsorted municipal waste, use separate collection facilities. Contact your local government for information regarding the collection systems available. If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, damaging your health and well-being. When replacing old appliances with new one, the retailer is legally obligated to take back your old appliances for disposal at least for free of charge.

<Table 2>

Part Name	Hazardous Substances					
	Lead	Mercury	Cadmium	Hexavalent Chromium	Polybrominated Biphenyls/ Polybromodiphenyl Ethers	Selected Phthalates Group
	Pb	Hg	Cd	Cr^{6+}	PBB/PBDE	DEHP/BBP/DBP/DIBP
PCBA	×	O	O	O	O	O
CHASSIS	×	O	O	O	O	O
ACCESSORY	×	O	O	O	O	O
PACKAGE	O	O	O	O	O	O

"O" indicates that the level of the specified chemical substance is less than the threshold level specified in the standards of SJ/T-11363-2006 and EU Directive 2011/65/EU..

"×" indicates that the level of the specified chemical substance exceeds the threshold level specified in the standards of SJ/T-11363-2006 and EU Directive 2011/65/EU..

1. Chroma is not fully transitioned to lead-free solder assembly at this moment; however, most of the components used are RoHS compliant.
2. The environment-friendly usage period of the product is assumed under the operating environment specified in each product's specification.

Disposal

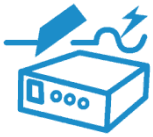
Do not dispose of electrical appliances as unsorted municipal waste, use separate collection facilities. Contact your local government for information regarding the collection systems available. If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, damaging your health and well-being. When replacing old appliances with new one, the retailer is legally obligated to take back your old appliances for disposal at least for free of charge.

Safety Summary

The following general safety precautions must be observed during all phases of operation, service, and repair of this instrument. Failure to comply with these precautions or specific WARNINGS given elsewhere in this manual will violate safety standards of design, manufacture, and intended use of the instrument. *Chroma* assumes no liability for the customer's failure to comply with these requirements.

BEFORE APPLYING POWER
Verify that the power is set to match the rated input of this power supply.

PROTECTIVE GROUNDING
Make sure to connect the protective grounding to prevent an electric shock before turning on the power.



NECESSITY OF PROTECTIVE GROUNDING
Never cut off the internal or external protective grounding wire, or disconnect the wiring of protective grounding terminal. Doing so will cause a potential shock hazard that may bring injury to a person.

FUSES
Only fuses with the required rated current, voltage, and specified type (normal blow, time delay, etc.) should be used. Do not use repaired fuses or short-circuited fuse holders. To do so could cause a shock or fire hazard.

DO NOT OPERATE IN AN EXPLOSIVE ATMOSPHERE
Do not operate the instrument in the presence of flammable gases or fumes. The instrument should be used in an environment of good ventilation.

DO NOT REMOVE THE COVER OF THE INSTRUMENT
Operating personnel must not remove the cover of the instrument. Component replacement and internal adjustment can be done only by qualified service personnel.

⚠WARNING

1. Lethal voltage. AC source may output 426 V peak voltage.
2. Touching the connected circuit or output terminal on the front or rear panel when the power is on may result in death.

Safety Symbols

	**DANGER –** High voltage.
	**Explanation:** To avoid injury, death of personnel, or damage to the instrument, the operator must refer to the explanation in the instruction manual.
	**High temperature:** This symbol indicates the temperature is hazardous to human beings. Do not touch it to avoid any personal injury.
	**Protective grounding terminal:** This symbol indicates that the terminal must be connected to ground before operation of the equipment to protect against electrical shock in case of a fault.
	**Functional grounding:** To identify an earth (ground) terminal in cases where the protective ground is not explicitly stated. This symbol indicates the power connector does not provide grounding.
	**Frame or chassis:** To identify a frame or chassis terminal.
	**Alternating Current (AC)**
	**Direct Current (DC) / Alternating Current (AC)**
	**Direct Current (DC)**
	**Push-on/Push-off power switch**
	The **WARNING** sign highlights an essential operating or maintenance procedure, practice, condition, statement, etc., which if not strictly observed, could result in injury to, or death of, personnel or long term health hazards.
	The **CAUTION** sign highlights an essential operating or maintenance procedure, practice, condition, statement, etc., which if not strictly observed, could result in damage to, or destruction of, equipment.
	The **Notice** sign highlights an essential operating or maintenance procedure, condition, or statement.

Revision History

The following lists the additions, deletions and modifications in this manual at each revision.

Date	Version	Revised Sections
Sep. 2017	1.0	Complete this manual.

Table of Contents

1. Overview

1.1 Features

- Equipped with a 7 inch full color display of human machine interface (resolution for 1024x600).
- Instant pattern view function.
- Supports ultra-high resolution 8Kx4K video pattern signal output on single module.
- Multiple independent signal modules for various video signal interfaces expansion.
- Equipped with image sync output function to output maximum 4 types of resolutions and test patterns.
- Provides high speed pattern switch time (8K@60Hz<0.2s) via the embedded new core graphics.
- Equipped with USB 3.0 communication interface (master x3 / slave x1).
- Equipped with 1G Ethernet interface.
- Fully support the standard 3D signal format on the market for output.
- Provides faster 3D drawing capabilities.

1.2 Specifications

1.2.1 Main Frame

MODEL	**2238**
SYSTEM	
Display	1024 x 600
Signal slot	4 Signal slot, each slot up to 4K or 8K resolution
Fan noise	< 65dB (with Fan control circuit)
System ready time	< 30s
DATA STORAGE	
Default	3000 timings + 3000 patterns
Internal memory	5000 timings + 5000 patterns + 2000 programs
External memory	USB Host interface
Disk on PC (R / W)	Unlimited data storage
CONNECTOR	
USB	USB 3.0 x 4 – Type A x 3 (Front x 2 + Rear x 1) / Type B x 1 (Rear x 1)
Ethernet	1Gpbs x 1 – RJ-45 x 1
Smart I/O	D-SUB 9pin x 1
OTHERS	
AC input voltage range	100 ~ 240V, 50~60Hz, 1.5 A Max.
Operating temperature	+5 ~ +40 °C
Storage temperature	-20 ~ 60 °C
Humidity	20 ~ 90%
Dimensions (H x W x D mm)	132 x 350 x 350 mm

1.2.2 A223801 Display Port Signal Module

A223801 DISPLAYPORT SIGNAL MODULE		
Video	Pixel rate range	25 MHz~2.4GHz
	Resolution	8Kx4K@30Hz (1Port) 8Kx4K@60Hz (2Port)
	3D Format	Frame/Field Sequential Stacked Frame Pixel Interleaved Side-by-side
	Signal compliant	DisplayPort v1.4 Specification
	Video signal type	RGB / YCbCr
	Sampling mode	RGB 4:4:4 / YCbCr 4:4:4 or 4:2:2 or 4:2:0
	Color depth	6 / 8 / 10 / 12 / 16 bits per component
	Color space	RGB / ITU-R BT.601 / ITU-R BT.709 / ITU-R BT.2020
	HDCP	HDCP V1.3 / HDCP V2.2
	Main Link Data Rate	1.62 / 2.7 / 5.4 / 8.1 (HRB3) Gbps per lane
	Lane Count	1 / 2 / 4 / 4 + 4 Lanes
	Pre-emphasis	0dB / 3.5dB / 6dB / 9.5dB selectable
	Swing level	400mV/600mV/800mV/1200mV selectable
Audio	Channel	2 Channel (L-PCM)-Internal ; 8 Channel (AC3/DTS)-External; 8 Channel HBR-audio
	Sample rate	32 , 44.1 , 48 , 88.2 , 96 , 176.4 , 192KHz , +/- 1000ppm
	Bits per sample	16 / 20 / 24 Bits
	Amplitude	-90.3 ~ 0.0 dBFS / -138.47 ~ 0.0 dBFS programmable
	Frequency	10 Hz ~ 20 KHz, 1 Hz/step
CONNECTOR		
DisplayPort		DisplayPort x 2
S/PDIF		S/PDIF In x 1 (Coaxial)

1.2.3 A223802 HDMI Signal Module

A223802 HDMI SIGNAL MODULE		
Video	Pixel rate range	600 MHz Max. (TMDS CLK : Max. 300MHz)
	Resolution	4Kx2K@60Hz (1 Port) 8Kx4K@60Hz (4 Port)
	3D Format	Frame packing Field alternative Line alternative Side-by-Side (Full) L + depth L + depth + graphics + graphics-depth Top-and-Bottom Side-by-Side (Half) Frame sequential Line-by-Line Checkerboard Dual Pipe 3D

	Support timing	CEA-861-F / CTA-861-G
	Pixel repetition	1~10
	Signal compliant	HDMI v2.0a Specification
	Video signal type	RGB / YCbCr
	Sampling mode	RGB 4:4:4 / YCbCr 4:4:4 or 4:2:2 or 4:2:0
	Color depth	24 / 30 / 36 / 48 @ RGB & YCbCr
	Color space	RGB / ITU-R BT.601 / ITU-R BT.709 / xvYcc(IEC61966-2-4)/SYCC/AdobeRGB/AdobeYCC / ITU-R BT.2020
	HDCP	HDCP 1.4 / HDCP V2.2
	HDR	HDR 10
	E-EDID	Version 1.3 Read / Write / Compare / Edit / Analysis
Audio	Channel	8 Channel (FL / FR / RL / RR / FC / LFE / RLC / RRC)
	Sample rate	32 , 44.1 , 48 , 88.2 , 96 , 176.4 , 192KHz +/- 1000ppm
	Bits per sample	16 / 20 / 24 Bit
	Amplitude	-90.3 ~ 0.0 dBFS / -138.47 ~ 0.0 dBFS programmable
	Frequency	10 Hz ~ 20 KHz, 1 Hz/step
	ARC output	S/PDIF (Coaxial)
CONNECTOR		
HDMI		HDMI Type A 19 Pin x 4
S/PDIF		S/PDIF In x 1 , S/PDIF Out x 1 (Coaxial)

1.2.4 A223803 Analog Signal Module

A223803 ANALOG SIGNAL MOUDULE	
ANALOG	
Pixel rate range	0.5 MHz ~ 300 MHz
3D Format	Frame sequential
Video signal	R, G, B (75 ohms)
Video level	0 ~ 1.0V, 1 mV/step
White level	0 ~ 1.2V, 1 mV/step
Black level	7.5 IRE / 0 IRE programmable
Sync level	0 ~ 0.5V, 1 mV/step
Sync on green	On / Off programmable
Rise/fall time	1.6nS (typical) , 2.0nS (maximum)
Separate sync	Hs / Vs / Xs
Video Format	R, G, B / RS-343A / RS-170 / VESA
	Y, R-Y, B-Y
	Y, Pb, Pr / ITU601, ITU709, RP177, SMPTE 240M
EDID	Version 1.3 Read / Write / Compare / Edit / Analysis
Signal compliant	VSIS v1.1
TV	
Video format	NTSC (443 / M / J), PAL (BDGHI / M / 60 / N / Nc), SECAM
Subcarrier accuracy	± 50 HZ
3D Format	Frame packing Top-and-Bottom

	Side-by-Side (Half) Frame sequential Line-by-Line Checkerboard
Video level	714mV(NTSC), 700mV(PAL/SECAM)
Sync level	300mV
Black level	0 ~100 IRE
Luminance accuracy	± 2%
Chrominance accuracy	NTSC / PAL : ± 3%
	SECAM : ± 10 %
Hue accuracy	± 3 degree
Close Caption (NTSC)	C1 / C2 / C3 / C4
	T1 / T2 / T3 / T4
V-Chip (NTSC)	MPAA: G / PG / PG-13 / R / NC-17 / X
	FCC: TV-Y / TY-Y7/ TV-G / TY-PG / TY-14 / TV-MA
	Canada English: C / C8+ / G / PG / 14+ / 18+
	Canada France: G / 8ans+ / 13ans+ /16ans+ /18ans
Teletext (PAL)	System B Level 1 , 1.5
AUDIO	
Channel	2 Channel (R , L)
Sample rate	32 , 44.1, 48, 88.2, 96, 176.4, 192KHz
Amplitude	0V ~ 2V, 50 mV/step (at 600 Ohms Load)
Frequency	10 Hz ~20 KHz, 1 Hz/ step
T.H.D	0.2 %
Output waveform	Sin wave
Special control mode	Tone / Sweep / Mute / Repeat / Play Time
CONNECTOR	
Analog RGB	D-sub 15 pin x 1
Component	RCA x 3
TV	BNC x 1 / YC x 1
AUDIO	RCA x 2

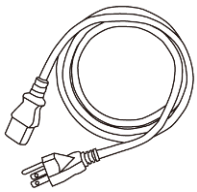
1.3 Standard Equipment and Accessories

Standard Equipment

2238 VPG

Standard Accessories (Cables)

Power Cord



USB B type

DP Cable

HDMI Cable

1.4 Inspection

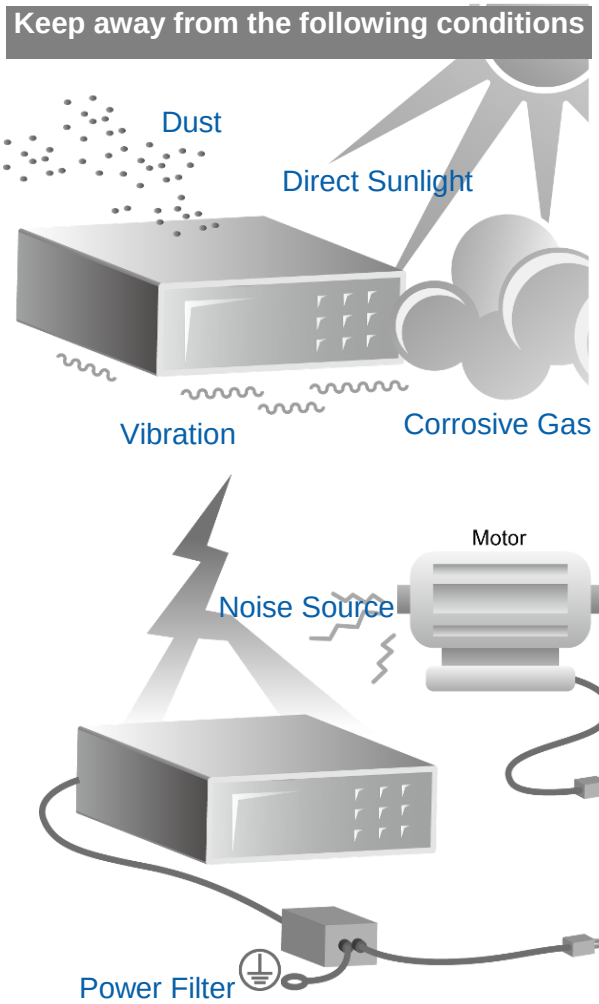
This instrument was inspected before shipment and found to be free of mechanical and electrical defects. As soon as the instrument is unpacked, inspect for any damage that may have occurred in transit. Save all packing materials in case the instrument needs to be returned. If damage is found, immediately file a claim with the carrier. Do not return the instrument to Chroma without prior approval.

1.5 Ambient Environment

(1) Do not use the hardware device in a dusty or vibrating location. Do not expose it to direct sunlight or corrosive gas. Be sure that the ambient temperature is 0°C ~ +40°C and that the relative humidity is between 20% ~ 80%.

(2) The VPG has been carefully designed to reduce the noise from the AC power source. However, it should be used in an environment with the lowest noise as possible. If noise is inevitable, please install a power filter.

(3) The VPG should be stored within the temperature range of -40°C ~ +85°C. If the unit is not going to use for a long time, please store it in its original box or a similar package at a dry place without direct sunlight to ensure its accuracy.



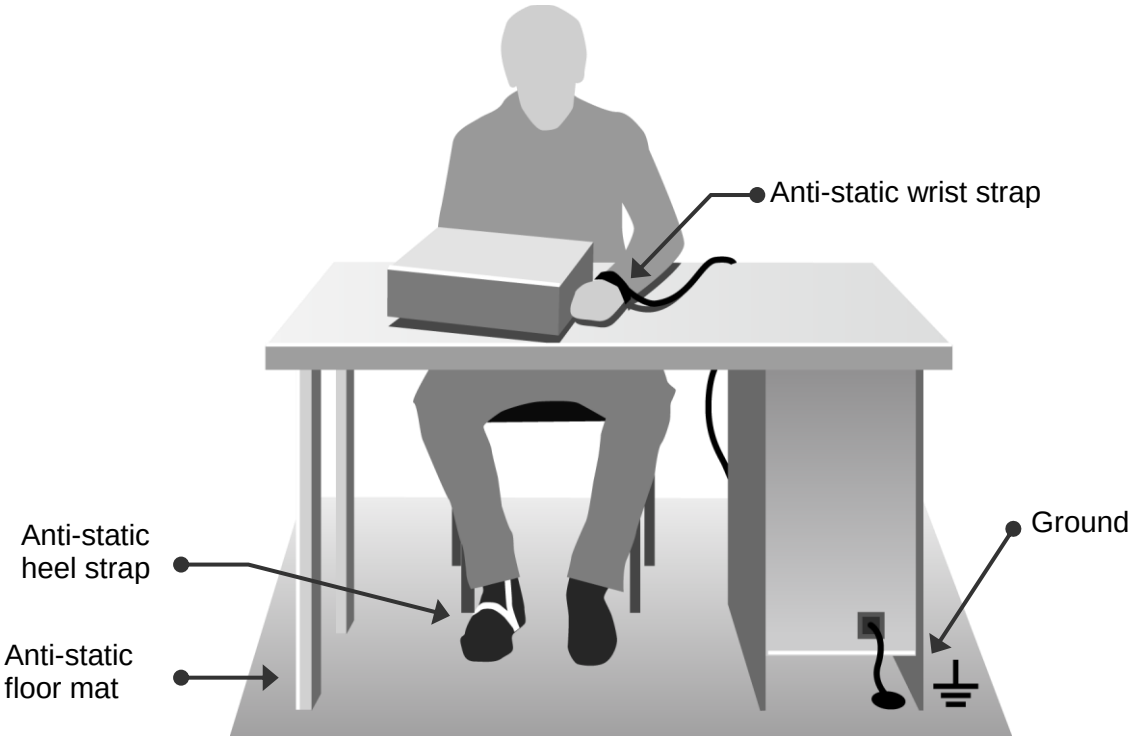
1.6 Common Environment Conditions

(1) Indoor use.
(2) Altitude: 2000 meter.
(3) Temperature: 5°C to 40°C.
(4) Humidity: Maximum 80%RH at 31°C decreasing to 50%RH at 40°C.
(5) Transient Overvoltage at Mains Supply: 2500V.
(6) Pollution Degree: 2.

1.7 Preparation for Use

Follow the Electrostatic Discharge Protection instructions to reduce the risk of damaging the electronic components.

To avoid damaging the electronic components, the place where the instrument is operated must be prevented from electrostatic discharge (ESD).



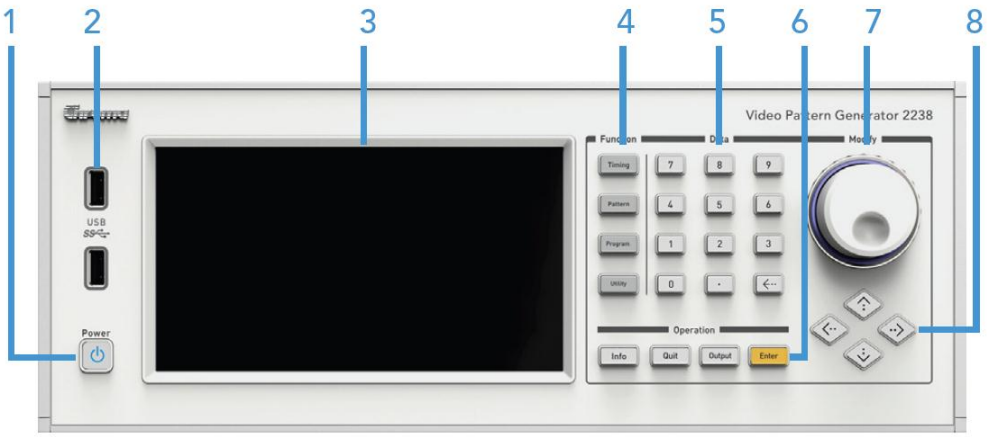
(1) Be sure that the AC line input to be connected meets the specification.
(2) The instrument must be installed in a well ventilated area to avoid the internal temperature from getting too high.

1.8 Maintenance and Cleaning

Unplug the power cord on the instrument first before cleaning. Use a brush to clean the dust on it. Do not wipe the chassis with any volatile liquid (such as Cleaning Naphtha) to avoid damaging it. For internal cleaning, please send the instrument back to the distributors or agents of Chroma for cleaning.

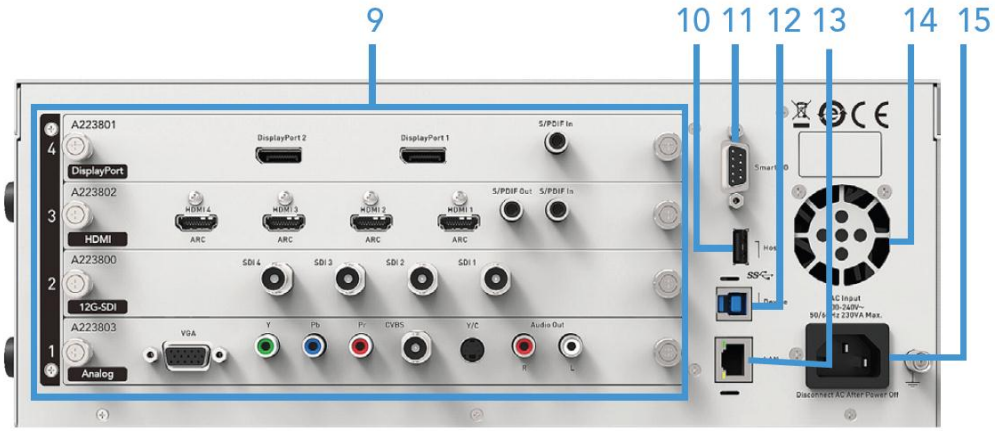
1.9 Panels

1.9.1 Front Panel



No.	Description	No.	Description	No.	Description
1	Main Power Switch	4	Function Keys	7	Rotary Knob
2	USB Port (A Type)	5	Numeric Keys	8	Arrow Keys
3	7” Touch Screen	6	Control Keys		

1.9.2 Rear Panel

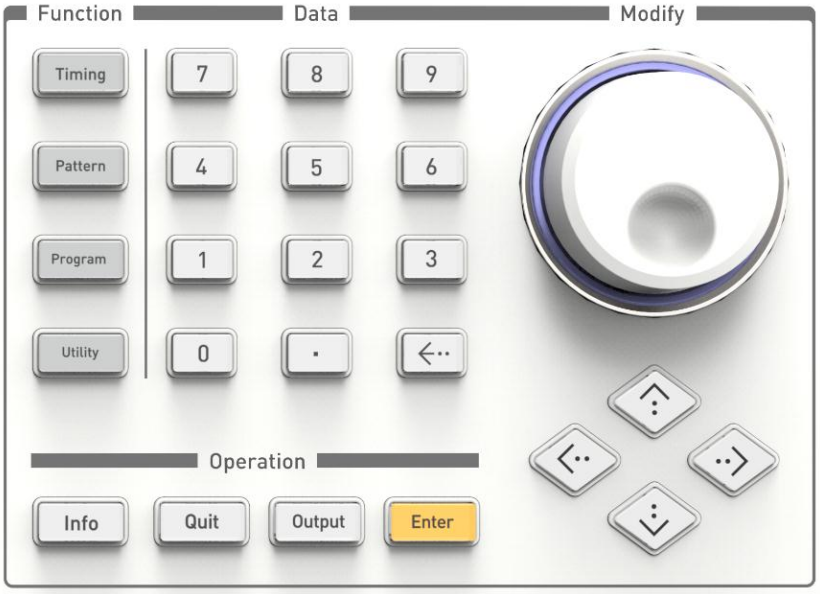


No.	Description	No.	Description	No.	Description
9	Signal Module	12	USB Port (B Type)	15	AC Line In
10	USB Port (A Type)	13	Ethernet Port		
11	SMART I/O	14	Cooling Fan		

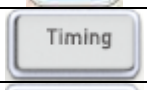
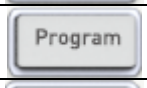
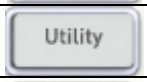
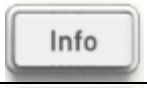
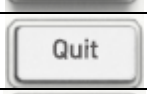
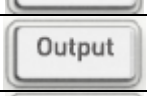
2. Operation

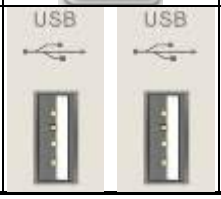
2.1 Panel Keys

2.1.1 Arrangement



2.1.2 Description

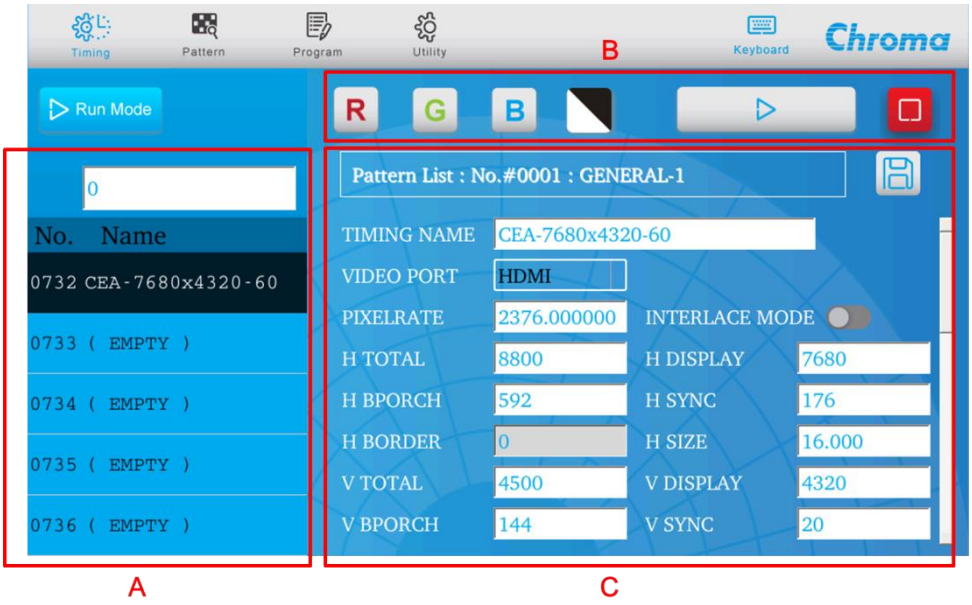
Group	Key Name	Description
Power		Power button.
Function		Timing function key.
		Pattern function key.
		Program function key.
		System setup function key.
Operation		Info key, reserved for special function use.
		Quit key to stop the current output.
		Video signal output key.
		Editing completion key (Enter Key) for confirmation.

Modify		Rotary knob for quick selection (scroll) and output when pressed down.
		Upward key.
		Downward key.
		Leftward key.
		Rightward key.
Data		Numeric keys.
		Backspace.
Connector		Connecting the USB devices.

2.2 Timing Function

2.2.1 Setting a Timing

Press **Timing** key to set a timing, and the LCD is shown as below.



Zone A: Timing Selection

- Press ▼ key to switch to next timing.
- Press ▲ key to switch to previous timing.
- Use the rotary knob to select timing by turning it clockwise to next timing and counterclockwise to previous timing. Entering a timing number via the numeric keys will go to the specified timing directly. (Ex. Input 555 and it will go to Timing #555.)

Zone B: Output Control

- Touch ▷ to start output.
- Touch ▢ to stop output.
- Touch R G B to enable or disable the R, G, B output.
- Touch ◥◣ to enable or disable the inverse output.

Zone C: TIMING Parameters Editing

- When the parameters are edited, touch 💾 to save the timing.

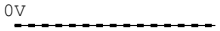
Timing Parameters

- Htotal: It is the time of a scanning horizontal raster line.
- Hdisplay: It is the time of a picture displayed on a scanning horizontal raster line.
- Hb-porch: H back porch is a period of time from the end of Hsync signal to the start of Hdisplay.
- Hsync Width: It is the time of the width of Hsync signal.
- Hborder: The part is not included in general standard signals. It is only symmetrically and slightly included in some special display types before and after the time of display to show more picture section.
- Hf-porch: H front porch is a period of time from the end of Hdisplay to the start of Hsync.
- Vtotal: It is the time of a whole vertical field.
- Vdisplay: It is the time of the display of vertical field.
- Vb-porch: V back porch is a period of time from the end of Vsync signal to the start of Vdisplay.
- Vsync Width: It is the time of the width of Vsync signal.

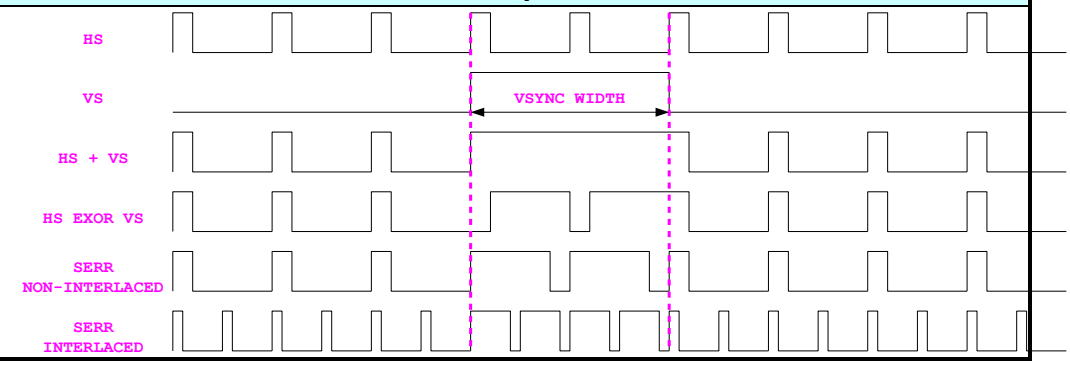
- Vborder: The part is not included in general standard signals. It is only symmetrically and slightly included in some special display types before and after the time of display to show more picture section.
- Vf-porch: V front porch is a period of time from the end of Vdisplay to the start of Vsync.

Sync Signal Parameters

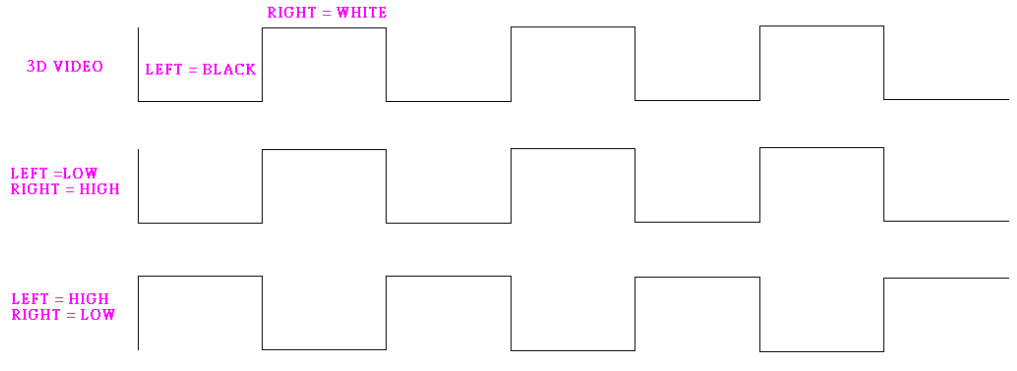
- H SYNC OUT: It specifies the horizontal sync signal output logic for the timing.
- V SYNC OUT: It specifies the vertical sync signal output logic for the timing.
- X STNC OUT: It specifies the composite sync signal output logic for the timing.

0 = ON(+)	1 = ON(-)	2 = OFF-LOW
		
3 = OFF-HIGH	**4 = 3D SYNC**	
		

- XS SELECT: It specifies the HS&VS logic composition of XS signal for the timing.

Selection	Description
0	
1	
2	
3	
4	

- XS SELECT: It specifies the XS signal for the timing when the XS SELECT is set to 3D SYNC.

Selection	Description
0	
1	

HDMI Parameters

- VIDEO PORT: It selects the output signal terminal for the timing.
- PIXEL RATE: It sets the output timing pixel rate.
- INTERLACE MODE: It set the interlace mode for the timing.
- COLOR SPACE: It selects YCbCr or RGB signal.
- COLOR DEPTH: It sets the color depth.
- PIXEL MODE: It specifies the YCbCr color signal encoding method when outputting the YCbCr signal.
- HPD Enable: It sets whether enable the Hot Plug Detect function. When this item is enabled and DTV is connected to VPG, it can output signal again if Hot Plug function is enabled by VPG. If Auto Relink HDCP function needs to be enabled, this item also needs to be enabled.
- HDMI AV MUTE: It selects if sending General Control Packet to DTV and commending DTV to execute AV Mute when the VPG pattern is changed. If this parameter is enabled, it will send the General Control Packet to give Set AV Mute command when the VPG pattern is changed. Please note that when the HDCP function is enabled, the system will give Clear AV Mute command before encrypting. It is because the HDMI Receiver cannot decrypt Clear AV Mute command when the data is encrypted.
- HDCP Enable: It specifies if executing the HDCP function.
- HDCP Version: It specifies if running the HDCP version.
- 3D TYPE: It sets the 3D type for output timing.
- HDR Enable: It specifies if executing the HDR function.
- HDR EOTF: It specifies the HDR format for execution.
- HDMI Scan Mode: It sets the “Scan mode” of Auxiliary Video information InfoFrame control flag for output. This control flag is to inform the DTV what Scan Mode should be used for showing the current video format.
- YC To RGB: It specifies if converting the color differential signal to output as RGB signal. It simulates the DVD Player that decompresses the MPEG to output image data in RGB mode.
- HDMI INFOGROUP: It selects the InfoFrame Group.
- HDMI Aspect Ratio: It sets the “Aspect Ratio” of Auxiliary Video information InfoFrame control flag for output. This control flag is to inform the DTV what Aspect Ratio should be used for showing the current video format.
- PIXEL REPET: It specifies the number of times for repeated data output.
- IT CONTENT: *TBD.
- HEX DATA: It sets the SMART I/O output signal.

DisplayPort Parameters

- VIDEO PORT: It selects the timing output signal terminal.
- PIXEL RATE: It sets the output timing pixel rate.
- INTERLACE MODE: It sets the timing to interlace mode.
- COLOR SPACE: It selects YCbCr or RGB signal.
- COLOR DEPTH: It selects the color depth.
- PIXEL MODE: It specifies the YCbCr color signal encoding method when outputting the YCbCr signal.
- HDCP Enable: It specifies if executing the HDCP function.
- YC To RGB: It specifies if converting the color differential signal to output as RGB signal. It simulates the DVD Player that decompresses the MPEG to output image data in RGB mode.
- TRAINING MODE: It has Auto, Manual and Fast three modes for setting.
  Auto Training: It uses the DPCD at Sink to perform Link Training (CR and EQ) and output video.
  Manual Training: It uses the user set Main Link and Bit Rate to perform Link Training (CR and EQ) and output video. (The block values shown at the bottom of VPG window

are the minimum parameters to support this timing pixel rate. For instance, the minimum setting should be one lane and 1.62 GHz under timing 640x480.)
Fast Training: It outputs video using the user-defined output parameters without performing Link Training.
Interval is the time interval between TP1 and TP2 (0~31 ms).
Pre-emphasis is the parameter (0, 3.5, 6 and 9.5 dB) for performing EQ in Link Training.
Swing Level is the parameter (400, 600, 800 and 1200 mV) for performing CR in Link Training

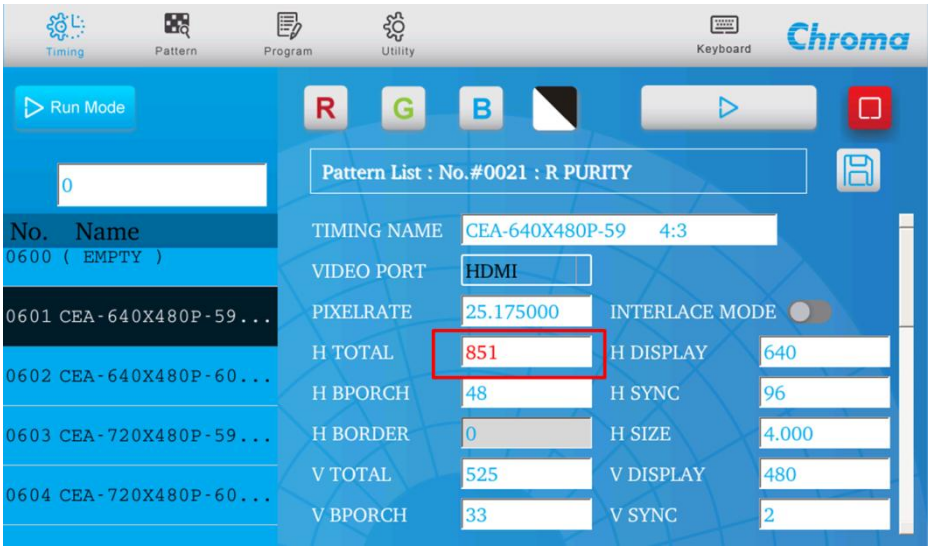
- SSC: It is the spread spectrum function setting. It outputs timing again when enabled and closes the function when disabled.
- READ DPCD OFFSET: It sets the DPCD address to be read along with Pattern 713 for output.
- HEX DATA: It sets the SMART I/O output signal.

2.2.2 Editing Timing Default Parameters and Saving User-Defined Timing

This parameter editing function provides users to edit the timing default parameters (such as horizontal timing, vertical timing, etc.). Here the timing CEA-640x480P-59 is used as example for explanation.

- **Editing parameters**
  Select the output timing for editing from the *Appendix A Default Timings List*. Take the CEA-640x480P-59 Timing for example, first press **Timing** **6** **0** **1**, and the VPG panel shows CEA-640x480P-59 HDMI Timing.

  The default timing parameters will load in on the right, and an HDMI parameter editing screen will appear. The use can edit the parameters as desired.



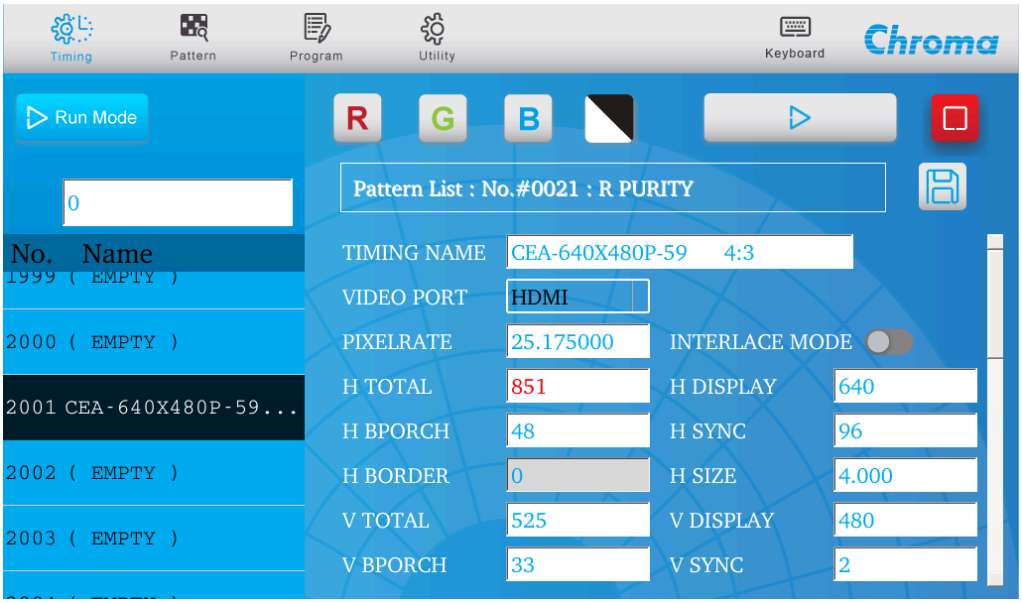
Notice The edited parameters will show in red if it is different from the default setting.

When the editing is done, touch [▷] to output directly.

- **Saving the user-defined timing**

  Touch [💾] to save the edited timing to a user-defined timing. The screen will prompt the timing number that has not been used.

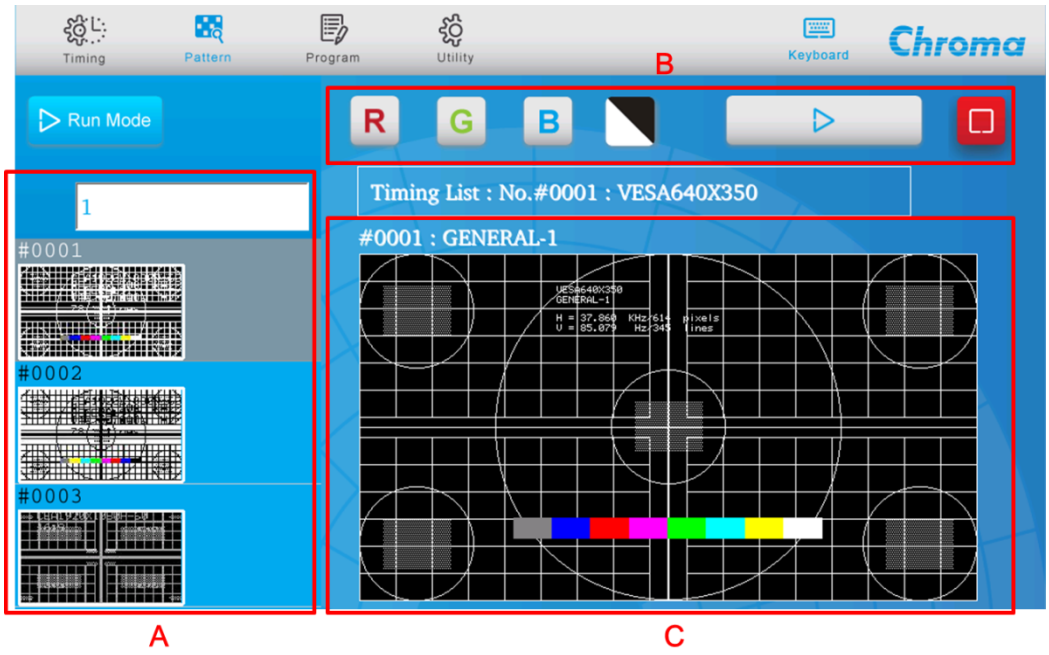
Touch **OK** to save the timing.



2.3 Pattern Function

2.3.1 Setting a Pattern

Press **Pattern** key to set a pattern, and the LCD is shown as below.



Zone A: Pattern selection

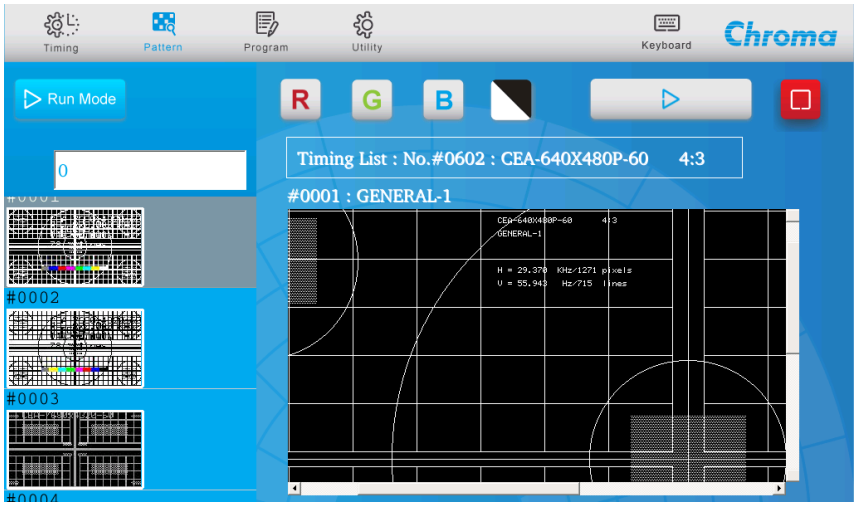
- Press ▼ to switch to next pattern.
- Press ▲ to switch to previous pattern.
- Use the rotary knob to select a pattern by turning it clockwise to next pattern and counterclockwise to previous pattern. Entering a pattern number via the numeric keys will go to the specified pattern directly. (Ex. Input 555 and it will go to Pattern #555.)

Zone B: Output control

- Touch ▷ to start output.
- Touch ❑ to stop output.
- Touch R G B to enable or disable the R, G, B output.
- Touch ◥ to enable or disable the inverse output.

Zone C: Pattern preview

- User finger to move/zoom in /zoom out the pattern for preview.

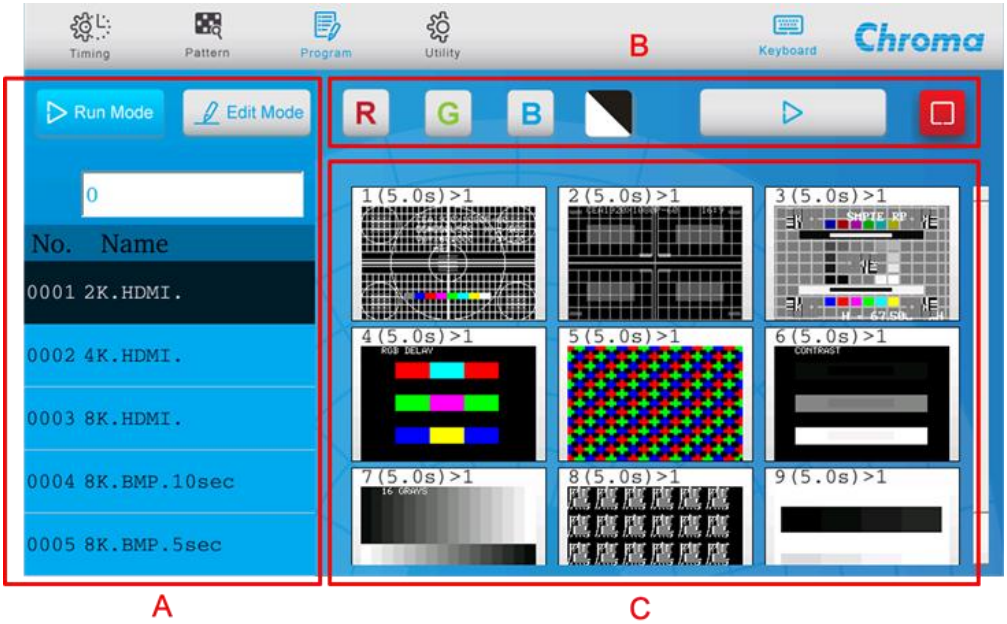


2.4 Program Function

The VPG uses “PROGRAM” and “SEQ” to create a procedure for outputting signals. The VPG has built in 1000 editable programs, and a program is composed of several sequences. The sequence can set various timings, patterns, audio and delay for output.

2.4.1 Setting a Program

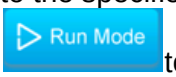
Press **Program** key to set a program, and the LCD is shown as below.



Zone A: Program selection

- Press ▼ to switch to next program.
- Press ▲ to switch to previous program.
- Use the rotary knob to select a program by turning it clockwise to next program and counterclockwise to previous program. Entering a program number via the numeric keys

will go to the specified program directly. (Ex. Input 555 and it will go to Program #555.)

- Touch 

to enter into Run Mode. Select a program in this mode and output.
- Touch 

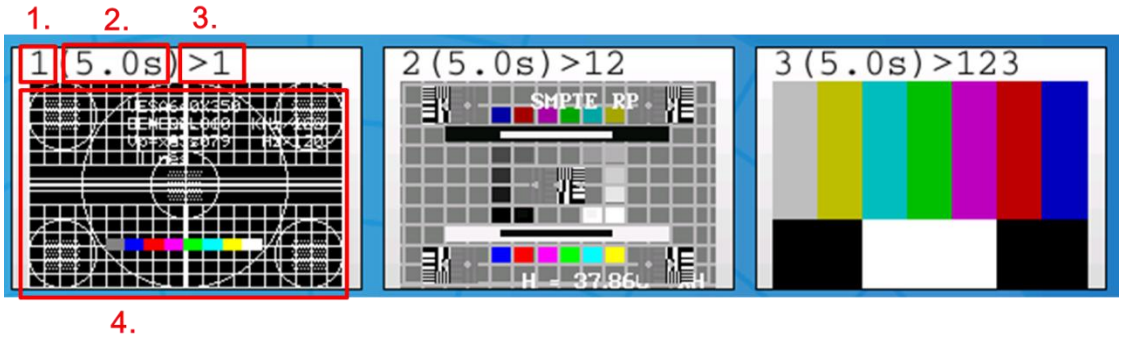
to enter into Edit Mode. Select a program in this mode and output.

Zone B: Output control

- Touch  to start output. Touch it again during output or press  to pause the program output.
- When outputting a program, use the rotary knob to select next sequence by turning it clockwise and counterclockwise to select previous sequence.
- Touch  to stop output.
- Touch 

to enable or disable the R, G, B output.
- Touch  to enable or disable the inverse output.

Zone C: Program preview



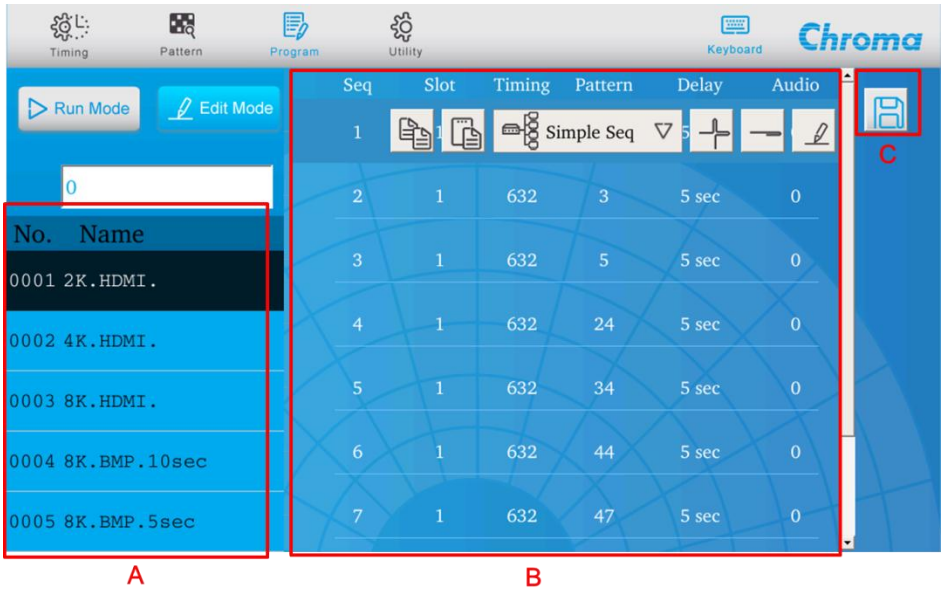
1. SEQ no.
2. DELAY time
3. Output slot
4. Output pattern

See section 2.4.2 for editing the sequence.

2.4.2 Steps for Editing a Sequence

Touch 

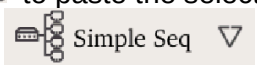
to enter into sequence editing mode, and the LCD is shown as below.

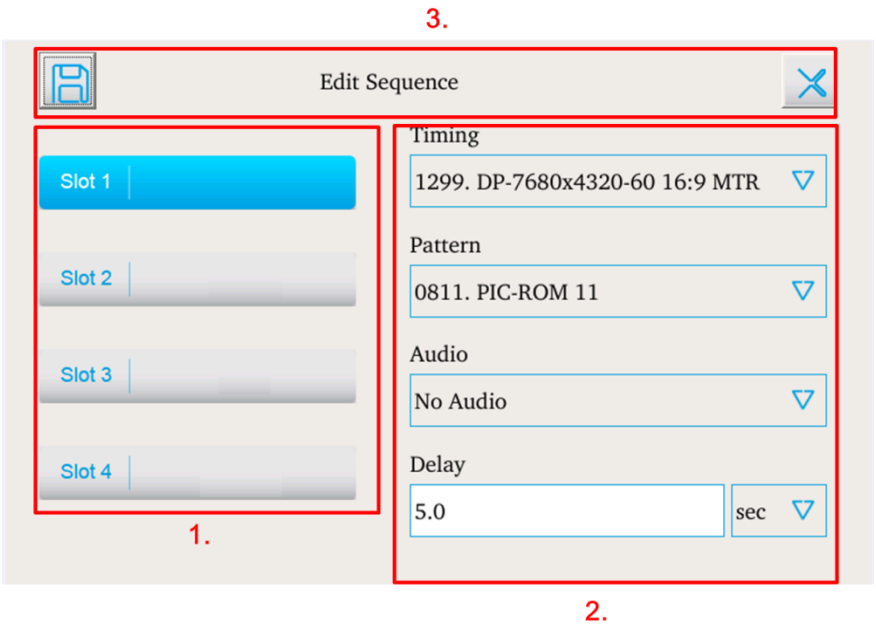


Zone A: Program selection

- Press ▼ to switch to next program.
- Press ▲ to switch to previous program.
- Use the rotary knob to select a program by turning it clockwise to next program and counterclockwise to previous program. Entering a program number via the numeric keys will go to the specified program directly. (Ex. Input 555 and it will go to Program #555.)

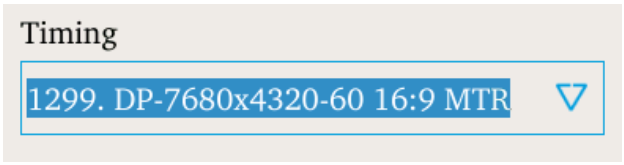
Zone B: SEQ editing

- It displays all the sequence info of selected program including the Seq no., Slot no., Timing no., Pattern no., Delay time, and Audio no.
- COPY: Touch  to copy the selected Seq.
- PASTE: Touch  to paste the selected Seq.
- SEQ TYPE: Touch  to select the sequence type. (Only Simple Seq is available now.)
- INSERT: Touch  to add a new sequence.
- DELETE: Touch  to delete a sequence.
- EDIT: Touch  to enter into the sequence editing window as the figure shown below.



1. **Selecting a SLOT:**
   It sets the slot to output the sequence. For instance, the sequence will only output from slot 1 as set in the figure above.

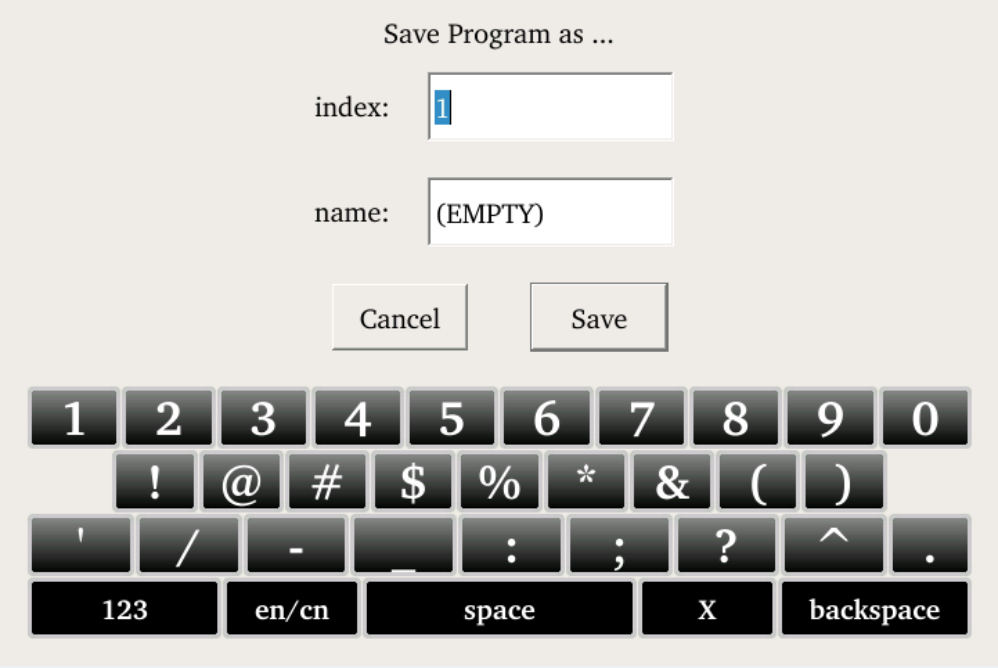
2. **Setting the Timing / Pattern / Audio / Delay:**
   It sets the sequence related settings for output. When editing timing and pattern, numbers can be input directly when the field column is reversed to speed up the editing.



3. **Save and exit:**
   Touch  to save the settings and  to exit the editing window.

Zone C: Storage

Touch  to save the edited program to another user-defined program by inputting the program number in the index column and program name in the name column.



Notice

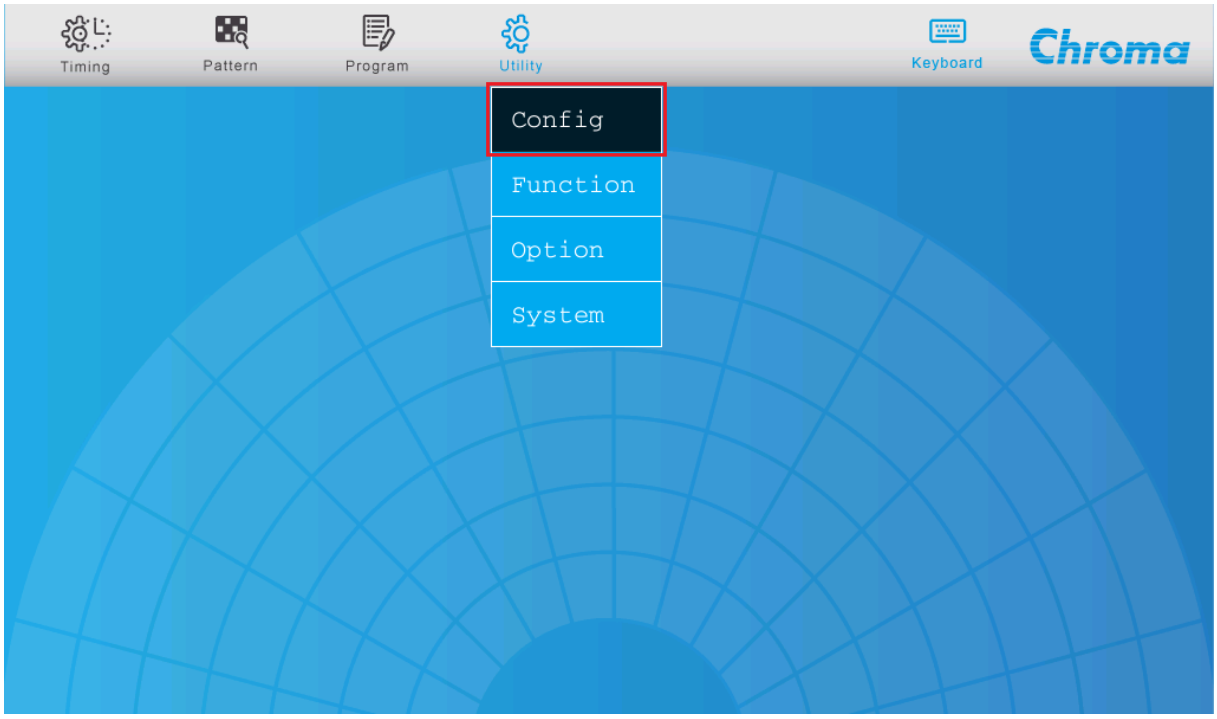
- When the timing or pattern number in the sequence is 0, it indicates the sequence is invalid.
- When the delay time in the sequence is set to 0, it indicates the sequence has to be manually switched.
- This VPG is able to store programs #001 ~ #1000.

2.5 Utility Function

The utility function has Config, Function, Option and System for users to do various settings.

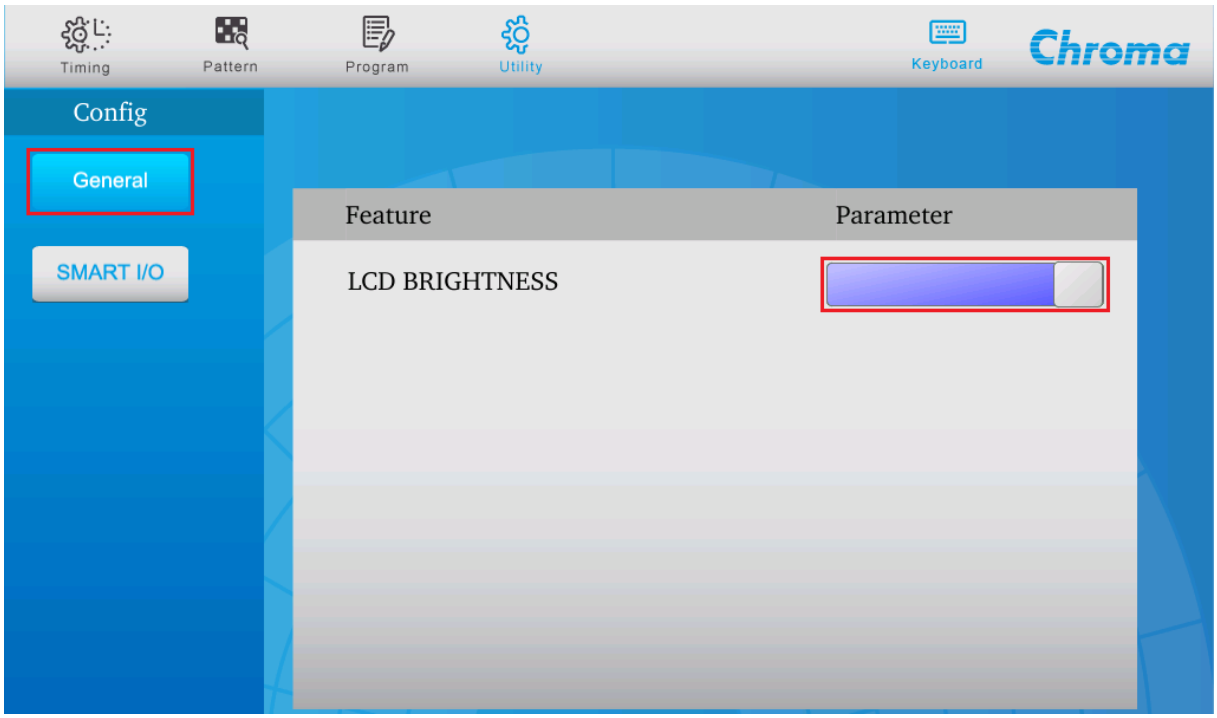
2.5.1 Config

This function is able to control the panel's brightness and set the configuration including General and SMART I/O settings. Press **Utility** and touch Config on the LCD panel to enter into the CONFIG page.



2.5.1.1 GENERAL Settings

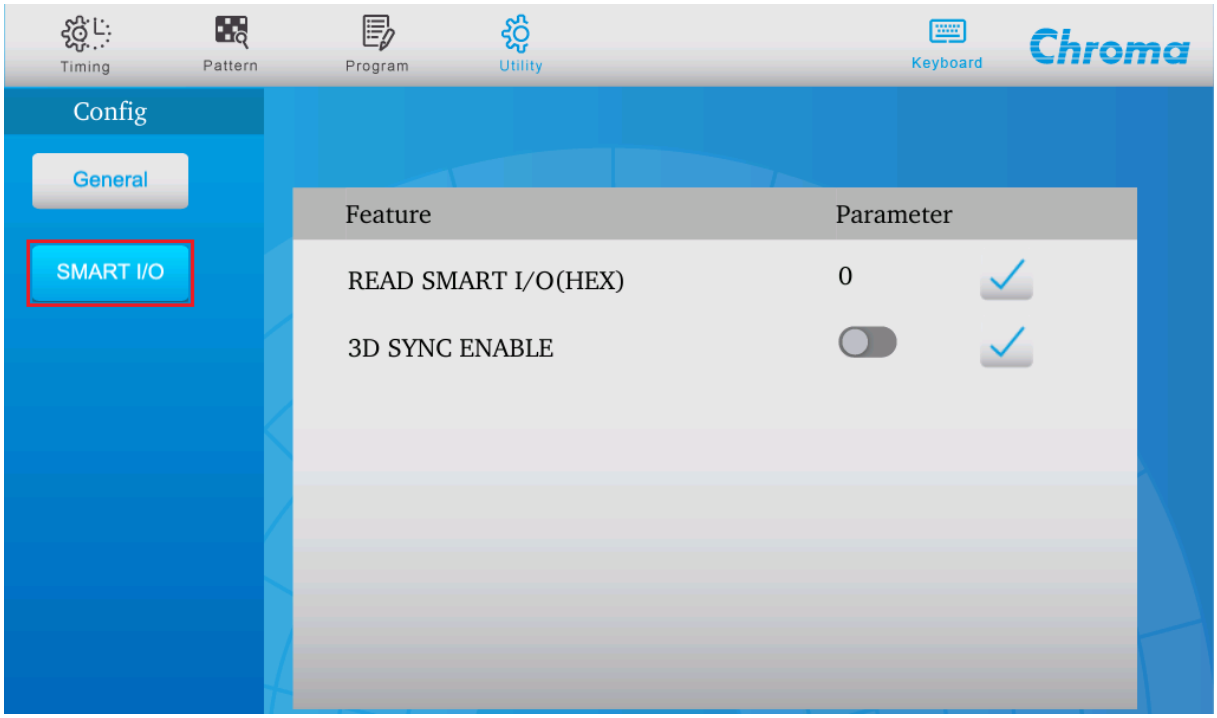
When in Config page, touch General on the LCD left side to open it.



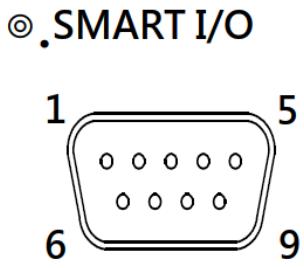
- LCD BRIGHTNESS: Adjust the bar to alter the brightness of LCD panel.

2.5.1.2 SMART I/O Settings

Select SMART I/O on the LCD left side, and the features of READ SMART I/O (HEX) and 3D SYNC ENABLE will appear as shown below.

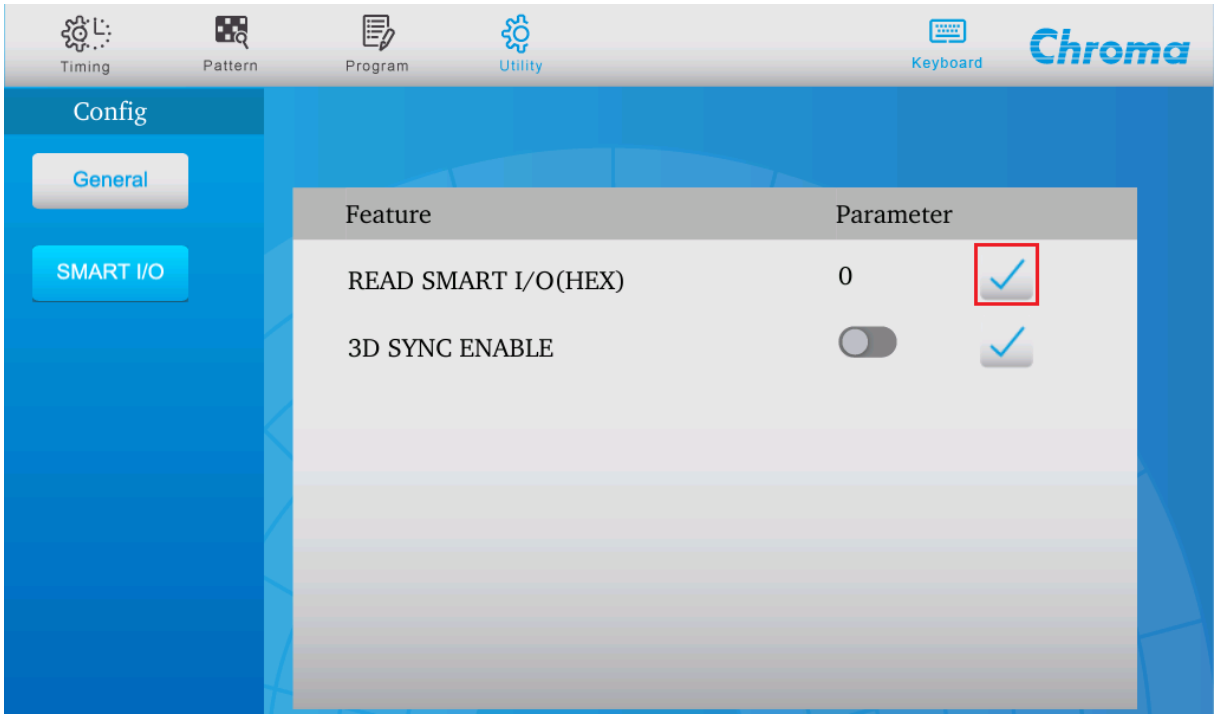


- READ SMART I/O(HEX):
  Connect the Pin6~Pin8 which is the input of SMART I/O port to the GPIO to be tested, and then touch the ✓ next to READ SMART I/O(HEX) to read the current digital value state.

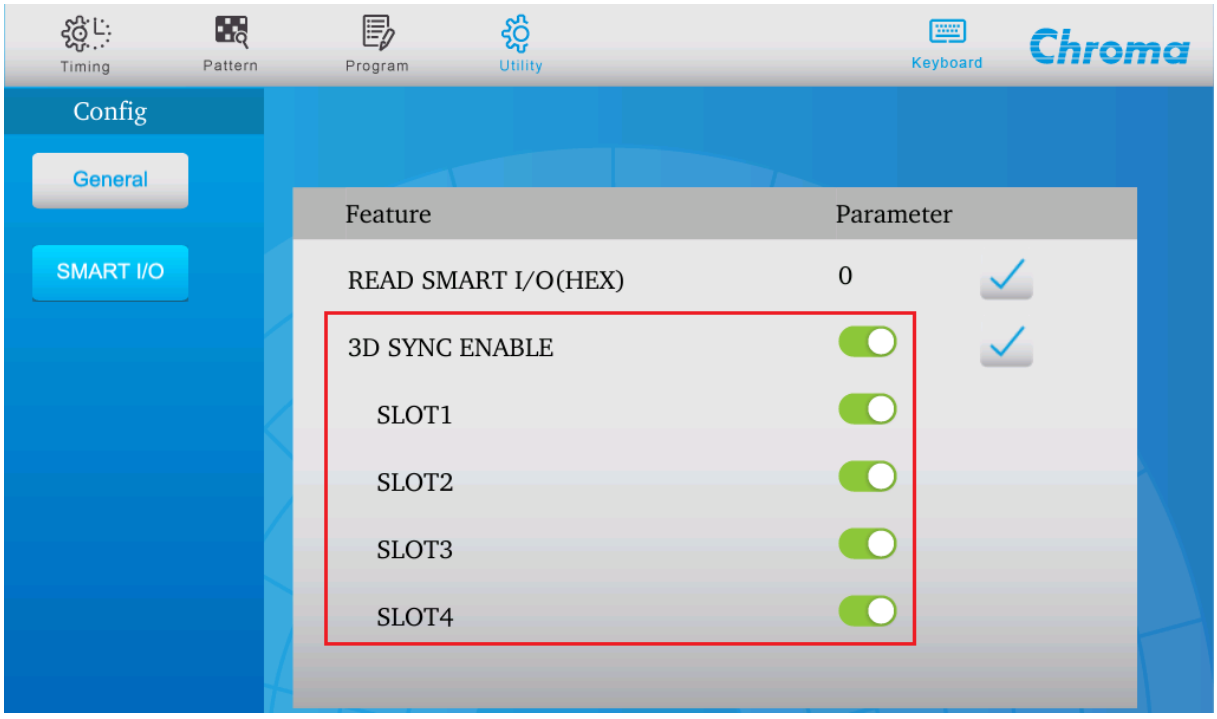


Pin Assignment

Pin No.	Name	Pin No.	Name
1	+5V	2	OUTPUT 1
3	OUTPUT 2	4	OUTPUT 3
5	GND	6	INPUT 1
7	INPUT 2	8	INPUT 3
9	GND		



- 3D SYNC ENABLE:
  When outputting a 3D TIMING with frame sequent type, it can use SMART I/O to enable 3D SYNC function. The 2238 VPG has 4 slots for use, and slot 1 is at the bottom. It increases to slot 4 from the bottom up. The 3D SYNC function of each slot can be enabled separately; however, the SMART I/O function will be disabled when 3D SYNC is enabled.



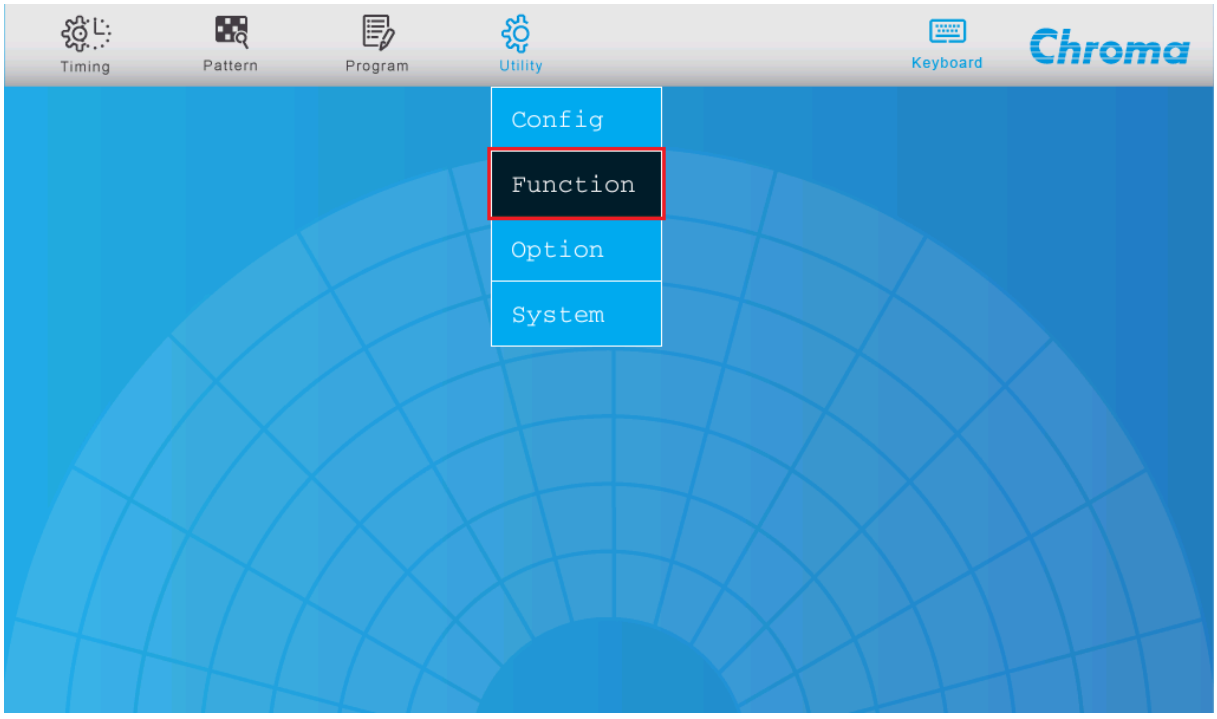
SMART I/O Port	3D SYNC	
	DISABLE	ENABLE
Pin2	OUTPUT 1	SLOT1_3D SYNC
Pin3	OUTPUT 2	SLOT2_3D SYNC
Pin4	OUTPUT 3	SLOT3_3D SYNC
Pin6	INPUT 1	SLOT4_3D SYNC

Notice

- The 3D SYNC function is only valid for the frame sequent type in 3D timing.
- When the 3D SYNC function is enabled, the SMART I/O port is used for 3D SYNC output only.
- SLOT1~SLOT4 can enable or disable the 3D SYNC function separately.

2.5.2 Setting Function

Press **Utility** key and touch Function on the LCD panel to enter the FUNCTION page.

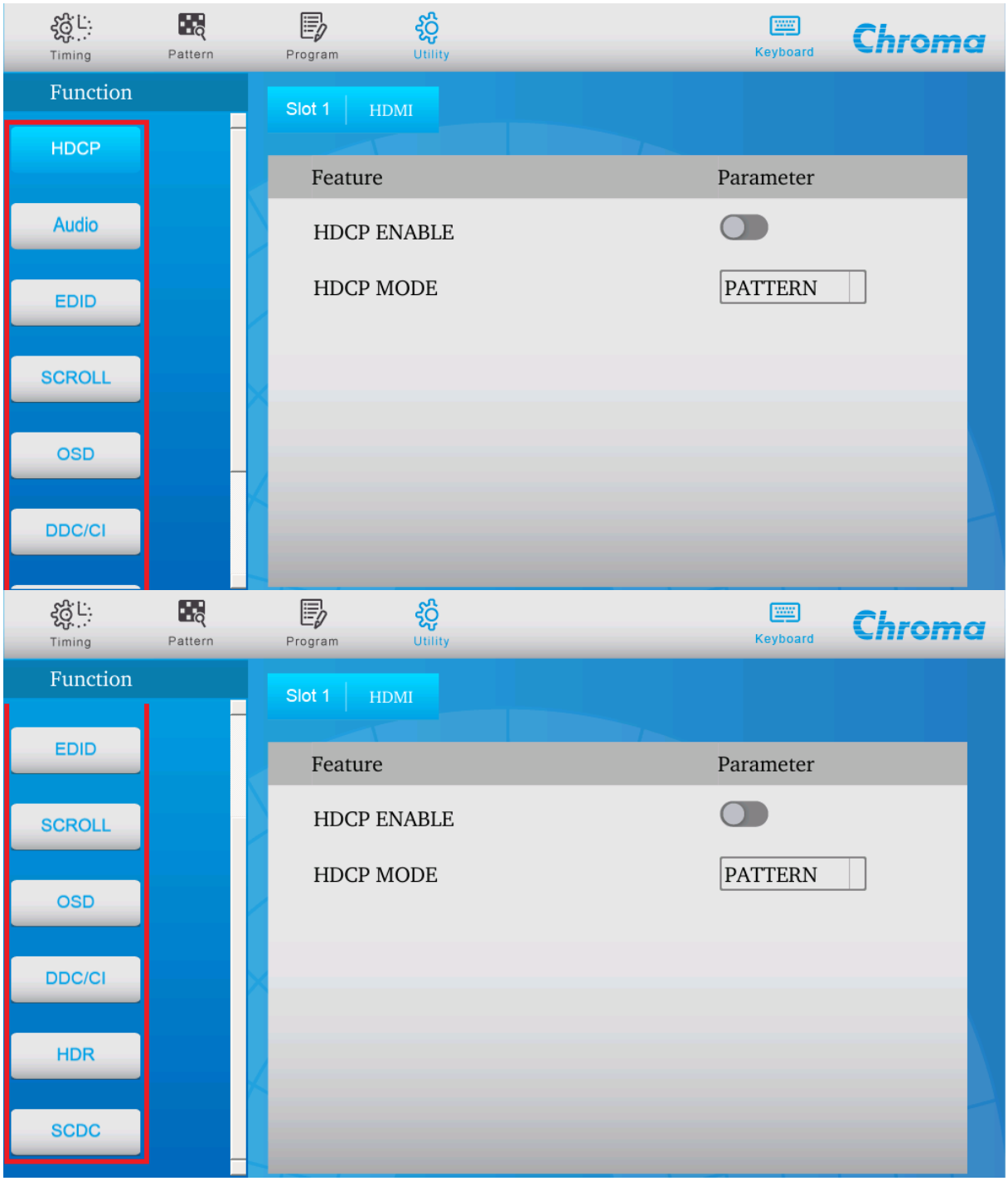


This function controls or displays certain system output functions. The table below lists the test items supported.

Function	1	HDCP
	2	AUDIO
	3	EDID
	4	SCROLL
	5	OSD

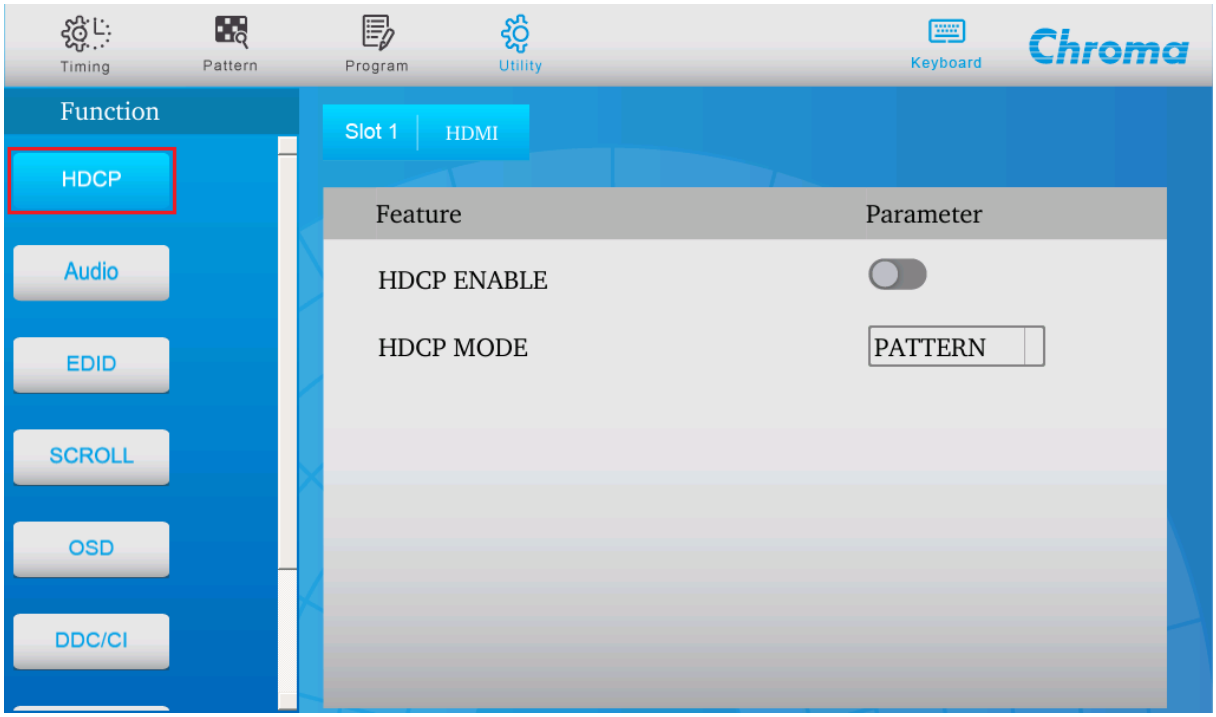
	6	LUMINANCE ADJ
	7	DDC / CI
	8	HDR
	9	SCDC
	10	DPCD
	11	DP OPTION

Scroll the function list on the LCD left side to view all test items, and select the slot to execute the test from the top.

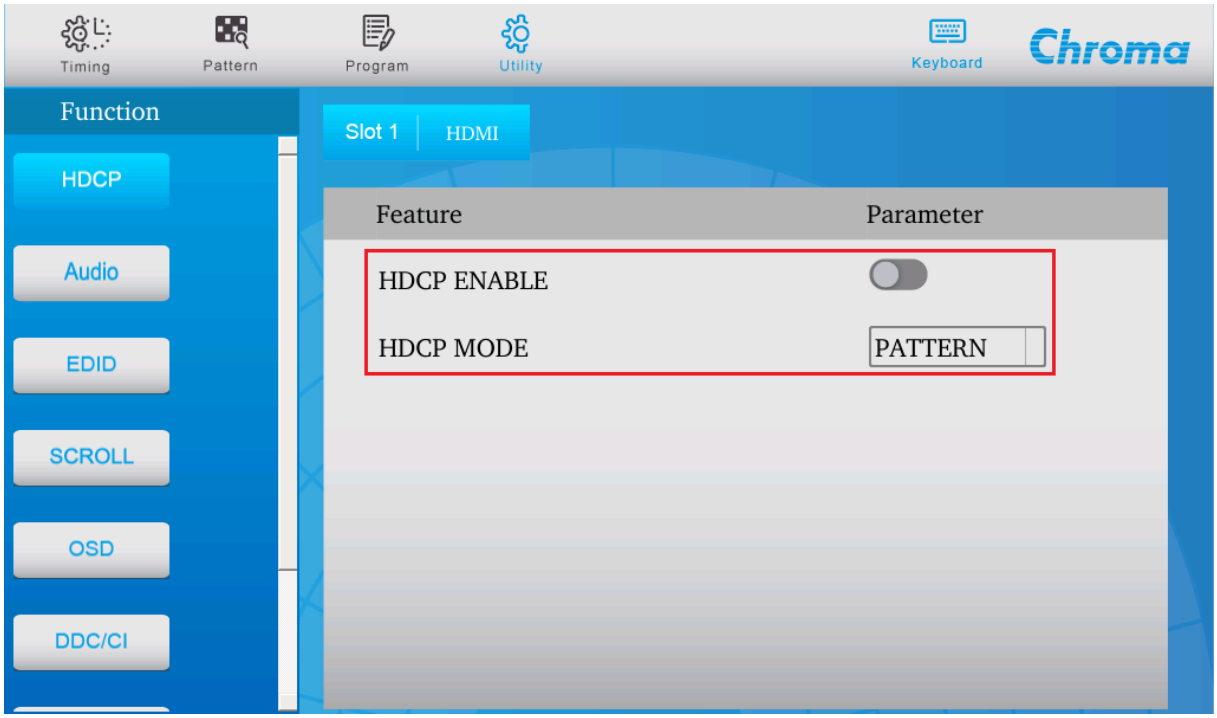


2.5.2.1 HDCP

This item edits and controls the HDCP function. Touch HDCP on the LCD panel under Function to edit the HDCP parameters.

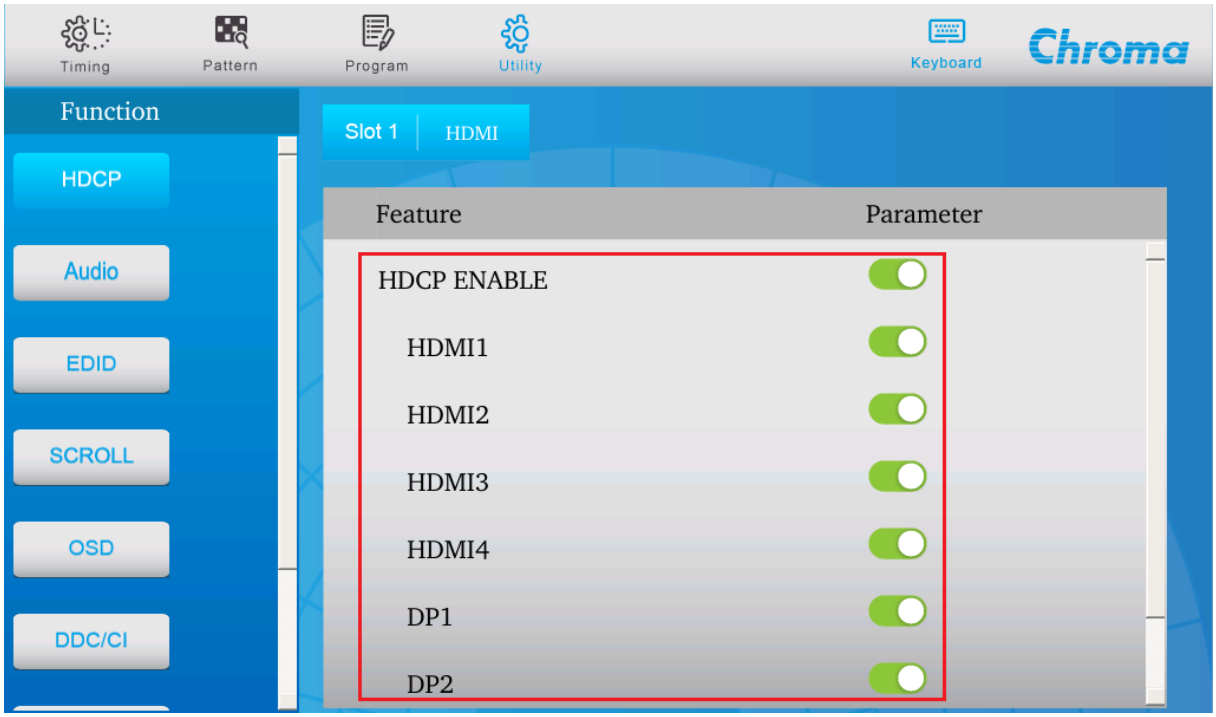


HDCP parameters description:

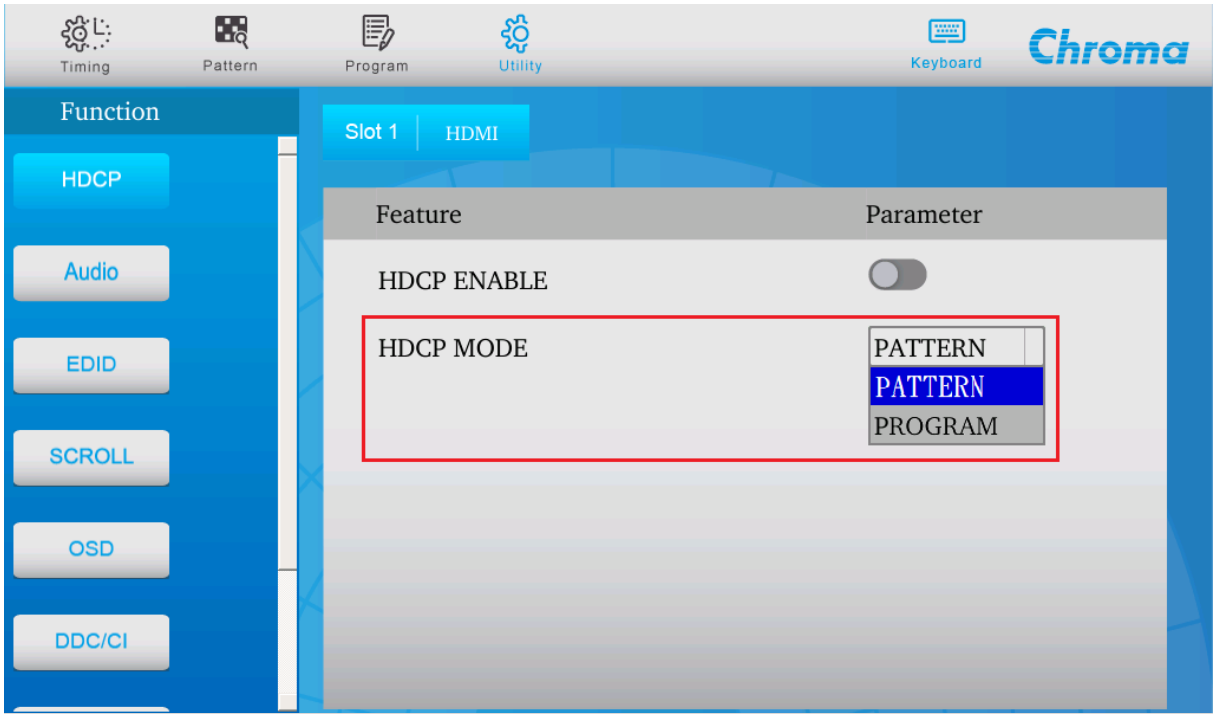


- HDCP ENABLE
  It turns the HDCP function on or off. The HDCP function is enabled when it is on, and the receiver must have HDCP function as well.

Notice When HDCP ENABLE is on, a list of HDMI and DP ports will appear for on/off setting.



- HDMI 1: It sets the HDCP switch for HDMI Port 1.
- HDMI 2: It sets the HDCP switch for HDMI Port 2.
- HDMI 3: It sets the HDCP switch for HDMI Port 3.
- HDMI 4: It sets the HDCP switch for HDMI Port 4.
- DP 1: It sets the HDCP switch for DisplayPort Port 1.
- DP 2: It sets the HDCP switch for DisplayPort Port 2.



- HDCP MODE: It sets the working mode of HDCP function. There are PATTERN and PROGRAM two modes for switch.

Item	HDCP Mode	Description
1	PATTERN	It automatically executes the HDCP setting. If the HDCP is set up successfully, the display device will show the pattern directly. If failed, error messages will show on the display device. The HDCP LINK process checks if Ri = Ri' every 2 seconds when the setup is OK. The LCD panel stops HDCP LINK and beeps when an error is found during check. The display device may show a noise screen.
2	PROGRAM	This function is mainly to work with Program Run for doing factory tests. It can set the HDMI Timing or DP Timing respectively to have the HDCP LINK process or not under the HDCP Enable state. For this selection, the HDCP ENABLE in HDMI or DP Timing Format should be set by VPGMASTER or the VPG (the default is NO which means there is no HDCP LINK process), and save it to a new user timing then it will have the HDCP LINK process function.

■ **Following is the operating example of PATTERN Mode**

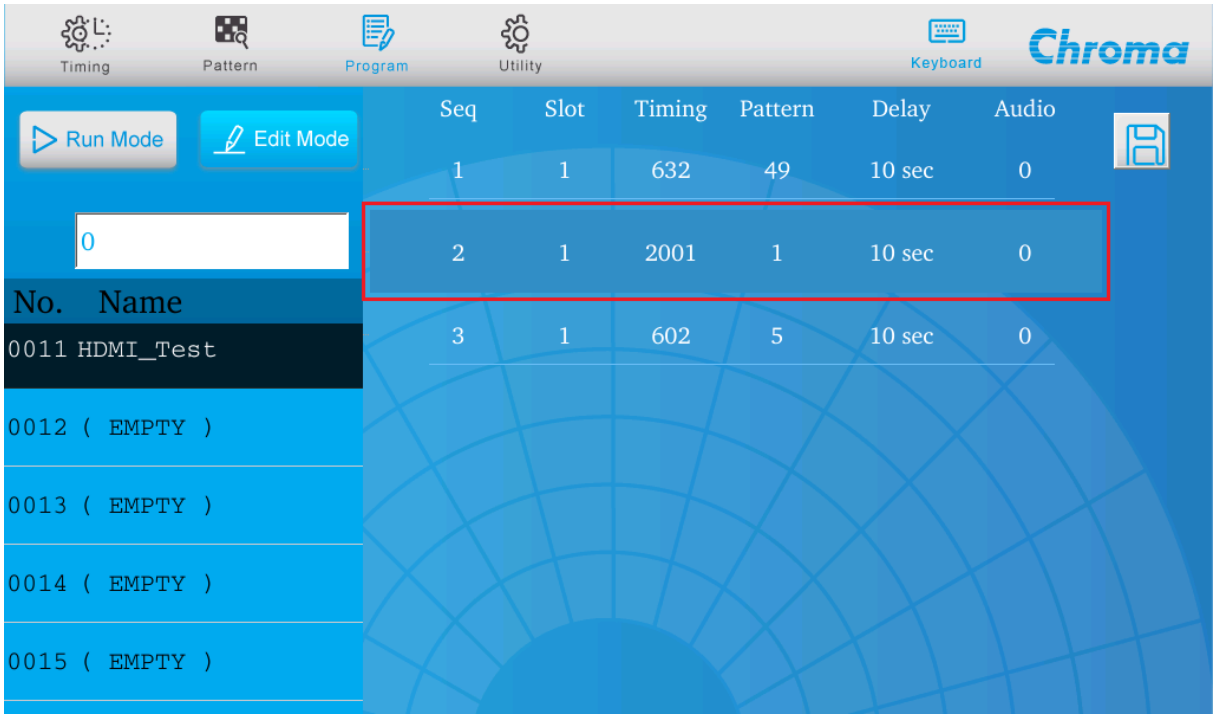
(1) Select PATTERN mode.
(2) Use a device that supports HDCP and select a mapped timing (ex: HDMI Timing #601) for output. An HDCP PATTERN Mode verification screen will appear on the screen.

The VPG runs HDCP verification program automatically, and an error message will appear on the display if the verification fails. When the verification is OK, a selected pattern will show on the screen and a window will appear on the left corner. The HDCP LINK checks if Ri is equal to Ri' every 2 seconds. For the DisplayPort interface, since Ri and Ri' are checked at Sink site, their values remain the same during display except the checked results are changed.

■ **Following is the operating example of PROGRAM Mode**
When PROGRAM is selected for HDCP MODE, the user can select if running HDCP Link for a certain HDMI or DP timing. The HDCP Link in HDMI or DP timing can only be selected or edited by VPGMaster or a VPG.

(1) First, save the timing to be output to another timing before executing this function.
(2) Edit the timing to add the program sequence. In the Timing menu, turn on HDCP Enable and save the file as the figure shown below.

(3) Next, go to the Program menu to add the already set Timing 2001.



(4) Last, find the HDCP supported device and execute Program Run.

The Timing 2001 has set to execute HDCP Link. When executing this timing, it will run HDCP verification. If the verification is OK, an HDCP verification screen will appear on the display. The HDCP Link checks if Ri is equal to Ri' every 2 seconds. For the DisplayPort interface, since Ri and Ri' are checked at Sink site, their values remain the same during display except the checked results are changed.

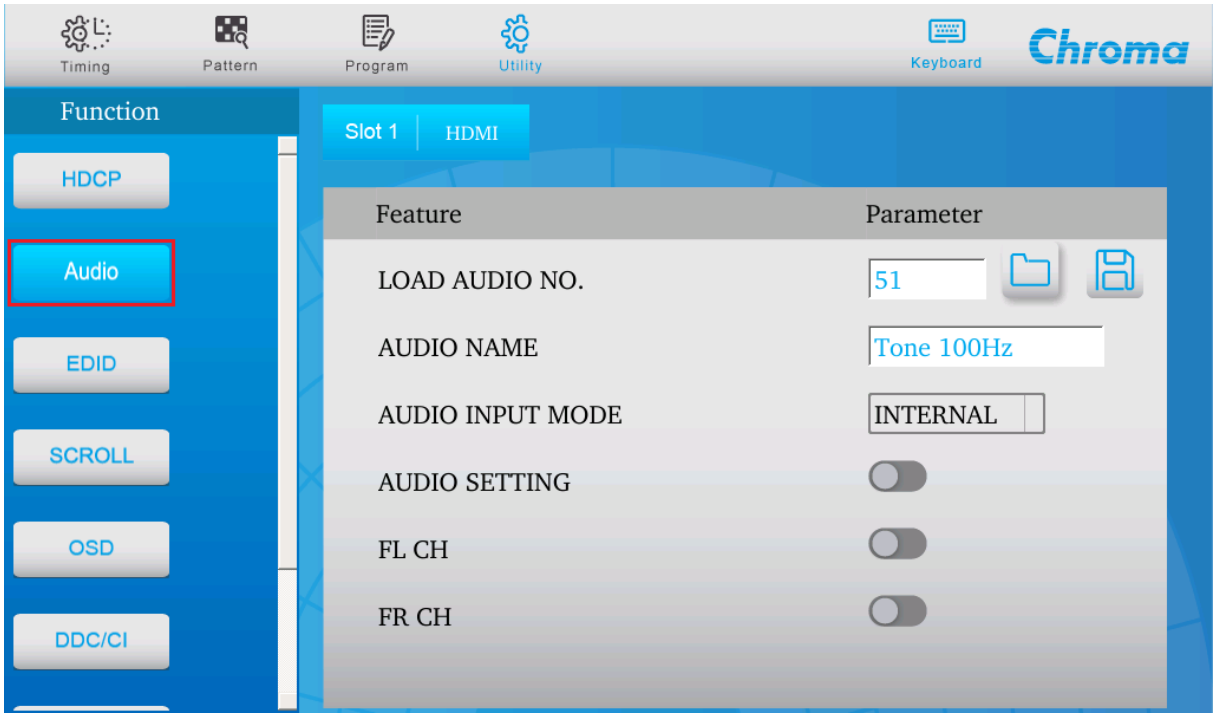
Following messages will appear if the HDCP is having errors in the above two modes.

Item	Error Message	Description
1	Initialize TX..Error	Transmitter initialization fails.
2	Receiver Check Error	Receiver is not connected.
3	Generate AN Error	Unable to generate the random number AN.
4	Write AN&AKSV Error	Unable to write in AN and AKSV to receiver.
5	Read BKSV Error	Unable to read or write BKSV from or to transmitter.
6	R0 isn't Ready	R0 is not generated or unable to create.
7	BKSV Error	Wrong use or invalid BKSV value.
8	R0 != R0'	The first LinkCode generated by receiver and transmitter is not the same which means the HDCP verification is failed.
9	Encryption Fail	Transmitter is unable to encrypt the output signal.

Notice If plug and pull occurs during the HDCP link process, the VPG will run verification again.

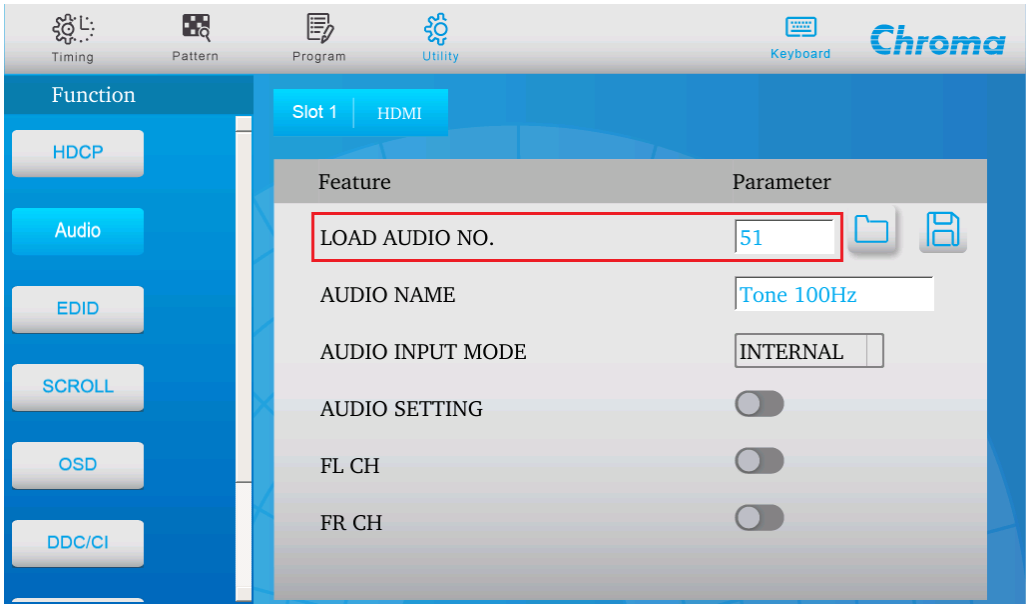
2.5.2.2 AUDIO

This item edits and controls the Audio function. Touch Audio on the LCD panel under Function to edit the Audio parameters.



2.5.2.3 Editing Audio and Parameter Definitions

- LOAD AUDIO NO.
  In Audio page, input the audio no. (99 in total) in the LOAD AUDIO NO. column. Touch  when done to enter into the audio editing format.

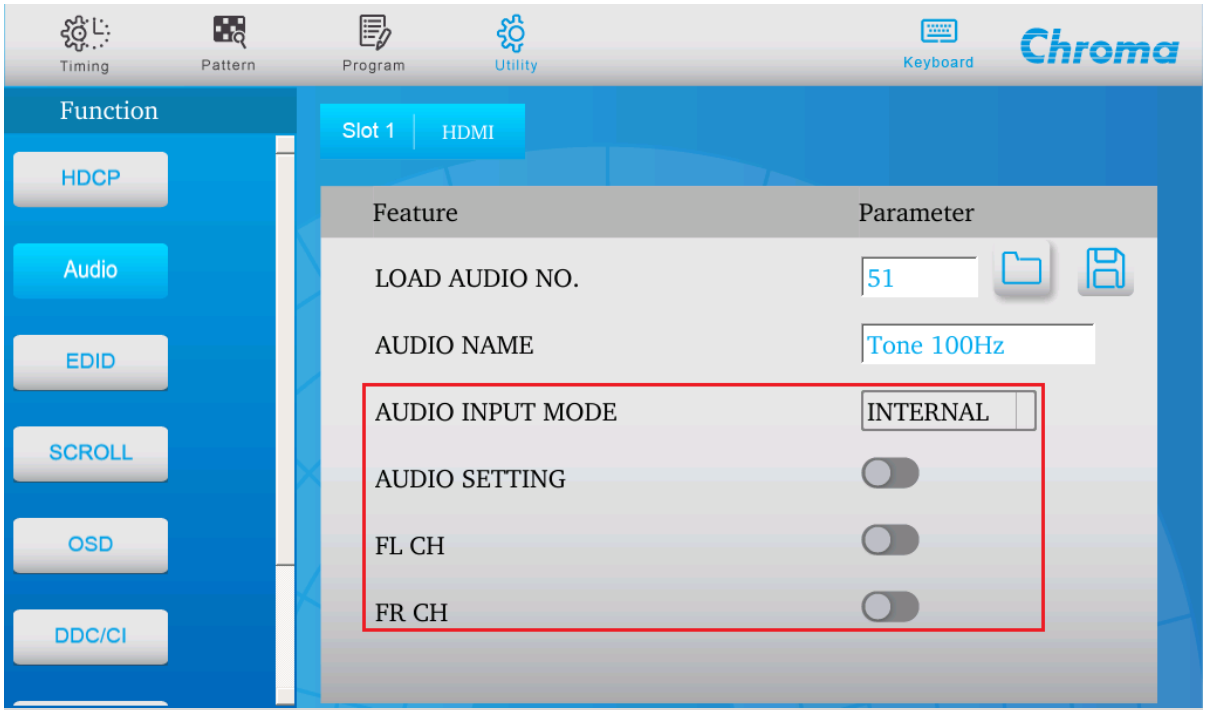


Default Audio List

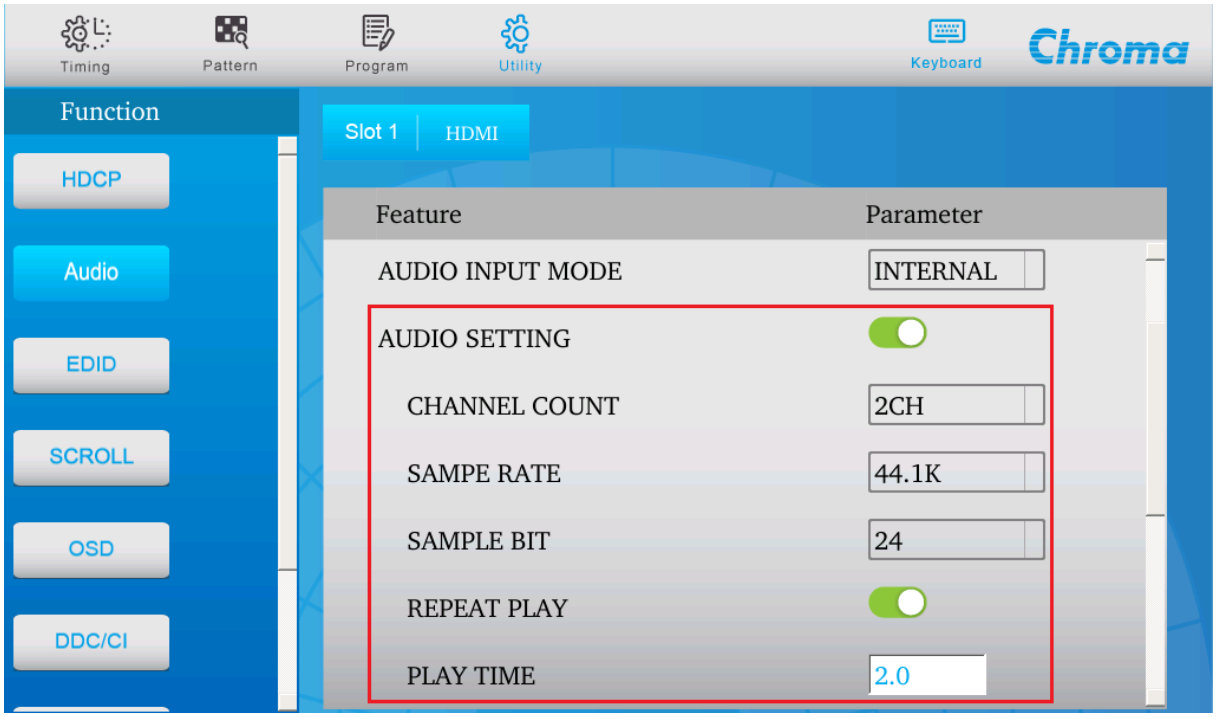
NO.	Description
49	Audio Input Mode = EXTERNAL, External Audio Input = OPTICAL
50	Audio Input Mode = EXTERNAL, External Audio Input = COAXIAL
51	Sample Rate=48kHz, Volume=1.5V, Freq=100Hz, Tone
52	Sample Rate=48kHz, Volume=1.5V, Freq=200Hz, Tone
53	Sample Rate=48kHz, Volume=1.5V, Freq=500Hz, Tone
54	Sample Rate=48kHz, Volume=1.5V, Freq=1 kHz, Tone
55	Sample Rate=48kHz, Volume=1.5V, Freq=2 kHz, Tone
56	Sample Rate=48kHz, Volume=1.5V, Freq=5 kHz, Tone
57	Sample Rate=48kHz, Volume=1.5V, Freq=10kHz, Tone
58	Sample Rate=48kHz, Volume=1.5V, Freq=20kHz, Tone
59	Sample Rate=48kHz, Volume=1.5V, Freq=10~20kHz, Sweep (Frequency changes from 10Hz to 20kHz in 2 sec.)
60	Sample Rate=48kHz, Volume=1.5V, Freq=20k~10Hz, Sweep (Frequency changes from 20kHz to 10Hz in 2 sec.)
61	Sample Rate=48kHz, Volume=1.5V, Freq=10~20k~10Hz, Sweep (Frequency changes from 10Hz to 20kHz and back to 10Hz in 2 sec.)

- AUDIO NAME: It is the name of selected AUDIO NO.
- AUDIO INPUT MODE
  INTERNAL: It is the audio source from internal.
  EXTERNAL: It is the audio source from external.

Notice When INTERNAL is set for AUDIO INPUT MODE, three settings – AUDIO SETTING, FL CH and FR CH will appear for selection.



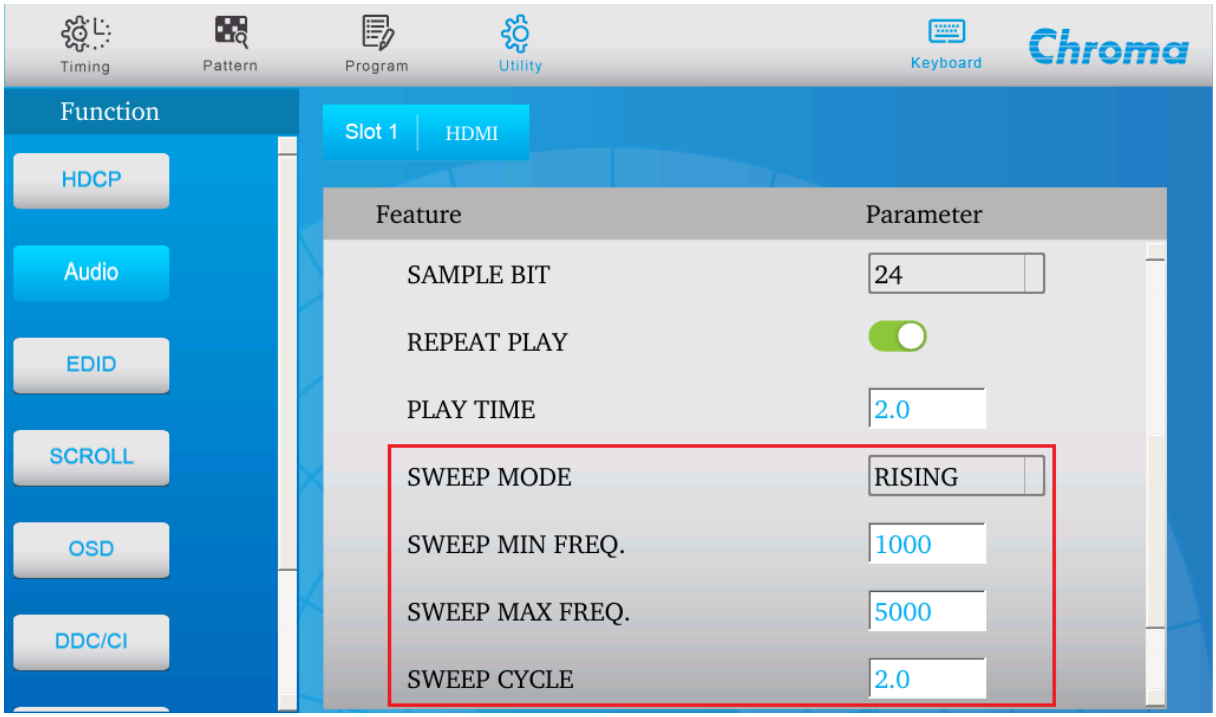
- AUDIO SETTING: It lists the general settings as shown below when enabled.



- CHANNEL COUNT: It has 2CH or 8CH available for output setting.
  2CH comprises FL (sync with Analog Audio L) and FR (sync with Analog Audio R).
  8CH comprises FL, FR, LFE, FC, RL, RR, RLC and RRC.

Notice When testing audio on the general display, be sure to turn the Audio to mute for LFE, FC, RL, RR, RLC and RRC audio channels.

- SAMPLE RATE: It has 32.0, 44.1, 48.0, 88.2, 96.0, 176.4 and 192.0 KHz for selection.
- SAMPLE BIT: It is the bits generated by internal audio source. There are 16, 20 and 24 bits for selection.
- REPEAT PLAY: It plays repeatedly when enabled.
  Enable ➔ The audio repeat play function is on.
  Disable ➔ The audio repeat play function is off.
- PLAY TIME: It edits the time for audio to output (1.0~5.0 sec).



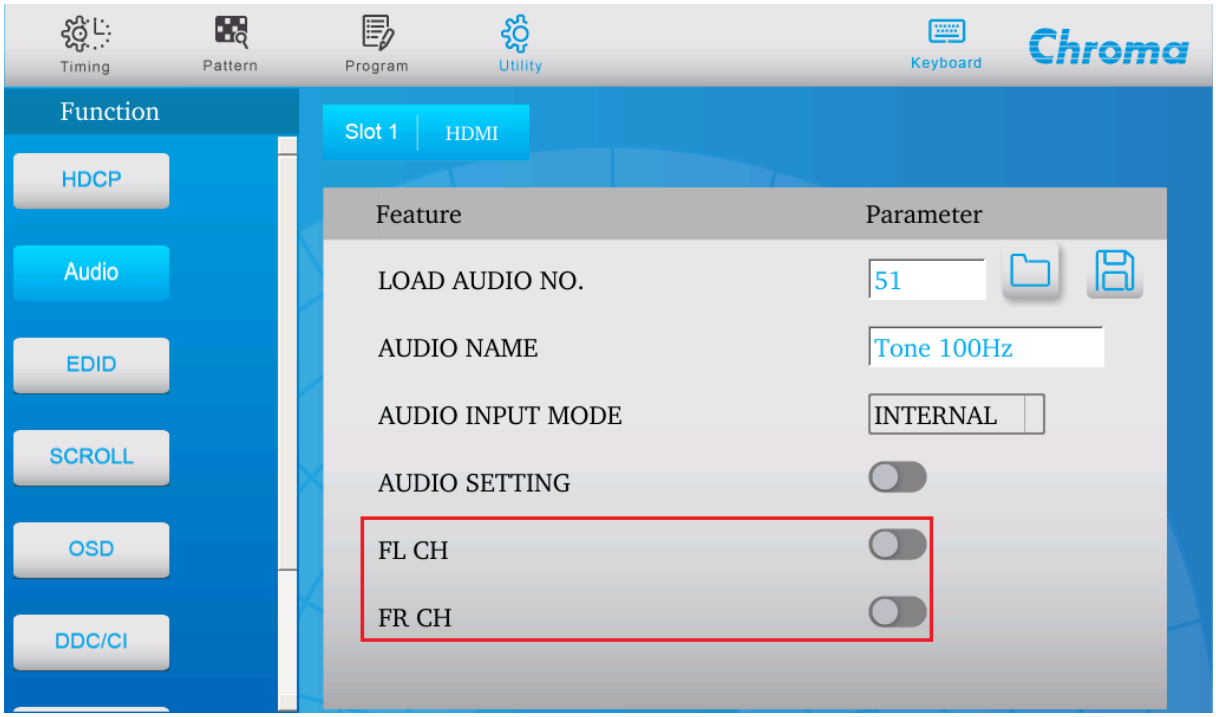
- SWEEP MODE: The audio sweep has RISING, FALLING and DUAL modes for selection.
  RISING: The frequency changed from low to high.
  FALLING: The frequency changed from high to low.
  DUAL: The frequency changed by cycling from low to high and then high to low.
- SWEEP MIN FREQ.: It edits the minimum frequency of Audio SWEEP ranged from 10 to 20000 Hz; 1Hz/Step.
- SWEEP MAX FREQ.: It edits the maximum frequency of Audio SWEEP ranged from 10 to 20000 Hz; 1Hz/Step.

Notice SWEEP MIN FREQ < SWEEP MAX FREQ.

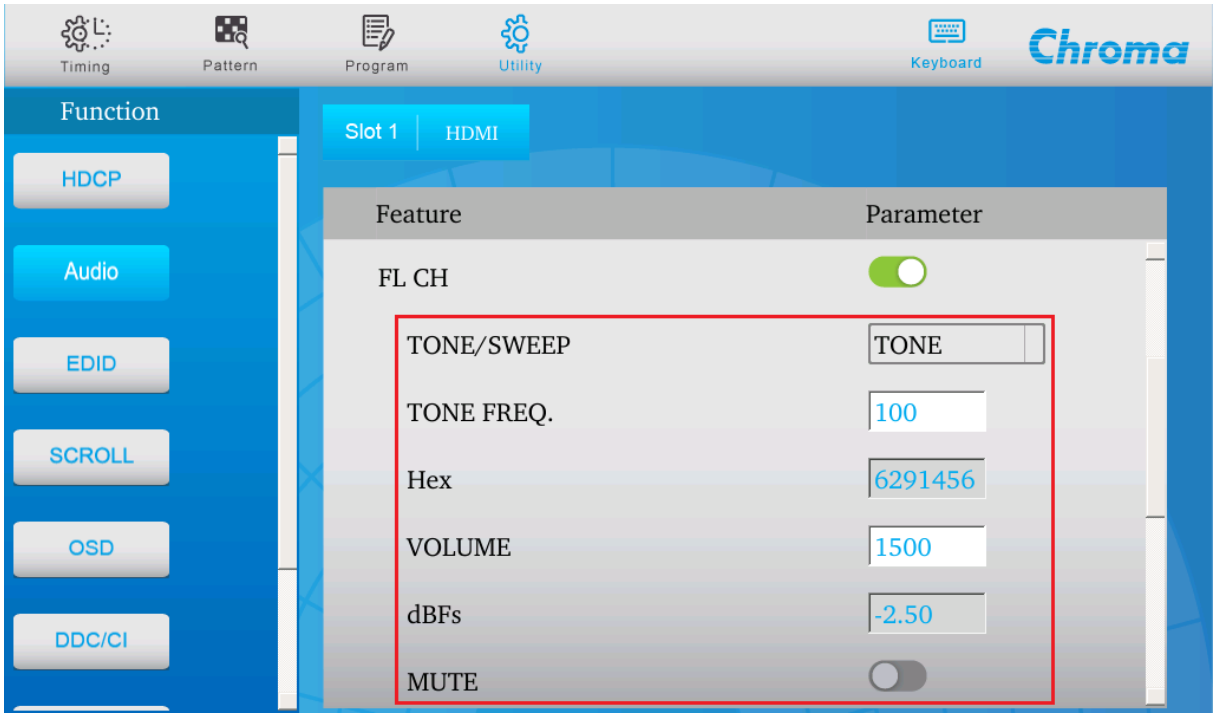
- SWEEP CYCLE: It edits the SWEEP TIME range (1.0~5.0 sec) to set the frequency change time from low to high.

  The FL (sync with Analog Audio L), FR (sync with Analog Audio R), LFE, FC, RL, RR, RLC and RRC eight channels can be set respectively for audio.

Notice When CHANNEL COUNT is set to 2CH, the LFE, FC, RL, RR, RLC and RRC will be hidden from view.



The following explains the parameter settings of FL CH.



- TONE/SWEEP: It switches to Tone mode or Sweep mode.
- TONE FREQ: It sets the Audio channel frequency in the range of 10- 20000Hz; 1Hz/Step.
- Hex: The audio channel volume ranged from 1 to 7FFFFF; 50mV/Step.
- VOLUME: It sets audio channel volume (mV) in the range of 0- 2000mV; 50mV/Step.
- dBFs: The audio channel volume ranged from -138.47 to 0; 50mV/Step.
- MUTE: It turns off the voice output.
  No ➔ Audio channel has voice output.

YES ➔ Audio channel has no voice output.

Notice

- Once the settings are done, edit the AUDIO NO. and AUDIO NAME to be saved and touch to save it.
- AUDIO NO: It sets the audio number to be saved (only 1~50 for user defined).
- AUDIO NAME: It edits the audio file name.

When EXTERNAL is set for AUDIO INPUT MODE, the EXTERNAL AUDIO INPUT will set to COAXIAL. So, please use external coaxial for input audio source. In addition, a selection of EXT. AUDIO SAMPLE RATE is provided for setting the sample rate of external audio source.

Notice

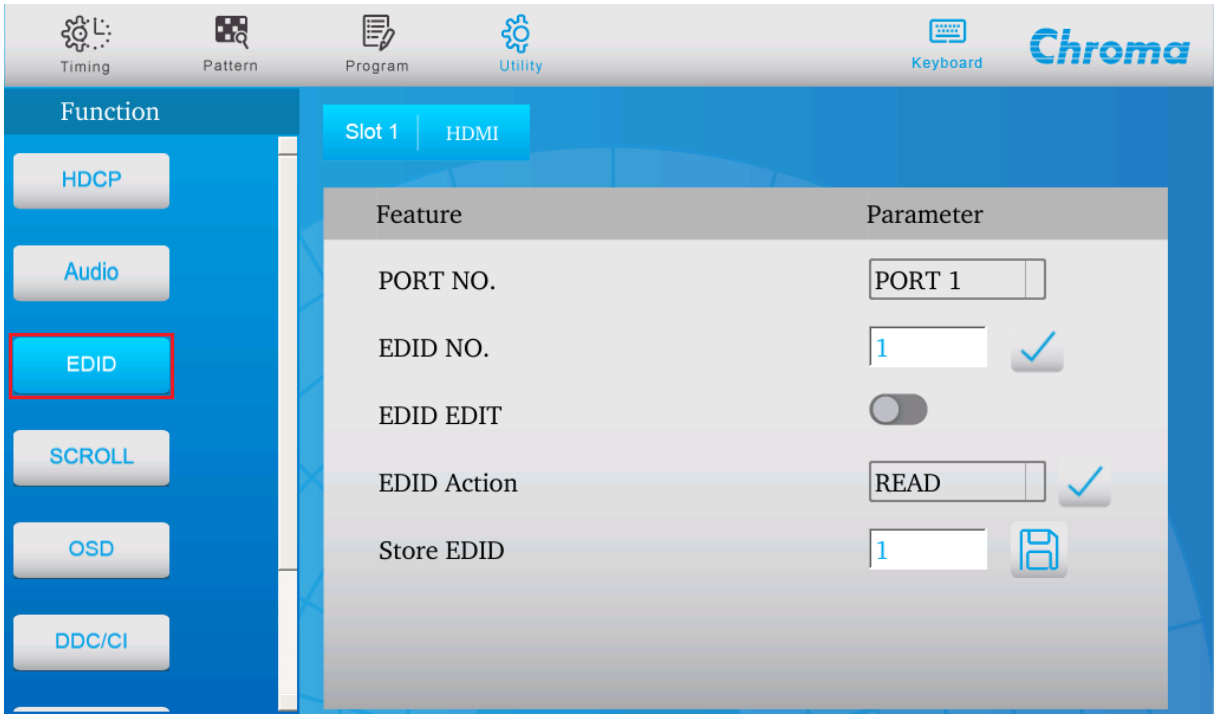
- The EXT. AUDIO SAMPLE RATE has 32.0, 44.1, 48.0, 88.2, 96.0, 176.4 and 192.0 KHz for selection.
- Once the settings are done, edit the AUDIO NO. and AUDIO NAME to be saved and touch to save it.
- AUDIO NO: It sets the audio number to be saved (only 1~50 for user defined).
- AUDIO NAME: It edits the audio file name.

Notice

- When the AUDIO INPUT MODE is set to INTERNAL, press **OUTPUT** key to output the internal audio source.
- When the AUDIO INPUT MODE changes to EXTERNAL, it can output without pressing the **OUTPUT** key.

2.5.2.4 EDID

This item edits and controls the EDID function. Touch EDID on the LCD panel under Function to edit the EDID parameters.



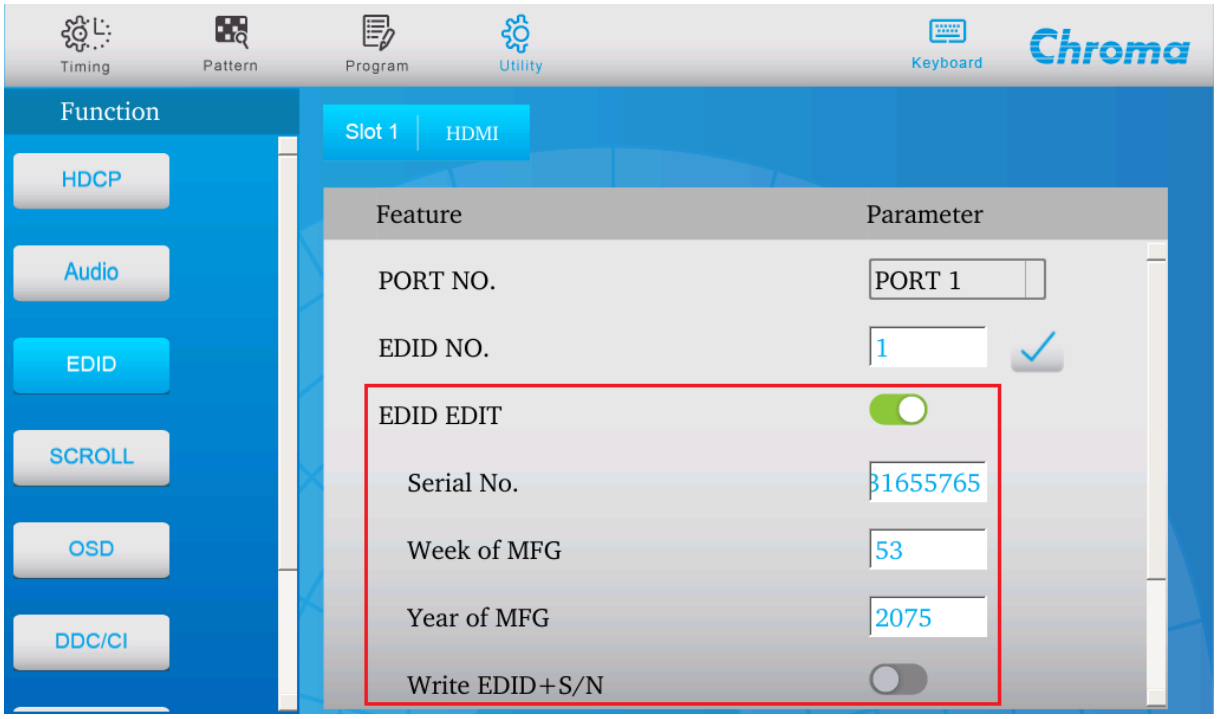
The definitions of EDID parameters are described as follows:

- PORT NO.: Select the port to be used (HDMI: Port 1~Port 4, DP: Port 1~Port 2, ANALOG: Port 1).
- EDID NO.: Enter the EDID number to be edited and touch ✓.

Notice

- The EDID setting has EDID1, EDID2 and E-EDID three types.
- Each type has EDID1=128 bytes, EDID2=256 bytes and E-EDID=2048 bytes.
- Up to 10 EDID can be edited for each EDID type.
  EDID NO. 1 ~ 10 reserved for EDID 1 to use.
  EDID NO. 11 ~ 20 reserved for EDID 2 to use.
  EDID NO. 21 ~ 30 reserved for E-EDID to use.

- EDID EDIT: It enables/disables the detail editing function of EDID.
  When the EDID EDIT is enabled, 4 editing items which are Serial No., Week of MFG, Year of MFG and Write EDID+S/N will on the screen. The data structure is based on version 2 revision 0 as described below.



- Serial No.: It edits the serial number of EDID.
- Week of MFG: It edits the manufactured week of EDID.
- Year of MFG: It edits the manufactured year of EDID.
- Write EDID+S/N: It writes the EDID data in buffer to the external EDID ROM and add 1 automatically to Serial No. when done.

- EDID ACTION:
  There are 4 EDID actions (read, write, compare and analysis) that can be performed on the external EDID.
  - READ: It automatically reads the EDID data in the external device and saves to the system buffer as well as displays on the screen.
  - WRITE: It writes the EDID data in buffer to the EDID ROM of external device.
  - COMPARE: When enabled, it compares the selected EDID with the external device EDID and checks if they are the same. If yes, the different EDID data will show on the screen.
  - ANALYSIS: It automatically analyzes the detailed bytes of the EDID in the external device and saves to the system buffer as well as displays on the screen.

- STORE EDID:
  It saves the read EDID data to the specified EDID No. After entered the EDID number, touch  to store it.

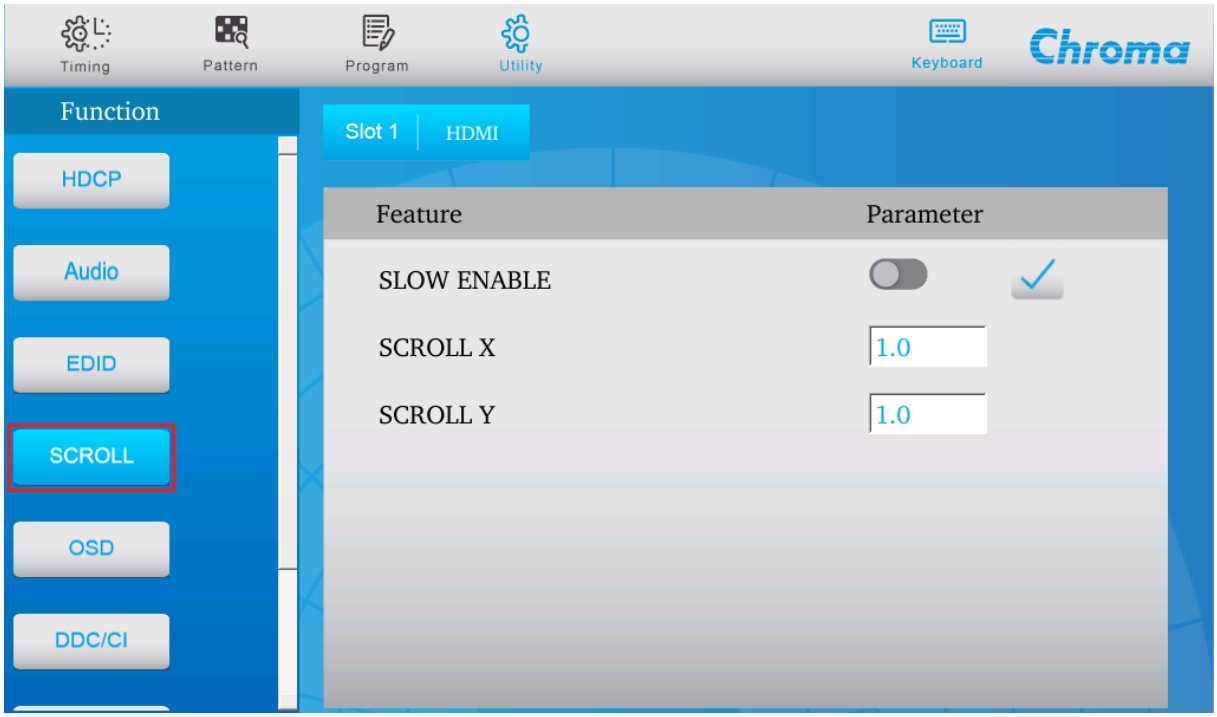
Notice

- Same as the previous VPG operation output an HDMI Timing or DP Timing first, and press Utility, touch Function on the panel and select EDID to edit the EDID serial number, manufactured date, and execute READ, WRITE, COMPARE and ANALYSIS actions. When running EDID READ, the UUT's EDID data will also show on the UUT. When doing COMPARE, it will show both VPG EDID Buffer and UUT's EDID data on the UUT. For any differences after compared, they will display in red.
- The VPG has new VESA Enhanced EDID (E-EDID).

- The E-EDID data structure is 128 bytes EDID1 (structure 1.3) + *n* EDID Extension; therefore the E-EDID length is not fixed.

2.5.2.5 SCROLL

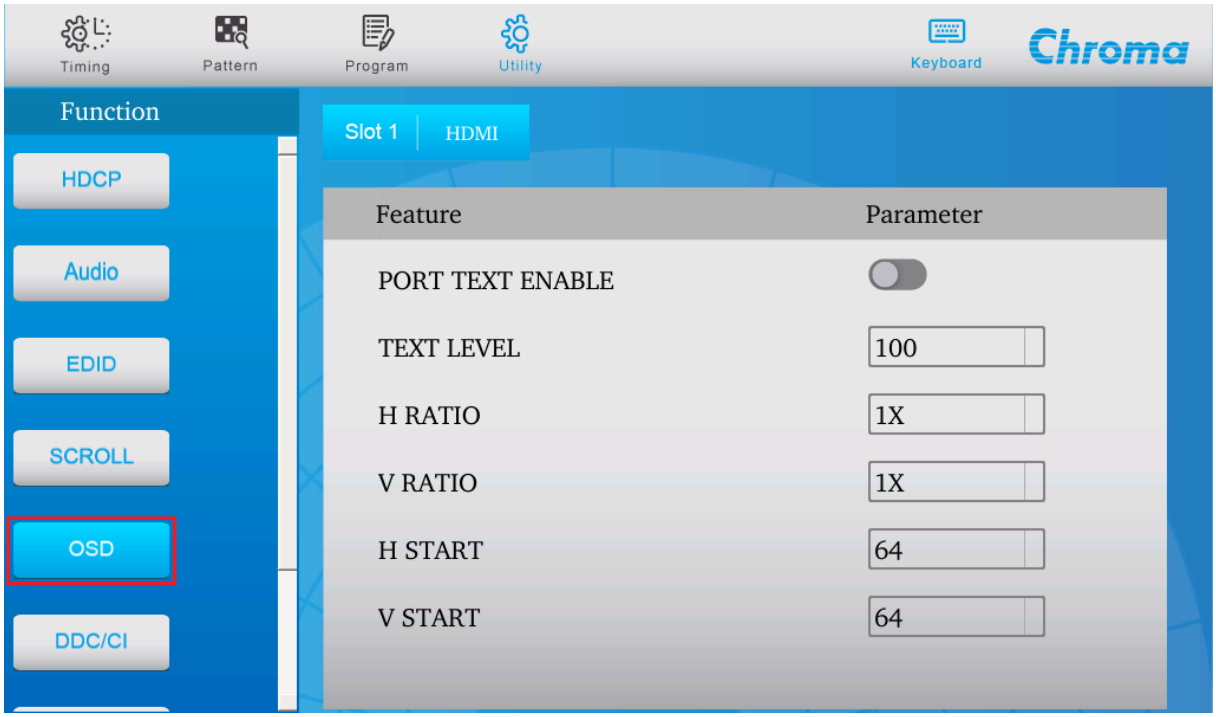
This item edits and controls the SCROLL function. Touch SCROLL on the LCD panel under Function to edit the SCROLL parameters. Touch  to execute scroll action on the panel.



- SLOW ENABLE: It sets the moving speed. It means a frame to move in several dots when off, and several frames to move a dot when on.
- SCROLL X: It sets the movement amount of X axis. It moves rightward when the value is positive and moves leftward when the value is negative.
- SCROLL Y: It sets the movement amount of Y axis. It moves downward when the value positive and moves upward when the value is negative.

2.5.2.6 OSD

This item edits and controls the OSD function. Touch OSD on the LCD panel under Function to edit the OSD parameters.



- PORT TEXT ENABLE: It turns on the text display function.
- TEXT LEVEL: It sets the text brightness level from strong to weak (100, 75, 50, 25, 0).
- H RATIO: It sets the horizontal magnification ratio from small to large (1/2X, 1X, 2X, 4X).
- V RATIO: It sets the vertical magnification ratio from small to large (1/2X, 1X, 2X, 4X).
- H START: It draws the horizontal starting coordinates for text from small to large (1, 32, 64, 128, 255).
- V START: It draws the vertical starting coordinates for text from small to large (1, 32, 64, 128, 255).

Notice When the above settings are modified and the function is turned on, press **OUTPUT** and it will output the signal and display the text at the same time.

2.5.2.7 LUMINANACE ADJUST

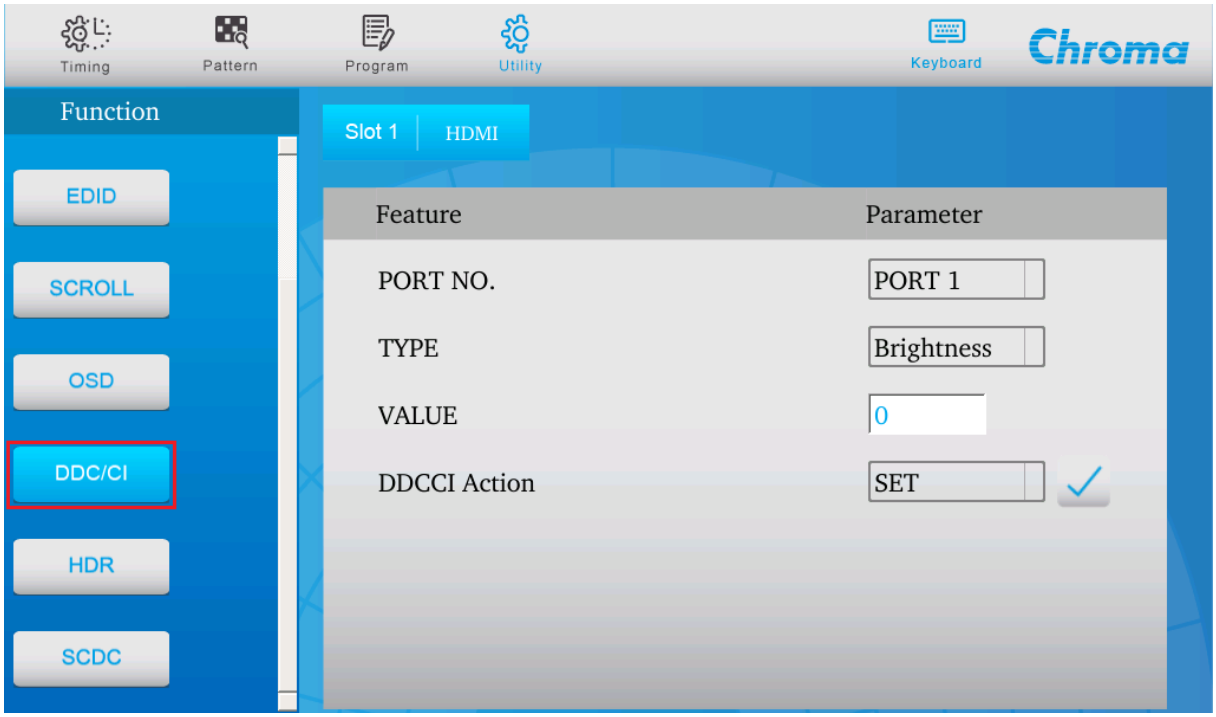
This item adjusts the luminance of a pattern.

- LUMI. ADJUST ENABLE: It enables the pattern luminance adjustment function.
- LUMI. LEVEL RANGE: It sets the luminance level range. The larger level range will have finer luminance of gradient.
- LUMI. RESOLUTION: It sets the luminance resolution. The higher resolution will have bigger luminance change.
- LUMI. LEVEL: It sets the current level number.

When the luminance adjustment is enabled, use ▲, ▼ to adjust the luminance level and ◀, ▶ to adjust the resolution in Pattern mode under output state. Use scroll rotary knob to switch the pattern.

2.5.2.8 DDC / CI

This item edits and controls the DDC/CI function. Touch DDC/CI on the LCD panel under Function to edit the DDC/CI parameters.

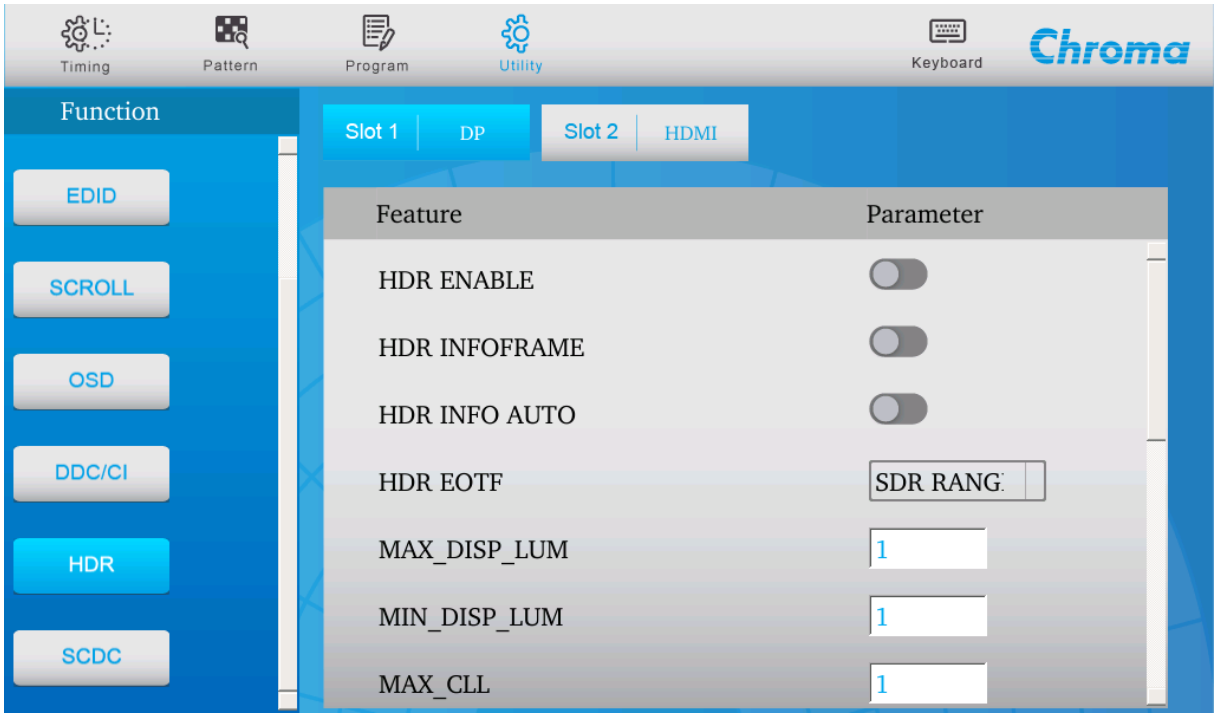


- PORT NO. : Select the port (HDMI: Port 1~Port 4, DP: Port 1~Port 2, ANALOG: Port 1) to be executed.
- SET TYPE: Select the parameter type (Brightness, Contrast, Hue and Saturation) to be set.
- SET VALUE: Set the parameter value.

When the settings are done, select SET for DDCCI Action and touch ✓ to send out the parameter commands.

2.5.2.9 HDR

This item edits and controls the HDR function. Touch HDR on the LCD panel under Function to edit the HDR parameters. The HDR function is limited to using HDR TEST PATTERN (#1020~#1200).



- HDR ENABLE: It sets if executing the HDR function that is to output the HDR InfoFrame and Metadata. It is the same as general SDR pattern if the HDR pattern is disabled.
- HDR INFOFRAME: It sets if displaying the HDR InfoFrame in the test pattern. (If the HDR Enable is ON and the HDR InfoFrame is OFF, the HDR InfoFrame and Metadata will still be sent except the frame is not displayed in the test pattern.)
- HDR INFO AUTO: It sets if automatically outputting the HDR parameters based on the TIMING settings.
  ex: If this item is enabled, the MAX_CLL , MIN_FALL and POINT RGBW will follow the output content and color space to do the setting. It can manually input the desired parameters if disabled.
- HDR EOTF: It sets to EOTF.
  00: Traditional gamma - SDR Luminance Range
  01: Traditional gamma - HDR Luminance Range
  02: SMPTE ST 2084
- MAX_DISP_LUM: It sets the maximum display luminance (nits) of the HDR IC under testing. The range is 0- 65535; 1/Step.
- MIN_DISP_LUM: It sets the minimum display luminance (nits) of the HDR IC under testing. The range is 0- 65535; 1/Step.
- MAX_CLL: It sets the Maximum Content Light Level as the brightest point in the pattern. The range is 0- 65535; 1/Step.
- MIN_FALL: It sets the Maximum Frame-average Light Level as the maximum average brightness point in the pattern. The range is 0- 65535; 1/Step.
- POINT R_X: It sets color space chromaticity coordinates - R (X value), range 0.001-1; 0.001 / Step.
- POINT R_Y: It sets color space chromaticity coordinates - R (Y value), range 0.001-1; 0.001 / Step.
- POINT G_X: It sets color space chromaticity coordinates - G (X value), range 0.001-1; 0.001 / Step.
- POINT G_Y: It sets color space chromaticity coordinates - G (Y value), range 0.001-1; 0.001 / Step.

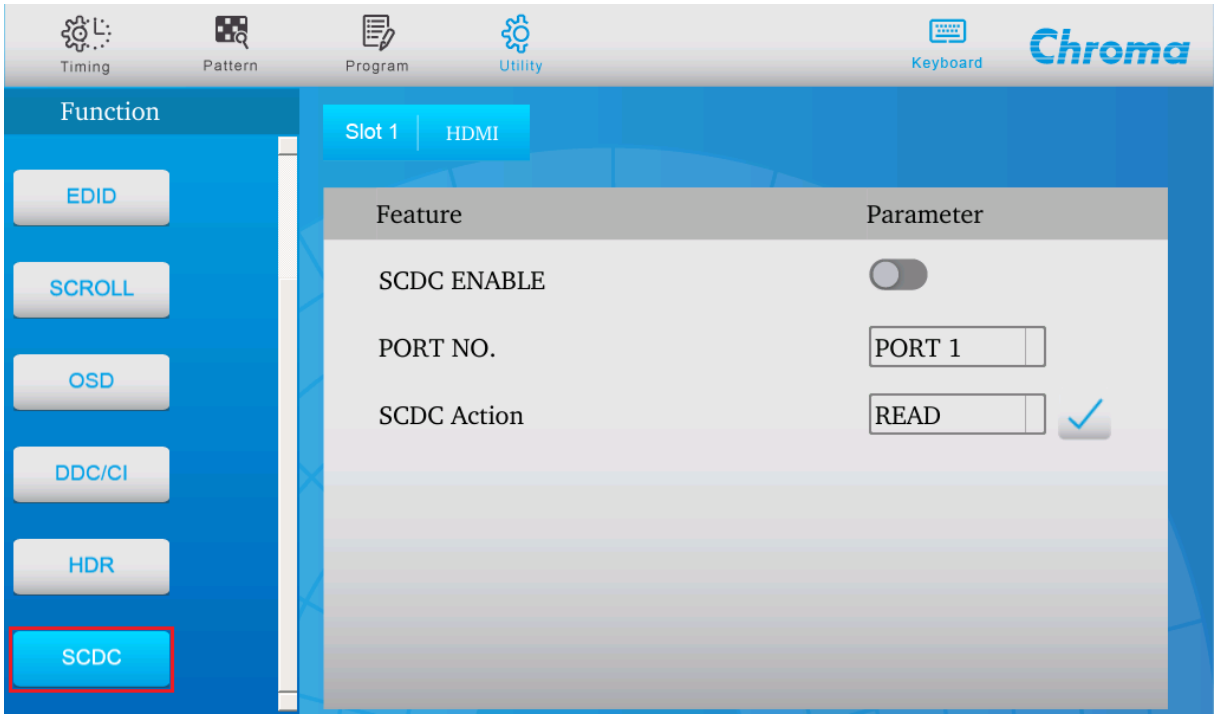
- POINT B_X: It sets color space chromaticity coordinates - B (X value), range 0.001-1; 0.001 / Step。
- POINT B_Y: It sets color space chromaticity coordinates - B (Y value), range 0.001-1; 0.001 / Step.
- POINT W_X: It sets color space chromaticity coordinates - White Point (X value), range 0.001-1; 0.001 / Step.
- POINT W_Y: It sets color space chromaticity coordinates - White Point (Y value), range 0.001-1; 0.001 / Step.

Notice If the HDR INFO AUTO is enabled, the color space chromaticity coordinates will output following the color space set in TIMING, for example when the color space in TIMING is set to BT.2020, the output is the BT.2020 chromaticity coordinates.

2.5.2.10 SCDC

This is the SCDC function for HDMI2.0. Before using the SCDC function, it needs to connect the HDMI SINK with SCDC function to the 2238 VPG. When the HDMI cable is used for connection, output a 4k*2kP60 timing and follow the descriptions below to perform SCDC function tests.

Touch SCDC on the LCD panel under Function to edit the SCDC function.



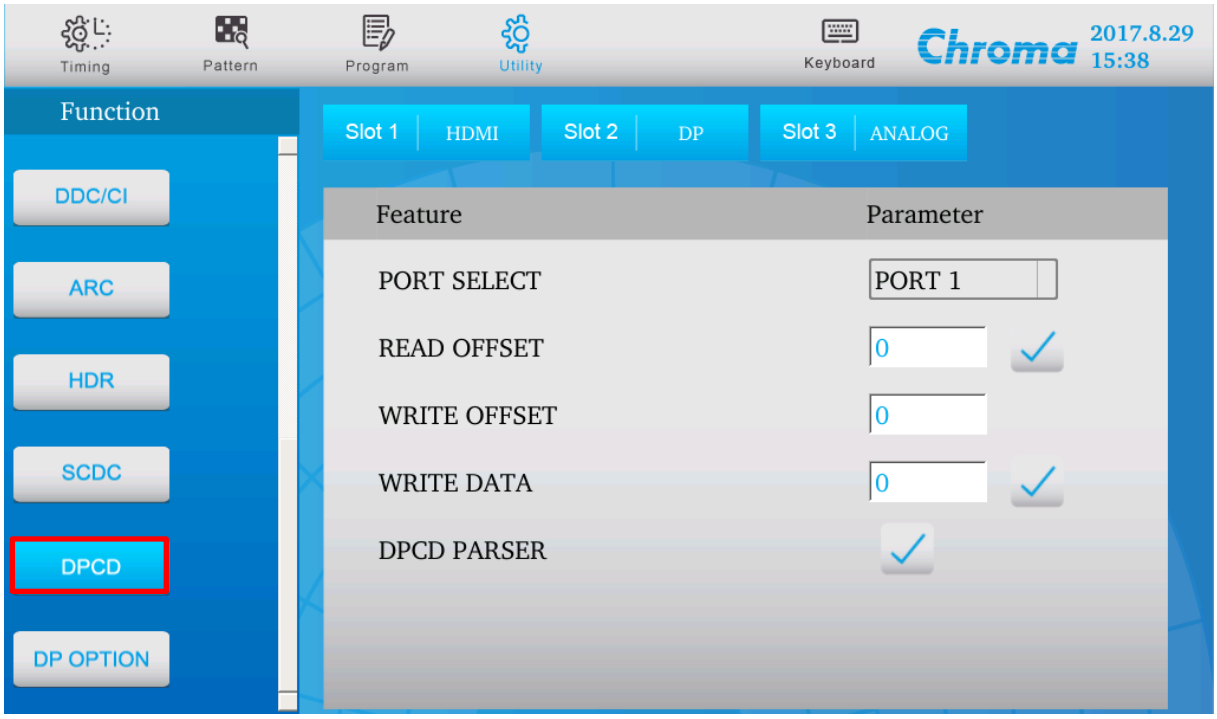
- SCDC ENABLE: It enables or disables the SCDC function.
- PORT NO.: It sets the port (HDMI: Port 1~Port 4) to be executed.
- SCDC Action: Touch ✓ next to READ to start SCDC READ.

Notice If the HDR INFO AUTO is enabled, the color space chromaticity coordinates will output following the color space set in TIMING, for example when the

color space in TIMING is set to BT.2020, the output is the BT.2020 chromaticity coordinates.

2.5.2.11 DPCD

This item edits and controls the DPCD function for DP.



- **READ OFFSET**
  It sets the start position of DPCD embedded value to be read.

  Move the cursor to READ DPCD and touch ✓ next to it to enable this function. It reads the DPCD embedded value from Sink and shows on the screen. The DPCD address starts reading 256 bytes data from READ OFFSET.

- **WRITE OFFSET**
  It sets the position of DPCD embedded value to be written.

- **WRITE DATA**
  It sets the data of DPCD embedded value to be written.

  Move the cursor to WRITE DPCD and touch ✓ next to it to enable this function. It writes the DPCD embedded value to sink with 1 byte data starting from WRITE OFFSET.

Definition of DPCD address section

Address	Definition
00000h - 000FFh	Receiver Capability Field
00100h - 001FFh	Link Configuration Field
00200h - 00217h	Link / Sink Status Field
00218h - 002FFh	Automated Testing Sub-Field (00218h to 0027Fh below) is optional
00300h - 003FFh	Source Device Specific Field
00400h - 004FFh	Sink Device Specific Field

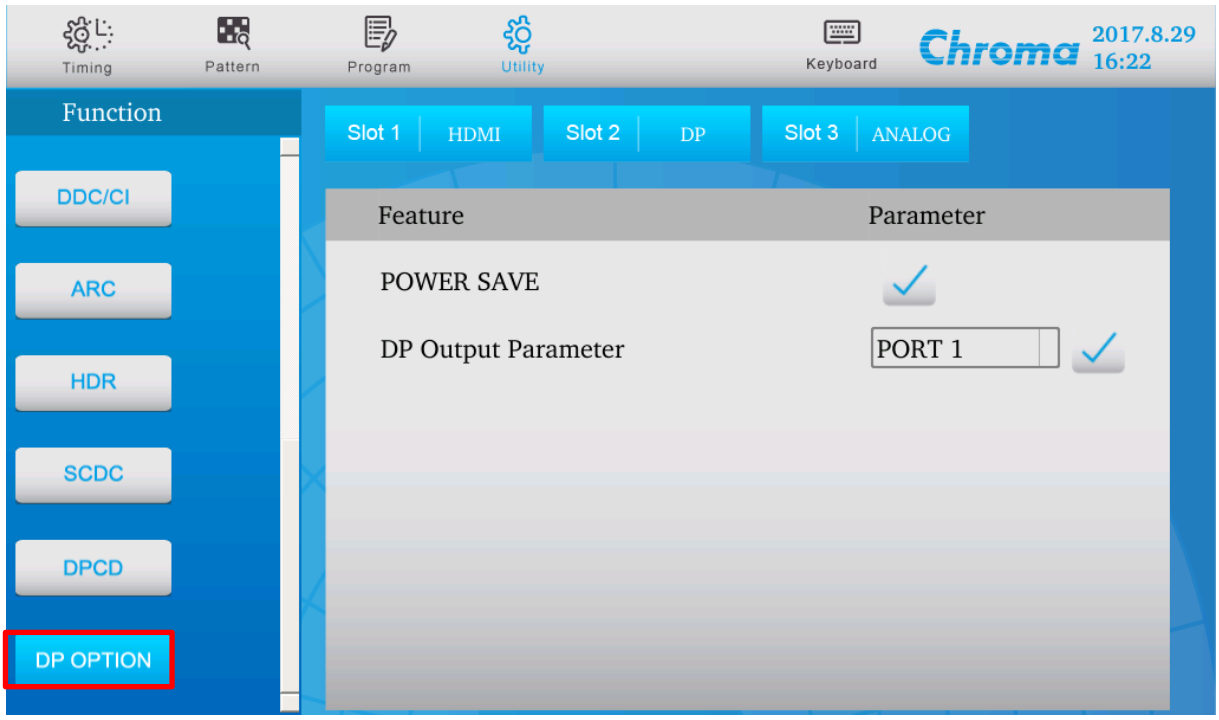
00500h - 005FFh	Branch Device Specific Field
00600h - 006FFh	Sink Control Field
00700h - 6FFFFh	Usage to be Defined
70000h - 7FFFFh	Usage to be Defined
80000h - 80FFFh	Reserved Field for DPCP
81000h - 81FFFh	Remote Command Pass-through Field
82000h - FFFFFh	Reserved

DPCD PARSER

Touch ✓ next to it to enable this function. The screen will show analyzed results.

2.5.2.12 DP OPTION

This item edits and controls the DP function.



- **POWER SAVE**
  When this function is enabled, close the Main Link to test the DUT's power save function.

- **DP Output Parameter**
  Press **ENTER** to enable this function. It reads and displays the output of Main Lane Count, Main Link Rate, Mvid, Nvid, Swing Level and Pre-Emphasis Level.

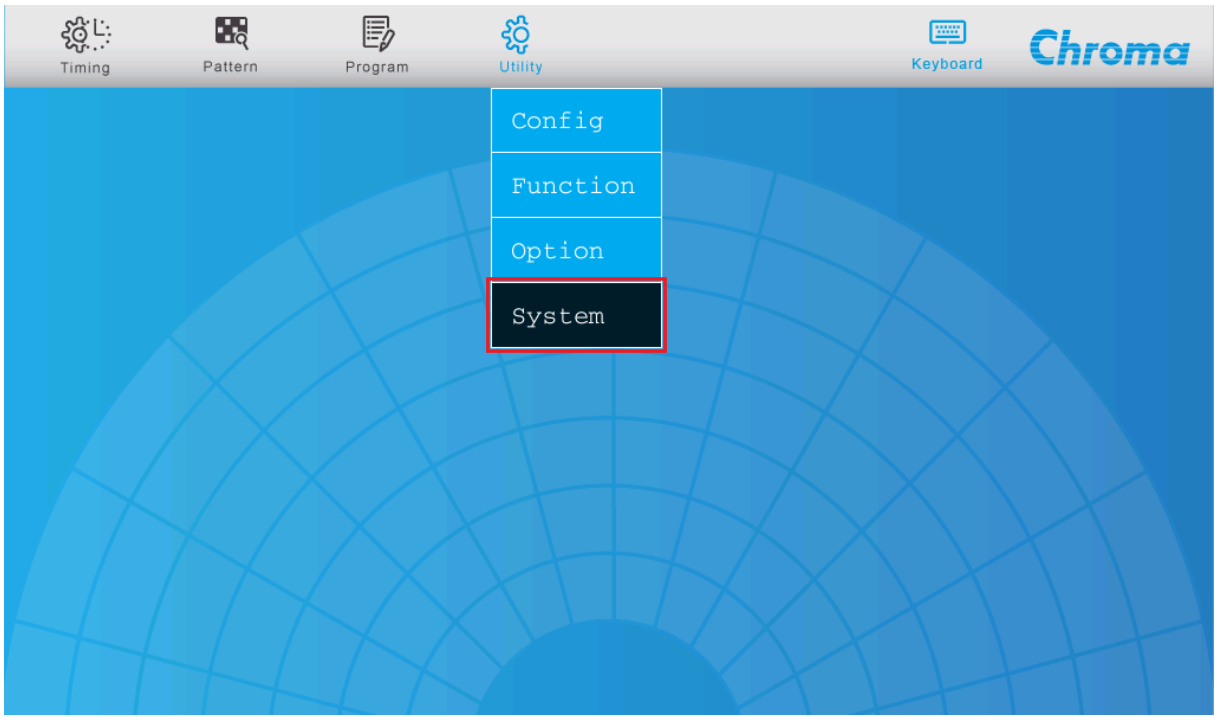
2.6 Using Option

The Option function controls or displays certain system functions for operation such as setting for remote control device. This function is not available at present.

2.7 Using System

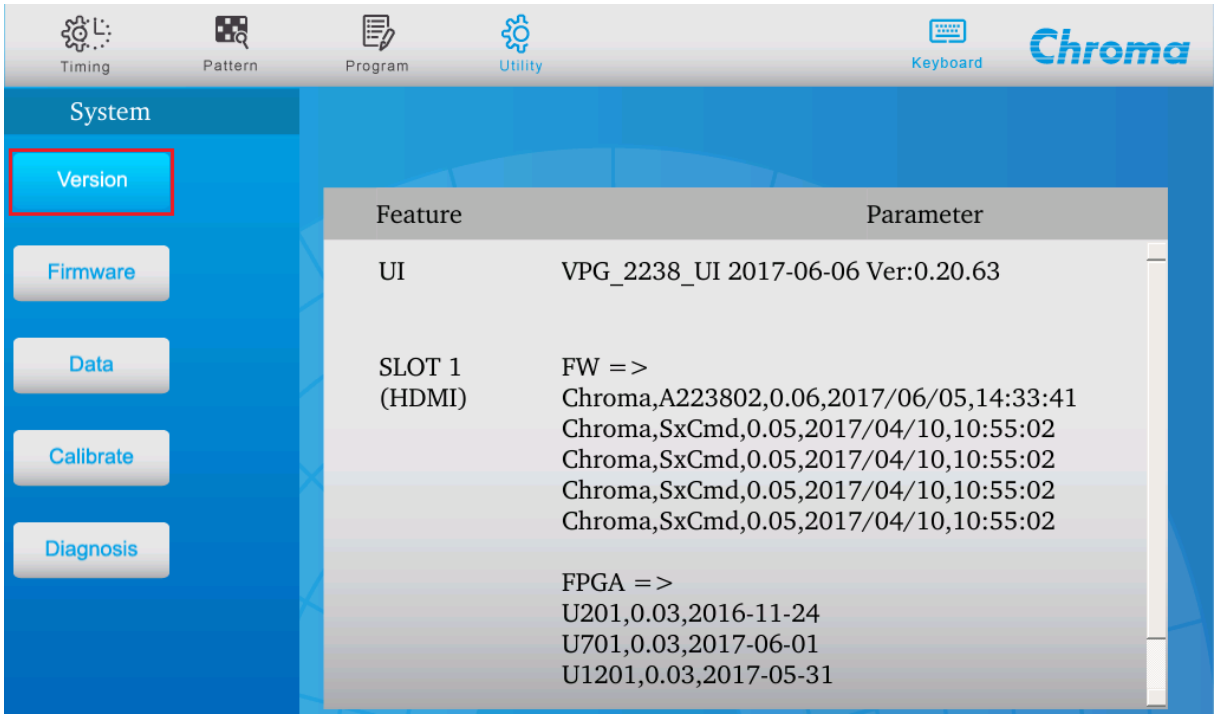
The System function controls or displays certain system operations such as version confirmation, F/W upgrade, internal database backup or update, calibration and diagnosis, etc.

Press **Utility** and touch System on the LCD panel to enter into the System page.



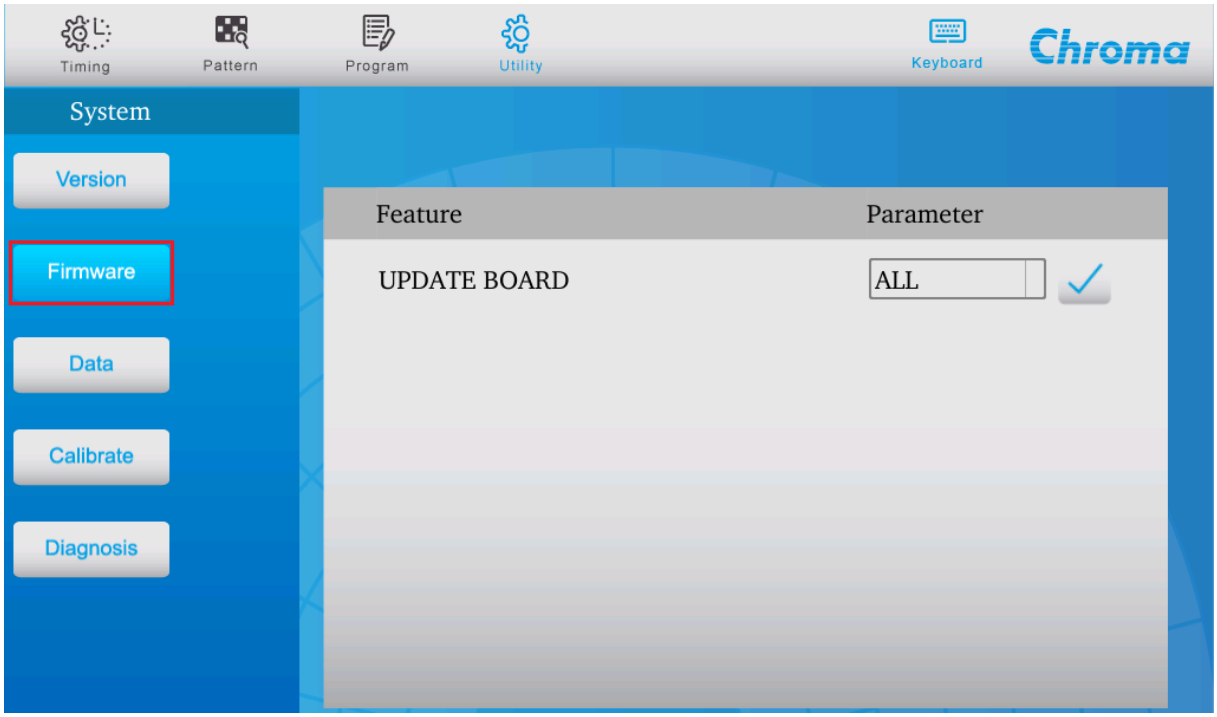
2.7.1 Version

Touch Version under the System page on the left of LCD panel. Scroll the information page on the right to see the version info of each module inside the system.



2.7.2 Firmware

This item upgrades the system's firmware. Touch Firmware under the System page on the left of LCD panel to go to the F/W update page. For any firmware upgrade, please contact the service engineer or sales rep. of Chroma.

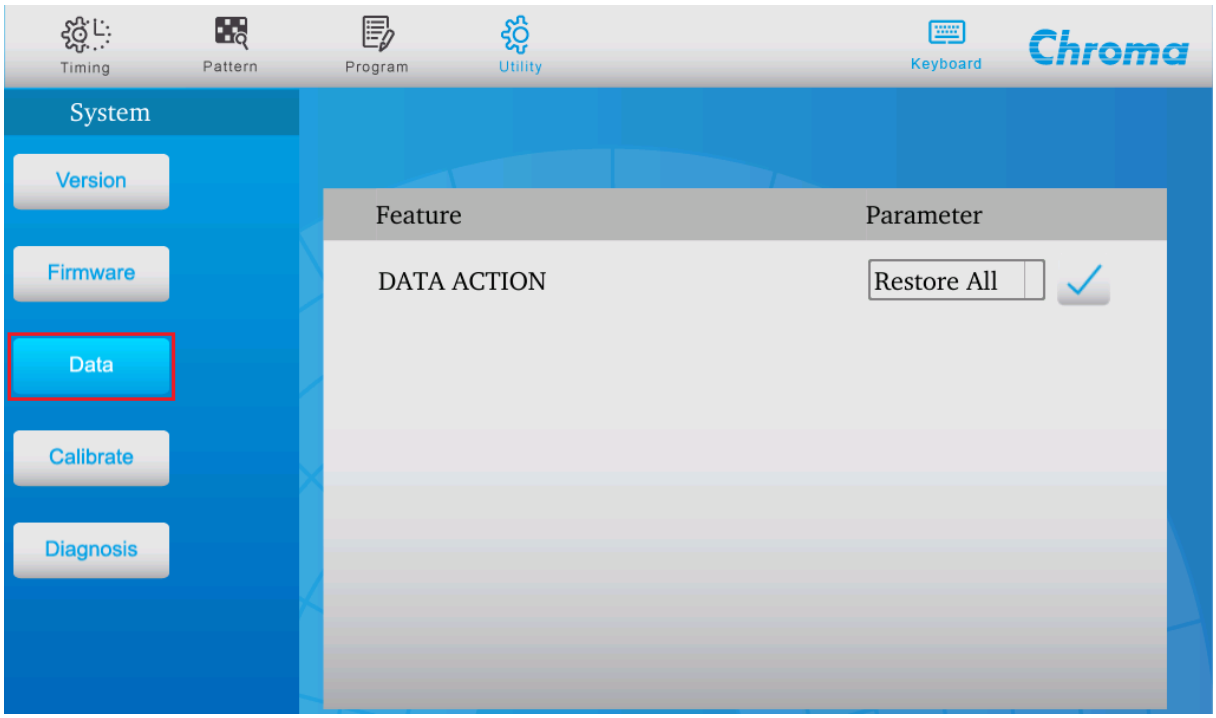


- UPDATE BOARD: There are ALL, HOST, SLOT and OTHER (UI) for firmware upgrade. Select the part desired for upgrade and touch ✓ to start upgrading the firmware.

Notice
- The FW has to be named as 2238.tar.tgz.
- The FW must be created in chroma folder under root directory.

2.7.3 Data

This item edits and controls the system data update function. Touch Data under the System page on the left of LCD panel to go to the Data update page.



- DATA ACTION: It sets the way to update the 2238 data. Currently only Restore All is available for selection. Touch ✓ to start updating the data. (The selection of Back All and Burn USB are not ready yet.)

Restore All: It copies all associated files (TIMING, PATTERN and PROGRAM) in the USB device to VPG.

Notice
- Before updating the data, it is necessary to create a chroma folder under root directory in the USB device.
- The data to be updated needs to be placed in chroma folder (chroma in lower case).

TIMING write in: Rename the TIMING (.tmn) file to be used to 2238.tmn and put in chroma folder for writing.

Notice
Due to format problem, the .tmn file created by old model may not be able to save as another TIMING. Please contact the service engineer or sales rep. of Chroma if there is need to write in the TIMING.

PATTERN (built-in) write in: Rename the PATTERN (.pnn) file to be used to 2238.pnn put in chroma folder for writing.

PATTERN (BMP) write in: Rename the BMP file to be used to picture001~050 and put in chroma folder for writing. The picture will store in PATTERN #801~#850.

PROGRAM write in: Rename the PROGRAM (.prm) file to be used to 2238.prm put in chroma folder for writing.

2.7.4 Calibrate

This item edits and controls the system calibration function for testers to calibrate the system output. This function is only available for the RD and production engineers of Chroma to use.

2.7.5 Diagnosis

This item edits and controls the system diagnosis function for testers to verify if the system output is correct. This function is only available the RD and production engineers of Chroma to use.

3. Communication

3.1 Setting RS-232 Interface

The VPG can use USB to RS-232 adapter to connect the RS-232 interface on PC site. When the USB to RS-232 adapter is used to plug in the USB Host Port (USB A Type), the system will automatically set the RS-232 communication format to 115200, 8-N-1 and set the RS-232 interface format on PC site to the same to communicate with VPG.

3.2 Command Set

The basic form of the commands that can be recognized by the system is as follows:

Command [Parameter 0], [Parameter 1]… ;

At first, there must be a marker, then followed by a combination of parameters or markers or nothing at all, and at last there must be a terminator. The terminator for the system is a semicolon (;). Markers and parameters must be separated by space, comma (,), carriage return (0DH), or line feed (0AH) to be more readable. The commands are all in ASCII codes, and can be written by use of any text editing software. A marker can be written in upper or lower case.

For example: ENABLE;
KEYBOARD LOCK;

When the system successfully receives a command, it will begin parsing the command, and check if the parameters are in the acceptable range. If the check is all right, the execution will start. During execution, if all is normal, the system will return an OK, otherwise an NG which indicates NOGO.

For example:
OK;
NG; BOUNDARY ERROR:

The commands are described in the following subsections.

3.2.1 Abbreviations of Commands

In order to increase the efficiency of input commands, abbreviations are used to replace certain commands.

Commands	Abbreviations
TIMING	TIM/TMG
PATTERN	PAT/PTN
PROGRAM	PRG/PGM
QUIT	Q

RED	**R**
GREEN	**G**
BLUE	**B**
REVERSE	**REV**
STORE	**STO**
VERSION	**VER**
KEYBOARD	**KB**
CURSOR	**CS**

3.2.2 General Commands

***RS232 commands are building**

RUN TIM xxxx **;**	First load TIMING xxxx and then enable it.
RUN PTN xxxx **;**	First load PATTERN xxxx and then enable it.

Appendix A Default Timings List

The VPG has built in approximately 800 sets of timings; however, the actual amount of timing is varied with the signals supported by each model. The timings are classified as the table shown below.

No.	Classification
1 ~ 100	Chroma 22xx / 23xx Series default Timing
101 ~ 130	TV Timing
131 ~ 200	SD/HDTV Timing
201 ~ 300	VESA Analog Timing
301 ~ 500	VESA CVT Timing
501 ~ 600	VESA Digital Timing
601 ~ 800	CTA-861–G Timing
801 ~ 850	PC Timing
851 ~ 900	SPWG Panel Timing
901 ~ 1000	DisplayPort – VESA Timing
1000 ~1200	DisplayPort – CVT Timing
1200 ~ 1300	DisplayPort Timing
1301 ~ 1400	3D Timing
1401 ~ 1500	Chroma 3G SDI Timing
1501 ~ 1600	DiiVA Timing
1601 ~ 2000	Reserved
2001 ~ 5000	User Storage

Notice The timing no. listed in gray indicates it is invalid now, and will be supported in the future.

TIMING 1-100 Model 22xx / 23xx Series Default Timing

Model 22xx / 23xx Series Default Timing															
Timing	Timing Name	Pixel Rate (M)	Htotal	Hdisplay	Hbp	Hsw	Hf (K)	Vtotal	Vdisplay	Vbp	Vsw	Vf	HSync	VSync	H:Vsize
1	VESA640x350	31.500	832	640	96	64	37.861	445	350	60	3	85.08	ON(+)	ON(-)	4:3
2	VESA640x400	31.500	832	640	96	64	37.861	445	400	41	3	85.08	ON(-)	ON(+)	4:3
3	VESA720x400	35.500	936	720	108	72	37.927	446	400	42	3	85.04	ON(-)	ON(+)	4:3
4	VGA640x480-6	25.175	800	640	48	96	31.649	525	480	33	2	59.94	ON(-)	ON(-)	4:3
5	V640x480-72	31.500	832	640	128	40	37.861	520	480	28	3	72.81	ON(-)	ON(-)	4:3
6	V640x480-75	31.500	840	640	120	64	37.500	500	480	16	3	75.00	ON(-)	ON(-)	4:3
7	V640x480-85	36.000	832	640	80	56	43.269	509	480	25	3	85.01	ON(-)	ON(-)	4:3
8	V800x600-56	36.000	1024	800	128	72	35.156	625	600	22	2	56.25	ON(+)	ON(+)	4:3
9	V800x600-60	40.000	1056	800	88	128	37.879	628	600	23	4	60.32	ON(+)	ON(+)	4:3
10	V800x600-72	50.000	1040	800	64	120	48.077	666	600	23	6	72.19	ON(+)	ON(+)	4:3
11	V800x600-75	49.500	1056	800	160	80	46.875	625	600	21	3	75.00	ON(+)	ON(+)	4:3
12	V800x600-85	58.250	1048	800	152	64	53.674	631	600	27	3	85.06	ON(+)	ON(+)	4:3
13	1024x768-43	44.900	1264	1024	56	176	35.522	408	384	20	4	86.96	ON(+)	ON(+)	4:3
14	V1024x768-60	65.000	1344	1024	160	136	48.363	806	768	29	6	60.00	ON(-)	ON(-)	4:3
15	V1024x768-70	75.000	1328	1024	144	136	56.476	806	768	29	6	70.07	ON(-)	ON(-)	4:3
16	V1024x768-75	78.750	1312	1024	176	96	60.023	800	768	28	3	75.03	ON(+)	ON(+)	4:3
17	V1024x768-85	94.500	1376	1024	208	96	68.677	808	768	36	3	84.99	ON(+)	ON(+)	4:3
18	V1152x864-75	108.000	1600	1152	256	128	67.500	900	864	32	3	75.00	ON(+)	ON(+)	4:3
19	V1280x960-60	108.000	1800	1280	312	112	60.000	1000	960	36	3	60.00	ON(+)	ON(+)	4:3
20	V1280x960-85	148.500	1728	1280	224	160	85.938	1011	960	47	3	85.00	ON(+)	ON(+)	4:3
21	1280x1024-60	108.000	1688	1280	248	112	63.981	1066	1024	38	3	60.02	ON(+)	ON(+)	4:3
22	1280x1024-75	135.000	1688	1280	248	144	79.976	1066	1024	38	3	75.02	ON(+)	ON(+)	4:3
23	1280x1024-85	157.500	1728	1280	224	160	91.146	1072	1024	44	3	85.02	ON(+)	ON(+)	4:3
24	1600x1200-60	162.000	2160	1600	304	192	75.000	1250	1200	46	3	60.00	ON(+)	ON(+)	4:3
25	1600x1200-65	175.500	2160	1600	304	192	81.250	1250	1200	46	3	65.00	ON(+)	ON(+)	4:3
26	1600x1200-70	189.000	2160	1600	304	192	87.500	1250	1200	46	3	70.00	ON(+)	ON(+)	4:3
27	1600x1200-75	202.500	2160	1600	304	192	93.750	1250	1200	46	3	75.00	ON(+)	ON(+)	4:3
28	1600x1200-85	229.500	2160	1600	304	192	106.25	1250	1200	46	3	85.00	ON(+)	ON(+)	4:3
29	1792x1344-60	204.750	2448	1792	328	200	83.640	1394	1344	46	3	60.00	ON(-)	ON(+)	4:3
30	1856x1392-60	218.250	2528	1856	352	224	86.333	1439	1392	43	3	59.99	ON(-)	ON(+)	4:3
31	1920x1440-60	234.000	2600	1920	344	208	90.000	1500	1440	56	3	60.00	ON(-)	ON(+)	4:3
32	SDTV-576P	27.000	864	720	69	63	31.250	625	576	39	5	50.00	-	-	4:3
33	SDTV-576i	13.500	864	720	69	63	15.625	312	287	19	3	50.00	-	-	4:3
34	SDTV-480P	27.000	858	720	59	63	31.469	525	483	30	6	59.94	-	-	4:3
35	SDTV-480i	13.500	858	720	59	63	15.734	262	241	15	3	59.94	-	-	4:3
36	NTSC-443	13.500	858	710	64	64	15.734	262	241	15	3	59.94	-	-	4:3
37	NTSC-M	13.500	858	710	64	64	15.734	262	241	15	3	59.94	-	-	4:3
38	PAL-BDGHI	13.500	864	702	78	64	15.625	312	287	19	3	50.00	-	-	4:3
39	SECAM	13.500	864	702	78	64	15.625	312	287	19	3	50.00	-	-	4:3
40															
41	P640x350-85	31.500	832	640	96	64	37.861	445	350	60	3	85.08	ON(+)	ON(-)	4:3
42	P640x400-85	31.500	832	640	96	64	37.861	445	400	41	3	85.08	ON(-)	ON(+)	4:3
43	P720x400-85	35.500	936	720	108	72	37.927	446	400	42	3	85.04	ON(-)	ON(+)	4:3
44	P640x480-60	25.175	800	640	48	96	31.469	525	480	33	2	59.94	ON(-)	ON(-)	4:3
45	P640x480-72	31.500	832	640	128	40	37.861	520	480	28	3	72.81	ON(-)	ON(-)	4:3
46	P640x480-75	31.500	840	640	120	64	48.077	500	480	16	3	75.00	ON(-)	ON(-)	4:3
47	P640x480-85	36.000	832	640	80	56	37.879	509	480	25	3	85.01	ON(-)	ON(-)	4:3
48	P800x600-56	36.000	1024	800	128	72	35.156	625	600	22	2	56.25	ON(+)	ON(+)	4:3
49	P800x600-60	40.000	1056	800	88	128	43.269	628	600	23	4	60.32	ON(+)	ON(+)	4:3
50	P800x600-72	50.000	1040	800	64	120	37.500	666	600	23	6	72.19	ON(+)	ON(+)	4:3
51	P800x600-75	49.500	1056	800	160	80	46.875	625	600	21	3	75.00	ON(+)	ON(+)	4:3
52	P800x600-85	56.250	1048	800	152	64	53.674	631	600	27	3	85.06	ON(+)	ON(+)	4:3
53	P1024x768-43	44.900	1264	1024	56	176	35.522	408	384	20	4	86.96	ON(+)	ON(+)	4:3
54	P1024x768-60	65.000	1344	1024	160	136	48.363	806	768	29	6	60.00	ON(-)	ON(-)	4:3
55	P1024x768-70	75.000	1328	1024	144	136	56.476	806	768	29	6	70.07	ON(-)	ON(-)	4:3
56	P1024x768-75	78.750	1312	1024	176	96	60.023	800	768	28	3	75.03	ON(+)	ON(+)	4:3
57	P1024x768-85	94.500	1376	1024	208	96	68.677	808	768	36	3	84.99	ON(+)	ON(+)	4:3
58	P1152x864-75	108.000	1600	1152	256	128	67.500	900	864	32	3	75.00	ON(+)	ON(+)	4:3
59	P1280x960-60	108.000	1800	1280	312	112	60.000	1000	960	36	3	60.00	ON(+)	ON(+)	4:3
60	P1280x960-85	148.500	1728	1280	224	160	85.938	1011	960	47	3	85.00	ON(+)	ON(+)	4:3
61	P1280x1024-6	108.000	1688	1280	248	112	63.981	1066	1024	38	3	60.02	ON(+)	ON(+)	4:3
62	P1280x1024-7	135.000	1688	1280	248	144	79.976	1066	1024	38	3	75.02	ON(+)	ON(+)	4:3
63	P1280x1024-8	157.500	1728	1280	224	160	91.146	1072	1024	44	3	85.02	ON(+)	ON(+)	4:3

64	P1600x1200-6	162.000	2160	1600	304	192	75.000	1250	1200	46	3	60.00	ON(+)	ON(+)	4:3
65	HDMI-480P59	27.000	858	720	60	62	31.469	525	480	30	6	59.94	ON(-)	ON(-)	4:3
66	HDMI-480i59	13.500	858	720	57	62	15.734	262	240	15	3	59.94	ON(-)	ON(-)	4:3
67	HDMI-576P50	27.000	864	720	68	64	31.250	625	576	39	5	50.00	ON(-)	ON(-)	4:3
68	HDMI-576i50	13.500	864	720	69	63	15.625	312	288	19	3	50.00	ON(-)	ON(-)	4:3
69	HDMI-720P60	74.250	1650	1280	220	40	45.000	750	720	20	5	60.00	ON(+)	ON(+)	16:9
70	HDMI-1080i60	74.250	2200	1920	148	44	33.750	562	540	15	5	60.00	ON(+)	ON(+)	16:9
71	HDMI-720P50	74.250	1980	1280	220	40	37.500	750	720	20	5	50.00	ON(+)	ON(+)	16:9
72	HDMI-1080i50	74.250	2640	1920	148	44	28.125	562	540	15	5	50.00	ON(+)	ON(+)	16:9
73	HDMI-1080P50	148.50	2640	1920	148	44	56.250	1125	1080	36	5	50.00	ON(+)	ON(+)	16:9
74	HDMI-1080P60	148.50	2200	1920	148	44	67.500	1125	1080	36	5	60.00	ON(+)	ON(+)	16:9
75	HDTV-1035i60	74.250	2200	1920	148	44	33.750	562	518	34	5	60.00	-	-	16:9
76	HDTV-1035i59	74.175	2200	1920	148	44	33.716	562	518	34	5	59.94	-	-	16:9
77	HDTV-1080i60	74.250	2200	1920	148	44	33.750	562	540	15	5	60.00	-	-	16:9
78	HDTV-1080i59	74.175	2200	1920	148	44	33.716	562	540	15	5	59.94	-	-	16:9
79	HDTV-720P60	74.250	1650	1280	220	40	45.000	750	720	20	5	60.00	-	-	16:9
80	HDTV-720P59	74.175	1650	1280	220	40	44.955	750	720	20	5	59.94	-	-	16:9
81	HDTV-720P50	74.250	1980	1280	220	40	37.500	750	720	20	5	50.00	-	-	16:9
82	HDTV-1080i50	74.250	2640	1920	148	44	28.125	562	540	15	5	50.00	-	-	16:9
83	HDTV-1080P30	74.250	2200	1920	148	44	33.750	1125	1080	36	5	30.00	-	-	16:9
84	HDTV-1080P29	74.175	2200	1920	148	44	33.716	1125	1080	36	5	29.97	-	-	16:9
85	HDTV-1080P25	74.250	2640	1920	148	44	28.125	1125	1080	36	5	25.00	-	-	16:9
86	HDTV-1080P24	74.250	2750	1920	148	44	27.000	1125	1080	36	5	24.00	-	-	16:9
87	HDTV-1080P23	74.175	2750	1920	148	44	26.973	1125	1080	36	5	23.98	-	-	16:9
88	HDTV-1080P50	148.500	2640	1920	148	44	56.250	1125	1080	36	5	50.00	-	-	16:9
89	HDTV-1080P59	148.350	2200	1920	148	44	67.432	1125	1080	36	5	59.94	-	-	16:9
90	HDTV-1080P60	148.500	2200	1920	148	44	67.500	1125	1080	36	5	60.00	-	-	16:9
91	TEST-LCD	165.000	2160	1600	304	192	76.389	1250	1200	46	3	61.11	ON(+)	ON(+)	4:3
92	TEST-TTL2	80.000	1024	32	0	32	78.125	10	4	0	2	7813	ON(+)	ON(+)	4:3
93	TEST-TTL1	50.000	1000	250	50	50	50.000	10	4	0	2	5000	ON(+)	ON(+)	4:3
94	TEST-WAVE2	135.000	1024	512	64	32	131.84	10	4	0	2	13183.6	ON(+)	ON(+)	4:3
95	TEST-WAVE1	135.000	1024	32	16	16	131.84	10	4	0	2	13183.6	ON(+)	ON(+)	4:3
96	TEST-SYND/W	135.000	1024	32	0	32	131.84	10	4	0	2	13183.6	ON(+)	ON(+)	4:3
97	TEST-HTOTAL	135.000	1024	16	32	16	131.84	10	4	0	2	13183.6	ON(+)	ON(+)	4:3
98	TEST-SYNC	50.000	1000	250	50	50	50.000	10	4	0	2	5000	ON(+)	ON(+)	4:3
99	TEST-NORM	50.000	1000	250	50	50	50.000	10	4	0	2	5000	ON(+)	ON(+)	4:3
100	TEST-CPU	65.000	1344	1028	144	128	48.363	806	768	29	6	60.004	ON(-)	ON(-)	4:3

TIMING 101-130 TV Timing

TV-Timing															
Timing	Timing Name	Pixel Rate (M)	Htotal	Hdisplay	Hbp	Hsw	Hf (K)	Vtotal	Vdisplay	Vbp	Vsw	Vf	HSync	VSync	H:Vsize
101	NTSC-M	13.500	858	710	64	64	15.734	262	241	15	3	59.94	-	-	4:3
102	NTSC-J	13.500	858	710	64	64	15.734	262	241	15	3	59.94	-	-	4:3
103	NTSC-443	13.500	858	710	64	64	15.734	262	241	15	3	59.94	-	-	4:3
104	PAL-BDGHI	13.500	864	702	78	64	15.625	312	287	19	3	50.00	-	-	4:3
105	PAL-M	13.500	858	713	61	64	15.734	262	241	15	3	59.94	-	-	4:3
106	PAL-60	13.500	858	713	61	64	15.734	262	241	15	3	59.94	-	-	4:3
107	PAL-N	13.500	864	719	61	64	15.625	312	287	18	3	50.00	-	-	4:3
108	PAL-Nc	13.500	864	702	78	64	15.625	312	287	19	3	50.00	-	-	4:3
109	SECAM	13.500	864	702	78	64	15.625	312	287	19	3	50.00	-	-	4:3
110															
111	NTSC (CC1)	13.500	858	710	64	64	15.734	262	241	15	3	59.94	-	-	4:3
112	NTSC (TV-MA)	13.500	858	710	64	64	15.734	262	241	15	3	59.94	-	-	4:3
113	PAL (TT1)	13.500	864	702	78	64	15.625	312	287	19	3	50.00	-	-	4:3
114															
115															
116															
117															
118															
119															
120															
121															
122															
123															
124															
125															
126															
127															
128															
129															
130															

TIMING 131-200 SD/HDTV Timing

SD/HDTV-Timing															
Timing	Timing Name	Pixel Rate (M)	Htotal	Hdisplay	Hbp	Hsw	Hf (K)	Vtotal	Vdisplay	Vbp	Vsw	Vf	HSync	VSync	H:Vsize
131	SDTV-480i	13.500	858	720	59	63	15.734	262	241	15	3	59.94	-	-	4:3
132	SDTV-480P	27.000	858	720	59	63	31.469	525	483	30	6	59.94	-	-	4:3
133	SDTV-576i	13.500	864	720	69	63	15.625	312	288	19	3	50.00	-	-	4:3
134	SDTV-576P	27.000	864	720	69	63	31.250	625	576	39	5	50.00	-	-	4:3
135	**STANAG 3350 Class A**														
136	**STANAG 3350 Class B**	**13.500**	**858**	**720**	**59**	**63**	**15.734**	**262**	**241**	**15**	**3**	**59.94**	**-**	**-**	**4:3**
137	**STANAG 3350 Class C**	**13.500**	**864**	**720**	**69**	**63**	**15.625**	**312**	**288**	**19**	**3**	**50.00**	**-**	**-**	**4:3**
138															
139															
140															
141															
142															
143															
144															
145															
146															
147															
148															
149															
150	HDTV-720P23	29.670	1650	1280	220	40	17.982	750	720	20	5	23.98	-	-	4:3
151	HDTV-720P24	29.700	1650	1280	220	40	18.000	750	720	20	5	24.00	-	-	4:3
152	HDTV-720P25	74.250	3960	1280	220	40	18.750	750	720	20	5	25.00	-	-	4:3
153	HDTV-720P29	37.090	1650	1280	220	40	22.479	750	720	20	5	29.97	-	-	4:3
154	HDTV-720P29S	74.175	3300	1280	220	40	22.477	750	720	20	5	29.97	-	-	4:3
155	HDTV-720P-24	30.004	1650	1280	220	40	18.184	750	720	20	5	24.25	-	-	4:3
156	HDTV-720P30S	74.250	3300	1280	220	40	22.500	750	720	20	5	30.00	-	-	4:3
157	HDTV-720P50	74.250	1980	1280	220	40	37.500	750	720	20	5	50.00	-	-	16:9
158	HDTV-720P59	74.175	1650	1280	220	40	44.955	750	720	20	5	59.94	-	-	16:9
159	HDTV-720P60	74.250	1650	1280	220	40	45.000	750	720	20	5	60.00	-	-	16:9
160	HDTV-1035i59	74.175	2200	1920	148	44	33.716	562	518	34	5	59.94	-	-	16:9
161	HDTV-1035i60	74.250	2200	1920	148	44	33.750	562	518	34	5	60.00	-	-	16:9
162	HDTV-1080i50	74.250	2640	1920	148	44	28.125	562	540	15	5	50.00	-	-	16:9
163	HDTV-1080i59	74.175	2200	1920	148	44	33.716	562	540	15	5	59.94	-	-	16:9
164	HDTV-1080i60	74.250	2200	1920	148	44	33.750	562	540	15	5	60.00	-	-	16:9
165	HDTV-1080P23	74.176	2750	1920	148	44	26.973	1125	1080	36	5	23.98	-	-	16:9
166	HDTV-1080P24	74.250	2750	1920	148	44	27.000	1125	1080	36	5	24.00	-	-	16:9
167	HDTV-1080P25	74.250	2640	1920	148	44	28.125	1125	1080	36	5	25.00	-	-	16:9
168	HDTV-1080P29	74.175	2200	1920	148	44	33.716	1125	1080	36	5	29.97	-	-	16:9
169	HDTV-1080P30	74.250	2200	1920	148	44	33.750	1125	1080	36	5	30.00	-	-	16:9
170	HDTV-1080P50	148.500	2640	1920	148	44	56.250	1125	1080	36	5	50.00	-	-	16:9
171	HDTV-1080P59	148.350	2200	1920	148	44	67.432	1125	1080	36	5	59.94	-	-	16:9
172	HDTV-1080P60	148.500	2200	1920	148	44	67.500	1125	1080	36	5	60.00	-	-	16:9
173															
174															
175															
176															
177															
178															
179															
180	**RS-343A-675**	**13.500**	**667**	**572**	**44**	**37**	**20.239**	**675**	**624**	**21**	**2**	**29.90**	**-**	**-**	**4:3**
181	**RS-343A-729**	**13.500**	**617**	**523**	**44**	**37**	**21.880**	**729**	**674**	**23**	**2**	**29.90**	**-**	**-**	**4:3**
182	**RS-343A-875**	**13.500**	**514**	**420**	**44**	**37**	**26.264**	**875**	**809**	**28**	**2**	**29.90**	**-**	**-**	**4:3**
183	**RS-343A-945**	**13.500**	**476**	**382**	**44**	**37**	**28.361**	**945**	**874**	**31**	**2**	**29.90**	**-**	**-**	**4:3**
184	**RS-343A-1023**	**13.500**	**440**	**345**	**44**	**37**	**30.681**	**1023**	**946**	**34**	**2**	**29.90**	**-**	**-**	**4:3**
185	**RS-170A-525**	**12.150**	**772**	**640**	**57**	**57**	**15.738**	**525**	**242**	**14**	**3**	**29.90**	**-**	**-**	**4:3**
186															
187															
188															
189															
190	AS-1152iSH	48.000	1536	1280	123	112	31.250	625	576	39	5	49.96	-	-	16:9
191	AS -1152iLH	72.000	2304	1920	184	168	31.250	625	540	57	5	49.96	-	-	16:9
192	AS -1152iLA	36.000	1152	720	212	84	31.250	625	576	39	5	49.96	-	-	4:3
193	AS -1152iSH_	49.500	1584	1280	146	133	31.250	625	576	39	5	49.96	-	-	16:9

194	AS -1152iLH_	74.250	2376	1920	218	200	31.250	625	540	57	5	49.96	-	-	16:9
195	AS -1152iLA_	37.125	1188	720	229	100	31.250	625	576	39	5	49.96	-	-	4:3
196															
197															
198															
199															
200															

TIMING 201-300 VESA Analog Timing

VESA Analog Timing															
Timing	Timing Name	Pixel Rate (M)	Htotal	Hdisplay	Hbp	Hsw	Hf (K)	Vtotal	Vdisplay	Vbp	Vsw	Vf	HSync	VSync	H:Vsize
201	VESA640X350-85	31.500	832	640	96	64	37.861	445	350	60	3	85.08	ON(+)	ON(-)	4:3
202	VESA640X400-85	31.500	832	640	96	64	37.861	445	400	41	3	85.08	ON(-)	ON(+)	4:3
203	VESA720X400-85	35.500	936	720	108	72	37.927	446	400	42	3	85.04	ON(-)	ON(+)	4:3
204	VESA640X480-60	25.175	800	640	48	96	31.469	525	480	33	2	59.94	ON(-)	ON(-)	4:3
205	VESA640X480-72	31.500	832	640	128	40	37.861	520	480	28	3	72.81	ON(-)	ON(-)	4:3
206	VESA640X480-75	31.500	840	640	120	64	37.500	500	480	16	3	75.00	ON(-)	ON(-)	4:3
207	VESA640X480-85	36.000	832	640	80	56	43.269	509	480	25	3	85.01	ON(-)	ON(-)	4:3
208	VESA800X600-56	36.000	1024	800	128	72	35.156	625	600	22	2	56.25	ON(+)	ON(+)	4:3
209	VESA800X600-60	40.000	1056	800	88	128	37.879	628	600	23	4	60.32	ON(+)	ON(+)	4:3
210	VESA800X600-72	50.000	1040	800	64	120	48.077	666	600	23	6	72.19	ON(+)	ON(+)	4:3
211	VESA800X600-75	49.500	1056	800	160	80	46.875	625	600	21	3	75.00	ON(+)	ON(+)	4:3
212	VESA800X600-85	56.250	1048	800	152	64	53.674	631	600	27	3	85.06	ON(+)	ON(+)	4:3
213	VESA848X480-60	33.750	1088	848	112	112	31.020	517	480	23	8	60.00	ON(+)	ON(+)	4:3
214	VESA1024X768-43	44.900	1264	1024	56	176	35.522	408	384	20	4	86.96	ON(+)	ON(+)	4:3
215	VESA1024X768-60	65.000	1344	1024	160	136	48.363	806	768	29	6	60.00	ON(-)	ON(-)	4:3
216	VESA1024X768-70	75.000	1328	1024	144	136	56.476	806	768	29	6	70.07	ON(-)	ON(-)	4:3
217	VESA1024X768-75	78.750	1312	1024	176	96	60.023	800	768	28	3	75.03	ON(+)	ON(+)	4:3
218	VESA1024X768-85	94.500	1376	1024	208	96	68.677	808	768	36	3	85.00	ON(+)	ON(+)	4:3
219	VESA1152X864-75	108.000	1600	1152	256	128	67.500	900	864	32	3	75.00	ON(+)	ON(+)	4:3
220	VESA1280X768-60	68.250	1440	1280	80	32	47.396	790	768	12	7	59.99	ON(+)	ON(-)	4:3
221	VESA1280X768-60	79.500	1664	1280	192	128	47.776	798	768	20	7	59.87	ON(-)	ON(+)	4:3
222	VESA1280X768-75	102.250	1696	1280	208	128	60.289	805	768	27	7	74.89	ON(-)	ON(+)	4:3
223	VESA1280X768-85	117.500	1712	1280	216	136	68.633	809	768	31	7	84.84	ON(-)	ON(+)	4:3
224	VESA1280X960-60	108.000	1800	1280	312	112	60.000	1000	960	36	3	60.00	ON(+)	ON(+)	4:3
225	VESA1280X960-85	148.500	1728	1280	224	160	85.938	1011	960	47	3	85.00	ON(+)	ON(+)	4:3
226	VESA1280X1024-60	108.000	1688	1280	248	112	63.981	1066	1024	38	3	60.02	ON(+)	ON(+)	4:3
227	VESA1280X1024-75	135.000	1688	1280	248	144	79.976	1066	1024	38	3	75.02	ON(+)	ON(+)	4:3
228	VESA1280X1024-85	157.500	1728	1280	224	160	91.146	1072	1024	44	3	85.02	ON(+)	ON(+)	4:3
229	VESA1360X768-60	85.500	1792	1360	256	112	47.712	795	768	18	6	60.02	ON(+)	ON(+)	4:3
230	VESA1400X1050-60	101.000	1560	1400	80	32	64.744	1080	1050	23	4	59.95	ON(+)	ON(-)	4:3
231	VESA1400X1050-60	121.750	1864	1400	232	144	65.317	1089	1050	32	4	59.98	ON(-)	ON(+)	4:3
232	VESA1400X1050-75	156.000	1896	1400	248	144	82.278	1099	1050	42	4	74.87	ON(-)	ON(+)	4:3
233	VESA1400X1050-85	179.500	1912	1400	256	152	93.881	1105	1050	48	4	84.96	ON(-)	ON(+)	4:3
234	VESA1440X900-60	88.750	1600	1440	80	32	55.469	926	900	17	6	59.90	ON(+)	ON(-)	4:3
235	VESA1440X900-60	106.500	1904	1440	232	152	55.935	934	900	25	6	59.89	ON(-)	ON(+)	4:3
236	VESA1440X900-75	136.750	1936	1440	248	152	70.635	942	900	33	6	74.98	ON(-)	ON(+)	4:3
237	VESA1440X900-85	157.000	1952	1440	256	152	80.430	948	900	39	6	84.84	ON(-)	ON(+)	4:3
238	VESA1600X1200-60	162.000	2160	1600	304	192	75.000	1250	1200	46	3	60.00	ON(+)	ON(+)	4:3
239	VESA1600X1200-65	175.500	2160	1600	304	192	81.250	1250	1200	46	3	65.00	ON(+)	ON(+)	4:3
240	VESA1600X1200-70	189.000	2160	1600	304	192	87.500	1250	1200	46	3	70.00	ON(+)	ON(+)	4:3
241	VESA1600X1200-75	202.500	2160	1600	304	192	93.750	1250	1200	46	3	75.00	ON(+)	ON(+)	4:3
242	VESA1600X1200-85	229.500	2160	1600	304	192	106.25	1250	1200	46	3	85.00	ON(+)	ON(+)	4:3
243	VESA1680X1050-60	119.000	1840	1680	80	32	64.674	1080	1050	21	6	59.88	ON(+)	ON(-)	4:3
244	VESA1680X1050-60	146.250	2240	1680	280	176	65.290	1089	1050	30	6	59.95	ON(-)	ON(+)	4:3
245	VESA1680X1050-75	187.000	2272	1680	296	176	82.306	1099	1050	40	6	74.89	ON(-)	ON(+)	4:3
246	VESA1680X1050-85	214.750	2288	1680	304	176	93.859	1105	1050	46	6	84.94	ON(-)	ON(+)	4:3
247	VESA1792X1344-60	204.750	2448	1792	328	200	83.640	1394	1344	46	3	60.00	ON(-)	ON(+)	4:3
248	VESA1792X1344-75	261.000	2456	1792	352	216	106.27	1417	1344	69	3	75.00	ON(-)	ON(+)	4:3
249	VESA1856X1392-60	218.250	2528	1856	352	224	86.333	1439	1392	43	3	60.00	ON(-)	ON(+)	4:3
250	VESA1856X1392-75	288.000	2560	1856	352	224	112.50	1500	1392	104	3	75.00	ON(-)	ON(+)	4:3
251	VESA1920X1200-60	154.000	2080	1920	80	32	74.038	1235	1200	26	6	59.95	ON(+)	ON(-)	4:3
252	VESA1920X1200-60	193.250	2592	1920	336	200	74.556	1245	1200	36	6	59.88	ON(-)	ON(+)	4:3
253	VESA1920X1200-75	245.250	2608	1920	344	208	94.038	1255	1200	46	6	74.93	ON(-)	ON(+)	4:3
254	VESA1920X1200-85	245.250	2608	1920	344	208	94.038	1255	1200	46	6	74.93	ON(-)	ON(+)	4:3
255	VESA1920X1440-60	234.000	2600	1920	208	128	90.000	1500	1440	56	3	60.00	ON(-)	ON(+)	4:3
256	VESA1920X1440-75	297.000	2640	1920	352	224	112.50	1500	1440	56	3	75.00	ON(-)	ON(+)	4:3
257															
258															
259															
260	VESA-1366x768-60	85.500	1792	1366	213	143	47.712	798	768	24	3	59.70	ON(+)	ON(-)	4:3
261	VESA-1920x1080-60	148.500	2200	1920	148	44	67.500	1125	1080	36	5	60.00	ON(+)	ON(+)	4:3
262	VESA-1280x800-60-RB	71.000	1440	1280	80	32	49.306	823	800	14	6	59.91	ON(+)	ON(-)	4:3
263	VESA-1280x800-60	83.500	1680	1280	200	128	49.702	831	800	22	6	59.81	ON(-)	ON(+)	4:3

264	VESA-1280x800-75	106.500	1696	1280	208	128	62.795	838	800	29	6	74.93	ON(-)	ON(+)	4:3
265	VESA-1280x800-85	122.500	1712	1280	216	136	71.554	843	800	34	6	84.88	ON(-)	ON(+)	4:3
266															
267															
268															
269															
270	VESA-800x600-120-RB	73.250	960	800	80	32	76.302	636	600	29	4	119.97	ON(+)	ON(-)	4:3
271	VESA-1024x768-120-RB	115.500	1184	1024	80	32	97.551	813	768	38	4	119.98	ON(+)	ON(-)	4:3
272	VESA-1280x768-120-RB	140.250	1440	1280	80	32	97.396	813	768	35	7	119.73	ON(+)	ON(-)	4:3
273	VESA-1280x800-120-RB	146.250	1440	1280	80	32	101.563	847	800	38	6	119.90	ON(+)	ON(-)	4:3
274	VESA-1280x960-120-RB	175.500	1440	1280	80	32	121.875	1017	960	50	4	119.83	ON(+)	ON(-)	4:3
275	VESA-1280x1024-120-RB	187.250	1440	1280	80	32	130.035	1084	1024	50	7	119.95	ON(+)	ON(-)	4:3
276	VESA-1360x768-120-RB	148.250	1520	1360	80	32	97.533	813	768	37	5	119.96	ON(+)	ON(-)	4:3
277	VESA-1440x1050-120-RB	208.000	1560	1440	80	32	133.333	1112	1050	55	4	119.90	ON(+)	ON(-)	4:3
278	VESA-1440x900-120-RB	182.750	1600	1440	80	32	114.219	953	900	44	6	119.85	ON(+)	ON(-)	4:3
279															
280	VESA-1680X1050-120-RB	245.500	1840	1680	80	32	133.424	1112	1050	53	6	119.98	ON(+)	ON(-)	4:3
281															
282															
283															
284															
285															
286	VESA-1366x768-60-RB	72.0	1500	1366	64	56		800	768	28	3	60.00	ON(+)	ON(-)	
287	VESA-1600x900-60-RB	108.00	1800	1600	96	80		1000	900	96	3	60.00	ON(+)	ON(-)	
288	VESA-2048x1152-60-RB	162.00	2250	2048	96	80		1200	1152	44	3	60.00	ON(+)	ON(-)	
289															
290															
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296															
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TIMING 301-500 VESA CVT Timing

VESA CVT Timing															
Timing	Timing Name	Pixel Rate (M)	Htotal	Hdisplay	Hbp	Hsw	Hf (K)	Vtotal	Vdisplay	Vbp	Vsw	Vf	HSync	VSync	H:Vsize
301	CVT-640X 480-50	19.750	800	640	80	64	24.688	497	480	10	4	49.67	ON(-)	ON(+)	4:3
302	CVT-640X 480-60	23.750	800	640	80	64	29.688	500	480	13	4	59.38	ON(-)	ON(+)	4:3
303	CVT-640X 480-75	30.750	816	640	88	64	37.684	504	480	17	4	74.77	ON(-)	ON(+)	4:3
304	CVT-640X 480-85	35.000	816	640	88	64	42.892	507	480	20	4	84.60	ON(-)	ON(+)	4:3
305	CVT-640X480-60-RB	23.500	800	640	80	32	29.375	494	480	8	4	59.46	ON(+)	ON(-)	4:3
306	CVT-800X 600-50	30.750	992	800	96	72	30.998	621	600	14	4	49.92	ON(-)	ON(+)	4:3
307	CVT-800X 600-60	38.250	1024	800	112	80	37.354	624	600	17	4	59.86	ON(-)	ON(+)	4:3
308	CVT-800X 600-75	49.000	1040	800	120	80	47.115	629	600	22	4	74.91	ON(-)	ON(+)	4:3
309	CVT-800X 600-85	56.750	1056	800	128	80	53.741	633	600	26	4	84.90	ON(-)	ON(+)	4:3
310	CVT-800X600-60-RB	35.500	960	800	80	32	36.979	618	600	12	4	59.84	ON(+)	ON(-)	4:3
311	CVT-1024X768-50	52.000	1312	1024	144	104	39.634	793	768	18	4	49.98	ON(-)	ON(+)	4:3
312	CVT-1024X768-60	63.500	1328	1024	152	104	47.816	798	768	23	4	59.92	ON(-)	ON(+)	4:3
313	CVT-1024X768-75	82.000	1360	1024	168	104	60.294	805	768	30	4	74.90	ON(-)	ON(+)	4:3
314	CVT-1024X768-85	94.500	1376	1024	176	104	68.677	809	768	34	4	84.89	ON(-)	ON(+)	4:3
315	CVT-1024X768-60-RB	56.000	1184	1024	80	32	47.297	790	768	16	4	59.87	ON(+)	ON(-)	4:3
316	CVT-1280X960-50	83.000	1680	1280	200	128	49.405	991	960	24	4	49.85	ON(-)	ON(+)	4:3
317	CVT-1280X960-60	101.250	1696	1280	208	128	59.699	996	960	29	4	59.94	ON(-)	ON(+)	4:3
318	CVT-1280X960-75	130.000	1728	1280	224	136	75.231	1005	960	38	4	74.86	ON(-)	ON(+)	4:3
319	CVT-1280X960-85	148.250	1728	1280	224	136	85.793	1011	960	44	4	84.86	ON(-)	ON(+)	4:3
320	CVT-1280X960-60-RB	85.250	1440	1280	80	32	59.201	988	960	22	4	59.92	ON(+)	ON(-)	4:3
321	CVT-1400X1050-50	100.000	1848	1400	224	144	54.113	1083	1050	26	4	49.97	ON(-)	ON(+)	4:3
322	CVT-1400X1050-60	121.750	1864	1400	232	144	65.317	1089	1050	32	4	59.98	ON(-)	ON(+)	4:3
323	CVT-1400X1050-75	156.000	1896	1400	248	144	82.278	1099	1050	42	4	74.87	ON(-)	ON(+)	4:3
324	CVT-1400X1050-85	179.500	1912	1400	256	152	93.881	1105	1050	48	4	84.96	ON(-)	ON(+)	4:3
325	CVT-1400X1050-60-RB	101.000	1560	1400	80	32	64.744	1080	1050	24	4	59.95	ON(+)	ON(-)	4:3
326	CVT-1600X1200-50	131.500	2128	1600	264	168	61.795	1238	1200	31	4	49.92	ON(-)	ON(+)	4:3
327	CVT-1600X1200-60	161.000	2160	1600	280	168	74.537	1245	1200	38	4	59.87	ON(-)	ON(+)	4:3
328	CVT-1600X1200-75	204.750	2176	1600	288	168	94.095	1255	1200	48	4	74.98	ON(-)	ON(+)	4:3
329	CVT-1600X1200-85	235.000	2192	1600	296	168	107.21	1262	1200	55	4	84.95	ON(-)	ON(+)	4:3
330	CVT-1600X1200-60-RB	130.250	1760	1600	80	32	74.006	1235	1200	29	4	59.92	ON(+)	ON(-)	4:3
331	CVT-1920X1440-50	192.250	2592	1920	336	200	74.171	1484	1440	27	4	49.98	ON(-)	ON(+)	4:3
332	CVT-1920X1440-60	233.500	2608	1920	344	208	89.532	1493	1440	46	4	59.97	ON(-)	ON(+)	4:3
333	CVT-1920X1440-75	298.000	2640	1920	360	208	112.88	1506	1440	59	4	74.95	ON(-)	ON(+)	4:3
334	CVT-1920X1440-60-RB	184.750	2080	1920	80	32	88.822	1481	1440	35	4	59.97	ON(+)	ON(-)	4:3
335	CVT-2048X1536-50	219.000	2768	2048	360	216	79.118	1583	1536	40	4	49.98	ON(-)	ON(+)	4:3
336	CVT-2048X1536-60	267.200	2800	2048	376	224	95.429	1592	1536	49	4	59.94	ON(-)	ON(+)	4:3
337	CVT-2048X1536-60-RB	209.250	2208	2048	80	32	94.769	1580	1536	38	4	59.98	ON(+)	ON(-)	4:3
338	CVT-2560X1920-60-RB	322.200	2720	2560	80	32	118.47	1975	1920	49	4	59.98	ON(+)	ON(-)	4:3
339	CVT-1280X1024-50	88.500	1680	1280	200	128	52.679	1057	1024	23	7	49.84	ON(-)	ON(+)	5:4
340	CVT-1280X1024-60	109.000	1712	1280	216	136	63.668	1063	1024	29	7	59.89	ON(-)	ON(+)	5:4
341	CVT-1280X1024-75	138.750	1728	1280	224	136	80.295	1072	1024	38	7	74.90	ON(-)	ON(+)	5:4
342	CVT-1280X1024-85	159.500	1744	1280	232	136	91.456	1078	1024	44	7	84.84	ON(-)	ON(+)	5:4
343	CVT-1280X1024-60-RB	91.000	1440	1280	80	32	63.194	1054	1024	21	7	59.96	ON(+)	ON(-)	5:4
344	CVT-1280X768-50	65.250	1648	1280	184	128	39.593	793	768	15	7	49.93	ON(-)	ON(+)	15:9
345	CVT-1280X768-60	79.500	1664	1280	192	128	47.776	798	768	20	7	59.87	ON(-)	ON(+)	15:9

346	CVT-1280X768-75	102.250	1696	1280	208	128	60.289	805	768	27	7	74.89	ON(-)	ON(+)	15:9
347	CVT-1280X768-85	117.500	1712	1280	216	136	68.633	809	768	31	7	84.84	ON(-)	ON(+)	15:9
348	CVT-1280X768-60-RB	68.250	1440	1280	80	32	47.396	790	768	13	7	59.99	ON(+)	ON(-)	15:9
349	CVT-848X 480-50	26.000	1056	848	104	80	24.621	497	480	9	5	49.54	ON(-)	ON(+)	16:9
350	CVT-848X 480-60	31.500	1056	848	104	80	29.830	500	480	12	5	59.66	ON(-)	ON(+)	16:9
351	CVT-848X 480-75	41.000	1088	848	120	80	37.684	504	480	16	5	74.77	ON(-)	ON(+)	16:9
352	CVT-848X 480-85	46.750	1088	848	120	80	42.969	507	480	19	5	84.75	ON(-)	ON(+)	16:9
353	CVT-848X480-60-RB	29.750	1008	848	80	32	29.514	494	480	7	5	59.74	ON(+)	ON(-)	16:9
354	CVT-1064X600-50	40.750	1320	1064	128	104	30.871	621	600	13	5	49.71	ON(-)	ON(+)	16:9
355	CVT-1064X600-60	50.500	1352	1064	144	104	37.352	624	600	16	5	59.86	ON(-)	ON(+)	16:9
356	CVT-1064X600-75	65.250	1384	1064	160	104	47.146	629	600	21	5	74.95	ON(-)	ON(+)	16:9
357	CVT-1064X600-85	75.250	1400	1064	168	112	53.750	633	600	25	5	84.91	ON(-)	ON(+)	16:9
358	CVT-1064X600-60-RB	45.250	1224	1064	80	32	36.969	618	600	11	5	59.82	ON(+)	ON(-)	16:9
359	CVT-1280X720-50	60.500	1632	1280	176	128	37.071	744	720	16	5	49.83	ON(-)	ON(+)	16:9
360	CVT-1280X720-60	74.500	1664	1280	192	128	44.772	748	720	20	5	59.86	ON(-)	ON(+)	16:9
361	CVT-1280X720-75	95.750	1696	1280	208	128	56.456	755	720	27	5	74.78	ON(-)	ON(+)	16:9
362	CVT-1280X720-85	110.250	1712	1280	216	136	64.398	759	720	31	5	84.85	ON(-)	ON(+)	16:9
363	CVT-1280X720-60-RB	64.000	1440	1280	80	32	44.444	741	720	14	5	59.98	ON(+)	ON(-)	16:9
364	CVT-1360X768-50	69.000	1744	1360	192	136	39.564	793	768	17	5	49.89	ON(-)	ON(+)	16:9
365	CVT-1360X768-60	84.750	1776	1360	208	136	47.720	798	768	22	5	59.80	ON(-)	ON(+)	16:9
366	CVT-1360X768-75	109.000	1808	1360	224	144	60.288	805	768	29	5	74.89	ON(-)	ON(+)	16:9
367	CVT-1360X768-85	125.250	1824	1360	232	144	68.668	809	768	33	5	84.88	ON(-)	ON(+)	16:9
368	CVT-1360X768-60-RB	72.000	1520	1360	80	32	47.368	790	768	15	5	59.96	ON(+)	ON(-)	16:9
369	CVT-1704X960-50	110.500	2232	1704	264	176	49.507	991	960	23	5	49.96	ON(-)	ON(+)	16:4
370	CVT-1704X960-60	135.250	2264	1704	280	176	59.739	996	960	28	5	59.98	ON(-)	ON(+)	4:3
371	CVT-1704X960-75	172.750	2296	1704	296	176	75.240	1005	960	37	5	74.87	ON(-)	ON(+)	16:9
372	CVT-1704X960-85	198.500	2312	1704	304	184	85.856	1011	960	43	5	84.92	ON(-)	ON(+)	16:9
373	CVT-1704X960-60-RB	110.250	1864	1704	80	32	59.147	988	960	21	5	59.87	ON(+)	ON(-)	16:9
374	CVT-1864X1050-50	132.750	2456	1864	296	192	54.051	1083	1050	25	5	49.91	ON(-)	ON(+)	16:9
375	CVT-1864X1050-60	162.500	2488	1864	312	192	65.314	1089	1050	31	5	59.98	ON(-)	ON(+)	16:9
376	CVT-1864X1050-75	207.500	2520	1864	328	200	82.341	1099	1050	41	5	74.92	ON(-)	ON(+)	16:9
377	CVT-1864X1050-85	238.000	2536	1864	336	200	93.849	1105	1050	47	5	84.93	ON(-)	ON(+)	16:9
378	CVT-1864X1050-60-RB	131.000	2024	1864	80	32	64.723	1080	1050	23	5	59.93	ON(+)	ON(-)	16:9
379	CVT-1920X1080-50	141.500	2544	1920	312	200	55.621	1114	1080	26	5	49.93	ON(-)	ON(+)	16:9
380	CVT-1920X1080-60	173.000	2576	1920	328	200	67.158	1120	1080	32	5	59.96	ON(-)	ON(+)	16:9
381	CVT-1920X1080-75	220.750	2608	1920	344	208	84.643	1130	1080	42	5	74.91	ON(-)	ON(+)	16:9
382	CVT-1920X1080-85	253.200	2624	1920	352	208	96.494	1137	1080	49	5	84.87	ON(-)	ON(+)	4:3
383	CVT-1920X1080-60-RB	138.500	2080	1920	80	32	66.587	1111	1080	24	5	59.93	ON(+)	ON(-)	16:9
384	CVT-2128X1200-50	175.000	2832	2128	352	224	61.794	1238	1200	30	5	49.91	ON(-)	ON(+)	16:9
385	CVT-2128X1200-60	213.750	2864	2128	368	224	74.633	1245	1200	37	5	59.95	ON(-)	ON(+)	16:9
386	CVT-2128X1200-75	272.500	2896	2128	384	224	94.095	1255	1200	47	5	74.98	ON(-)	ON(+)	4:3
387	CVT-2128X1200-85	312.200	2912	2128	392	232	107.21	1262	1200	54	5	84.95	ON(-)	ON(+)	16:9
388	CVT-2128X1200-60-RB	169.500	2288	2128	80	32	74.082	1235	1200	28	5	59.99	ON(+)	ON(-)	16:9
389	CVT-2560X1440-50	256.200	3456	2560	448	272	74.132	1484	1440	36	5	49.95	ON(-)	ON(+)	4:3
390	CVT-2560X1440-60	312.200	3488	2560	464	272	89.507	1493	1440	45	5	59.95	ON(-)	ON(+)	4:3
391	CVT-2560X1440-60-RB	241.500	2720	2560	80	32	88.787	1481	1440	34	5	59.95	ON(+)	ON(-)	16:9
392	CVT-2728X1536-50	291.700	3688	2728	480	288	79.094	1583	1536	39	5	49.96	ON(-)	ON(+)	4:3
393	CVT-2728X1536-60-RB	273.700	2888	2728	80	32	94.771	1580	1536	37	5	59.98	ON(+)	ON(-)	4:3
394	CVT-768X 480-50	23.750	960	768	96	72	24.740	497	480	8	6	49.78	ON(-)	ON(+)	16:10

395	CVT-768X 480-60	28.750	960	768	96	72	29.948	500	480	11	6	59.90	ON(-)	ON(+)	16:10
396	CVT-768X 480-75	36.750	976	768	104	72	37.654	504	480	15	6	74.71	ON(-)	ON(+)	16:10
397	CVT-768X 480-85	42.500	992	768	112	72	42.843	507	480	18	6	84.50	ON(-)	ON(+)	16:10
398	CVT-768X480-60-RB	27.500	928	768	80	32	29.634	494	480	6	6	59.99	ON(+)	ON(-)	16:10
399	CVT-960X 600-50	37.000	1200	960	120	96	30.833	621	600	12	6	49.65	ON(-)	ON(+)	16:10
400	CVT-960X 600-60	45.250	1216	960	128	96	37.212	624	600	15	6	59.63	ON(-)	ON(+)	16:10
401	CVT-960X 600-75	58.750	1248	960	144	96	47.075	629	600	20	6	74.84	ON(-)	ON(+)	16:10
402	CVT-960X 600-85	67.750	1264	960	152	96	53.600	633	600	24	6	84.68	ON(-)	ON(+)	16:10
403	CVT-960X600-60-RB	41.500	1120	960	80	32	37.054	618	600	10	6	59.96	ON(+)	ON(-)	16:10
404	CVT-1152X720-50	54.500	1472	1152	160	112	37.024	744	720	15	6	49.76	ON(-)	ON(+)	16:10
405	CVT-1152X720-60	66.750	1488	1152	168	112	44.859	748	720	19	6	59.97	ON(-)	ON(+)	16:10
406	CVT-1152X720-75	85.750	1520	1152	184	120	56.414	755	720	26	6	74.72	ON(-)	ON(+)	16:10
407	CVT-1152X720-85	99.000	1536	1152	192	120	64.453	759	720	30	6	84.92	ON(-)	ON(+)	16:10
408	CVT-1152X720-60-RB	58.250	1312	1152	80	32	44.398	741	720	13	6	59.92	ON(+)	ON(-)	16:10
409	CVT-1224x768-50	62.250	1576	1224	176	120	39.499	793	768	16	6	49.81	ON(-)	ON(+)	16:10
410	CVT-1224x768-60	76.000	1592	1224	184	120	47.739	798	768	21	6	59.82	ON(-)	ON(+)	16:10
411	CVT-1224x768-75	97.750	1624	1224	200	128	60.191	805	768	28	6	74.77	ON(-)	ON(+)	16:10
412	CVT-1224x768-85	112.500	1640	1224	208	128	68.598	809	768	32	6	84.79	ON(-)	ON(+)	16:10
413	CVT-1224X768-60-RB	65.500	1384	1224	80	32	47.327	790	768	14	6	59.91	ON(+)	ON(-)	16:10
414	CVT-1536x960-50	99.750	2016	1536	240	160	49.479	991	960	22	6	49.93	ON(-)	ON(+)	16:10
415	CVT-1536x960-60	121.250	2032	1536	248	160	59.670	996	960	27	6	59.91	ON(-)	ON(+)	16:10
416	CVT-1536x960-75	155.250	2064	1536	264	160	75.218	1005	960	36	6	74.84	ON(-)	ON(+)	16:10
417	CVT-1536x960-85	178.500	2080	1536	272	160	85.817	1011	960	42	6	84.88	ON(-)	ON(+)	16:10
418	CVT-1536X960-60-RB	100.500	1696	1536	80	32	59.257	988	960	20	6	59.98	ON(+)	ON(-)	16:10
419	CVT-1680x1050-50	119.500	2208	1680	264	176	54.121	1083	1050	24	6	49.97	ON(-)	ON(+)	16:10
420	CVT-1680x1050-60	146.250	2240	1680	280	176	65.290	1089	1050	30	6	59.95	ON(-)	ON(+)	16:10
421	CVT-1680x1050-75	187.000	2272	1680	296	176	82.306	1099	1050	40	6	74.89	ON(-)	ON(+)	16:10
422	CVT-1680x1050-85	214.750	2288	1680	304	176	93.859	1105	1050	46	6	84.94	ON(-)	ON(+)	16:10
423	CVT-1680X1050-60-RB	119.000	1840	1680	80	32	64.674	1080	1050	22	6	59.88	ON(+)	ON(-)	16:10
424	CVT-1728x1080-50	127.250	2288	1728	280	176	55.616	1114	1080	25	6	49.92	ON(-)	ON(+)	16:10
425	CVT-1728x1080-60	155.750	2320	1728	296	184	67.134	1120	1080	31	6	59.94	ON(-)	ON(+)	16:10
426	CVT-1728x1080-75	197.750	2336	1728	304	184	84.653	1130	1080	41	6	74.91	ON(-)	ON(+)	16:10
427	CVT-1728x1080-85	227.000	2352	1728	312	184	96.514	1137	1080	48	6	84.88	ON(-)	ON(+)	16:10
428	CVT-1728X1080-60-RB	125.750	1888	1728	80	32	66.605	1111	1080	23	6	59.95	ON(+)	ON(-)	16:10
429	CVT-1920x1200-50	158.250	2560	1920	320	200	61.816	1238	1200	29	6	49.93	ON(-)	ON(+)	16:10
430	CVT-1920x1200-60	193.250	2592	1920	336	200	74.556	1245	1200	36	6	59.88	ON(-)	ON(+)	16:10
431	CVT-1920x1200-75	245.250	2608	1920	344	208	94.038	1255	1200	46	6	74.93	ON(-)	ON(+)	16:10
432	**CVT-1920x1200-85**	**281.200**	**2624**	**1920**	**35**	**208**	**107.17**	**126**	**1200**	**53**	**6**	**84.92**	**ON(-)**	**ON(+)**	**4:3**
433	CVT-1920X1200-60-RB	154.000	2080	1920	80	32	74.038	1235	1200	27	6	59.95	ON(+)	ON(-)	16:10
434	CVT-2304x1440-50	230.250	3104	2304	400	248	74.178	1484	1440	35	6	49.99	ON(-)	ON(+)	16:10
435	**CVT-2304x1440-60**	**280.700**	**3136**	**2304**	**416**	**248**	**89.509**	**1493**	**1440**	**44**	**6**	**59.95**	**ON(-)**	**ON(+)**	**4:3**
436	CVT-2304X1440-60-RB	218.750	2464	2304	80	32	88.778	1481	1440	33	6	59.94	ON(+)	ON(-)	16:10
437	**CVT-2456x1536-50**	**262.500**	**3320**	**2456**	**432**	**264**	**79.066**	**1583**	**1536**	**38**	**6**	**49.95**	**ON(-)**	**ON(+)**	**4:3**
438	**CVT-2456x1536-60**	**320.000**	**3352**	**2456**	**448**	**264**	**95.465**	**1592**	**1536**	**47**	**6**	**59.97**	**ON(-)**	**ON(+)**	**4:3**
439	CVT-2456X1536-60-RB	247.750	2616	2456	80	32	94.706	1580	1536	36	6	59.94	ON(+)	ON(-)	16:10
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TIMING 501-600 VESA Digital Timing

VESA Digital Timing															
Timing	Timing Name	Pixel Rate (M)	Htotal	Hdisplay	Hbp	Hsw	Hf (K)	Vtotal	Vdisplay	Vbp	Vsw	Vf	HSync	VSync	H:Vsize
501	DVI-640X350-85	31.500	832	640	96	64	37.861	445	350	60	3	85.08	ON(+)	ON(-)	4:3
502	DVI-640X400-85	31.500	832	640	96	64	37.861	445	400	41	3	85.08	ON(-)	ON(+)	4:3
503	DVI-720X400-85	35.500	936	720	108	72	37.927	446	400	42	3	85.04	ON(-)	ON(+)	4:3
504	DVI-640X480-60	25.175	800	640	48	96	31.469	525	480	33	2	59.94	ON(-)	ON(-)	4:3
505	DVI-640X480-72	31.500	832	640	128	40	37.861	520	480	28	3	72.81	ON(-)	ON(-)	4:3
506	DVI-640X480-75	31.500	840	640	120	64	37.500	500	480	16	3	75.00	ON(-)	ON(-)	4:3
507	DVI-640X480-85	36.000	832	640	80	56	43.269	509	480	25	3	85.01	ON(-)	ON(-)	4:3
508	DVI-800X600-56	36.000	1024	800	128	72	35.156	625	600	22	2	56.25	ON(+)	ON(+)	4:3
509	DVI-800X600-60	40.000	1056	800	88	128	37.879	628	600	23	4	60.32	ON(+)	ON(+)	4:3
510	DVI-800X600-72	50.000	1040	800	64	120	48.077	666	600	23	6	72.19	ON(+)	ON(+)	4:3
511	DVI-800X600-75	49.500	1056	800	160	80	46.875	625	600	21	3	75.00	ON(+)	ON(+)	4:3
512	DVI-800X600-85	56.250	1048	800	152	64	53.674	631	600	27	3	85.06	ON(+)	ON(+)	4:3
513	DVI-848X480-60	33.750	1088	848	112	112	31.020	517	480	23	8	60.00	ON(+)	ON(+)	4:3
514	DVI-1024X768-43	44.900	1264	1024	56	176	35.522	408	384	20	4	86.96	ON(+)	ON(+)	4:3
515	DVI-1024X768-60	65.000	1344	1024	160	136	48.363	806	768	29	6	60.00	ON(-)	ON(-)	4:3
516	DVI-1024X768-70	75.000	1328	1024	144	136	56.476	806	768	29	6	70.07	ON(-)	ON(-)	4:3
517	DVI-1024X768-75	78.750	1312	1024	176	96	60.023	800	768	28	3	75.03	ON(+)	ON(+)	4:3
518	DVI-1024X768-85	94.500	1376	1024	208	96	68.677	808	768	36	3	85.00	ON(+)	ON(+)	4:3
519	DVI-1152X864-75	108.000	1600	1152	256	128	67.500	900	864	32	3	75.00	ON(+)	ON(+)	4:3
520	DVI-1280X768-60	68.250	1440	1280	80	32	47.396	790	768	12	7	59.99	ON(+)	ON(-)	4:3
521	DVI-1280X768-60	79.500	1664	1280	192	128	47.776	798	768	20	7	59.87	ON(-)	ON(+)	4:3
522	DVI-1280X768-75	102.250	1696	1280	208	128	60.289	805	768	27	7	74.89	ON(-)	ON(+)	4:3
523	DVI-1280X768-85	117.500	1712	1280	216	136	68.633	809	768	31	7	84.84	ON(-)	ON(+)	4:3
524	DVI-1280X960-60	108.000	1800	1280	312	112	60.000	1000	960	36	3	60.00	ON(+)	ON(+)	4:3
525	DVI-1280X960-85	148.500	1728	1280	224	160	85.938	1011	960	47	3	85.00	ON(+)	ON(+)	4:3
526	DVI-1280X1024-60	108.000	1688	1280	248	112	63.981	1066	1024	38	3	60.02	ON(+)	ON(+)	4:3
527	DVI-1280X1024-75	135.000	1688	1280	248	144	79.976	1066	1024	38	3	75.02	ON(+)	ON(+)	4:3
528	DVI-1280X1024-85	157.500	1728	1280	224	160	91.146	1072	1024	44	3	85.02	ON(+)	ON(+)	4:3
529	DVI-1360X768-60	85.500	1792	1360	256	112	47.712	795	768	18	6	60.02	ON(+)	ON(+)	4:3
530	DVI-1400X1050-60	101.000	1560	1400	80	32	64.744	1080	1050	23	4	59.95	ON(+)	ON(-)	4:3
531	DVI-1400X1050-60	121.750	1864	1400	232	144	65.317	1089	1050	32	4	59.98	ON(-)	ON(+)	4:3
532	DVI-1400X1050-75	156.000	1896	1400	248	144	82.278	1099	1050	42	4	74.87	ON(-)	ON(+)	4:3
533	DVI-1400X1050-85	179.500	1912	1400	256	152	93.881	1105	1050	48	4	84.96	ON(-)	ON(+)	4:3
534	DVI-1440X900-60	88.750	1600	1440	80	32	55.469	926	900	17	6	59.90	ON(+)	ON(-)	4:3
535	DVI-1440X900-60	106.500	1904	1440	232	152	55.935	934	900	25	6	59.89	ON(-)	ON(+)	4:3
536	DVI-1440X900-75	136.750	1936	1440	248	152	70.635	942	900	33	6	74.98	ON(-)	ON(+)	4:3
537	DVI-1440X900-85	157.000	1952	1440	256	152	80.430	948	900	39	6	84.84	ON(-)	ON(+)	4:3
538	DVI-1600X1200-60	162.000	2160	1600	304	192	75.000	1250	1200	46	3	60.00	ON(+)	ON(+)	4:3
539	DVI-1600X1200-65	175.500	2160	1600	304	192	81.250	1250	1200	46	3	65.00	ON(+)	ON(+)	4:3
540	DVI-1600X1200-70	189.000	2160	1600	304	192	87.500	1250	1200	46	3	70.00	ON(+)	ON(+)	4:3
541	DVI-1600X1200-75	202.500	2160	1600	304	192	93.750	1250	1200	46	3	75.00	ON(+)	ON(+)	4:3
542	DVI-1600X1200-85	229.500	2160	1600	304	192	106.25	1250	1200	46	3	85.00	ON(+)	ON(+)	4:3
543	DVI-1680X1050-60	119.000	1840	1680	80	32	64.674	1080	1050	21	6	59.88	ON(+)	ON(-)	4:3
544	DVI-1680X1050-60	146.250	2240	1680	280	176	65.290	1089	1050	30	6	59.95	ON(-)	ON(+)	4:3
545	DVI-1680X1050-75	187.000	2272	1680	296	176	82.306	1099	1050	40	6	74.89	ON(-)	ON(+)	4:3
546	DVI-1680X1050-85	214.750	2288	1680	304	176	93.859	1105	1050	46	6	84.94	ON(-)	ON(+)	4:3
547	DVI-1792X1344-60	204.750	2448	1792	328	200	83.640	1394	1344	46	3	60.00	ON(-)	ON(+)	4:3
548	DVI-1792X1344-75	261.000	2456	1792	352	216	106.27	1417	1344	69	3	75.00	ON(-)	ON(+)	4:3
549	DVI-1856X1392-60	218.250	2528	1856	352	224	86.333	1439	1392	43	3	60.00	ON(-)	ON(+)	4:3
550	DVI-1856X1392-75	288.000	2560	1856	352	224	112.50	1500	1392	104	3	75.00	ON(-)	ON(+)	4:3
551	DVI-1920X1200-60	154.000	2080	1920	80	32	74.038	1235	1200	26	6	59.95	ON(+)	ON(-)	4:3
552	DVI-1920X1200-60	193.250	2592	1920	336	200	74.556	1245	1200	36	6	59.88	ON(-)	ON(+)	4:3
553	DVI-1920X1200-75	245.250	2608	1920	344	208	94.038	1255	1200	46	6	74.93	ON(-)	ON(+)	4:3
554	DVI-1920X1200-85	281.250	2642	1920	352	208	94.038	1262	1200	53	6	74.93	ON(-)	ON(+)	4:3
555	DVI-1920X1440-60	234.000	2600	1920	208	128	90.000	1500	1440	56	3	60.00	ON(-)	ON(+)	4:3
556	DVI-1920X1440-75	297.000	2640	1920	352	224	112.50	1500	1440	56	3	75.00	ON(-)	ON(+)	4:3
557	DVI-2560X1600-60	268.500	2720	2560	80	32	98.713	1646	1600	37	6	59.97	ON(-)	ON(+)	4:3
558	DVI-1920X1200-75	317.000	2080	1920	80	32	152.40	1271	1200	62	6	119.9	ON(-)	ON(+)	4:3
559	DVI-2048X1536-60	330.000	2708	2048	304	192	121.86	2048	1536	46	3	59.50	ON(-)	ON(+)	4:3
560	DVI-1366x768-60	85.500	1792	1366	213	143	47.712	798	768	24	3	59.70	ON(+)	ON(+)	4:3
561	DVI-1920x1080-60	148.500	2200	1920	148	44	67.500	1125	1080	36	5	60.000	ON(+)	ON(+)	4:3
562	DVI-1280x800-60-RB	71.000	1440	1280	80	32	49.306	823	800	14	6	59.910	ON(+)	ON(-)	4:3
563	DVI-1280x800-60	83.500	1680	1280	200	128	49.702	831	800	22	6	59.810	ON(-)	ON(+)	4:3

564	DVI-1280x800-75	106.500	1696	1280	208	128	62.795	838	800	29	6	74.934	ON(-)	ON(+)	4:3
565	DVI-1280x800-85	122.500	1712	1280	216	136	71.554	843	800	34	6	84.880	ON(-)	ON(+)	4:3
566	DVI-3840x2160-30	297.000	4400	3840	296	88	67.500	2250	2160	72	10	30.000	ON(+)	ON(+)	16:9
567															
568															
569															
570	DVI-800x600-120-RB	73.250	960	800	80	32	76.302	636	600	29	4	119.972	ON(+)	ON(-)	4:3
571	DVI-1024x768-120-RB	115.500	1184	1024	80	32	97.551	813	768	38	4	119.989	ON(+)	ON(-)	4:3
572	DVI-1280x768-120-RB	140.250	1440	1280	80	32	97.396	813	768	35	7	119.738	ON(+)	ON(-)	4:3
573	DVI-1280x800-120-RB	146.250	1440	1280	80	32	101.563	847	800	38	6	119.909	ON(+)	ON(-)	4:3
574	DVI-1280x960-120-RB	175.500	1440	1280	80	32	121.875	1017	960	50	4	119.838	ON(+)	ON(-)	4:3
575	DVI-1280x1024-120-RB	187.250	1440	1280	80	32	130.035	1084	1024	50	7	119.958	ON(+)	ON(-)	4:3
576	DVI-1360x768-120-RB	148.250	1520	1360	80	32	97.533	813	768	37	5	119.967	ON(+)	ON(-)	4:3
577	DVI-1440x1050-1200-RB	208.000	1560	1440	80	32	133.333	1112	1050	55	4	119.904	ON(+)	ON(-)	4:3
578	DVI-1440x900-120-RB	182.750	1600	1440	80	32	114.219	953	900	44	6	119.852	ON(+)	ON(-)	4:3
579	DVI-1600x1200-120-RB	268.250	1760	1600	80	32	152.415	1271	1200	64	4	119.917	ON(+)	ON(-)	4:3
580	DVI-1680X1050-120-RB	245.500	1840	1680	80	32	133.424	1112	1050	53	6	119.986	ON(+)	ON(-)	4:3
581															
582															
583	DVI-1920x1200-120-RB	317.000	2080	1920	80	32	152.404	1271	1200	62	6	119.909	ON(+)	ON(-)	4:3
584															
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TIMING 601-800 CTA-861–G Timing

CTA-861-G Timing															
Timing	Timing Name	Pixel Rate (M)	Htotal	Hdisplay	Hbp	Hsw	Hf (K)	Vtotal	Vdisplay	Vbp	Vsw	Vf	HSync	VSync	H:Vsize
601(01)	CTA-640X480P-59 4:3	25.175	800	640	48	96	31.469	525	480	33	2	59.94	ON(-)	ON(-)	4:3
602(01)	CTA-640X480P-60 4:3	25.200	800	640	48	96	31.500	525	480	33	2	60.00	ON(-)	ON(-)	4:3
603(02)	CTA-720X480P-59 4:3	27.000	858	720	60	62	31.469	525	480	30	6	59.94	ON(-)	ON(-)	4:3
604(02)	CTA-720X480P-60 4:3	27.027	858	720	60	62	31.500	525	480	30	6	60.00	ON(-)	ON(-)	4:3
605(03)	CTA-720X480P-59 16:9	27.000	858	720	60	62	31.469	525	480	30	6	59.94	ON(-)	ON(-)	16:9
606(03)	CTA-720X480P-60 16:9	27.027	858	720	60	62	31.500	525	480	30	6	60.00	ON(-)	ON(-)	16:9
607(04)	CTA-1280X720P-59 16:9	74.175	1650	1280	220	40	44.955	750	720	20	5	59.94	ON(+)	ON(+)	16:9
608(04)	CTA-1280X720P-60 16:9	74.250	1650	1280	220	40	45.000	750	720	20	5	60.00	ON(+)	ON(+)	16:9
609(05)	CTA-1920X1080i-59 16:9	74.175	2200	1920	148	44	33.716	562	540	15	5	59.94	ON(+)	ON(+)	16:9
610(05)	CTA-1920X1080i-60 16:9	74.250	2200	1920	148	44	33.750	562	540	15	5	60.00	ON(+)	ON(+)	16:9
611(06)	CTA-1440X480i-59 4:3	13.500*2	858*2	720*2	57*2	62*2	15.734	262	240	15	3	59.94	ON(-)	ON(-)	4:3
612(06)	CTA-1440X480i-60 4:3	13.513*2	858*2	720*2	57*2	62*2	15.749	262	240	15	3	60.00	ON(-)	ON(-)	4:3
613(07)	CTA-1440X480i-59 16:9	13.500*2	858*2	720*2	57*2	62*2	15.734	262	240	15	3	59.94	ON(-)	ON(-)	16:9
614(07)	CTA-1440X480i-60 16:9	13.513*2	858*2	720*2	57*2	62*2	15.749	262	240	15	3	60.00	ON(-)	ON(-)	16:9
615(08)	CTA-1440X 240P-59 4:3	13.500*2	858*2	720*2	57*2	62*2	15.734	263	240	15	3	59.83	ON(-)	ON(-)	4:3
616(08)	CTA-1440X 240P-60 4:3	13.513*2	858*2	720*2	57*2	62*2	15.749	263	240	15	3	59.88	ON(-)	ON(-)	4:3
617(09)	CTA-1440X 240P-59 16:9	13.500*2	858*2	720*2	57*2	62*2	15.734	263	240	15	3	59.83	ON(-)	ON(-)	16:9
618(09)	CTA-1440X 240P-60 16:9	13.513*2	858*2	720*2	57*2	62*2	15.749	263	240	15	3	59.88	ON(-)	ON(-)	16:9
619(10)	CTA-2880X480i-59 4:3	13.500*4	858*4	720*4	57*4	62*4	15.734	262	240	15	3	59.94	ON(-)	ON(-)	4:3
620(10)	CTA-2880X480i-60 4:3	13.513*4	858*4	720*4	57*4	62*4	15.749	262	240	15	3	60.00	ON(-)	ON(-)	4:3
621(11)	CTA-2880X480i-59 16:9	13.500*4	858*4	720*4	57*4	62*4	15.734	262	240	15	3	59.94	ON(-)	ON(-)	16:9
622(11)	CTA-2880X480i-60 16:9	13.513*4	858*4	720*4	57*4	62*4	15.749	262	240	15	3	60.00	ON(-)	ON(-)	16:9
623(12)	CTA-2880X240P-59 4:3	13.500*4	858*4	720*4	57*4	62*4	15.734	263	240	15	3	59.83	ON(-)	ON(-)	4:3
624(12)	CTA-2880X240P-60 4:3	13.513*4	858*4	720*4	57*4	62*4	15.749	263	240	15	3	59.88	ON(-)	ON(-)	4:3
625(13)	CTA-2880X240P-59 16:9	13.500*4	858*4	720*4	57*4	62*4	15.734	263	240	15	3	59.83	ON(-)	ON(-)	16:9
626(13)	CTA-2880X240P-60 16:9	13.513*4	858*4	720*4	57*4	62*4	15.749	262	240	15	3	60.11	ON(-)	ON(-)	16:9
627(14)	CTA-1440X480P-59 4:3	27.000*2	858*2	720*2	60*2	62*2	31.469	525	480	30	6	59.94	ON(-)	ON(-)	4:3
628(14)	CTA-1440X480P-60 4:3	27.027*2	858*2	720*2	60*2	62*2	31.500	525	480	30	6	60.00	ON(-)	ON(-)	4:3
629(15)	CTA-1440X480P-59 16:9	27.000*2	858*2	720*2	60*2	62*2	31.469	525	480	30	6	59.94	ON(-)	ON(-)	16:9
630(15)	CTA-1440X480P-60 16:9	27.027*2	858*2	720*2	60*2	62*2	31.500	525	480	30	6	60.00	ON(-)	ON(-)	16:9
631(16)	CTA-1920X1080P-59 16:9	148.350	2200	1920	148	44	67.432	1125	1080	36	5	59.94	ON(+)	ON(+)	16:9
632(16)	CTA-1920X1080P-60 16:9	148.500	2200	1920	148	44	67.500	1125	1080	36	5	60.00	ON(+)	ON(+)	16:9
633(17)	CTA-720X576P-50 4:3	27.000	864	720	68	64	31.250	625	576	39	5	50.00	ON(-)	ON(-)	4:3
634(18)	CTA-720X576P-50 16:9	27.000	864	720	68	64	31.250	625	576	39	5	50.00	ON(-)	ON(-)	16:9
635(19)	CTA-1280X720P-50 16:9	74.250	1980	1280	220	40	37.500	750	720	20	5	50.00	ON(+)	ON(+)	16:9
636(20)	CTA-1920X1080i-50 16:9	74.250	2640	1920	148	44	28.125	562	540	15	5	50.00	ON(+)	ON(+)	16:9
637(21)	CTA-1440X576i-50 4:3	13.500*2	864*2	720*2	69*2	63*2	15.625	312	288	19	3	50.00	ON(-)	ON(-)	4:3
638(22)	CTA-1440X576i-50 16:9	13.500*2	864*2	720*2	69*2	63*2	15.625	312	288	19	3	50.00	ON(-)	ON(-)	16:9
639(23)	CTA-1440X288P-50 4:3	13.500*2	864*2	720*2	69*2	63*2	15.625	312	288	19	3	50.08	ON(-)	ON(-)	4:3
640(24)	CTA-1440X288P-50 16:9	13.500*2	864*2	720*2	69*2	63*2	15.625	312	288	19	3	50.08	ON(-)	ON(-)	16:9
641(25)	CTA-2880X576i-50 4:3	13.500*4	864*4	720*4	69*4	63*4	15.625	312	288	19	3	50.00	ON(-)	ON(-)	4:3
642(26)	CTA-2880X576i-50 16:9	13.500*4	864*4	720*4	69*4	63*4	15.625	312	288	19	3	50.00	ON(-)	ON(-)	16:9
643(27)	CTA-2880X288P-50 4:3	13.500*4	864*4	720*4	69*4	63*4	15.625	312	288	19	3	50.08	ON(-)	ON(-)	4:3
644(28)	CTA-2880X288P-50 16:9	13.500*4	864*4	720*4	69*4	63*4	15.625	312	288	19	3	50.08	ON(-)	ON(-)	16:9
645(29)	CTA-1440X576P-50 4:3	27.000*2	864*2	720*2	68*2	64*2	31.250	625	576	39	5	50.00	ON(-)	ON(-)	4:3
646(30)	CTA-1440X576P-50 16:9	27.000*2	864*2	720*2	68*2	64*2	31.250	625	576	39	5	50.00	ON(-)	ON(-)	16:9
647(31)	CTA-1920X1080P-50 16:9	148.500	2640	1920	148	44	56.250	1125	1080	36	5	50.00	ON(+)	ON(+)	16:9
648(32)	CTA-1920X1080P-23 16:9	74.175	2750	1920	148	44	26.973	1125	1080	36	5	23.98	ON(+)	ON(+)	16:9
649(32)	CTA-1920X1080P-24 16:9	74.250	2750	1920	148	44	27.000	1125	1080	36	5	24.00	ON(+)	ON(+)	16:9
650(33)	CTA-1920X1080P-25 16:9	74.250	2640	1920	148	44	28.125	1125	1080	36	5	25.00	ON(+)	ON(+)	16:9
651(34)	CTA-1920X1080P-29 16:9	74.175	2200	1920	148	44	33.716	1125	1080	36	5	29.97	ON(+)	ON(+)	16:9
652(34)	CTA-1920X1080P-30 16:9	74.250	2200	1920	148	44	33.750	1125	1080	36	5	30.00	ON(+)	ON(+)	16:9
653(35)	CTA-2880x480P-60 4:3	27.027*4	858*4	720*4	60*4	62*4	31.500	525	480	30	6	60.00	ON(-)	ON(-)	4:3
654(36)	CTA-2880x480P-60 16:9	27.027*4	858*4	720*4	60*4	62*4	31.500	525	480	30	6	60.00	ON(-)	ON(-)	16:9
655(37)	CTA-2880x576P-50 4:3	27.000*4	864*4	720*4	68*4	64*4	31.250	625	576	39	5	50.00	ON(-)	ON(-)	4:3
656(38)	CTA-2880x576P-50 16:9	27.000*4	864*4	720*4	68*4	64*4	31.250	625	576	39	5	50.00	ON(-)	ON(-)	16:9
657(39)	CTA-1920X1080i-50 16:9	72.000	2304	1920	184	168	31.250	625	540	57	5	49.96	ON(+)	ON(+)	16:9
658(40)	CTA-1920X1080i-100 16:9	148.500	2640	1920	148	44	56.250	562	540	15	5	100.0	ON(+)	ON(+)	16:9
659(41)	CTA-1280X720P-100 16:9	148.500	1980	1280	220	40	75.000	750	720	20	5	100.0	ON(+)	ON(+)	16:9
660(42)	CTA-720X576P-100 4:3	54.000	864	720	68	64	62.500	625	576	39	5	100.0	ON(-)	ON(-)	4:3
661(43)	CTA-720X576P-100 16:9	54.000	864	720	68	64	62.500	625	576	39	5	100.0	ON(-)	ON(-)	16:9
662(44)	CTA-720X576i-100 4:3	27.000	864	720	69	63	31.250	312	288	19	3	100.0	ON(-)	ON(-)	4:3
663(45)	CTA-720X576i-100 16:9	27.000	864	720	69	63	31.250	312	288	19	3	100.0	ON(-)	ON(-)	16:9
664(46)	CTA-1920X1080i-120 16:9	148.500	2200	1920	148	44	67.500	562	540	15	5	120.0	ON(+)	ON(+)	16:9

665(47)	CTA-1280X720P-120 16:9	148.500	1650	1280	220	40	90.000	750	720	20	5	120.0	ON(+)	ON(+)	16:9
666(48)	CTA-720X480P-120 4:3	54.054	858	720	60	62	63.000	525	480	30	6	120.0	ON(-)	ON(-)	4:3
667(49)	CTA-720X480P-120 16:9	54.054	858	720	60	62	63.000	525	480	30	6	120.0	ON(-)	ON(-)	16:9
668(50)	CTA-720X480i-120 4:3	27.027	858	720	57	62	31.500	262	240	15	3	120.0	ON(-)	ON(-)	4:3
669(51)	CTA-720X480i-120 16:9	27.027	858	720	57	62	31.500	262	240	15	3	120.0	ON(-)	ON(-)	16:9
670(52)	CTA-720X576P-200 4:3	108.000	864	720	68	64	125.00	625	576	39	5	200.0	ON(-)	ON(-)	4:3
671(53)	CTA-720X576P-200 16:9	108.000	864	720	68	64	125.00	625	576	39	5	200.0	ON(-)	ON(-)	16:9
672(54)	CTA-720X576i-200 4:3	54.000	864	720	69	63	62.500	312	288	19	3	200.0	ON(-)	ON(-)	4:3
673(55)	CTA-720X576i-200 16:9	54.000	864	720	69	63	62.500	312	288	19	3	200.0	ON(-)	ON(-)	16:9
674(56)	CTA-720X480P-240 4:3	108.108	858	720	60	62	126.00	525	480	30	6	240.0	ON(-)	ON(-)	4:3
675(57)	CTA-720X480P-240 16:9	108.108	858	720	60	62	126.00	525	480	30	6	240.0	ON(-)	ON(-)	16:9
676(58)	CTA-720X480i-240 4:3	54.054	858	720	57	62	63.000	262	240	15	3	240.0	ON(-)	ON(-)	4:3
677(59)	CTA-720X480i-240 16:9	54.054	858	720	57	62	63.000	262	240	15	3	240.0	ON(-)	ON(-)	16:9
678(60)	CTA-1280X720P-24 16:9	59.4	3300	1280	220	40	18	750	720	20	5	24	ON(+)	ON(+)	16:9
679(61)	CTA-1280X720P-25 16:9	74.25	3960	1280	220	40	18.75	750	720	20	5	25	ON(+)	ON(+)	16:9
680(62)	CTA-1280X720P-30 16:9	74.25	3300	1280	220	40	22.5	750	720	25	5	30	ON(+)	ON(+)	16:9
681(64)	CTA-1920X1080P-100 16:9	297.000	2640	1920	148	44	112.50	1125	1080	36	5	100.0	ON(+)	ON(+)	16:9
682(63)	CTA-1920X1080P-120 16:9	297.000	2200	1920	148	44	135.00	1125	1080	36	5	120.0	ON(+)	ON(+)	16:9
683(0)	HDMI-3840x2160-23 16:9	296.703	5500	3840	296	88	53.946	2250	2160	72	10	23.976	ON(+)	ON(+)	16:9
684(0)	HDMI-3840x2160-24 16:9	297.000	5500	3840	296	88	54	2250	2160	72	10	24.00	ON(+)	ON(+)	16:9
685(0)	HDMI-3840x2160-25 16:9	297.000	5280	3840	296	88	56.25	2250	2160	72	10	25.00	ON(+)	ON(+)	16:9
686(0)	HDMI-3840x2160-29 16:9	296.703	4400	3840	296	88	67.43	2250	2160	72	10	29.970	ON(+)	ON(+)	16:9
687(0)	HDMI-3840x2160-30 16:9	297.000	4400	3840	296	88	67.5	2250	2160	72	10	30.00	ON(+)	ON(+)	16:9
688(0)	SMPTE-4096x2160-24 16:9	297.000	5500	4096	296	88	54	2250	2160	72	10	24.00	ON(+)	ON(+)	16:9
689(65)	CTA-1280x720p-24 64:27	59.4	3300	1280	220	40	18	750	720	20	5	23.98	ON(+)	ON(+)	64:27:
690(66)	CTA-1280x720p-25 64:27	74.25	3960	1280	220	40	18.75	750	720	20	5	25	ON(+)	ON(+)	64:27:
691(67)	CTA-1280x720p-30 64:27	74.25	3300	1280	220	40	22.5	750	720	20	5	29.97	ON(+)	ON(+)	64:27:
692(68)	CTA-1280x720p-50 64:27	74.25	1980	1280	220	40	37.5	750	720	20	5	50	ON(+)	ON(+)	64:27:
693(69)	CTA-1280x720p-60 64:27	74.25	1650	1280	220	40	45	750	720	20	5	59.94	ON(+)	ON(+)	64:27:
694(70)	CTA-1280x720p-100 64:27	148.5	1980	1280	220	40	75	750	720	20	5	100	ON(+)	ON(+)	64:27:
695(71)	CTA-1280x720p-120 64:27	148.5	1650	1280	220	40	90	750	720	20	5	119.88	ON(+)	ON(+)	64:27:
696(72)	CTA-1920x1080p-24 64:27	74.25	2750	1920	148	44	27	1125	1080	36	5	23.98	ON(+)	ON(+)	64:27:
697(73)	CTA-1920x1080p-25 64:27	74.25	2640	1920	148	44	28.125	1125	1080	36	5	25	ON(+)	ON(+)	64:27:
698(74)	CTA-1920x1080p-30 64:27	74.25	2200	1920	148	44	33.75	1125	1080	36	5	29.97	ON(+)	ON(+)	64:27:
699(75)	CTA-1920x1080p-50 64:27	148.5	2640	1920	148	44	56.25	1125	1080	36	5	50	ON(+)	ON(+)	64:27:
700(76)	CTA-1920x1080p-60 64:27	148.5	2200	1920	148	44	67.5	1125	1080	36	5	59.94	ON(+)	ON(+)	64:27:
701(77)	CTA-1920x1080-100 64:27	297	2640	1920	148	44	112.5	1125	1080	36	5	100	ON(+)	ON(+)	64:27:
702(78)	CTA-1920x1080-120 64:27	297	2200	1920	148	44	135	1125	1080	36	5	119.88	ON(+)	ON(+)	64:27:
703(79)	CTA-1680x720p-24 64:27	59.4	3300	1680	220	40	18	750	720	20	5	23.98	ON(+)	ON(+)	64:27:
704(80)	CTA-1680x720p-25 64:27	59.4	3168	1680	220	40	18.75	750	720	20	5	25	ON(+)	ON(+)	64:27:
705(81)	CTA-1680x720p-30 64:27	59.4	2640	1680	220	40	22.5	750	720	20	5	29.97	ON(+)	ON(+)	64:27:
706(82)	CTA-1680x720p-50 64:27	82.5	2200	1680	220	40	37.5	750	720	20	5	50	ON(+)	ON(+)	64:27:
707(83)	CTA-1680x720p-60 64:27	99	2200	1680	220	40	45	750	720	20	5	59.94	ON(+)	ON(+)	64:27:
708(84)	CTA-1680x720p-100 64:27	165	2000	1680	220	40	82.5	825	720	95	5	100	ON(+)	ON(+)	64:27:
709(85)	CTA-1680x720p-120 64:27	198	2000	1680	220	40	99	825	720	95	5	119.88	ON(+)	ON(+)	64:27:
710(86)	CTA-2560x1080p-24 64:27	99	3750	2560	148	44	26.4	1100	1080	11	5	23.98	ON(+)	ON(+)	64:27:
711(87)	CTA-2560x1080p-25 64:27	90	3200	2560	148	44	28.125	1125	1080	36	5	25	ON(+)	ON(+)	64:27:
712(88)	CTA-2560x1080p-30 64:27	118.8	3520	2560	148	44	33.75	1125	1080	36	5	29.97	ON(+)	ON(+)	64:27:
713(89)	CTA-2560x1080p-50 64:27	185.625	3300	2560	148	44	56.25	1125	1080	36	5	50	ON(+)	ON(+)	64:27:
714(90)	CTA-2560x1080p-60 64:27	198	3000	2560	148	44	66	1100	1080	11	5	59.94	ON(+)	ON(+)	64:27:
717(93)	CTA-3840x2160-24 16:9	297	5500	3840	296	88	54	2250	2160	72	10	23.98	ON(+)	ON(+)	16: 9
718(94)	CTA-3840x2160-25 16:9	297	5280	3840	296	88	56.25	2250	2160	72	10	25	ON(+)	ON(+)	16: 9
719(95)	CTA-3840x2160-30 16:9	297	4400	3840	296	88	67.5	2250	2160	72	10	29.97	ON(+)	ON(+)	16: 9
720(96)	CTA-3840x2160-50 16:9	594	5280	3840	296	88	112.5	2250	2160	72	10	50	ON(+)	ON(+)	16: 9
721(97)	CTA-3840x2160-60 16:9	594	4400	3840	296	88	135	2250	2160	72	10	59.94	ON(+)	ON(+)	16: 9
722(98)	CTA-4096x2160-24 256:135	297	5500	4096	296	88	54	2250	2160	72	10	23.98	ON(+)	ON(+)	256:135
723(99)	CTA-4096x2160-25 256:135	297	5280	4096	128	88	56.25	2250	2160	72	10	25	ON(+)	ON(+)	256:135
724(100)	CTA-4096x2160-30 256:135	297	4400	4096	128	88	67.5	2250	2160	72	10	29.97	ON(+)	ON(+)	256:135
725(101)	CTA-4096x2160-50 256:135	594	5280	4096	128	88	112.5	2250	2160	72	10	50	ON(+)	ON(+)	256:135
726(102)	CTA-4096x2160-60 256:135	594	4400	4096	128	88	135	2250	2160	72	10	59.94	ON(+)	ON(+)	256:135
727(103)	CTA-3840x2160-23 64:27	297	5500	3840	296	88	54	2250	2160	72	10	23.98	ON(+)	ON(+)	64:27:
728(104)	CTA-3840x2160-24 64:27	297	5280	3840	296	88	56.25	2250	2160	72	10	25	ON(+)	ON(+)	64:27:
729(105)	CTA-3840x2160-29 64:27	297	4400	3840	296	88	67.5	2250	2160	72	10	29.97	ON(+)	ON(+)	64:27:
730(106)	CTA-3840x2160-50 64:27	594	5280	3840	296	88	112.5	2250	2160	72	10	50	ON(+)	ON(+)	64:27:
731(107)	CTA-3840x2160-60 64:27	594	4400	3840	296	88	135	2250	2160	72	10	59.94	ON(+)	ON(+)	64:27:
732	CTA-7680x4320-60 64:27	2376	8800	7680	592	176	270	4500	4320	144	20	59.94	ON(+)	ON(+)	64:27
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TIMING 801-850 PC Timing

PC Timing															
Timing	Timing Name	Pixel Rate (M)	Htotal	Hdisplay	Hbp	Hsw	Hf (K)	Vtotal	Vdisplay	Vbp	Vsw	Vf	HSync	VSync	H:Vsize
801	IBM-640X350-70	25.175	800	640	48	96	31.469	449	350	62	2	70.09	ON(+)	ON(-)	4:3
802	IBM-640X480-60	25.175	800	640	48	96	31.469	525	480	33	2	59.94	ON(-)	ON(-)	4:3
803	IBM-720X400-70	28.320	900	720	56	108	31.467	449	400	34	2	70.08	ON(-)	ON(+)	4:3
804	IBM-1024X768-87	44.900	1264	1024	48	176	35.522	409	384	20	4	86.75	ON(+)	ON(+)	4:3
805	MAC-640X480-60	25.175	800	640	48	96	31.469	525	480	33	2	59.94	ON(-)	ON(-)	4:3
806	MAC-640X480-66	30.240	864	640	96	64	35.000	525	480	39	3	66.67	ON(-)	ON(-)	4:3
807	MAC-832X624-75	57.284	1152	834	224	64	49.722	667	624	39	3	74.55	ON(-)	ON(-)	4:3
808	MAC-1024X768-60	63.999	1312	1024	128	96	48.773	813	768	33	6	59.99	ON(-)	ON(-)	4:3
809	MAC-1024X768-75	80.000	1328	1024	176	96	60.241	804	768	30	2	74.93	ON(-)	ON(-)	4:3
810	MAC-1152X870-75	100.000	1456	1152	144	128	68.681	915	870	39	3	75.06	ON(-)	ON(-)	4:3
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TIMING 851-900 SPWG Panel Timing

SPWG Panel Timing															
Timing	Timing Name	Pixel Rate (M)	Htotal	Hdisplay	Hbp	Hsw	Hf (K)	Vtotal	Vdisplay	Vbp	Vsw	Vf	HSync	VSync	H:Vsize
851	XGA-1024X768	56.000	1184	1024	80	32	47.297	790	768	15	4	59.87	ON(-)	ON(-)	4:3
852	SXGA+1400X1050	101.000	1560	1400	80	32	64.744	1080	1050	23	4	59.95	ON(-)	ON(-)	4:3
853	UXGA-1600X1200	130.199	1760	1600	80	32	73.977	1235	1200	28	4	59.90	ON(-)	ON(-)	4:3
854	WXGA 1280X800	71.000	1440	1280	80	32	49.306	823	800	14	6	59.91	ON(-)	ON(-)	4:3
855	WXGA 1440X900	88.750	1600	1440	80	32	55.469	926	900	17	6	59.90	ON(-)	ON(-)	4:3
856	WSXGA+1680X1050	119.000	1840	1680	80	32	64.674	1080	1050	21	6	59.88	ON(-)	ON(-)	4:3
857	WUXGA-1920X1200	154.000	2080	1920	80	32	74.038	1235	1200	26	6	59.95	ON(-)	ON(-)	4:3
858	QXGA-2048X1536	209.200	2208	2048	80	32	94.746	1580	1536	37	4	59.97	ON(-)	ON(-)	4:3
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TIMING 901-1000 DisplayPort- VESA Timing

DP Timing																	
Timing	Timing Name	Pixel Rate (M)	Htotal	Hdisplay	Hbp	Hsw	Hf (K)	Vtotal	Vdisplay	Vbp	Vsw	Vf	HSync	VSync	H:Vsize	Bit rate	Lane
901	DP-640x350-85 (VESA)	31.500	832	640	96	64	37.861	445	350	60	3	85.080	ON(+)	ON(-)	4:3	1.62	1
902	DP-640x400-85 (VESA)	31.500	832	640	96	64	37.861	445	400	41	3	85.080	ON(-)	ON(+)	4:3	1.62	1
903	DP-720x400-85 (VESA)	35.500	936	720	108	72	37.927	446	400	42	3	85.039	ON(-)	ON(+)	4:3	1.62	1
904	DP-640x480-60 (VESA)	25.175	800	640	40	96	31.469	512	480	25	2	59.940	ON(-)	ON(+)	4:3	1.62	1
905	DP-640x480-72 (VESA)	31.500	832	640	120	40	37.861	520	480	20	3	72.809	ON(-)	ON(-)	4:3	1.62	1
906	DP-640x480-75 (VESA)	31.500	840	640	120	64	37.500	500	480	16	3	75.000	ON(-)	ON(-)	4:3	1.62	1
907	DP-640x480-85 (VESA)	36.000	832	640	80	56	43.269	509	480	25	3	85.008	ON(-)	ON(-)	4:3	1.62	1
908	DP-800x600-56 (VESA)	36.000	1024	800	128	72	35.156	625	600	22	2	56.250	ON(+)	ON(+)	4:3	1.62	1
909	DP-800x600-60 (VESA)	40.000	1056	800	88	128	37.879	628	600	23	4	60.317	ON(+)	ON(+)	4:3	1.62	1
910	DP-800x600-72 (VESA)	50.000	1040	800	64	120	48.077	666	600	23	6	72.188	ON(+)	ON(+)	4:3	1.62	1
911	DP-800x600-75 (VESA)	49.500	1056	800	160	80	46.875	625	600	21	3	75.000	ON(+)	ON(+)	4:3	1.62	1
912	DP-800x600-85 (VESA)	56.250	1048	800	152	64	53.674	631	600	27	3	85.061	ON(+)	ON(+)	4:3	2.7	1
913	DP-800x600-120-RB (VESA)	73.250	960	800	80	32	76.302	636	600	29	4	119.972	ON(+)	ON(-)	4:3	2.7	1
914	DP-848x480-60 (VESA)	33.750	1088	848	112	112	31.020	517	480	23	8	60.000	ON(+)	ON(+)	4:3	1.62	1
915	DP-1024x768-43 (VESA)	44.900	1264	1024	56	176	35.522	817	768	20	4	86.957	ON(+)	ON(+)	4:3	1.62	1
916	DP-1024x768-60 (VESA)	65.000	1344	1024	160	136	48.363	806	768	29	6	60.004	ON(-)	ON(-)	4:3	2.7	1
917	DP-1024768-70 (VESA)	75.000	1328	1024	144	136	56.746	806	768	29	6	70.069	ON(-)	ON(-)	4:3	2.7	1
918	DP-1024x768-75 (VESA)	78.750	1312	1024	176	96	60.023	800	768	28	3	75.029	ON(+)	ON(+)	4:3	2.7	1
919	DP-1024x768-85 (VESA)	94.500	1376	1024	208	96	68.677	808	768	36	3	84.997	ON(+)	ON(+)	4:3	1.62	2
920	DP-1024x768-120-RB (V)	115.500	1184	1024	80	32	97.551	813	768	38	4	119.989	ON(+)	ON(-)	4:3	2.7	2
921	DP-1152x864-75 (VESA)	108.000	1600	1152	256	128	67.500	900	864	32	3	75.000	ON(+)	ON(+)	4:3	1.62	2
922	DP-1280x768-60-RB (VESA)	68.250	1440	1280	80	32	47.396	790	768	12	7	59.995	ON(+)	ON(-)	4:3	2.7	1
923	DP-1280x768-60 (VESA)	79.500	1664	1280	192	128	47.776	798	768	20	7	59.870	ON(-)	ON(+)	4:3	2.7	1
924	DP-1280x768-75 (VESA)	102.250	1696	1280	208	128	60.289	805	768	27	7	74.893	ON(-)	ON(+)	4:3	1.62	2
925	DP-1280x768-85 (VESA)	117.500	1712	1280	216	136	68.633	809	768	31	7	84.837	ON(-)	ON(+)	4:3	2.7	2
926	DP-1280x768-120-RB (V)	140.250	1440	1280	80	32	97.396	813	768	35	7	119.738	ON(+)	ON(-)	4:3	2.7	2
927	DP-1280x800-60-RB (VESA)	71.000	1440	1280	80	32	49.306	823	800	14	6	59.910	ON(+)	ON(-)	4:3	2.7	1
928	DP-1280x800-60 (VESA)	83.500	1680	1280	200	128	49.702	831	800	22	6	59.810	ON(-)	ON(+)	4:3	2.7	1
929	DP-1280x800-75 (VESA)	106.500	1696	1280	208	128	62.795	838	800	29	6	74.934	ON(-)	ON(+)	4:3	1.62	2
930	DP-1280x800-85 (VESA)	122.500	1712	1280	216	136	71.554	843	800	34	6	84.880	ON(-)	ON(+)	4:3	2.7	2
931	DP-1280x800-120-RB (V)	146.250	1440	1280	80	32	101.563	847	800	38	6	119.909	ON(+)	ON(-)	4:3	2.7	2
932	DP-1280x960-60 (VESA)	108.000	1800	1280	312	112	60.000	1000	960	36	3	60.000	ON(+)	ON(+)	4:3	1.62	2
933	DP-1280x960-85 (VESA)	148.500	1728	1280	224	160	85.938	1011	960	47	3	85.002	ON(+)	ON(+)	4:3	2.7	2
934	DP-1280x960-120-RB (V)	175.500	1440	1280	80	32	121.875	1017	960	50	4	119.838	ON(+)	ON(-)	4:3	2.7	2
935	DP-1280x1024-60 (VESA)	108.000	1688	1280	248	112	63.981	1066	1024	38	3	60.020	ON(+)	ON(+)	4:3	1.62	2
936	DP-1280x1024-75 (VESA)	135.000	1688	1280	248	144	79.975	1066	1024	38	3	75.025	ON(+)	ON(+)	4:3	2.7	2
937	DP-1280x1024-85 (VESA)	157.500	1728	1280	224	160	91.146	1072	1024	44	3	85.024	ON(+)	ON(+)	4:3	2.7	2
938	DP-1280x1024-120-RB (V)	187.250	1440	1280	80	32	130.035	1084	1024	50	7	119.958	ON(+)	ON(-)	4:3	1.62	4
939	DP-1360x768-60 (VESA)	85.500	1792	1360	256	112	47.712	795	768	18	6	60.015	ON(+)	ON(+)	4:3	2.7	1
940	DP-1360x768-120-RB (V)	148.250	1520	1360	80	32	97.533	813	768	37	5	119.967	ON(+)	ON(-)	4:3	2.7	2
941	DP-1366x768-60 (VESA)	85.500	1792	1366	213	143	47.712	798	768	24	3	59.790	ON(+)	ON(+)	4:3	2.7	1
942	DP-1400x1050-60-RB (V)	101.000	1560	1400	80	32	64.744	1080	1050	23	4	59.948	ON(+)	ON(-)	4:3	1.62	2
943	DP-1400x1050-60 (VESA)	121.750	1864	1400	232	144	65.317	1089	1050	32	4	59.978	ON(-)	ON(+)	4:3	2.7	2
944	DP-1400x1050-75 (VESA)	156.000	1896	1400	248	144	82.278	1099	1050	42	4	74.867	ON(-)	ON(+)	4:3	2.7	2
945	DP-1400x1050-85 (VESA)	179.500	1912	1400	256	152	93.881	1105	1050	48	4	84.960	ON(-)	ON(+)	4:3	2.7	2
946	DP-1440x1050-120-RB (V)	208.000	1560	1440	80	32	133.333	1112	1050	55	4	119.904	ON(+)	ON(-)	4:3	1.62	4
947	DP-1400x900-60-RB (VESA)	88.750	1600	1440	80	32	55.469	926	900	17	6	59.901	ON(+)	ON(-)	4:3	2.7	1
948	DP-1440x900-60 (VESA)	106.500	1904	1440	232	152	55.935	934	900	25	6	59.887	ON(-)	ON(+)	4:3	1.62	2
949	DP-1440x900-75 (VESA)	136.750	1936	1440	248	152	70.635	942	900	33	6	74.984	ON(-)	ON(+)	4:3	2.7	2
950	DP-1440x900-85 (VESA)	157.000	1952	1440	256	152	80.430	948	900	39	6	84.432	ON(-)	ON(+)	4:3	2.7	2
951	DP-1440x900-120-RB (V)	182.750	1600	1440	80	32	114.219	953	900	44	6	119.852	ON(+)	ON(-)	4:3	1.62	4
952	DP-1600x1200-60 (VESA)	162.000	2160	1600	304	192	75.000	1250	1200	46	3	60.000	ON(+)	ON(+)	4:3	2.7	2
953	DP-1600x1200-65 (VESA)	175.500	2160	1600	304	192	81.250	1250	1200	46	3	65.000	ON(+)	ON(+)	4:3	2.7	2
954	DO-1600x1200-70 (VESA)	189.000	2160	1600	304	192	87.500	1250	1200	46	3	70.000	ON(+)	ON(+)	4:3	1.62	4
955	DP-1600x1200-75 (VESA)	202.500	2160	1600	304	192	93.750	1250	1200	46	3	75.000	ON(+)	ON(+)	4:3	1.62	4
956	DP-1600x1200-85 (VESA)	229.500	2160	1600	304	192	106.250	1250	1200	46	3	85.000	ON(+)	ON(+)	4:3	2.7	4
957	DP-1600x1200-120-RB (V)	268.250	1760	1600	80	32	152.415	1271	1200	64	4	119.917	ON(+)	ON(-)	4:3	2.7	4
958	DP-1680x1050-60-RB (V)	119.000	1840	1680	80	32	64.674	1080	1050	21	6	59.883	ON(+)	ON(-)	4:3	2.7	2
959	DP-1680x1050-60 (VESA)	146.250	2240	1680	280	176	65.290	1089	1050	30	6	59.954	ON(-)	ON(+)	4:3	2.7	2
960	DP-1680x1050-75 (VESA)	187.000	2272	1680	296	176	82.306	1099	1050	40	6	74.892	ON(-)	ON(+)	4:3	1.62	4
961	DP-1680x1050-85 (VESA)	214.750	2288	1680	304	176	93.859	1105	1050	46	6	84.941	ON(-)	ON(+)	4:3	1.62	4
962	DP-1680X1050-120-RB (V)	245.500	1840	1680	80	32	133.424	1112	1050	53	6	199.986	ON(+)	ON(-)	4:3	2.7	4
963	DP-1792x1344-60 (VESA)	204.750	2448	1792	328	200	83.640	1394	1344	46	3	60.000	ON(-)	ON(+)	4:3	1.62	4

964	DP-1792x1344-75 (VESA)	261.000	2456	1792	352	216	106.270	1417	1344	69	3	74.997	ON(-)	ON(+)	4:3	2.7	4
965																	
966	DP-1856x1392-60 (VESA)	218.250	2528	1856	352	224	86.333	1439	1392	43	3	59.995	ON(-)	ON(+)	4:3	2.7	4
967																	
968																	
969	DP-1920x1080-60 (VESA)	148.500	2200	1920	148	44	67.500	1125	1080	36	5	60.000	ON(+)	ON(+)	4:3	2.7	2
970	DP-1920x1200-60-RB (V)	154.000	2080	1920	80	32	74.038	1235	1200	26	6	59.950	ON(+)	ON(-)	4:3	2.7	2
971	DP-1920x1200-60 (VESA)	193.250	2592	1920	336	200	74.556	1245	1200	36	6	59.885	ON(-)	ON(+)	4:3	1.62	4
972	DP-1920x1200-75 (VESA)	245.250	2608	1920	344	208	94.038	1255	1200	46	6	74.930	ON(-)	ON(+)	4:3	2.7	4
973																	
974	DP-1920x1200-120-RB (V)	317.000	2080	1920	80	32	152.404	1271	1200	62	6	119.909	ON(+)	ON(-)	4:3	2.7	4
975	DP-1920x1440-60-RB (V)	234.000	2600	1920	208	128	90.000	1500	1440	56	3	60.000	ON(-)	ON(+)	4:3	2.7	4
976																	
977	DP-1920x1440-120-RB (V)	380.500	2080	1920	80	32	182.933	1525	1440	78	4	119.956	ON(+)	ON(-)	4:3	2.7	4
978	DP-2560x1600-60-RB (V)	268.500	2720	2560	80	32	98.713	1646	1600	37	6	59.972	ON(+)	ON(-)	4:3	2.7	4
979																	
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981																	
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TIMING 1001-1200 DisplayPort- CVT Timing

DP Timing																	
Timing	Timing Name	Pixel Rate (M)	Htotal	Hdisplay	Hbp	Hsw	Hf (K)	Vtotal	Vdisplay	Vbp	Vsw	Vf	HSync	VSync	H:Vsize	Bit rate	Lane
1001																	
1002																	
1003	DP-640x480-75 (CVT)	30.75	816	640	88	64	37.684	504	480	17	4	74.769	ON(-)	ON(+)	4:3	1.62	1
1004	DP-640x480-85 (CVT)	35.00	816	640	88	64	42.892	507	480	20	4	84.600	ON(-)	ON(+)	4:3	1.62	1
1005																	
1006	DP-800x600-50 (CVT)	30.75	992	800	96	72	30.998	621	600	14	4	49.916	ON(-)	ON(+)	4:3	1.62	1
1007	DP-800x600-60 (CVT)	38.25	1024	800	112	80	37.354	624	600	17	4	59.861	ON(-)	ON(+)	4:3	1.62	1
1008	DP-800x600-75 (CVT)	49.00	1040	800	120	80	47.115	629	600	22	4	74.905	ON(-)	ON(+)	4:3	1.62	1
1009	DP-800x600-85 (CVT)	56.75	1056	800	128	80	53.741	633	600	26	4	84.898	ON(-)	ON(+)	4:3	2.7	1
1010	DP-800x600-60-RB (CVT)	35.50	960	800	80	32	36.979	618	600	12	4	59.837	ON(+)	ON(-)	4:3	1.62	1
1011	DP-1024x768-50 (CVT)	52.00	1312	1024	144	104	39.634	793	768	18	4	49.980	ON(-)	ON(+)	4:3	1.62	1
1012	DP-1024x768-60 (CVT)	63.50	1328	1024	152	104	47.816	798	768	23	4	59.920	ON(-)	ON(+)	4:3	2.7	1
1013	DP-1024x768-75 (CVT)	82.00	1360	1024	168	104	60.294	805	768	30	4	74.900	ON(-)	ON(+)	4:3	2.7	1
1014	DP-1024x768-85 (CVT)	94.50	1376	1024	176	104	68.677	809	768	34	4	84.892	ON(-)	ON(+)	4:3	1.62	2
1015	DP-1024x768-60-RB (CVT)	56.00	1184	1024	80	32	47.297	790	768	16	4	59.870	ON(+)	ON(-)	4:3	2.7	1
1016	DP-1280x960-50 (CVT)	83.00	1680	1280	200	128	49.405	991	960	24	4	49.853	ON(-)	ON(+)	4:3	2.7	1
1017	DP-1280x960-60 (CVT)	101.25	1696	1280	208	128	59.699	996	960	29	4	59.939	ON(-)	ON(+)	4:3	1.62	2
1018	DP-1280x960-75 (CVT)	130.00	1728	1280	224	136	75.231	1005	960	38	4	74.857	ON(-)	ON(+)	4:3	2.7	2
1019	DP-1280x960-85 (CVT)	148.25	1728	1280	224	136	85.793	1011	960	44	4	84.859	ON(-)	ON(+)	4:3	2.7	2
1020	DP-1280x960-60-RB (CVT)	85.25	1440	1280	80	32	59.201	988	960	22	4	59.920	ON(+)	ON(-)	4:3	2.7	1
1021	DP-1400x1050-50 (CVT)	100.00	1848	1400	224	144	54.113	1083	1050	26	4	49.965	ON(-)	ON(+)	4:3	1.62	2
1022	DP-1400x1050-60 (CVT)	121.75	1864	1400	232	144	65.317	1089	1050	32	4	59.978	ON(-)	ON(+)	4:3	2.7	2
1023	DP-1400x1050-75 (CVT)	156.00	1896	1400	248	144	82.278	1099	1050	42	4	74.867	ON(-)	ON(+)	4:3	2.7	2
1024	DP-1400x1050-85 (CVT)	179.50	1912	1400	256	152	93.881	1105	1050	48	4	84.960	ON(-)	ON(+)	4:3	2.7	2
1025	DP-1400x1050-60-RB (CVT)	101.00	1560	1400	80	32	64.774	1080	1050	24	4	59.948	ON(+)	ON(-)	4:3	1.62	2
1026	DP-1600x1200-50 (CVT)	131.50	2128	1600	264	168	61.795	1238	1200	31	4	49.915	ON(-)	ON(+)	4:3	2.7	2
1027	DP-1600x1200-60 (CVT)	161.00	2160	1600	280	168	74.537	1245	1200	38	4	59.869	ON(-)	ON(+)	4:3	2.7	2
1028	DP-1600x1200-75 (CVT)	204.75	2176	1600	288	168	94.095	1255	1200	48	4	74.976	ON(-)	ON(+)	4:3	1.62	4
1029	DP-1600x1200-85 (CVT)	235.00	2192	1600	296	168	107.208	1262	1200	55	4	84.951	ON(-)	ON(+)	4:3	2.7	4
1030	DP-1600x1200-60-RB (CVT)	130.25	1760	1600	80	32	74.006	1235	1200	29	4	59.924	ON(+)	ON(-)	4:3	2.7	2
1031	DP-1920x1440-50 (CVT)	192.25	2592	1920	336	200	74.171	1484	1440	27	4	49.980	ON(-)	ON(+)	4:3	1.62	4
1032	DP-1920x1440-60 (CVT)	233.50	2608	1920	344	208	89.532	1493	1440	46	4	59.968	ON(-)	ON(+)	4:3	2.7	4
1033																	
1034	DP-1920x1440-60-RB (CVT)	184.75	2080	1920	80	32	88.822	1481	1440	35	4	59.974	ON(+)	ON(-)	4:3	1.62	4
1035	DP-2048x1536-50 (CVT)	219.00	2768	2048	360	216	79.118	1583	1536	40	4	49.980	ON(-)	ON(+)	4:3	2.7	4
1036	DP-2048x1536-60 (CVT)	267.25	2800	2048	376	224	95.446	1592	1536	49	4	59.954	ON(-)	ON(+)	4:3	2.7	4
1037	DP-2048x1536-60-RB (CVT)	209.25	2208	2048	80	32	94.769	1580	1536	38	4	59.980	ON(+)	ON(-)	4:3	1.62	4
1038																	
1039	DP-1280x1024-50 (CVT)	88.50	1680	1280	200	128	52.679	1057	1024	23	7	49.838	ON(-)	ON(+)	5:4	2.7	1
1040	DP-1280x1024-60 (CVT)	109.00	1712	1280	216	136	63.668	1063	1024	29	7	59.895	ON(-)	ON(+)	5:4	2.7	2
1041	DP-1280x1024-75 (CVT)	138.75	1728	1280	224	136	80.295	1072	1024	38	7	74.902	ON(-)	ON(+)	5:4	2.7	2
1042	DP-1280x1024-85 (CVT)	159.50	1744	1280	232	136	91.456	1078	1024	44	7	84.839	ON(-)	ON(+)	5:4	2.7	2
1043	DP-1280x1024-60-RB (CVT)	91.00	1440	1280	80	32	63.194	1054	1024	21	7	59.957	ON(+)	ON(-)	5:4	1.62	2
1044	DP-1280x768-50 (CVT)	65.25	1648	1280	184	128	39.593	793	768	15	7	49.929	ON(-)	ON(+)	15:9	2.7	1
1045	DP-1280x768-60 (CVT)	79.50	1664	1280	192	128	47.776	798	768	20	7	59.870	ON(-)	ON(+)	15:9	2.7	1

1046	DP-1280x768-75 (CVT)	102.25	1696	1280	208	128	60.289	805	768	27	7	74.893	ON(-)	ON(+)	15:9	1.62	2
1047	DP-1280x768-85 (CVT)	117.50	1712	1280	216	136	68.633	809	768	31	7	84.837	ON(-)	ON(+)	15:9	2.7	2
1048	DP-1280x768-60-RB (CVT)	68.25	1440	1280	80	28	47.396	790	768	13	7	59.995	ON(+)	ON(-)	15:9	2.7	1
1049	DP-848x480-50 (CVT)	26.00	1056	848	104	80	24.621	497	480	9	5	49.540	ON(-)	ON(+)	16:9	1.62	1
1050	DP-848x480-60 (CVT)	31.50	1056	848	104	80	29.830	500	480	12	5	59.659	ON(-)	ON(+)	16:9	1.62	1
1051	DP-848x480-75 (CVT)	41.00	1088	848	120	80	37.684	504	480	16	5	74.769	ON(-)	ON(+)	16:9	1.62	1
1052	DP-848x480-85 (CVT)	46.75	1088	848	120	80	42.969	507	480	19	5	84.751	ON(-)	ON(+)	16:9	1.62	1
1053	DP-848x480-60-RB (CVT)	29.75	1008	848	80	32	29.514	494	480	7	5	59.745	ON(+)	ON(-)	16:9	1.62	1
1054	DP-1064x600-50 (CVT)	40.75	1320	1064	128	104	30.871	621	600	13	5	49.712	ON(-)	ON(+)	16:9	1.62	1
1055	DP-1064x600-60 (CVT)	50.50	1352	1064	144	104	37.352	624	600	16	5	59.859	ON(-)	ON(+)	16:9	1.62	1
1056	DP-1064x600-75 (CVT)	65.25	1384	1064	160	104	47.146	629	600	21	5	74.954	ON(-)	ON(+)	16:9	2.7	1
1057	DP-1064x600-85 (CVT)	75.25	1400	1064	168	112	53.750	633	600	25	5	84.913	ON(-)	ON(+)	16:9	2.7	1
1058	DP-1064x600-60-RB (CVT)	45.25	1224	1064	80	32	36.969	618	600	11	5	59.820	ON(+)	ON(-)	16:9	1.62	1
1059	DP-1280x720-50 (CVT)	60.50	1632	1280	176	128	37.071	744	720	16	5	49.827	ON(-)	ON(+)	16:9	2.7	1
1060	DP-1280x720-60 (CVT)	74.50	1664	1280	192	128	44.772	748	720	20	5	59.855	ON(-)	ON(+)	16:9	2.7	1
1061	DP-1280x720-75 (CVT)	95.75	1696	1280	208	128	56.456	755	720	27	5	74.777	ON(-)	ON(+)	16:9	1.62	2
1062	DP-1280x720-85 (CVT)	110.25	1712	1280	216	136	64.398	759	720	31	5	84.846	ON(-)	ON(+)	16:9	2.7	2
1063	DP-1280x720-60 (CVT)	64.00	1440	1280	80	32	44.444	741	720	14	5	59.979	ON(+)	ON(-)	16:9	2.7	1
1064	DP-1360x768-50 (CVT)	69.00	1744	1360	192	136	39.564	793	768	17	5	49.892	ON(-)	ON(+)	16:9	2.7	1
1065	DP-1360x768-60 (CVT)	84.75	1776	1360	208	136	47.720	798	768	22	5	59.799	ON(-)	ON(+)	16:9	2.7	1
1066	DP-1360x768-75 (CVT)	109.00	1808	1360	224	144	60.288	805	768	29	5	74.891	ON(-)	ON(+)	16:9	2.7	2
1067	DP-1360x768-85 (CVT)	125.25	1824	1360	232	144	68.688	809	768	33	5	84.880	ON(-)	ON(+)	16:9	2.7	2
1068	DP-1360x768-60-RB (CVT)	72.00	1520	1360	80	32	47.368	790	768	15	5	59.960	ON(+)	ON(-)	16:9	2.7	1
1069	DP-1704x960-50 (CVT)	110.50	2232	1704	264	176	49.507	991	960	23	5	49.957	ON(-)	ON(+)	16:9	2.7	2
1070	DP-1704x960-60 (CVT)	135.25	2264	1704	280	176	59.739	996	960	28	5	59.979	ON(-)	ON(+)	16:9	2.7	2
1071	DP-1704x960-75 (CVT)	172.75	2296	1704	296	176	75.240	1005	960	37	5	74.865	ON(-)	ON(+)	16:9	2.7	2
1072	DP-1704x960-85 (CVT)	198.50	2312	1704	304	184	85.856	1011	960	43	5	84.922	ON(-)	ON(+)	16:9	1.62	4
1073	DP-1704x960-60-RB (CVT)	110.25	1864	1704	80	32	59.147	988	960	21	5	59.865	ON(+)	ON(-)	16:9	2.7	2
1074	DP-1864x1050-50 (CVT)	132.75	2456	1864	296	192	54.051	1083	1050	25	5	49.909	ON(-)	ON(+)	16:9	2.7	2
1075	DP-1864x1050-60 (CVT)	162.50	2488	1864	312	192	65.314	1089	1050	31	5	59.976	ON(-)	ON(+)	16:9	2.7	2
1076	DP-1864x1050-75 (CVT)	207.50	2520	1864	328	200	82.341	1099	1050	41	5	74.924	ON(-)	ON(+)	16:9	1.62	4
1077	DP-1864x1050-85 (CVT)	238.00	2536	1864	336	200	93.849	1105	1050	47	5	84.931	ON(-)	ON(+)	16:9	2.7	4
1078	DP-1864x1050-60-RB (CVT)	131.00	2024	1864	80	32	64.723	1080	1050	23	5	59.929	ON(+)	ON(-)	16:9	2.7	2
1079	DP-1920x1080-50 (CVT)	141.50	2544	1920	312	200	55.621	1114	1080	26	5	49.929	ON(-)	ON(+)	16:9	2.7	2
1080	DP-1920x1080-60 (CVT)	173.00	2576	1920	328	200	67.158	1120	1080	32	5	59.963	ON(-)	ON(+)	16:9	2.7	2
1081	DP-1920x1080-75 (CVT)	220.75	2608	1920	344	208	84.643	1130	1080	42	5	74.906	ON(-)	ON(+)	16:9	2.7	4
1082	DP-1920x1080-85 (CVT)	253.25	2624	1920	352	208	96.513	1137	1080	49	5	84.884	ON(-)	ON(+)	16:9	2.7	4
1083	DP-1920x1080-60-RB (CVT)	138.50	2080	1920	80	32	66.587	1111	1080	24	5	59.934	ON(+)	ON(-)	16:9	2.7	2
1084	DP-2128x1200-50 (CVT)	175.00	2832	2128	352	224	61.794	1238	1200	30	5	49.914	ON(-)	ON(+)	16:9	2.7	2
1085	DP-2128x1200-60 (CVT)	213.75	2864	2128	368	224	74.633	1245	1200	37	5	59.946	ON(-)	ON(+)	16:9	1.62	4
1086																	
1087	DP-2128x1200-60-RB (CVT)	169.50	2288	2128	80	32	74.082	1235	1200	28	5	59.986	ON(+)	ON(-)	16:9	2.7	2
1088	DP-2560x1440-50 (CVT)	256.25	3456	2560	448	272	74.146	1484	1440	36	5	49.964	ON(-)	ON(+)	16:9	2.7	4
1089																	
1090	DP-2560x1440-60-RB (CVT)	241.50	2720	2560	80	32	88.787	1481	1440	34	5	59.951	ON(+)	ON(-)	16:9	2.7	4
1091																	
1092																	
1093																	
1094	DP-768x480-60 (CVT)	28.75	960	768	96	72	29.948	500	480	11	6	59.896	ON(-)	ON(+)	16:10	1.62	1

1095	DP-768x480-75 (CVT)	36.75	976	768	104	72	37.654	504	480	15	6	74.710	ON(-)	ON(+)	16:10	1.62	1
1096	DP-768x480-85 (CVT)	42.50	992	768	112	72	42.843	507	480	18	6	84.502	ON(-)	ON(+)	16:10	1.62	1
1097	DP-768x480-60-RB (CVT)	27.50	928	768	80	32	29.634	494	480	6	6	59.987	ON(+)	ON(-)	16:10	1.62	1
1098	DP-960x600-50 (CVT)	37.00	1200	960	120	96	30.833	621	600	12	6	49.651	ON(-)	ON(+)	16:10	1.62	1
1099	DP-960x600-60 (CVT)	45.25	1216	960	128	96	37.212	624	600	15	6	59.635	ON(-)	ON(+)	16:10	1.62	1
1100	DP-960x600-75 (CVT)	58.75	1248	960	144	96	47.075	629	600	20	6	74.842	ON(-)	ON(+)	16:10	2.7	1
1101	DP-960x600-85 (CVT)	67.75	1264	960	152	96	53.600	633	600	24	6	84.676	ON(-)	ON(+)	16:10	2.7	1
1102	DP-960x600-60-RB (CVT)	41.50	1120	960	80	32	37.054	618	600	10	6	59.957	ON(+)	ON(-)	16:10	1.62	1
1103	DP-1152x720-50 (CVT)	54.50	1472	1152	160	112	37.024	744	720	15	6	49.764	ON(-)	ON(+)	16:10	2.7	1
1104	DP-1152x720-60 (CVT)	66.75	1488	1152	168	112	44.859	748	720	19	6	59.972	ON(-)	ON(+)	16:10	2.7	1
1105	DP-1152x720-75 (CVT)	85.75	1520	1152	184	120	56.414	755	720	26	6	74.721	ON(-)	ON(+)	16:10	2.7	1
1106	DP-1152x720-85 (CVT)	99.00	1536	1152	192	120	64.453	759	720	30	6	84.918	ON(-)	ON(+)	16:10	1.62	2
1107	DP-1152x720-60-RB (CVT)	58.25	1312	1152	80	32	44.398	741	720	13	6	59.916	ON(+)	ON(-)	16:10	2.7	1
1108	DP-1224x768-50 (CVT)	62.25	1576	1224	176	120	39.499	793	768	16	6	49.809	ON(-)	ON(+)	16:10	2.7	1
1109	DP-1224x768-60 (CVT)	76.00	1592	1224	184	120	47.739	798	768	21	6	59.823	ON(-)	ON(+)	16:10	2.7	1
1110	DP-1224x768-75 (CVT)	97.75	1624	1224	200	128	60.191	805	768	28	6	74.771	ON(-)	ON(+)	16:10	1.62	2
1111	DP-1224x768-85 (CVT)	112.50	1640	1224	208	128	68.598	809	768	32	6	84.793	ON(-)	ON(+)	16:10	2.7	2
1112	DP-1224x768-60-RB (CVT)	65.50	1384	1224	80	32	47.327	790	768	14	6	59.907	ON(+)	ON(-)	16:10	2.7	1
1113	DP-1536x960-50 (CVT)	99.75	2016	1536	240	160	49.479	991	960	22	6	49.929	ON(-)	ON(+)	16:10	1.62	2
1114	DP-1536x960-60 (CVT)	121.25	2032	1536	248	160	59.670	996	960	27	6	59.910	ON(-)	ON(+)	16:10	2.7	2
1115	DP-1536x960-75 (CVT)	155.25	2064	1536	264	160	75.218	1005	960	36	6	74.844	ON(-)	ON(+)	16:10	2.7	2
1116	DP-1536x960-85 (CVT)	178.50	2080	1536	272	160	85.817	1011	960	42	6	84.884	ON(-)	ON(+)	16:10	2.7	2
1117	DP-1536x960-60-RB (CVT)	100.50	1696	1536	80	32	59.257	988	960	20	6	59.977	ON(+)	ON(-)	16:10	1.62	2
1118	DP-1680x1050-50 (CVT)	119.50	2208	1680	264	176	54.121	1083	1050	24	6	49.974	ON(-)	ON(+)	16:10	2.7	2
1119	DP-1680x1050-60 (CVT)	146.25	2240	1680	280	176	65.290	1089	1050	30	6	59.954	ON(-)	ON(+)	16:10	2.7	2
1120	DP-1680x1050-75 (CVT)	187.00	2272	1680	296	176	82.306	1099	1050	40	6	74.892	ON(-)	ON(+)	16:10	1.62	4
1121	DP-1680x1050-85 (CVT)	214.75	2288	1680	304	176	93.859	1105	1050	46	6	84.941	ON(-)	ON(+)	16:10	1.62	4
1122	DP-1680x1050-60-RB (CVT)	119.00	1840	1680	80	32	64.674	1080	1050	22	6	59.883	ON(+)	ON(-)	16:10	2.7	2
1123	DP-1728x1080-50 (CVT)	127.25	2288	1728	280	176	55.616	1114	1080	25	6	49.925	ON(-)	ON(+)	16:10	2.7	2
1124	DP-1728x1080-60 (CVT)	155.75	2320	1728	296	184	67.134	1120	1080	31	6	59.941	ON(-)	ON(+)	16:10	2.7	2
1125	DP-1728x1080-75 (CVT)	197.75	2336	1728	304	184	84.653	1130	1080	41	6	74.914	ON(-)	ON(+)	16:10	1.62	4
1126	DP-1728x1080-85 (CVT)	227.00	2352	1728	312	184	96.514	1137	1080	48	6	84.884	ON(-)	ON(+)	16:10	2.7	4
1127	DP-1728x1080-60-RB (CVT)	125.75	1888	1728	80	32	66.605	1111	1080	23	6	59.950	ON(+)	ON(-)	16:10	2.7	2
1128	DP-1920x1200-50 (CVT)	158.25	2560	1920	320	200	61.816	1238	1200	29	6	49.932	ON(-)	ON(+)	16:10	2.7	2
1129	DP-1920x1200-60 (CVT)	193.25	2592	1920	336	200	74.556	1245	1200	36	6	59.885	ON(-)	ON(+)	16:10	1.62	4
1130	DP-1920x1200-75 (CVT)	245.25	2608	1920	344	208	94.038	1255	1200	46	6	74.930	ON(-)	ON(+)	16:10	2.7	4
1131																	
1132	DP-1920x1200-60-RB (CVT)	154.00	2080	1920	80	32	74.038	1235	1200	27	6	59.950	ON(+)	ON(-)	16:10	2.7	2
1133	DP-2304x1440-50 (CVT)	230.25	3104	2304	400	248	74.178	1484	1440	35	6	49.985	ON(-)	ON(+)	16:10	2.7	4
1134																	
1135	DP-2304x1440-60-RB (CVT)	218.75	2464	2304	80	32	88.778	1481	1440	33	6	59.945	ON(+)	ON(-)	16:10	2.7	4
1136	DP-2456x1536-50 (CVT)	262.50	3320	2456	432	264	79.066	1583	1536	38	6	49.947	ON(-)	ON(+)	16:10	2.7	4
1137																	
1138	DP-2456x1536-60-RB (CVT)	247.75	2616	2456	80	32	94.706	1580	1536	36	6	59.940	ON(+)	ON(-)	16:10	2.7	4
1139																	
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1197																	
1198																	
1199																	
1200																	

TIMING 1200-1300 DisplayPort Timing

DP Timing																	
Timing	Timing Name	Pixel Rate (M)	Htotal	Hdisplay	Hbp	Hsw	Hf (K)	Vtotal	Vdisplay	Vbp	Vsw	Vf	HSync	VSync	H:Vsize	Bit rate	Lane
1201	DP-640x480P-59-4:3	25.175	800	640	48	96	31.469	525	480	33	2	59.94	ON(-)	ON(-)	4:3	1.62	1
1202	DP-640X480P-60-4:3	25.200	800	640	48	96	31.5	525	480	33	2	60	ON(-)	ON(-)	4:3	1.62	1
1203	DP-720x480P-59-4:3	27.000	858	720	60	62	31.469	525	480	30	6	59.94	ON(-)	ON(-)	4:3	1.62	1
1204	DP-720x480P-60-4:3	27.027	858	720	60	62	31.5	525	480	30	6	60	ON(-)	ON(-)	4:3	1.62	1
1205	DP-720x480P-59-16:9	27.000	858	720	60	62	31.469	525	480	30	6	59.94	ON(-)	ON(-)	16:9	1.62	1
1206	DP-720x480P-60-16:9	27.027	858	720	60	62	31.5	525	480	30	6	60	ON(-)	ON(-)	16:9	1.62	1
1207	DP-1280x720P-59-16:9	74.175	1650	1280	220	40	44.955	750	720	20	5	59.939	ON(+)	ON(+)	16:9	2.7	1
1208	DP-1280x720P-60-16:9	74.250	1650	1280	220	40	45	750	720	20	5	60	ON(+)	ON(+)	16:9	2.7	1
1209	DP-1920x1080i-59-16:9	74.175	2200	1920	148	44	33.716	562	540	15	5	59.939	ON(+)	ON(+)	16:9	2.7	1
1210	DP-1920x1080i-60-16:9	74.250	2200	1920	148	44	33.75	562	540	15	5	60	ON(+)	ON(+)	16:9	2.7	1
1211																	
1212																	
1213																	
1214																	
1215																	
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1223																	
1224																	
1225																	
1226																	
1227	DP-1440X480P-59-4:3	54.000	1716	1440	120	124	31.469	525	480	30	6	59.94	ON(-)	ON(-)	4:3	1.62	1
1228	DP-1440X480P-60-4:3	54.054	1716	1440	120	124	31.5	525	480	30	6	60	ON(-)	ON(-)	4:3	1.62	1
1229	DP-1440X480P-59-16:9	54.000	1716	1440	120	124	31.469	525	480	30	6	59.94	ON(-)	ON(-)	16:9	1.62	1
1230	DP-1440X480P-60-16:9	54.054	1716	1440	120	124	31.5	525	480	30	6	60	ON(-)	ON(-)	16:9	1.62	1
1231	DP-1920x1080P-59-16:9	148.350	2200	1920	148	44	67.432	1125	1080	36	5	59.939	ON(+)	ON(+)	16:9	2.7	2
1232	DP-1920x1080P-60-16:9	148.500	2200	1920	148	44	67.5	1125	1080	36	5	60	ON(+)	ON(+)	16:9	2.7	2
1233	DP-720x576P-50-4:3	27.000	864	720	68	64	31.25	625	576	39	5	50	ON(-)	ON(-)	4:3	1.62	1
1234	DP-720x576P-50-16:9	27.000	864	720	68	64	31.25	625	576	39	5	50	ON(-)	ON(-)	16:9	1.62	1
1235	DP-1280x720P-50-16:9	74.250	1980	1280	220	40	37.5	750	720	20	5	50	ON(+)	ON(+)	16:9	2.7	1
1236	DP-1920x1080i-50-16:9	74.250	2640	1920	148	44	28.125	562	540	15	5	50	ON(+)	ON(+)	16:9	2.7	1
1237																	
1238																	
1239																	
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1244																	
1245	DP-1440X576P-50-4:3	54.000	1728	1440	136	128	31.25	625	576	39	5	50	ON(-)	ON(-)	4:3	1.62	1
1246	DP-1440X576P-50-16:9	54.000	1728	1440	136	128	31.25	625	576	39	5	50	ON(-)	ON(-)	16:9	1.62	1
1247	DP-1920x1080P-50-16:9	148.500	2640	1920	148	44	56.25	1125	1080	36	5	50	ON(+)	ON(+)	16:9	2.7	2
1248	DP-1920x1080P-23-16:9	74.175	2750	1920	148	44	26.973	1125	1080	36	5	23.976	ON(+)	ON(+)	16:9	2.7	1
1249	DP-1920x1080P-24-16:9	74.250	2750	1920	148	44	27	1125	1080	36	5	24	ON(+)	ON(+)	16:9	2.7	1
1250	DP-1920x1080P-25-16:9	74.250	2640	1920	148	44	28.125	1125	1080	36	5	25	ON(+)	ON(+)	16:9	2.7	1
1251	DP-1920x1080P-29-16:9	74.175	2200	1920	148	44	33.716	1125	1080	36	5	29.97	ON(+)	ON(+)	16:9	2.7	1
1252	DP-1920x1080P-30-16:9	74.250	2200	1920	148	44	33.75	1125	1080	36	5	30	ON(+)	ON(+)	16:9	2.7	1
1253	DP-2880x480P-60-4:3	108.108	3432	2880	240	248	31.5	525	480	30	6	60	ON(-)	ON(-)	4:3	1.62	1
1254	DP-2880x480P-60-16:9	108.108	3432	2880	240	248	31.5	525	480	30	6	60	ON(-)	ON(-)	16:9	1.62	1
1255	DP-2880x576P-50-4:3	108.000	3456	2880	272	256	31.25	625	576	39	5	50	ON(-)	ON(-)	4:3	1.62	1
1256	DP-2880x576P-50-16:9	108.000	3456	2880	272	256	31.25	625	576	39	5	50	ON(-)	ON(-)	16:9	1.62	1
1257	DP-1920x1080i-50-16:9	72.000	2304	1920	184	168	31.25	625	540	28	3	49.96	ON(+)	ON(+)	16:9	2.7	1
1258	DP-1920x1080i-100-16:9	148.500	2640	1920	148	44	56.25	562	540	15	5	100	ON(+)	ON(+)	16:9	2.7	2
1259	DP-1280x720P-100-16:9	148.500	1980	1280	220	40	75	750	720	20	5	100	ON(+)	ON(+)	16:9	2.7	2
1260	DP-720x576P-100-4:3	54.000	864	720	68	64	62.5	625	576	39	5	100	ON(-)	ON(-)	4:3	1.62	1
1261	DP-720x576P-100-16:9	54.000	864	720	68	64	62.5	625	576	39	5	100	ON(-)	ON(-)	16:9	1.62	1
1262	DP-1440x576i-100-4:3	54.000	1728	1440	138	126	31.25	312	288	19	3	100	ON(-)	ON(-)	4:3	1.62	1
1263	DP-1440x576i-100-16:9	54.000	1728	1440	138	126	31.25	312	288	19	3	100	ON(-)	ON(-)	16:9	1.62	1

1264	DP-1920x1080i-120-16:9	148.500	2200	1920	148	44	67.5	562	540	15	5	120	ON(+)	ON(+)	16:9	2.7	2
1265	DP-1280x720P-120-16:9	148.500	1650	1280	220	40	90	750	720	20	5	120	ON(+)	ON(+)	16:9	2.7	2
1266	DP-720x480P-120-4:3	54.054	858	720	60	62	63	525	480	30	6	120	ON(-)	ON(-)	4:3	2.7	1
1267	DP-720x480P-120-16:9	54.054	858	720	60	62	63	525	480	30	6	120	ON(-)	ON(-)	16:9	2.7	1
1268	DP-1440x480i-120-4:3	54.054	1716	1440	114	124	31.5	262	240	15	3	120	ON(-)	ON(-)	4:3	1.62	1
1269	DP-1440x480i-120-16:9	54.054	1716	1440	114	124	31.5	262	240	15	3	120	ON(-)	ON(-)	16:9	1.62	1
1270	DP-720x576P-200-4:3	108.000	864	720	68	64	125	625	576	39	5	200	ON(-)	ON(-)	4:3	1.62	2
1271	DP-720x576P-200-16:9	108.000	864	720	68	64	125	625	576	39	5	200	ON(-)	ON(-)	16:9	1.62	2
1272	DP-1440x576i-200-4:3	108.000	1728	1440	138	126	62.5	312	288	19	3	200	ON(-)	ON(-)	4:3	1.62	1
1273	DP-1440x576i-200-16:9	108.000	1728	1440	138	126	62.5	312	288	19	3	200	ON(-)	ON(-)	16:9	1.62	1
1274	DP-720x480P-240-4:3	108.108	858	720	60	62	126	525	480	30	6	240	ON(-)	ON(-)	4:3	2.7	2
1275	DP-720x480P-240-16:9	108.108	858	720	60	62	126	525	480	30	6	240	ON(-)	ON(-)	16:9	2.7	2
1276	DP-1440x480i-240-4:3	108.108	1716	1440	114	124	63	262	240	15	3	240	ON(-)	ON(-)	4:3	2.7	1
1277	DP-1440x480i-240-16:9	108.108	1716	1440	114	124	63	262	240	15	3	240	ON(-)	ON(-)	16:9	2.7	1
1278																	
1279																	
1280																	
1281																	
1282																	
1283	DP-3840x2160-23-16:9	296.703	5500	3840	296	88	53.946	2250	2160	72	10	23.976	ON(+)	ON(+)	16:9	2.7	2
1284	DP-3840x2160-24-16:9	297.000	5500	3840	296	88	54	2250	2160	72	10	24.00	ON(+)	ON(+)	16:9	2.7	2
1285	DP-3840x2160-25-16:9	297.000	5280	3840	296	88	56.25	2250	2160	72	10	25.00	ON(+)	ON(+)	16:9	2.7	2
1286	DP-3840x2160-29-16:9	296.703	4400	3840	296	88	67.43	2250	2160	72	10	29.970	ON(+)	ON(+)	16:9	2.7	2
1287	DP-3840x2160-30-16:9	297.000	4400	3840	296	88	67.5	2250	2160	72	10	30.00	ON(+)	ON(+)	16:9	2.7	2
1288	DP-4096x2160-24-16:9	297.000	5500	4096	296	88	54	2250	2160	72	10	24.00	ON(+)	ON(+)	16:9	2.7	2
1289	DP-3840x2160p50 16:9	594.000	5280	3840	296	88	112.5	2250	2160	72	10	50.0	ON(+)	ON(+)	16:9	5.4	4
1290	DP-3840x2160p60 16:9	594.000	4400	3840	296	88	135.0	2250	2160	72	10	60.0	ON(+)	ON(+)	16:9	5.4	4
1291	DP-4096x2160p50	594.000	5280	4096	128	88	112.5	2250	2160	72	10	50.0	ON(+)	ON(+)	32:16.9	5.4	4
1292	DP-4096x2160p60	594.000	4400	4096	128	88	135.0	2250	2160	72	10	60.0	ON(+)	ON(+)	32:16.9	5.4	4
1293																	
1294																	
1295	DP-5120X2880-60 16:9	966.7968	5440	5120	160	64	177.720	2962	2880	69	10	60.0	ON(+)	ON(-)	16:9	5.4	
1296	DP-7680x4320-30 16:9	1400.75	10624	7680	1472	848	131.848	4396	4320	68	5	30	ON(-)	ON(+)	16:09	8.1	4
1297	DP-7680x4320-30 16:9 RB	1030.25	7840	7680	32	80	131.409	4381	4320	53	5	30	ON(+)	ON(-)	16:09	8.1	4
1298	DP-7680x4320-60 16:9 RB	2089.75	7840	7680	80	32	266.55	4443	4320	115	5	59.99	ON(+)	ON(-)	16:09	8.1	4
1299	DP-7680x4320-60 16:9 MTR	2117	8080	7680	240	64	266.22	4367	4320	35	10	60	ON(+)	ON(-)	16:09	8.1	4
1300																	

Notice The Bit Rate and Lane Count of DP Timing are calculated based on the color bits of 8.

DP Timing: Mapping table of color bit, bit rate and lane count

BPC	6	bit	Lanes			
			1	2	4	
Bit-Rate	1.62	G	72	144	288	MBps
	2.7	G	120	240	480	MBps

BPC	8	bit	Lanes			
			1	2	4	
Bit-Rate	1.62	G	54	108	216	MBps
	2.7	G	90	180	360	MBps

BPC	10	bit	Lanes			
			1	2	4	
Bit-Rate	1.62	G	43.2	86.4	172.8	MBps
	2.7	G	72	144	288	MBps

BPC	12	bit	Lanes			
			1	2	4	
Bit-Rate	1.62	G	36	72	144	MBps
	2.7	G	60	120	240	MBps

BPC	16	bit	Lanes			
			1	2	4	
Bit-Rate	1.62	G	27	54	108	MBps
	2.7	G	45	90	180	MBps

TIMING 1301-1400 3D Timing

3D Timing															
Timing	Timing Name	Pixel Rate (M)	Htotal	Hdisplay	Hbp	Hsw	Hf (K)	Vtotal	Vdisplay	Vbp	Vsw	Vf	HSync	VSync	H:Vsize
1301	3D-1920X1080P23-FP	148.35	2750	1920	148	44	53.950	2250	2205	36	5	23.98	ON(+)	ON(+)	16:9
1302	3D-1920X1080P24-FP	148.50	2750	1920	148	44	54.000	2250	2205	36	5	24.00	ON(+)	ON(+)	16:9
1303	3D-1280X720P59-FP	148.35	1650	1280	220	40	89.910	1500	1470	20	5	59.94	ON(+)	ON(+)	16:9
1304	3D-1280X720P60-FP	148.50	1650	1280	220	40	90.000	1500	1470	20	5	60.01	ON(+)	ON(+)	16:9
1305	3D-1280X720P50-FP	148.50	1980	1280	220	40	75.000	1500	1470	20	5	50.01	ON(+)	ON(+)	16:9
1306	3D-1920X1080i59-SSH	74.175	2200	1920	148	44	33.715	562	540	15	5	59.94	ON(+)	ON(+)	16:9
1307	3D-1920X1080i60-SSH	74.250	2200	1920	148	44	33.750	562	540	15	5	60.00	ON(+)	ON(+)	16:9
1308	3D-1920X1080i50-SSH	74.250	2640	1920	148	44	28.125	562	540	15	5	50.00	ON(+)	ON(+)	16:9
1309	3D-1920X1080P23-TB	74.175	2750	1920	148	44	26.972	1125	1080	36	5	23.98	ON(+)	ON(+)	16:9
1310	3D-1920X1080P24-TB	74.250	2750	1920	148	44	27.000	1125	1080	36	5	24.00	ON(+)	ON(+)	16:9
1311	3D-1280X720P59-TB	74.175	1650	1280	220	40	44.954	750	720	20	5	59.94	ON(+)	ON(+)	16:9
1312	3D-1280X720P60-TB	74.250	1650	1280	220	40	45.000	750	720	20	5	60.01	ON(+)	ON(+)	16:9
1313	3D-1280X720P50-TB	74.250	1980	1280	220	40	37.500	750	720	20	5	50.01	ON(+)	ON(+)	16:9
1314	3D-1920X1080i60-FA	148.500	2200	1920	148	44	67.500	1125	1080	15	5/4.5	60.00	ON(+)	ON(+)	16:9
1315	3D-1920X1080i50-FA	148.500	2640	1920	148	44	56.250	1125	1080	15	5/4.5	50.00	ON(+)	ON(+)	16:9
1316	3D-DVI-1080P60-LA	297.000	2200	1920	148	44	135.000	2250	2160	72	10	60.00	ON(+)	ON(+)	16:9
1317	3D-DVI-1080P50-LA	297.000	2640	1920	148	44	112.500	2250	2160	72	10	50.00	ON(+)	ON(+)	16:9
1318	3D-DVI-1080P60-SSF	297.000	4400	3840	296	88	67.500	1125	1080	36	5	60.00	ON(+)	ON(+)	16:9
1319	3D-DVI-1080P50-SSF	297.000	5280	3840	296	88	56.250	1125	1080	36	5	50.00	ON(+)	ON(+)	16:9
1320	3D-1280X720P50-L+D	148.500	1980	1280	220	40	75.000	1500	1470	20	5	50.01	ON(+)	ON(+)	16:9
1321	3D-720X480P60-L+DG	108.108	858	720	60	62	126.000	2100	2055	30	6	60.00	ON(-)	ON(-)	4:3
1322	3D-1440X480i59-FA	27.000	858	720	57	62	31.470	525	480	15	3/2.5	59.94	ON(-)	ON(-)	4:3
1323	3D-1920X1080P59-SSH	148.350	2200	1920	148	44	67.431	1125	1080	36	5	59.94	ON(+)	ON(+)	16:9
1324	3D-1920X1080P60-SSH	148.500	2200	1920	148	44	67.500	1125	1080	36	5	60.00	ON(+)	ON(+)	16:9
1325	3D-1920X1080P50-SSH	148.500	2640	1920	148	44	56.250	1125	1080	36	5	50.00	ON(+)	ON(+)	16:9
1326	3D-1920X1080i59-FP	148.350	2200	1920	148	44	67.430	2250	2228	15	5	29.97	ON(+)	ON(+)	16:9
1327	3D-1920X1080i60-FP	148.500	2200	1920	148	44	67.500	2250	2228	15	5	30.00	ON(+)	ON(+)	16:9
1328	3D-1920X1080i50-FP	148.500	2640	1920	148	44	56.250	2250	2228	15	5	25.00	ON(+)	ON(+)	16:9
1329	3D-1920X1080P60-FP	297.000	2200	1920	148	44	135.000	2250	2205	36	5	60.00	ON(+)	ON(+)	16:9
1330	3D-1920X1080P50-FP	297.000	2640	1920	148	44	112.500	2250	2205	36	5	50.00	ON(+)	ON(+)	16:9
1331	3D-1920X1080P60-LA	297.000	2200	1920	148	44	135.000	2250	2160	72	10	60.00	ON(+)	ON(+)	16:9
1332	3D-1920X1080P50-LA	297.000	2640	1920	148	44	112.500	2250	2160	72	10	50.00	ON(+)	ON(+)	16:9
1333	3D-1920X1080P60-SSF	297.000	4400	3840	296	88	67.500	1125	1080	36	5	60.00	ON(+)	ON(+)	16:9
1334	3D-1920X1080P50-SSF	297.000	5280	3840	296	88	56.250	1125	1080	36	5	50.00	ON(+)	ON(+)	16:9
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TIMING 1401-1422 3G SDI Timing

3G SDI Timing															
Timing	Timing Name	Pixel Rate (M)	Htotal	Hdisplay	Hbp	Hsw	Hf (K)	Vtotal	Vdisplay	Vbp	Vsw	Vf	HSync	VSync	H:Vsize
1401	SDI_SD_480I	13.500	858	720	57	62	15.734	262	240	15	3	59.94	ON(-)	ON(-)	4:3
1402	SDI_SD_576I	13.500	864	720	69	63	15.625	312	288	19	3	50.00	ON(-)	ON(-)	4:3
1403	SDI_HD_720P60	74.250	1650	1280	220	40	45.000	750	720	20	5	60.01	ON(+)	ON(+)	16:9
1404	SDI_HD_1080I60	74.250	2200	1920	148	44	33.750	562	540	15	5	60.00	ON(+)	ON(+)	16:9
1405	SDI_HD_720P50	74.250	1980	1280	220	40	37.500	750	720	20	5	50.01	ON(+)	ON(+)	16:9
1406	SDI_HD_1080I50	74.250	2640	1920	148	44	28.125	562	540	15	5	50.00	ON(+)	ON(+)	16:9
1407	SDI_HD_1080P30	74.250	2200	1920	148	44	33.750	1125	1080	36	5	30.00	ON(+)	ON(+)	16:9
1408	SDI_HD_1080P25	74.250	2640	1920	148	44	28.125	1125	1080	36	5	25.00	ON(+)	ON(+)	16:9
1409	SDI_HD_1080P24	74.250	2750	1920	148	44	27.000	1125	1080	36	5	24.00	ON(+)	ON(+)	16:9
1410	SDI_HD_1080I59	74.175	2200	1920	148	44	33.715	562	540	15	5	59.94	ON(+)	ON(+)	16:9
1411	SDI_HD_720P59	74.175	1650	1280	220	40	44.954	750	720	20	5	59.94	ON(+)	ON(+)	16:9
1412	SDI_HD_1080P23	74.175	2750	1920	148	44	26.972	1125	1080	36	5	23.98	ON(+)	ON(+)	16:9
1413	SDI_HD_1080P29	74.175	2200	1920	148	44	33.715	1125	1080	36	5	29.97	ON(+)	ON(+)	16:9
1414	SDI_3GA_1080P50	148.500	2640	1920	148	44	56.250	1125	1080	36	5	50.00	ON(+)	ON(+)	16:9
1415	SDI_3GA_1080P59	148.350	2200	1920	148	44	67.431	1125	1080	36	5	59.94	ON(+)	ON(+)	16:9
1416	SDI_3GA_1080P60	148.500	2200	1920	148	44	67.500	1125	1080	36	5	60.00	ON(+)	ON(+)	16:9
1417	SDI_3GB_1080P50	148.500	2640	1920	148	44	56.250	1125	1080	36	5	50.00	ON(+)	ON(+)	16:9
1418	SDI_3GB_1080P59	148.350	2200	1920	148	44	67.431	1125	1080	36	5	59.94	ON(+)	ON(+)	16:9
1419	SDI_3GB_1080P60	148.500	2200	1920	148	44	67.500	1125	1080	36	5	60.00	ON(+)	ON(+)	16:9
1420	SDI_3GB_D_1080P50	148.500	2640	1920	148	44	56.250	1125	1080	36	5	50.00	ON(+)	ON(+)	16:9
1421	SDI_3GB_D_1080P59	148.350	2200	1920	148	44	67.431	1125	1080	36	5	59.94	ON(+)	ON(+)	16:9
1422	SDI_3GB_D_1080P60	148.500	2200	1920	148	44	67.500	1125	1080	36	5	60.00	ON(+)	ON(+)	16:9
1423	SDI_HD_1080_PSF30	74.250	2200	1920	148	44	33.750	562	540	15	5	60.00	ON(+)	ON(+)	16:9
1424	SDI_HD_1080_PSF29	74.175	2200	1920	148	44	33.715	562	540	15	5	59.94	ON(+)	ON(+)	16:9
1425	SDI_HD_1080_PSF25	74.250	2640	1920	148	44	28.125	562	540	15	5	50.00	ON(+)	ON(+)	16:9
1426	SDI_HD_1080_PSF24	74.250	2750	1920	148	44	27.000	562	540	15	5	48.00	ON(+)	ON(+)	16:9
1427	SDI_HD_1080_PSF23	74.175	2750	1920	148	44	26.972	562	540	15	5	47.9	ON(+)	ON(+)	16:9
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Appendix B Default Patterns List

The system has built in approximately 300 patterns scattered in pattern 1~900. There are some spaces left for use in the future.

No.	Classification
1 ~ 100	Chroma Default Pattern
101 ~ 200	BASIC Pattern
201 ~ 250	TV Pattern
251 ~ 300	Colorful Pattern
301 ~ 350	Linearity Pattern
351 ~ 400	Resolution Pattern
401 ~ 450	Optical Pattern
501 ~ 550	High Definition Pattern
551 ~ 600	Dynamic Pattern
601 ~ 650	Audio Pattern
651 ~ 700	LCM Pattern
701 ~ 800	Information Pattern
801 ~ 900	BMP Pattern
901 ~ 1000	3D Pattern
1001~1050	Energy Star Pattern
1051 ~ 2000	Empty
2001 ~ 5000	User Storage

Notice The pattern no. listed in gray indicates it is invalid now, and will be supported in the future.

PATTERN 1 ~ 100:

Default Pattern							
Pattern	**Name**	**Test Function**	**Description**	**Pattern**	**Name**	**Test Function**	**Description**
1	GENERAL-1	General	Color	**51**	X-HATCH/V8	Linear (square)	8 vertical grids
2	GENERAL-1R	General	Reverse Color	**52**	X-HATCH/V10	Linear (square)	10 vertical grids
3	GENERAL-2	General	Mono	**53**	X-HATCH/V12	Linear (square)	12 vertical grids
4	GENERAL-2R	General	Reverse Mono	**54**	X-HATCH/V9E	Linear (square)	9 vertical + sides
5	SMPTE RP-133	General	SMPTE Type	**55**	X-HATCH/V12E	Linear (square)	12 vertical + sides
6				**56**	LINEARITY/ 8	Linear	8V by 10H
7				**57**	LINEARITY/ 9	Linear	9V by 12H
8				**58**	LINEARITY/ 10	Linear	10V by 13H
9				**59**	LINEARITY/ 12	Linear	12V by 16H
10				**60**	X-HATCH/1612	Linear (square)	12V by 16H
11	BLACK	Size/Position	All Black	**61**	H.V.-STATIC	High voltage	Static
12	RASTER	Size/Position	RASTER	**62**	H V-BLINK	High voltage	Dynamic
13	BORDER	Size/Position	BORDER	**63**	CROSS TALK	Interference	Video/deviation interference
14	CENTER-1	Size/Position	4 sides & center lines	**64**	PAIRING	Interlace	Interlaced scanning location
15	CENTER-2	Size/Position	4 corners & center marks	**65**	FLOWING GRID		
16	SIZE	Size/Position	4 sides & diagonal lines	**66**	RESOLUTION-1	Res./converge	Lines
17	PRE-TILT	Size/Position	Pre-tilt adjustment	**67**	RESOLUTION-2	Res./converge	Lines + density
18				**68**	MOTION-1		Dynamic picture
19				**69**	PICTURE		Natural picture
20	WHITE-LCD			**70**			
21	R PURITY	Color	R purity	**71**	CHARAC/H-5	Res./converge	5*7 "H"
22	G PURITY	Color	G purity	**72**	CHARAC/H-5R	Res./converge	5*7 "H" (reverse)
23	B PURITY	Color	B purity	**73**	CHARAC/CX-5	Res./converge	5*7 "CX"
24	RGB DELAY	Color	RGB delay	**74**	CHARAC/CX-5R	Res./converge	5*7 "CX" (reverse)
25	COLOR-GRID			**75**	CHARAC/ME	Res./converge	11*11 "ME"
26	RGB CHECK	Color	RGB connection/ operation	**76**	CHARAC/ME-R	Res./converge	11*11 "ME" (reverse)
27	16 COLOR	Color	16 -color check	**77**	ROOT WEAVE	Res./converge	6*6 root
28	EGA 64 COLOR	Color	64-color check	**78**	CHARAC/16X15	Res./converge	16*15 "[illegible]", Hui
29	256 COLOR	Color	256-color check	**79**	CHARAC/24X24	Res./converge	16*15 "[illegible]", Ying
30	RGB-OVERLAP			**80**	CHARAC/@	Res./converge	5*7 "@"
31	R-B CONVERGE	CONVERGENCE	R,B Convergence	**81**	CHARAC/H-7	Res./converge	7*9 "H"
32	R-G CONVERGE	CONVERGENCE	R,G Convergence	**82**	CHARAC/H-7R	Res./converge	7*9 "H" (reverse)
33	B-G CONVERGE	CONVERGENCE	B,G Convergence	**83**	CHARAC/CX-7	Res./converge	7*9 "CX"
34	RGB X-HATCH	CONVERGENCE	R,G,B Convergence	**84**	CHARAC/CX-7R	Res./converge	7*9 "CX" (reverse)
35	CG1	CONVERGENCE	R,G,B Convergence	**85**	TEXT-5X7	Res./converge	5*7 text
36	COLORBAR			**86**	TEXT-7X9	Res./converge	7*9 text
37	TV-PATTERN			**87**	TV-SMPTE BAR	TV color	SMPTE Color Bar (TV only)
38	OVERLAP-MASK			**88**	TV-MULTBURST	TV frequency response	Sine Wave (TV only)
39	MOTION-GRAY			**89**	TV-PULSE & BAR	TV Y/C distortion	T &Modulated T Pulse (TV)
40	SCROLL-PTN			**90**			
41	WHITE	Luminance/gray	Full brightness	**91**	TEST-TTL/ECL	System self-diagnostics	
42	5-MOSAIC	Luminance/gray	5 bright squares	**92**			
43	5-DISC	Luminance/gray	5 bright circles	**93**			
44	CONTRAST	Luminance/gray	5% contrast	**94**	TEST-LINE1+2	System self-diagnostics	
45	4 GRAYS	Luminance/gray	TTL/ECL grayscale	**95**	TEST-BLANK	System self-diagnostics	
46	10 GRAYS	Luminance/gray	10 grayscale	**96**	TEST-LINES	System self-diagnostics	
47	16 GRAYS	Luminance/gray	16 grayscale	**97**	TEST-RASTER	System self-diagnostics	
48	32 GRAYS	Luminance/gray	32 grayscale	**98**	TEST-C/BLACK	System self-diagnostics	
49	256 GRAYS	Luminance/gray	256 grayscale	**99**	TEST-C/WHITE	System self-diagnostics	
50	64GRAYS RGBW	Luminance/gray	64 color scale	**100**	TEST-C/BLINK	System self-diagnostics	

PATTERN 101 ~ 200:

BASIC Pattern							
Pattern	**Name**	**Test Function**	**Description**	**Pattern**	**Name**	**Test Function**	**Description**
101	W 100%	Luminance	100% luminance	**151**	CHECK BOARD4X4-R	Contrast	Checkboard
102	W 90%	Luminance	90% luminance	**152**	8 GRAY SCALE-W	Luminance linearity	Grayscale
103	W 80%	Luminance	80% luminance	**153**			
104	W 70%	Luminance	70% luminance	**154**			
105	W 60%	Luminance	60% luminance	**155**			
106	W 50%	Luminance	50% luminance	**156**			
107	W 40%	Luminance	40% luminance	**157**			
108	W 30%	Luminance	30% luminance	**158**			
109	W 20%	Luminance	20% luminance	**159**			
110	W 10%	Luminance	10% luminance	**160**			
111	W 0%	Luminance	0% luminance	**161**			
112				**162**			
113				**163**			
114				**164**			
115				**165**			
116				**166**			
117				**167**			
118				**168**			
119				**169**			
120	5 STAIR CASE	Luminance linearity	6 grayscale	**170**			
121	10 STAIR CASE	Luminance linearity	11 grayscale	**171**			
122	16 STAIR CASE	Luminance linearity	17 grayscale	**172**			
123	64 STAIR CASE	Luminance linearity	65 grayscale	**173**			
124	255 STAIR CASE	Luminance linearity	256 grayscale	**174**			
125				**175**			
126				**176**			
127				**177**			
128				**178**			
129				**179**			
130	WINDOW	Low-frequency interference	Width H/3 Height V/3 White blocks	**180**			
131	WHITE TUNE	Tune Gamma	White tune blocks	**181**			
132	CHECK BOARD4X4	Contrast	Checkboard	**182**			
133	CHECK BOARD6X6	Contrast	Checkboard	**183**			
134	CHECK BOARD8X8	Contrast	Checkboard	**184**			
135	CHECK BOARD16X16	Contrast	Checkboard	**185**			
136	CHECK BOARD5X5	Contrast	Checkboard	**186**			
137	CHECK BOARD32X36	Contrast	Checkboard	**187**			
138				**188**			
139				**189**			
140	16 GRAY	Luminance/gray	16 grayscale	**190**			
141	32 GRAY	Luminance/gray	32 grayscale	**191**			
142	64 GRAY	Luminance/gray	64 grayscale	**192**			
143	128 GRAY	Luminance/gray	128 grayscale	**193**			
144	256 GRAY	Luminance/gray	256 grayscale	**194**			
145	512 GRAY	Luminance/gray	512 grayscale	**195**			
146	1024 GRAY	Luminance/gray	1024 grayscale	**196**			
147	2048 GRAY	Luminance/gray	2048 grayscale	**197**			
148	4096 GRAY	Luminance/gray	4096 grayscale	**198**			
149	256 GRAY GAMMA	Luminance/gray	256 grayscale	**199**			
150	1024 GRAY GAMMA	Luminance/gray	1024 grayscale	**200**			

PATTERN 201 ~ 300:

TV Pattern & Colorful Pattern							
Pattern	**Name**	**Test Function**	**Description**	**Pattern**	**Name**	**Test Function**	**Description**
201	100/7.5/75/7.5	Color/luminance	Color Bar	**251**	RGB & XVYCC	Color Space	
202	100/7.5/100/7.5	Color/luminance	Color Bar	**252**	4096 GRAY FULL	Deep Color	
203	75/0/75/0	Color/luminance	Color Bar	**253**	DEEP COLOR 1	Deep Color	
204	100/0/75/0	Color/luminance	Color Bar	**254**	TRUE BAR1	True Color	
205	100/0/100/0	Color/luminance	Color Bar	**255**	TRUE BAR2	True Color	
206	100/0/100/25	Color/luminance	Color Bar	**256**	TRUE BAR3	True Color	
207	75/0/100/25	Color/luminance	Color Bar	**257**	TRUE GRAY BAR	True Color	
208	75/7.5/75/7.5	Color/luminance	Color Bar	**258**	TRUE GRAY BAR1	True Color	
209				**259**	TRUE SCALE	True Color	
210				**260**			
211	SMPTE RP-133	Synthesis	SMPTE suggestion	**261**	PRIMARY COLOR	True Color	
212				**262**	STANDARD COLOR	Standard color	
213	TV -SMPTE BAR	Contrast /Saturation	SMPTE suggestion	**263**	COLOR SCALE		
214	PC SMPTE	Synthesis		**264**	COLOR BLEND RAMP	Blend	
215	PHILIPS	Synthesis		**265**	COLOR BLEND SCAL	Blend	
216	MONO SCOPE			**266**	COLOR SPECTRUM	Blend	
217				**267**			
218	TV-MULTIBURST	Frequency response		**268**	COLOR SATURATION	Saturation	
219				**269**			
220				**270**			
221				**271**			
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250				**300**			

PATTERN 301 ~ 400:

Linearity Pattern & Resolution Pattern							
Pattern	**Name**	**Test Function**	**Description**	**Pattern**	**Name**	**Test Function**	**Description**
301	CONVERGENCE	Convergence	Circle+grid+dot	**351**	CHARAC/@	Resolution / Focusing	"@" character filled in screen
302	CIRCLE & CENTER	Convergence	Circle+center	**352**	SCALED FONT	Resolution / Focusing	Different font style character
303	10 C-CIRCLES	Convergence	Concentric circle	**353**	FOCUS ME	Resolution / Focusing	"ME" character filled in five blocks
304	CENTER+SCALE	Position/ OVERSCAN	Center line with scale	**354**	RESOLUTION 3	Resolution / Focusing	Line
305	RECT SCALE	Position/ OVERSCAN	Center line with scale	**355**	RESOLUTION 4	Resolution / Focusing	Line+dot
306	CROSS CENTER	Position/ OVERSCAN	Rectangular with scale	**356**	RANDOM	EYE PATTERN	Noise
307				**357**			
308				**358**			
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350				**400**			

PATTERN 501 ~ 600:

High Definition Pattern & Dynamic Pattern							
Pattern	**Name**	**Test Function**	**Description**	**Pattern**	**Name**	**Test Function**	**Description**
501	SDTV BMP(4:3)	Synthesis		**551**	MOTION BAR		Motion picture
502	HDTV BMP(16:9)	Synthesis		**552**	H WINDOW		Motion picture
503	8 GRAY SCALE	Luminance linearity	Grayscale	**553**	V WINDOW		Motion picture
504	WHITE WINDOWS	Contrast	White box	**554**			
505	BLACK WINDOWS	Contrast	Black box	**555**	MOTION-3		Motion picture
506	SDTV BLACK&WHITE	Luminance	Black box	**556**	MOTION-4		Motion picture
507	HDTV BLACK&WHITE	Luminance	Black box	**557**	MOTION-5		Motion picture
508	CHECK BOARD5X5	Contrast	Checkboard	**558**	FLYING BALL		Motion picture
509				**559**	SCROLL-HBAR		Motion picture
510				**560**	SCROLL-VBAR		Motion picture
511				**561**	LIPSYNC-MOTION	Test lipsync function	Motion picture
512				**562**			
513				**563**			
514				**564**			
515				**565**			
516				**566**			
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520	4K2k-MONO HDCP			**570**			
521	4K2K-MONO			**571**			
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PATTERN 601 ~ 700:

Audio Pattern & LCM Pattern							
Pattern	**Name**	**Test Function**	**Description**	**Pattern**	**Name**	**Test Function**	**Description**
601	AUDIO1	TONE 100HZ	AUDIO	**651**	POLYGON-1		
602	AUDIO2	TONE 200HZ	AUDIO	**652**	POLYGON-2		
603	AUDIO3	TONE 500HZ	AUDIO	**653**	POLYGON-3		
604	AUDIO4	TONE 1000HZ	AUDIO	**654**	POLYGON-4	LCM physical curve	Converge lines to center
605	AUDIO5	TONE 2000HZ	AUDIO	**655**	POLYGON-5	LCM physical curve	Converge rectangular to center
606	AUDIO6	TONE 5000HZ	AUDIO	**656**			
607	AUDIO7	TONE 10000HZ	AUDIO	**657**			
608	AUDIO8	TONE 20000HZ	AUDIO	**658**			
609	AUDIO9	SWEEP10 – 20000HZ	AUDIO	**659**			
610	AUDIO10	SWEEP 20000-10HZ	AUDIO	**660**			
611	AUDIO11	SWEEP 10-20000-10HZ	AUDIO	**661**	SUB PIXEL 1	LCM PIXEL	
612	AUDIO VOL SWEEP1	SWEEP VOL 0-2000-0 MV		**662**	SUB PIXEL 2	LCM PIXEL	
613	AUDIO L/R/LR	2 SEC L – 2SEC R – 2SEC L/R		**663**	SUB PIXEL 3	LCM PIXEL	
614	AUDIO VOL SWEEP2	SWEEP L VOL 0-2000-0 MV SWEEP R VOL2000-0-2000 MV		**664**	SUB PIXEL 4	LCM PIXEL	
615	AUDIO SONG 1	MUSIC		**665**	SUB PIXEL 5	LCM PIXEL	
616	AUDIO SONG 2	MUSIC		**666**	SUB PIXEL 6	LCM PIXEL	
617	AUDIO SCROLL 8CH	SCROLL 8 CHANNEL		**667**	SUB PIXEL 7	LCM PIXEL	
618	AUDIO VOL ADJUST	MANUAL ASJUST VOLUME		**668**	SUB PIXEL 8	LCM PIXEL	
619				**669**	SUB PIXEL 9	LCM PIXEL	
620				**670**	SUB PIXEL 10	LCM PIXEL	
621				**671**			
622				**672**			
623				**673**			
624				**674**			
625				**675**			
626				**676**			
627				**677**			
628				**678**			
629				**679**			
630				**680**			
631				**681**			
632				**682**			
633				**683**			
634				**684**			
635				**685**			
636				**686**			
637				**687**			
638				**688**			
639				**689**			
640				**690**			
641				**691**			
642				**692**			
643				**693**			
644				**694**			
645				**695**			
646				**696**			
647				**697**			
648				**698**			
649				**699**			
650				**700**			

PATTERN 701 ~ 800:

Information Pattern							
Pattern	**Name**	**Test Function**	**Description**	**Pattern**	**Name**	**Test Function**	**Description**
701	EDID INFO	EDID EDID EDID EDID	Display EDID	**751**	HDMI 1 EDID INFO	EDID	顯示 EDID
702	E-EDID INFO.	EDID	Display EDID	**752**	HDMI 2 EDID INFO	EDID	顯示 EDID
703	INFO FRAME		Display HDMI packet	**753**	HDMI 3 EDID INFO	EDID	顯示 EDID
704	HDCP&E-EDID INFO	HDMI EDID/HDCP	HDCP test	**754**	HDMI 4 EDID INFO	EDID	顯示 EDID
705	SYSTEM INFO.		VPG system information	**755**			
706	TIMING LIST		Display TIMING data	**756**			
707	HDCP LINK CODE		HDCP test	**757**			
708				**758**			
709				**759**			
710	BLACK WHITE VL		DP Timing test used	**760**			
711	COLOR SQUARE		DP Timing test used	**761**	DP 1 EDID INFO	EDID	顯示 EDID
712	COLOR RAMP		DP Timing test used	**762**	DP 2 EDID INFO	EDID	顯示 EDID
713	DPCD INFO	DPCD	Display DPCD	**763**			
714				**764**			
715				**765**			
716	INITIATE ARC	ARC	ARC test	**766**			
717	TERMINATE ARC	ARC	ARC test	**767**			
718				**768**			
719	CEC MONITOR	CEC	CEC test	**769**			
720	ONE TOUCH PLAY	CEC	CEC test	**770**			
721	SYSTEM STANDBY	CEC	CEC test	**771**	DVI EDID INFO	EDID	顯示 EDID
722	OSD DISPLAY	CEC	CEC test	**772**	VGA EDID INFO	EDID	顯示 EDID
723	SET OSD NAME	CEC	CEC test	**773**			
724	GIVE POWER STATU	CEC	CEC test	**774**			
725	AUDIO CONTROL	CEC	CEC test	**775**			
726	DDC/Ci GET OSD	DDC / Ci	DDC / Ci test	**776**			
727	Contrast 100%	DDC / Ci	DDC / Ci test	**777**			
728	Contrast 50%	DDC / Ci	DDC / Ci test	**778**			
729				**779**			
730				**780**			
731				**781**			
732				**782**			
733				**783**			
734				**784**			
735	HEC INQUIRE	HEC	HEC test	**785**			
736	HEC DE-ACTIVE	HEC	HEC test	**786**			
737	HEC ACTIVE	HEC	HEC test	**787**			
738	HEC DISCOVER	HEC	HEC test	**788**			
739	HEC SET STATE	HEC	HEC test	**789**			
740	HEC REQ. DEACT.	HEC	HEC test	**790**			
741				**791**			
742				**792**			
743				**793**			
744				**794**			
745				**795**			
746				**796**			
747				**797**			
748				**798**			
749				**799**			
750				**800**			

PATTERN 801 ~ 900:

Picture Pattern							
Pattern	**Name**	**Test Function**	**Description**	**Pattern**	**Name**	**Test Function**	**Description**
801	PIC-USB 1			**851**	PIC-USB 1		Bitmap picture
802	PIC-USB 2			**852**	PIC-USB 2		Bitmap picture
803	PIC-USB 3			**853**	PIC-USB 3		Bitmap picture
804	PIC-USB 4			**854**	PIC-USB 4		Bitmap picture
805	PIC-USB 5			**855**	PIC-USB 5		Bitmap picture
806	PIC-USB 6			**856**	PIC-USB 6		Bitmap picture
807	PIC-USB 7			**857**	PIC-USB 7		Bitmap picture
808	PIC-USB 8			**858**	PIC-USB 8		Bitmap picture
809	PIC-USB 9			**859**	PIC-USB 9		Bitmap picture
810	PIC-USB 10			**860**	PIC-USB 10		Bitmap picture
811	PIC-USB 11			**861**	PIC-USB 11		Bitmap picture
812	PIC-USB 12			**862**	PIC-USB 12		Bitmap picture
813	PIC-USB 13			**863**	PIC-USB 13		Bitmap picture
814	PIC-USB 14			**864**	PIC-USB 14		Bitmap picture
815	PIC-USB 15			**865**	PIC-USB 15		Bitmap picture
816	PIC-USB 16			**866**	PIC-USB 16		Bitmap picture
817	PIC-USB 17			**867**	PIC-USB 17		Bitmap picture
818	PIC-USB 18			**868**	PIC-USB 18		Bitmap picture
819	PIC-USB 19			**869**	PIC-USB 19		Bitmap picture
820	PIC-USB 20			**870**	PIC-USB 20		Bitmap picture
821	PIC-USB 21			**871**	PIC-USB 21		Bitmap picture
822	PIC-USB 22			**872**	PIC-USB 22		Bitmap picture
823	PIC-USB 23			**873**	PIC-USB 23		Bitmap picture
824	PIC-USB 24			**874**	PIC-USB 24		Bitmap picture
825	PIC-USB 25			**875**	PIC-USB 25		Bitmap picture
826	PIC-USB 26			**876**	PIC-USB 26		Bitmap picture
827	PIC-USB 27			**877**	PIC-USB 27		Bitmap picture
828	PIC-USB 28			**878**	PIC-USB 28		Bitmap picture
829	PIC-USB 29			**879**	PIC-USB 29		Bitmap picture
830	PIC-USB 30			**880**	PIC-USB 30		Bitmap picture
831	PIC-USB 31			**881**	PIC-USB 31		Bitmap picture
832	PIC-USB 32			**882**	PIC-USB 32		Bitmap picture
833	PIC-USB 33			**883**	PIC-USB 33		Bitmap picture
834	PIC-USB 34			**884**	PIC-USB 34		Bitmap picture
835	PIC-USB 35			**885**	PIC-USB 35		Bitmap picture
836	PIC-USB 36			**886**	PIC-USB 36		Bitmap picture
837	PIC-USB 37			**887**	PIC-USB 37		Bitmap picture
838	PIC-USB 38			**888**	PIC-USB 38		Bitmap picture
839	PIC-USB 39			**889**	PIC-USB 39		Bitmap picture
840	PIC-USB 40			**890**	PIC-USB 40		Bitmap picture
841	PIC-USB 41			**891**	PIC-USB 41		Bitmap picture
842	PIC-USB 42			**892**	PIC-USB 42		Bitmap picture
843	PIC-USB 43			**893**	PIC-USB 43		Bitmap picture
844	PIC-USB 44			**894**	PIC-USB 44		Bitmap picture
845	PIC-USB 45			**895**	PIC-USB 45		Bitmap picture
846	PIC-USB 46			**896**	PIC-USB 46		Bitmap picture
847	PIC-USB 47			**897**	PIC-USB 47		Bitmap picture
848	PIC-USB 48			**898**	PIC-USB 48		Bitmap picture
849	PIC-USB 49			**899**	PIC-USB 49		Bitmap picture
850	PIC-USB 50			**900**	PIC-USB 50		Bitmap picture

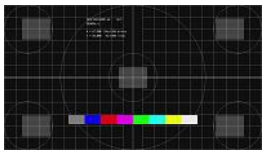
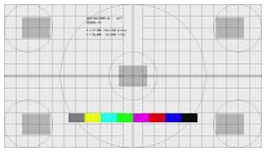
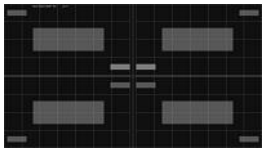
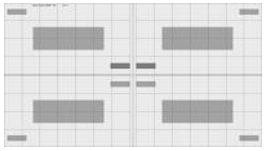
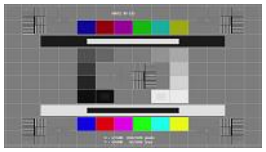
PATTERN 901 ~ 1000:

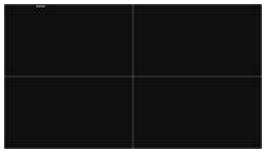
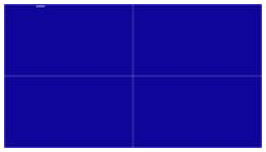
3D Pattern							
Pattern	**Name**	**Test Function**	**Description**	**Pattern**	**Name**	**Test Function**	**Description**
901	3D.L.R.CHECK	3D	3D test	**951**			
902	3D.MERGE	3D	3D test	**952**			
903	3D.CROSS TALK	3D	3D test	**953**			
904	3D.CHECK BOARD	3D	3D test	**954**			
905	3D.SUB-SAMPLE	3D	3D test	**955**			
906	3D.SUB-HOE	3D	3D test	**956**			
907	3D.SUB-HOEX	3D	3D test	**957**			
908	3D.SUB-TBOE	3D	3D test	**958**			
909	3D.HCOLORBAR	3D	3D test	**959**			
910	3D.VCOLORBAR	3D	3D test	**960**			
911	3D.GRAYBAR	3D	3D test	**961**			
912	3D.LWRB	3D	3D test	**962**			
913	3D.LBRW	3D	3D test	**963**			
914	3D.1/2-BW	3D	3D test	**964**			
915	3D.1/2-WB	3D	3D test	**965**			
916	3D.BLACK	3D	3D test	**966**			
917	3D.WHITE	3D	3D test	**967**			
918	3D.WHITE_TUNE	3D	3D test	**968**			
919	3D.BOX	3D	3D test	**969**			
920	3D.DOT/LINE	3D	3D test	**970**			
921	3D.River	3D	3D test	**971**			
922	3D.Sakura1	3D	3D test	**972**			
923	3D.Sakura2	3D	3D test	**973**			
924	3D.Pillar0	3D	3D test	**974**			
925	3D.Pillar2	3D	3D test	**975**			
926				**976**			
927				**977**			
928				**978**			
929				**979**			
930				**980**			
931	3D.Chroma logo	3D	3D test	**981**			
932	3D.Chess	3D	3D test	**982**			
933	3D.Chroma	3D	3D test	**983**			
934	3D.Marbles	3D	3D test	**984**			
935	3D.Square Stick	3D	3D test	**985**			
936	3D.Coffee cup	3D	3D test	**986**			
937	3D.Books & Door	3D	3D test	**987**			
938	3D.Depth.Chroma	3D	3D test	**988**			
939	3D.Depth.Stick	3D	3D test	**989**			
940				**990**			
941	C-1080-SSH-OO	3D Motion	3D dynamic test	**991**			
942	S-1080-SSH-OO	3D Motion	3D dynamic test	**992**			
943	C-1080-SSH-OOX	3D Motion	3D dynamic test	**993**			
944	S-1080-SSH-OOX	3D Motion	3D dynamic test	**994**			
945	C-1080-TB-OO	3D Motion	3D dynamic test	**995**			
946	S-1080-TB-OO	3D Motion	3D dynamic test	**996**			
947	C-720-FP	3D Motion	3D dynamic test	**997**			
948	S-720-FP	3D Motion	3D dynamic test	**998**			
949	S-1080-FP	3D Motion	3D dynamic test	**999**			
950				**1000**			

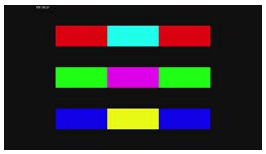
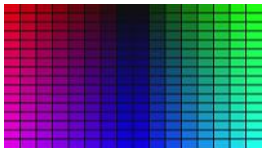
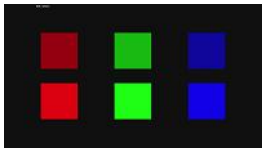
PATTERN 1001 ~ 1100:

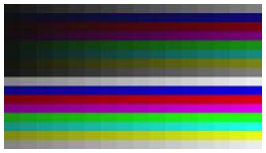
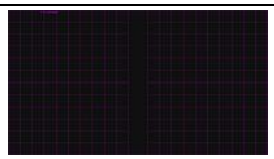
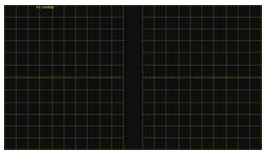
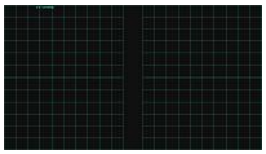
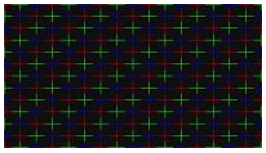
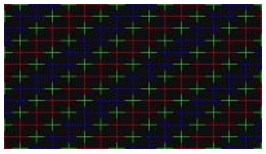
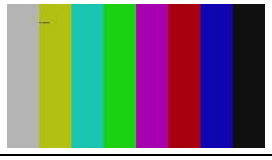
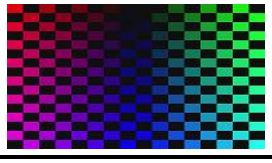
Energy Star Pattern							
Pattern	**Name**	**Test Function**	**Description**	**Pattern**	**Name**	**Test Function**	**Description**
1001	ES-Black level			**1051**	HDR 50% APL BLACK WINDOW	HDR TEST	
1002	ES-White level			**1052**	HDR 40% APL BLACK WINDOW	HDR TEST	
1003	ES-CBar 100/75			**1053**	HDR 30% APL BLACK WINDOW	HDR TEST	
1004	ES-CBar75/75			**1054**	HDR 20% APL BLACK WINDOW	HDR TEST	
1005	ES-Three bar			**1055**	HDR 10% APL BLACK WINDOW	HDR TEST	
1006				**1056**	HDR 0% APL BLACK WINDOW	HDR TEST	
1007				**1057**			
1008				**1058**			
1009				**1059**			
1010				**1060**			
1011				**1061**			
1012				**1062**			
1013				**1063**			
1014				**1064**			
1015				**1065**			
1016				**1066**			
1017				**1067**			
1018				**1068**			
1019				**1069**			
1020	HDR 16 Gray	HDR TEST		**1070**			
1021	HDR 32 Gray	HDR TEST		**1071**			
1022	HDR 64 Gray	HDR TEST		**1072**			
1023	HDR 100% White	HDR TEST		**1073**			
1024	HDR 100% Red	HDR TEST		**1074**			
1025	HDR 100% Green	HDR TEST		**1075**			
1026	HDR 100% Blue	HDR TEST		**1076**			
1027	HDR 1% White Window	HDR TEST		**1077**			
1028	HDR 10% White Window	HDR TEST		**1078**			
1029	HDR 20% White Window	HDR TEST		**1079**			
1030	HDR 30% White Window	HDR TEST		**1080**			
1031	HDR 40% White Window	HDR TEST		**1081**			
1032	HDR 2.5%SIDE WINDOW	HDR TEST		**1082**			
1033	HDR COLOR CHECKER-F	HDR TEST		**1083**			
1034	HDR COLOR CHECKER-N	HDR TEST		**1084**			
1035	HDR 0% APL WHITE WINDOW	HDR TEST		**1085**			
1036	HDR 10% APL WHITE WINDOW	HDR TEST		**1086**			
1037	HDR 20% APL WHITE WINDOW	HDR TEST		**1087**			
1038	HDR 30% APL WHITE WINDOW	HDR TEST		**1088**			
1039	HDR 40% APL WHITE WINDOW	HDR TEST		**1089**			
1040	HDR 50% APL WHITE WINDOW	HDR TEST		**1090**			
1041	HDR 60% APL WHITE WINDOW	HDR TEST		**1091**			
1042	HDR 70% APL WHITE WINDOW	HDR TEST		**1092**			
1043	HDR 80% APL WHITE WINDOW	HDR TEST		**1093**			
1044	HDR 90% APL WHITE WINDOW	HDR TEST		**1094**			
1045	HDR 100% APL WHITE WINDOW	HDR TEST		**1095**			
1046	HDR 100% APL BLACK WINDOW	HDR TEST		**1096**			
1047	HDR 90% APL BLACK WINDOW	HDR TEST		**1097**			
1048	HDR 80% APL BLACK WINDOW	HDR TEST		**1098**			
1049	HDR 70% APL BLACK WINDOW	HDR TEST		**1099**			
1050	HDR 60% APL BLACK WINDOW	HDR TEST		**1100**			

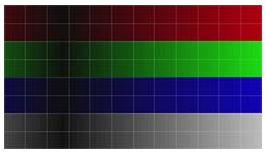
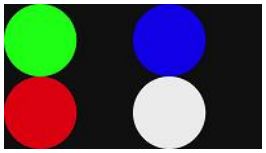
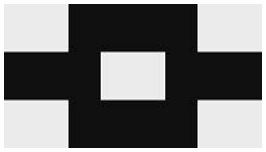
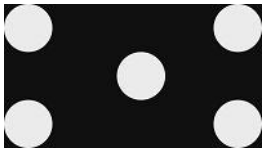
PATTERN 1-100 Default Patterns

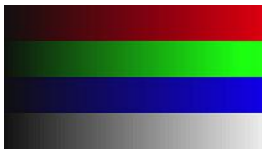
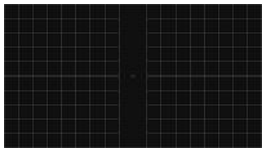
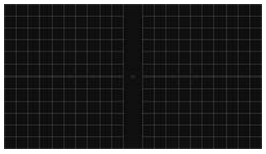
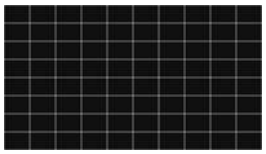
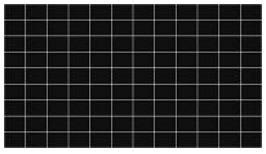
Default Patterns (No. 1 ~ No. 100)			
NO.	**NAME**	**Preview**	**Description**
1	GENERAL-1		The central big cross is used to adjust the position of central point. The crosshatch of 12 vertical squares is used to check linearity. Four corners and central six circles as well as four corners and central five blocks of density are used to test resolution. At the lower end there is a colorbar to check the normality of R, G, B. Timing/pattern name and horizontal/vertical frequencies are located on the top for reference. The outside frame can be used for size measurement and pincushion adjustment.
2	GENERAL-1R		REVERSED OF PATTERN #1
3	GENERAL-2		It is similar to Pattern # 1 but without circle and colorbar. The luminance of the two rectangular dot images on the upper middle are 100% luminance and the rest images are 50% luminance.
4	GENERAL-2R		REVERSED OF PATTERN #3
5	SMPTE RP-133		The SMPTE RP-133 standard patterns for general tests. 1. Background Color: The background color is 50% luminance grayscale. 2. Text: The luminance of the text is determined by the foreground color that is 100% here. The pattern is located on the upper side while the horizontal and vertical pixels are located on the lower side. 3. Lines: The white crosshatch line is 2-pixel thick with 75% luminance. The lattice has 10 vertical grids. (If the pattern has a 0.5% thickness frame about 1% distance from the edge, it means this lattice cannot be used for linearity test.) 4. Resolution Block-1: A block is located at four corners and the center respectively. 5. COLORBAR: Both of the upper and lower side has a colorbar. The order

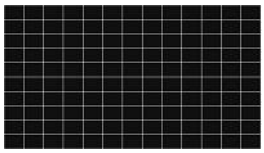
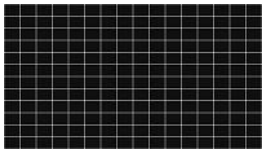
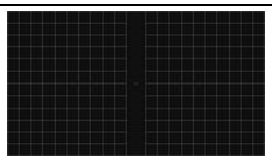
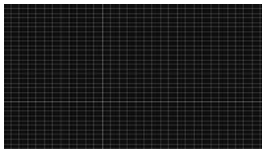
			from left to right is B, R, B+R, G, G+B, G+R. The one on the lower side is brighter than the one on the upper side. 6. Contrast of Black & White: The upper colorbar has a 95% horizontal white bar in the middle of a 5% horizontal black bar. The lower colorbar has a 5% horizontal black bar in the middle of a 95% horizontal white bar.。 7. Grayscale: There are blocks with different luminance around the center.
6 ~ 10			Reserved.
11	BLACK		It is an all black pattern with name displayed on the upper left corner.
12	RASTER		The raster outside the display area became the brightest. The color of the central cross inside the display area and the color of the frame are foreground color. It is used to observe the real position of raster (without adjusting the luminance button of inside or outside the monitor). It can also adjust the raster and the pattern central point to superimpose the central point of CRT.
13	BORDER		The display area is the frame with a central cross. An Hborder is on the outer rim left and right side, and a Vborder is on the upper and lower side respectively. The color is the same as the foreground. *__Note__: Only this pattern will use Hborder and Vborder parameters. Other patterns have no border effect.
14	CENTER-1		The frame and the central cross are used to adjust the central point and pincushion.
15	CENTER-2		The four corners, central point of four sides and central mark on the pattern are used to adjust the central point.
16	SIZE		The outer lines of four corners and the two diagonal lines are used to adjust the trapezoid distortion and display size. On the pattern the values of Hsize and Vsize set in Timing Format are displayed for operator's

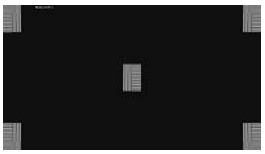
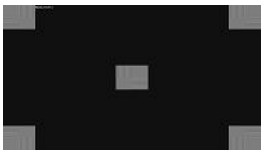
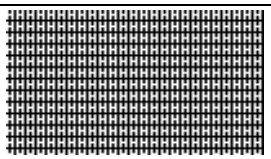
			reference.
17	PRE-TILT		The symbol "×" of the central point is used to adjust pre-tilt. If its extent does not meet the actual need, it can change the contents of window size in the icon (marker # 7).
18 ~ 19			Reserved
20	WHITE-LCD		The pattern is all white. To adjust the brightness, select Pen Form to gray. See *Appendix E* for detailed information.
21	R PURITY		The pattern is all red (Red = Color Pen # 10) for purity check.
22	G PURITY		The pattern is all green (Green = Color Pen # 12) for purity check.
23	B PURITY		The pattern is all blue (Blue = Color Pen # 9) for purity check.
24	RGB DELAY		The pattern has complementary colors in the middle of the R, G, B color bars. If there is delay in R, G, B, the border lines of some color bars will change to white.
25	COLOR-GRID		The pattern is an R, G, B color mixed checkerboard. The color palettes are editable, and the patterns can be triangle, circle and square.
26	RGB CHECK		The pattern has R, G, B three colorbars from left to right on the upper side, and three brighter R, G, B colorbars from left to right on the lower side. The pattern is used to check if the R, G, B connecting order is correct and if the circuit is working normally.
27	16 COLOR		The standard 16-colorbar is used for the comparing the contrast of colors.

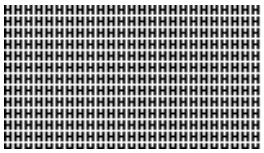
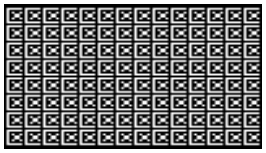
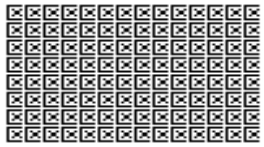
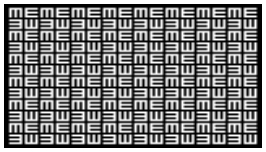
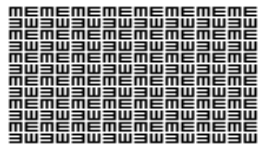
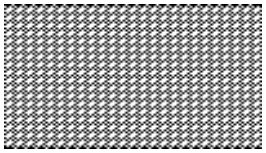
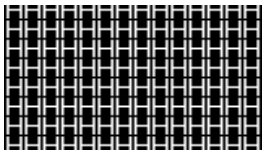
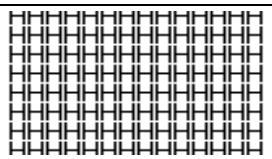
28	EGA 64 COLOR		The pattern of 64 colors is used for EGA monitor. (It is only meaningful when the output is TTL RGB rgb. See the description of Type = 64 colors in colorbar icon for the detailed positions.)
29	256 COLOR		This pattern is a 256 colors analog monitor. See the description of Type = 256 colors in colorbar icon for the detailed positions.
30	RGB-OVERLAP		This pattern has R, G, B 3 colors mixed for use.
31	R-B CONVERGE		The crosshatch of magenta (R+B) is used to check the R & B convergence on CRT.
32	R-G CONVERGE		It is the same as pattern # 31 except the color is yellow (R+G).
33	B-G CONVERGE		It is the same as pattern # 31 except the color is cyan (G+B).
34	RGB X-HATCH		It is the crosshatch pattern with grid lines; however the R, G, B color lines are appearing by turns. Its checks he R, G, B convergence at the same time.
35	CG1		It is the same as pattern # 34.
36	COLORBAR		It is a COLOR BAR of 7-color with black-white interlaced block.
37	TV-PATTERN		This pattern is a 75% of colorbar that frequently used for TV test.
38	OVERLAP-MASK		It is an R, G, B grids pattern with MASK function added.

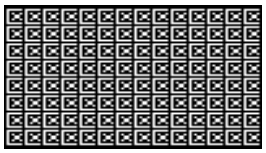
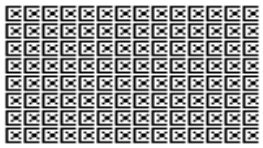
39	MOTION-GRAY		It is an R, G, B, W color scale pattern that can move dynamically.
40	SCROLL-PTN		It is an R, G, B, W four circles pattern that the color order can be changed sequentially.
41	WHITE		The pattern is all white (a highlighted pattern name is located on the upper left corner). It is for luminance and white balance adjustment use.
42	5-MOSAIC		This pattern has five independent, bright squares for luminance adjustment.
43	5-DISC		This pattern has five independent, bright circles for luminance adjustment.
44	CONTRAST		This pattern has three horizontal bars of different luminance. The central luminance is all reduced 5% in order to check if the contrast can be distinguished.
45	4 GRAYS		This pattern is for TTL output signal to check the black and white contrast.
46	10 GRAYS		From 0% to 100%, the grayscale raises a scale every 10% for contrast adjustment. The middle is black (0%).
47	16 GRAYS		The upper part has 16 grayscales from left to right with brighter scale. The lower part is the arrangement from right to left. ***Note**: The weakest luminance is 60/4095, and the strongest is 4095/4095. The difference of every scale is 64/4095.
48	32 GRAYS		It is the same as pattern # 47 except it has 32 grayscales. ***Note**: The weakest luminance is 28/4095, and the strongest is 4095/4095. The difference of every scale is 32/4095.

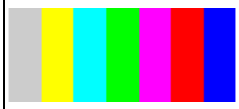
49	256 GRAYS		It is the same as pattern # 47 except it has 255 grayscales. ***Note**: The weakest luminance is 0/4095, and the strongest is 4095/4095. The difference of every scale is 4/4095.
50	64GRAYS RGBW		The R, G, B, W color scales are arranged from top to bottom. Each color has 64 scales, and the difference of every scale is 16/4095.
51	X-HATCH/V8		It is a crosshatch pattern with 8 vertical grids. The remainders are placed in the center. The number of horizontal grids is automatically calculated by the system, and this makes all grids to be squares except the remainders. Moreover, it has a symbol "×" in the central point.
52	X-HATCH/V10		It is the same as pattern #51 except it has 10 vertical grids.
53	X-HATCH/V12		It is the same as pattern #51 except it has 12 vertical grids.
54	X-HATCH/V9E		It is the same as pattern #51 except it has 9 vertical grids with remainders on the two sides.
55	X-HATCH/V12E		It is the same as pattern #51 except it has 12 vertical grids with remainders on the two sides.
56	LINEARITY/8		This pattern looks like a crosshatch with 10 horizontal grids and 8 vertical grids. If there are remainders, the highlighted part will be placed on the right and lower sides. If there are no remainders, the frame line is 1-pixel wide, and the internal grid line is 2-pixel wide. The grids are drawn repeatedly using rectangles (which is suitable for adjusting the automated test equipment.)
57	LINEARITY/9		It is the same as pattern # 56 except it has 12 horizontal grids with 9 vertical grids.

58	LINEARITY/10		It is the same as pattern # 56 except it has 13 horizontal grids with 10 vertical grids.
59	LINEARITY/12		It is the same as pattern # 56 except it has 16 horizontal grids with 12 vertical grids.
60	X-HATCH/1612		It is a crosshatch pattern with 16 horizontal grids and 12 vertical grids. The remainders are placed in the center. It has a symbol "×" in the central point.
61	H.V.-STATIC		The pattern has three bright and three dark horizontal bars to check the high voltage stability when the load changes. If the high voltage is not stable, the lower part of the bright bars will protrude from both left and right, and not withdraw until they reach the dark bars.
62	H V-BLINK		Two patterns are altered in turn to testing the high voltage stability under different loads. If the high voltage is not stable, the size of these two patterns will not be the same. The corresponding change of high voltage can be measured through the change of boundary lines.
63	CROSS TALK		This pattern uses the upper bar with dark and bright interlaced lines and the lower bright bar with high and low frequencies to check if the monitor's horizontal bias circuit is affected by video. If the affection is in high (or low) frequency, the frames on the video two sides will be staggered with other frames in the same direction.
64	PAIRING		The pattern has four consecutive vertical lines inside the square. In Interlace mode, the four lines belong to two different fields, and should be divided to equal distance (which can be seen using a magnifier).
65	FLOWING GRID		It is a crosshatch pattern with moving grids. Use Speed On parameter to determine the horizontal grid number and Speed Off to determine the vertical grid number. The first parameter of Blink Draw determines the pixel for moving horizontally while the second parameter determines the pixel for moving vertically. The third parameter of Blink Draw sets the moving speed. The larger the value the slower the speed.

66	RESOLUTION-1		The pattern has six blocks of horizontal and vertical lines in different densities in four corners and the center. They are 1-pixel ON / 1-pixel OFF, 2-pixel ON / 2-pixel OFF and 3-pixel ON / 3-pixel OFF respectively that is used to check the resolution.
67	RESOLUTION-2		The pattern has all kinds of dense dots, horizontal and vertical lines (all are 1-pixel ON/ 1-pixel OFF) in four corners and the center. They are used to check the resolution.
68	MOTION-1		This is for phosphor persistence inspection. Use Speed On parameter to choose the moving speed. The larger the value the faster the speed. Use Speed Off parameter to determine the size of a small square. The larger the value the smaller the size. The first parameter of Blink Draw determines the amount of small squares by adding 1 to the value. The second parameter of Blink Draw determines the following: 1. The path is a rectangle when set to a clockwise direction. 2. The path is a rectangle when set to a counterclockwise direction. 3. The path is a straight line when set to an oblique direction. 4. The path is a circle when set to a clockwise direction. 5. The path is a circle when set to a counterclockwise direction.
69	PICTURE		BITMAP displays the natural picture. No.: The number of natural picture. The range is from 1 to 999. DEV. SELECT: It selects to read the natural picture from internal or USB disk. INTERNAL: Read from internal USB DISK: Read from USB disk X, Y: The location is at the upper left corner of the natural picture. X: The range is from 0 to 4095. Y: The range is from 0 to 2047. The internal can save 100 natural pictures by default. The natural pictures are read by USB disk if over 100.
70			Reserved.
71	CHARAC/H-5		The pattern is all composed of “H”. The font type is 5 × 7.

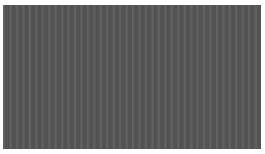
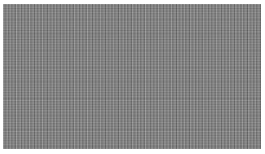
72	CHARAC/H-5R		It is the reverse pattern of pattern # 71.
73	CHARAC/CX-5		The pattern is all composed of "CX". The font type is 5 × 7.
74	CHARAC/CX-5R		It is the reverse pattern of pattern # 73.
75	CHARAC/ME		The pattern is all composed of "E" in up/down/left/right direction. The font type is 11 x 11.
76	CHARAC/ME-R		It is the reverse pattern of pattern # 75.
77	ROOT WEAVE		The pattern is all composed of "root". It is used to check moire.
78	CHARAC/16X15		The pattern is all composed of "懸" (Hui). The font type is 16 x 15.
79	CHARAC/24X24		The pattern is all composed of "鷹" (Ying). The font type is 24 x 24.
80	CHARAC/@		The pattern is all composed of "@". The font type is 5 x 7.
81	CHARAC/H-7		The pattern is all composed of "H". The font type is 7 x 9.
82	CHARAC/H-7R		It is the reverse pattern of pattern # 81.

83	CHARAC/CX-7		The pattern is all composed of “CX”. The font type is 7 x 9.
84	CHARAC/CX-7R		It is the reverse pattern of pattern # 83.
85	TEXT-5X7		The pattern is an article. The font type of each letter is 5 x 7.
86	TEXT-7X9		The pattern is an article. The font type of each letter is 7 x 9 (character # 160 ~ 255) in proportional spacing.
87	TV-SMPTE BAR		Pattern 87 is a standard SMPTE COLORBAR and is for NTSC and PAL timing only. Black screen will output if using other timings. When Pattern 87 is selected, it outputs NTSC SMPTE COLORBAR if the timing is NTSC, and it outputs PAL SMPTE COLORBAR if the timing is PAL. The descriptions of pattern combinations are as follows.

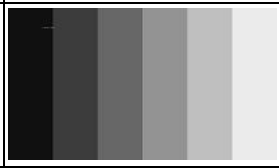
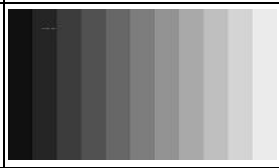
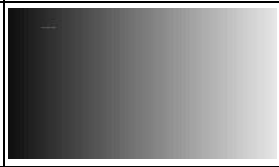
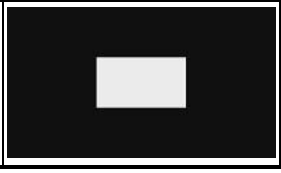
Area	Pattern	Description
First 2/3 of the field		NTSC : 75 / 7.5 / 75 / 7.5 colorbar PAL : 75 / 0 / 75 / 0 colorbar
Next 1/12 of the field		Reverse Blue bar
Remainder of the field		

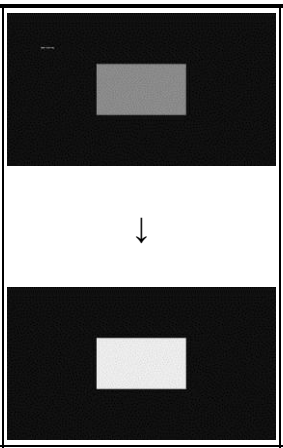
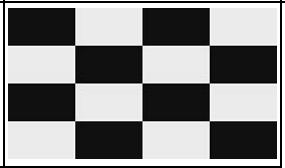
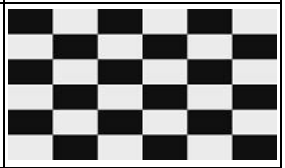
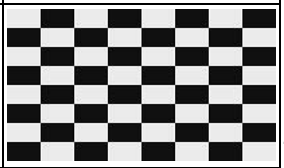
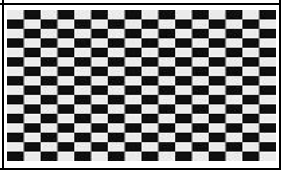
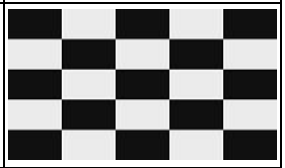
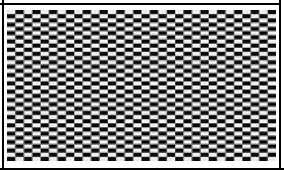
	NTSC System	PAL System
1	40 IRE “–I” phase	43 IRE “–V” phase
2	white bar	white bar
3	40 IRE “+Q” phase	43 IRE “+U” phase
4	black bar	black bar
5	black 3.5 IRE	black –3.2%
6	black bar	black bar
7	black 11.5 IRE	black +3.2%
8	black bar	black bar

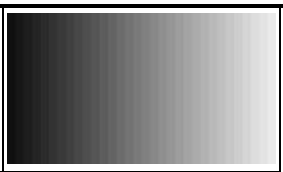
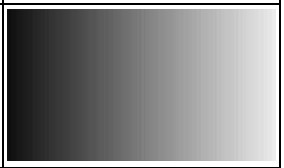
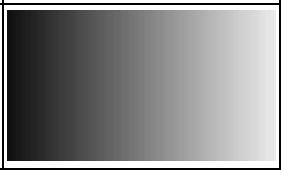
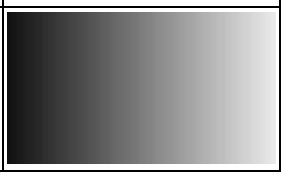
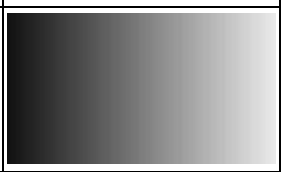
88	TV-MULTBURST (NTSC, PAL only)		This pattern is composed of 6 different frequencies of sine waves to test TV’s frequency response. The system frequencies for NTSC are 0.5M, 1.25M, 2M, 3M, 3.58M and 4.2M Hz, and for PAL are 0.5M, 1M, 2M, 3M, 4.43M and 5.8M Hz.

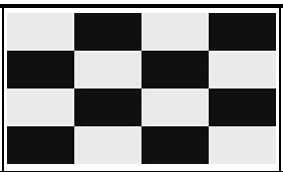
89	TV-PULSE&BAR (NTSC, PAL only)		The pattern from left to right contains 100% White Bar: Test the luminance. 2T Pulse: It uses 4MHz bandwidth of pulse signal to test the frequency response. 12.5T Pulse: It uses the color modulated pulse signal to test the delay between color signal and luminance signal. 5 Step: It is a 5 step luminance stair to test the luminance response linearity.
90			Reserved.
91	TEST-TTL/ECL		It is for Chroma to test only.
92 ~ 93			Reserved.
94	TEST-LINE1+2		It is for Chroma to test only.
95	TEST-BLANK		It is for Chroma to test only.
96	TEST-LINES		It is for Chroma to test only.
97	TEST-RASTER		It is for Chroma to test only.
98	TEST-C/BLACK		It is for Chroma to test only.
99	TEST-C/WHITE		It is for Chroma to test only.
100	TEST-C/BLINK		It is for Chroma to test only.

PATTERN 101-200 BASIC Patterns

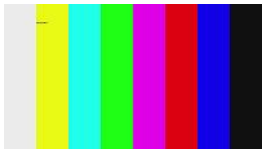
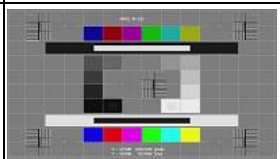
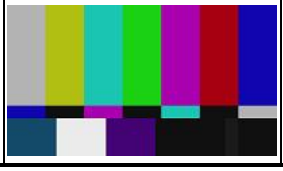
BASIC Pattern (No. 101 ~ No. 200)			
NO.	**NAME**		**Description**
101	W 100%		The luminance is from 100% to 0% to calibrate the Gamma curve.
102	W 90%		
103	W 80%		
104	W 70%		
105	W 60%		
106	W 50%		
107	W 40%		
108	W 30%		
109	W 20%		
110	W 10%		
111	W 0%		
120	5 STAIR CASE		The luminance ascends from 0% to 100% with fixed percentage for each stair to test the luminance linearity.
121	10 STAIR CASE		
122	16 STAIR CASE		
123	64 STAIR CASE		
124	255 STAIR CASE		
125 ~ 129			Reserved.
130	WINDOW		The white box with H/3 width and V/3 height is used to test the low frequency interference.

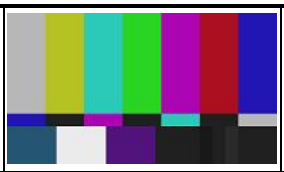
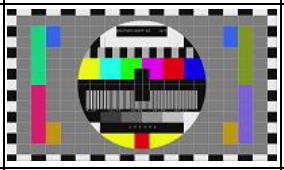
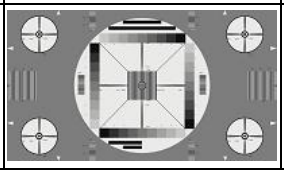
131	WHITE TUNE		The white window with H/3 width and V/3 height on the screen is often applied to do white balance and Gamma curve calibration.
132	CHECK BOARD 4X4		The patterns are composed of black and white checkerboard for contrast calibration.
133	CHECK BOARD 6X6		
134	CHECK BOARD 8X8		
135	CHECK BOARD 16X16		
136	CHECK BOARD 5X5		
137	CHECK BOARD 32X36		
138 ~ 139			Reserved
140	16 GRAY		The luminance of grayscale ascends from dark to bright with fixed percentage for each stair to test the luminance linearity or calibrate the Gamma curve.

141	32 GRAY		
142	64 GRAY		
143	128 GRAY		
144	256 GRAY		
145	512 GRAY		
146	1024 GRAY		
147	2048 GRAY		
148	4096 GRAY		
149	256 GRAY GAMMA		The luminance of the upper 256 grayscales ascend from dark to bright with fixed percentage for each stair to test the luminance and gray. The lower luminance is the same but adopts the variation of GAMMA curve.
150	1024 GRAY GAMMA		The luminance of the upper 1024 grayscales ascend from dark to bright with fixed percentage for each stair to test the luminance and gray. The lower luminance is the same but adopts the variation of GAMMA curve.

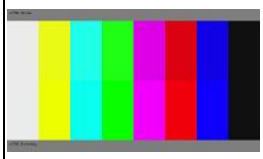
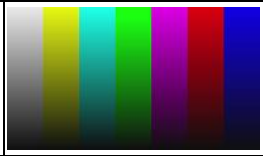
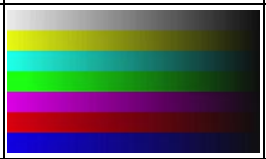
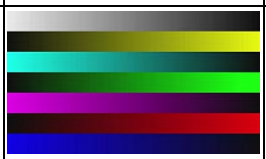
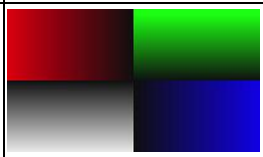
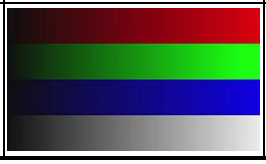
151	CHECK BOARD4X4-R		The pattern is composed of black and white checkerboard for contrast calibration.
152	GRAY SCALE-W		The 8-grayscale signal levels are the two rows of signals which generated on all white background. The gray scale of the 1st row: 0% / 5% / 10% / 15% The gray scale of the 2nd row: 85% / 90% / 95% / 100% Each gray scale rectangle is 5% of full screen and the same ratio with the entire pattern. The signal is for adjusting standard status of display.
153 ~ 200			Reserved.

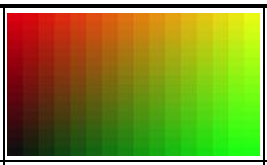
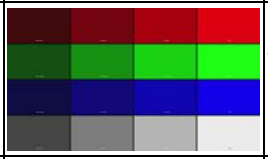
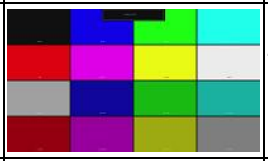
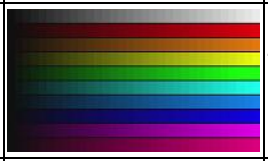
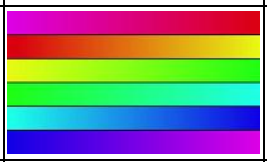
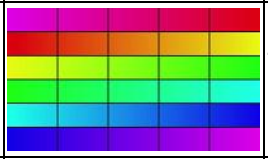
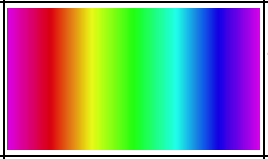
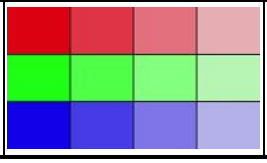
PATTERN 201-250 TV Patterns

TV Pattern (No. 201 ~ No. 250)			
NO.	**NAME**		**Description**
201	100/7.5/75/7.5		This pattern is used to adjust the Hue, Saturation and Contrast of TV for Whiteness (%) / Chrominance offset (%) / Chrominance (%) / Blackness offset (%).
202	100/7.5/100/7.5		
203	75/0/75/0		
204	100/0/75/0		
205	100/0/100/0		
206	100/0/100/25		
207	75/0/100/25		
208	75/7.5/75/7.5		
209~ 210			Reserved
211	SMPTE RP-133		It is the same as Pattern 5.
212			Reserved.
213	TV-SMPTE BAR		This pattern is the standard NTSC/PAL SMPTE colorbar used to adjust the Contrast, Saturation, Hue and Brightness for TV.

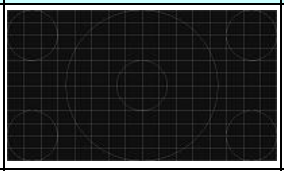
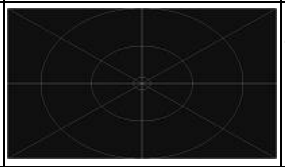
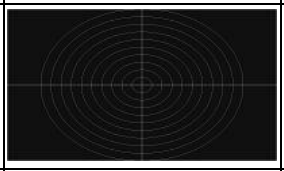
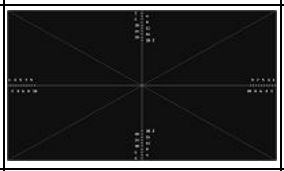
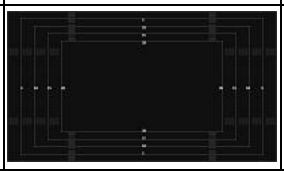
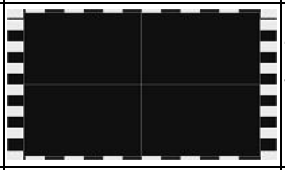
214	PC SMPTE		This pattern is the SMPTE Color Bar for PC. The biggest different is that it added 7.5IRE and brightness offset for –I, +Q colors so that a common PC can output these two colors.
215	PHILIPS		This pattern is a composite TV test screen often used by TV stations to test the color, brightness, aspect ratio, over scan, and frequency response, etc.
216	MONO SCOPE		This pattern is a frequently used composite TV test screen to test the aspect ratio, over scan, and resolution, etc.
217			Reserved.
218	TV-MULTBURST		This pattern is composed of 6 sine waves of different frequencies to test the frequency response of TV. The NTSC system sine wave frequencies are 0.5M, 1.25M, 2M, 3M, 3.58M and 4.2M Hz. The PAL system sine wave frequencies are 0.5M, 1M, 2M, 3M, 4.43M and 5.8M Hz.
219 ~ 250			Reserved.

PATTERN 251-300 Colorful Patterns

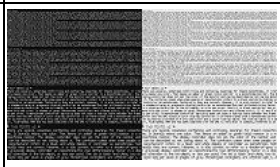
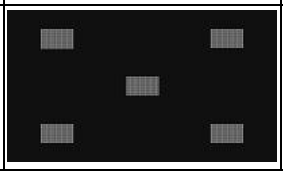
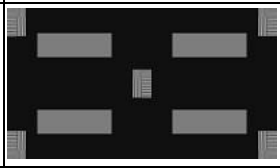
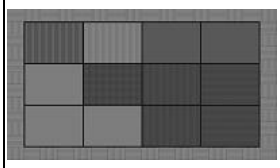
Colorful Patterns (No. 251 ~ No. 300)			
NO.	**NAME**		**Description**
251	RGB & XVYCC		It is an HDMI xvYCC wide color gamut test pattern. The upper colorbar is in xvYCC normal range and the lower colorbar is in xvYCC extending range. It can use a color analyzer (such as the 7121 Color Analyzer of Chroma) to test the color gamut range displayed by the TV or Monitor. **Note:** This test pattern can only display in HDMI Timing.
252	4096 GRAY FULL		This pattern provides a gradation screen in 4096 grayscale. The spread of scale divides the screen into 16 vertical sections after special arrangement. Each section is spread in horizontal 256-scale. Output this screen to LCD panel can distinguish 8/10/12 bit LCD panel by observing the scale number of screen horizontal direction.
253	DEEP COLOR 1		The grayscale varies with the deep color. There are three parts to authenticate the UUT decoding method, which are 256 scales for upper part, 1024 scales for the middle and 4096 scales for the lower part.
254	TRUE BAR1		This pattern shows the true color change in gradient.
255	TRUE BAR2		This pattern shows the true color change in gradient.
256	TRUE BAR3		This pattern shows the true color change in gradient.
257	TRUE GRAY BAR		It is all 4096 grayscales.
258	TRUE GRAY BAR1		It is all 4096 grayscales.

259	TRUE SCALE		This pattern shows the true color change in gradient.
260			Reserved.
261	PRIMARY COLOR		This pattern shows the true color change in blocks.
262	STANDARD COLOR		This pattern shows the true color change in blocks.
263	COLOR SCALE		This pattern shows the true color change in gradient.
264	COLOR BLEND RAMP		This pattern shows the true color change in gradient.
265	COLOR BLEND SCAL		This pattern shows the true color change in gradient and blocks.
266	COLOR SPECTRUM		This pattern shows the true color change in gradient.
267			Reserved.
268	COLOR SATURATION		This pattern shows the true color change in blocks.

PATTERN 301-350 Linearity Patterns

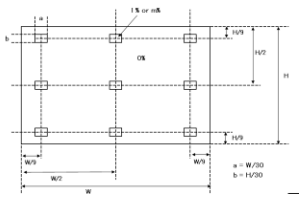
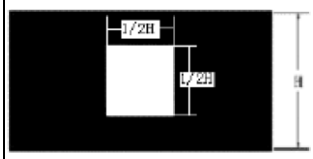
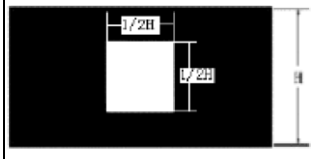
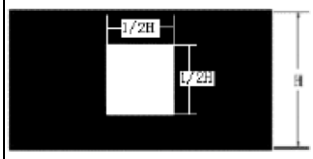
Linearity Pattern (No. 301 ~ No. 350)			
NO.	**NAME**		**Description**
301	CONVERGENCE		This pattern is composed of CrossHatch, Circle and Dot for Convergence, Geometry Appearance and Aspect Ratio inspection.
302	CIRCLE & CENTER		This pattern is composed of Circles and Center Marker for Aspect Ratio inspection and horizontal/vertical positioning.
303	10 C-CIRCLES		This pattern is composed of Circles and Center Marker for Convergence and Aspect Ratio inspection as well as for center point positioning.
304	CENTER+SCALE		This pattern is composed of scaled Center Marker for OverScan inspection and center point positioning.
305	RECT SCALE		This pattern is composed of rectangle scaler for OverScan inspection.
306	CROSS CENTER		This pattern is composed of black and white frame along with Center Marker for OverScan inspection and center point positioning.
307 ~ 350			Reserved.

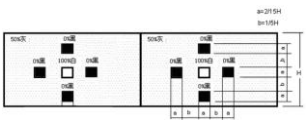
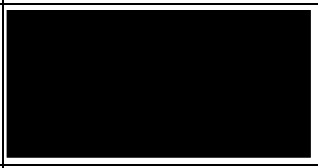
PATTERN 351-400 Resolution Patterns

Resolution Pattern (No. 351 ~ No. 400)			
NO.	**NAME**		**Description**
351	CHARAC/@		This pattern is filled up with @ characters for Convergence and resolution inspection.
352	SCALED FONT		This pattern is divided into two parts in reversed colors with 4 types of fonts for resolution and contrast inspection.
353	FOCUS ME		The 4 corners and center area of the pattern are filled up with M/E characters for resolution inspection and project focusing.
354	RESOLUTION 3		The 4 corners and center area of the pattern are filled in with various alignments of different lines and inserted 4 dots with blinking for resolution inspection.
355	RESOLUTION 4		This pattern is composed of various dots and lines in different alignment for resolution inspection. Furthermore, it can test the process capability of Monitor or TV Scaler for various alignments of dots and lines as well as verify the algorithm.
356	RANDOM		It is for Digital Video only to testing the eye pattern. (DVI)
357 ~ 400			Reserved.

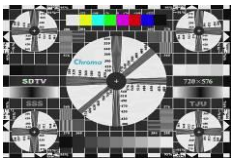
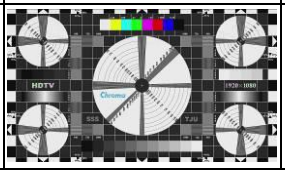
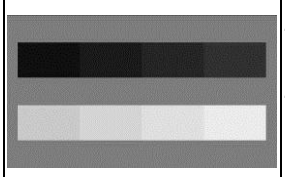
PATTERN 401-500 Optical Patterns

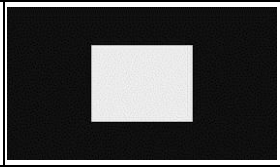
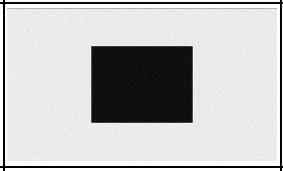
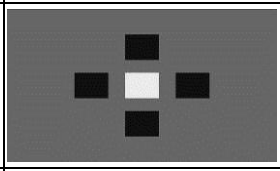
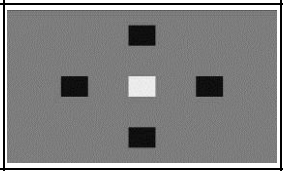
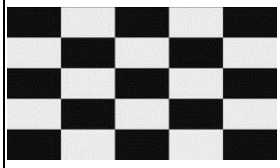
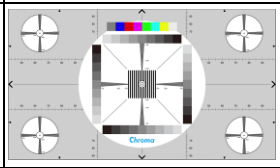
Optical Pattern (No. 401 ~ No. 500)			
NO.	**NAME**		**Description**
401	CA-White		The pattern is 100% white. It can use command to adjust the luminance. RUN PEN 15 R %i G %i B %i ;
402	CA-Red		The pattern is 100% red. It can use command to adjust the luminance. RUN PEN 10 R %i G 0 B 0 ;
403	CA-Green		The pattern is 100% green. * It can use command to adjust the luminance. RUN PEN 12 R 0 G %i B 0
404	CA-Blue		The pattern is 100% blue. * It can use command to adjust the luminance. RUN PEN 9 R 0 G 0 B %i
405	CA-Black		The pattern is 100% black. * It can use command to adjust the luminance. RUN PEN 0 R %i G %i B %i
406	CA-CHECK BOARD		The pattern is composed of black and white checkerboard for contrast calibration
407	CA-8 GRAY SCALE		The limit 8-grayscale signal levels are the two rows of signals that generated on gray background. The gray scale of the 1st row: 0% / 5% / 10% / 15% The gray scale of the 2nd row: 85% / 90% / 95% / 100% Each gray scale rectangle is 5% of full screen and the same ratio with the entire pattern. The signal is for adjusting standard status of display.
408 ~ 450			Reserved.
451	CH3D-China Complex pattern		The left and right patterns adopt the China HD complex test images. The tester wears 3D glasses of the tested prototype using one eye and both eyes to view the patterns. On the center and corner of the displayed pattern, evaluate the visual limit of the

			wedge and record the mapped numbers of clear TV lines.
452	CH3D-9W_LRAdjust		It is a 3D crosstalk inspection pattern. The black background (0%) has 9 dots of white window signal (100%). The white window signal can manually adjust the left and right eye level. Press left or right arrow key to switch the left eye or right eye pattern, and press up and down arrow to adjust the window signal level. There are 5 adjustable levels which are 0%, 25%, 50%, 75% and 100%. *It can use command to adjust the luminance of left and right eye respectively. RUN 3DPURE_L R %i G %i B %i ; RUN 3DPURE_R R %i G %i B %i ;
453	CH3D-LR_GrayAdjust		It is a 3D crosstalk inspection pattern. Both left and right are full black patterns (0%) and can be adjusted to full white (100%). It can manually adjust the left and right eye pattern level separately. Press left or right arrow key to switch the left eye or right eye pattern, and press up and down arrow to adjust the pattern level. There are 9 adjustable levels which are 0%, 12.5%, 25%, 37.5%, 50%, 62.5%, 75%, 87.5% and 100%. * It can use command to adjust the luminance of left and right eye respectively. RUN 3DPURE_L R %i G %i B %i ; RUN 3DPURE_R R %i G %i B %i ;
454	CH3D-LWW+RWW		It is a 3D luminance inspection pattern. The left and right patterns are all white windows (background 0%, white window 100%) Left: White Window Right: White Window
455	CH3D-LBB+RWW		It is a 3D luminance inspection pattern. The left pattern is a full black window (100%), and the right pattern is a full white window (background 0%, white window 100%) Left: Black Background Right: White Window
456	CH3D-LWW+RBB		It is a 3D luminance inspection pattern. The left pattern is a full white window (background 0%, white window 100%) and the right pattern is a full black window (100%). Left: White Window

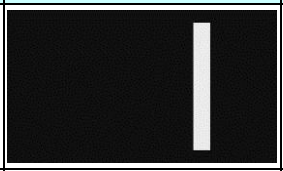
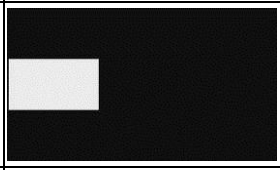
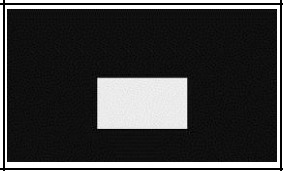
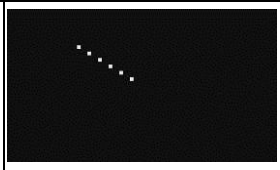
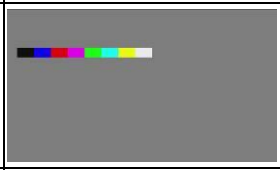
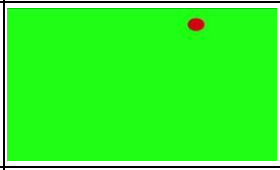
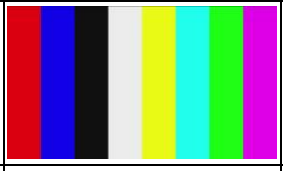
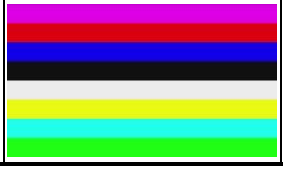
			Right: Black Background
457	CH3D-B&W Window		It is a 3D contrast comparison inspection pattern. The background is 50% gray, the black window is 0% black and the white window is 100% white.
458	CH3D-LW+RB		The left pattern is 100% white while the right pattern is 0% black.
459	CH3D-LB+RW		The left pattern is 0% black while the right pattern is 100% white.
460	CH3D-LW+RW		The left pattern is 100% white and the right pattern is also 100% white.
461	CH3D-LB+RB		The left pattern is 0% black and the right pattern is also 0% black.
462 ~ 500			Reserved.

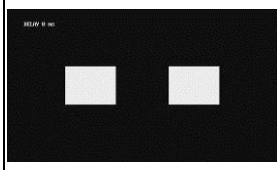
PATTERN 501-550 High Definition Patterns

High Definition Patterns (No. 501 ~ No. 550)			
NO.	**NAME**		**Description**
501	SDTV BMP(4:3)		It is a BMP file which is built in the VPG and cannot be coped and moved to other devices.
502	HDTV BMP(16:9)		It is a BMP file which is built in the VPG and cannot be copied and moved to other devices.
503	8 GRAY SCALE		The limit 8-grayscale signal levels are the two rows of signals which generated on 50% gray background. The gray scale of the 1st row: 0% / 5% / 10% / 15% The gray scale of the 2nd row: 85% / 90% / 95% / 100% Each gray scale rectangle is 5% of full screen and the same ratio with the entire pattern. The signal is for adjusting standard

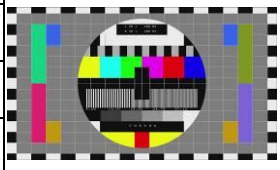
			status of display.
504	WHITE WINDOWS		This pattern is a luminance signal created on black background. The width of the window is 1/2 of pattern height and the window amplitude is 10% to 100% changeable.
505	BLACK WINDOWS		This pattern is a luminance signal created on white background. The width of window is 1/2 of pattern height and the window amplitude is 10% to 100% changeable.
506	SDTV BLACK&WHITE		This pattern is a luminance signal that creates one white and four black rectangle windows on 40% gray background. The size of the white window is 1/6 of pattern height (SDTV).
507	HDTV BLACK&WHITE		This pattern is a luminance signal that creates one white and four black rectangle windows on 50% gray background. The size of white window is 2/15 of pattern height (HDTV).
508	CHECK BOARD 5X5		This pattern is a luminance signal consists of 55 rectangles. The size of each rectangle is 1/5 of pattern width and 1/5 of height. The signal amplitudes of the rectangle frames are 100% and 0% respectively.
509 ~ 519			Reserved.
520	4K2K-MONO HDCP		This pattern is a composite test screen designed with 4K resolution to test the aspect ratio, over scan, color bar, gray scale and resolution, etc. at the same time.
521	4K2K-MONO		
522 ~ 550			

PATTERN 551-600 Dynamic Patterns

Dynamic Patterns (No. 551 ~ No. 600)			
NO.	**NAME**		**Description**
551	MOTION BAR		The white bar in the pattern moves from left to right in a speed of 9 pixels per frame to evaluate the residual image of TV motion picture.
552	H WINDOW		The white window in the pattern moves from left to right and vice versa in high speed of 126 pixels per frame to evaluate the residual image of TV motion picture.
553	V WINDOW		The white window in the pattern moves up and down and vice versa in high speed of 126 lines per frame to evaluate the residual image of TV motion picture.
554			Reserved.
555	MOTION-3		The pattern has 6 white boxes moving in diagonal direction. The speed of the corner box is 1 pixel/frame and the moving interval of each box is 1 time faster to evaluate the residual image of TV motion picture.
556	MOTION-4		The pattern has 6 white boxes moving in circle. The speed of the center box is 1 pixel/frame and the moving interval of each box is 1 time faster to evaluate the residual image of TV motion picture.
557	MOTION-5		An 8- color 100%ColorBar is moving in a speed of 8 pixels per frame on a screen of 50% luminance background to evaluate the residual image of TV motion picture.
558	FLYING BALL		A red ball is moving in a speed of 9 pixels per frame on a screen with green background to evaluate the residual image of TV motion picture.
559	SCROLL-HBAR		The horizontal 8 colors 100%ColorBar changes color repeatedly to test the TV response speed to color change.
560	SCROLL-VBAR		The vertical 8 colors 100%ColorBar changes color repeatedly to test the TV response speed to color change.

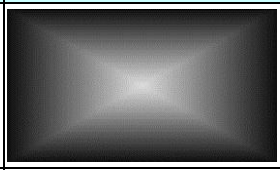
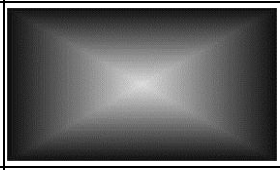
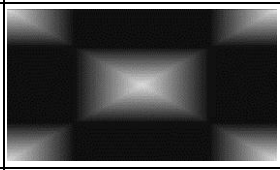
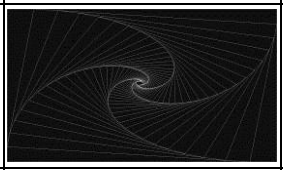
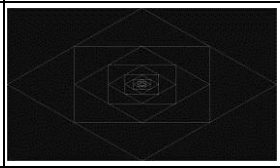
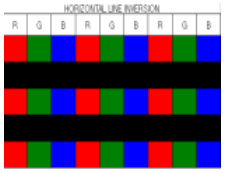
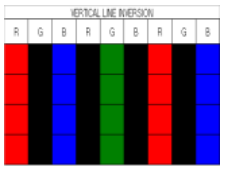
561	LIPSYNC-MOTION		The two windows on the pattern start to close to each other from the left and right frame until they touched each other. The window's color will change, and a sound will generate after a period of time. The time displays on the upper left corner and can be modified it in FUNC → LIPSYNC → LIPSYNC TIME.
562	LIPSYNC-MEAS.		This pattern blinks with sound turned on or off. The delay between video and audio is determined by EDID. This pattern can be easily used to test Lipsync.
563 ~ 600			Reserved.

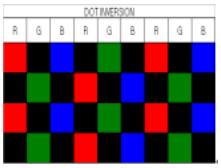
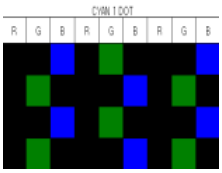
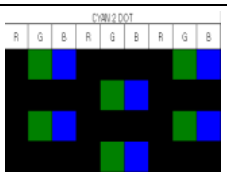
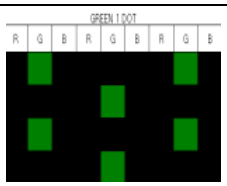
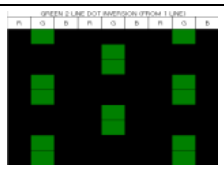
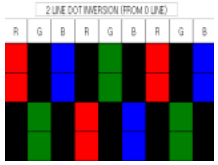
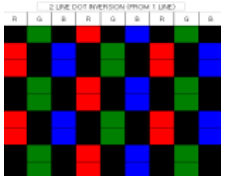
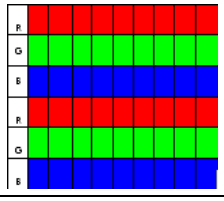
PATTERN 601-650 Audio Patterns

Audio Pattern (No. 601 ~ No. 650)				
NO.	**NAME**		**Description**	
601	AUDIO1		Tone 100Hz	
602	AUDIO2		Tone 200Hz	
603	AUDIO3		Tone 500Hz	
604	AUDIO4		Tone 1KHz	
605	AUDIO5		Tone 2KHz	
606	AUDIO6		Tone 5KHz	
607	AUDIO7		Tone 10KHz	
608	AUDIO8		Tone 20KHz	
609	AUDIO9		Sweep 10~20Khz	Philips pattern along with audio is used for this pattern and the test frequency is labeled on the top.
610	AUDIO10		Sweep 20K~10hz	
611	AUDIO11		Sweep 10~20K~10hz	
612	AUDIO VOL SWEEP1		SWEEP VOL 0-2000-0 MV	
613	AUDIO L/R/LR		2 SEC L – 2SEC R – 2SEC L/R	
614	AUDIO VOL SWEEP2		SWEEP L VOL 0-2000-0 MV SWEEP R VOL2000-0-2000	
615	AUDIO SONG 1		MUSIC	
616	AUDIO SONG 2		MUSIC	
617	AUDIO SCROLL 8CH		SCROLL 8 CHANNEL	

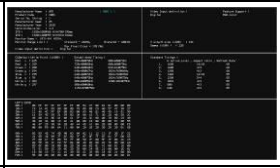
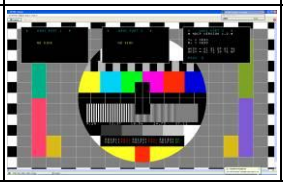
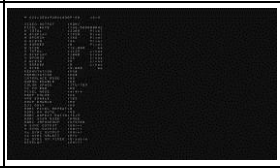
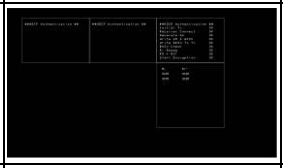
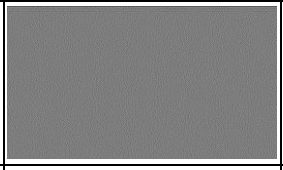
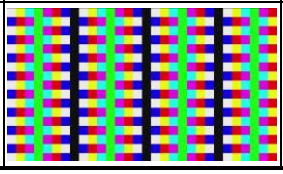
618	AUDIO VOL ADJUST		MANUAL ADJUST VOLUME	
619 ~ 650			Reserved	

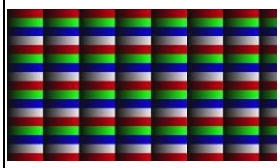
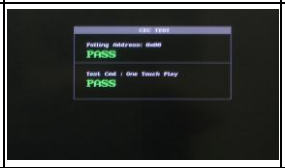
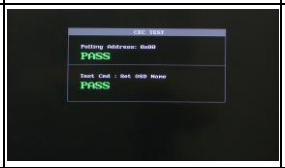
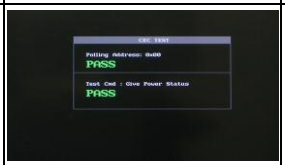
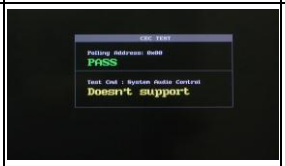
PATTERN 651-700 LCM Patterns

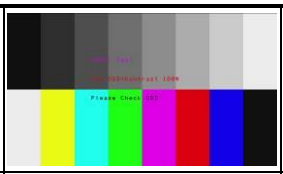
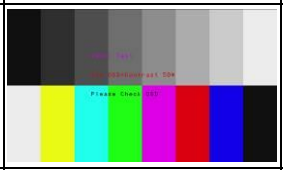
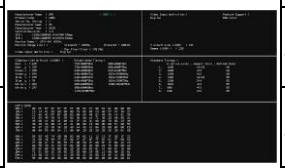
LCM Pattern (No. 651 ~ No. 700)			
NO.	**NAME**		**Description**
651	POLYGON-1		It is a polygon of varied linear that often used to test the linearity of panel grayscale response.
652	POLYGON-2		It is the same as Pattern 651 but with frame.
653	POLYGON-3		It is the same as Pattern 651 but in smaller size, and a 1/4 of lower-right polygon is copied to four corners in the pattern.
654	POLYGON-4		It is a polygon composed of lines that often used to test the convergence of Panel.
655	POLYGON-5		It is a polygon composed of lines that often used to test the convergence of Panel.
656 ~ 660			Reserved.
661	SUB PIXEL 1		These patterns test the LCD Panel resolution and if each Dot is normal.
662	SUB PIXEL 2		

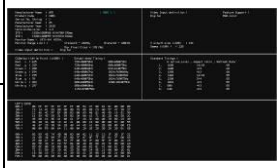
663	SUB PIXEL 3		
664	SUB PIXEL 4		
665	SUB PIXEL 5		
666	SUB PIXEL 6		
667	SUB PIXEL 7		
668	SUB PIXEL 8		
669	SUB PIXEL 9		
670	SUB PIXEL 10		
671 ~700			Reserved.

PATTERN 701-800 Information Patterns

Information Patterns (No. 701 ~ No. 800)			
NO.	**NAME**		**Description**
701	EDID INFO		This pattern reads the EDID of TV or Monitor and interprets it on TV or monitor. If it is multi-port output (HDMI, DP), the displayed pattern will be switched to three parts.
702	E-EDID INFO		This pattern interprets the EDID Extension contents of CEA on TV or monitor.
703	INFO FRAME		This pattern shows the CEA-861x InfoFrame contents sent by VPG on TV or monitor.
704	HDCP&E-EDID INFO		It automatically executes HDCP function and interprets the E-EDID contents on TV or monitor. (Meanwhile, it shows the information of resolution.)
705	SYSTEM INFO.		This pattern shows the VPG system information on TV or Monitor.
706	TIMING LIST		It shows the mapped timing parameter on TV or monitor.
707	HDCP LINK CODE		It shows the HDCP information on TV or monitor along with ASKV, BKSV and Pass/Fail.
708 ~ 709			Reserved.
710	BLACK WHITE VL		It is composed of vertical lines interlaced with black and white. The line width is 1 pixel.
711	COLOR SQUARE		It is composed of various color squares with width and height 64 pixels.

712	COLOR RAMP		It is composed of different colors of Graybar. The height and color of bar are varied with the Deep Color parameter set in Timing. The height is 64 lines when Deep Color is set to 6 bits and 8 bits. Or, it will be 32 lines with width fixed to 256 pixels.
713			Resaved.
714 ~ 715			Reserved.
716	INITIATE ARC		It sends the CEC command <Initiate arc>. (It enables the ARC function.)
717	TERMINATE ARC		It sends the CEC command <Terminate arc>. (It disables the ARC function.)
718 ~ 719			Reserved.
720	ONE TOUCH PLAY		It sends the CEC command <Image View On><Active Source>. (It makes TV to exit standby mode and change to VPG output port.)
721	SYSTEM STANDBY		It sends the CEC command <System Standby>. (It makes TV to enter into standby mode.)
722	OSD DISPLAY		It sends the CEC command <OSD Display>. (sending OSD string)
723	SET OSD NAME		It sends the CEC command <Set OSD Name>. (sending OSD Name string)
724	GIVE POWER STATU		It sends the CEC command <Give Power Status>. (It gets the TV power status.)
725	AUDIO CONTROL		It sends the CEC command <Give Audio Status>. (It gets the Audio status.)
726	DDC/Ci GET OSD		It sends the DDC/Ci command to read the brightness, contrast, saturation and hue parameters of DUT.

727	Contrast 100%		The upper part is Gray Bar and the lower part is Color Bar. It sends the DDC/Ci command and sets the DUT contrast value to 100.
728	Contrast 50%		The upper part is Gray Bar and the lower part is Color Bar. It sends the DDC/Ci command and sets the DUT contrast value to 50.
729 ~ 734			Reserved.
735	HEC INQUIRE		It sends the CDC command <CDC_HEC_InquireState>. (It inquires the device status of HDMI Ethernet Channel.)
736	HEC DE-ACTIVE		It sends the CDC command <CDC_HEC_SetStateAdjacent>. (It sets the HEC Set State to disable the HEC function.)
737	HEC ACTIVE		It sends the CDC command <CDC_HEC_SetStateAdjacent>. (It sets the HEC Set State to enable the HEC function.)
738	HEC DISCOVER		It sends the HEC command <CDC_HEC_Discover>. (It searches the devices that support HEC function in HEC network.)
739	HEC SET STATE		It sends the HEC command <CDC_HEC_SetState>. (It enables or disables the HEC function.)
740	HEC REQ. DEACT.		It sends the HEC command <CDC_RequestDeactivation>. (It requests to disable the HEC function).
741 ~ 750			Reserved.
751	HDMI 1 EDID INFO		It reads the EDID of HDMI 1 and interprets it on TV or Monitor.
752	HDMI 2 EDID INFO		It reads the EDID of HDMI 2 and interprets it on TV or Monitor.
753	HDMI 3 EDID INFO		It reads the EDID of HDMI 4 and interprets it on TV or Monitor.
754	HDMI 4 EDID INFO		It reads the EDID of HDMI 4 and interprets it on TV or Monitor.
755 ~ 760			Reserved.
761	DP 1 EDID INFO		

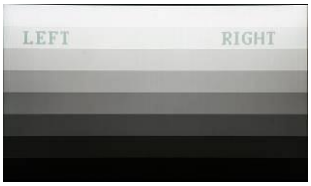
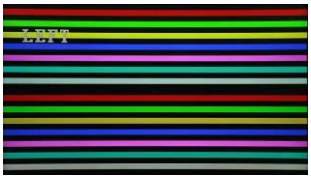
762	DP 2 EDID INFO		
763 ~ 770			Reserved.
771	DVI EDID INFO		It reads the EDID of DVI and interprets it on TV or Monitor.
772	VGA EDID INFO		It reads the EDID of VGA and interprets it on TV or Monitor.
773 ~ 800			Reserved.

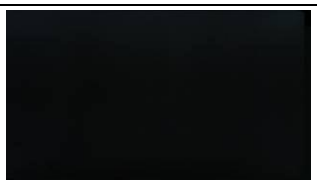
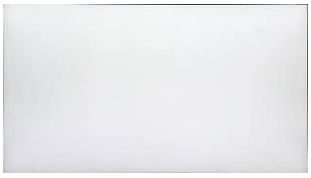
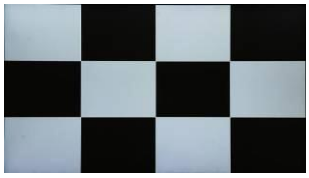
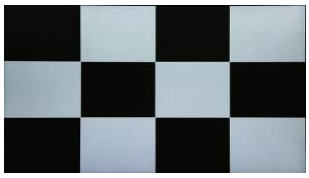
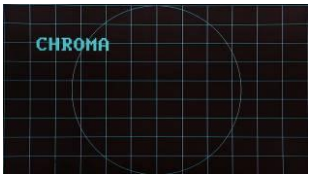
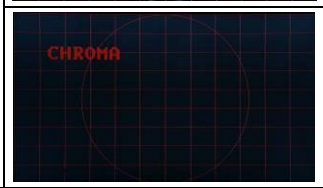
PATTERN 801-900 BMP Patterns

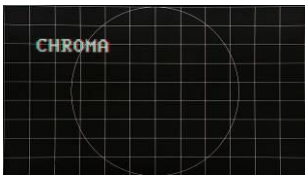
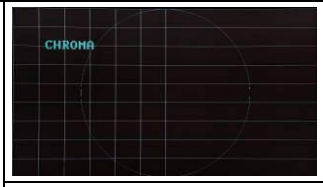
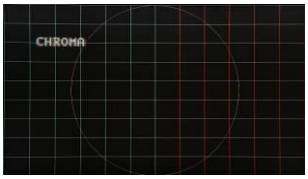
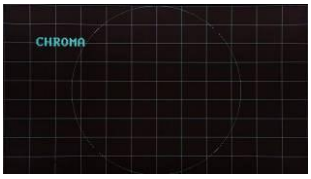
Picture (No. 801 ~ No. 900)			
NO.	**NAME**		**Description**
801 ~ 850	Picture 001 ~ Picture 050		The pictures are stored in the external USB device.
851 ~ 900			

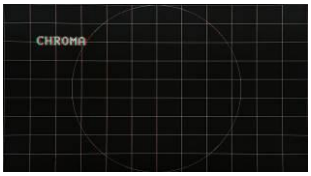
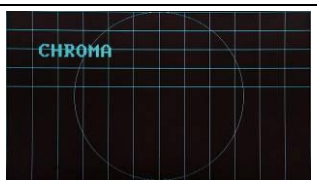
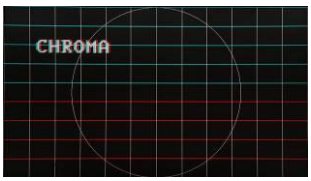
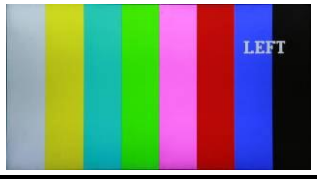
PATTERN 901-1000 3D Patterns

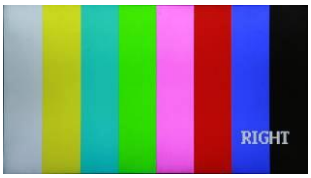
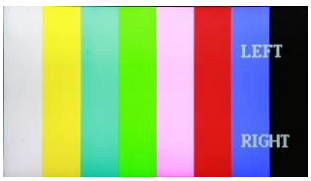
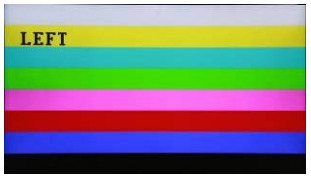
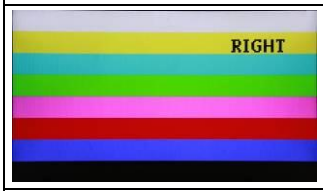
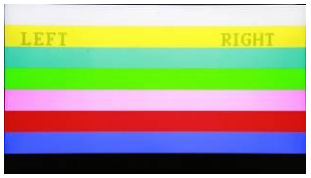
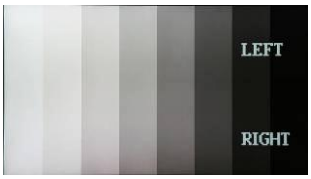
3D Patterns	Pattern No.
3D static test screen	901~920 (20 sets)
3D static display pictures (3D Max)	931~940 (10 sets)
3D real static photos	921~930 (10 sets)
3D dynamic display animation (3D Max)	940~950 (10 sets)
3D live video	N.A

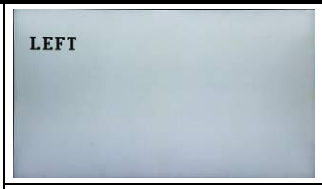
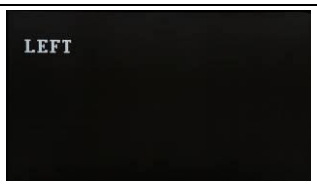
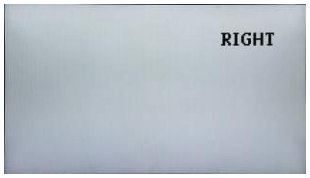
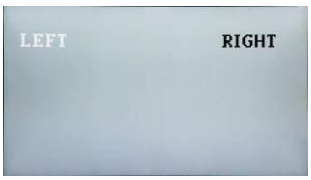
3D Pattern (No. 901 ~ No. 1000)			
NO.	**NAME**		**Description**
901	3D.L.R.CHECK		The pattern for left eye is a vertical 8-grayscale (100 ~ 0%); the brightness is the same as the pattern for right eye.
			The pattern for right eye is a vertical 8-grayscale (100 ~ 0%); the brightness is the same as the pattern for left eye.
			When a 3D image is composed, the vertical 8-grayscale can be viewed directly without using 3D glasses. The text "LEFT" and "RIGHT" provide a quick inspection to check if the left/right eye images are existed. The vertical 8-grayscale can test grayscale continuity in 3D mode.
902	3D.MERGE		The pattern for left eye is a color photo signal in fixed-pitch which interlaced with the right eye pattern.
			The pattern for right eye is a color photo signal in fixed-pitch which interlaced with the left eye pattern.
			When a 3D image is composed, the vertical 8-grayscale can be viewed directly without using 3D glasses. The text "LEFT" and "RIGHT" provide a quick inspection to check if the left/right eye images are existed. The color bar signal provides 3D mode color display for testing. The horizontal color bar interlaced position can inspect if the horizontal position is correct after the 3D left and right patterns are composed

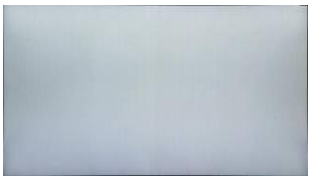
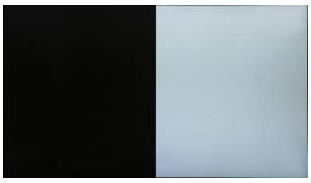
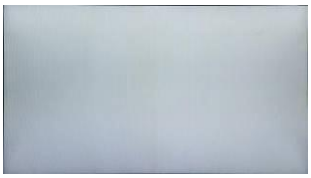
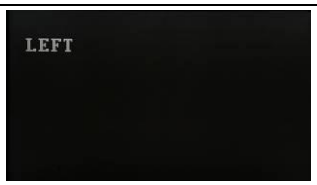
			on the display.
903	3D.CROSS TALK		The pattern for left eye is a black screen.
			The pattern for right eye is a white screen.
			When a 3D image is composed, it can inspect if the left and right eye shaded switching of 3D glasses is correct. Using with Chroma 3D optical measurement equipment can meet the automatic 3D crosstalk measurement function.
904	3D.CHECK BOARD		The pattern for left eye is a checkerboard which interlaced with the pattern for right eye.
			The pattern for right eye is a checkerboard which interlaced with the pattern for left eye.
			When a 3D image is composed, the interlaced checkerboard turns to all white without using 3D glasses. Black/white checkerboard signal makes sure the left and right eye shaded switching is correct. The checkerboard interlaced position can check if the horizontal/vertical position is correct after the 3D left and right patterns are composed on the display.
905	3D.SUB-SAMPLE		The pattern for left eye is a cyan geometric figure with the text “CHROMA” in it. *Odd for the pattern left half and even for the right half.
			The pattern for right eye is a red geometric figure with the text “CHROMA” in it. *Odd for the pattern upper half and even for the lower half.

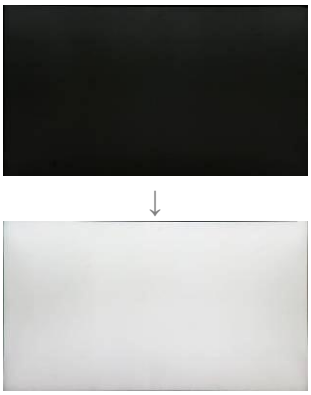
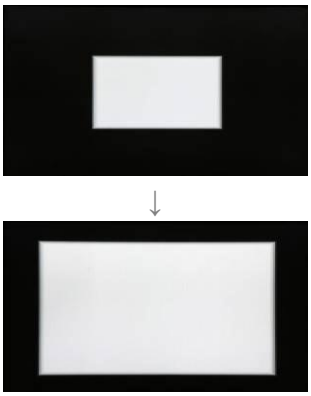
			Taking frame packing for example, when a 3D image is composed, the geometric figure interlaced to white can be viewed without using 3D glasses. It can inspect if the horizontal/vertical position is correct after the 3D left and right patterns are composed on the display. The text "CHROMA" is interlaced with left and right eyes. Use 3D glasses to see the three-dimensional effect and confirm if 3D mode is activated on TV.
906	3D.SUB-HOE		The pattern for left eye is a cyan geometric figure with the text "CHROMA" in it.
			The pattern for right eye is a red geometric figure with the text "CHROMA" in it.
			When a 3D image is composed, the cyan vertical lines on the left half and the red vertical lines on the right half as well as the rest white lines can viewed without using 3D glasses. It can inspect if the horizontal/vertical position is correct after the 3D left and right patterns are composed on the display. The word "CHROMA" is interlaced with left and right eyes. Use 3D glasses to see the three-dimensional effect and confirm if 3D mode is activated on TV. ※ **Note**: It is a dedicated test pattern for Side by Side-Half-Odd/Even that can only be outputted when 3D TYPE is set to this mode.
907	3D.SUB-HOEX		The pattern for left eye is a cyan geometric figure with a word "CHROMA" in it.
			The pattern for right eye is a red geometric figure with a word "CHROMA" in it.

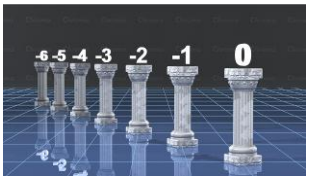
			When a 3D image is composed, the white geometric figure can be viewed without using 3D glasses. It can inspect if the horizontal/vertical position is correct after the 3D left and right patterns are composed on the display. The word “CHROMA” is interlaced with left and right eyes. Use 3D glasses to see the three-dimensional effect and confirm if 3D mode is activated on TV. ※ **Note**: It is a dedicated test pattern for Side by Side-Half-Odd/Even (Quincunx Matrix) that can only be outputted when 3D TYPE is set to this mode.
908	3D.SUB-TBOE		The pattern for left eye is a cyan geometric figure with a word “CHROMA” in it.
			The pattern for right eye is a red geometric figure with a word “CHROMA” in it.
			When a 3D image is composed, the cyan horizontal lines on the upper half and the red horizontal lines on the lower half as well as the rest white lines can be viewed without using 3D glasses. It can inspect if the horizontal/vertical position is correct after the 3D left and right patterns are composed on the display. The text “CHROMA” is interlaced with left and right eyes. Use 3D glasses to see the three-dimensional effect and confirm if 3D mode is activated on TV. ※ **Note**: It is a dedicated test pattern for Side by Top/Bottom-Odd/Even that can only be outputted when 3D TYPE is set to this mode.
909	3D.HCOLORBAR		The pattern for left eye contains horizontal color bars. The chromaticity and brightness are the same as the pattern for right eye.

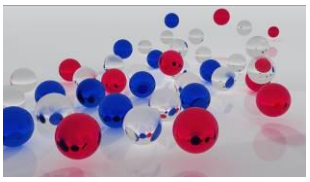
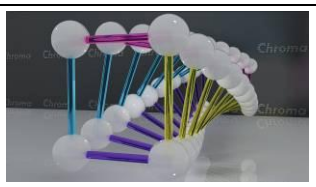
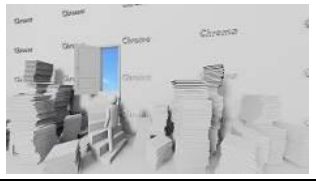
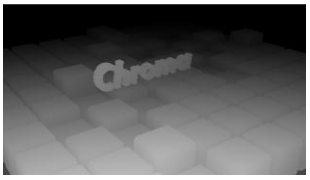
			The pattern for right eye contains horizontal color bars. The chromaticity and brightness are the same as the pattern for left eye.
			When a 3D image is composed, the horizontal color bars and the text "LEFT" and "RIGHT" can be viewed without using 3D glasses. They provide a quick inspection to check if the left/right eye images are existed. The color bar provides color display for testing in 3D mode.
910	3D.VCOLORBAR		The pattern for left eye contains vertical color bars. The chromaticity and brightness are the same as the pattern for right eye.
			The pattern for right eye contains vertical color bars. The chromaticity and brightness are the same as the pattern for left eye.
			When a 3D image is composed, the vertical color bars and the text "LEFT" and "RIGHT" can be viewed without using 3D glasses. They provide a quick inspection to check if the left/right eye images are existed. The color bar provides color display for testing in 3D mode.
911	3D.GRAYBAR		The pattern for left eye is a horizontal 8-grayscale (100~0%). The brightness is the same as the pattern for right eye.
			The pattern for right eye is a horizontal 8-grayscale (100~0%). The brightness is the same as the pattern for left eye.
			When a 3D image is composed, the horizontal 8-grayscale can be viewed without using 3D glasses. The text "LEFT" and "RIGHT" provide a quick inspection to check if the left/right eye images are existed. The horizontal 8-grayscale can test grayscale continuity in 3D mode.

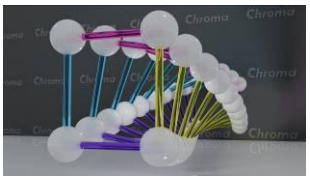
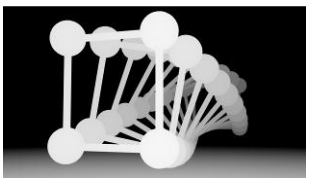
912	3D.LWRB		The pattern for left eye is a white screen with black text.
			The pattern for right eye is a black screen with white text.
			When a 3D image is composed, it can inspect if the left and right eye shaded switching of 3D glasses is correct. The text “LEFT” and “RIGHT” provide a quick inspection to check if the left/right eye images are existed. The left and right patterns in black and white with Chroma 3D optical measurement equipment can meet the automatic 3D crosstalk measurement function.
913	3D.LBRW		The pattern for left eye is a black screen with white text.
			The pattern for right eye is a white screen with black text.
			When a 3D image is composed, it can inspect if the left and right eye shaded switching of 3D glasses is correct. The text “LEFT” and “RIGHT” provide a quick inspection to check if the left/right eye images are existed. The left and right patterns in black and white with Chroma 3D optical measurement equipment can meet the automatic 3D crosstalk measurement function.
914	3D.1/2-BW		The pattern for left eye is black for the left half and white for the right half. It is a reversed pattern for right eye.
			The pattern for right eye is white for the left half and black for the right half. It is a reversed pattern for left eye.

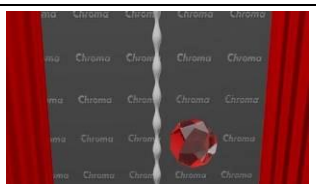
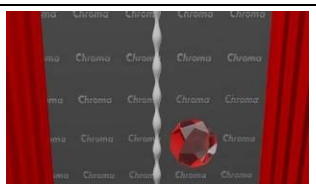
			When a 3D image is composed, the white pattern can be viewed without using 3D glasses. The junction area can test if the 3D composition horizontal position is correct. The left and right patterns in black and white with Chroma 3D optical measurement equipment can meet the automatic 3D crosstalk measurement function.
915	3D.1/2-WB		The pattern for left eye is white for the left half and black for the right half. It is a reversed pattern for right eye
			The pattern for right eye is black for the left half and white for the right half. It is a reversed pattern for left eye.
			When a 3D image is composed, the white pattern can be viewed without using 3D glasses. The junction area can test if the 3D composition horizontal position is correct. The left and right patterns in black and white with Chroma 3D optical measurement equipment can meet the automatic 3D crosstalk measurement function.
916	3D.BLACK		The pattern for left eye is a black screen with white text.
			The pattern for right eye is a black screen with white text.
			When a 3D image is composed, it can inspect if the left and right eye shaded switching of 3D glasses is correct. The text "LEFT" and "RIGHT" provide a quick inspection to check if the left/right eye images are existed. The black background with white text can test the black and white contrast and the text presentation. The all black pattern can check the black screen presentation in 3D mode.

917	3D.WHITE		The pattern for left eye is a white screen with black text.
			The pattern for right eye is a white screen with black text.
			When a 3D image is composed, it can inspect if the left and right eye shaded switching of 3D glasses is correct. The text “LEFT” and “RIGHT” provide a quick inspection to check if the left/right eye images are existed. The white background with black text can test the black and white contrast and the text presentation. The all white pattern can check the white screen presentation in 3D mode.
918	3D.WHITE_TUNE		The pattern for left/right eye and composite are increasing luminance from all black to all white (the luminance has 255 levels). When outputting a pattern, press Select to switch to manual mode and it can control the pattern luminance separately for left and right eye. Press the left and right keys to switch the setting, and up and down keys to adjust the luminance. It provides independent luminance adjustment function for 3D left and right patterns to inspect and adjust the 3D luminance and balance for left and right.
919	3D.BOX		The pattern for left/right eye and composite are increasing from small white box to large white one (scaled for 100 levels). When outputting a pattern, press Select to switch to manual mode and it can control the pattern size of left and right eye respectively. Press the left and right keys to switch the current setting, up and down keys to adjust the size. It provides independent adjustment function for 3D left and right white blocks size to inspect and adjust the 3D luminance and balance for left and right.

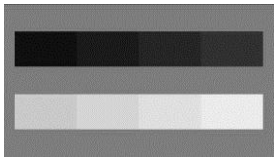
920	3D.DOT/LINE		The upper half of the pattern for left eye is composed of dots and the lower half is composed of lines. It is the same as the pattern for right eye. *Dots and lines are all started from odd.
			The upper half of the pattern for right eye is composed of dots and the lower half is composed of lines. It is the same as the pattern for left eye. *Dots and lines are all started from odd.
			When a 3D image is composed, the white screen can be viewed without using 3D glasses. The text "LEFT" and "RIGHT" provide a quick inspection to check if the left/right eye images are existed. The dots and lines alignments can be used for resolution test in 3D mode.
921	3D.River		It is a real 3D image. The branches spread at the front and middle with a background of river and dry forest show the depth of field space in 3D. It is to evaluate the front, middle and rear depth of field for 3D.
922	3D.Sakura1		It is a real 3D image. The cherry blossoms spread in the image are vivid and multi-layered. It is to evaluate the rendered effect of 3D layer and detail.
923	3D.Sakura2		It is a real 3D image. The cherry blossoms spread in the image are vivid and multi-layered. It is to evaluate the rendered effect of 3D layer and detail.
924	3D.Pillar0		It is a 3D depth of field test image using pillars with scale to mark equidistant depth of field. It is focused on 0 which is located on the right of the pattern. It is to evaluate the expression of 3D depth of field.
925	3D.Pillar2		It is a 3D depth of field test image using pillars with scale to mark equidistant depth of field. It is focused on 0 which is located at the center of the pattern. It is to evaluate the expression of 3D depth of field.
926 ~ 930			Reserved.

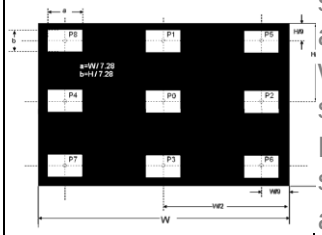
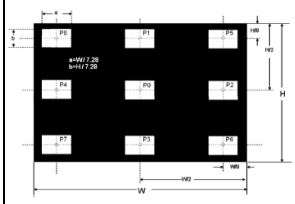
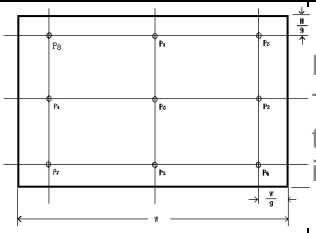
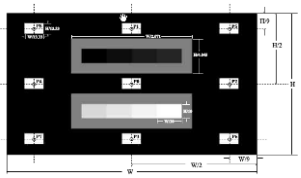
931	3D.Chroma logo		The foreground Chroma logo flew out of the screen intensifying the 3D visual effect. It is to evaluate the 3D effect of an object.
932	3D.Chess		The chess pieces with different depth of field show multi-layer depth of fields. The two-color checkerboard at the bottom shows equidistant depth of field. It is to evaluate the transparent gloss and layer effect of a 3D object.
933	3D.Chroma		The platform is composed of metal squares with layer gaps to enrich the 3D sense while the Chroma LOGO renders vertical 3D sense. It is to evaluate the metallic gloss and layer effect of a 3D object.
934	3D.Marbles		The free falling marbles shown in glass quality and color present two delicate levels. It is to evaluate the 3D sense and color rendered effect of an object.
935	3D.Square Stick		It uses spiral objects to build visual wire and sense of spatial depth. It is to evaluate the 3D depth of field and color rendered effect.
936	3D.Coffee cup		The coffee cup with 3D miniature urban city along with captions on the foreground is used to evaluate the 3D sense and caption rendered effect of an object.
937	3D.Books & Door		The pure white scene with books stacking in different depth of field is used to evaluate the 3D sense and the level gap.
938	3D.Depth.Chroma	 	The 3D Depth format test patterns are composed of original images and depth images. It needs to be used with Timing parameter 3D TYPE is L + Depth to test if the composite of 3D depth format is correct.

939	3D.Depth.Stick	 	
940			Reserved.
941	C-1080-SSH-OO		The 1920x1080 side-by-side (Half) and SUB-SAMPLING MODE=OO 3D motion image test pattern need to use this timing format to output image. A motion CHROMA LOGO is flying from the screen end to the front. The original depth of field will become bulged. When it reaches the set position, the text will rotate to see depth of field and bulge effect.
942	S-1080-SSH-OO		The 1920x1080 side-by-side (Half) and SUB-SAMPLING MODE=OO 3D motion image test pattern need to use this Timing format to output image. The central spiral column is used as a fulcrum with a revolving ball surrounding the column. When the ball moves, the user can obviously feel the depth of field difference as positioned before, behind and surrounding the column.
943	C-1080-SSH-OOX		The 1920x1080 side-by-side (Half) and SUB-SAMPLING MODE=OOX 3D motion image test pattern needs to use this timing format to output image.
944	S-1080-SSH-OOX		The 1920x1080 side-by-side (Half) and SUB-SAMPLING MODE=OOX 3D motion image test pattern need to use this timing format to output image.
945	C-1080-TB-OO		The 1920x1080 top and bottom and SUB-SAMPLING MODE=OO 3D motion image test pattern need to use this timing format to output image.

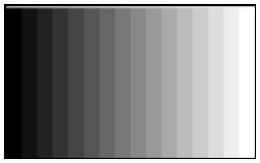
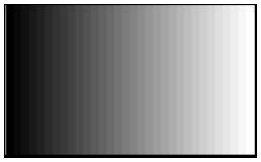
946	S-1080-TB-OO		The 1920x1080 top and bottom and SUB-SAMPLING MODE=OO 3D motion image test pattern need to use this timing format to output image.
947	C-720-FP		The 1280x720 frame packing 3D motion image test pattern needs to use this timing format to output image.
948	S-720-FP		The 1280x720 frame packing 3D motion image test pattern needs to use this timing format to output image.
949	S-1080-FP		The 1920x1080 frame packing 3D motion image test pattern needs to use this timing format to output image.
950 ~ 1000			Reserved

PATTERN 1001-1019 Energy Star Patterns

Picture (No. 1001 ~ No. 1019)			
NO.	**NAME**		**Description**
1001	ES-Black level		Full black (0 %) as defined in IEC 60107-1:1997, 3.2.1.5
1002	ES-White level		Full white 100 % as defined in IEC 60107-1:1997, 3.2.1.5
1003	ES-CBar100/75		For 50 Hz systems, the (100/0/75/0) color bar signal for PAL and SECAM receivers as defined in IEC 60107-1:1997, 3.2.1.2 shall be used.
1004	ES-CBar75/75		For 60 Hz system, the (75/0/75/0) color bar signal for NTSC defined in IEC 60107-1:1997, 3.2.1.2
1005	ES-Three bar		Three bars of white (100 %) over a black (0 %) background as defined in IEC 60107-1:1997, 3.2.1.3
1006	ESGB-8 GRAY		The limit 8-grayscale signal levels are the two rows of signals that generated on 50% of gray background. The gray scale of the 1st row: 0% / 5% / 10% / 15%

			The gray scale of the 2nd row: 85% / 90% / 95% / 100% Each gray scale rectangle is 5% of full screen and the same ratio with the entire pattern. The signal is for adjusting standard status of display.
1007	ESGB-17%APL		The 9 white windows on the pattern black background are 17% APL white window signals. The positions and size diagrams are shown below: W: The width of screen effective luminous surface. H: The height of screen effective luminous surface. a: The width of white window. b: The height of white white window. P0~P8: The luminance test dot.
1008	ESGB-17%APL-B		Same as the pattern above, the 17%APL white window signals (intermittent black screen) add loop display of black screen. The loop display is 3 seconds for black screen and 7 seconds for white windows.
1009	ESGB -9Position		Positioning 9 windows signals The positioning signals draw white lines on the black background and the intersections are the positioning points.
1010	ESGB-17%APL+8G		The 17%APL white window signals plus the limit 8-grayscale signal levels are the two rows of signals that generated on 50% of gray background. The gray scale of the 1st row: 0% / 5% / 10% / 15% The gray scale of the 2nd row: 85% / 90% / 95% / 100% Each gray scale rectangle is 5% of full screen and the same ratio with the entire pattern. The signal is for adjusting standard status of display.
1011 ~ 1019			Reserved.

PATTERN 1020-1200 HDR Patterns

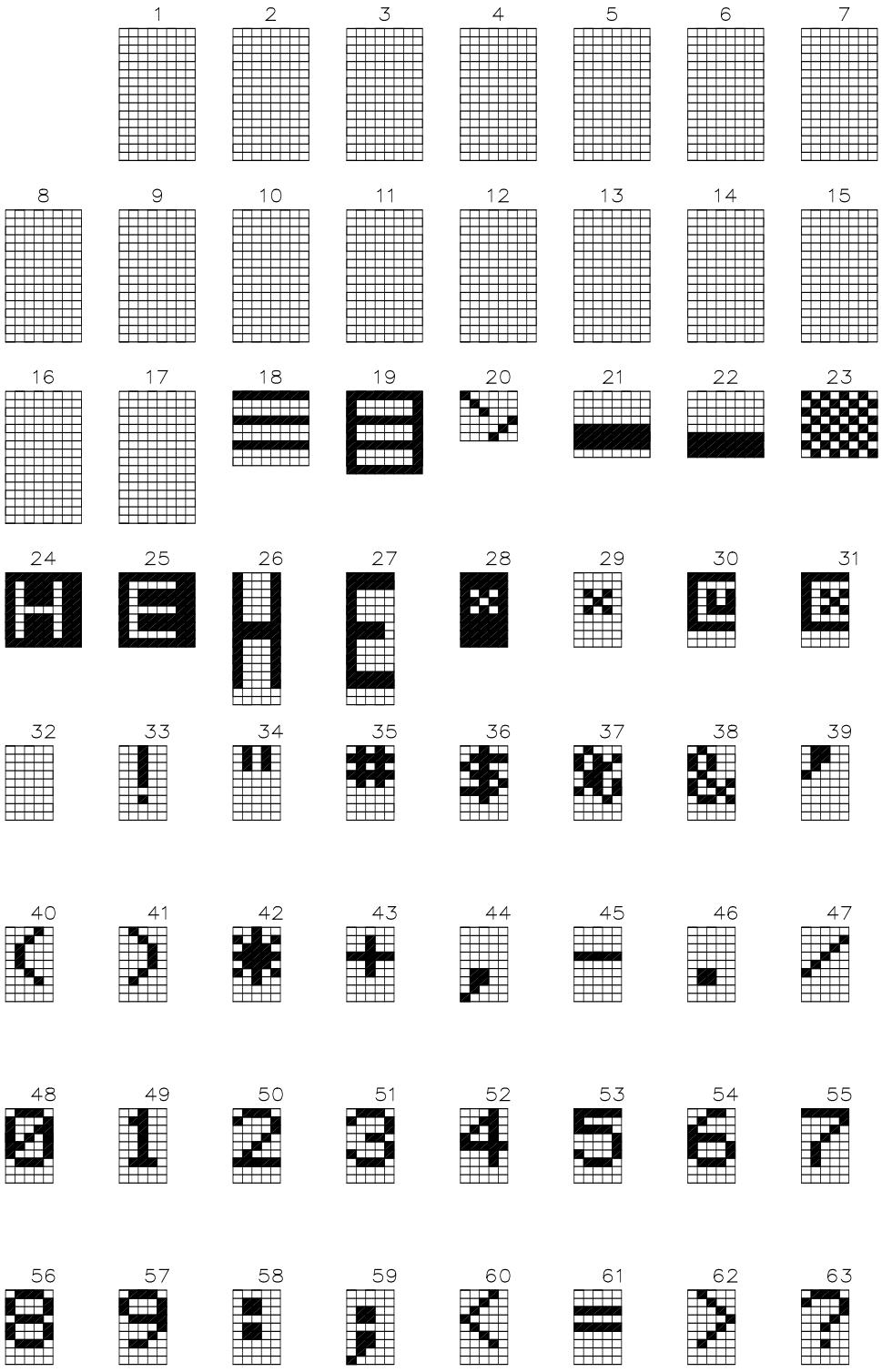
Picture (No. 1020 ~ No. 1200)			
NO.	**NAME**		**Description**
1020	HDR 16 Gray		It is created by Pattern #140 - 16Gray.
1021	HDR 32 Gray		It is created by Pattern #141 - 32Gray.
1022	HDR 64 Gray		It is created by Pattern #142 - 64Gray.
1023	HDR 100% White		It is a 100% full white test pattern. (Created by Pattern #20, see GB/T 26270-2010 – section 5.4)
1024	HDR 100% Red		It is a 100% full red test pattern. (Created by Pattern #21, see GB/T 26270-2010 – section 5.23)
1025	HDR 100% Green		It is a 100% full green test pattern. (Created by Pattern #22, see GB/T 26270-2010 – section 5.23)
1026	HDR 100% Blue		It is a 100% full blue test pattern. (Created by Pattern #23, see GB/T 26270-2010 – section 5.23)
1027	HDR 1% White Window		It is a 1% white window test pattern. (1% is the area ratio white window occupied in the entire image. It is created by Pattern #504.)
1028	HDR 10% White Window		It is a 10% white window test pattern. (10% is the area ratio white window occupied in the entire image. It is created by Pattern #504.)

1029	HDR 20% White Window		It is a 20% white window test pattern. (20% is the area ratio white window occupied in the entire image. It is created by Pattern #504.)
1030	HDR 30% White Window		It is a 30% white window test pattern. (30% is the area ratio white window occupied in the entire image. It is created by Pattern #504.)
1031	HDR 40% White Window		It is a 40% white window test pattern. (40% is the area ratio white window occupied in the entire image. It is created by Pattern #504.)
1032	HDR 2.5%SIDE WINDOW		It is a 2.5% side windows test pattern. (2.5% is the area ratio of each white window on the corner occupied in the entire image. CESI TS008-2016 <HDR Display Certification Technical Specifications> P.9
1033	HDR COLOR CHECKER-F		The color reduction test chart (full range). (The info of each pane color, see CESI TS008-2016 <HDR Display Certification Technical Specifications> P.15)
1034	HDR COLOR CHECKER-N		The color reduction test chart narrow range). (The info of each pane color, see CESI TS008-2016 <HDR Display Certification Technical Specifications> P.15)
1035 ~ 1045	HDR 0%~100% APL WHITE WINDOW	 (White window signal on 0% background)	The APL white window signal is a luminance signal. The background changes from 0% to 100% with 10% step length. The window width is 300×300 pixels. There are 11 patterns in total. (See TIRT-GK-JS-34-2016 < Technical Specification for HDR Characteristic Certification of LCD>P.7)
1046~ 1056	HDR 0%~100% APL BLACK WINDOW	 (Black window signal on 100% background)	The APL black window signal is a luminance signal. The background changes from 0% to 100% with 10% step length. The window width is 300×300 pixels. There are 11 patterns in total. (See TIRT-GK-JS-34-2016 < Technical Specification for HDR Characteristic Certification of LCD>P.7)
1057~1200			Reserved.

Appendix C Characters List

Character Fonts

CODE No. #	No. of CHAR.	TYPE	READ / WRITE	MAX. FONT SIZE	REMARKS
1 ~ 31	31	DEFAULT	READ	8*16	
32 ~ 127	96	DEFAULT	READ	5*7	(STORE SIZE 5*9)
128 ~ 159	32	DEFAULT	READ	8*16	
160 ~ 255	96	DEFAULT	READ	7*9	(PROPORTIONAL WIDTH STORE SIZE
256 ~ 351	96	DEFAULT	READ	7*9	A*12)
352 ~ 383	32	DEFAULT	READ	16*16	(PC FONT,STORE SIZE
384 ~ 415	32	DEFAULT	READ	24*24	A*13)
416 ~ 431	16	DEFAULT	READ	32*32	
432 ~ 435	4	DEFAULT	READ	64*64	
436 ~ 499	-	-	-	-	RESERVED RESERVED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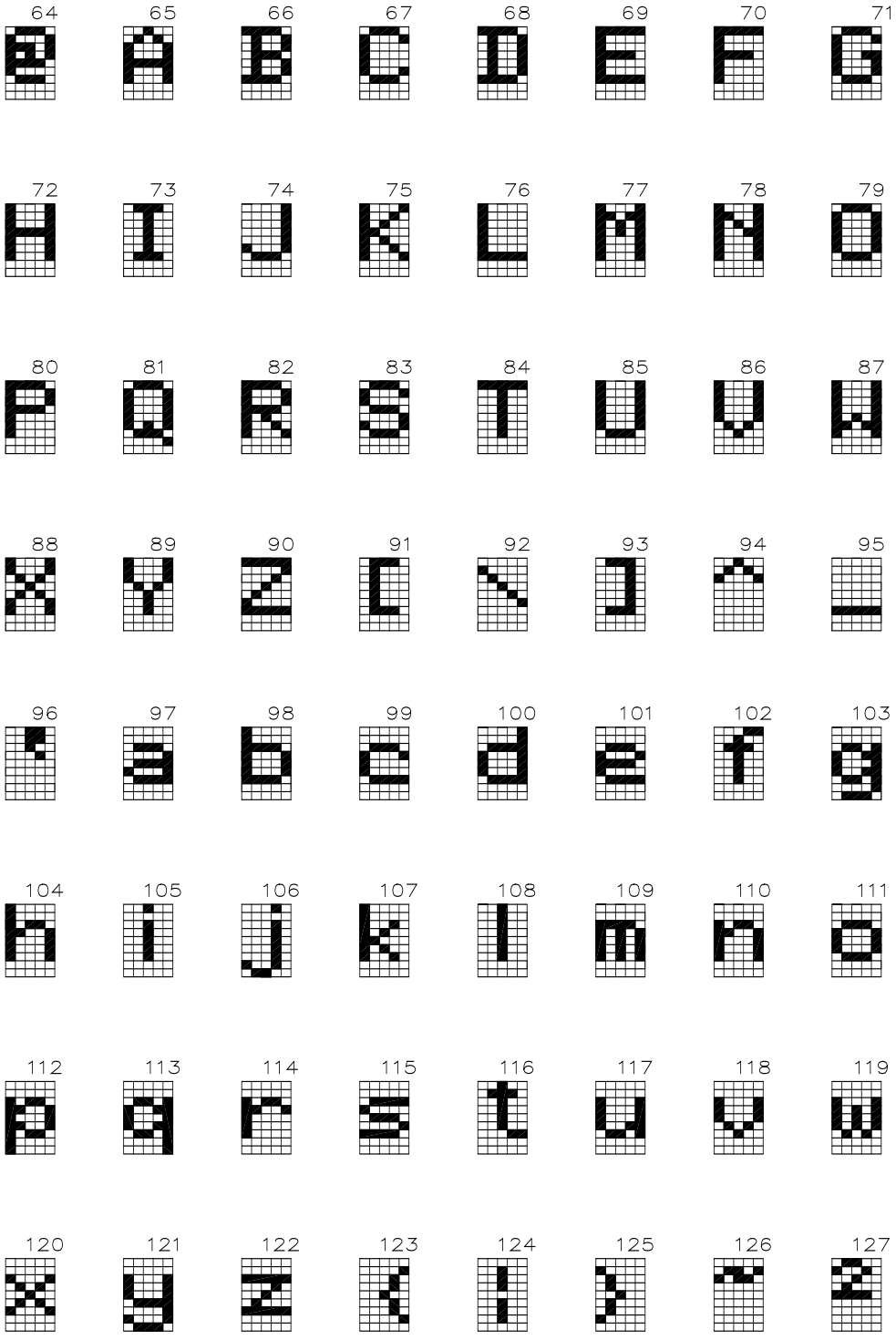
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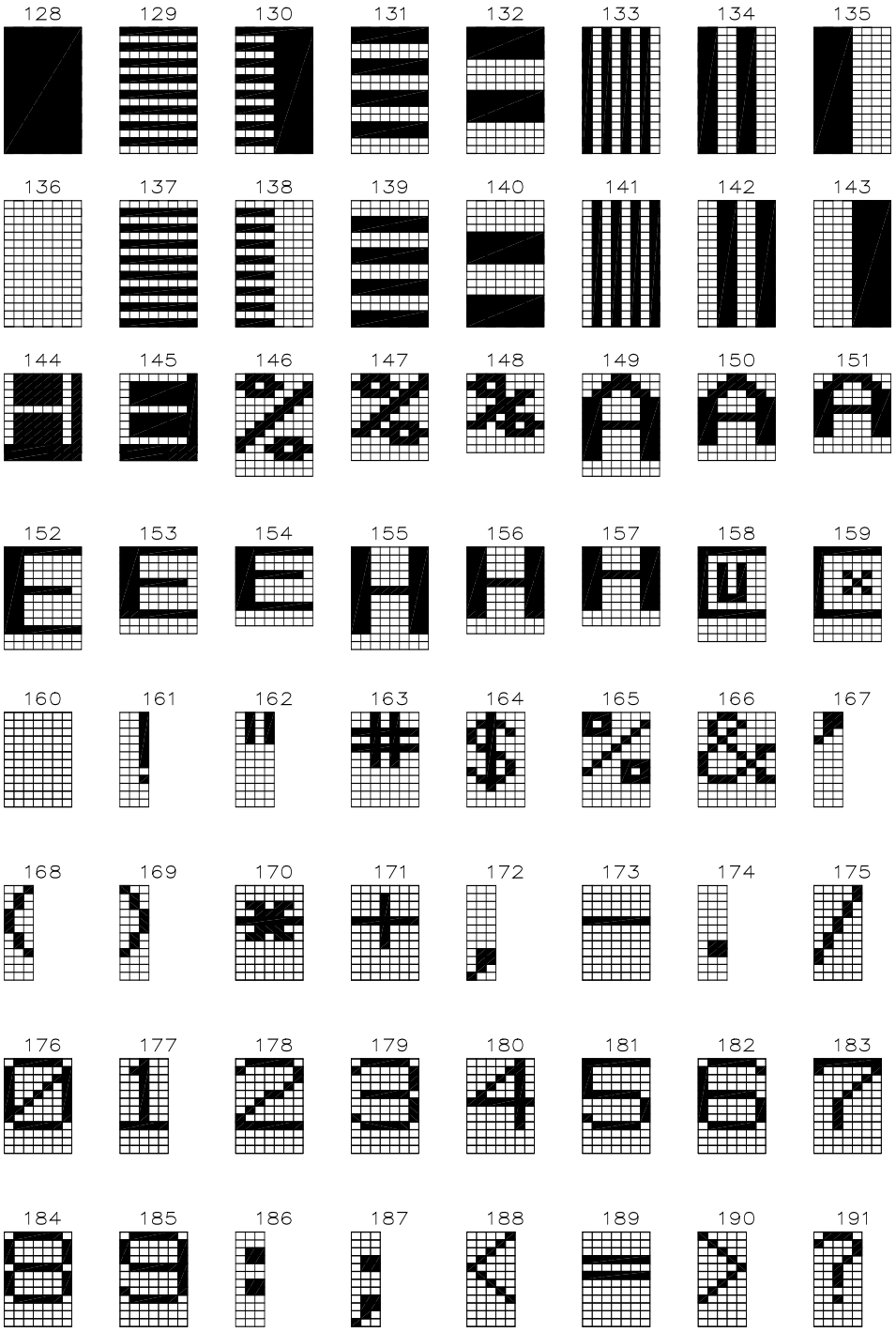
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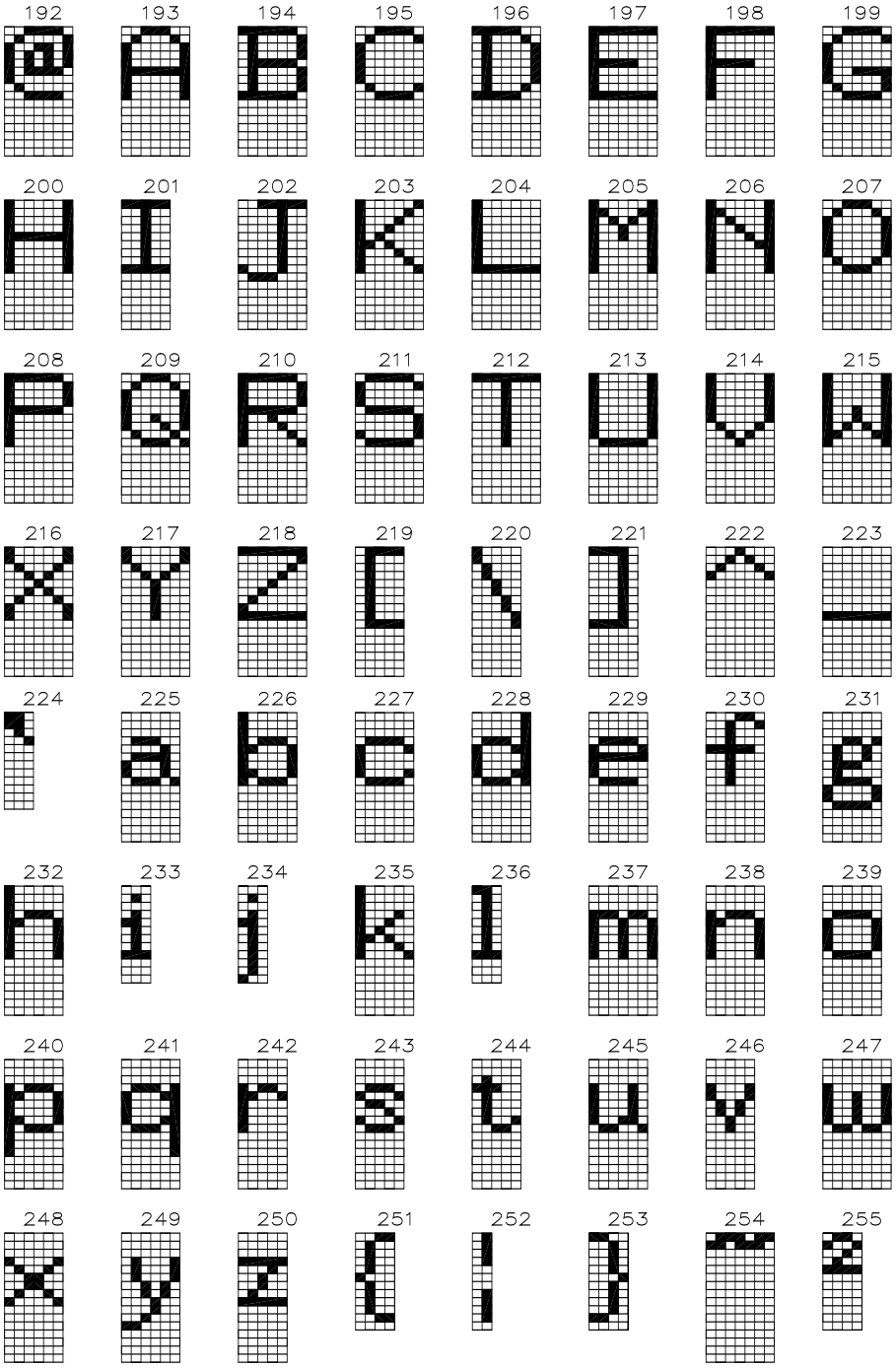
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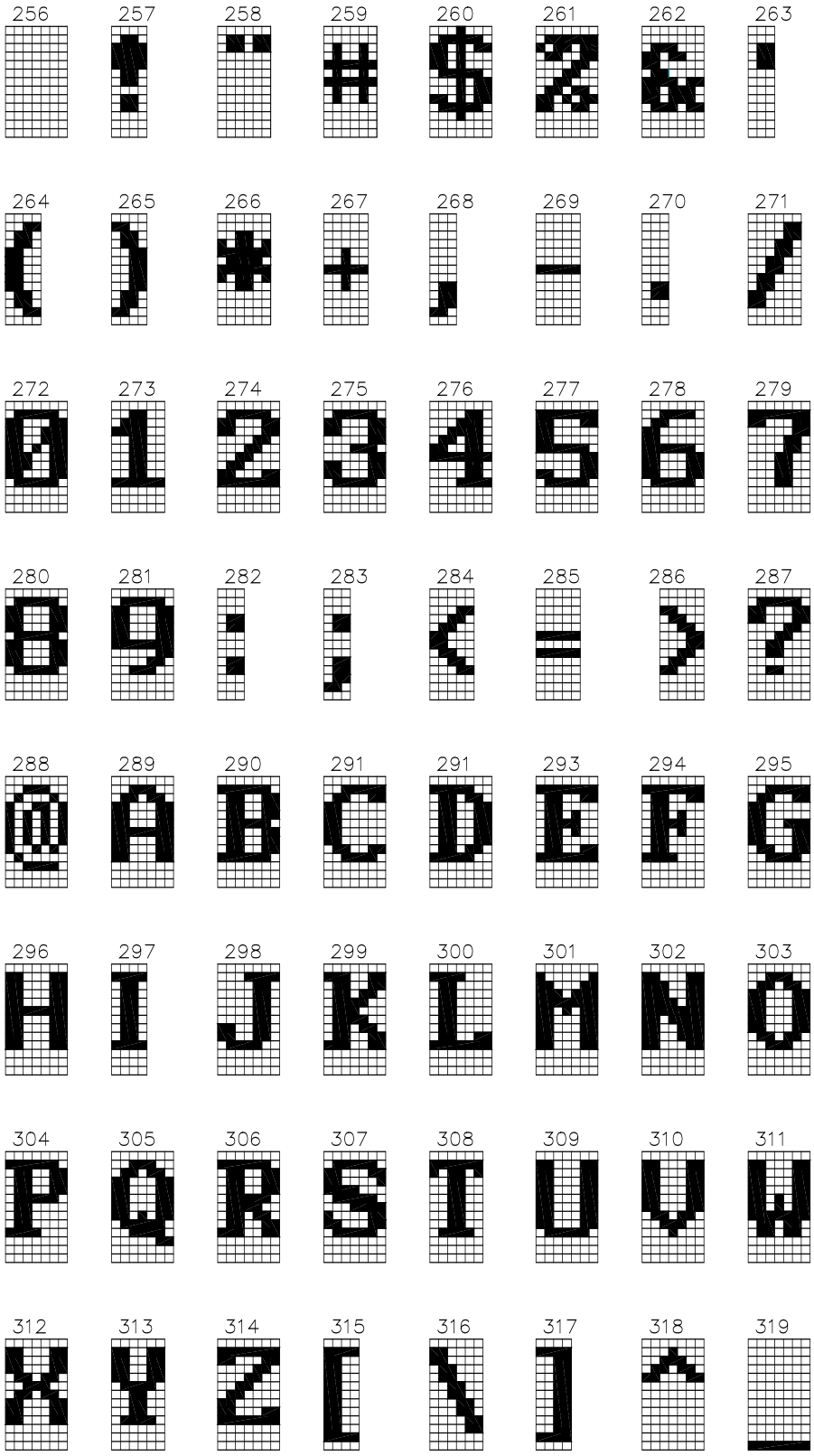
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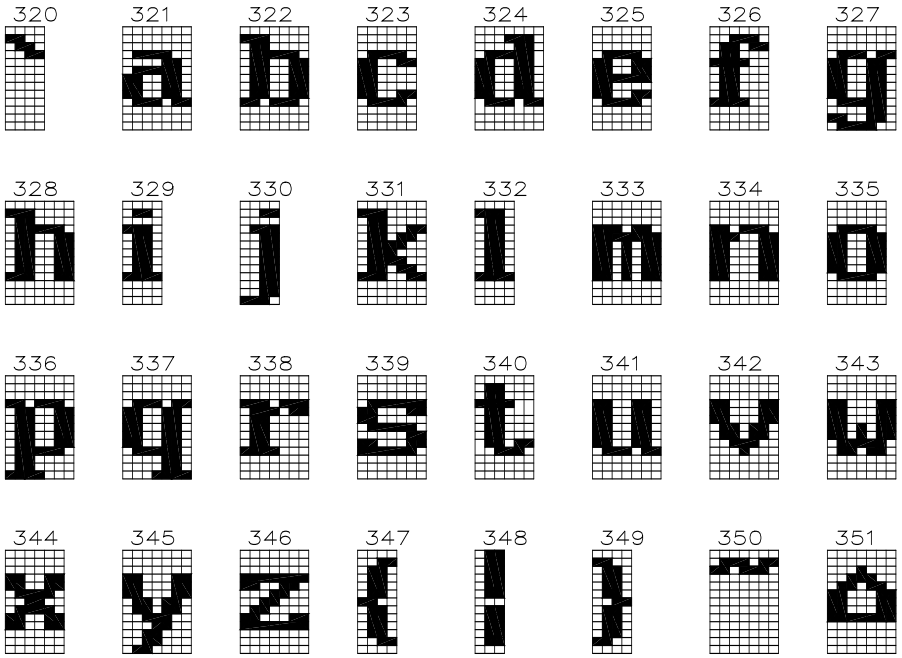
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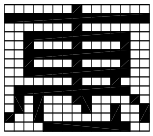
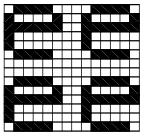
353 

354 

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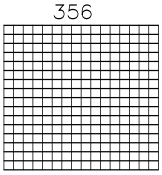
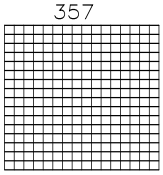
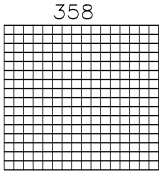
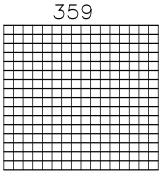
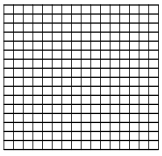
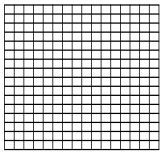
356 

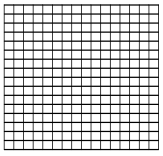
357 

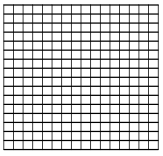
358 

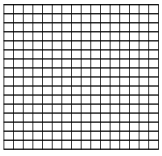
359 

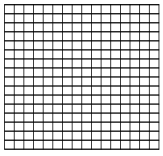
360 

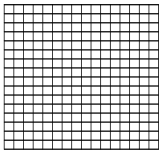
361 

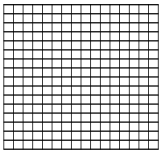
362 

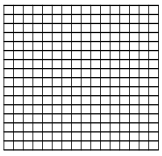
363 

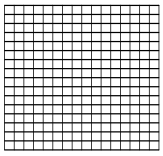
364 

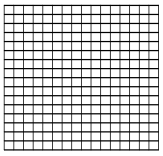
365 

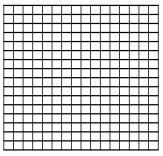
366 

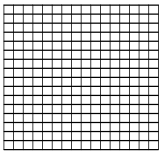
367 

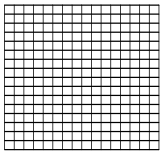
368 

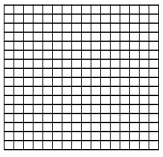
369 

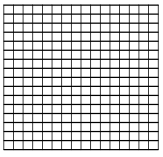
370 

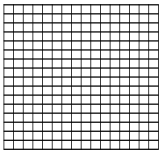
371 

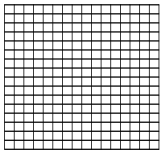
372 

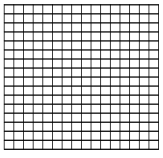
373 

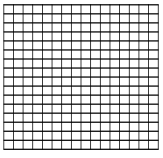
374 

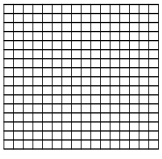
375 

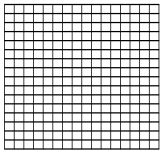
376 

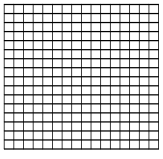
377 

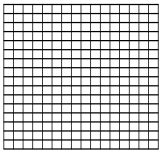
378 

379 

380 

381 

382 

383 

Appendix D Pen Forms List

ANALOG-COLOR PEN FORM

PEN	R	G	B	PEN	R	G	B	PEN	R	G	B	PEN	R	G	B
0	0	0	0	**64**	112	0	0	**128**	0	112	0	**192**	112	112	0
1	0	0	2696	**65**	240	0	0	**129**	0	240	0	**193**	240	240	0
2	2696	0	0	**66**	368	0	0	**130**	0	368	0	**194**	368	368	0
3	2696	0	2696	**67**	496	0	0	**131**	0	496	0	**195**	496	496	0
4	0	2696	0	**68**	624	0	0	**132**	0	624	0	**196**	624	624	0
5	0	2696	2696	**69**	756	0	0	**133**	0	756	0	**197**	756	756	0
6	2696	2696	0	**70**	884	0	0	**134**	0	884	0	**198**	884	884	0
7	2696	2696	2696	**71**	1012	0	0	**135**	0	1012	0	**199**	1012	1012	0
8	2056	2056	2056	**72**	1140	0	0	**136**	0	1140	0	**200**	1140	1140	0
9	0	0	4095	**73**	1268	0	0	**137**	0	1268	0	**201**	1268	1268	0
10	4095	0	0	**74**	1396	0	0	**138**	0	1396	0	**202**	1396	1396	0
11	4095	0	4095	**75**	1524	0	0	**139**	0	1524	0	**203**	1524	1524	0
12	0	4095	0	**76**	1652	0	0	**140**	0	1652	0	**204**	1652	1652	0
13	0	4095	4095	**77**	1780	0	0	**141**	0	1780	0	**205**	1780	1780	0
14	4095	4095	0	**78**	1908	0	0	**142**	0	1908	0	**206**	1908	1908	0
15	4095	4095	4095	**79**	2036	0	0	**143**	0	2036	0	**207**	2036	2036	0
16	204	204	204	**80**	2168	0	0	**144**	0	2168	0	**208**	2168	2168	0
17	408	408	408	**81**	2296	0	0	**145**	0	2296	0	**209**	2296	2296	0
18	820	820	820	**82**	2424	0	0	**146**	0	2424	0	**210**	2424	2424	0
19	1228	1228	1228	**83**	2552	0	0	**147**	0	2552	0	**211**	2552	2552	0
20	1636	1636	1636	**84**	2680	0	0	**148**	0	2680	0	**212**	2680	2680	0
21	1964	1964	1964	**85**	2808	0	0	**149**	0	2808	0	**213**	2808	2808	0
22	2048	2048	2048	**86**	2936	0	0	**150**	0	2936	0	**214**	2936	2936	0
23	2088	2088	2088	**87**	3064	0	0	**151**	0	3064	0	**215**	3064	3064	0
24	2168	2168	2168	**88**	3192	0	0	**152**	0	3192	0	**216**	3192	3192	0
25	2456	2456	2456	**89**	3320	0	0	**153**	0	3320	0	**217**	3320	3320	0
26	2864	2864	2864	**90**	3452	0	0	**154**	0	3452	0	**218**	3452	3452	0
27	3068	3068	3068	**91**	3580	0	0	**155**	0	3580	0	**219**	3580	3580	0
28	3272	3272	3272	**92**	3708	0	0	**156**	0	3708	0	**220**	3708	3708	0
29	3684	3684	3684	**93**	3836	0	0	**157**	0	3836	0	**221**	3836	3836	0
30	3888	3888	3888	**94**	3964	0	0	**158**	0	3964	0	**222**	3964	3964	0
31	496	496	496	**95**	4095	0	0	**159**	0	4095	0	**223**	4095	4095	0
32	0	0	112	**96**	112	0	112	**160**	0	112	112	**224**	112	112	112
33	0	0	240	**97**	240	0	240	**161**	0	240	240	**225**	240	240	240
34	0	0	368	**98**	368	0	368	**162**	0	368	368	**226**	368	368	368
35	0	0	496	**99**	496	0	496	**163**	0	496	496	**227**	496	496	496
36	0	0	624	**100**	624	0	624	**164**	0	624	624	**228**	624	624	624
37	0	0	756	**101**	756	0	756	**165**	0	756	756	**229**	756	756	756
38	0	0	884	**102**	884	0	884	**166**	0	884	884	**230**	884	884	884
39	0	0	1012	**103**	1012	0	1012	**167**	0	1012	1012	**231**	1012	1012	1012
40	0	0	1140	**104**	1140	0	1140	**168**	0	1140	1140	**232**	1140	1140	1140
41	0	0	1268	**105**	1268	0	1268	**169**	0	1268	1268	**233**	1268	1268	1268
42	0	0	1396	**106**	1396	0	1396	**170**	0	1396	1396	**234**	1396	1396	1396
43	0	0	1524	**107**	1524	0	1524	**171**	0	1524	1524	**235**	1524	1524	1524
44	0	0	1652	**108**	1652	0	1652	**172**	0	1652	1652	**236**	1652	1652	1652
45	0	0	1780	**109**	1780	0	1780	**173**	0	1780	1780	**237**	1780	1780	1780
46	0	0	1908	**110**	1908	0	1908	**174**	0	1908	1908	**238**	1908	1908	1908
47	0	0	2036	**111**	2036	0	2036	**175**	0	2036	2036	**239**	2036	2036	2036
48	0	0	2168	**112**	2168	0	2168	**176**	0	2168	2168	**240**	2168	2168	2168
49	0	0	2296	**113**	2296	0	2296	**177**	0	2296	2296	**241**	2296	2296	2296
50	0	0	2424	**114**	2424	0	2424	**178**	0	2424	2424	**242**	2424	2424	2424
51	0	0	2552	**115**	2552	0	2552	**179**	0	2552	2552	**243**	2552	2552	2552
52	0	0	2680	**116**	2680	0	2680	**180**	0	2680	2680	**244**	2680	2680	2680
53	0	0	2808	**117**	2808	0	2808	**181**	0	2808	2808	**245**	2808	2808	2808
54	0	0	2936	**118**	2936	0	2936	**182**	0	2936	2936	**246**	2936	2936	2936
55	0	0	3064	**119**	3064	0	3064	**183**	0	3064	3064	**247**	3064	3064	3064
56	0	0	3192	**120**	3192	0	3192	**184**	0	3192	3192	**248**	3192	3192	3192
57	0	0	3320	**121**	3320	0	3320	**185**	0	3320	3320	**249**	3320	3320	3320
58	0	0	3452	**122**	3452	0	3452	**186**	0	3452	3452	**250**	3452	3452	3452
59	0	0	3580	**123**	3580	0	3580	**187**	0	3580	3580	**251**	3580	3580	3580
60	0	0	3708	**124**	3708	0	3708	**188**	0	3708	3708	**252**	3708	3708	3708
61	0	0	3836	**125**	3836	0	3836	**189**	0	3836	3836	**253**	3836	3836	3836

62	0	0	3964	**126**	3964	0	3964	**190**	0	3964	3964	**254**	3964	3964	3964
63	0	0	4095	**127**	4095	0	4095	**191**	0	4095	4095	**255**	4095	4095	4095

PEN	R	G	B	PEN	R	G	B	PEN	R	G	B	PEN	R	G	B
256	0	0	0	**320**	1028	1028	1028	**384**	2056	2056	2056	**448**	3083	3083	3083
257	16	16	16	**321**	1044	1044	1044	**385**	2072	2072	2072	**449**	3099	3099	3099
258	32	32	32	**322**	1060	1060	1060	**386**	2088	2088	2088	**450**	3115	3115	3115
259	48	48	48	**323**	1076	1076	1076	**387**	2104	2104	2104	**451**	3131	3131	3131
260	64	64	64	**324**	1092	1092	1092	**388**	2120	2120	2120	**452**	3148	3148	3148
261	80	80	80	**325**	1108	1108	1108	**389**	2136	2136	2136	**453**	3164	3164	3164
262	96	96	96	**326**	1124	1124	1124	**390**	2152	2152	2152	**454**	3180	3180	3180
263	112	112	112	**327**	1140	1140	1140	**391**	2168	2168	2168	**455**	3196	3196	3196
264	128	128	128	**328**	1156	1156	1156	**392**	2184	2184	2184	**456**	3212	3212	3212
265	145	145	145	**329**	1172	1172	1172	**393**	2200	2200	2200	**457**	3228	3228	3228
266	161	161	161	**330**	1188	1188	1188	**394**	2216	2216	2216	**458**	3244	3244	3244
267	177	177	177	**331**	1204	1204	1204	**395**	2232	2232	2232	**459**	3260	3260	3260
268	193	193	193	**332**	1220	1220	1220	**396**	2248	2248	2248	**460**	3276	3276	3276
269	209	209	209	**333**	1237	1237	1237	**397**	2264	2264	2264	**461**	3292	3292	3292
270	225	225	225	**334**	1253	1253	1253	**398**	2280	2280	2280	**462**	3308	3308	3308
271	241	241	241	**335**	1269	1269	1269	**399**	2296	2296	2296	**463**	3324	3324	3324
272	257	257	257	**336**	1285	1285	1285	**400**	2312	2312	2312	**464**	3340	3340	3340
273	273	273	273	**337**	1301	1301	1301	**401**	2329	2329	2329	**465**	3356	3356	3356
274	289	289	289	**338**	1317	1317	1317	**402**	2345	2345	2345	**466**	3372	3372	3372
275	305	305	305	**339**	1333	1333	1333	**403**	2361	2361	2361	**467**	3388	3388	3388
276	321	321	321	**340**	1349	1349	1349	**404**	2377	2377	2377	**468**	3404	3404	3404
277	337	337	337	**341**	1365	1365	1365	**405**	2393	2393	2393	**469**	3421	3421	3421
278	353	353	353	**342**	1381	1381	1381	**406**	2409	2409	2409	**470**	3437	3437	3437
279	369	369	369	**343**	1397	1397	1397	**407**	2425	2425	2425	**471**	3453	3453	3453
280	385	385	385	**344**	1413	1413	1413	**408**	2441	2441	2441	**472**	3469	3469	3469
281	401	401	401	**345**	1429	1429	1429	**409**	2457	2457	2457	**473**	3485	3485	3485
282	418	418	418	**346**	1445	1445	1445	**410**	2473	2473	2473	**474**	3501	3501	3501
283	434	434	434	**347**	1461	1461	1461	**411**	2489	2489	2489	**475**	3517	3517	3517
284	450	450	450	**348**	1477	1477	1477	**412**	2505	2505	2505	**476**	3533	3533	3533
285	466	466	466	**349**	1493	1493	1493	**413**	2521	2521	2521	**477**	3549	3549	3549
286	482	482	482	**350**	1510	1510	1510	**414**	2537	2537	2537	**478**	3565	3565	3565
287	498	498	498	**351**	1526	1526	1526	**415**	2553	2553	2553	**479**	3581	3581	3581
288	514	514	514	**352**	1542	1542	1542	**416**	2569	2569	2569	**480**	3597	3597	3597
289	530	530	530	**353**	1558	1558	1558	**417**	2585	2585	2585	**481**	3613	3613	3613
290	546	546	546	**354**	1574	1574	1574	**418**	2602	2602	2602	**482**	3629	3629	3629
291	562	562	562	**355**	1590	1590	1590	**419**	2618	2618	2618	**483**	3645	3645	3645
292	578	578	578	**356**	1606	1606	1606	**420**	2634	2634	2634	**484**	3661	3661	3661
293	594	594	594	**357**	1622	1622	1622	**421**	2650	2650	2650	**485**	3677	3677	3677
294	610	610	610	**358**	1638	1638	1638	**422**	2666	2666	2666	**486**	3694	3694	3694
295	626	626	626	**359**	1654	1654	1654	**423**	2682	2682	2682	**487**	3710	3710	3710
296	642	642	642	**360**	1670	1670	1670	**424**	2698	2698	2698	**488**	3726	3726	3726
297	658	658	658	**361**	1686	1686	1686	**425**	2714	2714	2714	**489**	3742	3742	3742
298	674	674	674	**362**	1702	1702	1702	**426**	2730	2730	2730	**490**	3758	3758	3758
299	691	691	691	**363**	1718	1718	1718	**427**	2746	2746	2746	**491**	3774	3774	3774
300	707	707	707	**364**	1734	1734	1734	**428**	2762	2762	2762	**492**	3790	3790	3790
301	723	723	723	**365**	1750	1750	1750	**429**	2778	2778	2778	**493**	3806	3806	3806
302	739	739	739	**366**	1766	1766	1766	**430**	2794	2794	2794	**494**	3822	3822	3822
303	755	755	755	**367**	1783	1783	1783	**431**	2810	2810	2810	**495**	3838	3838	3838
304	771	771	771	**368**	1799	1799	1799	**432**	2826	2826	2826	**496**	3854	3854	3854
305	787	787	787	**369**	1815	1815	1815	**433**	2842	2842	2842	**497**	3870	3870	3870
306	803	803	803	**370**	1831	1831	1831	**434**	2858	2858	2858	**498**	3886	3886	3886
307	819	819	819	**371**	1847	1847	1847	**435**	2875	2875	2875	**499**	3902	3902	3902
308	835	835	835	**372**	1863	1863	1863	**436**	2891	2891	2891	**500**	3918	3918	3918
309	851	851	851	**373**	1879	1879	1879	**437**	2907	2907	2907	**501**	3934	3934	3934
310	867	867	867	**374**	1895	1895	1895	**438**	2923	2923	2923	**502**	3950	3950	3950
311	883	883	883	**375**	1911	1911	1911	**439**	2939	2939	2939	**503**	3967	3967	3967
312	899	899	899	**376**	1927	1927	1927	**440**	2955	2955	2955	**504**	3983	3983	3983
313	915	915	915	**377**	1943	1943	1943	**441**	2971	2971	2971	**505**	3999	3999	3999
314	931	931	931	**378**	1959	1959	1959	**442**	2987	2987	2987	**506**	4015	4015	4015
315	947	947	947	**379**	1975	1975	1975	**443**	3003	3003	3003	**507**	4031	4031	4031

316	964	964	964	**380**	1991	1991	1991	**444**	3019	3019	3019	**508**	4047	4047	4047
317	980	980	980	**381**	2007	2007	2007	**445**	3035	3035	3035	**509**	4063	4063	4063
318	996	996	996	**382**	2023	2023	2023	**446**	3051	3051	3051	**510**	4079	4079	4079
319	1012	1012	1012	**383**	2039	2039	2039	**447**	3067	3067	3067	**511**	4095	4095	4095

PEN	R	G	B	PEN	R	G	B	PEN	R	G	B	PEN	R	G	B
512	0	0	0	**576**	0	0	0	**640**	0	0	0	**704**	0	0	0
513	0	0	0	**577**	0	0	0	**641**	0	0	0	**705**	0	0	0
514	0	0	0	**578**	0	0	0	**642**	0	0	0	**706**	0	0	0
515	0	0	0	**579**	0	0	0	**643**	0	0	0	**707**	0	0	0
516	0	0	0	**580**	0	0	0	**644**	0	0	0	**708**	0	0	0
517	0	0	0	**581**	0	0	0	**645**	0	0	0	**709**	0	0	0
518	0	0	0	**582**	0	0	0	**646**	0	0	0	**710**	0	0	0
519	0	0	0	**583**	0	0	0	**647**	0	0	0	**711**	0	0	0
520	0	0	0	**584**	0	0	0	**648**	0	0	0	**712**	0	0	0
521	0	0	0	**585**	0	0	0	**649**	0	0	0	**713**	0	0	0
522	0	0	0	**586**	0	0	0	**650**	0	0	0	**714**	0	0	0
523	0	0	0	**587**	0	0	0	**651**	0	0	0	**715**	0	0	0
524	0	0	0	**588**	0	0	0	**652**	0	0	0	**716**	0	0	0
525	0	0	0	**589**	0	0	0	**653**	0	0	0	**717**	0	0	0
526	0	0	0	**590**	0	0	0	**654**	0	0	0	**718**	0	0	0
527	0	0	0	**591**	0	0	0	**655**	0	0	0	**719**	0	0	0
528	0	0	0	**592**	0	0	0	**656**	0	0	0	**720**	0	0	0
529	0	0	0	**593**	0	0	0	**657**	0	0	0	**721**	0	0	0
530	0	0	0	**594**	0	0	0	**658**	0	0	0	**722**	0	0	0
531	0	0	0	**595**	0	0	0	**659**	0	0	0	**723**	0	0	0
532	0	0	0	**596**	0	0	0	**660**	0	0	0	**724**	0	0	0
533	0	0	0	**597**	0	0	0	**661**	0	0	0	**725**	0	0	0
534	0	0	0	**598**	0	0	0	**662**	0	0	0	**726**	0	0	0
535	0	0	0	**599**	0	0	0	**663**	0	0	0	**727**	0	0	0
536	0	0	0	**600**	0	0	0	**664**	0	0	0	**728**	0	0	0
537	0	0	0	**601**	0	0	0	**665**	0	0	0	**729**	0	0	0
538	0	0	0	**602**	0	0	0	**666**	0	0	0	**730**	0	0	0
539	0	0	0	**603**	0	0	0	**667**	0	0	0	**731**	0	0	0
540	0	0	0	**604**	0	0	0	**668**	0	0	0	**732**	0	0	0
541	0	0	0	**605**	0	0	0	**669**	0	0	0	**733**	0	0	0
542	0	0	0	**606**	0	0	0	**670**	0	0	0	**734**	0	0	0
543	0	0	0	**607**	0	0	0	**671**	0	0	0	**735**	0	0	0
544	0	0	0	**608**	0	0	0	**672**	0	0	0	**736**	0	0	0
545	0	0	0	**609**	0	0	0	**673**	0	0	0	**737**	0	0	0
546	0	0	0	**610**	0	0	0	**674**	0	0	0	**738**	0	0	0
547	0	0	0	**611**	0	0	0	**675**	0	0	0	**739**	0	0	0
548	0	0	0	**612**	0	0	0	**676**	0	0	0	**740**	0	0	0
549	0	0	0	**613**	0	0	0	**677**	0	0	0	**741**	0	0	0
550	0	0	0	**614**	0	0	0	**678**	0	0	0	**742**	0	0	0
551	0	0	0	**615**	0	0	0	**679**	0	0	0	**743**	0	0	0
552	0	0	0	**616**	0	0	0	**680**	0	0	0	**744**	0	0	0
553	0	0	0	**617**	0	0	0	**681**	0	0	0	**745**	0	0	0
554	0	0	0	**618**	0	0	0	**682**	0	0	0	**746**	0	0	0
555	0	0	0	**619**	0	0	0	**683**	0	0	0	**747**	0	0	0
556	0	0	0	**620**	0	0	0	**684**	0	0	0	**748**	0	0	0
557	0	0	0	**621**	0	0	0	**685**	0	0	0	**749**	0	0	0
558	0	0	0	**622**	0	0	0	**686**	0	0	0	**750**	0	0	0
559	0	0	0	**623**	0	0	0	**687**	0	0	0	**751**	0	0	0
560	0	0	0	**624**	0	0	0	**688**	0	0	0	**752**	0	0	0
561	0	0	0	**625**	0	0	0	**689**	0	0	0	**753**	0	0	0
562	0	0	0	**626**	0	0	0	**690**	0	0	0	**754**	0	0	0
563	0	0	0	**627**	0	0	0	**691**	0	0	0	**755**	0	0	0
564	0	0	0	**628**	0	0	0	**692**	0	0	0	**756**	0	0	0
565	0	0	0	**629**	0	0	0	**693**	0	0	0	**757**	0	0	0
566	0	0	0	**630**	0	0	0	**694**	0	0	0	**758**	0	0	0
567	0	0	0	**631**	0	0	0	**695**	0	0	0	**759**	0	0	0
568	0	0	0	**632**	0	0	0	**696**	0	0	0	**760**	0	0	0
569	0	0	0	**633**	0	0	0	**697**	0	0	0	**761**	0	0	0

570	0	0	0	**634**	0	0	0	**698**	0	0	0	**762**	0	0	0
571	0	0	0	**635**	0	0	0	**699**	0	0	0	**763**	0	0	0
572	0	0	0	**636**	0	0	0	**700**	0	0	0	**764**	0	0	0
573	0	0	0	**637**	0	0	0	**701**	0	0	0	**765**	0	0	0
574	0	0	0	**638**	0	0	0	**702**	0	0	0	**766**	0	0	0
575	0	0	0	**639**	0	0	0	**703**	0	0	0	**767**	0	0	0

Notice The RGB value for ANALOG-COLOR PEN 512 ~ 767 in the system will be filled in as required. For example, 256 kinds of RGB values will be filled in this section when displaying a 256-color BMP file.

PEN	R	G	B	PEN	R	G	B	PEN	R	G	B	PEN	R	G	B
768	64	0	0	**832**	0	64	0	**896**	**0**	**0**	**64**	**960**	64	64	64
769	128	0	0	**833**	0	128	0	**897**	**0**	**0**	**128**	**961**	128	128	128
770	192	0	0	**834**	0	192	0	**898**	**0**	**0**	**192**	**962**	192	192	192
771	256	0	0	**835**	0	256	0	**899**	**0**	**0**	**256**	**963**	256	256	256
772	320	0	0	**836**	0	320	0	**900**	**0**	**0**	**320**	**964**	320	320	320
773	384	0	0	**837**	0	384	0	**901**	**0**	**0**	**384**	**965**	384	384	384
774	448	0	0	**838**	0	448	0	**902**	**0**	**0**	**448**	**966**	448	448	448
775	512	0	0	**839**	0	512	0	**903**	**0**	**0**	**512**	**967**	512	512	512
776	576	0	0	**840**	0	576	0	**904**	**0**	**0**	**576**	**968**	576	576	576
777	640	0	0	**841**	0	640	0	**905**	**0**	**0**	**640**	**969**	640	640	640
778	704	0	0	**842**	0	704	0	**906**	**0**	**0**	**704**	**970**	704	704	704
779	768	0	0	**843**	0	768	0	**907**	**0**	**0**	**768**	**971**	768	768	768
780	832	0	0	**844**	0	832	0	**908**	**0**	**0**	**832**	**972**	832	832	832
781	896	0	0	**845**	0	896	0	**909**	**0**	**0**	**896**	**973**	896	896	896
782	960	0	0	**846**	0	960	0	**910**	**0**	**0**	**960**	**974**	960	960	960
783	1024	0	0	**847**	0	1024	0	**911**	**0**	**0**	**1024**	**975**	1024	1024	1024
784	1088	0	0	**848**	0	1088	0	**912**	**0**	**0**	**1088**	**976**	1088	1088	1088
785	1152	0	0	**849**	0	1152	0	**913**	**0**	**0**	**1152**	**977**	1152	1152	1152
786	1216	0	0	**850**	0	1216	0	**914**	**0**	**0**	**1216**	**978**	1216	1216	1216
787	1280	0	0	**851**	0	1280	0	**915**	**0**	**0**	**1280**	**979**	1280	1280	1280
788	1344	0	0	**852**	0	1344	0	**916**	**0**	**0**	**1344**	**980**	1344	1344	1344
789	1408	0	0	**853**	0	1408	0	**917**	**0**	**0**	**1408**	**981**	1408	1408	1408
790	1472	0	0	**854**	0	1472	0	**918**	**0**	**0**	**1472**	**982**	1472	1472	1472
791	1536	0	0	**855**	0	1536	0	**919**	**0**	**0**	**1536**	**983**	1536	1536	1536
792	1600	0	0	**856**	0	1600	0	**920**	**0**	**0**	**1600**	**984**	1600	1600	1600
793	1664	0	0	**857**	0	1664	0	**921**	**0**	**0**	**1664**	**985**	1664	1664	1664
794	1728	0	0	**858**	0	1728	0	**922**	**0**	**0**	**1728**	**986**	1728	1728	1728
795	1792	0	0	**859**	0	1792	0	**923**	**0**	**0**	**1792**	**987**	1792	1792	1792
796	1856	0	0	**860**	0	1856	0	**924**	**0**	**0**	**1856**	**988**	1856	1856	1856
797	1920	0	0	**861**	0	1920	0	**925**	**0**	**0**	**1920**	**989**	1920	1920	1920
798	1984	0	0	**862**	0	1984	0	**926**	**0**	**0**	**1984**	**990**	1984	1984	1984
799	2048	0	0	**863**	0	2048	0	**927**	**0**	**0**	**2048**	**991**	2048	2048	2048
800	2112	0	0	**864**	0	2112	0	**928**	**0**	**0**	**2112**	**992**	2112	2112	2112
801	2176	0	0	**865**	0	2176	0	**929**	**0**	**0**	**2176**	**993**	2176	2176	2176
802	2240	0	0	**866**	0	2240	0	**930**	**0**	**0**	**2240**	**994**	2240	2240	2240
803	2304	0	0	**867**	0	2304	0	**931**	**0**	**0**	**2304**	**995**	2304	2304	2304
804	2368	0	0	**868**	0	2368	0	**932**	**0**	**0**	**2368**	**996**	2368	2368	2368
805	2432	0	0	**869**	0	2432	0	**933**	**0**	**0**	**2432**	**997**	2432	2432	2432
806	2496	0	0	**870**	0	2496	0	**934**	**0**	**0**	**2496**	**998**	2496	2496	2496
807	2560	0	0	**871**	0	2560	0	**935**	**0**	**0**	**2560**	**999**	2560	2560	2560
808	2624	0	0	**872**	0	2624	0	**936**	**0**	**0**	**2624**	**1000**	2624	2624	2624
809	2688	0	0	**873**	0	2688	0	**937**	**0**	**0**	**2688**	**1001**	2688	2688	2688
810	2752	0	0	**874**	0	2752	0	**938**	**0**	**0**	**2752**	**1002**	2752	2752	2752
811	2816	0	0	**875**	0	2816	0	**939**	**0**	**0**	**2816**	**1003**	2816	2816	2816
812	2880	0	0	**876**	0	2880	0	**940**	**0**	**0**	**2880**	**1004**	2880	2880	2880
813	2944	0	0	**877**	0	2944	0	**941**	**0**	**0**	**2944**	**1005**	2944	2944	2944
814	3008	0	0	**878**	0	3008	0	**942**	**0**	**0**	**3008**	**1006**	3008	3008	3008
815	3072	0	0	**879**	0	3072	0	**943**	**0**	**0**	**3072**	**1007**	3072	3072	3072
816	3136	0	0	**880**	0	3136	0	**944**	**0**	**0**	**3136**	**1008**	3136	3136	3136
817	3200	0	0	**881**	0	3200	0	**945**	**0**	**0**	**3200**	**1009**	3200	3200	3200
818	3264	0	0	**882**	0	3264	0	**946**	**0**	**0**	**3264**	**1010**	3264	3264	3264

819	3328	0	0	**883**	0	3328	0	**947**	**0**	**0**	**3328**	**1011**	3328	3328	3328
820	3392	0	0	**884**	0	3392	0	**948**	**0**	**0**	**3392**	**1012**	3392	3392	3392
821	3456	0	0	**885**	0	3456	0	**949**	**0**	**0**	**3456**	**1013**	3456	3456	3456
822	3520	0	0	**886**	0	3520	0	**950**	**0**	**0**	**3520**	**1014**	3520	3520	3520
823	3584	0	0	**887**	0	3584	0	**951**	**0**	**0**	**3584**	**1015**	3584	3584	3584
824	3648	0	0	**888**	0	3648	0	**952**	**0**	**0**	**3648**	**1016**	3648	3648	3648
825	3712	0	0	**889**	0	3712	0	**953**	**0**	**0**	**3712**	**1017**	3712	3712	3712
826	3776	0	0	**890**	0	3776	0	**954**	**0**	**0**	**3776**	**1018**	3776	3776	3776
827	3840	0	0	**891**	0	3840	0	**955**	**0**	**0**	**3840**	**1019**	3840	3840	3840
828	3904	0	0	**892**	0	3904	0	**956**	**0**	**0**	**3904**	**1020**	3904	3904	3904
829	3968	0	0	**893**	0	3968	0	**957**	**0**	**0**	**3968**	**1021**	3968	3968	3968
830	4032	0	0	**894**	0	4032	0	**958**	**0**	**0**	**4032**	**1022**	4032	4032	4032
831	4095	0	0	**895**	0	4095	0	**959**	**0**	**0**	**4095**	**1023**	4095	4095	4095

GRAY PEN FORM

PEN	R	G	B	PEN	R	G	B	PEN	R	G	B	PEN	R	G	B
0	0	0	0	**64**	256	256	256	**128**	512	512	512	**192**	769	769	769
1	4	4	4	**65**	260	260	260	**129**	516	516	516	**193**	773	773	773
2	8	8	8	**66**	264	264	264	**130**	520	520	520	**194**	777	777	777
3	12	12	12	**67**	268	268	268	**131**	524	524	524	**195**	781	781	781
4	16	16	16	**68**	272	272	272	**132**	528	528	528	**196**	785	785	785
5	20	20	20	**69**	276	276	276	**133**	532	532	532	**197**	789	789	789
6	24	24	24	**70**	280	280	280	**134**	536	536	536	**198**	793	793	793
7	28	28	28	**71**	284	284	284	**135**	540	540	540	**199**	797	797	797
8	32	32	32	**72**	288	288	288	**136**	544	544	544	**200**	801	801	801
9	36	36	36	**73**	292	292	292	**137**	548	548	548	**201**	805	805	805
10	40	40	40	**74**	296	296	296	**138**	552	552	552	**202**	809	809	809
11	44	44	44	**75**	300	300	300	**139**	556	556	556	**203**	813	813	813
12	48	48	48	**76**	304	304	304	**140**	560	560	560	**204**	817	817	817
13	52	52	52	**77**	308	308	308	**141**	564	564	564	**205**	821	821	821
14	56	56	56	**78**	312	312	312	**142**	568	568	568	**206**	825	825	825
15	60	60	60	**79**	316	316	316	**143**	572	572	572	**207**	829	829	829
16	64	64	64	**80**	320	320	320	**144**	576	576	576	**208**	833	833	833
17	68	68	68	**81**	324	324	324	**145**	580	580	580	**209**	837	837	837
18	72	72	72	**82**	328	328	328	**146**	584	584	584	**210**	841	841	841
19	76	76	76	**83**	332	332	332	**147**	588	588	588	**211**	845	845	845
20	80	80	80	**84**	336	336	336	**148**	592	592	592	**212**	849	849	849
21	84	84	84	**85**	340	340	340	**149**	596	596	596	**213**	853	853	853
22	88	88	88	**86**	344	344	344	**150**	600	600	600	**214**	857	857	857
23	92	92	92	**87**	348	348	348	**151**	604	604	604	**215**	861	861	861
24	96	96	96	**88**	352	352	352	**152**	608	608	608	**216**	865	865	865
25	100	100	100	**89**	356	356	356	**153**	612	612	612	**217**	869	869	869
26	104	104	104	**90**	360	360	360	**154**	616	616	616	**218**	873	873	873
27	108	108	108	**91**	364	364	364	**155**	620	620	620	**219**	877	877	877
28	112	112	112	**92**	368	368	368	**156**	624	624	624	**220**	881	881	881
29	116	116	116	**93**	372	372	372	**157**	628	628	628	**221**	885	885	885
30	120	120	120	**94**	376	376	376	**158**	632	632	632	**222**	889	889	889
31	124	124	124	**95**	380	380	380	**159**	636	636	636	**223**	893	893	893
32	128	128	128	**96**	384	384	384	**160**	640	640	640	**224**	897	897	897
33	132	132	132	**97**	388	388	388	**161**	644	644	644	**225**	901	901	901
34	136	136	136	**98**	392	392	392	**162**	648	648	648	**226**	905	905	905
35	140	140	140	**99**	396	396	396	**163**	652	652	652	**227**	909	909	909
36	144	144	144	**100**	400	400	400	**164**	656	656	656	**228**	913	913	913
37	148	148	148	**101**	404	404	404	**165**	660	660	660	**229**	917	917	917
38	152	152	152	**102**	408	408	408	**166**	664	664	664	**230**	921	921	921
39	156	156	156	**103**	412	412	412	**167**	668	668	668	**231**	925	925	925
40	160	160	160	**104**	416	416	416	**168**	672	672	672	**232**	929	929	929
41	164	164	164	**105**	420	420	420	**169**	676	676	676	**233**	933	933	933
42	168	168	168	**106**	424	424	424	**170**	680	680	680	**234**	937	937	937
43	172	172	172	**107**	428	428	428	**171**	685	685	685	**235**	941	941	941
44	176	176	176	**108**	432	432	432	**172**	689	689	689	**236**	945	945	945
45	180	180	180	**109**	436	436	436	**173**	693	693	693	**237**	949	949	949
46	184	184	184	**110**	440	440	440	**174**	697	697	697	**238**	953	953	953
47	188	188	188	**111**	444	444	444	**175**	701	701	701	**239**	957	957	957
48	192	192	192	**112**	448	448	448	**176**	705	705	705	**240**	961	961	961
49	196	196	196	**113**	452	452	452	**177**	709	709	709	**241**	965	965	965
50	200	200	200	**114**	456	456	456	**178**	713	713	713	**242**	969	969	969

51	204	204	204	**115**	460	460	460	**179**	717	717	717	**243**	973	973	973
52	208	208	208	**116**	464	464	464	**180**	721	721	721	**244**	977	977	977
53	212	212	212	**117**	468	468	468	**181**	725	725	725	**245**	981	981	981
54	216	216	216	**118**	472	472	472	**182**	729	729	729	**246**	985	985	985
55	220	220	220	**119**	476	476	476	**183**	733	733	733	**247**	989	989	989
56	224	224	224	**120**	480	480	480	**184**	737	737	737	**248**	993	993	993
57	228	228	228	**121**	484	484	484	**185**	741	741	741	**249**	997	997	997
58	232	232	232	**122**	488	488	488	**186**	745	745	745	**250**	1001	1001	1001
59	236	236	236	**123**	492	492	492	**187**	749	749	749	**251**	1005	1005	1005
60	240	240	240	**124**	496	496	496	**188**	753	753	753	**252**	1009	1009	1009
61	244	244	244	**125**	500	500	500	**189**	757	757	757	**253**	1013	1013	1013
62	248	248	248	**126**	504	504	504	**190**	761	761	761	**254**	1017	1017	1017
63	252	252	252	**127**	508	508	508	**191**	765	765	765	**255**	1021	1021	1021

PEN	R	G	B	PEN	R	G	B	PEN	R	G	B	PEN	R	G	B
256	1025	1025	1025	**320**	1281	1281	1281	**384**	1537	1537	1537	**448**	1793	1793	1793
257	1029	1029	1029	**321**	1285	1285	1285	**385**	1541	1541	1541	**449**	1797	1797	1797
258	1033	1033	1033	**322**	1289	1289	1289	**386**	1545	1545	1545	**450**	1801	1801	1801
259	1037	1037	1037	**323**	1293	1293	1293	**387**	1549	1549	1549	**451**	1805	1805	1805
260	1041	1041	1041	**324**	1297	1297	1297	**388**	1553	1553	1553	**452**	1809	1809	1809
261	1045	1045	1045	**325**	1301	1301	1301	**389**	1557	1557	1557	**453**	1813	1813	1813
262	1049	1049	1049	**326**	1305	1305	1305	**390**	1561	1561	1561	**454**	1817	1817	1817
263	1053	1053	1053	**327**	1309	1309	1309	**391**	1565	1565	1565	**455**	1821	1821	1821
264	1057	1057	1057	**328**	1313	1313	1313	**392**	1569	1569	1569	**456**	1825	1825	1825
265	1061	1061	1061	**329**	1317	1317	1317	**393**	1573	1573	1573	**457**	1829	1829	1829
266	1065	1065	1065	**330**	1321	1321	1321	**394**	1577	1577	1577	**458**	1833	1833	1833
267	1069	1069	1069	**331**	1325	1325	1325	**395**	1581	1581	1581	**459**	1837	1837	1837
268	1073	1073	1073	**332**	1329	1329	1329	**396**	1585	1585	1585	**460**	1841	1841	1841
269	1077	1077	1077	**333**	1333	1333	1333	**397**	1589	1589	1589	**461**	1845	1845	1845
270	1081	1081	1081	**334**	1337	1337	1337	**398**	1593	1593	1593	**462**	1849	1849	1849
271	1085	1085	1085	**335**	1341	1341	1341	**399**	1597	1597	1597	**463**	1853	1853	1853
272	1089	1089	1089	**336**	1345	1345	1345	**400**	1601	1601	1601	**464**	1857	1857	1857
273	1093	1093	1093	**337**	1349	1349	1349	**401**	1605	1605	1605	**465**	1861	1861	1861
274	1097	1097	1097	**338**	1353	1353	1353	**402**	1609	1609	1609	**466**	1865	1865	1865
275	1101	1101	1101	**339**	1357	1357	1357	**403**	1613	1613	1613	**467**	1869	1869	1869
276	1105	1105	1105	**340**	1361	1361	1361	**404**	1617	1617	1617	**468**	1873	1873	1873
277	1109	1109	1109	**341**	1365	1365	1365	**405**	1621	1621	1621	**469**	1877	1877	1877
278	1113	1113	1113	**342**	1369	1369	1369	**406**	1625	1625	1625	**470**	1881	1881	1881
279	1117	1117	1117	**343**	1373	1373	1373	**407**	1629	1629	1629	**471**	1885	1885	1885
280	1121	1121	1121	**344**	1377	1377	1377	**408**	1633	1633	1633	**472**	1889	1889	1889
281	1125	1125	1125	**345**	1381	1381	1381	**409**	1637	1637	1637	**473**	1893	1893	1893
282	1129	1129	1129	**346**	1385	1385	1385	**410**	1641	1641	1641	**474**	1897	1897	1897
283	1133	1133	1133	**347**	1389	1389	1389	**411**	1645	1645	1645	**475**	1901	1901	1901
284	1137	1137	1137	**348**	1393	1393	1393	**412**	1649	1649	1649	**476**	1905	1905	1905
285	1141	1141	1141	**349**	1397	1397	1397	**413**	1653	1653	1653	**477**	1909	1909	1909
286	1145	1145	1145	**350**	1401	1401	1401	**414**	1657	1657	1657	**478**	1913	1913	1913
287	1149	1149	1149	**351**	1405	1405	1405	**415**	1661	1661	1661	**479**	1917	1917	1917
288	1153	1153	1153	**352**	1409	1409	1409	**416**	1665	1665	1665	**480**	1921	1921	1921
289	1157	1157	1157	**353**	1413	1413	1413	**417**	1669	1669	1669	**481**	1925	1925	1925
290	1161	1161	1161	**354**	1417	1417	1417	**418**	1673	1673	1673	**482**	1929	1929	1929
291	1165	1165	1165	**355**	1421	1421	1421	**419**	1677	1677	1677	**483**	1933	1933	1933
292	1169	1169	1169	**356**	1425	1425	1425	**420**	1681	1681	1681	**484**	1937	1937	1937
293	1173	1173	1173	**357**	1429	1429	1429	**421**	1685	1685	1685	**485**	1941	1941	1941
294	1177	1177	1177	**358**	1433	1433	1433	**422**	1689	1689	1689	**486**	1945	1945	1945
295	1181	1181	1181	**359**	1437	1437	1437	**423**	1693	1693	1693	**487**	1949	1949	1949
296	1185	1185	1185	**360**	1441	1441	1441	**424**	1697	1697	1697	**488**	1953	1953	1953
297	1189	1189	1189	**361**	1445	1445	1445	**425**	1701	1701	1701	**489**	1957	1957	1957
298	1193	1193	1193	**362**	1449	1449	1449	**426**	1705	1705	1705	**490**	1961	1961	1961
299	1197	1197	1197	**363**	1453	1453	1453	**427**	1709	1709	1709	**491**	1965	1965	1965
300	1201	1201	1201	**364**	1457	1457	1457	**428**	1713	1713	1713	**492**	1969	1969	1969
301	1205	1205	1205	**365**	1461	1461	1461	**429**	1717	1717	1717	**493**	1973	1973	1973
302	1209	1209	1209	**366**	1465	1465	1465	**430**	1721	1721	1721	**494**	1977	1977	1977
303	1213	1213	1213	**367**	1469	1469	1469	**431**	1725	1725	1725	**495**	1981	1981	1981
304	1217	1217	1217	**368**	1473	1473	1473	**432**	1729	1729	1729	**496**	1985	1985	1985
305	1221	1221	1221	**369**	1477	1477	1477	**433**	1733	1733	1733	**497**	1989	1989	1989

306	1225	1225	1225	**370**	1481	1481	1481	**434**	1737	1737	1737	**498**	1993	1993	1993
307	1229	1229	1229	**371**	1485	1485	1485	**435**	1741	1741	1741	**499**	1997	1997	1997
308	1233	1233	1233	**372**	1489	1489	1489	**436**	1745	1745	1745	**500**	2001	2001	2001
309	1237	1237	1237	**373**	1493	1493	1493	**437**	1749	1749	1749	**501**	2005	2005	2005
310	1241	1241	1241	**374**	1497	1497	1497	**438**	1753	1753	1753	**502**	2009	2009	2009
311	1245	1245	1245	**375**	1501	1501	1501	**439**	1757	1757	1757	**503**	2013	2013	2013
312	1249	1249	1249	**376**	1505	1505	1505	**440**	1761	1761	1761	**504**	2017	2017	2017
313	1253	1253	1253	**377**	1509	1509	1509	**441**	1765	1765	1765	**505**	2021	2021	2021
314	1257	1257	1257	**378**	1513	1513	1513	**442**	1769	1769	1769	**506**	2025	2025	2025
315	1261	1261	1261	**379**	1517	1517	1517	**443**	1773	1773	1773	**507**	2029	2029	2029
316	1265	1265	1265	**380**	1521	1521	1521	**444**	1777	1777	1777	**508**	2033	2033	2033
317	1269	1269	1269	**381**	1525	1525	1525	**445**	1781	1781	1781	**509**	2037	2037	2037
318	1273	1273	1273	**382**	1529	1529	1529	**446**	1785	1785	1785	**510**	2041	2041	2041
319	1277	1277	1277	**383**	1533	1533	1533	**447**	1789	1789	1789	**511**	2045	2045	2045

PEN	R	G	B	PEN	R	G	B	PEN	R	G	B	PEN	R	G	B
512	2050	2050	2050	**576**	2306	2306	2306	**640**	2562	2562	2562	**704**	2818	2818	2818
513	2054	2054	2054	**577**	2310	2310	2310	**641**	2566	2566	2566	**705**	2822	2822	2822
514	2058	2058	2058	**578**	2314	2314	2314	**642**	2570	2570	2570	**706**	2826	2826	2826
515	2062	2062	2062	**579**	2318	2318	2318	**643**	2574	2574	2574	**707**	2830	2830	2830
516	2066	2066	2066	**580**	2322	2322	2322	**644**	2578	2578	2578	**708**	2834	2834	2834
517	2070	2070	2070	**581**	2326	2326	2326	**645**	2582	2582	2582	**709**	2838	2838	2838
518	2074	2074	2074	**582**	2330	2330	2330	**646**	2586	2586	2586	**710**	2842	2842	2842
519	2078	2078	2078	**583**	2334	2334	2334	**647**	2590	2590	2590	**711**	2846	2846	2846
520	2082	2082	2082	**584**	2338	2338	2338	**648**	2594	2594	2594	**712**	2850	2850	2850
521	2086	2086	2086	**585**	2342	2342	2342	**649**	2598	2598	2598	**713**	2854	2854	2854
522	2090	2090	2090	**586**	2346	2346	2346	**650**	2602	2602	2602	**714**	2858	2858	2858
523	2094	2094	2094	**587**	2350	2350	2350	**651**	2606	2606	2606	**715**	2862	2862	2862
524	2098	2098	2098	**588**	2354	2354	2354	**652**	2610	2610	2610	**716**	2866	2866	2866
525	2102	2102	2102	**589**	2358	2358	2358	**653**	2614	2614	2614	**717**	2870	2870	2870
526	2106	2106	2106	**590**	2362	2362	2362	**654**	2618	2618	2618	**718**	2874	2874	2874
527	2110	2110	2110	**591**	2366	2366	2366	**655**	2622	2622	2622	**719**	2878	2878	2878
528	2114	2114	2114	**592**	2370	2370	2370	**656**	2626	2626	2626	**720**	2882	2882	2882
529	2118	2118	2118	**593**	2374	2374	2374	**657**	2630	2630	2630	**721**	2886	2886	2886
530	2122	2122	2122	**594**	2378	2378	2378	**658**	2634	2634	2634	**722**	2890	2890	2890
531	2126	2126	2126	**595**	2382	2382	2382	**659**	2638	2638	2638	**723**	2894	2894	2894
532	2130	2130	2130	**596**	2386	2386	2386	**660**	2642	2642	2642	**724**	2898	2898	2898
533	2134	2134	2134	**597**	2390	2390	2390	**661**	2646	2646	2646	**725**	2902	2902	2902
534	2138	2138	2138	**598**	2394	2394	2394	**662**	2650	2650	2650	**726**	2906	2906	2906
535	2142	2142	2142	**599**	2398	2398	2398	**663**	2654	2654	2654	**727**	2910	2910	2910
536	2146	2146	2146	**600**	2402	2402	2402	**664**	2658	2658	2658	**728**	2914	2914	2914
537	2150	2150	2150	**601**	2406	2406	2406	**665**	2662	2662	2662	**729**	2918	2918	2918
538	2154	2154	2154	**602**	2410	2410	2410	**666**	2666	2666	2666	**730**	2922	2922	2922
539	2158	2158	2158	**603**	2414	2414	2414	**667**	2670	2670	2670	**731**	2926	2926	2926
540	2162	2162	2162	**604**	2418	2418	2418	**668**	2674	2674	2674	**732**	2930	2930	2930
541	2166	2166	2166	**605**	2422	2422	2422	**669**	2678	2678	2678	**733**	2934	2934	2934
542	2170	2170	2170	**606**	2426	2426	2426	**670**	2682	2682	2682	**734**	2938	2938	2938
543	2174	2174	2174	**607**	2430	2430	2430	**671**	2686	2686	2686	**735**	2942	2942	2942
544	2178	2178	2178	**608**	2434	2434	2434	**672**	2690	2690	2690	**736**	2946	2946	2946
545	2182	2182	2182	**609**	2438	2438	2438	**673**	2694	2694	2694	**737**	2950	2950	2950
546	2186	2186	2186	**610**	2442	2442	2442	**674**	2698	2698	2698	**738**	2954	2954	2954
547	2190	2190	2190	**611**	2446	2446	2446	**675**	2702	2702	2702	**739**	2958	2958	2958
548	2194	2194	2194	**612**	2450	2450	2450	**676**	2706	2706	2706	**740**	2962	2962	2962
549	2198	2198	2198	**613**	2454	2454	2454	**677**	2710	2710	2710	**741**	2966	2966	2966
550	2202	2202	2202	**614**	2458	2458	2458	**678**	2714	2714	2714	**742**	2970	2970	2970
551	2206	2206	2206	**615**	2462	2462	2462	**679**	2718	2718	2718	**743**	2974	2974	2974
552	2210	2210	2210	**616**	2466	2466	2466	**680**	2722	2722	2722	**744**	2978	2978	2978
553	2214	2214	2214	**617**	2470	2470	2470	**681**	2726	2726	2726	**745**	2982	2982	2982
554	2218	2218	2218	**618**	2474	2474	2474	**682**	2730	2730	2730	**746**	2986	2986	2986
555	2222	2222	2222	**619**	2478	2478	2478	**683**	2734	2734	2734	**747**	2990	2990	2990
556	2226	2226	2226	**620**	2482	2482	2482	**684**	2738	2738	2738	**748**	2994	2994	2994
557	2230	2230	2230	**621**	2486	2486	2486	**685**	2742	2742	2742	**749**	2998	2998	2998
558	2234	2234	2234	**622**	2490	2490	2490	**686**	2746	2746	2746	**750**	3002	3002	3002
559	2238	2238	2238	**623**	2494	2494	2494	**687**	2750	2750	2750	**751**	3006	3006	3006

560	2242	2242	2242	**624**	2498	2498	2498	**688**	2754	2754	2754	**752**	3010	3010	3010
561	2246	2246	2246	**625**	2502	2502	2502	**689**	2758	2758	2758	**753**	3014	3014	3014
562	2250	2250	2250	**626**	2506	2506	2506	**690**	2762	2762	2762	**754**	3018	3018	3018
563	2254	2254	2254	**627**	2510	2510	2510	**691**	2766	2766	2766	**755**	3022	3022	3022
564	2258	2258	2258	**628**	2514	2514	2514	**692**	2770	2770	2770	**756**	3026	3026	3026
565	2262	2262	2262	**629**	2518	2518	2518	**693**	2774	2774	2774	**757**	3030	3030	3030
566	2266	2266	2266	**630**	2522	2522	2522	**694**	2778	2778	2778	**758**	3034	3034	3034
567	2270	2270	2270	**631**	2526	2526	2526	**695**	2782	2782	2782	**759**	3038	3038	3038
568	2274	2274	2274	**632**	2530	2530	2530	**696**	2786	2786	2786	**760**	3042	3042	3042
569	2278	2278	2278	**633**	2534	2534	2534	**697**	2790	2790	2790	**761**	3046	3046	3046
570	2282	2282	2282	**634**	2538	2538	2538	**698**	2794	2794	2794	**762**	3050	3050	3050
571	2286	2286	2286	**635**	2542	2542	2542	**699**	2798	2798	2798	**763**	3054	3054	3054
572	2290	2290	2290	**636**	2546	2546	2546	**700**	2802	2802	2802	**764**	3058	3058	3058
573	2294	2294	2294	**637**	2550	2550	2550	**701**	2806	2806	2806	**765**	3062	3062	3062
574	2298	2298	2298	**638**	2554	2554	2554	**702**	2810	2810	2810	**766**	3066	3066	3066
575	2302	2302	2302	**639**	2558	2558	2558	**703**	2814	2814	2814	**767**	3070	3070	3070

PEN	R	G	B	PEN	R	G	B	PEN	R	G	B	PEN	R	G	B
768	3074	3074	3074	**832**	3330	3330	3330	**896**	3587	3587	3587	**960**	3843	3843	3843
769	3078	3078	3078	**833**	3334	3334	3334	**897**	3591	3591	3591	**961**	3847	3847	3847
770	3082	3082	3082	**834**	3338	3338	3338	**898**	3595	3595	3595	**962**	3851	3851	3851
771	3086	3086	3086	**835**	3342	3342	3342	**899**	3599	3599	3599	**963**	3855	3855	3855
772	3090	3090	3090	**836**	3346	3346	3346	**900**	3603	3603	3603	**964**	3859	3859	3859
773	3094	3094	3094	**837**	3350	3350	3350	**901**	3607	3607	3607	**965**	3863	3863	3863
774	3098	3098	3098	**838**	3354	3354	3354	**902**	3611	3611	3611	**966**	3867	3867	3867
775	3102	3102	3102	**839**	3358	3358	3358	**903**	3615	3615	3615	**967**	3871	3871	3871
776	3106	3106	3106	**840**	3362	3362	3362	**904**	3619	3619	3619	**968**	3875	3875	3875
777	3110	3110	3110	**841**	3366	3366	3366	**905**	3623	3623	3623	**969**	3879	3879	3879
778	3114	3114	3114	**842**	3370	3370	3370	**906**	3627	3627	3627	**970**	3883	3883	3883
779	3118	3118	3118	**843**	3374	3374	3374	**907**	3631	3631	3631	**971**	3887	3887	3887
780	3122	3122	3122	**844**	3378	3378	3378	**908**	3635	3635	3635	**972**	3891	3891	3891
781	3126	3126	3126	**845**	3382	3382	3382	**909**	3639	3639	3639	**973**	3895	3895	3895
782	3130	3130	3130	**846**	3386	3386	3386	**910**	3643	3643	3643	**974**	3899	3899	3899
783	3134	3134	3134	**847**	3390	3390	3390	**911**	3647	3647	3647	**975**	3903	3903	3903
784	3138	3138	3138	**848**	3394	3394	3394	**912**	3651	3651	3651	**976**	3907	3907	3907
785	3142	3142	3142	**849**	3398	3398	3398	**913**	3655	3655	3655	**977**	3911	3911	3911
786	3146	3146	3146	**850**	3402	3402	3402	**914**	3659	3659	3659	**978**	3915	3915	3915
787	3150	3150	3150	**851**	3406	3406	3406	**915**	3663	3663	3663	**979**	3919	3919	3919
788	3154	3154	3154	**852**	3410	3410	3410	**916**	3667	3667	3667	**980**	3923	3923	3923
789	3158	3158	3158	**853**	3415	3415	3415	**917**	3671	3671	3671	**981**	3927	3927	3927
790	3162	3162	3162	**854**	3419	3419	3419	**918**	3675	3675	3675	**982**	3931	3931	3931
791	3166	3166	3166	**855**	3423	3423	3423	**919**	3679	3679	3679	**983**	3935	3935	3935
792	3170	3170	3170	**856**	3427	3427	3427	**920**	3683	3683	3683	**984**	3939	3939	3939
793	3174	3174	3174	**857**	3431	3431	3431	**921**	3687	3687	3687	**985**	3943	3943	3943
794	3178	3178	3178	**858**	3435	3435	3435	**922**	3691	3691	3691	**986**	3947	3947	3947
795	3182	3182	3182	**859**	3439	3439	3439	**923**	3695	3695	3695	**987**	3951	3951	3951
796	3186	3186	3186	**860**	3443	3443	3443	**924**	3699	3699	3699	**988**	3955	3955	3955
797	3190	3190	3190	**861**	3447	3447	3447	**925**	3703	3703	3703	**989**	3959	3959	3959
798	3194	3194	3194	**862**	3451	3451	3451	**926**	3707	3707	3707	**990**	3963	3963	3963
799	3198	3198	3198	**863**	3455	3455	3455	**927**	3711	3711	3711	**991**	3967	3967	3967
800	3202	3202	3202	**864**	3459	3459	3459	**928**	3715	3715	3715	**992**	3971	3971	3971
801	3206	3206	3206	**865**	3463	3463	3463	**929**	3719	3719	3719	**993**	3975	3975	3975
802	3210	3210	3210	**866**	3467	3467	3467	**930**	3723	3723	3723	**994**	3979	3979	3979
803	3214	3214	3214	**867**	3471	3471	3471	**931**	3727	3727	3727	**995**	3983	3983	3983
804	3218	3218	3218	**868**	3475	3475	3475	**932**	3731	3731	3731	**996**	3987	3987	3987
805	3222	3222	3222	**869**	3479	3479	3479	**933**	3735	3735	3735	**997**	3991	3991	3991
806	3226	3226	3226	**870**	3483	3483	3483	**934**	3739	3739	3739	**998**	3995	3995	3995
807	3230	3230	3230	**871**	3487	3487	3487	**935**	3743	3743	3743	**999**	3999	3999	3999
808	3234	3234	3234	**872**	3491	3491	3491	**936**	3747	3747	3747	**1000**	4003	4003	4003
809	3238	3238	3238	**873**	3495	3495	3495	**937**	3751	3751	3751	**1001**	4007	4007	4007
810	3242	3242	3242	**874**	3499	3499	3499	**938**	3755	3755	3755	**1002**	4011	4011	4011
811	3246	3246	3246	**875**	3503	3503	3503	**939**	3759	3759	3759	**1003**	4015	4015	4015
812	3250	3250	3250	**876**	3507	3507	3507	**940**	3763	3763	3763	**1004**	4019	4019	4019
813	3254	3254	3254	**877**	3511	3511	3511	**941**	3767	3767	3767	**1005**	4023	4023	4023

814	3258	3258	3258	**878**	3515	3515	3515	**942**	3771	3771	3771	**1006**	4027	4027	4027
815	3262	3262	3262	**879**	3519	3519	3519	**943**	3775	3775	3775	**1007**	4031	4031	4031
816	3266	3266	3266	**880**	3523	3523	3523	**944**	3779	3779	3779	**1008**	4035	4035	4035
817	3270	3270	3270	**881**	3527	3527	3527	**945**	3783	3783	3783	**1009**	4039	4039	4039
818	3274	3274	3274	**882**	3531	3531	3531	**946**	3787	3787	3787	**1010**	4043	4043	4043
819	3278	3278	3278	**883**	3535	3535	3535	**947**	3791	3791	3791	**1011**	4047	4047	4047
820	3282	3282	3282	**884**	3539	3539	3539	**948**	3795	3795	3795	**1012**	4051	4051	4051
821	3286	3286	3286	**885**	3543	3543	3543	**949**	3799	3799	3799	**1013**	4055	4055	4055
822	3290	3290	3290	**886**	3547	3547	3547	**950**	3803	3803	3803	**1014**	4059	4059	4059
823	3294	3294	3294	**887**	3551	3551	3551	**951**	3807	3807	3807	**1015**	4063	4063	4063
824	3298	3298	3298	**888**	3555	3555	3555	**952**	3811	3811	3811	**1016**	4067	4067	4067
825	3302	3302	3302	**889**	3559	3559	3559	**953**	3815	3815	3815	**1017**	4071	4071	4071
826	3306	3306	3306	**890**	3563	3563	3563	**954**	3819	3819	3819	**1018**	4075	4075	4075
827	3310	3310	3310	**891**	3567	3567	3567	**955**	3823	3823	3823	**1019**	4079	4079	4079
828	3314	3314	3314	**892**	3571	3571	3571	**956**	3827	3827	3827	**1020**	4083	4083	4083
829	3318	3318	3318	**893**	3575	3575	3575	**957**	3831	3831	3831	**1021**	4087	4087	4087
830	3322	3322	3322	**894**	3579	3579	3579	**958**	3835	3835	3835	**1022**	4091	4091	4091
831	3326	3326	3326	**895**	3583	3583	3583	**959**	3839	3839	3839	**1023**	4095	4095	4095

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