HDMI Deep Color & full 3D Pattern Generator

Safety and Notice

The **AV-GM09A3-S1 HDMI Deep Color & full 3D Pattern Generator** has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the **AV-GM09A3-S1** should be used with care. Please read and follow the safety instructions to protect yourself from possible injury and to minimize the risk of damage to the unit.

- Follow all instructions and warnings marked on this unit.

- Do not attempt to service this unit yourself, except where explained in this manual.

- Provide proper ventilation and air circulation and do not use near water.

- Keep away the objects that might damage the device and assure that the placement of this unit is on a stable surface.

- Use only the power adapter, power cords and connection cables designed for this unit.

- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.

The **AV-GM09A3-S1 HDMI Deep Color & full 3D Pattern Generator** is an advanced HDMI pattern generator with multi-format and multi-pattern support. Besides still and moving video test patterns, other features such as S/PDIF audio output and EDID analyzer are also provided. AV-GM09A3-S1 can support up to 8 channel LPCM audio with selectable sample rate. Another attractive feature of AV-GM09A3-S1 comes from bypassing HDMI input and allows users with more testing patterns for connected display or treats AV-GM09A3-S1 as an HDMI switcher. With portable size, AV-GM09A3-S1 is equipped four buttons and LCM screen to ease the control. This device provides a cost effective way to calibrate and test HDMI enable video devices and displays.

The unique feature available on this mini video pattern generator is the loop test, which can be used to estimate the condition of transmission line. The loop test provides signal monitor to watch the pixel loss over HDMI transmission and over time! When HDMI transmission becomes longer and the requirement on cable quality and HDMI extender becomes stronger, AV-GM09A3-S1 offers a simple way to evaluate either cables or extenders!

Features

- **Supported output resolution**
  NTSC 525@60, PAL 625@50, 720p@50,720p@59.94, 720p@60, 1080i@50, 1080i@59.94, 1080i@60, 1080p@23.97, 1080p@24, 1080p@25, 1080p@29.97, 1080p@30, 1080p@50, 1080p@59.94, 1080p@60
  Bit Rate: up to 2.25 Gbps
  Resolution: 24/30/36 bits

- **Video Patterns**
  100% Color Bars, Borderline, Random Noise, Check Field, Black, Vertical Lines, Black / White alternate fields, Full Grey / Full White, Black to White Gradient, Random Generator for all still patterns, moving squares, white noise, inverse effect with still pattern, Scrolling Title (see Appendix for illustrations)

- **HDMI 3D video patterns Supported output resolution**
  3D video standards include frame packing, top & bottom, side-by-side half, side-by-side full, frame sequential, and line-by-line.

- **Audio Patterns**
  Up to 8 CH LPCM [I2S] audio encoder, S/PDIF[IEC60958], audio mask

- **Loop Test**
  A solution to estimate the Quality of connected cable or HDMI extender

- **AVI Info editor**

- **EDID analyzer**

- Restorable Settings
- LCM Display

Specifications & Package Contents

Model Name		AV-GM09A3-S1	AV-GM09B3-S1
Technical			
Role of usage		Pattern generator	
HDMI standards		HDMI Deep Color & full 3D	
Video bandwidth		6.75Gpbs	
Video support		[Full HD] 1080p@50/59.94/60 [HD] 720p50/59.94/60, 1080p24/30, 1080i50/59.94/60 [SD] NTSC@59.94Hz, PAL@50Hz HDMI 3D video	
HDMI bypass		Yes	
Output impedance		75Ω	
Audio support		8 CH LPCM/ S/PDIF	
PCB Stack-up		4-layer board [impedance control — differential 100Ω; single 50Ω]	
Input		2x HDMI	1x HDMI + 1x RJ45
Output		1x HDMI	1x HDMI + 1x RJ45
RS-232		D-Sub9	DIN9
HDMI connector		Type A [19-pin female]	
Mechanical		AV-GM09A3-S1	AV-GM09B3-S1
Housing		Metal enclosure	
Dimensions [L x W x H]	Model	154 x 110 x 33mm [6" x 4.3" x 1.3"]	178 x 110 x 35mm [7" x 4.3" x 1.4"]
	Package	263 x 170 x 97mm [10.4" x 6.7" x 3.8"]	
	Carton	512 x 364 x 288mm [1'8" x 1'2" x 11.3"]	
Weight	Model	TBA	
	Package	TBA	
Fixedness		Interlocking power supply	
Power supply		5V 4A DC	
Power consumption		10 Watts [max]	
Operation temperature		0~40°C [32~104°F]	
Storage temperature		-20~60°C [-4~140°F]	
Relative humidity		20~90% RH [no condensation]	
Package Contents		1x AV-GM09A3-S1 1x 5V power supply unit 1x User manual	1x AV-GM09B3-S1 1 x DIN9 to D-Sub9 adapter 1x 5V power supply unit 1x User manual

Menu Operation

Menu	Items	
01 Format	Resolution	576p
		576i
		480p
		480i
		720p
		1080i
		1080p
	Frequency	23.98
		24
		25
		29.97
		30
		50
		59.94
		60
	Output	DVI
		HDMI 36bits
		HDMI 30bits
		HDMI 24bits
02 Video	Patterns	SMPTE Bar
		100% Bar
		75% Bar
		Cross
		Grad B->R (H)
		Grad B->G (H)
		Grad B->B (H)
		Grad R->B (H)
		Grad G->B (H)
		Grad B->B (H)
		Grad B->R (V)
		Grad B->G (V)
		Grad B->B (V)
		Grad R->B (V)
		Grad G->B (V)
		Grad B->B (V)
		Red Level B->R
		Red Level R->B

		Grn Level B->B
		Grn Level G->B
		Blu Level B->B
		Blu Level G->B
		Gra Level B->W
		Gra Level W->B
		100% Red
		100% Green
		100% Blue
		100% White
		70% Gray
		40% Gray
		Black
		Noise
		Circle 1
		Circle 2
		Moire
		Chess 1
		Chess 2
		HDMI Source 1
		HDMI Source 2
	Text	On-White
		On-Black
		Off
	Timer	On-W/B
		On-B/W
		Off
	ID Number	Off
		0
		1
		2
		3
		4
		5
		6
		7
		8
		9
		A
		B
		C
		D
		E
		F
	3D ID (Only Available in 3D	Off
		On

	mode)	
03 Audio	Channel	1+2
		3+4
		5+6
		7+8
		Layout: 2CH/8CH
	Mode	I2S/SPDIF/Mute
03 Audio	Audio level	0dB
		-6dB
		-12dB
		-18dB
		-24dB
		-30dB
		-36dB
		-42dB
		Random
	Audio mask	Off
		CH 1
		CH 2
		CH 3
		CH 4
		CH 5
		CH 6
		CH 7
		CH 8
		CH 1+2
		CH 3+4
		CH 5+6
		CH 7+8
04 Motion	Motion	No Motion
		Square 1
		Square 2
		2 Squares
		Square Inv
	Data Speed	1
		2
		3
		4
		5
		6
		7
		8
05 Equalizer	EQ	0 (Strongest)

(AV-GM09B3-S1 Only)		1
		2
		3
		4
		5
		6
		7 (Weakest)
06 Loop Test	Test Video	Off
		On
	Burst Width	1
		2
		3
		4
		5
		6
		7
		8
		9
		10
06 Loop Test		11
		12
		13
		14
		15
	Test	Start
		Stop
07 Feature	AVI Info	Off
		On
	SPD Info	Off
		On
	Audio Info	Off
		On
	MPEG Info	Off
		On
	ACP Packet	Off
		On
	HDCP Output	Off
		On
08 AVI Info	Scan Info	No Data
		Over
		Under
	Bar Info	Invalid
		Vert
		Hori
		Vert & Hori
	ActFmt Info	Invalid

		Valid
	Color	RGB
		YCbCr422
		YCbCr444
	ActFmt Aspect	None
		4:3
		16:9
		14:9
	Pic Aspect	No Data
		4:3
	Colorimetry	None
		SDTV
		HDTV
	Scaling	No Scaling
		Hori
		Vert
		Hori & Vert
	TopBar EndL	0~255
	TopBar EndH	0~255
	BotBar StartL	0~255
	BotBar StartH	0~255
	LeftBar EndL	0~255
	LeftBar EndH	0~255
	RightBar StartL	0~255
	RightBar StartH	0~255
09 SPD Info	SrcDevice	Unknown
		Digi STB
		DVD
		D-VHS
		HDD
		DVC
		DSC
		CD
		Game
		PC
		Blu-Ray
		SACD
10 Audio Info	CH Count	2CH
		3CH
		4CH
		5CH
		6CH
		7CH
		8CH
		Refer

	CT	IEC 60958
		AC-3
		MPEG1
		MP3
		MPEG2
		AAC
		DTS
		ATRAC
		One Bit Audio
		Dolby Digital
		DTS-HD Master
		Dolby TrueHD
		DST
		WMA Pro
		Refer
	Samp Freq	32KHz
		44.1KHz
		48KHz
		96KHz
		192KHz
		Refer
	Audio Width	16 Bit
		20 Bit
		24 Bit
		Refer
	Ch Allocation	0~31
	Level Shift	0~15 dB
	Down-mix	Permitted
		Prohibited
11 MPEG Info	Bit Rate0	0~255
	Bit Rate1	0~255
	Bit Rate2	0~255
	Bit Rate3	0~255
	MPEG Frame	Uknown
		I Pic
		B Pic
		P Pic
	Field	New
		Repeat
12 ACP Packet	ACP Type	Generic
		IEC 0958
		DVD Audio
		SACD
13 EDID	System	(00-03) Byte 0 ~ Byte 3
		...

	[Read EDID from Device]	(FC-FF)Byte 252 ~ Byte 255
	Saved [Write EDID to Device]	(00-03) Byte 0 ~ Byte 3
		…
		(FC-FF)Byte 252 ~ Byte 255
	Save Mon [Save Monitor's EDID to Flash]	
	Sys Use Def [Restore Default EDID]	
	Sys Use Saved [Overwrite EDID by Monitor's]	
14 System	Status	No Change
		Factory
		Now Save
	Baud Rate	9600 ~ 115200
	Version	V 1.00

Side View

1. **HDMI INPUT:** Plug in a HDMI cable to be linked to HDMI sources
2. **+5V DC:** Connect to a 5V DC power supply unit
3. **HDMI OUTPUT:** Connect to a HDMI display with a HDMI male-male cable here.
4. **LED**
5. **RS-232**: RS-232 port for firmware update

Top View
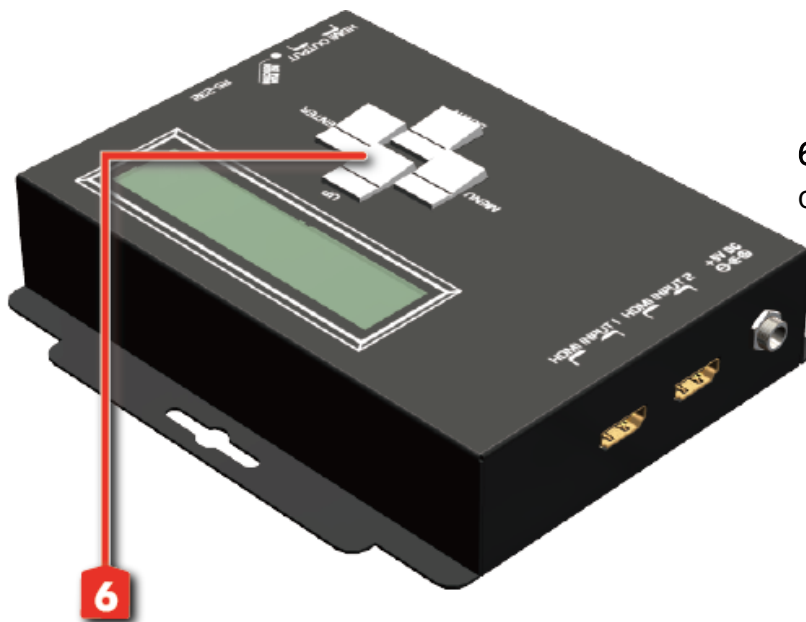
6. **Menu Button**: Trigger the menu operation

Enter Button: Enter the menu item

Up Button: Choose the last menu item

Down Button: Choose the next menu item

AV-GM09A3-S1 offers the unique estimator for evaluating the quality of cables or extenders. Users can simply connect the cable or extender under testing to AV-GM09A3-S1 and the built-in loop monitor will examine the video pixel by pixel! The measured statistics is displayed on LCM and offer useful information for building up robust A/V systems with HDMI backbone.

1. **Test video**
   The designed test video is bursts, and user can turn on the test video for preview without running the test.

2. **Burst width**
   AV-GM09A3-S1 offers 15 different widths for different situations with 24 bit 1080p@60 video resolution.

3. **Loop test**
   With appropriate connection, AV-GM09A3-S1 can estimate the quality of connected cable or extender, and the Pixel Error Rate will be updated every 10 seconds.

Application Illustration：
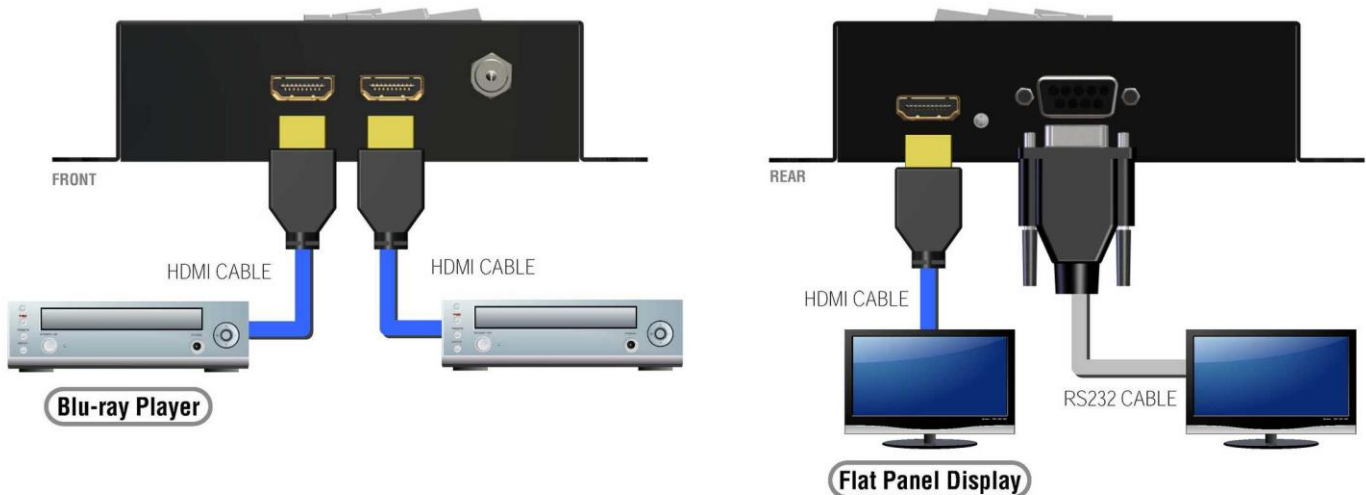
AV-GM09A3-S1 offers the most convenient way for users to check, copy, and analyze the EDID. Users can directly check the EDID of the connected byte by byte on AV-GM09A3-S1 or save the monitor's EDID into flash! In addition, users can send the saved EDID in the flash through RS-232 to hyper terminal with the specified baud rate.

1. **Default EDID**
   There are basically two sets of EDID for AV-GM09A3-S1, one for default and the other for user's use.
   The default EDID is showed as follows:

0x00,0xFF,0xFF,0xFF,0xFF,0xFF,0xFF,0x00, 0x35,0x34,0x10,0x20,0x00,0x00,0x00,0x00,

0x20,0x14,0x01,0x03,0x80,0x34,0x21,0x78,0xEE,0xEE,0x91,0xA3,0x54,0x4C,0x99,0x26,

0x0F,0x50,0x54,0xBF,0xEF,0x80,0xA9,0x40, 0xA9,0xC0, 0xB3,0x00, 0x95,0x00, 0x8B,0xC0,

0x81,0x40, 0x81,0x00, 0x81,0xC0, 0x02,0x3A,0x80,0x18,0x71,0x38,0x2D,0x40,0x58,0x2C,

0x45,0x00,0xC4,0x8E,0x21,0x00,0x00,0x1E,0x28,0x3C,0x80,0xA0,0x70,0xB0,0x23,0x40,

0x30, 0x20,0x36,0x00,0xC4,0x8E,0x21,0x00,0x00,0x1A,0x00,0x00,0x00,0xFC,0x00,0x50,

0x61,0x74,0x74, 0x65,0x72,0x6E,0x20,0x47,0x65,0x6E,0x0A,0x20,0x00,0x00,0x00,0xFD,

0x00,0x38,0x4C,0x1E,0x53,0x11,0x01,0x0A,0x20,0x20,0x20,0x20,0x20,0x20,0x01,0xC5,

0x02,0x03,0x20,0x71,0x4D,0x90, 0x1F, 0x20, 0x21, 0x22, 0x05, 0x14, 0x04, 0x13, 0x12, 0x03,

0x16, 0x07, 0x23,0x09,0x7F,0x07,0x83,0x01,0x00,0x00,0x65,0x03,0x0C,0x00,0x10,0x00,

0x02,0x3A,0x80,0x18,0x71,0x38,0x2D,0x40,0x58, 0x2C,0x45,0x00,0xC4,0x8E,0x21,0x00,

0x00,0x1E,0x01,0x1D,0x80,0x18,0x71,0x1C,0x16,0x20,0x58,0x2C,0x25,0x00,0xC4,0x8E,

0x21,0x00,0x00,0x9E,0x01,0x1D,0x00,0x72,0x51,0xD0,0x1E,0x20,0x6E, 0x28,0x55,0x00,

0xC4,0x8E,0x21,0x00,0x00,0x1E,0x8C,0x0A,0xD0,0x8A,0x20,0xE0,0x2D,0x10,0x10, 0x3E,

0x96,0x00,0xC4,0x8E,0x21,0x00,0x00,0x18,0x8C,0x0A,0xA0,0x14,0x51,0xF0,0x16,0x00,

0x26, 0x7C,0x43,0x00,0xC4,0x8E,0x21,0x00,0x00,0x98,0x00,0x00,0x00,0x00,0x00,0xE0

2. **System EDID**
   The EDID of AV-GM09A3-S1 is basically for HDMI inputs. In order to have appropriate EDID for HDMI sources, users sometimes need to use different EDID for different scenarios or application.
   By entering the following menu state, force AV-GM09A3-S1 to use default EDID.

   Menu-11 EDID
   Sys Use Def: Undo#:
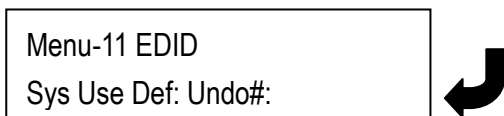
   If users would like to use the EDID learned from monitor, please enter the following menu state.

```
+------------------------------+
| Menu-11 EDID                 |     ↵
| Sys Use Saved: Undo#:        |
+------------------------------+
```

3. Save monitor's EDID

Users can read and save monitor's EDID by entering the following menu item.

```
+------------------------------+
| Menu-11 EDID                 |     ↵
| Saved (00-03):               |
+------------------------------+
```

When Enter button is pushed, 256 bytes of EDID data will be sent to the serial port with the specified baud rate.

```
ff - HyperTerminal                                              _ □ ✕
File  Edit  View  Call  Transfer  Help

0x00 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
0x20 0x11 0x01 0x03 0x80 0x34 0x21 0x78 0xEE 0xEE 0x91 0xA3 0x54 0x4C 0x99 0x26
0x0F 0x50 0x54 0xA5 0x4B 0x00 0x81 0x80 0x90 0x40 0xA9 0x40 0xC1 0x40 0xC9 0x40
0xD1 0x00 0xD1 0x40 0xD1 0x4F 0x30 0x2A 0x00 0x98 0x51 0x00 0x2A 0x40 0x30 0x70
0x13 0x00 0x78 0x2D 0x11 0x00 0x00 0x1E 0x28 0x3C 0x80 0xA0 0x70 0xB0 0x23 0x40
0x30 0x20 0x36 0x00 0x07 0x44 0x21 0x00 0x00 0x1A 0x00 0x00 0x00 0xFC 0x00 0x56
0x49 0x44 0x45 0x4F 0x20 0x4D 0x49 0x58 0x45 0x52 0x20 0x20 0x00 0x00 0x00 0xFD
0x00 0x38 0x4C 0x1E 0x53 0x11 0x00 0x0A 0x20 0x20 0x20 0x20 0x20 0x20 0x01 0x3F
0x02 0x03 0x1A 0x71 0x4C 0x85 0x04 0x10 0x1F 0x14 0x13 0x12 0x11 0x03 0x02 0x07
0x06 0x23 0x0F 0x07 0x07 0x83 0x69 0x00 0x00 0x65 0x03 0x0C 0x00 0x10 0x00 0x01
0x1D 0x80 0x18 0x71 0x1C 0x16 0x20 0x58 0x2C 0x25 0x00 0xC4 0x8E 0x21 0x00 0x00
0x9E 0x01 0x1D 0x00 0x72 0x51 0xD0 0x1E 0x20 0x6E 0x28 0x55 0x00 0xC4 0x8E 0x21
0x00 0x00 0x1E 0x8C 0x0A 0xD0 0x90 0x20 0x40 0x31 0x20 0x0C 0x40 0x55 0x00 0xC4
0x8E 0x20 0x00 0x00 0x18 0x8C 0x0A 0xD0 0x8A 0x20 0xE0 0x2D 0x10 0x10 0x3E 0x96
0x00 0xC4 0x8E 0x21 0x00 0x00 0x18 0x8C 0x0A 0xA0 0x14 0x51 0xF0 0x16 0x00 0x26
0x7C 0x43 0x00 0xC4 0x8E 0x21 0x00 0x00 0x98 0x00 0x00 0x00 0x00 0x00 0x00 0xC3

Connected 0:00:21      Auto detect     115200 8-N-1    SCROLL   CAPS   NUM   Capture   Print echo
```

1. AV-GM09A3-S1 only supports I2S and S/PDIF audio formats. For audio packet, users can setup different audio format flags in audio packet for debug purposes. AV-GM09A3-S1 will output the chosen audio format, either I2S or S/PDIF, according to the mode section of 03-Audio.

2. Same to MPEG info. The MPEG info is designed for debugging purpose and AV-GM09A3-S1 will NOT generate any compressed video or audio.

● Built-in Video Patterns
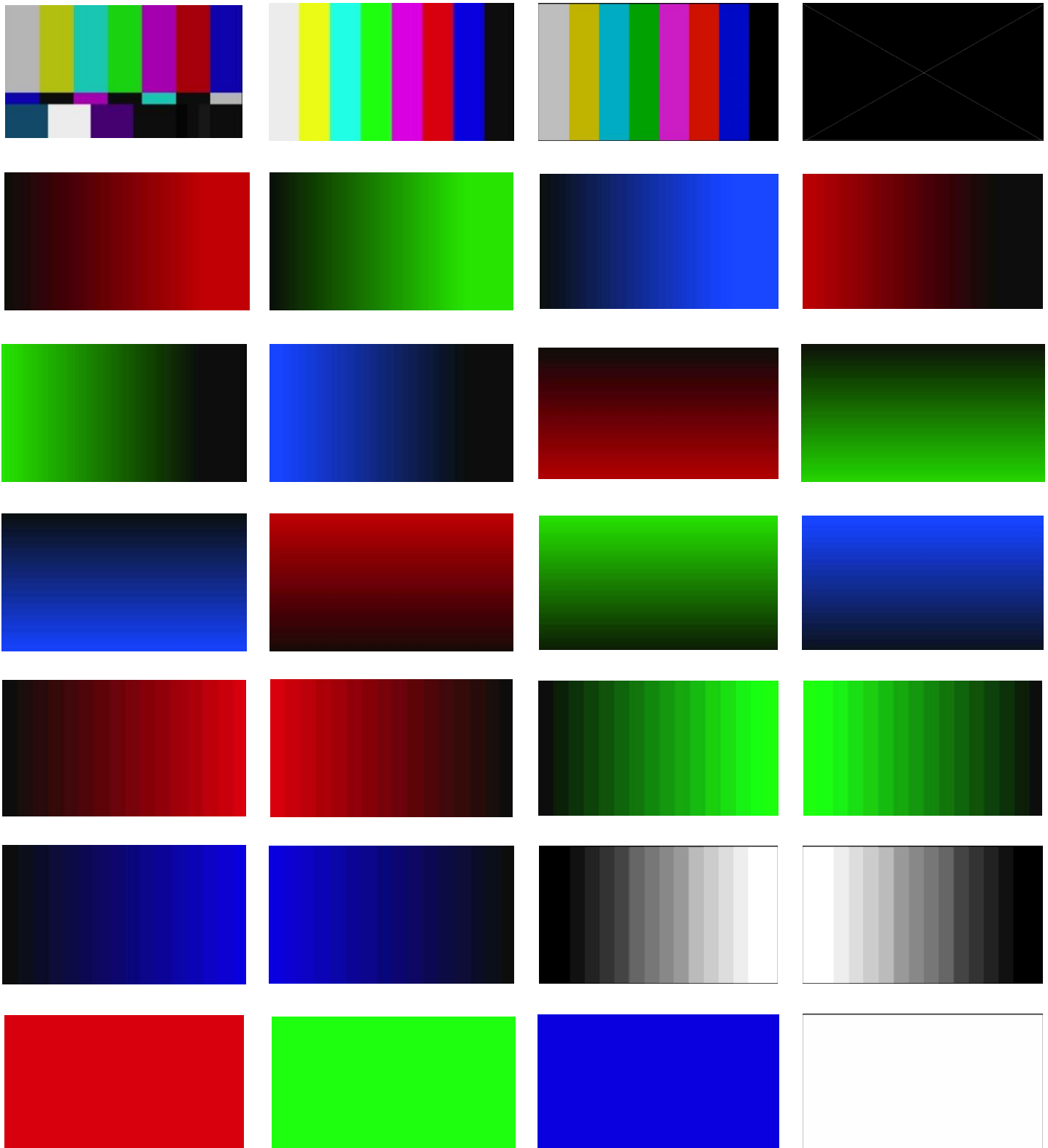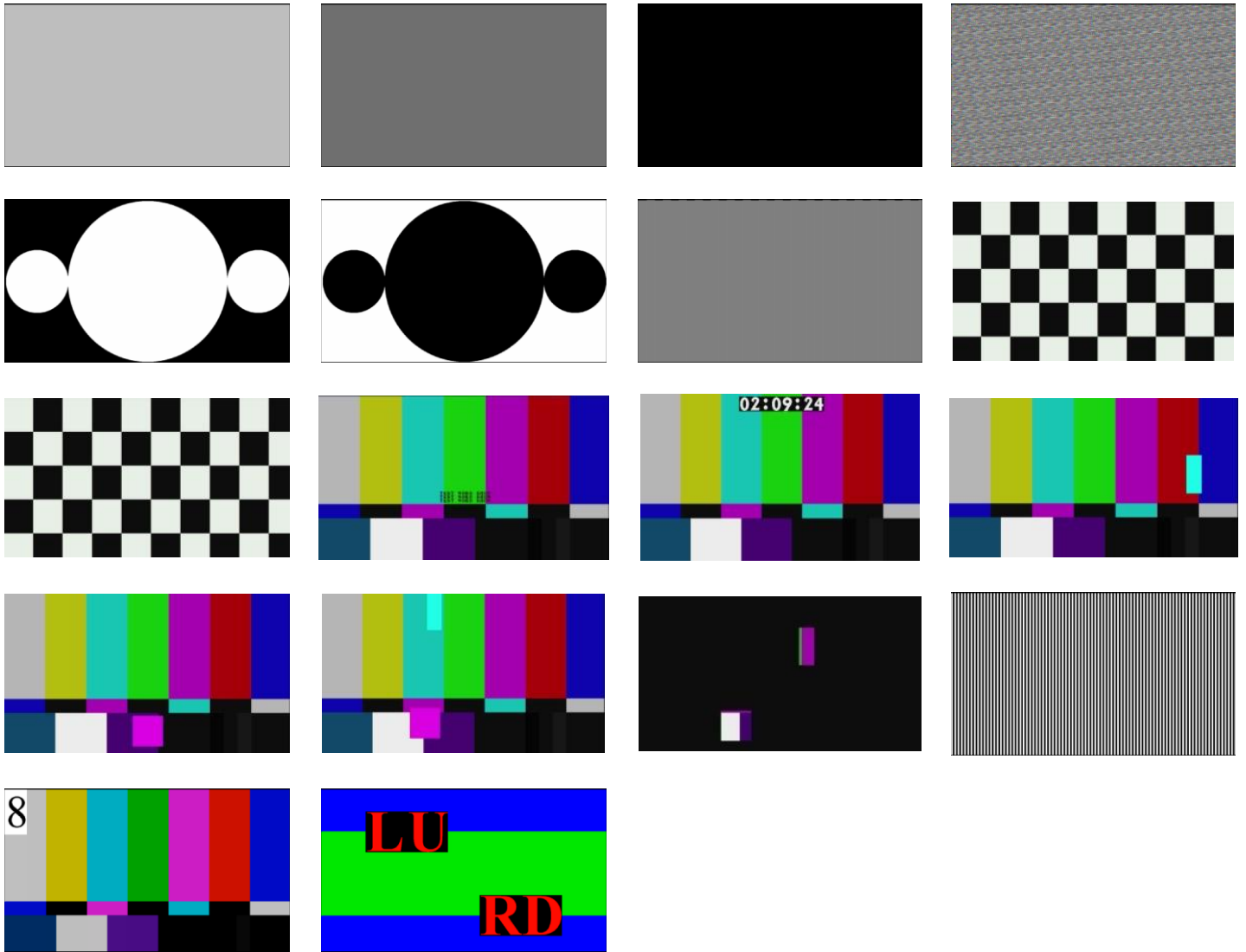
The SELLER warrants the **AV-GM09A3-S1 HDMI Deep Color & full 3D Pattern Generator** to be free from defects in the material and workmanship for 3 years from the date of purchase from the SELLER or an authorized dealer. Should this product fail to be in good working order within 3 years warranty period, The SELLER, at its option, repair or replace the unit, provided that the unit has not been subjected to accident, disaster, abuse or any unauthorized modifications including static discharge and power surges.

Unit that fails under conditions other than those covered will be repaired at the current price of parts and labor in effect at the time of repair. Such repairs are warranted for 90 days from the day of reshipment to the BUYER. If the unit is delivered by mail, customers agree to insure the unit or assume the risk of loss or damage in transit. Under no circumstances will a unit be accepted without a return authorization number.

The warranty is in lieu of all other warranties expressed or implied, including without limitations, any other implied warranty or fitness or merchantability for any particular purpose, all of which are expressly disclaimed.

Proof of sale may be required in order to claim warranty. Customers outside Taiwan are responsible for shipping charges to and from the SELLER. Cables are limited to a 30 day warranty and cable must be free from any markings, scratches, and neatly coiled.

The content of this manual has been carefully checked and is believed to be accurate. However, The SELLER assumes no responsibility for any inaccuracies that may be contained in this manual. The SELLER will NOT be liable for direct, indirect, incidental, special, or consequential damages resulting from any defect or omission in this manual, even if advised of the possibility of such damages. **Also, the technical information contained herein regarding the AV-GM09A3-S1 features and specifications is subject to change without further notice.**

Support

For more info or tech support

http://www.siig.com/support

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