MU-SIX-G-8K

HDMI 2.1 40Gbps FRL
Test Pattern Generator
HDCP 2.3 Tester

Introduction

The Murideo 8K SIX-G is an HDMI pattern generator intended for the AV integration market to confirm HDMI 2.0(b) and HDCP 2.2 operation at the 40Gbps level. Additionally, the SIX-G is an excellent field troubleshooting tool for distributed high bandwidth HDMI systems and a reference source for video calibration. This device can create a signal that allows it to act as any modern HDMI source.

The handheld device is portable thanks to a built-in battery and can generate over 100 different test patterns for setup, calibration and troubleshooting. There's a three-inch color display with simplified menus as well as free PC control software. The 8K SIX-G also features Hot Plug Detect, EDID read/write functionality and the ability to create custom resolutions. There's the option for either RS232 or USB control and support for CalMAN and Light Illusion calibration software. The 8K SIX-G is the only unit to carry the complete suite of ISF test patterns, select-able color output level, RGB Triplets and Constant APL (Average Picture Level) all in one place, making it a calibrators dream. The 8K SIX-G is ISF Labs and DPL Labs certified, the firmware is field upgradable, and it even includes audio confidence tests.

Note: The SIX-G ships with a protective cover on the screen that you may remove, although this is not required for operation.

NOTE: This document contains many technical terms and acronyms. If you are unsure of what these mean we have a full GLOSSARY of Audio Video terms with definitions available at www.murideo.com

Features

- HDMI 2.0(a) Support. 600 Mcsc - 3840x2160P@60Hz 4:4:4
- HDMI 2.1 40Gbps FRL 7680x4320@60Hz 4:2:0
- Color Space Selectable
  - RGB Full
  - RGB Limited
  - YC444, 422, 420 (16-235)
  - Auto Detect (read EDID - display preferred format)
- High Bit Depth - 8, 10, 12, and 16 bit per pixel support
- HDR (High Dynamic Range) Support
  - HDR10
  - HLG
  - Dolby Vision
  - Custom HDR Memory
  - 4 Native HDR Test Patterns
  - BT. 2020 (Wide Color Gamut WCG) Support
- HDCP Content Type Selectable
  - Type 0 - Type 0 content can pass over any version of HDCP (1.x or 2.x)
  - Type 1 - Type 1 content requires mandatory HDCP 2.x

- CEC Test - CEC Pass/Fail test. Connect to an HDMI INPUT/OUTPUT to validate CEC functionality
- Sync & Latency Test. When using SIX-G-8K/SIX-A-8K Pair
- Full 10-Bit RGB Triplet Generator (0-1024 RGB)
- HDCP Selectable - Off, HDCP 2.x or HDCP 1.x
- Hot Plug Detect Indicator Light
- ISF Certified. Test Patterns including contrast, brightness, color, tint, sharpness and more.
- DLP Labs Certified
- EDID Read and Save functionality
  - x6 EDID Memory Slots
  - Read and Display EDID (quick glance on device, detailed information using PC software)
  - Emulate any display
- USB/Serial Control
- Free PC software (Control, Custom Pattern Uploader) @ www.murideo.com
- API (Application Programming Interface) Available upon request @ www.murideo.com
- Reference Source for third party calibration software.
- Portable, Battery Operated
- 3" LCD display with simple menu system
- Native 4K Geometry Pattern in multiple Timings (Frame Rates)
- Audio test tones for confidence testing

What's in the box

- MU-SIX-G-8K Generator
- 12V 2A DC/AC Power Supply / Charger (110-240 VAC) with set of International plugs (US, UK, AU, EU)
- Rechargeable Battery Pack (Internal)
- x1 Micro USB to USB A cable
- x1 3.5mm to DB9 (F) serial cable adapter

VIDEO:	
HDMI VERSION	HDMI 2.1 (FRL5 40GBPS)
HDCP VERSION	HDCP 2.3 AND 1.4
HDCP ON/OFF	YES
MAXIMUM CLOCK RATE	600 Mcsc (594 MHz)
MAXIMUM THROUGHPUT PER CHANNEL	10.0 Gbits/sec (40 GBP/sec TOTAL)
RESOLUTION TIMINGS	VESA; VIDEO STANDARD WITH 60, 59.94, 30, 29.97, 24, 23.98, FPS; VIDEO STANDARD WITH 50, 25 FPS; AUTO AND 10 USER DEFINDED
VIDEO ENCODING	RGB, YCbCr
VIDEO SAMPLING MODELS	RGB 4:4:4, YUV 4:4:4, YUV 4:2:2, YUV 4:2:0 HDMI 2.0
COLOR BIT DEPTH	8, 10, 12, 16, AND AUTO EDID READ
PATTERNS	OVER 80 BUILT IN INCLUDING ISF GEOMETERY, ISF RESOLUTION, ISF PLUGE, COLORS, FOCUS, RESOLUTION, BARS, RAMPS, MULTIBURST, BLACK/WHITE AND MOVING BARS.
AUDIO:	
AUDIO CHANNELS	UP TO 8 (7.1)
AUDIO OUTPUT	2 CH LPCM
VU METER CHANNELS	UP TO 8 (7.1)
PORTS:	
HDMI	TYPE A
AUDIO (L/R INPUT)	3.5MM STEREO (3-CONDUCTOR)
SYNC (SYNC & LATENCY TEST)	3.5MM STEREO (3-CONDUCTOR)
RS232	3.5MM STEREO (3-CONDUCTOR)
FIRMWARE/CONTROL	MICRO USB
ENVIRONMENTAL:	
OPERATING TEMPRATURE	23 TO 125°F (-5 TO 51°C)
STORAGE TEMPERATURE	-4 TO 140°F (-20 TO 60°C)
HUMIDITY RANGE	5-90% RH (NO CONDENSATION)
POWER:	
POWER	7.4V 2600mAh INTERNAL BATTERY OR WALL ADAPTER
POWER CONSUMPTION (TOTAL)	12 WATTS MAX
POWER SUPPLY	INPUT: AC 100-240V ~ 50/60HZ OUTPUT: DC 12V 2A
DIMENSIONS:	
DIMENSIONS (UNIT ONLY DEPTH/WIDTH/HEIGHT)	MM: 28.8 x 108.44 x 139 INCH: 1.13 x 4.27 x 5.47
WEIGHT (UNIT)	0.8 LBS/0.36 KG

FRONT PANEL OVERVIEW

3" color LCD Display with Polycarbonate protective covering

HPD (Hot Plug Detect) LED: Solid light indicates that hot plug detect is successful

HDCP (High Bandwidth Content Protection) LED: On indicates HDCP is being sent

Shortcut button to commonly used video resolution timings

Shortcut button to HDCP settings

Power button to turn the device off and on

Menu navigation buttons

Selection button

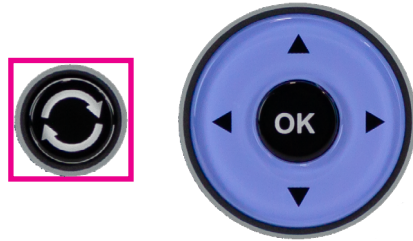Back button to back up one menu with each push

Connection Overview:

Video Generator: Timing & Resolution

Use this page to select the resolution and frame rate of the generated video signal.
It contains the following options:

Use the Timing Shortcut button to jump to 6 commonly used Timing & Resolutions. Press the UP/DOWN arrow keys to choose, then the OK button to select.

The first 6 slots can be accessed by pressing the Timing Shortcut button. If you would like a resolution that is not listed under the Timing Shortcut button press the right arrow button to access the other 64 available timings & resolutions.

1. 1080P 60Hz
2. 4096x2160 24Hz
3. 3840x2160 30Hz
4. 3840x2160 60Hz
5. 7680x4320 30Hz
6. 7680x4320 60Hz
7. 1280x1024 60Hz
8. 1400x1050 60Hz
9. 1600x1200 60Hz
10. 1920x1200 60Hz
11. 480I 59.94Hz
12. 480P 59.94Hz
13. 720P 60Hz
14. 720P 59.94Hz
15. 1080I 60Hz
16. 1080I 59.94Hz
17. 1080P 30Hz
18. 1080P 29.97Hz
19. 1080P 24Hz
20. 1080P 23976Hz
21. 1080P 60Hz
22. 1080P 59.94Hz
23. 576I 50Hz
24. 576P 50Hz
25. 720P 50Hz
26. 1080I 50Hz
27. 1080P 25Hz
28. 1080P 50Hz
29. 3840X2160 30Hz
30. 3840x2160 29.97Hz
31. 3840X2160 25Hz
32. 3840x2160 24Hz
33. 3840x2160 23.98Hz
34. 4096x2460 24Hz
35. 3840x2160 60Hz
36. 3840x2160 59.94Hz
37. 3840x2160 50Hz
38. 720P 60Hz (3D-FP)
39. 720P 59.94Hz (3D-FP)
40. 1080P 24Hz (3D-FP)
41. 1080P 23.976Hz (3D-FP)
42. 720P 50Hz (3D-FP)
43. AUTO
44. USER1
45. USER2
46. USER3
47. USER4
48. USER5
49. USER6
50. USER7
51. USER8
52. USER9
53. USER10
54. 4096x2160 30Hz
55. 4096x2160 29.97Hz
56. 4096x2160 25Hz
57. 4096x2160 23.976Hz
58. 4096x2160 60Hz
59. 4096x2160 59.94Hz
60. 4096x2160 50Hz
61. 7680x4320 30Hz
62. 7680x4320 29.97Hz
63. 7680x4320 25Hz
64. 7680x4320 24Hz
65. 7680x4320 23.98Hz
66. 7680x4320 60Hz
67. 7680x4320 59.94Hz
68. 7680x4320 50Hz
69. 7680x4320 48Hz
70. 7680x4320 47.95Hz

8

Video Generator: 4K Geometry 178

This menu contains one native 4k geometry pattern.

This pattern in available in multiple frame rates. These include the following options:

1. 3840x2160 30Hz
2. 3840x2160 29.97Hz
3. 3840x2160 25Hz
4. 3840x2160 24Hz
5. 3840x2160 23.98Hz
6. 3840x2160 60Hz
7. 3840x2160 59.94Hz
8. 3840x2160 50Hz
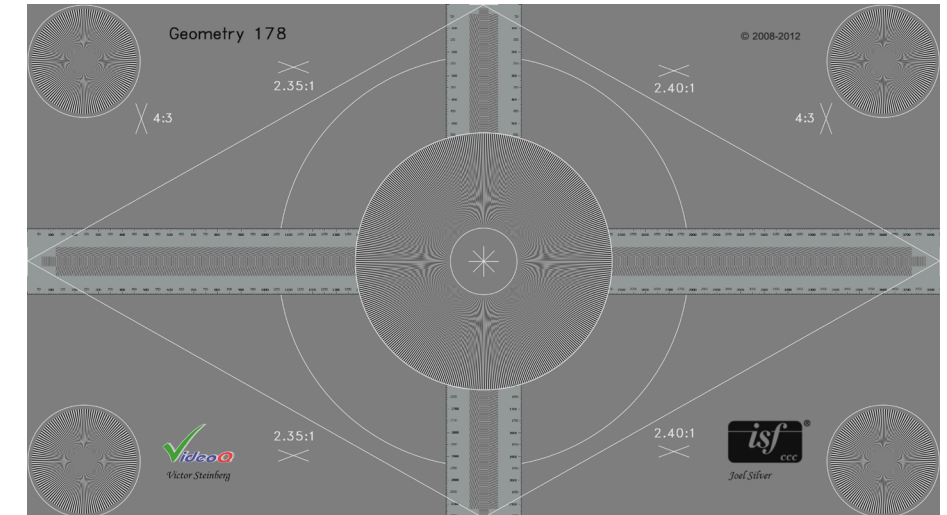
Video Generator: Color Space

Select the Color Space for the display or system you are testing.

These include the following options:

· RGB (0-255) – RGB Full is generally reserved for PC monitors since PCs use full range RGB.
· RGB (16-235) – RGB Limited - HDTV SMPTE Range – Movies and most video based content (TV Shows, streaming, etc.) are viewed and produced within this range.
· YC444 (16-235)- YCbCr 4:4:4 - Full horizontal & vertical resolution – no chroma-subsampling is used.
· YC422 (16-235) – YCbCr 4:2:2 – ½ horizontal resolution, full vertical resolution.
· YC420 (16-235) – YCbCr 4:2:0 – ½ horizontal resolution, ½ vertical resolution.
· AUTO – The Generator will output the color space of the connected device based on that device's EDID.

NOTE: The human eye is less sensitive on color data compared to luminance; color data for that reason is ½ horizontal and vertical resolution. Generally YC422 is the setting for most consumer electronics sources like Blu-ray players and cable/satellite boxes.

9

Video Generator: BT. 2020 SETUP

Enable/Disable BT2020 (Wide Color Gamut).

The options include:

- · BT. 2020 Disable
- · BT. 2020 Enable

NOTE: When BT. 2020 is Disabled the default color gamut is BT. 709

Rec 2020 - — -
Rec 709   · · · · ·
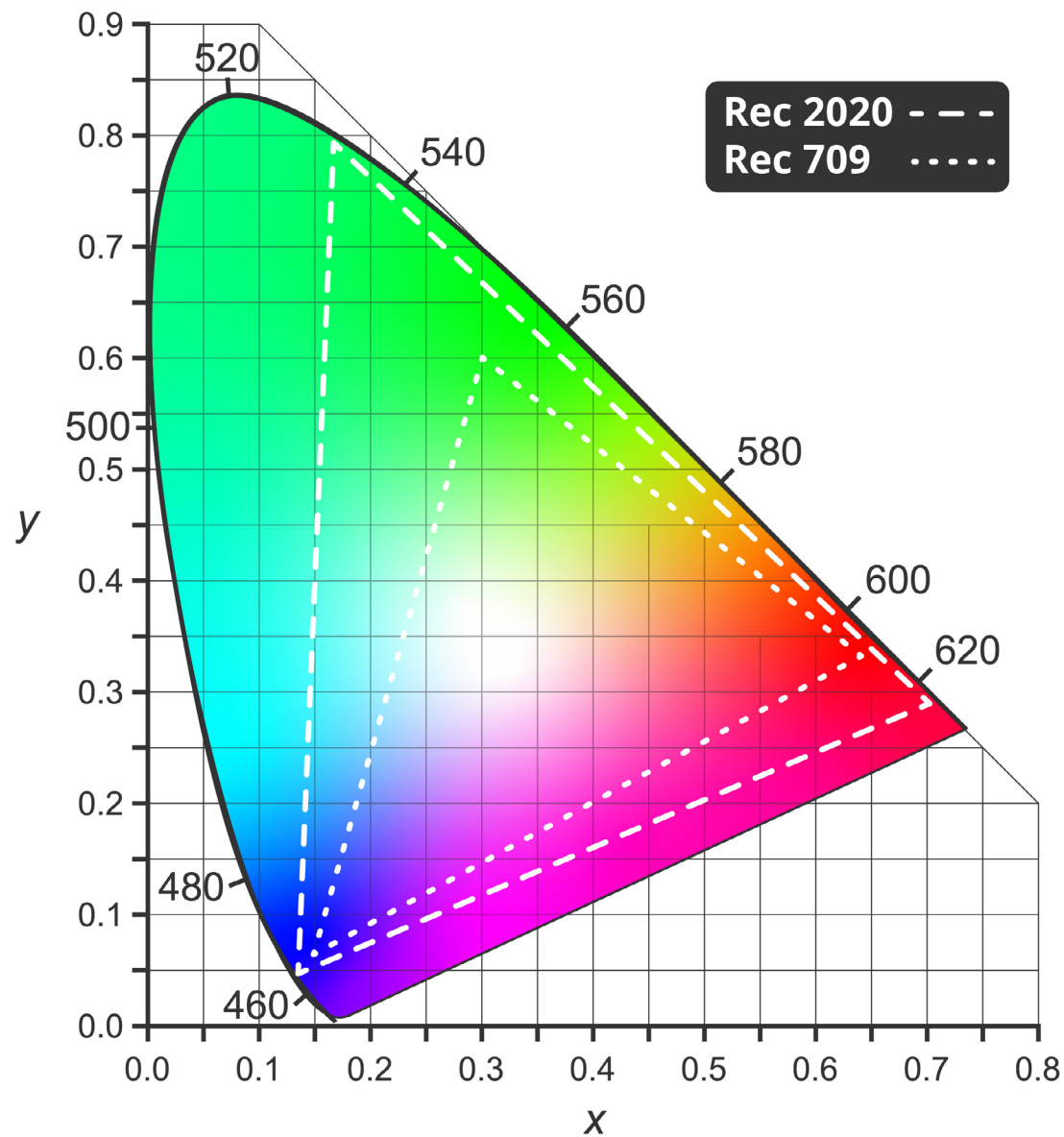
Video Generator: Deep Color Depth

Deep Color Depth - Also known as Color Depth/Bit Depth.

Allows selection of bit depth between 8 and 16-bits per pixel.
This menu contains the following options:

1. 8Bit
2. 10Bit
3. 12Bit
4. 16Bit

As the Bit Depth increases the image looks smoother, especially within solid colors in the image.

1 bit (2 Gradations)
2 bit (4 Gradations)
4 bit (16 Gradations)
8 bit (256 Gradations)
10 bit (1024 Gradations)
12 bit (4096 Gradations)
16 bit (65536 Gradations)
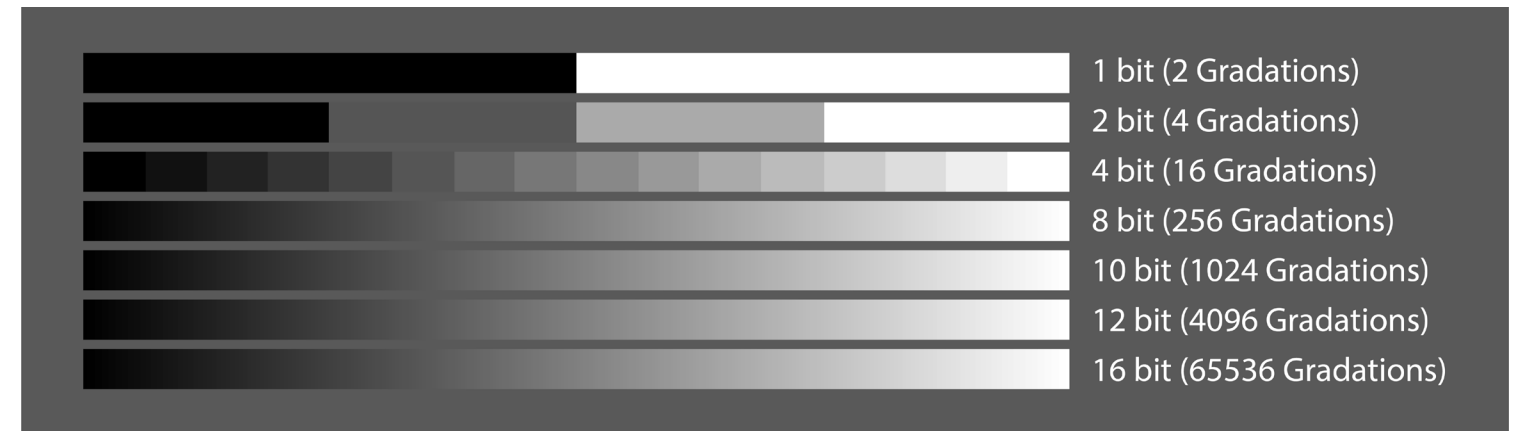
Note: Resolution/Timing, Color Space, and Bit Depth are interrelated and they all effect the total band-width. If the bandwith exceeds the system's capabilities, you may have to lower any of these parameters. If not, you may experience no signal or no image on the display under test.

Video Generator: HDCP Setup

In this menu you can enable or disable HDCP. Disabling HDCP may be useful while troubleshooting. These menu contains the following options:

1. HDCP OFF
2. HDCP1.4
3. HDCP2.3
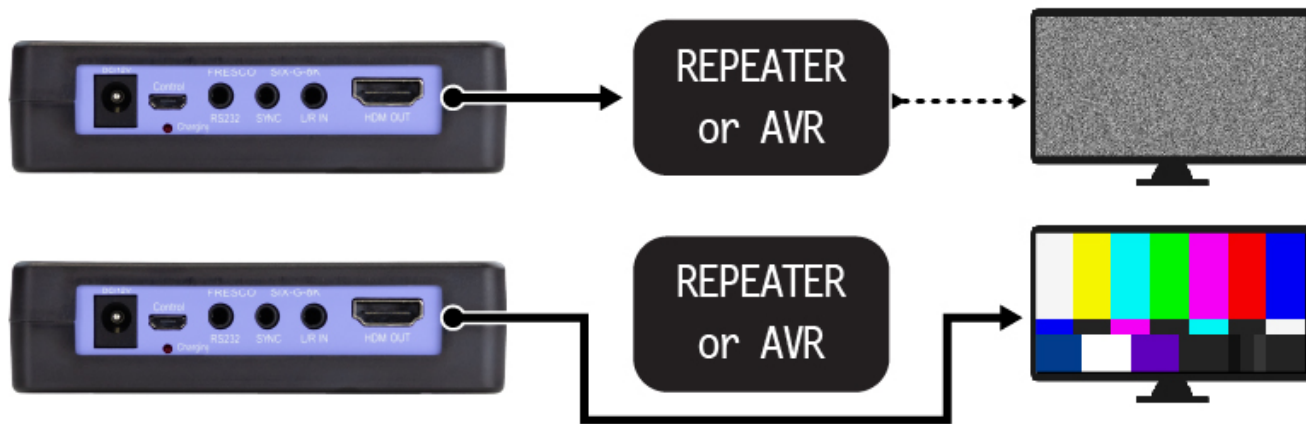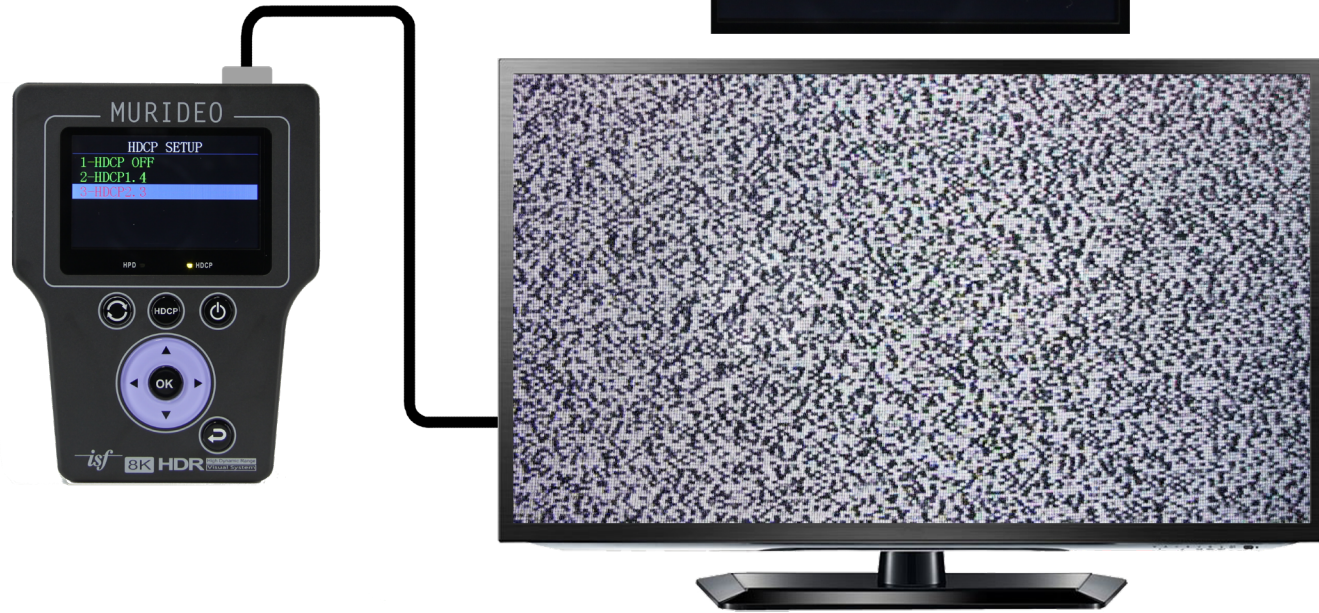
The above example the repeater/AVR cannot pass HDCP 2.x (resulting in "HDCP Snow"). Steps must be taken to convert, bypass, or replace the non-compliant device.

Video Generator: HDCP 2.2 Content Type

Content Type 0, Content Type 1

· Content Type 0 - Does not require HDCP2.2 (will fall back to previous versions)

· Content Type 1 - Requires HDCP 2.2 (will not fall back to previous versions)

Video Generator: HDMI /DVI Setup

This menu will allow you to select between HDMI and DVI as the SIX-G-8K's output. Although the SIX-G-8K's physical output port is HDMI, if using an HDMI to DVI adaptor anywhere in the signal chain this may result in no signal or no image on the display under test.

This menu contains the following options:

1. DVI
2. HDMI
3. AUTO

Note: Use the DVI option if there is an HDMI to DVI adaptor anywhere in the signal chain. Use the HDMI option if all the cables in the signal chain are HDMI. The connection type is embedded in the EDID (extended display identification data) data block. Using the AUTO setting the SIX-G-8K will automatically select HDMI/DVI based on the EDID of the display under test.

SIX-G Connection Diagram
Testing Displays

Test HDMI
SIX-G Test Point

SINK-HDTV

Procedure:
Test each input on the display to ensure it can display a test pattern from the SIX-G. Use motion patterns to check for video artifacts.

1. Test/verify highest resolution.
2. Test for HDCP 1.4, 2.2, and 2.3
3. Test for color space
4. Test for 3D functionality
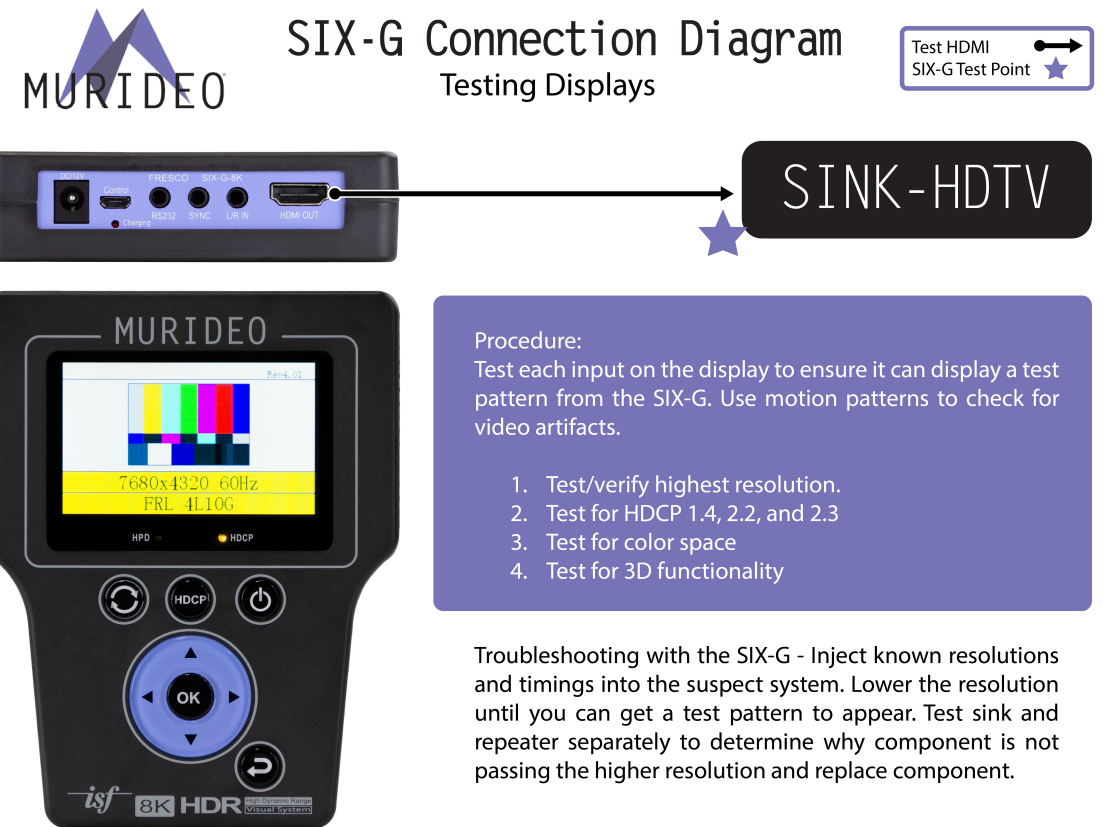
Troubleshooting with the SIX-G - Inject known resolutions and timings into the suspect system. Lower the resolution until you can get a test pattern to appear. Test sink and repeater separately to determine why component is not passing the higher resolution and replace component.

Video Generator: HDR Pattern

The SIX-G-8K contains 3 HDR test patterns and 1 HDR reference image provided by DVS (www.diversi-fiedvideosolutions.com). These test patterns/image are natively 1920x1080@60Hz 4:2:2 12Bit 1000nits. Use the test patterns to verify black level, white level, and color saturations are set correctly on the display. Use the reference image for confirmation.

Black Clipping - This test pattern shows black level from code value 64 up to code value 156. Code value 64 is REFERENCE BLACK. Ideally you can see code value 68 and greater while still preserving code value 64 as black.
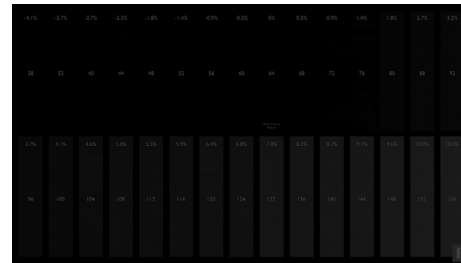
NOTE: Some consumer displays cannot resolve some of the bars above 64. This is due to the display's limited capabilities.

White Clipping - When viewing this pattern on a display you should be able to see all of the white bars up to the display's capabilities. For example if you are viewing this on a display that is only capable of 800nits the last several bars will be clipped (look the same). If the display is capable of 1,400nits or more you should see all of the bars.
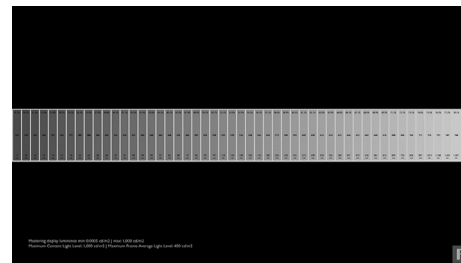
Color Clipping - When viewing this pattern on a display you should be able to see a difference in all of the gradients in white and the primary/secondary colors. This is based on the display's limited capabilites.
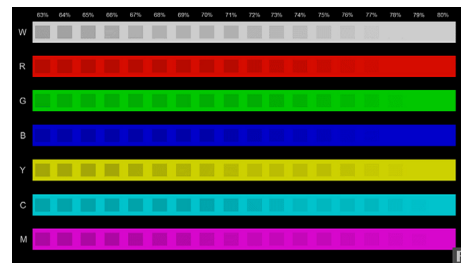
NOTE: This test pattern was mastered with a maximum luminance of 10,000nits. If the display you are testing is only capable of 1,000nits, everything after that will be clipped (look the same).

Indian Market - This is an HDR reference test image. This can be used as a confidence test to ensure that the display under test is displaying HDR correctly. If the display is calibrated you should be able to see details in her hair, her skin tone should look natural, the colors of the food/spices should look natural, and the entire image should be free of artifacts and edge enhancement.

Video Generator: HDR SETUP

Choose from Off, or from 8 customizable HDR Test Info-frame. The included HDR levels are some of the most commonly used. If you would like to build a custom HDR Infoframe please use the SIX-G-8K's PC Control Software.

This menu contains the following options:

1. HDR OFF
2. HDR1 (10000nits)
3. HDR2 (600nits)
4. HDR3 (540nits)
5. HDR4 (4000nits)
6. HDR5 (1000nits)
7. HDR6 (250nits)
8. HDR7 (1000nits)
9. HDR8 (540nits)
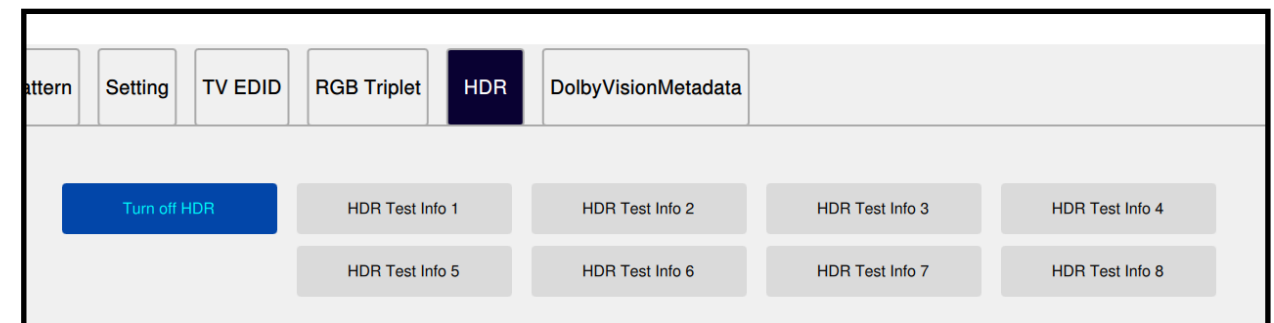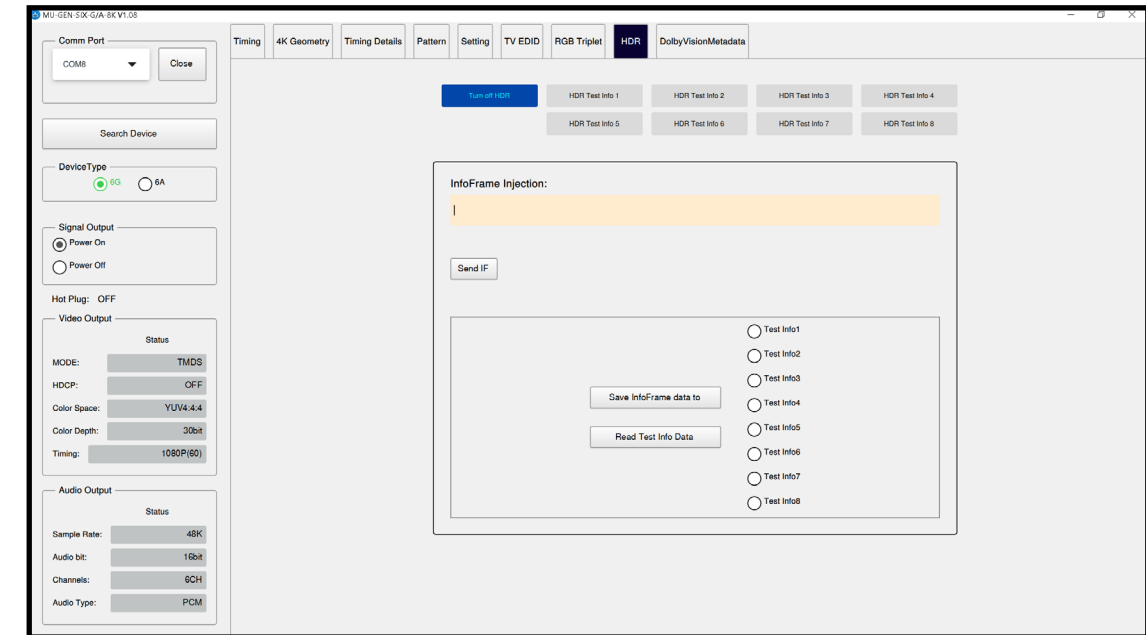
Audio Generator:

The SIX-G-8K is also capable of generating audio test tones for confidence testing. If using the SIX-G-8K for audio testing you can set the following:

· Audio Sampling Rate

· Audio Sampling Size

· Audio Source

· Audio Channels

· Audio Volume

Once you select the audio output parameters the SIX-G-8K will output a 1KHz test tone. If testing a display you should hear the test tone through the display's speaker(s). If testing an audio system you can assign the test tone to play through all of the speakers or select speakers (2CH up to 8CH). Once you have selected the audio channels you can set the volume of the test tone.

NOTE: If you would like you can use an external audio source instead of the internally generated test tone. See page 20 (AUDIO SOURCE) for more details.

SIX-G Connection Diagram
Repeater Test

Signal Path
Test HDMI
SIX-G Test Point

8K SOURCE

REPEATER or AVR

Procedure:
Test each HDMI input on the repeater to ensure it can display a test pattern from the SIX-G. Use motion patterns to check for video artifacts

1. Test/ verify highest resolution
2. Test for HDCP 1.4, 2.2, and 2.3
3. Test for color space
4. Test for 3D functionality

Check settings and routing if the repeater is not passing the test pattern through. Note: all components must be HDCP 2.3 compliant. Troubleshooting with the SIX-G – Test all displays for maximum resolution and HDCP compliance.

Audio Generator: Audio Sample Rate

Allows audio sampling rates between 32K and 192K.

This menu contains the following options:

1. 32K
2. 44.1K
3. 48K
4. 88K
5. 96K
6. 176K
7. 192K

NOTE: There is no "one size fits all" setting for Audio Sample Rate. Choose the selection that you need for your specific application.
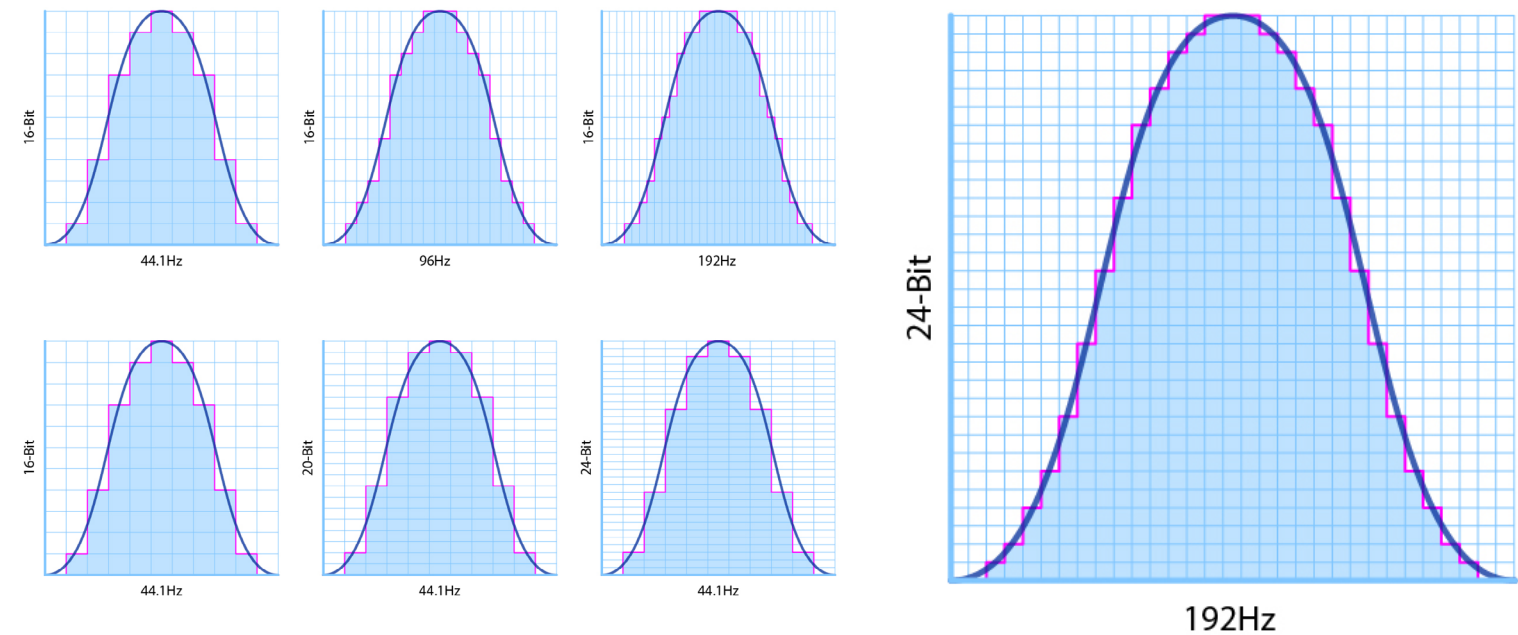
Audio Generator: Audio Sample Size

This menu contains the following options:

1. 16Bit
2. 20Bit
3. 24Bit

NOTE: There is no "one size fits all" setting for Audio Sample Size. Choose the selection that you need for your specific application.

Audio Generator: Audio Source

This menu contains the following options:

1. INT. SineWaveTone (1K)
2. EXT. Stereo

If you would like to use an external audio source instead of the internal test tone generator select the EXT (external) Stereo setting. Connect your audio source to the 3.5mm "L/R IN" port on the connections panel.

NOTE: You must set your audio source to 2 Channel PCM for this to work properly.

Audio Generator: Audio Channels

In this menu you can select 32 speaker configurations from 2 channel up to 8 channel. The SIX-G-8K will support up to 8 channels of audio with the highest resolution being 192KHz/24bit. While in this menu to change speaker configurations use the UP/DOWN arrow buttons. Once you have chosen your desired speaker configuration press the OK button to set.

This menu contains the following options:

- 2CH (Front Left/Front Right)
- 2.1CH (Front Left/Front Right/LFE [Low Frequency Effect])
- 3CH (Front Left/Front Center/Front Right)
- 3.1CH (Front Left/Front Center/Front Right/LFE)
- 3CH (Front Left/Rear Center/Front Right)
- 3.1CH (Front Left/Rear Center/Front Right/LFE)
- 4CH (Front Left/Front Center/Front Right/Rear Center)
- 4.1CH (Front Left/Front Center/Front Right/Rear Center/LFE)
- 4CH (Front Left/Front Right/Rear Left/Rear Right)
- 4.1CH (Front Left/Front Right/Rear Left/Rear Right/LFE)
- 5CH (Front Left/Front Center/Front Right/Rear Left/Rear Right)
- 5.1CH (Front Left/Front Center/Front Right/Rear Left/Rear Right/LFE)
- 5CH (Front Left/Rear Center/Front Right/Rear Left/Rear Right)
- 5.1CH(Front Left/Rear Center/Front Right/Rear Left/Rear Right/LFE)

- 6CH (Front Left/Front Center/Front Right/Rear Left/Rear Center/Rear Right)
- 6.1CH (Front Left/Front Left Center/Front Right Center/Front Right/Rear Left/Rear Right/LFE)
- 6CH (Front Left/Front Left Center/Front Right/Front Right Center/Front Right/Rear Left/Rear Right)
- 6.1CH (Front Left/Front Left Center/Front Right Center/Front Right/Rear Left/Rear Right/LFE)
- 7CH (Front Left/Front Left Center/Front Right Center/Front Right/Rear Left/Rear Right)
- 7.1CH (Front Left/Front Left Center/Front Right Center/Front Right/Rear Left/Rear Right/LFE)
- 4CH (Front Left/Front Left Center/Front Right Center/Front Right)
- 4.1CH (Front Left/Front Left Center/Front Right Center/Front Right/LFE)
- 5CH (Front Left/Front Left Center/Front Center/Front Right Center/Front Right)
- 5.1CH (Front Left/Front Left Center/Front Center/Front Right Center/Front Right/LFE)
- 5CH (Front Left/Front Left Center/Front Right Center/Front Right/Rear Center)
- 5.1CH (Front Left/Front Left Center/Front Right Center/Front Right/Rear Center/LFE)
- 6CH (Front Left/Front Left Center/Front Center/Front Right Center/Front Right/Rear Center)
- 6.1CH (Front Left/Front Left Center/Front Center/Front Right Center/Front Right/Rear Center/LFE)
- 6CH (Front Left/Front Left Center/Front Right Center/Front Right/Rear Left/Rear Right)
- 6.1CH (Front Left/Front Left Center/Front Right Center/Front Right/Rear Left/Rear Right/LFE)
- 7CH (Front Left/Front Left Center/Front Center/Front Right Center/Front Rear/Rear Left/Rear Right)
- 7.1CH (Front Left/Front Left Center/Front Center/Front Right Center/Front Rear/Rear Left/Rear Right/LFE)

NOTE: When changing channel selections each channel will be illuminated in green. Once you have choosen the selection press the OK button to set. The channels and format will now be illuminated in red.

Audio Generator: Audio Volume

Use this menu to adjust the output volume level of the internaly generated test tone. To change volume use the UP/DOWN arrow buttons. If you set the volume level to ZERO (00) the volume will be muted.

NOTE: The volume level control does not effect the 3.5mm L/R Input.

IRE Window:

Use this menu to change the size and level of the window test pattern. This may be helpful when working with different display types. Once in this menu press the OK button. Use the UP/DOWN buttons to INCREASE/DECREASE the window size. Use the LEFT/RIGHT buttons to LOWER/RAISE the level of the test pattern.

NOTE: Size can be adjusted from 0-100. Level can be adjusted from 0-255 (black to white) in increments of one. To adjust in increments of more than one press and hold either UP/DOWN/LEFT/RIGHT depending on whether you are changing size or level.
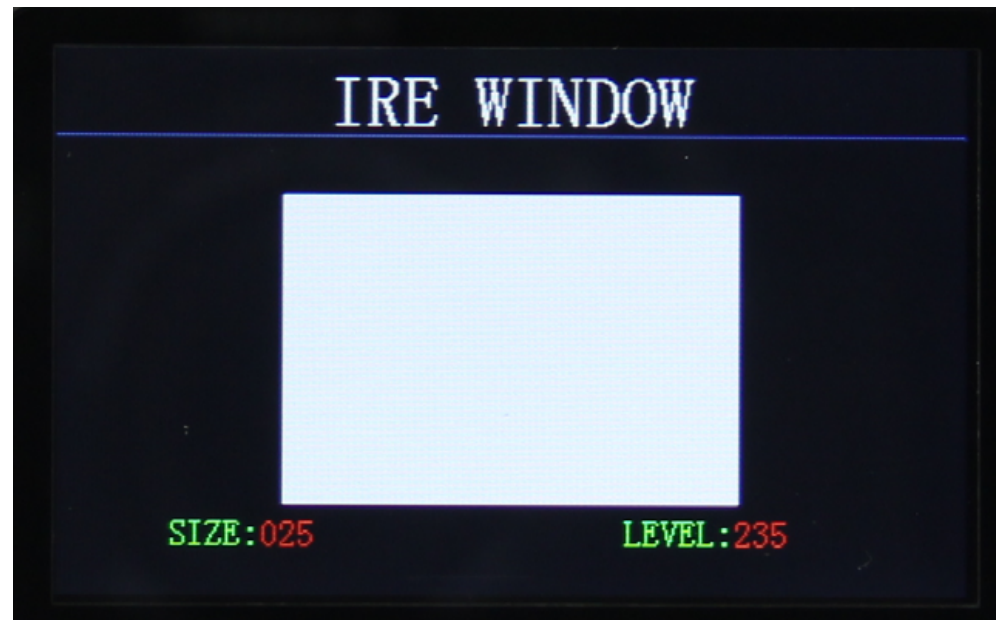
RGB Triplet:

Use this menu to create a custom window test pattern. Here you can control the size and color of not only the window but also the background of the test pattern. This can be used for SDR and Dolby Vision/HDR. RGB Triplets are the numerical values used for making over 16,000 colors. Combining the RGB values will generate a specific color. For example the RGB triplet value for white is R=255, G=255, B=255.
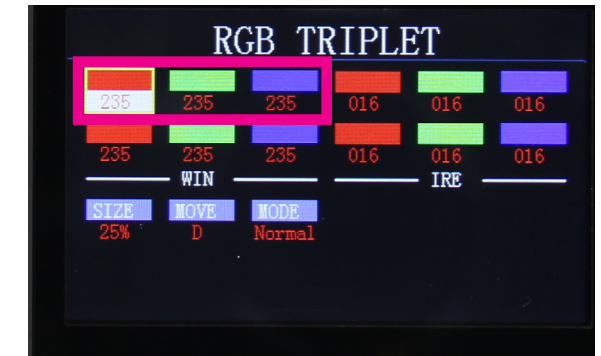
Once in this menu you can change the RGB Values for both the even and odd lines that make up the window, the even and odd lines of the background, the size of the window, and whether the window moves or is stationary.

To change values you will use the UP/DOWN arrow buttons to INCREASE/DECREASE the value of R,G,B. Use the OK button to advance through the menu.

To change the size of the window press the OK button until SIZE is highlighted. Use the UP/DOWN arrow buttons to change the size. The size can be adjusted from 0% to 100%. Setting the size to 100% will result in the window pattern filling up the entire screen of the display you are testing.

To select whether the window moves or is stationary press the OK button until MOVE is highlighted.

There are two options:
D (Disable) or E (Enable). Use D for a stationary window. Use E for a moving window. If using E the window will scroll right to left across the display you are testing.

To toggle the output between SDR and Dolby Vision/HDR press the OK button until MODE is highlighted. To choose SDR use the NORMAL setting. To choose HDR/Dolby Vision use the DV HDR setting.

NOTE: Although you can use this tool using the front panel controls we HIGHLY recommend you use the free PC Control Software.....Show screenshot W/Mouse of this menu in the software.

CEC Test:

The CEC (Consumer Electronics Control) test is a simple pass/fail test to confirm CEC is functioning on the device that is connected to the SIX-G-8K. This can be either a source, repeater, or sink (display). To run the CEC test connect an HDMI Cable from the SIX-G-8K to the device you are testing. Navigate to the CEC TEST menu and press the OK button. The test results will be either:

1. PASS
2. FAIL

1. PASS
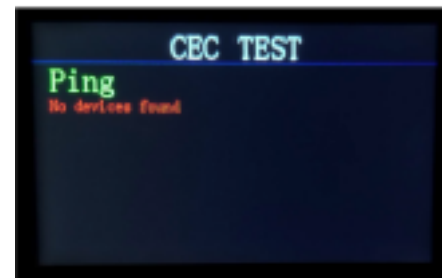
2. FAIL

NOTE: This test will fail 100% of the time if CEC is not ENABLED on the device you are testing. For specific instructions on how to enable CEC on the device you are testing, see the owner's manual of that device.

Sync & Latency Test:

This test is designed to measure (in microseconds "µs") the sync and latency between the source and sink.   This could be something as simple as an HDMI cable or as complex as a distributed AV system. The results of this test will give you the data needed to adjust any audio or video delay adjustments in the AV system.

This test requires the use of both the SIX-G-8K and the SIX-A-8K. In this example we will test the laten-cy between the SIX-G-8K and SIX-A-8K (Generator/Analyzer) when the signal is ran through a repeater device.

1. Connect the SIX-G-8K to an INPUT of the repeater (AVR) with an HDMI cable
2. Connect the SIX-A-8K to the OUTPUT of the repeater (AVR) with an HDMI cable
3. Using a 3.5mm analog stereo cable, connect the SIX-G-8K to the SIX-A-8K using the SYNC port on both devices
4. Navigate to the SYNC & LATENCY TEST Menu
5. Press the OK Button
6. Read results

NOTE: If the test shows as FAILURE check that the 3.5mm cable is fully inserted into the SYNC port on both devices.

Auto Power Off:

You can set your SIX-G-8K to power off automatically when not in use. This will help save battery life. This menu contains the following options:

- DISABLE - The SIX-G-8K will remain powered on until you power if off manually.
- ENABLE - The SIX-G-8K will automatically power down after 10 minutes of inactivity.

NOTE: This setting is enabled by default.

Output Standby:

You can set your SIX-G-8K to go into sleep mode. If no HPD (Hot Plug Detect) is detected after 10 minutes, the SIX-G-8K will go to sleep. If the SIX-G-8K is sleeping press any button to wake it up.

This menu contains the following options:

- STANDBY OFF - The SIX-G-8K will never go to sleep
- STANDBY ON - The SIX-G-8K will go to sleep after 10 minutes of inactivity

Save EDID:

You can save up to 6 EDIDs from any device that has an EDID. Reading the EDID of the device that you are testing will help you understand the capabilities of the device. To save and EDID:

1. Connect an HDMI Cable between the SIX-G-8K and the device you would like to read the EDID from
2. Navigate to the SAVE EDID menu
3. Use the UP/DOWN arrow buttons to choose a slot/memory (1-6)
4. Press the OK button

If the SIX-G-8K succesfully reads the EDID of the device you are testing you will see SUCCESS next to the slot/memory.
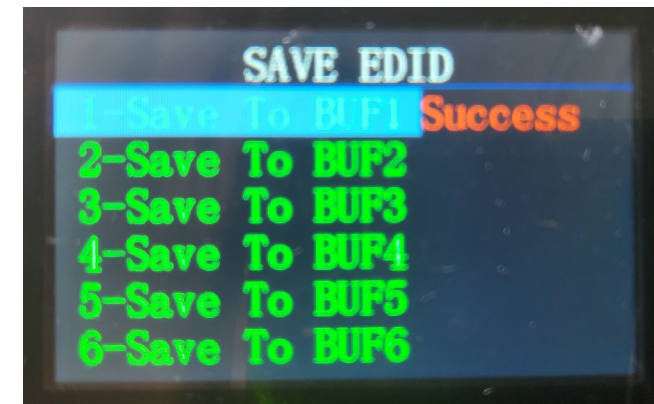
If the SIX-G-8K was not able to read the EDID of the device you are testing you will see FAILURE next to the slot/memory. If this happens be sure the HDMI cable is fully inserted into the HDMI ports on both devices.
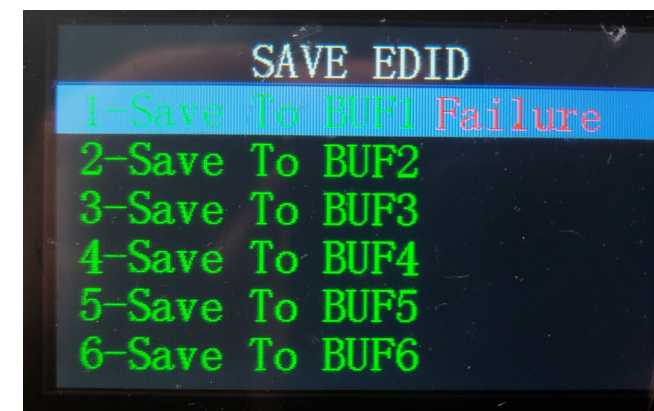
Sink EDID Info:

This menu will give you the basic EDID information of the device that is connected to the SIX-G-8K.   This information includes the device's manufacturer, preffered timing, and more.

NOTE: To see detailed information about the EDID use the SIX-G-8K PC Control Software.

| | Pattern | Setting | TV EDID | RGB Triplet | HDR | DolbyVisionMetadata | | | | | | |

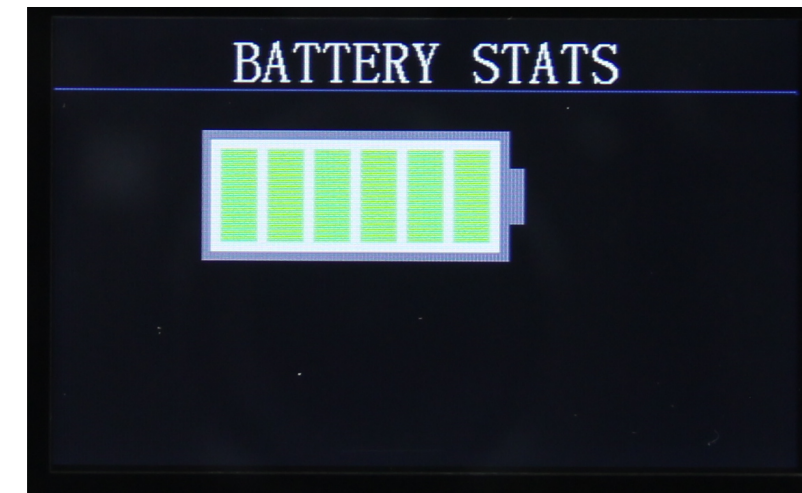|	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00	00	FF	FF	FF	FF	FF	FF	00	4D	D9	04	AA	01	01	01	01
10	01	1D	01	03	80	90	51	78	0A	0D	C9	A0	57	47	98	27
20	12	48	4C	21	08	00	81	80	A9	C0	71	4F	B3	00	01	01
30	01	01	01	01	01	01	08	E8	00	30	F2	70	5A	80	B0	58
40	8A	00	9F	29	53	00	00	1E	02	3A	80	18	71	38	2D	40
50	58	2C	45	00	9F	29	53	00	00	1E	00	00	00	FC	00	53
60	4F	4E	59	20	54	56	20	20	2A	30	30	0A	00	00	00	FD
70	00	17	79	0E	88	3C	00	0A	20	20	20	20	20	20	01	82
80	02	03	64	F0	58	61	60	5D	5E	5F	62	1F	10	14	05	13
90	04	20	22	3C	3E	12	03	11	02	65	66	3F	40	2F	0D	7F
A0	07	15	07	50	3D	07	BC	57	06	01	67	04	03	83	0F	00
B0	00	6E	03	0C	00	10	00	B8	3C	2F	00	80	01	02	03	04
C0	67	D8	5D	C4	01	78	80	03	EB	01	46	D0	00	44	03	98
D0	88	62	76	97	E2	00	CB	E3	05	DF	01	E4	0F	03	00	30
E0	E3	06	0D	01	01	1D	00	72	51	D0	1E	20	6E	28	55	00
F0	9F	29	53	00	00	1E	00	00	00	00	00	00	00	00	00	E6

EDID read From:

TV EDID ▼

READ EDID

WRITE EDID

SAVE EDID

OPEN EDID

General Info:

Manufacture's Name:SNY
Product Code:43524
Video Signal Interface:Digtal
Color Bit Depth:Reserved
Display Product Name:SONY TV *00
Vertical Rate:23Hz--121Hz
Horizontal Rate:14KHz---120KHz

HDMI EDIDcheck sum Ok !

Video Information:

Preferred Timing:3840x2160@60Hz
Detailed Timing:1920x1080@60Hz
Extension Detailed Timing1:1280x720@60Hz

Short Video Descripter
3840x2160p@60Hz 16:9
3840x2160p@50Hz 16:9
3840x2160p@24Hz 16:9
3840x2160p@25Hz 16:9
3840x2160p@30Hz 16:9
4096x2160p@24Hz 256:135
1920x1080p@50Hz 16:9
1920x1080p@60Hz 16:9
1920x1080i@50Hz 16:9

Audio Information:

Audio Format:LPCM.
Audio Channel(s):6
Sample Frequency:
192KHz
176KHz
96KHz
88KHz
48KHz
44.1KHz
32KHz
Sample Bit:
24Bit
20Bit
16Bit

Battery Stats:

This menu will show you the current status of the SIX-G-8K's internal battery.

NOTE: If the SIX-G-8K's battery is low you can operate it while plugged into power. This will also charge the battery while the SIX-G-8K is in use.

Test Patterns: Usage and explaination

Pattern	Variables	Usage
Checker Board 4x4		Used to measure contrast ratio
Gray Ramps		Used to review transition from black to white at moltiple
3D Alignment		Used to adjust for left eye/right eye offset in a 3D image
Moving Ball (zone plate)		Used to check for motion artifacts
White/Black/Gray Windows	Use RGB Triplet function to set any size window and IRE level	Used for grayscale calibration
Aspect Ratio		Used for setting proper aspect ratio on display
Moving Ramps	Gray, Red, Green and Blue Versions	Check for motion artifracts & smooth transitions from black to white (0 IRE to 100 IRE)
Half Black-Half White	Side-by-Side and Top/Bottom versions	Used to measure contrast ration and white field uniformity
Gray Ramps	Horizontal and verticle versions	Use to view high frequency response of display
Moving Line	Horizontal and verticle versions	Use to check for motion artifacts
Full Screen Checkerboard		Use for viewing overall white field to black field
Full Screen Dots		Use for checking sharpness and black to white transitions
Full Screen White Boxes on Black Background		For use in checking black to white transitions
Grids	Gray, red, green and blue	Use for checking uniformity, alignment and color purity
Stationary Ramps	Gray, red, green and blue	Use for checking uniformity, alignment and color purity from 10% to 90% luminance.
Raster/Full Screen	Black & White	Use to set on/off contrast ration
Raster/Full Screen - RGBCMY	Red, green, blue, cyan, magenta and yellow	Use to view or measure individual color purity
Color Bars 70%	70% RGBCMY + Black & White	70% color reference for post production
Color Bars 100%	100% RGBCMY + Black & White	100% color reference for post production. The colors are all the combinations of the primary colors: white (re plus green plus blue), Red, green, blue, yellow (red plus green), cyan (green plus blue), magenta (red plus blue), and black (none). The order of the bars on top is in descending
16-Step Gray Bars	More detail	Use this pattern to visually choose the correct color temperature mode on the display
8-Step Gray Bars	Less detail	Use this pattern to visually choose the correct color temperature mode on the display
ISF Color Multiburst		Used to choose the most apporpriate output color space and processing on your source device
ISF Sharpness & Geometry		Use this pattern to set sharpness and aspect ratio
ISF Color Girls		Use this pattern to adjust color and tint if TV does not
Portrait Multicultural Family		Use this pattern to adjust color and tint if TV does not have a blue-only mode - validate post caligbration settings
SMPTE Color Bars	Use RGBCMY + Black & White	Use this pattern to set color and tint when display has blue-only mode
ISF Black Pluge		Use to set black level on display (brightness)
ISF White Pluge		USe to set peak white on display (contrast)
RGB Triplets	10-bit adjustable RGB	Used via API for color calibration
Dolby Vision		Go/No-Go test for the presense of Dolby Vision content.

List of supported resolutions

Maximum 4K UHD resolution is: 2160P60 4:4:4 8-bit (almost 18 GBP/sec)

640x480@60	4096x2160@24
800x600@60	3840x2160@60
1024x768@60	3840x2160@59.94
1280x768@60	3840x2160@50
1360x768@60	720P@60 3D FP
1280x960@60	720P@59.9 3D FP
1280x1024@60	1080P@24 3D FP
1400x1050@60	1080P@23.9 3D FP
1600x1200@60	720P@50 3D FP
1920x1200@60	
480i@59.94	
480P@59.94	
720P@60	
720P@59.94	
1080i@60	
1080i@59.94	
1080P@30	
1080P@29.97	
1080P@24	
1080P@23.976	
1080P@60	
1080P@59.94	
576i@50	USER 1
576P@50	USER 2
720P@50	USER 3
1080i@50	USER 4
1080P@25	USED 5
1080P@50	USER 6
4Kx2K@30	USER 7
4Kx2K@29.97	USER 8
4Kx2K@25	USER 9
4Kx2k@24	USER 10
4Kx2K@23.98	

Warranty and Getting Help

AVPro Global Holdings (DBA MURIDEO) offers a 2 year international limited warranty for its Murideo products. Any product first sold to you is guaranteed to be free from defects in both components and workmanship under regular uses. The warranty period commences on the date the item ships. Attention: Your invoice with the date of purchase, model number and serial number of the product is your proof of the date of purchase. The International Limited Warranty is applicable and shall be honored in every country where MURIDEO or its Authorized Service Providers offer warranty service subject to the terms and conditions provided in this International Limited Warranty Statement. Products included in this warranty:

· Murideo SEVEN Generator

· Murideo SIX G Generator

· Murideo SIX A Analyzer

· Murideo Fox & Hound Testing and Troubleshooting Kit`

· Murideo 4K HDMI Test Monitor

During the warranty period, the defective hardware of Murideo products will be either repaired or replaced, with new or like new products, at the discretion of Murideo. This International Limited Warranty covers the costs of service parts and labor required to restore your product to fully functional condition. MURIDEO will, at its discretion, repair or replace any defective products or parts thereof covered by this International Limited warranty with refurbished parts of the product that are equivalent to new or like new products in both functionality and performance. A product or part that is repaired or replaced under this International Limited Warranty shall be covered for the remainder of the original warranty period applying to the product or part, or for 90-days, whichever expires last. All exchanged parts and products under this International Limited Warranty will become the property of MURIDEO.

Obtaining the Warranty Service

Warranty service or Returned Merchandise Authorization (RMA) under this International Limited Warranty will be honored only if claims are made within the warranty period. For notifications to MURIDEO or products outside the warranty period, the process will be the same, but charges may apply. Contact details may be obtained on MURIDEO website https://www.murideo.com/

Customers are requested to perform the following actions before claiming MURIDEO product as defective:

(a) Owner must notify MURIDEO, during the warranty period, in writing of alleged defect, and allow MURIDEO a reasonable opportunity to inspect the allegedly defective product;

(b) No Product may be returned without MURIDEO's consent, The MURIDEO RMA# must accompany all returns, and all returns must be delivered to MURIDEO within the warranty period;

(c) Owner may, then at its own expense, return the allegedly defective Product, freight pre-paid and in the original packaging, accompanied by a brief statement explaining the alleged defect to MURIDEO;

(d) If MURIDEO determines that any returned Product is not defective, or if MURIDEO determines that the defect is not covered by the warranty, MURIDEO will return the Product to the Owner at Owner's expense, freight collect, and Owner agrees to pay MURIDEO's reasonable cost of handling and testing;

(e) Upon determining that a returned product is defective, to receive warranty service Owner will need to present the invoice showing the original purchase transaction. If shipping the product, Owner will need to package it carefully and send it, transportation prepaid by a traceable, insured method, to the MURIDEO Service Center. Package the product using adequate padding material to prevent damage in transit. The original container is ideal for this purpose. Include the RMA #, your name, return shipping address, email address and telephone number where you may be reached during business hours, inside the shipping package with the unit. Any replacement unit will be warranted under these Terms and Conditions for the remainder of the original warranty period or ninety (90) days whichever is longer.

Refer to user manual available for download on our website http://www.murideo.com/ for important tips on how to operate and troubleshoot the product.

- Damage caused by act of nature, such as fire, flood, wind, earthquake, lightning, etc.
- Damage or incompatibility caused by failure to perform a proper installation or to provide an appropriate operational environment for the product, including but not limited to unstable wired/wireless network connection and phone lines, bad grounding, external electro-magnetic fields, direct sunlight, high humidity and vibration.
- Damage caused by impact with other objects, dropping, falls, spilled liquids, or submersion in liquids.
- Damage caused by unauthorized repair or disassembling of the product.
- Damage caused by any other abuse, misuse, mishandling, or misapplication.
- Damage caused by third party peripherals (including but not limited to visible damages on motherboard or other electronic parts of the product such as burn spots after electric discharge, melting, fusing, splitting, etc.)
- Any unauthorized software or modification of built-in software not approved by MURIDEO.
- The serial number of the product (or serial number stickers of its parts) has been modified, removed, blurred or damaged.
- Defects caused by transportation, handling or customer abuse.

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Getting Help

For service and support, contact your local dealer.

To find your dealer or to contact MURIDEO support, go to: https://support.murideo.com/

Or call

+1-605-330-8491 for worldwide technical support

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