MU-SEVEN-G-8K

Professional Audio/Video Testing Device for HDMI 2.1, ARC/eARC, Latency & Calibration An Approved Test Device for Dolby Audio ™

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Introduction

The SEVEN Generator is the next generation in HDMI test and measurement equipment from Murideo. An approved test device for Dolby Vision™ and Dolby Audio™, the SEVEN hosts an unmatched suite of audio and video tests. This device is the GO-TO tool for the video device, display, or repeater manufacturer as well as the consummate video professional.

The impressive video capabilities of the SEVEN include native 10/12 Bit BT2020 video output with over 1000 patterns, including HDR, SDR, Dolby Vision, and HLG. Test patterns are generated from FPGA or raw YUV files for a truly native experience and include video playback. The SEVEN includes the full suite of patterns from Diversified Video Solutions and other patterns and videos from Bill Wetzel, ISF, PVA, Portrait Displays, and Spears & Munsil. This device is the ideal solution for display calibration and evaluation. The test suite allows the user to construct a test signal with any video format and any audio format, then execute a test based on your own parameters and allows for reporting. The device has 1.5TB of storage, with reservations for up to 3 minutes of 4K60 4:4:4 video playback so the user can quickly load patterns using the USB 3.0 interface. The SEVEN is also capable of 120 frame video playback.

The impeccable performance in video generation is just the beginning. As a test device approved by Dolby Laboratories, Inc., SEVEN was designed with advanced audio testing capabilities, including A/V Sync (Lip Sync), Audio Latency, and Dolby Audio. This approved test device for Dolby Audio contains all current Dolby Audio streams, including; Dolby Digital, Dolby Digital Plus (w/Dolby Atmos), Dolby MAT (Dolby Atmos), and Dolby True HD (w/ Dolby Atmos). The Audio Suite of tests is available in HDMI Tx, ARC Tx, and eARC Tx. With additional features like tone generation, frequency sweeps, AV Sync measurements, audio latency measurements, this is an audio swiss army knife. The built-in photo-diode sensor and microphone allow you to get real-time sync and latency measurements from HDMI and ARC/eARC.

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

- Complete HDMI 2.0 Support (All Revisions)
- 600 Mcsc - 2160P @60 4:4:4 Maximum Resolution
- 40Gbps FRL HDMI 2.1 Support
- 4K BT2020 (WCG) 10/12 Bit Support (Native)
- Dolby Vision, HDR 10, HLG, SDR
- HDCP 2.3 Support
- ARC/eARC Tx and Rx
- 1080P 120Hz patterns and video playback
- ISF Labs Certified
- Control - Front Panel/PC Software/WebUI
- Haptic Front Keypad
- API (Application Programming Interface) Available upon request
- 7” 1080P Display
- Custom Test Pattern, Video Clip, and Audio Stream Uploader PC Software
- USB 3.0 for fast uploads
- Reservation for up to 3 minutes of full 4K video
- Native YUV/RGB File upload and playback

In the Box

- SEVEN Generator
- Hard Case
- Mini XLR Microphone
- Optical Sensor
- USB cable
- Mini Tripod
- Power Supply (12V/5A Locking Barrel Type)

Free PC Software

- PC Control Software
- Device Log
- Protocol Analyzer
- User Audio Uploader
- User Video Uploader

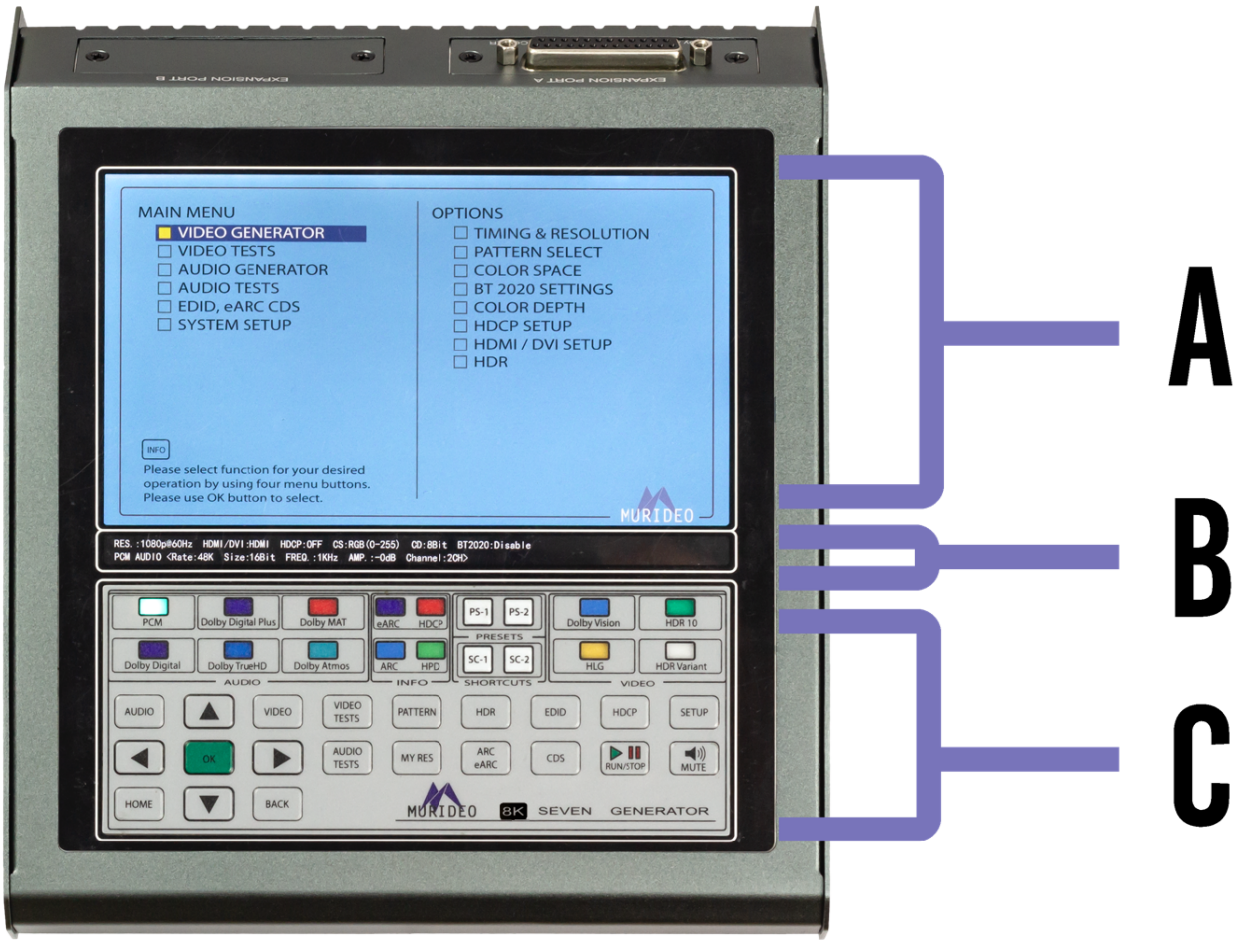
Available for download at www.murideo.com
Price - $0.00 !!!

VIDEO:	
VIDEO RESOLUTIONS	UP TO 8K 60HZ 4:2:0 (4K120 4:4:4:)
VESA RESOLUTIONS	UP TO DCI 4K (4096X2160)
HDR FORMATS/RESOLUTIONS	420, 422, 444 (10 AND 12 DEEP COLOR) HDR10, HDR10+, DOLBY VISION, HLG
COLOR SPACE	YUV (COMPONENT), RGB (CSC: REC. 601, REC. 709, BT2020, DCI, P3 D6500)
CHROMA SUBSAMPLING	4:4:4, 4:2:2, 4:2:0 SUPPORTED
DEEP COLOR	UP TO 16 BIT (1080P), UP TO 12 BIT (4K)
AUDIO:	
AUDIO FORMATS SUPPORTED HDMI	PCM 2.0 CH, LPCM 5.1 &7.1, DOLBY DIGITAL, DOLBY DIGITAL PLUS (W/ ATMOS), DOLY MAT (W/ ATMOS) DOLBY TRUEHD (W/ ATMOS), DTS DIGITAL SURROUND, DTS-HD HIGH RESOLUTION, DTS-HD MASTER AUDIO, DTS:X, AND DTS EXPRESS
AUDIO FORMATS SUPPORTED EARC	PCM 2.0 CH, LPCM 5.1 &7.1, DOLBY DIGITAL, DOLBY DIGITAL PLUS (W/ ATMOS), DOLY MAT (W/ ATMOS) DOLBY TRUEHD (W/ ATMOS), DTS DIGITAL SURROUND, DTS-HD HIGH RESOLUTION, DTS-HD MASTER AUDIO, DTS:X, AND DTS EXPRESS
AUDIO FORMATS SUPPORTED ARC	PCM 2.0 CH, LPCM 5.1 &7.1, DOLBY DIGITAL, DOLBY DIGITAL PLUS (W/ ATMOS)
AUDIO FORMATS SUPPORTED (TOSLINK)	PCM 2.0 CH, LPCM 5.1 &7.1, DOLBY DIGITAL, DOLBY DIGITAL PLUS, DTS DIGITAL SURROUND
AUDIO FORMATS SUPPORTED (COAX)	PCM 2.0 CH, LPCM 5.1, DOLBY DIGITAL, DTS DIGITAL SURROUND
OTHER:	
BANDWITH	40GBPS (FRL)
HDCP	HDCP 2.3 AND EARLIER
CONTROL:	
PORTS	LAN, RS232, 3 PIN TERMINAL, USB, KEYPAD
LAN WEB UI	YES
PORTS:	
HDMI SOURCE	TYPE A
HDMI SINK (ARC/EARC TX)	TYPE A
LAN WEB UI	RJ45 W/ WEB INTERFACE/ CONTROL
AUDIO (EXTRACTED DIGITAL)	TOSLINK AND COAXIAL
AUDIO INPUT	3.5MM
RS232	3 PIN TERMINAL BLOCK AND DB9
MICROPHONE	MINI XLR
PHOTO-DIODE	3.5MM
EXPANSION DECODER	DB25
ENVIORMENTAL:	
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 CONSUMPTION (TOTAL)	18 WATTS MAX
POWER SUPPLY	INPUT: AC 100-240V ~ 50/60HZ OUTPUT: DC 12V 5A

*SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE. MASS & DIMENSIONS ARE APPROXIMATE

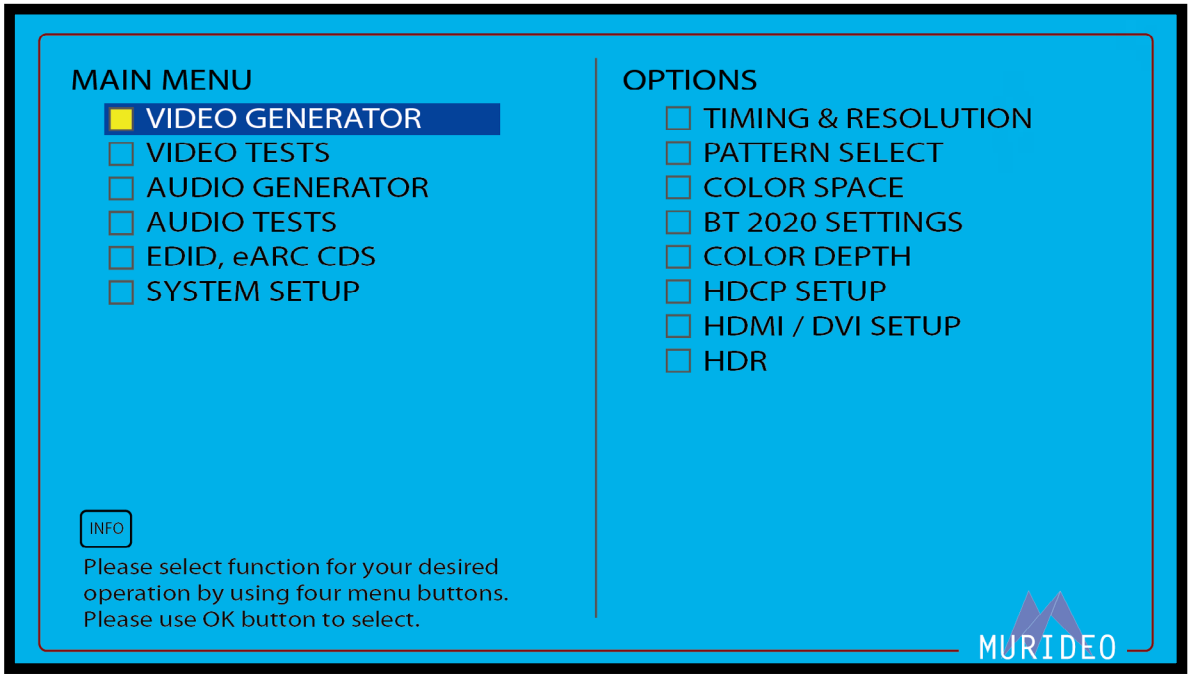
MURIDEO ~ 2222 E 52ND ST N STE. 101 SIOUX FALLS, SD 57104 ~ 1-877-886-5112 ~ +1-605-330-5491 ~ SUPPORT@MURIDEO.COM

FRONT PANEL OVERVIEW



A - Display

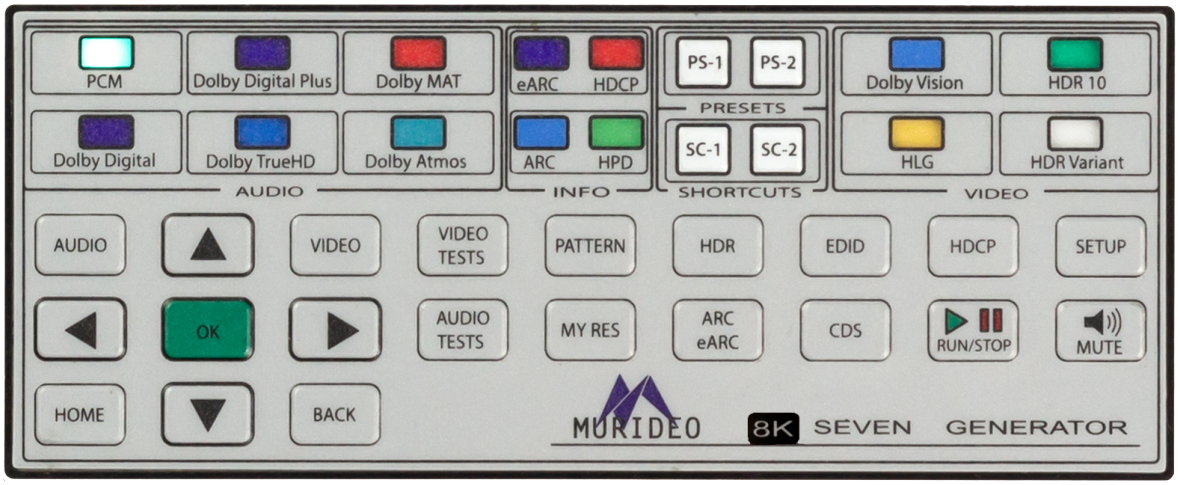
The SEVEN-G includes a High Resoltution 1080P Full Color Display.



B - Audio/Video Output Info Bar

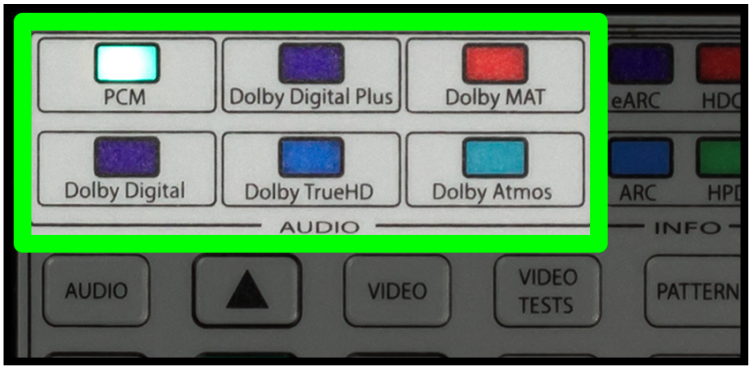
The AUDIO / VIDEO OUTPUT INFO BAR includes all pertinent video and audio output information including resolution, timing, color space, color depth, PQ, audio format, sample rates, data size (bit depth), audio frequency, and audio channel count.

C - Keypad



Audio Signal Output Indicator Lights

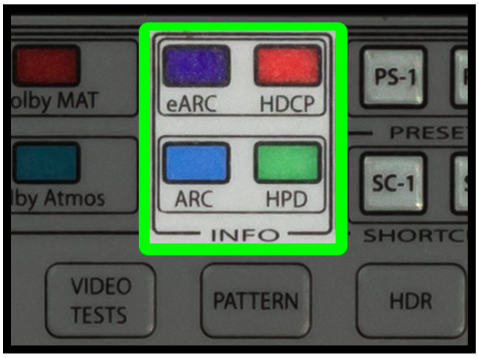
These lights indicate which audio format is currently being generated by the SEVEN-G-8K.
In the example to the right, PCM audio is currently selected as the audio output.



eARC, ARC, HDCP, and HPD Signal Output Indicator Lights

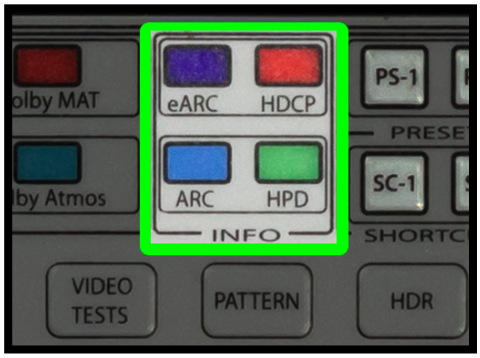
ARC/eARC lights indicate if an ARC/eARC is enabled on the SEVEN-G-8K and the connected device under test.

- OFF - Disabled
- ON - Enabled on the SEVEN-G-8K and connected device under test
- FLASHING - Enabled on the SEVEN-G-8K but not on connected device under test



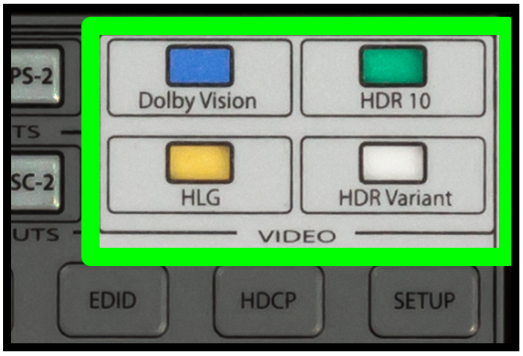
HDCP Light indicates if HDCP is enabled on the SEVEN-G-8K.

HPD Light indicates if a Hot Plug is detected with a device connected to the HDMI OUTPUT of the SEVEN-G-8K



Video Signal/Format Output Indicator Lights

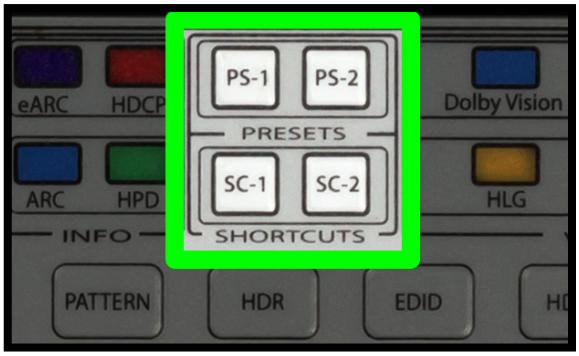
These lights indicate which version of HDR is currently selected. All off indicates an SDR Video signal (no HDR).



PS-1/PS-2

Preset Shortcut Buttons

For more information see Page 23.



SC-1/SC-2

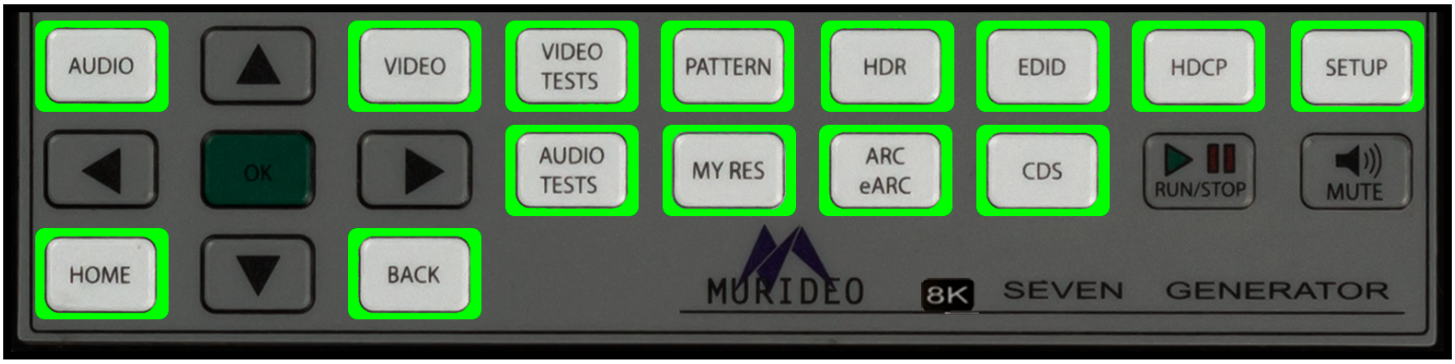
Shortcut Buttons

For more information see Page 24.

Navigation Shortcut Buttons

Use these buttons to quickly jump to your favorite/commonly used menus/settings.

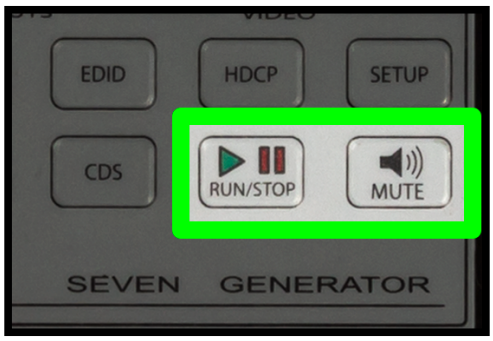
For more information see Pages 14-21.



Media Controls

RUN/STOP Button
Use this button to pause/continue video clips.

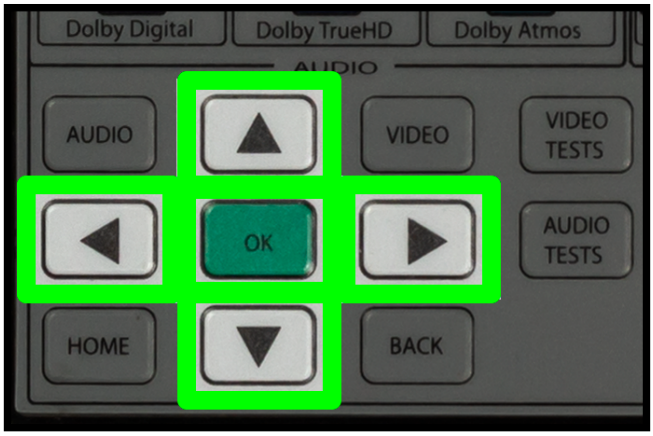
MUTE Button
Use this button to MUTE/UNMUTE the AUDIO OUTPUT of the SEVEN-G-8K.



Menu Navigation

UP/DOWN/LEFT/RIGHT Buttons
These buttons are used to navigate through menus.

OK Buttons
Press this button after you have highlighted your menu item to confirm your selection.



Connections

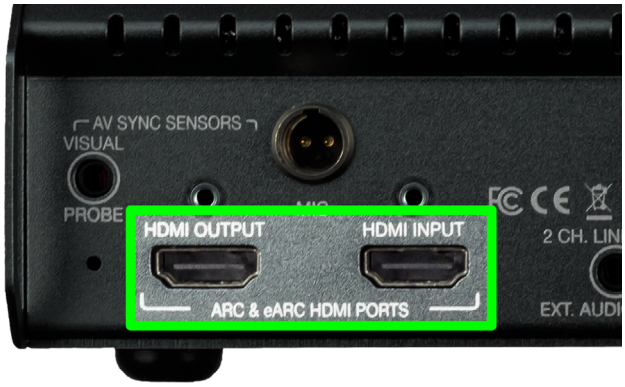
AV SYNC SENSORS

Visual Probe - connect the included light sensor for video or audio/video latency tests. After connecting the sensor to the SEVEN-G-8K, place the sensor in the middle of the display. The sensor can also be attached to a tripod if you are using it to test video or audio/video latency of a 2 piece projection system.

Microphone - This mini-XLR connection is where you connect the included microphone for audio or audio/video latency tests. After connecting the microphone to the SEVEN-G-8K, place the microphone as close to the display's speaker (or a speaker in the audio system) as possible.

NOTE: We have found extension cables that work with the visual probe and microphone. These can be used in applications where the included cables are too short. If you would like a recommendation on extension cables, feel free to email us at info@murideo.com

HDMI PORTS



HDMI OUTPUT - Using a known good HDMI cable, connect the SEVEN-G-8K to the device you'd like to test.

HDMI INPUT - Using a known good HDMI cable, connect the SEVEN-G-8k to the source you'd like to test.

Connections Cont.

Audio INPUT

2 CH. LINE LEVEL EXT. AUDIO INPUT - Use this 3.5mm input to connect an external audio source to the SEVEN-G-8K. This can be used if you have audio test tones or perhaps music clips from another device.

Audio OUTPUTS

Extracted S/PDIF Audio OUTPUT - Connect the SEVEN-G-8K to an external audio preamp, amplifier, AVR, or any other device that has an audio input. Use this to test/confirm audio signals. NOTE: This is only used to pass the extracted audio from the HDMI stream. These cannot be used as a "stand alone" audio output from the SEVEN-G-8K. There are 2 connections:

- TOSLINK
- Digital Coax

CONTROL

The SEVEN-G-8K has multiple connections for control. These can be used to control the SEVEN-G-8K remotely, for FW updates, or for uploading custom test patterns, audio files, or video clips. The connections are:

- IP Control - Use an Ethernet cable to connect the SEVEN-G-8k to a network to access the Web UI. NOTE: For this to work properly your PC must be on the same network as the SEVEN-G-8K. The default IP address is 192.168.1.239, but can be changed in the System Setup menu if needed.
- RS-232 Control - Use a DB9 cable to connect the SEVEN-G-8K to a PC. You can now remotely control the SEVEN-G-8K via RS-232 protocol. This can also be used to access and use any of the included SEVEN-G-8K software packages.
- Serial Link - Use a 3-pin terminal to connect the SEVEN-G-8K to a PC. You can now remotely

control the SEVEN-G-8K via RS-232 protocol. This can also be used to access and use any of the included SEVEN-G-8K software packages.

- USB 3.0 - Use a USB cable to connect the SEVEN-G-8K to a PC. . You can now remotely control the SEVEN-G-8K via RS-232 protocol. This can also be used to access and use any of the included SEVEN-G-8K software packages.

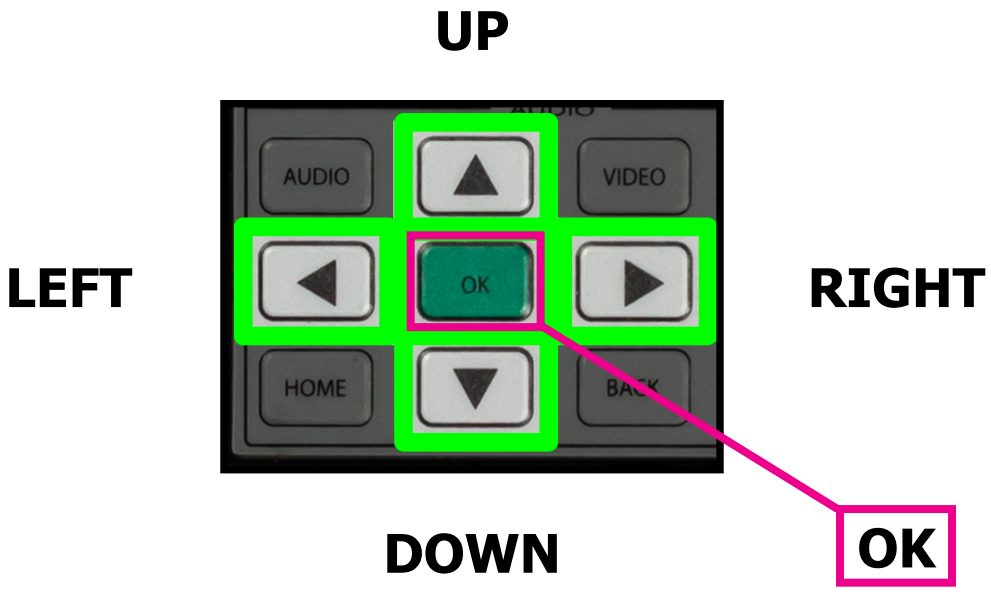
NOTE: You MUST use the USB connection for uploading custom test patterns, audio files, or video clips. If loading FW you can use whichever control connection is most convenient to you.

POWER

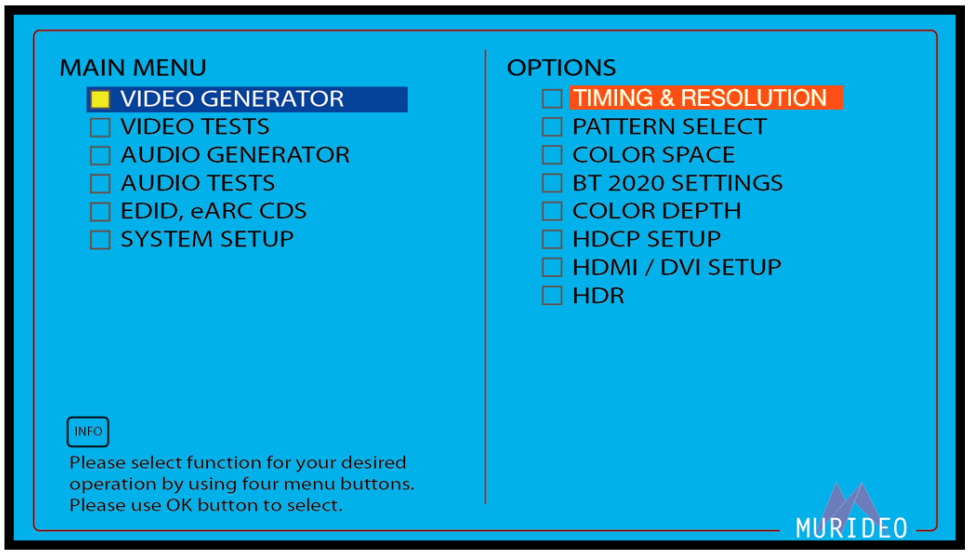
- 12V/3A - Here is where you connect the SEVEN-G-8K's power supply. NOTE: Only use the included power supply.
- POWER SWITCH - This a simple ON/OFF switch to power the SEVEN-G-8K off (down position) or ON (up position).

Navigation Tutorial

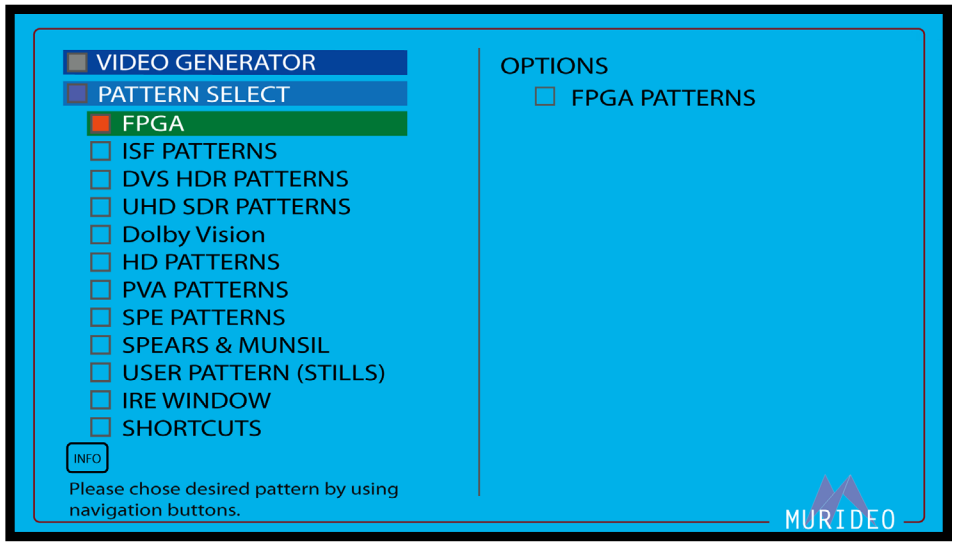
If this is your first time using the SEVEN-G-8K take a few moments to learn how to navigate through the SEVEN-G-8K's menu system. In this example we are going to select a DVS HDR Evaluation test pattern, then a Chroma Sub 500 test pattern.



1. Verify that your SEVEN-G-8K is Powered OFF.
2. Connect a high-performance HDMI cable to your SEVEN-G-8K's "HDMI OUTPUT" port to an "HDMI INPUT" of an HDR10 compatible display.
3. Power Up the SEVEN-G-8K using the On/Off switch.
4. Starting from the MAIN MENU screen (this is the default menu when you power on, or you can press the HOME shortcut button to get to the MAIN MENU). Use the UP/DOWN ARROW buttons and highlight the "VIDEO GENERATOR" menu.
5. Press the GREEN "OK" button.
6. Looking at the right side of the screen, notice that the "TIMING & RESOLUTION" OPTION is now highlighted in ORANGE.



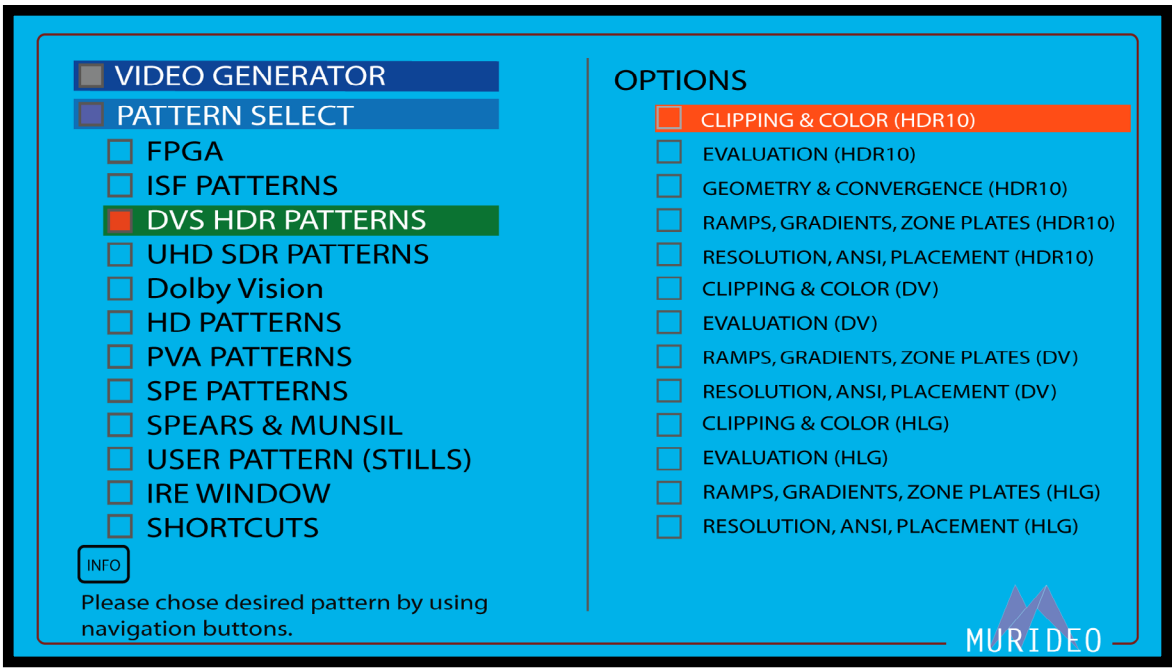
7. Press the "ARROW DOWN" button to highlight "PATTERN SELECT".
8. Press the GREEN "OK" button.



9. Looking at the left side of the screen, notice new sub-menu selections under the "VIDEO GENERATOR" / "PATTERN SELECT" menu tree.
10. Arrow Down and highlight the "DVS HDR PATTERNS" menu item.

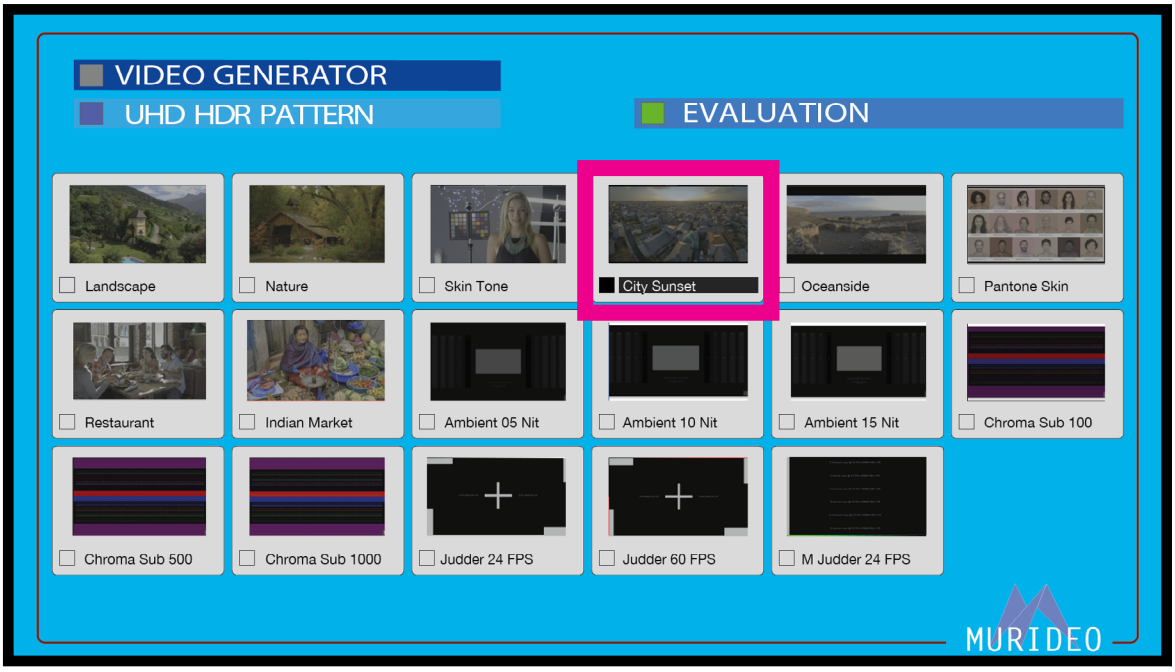
11. Press the GREEN "OK" button.

12. On the right side of the screen, notice that the "CLIPPING & COLOR" OPTION is now highlighted in ORANGE.

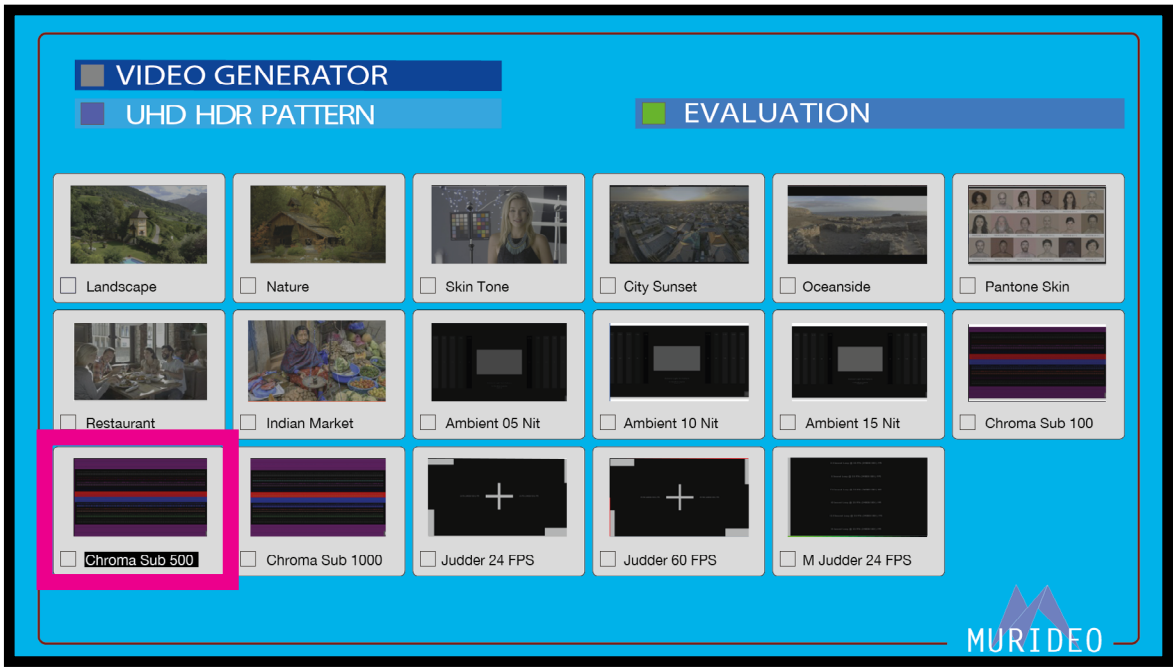


13. Arrow Down and highlight the "EVALUATION" OPTION.

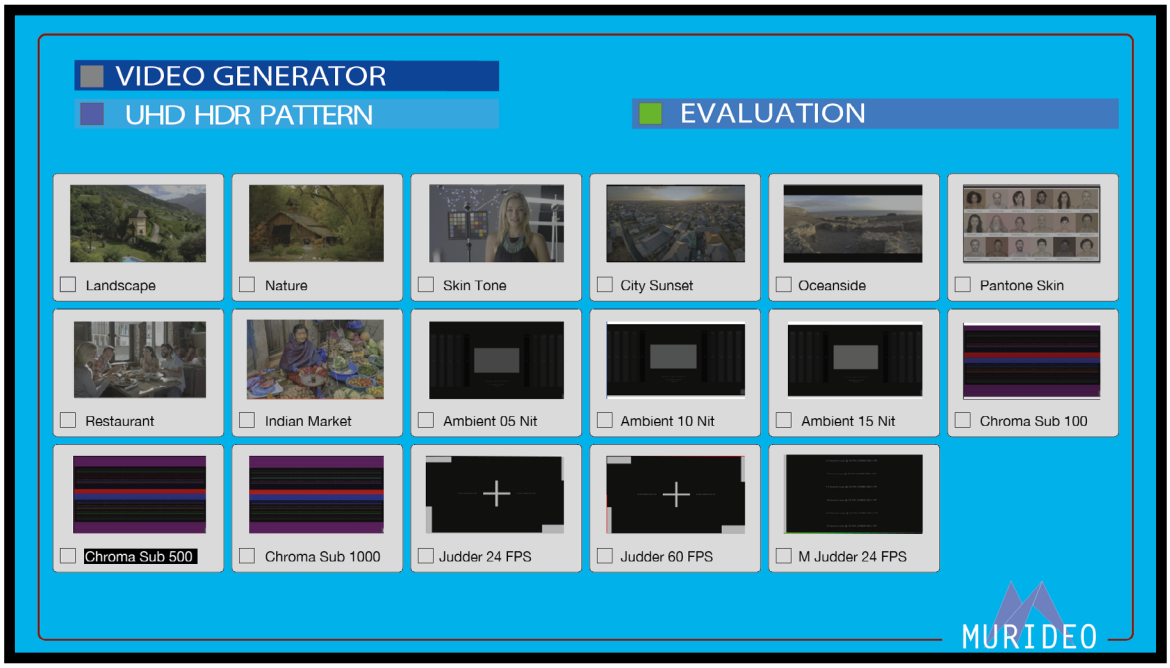
14. Press the GREEN "OK" button.



15. Press the "RIGHT ARROW" button until the "City Sunset" test pattern is highlighted in BLACK, then press the GREEN "OK" button to select. The "City Sunset" test pattern should now be visible on the display that you have your SEVEN-G-8K plugged into.



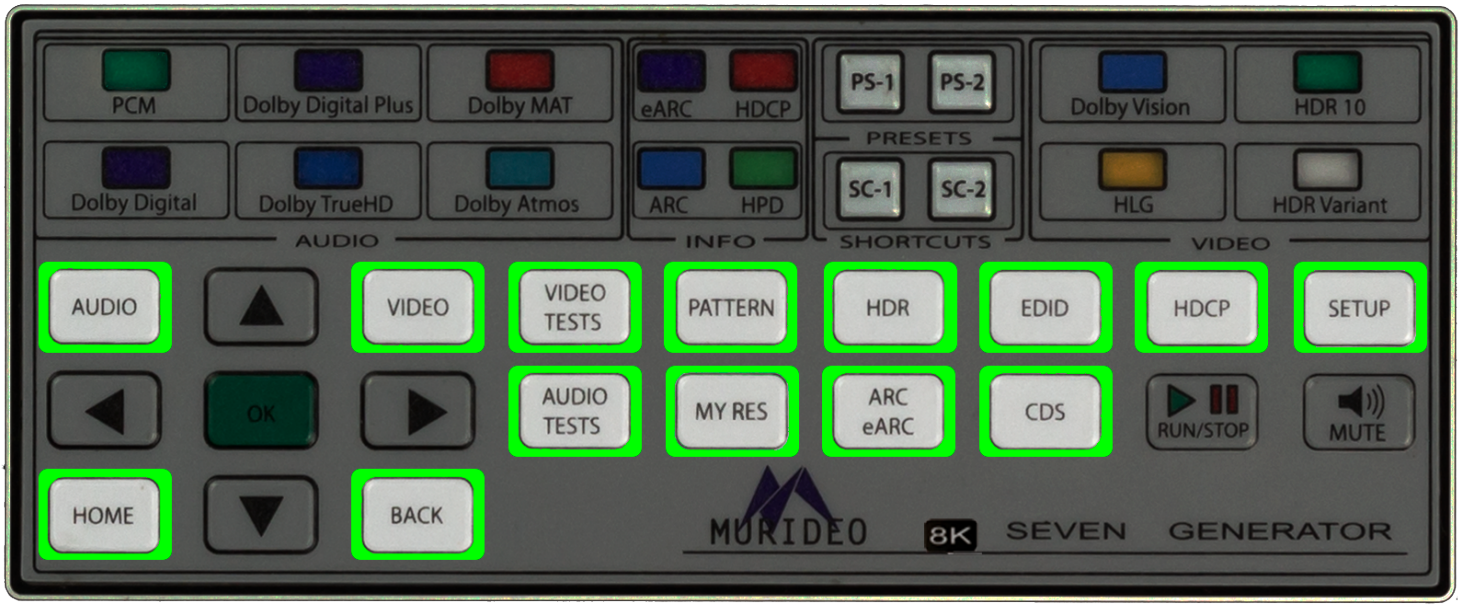
16. Use the navigation arrow buttons to highlight the "Chroma Sub 500" pattern in BLACK.
17. Press the GREEN "OK" button to select.

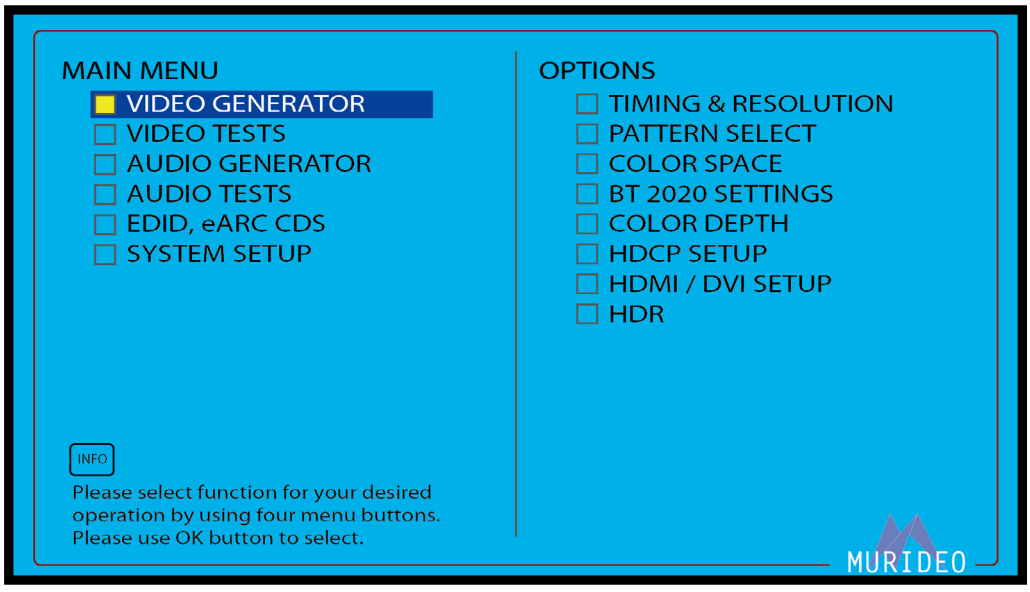


18. Select any other patterns you might like to look at. When you are finished exploring, press the "BACK" button several times OR press the "HOME" button to jump back to the "MAIN MENU" screen.

Front Panel: Shortcut Buttons

The following pages cover the SEVEN-G-8K's shortcut buttons.

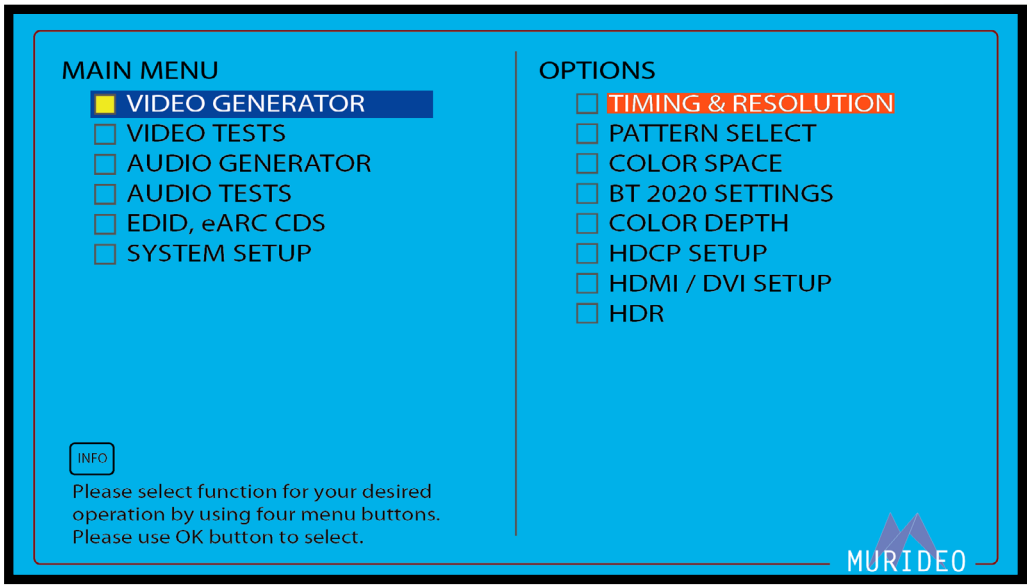




HOME

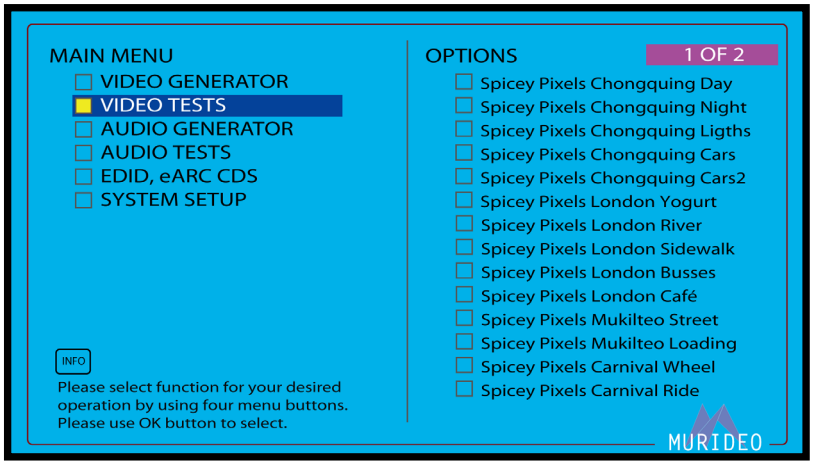
Pressing the "HOME" button will jump to the SEVEN-G-8K's Main Menu.

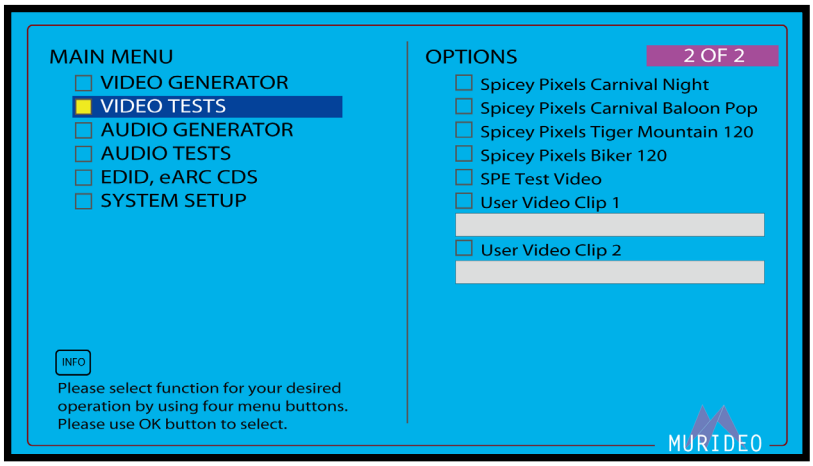
Note: This is the default menu when the SEVEN-G-8K is powered on.



VIDEO

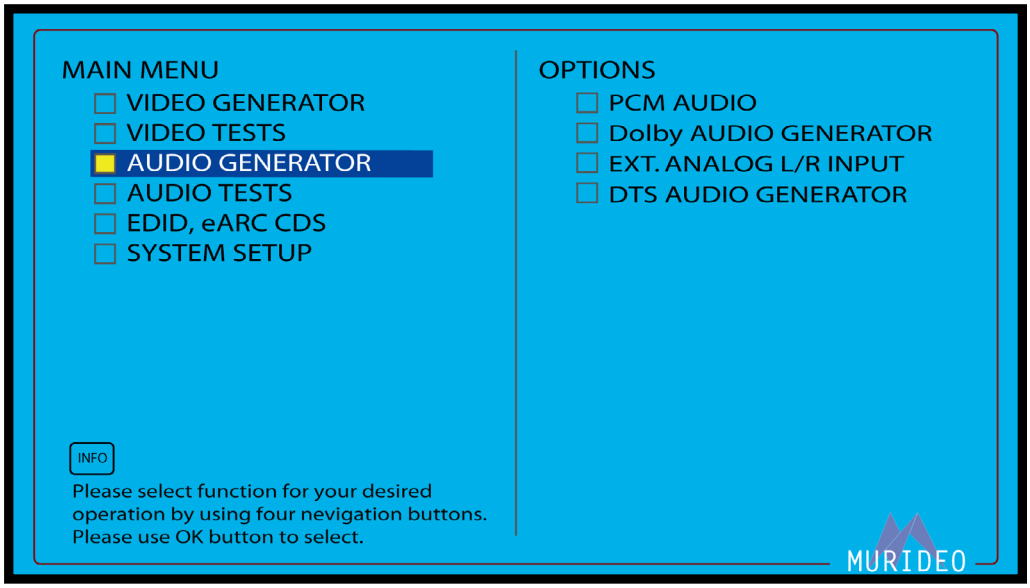
Pressing the "VIDEO" button will jump to the Video Generator menu. Here you can select and change the output settings. See Pages 24-30 for more details.





VIDEO TESTS

Pressing the "VIDEO TESTS" button will jump to the Video Tests menu. See Page 31 for more details.

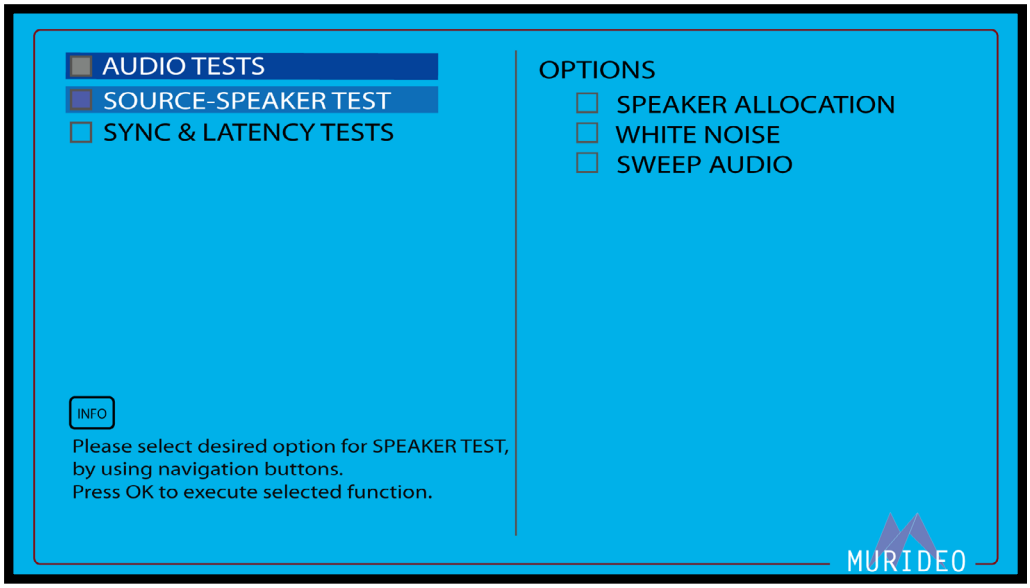


AUDIO

Pressing the "AUDIO" button will jump to the Audio Generator menu. See Page 32-34 for more details.

AUDIO TESTS

Pressing the "AUDIO TESTS" button will jump to the Audio Tests menu. See Page 32-39 for more details.



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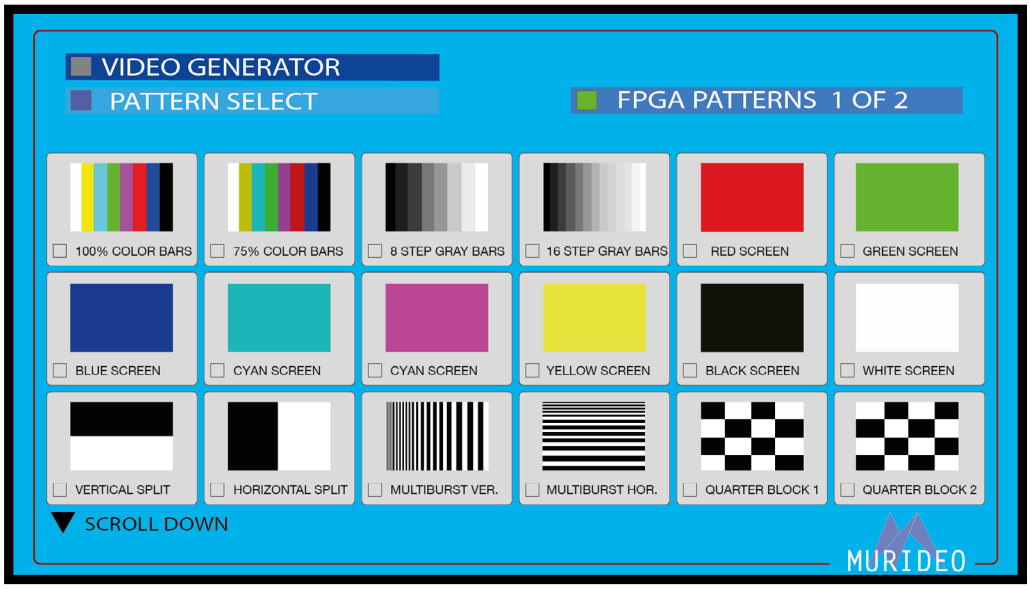
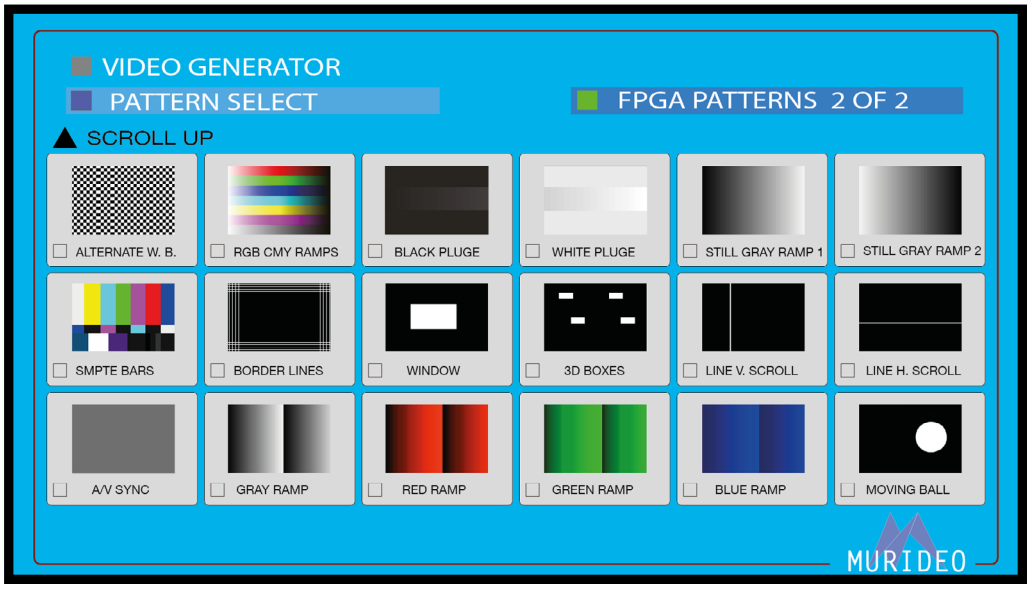
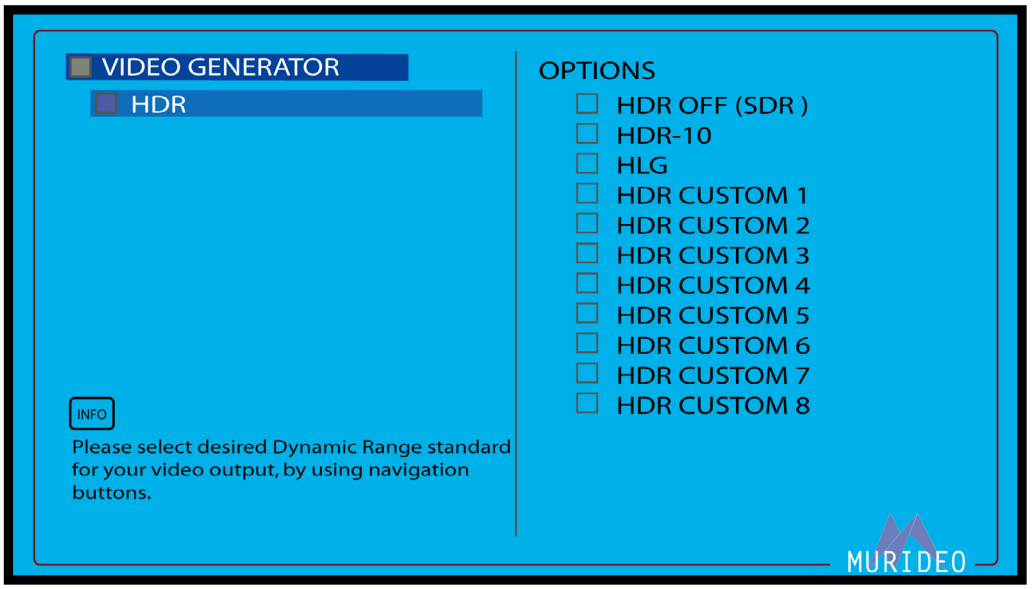
PATTERN

Pressing the "PATTERN" button will jump to the FPGA Pattern select menu. See Page 24-28 for more details.



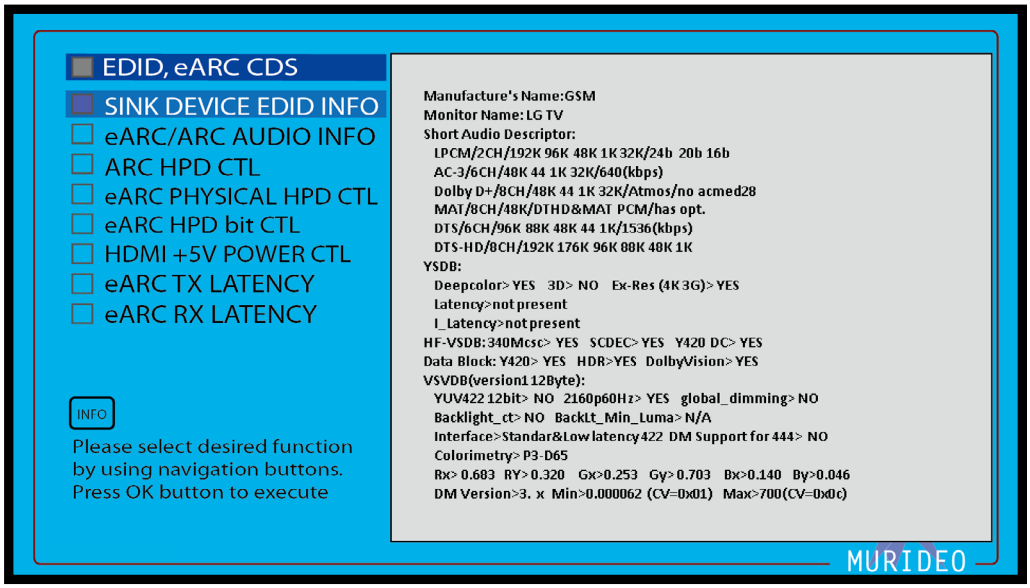


For a detailed list of the available test patterns and a description of each, visit
W



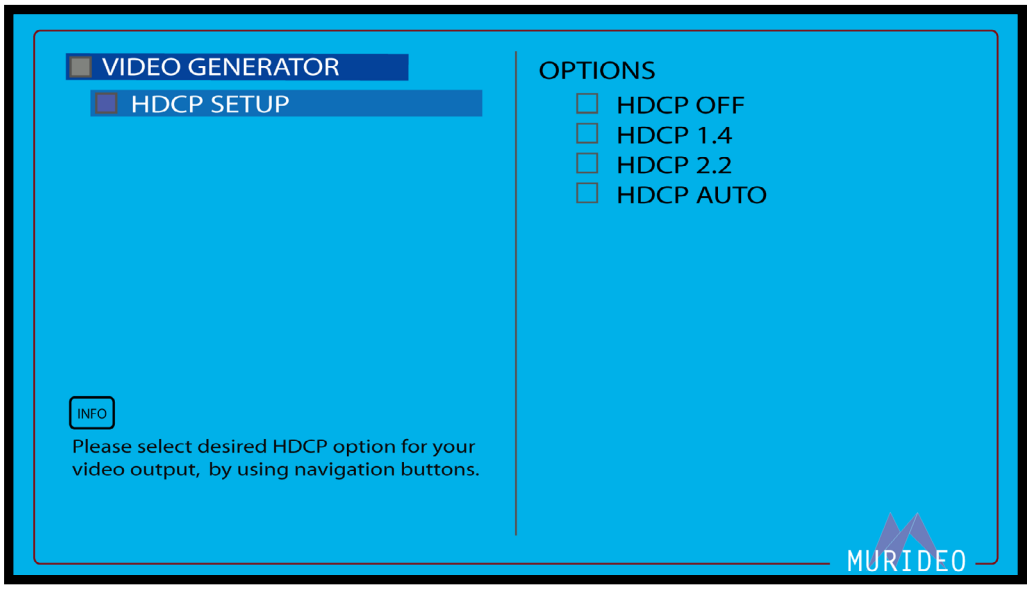
HDR

Pressing the "HDR" button will jump to the HDR menu.
See Page 31 for more details.



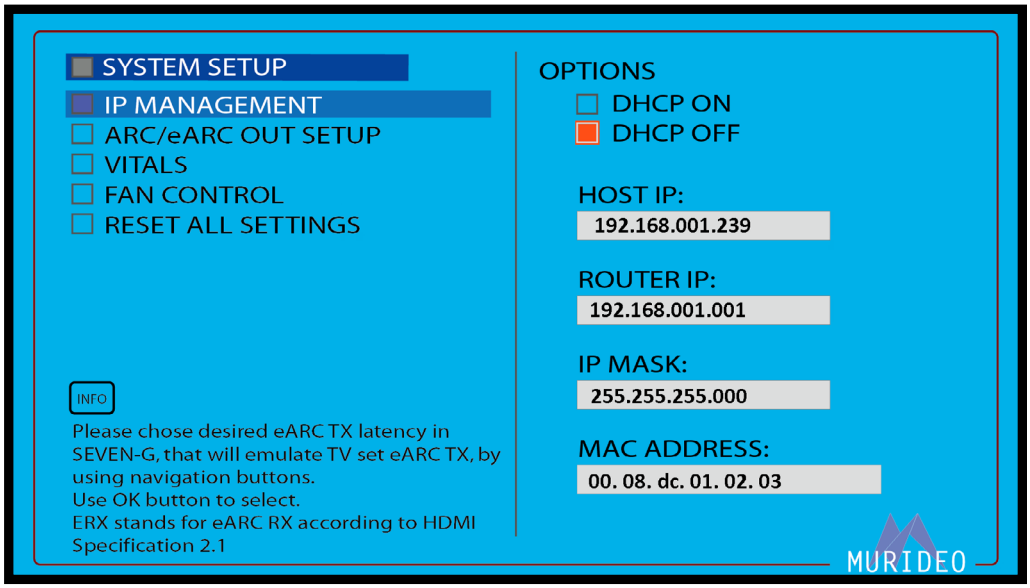
EDID

Pressing the "EDID" shortcut button jump to the EDID, eARC, CDS menu. See Page 48 for more details.



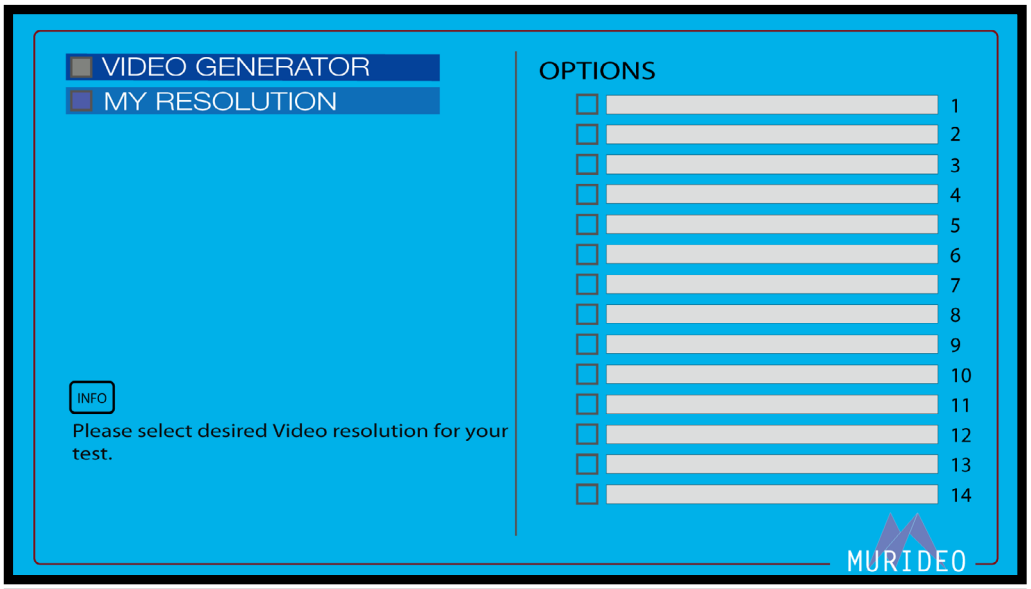
HDCP

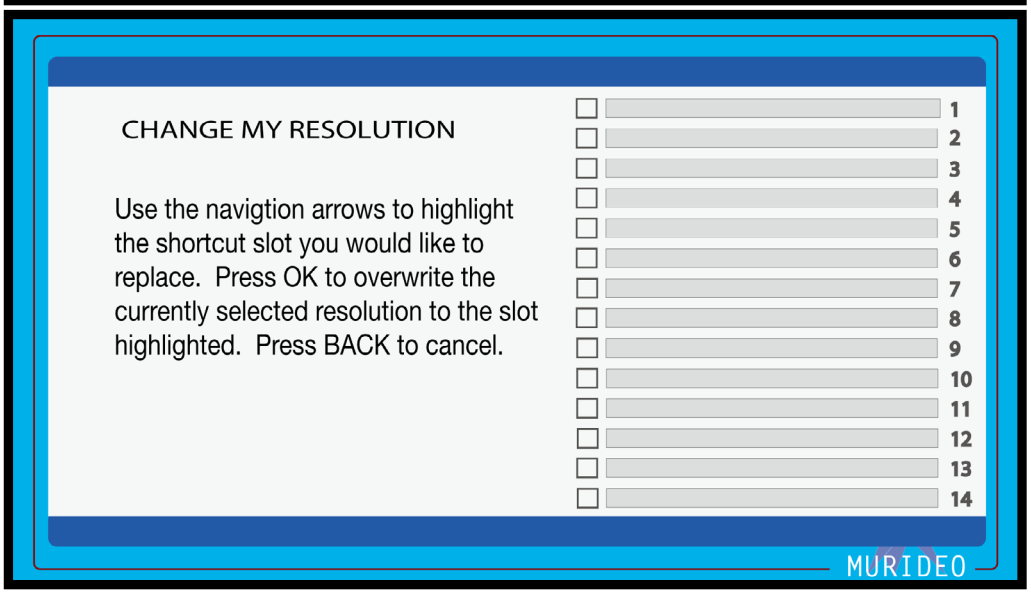
Pressing the HDCP shortcut button will jump to the HDCP Setup menu. See Page 30 for more details.



SETUP

Pressing the Setup shortcut button will jump to the System Setup menu. See Page 51 for more details.



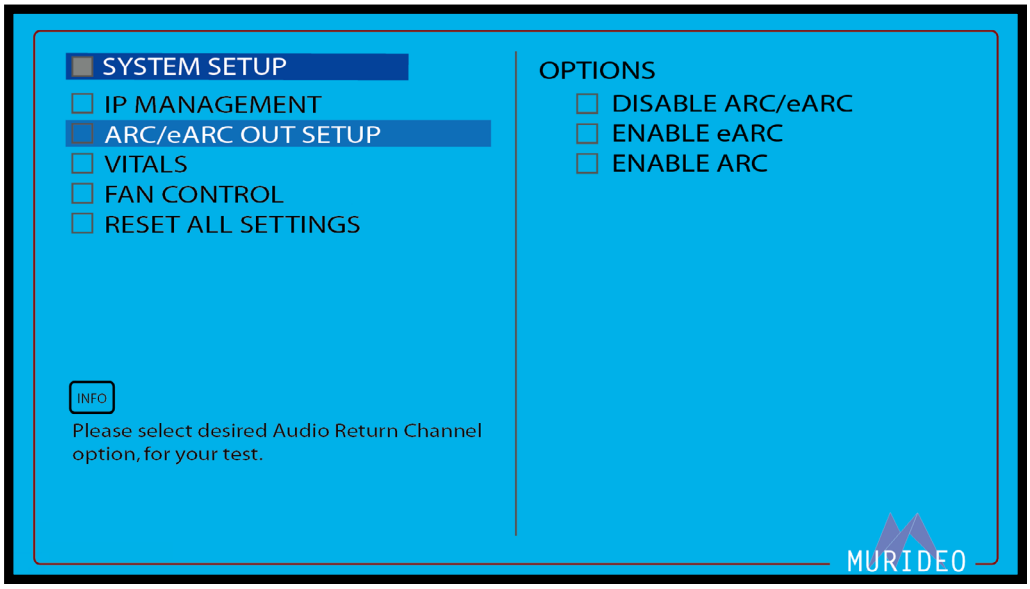


MY RES

Pressing the My Res shortcut button will jump to the My Resolutions menu. In order to save a specific resolution/timing, first choose a resolution/timing from the TIMING & RESOLUTION menu. For example:

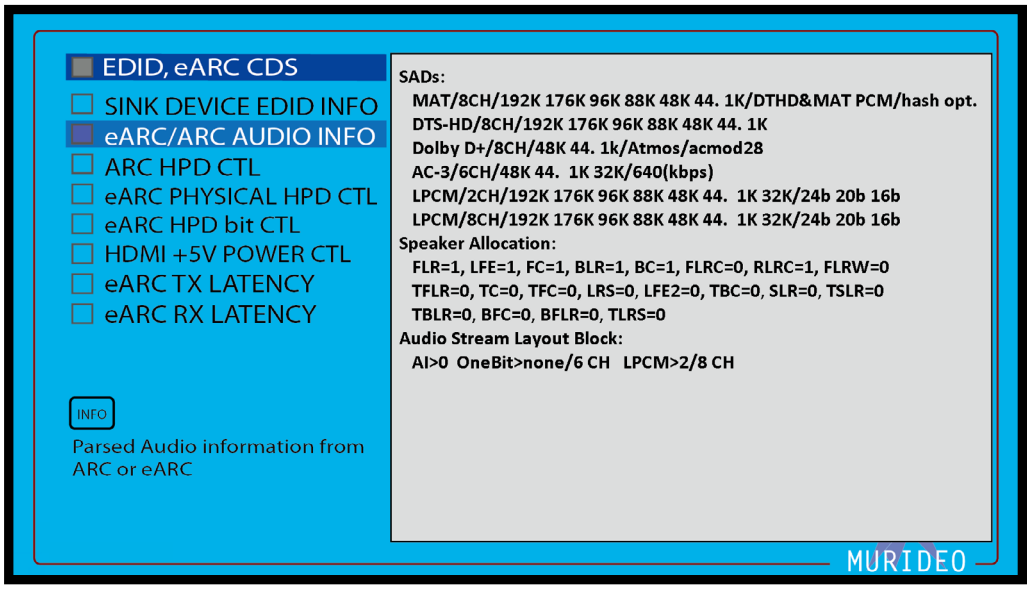
- Select (for example7680x4320@30Hz)
- Press and hold the OK button for 3 seconds
- This jumps to the CHANGE MY RESOLUTION menu
- Use the UP/DOWN arrows to select a slot (1-14)
- Press the OK button to set/confirm

NOTE: For detailed instructions see the "Using Shortcuts" user guide located at www.murideo.com



ARC / eARC

Pressing the ARC/eARC shortcut button will jump to the ARC/eARC Output setup menu. See Page 51 for more details.



CDS

Pressing the CDS shortcut button will jump to the ARC/eARC Audio Information menu. See Page 49 for more details.

Preset Buttons

There are 2 programmable preset buttons. Use these to quickly select your favorite output parameters. These include:

- Resolution
- Timing
- HDCP Version
- Color Space
- CD (Color Bit Depth)
- Color Gamut
- Audio Format
- Audio Sampling Rate
- Audio Bit Depth
- Channel Configuration

NOTE: All parameters you have choosen will be displayed in the Audio Video Output Info Bar (see image below).

NOTE: For detailed instructions see the "Using Shortcuts" user guide located at www.murideo.com

To save a Preset (PS-1/PS-2):

- Select your desired Audio and Video Output parameters
- Press and hold PS-1/PS-2 button for approximately 3 seconds
- The Keypad lights of the SEVEN-G-8K will all flash once confirming that the preset has been saved

NOTE: Your custom programed presets will be lost upon a "FACTORY RESET" or after a Firmware Update.

Shortcut Buttons

There are 2 programmable shortcut buttons (SC-1/SC-2). Use these to quickly navigate to your favorite menu.

To save a Shortcut (SC-1/SC-2):

- Navigate to the Menu you would like to save as a shortcut
- Press and hold SC-1/SC-2 button for approximately 3 seconds
- The Keypad lights of the SEVEN-G-8K will all flash once confirming that the shortcut has been saved

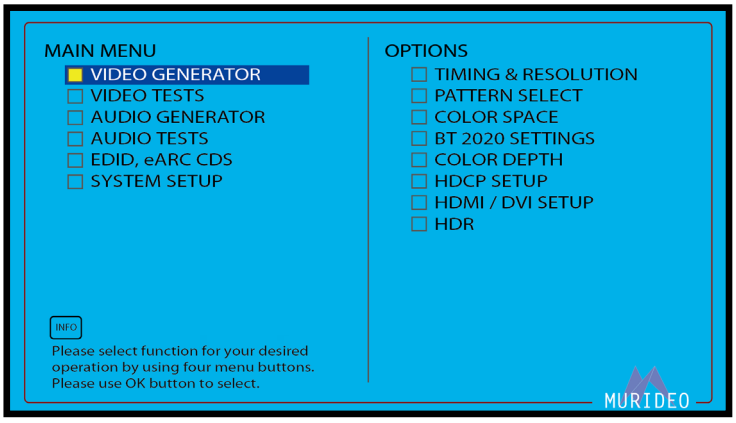
Example: You use the ARC-LATENCY MEASUREMENT menu on a regular basis. In order to navigate to this test you would have to normally press approximately 12 buttons. Since you have this menu saved as a shortcut your 12 button presses are now just ONE!

NOTE: Your custom programed shortcuts will be lost upon a "FACTORY RESET" or after a Firmware Update.

Video Generator

This is the Video Generator menu. This is where you can choose the parameters of the generated video signal. It contains the following options:

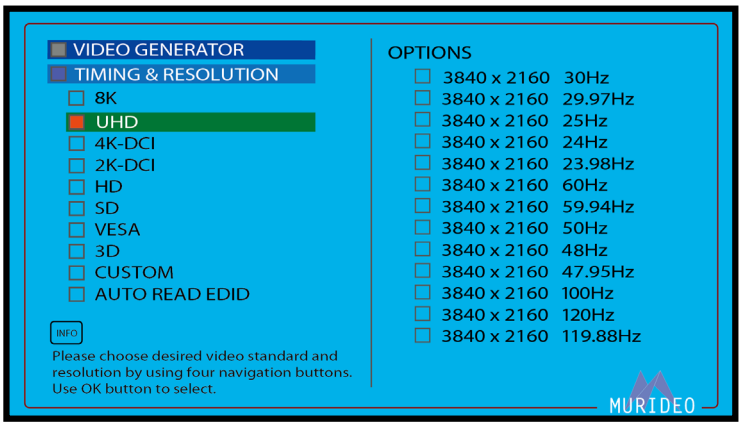
- TIMING & RESOLUTION
- PATTERN SELECT
- COLOR SPACE
- BT 2020 SETTINGS
- COLOR DEPTH
- HDCP SETUP
- HDMI / DVI SETUP
- HDR



TIMING & RESOLUTION:

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

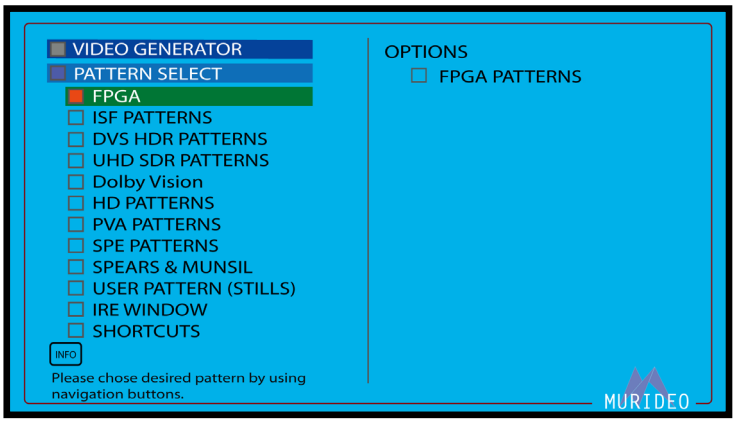
- 8K
- UHD
- 4K-DCI
- 2K-DCI
- HD
- SD
- VESA
- 3D
- CUSTOM
- AUTO READ EDID



For a complete list of available timings, visit www.murideo.com

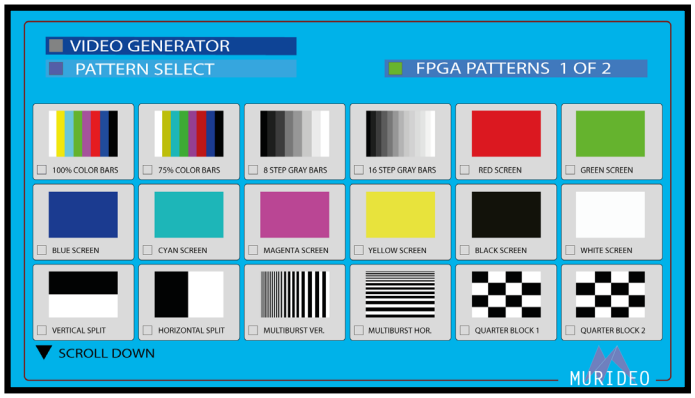
PATTERN SELECT:

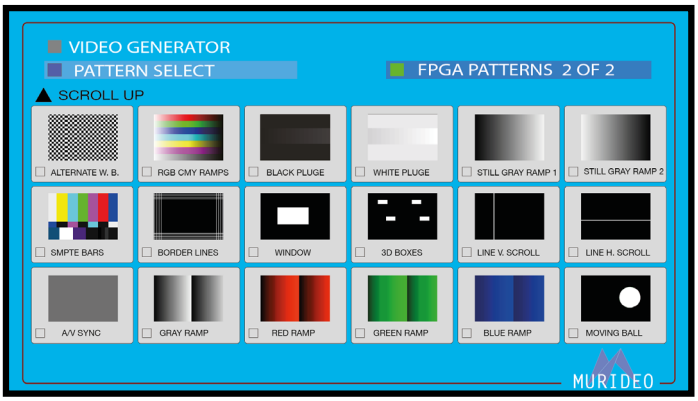
Select from over 500 high-quality stand-alone patterns. However, the pattern choices are virtually unlimited when using the FPGA processor in addition to patterns generated with IRE and APL (Average Picture Level).
For a complete list of patterns and their descriptions visit www.murideo.com/test-pattern-library



FPGA:

FPGA (Field Programmable Gate Array) patterns are generated "on-the-fly". This means you can select/ change any video parameter that is neccesarry for your specfic needs.
NOTE: If you change any parameters of any patterns that are not in the FPGA menu (example ISF, DVS, UHD/SDR, Dolby Vision, HD Patterns, PVA Patterns, SPE Patterns, Spears and Munsil) these will always be output in their native format.

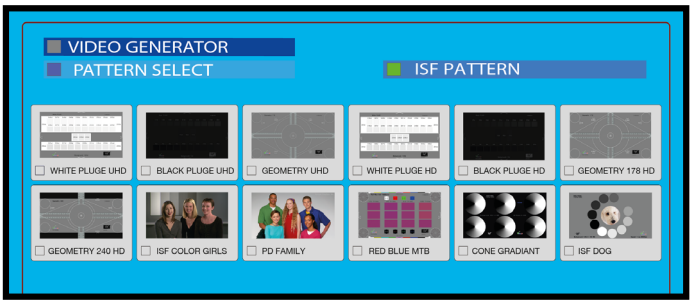




ISF PATTERNS:

HD - Native 1920x1080@60Hz RGB Full (0-255)
UHD - Native 3840x2160@60Hz RGB Full (0-255)

ISF Patterns are designed by the Imaging Science Foundation. https://imagingscience.com/

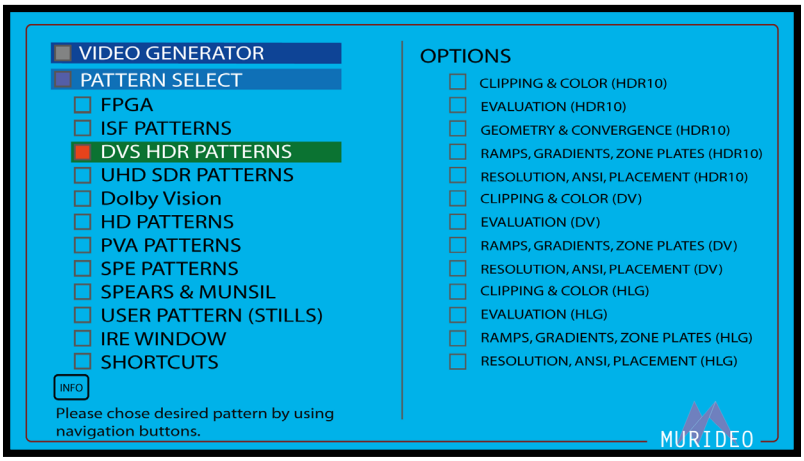


DVS HDR PATTERNS:

DVS Patterns include "real world" images along with technical test patterns which are available in HDR10, Dolby Vision, and HLG.
https://diversifiedvideosolutions.com/
Native Timing for the 3 options.
HDR10 - 3840x2160@24Hz YC 4:4:4
DV - 3840x2160@24Hz YC 4:2:2
HLG - 3840x2160@24Hz YC 4:4:4

This menu contains the following options:

- CLIPPING & COLOR (HDR10)
- EVALUATION (HDR10)
- GEOMETRY & CONVERGENCE (HDR10)
- RAMPS, GRADIENTS, ZONE PLATES (HDR10)
- RESOLUTION, ANSI, PLACEMENT (HDR10)

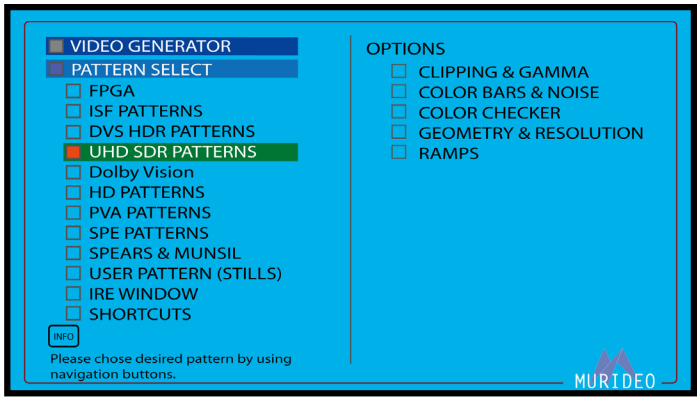


- CLIPPING & COLOR (DV)
- EVALUATION (DV)
- RAMPS, GRADIENTS, ZONE PLATES (DV)
- RESOLUTIONS, ANSI, PLACEMENT (DV)
- CLIPPING & COLOR (HLG)
- EVALUATION (HLG)
- RAMPS, GRADIENTS, ZONE PLATES (HLG)
- RESOLUTION, ANSI, PLACEMENT (HLG)

UHD SDR PATTERNS:

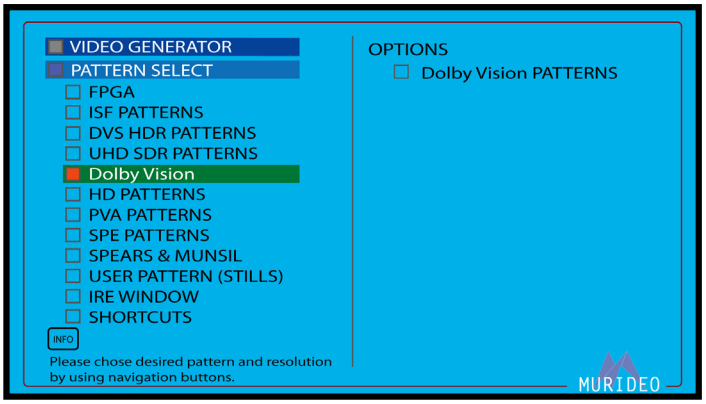
Native 3840x2160@60Hz RGB Full (0-255).

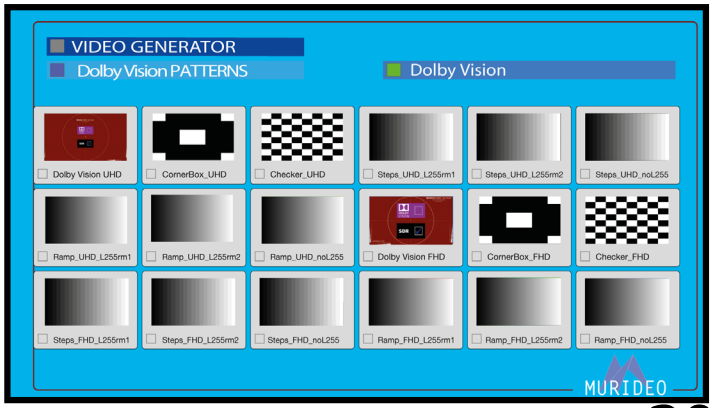
- Clipping & Gamma
- Color Bars & Noise
- Color Checker
- Geometry & Resolution
- Ramps



Dolby Vision:

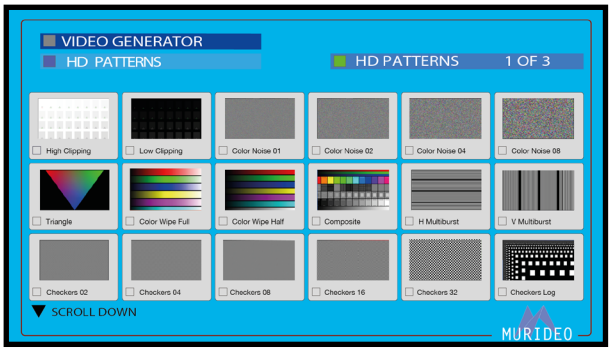
They are labeled FHD (1080p) and UHD (4k).
FHD - Native 1920x1080@60Hz RGB Full (0-255)
UHD - Native 3840x2160@60Hz RGB Full (0-255)

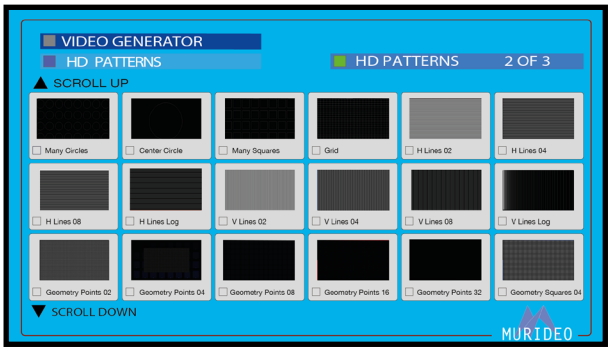


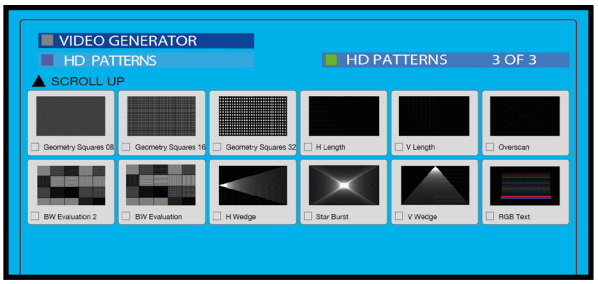


HD PATTERNS:

These test patterns are native 1080p@60Hz RGB (0-255)



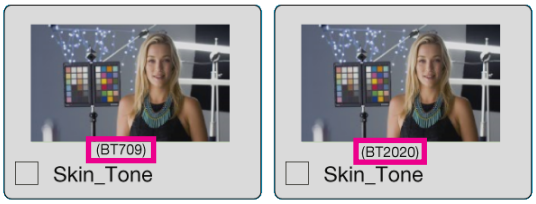


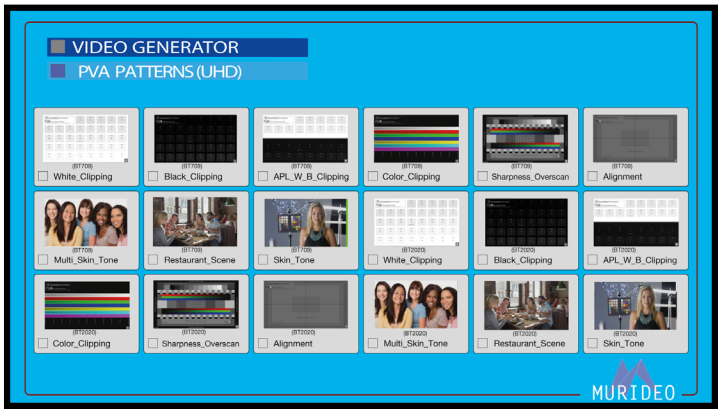


PVA PATTERNS (UHD):

These patterns were developed by the Professional Video Alliance.
https://professionalvideoalliance.com/
These patterns are native 3840x2160@60Hz YC 4:2:2.
Each pattern has two versions:

- BT709
- BT2020



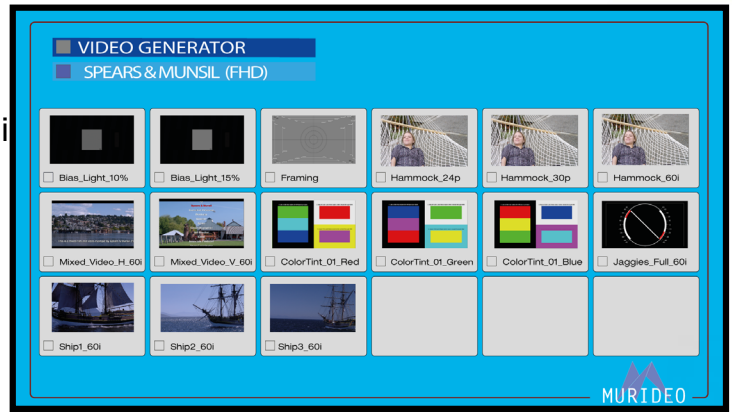


SPE PATTERNS (UHD):

These patterns were developed by SPE (Sony Pictures Entertainment). There are two images, each one in multiple formats.
These patterns are native 3840x2160@60Hz, but they do vary in colorspace, chroma sub sampling, and SDR/ HDR.

NOTE: Be sure to choose the correct version for your specific application. Verify the version by looking closely at the name of the test pattern or by looking at the AUDIO VIDEO INFO bar.

SPEARS & MUNSIL (FHD):



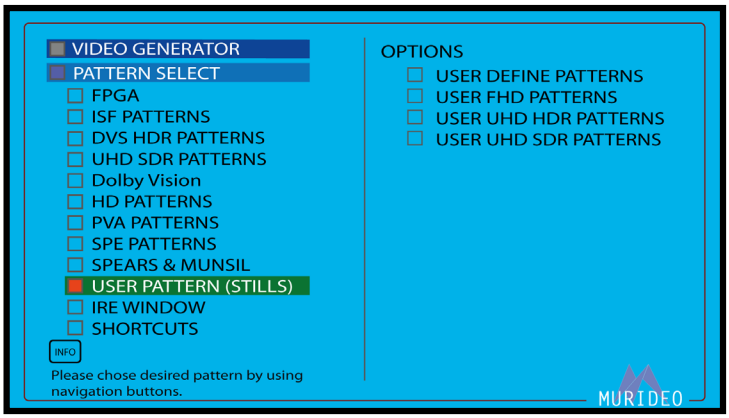
These test patterns are native 1920x1080 YC 4:2:2, but they do vary in frame rate. To add, some are 1080i while others are 1080P
Spears & Munsil Pattern Selection includes Bias, Framing, "Sara on a Hammock", Motion Video, Color, Tint, Jaggies, and 1080i (interlaced) Motion.

NOTE: Be sure to choose the correct version for your specific application. Verify the version by looking closely at the name of the test pattern or by looking at the AUDIO VIDEO INFO bar.

USER PATTERN (STILLS):

This is where you would access any custom test patterns that you have uploaded.
This menu contains 4 options:

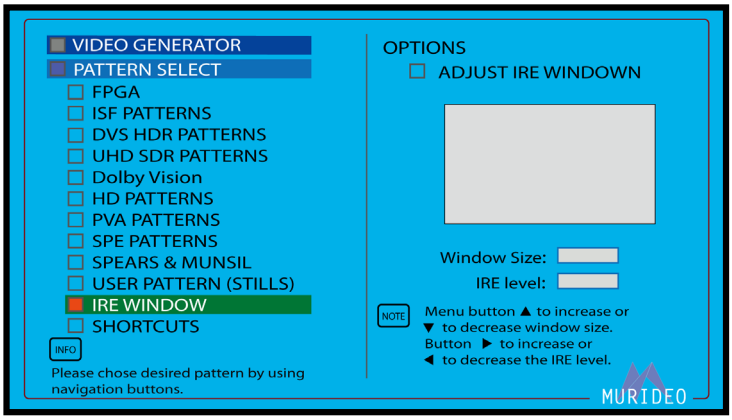
- USER DEFINED PATTERNS (x6 slots available)
- USER FHD PATTERNS (x54 slots available)
- USER UHD HDR PATTERNS (x54 slots available)
- USER UHD SDR PATTERNS (x54 slots available)



NOTE: To upload custom test patterns use the USER VIDEO UPLOADER PC software which can be downloaded from www.murideo.com

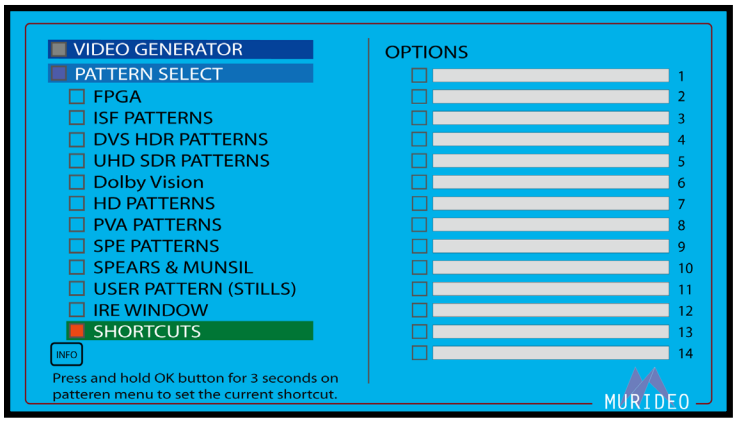
IRE WINDOW:

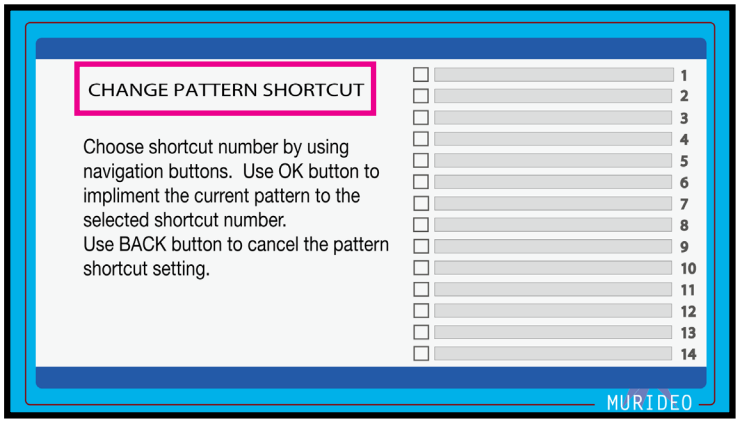
Allows you to create a custom IRE window. You may adjust the window size (using the UP/DOWN arrow buttons) and the IRE level (using the LEFT/RIGHT arrow buttons).
NOTE: This IRE Window (pattern) is gererated by the FPGA. This means any output parameters that you choose will be retained. You can verify by looking at Audio Video Output Info Bar.



SHORTCUTS:

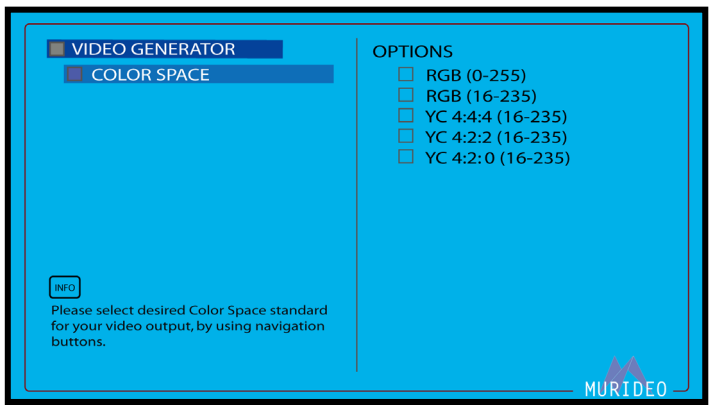
You can save up to 14 of your favorite test patterns as shortcuts for easy access. To save a test pattern as a shortcut choose the pattern then press and hold the OK button for 3 seconds. This will bring up the CHANGE PATTERN SHORTCUT Menu.
For detailed instructionsv see the "Using Shortcuts" user guide located at www.murideo.com





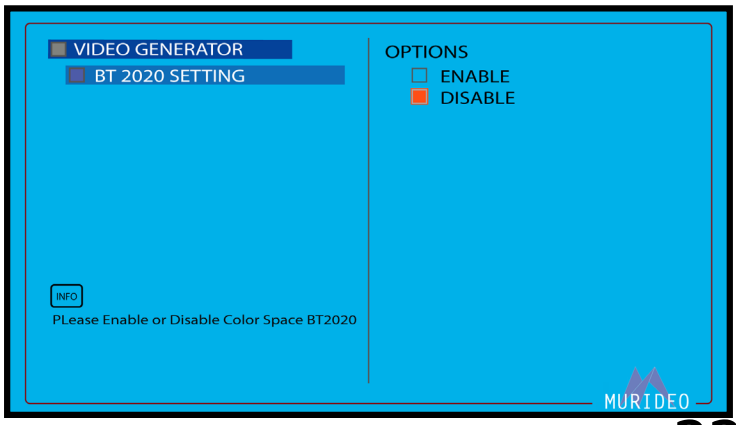
COLOR SPACE:

Select the desired color space of the Output Signal. These options are generated from the FPGA.
NOTE: This will only affect the FPGA Patterns and the custom IRE window tool.



BT2020 SETTING:

Enable or Disable BT2020 for the FPGA Generator.
NOTE: If BT2020 is Disabled, the default color gamut will be BT 709

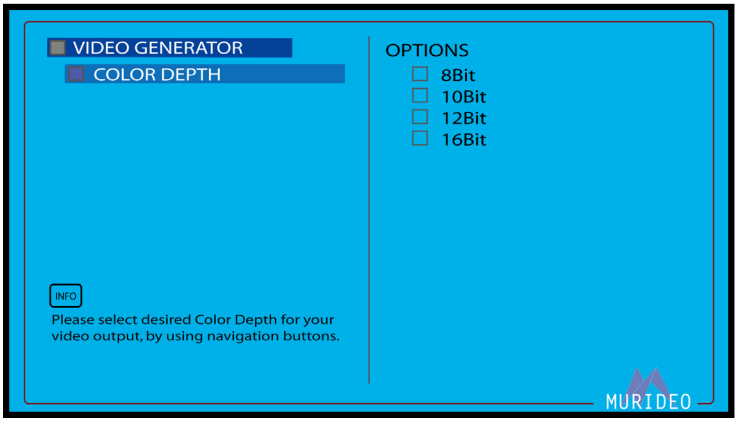


COLOR DEPTH:

Change the Color Depth for any of the FPGA Patterns.

- 8 Bit
- 10 Bit
- 12 Bit
- 16 Bit

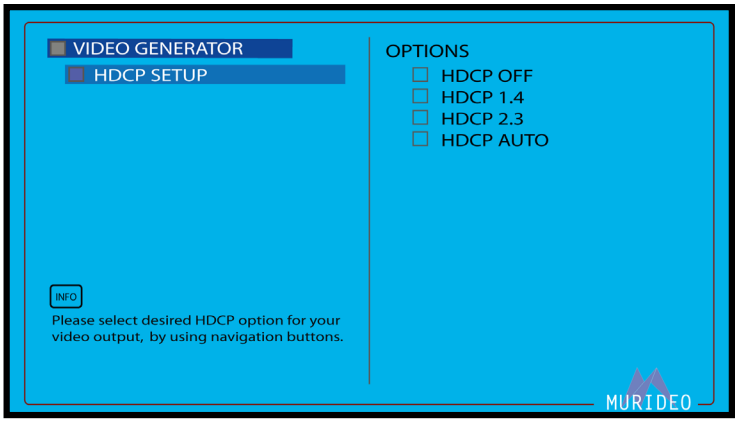
NOTE: This will only affect the FPGA Patterns and the custom IRE window tool.



HDCP SETUP:

Set the encryption type for the HDMI Output of the SEVEN-G-8K.

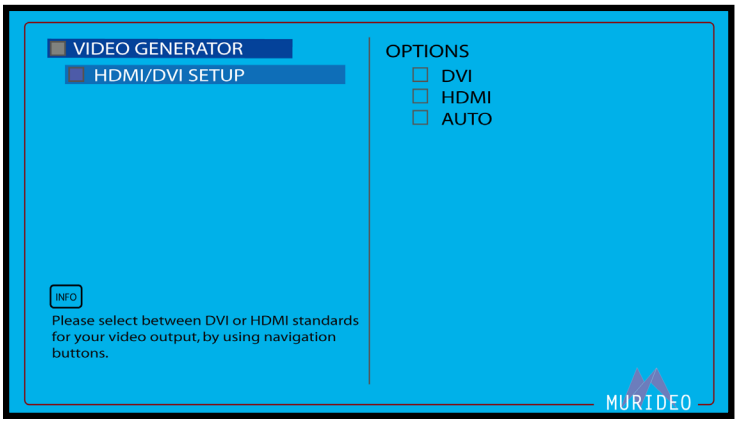
- HDCP OFF
- HDCP 1.4
- HDCP 2.3 (this includes 2.2)
- HDCP AUTO (according to the EDID of the connected device)

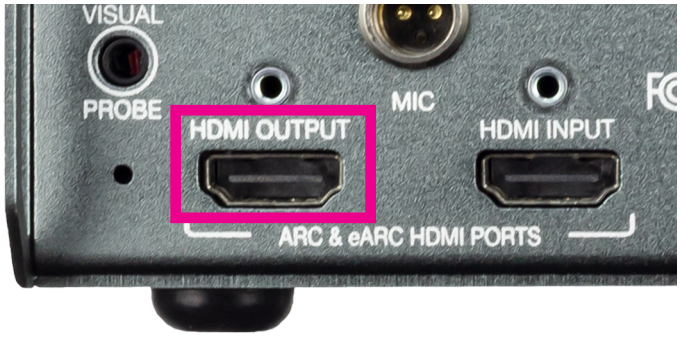


HDMI/DVI SETUP:

Use this page to set the TX (Output).

- DVI - Sets the output to DVI (RGB 4:4:4)
- HDMI - Sets the output to HDMI (YUV)
- AUTO - Based on the EDID of the connected device

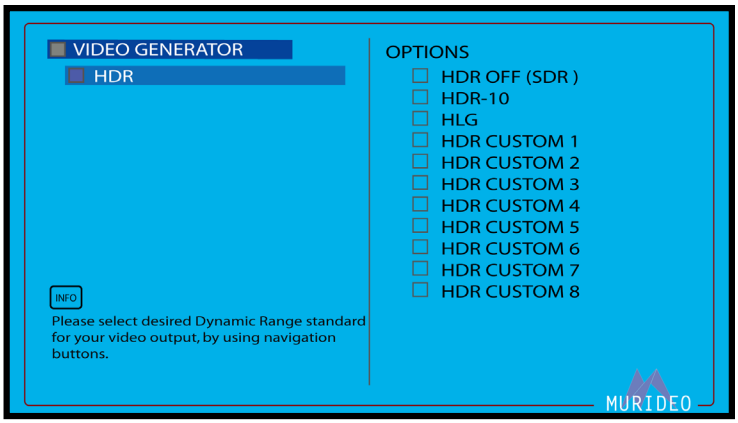




HDR:

Change the HDR Metadata for any of the FPGA Patterns.

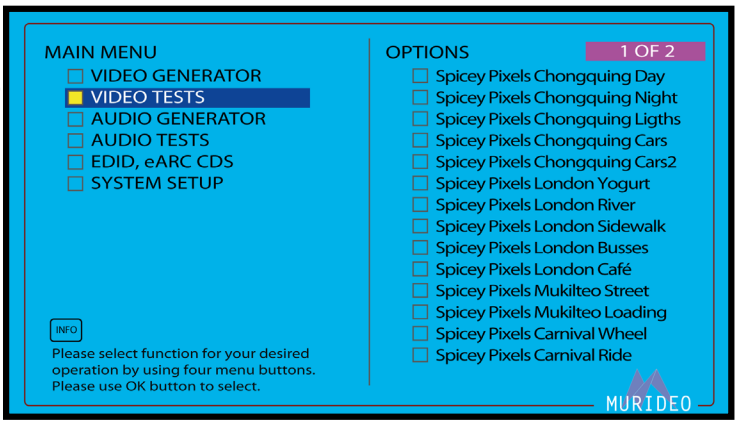
Note: You can view the HDR Metadata down to the HEX code using the PC Control Software available for download at www.murideo.com

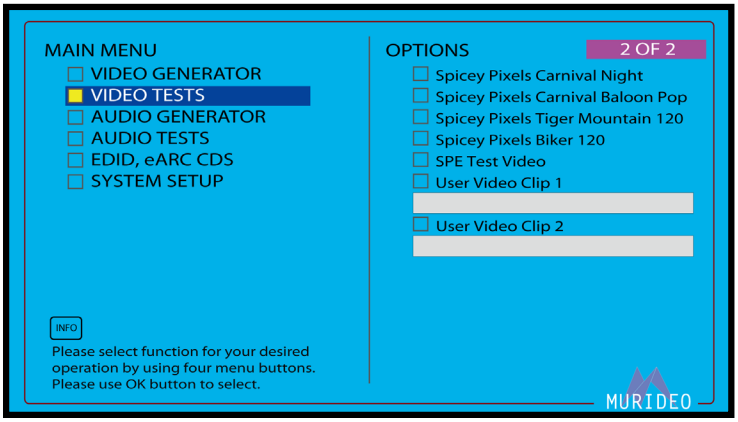


VIDEO TEST:

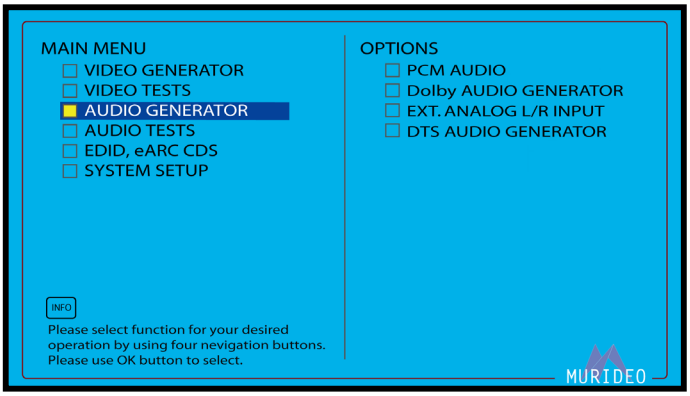
Playback pre-loaded video files files from Spicey Pixels and SPE (Sony Pictures Entertainment), or any of your own that you have uploaded using the User Video Uploader free PC software.

Note: Visit www.murideo.com to download the free User Video Uploder PC Software. There are 19 pre-loaded video test clips, or you can load TWO of custom video test clips (.MOV or multiple .YUV frames)



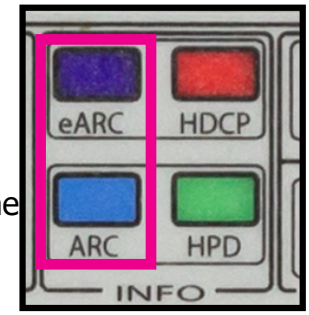


AUDIO GENERATOR:



Use this menu to select the format of the generated audio signal.

- PCM
- Dolby Audio
- External L/R
- DTS

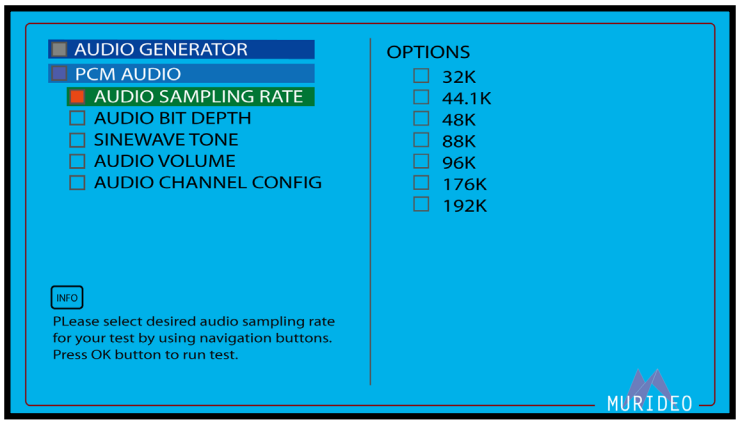


NOTE: These settings apply for both the HDMI TX (Output) and RX (Input, ARC and eARC) - You must enable ARC/eARC from the system setup menu. You may also need to enable ARC/eARC inside the connected device under test. Once detected, the ARC/eARC light will illuminate.

PCM AUDIO:

PCM Audio contains the following options:

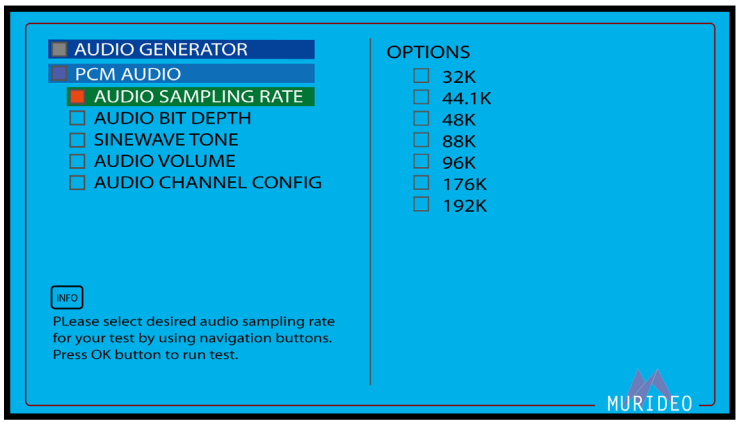
- Audio Sampling Rate
- Audio Bit Depth
- Sinewave Tone
- Audio Volume
- Audio Channel Configuration



PCM AUDIO SAMPLING RATE:

PCM Audio Sampling Rate contains the following options (in Kilohertz/KHz):

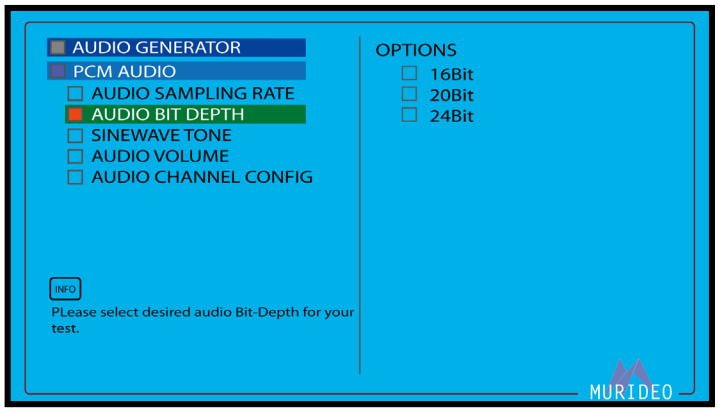
- 32K
- 44.1K
- 48K
- 88K
- 96K
- 176K
- 192K



PCM AUDIO BIT DEPTH:

PCM Audio contains the following options for Bit Depth.

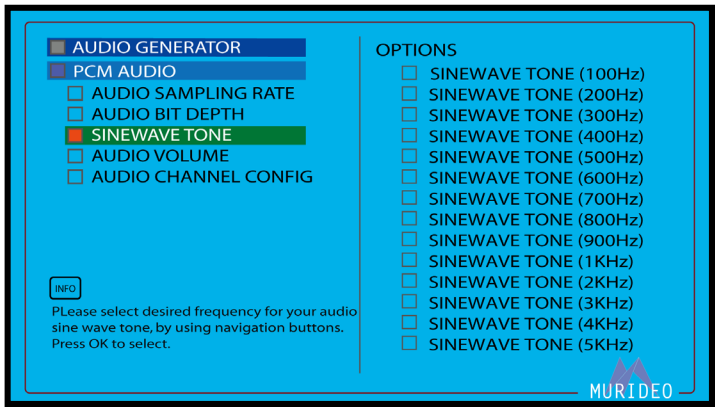
- 16Bit
- 20Bit
- 24Bit



PCM AUDIO SINEWAVE TONE:

Here you can customize the frequency of the PCM Audio Sinewave tone. There are 14 options available.

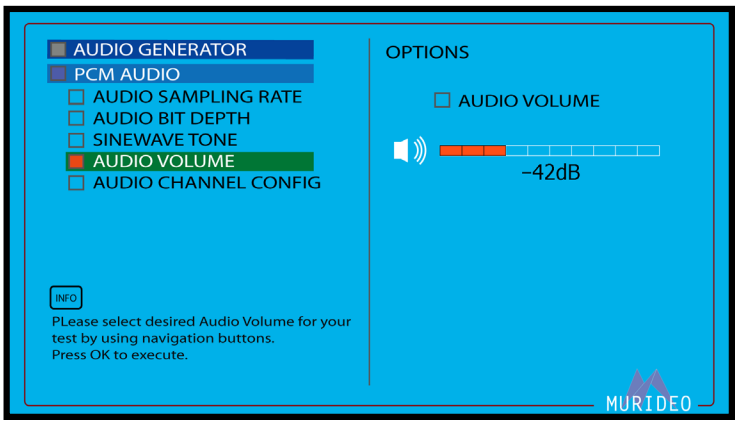
- 100Hz
- 200Hz
- 300Hz
- 400Hz
- 500Hz
- 600Hz
- 700Hz
- 800Hz
- 900Hz
- 1KHz
- 2KHz
- 3KHZ
- 4KHz
- 5KHz



PCM AUDIO AUDIO VOLUME:

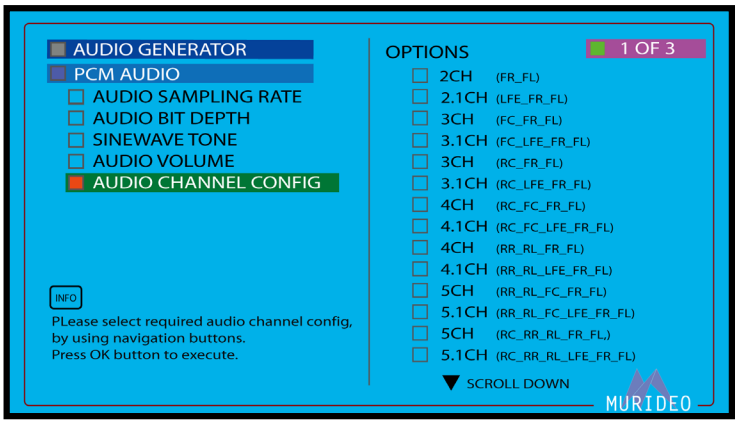
Adjust the volume of the generator Audio output.

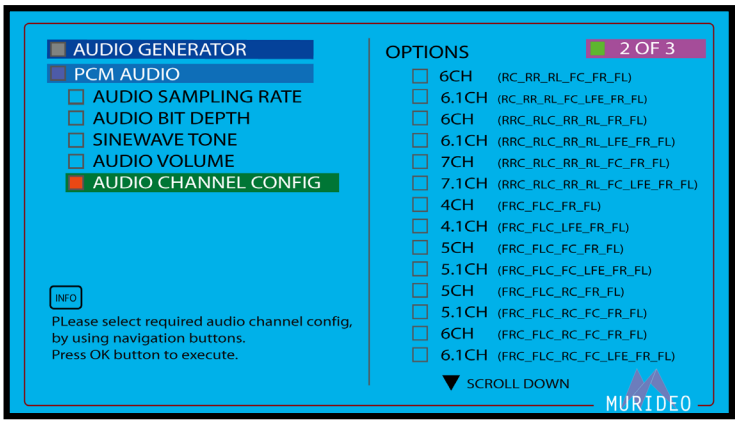
NOTE: This volume adjustment affects all audio generated by the SEVEN-G-8K.

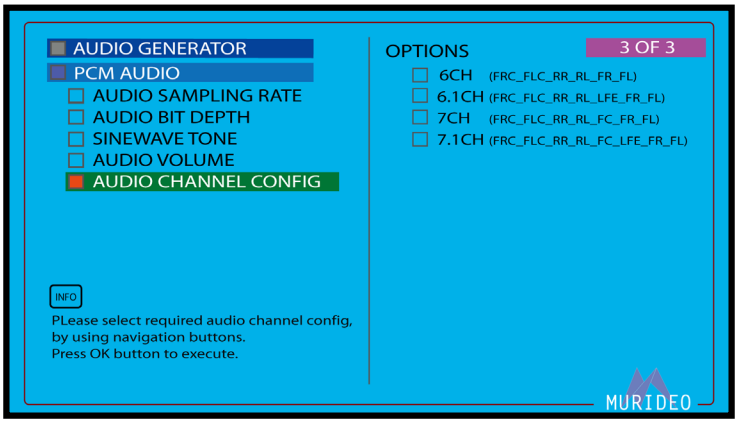


AUDIO CHANNEL /SPEAKER CONFIGURATION:

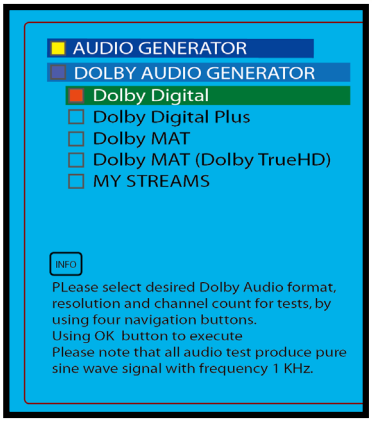
Use this page to select between various multichannel audio samples starting with 2 CH Stereo with OPTIONS up to 7.1CH.







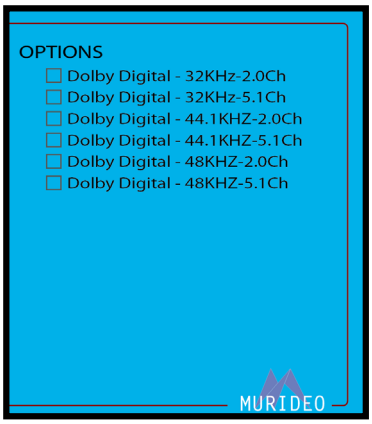
DOLBY AUDIO GENERATOR:



There are 5 options under the Dolby Audio Generator. These options include:

- Dolby Digital
- Dolby Digital Plus
- Dolby MAT
- Dolby MAT (Dolby TrueHD)
- My Streams

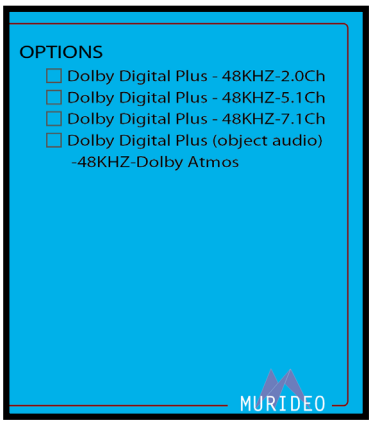
DOLBY DIGITAL:



There are 6 options under the Dolby Digital. These options include:

- Dolby Digital - 32KHz 2.0Ch
- Dolby Digital - 32KHz 5.1Ch
- Dolby Digital - 44.1KHz 2.0Ch
- Dolby Digital - 44.1KHz 5.1Ch
- Dolby Digital - 48KHz 2.0Ch
- Dolby Digital - 48KHz 5.1Ch

DOLBY DIGITAL PLUS:

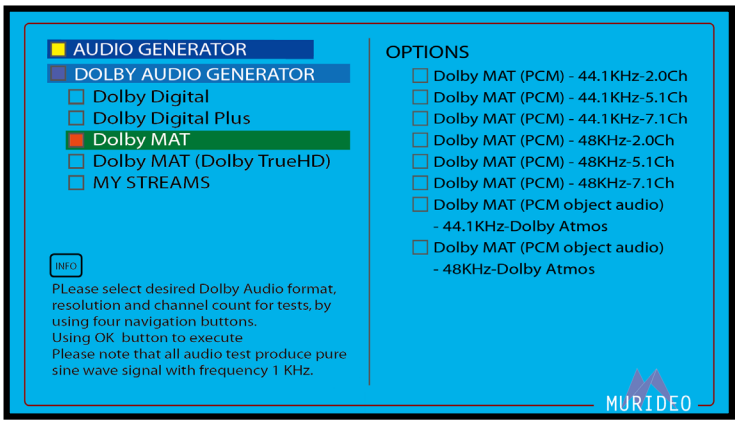


There are 4 options under the Dolby Digital Plus. These options include:

- Dolby Digital Plus- 48KHz - 2.0Ch
- Dolby Digital Plus- 48KHz - 5.1Ch
- Dolby Digital Plus- 48KHz - 7.1Ch
- Dolby Digital Plus (object audio) 48KHz - Dolby Atmos

DOLBY MAT:

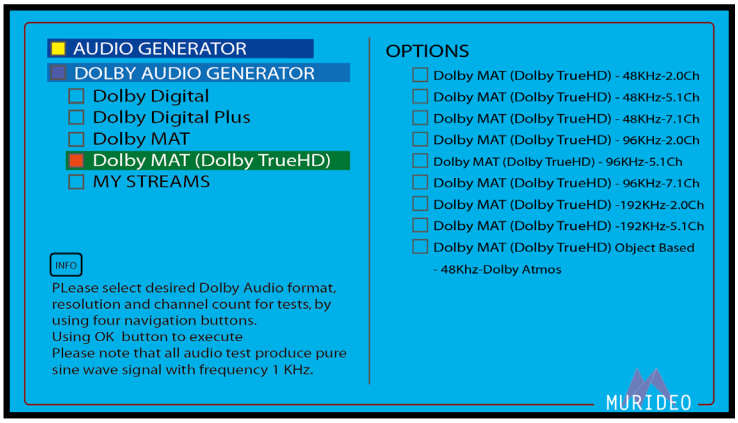
There are 8 options under Dolby Digital Plus. These options include:



- Dolby MAT (PCM) - 44.1KHz - 2.0Ch
- Dolby MAT (PCM) - 44.1KHz - 5.1Ch
- Dolby MAT (PCM) - 44.1KHz - 7.1Ch
- Dolby MAT (PCM) - 48KHz - 2.0 Ch
- Dolby MAT (PCM) - 48KHz - 5.1Ch
- Dolby MAT (PCM) - 48KHz - 7.1Ch
- Dolby MAT (PCM object audio) - 44.1KHz - Dolby Atmos
- Dolby MAT (PCM object audio) - 48KHz - Dolby Atmos

DOLBY MAT (Dolby TrueHD):

There are 9 options under Dolby MAT (Dolby TrueHD). These options include:

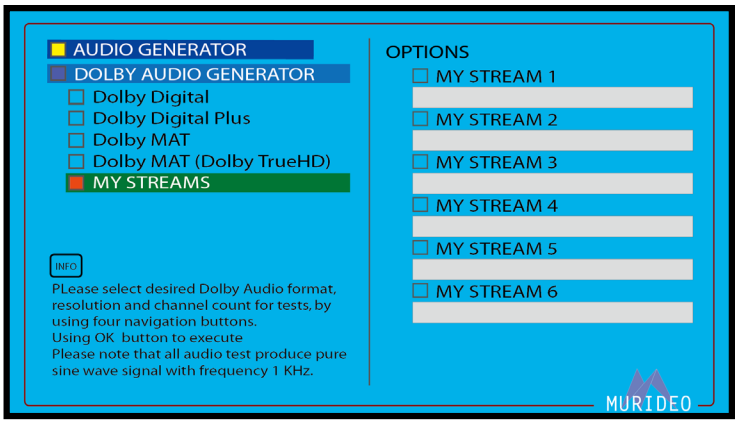


- Dolby MAT (Dolby TrueHD) - 48KHz - 2.0Ch
- Dolby MAT (Dolby TrueHD) - 48KHz - 5.1Ch
- Dolby MAT (Dolby TrueHD) - 48KHz - 7.1Ch
- Dolby MAT (Dolby TrueHD) - 96KHz - 2.0Ch
- Dolby MAT (Dolby TrueHD) - 96KHz - 5.1Ch
- Dolby MAT (Dolby TrueHD) - 96KHz - 7.1Ch
- Dolby MAT (Dolby TrueHD) - 192KHz - 2.0Ch
- Dolby MAT (Dolby TrueHD) - 192KHz - 5.1Ch
- Dolby MAT (Dolby TrueHD) Object Based - 48KHz Dolby Atmos

MY STREAMS:

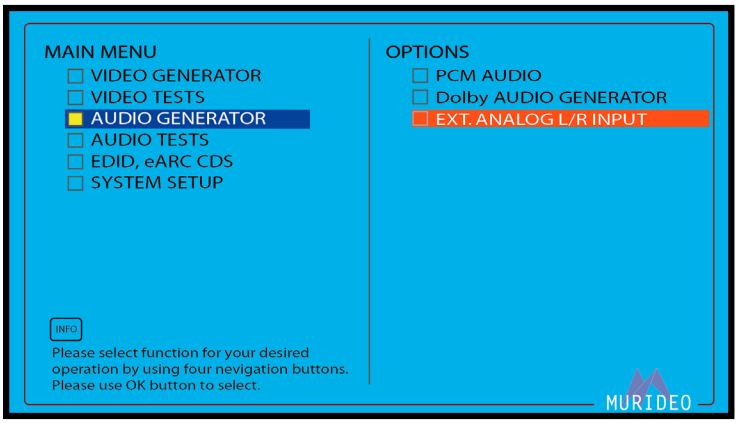
Use this page to select one of the 6 custom uploaded Dolby audio streams.

NOTE: The Audio Uploader Software with instructions are available at www.murideo.com



EXT. ANALOG L/R INPUT:

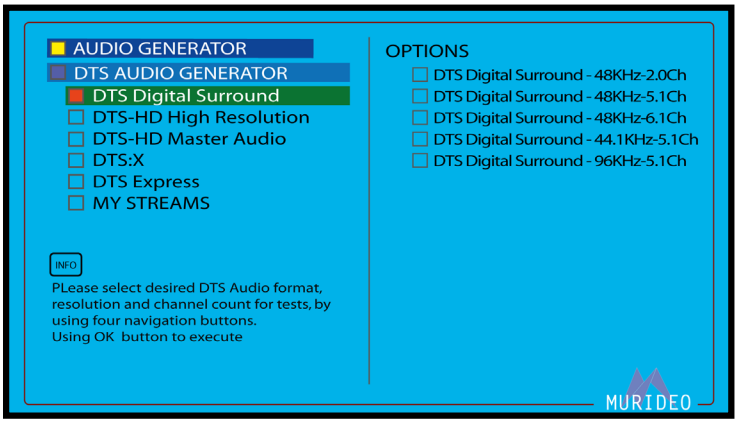
If using an external audio source via the 3.5mm Ext. Audio Input, use this menu to switch from internal audio generator to the ext. audio source.
Note: 2 Ch PCM audio only.



DTS AUDIO GENERATOR:

There are 6 options under DTS Audio Generator. These options include:

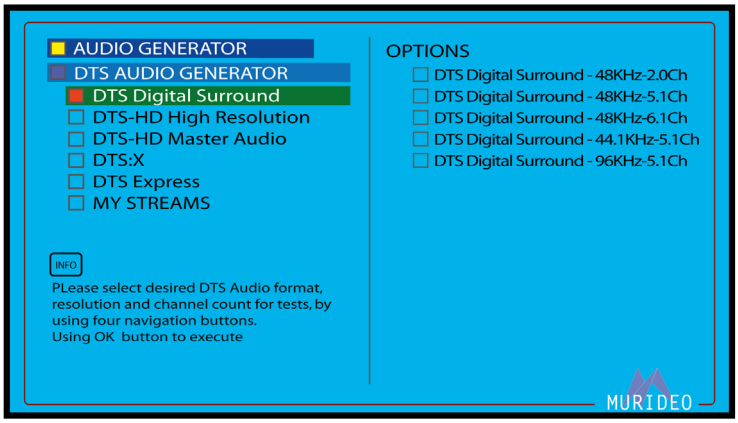
- DTS Digital Surround
- DTS-HD High Resolution
- DTS-HD Master Audio
- DTS:X
- DTS Express
- MY STREAMS



DTS DIGITAL SURROUND:

There are 5 options under DTS Digital Surround. These options include:

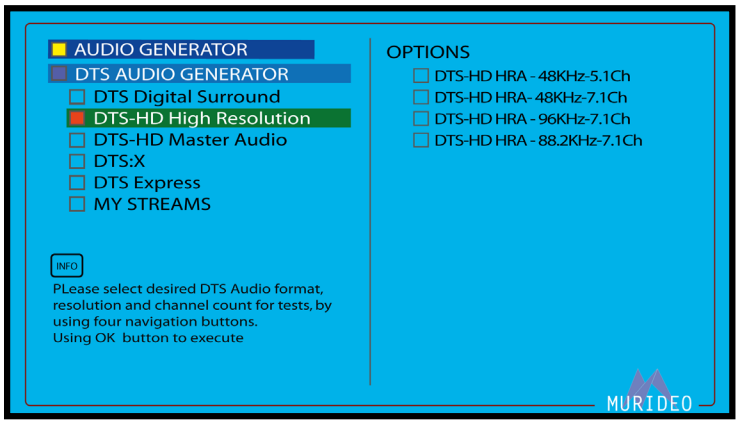
- DTS Digital Surround - 48KHz - 2.0Ch
- DTS Digital Surround - 48KHz - 5.1Ch
- DTS Digital Surround - 48KHz - 6.1Ch
- DTS Digital Surround - 44.1KHz - 5.1Ch
- DTS Digtal Surround - 96KHz - 5.1Ch



DTS-HD High Resolution:

There are 4 options under DTS Digital Surround. These options include:

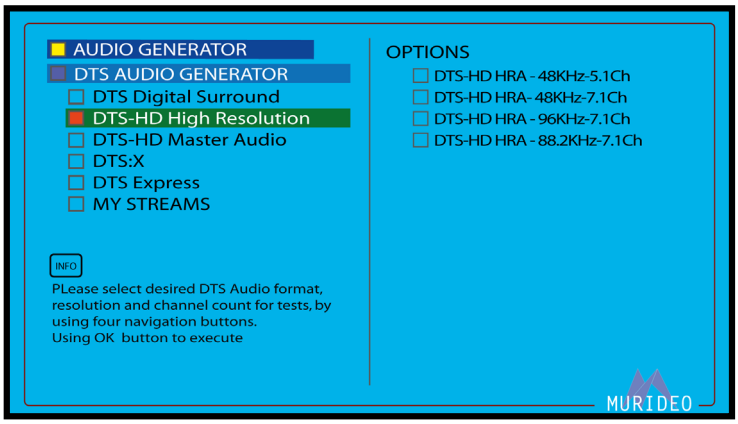
- DTS-HD HRA - 48KHz - 5.1Ch
- DTS HD HRA - 48KHz - 7.1Ch
- DTS HD HRA - 96KHz - 7.1Ch
- DTS HD HRA - 88.2KHz - 7.1Ch



DTS-HD Master Audio:

There are 4 options under DTS-HD High Resoluktions . These options include:

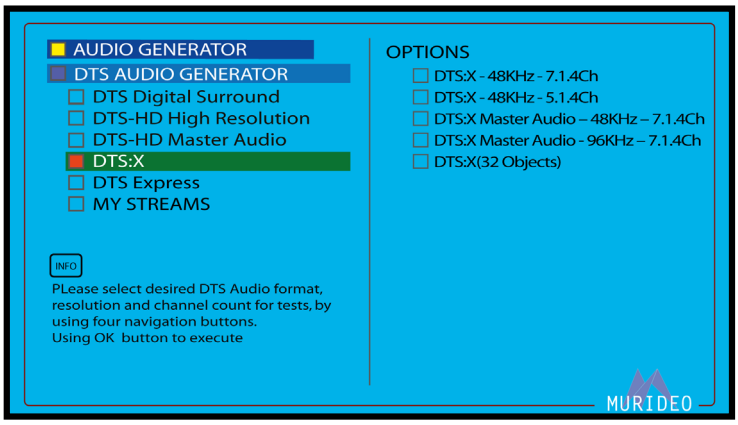
- DTS-HD MA - 48KHz - 5.1Ch
- DTS HD MA - 48KHz - 7.1Ch
- DTS HD MA - 196KHz - 2.0Ch
- DTS HD HRA - 196KHz - 7.1Ch



DTS-X:

There are 5 options under DTS-X. These options include:

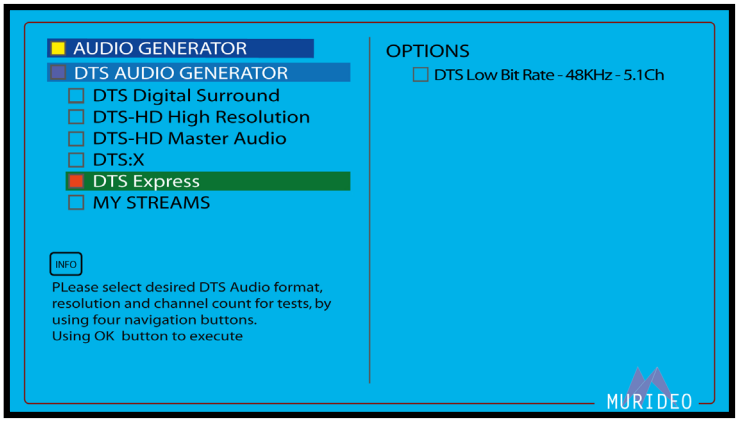
- DTS:X - 48KHz - 7.1.4Ch
- DTS:X - 48KHz - 5.1.4Ch
- DTS:X Master Audio - 48KHz - 7.1.4Ch
- DTS:X Master Audio - 96KHz - 7.1.4Ch
- DTS:X(32 Objects)



DTS Express:

There is 1 option under DTS Express:

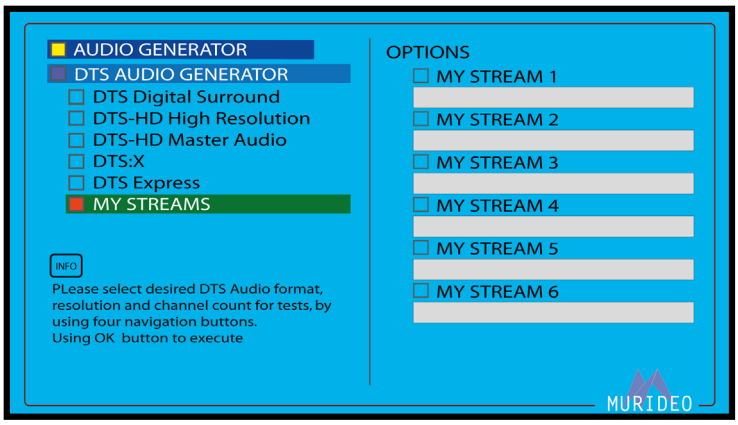
- DTS Low Bit Rate - 48KHz - 5.1Ch



MY STREAMS:

Use this page to select one of the 6 custom uploaded DTS audio streams.

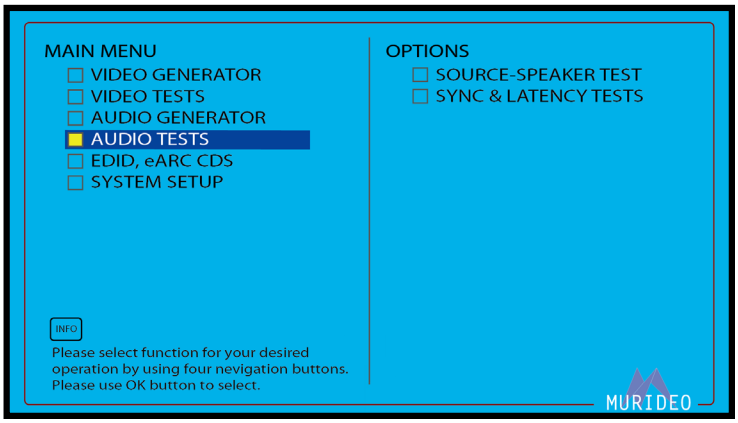
NOTE: The Audio Uploader Software with instructions are available at www.murideo.com



AUDIO TESTS:

There are 2 options under the Audio Tests menu. These options include:

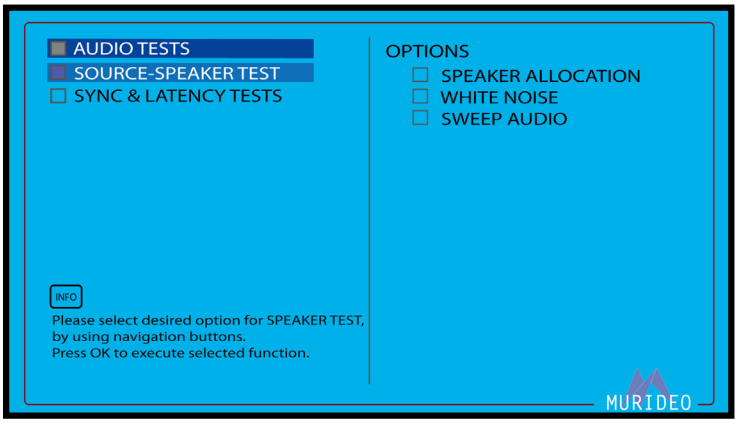
- SOURCE SPEAKER TEST (multiple options available. See below)
- SYNC & LATENCY TEST (this test is designed to be used with the included Visual Light Sensor and Mini XLR Microphone)

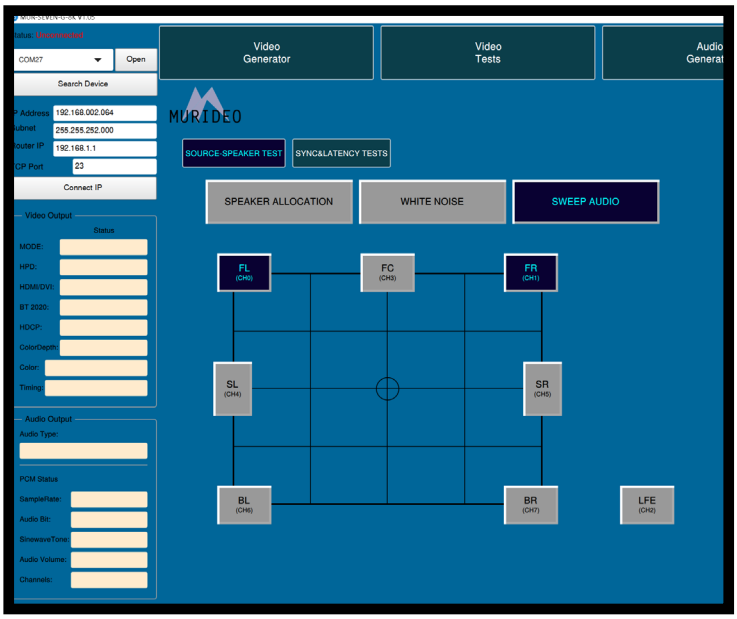


SOURCE-SPEAKER TEST:

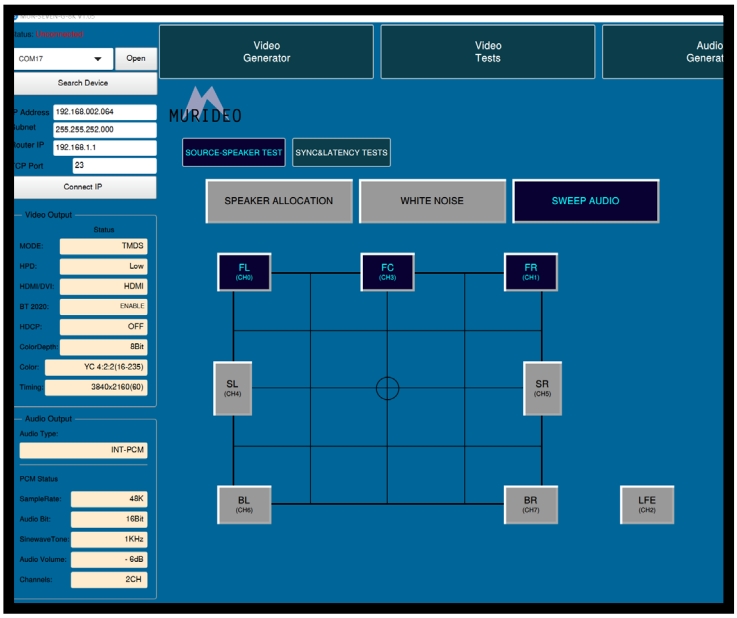
There are 3 options under Source-Speaker Test. These include:

- SPEAKER ALLOCATION - Audio confidence test used to ensure speaker outputs (from AVR or Audio Amplifier) are connected to the correct Channels/Speakers.
- WHITE NOISE - Audio confidence test used to ensure system/speakers are performing as expected
- SWEEP AUDIO - Audio confidence test. Starting with a low frequency (20Hz) and building to a high frequency (20KHz) these test tones can be used to measure room acoustics with a micro-phone. Or this can be used to ensure speaker are operating as expected.
- NOTE: If using the SEVEN-G-8K's front panel controls, you will hear the test tone through every speaker in the system. If using the PC Control Software you can choose single specific channels or any combination of Channels. See examples on next page.

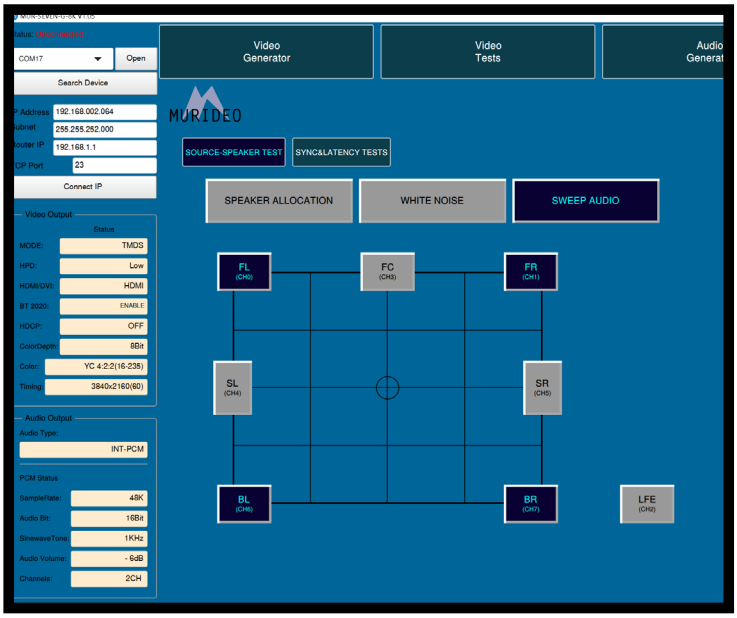




- FL (Front Left Channel Selected)
- FR (Front Right Channel Selected)



- FL (Front Left Channel Selected)
- FR (Front Right Channel Selected)
- FC (Front Center Channel Selected)

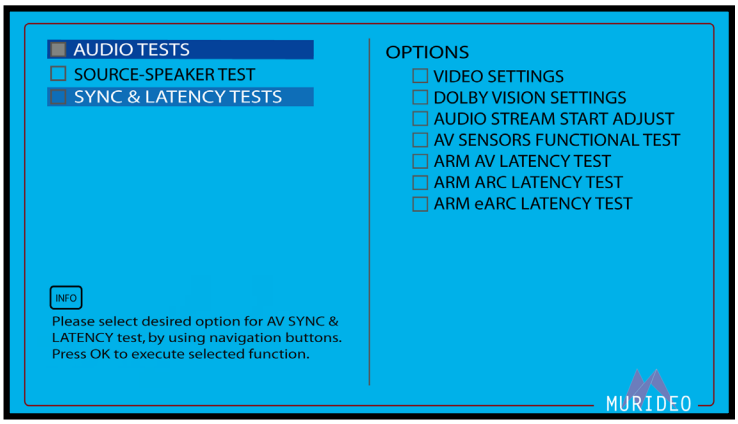


- FL (Front Left Channel Selected)
- FR (Front Right Channel Selected)
- BL (Back Left Channel Selected)
- BR (Back Right Channel Selected)

SYNC & LATENCY TESTS:

There are 7 options under the SYNC & LATENCY TEST. These options include:

- Video Settings
- Dolby Vision Settings
- Audio Stream Start adjust
- AV Sensors Funcional Test
- ARM AV Latency Test
- ARM eARC Latency Test

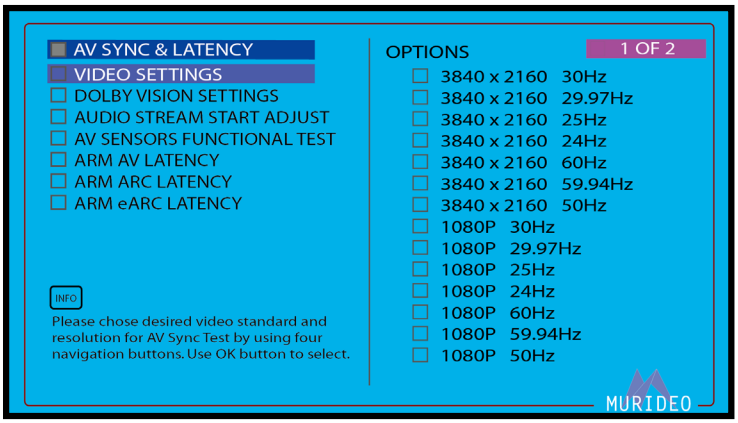


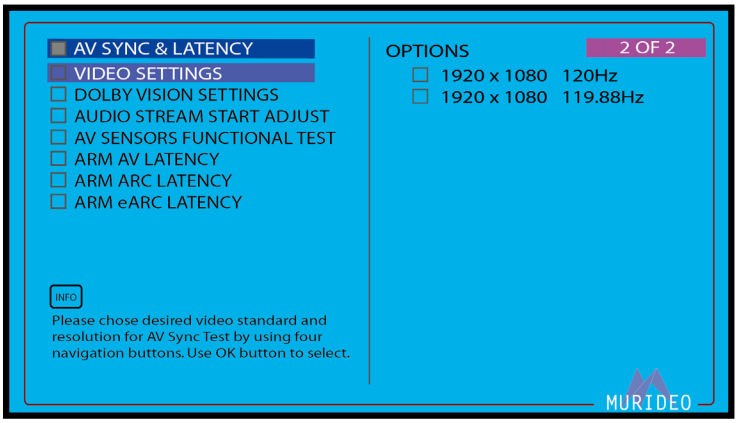
Note: More details on each of the above options are described below.

VIDEO SETTINGS:

Choose the Output Video Resolution for the AV SYNC & LATENCY tests.
The resolutions options available are:

- 3840 x 2160 30Hz
- 3840 x 2160 29.97Hz
- 3840 x 2160 25Hz
- 3840 x 2160 24Hz
- 3840 x 2160 60Hz
- 3840 x 2160 59.94Hz
- 3840 x 2160 50Hz
- 1080P 30Hz
- 1080P 29.97Hz
- 1080P 25Hz
- 1080P 24Hz
- 1080P 60Hz
- 1080P 59.94Hz
- 1080P 50Hz
- 1920 x 1080 120Hz
- 1920 x 1080 119.88Hz

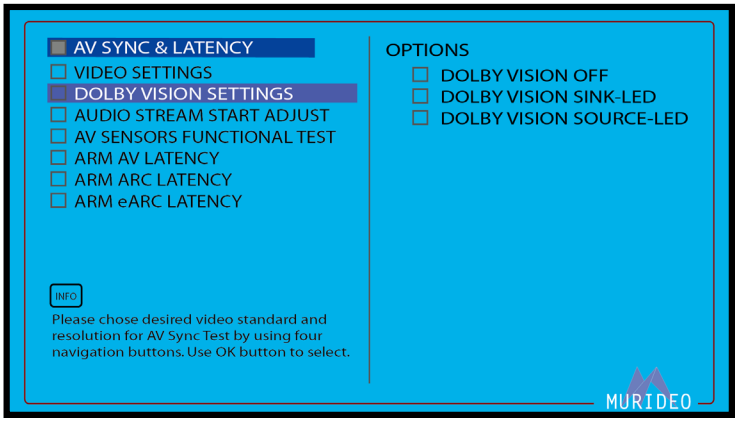




DOLBY VISION SETTINGS:

This menu contains 3 options for Dolby Vision:

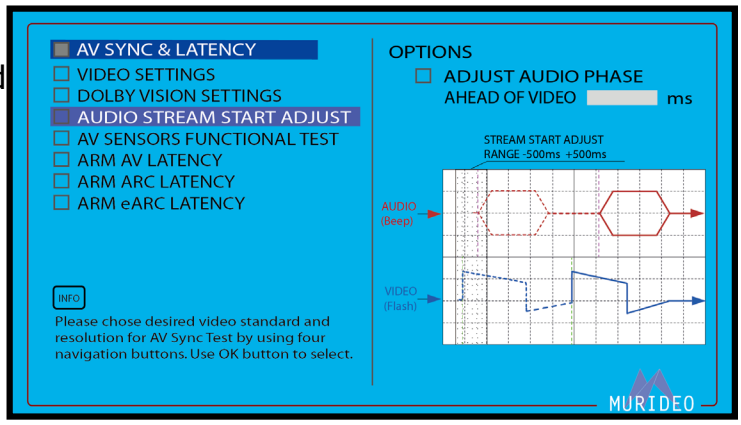
- DOLBY VISION OFF
- DOLBY VISION SINK - LED
- DOLBY VISION SOURCE - LED



AUDIO STREAM START ADJUST:

This menu allows you to adjust the audio phase ahead of the video in ms (milliseconds).

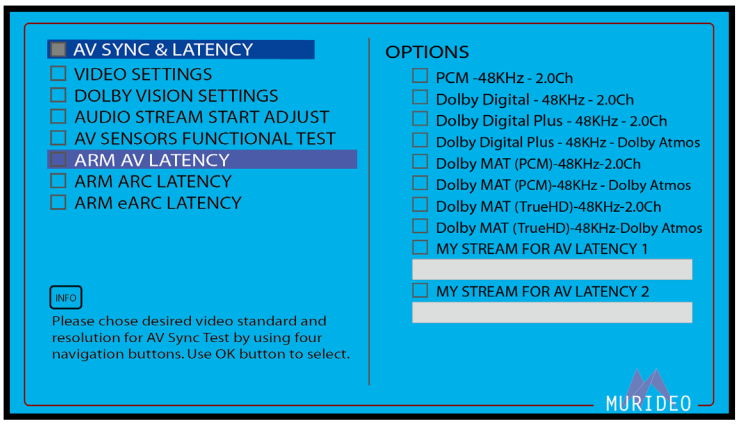
NOTE: This can be adjusted from -500ms to 500ms in increments of 1ms.



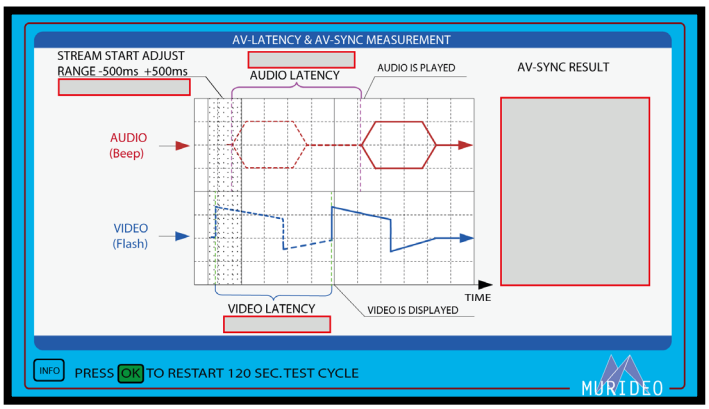
ARM AV LATENCY:

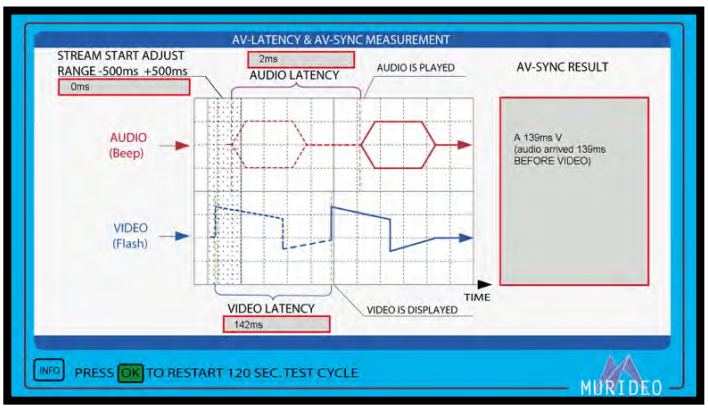
Choose the desired audio format that you will use for the selected AV latency test.

- PCM - 48KHz - 2.0 Ch
- Dolby Digital - 48KHz - 2.0 Ch
- Dolby Digital Plus - 48KHz - 2.0 Ch
- Dolby Digital Plus - 48KHz Dolby Atmos
- Dolby MAT (PCM) - 48KHz - 2.Ch
- Dolby MAT (PCM) - 48KHz - Dolby Atmos
- Dolby MAT (TrueHD) - 48KHz - 2.0 Ch
- Dolby MAT (TrueHD) - 48KHz - Dolby Atmos
- MY STREAM FOR AV LATENCY 1
- MY STREAM FOR AV LATENCY 2

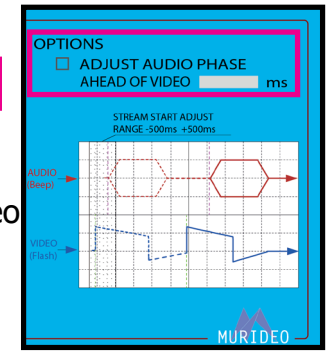


With the Microphone and Visual sensor connected to the SEVEN-G-8K and placed appropriately (visual probe centered on the display and microphone placed as close as possible to the speaker under test), press the green OK button to initiate the Audio Video Latency Test (note this test runs for 120 seconds and will restart each time you press the OK button).





Stream Start Adjust - This shows you in ms (milliseconds) the delay time you set using the Audio Stream Start Adjust (Pg.41). Once you run the initial test (with no adjustment) you can now use that data to delay the audio so it in sync with the video. The goal for this test is to have ZERO delay, meaning that the audio and video signals are arriving at the same time.

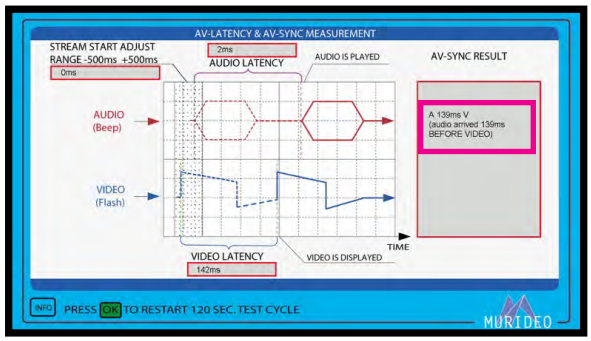


Audio Latency - This shows you (in milliseconds) the delay time of the audio being

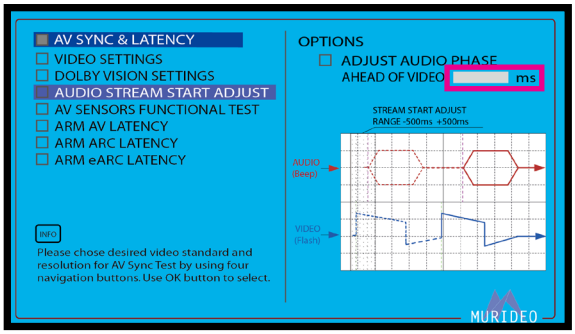
sent versus being measured.
Video Latency - This shows you (in milliseconds) the delay time of the video being sent versus being measured.
AV-Sync Results - This shows the test results (in milliseconds) of the delay time between the audio and video signal.

NOTE: Use the data from the AV-Sync Results (example: audio arrived 139ms before video) to calibrate the audio delay in the Audio Stream Start Adjust menu (pg. 41).

AV-Latency & AV Sync Measurement Menu



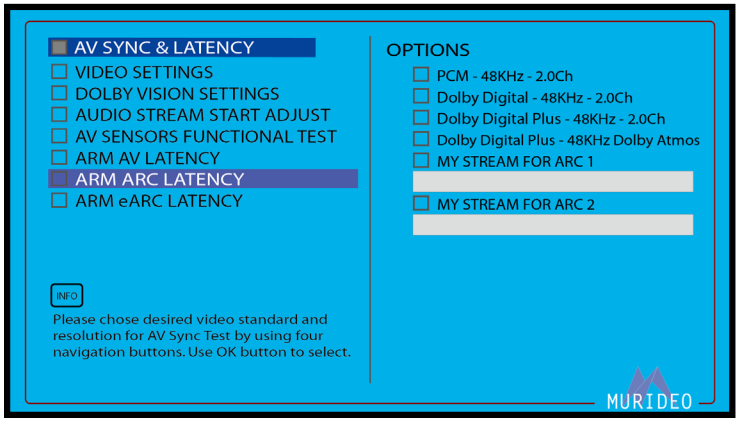
Audio Stream Start Adjust Menu



ARM ARC LATENCY:

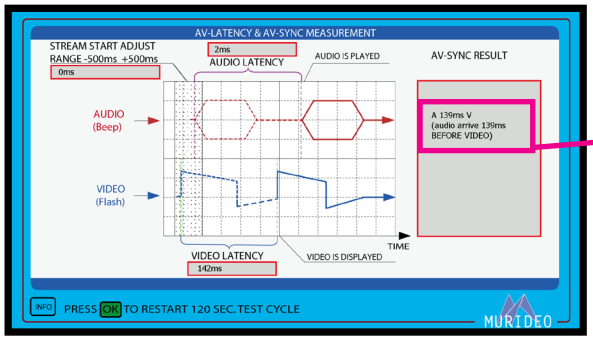
Choose the desired audio format that you will use for the selected ARC latency test.

- PCM - 48KHz - 2.0 Ch
- Dolby Digital - 48KHz - 2.0 Ch
- Dolby Digital Plus - 48KHz Dolby Atmos
- MY STREAM FOR ARC 1
- MY STREAM FOR ARC 2

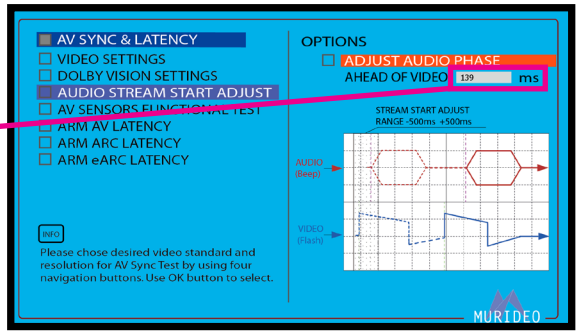


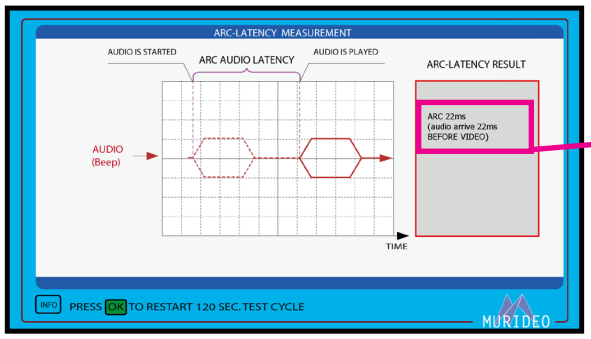
With the Microphone connected to the SEVEN-G-8K and placed as close as possible to the speaker under test, press the green OK button to initiate the ARC Audio Latency Test (note this test runs for 120 seconds and will restart each time you press the OK button).

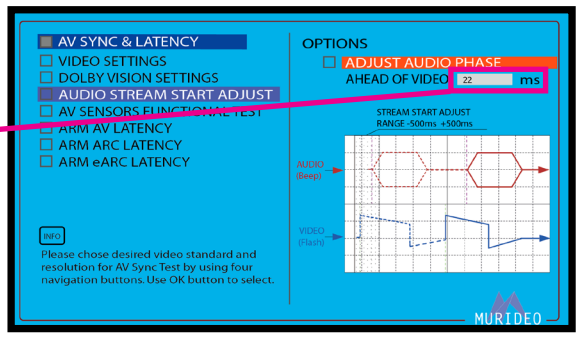
AV-Latency & AV Sync Measurement Menu



Audio Stream Start Adjust Menu



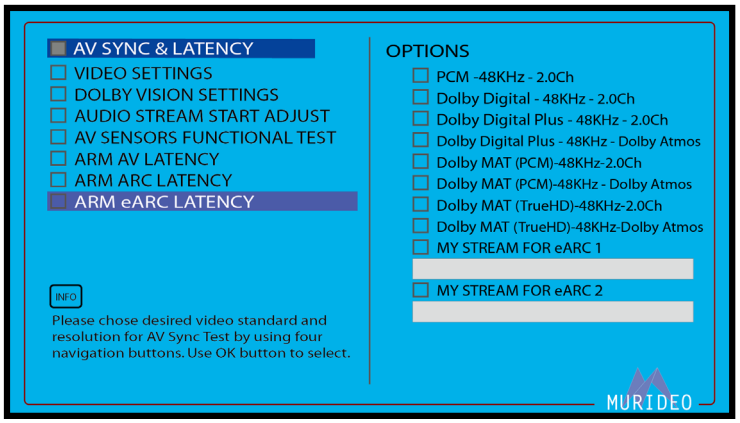




ARM eARC LATENCY:

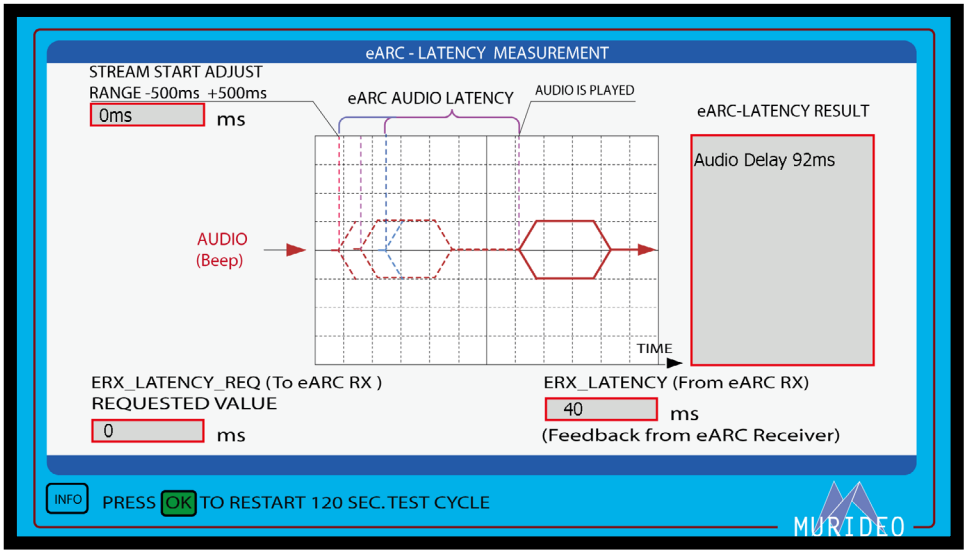
Choose the desired audio format that you will use for the selected eARC (enhanced Audio Return Channel) latency test.

- PCM - 48KHz - 2.0 Ch
- Dolby Digital - 48KHz - 2.0 Ch
- Dolby Digital Plus - 48KHz - 2.0 Ch
- Dolby Digital Plus - 48KHz - Dolby Atmos
- Dolby MAT (PCM) - 48KHz - Dolby Atmos
- Dolby MAT (PCM) - 48KHz - 2.0 Ch
- Dolby MAT (TrueHD) - 48KHz 2.0 Ch
- Dolby MAT (TrueHD) - 48KHz - Dolby Atmos
- MY STREAMS FOR eARC 1
- MY STREAMS FOR eARC 2



With the Microphone connected to the SEVEN-G-8K and placed as close as possible to the speaker under test, press the green OK button to initiate the eARC Audio Latency Test (note this test runs for 120 seconds and will restart each time you press the OK button).

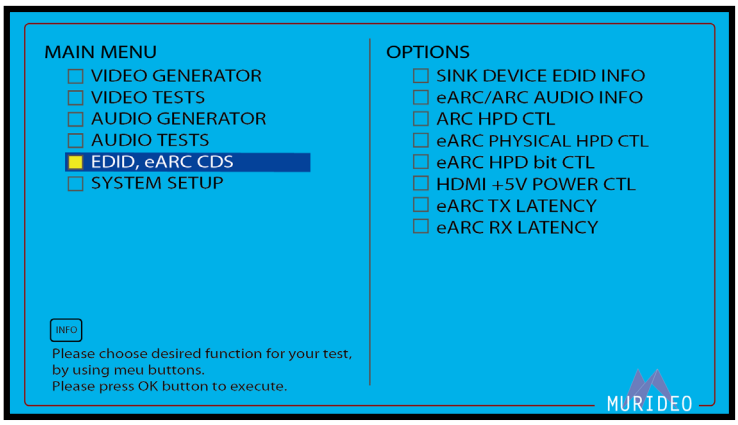
AV-Latency & AV Sync Measurement Menu



EDID, eARC CDS:

This menu contains HDMI protocol analysis/control functions. This menu contains the following options:

- SINK DEVICE EDID INFO
- eARC/ARC AUDIO INFO
- ARC HPD CTL
- eARC PHYSICAL HPD CTL
- eARC HPD bit CTL
- HDMI +5V POWER CTL
- eARC TX LATENCY
- eARC RX LATENCY

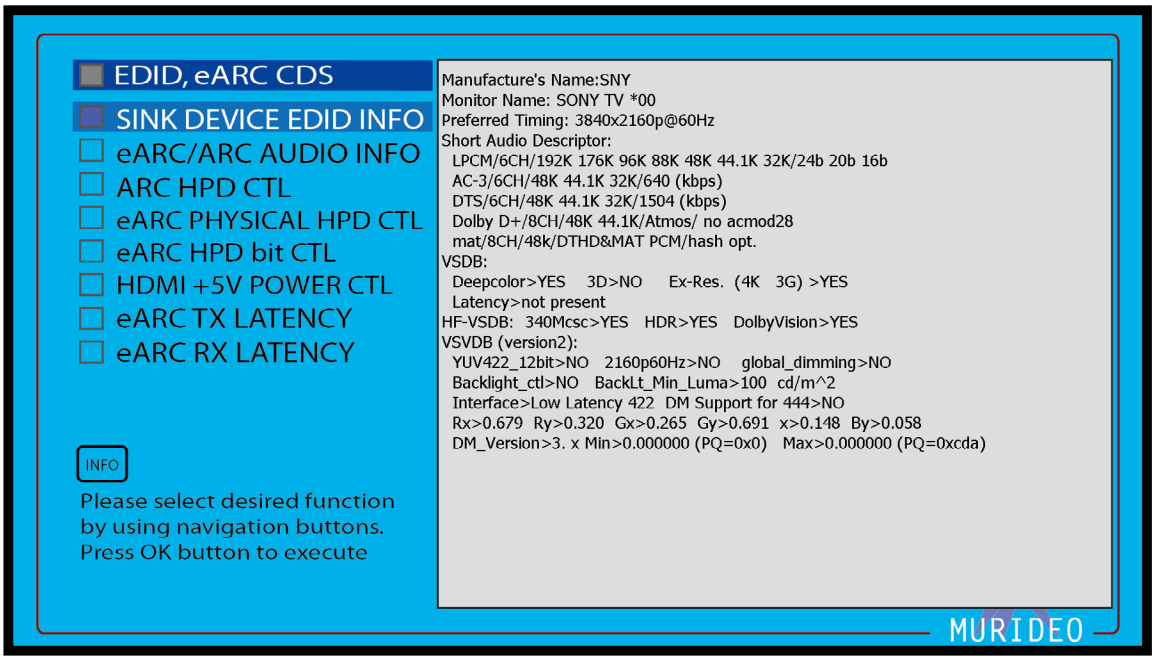


NOTE: In order to test ARC/eARC, you must do the following:

- Enable ARC/eARC (located under the SYSTEM SETUP menu pg. 49) inside the SEVEN-G-8K
- Enable ARC/eARC inside the device you are testing (display, AVR, etc.)

SINK DEVICE EDID INFO:

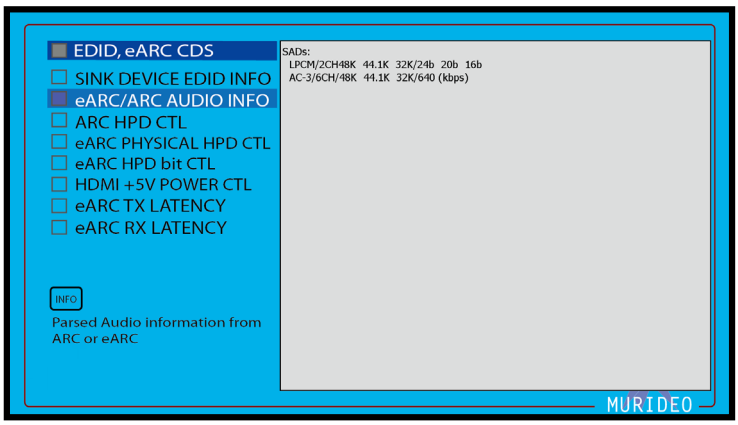
This menu displays the SINK device's EDID information in Human Readable Format. To see the EDID in HEX form please use the PC Control Software (available for download at www.murideo.com).



eARC/ARC AUDIO INFO:

Displays the CDS (Capabilities Data Structure). This infomation also relates to eARC/ARC and contains the following:

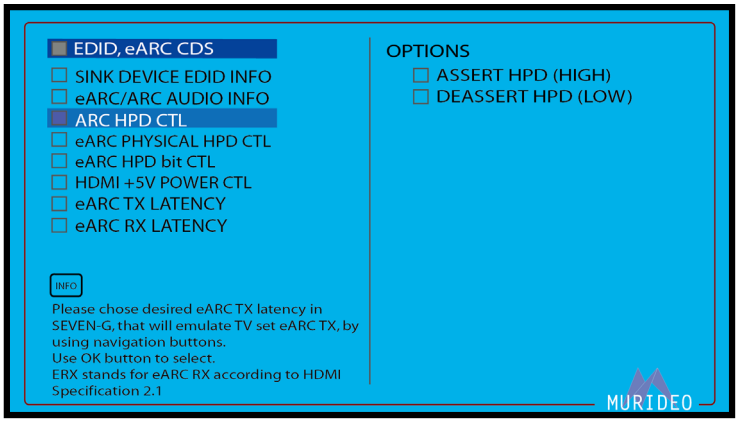
- SADs - (Short Audio Descriptor)
- Speaker Allocation
- Audio Stream layout Block



ARC HPD CTL:

ARC HPD CTL (Hot Plug Detect Control). This will allow you to turn ON or OFF the +5V HDMI power output. This menu contains the following:

- ASSERT HPD = ON
- DEASSERT HPD = OFF

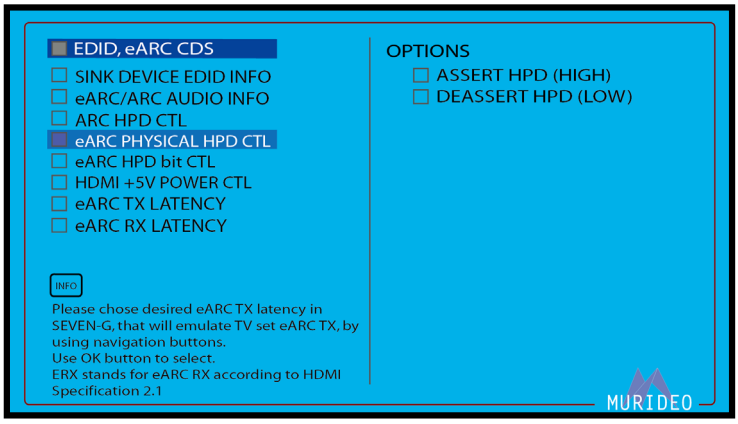


NOTE: Use this to trigger an HPE (Hot Plug Event) without physically disconnecting/reconnecting the HDMI cable.

eARC PHYSICAL HPD CTL:

eARC Physical HPD CTL (Hot Plug Control). This menu contains the following:

- ASSERT HPD = ON
- DEASSERT HPD = OFF

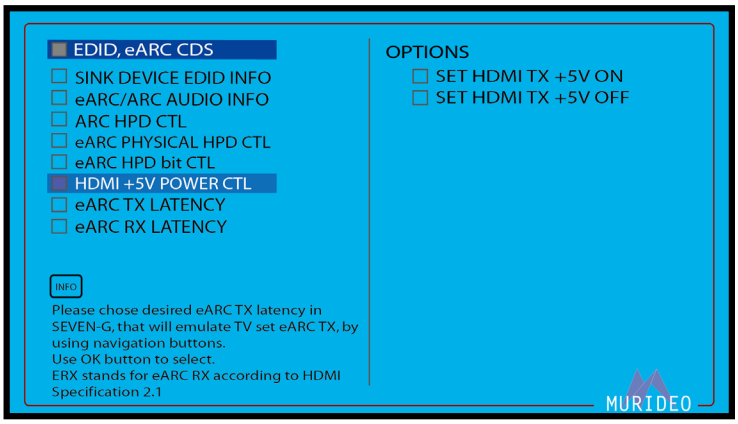


NOTE: Use this to trigger an HPE (Hot Plug Event) on the ARC/eARC (HDMI INPUT) without physically disconnecting/reconnecting the HDMI cable.

HDMI +5V POWER CTL:

Activate or disable the +5V HDMI power output. This contains the following options:

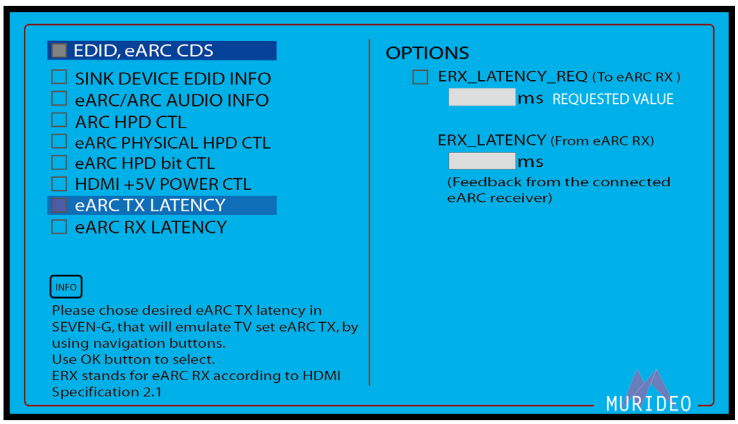
- SET HDMI TX +5V ON
- SET HDMI TX +5V OFF



NOTE: Use this to trigger an HPE (Hot Plug Event) without physically disconnecting/reconnecting the HDMI cable.

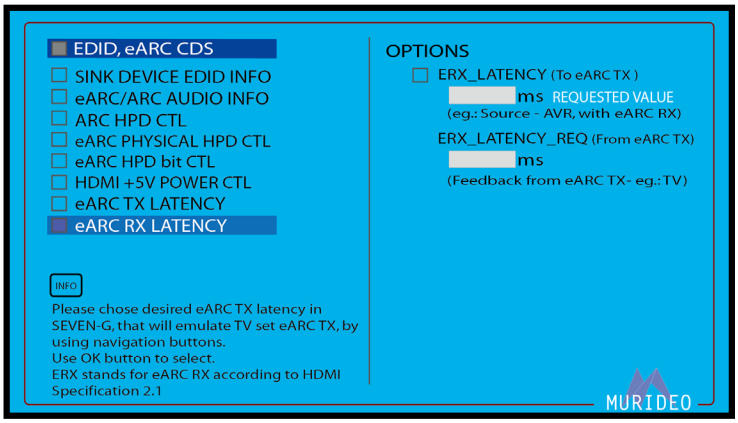
eARC TX LATENCY:

Use this test to read the latency value (in milliseconds) for the eARC RX. This is performed using the HDMI RX (INPUT) on the SEVEN-G-8K.



eARC RX LATENCY:

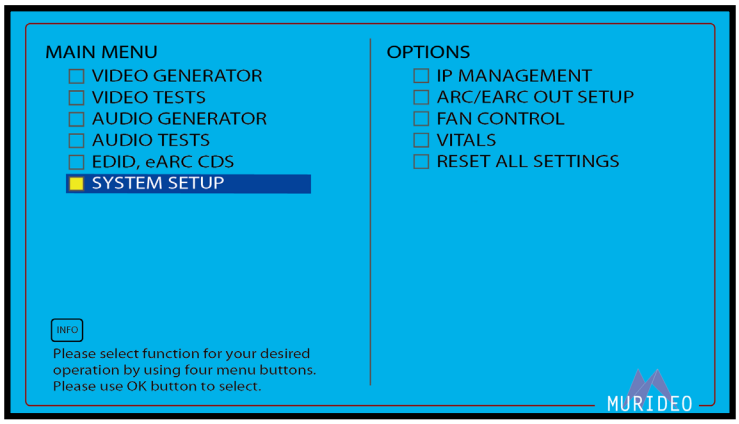
Use this test to read the latency value (in milliseconds) for the eARC TX. This is performed using the HDMI TX (OUTPUT) on the SEVEN-G-8k.



SYSTEM SETUP:

This menu contains general device setup and managment for the SEVEN-G-8k. This contains the following options:

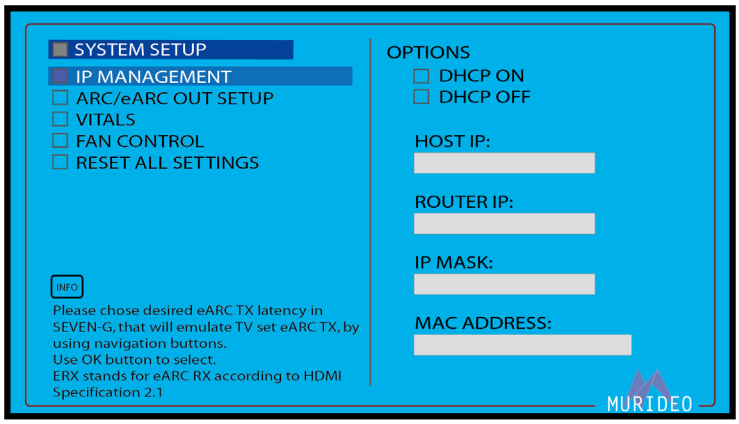
- IP MANAGEMENT
- ARC/eARC OUT SETUP
- FAN CONTORL
- VITALS
- RESET ALL SETTINGS



IP MANAGEMENT:

This menu contains network information for the SEVEN-G-8k. Here you can manually set the device's IP address or you can Enable DHCP to allow your network controller to assign the settings. This menu contains the following options:

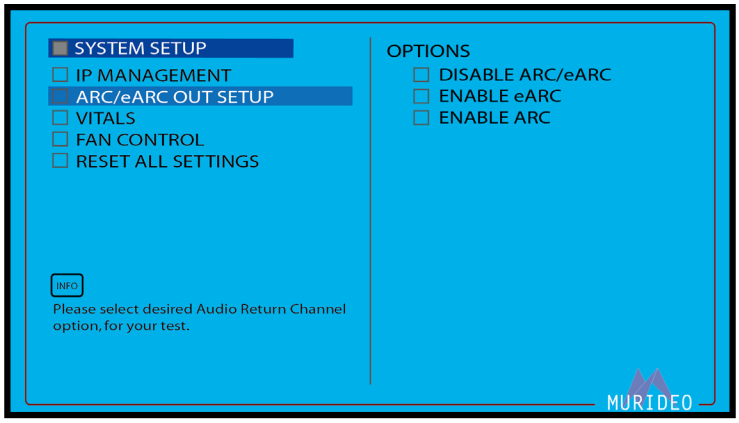
- DHCP ON / DCHP OFF
- HOST IP
- ROUTER IP
- IP MASK
- MAC ADDRESS



ARC/eARC OUT SETUP:

This menu contains the following options:

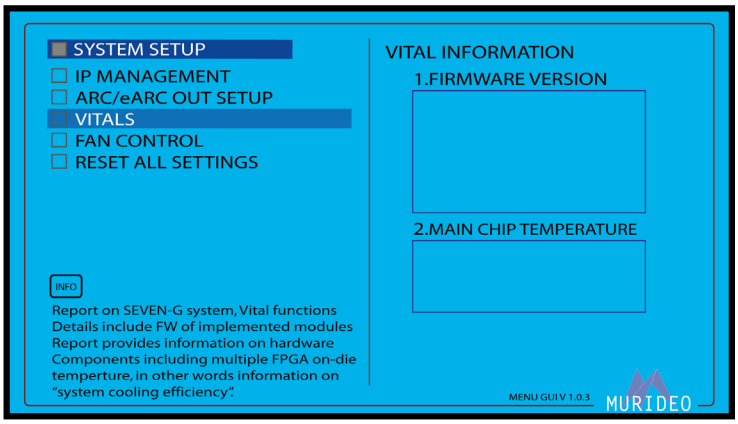
- DISABLE ARC/eARC
- ENABLE eARC
- ENABLE ARC



VITALS:

This menu contains vital information for the SEVEN-G-8K. This includes:

- Firmware Version
- Main Chip Temperature

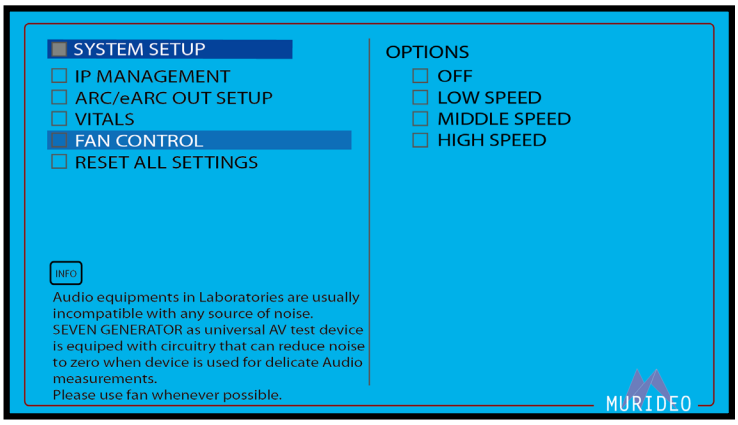


NOTE: For the latest Firmware and instructions on how to load, visit www.murideo.com

FAN CONTROL:

Use this menu to adjust the fan speed. There are 4 settings to choose from:

- OFF (see note below)
- LOW SPEED
- MIDDLE SPEED (Default)
- HIGH SPEED

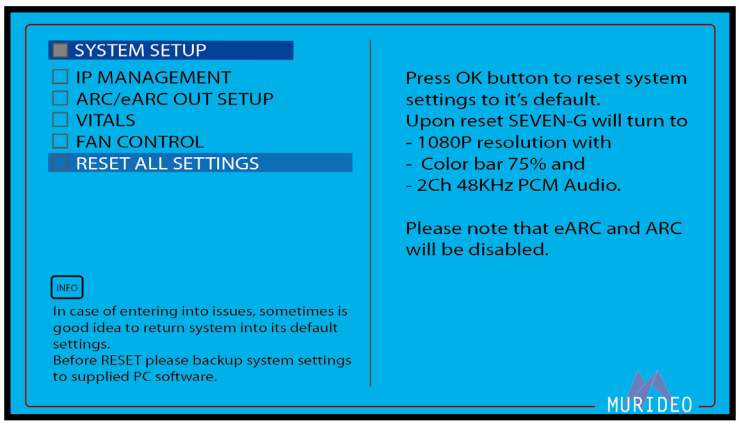


NOTE: You may consider turning the fan OFF in situations where audio measurements are critical. It is not recommended to leave the fan OFF for an extended period of time while using the SEVEN-G-8K.

RESET ALL SETTINGS:

Use this menu to reset the SEVEN-G-8K to the factory default settings. Upon reseting, the SEVEN-G-8K will set

- Resolution - 1920 x 1080 P
- Pattern - Color Bar 75%
- Audio - PCM 48KHz - 2.0 Ch

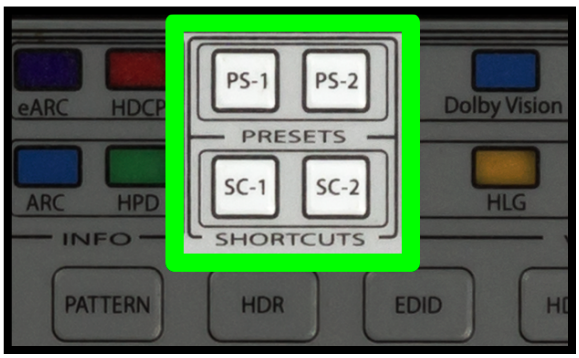


NOTE: Resetting to factory defaults will NOT delete/remove your custom uploaded patterns/videos clips/audio streams.

NOTE: Resetting to factory defaults WILL reset the PRESET and SHORTCUT buttons back to their default state.

PS-1/PS-2 Defaults
100% COLOR BARS Pattern
1920x1080@60Hz RGB Full (0-255)
PCM AUDIO <Rate:48K Size:16Bit FREQ. :1KHz AMP. :-0dB Channel: 2CH>

SC-1/SC-2 Defaults back to the HOME Menu



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Updating Firmware

Field firmware updates are available via USB port. Firmware updates, when available will be posted on the Murideo.com we site, along with instructions.

FCC Interference and Compliance Statement

This device complies with part 15 of the FCC Rules.

Operation is subject to the following two conditions:

1. This device may not cause harmful interference, including interference that my cause undesired operation.
2. This device must accept any interference received, including interference that my cause undesired operation.

FCC WARNING

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connecd the equipment into an outlet different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution

To comply with the limits for an FCC Class B computing device, always use the shielded signal cord supplied with this unit. The Federal Communications Commission warns that changes or modifications of the unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

CE mark for Class B ITE (Following European standard EN55022/1998;
EN61000-3-2/1995; EN61000-3-3/1995, EN55024/1998, EN60950-1/2001)

Radio Frequency Interference Statement Warning: This is a Class B product. In a domestic enviornment, this product may cuase radio interference in which case the user may be required to take adequate measures.

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

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.

Disclaimer of Warranty

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