



# Instruction Manual

**1T-TG-620  
HDMI Test Generator**



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## **1.0 INTRODUCTION**

The 1T-TG-620 HDMI Test Generator provides a means to verify the correct operation of HDMI equipment such as monitors and projectors. Any device with an HDMI type input (plus PC or DVI-D displays with appropriate cable adaptors) can be tested using several different types of test signals. A provision has been made to embed either a 1Khz internally generated audio signal or an externally generated audio signal in the digital bitstream so that operation of the audio portion of the HDMI signal can be verified and, in addition, HDCP (High Definition Content Protection) functionality can also be tested thereby insuring that all video, audio and security components of the HDMI display device are functioning properly.

Our professional video conversion products have been serving the industry for over twenty years. tvONE offers a full line of high quality Seamless Switchers, Video Scalers, Up/Down/Cross Converters, Analog-Digital Converters (SD/HD-SDI, HDMI, DVI), Format Converters, Standards Converters, TBC/Frame Synchronizers, Matrix Routing Switchers, Signal Distribution Amplifiers and Cat.5 Transmission Systems.

### **1.1 Liability Statement**

Every effort has been made to ensure that this product is free of errors. tvONE cannot be held liable for the use of this hardware or any direct or indirect consequential damages arising from its use. It is the responsibility of the user of the hardware to check that it is suitable for his/her requirements and that it is installed correctly. All rights reserved. No parts of this manual may be reproduced or transmitted by any form or means electronic or mechanical, including photocopying, recording or by any information storage or retrieval system without the written consent of the publisher.

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### **1.2 Features**

- HDMI v1.2, HDCP 1.1 and DVI 1.0 Compliant.
- 1.65Gbps Single Link HDMI Frequency Bandwidth.
- EDID Support, VESA EDID v1.3 and EIA/CEA 861 Version 3
- Supports PC & HD Video Inputs (Up to WUXGA60 and 1080p).
- Supports Embedded Audio – Internally Generated and External.
- Infrared Remote Control.

### 1.3 Getting the Best Results

There are many factors affecting the quality of results when dealing with HDMI type signals. Some basic precautions will ensure the best possible performance from your 1T-TG-620 HDMI Test Generator.

- **Output display device** – The quality of the output signal will depend largely upon the type and quality of the HDMI display device used. For instance, some video projectors just look better than others.
- **Distance between the Test Generator and the display** – This plays a major role in the final result. Long distances are possible, but special measures should be taken in order to avoid cable losses. These include using high quality cables. Line amplifiers may also be necessary for the longest runs.
- **Input/Output connection cables** – Low quality cables are susceptible to interference. They degrade signal quality due to poor matching and can cause elevated noise levels. Cables should be of the best quality.
- **Interference from nearby electrical devices** – These can have an adverse effect on signal quality. For example, an older computer monitor often emits very high electromagnetic fields that can interfere with the performance of video equipment in its proximity.

## 2.0 SPECIFICATIONS

<b>Audio Input</b>	
Optical Audio (Ext. Audio)	1x S/PDIF via Toslink Connector
<b>Video Output</b>	
HDMI	1x via Type A HDMI Connector (Note 1)
<b>HDMI Transport</b>	
Frequency Bandwidth	1.65Gbps (Single Link)
Supported PC Resolution	Up to WUXGA/60
Supported HDTV Formats	480p, 576p, 720p, 1080i (Note 2) and 1080p
Audio (Embedded)	1Khz Sine wave Int. or Ext., 48Khz Sample Rate
Compliance	HDMI v1.2, HDCP V1.1, DVI V1.0
<b>Special Feature</b>	
HDCP Functionality Check	Via Internal Algorithm
<b>Video Test Patterns</b>	
36 Video Patterns	In 8 Groups
<b>Control Methods</b>	
Local Control	Front Panel via Push Button Switches
Remote Control	1x Infrared Remote Control
<b>Warranty</b>	
Limited Warranty	2 Years Parts and Labor
<b>Mechanical</b>	
Size (H-W-D)	1.2"x4.9"x4.9" (30x125x125mm)
Weight (Net)	0.72lbs (334g)
<b>Environmental</b>	
Operating Temperature	0° to +48°C (+32° to +120°F)
Operating Humidity	10% to 90%, Non-condensing
Storage Temperature	-10° to +70°C (+32° to +120°F)
Storage Humidity	10% to 90%, Non-condensing
<b>Power Requirement</b>	
External Power Supply	5VDC@2A
<b>Regulatory Approvals</b>	
HDMI Test Generator	FCC, CE, RoHS
Power Supply	UL, CUL, CE, PSE, GS, RoHS
<b>Accessories Included</b>	
1x AC Power Adapter	US, UK or Euro Type
1x Instruction Manual	
1x IR Remote Control	
<b>Product Number</b>	
1T-TG-620	HDMI Test Generator
<b>Notes</b>	
(1) PC Video & DVI Video Operation is possible using optional adapters.	
(2) The timing of the 1080i output signal is very critical; therefore it may not be compatible with all displays.	

### 3.0 CHECKING PACKAGE CONTENTS

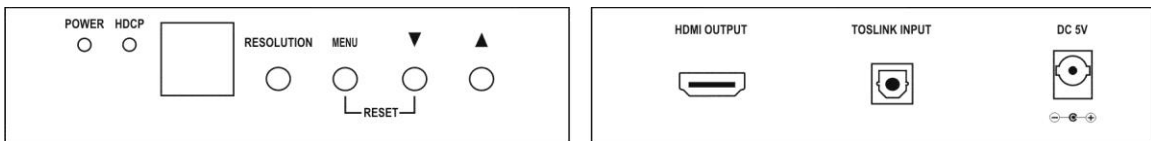
Before attempting to use this unit, please check the packaging and make certain the following items are contained in the shipping carton:

- 1x 1T-TG-620 HDMI Test Generator
- 1x 100~240VAC to 5VDC Power Adapter
- 1x Instruction Manual
- 1x Infrared Remote Control

**Note:** Please retain the original packing material should the need ever arise to return the unit. If you find any items are missing, contact your reseller or tvONE immediately. Have the Model Number, Serial Number and Invoice available for reference when you call.

### 4.0 CONNECTING THE HARDWARE

Connect the HDMI Video Device's HDMI input to the Output of the 1T-TG-620 Test Generator and connect an External Audio signal (if desired) to the Generator's S/PDIF Optical connector. The drawings below show the locations of the front panel controls, input, output and power connector.



**1T-TG-620 HDMI Test Generator**

You can connect any HDMI compliant device's input to the HDMI output. Make certain that the HDMI cable is securely plugged into the destination device as well as the HDMI Test Generator. Always use a high quality cable, as short a length as possible, for best results.

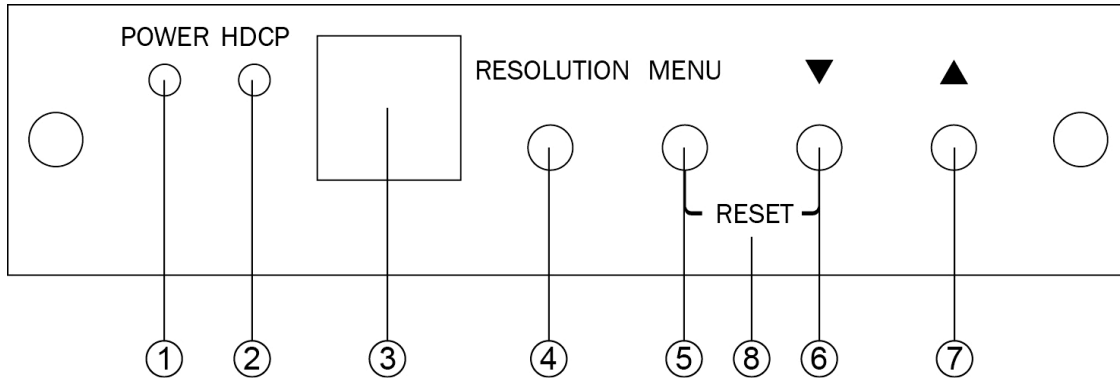
#### 4.1 Connecting Power to the 1T-TG-620

The unit is shipped with a Power Adapter to convert 100~240VAC@50-60Hz to 5VDC. Connect the DC Output Cable from the Power Adapter to the back of the unit and then plug the Power Adapter into an AC Receptacle. The 1T-TG-620 HDMI Test Generator will begin to function as soon as it receives power. There is no power switch.

## 5.0 OPERATING THE 1T-TG-620 HDMI TEST GENERATOR

The 1T-TG-620 HDMI Test Generator can be operated directly via the front panel controls or via the included Infrared Remote Control. An On Screen Display (OSD) provides a menu that allows you to select the test signal or function desired using the front panel buttons. (Operation via the Remote Control will be described later.)

### LED Display & Button Operation:



- 1 Power On/Off LED Indicator
- 2 HDCP On/Off LED Indicator
- 3 Remote Control Infrared Sensor
- 4 Resolution – Switches resolution sequentially in the following order:  
VGA60→SVGA60→XGA60→SXGA60→UXGA60→WUXGA60→  
576p50→480p60→720p50→720p60→1080i50→1080i60→1080p50  
→1080p60
- 5 Menu - Used to display OSD Menu and make selections from the Menu. (Note that the HDCP function turns off automatically when OSD is present and turns back on when it is no longer visible.) \*
- 6 Down Arrow moves OSD cursor towards the bottom of the display.
- 7 Up Arrow moves OSD cursor towards the top of the display.
- 8 Pressing the Menu and Down Arrow buttons at the same time will return the 1T-TG-620 to the Factory Default setting.

\* The Menu button is also the Enter Button. When you have reached the pattern or adjustment you wish to utilize, pressing the Menu button allows selection of the desired function or pattern and allows you to “Drill Down” into the sub menus.

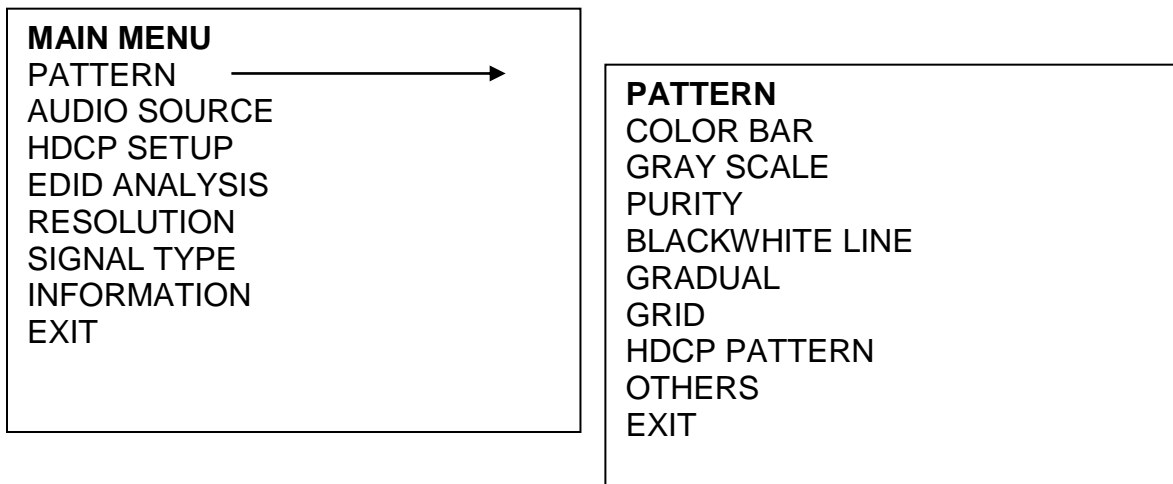


## 5.1 Menu Structure

Press [MENU] to show OSD Main Menu.

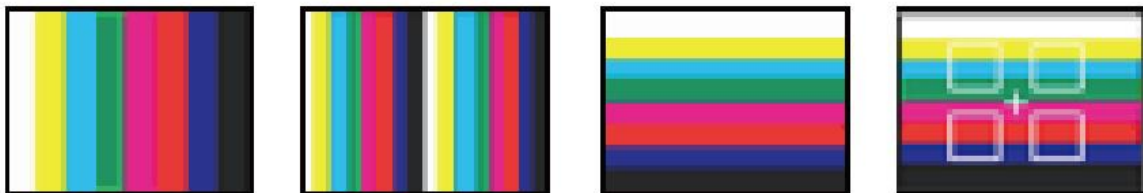
### 5.1.1 Pattern

On the Main Menu, press the arrow buttons as required to position the cursor over the word “Pattern” and then press [Menu] to enter the pattern mode. There are 8 different pattern groups available and you simply move the cursor and press [Menu] to enter a particular pattern group. Press the up or down arrow buttons to select previous/next pattern and select “Exit” to move back to the main menu. Pressing Exit from the main menu will remove the OSD from the video output.



The various patterns are shown below for reference purposes.

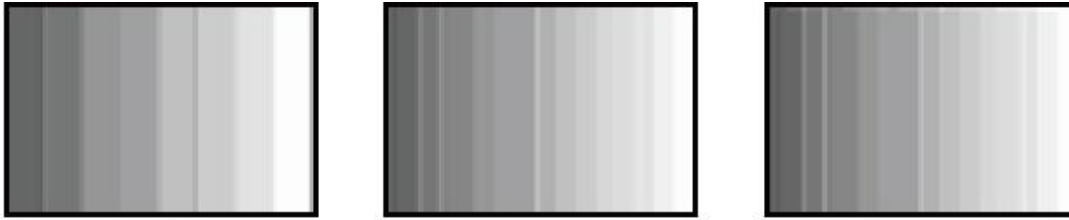
### Color Bars



The color bar patterns provide a good overall check on color performance. This includes the checks of burst keying, sub-carrier regeneration, RGB amplifier balance, chrominance/luminance delay and a color saturation check.

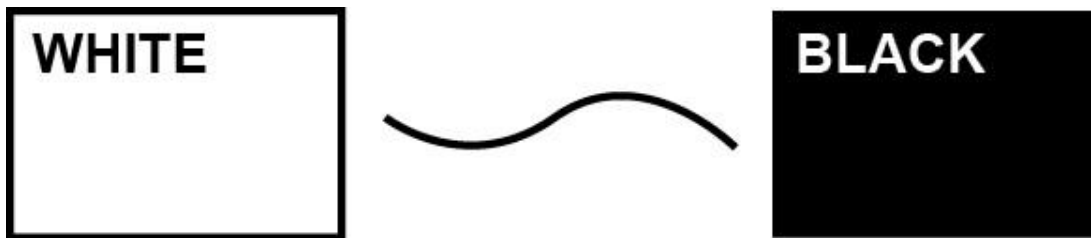
*Note that when the output resolution is 1080i, the horizontal Color Bar patterns are not supported.*

## Gray Scale



The Gray scale pattern is used to locate non-linearity in a video amplifier. Non-linearity results in compression of the white level and a loss of high frequency detail.

## Purity Check



The available purity colors are White, Blue, Red, Magenta, Green, Cyan, Yellow and Black. The red and green patterns are most frequently used for checking color purity.

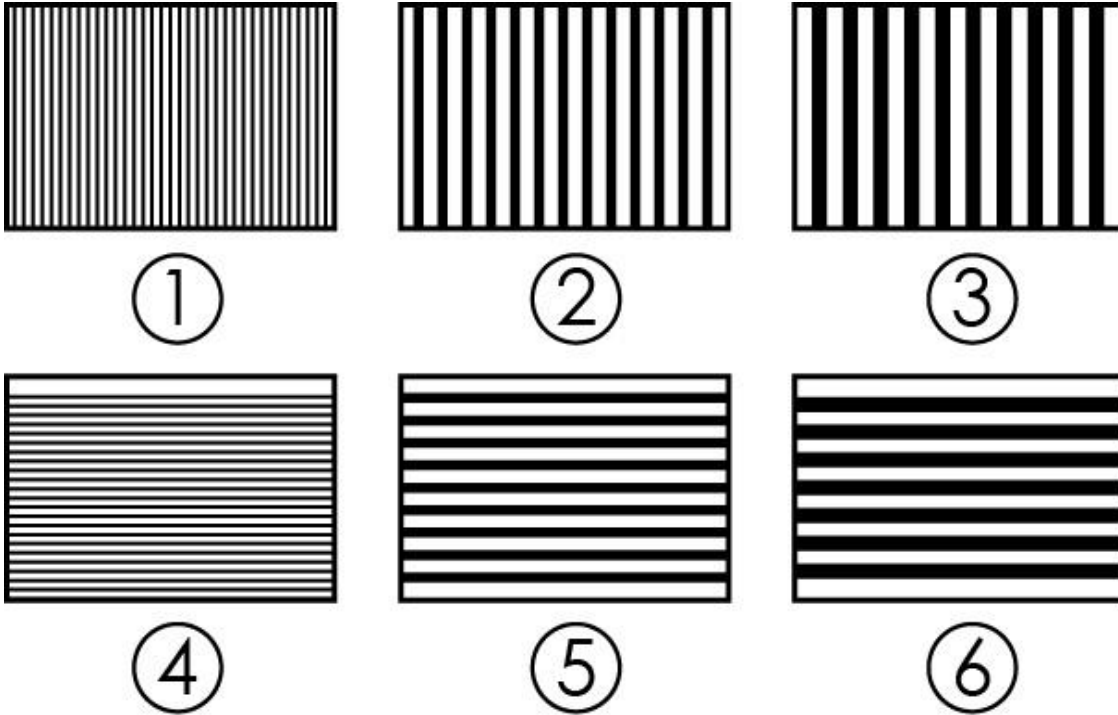
In a correctly adjusted monitor, each electron beam will strike only one set of color dots or stripes on the screen. If the red pattern is selected only this color should be visible; the presence of any other color is an indication that color purity needs adjustment.

The green pattern provides a purity check for three in-line tubes. In addition the pattern serves as a reference to locate any geometrical distortions in these picture tubes. In the in-line tubes, the guns are in a horizontal position and the green gun is located in the center.

Blue, as well as the complementary colors, are often used to check the color performance.

The other patterns (mainly RED) are used to ensure that there is no interference between the sound and chroma carrier. In addition to the primary and complementary colors 100% white can be selected as well as black pattern with color burst. Purity patterns are also used for measuring unwanted amplitude and phase modulation of the sub-carrier, AM and PM noise as it occurs with VCRs.

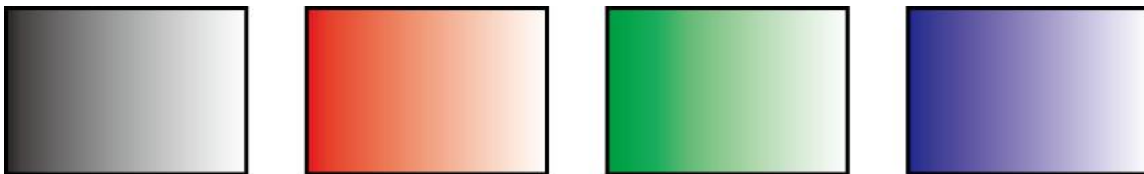
## Black/White Lines



The vertical patterns provide a quick way to check the color monitor's horizontal bandwidth and phase behavior. They help verify video amplifier operation and the display's color temperature. The horizontal pattern serves as a quick way to check of color monitor's vertical bandwidth and phase response. Like the vertical signals, they also are used to verify video amplifier bandwidth and display color temperature.

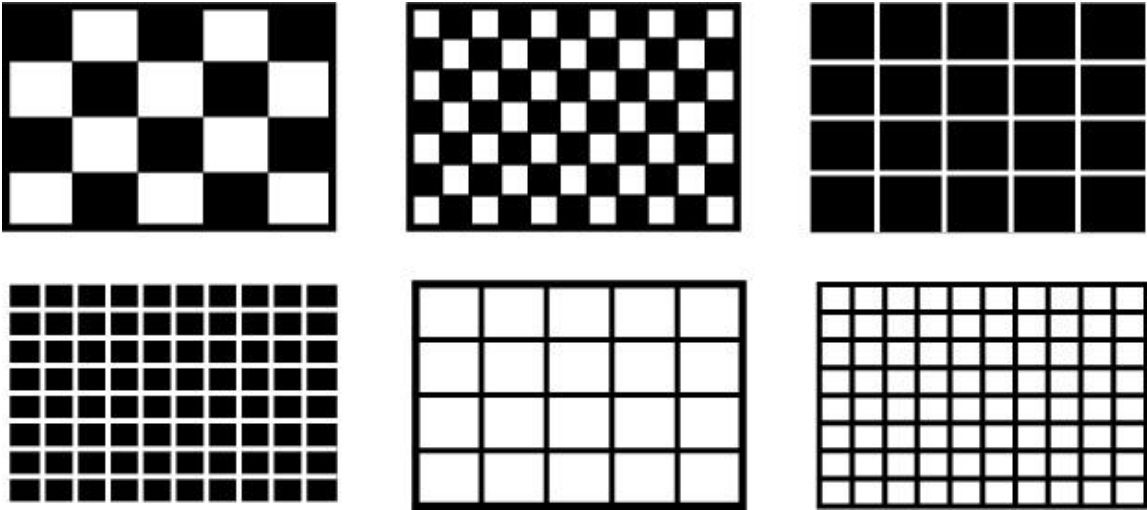
*Note: When the output resolution is 1080i, the patterns 4 , 5 and 6 are not supported.*

## Gradual



These signals check adjustment of the decoders, especially the video de-emphasis decoders. In a monitor, the chrominance signal should have the same amplitude in the active video portion of the signal.

## Grid



This pattern is mainly used for checking and aligning dynamic and corner convergence of TVs or monitors. *Note: When the output resolution is 1080i 50/60, the Grid patterns are not supported.*

## HDCP



This pattern is used to test DVI and HDMI monitors with HDCP capability. All DVI and HDMI options, including analyzer options are supported if the HDCP option is installed.

## Others



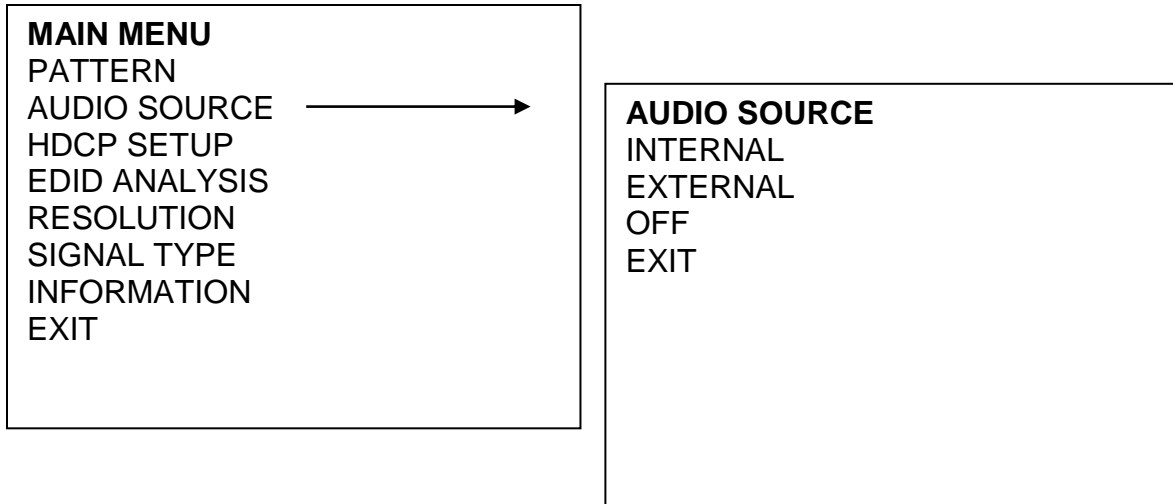
The H pattern is mainly used for checking aligning dynamic convergence and the Dot pattern is used for checking and adjusting the static convergence.

When using the Dot pattern, the screen should contain pure white dots. The presence of colored dots points to problems with focusing and convergence.

The Cross center is used to check and adjust the geometric distortion. The Cross center is ideal to center images on TV monitors and to facilitate alignment of picture height/picture width. It is also used to check deflection linearity and pincushion correction.

The Motion pattern is to check the correct digital video processing, especially Analog to Digital conversion. When Motion pattern is On, the HDCP function will be turned Off. When the user switches to other patterns, the HDCP function will be turned back On.

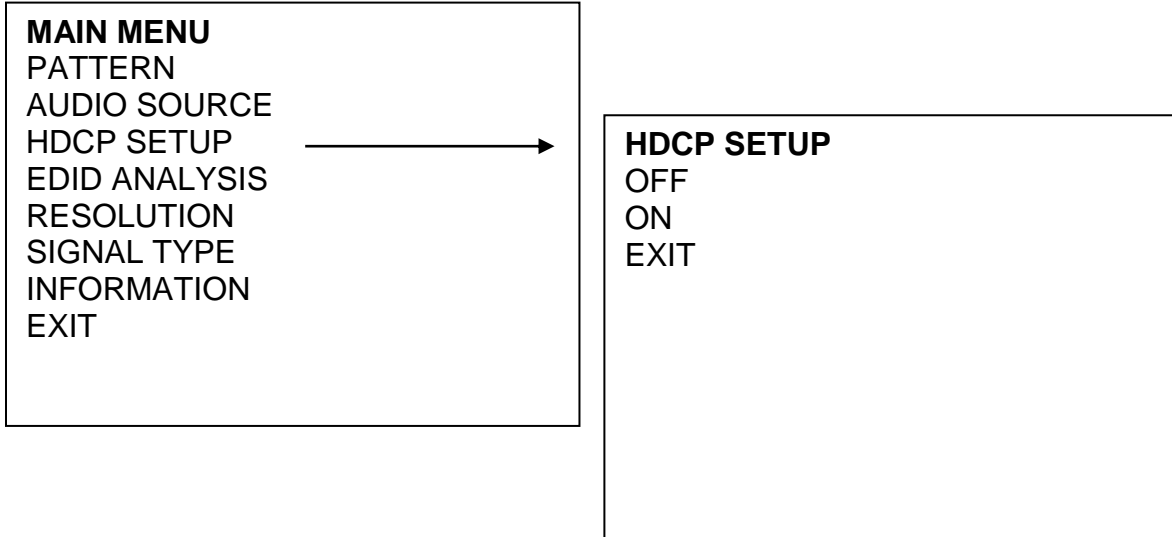
### 5.1.2 Audio Source



Press the Arrow Buttons to move the cursor and then press [Menu] to enter the audio source. After the audio source been selected press [Menu] to confirm the selection.

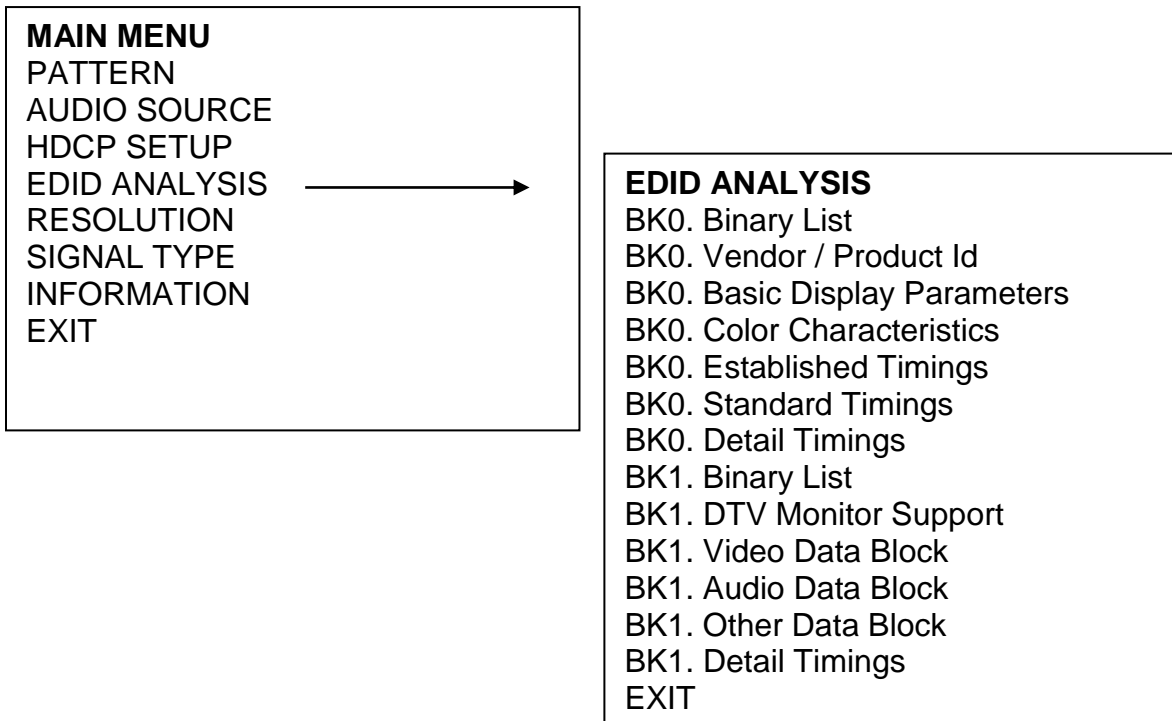
As with all the OSD Menu items, select the Exit line and press the Menu button to exit the Sub Menu and select Exit then press the Menu button from the Main Menu display to exit the OSD entirely.

### 5.1.3 HDCP SETUP



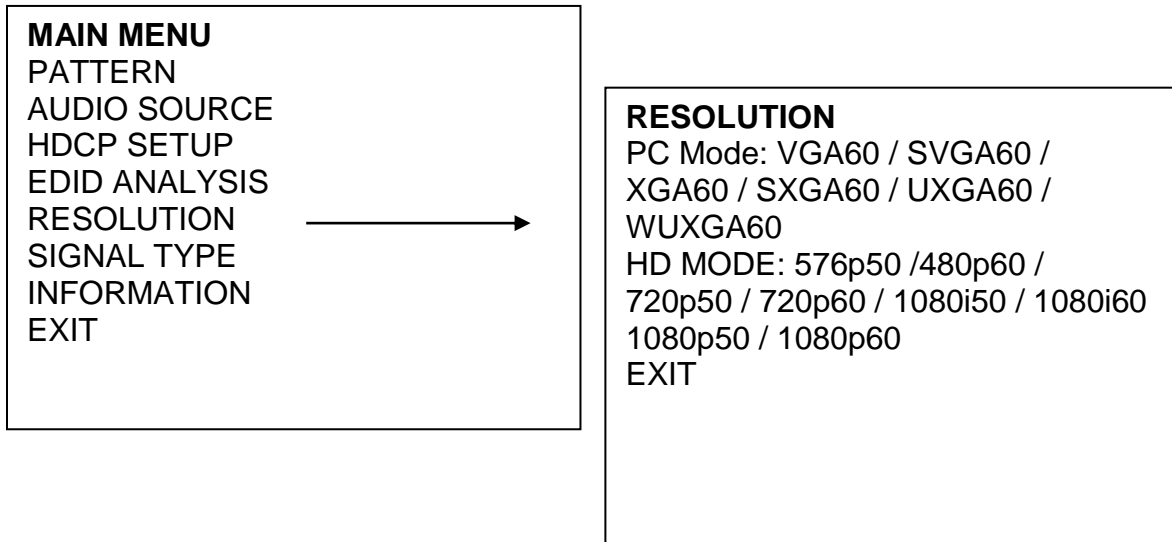
Press the arrow buttons to move the cursor and then press [Menu] to enter the HDCP Setup. After the HDCP setup been selected press [Menu] to confirm the selection. Press [Exit/Menu] to return to pervious page. Or press [Exit/Menu] twice to return to the Main menu.

### 5.1.4 EDID ANALYSIS



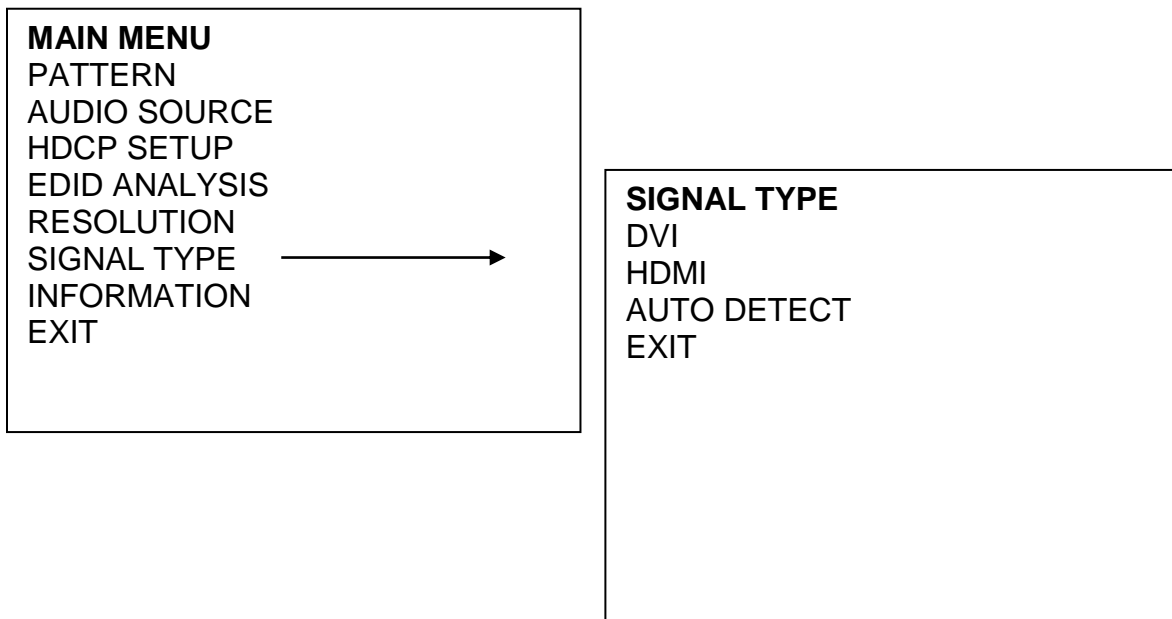
Press the arrow buttons to move the cursor and then press [Menu] to enter the EDID Analysis. After entering EDID analysis sub-menu, the user can move the cursor and press [Menu] to check the EDID information. Press [Exit/Menu] to return to pervious page. Or press [Exit/Menu] twice to return to the Main menu.

### 5.1.5 RESOLUTION



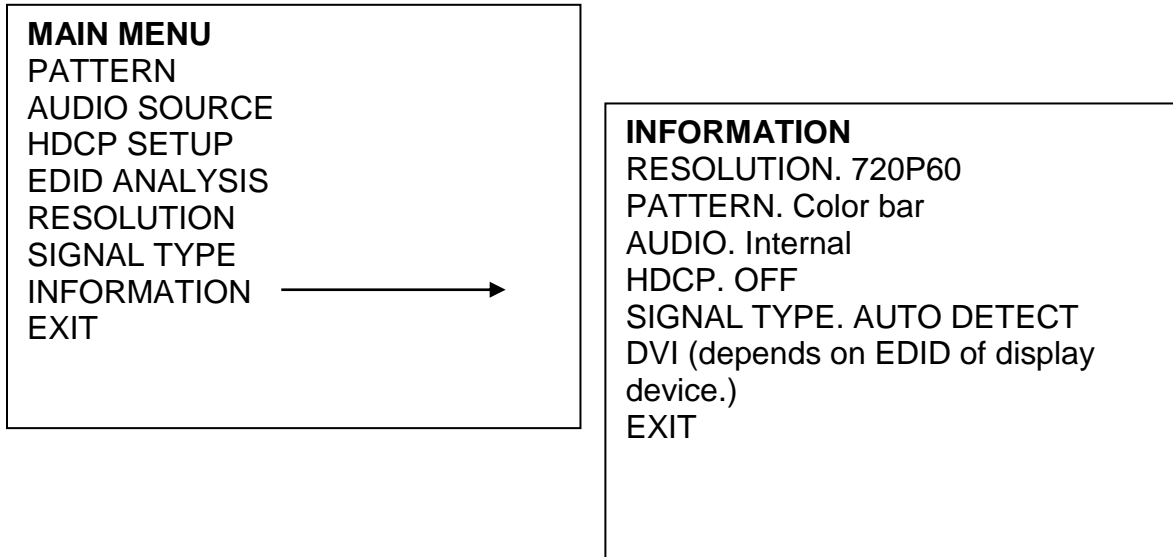
Press the arrow buttons to move the cursor and then press [Menu] to enter the resolution setup. After the resolution setup been selected press [Menu] to confirm the selection. Press [Exit/Menu] to return to pervious page or press [Exit/Menu] twice to return to the Main menu.

### 5.1.6 SIGNAL TYPE



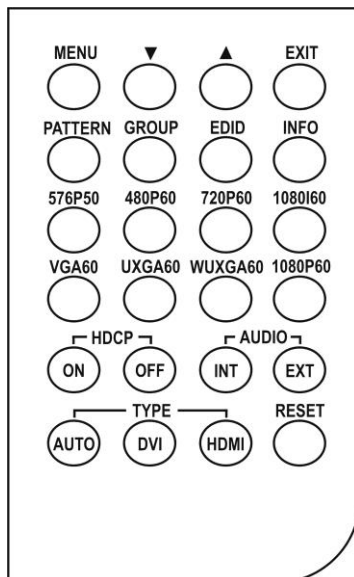
Press the arrow buttons to move the cursor and then press [Menu] to enter the signal type setup. After the signal type been selected press [Menu] to confirm the selection. Press [Exit/Menu] to return to pervious page or press [Exit/Menu] twice to return to the Main menu.

### 5.1.7 INFORMATION



Press the arrow buttons to move the cursor and then press [Menu] to show system information. The system default status is shown in the example. Press [Exit/Menu] to return to the Main menu. Note: After the user changes the system status using the other menu options, the information status display will change.

### 5.2 Operation of the 1T-TG-620 via Remote Control



Operation of the 1T-TG-620 is possible via an included Infrared Remote Control.

*Note: When you unpack the HDMI Test Generator, you may have to remove an insulator from the battery compartment of the remote in order for the remote to receive power. The battery compartment slides out from the bottom of the unit.*



On the top row of the remote control, the Front Panel OSD Menu buttons on the 1T-TG-620 are duplicated. Operation is the same as described above.

The Remote Control also allows direct access to many of the functions of the Test Generator by pressing the appropriate button on the remote.

For instance, you can press the Pattern button and then repeatedly press the Group button and directly access the pattern group you want. Pressing the up and down arrows will then allow you to move to the exact pattern you want and pressing the menu button will then select the pattern.

By the same token, you can directly access a particular resolution, signal type and so on. It is always possible to use the remote in the same manner as the front panel buttons if you like.

## **6.0 TROUBLESHOOTING**

In the event of problems, first make certain that the output cable is no more than 50 feet long (for signals to 1080i resolution) and is of the highest possible quality. Next, make certain that the Test Generator is receiving power.

Generally, aside from cable problems and lack of power, the next most likely area for problems is misuse or misunderstanding of the menu structure used in the On Screen Display (OSD). Please take the time to read the instructions for using the OSD Menu and if you become unsure of where you are in the menu structure, press the Reset Button on the Remote so that you have a known starting point.

If the 1080i output resolution does not work properly, please change to a different resolution. As noted in the Specifications (Section 2), this resolution may not be compatible with all displays.

After trying the above suggestions should the problem still persist, contact your dealer for additional suggestions before contacting tvONE. Should the dealer's technical personnel be unable to assist you, contact tvONE via our support website: <http://tvONE.crmdesk.com>. Create a technical support request on the site and our support team will respond within a short period of time.

## **7.0 LIMITED WARRANTY**

LIMITED WARRANTY – With the exceptions noted in the next paragraph, tvONE warrants the original purchaser that the equipment it manufactures or sells will be free from defects in materials and workmanship for a period of one year from the date of purchase. Should this product, in tvONE's opinion, prove defective within this warranty period, tvONE, at its option, will repair or replace this product without charge. Any defective parts replaced become the property of tvONE. This warranty does not apply to those products which have been damaged due to accident, unauthorized alterations, improper repair, modifications, inadequate

maintenance and care, or use in any manner for which the product was not originally intended.

Items integrated into tvONE products that are made by other manufacturers, notably computer hard drives and liquid crystal display panels, are limited to the term of the warranty offered by the respective manufacturers. Such specific warranties are available upon request to tvONE.

If repairs are necessary under this warranty policy, the original purchaser must obtain a Return Authorization Number from tvONE and return the product to a location designated by tvONE, freight prepaid. After repairs are complete, the product will be returned, freight prepaid. LIMITATIONS - All products sold are "as is" and the above Limited Warranty is in lieu of all other warranties for this product, expressed or implied, and is strictly limited to two years from the date of purchase. tvONE assumes no liability to distributors, resellers or end-users or any third parties for any loss of use, revenue or profit.

tvONE makes no other representation of warranty as to fitness for the purpose or merchantability or otherwise in respect of any of the products sold. The liability of tvONE with respect to any defective products will be limited to the repair or replacement of such products. In no event shall tvONE be responsible or liable for any damage arising from the use of such defective products whether such damages be direct, indirect, consequential or otherwise, and whether such damages are incurred by the reseller, end-user or any third party.

## **8.0 REGULATORY COMPLIANCE**

The 1T-TG-620 HDMI Test Generator has been tested for compliance with appropriate FCC and CE rules and regulations. The Power Adaptor/Supplies have been tested for compliance with appropriate UL, CUL, CE, PSE, GS Rules, Regulations and/or Guidelines. These Products and Power Adapters are RoHS Compliant.

## 9.0 CONTACT INFORMATION

Should you have questions or require assistance with this product in areas not covered by this manual, please contact tvONE at the appropriate location.

### **tvONE USA**

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End of Manual