

# advoli <sup>TM</sup>



## ADVOLI™ TB6 PERFORMANCE LIGHT INSTALLATION GUIDE

HDBaseT™ Certified Product

# INSTALLATION GUIDE

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# INTRODUCTION

Thank you for your support in our quest to innovate. We are proud to present the advoli™ TB6 Performance Light graphics card, our third HDBaseT™ certified graphics card and the ultimate entry-level six channel UHD graphics card for professional HDBaseT audiovisual installations.

The advoli™ TB6 Performance Light graphics card was designed with optimal flexibility and functionality. It is specifically designed to allow for a simpler and smarter way to do display walls, menu boards and similar audiovisual configurations in high resolution and over medium distances.

Most other graphics cards are limited to transmission of only audio and video signals, and the signals can only be transmitted over short distances with no ability to terminate cables during installation.

advoli™ TB6 Performance Light graphics card uses CAT 5e/6/7/+ cables to allow for greater cable functionality and flexibility. CAT cables can easily be terminated at installation, are cheaper to procure and allow for greater functionality, such as power over cable (optional), control signals and diagnostics in addition to audio and video.

Our technology combined with HDBaseT™ technology allow transmission of signals over a distance of 40 meters at UHD resolution (4K), and 70 meters at FHD resolution (1080P) over a single hop. With the addition of extenders the signal can be transmitted up to 8 hops, the equivalent distance of 320 meters at UHD resolution or 560 meters at FHD.

The advoli™ TB6 Performance Light graphics card is designed to utilise most six channel MXM modules that follow the MXM 3.1 specification, allowing for higher flexibility with scaling up or down the GPU based on need. The design is also optimised for the future and can be easily upgraded with new MXM modules, including Type A and Type B. For an updated list of approved MXM modules please visit our website: [www.advoli.com](http://www.advoli.com)

The fan sink is built to optimise cooling in tougher climates, dual fan cooling for redundancy and greater heat dispersion with pure aluminium heat sink protected by a metal casing.

We expect that our advoli™ TB6 Performance Light graphics card will find a good home with you!

With kind regards,  
The advoli™ team

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# ABOUT THIS GUIDE

This is the installation and setup guide for the successful operation of the advoli™ TB6 Performance Light graphics card.

+ Please make sure that you register your product by scanning the QR code attached to the advoli™ TB6 Performance Light graphics card. The QR code will lead you directly to our website to fill out the registration form. By registering your product you will receive faster support services.

**Warning:**

Read all the instructions in this document and heed all warnings before installing product. Keep this document and its instructions and warnings for future reference. Attach product securely with screws and fasteners to ensure continuous bonding between product and chassis. Product should only be used with other products that have passed similar or higher regulatory approval.

# SYSTEM REQUIREMENTS

## UHD Resolution

To operate the advoli™ TB6 Performance Light HDBaseT™ certified graphics card with UHD resolution x 6 displays showing 6 independent videos you will need at a minimum, a system with the following specifications:

**+ Operating System:**

Windows 10 – 64-Bit Edition  
Windows 7 – 32-Bit Edition  
Windows 7 – 64-Bit Edition  
Linux x86\_64

**+ Motherboard:**

PCI Express 3.1 compliant motherboard with a dual-width x16 graphics slot and that is compatible with the below components.

**+ System Memory:**

2 x 4 GB system memory.

**+ Central Processing Unit:**

Intel® i7-6700K or better

**+ MXM Module:**

AMD® E9550 (Included with your purchase)

**+ USB or Internet Connection:**

For installation of MXM drivers

**+ Hard Drive:**

Enough free space to run the OS and to store the content, with additional 20% free space or 1GB whichever is greater. Please note that 4K videos are large in file size and therefore require large storage space. We recommend SSD hard drive with fast read speed, with minimum 6 Gb/s, read 560 MB/s, write 520 MB/s

**+ System Power Supply:**

Minimum 500 W with one unused 6-pin 12V PCI Express power connector per TB6 Performance Light graphics card.

**+ Software:**

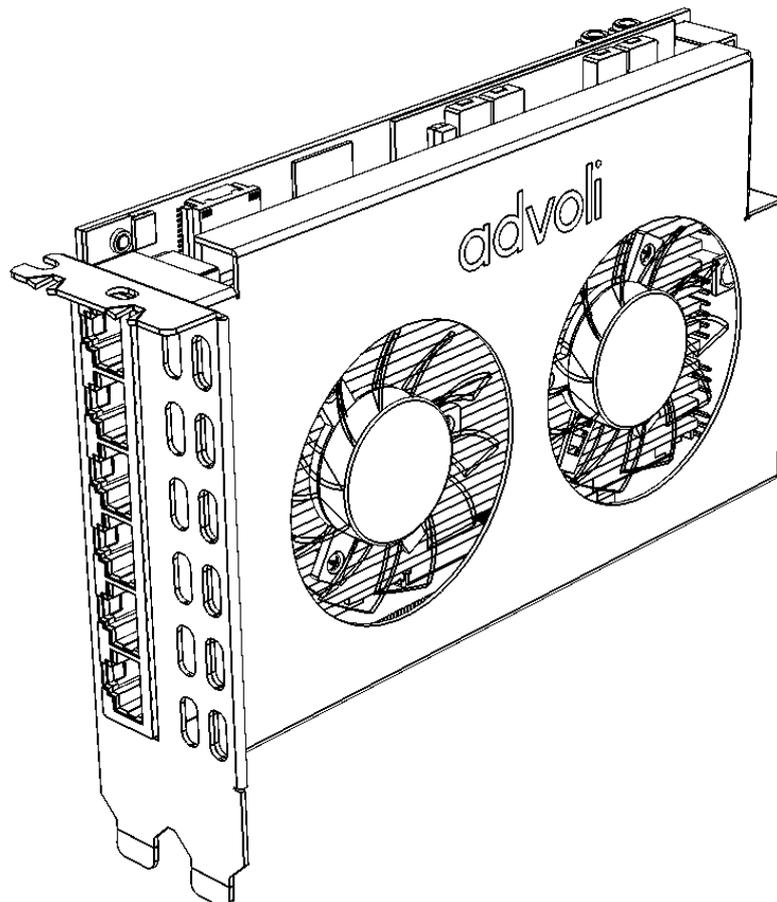
VLC player or equivalent video player that is low in processor consumption to drive video content

# UNPACKING

## EQUIPMENT LIST

- + 1 x USB 9-Pin Cable
- + 1 x USB 3.0 to 2.0 Converter Card
- + 1x advoli™ TB6 Performance Light graphics card, with MXM module and Fan Sink + Casing
- + 1 x Optional Power over Cable jumper
- + **OPTIONAL:** 6 x RB1 Standard Receivers **IF** kit option has been purchased
- + **Quick Start Guide**
  - Quick guide on installing advoli™ TB6 Performance Light graphics card
  - Link to advoli™ website for drivers.
  - Link to advoli™ website for troubleshooting.
  - Link to advoli™ website for detailed manual.

Note: If any of the above items are missing from the box or damaged, please contact your point of purchase.



# HARDWARE INSTALLATION

Installing the advoli™ TB6 Performance Light graphics card is simple, however it is important that you follow all the safety instructions outlined in this document to ensure that you, your computer and the graphics card are not damaged. Improper use of electronic products may cause serious material and personal damage.

The hardware needs to be properly installed before the driver is installed.

## Safety Instructions

- + Ensure that your computer system and all of its components are completely disconnected from any power source before you proceed to install the advoli™ TB6 Performance Light graphics card.
- + As with the majority of electronic products that have exposed circuitry and that are not labeled as water proof - do not use the advoli™ TB6 Performance Light graphics card near water or liquids or with wet hands/body.
- + Ensure that the graphic card is not placed on surfaces or in an environment that inhibits air flow or blocks ventilation slots and fans. It is important that the graphic card has proper air flow to reduce the temperature of the GPU and other components and prevent over heating.
- + Avoid placing the graphics card or its computer in an environment or close to a source with significant heat, dust or humidity as it will destroy the advoli™ TB6 Performance Light graphics card.
- + Keep the product on a safe, stable and secure surface before installing inside computer. Damage to this product will void warranty and will most likely result in it failing.
- + No item should rest on the graphics card or any of its components, such as power cord, fans or other cables. Ensure that non of the peripherals for your computer or computer itself is placed in such a way that the computer is damaged. A damaged computer will most likely damage its internal components also the advoli™ TB6 Performance Light graphics card.
- + Ensure that you discharge any static electricity by touching a grounded surface before installing or touching the graphics card. Static electricity can damage components on the graphics card.
- + Ensure that you do not put pressure on or lift the advoli™ TB6 Performance Light graphics card by the fans. Do not touch the fans when they are operating.
- + If you choose to add Power over Cable (PoC), ensure that you read carefully the section dedicated to it in this document and especially the warning!

## Before you Begin

Ensure that your motherboard has a free PCI Express 3.1 x 16 graphics card slot (dual width) and that it is not already in use.

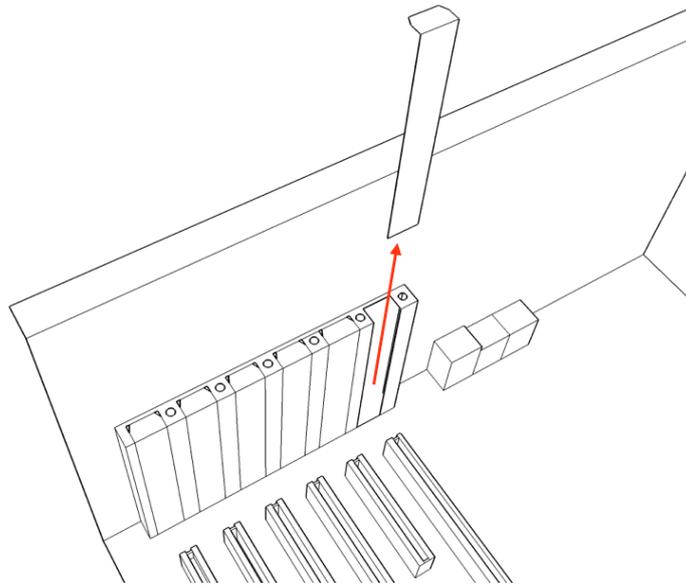
Ensure that the CAT cables you have purchased are not stranded, but solid-core. Stranded CAT cables will heavily reduce the cable distance to below 10 meters. Please follow the cable guide in this document.

There are many different types of motherboards and therefore this guide will not be sufficient to cover how to install the advoli™ TB6 Performance Light graphics card for all the different types of computer systems. If the explanations that follow do not match with your computer system, please consult the documentation that came with your computer system before proceeding to install.

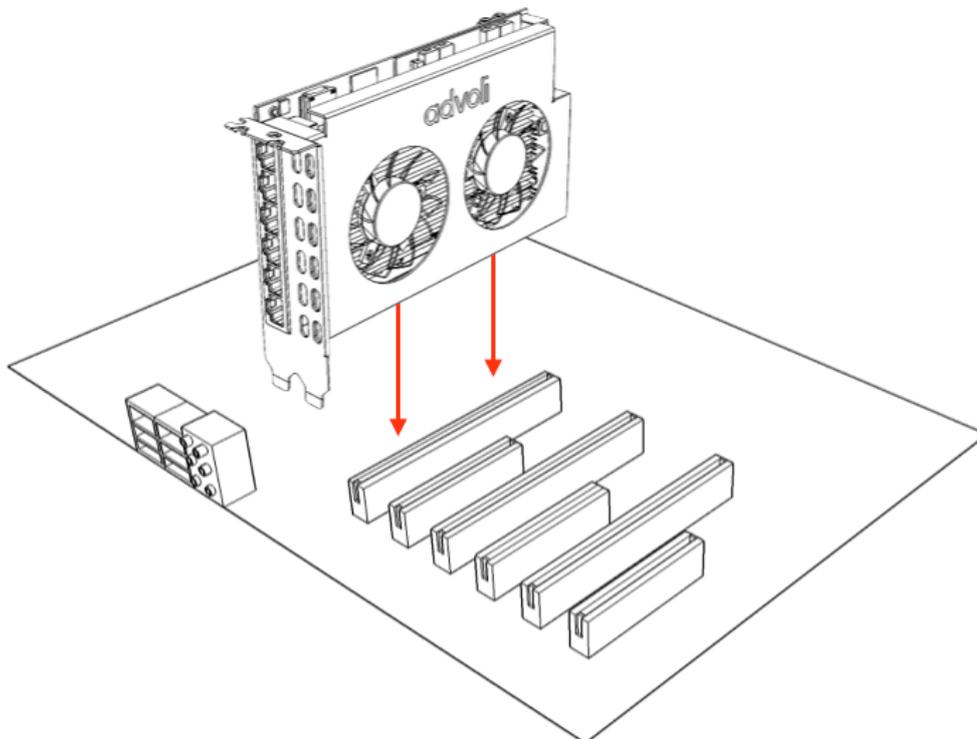
## Installation Steps

1. Please re-read the safety instructions in this document and follow all of its advice before proceeding to install the graphics card. Make sure you remove any static electricity on your body before touching any electronic component.
2. Turn off and unplug the power cord to your computer and all of its peripherals (monitor, speakers etc...) that may transfer electricity to the computer, you and graphics card.

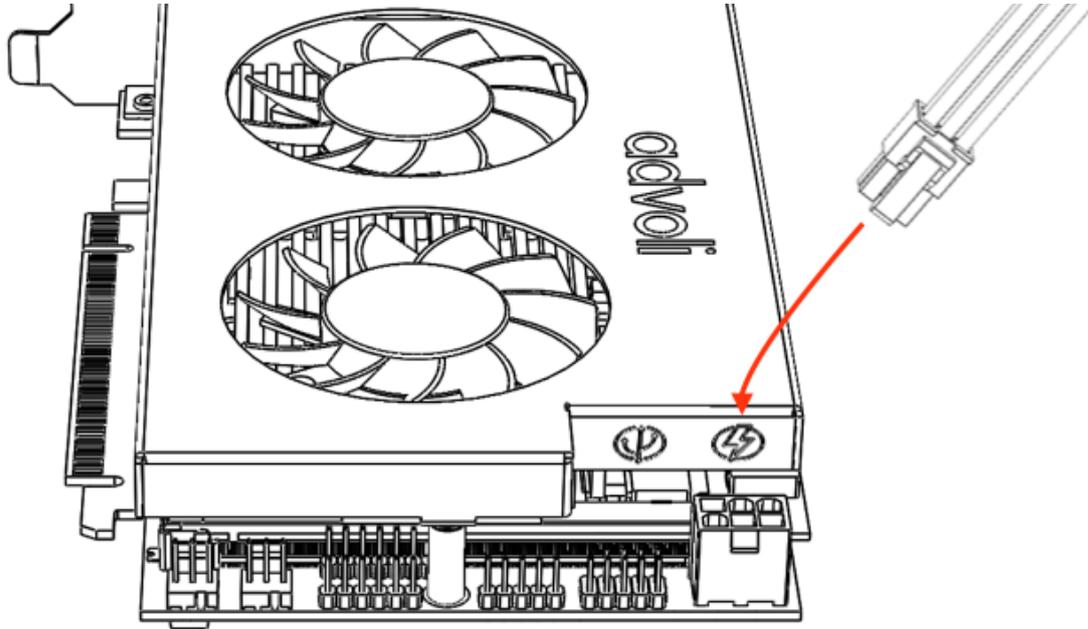
3. Open the computer casing/panel so that you have direct access to the motherboard.  
If your computer has been operating immediately before you opened the panel, wait touching any component inside your computer until the system is cooled down properly.  
When the computer is properly cooled down, remove any existing graphics cards if there are any.
4. Remove two expansion slot cover if there are no graphics card already installed. If a previous graphics card has been installed, it is highly recommended that you remove all previous drivers and start with a fresh installation of your operating system. Other graphics card drivers can interfere with the TB6 Performance Light graphics card driver causing it from working effectively and degrade GPU performance. You may need to reset CMOS on your motherboard in order for your system to accept a new card. Please consult the documentation that came with your computer system to learn how to reset CMOS.



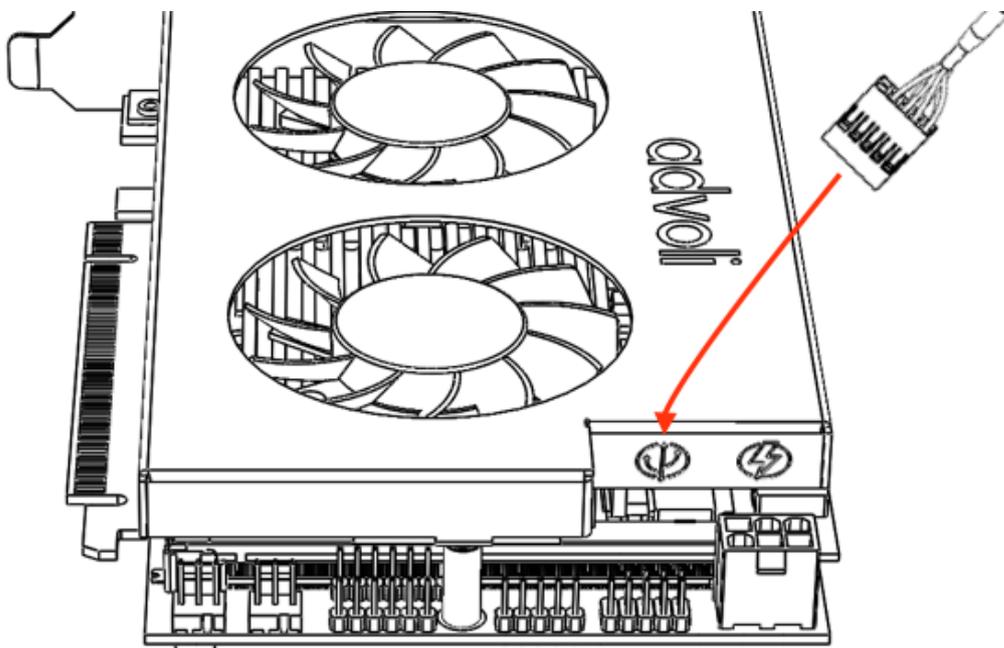
5. Carefully insert the advoli™ TB6 Performance Light graphics card in the primary PCI express x16 slot. If you have multiple PCI express x16 expansion slots ensure you are using the primary. Please consult the documentation for your motherboard to ensure you have selected the right slot. If you do not use the primary slot, the graphics card may not be recognised. You may also select the correct PCI express x16 slot via bios.



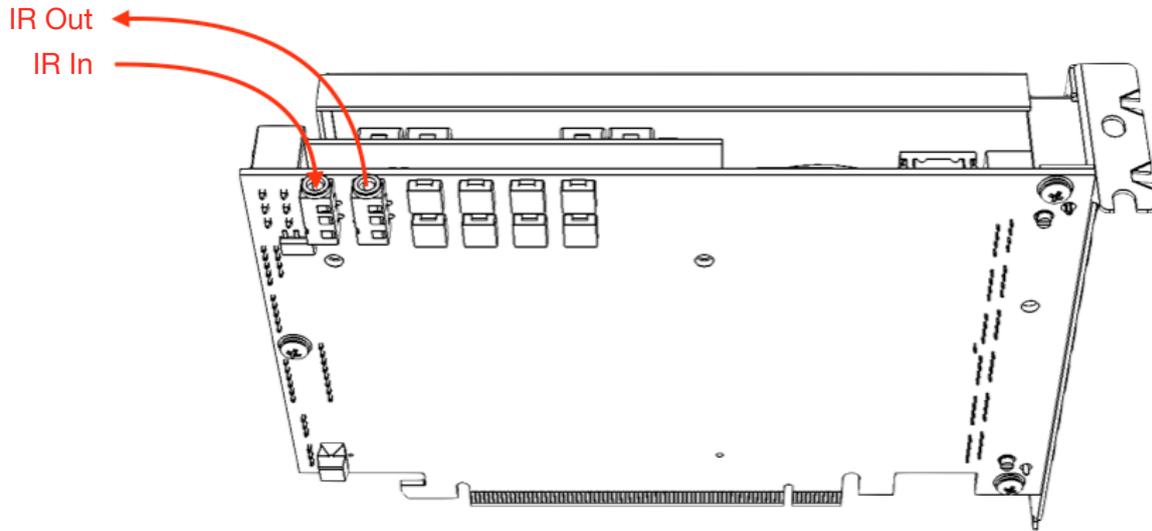
6. Ensure that the advoli™ TB6 Performance Light graphics card is firmly secured in the PCI express x16 slot and that the bracket of the graphics card is firmly screwed to the computer chassis.
7. Connect one 6-pin PCI Express auxiliary power connector to the top right edge of the advoli™ TB6 Performance Light graphics card where there is a power connector. If the connector does not fit, please do not force the connector, but ensure that you are properly matching the connector with the socket on the graphics card.



8. Connect one 9-pin cable that comes with the advoli™ TB6 Performance Light graphics card to the to the top right edge of the advoli™ TB6 Performance Light graphics card where you see the 9-pin connector. If the connector does not fit, please do not force the connector, but ensure that you are properly matching the connector with the pins on the graphics card. The other side of the 9-pin should be connected to your motherboard USB 9-pin header connector. If there is no 9-pin USB 2.0 header connector on your motherboard, but there is a 19-pin USB 3.0 header, please use the USB adapter card that comes with your advoli™ TB6 Performance Light graphics card.

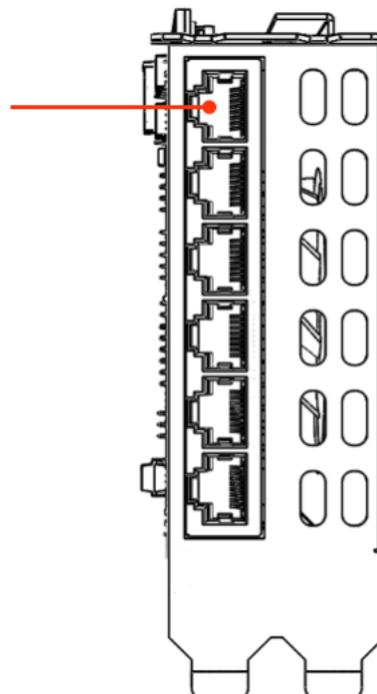


9. You may choose to connect an IR source to the advoli™ TB6 Performance Light graphics card in the 'IR in' socket, or an IR emitter to the 'IR out' if you plan on using the pass through capabilities of the graphics card. We recommend using advoli IR Transmitter and IR Receiver accessories for full compatibility.



10. Close the computer casing/panel once you have completed the installation of the advoli™ TB6 Performance Light graphics card.
11. It is advised to use an already existing HDMI/VGA/DisplayPort connector on the motherboard with a paired monitor to setup the driver for the graphics cards. If you do not setup the driver before use of the graphics card, it may not work on some motherboards until you have done so. Please ensure you install the driver before proceeding to step 12 below.
12. You will need to have CAT 5e/6/7/+ cables in at least one of the six RJ45 sockets with a HDBaseT™ certified display/projector or HDBaseT™ certified receiver connected to a display in order to use the HDBaseT™ certified advoli™ TB6 Performance Light graphics card. You may use all six RJ45 sockets paired with their own display respectively. It is advised to use HDBaseT™ certified receivers to ensure compatibility. We highly recommend the advoli™ HDBaseT RB1 Standard receiver for guaranteed compatibility. Please refer to our cable guide in this document for best performance.

**HDBaseT™ Output**  
 Each RJ45 port can deliver 4K resolution video, audio, controls (RS232, IR, CEC), 3Dsync and receive diagnostics.



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# DRIVER INSTALLATION

After the hardware installation, it is important to follow the process to install the correct drivers. advoli™ TB6 Performance Light graphics card is designed to work with a multitude of MXM modules from different manufacturers, this includes Type A and Type B MXM modules. It is important to understand that the below process is the driver installation instruction for AMD E9550 MXM module. Other modules may need other drivers. Please visit our website [www.advoli.com/drivers/](http://www.advoli.com/drivers/) for instructions on how to install drivers for other modules.

1. Go to: [www.advoli.com/drivers/](http://www.advoli.com/drivers/) to download driver for your operating system
2. Ensure that any other existing graphics card drivers are uninstalled before proceeding with installing the driver at the above URL. We highly recommend starting with a fresh installation of your operating system.
3. Double-click the downloaded file and select installation destination folder.
4. Choose default selection for drivers (recommended) and click install
5. The drivers will be installed, please note that displays may flicker multiple times, and if you have multiple displays they may switch off for a while, come back on and flicker some more. Be patient and let the installation and setup process finish.
6. After the installation is complete, click 'restart now'. Restarting the computer is important for the installation to complete and for you to be able to use the advoli™ TB6 Performance Light graphics card.

Please note: The current driver is compatible with the AMD E9550 MXM module and the advoli™ TB6 Performance Light graphics card. If you choose to use a newer or alternative driver installation executable file, then the advoli™ TB6 Performance Light graphics card may not work properly.

## Quick Troubleshoot:

- A. If the flickering mentioned above does not stop after installation of the driver then it is highly likely you have installed the wrong driver - verify the MXM module you have purchased, uninstall the driver and download the correct driver for your card and start the installation process from the beginning.
- B. If you install the driver in an existing system and when booting you get no video after installing the driver, try to reset the CMOS on your motherboard. Please refer to the documentation that came with your motherboard to learn how.
- C. Verify that you are using the correct primary PCIe slot.
- D. Verify that BIOS has enabled the use of GPUs using the PCIe slot. Some motherboard manufacturers will only allow the use of pre-approved and proprietary GPUs.

# CONFIGURING AUDIO

To ensure you do not experience audio issues, it is important that you have the correct audio settings to allow audio over LAN.

## Enabling Audio over LAN

When you have connected your displays with CAT cables to the HDBase™ certified advoli™ TB6 Performance Light graphics card in one end and a HDBase™ certified display or HDBase™ certified receiver in the other - we recommend our advoli™ HDBaseT RA1 Performance receiver for guaranteed compatibility - you may need to verify that your audio output is enabled.

For Windows 8 and 10

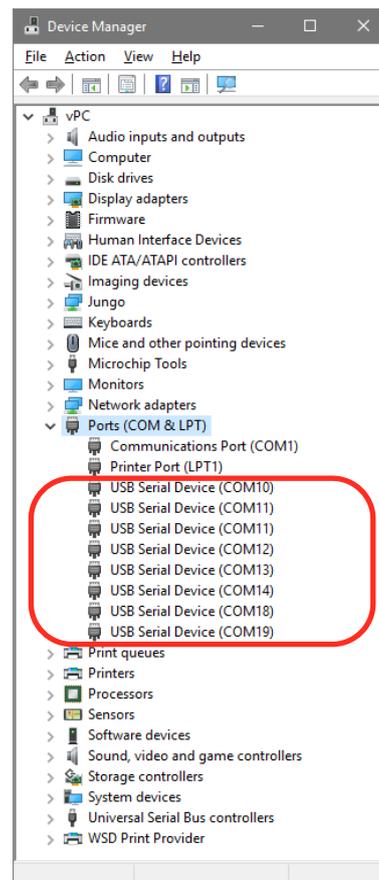
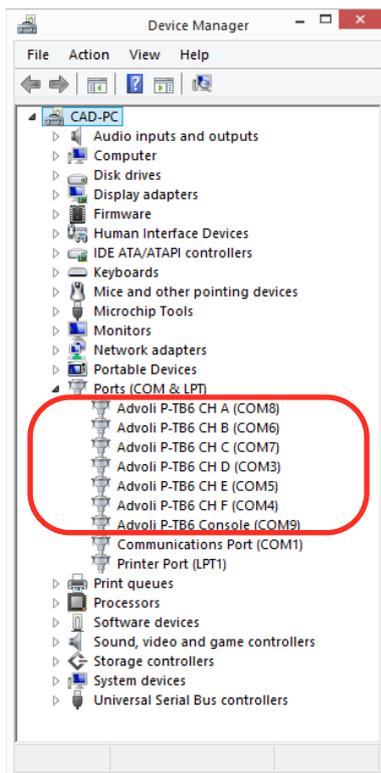
1. Right click Start OR Press Windows key + X
2. In the menu that opens, click Control Panel
3. New window will open, in the top right select view by (large icons)
4. Find the icon that says sound, and click it
5. New sound window should open, select the playback tab in the new sound window
6. In the playback tab, select the display you want to be the default, after selecting the display to be the default audio display, select set default and click apply.

You have now selected the display that will be the default audio channel and your advoli™ TB6 Performance Light graphics card is ready to be used. If you would like to have audio go out on more than one channel, certain operating systems may limit you to only two outputs. Do not worry there are third party software, including freeware available to allow audio to go out on all six channels. The advoli™ TB6 Performance Light graphics card is designed to allow six channels with audio.

# SERIAL PORTS AND CONSOLE USER GUIDE

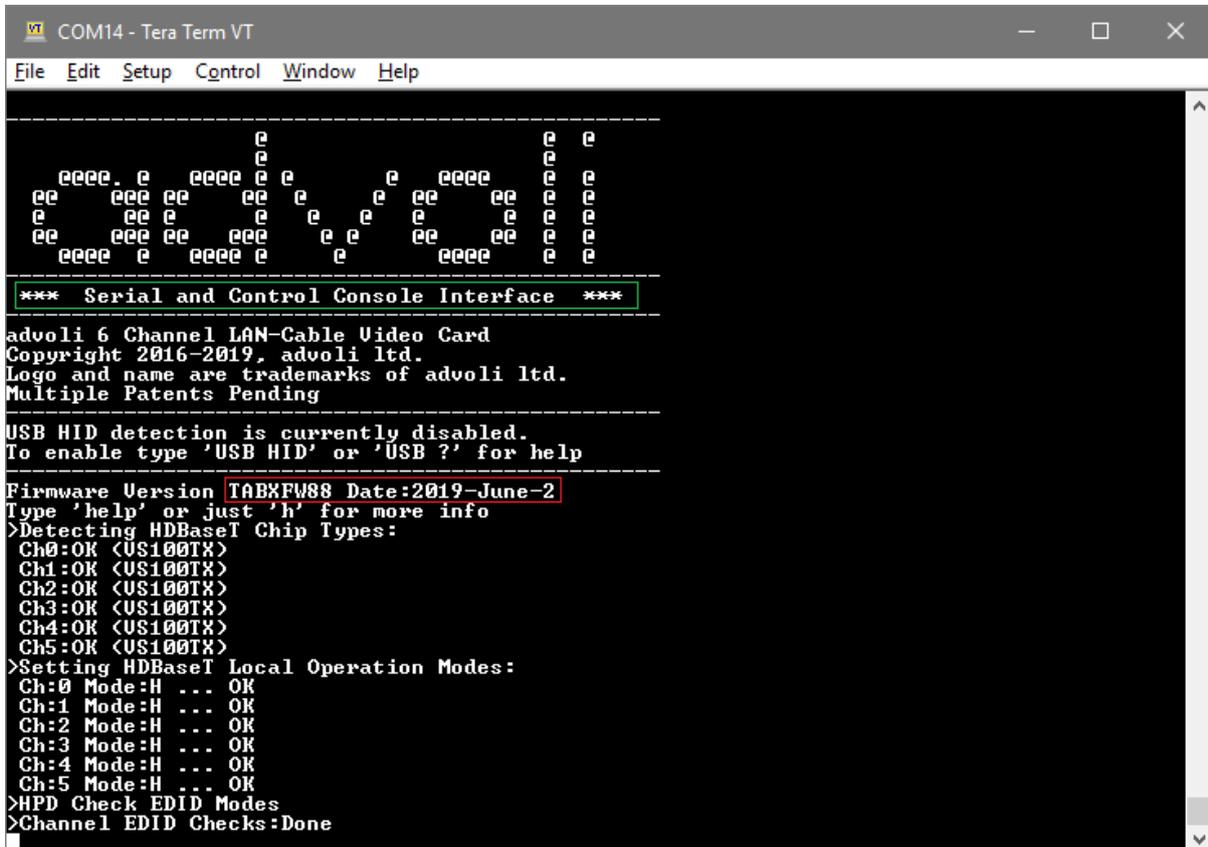
1. Ensure that you have followed the complete hardware installation process in the previous section of this document.
2. Verify that the 9-pin cable is plugged into the advoli™ TB6 Performance Light graphics card and the motherboard. If not, please go back to the hardware installation process, followed by driver installation and audio configuration. Note that if you use more than one advoli™ graphics card in one system, you need to install one USB-cable for each card.
3. Once your advoli™ TB6 Performance Light graphics card has been properly installed and is functioning, Windows Device Manager will present one COM port per physical HDBaseT™ channel, plus two additional COM ports for the consoles. There are two consoles, one for Serial and Control and the other for IR and CEC control. An example of this is shown in the picture below as COM3-COM9. There will be one COM port for each of the six channels of the advoli™ TB6 Performance Light graphics card.

## Windows 8 (inf-file required)



The above images are screenshots from Windows 8 and Windows 10 for illustration and educational purposes only. Please note that the Device Manager or equivalent name on other operating systems and versions of Windows may display the COM ports differently. Versions before Windows 8 may work, but are not supported.

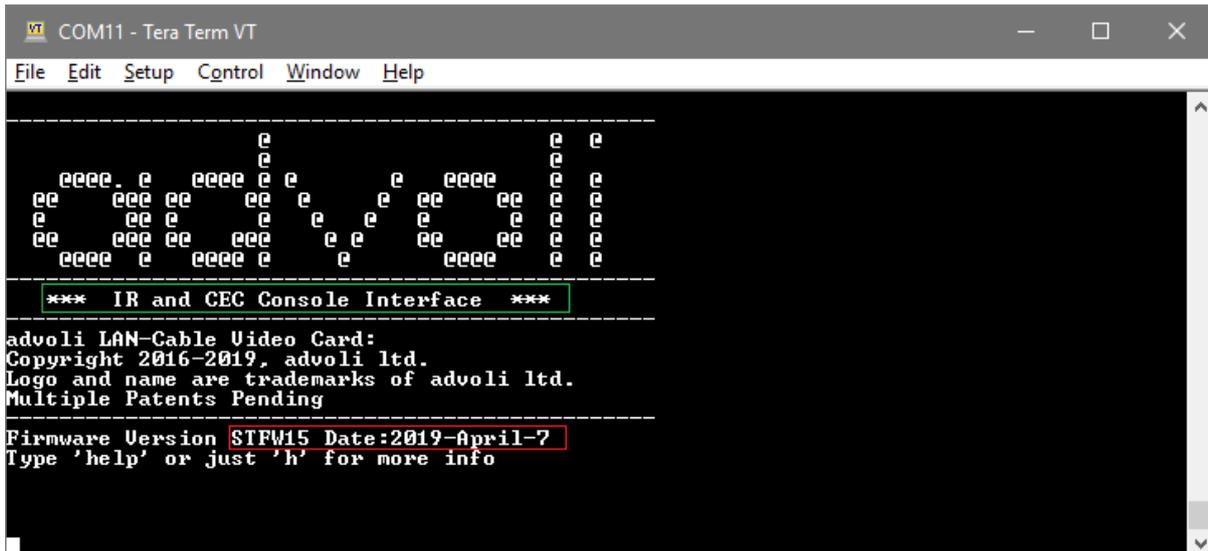
- Ensure you have a terminal program installed. An example of an open source terminal program is TeraTerm. Other terminal programs may be used to configure the advoli™ TB6 Performance Light graphics card console. Once you have a terminal program installed there will be two consoles. The below images show the two consoles, please see green box for the console type and red box for the firmware version. Windows 10 already comes with Virtual COM port drivers for CDC devices, unfortunately the ports may get numbered in a non-sequential order, thus you need to open each port in Tera Term or until you find the console port you are looking for. After you have found the right port you can choose “Menu | Setup | Save Setup” so that the chosen port opens every time as the default COM port number.



```

COM14 - Tera Term VT
File Edit Setup Control Window Help
-----
          e
          e
    eeee. e  eeee e e  e  eeee ee  e e
    ee  ee ee  ee  e e  e  ee  ee  e e
    e   ee e   e   e e  e   ee  ee  e e
    ee  ee ee  ee  ee  e e  ee  ee  e e
    eeee e   eeee e   e   eeee  e   e

*** Serial and Control Console Interface ***
-----
advoli 6 Channel LAN-Cable Video Card
Copyright 2016-2019, advoli ltd.
Logo and name are trademarks of advoli ltd.
Multiple Patents Pending
-----
USB HID detection is currently disabled.
To enable type 'USB HID' or 'USB ?' for help
-----
Firmware Version TABXFW88 Date:2019-June-2
Type 'help' or just 'h' for more info
>Detecting HDBaseI Chip Types:
Ch0:OK (US100TX)
Ch1:OK (US100TX)
Ch2:OK (US100TX)
Ch3:OK (US100TX)
Ch4:OK (US100TX)
Ch5:OK (US100TX)
>Setting HDBaseI Local Operation Modes:
Ch:0 Mode:H ... OK
Ch:1 Mode:H ... OK
Ch:2 Mode:H ... OK
Ch:3 Mode:H ... OK
Ch:4 Mode:H ... OK
Ch:5 Mode:H ... OK
>HPD Check EDID Modes
>Channel EDID Checks:Done
  
```



```

COM11 - Tera Term VT
File Edit Setup Control Window Help
-----
          e
          e
    eeee. e  eeee e e  e  eeee ee  e e
    ee  ee ee  ee  e e  e  ee  ee  e e
    e   ee e   e   e e  e   ee  ee  e e
    ee  ee ee  ee  ee  e e  ee  ee  e e
    eeee e   eeee e   e   eeee  e   e

*** IR and CEC Console Interface ***
-----
advoli LAN-Cable Video Card:
Copyright 2016-2019, advoli ltd.
Logo and name are trademarks of advoli ltd.
Multiple Patents Pending
-----
Firmware Version $IFW15 Date:2019-April-7
Type 'help' or just 'h' for more info
  
```

These above images of the consoles are using a program Tera Term VT which is free to download and use. While other terminal programs can be used, advoli recommends using this program as it has shown best in compatibility and best in supporting hot-swap and disconnects of USB devices.

# USING THE CONTROL CONSOLE

1. Ensure you have a terminal program installed. An example of an open source terminal program is TeraTerm. Other terminal programs may be used to configure the advoli™ TB6 Performance Light graphics card console.
2. The advoli™ TB6 Performance Light graphics card uses a Universal Serial COM port that also works under most other operating systems. The port is virtual, so any port setting and speed is supported.
3. Open the Serial and Control Console with the terminal program and type 'help' or 'h' to display the help-menu as shown in the below picture:

```

COM14 - Tera Term VT
File Edit Setup Control Window Help
advoli Help Menu. Capitals can be used as single letter commands.
-----
Help      : this help menu
USB       : Configure USB. 'USB ?' for more details
events    : show system events in this console
Info      : current feature settings info
Pwr       : display voltage and currents
diag      : start diagnostics
dc        : DC-DC diagnostics
Ual       : Ualens Diagnostics and Cable Length
Mode      : read/set HDBaseT mode
Cqa       : Cable quality analysis
Ber       : Bit error rate
Fan       : display or set fan duty cycle [0-100%]
Temp      : displays the temperature sensor readings
poc       : display power on cable or set [on] or [off]
Mxm       : MXM type
Sis       : MXM SIS (System Information Structure)
com       : COM port/UART status
Num       : Show COM port Number on Uirtual COM ports
default   : load default factory settings
reset     : reset card (might require system restart)
Dump      : dump BootLog (c:clear, d:debug, e:exceptions)
Edid      : EDID show info
Auto      : EDID Auto Mode
Lock      : EDID Lock Mode
GCM       : EDID GCM (Graphics Card Mode)
restart   : restart EDID detection
debug     : turn on showing debug messages
fwupdate  : force entering Boot Loader so FW can be updated
pcireset  : issue PCI-bus RESET# to the PC
pciwake   : issue PCI-bus WAKE# to the PC
Test      : start diagnostic self test
lan       : LAN controller info
Rcv       : Receiver Diagnostics
XYZ       : Receiver Accelerometer Info
pOe       : Display PoE info
  
```

4. **WARNING:** Be aware, many of the commands in the advoli™ graphics card console are for advanced users, and should generally not be used by end users as it may render your product non-functioning. This document describes the most used and useful commands for the advoli™ graphics cards that are safe to use for general users. Any other command not explicitly listed in this document under the heading 'safe commands', but may be shown in the images in this document or are available through the console at time of use, should not be used. If you choose to use the additional advanced commands, you do so at your own risk and you assume all responsibility for any consequence arising from such action.

**NOTE:** all commands in the advoli™ graphics card console are non-case-sensitive, so you can use and mix upper and lower case characters.

### 5. Reset To Factory Settings:

Should you make a mistake using some of the commands, and would like to reset the card to factory settings, there are two ways to do so, both having the same function:

- please press and hold the button located between the two IR ports top left corner at the back of the card for at least one second while standby power is given. **WARNING:** Please make sure you are careful not to touch any other exposed components on the card as the current can be dangerous to your health.
- type command 'default'. This will restore factory settings and reboot the card firmware.

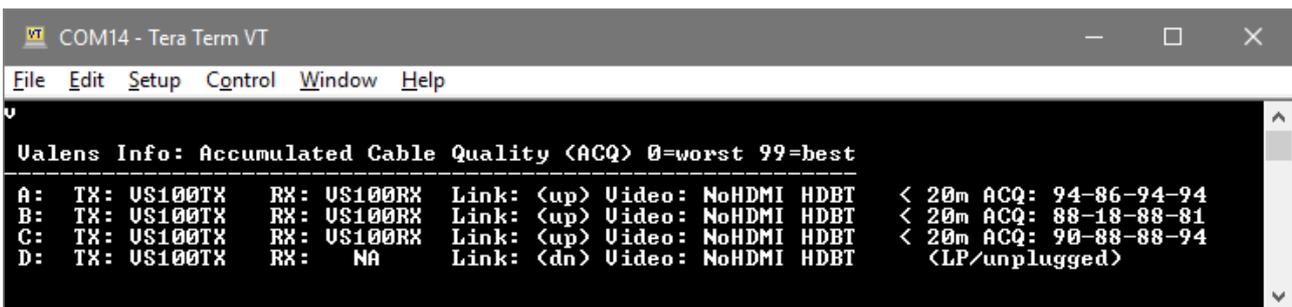
### Safe Commands:

+ **Information:** Type 'info' or 'i'

This command shows the status and current configuration of the advoli™ TB6 Performance Light graphics card, and is particularly useful when trying to determine which card and features your card has.

+ **Valens Information:** Type 'val' or 'v'

This command shows the type of Valens HDBaseT chips for transmitter side (TX) and receiver side (RX), the link and video status, and the cable connection status for all channels. It also shows the cable length and Accumulated Cable Quality (ACQ) for each channel and CAT cable pair where 99-99-99-99 is the best result possible. The CQA is continuously monitored and sampled and this command shows the worst values accumulated over time.



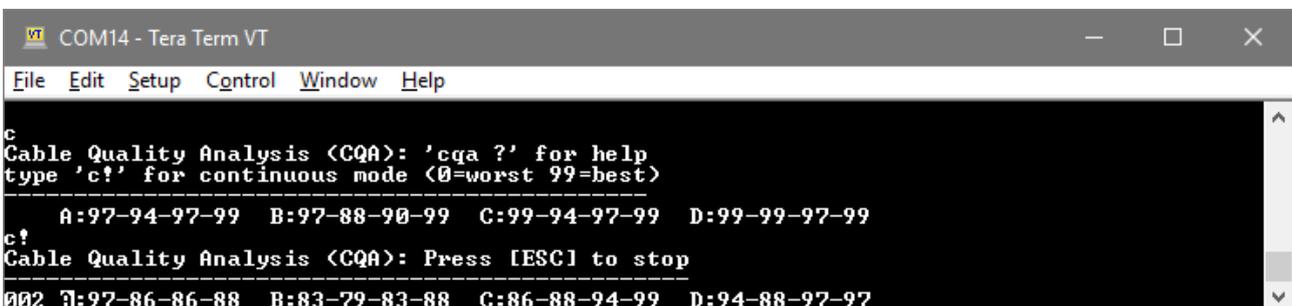
```

COM14 - Tera Term VT
File Edit Setup Control Window Help
v
Valens Info: Accumulated Cable Quality (ACQ) 0=worst 99=best
-----
A: TX: US100TX  RX: US100RX  Link: <up> Video: NoHDMI HDBT  < 20m ACQ: 94-86-94-94
B: TX: US100TX  RX: US100RX  Link: <up> Video: NoHDMI HDBT  < 20m ACQ: 88-18-88-81
C: TX: US100TX  RX: US100RX  Link: <up> Video: NoHDMI HDBT  < 20m ACQ: 90-88-88-94
D: TX: US100TX  RX: NA       Link: <dn> Video: NoHDMI HDBT  <LP/unplugged>
  
```

The picture is using a 4-channel card as example. If you have a 6-channel card, channels A-F will be displayed.

+ **Cable Quality Analysis:** Type 'CQA' or 'c' (for continuous display of real time samples type 'c !')

This command clears the CQA measurement history and starts a fresh set of samples over several seconds. This is particularly useful when troubleshooting installation and to see cable quality in near real time. A disconnected channel or a channel with no link is displayed as ..-.-.-..

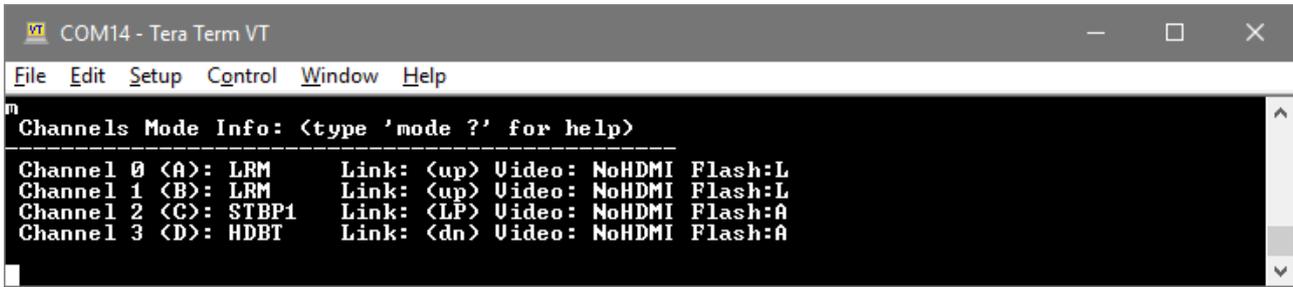


```

COM14 - Tera Term VT
File Edit Setup Control Window Help
c
Cable Quality Analysis (CQA): 'cqa ?' for help
type 'c!' for continuous mode (0=worst 99=best)
-----
A:97-94-97-99 B:97-88-90-99 C:99-94-97-99 D:99-99-97-99
c!
Cable Quality Analysis (CQA): Press [ESC] to stop
-----
002 1]:97-86-86-88 B:83-79-83-88 C:86-88-94-99 D:94-88-97-97
  
```

+ **HDBaseT Mode:** Type 'mode' or 'm' (for detailed help type 'm ?')

This command shows the configured mode for the HDBaseT channels. The factory default is "auto".



**'mode' command Examples:**

To enable Long Reach Mode (LRM) type:  
 'm L' to configure all channels in LRM  
 'm L L L A A A' to configure LRM for channels A,B,C and Auto for D,E F

**EDID CONFIGURATION TYPES**

There are 3 types of modes when display devices are attached or removed. To enable these modes for all channels, simply type one of the following: 'auto', 'lock' or 'gcm'.

EDID TYPE (command)	What Happens to the Operating System (OS) Display Manager			
	First Time Display Plug in	Display Unplug	Same Display Re-Plug	Different Display Plug in
'auto'	Enable <sup>1</sup> , store new EDID	nothing	nothing	Update EDID <sup>3</sup>
'gcm'	Enable	Disable <sup>2</sup>	Enable	Enable
'lock'	nothing	nothing	nothing	nothing

*The HotPlugDetect (HPD) signal is the signal that indicates to the OS if a device is plugged in or not.*  
<sup>1</sup>'Enable' means that HPD indicates to the OS its detected, and the device will show up in display manager.  
<sup>2</sup>'Disable' means that HPD indicates to the OS its not-detected, the display will NOT show in display manager.  
<sup>3</sup>'EDID' is the detailed information about the display device that is typically read when a display is plugged in, and every time the system boots. This data is provided to the OS Display Manager, and is used by the OS to set the resolution, refresh-rate and color capabilities of the display device.

**PURPOSE OF THE EDID OPERATING MODES**

Many of the problems that arise in display systems stem from display devices being connected and disconnected. This can happen when cables or displays are physically connected/disconnected, or when display power is turned on/off. The time that it takes for each display to be detected may vary, which causes all kinds of problems with screen order, screen resolution settings, desktop configuration in multi-desktop configurations, and especially when configuring AMD™ Eyefinity Display Groups or NVIDIA™ Mosaic.

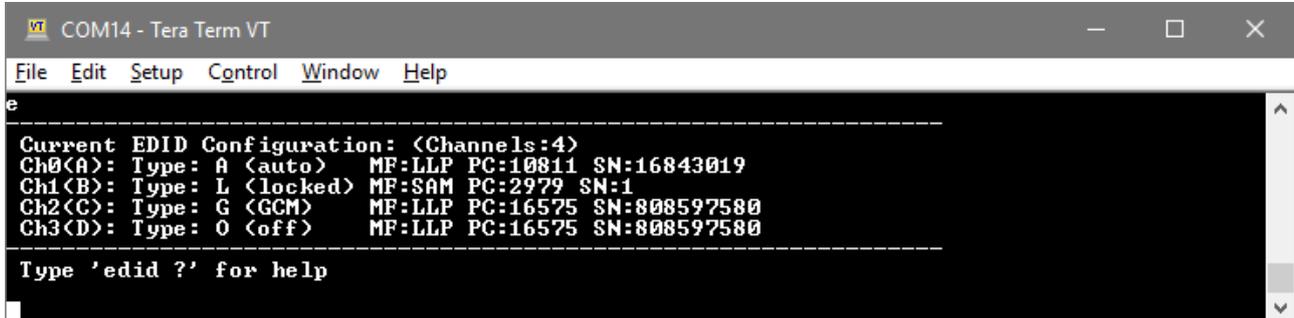
All advoli™ graphics cards solve this problem by a patented technology that presents the EDID information from EEPROMS on the physical hardware rather than directly from the display devices themselves. This means that the correct data is presented to the Operating System on every boot, and every time the OS requests the data immediately and without delay.

With advoli™ graphics cards you can configure screens and EDID data, either automatically or manually, exactly the way you want it and then 'lock' the configuration with a simple command, and your configuration will never change even if screens are physically unplugged or changed.

### + EDID Configuration: Type 'edid' or 'e'

Each channel of advoli™ graphics cards can have its own custom configuration, although the most common configuration is to configure each channel with the same EDID type.

The edid command show the EDID configuration for each channel, and is also used to configure the EDID types for individual channels.



```

COM14 - Tera Term VT
File Edit Setup Control Window Help
e
-----
Current EDID Configuration: <Channels:4>
Ch0(A): Type: A <auto> MF:LLP PC:10811 SN:16843019
Ch1(B): Type: L <locked> MF:SAM PC:2979 SN:1
Ch2(C): Type: G <GCM> MF:LLP PC:16575 SN:808597580
Ch3(D): Type: 0 <off> MF:LLP PC:16575 SN:808597580
-----
Type 'edid ?' for help

```

*This picture shows a manual EDID configuration for a 4-channel card where channel A is in 'auto' mode, channel B is 'locked' and channel C is in 'GCM'. Channel D is turned off.*

### + Manual EDID Configuration: Type 'edid use a b ...'

This command is used to set the EDID type for individual channels. It works just like 'auto', 'gcm' and 'lock' does, but the types can be set uniquely for each channel. In addition, this command can turn channels permanently 'off' by using the 'o' (letter o - not zero)

#### 'edid use' command Examples:

'edid use A L G O' sets channels respectively as auto, lock, gcm and off (for a 4 channel card)  
 'edid use L L L L A A' locks the first 4 channels and E and F in auto mode (for a 6 channel card)

### EDID Emulation

All advoli™ graphics cards include state of the art advanced EDID management tools that:

- run in embedded hardware
- is stored in flash
- is preserved across boot
- follows the card when moved to a new system

## EDID Emulation List

All advoli™ graphics cards include a list of pre-configured EDIDs that can be used for testing and troubleshooting. There are two types:

Fixed EDIDs: 0 through 19

User EDIDs: U0 through U9

```

edid l
List of Fixed EDIDs for Emulation:
0: 1080p
1: 480p
2: 720p
3: ACER_CB280HK_4K
4: Acer_4K_BX320HK
5: HP_4K_Spectre32
6: ASUS_UH238
7: Acer_T232HL
8: Dell_P2314T
9: Dell_U2410
10: Mitsubishi_A2129
11: NEC_P461
12: SAMSUNG_2979_SyncMaster
13: Sharp_4353
14: Sony_11522
15: Sony_59905
16: Toshiba_TU-SB_518
17: VIZIO_E600i-B3
18: Adtechno_LCD1015HDS
19: advoliDCI<4096x2160>
U0: UserType0 <empty>
U1: UserType1 <empty>
U2: UserType2 <empty>
U3: UserType3 <valid>
U4: UserType4 <empty>
U5: UserType5 <empty>
U6: UserType6 <empty>
U7: UserType7 <empty>
U8: UserType8 <empty>
U9: UserType9 <empty>
  
```

*Brand names and models are for illustration and educational purposes only*

Command usage examples:

EDID command	Function
'edid L'	lists some typical displays with the EDID already stored
'edid save B 3'	stores the EDID of the device currently in channel B into User EDID U3. (note text 'valid' in the picture for U3)
'edid use A A 0 U3'	Auto type for channel A and B, fixed 0 (1080p) for channel C, User U3 for channel D.

**Note:** After any change of EDID configuration, it may take the operating system and video card drivers some time to adjust to the new monitor configuration. In some cases, especially in operating systems that have been used with many different monitor configurations and desktops, it may take the operating system several minutes to fully reconfigure to the new configuration. Please be patient.

### Quick Troubleshooting:

If your Windows installation is getting sluggish due to many display configurations, clear the Windows registry. Please note that this is a pro-user fix and may render your computer non-functioning if you make any mistakes. The items to clear under Windows registry can usually be found at the following location:

Computer\HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\ControlGraphicsDrivers\

- A. Configuration
- B. Connectivity

Clear out the settings under A and B folders listed above, be careful not to delete the folders themselves. After clearing out the Windows registry of connected displays and configurations, restart your computer and you should see noticeable improvement in performance. Please note that the connectivity and configuration files may have moved in different versions of windows OS.

**+ Activity Log:** Type 'dump' or 'd'

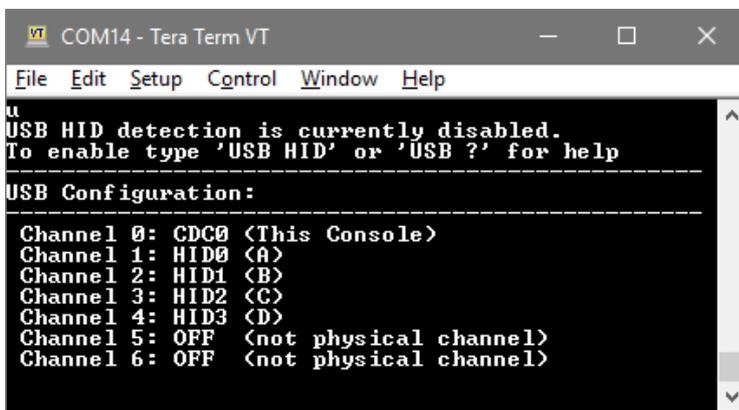
All advoli™ graphics cards create a fresh log-file on boot. Any event that happens gets logged in this file. To display this file type "dump" or 'd'. For any support issues or diagnostics capture, please provide the result of this file and send it to the advoli™ support team.

**+ Human Interface Device (HID) support**

All advoli™ graphics cards from firmware version FW88 and later supports USB Keyboard and Mouse. Each HDBaseT channel can support up to two physical USB ports and up to a total of 7 devices through a HUB.

USB HID is not enabled by default. To enable, type:

HID command	Function
'USB DEFAULT'	No HID
'USB HID'	Can detect HID. If HID detected, that channel will remain HID forever.
'USB DYN'	Can detect HID. If HID is detected as removed channel will revert back to CDC (Virtual COM Port)



**NOTE:** HID also requires support from the receivers. Contact the advoli™ team for details or purchase the advoli™ RA1+HID or advoli™ RB1+HID receivers.

# POWER OVER CABLE

## WARNING!:

If you choose to add the option of Power over Cable (PoC) using the jumper that comes with the product, understand that you cannot then use the advoli™ TB6 Performance Light with other power over cable products or other HDBaseT products. The advoli™ TB6 Performance Light ceases to be a certified HDBaseT product, once you put in the jumper. You can only use the Power over Cable function directly with the advoli™ RA1 Performance or advoli™ RB1 Standard receivers.

advoli™ is not responsible for any damage in any shape, way or form, caused to products or people when you use the Power over Cable (PoC) functionality with any other product than those listed here: advoli™ RA1 Performance and advoli™ RB1 Standard receivers.

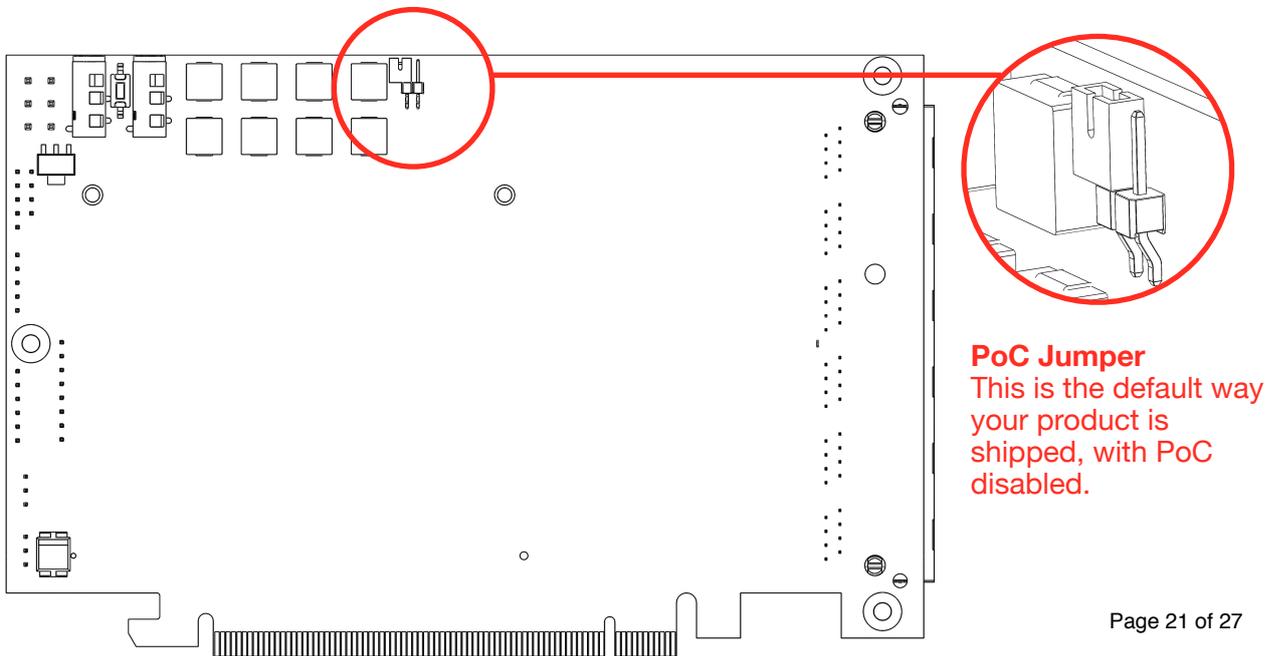
The advoli™ TB6 Performance Light graphics card is shipped default without any PoC functionality enabled. Please ensure that your advoli™ TB6 Performance Light does not have the jumper plugged in before installing and using the advoli™ TB6 Performance Light graphics card. Using the PoC functionality will not violate regulatory compliance as listed in the “Regulatory Compliance” section of this document. The jumper is a small device and may be a choking hazard. Store it in a safe place and away from children when not in use.

The jumper looks like the below illustration and is approximately 4 mm / 0.157 in (L) x 5 mm / 0.196 in (H) x 2mm / 0.78 in (W). Only plug/unplug the jumper when the graphics card is taken out of a computer/system and has no connected power via auxiliary power or via the PCI Express port.



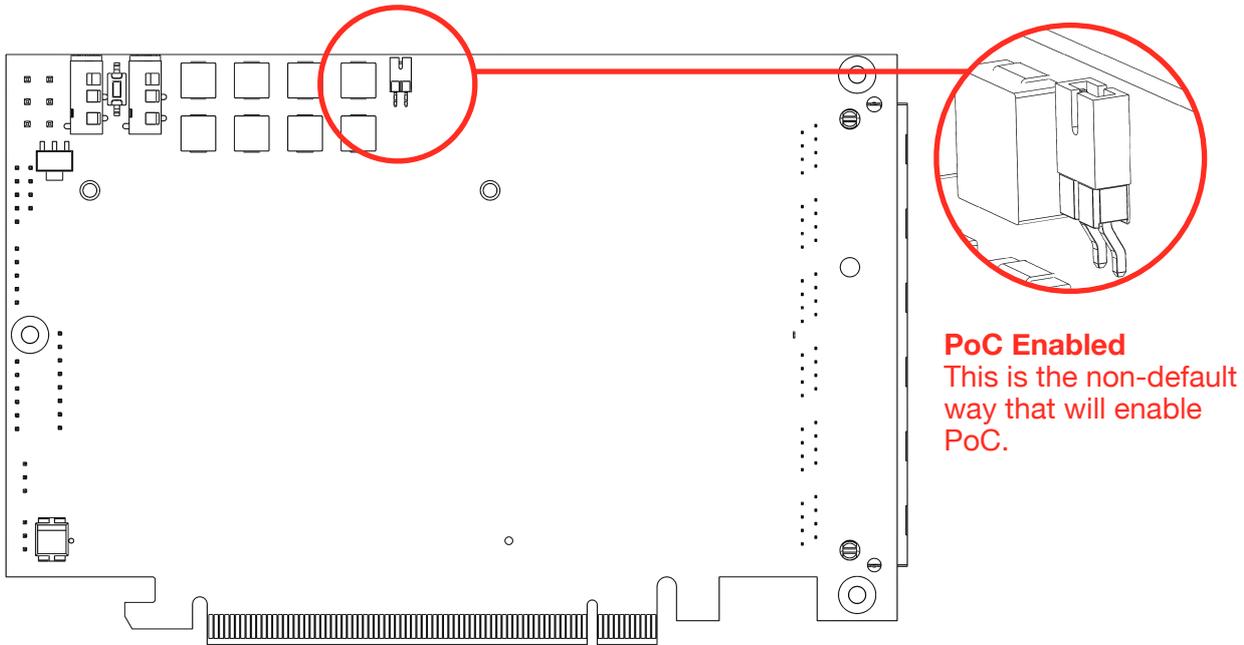
## Default Product Shipment - Disabled PoC:

Ensure that your advoli™ TB6 Performance Light graphics card once taken out of the box has the jumper plugged in at the back of the advoli™ TB6 Performance Light graphics card as depicted in the illustration below. This is the default way that you should receive the product and it means that PoC is **disabled** and that your product is HDBaseT certified and compliant and should be interoperable other HDBaseT certified products. If the jumper on your advoli™ TB6 Performance Light graphics card is plugged in, in any other way than as depicted the below illustration, please remove it completely from the product and plug it in as depicted. We advice using non-electrically conductive tweezers to change how the jumper is fastened.



**Enable PoC (Read above Warning before proceeding):**

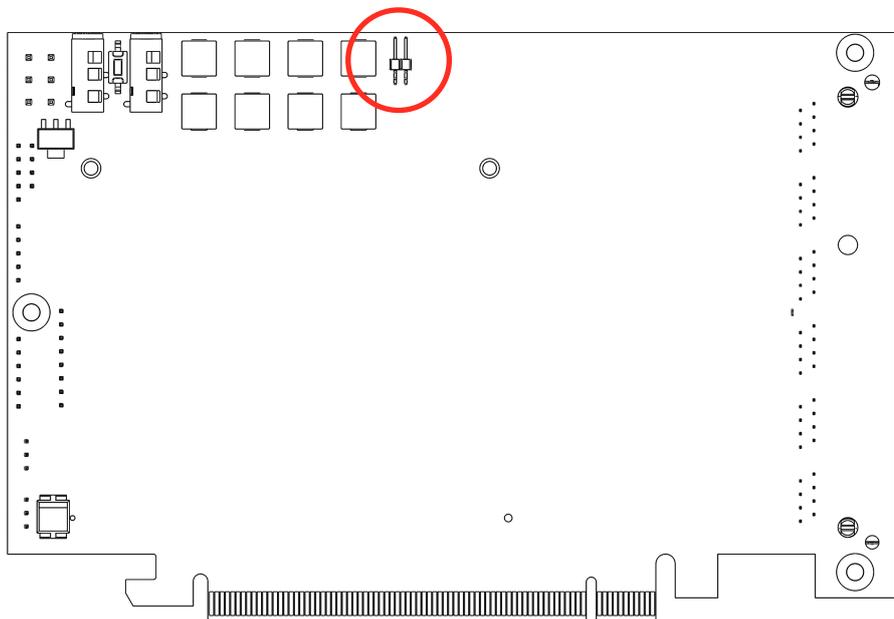
If you would like to enable PoC for the advoli™ TB6 Performance Light graphics card, note that the product seizes to be a HDBaseT compliant and certified product and should not be used with such products other than those approved in this document. To **enable** PoC remove the jumper from its default position and place it so that the jumper covers both protruding pins as depicted in the image below. Only do this when the graphics card is taken out of a computer/system and has no connected power.



+ **Note:** Power over Cable will enable 24V 0.5A on each of the RJ45 connector channels.

**No Jumper:**

When no jumper is used, the back of the graphics card will look as depicted in the illustration below and the graphics card will function as a HDBaseT compliant graphics card:



# CABLE GUIDE

Before using HDBaseT™ products you should be aware of the extreme importance of using correct cabling in order to get the performance levels in terms of distance and quality as marketed. HDBaseT behaves differently to your regular TCP/IP networking. No CAT cable is created the same so variability can be expected. We have taken a lot of precaution to add cable diagnostics in our products for this reason, as the most common questions advoli™ receives is related to incorrect cable purchase, mishandling or misunderstanding of HDBaseT technology and performance. Before you purchase the CAT cable for your HDBaseT installation, please read the following items to reduce your troubleshooting experience:

1. Please read the following documents published by the HDBaseT alliance:

HDBaseT™ Do's & Don'ts and Best Practices

<https://installers.hdbaset.org/wp-content/uploads/2014/09/Dos-and-Donts-WP.pdf>

The HDBaseT Installer's Ten Cable Commandments

<https://installers.hdbaset.org/wp-content/uploads/2014/06/Installers-10-commandments.pdf>

2. Refer to HDBaseT cable program for certified cabling:

<https://hdbaset.org/hdbaset-recommended-cables/>

Be aware that the distance and resolution of the certified cables do not necessarily apply when you bundle cables.

3. For best performance HDBaseT cables, advoli™ would like to recommend Belden™ HDBaseT cables found at the following URL:

<https://www.belden.com/products/enterprise/hdbaset-cable>

4. For general rule of thumb for performance and distance of HDBaseT signals when bundling multiple HDBaseT cables, the below table created by Belden and independently verified and recreated by advoli™ - without knowledge of Belden's white paper - is relatively accurate for most bundled installations of up to 6 cables:

CABLE TYPE	AWG	SHIELD	DISTANCE (METERS)
<b>Belden HDBaseT Cable</b>	23	F/UTP	100
<b>CAT 7A</b>	22	S/FTP	100
<b>CAT 7</b>	22	S/FTP	100
<b>CAT 7</b>	23	S/FTP	90
<b>CAT 6A</b>	23	F/UTP	90
<b>CAT 6A</b>	23	U/UTP	90
<b>CAT 6A</b>	24	S/FTP	70
<b>CAT 6+</b>	23	F/UTP	90
<b>CAT 5E</b>	24	SF/UTP	90
<b>Non-Ethernet (Stranded)</b>	22	STP	10

The advoli™ TB6 Performance Light is a VS010-series chipset or advoli's B-series product, therefore most of the cables above will be able to deliver 1080P content up to 70 meters and 4K content up to 40 meters. When in doubt go for the better cables.

For a great white paper on HDBaseT cabling read the white paper named "Cabling to Support 4K UHD HDBaseT Applications" found at the following URL and available for free:

<https://www.belden.com/resources/knowledge/white-papers/4k-uhd-wp>

5. The general rule of thumb (not always true) to reduce the number of headaches in your installation are:
  - Use solid wire only and not stranded CAT cables.
  - The higher the AWG the thinner the copper and usually the poorer the performance.
  - The more couplers/wall-plates you add the poorer the performance.
  - Poor quality coupler/wall-plates usually means worse signal.
  - The more mix of different cables the poorer the performance.
  - The poorer the termination/connector the poorer the performance.
  - The more HDBaseT signals/cables in parallel the more alien cross-talk.
  - The more you bend the cables the higher likelihood of poorer performance.
  - If you need to use couplers/wall-plates make sure they are rated equal to the CAT cable that you are using.
  - Refer to the above table which indicates performance of cables when bundled and without couplers at 4K. The more you deviate in your installation with inferior cabling, shielding, couplers, wall-plates and poor quality connectors/termination the worse the performance.
  - Use advoli console to determine the signal integrity of each cable for your installation.
6. In general don't try to do 'short-cuts' on cables in order to save a few dollars. Having to install new cabling because you bought inferior or wrong cables will cost you a lot more. Plan ahead and realize that you may install other cables in your AV infrastructure in the future that may create electro-magnetic interference. Abide by the regulatory demands of your country, when in doubt, use properly shielded cables and connectors.

# REGULATORY COMPLIANCE

The advoli™ TB6 Performance Light graphics card is compliant with the following regulations:

## REGULATORY COMPLIANCE

<b>United States</b>	FCC Rules Part 15 Subpart B 15.109/15.107 Class B
<b>Canada</b>	ICES-003 Issue 6 January 2016
<b>Europe</b>	CE & WEEE EN55032 Class B (2015) EN55024 (2010/A:2015), (IEC/ EN61000-4-2(2009)/-3(2006+A2:2010)/-4(2012)/-6(2014)/-8(2010)  EN 60601-1-2: 2015 EN 55011 (2009+ A1:2010) IEC/ EN61000-4-2(2009)/-3(2006+A2:2010)/-4(2012)/-6(2014)/-8(2010))
<b>Japan</b>	VCCI-CISPR 32: 2016 Class B
<b>Australia &amp; New Zealand</b>	C-Tick EN55032 Class B (2015). AS/NZS CISPR 32:2015

For details of regulatory compliance for our products please visit our website [www.advoli.com](http://www.advoli.com)

**Warning:** advoli™ TB6 Performance Light graphics card is only to be used with shielded CAT cables. Using any other type of cable will make the product non-compliant and will void any regulatory compliance listed above. Please ensure that the advoli™ TB6 Performance Light graphics card is properly grounded and connected to the chassis.

## FCC 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, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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 receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The user is cautioned that changes and modifications made to the equipment without the approval of manufacturer could void the user's authority to operate this equipment

In order to maintain compliance with FCC regulations, shielded cables must be used with this equipment.

Operation with non-approved equipment or unshielded cables is likely to result in interference to radio and TV reception.

### CE CONFORMITY FOR EUROPEAN COUNTRIES

The device complies with the EMC Directive 2014/30/EU and Low Voltage directive 2014/35/EU.

#### The following information is only for EU-member states:

The mark is in compliance with the Waste Electrical and Electronic Equipment Directive 2012/19/EU (WEEE).

The mark indicates the requirement NOT to dispose the equipment including any spent or discarded batteries or accumulators as unsorted municipal waste, but use the return and collection systems available.

If the batteries, accumulators and button cells included with this equipment, display the chemical symbol Hg, Cd, or Pb, then it means that the battery has a heavy metal content of more than 0.0005% Mercury or more than, 0.002% Cadmium, or more than 0.004% Lead.

### FOR CANADA

CAN ICES-3 (B)/NMB-3(B)

### DECLARATION OF RoHS2 COMPLIANCE

This product has been designed and manufactured in compliance with Directive 2011/65/EU of the European Parliament and the Council on restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS2 Directive) and is deemed to comply with the maximum concentration values issued by the European Technical Adaptation Committee (TAC) as shown below:

Restricted Substance	Maximum Threshold Limit
Cadmium and its compounds	100 ppm (0.01 weight %)
Mercury and its compounds	1000 ppm (0.1 weight %)
Hexavalent chromium and its compounds	1000 ppm (0.1 weight %)
Lead and its compounds	1000 ppm (0.1 weight %)
Polybrominated biphenyls (PBB)	1000 ppm (0.1 weight %)
Polybrominated diphenyls (PBDE)	1000 ppm (0.1 weight %)
Bis(2-Ethylhexyl) phthalate (DEHP)	1000 ppm (0.1 weight %)
Benzyl butyl phthalate (BBP)	1000 ppm (0.1 weight %)
Dibutyl phthalate (DBP)	1000 ppm (0.1 weight %)
Diisobutyl phthalate (DIBP)	1000 ppm (0.1 weight %)

Certain components of products as stated above are exempted under the Annex III of the RoHS2 Directives. Lead as an alloy element in aluminium containing up to 0.4% lead by weight. Copper alloy containing up to 4% lead by weight. Lead in high melting temperature type solders (i.e. lead-based alloys containing 85% by weight or more lead). Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectric devices, or in a glass or ceramic matrix compound.

**Note:** advoli™ may have added other regulatory compliances after the publishing of this document. For a complete view on our regulatory approval compliances, processes, technical setup and results, please visit our website [www.advoli.com/compliance](http://www.advoli.com/compliance)

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