

# Cuebi Light Manual

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# Quick start

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## Set up a Wi-Fi network

Connect a wireless access point or router to the network of your ATEM switcher.

Configure the access point with WPA2 security, a network name and password.

Set up DHCP to be in range of the ATEM switcher.

## Configure Cuebi Lights

Download and start the setup utility.

Connect a Cuebi Light to your computer via USB.

Set the Wi-Fi name, password, ATEM ip address and the preferred camera input number.

## Start using the Cuebi Lights

Place the Cuebi Light on your camera and connect it to the battery pack, or any other USB power source.

The Cuebi Light will communicate its state using the LED:

- Blue: looking for Wi-Fi network.
- Purple: Connected to Wi-Fi, connecting to ATEM mixer.
- Red/Green/Off: Tally state.

# Setting up a wireless network

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*Short version: Use a modern and powerful 2.4Ghz wireless access point supporting radio mode "n" on a low congested channel, 20Mhz wide, with WPA2 security, that can be placed in line of sight with the Cuebi Lights. Outdoor AP's with directional antenna's and PoE work best.*

The Cuebi Lights work over standard WiFi, however, this does not mean placing any old router somewhere will do.

The proprietary protocol that is used by the ATEM mixer requires low-latency and direct responses from its clients.

While this is not an issue for a wired connection, for a wireless connection, there are many factors that can disrupt the speed and stability of the network.

It is therefor important to make sure the wireless network is set up in the most optimal condition.

Most AP's today are equipped with powerful processors and antenna arrays that greatly improve the speed and stability of the wireless network. By placing the AP properly it is possible to create a wireless network that is strong and fast enough to offer a stable connection with the ATEM switcher.

## Configuration

The Cuebi Lights are compatible with 2.4Ghz b/g/n networks. It is recommended to set up the AP in either b/g/n or n-only mode.

For password encryption, use WPA2 with a password, also referred to as "WPA-personal" or "WPA-PSK".

Set the channel to "auto". When experiencing interference, it might help to manually select and set the channel. It is important to select a channel with no or low congestion. If possible, select a channel 4 channels higher or lower than the strongest WiFi networks around. To get a better view of WiFi networks in the air, use free tools like inSSIDer (for Windows) or iStumbler (for Mac)

For best performance, set up a wireless network dedicated to the Cuebi Lights. Do not use this network e.g. for controlling the ATEM or to stream or download data.

Do not connect a wireless network to another wireless network to extend the range.

Wire each AP directly to the main switch connected to the ATEM

Many AP's offer higher bandwidth by combining multiple channels, this setting is often called "channel width" and have options like "wide channel" or "20/40Mhz". Do NOT use this feature. Wider channels are more prone to interference and the increased bandwidth offers no benefits. Always select "20Mhz" or "narrow channel"

Any setting called "client isolation" or "AP isolation" or anything related to isolating wireless clients should be turned OFF as it will prevent the Cuebi Lights to communicate with each other.

## Placement

A WiFi network, just as any other RF based signal is prone to interference. Contrary to popular believe, Bluetooth devices and other WiFi networks and are usually not the greatest source of interference for a wireless network. Most Bluetooth devices support Adaptive Frequency Hopping to avoid interference with WiFi networks. WiFi networks work in predefined channels, which makes it easy to manually or automatically select a less crowded channel. More likely, interference will come from less controllable sources like audio and video senders, baby monitors, micro wave ovens, LCD displays, car alarms, etc. If possible, avoid the usage of any such devices near the wireless network.

Interference is also caused by barriers between the AP and the Cuebi Lights, walls, curtains, metal constructions, people, etc. Any type of barrier will affect the wireless signal and should be avoided as much as possible.

When placing the AP, try to ensure line-of-sight between the AP and the Cuebi Lights. This means placing the AP high up, near the set and the camera's, rather than putting an AP inside the flight case, next to the ATEM in the control room far away from the set.

Most AP's and wireless routers available are intended for home use and provide omnidirectional antenna's, creating a network around the AP, which is not ideal. It is much better to use a directional antenna, which allows creating a wireless network towards the camera's.

For this purpose, outdoor access points work really well. They have directional antenna's and are designed to be fixed onto something. Which makes it easy to attach it to a lighting tripod for example. Also, most of these kind of access points are powered over ethernet, which allows for convenient placement.

# Network configuration

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The Cuebi Light required a DHCP server to receive an IP address. Routers and most wireless access points have a DHCP server that can be enabled. Normally, not more than 1 device within the network should have a DHCP server enabled.

The DHCP server must be set to give out an IP addresses in the same range as the ATEM mixer. It should never give out an IP address that is already in use by another device with a fixed IP address.

To decide on the range to use, make a list of all devices in the ATEM network, for instance:

Router IP adres:	192.168.10.1
Laptop IP adres:	192.168.10.2
Broadcast panel IP adres:	192.168.10.10
ATEM IP adres:	192.168.10.240

In this case, a safe range could be "192.168.10.60" to "192.168.10.90"

# Powering the Cuebi Lights

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Cuebi Lights are powered by 5V via standard micro-USB connector. The average power consumption is 0.4 Watt (80mA). It comes with a 2xAA battery powered USB pack, which, when using good batteries can provide enough power for 4-6 hours of operating time. But it can just as well be powered from a phone charger, USB power banks, or even the camera itself.

Many camera's today come with an USB port, which, in most cases, can be used to power a Cuebi Light. This way, there is no need for an extra power pack, and since it uses so little power, it will not make a significant difference to total power consumption of the camera itself. Cuebi also sells d-tap to usb adapters, to power the Cuebi Light directly from a large camera battery.

Note: There are power banks available that feature a “power saving mode”, which turns down the power output when little or no power is being drawn. Because of the low power consumption of the Cuebi Light, some power banks will switch off while the Cuebi Light is running. These power banks are not suitable for the Cuebi Light, so check the specifications before purchase.