

**CITY**  
**THEATRICAL**  
I N C



# SHOW

DMX <sup>TM</sup>



## SHoW DMX™ (Synchronized Hopping of Wireless DMX) from City Theatrical is the most advanced and reliable wireless DMX ever!

CTI's patent pending features ensure superior broadcast reliability while causing less impact to other wireless devices. With the growing amount of wireless data on productions, it's vital not only to ensure that your wireless DMX is broadcast intact, but also to be aware of other wireless users in the area, such as the sound department, automation, stage management or even the box office. We have very carefully crafted the features of SHoW DMX™ to ensure the highest levels of data throughput and the ability to use only the amount of power and bandwidth required to accomplish the task at hand.





City Theatrical has been a leader in wireless DMX since 2004 with our wireless gear found on Broadway shows, on tour, in permanent installations, and in custom projects all over the world. Now, we have used our experience to create a new generation of wireless DMX, crafted to be powerful, but with the ability to coexist with other wireless signals in the busy 2.4 GHz band of the spectrum. Our patent pending design assures the user the most data throughput of any wireless DMX system, while at the same time having the least effect on other wireless users.

**New features of ShoW DMX include:**

**Synchronized Hopping of FHSS Radio and DMX**

CTI's proprietary system synchronizes the FHSS (Frequency Hopping Spread Spectrum) hopping period so that (unlike other wireless DMX systems) every DMX data packet is transmitted completely during a single hop. Further, each DMX data packet is re-broadcast completely on the subsequent hop, and all of this happens during the period that the next DMX packet is arriving at the Transmitter. At the receiver end, the packet (two copies) is received, checked and output as standard DMX with the same refresh rate as the original console output. Since each data packet is transmitted twice on different channels, the odds of a refresh being lost to local channel interference are significantly reduced.

**High Speed Broadcast Data Rate with Optimized Data Format**

The SHoW DMX Transceiver's through-air data rate is 1Mbps, and the broadcast data packet has been optimized for half-duplex wireless DMX delivery so that the available 1Mbps through-air data rate is utilized as efficiently as possible. This allows the system to broadcast more than two times as many copies of the DMX data in a given period as was achievable with CTI's previous system, the WDS Wireless Data System™. Each complete DMX packet (513 bytes with the start code byte) is transmitted in 5.5mS, four times faster than the fastest wired DMX data rate.

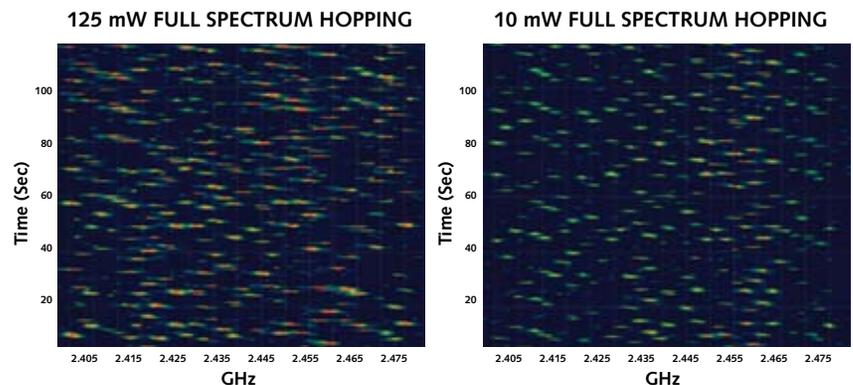
**Adjustable Output Power**

The SHoW DMX Transmitter has adjustable broadcast power from 5mW (FCC)/16mW (CE-ETSI) to 125mW (FCC)/395mW (CE-ETSI). This allows the user to adjust the output power to meet the application requirement. CE Units are limited at the factory to 32mW (FCC)/100mW (CE-ETSI) max output power.

The option of adjustable output power allows users to select only the power needed and to respect the wireless needs of their colleagues on their production, and other wireless users in the area. This philosophy is diametrically opposed to some other manufacturers who sell powerful radios with only one output setting designed to overpower all radio users in the area.

**Output Power**

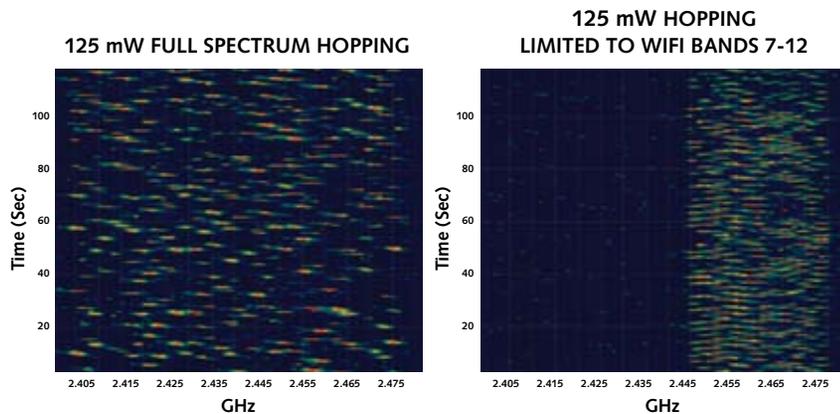
mW (FCC)	mW (CE-ETSI)
5	16
10	32
32	100
50	158
100	316
125	395



## Adjustable Hopping Patterns, Including Full Bandwidth Hopping and Limited Bandwidth Hopping

SHoW DMX offers more than one kind of user-selectable FHSS hopping mode. In full bandwidth hopping mode, the system will continuously and pseudo-randomly hop between channels across the full 2.4GHz spectrum. This mode is available at any output power setting, and is quite typical of all FHSS radios.

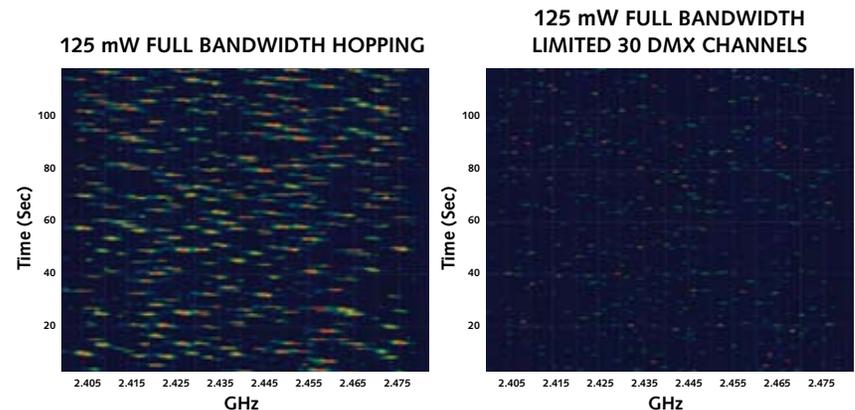
In the Limited Bandwidth Hopping mode, the 2.4GHz band is divided into sub-bands. Each sub-band occupies approximately 40% of the full band, with one positioned at the low end, one in the center, and one at the high end of the full band. This allows the SHoW DMX Transmitter to be set to hop and broadcast in a different area of the spectrum to minimize or eliminate interference with WiFi or other channel specific or limited bandwidth equipment.



## Limited Burst DMX Output

In Limited Burst mode, the user may select for broadcast any contiguous group of 30 or more DMX channels in multiples of 32 channels. These may be assigned to any starting address that will accommodate the burst size. This will reduce the amount of radio energy that is broadcast, thereby reducing the potential for interference with other systems. For instance,

if a show needs only 128 channels of wireless DMX, the system can be set to broadcast only 128 channels, causing the radio to go silent 75% of the time ( $1 - (128/512) = .75$ ). If only 64 channels are used, the radio will be silent 87% of the time. This silent time reduces overall radio spectrum activity and increases the chances of all other radio signals in the vicinity to be broadcast successfully.



## Simple Default Plug and Play Mode

The SHoW DMX system has a sophisticated user interface allowing complete control of a number of settings, but in its default mode, SHoW DMX is completely plug and play. In its factory mode, or by resetting factory defaults, Transmitter and Receiver will wake up in contact with each other and no other settings are needed, unless the user chooses to make them. With all its sophistication, the SHoW DMX system is also one of the simplest systems.

## RDM

The SHoW DMX system uses RDM communications for all remote device control and configuration, or for any inter-device communication required. This provides an easily understood method for managing requirements such as Receiver strength and Dimmer address setting. RDM commands may be issued from an upstream RDM controller such as a console, the SHoW DMX Monitor, or from the Transmitter. RDM features include:



1. **RDM Controller Functions:** Transmitters have some RDM controller functions accessible via the user interface.
2. **RDM Proxy Functions:** Transmitters and Receivers act together as an RDM proxy system, providing a bidirectional half-duplex RDM link between the controller and any RDM device being controlled via the SHoW DMX system.
3. **RDM Discovery/Unique Device IDs:** Each unit is programmed with a unique RDM device ID that will identify the unit, permitting RDM discovery, as well as communication with and control of each specific device.
4. **Receiver Received Signal Strength:** The system remotely polls each Receiver for its received signal strength via standard RDM.
5. **RDM Responder Features:** SHoW DMX Dimmers have appropriate RDM features such as UID/discovery, DMX addressing, battery power status, etc.

### SHoW DMX Monitor



### ACN/Art-Net

The SHoW DMX Transmitter is provided with an RJ 45 connector and additional processing capacity to allow ACN and Art-Net implementation.

### OEM Receiver

The SHoW DMX OEM Receiver is a miniature receiver PCBA for installation in other equipment or for use in custom designs and will support all features of the SHoW DMX Receiver except for an abbreviated user interface. All settings will also be configurable via RDM as transmissions from the SHoW DMX Transmitter, or via RDM commands from the host unit. Thus, OEM users such as moving light manufacturers will be able to configure the installed OEM Receiver from their existing user interface, provided they can implement RDM based control software.

### SHoW DMX Dimmer

The SHoW DMX Three Channel 10A Dimmer provides three independently controllable 10A 12-24V DMX/RDM DC dimmers in a single compact package with a total capacity of 30 amps. With its four different output configurations, the SHoW DMX Three Channel 10A Dimmer can be used as three individual 10A DC dimmers for incandescent loads, as three individual linear curve dimmers, as three individual non-dims, or as three individual LED dimmers. Additionally, any two outputs are usable as 15A dimmers, or any single output is usable as a 30A dimmer. In LED mode, the units are perfect for controlling LED RGB tape, or other types of RGB LEDs.

### Upgrading Your WDS Wireless Data System to SHoW DMX

If you would like to upgrade your present WDS Wireless Data System equipment and gain the substantial benefits in data integrity of the SHoW DMX system, you can. Although the SHoW DMX system and the WDS Wireless Data System do not speak directly to each other, we can retrofit SHoW DMX radios into your WDS Transmitters and Receivers through an inexpensive factory upgrade. This adds many of the SHoW DMX features to the WDS Transmitter and Receiver, including Receivers found in the PDS-750 TRw™, PDS-375 TRw™ and PDS-50™. Please contact City Theatrical for more information.



# SHoW<sup>™</sup> DMX



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