

# RFI Test Report – Lutron Dimmer Switch

**Manufacturer: Lutron**

**Model: Diva Dimmer & Switch**

Model number: DVCL-153P

<http://www.lutron.com/en-US/Products/Pages/StandAloneControls/Dimmers-Switches/DivadimmerSwitch/Overview.aspx>

Description: Single-pole paddle switch with dimmer

Purchased from: Home Depot

Price: \$28

Test equipment: Isolation transformer, 50 uH LISN, HP 8560A with 20 dB preamp, Tek TDS320A. Note: Spectrum spikes around 100 MHz are FM band leakage.

Tested by: Gary Johnson, NA6O Date: Dec 18, 2019

## Summary

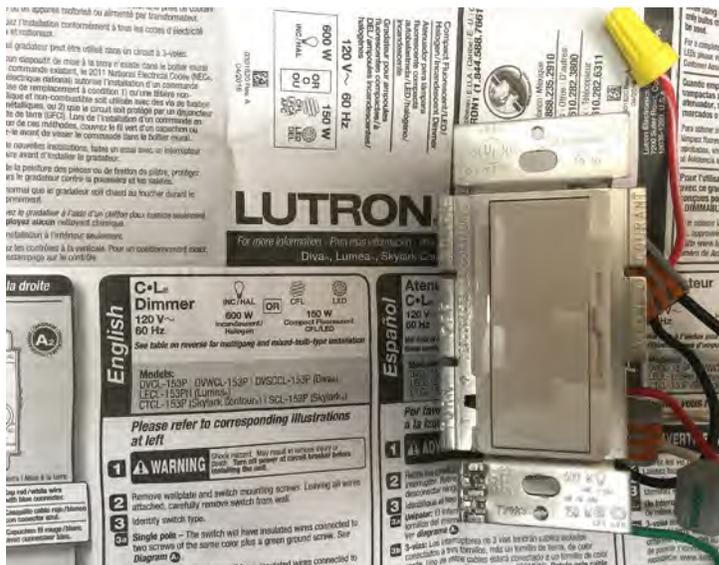
Recommend for amateur radio stations: **NO**, though a common-mode choke may help.

FCC Part 15B conducted emissions: **NO**.

FCC Part 15 labeling: **No markings or notices anywhere.**

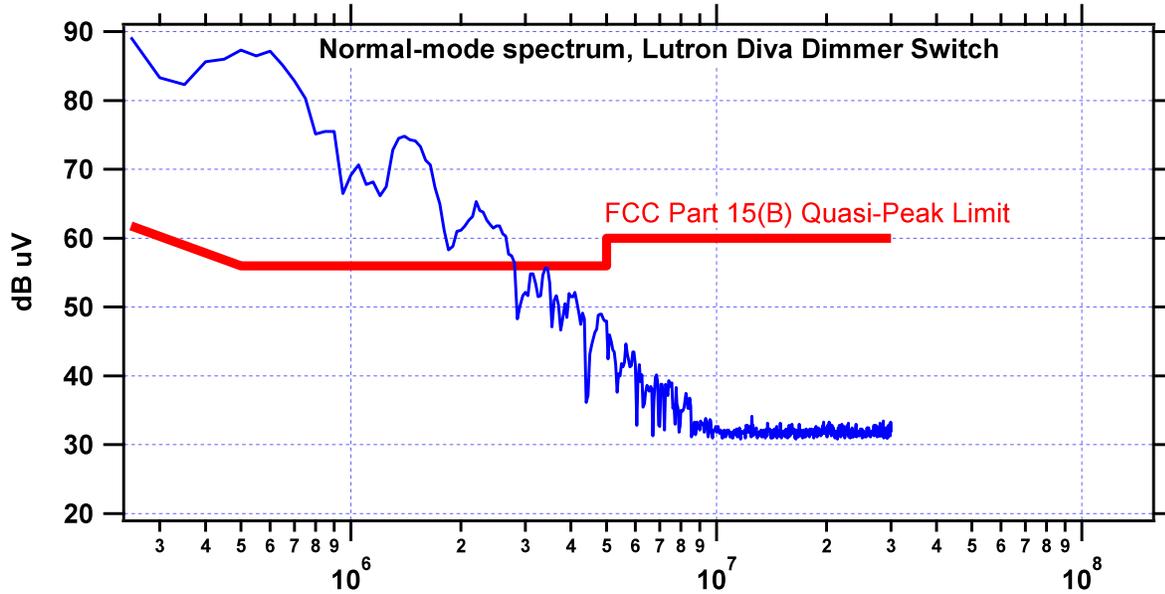
## Observations:

Generates switching transient at every 60 Hz zero-crossing with most energy concentrated below a few MHz. Radiated RFI is maximized when dimmer is set to about 50% (all data was taken at that setting, and with a 65W incandescent lamp load). Sound of the noise is 120 Hz wideband buzz. Normal-mode exceeds FCC Part 15 below 3 MHz. Common-mode noise is significant below 2 MHz and may impact the 160m band. Waveform entirely free of high-speed glitches. No noticeable VHF noise. Detectable with my portable SW radio on the 80m band when at close range (~4 ft) with very short power leads. Likely much worse when connected directly to the AC mains. Not recommended for use at amateur radio stations, though you may be able to use it if your antennas are fairly far away. Test carefully on the low bands. A common-mode choke, optimized for lower frequencies, would be extremely beneficial in reducing this noise.



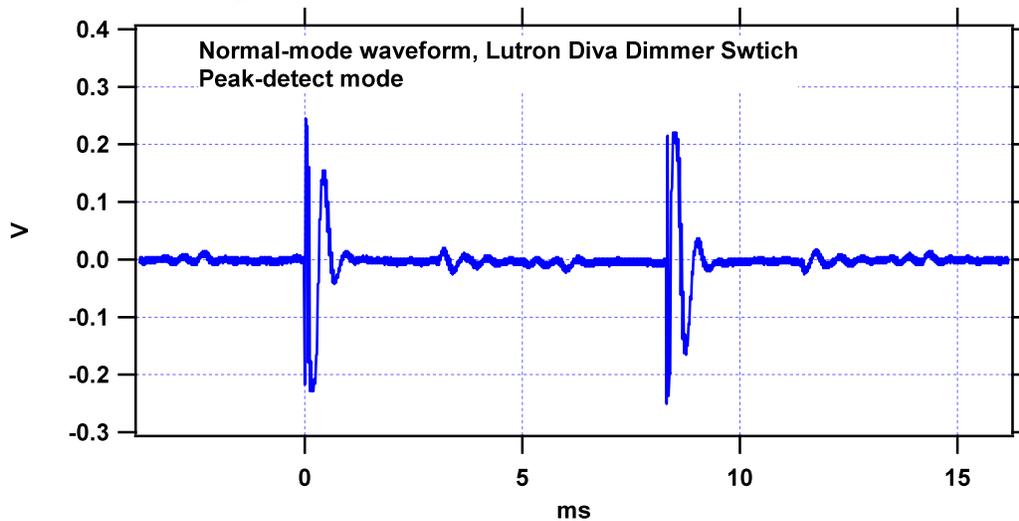
## Normal-mode Spectrum

There is a great deal of energy below a few MHz.

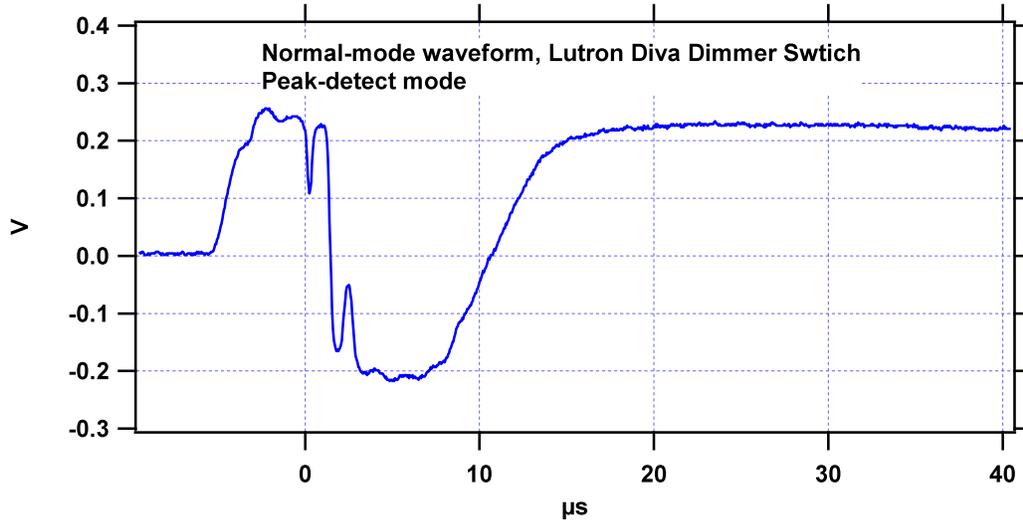


## Normal-mode Waveform

Peak-detect mode. Bursts occur at a 120 Hz rate and consist of a faster glitch followed by a very slow (~2 kHz) ringdown.

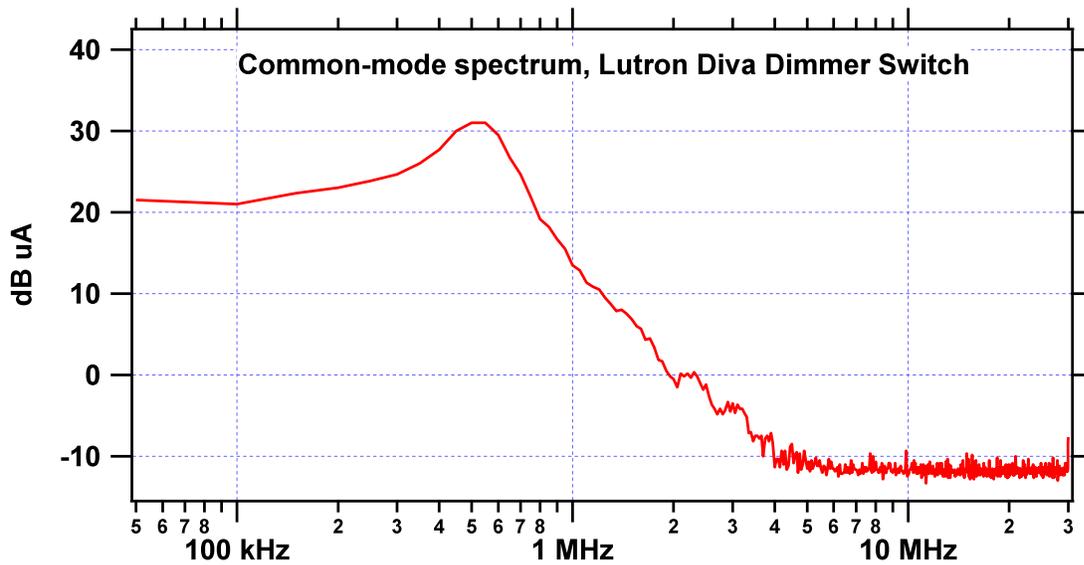


Here is the initial normal-mode glitch. Energy in the large single-cycle corresponds to about 63 kHz.



### Common-mode Spectrum

Very strong signal below 1 MHz, enough that I was not able to use my preamp in order to check higher frequencies without a temporary highpass filter. This is 25 dB worse than the noisiest LED light fixture that I have measured.



## Common-mode Waveform

This ringdown occurs at a 120 Hz rate and is the primary source of radiated RFI. Its characteristic frequency is about 580 kHz, corresponding to the rise in the CM spectrum.

