

## RFI Test Report – Lighting Device

**Manufacturer: Commercial Electric (Home Depot house brand)**  
**Model: DL-N28A11FR1-27 Round LED Light Fixture**

Model number: **DL-N28A11FR1-27** Item number: **1001 749 797**  
Description: 5 or 6-inch diameter LED light fixture with internal DC converter  
Purchased from: Home Depot Price: \$35 (4-pack)

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: June 16, 2019

### Summary

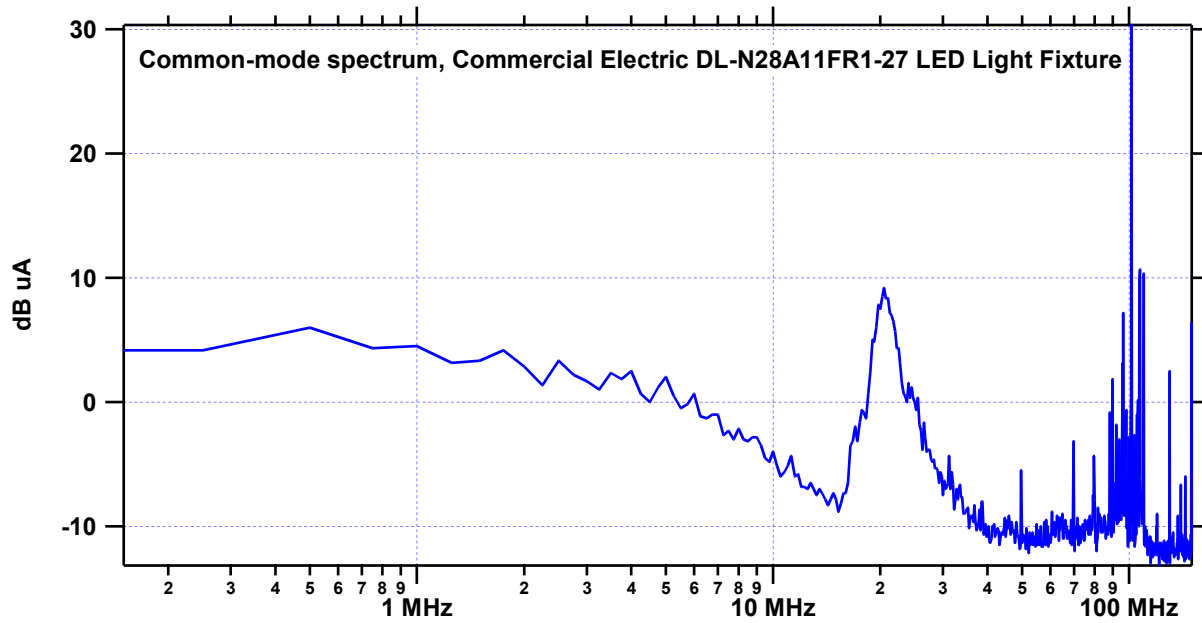
Recommend for amateur radio stations: NO, significant RFI generator.  
FCC Part 15 conducted emissions: COMPLIANT  
FCC Part 15 labeling: COMPLIANT

### Observations:

Switching frequency about 80 kHz. Normal-mode meets FCC Part 15. Has significant normal-mode component (hot and neutral signals are different) and could benefit from normal-mode filtering e.g. a capacitor across the AC line. Examination of the circuit board shows that there is no such capacitor present, only one series inductor. Common-mode data is dominated by my local FM station pickup due to long leads on the fixture. Most notable feature is a hump that peaks at 20.5 MHz, indicating possible interference with the 15m band. Overall levels of RFI are fairly high and likely to cause interference if your antennas are in proximity. My portable radio and RFI antenna told me loud and clear that I do not want this fixture anywhere near my property. As a point of comparison, it's 10-15 dB worse than the average screw-in LED bulb.

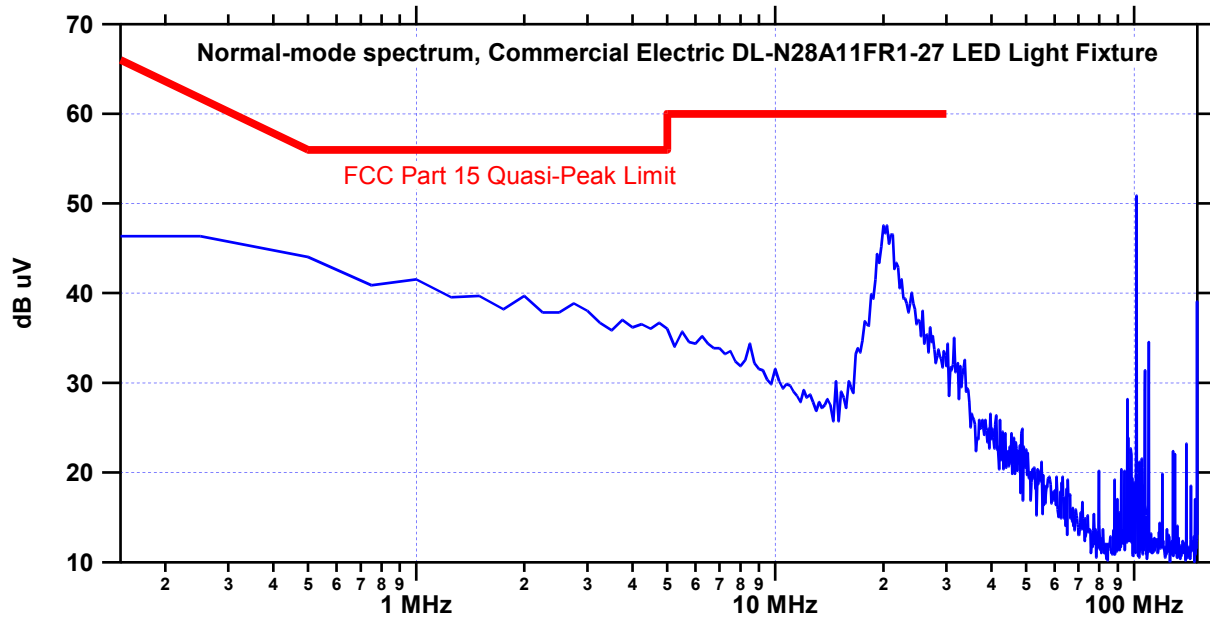


## Common-mode Spectrum



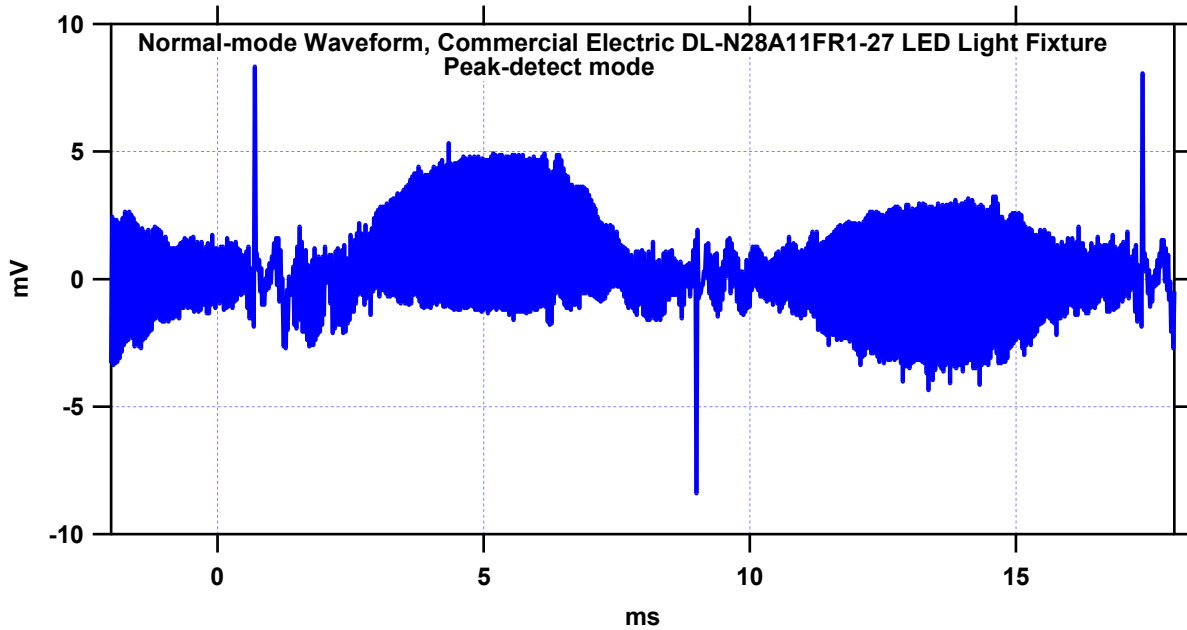
## Normal-mode Spectrum

Peak at 20.5 MHz indicates possible interference to 15m band.



### Normal-mode Waveform

Peak-detect mode. Bursts are 80 kHz sinewaves with small glitches riding on them. Tall glitches are 2.5  $\mu$ s wide and well-damped. Overall, typical of noisy LED fixtures.



### Circuit Board

L2, an inductor in series with one side of the AC line, is the only input filtering component. The opposite side contains the controller IC and numerous SMT components.

