

10/01/2025

Lutron Electronics
7200 Suter Road
Coopersburg, Pennsylvania 18036
USA

Dear Dan Osle,

Enclosed is the EMC test report for testing of the Lutron Electronics, Bridge tested to the requirements of FCC Part 2.1091 and RSS-102 Issue 6

Thank you for using the services of Eurofins E&E North America. If you have any questions regarding these results or if MET can be of further service to you, please do feel free to contact me.

Sincerely,



Nancy LaBrecque
Documentation Department
Eurofins Electrical and Electronic Testing NA, Inc.

Reference: WIRA137382-RF Exp



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**RF Exposure Criteria
Test Report**

for the

**Lutron Electronics
Bridge (Model: L-BDG-2)**

Tested under

FCC Part 2.1091 and RSS-102 Issue 6

Report: WIRA137382-RF Exp

10/01/2025



Bryan Taylor, Wireless Team Lead
Electromagnetic Compatibility Lab



Nancy LaBrecque
Documentation Department

Engineering Statement: The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.



Matthew Hinojosa
EMC Manager, Austin Electromagnetic Compatibility Lab

Report Status Sheet

Revision	Report Date	Reason for Revision
0	10/01/2025	Initial Issue.

List of Terms and Abbreviations

AC	Alternating Current
ACF	Antenna Correction Factor
Cal	Calibration
<i>d</i>	Measurement Distance
dB	Decibels
dBμA	Decibels above one microamp
dBμV	Decibels above one microvolt
dBμA/m	Decibels above one microamp per meter
dBμV/m	Decibels above one microvolt per meter
DC	Direct Current
E	Electric Field
DSL	Digital Subscriber Line
ESD	Electrostatic Discharge
EUT	Equipment Under Test
<i>f</i>	Frequency
CISPR	Comite International Special des Perturbations Radioelectriques (International Special Committee on Radio Interference)
GRP	Ground Reference Plane
H	Magnetic Field
HCP	Horizontal Coupling Plane
Hz	Hertz
IEC	International Electrotechnical Commission
kHz	kiloHertz
kPa	kiloPascal
kV	kilovolt
LISN	Line Impedance Stabilization Network
MHz	MegaHertz
μH	microHenry
μF	microFarad
μs	microseconds
PRF	Pulse Repetition Frequency
RF	Radio Frequency
RMS	Root-Mean-Square
V/m	Volts per meter
VCP	Vertical Coupling Plane

1.0 Requirements Summary

Page Number	Test Name	Result
9	RSS-102 Issue 6 MPE Limits (For General Public Exposure)	Compliant
10	FCC Part 2.1091 MPE Limits (For General Public Exposure)	Compliant

Table 1. Summary of Test Results

2.0 Equipment Configuration

2.1 Overview

Eurofins MET Labs was contracted by Lutron Electronics to perform testing on the Bridge, under Lutron Electronics's purchase order number 5359866.

This document describes the test setups, test methods, required test equipment, and the test limit criteria used to perform compliance testing of the Lutron Electronics Bridge.

The results obtained relate only to the item(s) tested.

Product Name:	Bridge	
Model(s) Tested:	L-BDG-2	
Sample Number:	25744-1	
FCCID:	JPZ0104	
ICID:	2851A-JPZ0104	
Equipment Specifications:	Primary Power:	5VDC via AC Powerline Adapter
	Type of Modulations:	FSK
	Maximum Field Strength of Fundamental:	74.75dBuV/m (3 meter average measurement)
	EUT Frequency Ranges:	431MHz – 437MHz
Analysis:	The results obtained relate only to the item(s) tested.	
Environmental Test Conditions:	Temperature: -20 to 50° C	
	Relative Humidity: 30-60%	
	Barometric Pressure: 860-1060 mbar	
Evaluated by:	Bryan Taylor, Veer Patel	
Report Date(s):	10/01/2025	

Table 2. EUT Summary Table

2.2 Test Site

All testing was performed at Eurofins E&E North America, Austin, TX. All equipment used in making physical determinations is accurate and bears recent traceability to the National Institute of Standards and Technology.

2.3 References

RSS-102: Issue 6	Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)
FCC Part 2.1091	Radiofrequency radiation exposure evaluation: mobile devices.

Table 3. References

2.4 Description of Test Sample

The L-BDG-2 is a table-top interface device, which contains a FSK transceiver and an antenna that is not accessible to the user. It is used as part of an integrated lighting control system. The purpose of the RF communication is to transmit and receive command signals. Transmitted commands allow the triggering of system events. Received commands allow for updating of control indicator status.

2.5 Modifications

2.5.1 Modifications to EUT

No modifications were made to the EUT.

2.5.2 Modifications to Test Standard

No modifications were made to the test standard.

2.6 Disposition of EUT

The test sample including all support equipment submitted to the Electro-Magnetic Compatibility Lab for testing was returned to Lutron Electronics upon completion of testing.

3.0 Maximum Permissible Exposure Results

3.1 RSS-102 SAR Exemption Limits

Frequency (MHz)	≤ 5 mm (mW)	10 mm (mW)	15 mm (mW)	20 mm (mW)	25 mm (mW)	30 mm (mW)	35 mm (mW)	40 mm (mW)	45 mm (mW)	> 50 mm (mW)
≤ 300	45	116	139	163	189	216	246	280	319	362
450	32	71	87	104	124	147	175	208	248	296
835	21	32	41	54	72	96	129	172	228	298
1900	6	10	18	33	57	92	138	194	257	323
2450	3	7	16	32	56	89	128	170	209	245
3500	2	6	15	29	50	72	94	114	134	158
5800	1	5	13	23	32	41	54	74	102	128

3.2 FCC Exposure Limits (Per KDB447498 D01 Section 4.3 and Appendix A)

For 100 MHz to 6 GHz and *test separation distances* ≤ 50 mm, the 1-g and 10-g *SAR test exclusion thresholds* are determined by the following:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f}(\text{GHz})] \leq 3.0$ for 1-g SAR, and ≤ 7.5 for 10-g extremity SAR, where:

- $f(\text{GHz})$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation³¹
- The result is rounded to one decimal place for comparison
- The values 3.0 and 7.5 are referred to as *numeric thresholds* in step b) below

The test exclusions are applicable only when the minimum *test separation distance* is ≤ 50 mm, and for transmission frequencies between 100 MHz and 6 GHz. When the minimum *test separation distance* is < 5 mm, a distance of 5 mm according to 4.1 f) is applied to determine SAR test exclusion.

Appendix A includes the following table estimating the SAR Test Exclusion Threshold in mW for specified separation distances.

MHz	5	10	15	20	25	mm
150	39	77	116	155	194	SAR Test Exclusion Threshold (mW)
300	27	55	82	110	137	
450	22	45	67	89	112	
835	16	33	49	66	82	
900	16	32	47	63	79	
1500	12	24	37	49	61	
1900	11	22	33	44	54	
2450	10	19	29	38	48	
3600	8	16	24	32	40	
5200	7	13	20	26	33	
5400	6	13	19	26	32	
5800	6	12	19	25	31	

Test Procedure:

For this device the field strength was measured at a specific distance. The radiated power was calculated via the formula from ANSI C63.10 shown below and then used to compare with the SAR exclusion levels for the FCC and ISSED:

$$EIRP = E_{Meas} + 20 \log(d_{Meas}) - 104.7$$

where

EIRP	is the equivalent isotropically radiated power, in dBm
E_{Meas}	is the field strength of the emission at the measurement distance, in dBuV/m
d_{Meas}	is the measurement distance, in m

Test Results:

The Bridge was **compliant** with FCC Part 2.1091 and RSS-102 Issue 6. The radiated power was less than the SAR exclusion levels for both the FCC and ISSED.

SAR Exemption Calculations:

The Field strength at 3m was measured (74.75dBuV/m) and according to the manufacturer has a 5% tune up tolerance from the measured value which equates to 75.18dBuV/m. 75.18dBuV/m was converted to EIRP using the equations from ANSI C63.10 Section 9.5:

$$EIRP = E_{Meas} + 20 \log(d_{Meas}) - 104.7 \quad (22)$$

where

E_{Meas} is the equivalent isotropically radiated power, in dBm
 E_{Meas} is the field strength of the emission at the measurement distance, in dBuV/m
 d_{Meas} is the measurement distance, in m

NOTE—Because this equation yields the identical result whether the field strength is extrapolated using the default 20 dB/decade of distance extrapolation factor, or the field strength is not extrapolated for distance, this equation can generally be applied directly (with no further correction) to determine EIRP. In some cases, a different distance correction factor may be required; see 9.1.

$$EIRP = 75.18\text{dBuV/m} + 20\log(3\text{m}) - 104.7 = -19.97\text{dBm or } 0.01\text{mW}$$

0.01mW is much less than the SAR exemption limits at 431MHz for a separation distance of $\leq 5\text{mm}$ for both FCC and ISSED.

Additionally, the calculated SAR exclusion threshold value is less than 3 indicating that the device is exempt from SAR.

100 MHz to 6 GHz and separation distance $\leq 50\text{ mm}$ KDB 447498 D01 v06 4.3.1.a			
Description	Value	Unit	Comments
Max Power of Channel	0.01	mW	
Minimum Separation Distance	5	mm	
Frequency	0.431	GHz	
Max Power of Channel (Rounded)	0	mW	Rounded to nearest mW
Minimum Separation Distance (Rounded)	5	mm	Rounded to nearest mm, limited to 5 mm
Calculated SAR Exclusion Threshold	0.0000		Max power, mW / min. separation distance, mm x $\sqrt{\text{frequency, GHz}}$
Excluded from 1-g SAR?	Yes		Threshold ≤ 3.0
Excluded from 10-g extremity SAR?	Yes		Threshold ≤ 7.5