



MPE Test Report

Report No.: LGD-ESH-P22010359B-3

FCC ID: Q4B-TFFD

Product: DLM Wireless Slim Switches

Model: LMSW-610-S, LMSW-611-S, LMSW-622-S, LMSW-641-S

Received Date: Jan.20, 2022

Test Date: Jan.20 to Feb.08, 2022

Issued Date: Feb.08, 2022

Applicant: The Watt Stopper, Inc.

Address: 2700 Zanker Road Suite 168 San Jose, CA 95134

Manufacturer: SHANGHAI LEGRAND ELECTRICAL CO.,LTD

Address: 1/F, Building 1, No. 1358 Xiangyang Road, Minhang District SHANGHAI - CHINA

Issued By: BUREAU VERITAS ADT (Shanghai) Corporation

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Test Lab
Cert 2343.01

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Table of Contents

| | |
|---|---|
| Release Control Record | 3 |
| 1 General Information | 5 |
| 1.1 General Description of EUT | 5 |
| 2 RF Exposure | 7 |
| 2.1 Limits For Maximum Permissible Exposure (MPE)..... | 7 |
| 2.2 MPE Calculation Formula | 7 |
| 2.3 MPE Calculation Formula | 7 |
| 2.4 Calculation Result of Maximum Permissible Exposure..... | 7 |



Release Control Record

| Issue No. | Description | Date Issued |
|----------------------|------------------|--------------|
| LGD-ESH-P22010359B-3 | Original release | Feb.08, 2022 |



1 Certificate of Conformity

Product: DLM Wireless Slim Switches

Brand: legrand®

Model: LMSW-610-S, LMSW-611-S, LMSW-622-S, LMSW-641-S

Applicant: The Watt Stopper, Inc.

Test Date: Jan.10 to Jan. 30, 2021

Standards: FCC Part 2 (Section 2.1091)

KDB 447498 D01 General RF Exposure Guidance v06

IEEE C95.1-1992

The above equipment has been tested by **BUREAU VERITAS ADT (Shanghai) Corporation**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by :

A handwritten signature in black ink that appears to read 'Yan Zhou'.

, Date:

Feb.08, 2022

Yan ZHOU

Project Engineer

Approved by :



, Date:

Feb.08, 2022

Daniel SUN

EMC Lab Manager



2 General Information

2.1 General Description of EUT

For BLE

| | |
|-----------------------------|--|
| Product | DLM Wireless Slim Switches |
| Brand |  legrand® |
| Test Model | LMSW-610-S, LMSW-611-S, LMSW-622-S, LMSW-641-S |
| Power Rating | 3.0Vdc |
| Modulation Type | GFSK |
| Modulation Technology | Bluetooth Low Energy 5.0 |
| Operating Frequency | 2402MHz ~ 2480MHz |
| Number of Channel | 40 |
| Antenna Type | PCB Antenna |
| Antenna Connector | -- |
| Antenna Gain | 3dBi |
| Product SW/HW version | 10.92/R4 |
| Radio SW/HW version | 17.1.0/R3 |
| Test SW version | 17.1.0 |
| RF power setting in Test SW | +4dBm |

Note:

1. For more details, please refer to the User's manual of the EUT.



For 802.15.4

| | |
|-----------------------------|--|
| Product | DLM Wireless Slim Switches |
| Brand |  legrand® |
| Test Model | LMSW-610-S, LMSW-611-S, LMSW-622-S, LMSW-641-S |
| Power Rating | 3.0Vdc |
| Modulation Type | O-QPSK |
| Modulation Technology | 6LoWPAN |
| Operating Frequency | 2405MHz to 2480MHz |
| Number of Channel | 16 |
| Antenna Type | PCB Antenna |
| Antenna Connector | -- |
| Antenna Gain | 3dBi |
| Product SW/HW version | 10.92/R4 |
| Radio SW/HW version | 17.1.0/R3 |
| Test SW version | 17.1.0 |
| RF power setting in Test SW | +4dBm |



3 RF Exposure

3.1 Limits For Maximum Permissible Exposure (MPE)

| Frequency Range (MHz) | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density (mW/cm ²) | Average Time (minutes) |
|---|-------------------------------|-------------------------------|-------------------------------------|------------------------|
| Limits For General Population / Uncontrolled Exposure | | | | |
| 300-1,500 | - | - | F/1500 | 30 |
| 1,500-100,000 | - | - | 1.0 | 30 |

F = Frequency in MHz

3.2 MPE Calculation Formula

Power density (S) is calculated according to the formula:

$$S = PG / (4\pi R^2)$$

Where S = power density in mW/cm²

P = transmit power in mW

G = numeric gain of transmit antenna (numeric gain=Log-1(dB antenna gain/10))

R = distance (cm)

3.3 MPE Calculation Formula

The antenna of this product, under normal use condition, is at least 20cm from the body of the user. So the device is classified as Mobile Device.

3.4 Calculation Result of Maximum Permissible Exposure

| Frequency Band (MHz) | Max. Conducted output power(dBm) | Antenna Gain (dBi) | Distance (cm) | Power Density (mW/cm ²) | Limit (mW/cm ²) |
|----------------------|----------------------------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 2402-2480 | 3.88 | 3 | 20 | 0.0009704 | 1 |
| 2405-2480 | 3.78 | 3 | 20 | 0.0009483 | 1 |

Conclusion:

The calculation result of MPE is less than the limit.

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