



## 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

**Lab Address:** No. 829, Xinzhuang Road, Shanghai, P.R.China (201612)



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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:** 

**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 :**



, **Date:**

Feb.08, 2022

Yan ZHOU

Project Engineer

**Approved by :**



Daniel SUN

EMC Lab Manager


, **Date:**

Feb.08, 2022

## 2 General Information

### 2.1 General Description of EUT


For BLE

Product	DLM Wireless Slim Switches
Brand	 <b>legrand</b>
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	 <b>legrand</b>
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 <sup>2</sup> )	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/cm<sup>2</sup>

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 <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
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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