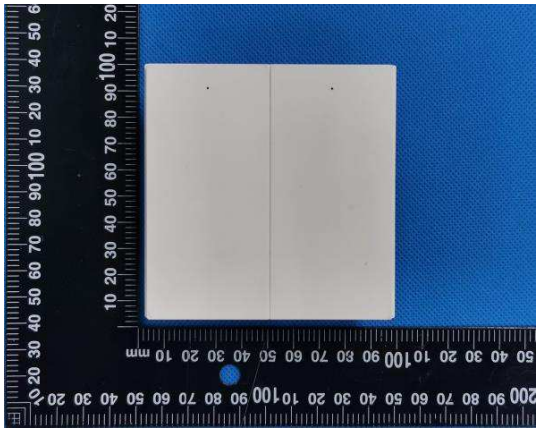
Prüfbericht-Nr.: *Test report no.:*	**CN21ZYD3 001**	**Auftrags-Nr.:** *Order no.:*	170259209	Seite 1 von 29 *Page 1 of 29*
Kunden-Referenz-Nr.: *Client Reference No.:*	N/A	**Auftragsdatum:** *Order date.:*	2020.12.29	
Auftraggeber: *Client:*	Lumi United Technology Co., Ltd. 8th Floor, JinQi Wisdom Valley, No.1 Tangling Road, Liuxian Ave, Taoyuan Residential District, Nanshan District, Shenzhen, Guangdong, P.R. China			
Prüfgegenstand: *Test item:*	Smart Wall Switch			
Bezeichnung / Typ-Nr.: *Identification / Type No.:*	WS-EUK01, WS-EUK02			
Auftrags-Inhalt: *Order content:*	TÜV Rheinland EMC service			
Prüfgrundlage: *Test specification:*	EN 60669-1:1999+A1+A2 EN 60669-2-1:2004+A1+A12			

Wareneingangsdatum: *Date of sample receipt:*	2020.12.31
Prüfmuster-Nr.: *Test sample No.:*	A002979252 006
Prüfzeitraum: *Testing period:*	Refer to test report
Ort der Prüfung: *Place of testing:*	Refer to section 2.1
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland (Guangdong) Ltd.
Prüfergebnis*: *Test result*:*	Pass



geprüft von: *tested by:*		**genehmigt von:** *authorized by:*	
Datum: 2021.03.12 *Date:*	Amy Wang	**Datum:** 2021.03.18 *Date:*	Cherry He
Stellung/*Position:*	Amy Wang/Project Manager	**Stellung**/*Position:*	Cherry He/TC

Sonstiges / *Other:*

The RF characteristics of this electronic switch were not evaluated in this report.

Zustand des Prüfgegenstandes bei Anlieferung: *Condition of the test item at delivery:*	Prüfmuster vollständig und unbeschädigt Test item complete and undamaged

* Legende:	1 = sehr gut 2 = gut P(ass) = entspricht o.g. Prüfgrundlage(n)	3 = befriedigend F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	4 = ausreichend N/A = nicht anwendbar	5 = mangelhalt N/T = nicht getestet
Legend:	1 = very good 2 = good P(ass) = passed a.m. test specifications(s)	3 = satisfactory F(ail) = failed a.m. test specifications(s)	4 = sufficient N/A = not applicable	5 = poor N/T = not tested

Test Summary

5.1.1 HARMONICS CURRENT EMISSION ON AC MAINS
RESULT: Pass

5.1.2 VOLTAGE CHANGES, VOLTAGE FLUCTUATIONS AND FLICKER
RESULT: Pass

5.1.3 TERMINAL CONTINUOUS DISTURBANCE VOLTAGE
RESULT: Pass

6.2.1 POWER-FREQUENCY MAGNETIC FIELD
RESULT: N/A

6.2.2 RADIO-FREQUENCY COMMON MODE / CONDUCTED SUSCEPTIBILITY (CS)
RESULT: Pass

6.2.3 RADIO-FREQUENCY ELECTROMAGNETIC FIELD SUSCEPTIBILITY (RS)
RESULT: Pass

6.3.1 ELECTRICAL FAST TRANSIENTS (EFT)
RESULT: Pass

6.3.2 SURGE
RESULT: Pass

6.3.3 ELECTROSTATIC DISCHARGES (ESD)
RESULT: Pass

6.4.1 VOLTAGE DIPS AND INTERRUPTIONS
RESULT: Pass

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1 General Remarks

When applying the basic standards in this test report, please refer to the applied generic or product family standards for edition information:
For dated basic standards, only the edition cited applies. For undated basic standards, the latest edition (including any amendments) applies.

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix 1: Test Result
Appendix 2: List of Test and Measurement Equipment.

2 Test Sites

2.1 Test Facilities

TÜV Rheinland (Guangdong) Ltd. EMC Laboratory
No.102, 1F of Southwest and No.205, 2F of West Warehouse Building, No.767 Tianyuan Road, Tianhe District, Guangzhou, Guangdong, P.R.China

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Refer to attached Appendix 2

3 General Product Information

The submitted samples WS-EUK01 and WS-EUK02 are Smart Wall Switch with ZigBee wireless control for household lamp control used.
Model WS-EUK01 and WS-EUK02 have the same electronic designed and wireless module except for the structure. WS-EUK02 has two control loops; WS-EUK01 has one control loop.
Based on above information, full tests were performed on model WS-EUK02.

3.1 Product Function and Intended Use

Refer to the Technical Documentation and User Manual for further details.

3.2 Ratings and System Details

Type designation	:	WS-EUK01, WS-EUK02
Rated input	:	AC100-250V, 50/60Hz, Max. 8A (Resisitive Load)
Protection class	:	II
Port	:	AC Mains input, AC load port
Cable type	:	Unshielded

3.3 Independent Operation Modes

The basic operation modes are:

A. On, maximum disturbance with maximum load.
B. On-Off-On, 24 times.
C. Off(standby mode)

Refer to User Manual for further details.

3.4 Noise Generating and Noise Suppressing Parts

Refer to Technical Documentation for further details.

3.5 Submitted Documents

Circuit Diagram
PCB Layout
Rating Label
User Manual
Difference Declaration

4 Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

Immunity: The equipment under test (EUT) was configured to have its highest possible susceptibility against the tested phenomena. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Refer to test set-up in chapter 5 and chapter 6.

4.3 Special Accessories and Auxiliary Equipment

None.

4.4 Countermeasures to achieve EMC Compliance

No additional countermeasures to the submitted test sample(s) were employed to achieve compliance.

5 Test Results EMISSION

5.1 Emission in the Frequency Range up to 30 MHz

5.1.1 Harmonics Current Emission on AC Mains

RESULT: **Pass**

Test Specification

Basic standard	:	EN IEC 61000-3-2:2019
Measurement equipment requirement	:	IEC 61000-4-7
Measured harmonics	:	1 – 40
Equipment class	:	C
Limits	:	Clause 7.1 and 7.3

Test Setup

Date of testing	:	Refer to appendix 1
Input voltage	:	AC 230V, 50Hz
Operation mode	:	A
Artificial hand	:	N/A
Test configuration	:	Table-top
Temperature	:	Refer to appendix 1
Humidity	:	Refer to appendix 1
Air pressure	:	Refer to appendix 1

Photograph 1: Set-up for Harmonic Current Emission on AC Mains

For test results, please refer to the attached appendix 1.

5.1.2 Voltage Changes, Voltage Fluctuations and Flicker

RESULT: **Pass**

Test Specification

Basic standard	:	EN 61000-3-3: 2013+A1
Measurement equipment requirement	:	IEC 61000-4-15
Limits	:	Clause 5

Test Setup

Date of testing	:	2020.08.05
Input voltage	:	AC 230V, 50Hz
Operation mode	:	B
Artificial hand	:	N/A
Test configuration	:	Table-top
Temperature	:	23.6°C
Humidity	:	63%
Air pressur	:	101kPA

Photograph 2: Set-up for Voltage Changes, Voltage Fluctuations and Flicker

Test Result

Parameter	Pst	Plt	d(t) ms	dc %	dmax %
Limit	1	0.65	200	3	4
WS-EUK02	/	/	0	1.34	1.58

5.1.3 Terminal Continuous Disturbance Voltage

RESULT: **Pass**

Test Specification

Family standard	:	EN 60669-1:1999+A1+A2 EN 60669-2-1: 2004+A1+A12, clause 26.2.2
Test procedure	:	EN 55015:2013+A1,clause 8
Port	:	Mains, Load Terminal
Frequency range of Mains	:	9kHz-30MHz
Test site	:	Shielded Room
Limits	:	EN 55015:2013+A1,Clause 4.3 Table 2a, 2b

Test Setup

Date of testing	:	Refer to appendix 1
Input voltage	:	AC 100V, 60Hz and AC 250V, 50Hz
Operation mode	:	A
Test Ports	:	AC Mains, Load terminal
Artificial hand	:	N/A
Test configuration	:	Table-top
Temperature	:	Refer to appendix 1
Humidity	:	Refer to appendix 1
Air pressure	:	Refer to appendix 1

Photograph 3: Set-up for Mains Terminal Disturbance Voltage

Test Result

Measurement uncertainty: 1. 98 dB(k=2, σ =95%)

If the result of the measurement with the Quasi Peak detector is below the Average limit, the measurement with Average Detector has been omitted.

Disturbances other than those mentioned are small or not detectable.

6 Test Results IMMUNITY

6.1 Classification of Apparatus

According to EN 60669-2-1: 2004+A1+A12, the EUT shall be tested in accordance with table 104, 105, 106 & 107, and comply with following performance criterion:

Power-frequency Magnetic Field	**Criterion A**
Radio-frequency Electromagnetic Field Amplitude Modulated (RS)	**Criterion A**
Radio-frequency Common Mode / Conducted Susceptibility (CS)	**Criterion A**
Electrical Fast Transients (EFT)	**Criterion B**
Surges	**Criterion B**
Electrostatic Discharge (ESD)	**Criterion B**
Voltage Dips and Interruptions	**Criterion B**

6.2 Continuous Disturbances

6.2.1 Power-frequency Magnetic Field

RESULT: **N/A**

Test Specification

Family standard	:	EN 60669-1:1999+A1+A2 EN 60669-2-1: 2004+A1+A12
Basic standard	:	IEC 61000-4-8
Frequency	:	50Hz or 60Hz
Magnetic field strength	:	3 A/m
Performance criterion	:	A

The EUT does not contain devices susceptible to magnetic fields, such as CRT monitors, Hall elements, electrodynamic microphones, magnetic field sensors, etc. Therefore, this test is not applicable and skipped.

*) EN 60669-2-1, clause 26.1.7: “This test is applicable only to electronic switches containing devices susceptible to magnetic fields, for example Hall elements, electrodynamic microphones, etc.”

6.2.2 Radio-frequency Common Mode / Conducted Susceptibility (CS)

RESULT: **Pass**

Test Specification

Family standard	:	EN 60669-1:1999+A1+A2 EN 60669-2-1: 2004+A1+A12
Basic standard	:	IEC 61000-4-6
Characteristics of test generator	:	
Output impedance		50 Ω
Harmonics and distortion		Any spurious spectral line at least 15 dB below the carrier level
Amplitude modulation		80 % ± 5 % in depth, 1 kHz ± 10 % sine wave
Frequency bandwidth	:	150 kHz to 80 MHz
Frequency step	:	1% with 1 s dwell time
Performance criterion	:	A

Test Setup

Date of testing	:	2021.03.12
Input voltage	:	AC 230V, 50Hz
Operation mode	:	A
Signal lines and control lines	:	N/A
Input and output dc power ports	:	N/A
Input and output ac power ports	:	3V (rms)
Temperature	:	24 °C
Humidity	:	58 %
Air pressure	:	101 kPA

Photograph 4: Set-up for Radio-frequency Common Mode / Conducted Susceptibility (CS)

Test Result

Table 2: Immunity against Radio-frequency Common Mode / Conducted Susceptibility (CS)

Coupling point	Application	Level (V(r.m.s))	Remark
Power ports			
AC input port	CDN-M2	3(150KHz~80MHz)	Applied, *)
AC output port	EM clamp	3(150KHz~80MHz)	Applied, *)
Signal and control lines			
	Current Clamp	3	N/A
	EM clamp	3	N/A

*) Remark: No degradation was observed during and after the tests.

6.2.3 Radio-frequency Electromagnetic Field Susceptibility (RS)

RESULT: **Pass**

Test Specification

Family standard	:	EN 60669-1:1999+A1+A2 EN 60669-2-1: 2004+A1+A12
Basic standard	:	IEC 61000-4-3
Test level	:	1/3/10 V/m(un-modulated)
Frequency range	:	80MHz-1000MHz, 1400MHz-2000MHz 2000MHz-2700MHz
Modulation	:	1 kHz sine-wave, 80% AM
Sweep mode	:	Automatic
Sweep step	:	1%
Dwell time	:	≥ 1 Sec
Performance criterion	:	A

Test Setup

Date of testing	:	2021.03.12
Input voltage	:	AC 230V, 50Hz
Operation mode	:	A
Ports	:	Enclosure
Temperature	:	24 °C
Humidity	:	58 %
Air pressure	:	101 kPA

Photograph 5: Set-up for Radio-frequency Electromagnetic Field Susceptibility

Test Result

Table 3: Immunity against Radio-frequency Electromagnetic Field Susceptibility (RS)

Field Polarization	**Side of EUT**	**Frequency Band**	**Strength** (unmodulated, r.m.s)	**Result**	**Remarks**
Horizontal Vertical	Left Right Front Rear	80-1000MHz/ 1400-200MHz	3 V/m	passed	see *) below

*) Remark: No degradation was observed during and after the tests.

6.3 Transient Disturbances

6.3.1 Electrical Fast Transients (EFT)

RESULT: **Pass**

Test Specification

Family standard	:	EN 60669-1:1999+A1+A2 EN 60669-2-1: 2004+A1+A12
Basic standard	:	IEC 61000-4-4
Wave shape of pulse in 50 Ω load	:	
Rise time		5 ns ± 30 %
Duration		50 ns ± 30 %
Wave shape into 1 kΩ load	:	
Rise time		5 ns ± 30 %
Duration		50 ns with a tolerance of -15 ns to + 100 ns
Burst duration	:	15 ms ± 20 % at 5 kHz
Burst period	:	300 ms ± 20 %
Repetition frequency	:	5 kHz
Polarity	:	Positive and negative
Time of application	:	2 minutes
Performance criterion	:	B

Test Setup

Date of testing	:	2021.03.12
Input voltage	:	AC 230V, 50Hz
Operation mode	:	A
Signal and control ports	:	N/A
Input and output dc power ports	:	N/A
Input and output ac power ports	:	1 KV
Temperature	:	22 °C
Humidity	:	52 %
Air pressure	:	101 kPA

Photograph 6: Set-up for Electrical Fast Transient (EFT)

Test Result

Table 4: Immunity against Electrical Fast Transients (EFT)

Coupling point	Application	Level (kV)	Polarity	Remark
Power ports				
AC input port	Coupling network	1	+	Applied, *)
		1	-	Applied, *)
AC output port	Coupling clamp	0. 5	+	Applied, *)
		0. 5	-	Applied, *)
Signal lines				
	Coupling clamp	0.5	+	N/A
		0.5	-	N/A
Control lines				
	Coupling clamp	0.5	+	N/A
		0.5	-	N/A

*) Remark: No degradation was observed during and after the tests.

6.3.2 Surge

RESULT: **Pass**

Test Specification

Family standard	:	EN 60669-1:1999+A1+A2
		EN 60669-2-1: 2004+A1+A12
Basic standard	:	IEC 61000-4-5
Definitions of waveform parameters	:	
Front time		1.2 µs ± 30 %
Time to half value		50 µs ± 20 %
Source impedance	:	
Power line symmetrical		2 Ω + 18 µF
Power line unsymmetrical		12 Ω + 9 µF
Polarity	:	Positive and negative
No. of surges / polarity /phase angle	:	5
Phase angles	:	0°, 90° and 270 °
Repetition rate	:	60 s
Performance criterion	:	C

Test Setup

Date of testing	:	2021.03.12
Input voltage	:	AC 230V, 50Hz
Operation mode	:	A
Temperature	:	24 °C
Humidity	:	53 %
Air pressure	:	101 kPA

Photograph 7: Set-up for Surge on AC Power Supply

Test Result

Table 5: Surge Immunity Tests Result

Coupling point	Application	Level (kV)	Polarity	Remark
AC power port	Between phase and neutral	0.5,1.0	+	Applied, *)
		0.5,1.0	-	Applied, *)
AC power port	Between phase and earth	N/A	+	N/A
		N/A	-	N/A
AC power port	Between neutral and earth	N/A	+	N/A
		N/A	-	N/A

*) Remark: No degradation was observed during and after the tests.

6.3.3 Electrostatic Discharges (ESD)

RESULT: **Pass**

Test Specification

Family standard	:	EN 60669-1:1999+A1+A2
		EN 60669-2-1: 2004+A1+A12
Basic standard	:	IEC 61000-4-2
Discharge impedance	:	330 Ω / 150 pF
No. of discharges	:	Contact discharge:≥10
		Air discharge: ≥10
Type of discharge	:	
Direct discharge		Air discharge, ±8kV
		Contact discharge, ±4kV
Indirect discharge		Contact discharge, ±4kV
Polarity	:	Positive and negative
Discharge location	:	See photo documentation of the test set-up
		All external locations accessible by hand
		Horizontal coupling plate (HCP)
		Vertical coupling plate (VCP)
Performance criterion	:	B

Test Setup

Date of testing	:	2021.03.12
Input voltage	:	AC 230V, 50Hz
Operation mode	:	A
Temperature	:	24 °C
Humidity	:	56 %
Air pressure	:	101 kPA

Photograph 8: Set-up for Electrostatic Discharge

Contact Discharge ±4kV Air Discharge ±8kV

Test Result

Table 6: Electrostatic Discharge

Direct discharges			
Air discharges Discharge location	**Air discharge voltage (kV)**	**Polarity**	**Remark**
Refer to Photograph of ESD	8	±	Applied, *)
Enclosure	8	±	Applied, *)
Contact discharges Discharge location	**Contact discharge voltage (kV)**	**Polarity**	**Remark**
Refer to Photograph of ESD	4	±	N/A
Conductive parts	4	±	Applied, *)
Indirect discharges			
Contact discharges Discharge location	**Contact discharge voltage (kV)**	**Polarity**	**Remark**
VCP	4	±	Applied, *)
HCP	4	±	Applied, *)

*) Remark: No degradation was observed during and after the tests.

6.4 Power Supply Alteration

6.4.1 Voltage Dips and Interruptions

RESULT: **Pass**

Test Specification

Family standard	:	EN 60669-1:1999+A1+A2 EN 60669-2-1: 2004+A1+A12
Basic standard	:	IEC 61000-4-11
Test voltage generator characteristics for interruptions	:	
Rise time		Between 1 µs and 5 µs
Fall time		Between 1 µs and 5 µs
Output impedance of test voltage generator	:	<(0.4 + j 0.25 Ω)
Phase angle	:	0°
Nominal mains voltage (Ut)	:	AC 230 V
Rated frequency	:	50Hz
No. of interruptions	:	3
No. of voltage dips	:	3
Interval	:	>10s
Performance criterion	:	B

Test Setup

Date of testing	:	2021.03.12
Input voltage	:	AC 230V, 50Hz
Operation mode	:	A
Temperature	:	22 °C
Humidity	:	53 %
Air pressure	:	101 kPA

Photograph 9: Set-up for Voltage Dips and Interruptions

Test Result

Table 7: Voltage Dip and Interruptions Immunity

Interruptions			
Test level (% Ut)	**Duration (cycle)**	**No. of interruptions**	**Result**
0	10	10	Applied, *)
Voltage dips			
Test level (% Ut)	**Duration (cycle)**	**No. of voltage dips**	**Result**
40	10	10	Applied, *)
70	10	10	Applied,*)

*) Remark: No degradation was observed during and after the tests.

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Prüfbericht - Nr.: **CN21ZYD3 001**
Test Report No.

EMC Test Record

TÜVRheinland®

Receipt No.:170259209	Page: Of
Report No.:	
Is this test result compliant with the requirements in the test plan? ☒ Yes / ☐ No	

Emission	Disturbance in supply system Harmonics on AC Mains	☒EN/IEC 61000-3-2 ☐EN/IEC 61000-3-12
Test voltage / Freq.: AC 230V/50 Hz	Climatic conditions: 22 ℃; 52 %RH;	
Test Site:	TUV Rheinland (Guangdong) Ltd. EMC Lab	
Model: WS-EUK02		Equipment: ☒ DPA 500 ☒ ACS 500
Operation Mode: A		
Harmonics Tables see page :		
Note:		

Settings	General Data		
Voltage	Current	Power	Power Fact.

Tested by Lisa Liu Reviewed by Jacky chen

Date: 20210317 Date: 20210318

Test Report

Report Number :	20210315
Test Standard :	IEC 61000-3-2 (Edition 5) Limits for harmonic current emissions (equipment input current < 16 A per phase)
Test Date :	3/16/2021 1:35:17 PM

Measures & Analysis

Measure Window :	10 periods	Voltage Range :	500 V
Refresh Interval :	2 s	Current Range :	50 A
Sampling Rate :	6.4 kS/s		
Scaled Window :	Rectangular		
According :	IEC 61000-3-2 (Edition 5) Limits for harmonic current emissions (equipment input current < 16 A per phase)		
Observation Period :	Quasi-stationary		

Measure Results

Standard Specific Results for IEC 61000-3-2 (Edition 5)

Standard Group:	Industry
Standard Name:	IEC 61000-3-2 (Edition 5) Limits for harmonic current emissions (equipment input current < 16 A per phase)
Device Under Test:	PASS
Power Source:	PASS
Connection Type:	L - N
Classification:	Class C (Rated power > 25 W)

Check Harmonics 2..40 [exception odd 21..39]			
First detected harmonic order > 150 %			
Line 1:	None		

Tested by Lisa Liu

Date: 20210317

Reviewed by Jacky chen

Date: 20210318

Prüfbericht - Nr.: **CN21ZYD3 001**
Test Report No.

Harmonics orders > 150 %			
Line 1:	None		
Harmonics orders with average > 100 %			
Line 1:	None		

Check Odd Harmonics 21..39			
First detected time window with partial > partial limits			
	time window (time)	*measured value*	*limit*
Line 1:	None		9.49 %
Maximal time window with partial > partial limits			
	time window (time)	*measured value*	*limit*
Line 1:	None		9.49 %
First detected harmonic order > 150 %			
Line 1:	None		
Harmonics orders > 150 %			
Line 1:	None		
Harmonics orders with average > 150 %			
Line 1:	None		

Measured values			
Fundamental Current			
Line 1:	7.374 A		
Active input Power			
Line 1:	1696.222 W *		
Circuit power factor			
Line 1:	1 *		

** Absolute value.*

Current Test Result

Average and Maximum harmonic current results									
Hn	Average (100% / 150% *)				Maximum (150%)				Harmonic Result
	Ieff [%]	of Limit [%]	Limit [%]	Result	Ieff [%]	of Limit [%]	Limit [%]	Result	
1	99.865				100.000				
2	0.030	1.491	2.000	n/a	0.037	1.235	3.000	n/a	n/a
3	0.061	0.202	30.000	n/a	0.075	0.166	45.000	n/a	n/a

Tested by Lisa Liu

Date: 20210317

Reviewed by Jacky chen

Date: 20210318

4	0.045				0.050				
5	0.019	0.187	10.000	n/a	0.023	0.153	15.000	n/a	n/a
6	0.022				0.027				
7	0.024	0.349	7.000	n/a	0.027	0.258	10.500	n/a	n/a
8	0.025				0.028				
9	0.035	0.704	5.000	n/a	0.038	0.509	7.500	n/a	n/a
10	0.022				0.026				
11	0.040	1.344	3.000	n/a	0.044	0.979	4.500	n/a	n/a
12	0.020				0.024				
13	0.015	0.497	3.000	n/a	0.017	0.378	4.500	n/a	n/a
14	0.022				0.025				
15	0.018	0.607	3.000	n/a	0.020	0.453	4.500	n/a	n/a
16	0.020				0.021				
17	0.036	1.211	3.000	n/a	0.040	0.884	4.500	n/a	n/a
18	0.023				0.026				
19	0.049	1.639	3.000	n/a	0.054	1.208	4.500	n/a	n/a
20	0.018				0.021				
21	0.011	0.237	4.500	n/a	0.013	0.297	4.500	n/a	n/a
22	0.020				0.022				
23	0.015	0.340	4.500	n/a	0.019	0.422	4.500	n/a	n/a
24	0.014				0.016				
25	0.024	0.526	4.500	n/a	0.026	0.576	4.500	n/a	n/a
26	0.015				0.018				
27	0.036	0.791	4.500	n/a	0.040	0.886	4.500	n/a	n/a
28	0.014				0.017				
29	0.018	0.393	4.500	n/a	0.021	0.462	4.500	n/a	n/a
30	0.013				0.015				
31	0.013	0.281	4.500	n/a	0.015	0.324	4.500	n/a	n/a
32	0.011				0.013				
33	0.011	0.247	4.500	n/a	0.014	0.313	4.500	n/a	n/a
34	0.012				0.016				
35	0.026	0.588	4.500	n/a	0.030	0.670	4.500	n/a	n/a
36	0.012				0.015				
37	0.027	0.592	4.500	n/a	0.030	0.657	4.500	n/a	n/a
38	0.011				0.014				
39	0.016	0.354	4.500	n/a	0.020	0.441	4.500	n/a	n/a
40	0.012				0.014				

Note: Harmonic currents less than 0.6 % of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.
** Application of limits for average is 100% except for odd harmonics from 21 to 39, where 150% applies.*

Tested by Lisa Liu

Date: 20210317

Reviewed by Jacky chen

Date: 20210318

Voltage Source Verification

Harmonic voltage results				
Hn	Ueff [V]	Ueff [%]	Limit [%]	Result
1	230.036	100.016		
2	0.059	0.026	0.200	PASS
3	0.056	0.024	0.900	PASS
4	0.027	0.012	0.200	PASS
5	0.041	0.018	0.400	PASS
6	0.021	0.009	0.200	PASS
7	0.040	0.017	0.300	PASS
8	0.021	0.009	0.200	PASS
9	0.074	0.032	0.200	PASS
10	0.010	0.005	0.200	PASS
11	0.059	0.026	0.100	PASS
12	0.011	0.005	0.100	PASS
13	0.028	0.012	0.100	PASS
14	0.018	0.008	0.100	PASS
15	0.043	0.019	0.100	PASS
16	0.014	0.006	0.100	PASS
17	0.072	0.031	0.100	PASS
18	0.015	0.006	0.100	PASS
19	0.084	0.037	0.100	PASS
20	0.012	0.005	0.100	PASS
21	0.048	0.021	0.100	PASS
22	0.010	0.004	0.100	PASS
23	0.027	0.012	0.100	PASS
24	0.012	0.005	0.100	PASS
25	0.064	0.028	0.100	PASS
26	0.016	0.007	0.100	PASS
27	0.078	0.034	0.100	PASS
28	0.014	0.006	0.100	PASS
29	0.060	0.026	0.100	PASS
30	0.012	0.005	0.100	PASS
31	0.028	0.012	0.100	PASS
32	0.013	0.006	0.100	PASS
33	0.039	0.017	0.100	PASS
34	0.012	0.005	0.100	PASS
35	0.071	0.031	0.100	PASS

Tested by Lisa Liu

Date: 20210317

Reviewed by Jacky chen

Date: 20210318

36	0.009	0.004	0.100	PASS
37	0.063	0.027	0.100	PASS
38	0.015	0.006	0.100	PASS
39	0.052	0.022	0.100	PASS
40	0.010	0.004	0.100	PASS

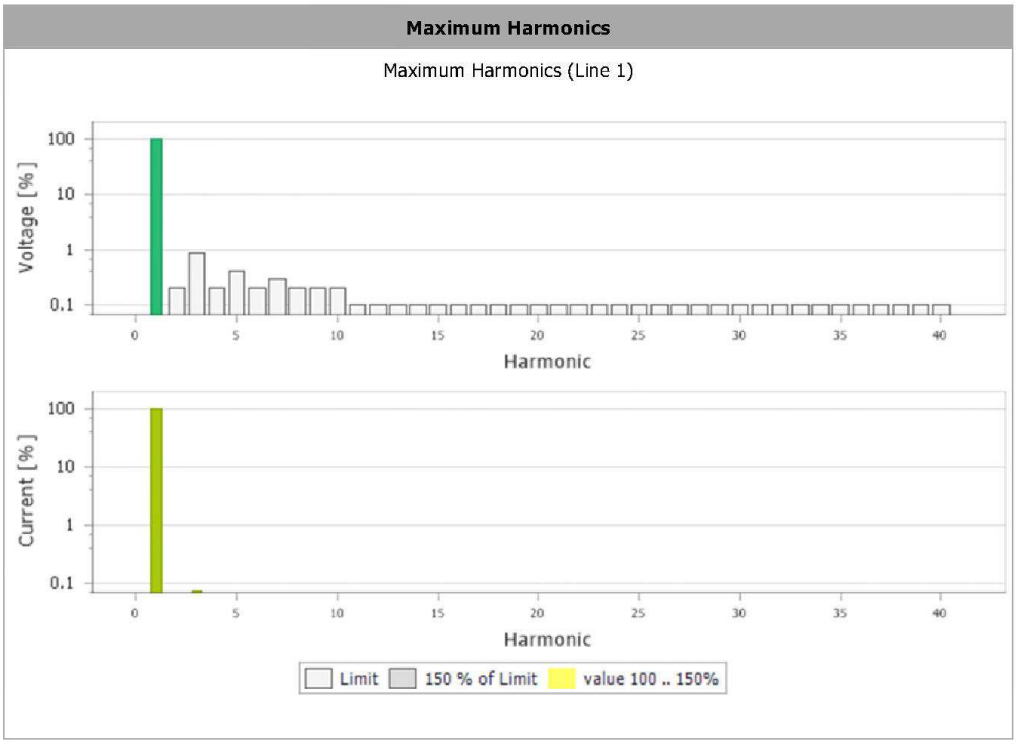
Tested by Lisa Liu

Date: 20210317

Reviewed by Jacky chen

Date: 20210318

Prüfbericht - Nr.: **CN21ZYD3 001**
Test Report No.



Tested by Lisa Liu

Date: 20210317

Reviewed by Jacky chen

Date: 20210318

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

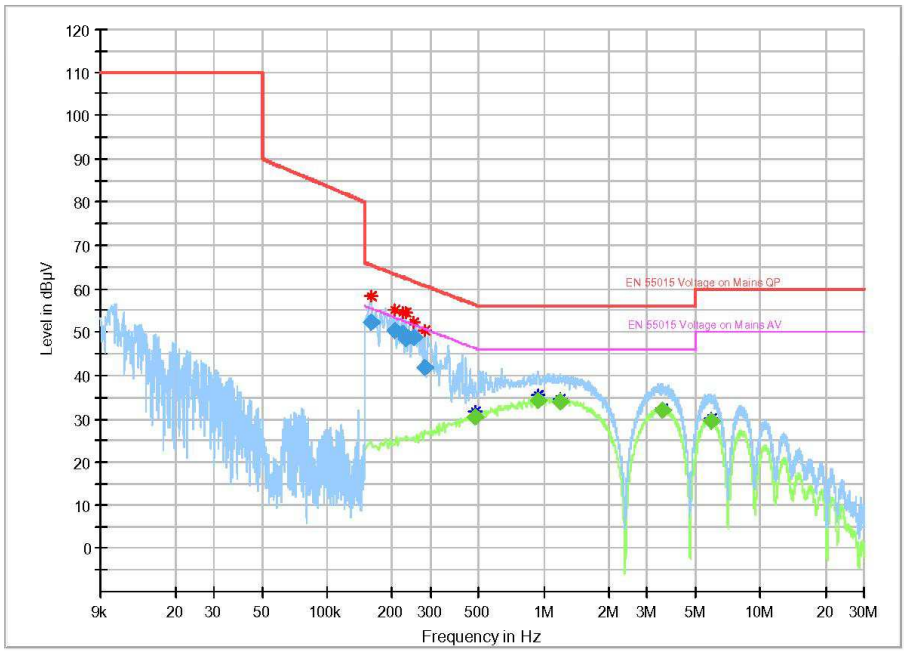
EMC Test Record (EMISSION)

Test Information

Manufacturer:	Lumi
Test Item:	Smart Wall Switch
Identification:	WS-EUK02
Test Standard:	EN55015
Test Detail:	Conducted Emission
Operation Mode:	A
Climate Condition:	21 ℃; 50 %RH; 101 kPa.
Test Voltage/ Freq.:	AC 100 V/ 60 Hz
Port / Line:	AC Mains(L1+N)
Receipt No.:	170259209
Report No.:	/
Result:	Pass
Comment:	/

Hardware Setup:	1phase LISN ENV216 to ESCI 3
Level Unit:	dBµV

Subrange	Detectors	IF Bandwidth	Step Size	Meas. Time	Receiver
9kHz - 150kHz	Peak	200Hz	100Hz	50ms	ESCI 3
150kHz - 30MHz	Peak; Average	9kHz	4.5kHz	10ms	ESCI 3



Tested by: Lisa Liu 20210317

Reviewed by: Jacky Chen 20210318

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.159000	52.17	---	65.52	13.35	1000.0	9.000	N	OFF	9.6
0.204000	50.32	---	63.45	13.13	1000.0	9.000	N	OFF	9.6
0.222000	49.90	---	62.74	12.84	1000.0	9.000	N	OFF	9.6
0.231000	48.46	---	62.41	13.95	1000.0	9.000	N	OFF	9.6
0.249000	48.87	---	61.79	12.92	1000.0	9.000	N	OFF	9.6
0.280500	41.85	---	60.80	18.96	1000.0	9.000	N	OFF	9.6
0.478500	---	30.35	46.37	16.02	1000.0	9.000	L1	OFF	9.7
0.937500	---	34.39	46.00	11.61	1000.0	9.000	L1	OFF	9.7
1.180500	---	34.09	46.00	11.91	1000.0	9.000	L1	OFF	9.7
3.507000	---	32.10	46.00	13.90	1000.0	9.000	L1	OFF	9.8
5.892000	---	29.63	50.00	20.37	1000.0	9.000	L1	OFF	9.9
5.959500	---	29.55	50.00	20.45	1000.0	9.000	L1	OFF	9.9

Tested by: Lisa Liu 20210317

Reviewed by: Jacky chen 20210318

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

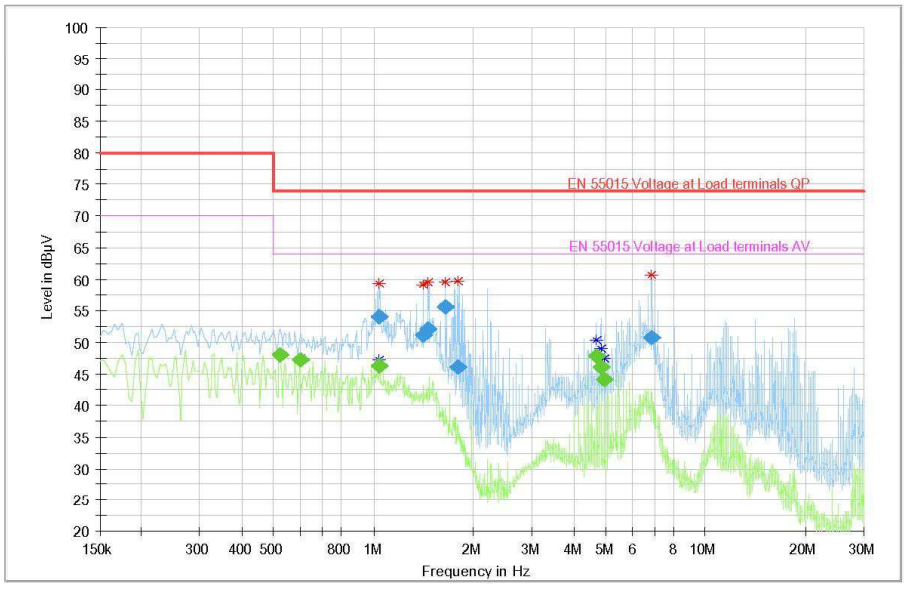
EMC Test Record (EMISSION)

Test Information

Manufacturer:	Lumi
Test Item:	Smart Wall Switch
Identification:	WS-EUK02
Test Standard:	EN55015
Test Detail:	Conducted Emission
Operation Mode:	A
Climate Condition:	20℃; 50%RH; 101 kPa.
Test Voltage/ Freq.:	AC 100 V/ 60 Hz
Port / Line:	Output line 2
Receipt No.:	170259209
Report No.:	/
Result:	Pass
Comment:	/

Hardware Setup:	ESH2-Z3 Voltage Probe
Level Unit:	dBµV

Subrange	Detectors	IF Bandwidth	Step Size	Meas. Time	Receiver
150kHz - 30MHz	Peak; Average	9kHz	4.5kHz	10ms	ESCI



Tested by: Lisa Liu 20210317

Reviewed by: Jacky chen 20210318

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Corr. (dB)
0.522000	---	48.00	64.00	16.00	1000.0	9.000	30.1
0.598000	---	47.33	64.00	16.67	1000.0	9.000	30.1
1.042000	---	46.29	64.00	17.71	1000.0	9.000	30.1
1.042000	54.10	---	74.00	19.90	1000.0	9.000	30.1
1.406000	51.15	---	74.00	22.86	1000.0	9.000	30.1
1.462000	52.11	---	74.00	21.89	1000.0	9.000	30.1
1.646000	55.71	---	74.00	18.29	1000.0	9.000	30.1
1.782000	46.06	---	74.00	27.94	1000.0	9.000	30.1
4.682000	---	47.93	64.00	16.07	1000.0	9.000	30.3
4.814000	---	46.17	64.00	17.83	1000.0	9.000	30.3
4.950000	---	44.08	64.00	19.92	1000.0	9.000	30.3
6.902000	50.85	---	74.00	23.15	1000.0	9.000	30.3

Tested by: Lisa Liu 20210317

Reviewed by: Jacky chen 20210318

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

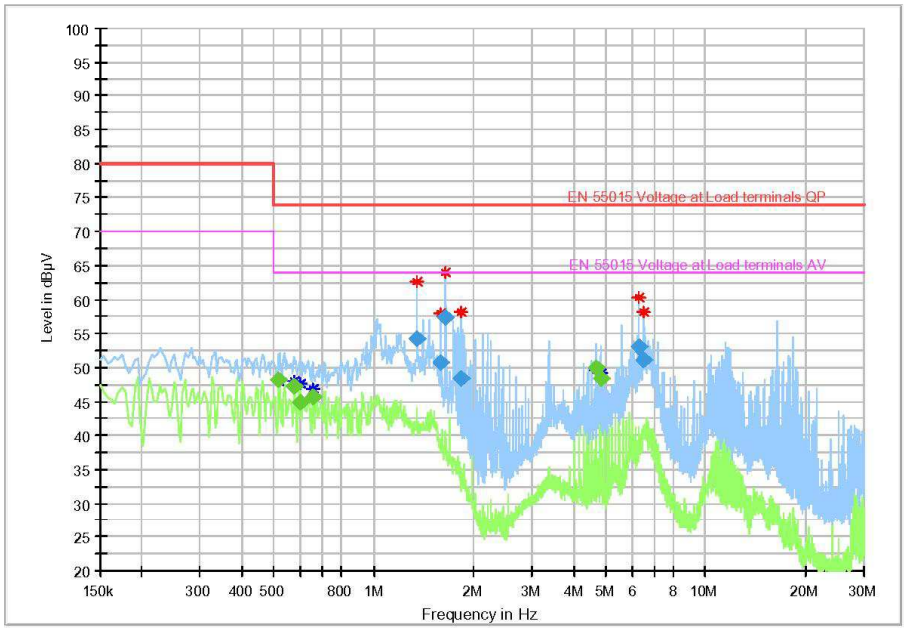
EMC Test Record (EMISSION)

Test Information

Manufacturer:	Lumi
Test Item:	Smart Wall Switch
Identification:	WS-EUK02
Test Standard:	EN55015
Test Detail:	Conducted Emission
Operation Mode:	A
Climate Condition:	20℃; 50%RH; 101 kPa.
Test Voltage/ Freq.:	AC 100 V/ 60 Hz
Port / Line:	Output line 2
Receipt No.:	170259209
Report No.:	/
Result:	Pass
Comment:	/

Hardware Setup:	ESH2-Z3 Voltage Probe
Level Unit:	dBµV

Subrange	Detectors	IF Bandwidth	Step Size	Meas. Time	Receiver
150kHz - 30MHz	Peak; Average	9kHz	4.5kHz	10ms	ESCI



Tested by: Lisa Liu 20210317

Reviewed by: Jacky chen 20210318

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Corr. (dB)
0.518000	---	48.19	64.00	15.81	1000.0	9.000	30.1
0.578000	---	47.21	64.00	16.79	1000.0	9.000	30.1
0.598000	---	44.99	64.00	19.01	1000.0	9.000	30.1
0.654000	---	45.79	64.00	18.21	1000.0	9.000	30.1
1.346000	54.35	---	74.00	19.65	1000.0	9.000	30.1
1.586000	50.79	---	74.00	23.21	1000.0	9.000	30.1
1.650000	57.32	---	74.00	16.68	1000.0	9.000	30.1
1.834000	48.44	---	74.00	25.56	1000.0	9.000	30.1
4.682000	---	49.97	64.00	14.03	1000.0	9.000	30.3
4.818000	---	48.45	64.00	15.55	1000.0	9.000	30.3
6.290000	53.08	---	74.00	20.92	1000.0	9.000	30.3
6.534000	51.12	---	74.00	22.88	1000.0	9.000	30.3

Tested by: Lisa Liu 20210317 Reviewed by: Jacky chen 20210318

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

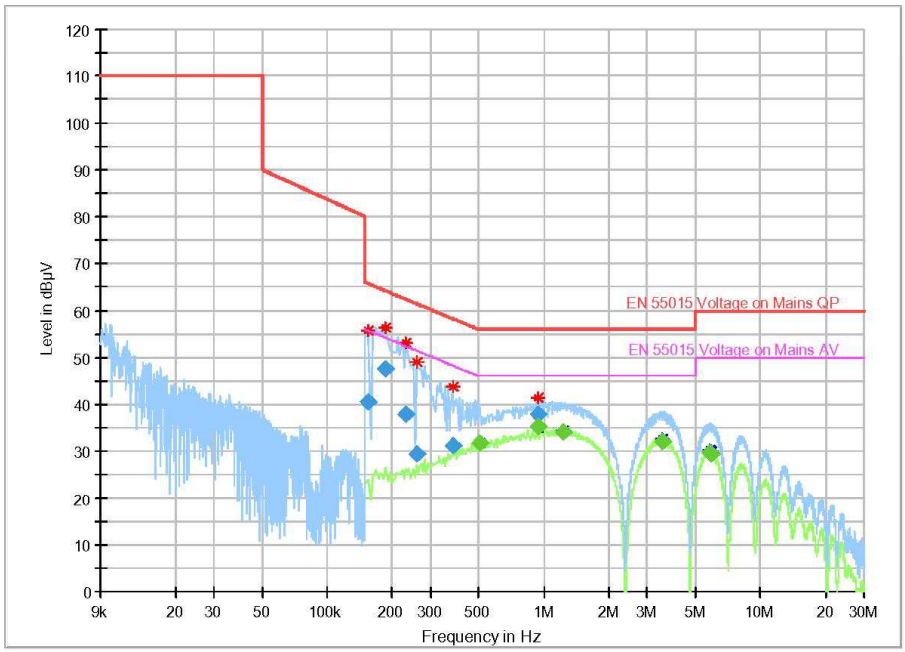
EMC Test Record (EMISSION)

Test Information

Manufacturer:	Lumi
Test Item:	Smart Wall Switch
Identification:	WS-EUK02
Test Standard:	EN55015
Test Detail:	Conducted Emission
Operation Mode:	A
Climate Condition:	21 ℃; 50 %RH; 101 kPa.
Test Voltage/ Freq.:	AC 250 V/ 50 Hz
Port / Line:	AC Mains(L1+N)
Receipt No.:	170259209
Report No.:	/
Result:	Pass
Comment:	/

Hardware Setup:	1phase LISN ENV216 to ESCI 3
Level Unit:	dBµV

Subrange	Detectors	IF Bandwidth	Step Size	Meas. Time	Receiver
9kHz - 150kHz	Peak	200Hz	100Hz	50ms	ESCI 3
150kHz - 30MHz	Peak; Average	9kHz	4.5kHz	10ms	ESCI 3



Tested by: Lisa Liu 20210317

Reviewed by: Jacky chen 20210318

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.154500	40.63	---	65.75	25.13	1000.0	9.000	N	OFF	9.6
0.186000	47.57	---	64.21	16.64	1000.0	9.000	L1	OFF	9.6
0.231000	37.91	---	62.41	24.51	1000.0	9.000	L1	OFF	9.6
0.258000	29.40	---	61.50	32.10	1000.0	9.000	N	OFF	9.6
0.379500	31.31	---	58.29	26.98	1000.0	9.000	N	OFF	9.6
0.510000	---	31.69	46.00	14.31	1000.0	9.000	L1	OFF	9.7
0.937500	---	35.30	46.00	10.70	1000.0	9.000	L1	OFF	9.7
0.937500	37.95	---	56.00	18.05	1000.0	9.000	L1	OFF	9.7
1.221000	---	34.27	46.00	11.73	1000.0	9.000	L1	OFF	9.7
3.498000	---	32.08	46.00	13.92	1000.0	9.000	L1	OFF	9.8
5.865000	---	29.66	50.00	20.34	1000.0	9.000	L1	OFF	9.9
5.959500	---	29.52	50.00	20.48	1000.0	9.000	L1	OFF	9.9

Tested by: Lisa Liu 20210317

Reviewed by: Jacky chen 20210318

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

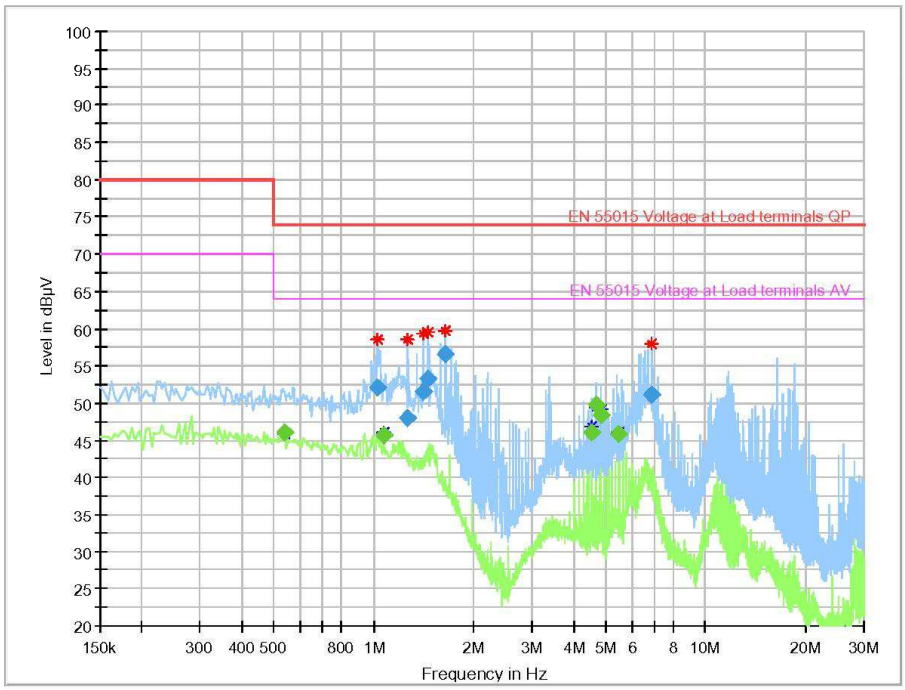
EMC Test Record (EMISSION)

Test Information

Manufacturer:	Lumi
Test Item:	Smart Wall Switch
Identification:	WS-EUK02
Test Standard:	EN55015
Test Detail:	Conducted Emission
Operation Mode:	A
Climate Condition:	20℃; 50%RH; 101 kPa.
Test Voltage/ Freq.:	AC 250 V/ 50 Hz
Port / Line:	Output line 2
Receipt No.:	170259209
Report No.:	/
Result:	Pass
Comment:	/

Hardware Setup:	ESH2-Z3 Voltage Probe
Level Unit:	dBµV

Subrange	Detectors	IF Bandwidth	Step Size	Meas. Time	Receiver
150kHz - 30MHz	Peak; Average	9kHz	4.5kHz	10ms	ESCI



Tested by: Lisa Liu 20210317

Reviewed by: Jacky chen 20210318

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Corr. (dB)
0.538000	---	46.00	64.00	18.00	1000.0	9.000	30.1
1.026000	52.06	---	74.00	21.94	1000.0	9.000	30.1
1.070000	---	45.63	64.00	18.37	1000.0	9.000	30.1
1.266000	48.08	---	74.00	25.92	1000.0	9.000	30.1
1.406000	51.60	---	74.00	22.40	1000.0	9.000	30.1
1.462000	53.28	---	74.00	20.72	1000.0	9.000	30.1
1.650000	56.66	---	74.00	17.34	1000.0	9.000	30.1
4.550000	---	46.16	64.00	17.84	1000.0	9.000	30.3
4.682000	---	49.69	64.00	14.31	1000.0	9.000	30.3
4.818000	---	48.42	64.00	15.58	1000.0	9.000	30.3
5.486000	---	45.87	64.00	18.13	1000.0	9.000	30.3
6.902000	51.11	---	74.00	22.89	1000.0	9.000	30.3

Tested by: Lisa Liu 20210317

Reviewed by: Jacky chen 20210318

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

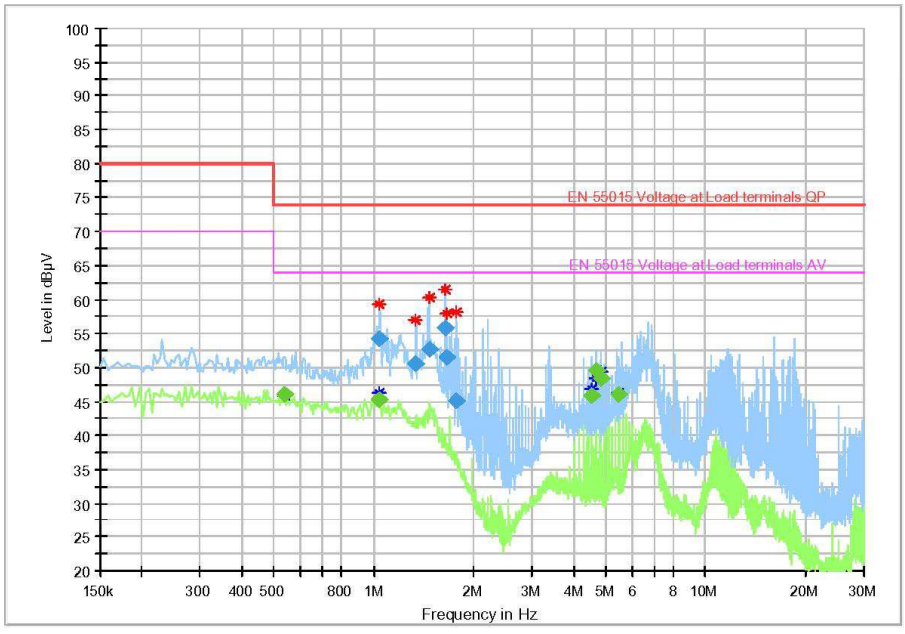
EMC Test Record (EMISSION)

Test Information

Manufacturer:	Lumi		
Test Item:	Smart Wall Switch		
Identification:	WS-EUK02		
Test Standard:	EN55015		
Test Detail:	Conducted Emission		
Operation Mode:	A		
Climate Condition:	20℃;	50%RH;	101 kPa.
Test Voltage/ Freq.:	AC250 V/	50 Hz	
Port / Line:	Output line 2		
Receipt No.:	170259209		
Report No.:	/		
Result:	Pass		
Comment:	/		

Hardware Setup:	ESH2-Z3 Voltage Probe
Level Unit:	dBµV

Subrange	Detectors	IF Bandwidth	Step Size	Meas. Time	Receiver
150kHz - 30MHz	Peak; Average	9kHz	4.5kHz	10ms	ESCI



Tested by: Lisa Liu 20210317

Reviewed by: Jacky chen 20210318

TUV Rheinland (Guangdong) Ltd. EMC Test Service Hotline: +86-20-28391188

Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Corr. (dB)
0.538000	---	45.99	64.00	18.01	1000.0	9.000	30.1
1.038000	---	45.38	64.00	18.62	1000.0	9.000	30.1
1.042000	54.18	---	74.00	19.82	1000.0	9.000	30.1
1.338000	50.58	---	74.00	23.42	1000.0	9.000	30.1
1.470000	52.72	---	74.00	21.28	1000.0	9.000	30.1
1.646000	55.80	---	74.00	18.20	1000.0	9.000	30.1
1.654000	51.56	---	74.00	22.44	1000.0	9.000	30.1
1.778000	45.14	---	74.00	28.86	1000.0	9.000	30.1
4.550000	---	45.81	64.00	18.19	1000.0	9.000	30.3
4.682000	---	49.66	64.00	14.34	1000.0	9.000	30.3
4.818000	---	48.40	64.00	15.60	1000.0	9.000	30.3
5.486000	---	46.14	64.00	17.86	1000.0	9.000	30.3

Tested by: Lisa Liu 20210317

Reviewed by: Jacky chen 20210318

Table 1: List of Test and Measurement Equipment (TÜV Rheinland (Guangdong) Ltd. EMC Laboratory)

Equipment	Manufacturer	Model No.	Serial No.	Cal Until
Disturbance Voltage				
EMI Test Receiver	Rohde&Schwarz	ESCI 3	100314	2022-03-15
Two-Line V-Network	Rohde&Schwarz	ENV216	100195	2021-05-25
EMI Test Receiver	Rohde&Schwarz	ESR7	102110	2022-04-09
Artificial Mains Network	AFJ	LT32C/10	32031810253	2021-07-30
Impedance Stabilization Network	TESTQ	ISN T8	51991	2021-07-29
Harmonics & Flicker				
Harmonic and Flicker Analyzer	EM TEST	DPA 500	0304-01	2021-04-20
AC Source	EM TEST	ACS 500	0304-01	2021-04-20
Radiated Susceptibility				
Signal Generator	Rohde&Schwarz	SMB100A	115613	2021-04-08
Power Meter	Rohde&Schwarz	NRX	100863	2021-04-08
Average Power Sensor	Rohde&Schwarz	NRP6A	101980	2021-04-08
Average Power Sensor	Rohde & Schwarz	NRP6A	101981	2021-04-08
Antenna	Amplifier Research	AT1080	0320070	2021-04-12
RF 1-6GHz Amplifier	Milmega	AS0860B-100-100	1085687	2021-03-15
Broad-band Horn Antenna	BBHA 9120 J	Rohde & Schwarz	00176	2021-04-12
Conducted Susceptibility(150 kHz-230 MHz)				
Continuous Wave Simulator	EM TEST	CWS500 C	0404-04	2022-03-15
EM Clamp	Luthi	EM101	35697	2022-03-15
Test system for conducted and radiated immunity	TESEQ	NSG4070C-80	54285	2021-08-30
6dB Attenuator	TESEQ	ATN6150	19042601	2021-07-29
Electrical Fast Transient(EFT)				
Ultra Compact Simulator	EM TEST	UCS 500-M4	V0707102252	2022-03-15
EFT Test Coupling Clamp	TESEQ	CDN 3425	1916	2022-03-15

Equipment	Manufacturer	Model No.	Serial No.	Cal Until
Surge & Voltage dips and Interruption				
Ultra Compact Simulator	EM TEST	UCS 500-M4	V0707102252	2022-03-15
Motorised Variac	EM TEST	MV 2616	V0707102253	2022-03-15
Electrostatic Discharge				
ESD Gun	TESEQ	NSG 437	615	2021-07-02