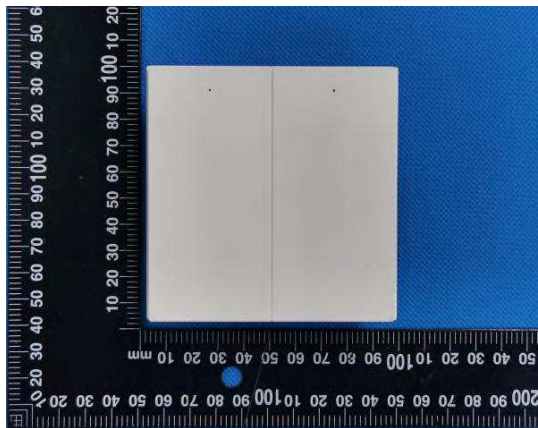




<b>Prüfbericht-Nr.:</b> <i>Test report no.:</i>	<b>CN21U8UU 001</b>	<b>Auftrags-Nr.:</b> <i>Order no.:</i>	170259209	Seite 1 von 29 Page 1 of 29
<b>Kunden-Referenz-Nr.:</b> <i>Client Reference No.:</i>	N/A	<b>Auftragsdatum:</b> <i>Order date.:</i>	2020.12.29	
<b>Auftraggeber:</b> <i>Client:</i>	Lumi 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			
<b>Prüfgegenstand:</b> <i>Test item:</i>	Smart Wall Switch			
<b>Bezeichnung / Typ-Nr.:</b> <i>Identification / Type No.:</i>	WS-EUK03, WS-EUK04			
<b>Auftrags-Inhalt:</b> <i>Order content:</i>	TÜV Rheinland EMC service			
<b>Prüfgrundlage:</b> <i>Test specification:</i>	EN 60669-1:1999+A1+A2 EN 60669-2-1:2004+A1+A12			
<b>Wareneingangsdatum:</b> <i>Date of sample receipt:</i>	2020.12.31			
<b>Prüfmuster-Nr.:</b> <i>Test sample No.:</i>	A002979252 005			
<b>Prüfzeitraum:</b> <i>Testing period:</i>	Refer to test report			
<b>Ort der Prüfung:</b> <i>Place of testing:</i>	Refer to section 2.1			
<b>Prüflaboratorium:</b> <i>Testing laboratory:</i>	TÜV Rheinland (Guangdong) Ltd.			
<b>Prüfergebnis*:</b> <i>Test result*:</i>	Pass			
<b>geprüft von:</b> <i>tested by:</i>	<b>genehmigt von:</b> <i>authorized by:</i>			
<b>Datum:</b> 2021.03.12 <i>Date:</i>				
<b>Stellung/Position:</b> Amy Wang/Project Manager	<b>Stellung/Position:</b> Cherry He/TC			
<b>Sonstiges / Other:</b>	The RF characteristics of this electronic switch were not evaluated in this report.			
<b>Zustand des Prüfgegenstandes bei Anlieferung:</b> <i>Condition of the test item at delivery:</i>	Prüfmuster vollständig und unbeschädigt Test item complete and undamaged			
* Legende: 1 = sehr gut 2 = gut 3 = befriedigend 4 = ausreichend 5 = mangelhaft P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet				
Legend: 1 = very good 2 = good 3 = satisfactory 4 = sufficient 5 = poor P(ass) = passed a.m. test specifications(s) F(ail) = failed a.m. test specifications(s) N/A = not applicable N/T = not tested				
<p><b>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.</b>  <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i></p>				

## ***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-EUK03 and WS-EUK04 are Smart Wall Switch with ZigBee wireless control for household lamp control used.

Model WS-EUK03 and WS-EUK04 have the same electronic designed and wireless module except for the structure. WS-EUK04 has two control loops; WS-EUK03 has one control loop.

Based on above information, full tests were performed on model WS-EUK04.

#### 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-EUK03, WS-EUK04
Rated input	: AC100-250V, 50/60Hz, Max. 8A (Resistive 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 : EN 61000-3-3: 2013+A1, 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 pressure : 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-EUK04	/	/	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,  $\sigma$  =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:

<b>Power-frequency Magnetic Field</b>	<b>Criterion A</b>
<b>Radio-frequency Electromagnetic Field Amplitude Modulated (RS)</b>	<b>Criterion A</b>
<b>Radio-frequency Common Mode / Conducted Susceptibility (CS)</b>	<b>Criterion A</b>
<b>Electrical Fast Transients (EFT)</b>	<b>Criterion B</b>
<b>Surges</b>	<b>Criterion B</b>
<b>Electrostatic Discharge (ESD)</b>	<b>Criterion B</b>
<b>Voltage Dips and Interruptions</b>	<b>Criterion B</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 $\Omega$
Harmonics and distortion	:	Any spurious spectral line at least 15 dB below the carrier level
Amplitude modulation	:	80 % $\pm$ 5 % in depth, 1 kHz $\pm$ 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
<b>Power ports</b>			
AC input port	CDN-M2	3(150KHz~80MHz)	Applied, *)
AC output port	EM clamp	3(150KHz~80MHz)	Applied, *)
<b>Signal and control lines</b>			
	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	: $\geq 1$ 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 $\Omega$ load	:	
Rise time	:	5 ns $\pm$ 30 %
Duration	:	50 ns $\pm$ 30 %
Wave shape into 1 k $\Omega$ load	:	
Rise time	:	5 ns $\pm$ 30 %
Duration	:	50 ns with a tolerance of -15 ns to + 100 ns
Burst duration	:	15 ms $\pm$ 20 % at 5 kHz
Burst period	:	300 ms $\pm$ 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
<b>Power ports</b>				
AC input port	Coupling network	1	+	Applied, *)
		1	-	Applied, *)
AC output port	Coupling clamp	0.5	+	Applied, *)
		0.5	-	Applied, *)
<b>Signal lines</b>				
	Coupling clamp	0.5	+	N/A
		0.5	-	N/A
<b>Control lines</b>				
	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 $\mu$ s $\pm$ 30 %
Time to half value	:	50 $\mu$ s $\pm$ 20 %
Source impedance	:	
Power line symmetrical	:	2 $\Omega$ + 18 $\mu$ F
Power line unsymmetrical	:	12 $\Omega$ + 9 $\mu$ F
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 $\Omega$ / 150 pF
No. of discharges	:	Contact discharge: $\geq 10$ Air discharge: $\geq 10$
Type of discharge	:	
Direct discharge	:	Air discharge, $\pm 8$ kV Contact discharge, $\pm 4$ kV
Indirect discharge	:	Contact discharge, $\pm 4$ kV
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**

<b>Direct discharges</b>			
<b>Air discharges</b>	<b>Air discharge voltage (kV)</b>	<b>Polarity</b>	<b>Remark</b>
<b>Discharge location</b>			
Refer to Photograph of ESD	8	±	Applied, *)
Enclosure	8	±	Applied, *)
<b>Contact discharges</b>	<b>Contact discharge voltage (kV)</b>	<b>Polarity</b>	<b>Remark</b>
<b>Discharge location</b>			
Refer to Photograph of ESD	4	±	N/A
Conductive parts	4	±	Applied, *)
<b>Indirect discharges</b>			
<b>Contact discharges</b>	<b>Contact discharge voltage (kV)</b>	<b>Polarity</b>	<b>Remark</b>
<b>Discharge location</b>			
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 $\mu$ s and 5 $\mu$ s
Fall time	:	Between 1 $\mu$ s and 5 $\mu$ s
Output impedance of test voltage generator	:	$<(0.4 + j 0.25 \Omega)$
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**

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

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

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**EMC Test Record**  TÜVRheinland®

Receipt No.:170259209	Page: Of
Report No.:	
Is this test result compliant with the requirements in the test plan? <input checked="" type="checkbox"/> Yes / <input type="checkbox"/> No	

<b>Emission</b>	<b>Disturbance in supply system</b> Harmonics on AC Mains	<input checked="" type="checkbox"/> EN/IEC 61000-3-2 <input type="checkbox"/> EN/IEC 61000-3-12
Test voltage / Freq.: AC 230V/50 Hz Climatic conditions: 22 °C; 52 %RH;		
Test Site: TUV Rheinland (Guangdong) Ltd. EMC Lab		
Model: WS-EUK04	<b>Equipment:</b>	
Operation Mode: A	<input checked="" type="checkbox"/> DPA 500 <input checked="" type="checkbox"/> ACS 500	
Harmonics Tables see page :		
Note:		
<b>Settings</b>		<b>General Data</b>
Voltage	Current	Power Power Fact.

Tested by

*Lisa Liu*

Reviewed by

*Jacky Chen*

Date:

20210317

Date: 20210318

**Prüfbericht - Nr.:**  
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**Test Report**

Report Number : 230V Har  
 Test Standard : IEC 61000-3-2 (Edition 5)  
 Limits for harmonic current emissions (equipment input current < 16 A per phase)  
 Test Date : 3/12/2021 1:59:50 PM

**Result**

E.U.T. : PASS Source : PASS

**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]

Tested by

*Lisa Liu*

Reviewed by

*Jacky Chen*

Date:

20210317

Date: 20210318

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

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<i>First detected harmonic order &gt; 150 %</i>			
Line 1:	None		
<i>Harmonics orders &gt; 150 %</i>			
Line 1:	None		
<i>Harmonics orders with average &gt; 100 %</i>			
Line 1:	None		

**Check Odd Harmonics 21..39**

<i>First detected time window with partial &gt; partial limits</i>			
	<i>time window (time)</i>	<i>measured value</i>	<i>limit</i>
Line 1:	None		9.49 %

<i>Maximal time window with partial &gt; partial limits</i>			
	<i>time window (time)</i>	<i>measured value</i>	<i>limit</i>
Line 1:	None		9.49 %

<i>First detected harmonic order &gt; 150 %</i>			
Line 1:	None		
<i>Harmonics orders &gt; 150 %</i>			
Line 1:	None		
<i>Harmonics orders with average &gt; 150 %</i>			
Line 1:	None		

**Measured values**

<i>Fundamental Current</i>			
Line 1:	7.41 A		
<i>Active input Power</i>			
Line 1:	1705.608 W *		
<i>Circuit power factor</i>			
Line 1:	1 *		

\* Absolute value.

**Current Test Result**

Average and Maximum harmonic current results									
Hn	Average (100% / 150% *)				Maximum (150%)				Harmonic Result
	I <sub>eff</sub> [%]	of Limit [%]	Limit [%]	Result	I <sub>eff</sub> [%]	of Limit [%]	Limit [%]	Result	
1	99.826				100.000				

Tested by

*Lisa Liu*

Reviewed by

*Jacky Chen*

Date:

20210317

Date: 20210318



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2	0.032	1.617	2.000	n/a	0.038	1.265	3.000	n/a	n/a
3	0.061	0.203	30.000	n/a	0.084	0.186	45.000	n/a	n/a
4	0.044				0.048				
5	0.021	0.214	10.000	n/a	0.027	0.183	15.000	n/a	n/a
6	0.023				0.028				
7	0.025	0.358	7.000	n/a	0.028	0.270	10.500	n/a	n/a
8	0.026				0.029				
9	0.035	0.707	5.000	n/a	0.038	0.510	7.500	n/a	n/a
10	0.023				0.027				
11	0.040	1.325	3.000	n/a	0.043	0.959	4.500	n/a	n/a
12	0.020				0.023				
13	0.015	0.503	3.000	n/a	0.017	0.381	4.500	n/a	n/a
14	0.022				0.025				
15	0.018	0.598	3.000	n/a	0.020	0.451	4.500	n/a	n/a
16	0.020				0.023				
17	0.036	1.214	3.000	n/a	0.040	0.892	4.500	n/a	n/a
18	0.022				0.023				
19	0.049	1.639	3.000	n/a	0.052	1.165	4.500	n/a	n/a
20	0.019				0.021				
21	0.011	0.240	4.500	n/a	0.013	0.295	4.500	n/a	n/a
22	0.019				0.022				
23	0.015	0.327	4.500	n/a	0.018	0.396	4.500	n/a	n/a
24	0.014				0.016				
25	0.024	0.532	4.500	n/a	0.028	0.614	4.500	n/a	n/a
26	0.016				0.019				
27	0.035	0.768	4.500	n/a	0.040	0.894	4.500	n/a	n/a
28	0.014				0.017				
29	0.018	0.389	4.500	n/a	0.021	0.461	4.500	n/a	n/a
30	0.012				0.014				
31	0.013	0.293	4.500	n/a	0.016	0.359	4.500	n/a	n/a
32	0.011				0.013				
33	0.011	0.244	4.500	n/a	0.015	0.338	4.500	n/a	n/a
34	0.012				0.015				
35	0.027	0.594	4.500	n/a	0.032	0.709	4.500	n/a	n/a
36	0.011				0.013				
37	0.027	0.597	4.500	n/a	0.030	0.672	4.500	n/a	n/a
38	0.011				0.012				
39	0.017	0.377	4.500	n/a	0.021	0.474	4.500	n/a	n/a
40	0.012				0.014				

Tested by

*Lisa Liu*

Reviewed by

*Jacky Chen*

Date:

20210317

Date: 20210318

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.

**Voltage Source Verification**

Harmonic voltage results				
Hn	Ueff [V]	Ueff [%]	Limit [%]	Result
1	230.197	100.086		
2	0.052	0.023	0.200	PASS
3	0.080	0.035	0.900	PASS
4	0.028	0.012	0.200	PASS
5	0.061	0.026	0.400	PASS
6	0.023	0.010	0.200	PASS
7	0.038	0.016	0.300	PASS
8	0.020	0.009	0.200	PASS
9	0.075	0.032	0.200	PASS
10	0.011	0.005	0.200	PASS
11	0.059	0.026	0.100	PASS
12	0.012	0.005	0.100	PASS
13	0.029	0.013	0.100	PASS
14	0.018	0.008	0.100	PASS
15	0.044	0.019	0.100	PASS
16	0.015	0.006	0.100	PASS
17	0.072	0.031	0.100	PASS
18	0.015	0.007	0.100	PASS
19	0.087	0.038	0.100	PASS
20	0.013	0.005	0.100	PASS
21	0.051	0.022	0.100	PASS
22	0.011	0.005	0.100	PASS
23	0.021	0.009	0.100	PASS
24	0.012	0.005	0.100	PASS
25	0.064	0.028	0.100	PASS
26	0.015	0.007	0.100	PASS
27	0.077	0.034	0.100	PASS
28	0.014	0.006	0.100	PASS
29	0.059	0.025	0.100	PASS
30	0.013	0.006	0.100	PASS
31	0.028	0.012	0.100	PASS
32	0.014	0.006	0.100	PASS
33	0.038	0.017	0.100	PASS

Tested by

*Lisa Liu*

Reviewed by

*Jacky Chen*

Date:

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Date: 20210318

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

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34	0.011	0.005	0.100	PASS
35	0.067	0.029	0.100	PASS
36	0.011	0.005	0.100	PASS
37	0.064	0.028	0.100	PASS
38	0.014	0.006	0.100	PASS
39	0.051	0.022	0.100	PASS
40	0.009	0.004	0.100	PASS

Tested by

*Lisa Liu*

Reviewed by

*Jacky Chen*

Date:

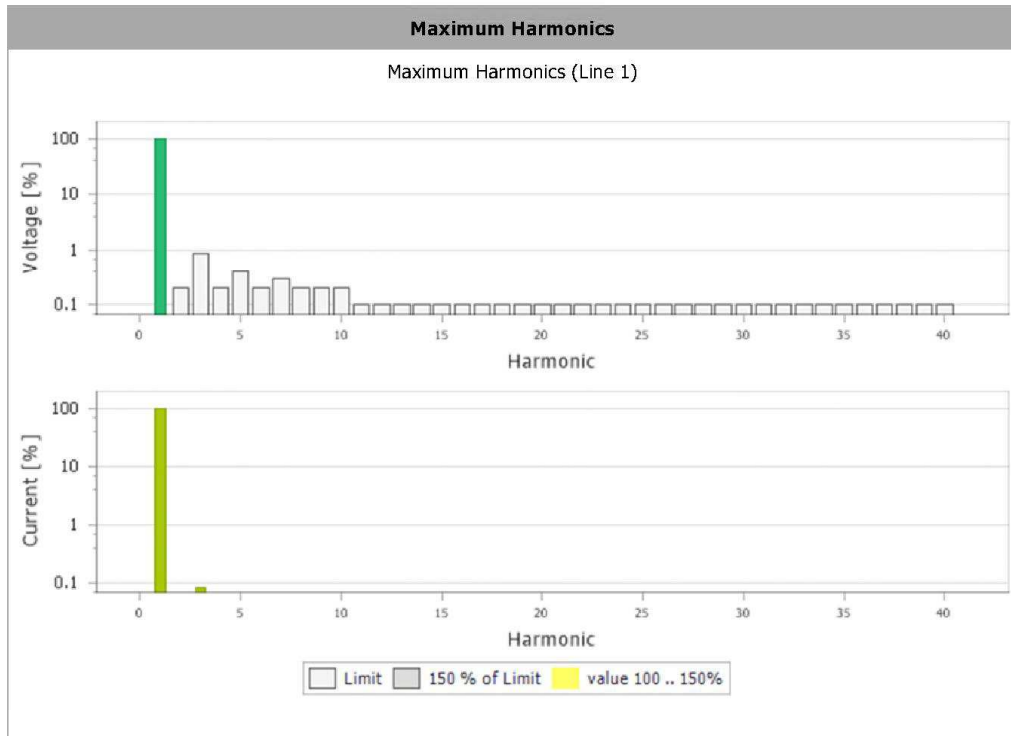
20210317

Date: 20210318

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Tested by

*Lisa Liu*

Reviewed by

*Jacky Chen*

Date:

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Date: 20210318

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TUV Rheinland (Guangdong) Ltd.

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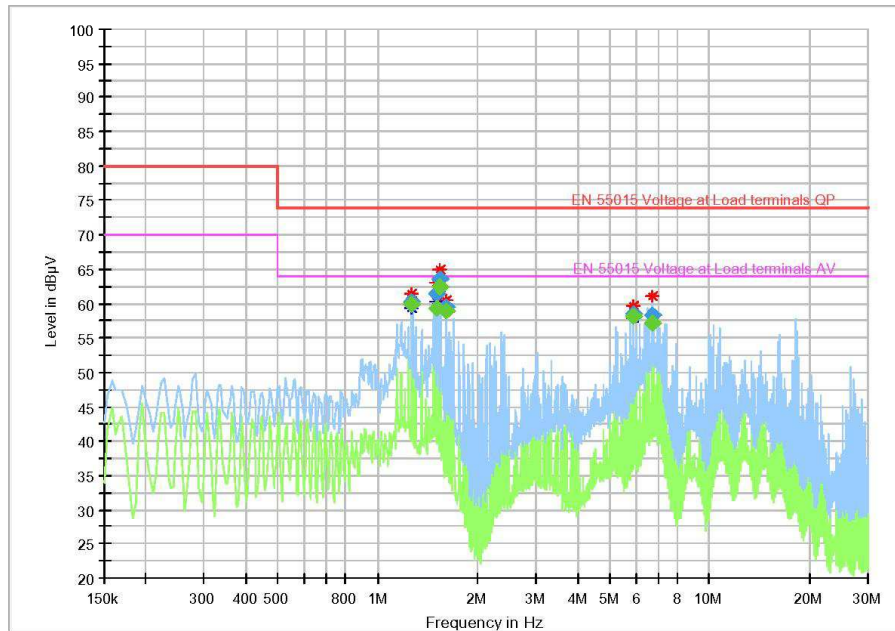
## EMC Test Record (EMISSION)

### Test Information

Manufacturer: Lumi  
 Test Item: Smart Wall Switch  
 Identification: WS-EUK04  
 Test Standard: EN55015  
 Test Detail: Conducted Emission  
 Operation Mode: A  
 Climate Condition: 20°C; 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*

Reviewed by: *Jacky Chen*

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TUV Rheinland (Guangdong) Ltd.

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**Final Result**

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Corr. (dB)
1.266000	---	59.86	64.00	4.14	1000.0	9.000	30.1
1.266000	60.23	---	74.00	13.77	1000.0	9.000	30.1
1.510000	---	59.28	64.00	4.72	1000.0	9.000	30.1
1.510000	61.43	---	74.00	12.57	1000.0	9.000	30.1
1.542000	---	62.41	64.00	1.59	1000.0	9.000	30.1
1.542000	63.60	---	74.00	10.40	1000.0	9.000	30.1
1.602000	59.52	---	74.00	14.48	1000.0	9.000	30.1
1.602000	---	58.96	64.00	5.04	1000.0	9.000	30.1
5.910000	58.53	---	74.00	15.47	1000.0	9.000	30.3
5.910000	---	58.10	64.00	5.90	1000.0	9.000	30.3
6.702000	---	57.10	64.00	6.90	1000.0	9.000	30.3
6.702000	58.44	---	74.00	15.56	1000.0	9.000	30.3

Tested by:

*Lisa Liu*

Reviewed by:

*Jacky Chen*

20210317

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**Prüfbericht - Nr.:**  
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TUV Rheinland (Guangdong) Ltd.

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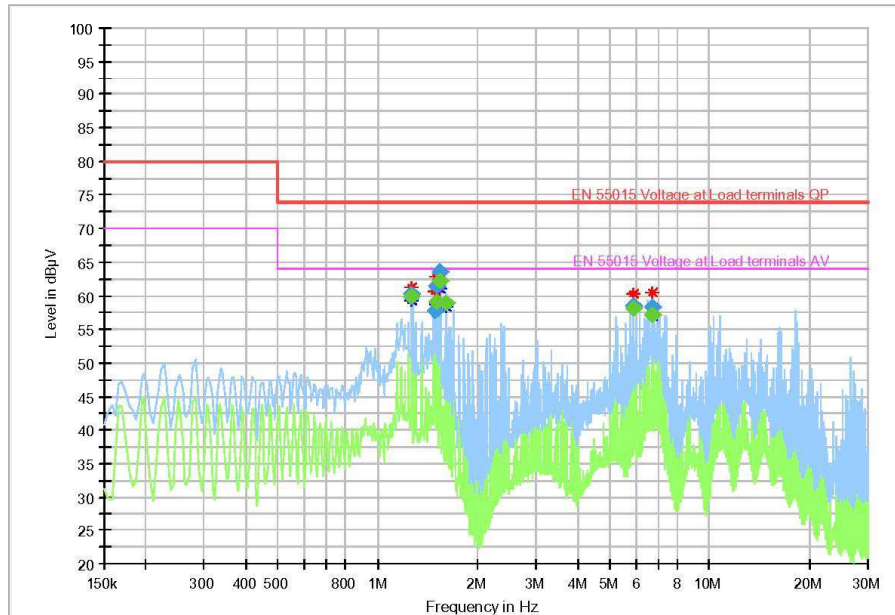
## EMC Test Record (EMISSION)

### Test Information

Manufacturer: Lumi  
 Test Item: Smart Wall Switch  
 Identification: WS-EUK04  
 Test Standard: EN55015  
 Test Detail: Conducted Emission  
 Operation Mode: A  
 Climate Condition: 20°C; 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 Liew*

Reviewed by:

*Jacky Chen*

20210317

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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)
1.266000	---	59.86	64.00	4.14	1000.0	9.000	30.1
1.266000	60.24	---	74.00	13.76	1000.0	9.000	30.1
1.482000	57.86	---	74.00	16.14	1000.0	9.000	30.1
1.510000	---	59.16	64.00	4.84	1000.0	9.000	30.1
1.510000	61.36	---	74.00	12.64	1000.0	9.000	30.1
1.542000	---	62.31	64.00	1.69	1000.0	9.000	30.1
1.542000	63.54	---	74.00	10.46	1000.0	9.000	30.1
1.602000	---	58.90	64.00	5.10	1000.0	9.000	30.1
5.910000	58.49	---	74.00	15.51	1000.0	9.000	30.3
5.910000	---	58.08	64.00	5.92	1000.0	9.000	30.3
6.702000	---	57.14	64.00	6.86	1000.0	9.000	30.3
6.702000	58.40	---	74.00	15.60	1000.0	9.000	30.3

Tested by:

*Lisa Liu*

Reviewed by:

*Jacky Chen*

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**Prüfbericht - Nr.:**  
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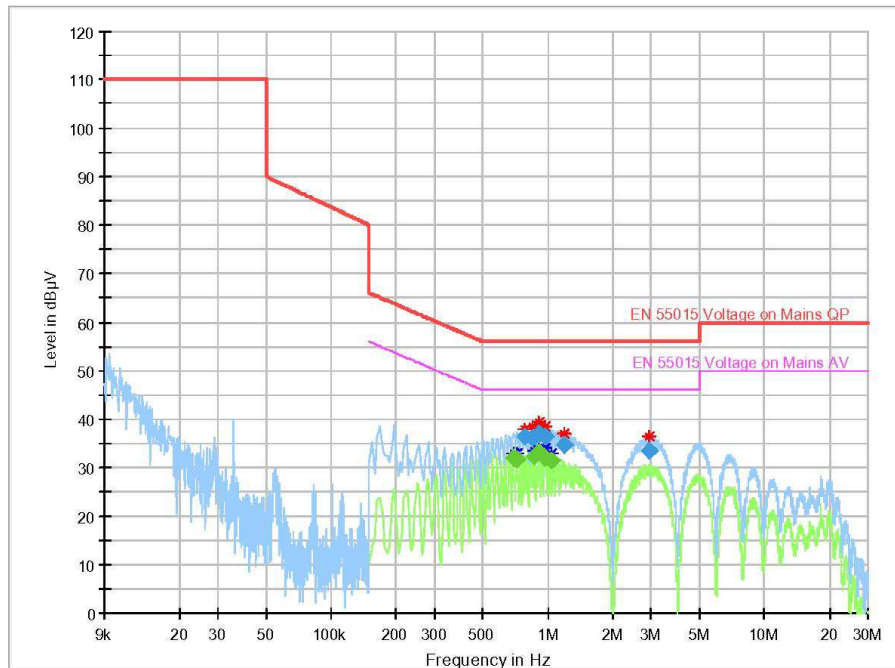
## EMC Test Record (EMISSION)

### Test Information

Manufacturer: Lumi  
 Test Item: Smart Wall Switch  
 Identification: WS-EUK04  
 Test Standard: EN55015  
 Test Detail: Conducted Emission  
 Operation Mode: A  
 Climate Condition: 21 °C; 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

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TUV Rheinland (Guangdong) Ltd.

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**Final Result**

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.694500	---	32.15	46.00	13.85	1000.0	9.000	N	OFF	9.7
0.721500	---	31.91	46.00	14.09	1000.0	9.000	N	OFF	9.7
0.780000	36.38	---	56.00	19.62	1000.0	9.000	N	OFF	9.7
0.856500	36.13	---	56.00	19.87	1000.0	9.000	L1	OFF	9.7
0.861000	---	32.42	46.00	13.58	1000.0	9.000	L1	OFF	9.7
0.910500	36.94	---	56.00	19.06	1000.0	9.000	L1	OFF	9.7
0.915000	---	33.16	46.00	12.84	1000.0	9.000	L1	OFF	9.7
0.969000	36.41	---	56.00	19.59	1000.0	9.000	L1	OFF	9.7
0.969000	---	32.04	46.00	13.96	1000.0	9.000	N	OFF	9.7
1.032000	---	31.64	46.00	14.36	1000.0	9.000	N	OFF	9.7
1.189500	34.72	---	56.00	21.28	1000.0	9.000	N	OFF	9.7
2.958000	33.47	---	56.00	22.53	1000.0	9.000	N	OFF	9.8

Tested by:

*Lisa Liu*

Reviewed by:

*Jacky Chen*

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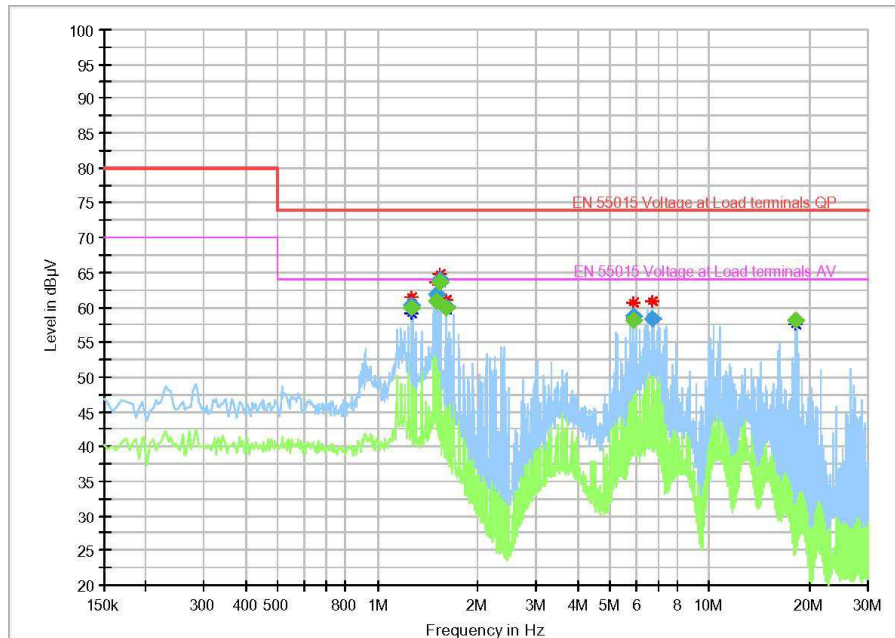
## EMC Test Record (EMISSION)

### Test Information

Manufacturer: Lumi  
 Test Item: Smart Wall Switch  
 Identification: WS-EUK04  
 Test Standard: EN55015  
 Test Detail: Conducted Emission  
 Operation Mode: A  
 Climate Condition: 20°C; 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*

Reviewed by: *Jacky Chen*

20210317

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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)
1.266000	---	59.87	64.00	4.13	1000.0	9.000	30.1
1.266000	60.34	---	74.00	13.66	1000.0	9.000	30.1
1.510000	---	60.94	64.00	3.06	1000.0	9.000	30.1
1.510000	61.93	---	74.00	12.07	1000.0	9.000	30.1
1.542000	---	63.69	64.00	0.31	1000.0	9.000	30.1
1.542000	63.94	---	74.00	10.06	1000.0	9.000	30.1
1.602000	60.01	---	74.00	13.99	1000.0	9.000	30.1
1.602000	---	59.88	64.00	4.12	1000.0	9.000	30.1
5.910000	58.83	---	74.00	15.17	1000.0	9.000	30.3
5.910000	---	58.23	64.00	5.77	1000.0	9.000	30.3
6.702000	58.34	---	74.00	15.66	1000.0	9.000	30.3
18.242000	---	58.13	64.00	5.87	1000.0	9.000	30.4

Tested by:

*Lisa Liu*

Reviewed by:

*Jacky Chen*

20210317

20210318

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

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EMC Test Service Hotline: +86-20-28391188

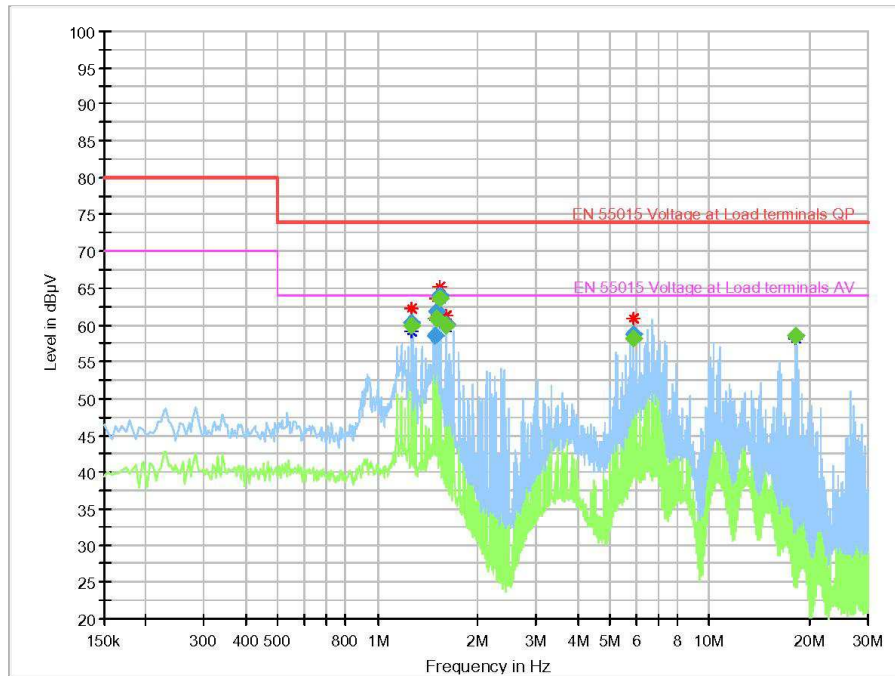
## EMC Test Record (EMISSION)

### Test Information

Manufacturer: Lumi  
 Test Item: Smart Wall Switch  
 Identification: WS-EUK04  
 Test Standard: EN55015  
 Test Detail: Conducted Emission  
 Operation Mode: A  
 Climate Condition: 20°C; 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

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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	Corr. (dB)
1.266000	---	59.89	64.00	4.11	1000.0	9.000	Single Line	30.1
1.266000	60.34	---	74.00	13.66	1000.0	9.000	Single Line	30.1
1.482000	58.60	---	74.00	15.40	1000.0	9.000	Single Line	30.1
1.510000	---	60.93	64.00	3.07	1000.0	9.000	Single Line	30.1
1.510000	61.93	---	74.00	12.07	1000.0	9.000	Single Line	30.1
1.542000	---	63.69	64.00	0.31	1000.0	9.000	Single Line	30.1
1.542000	63.91	---	74.00	10.09	1000.0	9.000	Single Line	30.1
1.602000	---	59.91	64.00	4.09	1000.0	9.000	Single Line	30.1
1.602000	60.01	---	74.00	13.99	1000.0	9.000	Single Line	30.1
5.910000	---	58.16	64.00	5.84	1000.0	9.000	Single Line	30.3
5.910000	58.83	---	74.00	15.17	1000.0	9.000	Single Line	30.3
18.242000	---	58.50	64.00	5.50	1000.0	9.000	Single Line	30.4

Tested by: *Lisa Liu*

Reviewed by: *Jacky Chen*

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EMC Test Service Hotline: +86-20-28391188

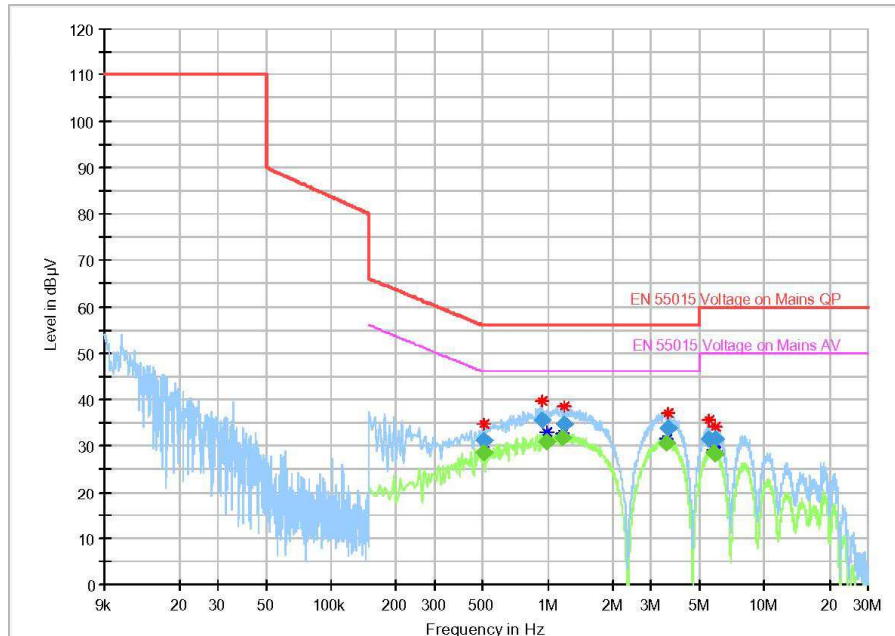
## EMC Test Record (EMISSION)

### Test Information

Manufacturer: Lumi  
 Test Item: Smart Wall Switch  
 Identification: WS-EUK04  
 Test Standard: EN55015  
 Test Detail: Conducted Emission  
 Operation Mode: A  
 Climate Condition: 21 °C; 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



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**Final Result**

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.505500	---	28.56	46.00	17.44	1000.0	9.000	N	OFF	9.6
0.505500	31.25	---	56.00	24.75	1000.0	9.000	L1	OFF	9.6
0.937500	35.48	---	56.00	20.52	1000.0	9.000	L1	OFF	9.7
0.987000	---	30.97	46.00	15.03	1000.0	9.000	L1	OFF	9.7
1.176000	---	31.88	46.00	14.12	1000.0	9.000	N	OFF	9.7
1.194000	34.72	---	56.00	21.28	1000.0	9.000	N	OFF	9.7
3.507000	---	30.59	46.00	15.41	1000.0	9.000	N	OFF	9.8
3.556500	33.77	---	56.00	22.23	1000.0	9.000	N	OFF	9.8
5.536500	31.53	---	60.00	28.47	1000.0	9.000	L1	OFF	9.9
5.833500	---	28.54	50.00	21.46	1000.0	9.000	L1	OFF	9.9
5.941500	---	28.32	50.00	21.68	1000.0	9.000	N	OFF	9.9
5.941500	31.54	---	60.00	28.46	1000.0	9.000	N	OFF	9.9

Tested by: *Lisa Liu*

Reviewed by: *Jacky Chen*

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

Equipment	Manufacturer	Model No.	Serial No.	Cal Until
<b>Disturbance Voltage</b>				
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
<b>Harmonics &amp; Flicker</b>				
Harmonic and Flicker Analyzer	EM TEST	DPA 500	0304-01	2021-04-20
AC Source	EM TEST	ACS 500	0304-01	2021-04-20
<b>Radiated Susceptibility</b>				
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
<b>Conducted Susceptibility(150 kHz-230 MHz)</b>				
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
<b>Electrical Fast Transient(EFT)</b>				
Ultra Compact Simulator	EM TEST	UCS 500-M4	V0707102252	2022-03-15
EFT Test Coupling Clamp	TESEQ	CDN 3425	1916	2022-03-15

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