



RF Exposure Evaluation Declaration

Product Name : Hue Outdoor light strip 2m
Model No. : 9290022890A
FCC ID : 2AGBW9290022890AX
IC : 20812-2890AX

Applicant : Signify (China) Investment Co., Ltd.
Address : Building no.9, Lane 888, Tianlin Road, Minhang
District, Shanghai 200233, China

Date of Receipt : Sep. 30, 2019
Test Date : Oct. 08, 2019 ~ Nov. 04, 2019
Issued Date : Dec. 02, 2019
Report No. : 1992203R-RF-US-P20V01
Report Version : V1.0

The test results presented in this report relate only to the object tested.

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The measurement result is considered in conformance with the requirement if it is within the prescribed limit, It is not necessary to calculate the uncertainty associated with the measurement result.

This report is not used for social proof in China (or Mainland China) market.

Test Report Certification

Issued Date : Dec. 02, 2019

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Product Name : Hue Outdoor light strip 2m
 Applicant : Signify (China) Investment Co., Ltd.
 Address : Building no.9, Lane 888, Tianlin Road, Minhang District,
 Shanghai 200233, China
 Manufacturer : Signify (China) Investment Co., Ltd.
 Address : Building no.9, Lane 888, Tianlin Road, Minhang District,
 Shanghai 200233, China
 Model No. : 9290022890A
 FCC ID : 2AGBW9290022890AX
 IC ID : 20812-2890AX
 Brand Name : PHILIPS
 EUT Voltage : 100-240 Vac, 50/60 Hz
 Test Voltage : AC 120 V/60Hz
 Applicable Standard : KDB 447498D01V06
 FCC Part1.1310
 RSS-102: Issue 5, 2015
 Test Result : Complied
 Performed Location : DEKRA Testing & Certification (Suzhou) Co., Ltd.
 No.99 Hongye Rd., Suzhou Industrial Park, Suzhou, 215006,
 Jiangsu, China
 TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098
 FCC Designation Number: CN1199
 ISED CAB identifier: CN0040
 Documented By : 

 (Project Assistant: Kitty Li)
 Reviewed By : 

 (Senior Engineer: Frank He)
 Approved By : 

 (Engineer Supervisor: Jack Zhang)

1. RF Exposure Evaluation

1.1.Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

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)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	30

F= Frequency in MHz

Friis Formula

Friis transmission formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$

Where

P_d = power density in mW/ cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

P_d is the limit of MPE, 1 mW/cm² . If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

According to RSS 102 Issue 5: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in RSS 102 Clause 4

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m ²)	Reference Period (minutes)
0.003-10 ²¹	83	90	-	Instantaneous*
0.1-10	-	$0.73/f$	-	6**
1.1-10	$87/f^{0.5}$	-	-	6**
10-20	27.46	0.0728	2	6
20-48	$58.07/f^{0.25}$	$0.1540/f^{0.25}$	$8.944/f^{0.5}$	6
48-300	22.06	0.05852	1.291	6
300-6000	$3.142 f^{0.3417}$	$0.008335 f^{0.3417}$	$0.02619 f^{0.6834}$	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	$616000/f^{1.2}$
150000-300000	$0.158 f^{0.5}$	$4.21 \times 10^{-4} f^{0.5}$	$6.67 \times 10^{-5} f$	$616000/f^{1.2}$
<p>Note: <i>f</i> is frequency in MHz. *Based on nerve stimulation (NS). ** Based on specific absorption rate (SAR).</p>				

1.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

The temperature and related humidity: 18°C and 78% RH.

1.3. Test Result of RF Exposure Evaluation

Product	:	Hue Outdoor light strip 2m
Test Item	:	RF Exposure Evaluation
Test Site	:	AC-6

● Antenna Information:

Antenna manufacturer	N/A		
Antenna Delivery	<input checked="" type="checkbox"/>	1*TX+1*RX	<input type="checkbox"/> 2*TX+2*RX <input type="checkbox"/> 3*TX+3*RX
Antenna technology	<input checked="" type="checkbox"/>	SISO	
	<input type="checkbox"/>	MIMO	<input type="checkbox"/> Basic
			<input type="checkbox"/> CDD
		<input type="checkbox"/> Beam-forming	
Antenna Type	<input type="checkbox"/>	External	<input type="checkbox"/> Dipole
	<input checked="" type="checkbox"/>	Internal	<input type="checkbox"/> PIFA
			<input checked="" type="checkbox"/> PCB
			<input type="checkbox"/> Ceramic Chip Antenna
			<input type="checkbox"/> Stamping Antenna
			<input type="checkbox"/> Metal plate type F antenna
		<input type="checkbox"/> Monopole antenna	
Antenna Gain	2.99 dBi		

- **Power Density:**

The tune-up power is 1dB, so the maximum conducted power of BT we used to calculate RF exposure is 10.33dBm.

The tune-up power is 1dB, so the maximum conducted power of Zigbee we used to calculate RF exposure is 10.72dBm.

Test Mode	Frequency Band (MHz)	EIRP (dBm)	Limit of Power Density S(mW/cm ²)	Power Density at R = 20 cm (mW/cm ²)
BT	2400 ~ 2483.5	13.32	1	0.0043
Zigbee	2400 ~ 2483.5	13.71	1	0.0047

Note:

The maximum power density is 0.0047mW/cm² for LED lamp without any other radio equipment.

————— The End —————