



## RF Exposure Evaluation Declaration

Product Name : LED lamp  
Model No. : 9290018215  
FCC ID : 2AGBW9290018215X  
IC : 20812-8215X

Applicant : Philips Lighting (China) Investment Co., Ltd.  
Address : Building 9, Lane 888, Tianlin Road, Minhang  
district, Shanghai, China

Date of Receipt : Nov. 01, 2017  
Issued Date : Dec. 11, 2017  
Report No. : 17A2137R-RF-US- P20V01  
Report Version : V1.0

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF, A2LA or any agency of the government.

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# Test Report Certification

Issued Date : Dec. 11, 2017

Report No. : 17A2137R-RF-US-P20V01



Product Name : LED lamp

Applicant : Philips Lighting (China) Investment Co., Ltd.

Address : Building 9, Lane 888, Tianlin Road, Minhang district, Shanghai, China

Manufacturer : Philips Lighting (China) Investment Co., Ltd.

Address : Building 9, Lane 888, Tianlin Road, Minhang district, Shanghai, China

Model No. : 9290018215

FCC ID : 2AGBW9290018215X

IC : 20812-8215X

EUT Voltage : 110-130VAC;10W;50-60Hz

Test Voltage : AC 120V/60Hz


Brand Name : Philips


Applicable Standard : KDB 447498D01V06  
FCC Part1.1310  
RSS-102: Issue 5, 2015

Test Result : Complied

Performed Location : DEKRA Testing and Certification (Suzhou) Co., Ltd.  
No.99 Hongye Rd., Suzhou Industrial Park, Suzhou, 215006, Jiangsu, China  
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FCC Designation Number: CN1199; IC Lab Code: 4075B

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## 1. RF Exposure Evaluation

### 1.1. Limits

#### For FCC:

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 <sup>2</sup> )	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/ cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

G = gain of antenna in linear scale

$\pi$  = 3.1416

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

$P_d$  is the limit of MPE, 1 mW/cm<sup>2</sup>. 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.

**For ISED:**

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 <sup>2</sup> )	Reference Period (minutes)
0.003-10 <sup>21</sup>	83	90	-	Instantaneous*
0.1-10	-	0.73/ <i>f</i>	-	6**
1.1-10	87/ <i>f</i> <sup>0.5</sup>	-	-	6**
10-20	27.46	0.0728	2	6
20-48	58.07/ <i>f</i> <sup>0.25</sup>	0.1540/ <i>f</i> <sup>0.25</sup>	8.944/ <i>f</i> <sup>0.5</sup>	6
48-300	22.06	0.05852	1.291	6
300-6000	3.142 <i>f</i> <sup>0.3417</sup>	0.008335 <i>f</i> <sup>0.3417</sup>	0.02619 <i>f</i> <sup>0.6834</sup>	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	616000/ <i>f</i> <sup>1.2</sup>
150000-300000	0.158 <i>f</i> <sup>0.5</sup>	4.21 x 10 <sup>-4</sup> <i>f</i> <sup>0.5</sup>	6.67 x 10 <sup>-5</sup> <i>f</i>	616000/ <i>f</i> <sup>1.2</sup>
<p><b>Note:</b> <i>f</i> is frequency in MHz.  *Based on nerve stimulation (NS).  ** Based on specific absorption rate (SAR).</p>				

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/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

$G$  = gain of antenna in linear scale

$\pi$  = 3.1416

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

$P_d$  is the limit of MPE, 0.540 mW/cm<sup>2</sup> for 2.4GHz . 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.

### 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	:	LED lamp
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"/> Sectorized antenna systems	
		<input type="checkbox"/> Cross-polarized antennas	
		<input type="checkbox"/> Unequal antenna gains, with equal transmit powers	
		<input type="checkbox"/> Spatial Multiplexing	
		<input type="checkbox"/> CDD	
Antenna Type	<input type="checkbox"/> External	<input type="checkbox"/> Dipole Antenna	
		<input type="checkbox"/> PIFA Antenna	
	<input checked="" type="checkbox"/> Internal	<input type="checkbox"/> PCB Antenna	
		<input checked="" type="checkbox"/> Slot Antenna	
		<input type="checkbox"/> Ceramic Chip Antenna	
		<input type="checkbox"/> Metal plate type F antenna	
		<input type="checkbox"/> Cross-polarize Antenna	
Antenna Gain	-1dBi		

- **Power Density:**

**The maximum conducted tune-up power is 8.56dBm.**

Test Mode	Frequency Band (MHz)	EIRP (dBm)	Limit of Power Density S(mW/cm <sup>2</sup> )		Power Density at R = 20 cm (mW/cm <sup>2</sup> )
			FCC	IC	
Zigbee	2400 ~ 2483.5	7.06	1	0.54	0.001

Note:

1. The maximum power of related plane is calculated for simultaneous MPE.
2. The power density is 0.001mW/cm<sup>2</sup> for LED lamp without any other radio equipment.

————— The End —————