



## RF Exposure Evaluation Declaration

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**FCC ID:** 2AGN8-S21N11

**APPLICANT:** Sengled Co., Ltd.

**Application Type:** Certification

**Product:** Bluetooth Speaker LED lamp

**Model No.:** S21-N11, S21-N12

**Brand Name:** sengled

**FCC Classification:** FCC Part 15 Spread Spectrum Transmitter(DSS)  
Digital Transmission System (DTS)

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( Robin Wu )

Approved By : Marlin Chen  
( Marlin Chen )



The test results relate only to the samples tested.

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

The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

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## Revision History

Report No.	Version	Description	Issue Date	Note
1702RSU01904	Rev. 01	Initial report	03-08-2017	Valid

## 1. Equipment Description

Product Name	Bluetooth Speaker LED lamp
Model No.	S21-N11, S21-N12
Bluetooth Version	v3.0 + HS, v4.0
Antenna Type	PCB Antenna
Antenna Gain	2.5dBi

## 2. RF Exposure Evaluation

### 2.1. 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 <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

Calculation Formula:  $P_d = (P_{out} * G) / (4 * \pi * r^2)$

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, 1mW/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.

## 2.2. Test Result of RF Exposure Evaluation

Product	Bluetooth Speaker LED lamp
Test Item	RF Exposure Evaluation

Antenna Gain: Refer to Clause 1.2 of antenna description.

Test Mode	Frequency Band (MHz)	Maximum Output Power (dBm)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
Bluetooth v3.0+HS	2402 ~ 2480	9.13	0.0029	1
Bluetooth v4.0	2402 ~ 2480	1.32	0.0005	1

### CONCLUSION:

Both of two Bluetooth 2.4GHz modules can transmit simultaneously.

Therefore, the Max Power Density at R (20 cm) =  $0.0029\text{mW/cm}^2 + 0.0005\text{mW/cm}^2 = 0.0034\text{mW/cm}^2 < 1\text{mW/cm}^2$ .

So the EUT complies with the requirement.

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