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Report No.: 1603RSU00302 Report Version: Issue Date: 03-10-2016

# **RF Exposure Evaluation Declaration**

FCC ID: 2ABX8SH-000000010

APPLICANT: Zhejiang shenghui lighting Co., Ltd. Shanghai Branch

**Application Type:** Certification

**Product:** sengled element

Model No.: Z01-A19NAE26

**Trademark:** sengled

FCC Classification: Digital Transmission System (DTS)

Reviewed By : Robin Wu )

Approved By : Marlinchen

( 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.

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## **Revision History**

Report No.	Version	Description	Issue Date
1603RSU00302	Rev. 01	Initial report	03-10-2016





## 1. PRODUCT INFORMATION

## 1.1. Equipment Description

Product Name	sengled element
Model No.	Z01-A19NAE26
Frequency Range	2405 ~ 2480 MHz
Type of Modulation	O-QPSK
Antenna Type	PIFA Antenna
Antenna Gain	3.66dBi



### 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	Electric Field	Magnetic Field	Power Density	Average Time
(MHz)	Strength (V/m)	Strength (A/m)	(mW/cm <sup>2</sup> )	(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:  $Pd = (Pout*G)/(4*pi*r^2)$ 

Where

Pd = power density in mW/cm<sup>2</sup>

Pout = 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

Pd 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	sengled element
Test Item	RF Exposure Evaluation

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 3.66dBi for ZigBee in logarithm scale.

Test Mode	Frequency Band	Maximum Average	Power Density at	Limit
	(MHz)	Output Power	R = 20 cm	(mW/cm <sup>2</sup> )
		(dBm)	(mW/cm <sup>2</sup> )	
802.15.4	2405 ~ 2480	5.66	0.0017	1

### **CONCULISON:**

The Max Power Density at R (20 cm) = 0.0017mW/cm<sup>2</sup> << 1mW/cm<sup>2</sup>. So the EUT complies with the requirement.

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