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Report No.: 1608RSU00904
Report Version: V01
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RF Exposure Evaluation Declaration

FCC ID: 2AGN8-P22N13

APPLICANT: Sengled Co., Ltd.

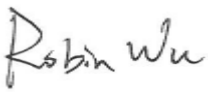
Application Type: Certification


Product: Pulse2

Model No.: P22-N13

Brand Name: sengled

FCC Classification: FCC Part 15 Spread Spectrum Transmitter(DSS)
Unlicensed National Information Infrastructure (UNII)

Reviewed By : 
Manager : _____
(Robin Wu)

Approved By : 
CEO : _____
(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	Note
1608RSU00904	Rev. 01	Initial report	08-26-2016	Valid

1. PRODUCT INFORMATION

1.1. Equipment Description

Product Name	Pulse2
Model No.	P22-N13
Frequency Range	<u>Bluetooth:</u> 2402~2480MHz <u>Wireless:</u> 5150~5250MHz, 5725~5850MHz
Type of Modulation	<u>Bluetooth:</u> 1Mbps (GFSK), 2Mbps (Pi/4 DQPSK), 3Mbps (8DPSK) <u>Wireless:</u> QPSK

1.2. Antenna Description

Antenna No.	Antenna Type	Frequency Band (MHz)	Manufacturer	Tx Paths	Max Peak Gain (dBi)
Bluetooth Antenna					
Antenna	PCB Antenna	2402 ~ 2480	Sengled Co., Ltd.	1	0.4
Wireless Antenna					
Antenna A	PCB Antenna	5180 ~ 5240	SMSC Inc.	1	3.0
		5736 ~ 5814		1	3.2
Antenna B	PCB Antenna	5180 ~ 5240	SMSC Inc.	1	3.0
		5736 ~ 5814		1	3.2

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 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

Calculation 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, 1mW/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.

2.2. Test Result of RF Exposure Evaluation

Product	Pulse2
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 ²)	Limit (mW/cm ²)
Bluetooth	2402 ~ 2480	0.44	0.0002	1
Wireless	5180 ~ 5240	9.46	0.0035	1
	5736 ~ 5814	13.18	0.0086	1

CONCLUSION:

Both of the Bluetooth 2.4GHz and Wireless 5GHz can transmit simultaneously. Therefore, the Max Power Density at R (20 cm) = $0.0002\text{mW/cm}^2 + 0.0086\text{mW/cm}^2 = 0.0088\text{mW/cm}^2 < 1\text{mW/cm}^2$. So the EUT complies with the requirement.

_____ The End _____