

RF Exposure Evaluation declaration

Product Name : Gateway

Model No. : PSC03-2A; PSC03-2B; PSC03-2C; PSC03-2D; PSC03-2E

FCC ID : RHPSC03

Applicant : Philio Technology Corporation

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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.

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

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.

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 : Gateway
Test Item : RF Exposure Evaluation

Zwave:

Step 1: Field strength is converted into Pout (dBm)

Radiated Power @ 3m (dBuV/m)	Distance (m)	Antenna Gain (dBi)	Maximum conducted output power (dBm)
91.195	3	0.87	-4.9

Note:
$$P = \frac{(Ed)^2}{30G}$$

Step 2: Calculating power density (Pd)

Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
0.3236	0.000079

$$Pd = (Pout \cdot G) / (4 \cdot \pi \cdot r^2)$$

Power density is much lower than the limit (1 mW/cm²).

WLAN:

Operation Frequency	2412-2462MHz, 2422-2452MHz
Maximum Conducted output power	22.45dBm
Antenna gain	1.96dBi

Output Power Into Antenna & RF Exposure Evaluation Distance:

Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
175.7924	0.054920

Power density is lower than the limit (1 mW/cm²).