

RF Exposure Evaluation Declaration

Product Name : TWO WAY RADIO/TRANSCEIVER
Trade Name : Wireless Pacific
Model No. : X10DRMD-AU2, X10DRMD-PU2, X10DRMD-LU2,
 X10DRMD-EU2, X10DRMD-AX2, X10DRMD-EX2,
 X10DRMD-XU2, X10DRMD-XX2, X10DRMD-SU2,
 X10DRMD-SX2, PTT500MD2, SMWMD2, NCXMD
FCC ID. : 2AGEY-XG2

Applicant : Wireless Corporation Limited
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Date of Receipt : Sep. 01, 2016
Date of Declaration : Jan. 17, 2017
Report No. : 1690080R-RF-US-Exp
Report Version : V1.0



The declaration results relate only to the samples calculated.

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

Where

P_d = power density in mW/cm^2

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/cm^2 . 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	TWO WAY RADIO/TRANSCEIVER
Test Mode	Mode 1: Transmit Mode_Ant 1
Test Condition	RF Exposure Evaluation

Antenna Gain

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 14 dBi or 25.12 in linear scale.

Output Power into Antenna & RF Exposure Evaluation Distance:

GFSK			
Bluetooth Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
00	2402	56.2341	0.28103
39	2441	58.3445	0.29157
78	2480	58.2103	0.29090

π/4-DQPSK			
Bluetooth Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
00	2402	81.4704	0.40714
39	2441	85.1138	0.42535
78	2480	85.9014	0.42929

8-DPSK			
Bluetooth Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
00	2402	82.6038	0.41281
39	2441	84.5279	0.42242
78	2480	85.1138	0.42535

The power density Pd (4th column) at a distance of 20 cm calculated from the Friis transmission formula is far below the limit of 1 mW/cm².

Product	TWO WAY RADIO/TRANSCEIVER
Test Mode	Mode 2: Transmit Mode_Ant 2
Test Condition	RF Exposure Evaluation

Antenna Gain

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.2dBi or 1.66 in linear scale.

Output Power into Antenna & RF Exposure Evaluation Distance:

GFSK			
Bluetooth Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
00	2402	56.2341	0.01857
39	2441	58.3445	0.01927
78	2480	58.2103	0.01922

π/4-DQPSK			
Bluetooth Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
00	2402	81.4704	0.02691
39	2441	85.1138	0.02811
78	2480	85.9014	0.02837

8-DPSK			
Bluetooth Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
00	2402	82.6038	0.02728
39	2441	84.5279	0.02791
78	2480	85.1138	0.02811

The power density Pd (4th column) at a distance of 20 cm calculated from the Friis transmission formula is far below the limit of 1 mW/cm².