

RF Exposure Evaluation Declaration

FCC ID: X3ZWFMOD10

APPLICANT: Amp'ed RF Technology, Inc.

Application Type: Certification

Product: Dual band wifi module

Model No.: WF60

Brand Name: Amp'ed RF

FCC Classification: Digital Transmission System (DTS)

Unlicensed National Information Infrastructure (NII)

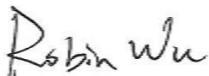
Test Date: November 15, 2018 ~ December 19, 2018

Reviewed By:



(Kevin Guo)

Approved By:



(Robin Wu)



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
1811WSU012-U3	Rev. 01	Initial report	12-28-2018	Valid

1. PRODUCT INFORMATION

1.1. Equipment Description

Product Name	Dual band wifi module
Model No.	WF60
Brand Name:	Amp'ed RF
Wi-Fi Specification:	802.11a/b/g/n-HT20

1.2. Description of Available Antennas

Antenna Specification				
Model Name	Type	Frequency Band	Connector	Max. Peak Gain
146153	FPC Antenna	2400-2480	ipex	3.0
		5150-5250, 5725-5850	ipex	4.5

1.3. Description of Antenna RF Port

Software Control Port	2.4GHz & 5GHz RF Port
	

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

Where

Pd = power density in mW/cm²

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/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	Dual band wifi module			
Test Item	RF Exposure Evaluation			

Antenna Gain: Refer to clause 1.2.

Test Mode	Frequency Band (MHz)	Max Conducted Power (dBm)	Antenna Gain (dBi)	Maximum EIRP (dBm)
802.11b/g/n	2412 ~ 2462	16.34	3.0	19.34
802.11a/n	5180 ~ 5240, 5745 ~ 5825	15.34	4.5	19.84

Test Mode	Frequency Band (MHz)	Maximum EIRP (dBm)	Power Density at R = 20 cm (mW/cm ²)	Limit (mW/cm ²)
802.11b/g/n	2412 ~ 2462	19.34	0.0171	1
802.11a/n	5180 ~ 5240, 5745 ~ 5825	19.84	0.0192	1

CONCLUSION:

The WLAN 2.4GHz and 5GHz Band cannot transmit simultaneously.

The max Power Density at R (20 cm) = 0.0826mW/cm² < 1mW/cm².

Therefore, the Min Safety Distance is 20cm.

The End

Appendix A - Test Setup Photograph

Refer to "1811WSU012-UT" file.

Appendix B - EUT Photograph

Refer to "1811WSU012-UE" file.