

RF Exposure Evaluation declaration

Product Name : Wireless-AC2400 Dual Band Gigabit Router
Wireless-AC2600 Dual Band Gigabit Router
Trade Name : ASUS
Model No. : RT-AC85P, RT-AC2400, RT-AC2600, RT-ACRH26
FCC ID. : MSQ-RTACHV00

Applicant : ASUSTeK COMPUTER INC.

Address : 4F, No. 150, Li-Te Rd., Peitou, Taipei, Taiwan

Date of Receipt : Jul. 24, 2018
Date of Declaration : Oct. 31, 2018
Report No. : 1880404R-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/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	Wireless-AC2400 Dual Band Gigabit Router Wireless-AC2600 Dual Band Gigabit Router
Test Mode	Transmit_ CDD mode
Test Condition	RF Exposure Evaluation

Antenna Gain

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.47 dBi or 1.77 in linear scale.

Output Power into Antenna & RF Exposure Evaluation Distance:

IEEE 802.11b (ANT 0+1+2+3)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
1	2412	323.811	0.114
6	2437	521.334	0.184
11	2462	248.389	0.087

IEEE 802.11g (ANT 0+1+2+3)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
1	2412	120.088	0.042
6	2437	517.130	0.182
11	2462	101.765	0.036

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.

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Test Mode	Transmit_ CDD mode
Test Condition	RF Exposure Evaluation

Antenna Gain

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.47 dBi or 1.77 in linear scale.

Output Power into Antenna & RF Exposure Evaluation Distance:

IEEE 802.11n (20MHz) (ANT 0+1+2+3)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
1	2412	106.488	0.038
6	2437	467.197	0.165
11	2462	88.247	0.031

IEEE 802.11n (40MHz) (ANT 0+1+2+3)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
3	2422	55.081	0.019
6	2437	134.679	0.047
9	2452	63.959	0.023

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	Wireless-AC2400 Dual Band Gigabit Router Wireless-AC2600 Dual Band Gigabit Router
Test Mode	Transmit_ CDD mode
Test Condition	RF Exposure Evaluation

Antenna Gain

5G Antenna Gain: The maximum Gain measured in fully anechoic chamber is 3.48 dBi or 2.23 in linear scale.

Output Power into Antenna & RF Exposure Evaluation Distance:

IEEE 802.11a (ANT 0+1+2+3)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
36	5180	342.531	0.152
40	5220	407.380	0.181
44	5240	395.276	0.175

IEEE 802.11a (ANT 0+1+2+3)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
149	5745	664.355	0.295
157	5785	766.832	0.340
165	5825	897.222	0.398

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.

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Test Mode	Transmit_ CDD mode
Test Condition	RF Exposure Evaluation

Antenna Gain

5G Antenna Gain: The maximum Gain measured in fully anechoic chamber is 3.48 dBi or 2.23 in linear scale.

Output Power into Antenna & RF Exposure Evaluation Distance:

IEEE 802.11n (20MHz) (ANT 0+1+2+3)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
36	5180	367.536	0.163
40	5220	376.444	0.167
44	5240	351.318	0.156

IEEE 802.11n (20MHz) (ANT 0+1+2+3)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
149	5745	737.055	0.327
157	5785	762.255	0.338
165	5825	761.728	0.338

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.

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Antenna Gain

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Output Power into Antenna & RF Exposure Evaluation Distance:

IEEE 802.11n (40MHz) (ANT 0+1+2+3)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
38	5190	280.931	0.125
46	5230	323.445	0.143

IEEE 802.11n (40MHz) (ANT 0+1+2+3)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
151	5755	908.448	0.403
159	5795	887.565	0.394

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.

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Test Mode	Transmit_ CDD mode
Test Condition	RF Exposure Evaluation

Antenna Gain

5G Antenna Gain: The maximum Gain measured in fully anechoic chamber is 3.48 dBi or 2.23 in linear scale.

Output Power into Antenna & RF Exposure Evaluation Distance:

IEEE 802.11ac (80MHz) (ANT 0+1+2+3)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
42	5210	136.113	0.060

IEEE 802.11ac (80MHz) (ANT 0+1+2+3)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
155	5775	463.127	0.205

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	Wireless-AC2400 Dual Band Gigabit Router Wireless-AC2600 Dual Band Gigabit Router
Test Mode	Transmit_ BF mode
Test Condition	RF Exposure Evaluation

Antenna Gain

5G Antenna Gain: The maximum Gain measured in fully anechoic chamber is 3.48 dBi or 2.23 in linear scale.

Output Power into Antenna & RF Exposure Evaluation Distance:

IEEE 802.11n (20MHz) (ANT 0+1+2+3)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
36	5180	338.143	0.150
40	5220	354.405	0.157
44	5240	353.021	0.157

IEEE 802.11n (20MHz) (ANT 0+1+2+3)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
149	5745	316.811	0.141
157	5785	538.518	0.239
165	5825	531.374	0.236

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	Wireless-AC2400 Dual Band Gigabit Router Wireless-AC2600 Dual Band Gigabit Router
Test Mode	Transmit_ BF mode
Test Condition	RF Exposure Evaluation

Antenna Gain

5G Antenna Gain: The maximum Gain measured in fully anechoic chamber is 3.48 dBi or 2.23 in linear scale.

Output Power into Antenna & RF Exposure Evaluation Distance:

IEEE 802.11n (40MHz) (ANT 0+1+2+3)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
38	5190	287.078	0.127
46	5230	447.816	0.199

IEEE 802.11n (40MHz) (ANT 0+1+2+3)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
151	5755	543.375	0.241
159	5795	540.381	0.240

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	Wireless-AC2400 Dual Band Gigabit Router Wireless-AC2600 Dual Band Gigabit Router
Test Mode	Transmit_ BF mode
Test Condition	RF Exposure Evaluation

Antenna Gain

5G Antenna Gain: The maximum Gain measured in fully anechoic chamber is 3.48 dBi or 2.23 in linear scale.

Output Power into Antenna & RF Exposure Evaluation Distance:

IEEE 802.11ac (80MHz) (ANT 0+1+2+3)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
42	5210	158.271	0.070

IEEE 802.11ac (80MHz) (ANT 0+1+2+3)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
155	5775	454.569	0.202

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	Wireless-AC2400 Dual Band Gigabit Router Wireless-AC2600 Dual Band Gigabit Router
Test Mode	Transmit
Test Condition	RF Exposure Evaluation

Power Density (2.4GHz) (mW/cm ²)	Power Density (5GHz) (mW/cm ²)	Total Power Density (2.4GHz+5GHz) (mW/cm ²)	Limit (mW/cm ²)
0.184	0.403	0.587	1