

RF EXPOSURE EVALUATION

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)

FCC ID: 2A22E-WWYLT18

EUT Specification

EUT	AC1200 Gigabit Dual Band Wi-Fi Router
Frequency band (Operating)	<input checked="" type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz <input checked="" type="checkbox"/> WLAN: 5.18GHz ~ 5.24GHz <input checked="" type="checkbox"/> WLAN: 5.745GHz ~ 5.825GHz <input checked="" type="checkbox"/> Others: 5.260GHz~5.320GHz, 5.500GHz~5.700GHz
Device category	<input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation) <input type="checkbox"/> Others ____
Exposure classification	<input type="checkbox"/> Occupational/Controlled exposure (S = 5mW/cm ²) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm ²)
Antenna diversity	<input type="checkbox"/> Single antenna <input checked="" type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input type="checkbox"/> Tx/Rx diversity
Max. output power	WiFi 2.4G: 17.275 dBm (0.0534W) WiFi 5.2G: 16.242 dBm (0.0421W) WiFi 5.3G: 15.973 dBm (0.0396W) WiFi 5.6G: 16.211 dBm (0.0418W) WiFi 5.8G: 16.068 dBm (0.0404W)
Antenna gain (Max)	For T18-21A: WiFi 2.4G ANT1/ ANT2: 5dBi WiFi 5G ANT1/ ANT2: 5dBi
Directional Gain:	For T18-21A: WiFi 2.4G: 8.01dBi WiFi 5.2G/5.3G/5.6G/5.8G: 8.01dBi
Evaluation applied	<input checked="" type="checkbox"/> MPE Evaluation <input type="checkbox"/> SAR Evaluation

Limits for Maximum Permissible Exposure(MPE)

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density(mW/cm²)	Average Time
(A) Limits for Occupational/Control Exposures				
300-1500	--	--	F/300	6
1500-100000	--	--	5	6
(B) Limits for General Population/Uncontrol Exposures				
300-1500	--	--	F/1500	6
1500-100000	--	--	1	30

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 the limit of MPE, 1mW/cm². If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

Max Measurement Result

Operating Mode	Measured Power	Tune up tolerance	Max. Tune up Power	Antenna Gain	Power density at 20cm	Power density Limits
	(dBm)	(dBm)	(dBm)	(dBi)	(mW/ cm ²)	(mW/cm ²)
WiFi 2.4G MIMO	17.275	17.275±1	18.275	8.01	0.0846	1
WiFi 5.2G MIMO	16.242	16.242±1	17.242	8.01	0.0667	1
WiFi 5.3G MIMO	15.973	15.973±1	16.973	8.01	0.0627	1
WiFi 5.6G MIMO	16.211	16.211±1	17.211	8.01	0.0662	1
WiFi 5.8G MIMO	16.068	16.068±1	17.068	8.01	0.0641	1

Worst case:

The WLAN 2.4G and WiFi 5.2G can transmit simultaneously:

$$\sum_i \frac{S_i}{S_{Limit,i}}$$

$$= S_{WiFi2.4} / S_{limit-2.4} + S_{WiFi 5.2} / S_{limit-5.2}$$

$$= 0.0846/1 + 0.0667/1$$

$$= 0.1513$$

$$< 1.0$$

Test Results: No Standalone SAR test is required.