IEEE C95.1
KDB 447498 D03
47 C.F.R. Part 1, Subpart I, Section 1.1310
47 C.F.R. Part 2, Subpart J, Section 2.1091

RF EXPOSURE REPORT

For

AC1200 Wireless LAN Concurrent Dual Band Gigabit Router

Model: BR-6478AC V2

Trade Name: EDIMAX

Issued to

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Testing Laboratory
1309

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	2015//12/4	Initial Issue	ALL	Kelly Cheng

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1. LIMIT

According to §15.247(i), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See § 1.1307(b)(1) of this chapter.

2. EUT SPECIFICATION

EUT	AC1200 Wireless LAN Concurrent Dual Band Gigabit Router		
Model	BR-6478AC V2		
RF Module(2.4G)	MEDIATEK	Model:	MT7620A
RF Module(5G)	MEDIATEK	Model:	MT7612EN
Frequency band (Operating)	☒ 802.11b/g/n HT20: 2.412GHz ~ 2.462GHz 802.11n HT40: 2.422GHz ~ 2.452GHz 802.11a/n HT20: 5.180GHz ~ 5.240GHz / 5.745 ~ 5.825GHz 802.11n HT40: 5.190GHz ~ 5.230GHz / 5.755~ 5.795GHz 802.11ac VHT80: 5.210GHz / 5.775GHz ☐ Others		
Device category	☐ Portable (<20cm separation) ☒ Mobile (>20cm separation) ☐ Others		
Exposure classification	☐ Occupational/Controlled exposure (S = 5mW/cm^2) ☒ General Population/Uncontrolled exposure (S=1mW/cm^2)		
Antenna Specification	Dipole Antenna：Master Wave Technology Co., Ltd. 2.4GHz: 98202PYYF000 Antenna Gain : 3.45 dBi (Numeric gain: 2.21) 98202PYYF001 Antenna Gain : 3.30 dBi (Numeric gain: 2.14) 5GHz: 98202PYYF000 Antenna Gain : 4.95 dBi (Numeric gain: 3.13) 98202PYYF001 Antenna Gain : 4.88 dBi (Numeric gain: 3.08) 2.4GHz: Directional gain = 3.45 dBi +10log (2) = 6.46 dBi (Numeric gain 4.43) 5GHz: Directional gain = 4.95 dBi +10log (2) = 7.96 dBi (Numeric gain 6.25)		
Maximum Average output power	IEEE 802.11b Mode: 26.85 dBm (484.172 mW) IEEE 802.11g Mode: 25.42 dBm (348.337 mW) IEEE 802.11n HT 20 Mode: 24.95 dBm (312.608 mW) IEEE 802.11n HT 40 Mode: 25.08 dBm (322.107 mW) IEEE 802.11a Mode: 24.16 dBm (260.615 mW) IEEE 802.11n HT 20 Mode: 21.38 dBm (137.404 mW) IEEE 802.11n HT 40 Mode: 21.62 dBm (145.211 mW) IEEE 802.11ac VHT80 Mode: 17.66 dBm (58.345 mW)		

Maximum Tune up Power	IEEE 802.11b Mode: 27.00 dBm (501.187 mW) IEEE 802.11g Mode: 26.00 dBm (398.107 mW) IEEE 802.11n HT 20 Mode: 25.00 dBm (316.228 mW) IEEE 802.11n HT 40 Mode: 25.50 dBm (354.813 mW) IEEE 802.11a Mode: 24.50 dBm (281.838 mW) IEEE 802.11n HT 20 Mode: 21.50 dBm (141.254 mW) IEEE 802.11n HT 40 Mode: 22.00 dBm (158.489 mW) IEEE 802.11ac VHT80 Mode: 18.00 dBm (63.096 mW)
Evaluation applied	☒ MPE Evaluation* ☐ SAR Evaluation ☐ N/A

3. TEST RESULTS

No non-compliance noted.

Calculation

Given $E = \frac{\sqrt{30 \times P \times G}}{d}$ & $S = \frac{E^2}{377}$

Where E = Field strength in Volts / meter
P = Power in Watts
G = Numeric antenna gain
d = Distance in meters
S = Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{377 d^2}$$

Changing to units of mW and cm, using:

P (mW) = P (W) / 1000 and

d (cm) = d(m) / 100

Yields

$$S = \frac{30 \times (P/1000) \times G}{377 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2}$$ ***Equation 1***

Where d = Distance in cm
P = Power in mW
G = Numeric antenna gain
S = Power density in mW / cm^2

4. MAXIMUM PERMISSIBLE EXPOSURE

Substituting the MPE safe distance using d = 20 cm into Equation 1:

$$S = 0.000199 \times P \times G$$

Where P = Power in mW

G = Numeric antenna gain

S = Power density in mW / cm²

IEEE 802.11b mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm²	Limit (mW/cm2)
6	2437	501.187	4.43	20	0.4418	1

IEEE 802.11g mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm²	Limit (mW/cm2)
6	2437	398.107	4.43	20	0.3510	1

IEEE 802.11n HT20 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm²	Limit (mW/cm2)
6	2437	316.228	4.43	20	0.2788	1

IEEE 802.11n HT40 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm²	Limit (mW/cm2)
6	2437	354.813	4.43	20	0.3128	1

IEEE 802.11a mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm²	Limit (mW/cm2)
165	5825	281.838	6.25	20	0.3505	1

IEEE 802.11a HT20 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm²	Limit (mW/cm2)
157	5785	141.254	6.25	20	0.1757	1

IEEE 802.11a HT40 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm²	Limit (mW/cm2)
151	5755	158.489	6.25	20	0.1971	1

IEEE 802.11ac VHT80 mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm²	Limit (mW/cm2)
155	5775	63.096	6.25	20	0.0785	1