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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*

**EDIMAX TECHNOLOGY CO., LTD.**  
No.3,Wu-Chuan 3rd Road,Wu-Ku Industrial Park, New Taipei City, Taiwan

*Issued by*

**Compliance Certification Services Inc.**  
No.11, Wugong 6th Rd., Wugu Dist.,  
New Taipei City 24891, Taiwan. (R.O.C.)  
<http://www.ccsrf.com>  
[service@ccsrf.com](mailto:service@ccsrf.com)  
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## Revision History

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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

<b>EUT</b>	AC1200 Wireless LAN Concurrent Dual Band Gigabit Router		
<b>Model</b>	BR-6478AC V2		
<b>RF Module(2.4G)</b>	MEDIATEK	Model:	MT7620A
<b>RF Module(5G)</b>	MEDIATEK	Model:	MT7612EN
<b>Frequency band (Operating)</b>	<input checked="" type="checkbox"/> 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 <input type="checkbox"/> Others		
<b>Device category</b>	<input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation) <input type="checkbox"/> Others		
<b>Exposure classification</b>	<input type="checkbox"/> Occupational/Controlled exposure (S = 5mW/cm <sup>2</sup> ) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm <sup>2</sup> )		
<b>Antenna Specification</b>	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)		
<b>Maximum Average output power</b>	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)		

<p><b>Maximum Tune up Power</b></p>	<p>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)</p>
<p><b>Evaluation applied</b></p>	<p><input checked="" type="checkbox"/> MPE Evaluation*  <input type="checkbox"/> SAR Evaluation  <input type="checkbox"/> N/A</p>

### 3. TEST RESULTS

No non-compliance noted.

#### Calculation

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

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:

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

Changing to units of mW and cm, using:

$$P \text{ (mW)} = P \text{ (W)} / 1000 \text{ and}$$

$$d \text{ (cm)} = d \text{ (m)} / 100$$

Yields

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

Where  $d$  = Distance in cm

$P$  = Power in mW

$G$  = Numeric antenna gain

$S$  = Power density in mW / cm<sup>2</sup>

## 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 / cm<sup>2</sup>

### IEEE 802.11b mode:

Ch.	Frq.(MHz)	P (mW)	Gain (num.)	D (cm)	Power density in mW / cm <sup>2</sup>	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 / cm <sup>2</sup>	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 / cm <sup>2</sup>	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 / cm <sup>2</sup>	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 / cm <sup>2</sup>	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 / cm <sup>2</sup>	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 / cm <sup>2</sup>	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 / cm <sup>2</sup>	Limit (mW/cm2)
155	5775	63.096	6.25	20	0.0785	1