

# Maximum Permissible Exposure

**Equipment** : High Power Plug-In AC2600 Wi-Fi Range Extender  
**Brand Name** : AMPED WIRELESS  
**Model No.** : REC44M  
**FCC ID** : ZTT-REC44M  
**Standard** : ANSI/IEEE C95.1  
**Applicant** : AMPED WIRELESS  
13089 Peyton Dr. #C307, Chino Hills, CA 91709  
**Manufacturer** : EDIMAX TECHNOLOGY CO., LTD.  
1F., No.3, Wu-Ghuan 3rd Rd., Wu-Gu,  
New Taipei City, Taiwan 24891

The product sample received on Mar. 22, 2016 and completely tested on May 19, 2016. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI/IEEE C95.1 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:

  
Kevin Liang / Assistant Manager

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## Revision History

[illegible]

# 1 Human Exposure Assessment

## 1.1 Maximum Permissible Exposure

### 1.1.1 Limit of Maximum Permissible Exposure

Limits for Occupational / Controlled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm <sup>2</sup> )	Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f <sup>2</sup> )*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	F/300	6
1500-100,000	-	-	5	6
Limits for General Population / Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm <sup>2</sup> )	Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f <sup>2</sup> )*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	F/1500	30
1500-100,000	-	-	1.0	30
Note 1: f = frequency in MHz ; *Plane-wave equivalent power density				
Note 2: For the applicable limit, see FCC 1.1310				

### 1.1.2 MPE Calculation Method

$$S = \frac{PG}{4\pi R^2}$$

S = power density (in appropriate units, e.g. mW/cm<sup>2</sup>)

P = power input to the antenna (in appropriate units, e.g., mW)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

**1.1.3 Result of Maximum Permissible Exposure (2.4GHz)**

RF General Information					
Frequency Range (MHz)	IEEE Std. 802.11 Protocol	Ch. Frequency (MHz)	Channel Number	Number of Transmit Chains (N <sub>TX</sub> )	RF Output Power (dBm)
2400-2483.5	b	2412-2462	1-11 [11]	2	24.66
2400-2483.5	g	2412-2462	1-11 [11]	2	24.45
2400-2483.5	n (HT20)	2412-2462	1-11 [11]	4	<b>26.68</b>
2400-2483.5	n (HT40)	2422-2452	3-9 [7]	4	20.73

Note 1: RF output power specifies that Maximum Conducted (Average) Output Power.

Worst Maximum RF Output Power Result									
Exposure Environment		General Population / Uncontrolled Exposure							
Separation Distance (cm)		20							
Condition		RF Output Power (dBm)							
Modulation Mode	N <sub>TX</sub>	Chain-Port 1	Chain-Port 2	Chain-Port 3	Chain-Port 4	Sum Chain	DG (dBi)	EIRP Power	PD (S) (mW/cm <sup>2</sup> )
n (HT20)	4	20.68	20.67	20.67	20.61	26.68	2.69	29.37	0.17216
Maximum Permissible Exposure Limit (mW/cm <sup>2</sup> )									1

Note 1: N<sub>TX</sub> = Number of Transmit Chains

**1.1.4 Result of Maximum Permissible Exposure (5.2GHz)\_(non-beamforming)**

RF General Information					
Frequency Range (MHz)	IEEE Std. 802.11 Protocol	Ch. Frequency (MHz)	Channel Number	Number of Transmit Chains (N <sub>TX</sub> )	RF Output Power (dBm)
5150-5250	a	5180-5240	36-48 [4]	4	23.44
5150-5250	n (HT20)	5180-5240	36-48 [4]	4	23.45
5150-5250	n (HT40)	5190-5230	38-46 [2]	4	<b>25.60</b>
5150-5250	ac (VHT20)	5180-5240	36-48 [4]	4	23.42
5150-5250	ac (VHT40)	5190-5230	38-46 [2]	4	25.42
5150-5250	ac (VHT80)	5210	42 [1]	4	14.62
Note 1: RF output power specifies that Maximum Conducted (Average) Output Power.					

Worst Maximum RF Output Power Result									
Exposure Environment		General Population / Uncontrolled Exposure							
Separation Distance (cm)		20							
Condition		RF Output Power (dBm)							
Modulation Mode	N <sub>TX</sub>	Chain-Port 1	Chain-Port 2	Chain-Port 3	Chain-Port 4	Sum Chain	DG (dBi)	EIRP Power	PD (S) (mW/cm <sup>2</sup> )
n (HT40)	4	19.95	18.99	19.11	20.13	25.60	3.91	29.51	0.17759
Maximum Permissible Exposure Limit (mW/cm <sup>2</sup> )									1
Note 1: N <sub>TX</sub> = Number of Transmit Chains									

**1.1.5 Result of Maximum Permissible Exposure (5.8GHz)\_(non-beamforming)**

RF General Information					
Frequency Range (MHz)	IEEE Std. 802.11 Protocol	Ch. Frequency (MHz)	Channel Number	Number of Transmit Chains (N <sub>TX</sub> )	RF Output Power (dBm) Co-location
5725-5850	a	5745-5825	149-165 [5]	4	24.73
5725-5850	n (HT20)	5745-5825	149-165 [5]	4	25.56
5725-5850	n (HT40)	5755-5795	151-159 [2]	4	<b>28.00</b>
5725-5850	ac (VHT20)	5745-5825	149-165 [5]	4	25.29
5725-5850	ac (VHT40)	5755-5795	151-159 [2]	4	27.72
5725-5850	ac (VHT80)	5775	155 [1]	4	23.85
Note 1: RF output power specifies that Maximum Conducted (Average) Output Power.					

Worst Maximum RF Output Power Result									
Exposure Environment		General Population / Uncontrolled Exposure							
Separation Distance (cm)		20							
Condition		RF Output Power (dBm)							
Modulation Mode	N <sub>TX</sub>	Chain-Port 1	Chain-Port 2	Chain-Port 3	Chain-Port 4	Sum Chain	DG (dBi)	EIRP Power	PD (S) (mW/cm <sup>2</sup> )
n (HT40)	4	22.16	21.81	21.16	22.66	28.00	3.91	31.91	0.30916
Maximum Permissible Exposure Limit (mW/cm <sup>2</sup> )									1
Note 1: N <sub>TX</sub> = Number of Transmit Chains									

**1.1.6 Result of Maximum Permissible Exposure (5.2GHz)\_(beamforming)**

RF General Information					
Frequency Range (MHz)	IEEE Std. 802.11 Protocol	Ch. Frequency (MHz)	Channel Number	Number of Transmit Chains (N <sub>TX</sub> )	RF Output Power (dBm)
5150-5250	n (HT20)	5180-5240	36-48 [4]	4	23.35
5150-5250	n (HT40)	5190-5230	38-46 [2]	4	<b>25.90</b>
5150-5250	ac (VHT20)	5180-5240	36-48 [4]	4	22.91
5150-5250	ac (VHT40)	5190-5230	38-46 [2]	4	25.80
5150-5250	ac (VHT80)	5210	42 [1]	4	16.31

Note 1: RF output power specifies that Maximum Conducted (Average) Output Power.

Worst Maximum RF Output Power Result									
Exposure Environment		General Population / Uncontrolled Exposure							
Separation Distance (cm)		20							
Condition		RF Output Power (dBm)							
Modulation Mode	N <sub>TX</sub>	Chain-Port 1	Chain-Port 2	Chain-Port 3	Chain-Port 4	Sum Chain	DG (dBi)	EIRP Power	PD (S) (mW/cm <sup>2</sup> )
n (HT40)	4	20.00	19.66	19.44	20.38	25.90	9.93	35.83	0.76248
Maximum Permissible Exposure Limit (mW/cm <sup>2</sup> )									1

Note 1: N<sub>TX</sub> = Number of Transmit Chains



**1.1.7 Result of Maximum Permissible Exposure (5.8GHz)\_(beamforming)**

RF General Information					
Frequency Range (MHz)	IEEE Std. 802.11 Protocol	Ch. Frequency (MHz)	Channel Number	Number of Transmit Chains (N <sub>TX</sub> )	RF Output Power (dBm) Co-location
5725-5850	n (HT20)	5745-5825	149-165 [5]	4	23.67
5725-5850	n (HT40)	5755-5795	151-159 [2]	4	<b>25.20</b>
5725-5850	ac (VHT20)	5745-5825	149-165 [5]	4	23.20
5725-5850	ac (VHT40)	5755-5795	151-159 [2]	4	25.08
5725-5850	ac (VHT80)	5775	155 [1]	4	22.05
Note 1: RF output power specifies that Maximum Conducted (Average) Output Power.					

Worst Maximum RF Output Power Result									
Exposure Environment		General Population / Uncontrolled Exposure							
Separation Distance (cm)		20							
Condition		RF Output Power (dBm)							
Modulation Mode	N <sub>TX</sub>	Chain-Port 1	Chain-Port 2	Chain-Port 3	Chain-Port 4	Sum Chain	DG (dBi)	EIRP Power	PD (S) (mW/cm <sup>2</sup> )
n (HT40)	4	19.30	19.15	18.48	19.69	25.20	9.93	35.10	0.64777
Maximum Permissible Exposure Limit (mW/cm <sup>2</sup> )									1
Note 1: N <sub>TX</sub> = Number of Transmit Chains									

**1.1.8 Result of Maximum Permissible Exposure (Co-Location)**

Worst Maximum RF Output Power Result					
Exposure Environment		General Population / Uncontrolled Exposure			
Separation Distance (cm)		20			
Condition		RF Output Power (dBm)			
Modulation Mode	N <sub>TX</sub>	RF Output Power (dBm)	DG (dBi)	EIRP Power	PD (S) (mW/cm <sup>2</sup> )
n (HT20)	4	26.68	2.69	29.37	0.17216
n (HT40) (5150 MHz – 5250 MHz) (beamforming)	4	25.90	9.93	35.83	0.76248
Co-location Total					0.93464
Maximum Permissible Exposure Limit (mW/cm <sup>2</sup> )					1
Note 1: N <sub>TX</sub> = Number of Transmit Chains					