

# Maximum Permissible Exposure

**Equipment** : ARTEMIS-High Power AC1300 Wi-Fi Router  
**Brand Name** : Amped Wireless  
**Model No.** : RTA1300M  
**FCC ID** : ZTT-RTA1300M  
**Standard** : ANSI/IEEE C95.1  
**Applicant** : Amped Wireless  
13089 Peyton Dr. #C307 Chino Hills CA 91709  
**Manufacturer** : EDIMAX TECHNOLOGY CO., LTD.  
No.3, Wu-Chuan 3rd Road, Wu-Ku Industrial  
Park, New Taipei City, Taiwan

The product sample received on Feb. 16, 2016 and completely tested on Apr. 15, 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	25.79
2400-2483.5	g	2412-2462	1-11 [11]	2	<b>26.25</b>
2400-2483.5	n (HT20)	2412-2462	1-11 [11]	2	25.86
2400-2483.5	n (HT40)	2422-2452	3-9 [7]	2	21.88
2400-2483.5	ac (VHT20)	2412-2462	1-11 [11]	2	25.72
2400-2483.5	ac (VHT40)	2422-2452	3-9 [7]	2	21.43
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	Sum Chain	DG (dBi)	EIRP Power	PD (S) (mW/cm <sup>2</sup> )
11g	2	23.18	23.30	26.25	5.03	31.28	0.26712
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]	2	24.26
5150-5250	n (HT20)	5180-5240	36-48 [4]	2	25.17
5150-5250	n (HT40)	5190-5230	38-46 [2]	2	25.54
5150-5250	ac (VHT20)	5180-5240	36-48 [4]	2	25.20
5150-5250	ac (VHT40)	5190-5230	38-46 [2]	2	<b>25.56</b>
5150-5250	ac (VHT80)	5210	42 [1]	2	17.97
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	Sum Chain	DG (dBi)	EIRP Power	PD (S) (mW/cm <sup>2</sup> )
ac (VHT40)	2	22.67	22.42	25.56	5.59	31.15	0.25910
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]	2	22.75
5725-5850	n (HT20)	5745-5825	149-165 [5]	2	22.94
5725-5850	n (HT40)	5755-5795	151-159 [2]	2	24.00
5725-5850	ac (VHT20)	5745-5825	149-165 [5]	2	22.94
5725-5850	ac (VHT40)	5755-5795	151-159 [2]	2	<b>24.05</b>
5725-5850	ac (VHT80)	5775	155 [1]	2	14.77
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	Sum Chain	DG (dBi)	EIRP Power	PD (S) (mW/cm <sup>2</sup> )
ac (VHT40)	2	21.58	20.42	24.05	5.59	29.64	0.18309
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	ac (VHT20)	5180-5240	36-48 [4]	2	22.04
5150-5250	ac (VHT40)	5190-5230	38-46 [2]	2	<b>23.90</b>
5150-5250	ac (VHT80)	5210	42 [1]	2	20.44
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	Sum Chain	DG (dBi)	EIRP Power	PD (S) (mW/cm <sup>2</sup> )
ac (VHT40)	2	21.34	20.40	23.90	8.60	32.50	0.35397
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	ac (VHT20)	5745-5825	149-165 [5]	2	24.00
5725-5850	ac (VHT40)	5755-5795	151-159 [2]	2	<b>24.24</b>
5725-5850	ac (VHT80)	5775	155 [1]	2	18.69
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	Sum Chain	DG (dBi)	EIRP Power	PD (S) (mW/cm <sup>2</sup> )
ac (VHT40)	2	21.45	21.01	24.24	8.60	32.84	0.38281
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)**

<b>Worst Maximum RF Output Power Result</b>					
<b>Exposure Environment</b>		General Population / Uncontrolled Exposure			
<b>Separation Distance (cm)</b>		20			
<b>Condition</b>		<b>RF Output Power (dBm)</b>			
<b>Modulation Mode</b>	<b>N<sub>TX</sub></b>	<b>RF Output Power (dBm)</b>	<b>DG (dBi)</b>	<b>EIRP Power</b>	<b>PD (S) (mW/cm<sup>2</sup>)</b>
11g	2	26.25	5.03	31.28	0.26712
ac (VHT40) (5725 MHz – 5850 MHz) (beamforming)	2	24.24	8.60	32.84	0.38281
<b>Co-location Total</b>					0.64993
<b>Maximum Permissible Exposure Limit (mW/cm<sup>2</sup>)</b>					1
Note 1: N <sub>TX</sub> = Number of Transmit Chains					