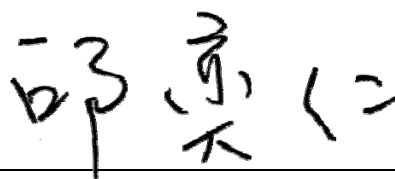


# MPE REPORT

案 號： 1808C223  
產 品 名 稱： AC1200 無線 MU-MIMO Gigabit 路由器  
型 號： Archer A6  
申請廠商（名稱）： 聯洲國際有限公司  
申請廠商（地址）： 新北市板橋區中山路一段156號13樓

**According to: LP0002 第 5.20.2 節**

實驗室報告簽署人：



發 行 日 期：

107 年 11 月 13 日

**東研信超股份有限公司**

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## MPE CALCULATION METHOD:

Calculation Method of RF Safety Distance:

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

where:

S = power density

P = power input to the antenna

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

Table for Filed Antenna:

For 2.4G

| Ant. | Brand                                                                               | P/N        | Antenna Type | Connector | Gain(dBi) |
|------|-------------------------------------------------------------------------------------|------------|--------------|-----------|-----------|
| 1    |    | 3101502122 | PCB          | N/A       | 4.65      |
| 2    |   | 3101502035 | Dipole       | N/A       | 4.71      |
| 3    |  | 2101502129 | Dipole       | N/A       | 4.71      |

Note:

This EUT supports MIMO 3X3, any transmit signals are correlated with each other,

so Directional gain =  $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N]$  dBi,

that is Directional gain =  $10\log[(10^{4.65/20} + 10^{4.71/20} + 10^{4.71/20})^2 / 3]$  dBi = 9.46.

So, the output power limit is  $30 - 9.46 + 6 = 26.54$ ,

the power density limit is  $8 - 9.46 + 6 = 4.54$ .

The worst case for 3TX as follow:

| Operating Mode  | TX Mode | 3TX                   |
|-----------------|---------|-----------------------|
| 802.11b         |         | V (ANT 1+ANT 2+ANT 3) |
| 802.11g         |         | V (ANT 1+ANT 2+ANT 3) |
| 802.11n(20 MHz) |         | V (ANT 1+ANT 2+ANT 3) |
| 802.11n(40 MHz) |         | V (ANT 1+ANT 2+ANT 3) |

For 5G:

| Ant. | Brand                                                                             | P/N        | Antenna Type | Connector | Gain (dBi) |
|------|-----------------------------------------------------------------------------------|------------|--------------|-----------|------------|
| 1    |  | 3101501992 | Dipole       | N/A       | 4.95       |
| 2    |  | 2101502128 | Dipole       | N/A       | 4.95       |

Note:

This EUT supports MIMO 2X2, any transmit signals are correlated with each other,  
so Directional gain =  $10\log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N]$  dBi,

that is Directional gain =  $10\log[(10^{4.95/20} + 10^{4.95/20})^2 / 2]$  dBi = 7.96;

So, the UNII-1, UNII-3 output power limit is  $30 - 7.96 + 6 = 28.04$ .

The UNII-1 power density limit is  $17 - 7.96 + 6 = 15.04$ ,

the UNII-3 power density limit is  $30 - 7.96 + 6 = 28.04$ .

The worst case for 2TX as follow:

| Operating Mode<br>TX Mode | 2TX              |
|---------------------------|------------------|
| 802.11a                   | V (ANT 1+ ANT 2) |
| 802.11n (20 MHz)          | V (ANT 1+ ANT 2) |
| 802.11n (40 MHz)          | V (ANT 1+ ANT 2) |
| 802.11ac (20 MHz)         | V (ANT 1+ ANT 2) |
| 802.11ac (40 MHz)         | V (ANT 1+ ANT 2) |
| 802.11ac (80 MHz)         | V (ANT 1+ ANT 2) |

## TEST RESULTS:

### For 2.4G

測試頻道: IEEE 802.11 n (20 MHz)      測試模式: 發射  
 檢 測 器: RMS      測試日期: 107/09/14  
 環境溫度: 24°C      環境濕度: 60%

| Antenna Gain (dBi) | Antenna Gain (numeric) | Peak Output Power (dBm) | Peak Output Power (mW) | Power Density (S) (mW/cm <sup>2</sup> ) | Limit of Power Density (S) (mW/cm <sup>2</sup> ) | Test Result |
|--------------------|------------------------|-------------------------|------------------------|-----------------------------------------|--------------------------------------------------|-------------|
| 9.46               | 8.8308                 | 24.65                   | 291.7427               | 0.51280278                              | 1                                                | Complies    |

### For 5G UNII-1:

測試頻道: IEEE 802.11a      測試模式: 發射  
 檢 測 器: RMS      測試日期: 107/09/17  
 環境溫度: 24°C      環境濕度: 60%

| Antenna Gain (dBi) | Antenna Gain (numeric) | Peak Output Power (dBm) | Peak Output Power (mW) | Power Density (S) (mW/cm <sup>2</sup> ) | Limit of Power Density (S) (mW/cm <sup>2</sup> ) | Test Result |
|--------------------|------------------------|-------------------------|------------------------|-----------------------------------------|--------------------------------------------------|-------------|
| 7.96               | 6.2517                 | 24.57                   | 286.4178               | 0.35641040                              | 1                                                | Complies    |

### For 5G UNII-3:

測試頻道: IEEE 802.11a      測試模式: 發射  
 檢 測 器: RMS      測試日期: 107/09/17  
 環境溫度: 24°C      環境濕度: 60%

| Antenna Gain (dBi) | Antenna Gain (numeric) | Peak Output Power (dBm) | Peak Output Power (mW) | Power Density (S) (mW/cm <sup>2</sup> ) | Limit of Power Density (S) (mW/cm <sup>2</sup> ) | Test Result |
|--------------------|------------------------|-------------------------|------------------------|-----------------------------------------|--------------------------------------------------|-------------|
| 7.96               | 6.2517                 | 25.09                   | 322.8494               | 0.40174490                              | 1                                                | Complies    |

Note: The evaluated distance is 20cm.

結束