

# MPE REPORT

案 號： 1907C037  
產 品 名 稱： AC1300 完整家庭Wi-Fi系統  
型 號： Deco M5  
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**

報告簽署人：



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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 2.4GHz:

| Ant. | Brand                                                                             | P/N        | Antenna Type | Connector | Gain(dBi) |
|------|-----------------------------------------------------------------------------------|------------|--------------|-----------|-----------|
| 1    |  | 3101502591 | Monopole     | N/A       | 1.30      |
| 2    |  | 3101502592 | Monopole     | N/A       | 1.30      |

Note:

(1) This EUT supports CDD, and all antennas have the same gain.

So, the directional gain =  $G_{ANT} + \text{Array Gain}$ .

For power Directional gain=1.30.

For power spectral density measurements, Array Gain=10log( $N_{ANT}/N_{SS}$ ) dB,  
that is Directional gain = 1.30+10log(2/1)dBi=4.31

(2) For Beamforming Gain: 3.00 dB. So the Directional gain = 3.00+1.30=4.30.

For 5GHz:

| Ant. | Brand                                                                               | P/N        | Antenna Type | Connector | Gain (dBi) |
|------|-------------------------------------------------------------------------------------|------------|--------------|-----------|------------|
| 1    |  | 3101502593 | Internal     | I-PEX     | 0.64       |
| 2    |  | 3101502594 | Internal     | I-PEX     | 0.64       |

Note: This EUT supports CDD, and all antennas have the same gain,

Directional gain =  $G_{ANT} + \text{Array Gain}$ , where Array Gain is as follows:

(1) For power Directional gain=0.64.

For power spectral density measurements,  $N_{ANT} = 2$ ,  $N_{SS} = 1$ .

So Directional gain =  $G_{ANT} + \text{Array Gain} = 10 \log (N_{ANT} / N_{SS}) \text{ dB} = 0.64 + 10 \log (2/1) \text{ dBi} = 3.65 \text{ dB}$ .

(2) For Beamforming Gain: 3.00 dB. So the Directional gain = 3.00+0.64=3.64.

## TEST RESULTS:

### For 2.4GHz Non Beamforming

測試頻道: IEEE 802.11b

測試模式: 發射

檢 測 器: RMS

測試日期: 108/07/12

環境溫度: 23.3°C

環境濕度: 56.4%

| Directional gain (dBi) | Directional Gain (numeric) | Max. Output Power (dBm) | Max. Output Power (mW) | Power Density (S) (mW/cm <sup>2</sup> ) | Limit of Power Density (S) (mW/cm <sup>2</sup> ) | Test Result |
|------------------------|----------------------------|-------------------------|------------------------|-----------------------------------------|--------------------------------------------------|-------------|
| 1.30                   | 1.3490                     | 26.06                   | 403.6454               | 0.10838031                              | 1                                                | Complies    |

### For 2.4GHz Beamforming

測試頻道: IEEE 802.11n (HT20)

測試模式: 發射

檢 測 器: RMS

測試日期: 108/07/12

環境溫度: 23.3°C

環境濕度: 56.4%

| Directional gain (dBi) | Directional Gain (numeric) | Max. Output Power (dBm) | Max. Output Power (mW) | Power Density (S) (mW/cm <sup>2</sup> ) | Limit of Power Density (S) (mW/cm <sup>2</sup> ) | Test Result |
|------------------------|----------------------------|-------------------------|------------------------|-----------------------------------------|--------------------------------------------------|-------------|
| 4.30                   | 2.6915                     | 25.54                   | 358.0964               | 0.19184495                              | 1                                                | Complies    |

### For 5GHz Non Beamforming

測試頻道: IEEE 802.11ac (VHT40) / 5.2 GHz 頻帶

測試模式: 發射

檢 測 器: RMS

測試日期: 108/09/24

環境溫度: 23.3°C

環境濕度: 56.4%

| Directional gain (dBi) | Directional Gain (numeric) | Max. Output Power (dBm) | Max. Output Power (mW) | Power Density (S) (mW/cm <sup>2</sup> ) | Limit of Power Density (S) (mW/cm <sup>2</sup> ) | Test Result |
|------------------------|----------------------------|-------------------------|------------------------|-----------------------------------------|--------------------------------------------------|-------------|
| 0.64                   | 1.1588                     | 27.32                   | 539.5106               | 0.12443724                              | 1                                                | Complies    |

測試頻道: IEEE 802.11a / 5.8 GHz 頻帶

測試模式: 發射

檢 測 器: RMS

測試日期: 108/09/24

環境溫度: 23.3°C

環境濕度: 56.4%

| Directional gain (dBi) | Directional Gain (numeric) | Max. Output Power (dBm) | Max. Output Power (mW) | Power Density (S) (mW/cm <sup>2</sup> ) | Limit of Power Density (S) (mW/cm <sup>2</sup> ) | Test Result |
|------------------------|----------------------------|-------------------------|------------------------|-----------------------------------------|--------------------------------------------------|-------------|
| 0.64                   | 1.1588                     | 26.07                   | 404.5759               | 0.09331477                              | 1                                                | Complies    |

### For 5GHz Beamforming

測試頻道: IEEE 802.11ac (VHT20) / 5.2 GHz 頻帶      測試模式: 發射  
 檢 測 器: RMS      測試日期: 108/09/24  
 環境溫度: 23.3°C      環境濕度: 56.4%

| Directional gain (dBi) | Directional Gain (numeric) | Max. Output Power (dBm) | Max. Output Power (mW) | Power Density (S) (mW/cm <sup>2</sup> ) | Limit of Power Density (S) (mW/cm <sup>2</sup> ) | Test Result |
|------------------------|----------------------------|-------------------------|------------------------|-----------------------------------------|--------------------------------------------------|-------------|
| 3.64                   | 2.3121                     | 25.48                   | 353.1832               | 0.16253630                              | 1                                                | Complies    |

測試頻道: IEEE 802.11n (HT40) / 5.8 GHz 頻帶      測試模式: 發射  
 檢 測 器: RMS      測試日期: 108/09/24  
 環境溫度: 23.3°C      環境濕度: 56.4%

| Directional gain (dBi) | Directional Gain (numeric) | Max. Output Power (dBm) | Max. Output Power (mW) | Power Density (S) (mW/cm <sup>2</sup> ) | Limit of Power Density (S) (mW/cm <sup>2</sup> ) | Test Result |
|------------------------|----------------------------|-------------------------|------------------------|-----------------------------------------|--------------------------------------------------|-------------|
| 3.64                   | 2.3121                     | 25.07                   | 321.3661               | 0.14789394                              | 1                                                | Complies    |

Note: The evaluated distance is 20cm.

結束