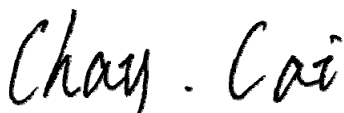


# FCC RF EXPOSURE REPORT

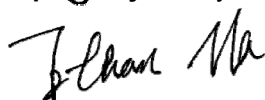
## FCC ID: 2ABZMW66AP

**Project No.** : 2006C026  
**Equipment** : AC1750 Wave2 Gigabit Access Point  
**Brand Name** : IP-COM  
**Test Model** : W66AP  
**Series Model** : N/A  
**Applicant** : SHENZHEN IP-COM NETWORKS CO.,LTD  
**Address** : Room 101, Unit A, First Floor, Tower E3, No. 1001, Zhongshanyuan Road, Nanshan District, Shenzhen, China. 518052  
**Manufacturer** : SHENZHEN IP-COM NETWORKS CO.,LTD  
**Address** : Room 101, Unit A, First Floor, Tower E3, No. 1001, Zhongshanyuan Road, Nanshan District, Shenzhen, China. 518052  
**Date of Receipt** : Jun. 05, 2020  
**Date of Test** : Jun. 05, 2020 ~ Jun. 08, 2020  
**Issued Date** : Jun. 22, 2020  
**Report Version** : R01  
**Test Sample** : Engineering Sample No.: DG19062851  
**Standard(s)** : FCC Guidelines for Human Exposure IEEE C95.1 & FCC Part 2.1091  
FCC Title 47 Part 2.1091, OET Bulletin 65 Supplement C

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.



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**REPORT ISSUED HISTORY**

| Report Version | Description             | Issued Date   |
|----------------|-------------------------|---------------|
| R00            | Original Issue.         | Jun. 19, 2020 |
| R01            | Changed the brand name. | Jun. 22, 2020 |

## 1. MPE CALCULATION METHOD

Calculation Method of RF Safety Distance:

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

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 Filled Antenna:

### For 2.4GHz:

| Ant. | Brand | Model Name | Antenna Type | Connector | Gain (dBi) |
|------|-------|------------|--------------|-----------|------------|
| 1    | Tenda | N/A        | Internal     | IPEX      | 3.0        |
| 2    | Tenda | N/A        | Internal     | IPEX      | 3.0        |
| 3    | Tenda | N/A        | Internal     | IPEX      | 3.0        |

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

(1) For Non Beamforming function, Directional gain= $G_{ANT}$ +Array Gain,

For output power measurements, Array Gain=0, so, Directional gain=3.0

For power spectral density measurements, Array Gain= $10\log(N_{ANT}/N_{SS})$  dB

Directional gain=3.0+ $10\log(3/1)$ =7.77. So, the power density limit is  $8-7.77+6=6.23$

(2) For Beamforming function, Beamforming gain: 4.5dB, so Directional gain=3.0+4.5=7.50

Then, the output Power limit is  $30-7.50+6=28.50$

### For 5GHz:

| Ant. | Brand | Model Name | Antenna Type | Connector | Gain (dBi) |
|------|-------|------------|--------------|-----------|------------|
| 1    | Tenda | N/A        | Internal     | IPEX      | 4.0        |
| 2    | Tenda | N/A        | Internal     | IPEX      | 4.0        |
| 3    | Tenda | N/A        | Internal     | IPEX      | 4.0        |

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

(1) For Non Beamforming function, Directional gain= $G_{ANT}$ +Array Gain,

For output power measurements, Array Gain=0, so, Directional gain=4.0

For power spectral density measurements, Array Gain= $10\log(N_{ANT}/N_{SS})$  dB

Directional gain=4.0+ $10\log(3/1)$ =8.77.

So, the UNII-1 power density limit is  $17-8.77+6=14.23$

the UNII-3 power density limit is  $30-8.77+6=27.23$

(2) For Beamforming function, Beamforming gain: 4.5dB, so Directional gain=4.0+4.5=8.50

Then, the output Power limit is  $30-8.50+6=27.50$

The worst case for 3TX as follow:

**For 2.4GHz:**

For Non Beamforming:

| Operating Mode     | TX Mode | 3TX                      |
|--------------------|---------|--------------------------|
| IEEE 802.11b       |         | V (Ant. 1+Ant. 2+Ant. 3) |
| IEEE 802.11g       |         | V (Ant. 1+Ant. 2+Ant. 3) |
| IEEE 802.11n(HT20) |         | V (Ant. 1+Ant. 2+Ant. 3) |
| IEEE 802.11n(HT40) |         | V (Ant. 1+Ant. 2+Ant. 3) |

For Beamforming:

| Operating Mode     | TX Mode | 3TX                      |
|--------------------|---------|--------------------------|
| IEEE 802.11n(HT20) |         | V (Ant. 1+Ant. 2+Ant. 3) |
| IEEE 802.11n(HT40) |         | V (Ant. 1+Ant. 2+Ant. 3) |

**For 5GHz:**

For Non Beamforming:

| Operating Mode       | TX Mode | 3TX                      |
|----------------------|---------|--------------------------|
| IEEE 802.11a         |         | V (Ant. 1+Ant. 2+Ant. 3) |
| IEEE 802.11n (HT20)  |         | V (Ant. 1+Ant. 2+Ant. 3) |
| IEEE 802.11n (HT40)  |         | V (Ant. 1+Ant. 2+Ant. 3) |
| IEEE 802.11ac(VHT20) |         | V (Ant. 1+Ant. 2+Ant. 3) |
| IEEE 802.11ac(VHT40) |         | V (Ant. 1+Ant. 2+Ant. 3) |
| IEEE 802.11ac(VHT80) |         | V (Ant. 1+Ant. 2+Ant. 3) |

For Beamforming:

| Operating Mode       | TX Mode | 3TX                      |
|----------------------|---------|--------------------------|
| IEEE 802.11n (HT20)  |         | V (Ant. 1+Ant. 2+Ant. 3) |
| IEEE 802.11n (HT40)  |         | V (Ant. 1+Ant. 2+Ant. 3) |
| IEEE 802.11ac(VHT20) |         | V (Ant. 1+Ant. 2+Ant. 3) |
| IEEE 802.11ac(VHT40) |         | V (Ant. 1+Ant. 2+Ant. 3) |
| IEEE 802.11ac(VHT80) |         | V (Ant. 1+Ant. 2+Ant. 3) |

## 2. TEST RESULTS

For 2.4GHz Non Beamforming:

| 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 |
|------------------------|----------------------------|-------------------------|------------------------|-----------------------------------------|--------------------------------------------------|-------------|
| 3.0                    | 1.9953                     | 29.99                   | 997.7001               | 0.25359                                 | 1                                                | Complies    |

For 2.4GHz Beamforming:

| 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 |
|------------------------|----------------------------|-------------------------|------------------------|-----------------------------------------|--------------------------------------------------|-------------|
| 7.50                   | 5.6234                     | 28.36                   | 685.4882               | 0.49106                                 | 1                                                | Complies    |

For 5GHz UNII-1 Non Beamforming:

| Antenna Gain (dBi) | Antenna 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 |
|--------------------|------------------------|-------------------------|------------------------|-----------------------------------------|--------------------------------------------------|-------------|
| 4.0                | 2.5119                 | 25.42                   | 348.3373               | 0.11146                                 | 1                                                | Complies    |

For 5GHz UNII-1 Beamforming:

| Antenna Gain (dBi) | Antenna 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 |
|--------------------|------------------------|-------------------------|------------------------|-----------------------------------------|--------------------------------------------------|-------------|
| 8.50               | 7.0795                 | 23.63                   | 230.6747               | 0.20803                                 | 1                                                | Complies    |

For 5GHz UNII-3 Non Beamforming:

| Antenna Gain (dBi) | Antenna 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 |
|--------------------|------------------------|-------------------------|------------------------|-----------------------------------------|--------------------------------------------------|-------------|
| 4.0                | 2.5119                 | 29.96                   | 990.8319               | 0.31705                                 | 1                                                | Complies    |

For 5GHz UNII-3 Beamforming:

| Antenna Gain (dBi) | Antenna 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 |
|--------------------|------------------------|-------------------------|------------------------|-----------------------------------------|--------------------------------------------------|-------------|
| 8.50               | 7.0795                 | 27.49                   | 561.0480               | 0.50598                                 | 1                                                | Complies    |

**For the max simultaneous transmission MPE:**

| Power Density (S) (mW/cm <sup>2</sup> ) | Power Density (S) (mW/cm <sup>2</sup> ) | Total   | Limit of Power Density (S) (mW/cm <sup>2</sup> ) | Test Result |
|-----------------------------------------|-----------------------------------------|---------|--------------------------------------------------|-------------|
| 2.4GHz                                  | 5GHz                                    |         |                                                  |             |
| 0.49106                                 | 0.50598                                 | 0.99704 | 1                                                | Complies    |

Note: The calculated distance is 25 cm.

**End of Test Report**