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 Filed 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=10log(N_{ANT}/N_{SS}) dB
Directional gain=3.0+10log(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=10log(N_{ANT}/N_{SS}) dB
Directional gain=4.0+10log(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^2)	Limit of Power Density (S) (mW/cm^2)	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^2)	Limit of Power Density (S) (mW/cm^2)	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^2)	Limit of Power Density (S) (mW/cm^2)	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^2)	Limit of Power Density (S) (mW/cm^2)	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^2)	Limit of Power Density (S) (mW/cm^2)	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^2)	Limit of Power Density (S) (mW/cm^2)	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^2)	Power Density (S) (mW/cm^2)	Total	Limit of Power Density (S) (mW/cm^2)	Test Result
2.4GHz	5GHz			
0.49106	0.50598	0.99704	1	Complies

Note: The calculated distance is 25 cm.

End of Test Report