Radio Exposure Evaluation Report

FCC ID	:	**QXO-AP3000**
Equipment	:	**Access Point**
Brand Name	:	Extreme networks or Extreme Networks
Model Name	:	**AP3000-WW, AP3000X-WW**
Applicant	:	**Extreme Networks, Inc. 2121 RDU Center Drive, Morrisville, NC 27560, United States**
Manufacturer	:	**Extreme Networks, Inc. 2121 RDU Center Drive, Morrisville, NC 27560, United States**
Standard	:	**47 CFR FCC Part 2 Subpart J, section 2.1091**

The product was received on Apr. 07, 2022, and testing was started from May 09, 2022 and completed on Sep. 12, 2022. We, SPORTON INTERNATIONAL INC. Hsinhua Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in 47 CFR FCC Part 2 Subpart J, section 2.1091 and shown compliance with the applicable technical standards.

The test results in this variant report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. Hsinhua Laboratory, the test report shall not be reproduced except in full.

Jordan Hsiao

Approved by: Jordan Hsiao

SPORTON INTERNATIONAL INC. Hsinhua Laboratory
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History of this test report

Report No.	Version	Description	Issued Date
FA232478-01	01	Initial issue of report	Jan. 19, 2023

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
2	-	Exposure evaluation	PASS	-

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
None

Reviewed by: Barry Hsiao

Report Producer: Ann Hou

1 General Description

1.1 Information

1.1.1 EUT General Information

RF General Information			
Evaluation Mode	**Frequency Range (MHz)**	**Operating Frequency (MHz)**	**Modulation Type**
2.4GHz WLAN	2400-2483.5	2412-2462	802.11b: DSSS (DBPSK, DQPSK, CCK) 802.11g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
5GHz WLAN	5150-5250 5250-5350 5470-5725 5725-5850	5180-5240 5260-5320 5500-5700 5745-5825	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM) 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
Bluetooth	2400-2483.5	2402-2480	LE: DSSS (GFSK)
802.15.4	2400-2483.5	2405-2480	DSSS (O-QPSK)
6GHz WLAN	5925-7125	5955-7095	802.11a: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)

1.1.2 Antenna Information

Internal Antenna (AP3000)

Ant.	Brand	Model Name	Antenna Type	Connector	Remark
1	Senao	5718A0691300	PIFA	I-PEX	Radio 1_5G+ Radio 2_2.4G
2	Senao	5718A0690300	PIFA	I-PEX	Radio 1_5G+ Radio 2_2.4G
3	Senao	5718A0693300	PIFA	I-PEX	Radio 2_6E
4	Senao	5718A0692300	PIFA	I-PEX	Radio 2_6E
5	Senao	5718A0694300	PIFA	I-PEX	Radio 3_ BT+802.15.4

Ant.	Port	Gain (dBi)				
		2.4G	**5G**	**6E**	**BT**	**802.15.4**
1	1	4.40	5.14	-	-	-
2	2	4.38	5.13	-	-	-
3	1	-	-	5.22	-	-
4	2	-	-	5.21	-	-
5	1	-	-	-	4.02	4.02

Composite Gain (dBi)			
2.4G		5G	
2T1S	2T2S	2T1S	2T2S
5.85	2.85	4.95	2.52

Note 1: The EUT has five antennas.

For 2.4GHz function:

For IEEE 802.11 b/g/n/ax mode (1TX/1RX)

Support diversity function and pre-tested on each single chain, the worst case was Ant. 2(port 2) and it was recorded in this test report.

For IEEE 802.11 b/g/n/ax mode (2TX/2RX)

Ant. 1 (port 1) and Ant. 2 (port 2) could transmit/receive simultaneously.

For 5GHz function:

For IEEE 802.11 a/n/ac/ax mode (1TX/1RX)

Support diversity function and pre-tested on each single chain, the worst case was Ant. 2(port 2) and it was recorded in this test report.

For IEEE 802.11 a/n/ac/ax mode (2TX/2RX)

Ant. 1 (port 1) and Ant. 2 (port 2) could transmit/receive simultaneously.

For 6GHz function:

For IEEE 802.11 a/ax mode (1TX/1RX)

Support diversity function and pre-tested on each single chain, the worst case was Ant. 4(port 2) and it was recorded in this test report.

For IEEE 802.11 a/ax mode (2TX/2RX)

Ant. 3 (port 1) and Ant. 4 (port 2) could transmit/receive simultaneously.

For BT function:

For IEEE 802.15.1 Bluetooth mode (1TX/1RX)

Ant. 5 (port 1) could transmit/receive.

For 802.15.4 function:

For IEEE 802.15.4 mode (1TX/1RX)

Ant. 5 (port 1) could transmit/receive.

External Antenna (AP3000X)

Ant.	Brand	Model Name	Antenna Type	Connector	Remark
1	WNC	ML2452-APA2-02	Dipole	Reverse SMA	Radio 1_5G+ Radio 2_2.4G
2	WNC	ML2452-APA2-02	Dipole	Reverse SMA	Radio 1_5G+ Radio 2_2.4G
3	AWAN	7102A0545000	Dipole	Reverse SMA	Radio 1_5G+ Radio 2_2.4G
4	AWAN	7102A0545000	Dipole	Reverse SMA	Radio 1_5G+ Radio 2_2.4G
5	Extreme	ML-2452-HPAG5A8-01	Omni	N-type	Radio 1_5G+ Radio 2_2.4G
6	Extreme	ML-2452-HPAG5A8-01	Omni	N-type	Radio 1_5G+ Radio 2_2.4G
7	MARS	MA-WC2458-2H	Panel	Reverse SMA	Radio 1_5G+ Radio 2_2.4G
8	AWAN	7102A0547000	Dipole	I-Pex	Radio 2_6E
9	AWAN	7102A0546000	Dipole	I-Pex	Radio 2_6E
10	Senao	5718A0694300	PIFA	I-Pex	Radio 3_ BT+802.15.4
11	Ventev	M6030040O1D3620DP	Panel	Reverse SMA	Radio 1_5G+ Radio 2_2.4G
12	Ventev	M6040060O2D2402	Panel	Reverse SMA	Radio 1_5G+ Radio 2_2.4G

Ant.	Gain (dBi)				
	2.4G	5G	6E	BT	802.15.4
1	3.04	4.96	-	-	-
2	3.04	4.96	-	-	-
3	3.23	5.22	-	-	-
4	3.23	5.22	-	-	-
5	5	8	-	-	-
6	5	8	-	-	-
7	7.5	7.5	-	-	-
8	-	-	5.49	-	-
9	-	-	5.49	-	-
10	-	-	-	4.02	4.02
11	2.94	4.62	-	-	-
12	2.97	4.94	-	-	-

Note 1: The EUT has twelve antennas.

Note 2: The antenna mentioned above will not be sold with the EUT in the market. (except Dipole Antenna_7102A0545000)

Note 3: EUT can match with above antennas for using. Higher gain in each type of antenna was used to perform the worst configuration and result of that was recorded as the final test result.

For 2.4GHz function:

For IEEE 802.11 b/g/n/ax mode (1TX/1RX)

Support diversity function and pre-tested on each single chain, the worst case was Ant. 3 (port 1), Ant. 5 (port 1),

Ant. 7 (port 1) and it was recorded in this test report.
For IEEE 802.11 b/g/n/ax mode (2TX/2RX)
Ant. 1~2, Ant. 3~4, Ant. 5~6, Ant. 7, Ant 11, Ant 12 could transmit/receive simultaneously.

For 5GHz function:

For IEEE 802.11 a/n/ac/ax mode (1TX/1RX)
Support diversity function and pre-tested on each single chain, the worst case was Ant. 3 (port 1), Ant. 6 (port 2), Ant. 7 (port 2) and it was recorded in this test report.
For IEEE 802.11 a/n/ac/ax mode (2TX/2RX)
Ant. 1~2, Ant. 3~4, Ant. 5~6, Ant. 7, Ant 11, Ant 12 could transmit/receive simultaneously.

For 6GHz function:

For IEEE 802.11 a/ax mode (1TX/1RX)
Support diversity function and pre-tested on each single chain, the worst case was Ant. 9 (port 2) and it was recorded in this test report.
For IEEE 802.11 a/ax mode (2TX/2RX)
Ant. 8 and Ant. 9 could transmit/receive simultaneously.

For BT function:

For IEEE 802.15.1 Bluetooth mode (1TX/1RX)
Ant. 10 could transmit/receive.

For 802.15.4 function:

For IEEE 802.15.4 mode (1TX/1RX)
Ant. 10 could transmit/receive.

1.1.3 Table for Multiple Listing

The model names in the following table are all refer to the identical product.

Model Name	Description
AP3000-WW, AP3000X-WW	The “X” in AP3000X-WW SKU indicates that it comes with external antenna

1.1.4 Table for Permissive Change

This product is an extension of original one reported under Sporton project number: FA232478
Below is the table for the change of the product with respect to the original one.

Modifications	Performance Checking
Frequency bands U-NII-2A and U-NII-2C were added	MPE was evaluated.

1.1.5 Accessories

Accessories				
SPECIAL WALL BKT	Brand Name	COMING	Model Name	6309Aq493000
Antenna (For AP3000X)	Brand Name	AWAN	Model Name	7102A0545000

Reminder: Regarding to more detail and other information, please refer to user manual.

1.2 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR FCC Part 2 Subpart J, section 2.1091
- KDB 447498 D04 Interim General RF Exposure Guidance v01

The following reference test guidance is not within the scope of accreditation of TAF.

- 47 CFR Part 1.1307
- 47 CFR Part 1.1310

1.3 Testing Location

Test Lab.：Sporton International Inc. Hsinhua Laboratory			
☒	Hsinhua	**ADD:** No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan (R.O.C.)	
	(TAF: 3785**)**	**TEL:** 886-3-327-3456	**FAX:** 886-3-327-0973
		Test site Designation No. TW3785 with FCC.	
☐	Wen 33rd.St.	**ADD:** No.14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)	
	(TAF: 3785**)**	**TEL:** 886-3-318-0787	**FAX:** 886-3-318-0287
		Test site Designation No. TW0008 with FCC.	

2 Maximum Permissible Exposure

2.1 Limit of Maximum Permissible Exposure

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm²)	Averaging Time |E|²,|H|² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f²)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	F/300	6
1500-100,000	-	-	5	6

(B) 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/ cm²)	Averaging Time |E|²,|H|² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f²)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	F/1500	30
1500-100,000	-	-	1.0	30

Note: f = frequency in MHz ; *Plane-wave equivalent power density

Multiple Transmitters Condition
Co-location as simultaneously transmitting (co-transmitting) and the evaluation shall be consider that simultaneous transmissions from co-located devices the individual transmitters are evaluated separately. After sum of the individual value (basic restriction / reference level) are measured/calculated also have to under basic restriction / reference level.
Co-transmitting mode: 5GHz WLAN + 2.4GHz WLAN + Bluetooth mode 5GHz WLAN + 6GHz WLAN + Bluetooth mode 5GHz WLAN + 2.4GHz WLAN + 802.15.4 mode 5GHz WLAN + 6GHz WLAN + 802.15.4 mode

2.2 RF Exposure Exempt Measurement

Option	Refer Std.	Exemption Exposure Thresholds (TL)
A	§1.1307(b)(3)(i)(A)	Available maximum time-averaged power is no more than 1 mW
B	§1.1307(b)(3)(i)(B)	$\mathrm{P}th(mW)=\begin{cases} ERP_{20cm}(d/20cm)^{x} \rightarrow d \le 20cm \\ ERP_{20cm} \rightarrow 20cm < d \le 40cm \end{cases}$ $x=-\log_{10}\left(\frac{60}{ERP_{20cm}\sqrt{f}}\right)$ and f is in GHz $\begin{cases} ERP_{20cm}: 0.3GHz \le f < 1.5GHz \rightarrow 2040\,f\,(mW) \\ ERP_{20cm}: 1.5GHz \le f \le 6GHz \rightarrow 3060(mW) \end{cases}$
C	§1.1307(b)(3)(i)(C)	$\begin{cases} 0.3 \sim 1.34MHz \rightarrow ERP(\mathrm{W}) = 1920R^2 \\ 1.34 \sim 30MHz \rightarrow ERP(\mathrm{W}) = 3450R^2 / f^2 \\ 30 \sim 300MHz \rightarrow ERP(\mathrm{W}) = 3.83R^2 \\ 300 \sim 1500MHz \rightarrow ERP(\mathrm{W}) = 0.0128R^2 f \\ 1500 \sim 100000MHz \rightarrow ERP(\mathrm{W}) = 19.2R^2 \end{cases}$ f is in MHz; R is in m; $\mathrm{R} > \lambda/2\pi$

2.3 Multiple RF Sources Exposure

Refer Std.	Exemption Exposure Thresholds (TL)
§1.1307(b)(3)(ii)(A)	The available maximum time-averaged power of each source is no more than 1 mW and there is a separation distance of two centimeters between any portion of a radiating structure operating and the nearest portion of any other radiating structure in the same device, except if the sum of multiple sources is less than 1 mW during the time-averaging period, in which case they may be treated as a single source (separation is not required)
§1.1307(b)(3)(ii)(B)	$\sum_{i=1}^{a}\frac{P_i}{P_{th,i}}+\sum_{j=1}^{b}\frac{ERP_j}{ERP_{th,j}}+\sum_{k=1}^{c}\frac{Evaluated_k}{ExposureLimit_k}\le 1$ a = number of fixed, mobile, or portable RF sources claiming exemption using paragraph §1.1307(b)(3)(i)(B) of this section for P , including existing exempt transmitters and those being added. b = number of fixed, mobile, or portable RF sources claiming exemption using paragraph §1.1307(b)(3)(i)(C) of this section for Threshold ERP, including existing exempt transmitters and those being added. c = number of existing fixed, mobile, or portable RF sources with known evaluation for the specified minimum distance including existing evaluated transmitters. P_i = the available maximum time-averaged power or the ERP, whichever is greater, for fixed, mobile, or portable RF source i at a distance between 0.5 cm and 40 cm (inclusive). $P_{th,i}$ = the exemption threshold power (P_{th}) according to paragraph §1.1307(b)(3)(i)(B) of this section for fixed, mobile, or portable RF source i. ERP_j = the ERP of fixed, mobile, or portable RF source j. $ERP_{th,j}$ = exemption threshold ERP for fixed, mobile, or portable RF source j, at a distance of at least λ/2π according to the applicable formula of paragraph §1.1307 (b)(3)(i)(C) of this section. $Evaluated_k$ = the maximum reported SAR or MPE of fixed, mobile, or portable RF source k either in the device or at the transmitter site from an existing evaluation at the location of exposure. $Evaluated\ Limit_k$ = either the general population/uncontrolled maximum permissible exposure (MPE) or specific absorption rate (SAR) limit for each fixed, mobile, or portable RF source k, as applicable from § 1.1310 of this chapter.

2.4 MPE Calculation Method

The MPE was calculated at 47 cm to show compliance with the power density limit.
The following formula was used to calculate the Power Density:

E (V/m) $= \frac{\sqrt{30 \times P \times G}}{d}$ Power Density: *Pd* (W/m²) $= \frac{E^2}{377}$

E = Electric field (V/m)

P = RF output power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

Pd $= \frac{30 \times P \times G}{377 \times d^2}$

2.5 Calculated Result and Limit

Exposure Environment: General Population / Uncontrolled Exposure

<Non-Beamforming_Internal>

2.4GHz WLAN

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm²)	S Limit (mW/cm²)	Option	TL ERP (mW)	TL Ratio
2.4G;G1D	4.40	25.04	29.44	0.50	601.39	47	0.03553	1	C	4241.280	0.1418
2.4G;D1D	4.40	23.25	27.65	0.50	398.25	47	0.02353	1	C	4241.280	0.0939

5GHz WLAN

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm²)	S Limit (mW/cm²)	Option	TL ERP (mW)	TL Ratio
5.2G;D1D	5.14	24.25	29.39	0.5	594.44	47	0.03512	1	C	4241.280	0.1402
5.8G;D1D	5.14	24.04	29.18	0.5	566.38	47	0.03347	1	C	4241.280	0.1335

Bluetooth

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm²)	S Limit (mW/cm²)	Option	TL ERP (mW)	TL Ratio
2.4G;BT-LE	4.02	3.98	8.00	0.5	4.32	47	0.00026	1	C	4241.280	0.0010

802.15.4

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm²)	S Limit (mW/cm²)	Option	TL ERP (mW)	TL Ratio
2.4G;D1D	4.02	4.01	8.03	0.5	4.35	47	0.00026	1	C	4241.280	0.0010

6GHz WLAN

Mode	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm²)	S Limit (mW/cm²)	Option	TL ERP (mW)	TL Ratio
6.2G;D1D	25.83	0.5	261.91	47	0.01547	1	C	4241.280	0.0617
6.4G;D1D	26.43	0.5	300.72	47	0.01777	1	C	4241.280	0.0709
6.7G;D1D	26.21	0.5	285.86	47	0.01689	1	C	4241.280	0.0674
7.0G;D1D	25.45	0.5	239.97	47	0.01418	1	C	4241.280	0.0566

<Non-Beamforming_Dipole>
2.4GHz WLAN

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm²)	S Limit (mW/cm²)	Option	TL ERP (mW)	TL Ratio
2.4G;G1D	3.23	23.76	26.99	0.5	342.10	47	0.02021	1	C	4241.280	0.0807
2.4G;D1D	3.23	23.97	27.20	0.50	359.01	47	0.02121	1	C	4241.280	0.0846

5GHz WLAN

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm²)	S Limit (mW/cm²)	Option	TL ERP (mW)	TL Ratio
5.2G;D1D	5.22	24.88	30.1	0.5	700.02	47	0.04136	1	C	4241.28	0.1650
5.8G;D1D	5.22	27.08	32.3	0.5	1,161.74	47	0.06864	1	C	4241.28	0.2739

6GHz WLAN

Mode	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm²)	S Limit (mW/cm²)	Option	TL ERP (mW)	TL Ratio
6.2G;D1D	26.72	0.5	321.48	47	0.01899	1	C	4241.280	0.0758
6.4G;D1D	25.59	0.5	247.83	47	0.01464	1	C	4241.280	0.0584
6.7G;D1D	26.86	0.5	332.01	47	0.01962	1	C	4241.280	0.0783
7.0G;D1D	24.62	0.5	198.22	47	0.01171	1	C	4241.280	0.0467

<Non-Beamforming_Omni>
2.4GHz WLAN

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm²)	S Limit (mW/cm²)	Option	TL ERP (mW)	TL Ratio
2.4G;G1D	5.00	22.18	27.18	0.5	357.40	47	0.02112	1	C	4241.280	0.0843
2.4G;D1D	5.00	23.69	28.69	0.5	506.01	47	0.02989	1	C	4241.280	0.1193

5GHz WLAN

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm²)	S Limit (mW/cm²)	Option	TL ERP (mW)	TL Ratio
5.2G;D1D	8	24.26	32.26	0.5	1,151.09	47	0.06801	1	C	4241.28	0.2714
5.8G;D1D	8	26.71	34.71	0.5	2,023.53	47	0.11956	1	C	4241.28	0.4771

<Non-Beamforming_Panel>
2.4GHz WLAN

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm²)	S Limit (mW/cm²)	Option	TL ERP (mW)	TL Ratio
2.4G;G1D	7.50	26.59	34.09	0.50	1,754.32	47	0.10366	1	C	4241.28	0.4136
2.4G;D1D	7.50	23.15	30.65	0.50	794.53	47	0.04695	1	C	4241.28	0.1873

5GHz WLAN

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm²)	S Limit (mW/cm²)	Option	TL ERP (mW)	TL Ratio
5.2G;D1D	7.50	24.98	32.48	0.50	1,210.90	47	0.07155	1	C	4241.28	0.2855
5.8G;D1D	7.50	26.54	34.04	0.50	1,734.24	47	0.10247	1	C	4241.28	0.4089

<Beamforming_Internal>
2.4GHz WLAN

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm²)	S Limit (mW/cm²)	Option	TL ERP (mW)	TL Ratio
2.4G;D1D	5.85	22.32	28.17	0.5	448.91	47	0.02652	1	C	4241.280	0.1058

5GHz WLAN

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm²)	S Limit (mW/cm²)	Option	TL ERP (mW)	TL Ratio
5.2G;D1D	4.95	24.46	29.41	0.5	597.19	47	0.03529	1	C	4241.28	0.1408
5.8G;D1D	4.95	25.77	30.72	0.5	807.44	47	0.04771	1	C	4241.28	0.1904

6GHz WLAN

Mode	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm²)	S Limit (mW/cm²)	Option	TL ERP (mW)	TL Ratio
6.2G;D1D	27.00	0.5	342.85	47	0.02026	1	C	4241.28	0.0808
6.4G;D1D	26.55	0.5	309.11	47	0.01826	1	C	4241.28	0.0729
6.7G;D1D	25.32	0.5	232.87	47	0.01376	1	C	4241.28	0.0549
7.0G;D1D	22.90	0.5	133.39	47	0.00788	1	C	4241.28	0.0314

<Beamforming_Dipole>
2.4GHz WLAN

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm²)	S Limit (mW/cm²)	Option	TL ERP (mW)	TL Ratio
2.4G;D1D	6.24	23.38	29.62	0.5	626.77	47	0.03703	1	C	4241.28	0.1478

5GHz WLAN

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm²)	S Limit (mW/cm²)	Option	TL ERP (mW)	TL Ratio
5.2G;D1D	8.23	25.1	33.33	0.5	1,472.69	47	0.08702	1	C	4241.28	0.3472
5.8G;D1D	8.23	26.12	34.35	0.5	1,862.56	47	0.11005	1	C	4241.28	0.4391

6GHz WLAN

Mode	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm²)	S Limit (mW/cm²)	Option	TL ERP (mW)	TL Ratio
6.2G;D1D	25.18	0.5	225.48	47	0.01332	1	C	4241.28	0.0532
6.4G;D1D	26.33	0.5	293.84	47	0.01736	1	C	4241.28	0.0693

Mode	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm²)	S Limit (mW/cm²)	Option	TL ERP (mW)	TL Ratio
6.7G;D1D	23.99	0.5	171.44	47	0.01013	1	C	4241.28	0.0404
7.0G;D1D	21.61	0.5	99.11	47	0.00586	1	C	4241.28	0.0234

<Beamforming_Omni>
2.4GHz WLAN

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm²)	S Limit (mW/cm²)	Option	TL ERP (mW)	TL Ratio
2.4G;D1D	8.01	21.9	29.91	0.5	670.05	47	0.03959	1	C	4241.28	0.1580

5GHz WLAN

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm²)	S Limit (mW/cm²)	Option	TL ERP (mW)	TL Ratio
5.2G;D1D	11.01	24.48	35.49	0.5	2,421.64	47	0.14309	1	C	4241.28	0.5710
5.8G;D1D	11.01	24.27	35.28	0.5	2,307.33	47	0.13633	1	C	4241.28	0.5440

<Beamforming_Panel>
2.4GHz WLAN

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm²)	S Limit (mW/cm²)	Option	TL ERP (mW)	TL Ratio
2.4G;D1D	10.51	22.08	32.59	0.50	1,241.97	47	0.07338	1	C	4241.28	0.2928

5GHz WLAN

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm²)	S Limit (mW/cm²)	Option	TL ERP (mW)	TL Ratio
5.2G;D1D	10.51	24.73	35.24	0.5	2,286.18	47	0.13508	1	C	4241.28	0.5390
5.8G;D1D	10.51	24.96	35.47	0.5	2,410.52	47	0.14243	1	C	4241.28	0.5683

Note 1: Option A, B and C refer as clause 2.2
Note 2: For option B, Pth(mW) convert to TL ERP(mW); For option C, ERP(W) convert to TL ERP(mW)
Note 3: TL Ratio=Tune-up ERP(mW)/TL ERP(mW)

Simultaneous Transmission Analysis Mode: 5GHz WLAN+2.4GHz WLAN+Bluetooth

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm2)	Limit (mW/cm2)	Option	TL ERP (mW)	TL Ratio
5.2G;D1D	11.01	24.48	35.49	0.50	2,421.64	47	0.14309	1	C	4241.28	0.57103
2.4G;G1D	7.50	26.59	34.09	0.50	1,754.32	47	0.10366	1	C	4241.28	0.41367
2.4G;BT-LE	4.02	3.98	8.00	0.50	4.32	47	0.00026	1	C	4241.28	0.00102
										Sum Ratio	0.98572
										Ratio Limit	1

Simultaneous Transmission Analysis Mode: 5GHz WLAN+6GHz WLAN+Bluetooth

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm2)	Limit (mW/cm2)	Option	TL ERP (mW)	TL Ratio
5.2G;D1D	11.01	24.48	35.49	0.50	2,421.64	47	0.14309	1	C	4241.28	0.57103
6.2G;G1D	-	-	27.00	0.50	342.85	47	0.02026	1	C	4241.28	0.08085
2.4G;BT-LE	4.02	3.98	8.00	0.50	4.32	47	0.00026	1	C	4241.28	0.00102
										Sum Ratio	0.65290
										Ratio Limit	1

Simultaneous Transmission Analysis Mode: 5GHz WLAN+2.4GHz WLAN+802.15.4

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm2)	Limit (mW/cm2)	Option	TL ERP (mW)	TL Ratio
5.2G;D1D	11.01	24.48	35.49	0.50	2,421.64	47	0.14309	1	C	4241.28	0.57103
2.4G;G1D	7.50	26.59	34.09	0.50	1,754.32	47	0.10366	1	C	4241.28	0.41367
2.4G;G1D	4.02	4.01	8.03	0.50	4.35	47	0.00026	1	C	4241.28	0.00102
										Sum Ratio	0.98572
										Ratio Limit	1

Simultaneous Transmission Analysis Mode: 5GHz WLAN+6GHz WLAN+802.15.4

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm2)	Limit (mW/cm2)	Option	TL ERP (mW)	TL Ratio
5.2G;D1D	11.01	24.48	35.49	0.50	2,421.64	47	0.14309	1	C	4241.28	0.57103
6.2G;G1D	-	-	27.00	0.50	342.85	47	0.02026	1	C	4241.28	0.08085
2.4G;G1D	4.02	4.01	8.03	0.50	4.35	47	0.00026	1	C	4241.28	0.00102
										Sum Ratio	0.65290
										Ratio Limit	1

Note 1: Option A, B and C refer as clause 2.2
Note 2: For option B, Pth(mW) convert to TL ERP(mW); For option C, ERP(W) convert to TL ERP(mW)
Note 3: TL Ratio=Tune-up ERP(mW)/TL ERP(mW)
Note 4: Refer as clause 2.3 Multiple RF Sources Exposure. Please follow below option and sum TL ration table.

Option	Sum TL Ratio_B	Option	Sum TL Ratio_C	Option	Sum TL Ratio_E
B	$\sum_{i=1}^{a} \frac{P_i}{P_{th,i}}$	C	$\sum_{j=1}^{b} \frac{ERP_j}{ERP_{th,j}}$	E	$\sum_{k=1}^{c} \frac{Evaluated_k}{ExposureLimit_k}$

Note: The above antenna gain was declared by manufacturer.

———THE END———