



# Radio Exposure Evaluation Report

**FCC ID** : TVE-51018E01231  
**Equipment** : Secured Wireless Access Point  
**Brand Name** : FORTINET  
**Model Name** : FortiAP 234Gxxxxxx, FAP-234Gxxxxxx,  
FORTIAP-234Gxxxxxx (Where "x" can be used as  
"A-Z", or "0-9", or "-", or blank for software  
changes or marketing purposes only)  
**Applicant** : Fortinet, Inc.  
899 Kifer Road, Sunnyvale, CA 94086, USA  
**Manufacturer** : Fortinet, Inc.  
899 Kifer Road, Sunnyvale, CA 94086, USA  
**Standard** : 47 CFR FCC Part 2 Subpart J, section 2.1091

The product was received on Aug. 07, 2023, and testing was started from Aug. 17, 2023 and completed on Oct. 14, 2023. 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 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.

  
Approved by: Jackson Tsai

**SPORTON INTERNATIONAL INC. Hsinhua Laboratory**  
No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan (R.O.C.)



# Table of Contents

**HISTORY OF THIS TEST REPORT .....3**

**SUMMARY OF TEST RESULT .....4**

**1 GENERAL DESCRIPTION .....5**

1.1 Information.....5

1.2 Applicable Standards .....9

1.3 Testing Location .....9

**2 MAXIMUM PERMISSIBLE EXPOSURE .....10**

2.1 Limit of Maximum Permissible Exposure .....10

2.2 RF Exposure Exempt Measurement .....11

2.3 Multiple RF Sources Exposure .....12

2.4 MPE Calculation Method .....13

2.5 Calculated Result and Limit.....14

## Photographs of EUT V01



### History of this test report

Report No.	Version	Description	Issued Date
FA380143-01	01	Initial issue of report	Dec. 26, 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: Amber Chiu



# 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) VHT: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM) 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
5GHz WLAN	5150-5250 5250-5350 5470-5725 5725-5850	5180-5240 5260-5320 5500-5720 5745-5825	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM) 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
Bluetooth	2400-2483.5	2402-2480	LE: DSSS (GFSK)
ZigBee	2400-2483.5	2405-2480	DSSS (O-QPSK)



**1.1.2 Antenna Information**

Ant.	Port	Brand	Model Name	Antenna Type	Connector	Support
1	1	AWAN	7102A0613000	Cross Dipole	I-Pex	2.4G
2	2	AWAN	7102A0613000	Cross Dipole	I-Pex	2.4G
3	1	AWAN	7102A0651000	Cross Dipole	I-Pex	5G
4	2	AWAN	7102A0651000	Cross Dipole	I-Pex	5G
5	1	AWAN	7102A0651000	Cross Dipole	I-Pex	5G+6G
6	2	AWAN	7102A0651000	Cross Dipole	I-Pex	5G+6G
7	3	AWAN	7102A0650000	Cross Dipole	I-Pex	2.4G
8	4	AWAN	7102A0650000	Cross Dipole	I-Pex	2.4G
9	1	AWAN	7102A0614000	Dipole	I-Pex	BT&Zigbee
10	1	Quectel	7102A0652000	Patch	I-Pex	GPS

Ant.	Port	Gain (dBi)					Remark
		2.4G	5G	6G	BT& Zigbee	GPS	
1	1	6.8	-	-	-	-	Radio 1
2	2	6.8	-	-	-	-	Radio 1
3	1	-	8.4	-	-	-	Radio 2
4	2	-	8.2	-	-	-	Radio 2 (Low Band)
5	1	-	8.4	8.3	-	-	Radio 3
6	2	-	8.4	8.3	-	-	Radio 3 (High Band)
7	3	6.6	-	-	-	-	Radio 3
8	4	6.7	-	-	-	-	Radio 3
9	1	-	-	-	6.2	-	-
10	1	-	-	-	-	2	-



Note 1: The EUT has ten antennas.

**For 2.4GHz function:**

**< Radio 1 >**

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

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

**< Radio 3 >**

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

Ant.7 (port 3), Ant.8 (port 4) could transmit/receive simultaneously.

**For 5GHz function:**

**< Radio 2 >**

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

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

**< Radio 3 >**

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

Ant.5 (port 1), Ant.6 (port 2) could transmit/receive simultaneously.

**For Bluetooth function:**

For Bluetooth mode (1TX/1RX)

Only Ant.9 can be used as transmitting/receiving.

**For GPS function:**

For GPS mode (1RX)

Only Ant.10 can be used as receiving.

Note 2: Directional gain information

	Maximum Output Power	Power Spectral Density
<b>Non-BF</b>	Directional gain = Max.gain + array gain. For power measurements on IEEE 802.11 devices Array Gain = 0 dB (i.e., no array gain) for N ANT ≤ 4	$DirectionalGain = 10 \cdot \log \left[ \frac{\sum_{j=1}^{N_{SI}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$
<b>BF</b>	$DirectionalGain = 10 \cdot \log \left[ \frac{\sum_{j=1}^{N_{SI}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$	$DirectionalGain = 10 \cdot \log \left[ \frac{\sum_{j=1}^{N_{SI}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$



**1.1.3 Table for Multiple Listing**

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

Brand Name	Model Name	Description
FORTINET	FortiAP 234Gxxxxxx, FAP-234Gxxxxxx, FORTIAP-234Gxxxxxx (Where "x" can be used as "A-Z", or "0-9", or "-", or blank for software changes or marketing purposes only)	All the models are identical, the difference model served as marketing strategy.

From the above models, model: FAP-234G was selected as representative model for the test and its data was recorded in this report.

**1.1.4 Table for Permissive Change**

This product is an extension of original one reported under Sporton project number: FA380143.

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				
AC Cord	Brand Name	I-SHENG	Model Name	AC CORD 600mm
	Signal Line	0.5 meter, shielded cable, w/o ferrite core		
PoE Adapter	Brand Name	Senao Inc.	Model Name	EPA5006GPR-SN(4P)
	Power Rating	I/P: 100-240 Vdc, 0.8A, 50-60 Hz O/P: 54 Vdc, 0.6 A		
BRACKET POLE MOUNT	Brand Name	CUN SHENG	Model Name	BRACKET POLE MOUNT LFP
BRACKET WALL MOUNT	Brand Name	XIERTEK	Model Name	BRACKET WALL MOUNT
Pole Mount Bracket	Brand Name	CUN SHENG	Model Name	6301A2873010
Ground Wire	Brand Name	BO YAO	Model Name	WIRE GEN AWG10 180cm
	Signal Line	1.8 meter, shielded cable, w/o ferrite core		

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

<b>Test Lab. : Sporton International Inc. Hsinhua Laboratory</b>		
<input checked="" type="checkbox"/>	Hsinhua (TAF: 3785)	<b>ADD:</b> No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan (R.O.C.) <b>TEL:</b> 886-3-327-3456 <b>FAX:</b> 886-3-327-0973
Test site Designation No. TW3785 with FCC.		
<input type="checkbox"/>	Wen 33rd.St. (TAF: 3785)	<b>ADD:</b> No.14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) <b>TEL:</b> 886-3-318-0787 <b>FAX:</b> 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/ cm <sup>2</sup> )	Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f <sup>2</sup> )*	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/ cm <sup>2</sup> )	Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f <sup>2</sup> )*	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:

1. Radio 1:2.4G+ Radio 2:5G+ Radio 3:2.4G+ BT
2. Radio 1:2.4G+ Radio 2:5G+ Radio 3:5G+ BT
3. Radio 1:2.4G+ Radio 2:5G+ Radio 3:2.4G+ Zigbee
4. Radio 1:2.4G+ Radio 2:5G+ Radio 3:5G+ Zigbee
5. Radio 1:2.4G+ (Radio 2:5G Low Band+ Radio 3:5G High Band)+ BT
6. Radio 1:2.4G+ (Radio 2:5G Low Band+ Radio 3:5G High Band)+ Zigbee

## 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)	$P_{th}(mW) = \begin{cases} ERP_{20cm} (d / 20cm)^x \rightarrow d \leq 20cm \\ ERP_{20cm} \rightarrow 20cm < d \leq 40cm \end{cases}$ $x = -\log_{10} \left( \frac{60}{ERP_{20cm} \sqrt{f}} \right) \text{ and } f \text{ is in GHz}$ $\begin{cases} ERP_{20cm} : 0.3GHz \leq f < 1.5GHz \rightarrow 2040 f (mW) \\ ERP_{20cm} : 1.5GHz \leq f \leq 6GHz \rightarrow 3060 (mW) \end{cases}$
C	§1.1307(b)(3)(i)(C)	$\begin{cases} 0.3 \sim 1.34MHz \rightarrow ERP(W) = 1920 R^2 \\ 1.34 \sim 30MHz \rightarrow ERP(W) = 3450 R^2 / f^2 \\ 30 \sim 300MHz \rightarrow ERP(W) = 3.83R^2 \\ 300 \sim 1500MHz \rightarrow ERP(W) = 0.0128 R^2 f \\ 1500 \sim 100000MHz \rightarrow ERP(W) = 19.2R^2 \end{cases}$ <p>f is in MHz; R is in m; <math>R &gt; \lambda / 2\pi</math></p>

### 2.3 Multiple RF Sources Exposure

Refer Std.	Exemption Exposure Thresholds (TL)
§1.1307(b)(3)(ii)(A)	<p>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)</p>
§1.1307(b)(3)(ii)(B)	$\sum_{i=1}^a \frac{P_i}{P_{th,i}} + \sum_{j=1}^b \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^c \frac{Evaluated_k}{ExposureLimit_k} \leq 1$ <p>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.</p> <p>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.</p> <p>c = number of existing fixed, mobile, or portable RF sources with known evaluation for the specified minimum distance including existing evaluated transmitters.</p> <p>P<sub>i</sub> = 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> <p>P<sub>th,i</sub> = the exemption threshold power ( P<sub>th</sub> ) according to paragraph §1.1307(b)(3)(i)(B) of this section for fixed, mobile, or portable RF source i.</p> <p>ERP<sub>j</sub> = the ERP of fixed, mobile, or portable RF source j.</p> <p>ERP<sub>th,j</sub> = 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.</p> <p>Evaluated<sub>k</sub> = 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.</p> <p>Evaluated Limit<sub>k</sub> = 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.</p>



## 2.4 MPE Calculation Method

The MPE was calculated at 62 cm to show compliance with the power density limit. The following formula was used to calculate the Power Density:

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

**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

### 2.4GHz WLAN\_Non-Beamforming

#### Radio 1

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )	Option	TL ERP (mW)	TL Ratio
2.4G;G1D	6.80	26.81	33.61	0.50	1570.76	62	0.05333	1.00000	C	7380.480	0.21283
2.4G;D1D	6.80	26.73	33.53	0.50	1542.09	62	0.05236	1.00000	C	7380.480	0.20894

#### Radio 3

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )	Option	TL ERP (mW)	TL Ratio
2.4G;G1D	6.70	25.03	31.73	0.50	1018.85	62	0.03459	1.00000	C	7380.480	0.13805
2.4G;D1D	6.70	25.03	31.73	0.50	1018.85	62	0.03459	1.00000	C	7380.480	0.13805

### 2.4GHz WLAN\_Beamforming

#### Radio 1

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )	Option	TL ERP (mW)	TL Ratio
2.4G;D1D	9.81	25.66	35.47	0.50	2410.52	62	0.08185	1.00000	C	7380.480	0.32661

#### Radio 3

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )	Option	TL ERP (mW)	TL Ratio
2.4G;D1D	9.66	24.91	34.57	0.50	1959.34	62	0.06653	1.00000	C	7380.480	0.26548



5GHz WLAN\_Non-Beamforming\_Indoor

Radio 2

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )	Option	TL ERP (mW)	TL Ratio
5.2G;D1D	8.40	24.73	33.13	0.50	1406.40	62	0.04775	1.00000	C	7380.480	0.19056
5.3G;D1D	8.40	20.97	29.37	0.50	591.71	62	0.02009	1.00000	C	7380.480	0.08017
5.6G;D1D	8.40	21.07	35.49	0.50	2421.64	62	0.08223	1.00000	C	7380.480	0.32811
5.8G;D1D	8.40	26.34	34.74	0.50	2037.56	62	0.06918	1.00000	C	7380.480	0.27607

Radio 3

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )	Option	TL ERP (mW)	TL Ratio
5.2G;D1D	8.40	25.73	34.13	0.50	1770.56	62	0.06012	1.00000	C	7380.480	0.23990
5.3G;D1D	8.40	21.09	29.49	0.50	608.29	62	0.02065	1.00000	C	7380.480	0.08242
5.6G;D1D	8.40	21.08	29.48	0.50	606.89	62	0.02061	1.00000	C	7380.480	0.08223
5.8G;D1D	8.40	26.56	34.96	0.50	2143.43	62	0.07278	1.00000	C	7380.480	0.29042

Radio 2(Low Band)+Radio 3(High Band)

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )	Option	TL ERP (mW)	TL Ratio
5.2G;D1D	8.40	26.43	34.83	0.50	2080.22	62	0.07063	1.00000	C	7380.480	0.28185
5.3G;D1D	8.40	20.79	29.19	0.50	567.69	62	0.01928	1.00000	C	7380.480	0.07692
5.6G;D1D	8.40	20.95	29.35	0.50	588.99	62	0.02000	1.00000	C	7380.480	0.07980
5.8G;D1D	8.40	25.13	33.53	0.50	1542.09	62	0.05236	1.00000	C	7380.480	0.20894



5GHz WLAN\_Beamforming\_Indoor

Radio 2

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )	Option	TL ERP (mW)	TL Ratio
5.2G;D1D	11.31	24.11	35.42	0.50	2382.92	62	0.08091	1.00000	C	7380.480	0.32287
5.3G;D1D	11.31	18.14	29.45	0.50	602.71	62	0.02046	1.00000	C	7380.480	0.08166
5.6G;D1D	11.31	18.08	29.39	0.50	594.44	62	0.02018	1.00000	C	7380.480	0.08054
5.8G;D1D	11.31	24.15	35.46	0.50	2404.97	62	0.08166	1.00000	C	7380.480	0.32586

Radio 3

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )	Option	TL ERP (mW)	TL Ratio
5.2G;D1D	11.41	24.08	35.49	0.50	2421.64	62	0.08223	1.00000	C	7380.480	0.32811
5.3G;D1D	11.41	18.07	29.48	0.50	606.89	62	0.02061	1.00000	C	7380.480	0.08223
5.6G;D1D	11.41	18.08	29.49	0.50	608.29	62	0.02065	1.00000	C	7380.480	0.08242
5.8G;D1D	11.41	24.08	35.49	0.50	2421.64	62	0.08223	1.00000	C	7380.480	0.32811

Radio 2(Low Band)+Radio 3(High Band)

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )	Option	TL ERP (mW)	TL Ratio
5.2G;D1D	11.31	23.88	35.19	0.50	2260.01	62	0.07674	1.00000	C	7380.480	0.30621
5.3G;D1D	11.31	18.13	29.44	0.50	601.33	62	0.02042	1.00000	C	7380.480	0.08148
5.6G;D1D	11.41	18.08	29.49	0.50	608.29	62	0.02065	1.00000	C	7380.480	0.08242
5.8G;D1D	11.41	24.08	35.49	0.50	2421.64	62	0.08223	1.00000	C	7380.480	0.32811





5GHz WLAN\_Non-Beamforming\_Outdoor

Radio 2

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )	Option	TL ERP (mW)	TL Ratio
5.2G;D1D	8.40	18.68	27.08	0.50	349.23	62	0.01186	1.00000	C	7380.480	0.04732
5.3G;D1D	8.40	20.97	29.37	0.50	591.71	62	0.02009	1.00000	C	7380.480	0.08017
5.6G;D1D	8.40	21.07	35.49	0.50	2421.64	62	0.08223	1.00000	C	7380.480	0.32811
5.8G;D1D	8.40	26.34	34.74	0.50	2037.56	62	0.06918	1.00000	C	7380.480	0.27607

Radio 3

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )	Option	TL ERP (mW)	TL Ratio
5.2G;D1D	8.40	18.98	27.38	0.50	374.21	62	0.01271	1.00000	C	7380.480	0.05070
5.3G;D1D	8.40	21.09	29.49	0.50	608.29	62	0.02065	1.00000	C	7380.480	0.08242
5.6G;D1D	8.40	21.08	29.48	0.50	606.89	62	0.02061	1.00000	C	7380.480	0.08223
5.8G;D1D	8.40	26.56	34.96	0.50	2143.43	62	0.07278	1.00000	C	7380.480	0.29042

Radio 2(Low Band)+Radio 3(High Band)

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )	Option	TL ERP (mW)	TL Ratio
5.2G;D1D	8.40	20.75	29.15	0.50	562.48	62	0.01910	1.00000	C	7380.480	0.07621
5.3G;D1D	8.40	20.79	29.19	0.50	567.69	62	0.01928	1.00000	C	7380.480	0.07692
5.6G;D1D	8.40	20.95	29.35	0.50	588.99	62	0.02000	1.00000	C	7380.480	0.07980
5.8G;D1D	8.40	25.13	33.53	0.50	1542.09	62	0.05236	1.00000	C	7380.480	0.20894



5GHz WLAN\_Beamforming\_Outdoor

Radio 2

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )	Option	TL ERP (mW)	TL Ratio
5.2G;D1D	11.31	18.55	29.86	0.50	662.38	62	0.02249	1.00000	C	7380.480	0.08975
5.3G;D1D	11.31	18.14	29.45	0.50	602.71	62	0.02046	1.00000	C	7380.480	0.08166
5.6G;D1D	11.31	18.08	29.39	0.50	594.44	62	0.02018	1.00000	C	7380.480	0.08054
5.8G;D1D	11.31	24.15	35.46	0.50	2404.97	62	0.08166	1.00000	C	7380.480	0.32586

Radio 3

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )	Option	TL ERP (mW)	TL Ratio
5.2G;D1D	11.41	18.85	30.26	0.50	726.29	62	0.02466	1.00000	C	7380.480	0.09841
5.3G;D1D	11.41	18.07	29.48	0.50	606.89	62	0.02061	1.00000	C	7380.480	0.08223
5.6G;D1D	11.41	18.08	29.49	0.50	608.29	62	0.02065	1.00000	C	7380.480	0.08242
5.8G;D1D	11.41	24.08	35.49	0.50	2421.64	62	0.08223	1.00000	C	7380.480	0.32811

Radio 2(Low Band)+Radio 3(High Band)

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )	Option	TL ERP (mW)	TL Ratio
5.2G;D1D	11.31	20.12	31.43	0.50	950.85	62	0.03229	1.00000	C	7380.480	0.12883
5.3G;D1D	11.31	18.13	29.44	0.50	601.33	62	0.02042	1.00000	C	7380.480	0.08148
5.6G;D1D	11.41	18.08	29.49	0.50	608.29	62	0.02065	1.00000	C	7380.480	0.08242
5.8G;D1D	11.41	24.08	35.49	0.50	2421.64	62	0.08223	1.00000	C	7380.480	0.32811

Bluetooth\_LE

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )	Option	TL ERP (mW)	TL Ratio
2.4G;BT-LE	6.20	9.97	16.17	0.50	28.32	62	0.00096	1.00000	C	7380.480	0.00384



Zigbee

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )	Option	TL ERP (mW)	TL Ratio
2.4G;G1D	6.20	9.95	16.15	0.50	28.19	62	0.00096	1.00000	C	7380.480	0.00382

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:

Radio 1:2.4G+ Radio 2:5G+ Radio 3:2.4G+ BT

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )	Option	TL ERP (mW)	TL Ratio
2.4G;D1D	9.81	25.66	35.47	0.50	2410.52	62	0.08185	1.00000	C	7380.480	0.32661
5.8G;D1D	11.31	24.15	35.46	0.50	2404.97	62	0.08166	1.00000	C	7380.480	0.32586
2.4G;D1D	9.66	24.91	34.57	0.50	1959.34	62	0.06653	1.00000	C	7380.480	0.26548
2.4G;BT-LE	6.20	9.97	16.17	0.50	28.32	62	0.00096	1.00000	C	7380.480	0.00384
Sum Ratio	0.92178										
Ratio Limit	1.00000										

Radio 1:2.4G+ Radio 2:5G+ Radio 3:5G+ BT

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )	Option	TL ERP (mW)	TL Ratio
2.4G;D1D	9.81	25.66	35.47	0.50	2410.52	62	0.08185	1.00000	C	7380.480	0.32661
5.8G;D1D	11.31	24.15	35.46	0.50	2404.97	62	0.08166	1.00000	C	7380.480	0.32586
5.8G;D1D	11.41	24.08	35.49	0.50	2421.64	62	0.08223	1.00000	C	7380.480	0.32811
2.4G;BT-LE	6.20	9.97	16.17	0.50	28.32	62	0.00096	1.00000	C	7380.480	0.00384
Sum Ratio	0.98441										
Ratio Limit	1.00000										



**Radio 1:2.4G+ Radio 2:5G+ Radio 3:2.4G+ Zigbee**

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )	Option	TL ERP (mW)	TL Ratio
2.4G;D1D	9.81	25.66	35.47	0.50	2410.52	62	0.08185	1.00000	C	7380.480	0.32661
5.8G;D1D	11.31	24.15	35.46	0.50	2404.97	62	0.08166	1.00000	C	7380.480	0.32586
2.4G;D1D	9.66	24.91	34.57	0.50	1959.34	62	0.06653	1.00000	C	7380.480	0.26548
2.4G;G1D	6.20	9.95	16.15	0.50	28.19	62	0.00096	1.00000	C	7380.480	0.00382
Sum Ratio	0.92176										
Ratio Limit	1.00000										

**Radio 1:2.4G+ Radio 2:5G+ Radio 3:5G+ Zigbee**

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )	Option	TL ERP (mW)	TL Ratio
2.4G;D1D	9.81	25.66	35.47	0.50	2410.52	62	0.08185	1.00000	C	7380.480	0.32661
5.8G;D1D	11.31	24.15	35.46	0.50	2404.97	62	0.08166	1.00000	C	7380.480	0.32586
5.8G;D1D	11.41	24.08	35.49	0.50	2421.64	62	0.08223	1.00000	C	7380.480	0.32811
2.4G;G1D	6.20	9.95	16.15	0.50	28.19	62	0.00096	1.00000	C	7380.480	0.00382
Sum Ratio	0.98440										
Ratio Limit	1.00000										

**Radio 1:2.4G+ (Radio 2:5G Low Band+ Radio 3:5G High Band)+ BT**

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )	Option	TL ERP (mW)	TL Ratio
2.4G;D1D	9.81	25.66	35.47	0.50	2410.52	62	0.08185	1.00000	C	7380.480	0.32661
5.8G;D1D	11.41	24.08	35.49	0.50	2421.64	62	0.08223	1.00000	C	7380.480	0.32811
2.4G;BT-LE	6.20	9.97	16.17	0.50	28.32	62	0.00096	1.00000	C	7380.480	0.00384
Sum Ratio	0.65856										
Ratio Limit	1.00000										



Radio 1:2.4G+ (Radio 2:5G Low Band+ Radio 3:5G High Band)+ Zigbee

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up ERP (mW)	Distance (cm)	S (mW/cm <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )	Option	TL ERP (mW)	TL Ratio
2.4G;D1D	9.81	25.66	35.47	0.50	2410.52	62	0.08185	1.00000	C	7380.480	0.32661
5.8G;D1D	11.41	24.08	35.49	0.50	2421.64	62	0.08223	1.00000	C	7380.480	0.32811
2.4G;G1D	6.20	9.95	16.15	0.50	28.19	62	0.00096	1.00000	C	7380.480	0.00382
Sum Ratio	0.65854										
Ratio Limit	1.00000										

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—————