MPE Report

Applicant	:	Fortinet, Inc.
Product Name	:	Network Security Gateway
Trade Name	:	FORTINET
Model Number	:	FG-1001F, FG-1000F-DC, FG-1000F, FG-1001F-DC FortiGate 1000Fxxxxxxxxxx, FORTIGATE-1000Fxxxxxxxxxx, FG-1000Fxxxxxxxxxx, FortiGate 1001Fxxxxxxxxxx, FORTIGATE-1001Fxxxxxxxxxx, FG-1001Fxxxxxxxxxx, FortiGate 1000F-DCxxxxxxxxxx, FORTIGATE-1000F-DCxxxxxxxxxx, FG-1000F-DCxxxxxxxxxx, FortiGate 1001F-DCxxxxxxxxxx, FORTIGATE-1001F-DCxxxxxxxxxx, FG-1001F-DCxxxxxxxxxx (where “x” can be used as “A-Z”, or “0-9”, or “-“, or blank for software changes or marketing purposes only)
Applicable Standard	:	47 CFR § 2.1091
Received Date	:	Jan. 11, 2023
Issue Date	:	Mar. 13, 2023

Issued by

Approved By : 

Eurofins E&E Wireless Taiwan Co., Ltd.
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Taiwan Accreditation Foundation accreditation number: 1330

Note:

1.The test results are valid only for samples provided by customers and under the test conditions described in this report.

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3.The relevant information is provided by customers in this test report. According to the correctness, appropriateness or completeness of the information provided by the customer, if there is any doubt or error in the information which affects the validity of the test results, the laboratory does not take the responsibility.

Revision History

Rev.	Issued Date	Revisions	Revised By
00	Mar. 13, 2023	Initial Issue	Abby Huang

Contents

1. General Information

1.1 Reference Applicable Standard

Standard	Description	Version
IEEE C95.1	American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 300 KHz to 100 GHz, New York.	1992
47 CFR § 2.1091	Radiofrequency radiation exposure evaluation: mobile devices.	-
47 CFR § 1.1310	Radiofrequency radiation exposure limits.	-
KDB 447498 D04	RF exposure procedures and equipment authorization policies for mobile and portable devices	v01

1.2 Testing Location

Site Name: Site Name: Eurofins E&E Wireless Taiwan Co., Ltd.

Site Address: ■ No. 140-1, Changan Street, Bade District, Taoyuan City 334025, Taiwan (R.O.C.)

Site Address: □ No. 2, Wuquan 5th Rd. Wugu Dist., New Taipei City, Taiwan (R.O.C.)

2. Description of Equipment under Test (EUT)

Applicant	Fortinet, Inc. 899 Kifer Road, Sunnyvale, CA 94086, USA
Manufacturer	Fortinet, Inc. 899 Kifer Road, Sunnyvale, CA 94086, USA
Product Name	Network Security Gateway
Trade Name	FORTINET
Model Number	FG-1001F, FG-1000F-DC, FG-1000F, FG-1001F-DC FortiGate 1000Fxxxxxxxxxx, FORTIGATE-1000Fxxxxxxxxxx, FG-1000Fxxxxxxxxxx, FortiGate 1001Fxxxxxxxxxx, FORTIGATE-1001Fxxxxxxxxxx, FG-1001Fxxxxxxxxxx, FortiGate 1000F-DCxxxxxxxxxx, FORTIGATE-1000F-DCxxxxxxxxxx, FG-1000F-DCxxxxxxxxxx, FortiGate 1001F-DCxxxxxxxxxx, FORTIGATE-1001F-DCxxxxxxxxxx, FG-1001F-DCxxxxxxxxxx (where “x” can be used as “A-Z”, or “0-9”, or “-“, or blank for software changes or marketing purposes only)
Models different description	Regarding the differences, please see the table below.
FCC ID	TVE-111T15G
Frequency Range	Bluetooth : 2402 - 2480
Supported Modulations	Bluetooth : LE

Model	PSU	SSD
FG-1001F	AC	V
FG-1000F	AC	
FG-1001F-DC	DC	V
FG-1000F-DC	DC	

Note:

The above information of DUT was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

Antenna Information				
Frequency Range (MHz)	Brand	Model Number	Type	Max. Gain (dBi)
2402 - 2480	WIESON	ARY196-0346-003-00	PIFA Antenna	1.84
2402 - 2480	INPAQ	WA-F-LA-02-119	PIFA Antenna	1.64

3. RF Exposure Limit

For devices that operate at larger distances from persons, where there are minimal RF coupling interactions between a device and the user or nearby persons, RF exposure compliance using maximum permissible exposure (MPE) limits is applied. The limits for MPE is listed as below:

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^2)	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	($180 / f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	F / 1,500	30
1,500-100,000	-	-	1.0	30
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^2)	Averaging Time$\|E\|^2$,$\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1,842 / f	4.89 / f	($900 / f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1,500	-	-	F / 300	6
1,500-100,000	-	-	5	6

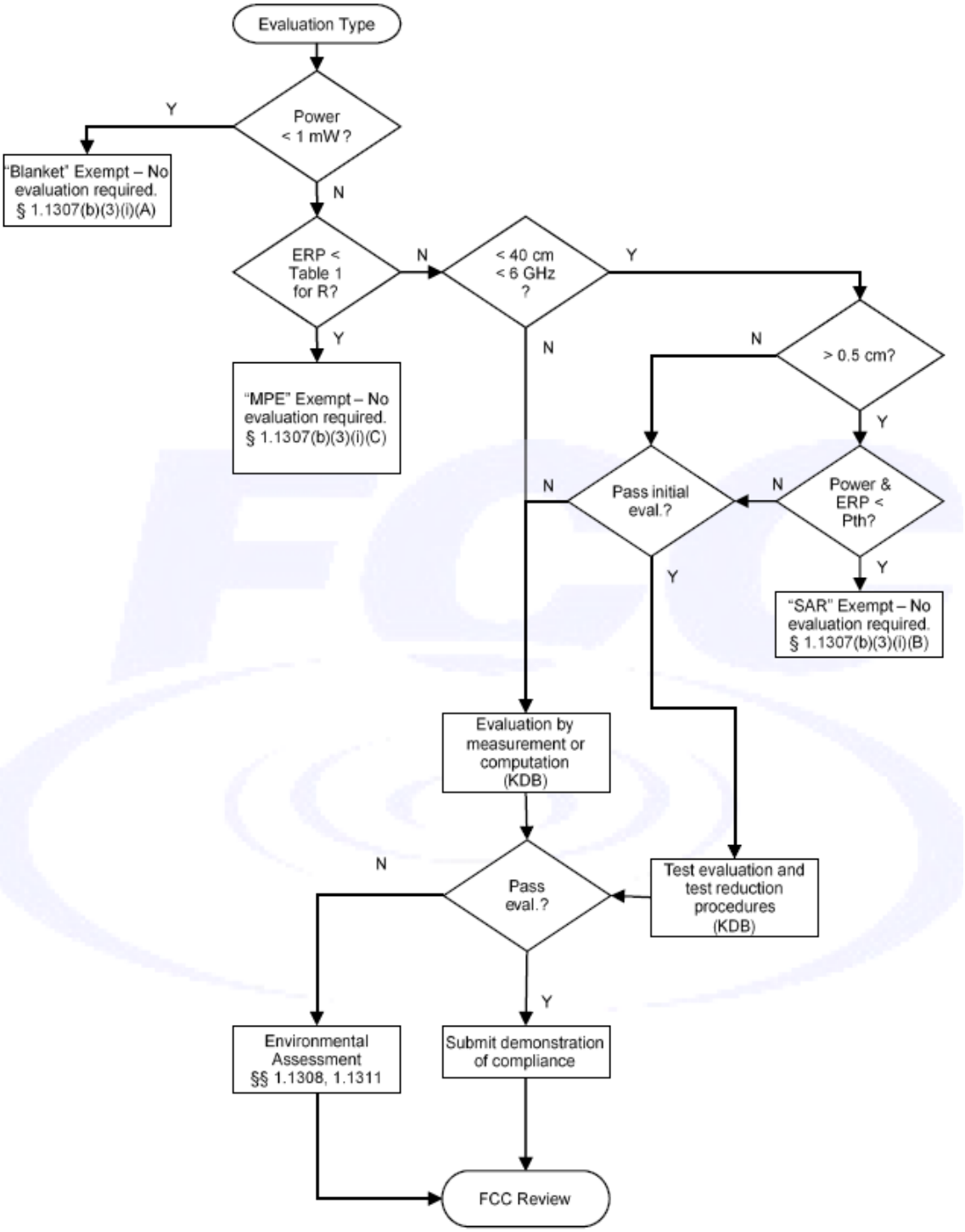
f = frequency in MHz. * = Plane-wave equivalent power density.

4. RF Exposure Assessment

4.1 Exemption Evaluation

Exemption evaluation was performed according to the appendix A and B in KDB447498 D04.

The General Sequence for Determination of Procedure demonstrated in Figure A.1 of KDB447498 D04 was applied.



4.2 Human Exposure Assessment

Due to the design and installation of this product, it is not possible to conduct SAR evaluation. This is because client either manufactures or supplies the antenna(s) that will be used in the installation of this product. Therefore, this product will be evaluated as a mobile device per 47 CFR § 1.1310 titled “Radiofrequency radiation exposure limits”, generally referred to as MPE limits.

In 47 CFR § 2.1091, paragraph (b) defines a mobile device as “a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 cm is normally maintained between the transmitter’s radiating structure(s) and the body of the user or nearby persons.”

Exposure evaluation
$$S_{eirp} = \frac{EIRP}{4\pi d^2} = \frac{PG}{4\pi d^2}\left(W/m^2\right)$$ Where S: is the input power (W); G: is the antenna gain; d : is the distance between antennas and evaluation point (m).

5. Maximum Tune-up Power

Operate Band	Frequency (MHz)	ANT 0
Bluetooth	2402 - 2480	3

6. Result

Band	Frequency (MHz)	Distance (cm) [R]	Tune-up Power (dBm) [P]	ANT Gain (dBi)	Numeric Gain [G]	Duty Cycle	Power with Duty cycle (mW) [P]x[G]	Power Density (mW/cm^2) [S]	Standalone Limit (mW/cm^2)	Antenna
Bluetooth	2402 - 2480	20.0	3.00	1.84	1.53	1	3.05	0.001	1.00	ANT 0

Note:

1. Mobile or fixed location transmitters, minimum separation distance is 0.2 m, even if calculations indicate MPE distance is less.
2. The Numeric Gain calculated by 10^(ant. Gain(dBi) /10).

Total MPE : 0.001 mW/cm^2	TER: 0.001

7. Conclusion

The result shows that this device is compliance with the exposure limits in 47 CFR §1.1310.

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