

# RF EXPOSURE EVALUATION REPORT

FCC ID : TVE-2401T25  
Equipment : Network Security Gateway  
Brand Name :   
Model Name : FortiGateRugged 70Fxxxxxxxxxx, FORTIGATERUGGED-70Fxxxxxxxxxx, FGR-70Fxxxxxxxxxx, FortiGateRugged 70F-3G4Gxxxxxxxxxx, FORTIGATERUGGED-70F-3G4Gxxxxxxxxxx, FGR-70F-3G4Gxxxxxxxxxx, (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 RD  
SUNNYVALE CA 94086  
UNITED STATES  
Manufacturer : Fortinet, Inc.  
899 KIFER RD  
SUNNYVALE CA 94086  
UNITED STATES  
Standard : 47 CFR Part 2.1091

We, SPORTON INTERNATIONAL INC has been evaluated this product in accordance with 47 CFR Part 2.1091 and it complies with applicable limit.

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC evaluation.

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



Approved by: Cona Huang / Deputy Manager



**SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory**  
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



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### History of this test report

Report No.	Version	Description	Issued Date
FA281818	Rev. 01	Initial issue of report	Dec. 21, 2022



1. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	Network Security Gateway
Brand Name	
Model Name	FortiGateRugged 70Fxxxxxxxxx, FORTIGATERUGGED-70Fxxxxxxxxx, FGR-70Fxxxxxxxxx, FortiGateRugged 70F-3G4Gxxxxxxxxx, FORTIGATERUGGED-70F-3G4Gxxxxxxxxx, FGR-70F-3G4Gxxxxxxxxx, (where "x" can be used as "A-Z", or "0-9", or "-", or blank for software changes or marketing purposes only)
FCC ID	TVE-2401T25
Integrated WWAN Module	Brand Name: Sierra Wireless Inc. Model Name: EM7565
Wireless Technology and Frequency Range	WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 26: 814.7 MHz ~ 848.3 MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz LTE Band 66: 1710.7 MHz ~ 1779.3 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Mode	RMC 12.2Kbps LTE: QPSK, 16QAM, 64QAM Bluetooth LE

Reviewed by: Jason Wang

Report Producer: Paula Chen



**2. Maximum RF average output power among production units**

Mode		Maximum Average power(dBm)
WCDMA	Band II	24
	Band IV	24
	Band V	24
LTE	Band 2	24
	Band 4	24
	Band 5	24
	Band 7	23
	Band 12	24
	Band 13	24
	Band 26	24
	Band 41	23
Band 66	24	

Band	Maximum Average Power (dBm)
Bluetooth LE	3

### 3. Determination of exemption

Per 1.1307(b)(3), (i) For single RF sources (i.e., any single fixed RF source, mobile device, or portable device, as defined in paragraph (b)(2) of this section): A single RF source is exempt if:

- (A) The available maximum time-averaged power is no more than 1 mW, regardless of separation distance. This exemption may not be used in conjunction with other exemption criteria other than those in paragraph (b)(3)(ii)(A) of this section. Medical implant devices may only use this exemption and that in paragraph (b)(3)(ii)(A);
- (B) Or the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold Pth (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). Pth is given by:

$$P_{th} \text{ (mW)} = ERP_{20cm} (d / 20)^x \text{ for distance } d \leq 20cm$$

$$P_{th} \text{ (mW)} = ERP_{20cm} \text{ for distance } 20cm < d \leq 40cm$$

$$x = -\log_{10} \left( \frac{60}{ERP_{20cm} \sqrt{f}} \right)$$

$ERP_{20cm} \text{ (mW)}$	$0.3 \text{ GHz} \leq f < 1.5 \text{ GHz}:$	2040 f
	$1.5 \text{ GHz} \leq f \leq 6 \text{ GHz}:$	3060

- (C) Or using Table 1 and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, R must be at least  $\lambda/2\pi$ , where  $\lambda$  is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of  $\lambda/4$  or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

Table 1 to § 1.1307(b)(3)(i)(C) - Single RF Sources Subject to Routine Environmental Evaluation

RF Source frequency (MHz)	Threshold ERP (watts)
0.3-1.34	$1,920 R^2$ .
1.34-30	$3,450 R^2/f^2$ .
30-300	$3.83 R^2$ .
300-1,500	$0.0128 R^2 f$ .
1,500-100,000	$19.2 R^2$ .



**4. RF Exposure Evaluation**

**General Note:**

1. Pi is mean 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
2. Pth is mean the exemption threshold power (Pth) according to the § 1.1307(b)(3)(i)(B) formula for fixed, mobile, or portable RF source i.
3. In this report was used Part1.1307(b)(3)(i)(B) perfrom RF Exposure evaluation
4. The distance of 20cm is for this device

Band	Antenna Gain (dBi)	Maximum Conducted Power (dBm)	Maximum EIRP (dBm)	Maximum ERP (dBm)	Maximum EIRP (mW)	Maximum ERP (mW)	Pi (dBm)	Pi (mW)	Part1.1307 option(b) Threshold (mW)	Part1.1307 option(b) Pi/Pth
WCDMA Band 2	0.63	24.00	24.6	22.48	290.40	177.01	24.00	251.19	3060.000	0.082
WCDMA Band 4	1.89	24.00	25.9	23.74	388.15	236.59	24.00	251.19	3060.000	0.082
WCDMA Band 5	2.41	24.00	26.4	24.26	437.52	266.69	24.26	266.69	1680.960	0.159
LTE Band 2	0.63	24.00	24.6	22.48	290.40	177.01	24.00	251.19	3060.000	0.082
LTE Band 4	1.89	24.00	25.9	23.74	388.15	236.59	24.00	251.19	3060.000	0.082
LTE Band 5	2.41	24.00	26.4	24.26	437.52	266.69	24.26	266.69	1680.960	0.159
LTE Band 7	2.33	23.00	25.3	23.18	341.19	207.97	23.18	207.97	3060.000	0.068
LTE Band 12	0.17	24.00	24.2	22.02	261.22	159.22	24.00	251.19	1425.960	0.176
LTE Band 13	1.53	24.00	25.5	23.38	357.27	217.77	24.00	251.19	1585.080	0.158
LTE Band 26	2.41	24.00	26.4	24.26	437.52	266.69	24.26	266.69	1660.560	0.161
LTE Band 41	2.33	23.00	25.3	23.18	341.19	207.97	23.18	207.97	3060.000	0.068
LTE Band 66	1.89	24.00	25.9	23.74	388.15	236.59	24.00	251.19	3060.000	0.082

Band	Antenna Gain (dBi)	Maximum Conducted Power (dBm)	Maximum EIRP (dBm)	Maximum ERP (dBm)	Maximum EIRP (mW)	Maximum ERP (mW)	Pi (dBm)	Pi (mW)	Part1.1307 option(b) Threshold (mW)	Part1.1307 option(b) Pi/Pth
Bluetooth	1.53	3.00	4.5	2.38	2.84	1.73	3.00	2.00	3060.000	0.001

**4.1. Collocated assessment**

**General Note:**

1. Either MPE-based exemption may be considered for test exemption for fixed, mobile, or portable device exposure conditions; therefore, the contributions from each exemption in conjunction with the measured SAR (*Evaluated<sub>k</sub>* term) shall be used to determine exemption for simultaneous transmission according to Formula (C.1).
2. The sum of the ratios of the applicable terms for MPE-based and MPE shall be less than 1, to determine WCDMA/LTE + BT simultaneous transmission exposure compliance.

$$\sum_{i=1}^a \frac{P_i}{P_{th,i}} + \sum_{j=1}^b \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^c \frac{Evaluated_k}{Exposure Limit_k} \leq 1 \quad (C.1)$$

WWAN Pi/Pth Ratio	Bluetooth Pi/Pth Ratio	Σ (P/Pth Ratio) of WLAN + Bluetooth
0.176	0.001	0.177

**Conclusion:**

According to 47 CFR §1.1307, the RF exposure analysis concludes that the RF Exposure is FCC compliant.