

# RF EXPOSURE EVALUATION REPORT

FCC ID : PKRISGS2000E3  
Equipment : S2000e-3  
Brand Name :   
Model Name : S2000e-3  
Marketing Name : 5G Enterprise Gateway  
Applicant : Inseego Corp.  
9710 Scranton Road Suite 200, San Diego, CA 92121  
Manufacturer : MeiG Smart Technology Co., Ltd  
Floor 2, Office Building No.5, Lingxia Road,  
Fenghuang Community, Fuyong Street, Bao 'an  
District, Shenzhen  
Standard : 47 CFR Part 2.1091

We, SPORTON INTERNATIONAL INC has been evaluated this product in accordance with 47 CFR Part2.1091 and it complies with applicable limit.

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) 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**  
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### History of this test report

Report No.	Version	Description	Issued Date
FA160713-02	Rev. 01	Initial issue of report	May. 10, 2022
FA160713-02	Rev. 02	Update general information in page 1 and 5~6	May. 11, 2022



## **1. Administration Data**

### **1.1. Testing Laboratory**

Sporton International (Kunshan) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.


<b>Testing Laboratory</b>		
<b>Test Firm</b>	Sporton International (Kunshan) Inc.	
<b>Test Site Location</b>	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958	
<b>Test Site No.</b>	<b>FCC Designation No.</b>	<b>FCC Test Firm Registration No.</b>
	CN1257	314309

<b>Applicant</b>	
<b>Company Name</b>	Inseego Corp.
<b>Address</b>	9710 Scranton Road Suite 200, San Diego,, CA 92121

<b>Manufacturer</b>	
<b>Company Name</b>	MeiG Smart Technology Co., Ltd
<b>Address</b>	Floor 2, Office Building No.5, Lingxia Road, Fenghuang Community, Fuyong Street, Bao 'an District, Shenzhen



**2. Description of Equipment Under Test (EUT)**

Product Feature & Specification	
EUT Type	S2000e-3
Brand Name	
Model Name	S2000e-3
Marketing Name	5G Enterprise Gateway
FCC ID	PKRISGS2000E3
Wireless Technology and Frequency Range	WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV : 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2 : 1850 MHz ~ 1910 MHz LTE Band 4 : 1710 MHz ~ 1755 MHz LTE Band 5 : 824 MHz ~ 849 MHz LTE Band 7 : 2500 MHz ~ 2570 MHz LTE Band 12 : 699 MHz ~ 716 MHz LTE Band 13 : 777 MHz ~ 787 MHz LTE Band 14 : 788 MHz ~ 798 MHz LTE Band 17 : 704 MHz ~ 716 MHz LTE Band 25 : 1850 MHz ~ 1915 MHz LTE Band 26 : 814 MHz ~ 849 MHz LTE Band 30 : 2305 MHz ~ 2315 MHz LTE Band 38 : 2570 MHz ~ 2620 MHz LTE Band 41 : 2496 MHz ~ 2690 MHz LTE Band 42 : 3550 MHz ~ 3600 MHz LTE Band 43 : 3600 MHz ~ 3700 MHz LTE Band 48 : 3550 MHz ~ 3700 MHz LTE Band 66 : 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz 5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n5 : 824 MHz ~ 849 MHz 5G NR n12 : 699 MHz ~ 716 MHz 5G NR n25 : 1850 MHz ~ 1915 MHz 5G NR n41 : 2496 MHz ~ 2690 MHz 5G NR n66 : 1710 MHz ~ 1780 MHz 5G NR n71 : 663 MHz ~ 698 MHz 5G NR n77 : 3700 MHz ~ 3980 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Mode	RMC 12.2Kbps HSDPA/HSUPA DC-HSDPA HSPA+ (16QAM uplink is not supported) LTE: QPSK, 16QAM, 64QAM, 256QAM(Downlink Only) DFT-s-OFDM (PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM) CP-OFDM (QPSK / 16QAM / 64QAM / 256QAM) Bluetooth LE
Antenna Gain	<b>&lt;For Bluetooth&gt;</b> Bluetooth: 4.00 dBi
HW Version	1.01
SW Version	2.37
EUT Stage	Identical Prototype
Remark:	This is a variant report by adding 5G NR n77. All the test cases were performed on original report which can be referred to Sporton Report Number FA0D1601. Based on the original report, the test cases were verified.



**Remark:**

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. This device supports HPUE for LTE band 41 with class 2 power level, so HPUE has been performed standalone power density calculation.
3. LTE band 42/43 covered by LTE band 48 with the same power level, so only chose LTE band 48 to perform standalone power density calculation.
4. For DFT-s-OFDM and CP-OFDM output power measurement reduction, according to maximum power reduction for the CP-OFDM mode will not higher than DFT-s-OFDM mode, therefore, CP-OFDM measurement is unnecessary. We always chose higher power (DFT-s-OFDM mode) to perform MPE analysis.
5. 5G NR supports NSA mode.

**Comments and Explanations:**

1. The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.
2. The maximum RF output tune up power, antenna gain also the safe distance used for evaluate RF exposure were declared by manufacturer.



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

**<WCDMA>**

	Mode	Maximum Average power(dBm)
WCDMA	Band II	24.00
	Band IV	24.00
	Band V	24.00

**<LTE>**

	Mode	Maximum Average power(dBm)
LTE	Band 2	24.00
	Band 4	24.00
	Band 5	24.00
	Band 7	24.00
	Band 12	24.00
	Band 13	24.00
	Band 14	24.00
	Band 17	24.00
	Band 25	24.00
	Band 26	24.00
	Band 30	24.00
	Band 38	24.00
	Band 41	24.00
	Band 41-HPUE	26.00
	Band 42	19.50
	Band 43	19.50
Band 48	19.50	
Band66	24.00	
Band71	24.00	

**<5G NR>**

	Mode	Maximum Average power(dBm)
5G NR	n2	24.00
	n5	24.00
	n12	24.00
	n25	24.00
	n41	24.00
	n66	24.00
	n71	24.00
	n77	24.00

**< Bluetooth>**

	Mode	Maximum Average power(dBm)
	Bluetooth LE	4



4. RF Exposure Limit Introduction

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

Table with 5 columns: Frequency range (MHz), Electric field strength (V/m), Magnetic field strength (A/m), Power density (mW/cm²), Averaging time (minutes). It is divided into two sections: (A) Limits for Occupational/Controlled Exposures and (B) Limits for General Population/Uncontrolled Exposure.

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

S = PG / (4πR²)

Where:

- S = Power Density
P = Output Power at Antenna Terminals
G = Gain of Transmit Antenna (linear gain)
R = Distance from Transmitting Antenna





5. Radio Frequency Radiation Exposure Evaluation

5.1. Standalone Power Density Calculation

Table with 9 columns: Band, Antenna Gain (dBi), Maximum Power (dBm), Maximum EIRP (dBm), Maximum EIRP (W), Average EIRP (mW), Power Density at 20cm (mW/cm^2), Limit (mW/cm^2), Power Density / Limit. Rows include WCDMA, LTE, and 5G NR bands, plus Bluetooth.

Note:

- 1. For conservativeness, the lowest frequency of each band is used to determine the MPE limit of that band.
2. This device supports HPUE for LTE band 41 with class 2 power level, so HPUE has been performed standalone power density calculation.
3. LTE band 42/43 covered by LTE band 48 with the same power level, so only chose LTE band 48 to perform standalone power density calculation.
4. Chose the maximum power density to do MPE analysis.



**5.2. Collocated Power Density Calculation**

WWAN Power Density / Limit	5G NR Power Density / Limit	Bluetooth Power Density / Limit	$\Sigma$ (Power Density / Limit) of WWAN+5G NR+Bluetooth
0.251	0.231	0.001	0.483

**Note:**

1. For collocation analysis, LTE Band7/38/41-HPUE is chosen for summation due to the highest (power density/limit) among all WWAN wireless modes.
2. For collocation analysis, 5G NR n71 is chosen for summation due to the highest (power density/limit) among all 5G NR modes.
3.  $\Sigma$  (Power Density / Limit): This is a summation of [(power density for each transmitter/antenna included in the simultaneous transmission) / (corresponding MPE limit)], for WWAN + 5G NR + BT.
4. Considering the WWAN module collocation with the 5G NR transmitter of the EIRP performance listed in the table above, the aggregated (power density /limit) is smaller than 1.

**Conclusion:**

According to 47 CFR §2.1091, the RF exposure analysis concludes that the RF Exposure is FCC compliant.

-----THE END-----