



FCC RADIO TEST REPORT

FCC ID : PKRISGFX31001
Equipment : Indoor Router
Brand Name : Inseego
Model Name : FX3100-1
Marketing Name : FX3100
Applicant : Inseego Corp.
9710 Scranton Road Suite 200, San Diego,, CA 92121
Manufacturer : Inseego Corp.
9710 Scranton Road Suite 200, San Diego,, CA 92121
Standard : FCC 47 CFR Part 2, 96

The product was received on Mar. 13, 2023 and testing was performed from Mar. 13, 2023 to Apr. 18, 2023. We, Sporton International (USA) Inc., would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA-603-E and has been in compliance with the applicable technical standards.

The test results in this partial report apply exclusively to the tested model / sample. Without written approval from Sporton International (USA) Inc., the test report shall not be reproduced except in full.

Approved by: Lance Tang

Sporton International (USA) Inc.
1175 Montague Expressway, Milpitas, CA 95035



Table of Contents

History of this test report.....	3
Summary of Test Result.....	4
1 General Description	5
1.1 Product Feature of Equipment Under Test	5
1.2 Modification of EUT	5
1.3 Testing Location	5
1.4 Applied Standards	6
2 Test Configuration of Equipment Under Test	7
2.1 Test Mode.....	7
2.2 Connection Diagram of Test System	7
2.3 Support Unit used in test configuration	8
2.4 Frequency List of Low/Middle/High Channels.....	8
3 Conducted Test Items	9
3.1 Measuring Instruments.....	9
3.2 Conducted Output Power	10
3.3 Effective Isotropic Radiated Power	11
4 Radiated Test Items	12
4.1 Measuring Instruments.....	12
4.2 Test Setup	12
4.3 Test Result of Radiated Test.....	13
4.4 Radiated Spurious Emission	14
5 List of Measuring Equipment.....	15
6 Uncertainty of Evaluation	16
Appendix A. Test Results of Conducted Test	
Appendix B. Test Results of Radiated Test	
Appendix C. Setup Photographs	



History of this test report

Report No.	Version	Description	Issue Date
FG220902006C	01	Initial issue of report	Apr. 18, 2023
FG220902006C	02	1. Add Conducted Output Power and Effective Isotropic Radiated Power 2. Revise Test Mode and Frequency List of Low/Middle/High Channels 3. This report is an updated version, replacing the report issued on Apr. 18, 2023.	Apr. 19, 2023

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.2	§2.1046	Conducted Output Power	Reporting only	-
3.3	§96.41	Effective Isotropic Radiated Power	Pass	-
4.4	§2.1051 §96.41	Radiated Spurious Emission	Pass	0.80 dB under the limit at 7360.000 MHz

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacture who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. Please refer to the section "Uncertainty of Evaluation" for measurement uncertainty.

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.



1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
Equipment Type : Indoor Router	
General Specs 4G-LTE, 5G-FR1, Wi-Fi 2.4GHz 802.11 b/g/n/ax, Wi-Fi 5GHz 802.11 a/n/ac/ax, and GNSS.	
Antenna Type WWAN: Fixed Internal Antenna WLAN: Fixed Internal Antenna GPS / Glonass / BDS / Galileo: Fixed Internal Antenna	
Antenna Gain	5G FR1 n48 <Ant. 4>: 1.5 dBi <Ant. 6>: 3.4 dBi

Remark: The EUT's information above is declared by manufacturer. Please refer to Disclaimer in report summary.

1.2 Modification of EUT

No modifications are made to the EUT during all test items.

1.3 Testing Location

Test Site	Sporton International (USA) Inc.	
Test Site Location	1175 Montague Expressway, Milpitas, CA 95035 TEL : 408 9043300	
Test Site No.	Sporton Site No.	
	TH01-CA	03CH01-CA
Test Engineer	Venkata Kondepudi	Leo Liu
Temperature (°C)	18.2~22.4	18~21
Relative Humidity (%)	34.7~64.7	37~41

Note: The test site complies with ANSI C63.4 2014 requirement.

FCC Designation No.: US1250



1.4 Applied Standards

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

- ♦ ANSI C63.26-2015
- ♦ ANSI / TIA-603-E
- ♦ FCC 47 CFR Part 2, 96
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- ♦ FCC KDB 940660 D01 Part 96 CBRS Eqpt v03
- ♦ FCC KDB 412172 D01 Determining ERP and EIRP v01r01
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01
- ♦ FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

2 Test Configuration of Equipment Under Test

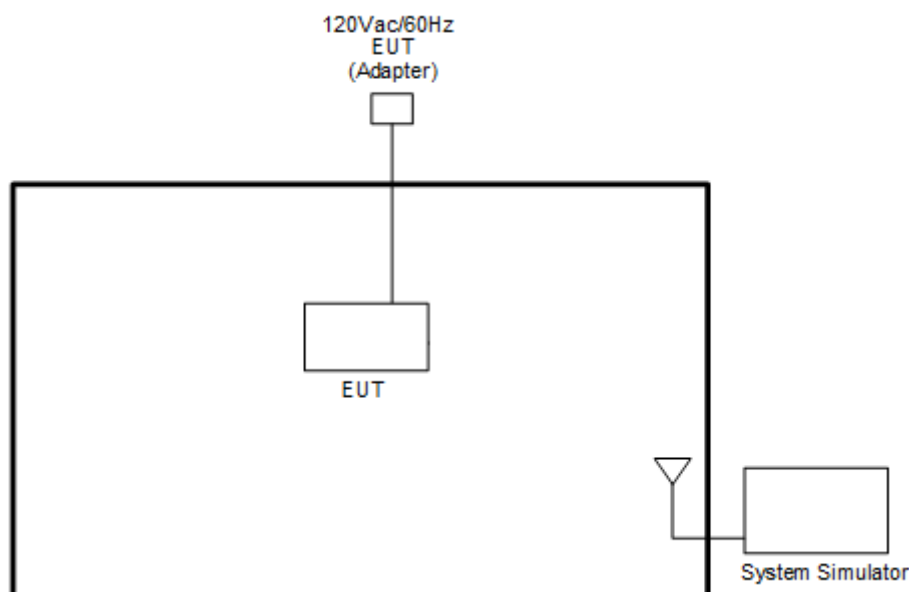
2.1 Test Mode

Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power.

For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape), and adjusting the measurement antenna orientation, following C63.26 exploratory test procedures and only the worst case emissions were reported in this report.

Test Items	Band	Bandwidth (MHz)				Modulation					RB #			Test Channel		
		10	15	20	40	PI/2 BPSK	QPSK	16QAM	64QAM	256QAM	1	Half	Full	L	M	H
Max. Output Power	n48	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
E.I.R.P	n48	v	v	v	v	v	v	v	v	v	Max. Power					
Radiated Spurious Emission	n48			v		v	v				v			v	v	v
Remark	- The mark "v" means that this configuration is chosen for testing - The mark "-" means that this bandwidth is not supported. - The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported. - For radiated measurement, pre-scanned in two modes, DFT-s OFDM and CP OFDM. The worst cases (DFT-s OFDM) were recorded in this report.															

2.2 Connection Diagram of Test System





2.3 Support Unit used in test configuration

Item	Equipment	Brand Name	Model No.	FCC ID	Data Cable	Power Cord
1.	5G Wireless Test Platform	Anritsu	MT8000A	N/A	N/A	Unshielded, 1.8 m

2.4 Frequency List of Low/Middle/High Channels

5G NR n48 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
40	Channel	638000	641666	645332
	Frequency	3570	3624.99	3679.98
30	Channel	637668	641666	645666
	Frequency	3565.02	3624.99	3684.99
20	Channel	637334	641666	646000
	Frequency	3560.01	3624.99	3690
10	Channel	637000	641666	646332
	Frequency	3555	3624.99	3694.98

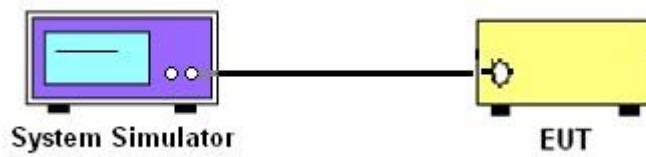
3 Conducted Test Items

3.1 Measuring Instruments

See list of measuring instruments of this test report.

3.1.1 Test Setup

3.1.2 Conducted Output Power



3.1.3 Test Result of Conducted Test

Please refer to Appendix A.



3.2 Conducted Output Power

3.2.1 Description of the Conducted Output Power Measurement

A system simulator was used to establish communication with the EUT. Its parameters were set to force the EUT transmitting at maximum output power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

3.2.2 Test Procedures

1. The transmitter output port was connected to the system simulator.
2. Set EUT at maximum power through the system simulator.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure and record the power level from the system simulator.



3.3 Effective Isotropic Radiated Power

3.3.1 Description of the EIRP Measurement

The EIRP of mobile transmitters must not exceed 23 dBm /10 megahertz for LTE Band 48.

The testing follows ANSI C63.26-2015 Section 5.2.5.5

According to KDB 412172 D01 Power Approach,

$EIRP = P_T + G_T - LC$, where

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

LC = signal attenuation in the connecting cable between the transmitter and antenna in dB

Device	Maximum EIRP (dBm/10 MHz)	Maximum PSD (dBm/MHz)
End User Device	23	n/a

Remark:

1. Total channel power is complied with EIRP limit 23dBm/10MHz.
2. The MIMO mode is completely uncorrelated, so the directional gain is selected the maximum gain among all antennas.

3.3.2 Test Procedures

The testing follows procedure in Section 5.2 of ANSI C63.26-2015 and KDB 940660 D01 Part 96 CBRS Eqpt v03 Section 3.2(b)(2)

Determine the EIRP by adding the effective antenna gain to the measured average conducted power level.

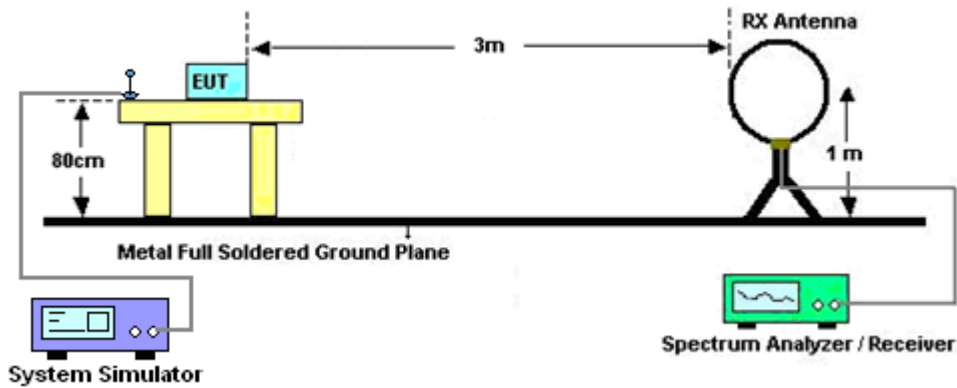
4 Radiated Test Items

4.1 Measuring Instruments

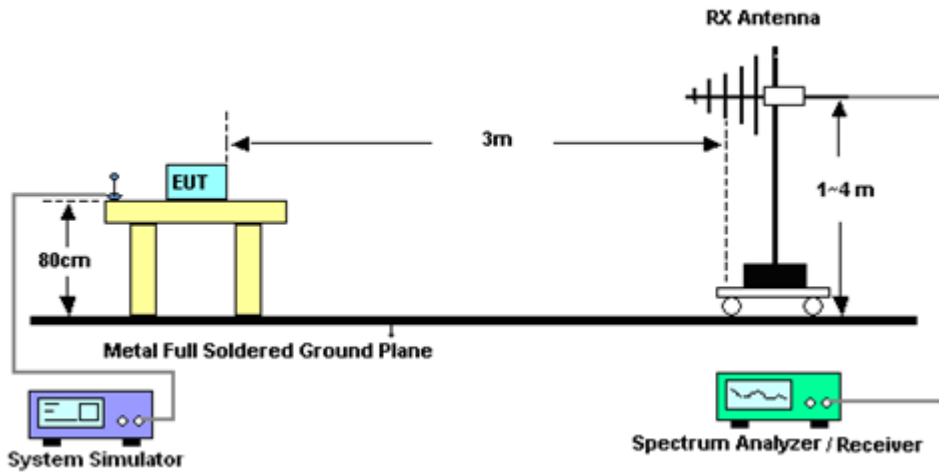
See list of measuring instruments of this test report.

4.2 Test Setup

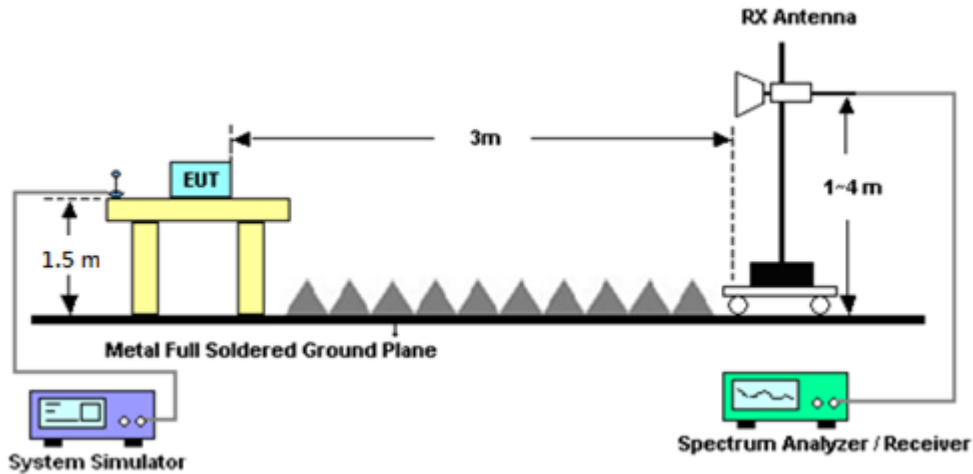
For radiated emissions below 30MHz



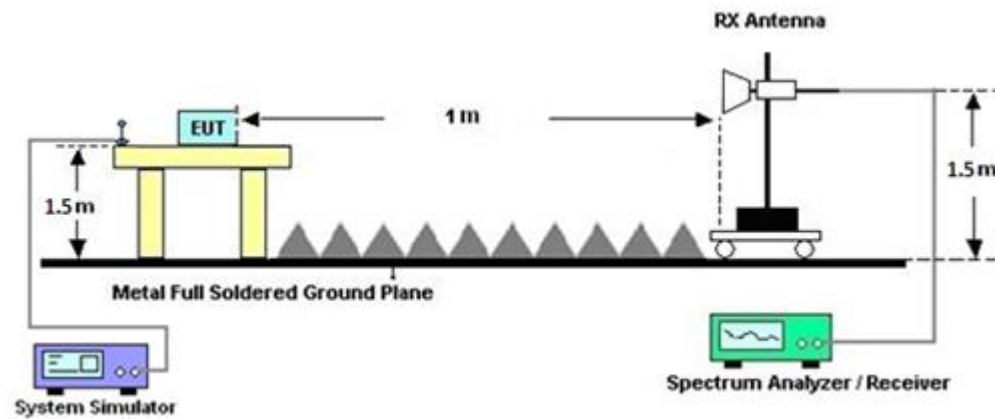
For radiated emissions from 30MHz to 1GHz



For radiated emissions from 1GHz to 18GHz



For radiated emissions above 18GHz



4.3 Test Result of Radiated Test

Please refer to Appendix B.

Note:

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.

4.4 Radiated Spurious Emission

4.4.1 Description of Radiated Spurious Emission Measurement

The radiated spurious emission was measured by substitution method according to ANSI / TIA-603-E. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least -40dBm / MHz .

The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

4.4.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 7 and ANSI / TIA-603-E Section 2.2.12.

1. The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and 1.5 meter height for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between 1m to 4m to search the maximum spurious emission for both horizontal and vertical polarizations.
5. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
7. Measure the burst average result by setting trace = max hold or trace = average with duty cycle factor when margin is not enough.
8. A horn antenna was substituted in place of the EUT and was driven by a signal generator. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
$$\text{EIRP (dBm)} = \text{S.G. Power} - \text{Tx Cable Loss} + \text{Tx Antenna Gain}$$
$$\text{ERP (dBm)} = \text{EIRP} - 2.15$$
9. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.



5 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Signal Generator	Rohde & Schwarz	SMF100A	105544	9kHz~44GHz	May 17, 2022	Apr. 04, 2023~ Apr. 10, 2023	May 16, 2023	Radiation (03CH01-CA)
Loop Antenna	R&S	HFH2-Z2E	100840	9kHz~30MHz	Jul. 05, 2022	Apr. 04, 2023~ Apr. 10, 2023	Jul. 04, 2023	Radiation (03CH01-CA)
Bilog Antenna	TESEQ	6111D	50392	30MHz~1GHz	Jul. 11, 2022	Apr. 04, 2023~ Apr. 10, 2023	Jul. 10, 2023	Radiation (03CH01-CA)
Bilog Antenna	TESEQ	6111D	54683	30MHz~1GHz	Nov. 01, 2022	Apr. 04, 2023~ Apr. 10, 2023	Oct. 31, 2023	Radiation (03CH01-CA)
Horn Antenna	SCHWARZBECK	BBHA 9120D	02115	1GHz~18GHz	Aug. 16, 2022	Apr. 04, 2023~ Apr. 10, 2023	Aug. 15, 2023	Radiation (03CH01-CA)
Horn Antenna	SCHWARZBECK	BBHA 9120D	02113	1GHz~18GHz	Jun. 22, 2022	Apr. 04, 2023~ Apr. 10, 2023	Jun. 21, 2023	Radiation (03CH01-CA)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA9170	00842	18GHz~40GHz	Aug. 16, 2022	Apr. 04, 2023~ Apr. 10, 2023	Aug. 15, 2023	Radiation (03CH01-CA)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA9170	00841	18GHz~40GHz	Sep. 12, 2022	Apr. 04, 2023~ Apr. 10, 2023	Sep. 11, 2023	Radiation (03CH01-CA)
Filter	Wainwright	WHKX8-5872.5-6750-18000-40ST	SN8	6.75GHz High Pass Filter	Jul. 21, 2022	Apr. 04, 2023~ Apr. 10, 2023	Jul. 20, 2023	Radiation (03CH01-CA)
Preamplifier	EMEC	00675	EMC18G40G	060725	May 10, 2022	Apr. 04, 2023~ Apr. 10, 2023	May 09, 2023	Radiation (03CH01-CA)
Preamplifier	SONOMA	310N	372241	9kHz~1GHz	May 09, 2022	Apr. 04, 2023~ Apr. 10, 2023	May 08, 2023	Radiation (03CH01-CA)
Preamplifier	E-instrument	ERA-100M-18G-56-01-A70	EC1900252	1GHz~18GHz	May 09, 2022	Apr. 04, 2023~ Apr. 10, 2023	May 08, 2023	Radiation (03CH01-CA)
Spectrum Analyzer	R&S	FW43	104042	2Hz~43GHz	Dec. 11, 2022	Apr. 04, 2023~ Apr. 10, 2023	Dec. 10, 2023	Radiation (03CH01-CA)
EMI Test Receiver	R&S	ESU26	100049	20Hz~26.5GHz	Jun. 01, 2022	Apr. 04, 2023~ Apr. 10, 2023	May 31, 2023	Radiation (03CH01-CA)
RF Cable	HUBER+SUHNER	SUCOFLEX 102	8015932/2, 8015762/2, 804938/2	N/A	Mar. 06, 2023	Apr. 04, 2023~ Apr. 10, 2023	Mar. 05, 2024	Radiation (03CH01-CA)
Hygrometer	TESTO	608-H1	45141354	N/A	Jul. 27, 2022	Apr. 04, 2023~ Apr. 10, 2023	Jul. 26, 2023	Radiation (03CH01-CA)
Controller	Chaintek	EM-1000	060881	Control Turn Table & Antenna Mast	N/A	Apr. 04, 2023~ Apr. 10, 2023	N/A	Radiation (03CH01-CA)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Apr. 04, 2023~ Apr. 10, 2023	N/A	Radiation (03CH01-CA)
Test Software	Audix E3	E6.2009-8-24d	PK-002093	N/A	N/A	Apr. 04, 2023~ Apr. 10, 2023	N/A	Radiation (03CH01-CA)
Hygrometer	Testo	608-H1	45141354	N/A	Jul. 27, 2022	Mar. 13, 2023~ Apr. 18, 2023	Jul. 26, 2023	Conducted (TH01-CA)
Spectrum Analyzer	Rohde & Schwarz	FSV40	101089	10Hz~40GHz	Jun. 01, 2022	Mar. 13, 2023~ Apr. 18, 2023	May 31, 2023	Conducted (TH01-CA)
Radio Communication Test Station	Anritsu	MT8000A	6262208375	N/A	Jun. 08, 2022	Mar. 13, 2023~ Apr. 18, 2023	Jun. 07, 2023	Conducted (TH01-CA)
Radio communication analyzer	Anritsu	MT8821C	6262257889	N/A	Aug. 17, 2022	Mar. 13, 2023~ Apr. 18, 2023	Aug. 16, 2023	Conducted (TH01-CA)

6 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	3.40 dB
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	3.60 dB
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Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	4.30 dB
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Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power and EIRP)

<SISO Mode>

5G FR1 n48 Maximum Average Power [dBm] (GT - LC = 1.5 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
10	1	1	PI/2 BPSK	21.01	20.97	19.58	22.57	0.1807		
10	1	22		20.89	20.98	19.38				
10	12	6		20.98	20.99	19.50				
10	1	0		20.44	20.56	18.91				
10	1	23		20.46	20.34	18.88				
10	24	0		20.57	20.53	19.02				
10	1	1	QPSK	21.07	20.92	19.40				
10	1	22		21.06	20.95	19.34				
10	12	6		21.04	21.04	19.54				
10	1	0		20.05	19.94	18.42				
10	1	23		19.97	19.89	18.40				
10	24	0		20.02	20.06	18.47				
10	1	1	16-QAM	18.95	19.92	18.63	21.42	0.1387		
10	1	1	64-QAM	18.32	18.34	16.83				
10	1	1	256-QAM	16.23	16.26	14.74				
Limit	EIRP < 23dBm/10MHz			Result			Pass			

5G FR1 n48 Maximum Average Power [dBm] (GT - LC = 1.5 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
20	1	1	PI/2 BPSK	21.21	21.06	19.99	22.71	0.1866		
20	1	49		21.09	21.00	19.48				
20	25	12		21.19	21.14	19.81				
20	1	0		20.84	20.64	19.17				
20	1	50		20.72	20.55	18.97				
20	50	0		20.77	20.65	19.14				
20	1	1	QPSK	21.19	21.06	19.96				
20	1	49		21.17	20.99	19.42				
20	25	12		21.20	21.10	19.80				
20	1	0		20.27	20.11	18.64				
20	1	50		20.19	20.11	18.38				
20	50	0		20.25	20.13	18.73				
20	1	1	16-QAM	20.19	20.12	18.70	21.69	0.1476		
20	1	1	64-QAM	18.41	18.47	17.16				
20	1	1	256-QAM	16.41	16.31	14.89				
Limit	EIRP < 23dBm/10MHz			Result			Pass			

Total EIRP power is less than partial EIRP limit 23 dBm/10MHz.



5G FR1 n48 Maximum Average Power [dBm] (GT - LC = 1.5 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
30	1	1	PI/2 BPSK	15.43	21.08	14.28	22.65	0.1841		
30	1	76		15.03	20.86	13.40				
30	36	18		15.37	21.10	13.96				
30	1	0		15.24	20.65	13.84				
30	1	77		15.09	20.44	13.41				
30	75	0		15.18	20.58	13.73				
30	1	1	QPSK	14.30	21.02	14.25				
30	1	76		14.08	20.87	13.42				
30	36	18		14.35	21.15	13.96				
30	1	0		14.33	20.20	13.88				
30	1	77		14.05	19.91	13.41				
30	75	0		14.16	20.14	13.74				
30	1	1	16-QAM	14.27	20.19	14.29	21.69	0.1476		
30	1	1	64-QAM	15.25	18.68	14.27				
30	1	1	256-QAM	13.95	16.31	13.97				
Limit	EIRP < 23dBm/10MHz			Result			Pass			

5G FR1 n48 Maximum Average Power [dBm] (GT - LC = 1.5 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
40	1	1	PI/2 BPSK	15.32	21.09	13.40	22.67	0.1849		
40	1	104		15.21	20.89	12.46				
40	50	25		15.31	21.11	13.01				
40	1	0		15.23	20.71	13.07				
40	1	105		15.25	20.33	12.47				
40	100	0		15.19	20.64	12.93				
40	1	1	QPSK	15.36	21.17	14.50				
40	1	104		15.24	20.84	13.45				
40	50	25		15.33	21.08	13.96				
40	1	0		15.25	20.17	14.07				
40	1	105		15.27	19.87	13.52				
40	100	0		15.17	20.14	13.92				
40	1	1	16-QAM	15.42	20.24	13.50	21.74	0.1493		
40	1	1	64-QAM	15.23	18.55	13.23				
40	1	1	256-QAM	14.94	16.32	13.05				
Limit	EIRP < 23dBm/10MHz			Result			Pass			

Total EIRP power is less than partial EIRP limit 23 dBm/10MHz.



<MIMO Mode>

Part96 5G FR1 n48 Maximum Average Power [dBm], DG = 3.4 dBi														
BW	RB	RB	Mod	Antenna 4			Antenna 6			Combine			EIRP	EIRP
(MHz)	Size	Offset		Lowest	Middle	Highest	Lowest	Middle	Highest	Lowest	Middle	Highest	(dBm)	(W)
10	1	1	QPSK	14.01	13.83	12.45	12.93	13.28	12.91	16.51	16.57	15.70	20.07	0.102
10	1	22		14.01	14.06	12.26	13.13	13.21	12.93	16.60	16.67	15.62		
10	12	6		14.10	14.01	12.41	12.99	13.22	12.91	16.59	16.64	15.68		
10	1	0		12.77	12.53	11.16	11.76	11.97	11.74	15.30	15.27	14.47		
10	1	23		11.09	12.53	12.73	11.66	11.85	11.68	14.39	15.21	15.25		
10	24	0		12.80	12.71	11.14	11.70	11.97	11.72	15.30	15.37	14.45		
10	1	1	16-QAM	13.60	13.36	12.04	12.77	12.93	12.55	16.22	16.16	15.31	19.62	0.092
10	1	1	64-QAM	12.40	12.10	10.61	10.95	11.32	10.98	14.75	14.74	13.81		
10	1	1	256-QAM	9.18	9.16	7.75	8.21	8.55	8.34	11.73	11.88	11.07		
Limit	EIRP < 23dBm/10MHz			Result									Pass	

Part96 5G FR1 n48 Maximum Average Power [dBm], DG = 3.4 dBi														
BW	RB	RB	Mod	Antenna 4			Antenna 6			Combine			EIRP	EIRP
(MHz)	Size	Offset		Lowest	Middle	Highest	Lowest	Middle	Highest	Lowest	Middle	Highest	(dBm)	(W)
20	1	1	QPSK	9.97	14.10	8.79	8.83	13.53	8.87	12.45	16.95	11.84	20.35	0.108
20	1	49		9.79	14.00	8.19	8.73	13.32	8.76	12.30	16.68	11.49		
20	25	12		9.97	14.13	8.57	13.48	8.86	8.90	15.08	15.26	11.75		
20	1	0		9.86	12.84	8.49	8.84	12.28	8.86	12.39	15.58	11.69		
20	1	50		9.87	14.08	8.27	8.74	13.27	8.61	12.35	16.70	11.45		
20	51	0		9.89	12.78	8.51	8.81	12.13	8.84	12.39	15.48	11.69		
20	1	1	16-QAM	10.13	13.57	8.79	8.80	13.09	8.99	12.53	16.35	11.90	19.75	0.094
20	1	1	64-QAM	10.05	12.36	8.73	8.60	11.49	8.66	12.40	14.96	11.71		
20	1	1	256-QAM	8.92	8.70	8.87	7.94	9.31	8.92	11.47	12.03	11.91		
Limit	EIRP < 23dBm/10MHz			Result									Pass	

Part96 5G FR1 n48 Maximum Average Power [dBm], DG = 3.4 dBi														
BW	RB	RB	Mod	Antenna 4			Antenna 6			Combine			EIRP	EIRP
(MHz)	Size	Offset		Lowest	Middle	Highest	Lowest	Middle	Highest	Lowest	Middle	Highest	(dBm)	(W)
30	1	1	QPSK	9.92	14.14	8.73	8.80	13.59	8.80	12.41	16.88	11.78	20.28	0.107
30	1	76		9.72	13.84	8.06	8.83	13.33	8.68	12.31	16.60	11.39		
30	39	19		9.98	14.06	8.49	8.70	13.35	8.82	12.40	16.73	11.67		
30	1	0		10.05	12.80	8.45	8.96	12.32	8.75	12.55	15.58	11.61		
30	1	77		9.70	12.63	7.96	8.80	12.01	8.60	12.28	15.34	11.30		
30	78	0		9.83	12.86	8.49	8.81	12.01	8.81	12.36	15.47	11.66		
30	1	1	16-QAM	9.88	13.51	8.93	8.99	13.16	8.74	12.47	16.35	11.85	19.75	0.094
30	1	1	64-QAM	9.89	12.51	8.86	8.60	11.44	8.55	12.30	15.02	11.72		
30	1	1	256-QAM	8.89	9.37	8.74	7.91	8.75	8.93	11.44	12.08	11.85		
Limit	EIRP < 23dBm/10MHz			Result									Pass	

Part96 5G FR1 n48 Maximum Average Power [dBm], DG = 3.4 dBi														
BW	RB	RB	Mod	Antenna 4			Antenna 6			Combine			EIRP	EIRP
(MHz)	Size	Offset		Lowest	Middle	Highest	Lowest	Middle	Highest	Lowest	Middle	Highest	(dBm)	(W)
40	1	1	QPSK	10.04	13.92	6.98	8.78	13.55	6.82	12.47	16.75	9.91	20.15	0.104
40	1	104		9.85	13.81	6.06	8.98	13.34	6.83	12.45	16.59	9.47		
40	53	26		9.91	14.08	6.57	8.87	13.37	6.72	12.43	16.75	9.66		
40	1	0		10.00	12.78	6.70	8.97	12.38	6.79	12.53	15.59	9.76		
40	1	105		9.84	12.53	6.07	9.01	11.94	6.81	12.46	15.26	9.47		
40	106	0		9.98	12.76	6.51	8.94	12.15	6.78	12.50	15.48	9.66		
40	1	1	16-QAM	9.87	13.59	7.89	8.89	13.19	7.90	12.42	16.40	10.91	19.80	0.096
40	1	1	64-QAM	8.96	12.34	8.05	7.63	11.51	7.52	11.36	14.96	10.80		
40	1	1	256-QAM	8.90	9.20	8.03	7.90	8.81	7.85	11.44	12.02	10.95		
Limit	EIRP < 23dBm/10MHz			Result									Pass	

Total EIRP power is less than partial EIRP limit 23 dBm/10MHz.



Appendix B. Test Results of Radiated Test

<Ant. 4>

5G FR1 n48

5G FR1 n48 / 20MHz / PI/2 BPSK									
Mode	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	7100	-46.32	-40	-6.32	-46.32	-56.04	1.18	10.90	H
	10650	-56.03	-40	-16.03	-56.03	-66.08	1.48	11.53	H
	14199.7	-55.29	-40	-15.29	-55.29	-65.50	1.68	11.89	H
	7100	-47.11	-40	-7.11	-47.62	-56.83	1.18	10.90	V
	10650	-57.10	-40	-17.10	-56.97	-67.15	1.48	11.53	V
	14199.7	-55.63	-40	-15.63	-55.14	-65.84	1.68	11.89	V
Middle	7230	-45.29	-40	-5.29	-45.29	-54.50	1.20	10.40	H
	10845	-56.03	-40	-16.03	-56.03	-66.21	1.48	11.67	H
	14462	-55.81	-40	-15.81	-55.81	-66.51	1.71	12.42	H
	7230	-44.26	-40	-4.26	-44.26	-53.47	1.20	10.40	V
	10845	-57.18	-40	-17.18	-57.18	-67.36	1.48	11.67	V
	14462	-55.34	-40	-15.34	-55.34	-66.04	1.71	12.42	V
Highest	7360	-40.80	-40	-0.80	-40.8	-50.45	1.18	10.83	H
	11040	-55.45	-40	-15.45	-55.45	-66.13	1.49	12.17	H
	14718.2	-55.55	-40	-15.55	-55.55	-66.40	1.72	12.57	H
	7360	-44.44	-40	-4.44	-44.44	-54.09	1.18	10.83	V
	11040	-56.19	-40	-16.19	-56.19	-66.87	1.49	12.17	V
	14718.2	-54.58	-40	-14.58	-54.58	-65.43	1.72	12.57	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



MIMO <Ant. 4+6>

5G FR1 n48 MIMO

5G FR1 n48 MIMO / 20MHz / QPSK									
Mode	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	7100	-51.24	-40	-11.24	-51.24	-60.96	1.18	10.90	H
	10650	-56.19	-40	-16.19	-56.19	-66.24	1.48	11.53	H
	14199.7	-55.29	-40	-15.29	-55.29	-65.50	1.68	11.89	H
	7100	-51.54	-40	-11.54	-51.54	-61.26	1.18	10.90	V
	10650	-56.87	-40	-16.87	-56.87	-66.92	1.48	11.53	V
	14199.7	-55.26	-40	-15.26	-55.26	-65.47	1.68	11.89	V
Middle	7230	-48.91	-40	-8.91	-48.91	-58.12	1.20	10.40	H
	10845	-56.25	-40	-16.25	-56.25	-66.43	1.48	11.67	H
	14462	-55.17	-40	-15.17	-55.17	-65.87	1.71	12.42	H
	7230	-49.36	-40	-9.36	-49.36	-58.57	1.20	10.40	V
	10845	-57.26	-40	-17.26	-57.26	-67.44	1.48	11.67	V
	14462	-55.31	-40	-15.31	-55.31	-66.01	1.71	12.42	V
Highest	7360	-42.40	-40	-2.40	-42.4	-52.05	1.18	10.83	H
	11040	-55.88	-40	-15.88	-55.88	-66.56	1.49	12.17	H
	14718.2	-55.10	-40	-15.10	-55.1	-65.95	1.72	12.57	H
	7360	-45.65	-40	-5.65	-45.65	-55.30	1.18	10.83	V
	11040	-56.30	-40	-16.30	-56.3	-66.98	1.49	12.17	V
	14718.2	-54.56	-40	-14.56	-54.56	-65.41	1.72	12.57	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

Appendix C. Setup Photographs

<Radiated Emission>

Y Plane

LF



HF



SHF



————THE END————