



FCC RF Test Report

APPLICANT : Inseego Corp.
EQUIPMENT : 5G High Performance Sub6 & mmWave Outdoor CPE
BRAND NAME : Inseego
MODEL NAME : FW2010-1, FW2010e-1
FCC ID : PKRISGFW2010
STANDARD : 47 CFR Part 2, 22, 24
CLASSIFICATION : PCS Licensed Transmitter (PCB)

The product was received on Dec. 16, 2020 and completely tested on Apr. 12, 2021. We, Sporton International (Kunshan) Inc., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.26-2015 and shown compliance with the applicable technical standards.

This product installed a RF module (Brand Name: Inseego, Model Name: MD2000, FCC ID: PKRISGMD2000) during the test, only ERP/EIRP and RSE test items are tested in this report, all the other test results are quoted on module RF report.

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

Jason Jia

Reviewed by: Jason Jia / Supervisor

Alex Wang

Approved by: Alex Wang / Manager



Sporton International (Kunshan) Inc.

**No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300
People's Republic of China**



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG0D1611G	Rev. 01	Initial issue of report	Mar. 29, 2021
FG0D1611G	Rev. 02	Add RSE test results of SA n2/n5/n25	Apr. 13, 2021



SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	§2.1046	Conducted Output Power	Reporting Only	PASS	-
	§22.913(a)(5)	Effective Radiated Power (5G NR n5)	ERP < 7 Watt		
	§24.232(c)	Equivalent Isotropic Radiated Power (5G NR n2) (5G NR n25)	EIRP < 2Watt		
-	§24.232(d)	Peak-to-Average Ratio	<13 dB	PASS	1
-	§2.1049	Occupied Bandwidth	Reporting Only	PASS	1
-	§2.1051 §22.917(a) §24.238(a)	Conducted Band Edge Measurement (5G NR n2) (5G NR n5) (5G NR n25)	< 43+10log10(P[Watts])	PASS	1
-	§2.1051 §22.917(a) §24.238(a)	Conducted Spurious Emission (5G NR n2) (5G NR n5) (5G NR n25)	< 43+10log10(P[Watts])	PASS	1
-	§2.1055 §22.355	Frequency Stability Temperature & Voltage	< 2.5 ppm for Part 22	PASS	1
	§2.1055 §24.235		Within Authorized Band		
4.4	§2.1053 §22.917(a) §24.238(a)	Radiated Spurious Emission (5G NR n2) (5G NR n5) (5G NR n25)	< 43+10log ₁₀ (P[Watts])	PASS	Under limit 31.80 dB at 5613.000 MHz

Remark 1:

- All conducted test items were leveraged from module RF report which can refer to Report No. "FG090125C"(for n2&n25.) & "FG090125-01B"(for n5).
- The maximum power of host is lower than and very close to the module, therefore, we chose higher power of the module to calculate the ERP/EIRP and show in the report.

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:

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.



1 General Description

1.1 Applicant

Inseego Corp.

9710 Scranton Road, Suite 200 San Diego, CA 92121

1.2 Manufacturer

MeiG Smart Technology Co., Ltd

Floor 2, Office Building No.5, Lingxia Road, Fenghuang Community, Fuyong Street, Bao 'an District, Shenzhen

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	5G High Performance Sub6 & mmWave Outdoor CPE
Brand Name	Inseego
Model Name	FW2010-1, FW2010e-1
FCC ID	PKRISGFW2010
EUT supports Radios application	LTE/5G NR/GNSS Bluetooth LE
HW Version	4
SW Version	2.384
EUT Stage	Identical Prototype

Remark:

1. Only 5G NR bands are tested in this report, all the other RF bands are tested in the other reports separately.
2. 5G NR supports CP-OFDM and DFT-s-OFDM modulation, DFT-s-OFDM power is higher than CP-OFDM, thus only DFT-s-OFDM modulation is reported.
3. The maximum ERP/EIRP is calculated from max output power, only the maximum ERP/EIRP is shown on the report.



1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n5 : 824 MHz ~ 849 MHz 5G NR n25 : 1850 MHz ~ 1915 MHz
Rx Frequency	5G NR n2 : 1930 MHz ~ 1990 MHz 5G NR n5 : 869 MHz ~ 894 MHz 5G NR n25 : 1930 MHz ~ 1995 MHz
Bandwidth	n2, n5, n25: 5MHz / 10MHz / 15MHz / 20MHz
SCS	n2, n5, n25: 15kHz
Antenna Gain	5G NR n2: 3.0 dBi 5G NR n5: 5.08 dBi 5G NR n25: 3.0 dBi
Type of Modulation	CP-OFDM: QPSK / 16QAM / 64QAM / 256QAM DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM

1.5 Modification of EUT

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

1.6 Maximum ERP/EIRP Power

5G NR n2		PI/2 BPSK/QPSK	16QAM/64QAM/256QAM
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Maximum EIRP(W)
20	1860.0 ~ 1900.0	0.4677	0.4592

5G NR n5		PI/2 BPSK/QPSK	16QAM/64QAM/256QAM
BW (MHz)	Frequency Range (MHz)	Maximum ERP(W)	Maximum ERP(W)
20	834.0 ~ 839.0	0.4667	0.4560

5G NR n25		PI/2 BPSK/QPSK	16QAM/64QAM/256QAM
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Maximum EIRP(W)
20	1860.0 ~ 1905.0	0.4571	0.4560

Note: Based on engineering evaluation, only the maximum bandwidth and the worst modulation test results are shown in the report.



1.7 Testing Location

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

Test Firm	Sporton International (Kunshan) Inc.		
Test Site Location	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		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	03CH04-KS	CN1257	314309

1.8 Test Software

Item	Site	Manufacture	Name	Version
1.	03CH04-KS	AUDIX	E3	6.2009-8-24a

1.9 Applicable Standards

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

- ♦ 47 CFR Part 2, 22, 24
- ♦ ANSI C63.26-2015
- ♦ FCC KDB 971168 D01 Power Meas License Digital Systems v03r01
- ♦ FCC KDB 412172 D01 Determining ERP and EIRP v01r01

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 are performed according to KDB 971168 D01 Power Meas License Digital Systems v03r01 with maximum output power.

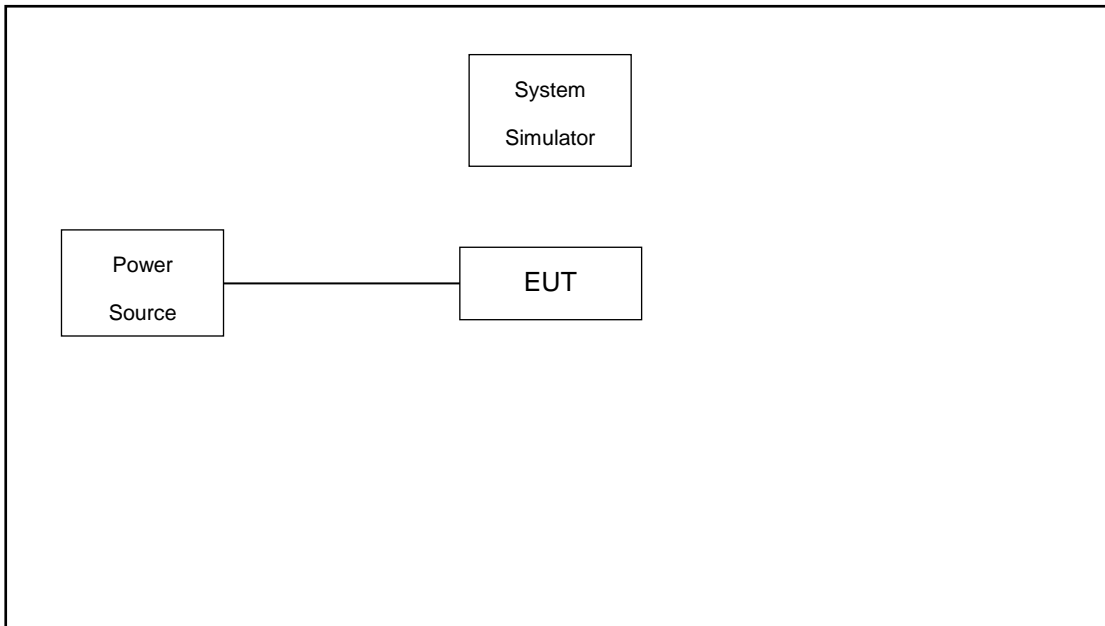
For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Y plane) were recorded in this report.

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.

Orthogonal Planes of EUT	X Plane	Y Plane	Z Plane
			

Test Items	Band	Bandwidth (MHz)						Modulation					RB #			Test Channel		
		5	10	15	20	60	100	PI/2 BPSK	QPSK	16QAM	64QAM	256QAM	1	Half	Full	L	M	H
E.R.P / E.I.R.P	n2	v	v	v	v	-	-	v	v	v	v	v	v	v	v	v	v	v
	n5	v	v	v	v	-	-	v	v	v	v	v	v	v	v	v	v	v
	n25	v	v	v	v	-	-	v	v	v	v	v	v	v	v	v	v	v
Radiated Spurious Emission	n2	Worst Case															v	
	n5	Worst Case															v	
	n25	Worst Case															v	
Note	<ol style="list-style-type: none"> 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. 																	

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	DC Power Supply	GW	GPS-3030D	N/A	N/A	Unshielded, 1.8 m
2.	LTE Base Station	Anritsu	MT8821C	N/A	N/A	Unshielded, 1.8 m
3.	NR Base Station	Anritsu	MT8000	N/A	N/A	Unshielded, 1.8 m



2.4 Frequency List of Low/Middle/High Channels

5G NR n2 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	372000	376000	380000
	Frequency	1860	1880	1900
15	Channel	371500	376000	380500
	Frequency	1857.5	1880	1902.5
10	Channel	371000	376000	381000
	Frequency	1855	1880	1905
5	Channel	370500	376000	381500
	Frequency	1852.5	1880	1907.5

5G NR n5 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	166800	167300	167800
	Frequency	834	836.5	839
15	Channel	166300	167300	168300
	Frequency	831.5	836.5	841.5
10	Channel	165800	167300	168800
	Frequency	829	836.5	844
5	Channel	165300	167300	169300
	Frequency	826.5	836.5	846.5

5G NR n25 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	372000	376500	381000
	Frequency	1860	1882.5	1905
15	Channel	371500	376500	381500
	Frequency	1857.5	1882.5	1907.5
10	Channel	371000	376500	382000
	Frequency	1855	1882.5	1910
5	Channel	370500	376500	382500
	Frequency	1852.5	1882.5	1912.5

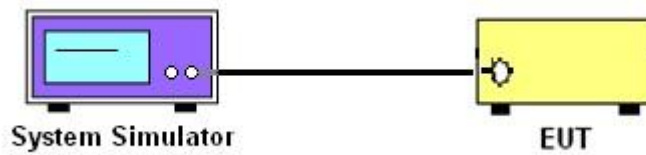
3 Conducted Test Items

3.1 Measuring Instruments

See list of measuring instruments of this test report.

3.2 Test Setup

3.2.1 Conducted Output Power



3.3 Test Result of Conducted Test

Please refer to Appendix A.



3.4 ERP/EIRP

3.4.1 Description of the ERP/EIRP 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.

The ERP of transmitters must not exceed 7 Watts for 5G NR n5.

The EIRP of transmitters must not exceed 2 Watts for 5G NR n2, n25.

According to KDB 412172 D01 Power Approach,

$EIRP = P_T + G_T - L_C$, $ERP = EIRP - 2.15$, where

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

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

3.4.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.2
2. The transmitter output port was connected to the system simulator.
3. Set EUT at maximum power through the system simulator.
4. Select lowest, middle, and highest channels for each band and different modulation.
5. Measure and record the power level from the system simulator.

3.4.3 Test Result of Conducted Test

Please refer to Appendix A.

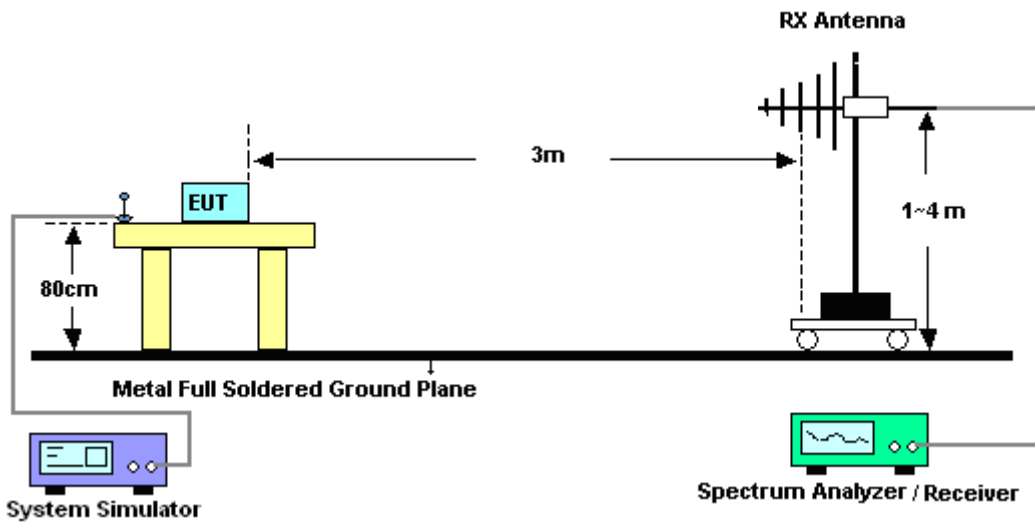
4 Radiated Test Items

4.1 Measuring Instruments

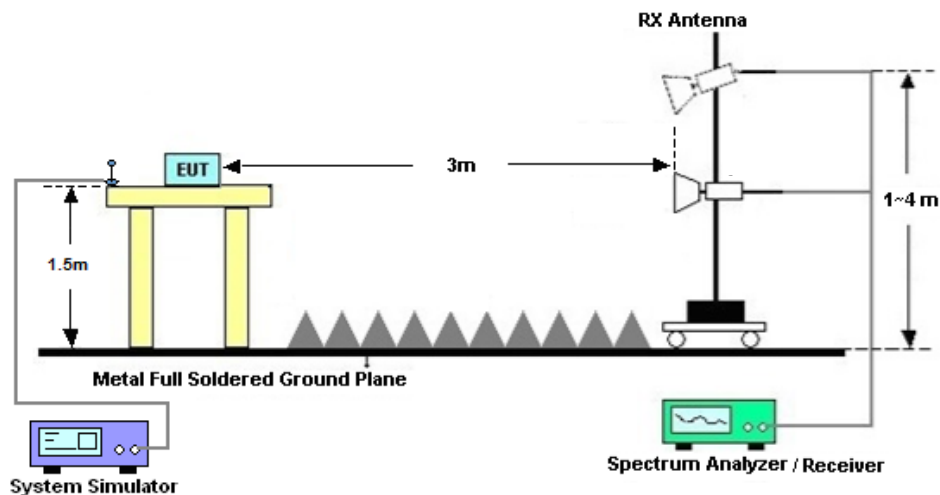
See list of measuring instruments of this test report.

4.2 Test Setup

4.2.1 For radiated test from 30MHz to 1GHz



4.2.2 For radiated test above 1GHz



4.3 Test Result of Radiated Test

Please refer to Appendix B.



4.4 Radiated Spurious Emission

4.4.1 Description of Radiated Spurious Emission

The radiated spurious emission was measured by substitution method according to ANSI C63.26. 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 $43 + 10 \log (P)$ dB.

4.4.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.5
2. 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.
3. The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
5. The height of the receiving antenna is varied between 1m to 4m to search the maximum spurious emission for both horizontal and vertical polarizations.
6. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power.
7. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
8. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
9. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
10. $EIRP (dBm) = S.G. Power - Tx Cable Loss + Tx Antenna Gain$
11. $ERP (dBm) = EIRP - 2.15$
12. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)
 $= P(W) - [43 + 10\log(P)] (dB)$
 $= [30 + 10\log(P)] (dBm) - [43 + 10\log(P)] (dB)$
 $= -13dBm.$



5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EXA Spectrum Analyzer	Keysight	N9010A	MY55150244	10Hz-44G,MAX 30dB	Apr. 15, 2020	Mar. 11, 2021~ Apr. 12, 2021	Apr. 14, 2021	Radiation (03CH04-KS)
Bilog Antenna	TeseQ	CBL6111D	49922	30MHz-1GHz	Jun. 08, 2020	Mar. 11, 2021~ Apr. 12, 2021	Jun. 07, 2021	Radiation (03CH04-KS)
Horn Antenna	Schwarzbeck	BBHA9120D	1356	1GHz~18GHz	Apr. 20, 2020	Mar. 11, 2021~ Apr. 12, 2021	Apr. 19, 2021	Radiation (03CH04-KS)
SHF-EHF Horn	Com-power	AH-840	101115	18GHz~40GHz	Jan. 06, 2021	Mar. 11, 2021~ Apr. 12, 2021	Jan. 05, 2022	Radiation (03CH04-KS)
Amplifier	SONOMA	310N	187289	9KHz-1GHz	Jan. 06, 2021	Mar. 11, 2021~ Apr. 12, 2021	Jan. 05, 2022	Radiation (03CH04-KS)
Amplifier	MITEQ	EM18G40G GA	060728	18~40GHz	Jan. 07, 2021	Mar. 11, 2021~ Apr. 12, 2021	Jan. 06, 2022	Radiation (03CH04-KS)
high gain Amplifier	MITEQ	AMF-7D-00 101800-30-1 0P	2025788	1Ghz-18Ghz	Jan. 06, 2021	Mar. 11, 2021~ Apr. 12, 2021	Jan. 05, 2022	Radiation (03CH04-KS)
Amplifier	Keysight	83017A	MY57280106	500MHz~26.5GHz	Oct. 14, 2020	Mar. 11, 2021~ Apr. 12, 2021	Oct. 13, 2021	Radiation (03CH04-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Mar. 11, 2021~ Apr. 12, 2021	NCR	Radiation (03CH04-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Mar. 11, 2021~ Apr. 12, 2021	NCR	Radiation (03CH04-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Mar. 11, 2021~ Apr. 12, 2021	NCR	Radiation (03CH04-KS)

NCR: No Calibration Required



6 Uncertainty of Evaluation

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.26-2015. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.3dB
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.8dB
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Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.8dB
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Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power and EIRP)

5G NR n2 SA:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Gain	EIRP	EIRP	EIRP
Channel				372000	376000	380000		L	M	H
Frequency (MHz)				1860	1880	1900				
20	PI/2 BPSK	1	1	23.64	23.54	23.24	3.0	0.4613	0.4508	0.4207
20	QPSK	1	1	23.66	23.56	23.66	3.0	0.4634	0.4529	0.4634
20	QPSK	1	104	22.86	23.16	23.46	3.0	0.3855	0.4130	0.4426
20	QPSK	50	25	23.56	23.66	23.70	3.0	0.4529	0.4634	0.4677
20	QPSK	1	0	23.66	23.66	23.56	3.0	0.4634	0.4634	0.4529
20	QPSK	1	105	22.66	23.36	23.26	3.0	0.3681	0.4325	0.4227
20	QPSK	100	0	23.46	23.36	23.46	3.0	0.4426	0.4325	0.4426
20	16QAM	1	1	23.62	22.76	22.76	3.0	0.4592	0.3767	0.3767
20	64QAM	1	1	21.96	21.96	21.96	3.0	0.3133	0.3133	0.3133
20	256QAM	1	1	20.46	20.46	20.56	3.0	0.2218	0.2218	0.2270
Channel				371500	376000	380500	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				1857.5	1880	1902.5				
15	QPSK	1	1	23.48	23.44	23.34	3.0	0.4446	0.4406	0.4305
15	16QAM	1	1	23.36	23.14	22.94	3.0	0.4325	0.4111	0.3926
Channel				371000	376000	381000	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				1855	1880	1905				
10	QPSK	1	1	23.35	23.34	23.34	3.0	0.4315	0.4305	0.4305
10	16QAM	1	1	23.27	23.04	23.04	3.0	0.4236	0.4018	0.4018
Channel				370500	376000	381500	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				1852.5	1880	1907.5				
5	QPSK	1	1	23.16	23.24	23.14	3.0	0.4130	0.4207	0.4111
5	16QAM	1	1	23.41	23.04	22.94	3.0	0.4375	0.4018	0.3926



5G NR n5 SA:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Gain	ERP	ERP	ERP
Channel				166800	167300	167800		L	M	H
Frequency (MHz)				834	836.5	839				
20	PI/2 BPSK	1	1	23.76	23.76	23.73	5.08	0.4667	0.4667	0.4634
20	QPSK	1	1	23.66	23.56	23.66	5.08	0.4560	0.4457	0.4560
20	QPSK	1	104	22.86	23.16	23.46	5.08	0.3793	0.4064	0.4355
20	QPSK	50	25	23.56	23.66	23.76	5.08	0.4457	0.4560	0.4667
20	QPSK	1	0	23.66	23.66	23.56	5.08	0.4560	0.4560	0.4457
20	QPSK	1	105	22.66	23.36	23.26	5.08	0.3622	0.4256	0.4159
20	QPSK	100	0	23.46	23.36	23.46	5.08	0.4355	0.4256	0.4355
20	16QAM	1	1	23.66	22.76	22.76	5.08	0.4560	0.3707	0.3707
20	64QAM	1	1	21.96	21.96	21.96	5.08	0.3083	0.3083	0.3083
20	256QAM	1	1	20.46	20.46	20.56	5.08	0.2183	0.2183	0.2234
Channel				166300	167300	168300	Gain	ERP	ERP	ERP
Frequency (MHz)				831.5	836.5	841.5				
15	QPSK	1	1	23.76	23.66	23.76	5.08	0.4667	0.4560	0.4667
15	16QAM	1	1	23.46	23.16	23.56	5.08	0.4355	0.4064	0.4457
Channel				165800	167300	168800	Gain	ERP	ERP	ERP
Frequency (MHz)				829	836.5	844				
10	QPSK	1	1	23.76	23.66	23.56	5.08	0.4667	0.4560	0.4457
10	16QAM	1	1	22.96	23.16	23.36	5.08	0.3882	0.4064	0.4256
Channel				165300	167300	169300	Gain	ERP	ERP	ERP
Frequency (MHz)				826.5	836.5	846.5				
5	QPSK	1	1	23.76	23.76	23.16	5.08	0.4667	0.4667	0.4064
5	16QAM	1	1	23.26	23.56	22.26	5.08	0.4159	0.4457	0.3304



5G NR n25 SA

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Gain	EIRP	EIRP	EIRP
Channel				372000	376500	381000		L	M	H
Frequency (MHz)				1860	1882.5	1905				
20	PI/2 BPSK	1	1	23.54	23.24	22.94	3.00	0.4508	0.4207	0.3926
20	QPSK	1	1	23.34	23.60	22.84	3.00	0.4305	0.4571	0.3837
20	QPSK	1	104	23.24	22.62	22.84	3.00	0.4207	0.3648	0.3837
20	QPSK	50	25	23.14	23.24	23.14	3.00	0.4111	0.4207	0.4111
20	QPSK	1	0	23.54	23.34	22.84	3.00	0.4508	0.4305	0.3837
20	QPSK	1	105	23.24	22.64	22.84	3.00	0.4207	0.3664	0.3837
20	QPSK	100	0	23.14	23.14	23.04	3.00	0.4111	0.4111	0.4018
20	16QAM	1	1	23.59	23.24	22.74	3.00	0.4560	0.4207	0.3750
20	64QAM	1	1	22.84	22.54	22.04	3.00	0.3837	0.3581	0.3192
20	256QAM	1	1	20.64	20.24	19.64	3.00	0.2312	0.2109	0.1837
Channel				371500	376500	381500	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				1857.5	1882.5	1907.5				
15	QPSK	1	1	23.60	23.44	22.94	3.00	0.4571	0.4406	0.3926
15	16QAM	1	1	23.54	23.44	22.84	3.00	0.4508	0.4406	0.3837
Channel				371000	376500	382000	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				1855	1882.5	1910				
10	QPSK	1	1	23.55	23.44	23.14	3.00	0.4519	0.4406	0.4111
10	16QAM	1	1	23.44	23.44	23.04	3.00	0.4406	0.4406	0.4018
Channel				370500	376500	382500	Gain	EIRP	EIRP	EIRP
Frequency (MHz)				1852.5	1882.5	1912.5				
5	QPSK	1	1	23.59	23.34	23.04	3.00	0.4560	0.4305	0.4018
5	16QAM	1	1	23.54	23.34	23.14	3.00	0.4508	0.4305	0.4111



Appendix B. Test Results of Radiated Test

Radiated Spurious Emission_SA Mode

5G NR n2 / 20MHz / PI/2 BPSK DFT-s-OFDM								
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3747	-55.34	-13	-42.34	-67.60	2.64	14.90	H
	5613	-54.91	-13	-41.91	-66.77	2.94	14.80	H
	7488	-52.99	-13	-39.99	-62.76	3.39	13.16	H
	3741	-56.46	-13	-43.46	-68.72	2.64	14.90	V
	5613	-55.65	-13	-42.65	-67.51	2.94	14.80	V
	7488	-52.94	-13	-39.94	-62.71	3.39	13.16	V

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

5G NR n5 / 20MHz / PI/2 BPSK DFT-s-OFDM								
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1656	-64.76	-13	-51.76	-71.73	1.58	10.70	H
	2482	-56.91	-13	-43.91	-65.16	2.10	12.50	H
	3312	-59.53	-13	-46.53	-68.42	2.86	13.90	H
	1656	-64.04	-13	-51.04	-71.01	1.58	10.70	V
	2482	-56.47	-13	-43.47	-64.72	2.10	12.50	V
	3312	-60.04	-13	-47.04	-68.93	2.86	13.90	V

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

5G NR n25 / 20MHz / PI/2 BPSK DFT-s-OFDM								
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3747	-57.22	-13	-44.22	-69.48	2.64	14.90	H
	5622	-55.86	-13	-42.86	-67.72	2.94	14.80	H
	7500	-53.31	-13	-40.31	-63.08	3.39	13.16	H
	3747	-57.17	-13	-44.17	-69.43	2.64	14.90	V
	5622	-56.37	-13	-43.37	-68.23	2.94	14.80	V
	7500	-53.13	-13	-40.13	-62.90	3.39	13.16	V

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



Radiated Spurious Emission_NSA Mode

EN-DC_5A_n2A / LTE 10MHz + NR 20MHz / PI/2 BPSK DFT-s-OFDM								
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3741	-57.85	-13	-44.85	-70.11	2.64	14.90	H
	5613	-55.66	-13	-42.66	-67.52	2.94	14.80	H
	7488	-52.98	-13	-39.98	-62.75	3.39	13.16	H
	3741	-57.20	-13	-44.20	-69.46	2.64	14.90	V
	5613	-51.86	-13	-38.86	-63.72	2.94	14.80	V
	7488	-52.94	-13	-39.94	-62.71	3.39	13.16	V

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

EN-DC_12A_n2A / LTE 10MHz + NR 20MHz / PI/2 BPSK DFT-s-OFDM								
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3741	-57.70	-13	-44.70	-69.96	2.64	14.90	H
	5613	-55.97	-13	-42.97	-67.83	2.94	14.80	H
	7488	-52.85	-13	-39.85	-62.62	3.39	13.16	H
	3741	-57.70	-13	-44.70	-69.96	2.64	14.90	V
	5613	-54.38	-13	-41.38	-66.24	2.94	14.80	V
	7488	-53.00	-13	-40.00	-62.77	3.39	13.16	V

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

EN-DC_13A_n2A / LTE 10MHz + NR 20MHz / PI/2 BPSK DFT-s-OFDM								
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3741	-57.63	-13	-44.63	-69.89	2.64	14.90	H
	5613	-56.05	-13	-43.05	-67.91	2.94	14.80	H
	7488	-52.95	-13	-39.95	-62.72	3.39	13.16	H
	3741	-57.55	-13	-44.55	-69.81	2.64	14.90	V
	5613	-54.79	-13	-41.79	-66.65	2.94	14.80	V
	7488	-52.65	-13	-39.65	-62.42	3.39	13.16	V

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



EN-DC_14A_n2A / LTE 10MHz + NR 20MHz / PI/2 BPSK DFT-s-OFDM								
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3471	-57.60	-13	-44.60	-69.86	2.64	14.90	H
	5613	-54.28	-13	-41.28	-66.14	2.94	14.80	H
	7488	-52.68	-13	-39.68	-62.45	3.39	13.16	H
	3471	-58.23	-13	-45.23	-70.49	2.64	14.90	V
	5613	-54.80	-13	-41.80	-66.66	2.94	14.80	V
	7488	-52.88	-13	-39.88	-62.65	3.39	13.16	V

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

EN-DC_30A_n2A / LTE 10MHz + NR 20MHz / PI/2 BPSK DFT-s-OFDM								
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3741	-57.40	-13	-44.40	-69.66	2.64	14.90	H
	5613	-54.67	-13	-41.67	-66.53	2.94	14.80	H
	7488	-53.06	-13	-40.06	-62.83	3.39	13.16	H
	3741	-56.56	-13	-43.56	-68.82	2.64	14.90	V
	5613	-56.19	-13	-43.19	-68.05	2.94	14.80	V
	7488	-53.11	-13	-40.11	-62.88	3.39	13.16	V

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

EN-DC_48A_n2A / LTE 10MHz + NR 20MHz / PI/2 BPSK DFT-s-OFDM								
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3741	-50.86	-13	-37.86	-63.12	2.64	14.90	H
	5613	-55.55	-13	-42.55	-67.41	2.94	14.80	H
	7488	-52.95	-13	-39.95	-62.72	3.39	13.16	H
	3741	-50.45	-13	-37.45	-62.71	2.64	14.90	V
	5613	-56.18	-13	-43.18	-68.04	2.94	14.80	V
	7488	-53.09	-13	-40.09	-62.86	3.39	13.16	V

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



EN-DC_66A_n2A / LTE 10MHz + NR 20MHz / PI/2 BPSK DFT-s-OFDM								
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3741	-57.59	-13	-44.59	-69.85	2.64	14.90	H
	5613	-50.02	-13	-37.02	-61.88	2.94	14.80	H
	7488	-53.36	-13	-40.36	-63.13	3.39	13.16	H
	3741	-57.41	-13	-44.41	-69.67	2.64	14.90	V
	5613	-44.80	-13	-31.80	-56.66	2.94	14.80	V
	7488	-52.75	-13	-39.75	-62.52	3.39	13.16	V

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

EN-DC_2A_n5A / LTE 10MHz + NR 20MHz / PI/2 BPSK DFT-s-OFDM								
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1656	-65.67	-13	-52.67	-72.64	1.58	10.70	H
	2482	-60.85	-13	-47.85	-69.10	2.10	12.50	H
	3312	-61.46	-13	-48.46	-70.35	2.86	13.90	H
	1656	-64.70	-13	-51.70	-71.67	1.58	10.70	V
	2482	-58.58	-13	-45.58	-66.83	2.10	12.50	V
	3312	-61.54	-13	-48.54	-70.43	2.86	13.90	V

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

EN-DC_7A_n5A / LTE 10MHz + NR 20MHz / PI/2 BPSK DFT-s-OFDM								
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1656	-65.94	-13	-52.94	-72.91	1.58	10.70	H
	2482	-61.40	-13	-48.40	-69.65	2.10	12.50	H
	3312	-61.63	-13	-48.63	-70.52	2.86	13.90	H
	1656	-64.85	-13	-51.85	-71.82	1.58	10.70	V
	2482	-59.47	-13	-46.47	-67.72	2.10	12.50	V
	3312	-61.65	-13	-48.65	-70.54	2.86	13.90	V

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



EN-DC_30A_n5A / LTE 10MHz + NR 20MHz / PI/2 BPSK DFT-s-OFDM								
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1656	-65.85	-13	-52.85	-72.82	1.58	10.70	H
	2482	-61.04	-13	-48.04	-69.29	2.10	12.50	H
	3312	-60.67	-13	-47.67	-69.56	2.86	13.90	H
	1656	-64.99	-13	-51.99	-71.96	1.58	10.70	V
	2482	-58.65	-13	-45.65	-66.90	2.10	12.50	V
	3312	-60.58	-13	-47.58	-69.47	2.86	13.90	V

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

EN-DC_48A_n5A / LTE 10MHz + NR 20MHz / PI/2 BPSK DFT-s-OFDM								
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1656	-65.48	-13	-52.48	-72.45	1.58	10.70	H
	2482	-61.17	-13	-48.17	-69.42	2.10	12.50	H
	3312	-60.29	-13	-47.29	-69.18	2.86	13.90	H
	1656	-64.58	-13	-51.58	-71.55	1.58	10.70	V
	2482	-58.98	-13	-45.98	-67.23	2.10	12.50	V
	3312	-60.64	-13	-47.64	-69.53	2.86	13.90	V

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

EN-DC_66A_n5A / LTE 10MHz + NR 20MHz / PI/2 BPSK DFT-s-OFDM								
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1656	-65.95	-13	-52.95	-72.92	1.58	10.70	H
	2482	-61.17	-13	-48.17	-69.42	2.10	12.50	H
	3312	-60.59	-13	-47.59	-69.48	2.86	13.90	H
	1656	-64.97	-13	-51.97	-71.94	1.58	10.70	V
	2482	-59.38	-13	-46.38	-67.63	2.10	12.50	V
	3312	-60.58	-13	-47.58	-69.47	2.86	13.90	V

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



EN-DC_12A_n25A / LTE 10MHz + NR 20MHz / PI/2 BPSK DFT-s-OFDM								
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3747	-57.59	-13	-44.59	-69.85	2.64	14.90	H
	5619	-55.98	-13	-42.98	-67.84	2.94	14.80	H
	7500	-52.93	-13	-39.93	-62.70	3.39	13.16	H
	3747	-57.30	-13	-44.30	-69.56	2.64	14.90	V
	5619	-55.09	-13	-42.09	-66.95	2.94	14.80	V
	7500	-52.69	-13	-39.69	-62.46	3.39	13.16	V

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

EN-DC_66A_n25A / LTE 10MHz + NR 20MHz / PI/2 BPSK DFT-s-OFDM								
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3747	-57.18	-13	-44.18	-69.44	2.64	14.90	H
	5622	-55.49	-13	-42.49	-67.35	2.94	14.80	H
	7500	-51.89	-13	-38.89	-61.66	3.39	13.16	H
	3747	-56.72	-13	-43.72	-68.98	2.64	14.90	V
	5622	-55.95	-13	-42.95	-67.81	2.94	14.80	V
	7500	-52.42	-13	-39.42	-62.19	3.39	13.16	V

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