



# FCC RADIO TEST REPORT

**FCC ID** : PKRISGM2000B  
**Equipment** : Wireless Hotspot Modem  
**Brand Name** : Inseego  
**Model Name** : M2000B  
**Marketing Name** : M2000  
**Applicant** : Inseego Corporation  
9710 Scranton Road Suite 200, San Diego, CA 92121  
**Manufacturer** : Inseego Corporation  
9710 Scranton Road Suite 200, San Diego, CA 92121  
**Standard** : FCC 47 CFR Part 2, 24(E), 27

The product was received on Jul. 30, 2020 and testing was started from Dec. 24, 2020 and completed on Mar. 04, 2021. We, Sporton International Inc. EMC & Wireless Communications Laboratory, 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 variant report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

*Louis Wu*

Approved by: Louis Wu

**Sporton International Inc. EMC & Wireless Communications Laboratory**  
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)



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### Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.2	§2.1046	Conducted Output Power	Reporting only	-
	§27.50 (c)(10)	Effective Radiated Power (n71)	Pass	
	§24.232 (c) §27.50 (h)(2)	Equivalent Isotropic Radiated Power (n2) (n25) (n41)		
	§27.50 (d)(4)	Equivalent Isotropic Radiated Power (n66)		
-	§24.232 (d) §27.50 (d)(5)	Peak-to-Average Ratio	Not Required	-
-	§2.1049	Occupied Bandwidth	Not Required	-
-	§2.1051 §24.238 (a) §27.53 (g) §27.53 (h)	Conducted Band Edge Measurement (n2) (n25) (n66) (n71)	Not Required	-
	§2.1051 §27.53 (m)(4)	Conducted Band Edge Measurement (n41)		
-	§2.1051 §24.238 (a) §27.53 (g) §27.53 (h)	Conducted Spurious Emission (n2) (n25) (n66) (n71)	Not Required	-
	§2.1051 §27.53 (m)(4)	Conducted Spurious Emission (n41)		
-	§2.1055 §24.235 §27.54	Frequency Stability Temperature & Voltage	Not Required	-
4.2	§2.1053 §24.238 (a) §27.53 (g) §27.53 (h)	Radiated Spurious Emission (n2) (n25) (n66) (n71)	Pass	Under limit 18.55 dB at 9645.000 MHz
	§2.1051 §27.53 (m)(4)	Radiated Spurious Emission (n41)		

**Remark:** This is a variant report by enable SA mode for 5G NR n25, n41, and n71 by software. All the test cases were performed on original report which can be referred to Sporton Report Number FG041658-01C as appendix D. Based on the original report, the test cases were verified.



**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.

**Reviewed by: Wii Chang**

**Report Producer: Tina Chuang**



# 1 General Description

## 1.1 Product Feature of Equipment Under Test

WCDMA/LTE/5G NR, Wi-Fi 2.4GHz 802.11b/g/n/ax, Wi-Fi 5GHz 802.11a/n/ac/ax and GNSS.

Product Specification subjective to this standard	
Antenna Type	WWAN: Fixed Internal Antenna WLAN: <Ant. 1>: Fixed Internal Antenna <Ant. 2>: Fixed Internal Antenna GPS: Fixed Internal Antenna
Antenna Gain	<Ant. 0>: 5G NR n71: 0.0 dBi <Ant. 8>: 5G NR n25: 0.9 dBi 5G NR n41: 0.6 dBi

**Remark:** The above EUT's information was declared by manufacturer. Please refer to Comments and Explanations in report summary.

## 1.2 Modification of EUT

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



### 1.3 Testing Location

<b>Test Site</b>	Sporton International Inc. EMC & Wireless Communications Laboratory
<b>Test Site Location</b>	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
<b>Test Site No.</b>	<b>Sporton Site No.</b> TH05-HY
<b>Test Engineer</b>	Ricahrd Qiu
<b>Temperature</b>	19.1~24.5°C
<b>Relative Humidity</b>	40.5~61.2%

<b>Test Site</b>	Sporton International Inc. Wensan Laboratory.
<b>Test Site Location</b>	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
<b>Test Site No.</b>	<b>Sporton Site No.</b> 03CH12-HY (TAF Code: 3786)
<b>Test Engineer</b>	Jack Cheng, Lance Chiang and Chuan Chu
<b>Temperature</b>	24.3~26.4°C
<b>Relative Humidity</b>	58~66%
<b>Remark</b>	The Radiated test item subcontracted to Sporton International Inc. Wensan Laboratory.

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

FCC Designation No.: TW1190 and TW0007

### 1.4 Applicable 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, 24(E), 27
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- ♦ FCC KDB 412172 D01 Determining ERP and EIRP v01r01
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01.

**Remark:**

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. The TAF code is not including all the FCC KDB listed without accreditation.



## 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.

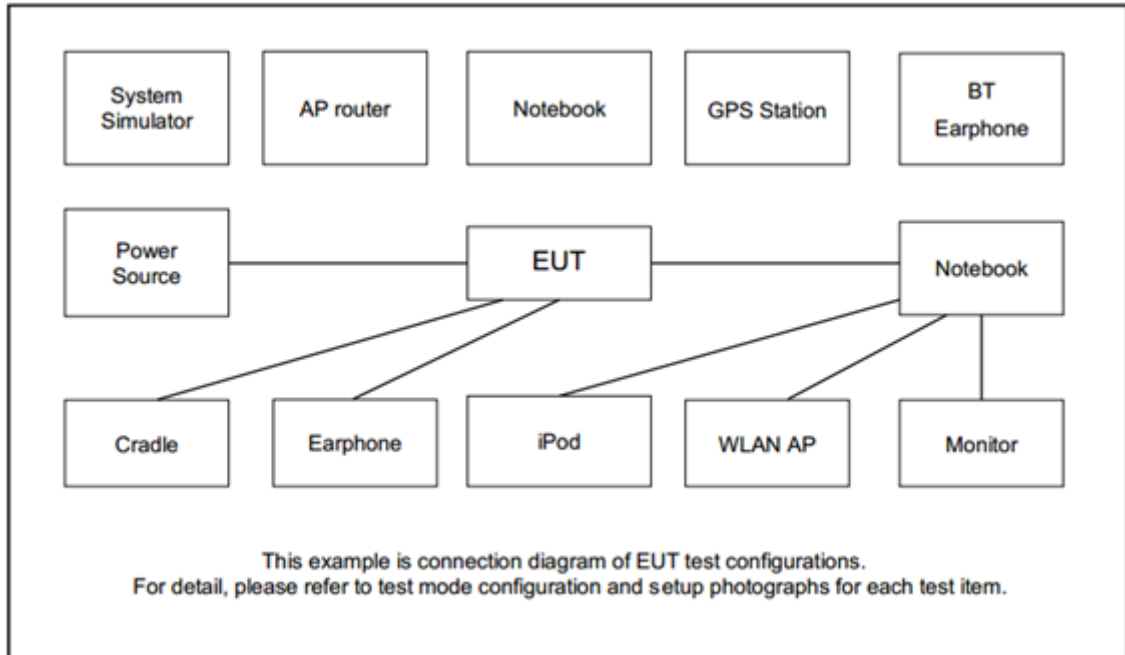
For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Y Plane) were recorded in this report.

Test Items	NR Band	Bandwidth (MHz)						Modulation					RB #			Test Channel			
		5	10	15	20	40	50	PI/2 BPSK	QPSK	16QAM	64QAM	256QAM	1	Half	Full	L	M	H	
Max. Output Power	n25	v	v	v	v	-	-	v	v	v	v	v	v	v	v	v	v	v	v
	n71	v	v	v	v	-	-	v	v	v	v	v	v	v	v	v	v	v	v
E.R.P / E.I.R.P	n25	v	v	v	v	-	-	v	v	v	v	v	Max Power						
	n71	v	v	v	v	-	-	v	v	v	v	v							
Radiated Spurious Emission	n25				v	-	-	v						v			v	v	v
	n71				v	-	-	v						v			v	v	v
Remark	<ol style="list-style-type: none"> <li>The mark "v " means that this configuration is chosen for testing</li> <li>The mark "- " means that this bandwidth is not supported.</li> <li>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.</li> <li>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, and the worst modes of FR1 and LTE for simultaneous transmission were verified and compliant.</li> <li>All the radiated test cases were performed with Battery2.</li> </ol>																		

Test Items	NR Band	Bandwidth (MHz)									Modulation					RB #			Test Channel		
		10	15	20	40	50	60	80	90	100	PI/2 BPSK	QPSK	16QAM	64QAM	256QAM	1	Half	Full	L	M	H
Max. Output Power	n41			v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
E.R.P / E.I.R.P	n41			v	v	v	v	v	v	v	v	v	v	v	Max Power						
Radiated Spurious Emission	n41									v	v					v			v	v	v
Remark	<ol style="list-style-type: none"> <li>The mark "v " means that this configuration is chosen for testing</li> <li>The mark "- " means that this bandwidth is not supported.</li> <li>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.</li> <li>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, and the worst modes of FR1 and LTE for simultaneous transmission were verified and compliant.</li> <li>All the radiated test cases were performed with Battery2.</li> </ol>																				



## 2.2 Connection Diagram of Test System



## 2.3 Support Unit used in test configuration and system

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 Band 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

5G NR Band n41 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
100	Channel	509202	518598	528000
	Frequency	2546.01	2592.99	2640
90	Channel	508200	518598	528996
	Frequency	2541	2592.99	2644.98
80	Channel	507204	518598	529998
	Frequency	2536.02	2592.99	2649.99
60	Channel	505200	518598	531996
	Frequency	2526	2592.99	2659.98
50	Channel	504204	518598	532998
	Frequency	2521.02	2592.99	2664.99
40	Channel	503202	518598	534000
	Frequency	2516.01	2592.99	2670
20	Channel	501204	518598	535998
	Frequency	2506.02	2592.99	2679.99



<b>5G NR Band n71 Channel and Frequency List</b>				
<b>BW [MHz]</b>	<b>Channel/Frequency(MHz)</b>	<b>Lowest</b>	<b>Middle</b>	<b>Highest</b>
20	Channel	134600	136100	137600
	Frequency	673	680.5	688
15	Channel	134100	136100	138100
	Frequency	670.5	680.5	690.5
10	Channel	133600	136100	138600
	Frequency	668	680.5	693
5	Channel	133100	136100	139100
	Frequency	665.5	680.5	695.5

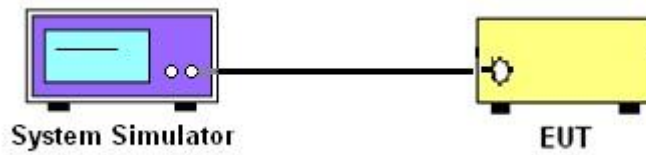
### 3 Conducted Test Items

#### 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 and ERP/EIRP

### 3.2.1 Description of the Conducted Output Power Measurement and 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 mobile transmitters must not exceed 3 Watts for 5G NR n71

The EIRP of mobile transmitters must not exceed 2 Watts for 5G NR n25 and n41

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

### 3.2.2 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.

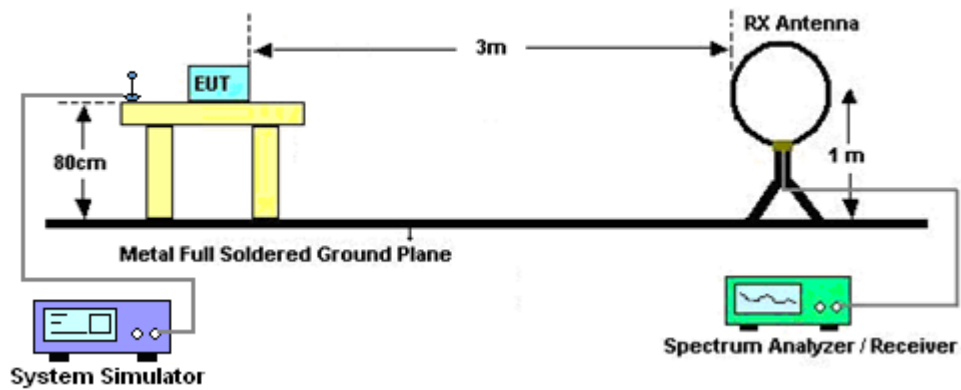
## 4 Radiated Test Items

### 4.1 Measuring Instruments

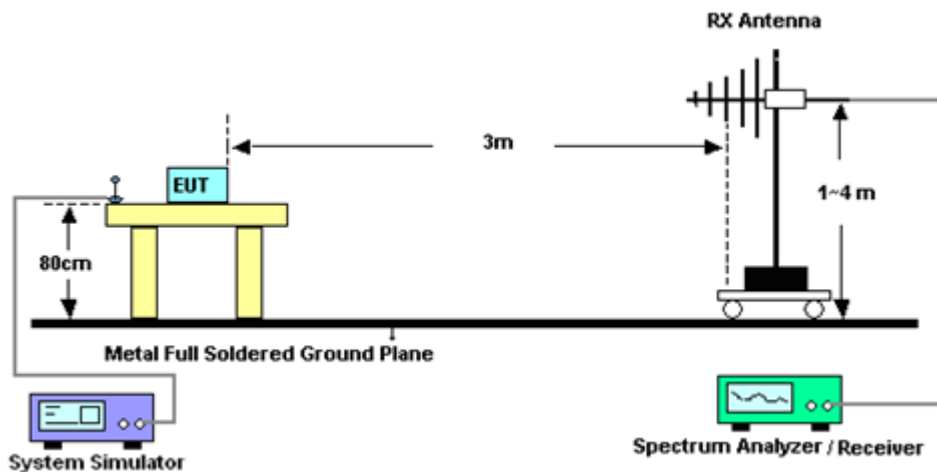
See list of measuring instruments of this test report.

#### 4.1.1 Test Setup

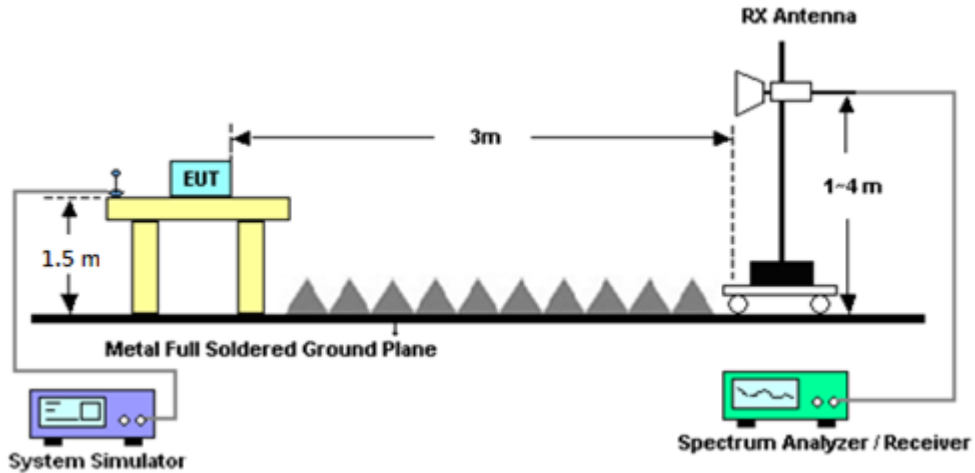
For radiated test below 30MHz



For radiated test from 30MHz to 1GHz



For radiated test above 1GHz



#### 4.1.2 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 a comparison data 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.



## 4.2 Radiated Spurious Emission Measurement

### 4.2.1 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  $43 + 10 \log (P)$  dB.

For 5G NR n41

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  $55 + 10 \log (P)$  dB.

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

### 4.2.2 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 for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the receiving antenna, which was 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 one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. 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)

For 5G NR n41

The limit line is derived from  $55 + 10\log(P)$ dB below the transmitter power P(Watts)





## 5 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Jul. 14, 2020	Dec. 24, 2020~ Dec. 25, 2020	Jul. 13, 2021	Radiation (03CH12-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N -06	40103 & 07	30MHz~1GHz	Apr. 29, 2020	Dec. 24, 2020~ Dec. 25, 2020	Apr. 28, 2021	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-1212	1GHz~18GHz	May 20, 2020	Dec. 24, 2020~ Dec. 25, 2020	May 19, 2021	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120D	9120D-1241	1GHz ~ 18GHz	Jul. 15, 2020	Dec. 24, 2020~ Dec. 25, 2020	Jul. 14, 2021	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA917025 1	18GHz~40GHz	Dec. 02, 2020	Dec. 24, 2020~ Dec. 25, 2020	Dec. 01, 2021	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA917098 0	18GHz ~ 40GHz	Jan. 10, 2020	Dec. 24, 2020~ Dec. 25, 2020	Jan. 09, 2021	Radiation (03CH12-HY)
Preamplifier	COM-POWER	PA-103	161075	10MHz~1GHz	Mar. 25, 2020	Dec. 24, 2020~ Dec. 25, 2020	Mar. 24, 2021	Radiation (03CH12-HY)
Preamplifier	Keysight	83017A	MY57280120	1GHz~26.5GHz	Jul. 20, 2020	Dec. 24, 2020~ Dec. 25, 2020	Jul. 19, 2021	Radiation (03CH12-HY)
Preamplifier	Jet-Power	JPA0118-55-3 03K	1710001800 054002	1GHz~18GHz	Feb. 07, 2020	Dec. 24, 2020~ Dec. 25, 2020	Feb. 06, 2021	Radiation (03CH12-HY)
Preamplifier	EMEC	EM18G40G	060801	18GHz~40GHz	Jun. 15, 2020	Dec. 24, 2020~ Dec. 25, 2020	Jun. 14, 2021	Radiation (03CH12-HY)
Spectrum Analyzer	Agilent	N9010A	MY54200485	10Hz~44GHz	Feb. 10, 2020	Dec. 24, 2020~ Dec. 25, 2020	Feb. 09, 2021	Radiation (03CH12-HY)
Signal Generator	Anritsu	MG3694C	163401	0.1Hz~40GHz	Feb. 15, 2020	Dec. 24, 2020~ Dec. 25, 2020	Feb. 14, 2021	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4PE	9kHz~30MHz	Mar. 12, 2020	Dec. 24, 2020~ Dec. 25, 2020	Mar. 11, 2021	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126E	0058/126E	30MHz~18GHz	Dec. 11, 2020	Dec. 24, 2020~ Dec. 25, 2020	Dec. 10, 2021	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30MHz~40GHz	Feb. 25, 2020	Dec. 24, 2020~ Dec. 25, 2020	Feb. 24, 2021	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	800740/2	30MHz~40GHz	Feb. 25, 2020	Dec. 24, 2020~ Dec. 25, 2020	Feb. 24, 2021	Radiation (03CH12-HY)
Hygrometer	TECPEL	DTM-303B	TP140349	N/A	Oct. 02, 2020	Dec. 24, 2020~ Dec. 25, 2020	Oct. 01, 2021	Radiation (03CH12-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	Dec. 24, 2020~ Dec. 25, 2020	N/A	Radiation (03CH12-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	Dec. 24, 2020~ Dec. 25, 2020	N/A	Radiation (03CH12-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Dec. 24, 2020~ Dec. 25, 2020	N/A	Radiation (03CH12-HY)
Software	Audix	E3 6.2009-8-24	RK-000989	N/A	N/A	Dec. 24, 2020~ Dec. 25, 2020	N/A	Radiation (03CH12-HY)



Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Programmable Power Supply	GW Instek	PSS-2005	EL890001	50Hz~60Hz	Oct. 05, 2020	Jan. 08, 2021~ Mar. 04, 2021	Oct. 04, 2021	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101907	10Hz~40GHz	May 14, 2020	Jan. 08, 2021~ Mar. 04, 2021	May 13, 2021	Conducted (TH05-HY)
Temperature Chamber	ESPEC	SU-241	92003713	-30°C ~95°C	May 15, 2020	Jan. 08, 2021~ Mar. 04, 2021	May 14, 2021	Conducted (TH05-HY)
Hygrometer	Testo	34893241	608-H1	NA	Mar. 02, 2020	Jan. 08, 2021~ Feb. 28, 2021	Mar. 01, 2021	Conducted (TH05-HY)
Hygrometer	Testo	34893241	608-H1	NA	Feb. 28, 2021	Mar. 01, 2021~ Mar. 04, 2021	Feb. 27, 2022	Conducted (TH05-HY)
Base Station (Measure)	Anritsu	MT8000A	6261940327	FR1	Sep. 23, 2020	Jan. 08, 2021~ Mar. 04, 2021	Sep. 22, 2021	Conducted (TH05-HY)



## 6 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	3.07
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### Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	3.21
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### Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	3.80
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## Appendix A. Test Results of Conducted Test

### Conducted Output Power(Average power) and ERP/EIRP

NR n25 Maximum Average Power [dBm] (GT - LC = 0.9 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)
5	1	1	PI/2 BPSK	22.76	22.42	22.66	23.86	0.2432
5	1	23		22.80	22.56	22.69		
5	12	6		22.95	22.52	22.77		
5	1	0		22.82	22.54	22.63		
5	1	24		22.86	22.56	22.40		
5	25	0		22.92	22.58	22.78		
5	1	1	QPSK	22.93	22.53	22.74		
5	1	23		22.96	22.72	22.72		
5	12	6		22.93	22.55	22.77		
5	1	0		22.95	22.53	22.62		
5	1	24		22.92	22.65	22.61		
5	25	0		22.93	22.60	22.76		
5	1	1	16-QAM	22.79	22.55	22.60	23.69	0.2339
5	1	1	64-QAM	21.56	21.17	21.45		
5	1	1	256-QAM	18.92	18.42	18.81		
Limit	EIRP < 3W			Result			Pass	

NR n25 Maximum Average Power [dBm] (GT - LC = 0.9 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)
10	1	1	PI/2 BPSK	22.86	22.41	22.71	23.86	0.2432
10	1	50		22.80	22.43	22.68		
10	25	12		22.89	22.52	22.91		
10	1	0		22.94	22.38	22.70		
10	1	51		22.84	22.44	22.65		
10	50	0		22.91	22.61	22.92		
10	1	1	QPSK	22.96	22.50	22.90		
10	1	50		22.93	22.59	22.74		
10	25	12		22.93	22.47	22.86		
10	1	0		22.92	22.48	22.83		
10	1	51		22.92	22.60	22.75		
10	50	0		22.93	22.53	22.89		
10	1	1	16-QAM	22.94	22.43	22.73	23.84	0.2421
10	1	1	64-QAM	21.73	21.13	21.49		
10	1	1	256-QAM	19.05	18.54	18.82		
Limit	EIRP < 2W			Result			Pass	



NR n25 Maximum Average Power [dBm] (GT - LC = 0.9 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)
15	1	1	PI/2 BPSK	22.93	22.61	22.77	23.86	0.2432
15	1	77		22.74	22.59	22.74		
15	36	18		22.93	22.60	22.88		
15	1	0		22.87	22.53	22.77		
15	1	78		22.51	22.53	22.73		
15	75	0		22.96	22.63	22.85		
15	1	1	QPSK	22.94	22.64	22.86		
15	1	77		22.82	22.64	22.79		
15	36	18		22.93	22.62	22.89		
15	1	0		22.90	22.47	22.90		
15	1	78		22.81	22.58	22.80		
15	75	0		22.92	22.63	22.87		
15	1	1	16-QAM	22.92	22.15	22.72	23.82	0.241
15	1	1	64-QAM	21.67	21.24	21.44		
15	1	1	256-QAM	19.00	18.59	18.87		
Limit	EIRP < 2W			Result			Pass	

NR n25 Maximum Average Power [dBm] (GT - LC = 0.9 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)
20	1	1	PI/2 BPSK	22.97	22.24	22.97	23.87	0.2438
20	1	104		22.20	22.59	22.77		
20	50	25		22.90	22.58	22.81		
20	1	0		22.95	22.20	22.86		
20	1	105		22.18	22.62	22.75		
20	100	0		22.88	22.59	22.88		
20	1	1	QPSK	22.93	22.35	22.79		
20	1	104		22.05	22.71	22.88		
20	50	25		22.90	22.62	22.83		
20	1	0		22.92	22.28	22.92		
20	1	105		22.14	22.72	22.89		
20	100	0		22.93	22.61	22.95		
20	1	1	16-QAM	22.96	21.48	22.52	23.86	0.2432
20	1	1	64-QAM	21.75	21.15	21.66		
20	1	1	256-QAM	19.05	18.71	18.98		
Limit	EIRP < 2W			Result			Pass	



NR n41 Maximum Average Power [dBm] (GT - LC = 0.6 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)
20	1	1	PI/2 BPSK	21.57	22.10	20.90	22.7	0.1862
20	1	49		21.57	21.90	21.63		
20	25	12		21.66	22.10	21.15		
20	1	0		18.00	18.54	17.43		
20	1	50		18.01	18.40	18.03		
20	50	0		21.07	21.53	20.69		
20	1	1	QPSK	21.47	22.09	20.88		
20	1	49		21.55	21.88	21.52		
20	25	12		21.60	22.06	21.07		
20	1	0		17.95	18.48	17.38		
20	1	50		17.95	18.35	17.97		
20	50	0		20.59	21.00	20.15		
20	1	1	16-QAM	20.54	21.20	19.98	21.8	0.1514
20	1	1	64-QAM	19.04	19.68	18.57		
20	1	1	256-QAM	16.84	17.35	16.43		
Limit	EIRP < 2W			Result			Pass	



NR n41 Maximum Average Power [dBm] (GT - LC = 0.6 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)
40	1	1	PI/2 BPSK	22.19	22.40	21.22	23	0.1995
40	1	104		21.23	22.24	21.73		
40	50	25		21.69	22.25	20.86		
40	1	0		18.67	19.01	17.68		
40	1	105		18.82	18.82	18.62		
40	100	0		18.52	21.90	20.86		
40	1	1	QPSK	22.16	22.34	21.19		
40	1	104		21.19	22.22	21.66		
40	50	25		21.20	22.40	20.85		
40	1	0		18.66	18.98	17.65		
40	1	105		18.80	18.80	18.60		
40	100	0		21.23	21.45	20.28		
40	1	1	16-QAM	21.25	21.63	20.10	22.23	0.1671
40	1	1	64-QAM	19.67	19.90	18.93		
40	1	1	256-QAM	17.68	18.03	16.50		
Limit	EIRP < 2W			Result			Pass	

NR n41 Maximum Average Power [dBm] (GT - LC = 0.6 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)
50	1	1	PI/2 BPSK	21.90	22.30	20.91	22.9	0.195
50	1	131		21.86	21.87	21.60		
50	64	32		21.79	22.23	20.77		
50	1	0		18.25	18.74	17.50		
50	1	132		18.40	18.36	18.19		
50	128	0		21.37	21.67	20.44		
50	1	1	QPSK	21.88	22.26	20.88		
50	1	131		21.80	21.85	21.57		
50	64	32		21.75	22.20	20.74		
50	1	0		18.22	18.72	17.44		
50	1	132		18.35	18.34	18.15		
50	128	0		20.82	21.16	19.88		
50	1	1	16-QAM	20.73	21.31	20.01	21.91	0.1552
50	1	1	64-QAM	19.25	19.88	18.55		
50	1	1	256-QAM	17.29	17.72	16.19		
Limit	EIRP < 2W			Result			Pass	



NR n41 Maximum Average Power [dBm] (GT - LC = 0.6 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)
60	1	1	PI/2 BPSK	21.94	22.19	21.40	22.85	0.1928
60	1	160		21.84	21.80	21.70		
60	81	40		19.22	22.25	20.76		
60	1	0		18.25	18.70	17.88		
60	1	161		18.45	18.26	18.30		
60	162	0		21.52	21.60	20.13		
60	1	1	QPSK	21.80	22.13	21.36	21.84	0.1528
60	1	160		21.72	21.72	21.63		
60	81	40		21.88	22.22	20.69		
60	1	0		18.22	18.65	17.82		
60	1	161		18.43	18.22	18.26		
60	162	0		20.80	21.15	20.10		
60	1	1	16-QAM	20.99	21.24	20.51	21.84	0.1528
60	1	1	64-QAM	19.44	19.94	18.93		
60	1	1	256-QAM	17.39	17.68	16.66		
Limit	EIRP < 2W			Result			Pass	





NR n41 Maximum Average Power [dBm] (GT - LC = 0.6 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
80	1	1	PI/2 BPSK	21.72	22.13	21.56	22.73	0.1875		
80	1	215		21.68	21.02	21.33				
80	108	54		20.89	21.90	20.70				
80	1	0		18.20	18.52	18.09				
80	1	216		18.19	17.50	17.86				
80	216	0		18.35	21.33	20.47				
80	1	1	QPSK	21.70	22.11	21.50			21.82	0.1521
80	1	215		21.65	21.00	21.30				
80	108	54		20.82	21.88	20.63				
80	1	0		18.17	18.47	18.02				
80	1	216		18.14	17.46	17.85				
80	216	0		20.70	20.81	20.00				
80	1	1	16-QAM	20.72	21.22	20.75	21.82	0.1521		
80	1	1	64-QAM	19.13	19.58	19.31				
80	1	1	256-QAM	17.00	17.44	17.04				
Limit	EIRP < 2W			Result			Pass			

NR n41 Maximum Average Power [dBm] (GT - LC = 0.6 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
90	1	1	PI/2 BPSK	21.70	22.10	21.78	22.7	0.1862		
90	1	243		21.55	20.91	21.31				
90	120	60		21.77	21.92	20.75				
90	1	0		18.13	18.59	18.27				
90	1	244		18.03	17.44	17.78				
90	240	0		20.92	21.25	19.03				
90	1	1	QPSK	21.68	22.02	21.75			21.68	0.1472
90	1	243		21.48	20.86	21.24				
90	120	60		21.71	21.84	20.70				
90	1	0		18.08	18.55	18.25				
90	1	244		17.96	17.42	17.75				
90	240	0		20.78	20.72	20.03				
90	1	1	16-QAM	20.70	21.08	20.89	21.68	0.1472		
90	1	1	64-QAM	19.30	19.58	19.53				
90	1	1	256-QAM	17.23	17.28	17.24				
Limit	EIRP < 2W			Result			Pass			



NR n41 Maximum Average Power [dBm] (GT - LC = 0.6 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)
100	1	1	PI/2 BPSK	21.89	22.43	21.89	23.03	0.2009
100	1	271		21.70	20.85	21.35		
100	135	67		21.50	21.94	21.00		
100	1	0		18.20	18.65	18.30		
100	1	272		17.80	17.35	17.99		
100	270	0		21.24	21.30	20.82		
100	1	1	QPSK	21.80	22.19	21.73		
100	1	271		21.35	20.82	21.52		
100	135	67		21.45	21.92	20.99		
100	1	0		18.19	18.68	18.29		
100	1	272		17.78	17.30	17.95		
100	270	0		21.20	20.84	20.29		
100	1	1	16-QAM	21.00	21.13	21.01	21.73	0.1489
100	1	1	64-QAM	19.35	19.55	19.48		
100	1	1	256-QAM	17.30	17.52	17.23		
Limit	EIRP < 2W			Result			Pass	



NR n71 Maximum Average Power [dBm] (GT - LC = 0 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP(W)		
5	1	1	PI/2 BPSK	23.16	22.80	22.67	21.01	0.1262		
5	1	23		22.94	22.72	22.50				
5	12	6		23.11	22.91	22.66				
5	1	0		22.79	22.44	22.29				
5	1	24		22.60	22.38	22.11				
5	25	0		22.79	22.51	22.28				
5	1	1	QPSK	23.15	22.96	22.86			20.59	0.1146
5	1	23		23.06	22.81	22.65				
5	12	6		23.12	22.82	22.63				
5	1	0		22.86	22.54	22.46				
5	1	24		22.64	22.40	22.22				
5	25	0		22.75	22.52	22.29				
5	1	1	16-QAM	22.74	22.49	22.28	20.59	0.1146		
5	1	1	64-QAM	21.47	21.21	21.12				
5	1	1	256-QAM	18.89	18.53	18.42				
Limit	ERP < 3W			Result			Pass			

NR n71 Maximum Average Power [dBm] (GT - LC = 0 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP(W)		
10	1	1	PI/2 BPSK	23.06	22.66	22.68	21.01	0.1262		
10	1	50		22.77	22.65	22.46				
10	25	12		23.08	22.96	22.73				
10	1	0		22.70	22.29	22.29				
10	1	51		22.36	22.26	22.03				
10	50	0		22.61	22.53	22.31				
10	1	1	QPSK	23.16	22.77	22.78			20.54	0.1132
10	1	50		22.85	22.78	22.54				
10	25	12		23.05	22.94	22.71				
10	1	0		22.76	22.44	22.40				
10	1	51		22.51	22.40	22.18				
10	50	0		22.69	22.49	22.29				
10	1	1	16-QAM	22.69	22.29	22.31	20.54	0.1132		
10	1	1	64-QAM	21.37	21.04	20.98				
10	1	1	256-QAM	18.74	18.35	18.31				
Limit	ERP < 3W			Result			Pass			



NR n71 Maximum Average Power [dBm] (GT - LC = 0 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP(W)		
15	1	1	PI/2 BPSK	22.91	22.82	22.65	20.87	0.1222		
15	1	77		22.66	22.73	22.54				
15	36	18		22.87	22.82	22.67				
15	1	0		22.51	22.26	22.42				
15	1	78		22.35	22.37	22.09				
15	75	0		22.40	22.42	22.33				
15	1	1	QPSK	23.02	22.91	22.71			20.44	0.1107
15	1	77		22.70	22.68	22.43				
15	36	18		22.86	22.79	22.66				
15	1	0		22.70	22.36	22.34				
15	1	78		22.39	22.28	22.10				
15	75	0		22.46	22.40	22.18				
15	1	1	16-QAM	22.59	22.48	22.30	20.44	0.1107		
15	1	1	64-QAM	21.29	21.19	20.88				
15	1	1	256-QAM	18.62	18.34	18.26				
Limit	ERP < 3W			Result			Pass			

NR n71 Maximum Average Power [dBm] (GT - LC = 0 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP(W)		
20	1	1	PI/2 BPSK	23.19	23.12	22.88	21.04	0.1271		
20	1	104		22.74	22.86	22.56				
20	50	25		22.96	22.95	22.81				
20	1	0		22.68	22.60	22.50				
20	1	105		22.37	22.38	22.19				
20	100	0		22.63	22.53	22.41				
20	1	1	QPSK	23.17	23.08	23.05			20.52	0.1127
20	1	104		22.81	22.64	22.63				
20	50	25		22.99	22.95	22.78				
20	1	0		22.72	22.46	22.63				
20	1	105		22.42	22.30	22.23				
20	100	0		22.62	22.54	22.44				
20	1	1	16-QAM	22.67	22.53	22.51	20.52	0.1127		
20	1	1	64-QAM	21.37	21.19	21.20				
20	1	1	256-QAM	18.68	18.44	18.46				
Limit	ERP < 3W			Result			Pass			



# Appendix B. Test Results of Radiated Test

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## 5G NR n25

SA NR n25 / 20MHz / PI/2 BPSK									
Channel	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	3702	-56.19	-13	-43.19	-74.12	-67.40	1.41	12.62	H
	5553	-51.42	-13	-38.42	-74.58	-62.98	1.74	13.30	H
	7405	-47.67	-13	-34.67	-74.48	-56.98	1.94	11.25	H
									H
									H
	3702	-56.21	-13	-43.21	-74.29	-67.42	1.41	12.62	V
	5553	-51.92	-13	-38.92	-74.61	-63.48	1.74	13.30	V
	7405	-47.64	-13	-34.64	-74.3	-56.95	1.94	11.25	V
									V
									V
Middle	3747	-56.06	-13	-43.06	-74.19	-67.28	1.42	12.65	H
	5621	-51.68	-13	-38.68	-74.81	-63.24	1.74	13.30	H
	7495	-47.49	-13	-34.49	-73.87	-56.61	1.99	11.11	H
									H
									H
	3747	-55.84	-13	-42.84	-74.18	-67.06	1.42	12.65	V
	5621	-52.33	-13	-39.33	-75.1	-63.89	1.74	13.30	V
	7495	-47.71	-13	-34.71	-74.06	-56.83	1.99	11.11	V
									V
									V



Highest	3792	-55.22	-13	-42.22	-73.55	-66.46	1.44	12.68	H
	5688	-51.99	-13	-38.99	-75.46	-63.56	1.73	13.30	H
	7585	-48.31	-13	-35.31	-74.23	-57.43	2.00	11.12	H
									H
									H
	3792	-54.97	-13	-41.97	-73.56	-66.21	1.44	12.68	V
	5688	-52.29	-13	-39.29	-75.23	-63.86	1.73	13.30	V
	7585	-48.36	-13	-35.36	-74.23	-57.48	2.00	11.12	V
									V
									V

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



5G NR n41

SA NR n41 / 100MHz / PI/2 BPSK									
Channel	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	4822	-52.85	-25	-27.85	-74.31	-63.95	1.54	12.64	H
	7233	-47.16	-25	-22.16	-73.96	-56.84	1.85	11.53	H
	9645	-44.56	-25	-19.56	-74.24	-53.71	2.29	11.44	H
									H
									H
	4822	-53.14	-25	-28.14	-73.99	-64.24	1.54	12.64	V
	7233	-47.74	-25	-22.74	-74.28	-57.42	1.85	11.53	V
	9645	-43.55	-25	-18.55	-74.15	-52.70	2.29	11.44	V
									V
									V
Middle	5096	-52.48	-25	-27.48	-74.46	-63.58	1.63	12.73	H
	7644	-48.46	-25	-23.46	-74.32	-57.58	2.01	11.13	H
	10193	-44.14	-25	-19.14	-74.18	-52.89	2.40	11.15	H
									H
									H
	5096	-53.32	-25	-28.32	-74.99	-64.42	1.63	12.73	V
	7644	-48.69	-25	-23.69	-74.45	-57.81	2.01	11.13	V
	10193	-43.80	-25	-18.80	-74.22	-52.55	2.40	11.15	V
									V
									V



Highest	5190	-52.32	-25	-27.32	-74.26	-63.53	1.66	12.87	H
	7785	-47.93	-25	-22.93	-73.85	-57.06	2.03	11.16	H
	10381	-43.84	-25	-18.84	-74.37	-52.44	2.39	11.00	H
									H
									H
	5190	-53.37	-25	-28.37	-75.13	-64.58	1.66	12.87	V
	7785	-48.08	-25	-23.08	-73.72	-57.21	2.03	11.16	V
	10381	-44.10	-25	-19.10	-74.6	-52.70	2.39	11.00	V
									V
									V

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





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**5G NR n71**

SA NR n71 / 20MHz / PI/2 BPSK									
Channel	Frequency ( MHz )	ERP ( 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	1328	-61.71	-13	-48.71	-70.85	-68.19	0.83	7.31	H
	1992	-60.96	-13	-47.96	-71.74	-69.89	1.04	9.97	H
	2656	-59.10	-13	-46.10	-72.91	-68.80	1.19	10.89	H
									H
									H
	1328	-62.80	-13	-49.80	-71.1	-69.28	0.83	7.31	V
	1992	-62.13	-13	-49.13	-71.94	-71.06	1.04	9.97	V
	2656	-58.86	-13	-45.86	-72.64	-68.56	1.19	10.89	V
									V
									V
Middle	1344	-60.48	-13	-47.48	-69.72	-67.03	0.83	7.38	H
	2016	-60.86	-13	-47.86	-72.01	-69.84	1.04	10.02	H
	2688	-58.84	-13	-45.84	-72.79	-68.57	1.20	10.93	H
									H
									H
	1344	-62.16	-13	-49.16	-70.47	-68.71	0.83	7.38	V
	2016	-61.70	-13	-48.70	-71.85	-70.68	1.04	10.02	V
	2688	-58.49	-13	-45.49	-72.4	-68.22	1.20	10.93	V
									V
									V



Highest	1360	-60.92	-13	-47.92	-70.25	-67.54	0.83	7.46	H
	2040	-59.82	-13	-46.82	-71.4	-68.83	1.05	10.06	H
	2720	-58.31	-13	-45.31	-72.4	-68.07	1.20	10.96	H
									H
									H
	1360	-61.95	-13	-48.95	-70.27	-68.57	0.83	7.46	V
	2040	-58.67	-13	-45.67	-69.22	-67.68	1.05	10.06	V
	2720	-58.49	-13	-45.49	-72.53	-68.25	1.20	10.96	V
									V
									V

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