



FCC RADIO TEST REPORT

FCC ID : PKRISGFW2000
Equipment : 5G CPE Wireless Solution
Brand Name : Inseego
Model Name : FW2000
Marketing Name : FW2000,FW2000e
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, 22(H), 24(E), 27

The product was received on Jul. 09, 2021 and testing was started from Jul. 16, 2021 and completed on Jul. 28, 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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History of this test report

Report No.	Version	Description	Issued Date
FG082512-04	01	Initial issue of report	Aug. 05, 2021

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 (h)(2)	Conducted Output Power (n7) (n38) (n41)	Not Required	
	§22.913 (a)(2)	Effective Radiated Power (n5)	Pass	
	§27.50 (c)(9)	Effective Radiated Power (n12) (n71)	Not Required	
	§24.232 (c)	Equivalent Isotropic Radiated Power (n2) (n25)	Pass	
	§27.50 (d)(4)	Equivalent Isotropic Radiated Power (n66)	Pass	
	-	Equivalent Isotropic Radiated Power (n77) (n78)	Not Required	
	§27.50 (j)(2)	Equivalent Isotropic Radiated Power Power Density	Not Required	
-	§24.232 (d) §27.50 (d)(5) 27.50 (j)(4)	Peak-to-Average Ratio	Not Required	-
-	§2.1049	Occupied Bandwidth	Not Required	-
-	§2.1051 §22.917 (a) §24.238 (a) §27.53 (g) §27.53 (h) §27.53 (l)(1)	Conducted Band Edge Measurement (n2) (n5) (n12) (n25) (n66) (n71) (n77) (n78)	Not Required	-
	§2.1051 §27.53 (m)(2)(v)	Conducted Band Edge Measurement (n7) (n38) (n41)		
-	§2.1051 §22.917 (a) §24.238 (a) §27.53 (g) §27.53 (h) §27.53 (l)(1)	Conducted Spurious Emission (n2) (n5) (n12) (n25) (n66) (n71) (n77) (n78)	Not Required	-
	§2.1051 §27.53 (m)(2)(v)	Conducted Spurious Emission (n7) (n38) (n41)		
-	§2.1055 §22.355 §24.235 §27.54	Frequency Stability Temperature & Voltage	Not Required	-



Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
4.2	§2.1053 §22.917 (a) §24.238 (a) §27.53 (g) §27.53 (h) §27.53 (l)(1)	Radiated Spurious Emission (n2) (n5) (n12) (n25) (n66) (n71) (n77) (n78)	Pass	Under limit 6.50 dB at 5553.000 MHz
	§2.1051 §27.53 (m)(2)(v)	Radiated Spurious Emission (n7) (n38) (n41)		

Remark:

1. Not required means after assessing, test items are not necessary to carry out.
2. This is a variant report by changing software. All the test cases were performed on original report which can be referred to Sporton Report Number FG082512-01B. 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: Lewis Ho**Report Producer: Celery Wei**

1 General Description

1.1 Product Feature of Equipment Under Test

LTE/5G NR, Bluetooth and GNSS.

Product Specification subjective to this standard	
Antenna Type	WWAN: Fixed Internal Antenna Bluetooth: Fixed Internal Antenna GPS/Glonass/Galileo/BDS : Fixed Internal Antenna
Antenna Gain	<Ant. 0>: <Main Antenna>: 5G NR n2: 9.1 dBi 5G NR n5: 2.4 dBi 5G NR n7: 10.3dBi 5G NR n12: 3.3 dBi 5G NR n38: 6.0 dBi 5G NR n41: 10.3 dB 5G NR n66: 8.5 dBi 5G NR n71: 3.1 dBi <Aux. Antenna>: 5G NR n2: 10.4 dBi 5G NR n5: 4.1 dBi 5G NR n7: 9.5 dBi 5G NR n12: 2.8 dBi 5G NR n38: 6.0 dBi 5G NR n41: 10.3 dB 5G NR n66: 11.8 dBi 5G NR n71: 3.3 dBi <Ant. 1>: <Main Antenna>: 5G NR n5: 4.0 dBi <Aux. Antenna>: 5G NR n5: 3.3 dBi <Ant. 4>: 5G NR n77: 13.3 dBi 5G NR n78: 13.3 dBi <Ant. 8>: <Main Antenna>: 5G NR n2: 9.1 dBi 5G NR n25: 9.1 dBi 5G NR n41: 10.3 dB 5G NR n66: 8.5 dBi <Aux. Antenna>: 5G NR n2: 10.4 dBi 5G NR n25: 9.5 dBi 5G NR n41: 10.3 dB 5G NR n66: 11.8 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

Test Site	Sporton International Inc. EMC & Wireless Communications Laboratory
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	Sporton Site No. TH03-HY
Test Engineer	Ivy Yeh
Temperature	23~25.3℃
Relative Humidity	47.7~53.7%

Test Site	Sporton International Inc. Wensan Laboratory.
Test Site Location	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
Test Site No.	Sporton Site No. 03CH12-HY (TAF Code: 3786)
Test Engineer	Jack Cheng, Lance Chiang and Chuan Chu
Temperature	24.3~26.4℃
Relative Humidity	58~66%
Remark	The Radiated Spurious Emission 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 TW3786



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, 22(H), 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

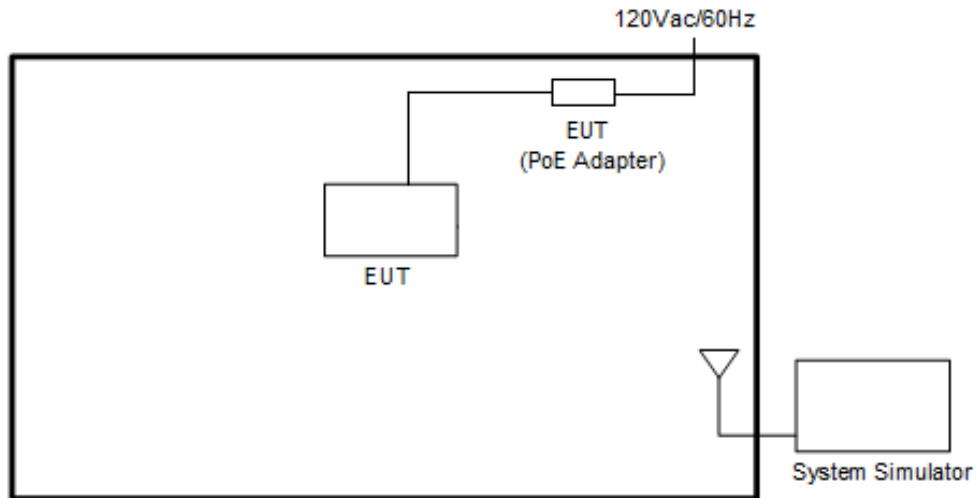
2.1 Test Mode

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.

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 find Y Plane for EN-DC 30A_n5A, EN-DC 14A_n2A, EN-DC 30A_n2A, EN-DC 30A_n66A; X Plane for EN-DC 14A_n66A as worst plane.

Test Items	NR Band	Bandwidth (MHz)							Modulation					RB #			Test Channel		
		5	10	15	20	30	40	50	PI/2 BPSK	QPSK	16QAM	64QAM	256QAM	1	Half	Full	L	M	H
Max. Output Power	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
	n66	v	v	v	v	-	-	-	v	v	v	v	v	v	v	v	v	v	v
E.R.P / E.I.R.P	n2	v	v	v	v	-	-	-	v	v	v	v	v	Max. Power					
	n5	v	v	v	v	-	-	-	v	v	v	v	v	Max. Power					
	n66	v	v	v	v	-	-	-	v	v	v	v	v	Max. Power					
Radiated Spurious Emission	n2	Worst Case														v	v	v	
	n5	Worst Case														v	v	v	
	n66	Worst Case														v	v	v	
Remark	1. The mark “v ” means that this configuration is chosen for testing 2. The mark “-” means that this bandwidth is not supported. 3. 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. 4. Test combination are EN-DC30A-n5A, EN-DC 14A-n2A, EN-DC 30A-n2A, EN-DC 14A-n66A and EN-DC 30A-n66A. 5. 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.																		

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.	System Simulator	Anritsu	MT8821C	N/A	N/A	Unshielded, 1.8 m
2.	System Simulator	Anritsu	MT8000A	N/A	N/A	Unshielded, 1.8 m

2.4 Frequency List of Low/Middle/High Channels

5G NR Band 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 Band 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 Band n66 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	344000	346500	349000
	Frequency	1720	1732.5	1745
15	Channel	343500	346500	349500
	Frequency	1717.5	1732.5	1747.5
10	Channel	343000	346500	350000
	Frequency	1715	1732.5	1750
5	Channel	342500	346500	350500
	Frequency	1712.5	1732.5	1752.5

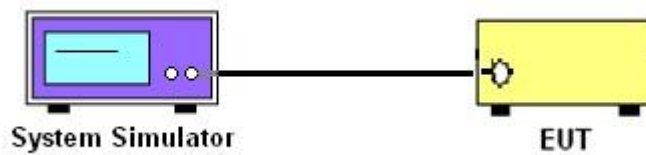
3 Conducted Test Items

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 transmitters must not exceed 7 Watts for 5G NR n5

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

The EIRP of transmitters must not exceed 1 Watts for 5G NR n66

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.

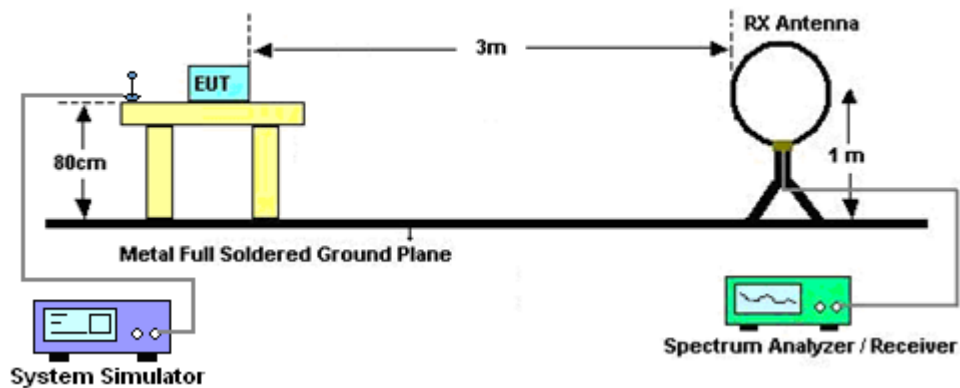
4 Radiated Test Items

4.1 Measuring Instruments

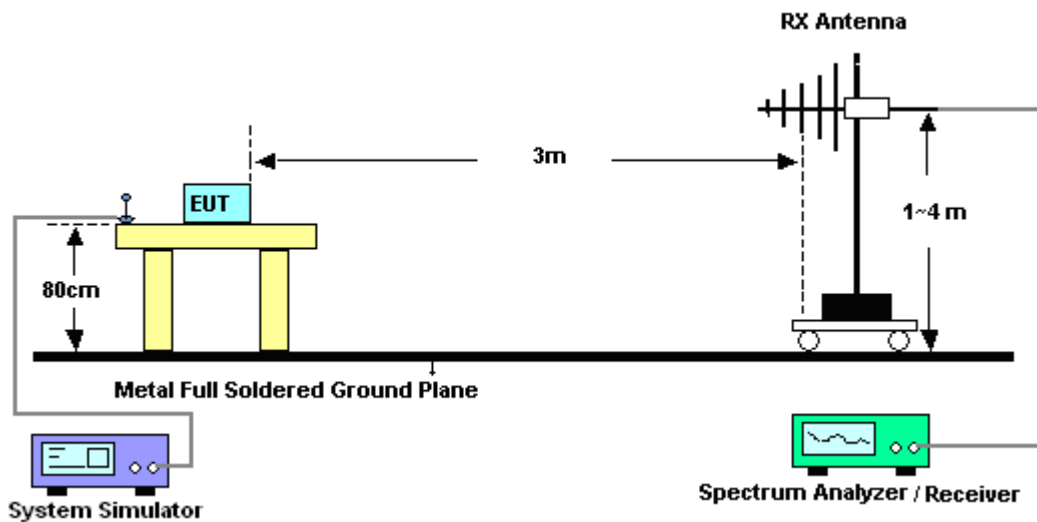
See list of measuring instruments of this test report.

4.1.1 Test Setup

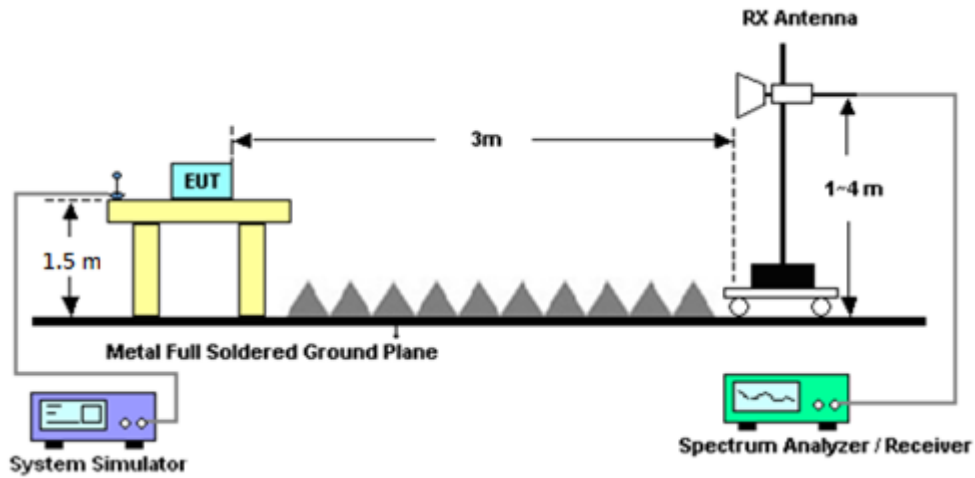
For radiated emissions below 30MHz



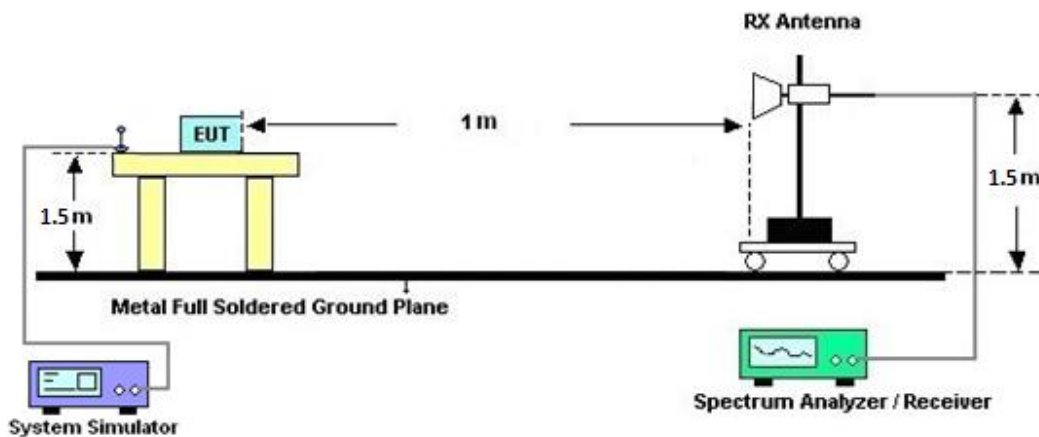
For radiated test from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated emissions above 18GHz



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 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.

4.2 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.

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)

$EIRP \text{ (dBm)} = S.G. \text{ Power} - Tx \text{ Cable Loss} + Tx \text{ Antenna Gain}$

$ERP \text{ (dBm)} = EIRP - 2.15$



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	100315	9 kHz~30 MHz	Jan. 04, 2021	Jul. 18, 2021~ Jul. 22, 2021	Jan. 03, 2022	Radiation (03CH12-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N -06	37059 & 01	30MHz~1GHz	Oct. 11, 2020	Jul. 18, 2021~ Jul. 22, 2021	Oct. 10, 2021	Radiation (03CH12-HY)
Bilog Antenna	TESEQ	CBL 6111D & N-6-06	35414 & AT-N0602	30MHz~1GHz	Oct. 11, 2020	Jul. 18, 2021~ Jul. 22, 2021	Oct. 10, 2021	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-1328	1GHz~18GHz	Nov. 23, 2020	Jul. 18, 2021~ Jul. 22, 2021	Nov. 22, 2021	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-1212	1GHz~18GHz	May 18, 2021	Jul. 18, 2021~ Jul. 22, 2021	May 17, 2022	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	00993	18GHz~40GHz	Nov. 19, 2020	Jul. 18, 2021~ Jul. 22, 2021	Nov. 18, 2021	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA917098 0	18GHz~40GHz	Jun. 11, 2021	Jul. 18, 2021~ Jul. 22, 2021	Jun. 10, 2022	Radiation (03CH12-HY)
Preamplifier	COM-POWER	PA-103	161075	10MHz~1GHz	Mar. 24, 2021	Jul. 18, 2021~ Jul. 22, 2021	Mar. 23, 2022	Radiation (03CH12-HY)
Preamplifier	Keysight	83017A	MY53270080	1GHz~26.5GHz	Nov. 12, 2020	Jul. 18, 2021~ Jul. 22, 2021	Nov. 11, 2021	Radiation (03CH12-HY)
Preamplifier	Jet-Power	JPA0118-55-3 03K	1710001800 054002	1GHz~18GHz	Jun. 16, 2021	Jul. 18, 2021~ Jul. 22, 2021	Jun. 15, 2022	Radiation (03CH12-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz~40GHz	Dec. 11, 2020	Jul. 18, 2021~ Jul. 22, 2021	Dec. 10, 2021	Radiation (03CH12-HY)
Spectrum Analyzer	Agilent	N9010A	MY53470118	10Hz~44GHz	Sep. 14, 2020	Jul. 18, 2021~ Jul. 22, 2021	Sep. 13, 2021	Radiation (03CH12-HY)
Signal Generator	Rohde & Schwarz	SMB100A	101107	100kHz~40GHz	Dec. 04, 2020	Jul. 18, 2021~ Jul. 22, 2021	Dec. 03, 2021	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126E	0058/126E	30MHz~18GHz	Dec. 11, 2020	Jul. 18, 2021~ Jul. 22, 2021	Dec. 10, 2021	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30MHz~40GHz	Feb. 22, 2021	Jul. 18, 2021~ Jul. 22, 2021	Feb. 21, 2022	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	800740/2	30MHz~40GHz	Feb. 22, 2021	Jul. 18, 2021~ Jul. 22, 2021	Feb. 21, 2022	Radiation (03CH12-HY)
Filter	Wainwright	WLKS1200-12 SS	SN2	1.2GHz Low Pass Filter	Mar. 17, 2021	Jul. 18, 2021~ Jul. 22, 2021	Mar. 16, 2022	Radiation (03CH12-HY)
Filter	Wainwright	WHKX12-1080 -1200-15000-6 OSS	SN1	1.2GHz High Pass Filter	Mar. 17, 2021	Jul. 18, 2021~ Jul. 22, 2021	Mar. 16, 2022	Radiation (03CH12-HY)
Filter	Wainwright	WHKX12-2700 -3000-18000-6 OSS	SN3	3GHz High Pass Filter	Sep. 14, 2020	Jul. 18, 2021~ Jul. 22, 2021	Sep. 13, 2021	Radiation (03CH12-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	Jul. 18, 2021~ Jul. 22, 2021	N/A	Radiation (03CH12-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	Jul. 18, 2021~ Jul. 22, 2021	N/A	Radiation (03CH12-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Jul. 18, 2021~ Jul. 22, 2021	N/A	Radiation (03CH12-HY)
Software	Audix	E3 6.2009-8-24	RK-000989	N/A	N/A	Jul. 18, 2021~ Jul. 22, 2021	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	Jul. 16, 2021~ Jul. 28, 2021	Oct. 04, 2021	Conducted (TH03-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101397	10Hz~40GHz	Nov. 27, 2020	Jul. 16, 2021~ Jul. 28, 2021	Nov. 26, 2021	Conducted (TH03-HY)
Temperature Chamber	ESPEC	SU-241	92003713	-30℃ ~95℃	May 21, 2021	Jul. 16, 2021~ Jul. 28, 2021	May 20, 2022	Conducted (TH03-HY)
Hygrometer	Testo	608-H11	3489324	NA	Jan. 18, 2021	Jul. 16, 2021~ Jul. 28, 2021	Jan. 17, 2022	Conducted (TH03-HY)
Base Station (Measure)	Anritsu	MT8821C	6261849015	LTE	Sep. 18, 2020	Jul. 16, 2021~ Jul. 28, 2021	Sep. 17, 2021	Conducted (TH03-HY)
Base Station (Measure)	Anritsu	MT8000A	6261940327	FR1	Sep. 23, 2020	Jul. 16, 2021~ Jul. 28, 2021	Sep. 22, 2021	Conducted (TH03-HY)



6 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	3.10
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	3.39
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Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	4.34
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Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power) and ERP/EIRP

NR n2 Maximum Average Power [dBm] (GT - LC = 9.1 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
5	1	1	PI/2 BPSK	22.60	22.74	22.86	31.96	1.5704		
5	1	23		22.50	22.84	22.76				
5	12	6		22.58	22.82	22.78				
5	1	0		22.10	22.24	22.36				
5	1	24		22.01	22.43	22.31				
5	25	0		22.13	22.37	22.41				
5	1	1	QPSK	22.44	22.63	22.70				
5	1	23		22.45	22.72	22.68				
5	12	6		22.57	22.74	22.84				
5	1	0		21.55	21.76	21.79				
5	1	24		21.56	21.82	21.81				
5	25	0		21.58	21.84	21.89				
5	1	1	16-QAM	21.64	21.90	21.95	31.05	1.2735		
5	1	1	64-QAM	20.02	20.21	20.28				
5	1	1	256-QAM	17.81	17.95	18.02				
Limit	EIRP < 2W			Result			Pass			

NR n2 Maximum Average Power [dBm] (GT - LC = 9.1 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
10	1	1	PI/2 BPSK	22.52	22.57	22.87	31.98	1.5776		
10	1	50		22.49	22.77	22.71				
10	25	12		22.73	22.84	22.88				
10	1	0		22.20	22.26	22.50				
10	1	51		22.13	22.48	22.34				
10	50	0		22.17	22.36	22.50				
10	1	1	QPSK	22.48	22.48	22.71				
10	1	50		22.36	22.80	22.73				
10	25	12		22.58	22.74	22.88				
10	1	0		21.64	21.64	21.94				
10	1	51		21.55	21.90	21.76				
10	50	0		21.65	21.87	21.89				
10	1	1	16-QAM	21.80	21.67	22.06	31.16	1.3062		
10	1	1	64-QAM	20.06	20.03	20.41				
10	1	1	256-QAM	17.75	17.77	18.16				
Limit	EIRP < 2W			Result			Pass			



NR n2 Maximum Average Power [dBm] (GT - LC = 9.1 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
15	1	1	PI/2 BPSK	22.67	22.59	22.76	31.98	1.5776		
15	1	77		22.53	22.88	22.66				
15	36	18		22.60	22.72	22.75				
15	1	0		22.21	22.15	22.35				
15	1	78		22.14	22.46	22.16				
15	75	0		22.17	22.35	22.28				
15	1	1	QPSK	22.56	22.65	22.67				
15	1	77		22.44	22.80	22.57				
15	36	18		22.57	22.74	22.76				
15	1	0		21.66	21.63	21.84				
15	1	78		21.55	21.94	21.58				
15	75	0		21.71	21.89	21.83				
15	1	1	16-QAM	21.82	21.84	21.99	31.09	1.2853		
15	1	1	64-QAM	20.20	20.12	20.31				
15	1	1	256-QAM	17.83	17.87	18.07				
Limit	EIRP < 2W			Result			Pass			

NR n2 Maximum Average Power [dBm] (GT - LC = 9.1 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
20	1	1	PI/2 BPSK	22.54	22.58	22.89	31.99	1.5812		
20	1	104		22.51	22.72	22.51				
20	50	25		22.57	22.69	22.78				
20	1	0		22.18	22.03	22.31				
20	1	105		22.02	22.40	22.11				
20	100	0		22.05	22.24	22.32				
20	1	1	QPSK	22.42	22.33	22.72				
20	1	104		22.40	22.71	22.44				
20	50	25		22.45	22.71	22.81				
20	1	0		21.51	21.44	21.78				
20	1	105		21.56	21.81	21.50				
20	100	0		21.59	21.72	21.90				
20	1	1	16-QAM	21.65	21.52	21.92	31.02	1.2647		
20	1	1	64-QAM	20.04	19.88	20.28				
20	1	1	256-QAM	17.71	17.60	17.93				
Limit	EIRP < 2W			Result			Pass			



NR n5 Maximum Average Power [dBm] (GT - LC = 4 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP(W)		
5	1	1	PI/2 BPSK	21.56	21.61	21.72	23.57	0.2275		
5	1	23		21.26	21.51	21.58				
5	12	6		21.51	21.64	21.72				
5	1	0		21.03	21.10	20.93				
5	1	24		19.64	21.11	21.15				
5	25	0		21.01	21.13	21.26				
5	1	1	QPSK	21.44	21.43	21.61				
5	1	23		21.37	21.51	21.53				
5	12	6		21.45	21.50	21.62				
5	1	0		20.59	20.48	20.75				
5	1	24		20.46	20.66	20.62				
5	25	0		20.56	20.58	20.75				
5	1	1	16-QAM	20.67	20.72	20.83	22.68	0.1854		
5	1	1	64-QAM	19.01	19.04	19.18				
5	1	1	256-QAM	16.57	16.59	16.75				
Limit	ERP < 7W			Result			Pass			

NR n5 Maximum Average Power [dBm] (GT - LC = 4 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP(W)		
10	1	1	PI/2 BPSK	21.25	21.39	21.45	23.46	0.2218		
10	1	50		21.38	21.52	21.36				
10	25	12		21.51	21.61	21.56				
10	1	0		20.91	20.87	21.06				
10	1	51		20.95	21.15	21.01				
10	50	0		20.94	21.10	21.12				
10	1	1	QPSK	21.34	21.27	21.37				
10	1	50		21.27	21.47	21.34				
10	25	12		21.04	21.38	21.56				
10	1	0		20.34	20.38	20.51				
10	1	51		20.38	20.58	20.49				
10	50	0		20.46	20.54	20.63				
10	1	1	16-QAM	20.41	20.46	20.61	22.46	0.1762		
10	1	1	64-QAM	18.82	18.80	18.95				
10	1	1	256-QAM	16.34	16.34	16.51				
Limit	ERP < 7W			Result			Pass			



NR n5 Maximum Average Power [dBm] (GT - LC = 4 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP(W)		
15	1	1	PI/2 BPSK	21.54	21.55	21.63	23.61	0.2296		
15	1	77		21.74	21.72	21.58				
15	36	18		21.57	21.71	21.73				
15	1	0		21.11	20.93	21.20				
15	1	78		21.33	21.30	21.19				
15	75	0		21.12	21.37	21.31				
15	1	1	QPSK	21.47	21.53	21.42				
15	1	77		21.76	21.75	21.60				
15	36	18		21.52	21.70	21.69				
15	1	0		20.55	20.52	20.55				
15	1	78		20.79	20.76	20.67				
15	75	0		20.65	20.80	20.76				
15	1	1	16-QAM	20.70	20.69	20.76	22.61	0.1824		
15	1	1	64-QAM	19.04	19.01	19.11				
15	1	1	256-QAM	16.62	16.67	16.65				
Limit	ERP < 7W			Result			Pass			

NR n5 Maximum Average Power [dBm] (GT - LC = 4 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP(W)		
20	1	1	PI/2 BPSK	21.32	21.30	21.78	23.63	0.2307		
20	1	104		21.56	21.54	21.53				
20	50	25		21.69	21.63	21.67				
20	1	0		21.00	18.25	20.88				
20	1	105		21.14	18.10	21.10				
20	100	0		21.12	21.17	21.22				
20	1	1	QPSK	21.36	21.36	21.38				
20	1	104		21.59	21.54	21.45				
20	50	25		21.70	21.64	21.74				
20	1	0		20.45	20.44	20.42				
20	1	105		20.60	20.61	20.64				
20	100	0		20.66	20.70	20.73				
20	1	1	16-QAM	20.56	20.62	20.61	22.47	0.1766		
20	1	1	64-QAM	18.85	18.93	18.91				
20	1	1	256-QAM	16.46	16.56	16.52				
Limit	ERP < 7W			Result			Pass			



NR n66 Maximum Average Power [dBm] (GT - LC = 8.5 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
5	1	1	PI/2 BPSK	19.00	19.24	19.01	27.85	0.6095		
5	1	23		19.03	19.22	18.79				
5	12	6		19.12	19.24	18.87				
5	1	0		18.48	18.83	18.47				
5	1	24		18.60	18.80	18.30				
5	25	0		18.64	18.87	18.41				
5	1	1	QPSK	18.92	19.25	18.75				
5	1	23		18.93	19.24	18.67				
5	12	6		19.07	19.35	18.82				
5	1	0		17.94	18.33	17.97				
5	1	24		18.02	18.29	17.76				
5	25	0		18.14	18.42	17.84				
5	1	1	16-QAM	18.13	18.45	18.17	26.95	0.4955		
5	1	1	64-QAM	16.61	16.88	16.50				
5	1	1	256-QAM	14.32	14.64	14.24				
Limit	EIRP < 1W			Result			Pass			

NR n66 Maximum Average Power [dBm] (GT - LC = 8.5 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
10	1	1	PI/2 BPSK	19.05	19.22	19.13	27.81	0.6039		
10	1	50		19.26	19.18	18.77				
10	25	12		19.15	19.31	19.12				
10	1	0		18.64	18.85	18.77				
10	1	51		18.80	18.93	18.29				
10	50	0		18.77	18.88	18.51				
10	1	1	QPSK	19.03	19.19	19.13				
10	1	50		19.14	19.25	18.71				
10	25	12		19.14	19.30	19.00				
10	1	0		18.07	18.27	18.16				
10	1	51		18.33	18.33	17.76				
10	50	0		18.23	18.35	18.02				
10	1	1	16-QAM	18.26	18.49	18.25	26.99	0.5		
10	1	1	64-QAM	16.71	16.87	16.73				
10	1	1	256-QAM	14.40	14.57	14.42				
Limit	EIRP < 1W			Result			Pass			



NR n66 Maximum Average Power [dBm] (GT - LC = 8.5 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
15	1	1	PI/2 BPSK	19.04	19.22	19.26	27.81	0.6039		
15	1	77		19.24	19.24	18.81				
15	36	18		19.18	19.26	19.05				
15	1	0		18.58	18.76	18.74				
15	1	78		18.90	18.84	18.38				
15	75	0		18.84	18.91	18.68				
15	1	1	QPSK	18.95	19.19	19.13				
15	1	77		19.29	19.31	18.84				
15	36	18		19.17	19.30	19.07				
15	1	0		18.03	18.24	18.21				
15	1	78		18.40	18.28	17.86				
15	75	0		18.33	18.26	18.17				
15	1	1	16-QAM	18.18	18.48	18.35	26.98	0.4989		
15	1	1	64-QAM	16.51	16.86	16.90				
15	1	1	256-QAM	14.26	14.66	14.55				
Limit	EIRP < 1W			Result			Pass			

NR n66 Maximum Average Power [dBm] (GT - LC = 8.5 dB)										
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	EIRP (dBm)	EIRP(W)		
20	1	1	PI/2 BPSK	19.01	19.36	19.14	27.86	0.6109		
20	1	104		19.29	19.08	18.68				
20	50	25		19.26	19.26	19.04				
20	1	0		18.65	18.79	18.72				
20	1	105		18.91	18.74	18.18				
20	100	0		18.76	18.77	18.59				
20	1	1	QPSK	19.03	19.07	19.18				
20	1	104		19.28	19.03	18.57				
20	50	25		19.24	19.23	19.07				
20	1	0		18.05	18.20	18.24				
20	1	105		18.35	18.16	17.77				
20	100	0		18.31	18.31	18.11				
20	1	1	16-QAM	18.14	18.34	18.43	26.93	0.4932		
20	1	1	64-QAM	16.61	16.66	16.85				
20	1	1	256-QAM	14.26	14.50	14.55				
Limit	EIRP < 1W			Result			Pass			



Appendix B. Test Results of Radiated Test

<Ant. 0+1>

EN-DC 30A-n5A

EN-DC 30A-n5A / 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	1650	-42.08	-13	-29.08	-70.52	-47.68	0.92	8.67	H
	2475	-37.43	-13	-24.43	-70.94	-44.80	1.14	10.67	H
	3301	-35.57	-13	-22.57	-70.92	-44.12	1.32	12.02	H
									H
									H
									H
	1650	-43.10	-13	-30.10	-71	-48.70	0.92	8.67	V
	2475	-37.40	-13	-24.40	-71.07	-44.77	1.14	10.67	V
	3301	-35.26	-13	-22.26	-71.08	-43.81	1.32	12.02	V
									V
									V
									V
Middle	1656	-41.57	-13	-28.57	-70.82	-47.19	0.92	8.69	H
	2480	-36.47	-13	-23.47	-70.71	-43.85	1.15	10.67	H
	3312	-35.27	-13	-22.27	-71.25	-43.84	1.33	12.05	H
									H
									H
									H
	1656	-42.39	-13	-29.39	-71.07	-48.01	0.92	8.69	V
	2480	-36.54	-13	-23.54	-70.95	-43.92	1.15	10.67	V
	3312	-34.63	-13	-21.63	-71.07	-43.20	1.33	12.05	V
									V
									V
									V



Highest	1660	-42.57	-13	-29.57	-71.03	-48.20	0.92	8.71	H
	2490	-37.76	-13	-24.76	-71.3	-45.15	1.15	10.69	H
	3321	-35.87	-13	-22.87	-71.17	-44.46	1.33	12.07	H
									H
									H
									H
	1660	-42.74	-13	-29.74	-70.62	-48.37	0.92	8.71	V
	2490	-37.58	-13	-24.58	-71.31	-44.97	1.15	10.69	V
	3321	-35.22	-13	-22.22	-70.98	-43.81	1.33	12.07	V
									V
									V
									V

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



<Ant. 0+8>

EN-DC 14A-n2A

EN-DC 14A-n2A / 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	3700	-36.02	-13	-23.02	-73.38	-47.23	1.41	12.62	H
	5553	-30.85	-13	-17.85	-74.04	-42.41	1.74	13.30	H
	7407	-46.97	-13	-33.97	-73.77	-56.28	1.94	11.25	H
									H
									H
									H
	3700	-22.17	-13	-9.17	-59.67	-33.38	1.41	12.62	V
	5553	-19.50	-13	-6.50	-62.22	-31.06	1.74	13.30	V
	7407	-47.30	-13	-34.30	-73.95	-56.61	1.94	11.25	V
									V
									V
									V
Middle	3742	-35.75	-13	-22.75	-73.33	-46.97	1.42	12.65	H
	5614	-30.62	-13	-17.62	-73.76	-42.18	1.74	13.30	H
	7484	-46.85	-13	-33.85	-73.29	-55.99	1.98	11.13	H
									H
									H
									H
	3742	-22.89	-13	-9.89	-60.67	-34.11	1.42	12.65	V
	5614	-21.19	-13	-8.19	-64	-32.75	1.74	13.30	V
	7484	-46.89	-13	-33.89	-73.28	-56.03	1.98	11.13	V
									V
									V
									V



Highest	3784	-35.10	-13	-22.10	-72.9	-45.31	2.02	12.23	H
	5674	-30.50	-13	-17.50	-73.92	-40.83	2.12	12.44	H
	7561	-46.84	-13	-33.84	-72.89	-54.95	2.11	10.22	H
									H
									H
									H
	3784	-24.25	-13	-11.25	-62.3	-34.46	2.02	12.23	V
	5674	-23.47	-13	-10.47	-66.39	-33.80	2.11	12.44	V
	7561	-47.06	-13	-34.06	-73.07	-55.17	2.11	10.22	V
									V
									V
									V

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

**EN-DC 30A-n2A**

EN-DC 30A-n2A / 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)
Middle	3744	-54.79	-13	-41.79	-72.91	-66.01	1.42	12.65	H
	5614	-50.28	-13	-37.28	-73.37	-61.84	1.74	13.30	H
	7482	-47.18	-13	-34.18	-73.62	-56.33	1.98	11.13	H
									H
									H
									H
	3744	-54.63	-13	-41.63	-72.95	-65.85	1.42	12.65	V
	5614	-51.11	-13	-38.11	-73.86	-62.67	1.74	13.30	V
	7482	-47.04	-13	-34.04	-73.43	-56.19	1.98	11.13	V
									V
									V
									V

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

**EN-DC 14A-n66A**

EN-DC 14A-n66A / 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	3422	-57.11	-13	-44.11	-73.05	-68.08	1.35	12.31	H
	5133	-52.38	-13	-39.38	-74.33	-63.52	1.64	12.79	H
	6845	-48.78	-13	-35.78	-74.16	-59.16	1.74	12.12	H
									H
									H
									H
	3422	-56.78	-13	-43.78	-73.14	-67.75	1.35	12.31	V
	5133	-52.84	-13	-39.84	-74.54	-63.98	1.64	12.79	V
	6845	-48.97	-13	-35.97	-73.95	-59.35	1.74	12.12	V
									V
									V
									V
Middle	3476	-56.02	-13	-43.02	-73.25	-67.11	1.36	12.44	H
	5171	-51.83	-13	-38.83	-74.41	-63.01	1.65	12.84	H
	6892	-47.69	-13	-34.69	-74.14	-58.01	1.74	12.05	H
									H
									H
									H
	3476	-55.41	-13	-42.41	-73.01	-66.50	1.36	12.44	V
	5171	-52.06	-13	-39.06	-74.44	-63.24	1.65	12.84	V
	6892	-48.24	-13	-35.24	-74.25	-58.56	1.74	12.05	V
									V
									V
									V



Highest	3472	-56.26	-13	-43.26	-72.68	-67.34	1.35	12.43	H
	5208	-52.52	-13	-39.52	-74.48	-63.75	1.66	12.89	H
	6945	-47.92	-13	-34.92	-73.8	-58.17	1.73	11.98	H
									H
									H
									H
	3472	-56.08	-13	-43.08	-72.88	-67.16	1.35	12.43	V
	5208	-52.84	-13	-39.84	-74.63	-64.07	1.66	12.89	V
	6945	-48.18	-13	-35.18	-73.6	-58.43	1.73	11.98	V
									V
									V
									V

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

**EN-DC 30A-n66A**

EN-DC 30A-n66A / 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)
Middle	3476	-55.57	-13	-42.57	-72.8	-66.66	1.36	12.44	H
	5171	-51.59	-13	-38.59	-74.17	-62.77	1.65	12.84	H
	6892	-47.66	-13	-34.66	-74.1	-57.98	1.74	12.05	H
									H
									H
									H
	3476	-55.39	-13	-42.39	-72.99	-66.48	1.36	12.44	V
	5171	-51.94	-13	-38.94	-74.32	-63.12	1.65	12.84	V
	6892	-47.99	-13	-34.99	-74	-58.31	1.74	12.05	V
									V
									V
									V

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