TEST REPORT

Application No.:	SZCR2404001514AT
Applicant:	Quectel Wireless Solutions Co., Ltd.
Address of Applicant:	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai 200233, China
Manufacturer:	Quectel Wireless Solutions Co., Ltd.
Address of Manufacturer:	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai 200233, China
EUT Description:	5G RedCap Sub-6 GHz Module
Model No.:	RG255C-GL
Trade Mark:	QUECTEL
FCC ID:	XMR2024RG255CGL
Standards:	47 CFR Part 2 47 CFR Part 22 47 CFR Part 24 47 CFR Part 27 47 CFR Part 90 47 CFR Part 96
Date of Receipt:	2024-04-24
Date of Test:	2024-05-12 to 2024-06-15
Date of Issue:	2024-06-19
Test Result:	**PASS ***

* In the configuration tested, the EUT detailed in this report complied with the standards specified above.

Authorized Signature:

Keny Xu
Laboratory Manager

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1 Version

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		2024-06-19		Original

Prepared By	**Leo Lai/Project Engineer**
Checked By	**Eric Fu/Reviewer**

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Content

2 Test Summary

2.1 NR Band n5/ NR Band n26(824-849)

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §22.913(a)(5)	FCC: ERP ≤ 7 W	Appendix_NR	Pass
Peak-Average Ratio	§22.913(d)	Limit≤13 dB	Appendix_NR	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Appendix_NR	Pass
Band Edges Compliance	§2.1051, §22.917(a)	≤ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	Appendix_NR	Pass
Spurious Emission at Antenna Terminals	§2.1051, §22.917(a)	FCC: ≤ -13 dBm/100 kHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges.	Appendix_NR	Pass
Field Strength of Spurious Radiation	§2.1053, §22.917(a)	FCC: ≤ -13 dBm/100 kHz.	Section 4.8 of the report	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §22.355	±2.5ppm.	Appendix_NR	Pass

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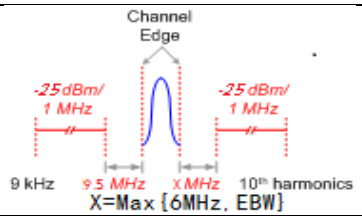
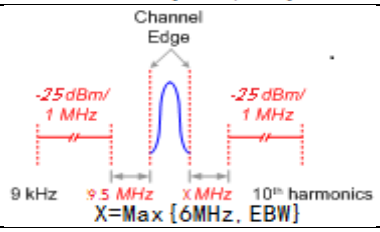
2.2 NR Band n7/NR Band n38/ NR Band n41

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §27.50(h)(2)	EIRP ≤ 2W	Appendix_NR	Pass
Peak-Average Ratio	---	≤13 dB	Appendix_NR	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Appendix_NR	Pass
Band Edges Compliance	§2.1051, §27.53(m4)	For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as de□ned in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz.	Appendix_NR	Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(m)		Appendix_NR	Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(m)		Section 4.8 of the report	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §27.54	Within authorized bands of operation/frequency block.	Appendix_NR	Pass

2.3 NR Band n2/ NR Band n25

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §24.232(c)	EIRP ≤ 2 W	Appendix_NR	Pass
Peak-Average Ratio	§24.232(d)	Limit≤13 dB	Appendix_NR	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Appendix_NR	Pass
Band Edges Compliance	§2.1051, §24.238(a)	≤ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	Appendix_NR	Pass
Spurious Emission at Antenna Terminals	§2.1051, §24.238(a)	≤ -13 dBm/1 MHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges.	Appendix_NR	Pass
Field Strength of Spurious Radiation	§2.1053, §24.238(a)	≤ -13 dBm/1 MHz.	Section 4.8 of the report	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §24.235	Within authorized bands of operation/frequency block.	Appendix_NR	Pass

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2.4 NR Band n12

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046 §27.50(c)(10)	ERP ≤ 3 W.	Appendix_NR	Pass
Peak-Average Ratio	---	Limit≤13 dB	Appendix_NR	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Appendix_NR	Pass
Band Edges Compliance	§2.1051, §27.53(g)	≤ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	Appendix_NR	Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(g)	FCC: ≤ -13 dBm/100 kHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges.	Appendix_NR	Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(g)	FCC: ≤ -13 dBm/100 kHz.	Section 4.8 of the report	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §27.54	Within authorized bands of operation/frequency block.	Appendix_NR	Pass

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2.5 NR Band n13

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §27.50(b)(10)	ERP ≤ 3 W.	Appendix_NR	Pass
Peak-Average Ratio	---	Limit≤13 dB	Appendix_NR	Pass
Bandwidth	§2.1049,	OBW: No limit. EBW: No limit.	Appendix_NR	Pass
Band Edges Compliance	§2.1051, §27.53(c)	≤ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	Appendix_NR	Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(c) §27.53(f)	≤ -13 dBm/100 kHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges. On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations. For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to −70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and −80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.	Appendix_NR	Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(c) §27.53(f)	FCC: ≤ -13 dBm/100 kHz. For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to −70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and −80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.	Section 4.8 of the report	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §27.54	Within authorized bands of operation/frequency block.	Appendix_NR	Pass

2.6 NR Band n14

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046 §90.542(a)	ERP ≤ 3 W.	Appendix_NR	Pass
Peak-Average Ratio	---	Limit≤13 dB	Appendix_NR	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Appendix_NR	Pass
Emission Mask	§2.1051 §90.210(b)	Transmitters designed for operation under this part on frequencies other than listed in this section must meet the emission mask requirements of Emission Mask B. Equipment operating under this part on frequencies allocated to but shared with the Federal Government, must meet the applicable Federal Government technical standards (b) Emission Mask B. For transmitters that are equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier power (P) as follows: (1) On any frequency removed from the assigned frequency by more than 50 percent, but not more than 100 percent of the authorized bandwidth: At least 25 dB.(2) On any frequency removed from the assigned frequency by more than 100 percent, but not more than 250 percent of the authorized bandwidth: At least 35 dB..(3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least 43 + 10 log (P) dB.	Appendix_NR	Pass
Band Edges Compliance	§2.1051 §90.543(e)(2)(3)	(1) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than 76 + 10 log (P) dB in a 6.25 kHz band segment, for base and fixed stations.(2) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25	Appendix_NR	Pass

		kHz band segment, for mobile and portable stations.(3) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least 43 + 10 log (P) dB.		
Spurious Emission at Antenna Terminals	§2.1051, §90.543(c) §90.543(f)	FCC: ≤ -13 dBm/100 kHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges. For operations in the 758–775 MHz and 788–805 MHz bands, all emissions including harmonics in the band 1559–1610 MHz shall be limited to -70 dBW/ MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.	Section 4.8 of the report	Pass
Field Strength of Spurious Radiation	§2.1053, §90.543(c) §90.543(f)	FCC: ≤ -13 dBm/100 kHz. For operations in the 758–775 MHz and 788–805 MHz bands, all emissions including harmonics in the band 1559–1610 MHz shall be limited to -70 dBW/ MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.	Appendix_NR	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §90.213	Within authorized bands of operation/frequency block.	Appendix_NR	Pass

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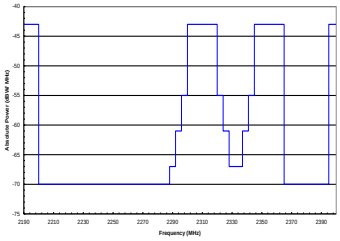
2.7 NR Band n26(814~824 MHz)

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Transmitter Conducted Power Output	§2.1046, §90.635(b)	< 100 W.	Appendix_NR	Pass
Peak-Average Ratio	---	Limit≤13 dB	Appendix_NR	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Appendix_NR	Pass
Emission Mask	§2.1051 § 90.691(a)	For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log10(f/6.1) decibels or 50+10Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.	Appendix_NR	Pass
Spurious Emission at Antenna Terminals	§2.1051, §90.691	< 43 + 10Log10(P[Watts]) for all out-of-band emissions	Appendix_NR	Pass
Field Strength of Spurious Radiation	§2.1053, §90.691	< 43 + 10Log10(P[Watts]) for all out-of-band emissions	Section 4.8 of the report	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §90.213	Within authorized bands of operation/frequency block.	Appendix_NR	Pass

2.8 NR Band n30

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §27.50(a)(3)	EIRP ≤ 50mW/1MHz EIRP ≤ 250mW/5MHz	Appendix_NR	Pass
Peak-Average Ratio	---	FCC: Limit≤13 dB	Appendix_NR	Pass
Bandwidth	§2.1049,	OBW: No limit. EBW: No limit.	Appendix_NR	Pass
Band Edges Compliance	§2.1051, §27.53(a)(4)	≤ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	Appendix_NR	Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(a)(4)	Figure 1: Unwanted Emisssions for Mobile, Portable, and Low Power Fixed Subscriber Equipment  For mobile and portable stations operating in the 2305-2315 MHz and 2350-2360 MHz bands: (i) By a factor of not less than: 43 + 10 log (P) dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than 55 + 10 log (P) dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than 61 + 10 log (P) dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than 67 + 10 log (P) dB on all frequencies between 2328 and 2337 MHz; (ii) By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2300 and 2305 MHz, 55 + 10 log (P) dB on all frequencies between 2296 and 2300 MHz, 61 + 10 log (P) dB on all frequencies	Appendix_NR	Pass

		between 2292 and 2296 MHz, 67 + 10 log (P) dB on all frequencies between 2288 and 2292 MHz, and 70 + 10 log (P) dB below 2288 MHz;(iii) By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2365 MHz, and not less than 70 + 10 log (P) dB above 2365 MHz.		
Field Strength of Spurious Radiation	§2.1053, §27.53(a)(4)	≤ -40dBm/MHz.	Section 4.8 of the report	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §27.54	within the range of the operating frequency blocks	Appendix_NR	Pass

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2.9 NR Band n66/ NR Band n70

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §27.50(d)(4)	EIRP ≤ 1 W	Appendix_NR	Pass
Peak-Average Ratio	§27.50(d)(5)	Limit≤13 dB	Appendix_NR	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Appendix_NR	Pass
Band Edges Compliance	§2.1051, §27.53(h)	≤ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	Appendix_NR	Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(h)	≤ -13 dBm/1 MHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges.	Appendix_NR	Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(h)	≤ -13 dBm/1 MHz.	Section 4.8 of the report	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §27.54	Within authorized bands of operation/frequency block.	Appendix_NR	Pass

2.10 NR Band n71

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046 §27.50(c)(10)	ERP ≤ 3 W	Appendix_NR	Pass
Peak-Average Ratio	---	Limit≤13 dB	Appendix_NR	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Appendix_NR	Pass
Band Edges Compliance	§2.1051, §27.53(g)	≤ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	Appendix_NR	Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(g)	≤ -13 dBm/1 MHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges.	Appendix_NR	Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(g)	≤ -13 dBm/1 MHz.	Section 4.8 of the report	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §27.54	within the authorized bands of operation.	Appendix_NR	Pass

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2.11 NR Band n77 / NR Band n78

3450-3550MHz:

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §27.50(k)(3)	EIRP ≤ 30dBm	Appendix_NR	Pass
Peak-Average Ratio	§27.50(k)(4)	FCC: Limit≤13 dB	Appendix_NR	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Appendix_NR	Pass
Band Edges Compliance	§2.1051, §27.50(n)(2)	For mobile operations in the 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz.	Appendix_NR	Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.50(n)(2)	For mobile operations in the 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz.	Appendix_NR	Pass
Field Strength of Spurious Radiation	§2.1053, §27.50(n)(2)	For mobile operations in the 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz.	Section 4.8 of the report	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §27.54	Within authorized bands of operation/ frequency block.	Appendix_NR	Pass

3700-3980MHz:

Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §27.50(j)(3)	EIRP ≤ 1W	Appendix_NR	Pass
Peak-Average Ratio	---	≤13 dB	Appendix_NR	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Appendix_NR	Pass
Band Edges Compliance	§2.1051, §27.53(l)(2)	(2) For mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz. Compliance with this paragraph (l)(2) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be either one percent of the emission bandwidth of the fundamental emission of the transmitter or 350 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz.	Appendix_NR	Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(l)(2)	not exceed -13 dBm/MHz.	Appendix_NR	Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(l)(2)	not exceed -13 dBm/MHz	Section 4.8 of the report	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(1) §27.54	Within authorized bands of operation/frequency block.	Appendix_NR	Pass

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3 General Information

3.1 Client Information

Applicant:	Quectel Wireless Solutions Co., Ltd.
Address of Applicant:	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai 200233, China
Manufacturer:	Quectel Wireless Solutions Co., Ltd.
Address of Manufacturer:	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai 200233, China

3.2 Test Location

Company:	SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
Address:	No. 1 Workshop, M-10, Middle section, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China
Post code:	518057

3.3 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

- **VCCI**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

- **Innovation, Science and Economic Development Canada**

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

- **FCC –Designation Number: CN1336**

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch has been recognized as an accredited testing laboratory.

Designation Number: CN1336.

Test Firm Registration Number: 787754

3.4 General Description of EUT

EUT Description:	5G RedCap Sub-6 GHz Module	
Model No.:	RG255C-GL	
Trade Mark:	QUECTEL	
Hardware Version:	R1.0	
Software Version:	RG255CGLABR01A02M4G	
IMEI:	RF Conducted	864624060017326
	RSE	864624060016013
HPUE Power Class:	Class 3 Class 2: NR Band 38, 41, 77, 78	
Antenna Type:	☒ External, ☐ Integrated	
Antenna Gain:	n2: 1.8dBi n5: 0.3dBi n7: 1.4dBi n12: -0.5dBi n13: -0.7dBi n14: -0.5dBi n25: 1.8dBi n26: 0.3dBi n30: -5.7dBi n38: 1.4dBi n41: 1.4dBi n66: 1.5dBi n70: 1.1dBi n71: -0.9dBi n77: -0.64dBi n78: -0.64dBi	
	Note: The antenna gain are derived from the gain information report provided by the manufacturer.	
RF Cable:	9kHz ~ 30MHz (0.3dB)	30MHz ~ 1000MHz (0.6dB) / 1000MHz ~ 2000MHz (0.8dB)
	2000MHz ~ 4000MHz (1.1dB)	4000MHz ~ 6000MHz (1.8dB) / 6000MHz ~ 12750MHz (2.6dB)
	Above 12750MHz (3.5dB)	
Remark: As above information is provided and confirmed by the applicant. SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.		

3.5 Test Mode

Test Mode	Test Modes Description
NR/TM1	NR system, DFT-s-Pi/2-BPSK modulation
NR/TM2	NR system, DFT-s-QPSK modulation
NR/TM3	NR system, DFT-s-16QAM modulation
NR/TM4	NR system, DFT-s-64QAM modulation
NR/TM5	NR system, DFT-s-256QAM modulation
NR/TM6	NR system, CP-QPSK modulation
NR/TM7	NR system, CP-16QAM modulation
NR/TM8	NR system, CP-64QAM modulation
NR/TM9	NR system, CP-256QAM modulation
Remark: The test mode(s) are selected according to relevant radio technology specifications.	

3.6 Test Environment

Environment Parameter	101.0 kPa Selected Values During Tests	
Relative Humidity	44-60 % RH Ambient	
Value	**Temperature(℃)**	**Voltage(V)**
NTNV	22~25	3.8
LTLV	-30	3.3
LTHV	-30	4.3
HTLV	75	3.3
HTHV	75	4.3
Remark:		
NV: Normal Voltage	LV: Low Extreme Test Voltage	HV: High Extreme Test Voltage
NT: Normal Temperature	LT: Low Extreme Test Temperature	HT: High Extreme Test Temperature

3.7 Description of Support Units

Description	Manufacturer	Model No.
Mother board	QUECTEL	----
Remark: all above the information of table are provided by client.		

3.8 Technical Specification

Characteristics	Description				
Radio System Type	☒ SA ☐ NSA				
Supported Frequency Range	Band	TX		RX	
	NR Band n2	1850 to 1910 MHz		1930 to 1990 MHz	
	NR Band n5	824 to 849 MHz		869 to 894 MHz	
	NR Band n7	2500 to 2570 MHz		2620 to 2690 MHz	
	NR Band n12	699 to 716 MHz		729 to 746 MHz	
	NR Band n13	777 to 787 MHz		746 to 756 MHz	
	NR Band n14	788 to 798 MHz		758 to 768 MHz	
	NR Band n25	1850 to 1915MHz		1930 to 1995 MHz	
	NR Band n26 (814 to 824 MHz)	814 to 824MHz		859 to 869 MHz	
	NR Band n26 (824 to 849 MHz)	824 to 849 MHz		869 to 894 MHz	
	NR Band n30	2305 to 2315 MHz		2350 to 2360 MHz	
	NR Band n38	2570 to 2620 MHz		2570 to 2620 MHz	
	NR Band n41	2496 to 2690 MHz		2496 to 2690 MHz	
	NR Band n66	1710 to 1780 MHz		2110 to 2200 MHz	
	NR Band n70	1695 to 1710 MHz		1995 to 2020 MHz	
	NR Band n71	663 to 698 MHz		617 to 652 MHz	
	NR Band n77	3700 to 3980 MHz		3700 to 3980 MHz	
		3450 to 3550 MHz		3450 to 3550 MHz	
	NR Band n78	3700 to 3800 MHz		3700 to 3800 MHz	
		3450 to 3550 MHz		3450 to 3550 MHz	
Supported Channel Bandwidth	NR Band n2	SCS 15kHz:			
		☒5 MHz	☒10 MHz	☒15 MHz	☒20 MHz
	NR Band n5	SCS 15kHz:			
		☒5 MHz	☒10 MHz	☒15 MHz	☒20 MHz
	NR Band n7	SCS 15kHz:			
		☒5 MHz	☒10 MHz	☒15 MHz	☒20 MHz
	NR Band n12	SCS 15kHz:			

		☒5 MHz	☒10 MHz	☒15 MHz	
	NR Band n13	SCS 15kHz:			
		☒5 MHz	☒10 MHz		
	NR Band n14	SCS 15kHz:			
		☒5 MHz	☒10 MHz		
	NR Band n25	SCS 15kHz:			
		☒5 MHz	☒10 MHz	☒15 MHz	☒20 MHz
	NR Band n26 (814 to 824 MHz)	SCS 15kHz:			
		☒5 MHz	☒10 MHz		
	NR Band n26 (824 to 849 MHz)	SCS 15kHz:			
		☒5 MHz	☒10 MHz	☒15 MHz	☒20 MHz
	NR Band n30	SCS 15kHz:			
		☒5 MHz	☒10 MHz		
	NR Band n38	SCS 30kHz:			
		☒10 MHz	☒15 MHz	☒20 MHz	
	NR Band n41	SCS 30kHz:			
		☒10 MHz	☒15 MHz	☒20 MHz	
	NR Band n66	SCS 15kHz:			
		☒5 MHz	☒10 MHz	☒15 MHz	☒20 MHz
	NR Band n70	SCS 15kHz:			
		☒5 MHz	☒10 MHz	☒15 MHz	
	NR Band n71	SCS 15kHz:			
		☒5 MHz	☒10 MHz	☒15 MHz	☒20 MHz
	NR Band n77	SCS 30kHz			
		☒10 MHz	☒15 MHz	☒20 MHz	
	NR Band n78	SCS 30kHz			
		☒10 MHz	☒15 MHz	☒20 MHz	

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3.9 Test Frequencies

3.9.1 Reference test frequencies for NR operating band n2

3.9.1.1 Test frequencies for NR operating band n2 and SCS 15 kHz

CBW [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
5	Downlink	Low	1932.5	386500	15
		Mid	1960	392000	
		High	1987.5	397500	
	Uplink	Low	1852.5	370500	-
		Mid	1880	376000	
		High	1907.5	381500	
10	Downlink	Low	1935	387000	15
		Mid	1960	392000	
		High	1985	397000	
	Uplink	Low	1855	371000	-
		Mid	1880	376000	
		High	1905	381000	
15	Downlink	Low	1937.5	387500	15
		Mid	1960	392000	
		High	1982.5	396500	
	Uplink	Low	1857.5	371500	-
		Mid	1880	376000	
		High	1902.5	380500	
20	Downlink	Low	1940	388000	15
		Mid	1960	392000	
		High	1980	396000	
	Uplink	Low	1860	372000	-
		Mid	1880	376000	
		High	1900	380000	

3.9.2 Reference test frequencies for NR operating band n5

3.9.2.1 Test frequencies for NR operating band n5 and SCS 15 kHz

CBW [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
5	Downlink	Low	871.5	174300	15
		Mid	881.5	176300	
		High	891.5	178300	
	Uplink	Low	826.5	165300	-
		Mid	836.5	167300	
		High	846.5	169300	
10	Downlink	Low	874	174800	15
		Mid	881.5	176300	
		High	889	177800	
	Uplink	Low	829	165800	-
		Mid	836.5	167300	
		High	844	168800	
15	Downlink	Low	876.5	175300	15
		Mid	881.5	176300	
		High	886.5	177300	
	Uplink	Low	831.5	166300	-
		Mid	836.5	167300	
		High	841.5	168300	
20	Downlink	Low	879	175800	15
		Mid	881.5	176300	
		High	884	176800	
	Uplink	Low	834	166800	-
		Mid	836.5	167300	
		High	839	167800	

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3.9.3 Reference test frequencies for NR operating band n7

3.9.3.1 Test frequencies for NR operating band n7 and SCS 15 kHz

Bandwidth [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
5	Downlink	Low	2622.5	524500	15
		Mid	2655	531000	
		High	2687.5	537500	
	Uplink	Low	2502.5	500500	--
		Mid	2535	507000	
		High	2567.5	513500	
10	Downlink	Low	2625	525000	15
		Mid	2655	531000	
		High	2685	537000	
	Uplink	Low	2505	501000	--
		Mid	2535	507000	
		High	2565	513000	
15	Downlink	Low	2627.5	525500	15
		Mid	2655	531000	
		High	2682.5	536500	
	Uplink	Low	2507.5	501500	--
		Mid	2535	507000	
		High	2562.5	512500	
20	Downlink	Low	2630	526000	15
		Mid	2655	531000	
		High	2680	536000	
	Uplink	Low	2510	502000	--
		Mid	2535	507000	
		High	2560	512000	

3.9.4 Reference test frequencies for NR operating band n12

3.9.4.1 Test frequencies for NR operating band n12 and SCS 15 kHz

Bandwidth [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
5	Downlink	Low	731.5	146300	15
		Mid	737.5	147500	
		High	743.5	148700	
	Uplink	Low	701.5	140300	--
		Mid	707.5	141500	
		High	713.5	142700	
10	Downlink	Low	734	146800	15
		Mid	737.5	147500	
		High	741	148200	
	Uplink	Low	704	140800	--
		Mid	707.5	141500	
		High	711	142200	
15	Downlink	Low	736.5	147300	15
		Mid	737.5	147500	
		High	738.5	147700	
	Uplink	Low	706.5	141300	--
		Mid	707.5	141500	
		High	708.5	141700	

3.9.5 Reference test frequencies for NR operating band n13

3.9.5.1 Test frequencies for NR operating band n13 and SCS 15 kHz

Bandwidth [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
5	Downlink	Low	748.5	149700	15
		Mid	751	150200	
		High	753.5	150700	
	Uplink	Low	779.5	155900	--
		Mid	782	156400	
		High	784.5	156900	
10	Downlink	Low	/	/	15
		Mid	751	150200	
		High	/	/	
	Uplink	Low	/	/	--
		Mid	779.5	156400	
		High	/	/	

3.9.6 Reference test frequencies for NR operating band n14

3.9.6.1 Test frequencies for NR operating band n14 and SCS 15 kHz

Bandwidth [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
5	Downlink	Low	760.5	151200	15
		Mid	763	152600	
		High	765.5	153100	
	Uplink	Low	790.5	158100	--
		Mid	793	158600	
		High	795.5	159100	
10	Downlink	Low	/	/	15
		Mid	763	152600	
		High	/	/	
	Uplink	Low	/	/	--
		Mid	763	152600	
		High	/	/	

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3.9.7 Reference test frequencies for NR operating band n25

3.9.7.1 Test frequencies for NR operating band n25 and SCS 15 kHz

CBW [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
5	Downlink	Low	1932.5	386500	15
		Mid	1962.5	392500	
		High	1992.5	398500	
	Uplink	Low	1852.5	370500	-
		Mid	1882.5	376500	
		High	1912.5	382500	
10	Downlink	Low	1935	387000	15
		Mid	1962.5	392500	
		High	1990	398000	
	Uplink	Low	1855	371000	-
		Mid	1882.5	376500	
		High	1910	382000	
15	Downlink	Low	1937.5	387500	15
		Mid	1962.5	392500	
		High	1987.5	397500	
	Uplink	Low	1857.5	371500	-
		Mid	1882.5	376500	
		High	1907.5	381500	
20	Downlink	Low	1940	388000	15
		Mid	1962.5	392500	
		High	1985	397000	
	Uplink	Low	1860	372000	-
		Mid	1882.5	376500	
		High	1905	381000	

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3.9.8 Reference test frequencies for NR operating band n26

3.9.8.1 Test frequencies for NR operating band n26 and SCS 15 kHz

814-824:

CBW [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
5	Downlink	Low	861.5	172300	15
		Mid	864	172800	
		High	866.5	173300	
	Uplink	Low	816.5	163300	-
		Mid	819	163800	
		High	821.5	164300	
10	Downlink	Low	/	/	15
		Mid	864	172800	
		High	/	/	
	Uplink	Low	/	/	-
		Mid	819	163800	
		High	/	/	

824-849:

CBW [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
5	Downlink	Low	871.5	174300	15
		Mid	881.5	176300	
		High	891.5	178300	
	Uplink	Low	826.5	165300	-
		Mid	836.5	167300	
		High	846.5	169300	
10	Downlink	Low	874	174800	15
		Mid	881.5	176300	
		High	889	177800	
	Uplink	Low	829	165800	-
		Mid	836.5	167300	
		High	844	168800	
15	Downlink	Low	876.5	175300	15
		Mid	881.5	176300	
		High	886.5	177300	
	Uplink	Low	831.5	166300	-
		Mid	836.5	167300	
		High	841.5	168300	
20	Downlink	Low	879	175800	15
		Mid	881.5	176300	
		High	884	176800	
	Uplink	Low	834	166800	-
		Mid	836.5	167300	
		High	839	167800	

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3.9.9 Reference test frequencies for NR operating band n30

3.9.9.1 Test frequencies for NR operating band n30 and SCS 15 kHz

CBW [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
5	Downlink	Low	2352.5	470500	15
		Mid	2355	471000	
		High	2357.5	471500	
	Uplink	Low	2307.5	461500	-
		Mid	2310	462000	
		High	2312.5	462500	
10	Downlink	Low	2355	471000	15
		Mid	2355	471000	
		High	2355	471000	
	Uplink	Low	2310	462000	-
		Mid	2310	462000	
		High	2310	462000	

3.9.10 Reference test frequencies for NR operating band n38

3.9.10.1 Test frequencies for NR operating band n38 and SCS 30 kHz

Bandwidth [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
10	Downlink & Uplink	Low	2580	516000	30
		Mid	2595	519000	
		High	2610	522000	
15	Downlink & Uplink	Low	2585	517000	30
		Mid	2595	519000	
		High	2605	521000	
20	Downlink & Uplink	Low	2590	518000	30
		Mid	2595	519000	
		High	2600	520000	

3.9.11 Reference test frequencies for NR operating band n41

3.9.11.1 Test frequencies for NR operating band n41 and SCS 30 kHz

CBW [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
10	Downlink & Uplink	Low	2506.02	501204	30
		Mid	2592.99	518598	
		High	2670	534000	
15	Downlink & Uplink	Low	2511	502200	30
		Mid	2592.99	518598	
		High	2675	535000	
20	Downlink & Uplink	Low	2516.01	503202	30
		Mid	2592.99	518598	
		High	2670	534000	

3.9.12 Reference test frequencies for NR operating band n66

3.9.12.1 Test frequencies for NR operating band n66 and SCS 15 kHz

CBW [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
5	Downlink	Low	2112.5	422500	15
		Mid	2155	431000	
		High	2197.5	439500	
	Uplink	Low	1712.5	342500	-
		Mid	1745	349000	
		High	1777.5	355500	
10	Downlink	Low	2115	423000	15
		Mid	2155	431000	
		High	2195	439000	
	Uplink	Low	1715	343000	-
		Mid	1745	349000	
		High	1775	355000	
15	Downlink	Low	2117.5	423500	15
		Mid	2155	431000	
		High	2192.5	438500	
	Uplink	Low	1717.5	343500	-
		Mid	1745	349000	
		High	1772.5	354500	
20	Downlink	Low	2120	424000	15
		Mid	2155	431000	
		High	2190	438000	
	Uplink	Low	1720	344000	-
		Mid	1745	349000	
		High	1770	354000	

3.9.13 Reference test frequencies for NR operating band n70

3.9.13.1 Test frequencies for NR operating band n70 and SCS 15 kHz

Bandwidth [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
5	Downlink	Low	1997.5	399500	15
		Mid	2002.5	400500	
		High	2007.5	401500	
	Uplink	Low	1697.5	339500	--
		Mid	1702.5	340500	
		High	1707.7	341500	
10	Downlink	Low	2000	400000	15
		Mid	2002.5	400500	
		High	2005	401000	
	Uplink	Low	1700	340000	--
		Mid	1702.5	340500	
		High	1705	341000	
15	Downlink	Low	/	/	15
		Mid	2002.5	400500	
		High	/	/	
	Uplink	Low	/	/	--
		Mid	1702.5	340500	
		High	/	/	

3.9.14 Reference test frequencies for NR operating band n71

3.9.14.1 Test frequencies for NR operating band n71 and SCS 15 kHz

CBW [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
5	Downlink	Low	619.5	123900	15
		Mid	634.5	126900	
		High	649.5	129900	
	Uplink	Low	665.5	133100	-
		Mid	680.5	136100	
		High	695.5	139100	
10	Downlink	Low	622	124400	15
		Mid	634.5	126900	
		High	647	129400	
	Uplink	Low	668	133600	-
		Mid	680.5	136100	
		High	693	138600	
15	Downlink	Low	624.5	124900	15
		Mid	634.5	126900	
		High	644.5	128900	
	Uplink	Low	670.5	134100	-
		Mid	680.5	136100	
		High	690.5	138100	
20	Downlink	Low	627	125400	15
		Mid	634.5	126900	
		High	642	128400	
	Uplink	Low	673	134600	-
		Mid	680.5	136100	
		High	688	137600	

3.9.15 Reference test frequencies for NR operating band n77

3.9.15.1 Test frequencies for NR operating band n77 and SCS 30 kHz

3450-3550:

CBW [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
10	Downlink & Uplink	Low	3455.01	630334	30
		Mid	3500.01	633334	
		High	3545.01	636334	
15	Downlink & Uplink	Low	3457.5	630500	30
		Mid	3500.01	633334	
		High	3542.52	636168	
20	Downlink & Uplink	Low	3460.02	630668	30
		Mid	3500.01	633334	
		High	3540	636000	

3700-3980:

CBW [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
10	Downlink	Low	3705	647000	30

		Mid	3840	656000	
		High	3975	665000	
15	Downlink & Uplink	Low	3707.52	647168	30
		Mid	3840	656000	
		High	3972.48	664832	
20	Downlink & Uplink	Low	3710.01	647334	30
		Mid	3840	656000	
		High	3969.99	664666	

3.9.16 Reference test frequencies for NR operating band n78

3.9.16.1 Test frequencies for NR operating band n78 and SCS 30 kHz

3450-3550:

CBW [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
10	Downlink & Uplink	Low	3455.01	630334	30
		Mid	3500.01	633334	
		High	3545.01	636334	
15	Downlink & Uplink	Low	3457.5	630500	30
		Mid	3500.01	633334	
		High	3542.52	636168	
20	Downlink & Uplink	Low	3460.02	630668	30
		Mid	3500.01	633334	
		High	3540	636000	

3700-3800:

CBW [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
10	Downlink & Uplink	Low	3705	647000	30
		Mid	3750	656000	
		High	37925	665000	
15	Downlink & Uplink	Low	3707.52	647168	30
		Mid	3750	656000	
		High	3792.48	664832	
20	Downlink & Uplink	Low	3710.01	647334	30
		Mid	3750	656000	
		High	3789.99	664666	

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4 Description of Tests

4.1 Conducted Output Power

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 5.2.1

The transmitter output was connected to a calibrated coaxial cable, attenuator and power meter, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The power output at the transmitter antenna port was determined by adding the value of the cable insertion loss to the power reading. The tests were performed at three frequencies (low channel, middle channel and high channel) and on the highest power levels, which can be setup on the transmitters.

Remark: Reference test setup 1

4.2 Effective (Isotropic) Radiated Power of Transmitter

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 5.8.4

Calculate power in dBm by the following formula:

ERP (dBm) = Conducted Power (dBm) + antenna gain (dBd)

EIRP(dBm) = Conducted Power (dBm) + antenna gain (dBi)

EIRP=ERP+2.15dB

4.3 EIRP Power Density

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 5.3

Test Settings

1. Set instrument center frequency to OBW center frequency.
2. Set span to at least 1.5 times the OBW.
3. Set the RBW to the specified reference bandwidth (often 1 MHz).
4. Set VBW ≥ 3 × RBW.
5. Detector = RMS (power averaging).
6. Ensure that the number of measurement points in the sweep ≥ 2 × span/RBW.
7. Sweep time = auto couple.
8. Employ trace averaging (RMS) mode over a minimum of 100 traces.
9. Use the peak marker function to determine the maximum amplitude level within the reference bandwidth (PSD).

4.4 Occupied Bandwidth

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 4.2 & 4.3

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. The transmitter output was connected to a calibrated coaxial cable, attenuator and Spectrum analyser, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The tests were performed at three frequencies (low channel, middle channel and high channel).The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1 percent of the selected span as is possible without being below 1 percent. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used since a peak or, peak hold, may produce a wider bandwidth than actual. The trace data points are recovered and are directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 percent of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded. The span between the two recorded frequencies is the occupied bandwidth.

Remark: Reference test setup 1

Test Settings

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth and the 26dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 – 5% of the expected OBW
3. VBW ≥ 3 x RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize
8. If necessary, steps 2 – 7 were repeated after changing the RBW such that it would be within 1 – 5% of the 99% occupied bandwidth observed in Step 7

4.5 Band Edge at Antenna Terminals

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 6.0

The transmitter output was connected to a calibrated coaxial cable, attenuator and Spectrum analyser, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The tests were performed at two frequencies (low channel and high channel).in the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of 100kHz or 1% of the emission bandwidth of the fundamental emission of the transmitter may be employed. The EUT emission bandwidth is measured as the width of the signal between two points, outside of which all emission are attenuated at least 26dB below the transmitter power. The video bandwidth of the spectrum analyzer was set at thrice the resolution bandwidth. Detector Mode was set to peak or peak hold power.

Remark: Reference test setup 1

Test Settings

1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW ≥ 1% of the emission bandwidth
4. VBW ≥ 3 x RBW
5. Detector = RMS
6. Number of sweep points ≥ 2 x Span/RBW
7. Trace mode = trace average for continuous emissions, max hold for pulse emissions
8. Sweep time = auto couple
9. The trace was allowed to stabilize

4.6 Spurious And Harmonic Emissions at Antenna Terminal

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 6.0

The transmitter output was connected to a calibrated coaxial cable, attenuator and Spectrum analyzer, the other end of which was connected to a Base Station Simulator. The Base Station Simulator was set to force the EUT to its maximum power setting. The tests were performed at three frequencies (low channel and high channel).The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log(P) dB. Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

Remark: Reference test setup 1

Test Settings

1. Start frequency was set to 9kHz and stop frequency was set to at least 10* the fundamental frequency(Separated into at least two plots per channel)
2. Detector = RMS
3. Trace mode = trace average for continuous emissinos, max hold for pulse emissions
4. Sweep time = auto couple
5. The trace was allowed to stabilize
6. Please see test notes below for RBW and VBW settings

4.7 Peak-Average Ratio

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 5.7.2

A peak to average ratio measurement is performed at the conducted port of the EUT. For WCDMA signals, the spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level. For GSM signals, an average and a peak trace are used on a spectrum analyzer to determine the largest deviation between the average and the peak power of the EUT in a bandwidth greater than the emission bandwidth. The traces are generated with the spectrum analyzer set to zero span mode.

Remark: Reference test setup 1

Test Settings

1. The signal analyzer's CCDF measurement profile is enabled
2. Frequency = carrier center frequency
3. Measurement BW > Emission bandwidth of signal
4. The signal analyzer was set to collect one million samples to generate the CCDF curve
5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power

4.8 Field Strength of Spurious Radiation

Measurement Procedure: FCC KDB 971168 D01 V03r01 Section 5.8

Below 1GHz test procedure as below:

1). The EUT was powered ON and placed on a 80cm high table in the chamber. The antenna of the transmitter was extended to its maximum length.

2). The disturbance of the transmitter was maximized on the test receiver display by raising and lowering from 1m to 4m (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made.

3). Steps 1) and 2) were performed with the EUT and the receive antenna in both vertical and horizontal polarization.

4). Test the EUT in the lowest channel, the middle channel ,the Highest channel.

5). The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, Only the test worst case mode is recorded in the report.

6). Repeat above procedures until all frequencies measured was complete.

E (dBμV/m) = Measured amplitude level (dBμV) + (Cable Loss (dB) + Antenna Factor (dB/m) – AMP(dB))

EIRP (dBm) = E (dBμV/m) + 20 log D − 104.8; where D is the measurement distance in meters

Above 1GHz test procedure as below:

1) Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber

2) Calculate power in dBm by the following formula:

E (dBμV/m) = Measured amplitude level (dBμV) + (Cable Loss (dB) + Antenna Factor (dB/m) – AMP(dB))

EIRP (dBm) = E (dBμV/m) + 20 log D − 104.8; where D is the measurement distance in meters

3). Test the EUT in the lowest channel, the middle channel the Highest channel

4). The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, Only the test worst case mode is recorded in the report.

5). Repeat above procedures until all frequencies measured was complete

Remark1: Reference test setup 2

Remark2: The emission below 18G were measured at a 3m test distance, while emissions above 18GHz were measured at a 1m test distance. At a measurement distance of 1 meter the limit line was increased by 20*LOG(3/1) = 9.54 dB.

Remark: Reference test setup 2

Remark:

1) The field strength is calculated by adding the Antenna Factor, Cable Factor & AMP. The basic equation with a sample calculation is as follows:

AF = Antenna Factor(dB/m)

Factor = Cable Factor(dB) - Preamplifier (dB)

Level = Reading Level + AF + Factor -95.26

Margin = Limit – Level

2) Scan from 9kHz to 40GHz, The disturbance between 9KHz to 30MHz and 18GHz to 40GHz was very low, and the harmonics were the highest point could be found when testing, so only the harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

3) All modes have been tested, but only the worst case data displayed in this report.

NR Band 2-Low channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3702.0	-58.6	-13	-45.6	-63.62	3.42	8.44	Horizontal	Pass
5553.0	-54.91	-13	-41.91	-61.12	4.24	10.45	Horizontal	Pass
7404.0	-52.18	-13	-39.18	-59.59	4.21	11.62	Horizontal	Pass
3702.0	-58.06	-13	-45.06	-63.08	3.42	8.44	Vertical	Pass
5553.0	-54.76	-13	-41.76	-60.97	4.24	10.45	Vertical	Pass
7404.0	-52.58	-13	-39.58	-59.99	4.21	11.62	Vertical	Pass

NR Band 2-Middle channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3742.0	-58.48	-13	-45.48	-63.52	3.45	8.49	Horizontal	Pass
5613.0	-55.02	-13	-42.02	-61.23	4.24	10.45	Horizontal	Pass
7484.0	-51.03	-13	-38.03	-58.53	4.22	11.72	Horizontal	Pass
3742.0	-58.4	-13	-45.4	-63.44	3.45	8.49	Vertical	Pass
5613.0	-56.05	-13	-43.05	-62.26	4.24	10.45	Vertical	Pass
7484.0	-50.72	-13	-37.72	-58.22	4.22	11.72	Vertical	Pass

NR Band 2-High channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3782.0	-58.24	-13	-45.24	-63.31	3.48	8.55	Horizontal	Pass
5673.0	-56.24	-13	-43.24	-62.46	4.23	10.45	Horizontal	Pass
7564.0	-51.61	-13	-38.61	-59.21	4.22	11.82	Horizontal	Pass
3782.0	-58.23	-13	-45.23	-63.3	3.48	8.55	Vertical	Pass
5673.0	-55.89	-13	-42.89	-62.11	4.23	10.45	Vertical	Pass
7564.0	-51.08	-13	-38.08	-58.68	4.22	11.82	Vertical	Pass

NR Band 5-Low channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1650.0	-68.38	-13	-55.38	-71.78	2.1	5.5	Horizontal	Pass
2475.0	-63.42	-13	-50.42	-66.54	2.64	5.76	Horizontal	Pass
3300.0	-60.1	-13	-47.1	-64.61	3.16	7.67	Horizontal	Pass
1650.0	-66.74	-13	-53.74	-70.14	2.1	5.5	Vertical	Pass
2475.0	-63.41	-13	-50.41	-66.53	2.64	5.76	Vertical	Pass
3300.0	-59.69	-13	-46.69	-64.2	3.16	7.67	Vertical	Pass

NR Band 5-Middle channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1655.0	-68.85	-13	-55.85	-72.23	2.11	5.49	Horizontal	Pass
2482.5	-64.55	-13	-51.55	-67.68	2.65	5.78	Horizontal	Pass
3310.0	-59.85	-13	-46.85	-64.39	3.16	7.7	Horizontal	Pass
1655.0	-68.19	-13	-55.19	-71.57	2.11	5.49	Vertical	Pass
2482.5	-63.02	-13	-50.02	-66.15	2.65	5.78	Vertical	Pass
3310.0	-59.83	-13	-46.83	-64.37	3.16	7.7	Vertical	Pass

NR Band 5-High channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1660.0	-67.97	-13	-54.97	-71.34	2.11	5.48	Horizontal	Pass
2490.0	-64.29	-13	-51.29	-67.44	2.65	5.8	Horizontal	Pass
3320.0	-58.84	-13	-45.84	-63.39	3.17	7.72	Horizontal	Pass
1660.0	-68.61	-13	-55.61	-71.98	2.11	5.48	Vertical	Pass
2490.0	-63.58	-13	-50.58	-66.73	2.65	5.8	Vertical	Pass
3320.0	-59.82	-13	-46.82	-64.37	3.17	7.72	Vertical	Pass

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NR Band 7-Low channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
5002.0	-55.77	-25	-30.77	-61.65	4.26	10.14	Horizontal	Pass
7503.0	-51.02	-25	-26.02	-58.54	4.22	11.74	Horizontal	Pass
10004.0	-50.09	-25	-25.09	-58.04	5.08	13.03	Horizontal	Pass
5002.0	-55.95	-25	-30.95	-61.83	4.26	10.14	Vertical	Pass
7503.0	-51.26	-25	-26.26	-58.78	4.22	11.74	Vertical	Pass
10004.0	-50.0	-25	-25.0	-57.95	5.08	13.03	Vertical	Pass

NR Band 7-Middle channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
5052.0	-55.09	-25	-30.09	-61.0	4.26	10.17	Horizontal	Pass
7578.0	-52.12	-25	-27.12	-59.73	4.22	11.83	Horizontal	Pass
10104.0	-49.05	-25	-24.05	-57.02	5.08	13.05	Horizontal	Pass
5052.0	-55.77	-25	-30.77	-61.68	4.26	10.17	Vertical	Pass
7578.0	-52.64	-25	-27.64	-60.25	4.22	11.83	Vertical	Pass
10104.0	-48.72	-25	-23.72	-56.69	5.08	13.05	Vertical	Pass

NR Band 7-High channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
5102.0	-56.45	-25	-31.45	-62.39	4.26	10.2	Horizontal	Pass
7653.0	-51.9	-25	-26.9	-59.59	4.23	11.92	Horizontal	Pass
10204.0	-50.67	-25	-25.67	-58.66	5.08	13.07	Horizontal	Pass
5102.0	-55.09	-25	-30.09	-61.03	4.26	10.2	Vertical	Pass
7653.0	-51.76	-25	-26.76	-59.45	4.23	11.92	Vertical	Pass
10204.0	-50.43	-25	-25.43	-58.42	5.08	13.07	Vertical	Pass

NR Band 12-Low channel, Modulation: QPSK, Bandwidth:15MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1399.5	-67.51	-13	-54.51	-70.82	1.93	5.24	Horizontal	Pass
2099.25	-66.21	-13	-53.21	-68.66	2.41	4.86	Horizontal	Pass
2799.0	-61.98	-13	-48.98	-65.62	2.84	6.48	Horizontal	Pass
1399.5	-66.88	-13	-53.88	-70.19	1.93	5.24	Vertical	Pass
2099.25	-65.87	-13	-52.87	-68.32	2.41	4.86	Vertical	Pass
2799.0	-63.07	-13	-50.07	-66.71	2.84	6.48	Vertical	Pass

NR Band 12-Middle channel, Modulation: QPSK, Bandwidth:15MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1401.5	-67.4	-13	-54.4	-70.73	1.93	5.26	Horizontal	Pass
2102.25	-66.05	-13	-53.05	-68.51	2.41	4.87	Horizontal	Pass
2803.0	-62.21	-13	-49.21	-65.86	2.84	6.49	Horizontal	Pass
1401.5	-67.66	-13	-54.66	-70.99	1.93	5.26	Vertical	Pass
2102.25	-65.41	-13	-52.41	-67.87	2.41	4.87	Vertical	Pass
2803.0	-62.02	-13	-49.02	-65.67	2.84	6.49	Vertical	Pass

NR Band 12-High channel, Modulation: QPSK, Bandwidth:15MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1403.5	-67.39	-13	-54.39	-70.73	1.93	5.27	Horizontal	Pass
2105.25	-65.65	-13	-52.65	-68.1	2.42	4.87	Horizontal	Pass
2807.0	-62.61	-13	-49.61	-66.27	2.84	6.5	Horizontal	Pass
1403.5	-67.31	-13	-54.31	-70.65	1.93	5.27	Vertical	Pass
2105.25	-66.32	-13	-53.32	-68.77	2.42	4.87	Vertical	Pass
2807.0	-61.82	-13	-48.82	-65.48	2.84	6.5	Vertical	Pass

NR Band 13-Low channel, Modulation: QPSK, Bandwidth:5MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1554.5	-67.63	-13	-54.63	-71.33	2.04	5.74	Horizontal	Pass
2331.75	-65.21	-13	-52.21	-68.07	2.56	5.42	Horizontal	Pass
3109.0	-58.77	-13	-45.77	-62.93	3.03	7.19	Horizontal	Pass
1554.5	-67.58	-13	-54.58	-71.28	2.04	5.74	Vertical	Pass
2331.75	-66.22	-13	-53.22	-69.08	2.56	5.42	Vertical	Pass
3109.0	-58.99	-13	-45.99	-63.15	3.03	7.19	Vertical	Pass

NR Band 13-Middle channel, Modulation: QPSK, Bandwidth:5MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1559.5	-67.72	-40	-27.72	-71.41	2.04	5.73	Horizontal	Pass
2339.25	-65.41	-13	-52.41	-68.28	2.56	5.43	Horizontal	Pass
3119.0	-59.22	-13	-46.22	-63.4	3.04	7.22	Horizontal	Pass
1559.5	-67.75	-40	-27.75	-71.44	2.04	5.73	Vertical	Pass
2339.25	-65.79	-13	-52.79	-68.66	2.56	5.43	Vertical	Pass
3119.0	-59.28	-13	-46.28	-63.46	3.04	7.22	Vertical	Pass

NR Band 13-High channel, Modulation: QPSK, Bandwidth:5MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1564.5	-67.47	-40	-27.47	-71.14	2.05	5.72	Horizontal	Pass
2346.75	-65.44	-13	-52.44	-68.33	2.56	5.45	Horizontal	Pass
3129.0	-59.32	-13	-46.32	-63.51	3.05	7.24	Horizontal	Pass
1564.5	-67.08	-40	-27.08	-70.75	2.05	5.72	Vertical	Pass
2346.75	-64.46	-13	-51.46	-67.35	2.56	5.45	Vertical	Pass
3129.0	-58.97	-13	-45.97	-63.16	3.05	7.24	Vertical	Pass

NR Band 14-Low channel, Modulation: QPSK, Bandwidth:5MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1576.5	-67.32	-40	-27.32	-70.96	2.05	5.69	Horizontal	Pass
2364.75	-65.77	-13	-52.77	-68.69	2.58	5.5	Horizontal	Pass
3153.0	-57.63	-13	-44.63	-61.87	3.06	7.3	Horizontal	Pass
1576.5	-67.11	-40	-27.11	-70.75	2.05	5.69	Vertical	Pass
2364.75	-65.56	-13	-52.56	-68.48	2.58	5.5	Vertical	Pass
3153.0	-58.35	-13	-45.35	-62.59	3.06	7.3	Vertical	Pass

NR Band 14-Middle channel, Modulation: QPSK, Bandwidth:5MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1581.5	-67.29	-40	-27.29	-70.9	2.06	5.67	Horizontal	Pass
2372.25	-65.55	-13	-52.55	-68.48	2.58	5.51	Horizontal	Pass
3163.0	-57.92	-13	-44.92	-62.18	3.07	7.33	Horizontal	Pass
1581.5	-67.23	-40	-27.23	-70.84	2.06	5.67	Vertical	Pass
2372.25	-65.46	-13	-52.46	-68.39	2.58	5.51	Vertical	Pass
3163.0	-57.93	-13	-44.93	-62.19	3.07	7.33	Vertical	Pass

NR Band 14-High channel, Modulation: QPSK, Bandwidth:5MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1586.5	-67.25	-40	-27.25	-70.85	2.06	5.66	Horizontal	Pass
2379.75	-65.15	-13	-52.15	-68.09	2.59	5.53	Horizontal	Pass
3173.0	-58.22	-13	-45.22	-62.5	3.07	7.35	Horizontal	Pass
1586.5	-67.29	-40	-27.29	-70.89	2.06	5.66	Vertical	Pass
2379.75	-64.47	-13	-51.47	-67.41	2.59	5.53	Vertical	Pass
3173.0	-57.59	-13	-44.59	-61.87	3.07	7.35	Vertical	Pass

NR Band 25-Low channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3702.0	-58.7	-13	-45.7	-63.72	3.42	8.44	Horizontal	Pass
5553.0	-55.44	-13	-42.44	-61.65	4.24	10.45	Horizontal	Pass
7404.0	-51.9	-13	-38.9	-59.31	4.21	11.62	Horizontal	Pass
3702.0	-57.5	-13	-44.5	-62.52	3.42	8.44	Vertical	Pass
5553.0	-54.99	-13	-41.99	-61.2	4.24	10.45	Vertical	Pass
7404.0	-52.0	-13	-39.0	-59.41	4.21	11.62	Vertical	Pass

NR Band 25-Middle channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3747.0	-57.5	-13	-44.5	-62.55	3.45	8.5	Horizontal	Pass
5620.5	-55.5	-13	-42.5	-61.71	4.24	10.45	Horizontal	Pass
7494.0	-51.42	-13	-38.42	-58.93	4.22	11.73	Horizontal	Pass
3747.0	-58.04	-13	-45.04	-63.09	3.45	8.5	Vertical	Pass
5620.5	-55.89	-13	-42.89	-62.1	4.24	10.45	Vertical	Pass
7494.0	-51.61	-13	-38.61	-59.12	4.22	11.73	Vertical	Pass

NR Band 25-High channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3792.0	-58.38	-13	-45.38	-63.46	3.48	8.56	Horizontal	Pass
5688.0	-55.29	-13	-42.29	-61.51	4.23	10.45	Horizontal	Pass
7584.0	-52.82	-13	-39.82	-60.44	4.22	11.84	Horizontal	Pass
3792.0	-58.84	-13	-45.84	-63.92	3.48	8.56	Vertical	Pass
5688.0	-55.01	-13	-42.01	-61.23	4.23	10.45	Vertical	Pass
7584.0	-52.41	-13	-39.41	-60.03	4.22	11.84	Vertical	Pass

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NR Band 26-Low channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1630.0	-66.33	-13	-53.33	-69.79	2.09	5.55	Horizontal	Pass
2445.0	-60.31	-13	-47.31	-63.37	2.63	5.69	Horizontal	Pass
3260.0	-58.37	-13	-45.37	-62.81	3.13	7.57	Horizontal	Pass
1630.0	-67.44	-13	-54.44	-70.9	2.09	5.55	Vertical	Pass
2445.0	-65.27	-13	-52.27	-68.33	2.63	5.69	Vertical	Pass
3260.0	-56.68	-13	-43.68	-61.12	3.13	7.57	Vertical	Pass

NR Band 26-Middle channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1645.0	-67.54	-13	-54.54	-70.95	2.1	5.51	Horizontal	Pass
2467.5	-62.53	-13	-49.53	-65.63	2.64	5.74	Horizontal	Pass
3290.0	-59.24	-13	-46.24	-63.73	3.15	7.64	Horizontal	Pass
1645.0	-68.27	-13	-55.27	-71.68	2.1	5.51	Vertical	Pass
2467.5	-64.01	-13	-51.01	-67.11	2.64	5.74	Vertical	Pass
3290.0	-59.7	-13	-46.7	-64.19	3.15	7.64	Vertical	Pass

NR Band 26-High channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1660.0	-67.97	-13	-54.97	-71.34	2.11	5.48	Horizontal	Pass
2490.0	-64.13	-13	-51.13	-67.28	2.65	5.8	Horizontal	Pass
3320.0	-59.64	-13	-46.64	-64.19	3.17	7.72	Horizontal	Pass
1660.0	-68.05	-13	-55.05	-71.42	2.11	5.48	Vertical	Pass
2490.0	-63.81	-13	-50.81	-66.96	2.65	5.8	Vertical	Pass
3320.0	-59.53	-13	-46.53	-64.08	3.17	7.72	Vertical	Pass

NR Band 30-Low channel, Modulation: QPSK, Bandwidth:5MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
4610.5	-57.57	-13	-44.57	-63.12	4.01	9.56	Horizontal	Pass
6915.75	-52.87	-13	-39.87	-59.7	4.19	11.02	Horizontal	Pass
9221.0	-50.58	-13	-37.58	-59.12	4.68	13.22	Horizontal	Pass
4610.5	-58.24	-13	-45.24	-63.79	4.01	9.56	Vertical	Pass
6915.75	-52.73	-13	-39.73	-59.56	4.19	11.02	Vertical	Pass
9221.0	-50.56	-13	-37.56	-59.1	4.68	13.22	Vertical	Pass

NR Band 30-Middle channel, Modulation: QPSK, Bandwidth:5MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
4615.5	-57.73	-13	-44.73	-63.29	4.01	9.57	Horizontal	Pass
6923.25	-53.15	-13	-40.15	-59.99	4.19	11.03	Horizontal	Pass
9231.0	-50.29	-13	-37.29	-58.82	4.69	13.22	Horizontal	Pass
4615.5	-57.1	-13	-44.1	-62.66	4.01	9.57	Vertical	Pass
6923.25	-52.46	-13	-39.46	-59.3	4.19	11.03	Vertical	Pass
9231.0	-50.82	-13	-37.82	-59.35	4.69	13.22	Vertical	Pass

NR Band 30-High channel, Modulation: QPSK, Bandwidth:5MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
4620.5	-57.55	-13	-44.55	-63.11	4.02	9.58	Horizontal	Pass
6930.75	-53.25	-13	-40.25	-60.1	4.19	11.04	Horizontal	Pass
9241.0	-49.42	-13	-36.42	-57.95	4.69	13.22	Horizontal	Pass
4620.5	-57.85	-13	-44.85	-63.41	4.02	9.58	Vertical	Pass
6930.75	-53.42	-13	-40.42	-60.27	4.19	11.04	Vertical	Pass
9241.0	-49.59	-13	-36.59	-58.12	4.69	13.22	Vertical	Pass

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NR Band 38-Low channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
5144.0	-56.5	-25	-31.5	-62.48	4.25	10.23	Horizontal	Pass
7716.0	-53.0	-25	-28.0	-60.76	4.23	11.99	Horizontal	Pass
10288.0	-50.77	-25	-25.77	-58.77	5.08	13.08	Horizontal	Pass
5144.0	-56.53	-25	-31.53	-62.51	4.25	10.23	Vertical	Pass
7716.0	-52.37	-25	-27.37	-60.13	4.23	11.99	Vertical	Pass
10288.0	-49.55	-25	-24.55	-57.55	5.08	13.08	Vertical	Pass

NR Band 38-Middle channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
5154.0	-56.19	-25	-31.19	-62.18	4.25	10.24	Horizontal	Pass
7731.0	-52.19	-25	-27.19	-59.97	4.23	12.01	Horizontal	Pass
10344.0	-50.42	-25	-25.42	-58.43	5.08	13.09	Horizontal	Pass
5154.0	-55.89	-25	-30.89	-61.88	4.25	10.24	Vertical	Pass
7731.0	-53.19	-25	-28.19	-60.97	4.23	12.01	Vertical	Pass
10344.0	-50.38	-25	-25.38	-58.39	5.08	13.09	Vertical	Pass

NR Band 38-High channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
5164.0	-54.8	-25	-29.8	-60.79	4.25	10.24	Horizontal	Pass
7746.0	-51.91	-25	-26.91	-59.71	4.23	12.03	Horizontal	Pass
10328.0	-51.13	-25	-26.13	-59.14	5.08	13.09	Horizontal	Pass
5164.0	-55.43	-25	-30.43	-61.42	4.25	10.24	Vertical	Pass
7746.0	-52.24	-25	-27.24	-60.04	4.23	12.03	Vertical	Pass
10328.0	-50.53	-25	-25.53	-58.54	5.08	13.09	Vertical	Pass

NR Band 41-Low channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
4994.04	-55.2	-25	-30.2	-61.07	4.26	10.13	Horizontal	Pass
7491.06	-50.35	-25	-25.35	-57.86	4.22	11.73	Horizontal	Pass
9988.08	-49.64	-25	-24.64	-57.61	5.07	13.04	Horizontal	Pass
4994.04	-56.25	-25	-31.25	-62.12	4.26	10.13	Vertical	Pass
7491.06	-51.89	-25	-26.89	-59.4	4.22	11.73	Vertical	Pass
9988.08	-47.83	-25	-22.83	-55.8	5.07	13.04	Vertical	Pass

NR Band 41-Middle channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
5167.98	-56.28	-25	-31.28	-62.27	4.25	10.24	Horizontal	Pass
7751.97	-52.4	-25	-27.4	-60.21	4.23	12.04	Horizontal	Pass
10335.96	-50.85	-25	-25.85	-58.86	5.08	13.09	Horizontal	Pass
5167.98	-55.99	-25	-30.99	-61.98	4.25	10.24	Vertical	Pass
7751.97	-52.69	-25	-27.69	-60.5	4.23	12.04	Vertical	Pass
10335.96	-50.91	-25	-25.91	-58.92	5.08	13.09	Vertical	Pass

NR Band 41-High channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
5341.98	-56.3	-25	-31.3	-62.4	4.25	10.35	Horizontal	Pass
8012.97	-50.51	-25	-25.51	-58.62	4.24	12.35	Horizontal	Pass
10683.96	-48.75	-25	-23.75	-56.85	5.08	13.18	Horizontal	Pass
5341.98	-56.07	-25	-31.07	-62.17	4.25	10.35	Vertical	Pass
8012.97	-50.47	-25	-25.47	-58.58	4.24	12.35	Vertical	Pass
10683.96	-48.92	-25	-23.92	-57.02	5.08	13.18	Vertical	Pass

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NR Band 66-Low channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	**EIRP (dBm)**	**Limit (dBm)**	**Over Limit (dB)**	**S.G. Power (dBm)**	**Cable Loss (dB)**	**Antenna Gain (dBi)**	**Polarization (H/V)**	**Result**
3424.0	-58.04	-13	-45.04	-62.78	3.24	7.98	Horizontal	Pass
5136.0	-55.21	-13	-42.21	-61.18	4.25	10.22	Horizontal	Pass
6848.0	-54.46	-13	-41.46	-61.21	4.19	10.94	Horizontal	Pass
3424.0	-58.7	-13	-45.7	-63.44	3.24	7.98	Vertical	Pass
5136.0	-55.82	-13	-42.82	-61.79	4.25	10.22	Vertical	Pass
6848.0	-53.81	-13	-40.81	-60.56	4.19	10.94	Vertical	Pass

NR Band 66-Middle channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	**EIRP (dBm)**	**Limit (dBm)**	**Over Limit (dB)**	**S.G. Power (dBm)**	**Cable Loss (dB)**	**Antenna Gain (dBi)**	**Polarization (H/V)**	**Result**
3454.0	-59.07	-13	-46.07	-63.87	3.26	8.06	Horizontal	Pass
5181.0	-55.45	-13	-42.45	-61.45	4.25	10.25	Horizontal	Pass
6908.0	-53.64	-13	-40.64	-60.46	4.19	11.01	Horizontal	Pass
3454.0	-58.76	-13	-45.76	-63.56	3.26	8.06	Vertical	Pass
5181.0	-55.64	-13	-42.64	-61.64	4.25	10.25	Vertical	Pass
6908.0	-53.57	-13	-40.57	-60.39	4.19	11.01	Vertical	Pass

NR Band 66-High channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	**EIRP (dBm)**	**Limit (dBm)**	**Over Limit (dB)**	**S.G. Power (dBm)**	**Cable Loss (dB)**	**Antenna Gain (dBi)**	**Polarization (H/V)**	**Result**
3550.5	-59.3	-13	-46.3	-64.22	3.32	8.24	Horizontal	Pass
5226.0	-55.02	-13	-42.02	-61.05	4.25	10.28	Horizontal	Pass
6968.0	-52.76	-13	-39.76	-59.66	4.19	11.09	Horizontal	Pass
3550.5	-59.65	-13	-46.65	-64.57	3.32	8.24	Vertical	Pass
5226.0	-55.45	-13	-42.45	-61.48	4.25	10.28	Vertical	Pass
6968.0	-53.92	-13	-40.92	-60.82	4.19	11.09	Vertical	Pass

NR Band 70-Low channel, Modulation: QPSK, Bandwidth:5MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3395.0	-58.23	-13	-45.23	-62.92	3.22	7.91	Horizontal	Pass
5092.5	-55.15	-13	-42.15	-61.09	4.26	10.2	Horizontal	Pass
6790.0	-53.21	-13	-40.21	-59.88	4.19	10.86	Horizontal	Pass
3395.0	-58.07	-13	-45.07	-62.76	3.22	7.91	Vertical	Pass
5092.5	-55.02	-13	-42.02	-60.96	4.26	10.2	Vertical	Pass
6790.0	-53.39	-13	-40.39	-60.06	4.19	10.86	Vertical	Pass

NR Band 70-Middle channel, Modulation: QPSK, Bandwidth:5MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3405.0	-57.95	-13	-44.95	-62.65	3.23	7.93	Horizontal	Pass
5107.5	-54.78	-13	-41.78	-60.73	4.26	10.21	Horizontal	Pass
6810.0	-52.33	-13	-39.33	-59.03	4.19	10.89	Horizontal	Pass
3405.0	-58.02	-13	-45.02	-62.72	3.23	7.93	Vertical	Pass
5107.5	-55.15	-13	-42.15	-61.1	4.26	10.21	Vertical	Pass
6810.0	-52.32	-13	-39.32	-59.02	4.19	10.89	Vertical	Pass

NR Band 70-High channel, Modulation: QPSK, Bandwidth:5MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
3415.0	-58.48	-13	-45.48	-63.21	3.23	7.96	Horizontal	Pass
5122.5	-55.02	-13	-42.02	-60.98	4.26	10.22	Horizontal	Pass
6830.0	-52.18	-13	-39.18	-58.9	4.19	10.91	Horizontal	Pass
3415.0	-58.39	-13	-45.39	-63.12	3.23	7.96	Vertical	Pass
5122.5	-55.13	-13	-42.13	-61.09	4.26	10.22	Vertical	Pass
6830.0	-52.35	-13	-39.35	-59.07	4.19	10.91	Vertical	Pass

NR Band 71-Low channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1328.0	-64.45	-13	-51.45	-67.36	1.88	4.79	Horizontal	Pass
1992.0	-65.32	-13	-52.32	-67.62	2.34	4.64	Horizontal	Pass
2656.0	-61.56	-13	-48.56	-64.97	2.75	6.16	Horizontal	Pass
1328.0	-63.94	-13	-50.94	-66.85	1.88	4.79	Vertical	Pass
1992.0	-65.72	-13	-52.72	-68.02	2.34	4.64	Vertical	Pass
2656.0	-62.08	-13	-49.08	-65.49	2.75	6.16	Vertical	Pass

NR Band 71-Middle channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1348.0	-66.79	-13	-53.79	-69.82	1.89	4.92	Horizontal	Pass
2022.0	-65.74	-13	-52.74	-68.05	2.36	4.67	Horizontal	Pass
2696.0	-61.67	-13	-48.67	-65.14	2.78	6.25	Horizontal	Pass
1348.0	-67.12	-13	-54.12	-70.15	1.89	4.92	Vertical	Pass
2022.0	-65.69	-13	-52.69	-68.0	2.36	4.67	Vertical	Pass
2696.0	-61.62	-13	-48.62	-65.09	2.78	6.25	Vertical	Pass

NR Band 71-High channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
1358.0	-64.67	-13	-51.67	-67.75	1.9	4.98	Horizontal	Pass
2037.0	-66.1	-13	-53.1	-68.44	2.37	4.71	Horizontal	Pass
2716.0	-60.2	-13	-47.2	-63.71	2.79	6.3	Horizontal	Pass
1358.0	-64.21	-13	-51.21	-67.29	1.9	4.98	Vertical	Pass
2037.0	-65.18	-13	-52.18	-67.52	2.37	4.71	Vertical	Pass
2716.0	-60.76	-13	-47.76	-64.27	2.79	6.3	Vertical	Pass

NR Band 77-Low channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
6920.04	-52.74	-13	-39.74	-59.58	4.19	11.03	Horizontal	Pass
10380.06	-50.95	-13	-37.95	-58.97	5.08	13.1	Horizontal	Pass
13840.08	-45.84	-13	-32.84	-55.28	4.95	14.39	Horizontal	Pass
6920.04	-52.88	-13	-39.88	-59.72	4.19	11.03	Vertical	Pass
10380.06	-50.07	-13	-37.07	-58.09	5.08	13.1	Vertical	Pass
13840.08	-46.2	-13	-33.2	-55.64	4.95	14.39	Vertical	Pass

NR Band 77-Middle channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
7000.02	-53.32	-13	-40.32	-60.26	4.19	11.13	Horizontal	Pass
10500.03	-51.04	-13	-38.04	-59.08	5.08	13.12	Horizontal	Pass
14000.04	-46.35	-13	-33.35	-56.01	4.82	14.48	Horizontal	Pass
7000.02	-53.51	-13	-40.51	-60.45	4.19	11.13	Vertical	Pass
10500.03	-50.62	-13	-37.62	-58.66	5.08	13.12	Vertical	Pass
14000.04	-45.68	-13	-32.68	-55.34	4.82	14.48	Vertical	Pass

NR Band 77-High channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Polarization (H/V)	Result
7080.0	-52.03	-13	-39.03	-59.07	4.19	11.23	Horizontal	Pass
10620.0	-48.48	-13	-35.48	-56.56	5.08	13.16	Horizontal	Pass
14160.0	-47.7	-13	-34.7	-57.22	4.94	14.46	Horizontal	Pass
7080.0	-52.41	-13	-39.41	-59.45	4.19	11.23	Vertical	Pass
10620.0	-49.33	-13	-36.33	-57.41	5.08	13.16	Vertical	Pass
14160.0	-46.91	-13	-33.91	-56.43	4.94	14.46	Vertical	Pass

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NR Band 78-Low channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	**EIRP (dBm)**	**Limit (dBm)**	**Over Limit (dB)**	**S.G. Power (dBm)**	**Cable Loss (dB)**	**Antenna Gain (dBi)**	**Polarization (H/V)**	**Result**
6920.04	-52.84	-13	-39.84	-59.68	4.19	11.03	Horizontal	Pass
10380.06	-51.04	-13	-38.04	-59.06	5.08	13.1	Horizontal	Pass
13840.08	-46.18	-13	-33.18	-55.62	4.95	14.39	Horizontal	Pass
6920.04	-52.79	-13	-39.79	-59.63	4.19	11.03	Vertical	Pass
10380.06	-49.75	-13	-36.75	-57.77	5.08	13.1	Vertical	Pass
13840.08	-45.74	-13	-32.74	-55.18	4.95	14.39	Vertical	Pass

NR Band 78-Middle channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	**EIRP (dBm)**	**Limit (dBm)**	**Over Limit (dB)**	**S.G. Power (dBm)**	**Cable Loss (dB)**	**Antenna Gain (dBi)**	**Polarization (H/V)**	**Result**
7000.02	-52.94	-13	-39.94	-59.88	4.19	11.13	Horizontal	Pass
10500.03	-50.7	-13	-37.7	-58.74	5.08	13.12	Horizontal	Pass
14000.04	-46.42	-13	-33.42	-56.08	4.82	14.48	Horizontal	Pass
7000.02	-52.83	-13	-39.83	-59.77	4.19	11.13	Vertical	Pass
10500.03	-49.9	-13	-36.9	-57.94	5.08	13.12	Vertical	Pass
14000.04	-46.08	-13	-33.08	-55.74	4.82	14.48	Vertical	Pass

NR Band 78-High channel, Modulation: QPSK, Bandwidth:20MHz, 1RB#0								
Frequency (MHz)	**EIRP (dBm)**	**Limit (dBm)**	**Over Limit (dB)**	**S.G. Power (dBm)**	**Cable Loss (dB)**	**Antenna Gain (dBi)**	**Polarization (H/V)**	**Result**
7080.0	-52.24	-13	-39.24	-59.28	4.19	11.23	Horizontal	Pass
10620.0	-48.79	-13	-35.79	-56.87	5.08	13.16	Horizontal	Pass
14160.0	-47.93	-13	-34.93	-57.45	4.94	14.46	Horizontal	Pass
7080.0	-51.96	-13	-38.96	-59.0	4.19	11.23	Vertical	Pass
10620.0	-48.98	-13	-35.98	-57.06	5.08	13.16	Vertical	Pass
14160.0	-47.21	-13	-34.21	-56.73	4.94	14.46	Vertical	Pass

Note: All modes have been tested and we found QPSK test mode has the worst test result. Only record the worst test result.

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4.9 Frequency Stability / Temperature Variation

Measurement Procedure:

Frequency stability testing is performed in accordance with the guidelines of FCC KDB 971168 D01 V03r01 Section 9

The frequency stability of the transmitter is measured by:

a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.

b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

Specification – The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5 ppm) of the center frequency.

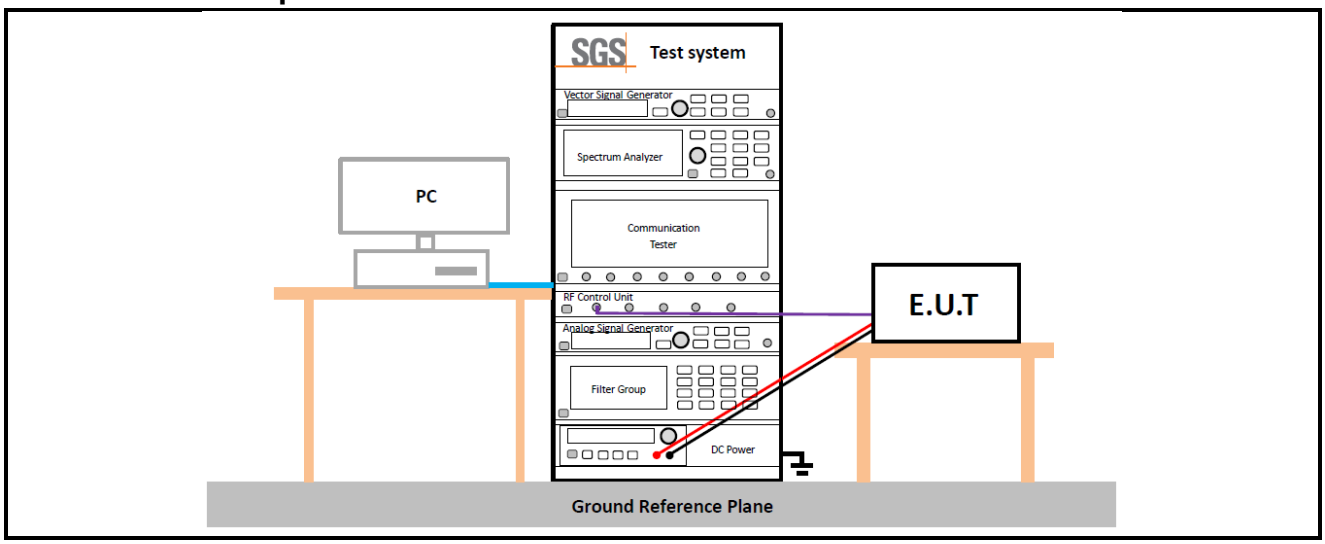
Time Period and Procedure:

1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
2. The equipment is turned on in a “standby” condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

Remark: Reference test setup 3

4.10 Test Setups

4.10.1 Test Setup 1



4.10.2 Test Setup 2

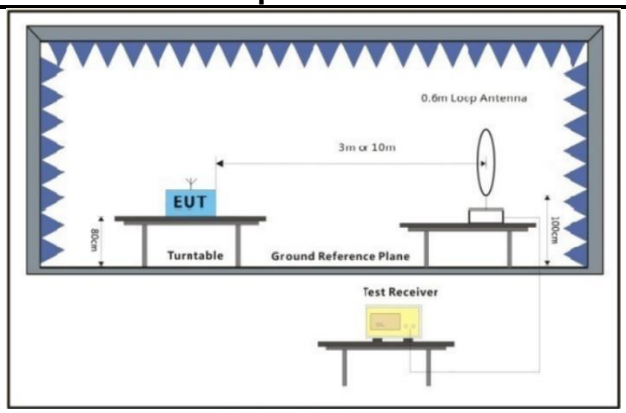


Figure 1. Below 30MHz

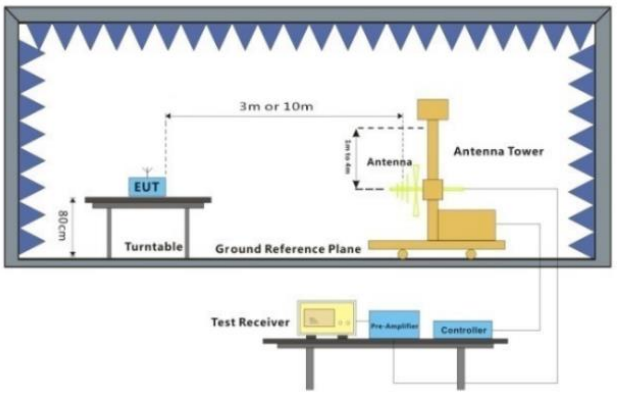


Figure 2. 30MHz to 1GHz

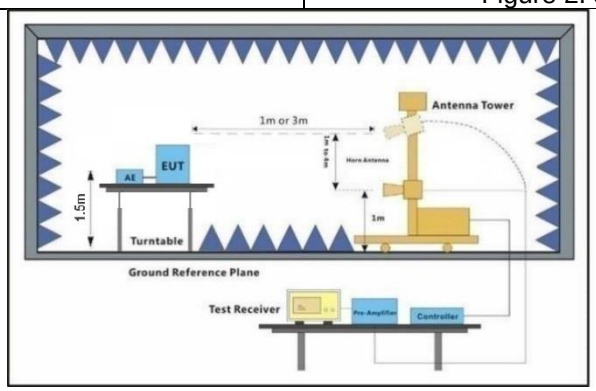
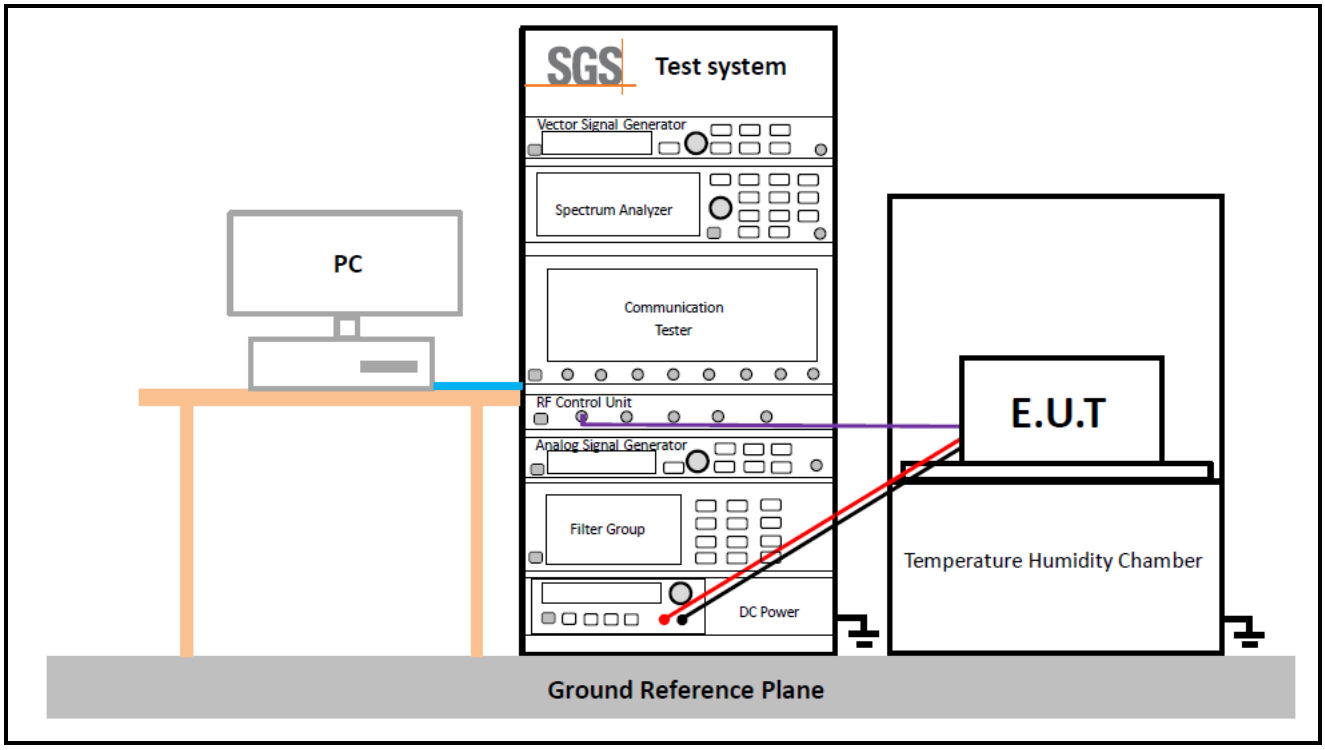


Figure 3. above 1GHz

4.10.3 Test Setup 3



4.11 Test Conditions

Transmit Output Power Data - Average Power, Spectral Density	
Test Case	**Test Conditions**
Test Environment	Ambient Climate & Rated Voltage
Test Setup	Test Setup 1
RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
Test Mode	NR/TM1; NR/TM2; NR/TM3; NR/TM4; NR/TM5; NR/TM6; NR/TM7;
Peak-to-Average Ratio	
Test Case	**Test Conditions**
Test Environment	Ambient Climate & Rated Voltage
Test Setup	Test Setup 1
RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
Test Mode	NR/TM1; NR/TM2; NR/TM3; NR/TM4; NR/TM5; NR/TM6; NR/TM7;
Bandwidth - Occupied Bandwidth	
Test Case	**Test Conditions**
Test Environment	Ambient Climate & Rated Voltage
Test Setup	Test Setup 1
RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
Test Mode	NR/TM1; NR/TM2; NR/TM3; NR/TM4; NR/TM5; NR/TM6; NR/TM7;
Bandwidth - Emission Bandwidth	
Test Case	**Test Conditions**
Test Environment	Ambient Climate & Rated Voltage
Test Setup	Test Setup 1
RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
Test Mode	NR/TM1; NR/TM2; NR/TM3; NR/TM4; NR/TM5; NR/TM6; NR/TM7;
Band Edges Compliance	
Test Case	**Test Conditions**
Test Environment	Ambient Climate & Rated Voltage
Test Setup	Test Setup 1
RF Channels (TX)	L, H (L= low channel, H= high channel)
Test Mode	NR/TM1; NR/TM2; NR/TM6
Spurious Emission at Antenna Terminals	

Test Case	Test Conditions
Test Environment	Ambient Climate & Rated Voltage
Test Setup	Test Setup 1
RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
Test Mode	NR/TM1; NR/TM2; NR/TM6
Field Strength of Spurious Radiation	
Test Case	**Test Conditions**
Test Environment	Ambient Climate & Rated Voltage
Test Setup	Test Setup 2
RF Channels (TX)	L, M, H (L= low channel, M= middle channel, H= high channel)
Test Mode	NR/TM1 Remark: All bandwidth and modulation of NR have been pre tested, and only the worst results are reflected in the report.
Frequency Stability	
Test Case	**Test Conditions**
Test Environment	(1) -30 °C to +50 °C with step 10 °C at Rated Voltage (2) VL, VN and VH of Rated Voltage at Ambient Climate.
Test Setup	Test Setup 3
RF Channels (TX)	M (M= middle channel)
Test Mode	NR/TM1; NR/TM2; NR/TM3; NR/TM4; NR/TM5; NR/TM6; NR/TM7; The report only show the bandwidth with the worst case.

5 Main Test Instruments

RF conducted test					
Test Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. Date**	**Cal. Due date**
Programmable DC Source	Chroma	62024P-80-60	SEM011-09	2023/07/11	2024/07/10
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2024/03/19	2025/03/18
Spectrum Analyzer	Rohde & Schwarz	FSV40	SEM008-04	2024/03/15	2025/03/14
Measurement Software	TST	TST PASS V2.0	N/A	N/A	N/A
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2023/07/11	2024/07/10
Universal Radio Communication Tester	Rohde & Schwarz	CMW 500	SEM010-03	2024/03/14	2025/03/13
Power Sensor	KEYSIGHT	U2021XA	SEM009-15	2024/03/15	2025/03/14

RE in Chamber					
Test Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. Date**	**Cal. Due date**
Trilog-Broadband Antenna	Schwarzbeck	VULB9168	SEM003-33	2021/09/25	2024/09/24
MXE EMI receiver	Agilent	N9038A	SEM004-05	2023/07/11	2024/07/10
Pre-amplifier	HP	8447D	SEM005-02	2023/07/11	2024/07/10
Spectrum Analyzer	Rohde & Schwarz	101288	SEM004-08	2023/07/11	2024/07/10
Low Noise Amplifier	CLAVIIO	BDLNA-0118-352810	SEM005-05	2023/07/11	2024/07/10
Substitution Antenna	Schwarzbeck	VULB9168	SEM003-18	2022/08/07	2025/08/06
Signal Generator(9kHz-40GHz)	N5173B	MY53270267	Agilent	2023/07/11	2024/07/10
Pre-amplifier	HP	8447D	SEM005-02	2023/07/11	2024/07/10
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	SEM003-15	2021/07/11	2024/07/10
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9120D	SEM003-32	2021/09/26	2024/09/25

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Double-ridged waveguide horn	ETS-LINDGREN	3117	SEM003-34	2021/09/25	2024/09/24
Spectrum Analyzer	Rohde & Schwarz	101288	SEM004-08	2023/07/11	2024/07/10
Low Noise Amplifier	CLAVIIO	BDLNA-0118-352810	SEM005-05	2023/07/11	2024/07/10
Pre-amplifier	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	2023/07/11	2024/07/10
Pre-amplifier	Rohde & Schwarz	CH14-H052	SEM005-17	2023/07/11	2024/07/10
Substitution Antenna	ETS-Lindgren	3142C	SEM003-01	2023/06/25	2026/06/24
Universal Radio Communication Tester	Rohde & Schwarz	CMW 500	SEM010-03	2024/03/14	2025/03/13

General used equipment					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
Humidity/ Temperature Indicator	deli	8838	SEM002-32	2023-07-28	2024-07-27
Humidity/ Temperature Indicator	deli	8838	SEM002-33	2023-07-28	2024-07-27
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2024/03/18	2025/03/17

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6 Measurement Uncertainty

For a 95% confidence level (k = 2), the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 as following:

No.	Item	Measurement Uncertainty
1	Radio Frequency	± 5.4 x 10^{-8}
2	Duty cycle	± 0.3%
3	Occupied Bandwidth	± 3%
4	RF conducted power	± 0.8dB
5	RF power density	± 0.4dB
6	Conducted Spurious emissions	± 2.7dB
7	Radiated Spurious emission test	± 3.1dB (Below 1GHz)
		± 4.4dB (Above 1GHz)
8	Temperature test	± 1°C
9	Humidity test	± 3%
10	Supply voltages	± 1.5%
11	Time	± 3%

7 Appendixes

SZCR2404001514AT Appendix	NR_n12
SZCR2404001514AT Appendix	NR_n13
SZCR2404001514AT Appendix	NR_n14
SZCR2404001514AT Appendix	NR_n2
SZCR2404001514AT Appendix	NR_n25
SZCR2404001514AT Appendix	NR_n26a(824-849MHz)
SZCR2404001514AT Appendix	NR_n26b(814-824MHz)
SZCR2404001514AT Appendix	NR_n26c(814-849MHz)
SZCR2404001514AT Appendix	NR_n30
SZCR2404001514AT Appendix	NR_n38
SZCR2404001514AT Appendix	NR_n41
SZCR2404001514AT Appendix	NR_n5
SZCR2404001514AT Appendix	NR_n66
SZCR2404001514AT Appendix	NR_n7
SZCR2404001514AT Appendix	NR_n70
SZCR2404001514AT Appendix	NR_n71
SZCR2404001514AT Appendix	NR_N77a(3450-3550MHz)
SZCR2404001514AT Appendix	NR_N77b(3700-3980MHz)
SZCR2404001514AT Appendix	NR_N78a(3450-3550MHz)
SZCR2404001514AT Appendix	NR_N78b(3700-3800MHz)
SZCR2404001514AT Appendix	NR_Frequency Stability
SZCR2404001514AT Appendix	NR_Power Output Data

---End of Report---