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	TEST REPORT
Application No.:	SEWM2308000314RG
Applicant:	Shenzhen Tinno Mobile Technology Corp.
Address of Applicant:	27-001, South Side of Tianlong Mobile Headquarters Building, Tongfa South Road, Xili Community, Xili Street, Nanshan District, Shenzhen , PRC
Manufacturer:	Shenzhen Tinno Mobile Technology Corp.
Address of Manufacturer:	27-001, South Side of Tianlong Mobile Headquarters Building, Tongfa South Road, Xili Community, Xili Street, Nanshan District, Shenzhen , PRC
EUT Description:	Smart Phone
Model No.:	Celero3 5G
FCC ID:	XD6U653DS
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:	2023/08/19
Date of Test:	2023/09/02 to 2023/10/12
Date of Issue:	2023/10/13
Test Result:	PASS *

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

Authorized Signature:

1 veli

Well Wei Wireless Laboratory Manager



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Revision Record					
VersionChapterDateModifierRemark					
01		2023/10/13		Original	

Prepared By	(Levi Li) / Test Engineer
Checked By	Stone Gu) / Reviewer



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2 Test Summary

2.1 NR Band n5/ NR Band n26(824~849 MHz)

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	Section 1 of Appendix B.17&B.20	Pass
Peak-Average Ratio	§22.913(d)	Limit≤13 dB	Section 2 of Appendix B.17&B.20	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Section 3 of Appendix B.17&B.20	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.	Section 4 of Appendix B.17&B.20	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.	Section 5 of Appendix B.17&B.20	Pass
Field Strength of Spurious Radiation	§2.1053, §22.917(a)	FCC: ≤ -13 dBm/100 kHz.	Section 6 of Appendix B.17&B.20	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(2) §22.355	±2.5ppm.	Section 7 of Appendix B.17&B.20	Pass



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Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §27.50(h)(2)	EIRP ≤ 2W	Section 1 of Appendix B.22	Pass
Peak-Average Ratio		≤13 dB	Section 2 of Appendix B.22	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Section 3 of Appendix B.22	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, wdhere X is the greater of 6 megahertz or the actual emission bandwidth as defined 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.	Section 4 of Appendix B.22	Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(m)	Channel Edge -25 dBm/ 1 MHz 9 kHz 9 kHz X=Max {6MHz, EBW} Channel Edge	Section 5 of Appendix B.22	Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(m)	25 dBm/ 1 MHz 1 MHz 9 kHz S 5 MHz X=Max {6MHz, EBW}	Section 6 of Appendix B.22	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(2) §27.54	Within authorized bands of operation/frequency block.	Section 7 of Appendix B.22	Pass

2.2 NR Band n41

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Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §24.232(c)	EIRP ≤ 2 W	Section 1 of Appendix B.16&B.18	Pass
Peak-Average Ratio	§24.232(d)	Limit≤13 dB	Section 2 of Appendix B.16&B.18	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Section 3 of Appendix B.16&B.18	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.	Section 4 of Appendix B.16&B.18	Pass
Spurious Emission at Antenna Terminals	§2.1051, §24.238(a)	≤ -13 dBm/1 MHz, from 9 kHz to 10 th harmonics but outside authorized operating frequency ranges.	Section 5 of Appendix B.16&B.18	Pass
Field Strength of Spurious Radiation	§2.1053, §24.238(a)	≤ -13 dBm/1 MHz.	Section 6 of Appendix B.16&B.18	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(2) §24.235	Within authorized bands of operation/frequency block.	Section 7 of Appendix B.16&B.18	Pass

2.3 NR Band n2/ NR Band n25

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Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Transmitter Conducted Power Output	§2.1046, §90.635(b)	< 100 W.	Section 1 of Appendix B.19	Pass
Peak-Average Ratio		Limit≤13 dB	Section 2 of Appendix B.19	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Section 3 of Appendix B.19	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.	Section 4 of Appendix B.19	Pass
Spurious Emission at Antenna Terminals	§2.1051, §90.691	< 43 + 10Log10(P[Watts]) for all out- of-band emissions	Section 5 of Appendix B.19	Pass
Field Strength of Spurious Radiation	§2.1053, §90.691	< 43 + 10Log10(P[Watts]) for all out- of-band emissions	Section 6 of Appendix B.19	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(2) §90.213	Within authorized bands of operation/frequency block.	Section 7 of Appendix B.19	Pass

2.4 NR Band n26(814~824 MHz)

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2.5 NR Band n30

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Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §27.50(a)(3)	EIRP ≤ 250mW/5MHz	Section 1 of Appendix B.21	Pass
Peak-Average Ratio		FCC: Limit≤13 dB	Section 2 of Appendix B.21	Pass
Bandwidth	§2.1049,	OBW: No limit. EBW: No limit.	Section 3 of Appendix B.21	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. 	Section 4 of Appendix B.21	Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(a)(4)	 First basedebase web and a number of the statute between 2305 and 2320 MHz and on all frequencies between 2341 and 2345 MHz, not less than 55 + 10 log (P) dB 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 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 2305 and 2324 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 2325 between 2341 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 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 2300 and 2300 MHz, 61 + 10 log (P) dB on all frequencies between 2296 and 2300 MHz, 61 + 10 log (P) dB on all frequencies between 2296 MHz, 67 + 10 log (P) dB on all frequencies between 2296 MHz, 67 + 10 log (P) dB on all frequencies between 2296 MHz, 67 + 10 log (P) dB on all frequencies between 2296 MHz, 67 + 10 log (P) dB on all frequencies between 2296 MHz, 67 + 10 log (P) dB on all frequencies between 2296 MHz, 67 + 10 log (P) dB on all frequencies between 2296 MHz, 67 + 10 log (P) dB on all frequencies 	Section 5 of Appendix B.21	Pass







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Effective (Isotropic) Radiated Power Output Data	§2.1046, §96.41	EIRP ≤ 23dBm/10MHz	Section 1 of Appendix B.23	Pass
Peak-Average Ratio	§96.41	FCC: Limit≤13 dB	Section 2 of Appendix B.23	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Section 3 of Appendix B.23	Pass
Adjacent Channel Leakage Ratio	§96.41	the Adjacent Channel Leakage Ratio for End User Devices shall be at least 30 dB.	Section 4 of Appendix B.23	Pass
Band Edges Compliance	§2.1051, §96.41	for channel and frequency assignments made by a CBSD to End User Devices, the conducted power of any End User Device emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed -13 dBm/MHz within 0 to B megahertz (where B is the bandwidth in megahertz of the assigned channel or multiple contiguous channels of the End User Device) above the upper CBSD-assigned channel edge and within 0 to B megahertz below the lower CBSD- assigned channel edge.	Section 5 of Appendix B.23	Pass
Spurious Emission at Antenna Terminals	§2.1051, §96.41	for channel and frequency assignments made by a CBSD to End User Devices, the conducted power of any End User Device emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed -13 dBm/MHz within 0 to B megahertz (where B is the bandwidth in megahertz of the assigned channel or multiple contiguous channels of the End User Device) above the upper CBSD-assigned channel edge and within 0 to B megahertz below the lower CBSD- assigned channel edge. At all frequencies greater than B megahertz above the upper CBSD assigned channel edge and less than B megahertz below the lower CBSD-assigned channel edge, the conducted power of any End User Device emission shall not exceed -25 dBm/MHz. (2) Additional protection levels. Notwithstanding paragraph (e)(1) of this section, for CBSDs and End User Devices, the conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed -25 dBm/MHz, and the conducted power of emissions below 3530 MHz	Section 6 of Appendix B.23	Pass

2.6 NR Band n48



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		or above 3720 MHz shall not exceed -40dBm/MHz. for channel and frequency assignments made by a CBSD to End User Devices, the conducted power of any End User Device emission		
Field Strength of Spurious Radiation	§2.1053, §96.41	 outside the fundamental emission (whether in or outside of the authorized band) shall not exceed -13 dBm/MHz within 0 to B megahertz (where B is the bandwidth in megahertz of the assigned channel or multiple contiguous channels of the End User Device) above the upper CBSD-assigned channel edge and within 0 to B megahertz below the lower CBSD-assigned channel edge. At all frequencies greater than B megahertz above the upper CBSD assigned channel edge and less than B megahertz below the lower CBSD-assigned channel edge and less than B megahertz below the lower CBSD-assigned channel edge and less than B megahertz below the lower CBSD-assigned channel edge and less than B megahertz below the lower CBSD-assigned channel edge, the conducted power of any End User Device emission shall not exceed -25 dBm/MHz. (2) Additional protection levels. Notwithstanding paragraph (e)(1) of this section, for CBSDs and End User Devices, the conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed -25 dBm/MHz, and the conducted power of emissions below 3720 MHz shall not exceed -40dBm/MHz. 	Section 7 of Appendix B.23	Pass
Frequency Stability	§2.1055, §96.41	Within authorized bands of operation/ frequency block.	Section 8 of Appendix B.23	Pass

frequency block.



Stability

§96.41

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2.7 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	Section 1 of Appendix B.24&B.25	Pass
Peak-Average Ratio	§27.50(d)(5)	Limit≤13 dB	Section 2 of Appendix B.24&B.25	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Section 3 of Appendix B.24&B.25	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.	Section 4 of Appendix B.24&B.25	Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(h)	≤ -13 dBm/1 MHz, from 9 kHz to 10 th harmonics but outside authorized operating frequency ranges.	Section 5 of Appendix B.24&B.25	Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(h)	≤ -13 dBm/1 MHz.	Section 6 of Appendix B.24&B.25	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(2) §27.54	Within authorized bands of operation/frequency block.	Section 7 of Appendix B.24&B.25	Pass



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Test Item	FCC Rule No.	Requirements	Test Result	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046 §27.50(c)(10)	ERP ≤ 3 W	Section 1 of Appendix B.26	Pass
Peak-Average Ratio		Limit≤13 dB	Section 2 of Appendix B.26	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Section 3 of Appendix B.26	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.	Section 4 of Appendix B.26	Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(g)	≤ -13 dBm/1 MHz, from 9 kHz to 10 th harmonics but outside authorized operating frequency ranges.	Section 5 of Appendix B.26	Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(g)	≤ -13 dBm/1 MHz.	Section 6 of Appendix B.26	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(2) §27.54	within the authorized bands of operation.	Section 7 of Appendix B.26	Pass

2.8 NR Band n71

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2.9 NR Band n77

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	Section 1 of Appendix B.28	Pass
Peak-Average Ratio		≤13 dB	Section 2 of Appendix B.28	Pass
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Section 3 of Appendix B.28	Pass
Band Edges Compliance	§2.1051, §27.53(I)(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 (I)(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. 	Section 4 of Appendix B.28	Pass
Spurious Emission at Antenna Terminals	§2.1051, §27.53(l)(2)	not exceed -13 dBm/MHz.	Section 5 of Appendix B.28	Pass
Field Strength of Spurious Radiation	§2.1053, §27.53(I)(2)	not exceed -13 dBm/MHz	Section 6 of Appendix B.28	Pass
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(2) §27.54	Within authorized bands of operation/frequency block.	Section 7 of Appendix B.28	Pass



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3450-3550MH	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	Section 1 of Appendix B.27	Pass				
Peak-Average Ratio	§27.50(k)(4)	FCC: Limit≤13 dB	Section 2 of Appendix B.27	Pass				
Bandwidth	§2.1049	OBW: No limit. EBW: No limit.	Section 3 of Appendix B.27	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.	Section 4 of Appendix B.27	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.	Section 5 of Appendix B.27	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 6 of Appendix B.27	Pass				
Frequency Stability	§2.1055(a)(1)(b) §2.1055(d)(2) §27.54	Within authorized bands of operation/ frequency block.	Section 7 of Appendix B.27	Pass				



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General Information 3

3.1 Client Information

Applicant:	Shenzhen Tinno Mobile Technology Corp.
Address of Applicant:	27-001, South Side of Tianlong Mobile Headquarters Building, Tongfa South Road, Xili Community, Xili Street, Nanshan District, Shenzhen , PRC
Manufacturer:	Shenzhen Tinno Mobile Technology Corp.
Address of Manufacturer:	27-001, South Side of Tianlong Mobile Headquarters Building, Tongfa South Road, Xili Community, Xili Street, Nanshan District, Shenzhen , PRC

3.2 Test Location

Company:	SGS-CSTC Standards Technical Services (Suzhou) Co., Ltd.
Address:	South of No. 6 Plant, No. 1, Runsheng Road, Suzhou Industrial Park, Suzhou Area, China (Jiangsu) Pilot Free Trade Zone
Post code:	215000
Test engineer:	Levi Li, King-p Li

3.3 Test Facility

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

 A2LA (Certificate No. 6336.01) SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 6336.01. Innovation, Science and Economic Development Canada SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. has been recognized by ISED as an accredited testing laboratory. CAB identifier: CN0120. IC#: 27594. • FCC – Designation Number: CN1312 SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. has been recognized as an accredited testing laboratory. Designation Number: CN1312.

Test Firm Registration Number: 717327



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EUT Description:	Smart Phone	Smart Phone				
Model No.:	Celero3 5G	Celero3 5G				
Hardware Version:	V1.0	V1.0				
Software Version:	N/A					
Power Supply:	Lithium Battery (3.	85V)				
	RF Conducted		860284060001673			
IMEI:	RSE		860284060010906			
HPUE Power Class:	Class 2: NR Band	n41; NI	R Band n77			
Antenna Type:	Fixed Internal Ante	enna				
	NR Band n2:	1.0dl	Bi (Ant2)			
	NR Band n5:	-2.3dBi (Ant1)				
	NR Band n25:	d n25: 1.0dBi (Ant2)				
	NR Band n26:	d n26: -2.3dBi (Ant1)				
	NR Band n30:	NR Band n30: -0.6dBi (Ant3)				
	NR Band n41:	-0.2d	IBi (Ant3)			
Antenna Gain:	NR Band n48:	-1.0d	IBi (Ant5)			
	NR Band n66:	0.2d	Bi (Ant2)			
	NR Band n70:	-0.8d	lBi (Ant2)			
	NR Band n71:	-1.7d	lBi (Ant1)			
	NR Band n77:	1.0dl	Bi (Ant5)			
	Note: The antenna gain are derived from the gain information report provided by manufacturer.					
	0.8dB(Below 1GHz	z)	1.0dB(1.0~2.4GHz)	1.2dB(2.4~3.4GHz)		
RF Cable:	1.5dB(Above 3.4G	1.5dB(Above 3.4GHz)				

3.4 General Description of EUT

1、We tested the conducted power and EIRP of all antennas and only provided the worst data. Conducting other test items using the highest power port for testing.

2、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.



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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		44-46 % RH Ambient		
Value		Temperature(°C)	Voltage(V)	
NTNV		22~23	3.85	
LTLV		-30	3.6	
LTHV		-30	4.4	
HTLV		50	3.6	
HTHV		50	4.4	
Remark:				
NV: Normal Voltage LV: Low		Extreme Test Voltage H	HV: High Extreme Test Voltage	
NT: Normal Temperature	T: Low	Extreme Test Temperature H	IT: High Extreme Test Temperature	

3.7 Description of Support Units

The EUT has been tested as an independent unit.



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Characteristics	Description						
Radio System Type	🖂 SA 🖾 NSA						
	Band	ТХ			₹X		
	NR Band n2	1850 to 1910 MHz		1930 to	1990 MHz		
	NR Band n5	824 to 8	349 MHz	869 to	894 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 8	349 MHz	869 to	894 MHz		
	NR Band n30	2305 to 2	2315 MHz	2350 to	2360 MHz		
	NR Band n41	2496 to 2	2690 MHz	2496 to	2690 MHz		
	NR Band n48	3550 to 3	3700 MHz	3550 to	3700 MHz		
	NR Band n66	1710 to ⁻	1780 MHz	2110 to	2180 MHz		
Supported Frequency Range	NR Band n70	1695 to 1710 MHz		1995 to 2020 MHz			
Kange	NR Band n71	663 to 698 MHz		617 to	617 to 652 MHz		
	NR Band n77	3700 to 3980 MHz		3700 to	3980 MHz		
		3450 to 3550 MHz		3450 to	3550 MHz		
	NR CA: CA_n26A-n66A; CA_n26A-n70A; CA_n66A-n71A; CA_n70A-n71A; ENDC: DC_2A_n5A; DC_30A_n5A; DC_66A_n5A; DC_2A_n66A; DC_12A_n66A; DC_30A_n66A; DC_5A_n2A; DC_30A_n2A; DC_12A_n2A; DC_66A_n2A; DC_66A_n66A; DC_2A_n2A; DC_2A_n77A; DC_5A_n77A; DC_66A_n77A; DC_30A_n77A; DC_12A_n77A; DC_14A_n77A; DC_14A_n66A;						
	DC_14A_n2A; DC_66A_n71A; DC_2A_n71A; DC_2A_n41A; DC_66A_n25A; DC_66A_n41A;						
	Remark: ENDC& N	-	RSE, report or	nly show worst	mode.		
		SCS 15kHz:					
	NR Band n2	⊠5 MHz	⊠10 MHz	⊠15 MHz	⊠20 MHz		
		SCS 30kHz:					
Supported Channel		⊠10 MHz	⊠15 MHz	⊠20 MHz			
Bandwidth		SCS 15kHz:	_				
	NR Band n5	⊠5 MHz	⊠10 MHz	⊠15 MHz	⊠20 MHz		
		SCS 30kHz:					
		⊠10 MHz	🛛 15 MHz	⊠20 MHz			

3.8 Technical Specification



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		SCS 15kHz:	-		
		⊠5 MHz	⊠10 MHz	⊠15 MHz	⊠20 MHz
		25 MHz	⊠30 MHz	⊠40 MHz	
	NR Band n25	SCS 30kHz:			
		⊠10 MHz	🛛 15 MHz	⊠20 MHz	⊠25 MHz
		⊠30 MHz	⊠40 MHz		
		SCS 15kHz:			
		⊠5 MHz	⊠10 MHz	⊠15 MHz	⊠20 MHz
	NR Band n26	SCS 30kHz:			
		⊠10 MHz	🛛 15 MHz	⊠20 MHz	
		SCS 15kHz:			
		⊠5 MHz	⊠10 MHz		
	NR Band n30	SCS 30kHz:			
		⊠10 MHz			
		SCS 15kHz:			
		⊠10 MHz	🛛 15 MHz	⊠20 MHz	⊠30 MHz
		⊠40 MHz	⊠50 MHz		
	NR Band n41	SCS 30kHz:			
		⊠10 MHz	🛛 15 MHz	⊠20 MHz	⊠30 MHz
		⊠40 MHz	⊠50 MHz	⊠60 MHz	⊠70 MHz
		⊠80 MHz	⊠90 MHz	⊠100 MHz	
		SCS 15kHz:			
		⊠10 MHz	🖾 15 MHz	⊠20 MHz	⊠30 MHz
	ND Dond n49	⊠40 MHz			
	NR Band n48	SCS 30kHz:			
		⊠10 MHz	🖾 15 MHz	⊠20 MHz	⊠30 MHz
		⊠40 MHz			
		SCS 15kHz:			
		⊠5 MHz	⊠10 MHz	⊠15 MHz	⊠20 MHz
	NR Band n66	🛛 25 MHz	⊠30 MHz	⊠40 MHz	
	NR Ballu 1100	SCS 30kHz:			
		⊠10 MHz	🛛 15 MHz	20 MHz	⊠25 MHz
		⊠30 MHz	⊠40 MHz		
	NR Band n70	SCS 15kHz:			
		⊠5 MHz	⊠10 MHz	🛛 15 MHz	



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			Report No.: Rev.: Page:	SEWM230 01 22 of 61	8000314RG02
		SCS 30kHz:	Tage.	22 01 01	
		10 MHz	⊠15 MHz		
		SCS 15kHz:			
		⊠5 MHz	⊠10 MHz	⊠15 MHz	⊠20 MHz
	NR Band n71	SCS 30kHz:			
		10 MHz	⊠15 MHz	20 MHz	
		SCS 15kHz:			
		10 MHz	⊠15 MHz	20 MHz	⊠25 MHz
	NR Band n77	SCS 30kHz:	_		
		10 MHz	⊠15 MHz	20 MHz	25 MHz
		30 MHz	⊠40 MHz	S0 MHz	⊠60 MHz
		⊠70 MHz	⊠80 MHz	⊠90 MHz	⊠100 MHz
_	NR Band n2	DFT-s-Pi/2- BPSK	CP-16QAM		
		SCS 15kHz:			
		4M48G7D	4M49W7D		
		8M92G7D	9M30W7D		
		13M4G7D	14M1W7D		
		17M8G7D	18M9W7D		
Designation of		SCS 15kHz:			
Emissions		4M47G7D	4M47W7D		
(Remark: the necessary	NR Band n5	8M94G7D	9M30W7D		
bandwidth of which is the worst value from		13M5G7D	14M1W7D		
the measured occupied		17M9G7D	18M9W7D		
bandwidths for each		SCS 15kHz:			
type of channel bandwidth		4M48G7D	4M49W7D		
configuration.)		8M91G7D	9M30W7D		
Ŭ ,	NR Band n25	13M4G7D	14M1W7D		
	NR Banu 125	17M9G7D	18M9W7D		
		22M9G7D	23M7W7D		
		28M5G7D	28M6W7D		
		38M5G7D	38M6W7D		
	NR Band n26	SCS 15kHz:			
	(814 to 824 MHz)	4M49G7D	4M47W7D		



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		8M93G7D	9M31W7D	
=		SCS 15kHz:		
		4M48G7D	4M47W7D	
	NR Band n26 (824 to 849 MHz)	8M89G7D	8M91W7D	
	(024 10 049 101 12)	13M4G7D	14M1W7D	
		17M9G7D	18M9W7D	
F		SCS 15kHz:		
	NR Band n30	4M48G7D	4M47W7D	
		8M91G7D	9M30W7D	
		SCS 30kHz:		
		8M57G7D	8M61W7D	
		12M8G7D	13M6W7D	
		17M8G7D	18M2W7D	
		26M7G7D	27M8W7D	
		35M8G7D	37M8W7D	
	NR Band n41	45M6G7D	47M6W7D	
		57M9G7D	57M6W7D	
		64M4G7D	67M5W7D	
		77M2G7D	77M5W7D	
		85M6G7D	87M6W7D	
		96M4G7D	97M3W7D	
		SCS 30kHz:		
		8M58G7D	8M58W7D	
	ND Devid v 40	12M9G7D	13M6W7D	
	NR Band n48	17M8G7D	18M3W7D	
		26M7G7D	27M8W7D	
		35M7G7D	37M8W7D	
		SCS 15kHz:		
	NR Band n66	4M47G7D	4M48W7D	
		8M92G7D	9M26W7D	
		13M4G7D	14M1W7D	
		17M9G7D	18M9W7D	
		22M9G7D	23M7W7D	
		28M6G7D	28M6W7D	
		38M5G7D	38M6W7D	



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		SCS 15kHz:	0	
	NR Band n70	4M48G7D	4M48W7D	
		8M93G7D	9M28W7D	
		13M4G7D	14M1W7D	
		SCS 15kHz:		
		4M48G7D	4M47W7D	
	NR Band n71	8M92G7D	9M30W7D	
		13M4G7D	14M1W7D	
		17M9G7D	18M9W7D	
		SCS 30kHz:		
		8M56G7D	8M57W7D	
		12M8G7D	13M6W7D	
		17M8G7D	18M2W7D	
		22M9G7D	23M2W7D	
	NR Band n77	26M7G7D	27M9W7D	
	(3450 to 3550	35M8G7D	37M7W7D	
	MHz)	45M7G7D	47M5W7D	
		57M8G7D	57M8W7D	
		64M4G7D	67M5W7D	
		77M2G7D	77M3W7D	
		85M7G7D	87M2W7D	
		96M4G7D	97M8W7D	
		SCS 30kHz:		
		8M56G7D	8M58W7D	
		12M8G7D	13M6W7D	
		17M8G7D	18M1W7D	
		22M9G7D	23M3W7D	
	NR Band n77	26M8G7D	27M9W7D	
	(3700 to 3980	35M7G7D	37M8W7D	
	MHz)	45M7G7D	47M5W7D	
		57M9G7D	57M8W7D	
		64M3G7D	67M5W7D	
		77M1G7D	77M4W7D	
		85M6G7D	87M3W7D	
		96M3G7D	97M4W7D	



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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]
		Low	1932.5	386500	
	Downlink	Mid	1960	392000	15
5		High	1987.5	397500	
5		Low	1852.5	370500	
	Uplink	Mid	1880	376000	-
		High	1907.5	381500	
		Low	1935	387000	
	Downlink	Mid	1960	392000	15
10		High	1985	397000	
10		Low	1855	371000	
	Uplink	Mid	1880	376000	-
		High	1905	381000	
	Downlink	Low	1937.5	387500	15
		Mid	1960	392000	
45		High	1982.5	396500	
15		Low	1857.5	371500	
	Uplink	Mid	1880	376000	-
		High	1902.5	380500	
		Low	1940	388000	
	Downlink	Mid	1960	392000	15
20		High	1980	396000	
20		Low	1860	372000	_
	Uplink	Mid	1880	376000	
	-	High	1900	380000]



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1980

1860

1880

1900

396000

372000

376000

380000

_

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9.1.2 Test f	requencies for NR	operating ba	nd n2 and SCS 30	kHz	
CBW [MHz]	Range)	Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
		Low	1935	387000	
	Downlink	Mid	1960	392000	30
10		High	1985	397000	
10		Low	1855	371000	
	Uplink	Mid	1880	376000	-
	-	High	1905	381000	
		Low	1937.5	387500	
	Downlink	Mid	1960	392000	30
15		High	1982.5	396500	
15		Low	1857.5	371500	
	Uplink	Mid	1880	376000	-
		High	1902.5	380500	
		Low	1940	388000	
	Downlink	Mid	1960	392000	30

High

Low

Mid

High

Uplink



SG:

20

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			and n5 and SCS 1		
CBW [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
		Low	871.5	174300	[····-]
5 —	Downlink	Mid	881.5	176300	15
		High	891.5	178300	
5		Low	826.5	165300	
	Uplink	Mid	836.5	167300	-
		High	846.5	169300	
		Low	874	174800	
	Downlink	Mid	881.5	176300	15
10		High	889	177800	
10	Uplink	Low	829	165800	
		Mid	836.5	167300	
		High	844	168800	
		Low	876.5	175300	
	Downlink	Mid	881.5	176300	15
15		High	886.5	177300	
15		Low	831.5	166300	
	Uplink	Mid	836.5	167300	-
		High	841.5	168300	
20 -		Low	879	175800	
	Downlink	Mid	881.5	176300	15
		High	884	176800	1
		Low	834	166800	
	Uplink	Mid	836.5	167300	-
	·	High	839	167800	1



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167300 167800

Bandwidth [MHz]	Range	• •	nd n5 and SCS 30 Carrier centre [MHz]	KHz Carrier centre [ARFCN]	SS block SCS [kHz]
	Downlink	Low	874	174800	1 • •
		Mid	881.5	176300	30
10		High	889	177800	
10	Uplink	Low	829	165800	
		Mid	836.5	167300	- [
		High	844	168800	
	Downlink	Low	876.5	175300	
		Mid	881.5	176300	30
15		High	886.5	177300	
15	Uplink	Low	831.5	166300	
		Mid	836.5	167300	-
		High	841.5	168300	
	Downlink	Low	879	175800	
		Mid	881.5	176300	30
20		High	884	176800	
20	Uplink	Low	834	166800	

836.5

839

Mid

High



SG

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3.9.3 Reference test frequencies for NR operating band n25

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

<u>3.9.3.1 Test</u> CBW [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
[]		Low	1932.5	386500	[2]
	Downlink	Mid	1962.5	392500	15
	Downink	High	1992.5	398500	
5		Low	1852.5	370500	
	Uplink	Mid	1882.5	376500	-
	• F	High	1912.5	382500	-
		Low	1935	387000	
	Downlink	Mid	1962.5	392500	15
40		High	1990	398000	
10		Low	1855	371000	
	Uplink	Mid	1882.5	376500	-
	· ·	High	1910	382000	
		Low	1937.5	387500	
	Downlink	Mid	1962.5	392500	15
45		High	1987.5	397500	
15		Low	1857.5	371500	
	Uplink	Mid	1882.5	376500	-
		High	1907.5	381500	
	Downlink	Low	1940	388000	
		Mid	1962.5	392500	15
20		High	1985	397000	
20	Uplink	Low	1860	372000	
		Mid	1882.5	376500	
		High	1905	381000	
		Low	1942.5	388500	
	Downlink	Mid	1962.5	392500	15
25		High	1982.5	396500	
25		Low	1862.5	372500	
	Uplink	Mid	1882.5	376500	-
		High	1902.5	380500	
		Low	1945	389000	
	Downlink	Mid	1962.5	392500	15
30		High	1980	396000	
50		Low	1865	373000	
40	Uplink	Mid	1882.5	376500	-
		High	1900	380000	
		Low	1950	390000	
	Downlink	Mid	1962.5	392500	15
		High	1975	395000	
40		Low	1870	374000	
	Uplink	Mid	1882.5	376500	1 -
		High	1895	379000	-



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[MHz] [ARFCN] Downlink Low 1935 387000 10 High 1990 392500 High 1990 398000 Uplink Low 1855 371000 Uplink Mid 1882.5 376500 High 1910 382000 10 High 1910 382000 10 High 1910 382000 10 High 1910 382000 10 High 1987.5 397500 10 Low 1857.5 371500 10 Uplink Mid 1982.5 397500 Uplink Mid 1982.5 397500 Uplink Mid 1982.5 392500 Uplink Mid 1982.5 397000 Low 1860 377000 10 Uplink Mid 1982.5 392500 Uplink Mid 1982.5 392500 Uplin				Rev.: Page:	No.: SEWM2308 01 30 of 61	000314RG0
Low 1935 387000 10 Mid 1935 387000 10 Mid 1962.5 392500 High 1990 398000 Uplink Mid 1855 371000 Uplink Mid 1882.5 376500 High 1910 382000 387500 Downlink Mid 1962.5 392500 15 Downlink Mid 1962.5 397500 16 High 1987.5 377500 17 Uplink Mid 1882.5 376500 Uplink Mid 1882.5 376500 Uplink Mid 1982.5 392500 Uplink Mid 1985 397000 Uplink Mid 1985 397000 Uplink Mid 1882.5 376500 Uplink Mid 1882.5 392500 Uplink Mid 1882.5 376500 High 1905	CBW			Carrier centre	Carrier centre	SS block S [kHz]
Low 1855 371000 Uplink Mid 1882.5 376500 High 1910 382000 Downlink Mid 1982.5 397500 15 Downlink Mid 1962.5 392500 Uplink Mid 1987.5 397500 Uplink Mid 1882.5 376500 Uplink Mid 1882.5 376500 Uplink Mid 1882.5 376500 Uplink Mid 1982.5 397000 20 Downlink Mid 1962.5 392500 Uplink Mid 1985 397000 20 Uplink Mid 1982.5 376500 Uplink Mid 1982.5 392500 Uplink Mid 1882.5 376500 Uplink Mid 1982.5 392500 25 Uplink Mid 1982.5 392500 10 Uplink Mid 1982.5 <	[10112]	Downlink	Mid	1935 1962.5	387000 392500	30
High 1910 382000 15 Downlink Low 1937.5 387500 15 Downlink Mid 1962.5 392500 16 Low 1857.5 371500 15 Uplink Mid 1857.5 371500 16 Uplink Mid 1882.5 376500 17 Mid 1882.5 376500 18 Mid 1940 388000 19 Downlink Mid 1940 388000 19 Low 1940 388000 1940 388000 19 Downlink Mid 1985 397000 194	10	Uplink	Low	1855	371000	-
High 1987.5 397500 Uplink Low 1857.5 371500 Uplink Mid 1882.5 376500 High 1907.5 381500 Low 1940 388000 High 1962.5 392500 High 1985 397000 Low 1860 372000 Uplink Mid 1882.5 376500 Uplink Mid 1985 397000 Low 1860 372000 Uplink Mid 1982.5 388500 Uplink Mid 1982.5 392500 High 1905 381000 1942.5 25 Uplink Mid 1982.5 396500 Uplink Mid 1982.5 396500 Uplink Mid 1982.5 392500 High 1902.5 389000 1945 30 Uplink Mid 1982.5 376500 Uplink Mid <td></td> <td></td> <td>Low</td> <td>1910 1937.5</td> <td>382000 387500</td> <td></td>			Low	1910 1937.5	382000 387500	
Uplink Mid 1882.5 376500 High 1907.5 381500 Low 1940 388000 Downlink Mid 1962.5 392500 High 1985 397000 Low 1860 372000 Uplink Mid 1882.5 376500 Uplink Mid 1882.5 376500 High 1905 381000 1942.5 Low 1942.5 388500 1942.5 Downlink Mid 1962.5 392500 High 1905 381000 1942.5 25 Downlink Mid 1962.5 392500 Uplink Mid 1962.5 392500 High 1902.5 380500 1945 30 Downlink Mid 1962.5 392500 Uplink Mid 1962.5 392500 1945 30 Low 1865 373000 1945 100 Mid	15	Downlink	High	1987.5	397500	30
20 Downlink Mid 1962.5 392500 20 High 1985 397000 Uplink Low 1860 372000 Uplink Mid 1882.5 376500 High 1905 381000 25 Downlink Mid 1962.5 Downlink Mid 1962.5 392500 High 1905 381000 25 Low 1942.5 388500 Downlink Mid 1962.5 392500 High 1982.5 396500 1965 Uplink Mid 1882.5 376500 High 1902.5 380500 1965 30 Low 1945 389000 Low 1945 389000 1962.5 30 Low 1980 396000 1965 30 Low 1865 373000 1965 Uplink Mid 1882.5 376500 1965		Uplink	Mid	1882.5	376500	
20 Low 1860 372000 Uplink Mid 1882.5 376500 High 1905 381000 Low 1942.5 388500 Downlink Mid 1962.5 392500 High 1982.5 396500 1000 25 Low 1862.5 372500 Uplink Mid 1882.5 376500 Uplink Mid 1882.5 376500 Uplink Mid 1882.5 376500 Jownlink Mid 1882.5 376500 Uplink Mid 1902.5 380500 Jow 1945 389000 1945 Jow 1945 392500 1945 Jow 1980 396000 1945 Jow 1865 373000 1945 Uplink Mid 1882.5 376500 High 1900 380000 1945 Jow 1865 373000 1945 <		Downlink	Mid	1962.5	392500	30
25 Low 1942.5 388500 25 Mid 1962.5 392500 High 1982.5 396500 Uplink Low 1862.5 372500 Uplink Mid 1882.5 376500 Uplink Mid 1902.5 380500 Jownlink Mid 1962.5 392500 Jownlink Mid 1982.5 376500 Jownlink Mid 1962.5 392500 Jownlink Mid 1962.5 392500 Jownlink Mid 1962.5 392500 Jownlink Mid 1965 373000 Uplink Mid 1882.5 376500 Uplink Mid 1882.5 376500 Uplink Mid 1882.5 376500 Uplink Mid 1882.5 390000 Low 1950 390000 1950 Downlink Mid 1962.5 392500 High 1975 <td>20 -</td> <td>Uplink</td> <td>Low Mid</td> <td>1860 1882.5</td> <td>372000 376500</td> <td></td>	20 -	Uplink	Low Mid	1860 1882.5	372000 376500	
Low 1862.5 372500 Uplink Mid 1882.5 376500 High 1902.5 380500 Low 1945 389000 Journal Strain Mid 1962.5 392500 Journal Strain Mid 1962.5 392500 Journal Strain Mid 1980 396000 Journal Strain Low 1865 373000 Uplink Mid 1882.5 376500 High 1900 380000 Journal Strain Downlink Mid 1865 373000 High 1900 380000 Journal Strain Mid 1862.5 392500 Journal Strain Mid 1950 390000 Journal Strain Journal Strain Mid 1962.5 392500 High 1975 395000 Journal Strain		Downlink	Low Mid	1942.5 1962.5	388500 392500	30
Low 1945 389000 30 Mid 1962.5 392500 High 1980 396000 Low 1865 373000 Uplink Mid 1882.5 376500 High 1900 380000 1950 Downlink Low 1950 390000 High 1902 380000 1950 Mid 1962.5 392500 1950 High 1975 395000 1975	25 -	Uplink	Low Mid	1862.5 1882.5	372500 376500	
30 Low 1865 373000 Uplink Mid 1882.5 376500 High 1900 380000 Low 1950 390000 Downlink Mid 1962.5 392500 High 1975 395000 1975		Downlink	Low Mid	1945 1962.5	389000 392500	30
Low 1950 390000 Downlink Mid 1962.5 392500 High 1975 395000	30 -	Uplink	Low Mid	1865 1882.5	373000 376500	
		Downlink	Low Mid	1950 1962.5	390000 392500	30
Low 1870 374000 Uplink Mid 1882.5 376500 High 1895 379000	40	Uplink	Low Mid	1870 1882.5	374000 376500	



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3.9.4 Reference test frequencies for NR operating band n26

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

814-824:

SG

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

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CBW [MHz]	Range	9	Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
		Low	871.5	174300	
	Downlink	Mid	881.5	176300	15
5		High	891.5	178300	
5		Low	826.5	165300	
	Uplink	Mid	836.5	167300	-
		High	846.5	169300	
		Low	874	174800	
	Downlink	Mid	881.5	176300	15
10		High	889	177800	
10		Low	829	165800	
	Uplink	Mid	836.5	167300] -
		High	844	168800	
		Low	876.5	175300	15
	Downlink	Mid	881.5	176300	
15		High	886.5	177300	
15		Low	831.5	166300	
	Uplink	Mid	836.5	167300	-
	-	High	841.5	168300	
		Low	879	175800	
	Downlink	Mid	881.5	176300	15
20		High	884	176800	
20		Low	834	166800	
	Uplink	Mid	836.5	167300	-
		High	839	167800]



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3.9.4.2 Test frequencies for NR operating band n26 and SCS 30 kHz

814-824:

SG

CBW [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
		Low	861.5	172300	
	Downlink	Mid	864	172800	30
F		High	866.5	173300	
5		Low	816.5	163300	
	Uplink	Mid	819	163800	-
		High	821.5	164300	
		Low	/	/	
	Downlink	Mid	864	172800	30
10		High	/	/	
		Low	/	/	
	Uplink	Mid	819	163800	-
		High	/	/	7

824-849:

CBW [MHz]	Range	1	Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
		Low	874	174800	
	Downlink	Mid	881.5	176300	30
10		High	889	177800	
10		Low	829	165800	
	Uplink	Mid	836.5	167300	- 1
		High	844	168800	
	Downlink	Low	876.5	175300	
		Mid	881.5	176300	30
15		High	886.5	177300	
15		Low	831.5	166300	
	Uplink	Mid	836.5	167300	-
		High	841.5	168300	
		Low	879	175800	
	Downlink	Mid	881.5	176300	30
20		High	884	176800	
20		Low	834	166800	
	Uplink	Mid	836.5	167300	
		High	839	167800	7



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3.9.5 Reference test frequencies for NR operating band n30 3 9 5 1 Test frequencies for NR operating hand n30 and SCS 15 kHz

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CBW [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
	Downlink	Low	2352.5	470500	
		Mid	2355	471000	15
5		High	2357.5	471500	
5		Low	2307.5	461500	
	Uplink	Mid	2310	462000	-
		High	2312.5	462500	
10 -		Low	2355	471000	
	Downlink	Mid	2355	471000	
		High	2355	471000	
		Low	2310	462000	
	Uplink	Mid	2310	462000] -
		High	2310	462000	7

3.9.5.2 Test frequencies for NR operating band n30 and SCS 30 kHz

CBW [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
	Downlink	Low	2355	471000	30
		Mid	2355	471000	
10		High	2355	471000	
10	Uplink	Low	2310	462000	
		Mid	2310	462000	-
	High		2310	462000	



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Reference test frequencies for NR operating band n41

3.9.6 3.9.6.1 Test frequencies for NR operating band n41 and SCS 15 kHz

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Bandwidth [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
	Downlink	Low	2501.01	500202	
10	&	Mid	2593.005	518601	15
	Uplink	High	2685	537000	
	Downlink	Low	2503.5	500700	
15	&	Mid	2593.005	518601	15
	Uplink	High	2682.495	536499	
	Downlink	Low	2506.005	501201	
20	&	Mid	2593.005	518601	15
	Uplink	High	2679.99	535998	
	Downlink	Low	2511	502200	
30	&	Mid	2593.005	518601	15
	Uplink	High	2674.995	534999	
	Downlink	Low	2516.01	503202	
40	&	Mid	2593.005	518601	15
	Uplink	High	2670	534000	
	Downlink	Low	2521.005	504201	
50	&	Mid	2593.005	518601	15
	Uplink	High	2664.99	532998	



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Bandwidth [MHz]	quencies for NR operating band Range		d n41 and SCS 30 kHz Carrier centre [MHz] [ARFCN]		SS block SCS [kHz]		
	Downlink	Low	2501.01	500202			
10	&	Mid	2592.99	518598	30		
	Uplink	High	2685	537000			
	Downlink	Low	2503.5	500700			
15	&	Mid	2592.99	518598	30		
-	Uplink	High	2682.48	536496			
	Downlink	Low	2506.02	501204			
20	&	Mid	2592.99	518598	30		
-	Uplink	High	2679.99	535998			
	Downlink	Low	2511	502200	30		
30	&	Mid	2592.99	518598			
ľ	Uplink	High	2674.98	534996			
	Downlink	Low	2516.01	503202	30		
40	&	Mid	2592.99	518598			
ľ	Uplink	High	2670	534000			
	Downlink	Low	2521.02	504204			
50	&	Mid	2592.99	518598	30		
-	Uplink	High	2664.99	532998			
	Downlink	Low	2526	505200			
60	&	Mid	2592.99	518598	30		
-	Uplink	High	2659.98	531996			
	Downlink	Low	2531	506200			
70	&	Mid	2592.29	518598	30		
-	Uplink	High	2655	531000			
	Downlink	Low	2536.02	507204			
80	&	Mid	2592.99	518598	30		
1	Uplink	High	2649.99	529998			
	Downlink	Low	2541	508200			
90	&	Mid	2592.99	518598	30		
	Uplink	High	2644.98	528996			
	Downlink	Low	2546.01	509202			
100	&	Mid	2592.99	518598	30		
	Uplink	High	2640	528000			



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3.9.7 Reference test frequencies for NR operating band n48

3.9.7.1 Test frequencies for NR operating band n48 and SCS 15 kHz

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Bandwidth [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
	Downlink	Low	3555	637000	
10	&	Mid	3624.99	641666	15
	Uplink	High	3694.98	646332	
	Downlink	Low	3557.52	637168	
15	&	Mid	3624.99	641666	15
	Uplink	High	3692.49	646166	
	Downlink	Low	3560.01	637334	15
20	&	Mid	3624.99	641666	
	Uplink	High	3690	646000	
	Downlink	Low	3565.02	637668	
30	&	Mid	3624.99	641666	15
	Uplink	High	3684.99	645666	1
40	Downlink	Low	3570	638000	
	&	Mid	3624.99	641666	15
	Uplink	High	3679.98	645332	

3.9.7.2 Test frequencies for NR operating band n48 and SCS 30 kHz

Bandwidth [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
	Downlink	Low	3555	637000	
10	&	Mid	3624.99	641666	30
	Uplink	High	3694.98	646332	
	Downlink	Low	3557.52	637168	
15	&	Mid	3624.99	641666	30
	Uplink	High	3692.49	646166	
	Downlink	Low	3560.01	637334	30
20	&	Mid	3624.99	641666	
	Uplink	High	3690	646000	
	Downlink	Low	3565.02	637668	
30	&	Mid	3624.99	641666	30
	Uplink	High	3684.99	645666	
	Downlink	Low	3570	638000	
40	&	Mid	3624.99	641666	30
	Uplink	High	3679.98	645332	



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3.9.8 Reference test frequencies for NR operating band n66

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

	trequencies for NF				
CBW [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
		Low	2112.5	422500	
	Downlink	Mid	2145	429000	15
5		High	2177.5	435500	
5		Low	1712.5	342500	
	Uplink	Mid	1745	349000	-
		High	1777.5	355500	
		Low	2115	423000	
	Downlink	Mid	2145	429000	15
10		High	2175	435000	
10		Low	1715	343000	
	Uplink	Mid	1745	349000	-
		High	1775	355000	
		Low	2117.5	423500	
	Downlink	Mid	2145	429000	15
15		High	2172.5	434500	
15		Low	1717.5	343500	
	Uplink	Mid	1745	349000	-
	-1	High	1772.5	354500	
	Downlink	Low	2120	424000	
		Mid	2145	429000	15
20		High	2170	434000	
20	Uplink	Low	1720	344000	
		Mid	1745	349000	
		High	1770	354000	
		Low	2122.5	424500	15
	Downlink	Mid	2145	429000	
05		High	2167.5	433500	
25		Low	1722.5	344500	
	Uplink	Mid	1745	349000	-
		High	1767.5	353500	
		Low	2125	425000	
	Downlink	Mid	2145	429000	15
20		High	2165	433000	
30		Low	1725	345000	
	Uplink	Mid	1745	349000	-
		High	1765	353000	1
40 -		Low	2130	426000	
	Downlink	Mid	2145	429000	15
		High	2160	432000	
		Low	1730	346000	
	Liplink	Mid	1730	349000	-
	Uplink				
		High	1760	352000	



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CBW [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block S [kHz]
		Low	2115	423000	
	Downlink	Mid	2145	429000	15
10		High	2175	435000	
10		Low	1715	343000	
	Uplink	Mid	1745	349000	-
		High	1775	355000	
		Low	2117.5	423500	
	Downlink	Mid	2145	429000	15
15		High	2172.5	434500	
15		Low	1717.5	343500	
	Uplink	Mid	1745	349000	-
		High	1772.5	354500	
	Downlink	Low	2120	424000	15
		Mid	2145	429000	
20		High	2170	434000	
20		Low	1720	344000	
	Uplink	Mid	1745	349000	
		High	1770	354000	
		Low	2122.5	424500	15
	Downlink	Mid	2145	429000	
25		High	2167.5	433500	
20		Low	1722.5	344500	
	Uplink	Mid	1745	349000	-
		High	1767.5	353500	
		Low	2125	425000	
	Downlink	Mid	2145	429000	15
20		High	2165	433000	
30		Low	1725	345000	
	Uplink	Mid	1745	349000	-
		High	1765	353000	
		Low	2130	426000	
	Downlink	Mid	2145	429000	15
		High	2160	432000	1
40		Low	1730	346000	1
	Uplink	Mid	1745	349000	1 _
	Opinik	High	1745	352000	-



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3.9.9 Reference test frequencies for NR operating band n70

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

Bandwidth [MHz]	Rang		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
		Low	1997.5	399500	
	Downlink	Mid	2002.5	400500	15
5		High	2007.5	401500	
5		Low	1697.5	339500	
	Uplink	Mid	1702.5	340500	
		High	1707.7	341500	
		Low	2000	400000	
	Downlink	Mid	2002.5	400500	15
10		High	2005	401000	
10		Low	1700	340000	
	Uplink	Mid	1702.5	340500	
		High	1705	341000	
		Low	/	/	
	Downlink	Mid	2002.5	400500	15
15		High	1	/	
		Low	1	/	
	Uplink	Mid	1702.5	340500]
		High	1	1]

3.9.9.2 Test frequencies for NR operating band n70 and SCS 30 kHz

Bandwidth [MHz]	Rang	e	Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
		Low	2000	400000	
	Downlink	Mid	2002.5	400500	30
10		High	2005	401000	
10		Low	1700	340000	
	Uplink	Mid	1702.5	340500	
		High	1705	341000	
	Downlink	Low	/	/	
		Mid	2002.5	400500	30
15		High	/	1	
15		Low	/	/	
	Uplink	Mid	1702.5	340500	
		High	/	1	



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3.9.10 Reference test frequencies for NR operating band n71

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

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



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CBW [MHz]	Range	9	Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
		Low	622	124400	
	Downlink	Mid	634.5	126900	30
10		High	647	129400	1
10		Low	668	133600	
	Uplink	Mid	680.5	136100	-
		High	693	138600	
		Low	624.5	124900	
	Downlink	Mid	634.5	126900	30
15		High	644.5	128900	
15		Low	670.5	134100	
	Uplink	Mid	680.5	136100	-
		High	690.5	138100	
		Low	627	125400	
20	Downlink	Mid	634.5	126900	30
		High	642	128400	1
20		Low	673	134600	
	Uplink	Mid	680.5	136100	-
					-

High

688

137600



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3.9.11 Reference test frequencies for NR operating band n77

3.9.11.1 Test frequencies for NR operating band n77 and SCS 15 kHz

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CBW [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
	Downlink	Low	3705	647000	
10	&	Mid	3840	656000	15
	Uplink	High	3975	665000	
	Downlink	Low	3707.52	647168	
15	&	Mid	3840	656000	15
	Uplink	High	3972.48	664832	
	Downlink	Low	3710.01	647334	
20	&	Mid	3840	656000	15
	Uplink	High	3969.99	664666	
	Downlink	Low	3712.515	647501	
25	&	Mid	3840	656000	15
	Uplink	High	3967.485	664499	
	Downlink	Low	3714.99	647666	
30	&	Mid	3840	656000	15
	Uplink	High	3965.01	664334	
	Downlink	Low	3720	648000	
40	&	Mid	3840	656000	15
	Uplink	High	3960	664000	1
	Downlink	Low	3725.01	648334	
50	&	Mid	3840	656000	15
	Uplink	High	3954.99	663666	



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CBW [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
	Downlink	Low	3455.01	630334	
10	&	Mid	3500.01	633334	15
	Uplink	High	3545.01	636334	
	Downlink	Low	3457.5	630500	
15	&	Mid	3500.01	633334	15
	Uplink	High	3542.49	636166	
	Downlink	Low	3460.02	630668	
20	&	Mid	3500.01	633334	15
	Uplink	High	3540	636000	
	Downlink	Low	3462.51	630834	
25	&	Mid	3500.01	633334	15
	Uplink	High	3537.51	635834	
	Downlink	Low	3465	631000	
30	&	Mid	3500.01	633334	15
	Uplink	High	3534.99	635666	
	Downlink	Low	3470.01	631334	
40	&	Mid	3500.01	633334	15
	Uplink	High	3530.01	635334	
	Downlink	Low	3475.02	631668	
50	&	Mid	3500.01	633334	15
	Uplink	High	3525	635000	



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

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CBW [MHz]	Range		Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
	Downlink	Low	3705	647000	
10	&	Mid	3840	656000	30
	Uplink	High	3975	665000	
	Downlink	Low	3707.52	647168	
15	&	Mid	3840	656000	30
	Uplink	High	3972.48	664832	
	Downlink	Low	3710.01	647334	
20	&	Mid	3840	656000	30
	Uplink	High	3969.99	664666	
	Downlink	Low	3712.515	647501	
25	&	Mid	3840	656000	30
	Uplink	High	3967.485	664499	
	Downlink	Low	3714.99	647666	
30	&	Mid	3840	656000	30
	Uplink	High	3965.01	664334	
	Downlink	Low	3720	648000	
40	&	Mid	3840	656000	30
	Uplink	High	3960	664000	
	Downlink	Low	3725.01	648334	
50	&	Mid	3840	656000	30
	Uplink	High	3954.99	663666	
	Downlink	Low	3730.02	648668	
60	&	Mid	3840	656000	30
	Uplink	High	3949.98	663332	
	Downlink	Low	3735	649000	
70	&	Mid	3840	656000	30
	Uplink	High	3945	663000	7
	Downlink	Low	3740.01	649334	
80	&	Mid	3840	656000	30
	Uplink	High	3939.99	662666	1
90	Downlink	Low	3745.02	649668	
	&	Mid	3840	656000	30
	Uplink	High	3934.98	662332	
	Downlink	Low	3750	650000	
100	&	Mid	3840	656000	30
	Uplink	High	3930	662000	1



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CBW [MHz]	Range)	Carrier centre [MHz]	Carrier centre [ARFCN]	SS block SCS [kHz]
	Downlink	Low	3455.01	630334	
10	&	Mid	3500.01	633334	30
	Uplink	High	3545.01	636334	
	Downlink	Low	3457.5	630500	
15	&	Mid	3500.01	633334	30
	Uplink	High	3542.49	636166	
	Downlink	Low	3460.02	630668	
20	&	Mid	3500.01	633334	30
	Uplink	High	3540	636000	
	Downlink	Low	3462.51	630834	
25	&	Mid	3500.01	633334	30
-	Uplink	High	3537.51	635834	
	Downlink	Low	3465	631000	
30	&	Mid	3500.01	633334	30
	Uplink	High	3534.99	635666	
	Downlink	Low	3470.01	631334	
40	&	Mid	3500.01	633334	30
	Uplink	High	3530.01	635334	
	Downlink	Low	3475.02	631668	
50	&	Mid	3500.01	633334	30
	Uplink	High	3525	635000	
	Downlink	Low	3480	632000	
60	&	Mid	3500.01	633334	30
	Uplink	High	3519.99	634666	
	Downlink	Low	3485.01	632334	
70	&	Mid	3500.01	633334	30
-	Uplink	High	3515.01	634334	1
	Downlink	Low	3490.02	632668	30
80	&	Mid	3500.01	633334	
	Uplink	High	3510	634000	1
I	Downlink	Low	3495	633000	30
90	&	Mid	3500.01	633334	
	Uplink	High	3504.99	633666	
	Downlink	Low		\	
100	&	Mid	3500.01	633334	30
	Uplink	High	1	\	1 1



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4 Description of Tests

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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



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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

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4.3 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

- 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



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4.4 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. $VBW \ge 3 \times RBW$
- 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



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4.5 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 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



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4.6 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



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4.7 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.
- 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 (dB μ V/m) = Measured amplitude level (dB μ V) + (Cable Loss (dB) + Antenna Factor (dB/m) AMP(dB)) EIRP (dBm) = E (dB μ V/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 + ÁF + 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.



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4.8 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 $\pm 0.00025\%$ (± 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



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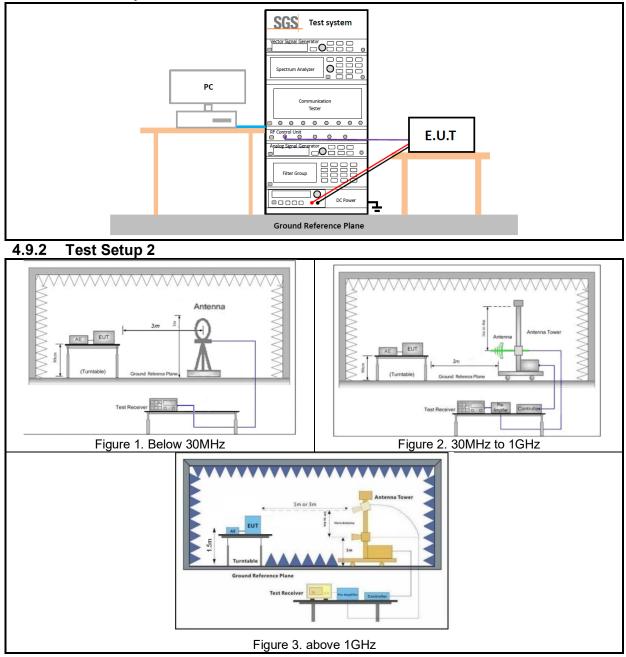
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4.9 Test Setups

4.9.1 Test Setup 1





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SGS Test system C 0 Spectrum Analyzer PC Communication Tester 0 0 0 0 0 0 0 0 Control Unit DE C E.U.T 0 0 0 og Signal Gene Filter Group Temperature Humidity Chamber \mathbf{O} DC Power 0000 근 **Ground Reference Plane**

4.9.3 Test Setup 3



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4.10 Test Conditions

Transmit Output Power Data - Average Power, Total				
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			
	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/TM5; NR/TM9			
	Bandwidth - Occupied Bandwidth			
Test Case	Test Conditions			
Test Environment	Ambient Climate & Rated Voltage			
Test Setup	Test Setup 1			
RF Channels (TX)	M (M= middle channel)			
Test Mode	NR/TM1; NR/TM2; NR/TM3; NR/TM4; NR/TM5; NR/TM6; NR/TM7; NR/TM8; NR/TM9			
	Bandwidth - Emission Bandwidth			
Test Case	Case Test Conditions			
Test Environment	Ambient Climate & Rated Voltage			
Test Setup	Test Setup 1			
RF Channels (TX)	M (M= middle channel)			
Test Mode	NR/TM1; NR/TM2; NR/TM3; NR/TM4; NR/TM5; NR/TM6; NR/TM7; NR/TM8; NR/TM9			
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/TM6			
	Spurious Emission at Antenna Terminals			
Test Case	Test Conditions			



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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			
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			
rest Environment	(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/TM6			
	The report only show the bandwidth with the worst case.			



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RF conducted test					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy/mm/dd)	Cal.Due date (yyyy/mm/dd)
Shielding Room	Brilliant-emc	N/A	SUWI-04-01-06	2021/05/08	2024/05/07
Temperature and humidity meter	MingGao	TH101B	SUWI-01-01-07	2023/02/06	2024/02/05
Signal Analyzer	ROHDE&SCHWARZ	FSV3030	SUWI-01-02-02	2023/05/11	2024/05/10
Measurement Software	Tonscend	JS1120-3 Test System V 2.6.88.0336	SUWI-02-09-09	NCR	NCR
Radio Communication Analyzer	Anritsu	MT8821C	SUWI-01-26-03	2022/11/23	2023/11/22
Wideband Radio Communication Tester	ROHDE&SCHWARZ	CMW500	SUWI-01-16-05	2023/02/06	2024/02/05
DC Power Supply	HYELEC	HY3005B	SUWI-01-18-01	2023/02/06	2024/02/05
Temperature Chamber	ESPEC	SU-242	SUWI-01-13-01	2023/02/06	2024/02/05
Wideband Radio	A maiter i	MT0000A		2022/09/16	2023/09/15
Communication Test Ststion	Anritsu	MT8000A	SUWI-01-34-02	2023/09/12	2024/09/11
Signal Analyzer	ROHDE&SCHWARZ	FSW43	SUWI-01-02-04	2023/05/11	2024/05/10

5 Main Test Instruments

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	RSE Test System					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date (yyyy/mm/dd)	Cal Due Date (yyyy/mm/dd)	
Semi-Anechoic Chamber	Brilliant-emc	N/A	SUWI-04-02-01	2021/05/08	2024/05/07	
Temperature and humidity meter	MingGao	TH101B	SUWI-01-01-05	2023/02/07	2024/02/06	
Signal Analyzer	KEYSIGHT	N9020A	SUWI-01-02-05	2022/11/23	2023/11/22	
Test receiver	ROHDE&SCHWARZ	ESR7	SUWI-01-10-01	2023/02/08	2024/02/07	
DC Power Supply	HYELEC	HY3005B	SUWI-01-18-01	2023/02/06	2024/02/05	
Receiving antenna	SCHWRZBECK MESS- ELEKTRONIK	VULB 9163	SUWI-01-11-01	2023/05/13	2024/05/12	
Receiving antenna	SCHWRZBECK MESS- ELEKTRONIK	BBHA 9120D	SUWI-01-11-02	2023/05/13	2024/05/12	
Receiving antenna	SCHWRZBECK MESS- ELEKTRONIK	BBHA 9170	SUWI-01-11-03	2023/05/12	2024/05/11	
Active Loop Antenna	SCHWRZBECK MESS- ELEKTRONIK	FMZB 1519B	SUWI-01-21-01	2023/05/13	2024/05/12	
Amplifier	Tonscend	TAP9K3G40	SUWI-01-14-01	2023/02/06	2024/02/05	
Amplifier	Tonscend	TAP01018050	SUWI-01-14-02	2023/02/06	2024/02/05	
Wideband Radio Communication Tester	Anritsu	MT8820C	SUWI-01-16-08	2023/02/06	2024/02/05	
UXM 5G Wireless Test Platform	KEYSIGHT	E7515B	SUWI-01-04-01	2023/02/06	2024/02/05	
Measurement Software	Tonscend	JS32-RE 4.0.0.0	SUWI-02-09-04	NCR	NCR	



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6 Measurement Uncertainty

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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	Total RF power, conducted	±0.54dB
2	RF power density, conducted	±1.03dB
3	Spurious emissions, conducted	±0.54dB
4	Radio Frequency	±1.0 %
5	Duty Cycle	±0.37%
6	Occupied Bandwidth	±1.0 %
7		± 3.13dB (9k -30MHz)
	Radiated Emission	± 4.8dB (30M -1GHz)
		± 4.8dB (1GHz to 18GHz)
		± 4.80dB (Above 18GHz)

I ne U_{lab} (Iab Uncertainty) is less than U_{cispr/ETSI} (CISPR/E I SI Uncertainty), so the test results

compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
 non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.



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7 Appendixes

Appendix A.3	WWAN Setup Photos
Appendix B.16	NR Band n2
Appendix B.17	NR Band n5
Appendix B.18	NR Band n25
Appendix B.19	NR Band n26(814-824)
Appendix B.20	NR Band n26(824-849)
Appendix B.21	NR Band n30
Appendix B.22	NR Band n41
Appendix B.23	NR Band n48
Appendix B.24	NR Band n66
Appendix B.25	NR Band n70
Appendix B.26	NR Band n71
Appendix B.27	NR Band n77(3450-3550)
Appendix B.28	NR Band n77(3700-3980)

---End of Report---



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