RF Test Report

Applicant:	TESLA INC
Address:	3500 Deer Creek Rd, Palo Alto, CA 94304 USA
Product:	5G NR Module
Model No.:	TAG555Q-GL
Brand Name:	TESLA
FCC ID:	2AEIM-TAG555Q
Standards:	47 CFR Part 22 47 CFR Part 24 47 CFR Part 27 47 CFR Part 90 47 CFR Part 96
Report No.:	PD20240042RF02
Issue Date:	2024/09/06
Test Result:	PASS *

* **Testing performed at Hefei Panwin Technology Co., Ltd. on the above equipment indicates the product meets the requirements of the relevant standards.**

Reviewed By: Charlie Wang **Approved By:** Alec Yang

Hefei Panwin Technology Co., Ltd.

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Revision History

Report No.	Version	Description	Issue Date	Note
PD20240042RF02	01	Initial Report	2024/09/06	Valid

CONTENTS

Test Summary

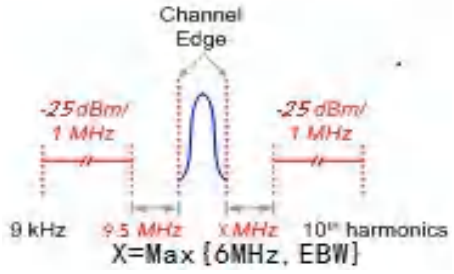
NR Band n2 / 25

No.	Test Case	FCC Rules	Limit	Verdict
1	RF Output Power & Effective Radiated Power	§2.1046, §24.232(c)	EIRP ≤2 Watt	PASS
2	Peak-to-Average Ratio	§24.232(d)	≤13 dB	PASS
3	Occupied Bandwidth	§2.1049	No limit.	Report Only
4	Conducted Band Edge Measurement	§2.1051, §24.238(a)	≤ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	PASS
5	Spurious Emissions at Antenna Terminals	§2.1051, §24.238(a)	≤ -13 dBm/1 MHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges.	PASS
6	Radiated Spurious Emission	§2.1053, §24.238(a)	≤ -13 dBm/1 MHz.	PASS
7	Frequency Stability	§2.1055 §24.235	Within authorized bands of operation/frequency block.	PASS

NR Band n5 / n26(824~849 MHz)

No.	Test Case	FCC Rules	Limit	Verdict
1	RF Output Power & Effective Radiated Power	§2.1046 §22.913 (a)(5)	ERP ≤ 7 Watt	PASS
2	Peak-to-Average Ratio	§22.913 (d)	≤13 dB	PASS
3	Occupied Bandwidth	§2.1049	No limit.	Report Only
4	Conducted Band Edge Measurement	§2.1051 §22.917 (a)	≤ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	PASS
5	Spurious Emissions 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.	PASS
6	Radiated Spurious Emission	§2.1053 §22.917(a)	FCC: ≤ -13 dBm/100 kHz.	PASS
7	Frequency Stability	§2.1055 §22.355	< ±2.5 ppm	PASS

NR Band n7 / n38 / n41

No.	Test Case	FCC Rules	Limit	Verdict
1	RF Output Power & Effective Radiated Power	§2.1046, §27.50(h)(2)	EIRP ≤ 2 Watt	PASS
2	Peak-to-Average Ratio	--	≤13 dB	PASS
3	Occupied Bandwidth	§2.1049	No limit.	Report Only
4	Conducted Band Edge Measurement	§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 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.	PASS
5	Spurious Emissions at Antenna Terminals	§2.1051, §27.53(m)		PASS
6	Radiated Spurious Emission	§2.1053, §27.53(m)		PASS
7	Frequency Stability	§2.1055 §27.54	Within authorized bands of operation/frequency block.	PASS

NR Band n12

No.	Test Case	FCC Rules	Limit	Verdict
1	RF Output Power & Effective Radiated Power	§2.1046, §27.50(c)(10)	ERP ≤ 3 Watt	PASS
2	Peak-to-Average Ratio	--	≤13 dB	PASS
3	Occupied Bandwidth	§2.1049	No limit.	Report Only
4	Conducted Band Edge Measurement	§2.1051, §27.53(g)	For operations in the 600 MHz band and the 698–746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.	PASS
5	Spurious Emissions 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.	PASS
6	Radiated Spurious Emission	§2.1053, §27.53(g)	FCC: ≤ -13 dBm/100 kHz.	PASS
7	Frequency Stability	§2.1055 §27.54	Within authorized bands of operation/frequency block.	PASS

NR Band n14

No.	Test Case	FCC Rules	Limit	Verdict
1	RF Output Power & Effective Radiated Power	§2.1046, §90.542(d)	ERP ≤ 3 Watt	PASS
2	Peak-to-Average Ratio	--	≤13 dB	PASS
3	Occupied Bandwidth	§2.1049	No limit.	Report Only
4	Emission Mask	§2.1051 §90.210(n)	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. 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.	PASS
5	Conducted Band Edge Measurement	§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 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 + 10log (P) dB.	PASS
6	Spurious Emissions at Antenna Terminals	§2.1051, §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.	PASS
7	Radiated Spurious Emission	§2.1053, §90.543(c) §90.543(f)		PASS
8	Frequency Stability	§2.1055 §90.213	Within authorized bands of operation/frequency block.	PASS

NR Band n26 (814~824 MHz)

No.	Test Case	FCC Rules	Limit	Verdict
1	RF Output Power & Effective Radiated Power	§2.1046, §90.635(b)	< 100 W	PASS
2	Peak-to-Average Ratio	--	≤13 dB	PASS
3	Occupied Bandwidth	§2.1049	No limit.	Report Only
4	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 + 10 Log10(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.	PASS
5	Spurious Emissions at Antenna Terminals	§2.1051, §90.691	< 43 + 10Log10(P[Watts]) for all out-of- band emissions	PASS
6	Radiated Spurious Emission	§2.1053, §90.691		PASS
7	Frequency Stability	§2.1055 §90.213	Within authorized bands of operation/frequency block.	PASS

NR Band n48

No.	Test Case	FCC Rules	Limit	Verdict
1	RF Output Power & Effective Radiated Power	§2.1046, §96.41	EIRP≤ 23dBm/10MHz	PASS
2	Peak-to-Average Ratio	§96.41	≤13 dB	PASS
3	Occupied Bandwidth	§96.41	No limit.	Report Only
4	Conducted Band Edge Measurement	§2.1051, §96.41	0-10 MHz: -13 dBm; 10-operating band edge MHz: -25 dBm; 11-other: -40 dBm	PASS
5	Spurious Emissions at Antenna Terminals	§2.1051, §96.41	≤ -40dBm	PASS
6	Radiated Spurious Emission	§2.1051, §96.41	≤ -40dBm	PASS
7	Frequency Stability	§2.1055	Fundamental emission stays within authorized frequency block	PASS
8	Adjacent Channel Leakage Ratio	§2.1051, §96.41	30dB	PASS

NR Band n66

No.	Test Case	FCC Rules	Limit	Verdict
1	RF Output Power & Effective Radiated Power	§2.1046, §27.50(d)(4)	EIRP ≤ 1 Watt	PASS
2	Peak-to-Average Ratio	§27.50(d)(5)	≤13 dB	PASS
3	Occupied Bandwidth	§2.1049	No limit.	Report Only
4	Conducted Band Edge Measurement	§2.1051, §27.53(h)	≤ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	PASS
5	Spurious Emissions at Antenna Terminals	§2.1051, §27.53(h)	≤ -13 dBm/1 MHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges.	PASS
6	Radiated Spurious Emission	§2.1053, §27.53(h)	≤ -13 dBm/1 MHz.	PASS
7	Frequency Stability	§2.1055 §27.54	Within authorized bands of operation/frequency block.	PASS

NR Band n71

No.	Test Case	FCC Rules	Limit	Verdict
1	RF Output Power & Effective Radiated Power	§2.1046, §27.50(c)(10)	ERP ≤ 3 Watt	PASS
2	Peak-to-Average Ratio	--	≤13 dB	PASS
3	Occupied Bandwidth	§2.1049	No limit.	Report Only
4	Conducted Band Edge Measurement	§2.1051, §27.53(g)	For operations in the 600 MHz band and the 698–746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.	PASS
5	Spurious Emissions at Antenna Terminals	§2.1051, §27.53(g)	FCC: ≤ -13 dBm/1 MHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges.	PASS
6	Radiated Spurious Emission	§2.1053, §27.53(g)	≤ -13 dBm/1 MHz.	PASS
7	Frequency Stability	§2.1055 §27.54	within the authorized bands of operation.	PASS

NR Band n77(3700 to 3980MHz) / n78(3700 to 3800MHz)

No.	Test Case	FCC Rules	Limit	Verdict
1	RF Output Power & Effective Radiated Power	§2.1046, §27.50(j)(3)	EIRP ≤ 1W	PASS
2	Peak-to-Average Ratio	--	≤13 dB	PASS
3	Occupied Bandwidth	§2.1049	No limit.	Report Only
4	Conducted Band Edge Measurement	§2.1051, §27.53(l)(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.	PASS
5	Spurious Emissions at Antenna Terminals	§2.1051, §27.53(l)(2)	not exceed -13 dBm/MHz.	PASS
6	Radiated Spurious Emission	§2.1053, §27.53(l)(2)	not exceed -13 dBm/MHz.	PASS
7	Frequency Stability	§2.1055 §27.54	Within authorized bands of operation/frequency block.	PASS

NR Band n77(3450 to 3550MHz) / n78(3450 to 3550MHz)

No.	Test Case	FCC Rules	Limit	Verdict
1	RF Output Power & Effective Radiated Power	§2.1046, §27.50(k)(3)	EIRP ≤ 30dBm	PASS
2	Peak-to-Average Ratio	§27.50(k)(4)	≤13 dB	PASS
3	Occupied Bandwidth	§2.1049	No limit.	Report Only
4	Conducted Band Edge Measurement	§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.	PASS
5	Spurious Emissions at Antenna Terminals			PASS
6	Radiated Spurious Emission	§2.1053, §27.50(n)(2)		PASS
7	Frequency Stability	§2.1055 §27.54	Within authorized bands of operation/frequency block.	PASS

Conducted detection date: 2024/04/10 to 2024/09/06
Radiated detection date: 2024/04/23 to 2024/08/02
Date of Sample Received: 2024/04/09

- The samples tested have been evaluated in accordance with the procedures given in the application standards in **Section 2.5** of this report and have been shown to comply with the applicable technical standards.
- All indications of PASS/FAIL in this report are based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.

1 Test Laboratory

1.1 Notes of the Test Report

This report is invalid without signature of auditor and approver or with any alterations. The report shall not be partially reproduced without written approval of the testing company. Entrusted test results are only responsible for incoming samples. If there is any objection to the testing report, it shall be raised to the testing company within 15 days from the date of receiving the report. In the test results, "NA" means "not applicable", and the test items marked with "Δ" are subcontracted projects.

1.2 Test Facility

A2LA (Certificate Number: 6849.01)

Hefei Panwin Technology Co., Ltd. has been accredited by American Association for Laboratory Accreditation to perform measurement.

FCC (Designation Number: CN1361, Test Firm Registration Number: 473156)

Hefei Panwin Technology Co., Ltd. has been accredited on the US Federal Communications Commission list of test facilities recognized to perform measurements.

1.3 Testing Laboratory

Company Name	Hefei Panwin Technology Co., Ltd.
Address	Floor 1, Zone E, Plant 2#, Mingzhu Industrial Park, No.106 Chuangxin Avenue, High-tech Zone, Hefei City, Anhui Province,China
Telephone	+86-0551-63811775
Post Code	230031

2 General Description of Equipment under Test

2.1 Details of Application

Applicant	TESLA INC
Applicant Address	3500 Deer Creek Rd, Palo Alto, CA 94304 USA
Manufacturer	TESLA INC
Manufacturer Address	3500 Deer Creek Rd, Palo Alto, CA 94304 USA

2.2 Details of EUT

Product			5G NR Module				
Model			TAG555Q-GL				
Hardware Version			R1.0				
Software Version			TAG555QGLABR06A01M8G_OCPU				
SN			Conducted: E1H24B107000029 Radiated: E1H24B107000056				
Support			☑SA ☑NSA				
Operating Band for NR Bands in FR1	**NR Band**	**Duplex Mode**	**Supported SCS & Bandwidth**		**ENDC**	**Tx (MHz)**	**Rx (MHz)**
	n2	FDD	15KHz	5MHz	DC_5A_n2A; DC_12A_n2A; DC_13A_n2A; DC_14A_n2A; DC_71A_n2A	1850 to 1910	1930 to 1990
				10MHz			
				15MHz			
				20MHz			
	n5	FDD	15KHz	5MHz	DC_2A_n5A; DC_7A_n5A; DC_66A_n5A	824 to 849	869 to 894
				10MHz			
				15MHz			
				20MHz			
	n7	FDD	15KHz	5MHz	DC_5A_n7A; DC_12A_n7A; DC_71A_n7A	2500 to 2570	2620 to 2690
				10MHz			
				15MHz			
				20MHz			
				25MHz			
				30MHz			
				40MHz			
	n12	FDD	15KHz	5MHz	DC_2A_n12A; DC_66A_n12A	699 to 716	729 to 746
				10MHz			
				15MHz			
	n14	FDD	15KHz	5MHz	/	788 to 798	758 to 768
				10MHz			
	n25	FDD	15KHz	5MHz	DC_12A_n25A; DC_48A_n25A;	1850 to 1915	1930 to 1995
				10MHz			
				15MHz			
				20MHz			

				25MHz			
				30MHz			
				40MHz			
	n26	FDD	15KHz	5MHz	/	814 to 849	859 to 894
				10MHz			
				15MHz			
				20MHz			
	n38	TDD	30KHz	20MHz	DC_71A_n38A	2570 to 2620	2570 to 2620
	n41	TDD	30KHz	20MHz	DC_5A_n41A; DC_26A_n41A; DC_71A_n41A	2496 to 2690	2496 to 2690
				30MHz			
				40MHz			
				50MHz			
				60MHz			
				70MHz			
				80MHz			
				90MHz			
				100MHz			
	n48	TDD	30KHz	20MHz	/	3550 to 3700	3550 to 3700
				40MHz			
	n66	FDD	15KHz	5MHz	DC_5A_n66A; DC_12A_n66A; DC_13A_n66A; DC_14A_n66A; DC_48A_n66A; DC_71A_n66A	1710 to 1780	2110 to 2180
				10MHz			
				15MHz			
				20MHz			
				40MHz			
	n71	FDD	15KHz	5MHz	DC_2A_n71A; DC_7A_n71A; DC_66A_n71A	663 to 698	617 to 652
				10MHz			
				15MHz			
				20MHz			
	n77	TDD	30KHz	20MHz	DC_2A_n77A; DC_5A_n77A; DC_12A_n77A; DC_13A_n77A; DC_14A_n77A; DC_26A_n77A; DC_40A_n77A; DC_41A_n77A; DC_66A_n77A;	3450 to 3550 3700 to 3980	3450 to 3550 3700 to 3980
				30MHz			
				40MHz			
				50MHz			
				60MHz			
				80MHz			
				90MHz			
				100MHz			

	n78	TDD	30KHz	20MHz 30MHz 40MHz 50MHz 60MHz 70MHz 80MHz 90MHz 100MHz	DC_2A_n78A; DC_5A_n78A; DC_7A_n78A; DC_12A_n78A; DC_26A_n78A; DC_38A_n78A; DC_40A_n78A; DC_41A_n78A; DC_66A_n78A	3450 to 3550 3700 to 3800	3450 to 3550 3700 to 3800

Modulation Type For NR Bands	**UL Modulation**	**DL Modulation**
	DFT-s-OFDM PI/2BPSK	/
	DFT-s-OFDM QPSK	/
	DFT-s-OFDM 16 QAM	/
	DFT-s-OFDM 64 QAM	/
	DFT-s-OFDM 256 QAM	/
	CP-OFDM QPSK	CP-OFDM QPSK
	CP-OFDM 16 QAM	CP-OFDM 16 QAM
	CP-OFDM 64 QAM	CP-OFDM 64 QAM
	CP-OFDM 256 QAM	CP-OFDM 256 QAM

Feature	UL 2*2 MIMO: n77, n78	
HPUE Power Class	Class 2: n77, n78	
Antenna Type	☑External ☐Integrated	
Antenna Gain	n2	0.25dBi (Ant MAIN)
	n5	2.68dBi (Ant DIV)
	n7	0.55dBi (Ant MAIN)
	n12	-0.20dBi (Ant DIV)
	n14	2.42dBi (Ant DIV)
	n25	0.25dBi (Ant MAIN)
	n26	2.87dBi (Ant DIV)
	n38	-0.23dBi (Ant MAIN)
	n41	0.78dBi (Ant MAIN)
	n48	-3.65dBi (Ant MIMO3)
	n66	1.47dBi (Ant MAIN)
	n71	1.22dBi (Ant DIV)
	n77(3450 to 3550MHz)	1.61dBi (Ant MIMO3); 1.61dBi (Ant MAIN)

	n77(3700 to 3980MHz)	2.59dBi (Ant MIMO3); 2.59dBi (Ant MAIN)
	n78(3450 to 3550MHz)	1.61dBi (Ant MIMO3); 1.61dBi (Ant MAIN)
	n78(3700 to 3800MHz)	2.59dBi (Ant MIMO3); 2.59dBi (Ant MAIN)

Note 1: The declared of product specification for EUT and/or Antenna presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.
Note 2: The frequency band subcarrier interval of TDD is 30kHz, and the frequency band subcarrier interval of FDD is 15kHz.
Note 3: Tested the power and RSE of ENDC, report only show worst mode.
Note 4: 5G NR support SA mode and NSA mode. According to the maximum power between SA and NSA mode, SA covers NSA mode.
Note 5: The maximum ERP/EIRP is calculated from max output power and max antenna gain.
Note 6: All modulations have been tested.
Note 7: The device supports two PAs for 5G NR n77/n78 (main PA with Ant MIMO3 for SA mode, and other PA with Ant MAIN for NSA mode), both the PA are full test.
Note 8: For UL MIMO mode, the conducted BE/Spurious are tested at single antenna port and add 10*log(NANT) according to KDB 662911 D01. The result of the single antenna port test is below the limit by more than 3dB margin, so the results of Ant1+Ant2 also meet the limit requirements.
Note 9: From C63.26: As an alternative, the highest power level measured in a narrower RBW (relative to the specified reference bandwidth) can be scaled by applying a correction factor determined from: 10 log [(reference bandwidth) / (resolution or measurement bandwidth)]. When using a smaller RBW, the current usage limit needs to be converted from the original limit.

Support Equipment				
Equipment	**Manufacturer**	**Description**	**Model**	**Serial Number**
EVB	/	/	/	/
Adapter	Dong Guan City GangQi Electronic Co.Ltd	/	GQ36-120300-AX	/

2.3 Frequency List of Low/Middle/High Channels

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

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

NR Band n7 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
5	Channel	500500	507000	513500
	Frequency	2502.5	2535	2567.5
10	Channel	501000	507000	513000
	Frequency	2505	2535	2565
15	Channel	501500	507000	512500
	Frequency	2507.5	2535	2562.5
20	Channel	502000	507000	512000
	Frequency	2510	2535	2560
25	Channel	502500	507000	511500
	Frequency	2512.5	2535	2557.5
30	Channel	503000	507000	511000
	Frequency	2515	2535	2555
40	Channel	504000	507000	510000
	Frequency	2520	2535	2550

NR Band n12 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
5	Channel	140300	141500	142700
	Frequency	701.5	707.5	713.5
10	Channel	140800	141500	142200
	Frequency	704	707.5	711
15	Channel	141300	141500	141700
	Frequency	706.5	707.5	708.5

NR Band n14 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
5	Channel	158100	158600	159100
	Frequency	790.5	793	795.5
10	Channel	/	158600	/
	Frequency	/	793	/

NR Band n25 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
5	Channel	370500	376500	382500
	Frequency	1852.5	1882.5	1912.5
10	Channel	371000	376500	382000
	Frequency	1855	1882.5	1910
15	Channel	371500	376500	381500
	Frequency	1857.5	1882.5	1907.5
20	Channel	372000	376500	381000
	Frequency	1860	1882.5	1905
25	Channel	388500	376500	396500
	Frequency	1862.5	1882.5	1902.5
30	Channel	389000	376500	396000
	Frequency	1865	1882.5	1900
40	Channel	390000	376500	395000
	Frequency	1870	1882.5	1895

NR Band n26 (824 to 849MHz) Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
5	Channel	165300	167300	169300
	Frequency	826.5	836.5	846.5
10	Channel	165800	167300	168800
	Frequency	829	836.5	844
15	Channel	166300	167300	168300
	Frequency	831.5	836.5	841.5
20	Channel	166800	167300	167800

	Frequency	834	836.5	839

NR Band n26 (814 to 824MHz) Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
5	Channel	163300	163800	164300
	Frequency	816.5	819	821.5
10	Channel	/	163800	/
	Frequency	/	819	/

NR Band n38 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
20	Channel	516000	519000	522000
	Frequency	2580	2595	2610

NR Band n41 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
20	Channel	501204	518598	535998
	Frequency	2506.02	2592.99	2679.99
30	Channel	502200	518598	534996
	Frequency	2511	2592.99	2674.98
40	Channel	503202	518598	534000
	Frequency	2516.01	2592.99	2670
50	Channel	504204	518598	532998
	Frequency	2521.02	2592.99	2664.99
60	Channel	505200	518598	531996
	Frequency	2526	2592.99	2659.98
70	Channel	506202	518598	531000
	Frequency	2531.01	2592.99	2655
80	Channel	507204	518598	529998
	Frequency	2536.02	2592.99	2649.99
90	Channel	508200	518598	528996
	Frequency	2541	2592.99	2644.98
100	Channel	509202	518598	528000
	Frequency	2546.01	2592.99	2640

NR Band n48 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
20	Channel	637334	641666	646000
	Frequency	3560.01	3624.99	3690
40	Channel	638000	641666	645332
	Frequency	3570	3624.99	3679.98

NR Band n66 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
5	Channel	342500	349000	355500
	Frequency	1712.5	1745	1777.5
10	Channel	343000	349000	355000
	Frequency	1715	1745	1775
15	Channel	343500	349000	354500
	Frequency	1717.5	1745	1772.5
20	Channel	344000	349000	354000
	Frequency	1720	1745	1770
40	Channel	346000	349000	352000
	Frequency	1730	1745	1760

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

NR Band n77 (3700 to 3980MHz) Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	647334	656000	664666
	Frequency	3710.01	3840	3969.99
30	Channel	647668	656000	664332
	Frequency	3715.02	3840	3964.98
40	Channel	648000	656000	664000
	Frequency	3720	3840	3960
50	Channel	648334	656000	663666
	Frequency	3725.01	3840	3954.99
60	Channel	648668	656000	663332
	Frequency	3730.02	3840	3949.98
80	Channel	649334	656000	662666
	Frequency	3740.01	3840	3939.99
90	Channel	649668	656000	662332
	Frequency	3745.02	3840	3934.98
100	Channel	650000	656000	662000
	Frequency	3750	3840	3930

NR Band n77/78 (3450 to 3550MHz) Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	630666	633334	636000
	Frequency	3459.99	3500.01	3540
30	Channel	631000	633334	635666
	Frequency	3465	3500.01	3534.99
40	Channel	631334	633334	635334
	Frequency	3470.01	3500.01	3530.01
50	Channel	631666	633334	635000
	Frequency	3474.99	3500.01	3525
60	Channel	632000	633334	634666
	Frequency	3480	3500.01	3519.99
70	Channel	632334	633334	634332
	Frequency	3485.01	3500.01	3514.98
80	Channel	632666	633334	634000
	Frequency	3489.99	3500.01	3510
90	Channel	633000	633334	633666
	Frequency	3495	3500.01	3504.99
100	Channel	/	633334	/
	Frequency	/	3500.01	/

NR Band n78 (3700 to 3800MHz) Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	647334	650000	652666
	Frequency	3710.01	3750	3789.99
30	Channel	647668	650000	652332
	Frequency	3175.02	3750	3784.98
40	Channel	648000	650000	652000
	Frequency	3720	3750	3780
50	Channel	648334	650000	651666
	Frequency	3725.01	3750	3774.99
60	Channel	648668	650000	651332
	Frequency	3730.02	3750	3769.98
70	Channel	649000	650000	651000
	Frequency	3735	3750	3765
80	Channel	649334	650000	650666
	Frequency	3740.01	3750	3759.99
90	Channel	649668	650000	650332
	Frequency	3745.02	3750	3754.98
100	Channel	/	650000	/
	Frequency	/	3750	/

2.4 Application Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following 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
ANSI C63.26-2015
FCC KDB 971168 D01 Power Meas License Digital Systems v03r01
FCC KDB 412172 D01 Determining ERP and EIRP v01r01

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

2.5 Maximum Conducted power and Emission Designator

NR Band	BW (MHz)	DFT -s-Pi/2-BPSK / QPSK		16QAM / 64QAM / 256QAM	
		Max Power (W)	Designator	Max Power (W)	Designator
NR Band n2	5	0.1991	4M51G7D	0.1585	4M53W7D
	10	0.1963	9M28G7D	0.1560	9M29W7D
	15	0.1982	14M1G7D	0.1592	14M1W7D
	20	0.1982	18M9G7D	0.1570	18M9W7D
NR Band n5	5	0.2286	4M48G7D	0.2032	4M49W7D
	10	0.2270	9M30G7D	0.2051	9M29W7D
	15	0.2301	14M1G7D	0.1977	14M1W7D
	20	0.2291	18M9G7D	0.1986	18M9W7D
NR Band n7	5	0.2056	4M47G7D	0.1637	4M48W7D
	10	0.2037	9M29G7D	0.1637	9M30W7D
	15	0.2004	14M1G7D	0.1603	14M1W7D
	20	0.2018	18M9G7D	0.1629	18M9W7D
	25	0.2009	23M7G7D	0.1637	23M8W7D
	30	0.2061	28M5G7D	0.1629	28M5W7D
	40	0.2061	38M5G7D	0.1644	38M5W7D
NR Band n12	5	0.2296	4M48G7D	0.2208	4M48W7D
	10	0.2259	9M27G7D	0.2168	9M29W7D
	15	0.2228	14M1G7D	0.2109	14M1W7D
NR Band n14	5	0.2270	4M57G7D	0.1791	4M58W7D
	10	0.2275	9M28G7D	0.1832	9M28W7D
NR Band n25	5	0.2004	4M47G7D	0.1563	4M48W7D
	10	0.1945	9M28G7D	0.1578	9M30W7D
	15	0.1950	14M1G7D	0.1581	14M1W7D
	20	0.1950	18M9G7D	0.1542	18M9W7D
	25	0.1875	23M7G7D	0.1452	23M7W7D
	30	0.1972	28M5G7D	0.1524	28M6W7D
	40	0.2014	38M5G7D	0.1596	38M5W7D
NR Band n26 (814 to 824MHz)	5	0.2307	4M55G7D	0.1803	4M61W7D
	10	0.2249	9M29G7D	0.1845	9M30W7D
NR Band n26 (824 to 849MHz)	5	0.2312	4M48G7D	0.1816	4M48W7D
	10	0.2296	9M28G7D	0.1807	9M29W7D

	15	0.2244	14M1G7D	0.1766	14M1W7D
	20	0.2208	18M9G7D	0.1750	18M9W7D
NR Band n38	20	0.2099	18M2G7D	0.1626	18M2W7D
NR Band n41	20	0.2075	18M2G7D	0.1618	18M2W7D
	30	0.2104	27M8G7D	0.1675	27M8W7D
	40	0.2089	37M8G7D	0.1660	37M7W7D
	50	0.2084	47M5G7D	0.1648	47M5W7D
	60	0.2056	57M7G7D	0.1618	58M0W7D
	70	0.2056	67M4G7D	0.1622	67M5W7D
	80	0.2094	77M4G7D	0.1629	77M4W7D
	90	0.2061	87M3G7D	0.1641	87M3W7D
	100	0.2065	97M2G7D	0.1622	97M3W7D
NR Band n48	20	0.1140	18M2G7D	0.0873	18M2W7D
	40	0.1138	37M8G7D	0.0912	37M9W7D
NR Band n66	5	0.2009	4M48G7D	0.1570	4M48W7D
	10	0.1986	9M28G7D	0.1545	9M29W7D
	15	0.1963	14M1G7D	0.1542	14M1W7D
	20	0.1977	18M9G7D	0.1585	18M9W7D
	40	0.2032	38M5G7D	0.1570	38M5W7D
NR Band n71	5	0.2173	4M48G7D	0.2249	4M55W7D
	10	0.2193	9M28G7D	0.2198	9M29W7D
	15	0.2183	14M1G7D	0.2153	14M1W7D
	20	0.2178	18M9G7D	0.2148	18M9W7D
NR Band n77 (3450 to 3550)	20	0.4335	18M2G7D	0.3491	18M3W7D
	30	0.4355	27M9G7D	0.3516	27M9W7D
	40	0.4295	37M8G7D	0.3342	37M9W7D
	50	0.4178	47M5G7D	0.3311	47M6W7D
	60	0.4315	57M9G7D	0.3357	57M9W7D
	80	0.4236	77M5G7D	0.3412	77M5W7D
	90	0.4256	87M4G7D	0.3381	87M6W7D
	100	0.4246	97M5G7D	0.3334	97M5W7D
NR Band n77 (3700 to 3980)	20	0.3890	18M2G7D	0.3112	18M3W7D
	30	0.4046	27M9G7D	0.3148	27M9W7D
	40	0.3972	37M8G7D	0.3126	37M9W7D

	50	0.4074	47M5G7D	0.3228	47M6W7D
	60	0.4130	57M9G7D	0.3141	57M9W7D
	80	0.4027	77M5G7D	0.3192	77M5W7D
	90	0.4009	87M4G7D	0.3192	87M5W7D
	100	0.4036	97M4G7D	0.3199	97M6W7D
NR Band n78 (3450 to 3550)	20	0.4487	18M2G7D	0.3606	18M2W7D
	30	0.4446	27M9G7D	0.3565	27M9W7D
	40	0.4345	37M8G7D	0.3508	37M9W7D
	50	0.4345	47M5G7D	0.3483	47M5W7D
	60	0.4406	57M8G7D	0.3499	57M9W7D
	70	0.4375	67M4G7D	0.3565	67M6W7D
	80	0.4345	77M4G7D	0.3467	77M5W7D
	90	0.4375	87M4G7D	0.3436	87M5W7D
	100	0.4315	97M4G7D	0.3483	97M5W7D
NR Band n78 (3700 to 3800)	20	0.4285	18M2G7D	0.3436	18M3W7D
	30	0.4121	27M8G7D	0.3388	27M9W7D
	40	0.4305	37M8G7D	0.3412	37M8W7D
	50	0.4207	47M5G7D	0.3365	47M5W7D
	60	0.4236	57M8G7D	0.3365	57M8W7D
	70	0.4217	67M6G7D	0.3311	67M6W7D
	80	0.4178	77M6G7D	0.3311	77M6W7D
	90	0.4083	87M4G7D	0.3281	87M5W7D
	100	0.4027	97M5G7D	0.3236	97M5W7D

3 Test Condition

3.1 Test Environmental Conditions

During testing, environmental conditions are described below.

Normal Configuration		Extreme Configuration		
Voltage	3.8V	Voltage	High: 4.3V	Low: 3.3V

3.2 Test Configuration

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). The worst cases were recorded in this report.

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes (Z, X, Y axis), receiver antenna polarization (horizontal and vertical), the worst emission was found in ‘ Z ’ position and the worst case was recorded.

Test Case	BW	modulation					RB		CH		
		BPSK	QPSK	16QAM	64QAM	256QAM	1	full	L	M	H
RF Output Power & Effective (Isotropic) Radiated Power	all	v	v	v	v	v	v	v	v	v	v
Occupied Bandwidth	all	--	v	v	v	v	--	v	--	v	--
Conducted Band Edge Measurement	all	v	v	--	--	--	v	v	v	--	v
Spurious Emissions at Antenna Terminals	all	v	v	--	--	--	v	--	v	v	v
Peak-to-Average Ratio	all	v	v	v	v	v	--	v	--	v	--
Frequency Stability	max	--	v	--	--	--	--	v	--	v	--
Radiated Spurious Emission	worst case										

Note:

1.The mark " V " means that this configuration is chosen for testing.

2.The mark " -- " means that this bandwidth is not supported.

3.The device is investigated from 30Hz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.

4.Frequency Stability : Normal Voltage = 3.8V ; Low Voltage =3.3V. ; High Voltage =4.3V

5.For radiation spurious emission, the worst cases were recorded for PSK/QPSK modulation in this report.

3.3 Equipment List

Name of Equipment	Manufacturer	Model	Asset No.	Cal. Interval	Cal. Due Date
Conducted					
Base Station Simulator	KEYSIGHT	E7515E	PWC0042	1 Year	2024/10/10
Spectrum Analyzer	KEYSIGHT	N9020B	PWC0049	1 Year	2024/10/10
Matrix Control Unit	Tonscend	JS0806-1	PWC0056	1 Year	2024/11/08
DC Power	KEYSIGHT	E3640A	PWC0045	1 Year	2024/10/11
Shielded Chamber	Mao Rui	MR534	PWC0041	3 Years	2026/08/26
Base Station Simulator	Anritsu	MT8000A_020/021	PWC0032	1 Year	2024/10/11
Spectrum Analyzer	R&S	FSV3044	PWC0036	1 Year	2024/10/11
Matrix Control Unit	Tonscend	JS0806-1	PWC0034	1 Year	2024/10/12
DC Power	KEYSIGHT	E3640A	PWB0080	1 Year	2024/10/11
Climate Chamber	Boyi	B-T-48C	PWC0035	1 Year	2024/10/10
Test Software	Tonscend	JS1120 V2.4.1	/	/	/
Radiated					
Receiver	R&S	ESR7	PWB0023	1 Year	2024/10/11
Spectrum Analyzer	R&S	FSV3044	PWB0024	1 Year	2024/10/11
TRILOG Broadband Antenna	Schwarzbeck	VULB9162	PWB0029	1 Year	2024/10/14
Double-Ridged Guide Antenna	ETS-Lindgren	3117	PWB0031	1 Year	2024/10/12
Loop Antenna	R&S	HFH2-Z2E	PWB0026	1 Year	2024/10/21
k Type Horn Antenna	Steatite Antennas	QMS-00880	PWB0035	1 Year	2024/10/17
Horn Antenna	Steatite Antennas	QMS-00208	PWB0033	1 Year	2024/10/21
Pre-Amplifier	R&S	SCU08F1	PWB0030	1 Year	2024/10/11
Pre-Amplifier	R&S	SCU40F1	PWB0036	1 Year	2024/10/11
Pre-Amplifier	R&S	OSP220	PWB0042	1 Year	2024/10/13
Pre-Amplifier	R&S	SCU18F	PWB0034	1 Year	2024/10/11
Pre-Amplifier	COM-MW	DLNA8	PWB0094	1 Year	2024/11/08
Anechoic Chamber	ETS.LINDGREN	Fact 3-2m	PWB0003	3 Years	2026/06/05
Test Software	R&S	ELEKTRA 4.20.2	/	/	/

3.4 Test Uncertainty

No.	Parameter	Uncertainty
1	Maximum transmit power	400MHz≤f < 3GHz 0.684dB 3GHz≤f < 6GHz 1.210dB
2	Frequency error	37.074Hz
3	Bandwidth occupied	5.9kHz
4	Emission spurious, Band edge and PAPR	10Hz-3.5GHz: 0.982dB 3.5GHz-18GHz: 1dB 18GHz-26.5GHz: 0.777dB 26.5GHz-40GHz: 1.066dB
5	Radiated Spurious Emission	30MHz-18GHz: 4.46 dB 18GHz-40GHz: 4.46 dB
6	Temperature	±3℃
7	Humidity	±1.3 %
8	Supply voltages	±0.006 V

4 Test Items Description

Ambient condition

Shielded Chamber

Temperature [°C]	20.1 to 27.6
Humidity [%RH]	39 to 57
Pressure [kPa]	100.1 to 102.4

Anechoic Chamber

Temperature [°C]	20.1 to 25.6
Humidity [%RH]	45 to 60
Pressure [kPa]	99.6 to 101.0

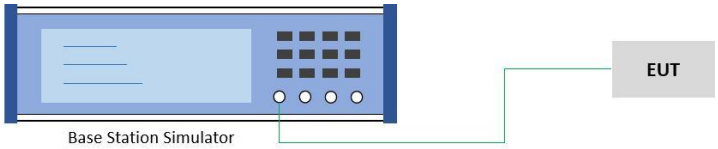
4.1 RF Output Power & Effective (Isotropic) Radiated Power

Methods of Measurement

Base Station Simulator was used to establish communication with the EUT. Its parameters were set to force the EUT transmitting at maximum output power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

According to KDB 412172 D01 Power Approach,
EIRP = PT + GT - LC, ERP = EIRP - 2.15, where
PT = transmitter output power in dBm
GT = gain of the transmitting antenna in dBi
LC = signal attenuation in the connecting cable between the transmitter and antenna in dB

Test Setup



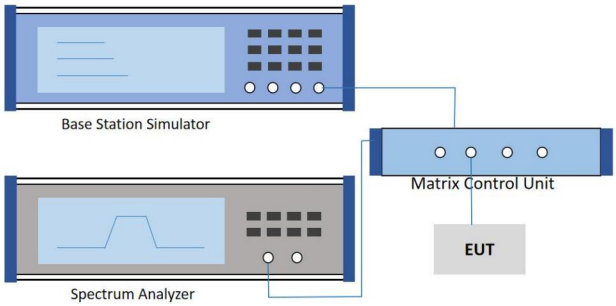
1.The testing follows ANSI C63.26 Section 5.2.
2.The transmitter output port was connected to the base station simulator.
3.Set EUT at maximum power through the base station simulator
4.Select lowest, middle, and highest channels for each band and different modulation.
5.Measure and record the power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

4.2 EIRP Power Density

Methods of Measurement

Measurement Procedure: C63.26 -2015 section 5.2.4

Test Setup



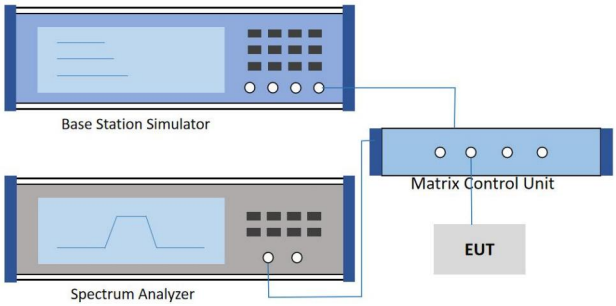
1.Set instrument center frequency to OBW center frequency.
2.Set span to at least 1.5 times the OBW.
3.Set the RBW to the specified reference bandwidth (often 1 MHz).
4.Set VBW ≥ 3 × RBW.
5.Detector = RMS (power averaging).
6.Ensure that the number of measurement points in the sweep ≥ 2 × span/RBW.
7.Sweep 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).

4.3 Peak-to-Average Ratio

Methods of Measurement

Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth.

Test Setup



1.The testing follows ANSI C63.26 Section 5.2.3.4 (CCDF).

2.The EUT was connected to spectrum and system simulator via a Matrix Control Unit.

3.Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.

4.The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.

5.Record the deviation as Peak to Average Ratio.

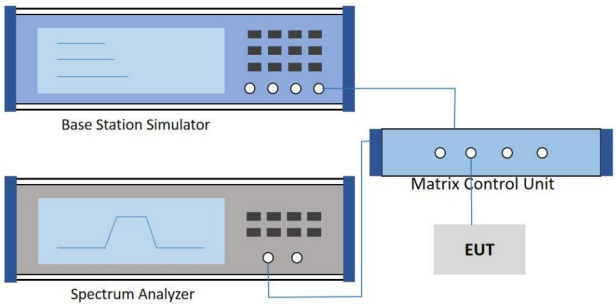
4.4 Occupied Bandwidth

Methods of Measurement

The occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

The 26 dB emission bandwidth is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated 26 dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth equal to approximately 1.0% of the emission bandwidth.

Test Setup



The testing follows ANSI C63.26 Section 5.4.
The EUT was connected to spectrum analyzer and system simulator via a Matrix Control Unit.
The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be between two and five times the anticipated OBW.
The nominal resolution bandwidth (RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
Set the detection mode to peak, and the trace mode to max hold.
Determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace.
(this is the reference value).
Determine the '-26 dB down amplitude' as equal to (Reference Value – X).
Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the '–X dB down amplitude' determined in step 6. If a marker is below this '-X dB down amplitude' value it shall be placed as close as possible to this value. The OBW is the positive frequency difference between the two markers.
Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

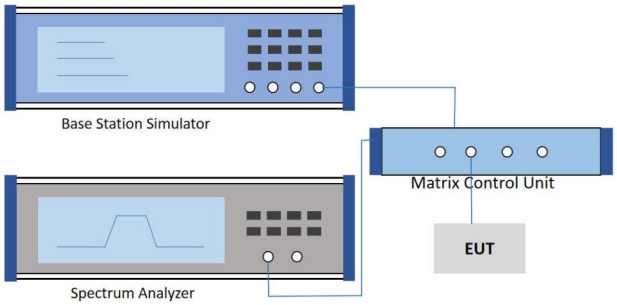
4.5 Conducted Band Edge Measurement

Methods of Measurement

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 RMS.

Test Setup



1.The testing follows ANSI C63.26 section 5.7

2.The EUT was connected to spectrum analyzer and system simulator via a Matrix Control Unit.

3.The band edges of low and high channels for the highest RF powers were measured.

4.Set RBW >= 1% EBW in the 1MHz band immediately outside and adjacent to the band edge.

5.Beyond the 1 MHz band from the band edge, RBW=1MHz was used or a narrower RBW was used and the measured power was integrated over the full required measurement bandwidth of 1 MHz.

6.Set spectrum analyzer with RMS detector.

7.The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

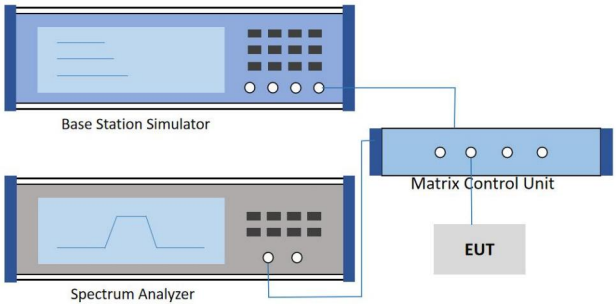
4.6 Spurious Emissions at Antenna Terminals

Methods of Measurement

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 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.

Test Setup



1.The testing follows ANSI C63.26 section 5.7

2.The EUT was connected to spectrum analyzer and system simulator via a Matrix Control Unit.

3.The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.

4.The middle channel for the highest RF power within the transmitting frequency was measured.

5.The conducted spurious emission for the whole frequency range was taken.

6.Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz.

7.Set spectrum analyzer with RMS detector.

8.Taking the record of maximum spurious emission.

9.The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

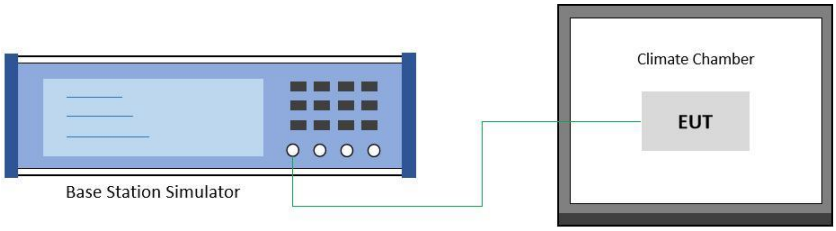
Note: As described in Section C63.26 4.2.3: Generally, the measurement must be corrected by adding 10 log [(reference bandwidth) / (resolution or measurement bandwidth)] to the measured value (such bandwidth scaling is limited to cases where the measurement bandwidth used to perform the measurement is less than the reference bandwidth). Therefore, the converted limit value is the standard limit value minus the conversion factor.

4.7 Frequency Stability

Methods of Measurement

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5ppm) of the center frequency.

Test Setup



Test Procedures for Temperature Variation

1.The testing follows ANSI C63.26 section 5.6.4

2.The EUT was set up in the thermal chamber and connected with the system simulator.

3.With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.

4.With power OFF, the temperature was raised in 10°C step up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

Test Procedures for Voltage Variation

1.The testing follows ANSI C63.26 section 5.6.5

2.The EUT was placed in a temperature chamber at 20±5°C and connected with the system simulator.

3.The power supply voltage to the EUT was varied from 85% to 115% of the nominal value for other than hand carried battery equipment.

4.For hand carried, battery powered equipment, reduce the primary ac or dc supply voltage to the battery operating end point, which shall be specified by the manufacturer.

5.The variation in frequency was measured for the worst case.

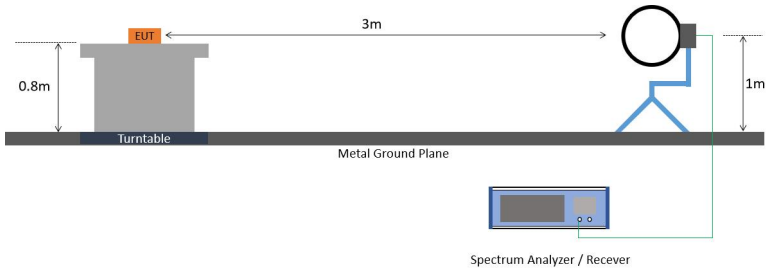
4.8 Radiated Spurious Emission

Methods of Measurement

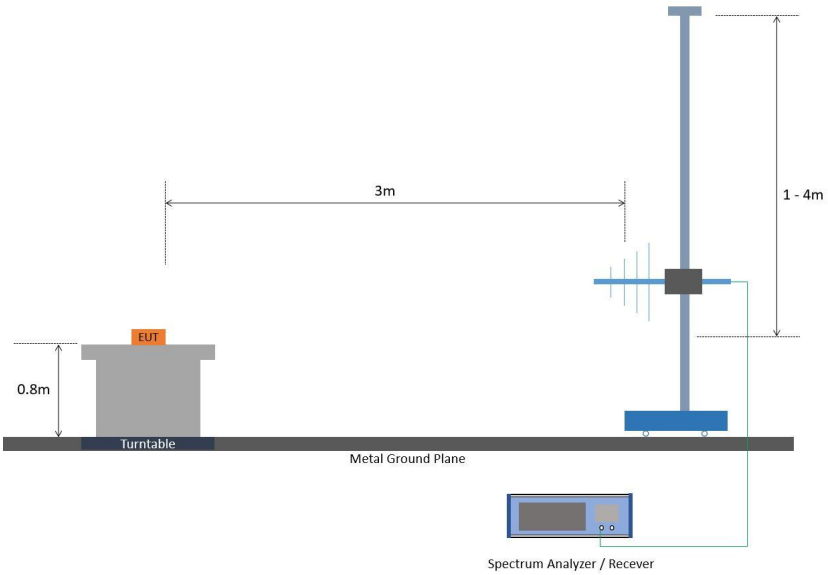
The radiated spurious emission was measured by substitution method according to ANSI C63.26. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

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

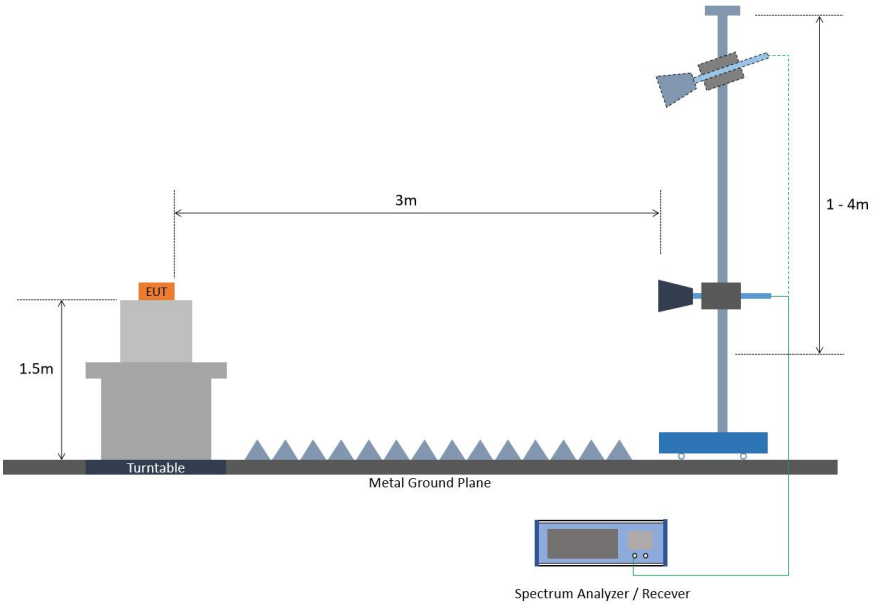
Test Setup



For radiated test below 30MHz



For radiated test from 30MHz to 1GHz



For radiated test above 1GHz

1.The testing follows ANSI C63.26 Section 5.5
2.The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and 1.5 meter height for frequency above 1GHz respectively above ground.
3.The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
4.The table was rotated 360 degrees to determine the position of the highest spurious emission.
5.The height of the receiving antenna is varied between 1m to 4m to search the maximum spurious emission for both horizontal and vertical polarizations.
6.During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power.
7.Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
8.A horn antenna was substituted in place of the EUT and was driven by a signal generator.
9.Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
10.EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
11.ERP (dBm) = EIRP - 2.15
12.The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

Remark: The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

Appendixes

External Photograph	Refer to “Attachment A.1: External Photograph” file.
Internal Photograph	Refer to “Attachment A.2: Internal Photograph” file.
Test Setup Photograph	Refer to “Attachment A.4: RF Test Setup Photograph” file.

Test Results of Conducted Test

NR Band n2	Refer to “Attachment B.30” file.
NR Band n5	Refer to “Attachment B.31” file.
NR Band n7	Refer to “Attachment B.32” file.
NR Band n12	Refer to “Attachment B.33” file.
NR Band n14	Refer to “Attachment B.34” file.
NR Band n25	Refer to “Attachment B.35” file.
NR Band n26 (814 to 824MHz)	Refer to “Attachment B.36” file.
NR Band n26 (824 to 849MHz)	Refer to “Attachment B.37” file.
NR Band n38	Refer to “Attachment B.38” file.
NR Band n41	Refer to “Attachment B.39” file.
NR Band n48	Refer to “Attachment B.40” file.
NR Band n66	Refer to “Attachment B.41” file.
NR Band n71	Refer to “Attachment B.42” file.
NR Band n77 (3450 to 3550MHz)	Refer to “Attachment B.43” file.
NR Band n77 (3700 to 3980MHz)	Refer to “Attachment B.44” file.
NR Band n78 (3450 to 3550MHz)	Refer to “Attachment B.45” file.
NR MIMO n77 (3450 to 3550MHz)	Refer to “Attachment B.46” file.
NR MIMO n77 (3700 to 3980MHz)	Refer to “Attachment B.47” file.
NR MIMO n78 (3450 to 3550MHz)	Refer to “Attachment B.48” file.
NR Band n78 (3700 to 3800)	Refer to “Attachment B.49” file.
NR MIMO n78 (3700 to 3800)	Refer to “Attachment B.50” file.

Test Results of Radiated Test

Radiation spurious test data for NR	Refer to “Attachment C.4” file.

****** End of the Report ******