FCC RF Test Report

APPLICANT	: Nokia Shanghai Bell Co., Ltd.
EQUIPMENT	: Nokia FastMile 5G Gateway 12
BRAND NAME	: Nokia
MODEL NAME	: 5G31-03W-B
FCC ID	: 2ADZR5G3103WB
STANDARD	: 47 CFR Part 2, 22, 24, 27
STANDARD	: PCS Licensed Transmitter (PCB)
CLASSIFICATION	: Apr. 05, 2024 ~ May 09, 2024

We, Sporton International Inc. (Kunshan), would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.26-2015 and shown compliance with the applicable technical standards.

This report contains data that were produced under subcontract by Sporton International Inc. (Shenzhen).

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. (Kunshan), the test report shall not be reproduced except in full.

Jason Jia

Approved by: Jason Jia

ACCREDITED Cert #5145.02

Sporton International Inc. (Kunshan)
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TABLE OF CONTENTS

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG432101H	Rev. 01	Initial issue of report	Jun. 21, 2024

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	Reporting Only	PASS	-
	§22.913(a)(5)	Effective Radiated Power (5G NR n5, n26)	ERP < 7 Watt		
	§24.232(c)	Equivalent Isotropic Radiated Power (5G NR n2, n25)	EIRP < 2Watt		
	§27.50(c)(10)	Effective Radiated Power (5G NR n12, n71)	ERP < 3 Watt		
3.5	§24.232(d)	Peak-to-Average Ratio	<13 dB	PASS	-
3.6	§2.1049	Occupied Bandwidth	Reporting Only	PASS	-
3.7	§2.1051 §22.917(a) §24.238(a) §27.53(g)	Conducted Band Edge Measurement (5G NR n5, n26) (5G NR n2, n25) (5G NR n12, n71)	< 43+10log10(P[Watts])	PASS	-
3.8	§2.1051 §22.917(a) §24.238(a) §27.53(g)	Conducted Spurious Emission (5G NR n5, n26) (5G NR n2, n25) (5G NR n12, n71)	< 43+10log10(P[Watts])	PASS	-
3.9	§2.1055 §22.355	Frequency Stability Temperature & Voltage	< 2.5 ppm for Part 22	PASS	-
	§2.1055 §24.235 §27.54		Within Authorized Band		
4.4	§2.1053 §22.917(a) §24.238(a) §27.53(g)	Radiated Spurious Emission ((5G NR n5, n26) (5G NR n2, n25) (5G NR n12, n71)	< 43+10log$_{10}$(P[Watts])	PASS	Under limit 37.22 dB at 2480.000 MHz

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the section “Measurement Uncertainty”

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

1 General Description

1.1 Applicant

Nokia Shanghai Bell Co., Ltd.
388#, Ningqiao Road, China (Shanghai) Pilot Free Trade Zone, Shanghai 201206, China

1.2 Manufacturer

Nokia Solutions and Networks Oy
Karakaari 7, 02610 Espoo, Finland

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Nokia FastMile 5G Gateway 12
Brand Name	Nokia
Model Name	5G31-03W-B
FCC ID	2ADZR5G3103WB
SN / IMEI Code	Conducted: KLT241102369(SN) Radiation: 355630740001412(IMEI)
HW Version	3TG03021Exxx (x may be from A to Z)
SW Version	5GGW-QCOM7X_D240200B31T0601E0496
EUT Stage	Identical Prototype

Remark: There are three samples under test, only different for the antenna manufacturers as below. According to the difference, we choose sample 1 to full test and the sample 2/3 are verified the RSE worse cases of LTE/NR in another report.

Ant Description	P/N	Vendor_1	Vendor_2	Vendor_3
Ant0&WiFi3_2.4G	3TG03393AAAA	GW12-A0W3	N42NKASA-PK1-D1X95BUD150U4LI	NKH049-15-000-R
Ant1&WiFi2_6G	3TG03394AAAA	GW12-A1W2	N40NKASB-PK1-E1X190BUE110U4LI	NKH050-15-000-R
Ant 2,Ant3,Ant5,Ant7	3TG03395AAAA	GW12-A2357	N40NKASC-PK1-R150U4LID115U4LI E165U4LIA105U4LI	NKH051-15-000-R
Ant4,Ant6&Ant9	3TG03396AAAA	GW12-A469	N40NKASD-PK1-A135U4LID170U4LI E200U4LI	NKH052-15-000-R
WiFi1_6G	3TG03397AAAA	GW12-W1	N06NKASF-PK1-A1X95BU	NKH053-15-000-R
WiFi4_2.4G	3TG03398AAAA	GW12-W4	N01NKASG-PK1-R1X160BU	NKH054-15-000-R
WiFi5_5G	3TG03399AAAA	GW12-W5	N02NKASH-PK1-D1X90BU	NKH055-15-000-R
Ant8&WiFi6_5G	3TG03400AAAA	GW12-A8W6	N43NKASE-PK1-E1X95BUA165U4LI	NKH056-15-000-R
WiFi7_5G	3TG03401AAAA	GW12-W7	N02NKASJ-PK1-A1X95BU	NKH057-15-000-R
WiFi8_5G	3TG03402AAAA	GW12-W8	N02NKASK-PK1-R1X115BU	NKH058-15-000-R

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n5 : 824 MHz ~ 849 MHz 5G NR n12 : 699 MHz ~ 716 MHz 5G NR n25 : 1850 MHz ~ 1915 MHz 5G NR n26 : 824 MHz ~ 849 MHz 5G NR n71: 663 MHz ~ 698 MHz
Rx Frequency	5G NR n2 : 1930 MHz ~ 1990 MHz 5G NR n5 : 869 MHz ~ 894 MHz 5G NR n12: 729 MHz ~ 746 MHz 5G NR n25 : 1930 MHz ~ 1995 MHz 5G NR n26 : 869 MHz ~ 894 MHz 5G NR n71: 617 MHz ~ 652 MHz
Bandwidth	n2/n25: 5MHz / 10MHz / 15MHz / 20MHz / 25MHz / 30MHz / 40MHz n5/n26/n71: 5MHz / 10MHz / 15MHz / 20MHz n12: 5MHz/ 10MHz/ 15MHz
SCS	15kHz
Antenna Gain	**<Ant. 0>** n2: 3.6 dBi n5: 2.4 dBi n12: 2.6 dBi n25: 3.6 dBi n26: 2.4 dBi n71: 2.0 dBi **<Ant. 1>** n2: 2.7 dBi n5: 0.8 dBi n12: 1.2 dBi n25: 2.7 dBi n71: 1.7 dBi **<MIMO Ant. 0+1>(See Remark5)** n2: 2.1 dBi n5: 0 dBi n25: 2.1 dBi n71: 0.5 dBi
Modulation	CP-OFDM: QPSK / 16QAM / 64QAM / 256QAM DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM

Remark:

1. The maximum ERP/EIRP is calculated from max output power and max antenna gain, only the maximum ERP/EIRP are shown in the report, Ant. 0 for SISO mode and Ant.(0+1) for UL MIMO mode.
2. 5G NR n2/n5/n12/n25/n71 support antenna switch function, SA mode work on Ant.0, NSA mode switch to Ant.1(LTE B48 related ENDC combinations remain work on Ant.0). According to the maximum output power, conducted items full test the Ant.0, RSE test Ant.0 for SA mode and Ant.0/1 for NSA mode.
3. 5G NR n2/n5/n12/n25/n71 support SA mode and NSA mode, n26 supports SA mode only. According to the maximum power between SA and NSA mode, SA covers NSA mode for conducted items.
4. 5G NR n2/n5/n25/n71 support UL MIMO mode for Power class 2, and UL MIMO mode only supports CP-OFDM Modulation.

5. The UL MIMO mode only work on Ant.0+1, MIMO Antenna gain is calculated according to KDB 662911 D01.
6. For UL MIMO mode, the conducted BE/Spurious are tested at single antenna port and add 10*log(NANT) according to KDB 662911 D01.
7. All the supported EN-DC combinations are verified conducted power, only the EN-DC combination with highest power are shown in the report.
8. The EN-DC mode combination could be referred to the product spec.

1.5 Modification of EUT

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

1.6 Maximum ERP/EIRP Power and Emission Designator

5G NR n2 SISO		PI/2 BPSK / QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)
5	1852.5 ~ 1907.5	0.4656	4M48G7D	0.3758	4M48W7D
10	1855.0 ~ 1905.0	0.4732	9M28G7D	0.3855	9M29W7D
15	1857.5 ~ 1902.5	0.4624	14M1G7D	0.3819	14M1W7D
20	1860.0 ~ 1900.0	0.4710	19M0G7D	0.3733	18M9W7D
25	1862.5 ~ 1897.5	0.4764	23M8G7D	0.3954	23M8W7D
30	1865.0 ~ 1895.0	0.4797	28M5G7D	0.3828	28M6W7D
40	1870.0 ~ 1890.0	0.5546	38M6G7D	0.3873	38M5W7D

5G NR n2 UL MIMO		QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)
5	1852.5 ~ 1907.5	0.5495	4M48G7D	0.4989	4M48W7D
10	1855.0 ~ 1905.0	0.5598	9M28G7D	0.4898	9M31W7D
15	1857.5 ~ 1902.5	0.5585	14M1G7D	0.4887	14M1W7D
20	1860.0 ~ 1900.0	0.5598	18M9G7D	0.4875	19M0W7D
25	1862.5 ~ 1897.5	0.5623	23M8G7D	0.4943	23M8W7D
30	1865.0 ~ 1895.0	0.5598	28M6G7D	0.5176	28M6W7D
40	1870. 0~ 1890.0	0.5636	38M6G7D	0.5047	38M7W7D

5G NR n12 SISO		PI/2 BPSK / QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum ERP(W)	Emission Designator (99%OBW)	Maximum ERP(W)	Emission Designator (99%OBW)
5	701.5 ~ 713.5	0.2443	4M46G7D	0.1982	4M47W7D
10	704.0~ 711.0	0.2466	9M26G7D	0.1972	9M26W7D
15	706.5 ~ 708.5	0.2472	14M1G7D	0.2000	14M1W7D

5G NR n25 SISO		PI/2 BPSK / QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)
5	1852.5 ~ 1912.5	0.4808	4M48G7D	0.3855	4M48W7D
10	1855.0 ~ 1910.0	0.4955	9M28G7D	0.3890	9M29W7D
15	1857.5 ~ 1907.5	0.4831	14M1G7D	0.3954	14M1W7D
20	1860.0 ~ 1905.0	0.4842	19M0G7D	0.3882	18M9W7D
25	1862.5 ~ 1902.5	0.4943	23M8G7D	0.3873	23M8W7D
30	1865.0 ~ 1900.0	0.4989	28M5G7D	0.3972	28M6W7D
40	1870.0 ~ 1895.0	0.5715	38M6G7D	0.4064	38M5W7D

5G NR n25 UL MIMO		QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)
5	1852.5 ~ 1912.5	0.5546	4M48G7D	0.4819	4M48W7D
10	1855.0 ~ 1910.0	0.5585	9M28G7D	0.4920	9M31W7D
15	1857.5 ~ 1907.5	0.5546	14M1G7D	0.4875	14M1W7D
20	1860.0 ~ 1905.0	0.5649	18M9G7D	0.5012	19M0W7D
25	1862.5 ~ 1902.5	0.5662	23M8G7D	0.4977	23M8W7D
30	1865.0 ~ 1900.0	0.5623	28M6G7D	0.5176	28M6W7D
40	1870.0 ~ 1895.0	0.5662	38M6G7D	0.4977	38M7W7D

5G NR n5 SISO		PI/2 BPSK / QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum ERP(W)	Emission Designator (99%OBW)	Maximum ERP(W)	Emission Designator (99%OBW)
5	826.5 ~ 846.5	0.2075	4M47G7D	0.1667	4M48W7D
10	829.0 ~ 844.0	0.2133	9M31G7D	0.1656	9M32W7D
15	831.5 ~ 841.5	0.2089	14M1G7D	0.1730	14M1W7D
20	834.0 ~ 839.0	0.2393	18M9G7D	0.1702	18M9W7D

5G NR n5 UL MIMO		QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum ERP(W)	Emission Designator (99%OBW)	Maximum ERP(W)	Emission Designator (99%OBW)
5	826.5 ~ 846.5	0.1914	4M48G7D	0.1722	4M48W7D
10	829.0 ~ 844.0	0.1928	9M30G7D	0.1722	9M32W7D
15	831.5 ~ 841.5	0.1914	14M1G7D	0.1671	14M1W7D
20	834.0 ~ 839.0	0.2000	18M9G7D	0.1746	19M0W7D

5G NR n26 SISO		PI/2 BPSK / QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum ERP(W)	Emission Designator (99%OBW)	Maximum ERP(W)	Emission Designator (99%OBW)
5	826.5 ~ 846.5	0.2460	4M47G7D	0.2018	4M48W7D
10	829.0 ~ 844.0	0.2472	9M31G7D	0.2009	9M32W7D
15	831.5 ~ 841.5	0.2415	14M1G7D	0.1919	14M1W7D
20	834.0 ~ 839.0	0.2495	18M9G7D	0.2018	18M9W7D

5G NR n71 SISO		PI/2 BPSK / QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum ERP(W)	Emission Designator (99%OBW)	Maximum ERP(W)	Emission Designator (99%OBW)
5	665.5 ~ 695.5	0.2023	4M47G7D	0.1687	4M49W7D
10	668.0 ~ 693.0	0.2104	9M29G7D	0.1614	9M30W7D
15	670.5 ~ 690.5	0.2051	14M1G7D	0.1611	14M1W7D
20	673.0 ~ 688.0	0.2333	18M9G7D	0.1663	19M0W7D

5G NR n71 UL MIMO		QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum ERP(W)	Emission Designator (99%OBW)	Maximum ERP(W)	Emission Designator (99%OBW)
5	665.5 ~ 695.5	0.2148	4M47G7D	0.1910	4M47W7D
10	668.0 ~ 693.0	0.2153	9M29G7D	0.1923	9M30W7D
15	670.5 ~ 690.5	0.2123	14M1G7D	0.1905	14M1W7D
20	673.0 ~ 688.0	0.2173	18M9G7D	0.1941	18M9W7D

Note:

1. 5G NR n26 overlaps the entire frequency range of 5G NR n5. Therefore, the test results provided in this report covers 5G NR n5 and the portion of 5G NR n26 subject to Part 22 for SISO mode.
2. 5G NR n25 overlaps the entire frequency range of 5G NR n2. Therefore, the test results provided in this report covers 5G NR n25 as well as 5G NR n2 for SISO&MIMO mode.
3. All modulations have been tested, only the worst test results of PSK & QAM are shown in the report.

1.7 Testing Location

Sporton International Inc. (Kunshan) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Test Firm	Sporton International Inc. (Kunshan)		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	03CH04-KS	CN1257	314309

Sporton International Inc. (ShenZhen) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

Test Firm	Sporton International Inc. (ShenZhen)		
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055 People's Republic of China TEL: +86-755-86379589 FAX: +86-755-86379595		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	TH01-SZ	CN1256	421272

Test data subcontracted: Conducted test cases in section 31~3.9 of this report.

1.8 Test Software

Item	Site	Manufacturer	Name	Version
1.	03CH04-KS	AUDIX	E3	6.2009-8-24al

1.9 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR Part 2, 22, 24, 27
- 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 Test Configuration of Equipment Under Test

2.1 Test Mode

Antenna port conducted and radiated test items are performed according to KDB 971168 D01 Power Meas License Digital Systems v03r01 with maximum output power.

For radiated measurement, pre-scanned flip open and close state in three orthogonal panels X, Y, Z. The worst cases (Y plane) were recorded in this report.

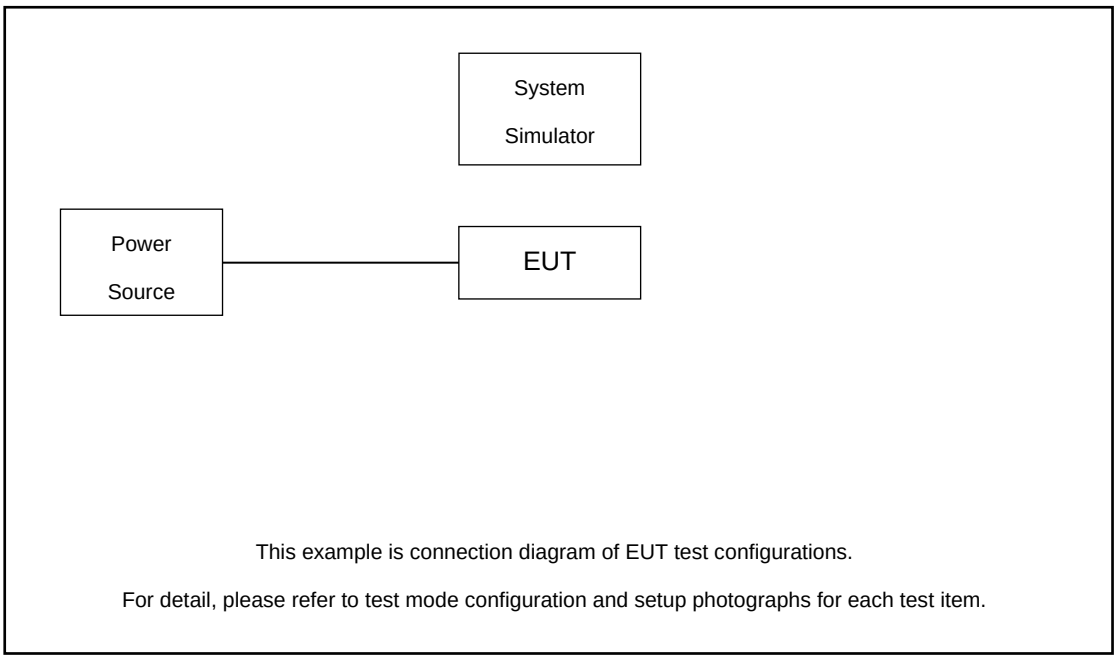
The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.

	X Plane	Y Plane	Z Plane
Orthogonal Planes of EUT			

Test Items	5G NR	Bandwidth (MHz)													Modulation					RB #		Test Channel		
		5	10	15	20	25	30	35	40	45	50-70	80	90	100	PI/2 BPSK	QPSK	16 QAM	64 QAM	256 QAM	1	Full	L	M	H
Max. Output Power	n2	v	v	v	v	v	v	-	v	-	-	-	-	-	v	v	v	v	v	v	v	v	v	v
	n5	v	v	v	v	-	-	-	-	-	-	-	-	-	v	v	v	v	v	v	v	v	v	v
	n12	v	v	v	-	-	-	-	-	-	-	-	-	-	v	v	v	v	v	v	v	v	v	v
	n25	v	v	v	v	v	v	-	v	-	-	-	-	-	v	v	v	v	v	v	v	v	v	v
	n26	v	v	v	v	-	-	-	-	-	-	-	-	-	v	v	v	v	v	v	v	v	v	v
	n71	v	v	v	v	-	-	-	-	-	-	-	-	-	v	v	v	v	v	v	v	v	v	v
Peak-to-Average Ratio	n5				v	-	-	-	-	-	-	-	-	-		v					v		v	
	n12			v	-	-	-	-	-	-	-	-	-	-	v	v					v		v	
	n25				v						-	-	-	-	v	v					v		v	
	n26				v	-	-	-	-	-	-	-	-	-	v	v					v		v	
	n71				v	-	-	-	-	-	-	-	-	-	v	v					v		v	
26dB and 99% Bandwidth	n5	v	v	v	v	-	-	-	-	-	-	-	-	-		v	v	v	v		v		v	
	n12	v	v	v	-	-	-	-	-	-	-	-	-	-		v	v	v	v		v		v	
	n25	v	v	v	v	v	v	-	v	-	-	-	-	-		v	v	v	v		v		v	
	n26	v	v	v	v	-	-	-	-	-	-	-	-	-		v	v	v	v		v		v	
	n71	v	v	v	v	-	-	-	-	-	-	-	-	-		v	v	v	v		v		v	

Test Items	5G NR	Bandwidth (MHz)													Modulation					RB #		Test Channel		
		5	10	15	20	25	30	35	40	45	50-70	80	90	100	PI/2 BPSK	QPSK	16 QAM	64 QAM	256 QAM	1	Full	L	M	H
Conducted Band Edge	n5				v	-	-	-	-	-	-	-	-	-		v				v	v	v		v
	n12	v	v	v	-	-	-	-	-	-	-	-	-	-	v	v				v	v	v		v
	n25	v			v			-	v	-	-	-	-	-	v	v				v	v	v		v
	n26	v	v		v	-	-	-	-	-	-	-	-	-	v	v				v	v	v		v
	n71	v	v		v	-	-	-	-	-	-	-	-	-	v	v				v	v	v		v
Conducted Spurious Emission	n5	v	v		v	-	-	-	-	-	-	-	-	-		v				v		v	v	v
	n12	v	v	v	-	-	-	-	-	-	-	-	-	-	v	v				v		v	v	v
	n25	v			v			-	v	-	-	-	-	-	v	v				v		v	v	v
	n26	v	v		v	-	-	-	-	-	-	-	-	-	v	v				v		v	v	v
	n71	v	v		v	-	-	-	-	-	-	-	-	-	v	v				v		v	v	v
Frequency Stability	n5				v	-	-	-	-	-	-	-	-	-		v					v		v	
	n12			v	-	-	-	-	-	-	-	-	-	-		v					v		v	
	n25				v			-		-	-	-	-	-		v					v		v	
	n26				v	-	-	-	-	-	-	-	-	-		v					v		v	
	n71				v	-	-	-	-	-	-	-	-	-		v					v		v	
E.R.P / E.I.R.P	n2	v	v	v	v	v	v	-	v	-	-	-	-	-	v	v	v	v	v	v	v	v	v	v
	n5	v	v	v	v	-	-	-	-	-	-	-	-	-	v	v	v	v	v	v	v	v	v	v
	n12	v	v	v	-	-	-	-	-	-	-	-	-	-	v	v	v	v	v	v	v	v	v	v
	n25	v	v	v	v	v	v	--	v	-	-	-	-	-	v	v	v	v	v	v	v	v	v	v
	n26	v	v	v	v	-	-	-	-	-	-	-	-	-	v	v	v	v	v	v	v	v	v	v
	n71	v	v	v	v	-	-	-	-	-	-	-	-	-	v	v	v	v	v	v	v	v	v	v
Radiated Spurious Emission	n5	Worst Case																					v	
	n12	Worst Case																					v	
	n25	Worst Case																					v	
	n26	Worst Case																					v	
	n71	Worst Case																					v	
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 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported. 4. Frequency Stability：Normal Voltage = 12V；Low Voltage =10.8V；High Voltage =13.2V; 5. All test items are based on engineering evaluation.																							

2.2 Connection Diagram of Test System



The EUT has been configuration operated in a manner tended to maximize its emission characteristics in a typical application.

2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	DC Power Supply	GW	GPS-3030D	N/A	N/A	Unshielded, 1.8 m
2.	LTE Base Station	Anritsu	MT8820/8821	N/A	N/A	Unshielded, 1.8 m
3.	NR Base Station	Anritsu	MT8000A	N/A	N/A	Unshielded, 1.8 m

2.4 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss.

Offset = RF cable loss.

Following shows an offset computation example with cable loss 8.0 dB.

Example :

Offset(dB) = RF cable loss(dB).

= 8.0 (dB)

2.5 Frequency List of Low/Middle/High Channels

5G NR n2 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
40	Channel	374000	376000	378000
	Frequency	1870	1880	1890
30	Channel	373000	376000	379000
	Frequency	1865	1880	1895
25	Channel	372500	376000	379500
	Frequency	1862.5	1880	1897.5
20	Channel	372000	376000	380000
	Frequency	1860	1880	1900
15	Channel	371500	376000	380500
	Frequency	1857.5	1880	1902.5
10	Channel	371000	376000	381000
	Frequency	1855	1880	1905
5	Channel	370500	376000	381500
	Frequency	1852.5	1880	1907.5

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

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

5G NR n25 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
40	Channel	374000	376500	379000
	Frequency	1870	1882.5	1895
30	Channel	373000	376500	380000
	Frequency	1865	1882.5	1900
25	Channel	372500	376500	380500
	Frequency	1862.5	1882.5	1902.5
20	Channel	372000	376500	381000
	Frequency	1860	1882.5	1905
15	Channel	371500	376500	381500
	Frequency	1857.5	1882.5	1907.5
10	Channel	371000	376500	382000
	Frequency	1855	1882.5	1910
5	Channel	370500	376500	382500
	Frequency	1852.5	1882.5	1912.5

5G NR n26 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	166800	167300	167800
	Frequency	834	836.5	839
15	Channel	166300	167300	168300
	Frequency	831.5	836.5	841.5
10	Channel	165800	167300	168800
	Frequency	829	836.5	844
5	Channel	165300	167300	169300
	Frequency	826.5	836.5	846.5

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

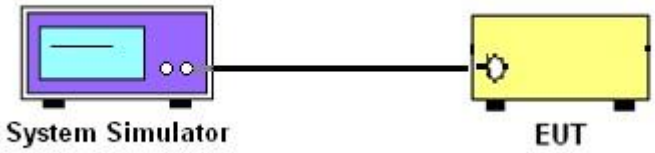
3 Conducted Test Items

3.1 Measuring Instruments

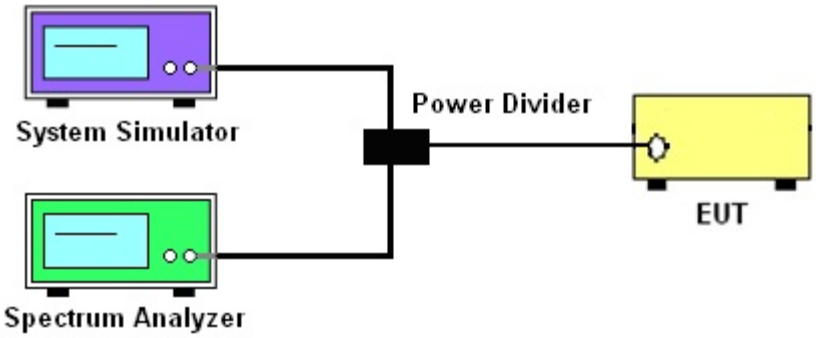
See list of measuring instruments of this test report.

3.2 Test Setup

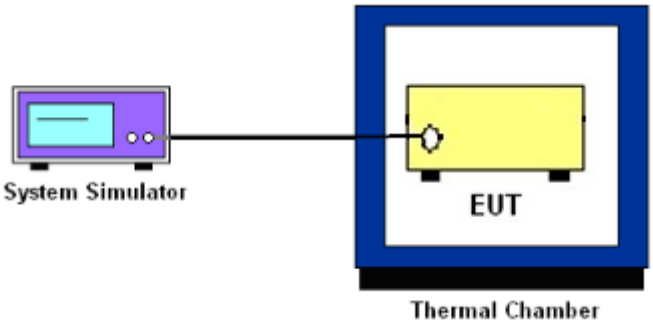
3.2.1 Conducted Output Power



3.2.2 Peak-to-Average Ratio, Occupied Bandwidth, Conducted Band-Edge and Conducted Spurious Emission



3.2.3 Frequency Stability



3.3 Test Result of Conducted Test

Please refer to Appendix A.

3.4 Conducted Output Power and ERP/EIRP

3.4.1 Description of the Conducted Output Power Measurement and ERP/EIRP Measurement

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

The ERP of mobile transmitters must not exceed 7 Watts for 5G NR n5, n26.

The ERP of mobile transmitters must not exceed 3 Watts for 5G NR n12, n71.

The EIRP of mobile transmitters must not exceed 2 Watts for 5G NR n2, n25.

According to KDB 412172 D01 Power Approach,

EIRP = $P_T + G_T – L_C$, ERP = EIRP -2.15, where

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

L_C = signal attenuation in the connecting cable between the transmitter and antenna in dB

3.4.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.2
2. The transmitter output port was connected to the system simulator.
3. Set EUT at maximum power through the system 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.

3.5 Peak-to-Average Ratio

3.5.1 Description of the PAR 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. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

3.5.2 Test Procedures

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 power divider.
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.

3.6 Occupied Bandwidth

3.6.1 Description of Occupied Bandwidth 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.

3.6.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.4
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. 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.
4. 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.
5. Set the detection mode to peak, and the trace mode to max hold.
6. 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)
7. Determine the “-26 dB down amplitude” as equal to (Reference Value – X).
8. 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.
9. Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

3.7 Conducted Band Edge

3.7.1 Description of Conducted Band Edge Measurement

22.917(a)

For operations in the 824 – 849 MHz band, the FCC limit is 43 + $10\log_{10}$(P[Watts]) dB below the transmitter power P(Watts) in a 100kHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

24.238 (a)

For operations in the 1850-1910 and 1930-1990 MHz band, the FCC limit is 43 + $10\log_{10}$(P[Watts]) dB below the transmitter power P(Watts) in a 1MHz bandwidth. 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.

27.53 (g)

For operations in the 600MHz band and 698 -746 MHz band, the FCC limit is 43 + 10log10(P[Watts]) dB below the transmitter power P(Watts) in a 100 kHz bandwidth. 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.

3.7.2 Test Procedures

1. The testing follows ANSI C63.26 section 5.7
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
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 (generally limited to no less than 1% of the OBW) and the measured power was integrated over the full required measurement bandwidth.
6. Set spectrum analyzer with RMS detector.
7. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
8. Checked that all the results comply with the emission limit line.
   Example:
   The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)
   = P(W)- [43 + 10log(P)] (dB)
   = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB) = -13dBm.
9. When using the integration method, the starting frequency of the integration shall be centered at one-half of the RBW away from the band edge.

3.8 Conducted Spurious Emission

3.8.1 Description of Conducted Spurious Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10^{th} harmonic.

3.8.2 Test Procedures

1. The testing follows ANSI C63.26 section 5.7
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
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.
10. The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)
    = P(W)- [43 + 10log(P)] (dB)
    = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
    = -13dBm.

3.9 Frequency Stability

3.9.1 Description of Frequency Stability 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.

3.9.2 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.

3.9.3 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.

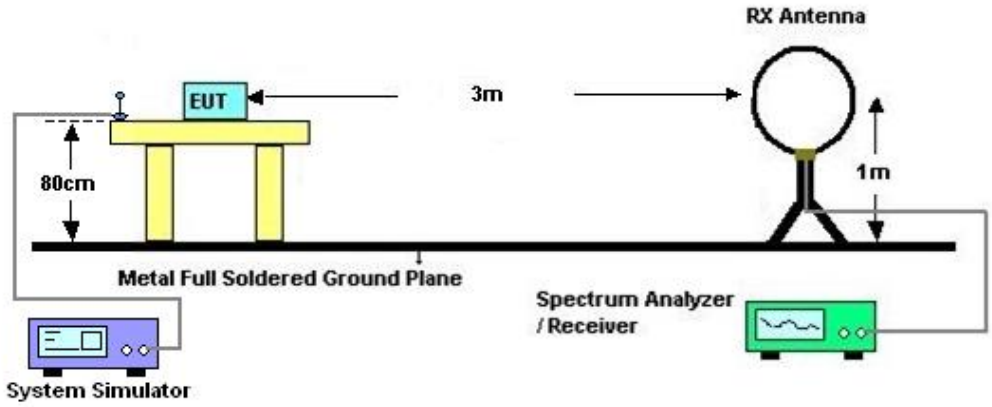
4 Radiated Test Items

4.1 Measuring Instruments

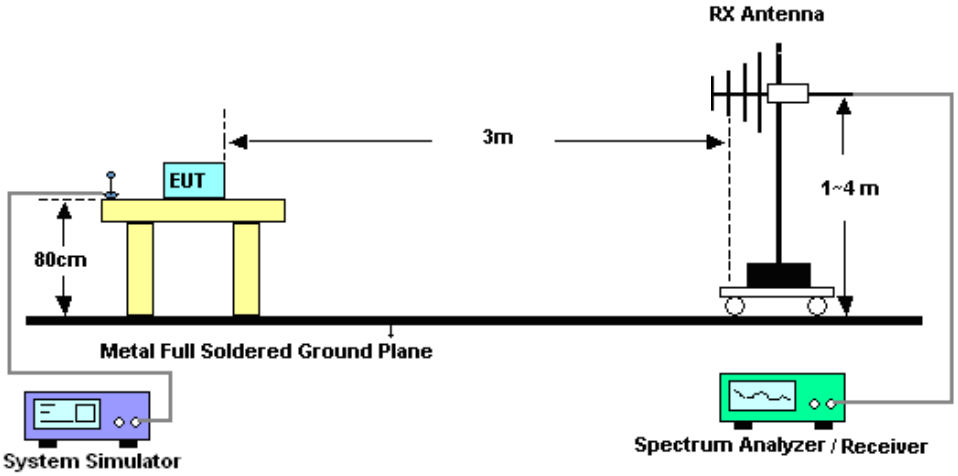
See list of measuring instruments of this test report.

4.2 Test Setup

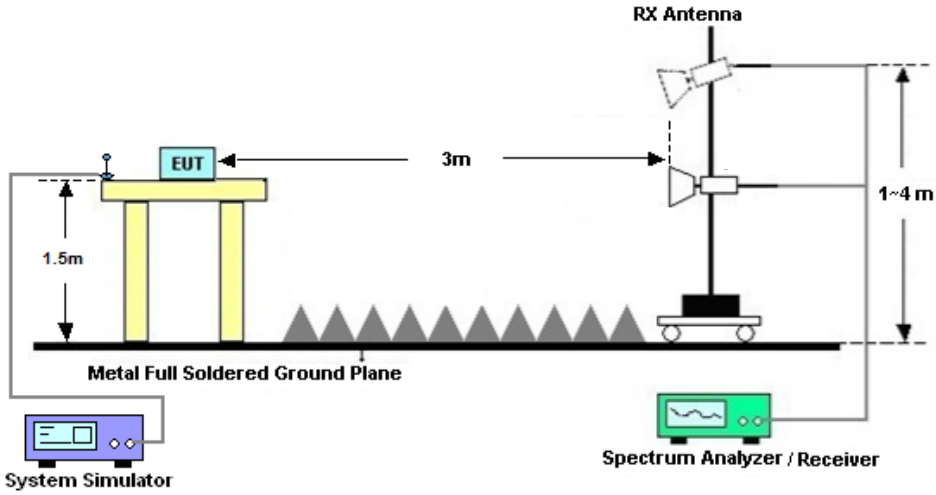
4.2.1 For radiated test below 30MHz



4.2.2 For radiated test from 30MHz to 1GHz



4.2.3 For radiated test above 1GHz



4.3 Test Result of Radiated Test

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.

Please refer to Appendix B.

4.4 Radiated Spurious Emission

4.4.1 Description of Radiated Spurious Emission

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.

4.4.2 Test Procedures

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.
    The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)
    = P(W)- [43 + 10log(P)] (dB)
    = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
    = -13dBm.

5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY55150213	10Hz~44GHz	Jul. 07, 2023	Apr. 05, 2024~ Apr. 21, 2024	Jul. 06, 2024	Conducted (TH01-SZ)
DC Power Supply	TTI	PL330P	290070	Max 32V，3A	Oct. 16, 2023	Apr. 05, 2024~ Apr. 21, 2024	Oct. 15, 2024	Conducted (TH01-SZ)
Power Divider	TOJOIN	PS-2SM-04265	60.06.020.0077	0.4GHz~26.5GHz	Dec. 25, 2023	Apr. 05, 2024~ Apr. 21, 2024	Dec. 24, 2024	Conducted (TH01-SZ)
Thermal Chamber	Ten Billion Hongzhangroup	LP-150U	H2014081803	-40~+150°C	Jul. 05, 2023	Apr. 05, 2024~ Apr. 21, 2024	Jul. 04, 2024	Conducted (TH01-SZ)
EXA Spectrum Analyzer	Keysight	N9010B	MY57471079	10Hz-44G,MAX 30dB	Oct. 10, 2023	May 09, 2024	Oct. 09, 2024	Radiation (03CH04-KS)
Loop Antenna	R&S	HFH2-Z2E	101125	9kHz~30MHz	Sep. 11, 2023	May 09, 2024	Sep. 10, 2024	Radiation (03CH04-KS)
Bilog Antenna	TeseQ	CBL6111D	59913	30MHz-1GHz	Aug. 19, 2023	May 09, 2024	Aug. 18, 2024	Radiation (03CH04-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00251694	1GHz~18GHz	Jul. 12, 2023	May 09, 2024	Jul. 11, 2024	Radiation (03CH04-KS)
SHF-EHF Horn	Com-power	AH-840	101070	18GHz~40GHz	Jan. 05, 2024	May 09, 2024	Jan. 04, 2025	Radiation (03CH04-KS)
Amplifier	SONOMA	310N	380827	9KHz-1GHz	Jul. 06, 2023	May 09, 2024	Jul. 05, 2024	Radiation (03CH04-KS)
Amplifier	MITEQ	EM18G40GGA	060728	18~40GHz	Jan. 05, 2024	May 09, 2024	Jan. 04, 2025	Radiation (03CH04-KS)
high gain Amplifier	EM	EM01G18GA	060840	1Ghz-18Ghz	Oct. 10, 2023	May 09, 2024	Oct. 09, 2024	Radiation (03CH04-KS)
Amplifier	Agilent	8449B	3008A02370	1Ghz-18Ghz	Oct. 10, 2023	May 09, 2024	Oct. 09, 2024	Radiation (03CH04-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	May 09, 2024	NCR	Radiation (03CH04-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	May 09, 2024	NCR	Radiation (03CH04-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	May 09, 2024	NCR	Radiation (03CH04-KS)

NCR: No Calibration Required

6 Measurement Uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.26-2015. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

Uncertainty of Conducted Measurement

Test Item	Uncertainty
Conducted Spurious Emission & Bandedge	±1.34 dB
Occupied Channel Bandwidth	±0.012 MHz
Conducted Power	±1.34 dB
Peak to Average Ratio	±1.34 dB
Frequency Stability	±1.3 Hz

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.83 dB

Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.83 dB

Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.82 dB

---------- THE END ----------

Appendix A. Test Results of Conducted Test

Test Engineer :	Khan Zheng	**Temperature :**	22~23℃
		Relative Humidity :	40~42%

Software Version: 23.06.1602

FR1 n2(Ant 0)

Transmitter Conducted Output Power And EIRP, (G_T - L_C)=3.6dB

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Conducted Power(dBm)	EIRP (dBm)	EIRP (W)
2	15	5	370500	1852.5	DFT-s-OFDM QPSK	1@1	22.89	26.49	0.4457
2	15	5	370500	1852.5	DFT-s-OFDM 16 QAM	1@1	21.98	25.58	0.3614
2	15	5	376000	1880	DFT-s-OFDM QPSK	1@1	23.08	26.68	0.4656
2	15	5	376000	1880	DFT-s-OFDM 16 QAM	1@1	22.15	25.75	0.3758
2	15	5	381500	1907.5	DFT-s-OFDM QPSK	1@1	22.96	26.56	0.4529
2	15	5	381500	1907.5	DFT-s-OFDM 16 QAM	1@1	22.12	25.72	0.3733
2	15	10	371000	1855	DFT-s-OFDM QPSK	1@1	23.15	26.75	0.4732
2	15	10	371000	1855	DFT-s-OFDM 16 QAM	1@1	21.94	25.54	0.3581
2	15	10	376000	1880	DFT-s-OFDM QPSK	1@1	23.08	26.68	0.4656
2	15	10	376000	1880	DFT-s-OFDM 16 QAM	1@1	22.26	25.86	0.3855
2	15	10	381000	1905	DFT-s-OFDM QPSK	1@1	23.13	26.73	0.4710
2	15	10	381000	1905	DFT-s-OFDM 16 QAM	1@1	22.07	25.67	0.3690
2	15	15	371500	1857.5	DFT-s-OFDM QPSK	1@1	22.93	26.53	0.4498
2	15	15	371500	1857.5	DFT-s-OFDM 16 QAM	1@1	22.11	25.71	0.3724
2	15	15	376000	1880	DFT-s-OFDM QPSK	1@1	23.05	26.65	0.4624
2	15	15	376000	1880	DFT-s-OFDM 16 QAM	1@1	22.05	25.65	0.3673
2	15	15	380500	1902.5	DFT-s-OFDM QPSK	1@1	23.04	26.64	0.4613
2	15	15	380500	1902.5	DFT-s-OFDM 16 QAM	1@1	22.22	25.82	0.3819
2	15	20	372000	1860	DFT-s-OFDM QPSK	1@1	22.99	26.59	0.4560
2	15	20	372000	1860	DFT-s-OFDM 16 QAM	1@1	21.95	25.55	0.3589
2	15	20	376000	1880	DFT-s-OFDM QPSK	1@1	23.13	26.73	0.4710
2	15	20	376000	1880	DFT-s-OFDM 16 QAM	1@1	22.12	25.72	0.3733
2	15	20	380000	1900	DFT-s-OFDM QPSK	1@1	23.11	26.71	0.4688
2	15	20	380000	1900	DFT-s-OFDM 16 QAM	1@1	22.12	25.72	0.3733
2	15	25	372500	1862.5	DFT-s-OFDM QPSK	1@1	22.91	26.51	0.4477
2	15	25	372500	1862.5	DFT-s-OFDM 16 QAM	1@1	21.97	25.57	0.3606
2	15	25	376000	1880	DFT-s-OFDM QPSK	1@1	23.09	26.69	0.4667
2	15	25	376000	1880	DFT-s-OFDM 16 QAM	1@1	22.16	25.76	0.3767
2	15	25	379500	1897.5	DFT-s-OFDM QPSK	1@1	23.18	26.78	0.4764

2	15	25	379500	1897.5	DFT-s-OFDM 16 QAM	1@1	22.37	25.97	0.3954
2	15	30	373000	1865	DFT-s-OFDM QPSK	1@1	23.06	26.66	0.4634
2	15	30	373000	1865	DFT-s-OFDM 16 QAM	1@1	22.13	25.73	0.3741
2	15	30	376000	1880	DFT-s-OFDM QPSK	1@1	23.14	26.74	0.4721
2	15	30	376000	1880	DFT-s-OFDM 16 QAM	1@1	22.12	25.72	0.3733
2	15	30	379000	1895	DFT-s-OFDM QPSK	1@1	23.21	26.81	0.4797
2	15	30	379000	1895	DFT-s-OFDM 16 QAM	1@1	22.23	25.83	0.3828
2	15	40	374000	1870	DFT-s-OFDM PI/2 BPSK	108@54	23.7	27.3	0.5370
2	15	40	374000	1870	DFT-s-OFDM PI/2 BPSK	1@1	23.52	27.12	0.5152
2	15	40	374000	1870	DFT-s-OFDM PI/2 BPSK	1@214	23.72	27.32	0.5395
2	15	40	374000	1870	DFT-s-OFDM QPSK	108@54	23.23	26.83	0.4819
2	15	40	374000	1870	DFT-s-OFDM QPSK	1@1	22.99	26.59	0.4560
2	15	40	374000	1870	DFT-s-OFDM QPSK	1@214	23.24	26.84	0.4831
2	15	40	374000	1870	DFT-s-OFDM 16 QAM	108@54	22.1	25.7	0.3715
2	15	40	374000	1870	DFT-s-OFDM 16 QAM	1@1	21.84	25.44	0.3499
2	15	40	374000	1870	DFT-s-OFDM 16 QAM	1@214	22.28	25.88	0.3873
2	15	40	374000	1870	DFT-s-OFDM 64 QAM	108@54	20.64	24.24	0.2655
2	15	40	374000	1870	DFT-s-OFDM 64 QAM	1@1	20.53	24.13	0.2588
2	15	40	374000	1870	DFT-s-OFDM 64 QAM	1@214	20.72	24.32	0.2704
2	15	40	374000	1870	DFT-s-OFDM 256 QAM	108@54	18.14	21.74	0.1493
2	15	40	374000	1870	DFT-s-OFDM 256 QAM	1@1	18.2	21.8	0.1514
2	15	40	374000	1870	DFT-s-OFDM 256 QAM	1@214	18.01	21.61	0.1449
2	15	40	374000	1870	CP-OFDM QPSK	108@54	21.58	25.18	0.3296
2	15	40	374000	1870	CP-OFDM QPSK	1@1	21.55	25.15	0.3273
2	15	40	374000	1870	CP-OFDM QPSK	1@214	21.8	25.4	0.3467
2	15	40	376000	1880	DFT-s-OFDM PI/2 BPSK	108@54	23.84	27.44	0.5546
2	15	40	376000	1880	DFT-s-OFDM PI/2 BPSK	1@1	23.36	26.96	0.4966
2	15	40	376000	1880	DFT-s-OFDM PI/2 BPSK	1@214	23.57	27.17	0.5212
2	15	40	376000	1880	DFT-s-OFDM QPSK	108@54	23.18	26.78	0.4764
2	15	40	376000	1880	DFT-s-OFDM QPSK	1@1	22.95	26.55	0.4519
2	15	40	376000	1880	DFT-s-OFDM QPSK	1@214	23.07	26.67	0.4645
2	15	40	376000	1880	DFT-s-OFDM 16 QAM	108@54	22.15	25.75	0.3758
2	15	40	376000	1880	DFT-s-OFDM 16 QAM	1@1	22	25.6	0.3631
2	15	40	376000	1880	DFT-s-OFDM 16 QAM	1@214	22.2	25.8	0.3802
2	15	40	376000	1880	DFT-s-OFDM 64 QAM	108@54	20.7	24.3	0.2692

2	15	40	376000	1880	DFT-s-OFDM 64 QAM	1@1	20.74	24.34	0.2716
2	15	40	376000	1880	DFT-s-OFDM 64 QAM	1@214	20.79	24.39	0.2748
2	15	40	376000	1880	DFT-s-OFDM 256 QAM	108@54	18.14	21.74	0.1493
2	15	40	376000	1880	DFT-s-OFDM 256 QAM	1@1	18.32	21.92	0.1556
2	15	40	376000	1880	DFT-s-OFDM 256 QAM	1@214	17.84	21.44	0.1393
2	15	40	376000	1880	CP-OFDM QPSK	108@54	21.59	25.19	0.3304
2	15	40	376000	1880	CP-OFDM QPSK	1@1	21.61	25.21	0.3319
2	15	40	376000	1880	CP-OFDM QPSK	1@214	21.6	25.2	0.3311
2	15	40	378000	1890	DFT-s-OFDM PI/2 BPSK	108@54	23.7	27.3	0.5370
2	15	40	378000	1890	DFT-s-OFDM PI/2 BPSK	1@1	23.58	27.18	0.5224
2	15	40	378000	1890	DFT-s-OFDM PI/2 BPSK	1@214	23.63	27.23	0.5284
2	15	40	378000	1890	DFT-s-OFDM QPSK	108@54	23.21	26.81	0.4797
2	15	40	378000	1890	DFT-s-OFDM QPSK	1@1	23.1	26.7	0.4677
2	15	40	378000	1890	DFT-s-OFDM QPSK	1@214	23.15	26.75	0.4732
2	15	40	378000	1890	DFT-s-OFDM 16 QAM	108@54	22.2	25.8	0.3802
2	15	40	378000	1890	DFT-s-OFDM 16 QAM	1@1	22.16	25.76	0.3767
2	15	40	378000	1890	DFT-s-OFDM 16 QAM	1@214	22.1	25.7	0.3715
2	15	40	378000	1890	DFT-s-OFDM 64 QAM	108@54	20.73	24.33	0.2710
2	15	40	378000	1890	DFT-s-OFDM 64 QAM	1@1	20.6	24.2	0.2630
2	15	40	378000	1890	DFT-s-OFDM 64 QAM	1@214	20.6	24.2	0.2630
2	15	40	378000	1890	DFT-s-OFDM 256 QAM	108@54	18.21	21.81	0.1517
2	15	40	378000	1890	DFT-s-OFDM 256 QAM	1@1	18.35	21.95	0.1567
2	15	40	378000	1890	DFT-s-OFDM 256 QAM	1@214	17.76	21.36	0.1368
2	15	40	378000	1890	CP-OFDM QPSK	108@54	21.66	25.26	0.3357
2	15	40	378000	1890	CP-OFDM QPSK	1@1	21.44	25.04	0.3192
2	15	40	378000	1890	CP-OFDM QPSK	1@214	21.58	25.18	0.3296

Appendix B. Test Results of Radiated Test

Radiated Spurious Emission

Test Engineer :	Carl Ni	Temperature :	23~25℃
		Relative Humidity :	41~42%

SA n12 / 15MHz / QPSK / ANT0								
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1400	-67.95	-13	-54.95	-74.92	1.58	10.70	H
	2104	-63.54	-13	-50.54	-71.79	2.102	12.50	H
	2800	-60.10	-13	-47.10	-68.99	2.856	13.90	H
	1400	-67.44	-13	-54.44	-74.41	1.58	10.70	V
	2104	-62.19	-13	-49.19	-70.44	2.10	12.50	V
	2800	-59.38	-13	-46.38	-68.27	2.86	13.90	V

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

EN-DC_48A_n12A / LTE 10MHz + NR 15MHz / QPSK / ANT1(LTE) & ANT0(NR)								
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1400	-68.19	-13	-55.19	-75.16	1.58	10.70	H
	2104	-61.81	-13	-48.81	-70.06	2.102	12.50	H
	2800	-59.41	-13	-46.41	-68.30	2.856	13.90	H
	1400	-67.81	-13	-54.81	-74.78	1.58	10.70	V
	2104	-61.29	-13	-48.29	-69.54	2.10	12.50	V
	2800	-59.43	-13	-46.43	-68.32	2.86	13.90	V

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

SA n25 / NR 40MHz / QPSK / ANT0(NR)								
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	3735	-57.63	-13	-44.63	-69.89	2.64	14.90	H
	5595	-54.91	-13	-41.91	-66.77	2.94	14.80	H
	7455	-53.85	-13	-40.85	-63.62	3.39	13.16	H
	3735	-57.04	-13	-44.04	-69.30	2.64	14.90	V
	5595	-56.23	-13	-43.23	-68.09	2.94	14.80	V
	7455	-53.99	-13	-40.99	-63.76	3.39	13.16	V

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

Software Version: 23.06.1602

FR1 n2 MIMO (Ant 0 + 1)

Transmitter Conducted Output Power And EIRP, (G_T - L_C)=2.1dB

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	ANT0 Power(dBm)	ANT1 Power(dBm)	Conducted Power(dBm)	EIRP (dBm)	EIRP (W)
2	15	5	370500	1852.5	CP-OFDM QPSK	1@1	22.02	22.33	25.19	27.29	0.5358
2	15	5	370500	1852.5	CP-OFDM 16 QAM	1@1	21.65	21.8	24.74	26.84	0.4831
2	15	5	376000	1880	CP-OFDM QPSK	1@1	21.75	22.51	25.16	27.26	0.5321
2	15	5	376000	1880	CP-OFDM 16 QAM	1@1	21.13	21.92	24.55	26.65	0.4624
2	15	5	381500	1907.5	CP-OFDM QPSK	1@1	22.09	22.49	25.30	27.40	0.5495
2	15	5	381500	1907.5	CP-OFDM 16 QAM	1@1	21.63	22.09	24.88	26.98	0.4989
2	15	10	371000	1855	CP-OFDM QPSK	1@1	22.18	22.4	25.30	27.40	0.5495
2	15	10	371000	1855	CP-OFDM 16 QAM	1@1	21.62	21.96	24.80	26.90	0.4898
2	15	10	376000	1880	CP-OFDM QPSK	1@1	21.8	22.6	25.23	27.33	0.5408
2	15	10	376000	1880	CP-OFDM 16 QAM	1@1	21.21	22	24.63	26.73	0.4710
2	15	10	381000	1905	CP-OFDM QPSK	1@1	22.22	22.51	25.38	27.48	0.5598
2	15	10	381000	1905	CP-OFDM 16 QAM	1@1	21.52	21.95	24.75	26.85	0.4842
2	15	15	371500	1857.5	CP-OFDM QPSK	1@1	22.21	22.5	25.37	27.47	0.5585
2	15	15	371500	1857.5	CP-OFDM 16 QAM	1@1	21.73	21.83	24.79	26.89	0.4887
2	15	15	376000	1880	CP-OFDM QPSK	1@1	21.7	22.39	25.07	27.17	0.5212
2	15	15	376000	1880	CP-OFDM 16 QAM	1@1	21.11	22.06	24.62	26.72	0.4699
2	15	15	380500	1902.5	CP-OFDM QPSK	1@1	22.12	22.57	25.36	27.46	0.5572
2	15	15	380500	1902.5	CP-OFDM 16 QAM	1@1	21.49	21.96	24.74	26.84	0.4831
2	15	20	372000	1860	CP-OFDM QPSK	1@1	22.11	22.38	25.26	27.36	0.5445
2	15	20	372000	1860	CP-OFDM 16 QAM	1@1	21.7	21.8	24.76	26.86	0.4853
2	15	20	376000	1880	CP-OFDM QPSK	1@1	21.84	22.42	25.15	27.25	0.5309
2	15	20	376000	1880	CP-OFDM 16 QAM	1@1	21.3	22.01	24.68	26.78	0.4764
2	15	20	380000	1900	CP-OFDM QPSK	1@1	22.03	22.69	25.38	27.48	0.5598
2	15	20	380000	1900	CP-OFDM 16 QAM	1@1	21.57	21.97	24.78	26.88	0.4875
2	15	25	372500	1862.5	CP-OFDM QPSK	1@1	22.17	22.43	25.31	27.41	0.5508
2	15	25	372500	1862.5	CP-OFDM 16 QAM	1@1	21.64	21.89	24.78	26.88	0.4875
2	15	25	376000	1880	CP-OFDM QPSK	1@1	21.84	22.7	25.30	27.40	0.5495
2	15	25	376000	1880	CP-OFDM 16 QAM	1@1	21.24	22.3	24.81	26.91	0.4909
2	15	25	379500	1897.5	CP-OFDM QPSK	1@1	22.04	22.71	25.40	27.50	0.5623
2	15	25	379500	1897.5	CP-OFDM 16 QAM	1@1	21.4	22.22	24.84	26.94	0.4943
2	15	30	373000	1865	CP-OFDM QPSK	1@1	22.27	22.47	25.38	27.48	0.5598
2	15	30	373000	1865	CP-OFDM 16 QAM	1@1	21.84	22.22	25.04	27.14	0.5176
2	15	30	376000	1880	CP-OFDM QPSK	1@1	22.02	22.68	25.37	27.47	0.5585
2	15	30	376000	1880	CP-OFDM 16 QAM	1@1	21.49	22.22	24.88	26.98	0.4989
2	15	30	379000	1895	CP-OFDM QPSK	1@1	22.1	22.6	25.37	27.47	0.5585
2	15	30	379000	1895	CP-OFDM 16 QAM	1@1	21.45	22.04	24.77	26.87	0.4864

2	15	40	374000	1870	CP-OFDM QPSK	108@54	21.86	22.45	25.18	27.28	0.5346
2	15	40	374000	1870	CP-OFDM QPSK	1@1	22.01	22.5	25.27	27.37	0.5458
2	15	40	374000	1870	CP-OFDM QPSK	1@214	22.09	22.48	25.30	27.40	0.5495
2	15	40	374000	1870	CP-OFDM 16 QAM	108@54	21.29	22.02	24.68	26.78	0.4764
2	15	40	374000	1870	CP-OFDM 16 QAM	1@1	21.54	22	24.79	26.89	0.4887
2	15	40	374000	1870	CP-OFDM 16 QAM	1@214	21.53	21.92	24.74	26.84	0.4831
2	15	40	374000	1870	CP-OFDM 64 QAM	108@54	19.45	20.06	22.78	24.88	0.3076
2	15	40	374000	1870	CP-OFDM 64 QAM	1@1	19.78	19.84	22.82	24.92	0.3105
2	15	40	374000	1870	CP-OFDM 64 QAM	1@214	19.49	19.91	22.72	24.82	0.3034
2	15	40	374000	1870	CP-OFDM 256 QAM	108@54	15.97	16.54	19.27	21.37	0.1371
2	15	40	374000	1870	CP-OFDM 256 QAM	1@1	16.25	16.72	19.50	21.60	0.1445
2	15	40	374000	1870	CP-OFDM 256 QAM	1@214	15.8	16.25	19.04	21.14	0.1300
2	15	40	376000	1880	CP-OFDM QPSK	108@54	21.8	22.52	25.19	27.29	0.5358
2	15	40	376000	1880	CP-OFDM QPSK	1@1	22.04	22.51	25.29	27.39	0.5483
2	15	40	376000	1880	CP-OFDM QPSK	1@214	22.26	22.54	25.41	27.51	0.5636
2	15	40	376000	1880	CP-OFDM 16 QAM	108@54	21.25	21.96	24.63	26.73	0.4710
2	15	40	376000	1880	CP-OFDM 16 QAM	1@1	21.28	21.99	24.66	26.76	0.4742
2	15	40	376000	1880	CP-OFDM 16 QAM	1@214	21.8	22.04	24.93	27.03	0.5047
2	15	40	376000	1880	CP-OFDM 64 QAM	108@54	19.35	20.07	22.74	24.84	0.3048
2	15	40	376000	1880	CP-OFDM 64 QAM	1@1	19.53	20	22.78	24.88	0.3076
2	15	40	376000	1880	CP-OFDM 64 QAM	1@214	19.66	20.09	22.89	24.99	0.3155
2	15	40	376000	1880	CP-OFDM 256 QAM	108@54	15.83	16.56	19.22	21.32	0.1355
2	15	40	376000	1880	CP-OFDM 256 QAM	1@1	16.3	16.8	19.57	21.67	0.1469
2	15	40	376000	1880	CP-OFDM 256 QAM	1@214	15.88	16.19	19.05	21.15	0.1303
2	15	40	378000	1890	CP-OFDM QPSK	108@54	21.9	22.5	25.22	27.32	0.5395
2	15	40	378000	1890	CP-OFDM QPSK	1@1	21.72	22.64	25.21	27.31	0.5383
2	15	40	378000	1890	CP-OFDM QPSK	1@214	22.07	22.47	25.28	27.38	0.5470
2	15	40	378000	1890	CP-OFDM 16 QAM	108@54	21.42	22.03	24.75	26.85	0.4842
2	15	40	378000	1890	CP-OFDM 16 QAM	1@1	21.19	22.07	24.66	26.76	0.4742
2	15	40	378000	1890	CP-OFDM 16 QAM	1@214	21.59	21.9	24.76	26.86	0.4853
2	15	40	378000	1890	CP-OFDM 64 QAM	108@54	19.55	20	22.79	24.89	0.3083
2	15	40	378000	1890	CP-OFDM 64 QAM	1@1	19.21	20.3	22.80	24.90	0.3090
2	15	40	378000	1890	CP-OFDM 64 QAM	1@214	19.64	19.9	22.78	24.88	0.3076
2	15	40	378000	1890	CP-OFDM 256 QAM	108@54	16.09	16.6	19.36	21.46	0.1400
2	15	40	378000	1890	CP-OFDM 256 QAM	1@1	16.1	16.87	19.51	21.61	0.1449
2	15	40	378000	1890	CP-OFDM 256 QAM	1@214	15.9	16.18	19.05	21.15	0.1303

Software Version: 23.06.1602

FR1 n5(Ant 0)

Transmitter Conducted Output Power And ERP, (G_T - L_C)=2.4dB

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Conducted Power(dBm)	ERP (dBm)	ERP (W)
5	15	5	165300	826.5	DFT-s-OFDM QPSK	1@1	22.92	23.17	0.2075
5	15	5	165300	826.5	DFT-s-OFDM 16 QAM	1@1	21.97	22.22	0.1667
5	15	5	167300	836.5	DFT-s-OFDM QPSK	1@1	22.83	23.08	0.2032
5	15	5	167300	836.5	DFT-s-OFDM 16 QAM	1@1	21.86	22.11	0.1626
5	15	5	169300	846.5	DFT-s-OFDM QPSK	1@1	22.71	22.96	0.1977
5	15	5	169300	846.5	DFT-s-OFDM 16 QAM	1@1	21.65	21.9	0.1549
5	15	10	165800	829	DFT-s-OFDM QPSK	1@1	22.92	23.17	0.2075
5	15	10	165800	829	DFT-s-OFDM 16 QAM	1@1	21.84	22.09	0.1618
5	15	10	167300	836.5	DFT-s-OFDM QPSK	1@1	23.04	23.29	0.2133
5	15	10	167300	836.5	DFT-s-OFDM 16 QAM	1@1	21.94	22.19	0.1656
5	15	10	168800	844	DFT-s-OFDM QPSK	1@1	22.96	23.21	0.2094
5	15	10	168800	844	DFT-s-OFDM 16 QAM	1@1	21.8	22.05	0.1603
5	15	15	166300	831.5	DFT-s-OFDM QPSK	1@1	22.89	23.14	0.2061
5	15	15	166300	831.5	DFT-s-OFDM 16 QAM	1@1	22.13	22.38	0.1730
5	15	15	167300	836.5	DFT-s-OFDM QPSK	1@1	22.95	23.2	0.2089
5	15	15	167300	836.5	DFT-s-OFDM 16 QAM	1@1	22.06	22.31	0.1702
5	15	15	168300	841.5	DFT-s-OFDM QPSK	1@1	22.75	23	0.1995
5	15	15	168300	841.5	DFT-s-OFDM 16 QAM	1@1	21.91	22.16	0.1644
5	15	20	166800	834	DFT-s-OFDM PI/2 BPSK	50@25	23.5	23.75	0.2371
5	15	20	166800	834	DFT-s-OFDM PI/2 BPSK	1@1	23.48	23.73	0.2360
5	15	20	166800	834	DFT-s-OFDM PI/2 BPSK	1@104	23.37	23.62	0.2301
5	15	20	166800	834	DFT-s-OFDM QPSK	50@25	22.91	23.16	0.2070
5	15	20	166800	834	DFT-s-OFDM QPSK	1@1	23.02	23.27	0.2123
5	15	20	166800	834	DFT-s-OFDM QPSK	1@104	22.92	23.17	0.2075
5	15	20	166800	834	DFT-s-OFDM 16 QAM	50@25	21.88	22.13	0.1633
5	15	20	166800	834	DFT-s-OFDM 16 QAM	1@1	22.06	22.31	0.1702
5	15	20	166800	834	DFT-s-OFDM 16 QAM	1@104	21.83	22.08	0.1614
5	15	20	166800	834	DFT-s-OFDM 64 QAM	50@25	20.45	20.7	0.1175
5	15	20	166800	834	DFT-s-OFDM 64 QAM	1@1	20.59	20.84	0.1213
5	15	20	166800	834	DFT-s-OFDM 64 QAM	1@104	20.46	20.71	0.1178
5	15	20	166800	834	DFT-s-OFDM 256 QAM	50@25	17.82	18.07	0.0641
5	15	20	166800	834	DFT-s-OFDM 256 QAM	1@1	18.03	18.28	0.0673
5	15	20	166800	834	DFT-s-OFDM 256 QAM	1@104	17.73	17.98	0.0628
5	15	20	166800	834	CP-OFDM QPSK	53@26	21.39	21.64	0.1459
5	15	20	166800	834	CP-OFDM QPSK	1@1	21.52	21.77	0.1503

5	15	20	166800	834	CP-OFDM QPSK	1@104	21.13	21.38	0.1374
5	15	20	167300	836.5	DFT-s-OFDM PI/2 BPSK	50@25	23.44	23.69	0.2339
5	15	20	167300	836.5	DFT-s-OFDM PI/2 BPSK	1@1	23.54	23.79	0.2393
5	15	20	167300	836.5	DFT-s-OFDM PI/2 BPSK	1@104	23.22	23.47	0.2223
5	15	20	167300	836.5	DFT-s-OFDM QPSK	50@25	22.96	23.21	0.2094
5	15	20	167300	836.5	DFT-s-OFDM QPSK	1@1	23.12	23.37	0.2173
5	15	20	167300	836.5	DFT-s-OFDM QPSK	1@104	22.6	22.85	0.1928
5	15	20	167300	836.5	DFT-s-OFDM 16 QAM	50@25	21.95	22.2	0.1660
5	15	20	167300	836.5	DFT-s-OFDM 16 QAM	1@1	21.84	22.09	0.1618
5	15	20	167300	836.5	DFT-s-OFDM 16 QAM	1@104	21.66	21.91	0.1552
5	15	20	167300	836.5	DFT-s-OFDM 64 QAM	50@25	20.41	20.66	0.1164
5	15	20	167300	836.5	DFT-s-OFDM 64 QAM	1@1	20.66	20.91	0.1233
5	15	20	167300	836.5	DFT-s-OFDM 64 QAM	1@104	20.28	20.53	0.1130
5	15	20	167300	836.5	DFT-s-OFDM 256 QAM	50@25	17.77	18.02	0.0634
5	15	20	167300	836.5	DFT-s-OFDM 256 QAM	1@1	18.04	18.29	0.0675
5	15	20	167300	836.5	DFT-s-OFDM 256 QAM	1@104	17.75	18	0.0631
5	15	20	167300	836.5	CP-OFDM QPSK	53@26	21.3	21.55	0.1429
5	15	20	167300	836.5	CP-OFDM QPSK	1@1	21.27	21.52	0.1419
5	15	20	167300	836.5	CP-OFDM QPSK	1@104	21.09	21.34	0.1361
5	15	20	167800	839	DFT-s-OFDM PI/2 BPSK	50@25	23.43	23.68	0.2333
5	15	20	167800	839	DFT-s-OFDM PI/2 BPSK	1@1	23.49	23.74	0.2366
5	15	20	167800	839	DFT-s-OFDM PI/2 BPSK	1@104	23.07	23.32	0.2148
5	15	20	167800	839	DFT-s-OFDM QPSK	50@25	22.88	23.13	0.2056
5	15	20	167800	839	DFT-s-OFDM QPSK	1@1	22.83	23.08	0.2032
5	15	20	167800	839	DFT-s-OFDM QPSK	1@104	22.84	23.09	0.2037
5	15	20	167800	839	DFT-s-OFDM 16 QAM	50@25	21.87	22.12	0.1629
5	15	20	167800	839	DFT-s-OFDM 16 QAM	1@1	21.87	22.12	0.1629
5	15	20	167800	839	DFT-s-OFDM 16 QAM	1@104	21.67	21.92	0.1556
5	15	20	167800	839	DFT-s-OFDM 64 QAM	50@25	20.38	20.63	0.1156
5	15	20	167800	839	DFT-s-OFDM 64 QAM	1@1	20.41	20.66	0.1164
5	15	20	167800	839	DFT-s-OFDM 64 QAM	1@104	20.17	20.42	0.1102
5	15	20	167800	839	DFT-s-OFDM 256 QAM	50@25	17.86	18.11	0.0647
5	15	20	167800	839	DFT-s-OFDM 256 QAM	1@1	18.15	18.4	0.0692
5	15	20	167800	839	DFT-s-OFDM 256 QAM	1@104	17.62	17.87	0.0612
5	15	20	167800	839	CP-OFDM QPSK	53@26	21.27	21.52	0.1419
5	15	20	167800	839	CP-OFDM QPSK	1@1	21.41	21.66	0.1466
5	15	20	167800	839	CP-OFDM QPSK	1@104	21.23	21.48	0.1406

Software Version: 23.06.1602

FR1 n5 MIMO (Ant 0 + 1)

Transmitter Conducted Output Power And ERP, (G_T - L_C)=0dB

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	ANT0 Power(dBm)	ANT1 Power(dBm)	Conducted Power(dBm)	ERP (dBm)	ERP (W)
5	15	5	165300	826.5	CP-OFDM QPSK	1@1	21.92	22	24.97	22.82	0.1914
5	15	5	165300	826.5	CP-OFDM 16 QAM	1@1	21.47	21.52	24.51	22.36	0.1722
5	15	5	167300	836.5	CP-OFDM QPSK	1@1	21.75	21.98	24.88	22.73	0.1875
5	15	5	167300	836.5	CP-OFDM 16 QAM	1@1	21.2	21.25	24.24	22.09	0.1618
5	15	5	169300	846.5	CP-OFDM QPSK	1@1	21.43	21.78	24.62	22.47	0.1766
5	15	5	169300	846.5	CP-OFDM 16 QAM	1@1	20.97	21.24	24.12	21.97	0.1574
5	15	10	165800	829	CP-OFDM QPSK	1@1	21.79	22.15	24.98	22.83	0.1919
5	15	10	165800	829	CP-OFDM 16 QAM	1@1	21.39	21.61	24.51	22.36	0.1722
5	15	10	167300	836.5	CP-OFDM QPSK	1@1	21.75	22.22	25.00	22.85	0.1928
5	15	10	167300	836.5	CP-OFDM 16 QAM	1@1	21.3	21.47	24.40	22.25	0.1679
5	15	10	168800	844	CP-OFDM QPSK	1@1	21.42	21.84	24.65	22.50	0.1778
5	15	10	168800	844	CP-OFDM 16 QAM	1@1	21.01	21.41	24.22	22.07	0.1611
5	15	15	166300	831.5	CP-OFDM QPSK	1@1	21.83	22.09	24.97	22.82	0.1914
5	15	15	166300	831.5	CP-OFDM 16 QAM	1@1	21.27	21.42	24.36	22.21	0.1663
5	15	15	167300	836.5	CP-OFDM QPSK	1@1	21.67	21.87	24.78	22.63	0.1832
5	15	15	167300	836.5	CP-OFDM 16 QAM	1@1	21.29	21.44	24.38	22.23	0.1671
5	15	15	168300	841.5	CP-OFDM QPSK	1@1	21.58	22.05	24.83	22.68	0.1854
5	15	15	168300	841.5	CP-OFDM 16 QAM	1@1	20.94	21.34	24.15	22.00	0.1585
5	15	20	166800	834	CP-OFDM QPSK	53@26	21.55	21.9	24.74	22.59	0.1816
5	15	20	166800	834	CP-OFDM QPSK	1@1	21.95	21.98	24.98	22.83	0.1919
5	15	20	166800	834	CP-OFDM QPSK	1@104	21.26	21.61	24.45	22.30	0.1698
5	15	20	166800	834	CP-OFDM 16 QAM	53@26	21.12	21.29	24.22	22.07	0.1611
5	15	20	166800	834	CP-OFDM 16 QAM	1@1	21.48	21.48	24.49	22.34	0.1714
5	15	20	166800	834	CP-OFDM 16 QAM	1@104	20.97	21.08	24.04	21.89	0.1545
5	15	20	166800	834	CP-OFDM 64 QAM	53@26	19.12	19.5	22.32	20.17	0.1040
5	15	20	166800	834	CP-OFDM 64 QAM	1@1	19.39	19.7	22.56	20.41	0.1099
5	15	20	166800	834	CP-OFDM 64 QAM	1@104	18.78	19.3	22.06	19.91	0.0979
5	15	20	166800	834	CP-OFDM 256 QAM	53@26	15.65	15.97	18.82	16.67	0.0465
5	15	20	166800	834	CP-OFDM 256 QAM	1@1	16	16.11	19.07	16.92	0.0492
5	15	20	166800	834	CP-OFDM 256 QAM	1@104	15.16	15.89	18.55	16.40	0.0437
5	15	20	167300	836.5	CP-OFDM QPSK	53@26	21.48	21.68	24.59	22.44	0.1754
5	15	20	167300	836.5	CP-OFDM QPSK	1@1	22.15	22.14	25.16	23.01	0.2000
5	15	20	167300	836.5	CP-OFDM QPSK	1@104	21.23	21.77	24.52	22.37	0.1726
5	15	20	167300	836.5	CP-OFDM 16 QAM	53@26	21.02	21.27	24.16	22.01	0.1589
5	15	20	167300	836.5	CP-OFDM 16 QAM	1@1	21.6	21.52	24.57	22.42	0.1746
5	15	20	167300	836.5	CP-OFDM 16 QAM	1@104	20.71	21.09	23.91	21.76	0.1500

5	15	20	167300	836.5	CP-OFDM 64 QAM	53@26	19.03	19.5	22.28	20.13	0.1030
5	15	20	167300	836.5	CP-OFDM 64 QAM	1@1	19.35	19.74	22.56	20.41	0.1099
5	15	20	167300	836.5	CP-OFDM 64 QAM	1@104	18.76	19.34	22.07	19.92	0.0982
5	15	20	167300	836.5	CP-OFDM 256 QAM	53@26	15.59	16.04	18.83	16.68	0.0466
5	15	20	167300	836.5	CP-OFDM 256 QAM	1@1	15.95	16.26	19.12	16.97	0.0498
5	15	20	167300	836.5	CP-OFDM 256 QAM	1@104	15.17	15.78	18.50	16.35	0.0432
5	15	20	167800	839	CP-OFDM QPSK	53@26	21.37	21.71	24.55	22.40	0.1738
5	15	20	167800	839	CP-OFDM QPSK	1@1	21.76	22.01	24.90	22.75	0.1884
5	15	20	167800	839	CP-OFDM QPSK	1@104	21.2	21.68	24.46	22.31	0.1702
5	15	20	167800	839	CP-OFDM 16 QAM	53@26	20.89	21.28	24.10	21.95	0.1567
5	15	20	167800	839	CP-OFDM 16 QAM	1@1	21.47	21.64	24.57	22.42	0.1746
5	15	20	167800	839	CP-OFDM 16 QAM	1@104	20.69	21.35	24.04	21.89	0.1545
5	15	20	167800	839	CP-OFDM 64 QAM	53@26	18.93	19.43	22.20	20.05	0.1012
5	15	20	167800	839	CP-OFDM 64 QAM	1@1	19.25	19.66	22.47	20.32	0.1076
5	15	20	167800	839	CP-OFDM 64 QAM	1@104	18.61	19.25	21.95	19.80	0.0955
5	15	20	167800	839	CP-OFDM 256 QAM	53@26	15.47	15.95	18.73	16.58	0.0455
5	15	20	167800	839	CP-OFDM 256 QAM	1@1	15.77	16.12	18.96	16.81	0.0480
5	15	20	167800	839	CP-OFDM 256 QAM	1@104	15.02	15.79	18.43	16.28	0.0425

FR1 n5 MIMO (Ant 0 + 1)-(Ant 0)

Frequency Stability

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Deviation (ppm)	Verdict	Environment
5	15	20	167300	836.5	CP-OFDM QPSK	106@0	0.0028	**PASS**	NV
5	15	20	167300	836.5	CP-OFDM QPSK	106@0	0.0041	**PASS**	LV
5	15	20	167300	836.5	CP-OFDM QPSK	106@0	0.0024	**PASS**	HV
5	15	20	167300	836.5	CP-OFDM QPSK	106@0	0.0043	**PASS**	-30℃
5	15	20	167300	836.5	CP-OFDM QPSK	106@0	0.0041	**PASS**	-20℃
5	15	20	167300	836.5	CP-OFDM QPSK	106@0	0.0022	**PASS**	-10℃
5	15	20	167300	836.5	CP-OFDM QPSK	106@0	0.0033	**PASS**	0℃
5	15	20	167300	836.5	CP-OFDM QPSK	106@0	0.0031	**PASS**	10℃
5	15	20	167300	836.5	CP-OFDM QPSK	106@0	0.0028	**PASS**	20℃
5	15	20	167300	836.5	CP-OFDM QPSK	106@0	0.0035	**PASS**	30℃
5	15	20	167300	836.5	CP-OFDM QPSK	106@0	0.0026	**PASS**	40℃
5	15	20	167300	836.5	CP-OFDM QPSK	106@0	0.0027	**PASS**	50℃

Peak to Average Ratio

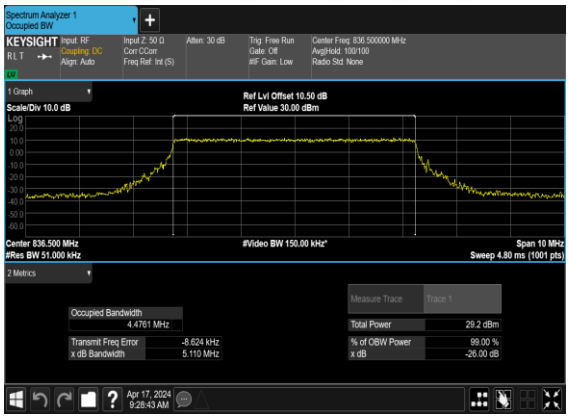
NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result (dB)	Limit (dB)	Verdict
5	15	20	167300	836.5	CP-OFDM QPSK	106@0	7.06	13	**PASS**

N5(20M)_CP-OFDM_QPSK_Outer_Full_Mid_CH

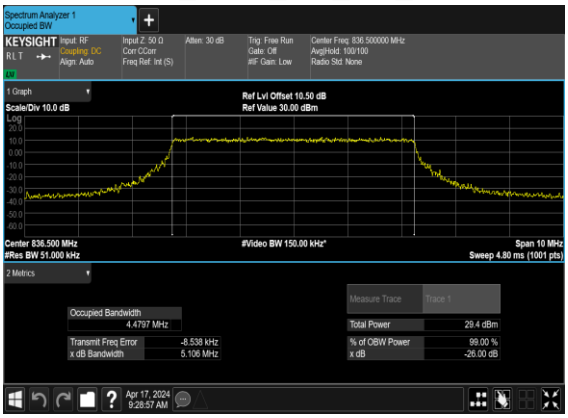
Occupied Bandwidth

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	OBW (MHz)	26dB BW (MHz)
5	15	5	167300	836.5	CP-OFDM QPSK	25@0	4.4761	5.11
5	15	5	167300	836.5	CP-OFDM 16 QAM	25@0	4.4797	5.106
5	15	5	167300	836.5	CP-OFDM 64 QAM	25@0	4.4795	5.165
5	15	5	167300	836.5	CP-OFDM 256 QAM	25@0	4.4736	4.993
5	15	10	167300	836.5	CP-OFDM QPSK	52@0	9.3029	10.1
5	15	10	167300	836.5	CP-OFDM 16 QAM	52@0	9.2988	10.11
5	15	10	167300	836.5	CP-OFDM 64 QAM	52@0	9.298	10.12
5	15	10	167300	836.5	CP-OFDM 256 QAM	52@0	9.2943	9.958
5	15	15	167300	836.5	CP-OFDM QPSK	79@0	14.135	14.81
5	15	15	167300	836.5	CP-OFDM 16 QAM	79@0	14.114	14.9
5	15	15	167300	836.5	CP-OFDM 64 QAM	79@0	14.125	14.86
5	15	15	167300	836.5	CP-OFDM 256 QAM	79@0	14.142	14.91
5	15	20	167300	836.5	CP-OFDM QPSK	106@0	18.934	19.98
5	15	20	167300	836.5	CP-OFDM 16 QAM	106@0	18.898	19.75
5	15	20	167300	836.5	CP-OFDM 64 QAM	106@0	18.953	19.81
5	15	20	167300	836.5	CP-OFDM 256 QAM	106@0	18.946	19.81

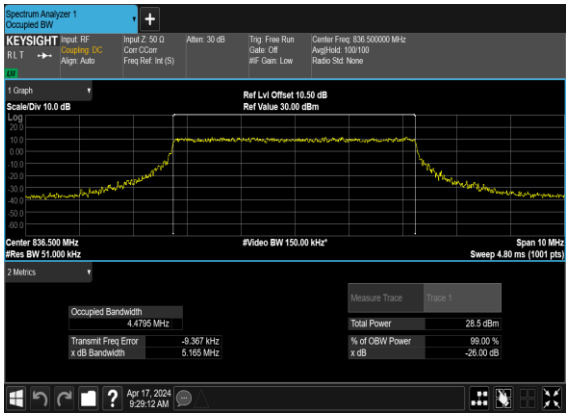
N5(5M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



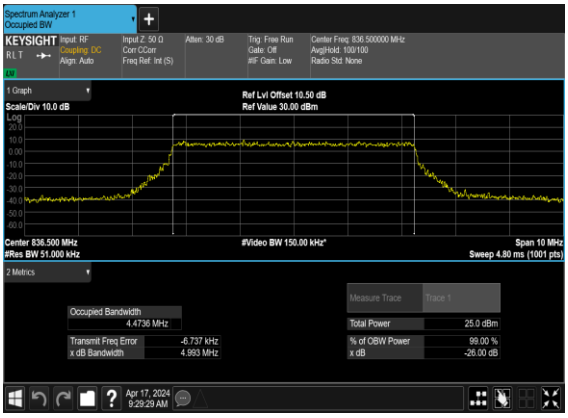
N5(5M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



N5(5M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH

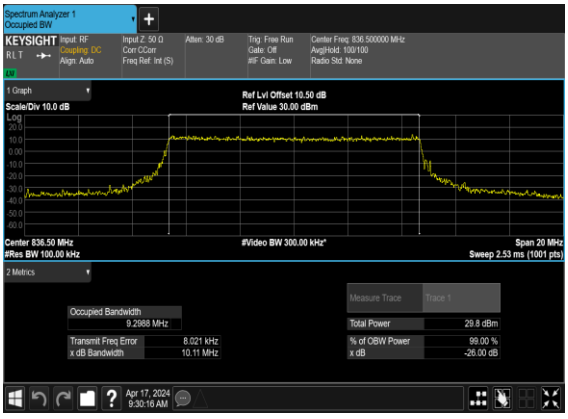


N5(5M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH

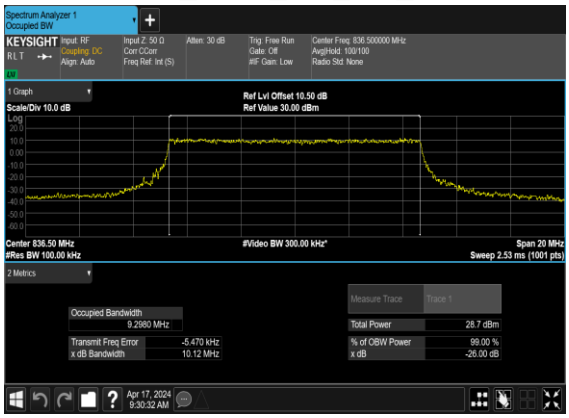


N5(10M)_CP-OFDM_QPSK_Outer_Full_Mid_CH

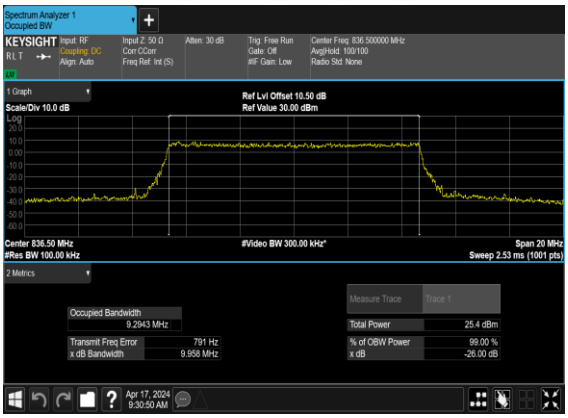
N5(10M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



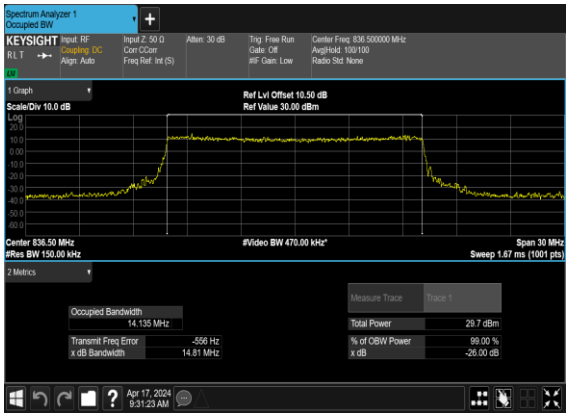
N5(10M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



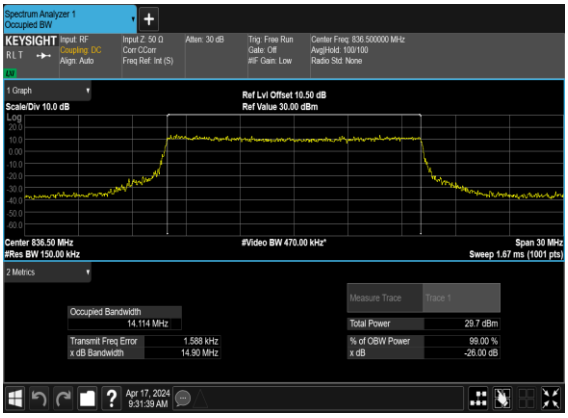
N5(10M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



N5(15M)_CP-OFDM_QPSK_Outer_Full_Mid_CH

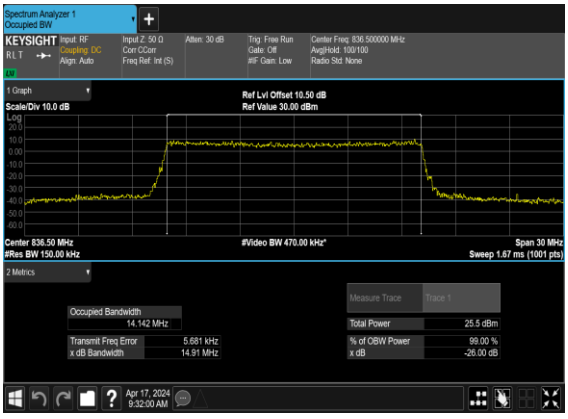


N5(15M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH

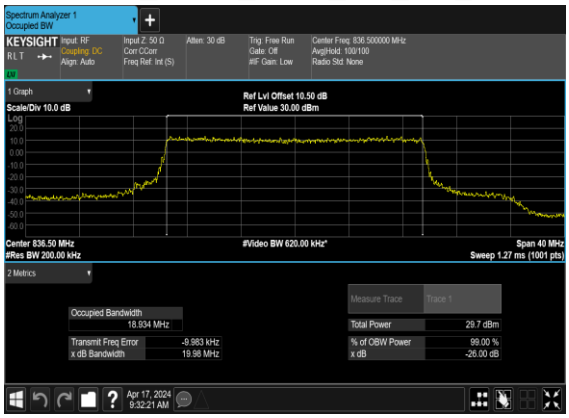


N5(15M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH

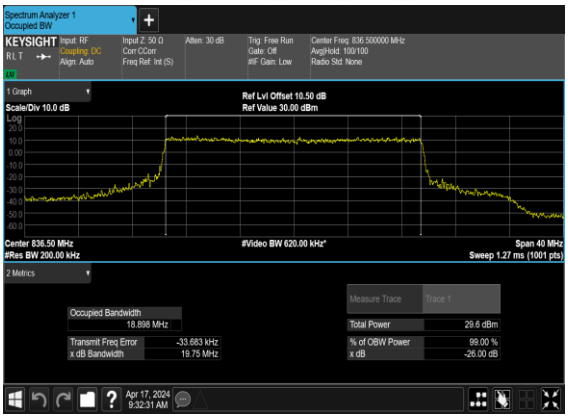
N5(15M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



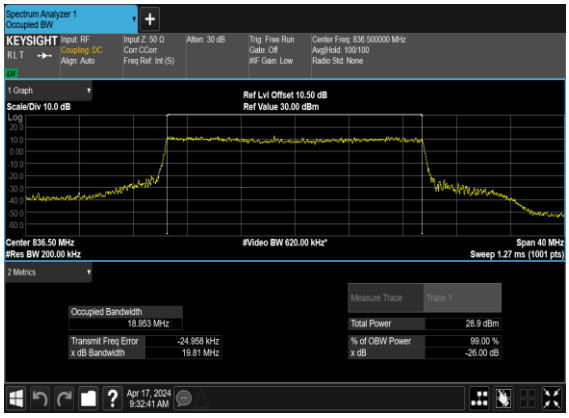
N5(20M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



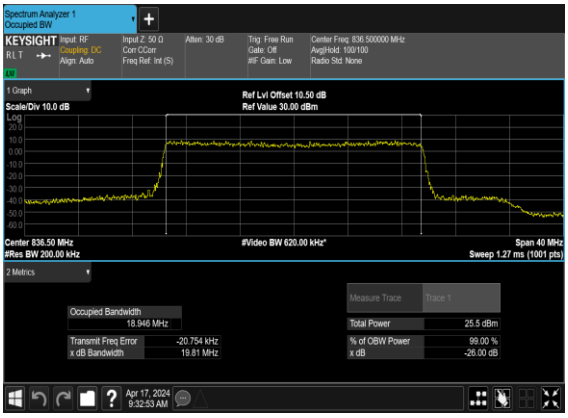
N5(20M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



N5(20M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



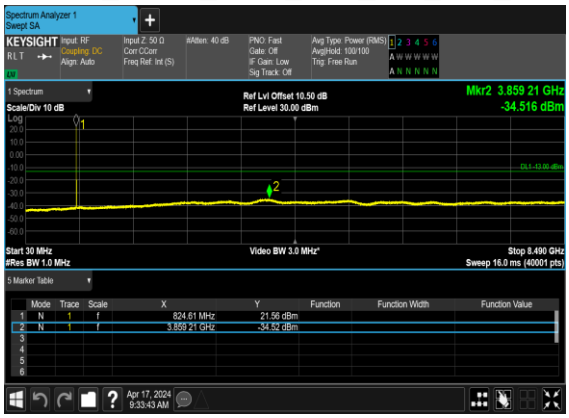
N5(20M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



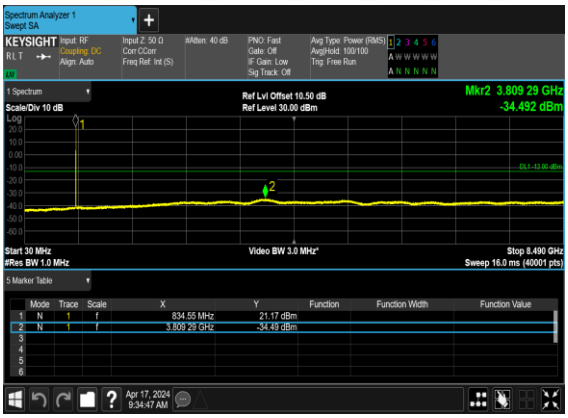
Conducted Spurious Emissions

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result	Verdict
5	15	5	165300	826.5	CP-OFDM QPSK	1@0	see graph	**---**
5	15	5	165300	826.5	CP-OFDM QPSK	1@0	see graph	**PASS**
5	15	5	167300	836.5	CP-OFDM QPSK	1@0	see graph	**---**
5	15	5	167300	836.5	CP-OFDM QPSK	1@0	see graph	**PASS**
5	15	5	169300	846.5	CP-OFDM QPSK	1@0	see graph	**---**
5	15	5	169300	846.5	CP-OFDM QPSK	1@0	see graph	**PASS**
5	15	10	165800	829.0	CP-OFDM QPSK	1@0	see graph	**---**
5	15	10	165800	829.0	CP-OFDM QPSK	1@0	see graph	**PASS**
5	15	10	167300	836.5	CP-OFDM QPSK	1@0	see graph	**---**
5	15	10	167300	836.5	CP-OFDM QPSK	1@0	see graph	**PASS**
5	15	10	168800	844.0	CP-OFDM QPSK	1@0	see graph	**---**
5	15	10	168800	844.0	CP-OFDM QPSK	1@0	see graph	**PASS**
5	15	20	166800	834.0	CP-OFDM QPSK	1@0	see graph	**---**
5	15	20	166800	834.0	CP-OFDM QPSK	1@0	see graph	**PASS**
5	15	20	167300	836.5	CP-OFDM QPSK	1@0	see graph	**---**
5	15	20	167300	836.5	CP-OFDM QPSK	1@0	see graph	**PASS**
5	15	20	167800	839.0	CP-OFDM QPSK	1@0	see graph	**---**
5	15	20	167800	839.0	CP-OFDM QPSK	1@0	see graph	**PASS**

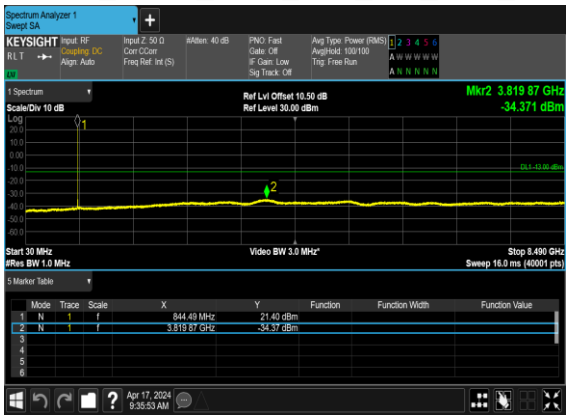
N5(5M)_CP-OFDM_QPSK_Edge_1RB_Left_Low_CH



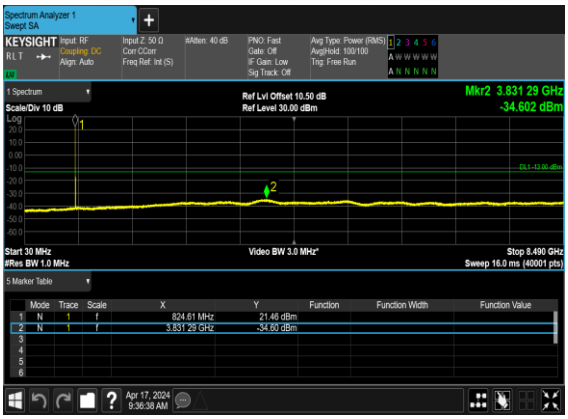
N5(5M)_CP-OFDM_QPSK_Edge_1RB_Left_Mid_CH



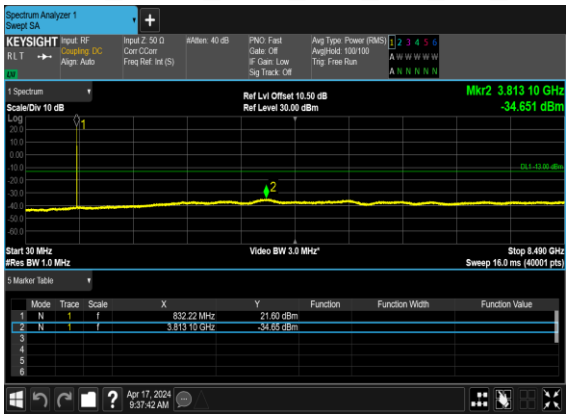
N5(5M)_CP-OFDM_QPSK_Edge_1RB_Left_High_CH



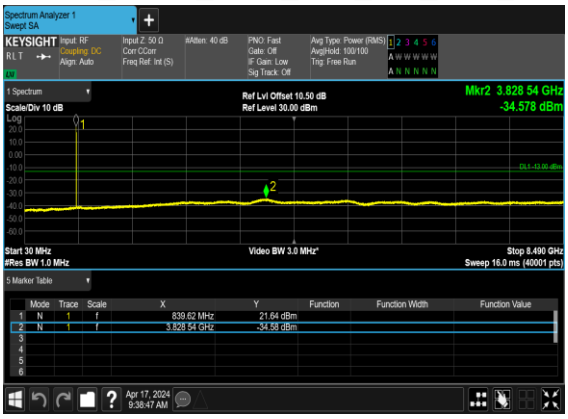
N5(10M)_CP-OFDM_QPSK_Edge_1RB_Left_Low_CH



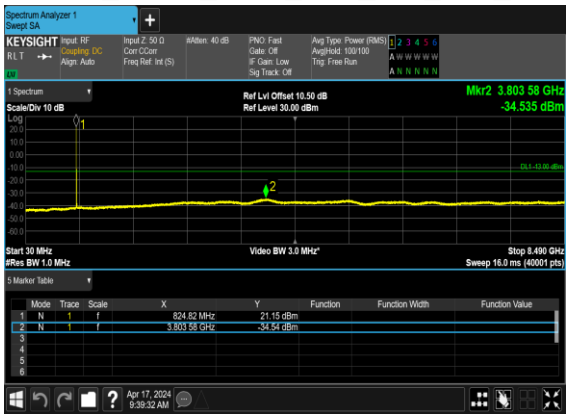
N5(10M)_CP-OFDM_QPSK_Edge_1RB_Left_Mid_CH



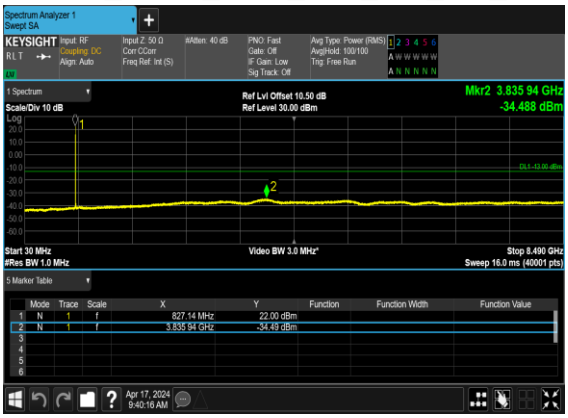
N5(10M)_CP-OFDM_QPSK_Edge_1RB_Left_High_CH



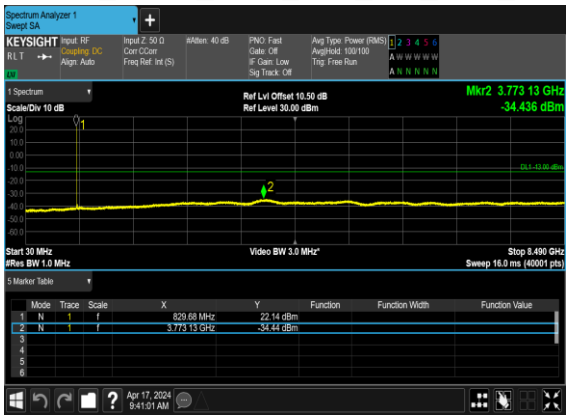
N5(20M)_CP-OFDM_QPSK_Edge_1RB_Left_Low_CH



N5(20M)_CP-OFDM_QPSK_Edge_1RB_Left_Mid_CH



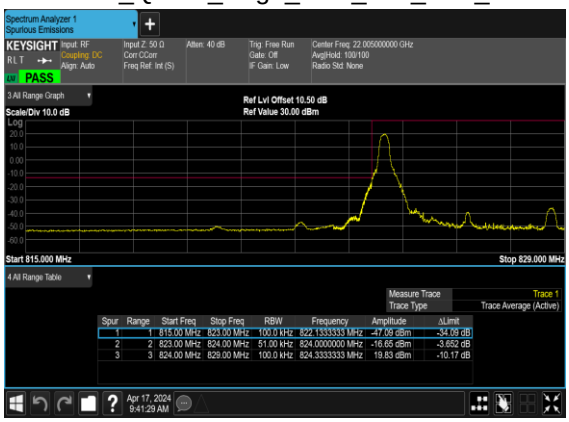
N5(20M)_CP-OFDM_QPSK_Edge_1RB_Left_High_CH



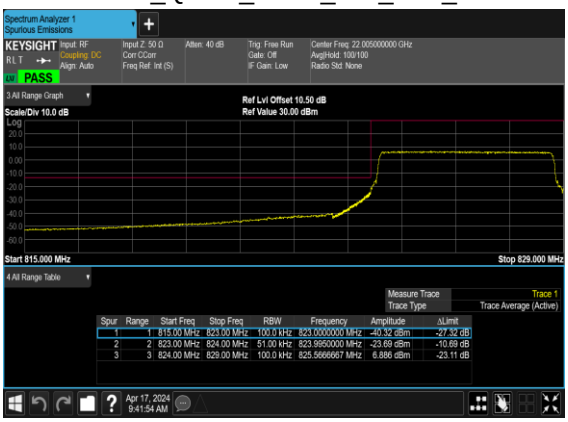
Conducted Band Edge

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result	Verdict
5	15	5	165300	826.5	CP-OFDM QPSK	1@0	see graph	**PASS**
5	15	5	165300	826.5	CP-OFDM QPSK	25@0	see graph	**PASS**
5	15	5	169300	846.5	CP-OFDM QPSK	1@24	see graph	**PASS**
5	15	5	169300	846.5	CP-OFDM QPSK	25@0	see graph	**PASS**
5	15	10	165800	829.0	CP-OFDM QPSK	1@0	see graph	**PASS**
5	15	10	165800	829.0	CP-OFDM QPSK	52@0	see graph	**PASS**
5	15	10	168800	844.0	CP-OFDM QPSK	1@51	see graph	**PASS**
5	15	10	168800	844.0	CP-OFDM QPSK	52@0	see graph	**PASS**
5	15	20	166800	834.0	CP-OFDM QPSK	1@0	see graph	**PASS**
5	15	20	166800	834.0	CP-OFDM QPSK	106@0	see graph	**PASS**
5	15	20	167800	839.0	CP-OFDM QPSK	1@105	see graph	**PASS**
5	15	20	167800	839.0	CP-OFDM QPSK	106@0	see graph	**PASS**

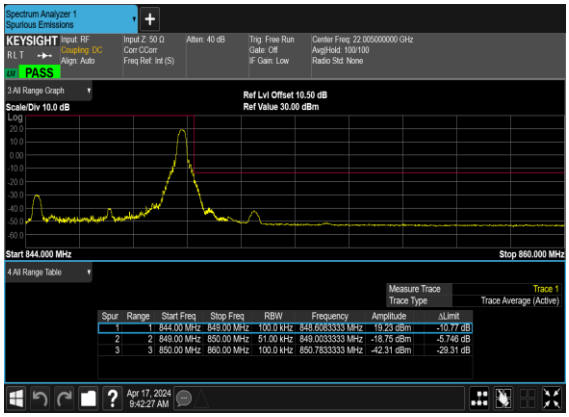
N5(5M)_CP-OFDM_QPSK_Edge_1RB_Left_Low_CH



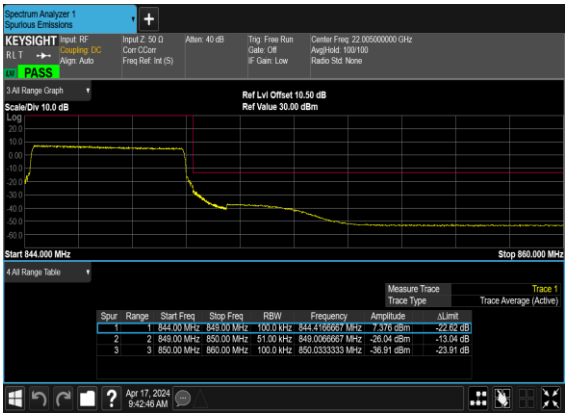
N5(5M)_CP-OFDM_QPSK_Outer_Full_Low_CH



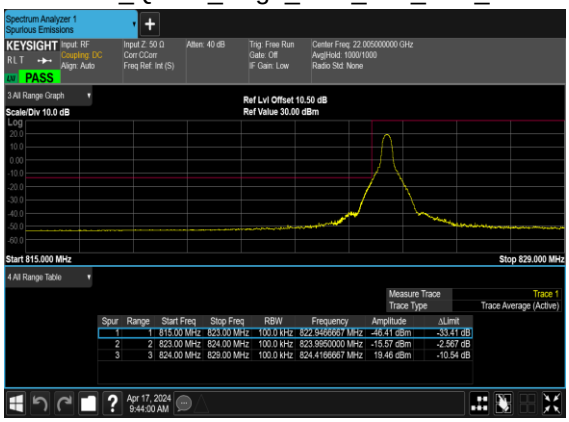
N5(5M)_CP-OFDM_QPSK_Edge_1RB_Right_High_CH



N5(5M)_CP-OFDM_QPSK_Outer_Full_High_CH



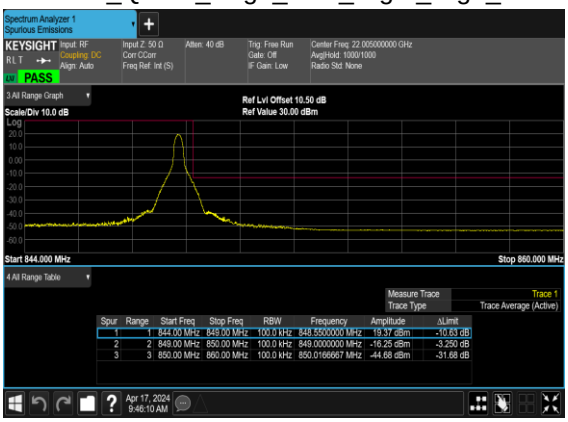
N5(10M)_CP-OFDM_QPSK_Edge_1RB_Left_Low_CH



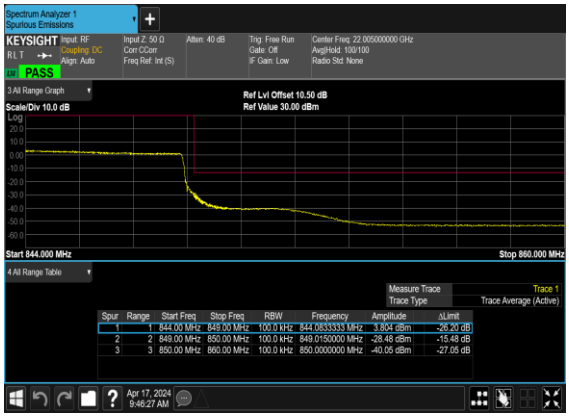
N5(10M)_CP-OFDM_QPSK_Edge_1RB_Left_Low_CH_**CHP**_**PASS**

N5(10M)_CP-OFDM_QPSK_Outer_Full_Low_CH

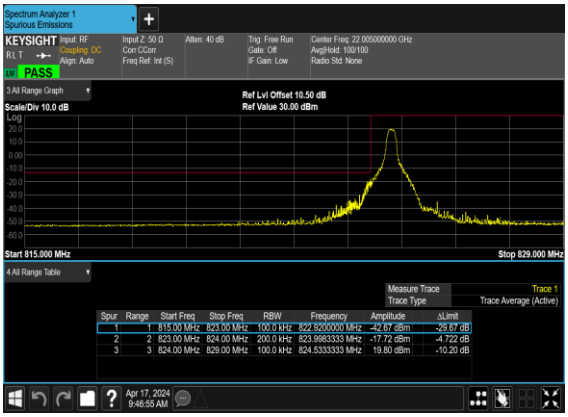
N5(10M)_CP-OFDM_QPSK_Edge_1RB_Right_High_CH



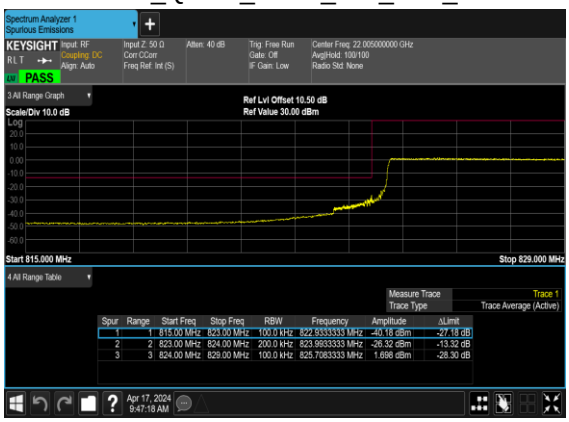
N5(10M)_CP-OFDM_QPSK_Outer_Full_High_CH



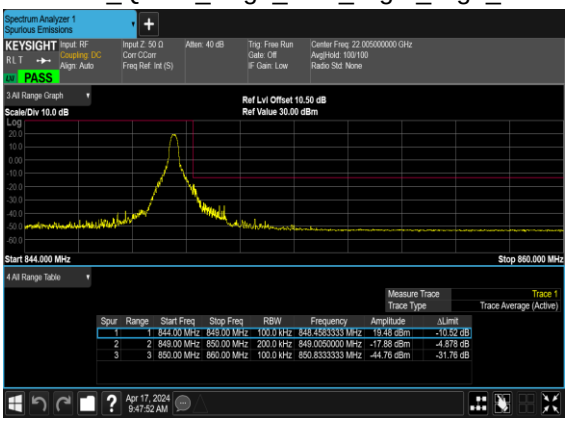
N5(20M)_CP-OFDM_QPSK_Edge_1RB_Left_Low_CH



N5(20M)_CP-OFDM_QPSK_Outer_Full_Low_CH



N5(20M)_CP-OFDM_QPSK_Edge_1RB_Right_High_CH



N5(20M)_CP-OFDM_QPSK_Outer_Full_High_CH

Software Version: 23.06.1602

FR1 n5 MIMO (Ant 0 + 1)-(Ant 1)

Frequency Stability

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Deviation (ppm)	Verdict	Environment
5	15	20	167300	836.5	CP-OFDM QPSK	106@0	0.0024	**PASS**	NV
5	15	20	167300	836.5	CP-OFDM QPSK	106@0	0.0021	**PASS**	LV
5	15	20	167300	836.5	CP-OFDM QPSK	106@0	0.0027	**PASS**	HV
5	15	20	167300	836.5	CP-OFDM QPSK	106@0	0.0039	**PASS**	-30℃
5	15	20	167300	836.5	CP-OFDM QPSK	106@0	0.0026	**PASS**	-20℃
5	15	20	167300	836.5	CP-OFDM QPSK	106@0	0.0044	**PASS**	-10℃
5	15	20	167300	836.5	CP-OFDM QPSK	106@0	0.0023	**PASS**	0℃
5	15	20	167300	836.5	CP-OFDM QPSK	106@0	0.0050	**PASS**	10℃
5	15	20	167300	836.5	CP-OFDM QPSK	106@0	0.0024	**PASS**	20℃
5	15	20	167300	836.5	CP-OFDM QPSK	106@0	0.0048	**PASS**	30℃
5	15	20	167300	836.5	CP-OFDM QPSK	106@0	0.0049	**PASS**	40℃
5	15	20	167300	836.5	CP-OFDM QPSK	106@0	0.0039	**PASS**	50℃

Peak to Average Ratio

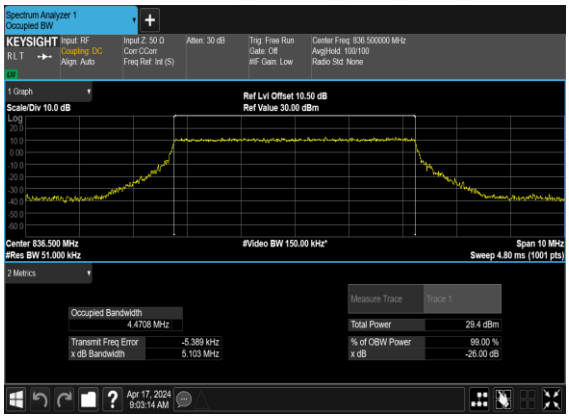
NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result (dB)	Limit (dB)	Verdict
5	15	20	167300	836.5	CP-OFDM QPSK	106@0	7.27	13	**PASS**

N5(20M)_CP-OFDM_QPSK_Outer_Full_Mid_CH

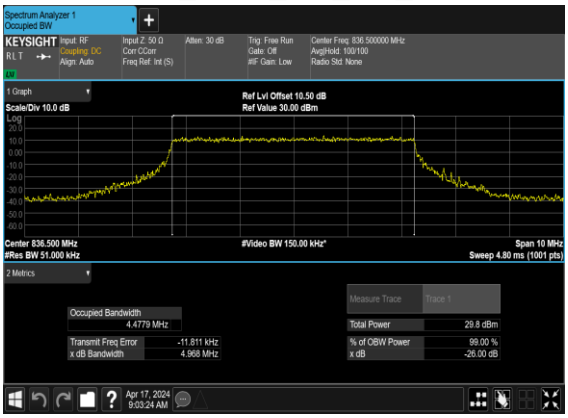
Occupied Bandwidth

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	OBW (MHz)	26dB BW (MHz)
5	15	5	167300	836.5	CP-OFDM QPSK	25@0	4.4708	5.103
5	15	5	167300	836.5	CP-OFDM 16 QAM	25@0	4.4779	4.968
5	15	5	167300	836.5	CP-OFDM 64 QAM	25@0	4.4695	5.014
5	15	5	167300	836.5	CP-OFDM 256 QAM	25@0	4.4737	4.983
5	15	10	167300	836.5	CP-OFDM QPSK	52@0	9.299	9.99
5	15	10	167300	836.5	CP-OFDM 16 QAM	52@0	9.304	10.08
5	15	10	167300	836.5	CP-OFDM 64 QAM	52@0	9.318	9.951
5	15	10	167300	836.5	CP-OFDM 256 QAM	52@0	9.3128	9.989
5	15	15	167300	836.5	CP-OFDM QPSK	79@0	14.119	14.93
5	15	15	167300	836.5	CP-OFDM 16 QAM	79@0	14.125	14.92
5	15	15	167300	836.5	CP-OFDM 64 QAM	79@0	14.111	14.9
5	15	15	167300	836.5	CP-OFDM 256 QAM	79@0	14.144	14.95
5	15	20	167300	836.5	CP-OFDM QPSK	106@0	18.939	19.84
5	15	20	167300	836.5	CP-OFDM 16 QAM	106@0	18.974	19.9
5	15	20	167300	836.5	CP-OFDM 64 QAM	106@0	18.924	19.86
5	15	20	167300	836.5	CP-OFDM 256 QAM	106@0	18.891	19.68

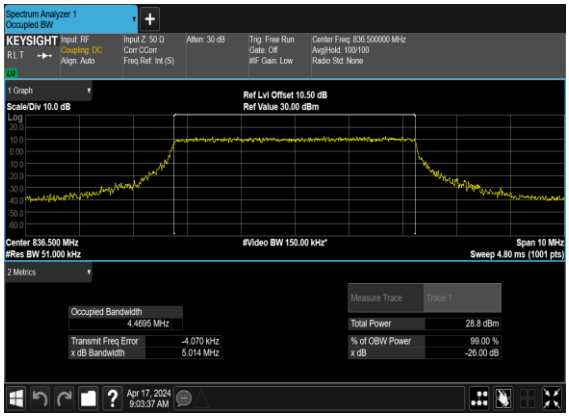
N5(5M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



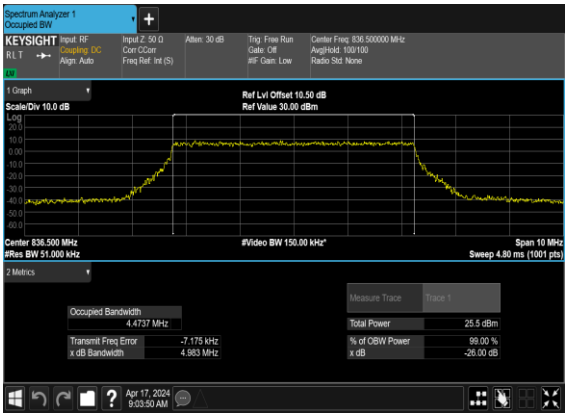
N5(5M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



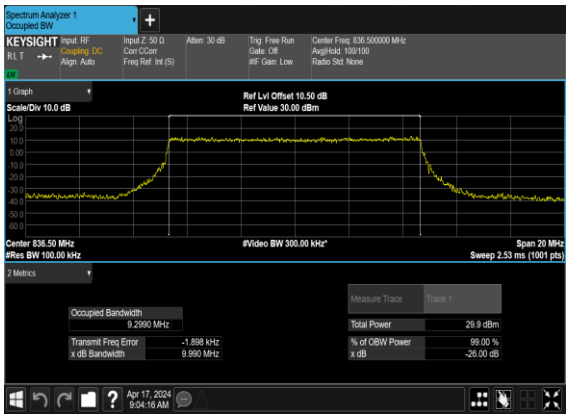
N5(5M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



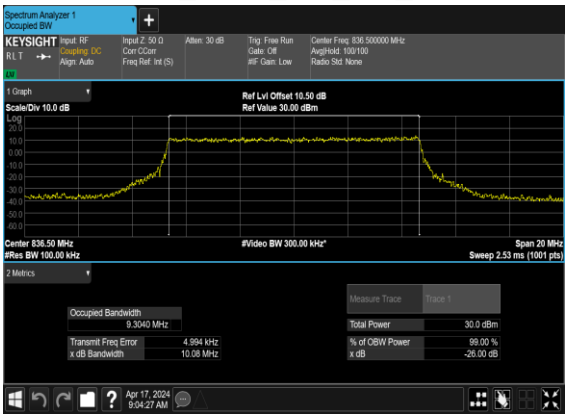
N5(5M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



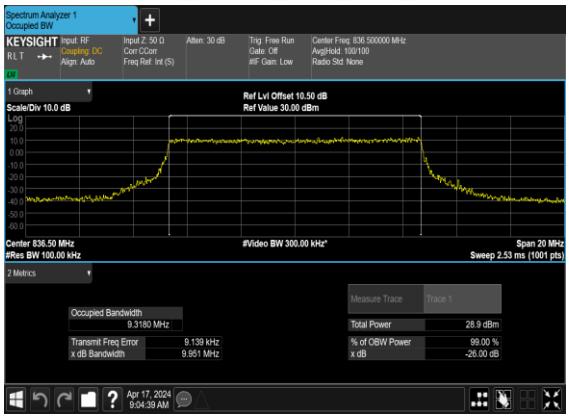
N5(10M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



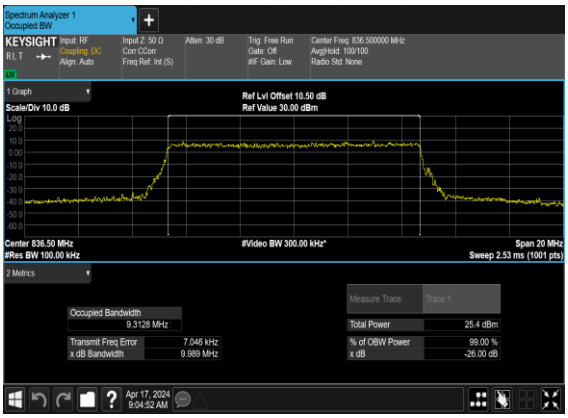
N5(10M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



N5(10M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH

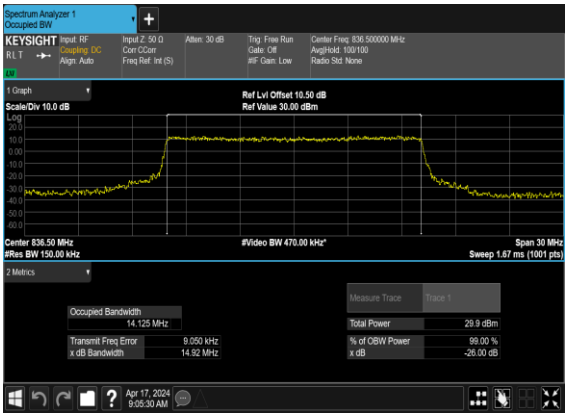


N5(10M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH

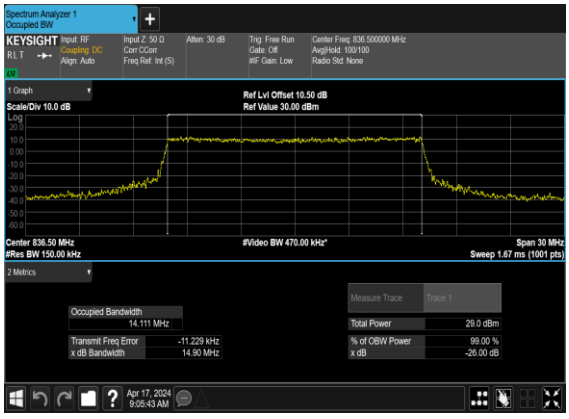


N5(15M)_CP-OFDM_QPSK_Outer_Full_Mid_CH

N5(15M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



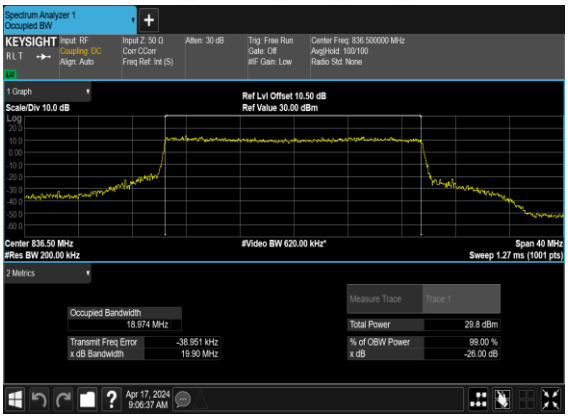
N5(15M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



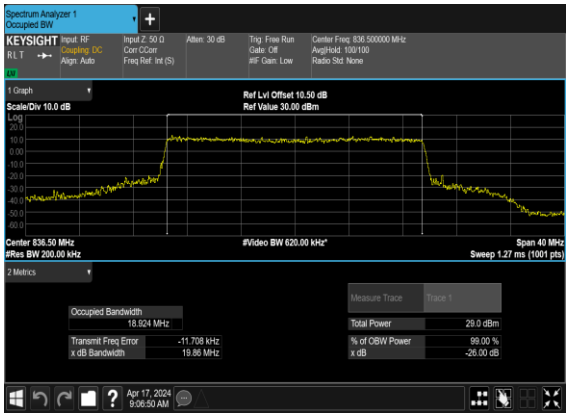
N5(15M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH

N5(20M)_CP-OFDM_QPSK_Outer_Full_Mid_CH

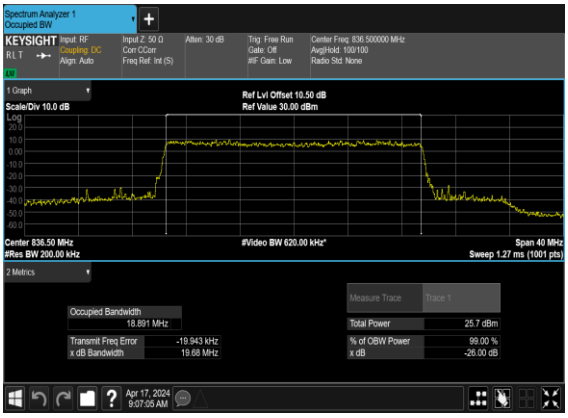
N5(20M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



N5(20M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



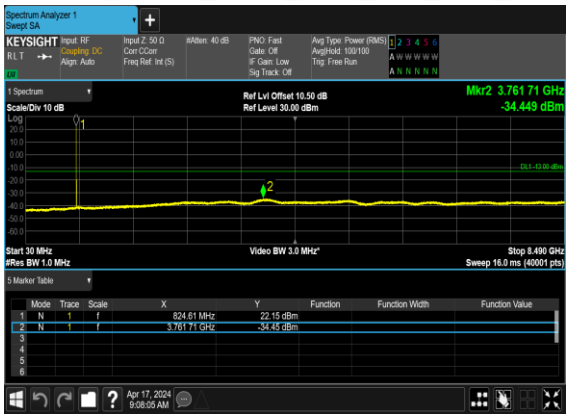
N5(20M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



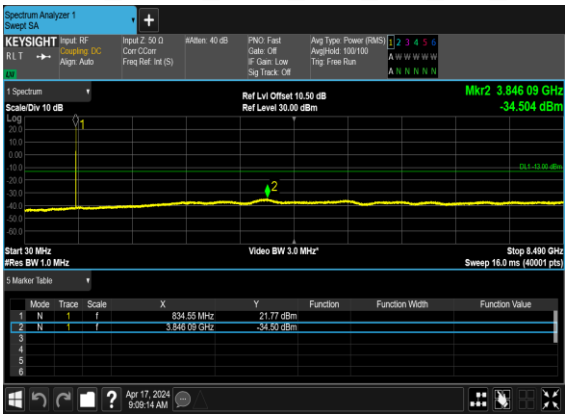
Conducted Spurious Emissions

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result	Verdict
5	15	5	165300	826.5	CP-OFDM QPSK	1@0	see graph	**---**
5	15	5	165300	826.5	CP-OFDM QPSK	1@0	see graph	**PASS**
5	15	5	167300	836.5	CP-OFDM QPSK	1@0	see graph	**---**
5	15	5	167300	836.5	CP-OFDM QPSK	1@0	see graph	**PASS**
5	15	5	169300	846.5	CP-OFDM QPSK	1@0	see graph	**---**
5	15	5	169300	846.5	CP-OFDM QPSK	1@0	see graph	**PASS**
5	15	10	165800	829.0	CP-OFDM QPSK	1@0	see graph	**---**
5	15	10	165800	829.0	CP-OFDM QPSK	1@0	see graph	**PASS**
5	15	10	167300	836.5	CP-OFDM QPSK	1@0	see graph	**---**
5	15	10	167300	836.5	CP-OFDM QPSK	1@0	see graph	**PASS**
5	15	10	168800	844.0	CP-OFDM QPSK	1@0	see graph	**---**
5	15	10	168800	844.0	CP-OFDM QPSK	1@0	see graph	**PASS**
5	15	20	166800	834.0	CP-OFDM QPSK	1@0	see graph	**---**
5	15	20	166800	834.0	CP-OFDM QPSK	1@0	see graph	**PASS**
5	15	20	167300	836.5	CP-OFDM QPSK	1@0	see graph	**---**
5	15	20	167300	836.5	CP-OFDM QPSK	1@0	see graph	**PASS**
5	15	20	167800	839.0	CP-OFDM QPSK	1@0	see graph	**---**
5	15	20	167800	839.0	CP-OFDM QPSK	1@0	see graph	**PASS**

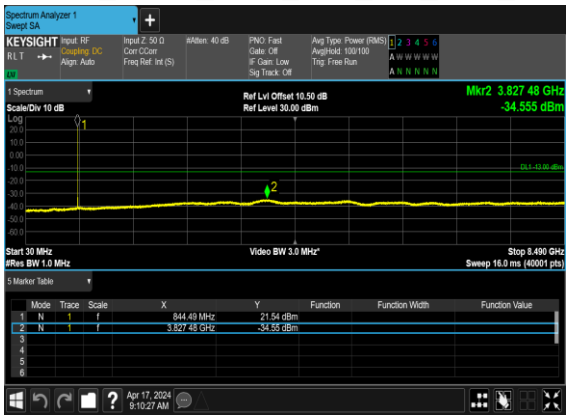
N5(5M)_CP-OFDM_QPSK_Edge_1RB_Left_Low_CH



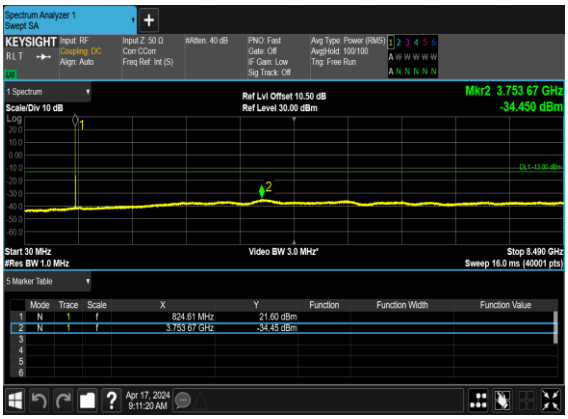
N5(5M)_CP-OFDM_QPSK_Edge_1RB_Left_Mid_CH



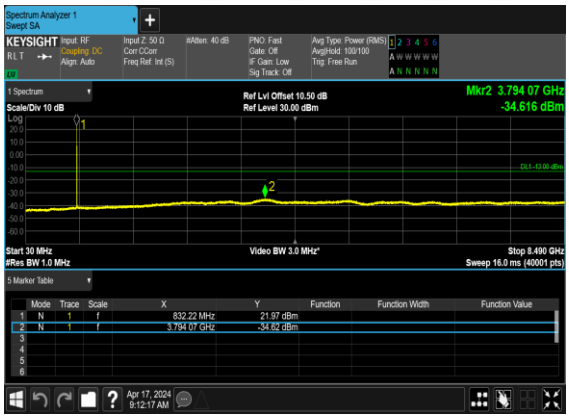
N5(5M)_CP-OFDM_QPSK_Edge_1RB_Left_High_CH



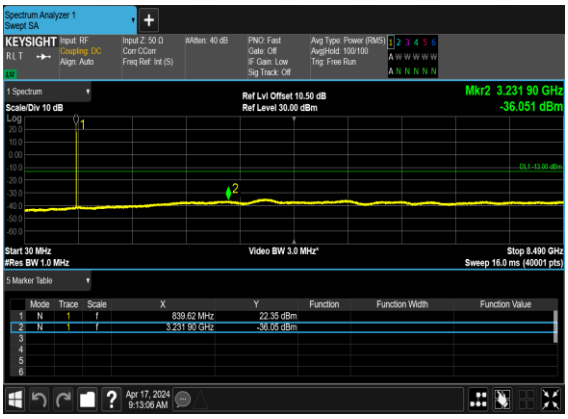
N5(10M)_CP-OFDM_QPSK_Edge_1RB_Left_Low_CH



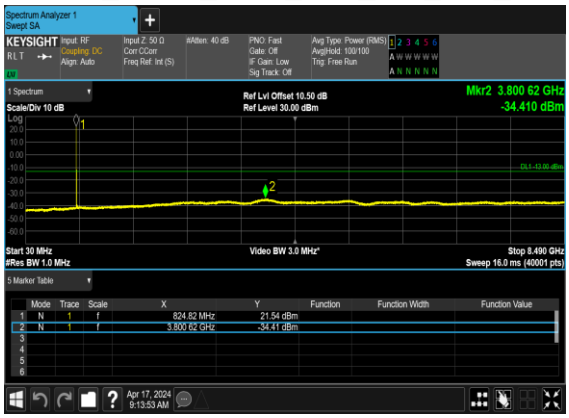
N5(10M)_CP-OFDM_QPSK_Edge_1RB_Left_Mid_CH



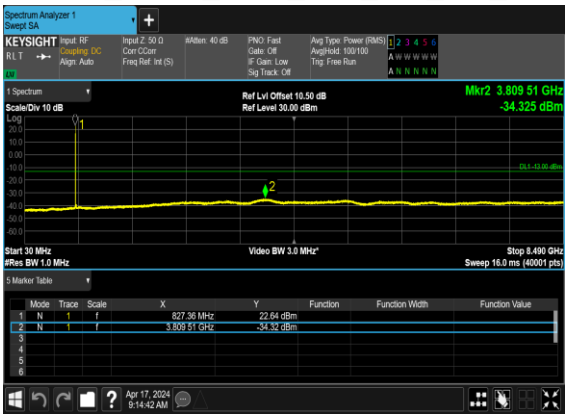
N5(10M)_CP-OFDM_QPSK_Edge_1RB_Left_High_CH



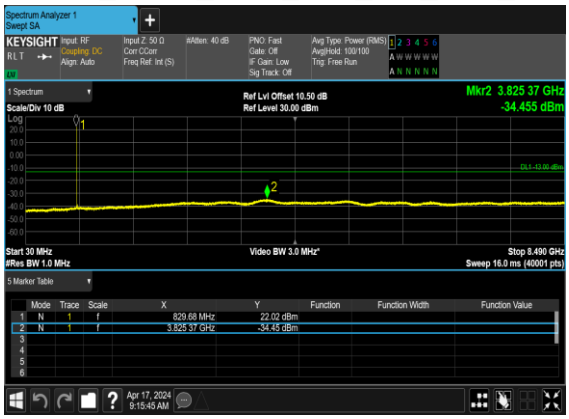
N5(20M)_CP-OFDM_QPSK_Edge_1RB_Left_Low_CH



N5(20M)_CP-OFDM_QPSK_Edge_1RB_Left_Mid_CH



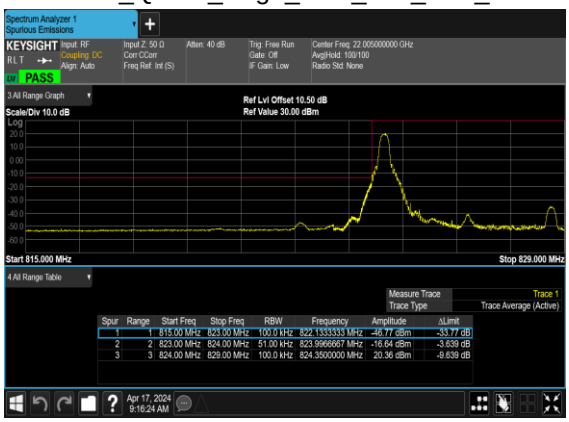
N5(20M)_CP-OFDM_QPSK_Edge_1RB_Left_High_CH



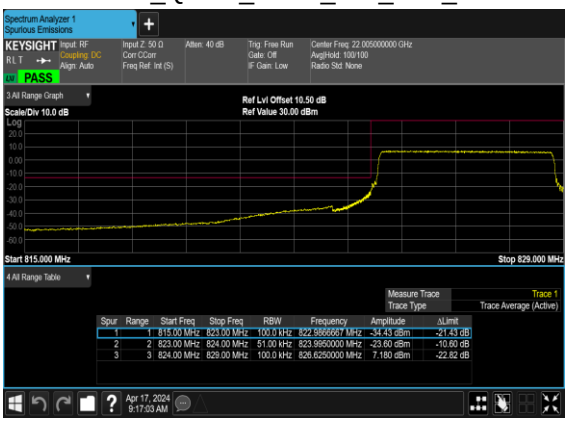
Conducted Band Edge

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result	Verdict
5	15	5	165300	826.5	CP-OFDM QPSK	1@0	see graph	**PASS**
5	15	5	165300	826.5	CP-OFDM QPSK	25@0	see graph	**PASS**
5	15	5	169300	846.5	CP-OFDM QPSK	1@24	see graph	**PASS**
5	15	5	169300	846.5	CP-OFDM QPSK	25@0	see graph	**PASS**
5	15	10	165800	829.0	CP-OFDM QPSK	1@0	see graph	**PASS**
5	15	10	165800	829.0	CP-OFDM QPSK	52@0	see graph	**PASS**
5	15	10	168800	844.0	CP-OFDM QPSK	1@51	see graph	**PASS**
5	15	10	168800	844.0	CP-OFDM QPSK	52@0	see graph	**PASS**
5	15	20	166800	834.0	CP-OFDM QPSK	1@0	see graph	**PASS**
5	15	20	166800	834.0	CP-OFDM QPSK	106@0	see graph	**PASS**
5	15	20	167800	839.0	CP-OFDM QPSK	1@105	see graph	**PASS**
5	15	20	167800	839.0	CP-OFDM QPSK	106@0	see graph	**PASS**

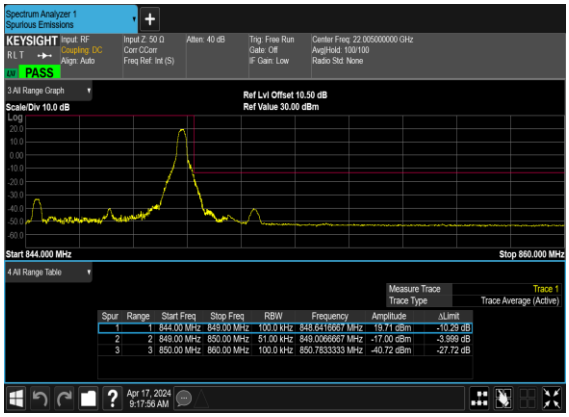
N5(5M)_CP-
OFDM_QPSK_Edge_1RB_Left_Low_CH



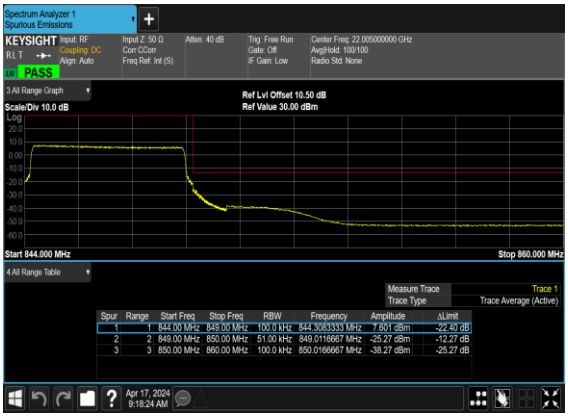
N5(5M)_CP-
OFDM_QPSK_Outer_Full_Low_CH



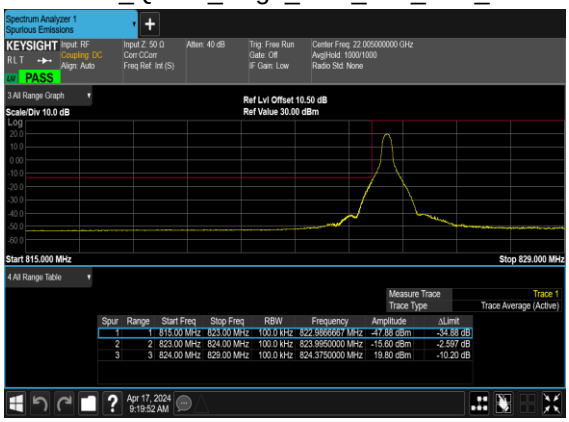
N5(5M)_CP-
OFDM_QPSK_Edge_1RB_Right_High_CH



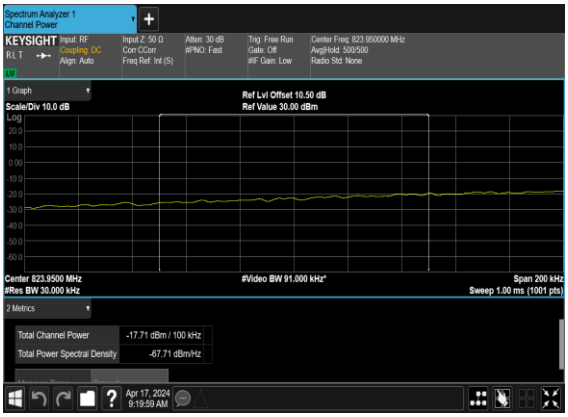
N5(5M)_CP-
OFDM_QPSK_Outer_Full_High_CH



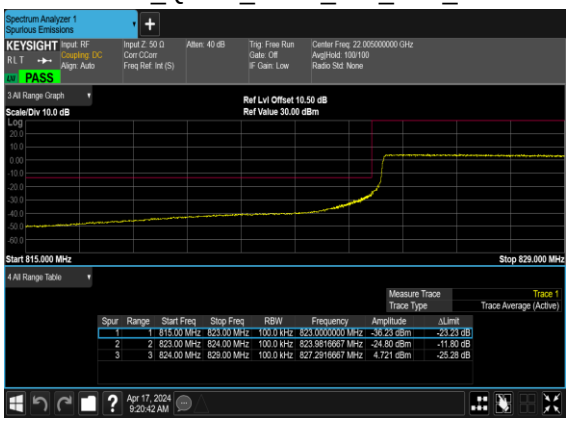
N5(10M)_CP-
OFDM_QPSK_Edge_1RB_Left_Low_CH



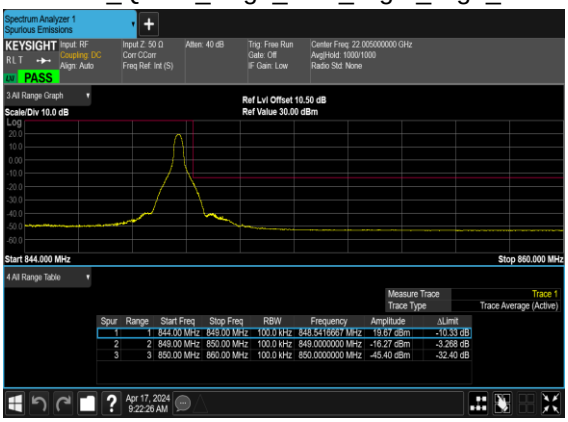
N5(10M)_CP-
OFDM_QPSK_Edge_1RB_Left_Low_CH_**CHP**_
PASS



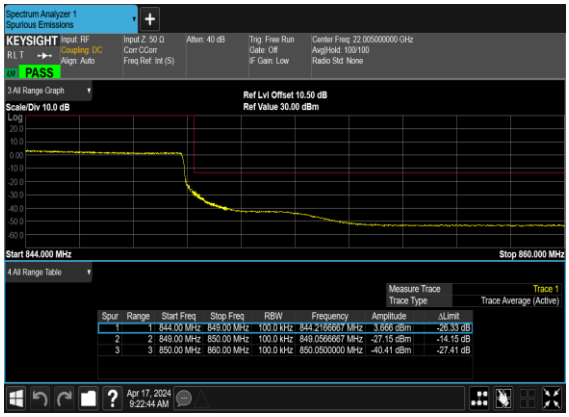
N5(10M)_CP-OFDM_QPSK_Outer_Full_Low_CH



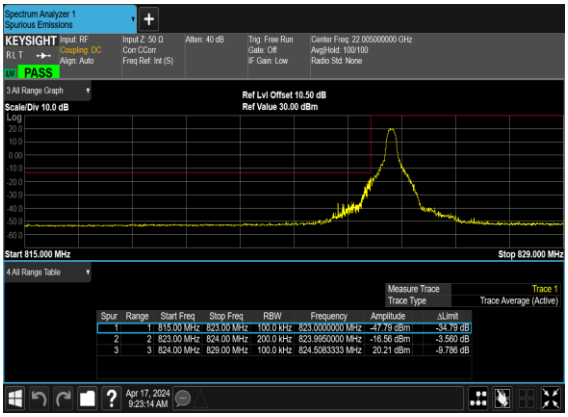
N5(10M)_CP-OFDM_QPSK_Edge_1RB_Right_High_CH



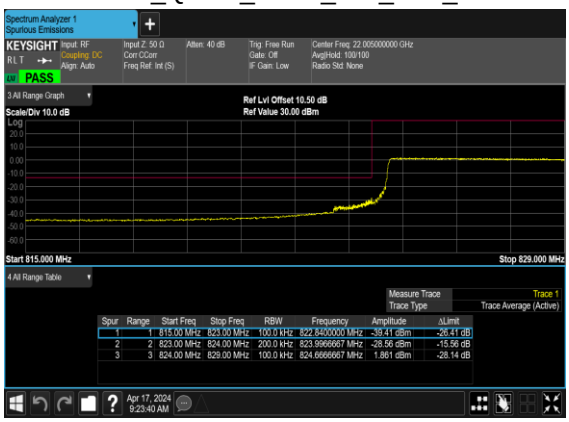
N5(10M)_CP-OFDM_QPSK_Outer_Full_High_CH



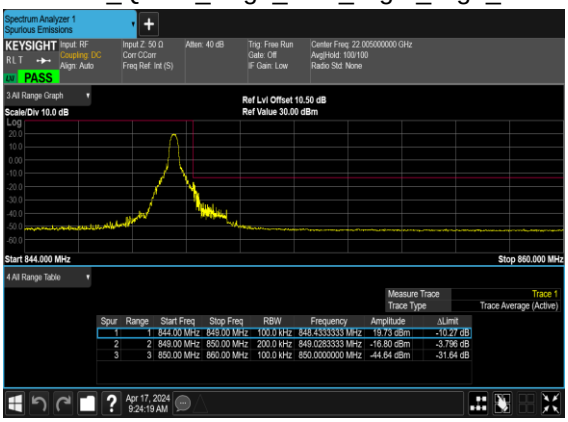
N5(20M)_CP-OFDM_QPSK_Edge_1RB_Left_Low_CH



N5(20M)_CP-OFDM_QPSK_Outer_Full_Low_CH



N5(20M)_CP-OFDM_QPSK_Edge_1RB_Right_High_CH



N5(20M)_CP-OFDM_QPSK_Outer_Full_High_CH

Software Version: 23.06.1602

FR1 n12 (ANT0)

Transmitter Conducted Output Power And ERP, (G_T - L_C)=2.6dB

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Conducted Power(dBm)	ERP (dBm)	ERP (W)
12	15	5	140300	701.5	DFT-s-OFDM QPSK	1@1	23.4	23.85	0.2427
12	15	5	140300	701.5	DFT-s-OFDM 16 QAM	1@1	22.33	22.78	0.1897
12	15	5	141500	707.5	DFT-s-OFDM QPSK	1@1	23.43	23.88	0.2443
12	15	5	141500	707.5	DFT-s-OFDM 16 QAM	1@1	22.52	22.97	0.1982
12	15	5	142700	713.5	DFT-s-OFDM QPSK	1@1	23.22	23.67	0.2328
12	15	5	142700	713.5	DFT-s-OFDM 16 QAM	1@1	22.31	22.76	0.1888
12	15	10	140800	704	DFT-s-OFDM QPSK	1@1	23.43	23.88	0.2443
12	15	10	140800	704	DFT-s-OFDM 16 QAM	1@1	22.5	22.95	0.1972
12	15	10	141500	707.5	DFT-s-OFDM QPSK	1@1	23.47	23.92	0.2466
12	15	10	141500	707.5	DFT-s-OFDM 16 QAM	1@1	22.33	22.78	0.1897
12	15	10	142200	711	DFT-s-OFDM QPSK	1@1	23.47	23.92	0.2466
12	15	10	142200	711	DFT-s-OFDM 16 QAM	1@1	22.41	22.86	0.1932
12	15	15	141300	706.5	DFT-s-OFDM PI/2 BPSK	36@18	23.45	23.9	0.2455
12	15	15	141300	706.5	DFT-s-OFDM PI/2 BPSK	1@1	23.43	23.88	0.2443
12	15	15	141300	706.5	DFT-s-OFDM PI/2 BPSK	1@77	23.23	23.68	0.2333
12	15	15	141300	706.5	DFT-s-OFDM QPSK	36@18	23.32	23.77	0.2382
12	15	15	141300	706.5	DFT-s-OFDM QPSK	1@1	23.35	23.8	0.2399
12	15	15	141300	706.5	DFT-s-OFDM QPSK	1@77	23.14	23.59	0.2286
12	15	15	141300	706.5	DFT-s-OFDM 16 QAM	36@18	22.35	22.8	0.1905
12	15	15	141300	706.5	DFT-s-OFDM 16 QAM	1@1	22.49	22.94	0.1968
12	15	15	141300	706.5	DFT-s-OFDM 16 QAM	1@77	22.28	22.73	0.1875
12	15	15	141300	706.5	DFT-s-OFDM 64 QAM	36@18	20.91	21.36	0.1368
12	15	15	141300	706.5	DFT-s-OFDM 64 QAM	1@1	20.88	21.33	0.1358
12	15	15	141300	706.5	DFT-s-OFDM 64 QAM	1@77	20.83	21.28	0.1343
12	15	15	141300	706.5	DFT-s-OFDM 256 QAM	36@18	18.92	19.37	0.0865
12	15	15	141300	706.5	DFT-s-OFDM 256 QAM	1@1	19	19.45	0.0881
12	15	15	141300	706.5	DFT-s-OFDM 256 QAM	1@77	18.82	19.27	0.0845
12	15	15	141300	706.5	CP-OFDM QPSK	39@19	21.81	22.26	0.1683
12	15	15	141300	706.5	CP-OFDM QPSK	1@1	22.03	22.48	0.1770
12	15	15	141300	706.5	CP-OFDM QPSK	1@77	21.81	22.26	0.1683
12	15	15	141500	707.5	DFT-s-OFDM PI/2 BPSK	36@18	23.46	23.91	0.2460
12	15	15	141500	707.5	DFT-s-OFDM PI/2 BPSK	1@1	23.42	23.87	0.2438
12	15	15	141500	707.5	DFT-s-OFDM PI/2 BPSK	1@77	23.27	23.72	0.2355
12	15	15	141500	707.5	DFT-s-OFDM QPSK	36@18	23.43	23.88	0.2443
12	15	15	141500	707.5	DFT-s-OFDM QPSK	1@1	23.45	23.9	0.2455
12	15	15	141500	707.5	DFT-s-OFDM QPSK	1@77	23.16	23.61	0.2296

12	15	15	141500	707.5	DFT-s-OFDM 16 QAM	36@18	22.4	22.85	0.1928
12	15	15	141500	707.5	DFT-s-OFDM 16 QAM	1@1	22.53	22.98	0.1986
12	15	15	141500	707.5	DFT-s-OFDM 16 QAM	1@77	22.45	22.9	0.1950
12	15	15	141500	707.5	DFT-s-OFDM 64 QAM	36@18	20.97	21.42	0.1387
12	15	15	141500	707.5	DFT-s-OFDM 64 QAM	1@1	21.11	21.56	0.1432
12	15	15	141500	707.5	DFT-s-OFDM 64 QAM	1@77	20.85	21.3	0.1349
12	15	15	141500	707.5	DFT-s-OFDM 256 QAM	36@18	18.64	19.09	0.0811
12	15	15	141500	707.5	DFT-s-OFDM 256 QAM	1@1	18.89	19.34	0.0859
12	15	15	141500	707.5	DFT-s-OFDM 256 QAM	1@77	18.92	19.37	0.0865
12	15	15	141500	707.5	CP-OFDM QPSK	39@19	21.83	22.28	0.1690
12	15	15	141500	707.5	CP-OFDM QPSK	1@1	21.81	22.26	0.1683
12	15	15	141500	707.5	CP-OFDM QPSK	1@77	21.53	21.98	0.1578
12	15	15	141700	708.5	DFT-s-OFDM PI/2 BPSK	36@18	23.48	23.93	0.2472
12	15	15	141700	708.5	DFT-s-OFDM PI/2 BPSK	1@1	23.46	23.91	0.2460
12	15	15	141700	708.5	DFT-s-OFDM PI/2 BPSK	1@77	23.19	23.64	0.2312
12	15	15	141700	708.5	DFT-s-OFDM QPSK	36@18	23.31	23.76	0.2377
12	15	15	141700	708.5	DFT-s-OFDM QPSK	1@1	23.34	23.79	0.2393
12	15	15	141700	708.5	DFT-s-OFDM QPSK	1@77	23.19	23.64	0.2312
12	15	15	141700	708.5	DFT-s-OFDM 16 QAM	36@18	22.37	22.82	0.1914
12	15	15	141700	708.5	DFT-s-OFDM 16 QAM	1@1	22.56	23.01	0.2000
12	15	15	141700	708.5	DFT-s-OFDM 16 QAM	1@77	22.36	22.81	0.1910
12	15	15	141700	708.5	DFT-s-OFDM 64 QAM	36@18	20.91	21.36	0.1368
12	15	15	141700	708.5	DFT-s-OFDM 64 QAM	1@1	21.16	21.61	0.1449
12	15	15	141700	708.5	DFT-s-OFDM 64 QAM	1@77	20.85	21.3	0.1349
12	15	15	141700	708.5	DFT-s-OFDM 256 QAM	36@18	18.94	19.39	0.0869
12	15	15	141700	708.5	DFT-s-OFDM 256 QAM	1@1	18.96	19.41	0.0873
12	15	15	141700	708.5	DFT-s-OFDM 256 QAM	1@77	18.72	19.17	0.0826
12	15	15	141700	708.5	CP-OFDM QPSK	39@19	21.68	22.13	0.1633
12	15	15	141700	708.5	CP-OFDM QPSK	1@1	21.8	22.25	0.1679
12	15	15	141700	708.5	CP-OFDM QPSK	1@77	21.57	22.02	0.1592

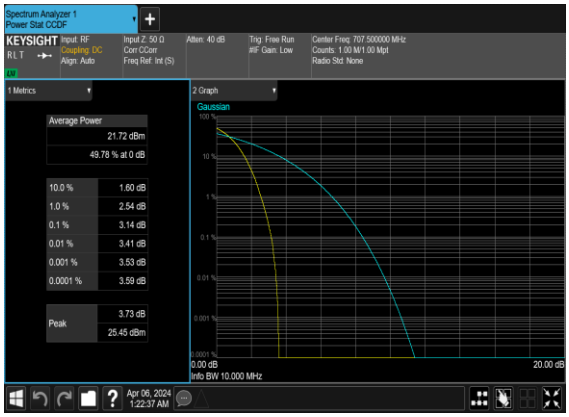
Frequency Stability

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Deviation (ppm)	Verdict	Environment
12	15	15	141500	707.5	DFT-s-OFDM QPSK	75@0	0.0069	**PASS**	NV
12	15	15	141500	707.5	DFT-s-OFDM QPSK	75@0	0.0045	**PASS**	LV
12	15	15	141500	707.5	DFT-s-OFDM QPSK	75@0	0.0069	**PASS**	HV
12	15	15	141500	707.5	DFT-s-OFDM QPSK	75@0	0.0040	**PASS**	-30℃
12	15	15	141500	707.5	DFT-s-OFDM QPSK	75@0	0.0038	**PASS**	-20℃
12	15	15	141500	707.5	DFT-s-OFDM QPSK	75@0	0.0037	**PASS**	-10℃
12	15	15	141500	707.5	DFT-s-OFDM QPSK	75@0	0.0042	**PASS**	0℃
12	15	15	141500	707.5	DFT-s-OFDM QPSK	75@0	0.0059	**PASS**	10℃
12	15	15	141500	707.5	DFT-s-OFDM QPSK	75@0	0.0069	**PASS**	20℃
12	15	15	141500	707.5	DFT-s-OFDM QPSK	75@0	0.0035	**PASS**	30℃
12	15	15	141500	707.5	DFT-s-OFDM QPSK	75@0	0.0050	**PASS**	40℃
12	15	15	141500	707.5	DFT-s-OFDM QPSK	75@0	0.0063	**PASS**	50℃

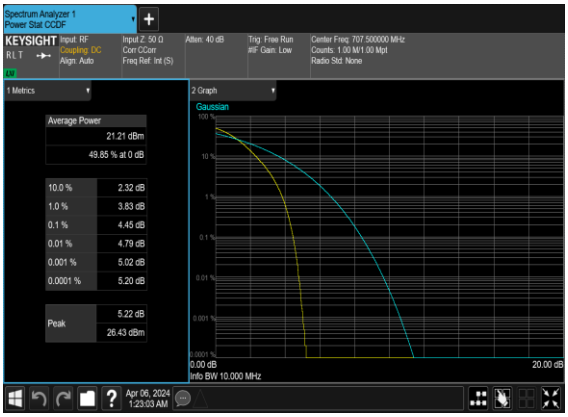
Peak to Average Ratio

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result (dB)	Limit (dB)	Verdict
12	15	15	141500	707.5	DFT-s-OFDM PI/2 BPSK	75@0	3.14	13	**PASS**
12	15	15	141500	707.5	DFT-s-OFDM QPSK	75@0	4.45	13	**PASS**

N12(15M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



N12(15M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



Occupied Bandwidth

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	OBW (MHz)	26dB BW (MHz)
12	15	5	141500	707.5	CP-OFDM QPSK	25@0	4.4595	5.084
12	15	5	141500	707.5	CP-OFDM 16 QAM	25@0	4.4601	5.044
12	15	5	141500	707.5	CP-OFDM 64 QAM	25@0	4.4681	5.075
12	15	5	141500	707.5	CP-OFDM 256 QAM	25@0	4.4709	5.025
12	15	10	141500	707.5	CP-OFDM QPSK	52@0	9.2567	10.02
12	15	10	141500	707.5	CP-OFDM 16 QAM	52@0	9.2615	9.906
12	15	10	141500	707.5	CP-OFDM 64 QAM	52@0	9.2528	9.923
12	15	10	141500	707.5	CP-OFDM 256 QAM	52@0	9.2415	9.765
12	15	15	141500	707.5	CP-OFDM QPSK	79@0	14.071	14.98
12	15	15	141500	707.5	CP-OFDM 16 QAM	79@0	14.1	14.78
12	15	15	141500	707.5	CP-OFDM 64 QAM	79@0	14.074	14.89
12	15	15	141500	707.5	CP-OFDM 256 QAM	79@0	14.07	14.79