FCC RF Test Report

APPLICANT	:	Quectel Wireless Solutions Co., Ltd.
EQUIPMENT	:	5G Sub-6 GHz LGA Module
BRAND NAME	:	Quectel
MODEL NAME	:	RG500L-NA
FCC ID	:	XMR2023RG500LNA
STANDARD	:	47 CFR Part 2, 22, 27
CLASSIFICATION	:	PCS Licensed Transmitter (PCB)
TEST DATE(S)	:	Feb. 02, 2023 ~ Apr. 07, 2023

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.
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)
No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG2D0201J	Rev. 01	Initial issue of report	Jun. 02, 2023

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	Reporting Only	PASS	-
	§27.50(h)(2)	Equivalent Isotropic Radiated Power (5G NR n7, n41, n38)	EIRP < 2Watt		
	§27.50(d)(4)	Equivalent Isotropic Radiated Power (5G NR n66)	EIRP < 1Watt		
3.5	§27.50(j)(4)	Peak-to-Average Ratio	<13 dB	PASS	-
3.6	§2.1049	Occupied Bandwidth	Reporting Only	PASS	-
3.7	§2.1051 §27.53(h)	Conducted Band Edge Measurement (5G NR n66)	< 43+10log10(P[Watts])	PASS	-
	§27.53(m)(4)	Conducted Band Edge Measurement (5G NR n7, n41, n38)	§27.53(m)(4)		
3.8	§2.1051 §27.53(h)	Conducted Spurious Emission (5G NR n66)	< 43+10log10(P[Watts])	PASS	-
	§2.1051 §27.53(m)(4)	Conducted Spurious Emission (5G NR n7, n41, n38)	< 55+10log$_{10}$(P[Watts])		
3.9	§2.1055 §27.54	Frequency Stability Temperature & Voltage	Within Authorized Band	PASS	-
4.4	§2.1053 §27.53(h)	Radiated Spurious Emission (5G NR n66)	< 43+10log$_{10}$(P[Watts])	PASS	Under limit 11.62 dB at 7570.00 MHz
	§2.1053 §27.53(m)(4)	Radiated Spurious Emission (5G NR n7, n41, n38)	< 55+10log$_{10}$(P[Watts])		

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

1 General Description

1.1 Applicant

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

1.2 Manufacturer

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

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	5G Sub-6 GHz LGA Module
Brand Name	Quectel
Model Name	RG500L-NA
FCC ID	XMR2023RG500LNA
IMEI Code	Conducted : 860815050004316 Radiation : 860815050004233
HW Version	R1.0
SW Version	RG500LNAAAR04A02E32_OCPU
EUT Stage	Identical Prototype

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	5G NR n7 : 2500 MHz ~ 2570 MHz 5G NR n38 : 2570 MHz ~ 2620 MHz 5G NR n41 : 2496 MHz ~ 2690 MHz 5G NR n66 : 1710 MHz ~ 1780 MHz
Rx Frequency	5G NR n7 : 2620 MHz ~ 2690 MHz 5G NR n38: 2570 MHz ~ 2620 MHz 5G NR n41 : 2496 MHz ~ 2690 MHz 5G NR n66 : 2110 MHz~ 2200 MHz
Bandwidth	**SA mode:** n7: 5MHz / 10MHz / 15MHz / 20MHz n38: 10MHz / 15MHz / 20MHz / 40MHz n41 : 10MHz / 15MHz / 20MHz / 30MHz / 40MHz / 50MHz / 60MHz / 80MHz / 90MHz / 100MHz n66: 5MHz / 10MHz / 15MHz / 20MHz / 25MHz / 30MHz /40MHz **NSA mode:** n7: 5MHz / 10MHz / 15MHz / 20MHz n38: 10MHz / 15MHz / 20MHz

	n41 : 10MHz / 15MHz / 20MHz / 30MHz / 40MHz / 50MHz / 60MHz / 80MHz / 90MHz / 100MHz n66: 5MHz / 10MHz / 15MHz / 20MHz
SCS	15kHz for FDD band 30kHz for TDD band
Antenna Gain	**<Ant. 1>** n7: 1.42 dBi n38: 0.77 dBi n41: 1.42 dBi n66: -0.20 dBi **<Ant. 7>** n7: 1.26 dBi n38: 1.69 dBi n41: 2.61 dBi n66: 0.33 dBi
Type of Modulation	CP-OFDM: QPSK / 16QAM / 64QAM / 256QAM DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM

Remark:

1. The maximum EIRP is calculated from max output power and max antenna gain, only the maximum EIRP of Ant.1 for n7/n41/n66, and Ant.7 for n38 are shown in the report.
2. The device supports two PAs for 5G NR n7/n38/n66 (main PA with Ant.1 for SA mode, and other PA with Ant.7 for NSA mode), both PA are full test.
3. The device supports HPUE mode for 5G NR n41.
4. 5G NR n41 supports UL MIMO mode, and only supports CP-OFDM modulation in UL MIMO mode. The MIMO mode is completely uncorrelated, the directional gain is selected the maximum gain among Ant.1 & Ant.7.
5. For n41 MIMO mode, the conducted Bandedge/Spurious are tested at single antenna port and add 10*log(N_{ANT}) according to KDB 662911 D01, only the worst MIMO Ant.1 is shown in the report.
6. 5G NR support SA mode and NSA mode. According to the maximum power between SA and NSA mode, SA covers NSA mode.
7. All the supported ENDC combinations are verified conducted power, only the ENDC 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 Conducted Power and Emission Designator

5G NR n7		PI/2 BPSK / QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum Conducted Power (W)	Emission Designator (99%OBW)	Maximum Conducted Power (W)	Emission Designator (99%OBW)
5	2502.5 ~ 2567.5	0.2588	4M48G7D	0.2018	4M48W7D
10	2505.0 ~ 2565.0	0.2600	9M28G7D	0.2032	9M30W7D
15	2507.5 ~ 2562.5	0.2624	14M1G7D	0.2023	14M1W7D
20	2510.0 ~ 2560.0	0.2679	18M9G7D	0.2070	18M9W7D

5G NR n38		PI/2 BPSK / QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum Conducted Power (W)	Emission Designator (99%OBW)	Maximum Conducted Power (W)	Emission Designator (99%OBW)
10	2575.0 ~ 2615.0	0.1782	8M65G7D	0.1445	8M75W7D
15	2577.5 ~ 2612.5	0.1811	13M6G7D	0.1429	13M7W7D
20	2580.0 ~ 2610.0	0.1799	18M2G7D	0.1455	18M3W7D
40	2590.02 ~ 2599.98	0.2118	38M0G7D	0.1462	38M3W7D

5G NR n41		PI/2 BPSK / QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum Conducted Power (W)	Emission Designator (99%OBW)	Maximum Conducted Power (W)	Emission Designator (99%OBW)
10	2501.01 ~ 2685.00	0.3475	8M65G7D	0.2891	8M63W7D
15	2503.50 ~ 2682.48	0.3420	13M6G7D	0.2851	13M7W7D
20	2506.02 ~ 2679.99	0.3396	18M3G7D	0.2831	18M3W7D
30	2511.00 ~ 2674.98	0.3357	27M9G7D	0.2799	27M9W7D
40	2516.01 ~ 2670.00	0.3357	38M0G7D	0.2692	38M3W7D
50	2521.02 ~ 2664.99	0.3420	47M7G7D	0.2851	47M6W7D
60	2526.00 ~ 2659.98	0.3365	57M8G7D	0.2805	58M1W7D
80	2536.02 ~ 2649.99	0.3342	77M6G7D	0.2570	77M7W7D
90	2541.00 ~ 2644.98	0.3327	87M9G7D	0.2466	88M1W7D
100	2546.01 ~ 2640.00	0.3565	97M7G7D	0.2427	97M9W7D

5G NR n66		PI/2 BPSK / QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum Conducted Power (W)	Emission Designator (99%OBW)	Maximum Conducted Power (W)	Emission Designator (99%OBW)
5	1712.5 ~ 1777.5	0.2339	4M47G7D	0.1706	4M47W7D
10	1715.0 ~ 1775.0	0.2296	9M28G7D	0.1656	9M30W7D
15	1717.5 ~ 1772.5	0.2291	14M1G7D	0.1671	14M1W7D
20	1720.0 ~ 1770.0	0.2249	18M9G7D	0.1629	18M9W7D
25	1722.5 ~ 1767.5	0.2198	23M7G7D	0.1607	23M7W7D
30	1725.0 ~ 1765.0	0.2153	28M5G7D	0.1570	28M6W7D
40	1730.0 ~ 1760.0	0.2371	38M5G7D	0.1629	38M5W7D

Note:

1. 5G NR Band n41 overlaps the entire frequency range of Band n38 for main PA. Therefore, the conducted test results provided in this report covers Band n41 as well as Band n38 for main PA, and n38 other PA is full test.
2. 5G NR n41 UL MIMO power is lower than SISO mode, thus not show MIMO power here.
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.

<table>
<tr><td>Test Firm</td><td colspan="3">Sporton International Inc. (Kunshan)</td></tr>
<tr><td>Test Site Location</td><td colspan="3">No. 1098, Pengxi North Road, Kunshan Economic Development Zone
Jiangsu Province 215300 People's Republic of China
TEL : +86-512-57900158</td></tr>
<tr><td rowspan="2">Test Site No.</td><td>Sporton Site No.</td><td>FCC Designation No.</td><td>FCC Test Firm Registration No.</td></tr>
<tr><td>03CH04-KS
TH01-KS</td><td>CN1257</td><td>314309</td></tr>
</table>

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, 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 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.

Orthogonal Planes of EUT	X Plane	Y Plane	Z Plane
			

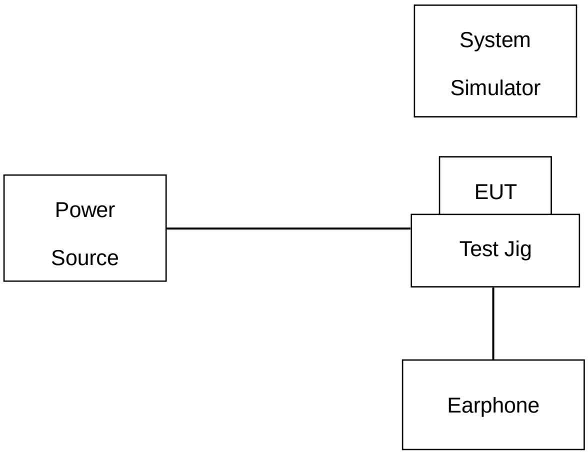
Test Items	5G NR	Bandwidth (MHz)													Modulation					RB #			Test Channel		
		5	10	15	20	25	30	40	50	60	70	80	90	100	PI/2 BPSK	QPSK	16QAM	64QAM	256QAM	1	Partial	Full	L	M	H
Max. Output Power	n7	v	v	v	v	-	-	-	-	-	-	-	-	-	v	v	v	v	v	v	v	v	v	v	v
	n38	-	v	v	v	-	-	v	-	-	-	-	-	-	v	v	v	v	v	v	v	v	v	v	v
	n41	-	v	v	v	-	v	v	v	v	-	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	n66	v	v	v	v	v	v	v	-	-	-	-	-	-	v	v	v	v	v	v	v	v	v	v	v
Peak-to-Average Ratio	n7				v	-	-	-	-	-	-	-	-	-	v	v				v		v		v	
	n38	-			v	-	-		-	-	-	-	-	-	v	v						v		v	
	n41	-				-					-			v	v	v				v		v		v	
	n66				v				-	-	-	-	-	-	v	v				v		v		v	
26dB and 99% Bandwidth	n7	v	v	v	v	-	-	-	-	-	-	-	-	-		v	v	v	v			v		v	
	n38	-	v	v	v	-	-		-	-	-	-	-	-		v	v	v	v			v		v	
	n41	-	v	v	v	-	v	v	v	v	-	v	v	v		v	v	v	v			v		v	
	n66	v	v	v	v	v	v	v	-	-	-	-	-	-		v	v	v	v			v		v	
Conducted Band Edge	n7	v		v	v	-	-	-	-	-	-	-	-	-	v	v				v		v	v		v
	n38	-	v	v	v	-	-		-	-	-	-	-	-	v	v				v		v	v		v
	n41	-	v			-			v		-			v	v	v				v		v	v		v
	n66	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	40	50	60	70	80	90	100	PI/2 BPSK	QPSK	16QAM	64QAM	256QAM	1	Partial	Full	L	M	H
Conducted Spurious Emission	n7	v		v	v	-	-	-	-	-	-	-	-	-	v	v				v			v	v	v
	n38	-	v	v	v	-	-		-	-	-	-	-	-	v	v				v			v	v	v
	n41	-	v			-			v		-			v	v	v				v			v	v	v
	n66	v		v	v			v	-	-	-	-	-	-	v	v				v			v	v	v
Frequency Stability	n7				v	-	-	-	-	-	-	-	-	-		v						v		v	
	n38	-	v			-	-		-	-	-	-	-	-		v						v		v	
	n41	-			v	-					-					v						v		v	
	n66				v				-	-	-	-	-	-		v						v		v	
E.I.R.P	n7	v	v	v	v	-	-	-	-	-	-	-	-	-	v	v	v	v	v	v	v	v	v	v	v
	n38	-	v	v	v	-	-	v	-	-	-	-	-	-	v	v	v	v	v	v	v	v	v	v	v
	n41	-	v	v	v	-	v	v	v	v	-	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	n66	v	v	v	v	v	v	v	-	-	-	-	-	-	v	v	v	v	v	v	v	v	v	v	v
Radiated Spurious Emission	n7	Worst Case																					v	v	v
	n38	Worst Case																					v	v	v
	n41	Worst Case																					v	v	v
	n66	Worst Case																					v	v	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 = 3.80V ; Low Voltage =3.30V ; High Voltage =4.30V.

2.2 Connection Diagram of Test System



This example is connection diagram of EUT test configurations.

For detail, please refer to test mode configuration and setup photographs for each test item.

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	MT8821C	N/A	N/A	Unshielded, 1.8 m
3.	NR Base Station	Anritsu	MT8000A	N/A	N/A	Unshielded, 1.8 m
4.	Earphone	N/A	N/A	N/A	N/A	N/A
5.	Test Jig	N/A	N/A	N/A	N/A	N/A

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 6.00 dB.

Example :

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

= 6.00 (dB)

2.5 Frequency List of Low/Middle/High Channels

5G NR n7 Channel and Frequency List for SCS 15k				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	502000	507000	512000
	Frequency	2510	2535	2560
15	Channel	501500	507000	512500
	Frequency	2507.5	2535	2562.5
10	Channel	501000	507000	513000
	Frequency	2505	2535	2565
5	Channel	500500	507000	513500
	Frequency	2502.5	2535	2567.5

5G NR n38 Channel and Frequency List for SCS 30k				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
40	Channel	518004	519000	519996
	Frequency	2590.02	2595	2599.98
20	Channel	516000	519000	522000
	Frequency	2580	2595	2610
15	Channel	515500	519000	522500
	Frequency	2577.5	2595	2612.5
10	Channel	515000	519000	523000
	Frequency	2575	2595	2615

5G NR n41 Channel and Frequency List for SCS 30k				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
100	Channel	509202	518598	528000
	Frequency	2546.01	2592.99	2640
90	Channel	508200	518598	528996
	Frequency	2541	2592.99	2644.98
80	Channel	507204	518598	529998
	Frequency	2536.02	2592.99	2649.99
60	Channel	505200	518598	531996
	Frequency	2526	2592.99	2659.98
50	Channel	504204	518598	532998
	Frequency	2521.02	2592.99	2664.99
40	Channel	503202	518598	534000
	Frequency	2516.01	2592.99	2670
30	Channel	502200	518598	534996
	Frequency	2511	2592.99	2674.98
20	Channel	501204	518598	535998
	Frequency	2506.02	2592.99	2679.99
15	Channel	500700	518598	536496
	Frequency	2503.5	2592.99	2682.48
10	Channel	500202	518598	537000
	Frequency	2501.01	2592.99	2685

5G NR n66 Channel and Frequency List for SCS 15k				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
40	Channel	346000	349000	352000
	Frequency	1730	1745	1760
30	Channel	345000	349000	353000
	Frequency	1725	1745	1765
25	Channel	344500	349000	353500
	Frequency	1722.5	1745	1767.5
20	Channel	344000	349000	354000
	Frequency	1720	1745	1770
15	Channel	343500	349000	354500
	Frequency	1717.5	1745	1772.5
10	Channel	343000	349000	355000
	Frequency	1715	1745	1775
5	Channel	342500	349000	355500
	Frequency	1712.5	1745	1777.5

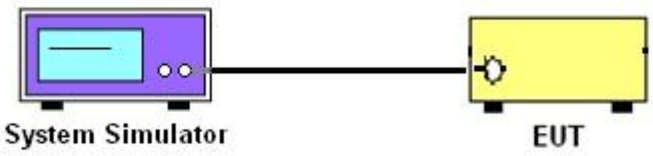
3 Conducted Test Items

3.1 Measuring Instruments

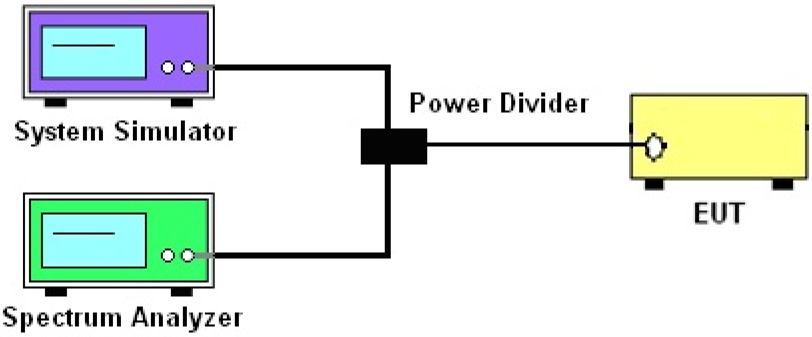
See list of measuring instruments of this test report.

3.2 Test Setup

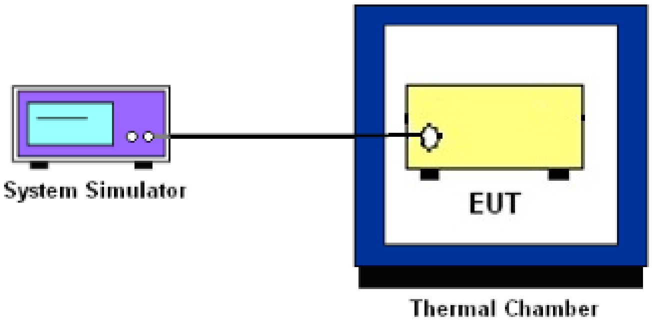
3.2.1 Conducted Output Power



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 EIRP

3.4.1 Description of the Conducted Output Power Measurement and 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 EIRP of mobile transmitters must not exceed 2 Watts for 5G NR n7, n38, n41.

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

According to KDB 412172 D01 Power Approach,

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

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

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

3.4.2 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.

For n41 UL MIMO:

1. The testing follows ANSI C63.26 Section 5.2.6 (PAPR).
2. The EUT was connected to spectrum and system simulator via a power divider.
3. Set EUT in maximum power output.
4. Set the RBW = 1MHz, VBW = 3MHz, Detector = Peak, Trace mode = max hold, Set span ≥ 2 × OBW in spectrum analyzer.
5. Set the RBW = 1MHz, VBW = 3MHz, Detector = power averaging, Trace mode = max hold, Set span ≥ 2 × OBW in spectrum analyzer.
6. Add [10 log (1/duty cycle)] to the measured maximum power level to compute the average power during continuous transmission.
7. PAPR (dB) = P_{Pk} (dBm) − P_{Avg} (dBm)

   where

   PAPR peak-to-average power ratio, in dB

   P_{Pk} measured peak power level, in dBm

   P_{Avg} measured average power level, in dBm
8. 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

27.53 (h)

For operations in the 1710 – 1755 MHz band, the FCC limit is 43 + $10\log_{10}$(P[Watts]) dB below the transmitter power P(Watts) in a 1 MHz 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.

27.53(m)(4)

For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

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. For 5G NR n7/n38/n41, the other 40 dB, and 55 dB have additionally applied same calculation above.
10. 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.

For 5G NR n7/n38/n41:

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 55 + 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.
11. For 5G NR n7/n38/n41
    The limit line is derived from 55 + 10log(P)dB below the transmitter power P(Watts)
    = P(W)- [55+ 10log(P)] (dB)
    = [30+ 10log(P)] (dBm) - [55+ 10log(P)] (dB)
    = -25dBm.

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.

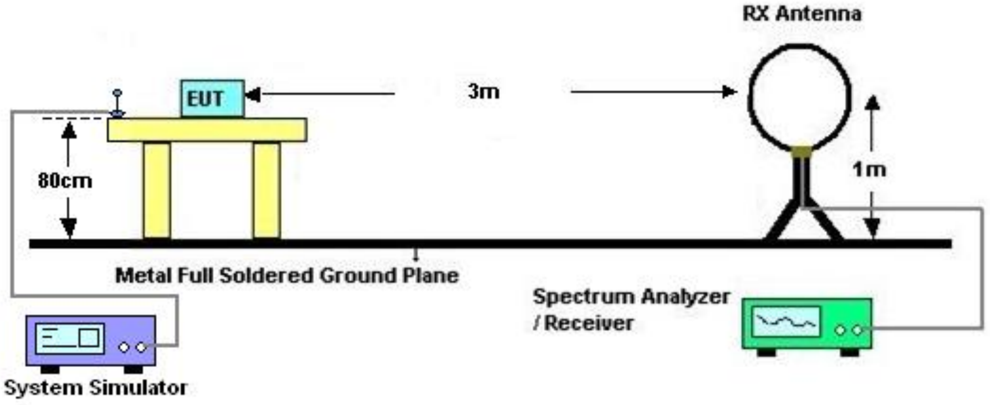
4 Radiated Test Items

4.1 Measuring Instruments

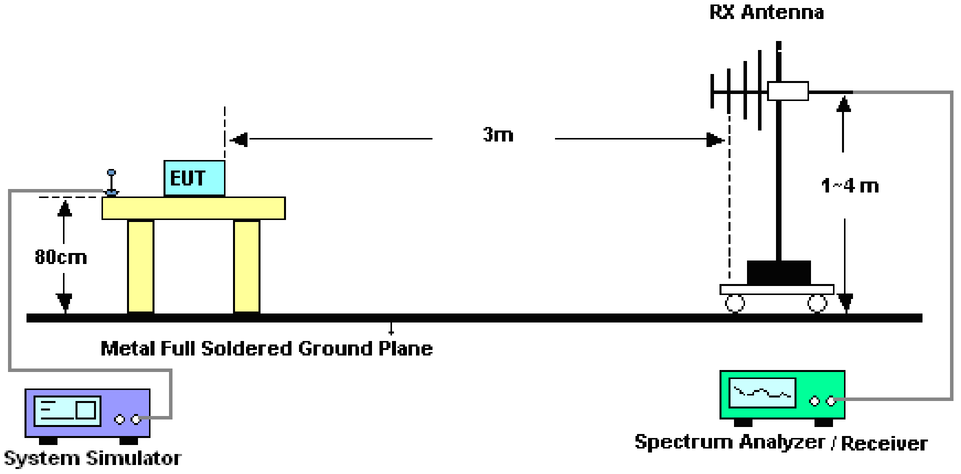
See list of measuring instruments of this test report.

4.2 Test Setup

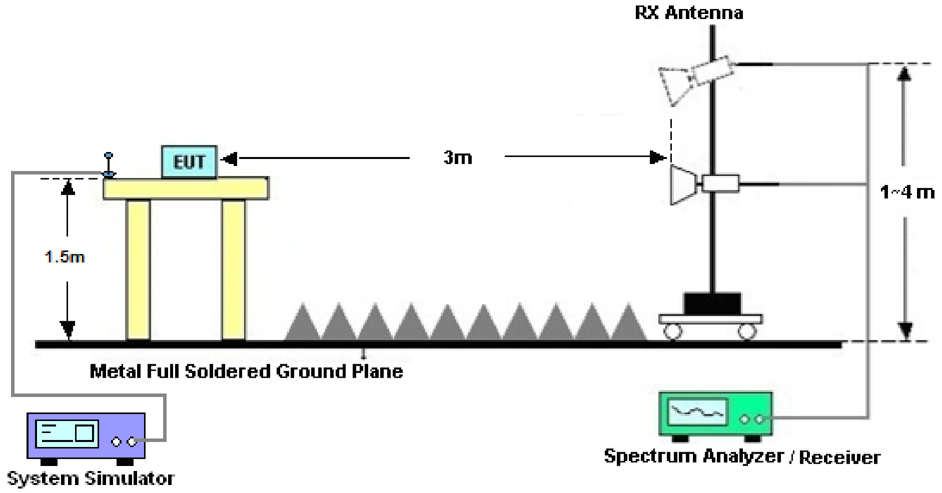
4.2.1 For radiated test below 30MHz



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.

For 5G NR n7/n38/n41

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 55 + 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.
13. For 5G NR n7/n38/n41:
    The limit line is derived from 55 + 10log(P)dB below the transmitter power P(Watts)The limit line is derived from 55 + 10log(P)dB below the transmitter power P(Watts)

5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Oct. 12, 2022	Feb. 02, 2023~ Apr. 07, 2023	Oct. 11, 2023	Conducted (TH01-KS)
EXA Spectrum Analyzer	Keysight	N9010B	MY57471079	10Hz-44G,MAX 30dB	Oct. 12, 2022	Feb. 02, 2023~ Apr. 07, 2023	Oct. 11, 2023	Conducted (TH01-KS)
Power divider	STI	STI08-0055	-	0.5~40GHz	NCR	Feb. 02, 2023~ Apr. 07, 2023	NCR	Conducted (TH01-KS)
Temperature & humidity chamber	Hongzhan	LP-150U	H2014011440	-40~+150°C 20%~95%RH	Jul. 15, 2022	Feb. 02, 2023~ Apr. 07, 2023	Jul. 14, 2023	Conducted (TH01-KS)
EXA Spectrum Analyzer	Keysight	N9010B	MY57471079	10Hz-44G,MAX 30dB	Oct. 12, 2022	Mar. 20, 2023	Oct. 11, 2023	Radiation (03CH04-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 16, 2022	Mar. 20, 2023	Oct. 15, 2023	Radiation (03CH04-KS)
Bilog Antenna	TeseQ	CBL6111D	49922	30MHz-1GHz	May 24, 2022	Mar. 20, 2023	May 23, 2023	Radiation (03CH04-KS)
Horn Antenna	Schwarzbeck	BBHA9120D	1284	1GHz~18GHz	Oct. 16, 2022	Mar. 20, 2023	Oct. 15, 2023	Radiation (03CH04-KS)
SHF-EHF Horn	Com-power	AH-840	101070	18GHz~40GHz	Jan. 08, 2023	Mar. 20, 2023	Jan. 07, 2024	Radiation (03CH04-KS)
Amplifier	SONOMA	310N	187289	9KHz-1GHz	May 24, 2022	Mar. 20, 2023	May 23, 2023	Radiation (03CH04-KS)
Amplifier	MITEQ	EM18G40G GA	060728	18~40GHz	Jan. 05, 2023	Mar. 20, 2023	Jan. 04, 2024	Radiation (03CH04-KS)
high gain Amplifier	EM	EM01G18G A	060840	1Ghz-18Ghz	Oct. 12, 2022	Mar. 20, 2023	Oct. 11, 2023	Radiation (03CH04-KS)
Amplifier	Agilent	8449B	3008A02370	1Ghz-18Ghz	Oct. 12, 2022	Mar. 20, 2023	Oct. 11, 2023	Radiation (03CH04-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Mar. 20, 2023	NCR	Radiation (03CH04-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Mar. 20, 2023	NCR	Radiation (03CH04-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Mar. 20, 2023	NCR	Radiation (03CH04-KS)

NCR: No Calibration Required

6 Uncertainty of Evaluation

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 Power	**±0.46 dB**
Conducted Emissions	**±0.48 dB**
Occupied Channel Bandwidth	**±0.1 %**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.3dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.8dB**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.8dB**

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

Appendix A. Test Results of Conducted Test

Test Engineer :	Simle Wang	Temperature :	22~23℃
		Relative Humidity :	40~42%

Conducted Output Power(Average power) and EIRP

5G NR n7_Ant.1:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Gain	EIRP (W)		
Channel				502000	507000	512000	Gain	L	M	H
Frequency (MHz)				2510	2535	2560				
20	PI/2 BPSK	1	1	23.88	24.05	24.03	1.42	0.3388	0.3524	0.3508
20	QPSK	1	1	24.10	24.16	24.20	1.42	0.3565	0.3614	0.3648
20	QPSK	1	53	24.22	24.24	24.21	1.42	0.3664	0.3681	0.3656
20	QPSK	1	104	24.26	24.28	24.23	1.42	0.3698	0.3715	0.3673
20	QPSK	50	0	23.10	23.30	22.96	1.42	0.2831	0.2965	0.2742
20	QPSK	50	28	24.18	24.20	24.13	1.42	0.3631	0.3648	0.3589
20	QPSK	50	56	23.21	23.06	22.92	1.42	0.2904	0.2805	0.2716
20	QPSK	100	0	23.11	23.17	22.94	1.42	0.2838	0.2877	0.2729
20	16QAM	1	1	22.98	22.86	23.16	1.42	0.2754	0.2679	0.2871
20	64QAM	1	1	21.07	21.32	21.24	1.42	0.1774	0.1879	0.1845
20	256QAM	1	1	19.74	19.82	19.76	1.42	0.1306	0.1330	0.1312
Channel				501500	507000	512500	Gain	EIRP (W)		
Frequency (MHz)				2507.5	2535	2562.5				
15	PI/2 BPSK	1	1	23.82	24.02	23.90	1.42	0.3342	0.3499	0.3404
15	QPSK	1	1	24.04	24.19	23.95	1.42	0.3516	0.3639	0.3443
15	16QAM	1	1	23.02	23.06	22.88	1.42	0.2780	0.2805	0.2692
Channel				501000	507000	513000	Gain	EIRP (W)		
Frequency (MHz)				2505	2535	2565				
10	PI/2 BPSK	1	1	23.96	24.01	23.92	1.42	0.3451	0.3491	0.3420
10	QPSK	1	1	24.10	24.15	24.06	1.42	0.3565	0.3606	0.3532
10	16QAM	1	1	23.08	23.02	22.99	1.42	0.2818	0.2780	0.2761
Channel				500500	507000	513500	Gain	EIRP (W)		
Frequency (MHz)				2502.5	2535	2567.5				
5	PI/2 BPSK	1	1	23.53	24.03	23.86	1.42	0.3126	0.3508	0.3373
5	QPSK	1	1	23.86	24.13	24.12	1.42	0.3373	0.3589	0.3581
5	16QAM	1	1	22.84	23.00	23.05	1.42	0.2667	0.2767	0.2799

5G NR n38_Ant.1 (Max conducted power):

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Gain	EIRP (W)		
Channel				518004	519000	519996		L	M	H
Frequency (MHz)				2590.02	2595	2599.98				
40	PI/2 BPSK	1	1	22.51	22.65	22.54	0.77	0.2128	0.2198	0.2143
40	QPSK	1	1	22.56	22.62	22.57	0.77	0.2153	0.2183	0.2158
40	QPSK	1	53	23.19	23.21	23.26	0.77	0.2489	0.2500	0.2529
40	QPSK	1	104	22.87	22.90	22.92	0.77	0.2312	0.2328	0.2339
40	QPSK	50	0	22.06	22.03	21.98	0.77	0.1919	0.1905	0.1884
40	QPSK	50	28	23.16	23.19	23.16	0.77	0.2472	0.2489	0.2472
40	QPSK	50	56	22.04	22.06	22.07	0.77	0.1910	0.1919	0.1923
40	QPSK	100	0	22.06	22.04	22.03	0.77	0.1919	0.1910	0.1905
40	16QAM	1	1	21.65	21.56	21.55	0.77	0.1746	0.1710	0.1706
40	64QAM	1	1	19.98	20.03	19.97	0.77	0.1189	0.1202	0.1186
40	256QAM	1	1	17.75	17.84	17.73	0.77	0.0711	0.0726	0.0708
Channel				516000	519000	522000	Gain	EIRP (W)		
Frequency (MHz)				2580	2595	2610				
20	PI/2 BPSK	1	1	22.46	22.52	22.43	0.77	0.2104	0.2133	0.2089
20	QPSK	1	1	22.51	22.55	22.41	0.77	0.2128	0.2148	0.2080
20	16QAM	1	1	21.62	21.63	21.51	0.77	0.1734	0.1738	0.1690
Channel				515500	519000	522500	Gain	EIRP (W)		
Frequency (MHz)				2577.5	2595	2612.5				
15	PI/2 BPSK	1	1	22.45	22.58	22.36	0.77	0.2099	0.2163	0.2056
15	QPSK	1	1	22.35	22.41	22.45	0.77	0.2051	0.2080	0.2099
15	16QAM	1	1	21.46	21.49	21.55	0.77	0.1671	0.1683	0.1706
Channel				515000	519000	523000	Gain	EIRP (W)		
Frequency (MHz)				2575	2595	2615				
10	PI/2 BPSK	1	1	22.40	22.51	22.32	0.77	0.2075	0.2128	0.2037
10	QPSK	1	1	22.33	22.41	22.50	0.77	0.2042	0.2080	0.2123
10	16QAM	1	1	21.44	21.49	21.60	0.77	0.1663	0.1683	0.1726

5G NR n38_Ant.7 (Max EIRP):

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Gain	EIRP		
Channel				516000	519000	522000		L	M	H
Frequency (MHz)				2580	2595	2610				
20	PI/2 BPSK	1	1	22.64	22.74	22.61	1.69	0.2710	0.2773	0.2692
20	QPSK	1	1	22.68	22.81	22.64	1.69	0.2735	0.2818	0.2710
20	QPSK	1	26	22.77	22.80	22.75	1.69	0.2793	0.2812	0.2780
20	QPSK	1	49	22.71	22.74	22.78	1.69	0.2754	0.2773	0.2799
20	QPSK	25	0	21.84	21.83	21.83	1.69	0.2254	0.2249	0.2249
20	QPSK	25	13	22.85	22.83	22.81	1.69	0.2844	0.2831	0.2818
20	QPSK	25	26	21.75	21.80	21.72	1.69	0.2208	0.2234	0.2193
20	QPSK	50	0	21.82	21.84	21.79	1.69	0.2244	0.2254	0.2228
20	16QAM	1	1	21.58	21.65	21.54	1.69	0.2123	0.2158	0.2104
20	64QAM	1	1	20.04	20.05	20.10	1.69	0.1489	0.1493	0.1510
20	256QAM	1	1	18.11	18.13	18.14	1.69	0.0955	0.0959	0.0962
Channel				515500	519000	522500	Gain	EIRP （W）		
Frequency (MHz)				2577.5	2595	2612.5				
15	PI/2 BPSK	1	1	22.68	22.72	22.71	1.69	0.2735	0.2761	0.2754
15	QPSK	1	1	22.71	22.78	22.70	1.69	0.2754	0.2799	0.2748
15	16QAM	1	1	21.63	21.65	21.68	1.69	0.2148	0.2158	0.2173
Channel				515000	519000	523000	Gain	EIRP （W）		
Frequency (MHz)				2575	2595	2615				
10	PI/2 BPSK	1	1	22.69	22.73	22.71	1.69	0.2742	0.2767	0.2754
10	QPSK	1	1	22.76	22.75	22.76	1.69	0.2786	0.2780	0.2786
10	16QAM	1	1	21.68	21.62	21.74	1.69	0.2173	0.2143	0.2203

5G NR n41_Ant.1:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Gain	EIRP (W)		
Channel				509202	518598	528000		L	M	H
Frequency (MHz)				2546.01	2592.99	2640				
100	PI/2 BPSK	1	1	25.32	24.49	24.21	1.42	0.4721	0.3899	0.3656
100	QPSK	1	1	25.29	24.32	24.25	1.42	0.4688	0.3750	0.3690
100	QPSK	1	137	25.34	25.21	25.34	1.42	0.4742	0.4603	0.4742
100	QPSK	1	271	24.54	24.76	24.74	1.42	0.3945	0.4150	0.4130
100	QPSK	135	0	24.38	24.41	24.34	1.42	0.3802	0.3828	0.3767
100	QPSK	135	69	25.52	25.29	25.37	1.42	0.4943	0.4688	0.4775
100	QPSK	135	138	24.15	24.53	24.54	1.42	0.3606	0.3936	0.3945
100	QPSK	270	0	24.33	24.48	24.47	1.42	0.3758	0.3890	0.3882
100	16QAM	1	1	23.85	23.75	23.71	1.42	0.3365	0.3289	0.3258
100	64QAM	1	1	22.19	22.15	22.10	1.42	0.2296	0.2275	0.2249
100	256QAM	1	1	20.42	20.34	20.28	1.42	0.1528	0.1500	0.1479

Channel				508200	518598	528996	Gain	EIRP (W)		
Frequency (MHz)				2541	2592.99	2644.98				
90	PI/2 BPSK	1	1	25.02	24.63	24.59	1.42	0.4406	0.4027	0.3990
90	QPSK	1	1	25.22	24.71	24.65	1.42	0.4613	0.4102	0.4046
90	16QAM	1	1	23.83	23.92	23.80	1.42	0.3350	0.3420	0.3327
Channel				507204	518598	529998	Gain	EIRP (W)		
Frequency (MHz)				2536.02	2592.99	2649.99				
80	PI/2 BPSK	1	1	25.01	24.76	24.87	1.42	0.4395	0.4150	0.4256
80	QPSK	1	1	25.24	24.89	24.94	1.42	0.4634	0.4276	0.4325
80	16QAM	1	1	23.85	24.10	24.09	1.42	0.3365	0.3565	0.3556
Channel				505200	518598	531996	Gain	EIRP (W)		
Frequency (MHz)				2526	2592.99	2659.98				
60	PI/2 BPSK	1	1	25.00	25.16	25.06	1.42	0.4385	0.4550	0.4446
60	QPSK	1	1	25.13	25.27	25.14	1.42	0.4519	0.4667	0.4529
60	16QAM	1	1	23.74	24.48	24.29	1.42	0.3281	0.3890	0.3724
Channel				504204	518598	532998	Gain	EIRP (W)		
Frequency (MHz)				2521.02	2592.99	2664.99				
50	PI/2 BPSK	1	1	25.03	25.30	25.16	1.42	0.4416	0.4699	0.4550
50	QPSK	1	1	25.26	25.34	25.14	1.42	0.4656	0.4742	0.4529
50	16QAM	1	1	23.87	24.55	24.29	1.42	0.3381	0.3954	0.3724
Channel				503202	518598	534000	Gain	EIRP (W)		
Frequency (MHz)				2516.01	2592.99	2670				
40	PI/2 BPSK	1	1	25.02	25.12	25.09	1.42	0.4406	0.4508	0.4477
40	QPSK	1	1	25.26	25.09	25.06	1.42	0.4656	0.4477	0.4446
40	16QAM	1	1	23.87	24.30	24.21	1.42	0.3381	0.3733	0.3656
Channel				502200	518598	534996	Gain	EIRP (W)		
Frequency (MHz)				2511	2592.99	2674.98				
30	PI/2 BPSK	1	1	25.00	25.21	25.11	1.42	0.4385	0.4603	0.4498
30	QPSK	1	1	25.23	25.26	25.17	1.42	0.4624	0.4656	0.4560
30	16QAM	1	1	23.84	24.47	24.32	1.42	0.3357	0.3882	0.3750
Channel				501204	518598	535998	Gain	EIRP (W)		
Frequency (MHz)				2506.02	2592.99	2679.99				
20	PI/2 BPSK	1	1	25.15	25.27	25.25	1.42	0.4539	0.4667	0.4645
20	QPSK	1	1	25.19	25.31	25.20	1.42	0.4581	0.4710	0.4592
20	16QAM	1	1	23.80	24.52	24.35	1.42	0.3327	0.3926	0.3776
Channel				500700	518598	536496	Gain	EIRP (W)		
Frequency (MHz)				2503.5	2592.99	2682.48				
15	PI/2 BPSK	1	1	25.19	25.31	25.28	1.42	0.4581	0.4710	0.4677
15	QPSK	1	1	25.20	25.34	25.30	1.42	0.4592	0.4742	0.4699
15	16QAM	1	1	23.81	24.55	24.45	1.42	0.3334	0.3954	0.3864
Channel				500202	518598	537000	Gain	EIRP (W)		
Frequency (MHz)				2501.01	2592.99	2685				
10	PI/2 BPSK	1	1	25.21	25.37	25.35	1.42	0.4603	0.4775	0.4753
10	QPSK	1	1	25.27	25.40	25.41	1.42	0.4667	0.4808	0.4819
10	16QAM	1	1	23.88	24.61	24.56	1.42	0.3388	0.4009	0.3963

5G NR n41 UL MIMO (Ant.1+7):

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Gain	EIRP (W)		
Channel				509202	518598	528000		L	M	H
Frequency (MHz)				2546.01	2592.99	2640				
100	QPSK	1	1	24.23	24.16	24.13	2.61	0.4831	0.4753	0.4721
100	QPSK	1	137	24.97	24.86	24.94	2.61	0.5728	0.5585	0.5689
100	QPSK	1	271	24.25	24.53	24.37	2.61	0.4853	0.5176	0.4989
100	QPSK	135	0	23.17	23.34	23.13	2.61	0.3784	0.3936	0.3750
100	QPSK	135	69	24.96	24.84	24.99	2.61	0.5715	0.5559	0.5754
100	QPSK	135	138	23.12	23.37	23.34	2.61	0.3741	0.3963	0.3936
100	QPSK	270	0	23.14	23.31	23.28	2.61	0.3758	0.3908	0.3882
100	16QAM	1	1	23.64	23.54	23.38	2.61	0.4217	0.4121	0.3972
100	64QAM	1	1	22.21	22.18	22.12	2.61	0.3034	0.3013	0.2972
100	256QAM	1	1	19.23	19.26	19.09	2.61	0.1528	0.1538	0.1479
Channel				508200	518598	528996	Gain	EIRP (W)		
Frequency (MHz)				2541	2592.99	2644.98				
90	QPSK	1	1	24.13	24.11	24.13	2.61	0.4721	0.4699	0.4721
90	16QAM	1	1	23.33	23.17	23.25	2.61	0.3926	0.3784	0.3855
Channel				507204	518598	529998	Gain	EIRP (W)		
Frequency (MHz)				2536.02	2592.99	2649.99				
80	QPSK	1	1	24.02	23.08	23.10	2.61	0.4603	0.3707	0.3724
80	16QAM	1	1	23.36	23.41	23.22	2.61	0.3954	0.3999	0.3828
Channel				505200	518598	531996	Gain	EIRP (W)		
Frequency (MHz)				2526	2592.99	2659.98				
60	QPSK	1	1	24.13	24.02	23.08	2.61	0.4721	0.4603	0.3707
60	16QAM	1	1	23.17	23.42	23.21	2.61	0.3784	0.4009	0.3819
Channel				504204	518598	532998	Gain	EIRP (W)		
Frequency (MHz)				2521.02	2592.99	2664.99				
50	QPSK	1	1	24.01	24.05	24.00	2.61	0.4592	0.4634	0.4581
50	16QAM	1	1	23.36	23.25	23.24	2.61	0.3954	0.3855	0.3846
Channel				503202	518598	534000	Gain	EIRP (W)		
Frequency (MHz)				2516.01	2592.99	2670				
40	QPSK	1	1	24.10	24.05	24.03	2.61	0.4688	0.4634	0.4613
40	16QAM	1	1	23.52	23.36	23.02	2.61	0.4102	0.3954	0.3656
Channel				502200	518598	534996	Gain	EIRP (W)		
Frequency (MHz)				2511	2592.99	2674.98				
30	QPSK	1	1	24.08	24.11	24.02	2.61	0.4667	0.4699	0.4603
30	16QAM	1	1	23.25	23.51	23.24	2.61	0.3855	0.4093	0.3846
Channel				501204	518598	535998	Gain	EIRP (W)		
Frequency (MHz)				2506.02	2592.99	2679.99				
20	QPSK	1	1	24.05	24.01	24.03	2.61	0.4634	0.4592	0.4613
20	16QAM	1	1	24.38	24.36	24.28	2.61	0.5000	0.4977	0.4887
Channel				500700	518598	536496	Gain	EIRP (W)		
Frequency (MHz)				2503.5	2592.99	2682.48				
15	QPSK	1	1	24.13	24.05	24.02	2.61	0.4721	0.4634	0.4603
15	16QAM	1	1	23.36	23.52	23.14	2.61	0.3954	0.4102	0.3758
Channel				500202	518598	537000	Gain	EIRP (W)		
Frequency (MHz)				2501.01	2592.99	2685				
10	QPSK	1	1	24.02	24.08	24.01	2.61	0.4603	0.4667	0.4589
10	16QAM	1	1	23.28	23.43	23.18	2.61	0.3882	0.4018	0.3793

5G NR n66_Ant.1:

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Gain	EIRP (W)		
Channel				346000	349000	352000		L	M	H
Frequency (MHz)				1730	1745	1760				
40	PI/2 BPSK	1	1	23.30	23.50	23.64	-0.20	0.2042	0.2138	0.2208
40	QPSK	1	1	23.38	23.45	23.75	-0.20	0.2080	0.2113	0.2265
40	QPSK	1	108	23.35	23.59	23.62	-0.20	0.2065	0.2183	0.2198
40	QPSK	1	214	23.24	23.33	23.26	-0.20	0.2014	0.2056	0.2023
40	QPSK	108	0	22.07	22.37	22.32	-0.20	0.1538	0.1648	0.1629
40	QPSK	108	54	23.44	23.51	23.69	-0.20	0.2109	0.2143	0.2234
40	QPSK	108	108	22.43	22.39	22.65	-0.20	0.1671	0.1656	0.1758
40	QPSK	216	0	22.24	22.35	22.52	-0.20	0.1600	0.1641	0.1706
40	16QAM	1	1	22.06	21.94	22.12	-0.20	0.1535	0.1493	0.1556
40	64QAM	1	1	20.43	20.22	20.37	-0.20	0.1054	0.1005	0.1040
40	256QAM	1	1	18.58	18.47	18.54	-0.20	0.0689	0.0671	0.0682
Channel				345000	349000	353000	Gain	EIRP (W)		
Frequency (MHz)				1725	1745	1765				
30	PI/2 BPSK	1	1	22.96	22.91	23.30	-0.20	0.1888	0.1866	0.2042
30	QPSK	1	1	23.08	22.95	23.33	-0.20	0.1941	0.1884	0.2056
30	16QAM	1	1	21.84	21.80	21.96	-0.20	0.1459	0.1445	0.1500
Channel				344500	349000	353500	Gain	EIRP (W)		
Frequency (MHz)				1722.5	1745	1767.5				
25	PI/2 BPSK	1	1	23.19	23.14	23.38	-0.20	0.1991	0.1968	0.2080
25	QPSK	1	1	23.25	23.21	23.42	-0.20	0.2018	0.2000	0.2099
25	16QAM	1	1	22.01	22.06	22.05	-0.20	0.1517	0.1535	0.1531
Channel				344000	349000	354000	Gain	EIRP (W)		
Frequency (MHz)				1720	1745	1770				
20	PI/2 BPSK	1	1	23.14	23.24	23.52	-0.20	0.1968	0.2014	0.2148
20	QPSK	1	1	23.22	23.27	23.47	-0.20	0.2004	0.2028	0.2123
20	16QAM	1	1	21.98	22.12	22.10	-0.20	0.1507	0.1556	0.1549
Channel				343500	349000	354500	Gain	EIRP (W)		
Frequency (MHz)				1717.5	1745	1772.5				
15	PI/2 BPSK	1	1	23.17	23.28	23.58	-0.20	0.1982	0.2032	0.2178
15	QPSK	1	1	23.26	23.31	23.60	-0.20	0.2023	0.2046	0.2188
15	16QAM	1	1	22.02	22.16	22.23	-0.20	0.1521	0.1570	0.1596
Channel				343000	349000	355000	Gain	EIRP (W)		
Frequency (MHz)				1715	1745	1775				
10	PI/2 BPSK	1	1	23.25	23.30	23.61	-0.20	0.2018	0.2042	0.2193
10	QPSK	1	1	23.31	23.33	23.56	-0.20	0.2046	0.2056	0.2168
10	16QAM	1	1	22.07	22.18	22.19	-0.20	0.1538	0.1578	0.1581
Channel				342500	349000	355500	Gain	EIRP (W)		
Frequency (MHz)				1712.5	1745	1777.5				
5	PI/2 BPSK	1	1	23.30	23.50	23.62	-0.20	0.2042	0.2138	0.2198
5	QPSK	1	1	23.38	23.45	23.69	-0.20	0.2080	0.2113	0.2234
5	16QAM	1	1	22.14	22.30	22.32	-0.20	0.1563	0.1622	0.1629

Software Version: 22.12.120701

FR1 N7 (Main PA)

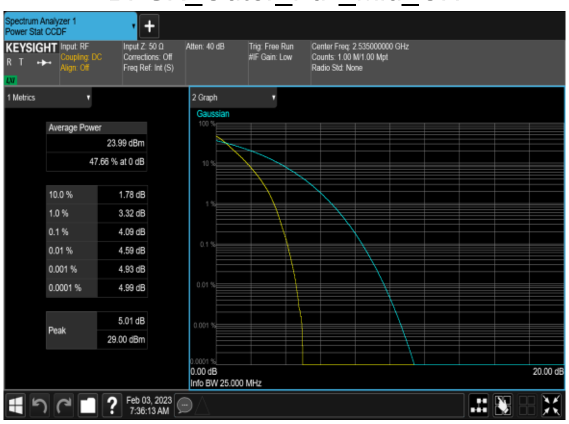
Frequency Stability

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Deviation (ppm)	Verdict	Environment
7	15	20	507000	2535.0	DFT-s-OFDM QPSK	100@0	0.0000	**PASS**	NV
7	15	20	507000	2535.0	DFT-s-OFDM QPSK	100@0	0.0005	**PASS**	LV
7	15	20	507000	2535.0	DFT-s-OFDM QPSK	100@0	0.0019	**PASS**	HV
7	15	20	507000	2535.0	DFT-s-OFDM QPSK	100@0	0.0020	**PASS**	-30℃
7	15	20	507000	2535.0	DFT-s-OFDM QPSK	100@0	0.0009	**PASS**	-20℃
7	15	20	507000	2535.0	DFT-s-OFDM QPSK	100@0	0.0016	**PASS**	-10℃
7	15	20	507000	2535.0	DFT-s-OFDM QPSK	100@0	0.0002	**PASS**	0℃
7	15	20	507000	2535.0	DFT-s-OFDM QPSK	100@0	0.0018	**PASS**	10℃
7	15	20	507000	2535.0	DFT-s-OFDM QPSK	100@0	0.0000	**PASS**	20℃
7	15	20	507000	2535.0	DFT-s-OFDM QPSK	100@0	0.0004	**PASS**	30℃
7	15	20	507000	2535.0	DFT-s-OFDM QPSK	100@0	0.0021	**PASS**	40℃
7	15	20	507000	2535.0	DFT-s-OFDM QPSK	100@0	0.0021	**PASS**	50℃

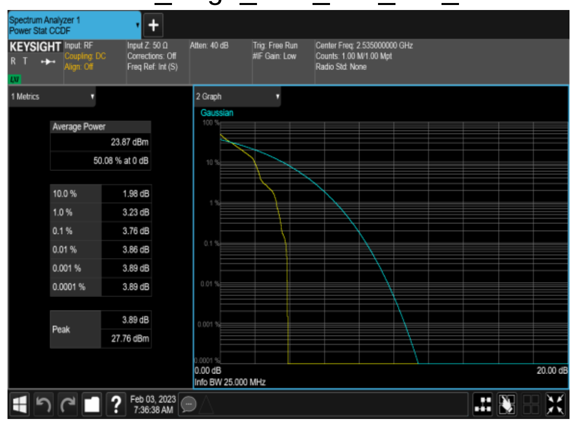
Peak to Average Ratio

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result (dB)	Limit (dB)	Verdict
7	15	20	507000	2535.0	DFT-s-OFDM PI/2 BPSK	100@0	4.09	13	**PASS**
7	15	20	507000	2535.0	DFT-s-OFDM PI/2 BPSK	1@0	3.76	13	**PASS**
7	15	20	507000	2535.0	DFT-s-OFDM QPSK	100@0	5.09	13	**PASS**
7	15	20	507000	2535.0	DFT-s-OFDM QPSK	1@0	4.41	13	**PASS**

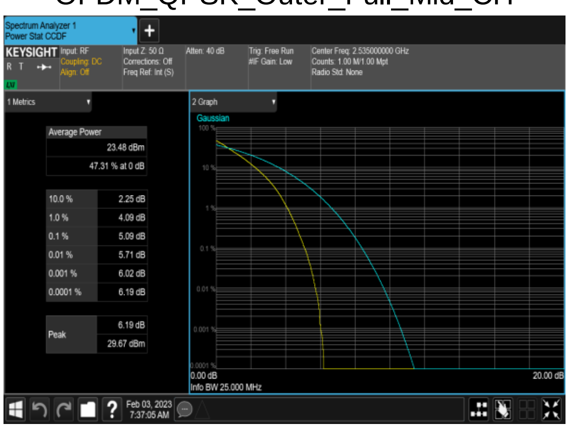
N7(20M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



N7(20M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_Mid_CH



N7(20M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH

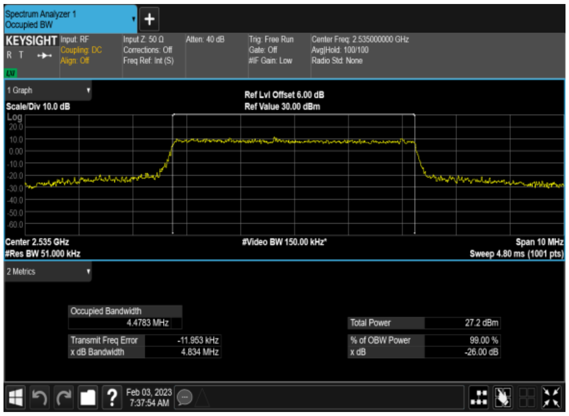


N7(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH

Occupied Bandwidth

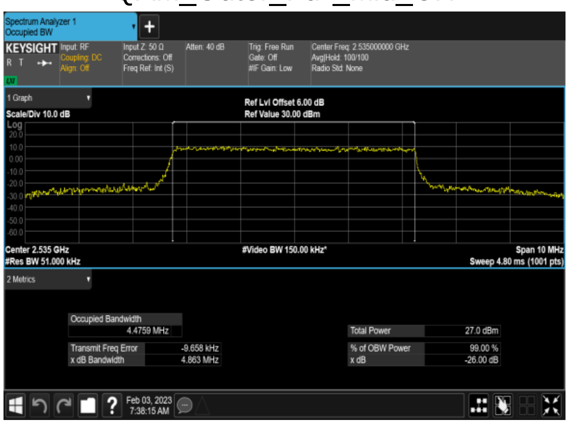
NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	OBW (MHz)	26dB BW (MHz)
7	15	5	507000	2535.0	CP-OFDM QPSK	25@0	4.4783	4.834
7	15	5	507000	2535.0	CP-OFDM 16 QAM	25@0	4.4758	4.867
7	15	5	507000	2535.0	CP-OFDM 64 QAM	25@0	4.4759	4.863
7	15	5	507000	2535.0	CP-OFDM 256 QAM	25@0	4.4729	4.767
7	15	10	507000	2535.0	CP-OFDM QPSK	52@0	9.2812	9.894
7	15	10	507000	2535.0	CP-OFDM 16 QAM	52@0	9.2811	9.822
7	15	10	507000	2535.0	CP-OFDM 64 QAM	52@0	9.2766	9.788
7	15	10	507000	2535.0	CP-OFDM 256 QAM	52@0	9.2774	9.795
7	15	15	507000	2535.0	CP-OFDM QPSK	79@0	14.09	14.68
7	15	15	507000	2535.0	CP-OFDM 16 QAM	79@0	14.072	14.73
7	15	15	507000	2535.0	CP-OFDM 64 QAM	79@0	14.112	14.7
7	15	15	507000	2535.0	CP-OFDM 256 QAM	79@0	14.054	14.67
7	15	20	507000	2535.0	CP-OFDM QPSK	106@0	18.911	19.72
7	15	20	507000	2535.0	CP-OFDM 16 QAM	106@0	18.914	19.76
7	15	20	507000	2535.0	CP-OFDM 64 QAM	106@0	18.898	19.8
7	15	20	507000	2535.0	CP-OFDM 256 QAM	106@0	18.835	19.83

N7(5M)_CP-OFDM_QPSK_Outer_Full_Mid_CH

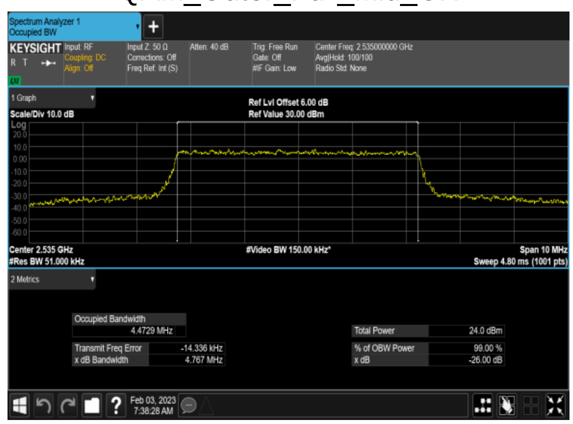


N7(5M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH

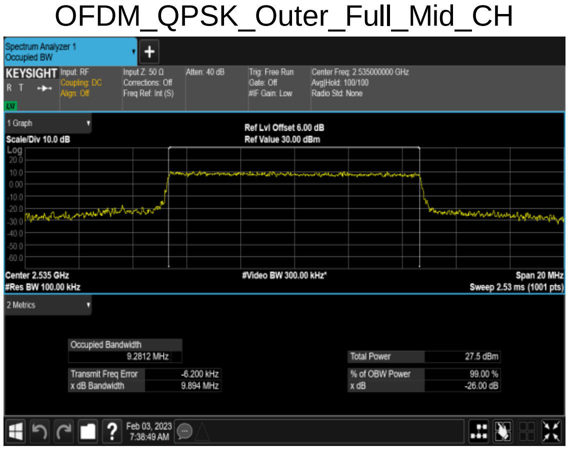
N7(5M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



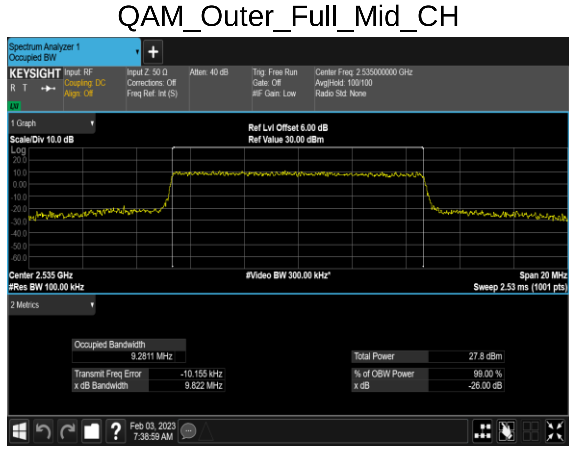
N7(5M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



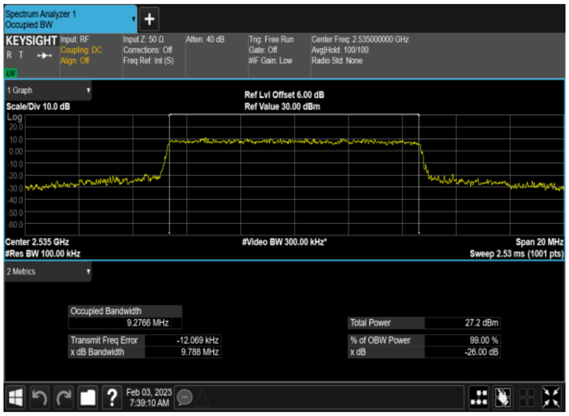
N7(10M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



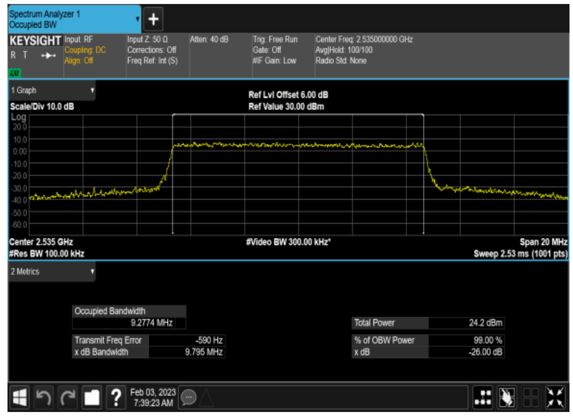
N7(10M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



N7(10M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH

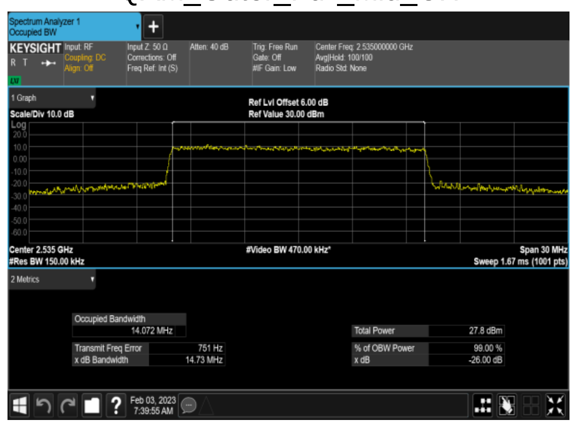


N7(10M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH

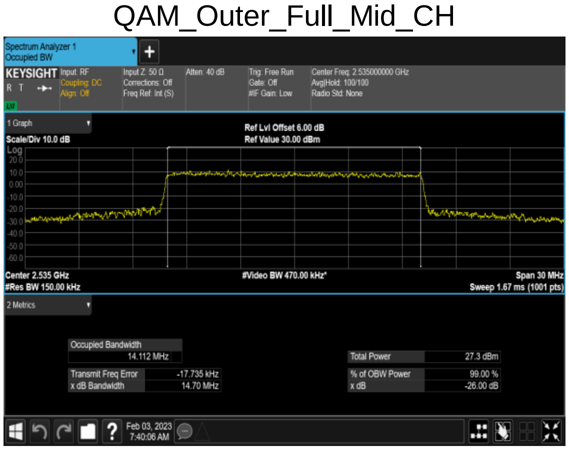


N7(15M)_CP-OFDM_QPSK_Outer_Full_Mid_CH

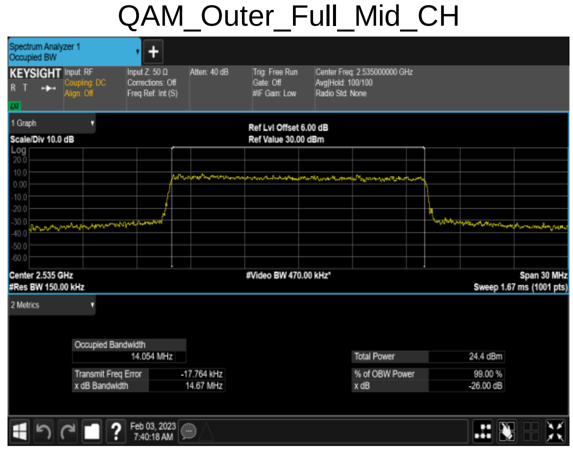
N7(15M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



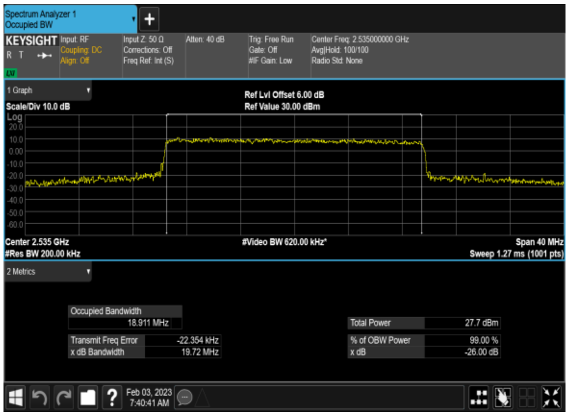
N7(15M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



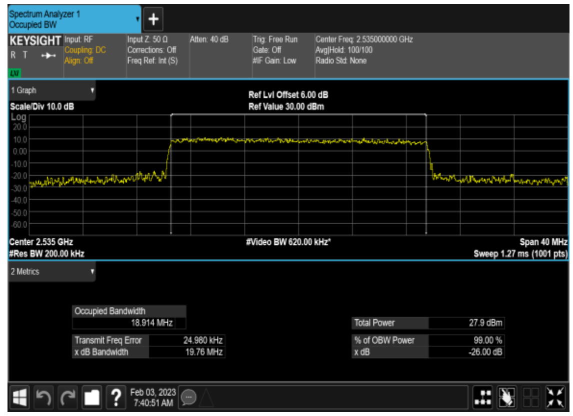
N7(15M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



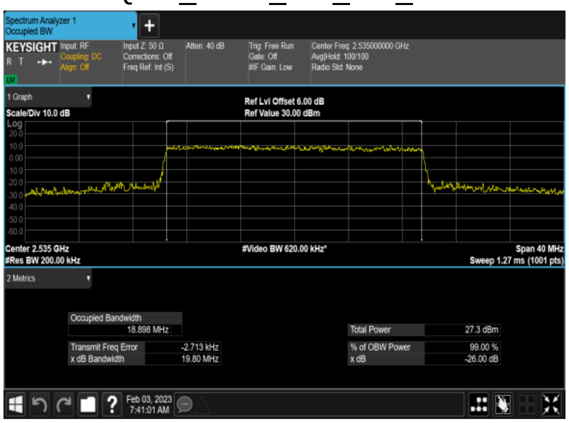
N7(20M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



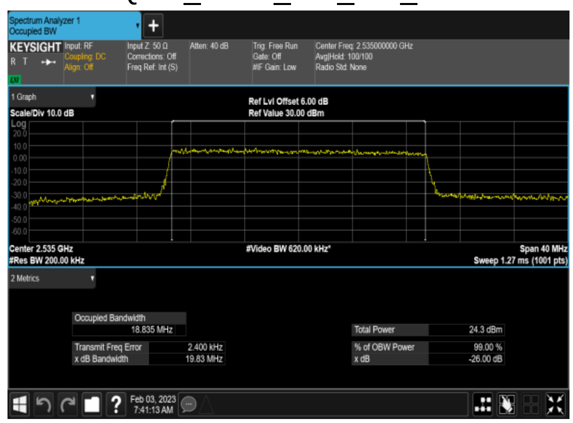
N7(20M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



N7(20M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



N7(20M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



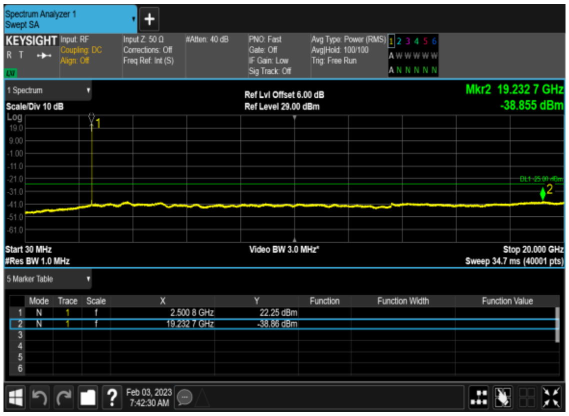
Conducted Spurious Emissions

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result	Verdict
7	15	5	500500	2502.5	DFT-s-OFDM BPSK	1@0	see graph	**---**
7	15	5	500500	2502.5	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
7	15	5	500500	2502.5	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
7	15	5	500500	2502.5	DFT-s-OFDM QPSK	1@0	see graph	**---**
7	15	5	500500	2502.5	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
7	15	5	500500	2502.5	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
7	15	5	507000	2535.0	DFT-s-OFDM BPSK	1@0	see graph	**---**
7	15	5	507000	2535.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
7	15	5	507000	2535.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
7	15	5	507000	2535.0	DFT-s-OFDM QPSK	1@0	see graph	**---**
7	15	5	507000	2535.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
7	15	5	507000	2535.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
7	15	5	513500	2567.5	DFT-s-OFDM BPSK	1@0	see graph	**---**
7	15	5	513500	2567.5	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
7	15	5	513500	2567.5	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
7	15	5	513500	2567.5	DFT-s-OFDM QPSK	1@0	see graph	**---**
7	15	5	513500	2567.5	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
7	15	5	513500	2567.5	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
7	15	15	501500	2507.5	DFT-s-OFDM BPSK	1@0	see graph	**---**
7	15	15	501500	2507.5	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
7	15	15	501500	2507.5	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
7	15	15	501500	2507.5	DFT-s-OFDM QPSK	1@0	see graph	**---**

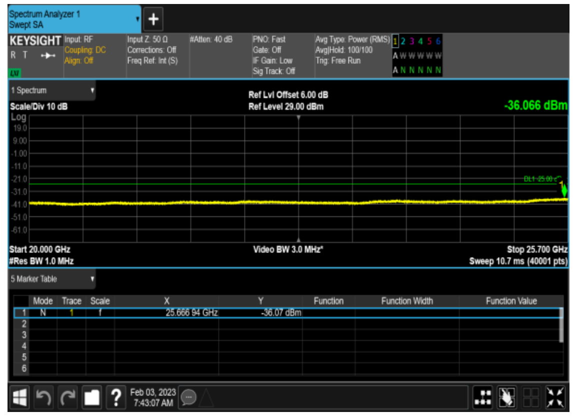
7	15	15	501500	2507.5	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
7	15	15	501500	2507.5	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
7	15	15	507000	2535.0	DFT-s-OFDM BPSK	1@0	see graph	**---**
7	15	15	507000	2535.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
7	15	15	507000	2535.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
7	15	15	507000	2535.0	DFT-s-OFDM QPSK	1@0	see graph	**---**
7	15	15	507000	2535.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
7	15	15	507000	2535.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
7	15	15	512500	2562.5	DFT-s-OFDM BPSK	1@0	see graph	**---**
7	15	15	512500	2562.5	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
7	15	15	512500	2562.5	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
7	15	15	512500	2562.5	DFT-s-OFDM QPSK	1@0	see graph	**---**
7	15	15	512500	2562.5	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
7	15	15	512500	2562.5	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
7	15	20	502000	2510.0	DFT-s-OFDM BPSK	1@0	see graph	**---**
7	15	20	502000	2510.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
7	15	20	502000	2510.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
7	15	20	502000	2510.0	DFT-s-OFDM QPSK	1@0	see graph	**---**
7	15	20	502000	2510.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
7	15	20	502000	2510.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
7	15	20	507000	2535.0	DFT-s-OFDM BPSK	1@0	see graph	**---**
7	15	20	507000	2535.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
7	15	20	507000	2535.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
7	15	20	507000	2535.0	DFT-s-OFDM QPSK	1@0	see graph	**---**

7	15	20	507000	2535.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
7	15	20	507000	2535.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
7	15	20	512000	2560.0	DFT-s-OFDM BPSK	1@0	see graph	**---**
7	15	20	512000	2560.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
7	15	20	512000	2560.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
7	15	20	512000	2560.0	DFT-s-OFDM QPSK	1@0	see graph	**---**
7	15	20	512000	2560.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
7	15	20	512000	2560.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**

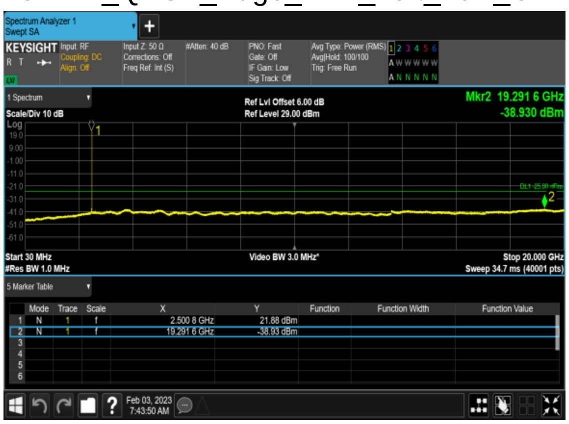
N7(5M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



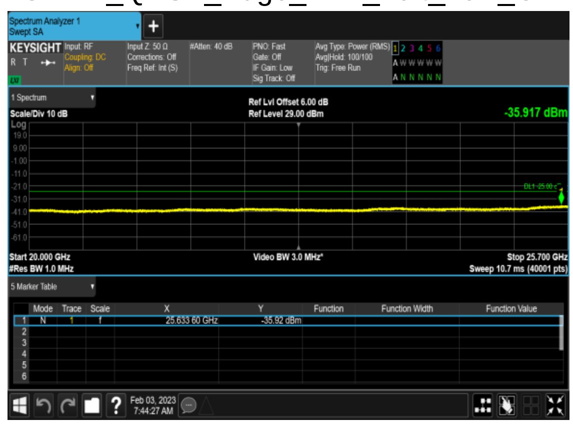
N7(5M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



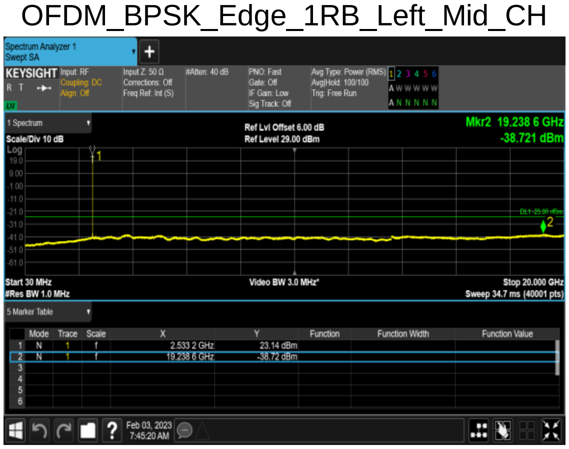
N7(5M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



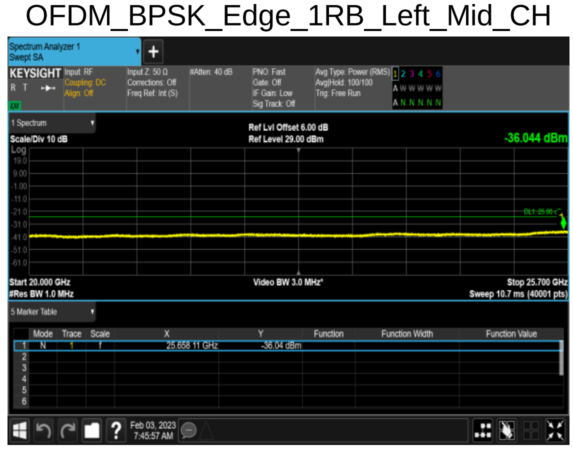
N7(5M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



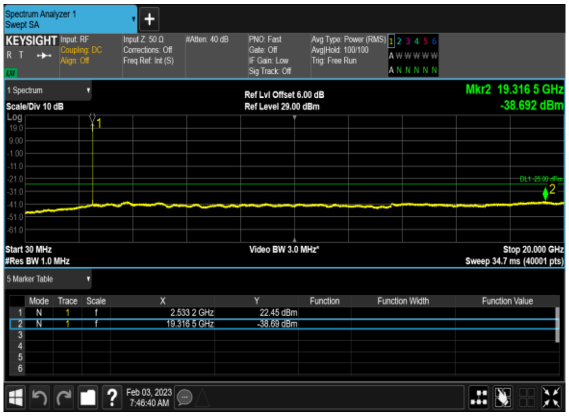
N7(5M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



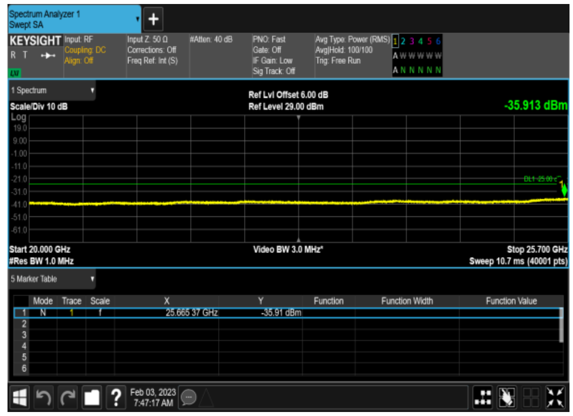
N7(5M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



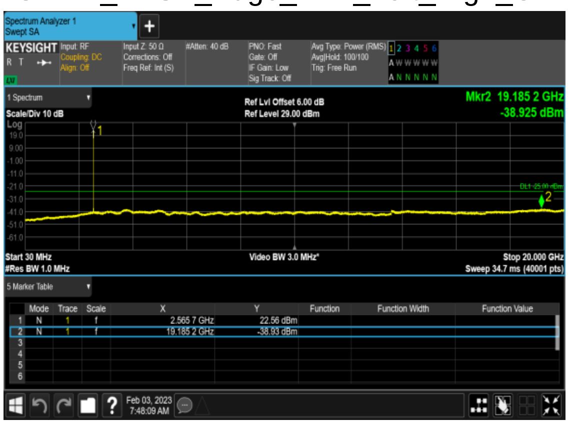
N7(5M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



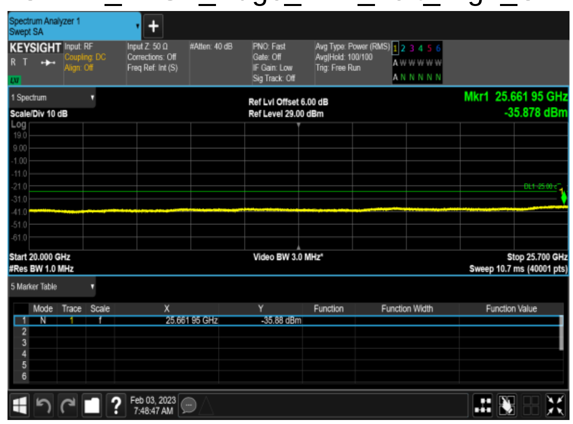
N7(5M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



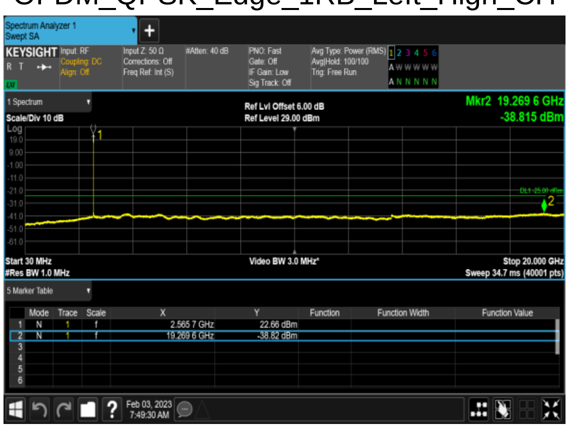
N7(5M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



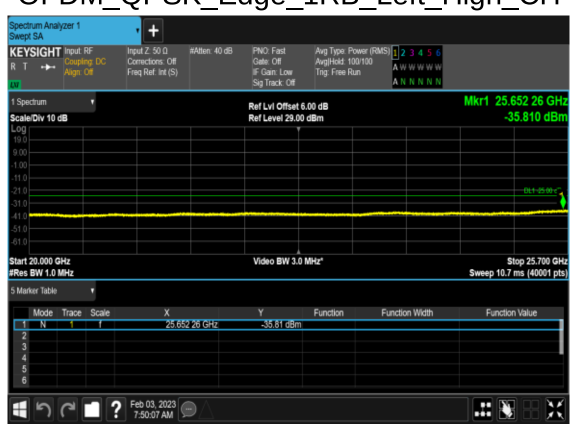
N7(5M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



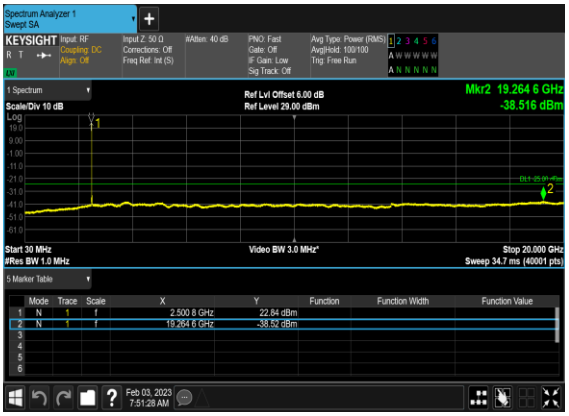
N7(5M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



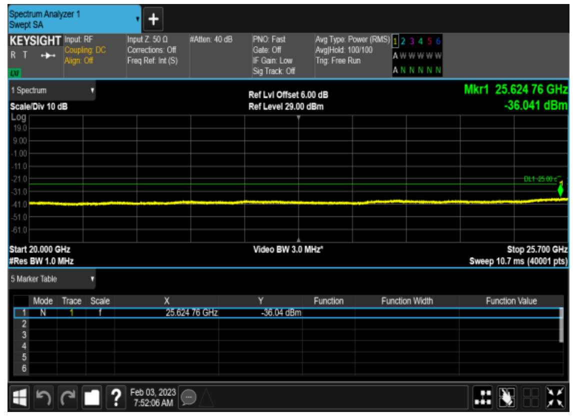
N7(5M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



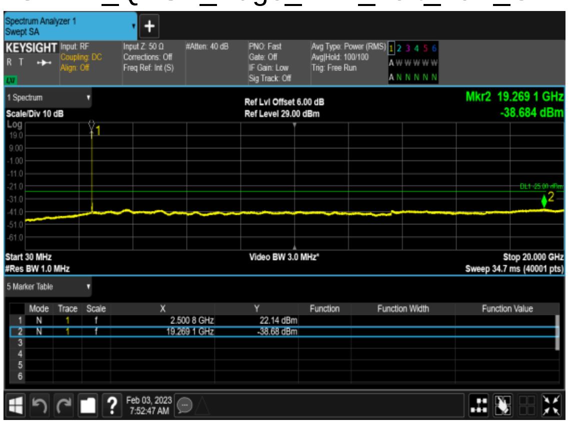
N7(15M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



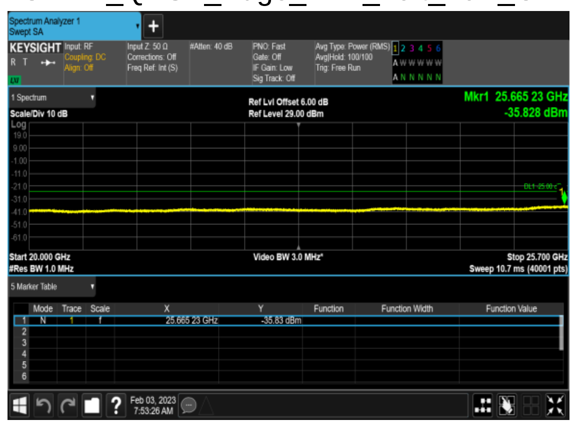
N7(15M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



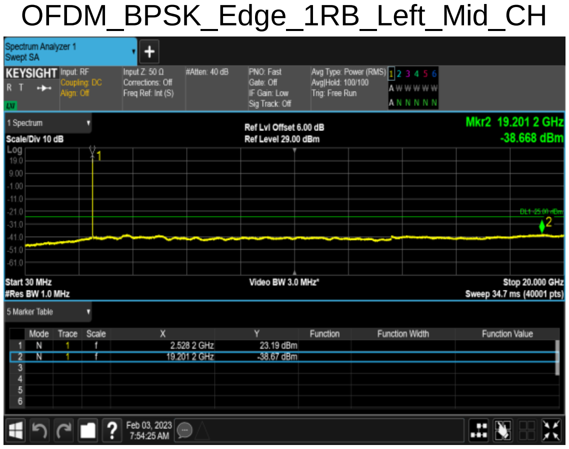
N7(15M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



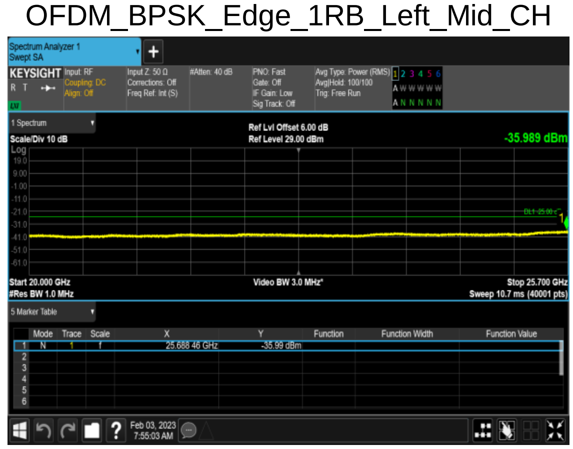
N7(15M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



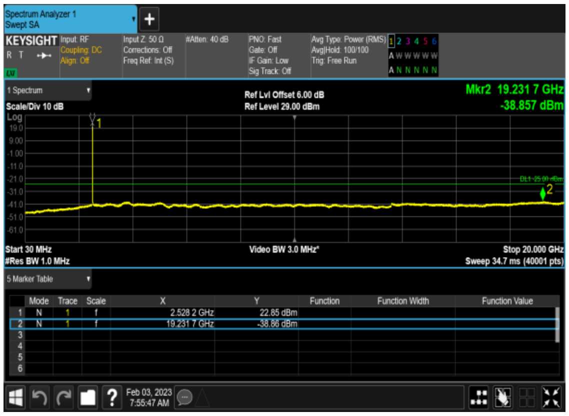
N7(15M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



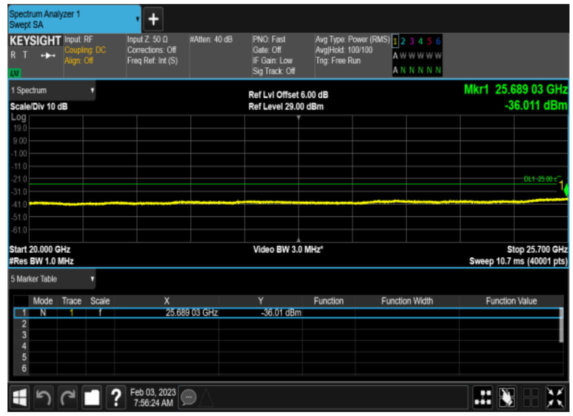
N7(15M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



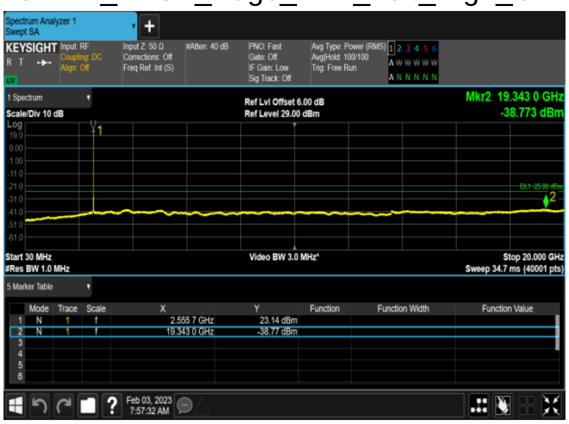
N7(15M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



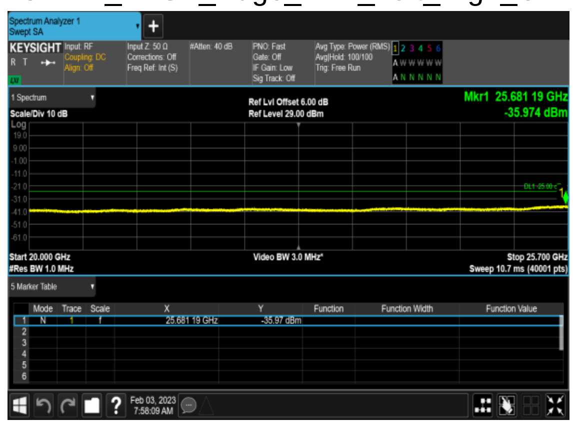
N7(15M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



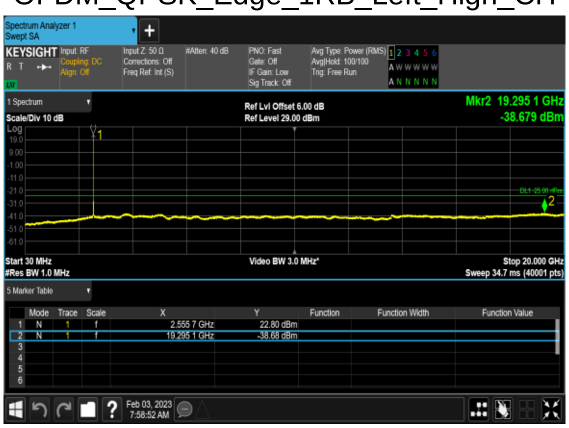
N7(15M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



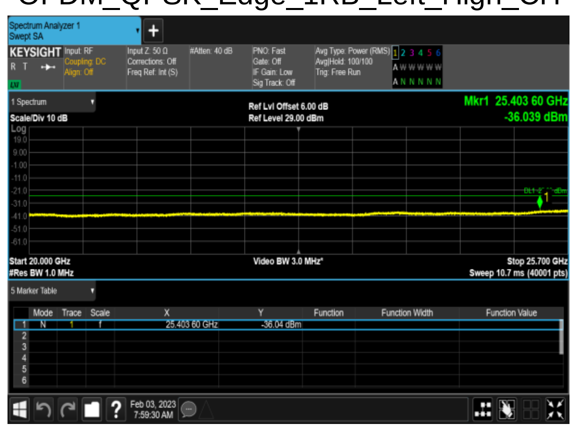
N7(15M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



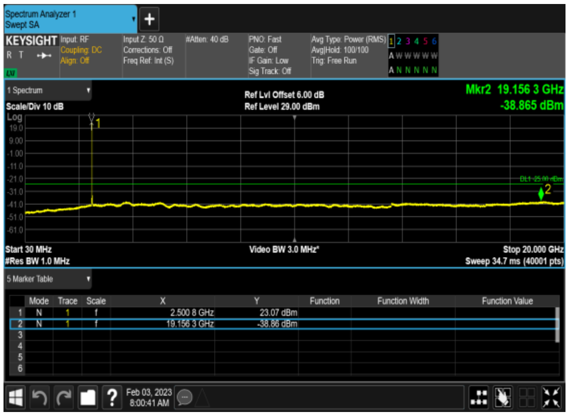
N7(15M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



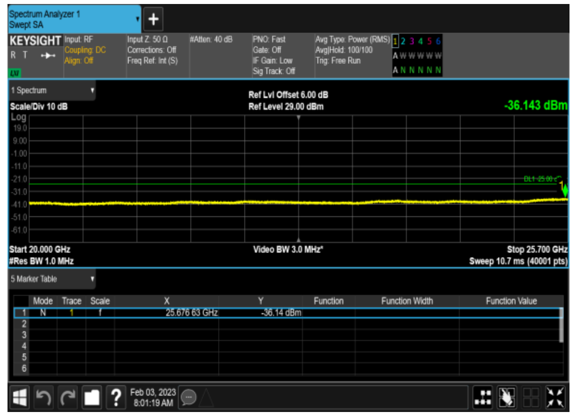
N7(15M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



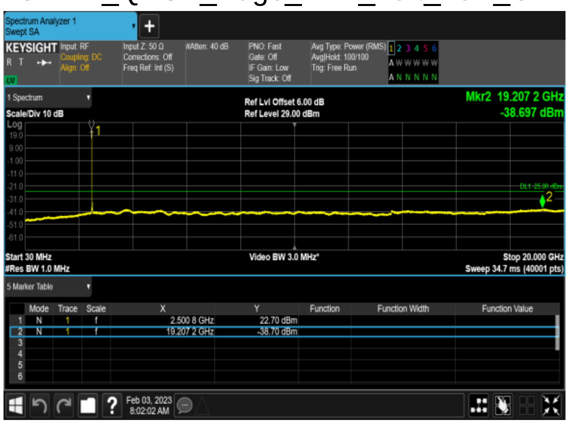
N7(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



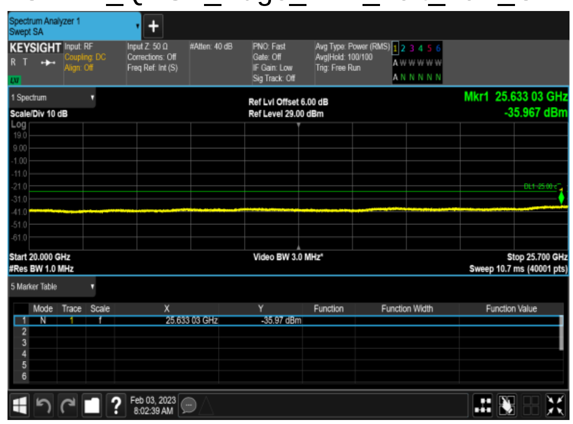
N7(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



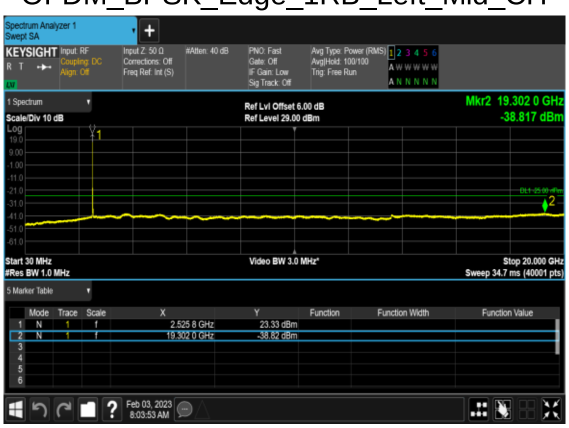
N7(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



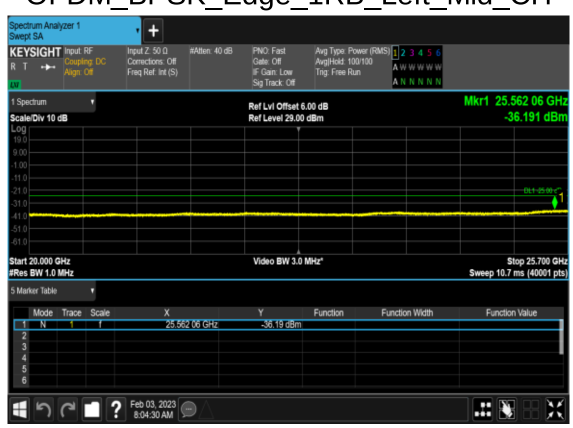
N7(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



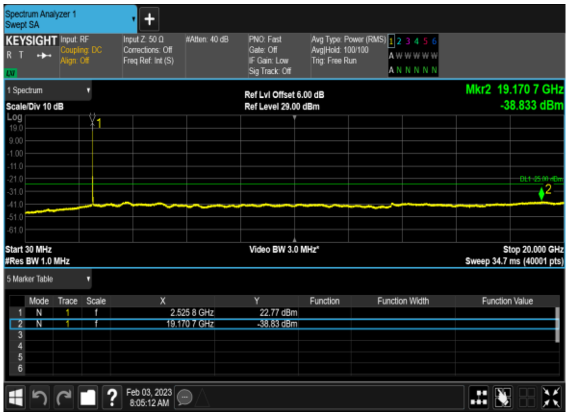
N7(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



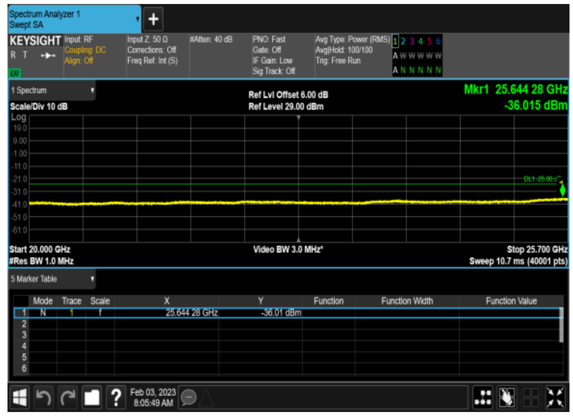
N7(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



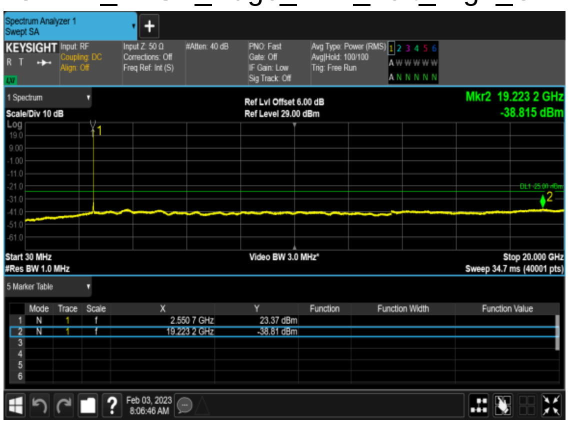
N7(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



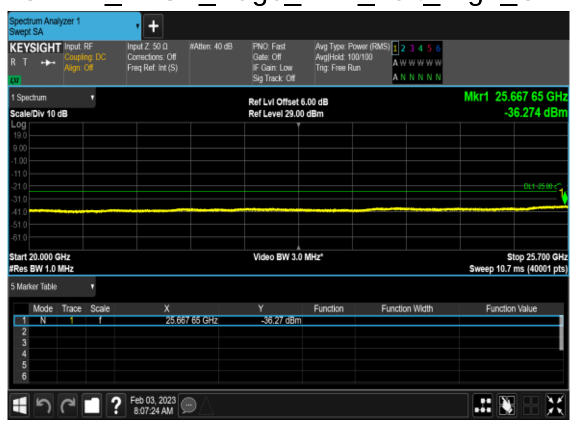
N7(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



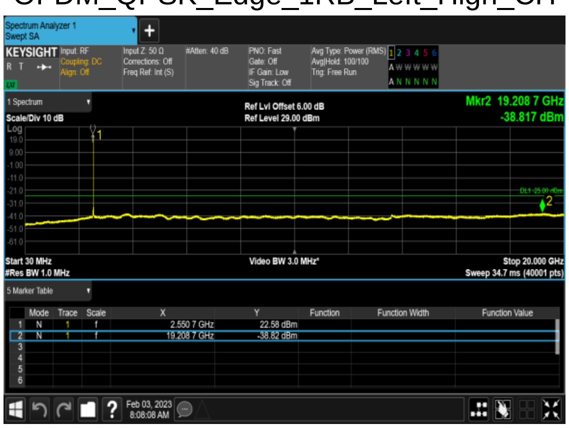
N7(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



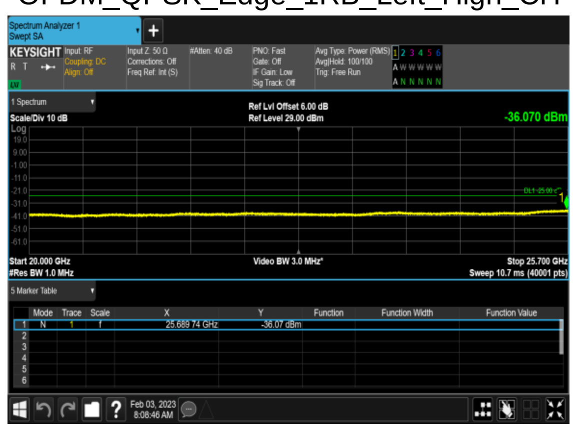
N7(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



N7(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



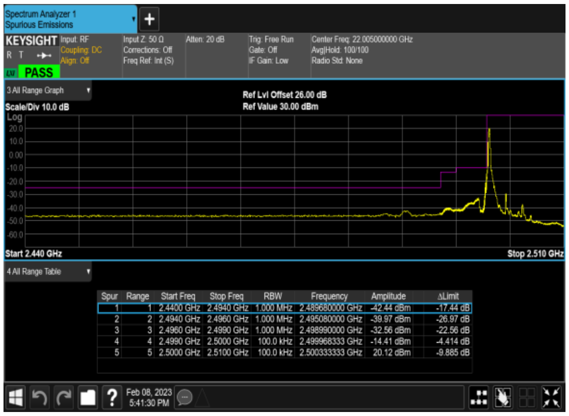
N7(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



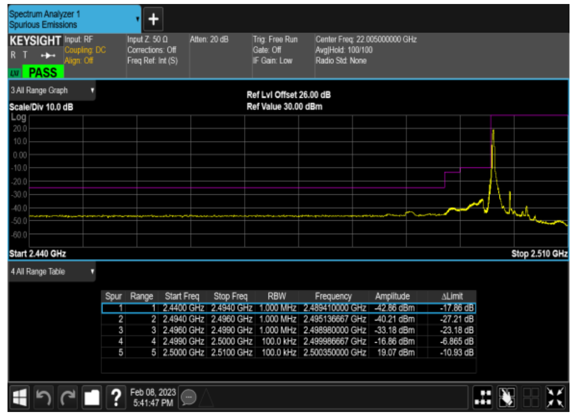
Conducted Band Edge

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result	Verdict
7	15	5	500500	2502.5	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
7	15	5	500500	2502.5	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
7	15	5	500500	2502.5	DFT-s-OFDM BPSK	25@0	see graph	**PASS**
7	15	5	500500	2502.5	DFT-s-OFDM QPSK	25@0	see graph	**PASS**
7	15	5	513500	2567.5	DFT-s-OFDM BPSK	1@24	see graph	**PASS**
7	15	5	513500	2567.5	DFT-s-OFDM QPSK	1@24	see graph	**PASS**
7	15	5	513500	2567.5	DFT-s-OFDM BPSK	25@0	see graph	**PASS**
7	15	5	513500	2567.5	DFT-s-OFDM QPSK	25@0	see graph	**PASS**
7	15	15	501500	2507.5	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
7	15	15	501500	2507.5	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
7	15	15	501500	2507.5	DFT-s-OFDM BPSK	75@0	see graph	**PASS**
7	15	15	501500	2507.5	DFT-s-OFDM QPSK	75@0	see graph	**PASS**
7	15	15	512500	2562.5	DFT-s-OFDM BPSK	1@78	see graph	**PASS**
7	15	15	512500	2562.5	DFT-s-OFDM QPSK	1@78	see graph	**PASS**
7	15	15	512500	2562.5	DFT-s-OFDM BPSK	75@0	see graph	**PASS**
7	15	15	512500	2562.5	DFT-s-OFDM QPSK	75@0	see graph	**PASS**
7	15	20	502000	2510.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
7	15	20	502000	2510.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
7	15	20	502000	2510.0	DFT-s-OFDM BPSK	100@0	see graph	**PASS**
7	15	20	502000	2510.0	DFT-s-OFDM QPSK	100@0	see graph	**PASS**
7	15	20	512000	2560.0	DFT-s-OFDM BPSK	1@105	see graph	**PASS**
7	15	20	512000	2560.0	DFT-s-OFDM QPSK	1@105	see graph	**PASS**
7	15	20	512000	2560.0	DFT-s-OFDM BPSK	100@0	see graph	**PASS**
7	15	20	512000	2560.0	DFT-s-OFDM QPSK	100@0	see graph	**PASS**

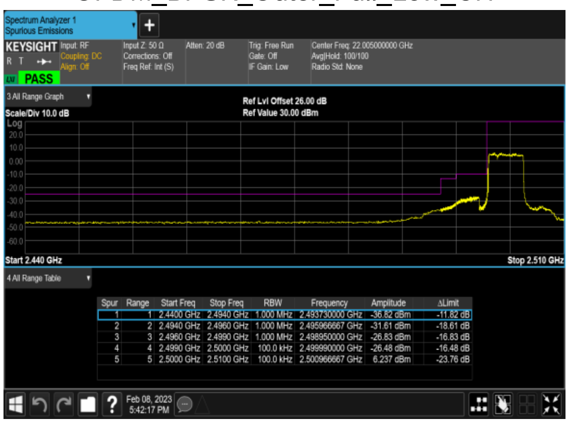
N7(5M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



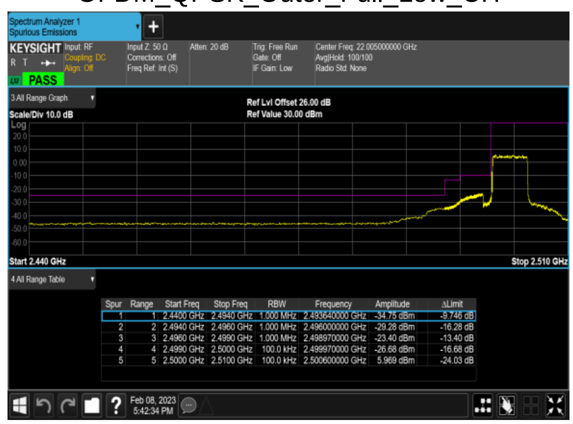
N7(5M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



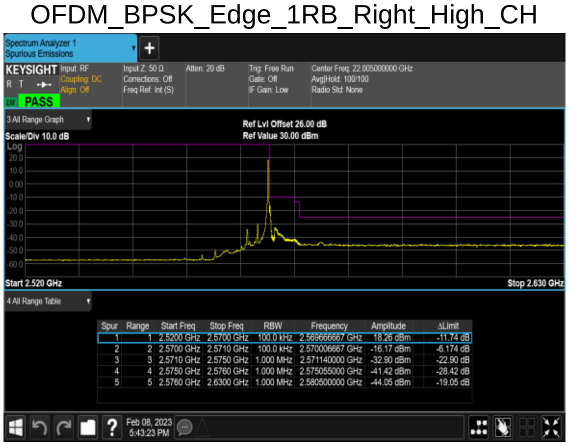
N7(5M)_DFT-s-OFDM_BPSK_Outer_Full_Low_CH



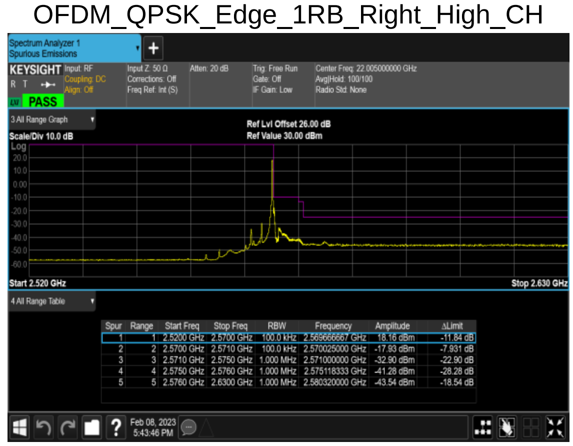
N7(5M)_DFT-s-OFDM_QPSK_Outer_Full_Low_CH



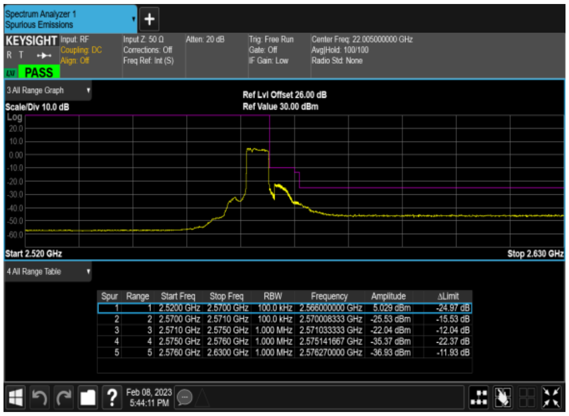
N7(5M)_DFT-s-OFDM_BPSK_Edge_1RB_Right_High_CH



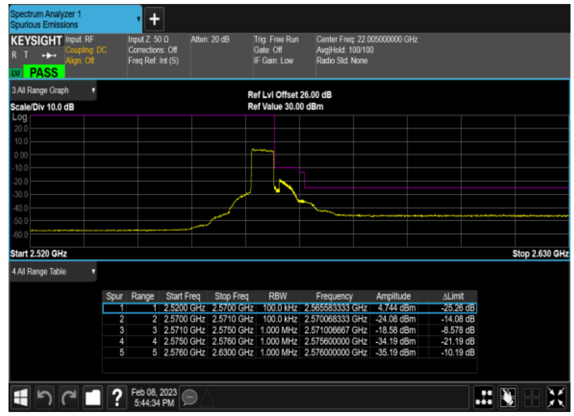
N7(5M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_High_CH



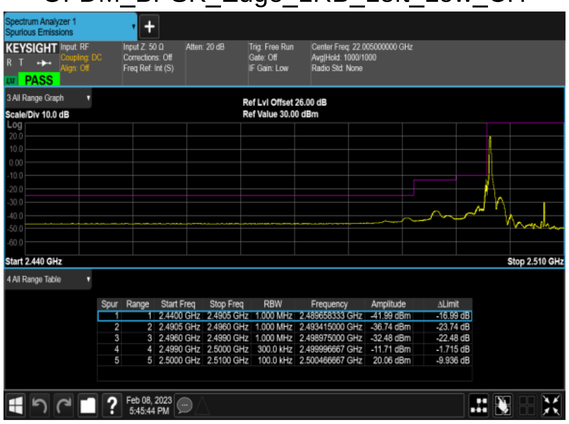
N7(5M)_DFT-s-OFDM_BPSK_Outer_Full_High_CH



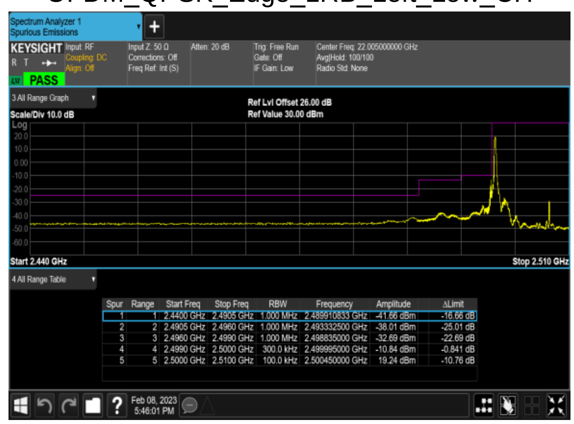
N7(5M)_DFT-s-OFDM_QPSK_Outer_Full_High_CH



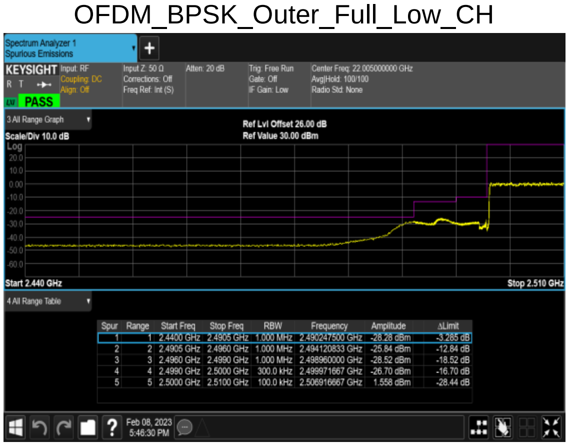
N7(15M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



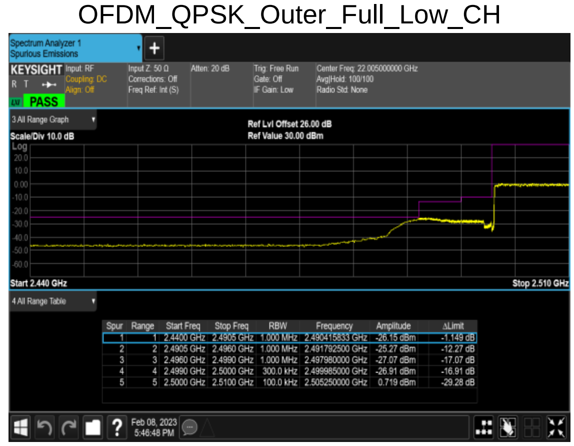
N7(15M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



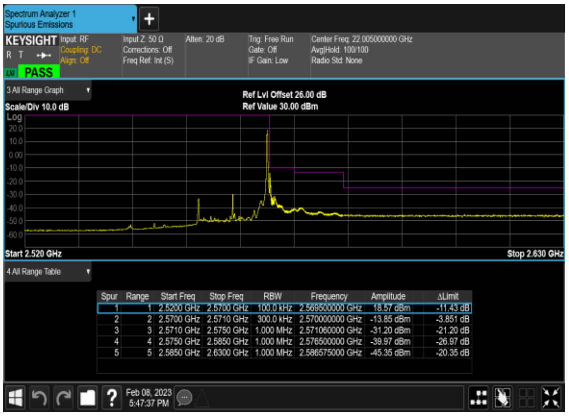
N7(15M)_DFT-s-OFDM_BPSK_Outer_Full_Low_CH



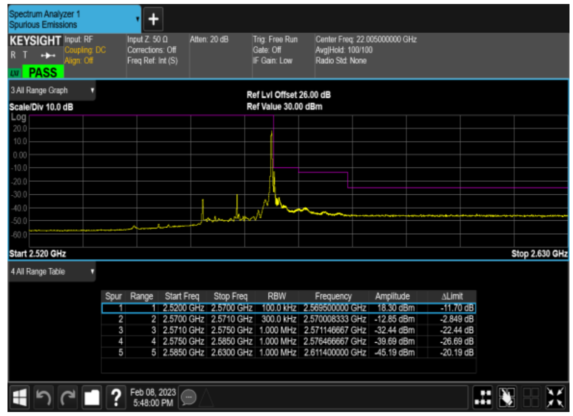
N7(15M)_DFT-s-OFDM_QPSK_Outer_Full_Low_CH



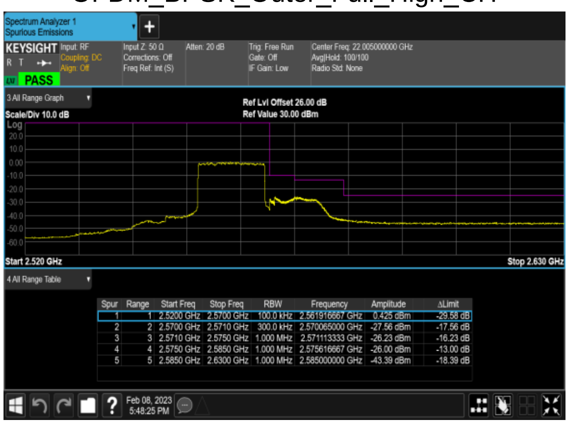
N7(15M)_DFT-s-OFDM_BPSK_Edge_1RB_Right_High_CH



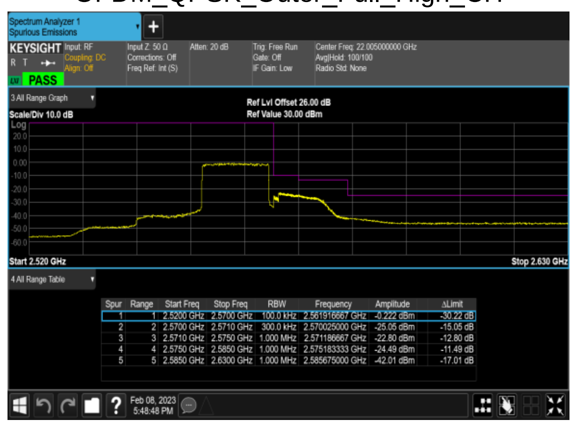
N7(15M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_High_CH



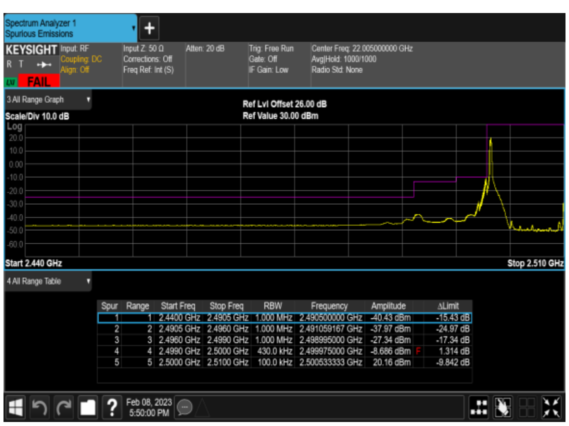
N7(15M)_DFT-s-OFDM_BPSK_Outer_Full_High_CH



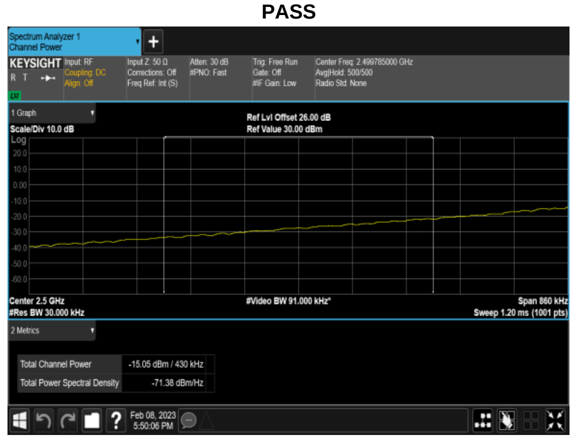
N7(15M)_DFT-s-OFDM_QPSK_Outer_Full_High_CH



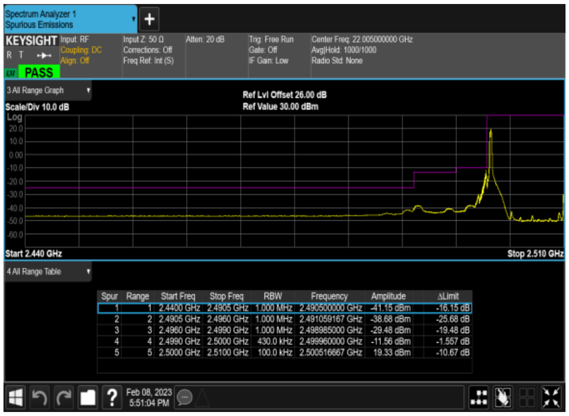
N7(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



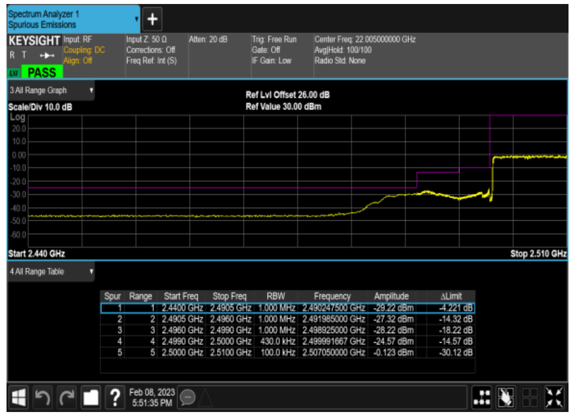
N7(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH**_CHP_ PASS**



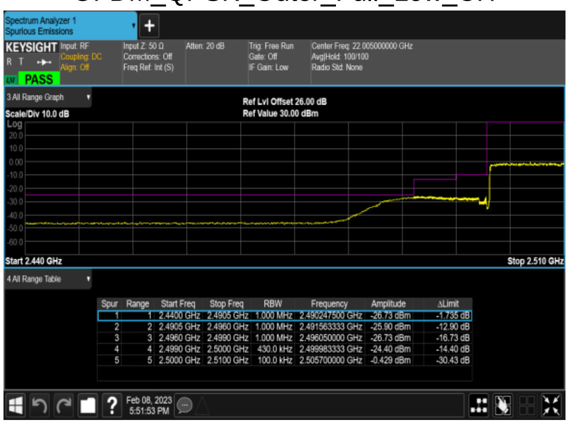
N7(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



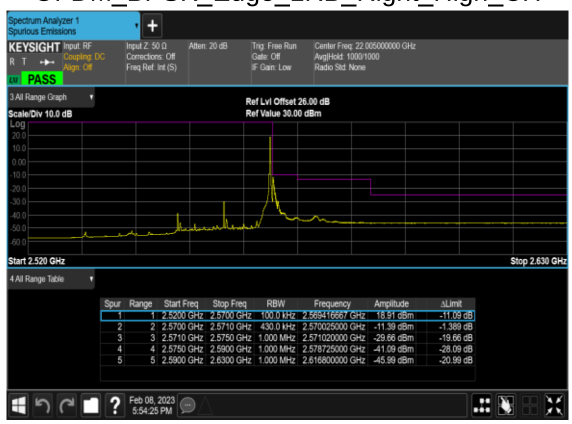
N7(20M)_DFT-s-OFDM_BPSK_Outer_Full_Low_CH



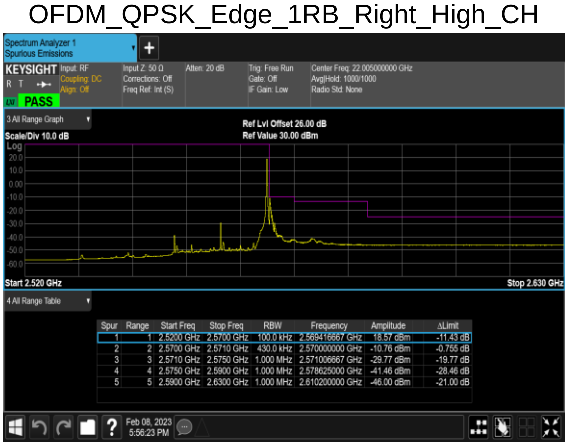
N7(20M)_DFT-s-OFDM_QPSK_Outer_Full_Low_CH



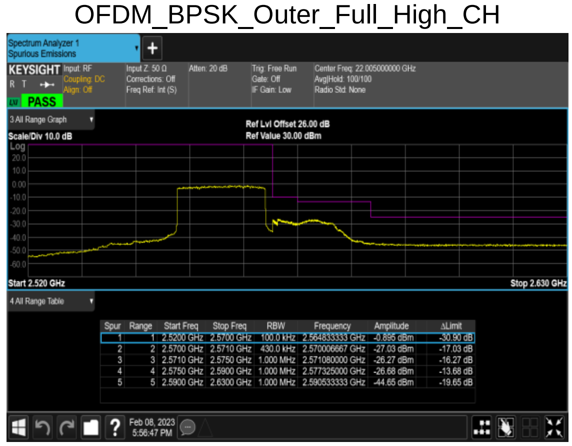
N7(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Right_High_CH



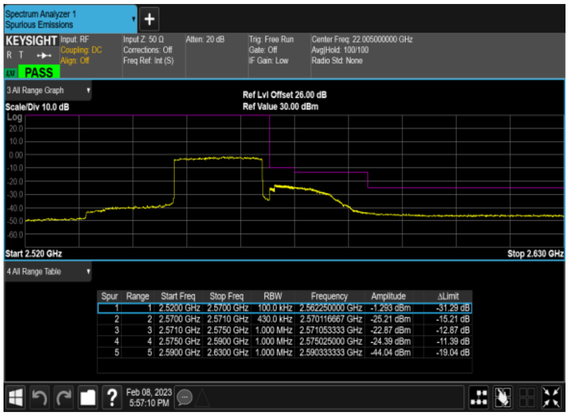
N7(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_High_CH



N7(20M)_DFT-s-OFDM_BPSK_Outer_Full_High_CH



N7(20M)_DFT-s-OFDM_QPSK_Outer_Full_High_CH



Software Version: 23.02.011001

FR1 NSA_N7 (Other PA)

LTE Band: 5, LTE BW: 10M, LTE ARFCN: Mid

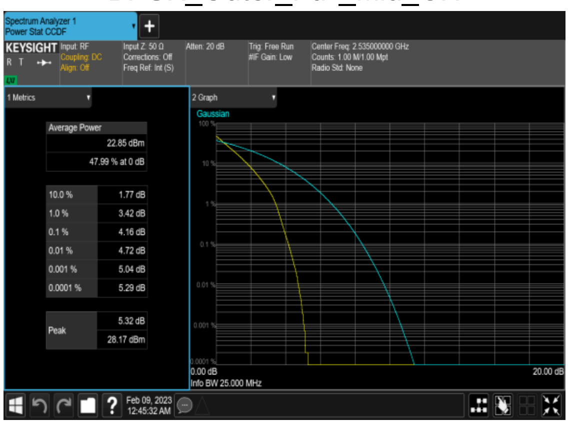
Frequency Stability

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Deviation (ppm)	Verdict	Environment
7	15	20	507000	2535.0	DFT-s-OFDM QPSK	100@0	0.0000	**PASS**	NV
7	15	20	507000	2535.0	DFT-s-OFDM QPSK	100@0	0.0008	**PASS**	LV
7	15	20	507000	2535.0	DFT-s-OFDM QPSK	100@0	0.0017	**PASS**	HV
7	15	20	507000	2535.0	DFT-s-OFDM QPSK	100@0	0.0024	**PASS**	-30℃
7	15	20	507000	2535.0	DFT-s-OFDM QPSK	100@0	0.0004	**PASS**	-20℃
7	15	20	507000	2535.0	DFT-s-OFDM QPSK	100@0	0.0014	**PASS**	-10℃
7	15	20	507000	2535.0	DFT-s-OFDM QPSK	100@0	0.0006	**PASS**	0℃
7	15	20	507000	2535.0	DFT-s-OFDM QPSK	100@0	0.0015	**PASS**	10℃
7	15	20	507000	2535.0	DFT-s-OFDM QPSK	100@0	0.0000	**PASS**	20℃
7	15	20	507000	2535.0	DFT-s-OFDM QPSK	100@0	0.0003	**PASS**	30℃
7	15	20	507000	2535.0	DFT-s-OFDM QPSK	100@0	0.0024	**PASS**	40℃
7	15	20	507000	2535.0	DFT-s-OFDM QPSK	100@0	0.0026	**PASS**	50℃

Peak to Average Ratio

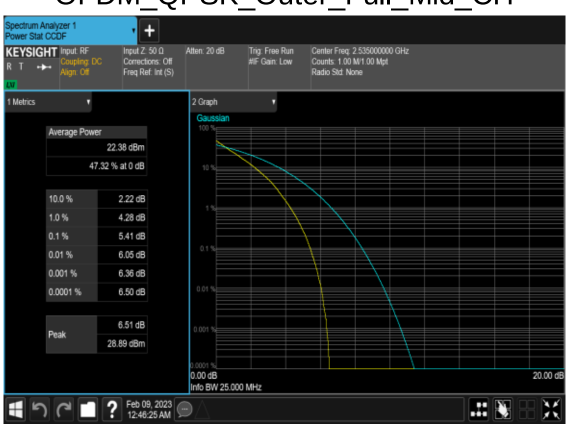
NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result (dB)	Limit (dB)	Verdict
7	15	20	507000	2535.0	DFT-s-OFDM PI/2 BPSK	100@0	4.16	13	**PASS**
7	15	20	507000	2535.0	DFT-s-OFDM PI/2 BPSK	1@0	3.64	13	**PASS**
7	15	20	507000	2535.0	DFT-s-OFDM QPSK	100@0	5.41	13	**PASS**
7	15	20	507000	2535.0	DFT-s-OFDM QPSK	1@0	5.14	13	**PASS**

B5_N7(20M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



B5_N7(20M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_Mid_CH

B5_N7(20M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH

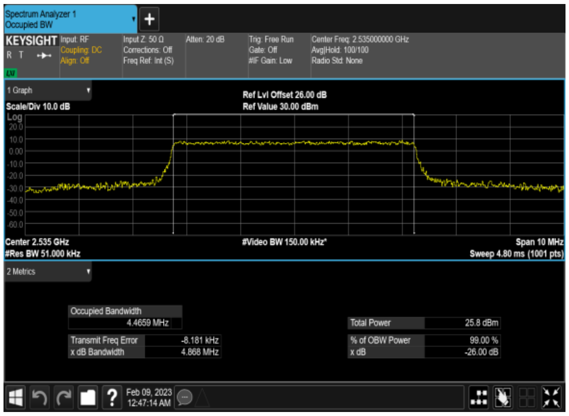


B5_N7(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH

Occupied Bandwidth

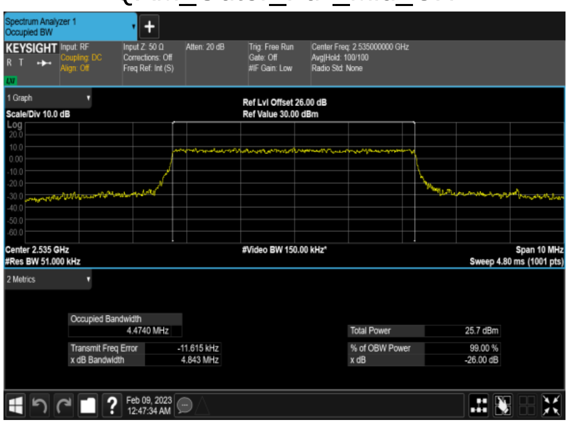
NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	OBW (MHz)	26dB BW (MHz)
7	15	5	507000	2535.0	CP-OFDM QPSK	25@0	4.4659	4.868
7	15	5	507000	2535.0	CP-OFDM 16 QAM	25@0	4.4697	4.832
7	15	5	507000	2535.0	CP-OFDM 64 QAM	25@0	4.474	4.843
7	15	5	507000	2535.0	CP-OFDM 256 QAM	25@0	4.4545	4.847
7	15	15	507000	2535.0	CP-OFDM QPSK	79@0	14.094	14.73
7	15	15	507000	2535.0	CP-OFDM 16 QAM	79@0	14.056	14.74
7	15	15	507000	2535.0	CP-OFDM 64 QAM	79@0	14.098	14.77
7	15	15	507000	2535.0	CP-OFDM 256 QAM	79@0	14.086	14.74
7	15	20	507000	2535.0	CP-OFDM QPSK	106@0	18.908	19.72
7	15	20	507000	2535.0	CP-OFDM 16 QAM	106@0	18.898	19.73
7	15	20	507000	2535.0	CP-OFDM 64 QAM	106@0	18.867	19.76
7	15	20	507000	2535.0	CP-OFDM 256 QAM	106@0	18.915	19.77
7	15	10	507000	2535.0	CP-OFDM QPSK	52@0	9.272	9.786
7	15	10	507000	2535.0	CP-OFDM 16 QAM	52@0	9.3001	9.824
7	15	10	507000	2535.0	CP-OFDM 64 QAM	52@0	9.2482	9.736
7	15	10	507000	2535.0	CP-OFDM 256 QAM	52@0	9.288	9.842

B5_N7(5M)_CP-OFDM_QPSK_Outer_Full_Mid_CH

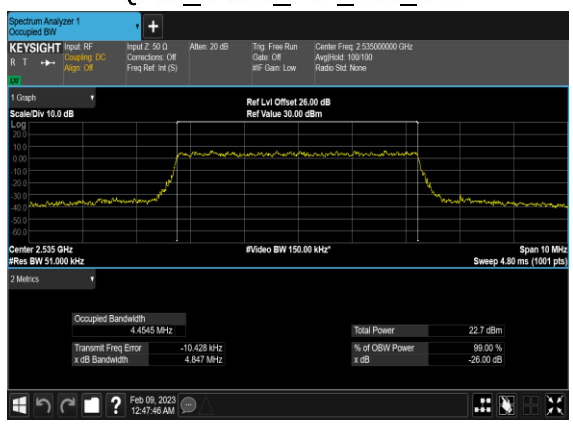


B5_N7(5M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH

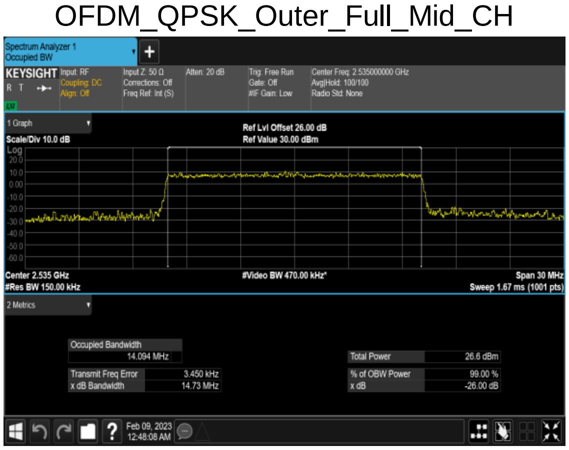
B5_N7(5M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



B5_N7(5M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



B5_N7(15M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



B5_N7(15M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH