FCC RF Test Report

APPLICANT	:	Motorola Mobility LLC
EQUIPMENT	:	Mobile Cellular Phone
BRAND NAME	:	Motorola
MODEL NAME	:	XT2431-2, XT2431-3
FCC ID	:	IHDT56AM6
STANDARD	:	47 CFR Part 2, 27
CLASSIFICATION	:	PCS Licensed Transmitter Held to Ear (PCE)
TEST DATE(S)	:	Nov. 30, 2023 ~ Dec. 20, 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.

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)
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
FG352916-13C	Rev. 01	Initial issue of report	Dec. 29, 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 n41)	EIRP < 2Watt		
	§27.50(j)(3)	Equivalent Isotropic Radiated Power (5G NR n77, n78)	EIRP < 1Watt		
3.5	§24.232(d) §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(l)(2)	Conducted Band Edge Measurement (5G NR n77, n78)	< 43+10log10(P[Watts])	PASS	-
	§27.53(m)(4)	Conducted Band Edge Measurement (5G NR n41)	§27.53(m)(4)		
3.8	§2.1051 §27.53(l)(2)	Conducted Spurious Emission (5G NR n77, n78)	< 43+10log10(P[Watts])	PASS	-
	§2.1051 §27.53(m)(4)	Conducted Spurious Emission (5G NR n41)	< 55+10log$_{10}$(P[Watts])		
3.9	§24.235 §27.54	Frequency Stability Temperature & Voltage	Within Authorized Band	PASS	-
4.4	§2.1053 §27.53(l)(2)	Radiated Spurious Emission (5G NR n77, n78)	< 43+10log$_{10}$(P[Watts])	PASS	Under limit 22.21 dB at 10174.00 MHz
	§2.1053 §27.53(m)(4)	Radiated Spurious Emission (5G NR n41)	< 55+10log$_{10}$(P[Watts])		

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

Motorola Mobility LLC
222 W,Merchandise Mart Plaza, Chicago IL 60654 USA

1.2 Manufacturer

Motorola Mobility LLC
222 W,Merchandise Mart Plaza, Chicago IL 60654 USA

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT2431-2, XT2431-3
FCC ID	IHDT56AM6
IMEI Code	Conducted : 355221240002058 Radiation : 355221240002157
HW Version	DVT
SW Version	U1TD34.37
EUT Stage	Identical Prototype

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	5G NR n41: 2496 MHz ~ 2690 MHz 5G NR n77: 3700 MHz ~ 3980 MHz 5G NR n78: 3700 MHz ~ 3800 MHz
Rx Frequency	5G NR n41: 2496 MHz ~ 2690 MHz 5G NR n77: 3700 MHz ~ 3980 MHz 5G NR n78: 3700 MHz ~ 3800 MHz
Bandwidth	**For SCS 15kHz:** n41, n77, n78: 10MHz / 15MHz / 20MHz / 30MHz / 40MHz / 50MHz **For SCS 30kHz:** n41, n77, n78: 10MHz / 15MHz / 20MHz / 30MHz / 40MHz / 50MHz / 60MHz / 70MHz / 80MHz / 90MHz / 100MHz
SCS	15kHz, 30kHz
Antenna Gain	**<Ant. 1>:** n77/78: -3.70dBi **<Ant. 2>:** n77/78: -3.50dBi **<Ant. 4>:** n41: -4.24dBi **<Ant. 5>:** n77/78: -3.71dBi **<Ant. 7>:** n77/78: -5.60dBi
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 are shown in the report, 5G NR n41 for Ant. 4 and n78 for Ant. 5.
2. 5G NR n77/78 support SA mode and NSA mode. According to the maximum power between SA and NSA mode, SA covers NSA mode.
3. 5G NR n77/78 supported ENDC combinations are verified conducted power, only the ENDC combination with highest power are shown in the report.
4. The EN-DC mode combination could be referred to the product spec.
5. 5G NR n41 support SA mode only.

1.5 Modification of EUT

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

1.6 Maximum EIRP and Emission Designator

5G NR n41 – SCS 15k		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)**
10	2501.01 ~ 2685.00	0.0736	9M28G7D	0.0592	9M29W7D
15	2503.50 ~ 2682.495	0.0741	14M1G7D	0.0601	14M1W7D
20	2506.005 ~ 2679.99	0.0740	18M9G7D	0.0596	19M0W7D
30	2511.00 ~ 2674.995	0.0692	28M5G7D	0.0552	28M6W7D
40	2516.01 ~ 2670.00	0.0659	38M6G7D	0.0524	38M6W7D
50	2521.005 ~ 2664.99	0.0778	48M1G7D	0.0614	48M2W7D
5G NR n41 – SCS 30k		**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)**
10	2501.01 ~ 2685.00	0.0753	8M57G7D	0.0574	8M58W7D
15	2503.50 ~ 2682.48	0.0748	13M6G7D	0.0578	13M6W7D
20	2506.02 ~ 2679.99	0.0740	18M2G7D	0.0558	18M3W7D
30	2511.00 ~ 2674.98	0.0701	27M8G7D	0.0540	27M9W7D
40	2516.01 ~ 2670.00	0.0676	37M8G7D	0.0506	37M9W7D
50	2521.02 ~ 2664.99	0.0697	47M4G7D	0.0537	47M5W7D
60	2526.00 ~ 2659.98	0.0693	57M8G7D	0.0514	57M9W7D
70	2531.01 ~ 2655.00	0.0695	67M6G7D	0.0535	67M4W7D
80	2536.02 ~ 2649.99	0.0664	77M3G7D	0.0508	77M7W7D
90	2541.00 ~ 2644.98	0.0635	87M5G7D	0.0483	87M3W7D
100	2546.01 ~ 2640.00	0.0776	97M0G7D	0.0617	97M3W7D

5G NR n77 – SCS 15k		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)
10	3705.000 ~ 3975.000	0.0813	9M28G7D	0.0656	9M28W7D
15	3705.505 ~ 3972.495	0.0815	14M1G7D	0.0655	14M1W7D
20	3710.010 ~ 3969.990	0.0811	18M9G7D	0.0670	18M9W7D
30	3715.005 ~ 3964.980	0.0780	28M6G7D	0.0631	28M5W7D
40	3720.000 ~ 3960.000	0.0736	38M6G7D	0.0607	38M6W7D
50	3725.010 ~ 3954.990	0.0817	48M1G7D	0.0647	48M3W7D
5G NR n77 - SCS 30k		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)
10	3705.00 ~ 3975.00	0.0811	8M57G7D	0.0658	8M58W7D
15	3707.52 ~ 3972.48	0.0783	13M6G7D	0.0637	13M6W7D
20	3710.01 ~ 3969.99	0.0783	18M1G7D	0.0635	18M2W7D
30	3715.02 ~ 3964.98	0.0760	27M9G7D	0.0608	27M8W7D
40	3720.00 ~ 3960.00	0.0723	37M7G7D	0.0589	37M8W7D
50	3725.01 ~ 3954.99	0.0764	47M4G7D	0.0621	47M5W7D
60	3730.02 ~ 3949.98	0.0741	57M6G7D	0.0601	57M8W7D
70	3735.00 ~ 3945.00	0.0611	67M5G7D	0.0579	67M6W7D
80	3740.01 ~ 3939.99	0.0675	77M4G7D	0.0557	77M5W7D
90	3745.02 ~ 3934.98	0.0643	87M4G7D	0.0527	87M4W7D
100	3750.00 ~ 3930.00	0.0813	97M0G7D	0.0644	97M4W7D

5G NR n78 – SCS 15k		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)
10	3705.000 ~ 3795.000	0.0740	9M28G7D	0.0619	9M28W7D
15	3705.505 ~ 3792.495	0.0731	14M1G7D	0.0603	14M1W7D
20	3710.010 ~ 3789.990	0.0681	18M9G7D	0.0552	18M9W7D
30	3715.005 ~ 3784.995	0.0630	28M6G7D	0.0516	28M5W7D
40	3720.000 ~ 3780.000	0.0603	38M6G7D	0.0489	38M6W7D
50	3725.010 ~ 3774.990	0.0750	48M1G7D	0.0598	48M3W7D

5G NR n78 – SCS 30k		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)
10	3705.00 ~ 3795.00	0.0711	8M57G7D	0.0596	8M58W7D
15	3707.52 ~ 3792.48	0.0703	13M6G7D	0.0574	13M6W7D
20	3710.01 ~ 3789.99	0.0681	18M1G7D	0.0552	18M2W7D
30	3715.02 ~ 3784.98	0.0668	27M9G7D	0.0542	27M8W7D
40	3720.00 ~ 3780.00	0.0634	37M7G7D	0.0509	37M8W7D
50	3725.01 ~ 3774.99	0.0676	47M4G7D	0.0552	47M5W7D
60	3730.02 ~ 3769.98	0.0661	57M6G7D	0.0532	57M8W7D
70	3735.00 ~ 3765.00	0.0668	67M5G7D	0.0547	67M6W7D
80	3740.01 ~ 3759.99	0.0653	77M4G7D	0.0530	77M5W7D
90	3745.02 ~ 3754.98	0.0649	87M4G7D	0.0520	87M4W7D
100	3750.00	0.0741	97M0G7D	0.0586	97M4W7D

Note:

1. 5G NR n77 overlaps the entire frequency range of 5G NR n78. Therefore, the test results provided in this report covers 5G NR n77 as well as 5G NR n78.
2. 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

1.8 Test Software

Item	Site	Manufacture	Name	Version
1.	03CH04-KS	AUDIX	E3	210616

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, 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.

1.10 Specification of Accessory

Accessories Information				
Battery 1	**Brand Name**	Motorola (ATL)	**Model Name**	QA50
Battery 2	**Brand Name**	Motorola (Jiade)	**Model Name**	QF50

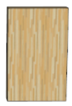
2 Test Configuration of Equipment Under Test

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 were recorded in this report.

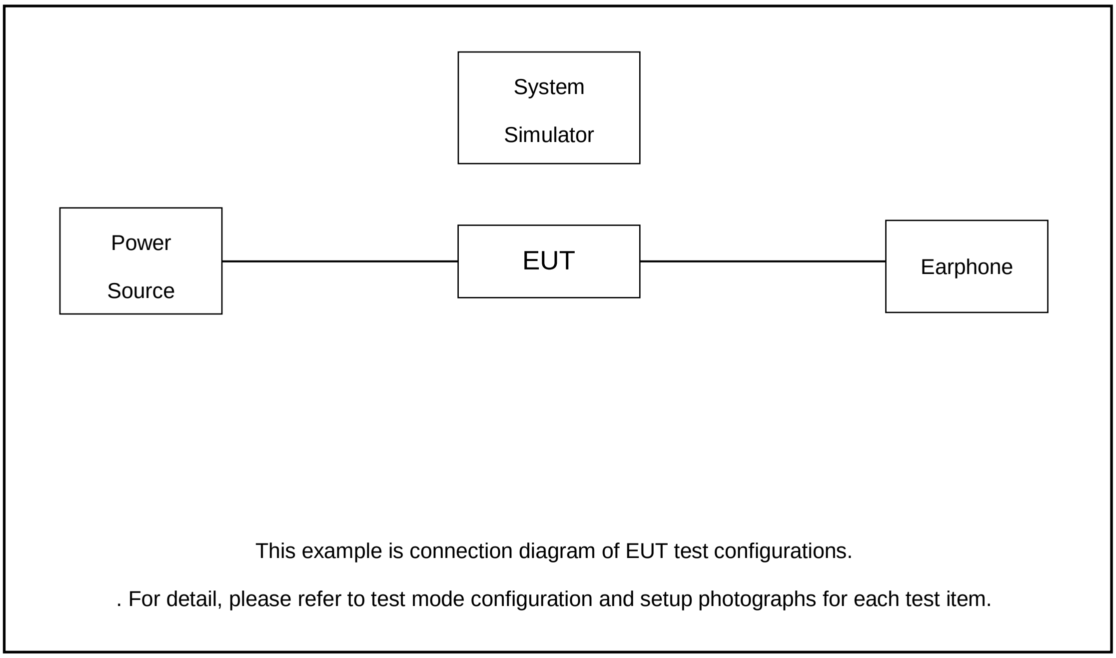
The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.(X/Y Plane)

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	Full	L	M	H
Max. Output Power	n41	-	v	v	v	-	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	n77	-	v	v	v	-	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	n78	-	v	v	v	-	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
Peak-to-Average Ratio	n41	-			v	-	-								v	v				v	v		v	
	n77	-			v	-	-								v	v				v	v		v	
26dB and 99% Bandwidth	n41	-	v	v	v	-	v	v	v	v	v	v	v	v		v	v	v	v		v		v	
	n77	-	v	v	v	-	v	v	v	v	v	v	v	v		v	v	v	v		v		v	
Conducted Band Edge	n41	-	v			-			v					v	v	v				v	v	v		v
	n77	-	v			-			v					v	v	v				v	v	v		v
Conducted Spurious Emission	n41	-	v			-			v					v	v	v				v		v	v	v
	n77	-	v			-			v					v	v	v				v		v	v	v
Frequency Stability	n41	-			v	-										v					v		v	
	n77	-			v	-										v					v		v	
E.I.R.P.	n41	-	v	v	v	-	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	n77	-	v	v	v	-	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	n78	-	v	v	v	-	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
Radiated Spurious Emission	n41	Worst Case																					v	
	n77	Worst Case																					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	Full	L	M	H
	n78	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 = 3.91V ；Low Voltage =3.60V.；High Voltage =4.45V																							

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	MT8821C	N/A	N/A	Unshielded, 1.8 m
3.	NR Base Station	Anritsu	MT8000A	N/A	N/A	Unshielded, 1.8 m
4.	Adapter	MOTO	MC-20L	N/A	N/A	N/A
5.	USB Cable	saibao	N/A	N/A	N/A	N/A
6.	Earphone	MOTO	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 8.60 dB

Example :

Offset(dB) = RF cable loss(dB)

= 8.60 (dB)

2.5 Frequency List of Low/Middle/High Channels

5G NR n41 Channel and Frequency List for SCS 15k				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
50	Channel	504201	518601	532998
	Frequency	2521.005	2593.005	2664.99
40	Channel	503202	518601	534000
	Frequency	2516.01	2593.005	2670
30	Channel	502200	518601	534999
	Frequency	2511	2593.005	2674.995
20	Channel	501201	518601	535998
	Frequency	2506.005	2593.005	2679.99
15	Channel	500700	518601	536499
	Frequency	2503.5	2593.005	2682.495
10	Channel	500202	518601	537000
	Frequency	2501.01	2593.005	2685

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
70	Channel	506202	518598	531000
	Frequency	2531.01	2592.99	2655
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 n77 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
100	Channel	650000	656000	662000
	Frequency	3750	3840	3930
90	Channel	649668	656000	662332
	Frequency	3745.02	3840	3934.98
80	Channel	649334	656000	662666
	Frequency	3740.01	3840	3939.99
70	Channel	649000	656000	663000
	Frequency	3735	3840	3945
60	Channel	648668	656000	663332
	Frequency	3730.02	3840	3949.98

50	Channel	648334	656000	663666
	Frequency	3725.01	3840	3954.99
40	Channel	648000	656000	664000
	Frequency	3720	3840	3960
30	Channel	647668	656000	664332
	Frequency	3715.02	3840	3964.98
20	Channel	647334	656000	664666
	Frequency	3710.01	3840	3969.99
15	Channel	647168	656000	664832
	Frequency	3707.52	3840	3972.48
10	Channel	647000	656000	665000
	Frequency	3705	3840	3975

5G n78 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
100	Channel		650000	
	Frequency		3750	
90	Channel	649668	650000	650332
	Frequency	3745.02	3750	3754.98
80	Channel	649334	650000	650666
	Frequency	3740.01	3750	3759.99
70	Channel	649000	650000	651000
	Frequency	3735	3750	3765
60	Channel	648668	650000	651332
	Frequency	3730.02	3750	3769.98
50	Channel	648334	650000	651666
	Frequency	3725.01	3750	3774.99
40	Channel	648000	650000	652000
	Frequency	3720	3750	3780
30	Channel	647668	650000	652332
	Frequency	3715.02	3750	3784.98
20	Channel	647334	650000	652666
	Frequency	3710.01	3750	3789.99
15	Channel	647168	650000	652832
	Frequency	3707.52	3750	3792.48
10	Channel	647000	650000	653000
	Frequency	3705	3750	3795

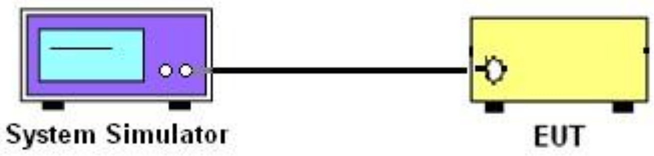
3 Conducted Test Items

3.1 Measuring Instruments

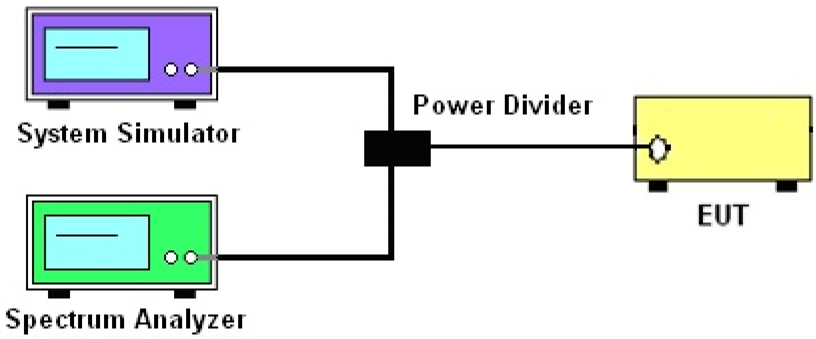
See list of measuring instruments of this test report.

3.2 Test Setup

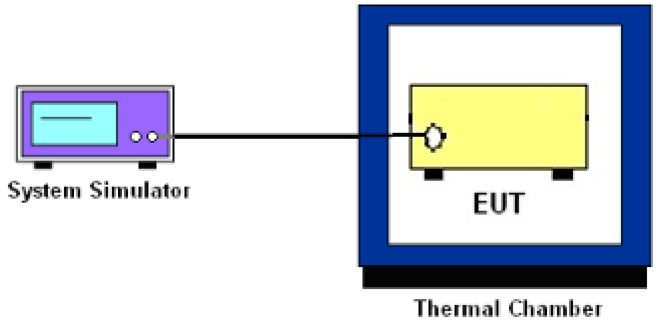
3.2.1 Conducted Output Power



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 n41.

The EIRP of mobile transmitters must not exceed 1 Watts for 5G NR n77, n78.

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

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.

27.53(l)(2)

For mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz. Compliance with this paragraph is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be either one percent of the emission bandwidth of the fundamental emission of the transmitter or 350 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz.

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 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 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 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.

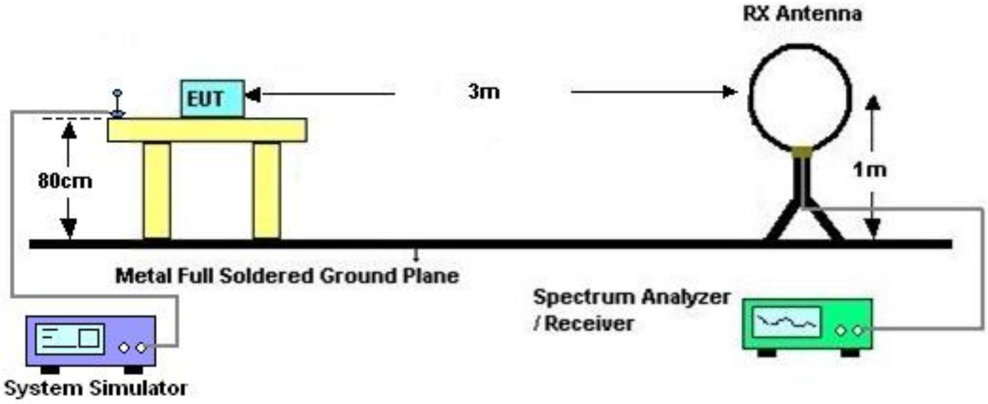
4 Radiated Test Items

4.1 Measuring Instruments

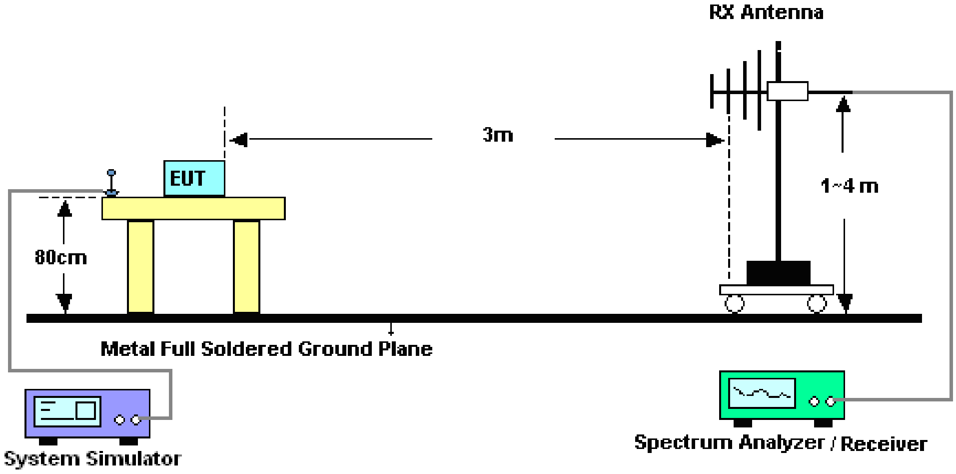
See list of measuring instruments of this test report.

4.2 Test Setup

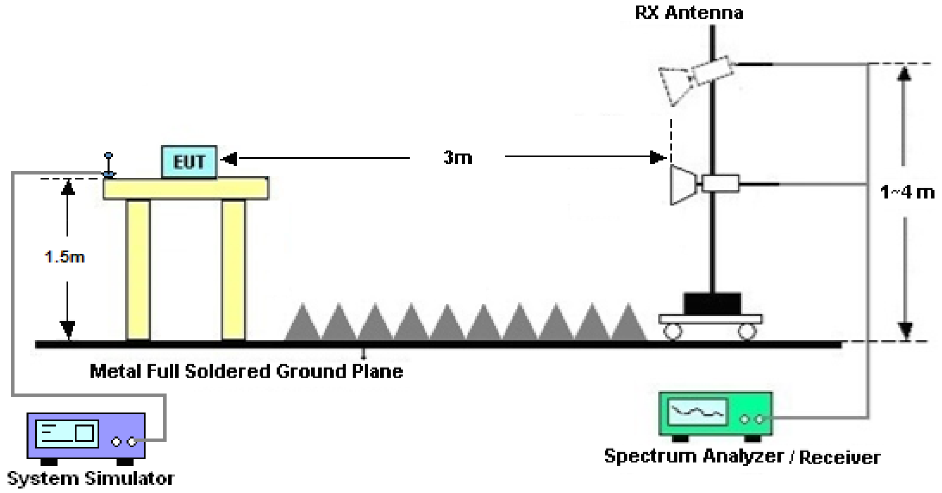
4.2.1 For radiated test below 30MHz



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 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 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	101078	10Hz~40GHz	Apr. 06, 2023	Dec. 13, 2023~ Dec. 20, 2023	Apr. 05, 2024	Conducted (TH01-SZ)
DC Power Supply	TTI	PL330P	290070	Max 32V，3A	Oct. 16, 2023	Dec. 13, 2023~ Dec. 20, 2023	Oct. 15, 2024	Conducted (TH01-SZ)
Power Divider	TOJOIN	PS-2SM-04 265	60.06.020.007 7	0.4GHz~26.5GHz	Dec. 25, 2022	Dec. 13, 2023~ Dec. 20, 2023	Dec. 24, 2023	Conducted (TH01-SZ)
Thermal Chamber	Ten Billion Hongzhangroup	LP-150U	H2014081803	-40~+150°C	Jul. 05, 2023	Dec. 13, 2023~ Dec. 20, 2023	Jul. 04, 2024	Conducted (TH01-SZ)
EXA Spectrum Analyzer	Keysight	N9010B	MY57471079	10Hz-44G,MAX 30dB	Oct. 10, 2023	Nov. 30, 2023	Oct. 09, 2024	Radiation (03CH04-KS)
Loop Antenna	R&S	HFH2-Z2E	101125	9kHz~30MHz	Sep. 11 2023	Nov. 30, 2023	Sep. 10, 2024	Radiation (03CH04-KS)
Bilog Antenna	TeseQ	CBL6111D	49922	30MHz-1GHz	Apr. 09, 2023	Nov. 30, 2023	Apr. 08, 2024	Radiation (03CH04-KS)
Horn Antenna	Schwarzbeck	BBHA9120D	1284	1GHz~18GHz	Oct. 10, 2023	Nov. 30, 2023	Oct. 09, 2024	Radiation (03CH04-KS)
SHF-EHF Horn	Com-power	AH-840	101070	18GHz~40GHz	Jan. 08, 2023	Nov. 30, 2023	Jan. 07, 2024	Radiation (03CH04-KS)
Amplifier	SONOMA	310N	380827	9KHz-1GHz	Jul 06, 2023	Nov. 30, 2023	Jul 05, 2024	Radiation (03CH04-KS)
Amplifier	MITEQ	EM18G40G GA	060728	18~40GHz	Jan. 05, 2023	Nov. 30, 2023	Jan. 04, 2024	Radiation (03CH04-KS)
high gain Amplifier	EM	EM01G18G A	060840	1Ghz-18Ghz	Oct. 10, 2023	Nov. 30, 2023	Oct. 09, 2024	Radiation (03CH04-KS)
Amplifier	Agilent	8449B	3008A02370	1Ghz-18Ghz	Oct. 10, 2023	Nov. 30, 2023	Oct. 09, 2024	Radiation (03CH04-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Nov. 30, 2023	NCR	Radiation (03CH04-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Nov. 30, 2023	NCR	Radiation (03CH04-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Nov. 30, 2023	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 (9 KHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.82

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.56

Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.54

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

Appendix A. Test Results of Conducted Test

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

FR1 N41(ANT4) – SCS 15k

Transmitter Conducted Output Power and EIRP, $(G_T - L_C)$=-4.24dB

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Conducted Power(dBm)	EIRP (dBm)	EIRP (W)
41	15	10	500202	2501.01	DFT-s-OFDM QPSK	1@1	22.62	18.38	0.0689
41	15	10	500202	2501.01	DFT-s-OFDM 16 QAM	1@1	21.59	17.35	0.0543
41	15	10	518601	2593.005	DFT-s-OFDM QPSK	1@1	22.75	18.51	0.0710
41	15	10	518601	2593.005	DFT-s-OFDM 16 QAM	1@1	21.86	17.62	0.0578
41	15	10	537000	2685	DFT-s-OFDM QPSK	1@1	22.91	18.67	0.0736
41	15	10	537000	2685	DFT-s-OFDM 16 QAM	1@1	21.96	17.72	0.0592
41	15	15	500700	2503.5	DFT-s-OFDM QPSK	1@1	22.83	18.59	0.0723
41	15	15	500700	2503.5	DFT-s-OFDM 16 QAM	1@1	21.66	17.42	0.0552
41	15	15	518601	2593.005	DFT-s-OFDM QPSK	1@1	22.89	18.65	0.0733
41	15	15	518601	2593.005	DFT-s-OFDM 16 QAM	1@1	21.84	17.6	0.0575
41	15	15	536499	2682.495	DFT-s-OFDM QPSK	1@1	22.94	18.7	0.0741
41	15	15	536499	2682.495	DFT-s-OFDM 16 QAM	1@1	22.03	17.79	0.0601
41	15	20	501201	2506.005	DFT-s-OFDM QPSK	1@1	22.84	18.6	0.0724
41	15	20	501201	2506.005	DFT-s-OFDM 16 QAM	1@1	21.67	17.43	0.0553
41	15	20	518601	2593.005	DFT-s-OFDM QPSK	1@1	22.93	18.69	0.0740
41	15	20	518601	2593.005	DFT-s-OFDM 16 QAM	1@1	21.99	17.75	0.0596
41	15	20	535998	2679.99	DFT-s-OFDM QPSK	1@1	22.91	18.67	0.0736
41	15	20	535998	2679.99	DFT-s-OFDM 16 QAM	1@1	21.96	17.72	0.0592
41	15	30	502200	2511	DFT-s-OFDM QPSK	1@1	22.62	18.38	0.0689
41	15	30	502200	2511	DFT-s-OFDM 16 QAM	1@1	21.59	17.35	0.0543
41	15	30	518601	2593.005	DFT-s-OFDM QPSK	1@1	22.62	18.38	0.0689
41	15	30	518601	2593.005	DFT-s-OFDM 16 QAM	1@1	21.62	17.38	0.0547
41	15	30	534999	2674.995	DFT-s-OFDM QPSK	1@1	22.64	18.4	0.0692
41	15	30	534999	2674.995	DFT-s-OFDM 16 QAM	1@1	21.66	17.42	0.0552
41	15	40	503202	2516.01	DFT-s-OFDM QPSK	1@1	22.42	18.18	0.0658
41	15	40	503202	2516.01	DFT-s-OFDM 16 QAM	1@1	21.37	17.13	0.0516
41	15	40	518598	2593.005	DFT-s-OFDM QPSK	1@1	22.37	18.13	0.0650
41	15	40	518598	2593.005	DFT-s-OFDM 16 QAM	1@1	21.4	17.16	0.0520
41	15	40	534000	2670	DFT-s-OFDM QPSK	1@1	22.43	18.19	0.0659

41	15	40	534000	2670	DFT-s-OFDM 16 QAM	1@1	21.43	17.19	0.0524
41	15	50	504201	2521.005	DFT-s-OFDM PI/2 BPSK	135@67	22.81	18.57	0.0719
41	15	50	504201	2521.005	DFT-s-OFDM PI/2 BPSK	1@1	22.79	18.55	0.0716
41	15	50	504201	2521.005	DFT-s-OFDM PI/2 BPSK	1@268	22.51	18.27	0.0671
41	15	50	504201	2521.005	DFT-s-OFDM QPSK	135@67	22.8	18.56	0.0718
41	15	50	504201	2521.005	DFT-s-OFDM QPSK	1@1	22.79	18.55	0.0716
41	15	50	504201	2521.005	DFT-s-OFDM QPSK	1@268	22.41	18.17	0.0656
41	15	50	504201	2521.005	DFT-s-OFDM 16 QAM	135@67	21.91	17.67	0.0585
41	15	50	504201	2521.005	DFT-s-OFDM 16 QAM	1@1	21.6	17.36	0.0545
41	15	50	504201	2521.005	DFT-s-OFDM 16 QAM	1@268	21.55	17.31	0.0538
41	15	50	504201	2521.005	DFT-s-OFDM 64 QAM	135@67	20.42	16.18	0.0415
41	15	50	504201	2521.005	DFT-s-OFDM 64 QAM	1@1	20.14	15.9	0.0389
41	15	50	504201	2521.005	DFT-s-OFDM 64 QAM	1@268	19.82	15.58	0.0361
41	15	50	504201	2521.005	DFT-s-OFDM 256 QAM	135@67	18.44	14.2	0.0263
41	15	50	504201	2521.005	DFT-s-OFDM 256 QAM	1@1	18.59	14.35	0.0272
41	15	50	504201	2521.005	DFT-s-OFDM 256 QAM	1@268	18.26	14.02	0.0252
41	15	50	504201	2521.005	CP-OFDM QPSK	135@67	21.49	17.25	0.0531
41	15	50	504201	2521.005	CP-OFDM QPSK	1@1	21.8	17.56	0.0570
41	15	50	504201	2521.005	CP-OFDM QPSK	1@268	21.13	16.89	0.0489
41	15	50	518601	2593.005	DFT-s-OFDM PI/2 BPSK	135@67	23.01	18.77	0.0753
41	15	50	518601	2593.005	DFT-s-OFDM PI/2 BPSK	1@1	17.53	13.29	0.0213
41	15	50	518601	2593.005	DFT-s-OFDM PI/2 BPSK	1@268	22.98	18.74	0.0748
41	15	50	518601	2593.005	DFT-s-OFDM QPSK	135@67	23.01	18.77	0.0753
41	15	50	518601	2593.005	DFT-s-OFDM QPSK	1@1	22.55	18.31	0.0678
41	15	50	518601	2593.005	DFT-s-OFDM QPSK	1@268	23.01	18.77	0.0753
41	15	50	518601	2593.005	DFT-s-OFDM 16 QAM	135@67	22	17.76	0.0597
41	15	50	518601	2593.005	DFT-s-OFDM 16 QAM	1@1	21.63	17.39	0.0548
41	15	50	518601	2593.005	DFT-s-OFDM 16 QAM	1@268	22.09	17.85	0.0610
41	15	50	518601	2593.005	DFT-s-OFDM 64 QAM	135@67	20.5	16.26	0.0423
41	15	50	518601	2593.005	DFT-s-OFDM 64 QAM	1@1	19.93	15.69	0.0371
41	15	50	518601	2593.005	DFT-s-OFDM 64 QAM	1@268	20.24	16	0.0398
41	15	50	518601	2593.005	DFT-s-OFDM 256 QAM	135@67	18.47	14.23	0.0265
41	15	50	518601	2593.005	DFT-s-OFDM 256 QAM	1@1	18.37	14.13	0.0259
41	15	50	518601	2593.005	DFT-s-OFDM 256 QAM	1@268	18.62	14.38	0.0274
41	15	50	518601	2593.005	CP-OFDM QPSK	135@67	21.51	17.27	0.0533

41	15	50	518601	2593.005	CP-OFDM QPSK	1@1	21.24	17	0.0501
41	15	50	518601	2593.005	CP-OFDM QPSK	1@268	21.5	17.26	0.0532
41	15	50	532998	2664.99	DFT-s-OFDM PI/2 BPSK	135@67	23.09	18.85	0.0767
41	15	50	532998	2664.99	DFT-s-OFDM PI/2 BPSK	1@1	22.82	18.58	0.0721
41	15	50	532998	2664.99	DFT-s-OFDM PI/2 BPSK	1@268	23.04	18.8	0.0759
41	15	50	532998	2664.99	DFT-s-OFDM QPSK	135@67	23.15	18.91	0.0778
41	15	50	532998	2664.99	DFT-s-OFDM QPSK	1@1	22.75	18.51	0.0710
41	15	50	532998	2664.99	DFT-s-OFDM QPSK	1@268	22.95	18.71	0.0743
41	15	50	532998	2664.99	DFT-s-OFDM 16 QAM	135@67	22.12	17.88	0.0614
41	15	50	532998	2664.99	DFT-s-OFDM 16 QAM	1@1	21.69	17.45	0.0556
41	15	50	532998	2664.99	DFT-s-OFDM 16 QAM	1@268	22.02	17.78	0.0600
41	15	50	532998	2664.99	DFT-s-OFDM 64 QAM	135@67	20.63	16.39	0.0436
41	15	50	532998	2664.99	DFT-s-OFDM 64 QAM	1@1	19.91	15.67	0.0369
41	15	50	532998	2664.99	DFT-s-OFDM 64 QAM	1@268	20.25	16.01	0.0399
41	15	50	532998	2664.99	DFT-s-OFDM 256 QAM	135@67	18.59	14.35	0.0272
41	15	50	532998	2664.99	DFT-s-OFDM 256 QAM	1@1	18.43	14.19	0.0262
41	15	50	532998	2664.99	DFT-s-OFDM 256 QAM	1@268	18.62	14.38	0.0274
41	15	50	532998	2664.99	CP-OFDM QPSK	135@67	21.63	17.39	0.0548
41	15	50	532998	2664.99	CP-OFDM QPSK	1@1	21.28	17.04	0.0506
41	15	50	532998	2664.99	CP-OFDM QPSK	1@268	21.52	17.28	0.0535

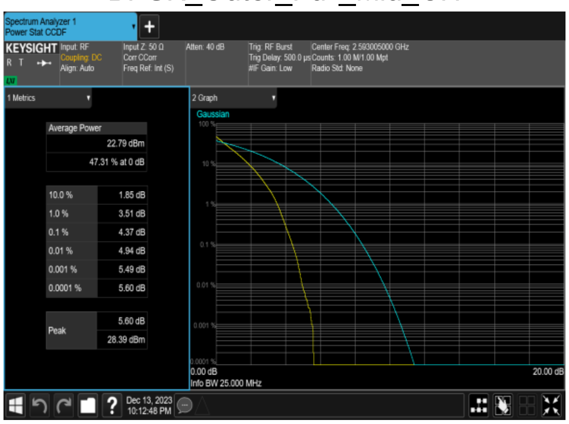
Frequency Stability

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Deviation (ppm)	Verdict	Environment
41	15	20	518601	2593.005	DFT-s-OFDM QPSK	100@0	0.0059	**PASS**	NV
41	15	20	518601	2593.005	DFT-s-OFDM QPSK	100@0	0.0054	**PASS**	LV
41	15	20	518601	2593.005	DFT-s-OFDM QPSK	100@0	0.0060	**PASS**	HV
41	15	20	518601	2593.005	DFT-s-OFDM QPSK	100@0	0.0064	**PASS**	-30℃
41	15	20	518601	2593.005	DFT-s-OFDM QPSK	100@0	0.0046	**PASS**	-20℃
41	15	20	518601	2593.005	DFT-s-OFDM QPSK	100@0	0.0058	**PASS**	-10℃
41	15	20	518601	2593.005	DFT-s-OFDM QPSK	100@0	0.0022	**PASS**	0℃
41	15	20	518601	2593.005	DFT-s-OFDM QPSK	100@0	0.0057	**PASS**	10℃
41	15	20	518601	2593.005	DFT-s-OFDM QPSK	100@0	0.0059	**PASS**	20℃
41	15	20	518601	2593.005	DFT-s-OFDM QPSK	100@0	0.0039	**PASS**	30℃
41	15	20	518601	2593.005	DFT-s-OFDM QPSK	100@0	0.0033	**PASS**	40℃
41	15	20	518601	2593.005	DFT-s-OFDM QPSK	100@0	0.0055	**PASS**	50℃

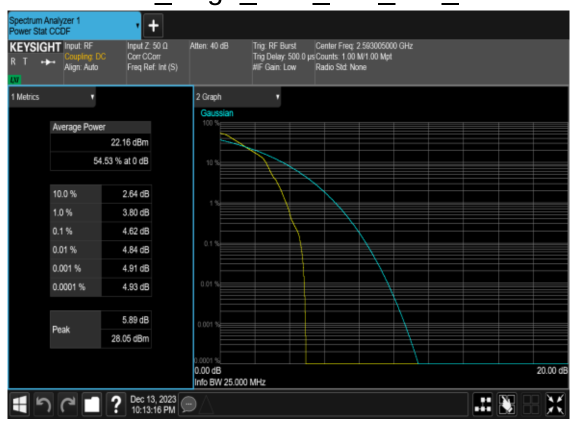
Peak to Average Ratio

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result (dB)	Limit (dB)	Verdict
41	15	20	518601	2593.005	DFT-s-OFDM PI/2 BPSK	100@0	4.37	13	**PASS**
41	15	20	518601	2593.005	DFT-s-OFDM PI/2 BPSK	1@0	4.62	13	**PASS**
41	15	20	518601	2593.005	DFT-s-OFDM QPSK	100@0	5.51	13	**PASS**
41	15	20	518601	2593.005	DFT-s-OFDM QPSK	1@0	6.33	13	**PASS**

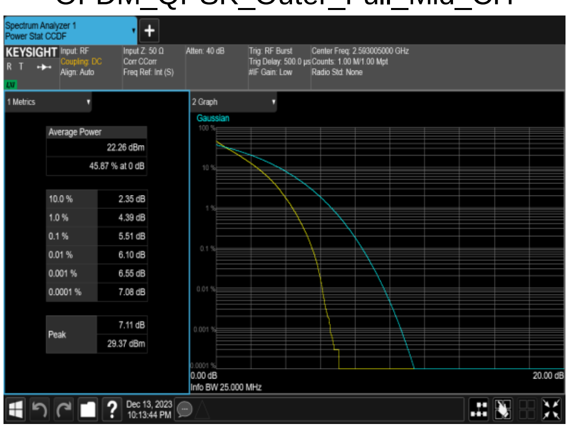
N41(20M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



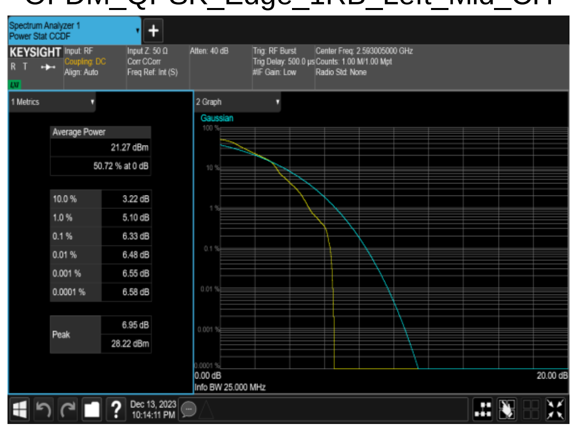
N41(20M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_Mid_CH



N41(20M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



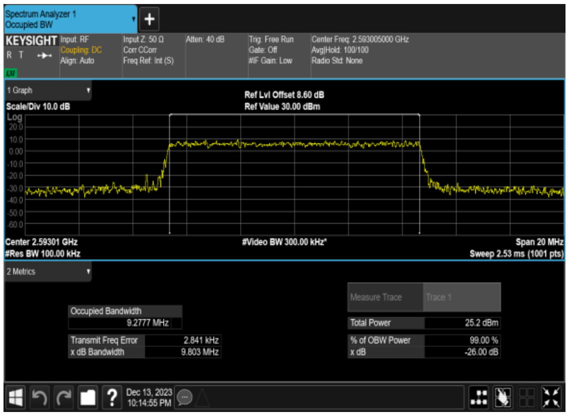
N41(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



Occupied Bandwidth

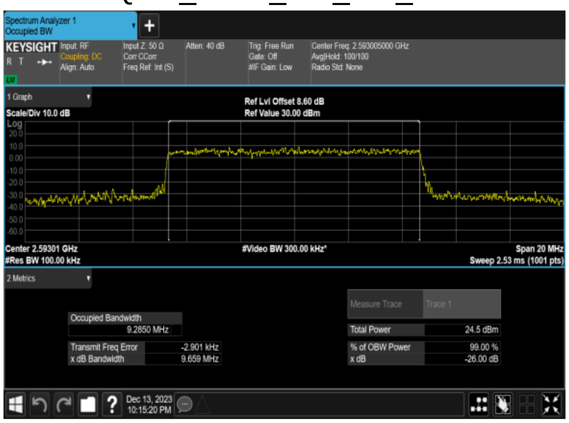
NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	OBW (MHz)	26dB BW (MHz)
41	15	10	518601	2593.01	CP-OFDM QPSK	52@0	9.2777	9.803
41	15	10	518601	2593.01	CP-OFDM 16 QAM	52@0	9.2488	9.836
41	15	10	518601	2593.01	CP-OFDM 64 QAM	52@0	9.285	9.659
41	15	10	518601	2593.01	CP-OFDM 256 QAM	52@0	9.2416	9.75
41	15	15	518601	2593.01	CP-OFDM QPSK	79@0	14.111	14.59
41	15	15	518601	2593.01	CP-OFDM 16 QAM	79@0	14.078	14.56
41	15	15	518601	2593.01	CP-OFDM 64 QAM	79@0	14.055	14.6
41	15	15	518601	2593.01	CP-OFDM 256 QAM	79@0	14.105	14.65
41	15	20	518601	2593.01	CP-OFDM QPSK	106@0	18.889	19.74
41	15	20	518601	2593.01	CP-OFDM 16 QAM	106@0	18.869	19.7
41	15	20	518601	2593.01	CP-OFDM 64 QAM	106@0	19.015	19.59
41	15	20	518601	2593.01	CP-OFDM 256 QAM	106@0	18.885	19.71
41	15	30	518601	2593.01	CP-OFDM QPSK	160@0	28.499	29.6
41	15	30	518601	2593.01	CP-OFDM 16 QAM	160@0	28.501	29.53
41	15	30	518601	2593.01	CP-OFDM 64 QAM	160@0	28.59	29.49
41	15	30	518601	2593.01	CP-OFDM 256 QAM	160@0	28.471	29.49
41	15	40	518598	2593.01	CP-OFDM QPSK	216@0	38.56	39.87
41	15	40	518598	2593.01	CP-OFDM 16 QAM	216@0	38.491	39.95
41	15	40	518598	2593.01	CP-OFDM 64 QAM	216@0	38.572	39.78
41	15	40	518598	2593.01	CP-OFDM 256 QAM	216@0	38.568	39.81
41	15	50	518601	2593.01	CP-OFDM QPSK	270@0	48.085	49.68
41	15	50	518601	2593.01	CP-OFDM 16 QAM	270@0	48.037	50.01
41	15	50	518601	2593.01	CP-OFDM 64 QAM	270@0	48.243	49.7
41	15	50	518601	2593.01	CP-OFDM 256 QAM	270@0	48.117	49.76

N41(10M)_CP-
OFDM_QPSK_Outer_Full_Mid_CH

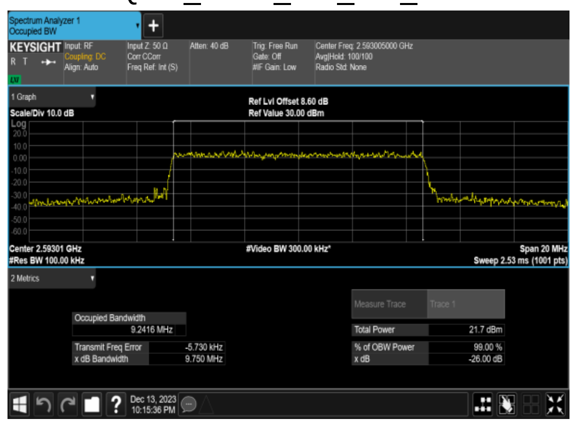


N41(10M)_CP-OFDM_16
QAM_Outer_Full_Mid_CH

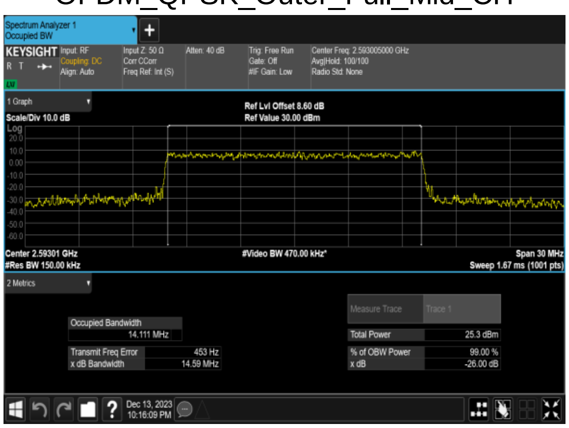
N41(10M)_CP-OFDM_64
QAM_Outer_Full_Mid_CH



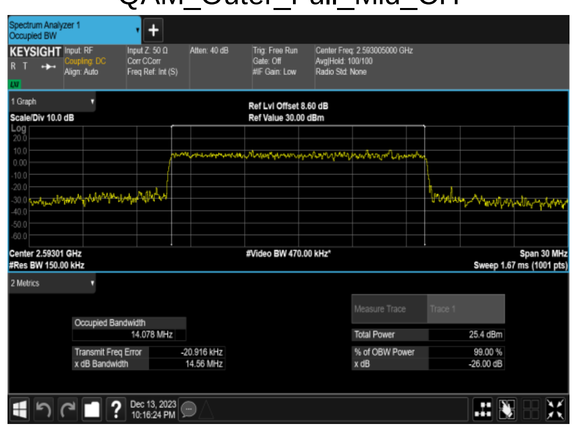
N41(10M)_CP-OFDM_256
QAM_Outer_Full_Mid_CH



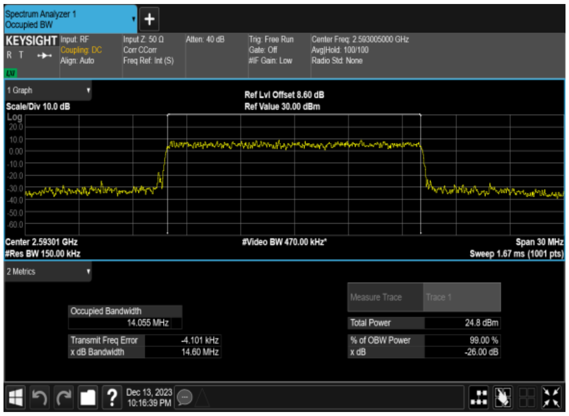
N41(15M)_CP-
OFDM_QPSK_Outer_Full_Mid_CH



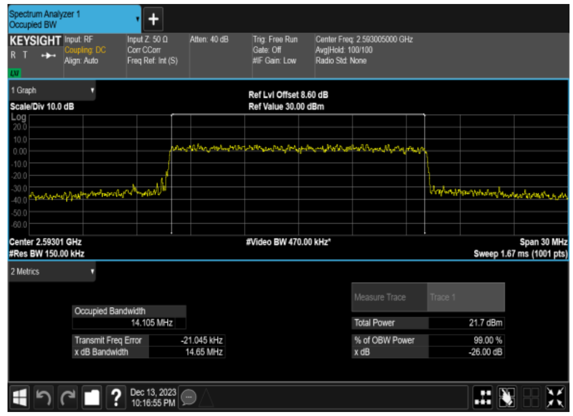
N41(15M)_CP-OFDM_16
QAM_Outer_Full_Mid_CH



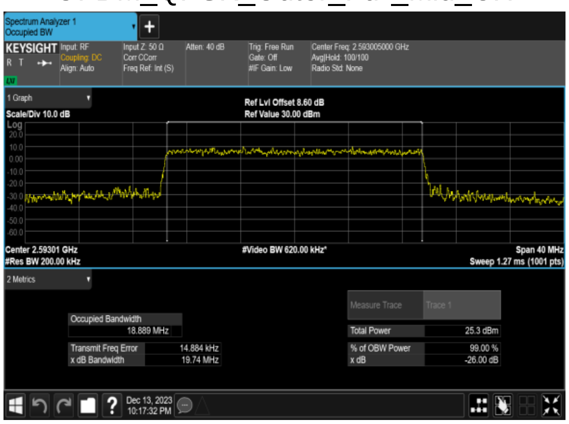
N41(15M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



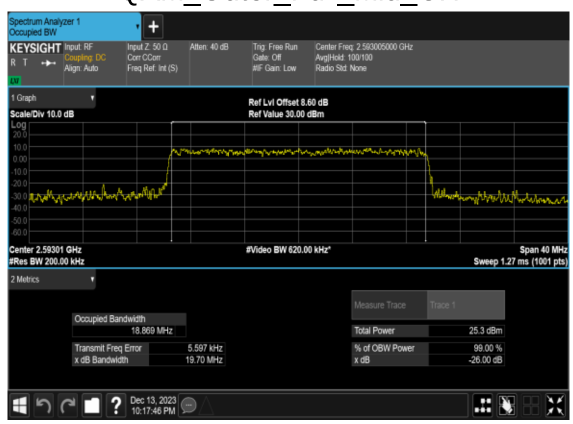
N41(15M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



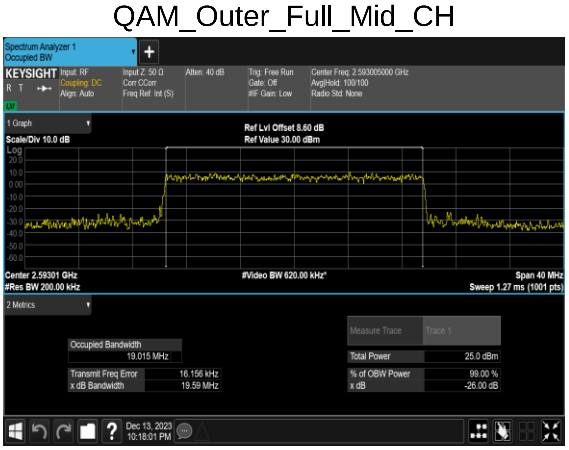
N41(20M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



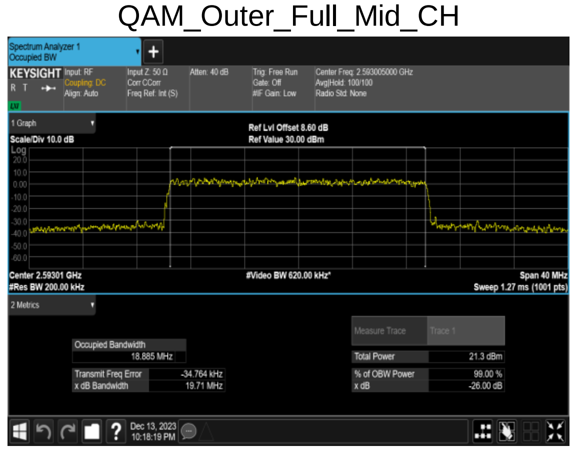
N41(20M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



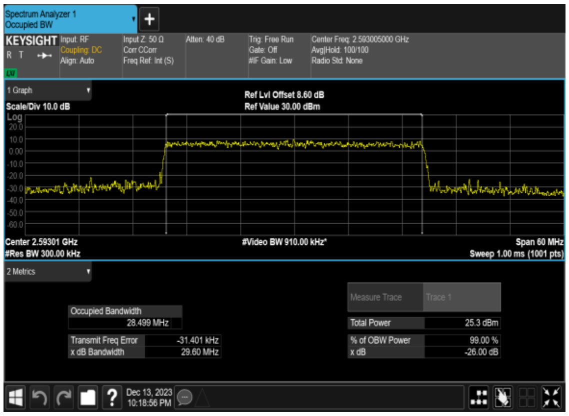
N41(20M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



N41(20M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH

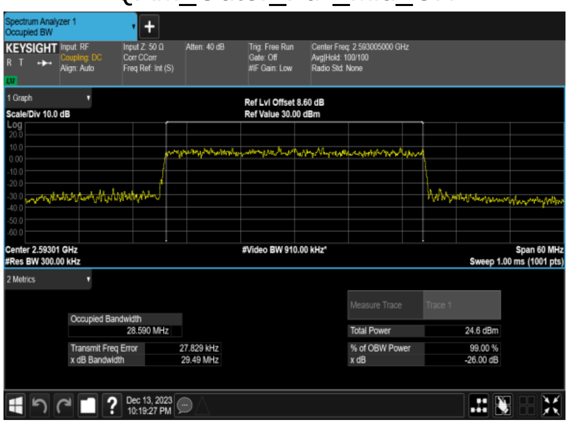


N41(30M)_CP-OFDM_QPSK_Outer_Full_Mid_CH

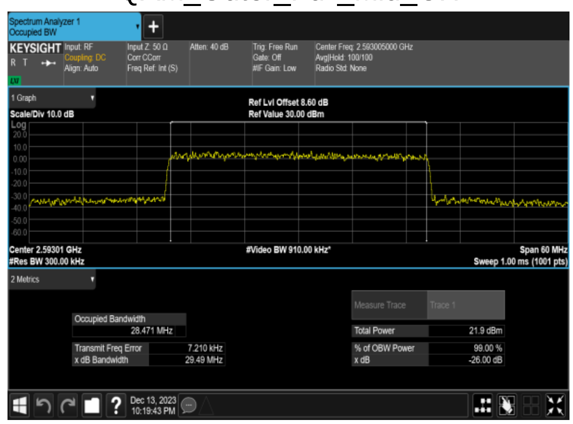


N41(30M)_CP-OFDM_16QAM_Outer_Full_Mid_CH

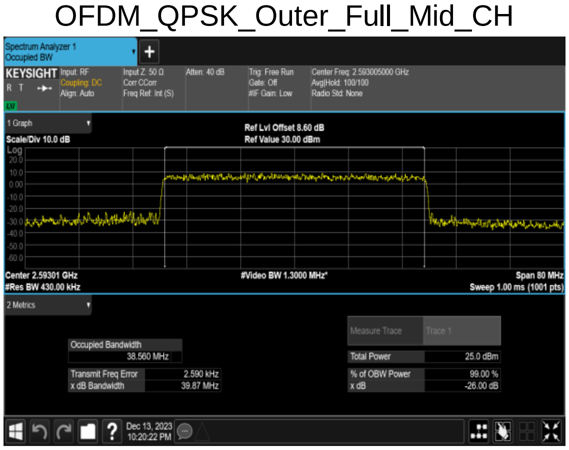
N41(30M)_CP-OFDM_64QAM_Outer_Full_Mid_CH



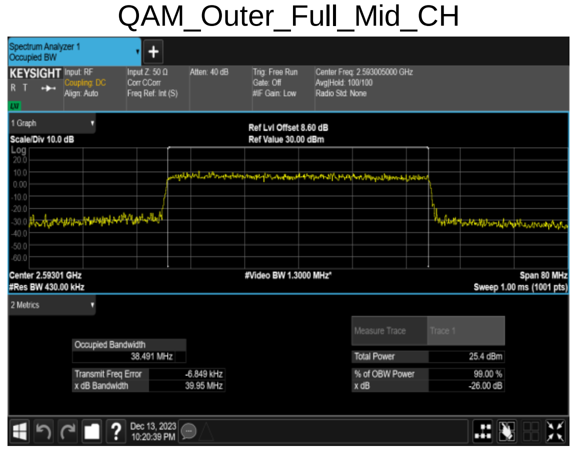
N41(30M)_CP-OFDM_256QAM_Outer_Full_Mid_CH



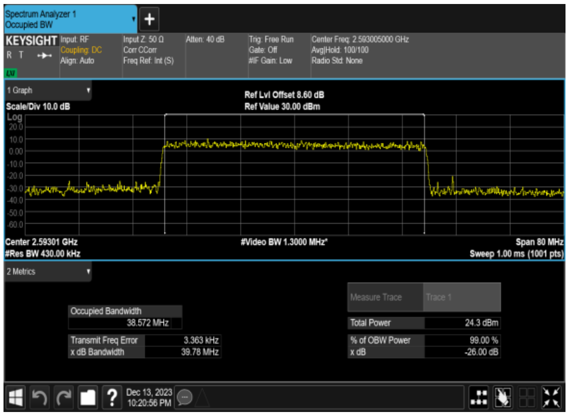
N41(40M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



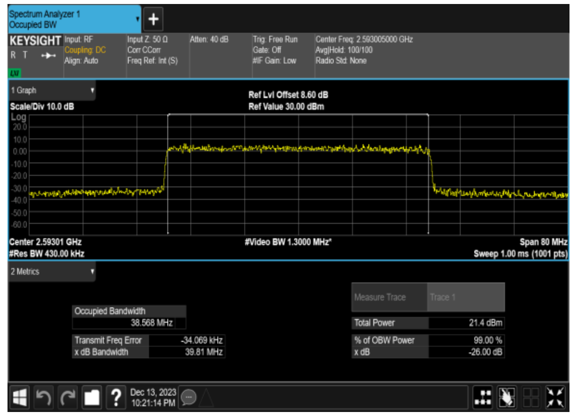
N41(40M)_CP-OFDM_16QAM_Outer_Full_Mid_CH



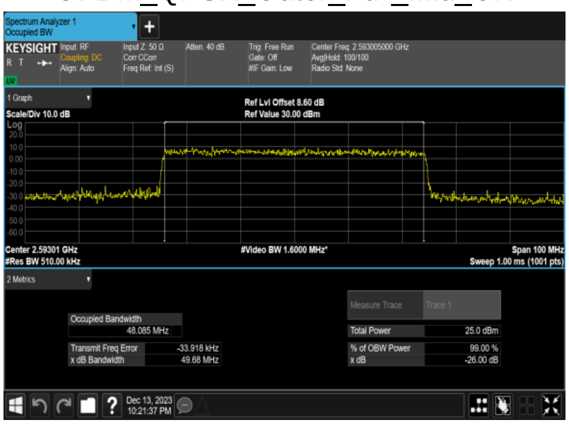
N41(40M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



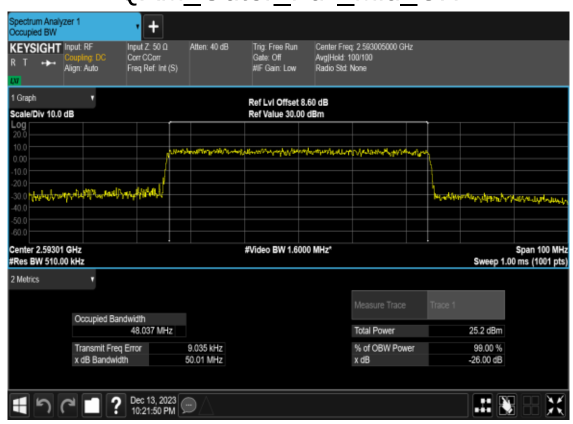
N41(40M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



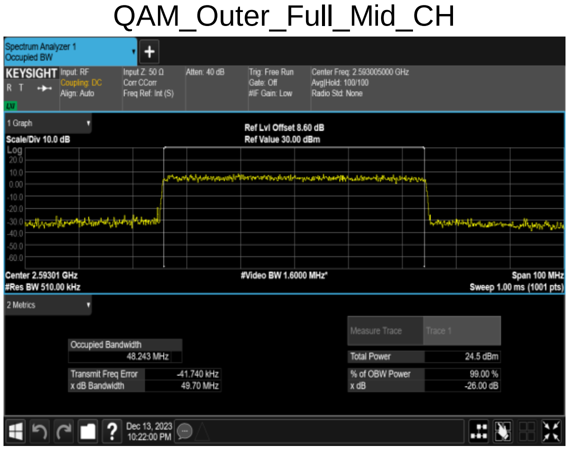
N41(50M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



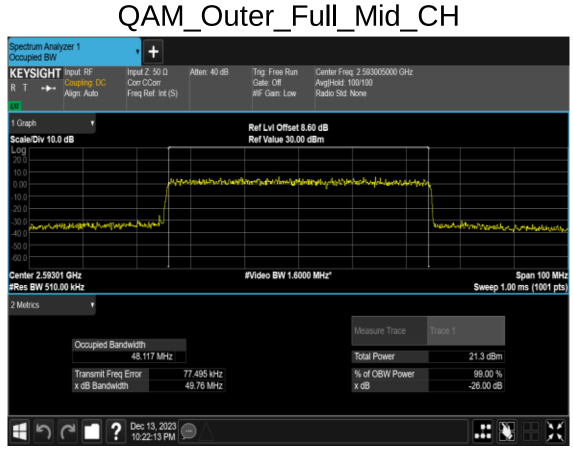
N41(50M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



N41(50M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



N41(50M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



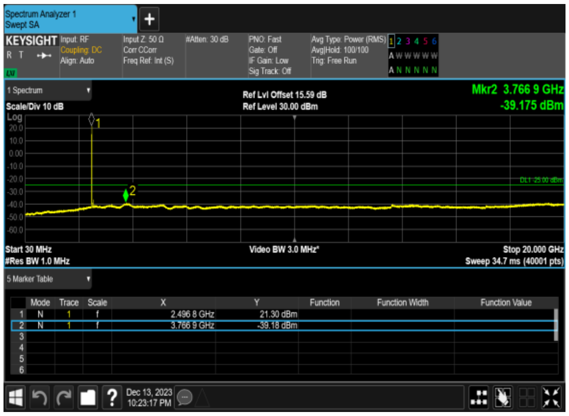
Conducted Spurious Emissions

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result	Verdict
41	15	10	500202	2501.01	DFT-s-OFDM BPSK	1@0	see graph	**---**
41	15	10	500202	2501.01	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
41	15	10	500202	2501.01	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
41	15	10	500202	2501.01	DFT-s-OFDM QPSK	1@0	see graph	**---**
41	15	10	500202	2501.01	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
41	15	10	500202	2501.01	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
41	15	10	518601	2593.005	DFT-s-OFDM BPSK	1@0	see graph	**---**
41	15	10	518601	2593.005	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
41	15	10	518601	2593.005	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
41	15	10	518601	2593.005	DFT-s-OFDM QPSK	1@0	see graph	**---**
41	15	10	518601	2593.005	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
41	15	10	518601	2593.005	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
41	15	10	537000	2685.0	DFT-s-OFDM BPSK	1@0	see graph	**---**
41	15	10	537000	2685.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
41	15	10	537000	2685.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
41	15	10	537000	2685.0	DFT-s-OFDM QPSK	1@0	see graph	**---**
41	15	10	537000	2685.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
41	15	10	537000	2685.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
41	15	30	502200	2511.0	DFT-s-OFDM BPSK	1@0	see graph	**---**
41	15	30	502200	2511.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
41	15	30	502200	2511.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
41	15	30	502200	2511.0	DFT-s-OFDM QPSK	1@0	see graph	**---**

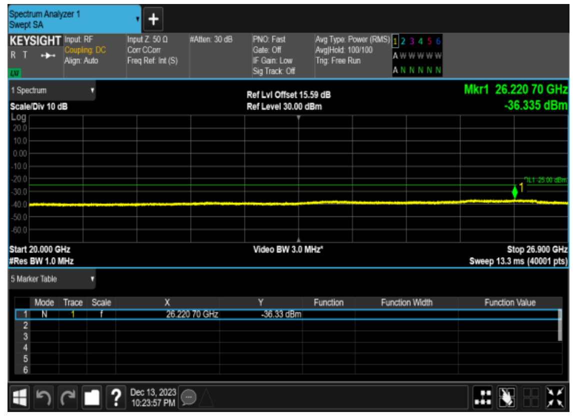
41	15	30	502200	2511.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
41	15	30	502200	2511.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
41	15	30	518601	2593.005	DFT-s-OFDM BPSK	1@0	see graph	**---**
41	15	30	518601	2593.005	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
41	15	30	518601	2593.005	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
41	15	30	518601	2593.005	DFT-s-OFDM QPSK	1@0	see graph	**---**
41	15	30	518601	2593.005	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
41	15	30	518601	2593.005	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
41	15	30	534999	2674.995	DFT-s-OFDM BPSK	1@0	see graph	**---**
41	15	30	534999	2674.995	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
41	15	30	534999	2674.995	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
41	15	30	534999	2674.995	DFT-s-OFDM QPSK	1@0	see graph	**---**
41	15	30	534999	2674.995	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
41	15	30	534999	2674.995	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
41	15	50	504201	2521.005	DFT-s-OFDM BPSK	1@0	see graph	**---**
41	15	50	504201	2521.005	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
41	15	50	504201	2521.005	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
41	15	50	504201	2521.005	DFT-s-OFDM QPSK	1@0	see graph	**---**
41	15	50	504201	2521.005	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
41	15	50	504201	2521.005	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
41	15	50	518601	2593.005	DFT-s-OFDM BPSK	1@0	see graph	**---**
41	15	50	518601	2593.005	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
41	15	50	518601	2593.005	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
41	15	50	518601	2593.005	DFT-s-OFDM QPSK	1@0	see graph	**---**

41	15	50	518601	2593.005	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
41	15	50	518601	2593.005	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
41	15	50	532998	2664.99	DFT-s-OFDM BPSK	1@0	see graph	**---**
41	15	50	532998	2664.99	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
41	15	50	532998	2664.99	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
41	15	50	532998	2664.99	DFT-s-OFDM QPSK	1@0	see graph	**---**
41	15	50	532998	2664.99	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
41	15	50	532998	2664.99	DFT-s-OFDM QPSK	1@0	see graph	**PASS**

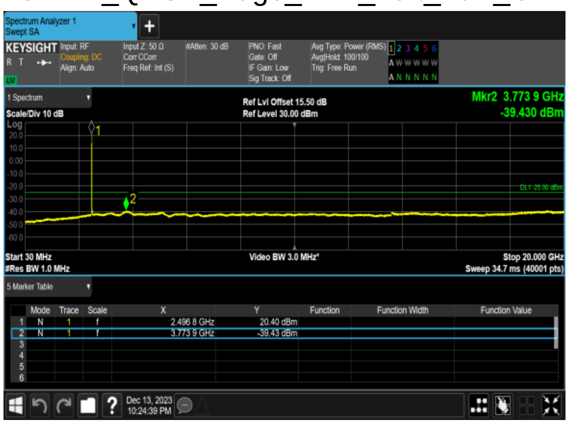
N41(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



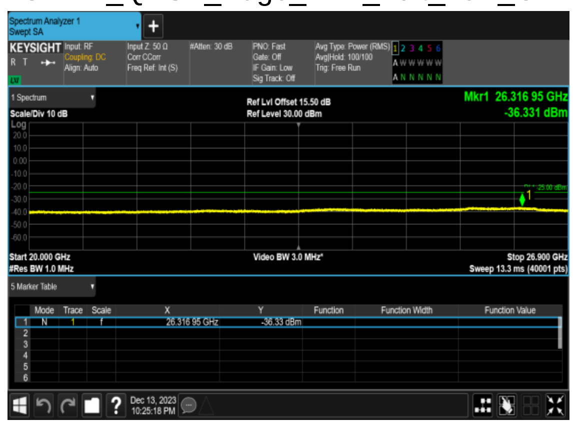
N41(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



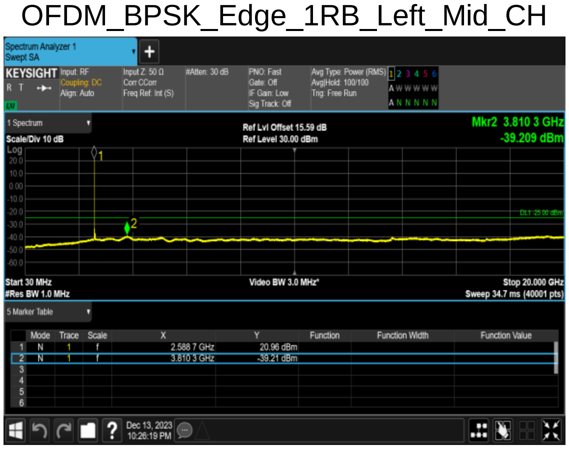
N41(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



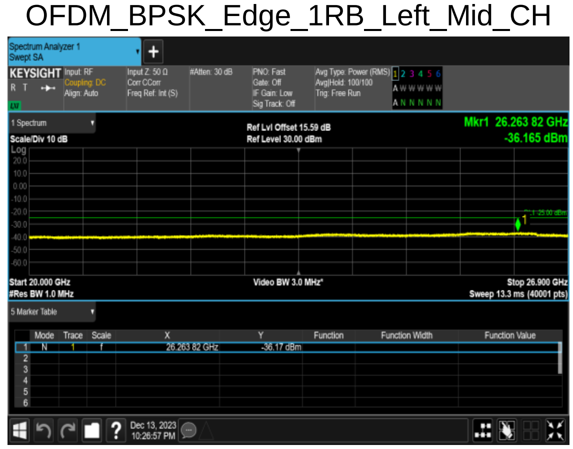
N41(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



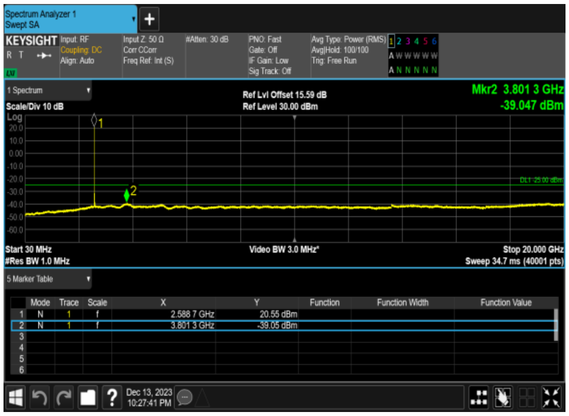
N41(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



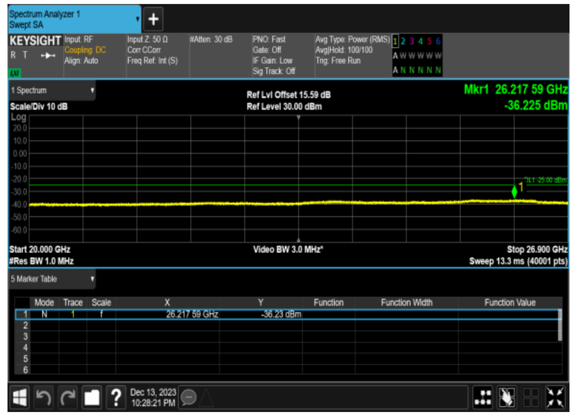
N41(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



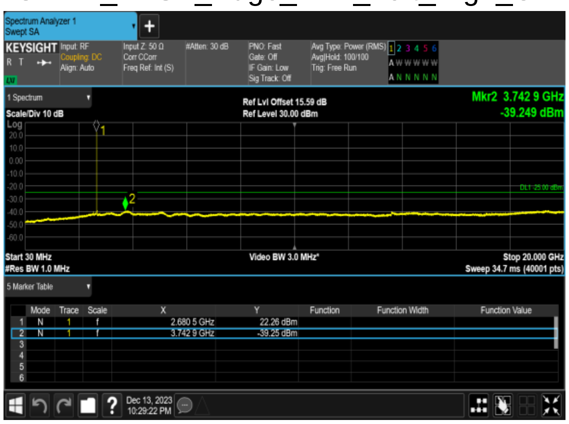
N41(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



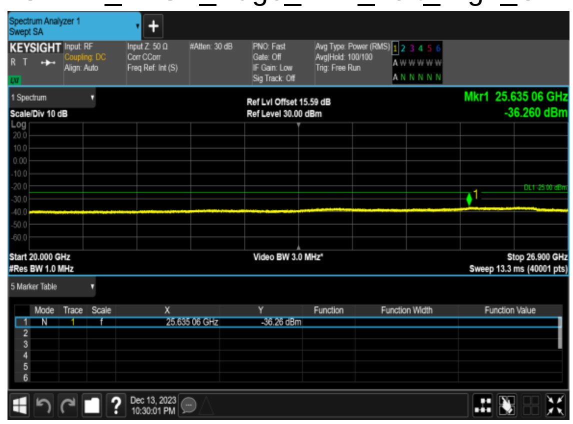
N41(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



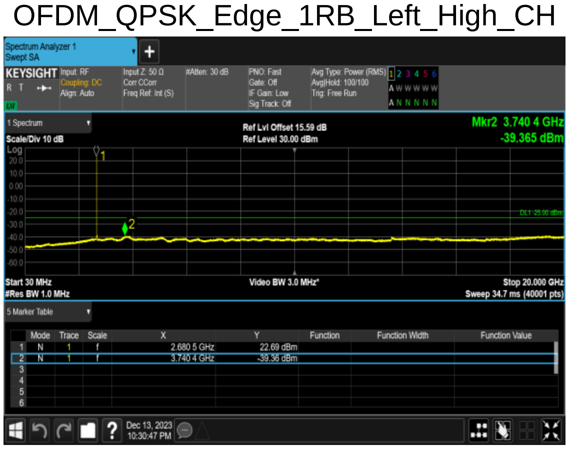
N41(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



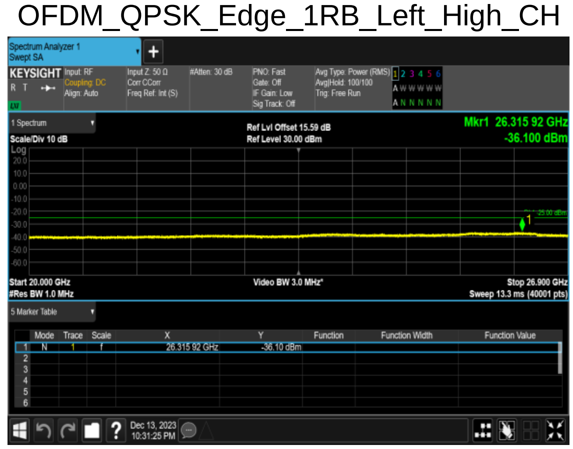
N41(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



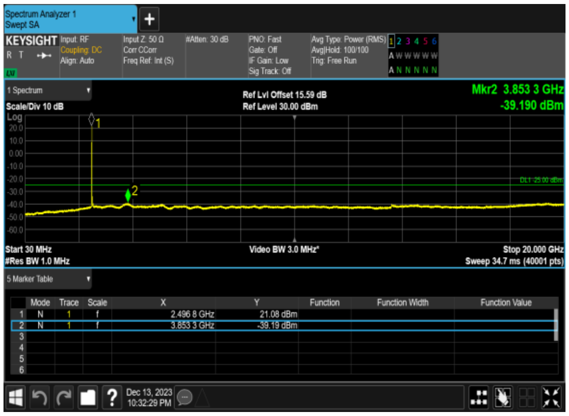
N41(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



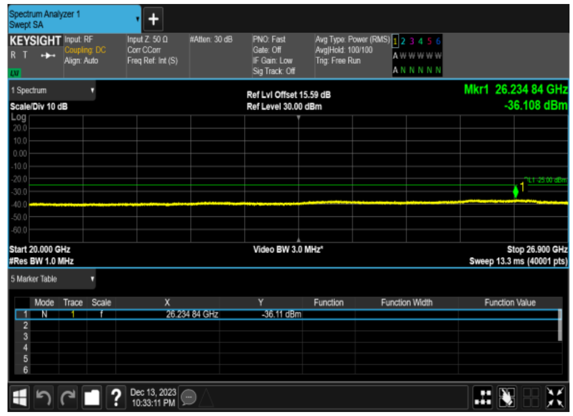
N41(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



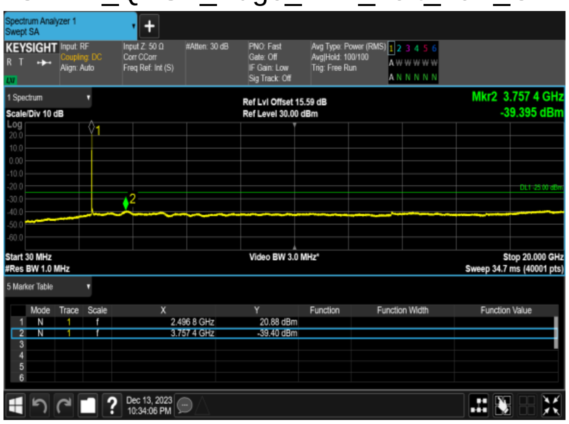
N41(30M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



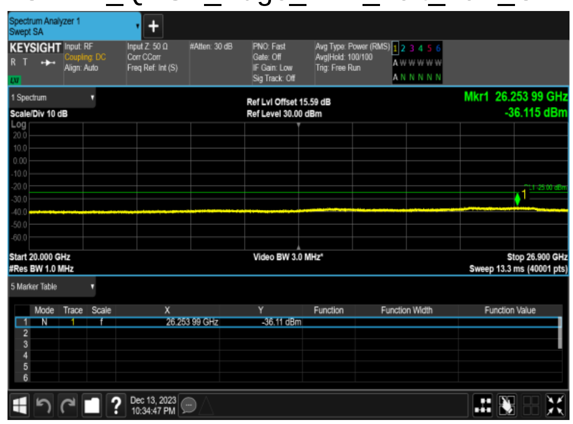
N41(30M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



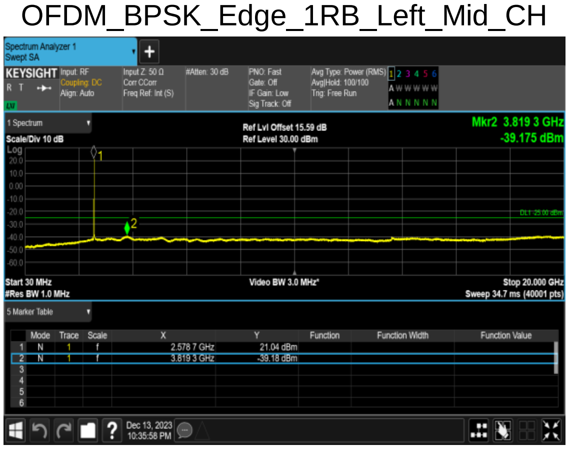
N41(30M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



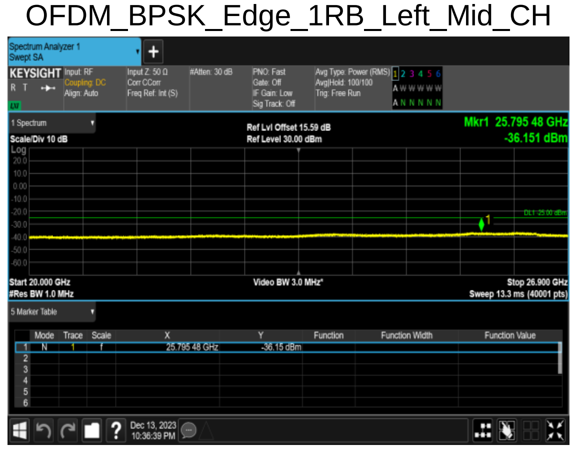
N41(30M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



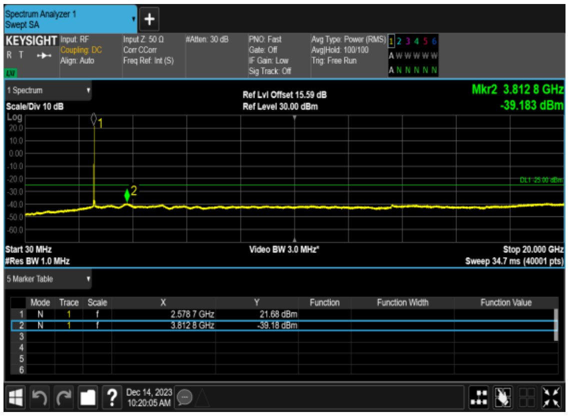
N41(30M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



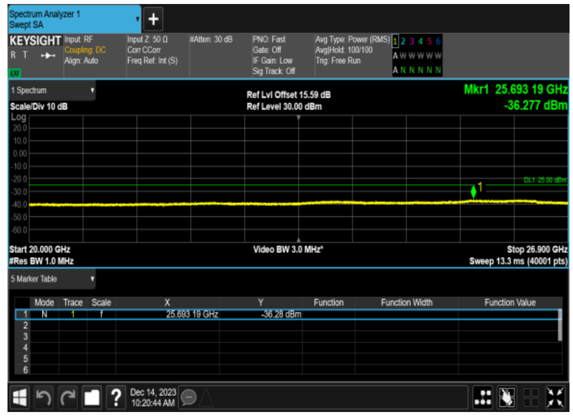
N41(30M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



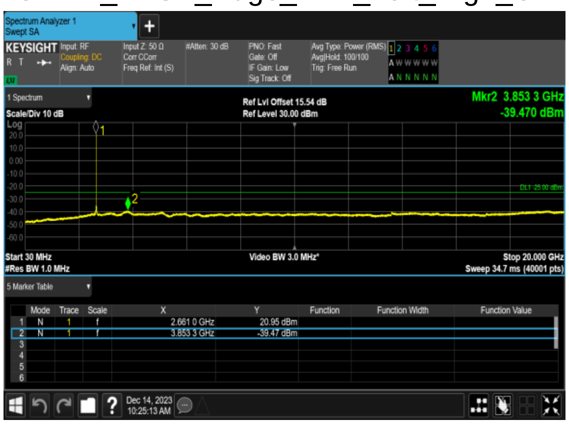
N41(30M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



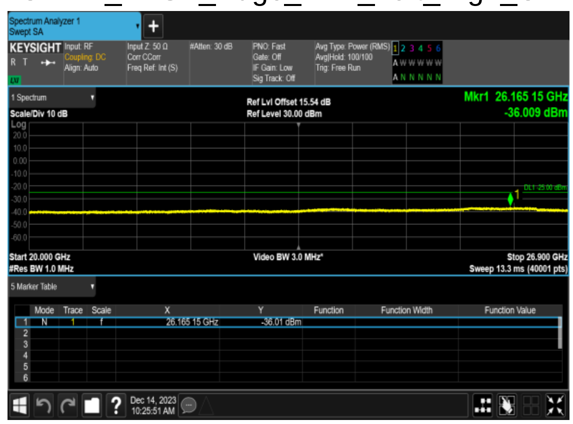
N41(30M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



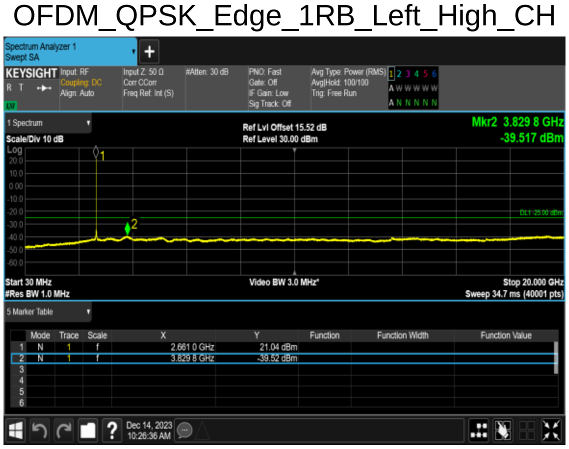
N41(30M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



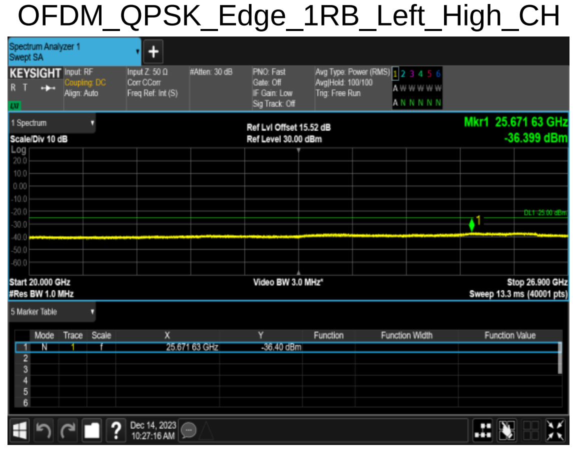
N41(30M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



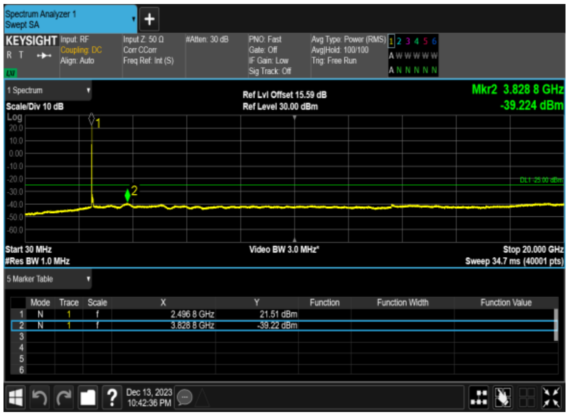
N41(30M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



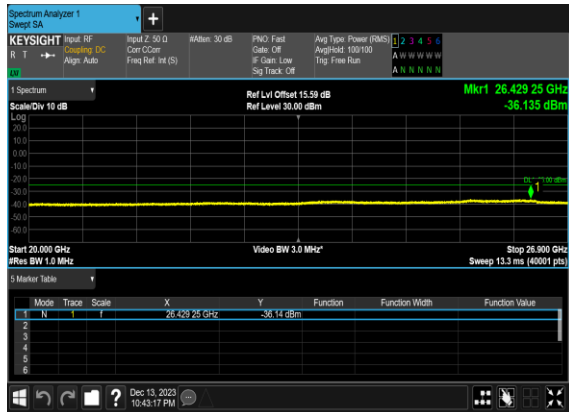
N41(30M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



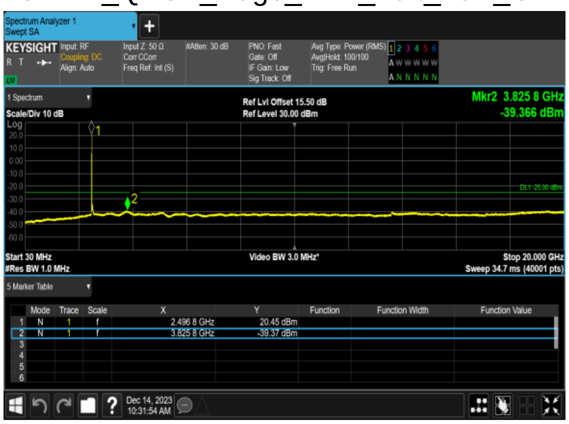
N41(50M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



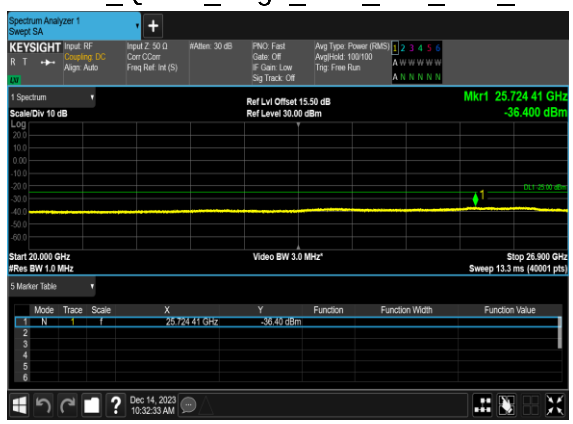
N41(50M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



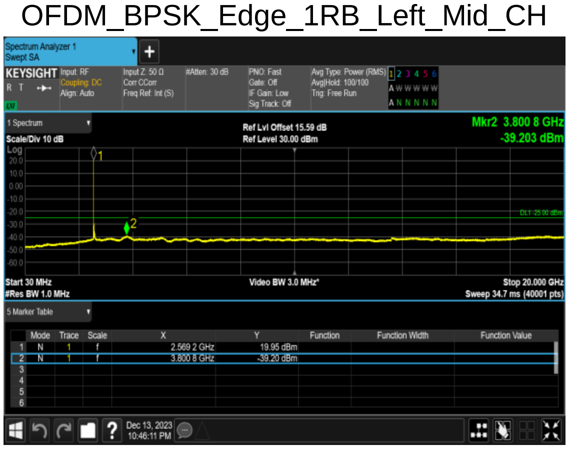
N41(50M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



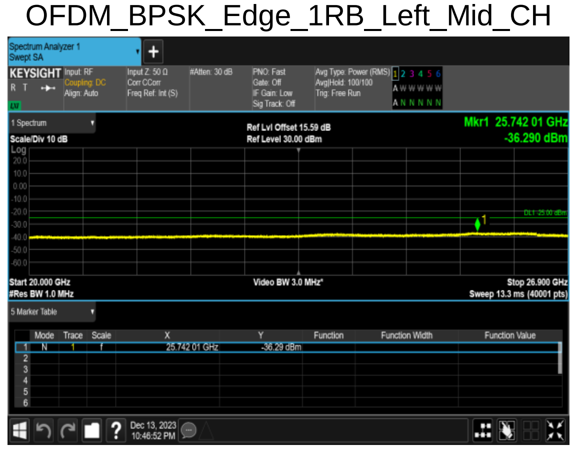
N41(50M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



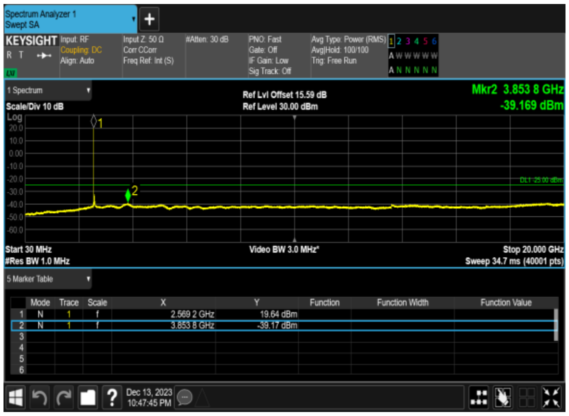
N41(50M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



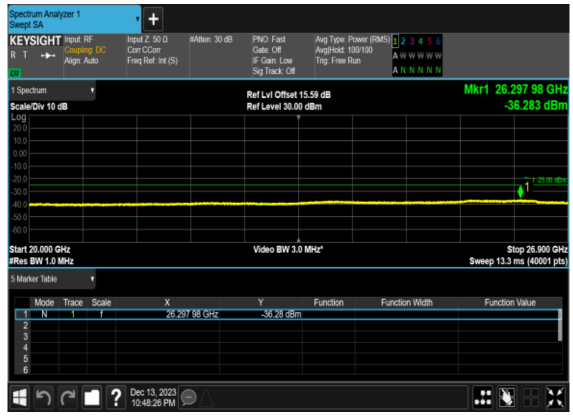
N41(50M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



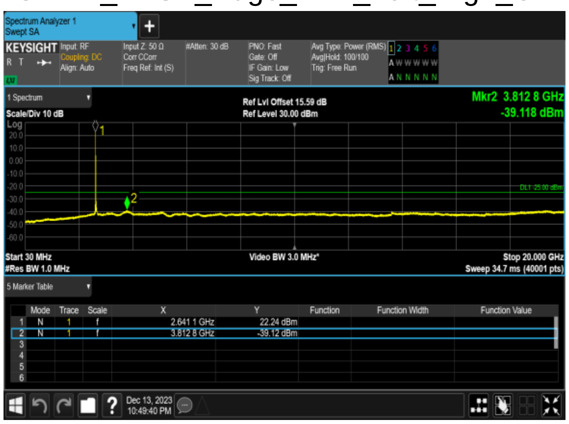
N41(50M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



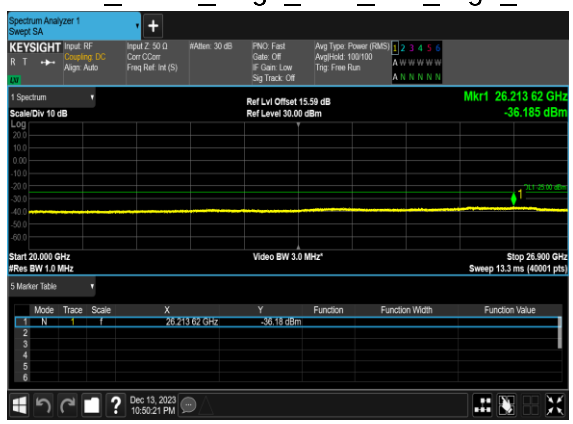
N41(50M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



N41(50M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



N41(50M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



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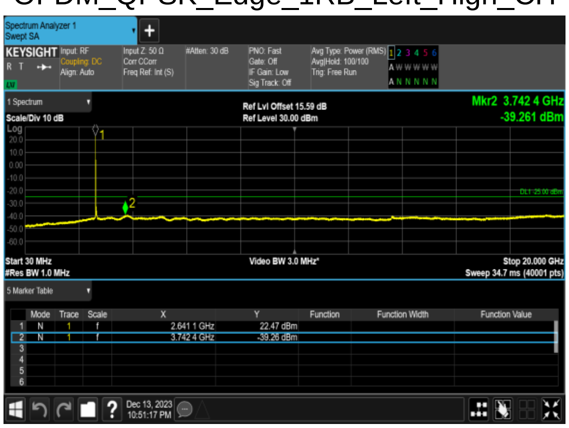
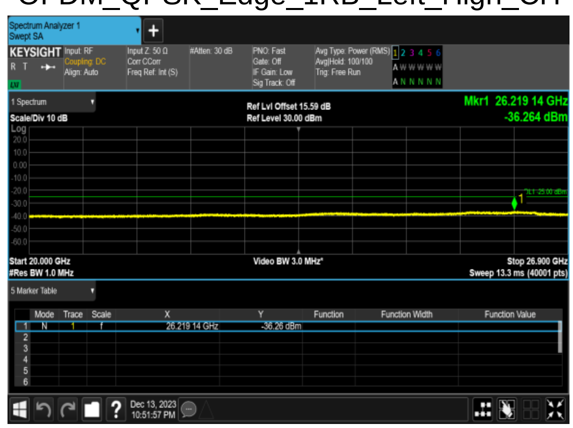


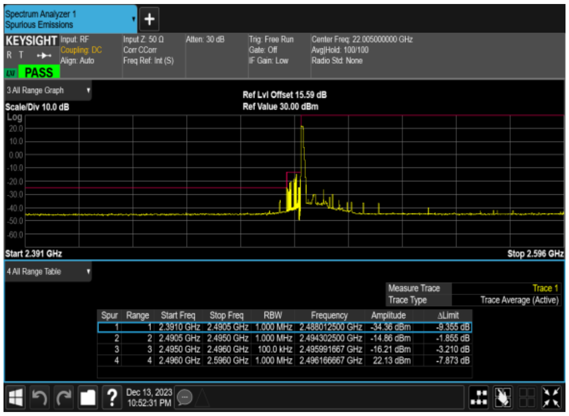
N41(50M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



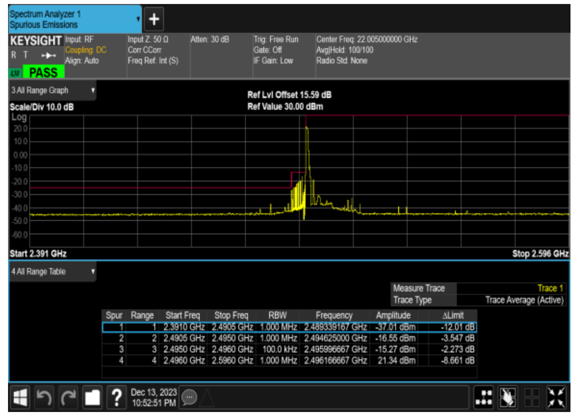
Conducted Band Edge

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result	Verdict
41	15	10	500202	2501.01	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
41	15	10	500202	2501.01	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
41	15	10	500202	2501.01	DFT-s-OFDM BPSK	50@0	see graph	**PASS**
41	15	10	500202	2501.01	DFT-s-OFDM QPSK	50@0	see graph	**PASS**
41	15	10	537000	2685.0	DFT-s-OFDM BPSK	1@51	see graph	**PASS**
41	15	10	537000	2685.0	DFT-s-OFDM QPSK	1@51	see graph	**PASS**
41	15	10	537000	2685.0	DFT-s-OFDM BPSK	50@0	see graph	**PASS**
41	15	10	537000	2685.0	DFT-s-OFDM QPSK	50@0	see graph	**PASS**
41	15	30	502200	2511.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
41	15	30	502200	2511.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
41	15	30	502200	2511.0	DFT-s-OFDM BPSK	160@0	see graph	**PASS**
41	15	30	502200	2511.0	DFT-s-OFDM QPSK	160@0	see graph	**PASS**
41	15	30	534999	2674.995	DFT-s-OFDM BPSK	1@159	see graph	**PASS**
41	15	30	534999	2674.995	DFT-s-OFDM QPSK	1@159	see graph	**PASS**
41	15	30	534999	2674.995	DFT-s-OFDM BPSK	160@0	see graph	**PASS**
41	15	30	534999	2674.995	DFT-s-OFDM QPSK	160@0	see graph	**PASS**
41	15	50	504201	2521.005	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
41	15	50	504201	2521.005	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
41	15	50	504201	2521.005	DFT-s-OFDM BPSK	270@0	see graph	**PASS**
41	15	50	504201	2521.005	DFT-s-OFDM QPSK	270@0	see graph	**PASS**
41	15	50	532998	2664.99	DFT-s-OFDM BPSK	1@269	see graph	**PASS**
41	15	50	532998	2664.99	DFT-s-OFDM QPSK	1@269	see graph	**PASS**
41	15	50	532998	2664.99	DFT-s-OFDM BPSK	270@0	see graph	**PASS**
41	15	50	532998	2664.99	DFT-s-OFDM QPSK	270@0	see graph	**PASS**

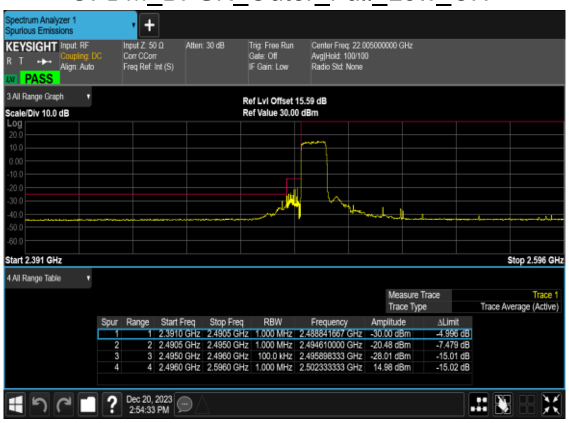
N41(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



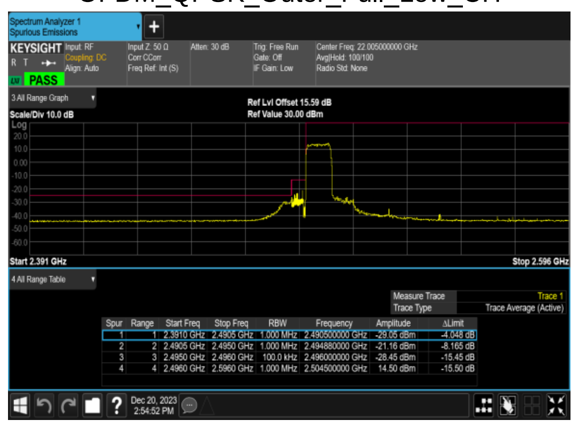
N41(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



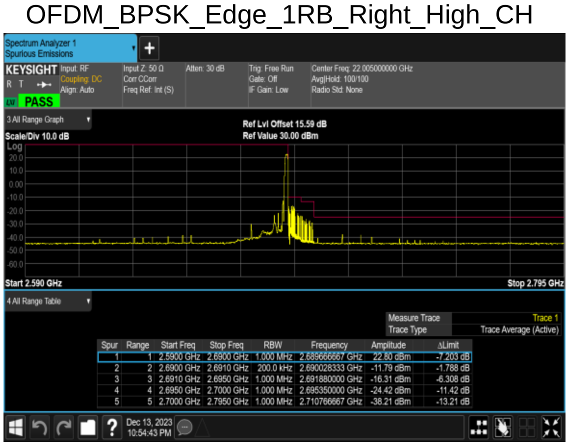
N41(10M)_DFT-s-OFDM_BPSK_Outer_Full_Low_CH



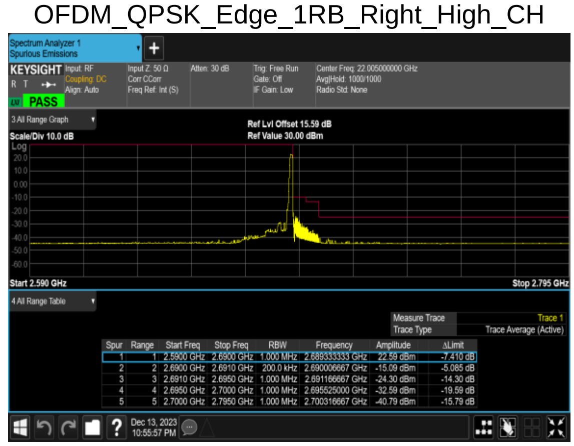
N41(10M)_DFT-s-OFDM_QPSK_Outer_Full_Low_CH



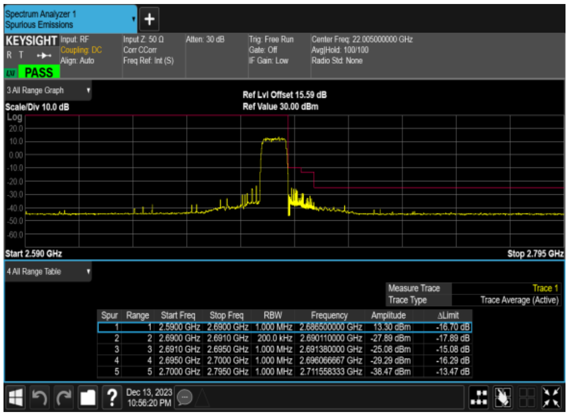
N41(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Right_High_CH



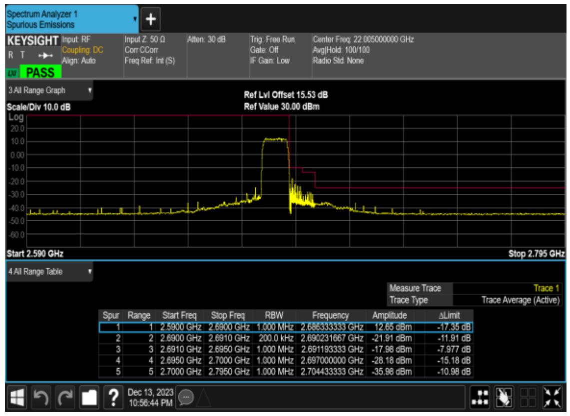
N41(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_High_CH



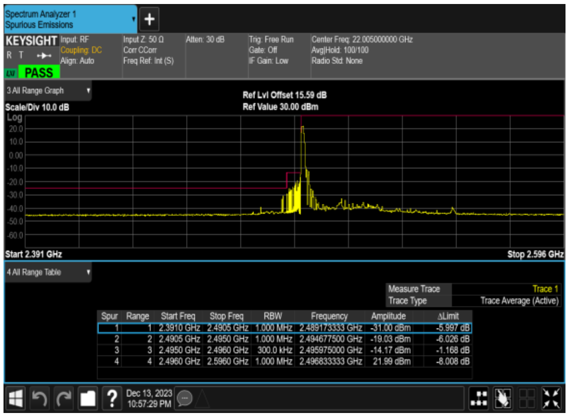
N41(10M)_DFT-s-OFDM_BPSK_Outer_Full_High_CH



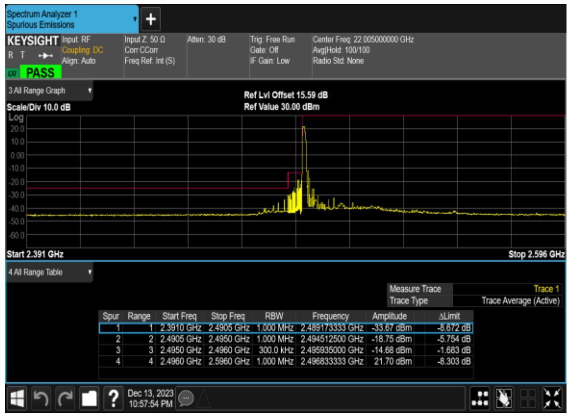
N41(10M)_DFT-s-OFDM_QPSK_Outer_Full_High_CH



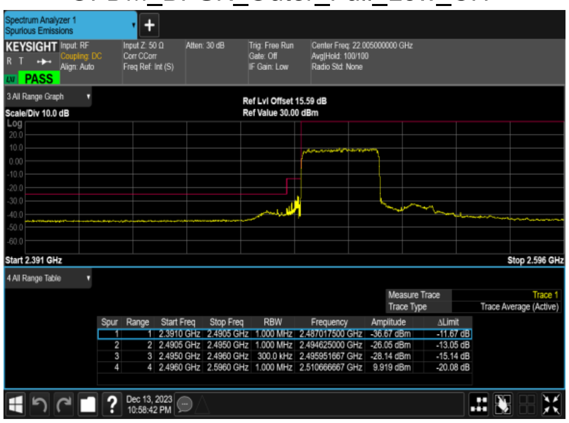
N41(30M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



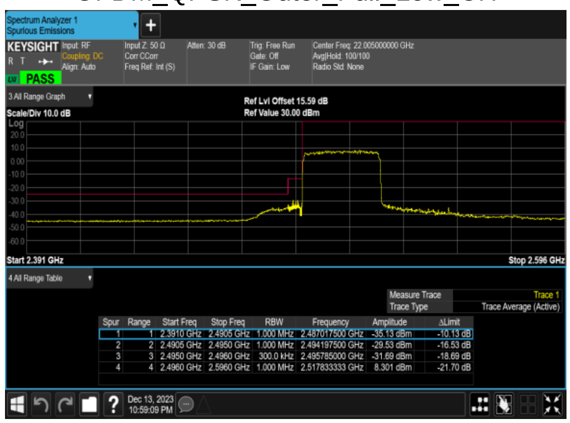
N41(30M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



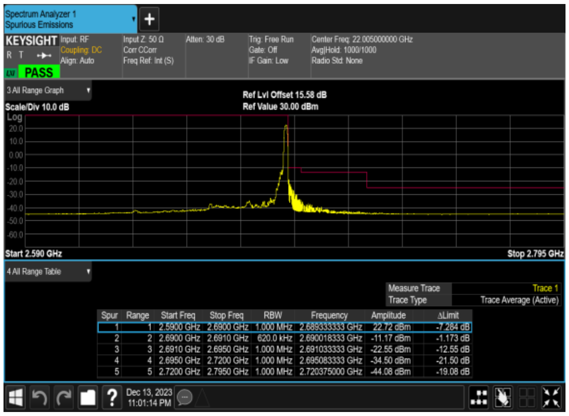
N41(30M)_DFT-s-OFDM_BPSK_Outer_Full_Low_CH



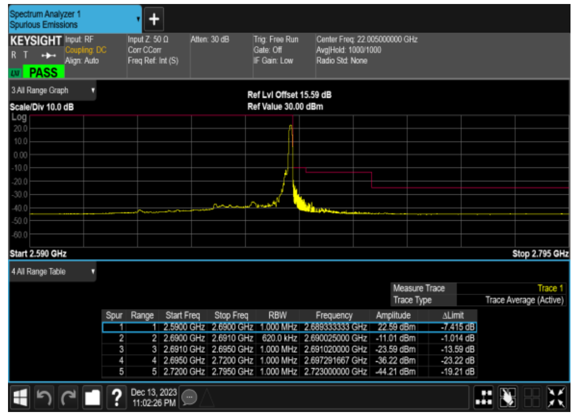
N41(30M)_DFT-s-OFDM_QPSK_Outer_Full_Low_CH



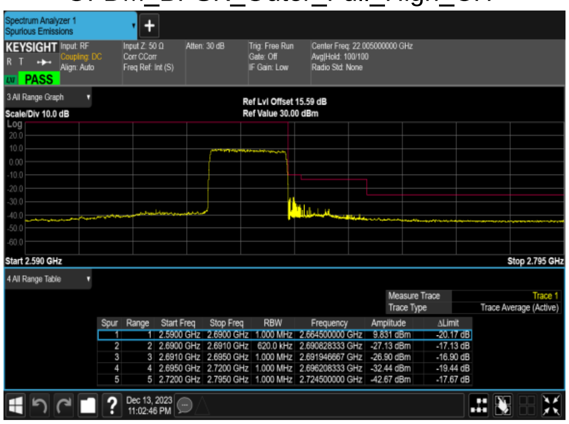
N41(30M)_DFT-s-OFDM_BPSK_Edge_1RB_Right_High_CH



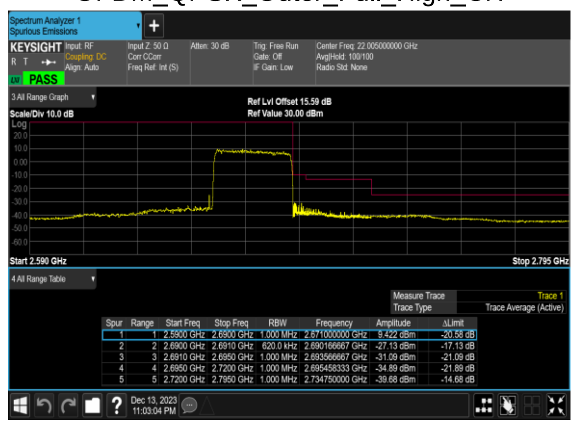
N41(30M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_High_CH



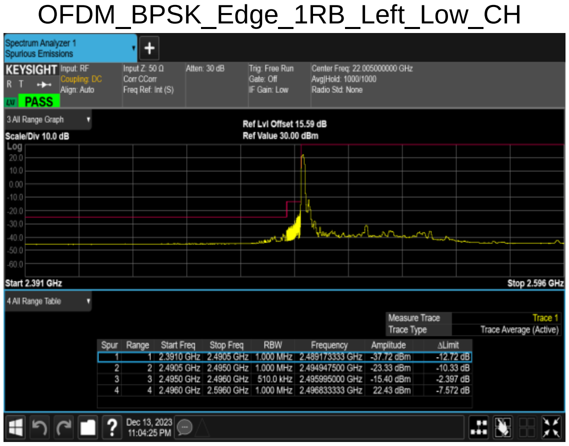
N41(30M)_DFT-s-OFDM_BPSK_Outer_Full_High_CH



N41(30M)_DFT-s-OFDM_QPSK_Outer_Full_High_CH



N41(50M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



N41(50M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH