FCC RF Test Report

APPLICANT	:	Motorola Mobility LLC
EQUIPMENT	:	Mobile Cellular Phone
BRAND NAME	:	Motorola
MODEL NAME	:	XT2311-3, XT2311-4, XT2311DL
FCC ID	:	IHDT56AH4
STANDARD	:	47 CFR Part 2, 22, 24, 27
CLASSIFICATION	:	PCS Licensed Transmitter Held to Ear (PCE)
TEST DATE(S)	:	Oct. 08, 2022 ~ Oct. 25, 2022

We, Sporton International Inc. (ShenZhen), 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. (ShenZhen), the test report shall not be reproduced except in full.

Jason Jia

Approved by: Jason Jia

ACCREDITED Cert #5145.02

Sporton International Inc. (ShenZhen)

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People's Republic of China

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG292212J	Rev. 01	Initial issue of report	Nov. 10, 2022

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	Reporting Only	PASS	-
	§22.913(a)(5)	Effective Radiated Power (5G NR n5, n26,)	ERP < 7 Watt		
	§27.50(c)(10)	Effective Radiated Power (5G NR n12)	ERP < 3 Watt		
	§24.232(c)	Equivalent Isotropic Radiated Power (5G NR n2, n25)	EIRP < 2Watt		
3.5	§24.232(d)	Peak-to-Average Ratio	<13 dB	PASS	-
3.6	§2.1049	Occupied Bandwidth	Reporting Only	PASS	-
3.7	§2.1051 §22.917(a) §24.238(a) §27.53(g)	Conducted Band Edge Measurement (5G NR n5, n26) (5G NR n2, n25) (5G NR n12)	< 43+10log10(P[Watts])	PASS	-
3.8	§2.1051 §22.917(a) §24.238(a) §27.53(g)	Conducted Spurious Emission (5G NR n5, n26) (5G NR n2, n25) (5G NR n12)	< 43+10log10(P[Watts])	PASS	-
3.9	§2.1055 §22.355	Frequency Stability Temperature & Voltage	< 2.5 ppm for Part 22	PASS	-
	§24.235 §27.54		Within Authorized Band		
4.4	§2.1053 §22.917(a) §24.238(a) §27.53(g)	Radiated Spurious Emission (5G NR n5, n26) (5G NR n2, n25) (5G NR n12)	< 43+10log$_{10}$(P[Watts])	PASS	Under limit 7.30 dB at 14482.000 MHz

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

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	XT2311-3, XT2311-4, XT2311DL
FCC ID	IHDT56AH4
IMEI Code	Conducted : 358373300032603/358373300032546 Radiation : 358373300025839
HW Version	DVT2
SW Version	TTO33.44
EUT Stage	Identical Prototype

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n5 : 824 MHz ~ 849 MHz 5G NR n12 : 699 MHz ~ 716 MHz 5G NR n25 : 1850 MHz ~ 1915 MHz 5G NR n26 : 824 MHz ~ 849 MHz
Rx Frequency	5G NR n2 : 1930 MHz ~ 1990 MHz 5G NR n5 : 869 MHz ~ 894 MHz 5G NR n12: 729 MHz ~ 746 MHz 5G NR n25 : 1930 MHz ~ 1995 MHz 5G NR n26 : 869 MHz ~ 894 MHz
Bandwidth	n2: 5/10/15/20/25/30MHz n5: 5/10/15/20/25 n12: 5/10/15MHz n25: 5/10/15/20/25/30/40MHz n26: 5/10/15/20
SCS	15kHz
Antenna Gain	**<Ant. 0>:** n2: -0.3 dBi n5: -4.3 dBi n12: -5.7 dBi

	n25: -0.3 dBi n26: -3.6 dBi **<Ant. 4>:** n2: -0.8 dBi n5: -5.7 dBi n12: -5.9 dBi n25: -0.7 dBi n26: -5.7 dBi
Type of Modulation	CP-OFDM: QPSK / 16QAM / 64QAM / 256QAM DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM

Remark:

1. The maximum ERP/EIRP is calculated from max output power and max antenna gain, only the maximum ERP/EIRP are shown in the report, 5G NR n2/n5/n12/n25/n26 for Ant. 0.
2. All the supported ENDC combinations are verified conducted power, only the ENDC combination with highest power are shown in the report.
3. 5G NR support SA (n2/n5/n12/n25/n26) mode and NSA(n2/n5/n12/n25) mode. According to the maximum power between SA and NSA mode, SA covers NSA mode for (n5/n12/n25).
4. The device supports two PAs for 5G NR n2(other PA only support NSA mode)
5. 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 Specification of Accessory

Specification of Accessory				
AC Adapter 1	**Brand Name**	Motorola(AOHAI)	**Model Name**	MC-101
AC Adapter 2	**Brand Name**	Motorola(Chenyang)	**Model Name**	MC-101
AC Adapter 3	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-101
Battery 1	**Brand Name**	Motorola (Sunwoda)	**Model Name**	PD50
Battery 2	**Brand Name**	Motorola (SCUD)	**Model Name**	PD50
USB Cable 1	**Brand Name**	HX	**Model Name**	S928D43190
USB Cable 2	**Brand Name**	NAEE	**Model Name**	S928D43191

1.7 Maximum ERP/EIRP Power and Emission Designator

5G NR n2		PI/2 BPSK / QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)
5	1852.5 ~ 1907.5	0.2178	4M48G7D	0.1841	4M47W7D
10	1855.0 ~ 1905.0	0.2070	9M29G7D	0.1694	9M29W7D
15	1857.5 ~ 1902.5	0.2133	14M1G7D	0.1742	14M1W7D
20	1860.0 ~ 1900.0	0.2123	18M9G7D	0.1770	18M9W7D
25	1862.5 ~ 1897.5	0.2032	23M7G7D	0.1687	23M8W7D
30	1865.0 ~ 1895.0	0.2183	28M6G7D	0.1738	28M5W7D

EN DC_5A-n2A		PI/2 BPSK / QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)
5	1852.5 ~ 1907.5	0.2350	4M47G7D	0.2023	4M48W7D
10	1855.0 ~ 1905.0	0.2254	9M29G7D	0.1928	9M29W7D
15	1857.5 ~ 1902.5	0.2312	14M1G7D	0.1982	14M1W7D
20	1860.0 ~ 1900.0	0.2307	18M9G7D	0.1963	18M9W7D
25	1862.5 ~ 1897.5	0.2234	23M7G7D	0.1914	23M8W7D
30	1865.0 ~ 1895.0	0.2432	28M6G7D	0.1941	28M5W7D

5G NR n5		PI/2 BPSK / QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum ERP(W)	Emission Designator (99%OBW)	Maximum ERP(W)	Emission Designator (99%OBW)
5	826.5 ~ 846.5	0.0508	4M47G7D	0.0407	4M48W7D
10	829.0 ~ 844.0	0.0492	9M28G7D	0.0394	9M29W7D
15	831.5 ~ 841.5	0.0489	14M1G7D	0.0402	14M1W7D
20	834.0 ~ 839.0	0.0500	18M9G7D	0.0398	18M9W7D
25	836.5	0.0518	23M8G7D	0.0409	23M8W7D

5G NR n12		PI/2 BPSK / QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum ERP(W)	Emission Designator (99%OBW)	Maximum ERP(W)	Emission Designator (99%OBW)
5	701.5 ~ 713.5	0.0422	4M47G7D	0.0358	4M47W7D
10	704.0~ 711.0	0.0404	9M27G7D	0.0340	9M28W7D
15	706.5 ~ 708.5	0.0423	14M1G7D	0.0352	14M1W7D

5G NR n25		PI/2 BPSK / QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)
5	1852.5 ~ 1912.5	0.2249	4M48G7D	0.1875	4M47W7D
10	1855.0 ~ 1910.0	0.2193	9M29G7D	0.1803	9M28W7D
15	1857.5 ~ 1907.5	0.2254	14M1G7D	0.1854	14M1W7D
20	1860.0 ~ 1905.0	0.2244	18M9G7D	0.1845	18M9W7D
25	1862.5 ~ 1902.5	0.2213	23M7G7D	0.1828	23M8W7D
30	1865.0 ~ 1900.0	0.2128	28M6G7D	0.1750	28M6W7D
40	1870.0 ~ 1895.0	0.2291	38M5G7D	0.1807	38M6W7D

5G NR n26		PI/2 BPSK / QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum ERP(W)	Emission Designator (99%OBW)	Maximum ERP(W)	Emission Designator (99%OBW)
5	826.5 ~ 846.5	0.0611	4M47G7D	0.0535	4M47W7D
10	829.0 ~ 844.0	0.0662	9M28G7D	0.0553	9M29W7D
15	831.5 ~ 841.5	0.0687	14M1G7D	0.0578	14M1W7D
20	834.0 ~ 839.0	0.0695	18M9G7D	0.0546	19M0W7D

Note: All modulations have been tested, only the worst test results of PSK & QAM are shown in the report.

1.8 Testing Location

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

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

Test Firm	Sporton International Inc. (Shenzhen)		
Test Site Location	101, 1st Floor, Block B, Building 1, No. 2, Tengfeng 4th Road, Fenghuang Community, Fuyong Street, Baoan District, Shenzhen City Guangdong Province China 518103 TEL: +86-755-33202398		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	03CH02-SZ	CN1256	421272

1.9 Test Software

Item	Site	Manufacturer	Name	Version
1.	03CH02-SZ	AUDIX	E3	6.2009-8-24a

1.10 Applicable Standards

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

- 47 CFR Part 2, 22, 24, 27
- ANSI C63.26-2015
- FCC KDB 971168 D01 Power Meas License Digital Systems v03r01
- FCC KDB 412172 D01 Determining ERP and EIRP v01r01

Remark:

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

2 Test Configuration of Equipment Under Test

2.1 Test Mode

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

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

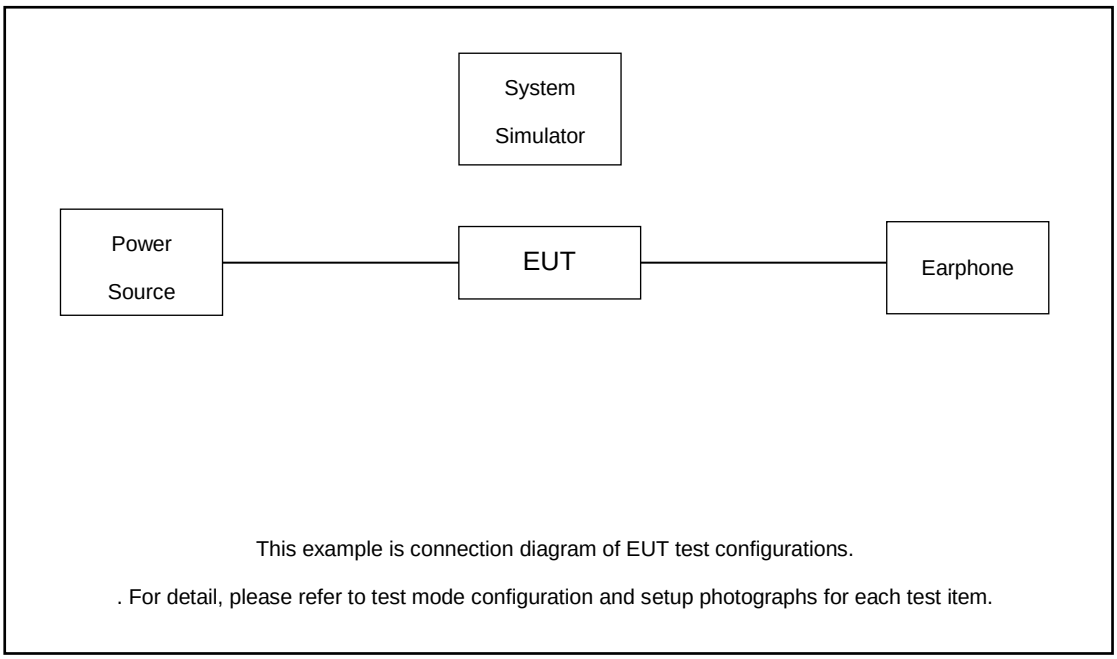
The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.

	X Plane	Y Plane	Z Plane
Orthogonal Planes of EUT			

Test Items	5G NR	Bandwidth (MHz)							Modulation					RB #		Test Channel		
		5	10	15	20	25	30	40	PI/2 BPSK	QPSK	16QAM	64QAM	256 QAM	1	Full	L	M	H
Max. Output Power	n2	v	v	v	v	v	v	-	v	v	v	v	v	v	v	v	v	v
	n5	v	v	v	v	v	-	-	v	v	v	v	v	v	v	v	v	v
	n12	v	v	v	-	-	-	-	v	v	v	v	v	v	v	v	v	v
	n25	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	n26	v	v	v	v	-	-	-	v	v	v	v	v	v	v	v	v	v
Peak-to-Average Ratio	n2				v			-	v	v				v	v		v	
	n5				v		-	-	v	v				v	v		v	
	n12			v	-	-	-	-	v	v				v	v		v	
	n25				v				v	v				v	v		v	
	n26				v	-	-		v	v				v	v		v	
26dB and 99% Bandwidth	n2	v	v	v	v	v	v	-	v	v	v	v	v		v	v	v	v
	n5	v	v	v	v	v	-	-	v	v	v	v	v		v		v	
	n12	v	v	v	-	-	-	-	v	v	v	v	v		v	v	v	v
	n25	v	v	v	v	v	v	v	v	v	v	v	v		v	v	v	v
	n26	v	v	v	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	PI/2 BPSK	QPSK	16QAM	64QAM	256 QAM	1	Full	L	M	H
Conducted Band Edge	n2	v			v		v	-	v	v				v	v	v		v
	n5	v		v		v	-	-	v	v				v	v	v		v
	n12	v	v	v	-	-	-	-	v	v				v	v	v		v
	n25	v			v			v	v	v				v	v	v		v
	n26	v	v		v	-	-		v	v				v	v	v		v
Conducted Spurious Emission	n2	v			v		v	-	v	v				v		v	v	v
	n5	v		v		v	-	-	v	v				v		v	v	v
	n12	v	v	v	-	-	-	-	v	v				v		v	v	v
	n25	v			v			v	v	v				v		v	v	v
	n26	v	v		v	-	-		v	v				v		v	v	v
Frequency Stability	n2				v			-		v					v		v	
	n5				v		-	-		v					v		v	
	n12		v		-	-	-	-		v					v		v	
	n25				v					v					v		v	
	n26				v	-	-			v					v		v	
E.R.P / E.I.R.P	n2	v	v	v	v	v	v	-	v	v	v	v	v	v	v	v	v	v
	n5	v	v	v	v	v	-	-	v	v	v	v	v	v	v	v	v	v
	n12	v	v	v	-	-	-	-	v	v	v	v	v	v	v	v	v	v
	n25	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
	n26	v	v	v	v	-	-	-	v	v	v	v	v	v	v	v	v	v
Radiated Spurious Emission	n2	Worst Case														v	v	v
	n5	Worst Case														v	v	v
	n12	Worst Case														v	v	v
	n25	Worst Case														v	v	v
	n26	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. Based on engineering evaluation, only the worst modulation test results are shown in the report. 5. Frequency Stability : Normal Voltage = 3.89V ; Low Voltage =3.60V. ; High Voltage =4.48V																	

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.

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.	Base Station	Anritsu	MT8000A	N/A	N/A	Unshielded,1.8m
3.	Base Station	Anritsu	MT8821C	N/A	N/A	Unshielded,1.8m

2.4 Measurement Results Explanation Example

For all conducted test items:

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

The spectrum analyzer offset is derived from RF cable loss.

Offset = RF cable loss.

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

Example :

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

= 8.0 (dB)

2.5 Frequency List of Low/Middle/High Channels

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

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

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

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

5G NR n26 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	175800	176300	176800
	Frequency	834	836.5	839
15	Channel	175300	176300	177300
	Frequency	831.5	836.5	841.5
10	Channel	174800	176300	177800
	Frequency	829	836.5	844
5	Channel	174300	176300	178300
	Frequency	826.5	836.5	846.5

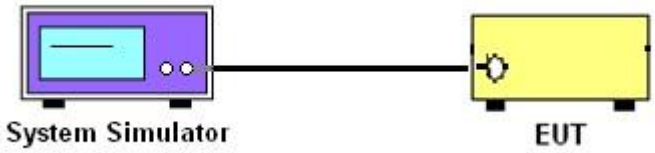
3 Conducted Test Items

3.1 Measuring Instruments

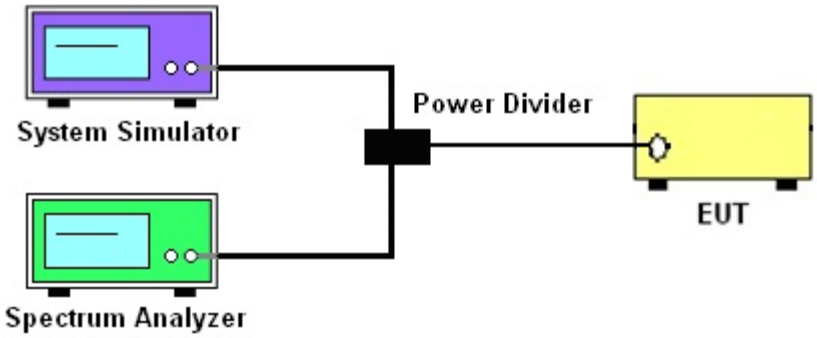
See list of measuring instruments of this test report.

3.2 Test Setup

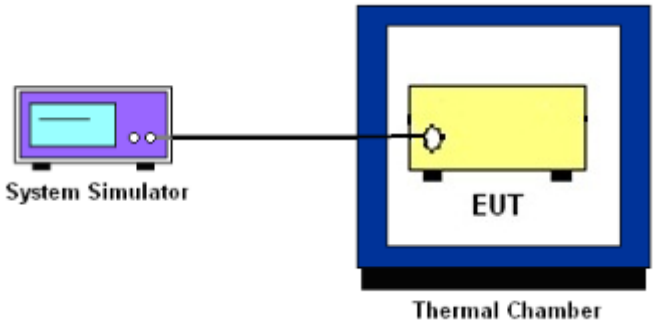
3.2.1 Conducted Output Power



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



3.2.3 Frequency Stability



3.3 Test Result of Conducted Test

Please refer to Appendix A.

3.4 Conducted Output Power and ERP/EIRP

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

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

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

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

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

According to KDB 412172 D01 Power Approach,

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

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

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

3.4.2 Test Procedures

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

3.5 Peak-to-Average Ratio

3.5.1 Description of the PAR Measurement

Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

3.5.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.2.3.4 (CCDF).
2. The EUT was connected to spectrum and system simulator via a power divider.
3. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
4. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
5. Record the deviation as Peak to Average Ratio.

3.6 Occupied Bandwidth

3.6.1 Description of Occupied Bandwidth Measurement

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

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

3.6.2 Test Procedures

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

3.7 Conducted Band Edge

3.7.1 Description of Conducted Band Edge Measurement

22.917(a)

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

24.238 (a)

For operations in the 1850-1910 and 1930-1990 MHz band, the FCC limit is 43 + $10\log_{10}$(P[Watts]) dB below the transmitter power P(Watts) in a 1MHz bandwidth. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

27.53 (g)

For operations in the 600MHz band and 698 -746 MHz band, the FCC limit is 43 + 10log10(P[Watts]) dB below the transmitter power P(Watts) in a 100 kHz bandwidth. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

3.7.2 Test Procedures

1. The testing follows ANSI C63.26 section 5.7
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The band edges of low and high channels for the highest RF powers were measured.
4. Set RBW >= 1% EBW in the 1MHz band immediately outside and adjacent to the band edge.
5. Beyond the 1 MHz band from the band edge, RBW=1MHz was used or a narrower RBW was used (generally limited to no less than 1% of the OBW) and the measured power was integrated over the full required measurement bandwidth.
6. Set spectrum analyzer with RMS detector.
7. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
8. Checked that all the results comply with the emission limit line.

   Example:

   The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)

   = P(W)- [43 + 10log(P)] (dB)

   = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB) = -13dBm.
9. When using the integration method, the starting frequency of the integration shall be centered at one-half of the RBW away from the band edge.

3.8 Conducted Spurious Emission

3.8.1 Description of Conducted Spurious Emission Measurement

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

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

3.8.2 Test Procedures

1. The testing follows ANSI C63.26 section 5.7
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
4. The middle channel for the highest RF power within the transmitting frequency was measured.
5. The conducted spurious emission for the whole frequency range was taken.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz.
7. Set spectrum analyzer with RMS detector.
8. Taking the record of maximum spurious emission.
9. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
10. The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)
    = P(W)- [43 + 10log(P)] (dB)
    = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
    = -13dBm.

3.9 Frequency Stability

3.9.1 Description of Frequency Stability Measurement

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

3.9.2 Test Procedures for Temperature Variation

1. The testing follows ANSI C63.26 section 5.6.4
2. The EUT was set up in the thermal chamber and connected with the system simulator.
3. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
4. With power OFF, the temperature was raised in 10°C step up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

3.9.3 Test Procedures for Voltage Variation

1. The testing follows ANSI C63.26 section 5.6.5
2. The EUT was placed in a temperature chamber at 20±5°C and connected with the system simulator.
3. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value for other than hand carried battery equipment.
4. For hand carried, battery powered equipment, reduce the primary ac or dc supply voltage to the battery operating end point, which shall be specified by the manufacturer.
5. The variation in frequency was measured for the worst case.

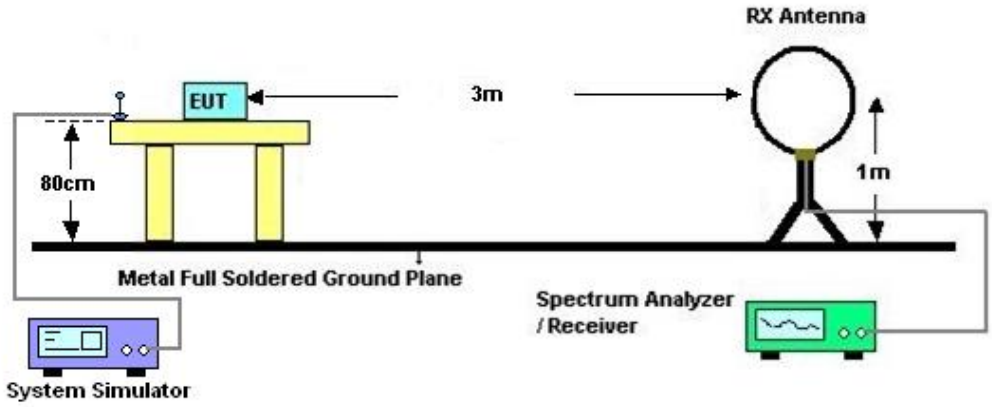
4 Radiated Test Items

4.1 Measuring Instruments

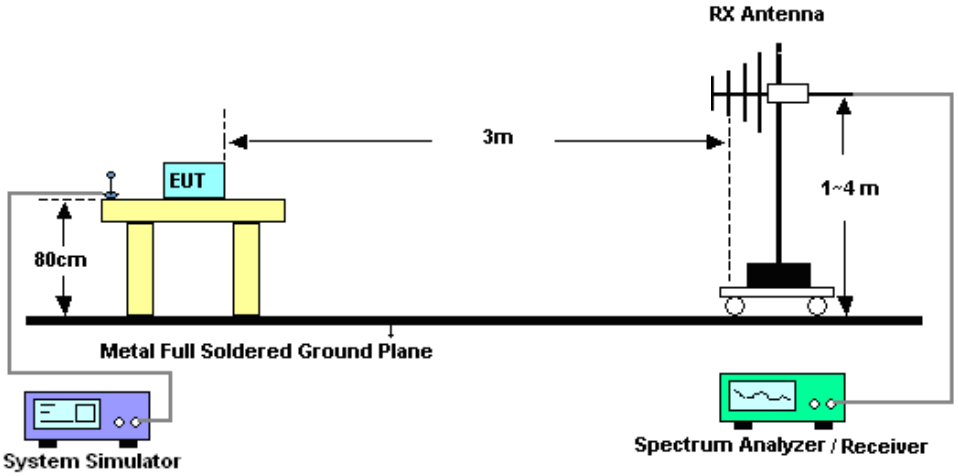
See list of measuring instruments of this test report.

4.2 Test Setup

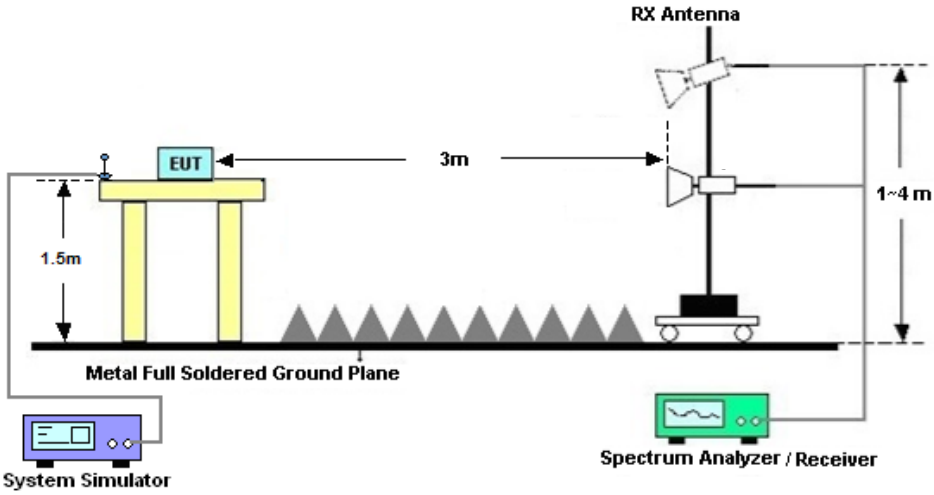
4.2.1 For radiated test below 30MHz



4.2.2 For radiated test from 30MHz to 1GHz



4.2.3 For radiated test above 1GHz



4.3 Test Result of Radiated Test

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

Please refer to Appendix B.

4.4 Radiated Spurious Emission

4.4.1 Description of Radiated Spurious Emission

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

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

4.4.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.5
2. The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and 1.5 meter height for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
5. The height of the receiving antenna is varied between 1m to 4m to search the maximum spurious emission for both horizontal and vertical polarizations.
6. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power.
7. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
8. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
9. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
10. EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
11. ERP (dBm) = EIRP - 2.15
12. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
    The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)
    = P(W)- [43 + 10log(P)] (dB)
    = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
    = -13dBm.

5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver&SA	Agilent	N9038A	MY52260185	20Hz~26.5GHz	Dec. 27, 2021	Oct. 08, 2022~ Oct. 25 ,2022	Dec. 26, 2022	Conducted (TH01-SZ)
Power Divider	TOJOIN	PS-2SM-04 265	60.06.020.007 7	0.4GHz~26.5GHz	Dec. 25, 2021	Oct. 08, 2022~ Oct. 25, 2022	Dec. 24, 2022	Conducted (TH01-SZ)
Thermal Chamber	Ten Billion Hongzhangroup	LP-150U	H2014081803	-40~+150°C	Jul. 07, 2022	Oct. 08, 2022~ Oct. 25, 2022	Jul. 06, 2023	Conducted (TH01-SZ)
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY55150213	10Hz~44GHz	Jul. 07, 2022	Oct. 18,2022	Jul. 06, 2023	Radiation (03CH02-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	Jul. 28, 2022	Oct. 18, 2022	Jul. 27, 2023	Radiation (03CH02-SZ)
Bilog Antenna	TeseQ	CBL6112D	44483	30MHz-2GHz	Oct. 22, 2021	Oct. 18, 2022	Oct. 21, 2022	Radiation (03CH02-SZ)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00119436	1GHz~18GHz	Jul. 07, 2022	Oct. 18, 2022	Jul. 06, 2023	Radiation (03CH02-SZ)
HF Amplifier	MITEQ	TTA1840-35 -HG	1871923	18GHz~40GHz	Jul. 07, 2022	Oct. 18, 2022	Jul. 06, 2023	Radiation (03CH02-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Apr. 10, 2022	Oct. 18, 2022	Apr. 09, 2023	Radiation (03CH02-SZ)
LF Amplifier	Burgeon	BPA-530	102211	0.01~3000Mhz	Oct. 22 ,2021	Oct. 18, 2022	Oct. 21, 2022	Radiation (03CH02-SZ)
HF Amplifier	KEYSIGHT	83017A	MY53270105	0.5GHz~26.5Ghz	Oct. 22, 2021	Oct. 18, 2022	Oct. 21, 2022	Radiation (03CH02-SZ)
AC Power Source	Chroma	61601	616010002470	N/A	NCR	Oct. 18, 2022	NCR	Radiation (03CH02-SZ)
Turn Table	Chaintek	T-200	N/A	0~360 degree	NCR	Oct. 18, 2022	NCR	Radiation (03CH02-SZ)
Antenna Mast	Chaintek	MBS-400	N/A	1 m~4 m	NCR	Oct. 18, 2022	NCR	Radiation (03CH02-SZ)

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	±1.34 dB
Conducted Emissions	±1.34 dB
Occupied Channel Bandwidth	±1.2 %

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.47dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.31dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.72dB

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

Appendix A. Test Results of Conducted Test

Test Engineer :	Jung Kuo	**Temperature :**	22~23℃
		Relative Humidity :	40~42%

Software Version: 22.09.0601

FR1 N2-Ant 0

Transmitter Conducted Output Power And EIRP, (G_T - L_C)=-0.3dB

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Conducted Power(dBm)	EIRP (dBm)	EIRP (W)
2	15	5	370500	1852.5	DFT-s-OFDM QPSK	1@1	23.67	23.37	0.2173
2	15	5	370500	1852.5	DFT-s-OFDM 16 QAM	1@1	22.77	22.47	0.1766
2	15	5	376000	1880.0	DFT-s-OFDM QPSK	1@1	23.68	23.38	0.2178
2	15	5	376000	1880.0	DFT-s-OFDM 16 QAM	1@1	22.95	22.65	0.1841
2	15	5	381500	1907.5	DFT-s-OFDM QPSK	1@1	23.68	23.38	0.2178
2	15	5	381500	1907.5	DFT-s-OFDM 16 QAM	1@1	22.72	22.42	0.1746
2	15	10	371000	1855.0	DFT-s-OFDM QPSK	1@1	23.43	23.13	0.2056
2	15	10	371000	1855.0	DFT-s-OFDM 16 QAM	1@1	22.58	22.28	0.1690
2	15	10	376000	1880.0	DFT-s-OFDM QPSK	1@1	23.46	23.16	0.2070
2	15	10	376000	1880.0	DFT-s-OFDM 16 QAM	1@1	22.59	22.29	0.1694
2	15	10	381000	1905.0	DFT-s-OFDM QPSK	1@1	23.4	23.1	0.2042
2	15	10	381000	1905.0	DFT-s-OFDM 16 QAM	1@1	22.54	22.24	0.1675
2	15	15	371500	1857.5	DFT-s-OFDM QPSK	1@1	23.59	23.29	0.2133
2	15	15	371500	1857.5	DFT-s-OFDM 16 QAM	1@1	22.7	22.4	0.1738
2	15	15	376000	1880.0	DFT-s-OFDM QPSK	1@1	23.59	23.29	0.2133
2	15	15	376000	1880.0	DFT-s-OFDM 16 QAM	1@1	22.71	22.41	0.1742
2	15	15	380500	1902.5	DFT-s-OFDM QPSK	1@1	23.52	23.22	0.2099
2	15	15	380500	1902.5	DFT-s-OFDM 16 QAM	1@1	22.61	22.31	0.1702
2	15	20	372000	1860.0	DFT-s-OFDM QPSK	1@1	23.54	23.24	0.2109

2	15	20	372000	1860.0	DFT-s-OFDM 16 QAM	1@1	22.63	22.33	0.1710
2	15	20	376000	1880.0	DFT-s-OFDM QPSK	1@1	23.57	23.27	0.2123
2	15	20	376000	1880.0	DFT-s-OFDM 16 QAM	1@1	22.78	22.48	0.1770
2	15	20	380000	1900.0	DFT-s-OFDM QPSK	1@1	23.4	23.1	0.2042
2	15	20	380000	1900.0	DFT-s-OFDM 16 QAM	1@1	22.61	22.31	0.1702
2	15	25	372500	1862.5	DFT-s-OFDM QPSK	1@1	23.38	23.08	0.2032
2	15	25	372500	1862.5	DFT-s-OFDM 16 QAM	1@1	22.56	22.26	0.1683
2	15	25	376000	1880.0	DFT-s-OFDM QPSK	1@1	23.35	23.05	0.2018
2	15	25	376000	1880.0	DFT-s-OFDM 16 QAM	1@1	22.57	22.27	0.1687
2	15	25	379500	1897.5	DFT-s-OFDM QPSK	1@1	23.28	22.98	0.1986
2	15	25	379500	1897.5	DFT-s-OFDM 16 QAM	1@1	22.51	22.21	0.1663
2	15	30	373000	1865.0	DFT-s-OFDM PI/2 BPSK	80@40	23.48	23.18	0.2080
2	15	30	373000	1865.0	DFT-s-OFDM PI/2 BPSK	1@1	23.25	22.95	0.1972
2	15	30	373000	1865.0	DFT-s-OFDM PI/2 BPSK	1@158	23.42	23.12	0.2051
2	15	30	373000	1865.0	DFT-s-OFDM QPSK	80@40	23.54	23.24	0.2109
2	15	30	373000	1865.0	DFT-s-OFDM QPSK	1@1	23.29	22.99	0.1991
2	15	30	373000	1865.0	DFT-s-OFDM QPSK	1@158	23.46	23.16	0.2070
2	15	30	373000	1865.0	DFT-s-OFDM 16 QAM	80@40	22.51	22.21	0.1663
2	15	30	373000	1865.0	DFT-s-OFDM 16 QAM	1@1	22.46	22.16	0.1644
2	15	30	373000	1865.0	DFT-s-OFDM 16 QAM	1@158	22.68	22.38	0.1730
2	15	30	373000	1865.0	DFT-s-OFDM 64 QAM	80@40	21.15	20.85	0.1216
2	15	30	373000	1865.0	DFT-s-OFDM 64 QAM	1@1	20.97	20.67	0.1167
2	15	30	373000	1865.0	DFT-s-OFDM 64 QAM	1@158	21.23	20.93	0.1239
2	15	30	373000	1865.0	DFT-s-OFDM 256 QAM	80@40	19.19	18.89	0.0774

2	15	30	373000	1865.0	DFT-s-OFDM 256 QAM	1@1	19.01	18.71	0.0743
2	15	30	373000	1865.0	DFT-s-OFDM 256 QAM	1@158	19.23	18.93	0.0782
2	15	30	373000	1865.0	CP-OFDM QPSK	80@40	22.12	21.82	0.1521
2	15	30	373000	1865.0	CP-OFDM QPSK	1@1	21.81	21.51	0.1416
2	15	30	373000	1865.0	CP-OFDM QPSK	1@158	22.05	21.75	0.1496
2	15	30	376000	1880.0	DFT-s-OFDM PI/2 BPSK	80@40	23.64	23.34	0.2158
2	15	30	376000	1880.0	DFT-s-OFDM PI/2 BPSK	1@1	23.25	22.95	0.1972
2	15	30	376000	1880.0	DFT-s-OFDM PI/2 BPSK	1@158	23.17	22.87	0.1936
2	15	30	376000	1880.0	DFT-s-OFDM QPSK	80@40	23.69	23.39	0.2183
2	15	30	376000	1880.0	DFT-s-OFDM QPSK	1@1	23.23	22.93	0.1963
2	15	30	376000	1880.0	DFT-s-OFDM QPSK	1@158	23.01	22.71	0.1866
2	15	30	376000	1880.0	DFT-s-OFDM 16 QAM	80@40	22.7	22.4	0.1738
2	15	30	376000	1880.0	DFT-s-OFDM 16 QAM	1@1	22.45	22.15	0.1641
2	15	30	376000	1880.0	DFT-s-OFDM 16 QAM	1@158	22	21.7	0.1479
2	15	30	376000	1880.0	DFT-s-OFDM 64 QAM	80@40	21.28	20.98	0.1253
2	15	30	376000	1880.0	DFT-s-OFDM 64 QAM	1@1	20.88	20.58	0.1143
2	15	30	376000	1880.0	DFT-s-OFDM 64 QAM	1@158	20.87	20.57	0.1140
2	15	30	376000	1880.0	DFT-s-OFDM 256 QAM	80@40	19.3	19	0.0794
2	15	30	376000	1880.0	DFT-s-OFDM 256 QAM	1@1	19.06	18.76	0.0752
2	15	30	376000	1880.0	DFT-s-OFDM 256 QAM	1@158	19.01	18.71	0.0743
2	15	30	376000	1880.0	CP-OFDM QPSK	80@40	22.26	21.96	0.1570
2	15	30	376000	1880.0	CP-OFDM QPSK	1@1	21.89	21.59	0.1442
2	15	30	376000	1880.0	CP-OFDM QPSK	1@158	21.48	21.18	0.1312
2	15	30	379000	1895.0	DFT-s-OFDM PI/2 BPSK	80@40	23.57	23.27	0.2123

2	15	30	379000	1895.0	DFT-s-OFDM PI/2 BPSK	1@1	23.39	23.09	0.2037
2	15	30	379000	1895.0	DFT-s-OFDM PI/2 BPSK	1@158	23.19	22.89	0.1945
2	15	30	379000	1895.0	DFT-s-OFDM QPSK	80@40	23.56	23.26	0.2118
2	15	30	379000	1895.0	DFT-s-OFDM QPSK	1@1	23.47	23.17	0.2075
2	15	30	379000	1895.0	DFT-s-OFDM QPSK	1@158	23.15	22.85	0.1928
2	15	30	379000	1895.0	DFT-s-OFDM 16 QAM	80@40	22.56	22.26	0.1683
2	15	30	379000	1895.0	DFT-s-OFDM 16 QAM	1@1	22.66	22.36	0.1722
2	15	30	379000	1895.0	DFT-s-OFDM 16 QAM	1@158	22.49	22.19	0.1656
2	15	30	379000	1895.0	DFT-s-OFDM 64 QAM	80@40	21.15	20.85	0.1216
2	15	30	379000	1895.0	DFT-s-OFDM 64 QAM	1@1	21.21	20.91	0.1233
2	15	30	379000	1895.0	DFT-s-OFDM 64 QAM	1@158	20.99	20.69	0.1172
2	15	30	379000	1895.0	DFT-s-OFDM 256 QAM	80@40	19.18	18.88	0.0773
2	15	30	379000	1895.0	DFT-s-OFDM 256 QAM	1@1	19.24	18.94	0.0783
2	15	30	379000	1895.0	DFT-s-OFDM 256 QAM	1@158	19.08	18.78	0.0755
2	15	30	379000	1895.0	CP-OFDM QPSK	80@40	22.15	21.85	0.1531
2	15	30	379000	1895.0	CP-OFDM QPSK	1@1	22	21.7	0.1479
2	15	30	379000	1895.0	CP-OFDM QPSK	1@158	22.14	21.84	0.1528

Frequency Stability

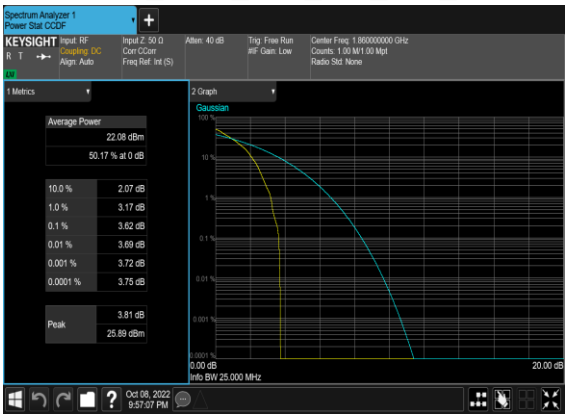
NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Deviation (ppm)	Verdict	Environment
2	15	20	376000	1880.0	DFT-s-OFDM QPSK	100@0	0.0065	**PASS**	NV
2	15	20	376000	1880.0	DFT-s-OFDM QPSK	100@0	0.0049	**PASS**	LV
2	15	20	376000	1880.0	DFT-s-OFDM QPSK	100@0	0.0069	**PASS**	HV
2	15	20	376000	1880.0	DFT-s-OFDM QPSK	100@0	0.0049	**PASS**	-30℃
2	15	20	376000	1880.0	DFT-s-OFDM QPSK	100@0	0.0043	**PASS**	-20℃
2	15	20	376000	1880.0	DFT-s-OFDM QPSK	100@0	0.0053	**PASS**	-10℃
2	15	20	376000	1880.0	DFT-s-OFDM QPSK	100@0	0.0052	**PASS**	0℃
2	15	20	376000	1880.0	DFT-s-OFDM QPSK	100@0	0.0060	**PASS**	10℃
2	15	20	376000	1880.0	DFT-s-OFDM QPSK	100@0	0.0065	**PASS**	20℃
2	15	20	376000	1880.0	DFT-s-OFDM QPSK	100@0	0.0035	**PASS**	30℃
2	15	20	376000	1880.0	DFT-s-OFDM QPSK	100@0	0.0039	**PASS**	40℃
2	15	20	376000	1880.0	DFT-s-OFDM QPSK	100@0	0.0061	**PASS**	50℃

Peak to Average Radio

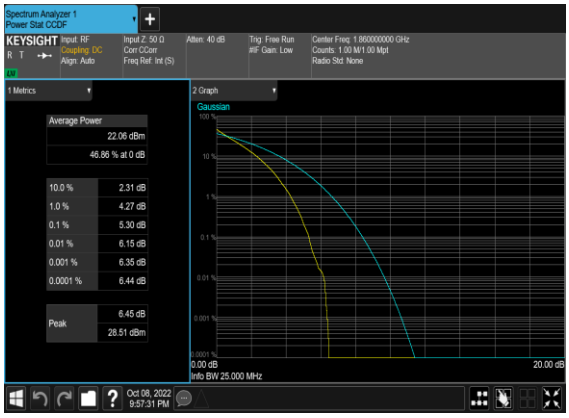
NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result (dB)	Limit (dB)	Verdict
2	15	20	372000	1860.0	DFT-s-OFDM PI/2 BPSK	100@0	4.17	13	**PASS**
2	15	20	372000	1860.0	DFT-s-OFDM PI/2 BPSK	1@0	3.62	13	**PASS**
2	15	20	372000	1860.0	DFT-s-OFDM QPSK	100@0	5.3	13	**PASS**
2	15	20	372000	1860.0	DFT-s-OFDM QPSK	1@0	4.64	13	**PASS**
2	15	20	376000	1880.0	DFT-s-OFDM PI/2 BPSK	100@0	4.16	13	**PASS**
2	15	20	376000	1880.0	DFT-s-OFDM PI/2 BPSK	1@0	3.5	13	**PASS**
2	15	20	376000	1880.0	DFT-s-OFDM QPSK	100@0	5.2	13	**PASS**
2	15	20	376000	1880.0	DFT-s-OFDM QPSK	1@0	4.69	13	**PASS**
2	15	20	380000	1900.0	DFT-s-OFDM PI/2 BPSK	100@0	4.05	13	**PASS**
2	15	20	380000	1900.0	DFT-s-OFDM PI/2 BPSK	1@0	3.51	13	**PASS**
2	15	20	380000	1900.0	DFT-s-OFDM QPSK	100@0	5.17	13	**PASS**
2	15	20	380000	1900.0	DFT-s-OFDM QPSK	1@0	4.76	13	**PASS**

N2(20M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Low_CH

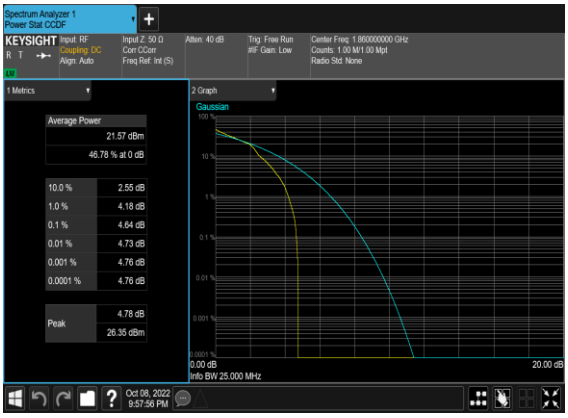
N2(20M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_Low_CH



N2(20M)_DFT-s-OFDM_QPSK_Outer_Full_Low_CH

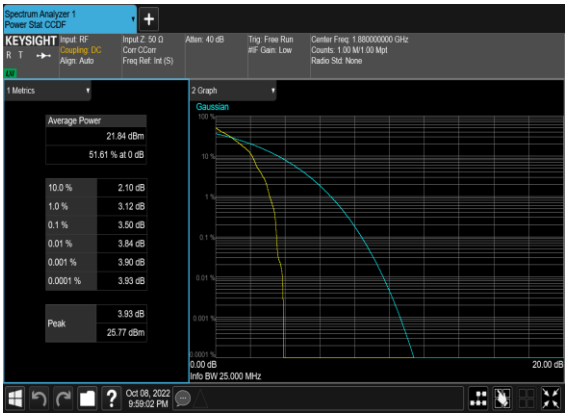


N2(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH

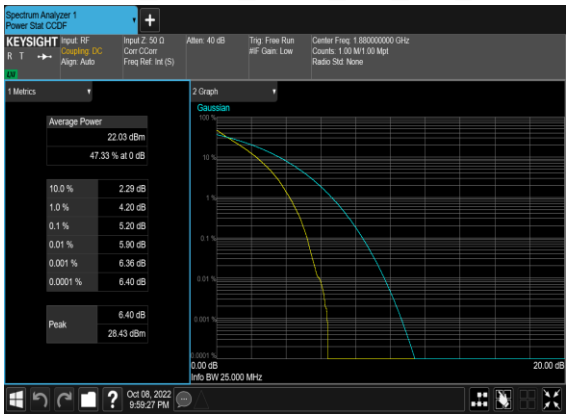


N2(20M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH

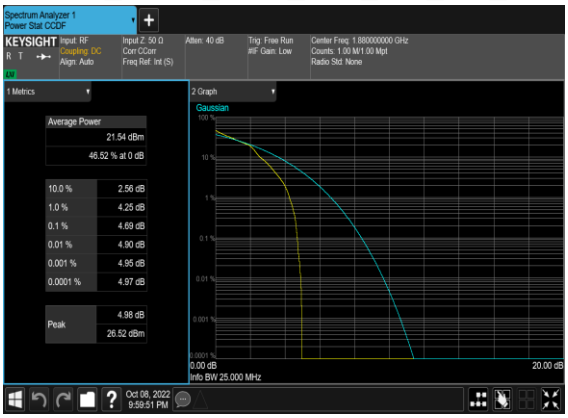
N2(20M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_Mid_CH



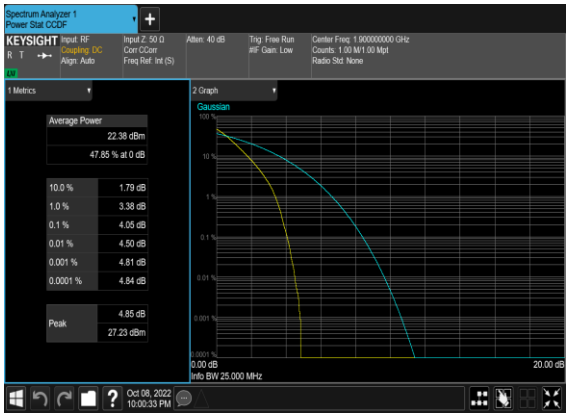
N2(20M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



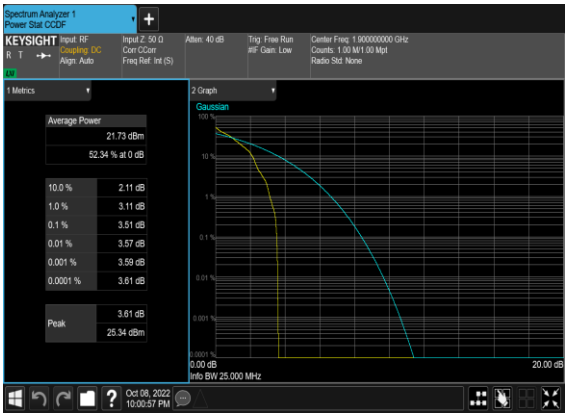
N2(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



N2(20M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_High_CH

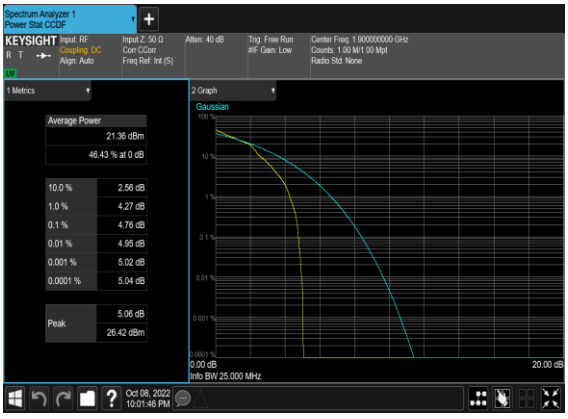


N2(20M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_High_CH



N2(20M)_DFT-s-OFDM_QPSK_Outer_Full_High_CH

N2(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH

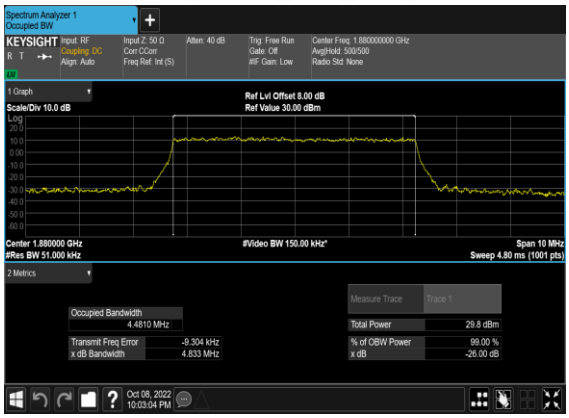


Occupied Bandwidth

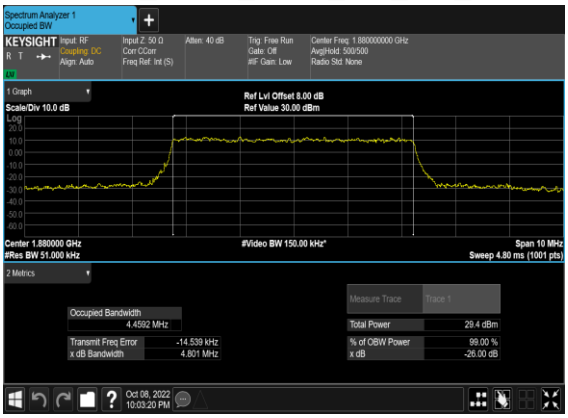
NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	OBW (MHz)	26dB OBW (MHz)
2	15	5	376000	1880.0	DFT-s-OFDM PI/2 BPSK	25@0	4.481	4.833
2	15	5	376000	1880.0	DFT-s-OFDM QPSK	25@0	4.4592	4.801
2	15	5	376000	1880.0	CP-OFDM QPSK	25@0	4.4564	4.914
2	15	5	376000	1880.0	CP-OFDM 16 QAM	25@0	4.4739	4.833
2	15	5	376000	1880.0	CP-OFDM 64 QAM	25@0	4.4637	4.805
2	15	5	376000	1880.0	CP-OFDM 256 QAM	25@0	4.462	4.803
2	15	10	376000	1880.0	DFT-s-OFDM PI/2 BPSK	50@0	8.9265	9.564
2	15	10	376000	1880.0	DFT-s-OFDM QPSK	50@0	8.9289	9.596
2	15	10	376000	1880.0	CP-OFDM QPSK	52@0	9.289	9.929
2	15	10	376000	1880.0	CP-OFDM 16 QAM	52@0	9.2897	9.92
2	15	10	376000	1880.0	CP-OFDM 64 QAM	52@0	9.2865	9.857
2	15	10	376000	1880.0	CP-OFDM 256 QAM	52@0	9.2666	9.902
2	15	15	376000	1880.0	DFT-s-OFDM PI/2 BPSK	75@0	13.378	14.14
2	15	15	376000	1880.0	DFT-s-OFDM QPSK	75@0	13.395	14.17
2	15	15	376000	1880.0	CP-OFDM QPSK	79@0	14.126	14.77
2	15	15	376000	1880.0	CP-OFDM 16 QAM	79@0	14.094	14.77
2	15	15	376000	1880.0	CP-OFDM 64 QAM	79@0	14.078	14.75
2	15	15	376000	1880.0	CP-OFDM 256 QAM	79@0	14.1	14.72
2	15	20	376000	1880.0	DFT-s-OFDM PI/2 BPSK	100@0	17.864	18.92
2	15	20	376000	1880.0	DFT-s-OFDM QPSK	100@0	17.884	18.96
2	15	20	376000	1880.0	CP-OFDM QPSK	106@0	18.914	19.99
2	15	20	376000	1880.0	CP-OFDM 16 QAM	106@0	18.888	19.69
2	15	20	376000	1880.0	CP-OFDM 64 QAM	106@0	18.915	19.95
2	15	20	376000	1880.0	CP-OFDM 256 QAM	106@0	18.862	19.85

2	15	25	376000	1880.0	DFT-s-OFDM PI/2 BPSK	128@0	22.821	23.98
2	15	25	376000	1880.0	DFT-s-OFDM QPSK	128@0	22.863	23.9
2	15	25	376000	1880.0	CP-OFDM QPSK	133@0	23.724	24.82
2	15	25	376000	1880.0	CP-OFDM 16 QAM	133@0	23.7	24.74
2	15	25	376000	1880.0	CP-OFDM 64 QAM	133@0	23.753	24.7
2	15	25	376000	1880.0	CP-OFDM 256 QAM	133@0	23.749	24.82
2	15	30	376000	1880.0	DFT-s-OFDM PI/2 BPSK	160@0	28.561	29.66
2	15	30	376000	1880.0	DFT-s-OFDM QPSK	160@0	28.578	29.68
2	15	30	376000	1880.0	CP-OFDM QPSK	160@0	28.53	29.72
2	15	30	376000	1880.0	CP-OFDM 16 QAM	160@0	28.542	29.74
2	15	30	376000	1880.0	CP-OFDM 64 QAM	160@0	28.538	29.71
2	15	30	376000	1880.0	CP-OFDM 256 QAM	160@0	28.49	29.65

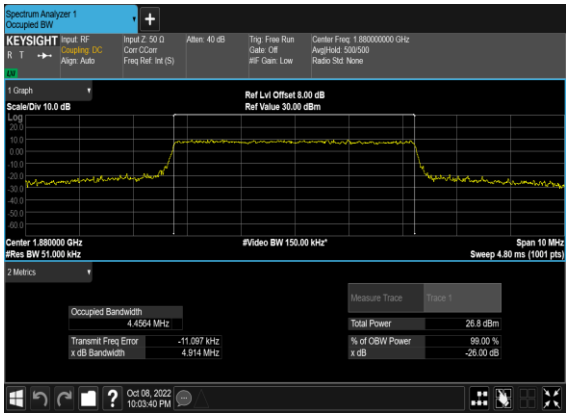
N2(5M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



N2(5M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



N2(5M)_CP-OFDM_QPSK_Outer_Full_Mid_CH

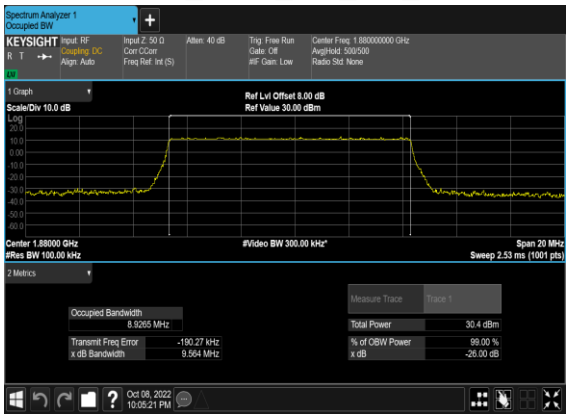


N2(5M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH

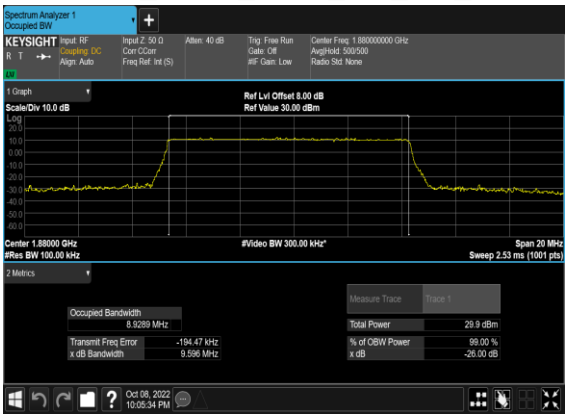
N2(5M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH

N2(5M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH

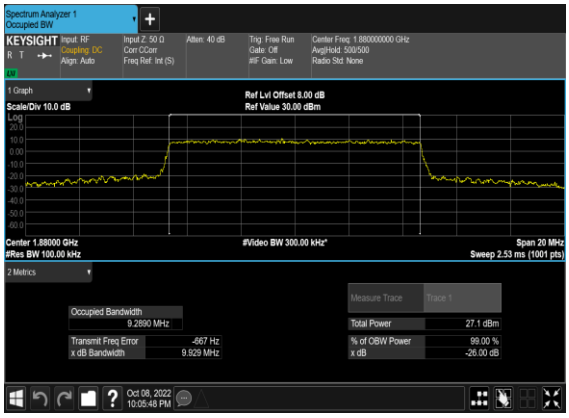
N2(10M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



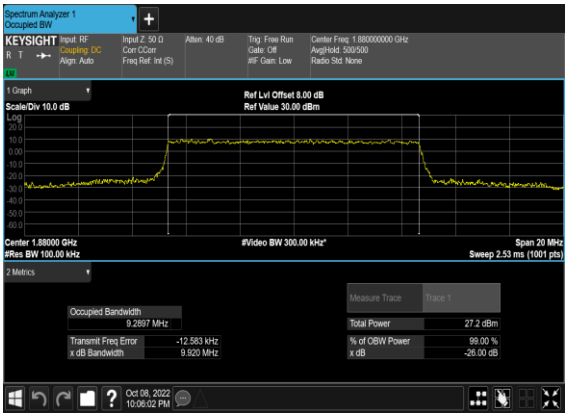
N2(10M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



N2(10M)_CP-OFDM_QPSK_Outer_Full_Mid_CH

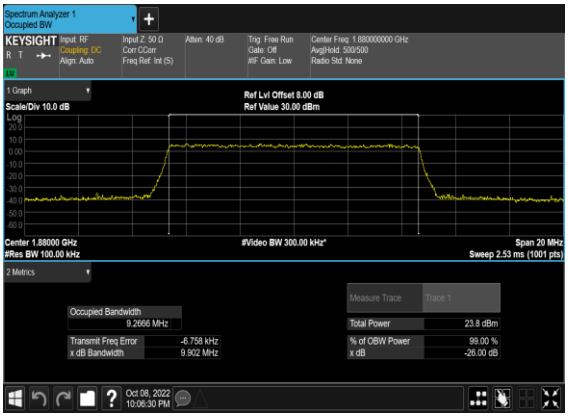


N2(10M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH

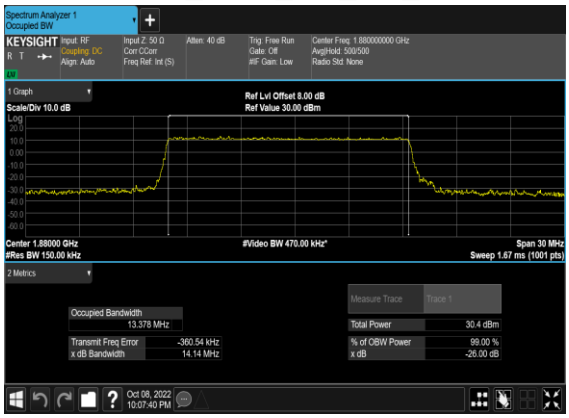


N2(10M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH

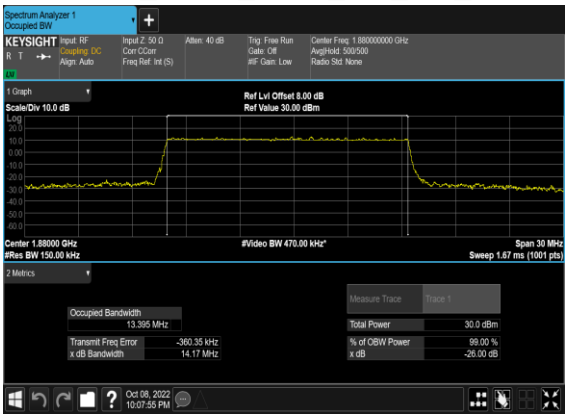
N2(10M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



N2(15M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH

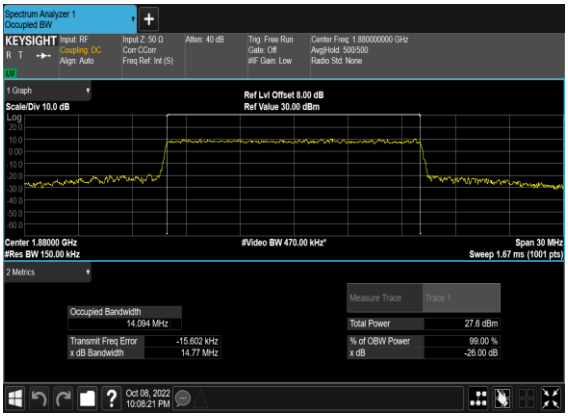


N2(15M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



N2(15M)_CP-OFDM_QPSK_Outer_Full_Mid_CH

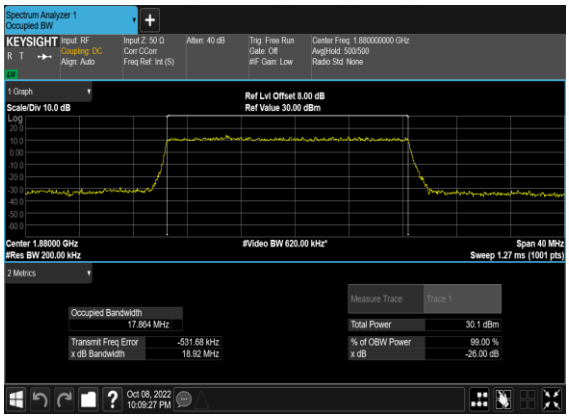
N2(15M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



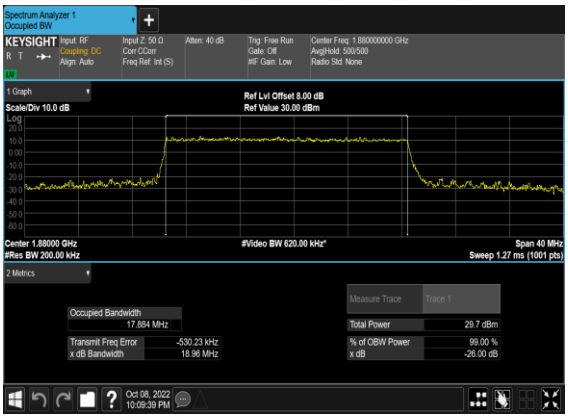
N2(15M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH

N2(15M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH

N2(20M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH

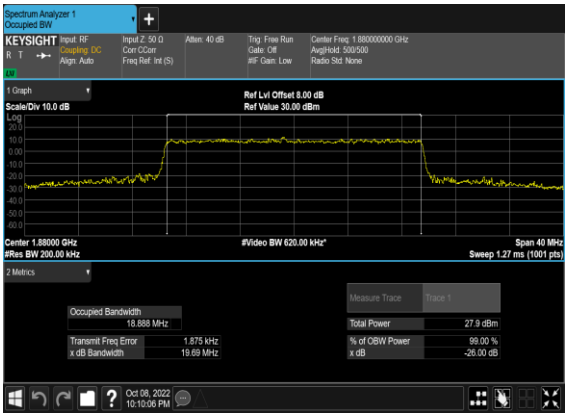


N2(20M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH

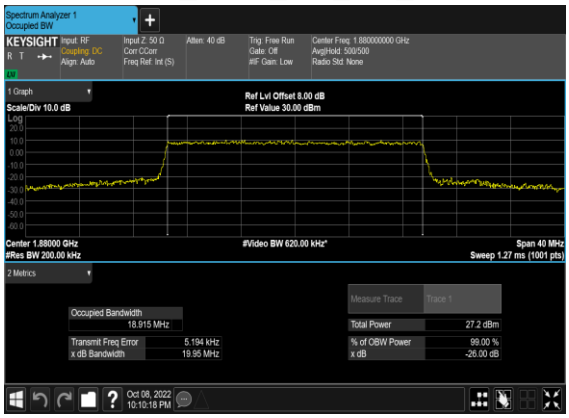


N2(20M)_CP-OFDM_QPSK_Outer_Full_Mid_CH

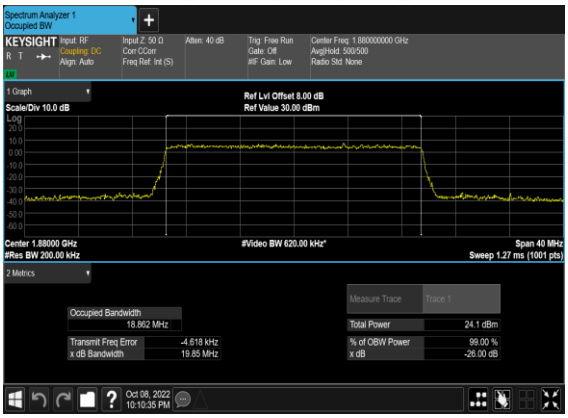
N2(20M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



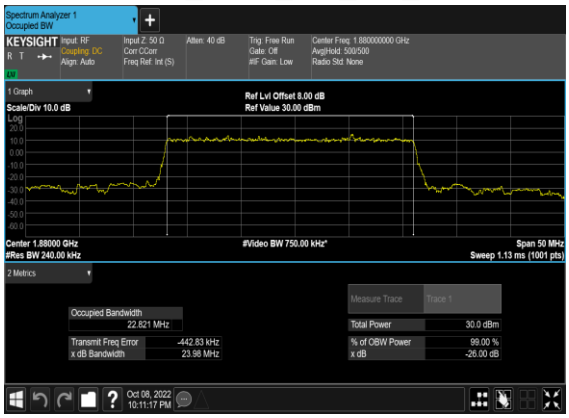
N2(20M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



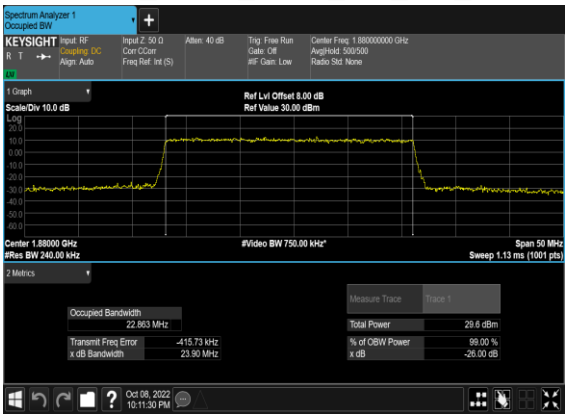
N2(20M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



N2(25M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



N2(25M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



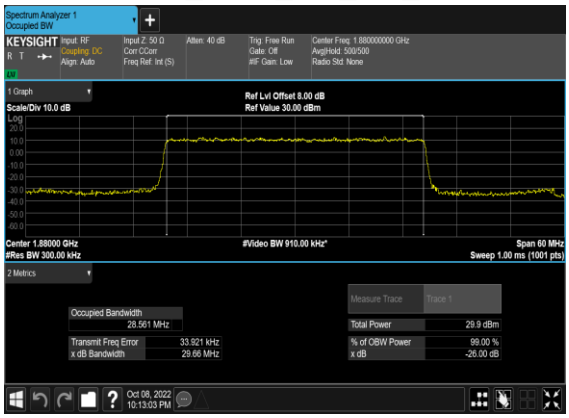
N2(25M)_CP-OFDM_QPSK_Outer_Full_Mid_CH

N2(25M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH

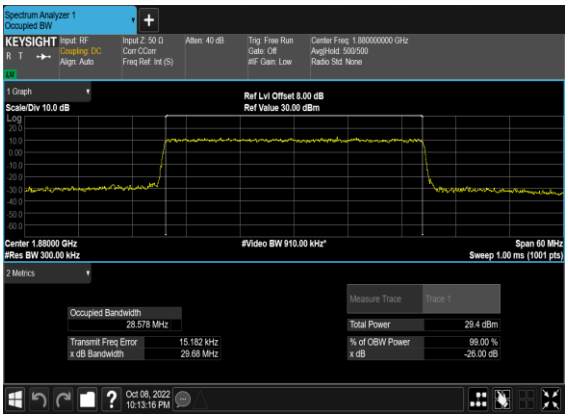
N2(25M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH

N2(25M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH

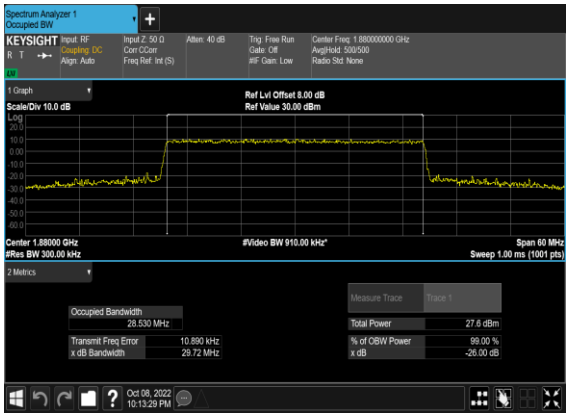
N2(30M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



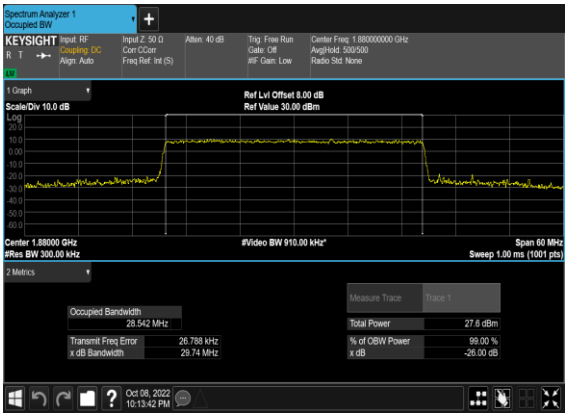
N2(30M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



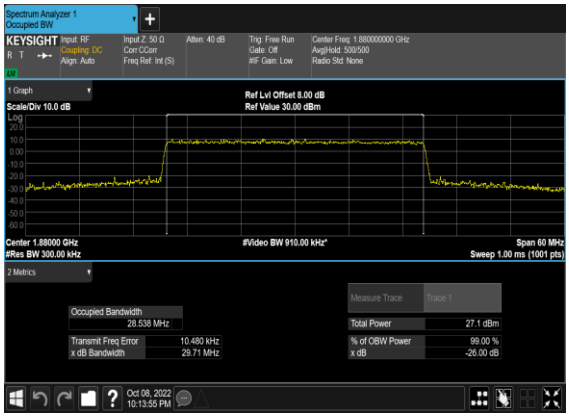
N2(30M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



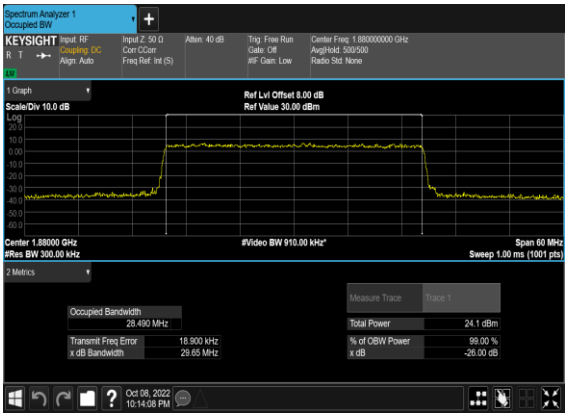
N2(30M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



N2(30M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



N2(30M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH

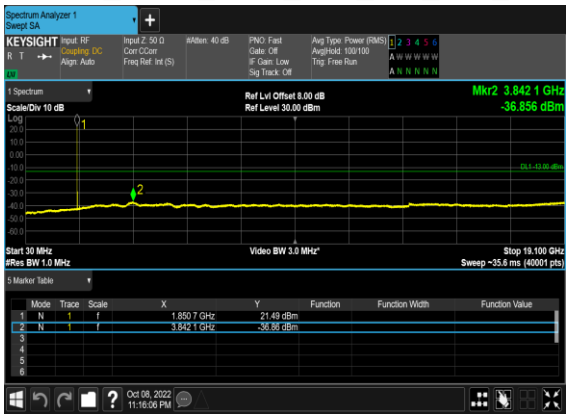


Conducted Spurious Emissions

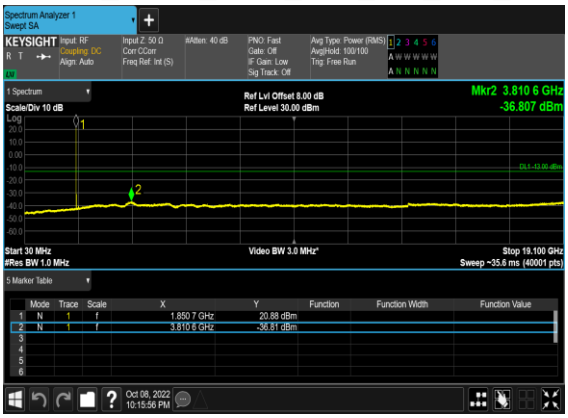
NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result	Verdict
2	15	5	370500	1852.5	DFT-s-OFDM BPSK	1@0	see graph	**---**
2	15	5	370500	1852.5	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
2	15	5	370500	1852.5	DFT-s-OFDM QPSK	1@0	see graph	**---**
2	15	5	370500	1852.5	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
2	15	5	376000	1880.0	DFT-s-OFDM BPSK	1@0	see graph	**---**
2	15	5	376000	1880.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
2	15	5	376000	1880.0	DFT-s-OFDM QPSK	1@0	see graph	**---**
2	15	5	376000	1880.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
2	15	5	381500	1907.5	DFT-s-OFDM BPSK	1@0	see graph	**---**
2	15	5	381500	1907.5	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
2	15	5	381500	1907.5	DFT-s-OFDM QPSK	1@0	see graph	**---**
2	15	5	381500	1907.5	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
2	15	20	372000	1860.0	DFT-s-OFDM BPSK	1@0	see graph	**---**
2	15	20	372000	1860.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
2	15	20	372000	1860.0	DFT-s-OFDM QPSK	1@0	see graph	**---**
2	15	20	372000	1860.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
2	15	20	376000	1880.0	DFT-s-OFDM BPSK	1@0	see graph	**---**
2	15	20	376000	1880.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
2	15	20	376000	1880.0	DFT-s-OFDM QPSK	1@0	see graph	**---**
2	15	20	376000	1880.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
2	15	20	380000	1900.0	DFT-s-OFDM BPSK	1@0	see graph	**---**
2	15	20	380000	1900.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**

2	15	20	380000	1900.0	DFT-s-OFDM QPSK	1@0	see graph	**---**
2	15	20	380000	1900.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
2	15	30	373000	1865.0	DFT-s-OFDM BPSK	1@0	see graph	**---**
2	15	30	373000	1865.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
2	15	30	373000	1865.0	DFT-s-OFDM QPSK	1@0	see graph	**---**
2	15	30	373000	1865.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
2	15	30	376000	1880.0	DFT-s-OFDM BPSK	1@0	see graph	**---**
2	15	30	376000	1880.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
2	15	30	376000	1880.0	DFT-s-OFDM QPSK	1@0	see graph	**---**
2	15	30	376000	1880.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
2	15	30	379000	1895.0	DFT-s-OFDM BPSK	1@0	see graph	**---**
2	15	30	379000	1895.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
2	15	30	379000	1895.0	DFT-s-OFDM QPSK	1@0	see graph	**---**
2	15	30	379000	1895.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**

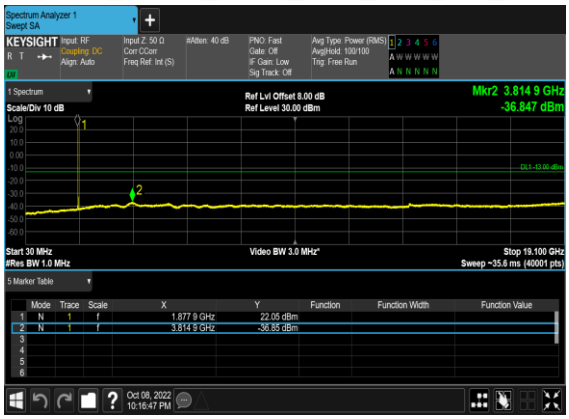
N2(5M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



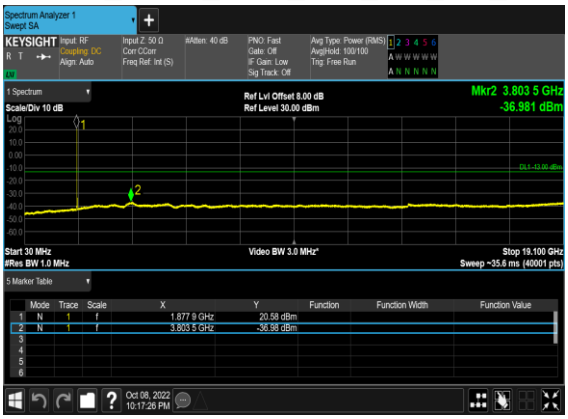
N2(5M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



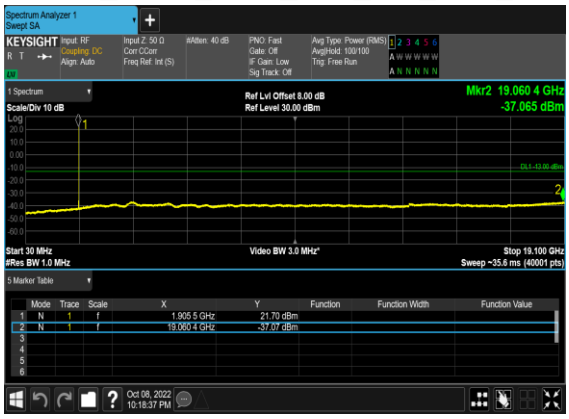
N2(5M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



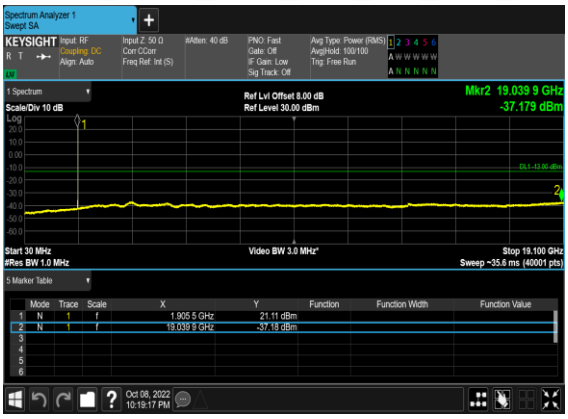
N2(5M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



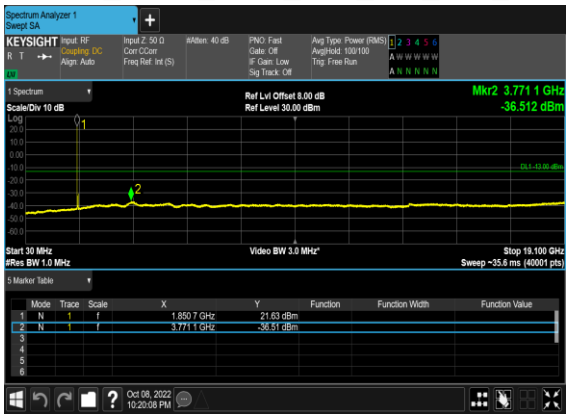
N2(5M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



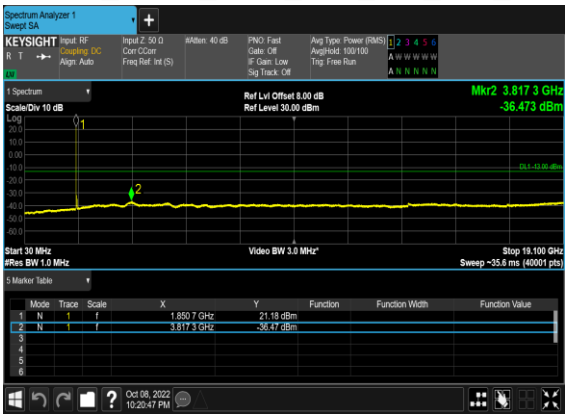
N2(5M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



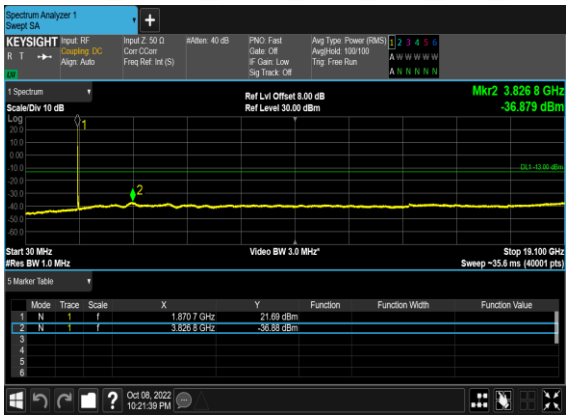
N2(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



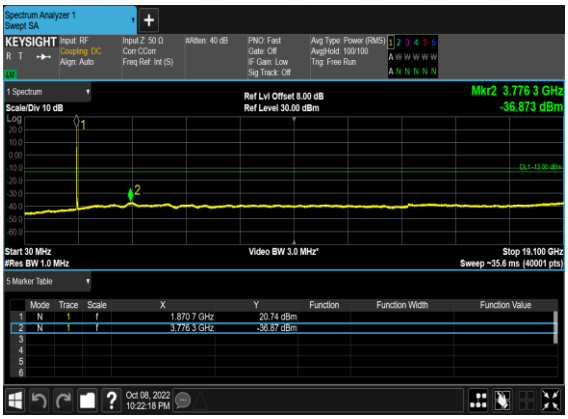
N2(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



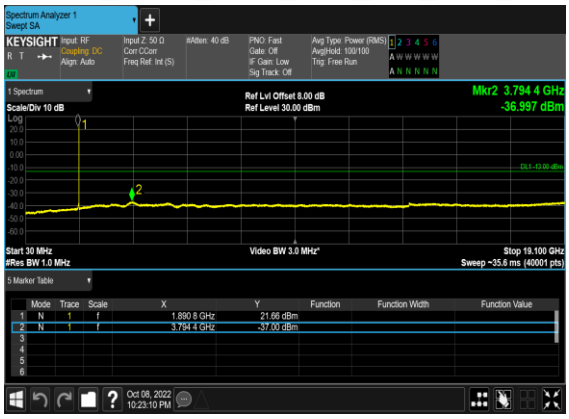
N2(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



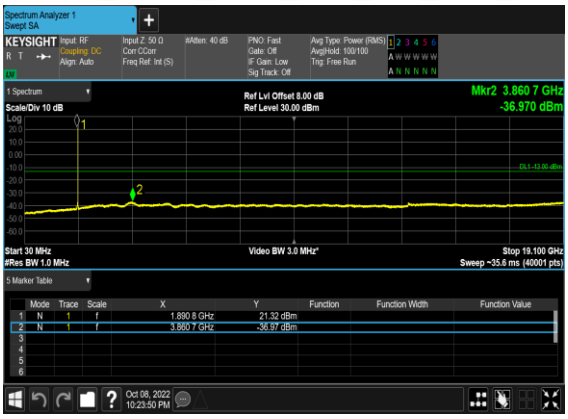
N2(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



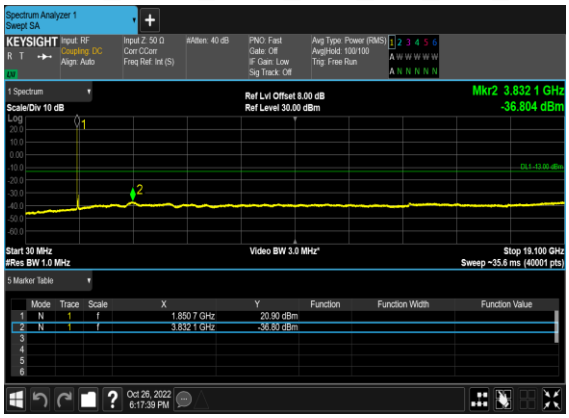
N2(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



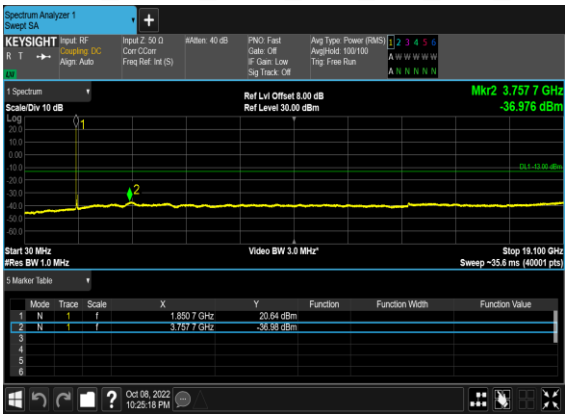
N2(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



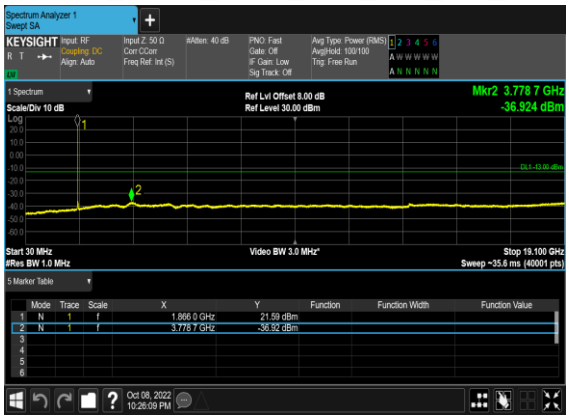
N2(30M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



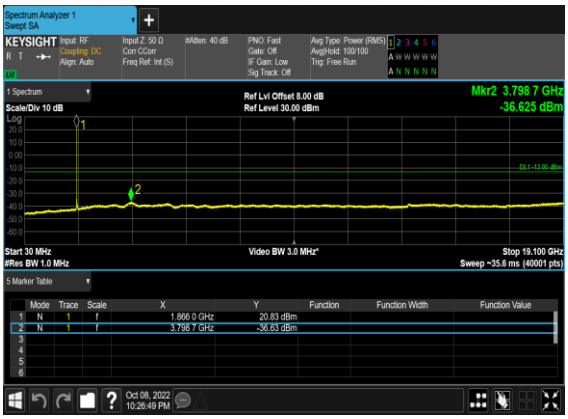
N2(30M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



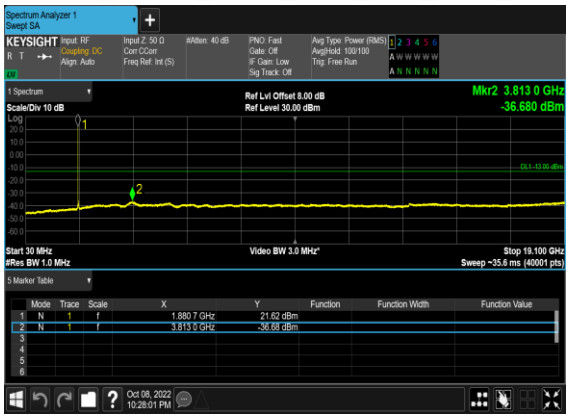
N2(30M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



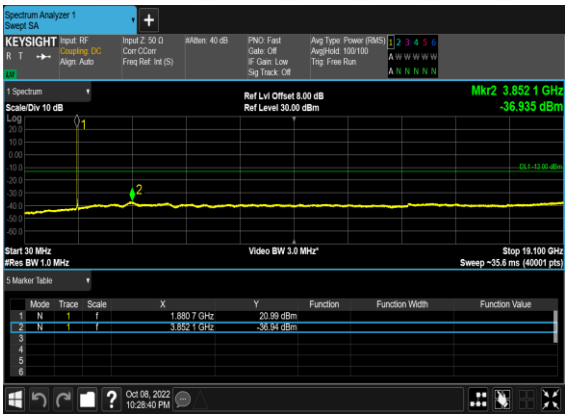
N2(30M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



N2(30M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



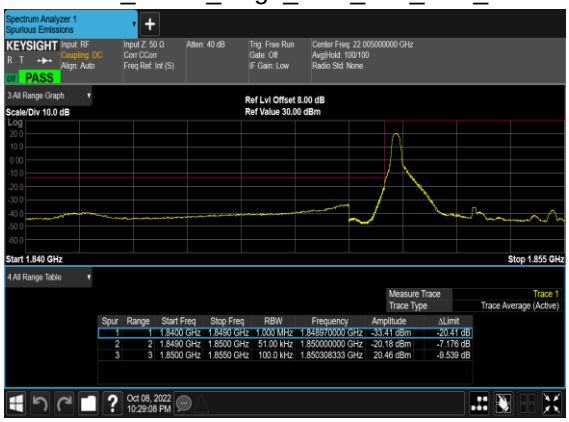
N2(30M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



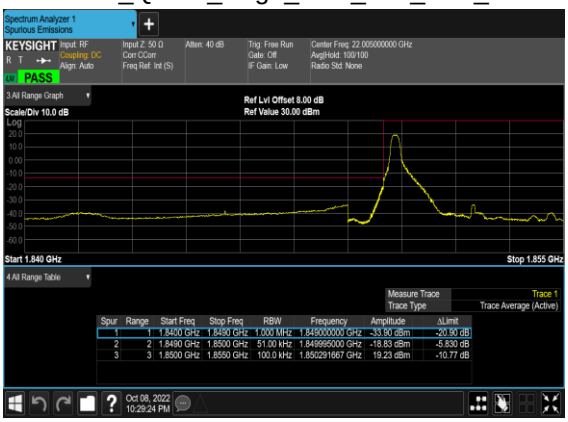
Conducted Band Edge

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result	Verdict
2	15	5	370500	1852.5	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
2	15	5	370500	1852.5	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
2	15	5	370500	1852.5	DFT-s-OFDM BPSK	25@0	see graph	**PASS**
2	15	5	370500	1852.5	DFT-s-OFDM QPSK	25@0	see graph	**PASS**
2	15	5	381500	1907.5	DFT-s-OFDM BPSK	1@24	see graph	**PASS**
2	15	5	381500	1907.5	DFT-s-OFDM QPSK	1@24	see graph	**PASS**
2	15	5	381500	1907.5	DFT-s-OFDM BPSK	25@0	see graph	**PASS**
2	15	5	381500	1907.5	DFT-s-OFDM QPSK	25@0	see graph	**PASS**
2	15	20	372000	1860.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
2	15	20	372000	1860.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
2	15	20	372000	1860.0	DFT-s-OFDM BPSK	100@0	see graph	**PASS**
2	15	20	372000	1860.0	DFT-s-OFDM QPSK	100@0	see graph	**PASS**
2	15	20	380000	1900.0	DFT-s-OFDM BPSK	1@105	see graph	**PASS**
2	15	20	380000	1900.0	DFT-s-OFDM QPSK	1@105	see graph	**PASS**
2	15	20	380000	1900.0	DFT-s-OFDM BPSK	100@0	see graph	**PASS**
2	15	20	380000	1900.0	DFT-s-OFDM QPSK	100@0	see graph	**PASS**
2	15	30	373000	1865.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
2	15	30	373000	1865.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
2	15	30	373000	1865.0	DFT-s-OFDM BPSK	160@0	see graph	**PASS**
2	15	30	373000	1865.0	DFT-s-OFDM QPSK	160@0	see graph	**PASS**
2	15	30	379000	1895.0	DFT-s-OFDM BPSK	1@159	see graph	**PASS**
2	15	30	379000	1895.0	DFT-s-OFDM QPSK	1@159	see graph	**PASS**
2	15	30	379000	1895.0	DFT-s-OFDM BPSK	160@0	see graph	**PASS**
2	15	30	379000	1895.0	DFT-s-OFDM QPSK	160@0	see graph	**PASS**

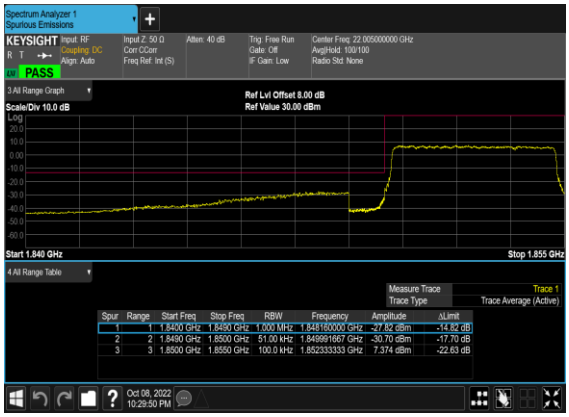
N2(5M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



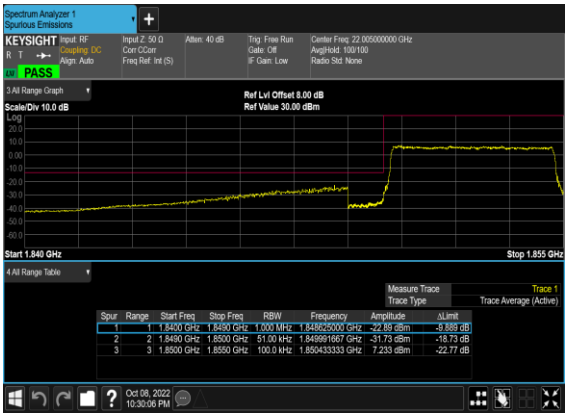
N2(5M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



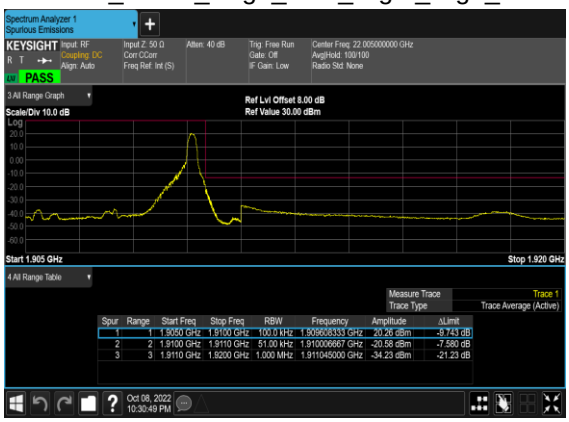
N2(5M)_DFT-s-OFDM_BPSK_Outer_Full_Low_CH



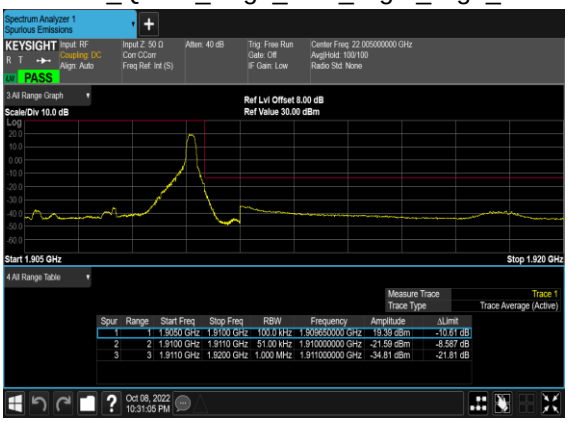
N2(5M)_DFT-s-OFDM_QPSK_Outer_Full_Low_CH



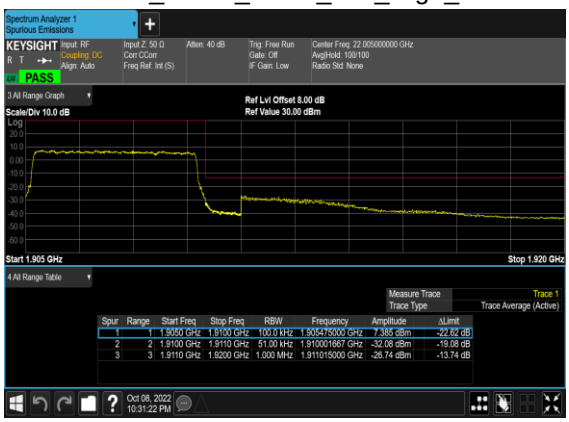
N2(5M)_DFT-s-OFDM_BPSK_Edge_1RB_Right_High_CH



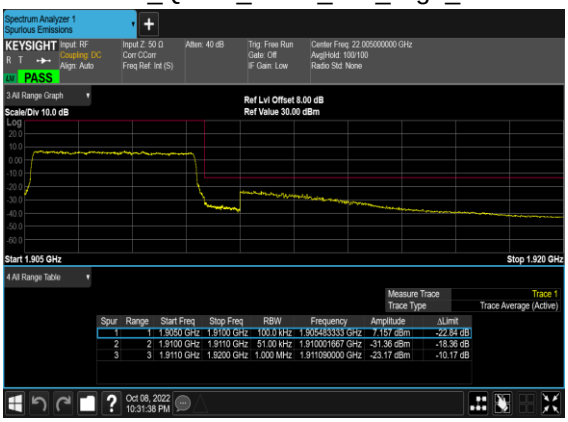
N2(5M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_High_CH



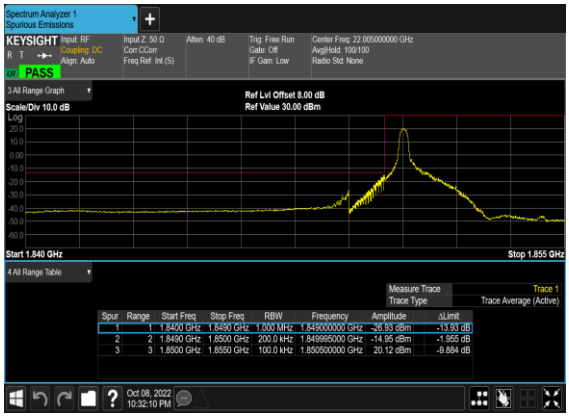
N2(5M)_DFT-s-OFDM_BPSK_Outer_Full_High_CH



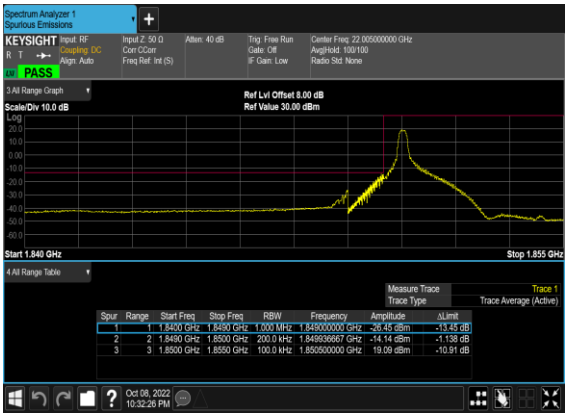
N2(5M)_DFT-s-OFDM_QPSK_Outer_Full_High_CH



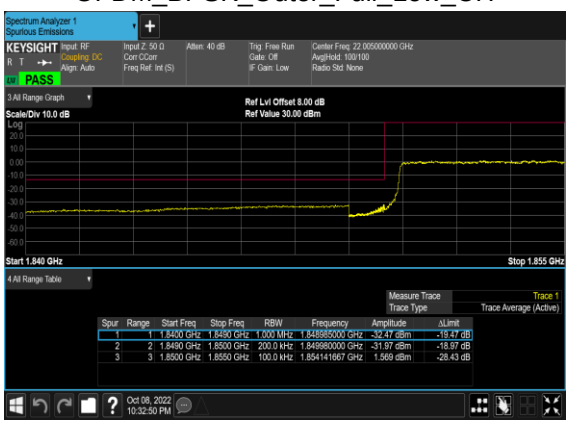
N2(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



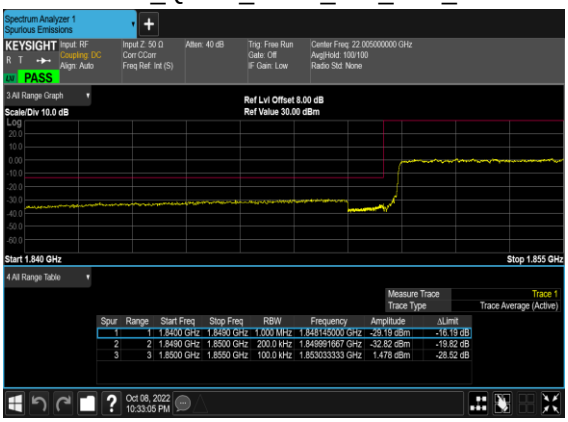
N2(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



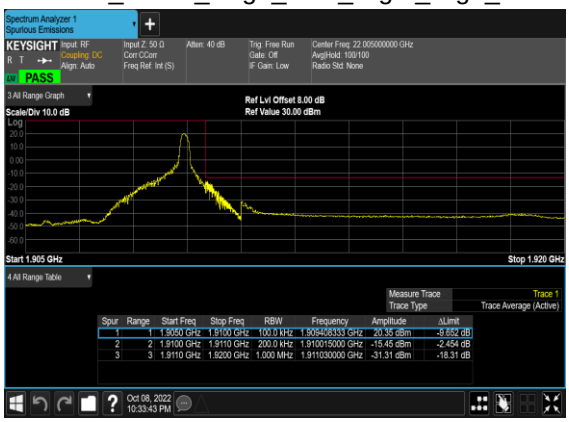
N2(20M)_DFT-s-OFDM_BPSK_Outer_Full_Low_CH



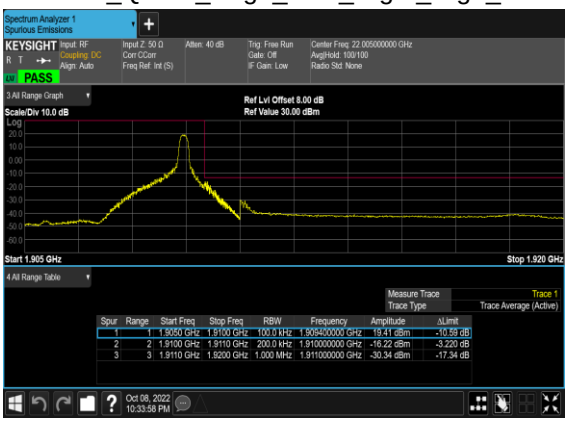
N2(20M)_DFT-s-OFDM_QPSK_Outer_Full_Low_CH



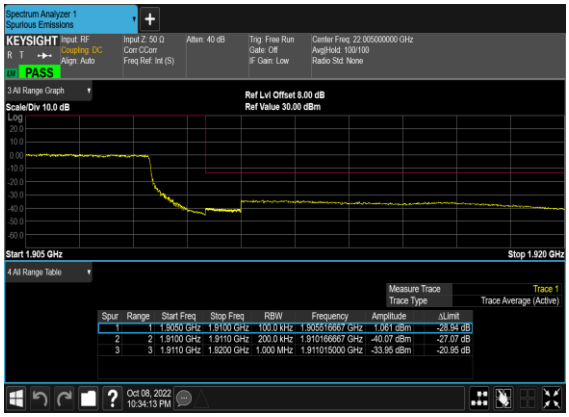
N2(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Right_High_CH



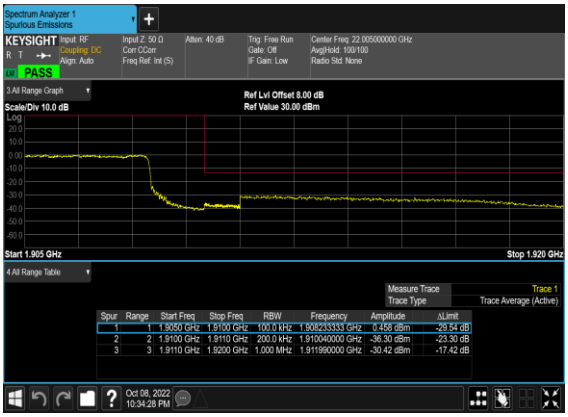
N2(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_High_CH



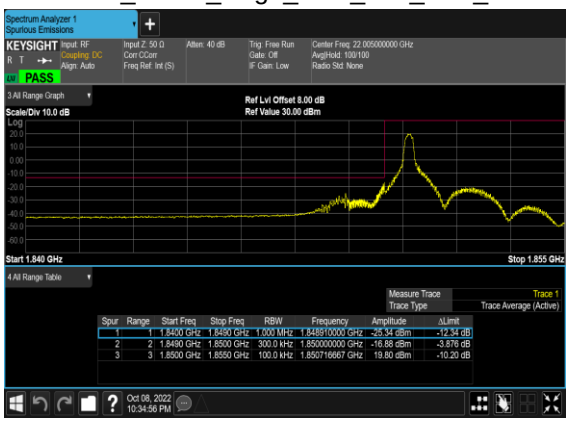
N2(20M)_DFT-s-OFDM_BPSK_Outer_Full_High_CH



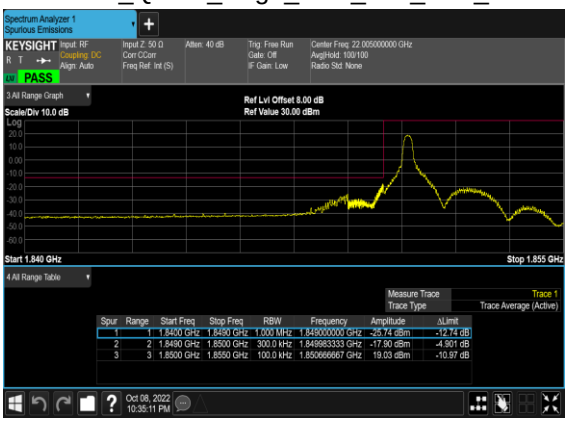
N2(20M)_DFT-s-OFDM_QPSK_Outer_Full_High_CH



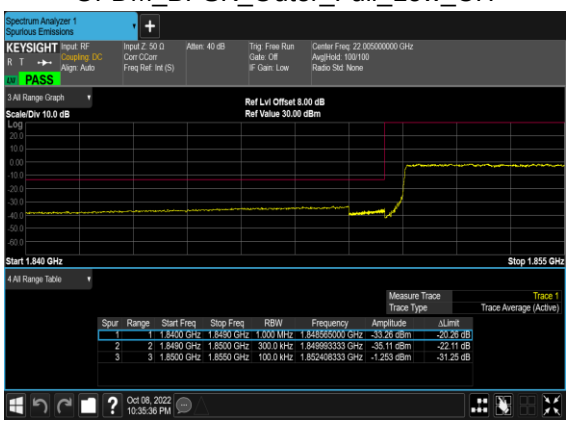
N2(30M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



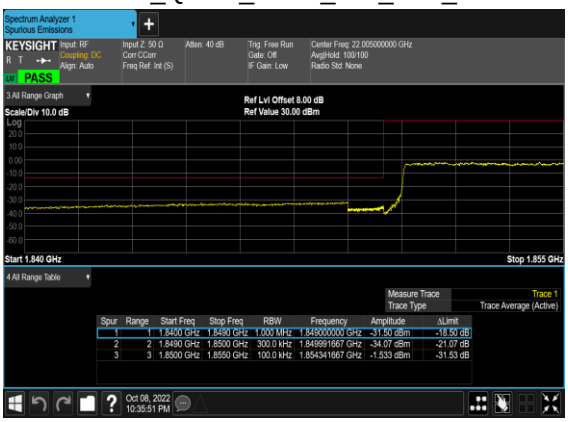
N2(30M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



N2(30M)_DFT-s-OFDM_BPSK_Outer_Full_Low_CH



N2(30M)_DFT-s-OFDM_QPSK_Outer_Full_Low_CH



N2(30M)_DFT-s-OFDM_BPSK_Edge_1RB_Right_High_CH

N2(30M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_High_CH

N2(30M)_DFT-s-OFDM_BPSK_Outer_Full_High_CH

N2(30M)_DFT-s-OFDM_QPSK_Outer_Full_High_CH