FCC RF Test Report

APPLICANT	: Xiaomi Communications Co., Ltd.
EQUIPMENT	: Mobile Phone
BRAND NAME	: XIAOMI
MODEL NAME	: 22071212AG
FCC ID	: 2AFZZ12AG
STANDARD	: 47 CFR Part 2, 27 Subpart O
CLASSIFICATION	: PCS Licensed Transmitter Held to Ear (PCE)
TEST DATE(S)	: Jun. 01, 2022 ~ Jun. 11, 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 #5145.01

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
FG250504G	Rev. 01	Initial issue of report	Jun. 20, 2022

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	Reporting Only	PASS	-
	§27.50(j)(3)	Equivalent Isotropic Radiated Power (5G NR n77, n78)	EIRP < 1Watt		
3.5	§27.50(j)(4)	Peak-to-Average Ratio	<13 dB	PASS	-
3.6	§2.1049	Occupied Bandwidth	Reporting Only	PASS	-
3.7	§2.1051 §27.53(l)(2)	Conducted Band Edge Measurement (5G NR n77, n78)	< 43+10log10(P[Watts])	PASS	-
3.8	§2.1051 §27.53(l)(2)	Conducted Spurious Emission (5G NR n77, n78)	< 43+10log10(P[Watts])	PASS	-
3.9	§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)	< $43+10\log_{10}$(P[Watts])	PASS	Under limit 24.84 dB at 7582.900 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

Xiaomi Communications Co., Ltd.
#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085

1.2 Manufacturer

Xiaomi Communications Co., Ltd.
#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Phone
Brand Name	XIAOMI
Model Name	22071212AG
FCC ID	2AFZZ12AG
IMEI Code	Conducted: 860232060096466 Radiation: 860232060096565/860232060096573
HW Version	P2
SW Version	MIUI 13
EUT Stage	Production Unit

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Frequency	5G NR n77: 3700 MHz ~ 3980 MHz 5G NR n78: 3700 MHz ~ 3800 MHz
SCS	15kHz, 30kHz
Bandwidth	n77/n78(15kHz): 10 / 15 / 20 / 25 / 30 / 40 / 50MHz n77/n78(30kHz): 10 / 15 / 20 / 25 / 30 / 40 / 50 / 60 / 70 / 80 / 90 / 100MHz
Antenna Gain	**Ant. 4:** 5G NR n77: -1.40 dBi 5G NR n78: -1.94 dBi **Ant. 5:** 5G NR n77: -0.46 dBi 5G NR n78: -1.20 dBi **Ant. 6:** 5G NR n77: -1.26 dBi 5G NR n78: -1.04 dBi **Ant. 7:** 5G NR n77: 0 dBi 5G NR n78: -1.00 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 is calculated from max Output power and antenna gain, only the maximum ERP are shown in the report, 5G NR n77/n78 for Antenna 6.
2. The device supports n77(1T4R) SRS resources on Antenna 4/5/6/7, only the test data of worst Antenna 6 is showed in the report according to the maximum power.
3. 5G NR n77/n78 support SA and NSA mode.
4. 5G NR n78 supports HPUE for SA 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 Maximum EIRP and Emission Designator

5G NR n77 SA for SCS 15kHz		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	0.2023	9M29G7D	0.1600	9M28W7D
15	3705.505 ~ 3972.495	0.2032	14M1G7D	0.1607	14M1W7D
20	3710.01 ~ 3969.99	0.2037	18M8G7D	0.1626	18M9W7D
25	3712.50 ~ 3967.50	0.1706	23M6G7D	0.1355	23M7W7D
30	3715.005 ~ 3964.98	0.2018	28M6G7D	0.1589	28M7W7D
40	3720.00 ~ 3960.00	0.2018	38M6G7D	0.1637	38M5W7D
50	3725.01 ~ 3954.99	0.2042	48M1G7D	0.1607	48M1W7D

5G NR n77 SA for SCS 30kHz		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	0.1923	8M59G7D	0.1472	8M59W7D
15	3705.52 ~ 3972.48	0.1923	13M6G7D	0.1500	13M6W7D
20	3710.01 ~ 3969.99	0.1928	18M2G7D	0.1507	18M2W7D
25	3712.50 ~ 3967.50	0.1663	23M1G7D	0.1315	23M2W7D
30	3715.02 ~ 3964.98	0.1941	27M8G7D	0.1528	27M9W7D
40	3720.00 ~ 3960.00	0.1914	37M9G7D	0.1483	37M9W7D
50	3725.01 ~ 3954.99	0.1923	47M5G7D	0.1542	47M5W7D
60	3730.02 ~ 3949.98	0.1892	58M0G7D	0.1507	57M8W7D
70	3735.00 ~ 3945.00	0.1982	67M5G7D	0.1574	67M6W7D
80	3740.01 ~ 3939.99	0.1932	77M7G7D	0.1552	77M5W7D
90	3745.02 ~ 3934.98	0.1977	87M4G7D	0.1556	87M6W7D
100	3750.00 ~ 3930.00	0.1986	97M5G7D	0.1567	97M6W7D

5G NR n78 SA for SCS 15kHz		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	0.2761	9M26G7D	0.2118	9M28W7D
15	3705.505 ~ 3792.495	0.2710	14M1G7D	0.2163	14M1W7D
20	3710.01 ~ 3789.99	0.2723	18M9G7D	0.2158	19M0W7D
25	3712.50 ~ 3787.50	0.2168	23M7G7D	0.1714	23M8W7D
30	3715.005 ~ 3784.995	0.2518	28M6G7D	0.1968	28M6W7D
40	3720.00 ~ 3780.00	0.2541	38M6G7D	0.2009	38M6W7D
50	3725.01 ~ 3774.99	0.2767	48M2G7D	0.2158	48M1W7D

5G NR n78 SA for SCS 30kHz		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	0.2735	8M61G7D	0.2148	8M59W7D
15	3705.505 ~ 3792.495	0.2679	13M6G7D	0.2109	13M6W7D
20	3710.01 ~ 3789.99	0.2685	18M2G7D	0.2138	18M2W7D
25	3712.50 ~ 3787.50	0.2188	23M2G7D	0.1734	23M2W7D
30	3715.005 ~ 3784.995	0.2489	27M8G7D	0.2014	27M8W7D
40	3720.00 ~ 3780.00	0.2529	37M8G7D	0.1919	37M9W7D
50	3725.01 ~ 3774.99	0.2506	47M4G7D	0.1977	47M4W7D
60	3730.02 ~ 3769.98	0.2466	57M9G7D	0.1928	57M8W7D
70	3735.00 ~ 3765.00	0.2547	67M5G7D	0.1941	67M7W7D
80	3740.01 ~ 3759.99	0.2564	77M5G7D	0.1963	77M6W7D
90	3745.02 ~ 3754.98	0.2547	87M4G7D	0.1910	87M5W7D
100	3750.00 ~ 3750.00	0.2742	97M4G7D	0.2158	97M6W7D

Note:

1. 5G NR Band n78 support HPUE, n77 not support HPUE, therefore n77 and n78 maximum power are tested separately.
2. All modulations have been tested, and only the worst test results of PSK & QAM are shown in the report.

1.7 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.**
	03CH03-SZ	CN1256	421272

1.8 Test Software

Item	Site	Manufacturer	Name	Version
1.	03CH03-SZ	AUDIX	E3	6.2009-8-24

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, 27O
- ANSI C63.26-2015
- FCC KDB 971168 D01 Power Meas License Digital Systems v03r01
- FCC KDB 412172 D01 Determining ERP and EIRP v01r01

Remark:

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

2 Test Configuration of Equipment Under Test

2.1 Test Mode

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

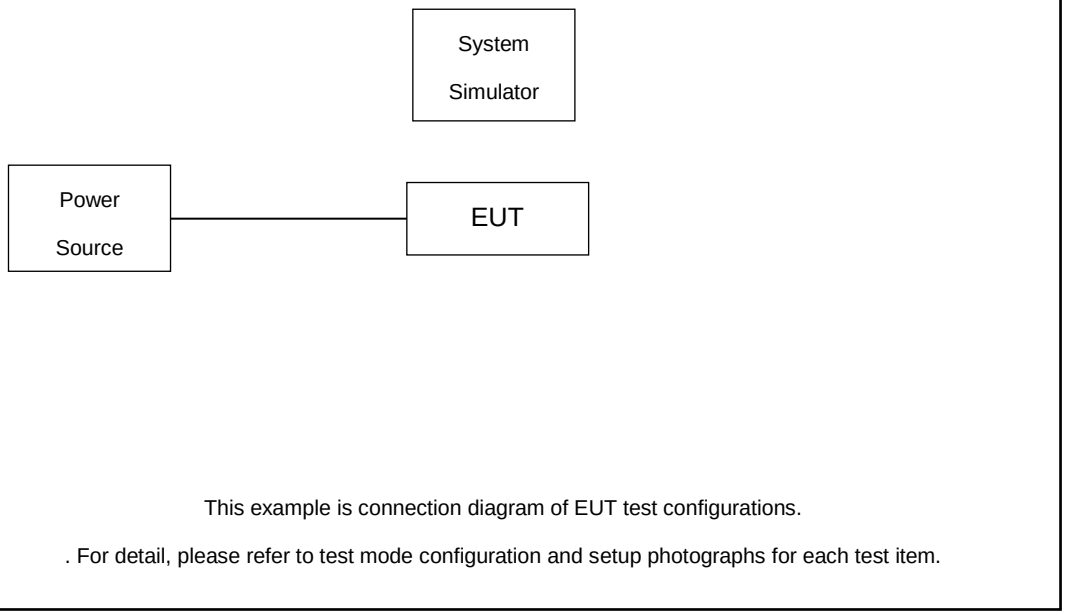
For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Y plane) were recorded in this report.

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

	X Plane	Y Plane	Z Plane
Orthogonal Planes of EUT			

Test Items	5G NR	Bandwidth (MHz)									Modulation					RB #		Test Channel		
		10	15	20	25	30	40	50	60-90	100	PI/2 BPSK	QPSK	16QAM	64QAM	256 QAM	1	Full	L	M	H
Max. Output Power	n77	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
Peak-to-Average Ratio	n77			v							v	v				v	v	v	v	v
	n78			v							v	v				v	v	v	v	v
26dB and 99% Bandwidth	n77	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	
Conducted Band Edge	n77	v			v			v		v	v	v				v	v	v		v
	n78	v			v			v		v	v	v				v	v	v		v
Conducted Spurious Emission	n77	v			v			v		v	v	v				v		v	v	v
	n78	v			v			v		v	v	v				v		v	v	v
Frequency Stability	n77			v								v					v		v	
	n78			v								v					v		v	
E.R.P / E.I.R.P	n77	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
Radiated Spurious Emission	n77	Worst Case																	v	
	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. Normal Voltage: 3.85Vdc, Extreme Voltage: 3.6Vdc ~4.25Vdc																			

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.	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

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 8.6 dB.

Example :

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

= 8.6 (dB)

2.5 Frequency List of Low/Middle/High Channels

5G n77 (15kHz) Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
50	Channel	648334	656000	663666
	Frequency	3725.01	3840	3954.99
40	Channel	648000	656000	664000
	Frequency	3720	3840	3960
30	Channel	647667	656000	664332
	Frequency	3715.005	3840	3964.98
25	Channel	647500	656000	664500
	Frequency	3712.5	3840	3967.5
20	Channel	647334	656000	664666
	Frequency	3710.01	3840	3969.99
15	Channel	647167	656000	664833
	Frequency	3707.505	3840	3972.495
10	Channel	647000	656000	665000
	Frequency	3705	3840	3975

5G n77 (30kHz) 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
25	Channel	647500	656000	664500
	Frequency	3712.5	3840	3967.5
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(15kHz) Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
50	Channel	648334	650000	651666
	Frequency	3725.01	3750	3774.99
40	Channel	648000	650000	652000
	Frequency	3720	3750	3780
30	Channel	647667	650000	652333
	Frequency	3715.005	3750	3784.995
25	Channel	647500	650000	652500
	Frequency	3712.5	3750	3787.5
20	Channel	647334	650000	652666
	Frequency	3710.01	3750	3789.99
15	Channel	647167	650000	652833
	Frequency	3707.505	3750	3792.495
10	Channel	647000	650000	653000
	Frequency	3705	3750	3795

5G n78(30kHz) 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
25	Channel	647500	650000	652500
	Frequency	3712.5	3750	3787.5
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

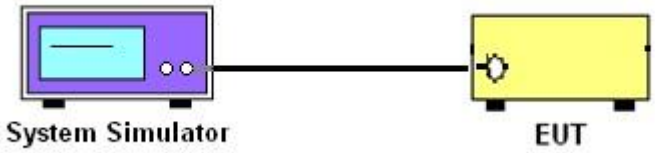
3 Conducted Test Items

3.1 Measuring Instruments

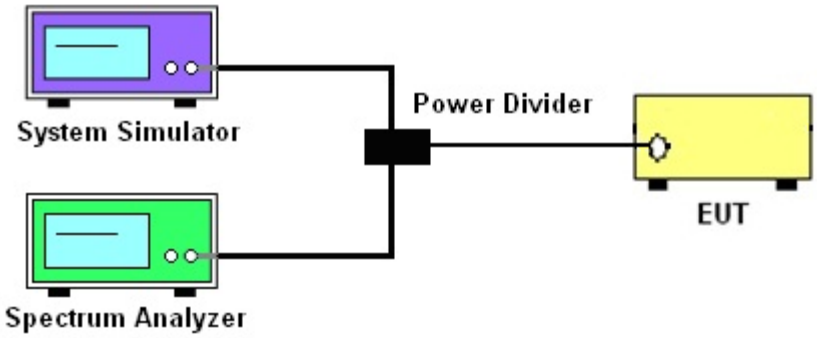
See list of measuring instruments of this test report.

3.2 Test Setup

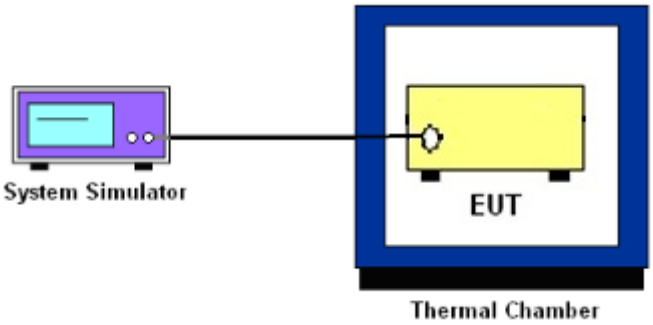
3.2.1 Conducted Output Power



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 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(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.
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.

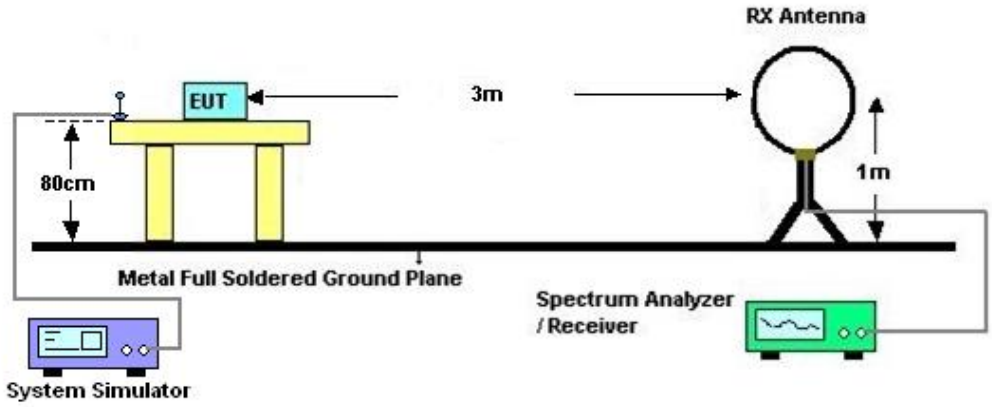
4 Radiated Test Items

4.1 Measuring Instruments

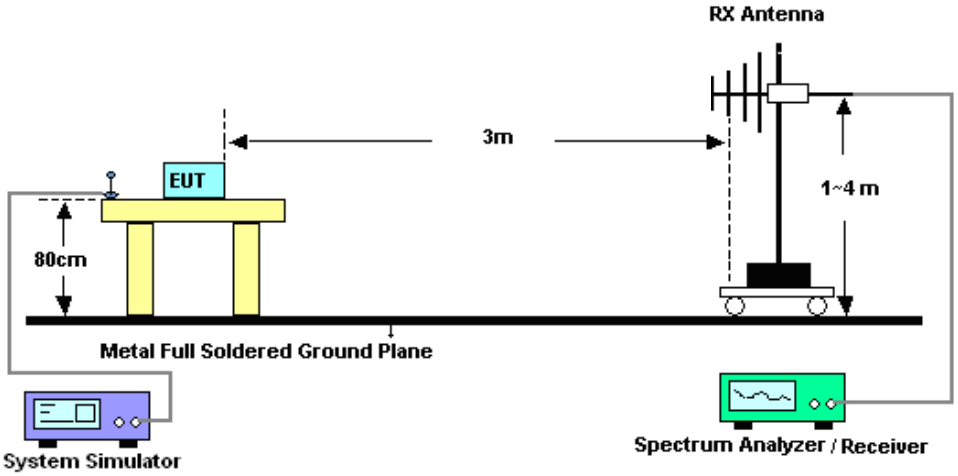
See list of measuring instruments of this test report.

4.2 Test Setup

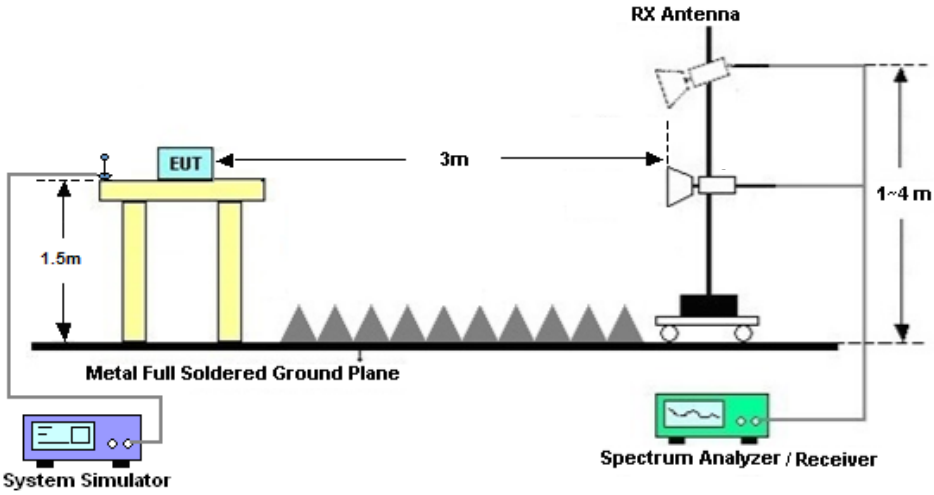
4.2.1 For radiated test below 30MHz



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
Spectrum Analyzer	R&S	FSV40	101078	10Hz~40GHz	Apr. 07, 2022	Jun. 01, 2022~ Jun. 10, 2022	Apr. 08, 2023	Conducted (TH01-SZ)
Power Divider	TOJOIN	PS-2SM-04 265	60.06.020.007 7	0.4GHz~26.5GHz	Dec. 25, 2021	Jun. 01, 2022~ Jun. 10, 2022	Dec. 24, 2022	Conducted (TH01-SZ)
Thermal Chamber	Ten Billion Hongzhangroup	LP-150U	H2014081803	-40~+150°C	Jul. 14, 2021	Jun. 01, 2022~ Jun. 10, 2022	Jul. 13, 2022	Conducted (TH01-SZ)
EMI Test Receiver&SA	KEYSIGHT	N9038A	MY54450083	20Hz~8.4GHz	Apr. 06, 2022	Jun. 11, 2022	Apr. 05, 2023	Radiation (03CH03-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	Jun. 22, 2020	Jun. 11, 2022	Jun. 21, 2022	Radiation (03CH03-SZ)
EXA Spectrum Anaiyzer	KEYSIGHT	N9010A	MY55150246	10Hz~44GHz;	Apr. 06, 2022	Jun. 11, 2022	Apr. 05, 2023	Radiation (03CH03-SZ
Bilog Antenna	TeseQ	CBL6112D	35408	30MHz-2GHz	Jun. 22, 2020	Jun. 11, 2022	Jun. 21, 2022	Radiation (03CH03-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-1355	1GHz~18GHz	Apr. 08 2022	Jun. 11, 2022	Apr. 07. 2023	Radiation (03CH03-SZ)
Amplifier	Burgeon	BPA-530	102211	0.01Hz ~3000MHz	Oct. 22,2021	Jun. 11, 2022	Oct. 21,2022	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	TTA1840-35 -HG	1871923	18GHz~40GHz	Oct. 22,2021	Jun. 11, 2022	Oct. 21,2022	Radiation (03CH03-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Apr. 10, 2022	Jun. 11, 2022	Apr. 09, 2023	Radiation (03CH03-SZ)
Amplifier	Agilent Technologies	83017A	MY39501302	500MHz~26.5GHz	Dec. 29,2021	Jun. 11, 2022	Dec. 28,2022	Radiation (03CH03-SZ)
AC Power Source	Chroma	61601	616010001985	N/A	NCR	Jun. 11, 2022	NCR	Radiation (03CH03-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Jun. 11, 2022	NCR	Radiation (03CH03-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Jun. 11, 2022	NCR	Radiation (03CH03-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	±0.13 %

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.0 dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.6 dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.8 dB

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

Appendix A. Test Results of Conducted Test

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

Software Version: 22.05.231801

FR1 N77-15K(Ant 6)

Transmitter Conducted Output Power And EIRP, (GT-LC)=-1.26dB

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Conducted Power(dBm)	EIRP (dBm)	EIRP (W)
77	15	10	647000	3705	DFT-s-OFDM QPSK	1@1	24.07	22.81	0.1910
77	15	10	647000	3705	DFT-s-OFDM 16 QAM	1@1	23.01	21.75	0.1496
77	15	10	656000	3840	DFT-s-OFDM QPSK	1@1	24.32	23.06	0.2023
77	15	10	656000	3840	DFT-s-OFDM 16 QAM	1@1	23.3	22.04	0.1600
77	15	10	665000	3975	DFT-s-OFDM QPSK	1@1	23.65	22.39	0.1734
77	15	10	665000	3975	DFT-s-OFDM 16 QAM	1@1	23	21.74	0.1493
77	15	15	647167	3707.505	DFT-s-OFDM QPSK	1@1	24.09	22.83	0.1919
77	15	15	647167	3707.505	DFT-s-OFDM 16 QAM	1@1	23.01	21.75	0.1496
77	15	15	656000	3840	DFT-s-OFDM QPSK	1@1	24.34	23.08	0.2032
77	15	15	656000	3840	DFT-s-OFDM 16 QAM	1@1	23.32	22.06	0.1607
77	15	15	664833	3972.495	DFT-s-OFDM QPSK	1@1	23.59	22.33	0.1710
77	15	15	664833	3972.495	DFT-s-OFDM 16 QAM	1@1	22.87	21.61	0.1449
77	15	20	647334	3710.01	DFT-s-OFDM QPSK	1@1	24.12	22.86	0.1932
77	15	20	647334	3710.01	DFT-s-OFDM 16 QAM	1@1	23.07	21.81	0.1517
77	15	20	656000	3840	DFT-s-OFDM QPSK	1@1	24.35	23.09	0.2037
77	15	20	656000	3840	DFT-s-OFDM 16 QAM	1@1	23.37	22.11	0.1626
77	15	20	664666	3969.99	DFT-s-OFDM QPSK	1@1	23.61	22.35	0.1718
77	15	20	664666	3969.99	DFT-s-OFDM 16 QAM	1@1	22.88	21.62	0.1452
77	15	25	647500	3712.5	DFT-s-OFDM QPSK	1@1	23.19	21.93	0.1560

77	15	25	647500	3712.5	DFT-s-OFDM 16 QAM	1@1	22.19	20.93	0.1239
77	15	25	656000	3840	DFT-s-OFDM QPSK	1@1	23.58	22.32	0.1706
77	15	25	656000	3840	DFT-s-OFDM 16 QAM	1@1	22.58	21.32	0.1355
77	15	25	664500	3967.5	DFT-s-OFDM QPSK	1@1	23.08	21.82	0.1521
77	15	25	664500	3967.5	DFT-s-OFDM 16 QAM	1@1	22.06	20.8	0.1202
77	15	30	647667	3715.005	DFT-s-OFDM QPSK	1@1	23.94	22.68	0.1854
77	15	30	647667	3715.005	DFT-s-OFDM 16 QAM	1@1	22.91	21.65	0.1462
77	15	30	656000	3840	DFT-s-OFDM QPSK	1@1	24.31	23.05	0.2018
77	15	30	656000	3840	DFT-s-OFDM 16 QAM	1@1	23.27	22.01	0.1589
77	15	30	664332	3964.98	DFT-s-OFDM QPSK	1@1	23.63	22.37	0.1726
77	15	30	664332	3964.98	DFT-s-OFDM 16 QAM	1@1	22.68	21.42	0.1387
77	15	40	648000	3720	DFT-s-OFDM QPSK	1@1	23.88	22.62	0.1828
77	15	40	648000	3720	DFT-s-OFDM 16 QAM	1@1	22.97	21.71	0.1483
77	15	40	656000	3840	DFT-s-OFDM QPSK	1@1	24.31	23.05	0.2018
77	15	40	656000	3840	DFT-s-OFDM 16 QAM	1@1	23.4	22.14	0.1637
77	15	40	664000	3960	DFT-s-OFDM QPSK	1@1	23.69	22.43	0.1750
77	15	40	664000	3960	DFT-s-OFDM 16 QAM	1@1	22.7	21.44	0.1393
77	15	50	648334	3725.01	DFT-s-OFDM PI/2 BPSK	135@67	24.06	22.8	0.1905
77	15	50	648334	3725.01	DFT-s-OFDM PI/2 BPSK	1@1	23.92	22.66	0.1845
77	15	50	648334	3725.01	DFT-s-OFDM PI/2 BPSK	1@268	24.04	22.78	0.1897
77	15	50	648334	3725.01	DFT-s-OFDM QPSK	135@67	24.08	22.82	0.1914
77	15	50	648334	3725.01	DFT-s-OFDM QPSK	1@1	23.96	22.7	0.1862
77	15	50	648334	3725.01	DFT-s-OFDM QPSK	1@268	23.94	22.68	0.1854
77	15	50	648334	3725.01	DFT-s-OFDM 16 QAM	135@67	23.12	21.86	0.1535

77	15	50	648334	3725.01	DFT-s-OFDM 16 QAM	1@1	23.04	21.78	0.1507
77	15	50	648334	3725.01	DFT-s-OFDM 16 QAM	1@268	23.03	21.77	0.1503
77	15	50	648334	3725.01	DFT-s-OFDM 64 QAM	135@67	21.55	20.29	0.1069
77	15	50	648334	3725.01	DFT-s-OFDM 64 QAM	1@1	21.43	20.17	0.1040
77	15	50	648334	3725.01	DFT-s-OFDM 64 QAM	1@268	21.47	20.21	0.1050
77	15	50	648334	3725.01	DFT-s-OFDM 256 QAM	135@67	19.56	18.3	0.0676
77	15	50	648334	3725.01	DFT-s-OFDM 256 QAM	1@1	19.23	17.97	0.0627
77	15	50	648334	3725.01	DFT-s-OFDM 256 QAM	1@268	19.28	18.02	0.0634
77	15	50	648334	3725.01	CP-OFDM QPSK	135@67	22.54	21.28	0.1343
77	15	50	648334	3725.01	CP-OFDM QPSK	1@1	22.52	21.26	0.1337
77	15	50	648334	3725.01	CP-OFDM QPSK	1@268	22.52	21.26	0.1337
77	15	50	656000	3840	DFT-s-OFDM PI/2 BPSK	135@67	24.32	23.06	0.2023
77	15	50	656000	3840	DFT-s-OFDM PI/2 BPSK	1@1	24.27	23.01	0.2000
77	15	50	656000	3840	DFT-s-OFDM PI/2 BPSK	1@268	23.98	22.72	0.1871
77	15	50	656000	3840	DFT-s-OFDM QPSK	135@67	24.36	23.1	0.2042
77	15	50	656000	3840	DFT-s-OFDM QPSK	1@1	24.3	23.04	0.2014
77	15	50	656000	3840	DFT-s-OFDM QPSK	1@268	23.9	22.64	0.1837
77	15	50	656000	3840	DFT-s-OFDM 16 QAM	135@67	23.32	22.06	0.1607
77	15	50	656000	3840	DFT-s-OFDM 16 QAM	1@1	23.32	22.06	0.1607
77	15	50	656000	3840	DFT-s-OFDM 16 QAM	1@268	23	21.74	0.1493
77	15	50	656000	3840	DFT-s-OFDM 64 QAM	135@67	21.84	20.58	0.1143
77	15	50	656000	3840	DFT-s-OFDM 64 QAM	1@1	21.78	20.52	0.1127
77	15	50	656000	3840	DFT-s-OFDM 64 QAM	1@268	21.41	20.15	0.1035
77	15	50	656000	3840	DFT-s-OFDM 256 QAM	135@67	19.73	18.47	0.0703
77	15	50	656000	3840	DFT-s-OFDM 256 QAM	1@1	19.54	18.28	0.0673

77	15	50	656000	3840	DFT-s-OFDM 256 QAM	1@268	19.18	17.92	0.0619
77	15	50	656000	3840	CP-OFDM QPSK	135@67	22.83	21.57	0.1435
77	15	50	656000	3840	CP-OFDM QPSK	1@1	22.89	21.63	0.1455
77	15	50	656000	3840	CP-OFDM QPSK	1@268	22.52	21.26	0.1337
77	15	50	663666	3954.99	DFT-s-OFDM PI/2 BPSK	135@67	23.8	22.54	0.1795
77	15	50	663666	3954.99	DFT-s-OFDM PI/2 BPSK	1@1	23.5	22.24	0.1675
77	15	50	663666	3954.99	DFT-s-OFDM PI/2 BPSK	1@268	23.85	22.59	0.1816
77	15	50	663666	3954.99	DFT-s-OFDM QPSK	135@67	23.83	22.57	0.1807
77	15	50	663666	3954.99	DFT-s-OFDM QPSK	1@1	23.53	22.27	0.1687
77	15	50	663666	3954.99	DFT-s-OFDM QPSK	1@268	23.84	22.58	0.1811
77	15	50	663666	3954.99	DFT-s-OFDM 16 QAM	135@67	22.77	21.51	0.1416
77	15	50	663666	3954.99	DFT-s-OFDM 16 QAM	1@1	22.61	21.35	0.1365
77	15	50	663666	3954.99	DFT-s-OFDM 16 QAM	1@268	22.96	21.7	0.1479
77	15	50	663666	3954.99	DFT-s-OFDM 64 QAM	135@67	21.3	20.04	0.1009
77	15	50	663666	3954.99	DFT-s-OFDM 64 QAM	1@1	21.02	19.76	0.0946
77	15	50	663666	3954.99	DFT-s-OFDM 64 QAM	1@268	21.38	20.12	0.1028
77	15	50	663666	3954.99	DFT-s-OFDM 256 QAM	135@67	19.21	17.95	0.0624
77	15	50	663666	3954.99	DFT-s-OFDM 256 QAM	1@1	18.75	17.49	0.0561
77	15	50	663666	3954.99	DFT-s-OFDM 256 QAM	1@268	19.11	17.85	0.0610
77	15	50	663666	3954.99	CP-OFDM QPSK	135@67	22.29	21.03	0.1268
77	15	50	663666	3954.99	CP-OFDM QPSK	1@1	22.05	20.79	0.1199
77	15	50	663666	3954.99	CP-OFDM QPSK	1@268	22.42	21.16	0.1306

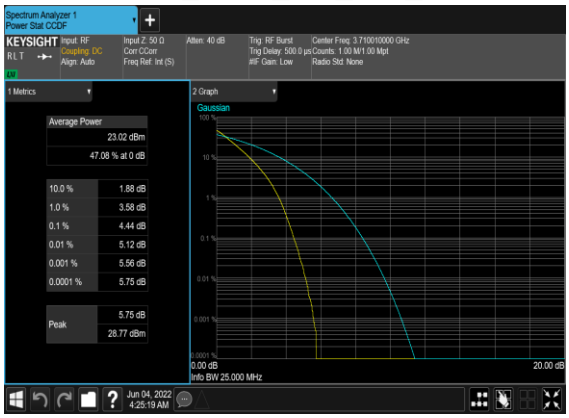
Frequency Stability

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Deviation (ppm)	Verdict	Environment
77	15	20	656000	3840.0	DFT-s-OFDM QPSK	100@0	0.00548	**PASS**	NV
77	15	20	656000	3840.0	DFT-s-OFDM QPSK	100@0	0.00236	**PASS**	LV
77	15	20	656000	3840.0	DFT-s-OFDM QPSK	100@0	0.00278	**PASS**	HV
77	15	20	656000	3840.0	DFT-s-OFDM QPSK	100@0	0.00298	**PASS**	-30℃
77	15	20	656000	3840.0	DFT-s-OFDM QPSK	100@0	0.00318	**PASS**	-20℃
77	15	20	656000	3840.0	DFT-s-OFDM QPSK	100@0	0.00659	**PASS**	-10℃
77	15	20	656000	3840.0	DFT-s-OFDM QPSK	100@0	0.00206	**PASS**	0℃
77	15	20	656000	3840.0	DFT-s-OFDM QPSK	100@0	0.00416	**PASS**	10℃
77	15	20	656000	3840.0	DFT-s-OFDM QPSK	100@0	0.00671	**PASS**	20℃
77	15	20	656000	3840.0	DFT-s-OFDM QPSK	100@0	0.00327	**PASS**	30℃
77	15	20	656000	3840.0	DFT-s-OFDM QPSK	100@0	0.00588	**PASS**	40℃
77	15	20	656000	3840.0	DFT-s-OFDM QPSK	100@0	0.00433	**PASS**	50℃

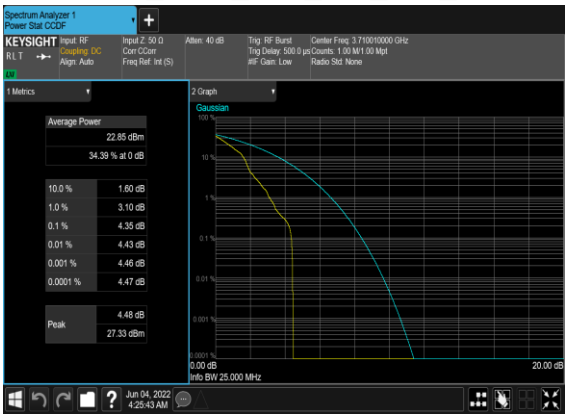
Peak to Average Radio

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result (dB)	Limit (dB)	Verdict
77	15	20	647334	3710.01	DFT-s-OFDM PI/2 BPSK	100@0	4.44	13	**PASS**
77	15	20	647334	3710.01	DFT-s-OFDM PI/2 BPSK	1@0	4.35	13	**PASS**
77	15	20	647334	3710.01	DFT-s-OFDM QPSK	100@0	5.72	13	**PASS**
77	15	20	647334	3710.01	DFT-s-OFDM QPSK	1@0	5.14	13	**PASS**
77	15	20	656000	3840.0	DFT-s-OFDM PI/2 BPSK	100@0	4.48	13	**PASS**
77	15	20	656000	3840.0	DFT-s-OFDM PI/2 BPSK	1@0	4.95	13	**PASS**
77	15	20	656000	3840.0	DFT-s-OFDM QPSK	100@0	5.83	13	**PASS**
77	15	20	656000	3840.0	DFT-s-OFDM QPSK	1@0	5.2	13	**PASS**
77	15	20	664666	3969.99	DFT-s-OFDM PI/2 BPSK	100@0	4.31	13	**PASS**
77	15	20	664666	3969.99	DFT-s-OFDM PI/2 BPSK	1@0	5.63	13	**PASS**
77	15	20	664666	3969.99	DFT-s-OFDM QPSK	100@0	5.5	13	**PASS**
77	15	20	664666	3969.99	DFT-s-OFDM QPSK	1@0	5.47	13	**PASS**

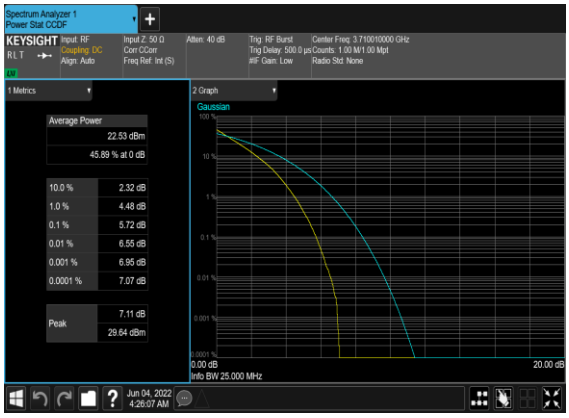
N77(20M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Low_CH



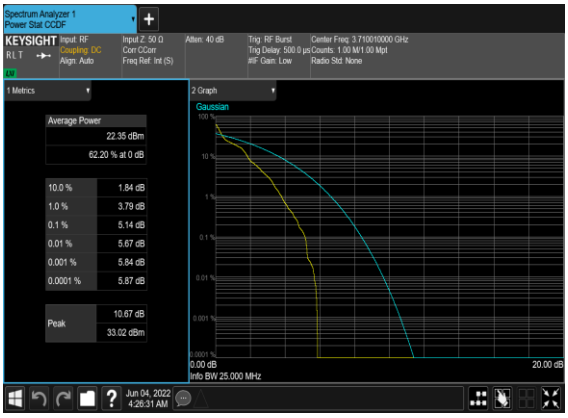
N77(20M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_Low_CH



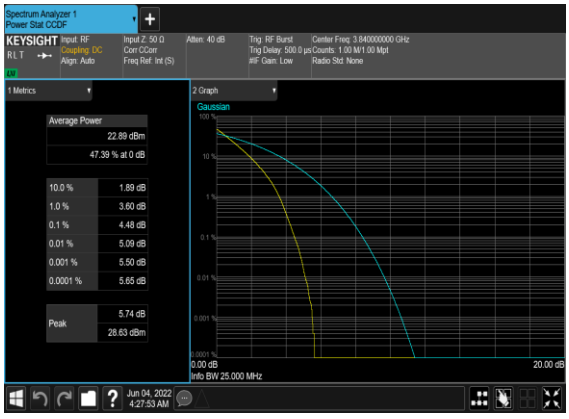
N77(20M)_DFT-s-OFDM_QPSK_Outer_Full_Low_CH



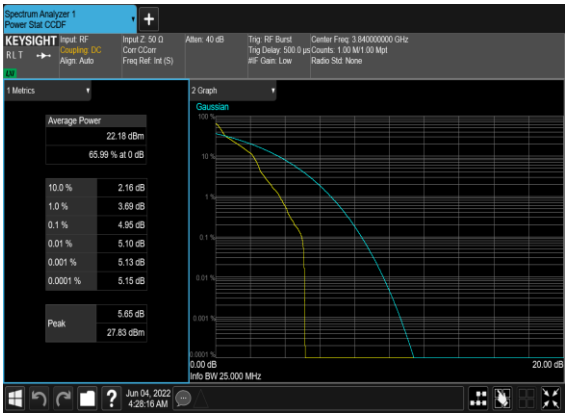
N77(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



N77(20M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH

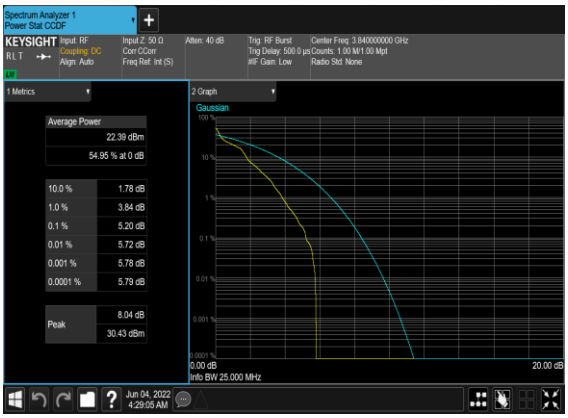


N77(20M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_Mid_CH

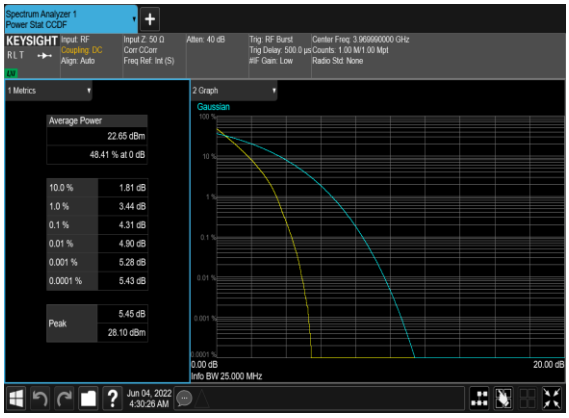


N77(20M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH

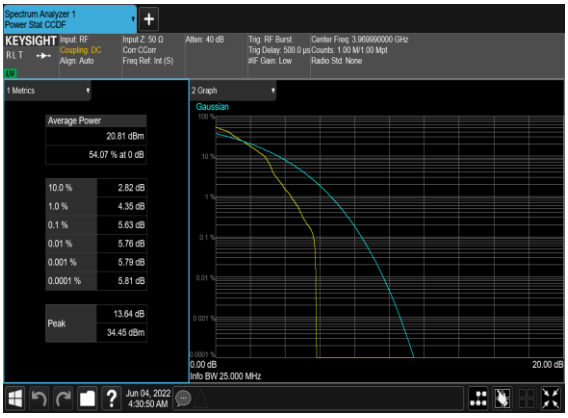
N77(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



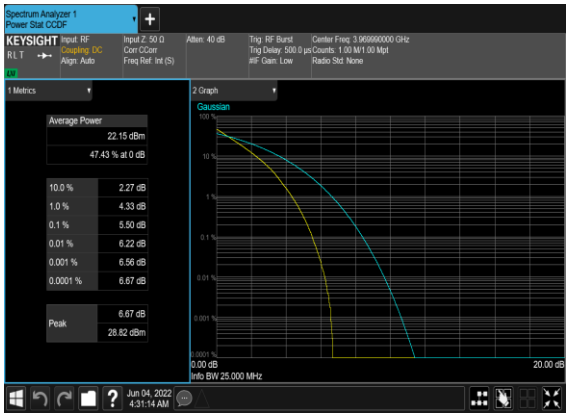
N77(20M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_High_CH



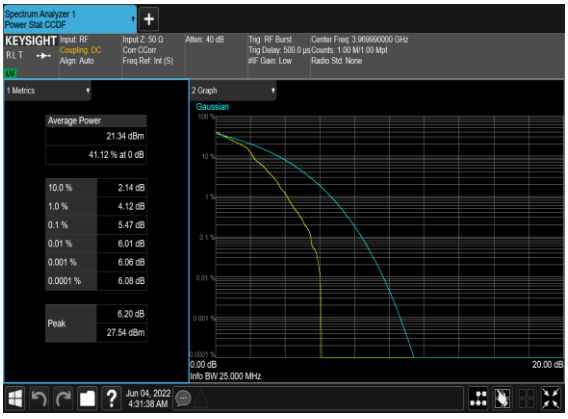
N77(20M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_High_CH



N77(20M)_DFT-s-OFDM_QPSK_Outer_Full_High_CH



N77(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH

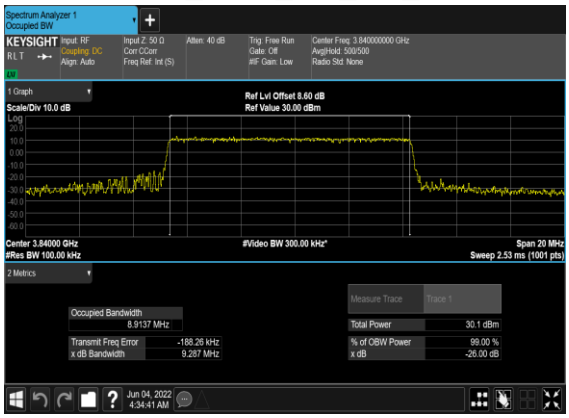


Occupied Bandwidth

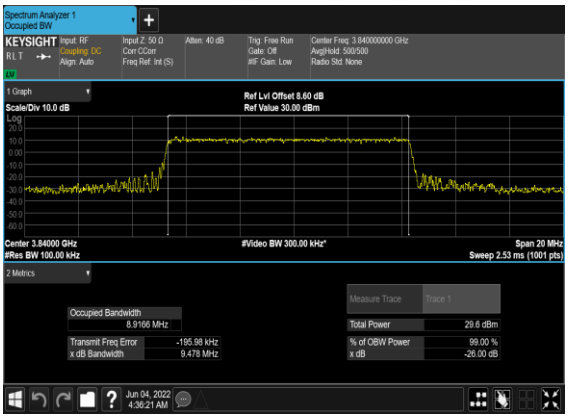
NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	OBW (MHz)	26dB OBW (MHz)
77	15	10	656000	3840.0	DFT-s-OFDM PI/2 BPSK	50@0	8.9137	9.287
77	15	10	656000	3840.0	DFT-s-OFDM QPSK	50@0	8.9166	9.478
77	15	10	656000	3840.0	CP-OFDM QPSK	52@0	9.2931	9.72
77	15	10	656000	3840.0	CP-OFDM 16 QAM	52@0	9.2755	9.757
77	15	10	656000	3840.0	CP-OFDM 64 QAM	52@0	9.2894	10.22
77	15	10	656000	3840.0	CP-OFDM 256 QAM	52@0	9.2845	9.791
77	15	15	656000	3840.0	DFT-s-OFDM PI/2 BPSK	75@0	13.37	14.04
77	15	15	656000	3840.0	DFT-s-OFDM QPSK	75@0	13.369	13.92
77	15	15	656000	3840.0	CP-OFDM QPSK	79@0	14.094	14.93
77	15	15	656000	3840.0	CP-OFDM 16 QAM	79@0	14.119	14.75
77	15	15	656000	3840.0	CP-OFDM 64 QAM	79@0	14.082	14.69
77	15	15	656000	3840.0	CP-OFDM 256 QAM	79@0	14.109	14.71
77	15	20	656000	3840.0	DFT-s-OFDM PI/2 BPSK	100@0	17.859	18.64
77	15	20	656000	3840.0	DFT-s-OFDM QPSK	100@0	17.864	19.13
77	15	20	656000	3840.0	CP-OFDM QPSK	106@0	18.847	19.8
77	15	20	656000	3840.0	CP-OFDM 16 QAM	106@0	18.89	19.62
77	15	20	656000	3840.0	CP-OFDM 64 QAM	106@0	18.892	20.03
77	15	20	656000	3840.0	CP-OFDM 256 QAM	106@0	18.891	19.69
77	15	25	656000	3840.0	DFT-s-OFDM PI/2 BPSK	128@0	22.837	23.66
77	15	25	656000	3840.0	DFT-s-OFDM QPSK	128@0	22.836	23.73
77	15	25	656000	3840.0	CP-OFDM QPSK	133@0	23.638	24.48
77	15	25	656000	3840.0	CP-OFDM 16 QAM	133@0	23.644	24.56
77	15	25	656000	3840.0	CP-OFDM 64 QAM	133@0	23.68	24.56
77	15	25	656000	3840.0	CP-OFDM 256 QAM	133@0	23.659	24.8

77	15	30	656000	3840.0	DFT-s-OFDM PI/2 BPSK	160@0	28.603	29.66
77	15	30	656000	3840.0	DFT-s-OFDM QPSK	160@0	28.572	29.86
77	15	30	656000	3840.0	CP-OFDM QPSK	160@0	28.519	29.5
77	15	30	656000	3840.0	CP-OFDM 16 QAM	160@0	28.655	29.55
77	15	30	656000	3840.0	CP-OFDM 64 QAM	160@0	28.562	29.53
77	15	30	656000	3840.0	CP-OFDM 256 QAM	160@0	28.565	29.62
77	15	40	656000	3840.0	DFT-s-OFDM PI/2 BPSK	216@0	38.587	39.86
77	15	40	656000	3840.0	DFT-s-OFDM QPSK	216@0	38.526	40.68
77	15	40	656000	3840.0	CP-OFDM QPSK	216@0	38.606	39.91
77	15	40	656000	3840.0	CP-OFDM 16 QAM	216@0	38.532	39.94
77	15	40	656000	3840.0	CP-OFDM 64 QAM	216@0	38.522	39.87
77	15	40	656000	3840.0	CP-OFDM 256 QAM	216@0	38.458	39.91
77	15	50	656000	3840.0	DFT-s-OFDM PI/2 BPSK	270@0	48.048	50.2
77	15	50	656000	3840.0	DFT-s-OFDM QPSK	270@0	48.084	49.79
77	15	50	656000	3840.0	CP-OFDM QPSK	270@0	48.112	49.75
77	15	50	656000	3840.0	CP-OFDM 16 QAM	270@0	48.071	49.76
77	15	50	656000	3840.0	CP-OFDM 64 QAM	270@0	48.146	49.79
77	15	50	656000	3840.0	CP-OFDM 256 QAM	270@0	48.076	49.76

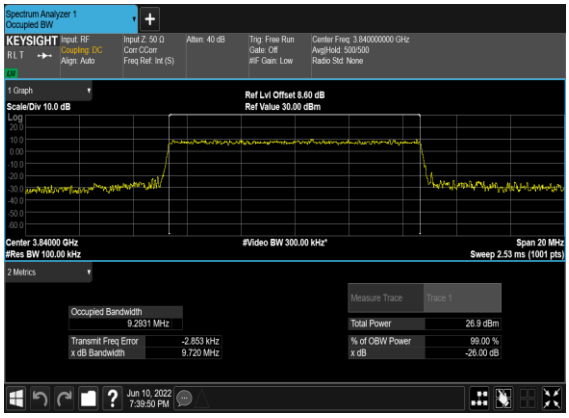
N77(10M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



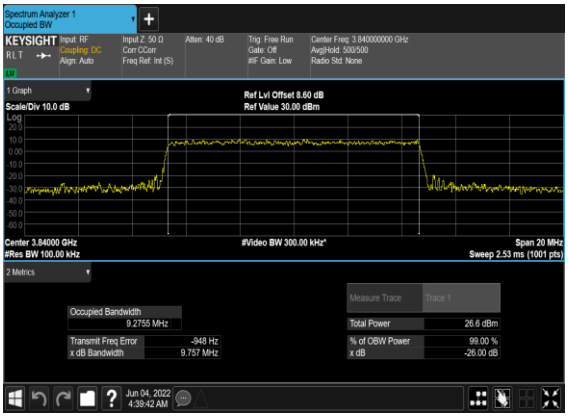
N77(10M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



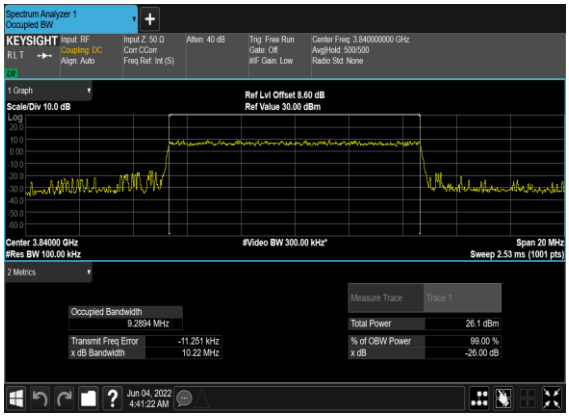
N77(10M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



N77(10M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH

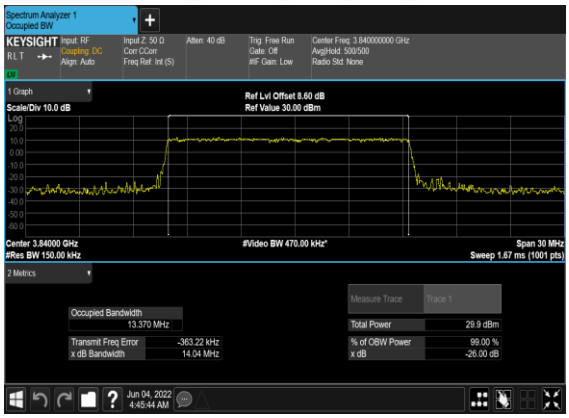


N77(10M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH

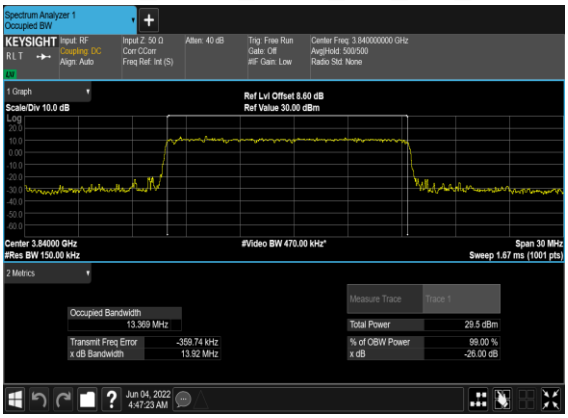


N77(10M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH

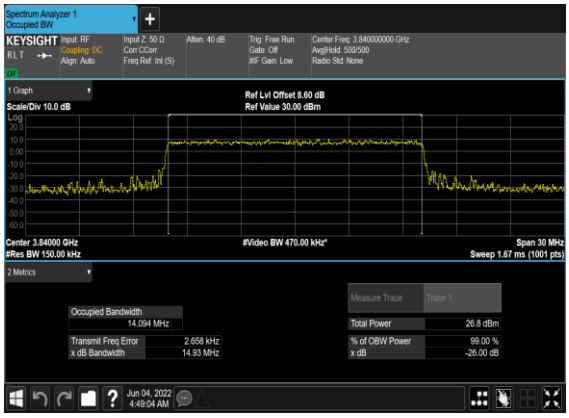
N77(15M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



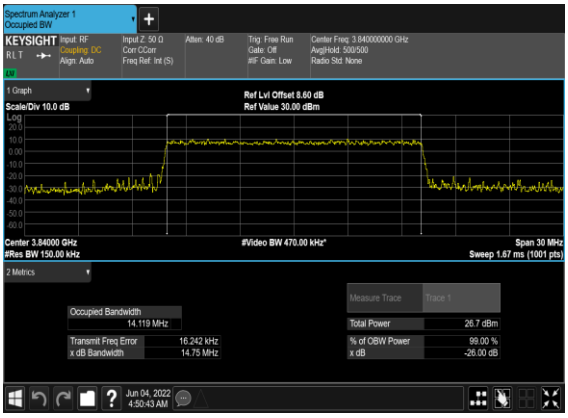
N77(15M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



N77(15M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



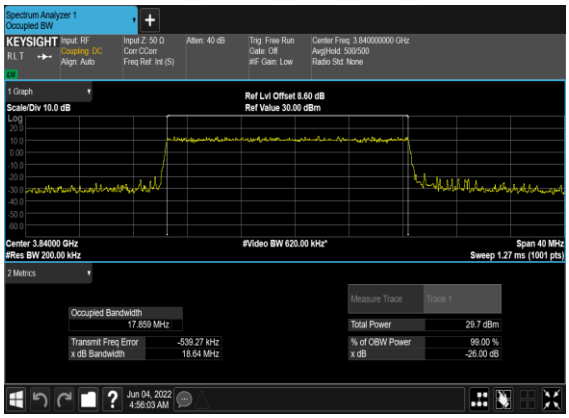
N77(15M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



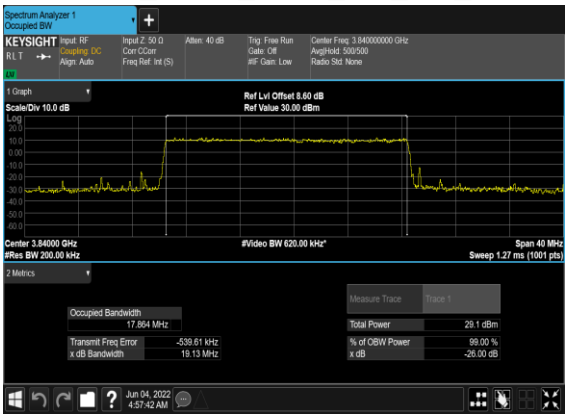
N77(15M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH

N77(15M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH

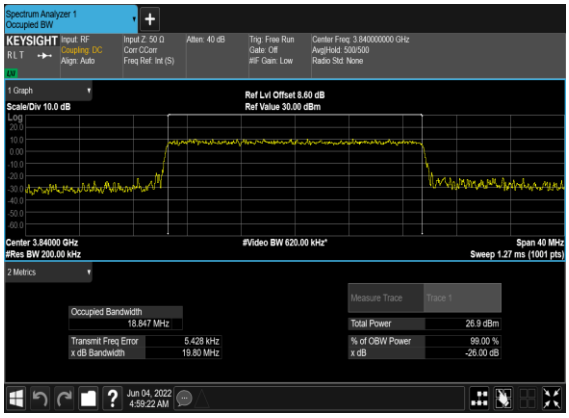
N77(20M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



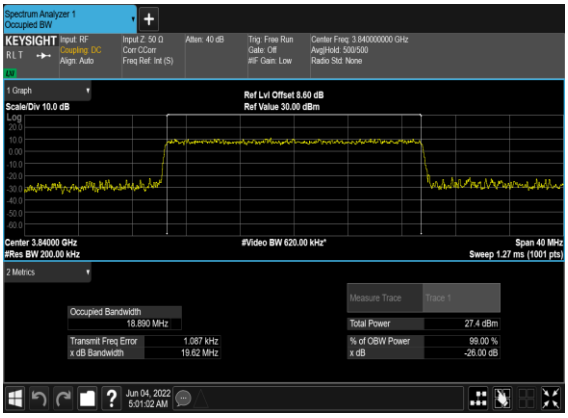
N77(20M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



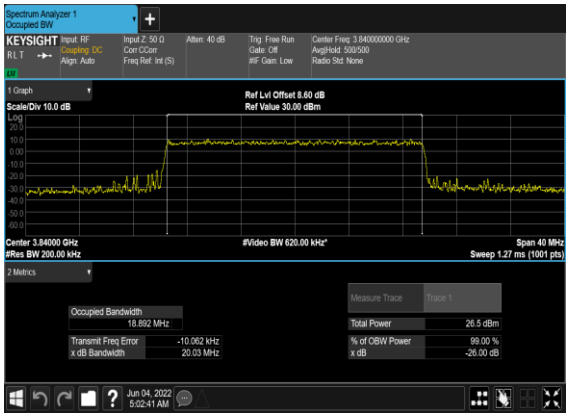
N77(20M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



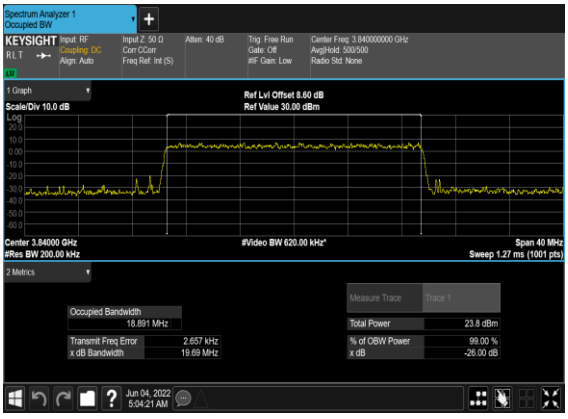
N77(20M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



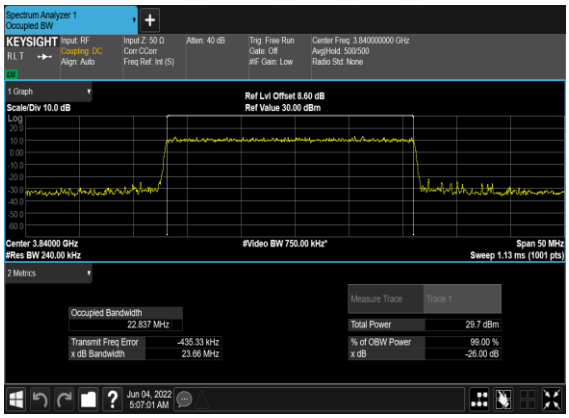
N77(20M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



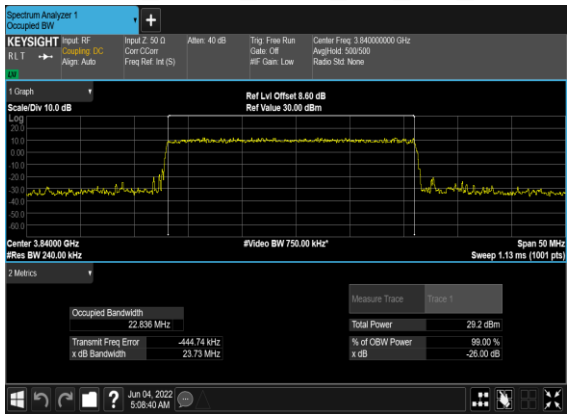
N77(20M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



N77(25M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH

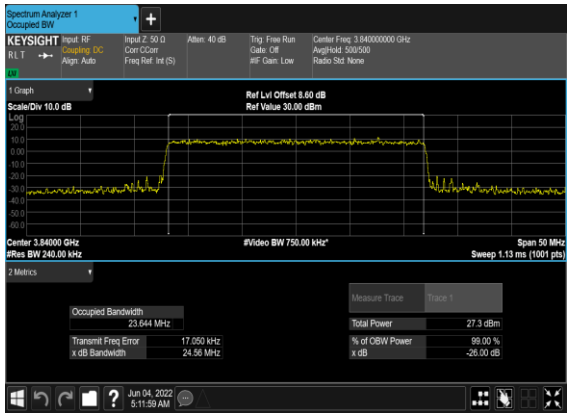


N77(25M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH

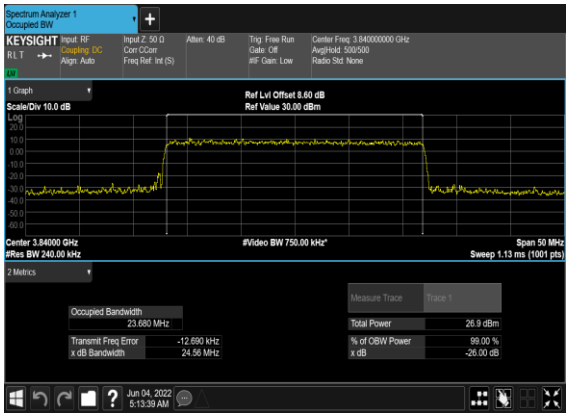


N77(25M)_CP-OFDM_QPSK_Outer_Full_Mid_CH

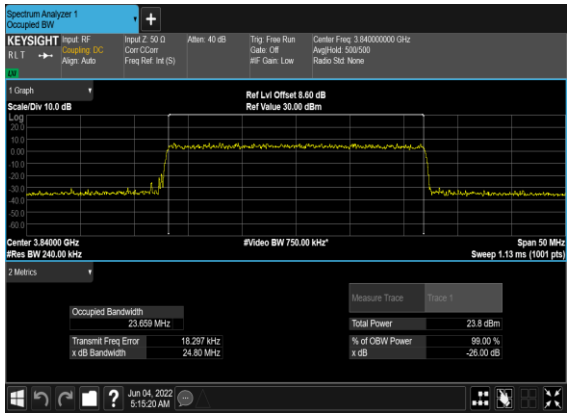
N77(25M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



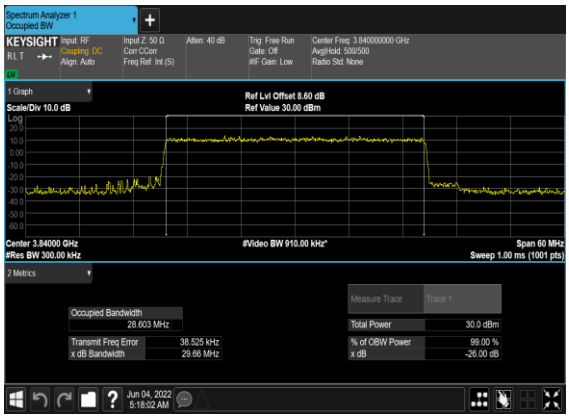
N77(25M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



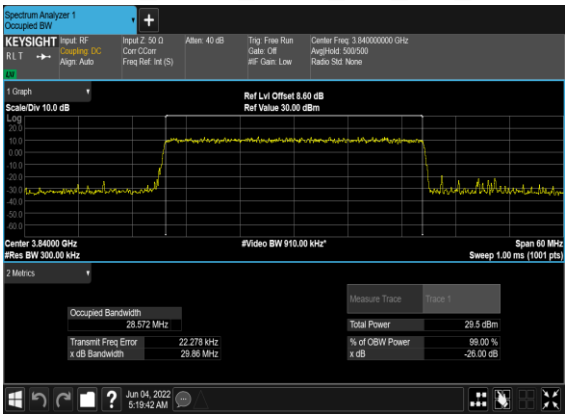
N77(25M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



N77(30M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH

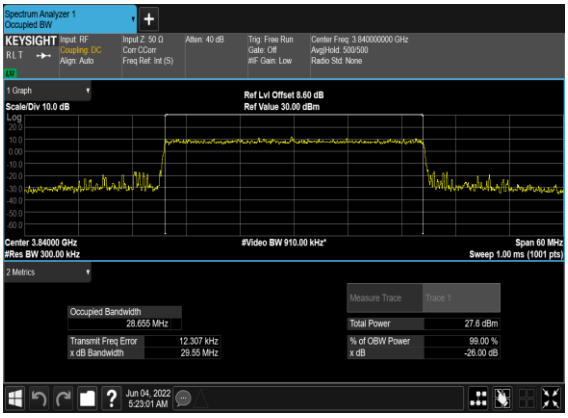


N77(30M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



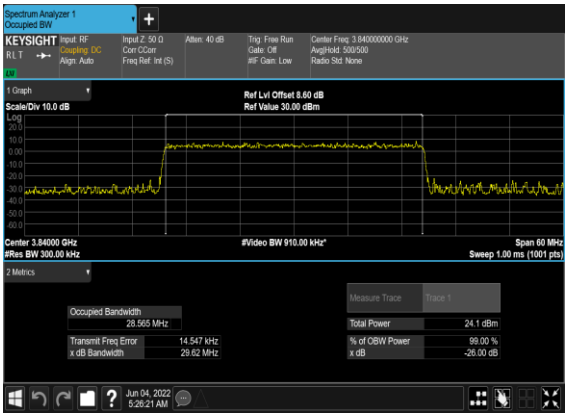
N77(30M)_CP-OFDM_QPSK_Outer_Full_Mid_CH

N77(30M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH

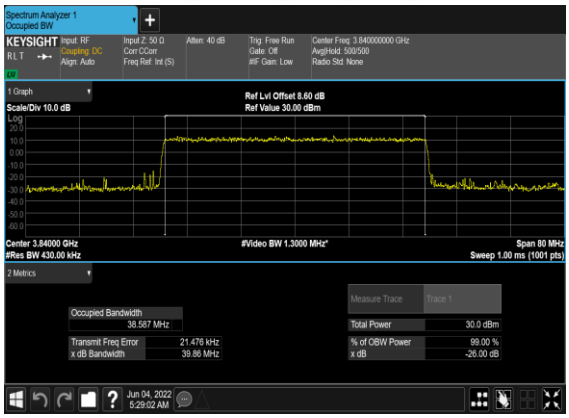


N77(30M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH

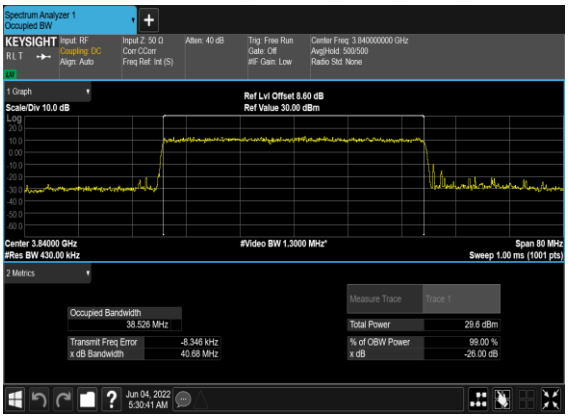
N77(30M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



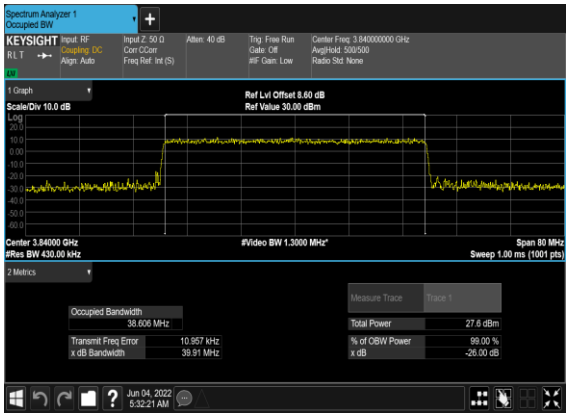
N77(40M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



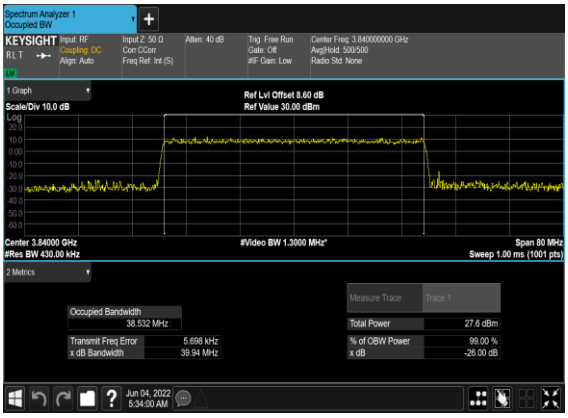
N77(40M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



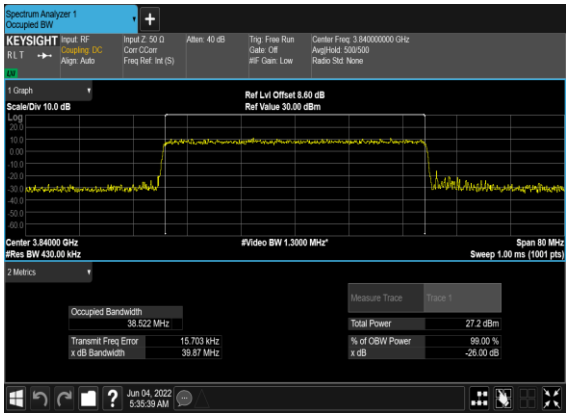
N77(40M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



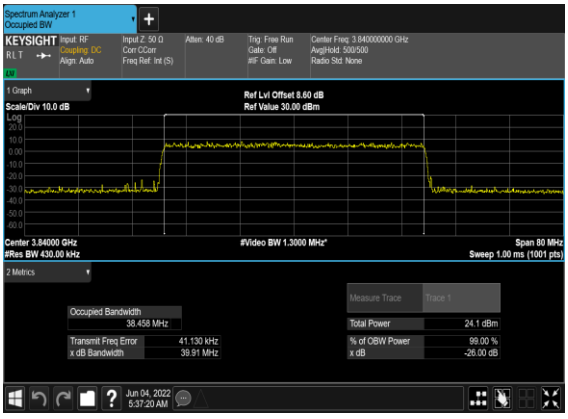
N77(40M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



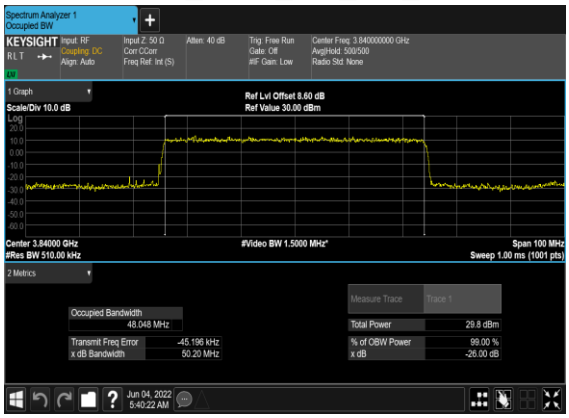
N77(40M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



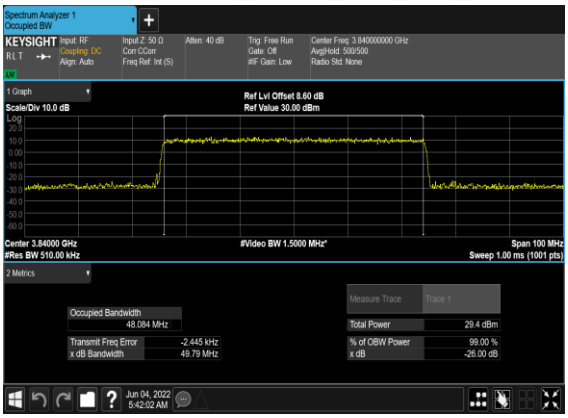
N77(40M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



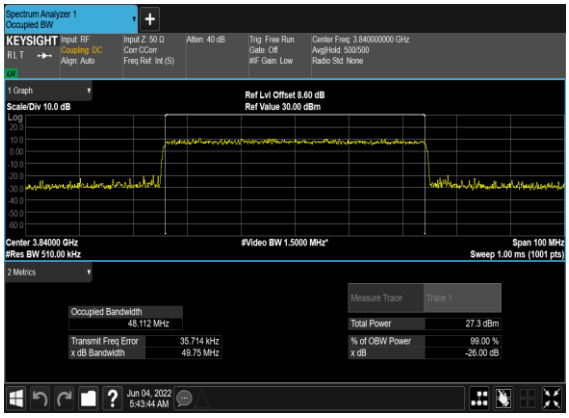
N77(50M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



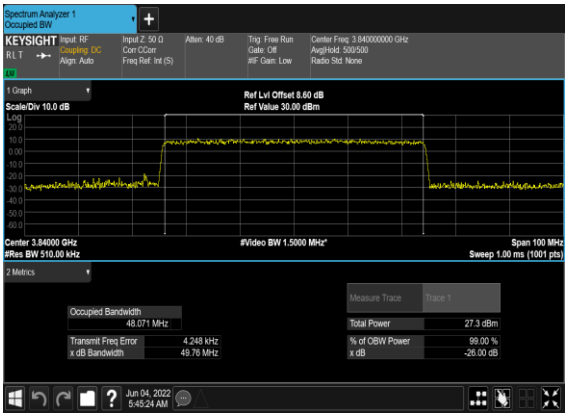
N77(50M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



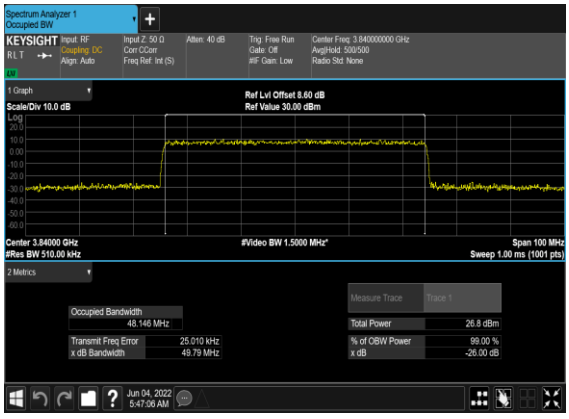
N77(50M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



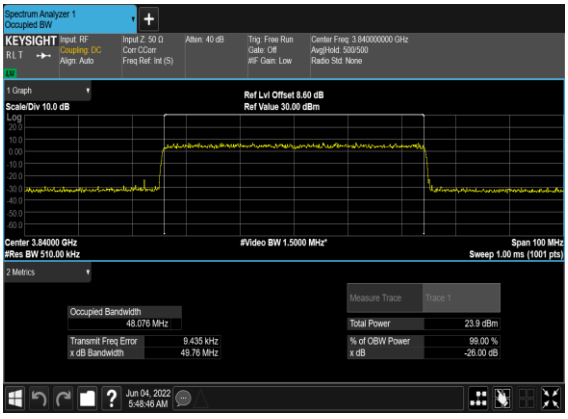
N77(50M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



N77(50M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



N77(50M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



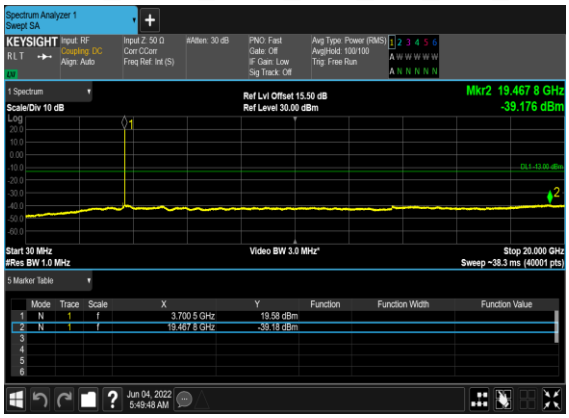
Conducted Spurious Emissions

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result	Verdict
77	15	10	647000	3705.0	DFT-s-OFDM BPSK	1@0	see graph	**---**
77	15	10	647000	3705.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	15	10	647000	3705.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	15	10	647000	3705.0	DFT-s-OFDM QPSK	1@0	see graph	**---**
77	15	10	647000	3705.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	15	10	647000	3705.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	15	10	656000	3840.0	DFT-s-OFDM BPSK	1@0	see graph	**---**
77	15	10	656000	3840.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	15	10	656000	3840.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	15	10	656000	3840.0	DFT-s-OFDM QPSK	1@0	see graph	**---**
77	15	10	656000	3840.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	15	10	656000	3840.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	15	10	665000	3975.0	DFT-s-OFDM BPSK	1@0	see graph	**---**
77	15	10	665000	3975.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	15	10	665000	3975.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	15	10	665000	3975.0	DFT-s-OFDM QPSK	1@0	see graph	**---**
77	15	10	665000	3975.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	15	10	665000	3975.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	15	25	647500	3712.5	DFT-s-OFDM BPSK	1@0	see graph	**---**
77	15	25	647500	3712.5	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	15	25	647500	3712.5	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	15	25	647500	3712.5	DFT-s-OFDM QPSK	1@0	see graph	**---**

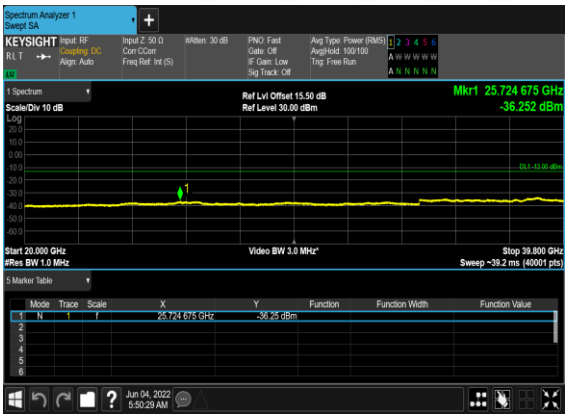
77	15	25	647500	3712.5	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	15	25	647500	3712.5	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	15	25	656000	3840.0	DFT-s-OFDM BPSK	1@0	see graph	**---**
77	15	25	656000	3840.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	15	25	656000	3840.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	15	25	656000	3840.0	DFT-s-OFDM QPSK	1@0	see graph	**---**
77	15	25	656000	3840.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	15	25	656000	3840.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	15	25	664500	3967.5	DFT-s-OFDM BPSK	1@0	see graph	**---**
77	15	25	664500	3967.5	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	15	25	664500	3967.5	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	15	25	664500	3967.5	DFT-s-OFDM QPSK	1@0	see graph	**---**
77	15	25	664500	3967.5	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	15	25	664500	3967.5	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	15	50	648334	3725.01	DFT-s-OFDM BPSK	1@0	see graph	**---**
77	15	50	648334	3725.01	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	15	50	648334	3725.01	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	15	50	648334	3725.01	DFT-s-OFDM QPSK	1@0	see graph	**---**
77	15	50	648334	3725.01	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	15	50	648334	3725.01	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	15	50	656000	3840.0	DFT-s-OFDM BPSK	1@0	see graph	**---**
77	15	50	656000	3840.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	15	50	656000	3840.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	15	50	656000	3840.0	DFT-s-OFDM QPSK	1@0	see graph	**---**

77	15	50	656000	3840.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	15	50	656000	3840.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	15	50	663666	3954.99	DFT-s-OFDM BPSK	1@0	see graph	**---**
77	15	50	663666	3954.99	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	15	50	663666	3954.99	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	15	50	663666	3954.99	DFT-s-OFDM QPSK	1@0	see graph	**---**
77	15	50	663666	3954.99	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	15	50	663666	3954.99	DFT-s-OFDM QPSK	1@0	see graph	**PASS**

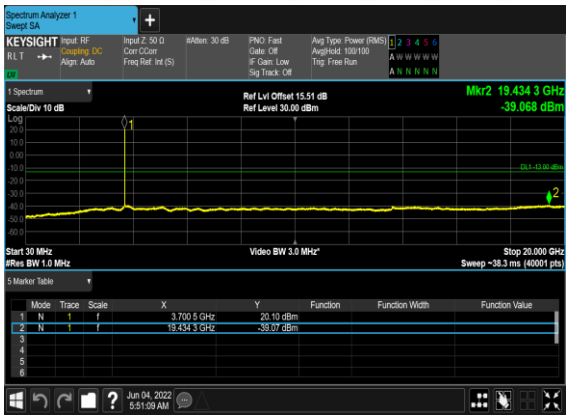
N77(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



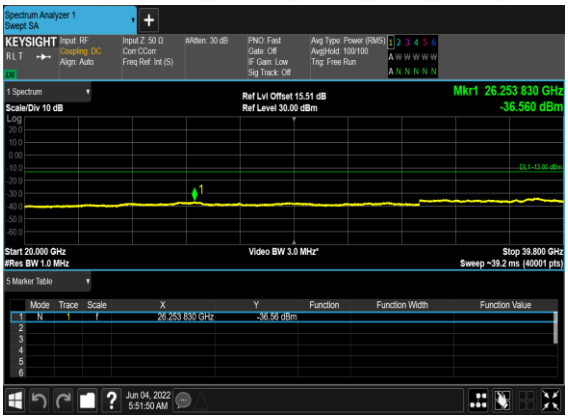
N77(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



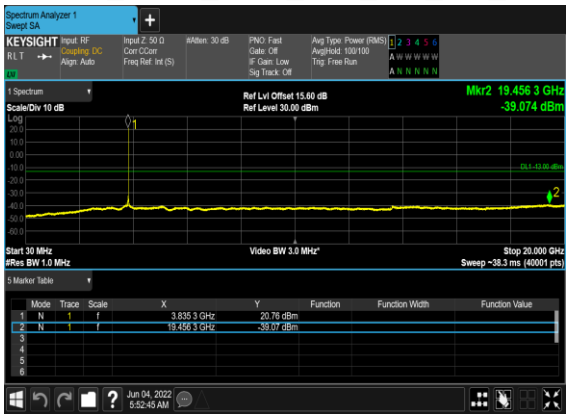
N77(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



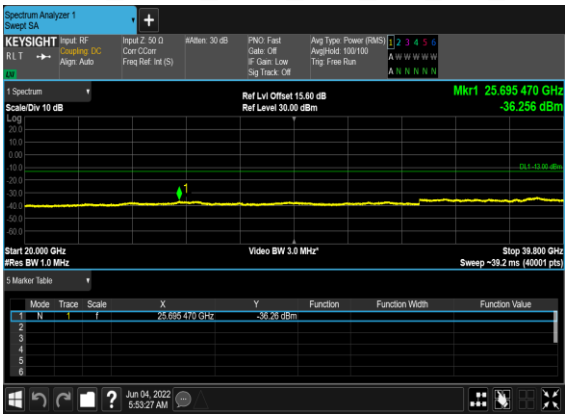
N77(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



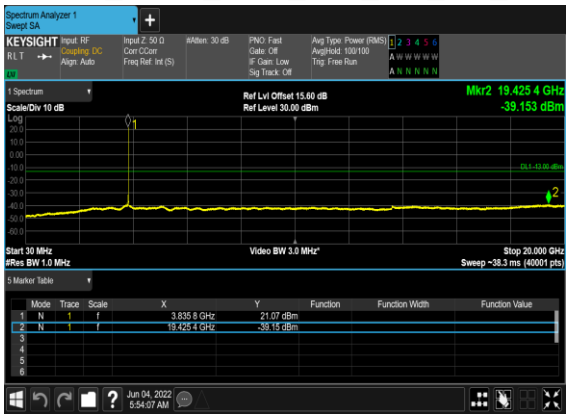
N77(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



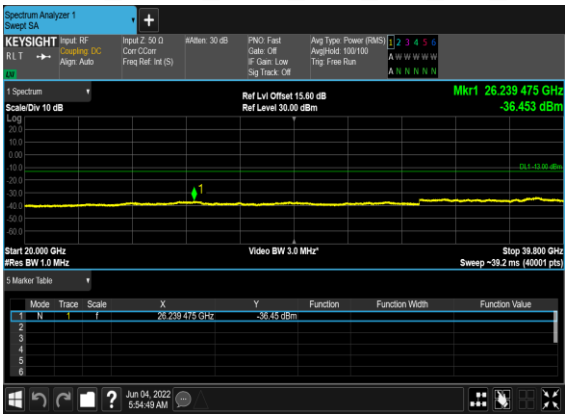
N77(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



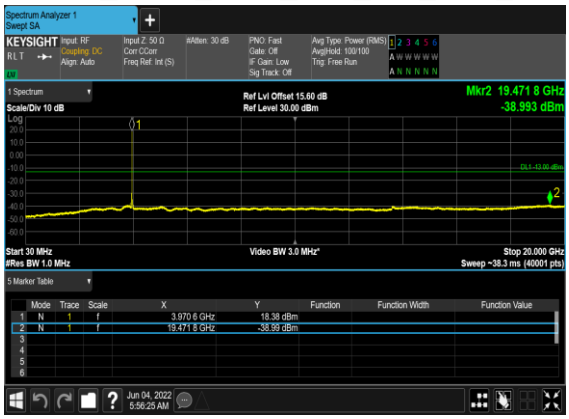
N77(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



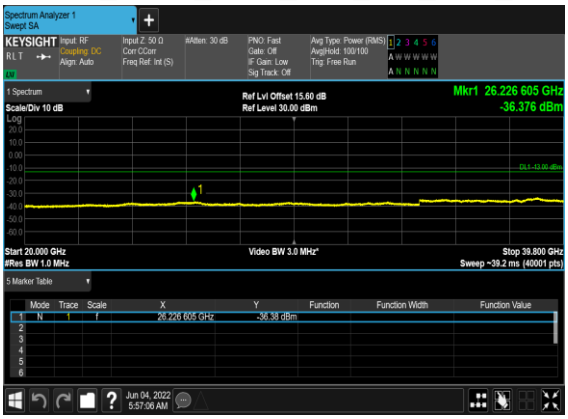
N77(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



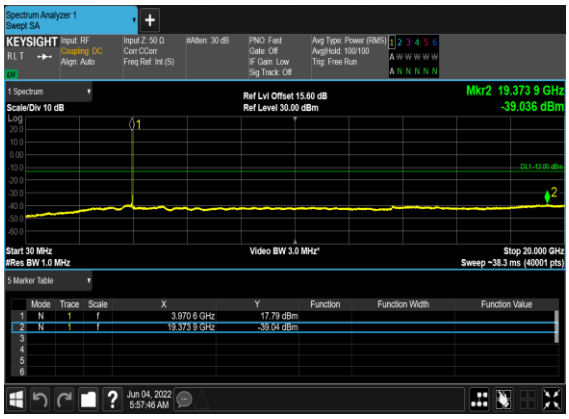
N77(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



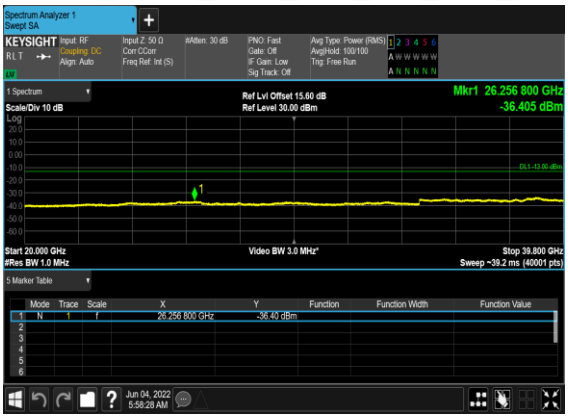
N77(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



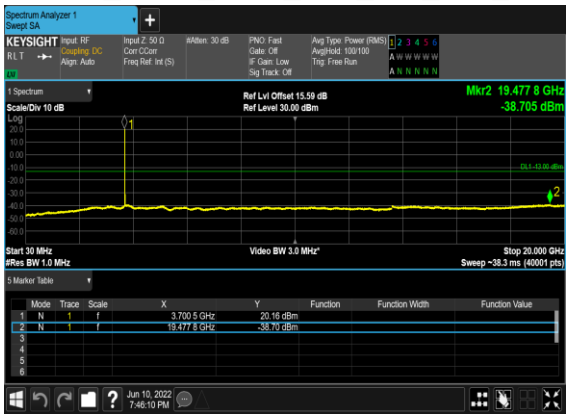
N77(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



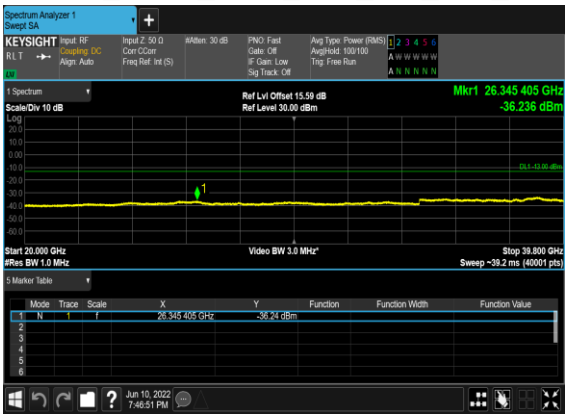
N77(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



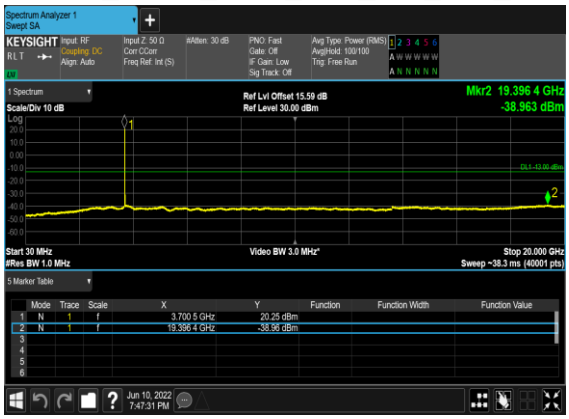
N77(25M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



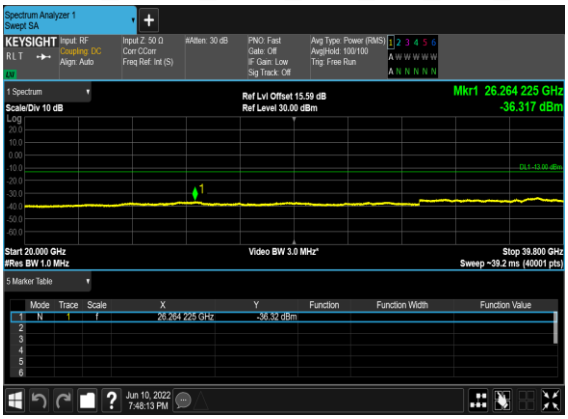
N77(25M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



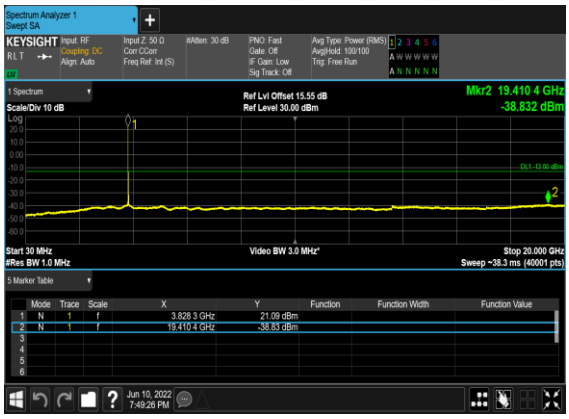
N77(25M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



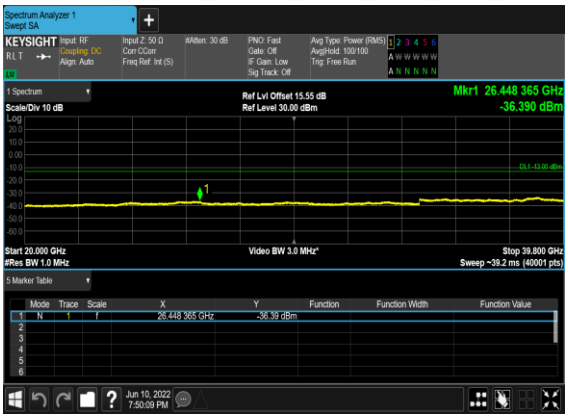
N77(25M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



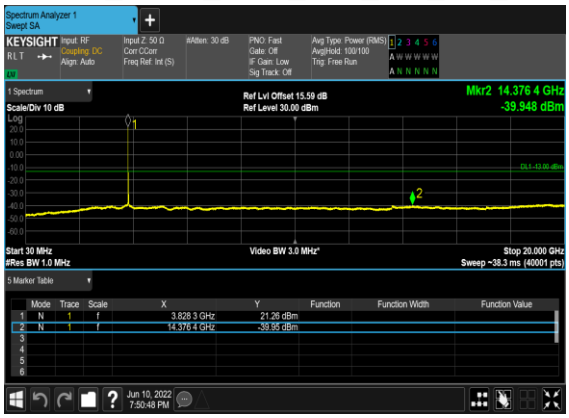
N77(25M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



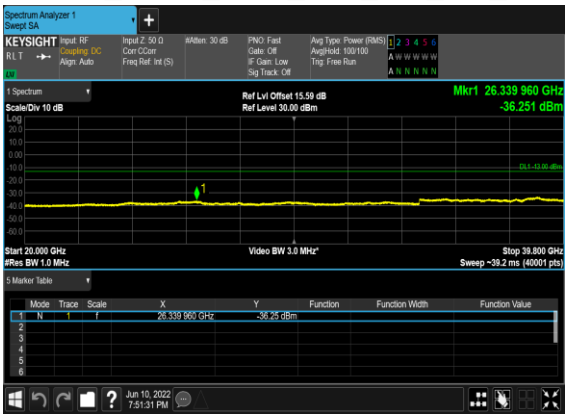
N77(25M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



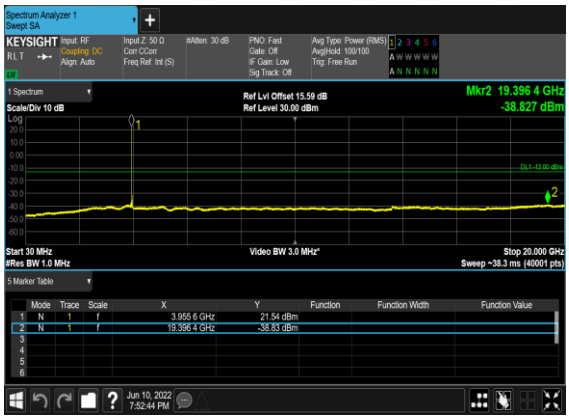
N77(25M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



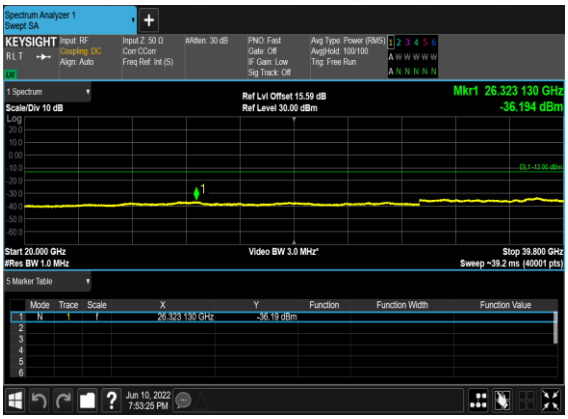
N77(25M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



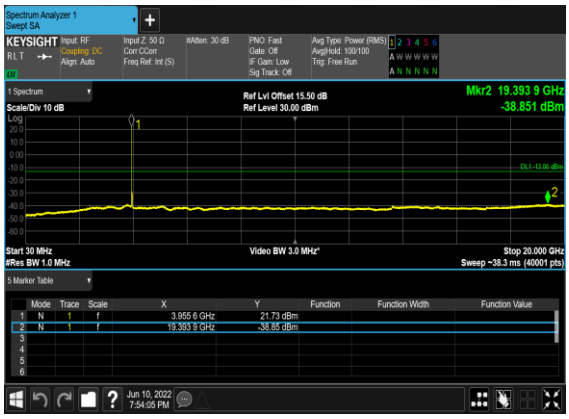
N77(25M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



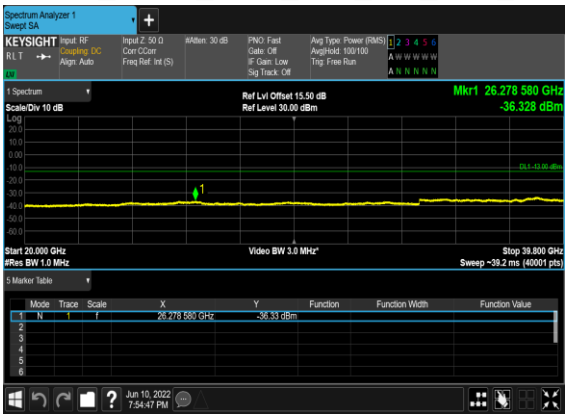
N77(25M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



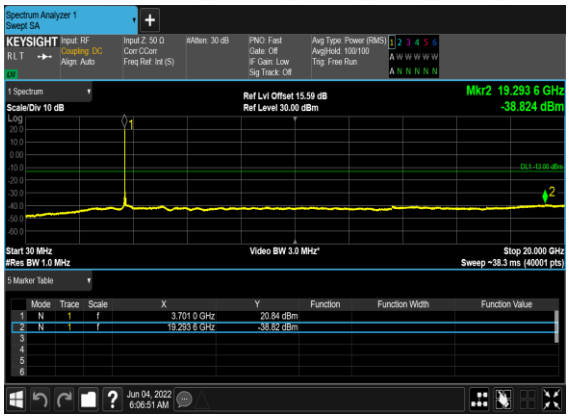
N77(25M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



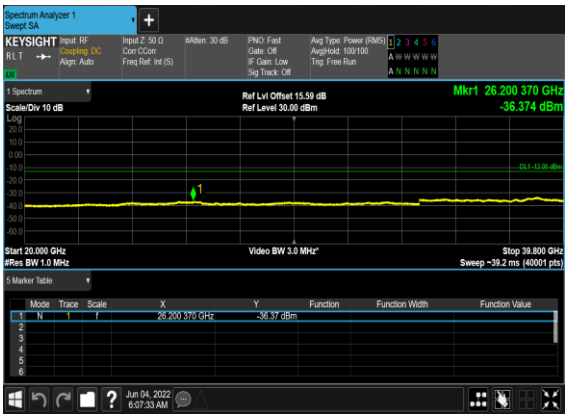
N77(25M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



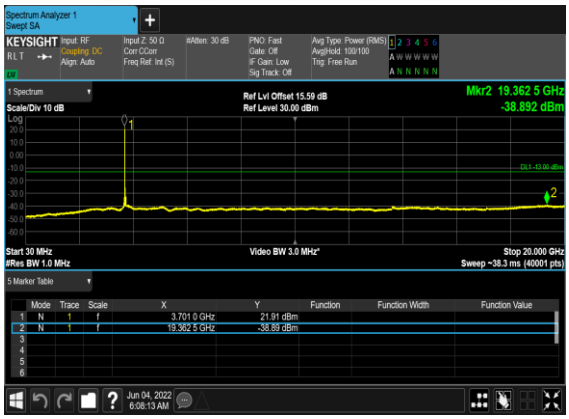
N77(50M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



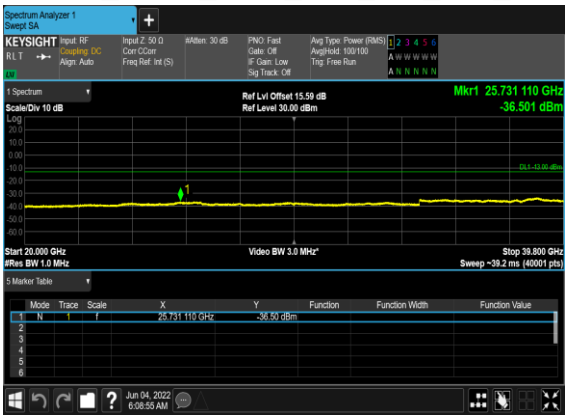
N77(50M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



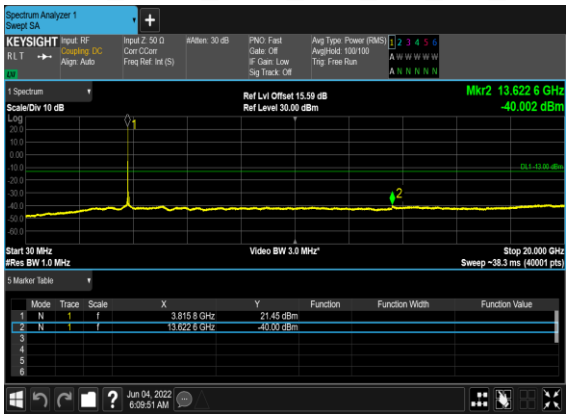
N77(50M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



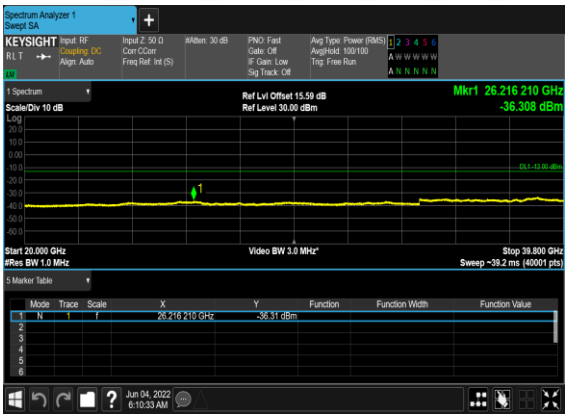
N77(50M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



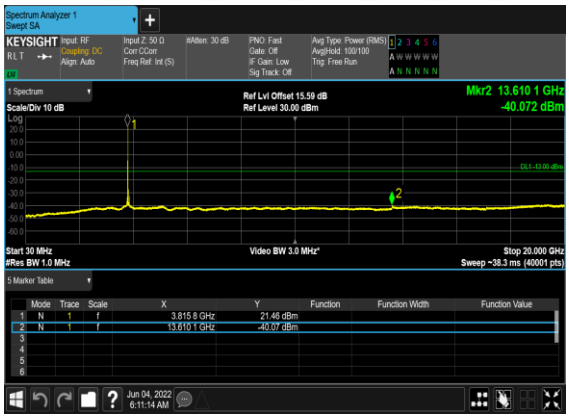
N77(50M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



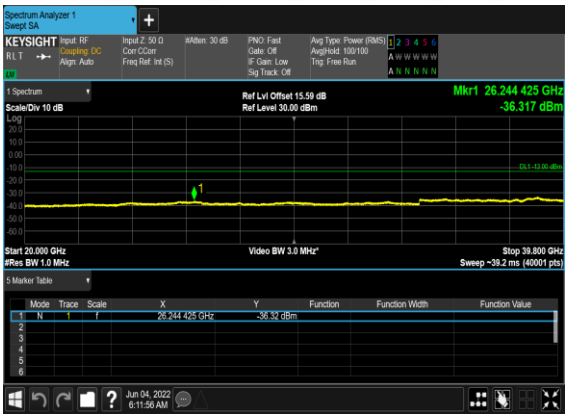
N77(50M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



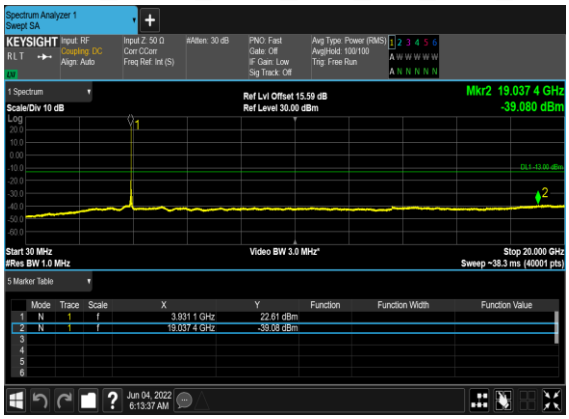
N77(50M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



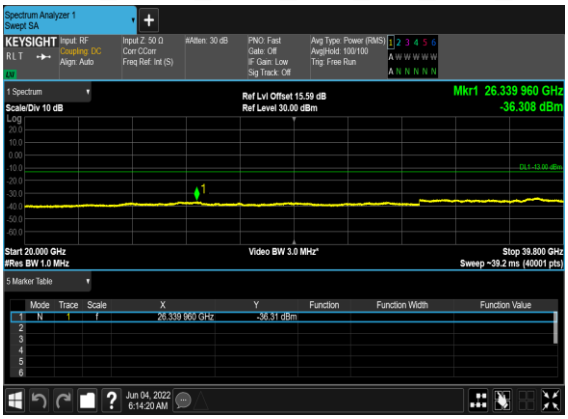
N77(50M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



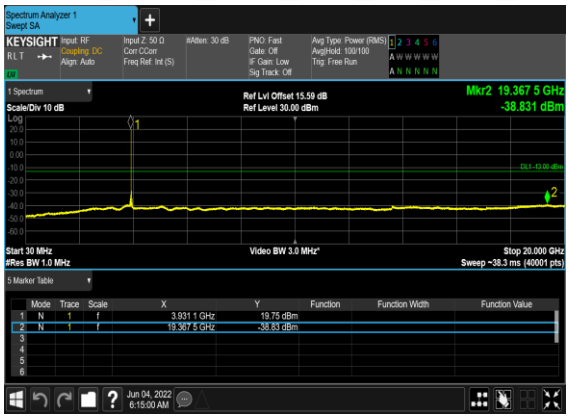
N77(50M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



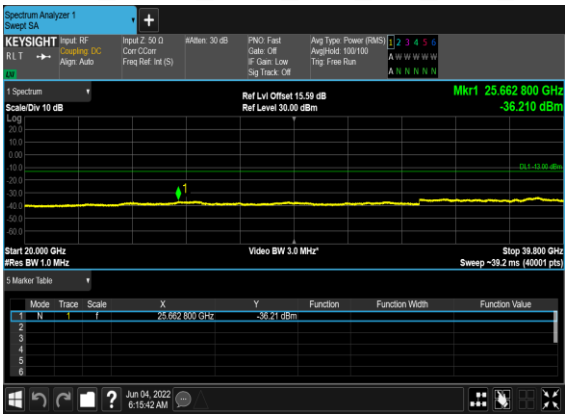
N77(50M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



N77(50M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



N77(50M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH

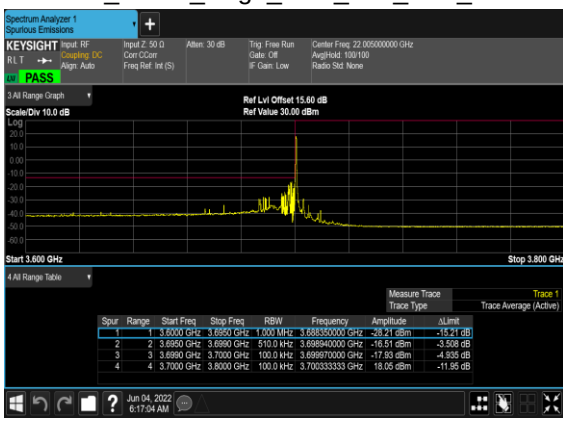


Conducted Band Edge

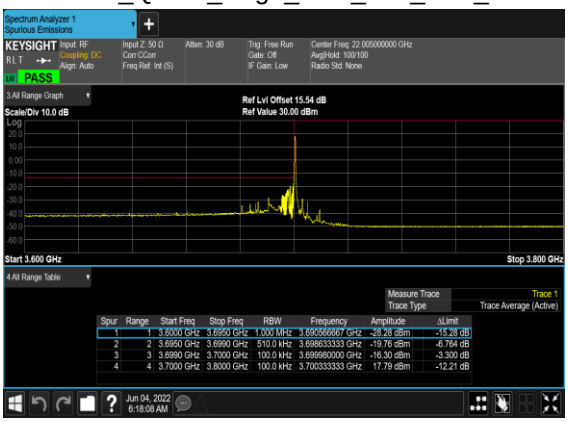
NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result	Verdict
77	15	10	647000	3705.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	15	10	647000	3705.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	15	10	647000	3705.0	DFT-s-OFDM BPSK	50@0	see graph	**PASS**
77	15	10	647000	3705.0	DFT-s-OFDM QPSK	50@0	see graph	**PASS**
77	15	10	665000	3975.0	DFT-s-OFDM BPSK	1@51	see graph	**PASS**
77	15	10	665000	3975.0	DFT-s-OFDM QPSK	1@51	see graph	**PASS**
77	15	10	665000	3975.0	DFT-s-OFDM BPSK	50@0	see graph	**PASS**
77	15	10	665000	3975.0	DFT-s-OFDM QPSK	50@0	see graph	**PASS**
77	15	25	647500	3712.5	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	15	25	647500	3712.5	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	15	25	647500	3712.5	DFT-s-OFDM BPSK	128@0	see graph	**PASS**
77	15	25	647500	3712.5	DFT-s-OFDM QPSK	128@0	see graph	**PASS**
77	15	25	664500	3967.5	DFT-s-OFDM BPSK	1@132	see graph	**PASS**
77	15	25	664500	3967.5	DFT-s-OFDM QPSK	1@132	see graph	**PASS**
77	15	25	664500	3967.5	DFT-s-OFDM BPSK	128@0	see graph	**PASS**
77	15	25	664500	3967.5	DFT-s-OFDM QPSK	128@0	see graph	**PASS**
77	15	50	648334	3725.01	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	15	50	648334	3725.01	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	15	50	648334	3725.01	DFT-s-OFDM BPSK	270@0	see graph	**PASS**
77	15	50	648334	3725.01	DFT-s-OFDM QPSK	270@0	see graph	**PASS**
77	15	50	663666	3954.99	DFT-s-OFDM BPSK	1@269	see graph	**PASS**
77	15	50	663666	3954.99	DFT-s-OFDM QPSK	1@269	see graph	**PASS**

77	15	50	663666	3954.99	DFT-s-OFDM BPSK	270@0	see graph	**PASS**
77	15	50	663666	3954.99	DFT-s-OFDM QPSK	270@0	see graph	**PASS**

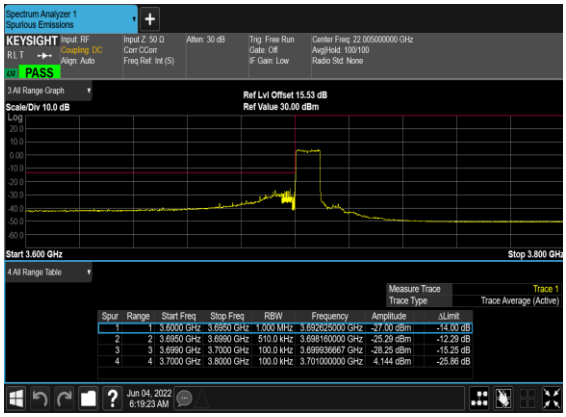
N77(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



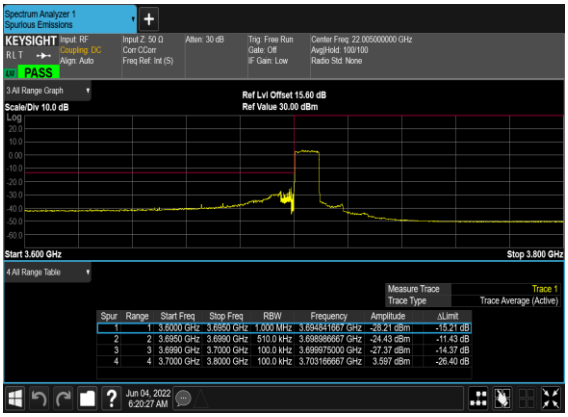
N77(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



N77(10M)_DFT-s-OFDM_BPSK_Outer_Full_Low_CH



N77(10M)_DFT-s-OFDM_QPSK_Outer_Full_Low_CH



N77(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Right_High_CH

N77(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_High_CH