

FCC RF Test Report

APPLICANT : OnePlus Technology (Shenzhen) Co., Ltd.
EQUIPMENT : Mobile Phone
BRAND NAME : 1+,ONEPLUS
MODEL NAME : CPH2583
FCC ID : 2ABZ2-AA550
STANDARD : 47 CFR Part 2, Part 27 Subpart Q
CLASSIFICATION : PCS Licensed Transmitter Held to Ear (PCE)
TEST DATE(S) : Sep. 16, 2023 ~ Sep. 28, 2023

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



Sporton International Inc. (ShenZhen)

1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055

People's Republic of China

TABLE OF CONTENTS

REVISION HISTORY.....	3
SUMMARY OF TEST RESULT	4
1 GENERAL DESCRIPTION	5
1.1 Applicant.....	5
1.2 Manufacturer.....	5
1.3 Product Feature of Equipment Under Test.....	5
1.4 Product Specification of Equipment Under Test.....	5
1.5 Modification of EUT	6
1.6 Maximum EIRP Power and Emission Designator	7
1.7 Testing Site.....	9
1.8 Test Software.....	9
1.9 Applied Standards	10
2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST	11
2.1 Test Mode.....	11
2.2 Connection Diagram of Test System.....	12
2.3 Support Unit used in test configuration and system	12
2.4 Measurement Results Explanation Example.....	12
2.5 Frequency List of Low/Middle/High Channels	13
3 CONDUCTED TEST ITEMS	15
3.1 Measuring Instruments	15
3.2 Test Setup	15
3.3 Test Result of Conducted Test	15
3.4 Conducted Output Power Measurement	16
3.5 Peak-to-Average Ratio	17
3.6 EIRP	18
3.7 Occupied Bandwidth.....	19
3.8 Conducted Band Edge Measurement	20
3.9 Conducted Spurious Emission Measurement	21
3.10 Frequency Stability Measurement.....	22
4 RADIATED TEST ITEMS	23
4.1 Measuring Instruments	23
4.2 Test Setup	23
4.3 Test Result of Radiated Test	24
4.4 Radiated Spurious Emission Measurement	25
5 LIST OF MEASURING EQUIPMENT	26
6 MEASUREMENT UNCERTAINTY	27
APPENDIX A. TEST RESULTS OF CONDUCTED TEST	
APPENDIX B. TEST RESULTS OF RADIATED TEST	
APPENDIX C. TEST SETUP PHOTOGRAPHS	



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG382311M	Rev. 01	Initial issue of report	Oct. 20, 2023

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	—	Report Only	-
3.5	§27.50 (k)(4)	Peak-to-Average Ratio	<13dB	PASS	
3.6	§27.50 (k)(3)	EIRP	EIRP < 1W (30dBm)	PASS	-
3.7	§2.1049	Occupied Bandwidth	—	Report Only	-
3.8	§2.1051 §27.53 (n)(2)	Conducted Band Edge Measurement	-13dBm/MHz	PASS	-
3.9	§2.1051 §27.53 (n)(2)	Conducted Spurious Emission	-13dBm/MHz	PASS	-
3.10	§2.1055 §27.54	Frequency Stability Temperature & Voltage	Within the band	PASS	-
4.4	§2.1053 §27.53 (n)(2)	Radiated Spurious Emission	-13dBm/MHz	PASS	Under limit 13.97 dB at 6917.50 MHz

Conformity Assessment Condition:

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

Disclaimer:

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

1 General Description

1.1 Applicant

OnePlus Technology (Shenzhen) Co., Ltd.

18C02, 18C03, 18C04, and 18C05, Shum Yip Terra Building, Binhe Avenue North, Futian District, Shenzhen, Guangdong, P.R. China.

1.2 Manufacturer

OnePlus Technology (Shenzhen) Co., Ltd.

18C02, 18C03, 18C04, and 18C05, Shum Yip Terra Building, Binhe Avenue North, Futian District, Shenzhen, Guangdong, P.R. China.

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Phone
Brand Name	1+,ONEPLUS
Model Name	CPH2583
FCC ID	2ABZ2-AA550
IMEI Code	Conducted : 865154060024816 Radiation : 865154060025854/865154060025847
HW Version	11
SW Version	OxygenOS V14.0
EUT Stage	Production Unit

1.4 Product Specification of Equipment Under Test

Product Feature	
Tx/Rx Frequency	5G NR n77: 3450 MHz ~ 3550 MHz 5G NR n78: 3450 MHz ~ 3550 MHz
SCS	30kHz
Bandwidth	n77: 10 / 15 / 20 / 30 / 40 / 50 / 60 / 70 / 80 / 90 / 100MHz n78: 10 / 20 / 30 / 40 / 50 / 60 / 70 / 80 / 90 / 100MHz
Antenna Gain	<Ant. 6> 5G NR n77: -2 dBi 5G NR n78: -2 dBi <Ant. 7> 5G NR n77: -2 dBi 5G NR n78: -2 dBi <Ant. 12> 5G NR n77: -2 dBi 5G NR n78: -2 dBi <Ant. 14> 5G NR n77: -2 dBi

	5G NR n78: -2 dBi
Type of Modulation	CP-OFDM: QPSK / 16QAM / 64QAM / 256QAM DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM

Remark:

1. The maximum EIRP is calculated from max output power and max antenna gain, only the maximum EIRP is shown in the report, 5G NR n77/n78 for Antenna 14 and n77/n78_UL MIMO for Ant.(6+12).
2. The device supports n77(1T4R) SRS resources on Antenna 6/7/12/14, only the test data of worst Antenna 14 is showed in the report according to the maximum power.
3. 5G NR n77 support UL MIMO mode for Ant(6+12) / Ant(14+7), only the worst test data of Ant(6+12) is shown in the report.
4. 5G NR n77/n78 UL_MIMO mode only supports CP-OFDM Modulation, the MIMO mode is completely uncorrelated, so the directional gain is selected the maximum gain among all antennas.
5. For UL MIMO mode, the conducted BE/Spurious are tested at single antenna port and add $10 \cdot \log(N_{ANT})$ according to KDB 662911 D01.
6. 5G NR n77/n78 support SA and NSA mode. The whole testing has assessed SA mode for n77 by referring to the higher conducted power for conducted test items.
7. The device supports HPUE mode for 5G NR n77/n78.
8. All the supported EN-DC combinations are verified conducted power, only the EN-DC combination with highest power are shown in the report.
9. The EN-DC mode combination could be referred to the product spec.
10. The device supports two PAs for 5G NR n77/n78, the maximum power of main PA is higher than the other PA, therefore, we chose higher power PA to calculate the EIRP and show in the report

1.5 Modification of EUT

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

1.6 Maximum EIRP Power and Emission Designator

5G NR n77 SA		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	3455.01 ~ 3544.98	0.2735	8M60G7D	0.2254	8M61W7D
15	3457.50 ~ 3542.49	0.2692	13M6G7D	0.2188	13M6W7D
20	3460.02 ~ 3540.00	0.2723	18M2G7D	0.2218	18M2W7D
30	3465.00 ~ 3534.99	0.2825	27M9G7D	0.2339	27M9W7D
40	3470.01 ~ 3529.98	0.2716	37M9G7D	0.2234	37M9W7D
50	3475.02 ~ 3525.00	0.2871	47M5G7D	0.2312	47M6W7D
60	3480.00 ~ 3519.99	0.2799	57M9G7D	0.2270	57M9W7D
70	3485.01 ~ 3514.98	0.2831	67M6G7D	0.2328	67M6W7D
80	3490.02 ~ 3510.00	0.2884	77M6G7D	0.2344	77M6W7D
90	3495.00 ~ 3504.99	0.2917	87M4G7D	0.2377	87M7W7D
100	3500.01	0.2938	97M5G7D	0.2344	97M7W7D

5G NR n78 SA		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	3455.01 ~ 3544.98	0.2421	8M60G7D	0.1982	8M61W7D
20	3460.02 ~ 3540.00	0.2541	18M2G7D	0.2070	18M2W7D
30	3465.00 ~ 3534.99	0.2729	27M9G7D	0.2254	27M9W7D
40	3470.01 ~ 3529.98	0.2529	37M9G7D	0.2056	37M9W7D
50	3475.02 ~ 3525.00	0.2661	47M5G7D	0.2198	47M6W7D
60	3480.00 ~ 3519.99	0.2636	57M9G7D	0.2163	57M9W7D
70	3485.01 ~ 3514.98	0.2742	67M6G7D	0.2244	67M6W7D
80	3490.02 ~ 3510.00	0.2723	77M6G7D	0.2228	77M6W7D
90	3495.00 ~ 3504.99	0.2723	87M4G7D	0.2203	87M7W7D
100	3500.01	0.2754	97M5G7D	0.2070	97M7W7D

5G NR n77 UL MIMO		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	3455.01 ~ 3544.98	0.1596	8M59G7D	0.1368	8M59W7D
15	3457.50 ~ 3542.49	0.1600	13M6G7D	0.1377	13M6W7D
20	3460.02 ~ 3540.00	0.1592	18M2G7D	0.1365	18M2W7D
30	3465.00 ~ 3534.99	0.1679	27M8G7D	0.1429	27M9W7D
40	3470.01 ~ 3529.98	0.1644	37M9G7D	0.1403	37M9W7D
50	3475.02 ~ 3525.00	0.1726	47M5G7D	0.1455	47M5W7D
60	3480.00 ~ 3519.99	0.1641	57M9G7D	0.1449	57M8W7D
70	3485.01 ~ 3514.98	0.1706	67M6G7D	0.1442	67M6W7D
80	3490.02 ~ 3510.00	0.1710	77M7G7D	0.1472	77M6W7D
90	3495.00 ~ 3504.99	0.1734	87M5G7D	0.1500	87M7W7D
100	3500.01	0.1770	97M5G7D	0.1486	97M6W7D

5G NR n78 UL MIMO		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	3455.01 ~ 3544.98	0.1600	8M59G7D	0.1361	8M59W7D
20	3460.02 ~ 3540.00	0.1611	18M2G7D	0.1390	18M2W7D
30	3465.00 ~ 3534.99	0.1675	27M8G7D	0.1426	27M9W7D
40	3470.01 ~ 3529.98	0.1626	37M9G7D	0.1403	37M9W7D
50	3475.02 ~ 3525.00	0.1714	47M5G7D	0.1469	47M5W7D
60	3480.00 ~ 3519.99	0.1629	57M9G7D	0.1422	57M8W7D
70	3485.01 ~ 3514.98	0.1687	67M6G7D	0.1439	67M6W7D
80	3490.02 ~ 3510.00	0.1714	77M7G7D	0.1426	77M6W7D
90	3495.00 ~ 3504.99	0.1746	87M5G7D	0.1687	87M7W7D
100	3500.01	0.1750	97M5G7D	0.1507	97M6W7D

Note:

- 5G NR Band n77 overlaps the entire frequency range of Band n78, and n77 power > n78 power, therefore the conducted test results of n77 provided in this report cover n78.
- All modulations have been tested, and only the worst test results of PSK & QAM are shown in the report.

1.7 Testing Site

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 518103 People's Republic of China TEL: +86-755-86066985		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	03CH01-SZ	CN1256	421272

1.8 Test Software

Item	Site	Manufacture	Name	Version
1.	03CH01-SZ	AUDIX	E3	6.2009-8-24

1.9 Applied Standards

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

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

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

2.1 Test Mode

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

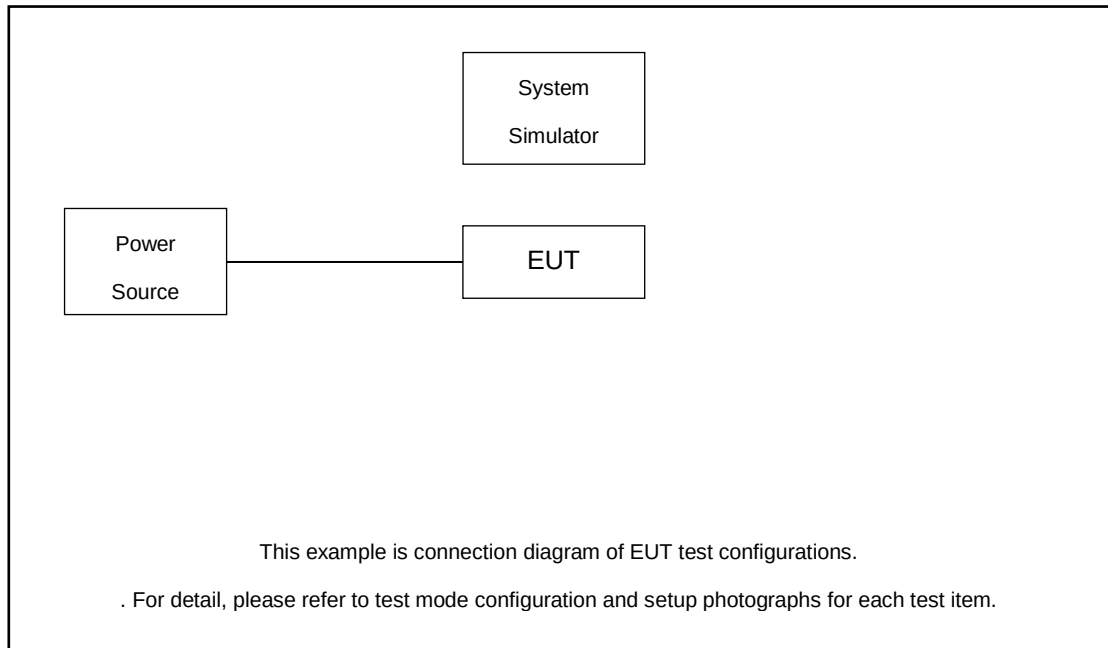
Radiated measurements are performed by rotating the EUT in three different orthogonal test planes to find the maximum emission. (Z Plane)

Test Cases	Band	Bandwidth (MHz)	Modulation	RB #	Test Channel
		eg. 5M, 10M, 15M, 20M	eg. PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM	1RB, Partial RB, Full RB	L/M/H
Max. Output Power	5G n77	10M, 15M, 20M, 30M, 40M, 50M, 60M, 70M, 80M, 90M, 100M	All Modulations	1RB, Partial RB, Full RB	L, M, H
	5G n78	10M, 20M, 30M, 40M, 50M, 60M, 70M, 80M, 90M, 100M	All Modulations	1RB, Partial RB, Full RB	L, M, H
Peak-to-Average Ratio	5G n77	20M	PI/2 BPSK, QPSK	1RB, Full RB	M
E.I.R.P	5G n77	10M, 15M, 20M, 30M, 40M, 50M, 60M, 70M, 80M, 90M, 100M	All Modulations	1RB, Partial RB, Full RB	L, M, H
	5G n78	10M, 20M, 30M, 40M, 50M, 60M, 70M, 80M, 90M, 100M	All Modulations	1RB, Partial RB, Full RB	L, M, H
26dB and 99% Bandwidth	5G n77	10M, 15M, 20M, 30M, 40M, 50M, 60M, 70M, 80M, 90M, 100M	QPSK, 16QAM, 64QAM, 256QAM	Full RB	M
Conducted Band Edge	5G n77	10M, 50M, 100M	BPSK, QPSK	1RB, Full RB	L, H
Conducted Spurious Emission	5G n77	10M, 50M, 100M	BPSK, QPSK	1RB	L, M, H
Frequency Stability	5G n77	20M	QPSK	Full RB	M
Radiated Spurious Emission	5G n77	Worst case from maximum power			M

Note:

- 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.
- Frequency Stability: Normal Voltage = 7.82V ; Low Voltage =6.80V.; High Voltage =9.00V.

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	Power Supply	GWINSTEK	PSS-2002	N/A	N/A	Unshielded, 1.8 m
2.	LTE Base Station	Anritsu	MT8820C	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

$$\text{Offset} = \text{RF cable loss}$$

Following shows an offset computation example with cable loss 8.90 dB

Example :

$$\begin{aligned} \text{Offset(dB)} &= \text{RF cable loss(dB)} \\ &= 8.90 \text{ (dB)} \end{aligned}$$

2.5 Frequency List of Low/Middle/High Channels

5G n77 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
100	Channel	-	633334	-
	Frequency	-	3500.01	-
90	Channel	633000	633334	633666
	Frequency	3495	3500.01	3504.99
80	Channel	632668	633334	634000
	Frequency	3490.02	3500.01	3510
70	Channel	632334	633334	634332
	Frequency	3485.01	3500.01	3514.98
60	Channel	632000	633334	634666
	Frequency	3480	3500.01	3519.99
50	Channel	631668	633334	635000
	Frequency	3475.02	3500.01	3525
40	Channel	631334	633334	635332
	Frequency	3470.01	3500.01	3529.98
30	Channel	631000	633334	635666
	Frequency	3465	3500.01	3534.99
20	Channel	630668	633334	636000
	Frequency	3460.02	3500.01	3540
15	Channel	630500	633334	636166
	Frequency	3457.5	3500.01	3542.49
10	Channel	630334	633334	636332
	Frequency	3455.01	3500.01	3544.98

5G n78 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
100	Channel	-	633334	-
	Frequency	-	3500.01	-
90	Channel	633000	633334	633666
	Frequency	3495	3500.01	3504.99
80	Channel	632668	633334	634000
	Frequency	3490.02	3500.01	3510
70	Channel	632334	633334	634332
	Frequency	3485.01	3500.01	3514.98
60	Channel	632000	633334	634666
	Frequency	3480	3500.01	3519.99
50	Channel	631668	633334	635000
	Frequency	3475.02	3500.01	3525
40	Channel	631334	633334	635332
	Frequency	3470.01	3500.01	3529.98
30	Channel	631000	633334	635666
	Frequency	3465	3500.01	3534.99
20	Channel	630668	633334	636000
	Frequency	3460.02	3500.01	3540
10	Channel	630334	633334	636332
	Frequency	3455.01	3500.01	3544.98

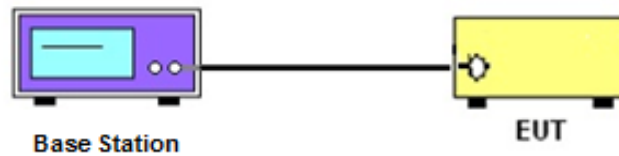
3 Conducted Test Items

3.1 Measuring Instruments

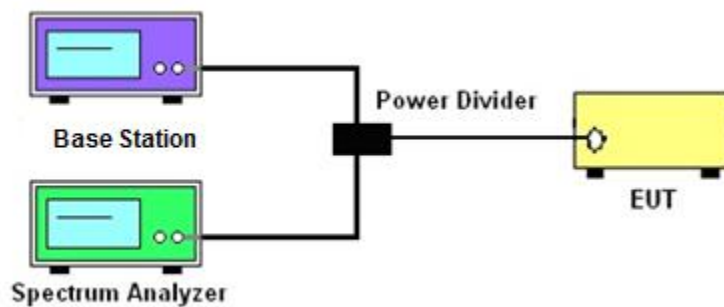
See list of measuring instruments of this test report.

3.2 Test Setup

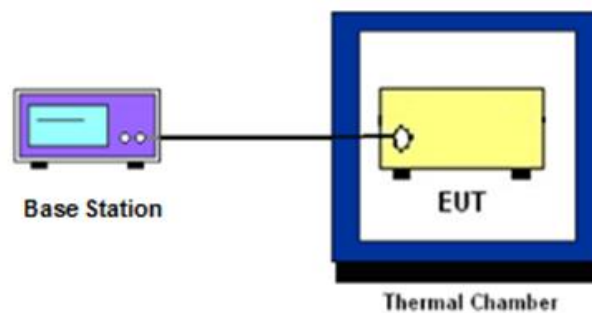
3.2.1 Conducted Output Power



3.2.2 Peak-to-Average Ratio, Occupied / 26dB Bandwidth, 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 Measurement

3.4.1 Description of the Conducted Output Power Measurement

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

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 EIRP

3.6.1 Description of EIRP Limit

§ 27.50 (k)(3)

Mobile devices are limited to 1Watt (30 dBm) EIRP. Mobile devices operating in these bands must employ a means for limiting power to the minimum necessary for successful communications

3.6.2 Test Procedures

1. According to KDB 412172 D01 Power Approach,
2. $EIRP = P_T + G_T - L_C$, $ERP = EIRP - 2.15$, 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

3.7 Occupied Bandwidth

3.7.1 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.

3.7.2 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.

3.8 Conducted Band Edge Measurement

3.8.1 Description of Conducted Band Edge Measurement

§ 27.53 (n)(2)

For mobile operations in the 3450-3550 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, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed, but limited to a maximum of 200 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.

3.8.2 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 band edges of low and high channels for the highest RF powers were measured.
4. Set RBW $\geq 1\%$ EBW but limited to a maximum of 200 kHz in the 1MHz band immediately outside and adjacent to the band edge.
5. Beyond the 1 MHz and 5 MHz removed from the band edge, set RBW ≥ 500 KHz.
6. Beyond the 5 MHz removed from the band edge, set RBW = 1MHz.
7. Set spectrum analyzer with RMS detector.
8. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
9. Checked that all the results comply with the emission limit line.

3.9 Conducted Spurious Emission Measurement

3.9.1 Description of Conducted Spurious Emission Measurement

The power of any emission outside of the authorized operating frequency ranges shall not exceed -13 dBm/MHz.

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

3.9.2 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. Checked that all the results comply with the emission limit line.

3.10 Frequency Stability Measurement

3.10.1 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.

3.10.2 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.

3.10.3 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.

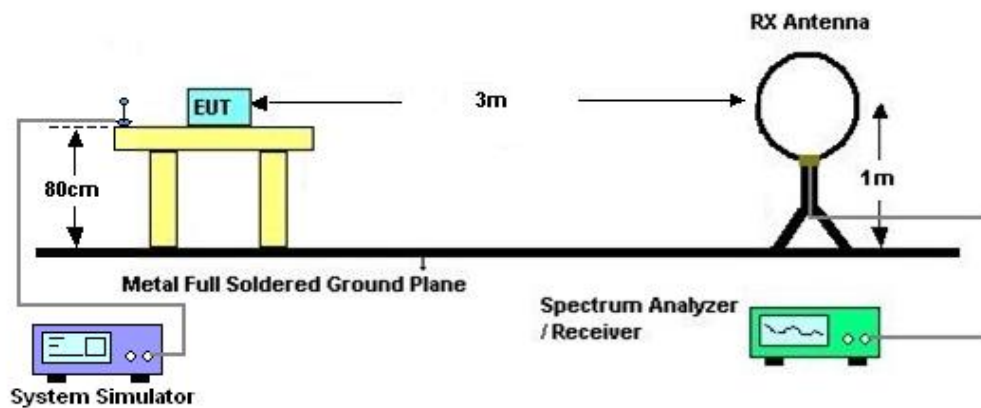
4 Radiated Test Items

4.1 Measuring Instruments

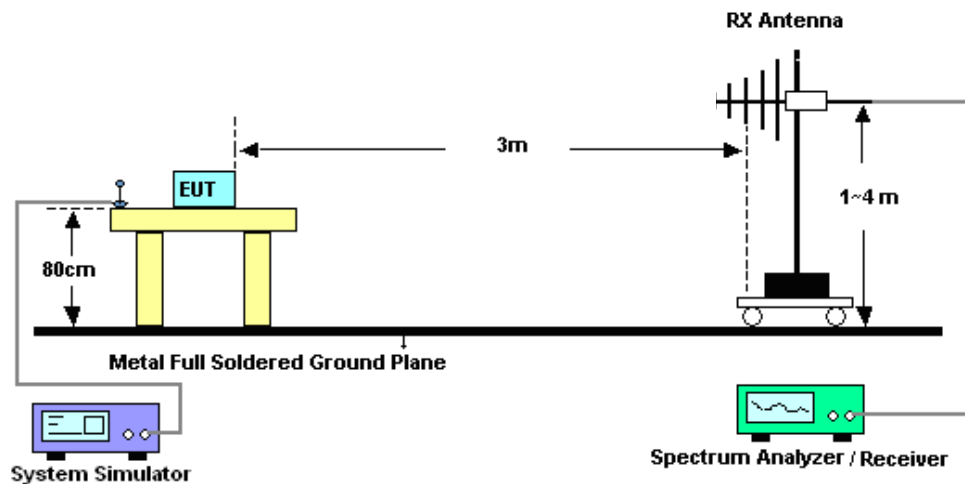
See list of measuring instruments of this test report.

4.2 Test Setup

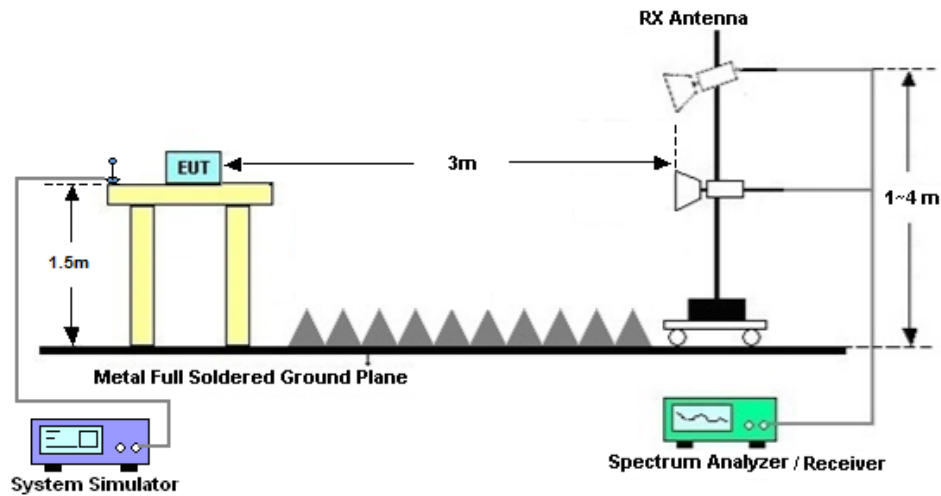
4.2.1 For radiated test below 30MHz



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 Measurement

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 shall not exceed -13 dBm/MHz.

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.
$$\text{EIRP (dBm)} = \text{S.G. Power} - \text{Tx Cable Loss} + \text{Tx Antenna Gain}$$
$$\text{ERP (dBm)} = \text{EIRP} - 2.15$$
10. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.



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. 26, 2022	Sep. 16, 2023~ Sep. 28, 2023	Dec. 25, 2023	Conducted (TH01-SZ)
Power Divider	TOJOIN	PS-2SM-04 265	60.06.020.0077	0.4GHz~26.5GHz	Dec. 25, 2022	Sep. 16, 2023~ Sep. 28, 2023	Dec. 24, 2023	Conducted (TH01-SZ)
Thermal Chamber	Ten Billion Hongzhangroup	LP-150U	H2014081803	-40~+150°C	Jul. 05, 2023	Sep. 16, 2023~ Sep. 28, 2023	Jul. 04, 2024	Conducted (TH01-SZ)
EMI Test Receiver&SA	Agilent	N9038A	MY52260185	20Hz~26.5GHz	Dec. 26, 2022	Sep. 19, 2023	Dec. 25, 2023	Radiation (03CH01-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	Jul. 28, 2022	Sep. 19, 2023	Jul. 27, 2024	Radiation (03CH01-SZ)
Bilog Antenna	TeseQ	CBL6112D	35407	30MHz~2GHz	Sep. 28, 2021	Sep. 19, 2023	Sep. 27, 2023	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00119436	1GHz~18GHz	Jul. 08, 2023	Sep. 19, 2023	Jul. 07, 2024	Radiation (03CH01-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18GHz~40GHz	Apr. 08, 2023	Sep. 19, 2023	Apr. 07, 2024	Radiation (03CH01-SZ)
LF Amplifier	Burgeon	BPA-530	102209	0.01~3000Mhz	Apr. 04, 2023	Sep. 19, 2023	Apr. 03, 2024	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	AMF-7D-00 101800-30-1 0P-R	1943528	1GHz~18GHz	Oct. 19, 2022	Sep. 19, 2023	Oct. 18, 2023	Radiation (03CH01-SZ)
HF Amplifier	KEYSIGHT	83017A	MY53270105	0.5GHz~26.5Ghz	Oct. 19, 2022	Sep. 19, 2023	Oct. 18, 2023	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	TTA1840-35 -HG	1871923	18GHz~40GHz	Jul. 07, 2023	Sep. 19, 2023	Jul. 06, 2024	Radiation (03CH01-SZ)
AC Power Source	Chroma	61601	616010001985	N/A	Nov. 10, 2022	Sep. 19, 2023	Nov. 09, 2023	Radiation (03CH01-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Sep. 19, 2023	NCR	Radiation (03CH01-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Sep. 19, 2023	NCR	Radiation (03CH01-SZ)

NCR: No Calibration Required

6 Measurement Uncertainty

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

Uncertainty of Conducted Measurement

Test Item	Uncertainty
Conducted Power	±1.34 dB
Conducted Emissions	±1.34 dB
Occupied Channel Bandwidth	±0.012MHz

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.48dB
---	--------

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.53dB
---	--------

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.02dB
---	--------

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



Appendix A. Test Results of Conducted Test

Test Engineer :	Jung Kuo	Temperature :	22~23°C
		Relative Humidity :	40~42%

FR1 N77

Transmitter Conducted Output Power And EIRP, ($G_T - L_C$)=-2dB

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Conducted Power(dBm)	EIRP (dBm)	EIRP (W)
77	30	10	630334	3455.01	DFT-s-OFDM QPSK	1@1	26.3	24.3	0.2692
77	30	10	630334	3455.01	DFT-s-OFDM 16 QAM	1@1	25.48	23.48	0.2228
77	30	10	633334	3500.01	DFT-s-OFDM QPSK	1@1	26.37	24.37	0.2735
77	30	10	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	25.53	23.53	0.2254
77	30	10	636332	3544.98	DFT-s-OFDM QPSK	1@1	26.25	24.25	0.2661
77	30	10	636332	3544.98	DFT-s-OFDM 16 QAM	1@1	25.37	23.37	0.2173
77	30	15	630500	3457.5	DFT-s-OFDM QPSK	1@1	26.22	24.22	0.2642
77	30	15	630500	3457.5	DFT-s-OFDM 16 QAM	1@1	25.4	23.4	0.2188
77	30	15	633334	3500.01	DFT-s-OFDM QPSK	1@1	26.3	24.3	0.2692
77	30	15	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	25.36	23.36	0.2168
77	30	15	636166	3542.49	DFT-s-OFDM QPSK	1@1	26.23	24.23	0.2649
77	30	15	636166	3542.49	DFT-s-OFDM 16 QAM	1@1	25.38	23.38	0.2178
77	30	20	630668	3460.02	DFT-s-OFDM QPSK	1@1	26.17	24.17	0.2612
77	30	20	630668	3460.02	DFT-s-OFDM 16 QAM	1@1	25.33	23.33	0.2153
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	1@1	26.35	24.35	0.2723
77	30	20	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	25.46	23.46	0.2218
77	30	20	636000	3540.0	DFT-s-OFDM QPSK	1@1	26.32	24.32	0.2704
77	30	20	636000	3540.0	DFT-s-OFDM 16 QAM	1@1	25.39	23.39	0.2183
77	30	30	631000	3465.0	DFT-s-OFDM QPSK	1@1	26.38	24.38	0.2742

77	30	30	631000	3465.0	DFT-s-OFDM 16 QAM	1@1	25.58	23.58	0.2280
77	30	30	633334	3500.01	DFT-s-OFDM QPSK	1@1	26.51	24.51	0.2825
77	30	30	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	25.69	23.69	0.2339
77	30	30	635666	3534.99	DFT-s-OFDM QPSK	1@1	26.46	24.46	0.2793
77	30	30	635666	3534.99	DFT-s-OFDM 16 QAM	1@1	25.5	23.5	0.2239
77	30	40	631334	3470.01	DFT-s-OFDM QPSK	1@1	26.28	24.28	0.2679
77	30	40	631334	3470.01	DFT-s-OFDM 16 QAM	1@1	25.44	23.44	0.2208
77	30	40	633334	3500.01	DFT-s-OFDM QPSK	1@1	26.41	24.41	0.2761
77	30	40	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	25.43	23.43	0.2203
77	30	40	635332	3529.98	DFT-s-OFDM QPSK	1@1	26.35	24.35	0.2723
77	30	40	635332	3529.98	DFT-s-OFDM 16 QAM	1@1	25.49	23.49	0.2234
77	30	50	631668	3475.02	DFT-s-OFDM QPSK	1@1	26.45	24.45	0.2786
77	30	50	631668	3475.02	DFT-s-OFDM 16 QAM	1@1	25.59	23.59	0.2286
77	30	50	633334	3500.01	DFT-s-OFDM QPSK	1@1	26.58	24.58	0.2871
77	30	50	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	25.52	23.52	0.2249
77	30	50	635000	3525.0	DFT-s-OFDM QPSK	1@1	26.53	24.53	0.2838
77	30	50	635000	3525.0	DFT-s-OFDM 16 QAM	1@1	25.64	23.64	0.2312
77	30	60	632000	3480.0	DFT-s-OFDM QPSK	1@1	26.33	24.33	0.2710
77	30	60	632000	3480.0	DFT-s-OFDM 16 QAM	1@1	25.43	23.43	0.2203
77	30	60	633334	3500.01	DFT-s-OFDM QPSK	1@1	26.37	24.37	0.2735
77	30	60	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	25.41	23.41	0.2193
77	30	60	634666	3519.99	DFT-s-OFDM QPSK	1@1	26.47	24.47	0.2799
77	30	60	634666	3519.99	DFT-s-OFDM 16 QAM	1@1	25.56	23.56	0.2270
77	30	70	632334	3485.01	DFT-s-OFDM QPSK	1@1	26.53	24.53	0.2838

77	30	70	632334	3485.01	DFT-s-OFDM 16 QAM	1@1	25.61	23.61	0.2296
77	30	70	633334	3500.01	DFT-s-OFDM QPSK	1@1	26.52	24.52	0.2831
77	30	70	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	25.58	23.58	0.2280
77	30	70	634332	3514.98	DFT-s-OFDM QPSK	1@1	26.52	24.52	0.2831
77	30	70	634332	3514.98	DFT-s-OFDM 16 QAM	1@1	25.67	23.67	0.2328
77	30	80	632668	3490.02	DFT-s-OFDM QPSK	1@1	26.53	24.53	0.2838
77	30	80	632668	3490.02	DFT-s-OFDM 16 QAM	1@1	25.58	23.58	0.2280
77	30	80	633334	3500.01	DFT-s-OFDM QPSK	1@1	26.53	24.53	0.2838
77	30	80	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	25.68	23.68	0.2333
77	30	80	634000	3510.0	DFT-s-OFDM QPSK	1@1	26.6	24.6	0.2884
77	30	80	634000	3510.0	DFT-s-OFDM 16 QAM	1@1	25.7	23.7	0.2344
77	30	90	633000	3495.0	DFT-s-OFDM QPSK	1@1	26.62	24.62	0.2897
77	30	90	633000	3495.0	DFT-s-OFDM 16 QAM	1@1	25.72	23.72	0.2355
77	30	90	633334	3500.01	DFT-s-OFDM QPSK	1@1	26.59	24.59	0.2877
77	30	90	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	25.73	23.73	0.2360
77	30	90	633666	3504.99	DFT-s-OFDM QPSK	1@1	26.65	24.65	0.2917
77	30	90	633666	3504.99	DFT-s-OFDM 16 QAM	1@1	25.76	23.76	0.2377
77	30	100	633334	3500.01	DFT-s-OFDM PI/2 BPSK	135@67	26.38	24.38	0.2742
77	30	100	633334	3500.01	DFT-s-OFDM PI/2 BPSK	1@1	26.66	24.66	0.2924
77	30	100	633334	3500.01	DFT-s-OFDM PI/2 BPSK	1@271	26.14	24.14	0.2594
77	30	100	633334	3500.01	DFT-s-OFDM QPSK	135@67	26.25	24.25	0.2661
77	30	100	633334	3500.01	DFT-s-OFDM QPSK	1@1	26.68	24.68	0.2938
77	30	100	633334	3500.01	DFT-s-OFDM QPSK	1@271	26.12	24.12	0.2582
77	30	100	633334	3500.01	DFT-s-OFDM 16 QAM	135@67	25.23	23.23	0.2104

77	30	100	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	25.7	23.7	0.2344
77	30	100	633334	3500.01	DFT-s-OFDM 16 QAM	1@271	25.11	23.11	0.2046
77	30	100	633334	3500.01	DFT-s-OFDM 64 QAM	135@67	23.82	21.82	0.1521
77	30	100	633334	3500.01	DFT-s-OFDM 64 QAM	1@1	24.07	22.07	0.1611
77	30	100	633334	3500.01	DFT-s-OFDM 64 QAM	1@271	23.5	21.5	0.1413
77	30	100	633334	3500.01	DFT-s-OFDM 256 QAM	135@67	21.82	19.82	0.0959
77	30	100	633334	3500.01	DFT-s-OFDM 256 QAM	1@1	21.91	19.91	0.0979
77	30	100	633334	3500.01	DFT-s-OFDM 256 QAM	1@271	21.39	19.39	0.0869
77	30	100	633334	3500.01	CP-OFDM QPSK	137@68	24.67	22.67	0.1849
77	30	100	633334	3500.01	CP-OFDM QPSK	1@1	25.13	23.13	0.2056
77	30	100	633334	3500.01	CP-OFDM QPSK	1@271	24.74	22.74	0.1879

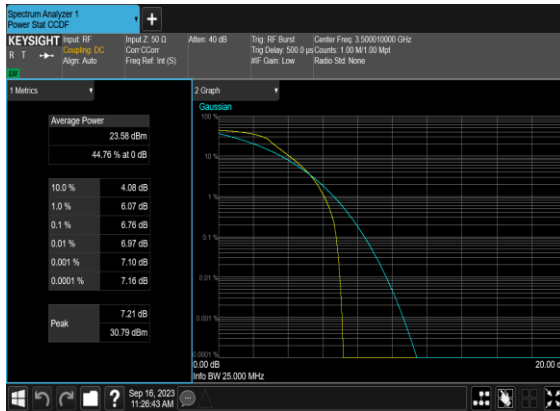
Frequency Stability

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Deviation (ppm)	Verdict	Environment
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.0058	PASS	NV
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.0057	PASS	LV
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.0063	PASS	HV
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.0027	PASS	-30°C
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.0053	PASS	-20°C
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.0053	PASS	-10°C
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.0068	PASS	0°C
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.0030	PASS	10°C
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.0058	PASS	20°C
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.0028	PASS	30°C
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.0065	PASS	40°C
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.0065	PASS	50°C

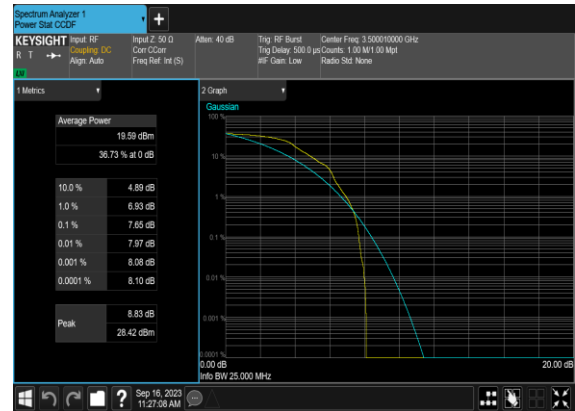
Peak to Average Ratio

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result (dB)	Limit (dB)	Verdict
77	30	20	633334	3500.01	DFT-s-OFDM PI/2 BPSK	50@0	6.76	13	PASS
77	30	20	633334	3500.01	DFT-s-OFDM PI/2 BPSK	1@0	7.65	13	PASS
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	7.25	13	PASS
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	1@0	8.26	13	PASS

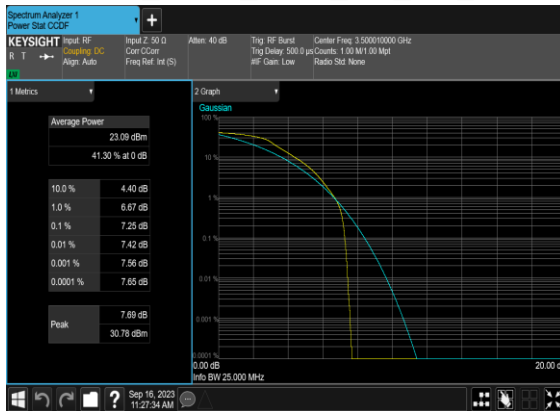
N77(20M)_DFT-s-OFDM_PI_2-
BPSK_Outer_Full_Mid_CH



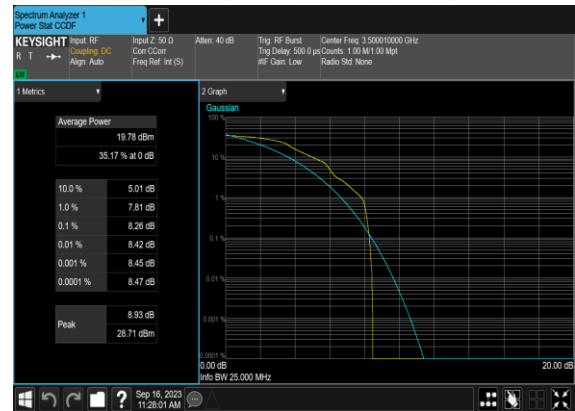
N77(20M)_DFT-s-OFDM_PI_2-
BPSK_Edge_1RB_Left_Mid_CH



N77(20M)_DFT-s-
OFDM_QPSK_Outer_Full_Mid_CH



N77(20M)_DFT-s-
OFDM_QPSK_Edge_1RB_Left_Mid_CH

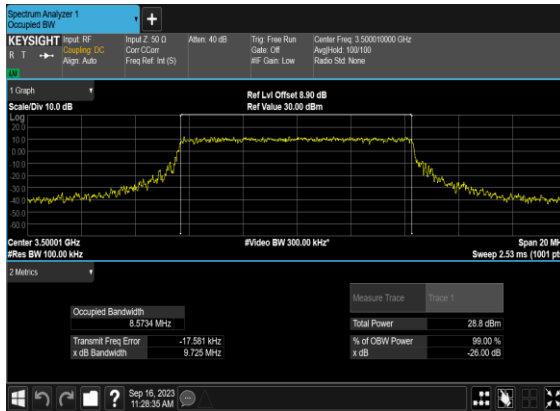


Occupied Bandwidth

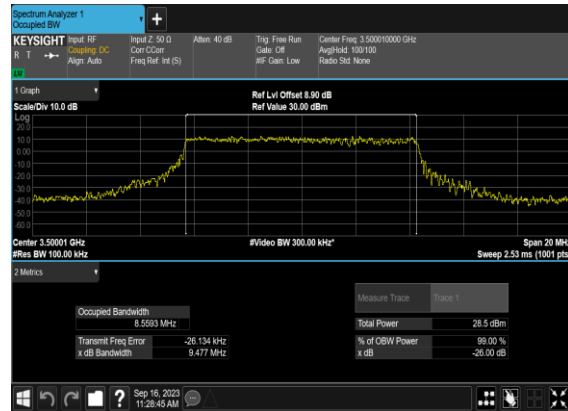
NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	OBW (MHz)	26dB BW (MHz)
77	30	10	633334	3500.01	CP-OFDM QPSK	24@0	8.5734	9.725
77	30	10	633334	3500.01	CP-OFDM 16 QAM	24@0	8.5593	9.477
77	30	10	633334	3500.01	CP-OFDM 64 QAM	24@0	8.6021	9.327
77	30	10	633334	3500.01	CP-OFDM 256 QAM	24@0	8.5606	9.345
77	30	15	633334	3500.01	CP-OFDM QPSK	38@0	13.598	15.1
77	30	15	633334	3500.01	CP-OFDM 16 QAM	38@0	13.596	14.73
77	30	15	633334	3500.01	CP-OFDM 64 QAM	38@0	13.557	14.82
77	30	15	633334	3500.01	CP-OFDM 256 QAM	38@0	13.547	14.47
77	30	20	633334	3500.01	CP-OFDM QPSK	51@0	18.184	19.67
77	30	20	633334	3500.01	CP-OFDM 16 QAM	51@0	18.219	19.15
77	30	20	633334	3500.01	CP-OFDM 64 QAM	51@0	18.201	19.14
77	30	20	633334	3500.01	CP-OFDM 256 QAM	51@0	18.215	19.72
77	30	30	633334	3500.01	CP-OFDM QPSK	78@0	27.893	29.21
77	30	30	633334	3500.01	CP-OFDM 16 QAM	78@0	27.824	29.24
77	30	30	633334	3500.01	CP-OFDM 64 QAM	78@0	27.916	28.78
77	30	30	633334	3500.01	CP-OFDM 256 QAM	78@0	27.832	28.91
77	30	40	633334	3500.01	CP-OFDM QPSK	106@0	37.856	39.67
77	30	40	633334	3500.01	CP-OFDM 16 QAM	106@0	37.896	39.37
77	30	40	633334	3500.01	CP-OFDM 64 QAM	106@0	37.909	39.47
77	30	40	633334	3500.01	CP-OFDM 256 QAM	106@0	37.837	39.18
77	30	50	633334	3500.01	CP-OFDM QPSK	133@0	47.483	49.09
77	30	50	633334	3500.01	CP-OFDM 16 QAM	133@0	47.513	49.35
77	30	50	633334	3500.01	CP-OFDM 64 QAM	133@0	47.559	49.31
77	30	50	633334	3500.01	CP-OFDM 256 QAM	133@0	47.471	49.04
77	30	60	633334	3500.01	CP-OFDM QPSK	162@0	57.946	59.83

77	30	60	633334	3500.01	CP-OFDM 16 QAM	162@0	57.85	59.7
77	30	60	633334	3500.01	CP-OFDM 64 QAM	162@0	57.791	59.61
77	30	60	633334	3500.01	CP-OFDM 256 QAM	162@0	57.808	59.66
77	30	70	633334	3500.01	CP-OFDM QPSK	189@0	67.634	69.76
77	30	70	633334	3500.01	CP-OFDM 16 QAM	189@0	67.28	69.89
77	30	70	633334	3500.01	CP-OFDM 64 QAM	189@0	67.444	70.16
77	30	70	633334	3500.01	CP-OFDM 256 QAM	189@0	67.566	69.82
77	30	80	633334	3500.01	CP-OFDM QPSK	217@0	77.545	80.1
77	30	80	633334	3500.01	CP-OFDM 16 QAM	217@0	77.458	80.0
77	30	80	633334	3500.01	CP-OFDM 64 QAM	217@0	77.516	79.83
77	30	80	633334	3500.01	CP-OFDM 256 QAM	217@0	77.297	79.9
77	30	90	633334	3500.01	CP-OFDM QPSK	245@0	87.376	90.13
77	30	90	633334	3500.01	CP-OFDM 16 QAM	245@0	87.299	90.29
77	30	90	633334	3500.01	CP-OFDM 64 QAM	245@0	87.505	90.29
77	30	90	633334	3500.01	CP-OFDM 256 QAM	245@0	87.479	90.42
77	30	100	633334	3500.01	CP-OFDM QPSK	273@0	97.38	100.7
77	30	100	633334	3500.01	CP-OFDM 16 QAM	273@0	97.59	100.6
77	30	100	633334	3500.01	CP-OFDM 64 QAM	273@0	97.365	100.4
77	30	100	633334	3500.01	CP-OFDM 256 QAM	273@0	97.645	100.4

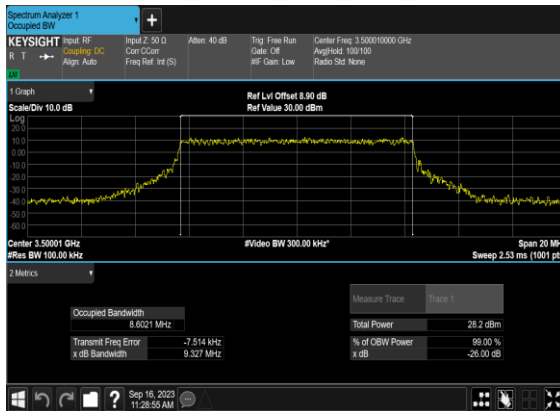
N77(10M)_CP- OFDM_QPSK_Outer_Full_Mid_CH



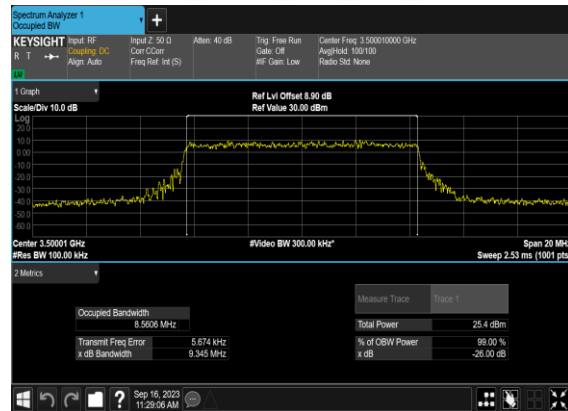
N77(10M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



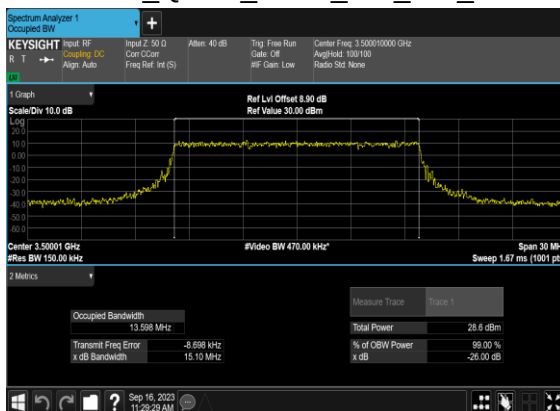
N77(10M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



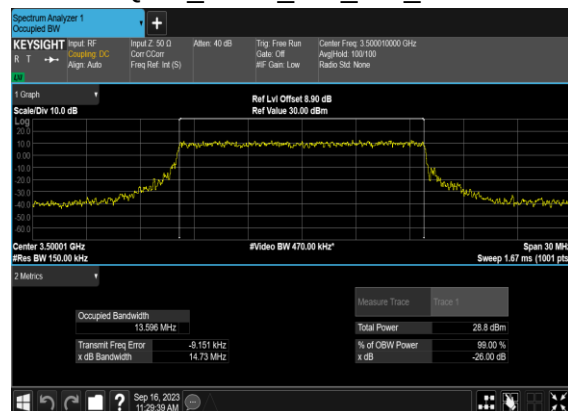
N77(10M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



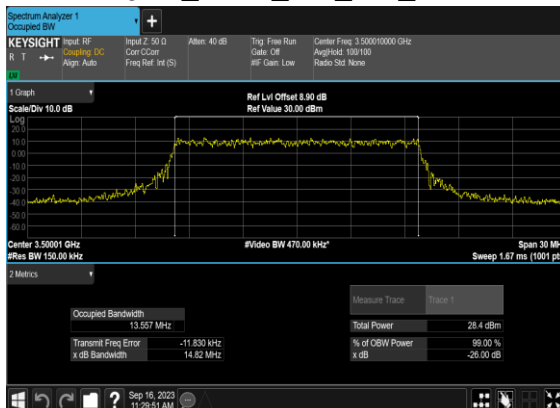
N77(15M)_CP- OFDM_QPSK_Outer_Full_Mid_CH



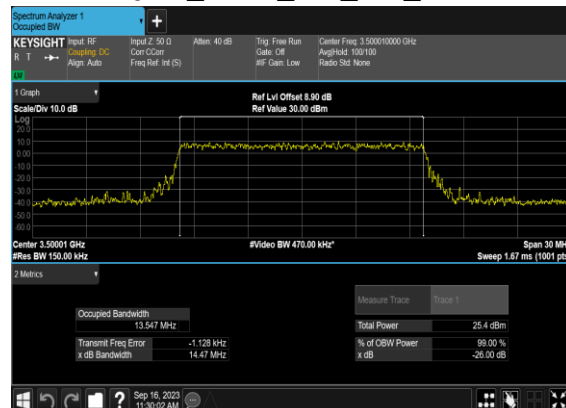
N77(15M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



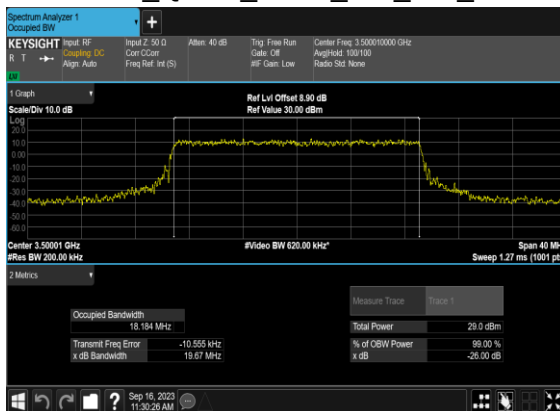
N77(15M)_CP-OFDM_64
QAM_Outer_Full_Mid_CH



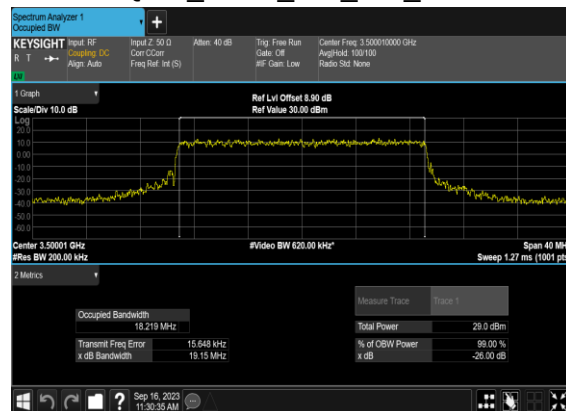
N77(15M)_CP-OFDM_256
QAM_Outer_Full_Mid_CH



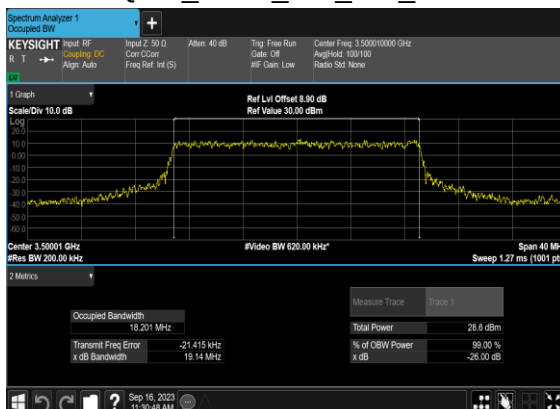
N77(20M)_CP-
OFDM_QPSK_Outer_Full_Mid_CH



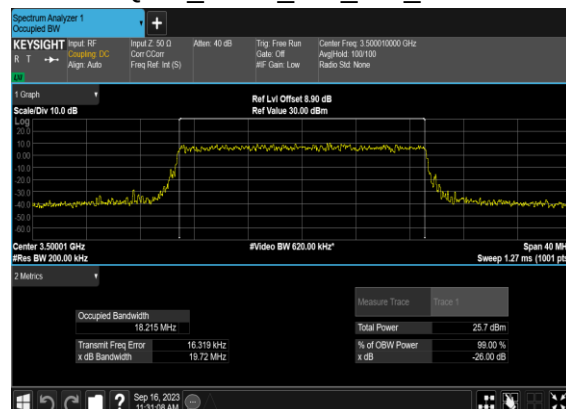
N77(20M)_CP-OFDM_16
QAM_Outer_Full_Mid_CH



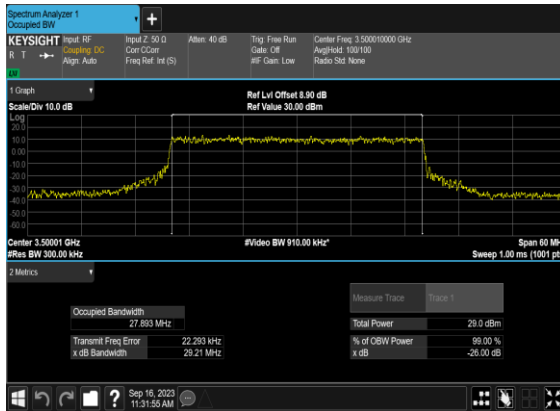
N77(20M)_CP-OFDM_64
QAM_Outer_Full_Mid_CH



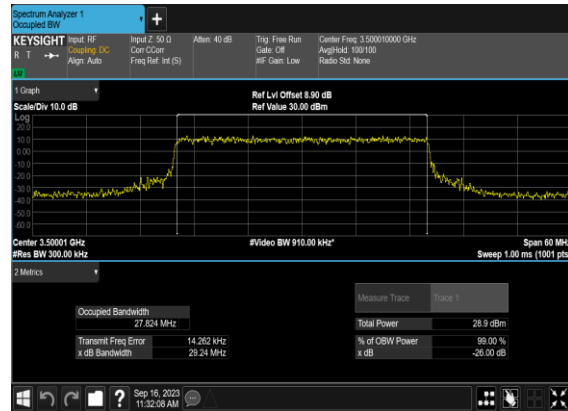
N77(20M)_CP-OFDM_256
QAM_Outer_Full_Mid_CH



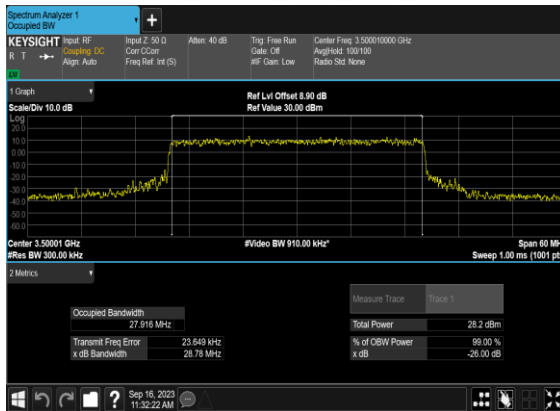
N77(30M)_CP- OFDM_QPSK_Outer_Full_Mid_CH



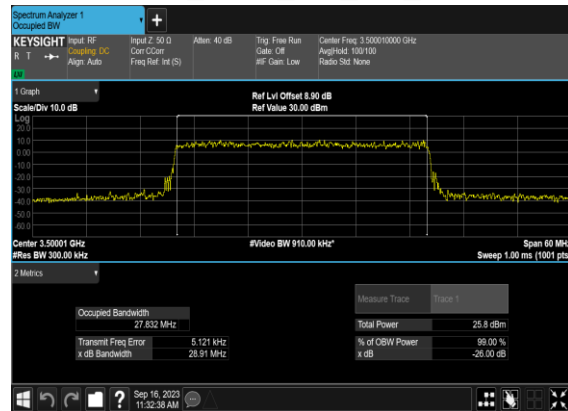
N77(30M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



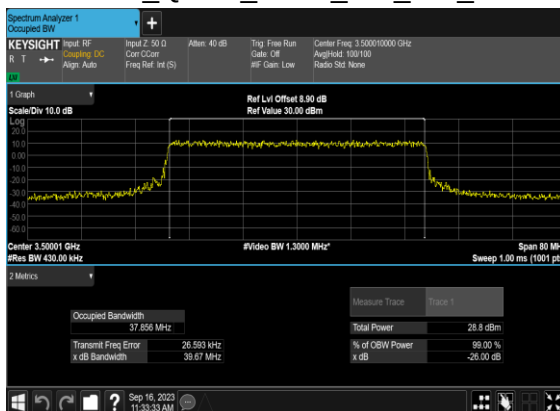
N77(30M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



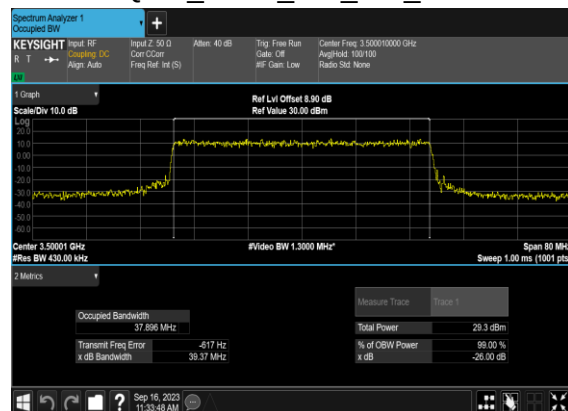
N77(30M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



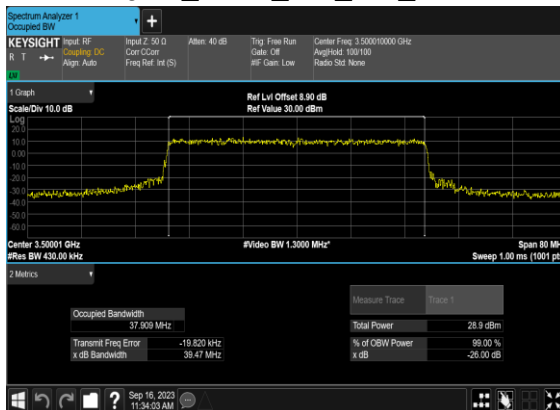
N77(40M)_CP- OFDM_QPSK_Outer_Full_Mid_CH



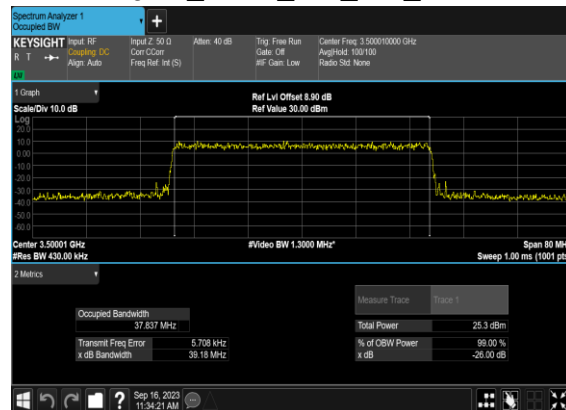
N77(40M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



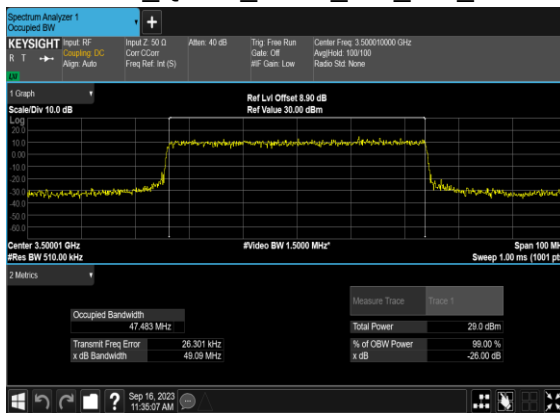
N77(40M)_CP-OFDM_64
QAM_Outer_Full_Mid_CH



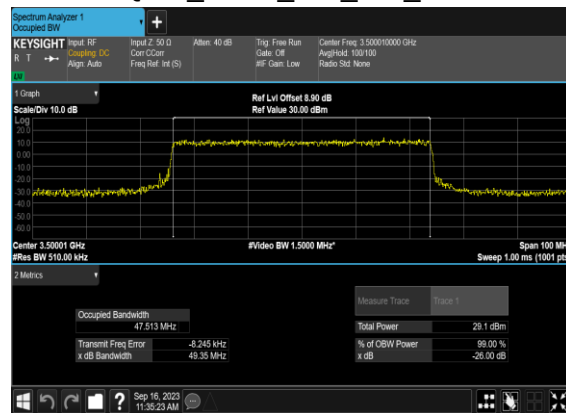
N77(40M)_CP-OFDM_256
QAM_Outer_Full_Mid_CH



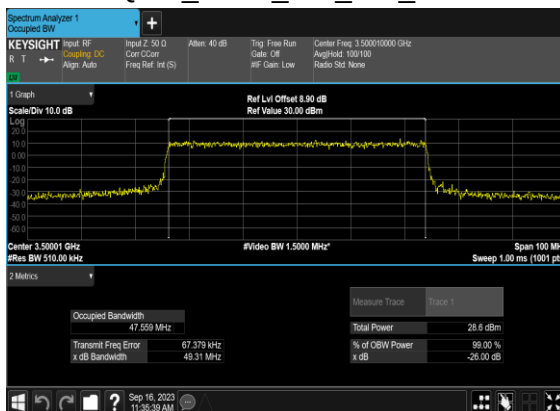
N77(50M)_CP-
OFDM_QPSK_Outer_Full_Mid_CH



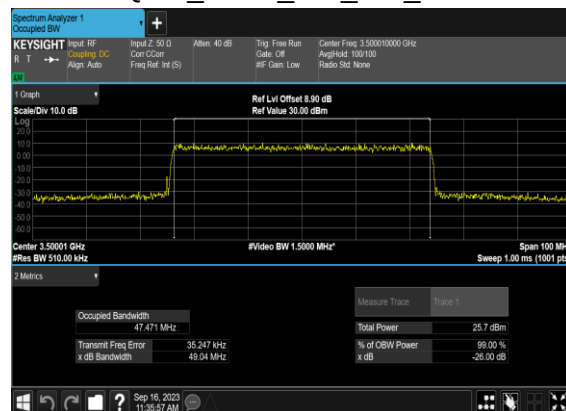
N77(50M)_CP-OFDM_16
QAM_Outer_Full_Mid_CH



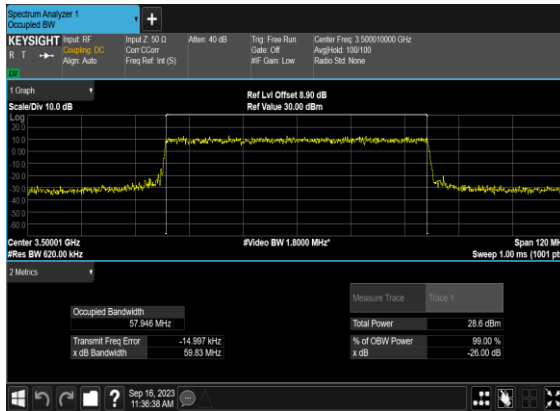
N77(50M)_CP-OFDM_64
QAM_Outer_Full_Mid_CH



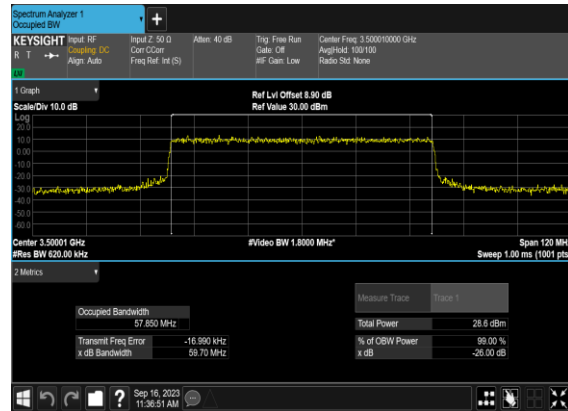
N77(50M)_CP-OFDM_256
QAM_Outer_Full_Mid_CH



N77(60M)_CP-
OFDM_QPSK_Outer_Full_Mid_CH



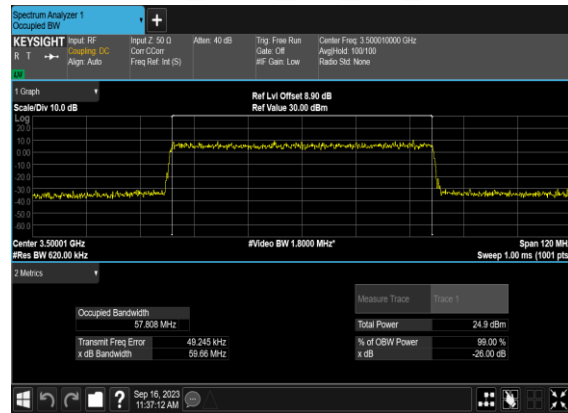
N77(60M)_CP-OFDM_16
QAM_Outer_Full_Mid_CH



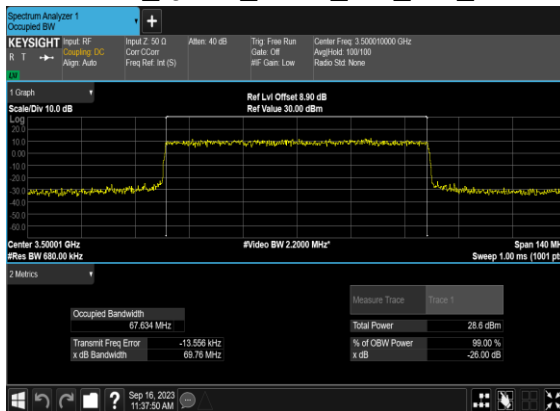
N77(60M)_CP-OFDM_64
QAM_Outer_Full_Mid_CH



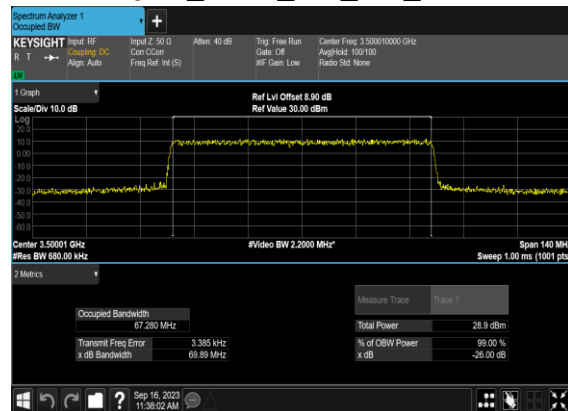
N77(60M)_CP-OFDM_256
QAM_Outer_Full_Mid_CH



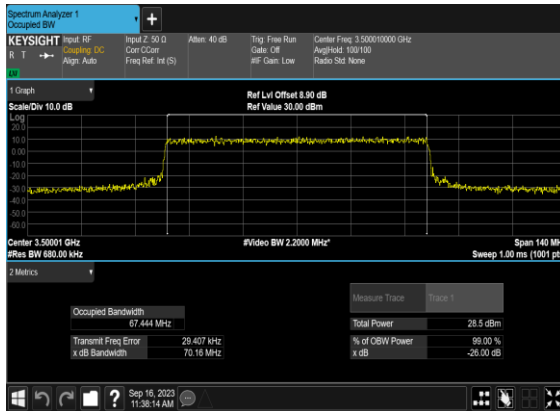
N77(70M)_CP-
OFDM_QPSK_Outer_Full_Mid_CH



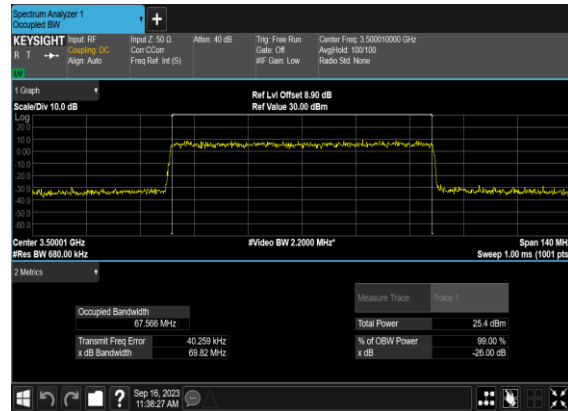
N77(70M)_CP-OFDM_16
QAM_Outer_Full_Mid_CH



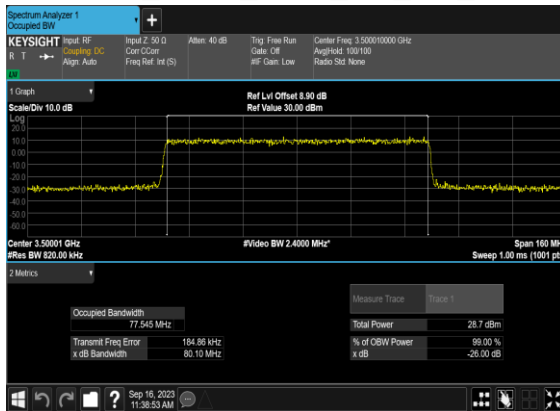
N77(70M)_CP-OFDM_64
QAM_Outer_Full_Mid_CH



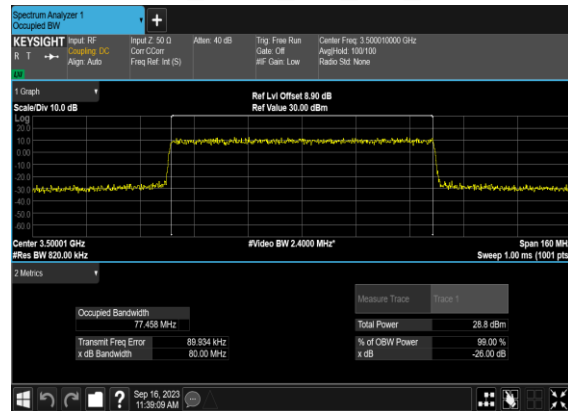
N77(70M)_CP-OFDM_256
QAM_Outer_Full_Mid_CH



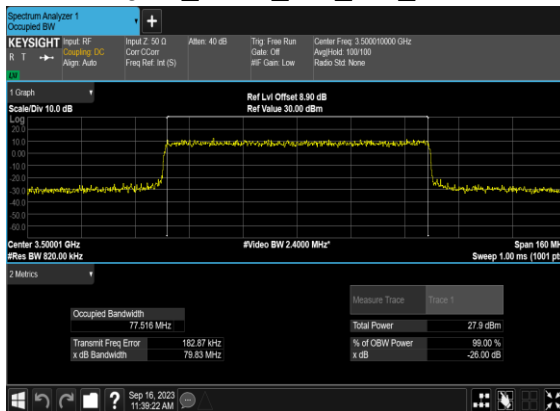
N77(80M)_CP-
OFDM_QPSK_Outer_Full_Mid_CH



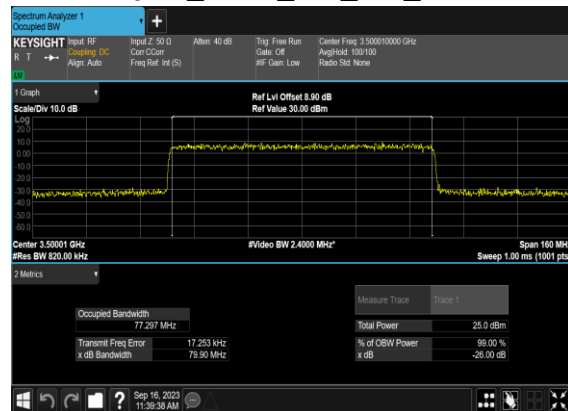
N77(80M)_CP-OFDM_16
QAM_Outer_Full_Mid_CH



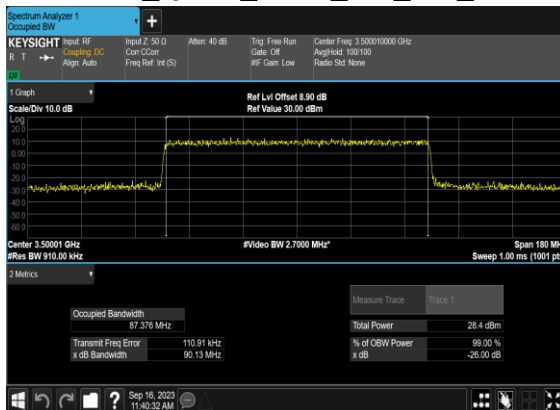
N77(80M)_CP-OFDM_64
QAM_Outer_Full_Mid_CH



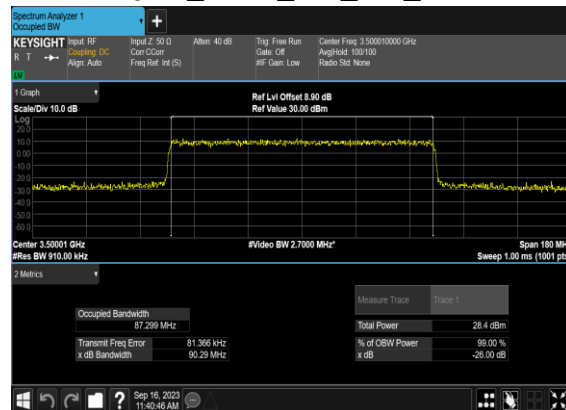
N77(80M)_CP-OFDM_256
QAM_Outer_Full_Mid_CH



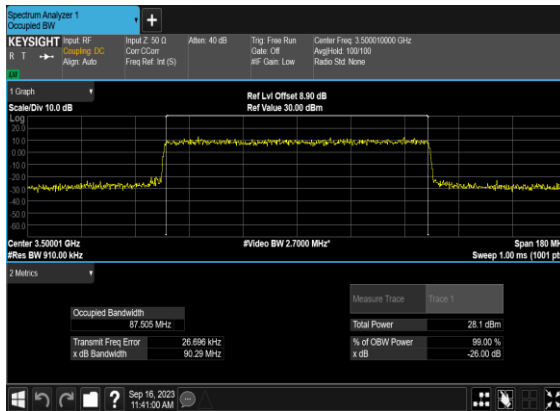
N77(90M)_CP- OFDM_QPSK_Outer_Full_Mid_CH



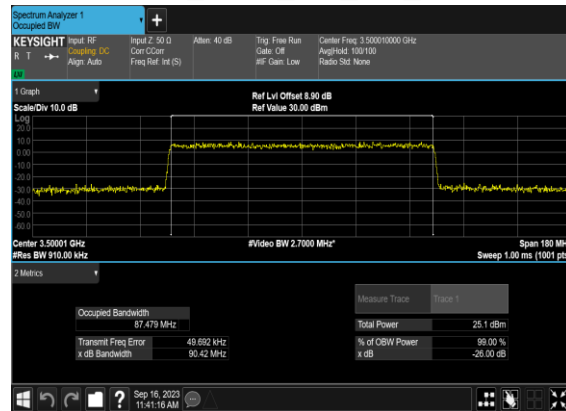
N77(90M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



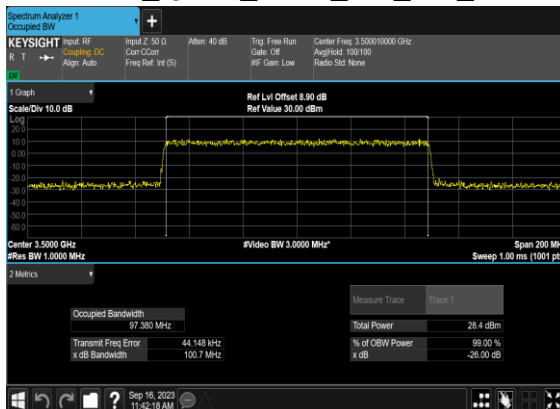
N77(90M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



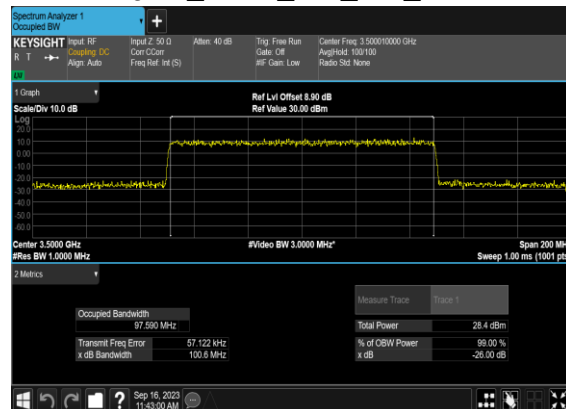
N77(90M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



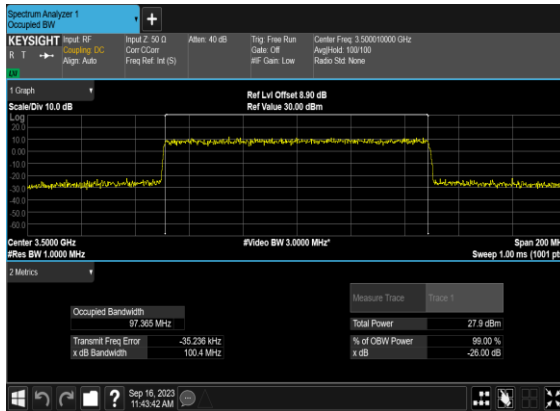
N77(100M)_CP- OFDM_QPSK_Outer_Full_Mid_CH



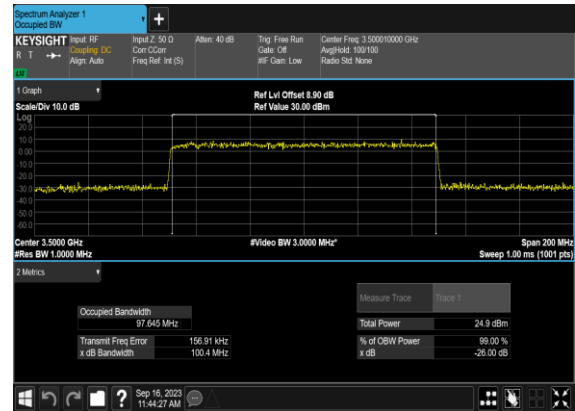
N77(100M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



N77(100M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



N77(100M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH

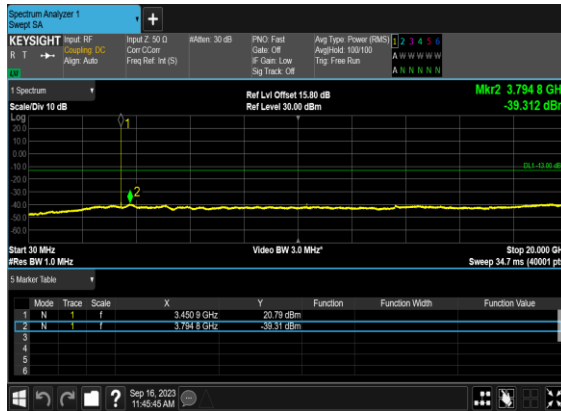


Conducted Spurious Emissions

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result	Verdict
77	30	10	630334	3455.01	DFT-s-OFDM BPSK	1@0	see graph	---
77	30	10	630334	3455.01	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	10	630334	3455.01	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	10	630334	3455.01	DFT-s-OFDM QPSK	1@0	see graph	---
77	30	10	630334	3455.01	DFT-s-OFDM QPSK	1@0	see graph	PASS
77	30	10	630334	3455.01	DFT-s-OFDM QPSK	1@0	see graph	PASS
77	30	10	633334	3500.01	DFT-s-OFDM BPSK	1@0	see graph	---
77	30	10	633334	3500.01	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	10	633334	3500.01	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	10	633334	3500.01	DFT-s-OFDM QPSK	1@0	see graph	---
77	30	10	633334	3500.01	DFT-s-OFDM QPSK	1@0	see graph	PASS
77	30	10	633334	3500.01	DFT-s-OFDM QPSK	1@0	see graph	PASS
77	30	10	636332	3544.98	DFT-s-OFDM BPSK	1@0	see graph	---
77	30	10	636332	3544.98	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	10	636332	3544.98	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	10	636332	3544.98	DFT-s-OFDM QPSK	1@0	see graph	---
77	30	10	636332	3544.98	DFT-s-OFDM QPSK	1@0	see graph	PASS
77	30	10	636332	3544.98	DFT-s-OFDM QPSK	1@0	see graph	PASS
77	30	50	631668	3475.02	DFT-s-OFDM BPSK	1@0	see graph	---
77	30	50	631668	3475.02	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	50	631668	3475.02	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	50	631668	3475.02	DFT-s-OFDM QPSK	1@0	see graph	---

77	30	50	631668	3475.02	DFT-s-OFDM QPSK	1@0	see graph	PASS
77	30	50	631668	3475.02	DFT-s-OFDM QPSK	1@0	see graph	PASS
77	30	50	633334	3500.01	DFT-s-OFDM BPSK	1@0	see graph	---
77	30	50	633334	3500.01	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	50	633334	3500.01	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	50	633334	3500.01	DFT-s-OFDM QPSK	1@0	see graph	---
77	30	50	633334	3500.01	DFT-s-OFDM QPSK	1@0	see graph	PASS
77	30	50	633334	3500.01	DFT-s-OFDM QPSK	1@0	see graph	PASS
77	30	50	635000	3525.0	DFT-s-OFDM BPSK	1@0	see graph	---
77	30	50	635000	3525.0	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	50	635000	3525.0	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	50	635000	3525.0	DFT-s-OFDM QPSK	1@0	see graph	---
77	30	50	635000	3525.0	DFT-s-OFDM QPSK	1@0	see graph	PASS
77	30	50	635000	3525.0	DFT-s-OFDM QPSK	1@0	see graph	PASS
77	30	100	633334	3500.01	DFT-s-OFDM BPSK	1@0	see graph	---
77	30	100	633334	3500.01	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	100	633334	3500.01	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	100	633334	3500.01	DFT-s-OFDM QPSK	1@0	see graph	---
77	30	100	633334	3500.01	DFT-s-OFDM QPSK	1@0	see graph	PASS
77	30	100	633334	3500.01	DFT-s-OFDM QPSK	1@0	see graph	PASS

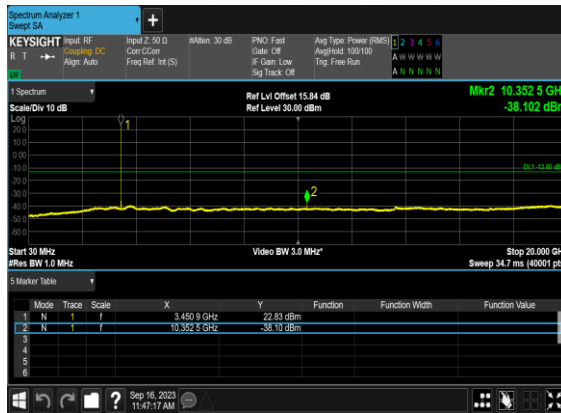
N77(10M)_DFT-s- OFDM_BPSK_Edge_1RB_Left_Low_CH



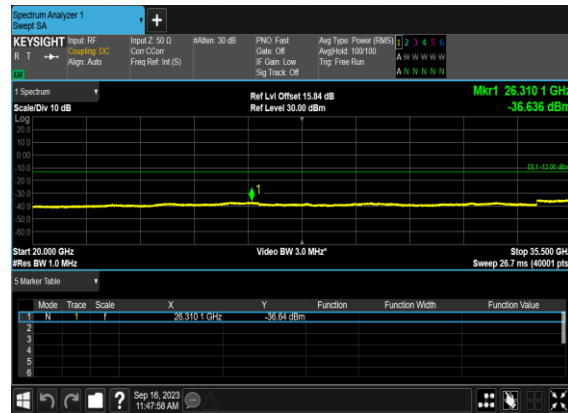
N77(10M)_DFT-s- OFDM_BPSK_Edge_1RB_Left_Low_CH



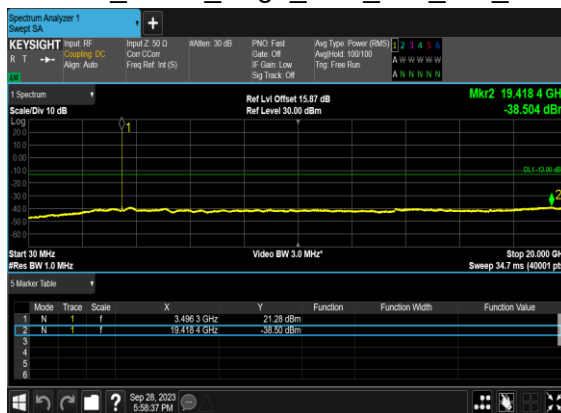
N77(10M)_DFT-s- OFDM_QPSK_Edge_1RB_Left_Low_CH



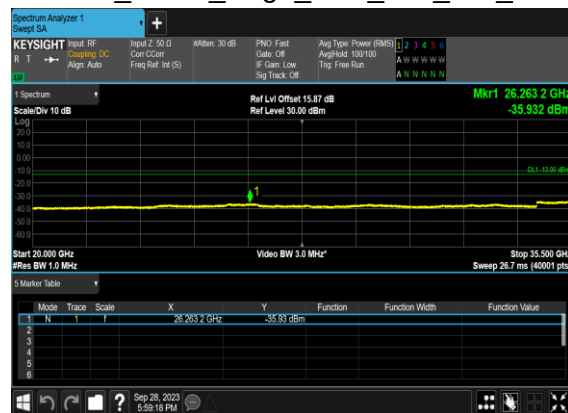
N77(10M)_DFT-s- OFDM_QPSK_Edge_1RB_Left_Low_CH



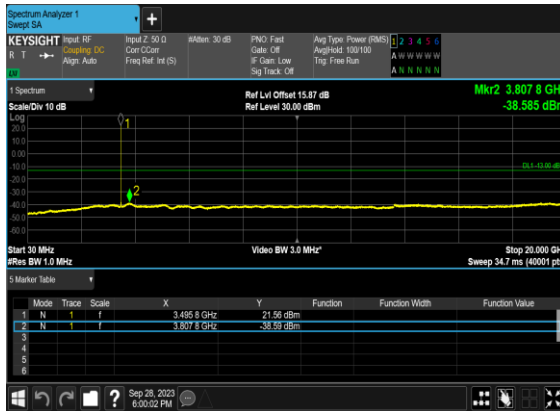
N77(10M)_DFT-s- OFDM_BPSK_Edge_1RB_Left_Mid_CH



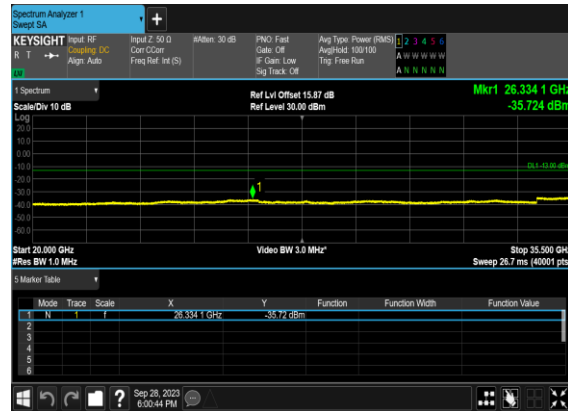
N77(10M)_DFT-s- OFDM_BPSK_Edge_1RB_Left_Mid_CH



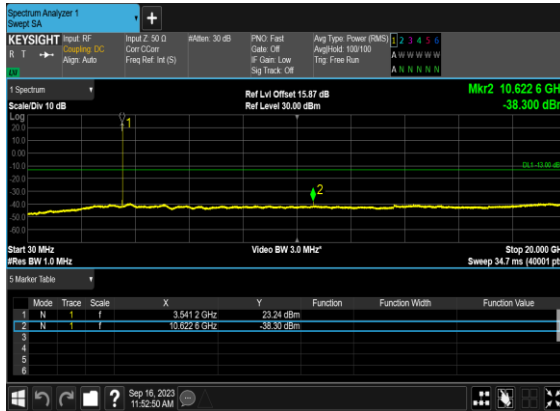
N77(10M)_DFT-s- OFDM_QPSK_Edge_1RB_Left_Mid_CH



N77(10M)_DFT-s- OFDM_QPSK_Edge_1RB_Left_Mid_CH



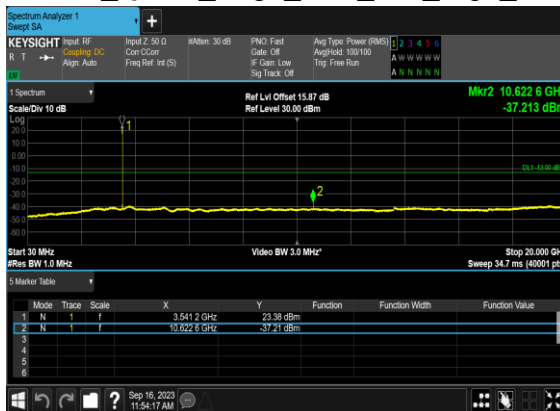
N77(10M)_DFT-s- OFDM_BPSK_Edge_1RB_Left_High_CH



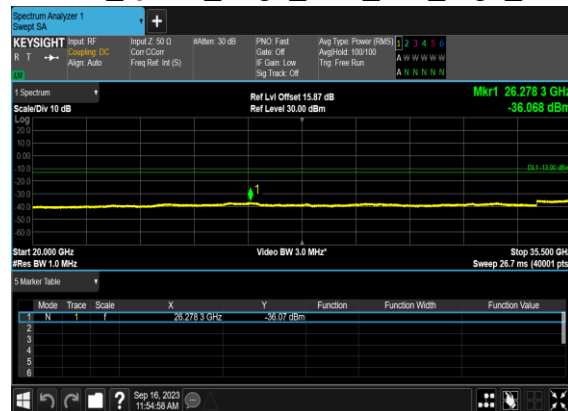
N77(10M)_DFT-s- OFDM_BPSK_Edge_1RB_Left_High_CH



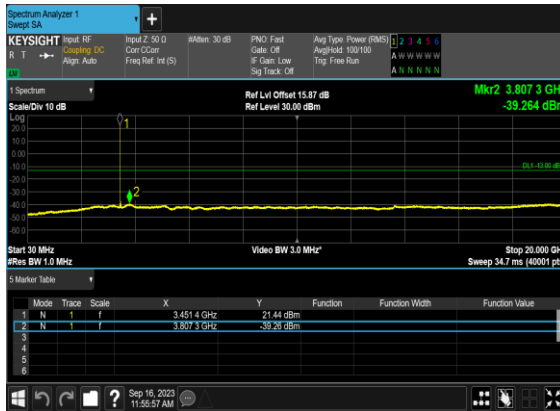
N77(10M)_DFT-s- OFDM_QPSK_Edge_1RB_Left_High_CH



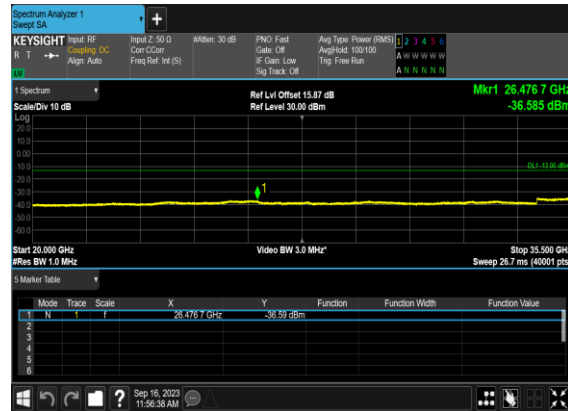
N77(10M)_DFT-s- OFDM_QPSK_Edge_1RB_Left_High_CH



N77(50M)_DFT-s-
OFDM_BPSK_Edge_1RB_Left_Low_CH



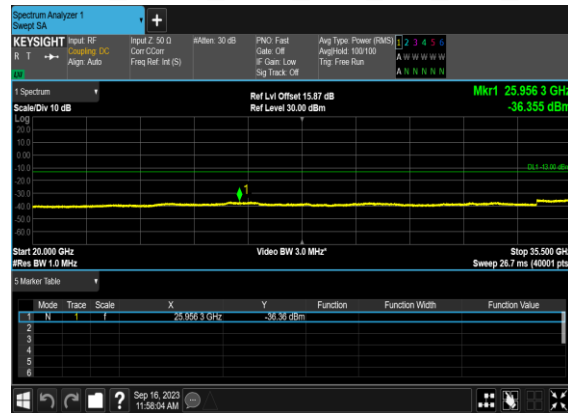
N77(50M)_DFT-s-
OFDM_BPSK_Edge_1RB_Left_Low_CH



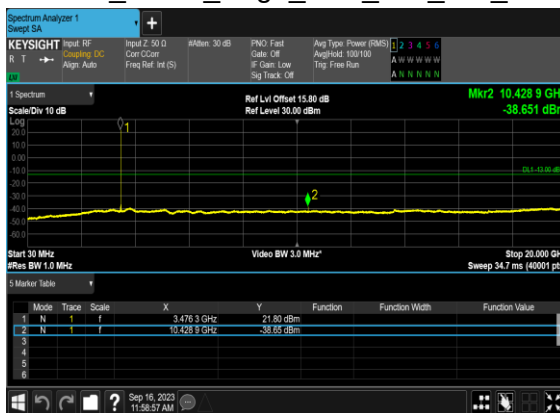
N77(50M)_DFT-s-
OFDM_QPSK_Edge_1RB_Left_Low_CH



N77(50M)_DFT-s-
OFDM_QPSK_Edge_1RB_Left_Low_CH



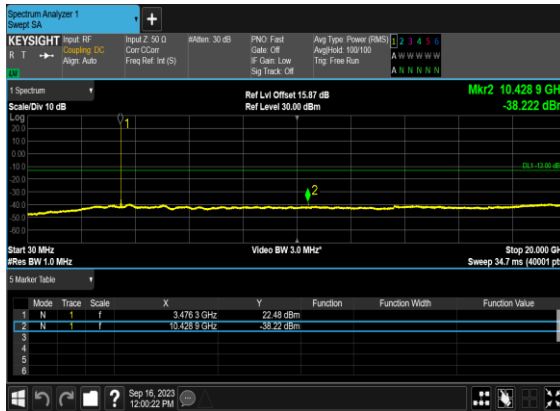
N77(50M)_DFT-s-
OFDM_BPSK_Edge_1RB_Left_Mid_CH



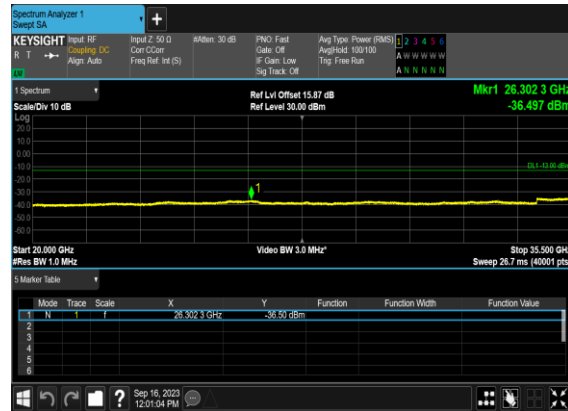
N77(50M)_DFT-s-
OFDM_BPSK_Edge_1RB_Left_Mid_CH



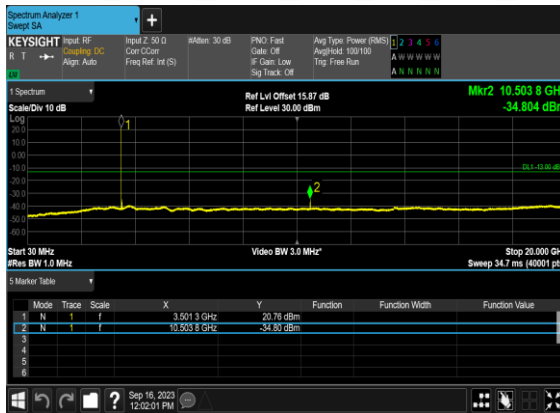
N77(50M)_DFT-s- OFDM_QPSK_Edge_1RB_Left_Mid_CH



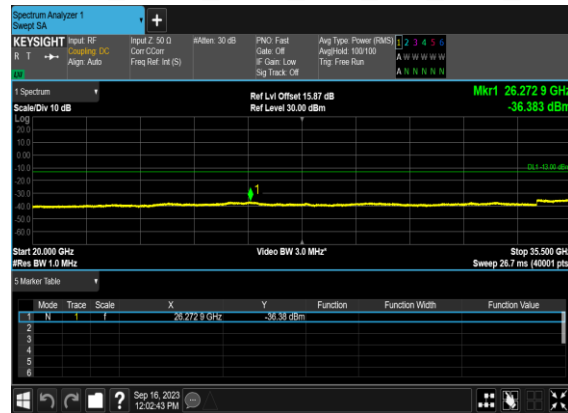
N77(50M)_DFT-s- OFDM_QPSK_Edge_1RB_Left_Mid_CH



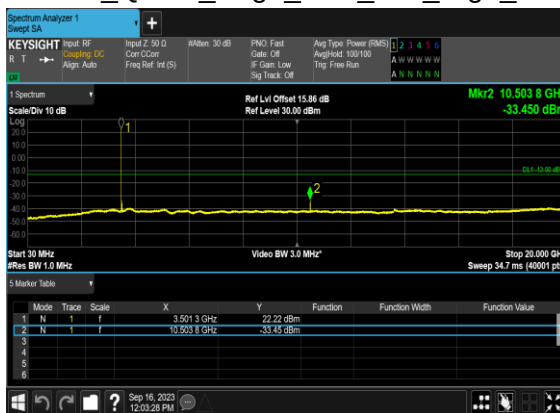
N77(50M)_DFT-s- OFDM_BPSK_Edge_1RB_Left_High_CH



N77(50M)_DFT-s- OFDM_BPSK_Edge_1RB_Left_High_CH



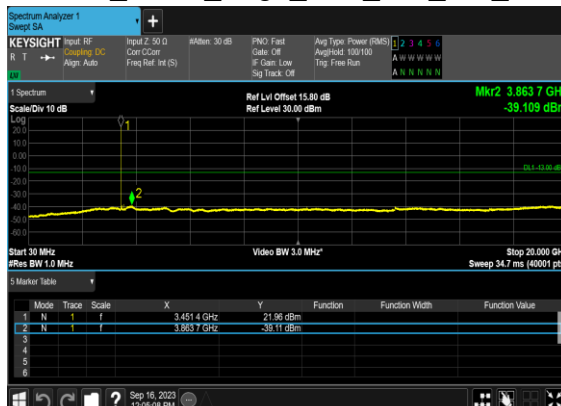
N77(50M)_DFT-s- OFDM_QPSK_Edge_1RB_Left_High_CH



N77(50M)_DFT-s- OFDM_QPSK_Edge_1RB_Left_High_CH



N77(100M)_DFT-s- OFDM_BPSK_Edge_1RB_Left_Mid_CH



N77(100M)_DFT-s- OFDM_BPSK_Edge_1RB_Left_Mid_CH



N77(100M)_DFT-s- OFDM_QPSK_Edge_1RB_Left_Mid_CH



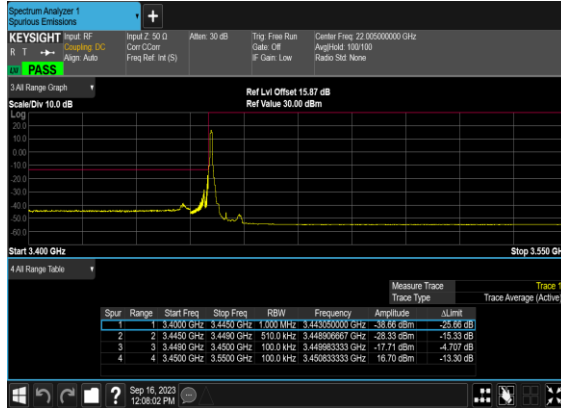
N77(100M)_DFT-s- OFDM_QPSK_Edge_1RB_Left_Mid_CH



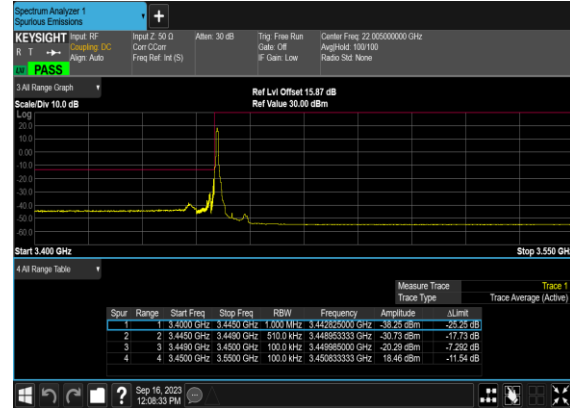
Conducted Band Edge

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result	Verdict
77	30	10	630334	3455.01	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	10	630334	3455.01	DFT-s-OFDM QPSK	1@0	see graph	PASS
77	30	10	630334	3455.01	DFT-s-OFDM BPSK	24@0	see graph	PASS
77	30	10	630334	3455.01	DFT-s-OFDM QPSK	24@0	see graph	PASS
77	30	10	636332	3544.98	DFT-s-OFDM BPSK	1@23	see graph	PASS
77	30	10	636332	3544.98	DFT-s-OFDM QPSK	1@23	see graph	PASS
77	30	10	636332	3544.98	DFT-s-OFDM BPSK	24@0	see graph	PASS
77	30	10	636332	3544.98	DFT-s-OFDM QPSK	24@0	see graph	PASS
77	30	50	631668	3475.02	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	50	631668	3475.02	DFT-s-OFDM QPSK	1@0	see graph	PASS
77	30	50	631668	3475.02	DFT-s-OFDM BPSK	128@0	see graph	PASS
77	30	50	631668	3475.02	DFT-s-OFDM QPSK	128@0	see graph	PASS
77	30	50	635000	3525.0	DFT-s-OFDM BPSK	1@132	see graph	PASS
77	30	50	635000	3525.0	DFT-s-OFDM QPSK	1@132	see graph	PASS
77	30	50	635000	3525.0	DFT-s-OFDM BPSK	128@0	see graph	PASS
77	30	50	635000	3525.0	DFT-s-OFDM QPSK	128@0	see graph	PASS
77	30	100	633334	3500.01	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	100	633334	3500.01	DFT-s-OFDM QPSK	1@0	see graph	PASS
77	30	100	633334	3500.01	DFT-s-OFDM BPSK	1@272	see graph	PASS
77	30	100	633334	3500.01	DFT-s-OFDM QPSK	1@272	see graph	PASS
77	30	100	633334	3500.01	DFT-s-OFDM BPSK	270@0	see graph	PASS
77	30	100	633334	3500.01	DFT-s-OFDM QPSK	270@0	see graph	PASS

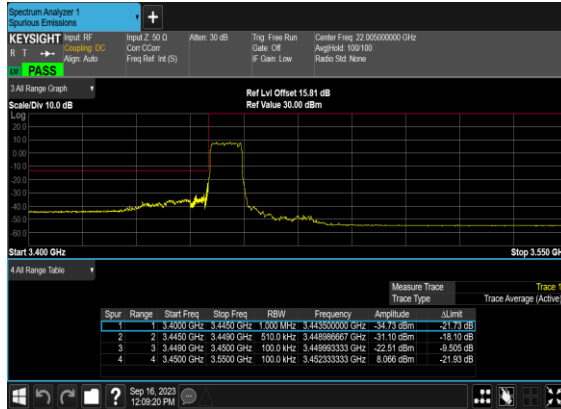
N77(10M)_DFT-s-
OFDM_BPSK_Edge_1RB_Left_Low_CH



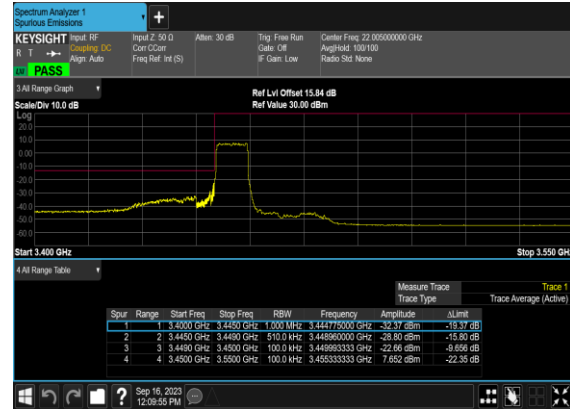
N77(10M)_DFT-s-
OFDM_QPSK_Edge_1RB_Left_Low_CH



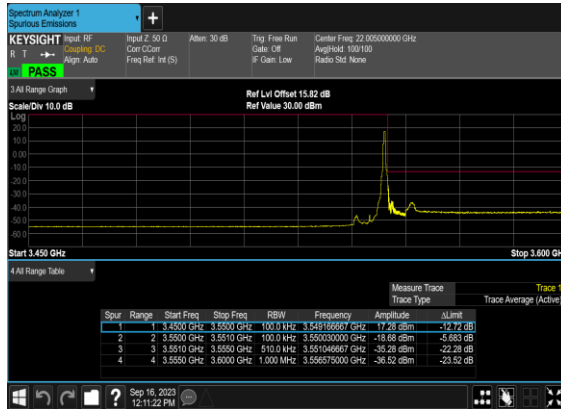
N77(10M)_DFT-s-
OFDM_BPSK_Outer_Full_Low_CH



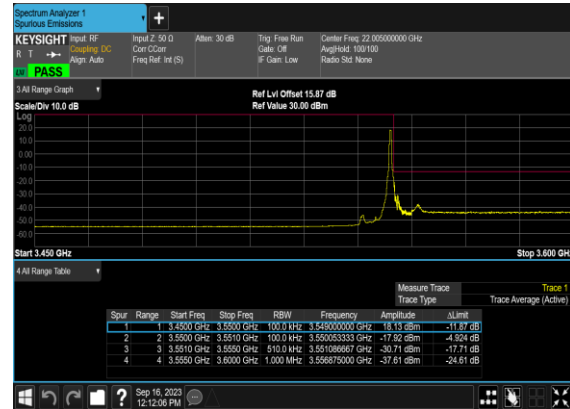
N77(10M)_DFT-s-
OFDM_QPSK_Outer_Full_Low_CH



N77(10M)_DFT-s-
OFDM_BPSK_Edge_1RB_Right_High_CH



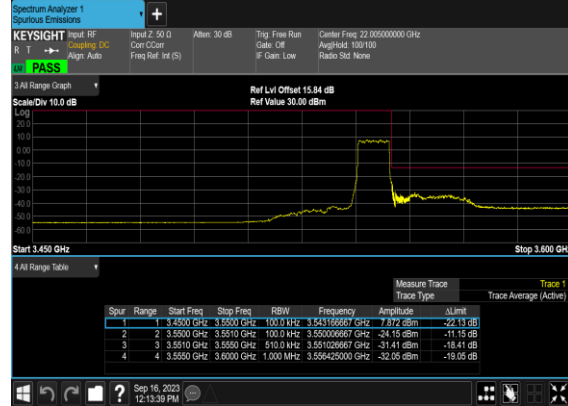
N77(10M)_DFT-s-
OFDM_QPSK_Edge_1RB_Right_High_CH



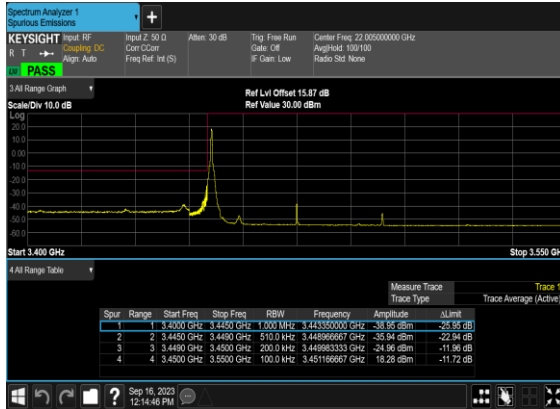
N77(10M)_DFT-s-
OFDM_BPSK_Outer_Full_High_CH



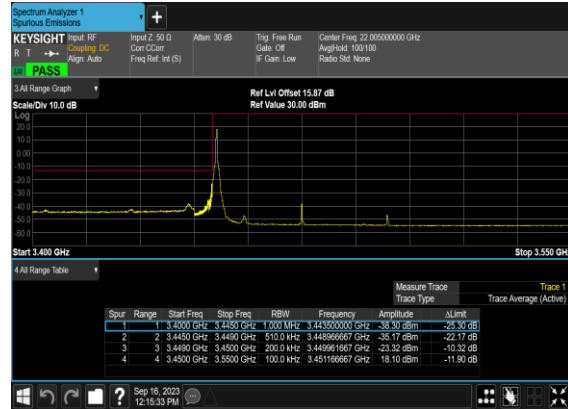
N77(10M)_DFT-s-
OFDM_QPSK_Outer_Full_High_CH



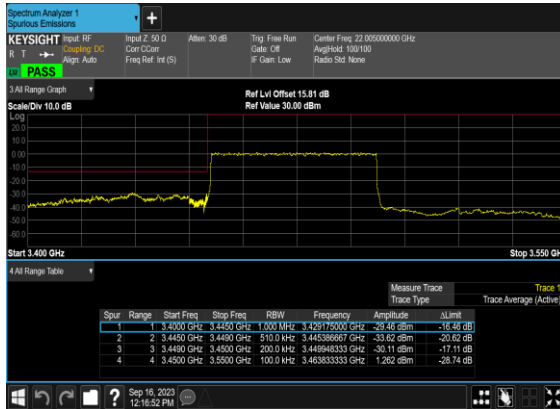
N77(50M)_DFT-s-
OFDM_BPSK_Edge_1RB_Left_Low_CH



N77(50M)_DFT-s-
OFDM_QPSK_Edge_1RB_Left_Low_CH



N77(50M)_DFT-s-
OFDM_BPSK_Outer_Full_Low_CH



N77(50M)_DFT-s-
OFDM_QPSK_Outer_Full_Low_CH

