FCC RF Test Report

APPLICANT	:	**Fibocom Wireless Inc.**
EQUIPMENT	:	**5G Module**
BRAND NAME	:	**Fibocom**
MODEL NAME	:	**FG190W-NA, FG190-NA**
FCC ID	:	**ZMOFG190WNA**
STANDARD	:	**47 CFR Part 27 Subpart Q**
CLASSIFICATION	:	**PCS Licensed Transmitter (PCB)**
TEST DATE(S)	:	**Aug. 06, 2024 ~ Aug. 17, 2024**

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

ilac-MRA A2LA 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
FG472418T	Rev. 01	Initial issue of report	Sep. 04, 2024

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 15.56 dB at 9223.00 MHz

Conformity Assessment Condition:

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

Disclaimer:

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

1 General Description

1.1 Applicant

Fibocom Wireless Inc.
1101, Tower A, Building 6, Shenzhen International Innovation Valley, Dashi 1st Rd, Nanshan, Shenzhen, China

1.2 Manufacturer

Fibocom Wireless Inc.
1101, Tower A, Building 6, Shenzhen International Innovation Valley, Dashi 1st Rd, Nanshan, Shenzhen, China

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	5G Module
Brand Name	Fibocom
Model Name	FG190W-NA, FG190-NA
FCC ID	ZMOFG190WNA
IMEI Code	Conducted : 864410070003781 Radiation : 864410070004029
HW Version	V1.3
SW Version	99101.1000.00.01.06.23
EUT Stage	Production Unit

Remark: There are two types of EUT: Sample1(FG190W-NA) and Sample2(FG190-NA) . The difference between them is that Sample1 with RF interface while Sample2 without, all the others are the same. According to the difference, we only evaluated sample 1 to perform full test.

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/n78: 10 / 15 / 20 / 25 / 30 / 40 / 50 / 60 / 70 / 80 / 90 / 100MHz
Antenna Gain	**<Ant. 2>** 5G NR n77: -6.13 dBi 5G NR n78: -6.13 dBi **<Ant. 7>** 5G NR n77: -6.13 dBi 5G NR n78: -6.13 dBi
Type of Modulation	CP-OFDM: QPSK / 16QAM / 64QAM / 256QAM DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM

Remark:

1. The maximum EIRP is calculated from max output power and max antenna gain, only the maximum EIRP of Antenna 2 for NR n77/n78 is shown in the report.
2. 5G NR n77/n78 support UL MIMO and TX Diversity (TXD) mode for ANT 2+7.
3. The device supports HPUE(PC2) for 5G NR n77/n78 SISO mode, and HPUE(PC1.5) for n77/n78 UL MIMO mode and TX Diversity (TXD) mode.
4. For UL MIMO mode and TX Diversity (TXD) mode, the conducted BE/Spurious are tested at single antenna port and add 10*log(N_{ANT}) to test results according to KDB 662911 D01.
5. The UL MIMO mode and TX Diversity (TXD) mode support both correlated and uncorrelated mode, the maximum EIRP is calculate using the correlated mode, the MIMO Antenna gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ /2].
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. All the supported EN-DC combinations are verified conducted power, only the EN-DC combination with highest power are shown in the report.
8. The EN-DC mode combination could be referred to the product spec.

1.5 Modification of EUT

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

1.6 Maximum Conducted Power and Emission Designator

5G NR n77 UL MIMO		PI/2 BPSK / QPSK		16QAM/64QAM/256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum Conducted Power (W)	Emission Designator (99%OBW)	Maximum Conducted Power (W)	Emission Designator (99%OBW)
10	3455.01 ~ 3544.98	1.1695	8M58G7D	0.9462	8M60W7D
15	3457.50 ~ 3542.49	1.1350	13M6G7D	0.9397	13M6W7D
20	3460.02 ~ 3540.00	1.1561	18M2G7D	0.9376	18M2W7D
25	3462.51 ~ 3537.48	1.1614	23M2G7D	0.9550	23M3W7D
30	3465.00 ~ 3534.99	1.2050	27M9G7D	0.9616	27M9W7D
40	3470.01 ~ 3529.98	1.1695	37M9G7D	0.9638	37M9W7D
50	3475.02 ~ 3525.00	1.1588	47M6G7D	0.9506	47M6W7D
60	3480.00 ~ 3519.99	1.1402	57M9G7D	0.9226	58M0W7D
70	3485.01 ~ 3514.98	1.1298	67M7G7D	0.9247	67M6W7D
80	3490.02 ~ 3510.00	1.1298	77M5G7D	0.9397	77M7W7D
90	3495.00 ~ 3504.99	1.1246	87M5G7D	0.9268	87M5W7D
100	3500.01	1.2474	97M8G7D	0.9506	97M6W7D

5G NR n78 UL MIMO		PI/2 BPSK / QPSK		16QAM/64QAM/256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum Conducted Power (W)	Emission Designator (99%OBW)	Maximum Conducted Power (W)	Emission Designator (99%OBW)
10	3455.01 ~ 3544.98	1.0965	8M58G7D	0.8790	8M60W7D
15	3457.50 ~ 3542.49	1.0715	13M6G7D	0.8851	13M6W7D
20	3460.02 ~ 3540.00	1.1015	18M2G7D	0.8872	18M2W7D
25	3462.51 ~ 3537.48	1.1561	23M2G7D	0.9484	23M3W7D
30	3465.00 ~ 3534.99	1.1967	27M9G7D	0.9683	27M9W7D
40	3470.01 ~ 3529.98	1.1402	37M9G7D	0.9528	37M9W7D
50	3475.02 ~ 3525.00	1.2162	47M6G7D	0.9908	47M6W7D
60	3480.00 ~ 3519.99	1.2078	57M9G7D	0.9638	58M0W7D
70	3485.01 ~ 3514.98	1.1967	67M7G7D	0.9727	67M6W7D
80	3490.02 ~ 3510.00	1.2078	77M5G7D	0.9528	77M7W7D
90	3495.00 ~ 3504.99	1.2246	87M5G7D	0.9931	87M5W7D
100	3500.01	1.2246	97M8G7D	0.9333	97M6W7D

Note:

1. 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.
2. For n77/n78 SISO & MIMO & TXD mode, only the maximum power of MIMO mode is show here.
3. 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.**
	03CH03-SZ	CN1256	421272

1.8 Test Software

Item	Site	Manufacture	Name	Version
1.	03CH03-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 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

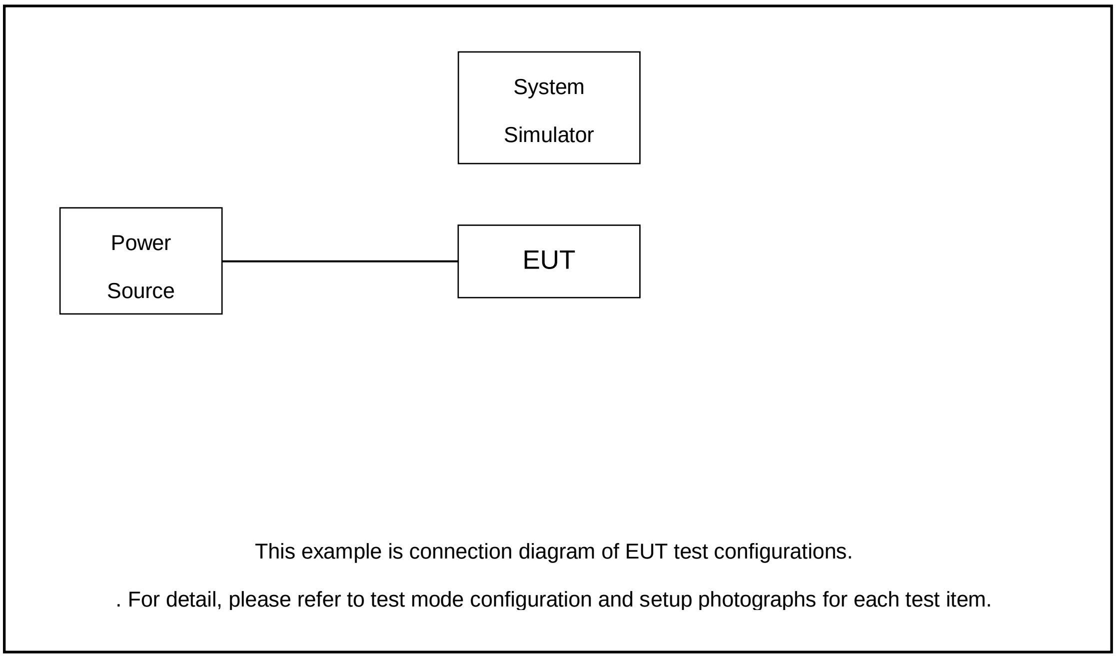
Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power.

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

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, 25M, 30M, 40M, 50M, 60M, 70M, 80M, 90M ,100M	All Modulations	1RB, Full RB	L, M, H
	5G n78	10M, 15M, 20M, 25M, 30M, 40M, 50M, 60M, 70M, 80M, 90M ,100M	All Modulations	1RB, Full RB	L, M, H
Peak-to-Average Ratio	5G n77	20M	PI/2 BPSK, QPSK	Full RB	M
E.I.R.P	5G n77	10M, 15M, 20M, 25M, 30M, 40M, 50M, 60M, 70M, 80M, 90M ,100M	All Modulations	1RB, Full RB	L, M, H
	5G n78	10M, 15M, 20M, 25M, 30M, 40M, 50M, 60M, 70M, 80M, 90M ,100M	All Modulations	1RB, Full RB	L, M, H
26dB and 99% Bandwidth	5G n77	10M, 15M, 20M, 25M, 30M, 40M, 50M, 60M, 70M, 80M, 90M ,100M	QPSK, 16QAM, 64QAM, 256QAM	Full RB	M
Conducted Band Edge	5G n77	10M, 50M, 100M	PI/2 BPSK, QPSK	1RB, Full RB	L, H
Conducted Spurious Emission	5G n77	10M, 50M, 100M	PI/2 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
	5G n78	Worst case from maximum power			M

Note:
1. 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.
2. Frequency Stability: Normal Voltage = 3.8V ; Low Voltage =3.3V.; High Voltage =4.4V.

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
4.	Adapter	N/A	N/A	N/A	N/A	N/A
5.	Test Jig	N/A	N/A	N/A	N/A	N/A

2.4 Measurement Results Explanation Example

For all conducted test items:

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

The spectrum analyzer offset is derived from RF cable loss.

Offset = RF cable loss.

Following shows an offset computation example with cable loss 8.9 dB.

Example :

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

= 8.9 (dB)

2.5 Frequency List of Low/Middle/High Channels

5G n77/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
25	Channel	630834	633334	635832
	Frequency	3462.51	3500.01	3537.48
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

3 Conducted Test Items

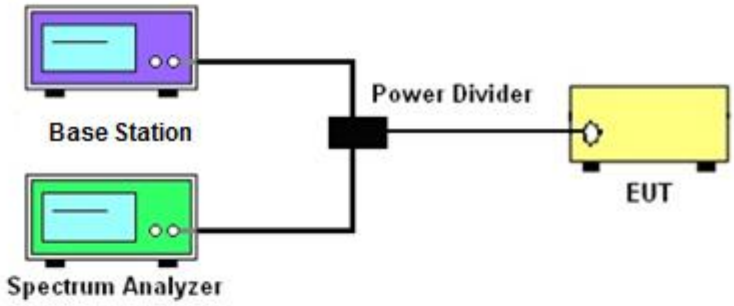
3.1 Measuring Instruments

See list of measuring instruments of this test report.

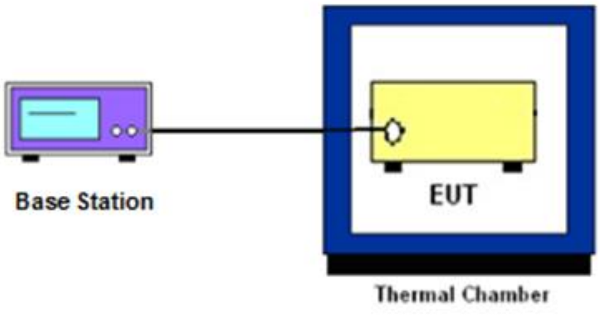
3.2 Test Setup

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 ≥ 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 ≥ 500KHz.
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 9 kHz up to a frequency including its 10^{th} 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.

3.10Frequency 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.

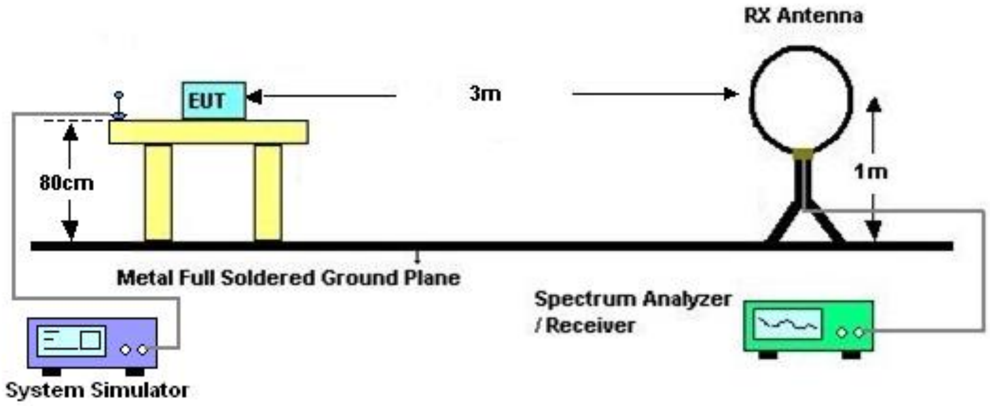
4 Radiated Test Items

4.1 Measuring Instruments

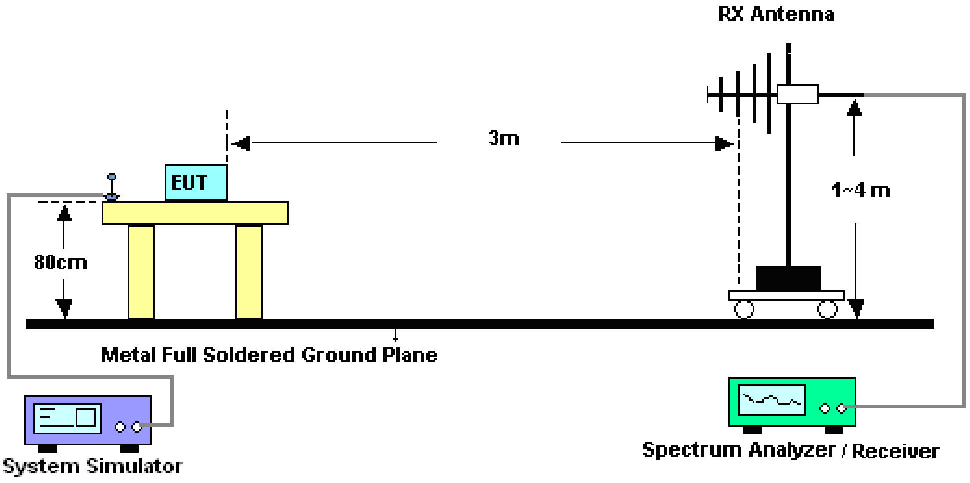
See list of measuring instruments of this test report.

4.2 Test Setup

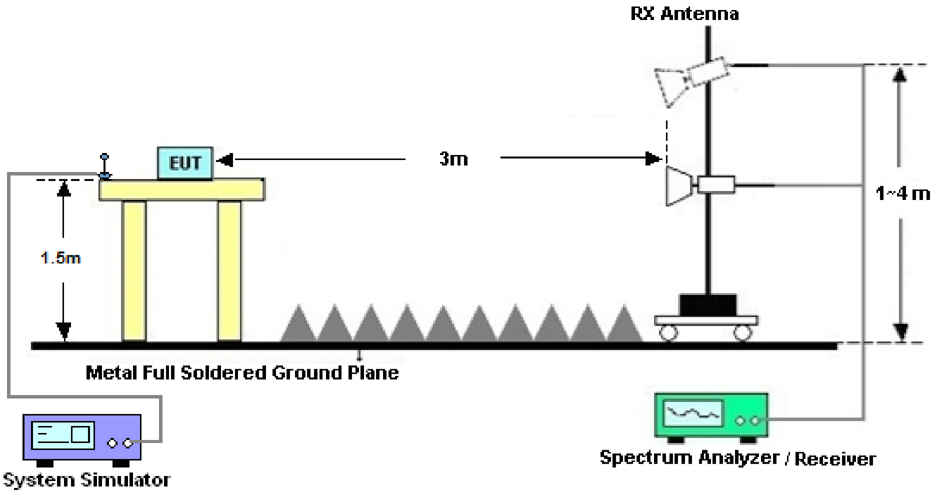
4.2.1 For radiated test below 30MHz



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.
   EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
   ERP (dBm) = 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
Spectrum Analyzer	R&S	FSV40	101078	10Hz~40GHz	Apr. 09, 2024	Aug. 06, 2024~ Aug. 17, 2024	Apr. 08, 2025	Conducted (TH01-SZ)
DC Power Supply	TTI	PL330P	290070	Max 32V，3A	Oct. 16, 2023	Aug. 06, 2024~ Aug. 17, 2024	Oct. 15, 2024	Conducted (TH01-SZ)
Power Divider	TOJOIN	PS-2SM-04 265	60.06.020.0077	0.4GHz~26.5GHz	Dec. 25, 2023	Aug. 06, 2024~ Aug. 17, 2024	Dec. 24, 2024	Conducted (TH01-SZ)
Thermal Chamber	Ten Billion Hongzhangroup	LP-150U	H2014081803	-40~+150°C	Jul. 03, 2024	Aug. 06, 2024~ Aug. 17, 2024	Jul. 02, 2025	Conducted (TH01-SZ)
EMI Test Receiver&SA	KEYSIGHT	N9038A	MY54450083	20Hz~8.4GHz	Apr. 09, 2024	Aug. 10, 2024~ Aug. 15, 2024	Apr. 08, 2025	Radiation (03CH03-SZ)
EXA Spectrum Anaiyzer	KEYSIGHT	N9010A	MY55150246	10Hz~44GHz;	Apr. 09, 2024	Aug. 10, 2024~ Aug. 15, 2024	Apr. 08, 2025	Radiation (03CH03-SZ
Loop Antenna	R&S	HFH2-Z2E	101141	9kHz~30MHz	Dec. 29, 2023	Aug. 10, 2024~ Aug. 15, 2024	Dec. 28, 2024	Radiation (03CH03-SZ)
Bilog Antenna	TeseQ	CBL6112D	35408	30MHz-2GHz	Aug. 20, 2023	Aug. 10, 2024~ Aug. 15, 2024	Aug. 19, 2025	Radiation (03CH03-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-1355	1GHz~18GHz	Apr. 09, 2024	Aug. 10, 2024~ Aug. 15, 2024	Apr. 08, 2025	Radiation (03CH03-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Apr. 09, 2024	Aug. 10, 2024~ Aug. 15, 2024	Apr. 08, 2025	Radiation (03CH03-SZ)
Amplifier	Burgeon	BPA-530	102211	0.01Hz ~3000MHz	Oct. 18, 2023	Aug. 10, 2024~ Aug. 15, 2024	Oct. 17, 2024	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	TTA1840-35 -HG	1871923	18GHz~40GHz	Jul. 03, 2024	Aug. 10, 2024~ Aug. 15, 2024	Jul. 02, 2025	Radiation (03CH03-SZ)
Amplifier	Agilent Technologies	83017A	MY39501302	500MHz~26.5GHz	Dec. 27, 2023	Aug. 10, 2024~ Aug. 15, 2024	Dec. 26, 2024	Radiation (03CH03-SZ)
AC Power Source	Chroma	61601	616010002729	N/A	Oct. 18, 2023	Aug. 10, 2024~ Aug. 15, 2024	Oct. 17, 2024	Radiation (03CH03-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Aug. 10, 2024~ Aug. 15, 2024	NCR	Radiation (03CH03-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Aug. 10, 2024~ Aug. 15, 2024	NCR	Radiation (03CH03-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 Spurious Emission & Bandedge	±1.34 dB
Occupied Channel Bandwidth	±0.012 MHz
Conducted Power	±1.34 dB
Peak to Average Ratio	±1.34 dB
Frequency Stability	±1.3 Hz

Uncertainty of Radiated Emission Measurement (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 :	Khan Zhen	**Temperature :**	22~23℃
		Relative Humidity :	40~42%

Software Version: 23.06.1602

FR1 N77_ANT 2

Transmitter Conducted Output Power And EIRP, (G_T - L_C)=-6.13dB

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	26.68	20.55	0.1135
77	30	10	630334	3455.01	DFT-s-OFDM 16 QAM	1@1	26.36	20.23	0.1054
77	30	10	633334	3500.01	DFT-s-OFDM QPSK	1@1	26.82	20.69	0.1172
77	30	10	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	26.46	20.33	0.1079
77	30	10	636332	3544.98	DFT-s-OFDM QPSK	1@1	27.11	20.98	0.1253
77	30	10	636332	3544.98	DFT-s-OFDM 16 QAM	1@1	26.6	20.47	0.1114
77	30	15	630500	3457.5	DFT-s-OFDM QPSK	1@1	27.09	20.96	0.1247
77	30	15	630500	3457.5	DFT-s-OFDM 16 QAM	1@1	26.32	20.19	0.1045
77	30	15	633334	3500.01	DFT-s-OFDM QPSK	1@1	26.9	20.77	0.1194
77	30	15	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	26.51	20.38	0.1091
77	30	15	636166	3542.49	DFT-s-OFDM QPSK	1@1	27.09	20.96	0.1247
77	30	15	636166	3542.49	DFT-s-OFDM 16 QAM	1@1	26.46	20.33	0.1079
77	30	20	630668	3460.02	DFT-s-OFDM QPSK	1@1	27.1	20.97	0.1250
77	30	20	630668	3460.02	DFT-s-OFDM 16 QAM	1@1	26.28	20.15	0.1035
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	1@1	26.89	20.76	0.1191
77	30	20	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	26.4	20.27	0.1064
77	30	20	636000	3540	DFT-s-OFDM QPSK	1@1	27.07	20.94	0.1242
77	30	20	636000	3540	DFT-s-OFDM 16 QAM	1@1	26.41	20.28	0.1067
77	30	25	630834	3462.51	DFT-s-OFDM QPSK	1@1	27.1	20.97	0.1250
77	30	25	630834	3462.51	DFT-s-OFDM 16 QAM	1@1	26.53	20.4	0.1096
77	30	25	633334	3500.01	DFT-s-OFDM QPSK	1@1	26.89	20.76	0.1191
77	30	25	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	26.49	20.36	0.1086
77	30	25	635832	3537.48	DFT-s-OFDM QPSK	1@1	27.06	20.93	0.1239
77	30	25	635832	3537.48	DFT-s-OFDM 16 QAM	1@1	26.41	20.28	0.1067
77	30	30	631000	3465	DFT-s-OFDM QPSK	1@1	26.93	20.8	0.1202
77	30	30	631000	3465	DFT-s-OFDM 16 QAM	1@1	26.45	20.32	0.1076
77	30	30	633334	3500.01	DFT-s-OFDM QPSK	1@1	26.7	20.57	0.1140
77	30	30	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	23.35	17.22	0.0527
77	30	30	635666	3534.99	DFT-s-OFDM QPSK	1@1	26.92	20.79	0.1199
77	30	30	635666	3534.99	DFT-s-OFDM 16 QAM	1@1	26.43	20.3	0.1072
77	30	40	631334	3470.01	DFT-s-OFDM QPSK	1@1	27.03	20.9	0.1230
77	30	40	631334	3470.01	DFT-s-OFDM 16 QAM	1@1	26.44	20.31	0.1074
77	30	40	633334	3500.01	DFT-s-OFDM QPSK	1@1	26.82	20.69	0.1172

77	30	40	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	26.24	20.11	0.1026
77	30	40	635332	3529.98	DFT-s-OFDM QPSK	1@1	27.07	20.94	0.1242
77	30	40	635332	3529.98	DFT-s-OFDM 16 QAM	1@1	26.69	20.56	0.1138
77	30	50	631668	3475.02	DFT-s-OFDM QPSK	1@1	27.46	21.33	0.1358
77	30	50	631668	3475.02	DFT-s-OFDM 16 QAM	1@1	26.64	20.51	0.1125
77	30	50	633334	3500.01	DFT-s-OFDM QPSK	1@1	27.37	21.24	0.1330
77	30	50	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	26.52	20.39	0.1094
77	30	50	635000	3525	DFT-s-OFDM QPSK	1@1	27.6	21.47	0.1403
77	30	50	635000	3525	DFT-s-OFDM 16 QAM	1@1	26.92	20.79	0.1199
77	30	60	632000	3480	DFT-s-OFDM QPSK	1@1	27.45	21.32	0.1355
77	30	60	632000	3480	DFT-s-OFDM 16 QAM	1@1	26.44	20.31	0.1074
77	30	60	633334	3500.01	DFT-s-OFDM QPSK	1@1	27.27	21.14	0.1300
77	30	60	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	26.3	20.17	0.1040
77	30	60	634666	3519.99	DFT-s-OFDM QPSK	1@1	27.48	21.35	0.1365
77	30	60	634666	3519.99	DFT-s-OFDM 16 QAM	1@1	26.46	20.33	0.1079
77	30	70	632334	3485.01	DFT-s-OFDM QPSK	1@1	27.44	21.31	0.1352
77	30	70	632334	3485.01	DFT-s-OFDM 16 QAM	1@1	26.37	20.24	0.1057
77	30	70	633334	3500.01	DFT-s-OFDM QPSK	1@1	27.2	21.07	0.1279
77	30	70	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	26.21	20.08	0.1019
77	30	70	634332	3514.98	DFT-s-OFDM QPSK	1@1	27.32	21.19	0.1315
77	30	70	634332	3514.98	DFT-s-OFDM 16 QAM	1@1	26.5	20.37	0.1089
77	30	80	632668	3490.02	DFT-s-OFDM QPSK	1@1	27.48	21.35	0.1365
77	30	80	632668	3490.02	DFT-s-OFDM 16 QAM	1@1	26.31	20.18	0.1042
77	30	80	633334	3500.01	DFT-s-OFDM QPSK	1@1	27.22	21.09	0.1285
77	30	80	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	26.19	20.06	0.1014
77	30	80	634000	3510	DFT-s-OFDM QPSK	1@1	27.22	21.09	0.1285
77	30	80	634000	3510	DFT-s-OFDM 16 QAM	1@1	26.21	20.08	0.1019
77	30	90	633000	3495	DFT-s-OFDM QPSK	1@1	27.58	21.45	0.1396
77	30	90	633000	3495	DFT-s-OFDM 16 QAM	1@1	26.33	20.2	0.1047
77	30	90	633334	3500.01	DFT-s-OFDM QPSK	1@1	27.42	21.29	0.1346
77	30	90	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	26.23	20.1	0.1023
77	30	90	633666	3504.99	DFT-s-OFDM QPSK	1@1	27.23	21.1	0.1288
77	30	90	633666	3504.99	DFT-s-OFDM 16 QAM	1@1	26.32	20.19	0.1045
77	30	100	633334	3500.01	DFT-s-OFDM PI/2 BPSK	135@67	27.24	21.11	0.1291
77	30	100	633334	3500.01	DFT-s-OFDM PI/2 BPSK	1@1	27.66	21.53	0.1422
77	30	100	633334	3500.01	DFT-s-OFDM PI/2 BPSK	1@271	26.67	20.54	0.1132
77	30	100	633334	3500.01	DFT-s-OFDM QPSK	135@67	26.88	20.75	0.1189
77	30	100	633334	3500.01	DFT-s-OFDM QPSK	1@1	27.17	21.04	0.1271
77	30	100	633334	3500.01	DFT-s-OFDM QPSK	1@271	26.63	20.5	0.1122
77	30	100	633334	3500.01	DFT-s-OFDM 16 QAM	135@67	25.98	19.85	0.0966
77	30	100	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	26.26	20.13	0.1030

77	30	100	633334	3500.01	DFT-s-OFDM 16 QAM	1@271	25.7	19.57	0.0906
77	30	100	633334	3500.01	DFT-s-OFDM 64 QAM	135@67	24.35	18.22	0.0664
77	30	100	633334	3500.01	DFT-s-OFDM 64 QAM	1@1	24.64	18.51	0.0710
77	30	100	633334	3500.01	DFT-s-OFDM 64 QAM	1@271	23.82	17.69	0.0587
77	30	100	633334	3500.01	DFT-s-OFDM 256 QAM	135@67	21.99	15.86	0.0385
77	30	100	633334	3500.01	DFT-s-OFDM 256 QAM	1@1	22.02	15.89	0.0388
77	30	100	633334	3500.01	DFT-s-OFDM 256 QAM	1@271	21.09	14.96	0.0313
77	30	100	633334	3500.01	CP-OFDM QPSK	137@68	25.1	18.97	0.0789
77	30	100	633334	3500.01	CP-OFDM QPSK	1@1	25.49	19.36	0.0863
77	30	100	633334	3500.01	CP-OFDM QPSK	1@271	25.09	18.96	0.0787

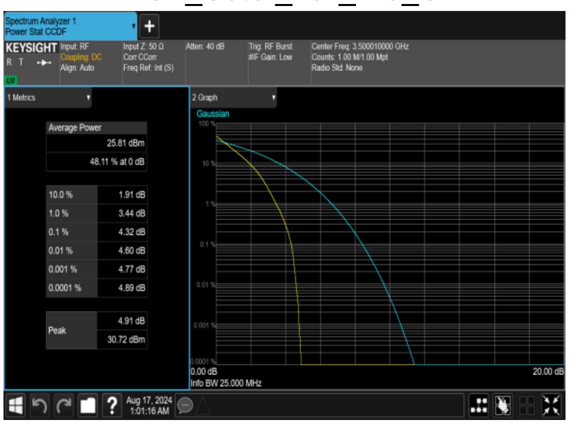
Frequency Stability

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	0.0026	**PASS**	NV
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.0037	**PASS**	LV
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.0070	**PASS**	HV
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.0056	**PASS**	-30℃
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.0053	**PASS**	-20℃
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.0035	**PASS**	-10℃
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.0041	**PASS**	0℃
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.0027	**PASS**	10℃
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.0026	**PASS**	20℃
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.0057	**PASS**	30℃
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.0023	**PASS**	40℃
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.0039	**PASS**	50℃

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	4.32	13	**PASS**
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	4.87	13	**PASS**

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



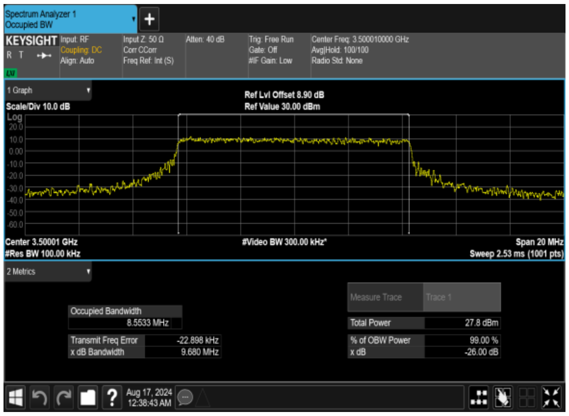
N77(20M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH

Occupied Bandwidth

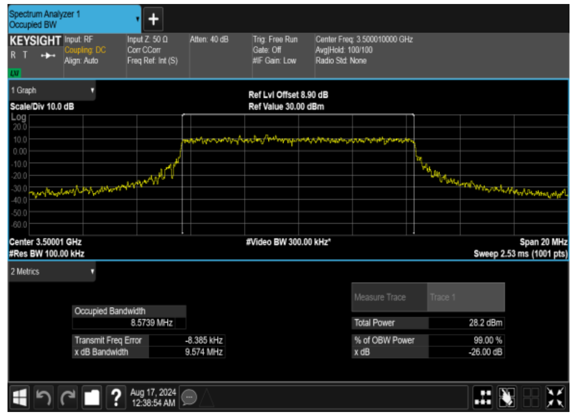
NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	OBW (MHz)	26dB BW (MHz)
77	30	10	633334	3500.01	CP-OFDM QPSK	24@0	8.5533	9.68
77	30	10	633334	3500.01	CP-OFDM 16 QAM	24@0	8.5739	9.574
77	30	10	633334	3500.01	CP-OFDM 64 QAM	24@0	8.5679	9.781
77	30	10	633334	3500.01	CP-OFDM 256 QAM	24@0	8.5743	9.682
77	30	15	633334	3500.01	CP-OFDM QPSK	38@0	13.594	15.11
77	30	15	633334	3500.01	CP-OFDM 16 QAM	38@0	13.585	14.57
77	30	15	633334	3500.01	CP-OFDM 64 QAM	38@0	13.593	14.86
77	30	15	633334	3500.01	CP-OFDM 256 QAM	38@0	13.577	14.44
77	30	20	633334	3500.01	CP-OFDM QPSK	51@0	18.197	19.49
77	30	20	633334	3500.01	CP-OFDM 16 QAM	51@0	18.209	19.74
77	30	20	633334	3500.01	CP-OFDM 64 QAM	51@0	18.196	19.17
77	30	20	633334	3500.01	CP-OFDM 256 QAM	51@0	18.249	19.2
77	30	25	633334	3500.01	CP-OFDM QPSK	65@0	23.21	24.05
77	30	25	633334	3500.01	CP-OFDM 16 QAM	65@0	23.317	24.32
77	30	25	633334	3500.01	CP-OFDM 64 QAM	65@0	23.238	25.73
77	30	25	633334	3500.01	CP-OFDM 256 QAM	65@0	23.202	24.75
77	30	30	633334	3500.01	CP-OFDM QPSK	78@0	27.859	29.01
77	30	30	633334	3500.01	CP-OFDM 16 QAM	78@0	27.8	30.97
77	30	30	633334	3500.01	CP-OFDM 64 QAM	78@0	27.857	30.26
77	30	30	633334	3500.01	CP-OFDM 256 QAM	78@0	27.762	29.05
77	30	40	633334	3500.01	CP-OFDM QPSK	106@0	37.819	39.6
77	30	40	633334	3500.01	CP-OFDM 16 QAM	106@0	37.871	39.55
77	30	40	633334	3500.01	CP-OFDM 64 QAM	106@0	37.754	39.11
77	30	40	633334	3500.01	CP-OFDM 256 QAM	106@0	37.898	39.24
77	30	50	633334	3500.01	CP-OFDM QPSK	133@0	47.399	49.32
77	30	50	633334	3500.01	CP-OFDM 16 QAM	133@0	47.404	48.99
77	30	50	633334	3500.01	CP-OFDM 64 QAM	133@0	47.541	49.02
77	30	50	633334	3500.01	CP-OFDM 256 QAM	133@0	47.491	49.66
77	30	60	633334	3500.01	CP-OFDM QPSK	162@0	57.837	60.36

77	30	60	633334	3500.01	CP-OFDM 16 QAM	162@0	57.79	59.64
77	30	60	633334	3500.01	CP-OFDM 64 QAM	162@0	57.769	59.65
77	30	60	633334	3500.01	CP-OFDM 256 QAM	162@0	57.787	59.7
77	30	70	633334	3500.01	CP-OFDM QPSK	189@0	67.526	69.94
77	30	70	633334	3500.01	CP-OFDM 16 QAM	189@0	67.414	69.63
77	30	70	633334	3500.01	CP-OFDM 64 QAM	189@0	67.606	69.82
77	30	70	633334	3500.01	CP-OFDM 256 QAM	189@0	67.642	69.77
77	30	80	633334	3500.01	CP-OFDM QPSK	217@0	77.407	79.95
77	30	80	633334	3500.01	CP-OFDM 16 QAM	217@0	77.661	79.93
77	30	80	633334	3500.01	CP-OFDM 64 QAM	217@0	77.48	80.34
77	30	80	633334	3500.01	CP-OFDM 256 QAM	217@0	77.461	79.88
77	30	90	633334	3500.01	CP-OFDM QPSK	245@0	87.485	90.14
77	30	90	633334	3500.01	CP-OFDM 16 QAM	245@0	87.607	90.13
77	30	90	633334	3500.01	CP-OFDM 64 QAM	245@0	87.548	90.44
77	30	90	633334	3500.01	CP-OFDM 256 QAM	245@0	87.74	90.24
77	30	100	633334	3500.01	CP-OFDM QPSK	273@0	97.367	100.7
77	30	100	633334	3500.01	CP-OFDM 16 QAM	273@0	97.433	100.5
77	30	100	633334	3500.01	CP-OFDM 64 QAM	273@0	97.399	100.5
77	30	100	633334	3500.01	CP-OFDM 256 QAM	273@0	97.552	100.6

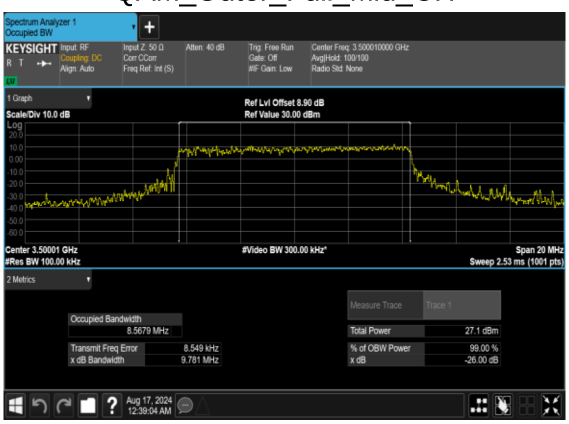
N77(10M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



N77(10M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH

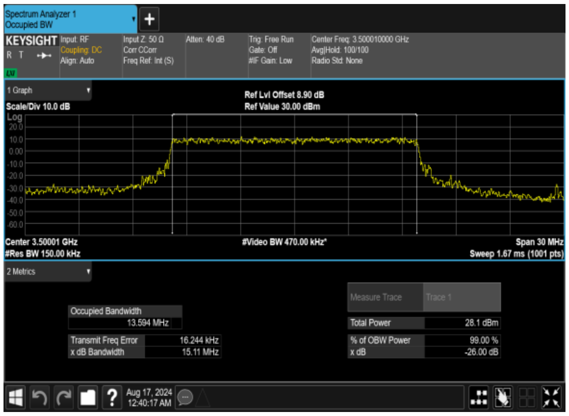


N77(10M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



N77(10M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH

N77(15M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



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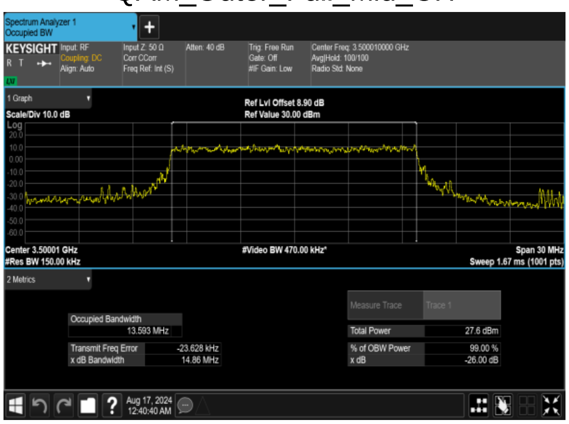
N77(15M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



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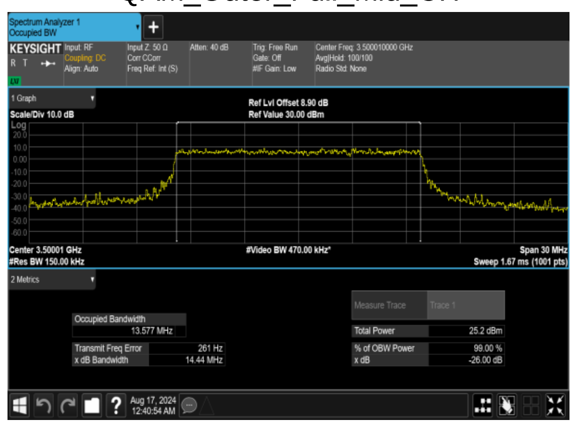
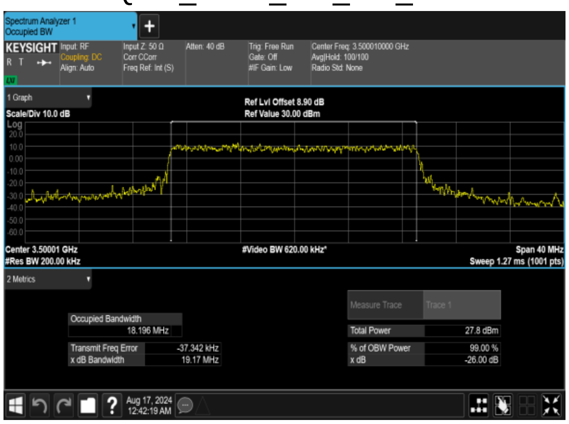


N77(20M)_CP-OFDM_QPSK_Outer_Full_Mid_CH

N77(20M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH

N77(20M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



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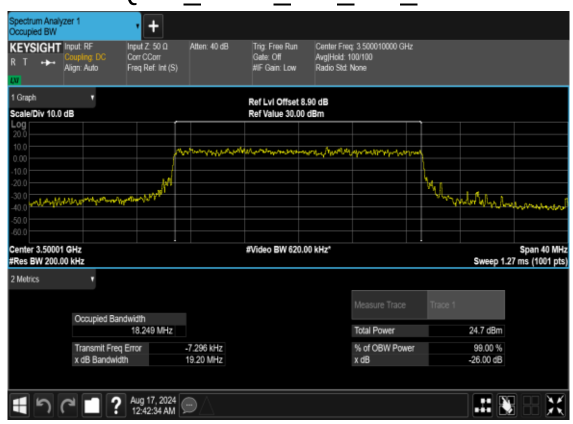
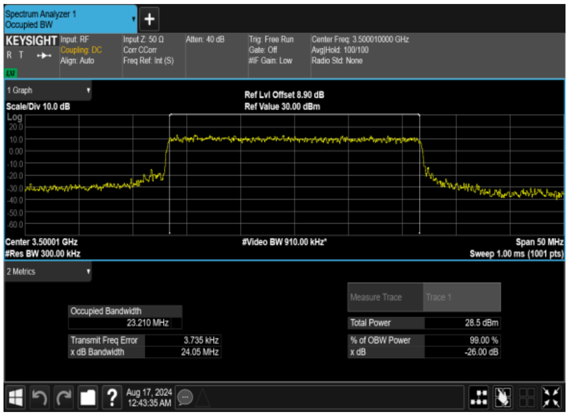
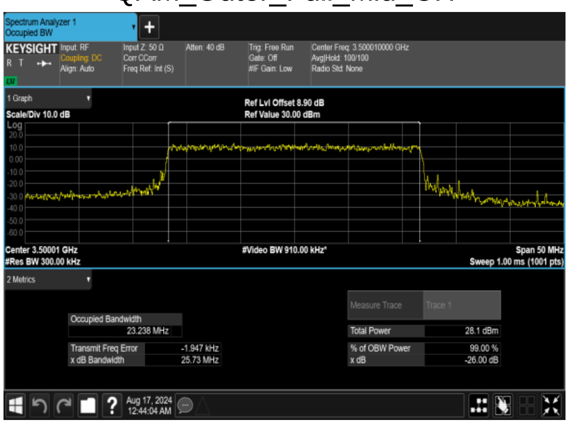


N77(25M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



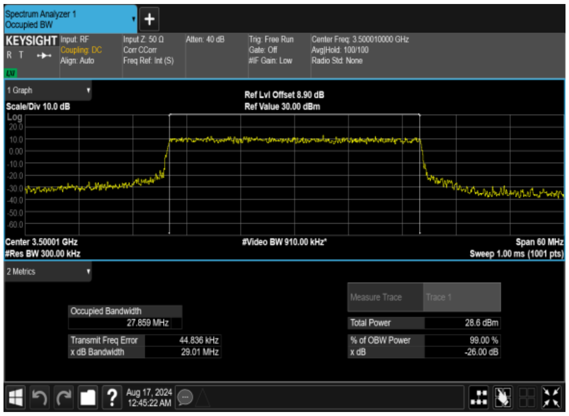
N77(25M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH

N77(25M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



N77(25M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH

N77(30M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



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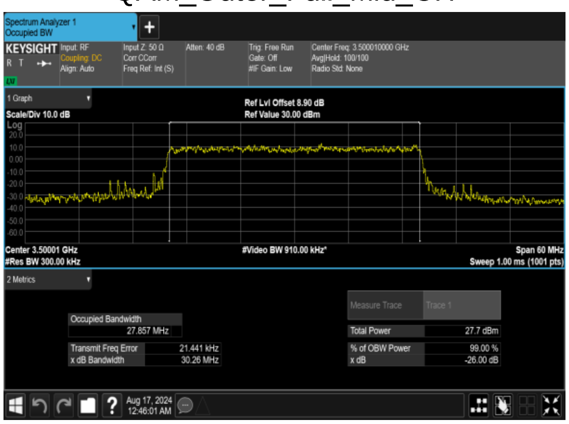
N77(30M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



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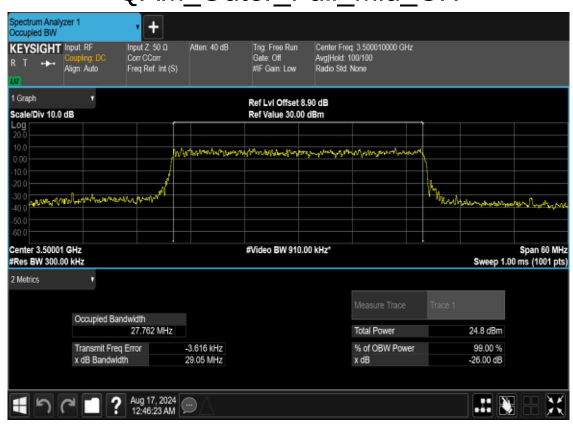
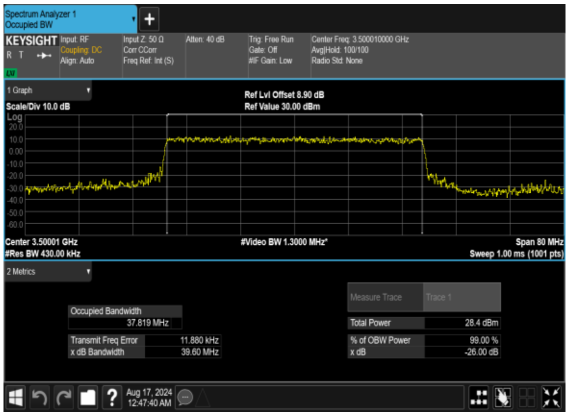
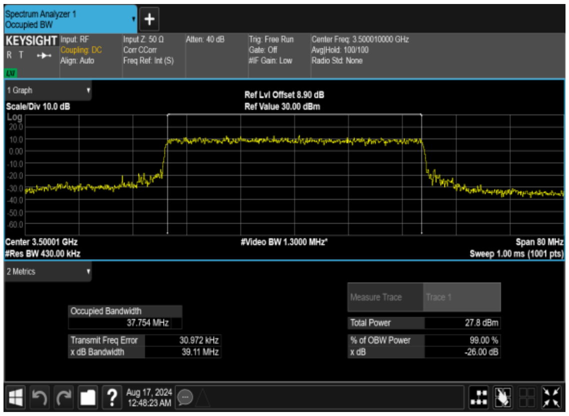


N77(40M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



N77(40M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH

N77(40M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



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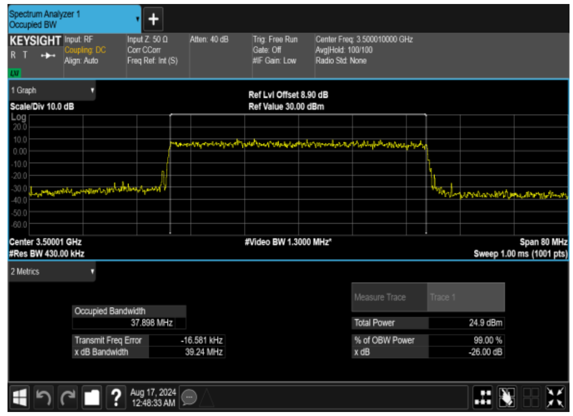
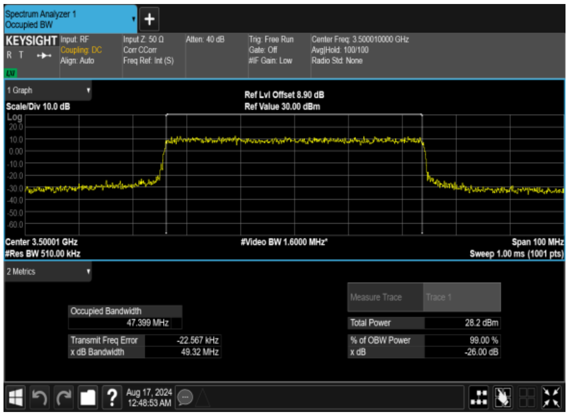
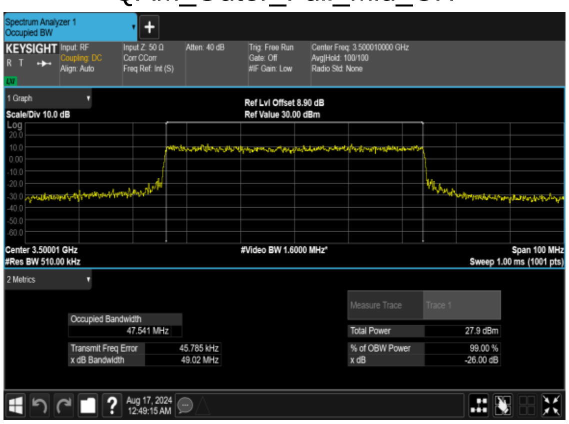


N77(50M)_CP-OFDM_QPSK_Outer_Full_Mid_CH

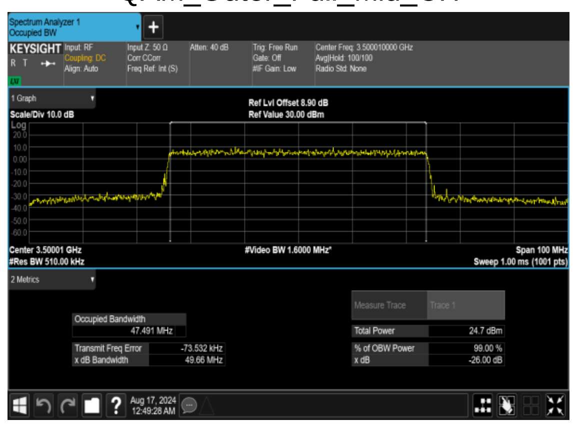


N77(50M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH

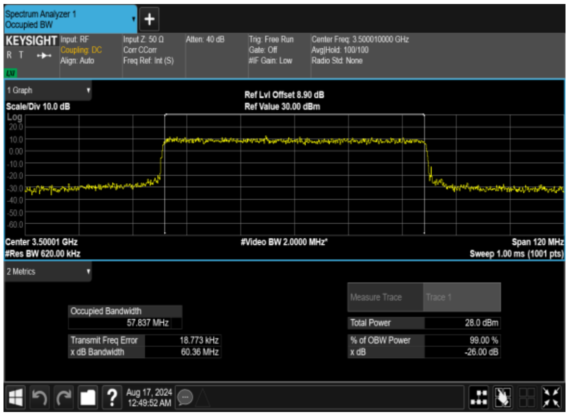
N77(50M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



N77(50M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH

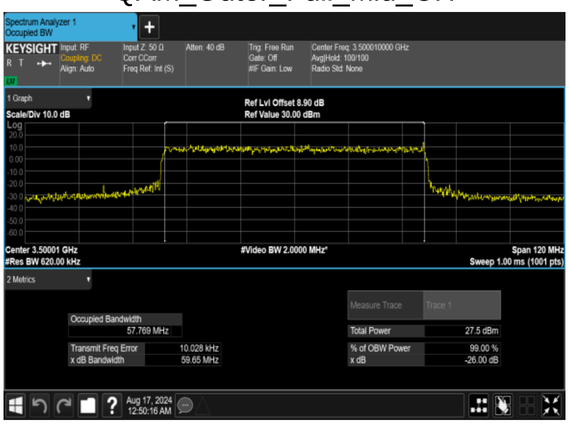


N77(60M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



N77(60M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH

N77(60M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



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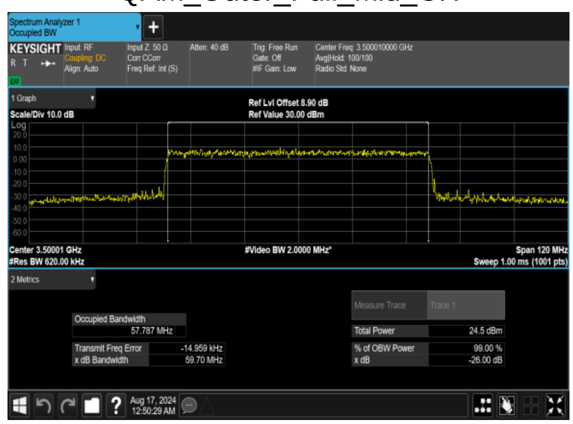

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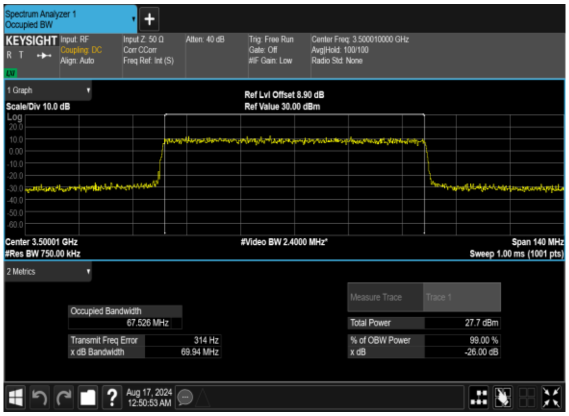

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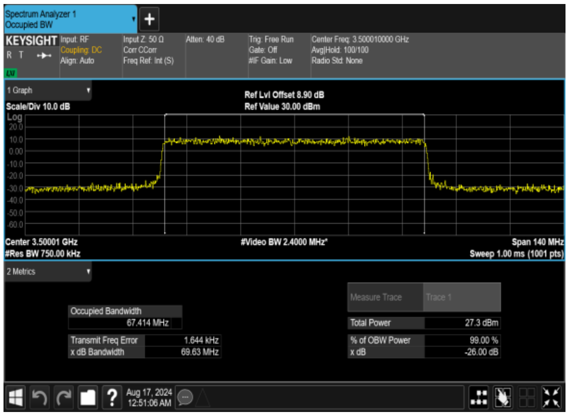
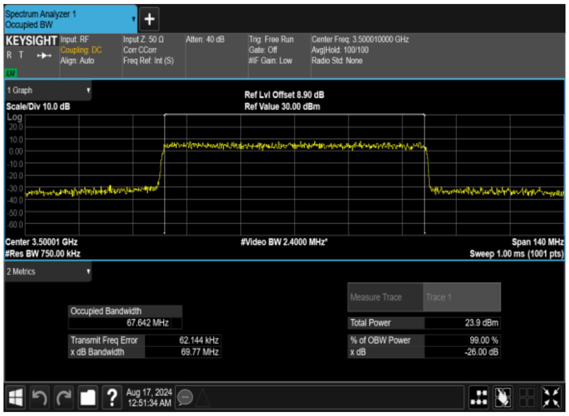
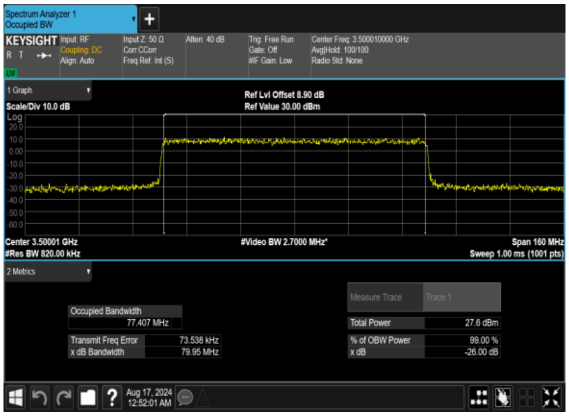


N77(70M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH

N77(70M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH

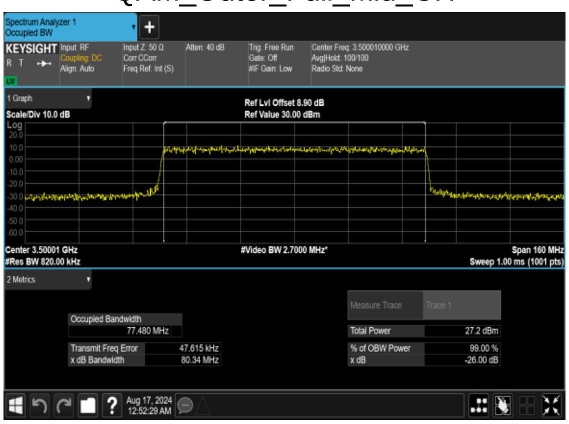


N77(80M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



N77(80M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH

N77(80M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



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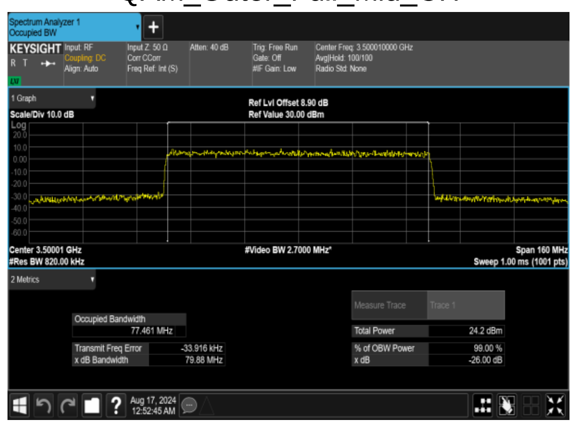
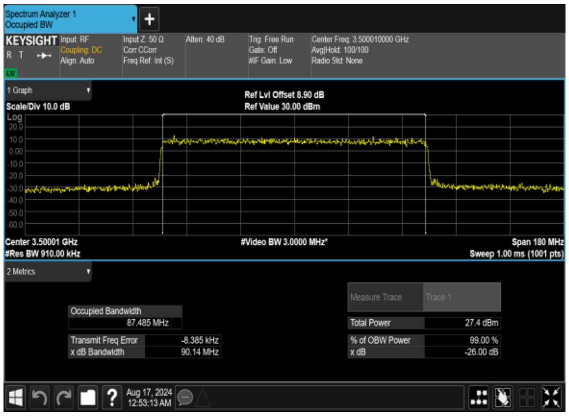
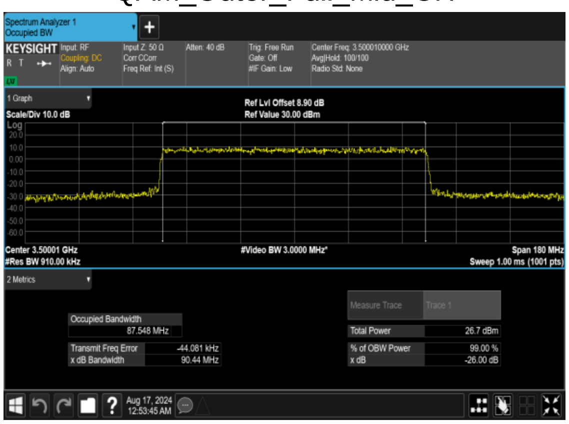


N77(90M)_CP-OFDM_QPSK_Outer_Full_Mid_CH

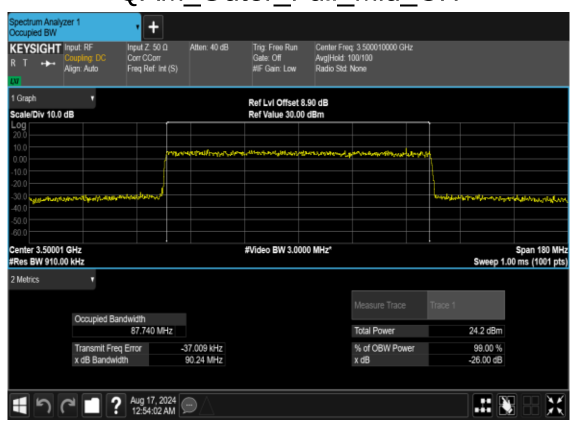


N77(90M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH

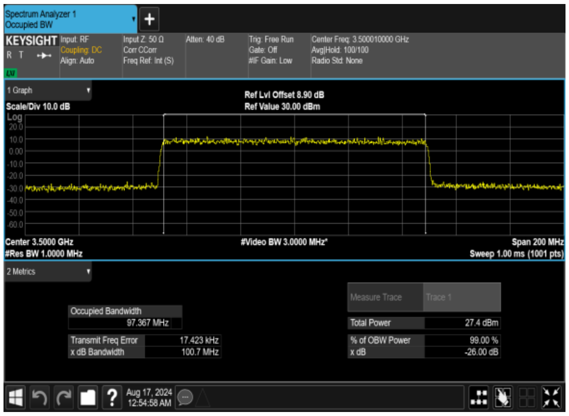
N77(90M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



N77(90M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



N77(100M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



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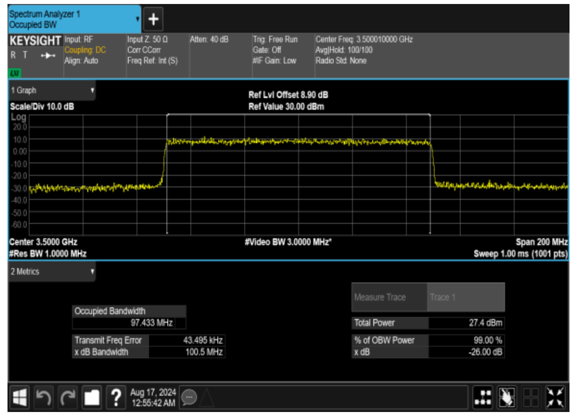

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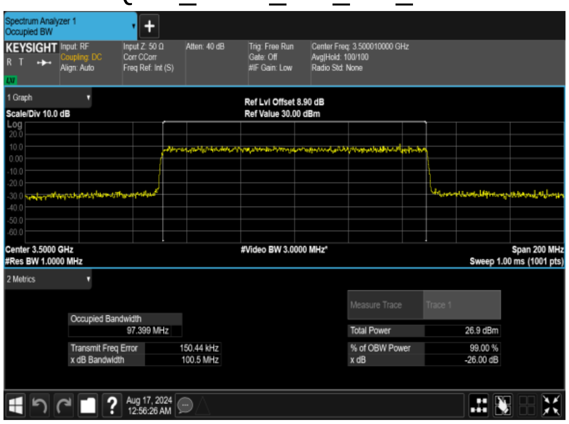
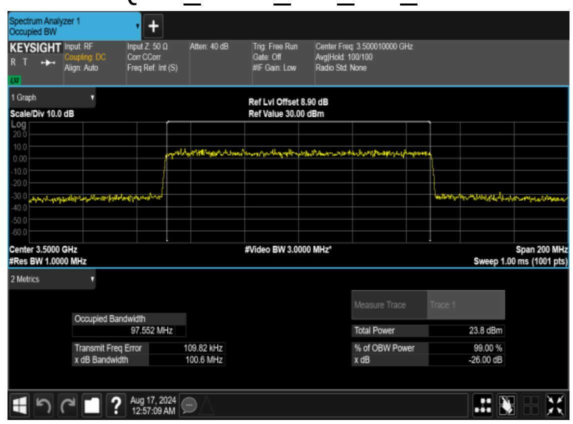


N77(100M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH

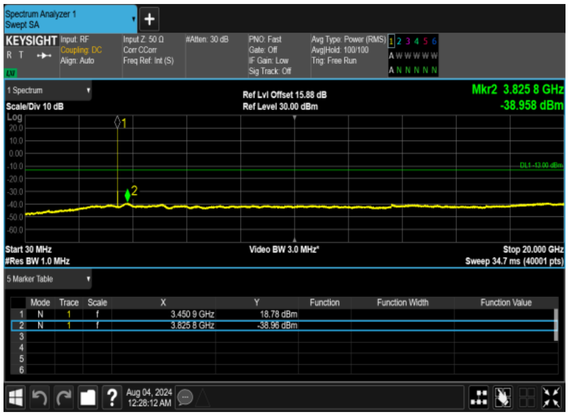


Conducted Spurious Emissions

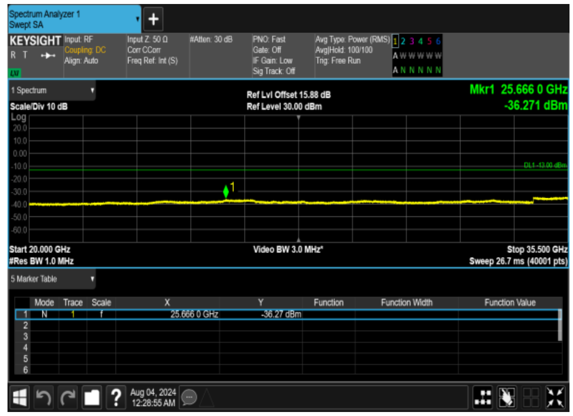
NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result	Verdict
77	30	10	630334	3455.01	DFT-s-OFDM BPSK	1@0	see graph	---
77	30	10	630334	3455.01	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	30	10	630334	3455.01	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	30	10	630334	3455.01	DFT-s-OFDM QPSK	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**

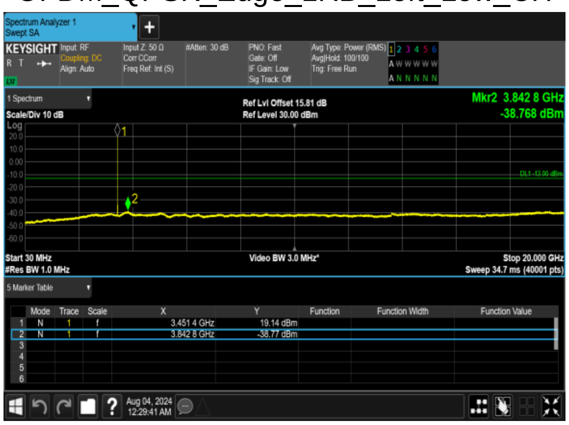
N77(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



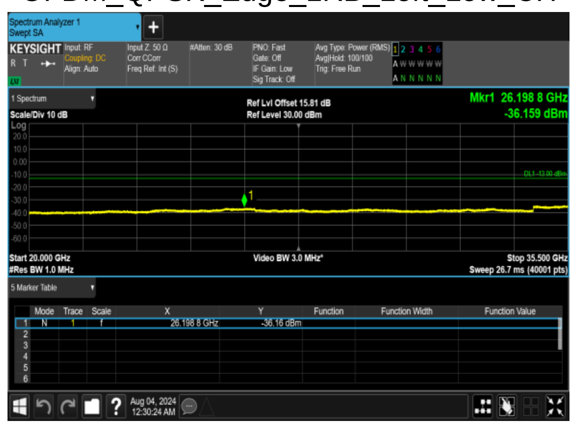
N77(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



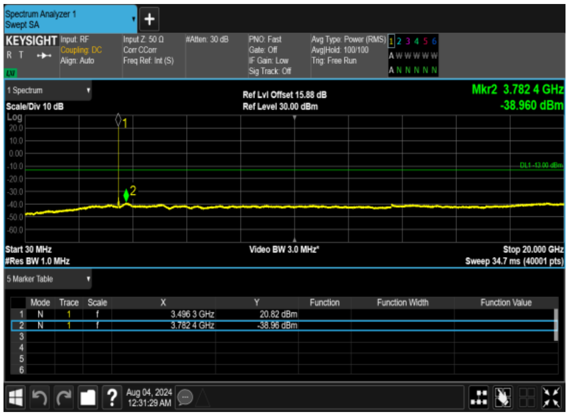
N77(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



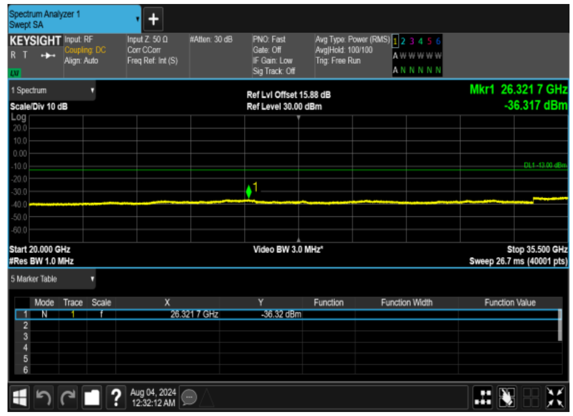
N77(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



N77(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH

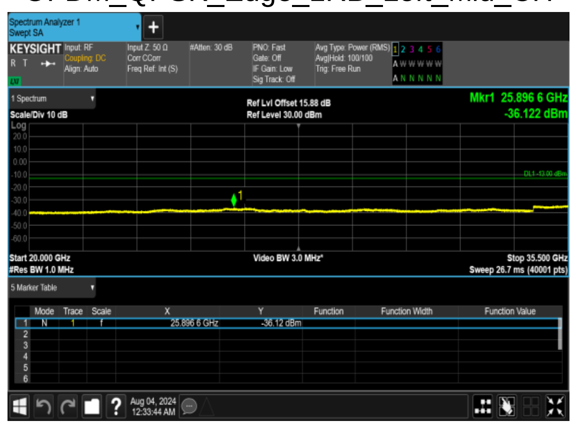


N77(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH

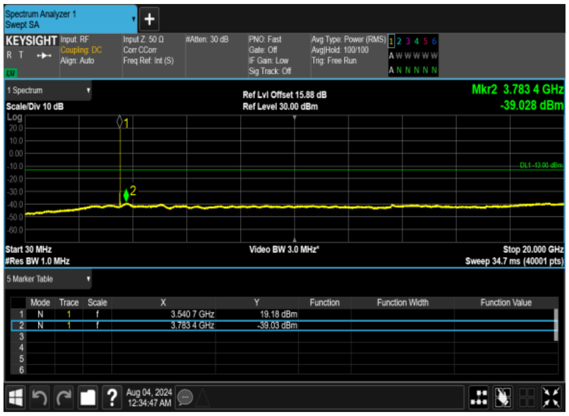


N77(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH

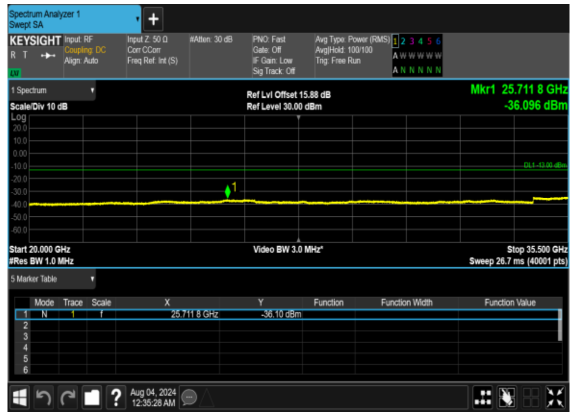
N77(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



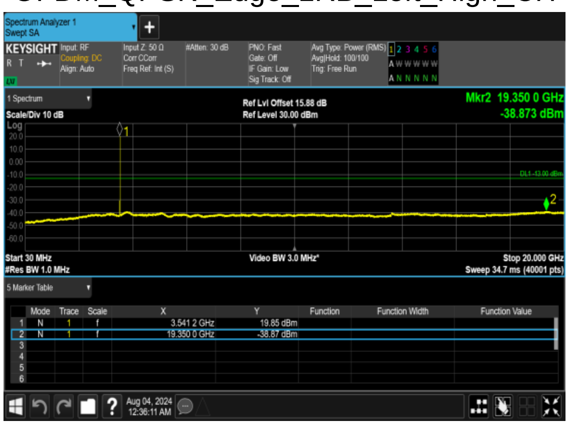
N77(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



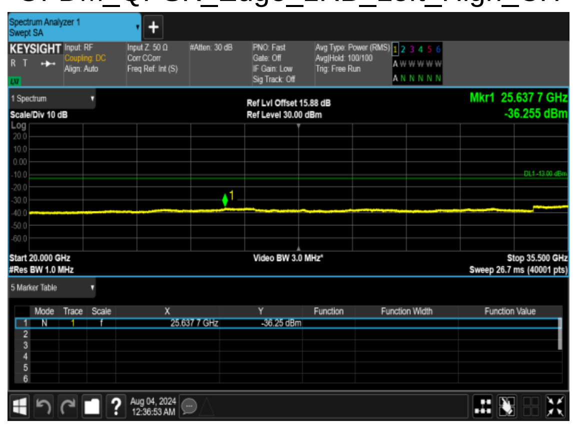
N77(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



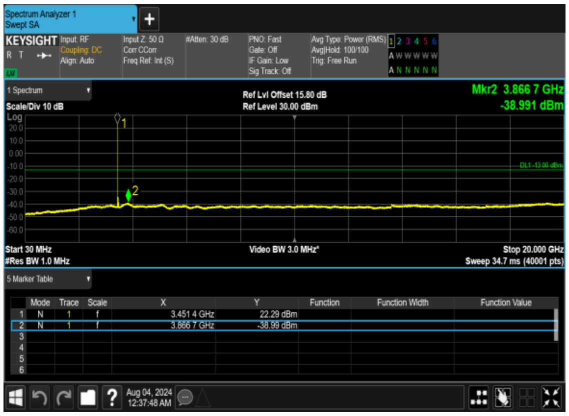
N77(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



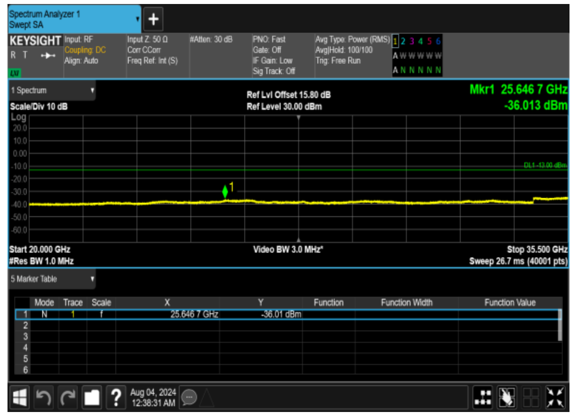
N77(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



N77(50M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH

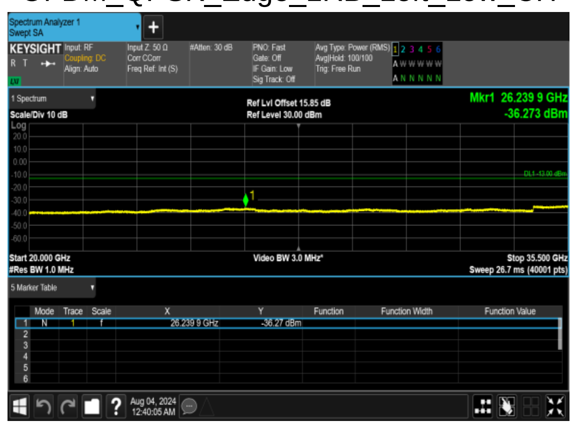


N77(50M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH

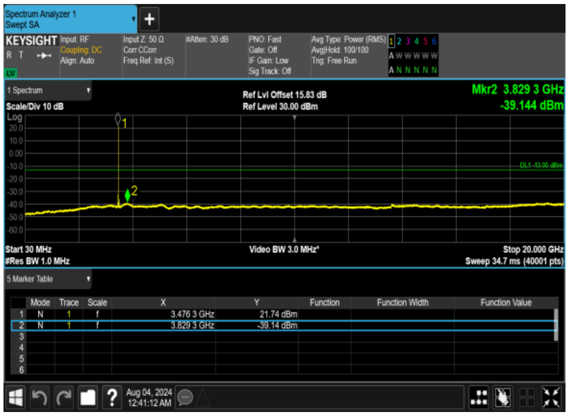


N77(50M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH

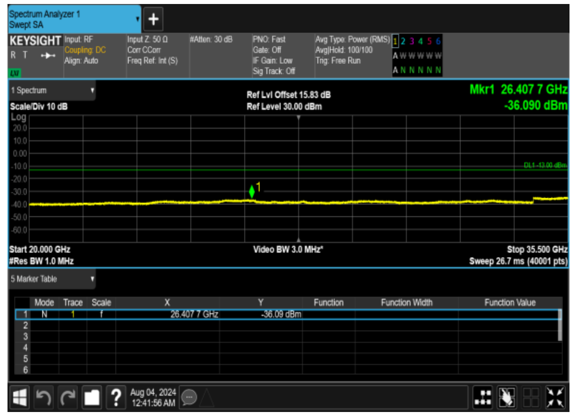
N77(50M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



N77(50M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH

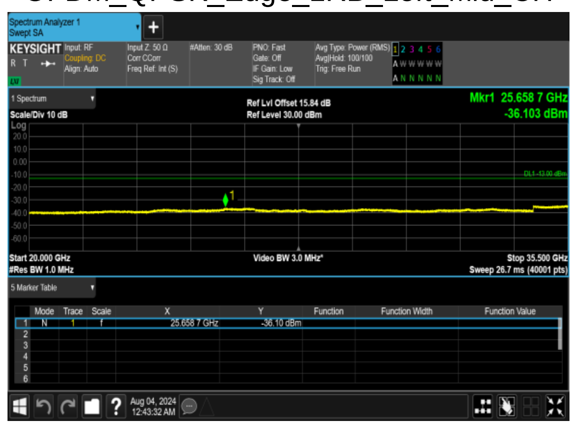


N77(50M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH

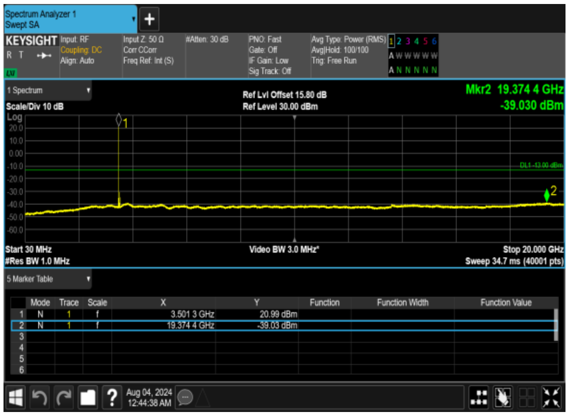


N77(50M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH

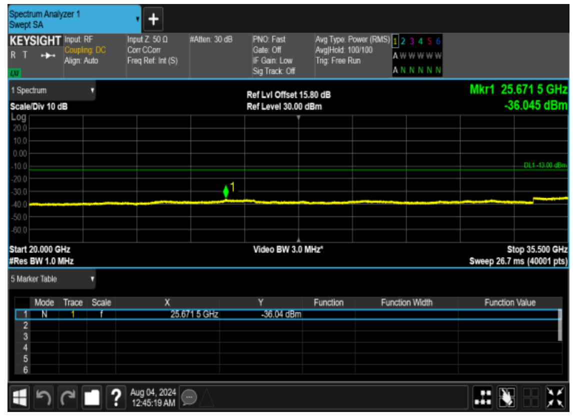
N77(50M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



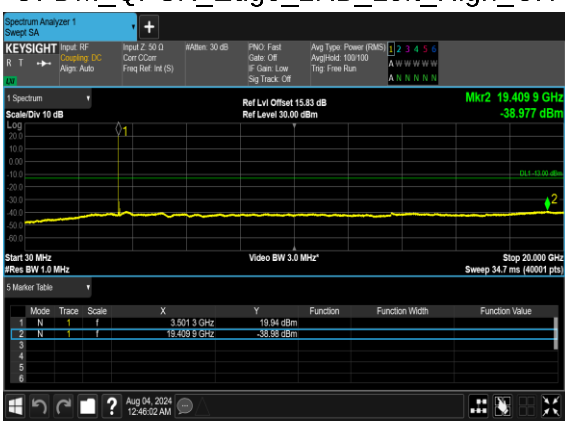
N77(50M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



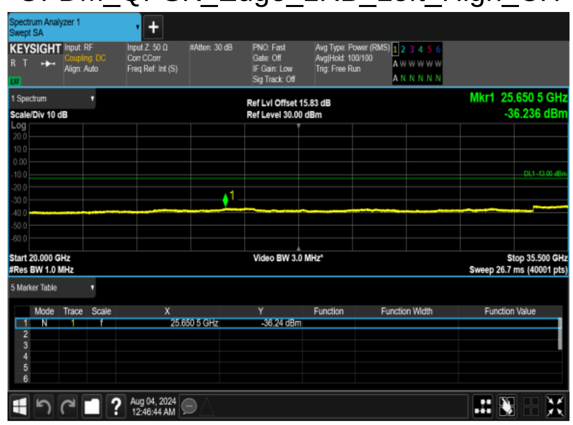
N77(50M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



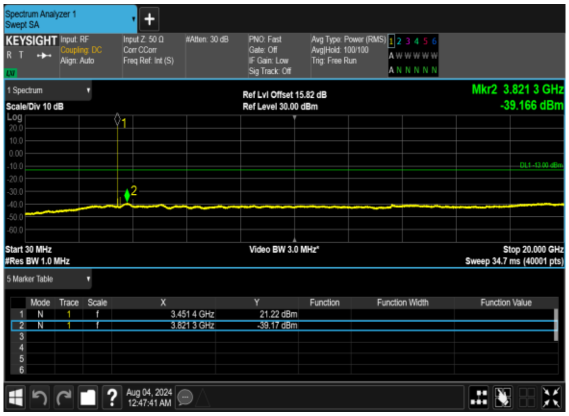
N77(50M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



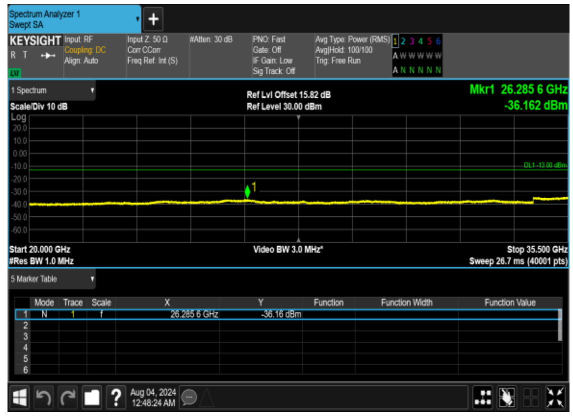
N77(50M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



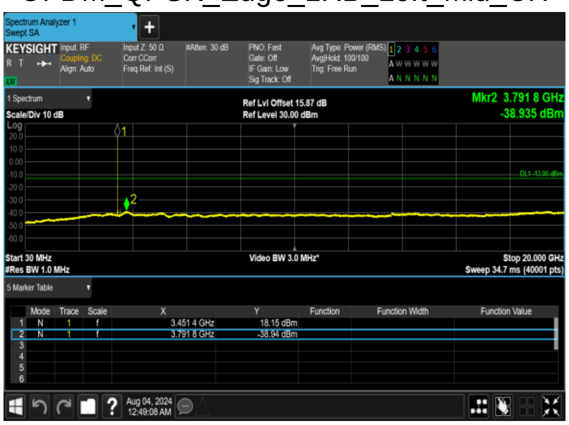
N77(100M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



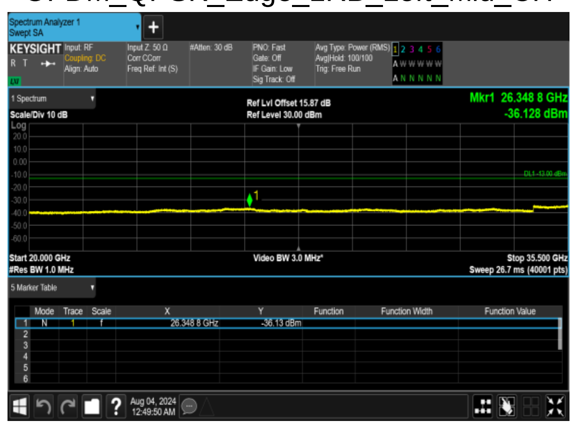
N77(100M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



N77(100M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



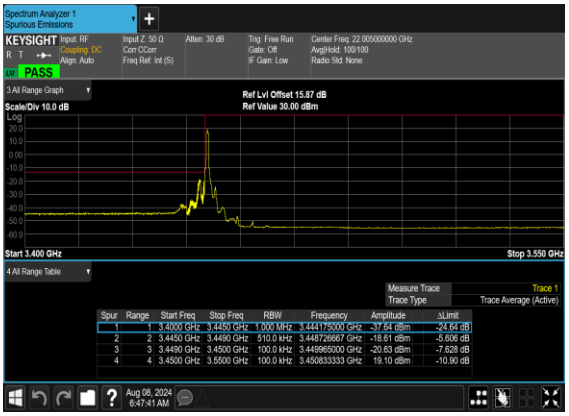
N77(100M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



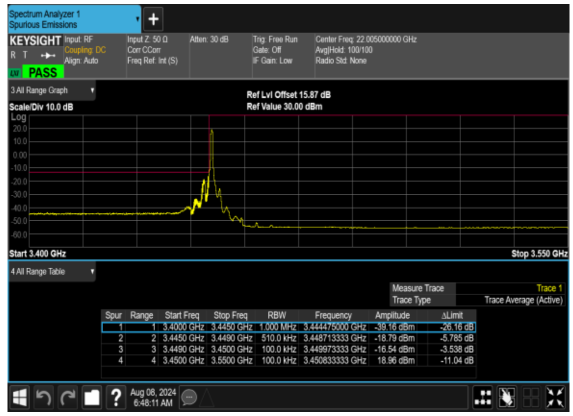
Conducted Band Edge

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**

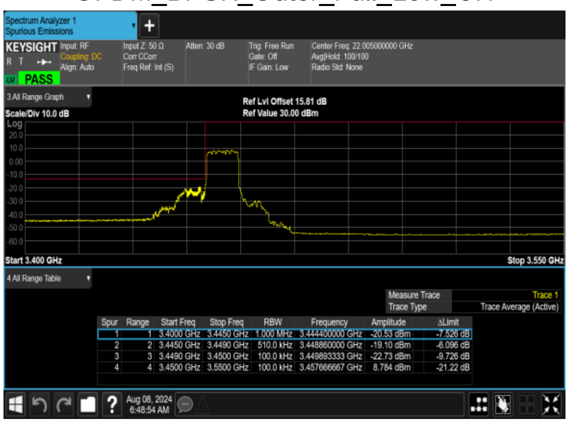
N77(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



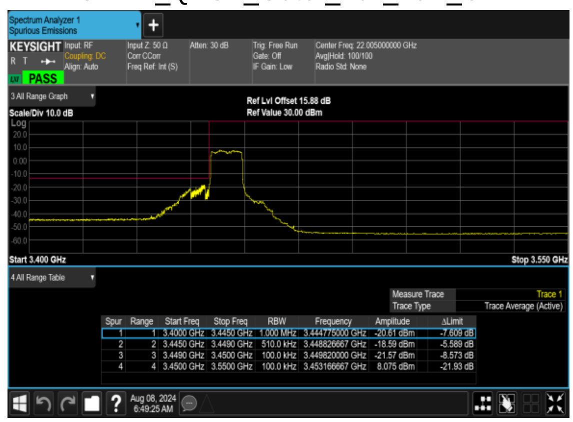
N77(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



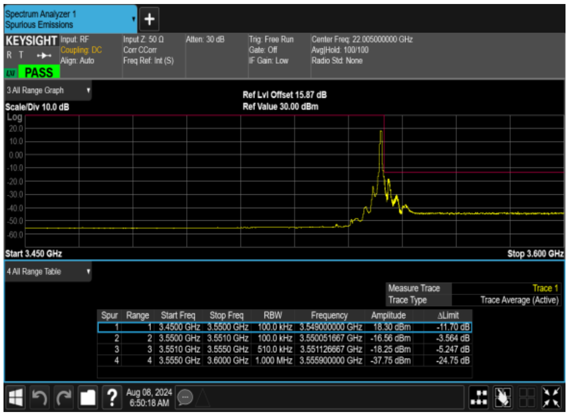
N77(10M)_DFT-s-OFDM_BPSK_Outer_Full_Low_CH



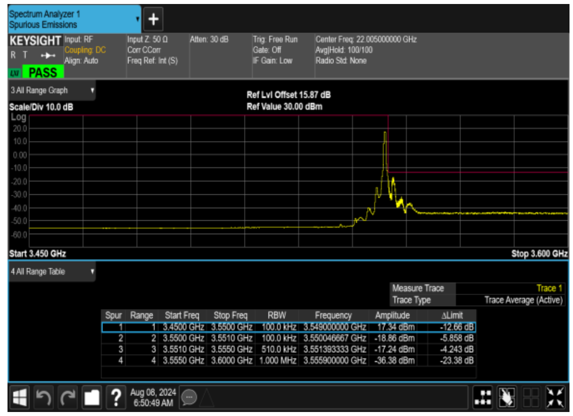
N77(10M)_DFT-s-OFDM_QPSK_Outer_Full_Low_CH



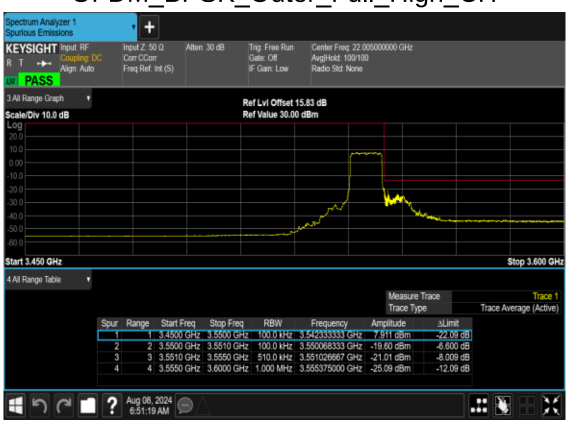
N77(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Right_High_CH



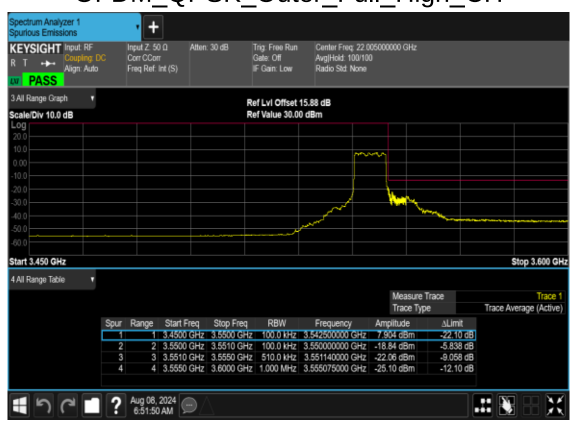
N77(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_High_CH



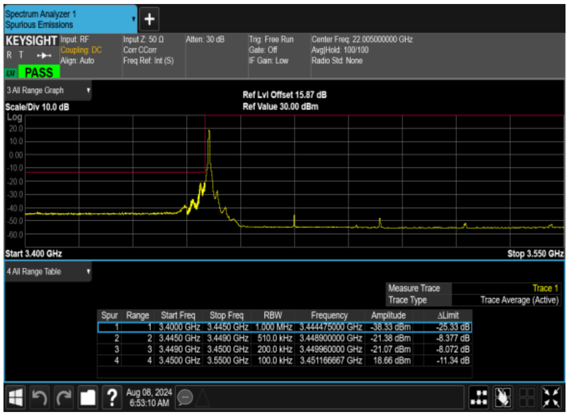
N77(10M)_DFT-s-OFDM_BPSK_Outer_Full_High_CH



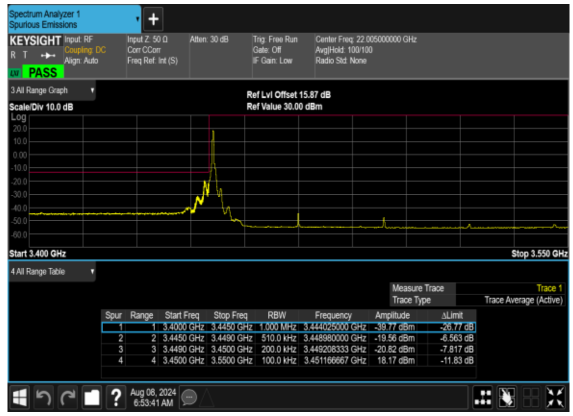
N77(10M)_DFT-s-OFDM_QPSK_Outer_Full_High_CH



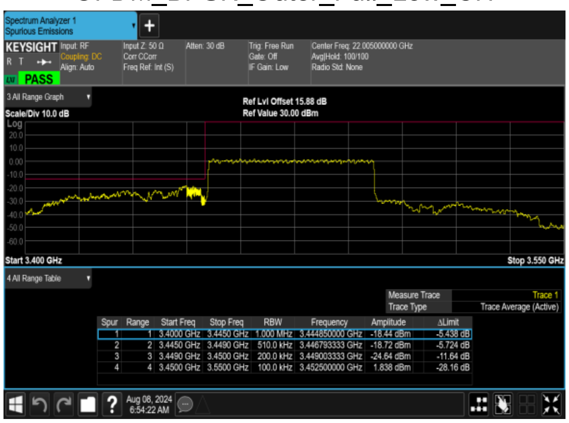
N77(50M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



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