



FCC RF Test Report

APPLICANT : Relay, Inc.
EQUIPMENT : Relay
BRAND NAME : Relay
MODEL NAME : RY2268
FCC ID : 2AMBHRY2268
STANDARD : 47 CFR Part 2, 27 Subpart O (3700-3980MHz)
CLASSIFICATION : PCS Licensed Transmitter Held to Ear (PCE)
TEST DATE(S) : Nov. 29, 2023 ~ Apr. 18, 2024

We, Sporton International Inc. (KunShan), would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.26-2015 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. (KunShan), the test report shall not be reproduced except in full.

Jason Jia

Approved by: Jason Jia



Sporton International Inc. (Kunshan)

**No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300
People's Republic of China**



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG2505070	Rev. 01	Initial issue of report	May 30, 2024



SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	Reporting Only	PASS	-
	§27.50(j)(3)	Equivalent Isotropic Radiated Power (5G NR n77, n78)	EIRP < 1Watt		
3.5	§27.50(j)(4)	Peak-to-Average Ratio	<13 dB	PASS	-
3.6	§2.1049	Occupied Bandwidth	Reporting Only	PASS	-
3.7	§2.1051 §27.53(l)(2)	Conducted Band Edge Measurement (5G NR n77, n78)	< 43+10log ₁₀ (P[Watts])	PASS	-
3.8	§2.1051 §27.53(l)(2)	Conducted Spurious Emission (5G NR n77, n78)	< 43+10log ₁₀ (P[Watts])	PASS	-
3.9	§27.54	Frequency Stability Temperature & Voltage	Within Authorized Band	PASS	-
4.4	§2.1053 §27.53(l)(2)	Radiated Spurious Emission (5G NR n77, n78)	< 43+10log ₁₀ (P[Watts])	PASS	Under limit 32.99 dB at 11378.00 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/manufacture 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

Relay, Inc.

4200 Six Forks Rd, Suite 1800, Raleigh, NC 27609, USA

1.2 Manufacturer

Relay, Inc.

4200 Six Forks Rd, Suite 1800, Raleigh, NC 27609, USA

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Relay
Brand Name	Relay
Model Name	RY2268
FCC ID	2AMBHRY2268
IMEI Code	Conducted : 004400152020000 Radiation : 990007570009388/990007570004066
HW Version	v01
EUT Stage	Identical Prototype

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Frequency	5G NR n77: 3700 MHz ~ 3980 MHz 5G NR n78: 3700 MHz ~ 3800 MHz
SCS	30kHz
Bandwidth	n77/n78 SA mode & n78 NSA mode: 10 / 15 / 20 / 25 / 30 / 40 / 50 / 60 / 70 / 80 / 90 / 100MHz n77 NSA mode: 10 / 15 / 20 / 30 / 40 / 50 / 60 / 70 / 80 / 90 / 100MHz
Antenna Gain	<Ant. 1> 5G NR n77: 0.1 dBi 5G NR n78: 0.1 dBi <Ant. 2> 5G NR n77: 0.3 dBi 5G NR n78: 0.3 dBi <Ant. 8> 5G NR n77: -2.00 dBi 5G NR n78: -2.00 dBi <Ant. 9> 5G NR n77: -2.86 dBi 5G NR n78: -2.86 dBi
Type of Modulation	CP-OFDM: QPSK / 16QAM / 64QAM / 256QAM DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM

Remark:



1. The device supports n77/n78 SRS resources on Ant.1/2/8/9, only the worst test data of Ant.1 is shown in the report according to the maximum power.
2. The maximum EIRP is calculated from max output power and max antenna gain, only the maximum EIRP of Ant.1 is shown in the report.
3. The device supports HPUE mode for 5G NR n77/n78.
4. 5G NR n77/n78 support SA mode and NSA mode. According to the maximum power, SA covers NSA mode.
5. The EN-DC mode combination could be referred to the product spec.

1.5 Modification of EUT

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

1.6 Maximum EIRP 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	3705.00 ~ 3975.00	0.7482	8M57G7D	0.5794	8M59W7D
15	3705.52 ~ 3972.48	0.7278	13M6G7D	0.5715	13M6W7D
20	3710.01 ~ 3969.99	0.7145	18M2G7D	0.5559	18M2W7D
25	3712.50 ~ 3967.50	0.7603	23M2G7D	0.6039	23M2W7D
30	3715.02 ~ 3964.98	0.6998	27M8G7D	0.5495	27M9W7D
40	3720.00 ~ 3960.00	0.7379	37M9G7D	0.5861	37M9W7D
50	3725.01 ~ 3954.99	0.7295	47M5G7D	0.5585	47M5W7D
60	3730.02 ~ 3949.98	0.6887	57M9G7D	0.5260	58M0W7D
70	3735.00 ~ 3945.00	0.6950	67M6G7D	0.5395	67M5W7D
80	3740.01 ~ 3939.99	0.6730	77M7G7D	0.5224	77M4W7D
90	3745.02 ~ 3934.98	0.6668	87M4G7D	0.5000	87M5W7D
100	3750.00 ~ 3930.00	0.7621	97M4G7D	0.5521	97M5W7D



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	3705.00 ~ 3795.00	0.5321	8M57G7D	0.4198	8M59W7D
15	3707.52 ~ 3792.48	0.5272	13M6G7D	0.4111	13M6W7D
20	3710.01 ~ 3789.99	0.5321	18M2G7D	0.4198	18M2W7D
25	3712.50 ~ 3787.50	0.5848	23M2G7D	0.4550	23M2W7D
30	3715.02 ~ 3784.98	0.5445	27M8G7D	0.4256	27M9W7D
40	3720.00 ~ 3780.00	0.5495	37M9G7D	0.4305	37M9W7D
50	3725.01 ~ 3774.99	0.5176	47M5G7D	0.4046	47M5W7D
60	3730.02 ~ 3769.98	0.5129	57M9G7D	0.4027	58M0W7D
70	3735.00 ~ 3765.00	0.5916	67M6G7D	0.4831	67M5W7D
80	3740.01 ~ 3759.99	0.5445	77M7G7D	0.4285	77M4W7D
90	3745.02 ~ 3754.98	0.5458	87M4G7D	0.4355	87M5W7D
100	3750.00 ~ 3750.00	0.6053	97M4G7D	0.4027	97M5W7D

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

1.7 Testing Location

Sporton International Inc. (Kunshan) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Test Firm	Sporton International Inc. (Kunshan)		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	03CH04-KS TH01-KS	CN1257	314309

1.8 Test Software

Item	Site	Manufacture	Name	Version
1.	TH01-KS	Tonscend	JS1120-3 test system China_210602	3.3.10
2.	03CH04-KS	AUDIX	E3	210616

1.9 Applicable Standards

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

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

Remark:

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



2 Test Configuration of Equipment Under Test

2.1 Test Mode

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

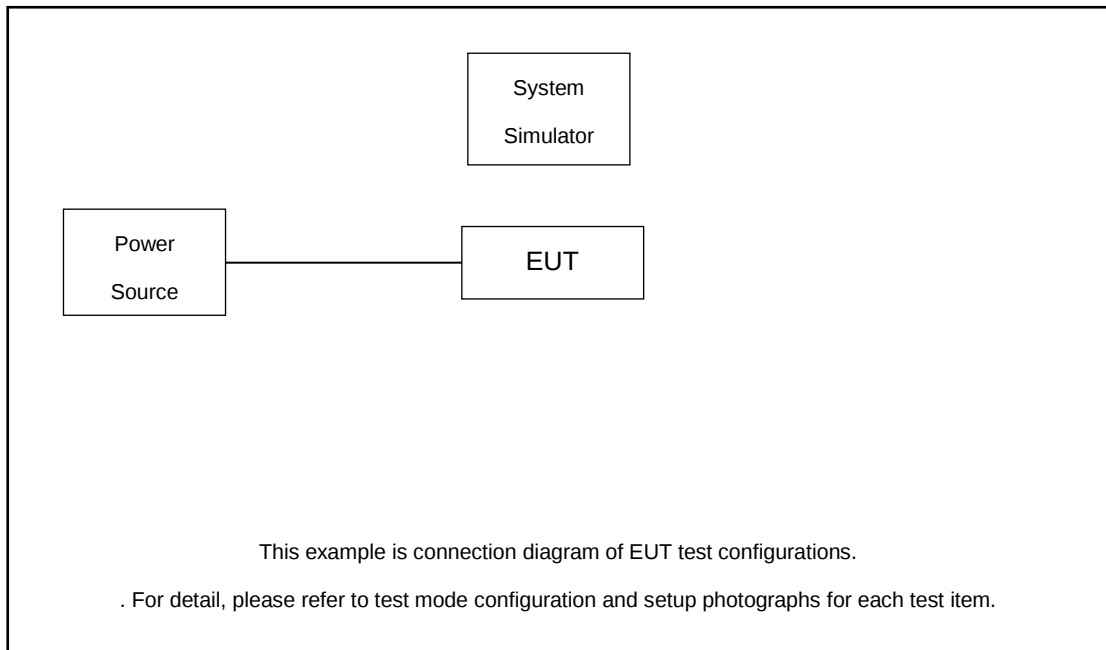
For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (X plane) were recorded in this report.

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

Orthogonal Planes of EUT	X Plane	Y Plane	Z Plane

Test Items	5G NR	Bandwidth (MHz)										Modulation					RB #		Test Channel				
		10	15	20	25	30	40	50	60	70~90	100	PI/2 BPSK	QPSK	16 QAM	64 QAM	256 QAM	1	Full	L	M	H		
Max. Output Power	n77	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v		
	n78	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v		
Peak-to-Ave rage Ratio	n77			v								v	v				v	v		v			
26dB and 99% Bandwidth	n77	v	v	v	v	v	v	v	v	v		v	v	v	v		v			v			
Conducted Band Edge	n77	v							v		v	v	v				v	v	v		v		
Conducted Spurious Emission	n77	v							v		v	v	v				v		v	v	v		
Frequency Stability	n77			v									v					v		v			
E.I.R.P	n77	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v		
	n78	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v		
Radiated Spurious Emission	n77	Worst Case																		v			
Note	1. The mark “v ” means that this configuration is chosen for testing 2. The mark “-” means that this bandwidth is not supported. 3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported. 4. Frequency Stability : Normal Voltage = 3.85V; Low Voltage =3.6V; 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.	DC Power Supply	GW	GPS-3030D	N/A	N/A	Unshielded, 1.8 m
2.	LTE Base Station	Anritsu	MT8821C	N/A	N/A	Unshielded, 1.8 m
3.	NR Base Station	Anritsu	MT8000A	N/A	N/A	Unshielded, 1.8 m

2.4 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor 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 and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 3.99 dB and 10dB attenuator.

Example :

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

$$= 3.99 + 10 = 13.99 \text{ (dB)}$$



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	650000	656000	662000
	Frequency	3750	3840	3930
90	Channel	649668	656000	662332
	Frequency	3745.02	3840	3934.98
80	Channel	649334	656000	662666
	Frequency	3740.01	3840	3939.99
70	Channel	649000	656000	663000
	Frequency	3735	3840	3945
60	Channel	648668	656000	663332
	Frequency	3730.02	3840	3949.98
50	Channel	648334	656000	663666
	Frequency	3725.01	3840	3954.99
40	Channel	648000	656000	664000
	Frequency	3720	3840	3960
30	Channel	647668	656000	664332
	Frequency	3715.02	3840	3964.98
25	Channel	647500	656000	664500
	Frequency	3712.5	3840	3967.5
20	Channel	647334	656000	664666
	Frequency	3710.01	3840	3969.99
15	Channel	647168	656000	664832
	Frequency	3707.52	3840	3972.48
10	Channel	647000	656000	665000
	Frequency	3705	3840	3975



5G n78 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
100	Channel	650000		
	Frequency	3750		
90	Channel	649668	650000	650332
	Frequency	3745.02	3750	3754.98
80	Channel	649334	650000	650666
	Frequency	3740.01	3750	3759.99
70	Channel	649000	650000	651000
	Frequency	3735	3750	3765
60	Channel	648668	650000	651332
	Frequency	3730.02	3750	3769.98
50	Channel	648334	650000	651666
	Frequency	3725.01	3750	3774.99
40	Channel	648000	650000	652000
	Frequency	3720	3750	3780
30	Channel	647668	650000	652332
	Frequency	3715.02	3750	3784.98
25	Channel	647500	650000	652500
	Frequency	3712.5	3750	3787.5
20	Channel	647334	650000	652666
	Frequency	3710.01	3750	3789.99
15	Channel	647168	650000	652832
	Frequency	3707.52	3750	3792.48
10	Channel	647000	650000	653000
	Frequency	3705	3750	3795

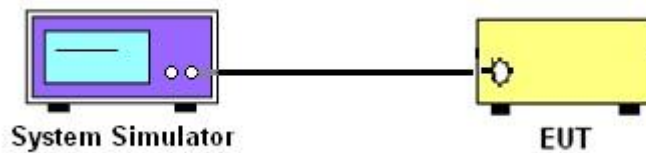
3 Conducted Test Items

3.1 Measuring Instruments

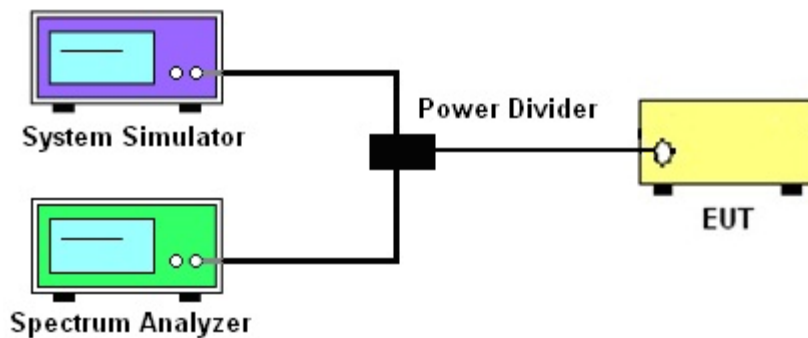
See list of measuring instruments of this test report.

3.2 Test Setup

3.2.1 Conducted Output Power



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



3.2.3 Frequency Stability



3.3 Test Result of Conducted Test

Please refer to Appendix A.

3.4 Conducted Output Power and EIRP

3.4.1 Description of the Conducted Output Power Measurement and EIRP Measurement

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

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

According to KDB 412172 D01 Power Approach,

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

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

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

3.4.2 Test Procedures

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

3.5 Peak-to-Average Ratio

3.5.1 Description of the PAR Measurement

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

3.5.2 Test Procedures

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

3.6 Occupied Bandwidth

3.6.1 Description of Occupied Bandwidth Measurement

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

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

3.6.2 Test Procedures

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

3.7 Conducted Band Edge

3.7.1 Description of Conducted Band Edge Measurement

27.53(l)(2)

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

3.7.2 Test Procedures

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

Example:

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

$$= P(W) - [43 + 10\log(P)] \text{ (dB)}$$

$$= [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)} = -13\text{dBm}.$$

9. When using the integration method, the starting frequency of the integration shall be centered at one-half of the RBW away from the band edge.

3.8 Conducted Spurious Emission

3.8.1 Description of Conducted Spurious Emission Measurement

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

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

3.8.2 Test Procedures

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

3.9 Frequency Stability

3.9.1 Description of Frequency Stability Measurement

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block.

3.9.2 Test Procedures for Temperature Variation

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

3.9.3 Test Procedures for Voltage Variation

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

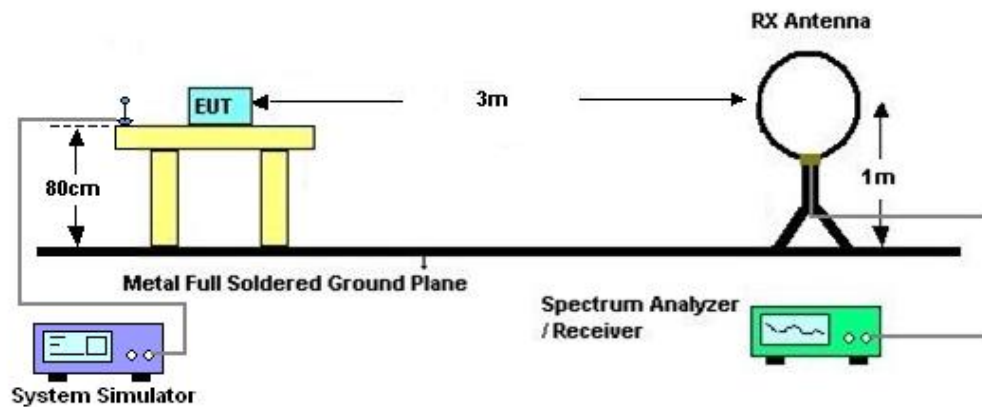
4 Radiated Test Items

4.1 Measuring Instruments

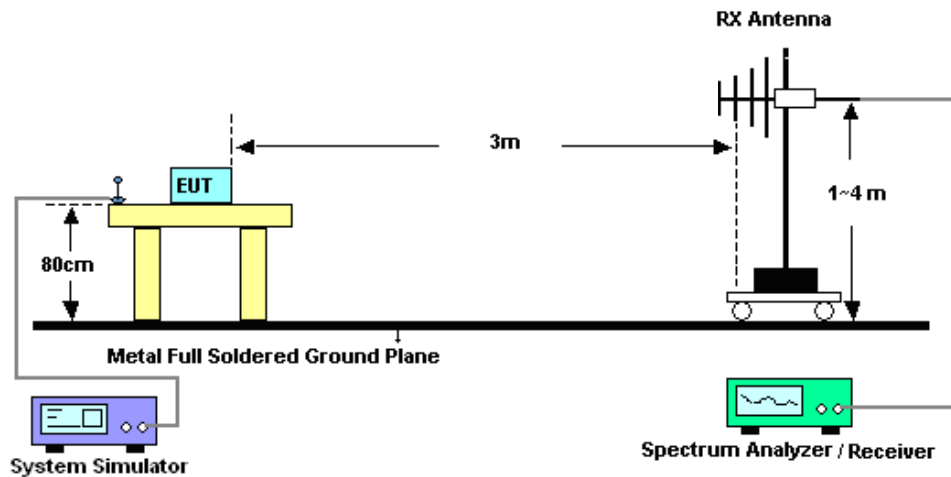
See list of measuring instruments of this test report.

4.2 Test Setup

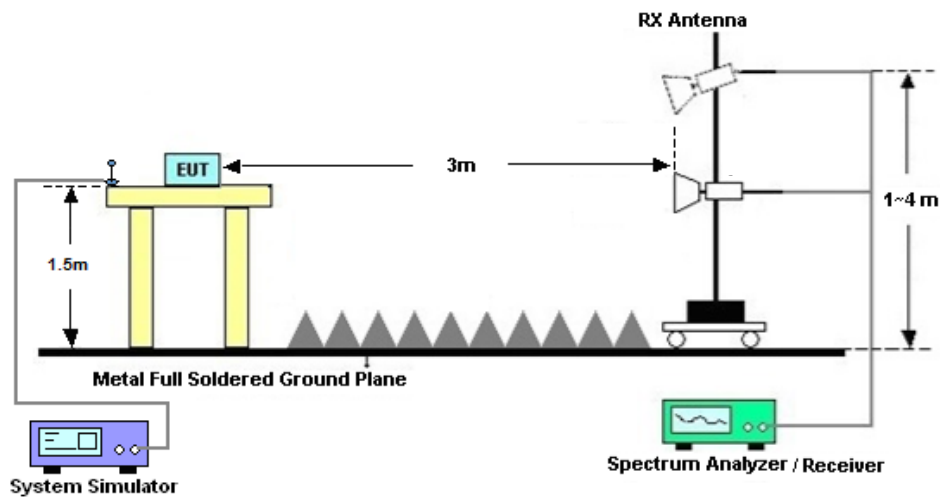
4.2.1 For radiated test below 30MHz



4.2.2 For radiated test from 30MHz to 1GHz



4.2.3 For radiated test above 1GHz



4.3 Test Result of Radiated Test

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

Please refer to Appendix B.

4.4 Radiated Spurious Emission

4.4.1 Description of Radiated Spurious Emission

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

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

4.4.2 Test Procedures

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

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

$$= P(W) - [43 + 10\log(P)] \text{ (dB)}$$

$$= [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)}$$

$$= -13\text{dBm}.$$



5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EXA Spectrum Analyzer	Keysight	N9010B	MY57471079	10Hz-44G,MAX 30dB	Oct. 10, 2023	Nov. 29, 2023~Dec. 01, 2024	Oct. 09, 2024	Conducted (TH01-KS)
Power divider	STI	STI08-0055	-	0.5~40GHz	NCR	Nov. 29, 2023~Dec. 01, 2024	NCR	Conducted (TH01-KS)
Temperature & humidity chamber	Hongzhan	LP-150U	H2014011440	-40~+150°C 20%~95%RH	Jul. 06, 2023	Nov. 29, 2023~Dec. 01, 2024	Jul. 05, 2024	Conducted (TH01-KS)
EXA Spectrum Analyzer	Keysight	N9010B	MY57471079	10Hz-44G,MAX 30dB	Oct. 10, 2023	Apr. 18, 2024	Oct. 09, 2024	Radiation (03CH04-KS)
Loop Antenna	R&S	HFH2-Z2E	101125	9kHz~30MHz	Sep. 11, 2023	Apr. 18, 2024	Sep. 10, 2024	Radiation (03CH04-KS)
Bilog Antenna	TeseQ	CBL6111D	59913	30MHz-1GHz	Aug. 19, 2023	Apr. 18, 2024	Aug. 18, 2024	Radiation (03CH04-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00251694	1GHz~18GHz	Jul. 12, 2023	Apr. 18, 2024	Jul. 11, 2024	Radiation (03CH04-KS)
SHF-EHF Horn	Com-power	AH-840	101070	18GHz~40GHz	Jan. 05, 2024	Apr. 18, 2024	Jan. 04, 2025	Radiation (03CH04-KS)
Amplifier	SONOMA	310N	380827	9KHz-1GHz	Jul. 06, 2023	Apr. 18, 2024	Jul. 05, 2024	Radiation (03CH04-KS)
Amplifier	MITEQ	EM18G40G GA	060728	18~40GHz	Jan. 05, 2024	Apr. 18, 2024	Jan. 04, 2025	Radiation (03CH04-KS)
high gain Amplifier	EM	EM01G18G A	060840	1Ghz-18Ghz	Oct. 10, 2023	Apr. 18, 2024	Oct. 09, 2024	Radiation (03CH04-KS)
Amplifier	Agilent	8449B	3008A02370	1Ghz-18Ghz	Oct. 10, 2023	Apr. 18, 2024	Oct. 09, 2024	Radiation (03CH04-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Apr. 18, 2024	NCR	Radiation (03CH04-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Apr. 18, 2024	NCR	Radiation (03CH04-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Apr. 18, 2024	NCR	Radiation (03CH04-KS)

NCR: No Calibration Required

6 Measurement Uncertainty

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

Uncertainty of Conducted Measurement

Conducted Spurious Emission & Bandedge	±2.26 dB
Occupied Channel Bandwidth	±0.1%
Conducted Power	±0.46 dB
Peak to Average Ratio	±0.46 dB
Frequency Stability	±0.4 Hz

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.82 dB
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.56 dB
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Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

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



Appendix A. Test Results of Conducted Test

Test Engineer :	Smile Wang	Temperature :	22~23°C
		Relative Humidity :	40~42%

FR1 N77 (ANT1)

Transmitter Conducted Output Power And EIRP, ($G_T - L_C$)=0.1dB

NR Band	SCS	Band Width	Arfcn	Freq(MHz)	Modulation	RB	Conducted Power(dBm)	EIRP (dBm)	EIRP (W)
77	30	10	64700 0	3705	DFT-s-OFDM PI/2 BPSK	1@1	26.95	27.05	0.5070
77	30	10	64700 0	3705	DFT-s-OFDM QPSK	1@1	26.92	27.02	0.5035
77	30	10	64700 0	3705	DFT-s-OFDM 16 QAM	1@1	25.9	26	0.3981
77	30	10	65600 0	3840	DFT-s-OFDM PI/2 BPSK	1@1	27.71	27.81	0.6039
77	30	10	65600 0	3840	DFT-s-OFDM QPSK	1@1	27.66	27.76	0.5970
77	30	10	65600 0	3840	DFT-s-OFDM 16 QAM	1@1	26.52	26.62	0.4592
77	30	10	66500 0	3975	DFT-s-OFDM PI/2 BPSK	1@1	28.64	28.74	0.7482
77	30	10	66500 0	3975	DFT-s-OFDM QPSK	1@1	28.6	28.7	0.7413
77	30	10	66500 0	3975	DFT-s-OFDM 16 QAM	1@1	27.53	27.63	0.5794
77	30	15	64716 8	3707.52	DFT-s-OFDM PI/2 BPSK	1@1	26.93	27.03	0.5047
77	30	15	64716 8	3707.52	DFT-s-OFDM QPSK	1@1	26.93	27.03	0.5047
77	30	15	64716 8	3707.52	DFT-s-OFDM 16 QAM	1@1	25.86	25.96	0.3945
77	30	15	65600 0	3840	DFT-s-OFDM PI/2 BPSK	1@1	27.73	27.83	0.6067
77	30	15	65600 0	3840	DFT-s-OFDM QPSK	1@1	27.74	27.84	0.6081
77	30	15	65600 0	3840	DFT-s-OFDM 16 QAM	1@1	26.63	26.73	0.4710
77	30	15	66483 2	3972.48	DFT-s-OFDM PI/2 BPSK	1@1	28.52	28.62	0.7278
77	30	15	66483 2	3972.48	DFT-s-OFDM QPSK	1@1	28.5	28.6	0.7244
77	30	15	66483 2	3972.48	DFT-s-OFDM 16 QAM	1@1	27.47	27.57	0.5715
77	30	20	64733 4	3710.01	DFT-s-OFDM PI/2 BPSK	1@1	27.07	27.17	0.5212
77	30	20	64733 4	3710.01	DFT-s-OFDM QPSK	1@1	27.06	27.16	0.5200
77	30	20	64733 4	3710.01	DFT-s-OFDM 16 QAM	1@1	26.09	26.19	0.4159
77	30	20	65600 0	3840	DFT-s-OFDM PI/2 BPSK	1@1	27.8	27.9	0.6166
77	30	20	65600 0	3840	DFT-s-OFDM QPSK	1@1	27.74	27.84	0.6081
77	30	20	65600 0	3840	DFT-s-OFDM 16 QAM	1@1	26.69	26.79	0.4775
77	30	20	66466 6	3969.99	DFT-s-OFDM PI/2 BPSK	1@1	28.44	28.54	0.7145
77	30	20	66466 6	3969.99	DFT-s-OFDM QPSK	1@1	28.43	28.53	0.7129
77	30	20	66466 6	3969.99	DFT-s-OFDM 16 QAM	1@1	27.35	27.45	0.5559
77	30	25	64750 0	3712.5	DFT-s-OFDM PI/2 BPSK	1@1	27.23	27.33	0.5408

77	30	25	64750 0	3712.5	DFT-s-OFDM QPSK	1@1	27.22	27.32	0.5395
77	30	25	64750 0	3712.5	DFT-s-OFDM 16 QAM	1@1	26.15	26.25	0.4217
77	30	25	65600 0	3840	DFT-s-OFDM PI/2 BPSK	1@1	28.14	28.24	0.6668
77	30	25	65600 0	3840	DFT-s-OFDM QPSK	1@1	28.15	28.25	0.6683
77	30	25	65600 0	3840	DFT-s-OFDM 16 QAM	1@1	26.99	27.09	0.5117
77	30	25	66450 0	3967.5	DFT-s-OFDM PI/2 BPSK	1@1	28.65	28.75	0.7499
77	30	25	66450 0	3967.5	DFT-s-OFDM QPSK	1@1	28.71	28.81	0.7603
77	30	25	66450 0	3967.5	DFT-s-OFDM 16 QAM	1@1	27.71	27.81	0.6039
77	30	30	64766 8	3715.02	DFT-s-OFDM PI/2 BPSK	1@1	27.01	27.11	0.5140
77	30	30	64766 8	3715.02	DFT-s-OFDM QPSK	1@1	26.98	27.08	0.5105
77	30	30	64766 8	3715.02	DFT-s-OFDM 16 QAM	1@1	25.96	26.06	0.4036
77	30	30	65600 0	3840	DFT-s-OFDM PI/2 BPSK	1@1	27.71	27.81	0.6039
77	30	30	65600 0	3840	DFT-s-OFDM QPSK	1@1	27.7	27.8	0.6026
77	30	30	65600 0	3840	DFT-s-OFDM 16 QAM	1@1	26.59	26.69	0.4667
77	30	30	66433 2	3964.98	DFT-s-OFDM PI/2 BPSK	1@1	28.33	28.43	0.6966
77	30	30	66433 2	3964.98	DFT-s-OFDM QPSK	1@1	28.35	28.45	0.6998
77	30	30	66433 2	3964.98	DFT-s-OFDM 16 QAM	1@1	27.3	27.4	0.5495
77	30	40	64800 0	3720	DFT-s-OFDM PI/2 BPSK	1@1	27.17	27.27	0.5333
77	30	40	64800 0	3720	DFT-s-OFDM QPSK	1@1	27.16	27.26	0.5321
77	30	40	64800 0	3720	DFT-s-OFDM 16 QAM	1@1	26.08	26.18	0.4150
77	30	40	65600 0	3840	DFT-s-OFDM PI/2 BPSK	1@1	27.82	27.92	0.6194
77	30	40	65600 0	3840	DFT-s-OFDM QPSK	1@1	27.78	27.88	0.6138
77	30	40	65600 0	3840	DFT-s-OFDM 16 QAM	1@1	26.71	26.81	0.4797
77	30	40	66400 0	3960	DFT-s-OFDM PI/2 BPSK	1@1	28.58	28.68	0.7379
77	30	40	66400 0	3960	DFT-s-OFDM QPSK	1@1	28.54	28.64	0.7311
77	30	40	66400 0	3960	DFT-s-OFDM 16 QAM	1@1	27.58	27.68	0.5861
77	30	50	64833 4	3725.01	DFT-s-OFDM PI/2 BPSK	1@1	26.95	27.05	0.5070
77	30	50	64833 4	3725.01	DFT-s-OFDM QPSK	1@1	26.93	27.03	0.5047
77	30	50	64833 4	3725.01	DFT-s-OFDM 16 QAM	1@1	25.94	26.04	0.4018
77	30	50	65600 0	3840	DFT-s-OFDM PI/2 BPSK	1@1	27.58	27.68	0.5861
77	30	50	65600 0	3840	DFT-s-OFDM QPSK	1@1	27.58	27.68	0.5861
77	30	50	65600 0	3840	DFT-s-OFDM 16 QAM	1@1	26.56	26.66	0.4634
77	30	50	66366 6	3954.99	DFT-s-OFDM PI/2 BPSK	1@1	28.48	28.58	0.7211
77	30	50	66366 6	3954.99	DFT-s-OFDM QPSK	1@1	28.53	28.63	0.7295

77	30	50	66366 6	3954.99	DFT-s-OFDM 16 QAM	1@1	27.37	27.47	0.5585
77	30	60	64866 8	3730.02	DFT-s-OFDM PI/2 BPSK	1@1	26.84	26.94	0.4943
77	30	60	64866 8	3730.02	DFT-s-OFDM QPSK	1@1	26.86	26.96	0.4966
77	30	60	64866 8	3730.02	DFT-s-OFDM 16 QAM	1@1	25.82	25.92	0.3908
77	30	60	65600 0	3840	DFT-s-OFDM PI/2 BPSK	1@1	27.56	27.66	0.5834
77	30	60	65600 0	3840	DFT-s-OFDM QPSK	1@1	27.56	27.66	0.5834
77	30	60	65600 0	3840	DFT-s-OFDM 16 QAM	1@1	26.51	26.61	0.4581
77	30	60	66333 2	3949.98	DFT-s-OFDM PI/2 BPSK	1@1	28.25	28.35	0.6839
77	30	60	66333 2	3949.98	DFT-s-OFDM QPSK	1@1	28.28	28.38	0.6887
77	30	60	66333 2	3949.98	DFT-s-OFDM 16 QAM	1@1	27.11	27.21	0.5260
77	30	70	64900 0	3735	DFT-s-OFDM PI/2 BPSK	1@1	26.88	26.98	0.4989
77	30	70	64900 0	3735	DFT-s-OFDM QPSK	1@1	26.94	27.04	0.5058
77	30	70	64900 0	3735	DFT-s-OFDM 16 QAM	1@1	25.88	25.98	0.3963
77	30	70	65600 0	3840	DFT-s-OFDM PI/2 BPSK	1@1	27.54	27.64	0.5808
77	30	70	65600 0	3840	DFT-s-OFDM QPSK	1@1	27.53	27.63	0.5794
77	30	70	65600 0	3840	DFT-s-OFDM 16 QAM	1@1	26.54	26.64	0.4613
77	30	70	66300 0	3945	DFT-s-OFDM PI/2 BPSK	1@1	28.29	28.39	0.6902
77	30	70	66300 0	3945	DFT-s-OFDM QPSK	1@1	28.32	28.42	0.6950
77	30	70	66300 0	3945	DFT-s-OFDM 16 QAM	1@1	27.22	27.32	0.5395
77	30	80	64933 4	3740.01	DFT-s-OFDM PI/2 BPSK	1@1	26.77	26.87	0.4864
77	30	80	64933 4	3740.01	DFT-s-OFDM QPSK	1@1	26.76	26.86	0.4853
77	30	80	64933 4	3740.01	DFT-s-OFDM 16 QAM	1@1	25.71	25.81	0.3811
77	30	80	65600 0	3840	DFT-s-OFDM PI/2 BPSK	1@1	27.46	27.56	0.5702
77	30	80	65600 0	3840	DFT-s-OFDM QPSK	1@1	27.48	27.58	0.5728
77	30	80	65600 0	3840	DFT-s-OFDM 16 QAM	1@1	26.46	26.56	0.4529
77	30	80	66266 6	3939.99	DFT-s-OFDM PI/2 BPSK	1@1	28.18	28.28	0.6730
77	30	80	66266 6	3939.99	DFT-s-OFDM QPSK	1@1	28.15	28.25	0.6683
77	30	80	66266 6	3939.99	DFT-s-OFDM 16 QAM	1@1	27.08	27.18	0.5224
77	30	90	64966 8	3745.02	DFT-s-OFDM PI/2 BPSK	1@1	26.83	26.93	0.4932
77	30	90	64966 8	3745.02	DFT-s-OFDM QPSK	1@1	26.75	26.85	0.4842
77	30	90	64966 8	3745.02	DFT-s-OFDM 16 QAM	1@1	25.79	25.89	0.3882
77	30	90	65600 0	3840	DFT-s-OFDM PI/2 BPSK	1@1	27.48	27.58	0.5728
77	30	90	65600 0	3840	DFT-s-OFDM QPSK	1@1	27.49	27.59	0.5741
77	30	90	65600 0	3840	DFT-s-OFDM 16 QAM	1@1	26.44	26.54	0.4508

77	30	90	66233 2	3934.98	DFT-s-OFDM PI/2 BPSK	1@1	28.14	28.24	0.6668
77	30	90	66233 2	3934.98	DFT-s-OFDM QPSK	1@1	28	28.1	0.6457
77	30	90	66233 2	3934.98	DFT-s-OFDM 16 QAM	1@1	26.89	26.99	0.5000
77	30	100	65000 0	3750	DFT-s-OFDM PI/2 BPSK	135@67	26.8	26.9	0.4898
77	30	100	65000 0	3750	DFT-s-OFDM PI/2 BPSK	1@1	26.75	26.85	0.4842
77	30	100	65000 0	3750	DFT-s-OFDM PI/2 BPSK	1@271	27.27	27.37	0.5458
77	30	100	65000 0	3750	DFT-s-OFDM QPSK	135@67	26.85	26.95	0.4955
77	30	100	65000 0	3750	DFT-s-OFDM QPSK	1@1	26.71	26.81	0.4797
77	30	100	65000 0	3750	DFT-s-OFDM QPSK	1@271	27.34	27.44	0.5546
77	30	100	65000 0	3750	DFT-s-OFDM 16 QAM	135@67	25.84	25.94	0.3926
77	30	100	65000 0	3750	DFT-s-OFDM 16 QAM	1@1	25.74	25.84	0.3837
77	30	100	65000 0	3750	DFT-s-OFDM 16 QAM	1@271	26.1	26.2	0.4169
77	30	100	65000 0	3750	DFT-s-OFDM 64 QAM	135@67	24.42	24.52	0.2831
77	30	100	65000 0	3750	DFT-s-OFDM 64 QAM	1@1	24.05	24.15	0.2600
77	30	100	65000 0	3750	DFT-s-OFDM 64 QAM	1@271	24.54	24.64	0.2911
77	30	100	65000 0	3750	DFT-s-OFDM 256 QAM	135@67	22.27	22.37	0.1726
77	30	100	65000 0	3750	DFT-s-OFDM 256 QAM	1@1	22.11	22.21	0.1663
77	30	100	65000 0	3750	DFT-s-OFDM 256 QAM	1@271	22.67	22.77	0.1892
77	30	100	65000 0	3750	CP-OFDM QPSK	137@68	25.36	25.46	0.3516
77	30	100	65000 0	3750	CP-OFDM QPSK	1@1	25.32	25.42	0.3483
77	30	100	65000 0	3750	CP-OFDM QPSK	1@271	25.74	25.84	0.3837
77	30	100	65600 0	3840	DFT-s-OFDM PI/2 BPSK	135@67	27.69	27.79	0.6012
77	30	100	65600 0	3840	DFT-s-OFDM PI/2 BPSK	1@1	27.43	27.53	0.5662
77	30	100	65600 0	3840	DFT-s-OFDM PI/2 BPSK	1@271	27.96	28.06	0.6397
77	30	100	65600 0	3840	DFT-s-OFDM QPSK	135@67	27.58	27.68	0.5861
77	30	100	65600 0	3840	DFT-s-OFDM QPSK	1@1	27.43	27.53	0.5662
77	30	100	65600 0	3840	DFT-s-OFDM QPSK	1@271	27.93	28.03	0.6353
77	30	100	65600 0	3840	DFT-s-OFDM 16 QAM	135@67	26.61	26.71	0.4688
77	30	100	65600 0	3840	DFT-s-OFDM 16 QAM	1@1	26.47	26.57	0.4539
77	30	100	65600 0	3840	DFT-s-OFDM 16 QAM	1@271	26.86	26.96	0.4966
77	30	100	65600 0	3840	DFT-s-OFDM 64 QAM	135@67	25.07	25.17	0.3289
77	30	100	65600 0	3840	DFT-s-OFDM 64 QAM	1@1	24.77	24.87	0.3069
77	30	100	65600 0	3840	DFT-s-OFDM 64 QAM	1@271	25.25	25.35	0.3428
77	30	100	65600 0	3840	DFT-s-OFDM 256 QAM	135@67	23.13	23.23	0.2104

77	30	100	65600 0	3840	DFT-s-OFDM 256 QAM	1@1	22.86	22.96	0.1977
77	30	100	65600 0	3840	DFT-s-OFDM 256 QAM	1@271	23.39	23.49	0.2234
77	30	100	65600 0	3840	CP-OFDM QPSK	137@68	26.06	26.16	0.4130
77	30	100	65600 0	3840	CP-OFDM QPSK	1@1	25.93	26.03	0.4009
77	30	100	65600 0	3840	CP-OFDM QPSK	1@271	26.4	26.5	0.4467
77	30	100	66200 0	3930	DFT-s-OFDM PI/2 BPSK	135@67	28.22	28.32	0.6792
77	30	100	66200 0	3930	DFT-s-OFDM PI/2 BPSK	1@1	27.77	27.87	0.6124
77	30	100	66200 0	3930	DFT-s-OFDM PI/2 BPSK	1@271	28.72	28.82	0.7621
77	30	100	66200 0	3930	DFT-s-OFDM QPSK	135@67	28.22	28.32	0.6792
77	30	100	66200 0	3930	DFT-s-OFDM QPSK	1@1	27.76	27.86	0.6109
77	30	100	66200 0	3930	DFT-s-OFDM QPSK	1@271	28.36	28.46	0.7015
77	30	100	66200 0	3930	DFT-s-OFDM 16 QAM	135@67	27.22	27.32	0.5395
77	30	100	66200 0	3930	DFT-s-OFDM 16 QAM	1@1	26.74	26.84	0.4831
77	30	100	66200 0	3930	DFT-s-OFDM 16 QAM	1@271	27.32	27.42	0.5521
77	30	100	66200 0	3930	DFT-s-OFDM 64 QAM	135@67	25.76	25.86	0.3855
77	30	100	66200 0	3930	DFT-s-OFDM 64 QAM	1@1	25.05	25.15	0.3273
77	30	100	66200 0	3930	DFT-s-OFDM 64 QAM	1@271	25.68	25.78	0.3784
77	30	100	66200 0	3930	DFT-s-OFDM 256 QAM	135@67	23.77	23.87	0.2438
77	30	100	66200 0	3930	DFT-s-OFDM 256 QAM	1@1	23.18	23.28	0.2128
77	30	100	66200 0	3930	DFT-s-OFDM 256 QAM	1@271	23.82	23.92	0.2466
77	30	100	66200 0	3930	CP-OFDM QPSK	137@68	26.71	26.81	0.4797
77	30	100	66200 0	3930	CP-OFDM QPSK	1@1	26.26	26.36	0.4325
77	30	100	66200 0	3930	CP-OFDM QPSK	1@271	26.82	26.92	0.4920

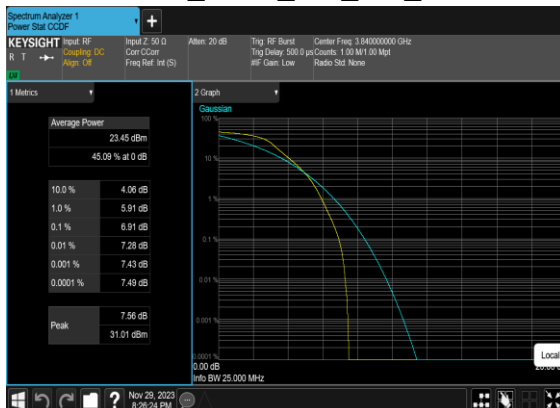
Frequency Stability

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Deviation (ppm)	Verdict	Environment
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	0.0038	PASS	NV
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	0.0024	PASS	LV
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	0.0016	PASS	HV
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	-0.0022	PASS	-30℃
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	0.0014	PASS	-20℃
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	0.0019	PASS	-10℃
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	-0.0007	PASS	0℃
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	0.0039	PASS	10℃
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	0.0015	PASS	20℃
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	0.0011	PASS	30℃
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	-0.0018	PASS	40℃
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	0.0026	PASS	50℃

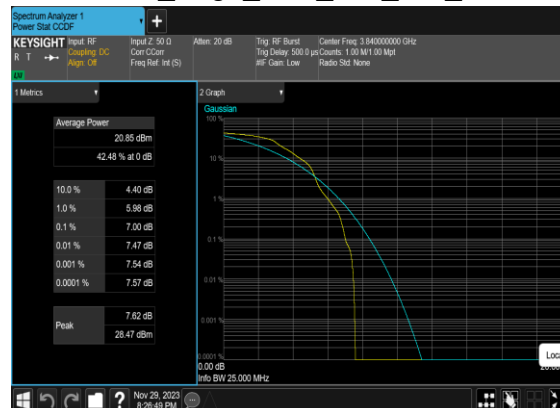
Peak to Average Ratio

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result (dB)	Limit (dB)	Verdict
77	30	20	656000	3840.0	DFT-s-OFDM PI/2 BPSK	50@0	6.91	13	PASS
77	30	20	656000	3840.0	DFT-s-OFDM PI/2 BPSK	1@0	7.0	13	PASS
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	7.68	13	PASS
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	1@0	6.83	13	PASS

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



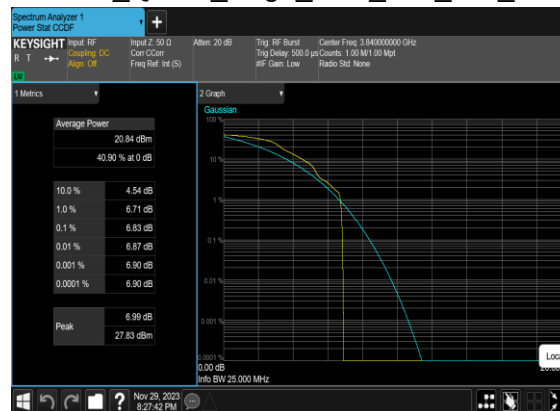
N77(20M)_DFT-s-OFDM_PI_2-
BPSK_Edge_1RB_Left_Mid_CH



N77(20M)_DFT-s-
OFDM_QPSK_Outer_Full_Mid_CH



N77(20M)_DFT-s-
OFDM_QPSK_Edge_1RB_Left_Mid_CH



Occupied Bandwidth

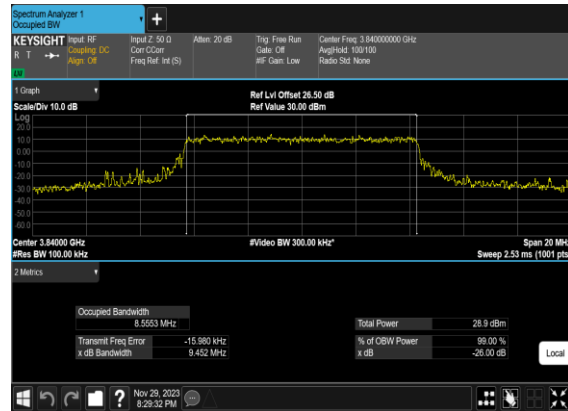
NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	OBW (MHz)	26dB BW (MHz)
77	30	10	656000	3840.0	CP-OFDM QPSK	24@0	8.5659	9.734
77	30	10	656000	3840.0	CP-OFDM 16 QAM	24@0	8.5553	9.452
77	30	10	656000	3840.0	CP-OFDM 64 QAM	24@0	8.5672	9.757
77	30	10	656000	3840.0	CP-OFDM 256 QAM	24@0	8.5937	9.436
77	30	15	656000	3840.0	CP-OFDM QPSK	38@0	13.581	14.84
77	30	15	656000	3840.0	CP-OFDM 16 QAM	38@0	13.581	14.63
77	30	15	656000	3840.0	CP-OFDM 64 QAM	38@0	13.593	14.6
77	30	15	656000	3840.0	CP-OFDM 256 QAM	38@0	13.574	14.79
77	30	20	656000	3840.0	CP-OFDM QPSK	51@0	18.207	19.32
77	30	20	656000	3840.0	CP-OFDM 16 QAM	51@0	18.206	20.55
77	30	20	656000	3840.0	CP-OFDM 64 QAM	51@0	18.157	20.34
77	30	20	656000	3840.0	CP-OFDM 256 QAM	51@0	18.243	19.58
77	30	25	656000	3840.0	CP-OFDM QPSK	65@0	23.198	24.21
77	30	25	656000	3840.0	CP-OFDM 16 QAM	65@0	23.215	24.48
77	30	25	656000	3840.0	CP-OFDM 64 QAM	65@0	23.227	24.85
77	30	25	656000	3840.0	CP-OFDM 256 QAM	65@0	23.154	25.6
77	30	30	656000	3840.0	CP-OFDM QPSK	78@0	27.803	29.26
77	30	30	656000	3840.0	CP-OFDM 16 QAM	78@0	27.852	29.22
77	30	30	656000	3840.0	CP-OFDM 64 QAM	78@0	27.892	30.28
77	30	30	656000	3840.0	CP-OFDM 256 QAM	78@0	27.874	28.75
77	30	40	656000	3840.0	CP-OFDM QPSK	106@0	37.909	39.71
77	30	40	656000	3840.0	CP-OFDM 16 QAM	106@0	37.71	39.28
77	30	40	656000	3840.0	CP-OFDM 64 QAM	106@0	37.761	39.6
77	30	40	656000	3840.0	CP-OFDM 256 QAM	106@0	37.865	39.69
77	30	50	656000	3840.0	CP-OFDM QPSK	133@0	47.547	49.5
77	30	50	656000	3840.0	CP-OFDM 16 QAM	133@0	47.446	49.31

77	30	50	656000	3840.0	CP-OFDM 64 QAM	133@0	47.48	49.31
77	30	50	656000	3840.0	CP-OFDM 256 QAM	133@0	47.407	49.4
77	30	60	656000	3840.0	CP-OFDM QPSK	162@0	57.909	60.73
77	30	60	656000	3840.0	CP-OFDM 16 QAM	162@0	57.826	59.77
77	30	60	656000	3840.0	CP-OFDM 64 QAM	162@0	57.974	60.02
77	30	60	656000	3840.0	CP-OFDM 256 QAM	162@0	57.864	60.43
77	30	70	656000	3840.0	CP-OFDM QPSK	189@0	67.55	69.83
77	30	70	656000	3840.0	CP-OFDM 16 QAM	189@0	67.515	69.76
77	30	70	656000	3840.0	CP-OFDM 64 QAM	189@0	67.343	70.04
77	30	70	656000	3840.0	CP-OFDM 256 QAM	189@0	67.389	69.49
77	30	80	656000	3840.0	CP-OFDM QPSK	217@0	77.683	79.99
77	30	80	656000	3840.0	CP-OFDM 16 QAM	217@0	77.382	79.96
77	30	80	656000	3840.0	CP-OFDM 64 QAM	217@0	77.335	79.84
77	30	80	656000	3840.0	CP-OFDM 256 QAM	217@0	77.448	79.88
77	30	90	656000	3840.0	CP-OFDM QPSK	245@0	87.39	90.53
77	30	90	656000	3840.0	CP-OFDM 16 QAM	245@0	87.402	90.36
77	30	90	656000	3840.0	CP-OFDM 64 QAM	245@0	87.473	90.29
77	30	90	656000	3840.0	CP-OFDM 256 QAM	245@0	87.315	90.25
77	30	100	656000	3840.0	CP-OFDM QPSK	273@0	97.351	100.5
77	30	100	656000	3840.0	CP-OFDM 16 QAM	273@0	97.309	100.6
77	30	100	656000	3840.0	CP-OFDM 64 QAM	273@0	97.265	100.5
77	30	100	656000	3840.0	CP-OFDM 256 QAM	273@0	97.487	100.6

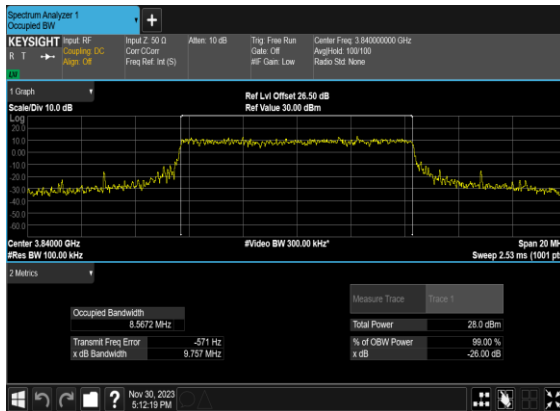
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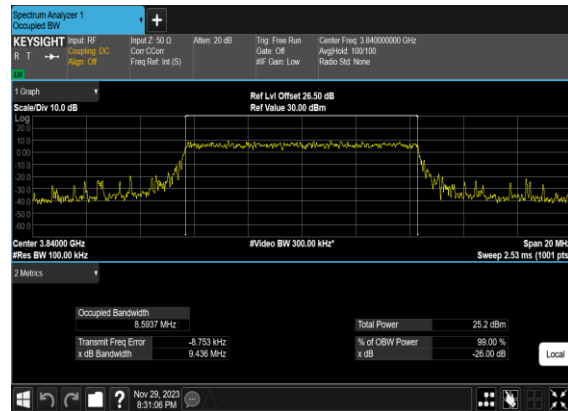
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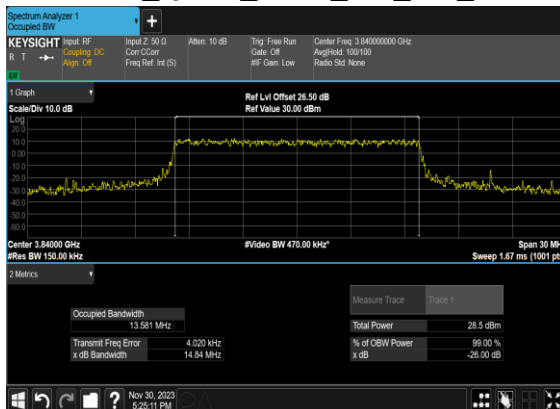
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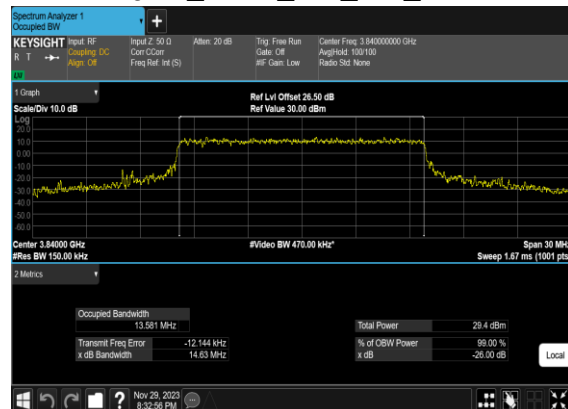
N77(10M)_CP-OFDM_256QAM_Outer_Full_Mid_CH



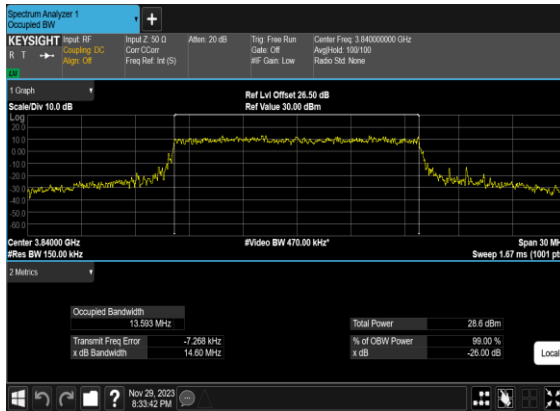
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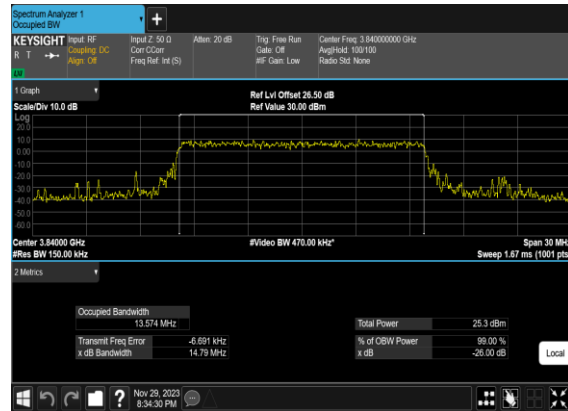
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N77(15M)_CP-OFDM_64
QAM_Outer_Full_Mid_CH



N77(15M)_CP-OFDM_256
QAM_Outer_Full_Mid_CH



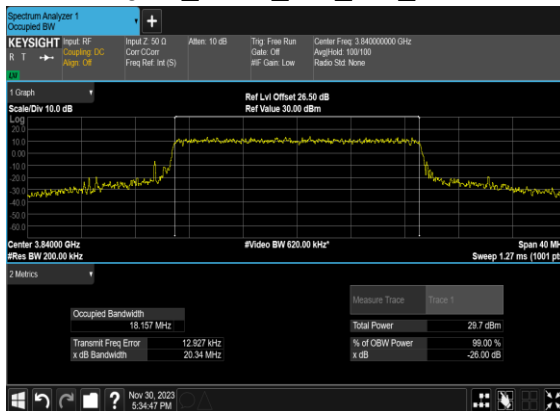
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OFDM_QPSK_Outer_Full_Mid_CH



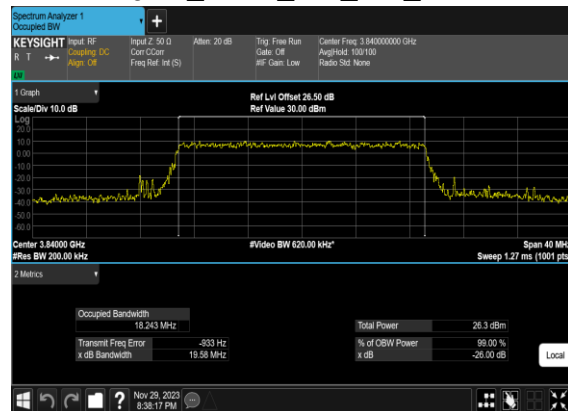
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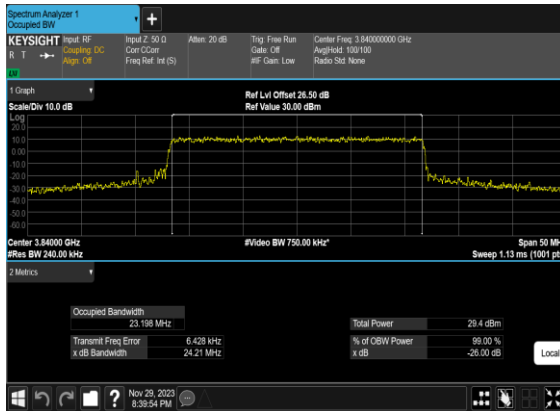
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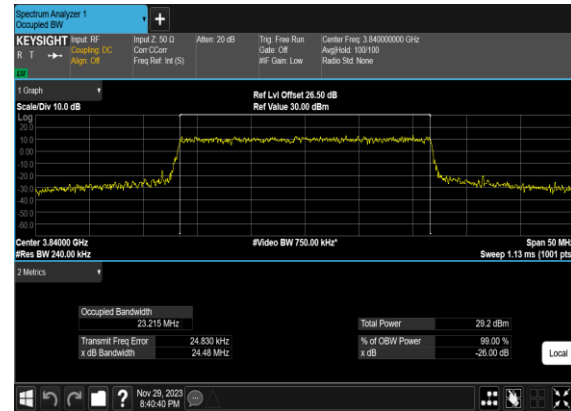
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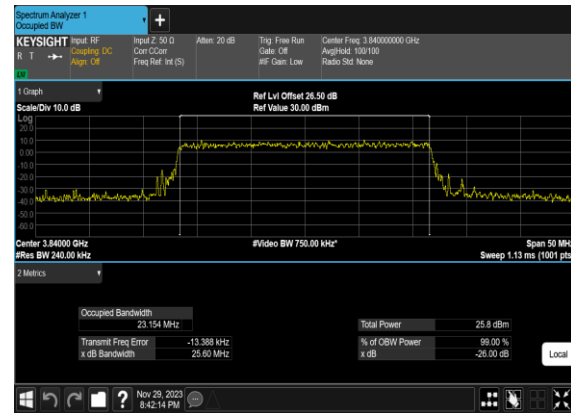
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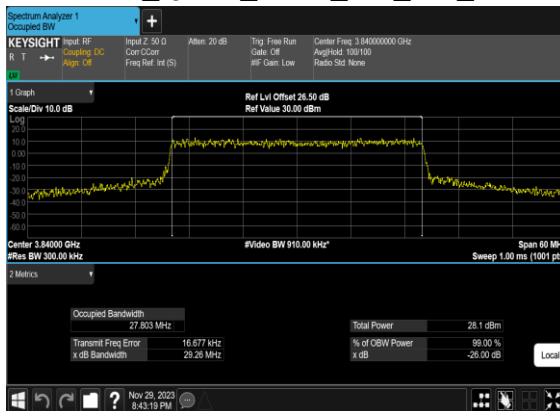
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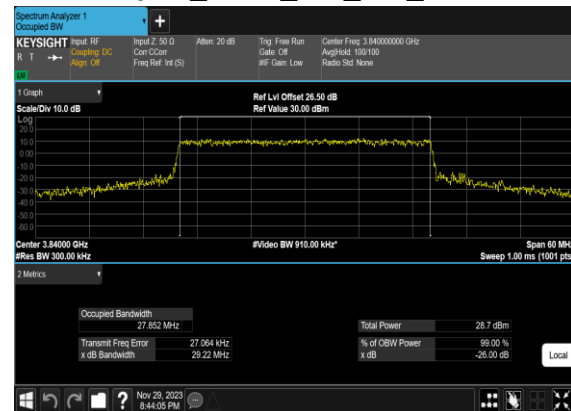
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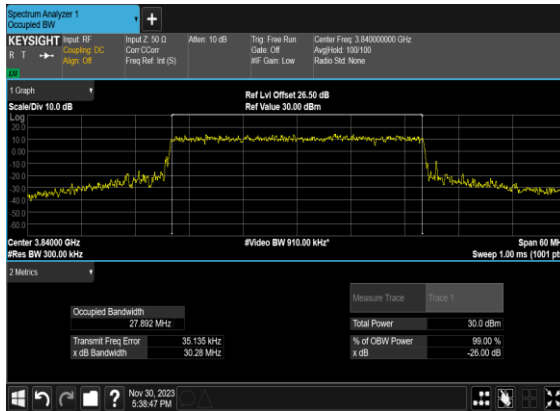
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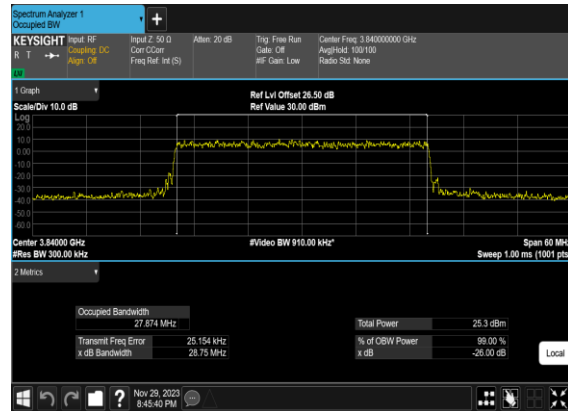
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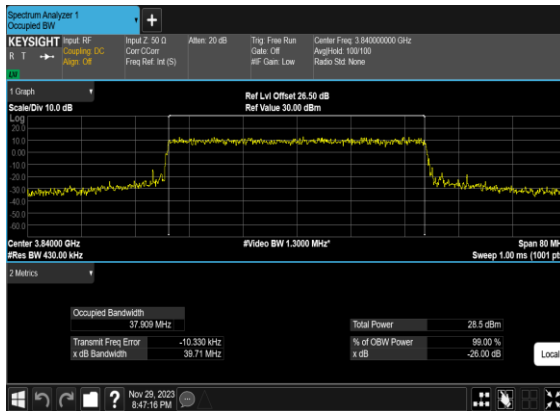
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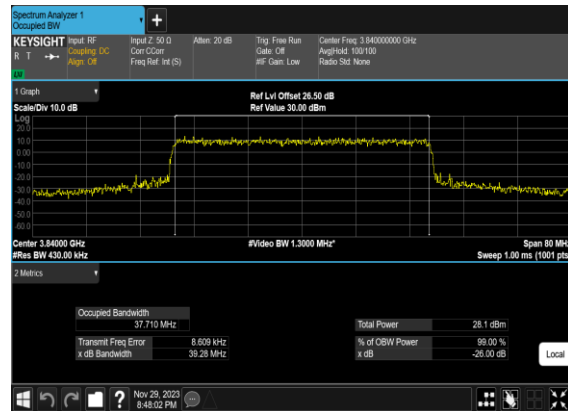
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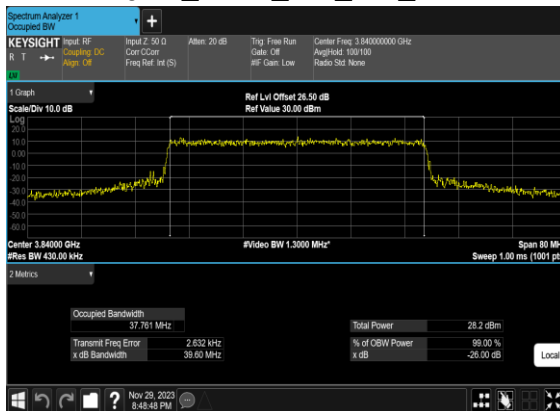
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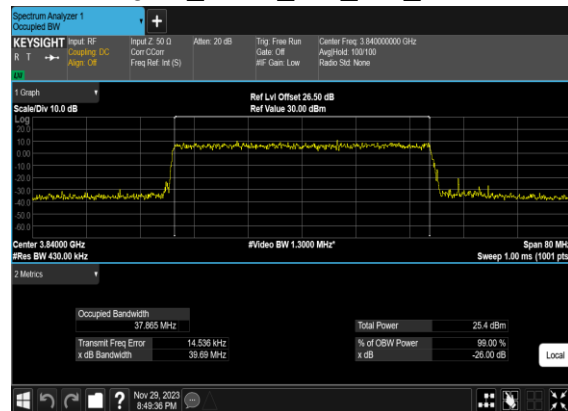
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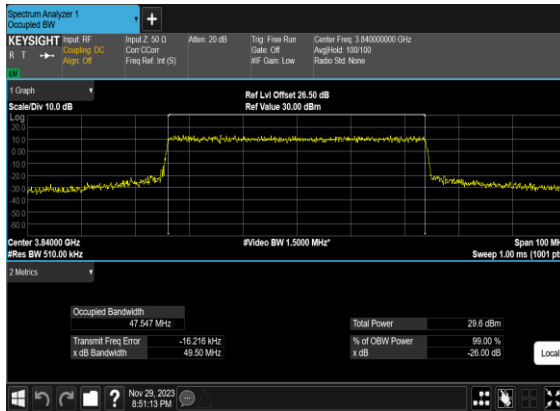
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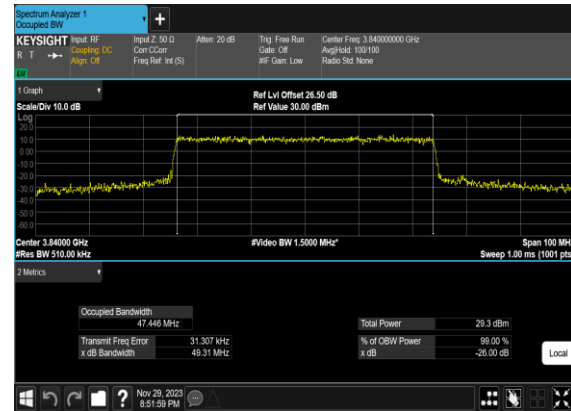
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QAM_Outer_Full_Mid_CH



N77(50M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



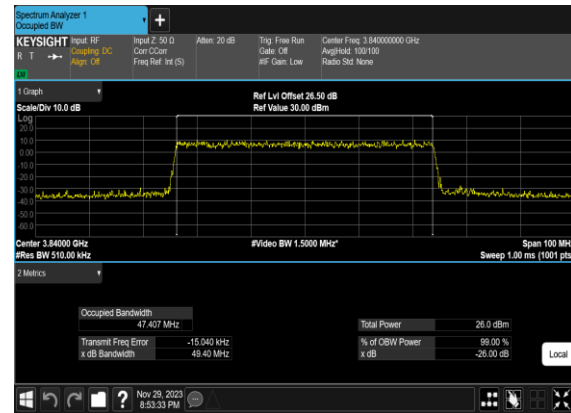
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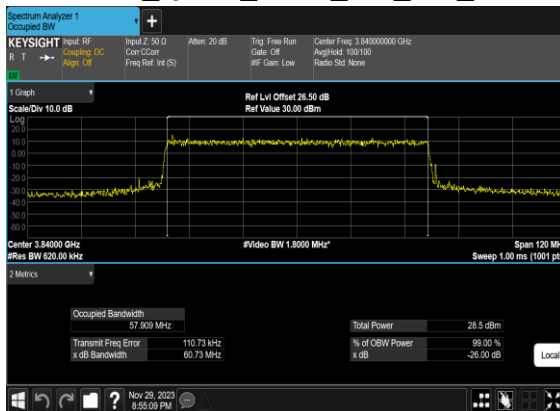
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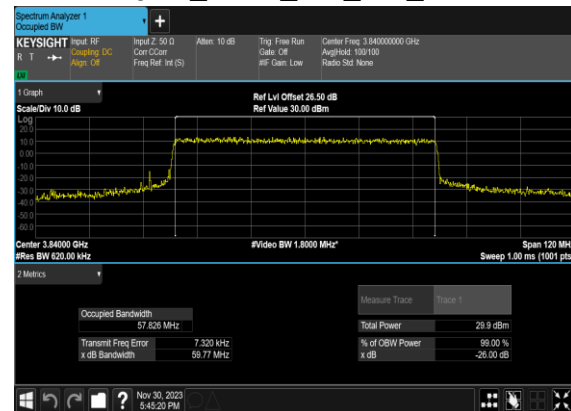
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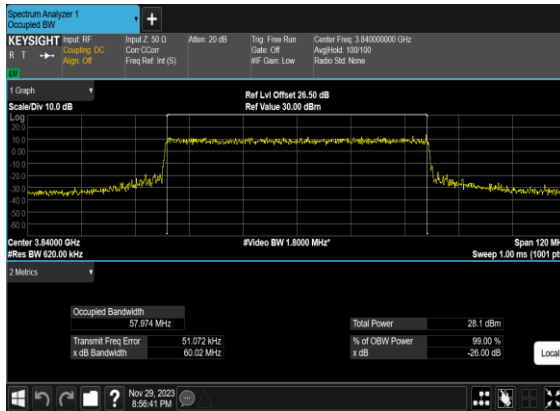
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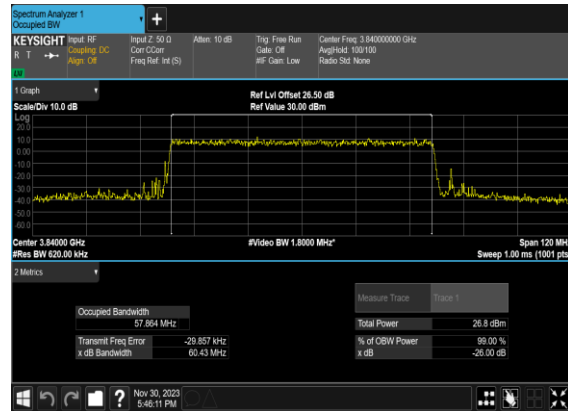
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N77(60M)_CP-OFDM_64
QAM_Outer_Full_Mid_CH



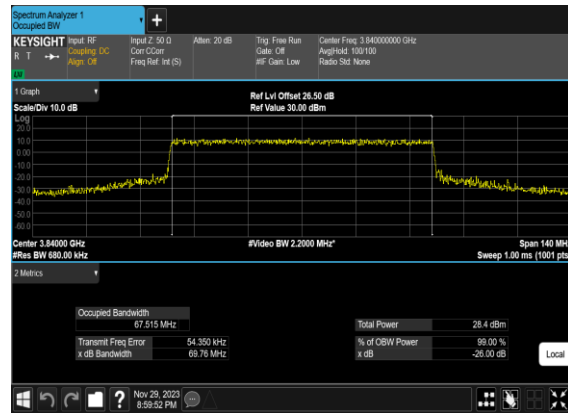
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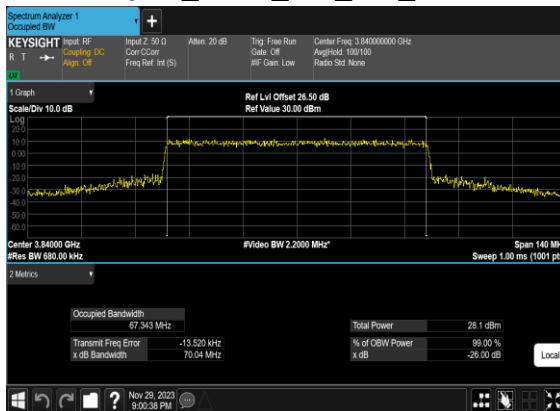
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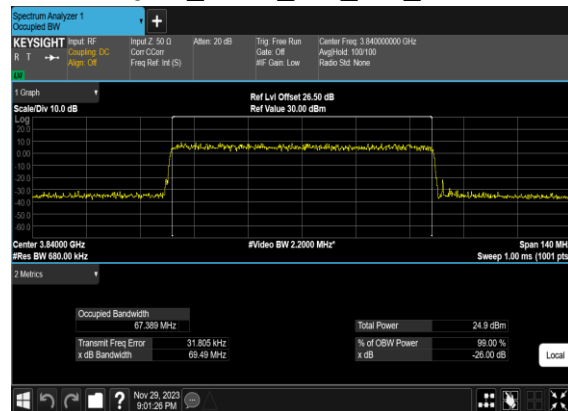
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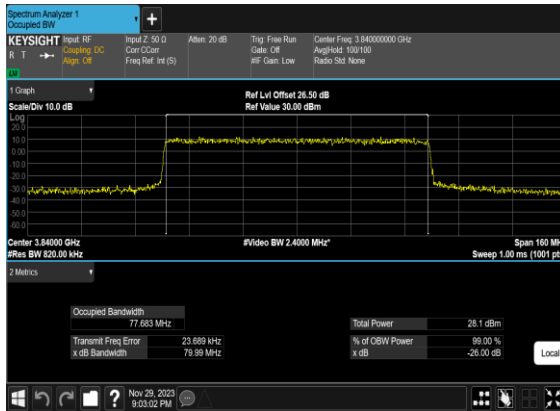
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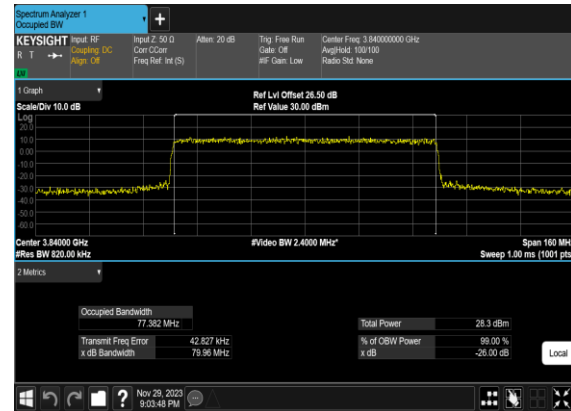
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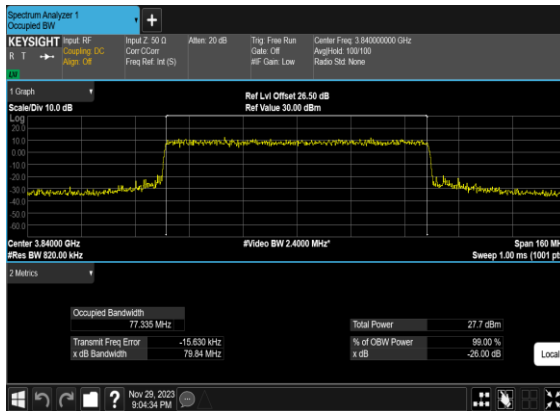
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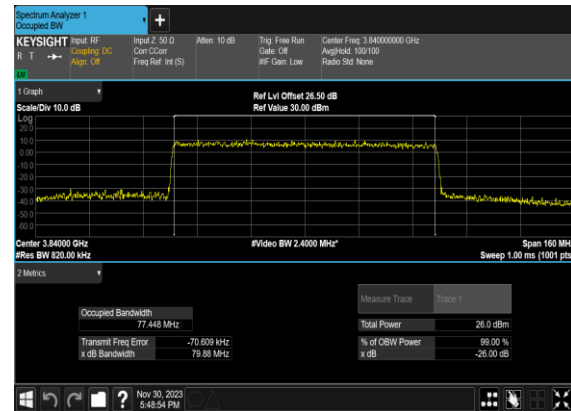
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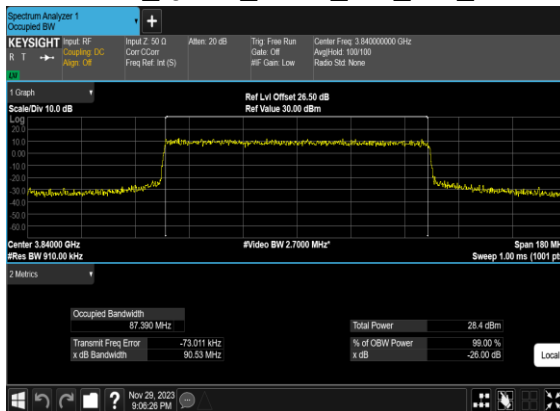
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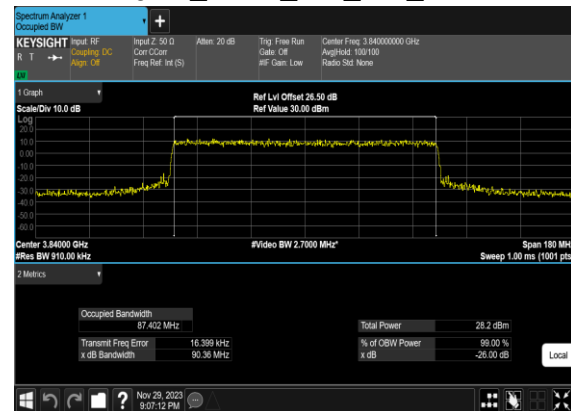
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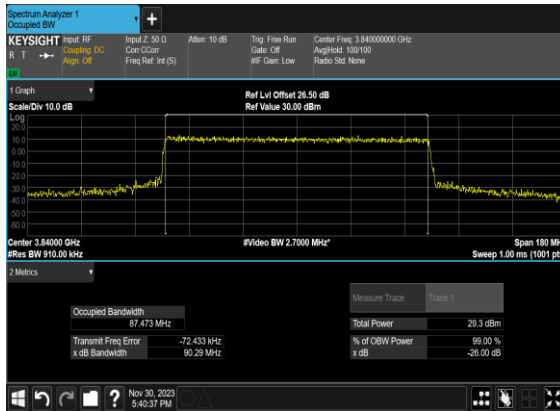
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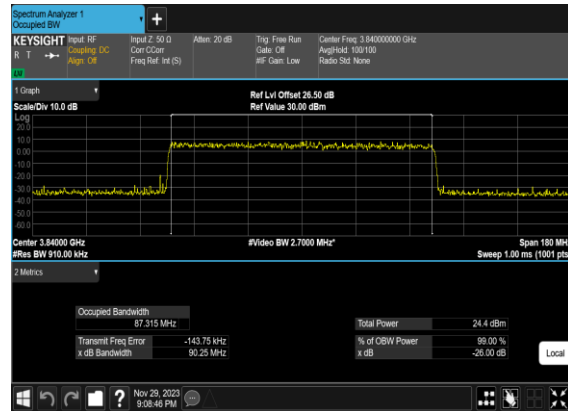
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QAM_Outer_Full_Mid_CH



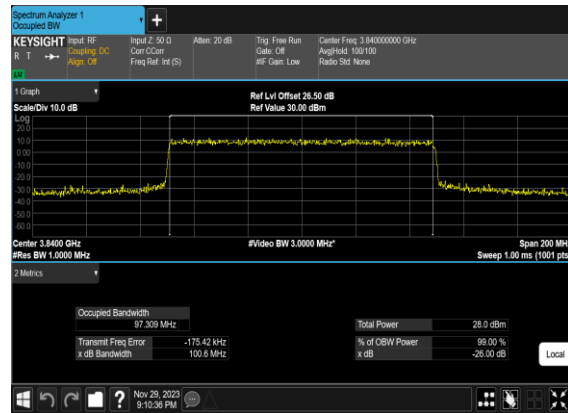
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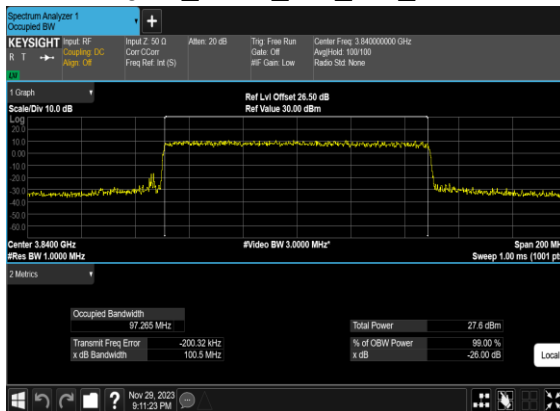
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OFDM_QPSK_Outer_Full_Mid_CH



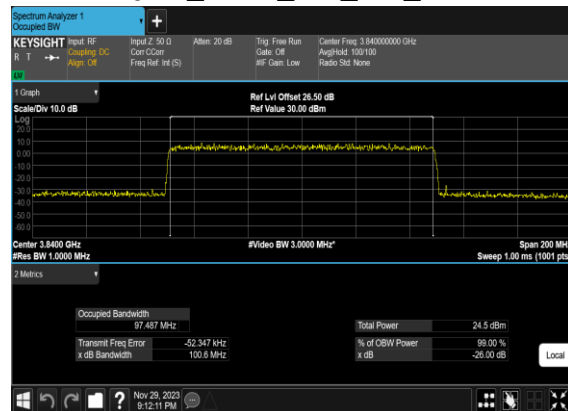
N77(100M)_CP-OFDM_16
QAM_Outer_Full_Mid_CH



N77(100M)_CP-OFDM_64
QAM_Outer_Full_Mid_CH



N77(100M)_CP-OFDM_256
QAM_Outer_Full_Mid_CH



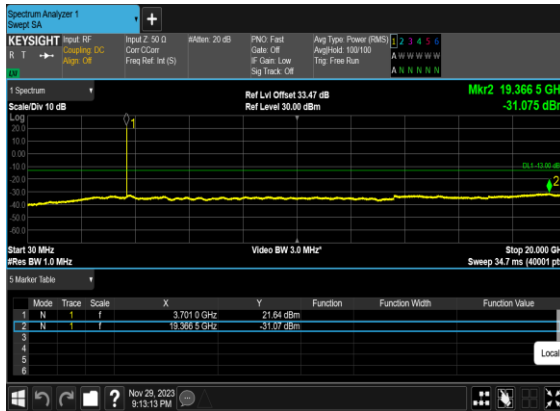
Conducted Spurious Emissions

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result	Verdict
77	30	10	647000	3705.0	DFT-s-OFDM BPSK	1@0	see graph	---
77	30	10	647000	3705.0	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	10	647000	3705.0	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	10	647000	3705.0	DFT-s-OFDM QPSK	1@0	see graph	---
77	30	10	647000	3705.0	DFT-s-OFDM QPSK	1@0	see graph	PASS
77	30	10	647000	3705.0	DFT-s-OFDM QPSK	1@0	see graph	PASS
77	30	10	656000	3840.0	DFT-s-OFDM BPSK	1@0	see graph	---
77	30	10	656000	3840.0	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	10	656000	3840.0	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	10	656000	3840.0	DFT-s-OFDM QPSK	1@0	see graph	---
77	30	10	656000	3840.0	DFT-s-OFDM QPSK	1@0	see graph	PASS
77	30	10	656000	3840.0	DFT-s-OFDM QPSK	1@0	see graph	PASS
77	30	10	665000	3975.0	DFT-s-OFDM BPSK	1@0	see graph	---
77	30	10	665000	3975.0	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	10	665000	3975.0	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	10	665000	3975.0	DFT-s-OFDM QPSK	1@0	see graph	---
77	30	10	665000	3975.0	DFT-s-OFDM QPSK	1@0	see graph	PASS
77	30	10	665000	3975.0	DFT-s-OFDM QPSK	1@0	see graph	PASS
77	30	60	648668	3730.02	DFT-s-OFDM BPSK	1@0	see graph	---
77	30	60	648668	3730.02	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	60	648668	3730.02	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	60	648668	3730.02	DFT-s-OFDM QPSK	1@0	see graph	---
77	30	60	648668	3730.02	DFT-s-OFDM QPSK	1@0	see graph	PASS

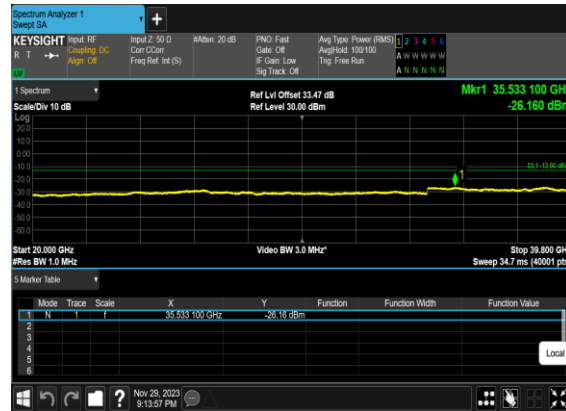
77	30	60	648668	3730.02	DFT-s-OFDM QPSK	1@0	see graph	PASS
77	30	60	656000	3840.0	DFT-s-OFDM BPSK	1@0	see graph	---
77	30	60	656000	3840.0	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	60	656000	3840.0	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	60	656000	3840.0	DFT-s-OFDM QPSK	1@0	see graph	---
77	30	60	656000	3840.0	DFT-s-OFDM QPSK	1@0	see graph	PASS
77	30	60	656000	3840.0	DFT-s-OFDM QPSK	1@0	see graph	PASS
77	30	60	663332	3949.98	DFT-s-OFDM BPSK	1@0	see graph	---
77	30	60	663332	3949.98	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	60	663332	3949.98	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	60	663332	3949.98	DFT-s-OFDM QPSK	1@0	see graph	---
77	30	60	663332	3949.98	DFT-s-OFDM QPSK	1@0	see graph	PASS
77	30	60	663332	3949.98	DFT-s-OFDM QPSK	1@0	see graph	PASS
77	30	100	650000	3750.0	DFT-s-OFDM BPSK	1@0	see graph	---
77	30	100	650000	3750.0	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	100	650000	3750.0	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	100	650000	3750.0	DFT-s-OFDM QPSK	1@0	see graph	---
77	30	100	650000	3750.0	DFT-s-OFDM QPSK	1@0	see graph	PASS
77	30	100	650000	3750.0	DFT-s-OFDM QPSK	1@0	see graph	PASS
77	30	100	656000	3840.0	DFT-s-OFDM BPSK	1@0	see graph	---
77	30	100	656000	3840.0	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	100	656000	3840.0	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	100	656000	3840.0	DFT-s-OFDM QPSK	1@0	see graph	---
77	30	100	656000	3840.0	DFT-s-OFDM QPSK	1@0	see graph	PASS

77	30	100	656000	3840.0	DFT-s-OFDM QPSK	1@0	see graph	PASS
77	30	100	662000	3930.0	DFT-s-OFDM BPSK	1@0	see graph	---
77	30	100	662000	3930.0	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	100	662000	3930.0	DFT-s-OFDM BPSK	1@0	see graph	PASS
77	30	100	662000	3930.0	DFT-s-OFDM QPSK	1@0	see graph	---
77	30	100	662000	3930.0	DFT-s-OFDM QPSK	1@0	see graph	PASS
77	30	100	662000	3930.0	DFT-s-OFDM QPSK	1@0	see graph	PASS

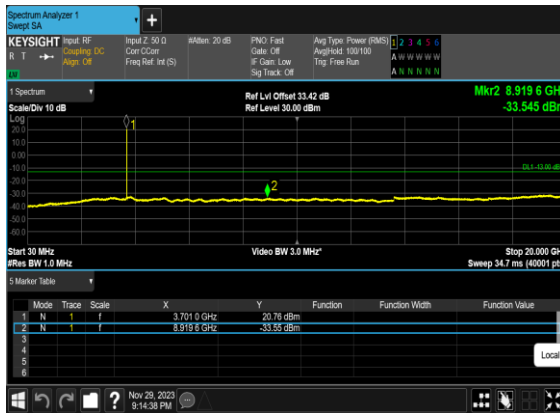
N77(10M)_DFT-s-
OFDM_BPSK_Edge_1RB_Left_Low_CH



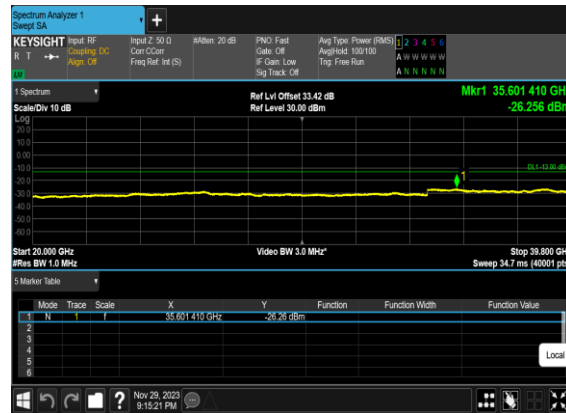
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OFDM_BPSK_Edge_1RB_Left_Low_CH



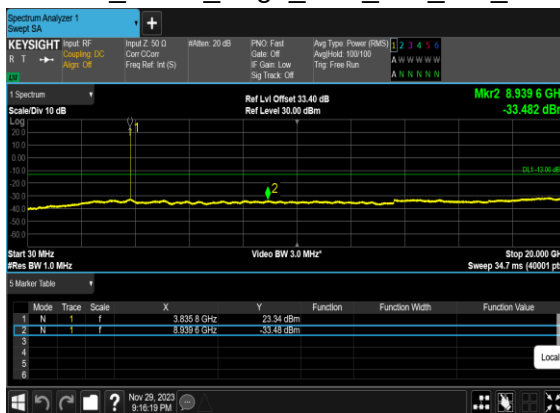
N77(10M)_DFT-s-
OFDM_QPSK_Edge_1RB_Left_Low_CH



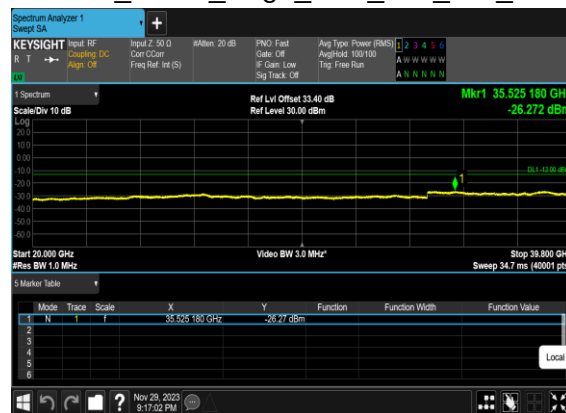
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OFDM_QPSK_Edge_1RB_Left_Low_CH



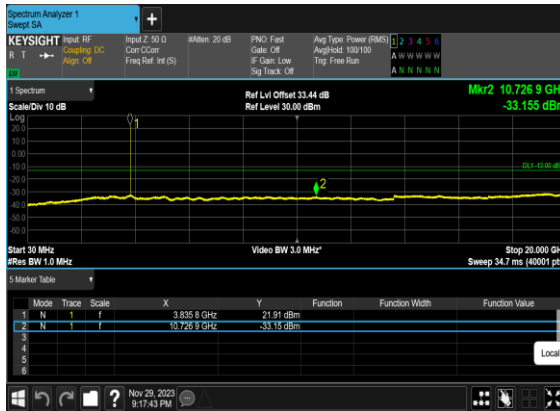
N77(10M)_DFT-s-
OFDM_BPSK_Edge_1RB_Left_Mid_CH



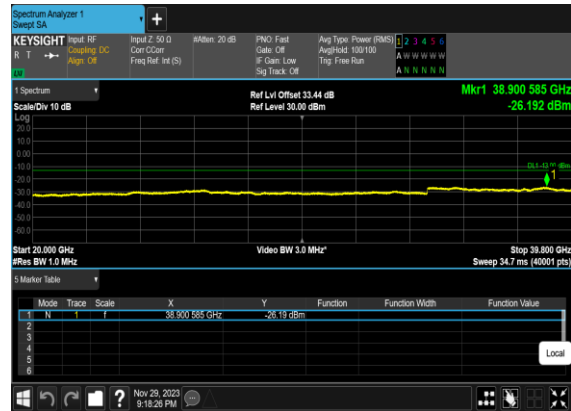
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OFDM_BPSK_Edge_1RB_Left_Mid_CH



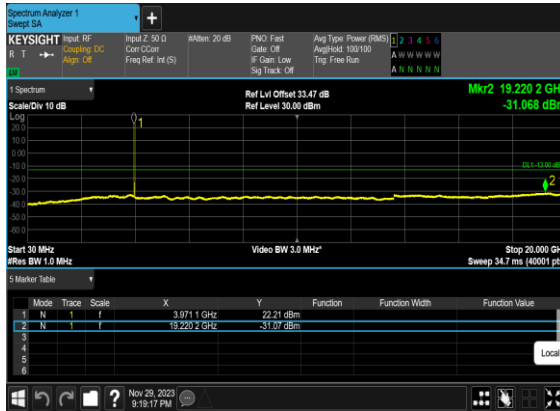
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OFDM_QPSK_Edge_1RB_Left_Mid_CH



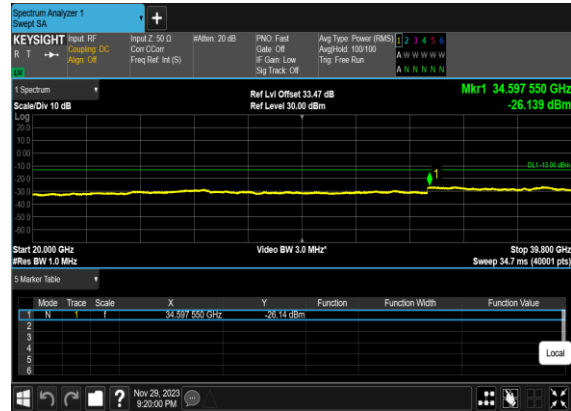
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OFDM_QPSK_Edge_1RB_Left_Mid_CH



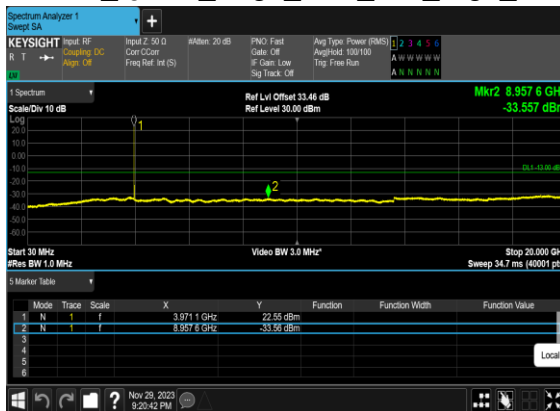
N77(10M)_DFT-s-
OFDM_BPSK_Edge_1RB_Left_High_CH



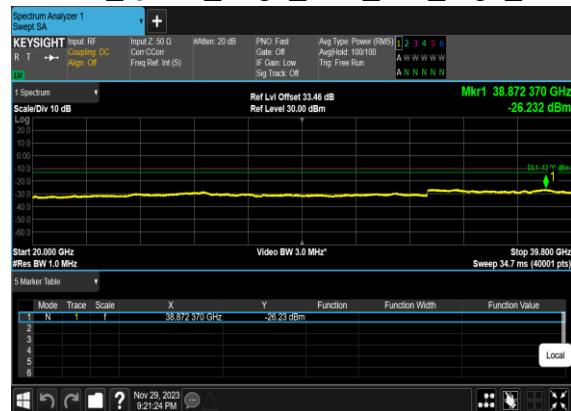
N77(10M)_DFT-s-
OFDM_BPSK_Edge_1RB_Left_High_CH



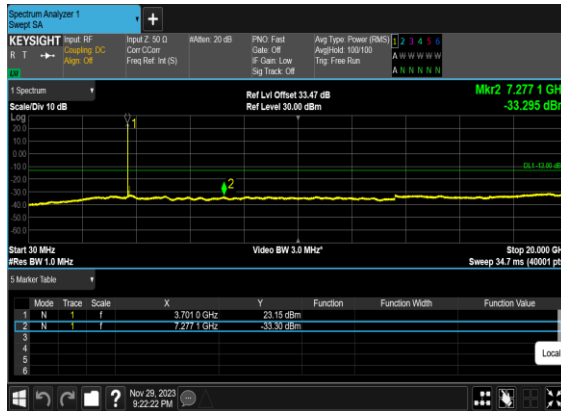
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OFDM_QPSK_Edge_1RB_Left_High_CH



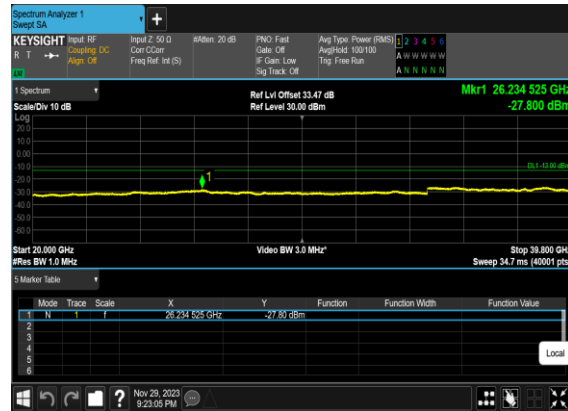
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OFDM_QPSK_Edge_1RB_Left_High_CH



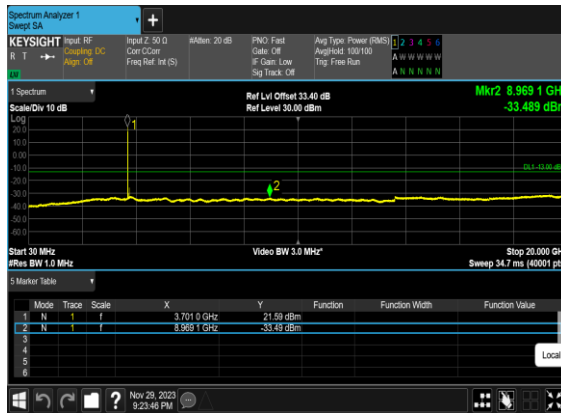
N77(60M)_DFT-s- OFDM_BPSK_Edge_1RB_Left_Low_CH



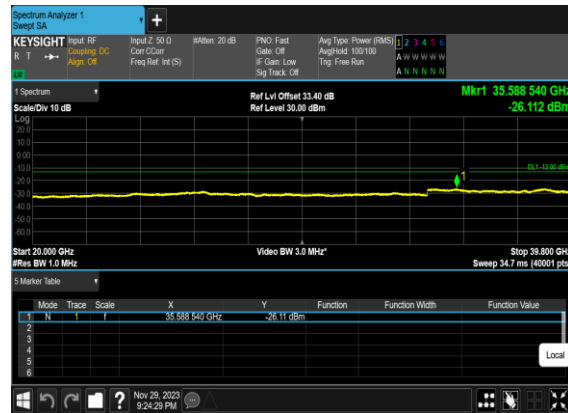
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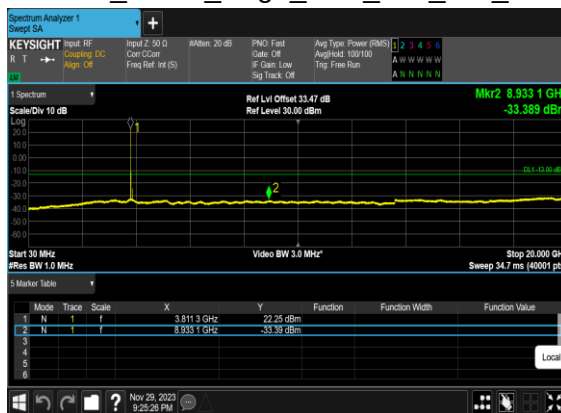
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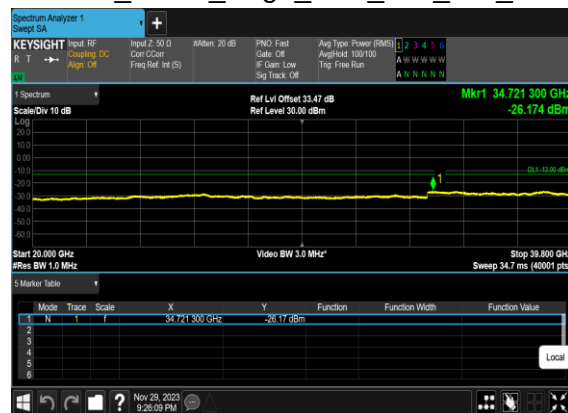
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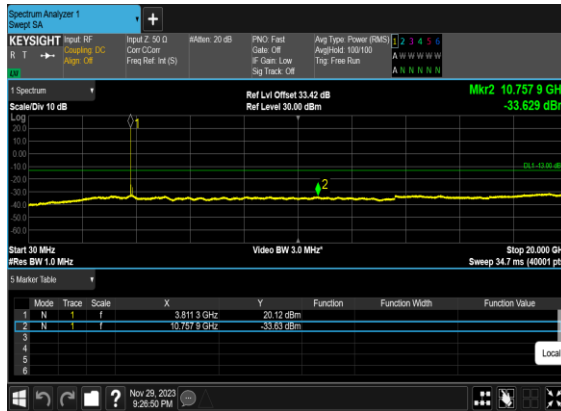
N77(60M)_DFT-s- OFDM_BPSK_Edge_1RB_Left_Mid_CH



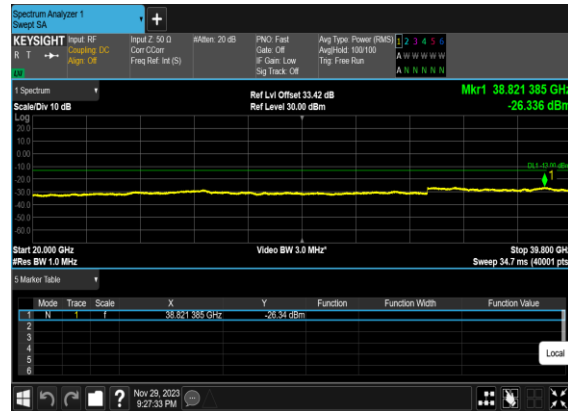
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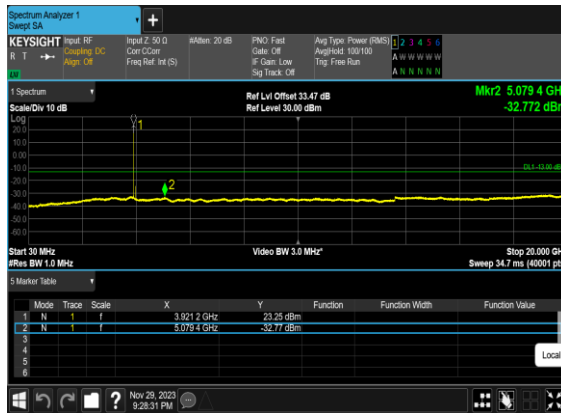
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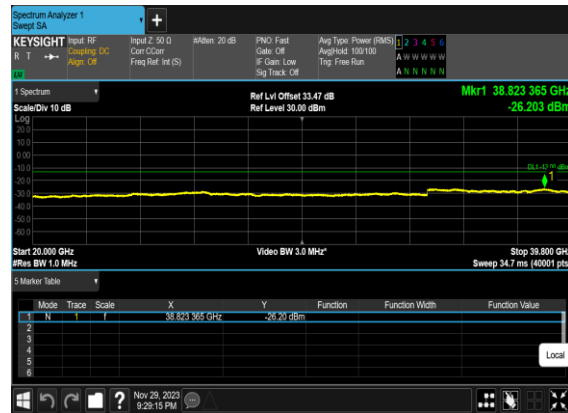
N77(60M)_DFT-s- OFDM_QPSK_Edge_1RB_Left_Mid_CH



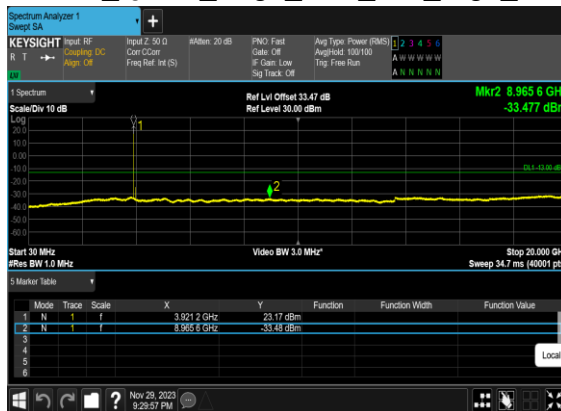
N77(60M)_DFT-s- OFDM_BPSK_Edge_1RB_Left_High_CH



N77(60M)_DFT-s- OFDM_BPSK_Edge_1RB_Left_High_CH



N77(60M)_DFT-s- OFDM_QPSK_Edge_1RB_Left_High_CH



N77(60M)_DFT-s- OFDM_QPSK_Edge_1RB_Left_High_CH

