FCC RF Test Report

APPLICANT	:	Quectel Wireless Solutions Co., Ltd.
EQUIPMENT	:	5G NR Module
BRAND NAME	:	QUECTEL
MODEL NAME	:	AG555Q-GL
FCC ID	:	XMR2024AG555QGL
STANDARD	:	47 CFR Part 2, 27 Subpart O (3700-3980MHz)
CLASSIFICATION	:	PCS Licensed Transmitter (PCB)
TEST DATE(S)	:	Jan. 26, 2024 ~ Mar. 10, 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

ACCREDITED Cert #5145.02

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
FG3D1801P	Rev. 01	Initial issue of report	Jun. 06, 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+10log10(P[Watts])	PASS	-
3.8	§2.1051 §27.53(l)(2)	Conducted Spurious Emission (5G NR n77, n78)	< 43+10log10(P[Watts])	PASS	-
3.9	§27.54	Frequency Stability Temperature & Voltage	Within Authorized Band	PASS	-
4.4	§2.1053 §27.53(l)(2)	Radiated Spurious Emission (5G NR n77, n78)	< $43+10\log_{10}(P[Watts])$	PASS	Under limit 26.74 dB at 7759.00 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

Quectel Wireless Solutions Co., Ltd.
Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, 200233, China

1.2 Manufacturer

Quectel Wireless Solutions Co., Ltd.
Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, 200233, China

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	5G NR Module
Brand Name	QUECTEL
Model Name	AG555Q-GL
FCC ID	XMR2024AG555QGL
IMEI Code	Conducted : 868637060025178 Radiation : 868637060025087
HW Version	R1.0
SW Version	BYA555QGLABR01A01M8G_OCPU
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: 20 / 30 / 40 / 50 / 60 / 80 / 90 / 100MHz n78: 20 / 30 / 40 / 50 / 60 / 70 / 80 / 90 / 100MHz
Antenna Gain	<Ant.0 / Ant.2> 5G NR n77: 2.59 dBi 5G NR n78: 2.59 dBi
Type of Modulation	CP-OFDM: QPSK / 16QAM / 64QAM / 256QAM DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM

Remark:

1. 5G NR n77/n78 support UL MIMO mode for Ant(0+2).
2. 5G NR n77/n78 SISO mode only support Antenna 2, not support Antenna 0.
3. 5G NR n77/n78 UL_MIMO mode only supports CP-OFDM Modulation, the MIMO mode is completely uncorrelated, so the directional gain is selected the maximum gain among all antennas.
4. For UL MIMO mode, the conducted BE/Spurious are tested at single antenna port and add

10*log(NANT) according to KDB 662911 D01.

5. 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.
6. The device supports HPUE mode for 5G NR n77/n78.
7. The device supports two PAs for 5G NR n77/78(main PA and other PA), both the PAs are full tested, the maximum power of main PA is higher than the other PA, therefore, we chose higher power of main PA to calculate the EIRP and show in the report.
8. All the supported EN-DC combinations are verified conducted power, only the EN-DC combination with highest power are shown in the report.
9. The EN-DC mode combination could be referred to the product spec.

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		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)
20	3710.01 ~ 3969.99	0.4688	18M2G7D	0.3945	18M3W7D
30	3715.02 ~ 3964.98	0.4571	27M8G7D	0.4046	27M9W7D
40	3720.00 ~ 3960.00	0.4539	37M8G7D	0.4027	37M9W7D
50	3725.01 ~ 3954.99	0.4498	47M4G7D	0.3899	47M5W7D
60	3730.02 ~ 3949.98	0.4808	57M8G7D	0.3908	58M0W7D
80	3740.01 ~ 3939.99	0.4819	77M4G7D	0.3873	77M6W7D
90	3745.02 ~ 3934.98	0.4667	87M6G7D	0.4345	87M7W7D
100	3750.00 ~ 3930.00	0.4786	97M5G7D	0.4055	97M5W7D

5G NR n78		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)
20	3710.01 ~ 3789.99	0.4764	18M2G7D	0.3846	18M3W7D
30	3715.02 ~ 3784.98	0.4786	27M8G7D	0.3999	27M9W7D
40	3720.00 ~ 3780.00	0.4721	37M8G7D	0.3990	37M9W7D
50	3725.01 ~ 3774.99	0.4624	47M4G7D	0.3819	47M5W7D
60	3730.02 ~ 3769.98	0.4426	57M8G7D	0.3945	58M0W7D
70	3735.00 ~ 3765.00	0.4395	67M6G7D	0.3908	67M6W7D
80	3740.01 ~ 3759.99	0.4753	77M4G7D	0.3899	77M6W7D
90	3745.02 ~ 3754.98	0.4721	87M6G7D	0.3890	87M7W7D
100	3750.00 ~ 3750.00	0.4797	97M5G7D	0.3793	97M5W7D

5G NR n77 UL MIMO		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)
20	3710.01 ~ 3969.99	0.4002	18M2G7D	0.3592	18M2W7D
30	3715.02 ~ 3964.98	0.4003	27M8G7D	0.3576	27M9W7D
40	3720.00 ~ 3960.00	0.4070	37M9G7D	0.3632	37M9W7D
50	3725.01 ~ 3954.99	0.3898	47M6G7D	0.3462	47M6W7D
60	3730.02 ~ 3949.98	0.3880	57M9G7D	0.3496	58M0W7D
80	3740.01 ~ 3939.99	0.3873	77M5G7D	0.3441	77M6W7D
90	3745.02 ~ 3934.98	0.3874	87M6G7D	0.3427	87M6W7D
100	3750.00 ~ 3930.00	0.4163	97M3G7D	0.3545	97M6W7D

5G NR n78 UL MIMO		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)
20	3710.01 ~ 3789.99	0.4009	18M2G7D	0.3562	18M2W7D
30	3715.02 ~ 3784.98	0.4051	27M8G7D	0.3627	27M9W7D
40	3720.00 ~ 3780.00	0.4056	37M9G7D	0.3711	37M9W7D
50	3725.01 ~ 3774.99	0.3959	47M6G7D	0.3553	47M6W7D
60	3730.02 ~ 3769.98	0.3959	57M9G7D	0.3565	58M0W7D
70	3735.00 ~ 3765.00	0.3931	67M6G7D	0.3516	67M6W7D
80	3740.01 ~ 3759.99	0.3959	77M5G7D	0.3573	77M6W7D
90	3745.02 ~ 3754.98	0.3968	87M6G7D	0.3562	87M6W7D
100	3750.00 ~ 3750.00	0.4136	97M3G7D	0.3444	97M6W7D

Note:

1. 5G NR n77 overlaps the entire frequency range of 5G NR n78, and n77 power > n78 power. Therefore, the conducted test results of n77 provided in this report cover n78 except the bandwidth of 70M.
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.

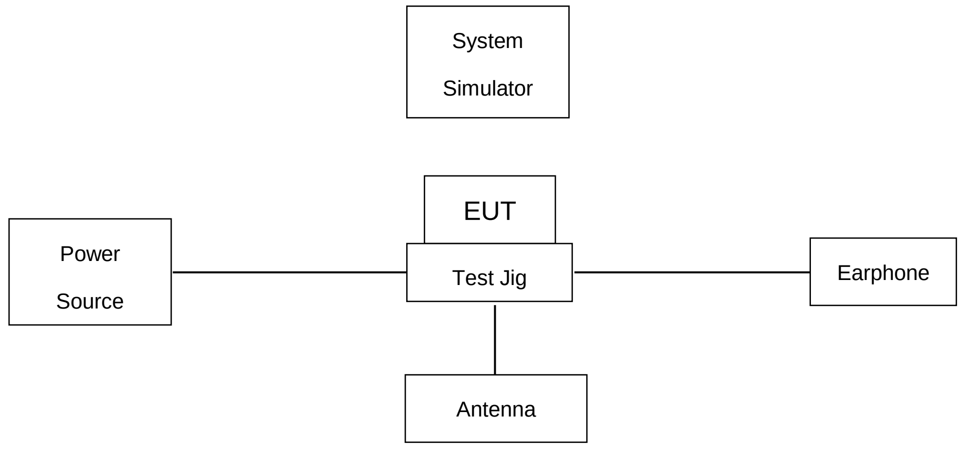
For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (X plane) were recorded in this report.

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	20	30	40	50	60	70	80	90	100	PI/2 BPSK	QPSK	16 QAM	64 QAM	256 QAM	1	Partial	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
	n78	-	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v		v	v	v	v
Peak-to-Average Ratio	n77	-	v					-				v	v				v		v		v	
	n78	-						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	
	n78	-						v					v	v	v	v			v		v	
Conducted Band Edge	n77	-	v				v	-			v	v	v				v		v	v		v
	n78	-						v				v	v				v		v	v		v
Conducted Spurious Emission	n77	-	v				v	-			v	v	v				v			v	v	v
	n78	-						v				v	v				v			v	v	v
Frequency Stability	n77	-	v					-					v						v		v	
	n78	-						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
	n78	-	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v		v	v	v	v
Radiated Spurious Emission	n77	Worst Case																		v	v	v
Note	1. The mark "v " means that this configuration is chosen for testing 2. The mark "-" means that this bandwidth is not supported. 3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported. 4. Frequency Stability : Normal Voltage = 3.80V; Low Voltage =3.3V; High Voltage =4.3V. 5. 5G NR n77 covers n78 for RSE test item.																					

2.2 Connection Diagram of Test System



This example is connection diagram of EUT test configurations.

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
4.	Test jig	N/A	N/A	N/A	N/A	N/A
5.	Antenna	N/A	N/A	N/A	N/A	N/A
6.	Adapter	N/A	N/A	N/A	N/A	N/A
7.	Earphone	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 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 6.6 dB and 20dB attenuator.

Example :

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

= 6.6 + 20 = 26.6 (dB)

2.5 Frequency List of Low/Middle/High Channels

5G n77 (30kHz) Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
100	Channel	650000	656000	662000
	Frequency	3750	3840	3930
90	Channel	649668	656000	662332
	Frequency	3745.02	3840	3934.98
80	Channel	649334	656000	662666
	Frequency	3740.01	3840	3939.99
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
20	Channel	647334	656000	664666
	Frequency	3710.01	3840	3969.99

5G n78(30kHz) Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
100	Channel		650000	
	Frequency		3750	
90	Channel	649668	650000	650332
	Frequency	3745.02	3750	3754.98
80	Channel	649334	650000	650666
	Frequency	3740.01	3750	3759.99
70	Channel	649000	650000	651000
	Frequency	3735	3750	3765
60	Channel	648668	650000	651332
	Frequency	3730.02	3750	3769.98
50	Channel	648334	650000	651666
	Frequency	3725.01	3750	3774.99
40	Channel	648000	650000	652000
	Frequency	3720	3750	3780
30	Channel	647668	650000	652332
	Frequency	3715.02	3750	3784.98
20	Channel	647334	650000	652666
	Frequency	3710.01	3750	3789.99

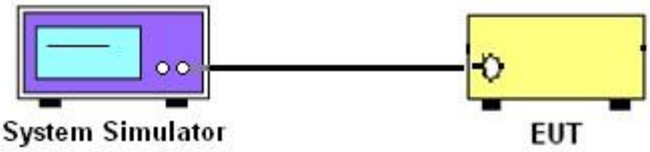
3 Conducted Test Items

3.1 Measuring Instruments

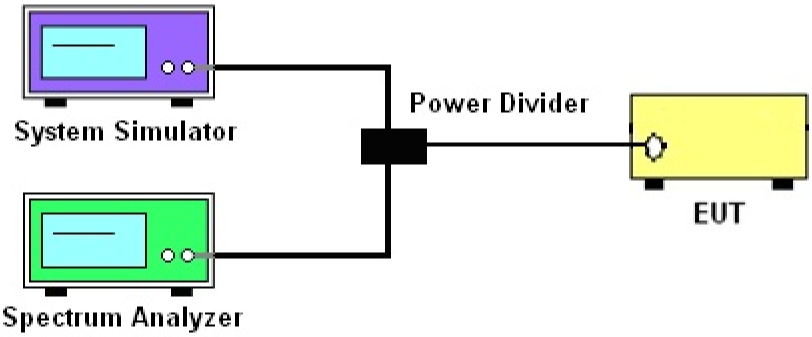
See list of measuring instruments of this test report.

3.2 Test Setup

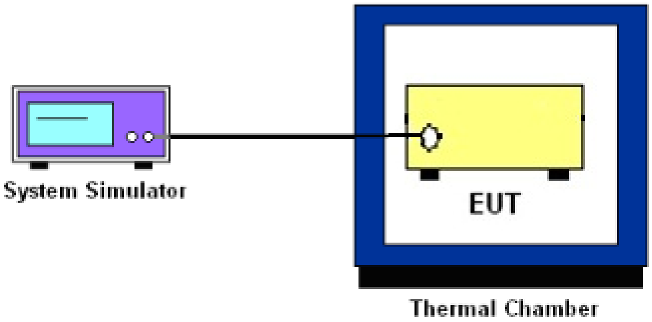
3.2.1 Conducted Output Power



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



3.2.3 Frequency Stability



3.3 Test Result of Conducted Test

Please refer to Appendix A.

3.4 Conducted Output Power and EIRP

3.4.1 Description of the Conducted Output Power Measurement and EIRP Measurement

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

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

According to KDB 412172 D01 Power Approach,

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

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

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

3.4.2 Test Procedures

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

3.5 Peak-to-Average Ratio

3.5.1 Description of the PAR Measurement

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

3.5.2 Test Procedures

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

3.6 Occupied Bandwidth

3.6.1 Description of Occupied Bandwidth Measurement

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

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

3.6.2 Test Procedures

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

3.7 Conducted Band Edge

3.7.1 Description of Conducted Band Edge Measurement

27.53(l)(2)

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

3.7.2 Test Procedures

1. The testing follows ANSI C63.26 section 5.7
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The band edges of low and high channels for the highest RF powers were measured.
4. Set RBW >= 1% EBW in the 1MHz band immediately outside and adjacent to the band edge.
5. Beyond the 1 MHz band from the band edge, RBW=1MHz was used.
6. Set spectrum analyzer with RMS detector.
7. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
8. Checked that all the results comply with the emission limit line.

   Example:

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

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

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

3.8 Conducted Spurious Emission

3.8.1 Description of Conducted Spurious Emission Measurement

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

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

3.8.2 Test Procedures

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

3.9 Frequency Stability

3.9.1 Description of Frequency Stability Measurement

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

3.9.2 Test Procedures for Temperature Variation

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

3.9.3 Test Procedures for Voltage Variation

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

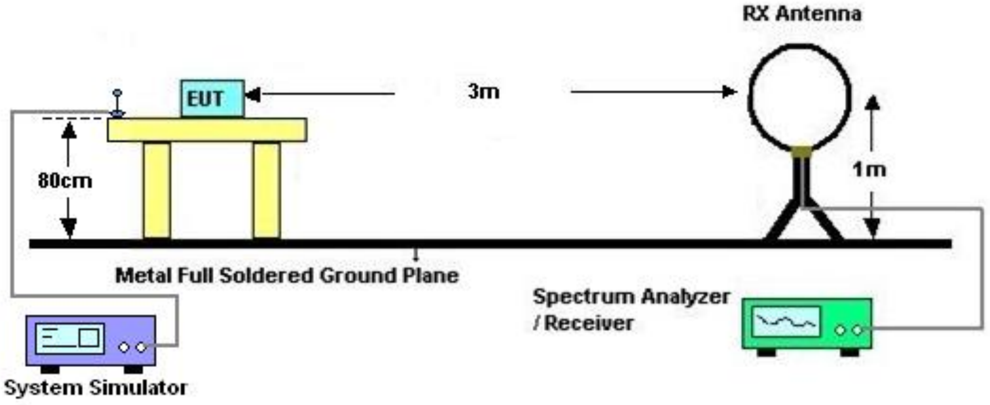
4 Radiated Test Items

4.1 Measuring Instruments

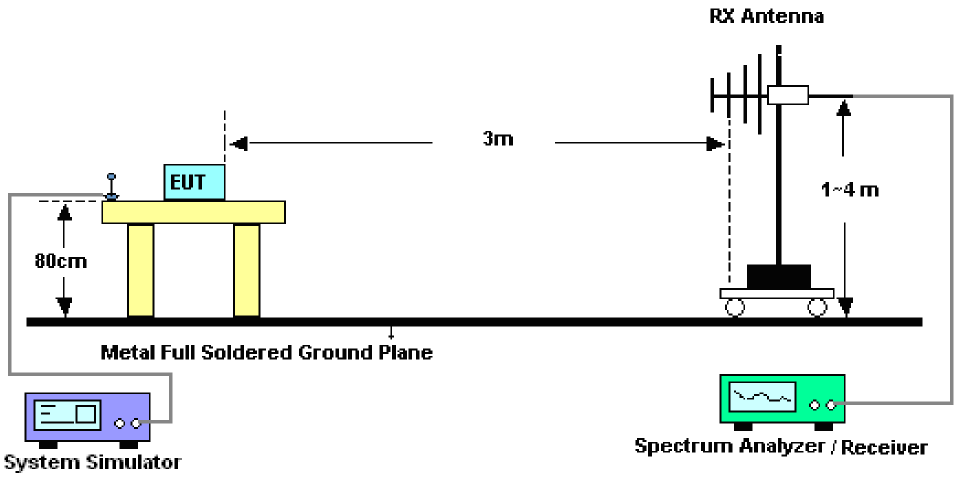
See list of measuring instruments of this test report.

4.2 Test Setup

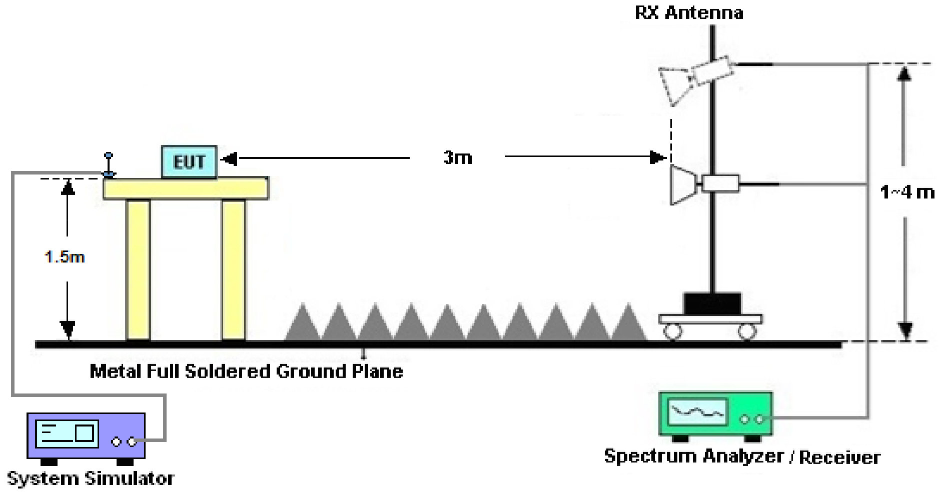
4.2.1 For radiated test below 30MHz



4.2.2 For radiated test from 30MHz to 1GHz



4.2.3 For radiated test above 1GHz



4.3 Test Result of Radiated Test

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

Please refer to Appendix B.

4.4 Radiated Spurious Emission

4.4.1 Description of Radiated Spurious Emission

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

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

4.4.2 Test Procedures

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

5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EXA Spectrum Analyzer	Keysight	N9010B	MY57471079	10Hz-44G,MAX 30dB	Oct. 10, 2023	Jan. 26, 2024~ Mar. 01, 2024	Oct. 09, 2024	Conducted (TH01-KS)
Power divider	STI	STI08-0055	-	0.5~40GHz	NCR	Jan. 26, 2024~ Mar. 01, 2024	NCR	Conducted (TH01-KS)
Temperature &h umidity chamber	Hongzhan	LP-150U	H2014011440	-40~+150°C 20%~95%RH	Jul. 06, 2023	Jan. 26, 2024~ Mar. 01, 2024	Jul. 05, 2024	Conducted (TH01-KS)
EXA Spectrum Analyzer	Keysight	N9010B	MY57471079	10Hz-44G,MAX 30dB	Oct. 10, 2023	Mar. 10, 2024	Oct. 09, 2024	Radiation (03CH04-KS)
Loop Antenna	R&S	HFH2-Z2E	101125	9kHz~30MHz	Sep. 11, 2023	Mar. 10, 2024	Sep. 10, 2024	Radiation (03CH04-KS)
Bilog Antenna	TeseQ	CBL6111D	49922	30MHz-1GHz	Apr. 09, 2023	Mar. 10, 2024	Apr. 08, 2024	Radiation (03CH04-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00251694	1GHz~18GHz	Jul. 12, 2023	Mar. 10, 2024	Jul. 11, 2024	Radiation (03CH04-KS)
SHF-EHF Horn	Com-power	AH-840	101070	18GHz~40GHz	Jan. 05, 2024	Mar. 10, 2024	Jan. 04, 2025	Radiation (03CH04-KS)
Amplifier	SONOMA	310N	380827	9KHz-1GHz	Jul. 06, 2023	Mar. 10, 2024	Jul. 05, 2024	Radiation (03CH04-KS)
Amplifier	MITEQ	EM18G40G GA	060728	18~40GHz	Jan. 05, 2024	Mar. 10, 2024	Jan. 04, 2025	Radiation (03CH04-KS)
high gain Amplifier	EM	EM01G18G A	060840	1Ghz-18Ghz	Oct. 10, 2023	Mar. 10, 2024	Oct. 09, 2024	Radiation (03CH04-KS)
Amplifier	Agilent	8449B	3008A02370	1Ghz-18Ghz	Oct. 10, 2023	Mar. 10, 2024	Oct. 09, 2024	Radiation (03CH04-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Mar. 10, 2024	NCR	Radiation (03CH04-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Mar. 10, 2024	NCR	Radiation (03CH04-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Mar. 10, 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

Test Item	Uncertainty
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))	3.82dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.56dB

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

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

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

Appendix A. Test Results of Conducted Test

Test Engineer :	Smile Wang	**Temperature :**	22~23℃
		Relative Humidity :	40~42%

Software Version: 23.06.1602

FR1 N77(ANT2)

Transmitter Conducted Output Power And EIRP, $(G_T\text{-}L_C)$=2.59dB

NR Band	SCS	BandWidth	Arfcn	Freq(MHz)	Modulation	RB	Conducted Power(dBm)	EIRP(dBm)	EIRP(W)
77	30	100	650000	3750	DFT-s-OFDM PI/2 BPSK	135@67	26.21	28.8	0.7586
77	30	100	650000	3750	DFT-s-OFDM PI/2 BPSK	1@1	26.68	29.27	0.8453
77	30	100	650000	3750	DFT-s-OFDM PI/2 BPSK	1@271	26.65	29.24	0.8395
77	30	100	650000	3750	DFT-s-OFDM QPSK	135@67	26.78	29.37	0.8650
77	30	100	650000	3750	DFT-s-OFDM QPSK	1@1	26.80	29.39	0.8690
77	30	100	650000	3750	DFT-s-OFDM QPSK	1@271	26.79	29.38	0.8670
77	30	100	650000	3750	DFT-s-OFDM 16 QAM	135@67	25.77	28.36	0.6855
77	30	100	650000	3750	DFT-s-OFDM 16 QAM	1@1	26.08	28.67	0.7362
77	30	100	650000	3750	DFT-s-OFDM 16 QAM	1@271	25.87	28.46	0.7015
77	30	100	650000	3750	DFT-s-OFDM 64 QAM	135@67	24.3	26.89	0.4887
77	30	100	650000	3750	DFT-s-OFDM 64 QAM	1@1	24.55	27.14	0.5176
77	30	100	650000	3750	DFT-s-OFDM 64 QAM	1@271	24.4	26.99	0.5000
77	30	100	650000	3750	DFT-s-OFDM 256 QAM	135@67	22.26	24.85	0.3055
77	30	100	650000	3750	DFT-s-OFDM 256 QAM	1@1	22.57	25.16	0.3281
77	30	100	650000	3750	DFT-s-OFDM 256 QAM	1@271	22.42	25.01	0.3170
77	30	100	650000	3750	CP-OFDM QPSK	137@68	25.29	27.88	0.6138
77	30	100	650000	3750	CP-OFDM QPSK	1@1	25.63	28.22	0.6637
77	30	100	650000	3750	CP-OFDM QPSK	1@271	25.39	27.98	0.6281
77	30	100	656000	3840	DFT-s-OFDM PI/2 BPSK	135@67	26.54	29.13	0.8185
77	30	100	656000	3840	DFT-s-OFDM PI/2 BPSK	1@1	26.52	29.11	0.8147
77	30	100	656000	3840	DFT-s-OFDM PI/2 BPSK	1@271	26.27	28.86	0.7691
77	30	100	656000	3840	DFT-s-OFDM QPSK	135@67	26.58	29.17	0.8260
77	30	100	656000	3840	DFT-s-OFDM QPSK	1@1	26.5	29.09	0.8110
77	30	100	656000	3840	DFT-s-OFDM QPSK	1@271	26.24	28.83	0.7638
77	30	100	656000	3840	DFT-s-OFDM 16 QAM	135@67	25.54	28.13	0.6501
77	30	100	656000	3840	DFT-s-OFDM 16 QAM	1@1	25.47	28.06	0.6397
77	30	100	656000	3840	DFT-s-OFDM 16 QAM	1@271	25.36	27.95	0.6237
77	30	100	656000	3840	DFT-s-OFDM 64 QAM	135@67	24.07	26.66	0.4634
77	30	100	656000	3840	DFT-s-OFDM 64 QAM	1@1	24.09	26.68	0.4656
77	30	100	656000	3840	DFT-s-OFDM 64 QAM	1@271	23.73	26.32	0.4285
77	30	100	656000	3840	DFT-s-OFDM 256 QAM	135@67	22.09	24.68	0.2938
77	30	100	656000	3840	DFT-s-OFDM 256 QAM	1@1	22.03	24.62	0.2897
77	30	100	656000	3840	DFT-s-OFDM 256 QAM	1@271	21.87	24.46	0.2793
77	30	100	656000	3840	CP-OFDM QPSK	137@68	25.04	27.63	0.5794
77	30	100	656000	3840	CP-OFDM QPSK	1@1	25.06	27.65	0.5821
77	30	100	656000	3840	CP-OFDM QPSK	1@271	24.82	27.41	0.5508
77	30	100	662000	3930	DFT-s-OFDM PI/2 BPSK	135@67	26.07	28.66	0.7345
77	30	100	662000	3930	DFT-s-OFDM PI/2 BPSK	1@1	26.22	28.81	0.7603
77	30	100	662000	3930	DFT-s-OFDM PI/2 BPSK	1@271	25.78	28.37	0.6871
77	30	100	662000	3930	DFT-s-OFDM QPSK	135@67	26.11	28.7	0.7413
77	30	100	662000	3930	DFT-s-OFDM QPSK	1@1	26.25	28.84	0.7656

77	30	100	662000	3930	DFT-s-OFDM QPSK	1@271	25.81	28.4	0.6918
77	30	100	662000	3930	DFT-s-OFDM 16 QAM	135@67	25.14	27.73	0.5929
77	30	100	662000	3930	DFT-s-OFDM 16 QAM	1@1	25.24	27.83	0.6067
77	30	100	662000	3930	DFT-s-OFDM 16 QAM	1@271	24.9	27.49	0.5610
77	30	100	662000	3930	DFT-s-OFDM 64 QAM	135@67	23.6	26.19	0.4159
77	30	100	662000	3930	DFT-s-OFDM 64 QAM	1@1	23.7	26.29	0.4256
77	30	100	662000	3930	DFT-s-OFDM 64 QAM	1@271	23.22	25.81	0.3811
77	30	100	662000	3930	DFT-s-OFDM 256 QAM	135@67	21.62	24.21	0.2636
77	30	100	662000	3930	DFT-s-OFDM 256 QAM	1@1	21.7	24.29	0.2685
77	30	100	662000	3930	DFT-s-OFDM 256 QAM	1@271	21.27	23.86	0.2432
77	30	100	662000	3930	CP-OFDM QPSK	137@68	24.62	27.21	0.5260
77	30	100	662000	3930	CP-OFDM QPSK	1@1	24.7	27.29	0.5358
77	30	100	662000	3930	CP-OFDM QPSK	1@271	24.38	26.97	0.4977
77	30	20	647334	3710.01	DFT-s-OFDM PI/2 BPSK	1@1	26.44	29.03	0.7998
77	30	20	647334	3710.01	DFT-s-OFDM QPSK	1@1	26.41	29	0.7943
77	30	20	647334	3710.01	DFT-s-OFDM 16 QAM	1@1	25.43	28.02	0.6339
77	30	20	656000	3840	DFT-s-OFDM PI/2 BPSK	1@1	26.23	28.82	0.7621
77	30	20	656000	3840	DFT-s-OFDM QPSK	1@1	26.32	28.91	0.7780
77	30	20	656000	3840	DFT-s-OFDM 16 QAM	1@1	25.96	28.55	0.7161
77	30	20	664666	3969.99	DFT-s-OFDM PI/2 BPSK	1@1	26.69	29.28	0.8472
77	30	20	664666	3969.99	DFT-s-OFDM QPSK	1@1	26.71	29.3	0.8511
77	30	20	664666	3969.99	DFT-s-OFDM 16 QAM	1@1	25.64	28.23	0.6653
77	30	30	647668	3715.02	DFT-s-OFDM PI/2 BPSK	1@1	26.48	29.07	0.8072
77	30	30	647668	3715.02	DFT-s-OFDM QPSK	1@1	26.46	29.05	0.8035
77	30	30	647668	3715.02	DFT-s-OFDM 16 QAM	1@1	25.47	28.06	0.6397
77	30	30	656000	3840	DFT-s-OFDM PI/2 BPSK	1@1	26.42	29.01	0.7962
77	30	30	656000	3840	DFT-s-OFDM QPSK	1@1	26.33	28.92	0.7798
77	30	30	656000	3840	DFT-s-OFDM 16 QAM	1@1	26.07	28.66	0.7345
77	30	30	664332	3964.98	DFT-s-OFDM PI/2 BPSK	1@1	26.6	29.19	0.8299
77	30	30	664332	3964.98	DFT-s-OFDM QPSK	1@1	26.58	29.17	0.8260
77	30	30	664332	3964.98	DFT-s-OFDM 16 QAM	1@1	25.61	28.2	0.6607
77	30	40	648000	3720	DFT-s-OFDM PI/2 BPSK	1@1	26.53	29.12	0.8166
77	30	40	648000	3720	DFT-s-OFDM QPSK	1@1	26.57	29.16	0.8241
77	30	40	648000	3720	DFT-s-OFDM 16 QAM	1@1	25.44	28.03	0.6353
77	30	40	656000	3840	DFT-s-OFDM PI/2 BPSK	1@1	26.31	28.9	0.7762
77	30	40	656000	3840	DFT-s-OFDM QPSK	1@1	26.13	28.72	0.7447
77	30	40	656000	3840	DFT-s-OFDM 16 QAM	1@1	26.05	28.64	0.7311
77	30	40	664000	3960	DFT-s-OFDM PI/2 BPSK	1@1	26.55	29.14	0.8204
77	30	40	664000	3960	DFT-s-OFDM QPSK	1@1	26.51	29.1	0.8128
77	30	40	664000	3960	DFT-s-OFDM 16 QAM	1@1	25.78	28.37	0.6871
77	30	50	648334	3725.01	DFT-s-OFDM PI/2 BPSK	1@1	26.39	28.98	0.7907
77	30	50	648334	3725.01	DFT-s-OFDM QPSK	1@1	26.4	28.99	0.7925
77	30	50	648334	3725.01	DFT-s-OFDM 16 QAM	1@1	25.41	28	0.6310
77	30	50	656000	3840	DFT-s-OFDM PI/2 BPSK	1@1	26.42	29.01	0.7962
77	30	50	656000	3840	DFT-s-OFDM QPSK	1@1	26.32	28.91	0.7780
77	30	50	656000	3840	DFT-s-OFDM 16 QAM	1@1	25.91	28.5	0.7079
77	30	50	663666	3954.99	DFT-s-OFDM PI/2 BPSK	1@1	26.53	29.12	0.8166
77	30	50	663666	3954.99	DFT-s-OFDM QPSK	1@1	26.41	29	0.7943

77	30	50	663666	3954.99	DFT-s-OFDM 16 QAM	1@1	25.8	28.39	0.6902
77	30	60	648668	3730.02	DFT-s-OFDM PI/2 BPSK	1@1	26.47	29.06	0.8054
77	30	60	648668	3730.02	DFT-s-OFDM QPSK	1@1	26.45	29.04	0.8017
77	30	60	648668	3730.02	DFT-s-OFDM 16 QAM	1@1	25.54	28.13	0.6501
77	30	60	656000	3840	DFT-s-OFDM PI/2 BPSK	1@1	26.6	29.19	0.8299
77	30	60	656000	3840	DFT-s-OFDM QPSK	1@1	26.68	29.27	0.8453
77	30	60	656000	3840	DFT-s-OFDM 16 QAM	1@1	25.92	28.51	0.7096
77	30	60	663332	3949.98	DFT-s-OFDM PI/2 BPSK	1@1	26.81	29.4	0.8710
77	30	60	663332	3949.98	DFT-s-OFDM QPSK	1@1	26.82	29.41	0.8730
77	30	60	663332	3949.98	DFT-s-OFDM 16 QAM	1@1	25.8	28.39	0.6902
77	30	80	649334	3740.01	DFT-s-OFDM PI/2 BPSK	1@1	26.54	29.13	0.8185
77	30	80	649334	3740.01	DFT-s-OFDM QPSK	1@1	26.57	29.16	0.8241
77	30	80	649334	3740.01	DFT-s-OFDM 16 QAM	1@1	25.49	28.08	0.6427
77	30	80	656000	3840	DFT-s-OFDM PI/2 BPSK	1@1	26.65	29.24	0.8395
77	30	80	656000	3840	DFT-s-OFDM QPSK	1@1	26.83	29.42	0.8750
77	30	80	656000	3840	DFT-s-OFDM 16 QAM	1@1	25.88	28.47	0.7031
77	30	80	662666	3939.99	DFT-s-OFDM PI/2 BPSK	1@1	26.74	29.33	0.8570
77	30	80	662666	3939.99	DFT-s-OFDM QPSK	1@1	26.63	29.22	0.8356
77	30	80	662666	3939.99	DFT-s-OFDM 16 QAM	1@1	25.62	28.21	0.6622
77	30	90	649668	3745.02	DFT-s-OFDM PI/2 BPSK	1@1	26.69	29.28	0.8472
77	30	90	649668	3745.02	DFT-s-OFDM QPSK	1@1	26.48	29.07	0.8072
77	30	90	649668	3745.02	DFT-s-OFDM 16 QAM	1@1	26.38	28.97	0.7889
77	30	90	656000	3840	DFT-s-OFDM PI/2 BPSK	1@1	26.23	28.82	0.7621
77	30	90	656000	3840	DFT-s-OFDM QPSK	1@1	26.11	28.7	0.7413
77	30	90	656000	3840	DFT-s-OFDM 16 QAM	1@1	25.8	28.39	0.6902
77	30	90	662332	3934.98	DFT-s-OFDM PI/2 BPSK	1@1	26.52	29.11	0.8147
77	30	90	662332	3934.98	DFT-s-OFDM QPSK	1@1	26.43	29.02	0.7980
77	30	90	662332	3934.98	DFT-s-OFDM 16 QAM	1@1	25.69	28.28	0.6730

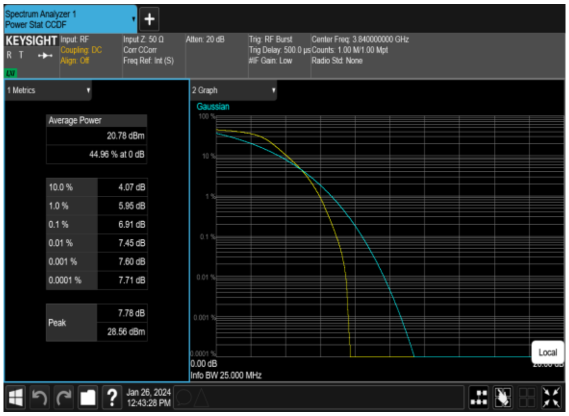
Frequency Stability

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	-0.0027	**PASS**	NV
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	0.0012	**PASS**	LV
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	0.0034	**PASS**	HV
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	0.0021	**PASS**	-30℃
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	-0.0010	**PASS**	-10℃
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	0.0033	**PASS**	0℃
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	0.0028	**PASS**	10℃
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	-0.0028	**PASS**	20℃
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	0.0021	**PASS**	30℃
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	-0.0035	**PASS**	40℃
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	0.0043	**PASS**	50℃

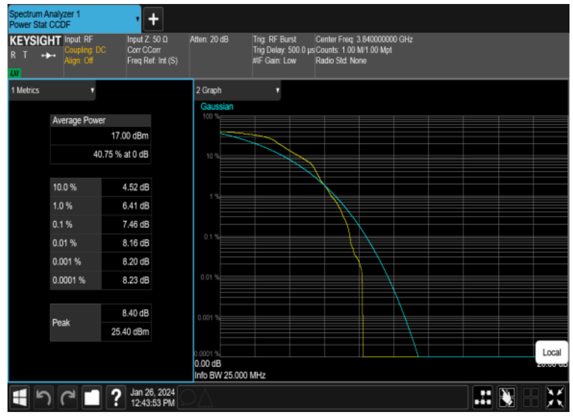
Peak to Average Ratio

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	7.46	13	**PASS**
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	50@0	7.99	13	**PASS**
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	1@0	7.6	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

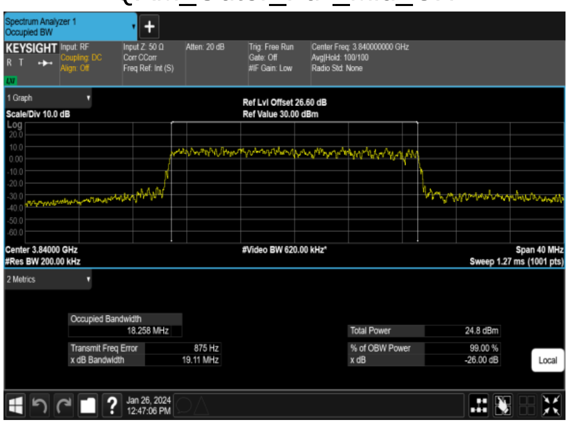
Occupied Bandwidth

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	OBW (MHz)	26dB BW (MHz)
77	30	20	656000	3840.0	CP-OFDM QPSK	51@0	18.196	19.01
77	30	20	656000	3840.0	CP-OFDM 16 QAM	51@0	18.224	19.1
77	30	20	656000	3840.0	CP-OFDM 64 QAM	51@0	18.258	19.11
77	30	20	656000	3840.0	CP-OFDM 256 QAM	51@0	18.156	19.01
77	30	30	656000	3840.0	CP-OFDM QPSK	78@0	27.8	29.08
77	30	30	656000	3840.0	CP-OFDM 16 QAM	78@0	27.757	29.11
77	30	30	656000	3840.0	CP-OFDM 64 QAM	78@0	27.855	29.1
77	30	30	656000	3840.0	CP-OFDM 256 QAM	78@0	27.737	28.74
77	30	40	656000	3840.0	CP-OFDM QPSK	106@0	37.791	39.41
77	30	40	656000	3840.0	CP-OFDM 16 QAM	106@0	37.846	39.19
77	30	40	656000	3840.0	CP-OFDM 64 QAM	106@0	37.875	39.31
77	30	40	656000	3840.0	CP-OFDM 256 QAM	106@0	37.813	39.15
77	30	50	656000	3840.0	CP-OFDM QPSK	133@0	47.406	48.94
77	30	50	656000	3840.0	CP-OFDM 16 QAM	133@0	47.301	49.06
77	30	50	656000	3840.0	CP-OFDM 64 QAM	133@0	47.43	49.0
77	30	50	656000	3840.0	CP-OFDM 256 QAM	133@0	47.47	49.27
77	30	60	656000	3840.0	CP-OFDM QPSK	162@0	57.763	59.68
77	30	60	656000	3840.0	CP-OFDM 16 QAM	162@0	57.787	59.61
77	30	60	656000	3840.0	CP-OFDM 64 QAM	162@0	58.023	59.64
77	30	60	656000	3840.0	CP-OFDM 256 QAM	162@0	57.796	59.69
77	30	80	656000	3840.0	CP-OFDM QPSK	217@0	77.442	79.91
77	30	80	656000	3840.0	CP-OFDM 16 QAM	217@0	77.588	79.97
77	30	80	656000	3840.0	CP-OFDM 64 QAM	217@0	77.494	79.84
77	30	80	656000	3840.0	CP-OFDM 256 QAM	217@0	77.497	79.75
77	30	90	656000	3840.0	CP-OFDM QPSK	245@0	87.332	90.21
77	30	90	656000	3840.0	CP-OFDM 16 QAM	245@0	87.501	90.2
77	30	90	656000	3840.0	CP-OFDM 64 QAM	245@0	87.466	90.22
77	30	90	656000	3840.0	CP-OFDM 256 QAM	245@0	87.44	90.17
77	30	100	656000	3840.0	CP-OFDM QPSK	273@0	97.459	100.5
77	30	100	656000	3840.0	CP-OFDM 16 QAM	273@0	97.436	100.5
77	30	100	656000	3840.0	CP-OFDM 64 QAM	273@0	97.272	100.5
77	30	100	656000	3840.0	CP-OFDM 256 QAM	273@0	97.365	100.6

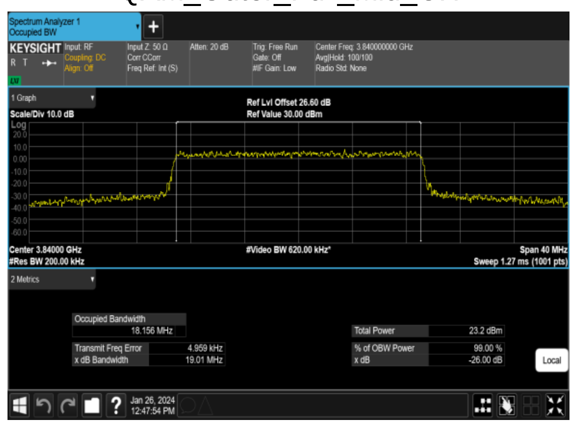
N77(20M)_CP-OFDM_QPSK_Outer_Full_Mid_CH

N77(20M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH

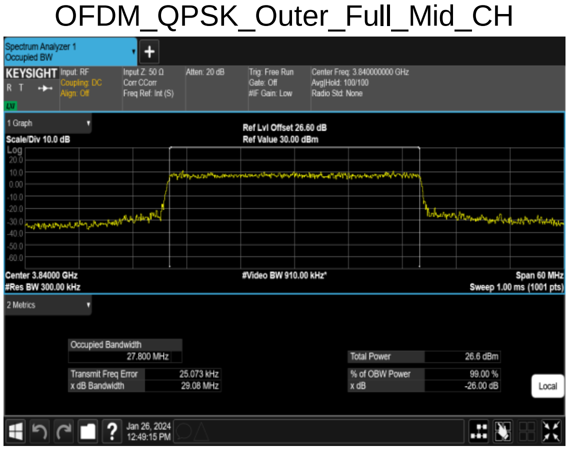
N77(20M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



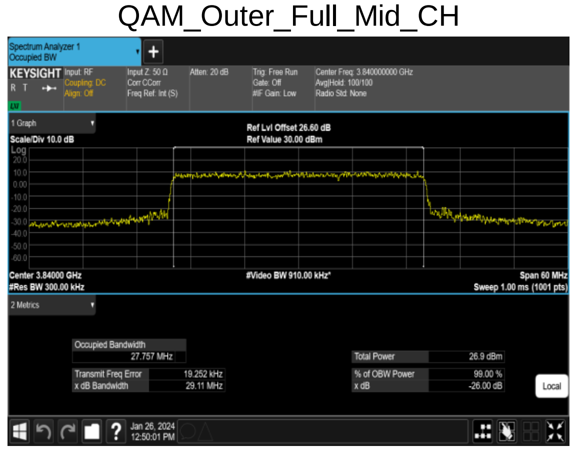
N77(20M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



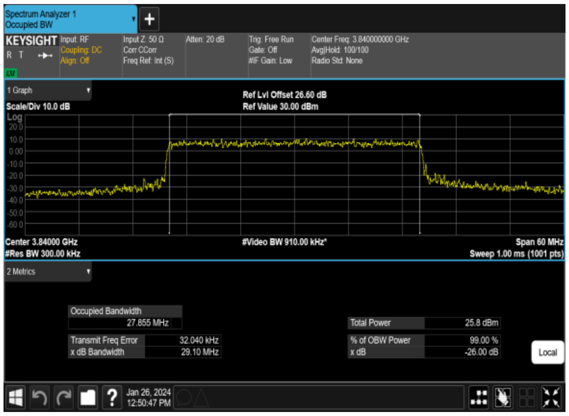
N77(30M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



N77(30M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH

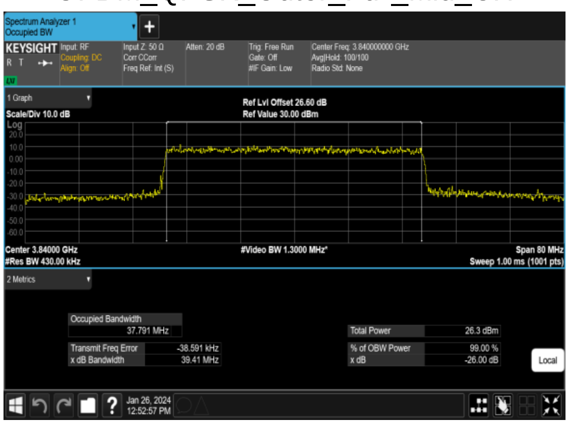


N77(30M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH

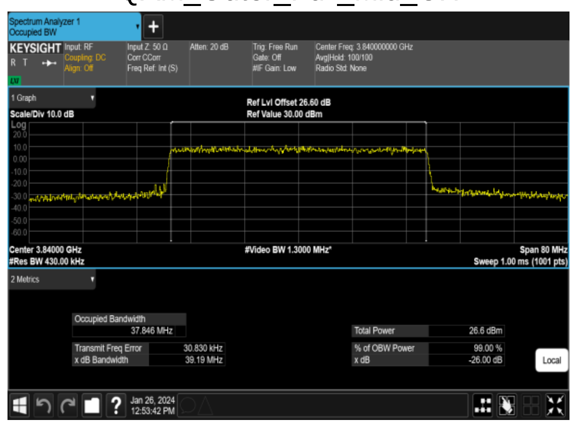


N77(30M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH

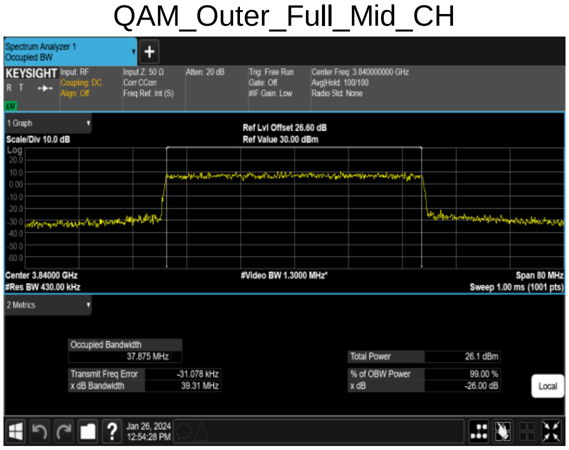
N77(40M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



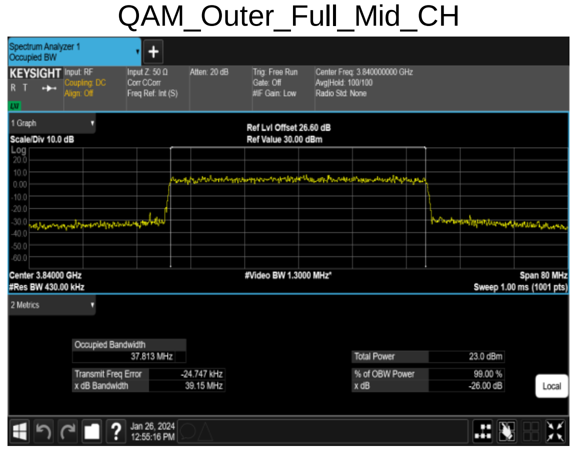
N77(40M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



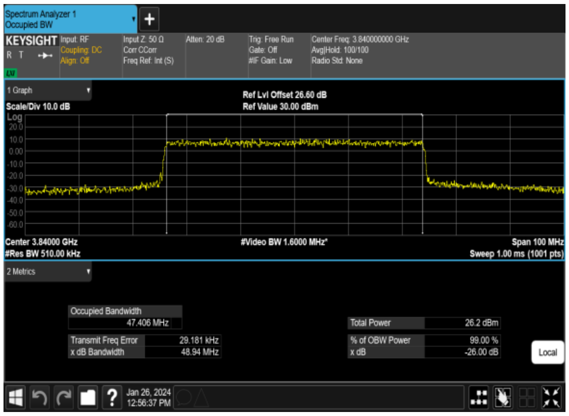
N77(40M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



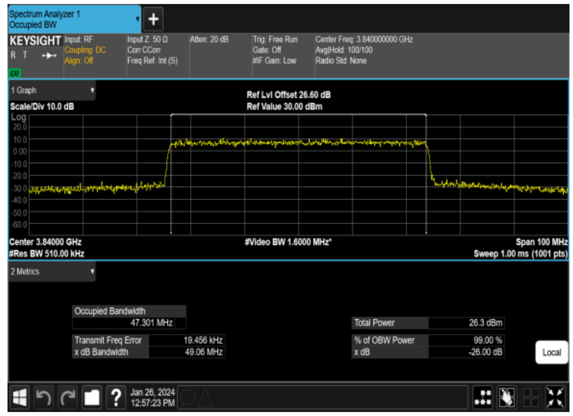
N77(40M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



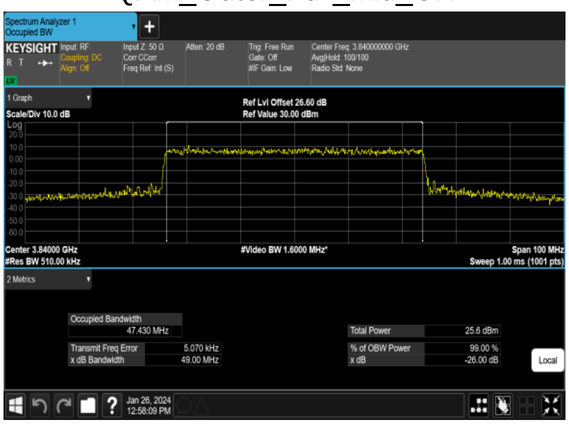
N77(50M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



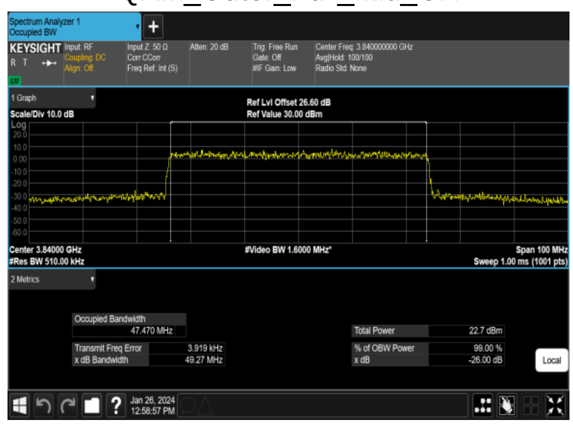
N77(50M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



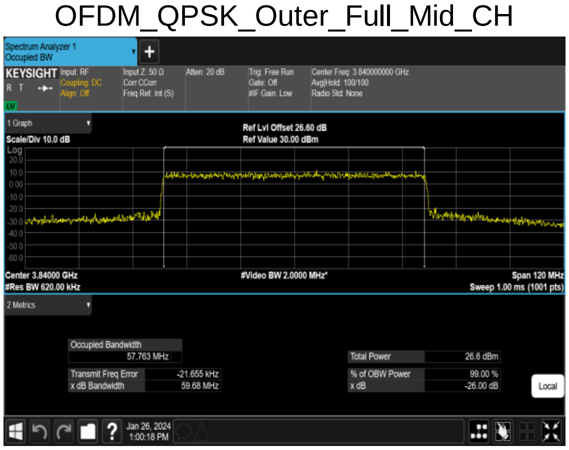
N77(50M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



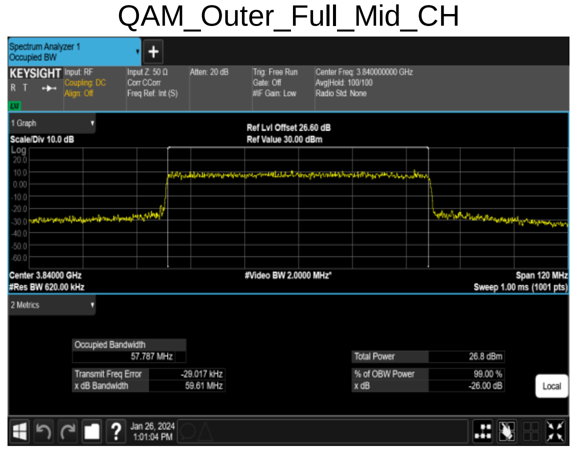
N77(50M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



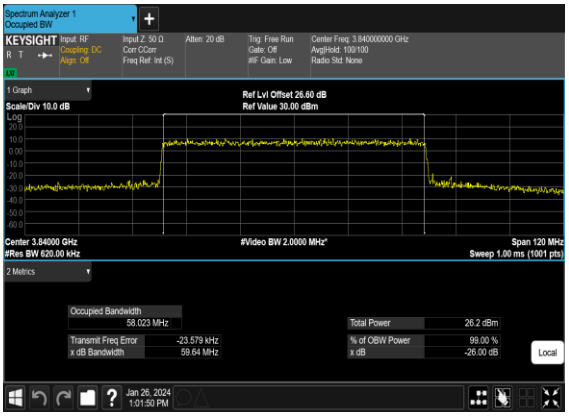
N77(60M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



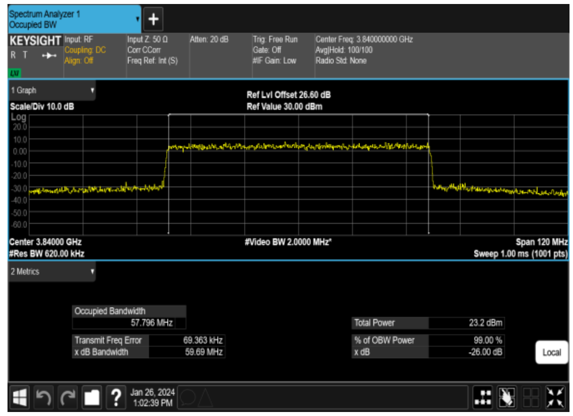
N77(60M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



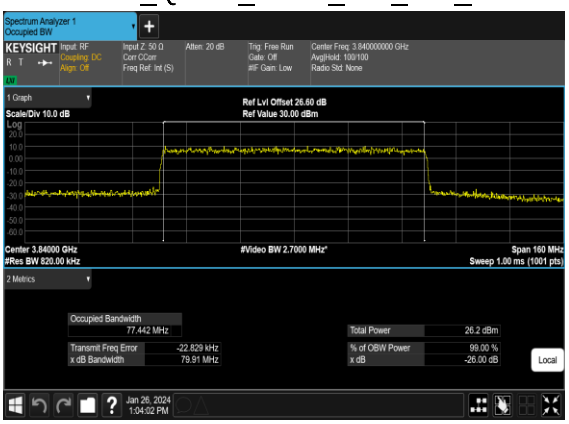
N77(60M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



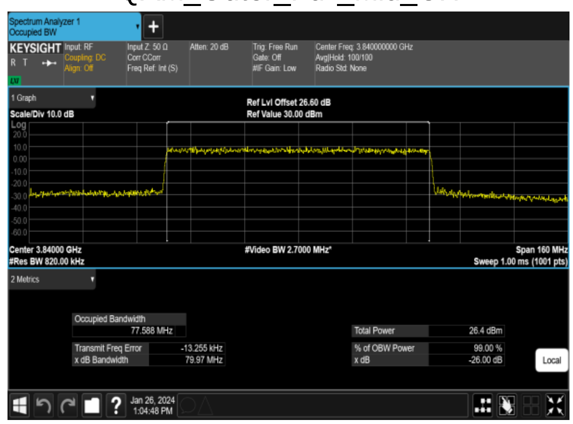
N77(60M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



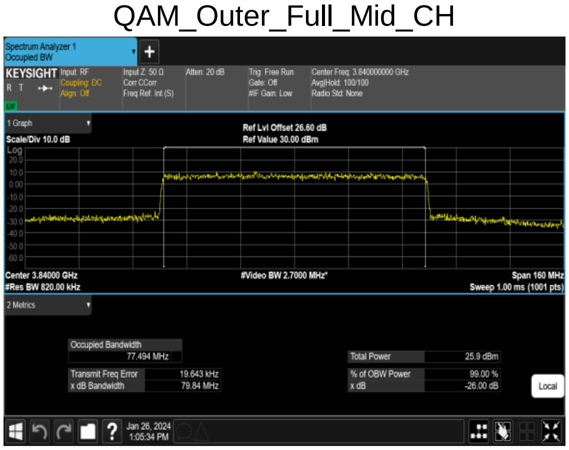
N77(80M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



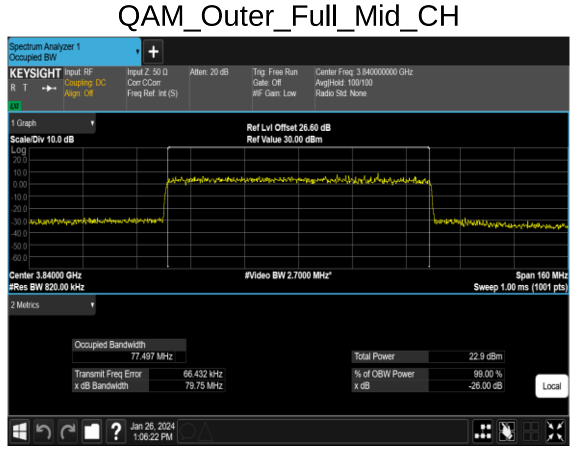
N77(80M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



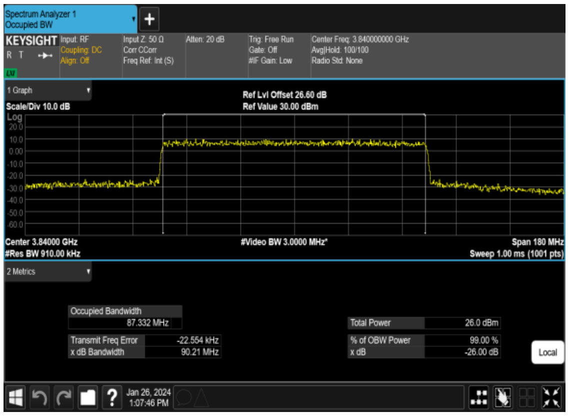
N77(80M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



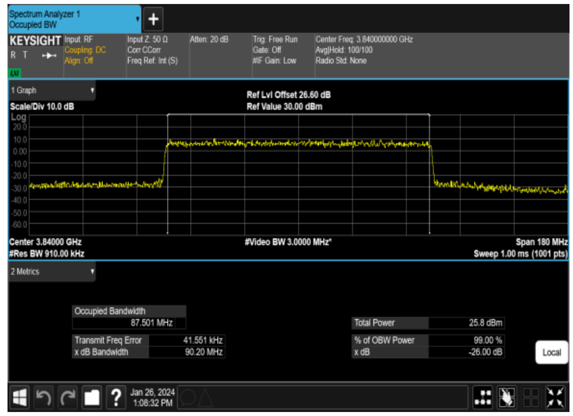
N77(80M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



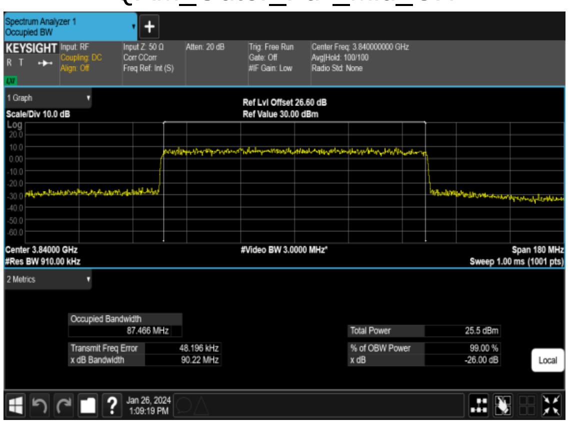
N77(90M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



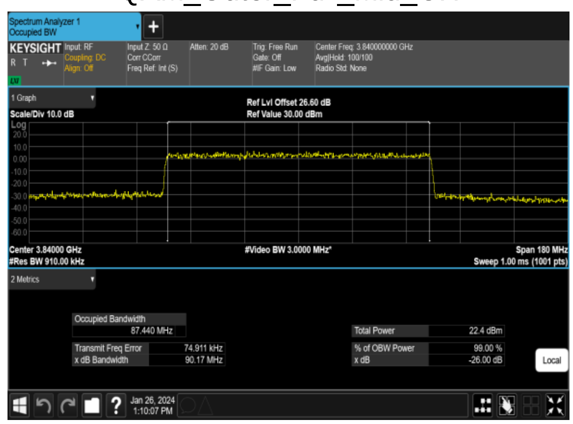
N77(90M)_CP-OFDM_16QAM_Outer_Full_Mid_CH



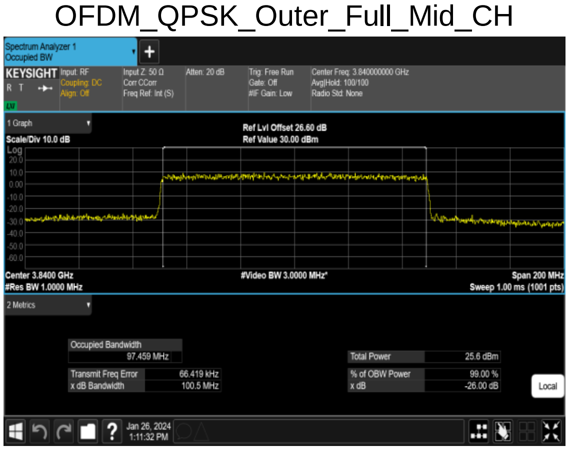
N77(90M)_CP-OFDM_64QAM_Outer_Full_Mid_CH



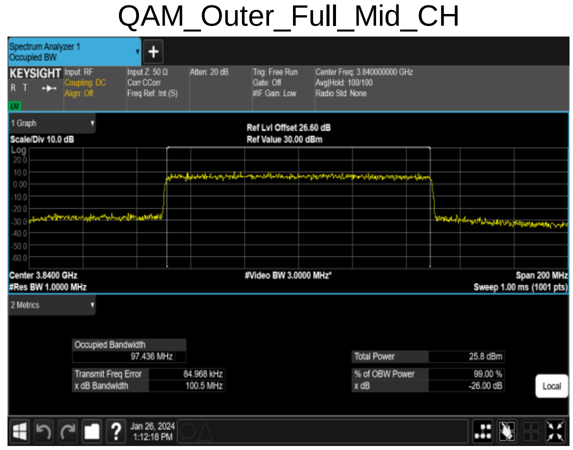
N77(90M)_CP-OFDM_256QAM_Outer_Full_Mid_CH



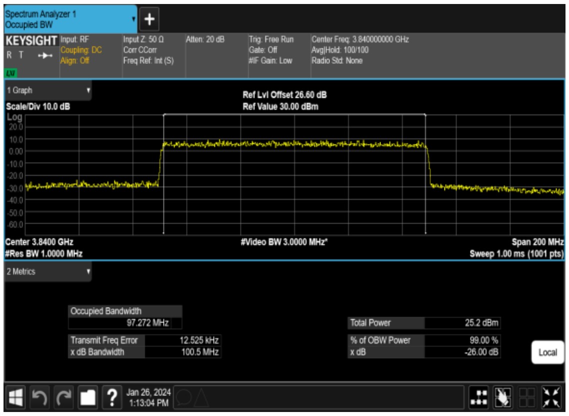
N77(100M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



N77(100M)_CP-OFDM_16QAM_Outer_Full_Mid_CH



N77(100M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



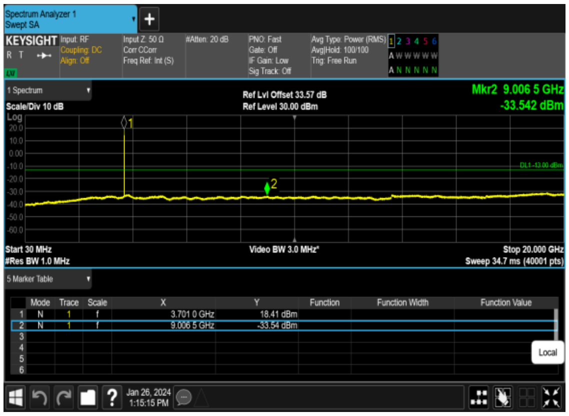
N77(100M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH

Conducted Spurious Emissions

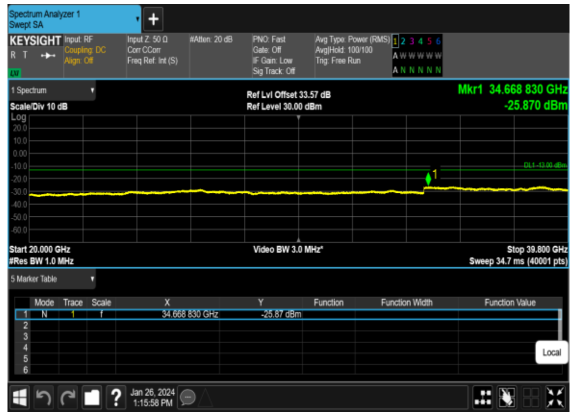
NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result	Verdict
77	30	20	647334	3710.01	DFT-s-OFDM BPSK	1@0	see graph	**---**
77	30	20	647334	3710.01	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	30	20	647334	3710.01	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	30	20	647334	3710.01	DFT-s-OFDM QPSK	1@0	see graph	**---**
77	30	20	647334	3710.01	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	30	20	647334	3710.01	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	30	20	656000	3840.0	DFT-s-OFDM BPSK	1@0	see graph	**---**
77	30	20	656000	3840.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	30	20	656000	3840.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	1@0	see graph	**---**
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	30	20	656000	3840.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	30	20	664666	3969.99	DFT-s-OFDM BPSK	1@0	see graph	**---**
77	30	20	664666	3969.99	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	30	20	664666	3969.99	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	30	20	664666	3969.99	DFT-s-OFDM QPSK	1@0	see graph	**---**
77	30	20	664666	3969.99	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	30	20	664666	3969.99	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**

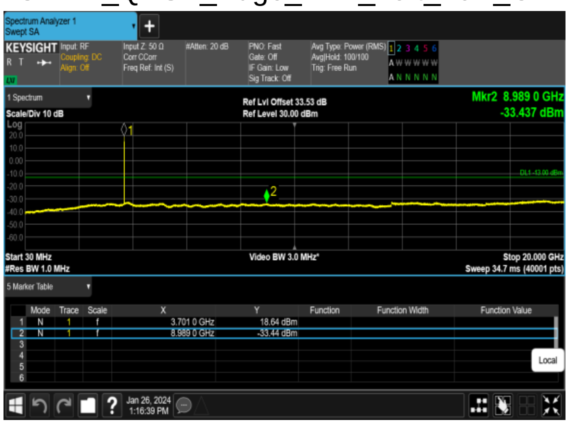
N77(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



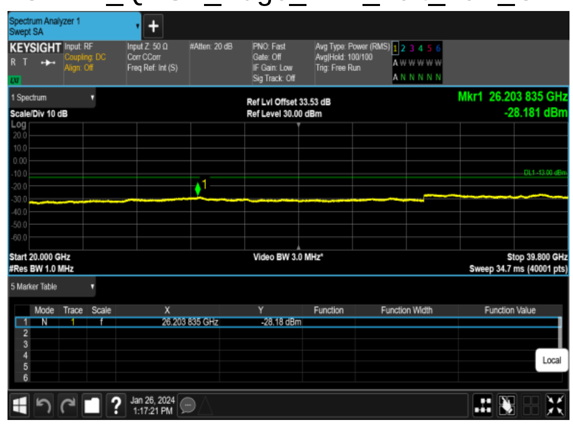
N77(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



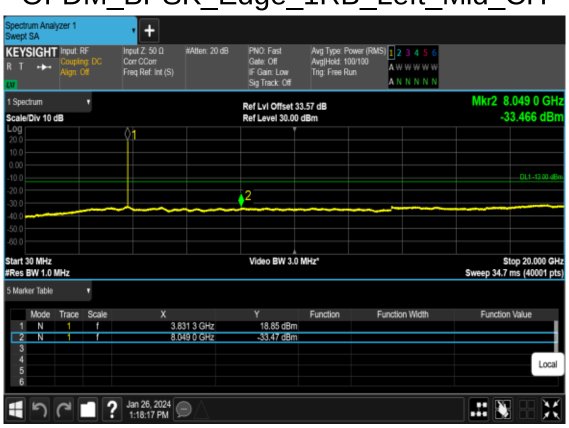
N77(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



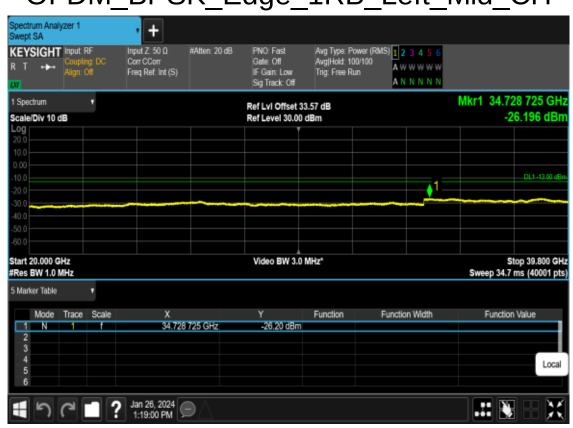
N77(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



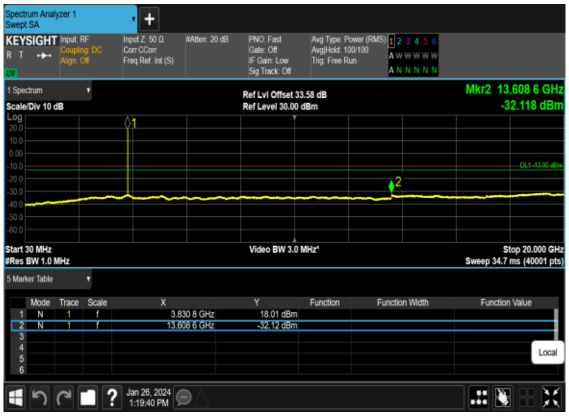
N77(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



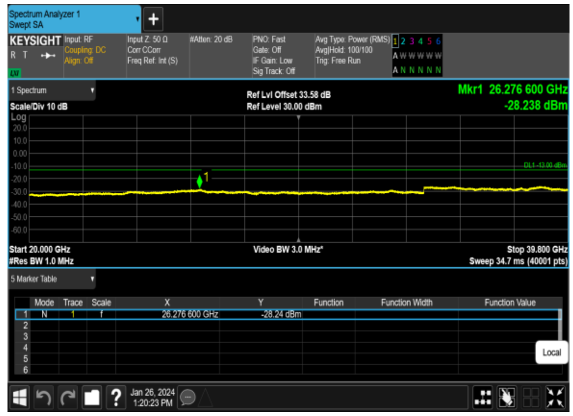
N77(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



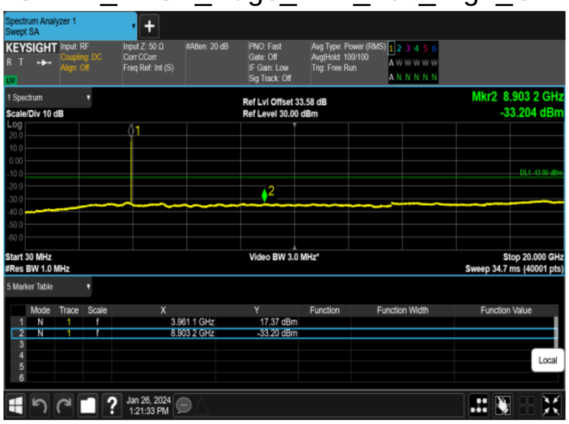
N77(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



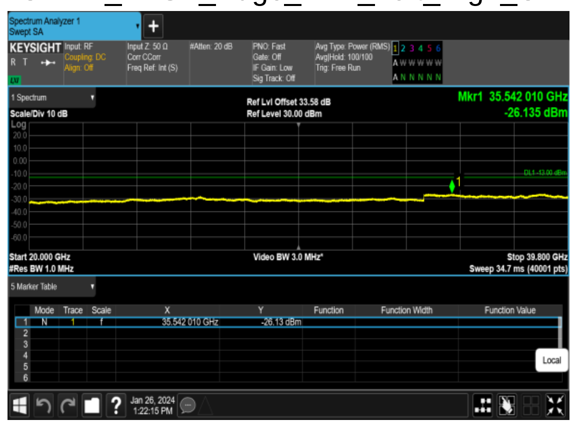
N77(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



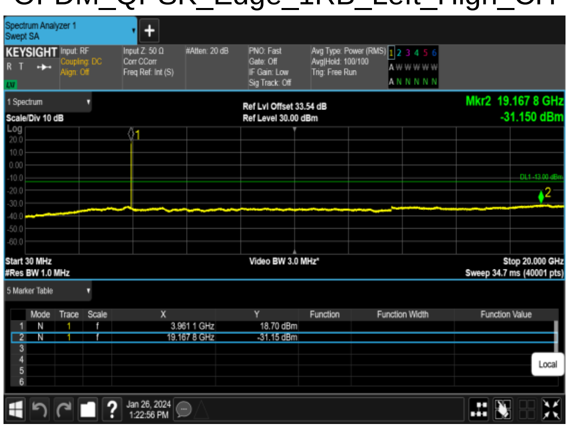
N77(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



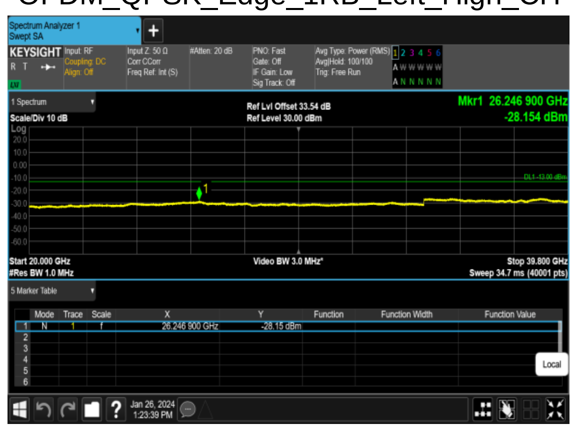
N77(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



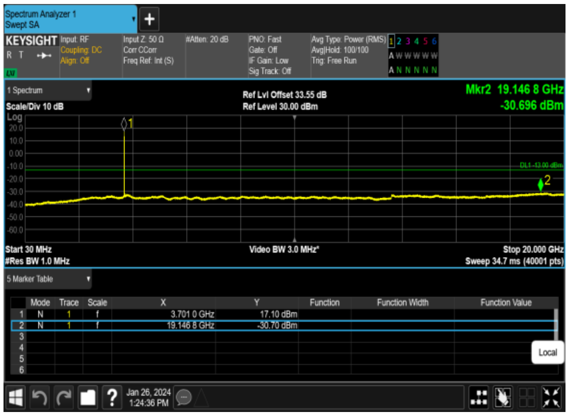
N77(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



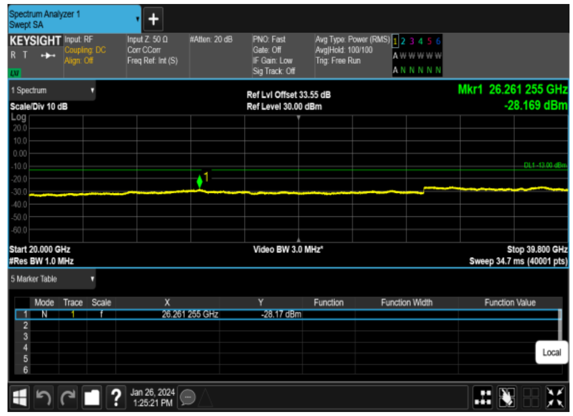
N77(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



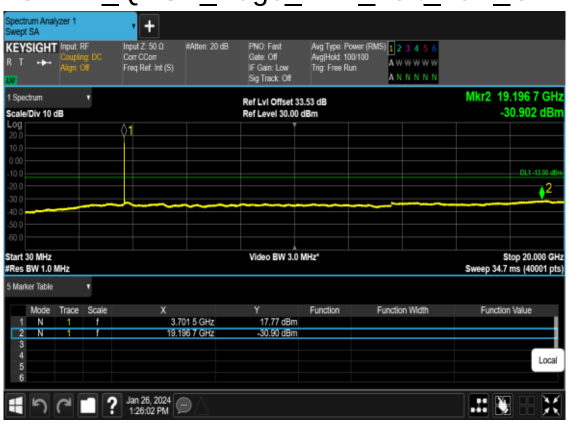
N77(60M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



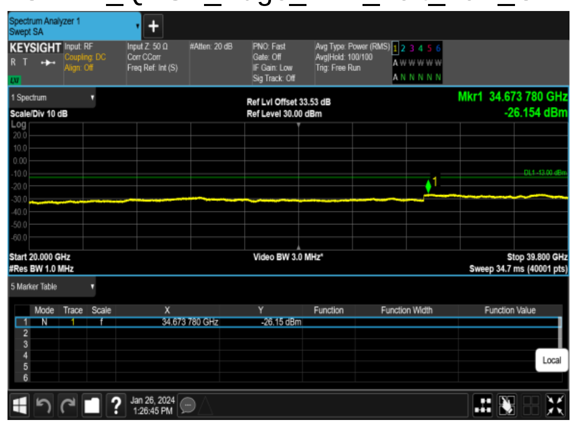
N77(60M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



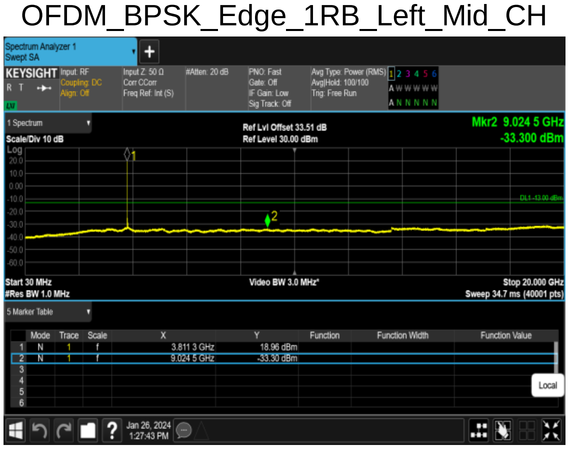
N77(60M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



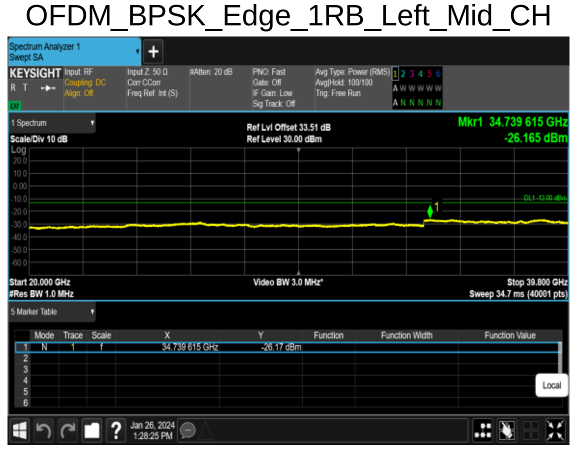
N77(60M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



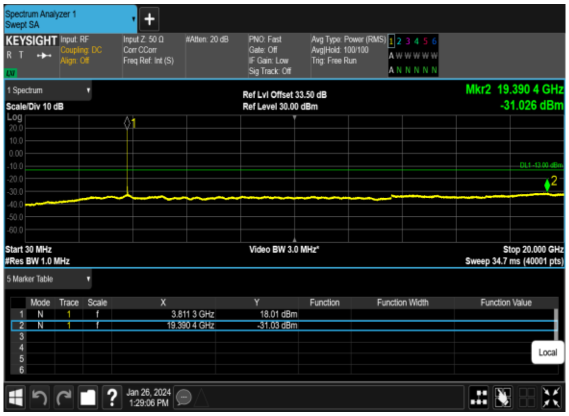
N77(60M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



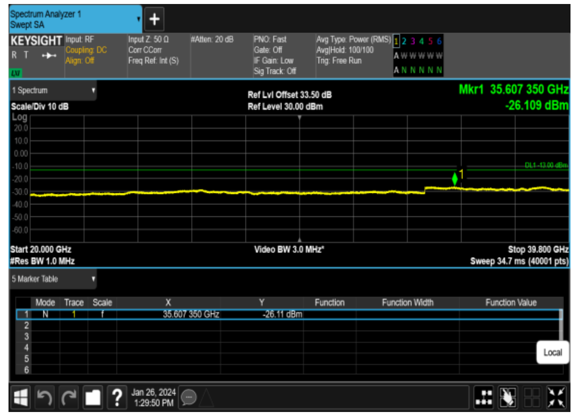
N77(60M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



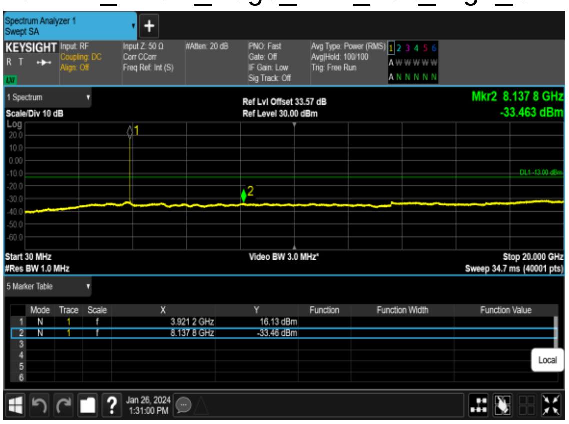
N77(60M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



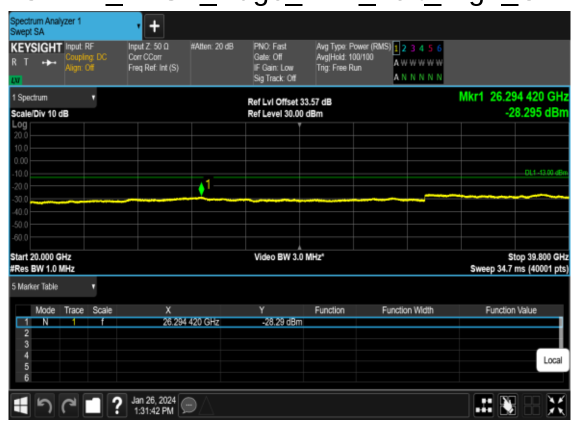
N77(60M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



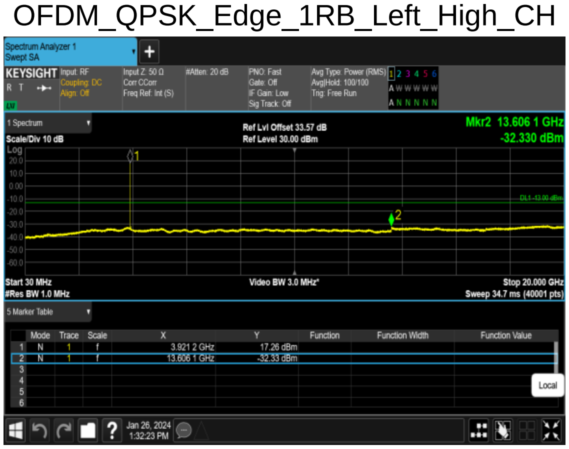
N77(60M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



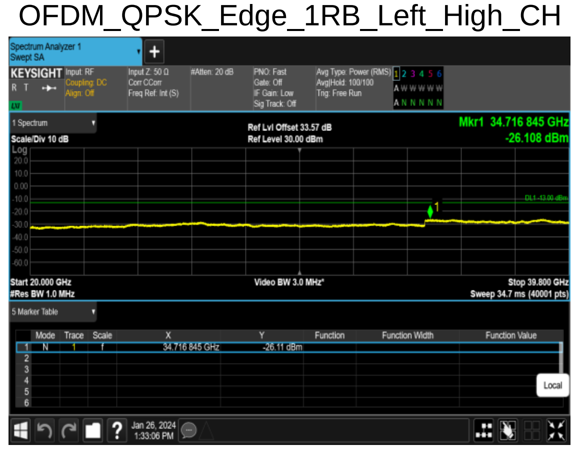
N77(60M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



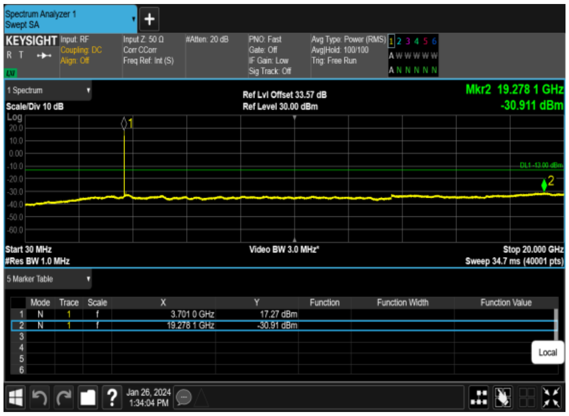
N77(60M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



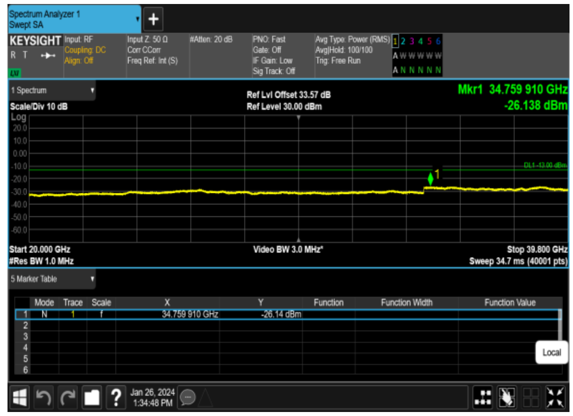
N77(60M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



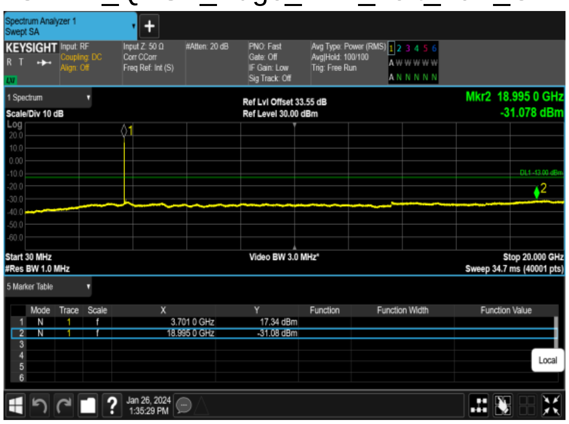
N77(100M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



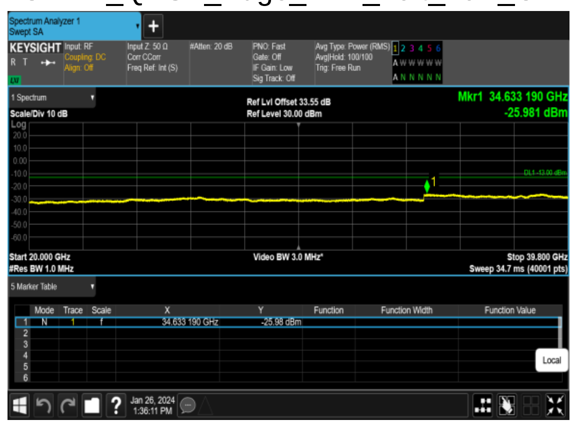
N77(100M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



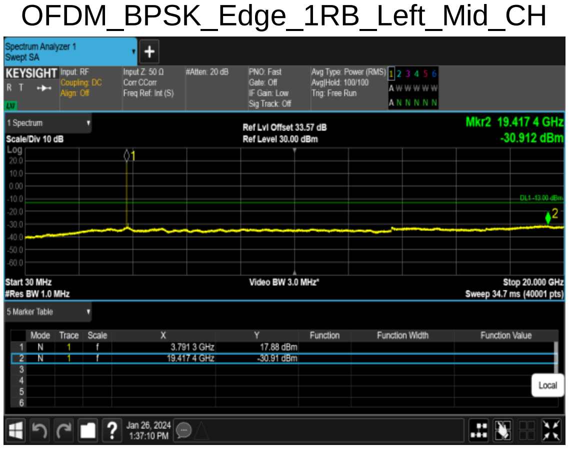
N77(100M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



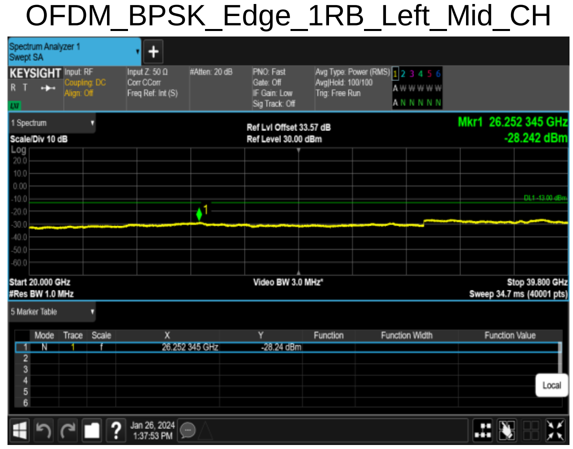
N77(100M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



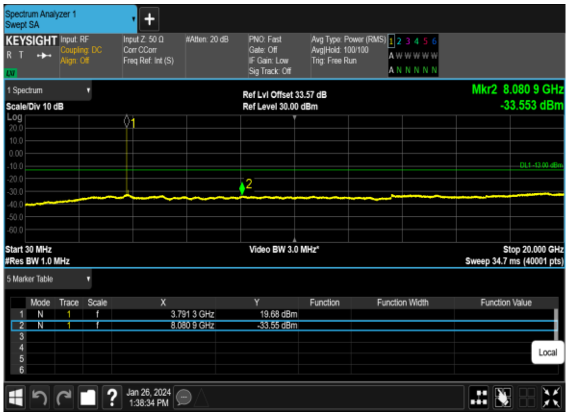
N77(100M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



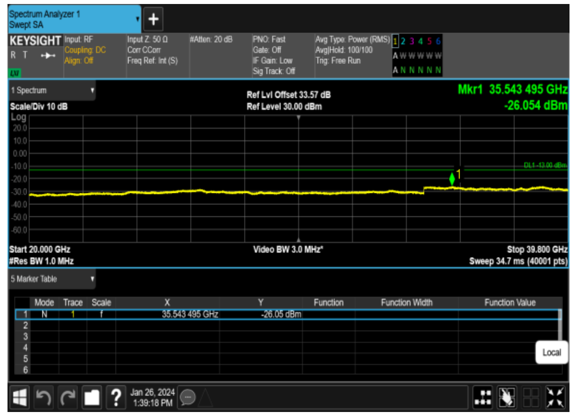
N77(100M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



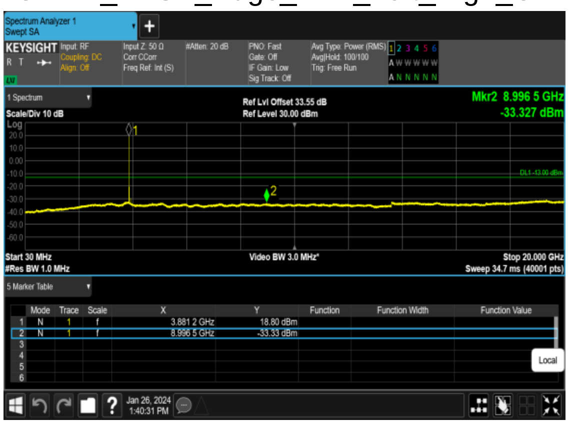
N77(100M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



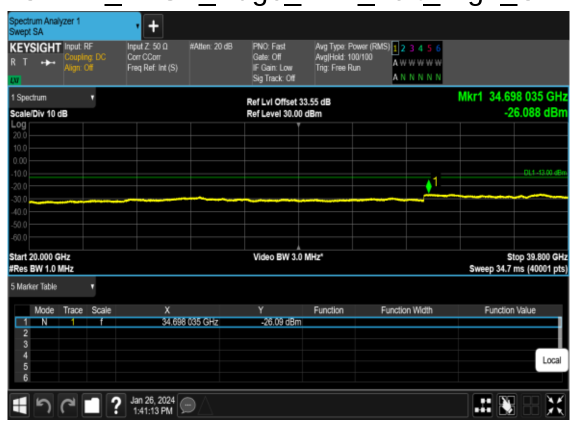
N77(100M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



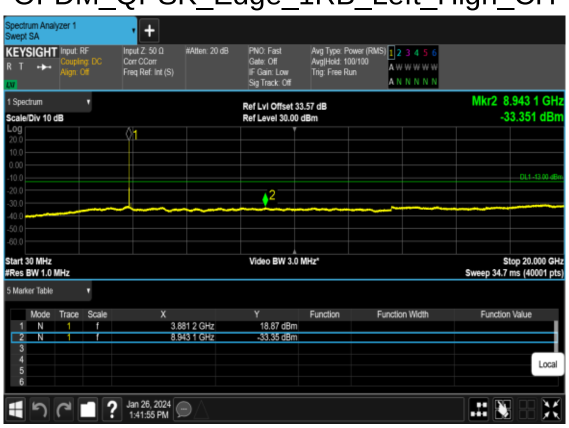
N77(100M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



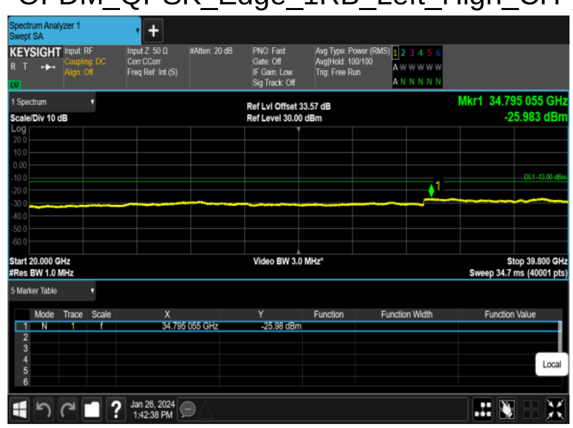
N77(100M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



N77(100M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



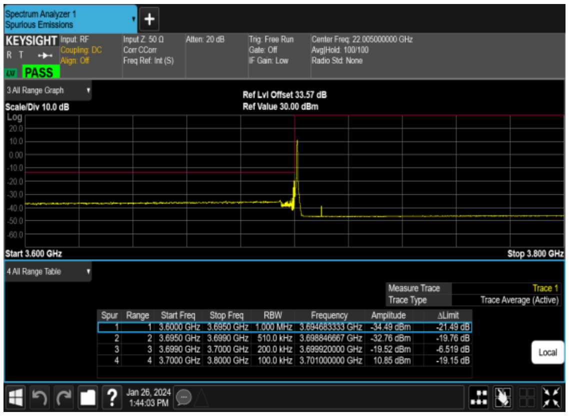
N77(100M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



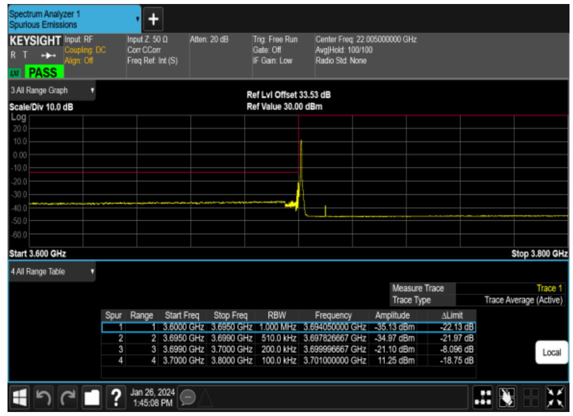
Conducted Band Edge

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result	Verdict
77	30	20	647334	3710.01	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	30	20	647334	3710.01	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	30	20	647334	3710.01	DFT-s-OFDM BPSK	50@0	see graph	**PASS**
77	30	20	647334	3710.01	DFT-s-OFDM QPSK	50@0	see graph	**PASS**
77	30	20	664666	3969.99	DFT-s-OFDM BPSK	1@50	see graph	**PASS**
77	30	20	664666	3969.99	DFT-s-OFDM QPSK	1@50	see graph	**PASS**
77	30	20	664666	3969.99	DFT-s-OFDM BPSK	50@0	see graph	**PASS**
77	30	20	664666	3969.99	DFT-s-OFDM QPSK	50@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	**PASS**
77	30	60	648668	3730.02	DFT-s-OFDM BPSK	162@0	see graph	**PASS**
77	30	60	648668	3730.02	DFT-s-OFDM QPSK	162@0	see graph	**PASS**
77	30	60	663332	3949.98	DFT-s-OFDM BPSK	1@161	see graph	**PASS**
77	30	60	663332	3949.98	DFT-s-OFDM QPSK	1@161	see graph	**PASS**
77	30	60	663332	3949.98	DFT-s-OFDM BPSK	162@0	see graph	**PASS**
77	30	60	663332	3949.98	DFT-s-OFDM QPSK	162@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	**PASS**
77	30	100	650000	3750.0	DFT-s-OFDM BPSK	270@0	see graph	**PASS**
77	30	100	650000	3750.0	DFT-s-OFDM QPSK	270@0	see graph	**PASS**
77	30	100	662000	3930.0	DFT-s-OFDM BPSK	1@272	see graph	**PASS**
77	30	100	662000	3930.0	DFT-s-OFDM QPSK	1@272	see graph	**PASS**
77	30	100	662000	3930.0	DFT-s-OFDM BPSK	270@0	see graph	**PASS**
77	30	100	662000	3930.0	DFT-s-OFDM QPSK	270@0	see graph	**PASS**

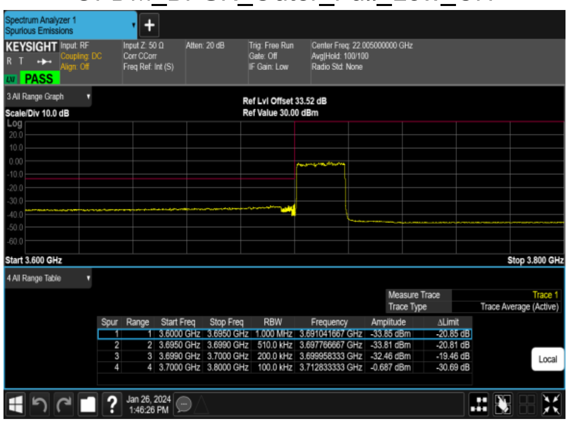
N77(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



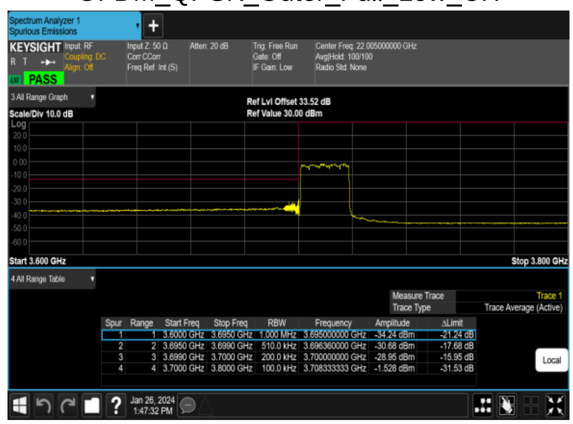
N77(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



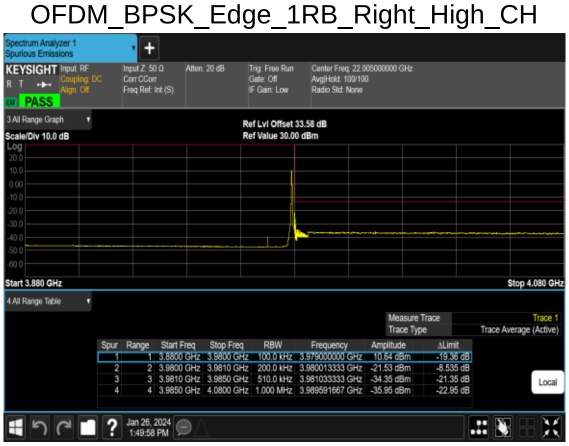
N77(20M)_DFT-s-OFDM_BPSK_Outer_Full_Low_CH



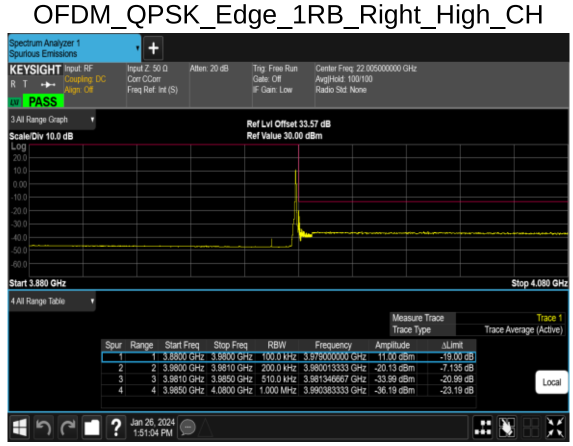
N77(20M)_DFT-s-OFDM_QPSK_Outer_Full_Low_CH



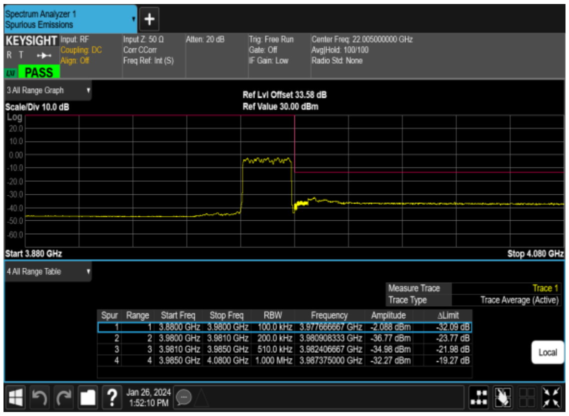
N77(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Right_High_CH



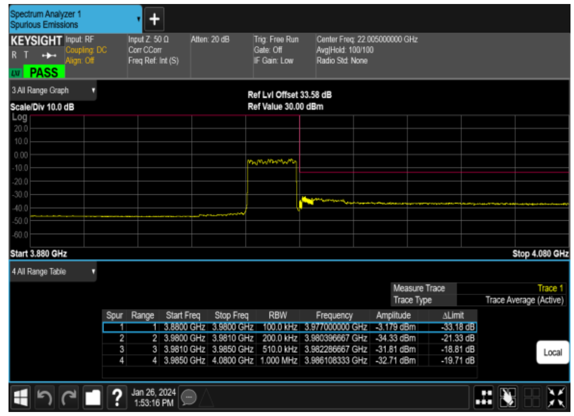
N77(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_High_CH



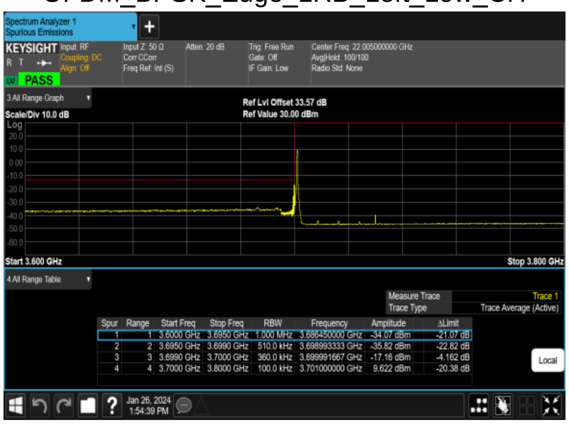
N77(20M)_DFT-s-OFDM_BPSK_Outer_Full_High_CH



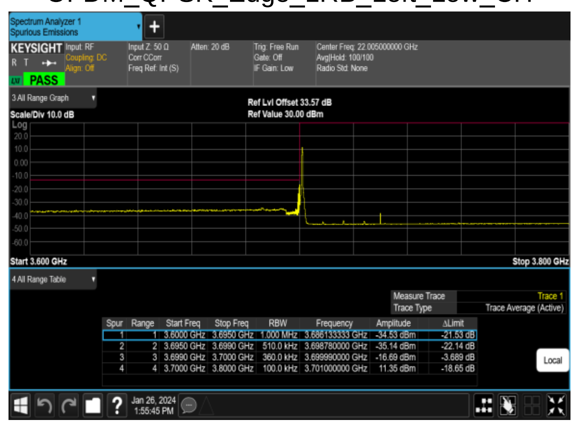
N77(20M)_DFT-s-OFDM_QPSK_Outer_Full_High_CH



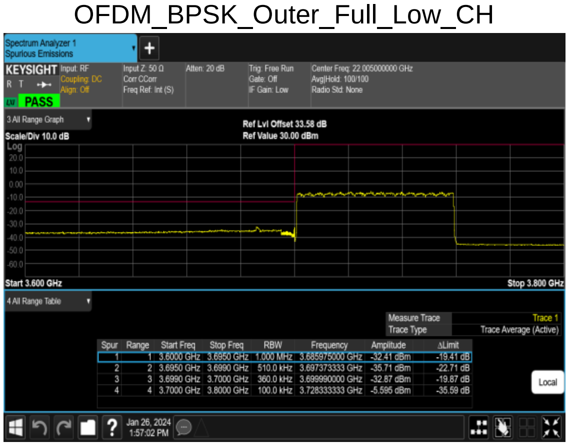
N77(60M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



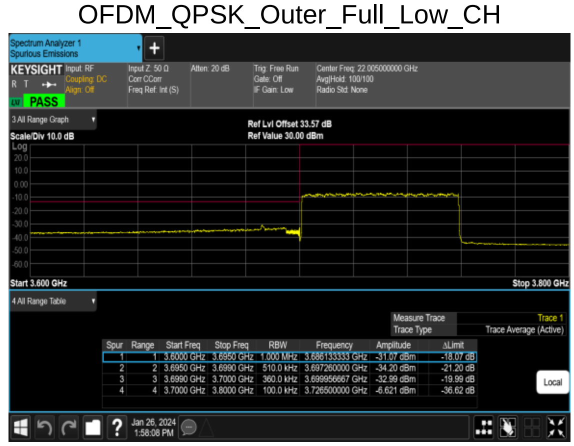
N77(60M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



N77(60M)_DFT-s-OFDM_BPSK_Outer_Full_Low_CH



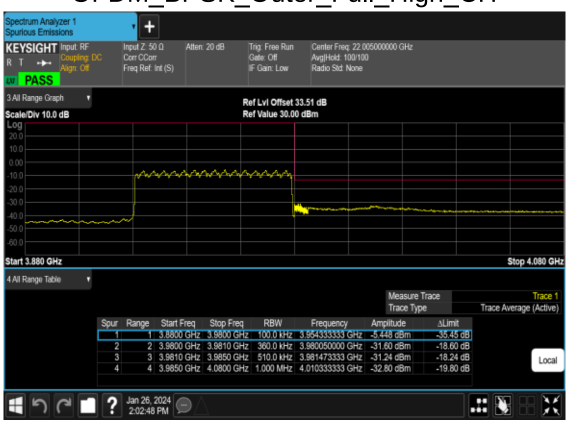
N77(60M)_DFT-s-OFDM_QPSK_Outer_Full_Low_CH



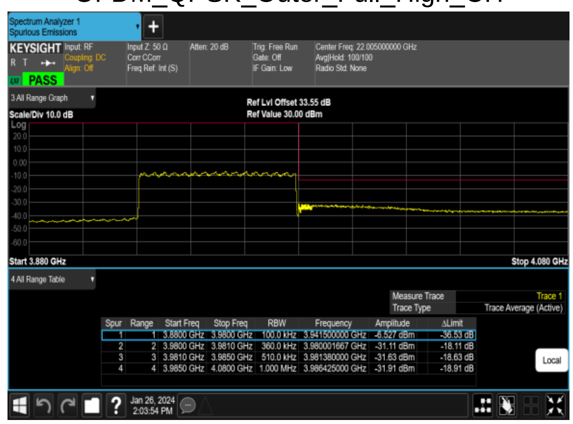
N77(60M)_DFT-s-OFDM_BPSK_Edge_1RB_Right_High_CH

N77(60M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_High_CH

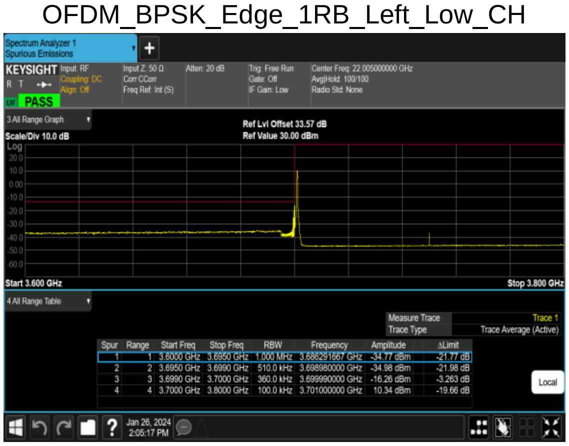
N77(60M)_DFT-s-OFDM_BPSK_Outer_Full_High_CH



N77(60M)_DFT-s-OFDM_QPSK_Outer_Full_High_CH



N77(100M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



N77(100M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH