FCC RF Test Report

APPLICANT	**:**	**Motorola Mobility LLC**
EQUIPMENT	**:**	**Mobile Cellular Phone**
BRAND NAME	**:**	**Motorola**
MODEL NAME	**:**	**XT2321-1**
FCC ID	**:**	**IHDT56AJ5**
STANDARD	**:**	**47 CFR Part 2, 27**
CLASSIFICATION	**:**	**PCS Licensed Transmitter Held to Ear (PCE)**
TEST DATE(S)	**:**	**Jan. 17, 2023 ~ Feb. 19, 2023**

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

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

Jason Jia

Approved by: Jason Jia

Cert #5145.01

Sporton International Inc. (ShenZhen)

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

People's Republic of China

TABLE OF CONTENTS

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG2D0913-01D	Rev. 01	Initial issue of report	Feb. 28, 2023

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	Reporting Only	PASS	-
	§27.50(d)(4)	Equivalent Isotropic Radiated Power (5G NR n66)	EIRP < 1Watt		
3.5	N/A	Peak-to-Average Ratio	<13 dB	PASS	-
3.6	§2.1049	Occupied Bandwidth	Reporting Only	PASS	-
3.7	§2.1051 §27.53(h)	Conducted Band Edge Measurement (5G NR n66)	< 43+10log10(P[Watts])	PASS	-
3.8	§2.1051 §27.53(h)	Conducted Spurious Emission (5G NR n66)	< 43+10log10(P[Watts])	PASS	-
3.9	§2.1055 §27.54	Frequency Stability Temperature & Voltage	Within Authorized Band	PASS	-
4.4	§2.1053 §27.53(h)	Radiated Spurious Emission (5G NR n66)	< 43+10$\log_{10}$(P[Watts])	PASS	Under limit 25.43 dB at 10122.360 MHz

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

1 General Description

1.1 Applicant

Motorola Mobility LLC
222 W,Merchandise Mart Plaza, Chicago IL 60654 USA

1.2 Manufacturer

Motorola Mobility LLC
222 W,Merchandise Mart Plaza, Chicago IL 60654 USA

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT2321-1
FCC ID	IHDT56AJ5
IMEI Code	Conducted : 356909990019178/356909990019186 Radiation : 356909990009575/356909990009583
HW Version	DVT2
SW Version	TTZ33.61
EUT Stage	Identical Prototype

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	5G NR n66 : 1710 MHz ~ 1780 MHz
Rx Frequency	5G NR n66 : 2110 MHz~ 2200 MHz
Bandwidth	n66: 5MHz / 10MHz / 15MHz / 20MHz / 30MHz / 40MHz
SCS	15kHz
Antenna Gain	**<Ant.0>** n66 : -2.20 dBi **<Ant. 1>** n66 : -2.64 dBi **<Ant. 2>** n66 : -4.65 dBi **<Ant. 3>** n66 : -3.73 dBi
Type of Modulation	CP-OFDM: QPSK / 16QAM / 64QAM / 256QAM DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM

Remark:

1. The maximum EIRP is calculated from output power and antenna gain, only the maximum EIRP are shown in the report, 5G NR n66 for Ant.3.
2. All the supported ENDC combinations are verified conducted power, only the ENDC combination

with highest power are shown in the report.

3. 5G NR n66 support SA mode and NSA mode. According to the maximum power between SA and NSA mode, SA covers NSA mode.
4. The EN-DC mode combination could be referred to the product spec.
5. The EUT has two working states, flip open state and flip close state, by verifying these two states, we choose the worst flip open state for all test.

1.5 Modification of EUT

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

1.6 Maximum EIRP Power and Emission Designator

5G NR n66		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)
5	1712.5 ~ 1777.5	0.0893	4M48G7D	0.0748	4M48W7D
10	1715.0 ~ 1775.0	0.0912	9M28G7D	0.0769	9M30W7D
15	1717.5 ~ 1772.5	0.0973	14M1G7D	0.0766	14M1W7D
20	1720.0 ~ 1770.0	0.0955	18M9G7D	0.0800	19M0W7D
30	1725.0 ~ 1765.0	0.0912	28M6G7D	0.0791	28M6W7D
40	1730.0 ~ 1760.0	0.0975	38M6G7D	0.0789	38M6W7D

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

1.7 Specification of Accessory

Specification of Accessory				
AC Adapter 1(US)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-331
AC Adapter 1 (EU)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-332
AC Adapter 1 (UK)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-333
AC Adapter 1(AU)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-335
AC Adapter 1(AR)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-336
AC Adapter 1(BR)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-337
AC Adapter 1(CHILE)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-339
AC Adapter 1(KR)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-330
AC Adapter 2(IN)	**Brand Name**	Motorola(Salcomp)	**Model Name**	MC-334
Battery 1	**Brand Name**	Motorola(ATL)	**Model Name**	PM29
Battery 2	**Brand Name**	Motorola(ATL)	**Model Name**	PM08
USB Cable 1	**Brand Name**	Motorola(Saibao)	**Model Name**	SC18D22297
USB Cable 2	**Brand Name**	Motorola(Cabletech)	**Model Name**	SC18D22298
USB Cable 3	**Brand Name**	Motorola(Luxshare)	**Model Name**	SC18D22299

1.8 Testing Location

Sporton International Inc. (ShenZhen) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

Test Firm	Sporton International Inc. (ShenZhen)		
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055 People's Republic of China TEL: +86-755-86379589 FAX: +86-755-86379595		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	TH01-SZ	CN1256	421272

Test Firm	Sporton International Inc. (ShenZhen)		
Test Site Location	101, 1st Floor, Block B, Building 1, No. 2, Tengfeng 4th Road, Fenghuang Community, Fuyong Street, Baoan District, Shenzhen City Guangdong Province China 518103 TEL: +86-755-33202398		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	03CH01-SZ	CN1256	421272

1.9 Test Software

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

1.10 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.

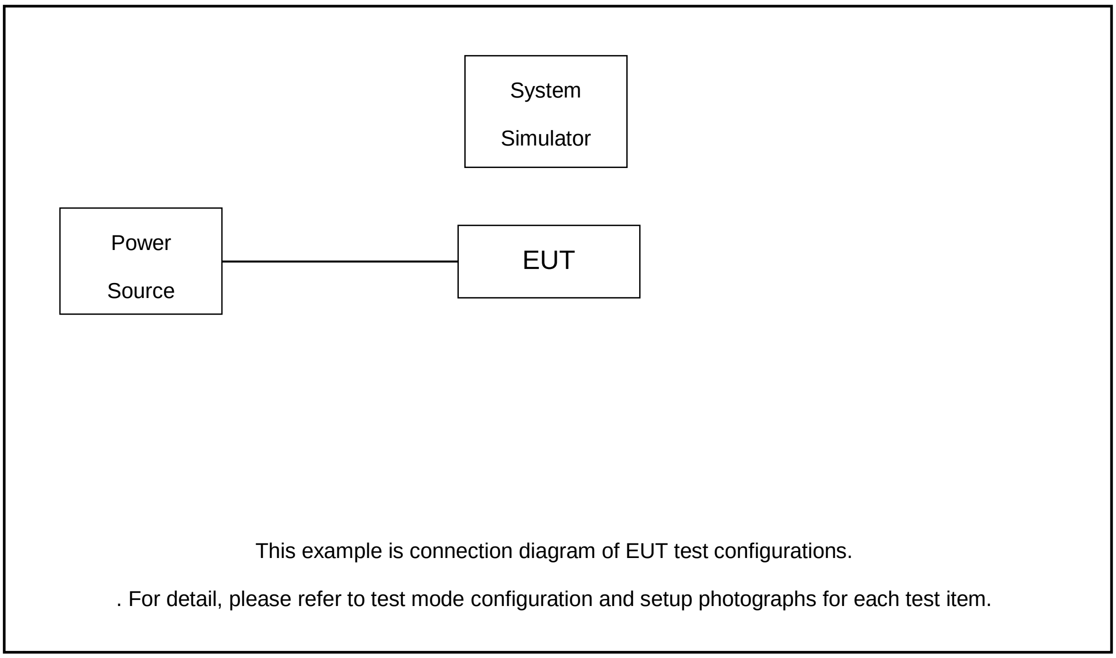
For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases were recorded in this report. (Y Plane)

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

	X Plane	Y Plane	Z Plane
Orthogonal Planes of EUT			

Test Items	5G NR	Bandwidth (MHz)													Modulation					RB #		Test Channel		
		5	10	15	20	25	30	40	50	60	70	80	90	100	PI/2 BPSK	QPSK	16QAM	64QAM	256QAM	1	Full	L	M	H
Max. Output Power	n66	v	v	v	v	-	v	v	-	-	-	-	-	-	v	v	v	v	v	v	v	v	v	v
Peak-to-Average Ratio	n66				v	-			-	-	-	-	-	-	v	v				v	v	v	v	v
26dB and 99% Bandwidth	n66	v	v	v	v	-	v	v	-	-	-	-	-	-	v	v	v	v	v		v		v	
Conducted Band Edge	n66	v			v	-		v	-	-	-	-	-	-	v	v				v	v	v		v
Conducted Spurious Emission	n66	v			v	-		v	-	-	-	-	-	-	v	v				v		v	v	v
Frequency Stability	n66				v	-			-	-	-	-	-	-		v					v		v	
E.I.R.P	n66	v	v	v	v	-	v	v	-	-	-	-	-	-	v	v	v	v	v	v	v	v	v	v
Radiated Spurious Emission	n66	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 = 3.91V ; Low Voltage =3.40V. ; High Voltage =4.50V																							

2.2 Connection Diagram of Test System



The EUT has been configuration operated in a manner tended to maximize its emission characteristics in a typical application.

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.

Following shows an offset computation example with cable loss 8.0 dB.

Example :

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

= 8.0 (dB)

2.5 Frequency List of Low/Middle/High Channels

5G NR n66 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
40	Channel	346000	349000	352000
	Frequency	1730	1745	1760
30	Channel	345000	349000	353000
	Frequency	1725	1745	1765
20	Channel	344000	349000	354000
	Frequency	1720	1745	1770
15	Channel	343500	349000	354500
	Frequency	1717.5	1745	1772.5
10	Channel	343000	349000	355000
	Frequency	1715	1745	1775
5	Channel	342500	349000	355500
	Frequency	1712.5	1745	1777.5

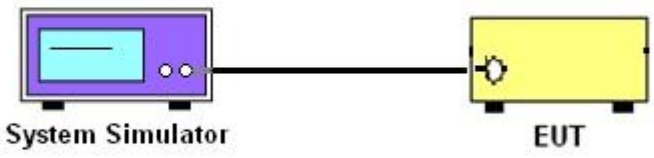
3 Conducted Test Items

3.1 Measuring Instruments

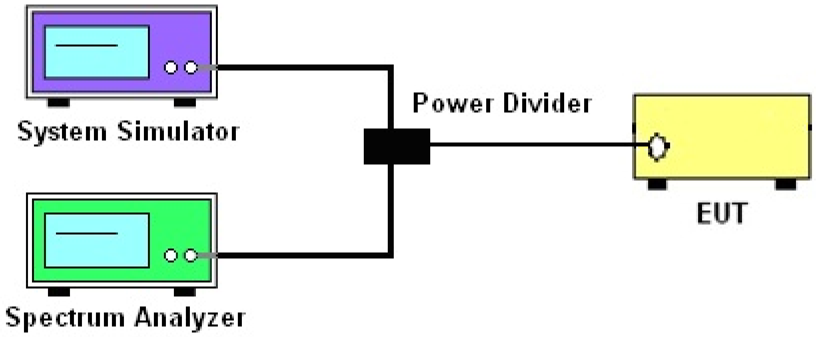
See list of measuring instruments of this test report.

3.2 Test Setup

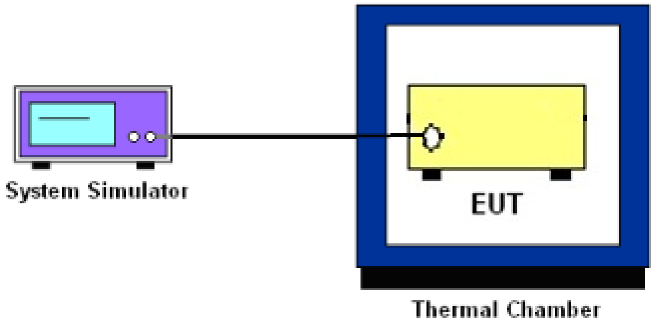
3.2.1 Conducted Output Power



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 n66.

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 (h)

For operations in the 1695 – 1710 MHz, 1710 – 1755 MHz and 1710 – 1780 MHz band, the FCC limit is 43 + $10\log_{10}$(P[Watts]) dB below the transmitter power P(Watts) in a 1 MHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

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%/2% 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 + 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.

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.

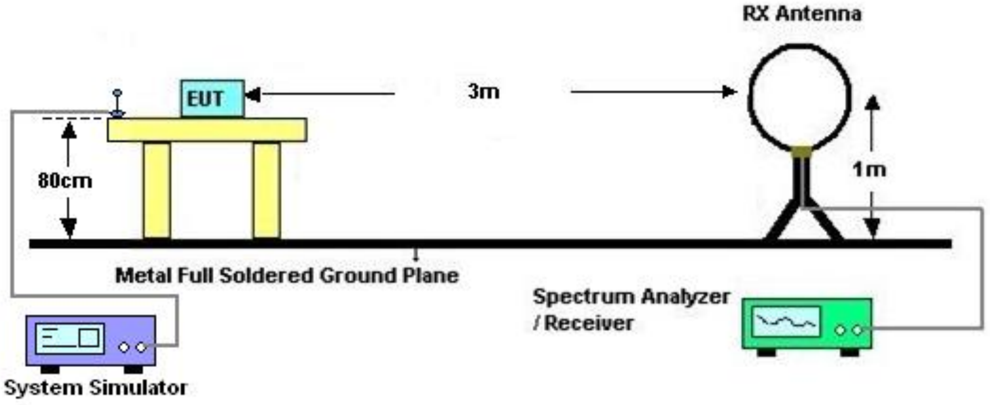
4 Radiated Test Items

4.1 Measuring Instruments

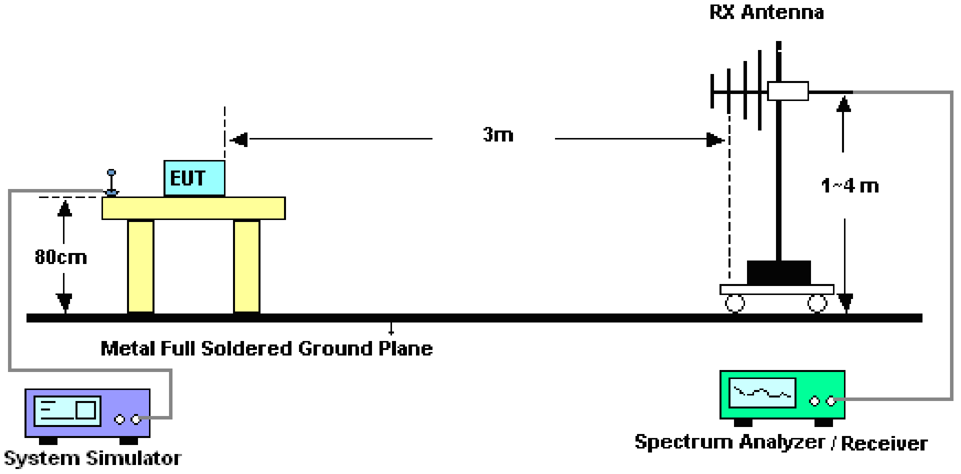
See list of measuring instruments of this test report.

4.2 Test Setup

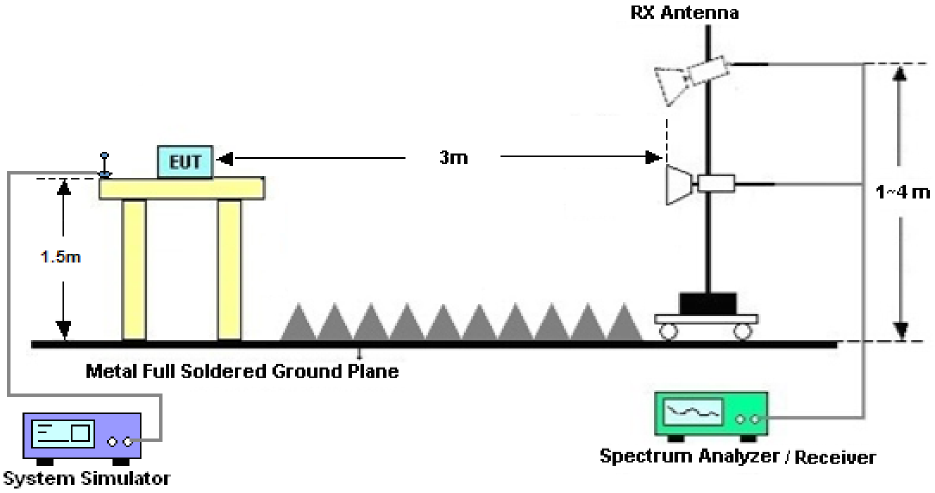
4.2.1 For radiated test below 30MHz



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
EMI Test Receiver&SA	Agilent	N9038A	MY52260185	20Hz~26.5GHz	Dec. 26, 2022	Feb. 19, 2023	Dec. 25, 2023	Conducted (TH01-SZ)
Power Divider	TOJOIN	PS-2SM-04 265	60.06.020.007 7	0.4GHz~26.5GHz	Dec. 25, 2022	Feb. 19, 2023	Dec. 24, 2023	Conducted (TH01-SZ)
Thermal Chamber	Ten Billion Hongzhangroup	LP-150U	H2014081803	-40~+150°C	Jul. 07, 2022	Feb. 19, 2023	Jul. 06, 2023	Conducted (TH01-SZ)
EMI Test Receiver&SA	Agilent	N9038A	MY52260185	20Hz~26.5GHz	Dec. 26, 2022	Jan. 17, 2023	Dec. 25, 2023	Radiation (03CH01-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	Jul. 28, 2022	Jan. 17, 2023	Jul. 27, 2024	Radiation (03CH01-SZ)
HF Amplifier	KEYSIGHT	83017A	MY53270105	0.5GHz~26.5Ghz	Oct. 19, 2022	Jan. 17, 2023	Oct. 18, 2023	Radiation (03CH01-SZ)
Bilog Antenna	TeseQ	CBL6112D	35407	30MHz-2GHz	Sep. 28, 2022	Jan. 17, 2023	Sep. 27, 2023	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00119436	1GHz~18GHz	Jul. 07, 2022	Jan. 17, 2023	Jul. 06, 2023	Radiation (03CH01-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Apr. 10, 2022	Jan. 17, 2023	Apr. 09, 2023	Radiation (03CH01-SZ)
LF Amplifier	Burgeon	BPA-530	102209	0.01~3000Mhz	Apr. 06, 2022	Jan. 17, 2023	Apr. 05, 2023	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	AMF-7D-00 101800-30-1 0P-R	1943528	1GHz~18GHz	Oct. 19, 2022	Jan. 17, 2023	Oct. 18, 2023	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	TTA1840-35 -HG	1871923	18GHz~40GHz	Jul. 06, 2022	Jan. 17, 2023	Jul. 05, 2023	Radiation (03CH01-SZ)
AC Power Source	Chroma	61601	616010001985	N/A	Nov. 10, 2022	Jan. 17, 2023	Nov. 09, 2023	Radiation (03CH01-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Jan. 17, 2023	NCR	Radiation (03CH01-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Jan. 17, 2023	NCR	Radiation (03CH01-SZ)

NCR: No Calibration Required

6 Uncertainty of Evaluation

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

Uncertainty of Conducted Measurement

Test Item	Uncertainty
Conducted Power	±1.34 dB
Conducted Emissions	±1.34 dB
Occupied Channel Bandwidth	±0.13 %

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

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

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

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

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

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

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

Appendix A. Test Results of Conducted Test

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

Software Version: 22.12.120701

FR1 N66(ANT3)

Transmitter Conducted Output Power and EIRP, (G_T - L_C)=-3.73dB

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Conducted Power(dBm)	EIRP (dBm)	EIRP (W)
66	15	5	342500	1712.5	DFT-s-OFDM QPSK	1@1	23.24	19.51	0.0893
66	15	5	342500	1712.5	DFT-s-OFDM 16 QAM	1@1	22.47	18.74	0.0748
66	15	5	349000	1745	DFT-s-OFDM QPSK	1@1	22.91	19.18	0.0828
66	15	5	349000	1745	DFT-s-OFDM 16 QAM	1@1	22.18	18.45	0.0700
66	15	5	355500	1777.5	DFT-s-OFDM QPSK	1@1	22.89	19.16	0.0824
66	15	5	355500	1777.5	DFT-s-OFDM 16 QAM	1@1	21.99	18.26	0.0670
66	15	10	343000	1715	DFT-s-OFDM QPSK	1@1	23.33	19.6	0.0912
66	15	10	343000	1715	DFT-s-OFDM 16 QAM	1@1	22.59	18.86	0.0769
66	15	10	349000	1745	DFT-s-OFDM QPSK	1@1	22.74	19.01	0.0796
66	15	10	349000	1745	DFT-s-OFDM 16 QAM	1@1	22.09	18.36	0.0685
66	15	10	355000	1775	DFT-s-OFDM QPSK	1@1	22.84	19.11	0.0815
66	15	10	355000	1775	DFT-s-OFDM 16 QAM	1@1	22.1	18.37	0.0687
66	15	15	343500	1717.5	DFT-s-OFDM QPSK	1@1	23.61	19.88	0.0973
66	15	15	343500	1717.5	DFT-s-OFDM 16 QAM	1@1	22.57	18.84	0.0766
66	15	15	349000	1745	DFT-s-OFDM QPSK	1@1	22.75	19.02	0.0798
66	15	15	349000	1745	DFT-s-OFDM 16 QAM	1@1	22.1	18.37	0.0687
66	15	15	354500	1772.5	DFT-s-OFDM QPSK	1@1	22.78	19.05	0.0804
66	15	15	354500	1772.5	DFT-s-OFDM 16 QAM	1@1	22.1	18.37	0.0687
66	15	20	344000	1720	DFT-s-OFDM QPSK	1@1	23.25	19.52	0.0895
66	15	20	344000	1720	DFT-s-OFDM 16 QAM	1@1	22.45	18.72	0.0745
66	15	20	349000	1745	DFT-s-OFDM QPSK	1@1	22.82	19.09	0.0811
66	15	20	349000	1745	DFT-s-OFDM 16 QAM	1@1	22.09	18.36	0.0685
66	15	20	354000	1770	DFT-s-OFDM QPSK	1@1	23.53	19.8	0.0955
66	15	20	354000	1770	DFT-s-OFDM 16 QAM	1@1	22.76	19.03	0.0800
66	15	30	345000	1725	DFT-s-OFDM QPSK	1@1	23.33	19.6	0.0912
66	15	30	345000	1725	DFT-s-OFDM 16 QAM	1@1	22.71	18.98	0.0791
66	15	30	349000	1745	DFT-s-OFDM QPSK	1@1	23.04	19.31	0.0853
66	15	30	349000	1745	DFT-s-OFDM 16 QAM	1@1	22.39	18.66	0.0735
66	15	30	353000	1765	DFT-s-OFDM QPSK	1@1	22.83	19.1	0.0813

66	15	30	353000	1765	DFT-s-OFDM 16 QAM	1@1	22.13	18.4	0.0692
66	15	40	346000	1730	DFT-s-OFDM PI/2 BPSK	108@54	22.97	19.24	0.0839
66	15	40	346000	1730	DFT-s-OFDM PI/2 BPSK	1@1	23.52	19.79	0.0953
66	15	40	346000	1730	DFT-s-OFDM PI/2 BPSK	1@214	22.94	19.21	0.0834
66	15	40	346000	1730	DFT-s-OFDM QPSK	108@54	23.38	19.65	0.0923
66	15	40	346000	1730	DFT-s-OFDM QPSK	1@1	23.51	19.78	0.0951
66	15	40	346000	1730	DFT-s-OFDM QPSK	1@214	23.62	19.89	0.0975
66	15	40	346000	1730	DFT-s-OFDM 16 QAM	108@54	22.46	18.73	0.0746
66	15	40	346000	1730	DFT-s-OFDM 16 QAM	1@1	22.7	18.97	0.0789
66	15	40	346000	1730	DFT-s-OFDM 16 QAM	1@214	22.06	18.33	0.0681
66	15	40	346000	1730	DFT-s-OFDM 64 QAM	108@54	20.83	17.1	0.0513
66	15	40	346000	1730	DFT-s-OFDM 64 QAM	1@1	21.22	17.49	0.0561
66	15	40	346000	1730	DFT-s-OFDM 64 QAM	1@214	20.71	16.98	0.0499
66	15	40	346000	1730	DFT-s-OFDM 256 QAM	108@54	18.78	15.05	0.0320
66	15	40	346000	1730	DFT-s-OFDM 256 QAM	1@1	18.9	15.17	0.0329
66	15	40	346000	1730	DFT-s-OFDM 256 QAM	1@214	18.43	14.7	0.0295
66	15	40	346000	1730	CP-OFDM QPSK	108@54	21.77	18.04	0.0637
66	15	40	346000	1730	CP-OFDM QPSK	1@1	22.29	18.56	0.0718
66	15	40	346000	1730	CP-OFDM QPSK	1@214	21.49	17.76	0.0597
66	15	40	349000	1745	DFT-s-OFDM PI/2 BPSK	108@54	22.97	19.24	0.0839
66	15	40	349000	1745	DFT-s-OFDM PI/2 BPSK	1@1	23.56	19.83	0.0962
66	15	40	349000	1745	DFT-s-OFDM PI/2 BPSK	1@214	23.51	19.78	0.0951
66	15	40	349000	1745	DFT-s-OFDM QPSK	108@54	23.06	19.33	0.0857
66	15	40	349000	1745	DFT-s-OFDM QPSK	1@1	23.29	19.56	0.0904
66	15	40	349000	1745	DFT-s-OFDM QPSK	1@214	23.3	19.57	0.0906
66	15	40	349000	1745	DFT-s-OFDM 16 QAM	108@54	22.52	18.79	0.0757
66	15	40	349000	1745	DFT-s-OFDM 16 QAM	1@1	22.33	18.6	0.0724
66	15	40	349000	1745	DFT-s-OFDM 16 QAM	1@214	22.21	18.48	0.0705
66	15	40	349000	1745	DFT-s-OFDM 64 QAM	108@54	20.74	17.01	0.0502
66	15	40	349000	1745	DFT-s-OFDM 64 QAM	1@1	21	17.27	0.0533
66	15	40	349000	1745	DFT-s-OFDM 64 QAM	1@214	20.72	16.99	0.0500
66	15	40	349000	1745	DFT-s-OFDM 256 QAM	108@54	18.51	14.78	0.0301
66	15	40	349000	1745	DFT-s-OFDM 256 QAM	1@1	18.54	14.81	0.0303
66	15	40	349000	1745	DFT-s-OFDM 256 QAM	1@214	18.55	14.82	0.0303
66	15	40	349000	1745	CP-OFDM QPSK	108@54	21.56	17.83	0.0607

66	15	40	349000	1745	CP-OFDM QPSK	1@1	21.99	18.26	0.0670
66	15	40	349000	1745	CP-OFDM QPSK	1@214	21.54	17.81	0.0604
66	15	40	352000	1760	DFT-s-OFDM PI/2 BPSK	108@54	22.96	19.23	0.0838
66	15	40	352000	1760	DFT-s-OFDM PI/2 BPSK	1@1	22.99	19.26	0.0843
66	15	40	352000	1760	DFT-s-OFDM PI/2 BPSK	1@214	23.04	19.31	0.0853
66	15	40	352000	1760	DFT-s-OFDM QPSK	108@54	22.94	19.21	0.0834
66	15	40	352000	1760	DFT-s-OFDM QPSK	1@1	23.23	19.5	0.0891
66	15	40	352000	1760	DFT-s-OFDM QPSK	1@214	23.32	19.59	0.0910
66	15	40	352000	1760	DFT-s-OFDM 16 QAM	108@54	22.13	18.4	0.0692
66	15	40	352000	1760	DFT-s-OFDM 16 QAM	1@1	22.08	18.35	0.0684
66	15	40	352000	1760	DFT-s-OFDM 16 QAM	1@214	22.14	18.41	0.0693
66	15	40	352000	1760	DFT-s-OFDM 64 QAM	108@54	20.84	17.11	0.0514
66	15	40	352000	1760	DFT-s-OFDM 64 QAM	1@1	20.89	17.16	0.0520
66	15	40	352000	1760	DFT-s-OFDM 64 QAM	1@214	21	17.27	0.0533
66	15	40	352000	1760	DFT-s-OFDM 256 QAM	108@54	18.8	15.07	0.0321
66	15	40	352000	1760	DFT-s-OFDM 256 QAM	1@1	18.56	14.83	0.0304
66	15	40	352000	1760	DFT-s-OFDM 256 QAM	1@214	18.64	14.91	0.0310
66	15	40	352000	1760	CP-OFDM QPSK	108@54	21.77	18.04	0.0637
66	15	40	352000	1760	CP-OFDM QPSK	1@1	21.57	17.84	0.0608
66	15	40	352000	1760	CP-OFDM QPSK	1@214	21.57	17.84	0.0608

Frequency Stability

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Deviation (ppm)	Verdict	Environment
66	15	20	349000	1745.0	DFT-s-OFDM QPSK	100@0	0.0067	**PASS**	NV
66	15	20	349000	1745.0	DFT-s-OFDM QPSK	100@0	0.0062	**PASS**	LV
66	15	20	349000	1745.0	DFT-s-OFDM QPSK	100@0	0.0047	**PASS**	HV
66	15	20	349000	1745.0	DFT-s-OFDM QPSK	100@0	0.0056	**PASS**	-30℃
66	15	20	349000	1745.0	DFT-s-OFDM QPSK	100@0	0.0046	**PASS**	-20℃
66	15	20	349000	1745.0	DFT-s-OFDM QPSK	100@0	0.0040	**PASS**	-10℃
66	15	20	349000	1745.0	DFT-s-OFDM QPSK	100@0	0.0032	**PASS**	0℃
66	15	20	349000	1745.0	DFT-s-OFDM QPSK	100@0	0.0065	**PASS**	10℃
66	15	20	349000	1745.0	DFT-s-OFDM QPSK	100@0	0.0067	**PASS**	20℃
66	15	20	349000	1745.0	DFT-s-OFDM QPSK	100@0	0.0048	**PASS**	30℃
66	15	20	349000	1745.0	DFT-s-OFDM QPSK	100@0	0.0067	**PASS**	40℃
66	15	20	349000	1745.0	DFT-s-OFDM QPSK	100@0	0.0048	**PASS**	50℃

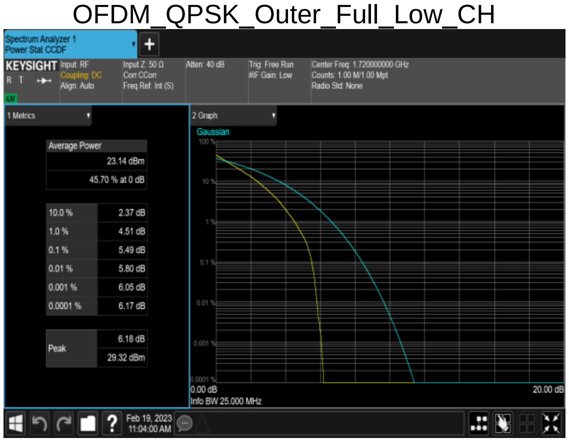
Peak to Average Ratio

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result (dB)	Limit (dB)	Verdict
66	15	20	344000	1720.0	DFT-s-OFDM PI/2 BPSK	100@0	4.89	13	**PASS**
66	15	20	344000	1720.0	DFT-s-OFDM PI/2 BPSK	1@0	4.94	13	**PASS**
66	15	20	344000	1720.0	DFT-s-OFDM QPSK	100@0	5.49	13	**PASS**
66	15	20	344000	1720.0	DFT-s-OFDM QPSK	1@0	5.94	13	**PASS**
66	15	20	349000	1745.0	DFT-s-OFDM PI/2 BPSK	100@0	4.74	13	**PASS**
66	15	20	349000	1745.0	DFT-s-OFDM PI/2 BPSK	1@0	3.92	13	**PASS**
66	15	20	349000	1745.0	DFT-s-OFDM QPSK	100@0	5.45	13	**PASS**
66	15	20	349000	1745.0	DFT-s-OFDM QPSK	1@0	5.72	13	**PASS**
66	15	20	354000	1770.0	DFT-s-OFDM PI/2 BPSK	100@0	4.76	13	**PASS**
66	15	20	354000	1770.0	DFT-s-OFDM PI/2 BPSK	1@0	4.39	13	**PASS**
66	15	20	354000	1770.0	DFT-s-OFDM QPSK	100@0	8.35	13	**PASS**
66	15	20	354000	1770.0	DFT-s-OFDM QPSK	1@0	5.98	13	**PASS**

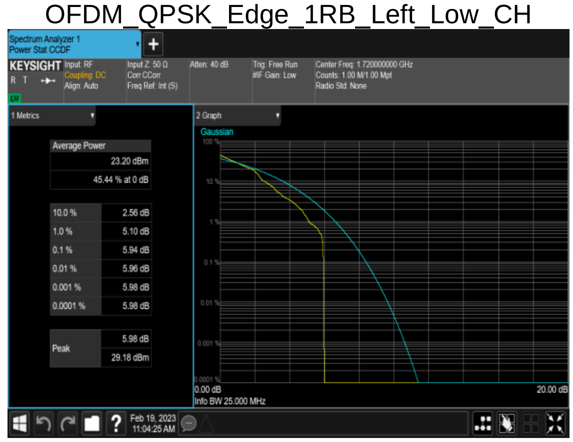
N66(20M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Low_CH

N66(20M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_Low_CH

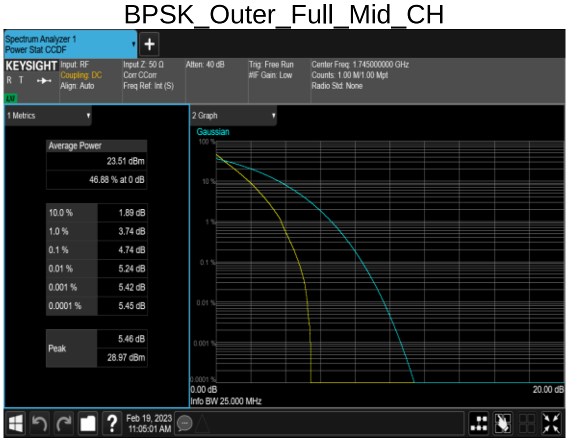
N66(20M)_DFT-s-OFDM_QPSK_Outer_Full_Low_CH



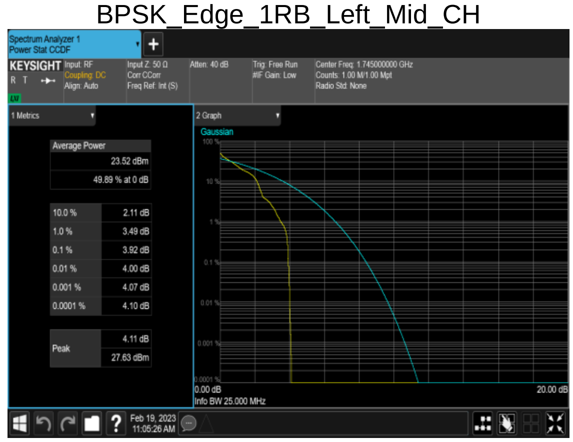
N66(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



N66(20M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



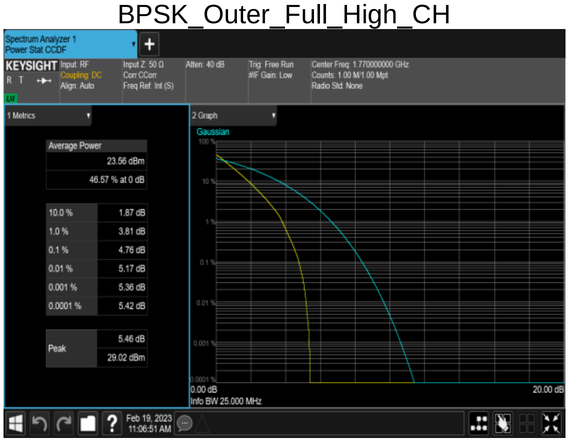
N66(20M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_Mid_CH



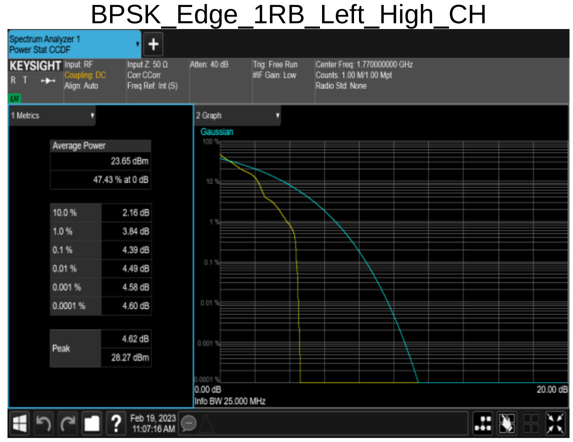
N66(20M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH

N66(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH

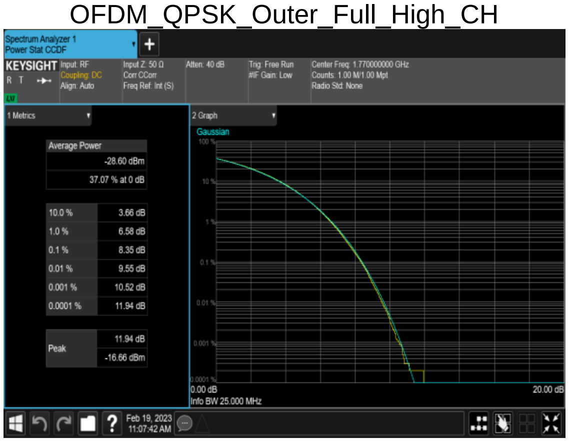
N66(20M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_High_CH



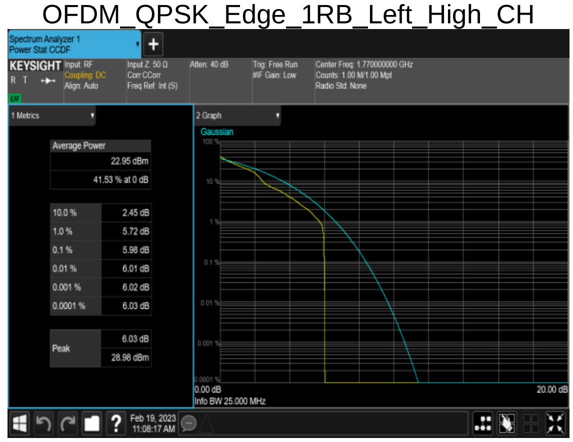
N66(20M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_High_CH



N66(20M)_DFT-s-OFDM_QPSK_Outer_Full_High_CH



N66(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



Occupied Bandwidth

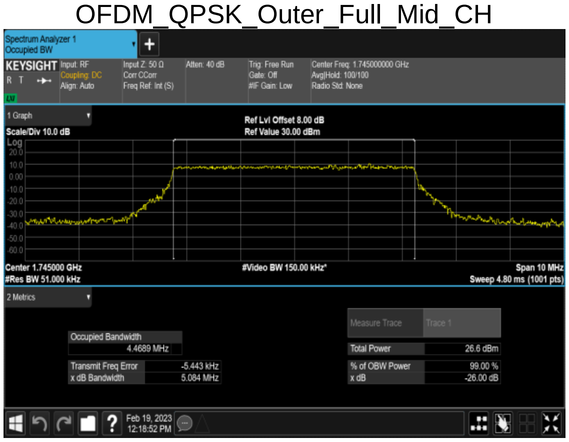
NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	OBW (MHz)	26dB BW (MHz)
66	15	5	349000	1745.0	DFT-s-OFDM PI/2 BPSK	25@0	4.4778	5.021
66	15	5	349000	1745.0	DFT-s-OFDM QPSK	25@0	4.4695	5.002
66	15	5	349000	1745.0	CP-OFDM QPSK	25@0	4.4689	5.084
66	15	5	349000	1745.0	CP-OFDM 16 QAM	25@0	4.481	5.141
66	15	5	349000	1745.0	CP-OFDM 64 QAM	25@0	4.4667	4.931
66	15	5	349000	1745.0	CP-OFDM 256 QAM	25@0	4.4804	5.014
66	15	10	349000	1745.0	DFT-s-OFDM PI/2 BPSK	50@0	8.9079	9.518
66	15	10	349000	1745.0	DFT-s-OFDM QPSK	50@0	8.9109	9.546
66	15	10	349000	1745.0	CP-OFDM QPSK	52@0	9.2758	10.04
66	15	10	349000	1745.0	CP-OFDM 16 QAM	52@0	9.2972	9.987
66	15	10	349000	1745.0	CP-OFDM 64 QAM	52@0	9.2606	9.898
66	15	10	349000	1745.0	CP-OFDM 256 QAM	52@0	9.2821	9.928
66	15	15	349000	1745.0	DFT-s-OFDM PI/2 BPSK	75@0	13.388	14.23
66	15	15	349000	1745.0	DFT-s-OFDM QPSK	75@0	13.411	14.32
66	15	15	349000	1745.0	CP-OFDM QPSK	79@0	14.093	14.99
66	15	15	349000	1745.0	CP-OFDM 16 QAM	79@0	14.083	14.96
66	15	15	349000	1745.0	CP-OFDM 64 QAM	79@0	14.148	14.81
66	15	15	349000	1745.0	CP-OFDM 256 QAM	79@0	14.092	14.94
66	15	20	349000	1745.0	DFT-s-OFDM PI/2 BPSK	100@0	17.937	18.84
66	15	20	349000	1745.0	DFT-s-OFDM QPSK	100@0	17.848	18.89
66	15	20	349000	1745.0	CP-OFDM QPSK	106@0	18.938	19.87
66	15	20	349000	1745.0	CP-OFDM 16 QAM	106@0	18.955	19.9
66	15	20	349000	1745.0	CP-OFDM 64 QAM	106@0	18.928	19.84
66	15	20	349000	1745.0	CP-OFDM 256 QAM	106@0	18.93	19.73
66	15	30	349000	1745.0	DFT-s-OFDM PI/2 BPSK	160@0	28.601	29.64

66	15	30	349000	1745.0	DFT-s-OFDM QPSK	160@0	28.536	29.55
66	15	30	349000	1745.0	CP-OFDM QPSK	160@0	28.571	29.74
66	15	30	349000	1745.0	CP-OFDM 16 QAM	160@0	28.537	29.75
66	15	30	349000	1745.0	CP-OFDM 64 QAM	160@0	28.531	29.46
66	15	30	349000	1745.0	CP-OFDM 256 QAM	160@0	28.578	29.63
66	15	40	349000	1745.0	DFT-s-OFDM PI/2 BPSK	216@0	38.595	39.85
66	15	40	349000	1745.0	DFT-s-OFDM QPSK	216@0	38.515	39.92
66	15	40	349000	1745.0	CP-OFDM QPSK	216@0	38.533	39.91
66	15	40	349000	1745.0	CP-OFDM 16 QAM	216@0	38.554	39.99
66	15	40	349000	1745.0	CP-OFDM 64 QAM	216@0	38.552	39.82
66	15	40	349000	1745.0	CP-OFDM 256 QAM	216@0	38.528	39.83

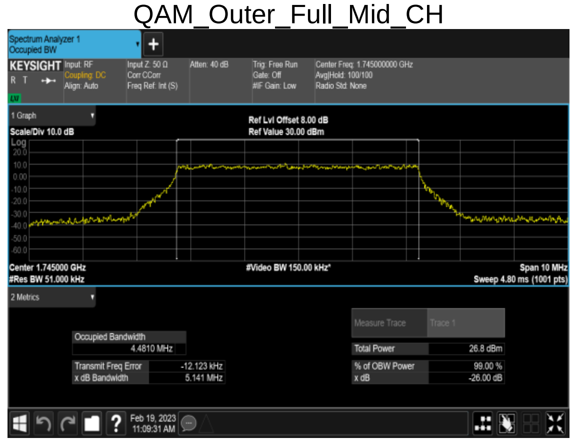
N66(5M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH

N66(5M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH

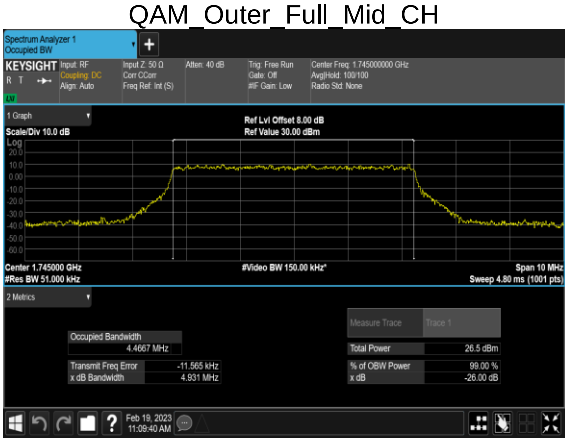
N66(5M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



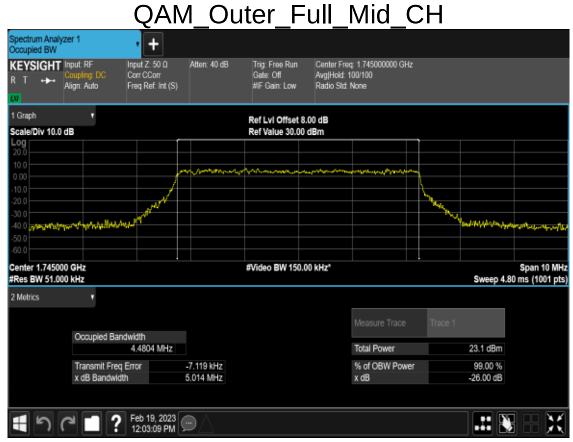
N66(5M)_CP-OFDM_16QAM_Outer_Full_Mid_CH



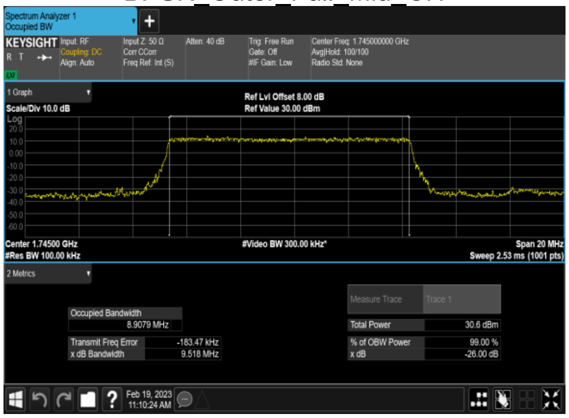
N66(5M)_CP-OFDM_64QAM_Outer_Full_Mid_CH



N66(5M)_CP-OFDM_256QAM_Outer_Full_Mid_CH

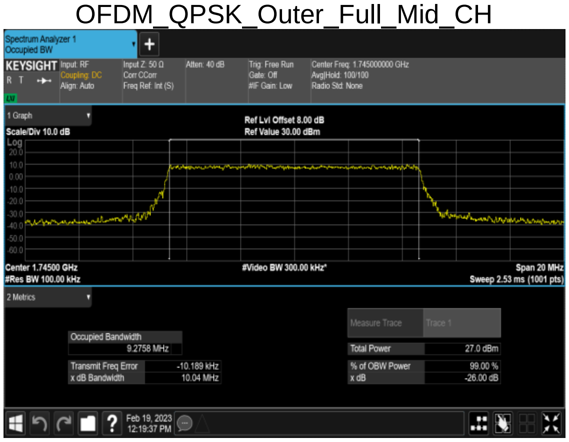


N66(10M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH

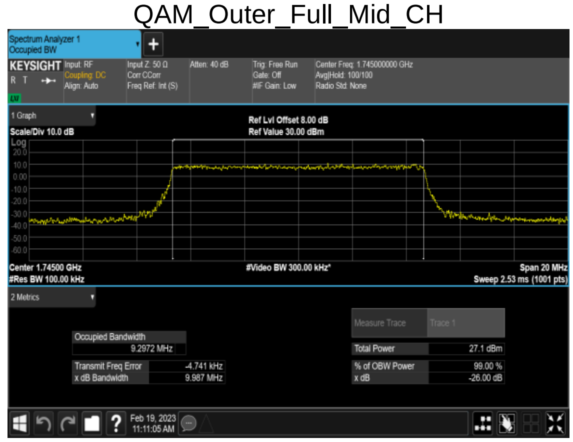


N66(10M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH

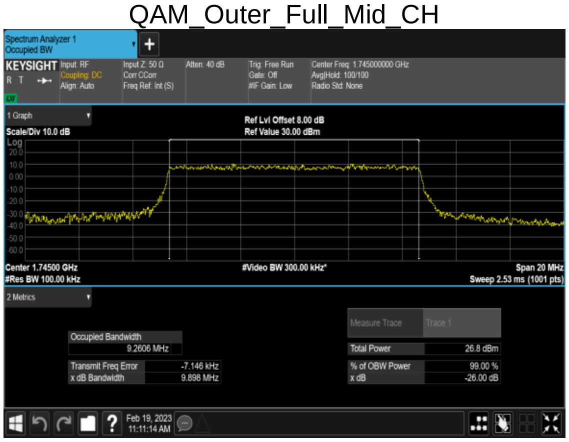
N66(10M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



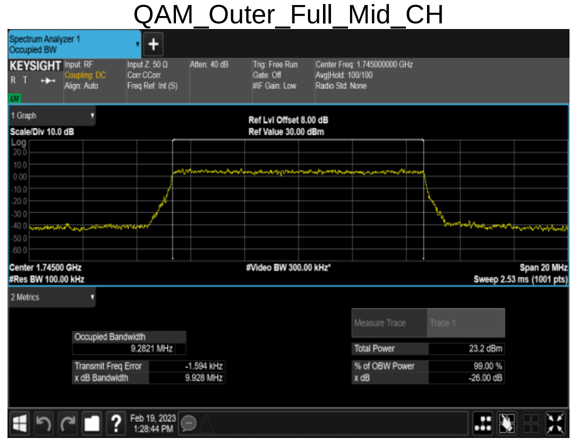
N66(10M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



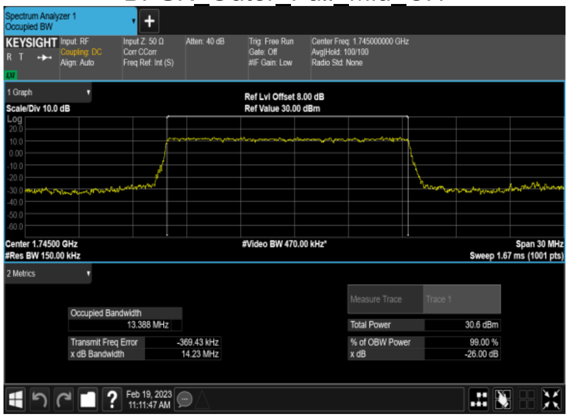
N66(10M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



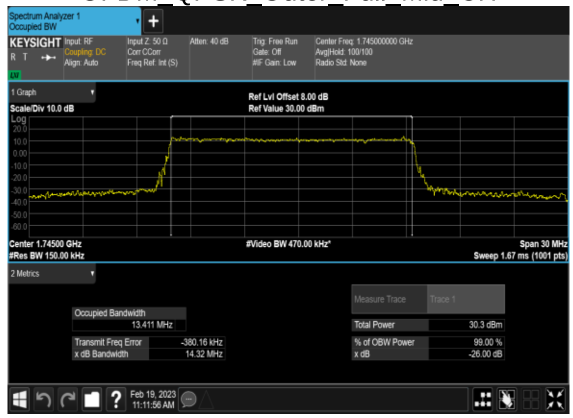
N66(10M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



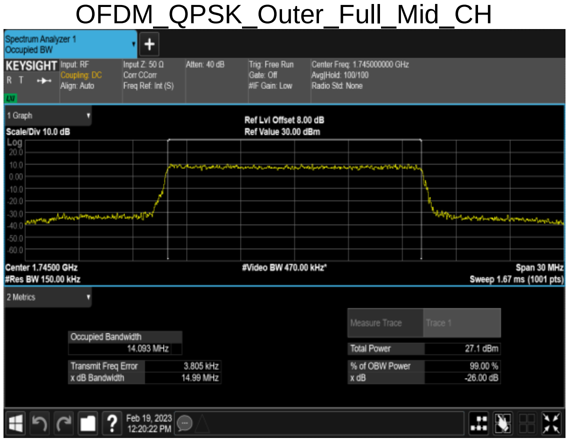
N66(15M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



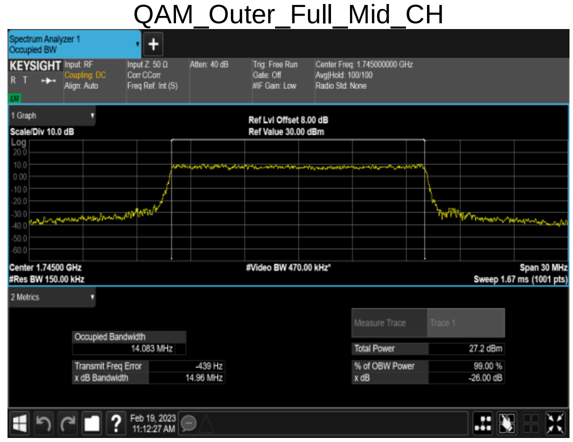
N66(15M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



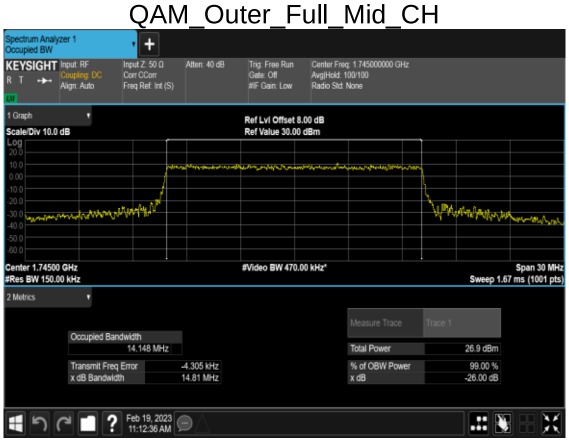
N66(15M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



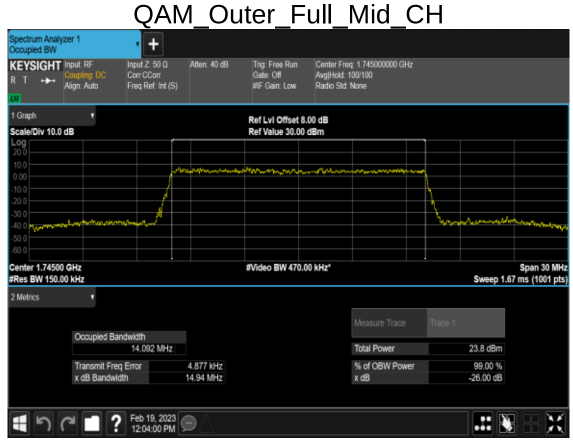
N66(15M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



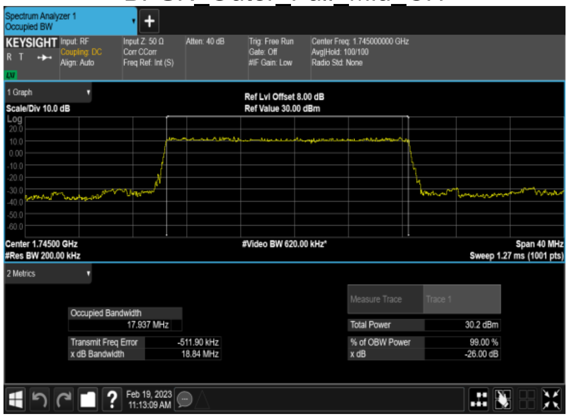
N66(15M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



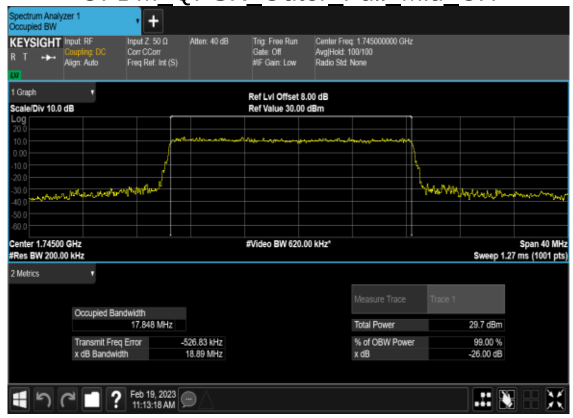
N66(15M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



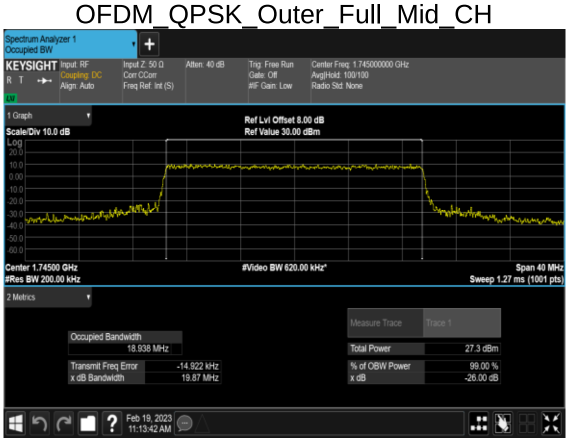
N66(20M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



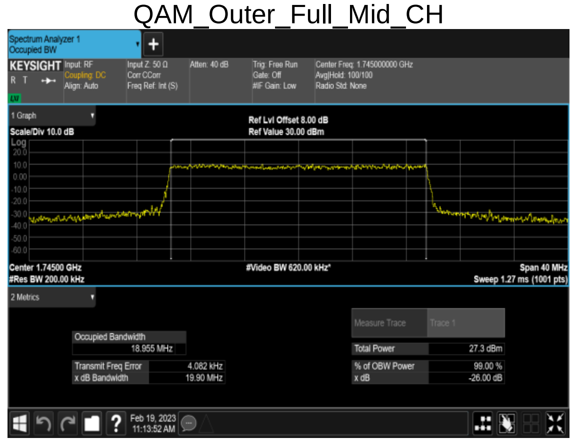
N66(20M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



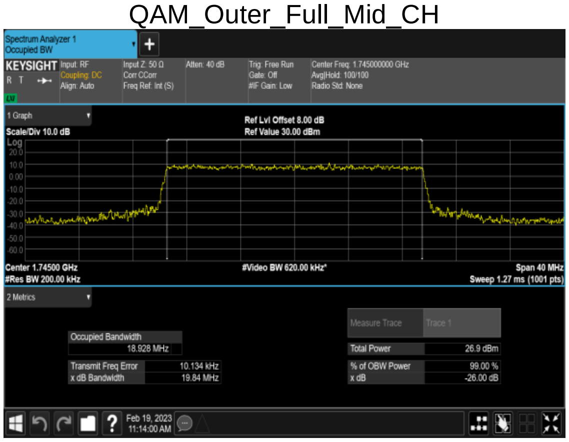
N66(20M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



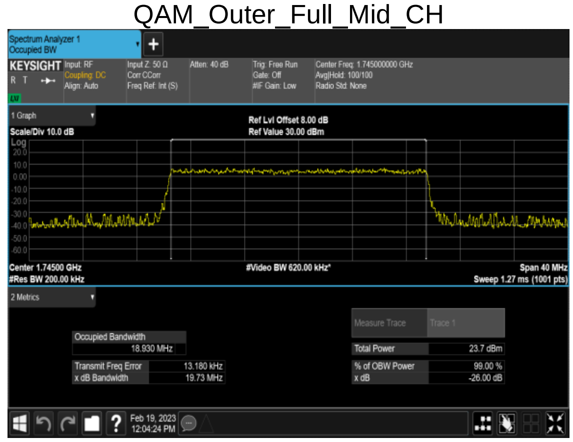
N66(20M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



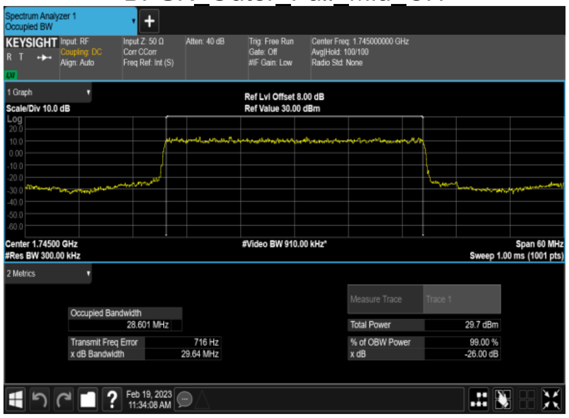
N66(20M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



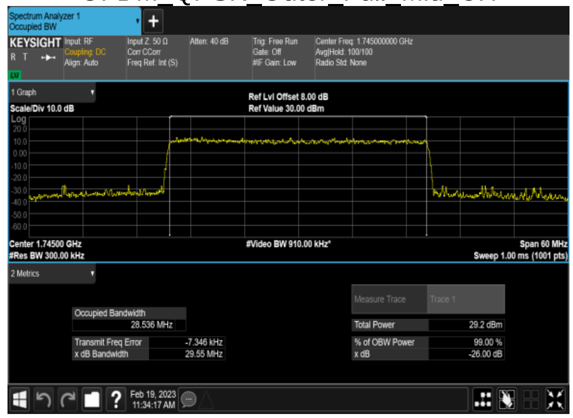
N66(20M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



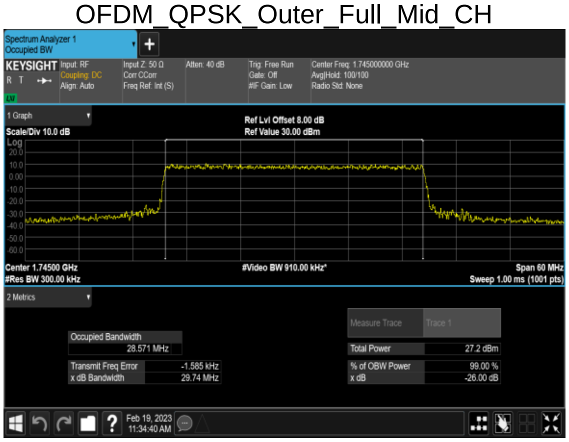
N66(30M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



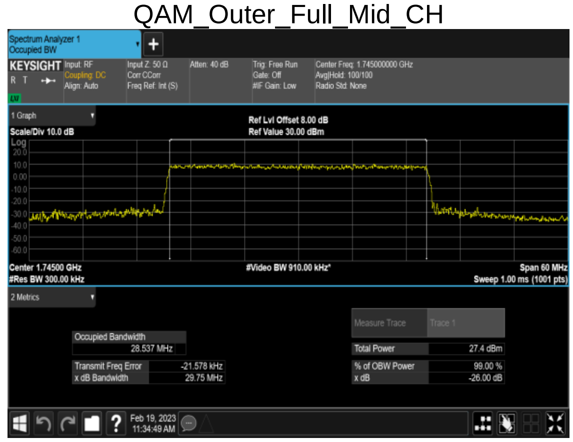
N66(30M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



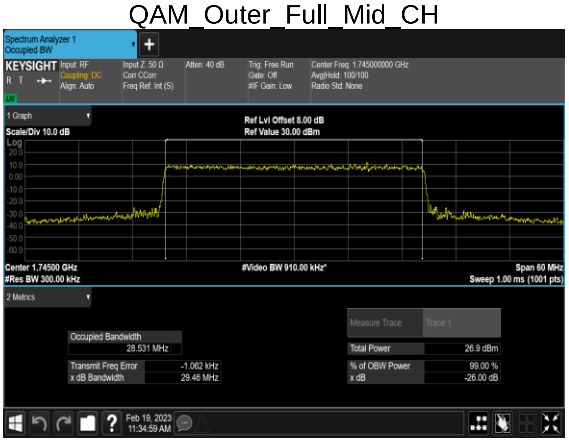
N66(30M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



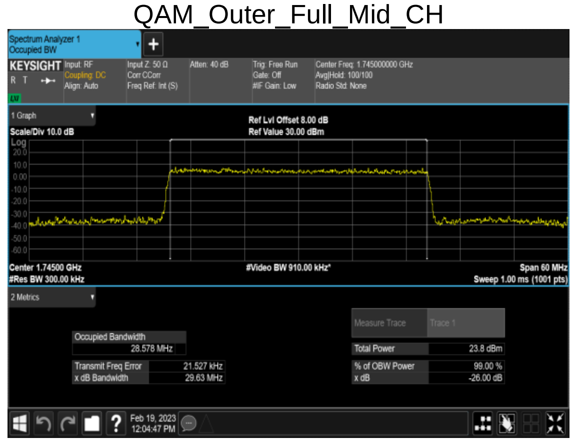
N66(30M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



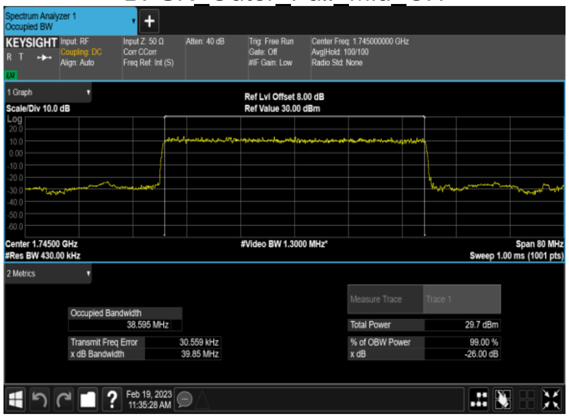
N66(30M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



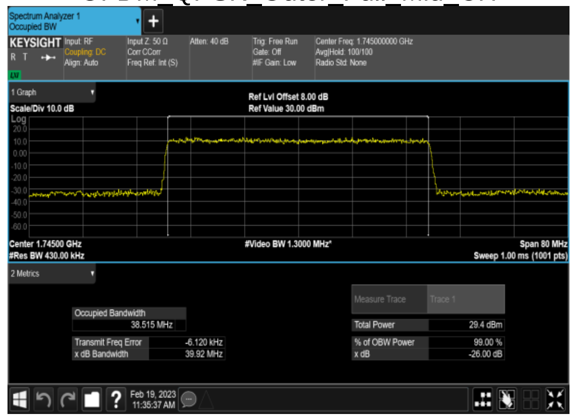
N66(30M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



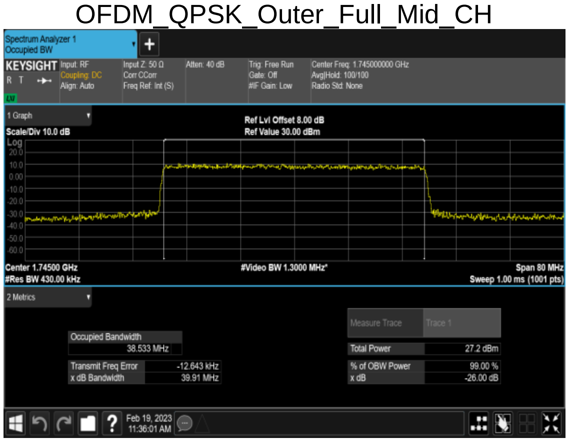
N66(40M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



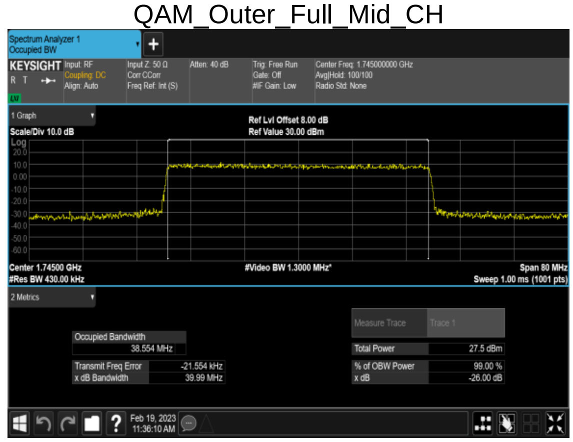
N66(40M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



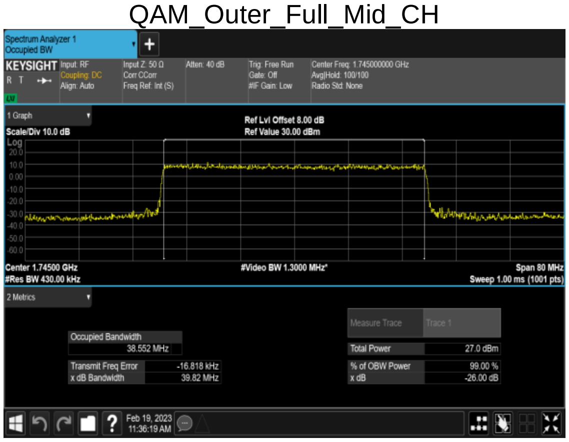
N66(40M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



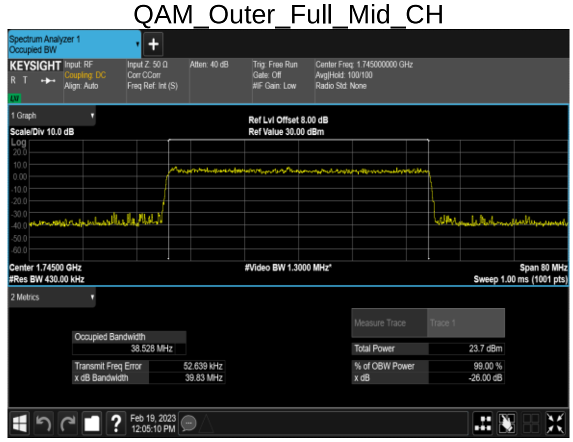
N66(40M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



N66(40M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



N66(40M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH

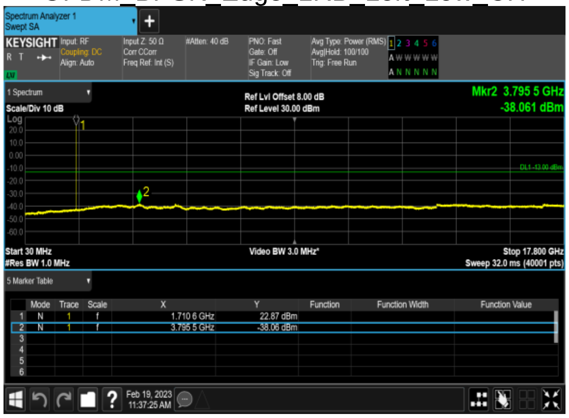


Conducted Spurious Emissions

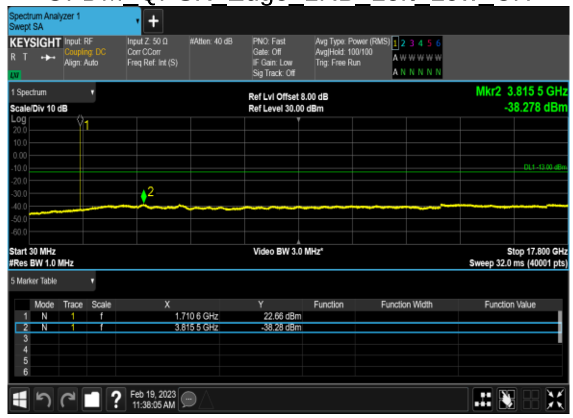
NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result	Verdict
66	15	5	342500	1712.5	DFT-s-OFDM BPSK	1@0	see graph	---
66	15	5	342500	1712.5	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
66	15	5	342500	1712.5	DFT-s-OFDM QPSK	1@0	see graph	---
66	15	5	342500	1712.5	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
66	15	5	349000	1745.0	DFT-s-OFDM BPSK	1@0	see graph	---
66	15	5	349000	1745.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
66	15	5	349000	1745.0	DFT-s-OFDM QPSK	1@0	see graph	---
66	15	5	349000	1745.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
66	15	5	355500	1777.5	DFT-s-OFDM BPSK	1@0	see graph	---
66	15	5	355500	1777.5	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
66	15	5	355500	1777.5	DFT-s-OFDM QPSK	1@0	see graph	---
66	15	5	355500	1777.5	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
66	15	20	344000	1720.0	DFT-s-OFDM BPSK	1@0	see graph	---
66	15	20	344000	1720.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
66	15	20	344000	1720.0	DFT-s-OFDM QPSK	1@0	see graph	---
66	15	20	344000	1720.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
66	15	20	349000	1745.0	DFT-s-OFDM BPSK	1@0	see graph	---
66	15	20	349000	1745.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
66	15	20	349000	1745.0	DFT-s-OFDM QPSK	1@0	see graph	---
66	15	20	349000	1745.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
66	15	20	354000	1770.0	DFT-s-OFDM BPSK	1@0	see graph	---
66	15	20	354000	1770.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
66	15	20	354000	1770.0	DFT-s-OFDM QPSK	1@0	see graph	---

66	15	20	354000	1770.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
66	15	40	346000	1730.0	DFT-s-OFDM BPSK	1@0	see graph	**---**
66	15	40	346000	1730.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
66	15	40	346000	1730.0	DFT-s-OFDM QPSK	1@0	see graph	**---**
66	15	40	346000	1730.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
66	15	40	349000	1745.0	DFT-s-OFDM BPSK	1@0	see graph	**---**
66	15	40	349000	1745.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
66	15	40	349000	1745.0	DFT-s-OFDM QPSK	1@0	see graph	**---**
66	15	40	349000	1745.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
66	15	40	352000	1760.0	DFT-s-OFDM BPSK	1@0	see graph	**---**
66	15	40	352000	1760.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
66	15	40	352000	1760.0	DFT-s-OFDM QPSK	1@0	see graph	**---**
66	15	40	352000	1760.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**

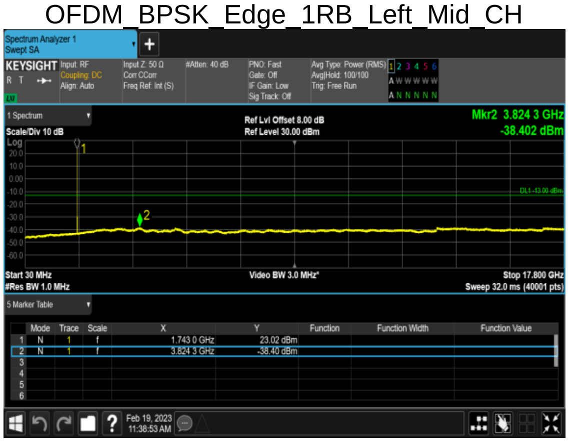
N66(5M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



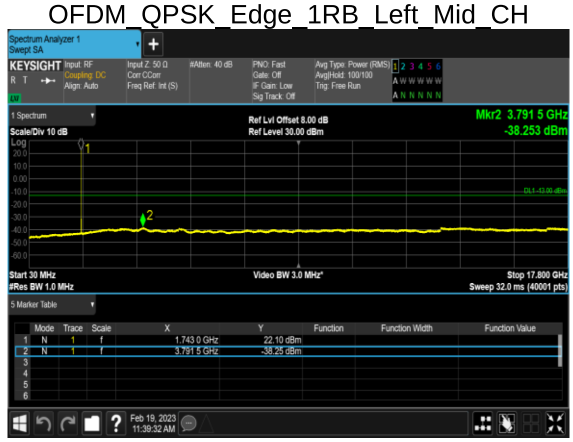
N66(5M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



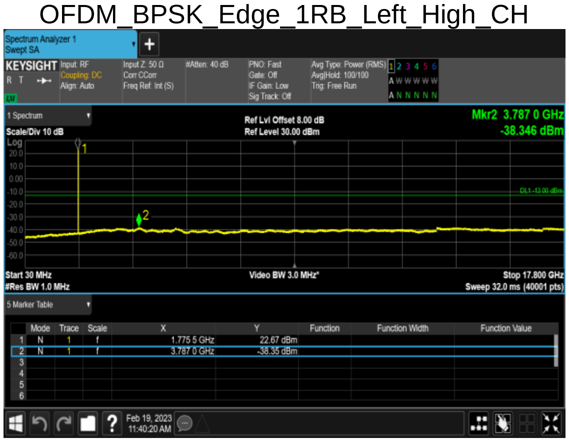
N66(5M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



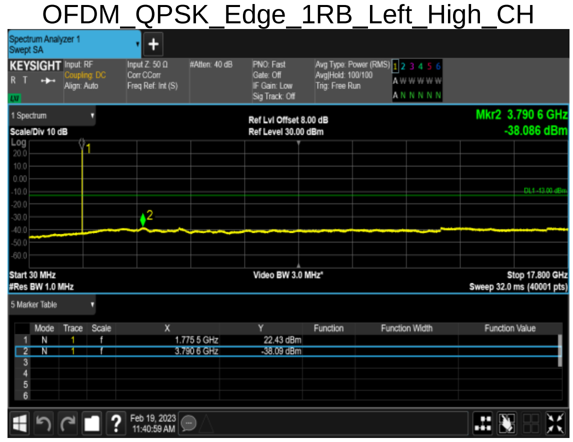
N66(5M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



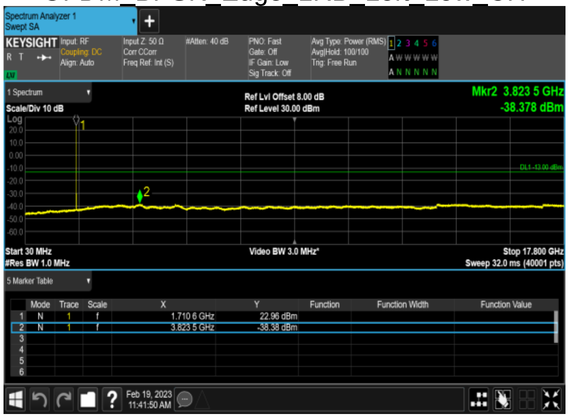
N66(5M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



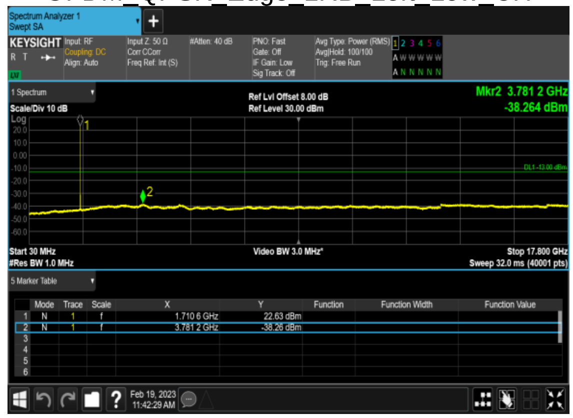
N66(5M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



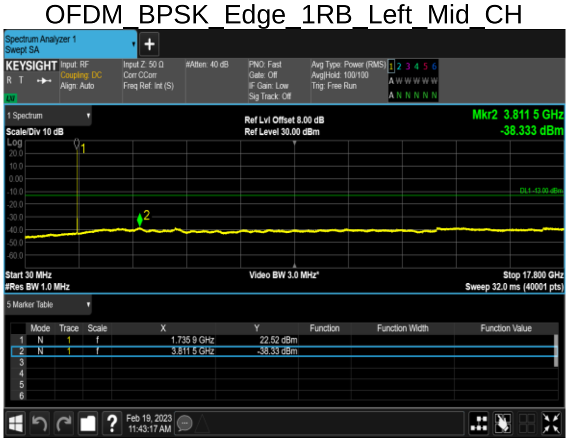
N66(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



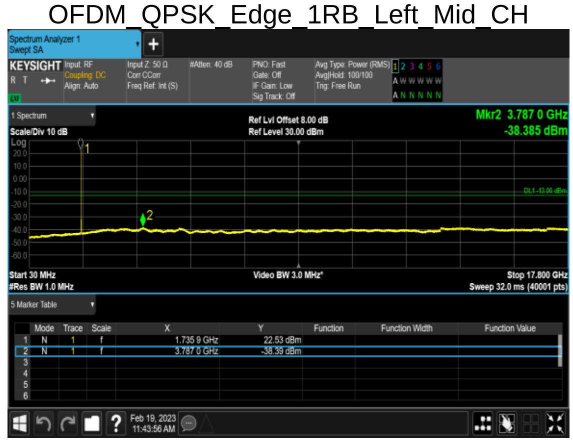
N66(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



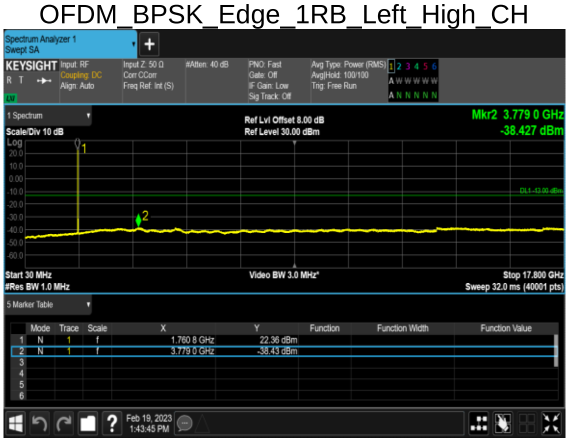
N66(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



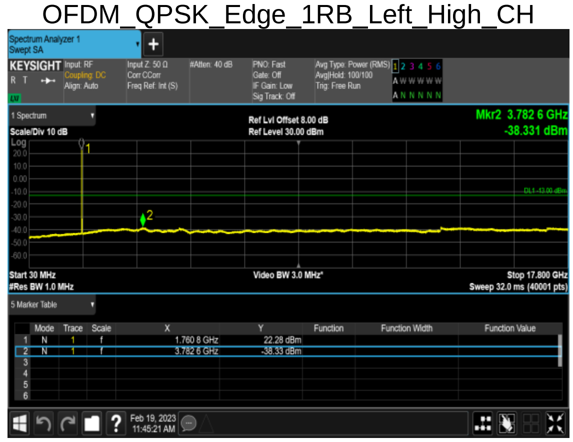
N66(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



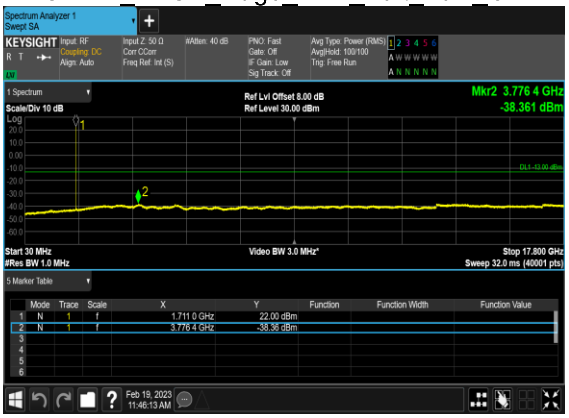
N66(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



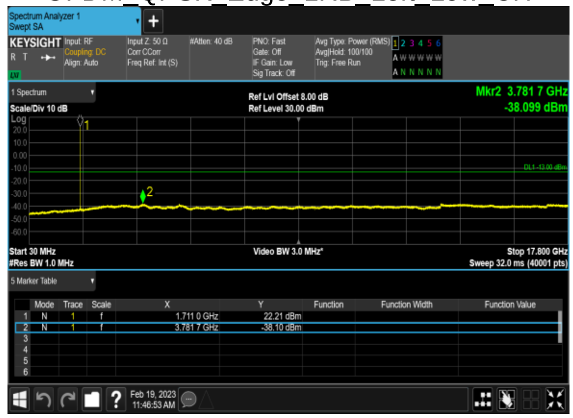
N66(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



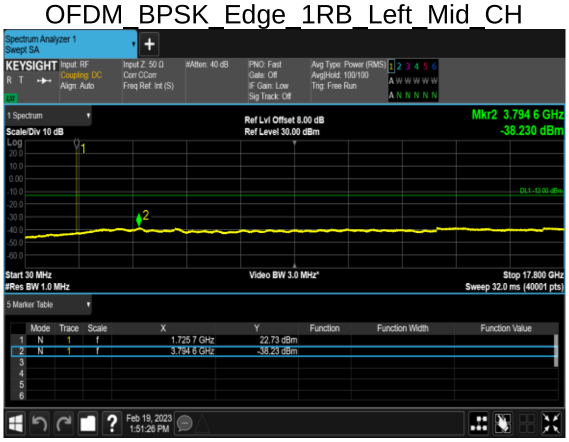
N66(40M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



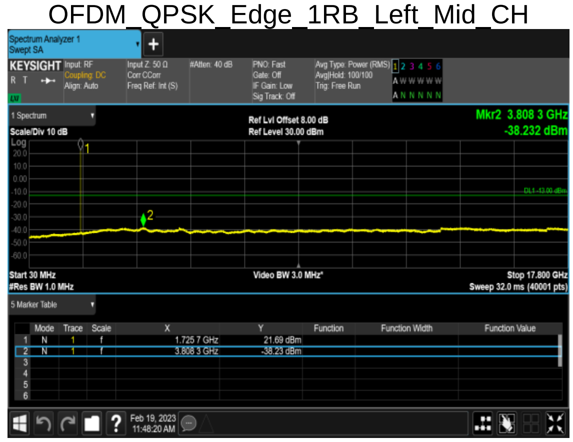
N66(40M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



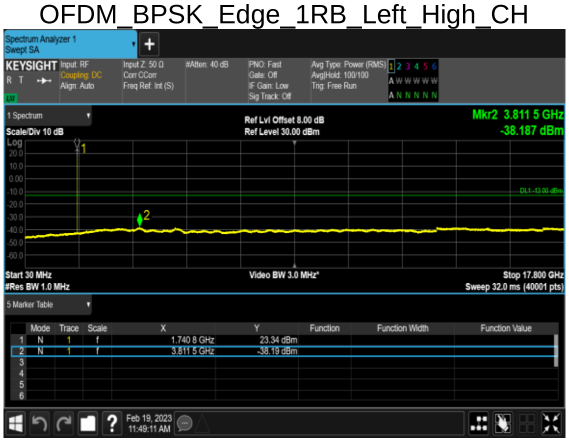
N66(40M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



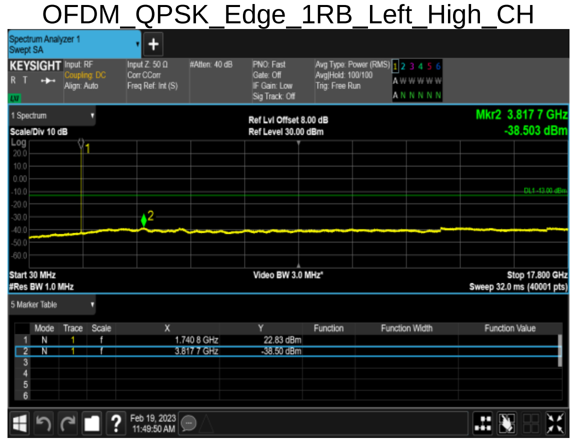
N66(40M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



N66(40M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



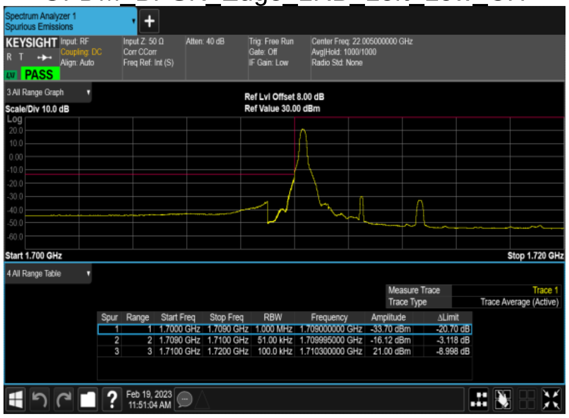
N66(40M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



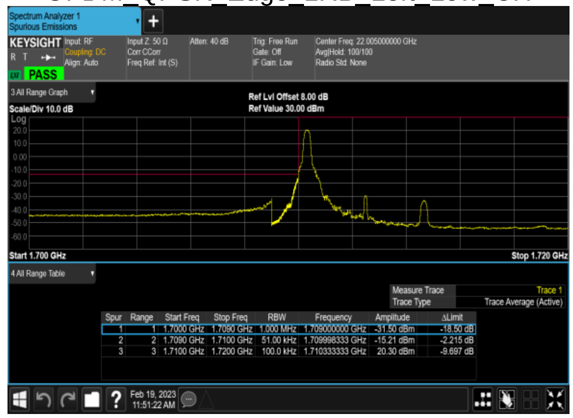
Conducted Band Edge

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result	Verdict
66	15	5	342500	1712.5	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
66	15	5	342500	1712.5	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
66	15	5	342500	1712.5	DFT-s-OFDM BPSK	25@0	see graph	**PASS**
66	15	5	342500	1712.5	DFT-s-OFDM QPSK	25@0	see graph	**PASS**
66	15	5	355500	1777.5	DFT-s-OFDM BPSK	1@24	see graph	**PASS**
66	15	5	355500	1777.5	DFT-s-OFDM QPSK	1@24	see graph	**PASS**
66	15	5	355500	1777.5	DFT-s-OFDM BPSK	25@0	see graph	**PASS**
66	15	5	355500	1777.5	DFT-s-OFDM QPSK	25@0	see graph	**PASS**
66	15	20	344000	1720.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
66	15	20	344000	1720.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
66	15	20	344000	1720.0	DFT-s-OFDM BPSK	100@0	see graph	**PASS**
66	15	20	344000	1720.0	DFT-s-OFDM QPSK	100@0	see graph	**PASS**
66	15	20	354000	1770.0	DFT-s-OFDM BPSK	1@105	see graph	**PASS**
66	15	20	354000	1770.0	DFT-s-OFDM QPSK	1@105	see graph	**PASS**
66	15	20	354000	1770.0	DFT-s-OFDM BPSK	100@0	see graph	**PASS**
66	15	20	354000	1770.0	DFT-s-OFDM QPSK	100@0	see graph	**PASS**
66	15	40	346000	1730.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
66	15	40	346000	1730.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
66	15	40	346000	1730.0	DFT-s-OFDM BPSK	216@0	see graph	**PASS**
66	15	40	346000	1730.0	DFT-s-OFDM QPSK	216@0	see graph	**PASS**
66	15	40	352000	1760.0	DFT-s-OFDM BPSK	1@215	see graph	**PASS**
66	15	40	352000	1760.0	DFT-s-OFDM QPSK	1@215	see graph	**PASS**
66	15	40	352000	1760.0	DFT-s-OFDM BPSK	216@0	see graph	**PASS**
66	15	40	352000	1760.0	DFT-s-OFDM QPSK	216@0	see graph	**PASS**

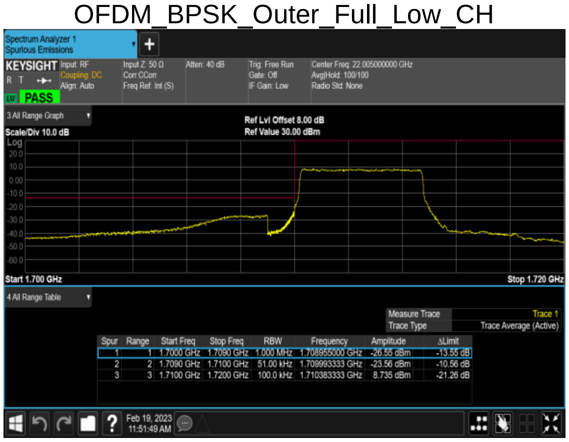
N66(5M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



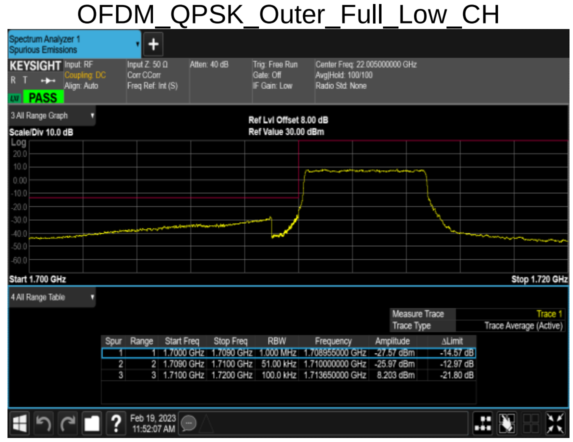
N66(5M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



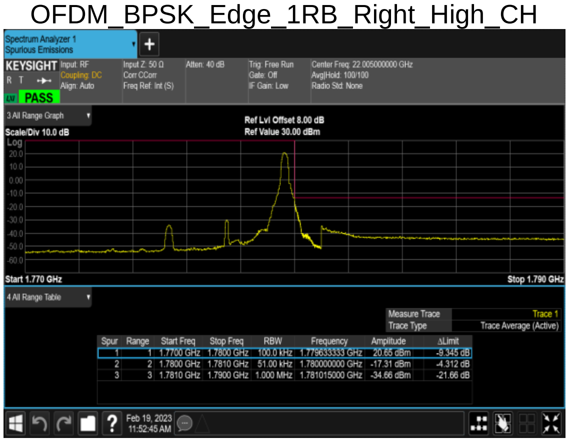
N66(5M)_DFT-s-OFDM_BPSK_Outer_Full_Low_CH



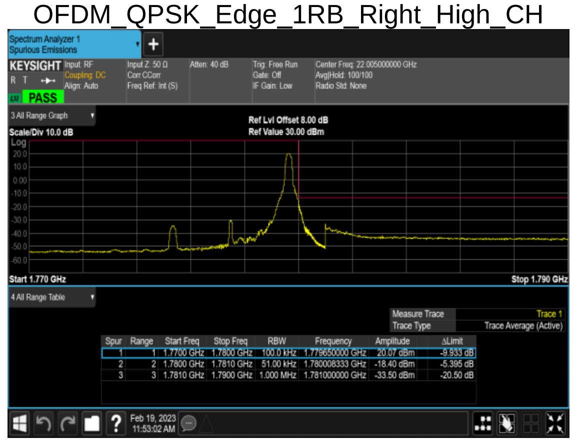
N66(5M)_DFT-s-OFDM_QPSK_Outer_Full_Low_CH



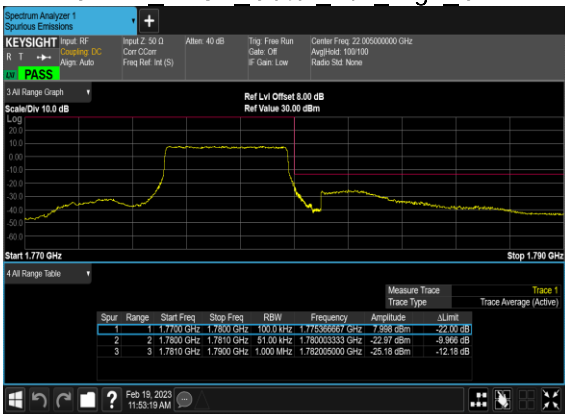
N66(5M)_DFT-s-OFDM_BPSK_Edge_1RB_Right_High_CH



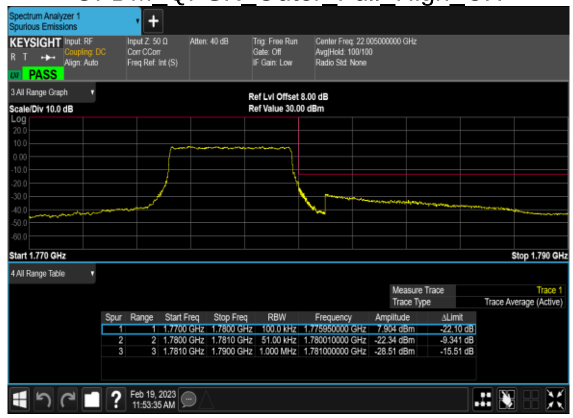
N66(5M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_High_CH



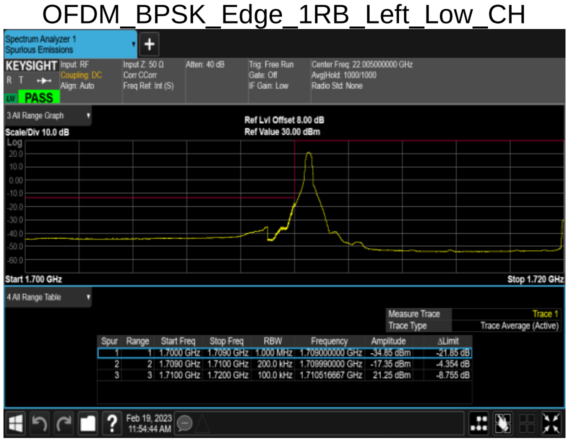
N66(5M)_DFT-s-OFDM_BPSK_Outer_Full_High_CH



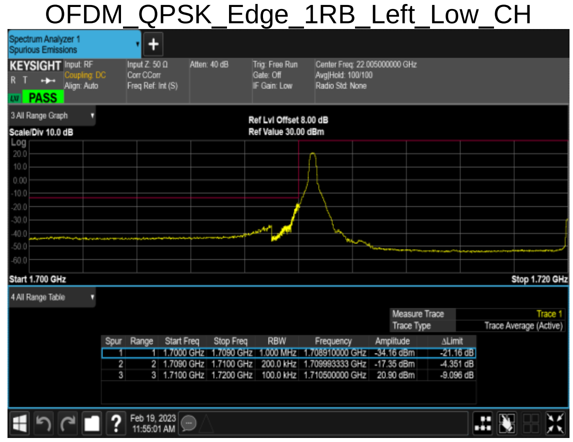
N66(5M)_DFT-s-OFDM_QPSK_Outer_Full_High_CH



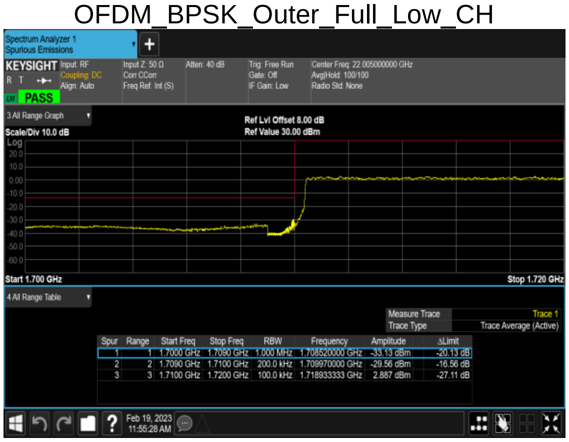
N66(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



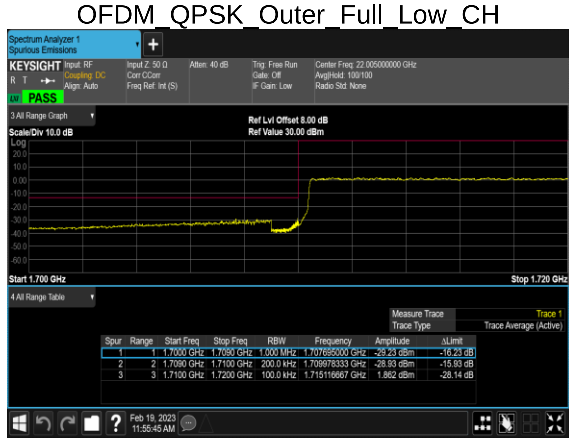
N66(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



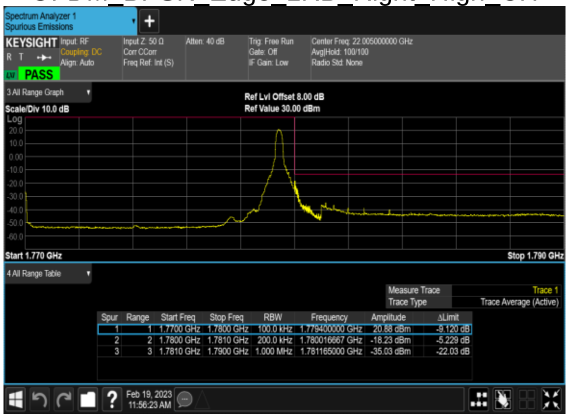
N66(20M)_DFT-s-OFDM_BPSK_Outer_Full_Low_CH



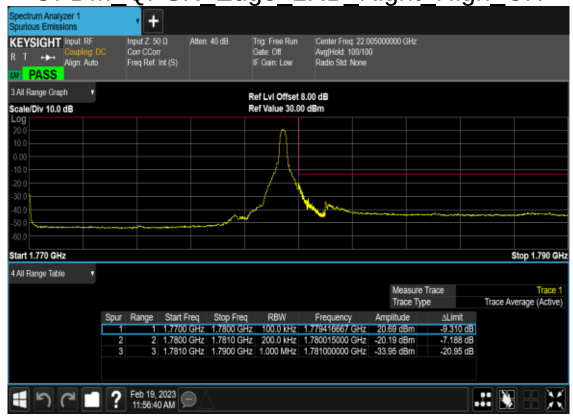
N66(20M)_DFT-s-OFDM_QPSK_Outer_Full_Low_CH



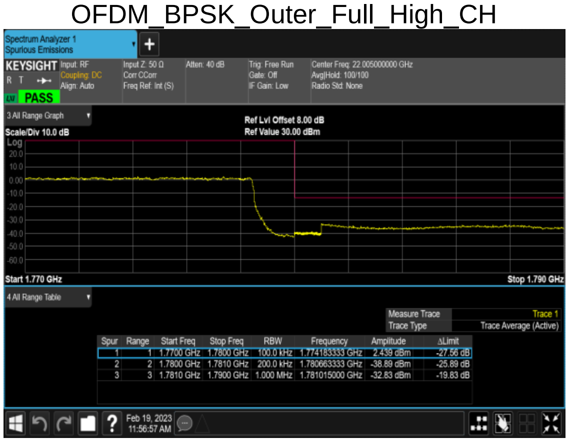
N66(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Right_High_CH



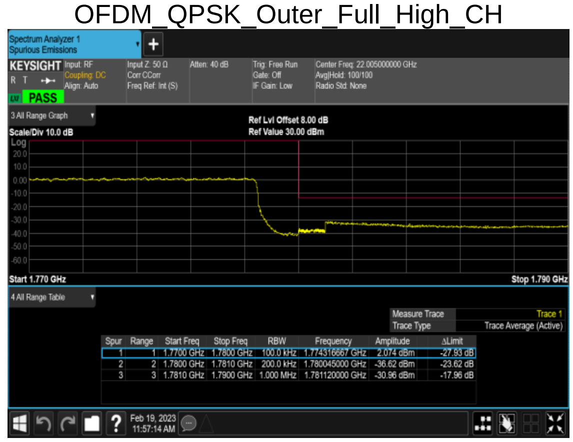
N66(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_High_CH



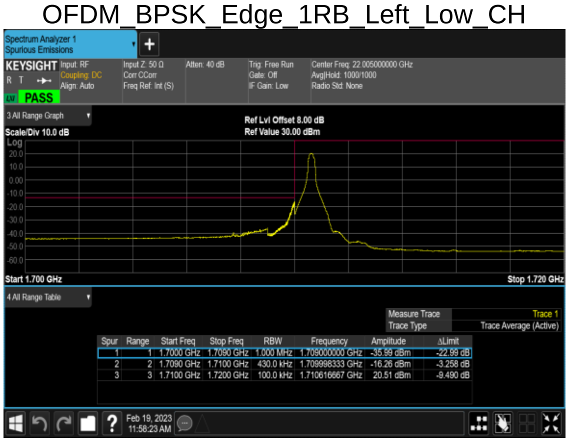
N66(20M)_DFT-s-OFDM_BPSK_Outer_Full_High_CH



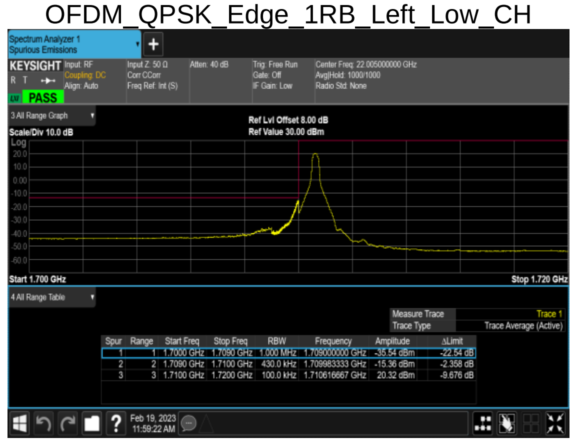
N66(20M)_DFT-s-OFDM_QPSK_Outer_Full_High_CH



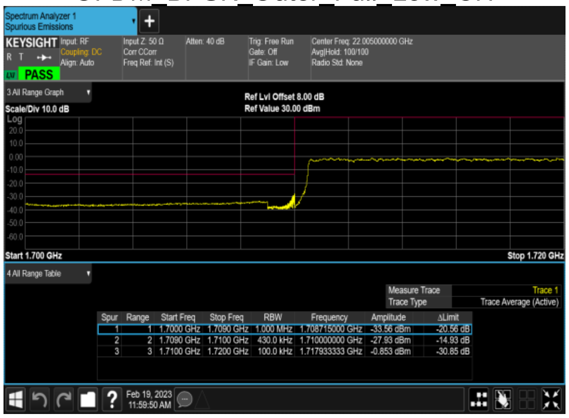
N66(40M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



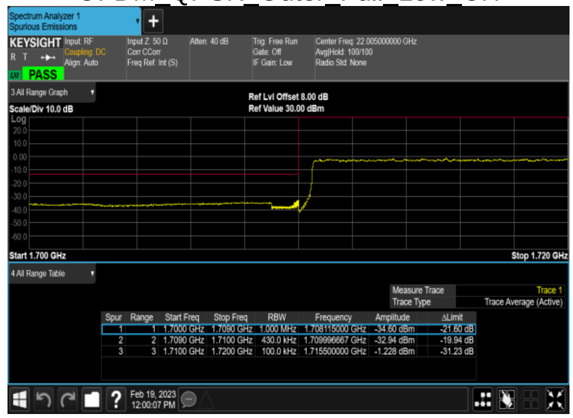
N66(40M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



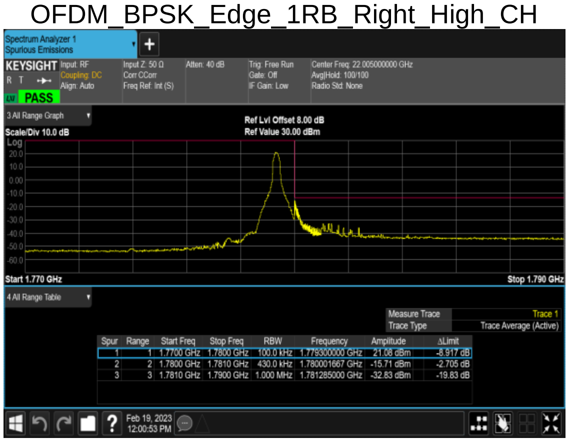
N66(40M)_DFT-s-OFDM_BPSK_Outer_Full_Low_CH



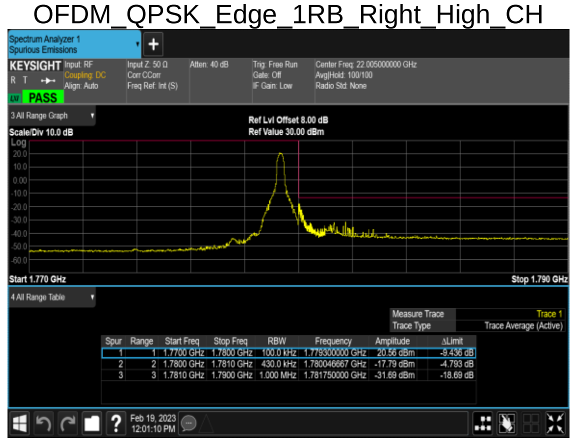
N66(40M)_DFT-s-OFDM_QPSK_Outer_Full_Low_CH



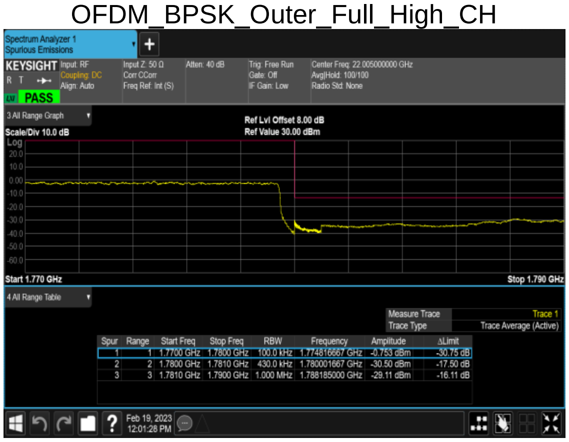
N66(40M)_DFT-s-OFDM_BPSK_Edge_1RB_Right_High_CH



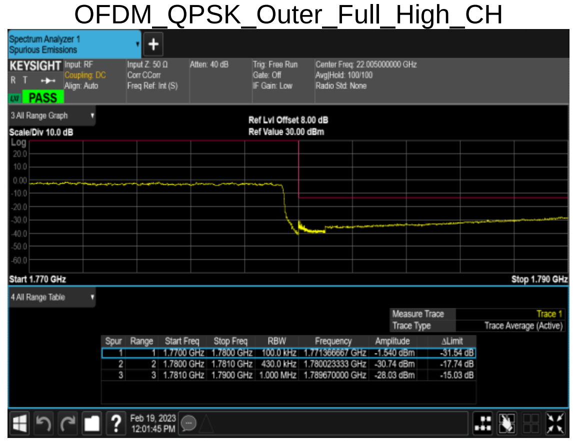
N66(40M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_High_CH



N66(40M)_DFT-s-OFDM_BPSK_Outer_Full_High_CH



N66(40M)_DFT-s-OFDM_QPSK_Outer_Full_High_CH



Appendix B. Test Results of Radiated Test

Radiated Spurious Emission

Test Engineer :	HuaCong Liang	Temperature :	22~25℃
		Relative Humidity :	48~52%

Note: Pre-scanned harmonic for the different antenna combinations, we choose the worst antenna mode to perform final test.

5G NR n66 / NR 40MHz / QPSK / ANT3									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	3420	-59.00	-13	-46.00	-79.87	-65.88	5.60	12.48	H
	5130	-49.72	-13	-36.72	-74.18	-55.40	7.10	12.78	H
	6840	-55.11	-13	-42.11	-81.17	-58.50	8.38	11.77	H
	3420	-57.83	-13	-44.83	-79.9	-64.71	5.60	12.48	V
	5130	-50.40	-13	-37.40	-75.6	-56.08	7.10	12.78	V
	6840	-53.74	-13	-40.74	-81.63	-57.13	8.38	11.77	V
Middle	3452	-58.40	-13	-45.40	-79.85	-65.25	5.65	12.50	H
	5178	-48.89	-13	-35.89	-73.65	-54.56	7.13	12.80	H
	6904	-55.54	-13	-42.54	-81.75	-58.94	8.40	11.80	H
	3452	-58.19	-13	-45.19	-80.58	-65.04	5.65	12.50	V
	5178	-50.78	-13	-37.78	-75.93	-56.45	7.13	12.80	V
	6904	-53.94	-13	-40.94	-81.43	-57.34	8.40	11.80	V
Highest	3480	-58.02	-13	-45.02	-80.06	-64.86	5.68	12.52	H
	5220	-52.02	-13	-39.02	-76.93	-57.69	7.15	12.82	H
	6960	-55.20	-13	-42.20	-81.58	-58.63	8.42	11.85	H
	3480	-57.23	-13	-44.23	-79.94	-64.07	5.68	12.52	V
	5220	-48.31	-13	-35.31	-73.39	-53.98	7.15	12.82	V
	6960	-54.96	-13	-41.96	-81.89	-58.39	8.42	11.85	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

EN-DC_7A_n66A / LTE 10MHz + NR 40MHz / QPSK /ANT3(LTE)&ANT2(NR)									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
NR n66 Lowest	3420	-57.80	-13	-44.80	-78.67	-64.68	5.60	12.48	H
	5130	-57.53	-13	-44.53	-81.99	-63.21	7.10	12.78	H
	6840	-55.24	-13	-42.24	-81.30	-58.63	8.38	11.77	H
	3420	-57.27	-13	-44.27	-79.34	-64.15	5.60	12.48	V
	5130	-56.91	-13	-43.91	-82.11	-62.59	7.10	12.78	V
	6840	-52.93	-13	-39.93	-80.82	-56.32	8.38	11.77	V
LTE Band7 Lowest	5061.18	-58.00	-25	-33.00	-82.07	-63.56	7.14	12.70	H
	7591.77	-54.86	-25	-29.86	-81.49	-58.16	8.30	11.60	H
	10122.36	-51.63	-25	-26.63	-82.59	-53.15	10.48	12.00	H
	5061.18	-57.08	-25	-32.08	-82.36	-62.64	7.14	12.70	V
	7591.77	-54.75	-25	-29.75	-81.38	-58.05	8.30	11.60	V
	10122.36	-50.53	-25	-25.53	-82.54	-52.05	10.48	12.00	V
NR n66 Middle	3452	-57.50	-13	-44.50	-78.95	-64.35	5.65	12.50	H
	5178	-56.71	-13	-43.71	-81.47	-62.38	7.13	12.80	H
	6904	-54.27	-13	-41.27	-80.48	-57.67	8.40	11.80	H
	3452	-57.06	-13	-44.06	-79.45	-63.91	5.65	12.50	V
	5178	-56.55	-13	-43.55	-81.7	-62.22	7.13	12.80	V
	6904	-53.56	-13	-40.56	-81.05	-56.96	8.40	11.80	V
LTE Band7 Middle	5061.18	-58.08	-25	-33.08	-82.15	-63.64	7.14	12.70	H
	7591.77	-54.56	-25	-29.56	-81.19	-57.86	8.30	11.60	H
	10122.36	-51.37	-25	-26.37	-82.33	-52.89	10.48	12.00	H
	5061.18	-56.36	-25	-31.36	-81.64	-61.92	7.14	12.70	V
	7591.77	-54.63	-25	-29.63	-81.26	-57.93	8.30	11.60	V
	10122.36	-50.43	-25	-25.43	-82.44	-51.95	10.48	12.00	V
NR n66 Highest	3480	-57.77	-13	-44.77	-79.81	-64.61	5.68	12.52	H
	5220	-57.72	-13	-44.72	-82.63	-63.39	7.15	12.82	H
	6960	-55.38	-13	-42.38	-81.76	-58.81	8.42	11.85	H
	3480	-56.78	-13	-43.78	-79.49	-63.62	5.68	12.52	V
	5220	-57.12	-13	-44.12	-82.2	-62.79	7.15	12.82	V
	6960	-54.87	-13	-41.87	-81.8	-58.30	8.42	11.85	V
LTE Band7 Highest	5061.18	-58.68	-25	-33.68	-82.75	-64.24	7.14	12.70	H
	7591.77	-55.57	-25	-30.57	-82.20	-58.87	8.30	11.60	H
	10122.36	-52.22	-25	-27.22	-83.18	-53.74	10.48	12.00	H
	5061.18	-57.38	-25	-32.38	-82.66	-62.94	7.14	12.70	V
	7591.77	-54.95	-25	-29.95	-81.58	-58.25	8.30	11.60	V
	10122.36	-51.18	-25	-26.18	-83.19	-52.70	10.48	12.00	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.