FCC RF Test Report

APPLICANT	**:**	**Nokia Shanghai Bell Co., Ltd.**
EQUIPMENT	**:**	**Nokia FastMile 5G Receiver**
BRAND NAME	**:**	**Nokia**
MODEL NAME	**:**	**5G16-B**
FCC ID	**:**	**2ADZR5G16B**
STANDARD	**:**	**47 CFR Part 2, 96**
CLASSIFICATION	**:**	**Citizens Band End User Devices (CBE)**
EQUIPMENT TYPE	**:**	**End User Equipment**
TEST DATE(S)	**:**	**Jun. 22, 2024 ~ Jul. 19, 2024**

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

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

Jason Jia

Approved by: Jason Jia

ilac-MRA

ACCREDITED 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

History of this test report

Report No.	Version	Description	Issued Date
FG341901-02H	01	Initial issue of report	Jul. 26, 2024

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.2	§2.1046	Conducted Output Power	Reporting only	-
–	§96.41	Peak-to-Average Ratio	Not Applicable	Not applicable for End User Devices
3.3	§96.41	Maximum E.I.R.P	Pass	-
		Maximum Power Spectral Density	Not Applicable	Not applicable for End User Devices
3.4	§2.1049 §96.41	Occupied Bandwidth	Reporting only	-
3.5	§2.1051 §96.41	Conducted Band Edge Measurement Adjacent Channel Leakage Ratio	Pass	-
3.6	§2.1051 §96.41	Conducted Spurious Emission	Pass	
3.7	§2.1055	Frequency Stability for Temperature & Voltage	Pass	-
4.4	§2.1051 §96.41	Radiated Spurious Emission	Pass	Under limit 9.31 dB at 14424.92 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

Nokia Shanghai Bell Co., Ltd.
388#, Ningqiao Road, China (Shanghai) Pilot Free Trade Zone, Shanghai 201206, China

1.2 Manufacturer

Nokia Solutions and Networks Oy
Karakaari 7, 02610 Espoo, Finland

1.3 Feature of Equipment Under Test

<table>
<tr><th colspan="2">Product Feature</th></tr>
<tr><td>Equipment</td><td>Nokia FastMile 5G Receiver</td></tr>
<tr><td>Brand Name</td><td>Nokia</td></tr>
<tr><td>Model Name</td><td>5G16-B</td></tr>
<tr><td>FCC ID</td><td>2ADZR5G16B</td></tr>
<tr><td>Tx Frequency</td><td>5G NR n48: 3550 MHz – 3700 MHz</td></tr>
<tr><td>Rx Frequency</td><td>5G NR n48: 3550 MHz – 3700 MHz</td></tr>
<tr><td>SCS</td><td>30kHz</td></tr>
<tr><td>Bandwidth</td><td>10MHz / 15MHz / 20MHz / 30MHz / 40MHz / 50MHz / 60MHz / 80MHz / 90MHz / 100MHz
(BW 50/ 60/ 80/ 90/ 100MHz support SCC only)</td></tr>
<tr><td>Antenna Gain</td><td><table>
<tr><th>NR Band</th><th>Mode</th><th>Ant. 4</th><th>Ant. 5</th></tr>
<tr><td rowspan="3">N48</td><td>SA</td><td>–</td><td>8.8dBi</td></tr>
<tr><td>NSA/CA</td><td>8.1dBi</td><td>8.8dBi</td></tr>
<tr><td>UL MIMO</td><td colspan="2">8.1dBi</td></tr>
</table></td></tr>
<tr><td>Type of Modulation</td><td>DFT-s-OFDM (PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM)
CP-OFDM (QPSK / 16QAM / 64QAM / 256QAM)</td></tr>
<tr><td>IMEI Code/SN</td><td>Conducted: KLT242100001
Radiation: 358937920000248</td></tr>
<tr><td>HW Version</td><td>3TG02508Axxx(x:A~Z)</td></tr>
<tr><td>SW Version</td><td>5GReceiver-HG-2_D240200BieT0001E0643</td></tr>
<tr><td>EUT Stage</td><td>Identical Prototype</td></tr>
</table>

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. 5G NR n48 support SA and NSA mode for SCS 30kHz. According to the maximum power, SA covers NSA mode.
3. The maximum EIRP is calculated from max output power and max antenna gain, only the maximum EIRP are shown in the report, 5G NR n48AA & n48B for Ant. 5.
4. 5G NR n48 supports UL MIMO mode, the MIMO mode is completely uncorrelated.
5. For n48 UL MIMO mode, the conducted BE/Spurious are tested at single antenna port and add 10*log(N_{ANT}) according to KDB 662911 D01.
6. All the supported EN-DC combinations are verified conducted power, only the EN-DC combination with

highest power are shown in the report.

7. The EN-DC mode combination could be referred to the product spec.
8. There are two Samples under test, Sample 1 is 1st antenna, Sample 2 is 2nd antenna and they are with the same Gain but different manufacturers. According to the difference, we choose sample 1 to full test and the sample 2 is verified the worse case for Radiation Spurious Emission.

Specification of Accessory				
AC Adapter	**Brand Name**	NOKIA	**Model Name**	G1418B-540-028-2.5G

1.4 Maximum EIRP Power and Emission Designator

5G NR n48		PI/2 BPSK / QPSK		16QAM/64QAM/256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)
10	**3555.00 – 3694.98**	0.1730	8M58G7D	0.1521	8M58W7D
15	**3557.52 – 3692.49**	0.1722	13M5G7D	0.1521	13M6W7D
20	**3560.01 – 3690.00**	0.1738	18M2G7D	0.1545	18M2W7D
30	**3565.02 – 3684.99**	0.1746	27M8G7D	0.1535	27M9W7D
40	**3570.00 – 3679.98**	0.1799	37M8G7D	0.1758	37M8W7D

5G NR n48 UL MIMO		QPSK		16QAM/64QAM/256QAM	
BW (MHz)	Frequency Range (MHz)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)
10	**3555.00 – 3694.98**	0.1476	8M59G7D	0.1439	8M60W7D
15	**3557.52 – 3692.49**	0.1459	13M6G7D	0.1422	13M6W7D
20	**3560.01 – 3690.00**	0.1479	18M2G7D	0.1435	18M2W7D
30	**3565.02 – 3684.99**	0.1507	27M9G7D	0.1476	28M0W7D
40	**3570.00 – 3679.98**	0.1545	37M9G7D	0.1531	37M9W7D

EN_DC_n48AA		PI/2 BPSK / QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)		Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)
NR BW 10MHz	**LTE BW 20MHz**	0.1713	28M1G7D	0.1758	28M1W7D
NR BW 15MHz	**LTE BW 20MHz**	0.1742	33M1G7D	0.1722	33M1W7D
NR BW 20MHz	**LTE BW 20MHz**	0.1750	37M9G7D	0.1754	37M9W7D
NR BW 40MHz	**LTE BW 20MHz**	0.1762	57M9G7D	0.1742	57M7W7D

n48B	PI/2 BPSK / QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)
NR BW 20MHz+20MHz	0.1856	38M0G7D	0.1637	38M0W7D
NR BW 20MHz+15MHz	0.1715	32M9G7D	0.1675	32M9W7D
NR BW 15MHz+20MHz	0.1760	32M9G7D	0.1623	32M9W7D
NR BW 20MHz+10MHz	0.1728	27M9G7D	0.1702	27M9W7D
NR BW 10MHz+20MHz	0.1760	27M9G7D	0.1612	27M9W7D
NR BW 15MHz+15MHz	0.1756	28M4G7D	0.1640	28M5W7D
NR BW 15MHz+10MHz	0.1760	23M4G7D	0.1623	23M5W7D
NR BW 10MHz+15MHz	0.1775	23M5G7D	0.1597	23M5W7D
NR BW 10MHz+10MHz	0.1800	18M5G7D	0.1620	18M5W7D

1.5 Testing Site

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

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

Test Firm	Sporton International Inc. (ShenZhen)		
Test Site Location	101, 1st Floor, Block B, Building 1, No. 2, Tengfeng 4th Road, Fenghuang Community, Fuyong Street, Baoan District, Shenzhen City, Guangdong Province 518103 People's Republic of China TEL: +86-755-86066985		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	03CH02-SZ	CN1256	421272

1.6 Test Software

Item	Site	Manufacture	Name	Version
1.	03CH02-SZ	AUDIX	E3	6.2009-8-24a

1.7 Applied Standards

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

- ANSI C63.26-2015
- 47 CFR Part 2, 96
- FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- FCC KDB 940660 D01 Part 96 CBRS v03
- FCC KDB 412172 D01 Determining ERP and EIRP v01r01

Remark:

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

2 Test Configuration of Equipment Under Test

2.1 Test Mode

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

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

Test Items	Band	Bandwidth (MHz)					Modulation					RB #			Test Channel		
		10	15	20	30	40	PI/2 BPSK	QPSK	16QAM	64QAM	256QAM	1	Half	Full	L	M	H
Max. Output Power	n48	v	v	v	v	v	v	v	v	v	v	v		v	v	v	v
26dB and 99% Bandwidth	n48	v	v	v	v	v		v	v	v	v			v		v	
Adjacent Channel Leakage Ratio	n48	v		v		v	v	v						v	v	v	v
Conducted Band Edge	n48	v		v		v	v	v				v		v	v	v	v
Conducted Spurious Emission	n48	v		v		v	v	v				v			v	v	v
E.I.R.P	n48	v	v	v	v	v	v	v	v	v	v	v		v	v	v	v
Frequency Stability	n48			v				v						v		v	
Radiated Spurious Emission	n48	Worst Case														v	
Remark	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. All test items are based on engineering evaluation. 5. Frequency Stability: Normal Voltage = 54V ; Low Voltage = 48V ; High Voltage = 57V.																

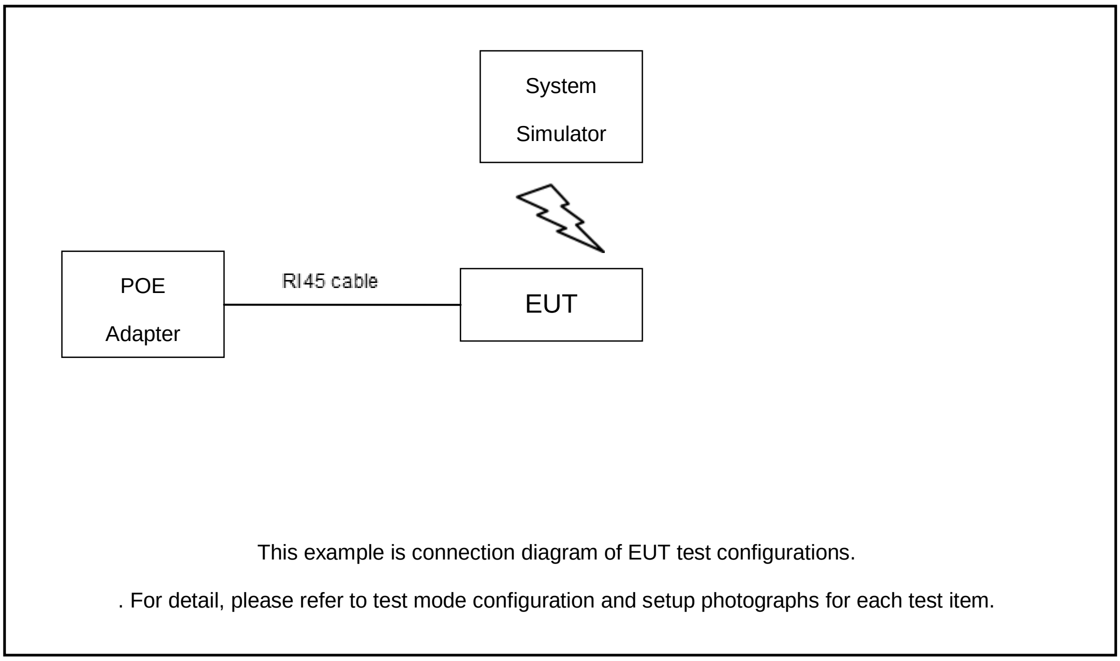
Test Cases	Band	Bandwidth (MHz)	Modulation	RB #	Test Channel
		eg. 10+20M, 15+20M, 20+20, 40+20M	eg. PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM	1RB, Partial RB, Full RB	L/M/H
Max. Output Power	n48AA	All supported Bandwidth	All Modulation	1RB, Full RB	L, M, H
E.I.R.P	n48AA	All supported Bandwidth	All Modulation	1RB, Full RB	L, M, H
26dB and 99% Bandwidth	n48AA	All supported Bandwidth	QPSK, 16QAM, 64QAM, 256QAM	Full RB	M
Adjacent Channel Leakage Ratio	n48AA	10+20M, 20+20M, 40+20M,	PI/2 BPSK, QPSK,	1RB, Full RB	L, M, H
Conducted Band Edge	n48AA	10+20M, 20+20M, 40+20M,	PI/2 BPSK, QPSK	1RB, Full RB	L, M, H
Conducted Spurious Emission	n48AA	10+20M, 20+20M, 40+20M,	PI/2 BPSK, QPSK	1RB, Full RB	L, M, H
Frequency Stability	n48AA	20+20M	PI/2 BPSK	Full RB	M
Radiated Spurious Emission	n48AA	Worst case from maximum power			M

Note:
1. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.
2. All test items are based on engineering evaluation.
3. Frequency Stability: Normal Voltage = 54V ; Low Voltage = 48V ; High Voltage = 57V.

Test Cases	Band	Bandwidth (MHz)	Modulation	RB #	Test Channel
		eg. 20+20M, 20+15M, 15+20M, 20+10M, 10+20M, 15+15M, 15+10M, 10+15M, 10+10M	eg. PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM	1RB, Partial RB, Full RB	L/M/H
Max. Output Power	n48B	All supported Bandwidth	All Modulation	1RB, Full RB	L, M, H
E.I.R.P	n48B	All supported Bandwidth	All Modulation	1RB, Full RB	L, M, H
26dB and 99% Bandwidth	n48B	All supported Bandwidth	QPSK, 16QAM, 64QAM, 256QAM	Full RB	M
Conducted Band Edge	n48B	10+10M, 20+10M, 20+20M	PI/2 BPSK, QPSK	1RB, Full RB	L, M, H
Conducted Spurious Emission	n48B	10+10M, 20+10M, 20+20M	PI/2 BPSK, QPSK	1RB, Full RB	L, M, H
Radiated Spurious Emission	n48B	Worst case from maximum power			M

Note:
1. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.
2. Frequency Stability: Normal Voltage = 54V ; Low Voltage = 48V ; High Voltage = 57V.

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	Power Supply	GWINSTEK	PSS-2002	N/A	N/A	Unshielded, 1.8 m
2.	Base Station	Anritsu	MT8821C	N/A	N/A	Unshielded, 1.8 m
3.	NR Base Station	Anritsu	MT8000A	N/A	N/A	Unshielded, 1.8 m

2.4 Measurement Results Explanation Example

For all conducted test items:

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

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 5.7 dB and 10dB attenuator.

Example :

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

= 5.7 + 10 = 15.7 (dB)

2.5 Frequency List of Low/Middle/High Channels

5G NR n48 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
40	Channel	638000	641666	645332
	Frequency	3570	3624.99	3679.98
30	Channel	637668	641666	645666
	Frequency	3565.02	3624.99	3684.99
20	Channel	637334	641666	646000
	Frequency	3560.01	3624.99	3690
15	Channel	637168	641666	646166
	Frequency	3557.52	3624.99	3692.49
10	Channel	637000	641666	646332
	Frequency	3555	3624.99	3694.98

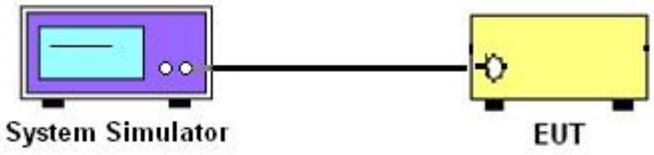
3 Conducted Test Items

3.1 Measuring Instruments

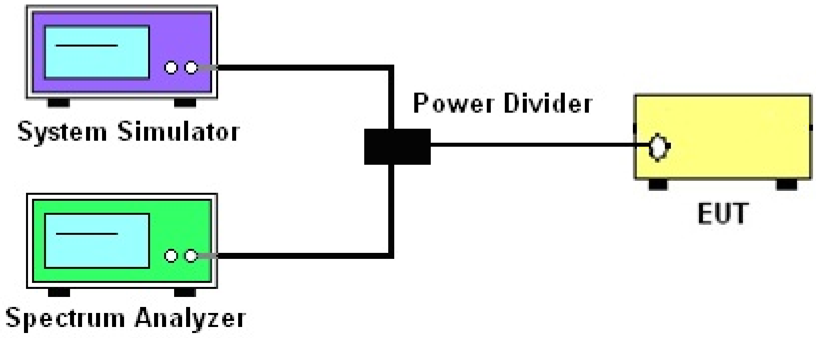
See list of measuring instruments of this test report.

3.1.1 Test Setup

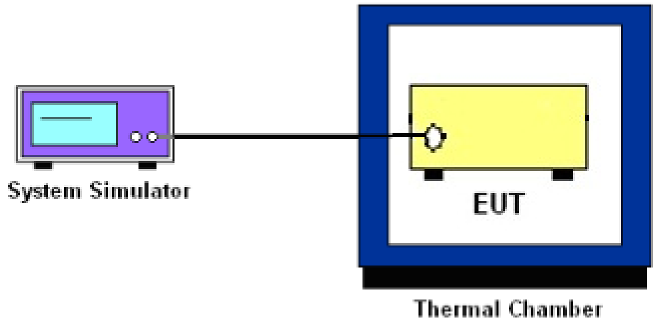
3.1.2 Conducted Output Power / ACLR



3.1.3 Occupied Bandwidth, Conducted Band-Edge and Conducted Spurious Emission



3.1.4 Frequency Stability



3.1.5 Test Result of Conducted Test

Please refer to Appendix A.

3.2 Conducted Output Power

3.2.1 Description of the Conducted Output Power 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.

3.2.2 Test Procedures

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

3.3 EIRP

3.3.1 Description of the EIRP Measurement

EIRP limits for CBRS equipment as below table:

Device		Maximum EIRP (dBm/10 MHz)	Maximum PSD (dBm/MHz)
Applied	**End User Device**	23	n/a
☐	**Category A CBSD**	30	20
☐	**Category B CBSD**	47	37

Remark:

1. The worst case EIRP shown in this section is found with LTE operating only using 1RB. As such, the EIRP/10MHz and full channel EIRP values will be identical since 1RB is fully contained within all available channel bandwidths for LTE Band 48 (i.e. 5, 10, 15, 20MHz)

3.3.2 Test Procedures for EIRP

1. Establishing a communications link with the call box (Base station) to measure the Maximum conducted power, the parameters were set to force the EUT transmitting at maximum output power level. Use the average power measurement function to measure total channel power of each channel bandwidth (per ANSI C63.26-2015 Section 5.2.1)

2. Determining ERP and/or EIRP from conducted RF output power measurements (Per ANSI C63.26-2015 Section 5.2.5.5)

   $EIRP = P_T + G_T – L_C$, $ERP = EIRP - 2.15$, 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 Occupied Bandwidth

3.4.1 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.

3.4.2 Test Procedures

The testing follows ANSI C63.26-2015 Section 5.4.3 (26dB) and Section 5.4.4 (99OB)

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. 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.
3. 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.
4. Set the detection mode to peak, and the trace mode to max hold.
5. 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)
6. Determine the "-26 dB down amplitude" as equal to (Reference Value – X).
7. 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.
8. Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

3.5 Conducted Band Edge

3.5.1 Description of Conducted Band Edge Measurement

Part 96.41 (e) (1) (ii)

For End User Devices the emission limits outside the fundamental are as follows:

Within 0 MHz to B MHz above and below the assigned channel ≤ −13 dBm/MHz

Greater than B MHz above and below the assigned channel ≤ −25 dBm/MHz

where B is the bandwidth in megahertz of the assigned channel or multiple contiguous channels of the End User Device.

Notwithstanding the emission limits in this paragraph, the Adjacent Channel Leakage Ratio for End User Devices shall be at least 30 dB.

Part 96.41 (e) (2)

For CBSDs and End User Devices, the conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed −25 dBm/MHz, and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed −40dBm/MHz

3.5.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The band edges of low and high channels for the highest RF powers were measured.
3. Set RBW >= 1% EBW in the 1MHz band immediately outside and adjacent to the band edge.
4. Beyond the 1 MHz band from the band edge, RBW=1MHz was used
5. Offset has included the duty factor for Band n48. Duty factor =10 log (1/x), where x is the measured duty cycle.
6. Set spectrum analyzer with RMS detector.
7. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.6 Conducted Spurious Emission

3.6.1 Description of Conducted Spurious Emission Measurement

96.41 (e)(2)

The conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed −40dBm/MHz.

3.6.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. 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.
3. The middle channel for the highest RF power within the transmitting frequency was measured.
4. The conducted spurious emission for the whole frequency range was taken.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz.
6. Set spectrum analyzer with RMS detector.
7. Taking the record of maximum spurious emission.
8. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
9. The limit line is −40dBm/MHz.

3.7 Frequency Stability

3.7.1 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.

3.7.2 Test Procedures for Temperature Variation

The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.

1. The EUT was set up in the thermal chamber and connected with the system simulator.
2. 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.
3. 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.

3.7.3 Test Procedures for Voltage Variation

The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.

1. The EUT was placed in a temperature chamber at 25±5° C and connected with the system simulator.
2. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
3. The variation in frequency was measured for the worst case.

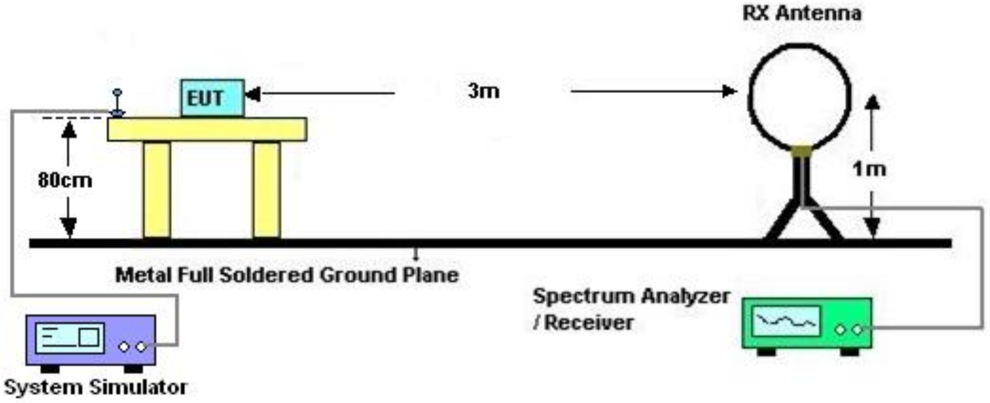
4 Radiated Test Items

4.1 Measuring Instruments

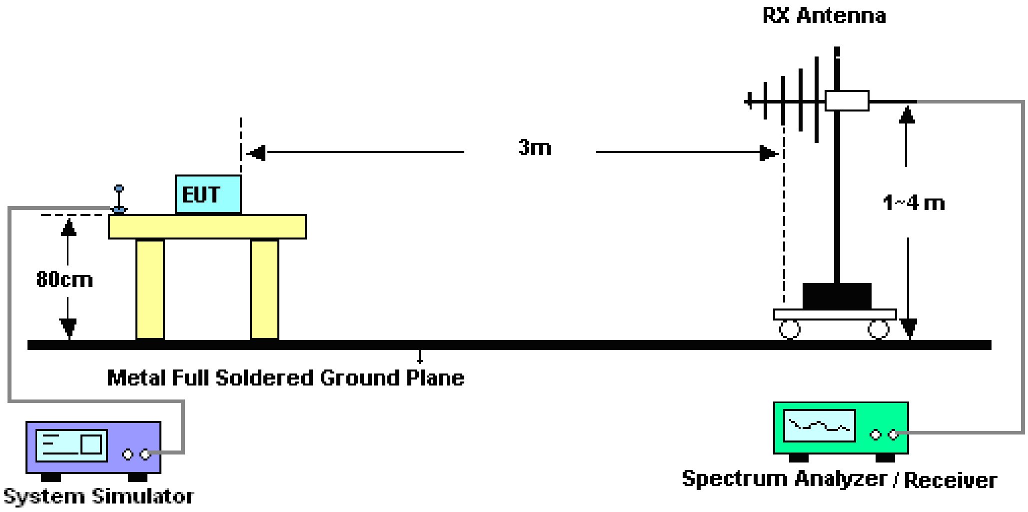
See list of measuring instruments of this test report.

4.2 Test Setup

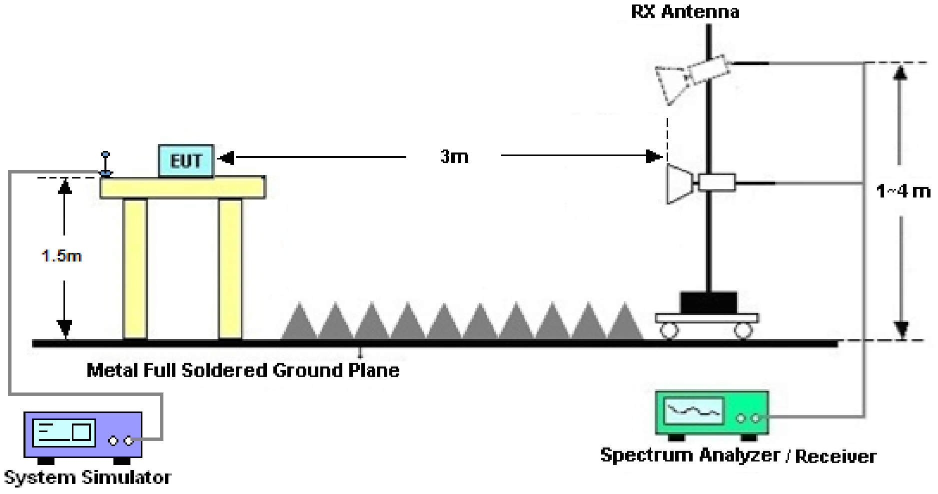
4.2.1 For radiated test below 30MHz



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 Measurement

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 -40dBm / MHz.

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

4.4.2 Test Procedures

1. 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.
2. The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between 1m to 4m to search the maximum spurious emission for both horizontal and vertical polarizations.
5. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
7. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
   Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
   EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
   ERP (dBm) = EIRP - 2.15
8. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
   The limit line is −40dBm/MHz

5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101078	10Hz~40GHz	Apr. 09, 2024	Jul. 06, 2024~ Jul. 19, 2024	Apr. 08, 2025	Conducted (TH01-SZ)
Power Divider	TOJOIN	PS-2SM-04265	60.06.020.0077	0.4GHz~26.5GHz	Dec. 25, 2023	Jul. 06, 2024~ Jul. 19, 2024	Dec. 24, 2024	Conducted (TH01-SZ)
Power Divider	SOLVANG TECHNOLOY	STI08-0055	-	Max 40GHz	Mar. 20, 2024	Jul. 06, 2024~ Jul. 19, 2024	Mar. 19, 2025	Conducted (TH01-SZ)
Thermal Chamber	Ten Billion Hongzhangroup	LP-150U	H2014081803	-40~+150°C	Jul. 04, 2024	Jul. 06, 2024~ Jul. 19, 2024	Jul. 03, 2025	Conducted (TH01-SZ)
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY55150213	10Hz~44GHz	Jul. 07, 2023	Jun. 22, 2024~ Jun. 26, 2024	Jul. 06, 2024	Radiation (03CH02-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	Jul. 28, 2022	Jun. 22, 2024~ Jun. 26, 2024	Jul. 27, 2024	Radiation (03CH02-SZ)
Bilog Antenna	TeseQ	CBL6112D	35407	30MHz-2GHz	Oct. 24, 2023	Jun. 22, 2024~ Jun. 26, 2024	Oct. 23, 2025	Radiation (03CH02-SZ)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00119436	1GHz~18GHz	Jul. 08, 2023	Jun. 22, 2024~ Jun. 26, 2024	Jul. 07, 2024	Radiation (03CH02-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Jul. 07, 2023	Jun. 22, 2024~ Jun. 26, 2024	Jul. 06, 2024	Radiation (03CH02-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Apr. 09, 2024	Jun. 22, 2024~ Jun. 26, 2024	Apr. 08, 2025	Radiation (03CH02-SZ)
LF Amplifier	Burgeon	BPA-530	102211	0.01~3000Mhz	Oct. 18, 2023	Jun. 22, 2024~ Jun. 26, 2024	Oct. 17, 2024	Radiation (03CH02-SZ)
HF Amplifier	KEYSIGHT	83017A	MY53270105	0.5GHz~26.5Ghz	Oct. 18, 2023	Jun. 22, 2024~ Jun. 26, 2024	Oct. 17, 2024	Radiation (03CH02-SZ)
AC Power Source	Chroma	61601	616010003043	N/A	Oct. 18, 2023	Jun. 22, 2024~ Jun. 26, 2024	Oct. 17, 2024	Radiation (03CH02-SZ)
Turn Table	Chaintek	T-200	N/A	0~360 degree	NCR	Jun. 22, 2024~ Jun. 26, 2024	NCR	Radiation (03CH02-SZ)
Antenna Mast	Chaintek	MBS-400	N/A	1 m~4 m	NCR	Jun. 22, 2024~ Jun. 26, 2024	NCR	Radiation (03CH02-SZ)

NCR: No Calibration Required

6 Measurement Uncertainty

Uncertainty of Conducted Measurement

Test Item	Uncertainty
Conducted Spurious Emission & Bandedge	±1.34 dB
Occupied Channel Bandwidth	±0.012 MHz
Conducted Power	±1.34 dB
ACLR	±1.34 dB
Frequency Stability	±1.3 Hz

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.47 dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.31 dB

Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.72 dB

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

Appendix A. Test Results of Conducted Test

Test Engineer :	Khan Zhen	**Temperature :**	22~23℃
		Relative Humidity :	40~42%

TEL : +86-755-8637-9589
FAX : +86-755-8637-9595

Software Version: 23.06.1602

FR1 N48 SCS 30KHz (ANT5)

Transmitter Conducted Output Power And EIRP, (G_T - L_C)=8.8dB

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Conducted Power(dBm)	EIRP (dBm)	EIRP (W)
48	30	10	637000	3555	DFT-s-OFDM QPSK	1@1	13.53	22.33	0.1710
48	30	10	637000	3555	DFT-s-OFDM 16 QAM	1@1	12.99	21.79	0.1510
48	30	10	641666	3624.99	DFT-s-OFDM QPSK	1@1	13.49	22.29	0.1694
48	30	10	641666	3624.99	DFT-s-OFDM 16 QAM	1@1	12.92	21.72	0.1486
48	30	10	646332	3694.98	DFT-s-OFDM QPSK	1@1	13.58	22.38	0.1730
48	30	10	646332	3694.98	DFT-s-OFDM 16 QAM	1@1	13.02	21.82	0.1521
48	30	15	637168	3557.52	DFT-s-OFDM QPSK	1@1	13.51	22.31	0.1702
48	30	15	637168	3557.52	DFT-s-OFDM 16 QAM	1@1	13.01	21.81	0.1517
48	30	15	641666	3624.99	DFT-s-OFDM QPSK	1@1	13.48	22.28	0.1690
48	30	15	641666	3624.99	DFT-s-OFDM 16 QAM	1@1	12.95	21.75	0.1496
48	30	15	646166	3692.49	DFT-s-OFDM QPSK	1@1	13.56	22.36	0.1722
48	30	15	646166	3692.49	DFT-s-OFDM 16 QAM	1@1	13.02	21.82	0.1521
48	30	20	637334	3560.01	DFT-s-OFDM QPSK	1@1	13.54	22.34	0.1714
48	30	20	637334	3560.01	DFT-s-OFDM 16 QAM	1@1	13.01	21.81	0.1517
48	30	20	641666	3624.99	DFT-s-OFDM QPSK	1@1	13.47	22.27	0.1687
48	30	20	641666	3624.99	DFT-s-OFDM 16 QAM	1@1	12.96	21.76	0.1500
48	30	20	646000	3690	DFT-s-OFDM QPSK	1@1	13.6	22.4	0.1738
48	30	20	646000	3690	DFT-s-OFDM 16 QAM	1@1	13.09	21.89	0.1545
48	30	30	637668	3565.02	DFT-s-OFDM QPSK	1@1	13.62	22.42	0.1746
48	30	30	637668	3565.02	DFT-s-OFDM 16 QAM	1@1	13.05	21.85	0.1531
48	30	30	641666	3624.99	DFT-s-OFDM QPSK	1@1	13.54	22.34	0.1714
48	30	30	641666	3624.99	DFT-s-OFDM 16 QAM	1@1	12.96	21.76	0.1500
48	30	30	645666	3684.99	DFT-s-OFDM QPSK	1@1	13.62	22.42	0.1746
48	30	30	645666	3684.99	DFT-s-OFDM 16 QAM	1@1	13.06	21.86	0.1535
48	30	40	638000	3570	DFT-s-OFDM PI/2 BPSK	50@25	13.57	22.37	0.1726
48	30	40	638000	3570	DFT-s-OFDM PI/2 BPSK	1@1	13.59	22.39	0.1734
48	30	40	638000	3570	DFT-s-OFDM PI/2 BPSK	1@104	13.48	22.28	0.1690
48	30	40	638000	3570	DFT-s-OFDM QPSK	50@25	13.55	22.35	0.1718
48	30	40	638000	3570	DFT-s-OFDM QPSK	1@1	13.72	22.52	0.1786
48	30	40	638000	3570	DFT-s-OFDM QPSK	1@104	13.48	22.28	0.1690
48	30	40	638000	3570	DFT-s-OFDM 16 QAM	50@25	13.57	22.37	0.1726
48	30	40	638000	3570	DFT-s-OFDM 16 QAM	1@1	13.65	22.45	0.1758
48	30	40	638000	3570	DFT-s-OFDM 16 QAM	1@104	13.43	22.23	0.1671
48	30	40	638000	3570	DFT-s-OFDM 64 QAM	50@25	13.03	21.83	0.1524
48	30	40	638000	3570	DFT-s-OFDM 64 QAM	1@1	13.22	22.02	0.1592
48	30	40	638000	3570	DFT-s-OFDM 64 QAM	1@104	12.97	21.77	0.1503
48	30	40	638000	3570	DFT-s-OFDM 256 QAM	50@25	12.99	21.79	0.1510

TEL : +86-755-8637-9589
FAX : +86-755-8637-9595

48	30	40	638000	3570	DFT-s-OFDM 256 QAM	1@1	13.4	22.2	0.1660
48	30	40	638000	3570	DFT-s-OFDM 256 QAM	1@104	13.06	21.86	0.1535
48	30	40	638000	3570	CP-OFDM QPSK	53@26	13.07	21.87	0.1538
48	30	40	638000	3570	CP-OFDM QPSK	1@1	13.27	22.07	0.1611
48	30	40	638000	3570	CP-OFDM QPSK	1@104	12.96	21.76	0.1500
48	30	40	641666	3624.99	DFT-s-OFDM PI/2 BPSK	50@25	13.58	22.38	0.1730
48	30	40	641666	3624.99	DFT-s-OFDM PI/2 BPSK	1@1	13.63	22.43	0.1750
48	30	40	641666	3624.99	DFT-s-OFDM PI/2 BPSK	1@104	13.46	22.26	0.1683
48	30	40	641666	3624.99	DFT-s-OFDM QPSK	50@25	13.68	22.48	0.1770
48	30	40	641666	3624.99	DFT-s-OFDM QPSK	1@1	13.6	22.4	0.1738
48	30	40	641666	3624.99	DFT-s-OFDM QPSK	1@104	13.43	22.23	0.1671
48	30	40	641666	3624.99	DFT-s-OFDM 16 QAM	50@25	13.65	22.45	0.1758
48	30	40	641666	3624.99	DFT-s-OFDM 16 QAM	1@1	13.51	22.31	0.1702
48	30	40	641666	3624.99	DFT-s-OFDM 16 QAM	1@104	13.41	22.21	0.1663
48	30	40	641666	3624.99	DFT-s-OFDM 64 QAM	50@25	13.15	21.95	0.1567
48	30	40	641666	3624.99	DFT-s-OFDM 64 QAM	1@1	12.97	21.77	0.1503
48	30	40	641666	3624.99	DFT-s-OFDM 64 QAM	1@104	12.95	21.75	0.1496
48	30	40	641666	3624.99	DFT-s-OFDM 256 QAM	50@25	13.11	21.91	0.1552
48	30	40	641666	3624.99	DFT-s-OFDM 256 QAM	1@1	13.17	21.97	0.1574
48	30	40	641666	3624.99	DFT-s-OFDM 256 QAM	1@104	13.02	21.82	0.1521
48	30	40	641666	3624.99	CP-OFDM QPSK	53@26	13.09	21.89	0.1545
48	30	40	641666	3624.99	CP-OFDM QPSK	1@1	13.06	21.86	0.1535
48	30	40	641666	3624.99	CP-OFDM QPSK	1@104	12.94	21.74	0.1493
48	30	40	645332	3679.98	DFT-s-OFDM PI/2 BPSK	50@25	13.71	22.51	0.1782
48	30	40	645332	3679.98	DFT-s-OFDM PI/2 BPSK	1@1	13.6	22.4	0.1738
48	30	40	645332	3679.98	DFT-s-OFDM PI/2 BPSK	1@104	13.45	22.25	0.1679
48	30	40	645332	3679.98	DFT-s-OFDM QPSK	50@25	13.75	22.55	0.1799
48	30	40	645332	3679.98	DFT-s-OFDM QPSK	1@1	13.57	22.37	0.1726
48	30	40	645332	3679.98	DFT-s-OFDM QPSK	1@104	13.48	22.28	0.1690
48	30	40	645332	3679.98	DFT-s-OFDM 16 QAM	50@25	12.8	21.6	0.1445
48	30	40	645332	3679.98	DFT-s-OFDM 16 QAM	1@1	12.48	21.28	0.1343
48	30	40	645332	3679.98	DFT-s-OFDM 16 QAM	1@104	13.36	22.16	0.1644
48	30	40	645332	3679.98	DFT-s-OFDM 64 QAM	50@25	13.29	22.09	0.1618
48	30	40	645332	3679.98	DFT-s-OFDM 64 QAM	1@1	13	21.8	0.1514
48	30	40	645332	3679.98	DFT-s-OFDM 64 QAM	1@104	13.12	21.92	0.1556
48	30	40	645332	3679.98	DFT-s-OFDM 256 QAM	50@25	13.24	22.04	0.1600
48	30	40	645332	3679.98	DFT-s-OFDM 256 QAM	1@1	13.15	21.95	0.1567
48	30	40	645332	3679.98	DFT-s-OFDM 256 QAM	1@104	13.02	21.82	0.1521
48	30	40	645332	3679.98	CP-OFDM QPSK	53@26	13.21	22.01	0.1589
48	30	40	645332	3679.98	CP-OFDM QPSK	1@1	13.05	21.85	0.1531
48	30	40	645332	3679.98	CP-OFDM QPSK	1@104	12.96	21.76	0.1500

Frequency Stability

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Deviation (ppm)	Verdict	Environment
48	30	20	641666	3624.99	DFT-s-OFDM QPSK	50@0	0.0039	**PASS**	NV
48	30	20	641666	3624.99	DFT-s-OFDM QPSK	50@0	0.0061	**PASS**	LV
48	30	20	641666	3624.99	DFT-s-OFDM QPSK	50@0	0.0030	**PASS**	HV
48	30	20	641666	3624.99	DFT-s-OFDM QPSK	50@0	0.0022	**PASS**	-30℃
48	30	20	641666	3624.99	DFT-s-OFDM QPSK	50@0	0.0058	**PASS**	-20℃
48	30	20	641666	3624.99	DFT-s-OFDM QPSK	50@0	0.0040	**PASS**	-10℃
48	30	20	641666	3624.99	DFT-s-OFDM QPSK	50@0	0.0047	**PASS**	0℃
48	30	20	641666	3624.99	DFT-s-OFDM QPSK	50@0	0.0025	**PASS**	10℃
48	30	20	641666	3624.99	DFT-s-OFDM QPSK	50@0	0.0039	**PASS**	20℃
48	30	20	641666	3624.99	DFT-s-OFDM QPSK	50@0	0.0022	**PASS**	30℃
48	30	20	641666	3624.99	DFT-s-OFDM QPSK	50@0	0.0057	**PASS**	40℃
48	30	20	641666	3624.99	DFT-s-OFDM QPSK	50@0	0.0068	**PASS**	50℃

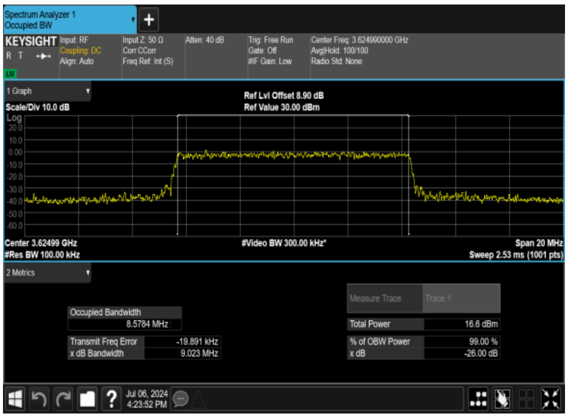
Occupied Bandwidth

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	OBW (MHz)	26dB BW (MHz)
48	30	10	641666	3624.99	CP-OFDM QPSK	24@0	8.58	9.119
48	30	10	641666	3624.99	CP-OFDM 16 QAM	24@0	8.5703	9.151
48	30	10	641666	3624.99	CP-OFDM 64 QAM	24@0	8.5784	9.023
48	30	10	641666	3624.99	CP-OFDM 256 QAM	24@0	8.5461	9.207
48	30	15	641666	3624.99	CP-OFDM QPSK	38@0	13.52	14.22
48	30	15	641666	3624.99	CP-OFDM 16 QAM	38@0	13.545	14.12
48	30	15	641666	3624.99	CP-OFDM 64 QAM	38@0	13.556	14.23
48	30	15	641666	3624.99	CP-OFDM 256 QAM	38@0	13.608	14.17
48	30	20	641666	3624.99	CP-OFDM QPSK	51@0	18.177	18.9
48	30	20	641666	3624.99	CP-OFDM 16 QAM	51@0	18.214	18.9
48	30	20	641666	3624.99	CP-OFDM 64 QAM	51@0	18.138	19.0
48	30	20	641666	3624.99	CP-OFDM 256 QAM	51@0	18.203	19.16
48	30	30	641666	3624.99	CP-OFDM QPSK	78@0	27.845	29.07
48	30	30	641666	3624.99	CP-OFDM 16 QAM	78@0	27.914	28.99
48	30	30	641666	3624.99	CP-OFDM 64 QAM	78@0	27.866	29.1
48	30	30	641666	3624.99	CP-OFDM 256 QAM	78@0	27.812	29.02
48	30	40	641666	3624.99	CP-OFDM QPSK	106@0	37.83	39.39
48	30	40	641666	3624.99	CP-OFDM 16 QAM	106@0	37.758	39.17
48	30	40	641666	3624.99	CP-OFDM 64 QAM	106@0	37.784	39.46
48	30	40	641666	3624.99	CP-OFDM 256 QAM	106@0	37.819	39.13

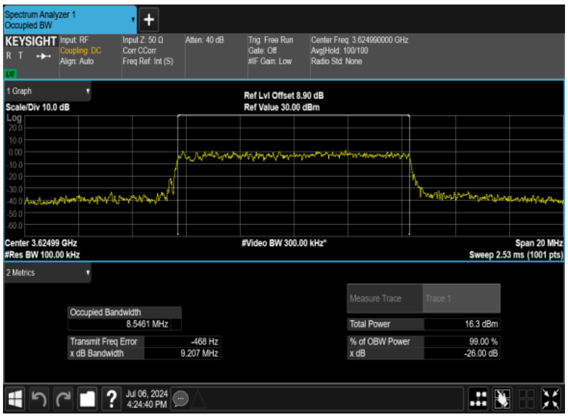
N48(10M)_CP-OFDM_QPSK_Outer_Full_Mid_CH

N48(10M)_CP-OFDM_16QAM_Outer_Full_Mid_CH

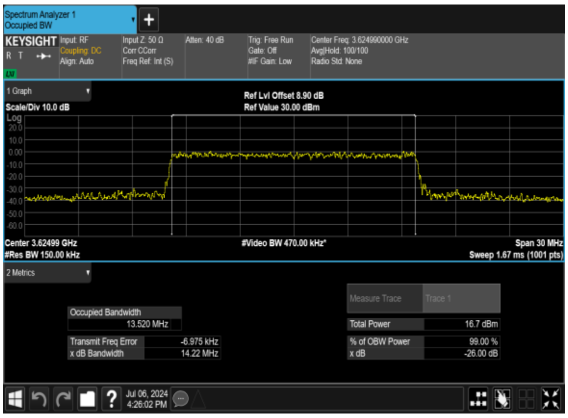
N48(10M)_CP-OFDM_64QAM_Outer_Full_Mid_CH



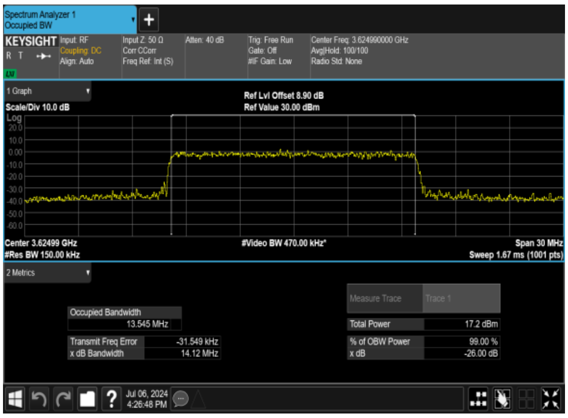
N48(10M)_CP-OFDM_256QAM_Outer_Full_Mid_CH



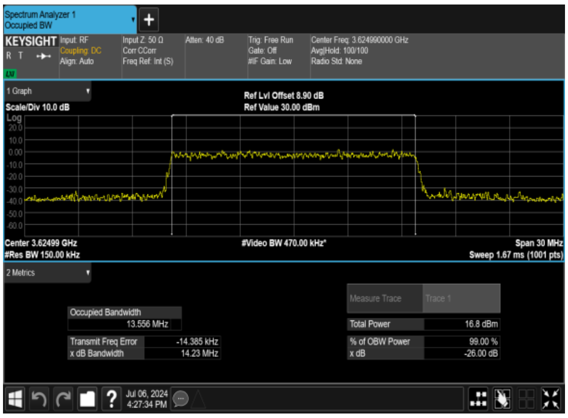
N48(15M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



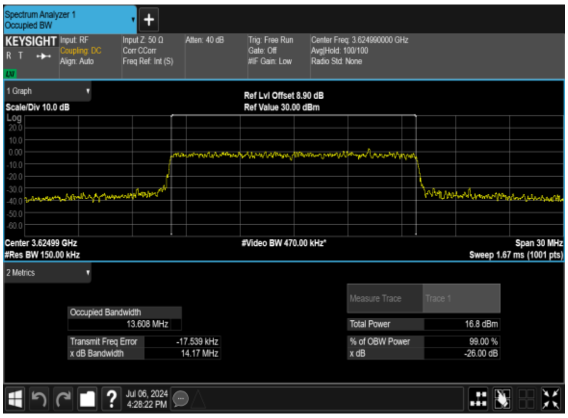
N48(15M)_CP-OFDM_16QAM_Outer_Full_Mid_CH



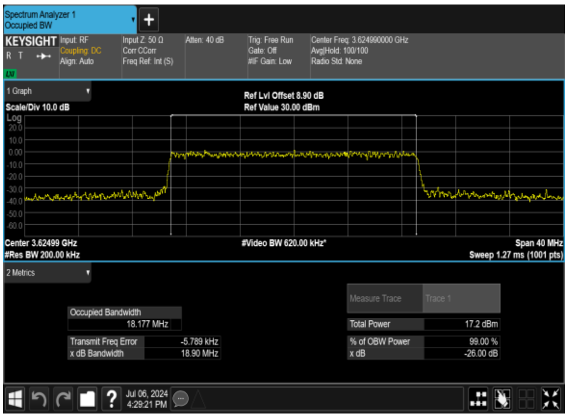
N48(15M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



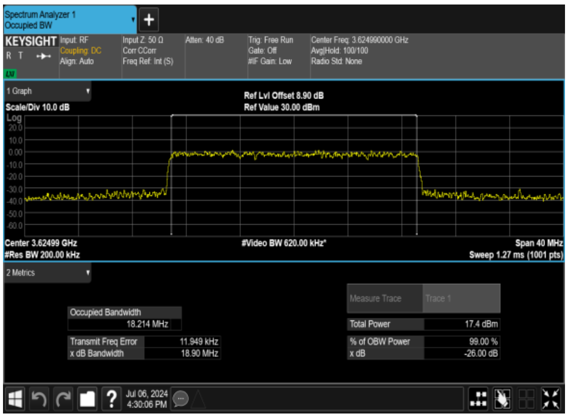
N48(15M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



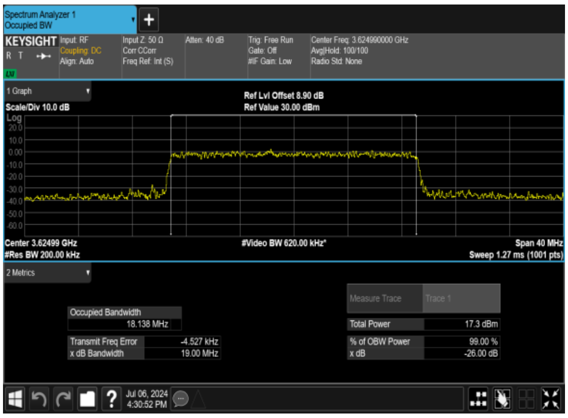
N48(20M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



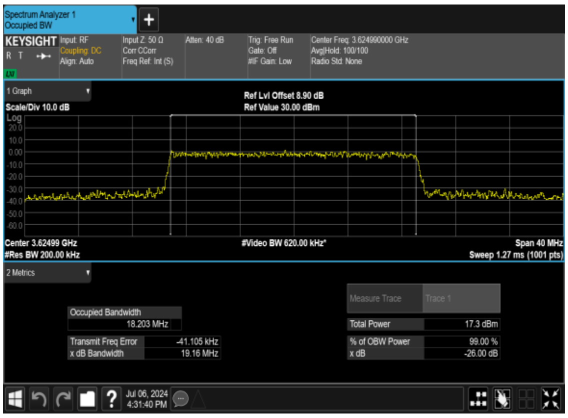
N48(20M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



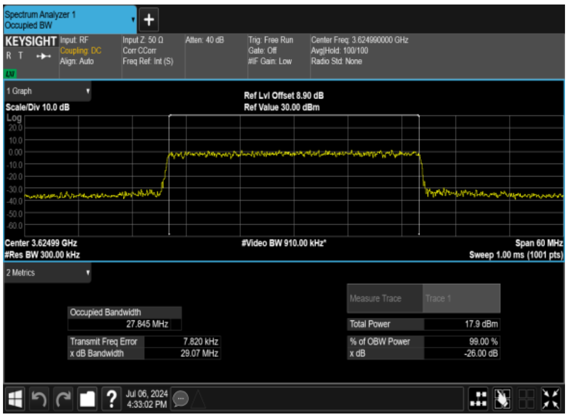
N48(20M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



N48(20M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH

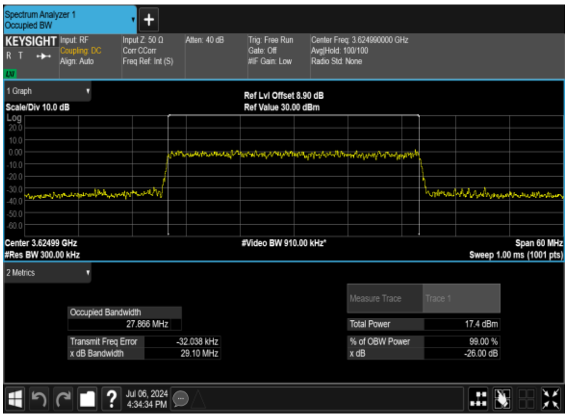


N48(30M)_CP-OFDM_QPSK_Outer_Full_Mid_CH

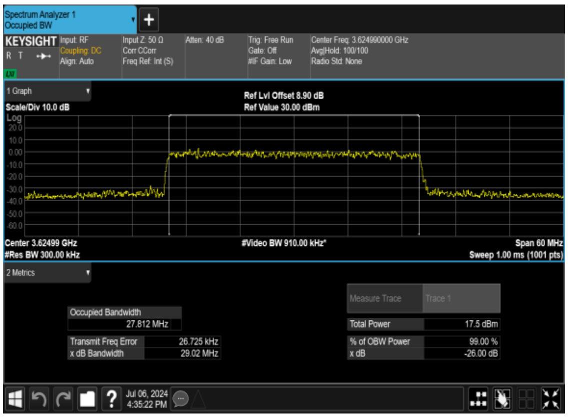


N48(30M)_CP-OFDM_16QAM_Outer_Full_Mid_CH

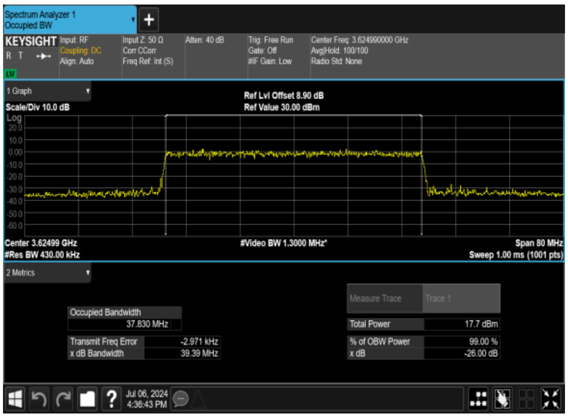
N48(30M)_CP-OFDM_64QAM_Outer_Full_Mid_CH



N48(30M)_CP-OFDM_256QAM_Outer_Full_Mid_CH

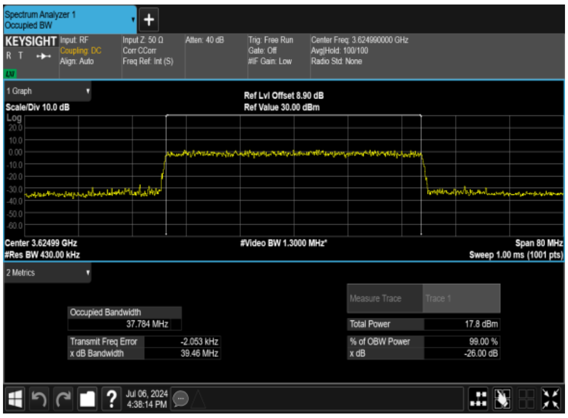


N48(40M)_CP-OFDM_QPSK_Outer_Full_Mid_CH

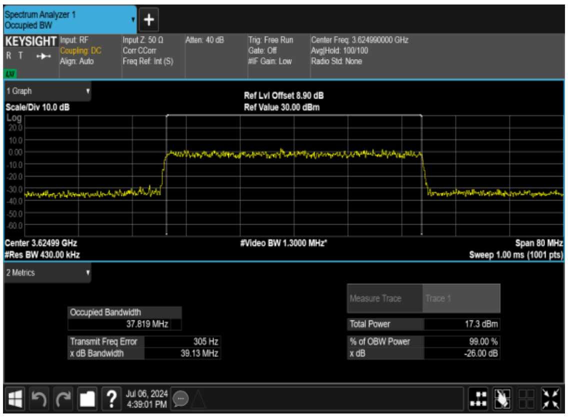


N48(40M)_CP-OFDM_16QAM_Outer_Full_Mid_CH

N48(40M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



N48(40M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



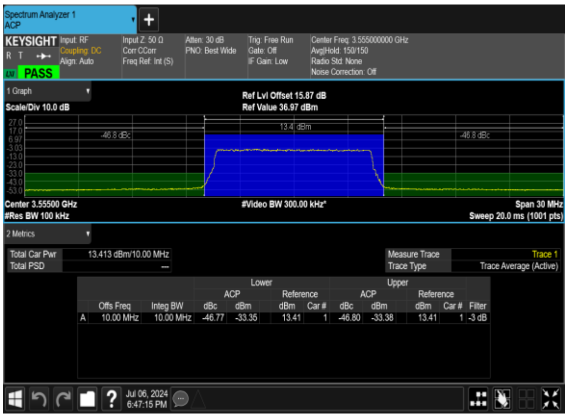
Adjacent Channel Leakage Ratio

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Lower Margin	Upper Margin	Result	Verdict
48	30	10	637000	3555.0	DFT-s-OFDM PI/2 BPSK	24@0	-16.77	-16.8	see graph	PASS
48	30	10	637000	3555.0	DFT-s-OFDM PI/2 BPSK	1@0	-15.99	-17.38	see graph	PASS
48	30	10	637000	3555.0	DFT-s-OFDM PI/2 BPSK	1@23	-17.31	-16.16	see graph	PASS
48	30	10	637000	3555.0	DFT-s-OFDM QPSK	24@0	-15.79	-15.8	see graph	PASS
48	30	10	637000	3555.0	DFT-s-OFDM QPSK	1@0	-15.83	-17.3	see graph	PASS
48	30	10	637000	3555.0	DFT-s-OFDM QPSK	1@23	-17.28	-16.29	see graph	PASS
48	30	10	641666	3624.99	DFT-s-OFDM PI/2 BPSK	24@0	-13.57	-13.36	see graph	PASS
48	30	10	641666	3624.99	DFT-s-OFDM PI/2 BPSK	1@0	-14.03	-14.89	see graph	PASS
48	30	10	641666	3624.99	DFT-s-OFDM PI/2 BPSK	1@23	-8.73	-8.06	see graph	PASS
48	30	10	641666	3624.99	DFT-s-OFDM QPSK	24@0	-12.92	-12.79	see graph	PASS
48	30	10	641666	3624.99	DFT-s-OFDM QPSK	1@0	-11.22	-11.95	see graph	PASS
48	30	10	641666	3624.99	DFT-s-OFDM QPSK	1@23	-13.28	-12.73	see graph	PASS
48	30	10	646332	3694.98	DFT-s-OFDM PI/2 BPSK	24@0	-12.44	-12.27	see graph	PASS
48	30	10	646332	3694.98	DFT-s-OFDM PI/2 BPSK	1@0	-12.29	-12.62	see graph	PASS
48	30	10	646332	3694.98	DFT-s-OFDM PI/2 BPSK	1@23	-12.41	-11.82	see graph	PASS
48	30	10	646332	3694.98	DFT-s-OFDM QPSK	24@0	-12.26	-12.04	see graph	PASS
48	30	10	646332	3694.98	DFT-s-OFDM QPSK	1@0	-11.32	-11.73	see graph	PASS
48	30	10	646332	3694.98	DFT-s-OFDM QPSK	1@23	-13.0	-12.52	see graph	PASS
48	30	20	637334	3560.01	DFT-s-OFDM PI/2 BPSK	50@0	-14.46	-14.19	see graph	PASS
48	30	20	637334	3560.01	DFT-s-OFDM PI/2 BPSK	1@0	-15.2	-15.51	see graph	PASS
48	30	20	637334	3560.01	DFT-s-OFDM PI/2 BPSK	1@50	-13.1	-12.48	see graph	PASS
48	30	20	637334	3560.01	DFT-s-OFDM QPSK	50@0	-13.64	-13.47	see graph	PASS

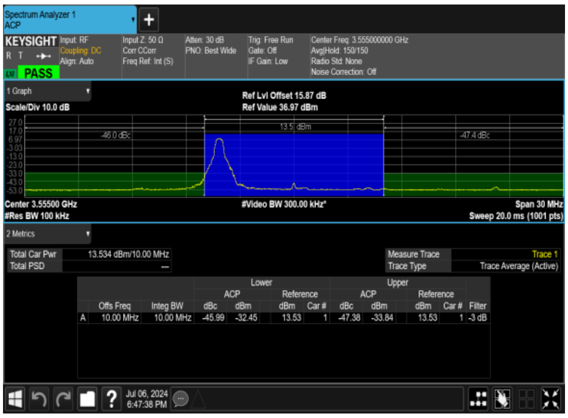
48	30	20	637334	3560.01	DFT-s-OFDM QPSK	1@0	-15.06	-15.23	**see graph**	PASS
48	30	20	637334	3560.01	DFT-s-OFDM QPSK	1@50	-16.09	-15.35	**see graph**	PASS
48	30	20	641666	3624.99	DFT-s-OFDM PI/2 BPSK	50@0	-10.66	-10.29	**see graph**	PASS
48	30	20	641666	3624.99	DFT-s-OFDM PI/2 BPSK	1@0	-10.21	-10.01	**see graph**	PASS
48	30	20	641666	3624.99	DFT-s-OFDM PI/2 BPSK	1@50	-10.68	-10.15	**see graph**	PASS
48	30	20	641666	3624.99	DFT-s-OFDM QPSK	50@0	-10.55	-10.2	**see graph**	PASS
48	30	20	641666	3624.99	DFT-s-OFDM QPSK	1@0	-10.89	-10.71	**see graph**	PASS
48	30	20	641666	3624.99	DFT-s-OFDM QPSK	1@50	-10.05	-9.52	**see graph**	PASS
48	30	20	646000	3690.0	DFT-s-OFDM PI/2 BPSK	50@0	-9.87	-9.4	**see graph**	PASS
48	30	20	646000	3690.0	DFT-s-OFDM PI/2 BPSK	1@0	-8.72	-8.38	**see graph**	PASS
48	30	20	646000	3690.0	DFT-s-OFDM PI/2 BPSK	1@50	-9.92	-9.26	**see graph**	PASS
48	30	20	646000	3690.0	DFT-s-OFDM QPSK	50@0	-9.55	-9.09	**see graph**	PASS
48	30	20	646000	3690.0	DFT-s-OFDM QPSK	1@0	-10.31	-10.01	**see graph**	PASS
48	30	20	646000	3690.0	DFT-s-OFDM QPSK	1@50	-9.7	-9.09	**see graph**	PASS
48	30	40	638000	3570.0	DFT-s-OFDM PI/2 BPSK	100@0	-8.37	-7.9	**see graph**	PASS
48	30	40	638000	3570.0	DFT-s-OFDM PI/2 BPSK	1@0	-8.89	-8.73	**see graph**	PASS
48	30	40	638000	3570.0	DFT-s-OFDM PI/2 BPSK	1@105	-9.18	-8.44	**see graph**	PASS
48	30	40	638000	3570.0	DFT-s-OFDM QPSK	100@0	-8.1	-7.66	**see graph**	PASS
48	30	40	638000	3570.0	DFT-s-OFDM QPSK	1@0	-8.11	-7.91	**see graph**	PASS
48	30	40	638000	3570.0	DFT-s-OFDM QPSK	1@105	-8.36	-7.66	**see graph**	PASS
48	30	40	641666	3624.99	DFT-s-OFDM PI/2 BPSK	100@0	-7.79	-7.02	**see graph**	PASS
48	30	40	641666	3624.99	DFT-s-OFDM PI/2 BPSK	1@0	-8.66	-8.25	**see graph**	PASS
48	30	40	641666	3624.99	DFT-s-OFDM PI/2 BPSK	1@105	-5.65	-4.76	**see graph**	PASS
48	30	40	641666	3624.99	DFT-s-OFDM QPSK	100@0	-7.71	-7.02	**see graph**	PASS
48	30	40	641666	3624.99	DFT-s-OFDM QPSK	1@0	-8.99	-8.63	**see graph**	PASS

48	30	40	641666	3624.99	DFT-s-OFDM QPSK	1@105	-6.51	-5.62	**see graph**	PASS
48	30	40	645332	3679.98	DFT-s-OFDM PI/2 BPSK	100@0	-7.58	-6.6	**see graph**	PASS
48	30	40	645332	3679.98	DFT-s-OFDM PI/2 BPSK	1@0	-7.46	-6.74	**see graph**	PASS
48	30	40	645332	3679.98	DFT-s-OFDM PI/2 BPSK	1@105	-7.06	-5.9	**see graph**	PASS
48	30	40	645332	3679.98	DFT-s-OFDM QPSK	100@0	-7.36	-6.41	**see graph**	PASS
48	30	40	645332	3679.98	DFT-s-OFDM QPSK	1@0	-7.35	-6.61	**see graph**	PASS
48	30	40	645332	3679.98	DFT-s-OFDM QPSK	1@105	-7.11	-5.86	**see graph**	PASS

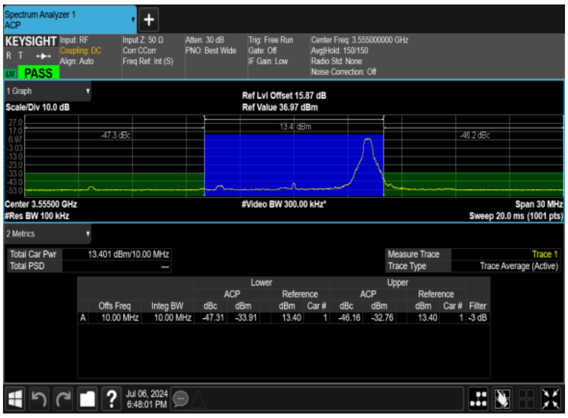
N48(10M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Low_CH



N48(10M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_Low_CH

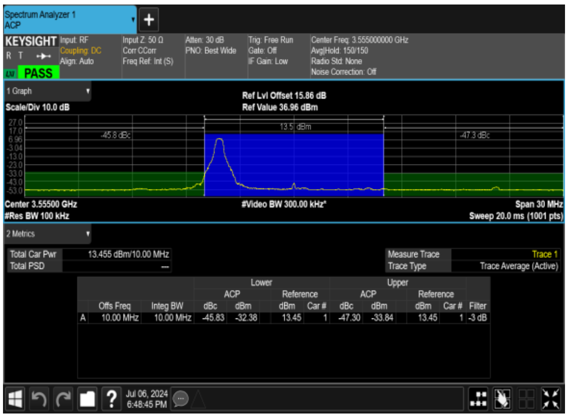


N48(10M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Right_Low_CH

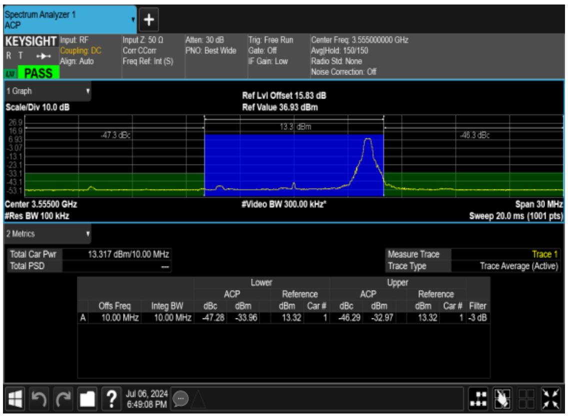


N48(10M)_DFT-s-OFDM_QPSK_Outer_Full_Low_CH

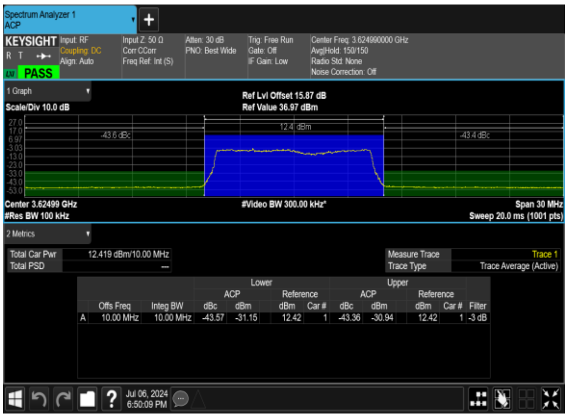
N48(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



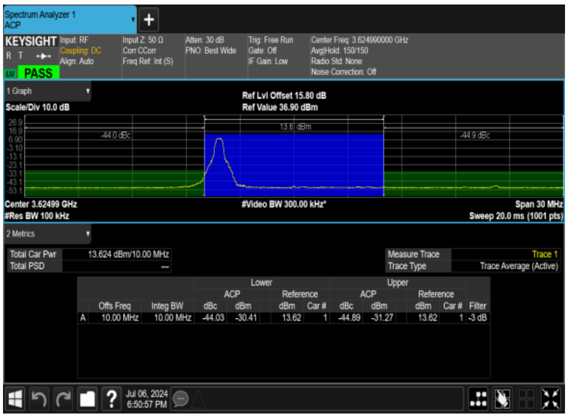
N48(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_Low_CH



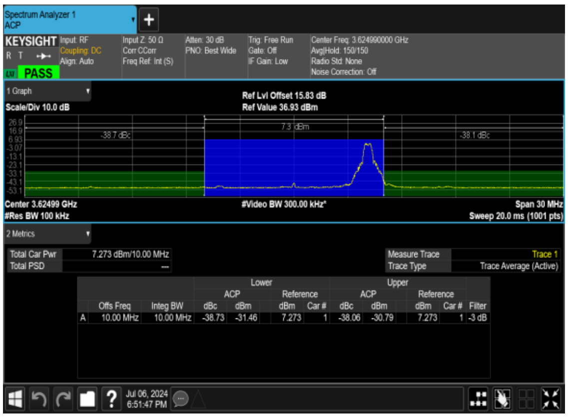
N48(10M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



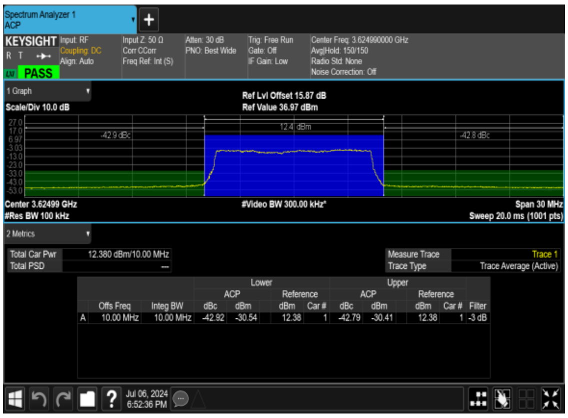
N48(10M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_Mid_CH



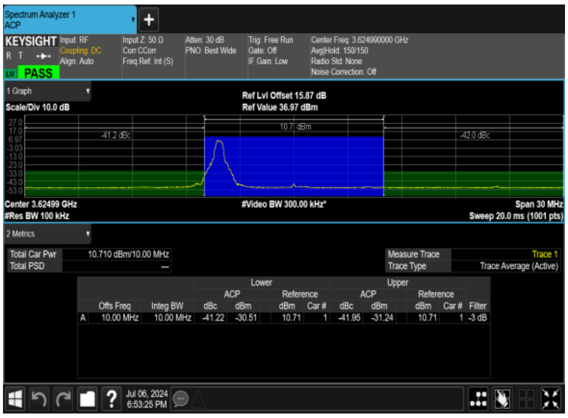
N48(10M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Right_Mid_CH



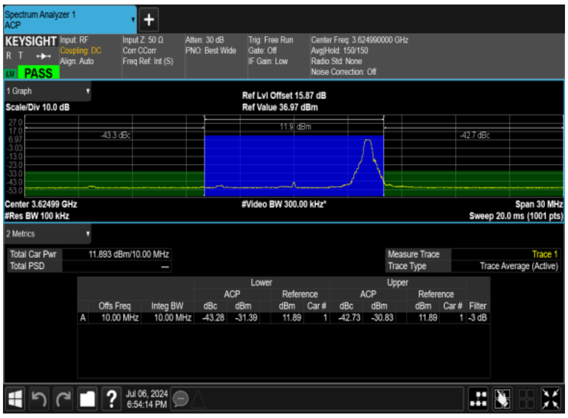
N48(10M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



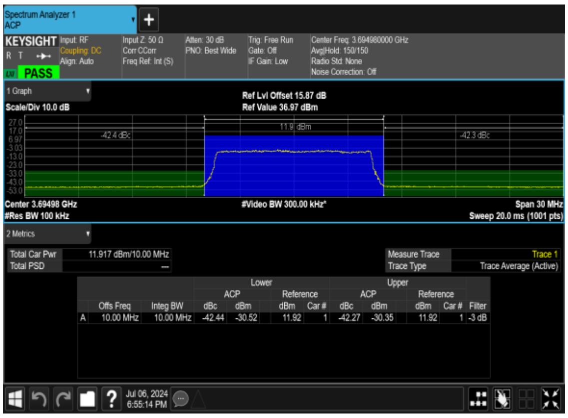
N48(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



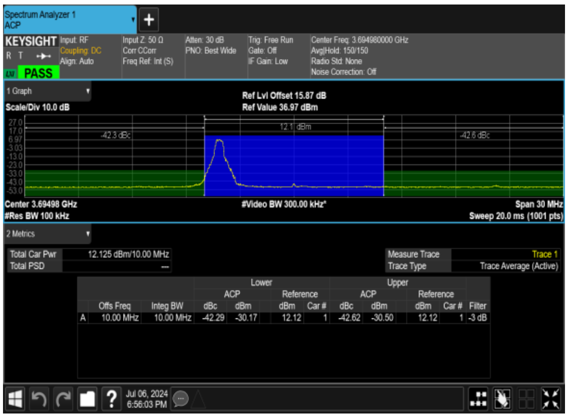
N48(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_Mid_CH



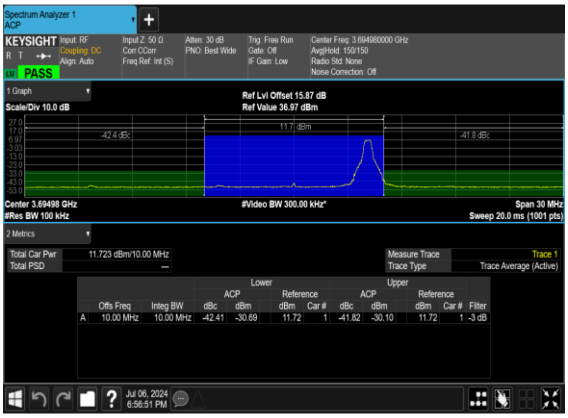
N48(10M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_High_CH



N48(10M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_High_CH

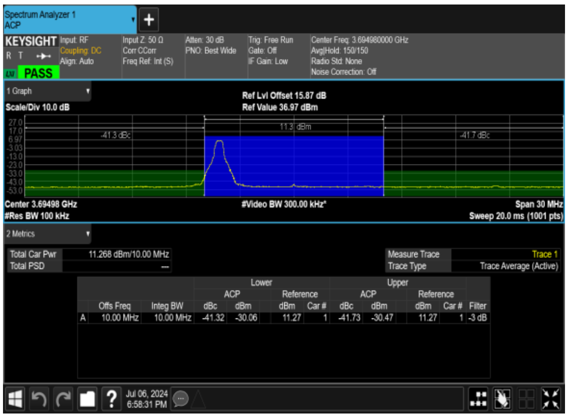


N48(10M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Right_High_CH

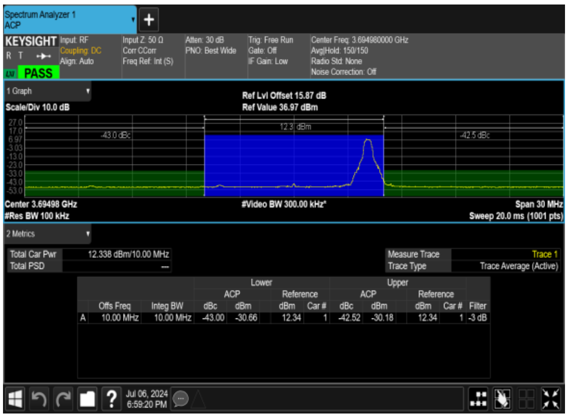


N48(10M)_DFT-s-OFDM_QPSK_Outer_Full_High_CH

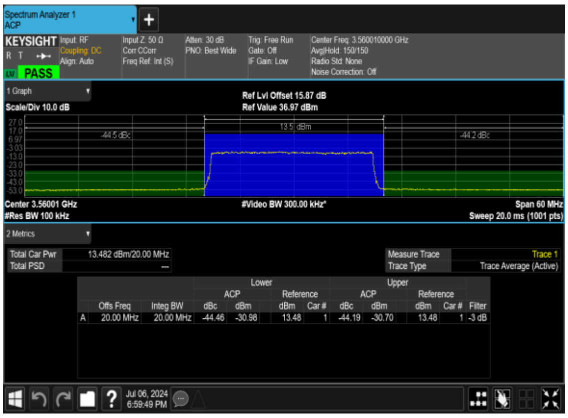
N48(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



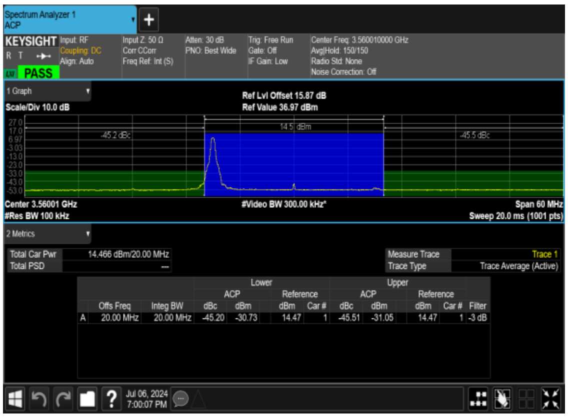
N48(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_High_CH



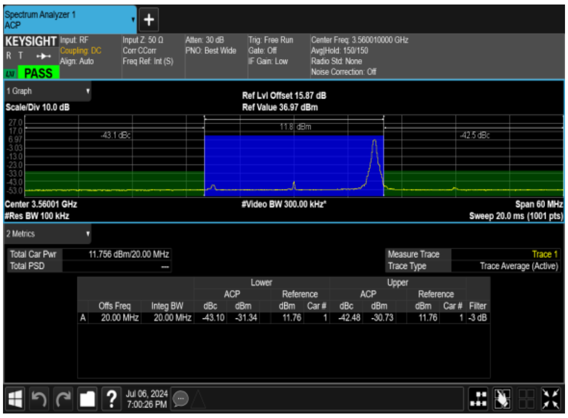
N48(20M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Low_CH



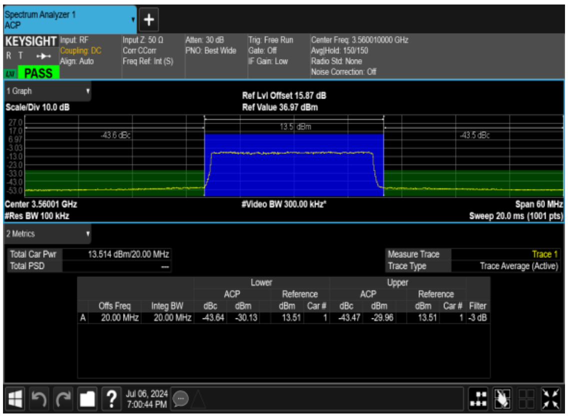
N48(20M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_Low_CH



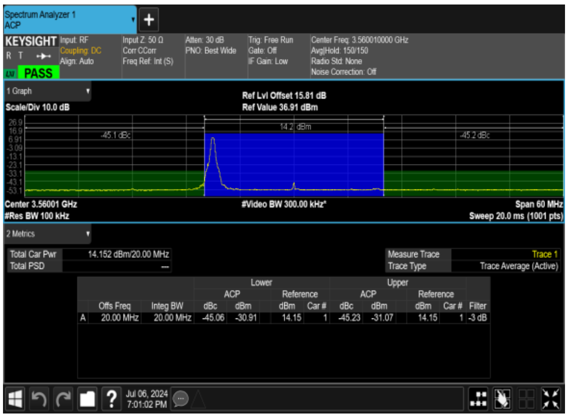
N48(20M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Right_Low_CH



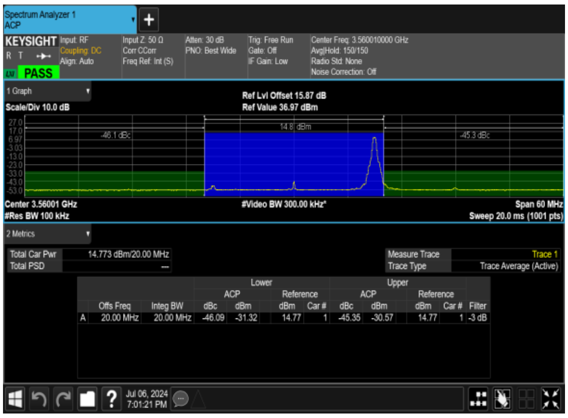
N48(20M)_DFT-s-OFDM_QPSK_Outer_Full_Low_CH



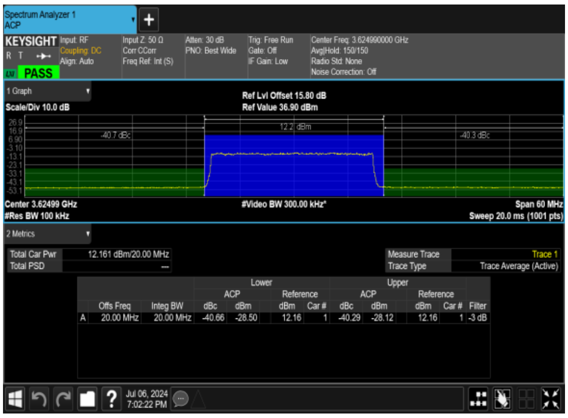
N48(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



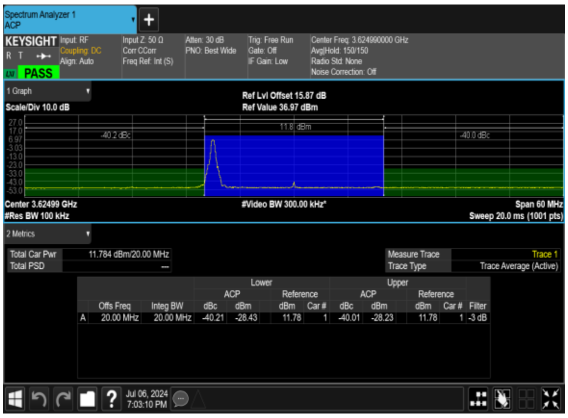
N48(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_Low_CH



N48(20M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH

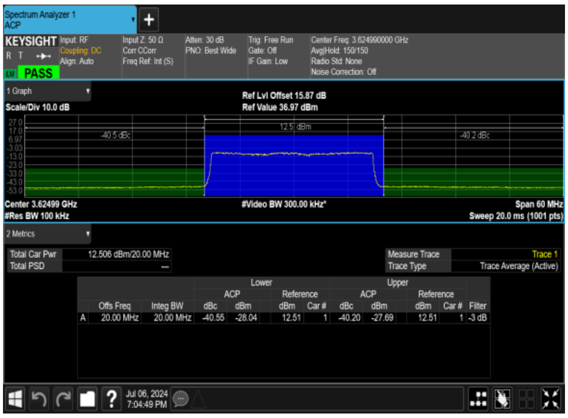


N48(20M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_Mid_CH

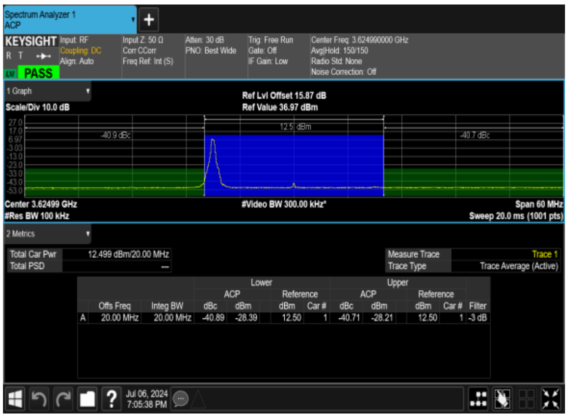


N48(20M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Right_Mid_CH

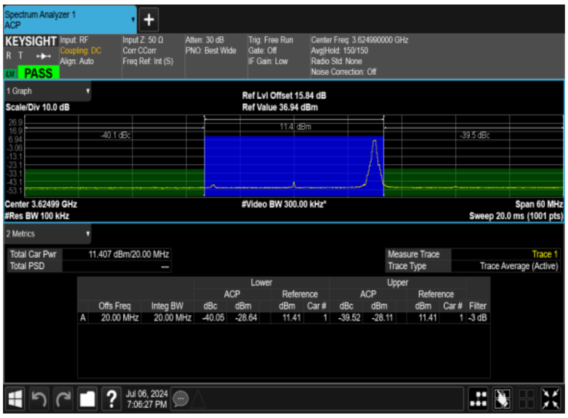
N48(20M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



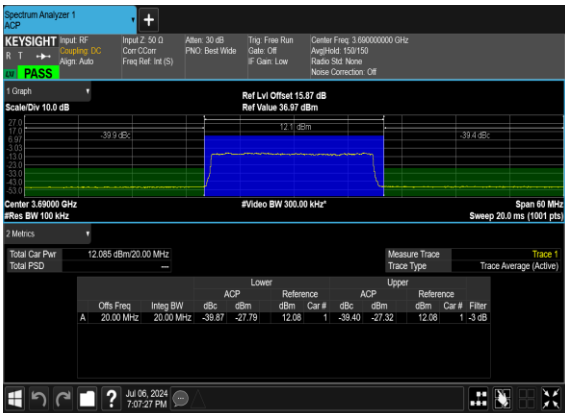
N48(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



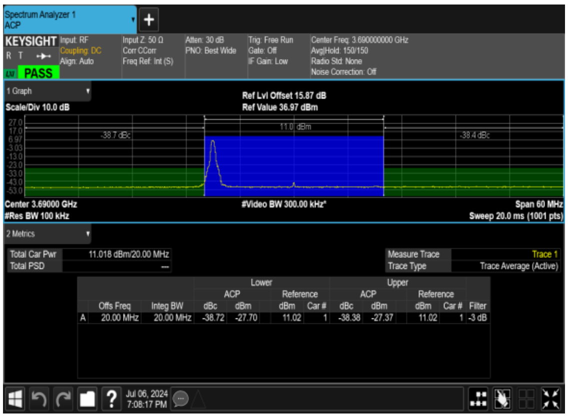
N48(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_Mid_CH



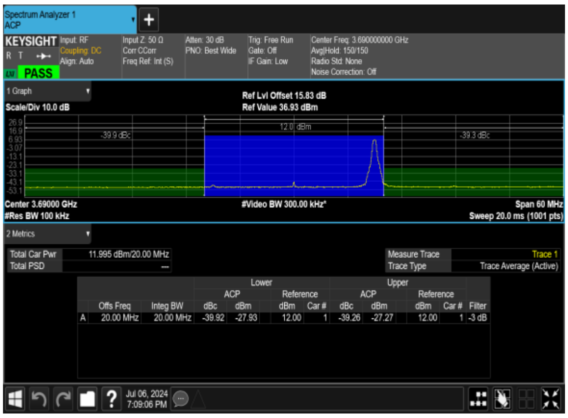
N48(20M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_High_CH



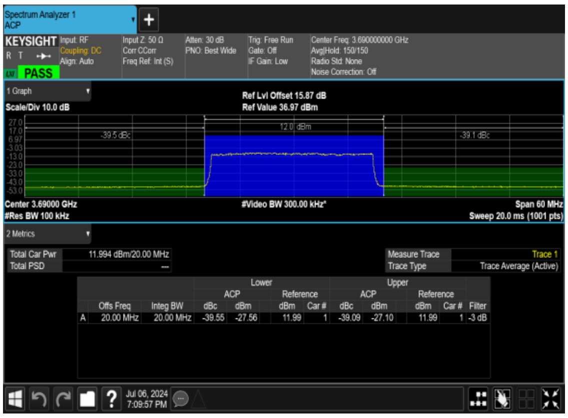
N48(20M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_High_CH



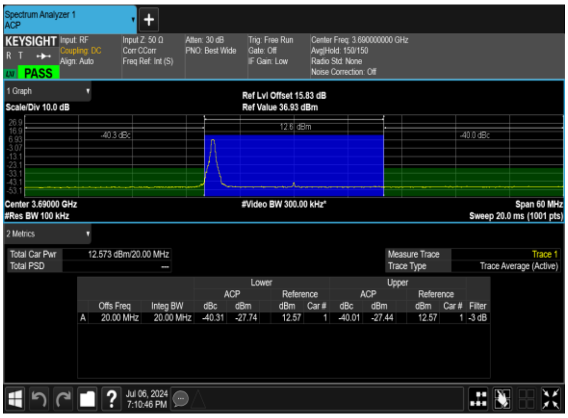
N48(20M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Right_High_CH



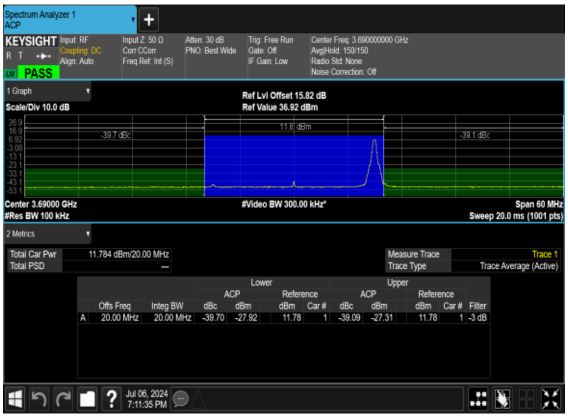
N48(20M)_DFT-s-OFDM_QPSK_Outer_Full_High_CH



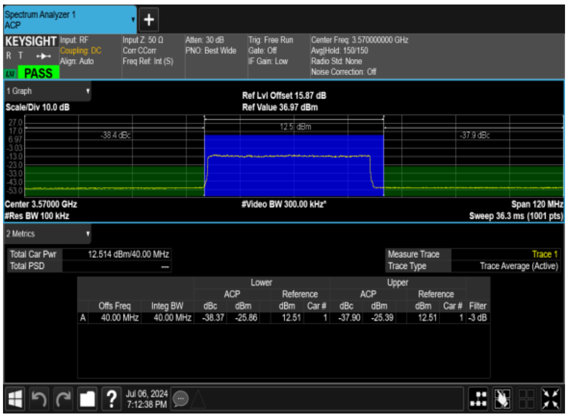
N48(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



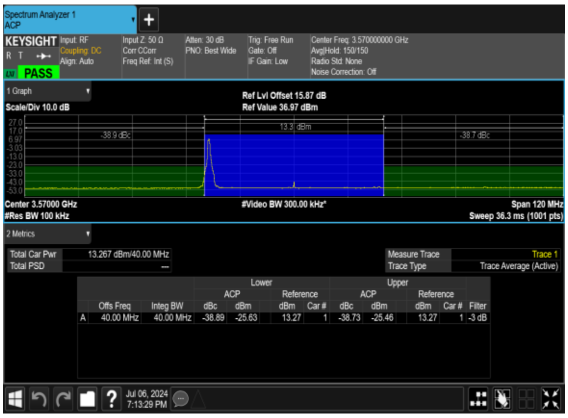
N48(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_High_CH



N48(40M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Low_CH

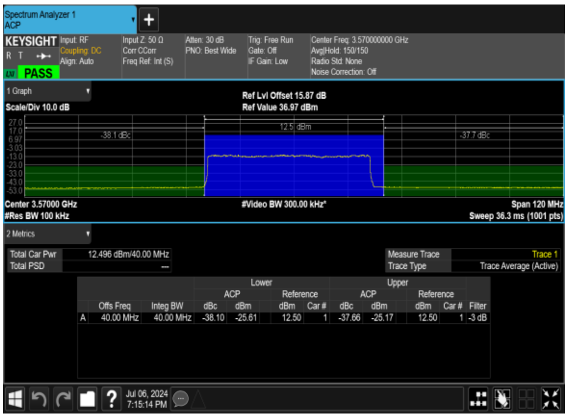


N48(40M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_Low_CH

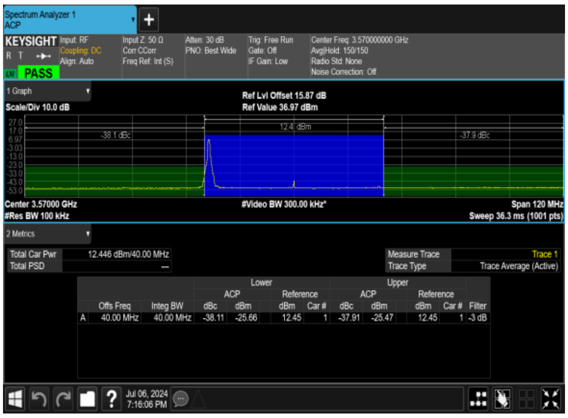


N48(40M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Right_Low_CH

N48(40M)_DFT-s-OFDM_QPSK_Outer_Full_Low_CH

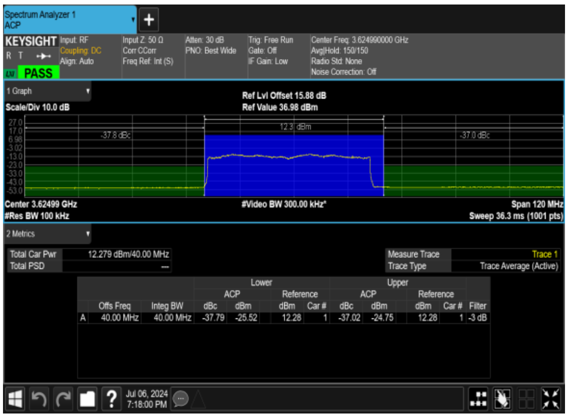


N48(40M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH

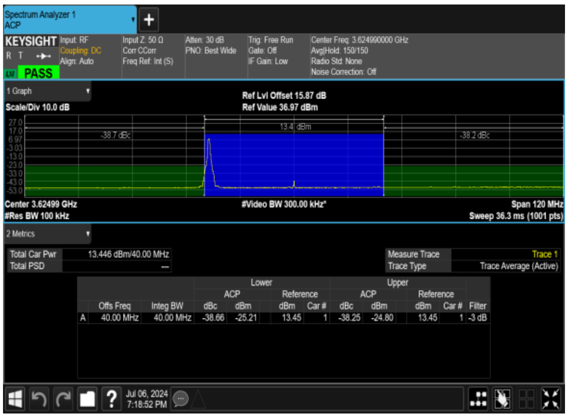


N48(40M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_Low_CH

N48(40M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH

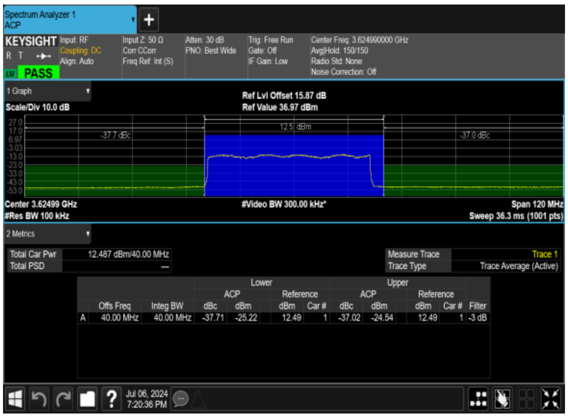


N48(40M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_Mid_CH



N48(40M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Right_Mid_CH

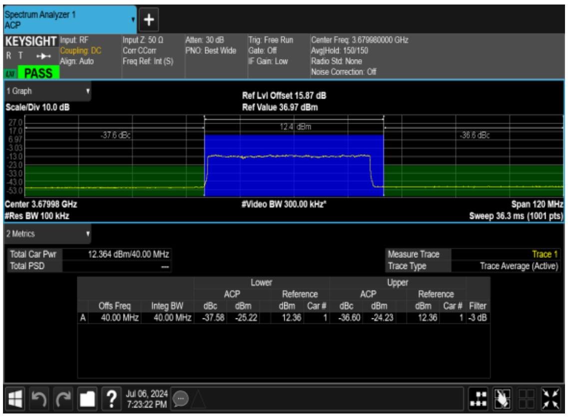
N48(40M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



N48(40M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH

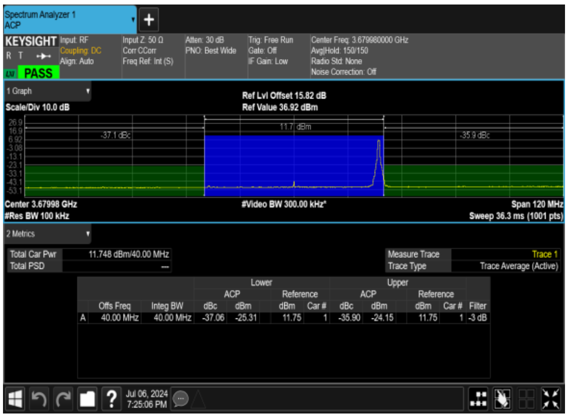
N48(40M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_Mid_CH

N48(40M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_High_CH

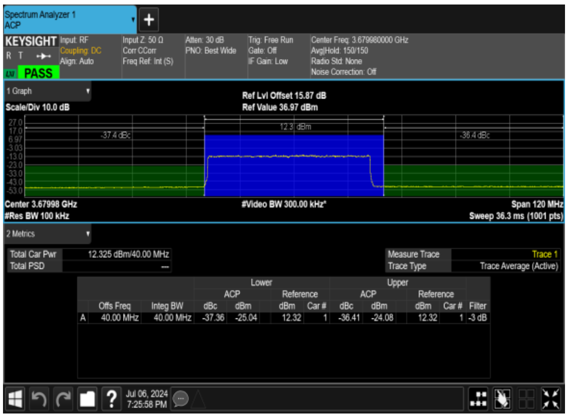


N48(40M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_High_CH

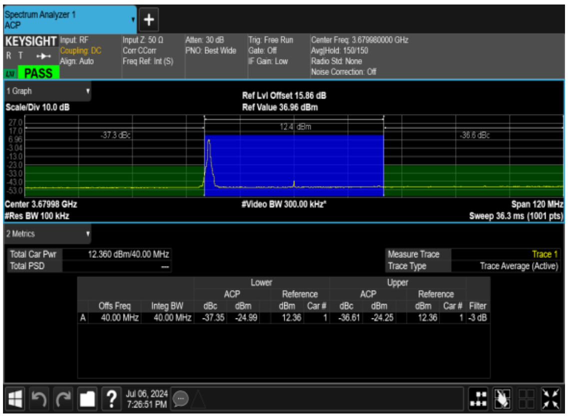
N48(40M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Right_High_CH



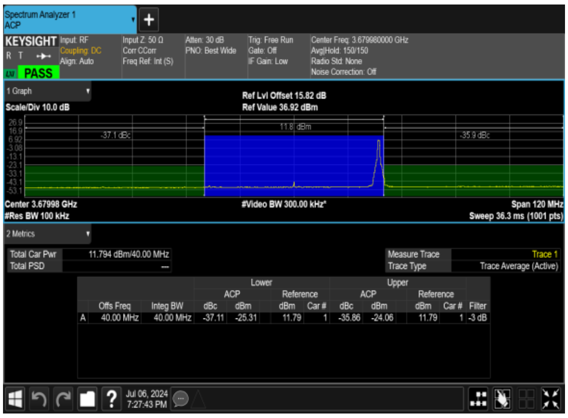
N48(40M)_DFT-s-OFDM_QPSK_Outer_Full_High_CH



N48(40M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



N48(40M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_High_CH



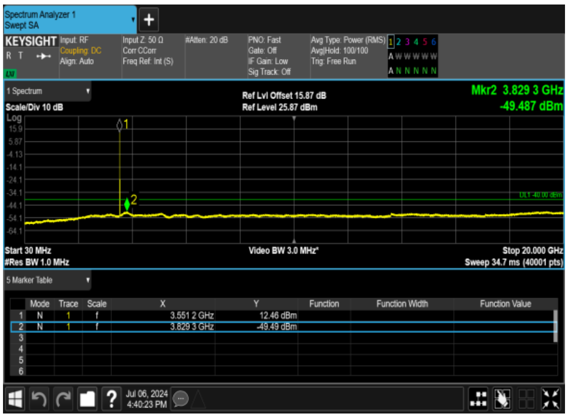
Conducted Spurious Emissions

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result	Verdict
48	30	10	637000	3555.0	DFT-s-OFDM BPSK	1@0	see graph	---
48	30	10	637000	3555.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
48	30	10	637000	3555.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
48	30	10	637000	3555.0	DFT-s-OFDM QPSK	1@0	see graph	---
48	30	10	637000	3555.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
48	30	10	637000	3555.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
48	30	10	641666	3624.99	DFT-s-OFDM BPSK	1@0	see graph	---
48	30	10	641666	3624.99	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
48	30	10	641666	3624.99	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
48	30	10	641666	3624.99	DFT-s-OFDM QPSK	1@0	see graph	---
48	30	10	641666	3624.99	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
48	30	10	641666	3624.99	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
48	30	10	646332	3694.98	DFT-s-OFDM BPSK	1@0	see graph	---
48	30	10	646332	3694.98	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
48	30	10	646332	3694.98	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
48	30	10	646332	3694.98	DFT-s-OFDM QPSK	1@0	see graph	---
48	30	10	646332	3694.98	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
48	30	10	646332	3694.98	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
48	30	20	637334	3560.01	DFT-s-OFDM BPSK	1@0	see graph	---
48	30	20	637334	3560.01	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
48	30	20	637334	3560.01	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
48	30	20	637334	3560.01	DFT-s-OFDM QPSK	1@0	see graph	---

48	30	20	637334	3560.01	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
48	30	20	637334	3560.01	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
48	30	20	641666	3624.99	DFT-s-OFDM BPSK	1@0	see graph	---
48	30	20	641666	3624.99	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
48	30	20	641666	3624.99	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
48	30	20	641666	3624.99	DFT-s-OFDM QPSK	1@0	see graph	---
48	30	20	641666	3624.99	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
48	30	20	641666	3624.99	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
48	30	20	646000	3690.0	DFT-s-OFDM BPSK	1@0	see graph	---
48	30	20	646000	3690.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
48	30	20	646000	3690.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
48	30	20	646000	3690.0	DFT-s-OFDM QPSK	1@0	see graph	---
48	30	20	646000	3690.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
48	30	20	646000	3690.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
48	30	40	638000	3570.0	DFT-s-OFDM BPSK	1@0	see graph	---
48	30	40	638000	3570.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
48	30	40	638000	3570.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
48	30	40	638000	3570.0	DFT-s-OFDM QPSK	1@0	see graph	---
48	30	40	638000	3570.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
48	30	40	638000	3570.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
48	30	40	641666	3624.99	DFT-s-OFDM BPSK	1@0	see graph	---
48	30	40	641666	3624.99	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
48	30	40	641666	3624.99	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
48	30	40	641666	3624.99	DFT-s-OFDM QPSK	1@0	see graph	---
48	30	40	641666	3624.99	DFT-s-OFDM QPSK	1@0	see graph	**PASS**

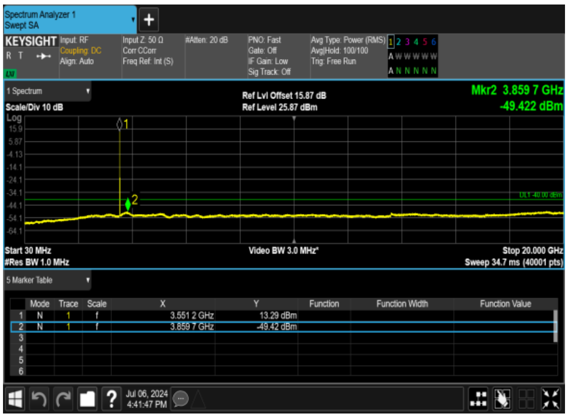
48	30	40	641666	3624.99	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
48	30	40	645332	3679.98	DFT-s-OFDM BPSK	1@0	see graph	**---**
48	30	40	645332	3679.98	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
48	30	40	645332	3679.98	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
48	30	40	645332	3679.98	DFT-s-OFDM QPSK	1@0	see graph	**---**
48	30	40	645332	3679.98	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
48	30	40	645332	3679.98	DFT-s-OFDM QPSK	1@0	see graph	**PASS**

N48(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



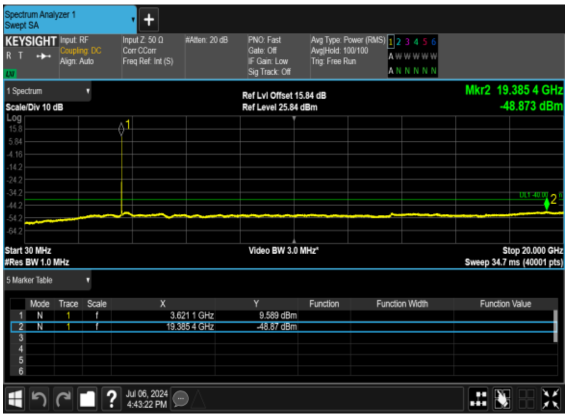
N48(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH

N48(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH

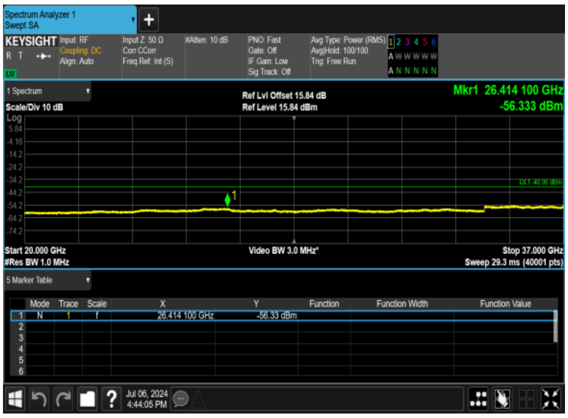


N48(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH

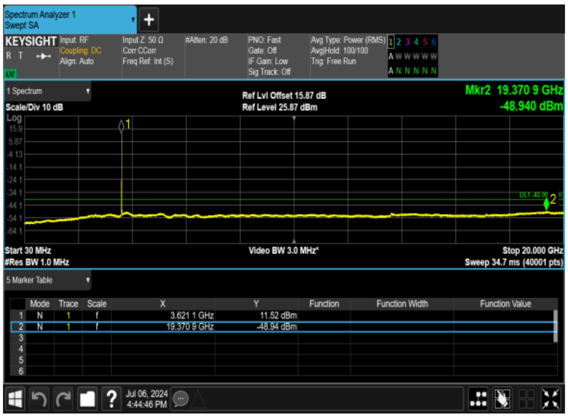
N48(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



N48(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH

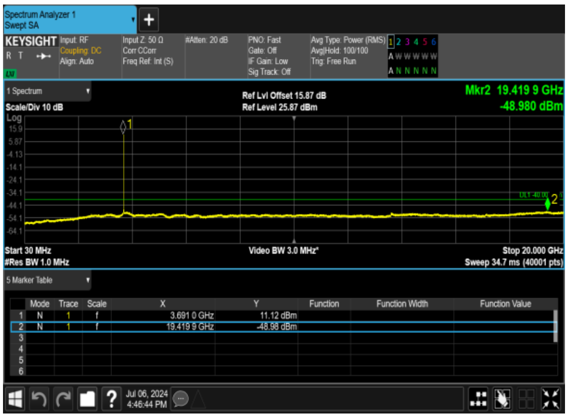


N48(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH

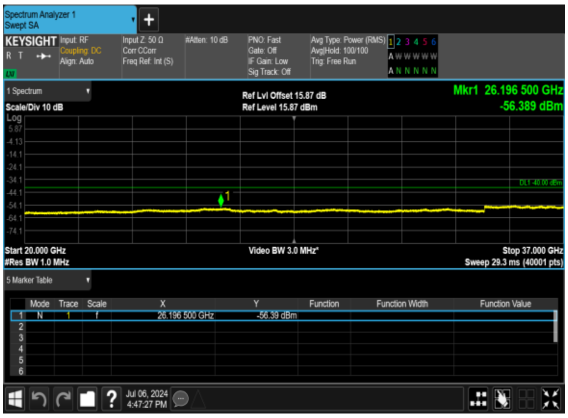


N48(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH

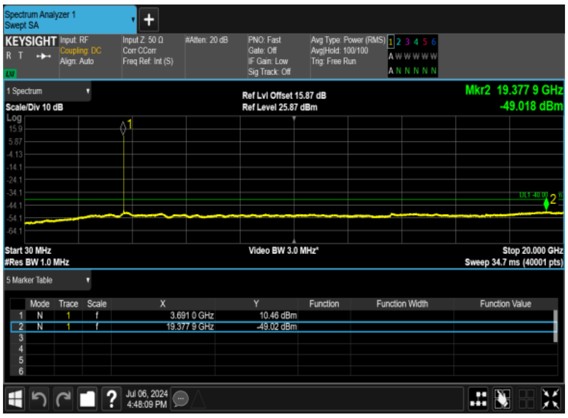
N48(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



N48(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



N48(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



N48(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH