FCC RF Test Report

APPLICANT	: FIH CO., LTD.
EQUIPMENT	: Internet Gateway
BRAND NAME	: FIH
MODEL NAME	: FWF100V5L
FCC ID	: RYQFWF100V5L
STANDARD	: 47 CFR Part 2, 96
CLASSIFICATION	: Citizens Band End User Devices (CBE)
EQUIPMENT TYPE	: End User Equipment
TEST DATE(S)	: Aug. 15, 2022 ~ Nov. 02, 2022

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

This report contains data that were produced under subcontract by Sporton International Inc. (Shenzhen)

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

Jason Jia

Approved by: Jason Jia

ACCREDITED
Cert #5145.02

Sporton International Inc. (Kunshan)
No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China

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Appendix A. Test Results of Conducted Test

Appendix B. Test Results of EIRP and Radiated Test

Appendix C. Test Setup Photographs

History of this test report

Report No.	Version	Description	Issued Date
FG262206E	01	Initial issue of report	Jan. 09, 2023

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 9.23 dB at 7152.000 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

FIH CO., LTD.
No.4, Minsheng St., Tu-Cheng Dist., New Taipei City 23679, Taiwan

1.2 Manufacturer

FIH CO., LTD.
No.4, Minsheng St., Tu-Cheng Dist., New Taipei City 23679, Taiwan

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	Internet Gateway
Brand Name	FIH
Model Name	FWF100V5L
FCC ID	RYQFWF100V5L
Tx Frequency	5G NR n48: 3550 MHz ~ 3700 MHz
Rx Frequency	5G NR n48: 3550 MHz ~ 3700 MHz
Bandwidth	SCS15kHz: 10MHz / 15MHz / 20MHz / 40MHz / 50MHz SCS30kHz: 10MHz / 15MHz / 20MHz / 40MHz / 50MHz / 60MHz / 80MHz / 90 MHz / 100MHz
SCS	15kHz, 30kHz
Antenna Type / Gain	Monopole Antenna / 0.97 dBi
Type of Modulation	DFT-s-OFDM (PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM) CP-OFDM (QPSK / 16QAM / 64QAM / 256QAM)
IMEI Code	Conducted: 358835490000905/358835490003404 Radiation: 358835490000293 for sample 1 358835490000319 for sample 2
EUT Stage	Identical Prototype

Remark:

1. 5G NR n48 supports SA mode only.

2. There are three types of EUT, the differences could be referred to the FWF100V5L_Operational Description of Product Equality Declaration which is exhibit separately. According to the difference, we choose sample 1 to full test and the sample 2 is verified for the difference for RSE testing.

1.4 Maximum EIRP Power and Emission Designator

5G NR n48-SCS 15kHz		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**	0.1750	9M29G7D	0.1400	9M28W7D
15	**3557.52~3692.49**	0.1766	14M1G7D	0.1390	14M1W7D
20	**3560.01~3690.00**	0.1811	18M9G7D	0.1429	18M9W7D
40	**3570.00~3679.98**	0.1824	38M6G7D	0.1445	38M6W7D
50	**3575.01~3675.00**	0.1875	48M3G7D	0.1476	48M2W7D

5G NR n48-SCS 30kHz		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**	0.1795	8M61G7D	0.1476	8M59W7D
15	**3557.52~3692.49**	0.1799	13M6G7D	0.1476	13M6W7D
20	**3560.01~3690.00**	0.1795	18M2G7D	0.1486	18M2W7D
40	**3570.00~3679.98**	0.1807	37M8G7D	0.1510	37M9W7D
50	**3575.01~3675.00**	0.1807	47M5G7D	0.1496	47M5W7D
60	**3580.02~3669.99**	0.1782	57M9G7D	0.1459	57M9W7D
80	**3590.01~3660.00**	0.1803	77M4G7D	0.1469	77M5W7D
90	**3595.02~3654.99**	0.1807	87M4G7D	0.1476	87M5W7D
100	**3600.00~3649.98**	0.1816	97M6G7D	0.1462	97M6W7D

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

1.5 Testing Site

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

Test Firm	Sporton International Inc. (Kunshan)		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	03CH04-KS	CN1257	314309

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 data subcontracted: Conducted test results in section 3 of this report.

1.6 Test Software

Item	Site	Manufacturer	Name	Version
1.	03CH04-KS	AUDIX	E3	6.2009-8-24al

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
- ANSI / TIA-603-E
- 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

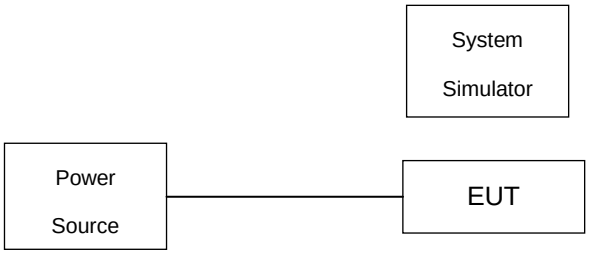
2.1 Test Mode

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	25	30	40	50	60	70	80	90	100	PI/2 BPSK	QPSK	16QAM	64QAM	256QAM	1	Full	L	M	H
Max. Output Power	n48	v	v	v	-	-	v	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	v	v	v		v		v	
Adjacent Channel Leakage Ratio	n48	v		v	-	-		v		-			v	v	v				v	v	v	v	v
Conducted Band Edge	n48	v		v	-	-		v		-			v	v	v				v	v	v	v	v
Conducted Spurious Emission	n48	v		v	-	-		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	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. Frequency Stability：Normal Voltage = 12V ；Low Voltage =11.4V. ；High Voltage =12.6V 5. Test mode include SCS15KHz/30kHz test configuration could refer to Appendix A for details.																						

2.2 Connection Diagram of Test System



This example is connection diagram of EUT test configurations.

. For detail, please refer to test mode configuration and setup photographs for each test item.

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	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 between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss.

Offset = RF cable loss.

Following shows an offset computation example with cable loss 8.90dB.

Example :

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

= 8.90 (dB)

2.5 Frequency List of Low/Middle/High Channels

5G NR n48 Channel and Frequency List(SCS15kHz/30kHz)				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
100	Channel	640000	641666	643332
	Frequency	3600.00	3624.99	3649.98
90	Channel	639668	641666	643666
	Frequency	3595.02	3624.99	3654.99
80	Channel	639334	641666	644000
	Frequency	3590.01	3624.99	3660.00
60	Channel	638668	641666	644666
	Frequency	3580.02	3624.99	3669.99
50	Channel	638334	641666	645000
	Frequency	3575.01	3624.99	3675.00
40	Channel	638000	641666	645332
	Frequency	3570.00	3624.99	3679.98
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	3555.0	3624.99	3694.98

Note: SCS15kHz, BW10~50MHz;

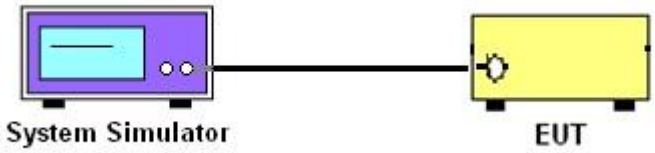
3 Conducted Test Items

3.1 Measuring Instruments

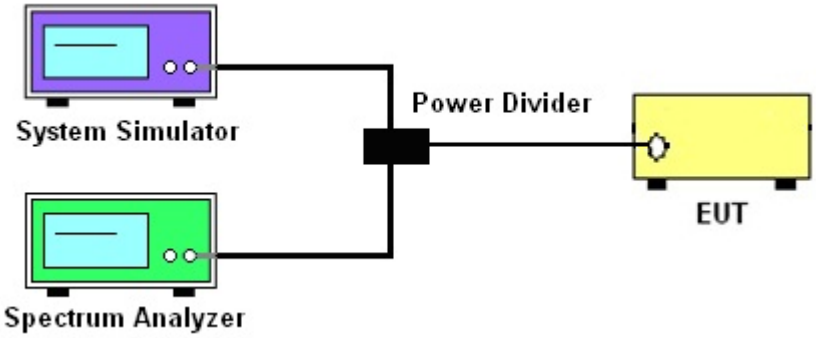
See list of measuring instruments of this test report.

3.1.1 Test Setup

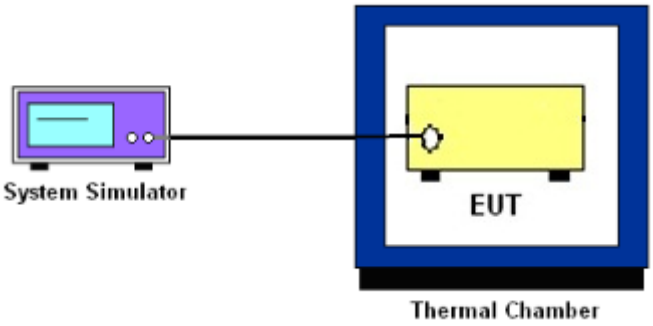
3.1.2 Conducted Output Power



3.1.3 PSD, Peak-to-Average Ratio, 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) (i)

For CBSD the emission limits outside the fundamental are as follows:

Within 0 MHz to 10 MHz above and below the assigned channel ≤ −13 dBm/MHz

Greater than 10 MHz above and below the assigned channel ≤ −25 dBm/MHz

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.

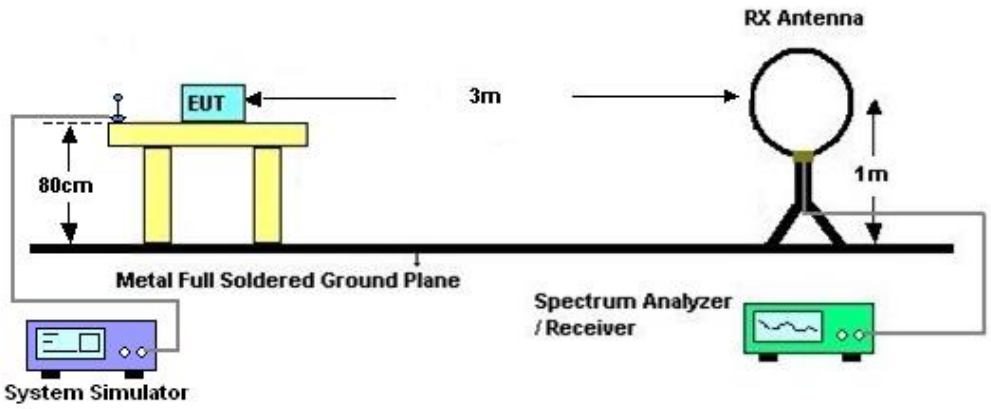
4 Radiated Test Items

4.1 Measuring Instruments

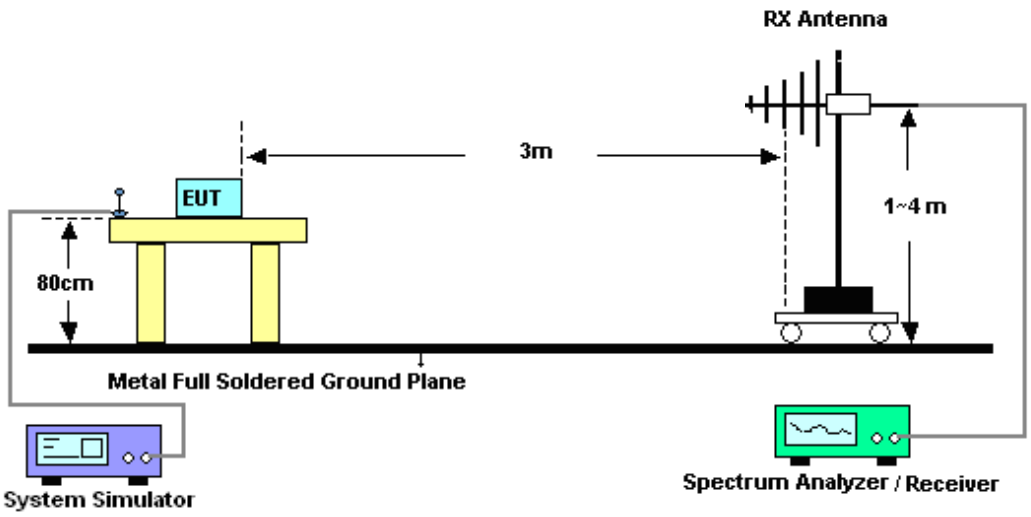
See list of measuring instruments of this test report.

4.2 Test Setup

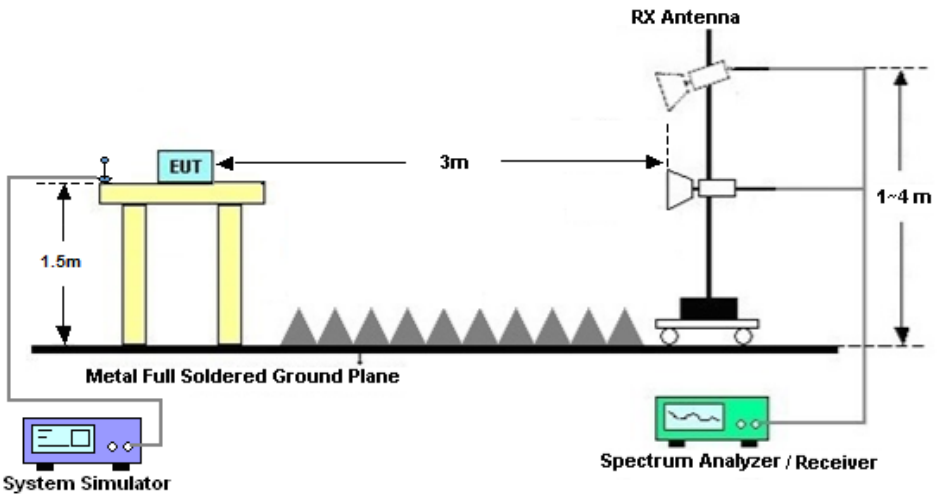
4.2.1 For radiated test below 30MHz



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
EMI Test Receiver&SA	Agilent	N9038A	MY52260185	20Hz~26.5GHz	Dec. 27, 2021	Aug. 25, 2022~ Sep. 01, 2022	Dec. 26, 2022	Conducted (TH01-SZ)
Power Divider	TOJOIN	PS-2SM-04 265	60.06.020.007 7	0.4GHz~26.5GHz	Dec. 25, 2021	Aug. 25, 2022~ Sep. 01, 2022	Dec. 24, 2022	Conducted (TH01-SZ)
Thermal Chamber	Ten Billion Hongzhangroup	LP-150U	H2014081803	-40~+150°C	Jul. 07, 2022	Aug. 25, 2022~ Sep. 01, 2022	Jul. 06, 2023	Conducted (TH01-SZ)
EXA Spectrum Analyzer	Keysight	N9010B	MY57471079	10Hz-44G,MAX 30dB	Oct. 13, 2021	Aug. 15, 2022~ Nov. 02, 2022	Oct. 12, 2022	Radiation (03CH04-KS)
EXA Spectrum Analyzer	Keysight	N9010B	MY57471079	10Hz-44G,MAX 30dB	Oct. 12, 2022		Oct. 11, 2023	Radiation (03CH04-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 30, 2021	Aug. 15, 2022~ Nov. 02, 2022	Oct. 29, 2022	Radiation (03CH04-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 29, 2022		Oct. 28, 2023	Radiation (03CH04-KS)
Bilog Antenna	TeseQ	CBL6111D	49922	30MHz-1GHz	May 24, 2022	Aug. 15, 2022~ Nov. 02, 2022	May 23, 2023	Radiation (03CH04-KS)
Horn Antenna	Schwarzbeck	BBHA9120D	1284	1GHz~18GHz	Jan. 05, 2022	Aug. 15, 2022~ Nov. 02, 2022	Jan. 04, 2023	Radiation (03CH04-KS)
SHF-EHF Horn	Com-power	AH-840	101070	18GHz~40GHz	Jan. 05, 2022	Aug. 15, 2022~ Nov. 02, 2022	Jan. 04, 2023	Radiation (03CH04-KS)
Amplifier	SONOMA	310N	187289	9KHz-1GHz	Jan. 05, 2022	Aug. 15, 2022~ Nov. 02, 2022	Jan. 04, 2023	Radiation (03CH04-KS)
Amplifier	MITEQ	EM18G40G GA	060728	18~40GHz	Jan. 05, 2022	Aug. 15, 2022~ Nov. 02, 2022	Jan. 04, 2023	Radiation (03CH04-KS)
high gain Amplifier	EM	EM01G18G A	060840	1Ghz-18Ghz	Oct. 13, 2021	Aug. 15, 2022~ Nov. 02, 2022	Oct. 12, 2022	Radiation (03CH04-KS)
high gain Amplifier	EM	EM01G18G A	060840	1Ghz-18Ghz	Oct. 12, 2022		Oct. 11, 2023	Radiation (03CH04-KS)
Amplifier	Agilent	8449B	3008A02370	1Ghz-18Ghz	Oct. 13, 2021	Aug. 15, 2022~ Nov. 02, 2022	Oct. 12, 2022	Radiation (03CH04-KS)
Amplifier	Agilent	8449B	3008A02370	1Ghz-18Ghz	Oct. 12, 2022		Oct. 11, 2023	Radiation (03CH04-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Aug. 15, 2022~ Nov. 02, 2022	NCR	Radiation (03CH04-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Aug. 15, 2022~ Nov. 02, 2022	NCR	Radiation (03CH04-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Aug. 15, 2022~ Nov. 02, 2022	NCR	Radiation (03CH04-KS)

NCR: No Calibration Required

6 Uncertainty of Evaluation

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))	3.3dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.8dB

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.8dB

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

Appendix A. Test Results of Conducted Test

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

Software Version: 22.08.2501

FR1 N48(ANT1)

Transmitter Conducted Output Power And EIRP, (G_T - L_C)=0.97dB

NR Band	SCS	BandWidth	Arfcn	Freq(MHz)	Modulation	RB	Conducted Power(dBm)	EIRP(dBm)	EIRP(W)
48	15	10	637000	3555	DFT-s-OFDM QPSK	1@1	21.46	22.43	0.1750
48	15	10	637000	3555	DFT-s-OFDM 16 QAM	1@1	20.49	21.46	0.1400
48	15	10	641666	3624.99	DFT-s-OFDM QPSK	1@1	20.71	21.68	0.1472
48	15	10	641666	3624.99	DFT-s-OFDM 16 QAM	1@1	19.72	20.69	0.1172
48	15	10	646332	3694.98	DFT-s-OFDM QPSK	1@1	20.38	21.35	0.1365
48	15	10	646332	3694.98	DFT-s-OFDM 16 QAM	1@1	19.37	20.34	0.1081
48	15	15	637168	3557.52	DFT-s-OFDM QPSK	1@1	21.5	22.47	0.1766
48	15	15	637168	3557.52	DFT-s-OFDM 16 QAM	1@1	20.46	21.43	0.1390
48	15	15	641666	3624.99	DFT-s-OFDM QPSK	1@1	20.85	21.82	0.1521
48	15	15	641666	3624.99	DFT-s-OFDM 16 QAM	1@1	19.81	20.78	0.1197
48	15	15	646166	3692.49	DFT-s-OFDM QPSK	1@1	20.28	21.25	0.1334
48	15	15	646166	3692.49	DFT-s-OFDM 16 QAM	1@1	19.27	20.24	0.1057
48	15	20	637334	3560.01	DFT-s-OFDM QPSK	1@1	21.61	22.58	0.1811
48	15	20	637334	3560.01	DFT-s-OFDM 16 QAM	1@1	20.58	21.55	0.1429
48	15	20	641666	3624.99	DFT-s-OFDM QPSK	1@1	21.04	22.01	0.1589
48	15	20	641666	3624.99	DFT-s-OFDM 16 QAM	1@1	20.03	21	0.1259
48	15	20	646000	3690	DFT-s-OFDM QPSK	1@1	20.33	21.3	0.1349
48	15	20	646000	3690	DFT-s-OFDM 16 QAM	1@1	19.31	20.28	0.1067
48	15	40	638000	3570	DFT-s-OFDM QPSK	1@1	21.64	22.61	0.1824
48	15	40	638000	3570	DFT-s-OFDM 16 QAM	1@1	20.63	21.6	0.1445
48	15	40	641666	3624.99	DFT-s-OFDM QPSK	1@1	21.36	22.33	0.1710
48	15	40	641666	3624.99	DFT-s-OFDM 16 QAM	1@1	20.33	21.3	0.1349
48	15	40	645332	3679.98	DFT-s-OFDM QPSK	1@1	21	21.97	0.1574
48	15	40	645332	3679.98	DFT-s-OFDM 16 QAM	1@1	20.01	20.98	0.1253
48	15	50	638334	3575.01	DFT-s-OFDM PI/2 BPSK	135@67	21.05	22.02	0.1592
48	15	50	638334	3575.01	DFT-s-OFDM PI/2 BPSK	1@1	21.73	22.7	0.1862

48	15	50	638334	3575.01	DFT-s-OFDM PI/2 BPSK	1@268	21.27	22.24	0.1675
48	15	50	638334	3575.01	DFT-s-OFDM QPSK	135@67	21.07	22.04	0.1600
48	15	50	638334	3575.01	DFT-s-OFDM QPSK	1@1	21.76	22.73	0.1875
48	15	50	638334	3575.01	DFT-s-OFDM QPSK	1@268	21.31	22.28	0.1690
48	15	50	638334	3575.01	DFT-s-OFDM 16 QAM	135@67	20.04	21.01	0.1262
48	15	50	638334	3575.01	DFT-s-OFDM 16 QAM	1@1	20.72	21.69	0.1476
48	15	50	638334	3575.01	DFT-s-OFDM 16 QAM	1@268	20.23	21.2	0.1318
48	15	50	638334	3575.01	DFT-s-OFDM 64 QAM	135@67	18.54	19.51	0.0893
48	15	50	638334	3575.01	DFT-s-OFDM 64 QAM	1@1	19.2	20.17	0.1040
48	15	50	638334	3575.01	DFT-s-OFDM 64 QAM	1@268	18.76	19.73	0.0940
48	15	50	638334	3575.01	DFT-s-OFDM 256 QAM	135@67	16.55	17.52	0.0565
48	15	50	638334	3575.01	DFT-s-OFDM 256 QAM	1@1	17.1	18.07	0.0641
48	15	50	638334	3575.01	DFT-s-OFDM 256 QAM	1@268	16.61	17.58	0.0573
48	15	50	638334	3575.01	CP-OFDM QPSK	135@67	19.53	20.5	0.1122
48	15	50	638334	3575.01	CP-OFDM QPSK	1@1	20.21	21.18	0.1312
48	15	50	638334	3575.01	CP-OFDM QPSK	1@268	19.75	20.72	0.1180
48	15	50	641666	3624.99	DFT-s-OFDM PI/2 BPSK	135@67	20.8	21.77	0.1503
48	15	50	641666	3624.99	DFT-s-OFDM PI/2 BPSK	1@1	21.36	22.33	0.1710
48	15	50	641666	3624.99	DFT-s-OFDM PI/2 BPSK	1@268	20.79	21.76	0.1500
48	15	50	641666	3624.99	DFT-s-OFDM QPSK	135@67	20.81	21.78	0.1507
48	15	50	641666	3624.99	DFT-s-OFDM QPSK	1@1	21.42	22.39	0.1734
48	15	50	641666	3624.99	DFT-s-OFDM QPSK	1@268	20.82	21.79	0.1510
48	15	50	641666	3624.99	DFT-s-OFDM 16 QAM	135@67	19.83	20.8	0.1202
48	15	50	641666	3624.99	DFT-s-OFDM 16 QAM	1@1	20.41	21.38	0.1374
48	15	50	641666	3624.99	DFT-s-OFDM 16 QAM	1@268	19.78	20.75	0.1189
48	15	50	641666	3624.99	DFT-s-OFDM 64 QAM	135@67	18.3	19.27	0.0845
48	15	50	641666	3624.99	DFT-s-OFDM 64 QAM	1@1	18.88	19.85	0.0966
48	15	50	641666	3624.99	DFT-s-OFDM 64 QAM	1@268	18.29	19.26	0.0843
48	15	50	641666	3624.99	DFT-s-OFDM 256 QAM	135@67	16.32	17.29	0.0536
48	15	50	641666	3624.99	DFT-s-OFDM 256 QAM	1@1	16.77	17.74	0.0594
48	15	50	641666	3624.99	DFT-s-OFDM 256 QAM	1@268	16.18	17.15	0.0519
48	15	50	641666	3624.99	CP-OFDM QPSK	135@67	19.25	20.22	0.1052
48	15	50	641666	3624.99	CP-OFDM QPSK	1@1	19.9	20.87	0.1222

48	15	50	641666	3624.99	CP-OFDM QPSK	1@268	19.34	20.31	0.1074
48	15	50	645000	3675	DFT-s-OFDM PI/2 BPSK	135@67	20.99	21.96	0.1570
48	15	50	645000	3675	DFT-s-OFDM PI/2 BPSK	1@1	20.95	21.92	0.1556
48	15	50	645000	3675	DFT-s-OFDM PI/2 BPSK	1@268	21.16	22.13	0.1633
48	15	50	645000	3675	DFT-s-OFDM QPSK	135@67	20.98	21.95	0.1567
48	15	50	645000	3675	DFT-s-OFDM QPSK	1@1	21	21.97	0.1574
48	15	50	645000	3675	DFT-s-OFDM QPSK	1@268	21.23	22.2	0.1660
48	15	50	645000	3675	DFT-s-OFDM 16 QAM	135@67	19.98	20.95	0.1245
48	15	50	645000	3675	DFT-s-OFDM 16 QAM	1@1	19.96	20.93	0.1239
48	15	50	645000	3675	DFT-s-OFDM 16 QAM	1@268	20.18	21.15	0.1303
48	15	50	645000	3675	DFT-s-OFDM 64 QAM	135@67	18.5	19.47	0.0885
48	15	50	645000	3675	DFT-s-OFDM 64 QAM	1@1	18.44	19.41	0.0873
48	15	50	645000	3675	DFT-s-OFDM 64 QAM	1@268	18.69	19.66	0.0925
48	15	50	645000	3675	DFT-s-OFDM 256 QAM	135@67	16.48	17.45	0.0556
48	15	50	645000	3675	DFT-s-OFDM 256 QAM	1@1	16.35	17.32	0.0540
48	15	50	645000	3675	DFT-s-OFDM 256 QAM	1@268	16.59	17.56	0.0570
48	15	50	645000	3675	CP-OFDM QPSK	135@67	19.44	20.41	0.1099
48	15	50	645000	3675	CP-OFDM QPSK	1@1	19.43	20.4	0.1096
48	15	50	645000	3675	CP-OFDM QPSK	1@268	19.76	20.73	0.1183

Frequency Stability

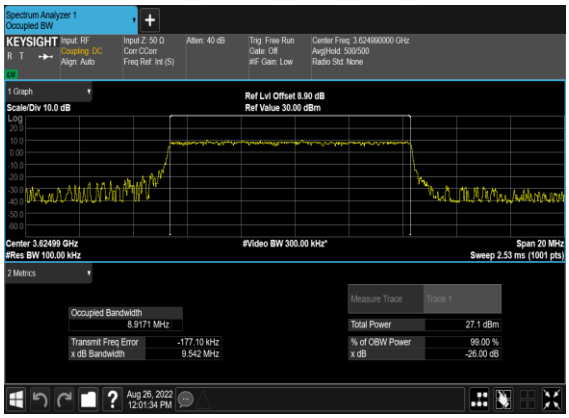
NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Deviation (ppm)	Verdict	Environment
48	15	20	641666	3624.99	DFT-s-OFDM QPSK	100@0	0.0062	**PASS**	NV
48	15	20	641666	3624.99	DFT-s-OFDM QPSK	100@0	0.0067	**PASS**	LV
48	15	20	641666	3624.99	DFT-s-OFDM QPSK	100@0	0.0061	**PASS**	HV
48	15	20	641666	3624.99	DFT-s-OFDM QPSK	100@0	0.0038	**PASS**	-30℃
48	15	20	641666	3624.99	DFT-s-OFDM QPSK	100@0	0.0038	**PASS**	-20℃
48	15	20	641666	3624.99	DFT-s-OFDM QPSK	100@0	0.0050	**PASS**	-10℃
48	15	20	641666	3624.99	DFT-s-OFDM QPSK	100@0	0.0021	**PASS**	0℃
48	15	20	641666	3624.99	DFT-s-OFDM QPSK	100@0	0.0044	**PASS**	10℃
48	15	20	641666	3624.99	DFT-s-OFDM QPSK	100@0	0.0062	**PASS**	20℃
48	15	20	641666	3624.99	DFT-s-OFDM QPSK	100@0	0.0053	**PASS**	30℃
48	15	20	641666	3624.99	DFT-s-OFDM QPSK	100@0	0.0024	**PASS**	40℃
48	15	20	641666	3624.99	DFT-s-OFDM QPSK	100@0	0.0068	**PASS**	50℃

Occupied Bandwidth

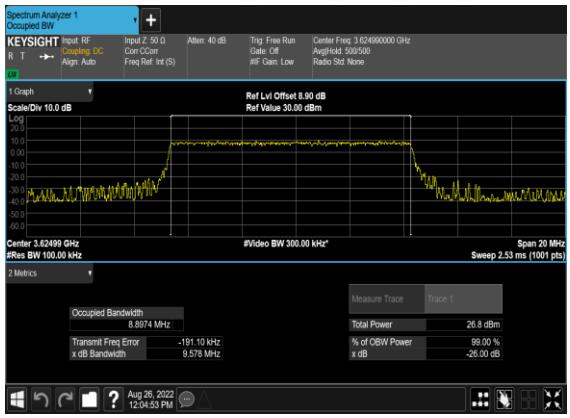
NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	OBW (MHz)	26dB OBW (MHz)
48	15	10	641666	3624.99	DFT-s-OFDM PI/2 BPSK	50@0	8.9171	9.542
48	15	10	641666	3624.99	DFT-s-OFDM QPSK	50@0	8.8974	9.578
48	15	10	641666	3624.99	CP-OFDM QPSK	52@0	9.2889	9.857
48	15	10	641666	3624.99	CP-OFDM 16 QAM	52@0	9.2833	10.29
48	15	10	641666	3624.99	CP-OFDM 64 QAM	52@0	9.2772	9.726
48	15	10	641666	3624.99	CP-OFDM 256 QAM	52@0	9.2848	9.8
48	15	15	641666	3624.99	DFT-s-OFDM PI/2 BPSK	75@0	13.432	14.1
48	15	15	641666	3624.99	DFT-s-OFDM QPSK	75@0	13.394	14.16
48	15	15	641666	3624.99	CP-OFDM QPSK	79@0	14.1	14.69
48	15	15	641666	3624.99	CP-OFDM 16 QAM	79@0	14.105	14.75
48	15	15	641666	3624.99	CP-OFDM 64 QAM	79@0	14.105	14.76
48	15	15	641666	3624.99	CP-OFDM 256 QAM	79@0	14.082	14.75
48	15	20	641666	3624.99	DFT-s-OFDM PI/2 BPSK	100@0	17.863	18.95
48	15	20	641666	3624.99	DFT-s-OFDM QPSK	100@0	17.857	18.91
48	15	20	641666	3624.99	CP-OFDM QPSK	106@0	18.943	19.96
48	15	20	641666	3624.99	CP-OFDM 16 QAM	106@0	18.934	19.74
48	15	20	641666	3624.99	CP-OFDM 64 QAM	106@0	18.871	19.83
48	15	20	641666	3624.99	CP-OFDM 256 QAM	106@0	18.896	19.96
48	15	40	641666	3624.99	DFT-s-OFDM PI/2 BPSK	216@0	38.576	40.4
48	15	40	641666	3624.99	DFT-s-OFDM QPSK	216@0	38.54	40.11
48	15	40	641666	3624.99	CP-OFDM QPSK	216@0	38.577	40.03
48	15	40	641666	3624.99	CP-OFDM 16 QAM	216@0	38.503	40.13
48	15	40	641666	3624.99	CP-OFDM 64 QAM	216@0	38.584	39.99
48	15	40	641666	3624.99	CP-OFDM 256 QAM	216@0	38.572	39.92

48	15	50	641666	3624.99	DFT-s-OFDM PI/2 BPSK	270@0	48.239	49.92
48	15	50	641666	3624.99	DFT-s-OFDM QPSK	270@0	48.277	50.02
48	15	50	641666	3624.99	CP-OFDM QPSK	270@0	48.103	50.08
48	15	50	641666	3624.99	CP-OFDM 16 QAM	270@0	48.165	50.73
48	15	50	641666	3624.99	CP-OFDM 64 QAM	270@0	48.204	49.75
48	15	50	641666	3624.99	CP-OFDM 256 QAM	270@0	48.186	50.01

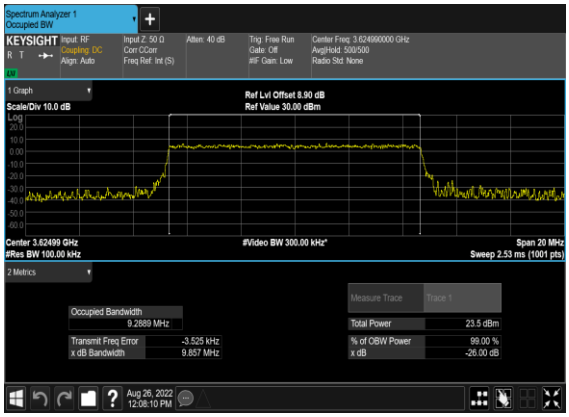
N48(10M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



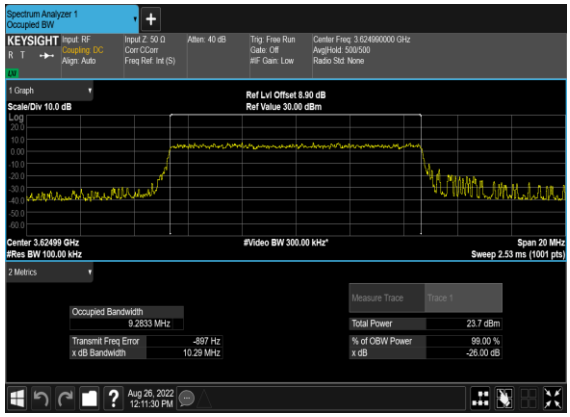
N48(10M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



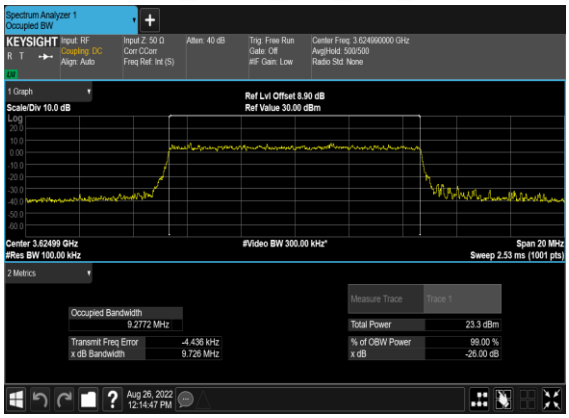
N48(10M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



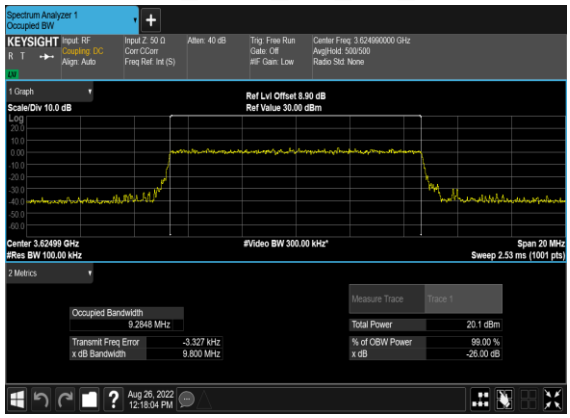
N48(10M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



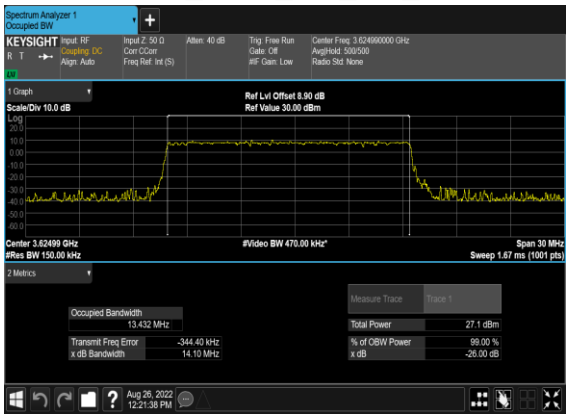
N48(10M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



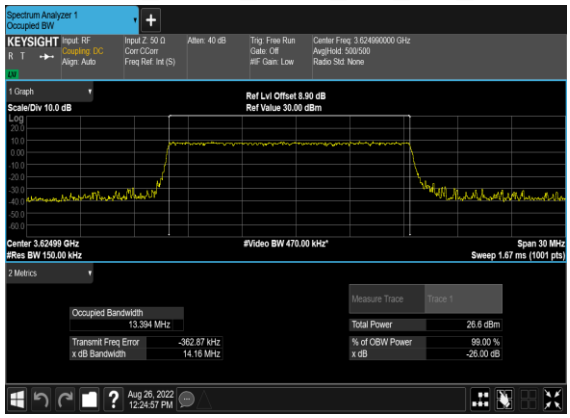
N48(10M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



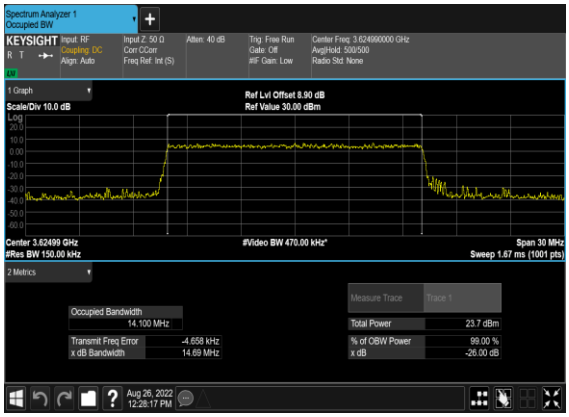
N48(15M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



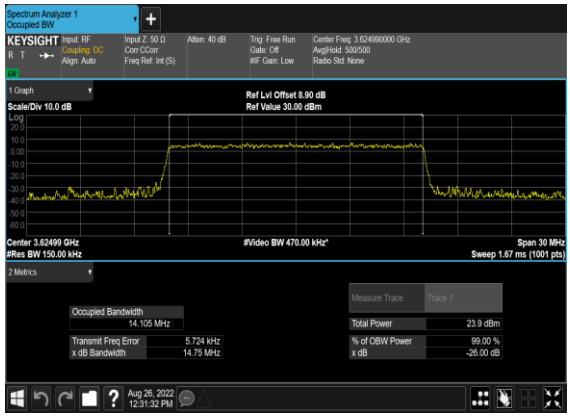
N48(15M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



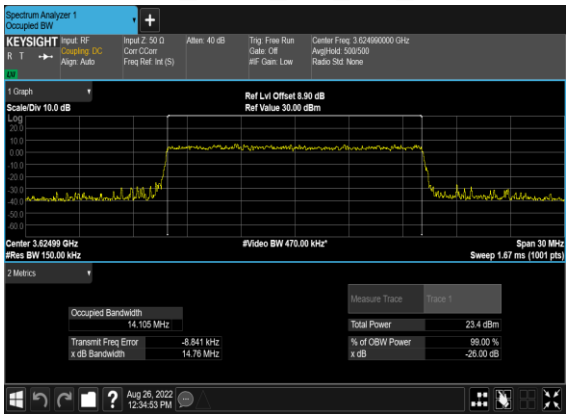
N48(15M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



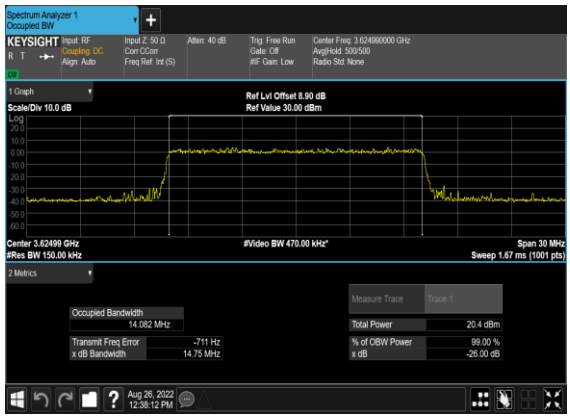
N48(15M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



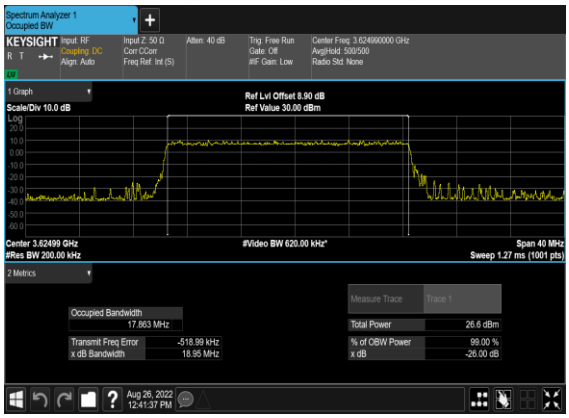
N48(15M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



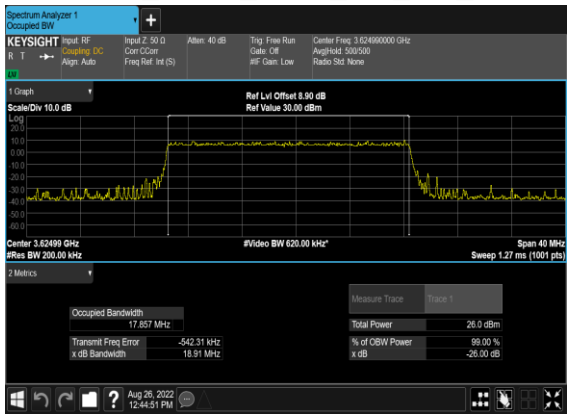
N48(15M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



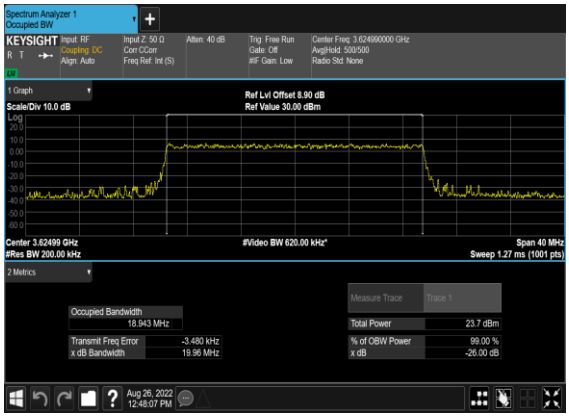
N48(20M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



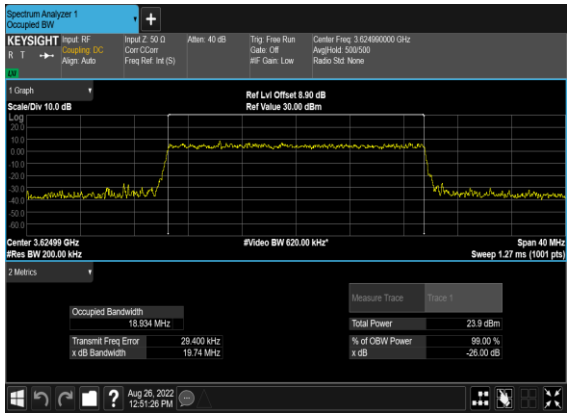
N48(20M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



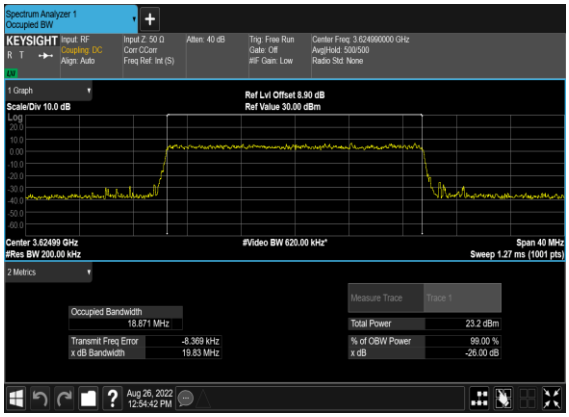
N48(20M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



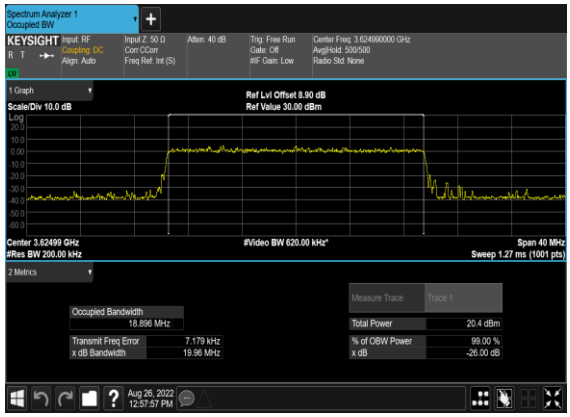
N48(20M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



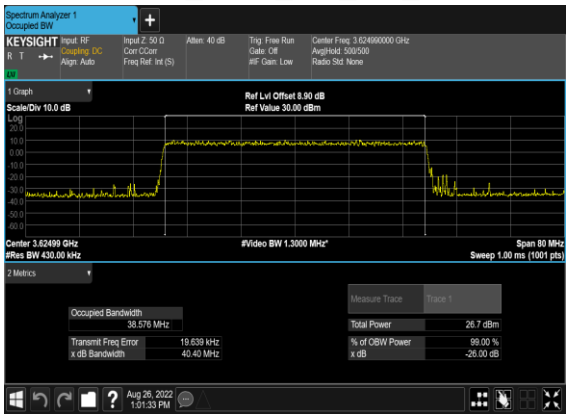
N48(20M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



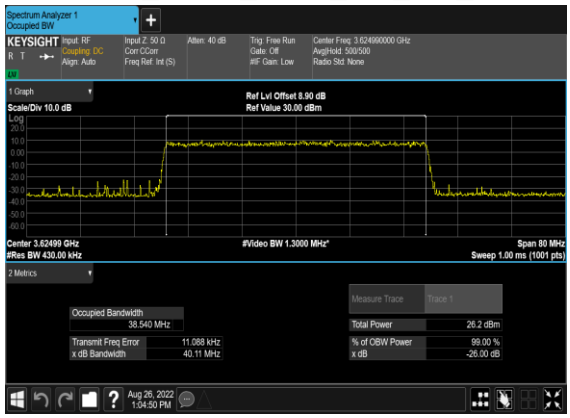
N48(20M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



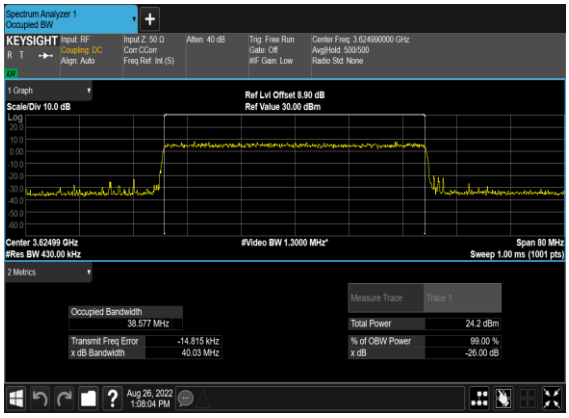
N48(40M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



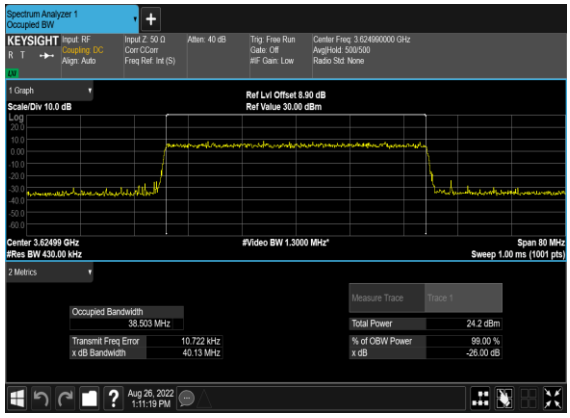
N48(40M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



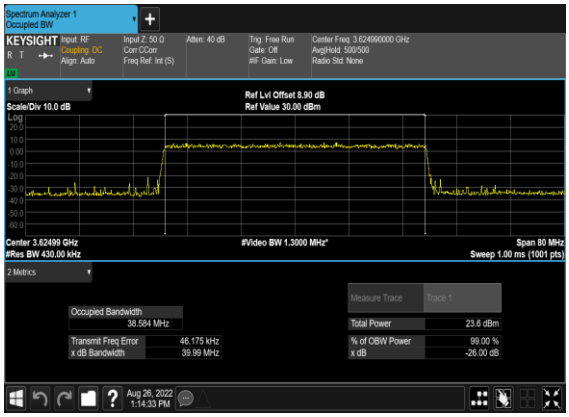
N48(40M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



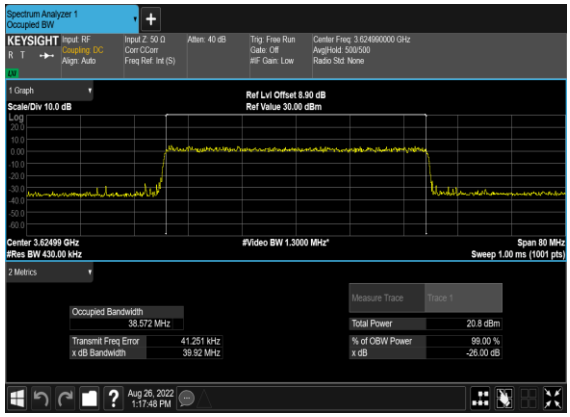
N48(40M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



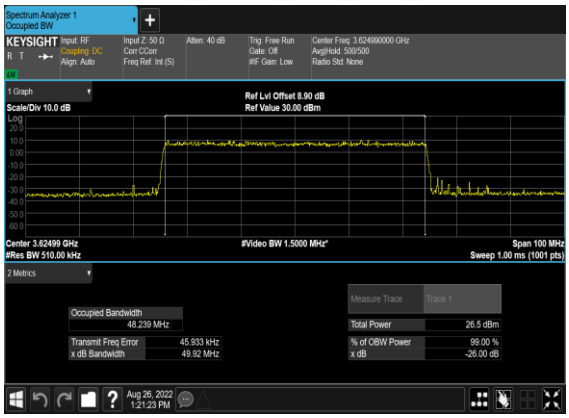
N48(40M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



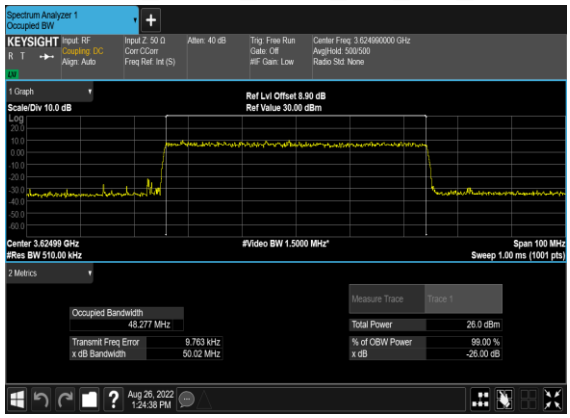
N48(40M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



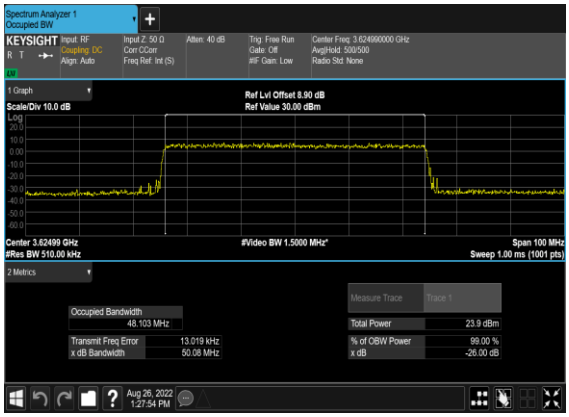
N48(50M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



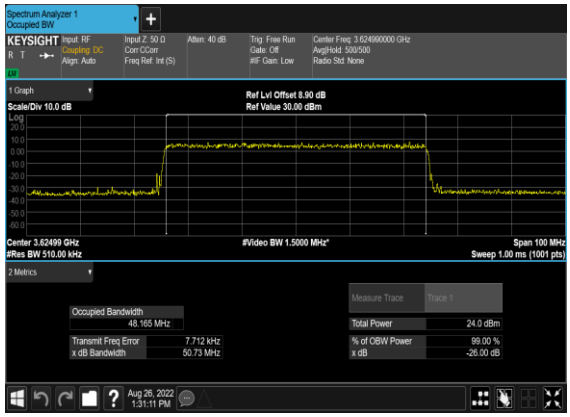
N48(50M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



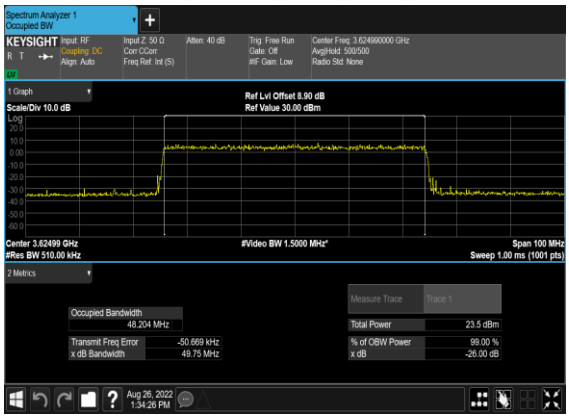
N48(50M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



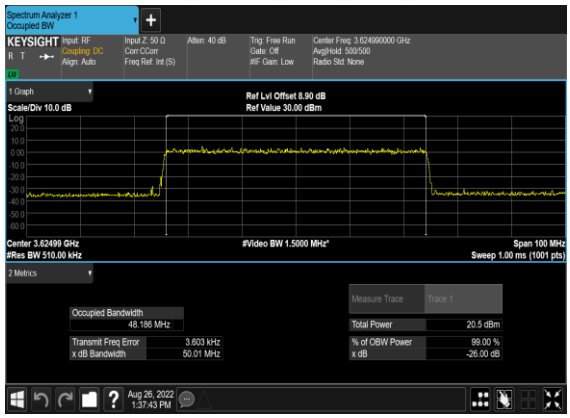
N48(50M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



N48(50M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



N48(50M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



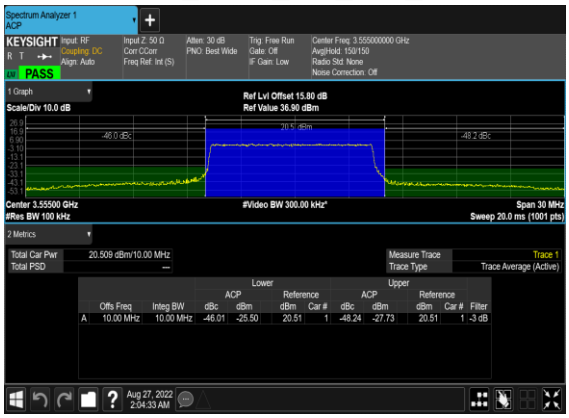
Adjacent Channel Leakage Ratio

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Lower Margin	Upper Margin	Result	Verdict
48	15	10	637000	3555.0	DFT-s-OFDM PI/2 BPSK	50@0	-16.01	-18.24	**see graph**	PASS
48	15	10	637000	3555.0	DFT-s-OFDM PI/2 BPSK	1@0	-7.32	-20.58	**see graph**	PASS
48	15	10	637000	3555.0	DFT-s-OFDM PI/2 BPSK	1@51	-21.03	-8.5	**see graph**	PASS
48	15	10	637000	3555.0	DFT-s-OFDM QPSK	50@0	-14.4	-17.33	**see graph**	PASS
48	15	10	637000	3555.0	DFT-s-OFDM QPSK	1@0	-7.81	-19.87	**see graph**	PASS
48	15	10	637000	3555.0	DFT-s-OFDM QPSK	1@51	-20.46	-8.23	**see graph**	PASS
48	15	10	641666	3624.99	DFT-s-OFDM PI/2 BPSK	50@0	-15.4	-16.19	**see graph**	PASS
48	15	10	641666	3624.99	DFT-s-OFDM PI/2 BPSK	1@0	-7.32	-20.68	**see graph**	PASS
48	15	10	641666	3624.99	DFT-s-OFDM PI/2 BPSK	1@51	-19.59	-8.25	**see graph**	PASS
48	15	10	641666	3624.99	DFT-s-OFDM QPSK	50@0	-15.89	-17.41	**see graph**	PASS
48	15	10	641666	3624.99	DFT-s-OFDM QPSK	1@0	-7.29	-17.9	**see graph**	PASS
48	15	10	641666	3624.99	DFT-s-OFDM QPSK	1@51	-16.3	-8.84	**see graph**	PASS
48	15	10	646332	3694.98	DFT-s-OFDM PI/2 BPSK	50@0	-14.59	-14.23	**see graph**	PASS
48	15	10	646332	3694.98	DFT-s-OFDM PI/2 BPSK	1@0	-7.73	-18.61	**see graph**	PASS
48	15	10	646332	3694.98	DFT-s-OFDM PI/2 BPSK	1@51	-17.87	-7.71	**see graph**	PASS
48	15	10	646332	3694.98	DFT-s-OFDM QPSK	50@0	-13.43	-13.56	**see graph**	PASS
48	15	10	646332	3694.98	DFT-s-OFDM QPSK	1@0	-7.15	-17.36	**see graph**	PASS
48	15	10	646332	3694.98	DFT-s-OFDM QPSK	1@51	-17.01	-7.5	**see graph**	PASS
48	15	20	637334	3560.01	DFT-s-OFDM PI/2 BPSK	100@0	-15.9	-18.19	**see graph**	PASS
48	15	20	637334	3560.01	DFT-s-OFDM PI/2 BPSK	1@0	-7.89	-20.5	**see graph**	PASS
48	15	20	637334	3560.01	DFT-s-OFDM PI/2 BPSK	1@105	-20.84	-8.43	**see graph**	PASS
48	15	20	637334	3560.01	DFT-s-OFDM QPSK	100@0	-15.62	-16.99	**see graph**	PASS

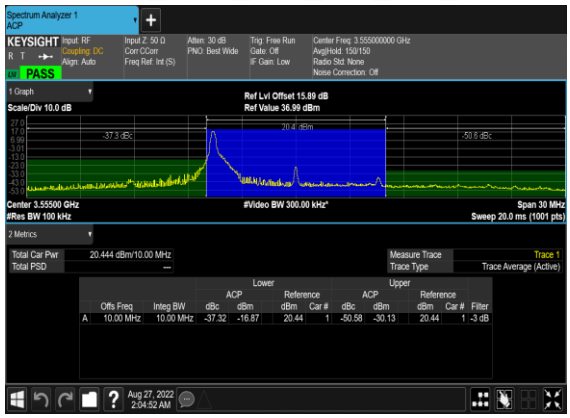
48	15	20	637334	3560.01	DFT-s-OFDM QPSK	1@0	-7.25	-19.9	**see graph**	PASS
48	15	20	637334	3560.01	DFT-s-OFDM QPSK	1@105	-19.51	-7.22	**see graph**	PASS
48	15	20	641666	3624.99	DFT-s-OFDM PI/2 BPSK	100@0	-17.52	-17.28	**see graph**	PASS
48	15	20	641666	3624.99	DFT-s-OFDM PI/2 BPSK	1@0	-7.68	-18.24	**see graph**	PASS
48	15	20	641666	3624.99	DFT-s-OFDM PI/2 BPSK	1@105	-17.82	-8.1	**see graph**	PASS
48	15	20	641666	3624.99	DFT-s-OFDM QPSK	100@0	-13.4	-13.03	**see graph**	PASS
48	15	20	641666	3624.99	DFT-s-OFDM QPSK	1@0	-6.73	-17.04	**see graph**	PASS
48	15	20	641666	3624.99	DFT-s-OFDM QPSK	1@105	-14.05	-7.98	**see graph**	PASS
48	15	20	646000	3690.0	DFT-s-OFDM PI/2 BPSK	100@0	-14.85	-14.09	**see graph**	PASS
48	15	20	646000	3690.0	DFT-s-OFDM PI/2 BPSK	1@0	-6.76	-16.59	**see graph**	PASS
48	15	20	646000	3690.0	DFT-s-OFDM PI/2 BPSK	1@105	-16.78	-8.46	**see graph**	PASS
48	15	20	646000	3690.0	DFT-s-OFDM QPSK	100@0	-12.85	-12.47	**see graph**	PASS
48	15	20	646000	3690.0	DFT-s-OFDM QPSK	1@0	-7.63	-15.37	**see graph**	PASS
48	15	20	646000	3690.0	DFT-s-OFDM QPSK	1@105	-15.85	-6.33	**see graph**	PASS
48	15	50	638334	3575.01	DFT-s-OFDM PI/2 BPSK	270@0	-13.81	-13.45	**see graph**	PASS
48	15	50	638334	3575.01	DFT-s-OFDM PI/2 BPSK	1@0	-10.35	-14.26	**see graph**	PASS
48	15	50	638334	3575.01	DFT-s-OFDM PI/2 BPSK	1@269	-14.81	-10.43	**see graph**	PASS
48	15	50	638334	3575.01	DFT-s-OFDM QPSK	270@0	-12.97	-12.56	**see graph**	PASS
48	15	50	638334	3575.01	DFT-s-OFDM QPSK	1@0	-9.96	-13.09	**see graph**	PASS
48	15	50	638334	3575.01	DFT-s-OFDM QPSK	1@269	-14.33	-10.42	**see graph**	PASS
48	15	50	641666	3624.99	DFT-s-OFDM PI/2 BPSK	270@0	-13.66	-12.68	**see graph**	PASS
48	15	50	641666	3624.99	DFT-s-OFDM PI/2 BPSK	1@0	-10.37	-13.13	**see graph**	PASS
48	15	50	641666	3624.99	DFT-s-OFDM PI/2 BPSK	1@269	-14.13	-10.51	**see graph**	PASS
48	15	50	641666	3624.99	DFT-s-OFDM QPSK	270@0	-12.65	-11.96	**see graph**	PASS

48	15	50	641666	3624.99	DFT-s-OFDM QPSK	1@0	-10.19	-12.88	**see graph**	PASS
48	15	50	641666	3624.99	DFT-s-OFDM QPSK	1@269	-13.82	-9.84	**see graph**	PASS
48	15	50	645000	3675.0	DFT-s-OFDM PI/2 BPSK	270@0	-12.65	-11.78	**see graph**	PASS
48	15	50	645000	3675.0	DFT-s-OFDM PI/2 BPSK	1@0	-9.82	-12.85	**see graph**	PASS
48	15	50	645000	3675.0	DFT-s-OFDM PI/2 BPSK	1@269	-15.06	-10.67	**see graph**	PASS
48	15	50	645000	3675.0	DFT-s-OFDM QPSK	270@0	-11.87	-10.72	**see graph**	PASS
48	15	50	645000	3675.0	DFT-s-OFDM QPSK	1@0	-9.81	-12.48	**see graph**	PASS
48	15	50	645000	3675.0	DFT-s-OFDM QPSK	1@269	-14.99	-10.1	**see graph**	PASS

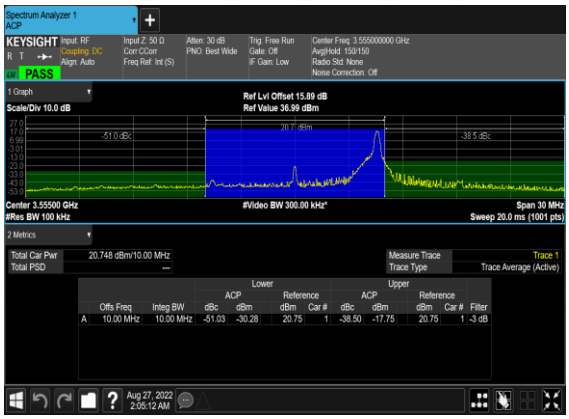
N48(10M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Low_CH



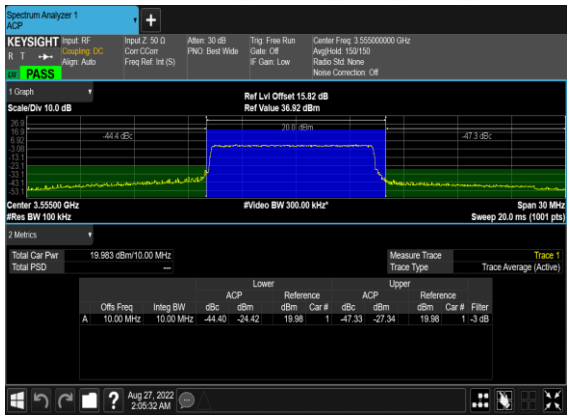
N48(10M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_Low_CH



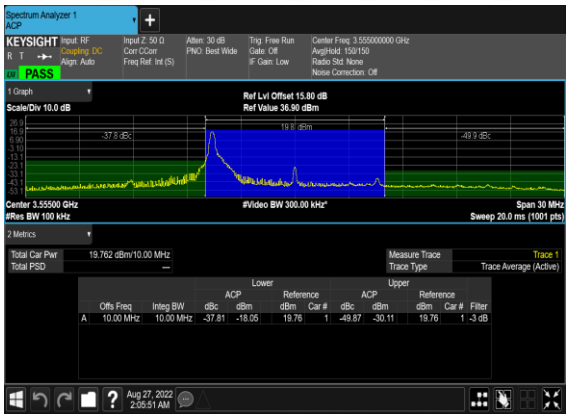
N48(10M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Right_Low_CH



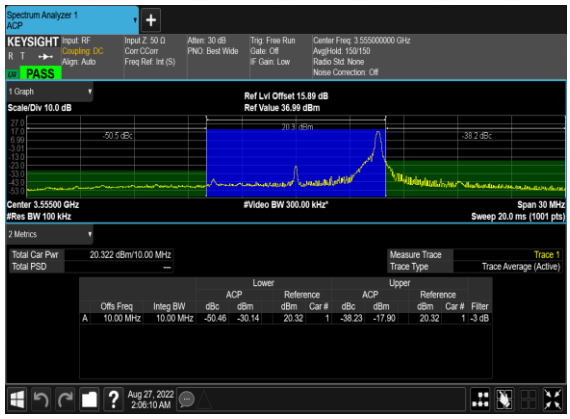
N48(10M)_DFT-s-OFDM_QPSK_Outer_Full_Low_CH



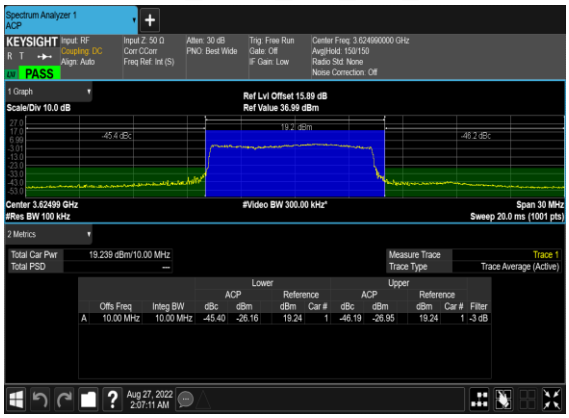
N48(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



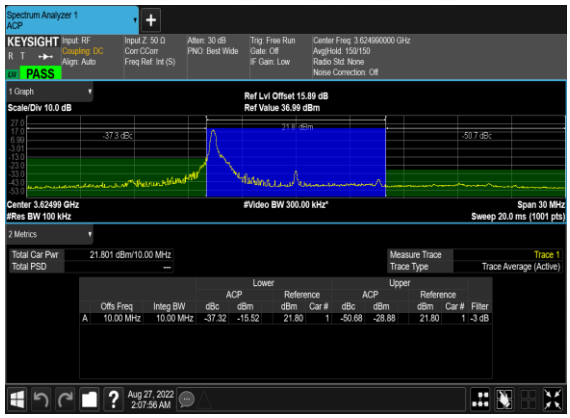
N48(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_Low_CH



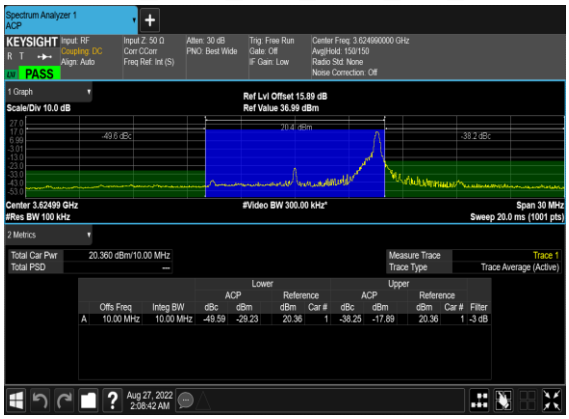
N48(10M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



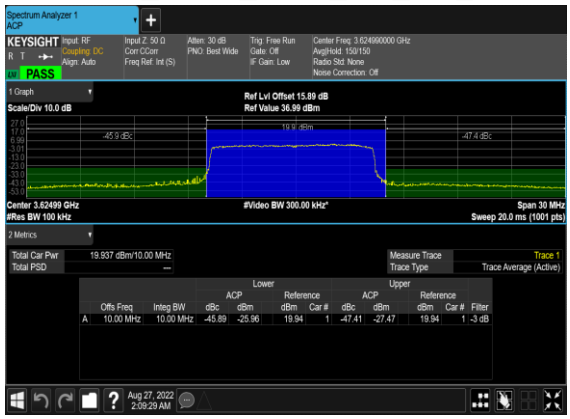
N48(10M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_Mid_CH



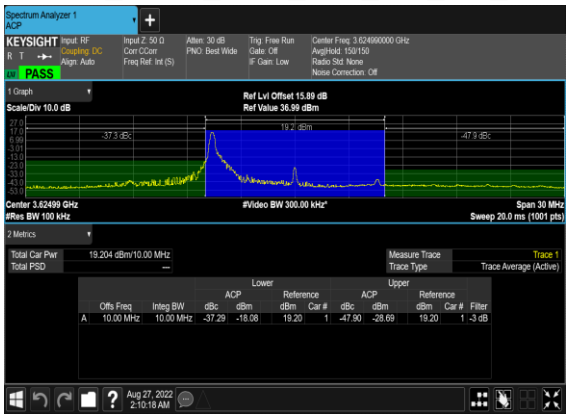
N48(10M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Right_Mid_CH



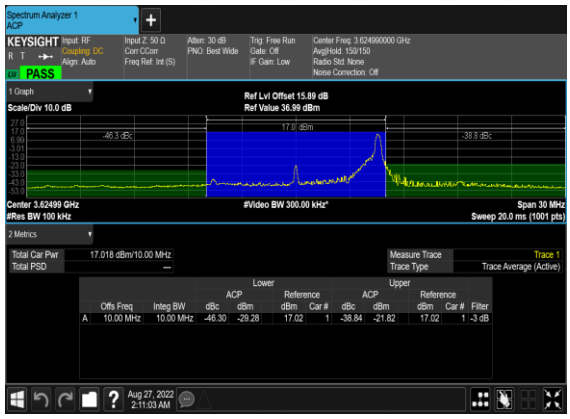
N48(10M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



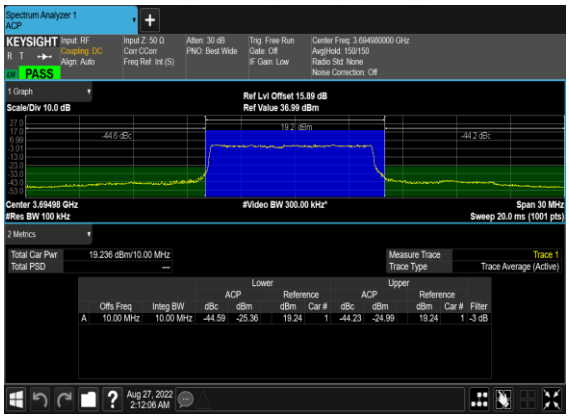
N48(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



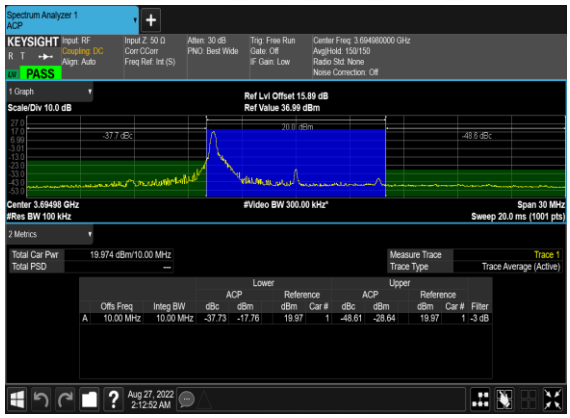
N48(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_Mid_CH



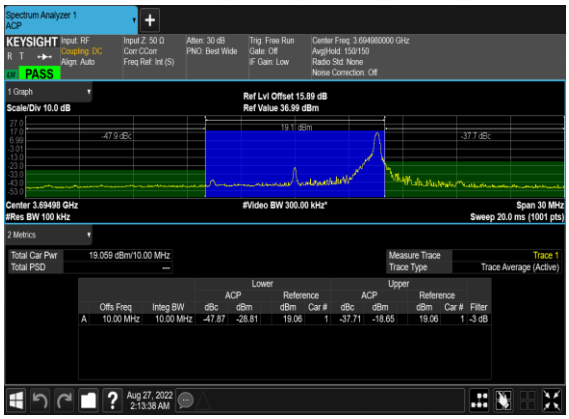
N48(10M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_High_CH



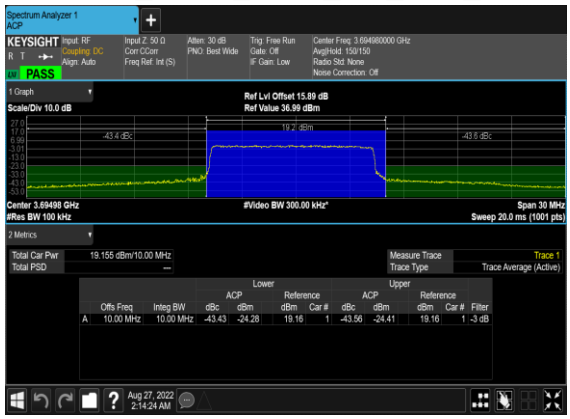
N48(10M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_High_CH



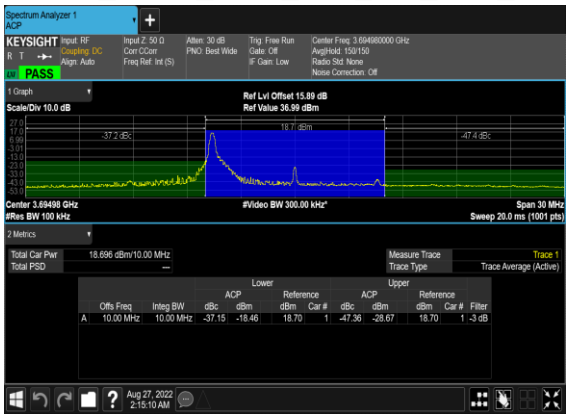
N48(10M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Right_High_CH



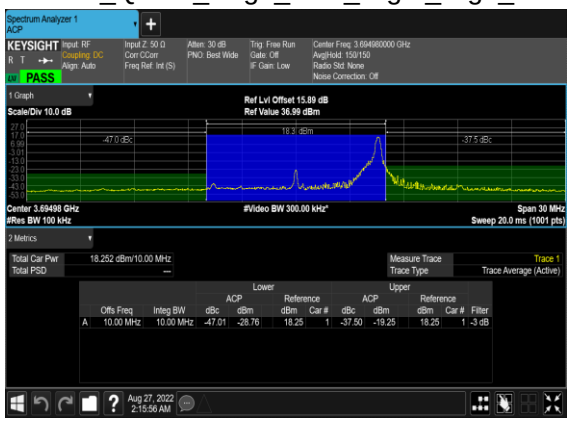
N48(10M)_DFT-s-OFDM_QPSK_Outer_Full_High_CH



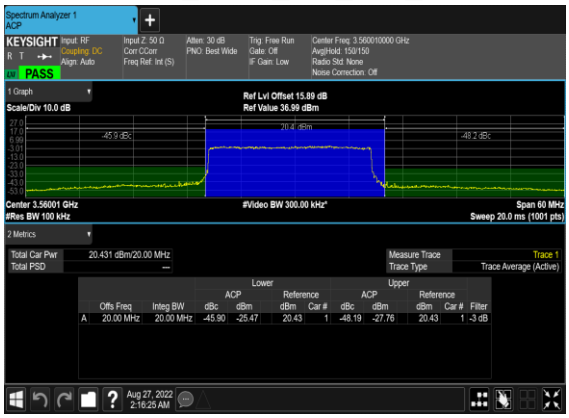
N48(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



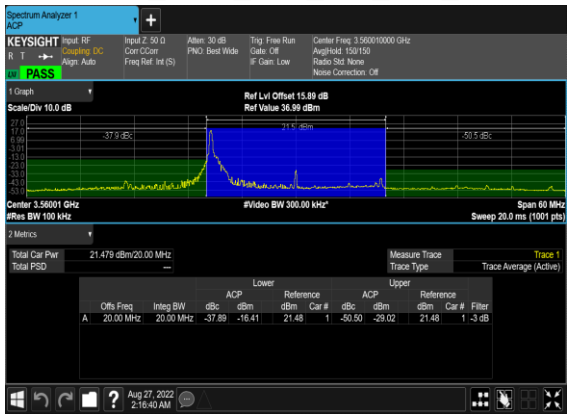
N48(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_High_CH



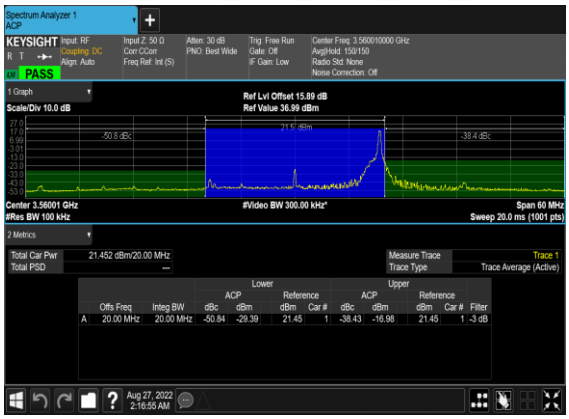
N48(20M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Low_CH



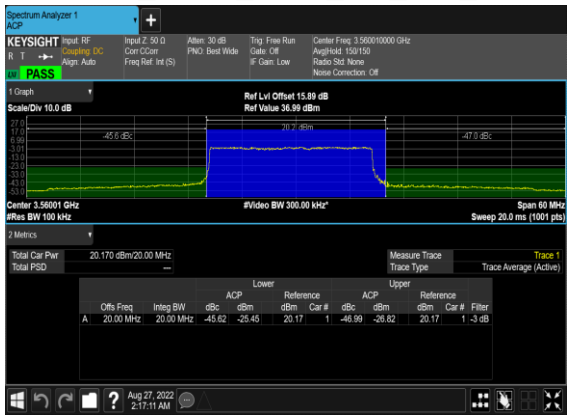
N48(20M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_Low_CH



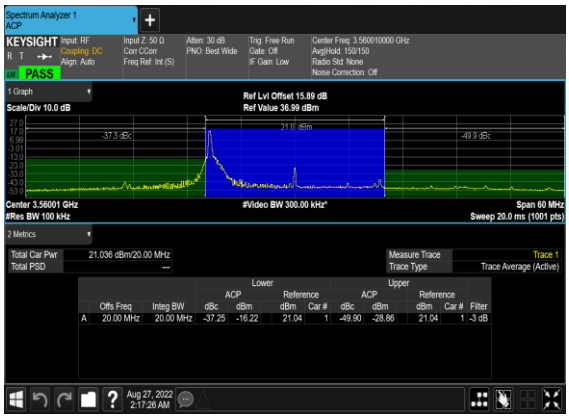
N48(20M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Right_Low_CH



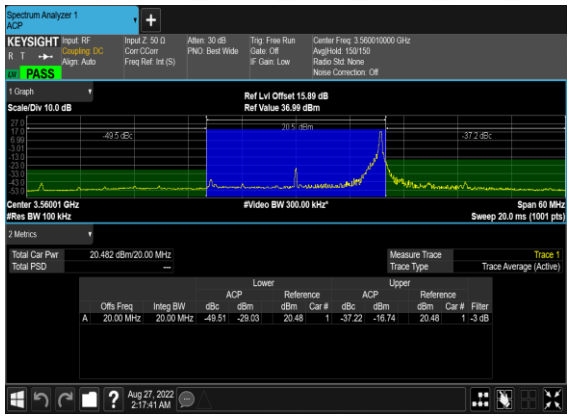
N48(20M)_DFT-s-OFDM_QPSK_Outer_Full_Low_CH



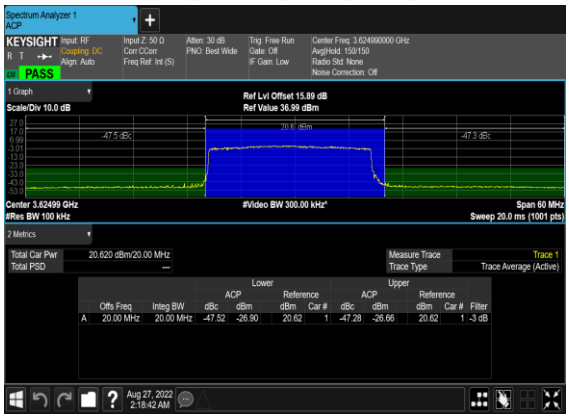
N48(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



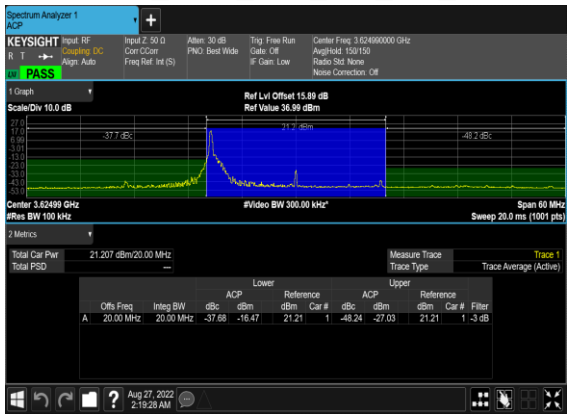
N48(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_Low_CH



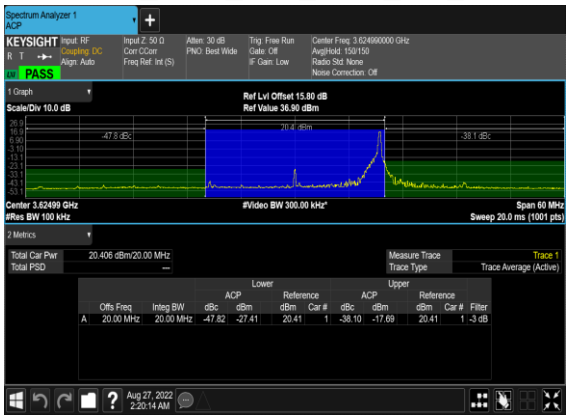
N48(20M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



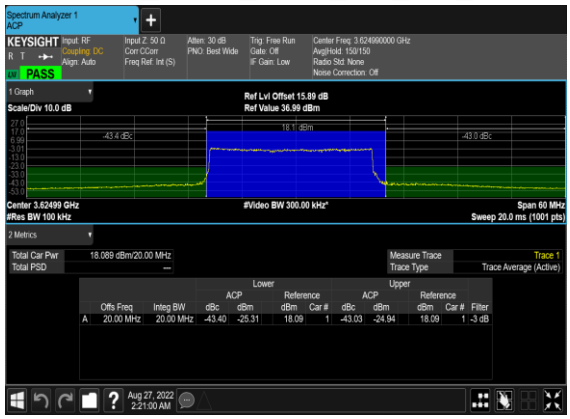
N48(20M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_Mid_CH



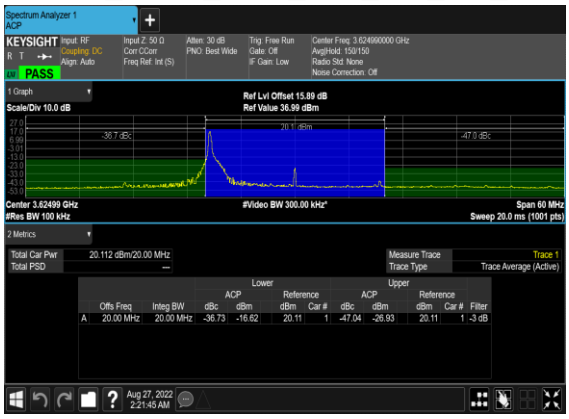
N48(20M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Right_Mid_CH



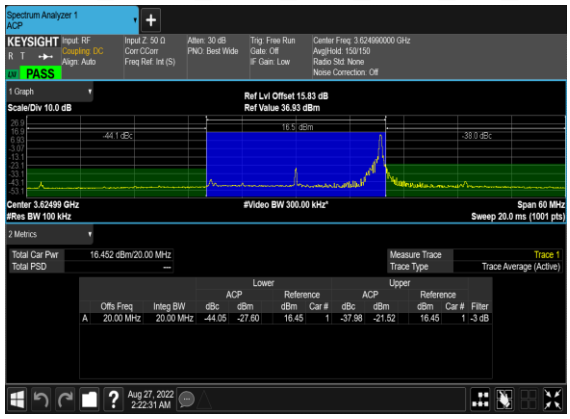
N48(20M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



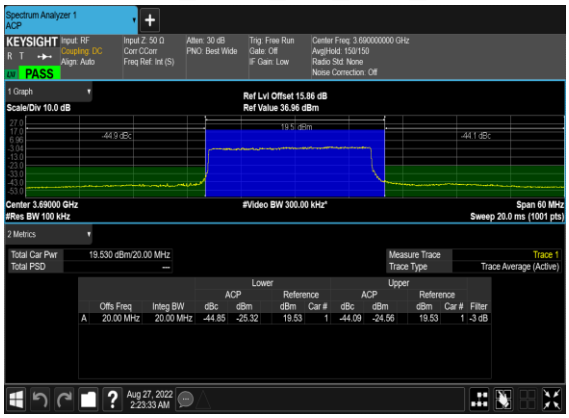
N48(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



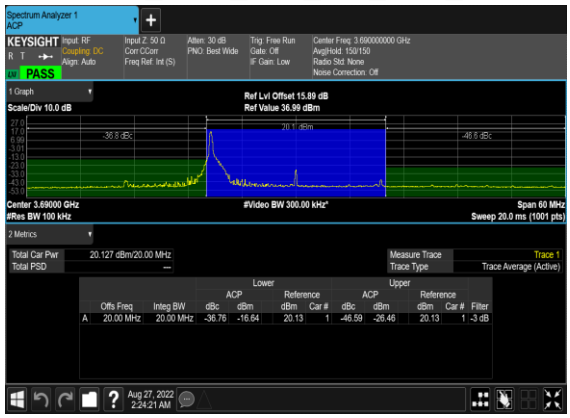
N48(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_Mid_CH



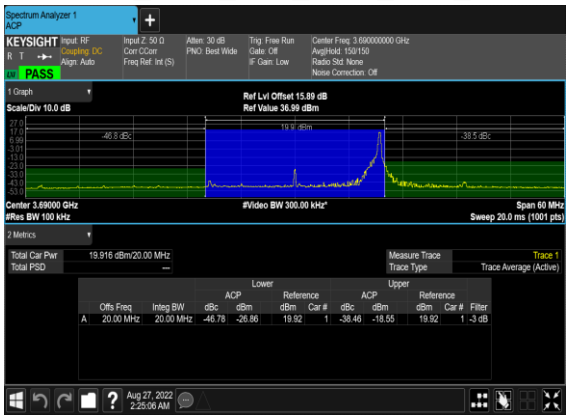
N48(20M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_High_CH



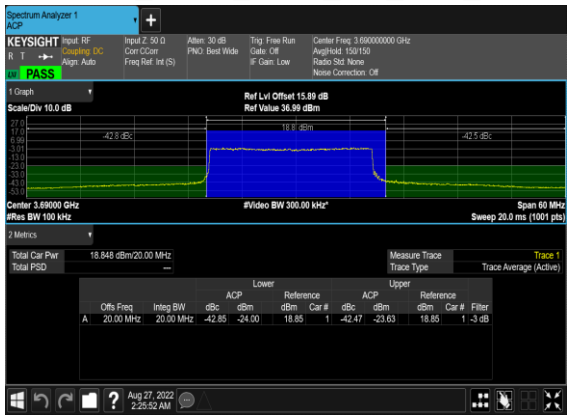
N48(20M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_High_CH



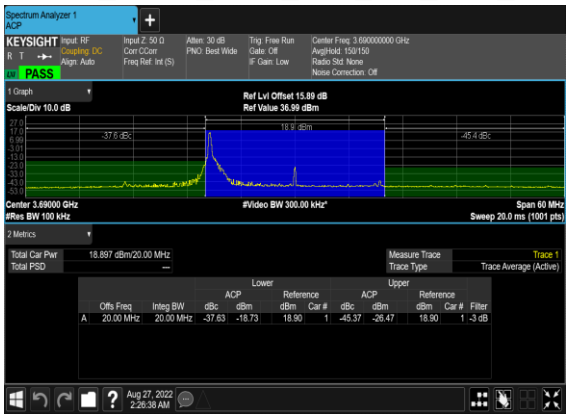
N48(20M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Right_High_CH



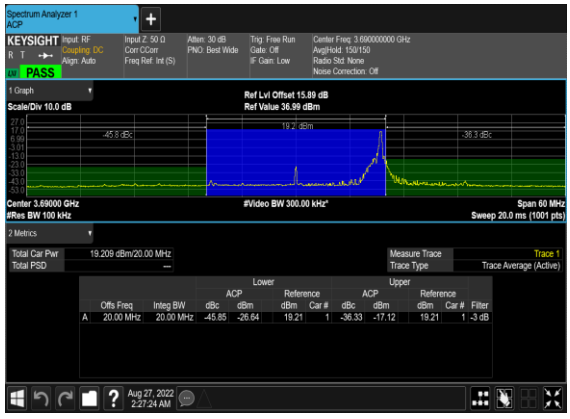
N48(20M)_DFT-s-OFDM_QPSK_Outer_Full_High_CH



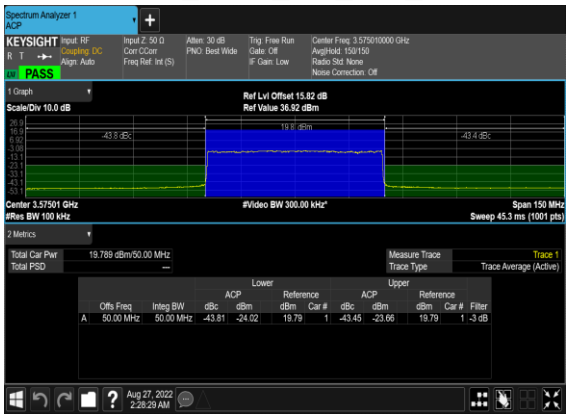
N48(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



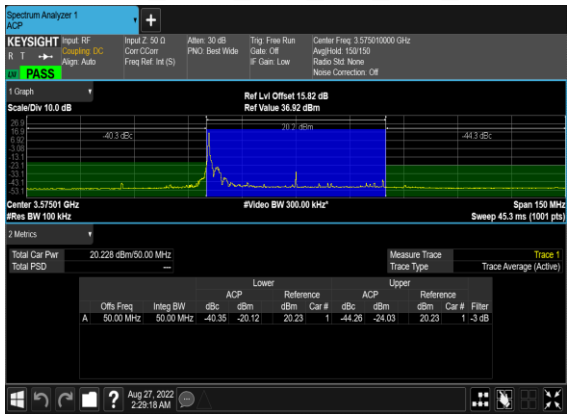
N48(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_High_CH



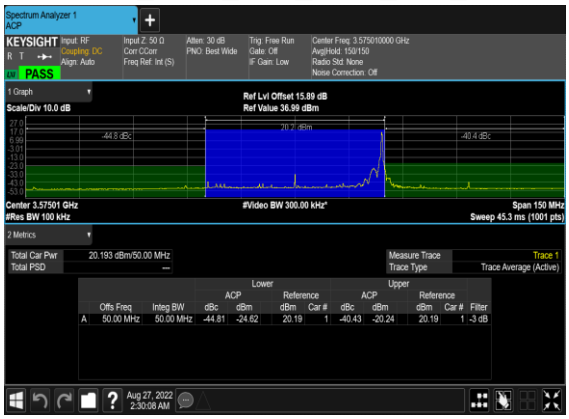
N48(50M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Low_CH



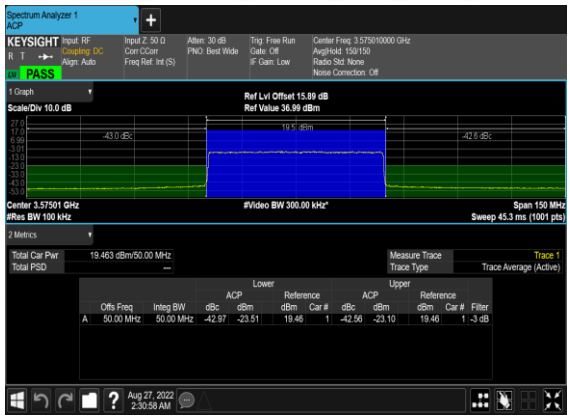
N48(50M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_Low_CH



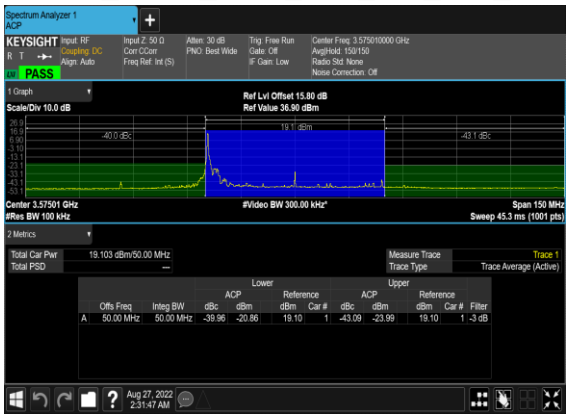
N48(50M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Right_Low_CH



N48(50M)_DFT-s-OFDM_QPSK_Outer_Full_Low_CH

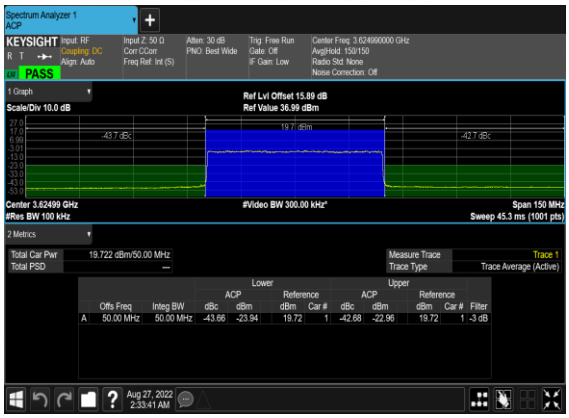


N48(50M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH

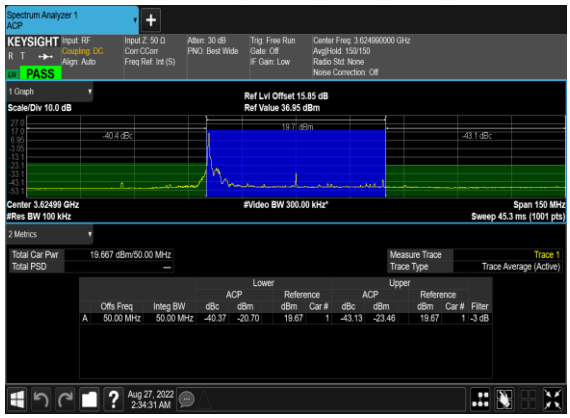


N48(50M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_Low_CH

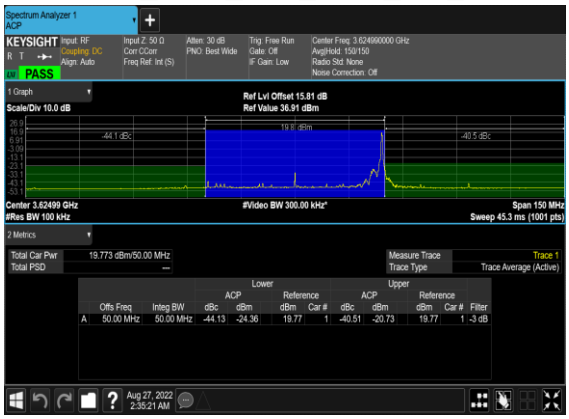
N48(50M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



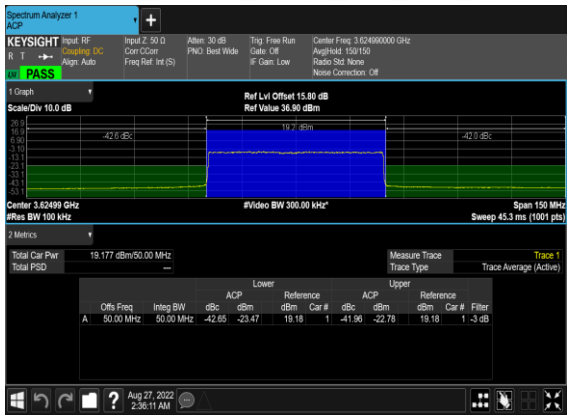
N48(50M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_Mid_CH



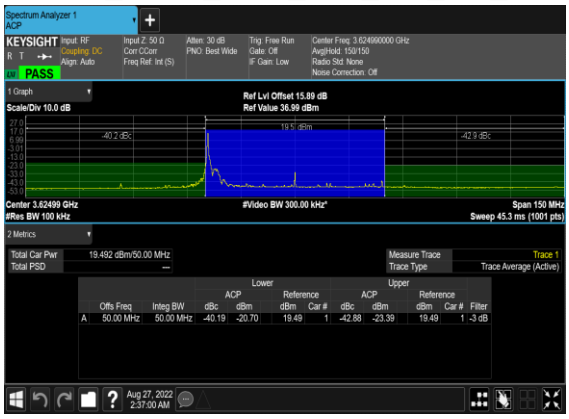
N48(50M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Right_Mid_CH



N48(50M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



N48(50M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



N48(50M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_Mid_CH