FCC RF Test Report

APPLICANT	:	OnePlus Technology (Shenzhen) Co.,Ltd.
EQUIPMENT	:	Mobile Phone
BRAND NAME	:	ONEPLUS
MODEL NAME	:	CPH2419, CPH2417
FCC ID	:	2ABZ2-AA497
STANDARD	:	47 CFR Part 2, 27 Subpart Q
CLASSIFICATION	:	PCS Licensed Transmitter Held to Ear (PCE)
TEST DATE(S)	:	May 28, 2022 ~ Jun. 17, 2022

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

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

Jason Jia

Approved by: Jason Jia

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

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG251121K	Rev. 01	Initial issue of report	Jul. 08, 2022

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	—	Report Only	-
3.5	§27.50 (k)(4)	Peak-to-Average Ratio	<13dB	PASS	
3.6	§27.50 (k)(3)	EIRP	EIRP < 1W (30dBm)	PASS	-
3.7	§2.1049	Occupied Bandwidth	—	Report Only	-
3.8	§2.1051 §27.53 (n)(2)	Conducted Band Edge Measurement	-13dBm/MHz	PASS	-
3.9	§2.1051 §27.53 (n)(2)	Conducted Spurious Emission	-13dBm/MHz	PASS	-
3.10	§2.1055 §27.54	Frequency Stability Temperature & Voltage	Within the band	PASS	-
4.4	§2.1053 §27.53 (n)(2)	Radiated Spurious Emission	-13dBm/MHz	PASS	Under limit 36.54 dB at 14000.04 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

OnePlus Technology (Shenzhen) Co.,Ltd.
18C02, 18C03, 18C04, 18C05, Shum Yip Terra Building, Binhe Avenue North, Futian District, Shenzhen, Guangdong, China.

1.2. Manufacturer

OnePlus Technology (Shenzhen) Co.,Ltd.
18C02, 18C03, 18C04, 18C05, Shum Yip Terra Building, Binhe Avenue North, Futian District, Shenzhen, Guangdong, China.

1.3. Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Phone
Brand Name	ONEPLUS
Model Name	CPH2419, CPH2417
FCC ID	2ABZ2-AA497
IMEI Code	Conducted: 861677060020347 Radiation: 861677060027938
HW Version	2AA495-0
SW Version	CPH2419_11_A.03
EUT Stage	Production Unit

Remark: The different model name is for different market purpose.

1.4. Product Specification of Equipment Under Test

Product Feature	
Tx/Rx Frequency	5G NR n77: 3450 MHz ~ 3550 MHz
SCS	30kHz
Bandwidth	n77(30kHz): 20 / 30 / 40 / 50 / 60 / 70 / 80 / 90 / 100MHz
Maximum Outpt Power	**Ant. 5:** 5G NR n77: 25.76 dBm **Ant. 10:** 5G NR n77: 24.80 dBm
Antenna Gain	**Ant. 5:** 5G NR n77: -2.0 dBi **Ant. 10:** 5G NR n77: -3.0 dBi
Type of Modulation	CP-OFDM: QPSK / 16QAM / 64QAM / 256QAM DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM

Remark:

1. The maximum EIRP is calculated from max output power and max antenna gain, only the maximum EIRP of Antenna 5 is shown in the report
2. 5G NR n77 support SA and NSA mode. The whole testing has assessed NSA mode for n77 by referring to the higher conducted power for conducted test items.
3. 5G NR n77 supports HPUE mode.
4. The EN-DC mode combination could be referred to the SAR report.

1.5. Modification of EUT

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

1.6. Maximum EIRP Power and Emission Designator

5G NR n77 NSA (EN DC_5A-n77A)		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)**
20	3460.02 ~ 3540	0.2265	18M2G7D	0.1897	18M2W7D
30	3465 ~ 3534.99	0.2317	27M9G7D	0.1954	27M8W7D
40	3470.01 ~ 3529.98	0.2377	37M8G7D	0.1986	37M9W7D
50	3475.02 ~ 3525	0.2265	47M4G7D	0.1897	47M6W7D
60	3480 ~ 3519.99	0.2234	57M8G7D	0.1884	57M8W7D
70	3485.01 ~ 3514.98	0.2158	67M5G7D	0.1832	67M4W7D
80	3490.02 ~ 3510	0.2153	77M4G7D	0.1786	77M6W7D
90	3495 ~ 3504.99	0.2148	87M5G7D	0.1730	87M6W7D
100	3500.01 ~ 3500.01	0.2133	97M5G7D	0.1795	97M5W7D

1.7. 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 China 518103 TEL: +86-755-33202398		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	03CH01-SZ	CN1256	421272

1.8. Test Software

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

1.9. Applied Standards

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

- 47 CFR Part 2, 27Q
- ANSI C63.26-2015
- FCC KDB 971168 Power Meas License Digital Systems D01 v03r01
- 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

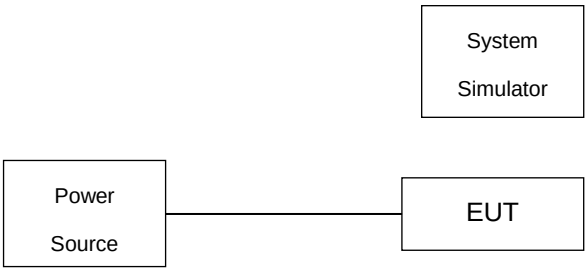
Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power.

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

Orthogonal Planes of EUT	X Plane	Y Plane	Z Plane
			

Test Items	5G NR	Bandwidth (MHz)									Modulation					RB #		Test Channel		
		20	30	40	50	60	70	80	90	100	PI/2 BPSK	QPSK	16QAM	64QAM	256 QAM	1	Full	L	M	H
Max. Output Power	n77	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
Peak-to-Average Ratio	n77	v									v	v				v	v	v	v	v
26dB and 99% Bandwidth	n77	v	v	v	v	v	v	v	v	v	v	v	v	v	v		v		v	
Conducted Band Edge	n77	v				v				v	v	v				v	v	v		v
Conducted Spurious Emission	n77	v				v				v	v	v				v		v	v	v
Frequency Stability	n77	v										v					v		v	
E.R.P / E.I.R.P	n77	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
Radiated Spurious Emission	n77	Worst Case																v	v	v
Note	1. The mark "**v** " means that this configuration is chosen for testing 2. The mark "-" means that this bandwidth is not supported. 3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported. 4. Normal Voltage: 7.78Vdc, Extreme Voltage: 6.0Vdc ~8.96Vdc																			

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 and system

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.	LTE Base Station	Anritsu	MT8821C	N/A	N/A	Unshielded, 1.8 m
3.	NR Base Station	Anritsu	MT8000A	N/A	N/A	Unshielded, 1.8 m

2.4. Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss 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 8.6 dB.

Example :

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

= 8.6 (dB)

2.5. Frequency List of Low/Middle/High Channels

5G n77 Channel and Frequency List-30kHz				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
100	Channel	-	633334	-
	Frequency	-	3500.01	-
90	Channel	633000	633334	633666
	Frequency	3495	3500.01	3504.99
80	Channel	632668	633334	634000
	Frequency	3490.02	3500.01	3510
70	Channel	632334	633334	634332
	Frequency	3485.01	3500.01	3514.98
60	Channel	632000	633334	634666
	Frequency	3480	3500.01	3519.99
50	Channel	631668	633334	635000
	Frequency	3475.02	3500.01	3525
40	Channel	631334	633334	635332
	Frequency	3470.01	3500.01	3529.98
30	Channel	631000	633334	635666
	Frequency	3465	3500.01	3534.99
20	Channel	630668	633334	636000
	Frequency	3460.02	3500.01	3540

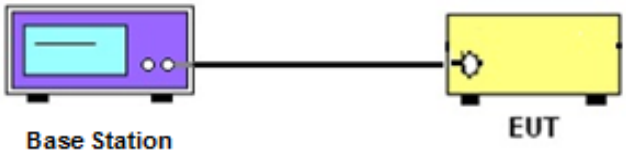
3 Conducted Test Items

3.1. Measuring Instruments

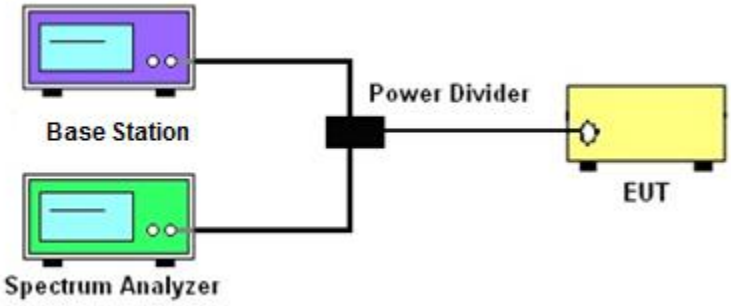
See list of measuring instruments of this test report.

3.2. Test Setup

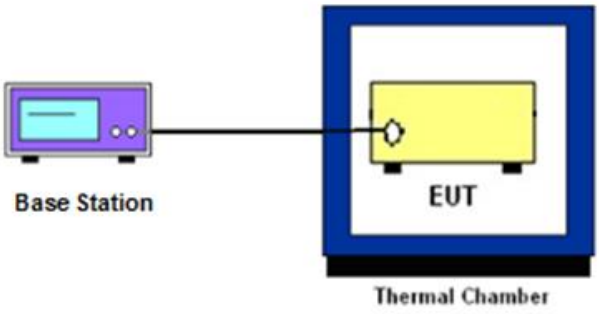
3.2.1 Conducted Output Power



3.2.2 Peak-to-Average Ratio, Occupied / 26dB Bandwidth ,Band-Edge and Conducted Spurious Emission



3.2.3 Frequency Stability



3.3. Test Result of Conducted Test

Please refer to Appendix A.

3.4. Conducted Output Power Measurement

3.4.1 Description of the Conducted Output Power Measurement

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

3.4.2 Test Procedures

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

3.5. Peak-to-Average Ratio

3.5.1 Description of the PAR Measurement

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

3.5.2 Test Procedures

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

3.6. EIRP

3.6.1 Description of EIRP Limit

§ 27.50 (k)(3)

Mobile devices are limited to 1Watt (30 dBm) EIRP. Mobile devices operating in these bands must employ a means for limiting power to the minimum necessary for successful communications

3.6.2 Test Procedures

1. According to KDB 412172 D01 Power Approach,
2. 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

3.7. Occupied Bandwidth

3.7.1 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.

3.7.2 Test Procedures

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

3.8. Conducted Band Edge Measurement

3.8.1 Description of Conducted Band Edge Measurement

§ 27.53 (n)(2)

For mobile operations in the 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz.

Compliance with this paragraph is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed, but limited to a maximum of 200 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz.

3.8.2 Test Procedures

1. The testing follows ANSI C63.26 section 5.7
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The band edges of low and high channels for the highest RF powers were measured.
4. Set RBW ≥ 1% EBW but limited to a maximum of 200 kHz in the 1MHz band immediately outside and adjacent to the band edge.
5. Beyond the 1 MHz and 5 MHz removed from the band edge, set RBW ≥ 500KHz.
6. Beyond the 5 MHz removed from the band edge, set RBW = 1MHz.
7. Set spectrum analyzer with RMS detector.
8. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
9. Checked that all the results comply with the emission limit line.

3.9. Conducted Spurious Emission Measurement

3.9.1 Description of Conducted Spurious Emission Measurement

The power of any emission outside of the authorized operating frequency ranges shall not exceed −13 dBm/MHz.

It is measured by means of a calibrated spectrum analyzer and scanned from 9 kHz up to a frequency including its 10^{th} harmonic.

3.9.2 Test Procedures

1. The testing follows ANSI C63.26 section 5.7
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
4. The middle channel for the highest RF power within the transmitting frequency was measured.
5. The conducted spurious emission for the whole frequency range was taken.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz.
7. Set spectrum analyzer with RMS detector.
8. Taking the record of maximum spurious emission.
9. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
10. Checked that all the results comply with the emission limit line.

3.10. Frequency Stability Measurement

3.10.1 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.

3.10.2 Test Procedures for Temperature Variation

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

3.10.3 Test Procedures for Voltage Variation

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

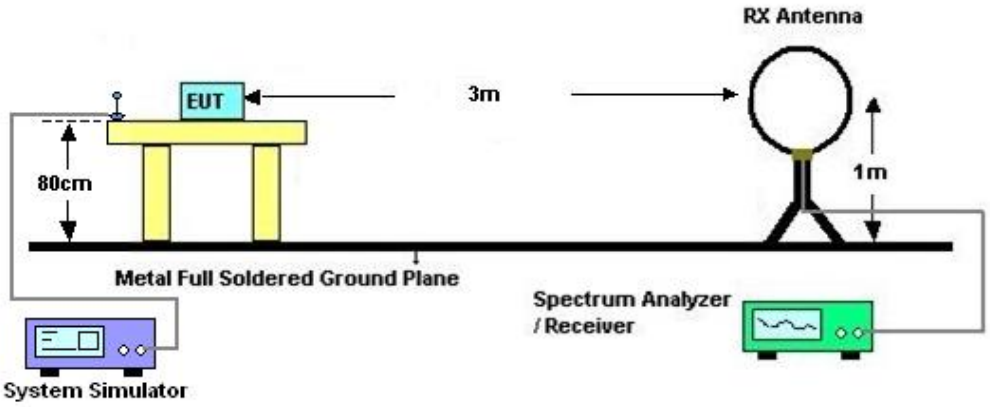
4 Radiated Test Items

4.1. Measuring Instruments

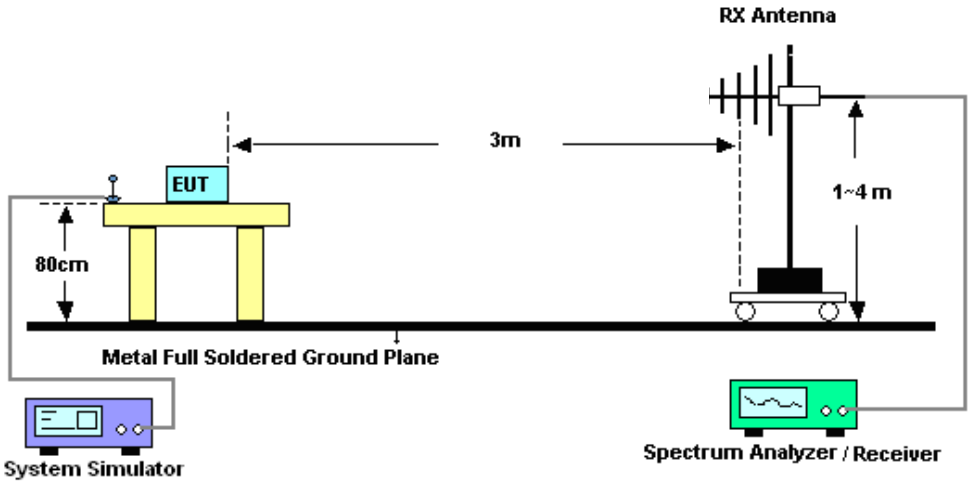
See list of measuring instruments of this test report.

4.2. Test Setup

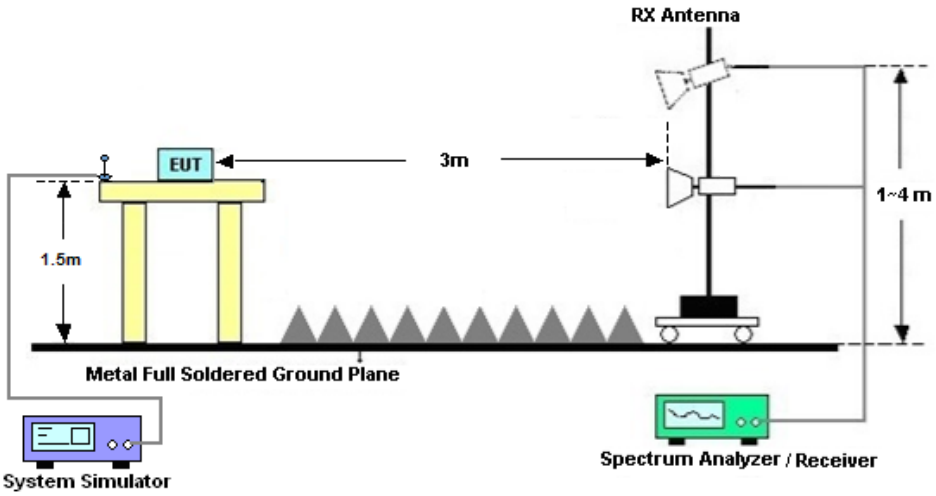
4.2.1 For radiated test below 30MHz



4.2.2 For radiated test from 30MHz to 1GHz



4.2.3 For radiated test above 1GHz



4.3. Test Result of Radiated Test

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

Please refer to Appendix B.

4.4. Radiated Spurious Emission Measurement

4.4.1 Description of Radiated Spurious Emission

The radiated spurious emission was measured by substitution method according to ANSI/TIA-603-E.

The power of any emission outside of the authorized operating frequency ranges shall not exceed −13 dBm/MHz.

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

4.4.2 Test Procedures

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

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. 07, 2022	May 28, 2022~ Jun. 02, 2022	Apr. 06, 2023	Conducted (TH01-SZ)
DC Power Supply	TTI	PL330P	290070	Max 32V，3A	Oct. 25, 2021	May 28, 2022~ Jun. 02, 2022	Oct. 24, 2022	Conducted (TH01-SZ)
Power Divider	TOJOIN	PS-2SM-04 265	60.06.020.007 7	0.4GHz~26.5GHz	Dec. 25, 2021	May 28, 2022~ Jun. 02, 2022	Dec. 24, 2022	Conducted (TH01-SZ)
Thermal Chamber	Ten Billion Hongzhangroup	LP-150U	H2014081803	-40~+150°C	Jul. 14, 2021	May 28, 2022~ Jun. 02, 2022	Jul. 13, 2022	Conducted (TH01-SZ)
EMI Test Receiver&SA	Agilent	N9038A	MY52260185	20Hz~26.5GHz	Dec. 27, 2021	Jun. 17, 2022	Dec. 26, 2022	Radiation (03CH01-SZ)
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY55150213	10Hz~44GHz	Jul. 14, 2021	Jun. 17, 2022	Jul. 13, 2022	Radiation (03CH01-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	Jun. 22, 2020	Jun. 17, 2022	Jun. 21, 2022	Radiation (03CH01-SZ)
Bilog Antenna	TeseQ	CBL6112D	35407	30MHz-2GHz	Sep. 28, 2021	Jun. 17, 2022	Sep. 27, 2022	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00119436	1GHz~18GHz	Jul. 18, 2021	Jun. 17, 2022	Jul. 17, 2022	Radiation (03CH01-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Apr. 10, 2022	Jun. 17, 2022	Apr. 09, 2023	Radiation (03CH01-SZ)
LF Amplifier	Burgeon	BPA-530	102209	0.01~3000Mhz	Apr. 06, 2022	Jun. 17, 2022	Apr. 05, 2023	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	AMF-7D-00 101800-30-1 0P-R	1943528	1GHz~18GHz	Oct. 22, 2021	Jun. 17, 2022	Oct. 21, 2022	Radiation (03CH01-SZ)
HF Amplifier	KEYSIGHT	83017A	MY53270105	0.5GHz~26.5Ghz	Oct. 22, 2021	Jun. 17, 2022	Oct. 21, 2022	Radiation (03CH01-SZ
HF Amplifier	MITEQ	TTA1840-35 -HG	1871923	18GHz~40GHz	Jul. 13, 2021	Jun. 17, 2022	Jul. 12, 2022	Radiation (03CH01-SZ)
AC Power Source	Chroma	61601	616010001985	N/A	NCR	Jun. 17, 2022	NCR	Radiation (03CH01-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Jun. 17, 2022	NCR	Radiation (03CH01-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Jun. 17, 2022	NCR	Radiation (03CH01-SZ)

NCR: No Calibration Required

6 Uncertainty of Evaluation

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

Uncertainty of Conducted Measurement

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

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

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

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

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

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

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

Appendix A. Test Results of Conducted Test

Test Engineer :	Jung Kuo	**Temperature :**	22~23℃
		Relative Humidity :	45~51%

Software Version: 22.05.231801

FR1 N77

LTE Band: 5, LTE BW: 10M, LTE ARFCN: Mid

Transmitter Conducted Output Power And EIRP, (GT-LC)=-2.0dB

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Conducted Power(dBm)	EIRP (dBm)	EIRP (W)
77	30	20	630668	3460.02	DFT-s-OFDM QPSK	1@1	25.47	23.47	0.2223
77	30	20	630668	3460.02	DFT-s-OFDM 16 QAM	1@1	24.78	22.78	0.1897
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	1@1	25.52	23.52	0.2249
77	30	20	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	24.72	22.72	0.1871
77	30	20	636000	3540	DFT-s-OFDM QPSK	1@1	25.55	23.55	0.2265
77	30	20	636000	3540	DFT-s-OFDM 16 QAM	1@1	24.73	22.73	0.1875
77	30	30	631000	3465	DFT-s-OFDM QPSK	1@1	25.58	23.58	0.2280
77	30	30	631000	3465	DFT-s-OFDM 16 QAM	1@1	24.82	22.82	0.1914
77	30	30	633334	3500.01	DFT-s-OFDM QPSK	1@1	25.58	23.58	0.2280
77	30	30	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	24.85	22.85	0.1928
77	30	30	635666	3534.99	DFT-s-OFDM QPSK	1@1	25.65	23.65	0.2317
77	30	30	635666	3534.99	DFT-s-OFDM 16 QAM	1@1	24.91	22.91	0.1954
77	30	40	631334	3470.01	DFT-s-OFDM QPSK	1@1	25.63	23.63	0.2307
77	30	40	631334	3470.01	DFT-s-OFDM 16 QAM	1@1	24.77	22.77	0.1892
77	30	40	633334	3500.01	DFT-s-OFDM QPSK	1@1	25.65	23.65	0.2317
77	30	40	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	24.87	22.87	0.1936
77	30	40	635332	3529.98	DFT-s-OFDM QPSK	1@1	25.76	23.76	0.2377
77	30	40	635332	3529.98	DFT-s-OFDM 16 QAM	1@1	24.98	22.98	0.1986

77	30	50	631668	3475.02	DFT-s-OFDM QPSK	1@1	25.39	23.39	0.2183
77	30	50	631668	3475.02	DFT-s-OFDM 16 QAM	1@1	24.68	22.68	0.1854
77	30	50	633334	3500.01	DFT-s-OFDM QPSK	1@1	25.47	23.47	0.2223
77	30	50	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	24.69	22.69	0.1858
77	30	50	635000	3525	DFT-s-OFDM QPSK	1@1	25.55	23.55	0.2265
77	30	50	635000	3525	DFT-s-OFDM 16 QAM	1@1	24.78	22.78	0.1897
77	30	60	632000	3480	DFT-s-OFDM QPSK	1@1	25.43	23.43	0.2203
77	30	60	632000	3480	DFT-s-OFDM 16 QAM	1@1	24.69	22.69	0.1858
77	30	60	633334	3500.01	DFT-s-OFDM QPSK	1@1	25.49	23.49	0.2234
77	30	60	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	24.61	22.61	0.1824
77	30	60	634666	3519.99	DFT-s-OFDM QPSK	1@1	25.43	23.43	0.2203
77	30	60	634666	3519.99	DFT-s-OFDM 16 QAM	1@1	24.75	22.75	0.1884
77	30	70	632334	3485.01	DFT-s-OFDM QPSK	1@1	25.29	23.29	0.2133
77	30	70	632334	3485.01	DFT-s-OFDM 16 QAM	1@1	24.52	22.52	0.1786
77	30	70	633334	3500.01	DFT-s-OFDM QPSK	1@1	25.34	23.34	0.2158
77	30	70	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	24.63	22.63	0.1832
77	30	70	634332	3514.98	DFT-s-OFDM QPSK	1@1	25.34	23.34	0.2158
77	30	70	634332	3514.98	DFT-s-OFDM 16 QAM	1@1	24.59	22.59	0.1816
77	30	80	632668	3490.02	DFT-s-OFDM QPSK	1@1	25.23	23.23	0.2104
77	30	80	632668	3490.02	DFT-s-OFDM 16 QAM	1@1	24.51	22.51	0.1782
77	30	80	633334	3500.01	DFT-s-OFDM QPSK	1@1	25.27	23.27	0.2123
77	30	80	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	24.52	22.52	0.1786
77	30	80	634000	3510	DFT-s-OFDM QPSK	1@1	25.33	23.33	0.2153
77	30	80	634000	3510	DFT-s-OFDM 16 QAM	1@1	24.5	22.5	0.1778

77	30	90	633000	3495	DFT-s-OFDM QPSK	1@1	25.25	23.25	0.2113
77	30	90	633000	3495	DFT-s-OFDM 16 QAM	1@1	24.38	22.38	0.1730
77	30	90	633334	3500.01	DFT-s-OFDM QPSK	1@1	25.23	23.23	0.2104
77	30	90	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	24.38	22.38	0.1730
77	30	90	633666	3504.99	DFT-s-OFDM QPSK	1@1	25.32	23.32	0.2148
77	30	90	633666	3504.99	DFT-s-OFDM 16 QAM	1@1	24.34	22.34	0.1714
77	30	100	633334	3500.01	DFT-s-OFDM PI/2 BPSK	135@67	25.26	23.26	0.2118
77	30	100	633334	3500.01	DFT-s-OFDM PI/2 BPSK	1@1	25.25	23.25	0.2113
77	30	100	633334	3500.01	DFT-s-OFDM PI/2 BPSK	1@271	25.08	23.08	0.2032
77	30	100	633334	3500.01	DFT-s-OFDM QPSK	135@67	25.26	23.26	0.2118
77	30	100	633334	3500.01	DFT-s-OFDM QPSK	1@1	25.29	23.29	0.2133
77	30	100	633334	3500.01	DFT-s-OFDM QPSK	1@271	25.11	23.11	0.2046
77	30	100	633334	3500.01	DFT-s-OFDM 16 QAM	135@67	24.38	22.38	0.1730
77	30	100	633334	3500.01	DFT-s-OFDM 16 QAM	1@1	24.54	22.54	0.1795
77	30	100	633334	3500.01	DFT-s-OFDM 16 QAM	1@271	24.32	22.32	0.1706
77	30	100	633334	3500.01	DFT-s-OFDM 64 QAM	135@67	22.86	20.86	0.1219
77	30	100	633334	3500.01	DFT-s-OFDM 64 QAM	1@1	23	21	0.1259
77	30	100	633334	3500.01	DFT-s-OFDM 64 QAM	1@271	22.88	20.88	0.1225
77	30	100	633334	3500.01	DFT-s-OFDM 256 QAM	135@67	20.83	18.83	0.0764
77	30	100	633334	3500.01	DFT-s-OFDM 256 QAM	1@1	20.64	18.64	0.0731
77	30	100	633334	3500.01	DFT-s-OFDM 256 QAM	1@271	20.5	18.5	0.0708
77	30	100	633334	3500.01	CP-OFDM QPSK	137@68	23.85	21.85	0.1531
77	30	100	633334	3500.01	CP-OFDM QPSK	1@1	23.95	21.95	0.1567
77	30	100	633334	3500.01	CP-OFDM QPSK	1@271	23.72	21.72	0.1486

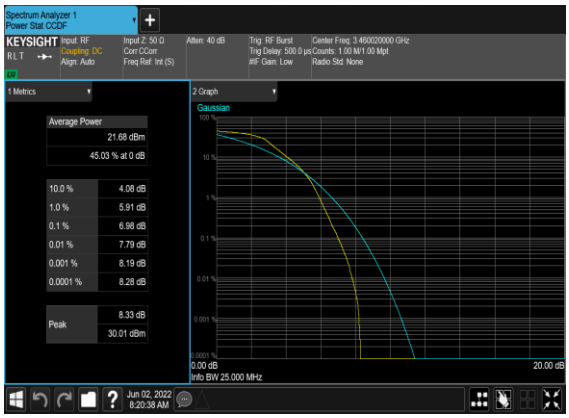
Frequency Stability

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Deviation (ppm)	Verdict	Environment
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.00337	**PASS**	NV
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.00691	**PASS**	LV
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.00372	**PASS**	HV
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.00591	**PASS**	-30℃
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.00518	**PASS**	-20℃
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.00371	**PASS**	-10℃
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.00305	**PASS**	0℃
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.00303	**PASS**	10℃
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.00592	**PASS**	20℃
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.00374	**PASS**	30℃
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.00028	**PASS**	40℃
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	0.00443	**PASS**	50℃

Peak to Average Radio

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result (dB)	Limit (dB)	Verdict
77	30	20	630668	3460.02	DFT-s-OFDM PI/2 BPSK	50@0	6.98	13	**PASS**
77	30	20	630668	3460.02	DFT-s-OFDM PI/2 BPSK	1@0	7.47	13	**PASS**
77	30	20	630668	3460.02	DFT-s-OFDM QPSK	50@0	8.15	13	**PASS**
77	30	20	630668	3460.02	DFT-s-OFDM QPSK	1@0	9.93	13	**PASS**
77	30	20	633334	3500.01	DFT-s-OFDM PI/2 BPSK	50@0	6.97	13	**PASS**
77	30	20	633334	3500.01	DFT-s-OFDM PI/2 BPSK	1@0	7.44	13	**PASS**
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	8.06	13	**PASS**
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	1@0	8.99	13	**PASS**
77	30	20	636000	3540.0	DFT-s-OFDM PI/2 BPSK	50@0	7.0	13	**PASS**
77	30	20	636000	3540.0	DFT-s-OFDM PI/2 BPSK	1@0	8.22	13	**PASS**
77	30	20	636000	3540.0	DFT-s-OFDM QPSK	50@0	8.03	13	**PASS**
77	30	20	636000	3540.0	DFT-s-OFDM QPSK	1@0	8.94	13	**PASS**

B5_N77(20M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Low_CH



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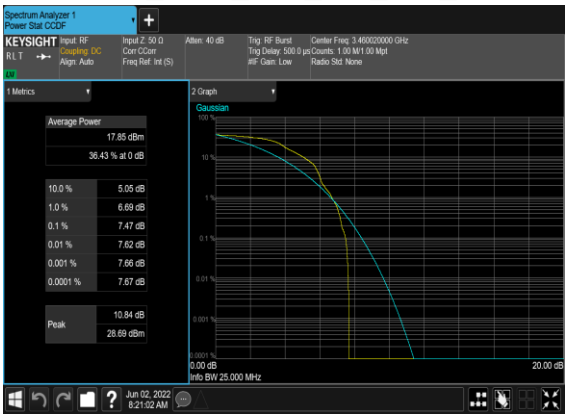
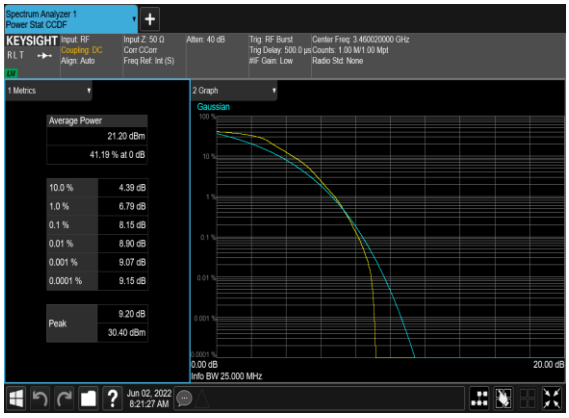
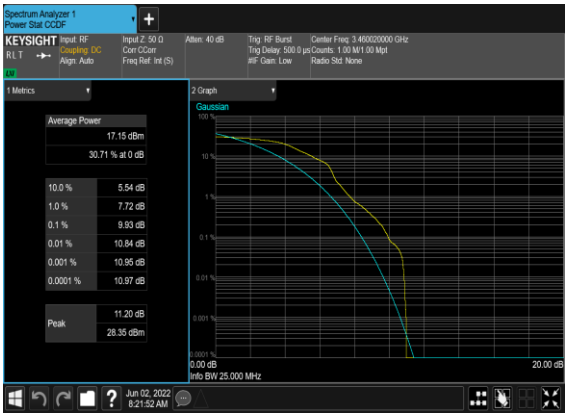


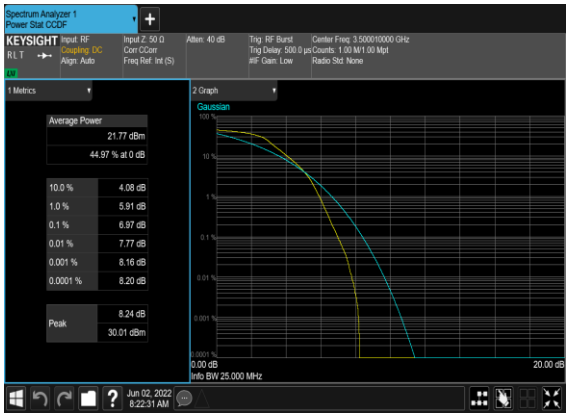
B5_N77(20M)_DFT-s-OFDM_QPSK_Outer_Full_Low_CH



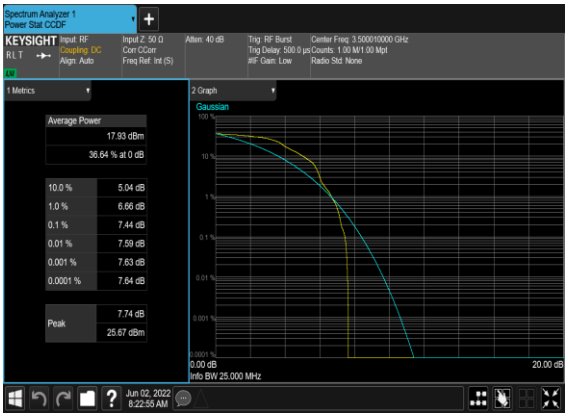
B5_N77(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



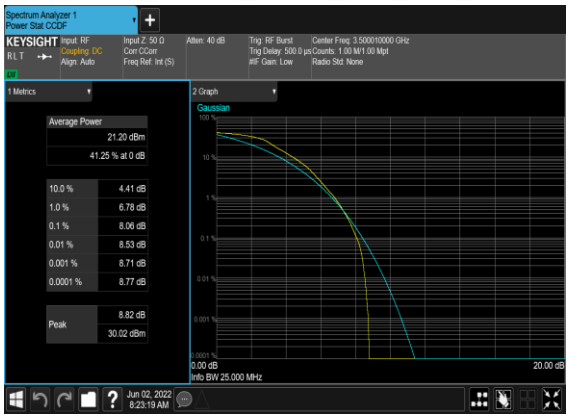
B5_N77(20M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



B5_N77(20M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_Mid_CH

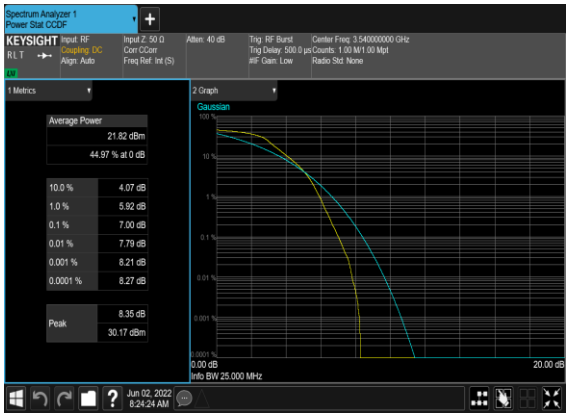


B5_N77(20M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH

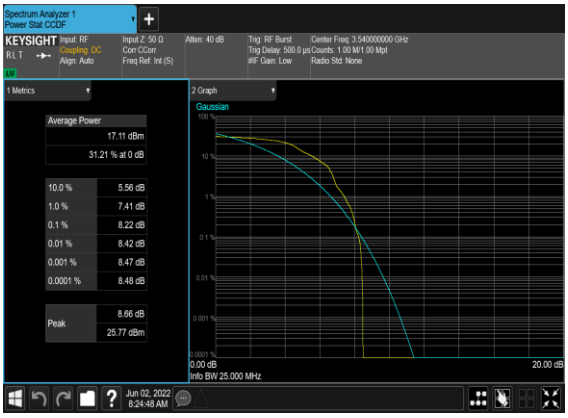


B5_N77(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH

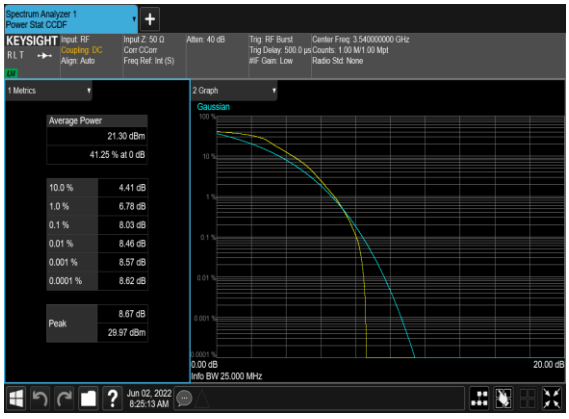
B5_N77(20M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_High_CH



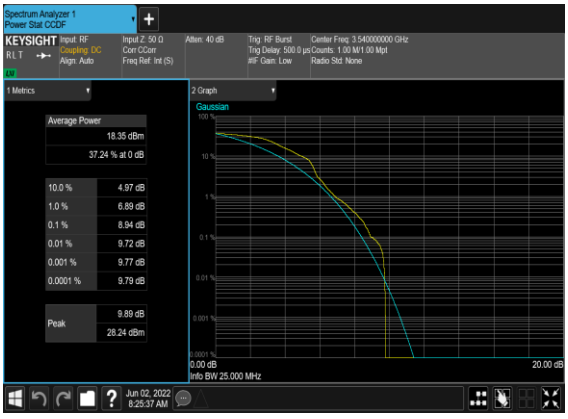
B5_N77(20M)_DFT-s-OFDM_PI_2-BPSK_Edge_1RB_Left_High_CH



B5_N77(20M)_DFT-s-OFDM_QPSK_Outer_Full_High_CH



B5_N77(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



Occupied Bandwidth

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	OBW (MHz)	26dB OBW (MHz)
77	30	20	633334	3500.01	DFT-s-OFDM PI/2 BPSK	50@0	17.763	18.92
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	50@0	17.777	19.37
77	30	20	633334	3500.01	CP-OFDM QPSK	51@0	18.227	19.76
77	30	20	633334	3500.01	CP-OFDM 16 QAM	51@0	18.161	19.34
77	30	20	633334	3500.01	CP-OFDM 64 QAM	51@0	18.202	19.54
77	30	20	633334	3500.01	CP-OFDM 256 QAM	51@0	18.225	19.64
77	30	30	633334	3500.01	DFT-s-OFDM PI/2 BPSK	75@0	26.761	28.45
77	30	30	633334	3500.01	DFT-s-OFDM QPSK	75@0	26.772	28.3
77	30	30	633334	3500.01	CP-OFDM QPSK	78@0	27.871	29.36
77	30	30	633334	3500.01	CP-OFDM 16 QAM	78@0	27.84	29.49
77	30	30	633334	3500.01	CP-OFDM 64 QAM	78@0	27.779	29.51
77	30	30	633334	3500.01	CP-OFDM 256 QAM	78@0	27.819	29.31
77	30	40	633334	3500.01	DFT-s-OFDM PI/2 BPSK	100@0	35.728	37.66
77	30	40	633334	3500.01	DFT-s-OFDM QPSK	100@0	35.721	37.39
77	30	40	633334	3500.01	CP-OFDM QPSK	106@0	37.803	39.85
77	30	40	633334	3500.01	CP-OFDM 16 QAM	106@0	37.764	39.71
77	30	40	633334	3500.01	CP-OFDM 64 QAM	106@0	37.81	39.72
77	30	40	633334	3500.01	CP-OFDM 256 QAM	106@0	37.945	39.69
77	30	50	633334	3500.01	DFT-s-OFDM PI/2 BPSK	128@0	45.712	47.58
77	30	50	633334	3500.01	DFT-s-OFDM QPSK	128@0	45.848	47.63
77	30	50	633334	3500.01	CP-OFDM QPSK	133@0	47.42	49.56
77	30	50	633334	3500.01	CP-OFDM 16 QAM	133@0	47.566	49.16
77	30	50	633334	3500.01	CP-OFDM 64 QAM	133@0	47.394	49.47
77	30	50	633334	3500.01	CP-OFDM 256 QAM	133@0	47.517	49.6

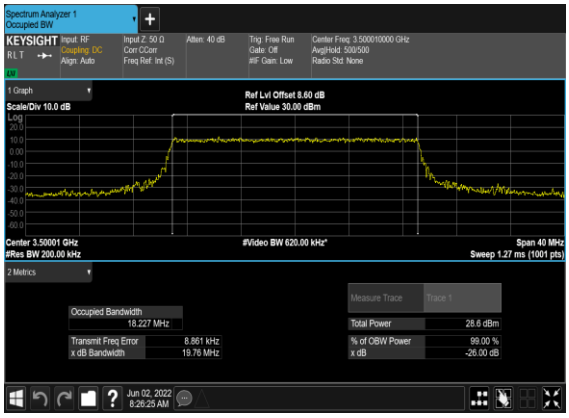
77	30	60	633334	3500.01	DFT-s-OFDM PI/2 BPSK	162@0	57.768	59.93
77	30	60	633334	3500.01	DFT-s-OFDM QPSK	162@0	57.824	60.11
77	30	60	633334	3500.01	CP-OFDM QPSK	162@0	57.785	60.06
77	30	60	633334	3500.01	CP-OFDM 16 QAM	162@0	57.845	59.78
77	30	60	633334	3500.01	CP-OFDM 64 QAM	162@0	57.74	59.8
77	30	60	633334	3500.01	CP-OFDM 256 QAM	162@0	57.773	59.96
77	30	70	633334	3500.01	DFT-s-OFDM PI/2 BPSK	180@0	64.321	66.52
77	30	70	633334	3500.01	DFT-s-OFDM QPSK	180@0	64.338	66.59
77	30	70	633334	3500.01	CP-OFDM QPSK	189@0	67.45	70.03
77	30	70	633334	3500.01	CP-OFDM 16 QAM	189@0	67.417	69.92
77	30	70	633334	3500.01	CP-OFDM 64 QAM	189@0	67.366	69.78
77	30	70	633334	3500.01	CP-OFDM 256 QAM	189@0	67.442	69.95
77	30	80	633334	3500.01	DFT-s-OFDM PI/2 BPSK	216@0	77.098	79.82
77	30	80	633334	3500.01	DFT-s-OFDM QPSK	216@0	77.178	79.85
77	30	80	633334	3500.01	CP-OFDM QPSK	217@0	77.429	80.34
77	30	80	633334	3500.01	CP-OFDM 16 QAM	217@0	77.473	80.1
77	30	80	633334	3500.01	CP-OFDM 64 QAM	217@0	77.638	80.19
77	30	80	633334	3500.01	CP-OFDM 256 QAM	217@0	77.438	80.1
77	30	90	633334	3500.01	DFT-s-OFDM PI/2 BPSK	240@0	85.69	88.48
77	30	90	633334	3500.01	DFT-s-OFDM QPSK	240@0	85.677	88.56
77	30	90	633334	3500.01	CP-OFDM QPSK	245@0	87.465	90.25
77	30	90	633334	3500.01	CP-OFDM 16 QAM	245@0	87.558	90.55
77	30	90	633334	3500.01	CP-OFDM 64 QAM	245@0	87.538	90.27
77	30	90	633334	3500.01	CP-OFDM 256 QAM	245@0	87.466	90.39
77	30	100	633334	3500.01	DFT-s-OFDM PI/2 BPSK	270@0	96.326	99.5
77	30	100	633334	3500.01	DFT-s-OFDM	270@0	96.432	99.54

					QPSK			
77	30	100	633334	3500.01	CP-OFDM QPSK	273@0	97.496	100.7
77	30	100	633334	3500.01	CP-OFDM 16 QAM	273@0	97.474	100.5
77	30	100	633334	3500.01	CP-OFDM 64 QAM	273@0	97.487	100.7
77	30	100	633334	3500.01	CP-OFDM 256 QAM	273@0	97.428	100.6

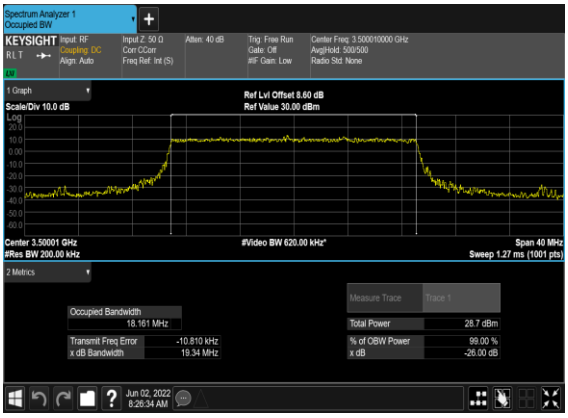
B5_N77(20M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH

B5_N77(20M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH

B5_N77(20M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



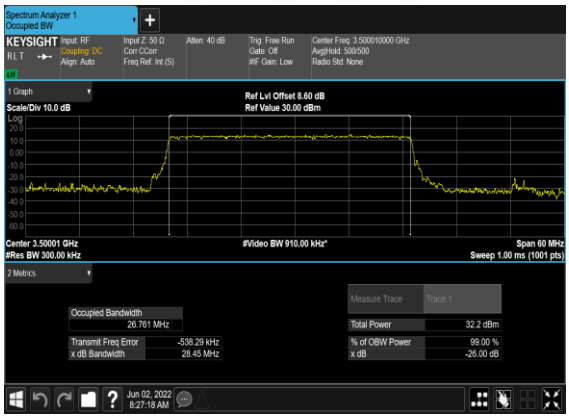
B5_N77(20M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



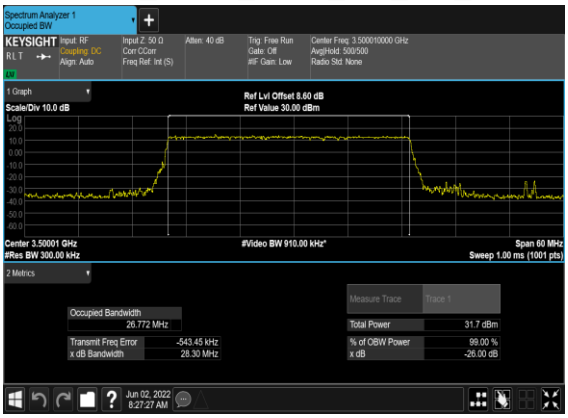
B5_N77(20M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH

B5_N77(20M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH

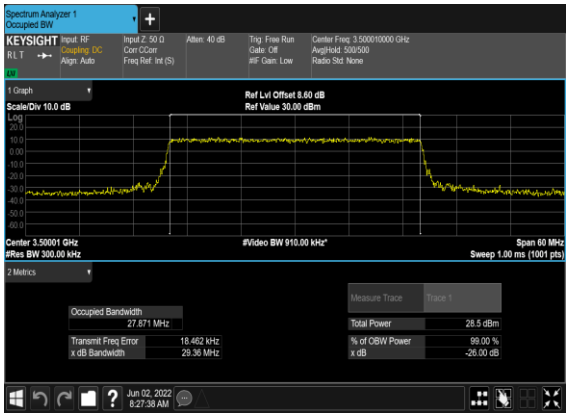
B5_N77(30M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



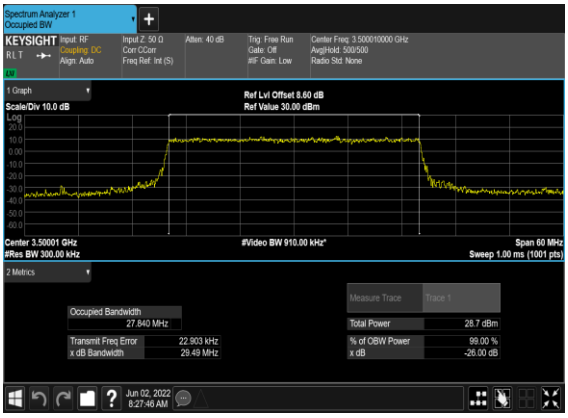
B5_N77(30M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



B5_N77(30M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



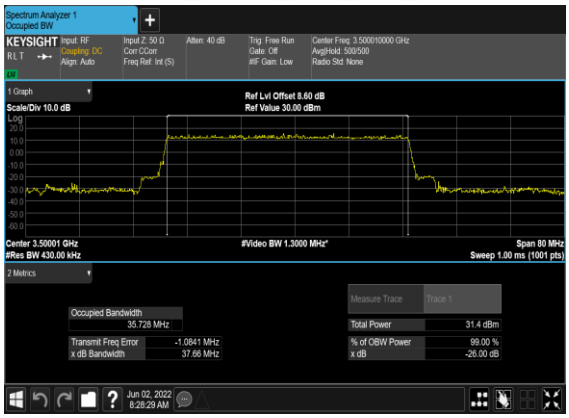
B5_N77(30M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



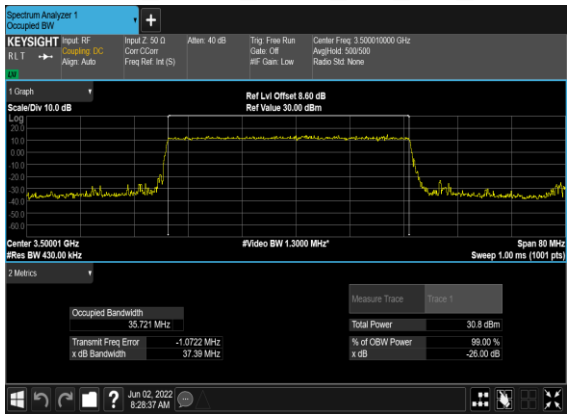
B5_N77(30M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH

B5_N77(30M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH

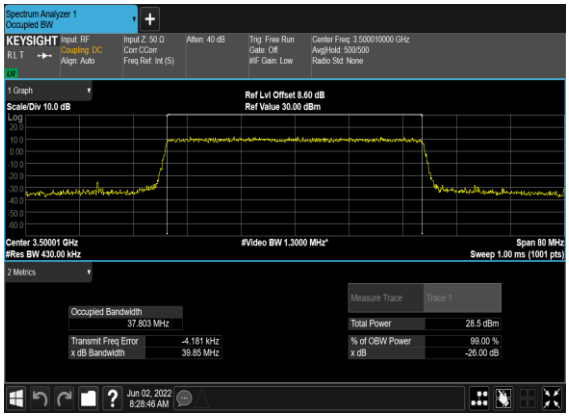
B5_N77(40M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



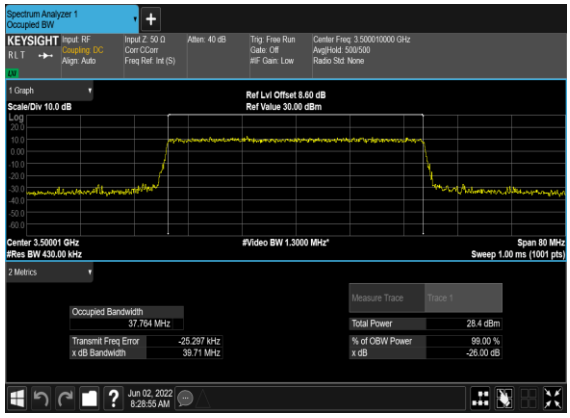
B5_N77(40M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



B5_N77(40M)_CP-OFDM_QPSK_Outer_Full_Mid_CH

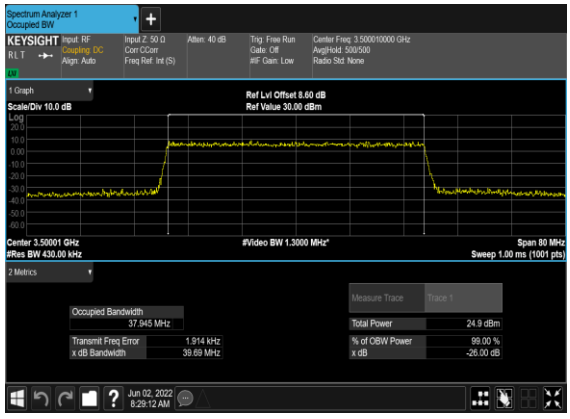


B5_N77(40M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH

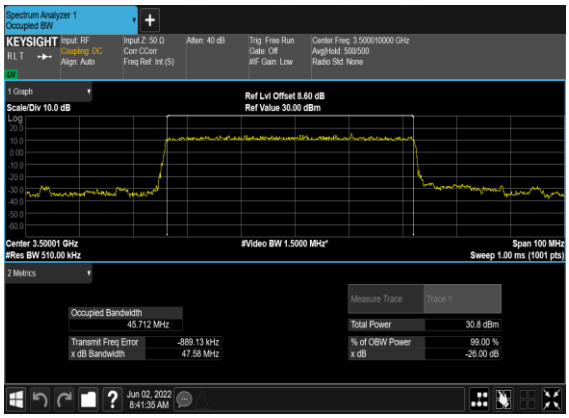


B5_N77(40M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH

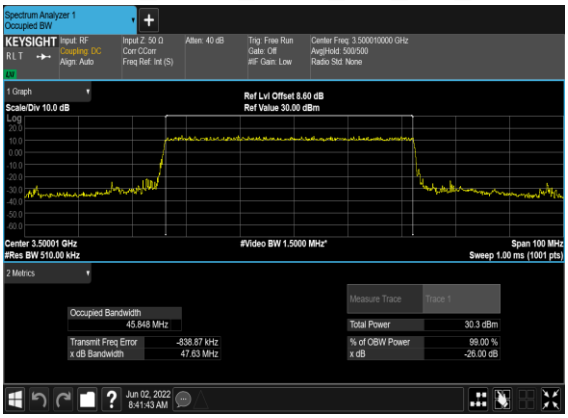
B5_N77(40M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



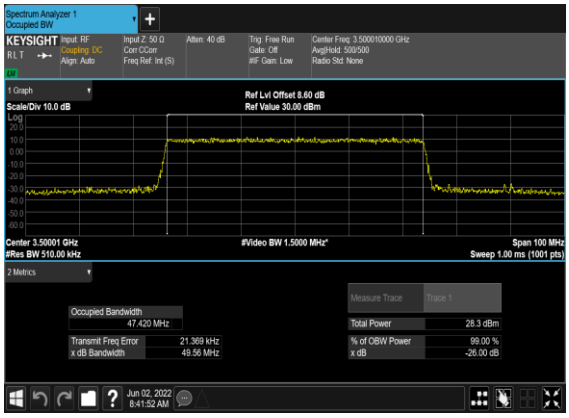
B5_N77(50M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



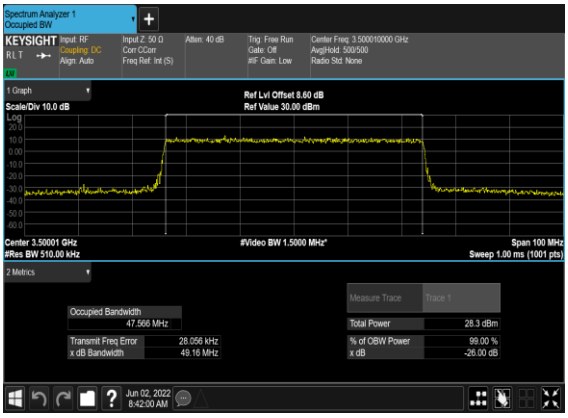
B5_N77(50M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



B5_N77(50M)_CP-OFDM_QPSK_Outer_Full_Mid_CH

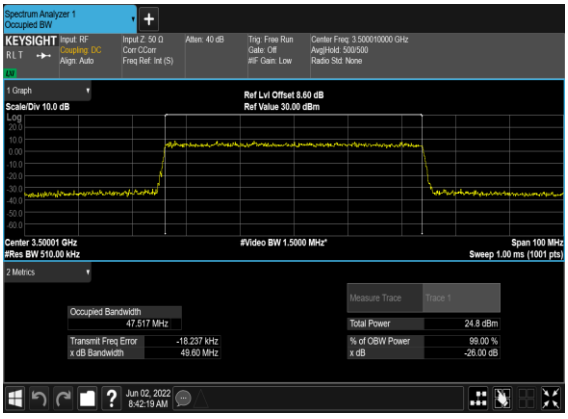


B5_N77(50M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH

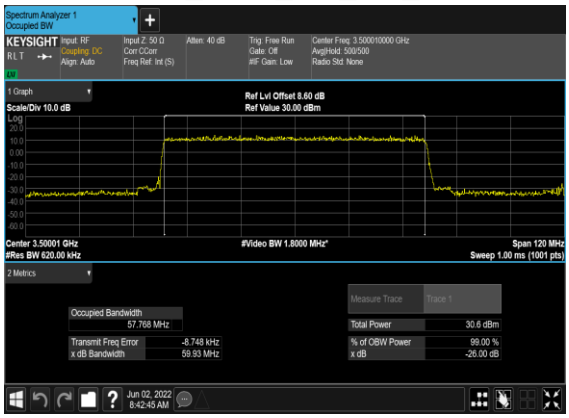


B5_N77(50M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH

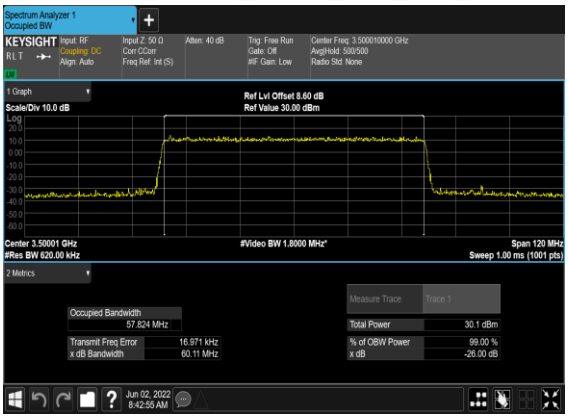
B5_N77(50M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



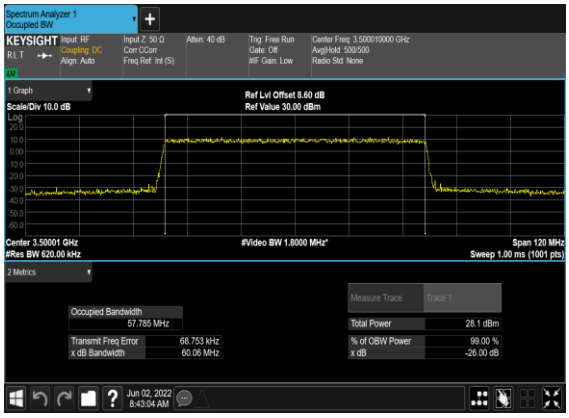
B5_N77(60M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



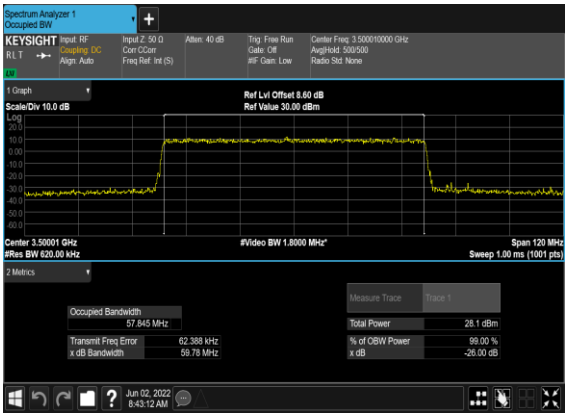
B5_N77(60M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



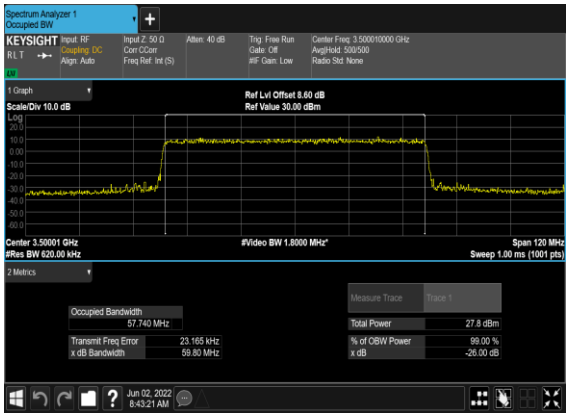
B5_N77(60M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



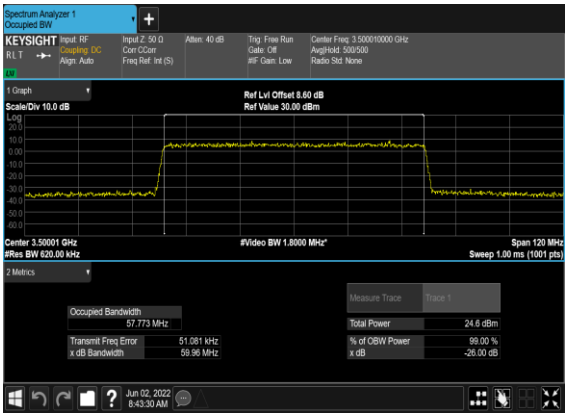
B5_N77(60M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



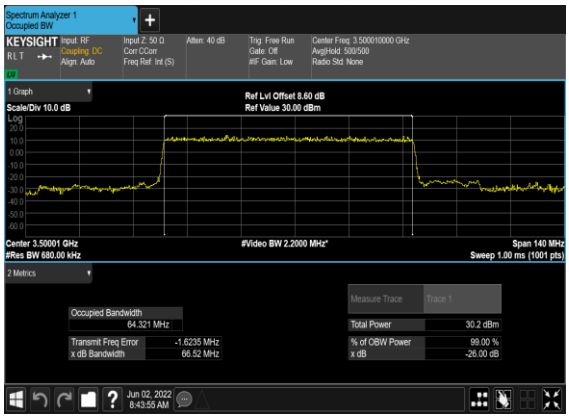
B5_N77(60M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



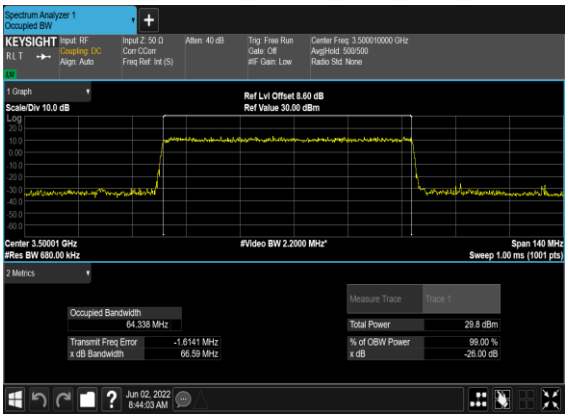
B5_N77(60M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



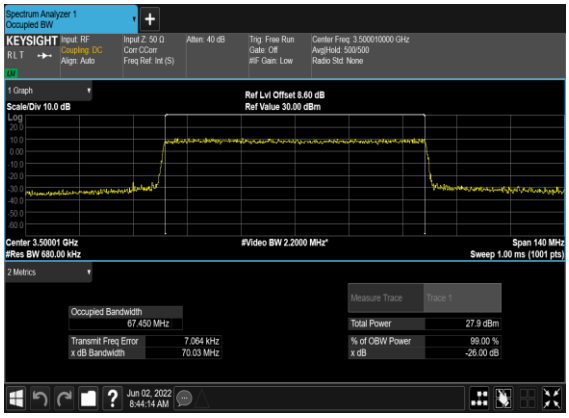
B5_N77(70M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



B5_N77(70M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



B5_N77(70M)_CP-OFDM_QPSK_Outer_Full_Mid_CH

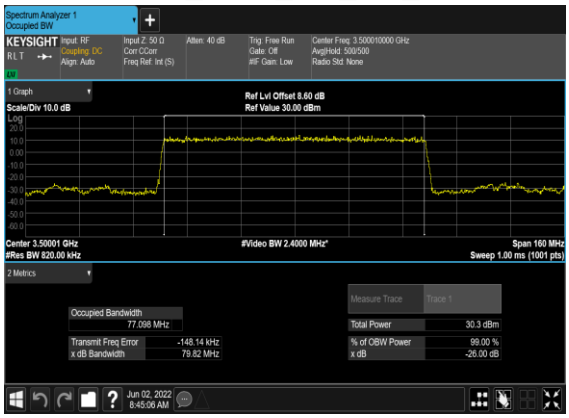


B5_N77(70M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH

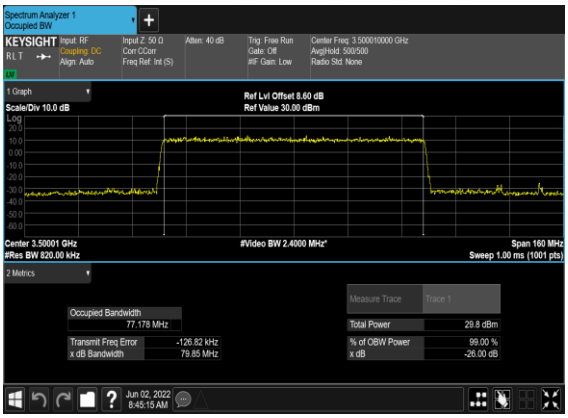
B5_N77(70M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH

B5_N77(70M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH

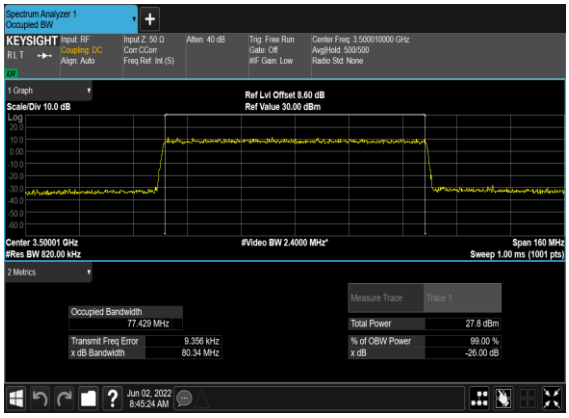
B5_N77(80M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



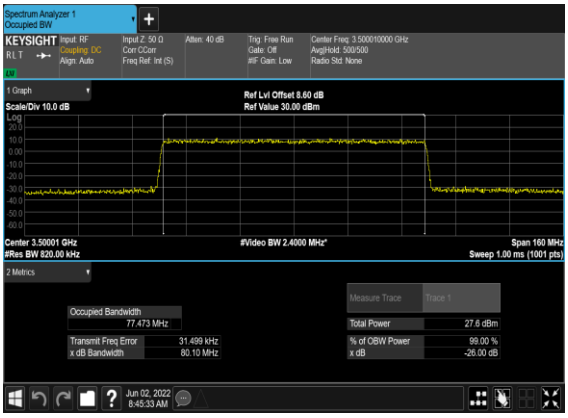
B5_N77(80M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



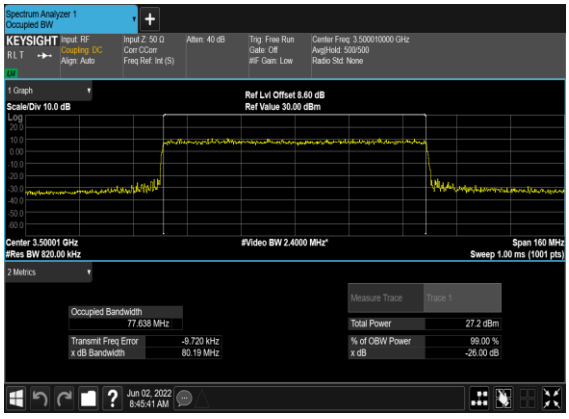
B5_N77(80M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



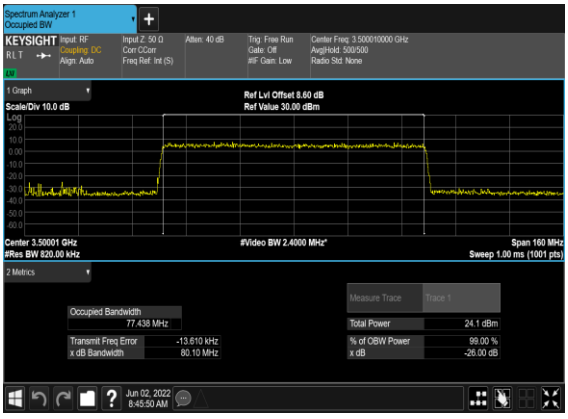
B5_N77(80M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



B5_N77(80M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH

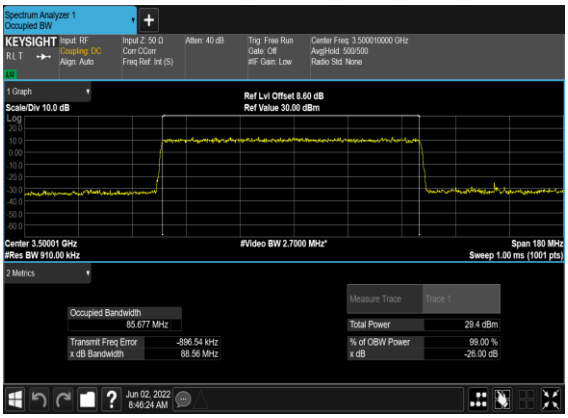


B5_N77(80M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH

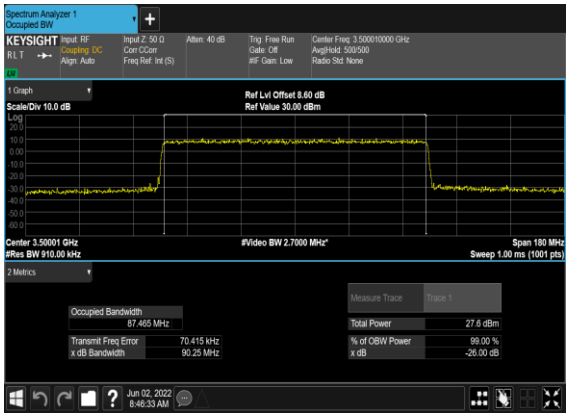


B5_N77(90M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH

B5_N77(90M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH

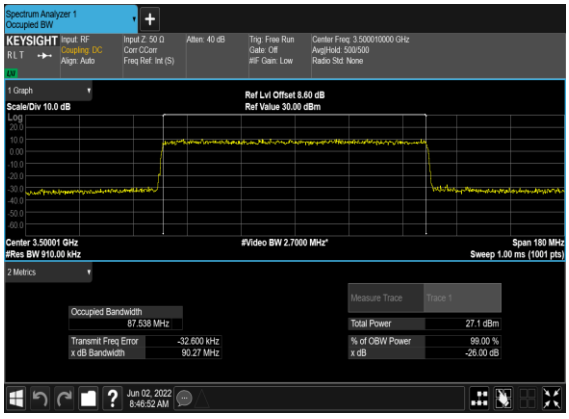


B5_N77(90M)_CP-OFDM_QPSK_Outer_Full_Mid_CH

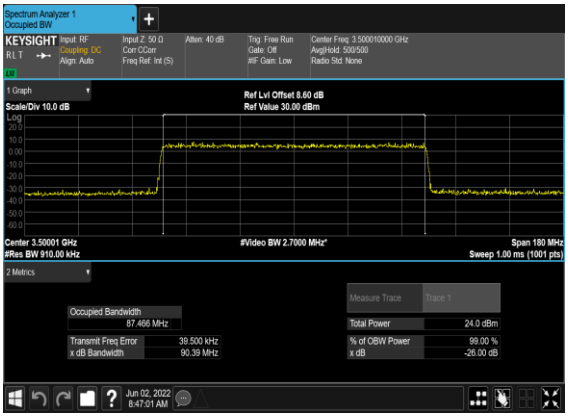


B5_N77(90M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH

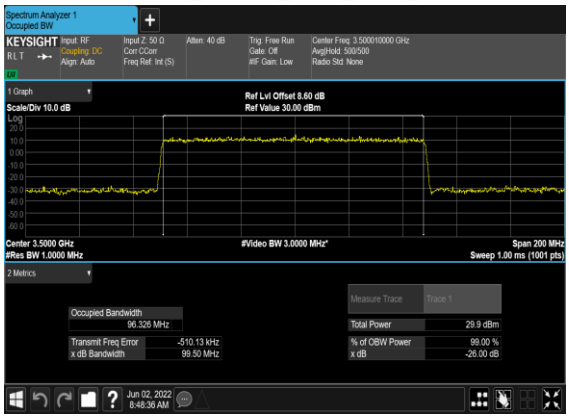
B5_N77(90M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



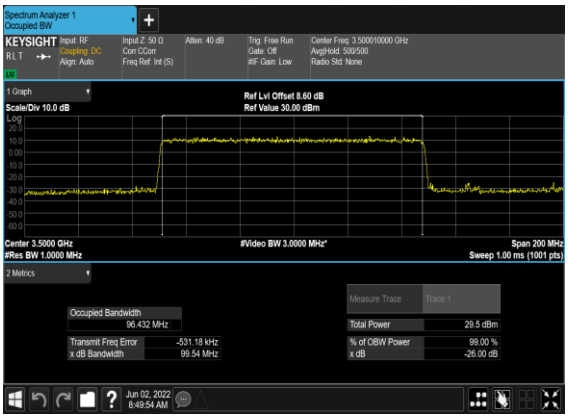
B5_N77(90M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH



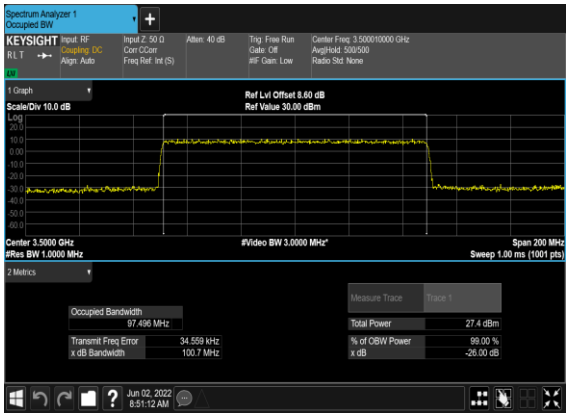
B5_N77(100M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



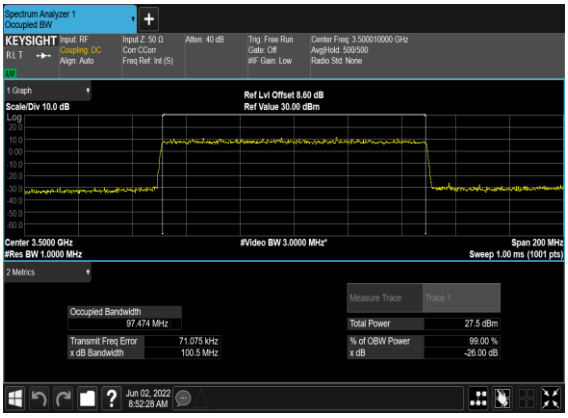
B5_N77(100M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH



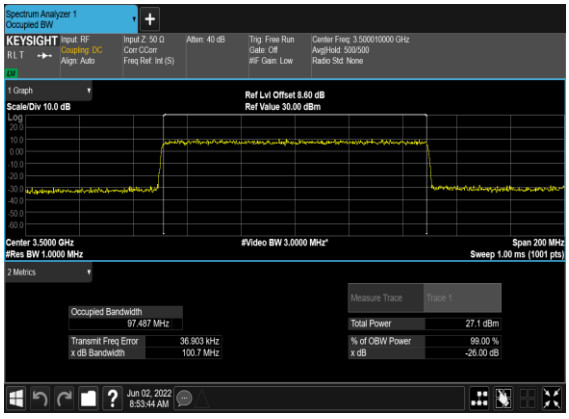
B5_N77(100M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



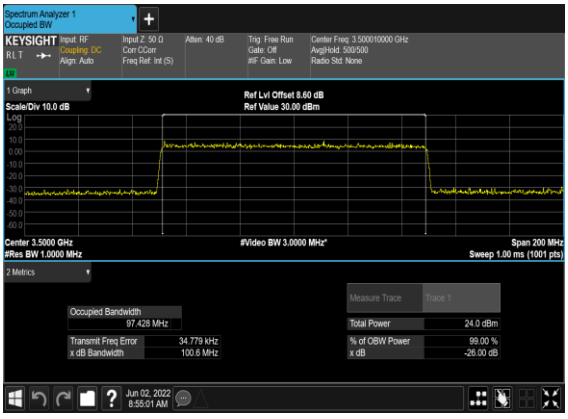
B5_N77(100M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



B5_N77(100M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



B5_N77(100M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH

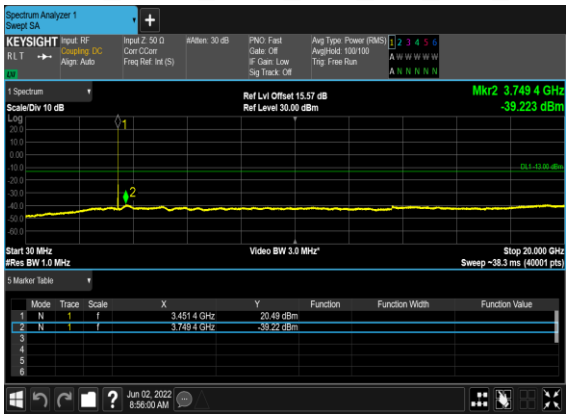


Conducted Spurious Emissions

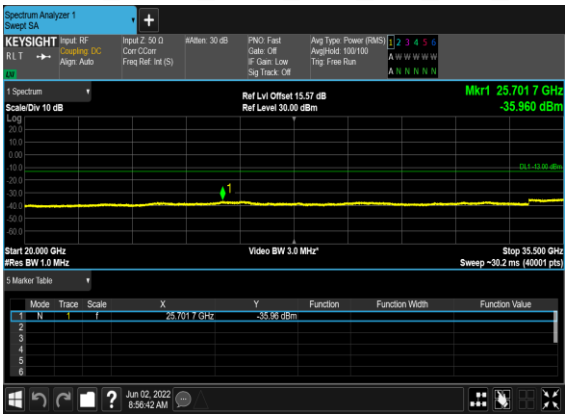
NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result	Verdict
77	30	20	630668	3460.02	DFT-s-OFDM BPSK	1@0	see graph	**---**
77	30	20	630668	3460.02	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	30	20	630668	3460.02	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	30	20	630668	3460.02	DFT-s-OFDM QPSK	1@0	see graph	**---**
77	30	20	630668	3460.02	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	30	20	630668	3460.02	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	30	20	633334	3500.01	DFT-s-OFDM BPSK	1@0	see graph	**---**
77	30	20	633334	3500.01	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	30	20	633334	3500.01	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	1@0	see graph	**---**
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	30	20	633334	3500.01	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	30	20	636000	3540.0	DFT-s-OFDM BPSK	1@0	see graph	**---**
77	30	20	636000	3540.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	30	20	636000	3540.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	30	20	636000	3540.0	DFT-s-OFDM QPSK	1@0	see graph	**---**
77	30	20	636000	3540.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	30	20	636000	3540.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	30	60	632000	3480.0	DFT-s-OFDM BPSK	1@0	see graph	**---**
77	30	60	632000	3480.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	30	60	632000	3480.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	30	60	632000	3480.0	DFT-s-OFDM QPSK	1@0	see graph	**---**

77	30	60	632000	3480.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	30	60	632000	3480.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	30	60	633334	3500.01	DFT-s-OFDM BPSK	1@0	see graph	**---**
77	30	60	633334	3500.01	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	30	60	633334	3500.01	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	30	60	633334	3500.01	DFT-s-OFDM QPSK	1@0	see graph	**---**
77	30	60	633334	3500.01	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	30	60	633334	3500.01	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	30	60	634666	3519.99	DFT-s-OFDM BPSK	1@0	see graph	**---**
77	30	60	634666	3519.99	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	30	60	634666	3519.99	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	30	60	634666	3519.99	DFT-s-OFDM QPSK	1@0	see graph	**---**
77	30	60	634666	3519.99	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	30	60	634666	3519.99	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	30	100	633334	3500.01	DFT-s-OFDM BPSK	1@0	see graph	**---**
77	30	100	633334	3500.01	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	30	100	633334	3500.01	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	30	100	633334	3500.01	DFT-s-OFDM QPSK	1@0	see graph	**---**
77	30	100	633334	3500.01	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	30	100	633334	3500.01	DFT-s-OFDM QPSK	1@0	see graph	**PASS**

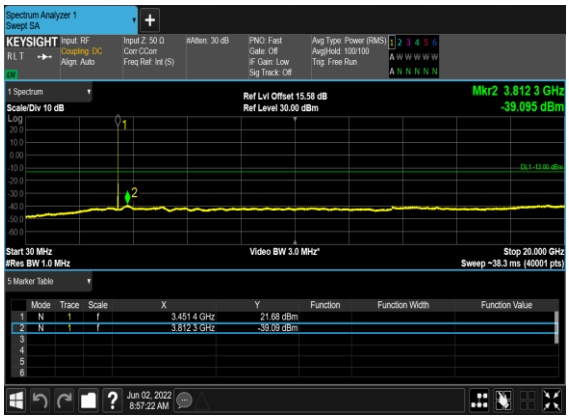
B5_N77(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



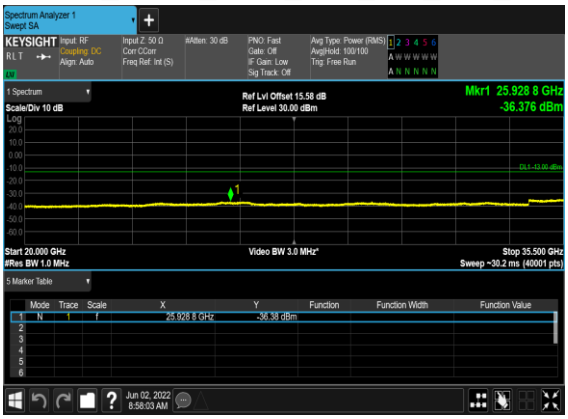
B5_N77(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



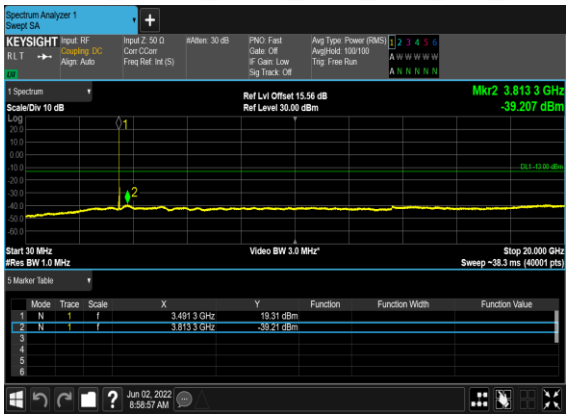
B5_N77(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



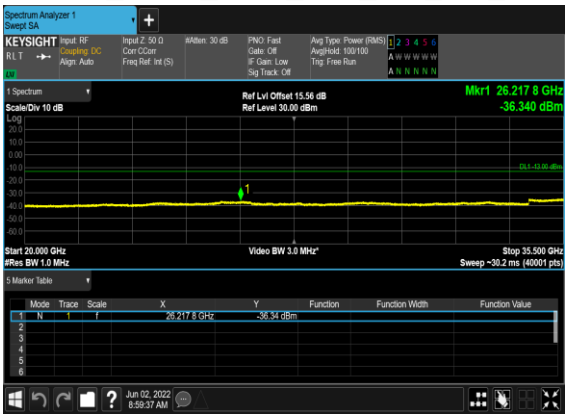
B5_N77(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



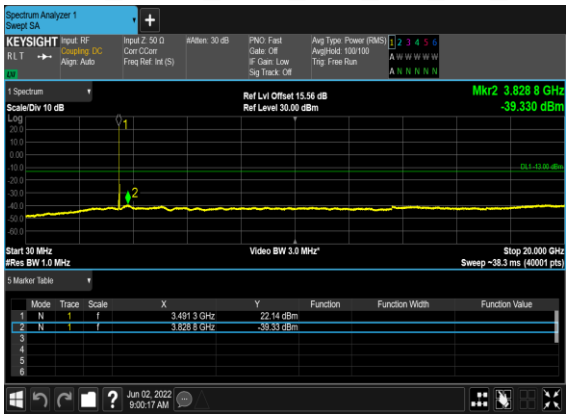
B5_N77(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



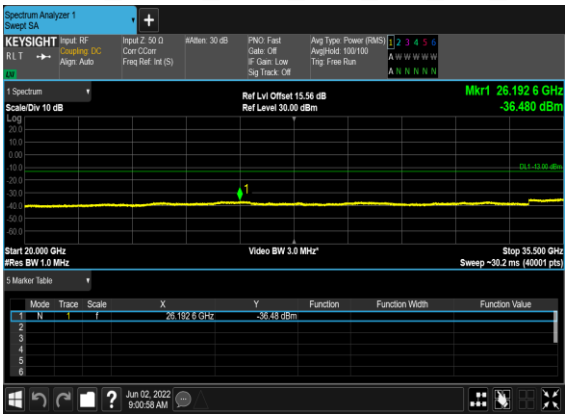
B5_N77(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



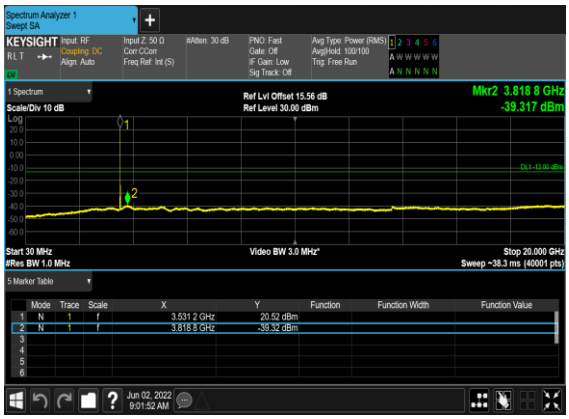
B5_N77(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



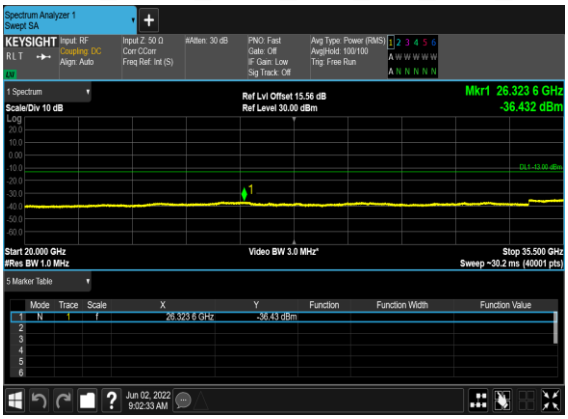
B5_N77(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



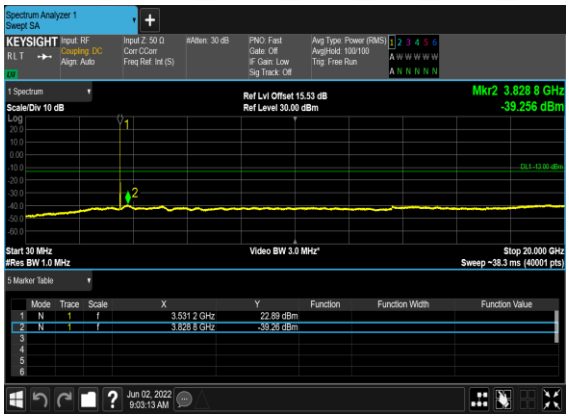
B5_N77(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



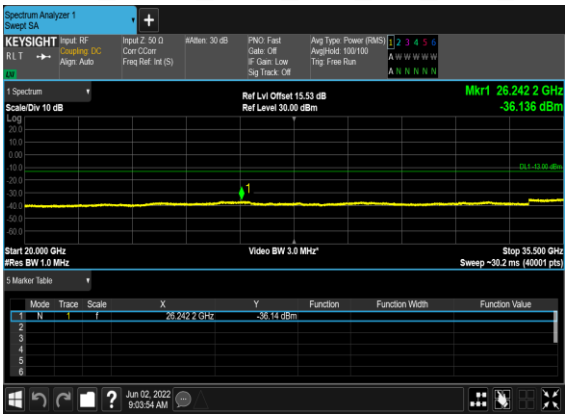
B5_N77(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



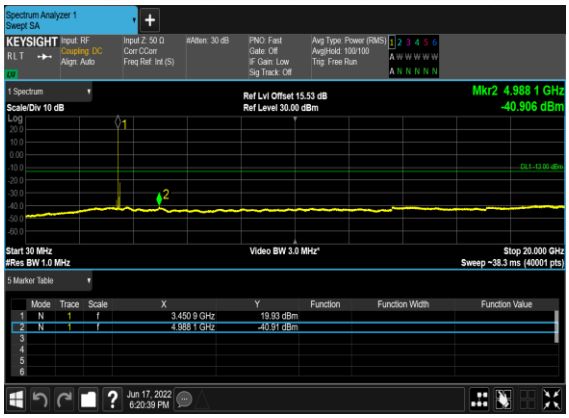
B5_N77(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



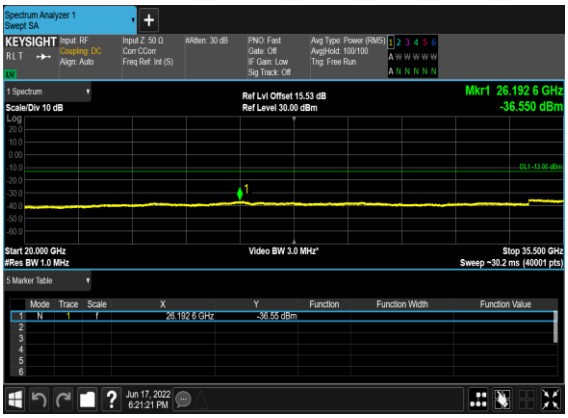
B5_N77(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



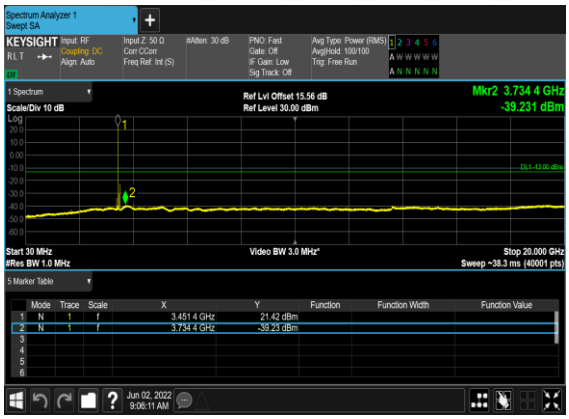
B5_N77(60M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



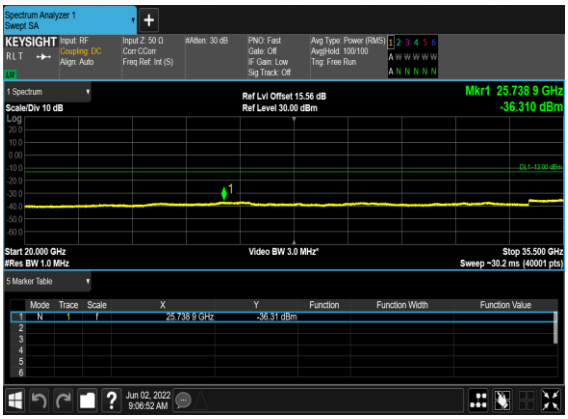
B5_N77(60M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



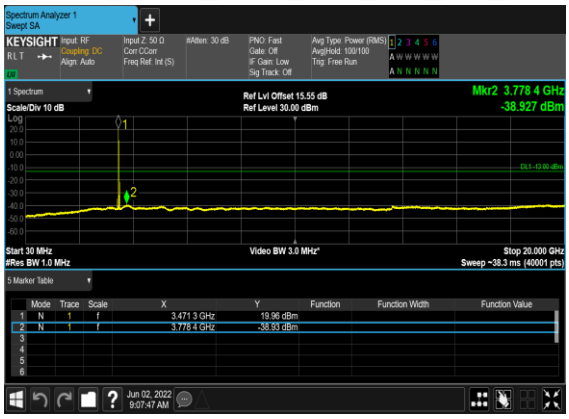
B5_N77(60M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



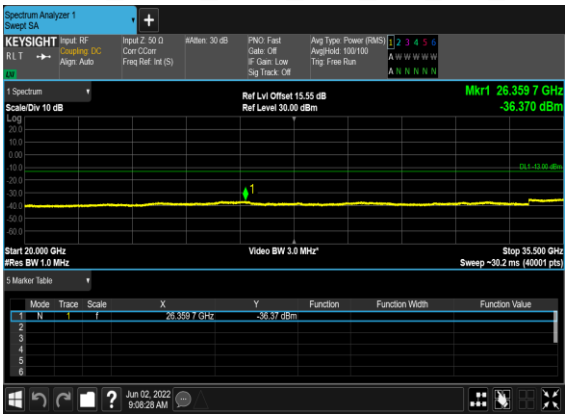
B5_N77(60M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



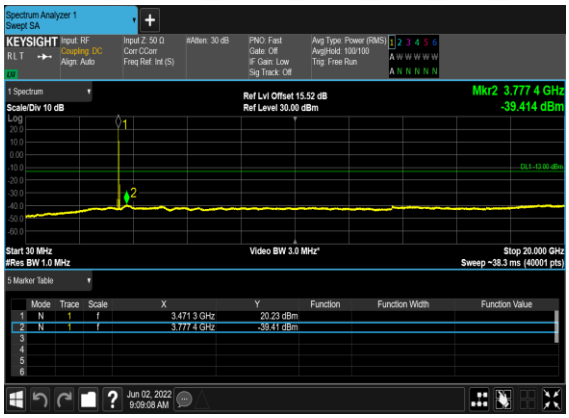
B5_N77(60M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



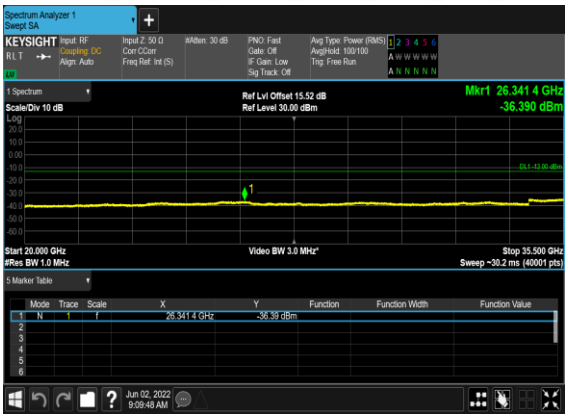
B5_N77(60M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



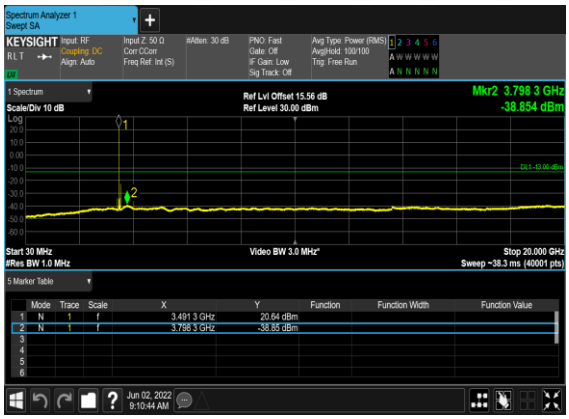
B5_N77(60M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



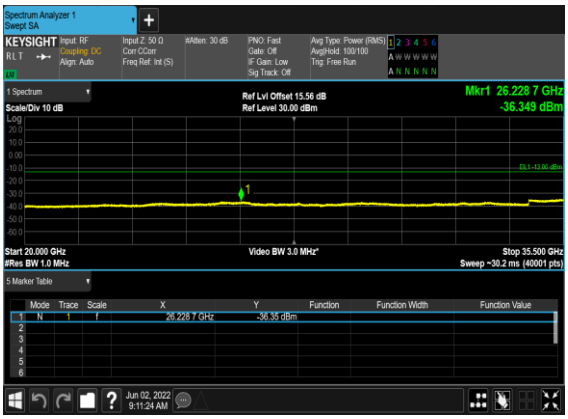
B5_N77(60M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



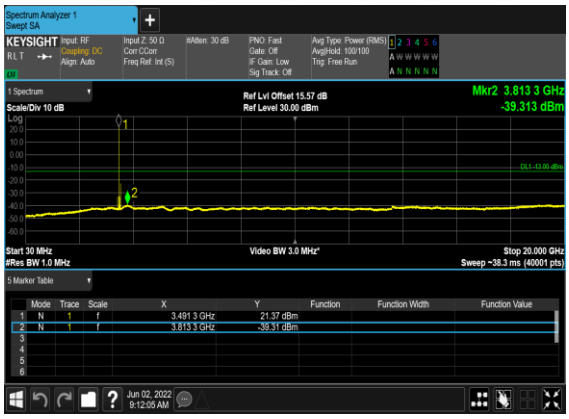
B5_N77(60M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



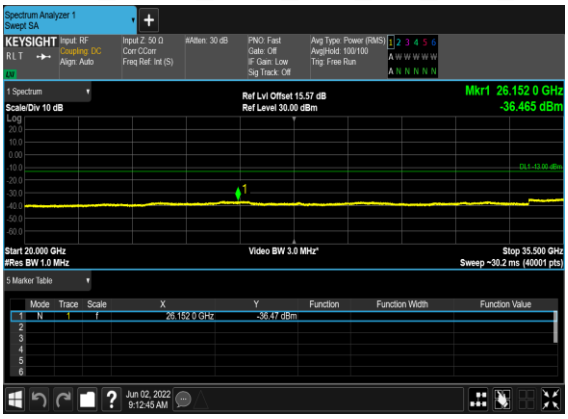
B5_N77(60M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



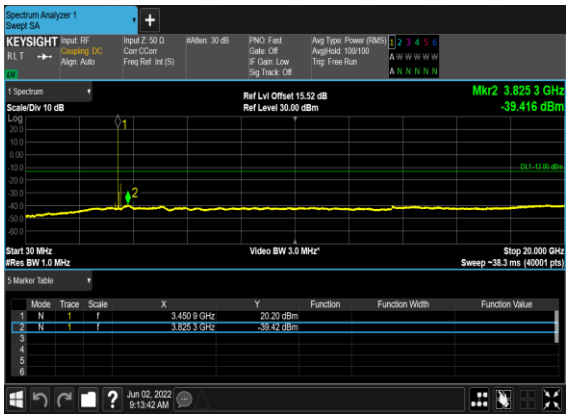
B5_N77(60M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



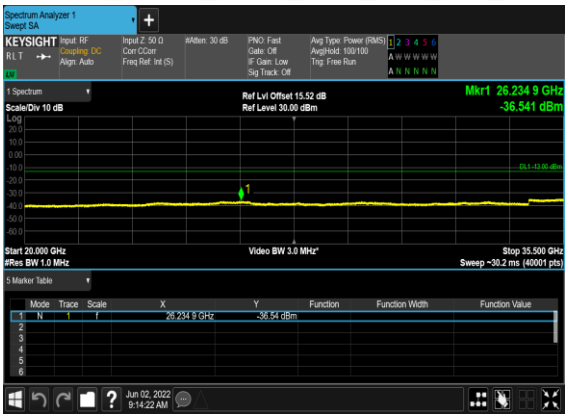
B5_N77(60M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



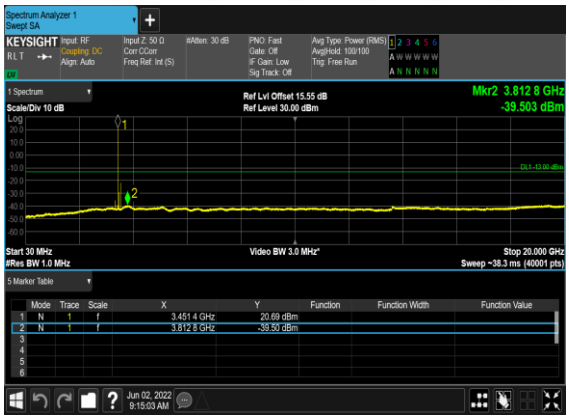
B5_N77(100M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



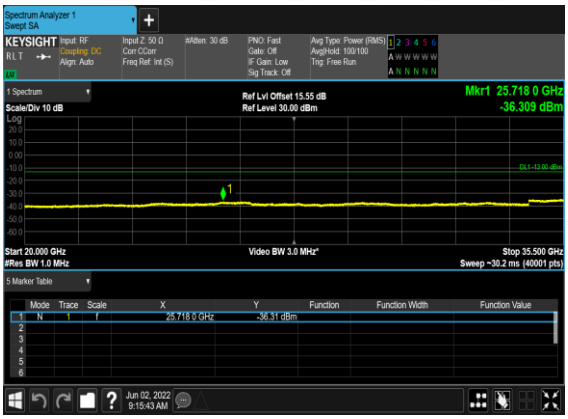
B5_N77(100M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



B5_N77(100M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



B5_N77(100M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



Conducted Band Edge

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result	Verdict
77	30	20	630668	3460.02	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	30	20	630668	3460.02	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	30	20	630668	3460.02	DFT-s-OFDM BPSK	50@0	see graph	**PASS**
77	30	20	630668	3460.02	DFT-s-OFDM QPSK	50@0	see graph	**PASS**
77	30	20	636000	3540.0	DFT-s-OFDM BPSK	1@50	see graph	**PASS**
77	30	20	636000	3540.0	DFT-s-OFDM QPSK	1@50	see graph	**PASS**
77	30	20	636000	3540.0	DFT-s-OFDM BPSK	50@0	see graph	**PASS**
77	30	20	636000	3540.0	DFT-s-OFDM QPSK	50@0	see graph	**PASS**
77	30	60	632000	3480.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	30	60	632000	3480.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	30	60	632000	3480.0	DFT-s-OFDM BPSK	162@0	see graph	**PASS**
77	30	60	632000	3480.0	DFT-s-OFDM QPSK	162@0	see graph	**PASS**
77	30	60	634666	3519.99	DFT-s-OFDM BPSK	1@161	see graph	**PASS**
77	30	60	634666	3519.99	DFT-s-OFDM QPSK	1@161	see graph	**PASS**
77	30	60	634666	3519.99	DFT-s-OFDM BPSK	162@0	see graph	**PASS**
77	30	60	634666	3519.99	DFT-s-OFDM QPSK	162@0	see graph	**PASS**
77	30	100	633334	3500.01	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
77	30	100	633334	3500.01	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
77	30	100	633334	3500.01	DFT-s-OFDM BPSK	1@272	see graph	**PASS**
77	30	100	633334	3500.01	DFT-s-OFDM QPSK	1@272	see graph	**PASS**
77	30	100	633334	3500.01	DFT-s-OFDM BPSK	270@0	see graph	**PASS**
77	30	100	633334	3500.01	DFT-s-OFDM QPSK	270@0	see graph	**PASS**