FCC RF Test Report

APPLICANT	:	**Motorola Mobility LLC**
EQUIPMENT	:	**Mobile Cellular Phone**
BRAND NAME	:	**Motorola**
MODEL NAME	:	**XT2503-4, XT2505-1**
FCC ID	:	**IHDT56AU8**
STANDARD	:	**47 CFR Part 27**
CLASSIFICATION	:	**PCS Licensed Transmitter Held to Ear (PCE)**
TEST DATE(S)	:	**Dec. 29, 2024 ~ Jan. 02, 2025**

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)

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People's Republic of China

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG4D1311-01D	Rev. 01	Initial issue of report	Feb. 07, 2025
FG4D1311-01D	Rev. 02	1. Remove conduted test data of n41. 2. Remove test data of n38. 3. Update the note information on Page 6.	Feb. 10, 2025

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	Reporting Only	PASS	-
	§27.50(c)(10)	Effective Radiated Power (5G NR n71)	ERP < 3 Watt		
3.5	N/A	Peak-to-Average Ratio	<13 dB	PASS	-
3.6	§2.1049	Occupied Bandwidth	Reporting Only	PASS	-
3.7	§2.1051 §27.53(g)	Conducted Band Edge Measurement (5G NR n71)	< 43+10log10(P[Watts])	PASS	- -
3.8	§2.1051 §27.53(g)	Conducted Spurious Emission (5G NR n71)	< 43+10log10(P[Watts])	PASS	-
3.9	§2.1055 §27.54	Frequency Stability Temperature & Voltage	Within Authorized Band	PASS	-
4.4	§2.1053 §27.53(g)	Radiated Spurious Emission (5G NR n71)	< $43+10\log_{10}$(P[Watts])	PASS	Under limit 26.33 dB at 10178.000 MHz
	§2.1053 §27.53(m)(4)	Radiated Spurious Emission (5G NR n41)	< $55+10\log_{10}$(P[Watts])		

Conformity Assessment Condition:
1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the section “Measurement Uncertainty”
Disclaimer:
The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

1 General Description

1.1 Applicant

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

1.2 Manufacturer

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

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT2503-4, XT2505-1
FCC ID	IHDT56AU8
IMEI Code	Conducted/Radiation: 357706750006133/357706750006141
HW Version	DVT2
SW Version	V2VC35.13
EUT Stage	Identical Prototype

Note: There are two types of EUT, model name: XT2503-4 is sample 1 and model name: XT2505-1 is sample 2, the differences could be referred to the XT2503-4, XT2505-1_Operational Description of Product Equality Declaration which is exhibit separately. According to the difference, for RF report, we choose sample 1 to full test

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	5G NR n41 : 2496 MHz ~ 2690 MHz 5G NR n71: 663 MHz ~ 698 MHz
Rx Frequency	5G NR n41 : 2496 MHz ~ 2690 MHz 5G NR n71: 617 MHz ~ 652 MHz
Bandwidth	n41 : 10MHz / 15MHz / 20MHz / 25MHz / 30MHz / 35MHz / 40MHz /45MHz / 50MHz / 60MHz / 70MHz / 80MHz / 90MHz / 100MHz n71 : 5MHz / 10MHz / 15MHz/ 20MHz
SCS	15kHz for FDD Band, 30kHz for TDD Band
Antenna Gain	**<Ant. 0>:** n71: -9.7 dBi n41: -3.9 dBi **<Ant. 1>:** n71: -9.2 dBi n41: -1.3 dBi **<Ant. 2>:** n41: -2.4 dBi

	<Ant. 9>: n41: -6.1 dBi
Type of Modulation	CP-OFDM: QPSK / 16QAM / 64QAM / 256QAM DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM

Remark:

1. The maximum ERP is calculated from max output power and max antenna gain, only the maximum ERP is shown in the report: 5G NR n71 for Ant. 0.
2. 5G NR n41 supports SA and NSA mode. According to the maximum power between SA and NSA mode, NSA covers SA mode, only the RSE was full tested and shown in this report, conducted test results refer to the original report FG4D1311H.
3. 5G NR n71 supports SA mode only.
4. The EN-DC combination could be referred to the product spec.

1.5 Modification of EUT

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

1.6 Maximum ERP and Emission Designator

5G NR n71		PI/2 BPSK / QPSK		16QAM / 64QAM / 256QAM	
BW (MHz)	**Frequency Range (MHz)**	**Maximum ERP(W)**	**Emission Designator (99%OBW)**	**Maximum ERP(W)**	**Emission Designator (99%OBW)**
5	665.5 ~ 695.5	0.0145	4M47G7D	0.0118	4M47W7D
10	668.0 ~ 693.0	0.0144	9M27G7D	0.0116	9M28W7D
15	670.5 ~ 690.5	0.0147	14M1G7D	0.0119	14M1W7D
20	673.0 ~ 688.0	0.0147	18M9G7D	0.0118	18M9W7D

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

1.7 Testing Location

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

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

Test Firm	Sporton International Inc. (ShenZhen)		
Test Site Location	101, 1st Floor, Block B, Building 1, No. 2, Tengfeng 4th Road, Fenghuang Community, Fuyong Street, Baoan District, Shenzhen City, Guangdong Province 518103 People's Republic of China TEL: +86-755-86066985		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	03CH01-SZ	CN1256	421272

1.8 Test Software

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

1.9 Applicable Standards

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

- 47 CFR Part 27
- ANSI C63.26-2015
- FCC KDB 971168 D01 Power Meas License Digital Systems v03r01
- FCC KDB 412172 D01 Determining ERP and EIRP v01r01

Remark:

All test items were verified and recorded according to the standards and without any deviation during the test.

1.10 Specification of Accessory

Accessories Information				
AC Adapter 1(US)	**Brand Name**	Motorola(Chenyang)	**Model Name**	MC-681N
AC Adapter 1(EU)	**Brand Name**	Motorola(Chenyang)	**Model Name**	MC-682N
AC Adapter 1(UK)	**Brand Name**	Motorola(Chenyang)	**Model Name**	MC-683N
AC Adapter 1(AU)	**Brand Name**	Motorola(Chenyang)	**Model Name**	MC-685N
AC Adapter 1(AR)	**Brand Name**	Motorola(Chenyang)	**Model Name**	MC-686N
AC Adapter 1(BR)	**Brand Name**	Motorola(Chenyang)	**Model Name**	MC-687N
AC Adapter 1(CHILE)	**Brand Name**	Motorola(Chenyang)	**Model Name**	MC-689N
AC Adapter 2(US)	**Brand Name**	Motorola(Acbel)	**Model Name**	MC-681N
AC Adapter 2(EU)	**Brand Name**	Motorola(Acbel)	**Model Name**	MC-682N
AC Adapter 2(UK)	**Brand Name**	Motorola(Acbel)	**Model Name**	MC-683N
AC Adapter 2(AU)	**Brand Name**	Motorola(Acbel)	**Model Name**	MC-685N
AC Adapter 2(AR)	**Brand Name**	Motorola(Acbel)	**Model Name**	MC-686N
AC Adapter 2(BR)	**Brand Name**	Motorola(Acbel)	**Model Name**	MC-687N
AC Adapter 2(CHILE)	**Brand Name**	Motorola(Acbel)	**Model Name**	MC-689N
Battery 1	**Brand Name**	Motorola(ATL)	**Model Name**	RM52
Battery 2	**Brand Name**	Motorola(Cosmx)	**Model Name**	RM52
Earphone	**Brand Name**	Motorola(Lyand)	**Model Name**	MI181C
USB Cable 1	**Brand Name**	Motorola(saibao)	**Model Name**	SC18D71644
USB Cable 2	**Brand Name**	Motorola(Luxshare)	**Model Name**	SC18E08104
USB Cable 3	**Brand Name**	Motorola(saibao)	**Model Name**	SC18D86731
USB Cable 4	**Brand Name**	Motorola(Luxshare)	**Model Name**	SC18E08103

2 Test Configuration of Equipment Under Test

2.1 Test Mode

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

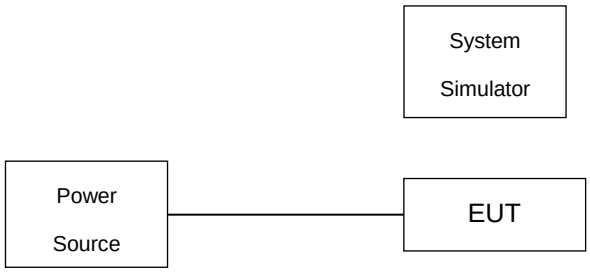
For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z for Adapter mode and Earphone mode. The worst cases (Y plane- Adapter mode) were recorded in this report.

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

	X Plane	Y Plane	Z Plane
Orthogonal Planes of EUT			

Test Items	5G NR	Bandwidth (MHz)															Modulation					RB #		Test Channel		
		5	10	15	20	25	30	35	40	45	50	60	70	80	90	100	PI/2 BPSK	QPSK	16 QAM	64 QAM	256 QAM	1	Full	L	M	H
Max. Output Power	n71	v	v	v	v	-	-	-	-	-	-	-	-	-	-	-	v	v	v	v	v	v	v	v	v	v
Peak-to-Average Ratio	n71				v	-	-	-	-	-	-	-	-	-	-	-	v	v					v		v	
26dB and 99% Bandwidth	n71	v	v	v	v	-	-	-	-	-	-	-	-	-	-	-		v	v	v	v		v		v	
Conducted Band Edge	n71	v	v		v	-	-	-	-	-	-	-	-	-	-	-	v	v				v	v	v		v
Conducted Spurious Emission	n71	v	v		v	-	-	-	-	-	-	-	-	-	-	-	v	v				v		v	v	v
Frequency Stability	n71				v	-	-	-	-	-	-	-	-	-	-	-		v					v		v	
E.R.P	n71	v	v	v	v	-	-	-	-	-	-	-	-	-	-	-	v	v	v	v	v	v	v	v	v	v
Radiated Spurious Emission	n71	Worst Case																							v	
	n41	Worst Case																							v	
Note	1. The mark "**v** " means that this configuration is chosen for testing 2. The mark "-" means that this bandwidth is not supported. 3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported. 4. Frequency Stability：Normal Voltage = 3.91V ；Low Voltage =3.60V.；High Voltage =4.50V																									

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.

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

2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	DC Power Supply	GW	GPS-3030D	N/A	N/A	Unshielded, 1.8 m
2.	LTE Base Station	Anritsu	MT8821C	N/A	N/A	Unshielded, 1.8 m
3.	NR Base Station	Anritsu	MT8000A	N/A	N/A	Unshielded, 1.8 m

2.4 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss 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 7.5 dB.

Example :

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

= 7.5 (dB)

2.5 Frequency List of Low/Middle/High Channels

5G NR n41 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
100	Channel	509202	518598	528000
	Frequency	2546.01	2592.99	2640
90	Channel	508200	518598	528996
	Frequency	2541	2592.99	2644.98
80	Channel	507204	518598	529998
	Frequency	2536.02	2592.99	2649.99
70	Channel	506202	518598	531000
	Frequency	2531.01	2592.99	2655
60	Channel	505200	518598	531996
	Frequency	2526	2592.99	2659.98
50	Channel	504204	518598	532998
	Frequency	2521.02	2592.99	2664.99
45	Channel	503700	518598	533496
	Frequency	2518.5	2592.99	2667.48
40	Channel	503202	518598	534000
	Frequency	2516.01	2592.99	2670
35	Channel	502704	518598	534498
	Frequency	2513.52	2592.99	2672.49
30	Channel	502200	518598	534996

	Frequency	2511	2592.99	2674.98
25	Channel	501702	518598	535500
	Frequency	2508.51	2592.99	2677.5
20	Channel	501204	518598	535998
	Frequency	2506.02	2592.99	2679.99
15	Channel	500700	518598	536496
	Frequency	2503.5	2592.99	2682.48
10	Channel	500202	518598	537000
	Frequency	2501.01	2592.99	2685

5G NR n71 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
20	Channel	134600	136100	137600
	Frequency	673	680.5	688
15	Channel	134100	136100	138100
	Frequency	670.5	680.5	690.5
10	Channel	133600	136100	138600
	Frequency	668	680.5	693
5	Channel	133100	136100	139100
	Frequency	665.5	680.5	695.5

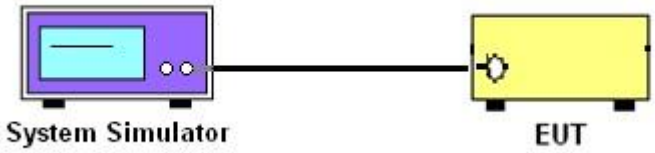
3 Conducted Test Items

3.1 Measuring Instruments

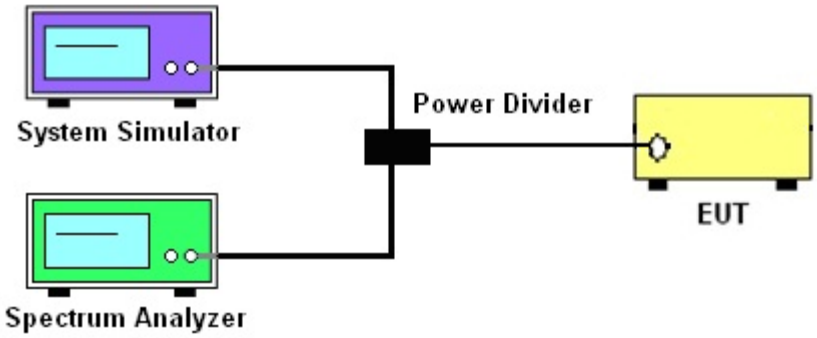
See list of measuring instruments of this test report.

3.2 Test Setup

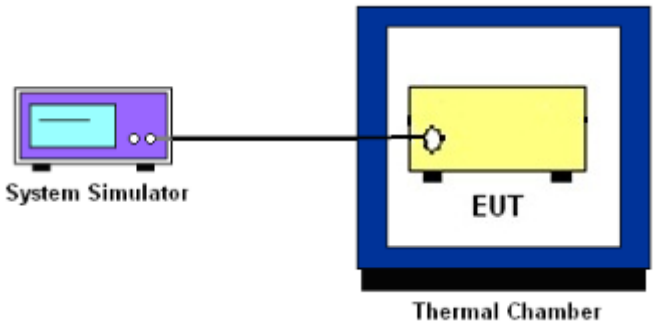
3.2.1 Conducted Output Power



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



3.2.3 Frequency Stability



3.3 Test Result of Conducted Test

Please refer to Appendix A.

3.4 Conducted Output Power and ERP

3.4.1 Description of the Conducted Output Power Measurement and ERP Measurement

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

The ERP of mobile transmitters must not exceed 3 Watts for 5G NR n71.

According to KDB 412172 D01 Power Approach,

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

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

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

3.4.2 Test Procedures

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

3.5 Peak-to-Average Ratio

3.5.1 Description of the PAR Measurement

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

3.5.2 Test Procedures

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

3.6 Occupied Bandwidth

3.6.1 Description of Occupied Bandwidth Measurement

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

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

3.6.2 Test Procedures

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

3.7 Conducted Band Edge

3.7.1 Description of Conducted Band Edge Measurement

27.53 (g)

For operations in the 600MHz band and 698 -746 MHz band, the FCC limit is 43 + 10log10(P[Watts]) dB below the transmitter power P(Watts) in a 100 kHz bandwidth. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

3.7.2 Test Procedures

1. The testing follows ANSI C63.26 section 5.7
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The band edges of low and high channels for the highest RF powers were measured.
4. Set RBW >= 1% EBW in the 1MHz band immediately outside and adjacent to the band edge.
5. Beyond the 1 MHz band from the band edge, RBW=1MHz was used or a narrower RBW was used (generally limited to no less than 1% of the OBW) and the measured power was integrated over the full required measurement bandwidth.
6. Set spectrum analyzer with RMS detector.
7. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
8. Checked that all the results comply with the emission limit line.
   Example:
   The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)
   = P(W)- [43 + 10log(P)] (dB)
   = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB) = -13dBm.
9. When using the integration method, the starting frequency of the integration shall be centered at one-half of the RBW away from the band edge.

3.8 Conducted Spurious Emission

3.8.1 Description of Conducted Spurious Emission Measurement

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

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

3.8.2 Test Procedures

1. The testing follows ANSI C63.26 section 5.7
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
4. The middle channel for the highest RF power within the transmitting frequency was measured.
5. The conducted spurious emission for the whole frequency range was taken.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz.
7. Set spectrum analyzer with RMS detector.
8. Offset has included the duty factor for 5G NR n41. Duty factor =10 log (1/x), where x is the measured duty cycle
9. Taking the record of maximum spurious emission.
10. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
11. The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)
    = P(W)- [43 + 10log(P)] (dB)
    = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
    = -13dBm.

3.9 Frequency Stability

3.9.1 Description of Frequency Stability Measurement

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block.

3.9.2 Test Procedures for Temperature Variation

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

3.9.3 Test Procedures for Voltage Variation

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

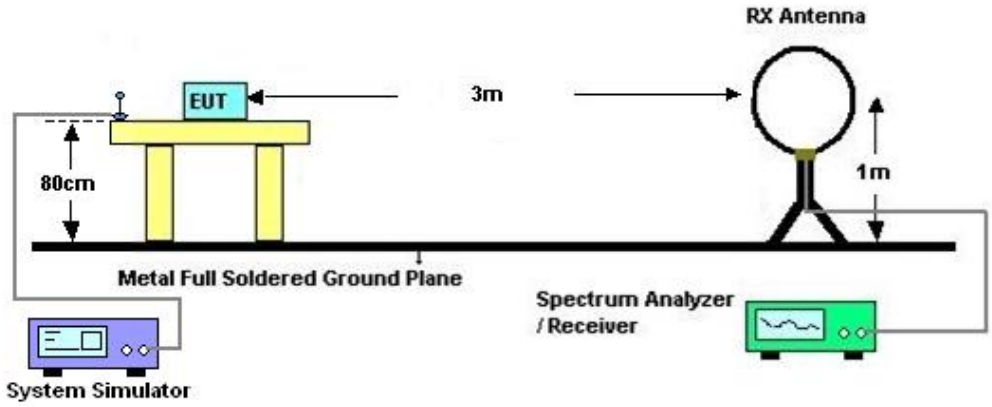
4 Radiated Test Items

4.1 Measuring Instruments

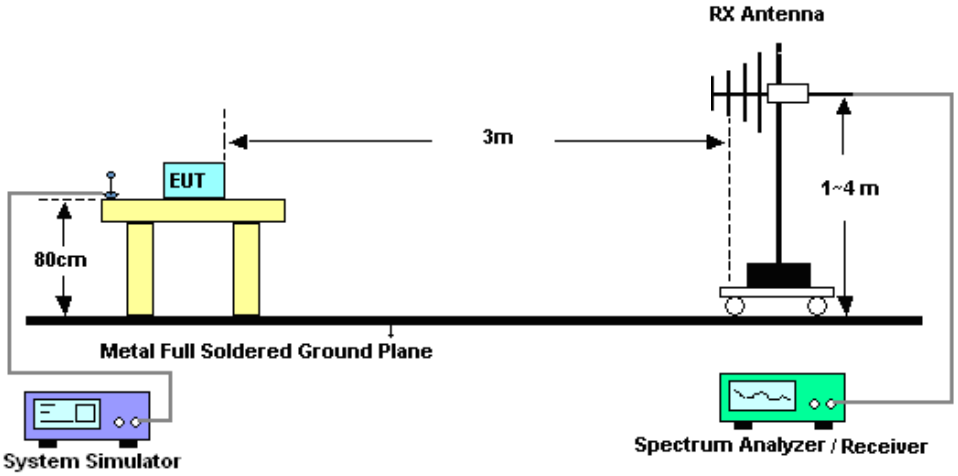
See list of measuring instruments of this test report.

4.2 Test Setup

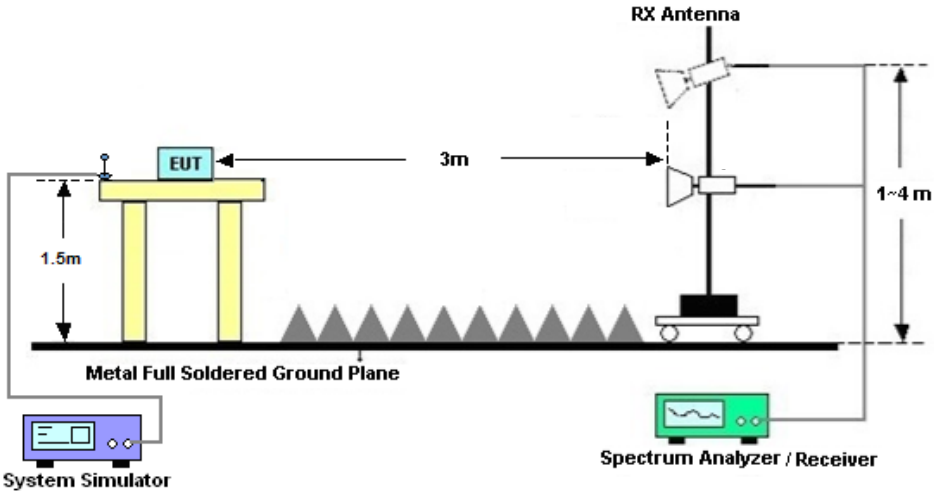
4.2.1 For radiated test below 30MHz



4.2.2 For radiated test from 30MHz to 1GHz



4.2.3 For radiated test above 1GHz



4.3 Test Result of Radiated Test

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

Please refer to Appendix B.

4.4 Radiated Spurious Emission

4.4.1 Description of Radiated Spurious Emission

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

For 5G NR n41

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 55 + 10 log (P) dB.

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

4.4.2 Test Procedures

1. The testing follows ANSI C63.26 Section 5.5
2. The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and 1.5 meter height for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
5. The height of the receiving antenna is varied between 1m to 4m to search the maximum spurious emission for both horizontal and vertical polarizations.
6. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power.
7. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
8. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
9. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
10. EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
11. ERP (dBm) = EIRP - 2.15
12. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
    The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)
    = P(W)- [43 + 10log(P)] (dB)
    = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
    = -13dBm.
13. For 5G NR n41:
    The limit line is derived from 55 + 10log(P)dB below the transmitter power P(Watts)The limit line is derived from 55 + 10log(P)dB below the transmitter power P(Watts)

5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101078	10Hz~40GHz	Apr. 09, 2024	Dec. 31, 2024~ Jan. 02, 2024	Apr. 08, 2025	Conducted (TH01-SZ)
DC Power Supply	TTI	PL330P	290070	Max 32V，3A	Oct. 15, 2024	Dec. 31, 2024~ Jan. 02, 2024	Oct. 14, 2025	Conducted (TH01-SZ)
Power Divider	TOJOIN	PS-2SM-04 265	60.06.020.007 7	0.4GHz~26.5GHz	Dec. 24, 2024	Dec. 31, 2024~ Jan. 02, 2024	Dec. 23, 2025	Conducted (TH01-SZ)
Thermal Chamber	Ten Billion Hongzhangroup	LP-150U	H2014081803	-40~+150°C	Jul. 03, 2024	Dec. 31, 2024~ Jan. 02, 2024	Jul. 02, 2025	Conducted (TH01-SZ)
EMI Test Receiver&SA	Agilent	N9038A	MY52260185	20Hz~26.5GHz	Dec. 26, 2024	Dec. 29, 2024	Dec. 25, 2025	Radiation (03CH01-SZ)
Loop Antenna	R&S	HFH2-Z2E	101141	9kHz~30MHz	Dec. 28, 2024	Dec. 29, 2024	Dec. 27, 2025	Radiation (03CH01-SZ)
HF Amplifier	KEYSIGHT	83017A	MY53270105	0.5GHz~26.5Ghz	Oct. 14, 2024	Dec. 29, 2024	Oct. 13, 2025	Radiation (03CH01-SZ
Bilog Antenna	TeseQ	CBL6112D	35407	30MHz-2GHz	Oct. 24, 2023	Dec. 29, 2024	Oct. 23, 2025	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00119436	1GHz~18GHz	Jul. 04, 2024	Dec. 29, 2024	Jul. 03, 2025	Radiation (03CH01-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Apr. 09, 2024	Dec. 29, 2024	Apr. 08, 2025	Radiation (03CH01-SZ)
LF Amplifier	Burgeon	BPA-530	102209	0.01~3000Mhz	Apr. 09, 2024	Dec. 29, 2024	Apr. 08, 2025	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	AMF-7D-00 101800-30-1 0P-R	1943528	1GHz~18GHz	Oct. 14, 2024	Dec. 29, 2024	Oct. 13, 2025	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	TTA1840-35 -HG	1871923	18GHz~40GHz	Jul. 03, 2024	Dec. 29, 2024	Jul. 02, 2025	Radiation (03CH01-SZ)
AC Power Source	Chroma	61601	616010001985	N/A	Oct. 14, 2024	Dec. 29, 2024	Oct. 13, 2025	Radiation (03CH01-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Dec. 29, 2024	NCR	Radiation (03CH01-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Dec. 29, 2024	NCR	Radiation (03CH01-SZ)

NCR: No Calibration Required

6 Measurement Uncertainty

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

Uncertainty of Conducted Measurement

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

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

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

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

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

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

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

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

Appendix A. Test Results of Conducted Test

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

Software Version: 23.06.1602

FR1 N71(Ant0)

Transmitter Conducted Output Power And ERP, (G_T - L_C)=-9.7dB

NR Band	SCS	BandWidth	Arfcn	Freq (MHz)	Modulation	RB	Conducted Power(dBm)	ERP (dBm)	ERP (W)
71	15	5	133100	665.5	DFT-s-OFDM QPSK	12@6	23.33	11.48	0.0141
71	15	5	133100	665.5	DFT-s-OFDM QPSK	1@1	23.45	11.6	0.0145
71	15	5	133100	665.5	DFT-s-OFDM QPSK	1@23	23.22	11.37	0.0137
71	15	5	133100	665.5	DFT-s-OFDM 16 QAM	12@6	22.29	10.44	0.0111
71	15	5	133100	665.5	DFT-s-OFDM 16 QAM	1@1	22.41	10.56	0.0114
71	15	5	133100	665.5	DFT-s-OFDM 16 QAM	1@23	22.38	10.53	0.0113
71	15	5	136100	680.5	DFT-s-OFDM QPSK	12@6	23.4	11.55	0.0143
71	15	5	136100	680.5	DFT-s-OFDM QPSK	1@1	23.37	11.52	0.0142
71	15	5	136100	680.5	DFT-s-OFDM QPSK	1@23	23.37	11.52	0.0142
71	15	5	136100	680.5	DFT-s-OFDM 16 QAM	12@6	22.36	10.51	0.0112
71	15	5	136100	680.5	DFT-s-OFDM 16 QAM	1@1	22.48	10.63	0.0116
71	15	5	136100	680.5	DFT-s-OFDM 16 QAM	1@23	22.53	10.68	0.0117
71	15	5	139100	695.5	DFT-s-OFDM QPSK	12@6	23.45	11.6	0.0145
71	15	5	139100	695.5	DFT-s-OFDM QPSK	1@1	23.44	11.59	0.0144
71	15	5	139100	695.5	DFT-s-OFDM QPSK	1@23	23.37	11.52	0.0142
71	15	5	139100	695.5	DFT-s-OFDM 16 QAM	12@6	22.41	10.56	0.0114
71	15	5	139100	695.5	DFT-s-OFDM 16 QAM	1@1	22.56	10.71	0.0118
71	15	5	139100	695.5	DFT-s-OFDM 16 QAM	1@23	22.56	10.71	0.0118
71	15	10	133600	668	DFT-s-OFDM QPSK	25@12	23.19	11.34	0.0136
71	15	10	133600	668	DFT-s-OFDM QPSK	1@1	23.35	11.5	0.0141
71	15	10	133600	668	DFT-s-OFDM QPSK	1@50	23.26	11.41	0.0138
71	15	10	133600	668	DFT-s-OFDM 16 QAM	25@12	22.24	10.39	0.0109
71	15	10	133600	668	DFT-s-OFDM 16 QAM	1@1	22.32	10.47	0.0111
71	15	10	133600	668	DFT-s-OFDM 16 QAM	1@50	22.45	10.6	0.0115
71	15	10	136100	680.5	DFT-s-OFDM QPSK	25@12	23.37	11.52	0.0142
71	15	10	136100	680.5	DFT-s-OFDM QPSK	1@1	23.42	11.57	0.0144
71	15	10	136100	680.5	DFT-s-OFDM QPSK	1@50	23.37	11.52	0.0142
71	15	10	136100	680.5	DFT-s-OFDM 16 QAM	25@12	22.39	10.54	0.0113
71	15	10	136100	680.5	DFT-s-OFDM 16 QAM	1@1	22.47	10.62	0.0115
71	15	10	136100	680.5	DFT-s-OFDM 16 QAM	1@50	22.51	10.66	0.0116
71	15	10	138600	693	DFT-s-OFDM QPSK	25@12	23.39	11.54	0.0143
71	15	10	138600	693	DFT-s-OFDM QPSK	1@1	23.35	11.5	0.0141
71	15	10	138600	693	DFT-s-OFDM QPSK	1@50	23.32	11.47	0.0140

NR Band	SCS	BandWidth	Arfcn	Freq (MHz)	Modulation	RB	Conducted Power(dBm)	ERP (dBm)	ERP (W)
71	15	10	138600	693	DFT-s-OFDM 16 QAM	25@12	22.43	10.58	0.0114
71	15	10	138600	693	DFT-s-OFDM 16 QAM	1@1	22.5	10.65	0.0116
71	15	10	138600	693	DFT-s-OFDM 16 QAM	1@50	22.48	10.63	0.0116
71	15	15	134100	670.5	DFT-s-OFDM QPSK	36@18	23.23	11.38	0.0137
71	15	15	134100	670.5	DFT-s-OFDM QPSK	1@1	23.41	11.56	0.0143
71	15	15	134100	670.5	DFT-s-OFDM QPSK	1@77	23.32	11.47	0.0140
71	15	15	134100	670.5	DFT-s-OFDM 16 QAM	36@18	22.21	10.36	0.0109
71	15	15	134100	670.5	DFT-s-OFDM 16 QAM	1@1	22.34	10.49	0.0112
71	15	15	134100	670.5	DFT-s-OFDM 16 QAM	1@77	22.48	10.63	0.0116
71	15	15	136100	680.5	DFT-s-OFDM QPSK	36@18	23.35	11.5	0.0141
71	15	15	136100	680.5	DFT-s-OFDM QPSK	1@1	23.36	11.51	0.0142
71	15	15	136100	680.5	DFT-s-OFDM QPSK	1@77	23.36	11.51	0.0142
71	15	15	136100	680.5	DFT-s-OFDM 16 QAM	36@18	22.34	10.49	0.0112
71	15	15	136100	680.5	DFT-s-OFDM 16 QAM	1@1	22.45	10.6	0.0115
71	15	15	136100	680.5	DFT-s-OFDM 16 QAM	1@77	22.59	10.74	0.0119
71	15	15	138100	690.5	DFT-s-OFDM QPSK	36@18	23.41	11.56	0.0143
71	15	15	138100	690.5	DFT-s-OFDM QPSK	1@1	23.51	11.66	0.0147
71	15	15	138100	690.5	DFT-s-OFDM QPSK	1@77	23.37	11.52	0.0142
71	15	15	138100	690.5	DFT-s-OFDM 16 QAM	36@18	22.4	10.55	0.0114
71	15	15	138100	690.5	DFT-s-OFDM 16 QAM	1@1	22.53	10.68	0.0117
71	15	15	138100	690.5	DFT-s-OFDM 16 QAM	1@77	22.53	10.68	0.0117
71	15	20	134600	673	DFT-s-OFDM PI/2 BPSK	50@25	23.3	11.45	0.0140
71	15	20	134600	673	DFT-s-OFDM PI/2 BPSK	1@1	23.14	11.29	0.0135
71	15	20	134600	673	DFT-s-OFDM PI/2 BPSK	1@104	23.29	11.44	0.0139
71	15	20	134600	673	DFT-s-OFDM QPSK	50@25	23.29	11.44	0.0139
71	15	20	134600	673	DFT-s-OFDM QPSK	1@1	23.13	11.28	0.0134
71	15	20	134600	673	DFT-s-OFDM QPSK	1@104	23.37	11.52	0.0142
71	15	20	134600	673	DFT-s-OFDM 16 QAM	50@25	22.33	10.48	0.0112
71	15	20	134600	673	DFT-s-OFDM 16 QAM	1@1	22.3	10.45	0.0111
71	15	20	134600	673	DFT-s-OFDM 16 QAM	1@104	22.56	10.71	0.0118
71	15	20	134600	673	DFT-s-OFDM 64 QAM	50@25	20.78	8.93	0.0078
71	15	20	134600	673	DFT-s-OFDM 64 QAM	1@1	20.47	8.62	0.0073
71	15	20	134600	673	DFT-s-OFDM 64 QAM	1@104	20.64	8.79	0.0076
71	15	20	134600	673	DFT-s-OFDM 256 QAM	50@25	18.79	6.94	0.0049
71	15	20	134600	673	DFT-s-OFDM 256 QAM	1@1	18.54	6.69	0.0047
71	15	20	134600	673	DFT-s-OFDM 256 QAM	1@104	18.74	6.89	0.0049
71	15	20	134600	673	CP-OFDM QPSK	53@26	21.78	9.93	0.0098
71	15	20	134600	673	CP-OFDM QPSK	1@1	21.62	9.77	0.0095
71	15	20	134600	673	CP-OFDM QPSK	1@104	21.8	9.95	0.0099

NR Band	SCS	BandWidth	Arfcn	Freq (MHz)	Modulation	RB	Conducted Power(dBm)	ERP (dBm)	ERP (W)
71	15	20	136100	680.5	DFT-s-OFDM PI/2 BPSK	50@25	23.4	11.55	0.0143
71	15	20	136100	680.5	DFT-s-OFDM PI/2 BPSK	1@1	23.21	11.36	0.0137
71	15	20	136100	680.5	DFT-s-OFDM PI/2 BPSK	1@104	23.34	11.49	0.0141
71	15	20	136100	680.5	DFT-s-OFDM QPSK	50@25	23.41	11.56	0.0143
71	15	20	136100	680.5	DFT-s-OFDM QPSK	1@1	23.25	11.4	0.0138
71	15	20	136100	680.5	DFT-s-OFDM QPSK	1@104	23.4	11.55	0.0143
71	15	20	136100	680.5	DFT-s-OFDM 16 QAM	50@25	22.42	10.57	0.0114
71	15	20	136100	680.5	DFT-s-OFDM 16 QAM	1@1	22.38	10.53	0.0113
71	15	20	136100	680.5	DFT-s-OFDM 16 QAM	1@104	22.49	10.64	0.0116
71	15	20	136100	680.5	DFT-s-OFDM 64 QAM	50@25	20.89	9.04	0.0080
71	15	20	136100	680.5	DFT-s-OFDM 64 QAM	1@1	20.54	8.69	0.0074
71	15	20	136100	680.5	DFT-s-OFDM 64 QAM	1@104	20.66	8.81	0.0076
71	15	20	136100	680.5	DFT-s-OFDM 256 QAM	50@25	18.89	7.04	0.0051
71	15	20	136100	680.5	DFT-s-OFDM 256 QAM	1@1	18.62	6.77	0.0048
71	15	20	136100	680.5	DFT-s-OFDM 256 QAM	1@104	18.77	6.92	0.0049
71	15	20	136100	680.5	CP-OFDM QPSK	53@26	21.87	10.02	0.0100
71	15	20	136100	680.5	CP-OFDM QPSK	1@1	21.79	9.94	0.0099
71	15	20	136100	680.5	CP-OFDM QPSK	1@104	21.8	9.95	0.0099
71	15	20	137600	688	DFT-s-OFDM PI/2 BPSK	50@25	23.52	11.67	0.0147
71	15	20	137600	688	DFT-s-OFDM PI/2 BPSK	1@1	23.35	11.5	0.0141
71	15	20	137600	688	DFT-s-OFDM PI/2 BPSK	1@104	23.37	11.52	0.0142
71	15	20	137600	688	DFT-s-OFDM QPSK	50@25	23.46	11.61	0.0145
71	15	20	137600	688	DFT-s-OFDM QPSK	1@1	23.39	11.54	0.0143
71	15	20	137600	688	DFT-s-OFDM QPSK	1@104	23.37	11.52	0.0142
71	15	20	137600	688	DFT-s-OFDM 16 QAM	50@25	22.46	10.61	0.0115
71	15	20	137600	688	DFT-s-OFDM 16 QAM	1@1	22.46	10.61	0.0115
71	15	20	137600	688	DFT-s-OFDM 16 QAM	1@104	22.5	10.65	0.0116
71	15	20	137600	688	DFT-s-OFDM 64 QAM	50@25	20.95	9.1	0.0081
71	15	20	137600	688	DFT-s-OFDM 64 QAM	1@1	20.65	8.8	0.0076
71	15	20	137600	688	DFT-s-OFDM 64 QAM	1@104	20.71	8.86	0.0077
71	15	20	137600	688	DFT-s-OFDM 256 QAM	50@25	18.95	7.1	0.0051
71	15	20	137600	688	DFT-s-OFDM 256 QAM	1@1	18.72	6.87	0.0049
71	15	20	137600	688	DFT-s-OFDM 256 QAM	1@104	18.78	6.93	0.0049
71	15	20	137600	688	CP-OFDM QPSK	53@26	21.94	10.09	0.0102
71	15	20	137600	688	CP-OFDM QPSK	1@1	21.87	10.02	0.0100
71	15	20	137600	688	CP-OFDM QPSK	1@104	21.83	9.98	0.0100

Frequency Stability

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Deviation (Hz)	Verdict	Environment
71	15	20	136100	680.5	DFT-s-OFDM QPSK	100@0	19.4	**PASS**	NV
71	15	20	136100	680.5	DFT-s-OFDM QPSK	100@0	18.5	**PASS**	LV
71	15	20	136100	680.5	DFT-s-OFDM QPSK	100@0	14.9	**PASS**	HV
71	15	20	136100	680.5	DFT-s-OFDM QPSK	100@0	13.3	**PASS**	-30℃
71	15	20	136100	680.5	DFT-s-OFDM QPSK	100@0	15.3	**PASS**	-20℃
71	15	20	136100	680.5	DFT-s-OFDM QPSK	100@0	16.1	**PASS**	-10℃
71	15	20	136100	680.5	DFT-s-OFDM QPSK	100@0	16.5	**PASS**	0℃
71	15	20	136100	680.5	DFT-s-OFDM QPSK	100@0	17.7	**PASS**	10℃
71	15	20	136100	680.5	DFT-s-OFDM QPSK	100@0	19.4	**PASS**	20℃
71	15	20	136100	680.5	DFT-s-OFDM QPSK	100@0	12.2	**PASS**	30℃
71	15	20	136100	680.5	DFT-s-OFDM QPSK	100@0	13.0	**PASS**	40℃
71	15	20	136100	680.5	DFT-s-OFDM QPSK	100@0	10.6	**PASS**	50℃

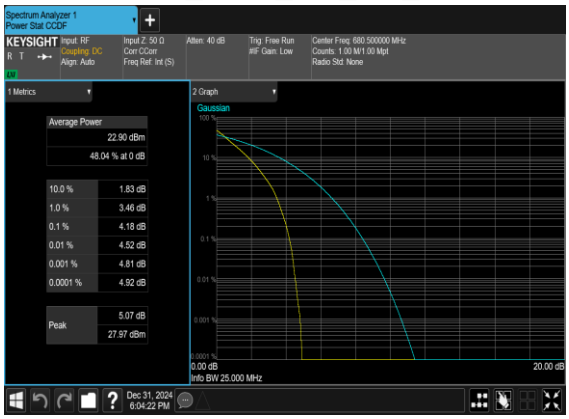
|MAX(△f)| = 19.4Hz

Frequency Stability	Frequency (MHz)	Limit Line	Result
fL – |MAX(△f)|	663.4894806	≧ 663 MHz	PASS
fH + |MAX(△f)|	696.3916194	≦ 698 MHz	

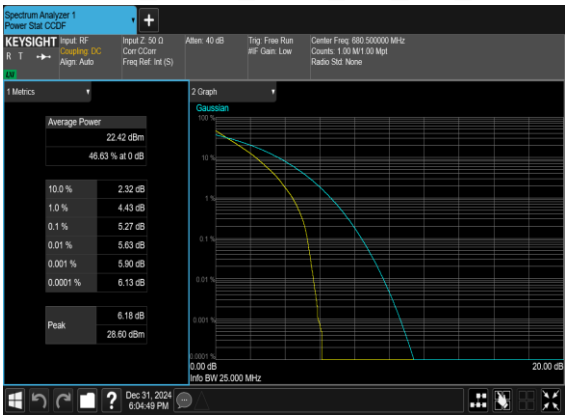
Peak to Average Ratio

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result (dB)	Limit (dB)	Verdict
71	15	20	136100	680.5	DFT-s-OFDM PI/2 BPSK	100@0	4.18	13	**PASS**
71	15	20	136100	680.5	DFT-s-OFDM QPSK	100@0	5.27	13	**PASS**

N71(20M)_DFT-s-OFDM_PI_2-BPSK_Outer_Full_Mid_CH



N71(20M)_DFT-s-OFDM_QPSK_Outer_Full_Mid_CH

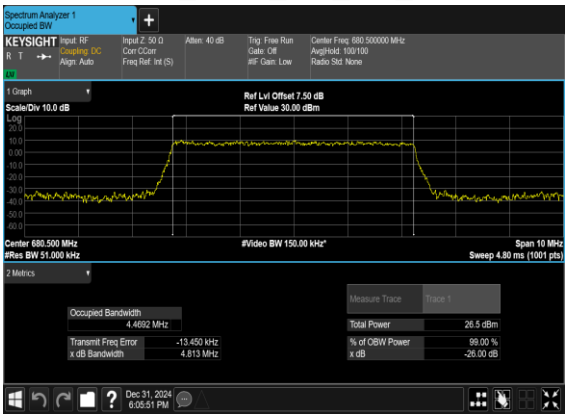


Occupied Bandwidth

NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	OBW (MHz)	26dB BW (MHz)
71	15	5	136100	680.5	CP-OFDM QPSK	25@0	4.4674	4.809
71	15	5	136100	680.5	CP-OFDM 16 QAM	25@0	4.4692	4.813
71	15	5	136100	680.5	CP-OFDM 64 QAM	25@0	4.4654	4.836
71	15	5	136100	680.5	CP-OFDM 256 QAM	25@0	4.4633	4.798
71	15	10	136100	680.5	CP-OFDM QPSK	52@0	9.2677	9.701
71	15	10	136100	680.5	CP-OFDM 16 QAM	52@0	9.27	9.716
71	15	10	136100	680.5	CP-OFDM 64 QAM	52@0	9.2809	9.725
71	15	10	136100	680.5	CP-OFDM 256 QAM	52@0	9.267	9.733
71	15	15	136100	680.5	CP-OFDM QPSK	79@0	14.143	14.68
71	15	15	136100	680.5	CP-OFDM 16 QAM	79@0	14.093	14.71
71	15	15	136100	680.5	CP-OFDM 64 QAM	79@0	14.14	14.76
71	15	15	136100	680.5	CP-OFDM 256 QAM	79@0	14.142	14.65
71	15	20	136100	680.5	CP-OFDM QPSK	106@0	18.884	19.63
71	15	20	136100	680.5	CP-OFDM 16 QAM	106@0	18.901	19.73
71	15	20	136100	680.5	CP-OFDM 64 QAM	106@0	18.94	19.58
71	15	20	136100	680.5	CP-OFDM 256 QAM	106@0	18.889	19.68

N71(5M)_CP-OFDM_QPSK_Outer_Full_Mid_CH

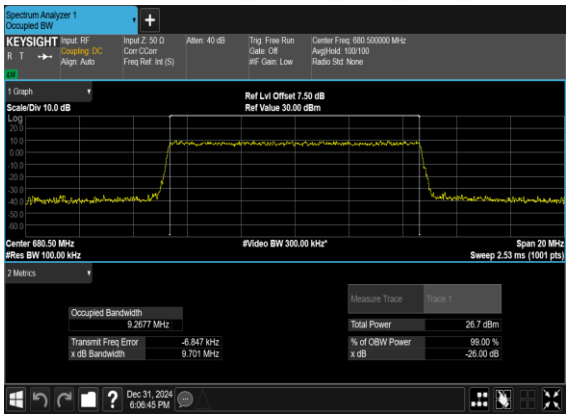
N71(5M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



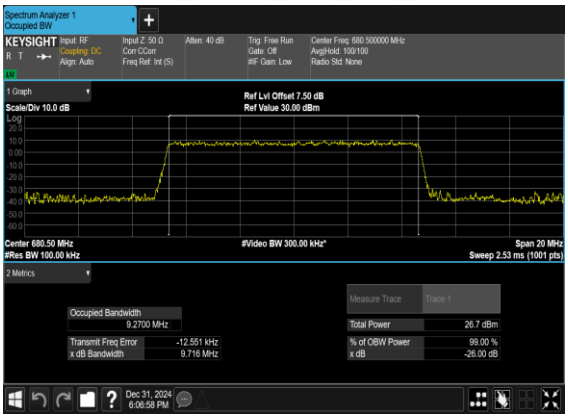
N71(5M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH

N71(5M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH

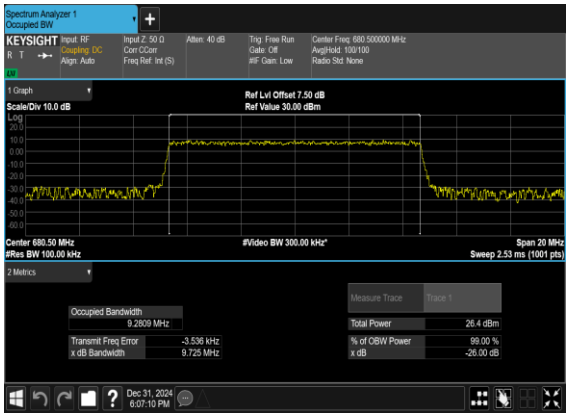
N71(10M)_CP-OFDM_QPSK_Outer_Full_Mid_CH



N71(10M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH

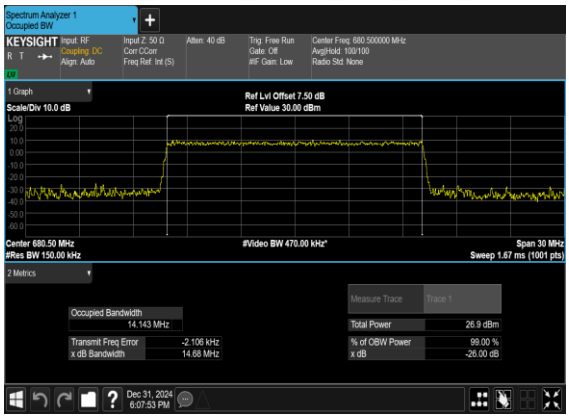


N71(10M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH

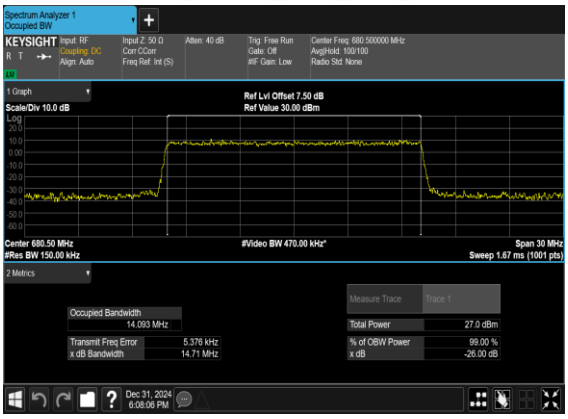


N71(10M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH

N71(15M)_CP-OFDM_QPSK_Outer_Full_Mid_CH

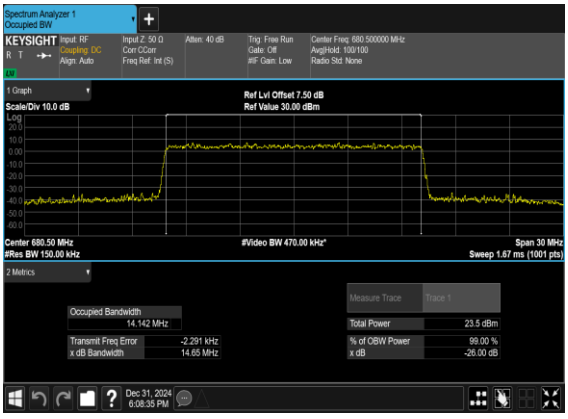


N71(15M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



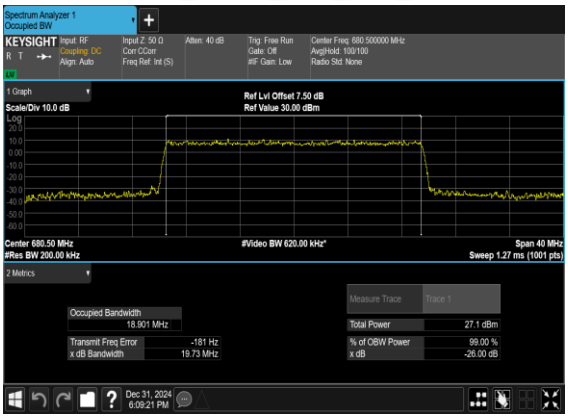
N71(15M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH

N71(15M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH

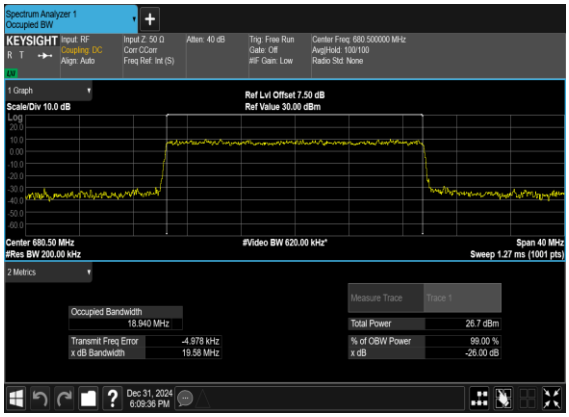


N71(20M)_CP-OFDM_QPSK_Outer_Full_Mid_CH

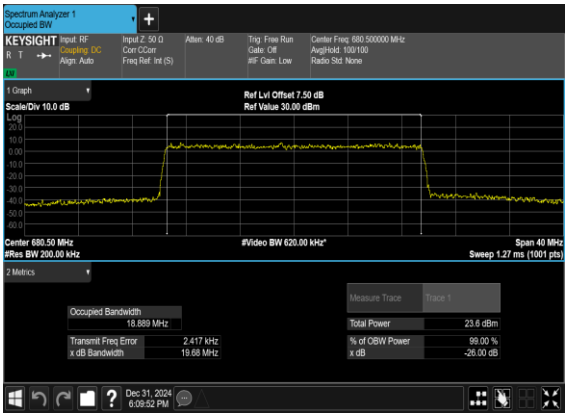
N71(20M)_CP-OFDM_16 QAM_Outer_Full_Mid_CH



N71(20M)_CP-OFDM_64 QAM_Outer_Full_Mid_CH



N71(20M)_CP-OFDM_256 QAM_Outer_Full_Mid_CH

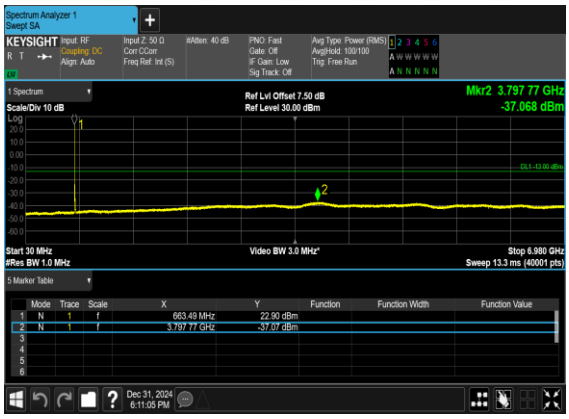


Conducted Spurious Emissions

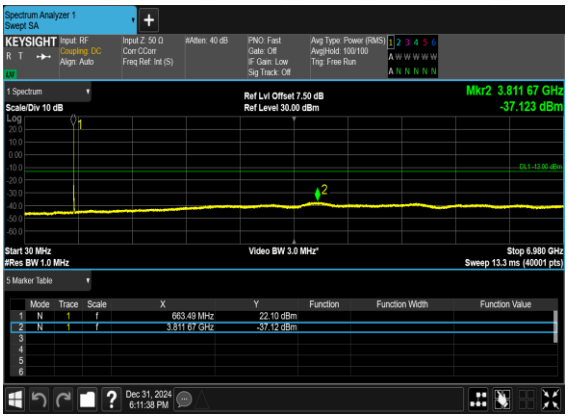
NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result	Verdict
71	15	5	133100	665.5	DFT-s-OFDM BPSK	1@0	see graph	**---**
71	15	5	133100	665.5	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
71	15	5	133100	665.5	DFT-s-OFDM QPSK	1@0	see graph	**---**
71	15	5	133100	665.5	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
71	15	5	136100	680.5	DFT-s-OFDM BPSK	1@0	see graph	**---**
71	15	5	136100	680.5	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
71	15	5	136100	680.5	DFT-s-OFDM QPSK	1@0	see graph	**---**
71	15	5	136100	680.5	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
71	15	5	139100	695.5	DFT-s-OFDM BPSK	1@0	see graph	**---**
71	15	5	139100	695.5	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
71	15	5	139100	695.5	DFT-s-OFDM QPSK	1@0	see graph	**---**
71	15	5	139100	695.5	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
71	15	10	133600	668.0	DFT-s-OFDM BPSK	1@0	see graph	**---**
71	15	10	133600	668.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
71	15	10	133600	668.0	DFT-s-OFDM QPSK	1@0	see graph	**---**
71	15	10	133600	668.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
71	15	10	136100	680.5	DFT-s-OFDM BPSK	1@0	see graph	**---**
71	15	10	136100	680.5	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
71	15	10	136100	680.5	DFT-s-OFDM QPSK	1@0	see graph	**---**
71	15	10	136100	680.5	DFT-s-OFDM QPSK	1@0	see graph	**PASS**

71	15	10	138600	693.0	DFT-s-OFDM BPSK	1@0	see graph	**---**
71	15	10	138600	693.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
71	15	10	138600	693.0	DFT-s-OFDM QPSK	1@0	see graph	**---**
71	15	10	138600	693.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
71	15	20	134600	673.0	DFT-s-OFDM BPSK	1@0	see graph	**---**
71	15	20	134600	673.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
71	15	20	134600	673.0	DFT-s-OFDM QPSK	1@0	see graph	**---**
71	15	20	134600	673.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
71	15	20	136100	680.5	DFT-s-OFDM BPSK	1@0	see graph	**---**
71	15	20	136100	680.5	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
71	15	20	136100	680.5	DFT-s-OFDM QPSK	1@0	see graph	**---**
71	15	20	136100	680.5	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
71	15	20	137600	688.0	DFT-s-OFDM BPSK	1@0	see graph	**---**
71	15	20	137600	688.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
71	15	20	137600	688.0	DFT-s-OFDM QPSK	1@0	see graph	**---**
71	15	20	137600	688.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**

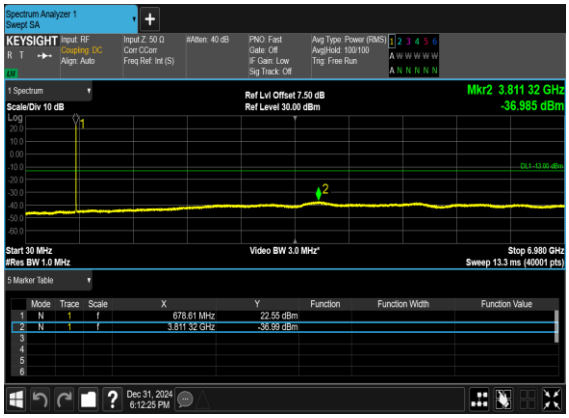
N71(5M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



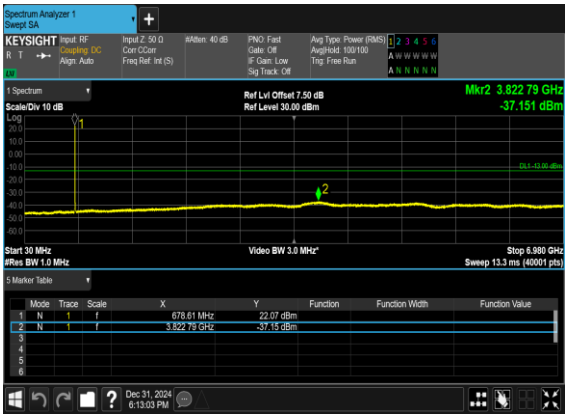
N71(5M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



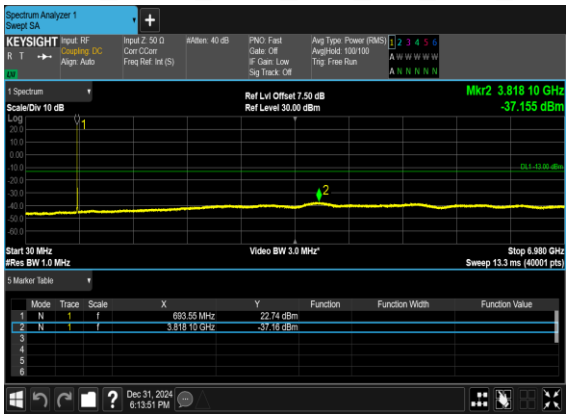
N71(5M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



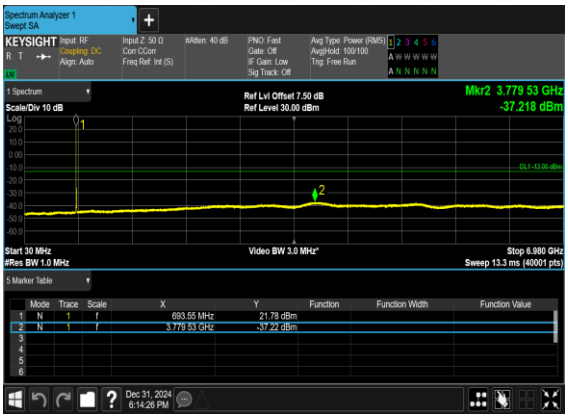
N71(5M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



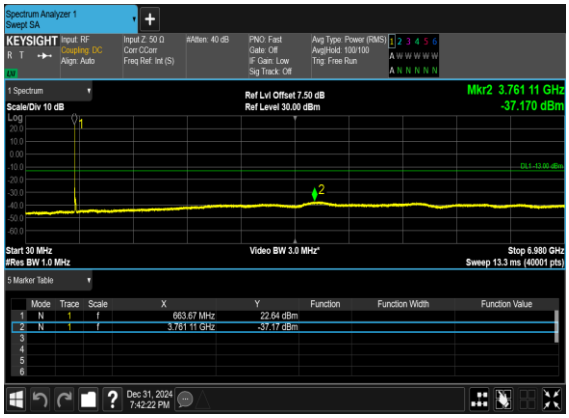
N71(5M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



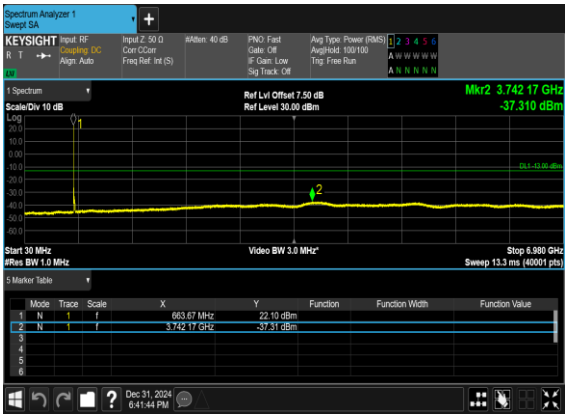
N71(5M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH



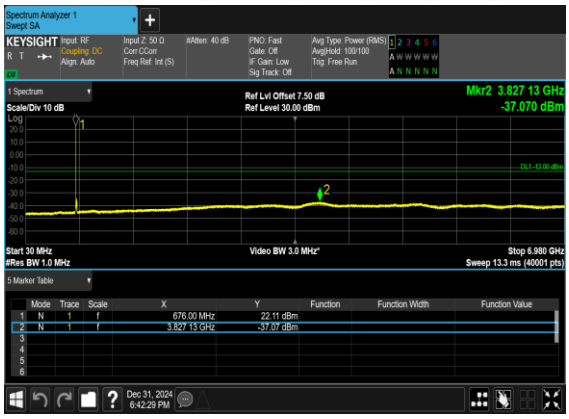
N71(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



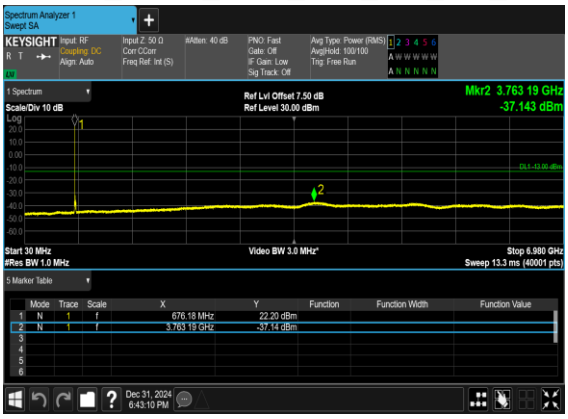
N71(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



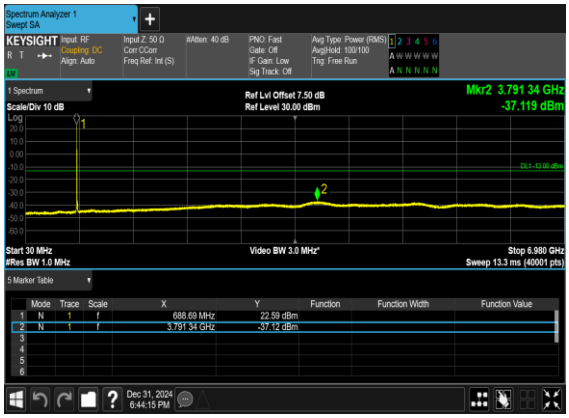
N71(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



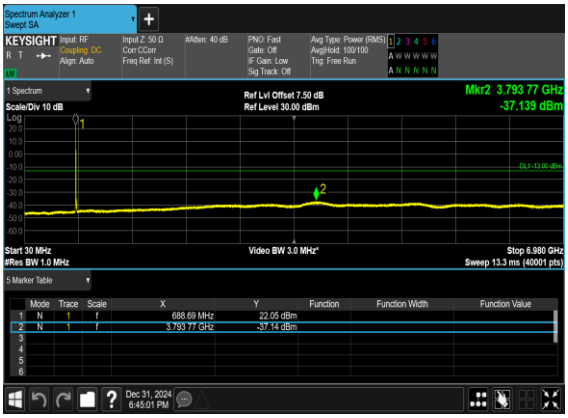
N71(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



N71(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH

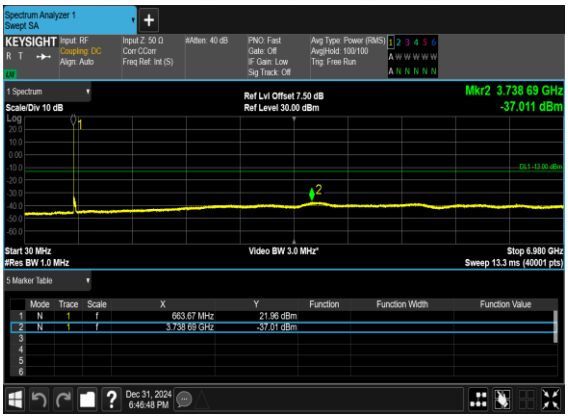


N71(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH

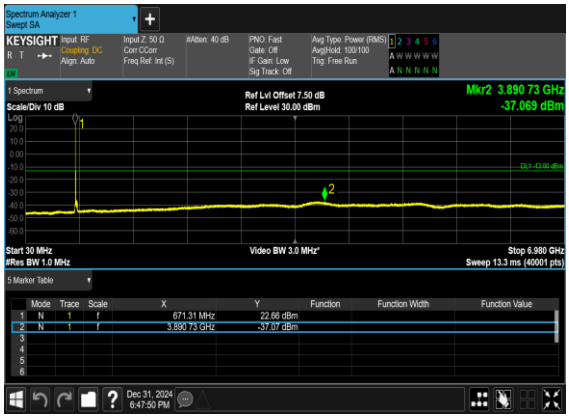


N71(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH

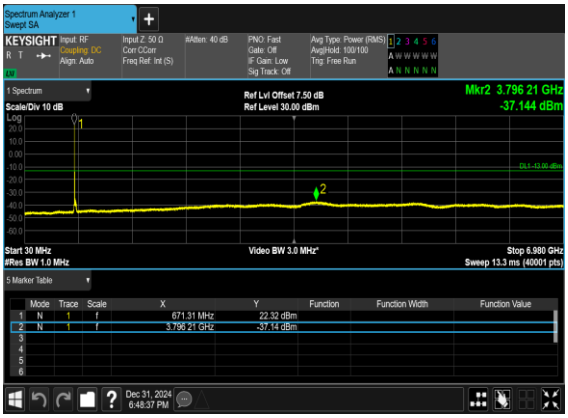
N71(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



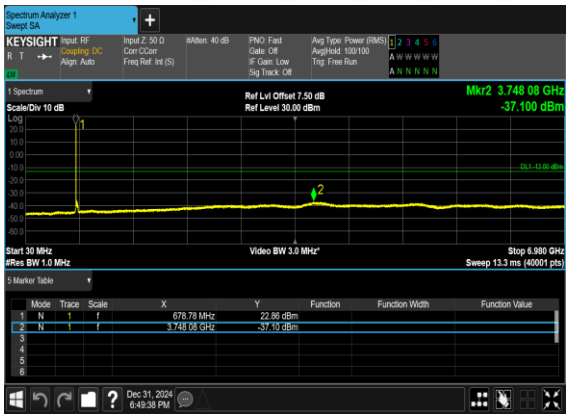
N71(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Mid_CH



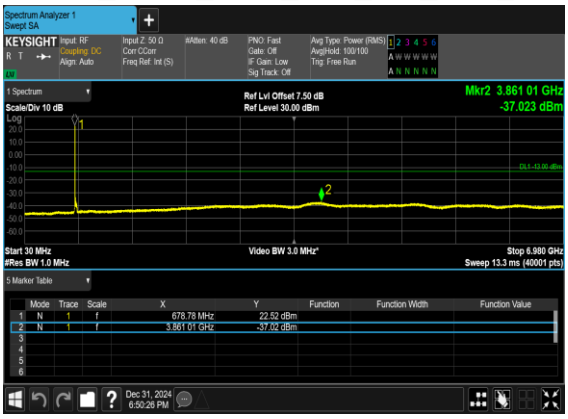
N71(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Mid_CH



N71(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_High_CH



N71(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_High_CH

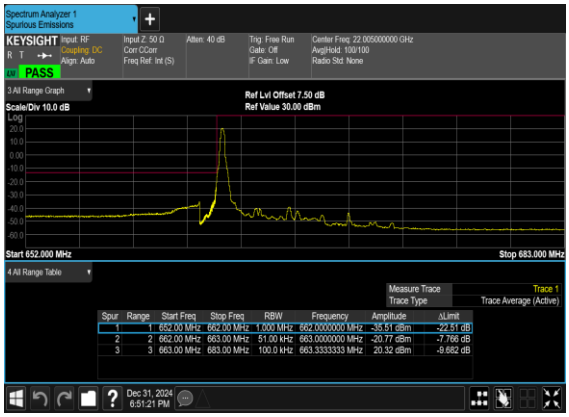


Conducted Band Edge

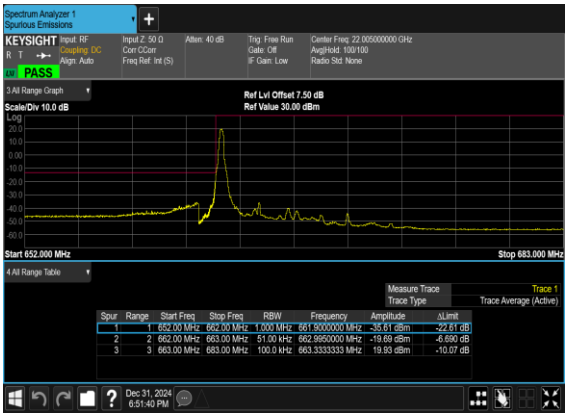
NR Band	SCS (kHz)	Bandwidth (MHz)	Arfcn	Freq (MHz)	Modulation	RB	Result	Verdict
71	15	5	133100	665.5	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
71	15	5	133100	665.5	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
71	15	5	133100	665.5	DFT-s-OFDM BPSK	25@0	see graph	**PASS**
71	15	5	133100	665.5	DFT-s-OFDM QPSK	25@0	see graph	**PASS**
71	15	5	139100	695.5	DFT-s-OFDM BPSK	1@24	see graph	**PASS**
71	15	5	139100	695.5	DFT-s-OFDM QPSK	1@24	see graph	**PASS**
71	15	5	139100	695.5	DFT-s-OFDM BPSK	25@0	see graph	**PASS**
71	15	5	139100	695.5	DFT-s-OFDM QPSK	25@0	see graph	**PASS**
71	15	10	133600	668.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
71	15	10	133600	668.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
71	15	10	133600	668.0	DFT-s-OFDM BPSK	50@0	see graph	**PASS**
71	15	10	133600	668.0	DFT-s-OFDM QPSK	50@0	see graph	**FAIL**
71	15	10	138600	693.0	DFT-s-OFDM BPSK	1@51	see graph	**PASS**
71	15	10	138600	693.0	DFT-s-OFDM QPSK	1@51	see graph	**PASS**
71	15	10	138600	693.0	DFT-s-OFDM BPSK	50@0	see graph	**PASS**
71	15	10	138600	693.0	DFT-s-OFDM QPSK	50@0	see graph	**PASS**
71	15	20	134600	673.0	DFT-s-OFDM BPSK	1@0	see graph	**PASS**
71	15	20	134600	673.0	DFT-s-OFDM QPSK	1@0	see graph	**PASS**
71	15	20	134600	673.0	DFT-s-OFDM BPSK	100@0	see graph	**PASS**
71	15	20	134600	673.0	DFT-s-OFDM QPSK	100@0	see graph	**PASS**

71	15	20	137600	688.0	DFT-s-OFDM BPSK	1@105	see graph	**PASS**
71	15	20	137600	688.0	DFT-s-OFDM QPSK	1@105	see graph	**PASS**
71	15	20	137600	688.0	DFT-s-OFDM BPSK	100@0	see graph	**PASS**
71	15	20	137600	688.0	DFT-s-OFDM QPSK	100@0	see graph	**PASS**

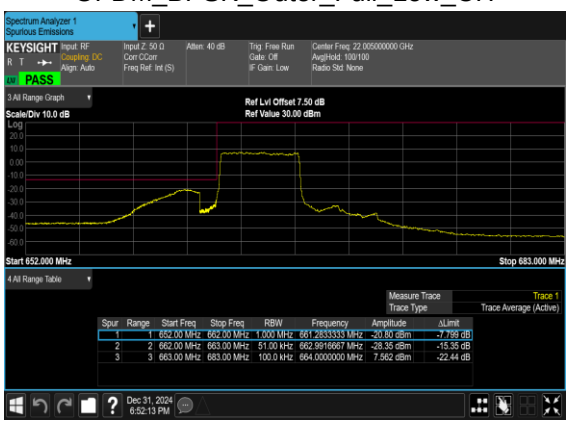
N71(5M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



N71(5M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH

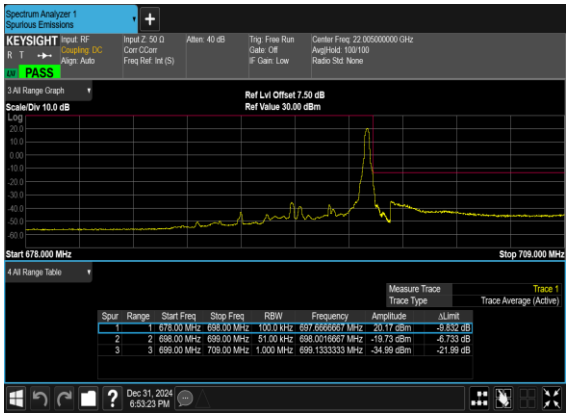


N71(5M)_DFT-s-OFDM_BPSK_Outer_Full_Low_CH

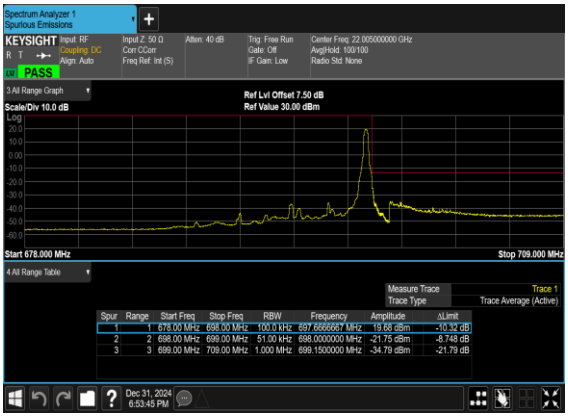


N71(5M)_DFT-s-OFDM_QPSK_Outer_Full_Low_CH

N71(5M)_DFT-s-OFDM_BPSK_Edge_1RB_Right_High_CH

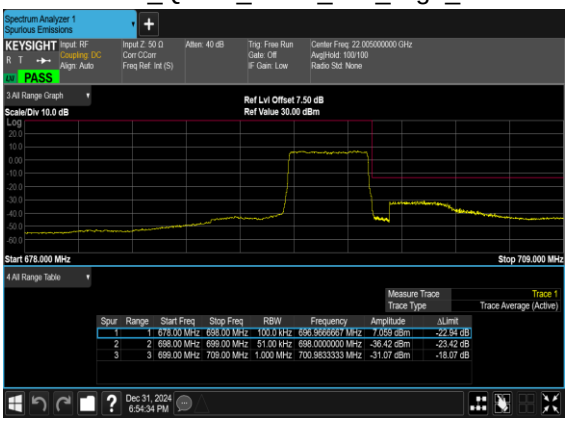


N71(5M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_High_CH

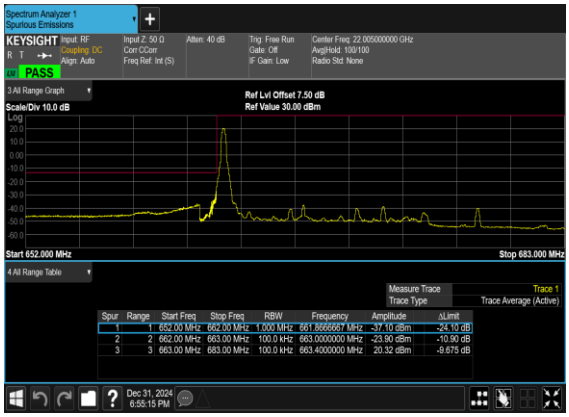


N71(5M)_DFT-s-OFDM_BPSK_Outer_Full_High_CH

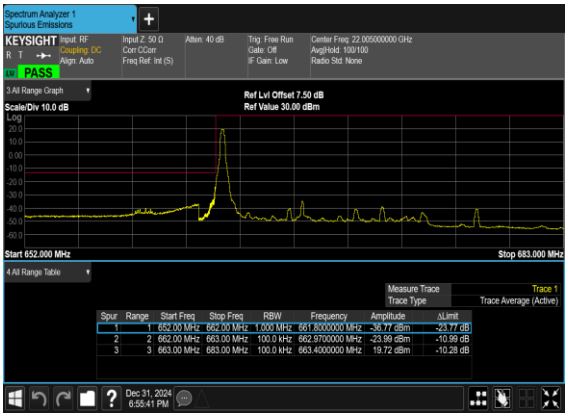
N71(5M)_DFT-s-OFDM_QPSK_Outer_Full_High_CH



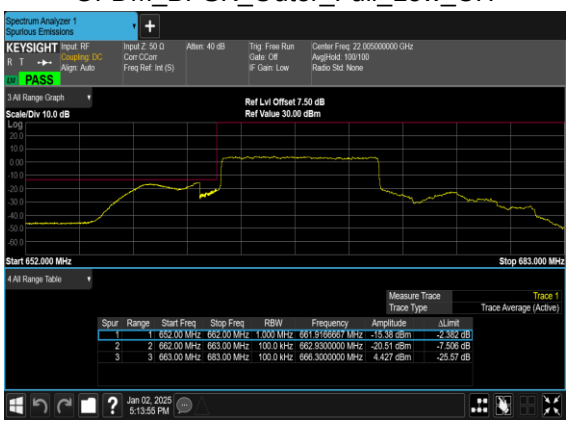
N71(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



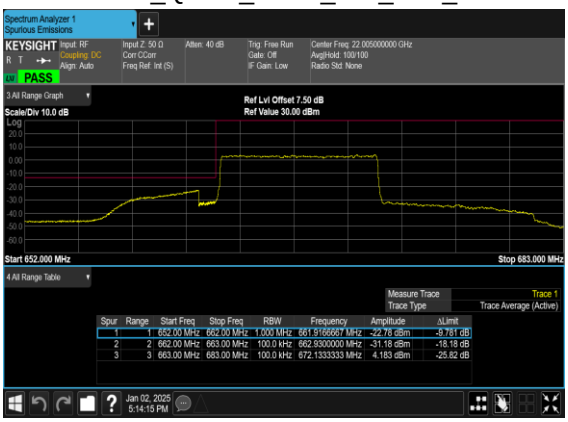
N71(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



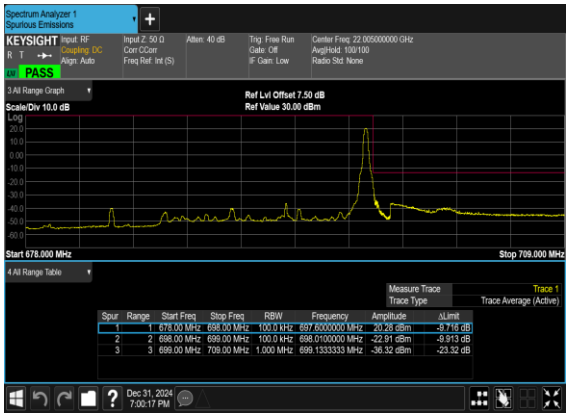
N71(10M)_DFT-s-OFDM_BPSK_Outer_Full_Low_CH



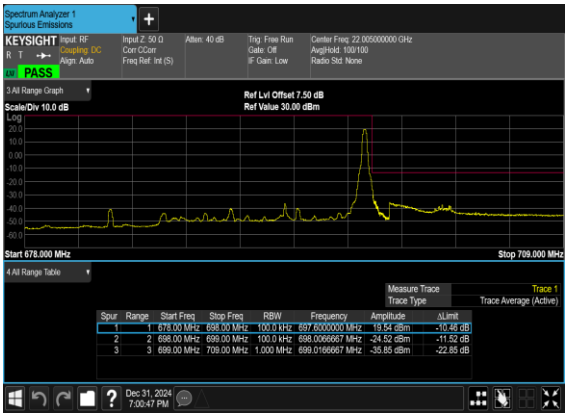
N71(10M)_DFT-s-OFDM_QPSK_Outer_Full_Low_CH



N71(10M)_DFT-s-OFDM_BPSK_Edge_1RB_Right_High_CH



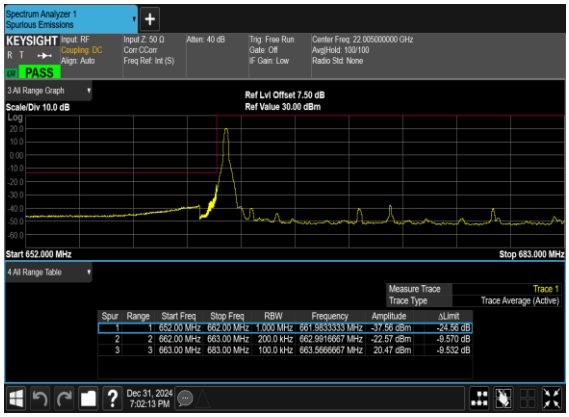
N71(10M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_High_CH



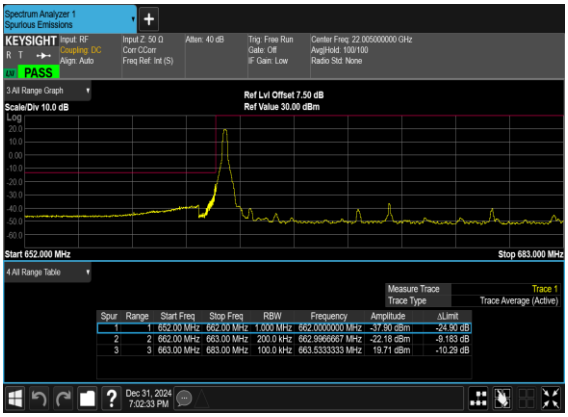
N71(10M)_DFT-s-OFDM_BPSK_Outer_Full_High_CH

N71(10M)_DFT-s-OFDM_QPSK_Outer_Full_High_CH

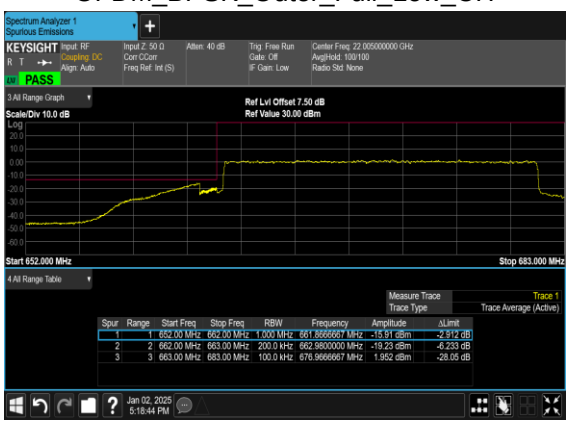
N71(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Left_Low_CH



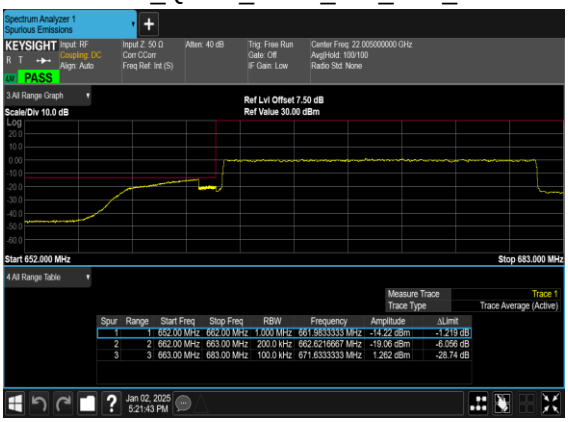
N71(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Left_Low_CH



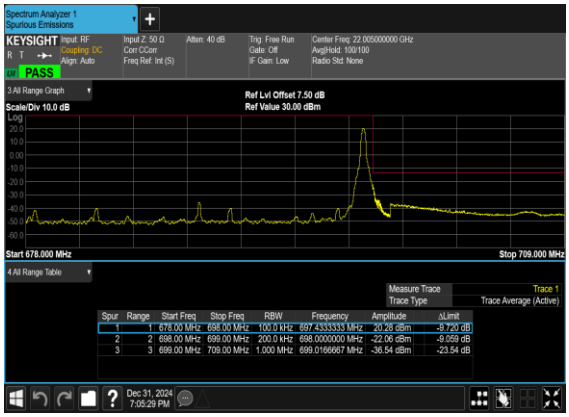
N71(20M)_DFT-s-OFDM_BPSK_Outer_Full_Low_CH



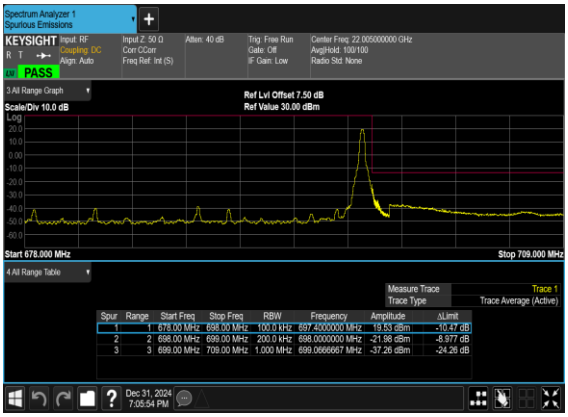
N71(20M)_DFT-s-OFDM_QPSK_Outer_Full_Low_CH



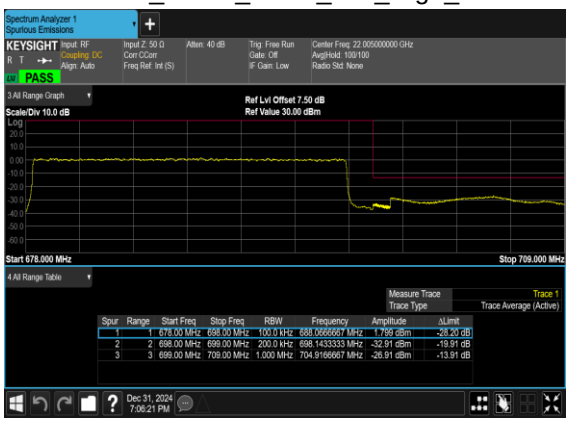
N71(20M)_DFT-s-OFDM_BPSK_Edge_1RB_Right_High_CH



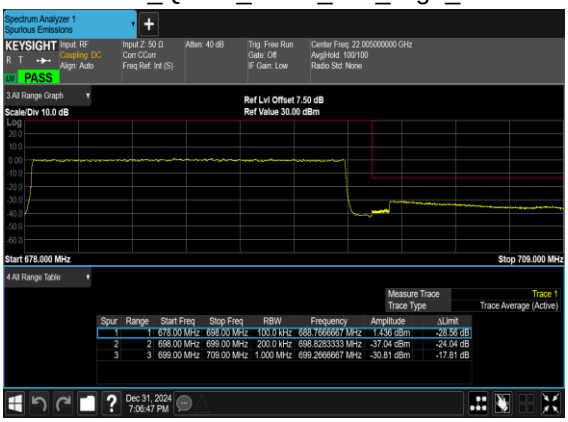
N71(20M)_DFT-s-OFDM_QPSK_Edge_1RB_Right_High_CH



N71(20M)_DFT-s-OFDM_BPSK_Outer_Full_High_CH



N71(20M)_DFT-s-OFDM_QPSK_Outer_Full_High_CH



Appendix B. Test Results of Radiated Test

Radiated Spurious Emission

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

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

n71 SA / NR 20MHz / QPSK(ANT1)									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1342	-65.88	-13	-52.88	-76.40	-69.13	4.00	9.40	H
	2013	-61.98	-13	-48.98	-78.91	-65.55	4.88	10.60	H
	2684	-59.61	-13	-46.61	-78.82	-64.54	5.52	12.60	H
	1342	-64.22	-13	-51.22	-75.69	-67.47	4.00	9.40	V
	2013	-61.54	-13	-48.54	-78.36	-65.11	4.88	10.60	V
	2684	-59.19	-13	-46.19	-78.86	-64.12	5.52	12.60	V

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

n41 SA / NR 100MHz / QPSK(ANT2)									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	5089.00	-58.08	-25	-33.08	-81.43	-63.64	7.14	12.70	H
	7633.50	-55.88	-25	-30.88	-82.05	-59.18	8.30	11.60	H
	10178.00	-53.02	-25	-28.02	-83.47	-54.54	10.48	12.00	H
	5089.00	-57.28	-25	-32.28	-81.61	-62.84	7.14	12.70	V
	7633.50	-54.70	-25	-29.70	-81.55	-58.00	8.30	11.60	V
	10178.00	-51.33	-25	-26.33	-83	-52.85	10.48	12.00	V

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

EN-DC_5A_n41A / LTE 10MHz + NR 100MHz / QPSK (ANT0+2)									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
NR n41 Middle	5089	-57.70	-25	-32.70	-81.05	-63.37	7.13	12.80	H
	7633.5	-55.10	-25	-30.10	-81.27	-58.20	8.50	11.60	H
	10178	-52.60	-25	-27.60	-83.05	-53.94	10.68	12.02	H
	5089	-56.92	-25	-31.92	-81.25	-62.59	7.13	12.80	V
	7633.5	-54.50	-25	-29.50	-81.35	-57.6	8.50	11.60	V
	10178	-51.42	-25	-26.42	-83.09	-52.76	10.68	12.02	V
LTE Band5 Middle	1673	-66.73	-13	-53.73	-78.41	-69.98	4.00	9.40	H
	2509.5	-59.60	-13	-46.60	-78.60	-63.17	4.88	10.60	H
	3346	-60.56	-13	-47.56	-81.53	-65.49	5.52	12.60	H
	1673	-64.62	-13	-51.62	-77.01	-67.87	4.00	9.40	V
	2509.5	-59.17	-13	-46.17	-78.38	-62.74	4.88	10.60	V
	3346	-58.43	-13	-45.43	-79.70	-63.36	5.52	12.60	V

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