

TEST REPORT

FCC Sub6 n48 Test for SM-A276U
Certification

APPLICANT
SAMSUNG Electronics Co., Ltd.

REPORT NO.
HCT-RF-2604-FC030-R1

DATE OF ISSUE
May 15, 2026

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TEST REPORT

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May 15, 2026

Additional Model

SM-A276U1, SM-S276V

Applicant

SAMSUNG Electronics Co., Ltd.

129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea

Product Name

Mobile Phone

Model Name

SM-A276U

Date of Test

March 11, 2026 ~ April 22, 2026

FCC ID

A3LSMA276U

Location of Test

☒ Permanent Testing Lab ☐ On Site Testing

(Address: 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Republic of Korea)

FCC Classification:

Citizens Band End User Devices (CBE)

Test Standard Used

FCC Rule Part: § 96

Test Results

PASS

REVISION HISTORY

The revision history for this test report is shown in table.

Revision No.	Date of Issue	Description
0	April 23, 2026	Initial Release
1	May 15, 2026	Revised the KDB version on page 8.

Notice

Content

The measurements shown in this report were made in accordance with the procedures specified in CFR47 section § 2.947. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.

HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998, 21 U.S. C. 853(a)

The results shown in this test report only apply to the sample(s), as received, provided by the applicant, unless otherwise stated.

The test results have only been applied with the test methods required by the standard(s).

The laboratory is not accredited for the test results marked *.

Information provided by the applicant is marked **.

Test results provided by external providers are marked ***.

When confirmation of authenticity of this test report is required, please contact www.hct.co.kr

The test results in this test report are not associated with the ((KS Q) ISO/IEC 17025) accreditation by KOLAS (Korea Laboratory Accreditation Scheme) / A2LA (American Association for Laboratory Accreditation) that are under the ILAC (International Laboratory Accreditation Cooperation) Mutual Recognition Agreement (MRA).

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MEASUREMENT REPORT

1. GENERAL INFORMATION

Model(s):	SM-A276U
Additional Model(s)	SM-A276U1
SCS(kHz):	30
Bandwidth(MHz):	10, 20, 30, 40
Waveform:	CP-OFDM, DFT-S-OFDM
Modulation:	DFT-S-OFDM: PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM CP-OFDM: QPSK, 16QAM, 64QAM, 256QAM
Tx Frequency:	3555.00 – 3694.98 : (Sub6 n48(10 MHz)) 3560.01 – 3690.00 : (Sub6 n48(20 MHz)) 3565.02 – 3684.99 : (Sub6 n48(30 MHz)) 3570.00 – 3679.98 : (Sub6 n48(40 MHz))
Serial number:	Radiated : R3GL30N9KXD Conducted : R37L300WEHN CBSD Protocol : R37L300TFBR
Antenna Information	Please refer to the Antenna Specification document.

1.1 MAXIMUM OUTPUT POWER

Mode (MHz)	Tx Frequency (MHz)	Emission Designator	Modulation	EIRP	
				Max. Power (W/10 MHz)	Max. Power (dBm/10 MHz)
Sub6 n48 (10)	3555.00 – 3694.98	8M60G7D	PI/2 BPSK	0.111	20.47
		8M67G7D	QPSK	0.111	20.46
		8M63W7D	16QAM	0.088	19.44
		8M65W7D	64QAM	0.063	17.99
		8M75W7D	256QAM	0.038	15.83
Sub6 n48 (20)	3560.01 – 3690.00	17M9G7D	PI/2 BPSK	0.118	20.72
		18M0G7D	QPSK	0.117	20.70
		18M0W7D	16QAM	0.091	19.61
		17M9W7D	64QAM	0.067	18.26
		17M9W7D	256QAM	0.040	16.04
Sub6 n48 (30)	3565.02 – 3684.99	26M9G7D	PI/2 BPSK	0.119	20.76
		26M9G7D	QPSK	0.119	20.74
		26M8W7D	16QAM	0.091	19.59
		26M9W7D	64QAM	0.068	18.31
		26M9W7D	256QAM	0.040	16.07
Sub6 n48 (40)	3570.00 – 3679.98	35M8G7D	PI/2 BPSK	0.122	20.85
		35M8G7D	QPSK	0.121	20.81
		35M9W7D	16QAM	0.094	19.74
		35M8W7D	64QAM	0.068	18.31
		35M8W7D	256QAM	0.041	16.13

2. INTRODUCTION

2.1. DESCRIPTION OF EUT

Please refer to the [2G3G] Test Report.

2.2. MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

2.3. TEST FACILITY

The Fully-anechoic chamber and conducted measurement facility used to collect the radiated data are located at the 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Republic of Korea

Detailed description of test facility was submitted to the Commission and accepted dated February 26, 2026 (Registration Number: KR0032).

2.4. EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to ANSI/USEMCSC C63.2-2023, "American National Standard for Specifications of Electromagnetic Interference and Field Strength Measuring Instrumentation in the Frequency Range 9 kHz to 40 GHz".

3. DESCRIPTION OF TESTS

3.1 TEST PROCEDURE

Test Description	Test Procedure Used
Occupied Bandwidth	- KDB 971168 D01 v03r01 – Section 4.3 - ANSI C63.26-2015 – Section 5.4.4 - KDB 940660 D01 v03r01
Channel Edge/ ACLR	- KDB 971168 D01 v03r01 – Section 6.0 - ANSI C63.26-2015 – Section 5.7 - KDB 940660 D01 v03r01
Spurious and Harmonic Emissions at Antenna Terminal	- KDB 971168 D01 v03r01 – Section 6.0 - ANSI C63.26-2015 – Section 5.7 - KDB 940660 D01 v03r01
Conducted Output Power	- KDB 971168 D01 v03r01 - Section 5.2.4 - ANSI C63.26-2015 - Section 5.2.1 & 5.2.4.2
Peak- to- Average Ratio	- KDB 971168 D01 v03r01 – Section 5.7 - ANSI C63.26-2015 – Section 5.2.3.4 - KDB 940660 D01 v03r01
Frequency stability	- ANSI C63.26-2015 – Section 5.6
Radiated Power	- ANSI C63.26-2015 – Section 5.2.4.4 - KDB 971168 D01 v03r01 – Section 5.8 - KDB 940660 D01 v03r01
Radiated Spurious and Harmonic Emissions	- ANSI C63.26-2015 – Section 5.5.3 - KDB 971168 D01 v03r01 – Section 5.8 - KDB 940660 D01 v03r01
End User Device Additional Requirement (CBSD Protocol)	- KDB 940660 D01 v03r01 - WINNF-TS-0122 V1.0.2

3.2 RADIATED POWER

Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

The equipment under test is placed on a non-conductive table 3-meters away from the receive antenna.

Test Settings

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation.
2. RBW = 1 – 5 % of the expected OBW, not to exceed 1 MHz
3. VBW $\geq$ 3 x RBW
4. Span = 1.5 times the OBW
5. No. of sweep points > 2 x span / RBW
6. Detector = RMS
7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto".
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation.
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

Test Note

1. The turntable is rotated through 360 degrees, and the receiving antenna scans in order to determine the level of the maximized emission.
2. A half wave dipole is then substituted in place of the EUT. For emissions above 1 GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator and the previously recorded signal was duplicated.

The power is calculated by the following formula;

$$P_d \text{ (dBm)} = P_g \text{ (dBm)} - \text{cable loss (dB)} + \text{antenna gain (dB)}$$

Where: P_d is the dipole equivalent power and P_g is the generator output power into the substitution antenna.

3. The maximum value is calculated by adding the forward power to the calibrated source plus its appropriate gain value.

These steps are repeated with the receiving antenna in both vertical and horizontal polarization. the difference between the gain of the horn and an isotropic antenna are taken into consideration

4. The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.
5. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

3.3 RADIATED SPURIOUS EMISSIONS

Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

Radiated Spurious Emission Measurements at 3 meters by Substitution Method.

Test Settings

1. RBW = 100 kHz for emissions below 1 GHz and 1 MHz for emissions above 1 GHz
2. VBW $\geq 3 \times$ RBW
3. No. of sweep points $> 2 \times$ span / RBW
4. Detector = Peak
5. Trace mode = Max Hold
6. The trace was allowed to stabilize
7. Test channel : Low/ Middle/ High
8. Frequency range : We are performed all frequency to 10th harmonics from 9 kHz.

Test Note

1. Measurements value show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
2. The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the test data
3. For spurious emissions above 1 GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator and the previously recorded signal was duplicated. The spurious emissions is calculated by the following formula;

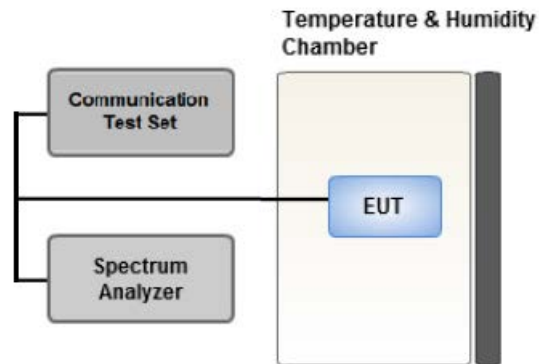
$$\text{Result}_{(\text{dBm})} = P_g_{(\text{dBm})} - \text{cable loss}_{(\text{dB})} + \text{antenna gain}_{(\text{dBi})}$$

Where: P_g is the generator output power into the substitution antenna.

If the fundamental frequency is below 1 GHz, RF output power has been converted to EIRP.

$$\text{EIRP}_{(\text{dBm})} = \text{ERP}_{(\text{dBm})} + 2.15$$

3.4 PEAK- TO- AVERAGE RATIO

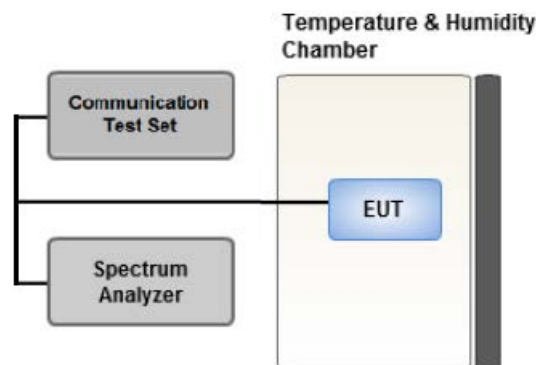


Test setup

Test Settings

1. Set resolution/measurement bandwidth $\geq$ signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Set the measurement interval as follows:
 - .- for continuous transmissions, set to 1 ms,
 - .- or burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize and set the measurement interval to a time that is less than or equal to the burst duration.
4. Record the maximum PAPR level associated with a probability of 0.1 %.

3.5 OCCUPIED BANDWIDTH.



Test setup

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 power of a given emission.

The EUT makes a call to the communication simulator.

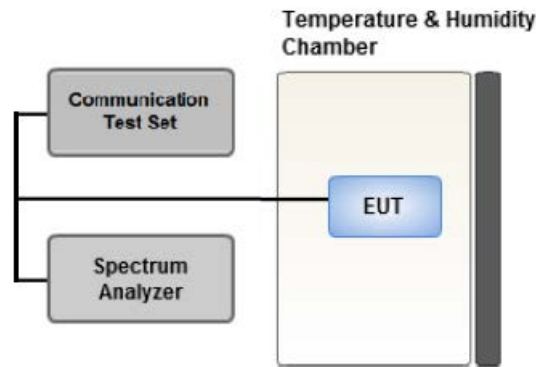
The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth

Test Settings

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99 % occupied bandwidth and the 26 dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 – 5 % of the expected OBW
3. VBW $\geq$ 3 x RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize
8. If necessary, steps 2 – 7 were repeated after changing the RBW such that it would be within 1 – 5 % of the 99 % occupied bandwidth observed in Step 7

3.6 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL



Test setup

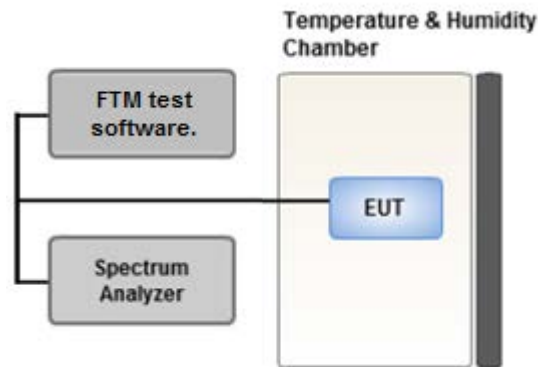
Test Overview

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Settings

1. RBW = 1 MHz
2. VBW $\geq$ 3 MHz
3. Detector = RMS
4. Trace Mode = Trace average
5. Sweep time > Number of points in sweep $\times$ Transmitter period
6. Number of points in sweep $\geq$ 2 x Span / RBW

3.7 CHANNEL EDGE



Test setup

Test Settings

1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. Within 1 MHz of the channel edge the RBW should be 2% of EBW, then 1 MHz after that.
4. VBW > 3 x RBW
5. Detector = RMS
6. Number of sweep points $\geq 2 \times \text{Span/RBW}$
7. Trace mode = trace average
8. Sweep time > (Number of Points) $\times$ (Symbol Period)
9. The trace was allowed to stabilize

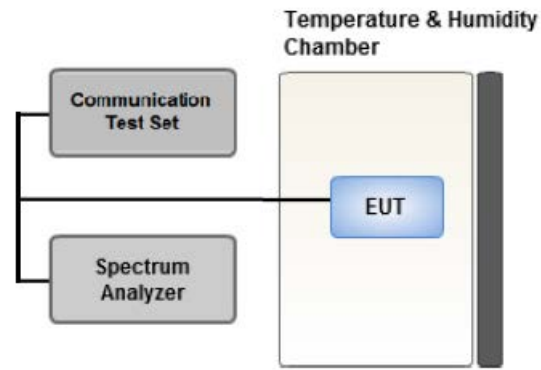
Test Notes

The conducted power of any emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed -13 dBm/MHz within 0-10 megahertz above the upper SAS-assigned channel edge and within 0-10 megahertz below the lower SAS-assigned channel edge. At all frequencies greater than 10 megahertz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge, the conducted power of any emission shall not exceed -25 dBm/MHz .

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

Where Margin < 1 dB the emission level is either corrected by $10 \log(1 \text{ MHz/RB})$ or the emission is integrated over a 1 MHz bandwidth to determine the final result. When using the integration method the integration window is either centered on the emission or, for emissions at the band edge, centered by an offset of 500 kHz from the block edge so that the integration window is the 1 MHz adjacent to the block edge.

3.8 Adjacent Channel Leakage Ratio



Test setup

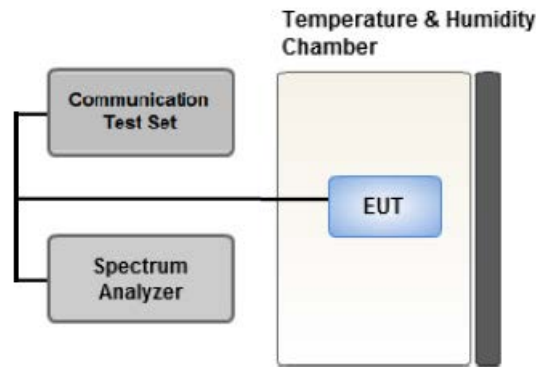
Test Settings

1. Use ACP measurement function of Spectrum analyzer to measure adjacent channel leakage ratio
2. Integral BW = Assigned channel bandwidth
5. Detector = RMS
6. Number of sweep points $\geq 2 \times \text{Span/RBW}$
7. Trace mode = trace average
8. Sweep time $> (\text{Number of points in sweep} \times \text{Transmitter period})$
9. The trace was allowed to stabilize

Test Notes

the Adjacent Channel Leakage Ratio for End User Devices shall be at least 30 dB.

3.9 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE



Test setup

Test Overview

Frequency stability testing is performed in accordance with the guidelines of ANSI C63.26-2015.

The frequency stability of the transmitter is measured by:

1. Temperature:

The temperature is varied from -30 °C to +50 °C in 10 °C increments using an environmental chamber.

2. Primary Supply Voltage:

. - Unless otherwise specified, vary primary supply voltage from 85 % to 115 % of the nominal value for other than hand carried battery equipment.

. - 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.

Test Settings

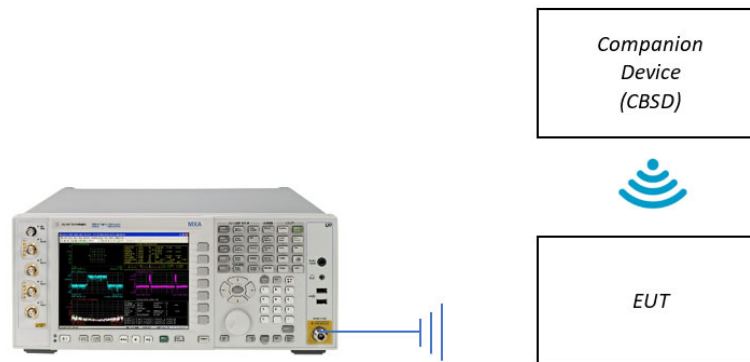
1. The carrier frequency of the transmitter is measured at room temperature (20 °C to provide a reference).

2. The equipment is turned on in a “standby” condition for fifteen minutes before applying power to the transmitter.

Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.

3. Frequency measurements are made at 10 °C intervals ranging from -30 °C to +50 °C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

3.10 End User Device Additional Requirement (CBSD Protocol)



Test setup

Test Overview

End user device additional requirements (CBSD Protocol) are tested per the test procedures listed below. During testing, the EUT is connected to a certified CBSD (FCC ID: 2BKZBWEH37-TM24B) as a companion device to show compliance with Part 96.47.

End User Devices may operate only if they can positively receive and decode an authorization signal transmitted by a CBSD, including the frequencies and power limits for their operation.

Test Channel & Power

1. Setup companion device with 3550 MHz - 3560 MHz (BW 10 MHz) and power level 23 dBm

Test Procedure

1. Enable AP service from companion device.
2. EUT is connected to a companion device.
3. Check EUT Tx frequency and power.
4. Disable AP service from companion device and check EUT stop transmission within 10 s.

3.11 WORST CASE(RADIATED TEST)

- Waveform : All Waveform of operation were investigated and the worst case configuration results are reported.
(Worst case: DFT-S-OFDM)
- The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.
- All modes of operation were investigated and the worst case configuration results are reported.
Mode: SA, SRS
Worst case: SA
Mode : Stand alone, Stand alone + External accessories (Earphone, AC adapter, etc)
Worst case : Stand alone
- All simultaneous transmission scenarios of operation were investigated, and the test results showed no additional significant emissions relative to the least restrictive limit were observed.
Therefore, only the worst case(stand-alone) results were reported.
- All RB sizes, offsets of operation were investigated and the worst case configuration results are reported.
Please refer to the table below.
- SM-A276U & additional models were tested and the worst case results are reported.
(Worst case : SM-A276U)

[Worst case]

Test Description	Modulation	RB size	RB offset	Axis
Equivalent Isotropic Radiated Power	PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM	See Section 8.1		Z
Radiated Spurious and Harmonic Emissions	PI/2 BPSK	See Section 8.2		Y

3.12 WORST CASE(CONDUCTED TEST)

- Waveform : All Waveform of operation were investigated and the worst case configuration results are reported.
(Worst case: DFT-S-OFDM)
- Modulation : All Modulation of operation were investigated and the worst case configuration results are reported.
(Worst case: PI/2 BPSK)
- All modes of operation were investigated and the worst case configuration results are reported.
Mode: SA, SRS
Worst case: SA
- All RB sizes, offsets of operation were investigated and the worst case configuration results are reported.
Please refer to the table below.
- SM-A276U & additional models were tested and the worst case results are reported.
(Worst case : SM-A276U)

[Worst case]

Test Description	Modulation	Bandwidth (MHz)	Frequency	RB size	RB offset
Occupied Bandwidth, Peak-To-Average Ratio	PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM	10, 20, 30, 40	Mid	Full RB	0
Channel Edge	PI/2 BPSK	10	Low	1	0
			High	1	23
		20	Low	1	0
			High	1	50
		30	Low	1	0
			High	1	77
		40	Low	1	0
			High	1	105
		10, 20, 30, 40	Low, Mid, High	Full RB	0
Spurious and Harmonic Emissions at Antenna Terminal	PI/2 BPSK	10, 20, 30, 40	Low, Mid, High	1	1
Adjacent Channel Leakage Ratio(ACLR)	PI/2 BPSK	10, 20, 30, 40	Low, Mid, High	Full RB	0

4. LIST OF TEST EQUIPMENT

Equipment	Model	Manufacture	Serial No.	Due to Calibration	Calibration Interval
Dipole Antenna	UHAP	Schwarzbeck	01273	03/05/2028	Biennial
Dipole Antenna	UHAP	Schwarzbeck	01274	03/05/2028	Biennial
Horn Antenna	BBHA 9120D	Schwarzbeck	02289	02/10/2027	Biennial
Horn Antenna	BBHA 9120D	Schwarzbeck	9120D-1299	04/17/2027	Biennial
Horn Antenna	BBHA 9170	Schwarzbeck	BBHA9170342	09/20/2026	Biennial
Horn Antenna	BBHA 9170	Schwarzbeck	BBHA9170124	03/23/2027	Biennial
Loop Antenna	FMZB1513	Schwarzbeck	1513-175	06/24/2027	Biennial
Bilog Antenna	VULB9160	Schwarzbeck	3150	03/05/2027	Biennial
Hybrid Antenna	VULB9168	Schwarzbeck	760	02/17/2027	Biennial
RF Switching System	FBSR-06B (1G HPF + LNA)	T&M SYSTEM	F3L1	05/08/2026	Annual
RF Switching System	FBSR-06B (3G HPF + LNA)	T&M SYSTEM	F3L2	05/08/2026	Annual
RF Switching System	FBSR-06B (6G HPF + LNA)	T&M SYSTEM	F3L3	05/08/2026	Annual
RF Switching System	FBSR-06B (LNA)	T&M SYSTEM	F3L4	05/08/2026	Annual
Broadband Low Noise Amplifier	CBL18265035	CERNEX	22966	10/21/2026	Annual
Broadband Low Noise Amplifier	CBL26405040	CERNEX	25956	02/09/2027	Annual
DC Power Supply	E3632A	Hewlett Packard	MY40004427	08/11/2026	Annual
Power Splitter	11667B	Hewlett Packard	11275	01/26/2027	Annual
Chamber	SU-642	ESPEC	93008124	02/09/2027	Annual
Signal Analyzer	N9020A	Agilent	MY51110063	04/01/2027	Annual
ATTENUATOR	8493C	Hewlett Packard	15233	12/10/2026	Annual
Signal Analyzer	FSV40	ROHDE & SCHWARZ	101436	01/29/2027	Annual
Signal & Spectrum Analyzer	FSW67	ROHDE & SCHWARZ	101736	05/27/2026	Annual
Wireless Communications Set	E5515C	Agilent	MY48360800	07/29/2026	Annual
Radio Communication Analyzer	MT8821C	Anritsu Corp.	6262287701	05/14/2026	Annual
Radio Communication Test Station	MT8000A	Anritsu Corp.	6262302511	05/08/2026	Annual
Signal Analyzer	N9030B	KEYSIGHT	MY55480167	05/14/2026	Annual
UXM 5G Wireless Test Platform	E7515B	KEYSIGHT	MY60101126	01/29/2027	Annual
Power Divider	ZC4PD-K1844+	Mini-Circuits	942907	09/05/2026	Annual
SIGNAL GENERATOR	SMB100A	ROHDE & SCHWARZ	177633	07/22/2026	Annual
Standard P5G Solution	Indoor RU: WEH37-TM24 USLP: SYS-111E-FWTR	Indoor RU: Wave Electronic USLP: SUPER MICRO COMPUTER,INC	Indoor RU: 1DT012249B00009 ULSP: C515BAN30A20232	-	-
Automation Software	FCC 2G/3G/4G Conducted	HCT CO., LTD	-	-	-
Automation Software	FCC NR Conducted	HCT CO., LTD	-	-	-
Automation Software	FCC LTE Radiated	HCT CO., LTD	-	-	-
Automation Software	FCC NR Radiated	HCT CO., LTD	-	-	-

Note:

1. Equipment whose calibration due date was updated during the test period was not used between the previous due date and the update. All reported measurements were performed using equipment within valid calibration.
2. Especially, all antenna for measurement is calibrated in accordance with the requirements of ANSI C63.5-2017.

5. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4-2014.

All measurement uncertainty values are shown with a coverage factor of $k = 2$ to indicate a 95 % level of confidence. The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty ($\pm$ kHz)
Occupied Bandwidth	95 (Confidence level about 95 %, $k=2$)
Frequency stability	28 (Confidence level about 95 %, $k=2$)

Parameter	Expanded Uncertainty ($\pm$ dB)
Block Edge	0.70 (Confidence level about 95 %, $k=2$)
Conducted Spurious Emissions	1.11 (Confidence level about 95 %, $k=2$)
Peak- to- Average Ratio	0.73 (Confidence level about 95 %, $k=2$)
Adjacent Channel Leakage Ratio(ACLR)	0.68 dB (Confidence level about 95 %, $k=2$)
Radiated Power	4.74 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (9 kHz ~ 30 MHz)	4.54 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (30 MHz ~ 1 GHz)	5.74 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.80 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (18 GHz ~ 40 GHz)	5.86 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (Above 40 GHz)	5.44 (Confidence level about 95 %, $k=2$)

6. SUMMARY OF TEST RESULTS

-. The decision rule applies 'simple acceptance'

6.1 Test Condition : Conducted Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Occupied Bandwidth	§ 2.1049	N/A	PASS
Band Edge / Spurious and Harmonic Emissions at Antenna Terminal.	§ 2.1051, § 96.41(e)	■ -13 dBm/MHz at frequencies within 0-10 MHz of channel edge ■ -25 dBm/MHz at frequencies greater than 10 MHz above and below channel edge ■ -40 dBm/MHz at frequencies below 3530 MHz and above 3720 MHz	PASS
Adjacent Channel Leakage Ratio	§ 96.41(e)	At least 30 dB.	PASS
Conducted Output Power	§ 2.1046	N/A	PASS Note1
Peak- to- Average Ratio	§ 96.41(g)	< 13 dB	PASS
Frequency stability / variation of ambient temperature	§ 2.1055,	Emission must remain in band	PASS

Note:

1. Refer to the SAR report
2. Conducted tests were tested using 5G Wireless Tester.

6.2 Test Condition : Radiated Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Equivalent Isotropic Radiated Power	§ 96.41(b)	23 dBm/10 MHz	PASS
Radiated Spurious and Harmonic Emissions	§ 2.1053, § 96.41(e)	-40 dBm/MHz	PASS
End User Device Additional Requirements (CBSD Protocol)	§ 96.47	End User Devices may operate only if they can positively receive and decode an authorization signal transmitted by a CBSD, including the frequencies and power limits for their operation. An End User Device must discontinue operations, change frequencies, or change its operational power level within 10 seconds of receiving instructions from its associated CBSD.	PASS

Note:

1. Radiated tests were tested using 5G Wireless Tester.

7. SAMPLE CALCULATION

7.1 ERP Sample Calculation

Ch./ Freq.		Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBd)	C.L	Pol.	ERP	
channel	Freq.(MHz)						W	dBm
128	824.20	-21.37	38.40	-10.61	0.95	H	0.483	26.84

$$\text{ERP} = \text{Substitute LEVEL(dBm)} + \text{Ant. Gain} - \text{CL(Cable Loss)}$$

- 1) The EUT mounted on a non-conductive turntable is 2.5 meter above test site ground level.
- 2) During the test, the turn table is rotated until the maximum signal is found.
- 3) Record the field strength meter's level.
- 4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.
- 5) Increase the signal generator output till the field strength meter's level is equal to the item (3).
- 6) The signal generator output level with Ant. Gain and cable loss are the rating of effective radiated power.

7.2 EIRP Sample Calculation

Ch./ Freq.		Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol.	EIRP	
channel	Freq.(MHz)						W	dBm
20175	1,732.50	-15.75	18.45	9.90	1.76	H	0.456	26.59

$$\text{EIRP} = \text{Substitute LEVEL(dBm)} + \text{Ant. Gain} - \text{CL(Cable Loss)}$$

- 1) The EUT mounted on a non-conductive turntable is 2.5 meter above test site ground level.
- 2) During the test, the turn table is rotated until the maximum signal is found.
- 3) Record the field strength meter's level.
- 4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.
- 5) Increase the signal generator output till the field strength meter's level is equal to the item (3).
- 6) The signal generator output level with Ant. Gain and cable loss are the rating of equivalent isotropic radiated power.

7.3. Emission Designator

GSM Emission Designator

Emission Designator = 249KGXW
GSM BW = 249 kHz
G = Phase Modulation
X = Cases not otherwise covered
W = Combination (Audio/Data)

EDGE Emission Designator

Emission Designator = 249KG7W
GSM BW = 249 kHz
G = Phase Modulation
7 = Quantized/Digital Info
W = Combination (Audio/Data)

WCDMA Emission Designator

Emission Designator = 4M17F9W
WCDMA BW = 4.17 MHz
F = Frequency Modulation
9 = Composite Digital Info
W = Combination (Audio/Data)

QPSK Modulation

Emission Designator = 4M48G7D
LTE BW = 4.48 MHz
G = Phase Modulation
7 = Quantized/Digital Info
D = Data transmission; telemetry; telecommand

QAM Modulation

Emission Designator = 4M48W7D
LTE BW = 4.48 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data transmission; telemetry; telecommand

8. TEST DATA

8.1 EQUIVALENT ISOTROPIC RADIATED POWER

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	EIRP	Limit	RB	
								dBm/10 MHz		Size	Size
3555.00	Sub6 n48/ 10 MHz [30 kHz]	PI/2 BPSK	-27.71	10.97	11.69	3.09	H	19.57	23.0	1	12
		QPSK	-27.74	10.94	11.69	3.09	H	19.54			
		16-QAM	-28.82	9.86	11.69	3.09	H	18.46			
		64-QAM	-30.31	8.37	11.69	3.09	H	16.97			
		256-QAM	-32.42	6.26	11.69	3.09	H	14.86			
3624.99		PI/2 BPSK	-27.00	11.79	11.81	3.13	H	20.47		1	22
		QPSK	-27.01	11.78	11.81	3.13	H	20.46			
		16-QAM	-28.03	10.76	11.81	3.13	H	19.44			
		64-QAM	-29.48	9.31	11.81	3.13	H	17.99			
		256-QAM	-31.64	7.15	11.81	3.13	H	15.83			
3694.98		PI/2 BPSK	-27.26	11.71	11.64	3.15	H	20.20		1	22
		QPSK	-27.30	11.67	11.64	3.15	H	20.16			
		16-QAM	-28.33	10.64	11.64	3.15	H	19.13			
		64-QAM	-29.77	9.20	11.64	3.15	H	17.69			
		256-QAM	-31.94	7.03	11.64	3.15	H	15.52			

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	EIRP	Limit	RB	
								dBm/10 MHz		Size	Size
3560.01	Sub6 n48/ 20 MHz [30 kHz]	PI/2 BPSK	-27.36	11.29	11.70	3.09	H	19.90	23.0	1	49
		QPSK	-27.43	11.22	11.70	3.09	H	19.83			
		16-QAM	-28.47	10.18	11.70	3.09	H	18.79			
		64-QAM	-29.88	8.77	11.70	3.09	H	17.38			
		256-QAM	-32.05	6.60	11.70	3.09	H	15.21			
3624.99		PI/2 BPSK	-26.75	12.04	11.81	3.13	H	20.72		1	49
		QPSK	-26.77	12.02	11.81	3.13	H	20.70			
		16-QAM	-27.86	10.93	11.81	3.13	H	19.61			
		64-QAM	-29.21	9.58	11.81	3.13	H	18.26			
		256-QAM	-31.43	7.36	11.81	3.13	H	16.04			
3690.00		PI/2 BPSK	-27.10	11.84	11.66	3.15	H	20.35		1	49
		QPSK	-27.13	11.81	11.66	3.15	H	20.32			
		16-QAM	-28.17	10.77	11.66	3.15	H	19.28			
		64-QAM	-29.62	9.32	11.66	3.15	H	17.83			
		256-QAM	-31.83	7.11	11.66	3.15	H	15.62			

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	EIRP	Limit	RB	
								dBm/10 MHz		Size	Size
3565.02	Sub6 n48/ 30 MHz [30 kHz]	PI/2 BPSK	-27.10	11.50	11.71	3.09	H	20.12	23.0	1	76
		QPSK	-27.14	11.46	11.71	3.09	H	20.08			
		16-QAM	-28.18	10.42	11.71	3.09	H	19.04			
		64-QAM	-29.61	8.99	11.71	3.09	H	17.61			
		256-QAM	-31.78	6.82	11.71	3.09	H	15.44			
3624.99		PI/2 BPSK	-26.71	12.08	11.81	3.13	H	20.76		1	1
		QPSK	-26.73	12.06	11.81	3.13	H	20.74			
		16-QAM	-27.88	10.91	11.81	3.13	H	19.59			
		64-QAM	-29.16	9.63	11.81	3.13	H	18.31			
		256-QAM	-31.40	7.39	11.81	3.13	H	16.07			
3684.99		PI/2 BPSK	-27.04	11.90	11.67	3.14	H	20.43		1	76
		QPSK	-27.07	11.87	11.67	3.14	H	20.40			
		16-QAM	-28.09	10.85	11.67	3.14	H	19.38			
		64-QAM	-29.62	9.32	11.67	3.14	H	17.85			
		256-QAM	-31.75	7.19	11.67	3.14	H	15.72			

Freq (MHz)	Mod/ Bandwidth [SCS (kHz)]	Modulation	Measured Level (dBm)	Substitute Level (dBm)	Ant. Gain (dBi)	C.L	Pol	EIRP	Limit	RB	
								dBm/10 MHz		Size	Size
3570.00	Sub6 n48/ 40 MHz [30 kHz]	PI/2 BPSK	-27.04	11.52	11.72	3.09	H	20.15	23.0	1	104
		QPSK	-27.05	11.51	11.72	3.09	H	20.14			
		16-QAM	-28.09	10.47	11.72	3.09	H	19.10			
		64-QAM	-29.57	8.99	11.72	3.09	H	17.62			
		256-QAM	-31.78	6.78	11.72	3.09	H	15.41			
3624.99		PI/2 BPSK	-26.62	12.17	11.81	3.13	H	20.85		1	104
		QPSK	-26.66	12.13	11.81	3.13	H	20.81			
		16-QAM	-27.73	11.06	11.81	3.13	H	19.74			
		64-QAM	-29.16	9.63	11.81	3.13	H	18.31			
		256-QAM	-31.34	7.45	11.81	3.13	H	16.13			
3679.98		PI/2 BPSK	-26.92	12.01	11.69	3.14	H	20.56		1	104
		QPSK	-26.93	12.00	11.69	3.14	H	20.55			
		16-QAM	-27.96	10.97	11.69	3.14	H	19.52			
		64-QAM	-29.54	9.39	11.69	3.14	H	17.94			
		256-QAM	-31.56	7.37	11.69	3.14	H	15.92			

8.2 RADIATED SPURIOUS EMISSIONS

NR Band:	<u>NR n48</u>
Bandwidth:	<u>10 MHz</u>
Modulation:	<u>PI/2 BPSK</u>
Distance:	<u>1 meters</u>
SCS:	<u>30 kHz</u>

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	Limit (dBm)	RB	
									Size	Offset
637000 (3555.00)	7 110.00	-62.31	11.45	-54.93	4.60	V	-48.08	-40.00	1	12
		-62.30		-54.92		H	-48.07	-40.00		
	10 665.00	-62.95	11.05	-51.74	5.67	V	-46.36	-40.00		
		-61.85		-50.64		H	-45.26	-40.00		
	14 220.00	-59.22	11.68	-50.11	6.64	V	-45.07	-40.00		
		-59.53		-50.42		H	-45.38	-40.00		
641666 (3624.99)	7 249.98	-60.35	11.38	-51.65	4.64	V	-44.91	-40.00	1	22
		-61.13		-52.43		H	-45.69	-40.00		
	10 874.97	-62.85	10.70	-51.77	5.77	V	-46.84	-40.00		
		-62.98		-51.90		H	-46.97	-40.00		
	14 499.96	-55.84	11.61	-48.72	6.75	V	-43.86	-40.00		
		-55.40		-48.28		H	-43.42	-40.00		
646332 (3694.98)	7 389.96	-62.04	11.40	-54.12	4.70	V	-47.42	-40.00	1	22
		-61.80		-53.88		H	-47.18	-40.00		
	11 084.94	-63.12	11.09	-51.94	5.86	V	-46.71	-40.00		
		-63.60		-52.42		H	-47.19	-40.00		
	14 779.92	-56.18	11.95	-50.07	6.84	V	-44.96	-40.00		
		-55.89		-49.78		H	-44.67	-40.00		

■ NR Band: NR n48
 ■ Bandwidth: 20 MHz
 ■ Modulation: PI/2 BPSK
 ■ Distance: 1 meters
 ■ SCS: 30 kHz

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	Limit (dBm)	RB	
									Size	Offset
637334 (3560.01)	7 120.02	-61.20	11.43	-53.80	4.61	V	-46.98	-40.00	1	49
		-62.18		-54.78		H	-47.96	-40.00		
	10 680.03	-62.76	11.06	-51.07	5.71	V	-45.72	-40.00		
		-60.94		-49.25		H	-43.90	-40.00		
	14 240.04	-57.93	11.67	-48.81	6.66	V	-43.80	-40.00		
		-57.69		-48.57		H	-43.56	-40.00		
641666 (3624.99)	7 249.98	-59.94	11.38	-51.24	4.64	V	-44.50	-40.00	1	49
		-63.81		-55.11		H	-48.37	-40.00		
	10 874.97	-64.37	10.70	-53.29	5.77	V	-48.36	-40.00		
		-63.60		-52.52		H	-47.59	-40.00		
	14 499.96	-56.18	11.61	-49.06	6.75	V	-44.20	-40.00		
		-56.24		-49.12		H	-44.26	-40.00		
646000 (3690.00)	7 380.00	-63.16	11.41	-55.09	4.69	V	-48.37	-40.00	1	49
		-61.89		-53.82		H	-47.10	-40.00		
	11 070.00	-63.73	11.04	-52.66	5.86	V	-47.48	-40.00		
		-63.29		-52.22		H	-47.04	-40.00		
	14 760.00	-56.36	11.89	-49.74	6.82	V	-44.67	-40.00		
		-56.64		-50.02		H	-44.95	-40.00		

■ NR Band: NR n48
 ■ Bandwidth: 30 MHz
 ■ Modulation: PI/2 BPSK
 ■ Distance: 1 meters
 ■ SCS: 30 kHz

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	Limit (dBm)	RB	
									Size	Offset
637668 (3565.02)	7 130.04	-58.95	11.41	-51.17	4.61	V	-44.37	-40.00	1	76
		-62.39		-54.61		H	-47.81	-40.00		
	10 695.06	-63.51	11.07	-51.95	5.71	V	-46.59	-40.00		
		-62.18		-50.62		H	-45.26	-40.00		
	14 260.08	-58.39	11.66	-49.82	6.71	V	-44.87	-40.00		
		-58.24		-49.67		H	-44.72	-40.00		
641666 (3624.99)	7 249.98	-59.50	11.38	-50.80	4.64	V	-44.06	-40.00	1	1
		-61.92		-53.22		H	-46.48	-40.00		
	10 874.97	-63.06	10.70	-51.98	5.77	V	-47.05	-40.00		
		-63.85		-52.77		H	-47.84	-40.00		
	14 499.96	-56.46	11.61	-49.34	6.75	V	-44.48	-40.00		
		-55.31		-48.19		H	-43.33	-40.00		
645666 (3684.99)	7 369.98	-60.77	11.41	-52.75	4.69	V	-46.03	-40.00	1	76
		-62.46		-54.44		H	-47.72	-40.00		
	11 054.97	-61.04	10.99	-49.61	5.82	V	-44.44	-40.00		
		-63.80		-52.37		H	-47.20	-40.00		
	14 739.96	-56.65	11.85	-50.22	6.80	V	-45.17	-40.00		
		-56.71		-50.28		H	-45.23	-40.00		

■ NR Band: NR n48
 ■ Bandwidth: 40 MHz
 ■ Modulation: PI/2 BPSK
 ■ Distance: 1 meters
 ■ SCS: 30 kHz

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)	Limit (dBm)	RB	
									Size	Offset
638000 (3570.00)	7 140.00	-59.76	11.40	-51.54	4.61	V	-44.75	-40.00	1	104
		-62.09		-53.87		H	-47.08	-40.00		
	10 710.00	-63.37	11.06	-51.81	5.69	V	-46.44	-40.00		
		-62.05		-50.49		H	-45.12	-40.00		
	14 280.00	-57.28	11.66	-48.53	6.72	V	-43.59	-40.00		
		-57.77		-49.02		H	-44.08	-40.00		
641666 (3624.99)	7 249.98	-59.27	11.38	-50.57	4.64	V	-43.83	-40.00	1	104
		-63.62		-54.92		H	-48.18	-40.00		
	10 874.97	-63.94	10.70	-52.86	5.77	V	-47.93	-40.00		
		-64.12		-53.04		H	-48.11	-40.00		
	14 499.96	-57.45	11.61	-50.33	6.75	V	-45.47	-40.00		
		-57.08		-49.96		H	-45.10	-40.00		
645332 (3679.98)	7 359.96	-61.74	11.42	-53.78	4.68	V	-47.04	-40.00	1	104
		-62.82		-54.86		H	-48.12	-40.00		
	11 039.94	-64.13	10.94	-51.93	5.80	V	-46.79	-40.00		
		-63.96		-51.76		H	-46.62	-40.00		
	14 719.92	-56.07	11.81	-49.41	6.79	V	-44.39	-40.00		
		-57.35		-50.69		H	-45.67	-40.00		

8.3 PEAK-TO-AVERAGE RATIO

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)	Limit (dB)
Sub6 n48	10 MHz	3624.99	Pl/2 BPSK	24	0	4.27	13.00
			QPSK			5.83	
			16-QAM			6.56	
			64-QAM			6.39	
			256-QAM			6.53	
	20 MHz		Pl/2 BPSK	50		4.26	
			QPSK			5.56	
			16-QAM			6.36	
			64-QAM			6.52	
			256-QAM			6.68	
	30 MHz		Pl/2 BPSK	75		4.52	
			QPSK			5.49	
			16-QAM			6.20	
			64-QAM			6.48	
			256-QAM			6.51	
	40 MHz		Pl/2 BPSK	100		4.33	
			QPSK			5.60	
			16-QAM			6.24	
			64-QAM			6.44	
			256-QAM			6.48	

8.4 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (MHz)
Sub6 n48	10 MHz	3624.99	PI/2 BPSK	24	0	8.6014
			QPSK			8.6646
			16-QAM			8.6289
			64-QAM			8.6453
			256-QAM			8.7450
	20 MHz		PI/2 BPSK	50		17.880
			QPSK			17.992
			16-QAM			17.979
			64-QAM			17.864
			256-QAM			17.899
	30 MHz		PI/2 BPSK	75		26.850
			QPSK			26.900
			16-QAM			26.755
			64-QAM			26.906
			256-QAM			26.861
	40 MHz		PI/2 BPSK	100		35.748
			QPSK			35.824
			16-QAM			35.849
			64-QAM			35.748
			256-QAM			35.791

8.5 CONDUCTED SPURIOUS EMISSIONS

Band	Band Width (MHz)	Frequency (MHz)	Frequency of Maximum Harmonic (GHz)	Factor (dB)	Measurement Maximum Data (dBm)	Result (dBm)	Limit (dBm)
Sub6 n48	10	3555.00	3.7819	35.523	-80.568	-45.045	-40.00
		3624.99	3.9285	35.523	-81.353	-45.830	
		3694.98	3.9215	35.523	-81.131	-45.608	
	20	3560.01	3.7814	35.523	-80.602	-45.079	
		3624.99	3.3861	35.523	-81.360	-45.837	
		3690.00	3.4509	35.523	-81.290	-45.767	
	30	3565.02	3.7819	35.523	-80.933	-45.410	
		3624.99	3.3811	35.523	-80.884	-45.361	
		3684.99	3.9788	35.523	-80.894	-45.371	
	40	3570.00	3.7819	35.523	-81.386	-45.863	
		3624.99	3.2993	35.523	-81.019	-45.496	
		3679.98	3.4309	35.523	-81.429	-45.906	

Note:

1. Factor(dB) = Duty Cycle Factor + Cable Loss + Ext. Attenuator + Power Splitter

- Result(dBm) = Reading + Factor

- Duty Cycle Factor(dB) = 6.99

2. Factor(dB)

Frequency Range (GHz)	Factor [dB]
0.03 – 1	34.002
1 – 5	35.523
5 – 10	36.106
10 – 15	37.015
15 – 20	38.042
Above 20	38.603

8.6 CHANNEL EDGE

BW (MHz)	RB (Size/ Offset)	Freq. (MHz)	Outside of the authorized band (dBm)							
			Lower Side(MHz)				Upper Side(MHz)			
			Below 3530 MHz	-[B]MHz ~ 3530 MHz	-1 MHz ~ -[B]MHz	0 MHz ~ -1 MHz	0 MHz ~ +1 MHz	1 MHz ~ +[B]MHz	+ [B]MHz ~ 3720 MHz	Above 3720 MHz
10	Full RB	3555.00	-54.32	-51.88	-29.54	-27.79	-30.34	-29.97	-52.85	—
		3624.99		-51.54	-33.03	-29.77	-29.49	-32.57	-52.43	—
		3694.98		-51.61	-31.92	-29.63	-31.99	-32.68	-50.94	-50.44
20	Full RB	3560.01	-53.31	-41.75	-34.84	-33.46	-36.47	-32.46	-50.96	—
		3624.99	—	-53.69	-36.30	-31.88	-37.29	-35.76	-52.61	—
		3690.00	—	-52.52	-36.50	-33.82	-37.76	-36.01	-37.82	-50.37
30	Full RB	3565.02	-48.61	-42.70	-36.29	-32.48	-41.28	-37.49	-52.22	—
		3624.99	—	-53.98	-36.75	-35.82	-39.48	-35.95	-51.54	—
		3684.99	—	-51.97	-35.82	-35.23	-38.31	-34.98	-35.65	-44.21
40	Full RB	3570.00	-50.09	-45.34	-38.48	-34.36	-41.59	-39.60	-52.44	—
		3624.99	—	-54.31	-38.64	-32.82	-40.97	-37.87	-51.00	—
		3679.98	—	-51.56	-38.92	-34.12	-41.30	-37.62	-38.04	-42.14
Limit (dBm)			-40.00	-25.00	-13.00	-13.00	-13.00	-13.00	-25.00	-40.00

Note:

1. C.E = Channel Edge
2. Duty Cycle factor already applied on the factor.
 - Duty Cycle Factor(dB) = 6.99
 - Factor(dB) = Duty Cycle factor + Cable Loss + Ext. Attenuator + **Power Splitter**
 - Result(dBm) = Reading + Factor

BW (MHz)	RB (Size/ Offset)	Freq. (MHz)	Outside of the authorized band (dBm)							
			Lower Side(MHz)				Upper Side(MHz)			
			Below 3530 MHz	-[B]MHz ~ 3530 MHz	-1 MHz ~ -[B]MHz	0 MHz ~ -1 MHz	0 MHz ~ +1 MHz	1 MHz ~ +[B]MHz	+ [B]MHz ~ 3720 MHz	Above 3720 MHz
10	Lower Side: 1/0 Upper Side: 1/23	3555.00	-54.20	-52.35	-31.73	-26.76	-25.23	-31.25	-52.58	—
		3624.99	—	-51.47	-32.56	-27.67	-27.53	-33.25	-52.29	—
		3694.98	—	-51.42	-33.06	-28.39	-26.62	-32.34	-50.67	-50.46
20	Lower Side: 1/0 Upper Side: 1/50	3560.01	-54.14	-52.30	-31.84	-27.36	-27.83	-32.58	-51.27	—
		3624.99	—	-53.73	-32.74	-28.56	-29.40	-33.68	-52.60	—
		3690.00	—	-52.54	-33.36	-29.72	-29.20	-33.26	-50.54	-50.36
30	Lower Side: 1/0 Upper Side: 1/77	3565.02	-54.17	-51.86	-35.47	-32.70	-33.68	-36.57	-52.15	—
		3624.99	—	-54.22	-34.93	-32.85	-33.31	-35.98	-51.59	—
		3684.99	—	-51.96	-35.71	-32.98	-34.79	-36.51	-50.04	-50.36
40	Lower Side: 1/0 Upper Side: 1/105	3570.00	-54.30	-52.35	-34.67	-31.40	-31.56	-35.33	-52.48	—
		3624.99	—	-54.45	-33.91	-30.11	-32.81	-35.66	-51.04	—
		3679.98	—	-51.51	-34.18	-30.22	-34.43	-36.76	-49.46	-50.27
Limit (dBm)			-40.00	-25.00	-13.00	-13.00	-13.00	-13.00	-25.00	-40.00

Note:

1. C.E = Channel Edge
2. Duty Cycle factor already applied on the factor.
 - Duty Cycle Factor(dB) = 6.99
 - Factor(dB) = Duty Cycle factor + Cable Loss + Ext. Attenuator + Power Splitter
 - Result(dBm) = Reading + Factor

8.7 Adjacent Channel Leakage Ratio(ACLR)

Band Width	RB (Size/ Offset)	Frequency (MHz)	Adjacent Channel Leakage Ratio(dB)	
			Lower Side	Upper Side
10 MHz	24/0	3555.00	44.60	45.64
		3624.99	45.37	44.88
		3694.98	45.75	44.45
20 MHz	50/0	3560.01	48.55	47.09
		3624.99	49.05	46.26
		3690.00	48.19	46.36
30 MHz	75/0	3565.02	46.97	46.09
		3624.99	47.08	47.63
		3684.99	46.47	45.96
40 MHz	100/0	3570.00	40.10	49.18
		3624.99	39.22	46.86
		3679.98	38.92	48.87
Limit (dB)			ACLR > 30dB	ACLR > 30dB

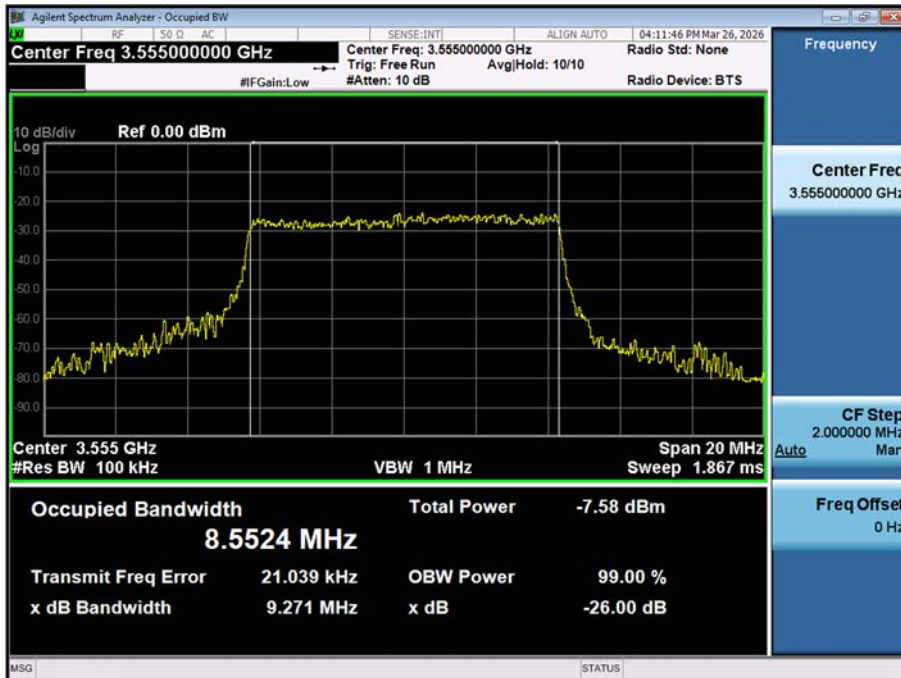
Note:

1. Duty Cycle factor already applied on the factor.

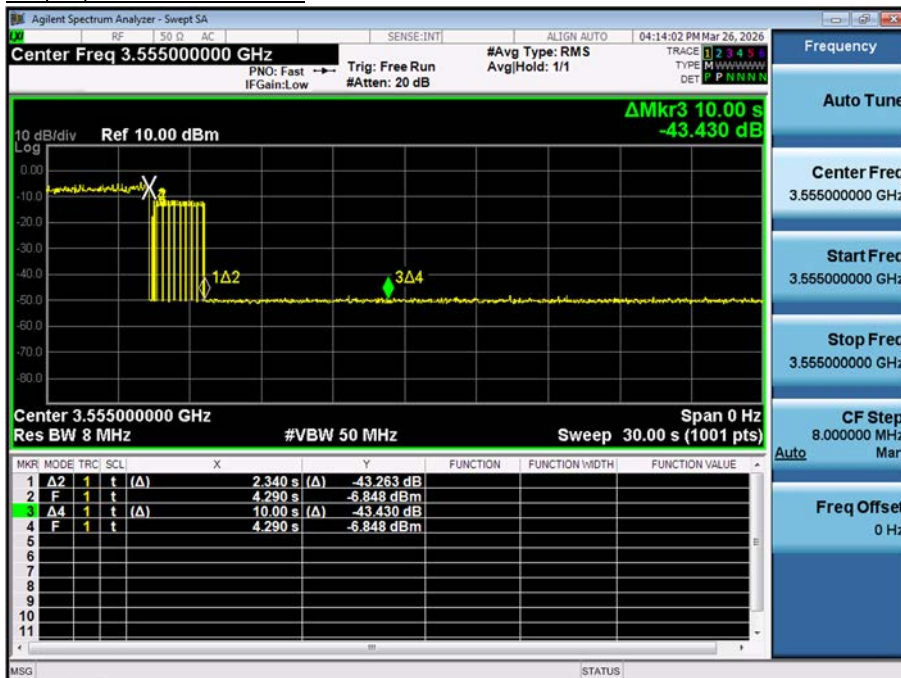
- Factor(dB) = Duty Cycle factor + Cable Loss + Ext. Attenuator + Power Splitter
- Result(dBm) = Reading + Factor
- Duty Cycle Factor(dB) = 6.990

8.8 End User Device Additional Requirement (CBSD Protocol)

Test#1: 3555 MHz(BW: 10 MHz)



Stop Operation Within 10 s



Note:

Marker 2: CBSD sends instructions to discontinue NR n48 operations.

Marker 1Δ2: EUT discontinues operation. (2.340 s)

Marker 3Δ4: 10 seconds elapsed time from CBSD sending instructions to EUT.(10.0 s)

8.9 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

BandWidth:	<u>10 MHz</u>
Voltage(100 %):	<u>3.880 VDC</u>
Batt. Endpoint:	<u>3.300 VDC</u>
LIMIT:	<u>Emission must remain in band</u>

Test. Frequency	Voltage	Temp.	Frequency	Frequency Error	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	(Hz)	(%)	
3555.000	100 %	+20(Ref)	3554 999 999	0.0	0.000 000	0.000
	100 %	-30	3555 000 000	0.8	0.000 000	0.000
	100 %	-20	3554 999 998	-1.0	0.000 000	0.000
	100 %	-10	3554 999 993	-6.0	0.000 000	-0.002
	100 %	0	3554 999 998	-1.1	0.000 000	0.000
	100 %	+10	3554 999 995	-4.4	0.000 000	-0.001
	100 %	+30	3554 999 997	-2.6	0.000 000	-0.001
	100 %	+40	3555 000 005	5.3	0.000 000	0.001
	100 %	+50	3554 999 999	-0.5	0.000 000	0.000
	Batt. Endpoint	+20	3555 000 001	1.7	0.000 000	0.000
3694.980	100 %	+20(Ref)	3694 979 995	0.0	0.000 000	0.000
	100 %	-30	3694 979 990	-5.0	0.000 000	-0.001
	100 %	-20	3694 979 986	-8.9	0.000 000	-0.002
	100 %	-10	3694 979 991	-3.7	0.000 000	-0.001
	100 %	0	3694 979 992	-3.2	0.000 000	-0.001
	100 %	+10	3694 979 993	-2.2	0.000 000	-0.001
	100 %	+30	3694 979 988	-6.8	0.000 000	-0.002
	100 %	+40	3694 979 989	-5.8	0.000 000	-0.002
	100 %	+50	3694 979 990	-5.3	0.000 000	-0.001
	Batt. Endpoint	+20	3694 979 993	-1.6	0.000 000	0.000

☐ BandWidth: 20 MHz
☐ Voltage(100 %): 3.880 VDC
☐ Batt. Endpoint: 3.300 VDC
☐ LIMIT: Emission must remain in band

Test. Frequency	Voltage	Temp.	Frequency	Frequency Error	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	(Hz)	(%)	
3560.010	100 %	+20(Ref)	3560 010 002	0.0	0.000 000	0.000
	100 %	-30	3560 010 004	1.9	0.000 000	0.001
	100 %	-20	3560 009 999	-3.1	0.000 000	-0.001
	100 %	-10	3560 010 008	5.5	0.000 000	0.002
	100 %	0	3560 010 002	0.0	0.000 000	0.000
	100 %	+10	3560 010 000	-2.7	0.000 000	-0.001
	100 %	+30	3560 009 998	-4.0	0.000 000	-0.001
	100 %	+40	3560 010 000	-2.5	0.000 000	-0.001
	100 %	+50	3560 010 003	0.5	0.000 000	0.000
	Batt. Endpoint	+20	3560 010 001	-1.5	0.000 000	0.000
3690.000	100 %	+20(Ref)	3689 999 995	0.0	0.000 000	0.000
	100 %	-30	3689 999 994	-1.0	0.000 000	0.000
	100 %	-20	3689 999 995	-0.4	0.000 000	0.000
	100 %	-10	3689 999 992	-3.2	0.000 000	-0.001
	100 %	0	3689 999 993	-2.3	0.000 000	-0.001
	100 %	+10	3689 999 993	-2.8	0.000 000	-0.001
	100 %	+30	3689 999 994	-1.4	0.000 000	0.000
	100 %	+40	3689 999 995	-0.6	0.000 000	0.000
	100 %	+50	3689 999 993	-2.8	0.000 000	-0.001
	Batt. Endpoint	+20	3689 999 995	-0.9	0.000 000	0.000

☐ BandWidth: 30 MHz
☐ Voltage(100 %): 3.880 VDC
☐ Batt. Endpoint: 3.300 VDC
☐ LIMIT: Emission must remain in band

Test. Frequency	Voltage	Temp.	Frequency	Frequency Error	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	(Hz)	(%)	
3565.020	100 %	+20(Ref)	3565 019 999	0.0	0.000 000	0.000
	100 %	-30	3565 019 997	-1.5	0.000 000	0.000
	100 %	-20	3565 020 001	2.4	0.000 000	0.001
	100 %	-10	3565 019 996	-2.5	0.000 000	-0.001
	100 %	0	3565 020 001	2.2	0.000 000	0.001
	100 %	+10	3565 020 000	1.3	0.000 000	0.000
	100 %	+30	3565 020 000	0.8	0.000 000	0.000
	100 %	+40	3565 019 998	-1.1	0.000 000	0.000
	100 %	+50	3565 020 000	1.4	0.000 000	0.000
	Batt. Endpoint	+20	3565 019 997	-2.2	0.000 000	-0.001
3.300	100 %	+20(Ref)	3684 989 996	0.0	0.000 000	0.000
	100 %	-30	3684 989 991	-5.0	0.000 000	-0.001
	100 %	-20	3684 989 991	-5.2	0.000 000	-0.001
	100 %	-10	3684 989 992	-3.9	0.000 000	-0.001
	100 %	0	3684 989 992	-4.4	0.000 000	-0.001
	100 %	+10	3684 989 992	-3.6	0.000 000	-0.001
	100 %	+30	3684 989 990	-6.0	0.000 000	-0.002
	100 %	+40	3684 989 992	-4.1	0.000 000	-0.001
	100 %	+50	3684 989 994	-2.2	0.000 000	-0.001
	Batt. Endpoint	+20	3684 989 993	-2.7	0.000 000	-0.001

☐ BandWidth: 40 MHz
☐ Voltage(100 %): 3.880 VDC
☐ Batt. Endpoint: 3.300 VDC
☐ LIMIT: Emission must remain in band

Test. Frequency	Voltage	Temp.	Frequency	Frequency Error	Deviation	ppm
(MHz)	(%)	(°C)	(Hz)	(Hz)	(%)	
3570.000	100 %	+20(Ref)	3569 999 993	0.0	0.000 000	0.000
	100 %	-30	3569 999 996	3.0	0.000 000	0.001
	100 %	-20	3569 999 990	-3.9	0.000 000	-0.001
	100 %	-10	3569 999 994	0.9	0.000 000	0.000
	100 %	0	3569 999 988	-5.2	0.000 000	-0.001
	100 %	+10	3569 999 989	-4.1	0.000 000	-0.001
	100 %	+30	3569 999 992	-1.7	0.000 000	0.000
	100 %	+40	3569 999 995	1.9	0.000 000	0.001
	100 %	+50	3569 999 992	-1.8	0.000 000	0.000
	Batt. Endpoint	+20	3569 999 992	-1.1	0.000 000	0.000
3679.980	100 %	+20(Ref)	3679 979 997	0.0	0.000 000	0.000
	100 %	-30	3679 979 989	-8.4	0.000 000	-0.002
	100 %	-20	3679 979 989	-7.6	0.000 000	-0.002
	100 %	-10	3679 979 993	-4.3	0.000 000	-0.001
	100 %	0	3679 979 992	-4.5	0.000 000	-0.001
	100 %	+10	3679 979 995	-2.3	0.000 000	-0.001
	100 %	+30	3679 979 991	-5.6	0.000 000	-0.002
	100 %	+40	3679 979 987	-10.2	0.000 000	-0.003
	100 %	+50	3679 979 993	-4.3	0.000 000	-0.001
	Batt. Endpoint	+20	3679 979 992	-4.6	0.000 000	-0.001

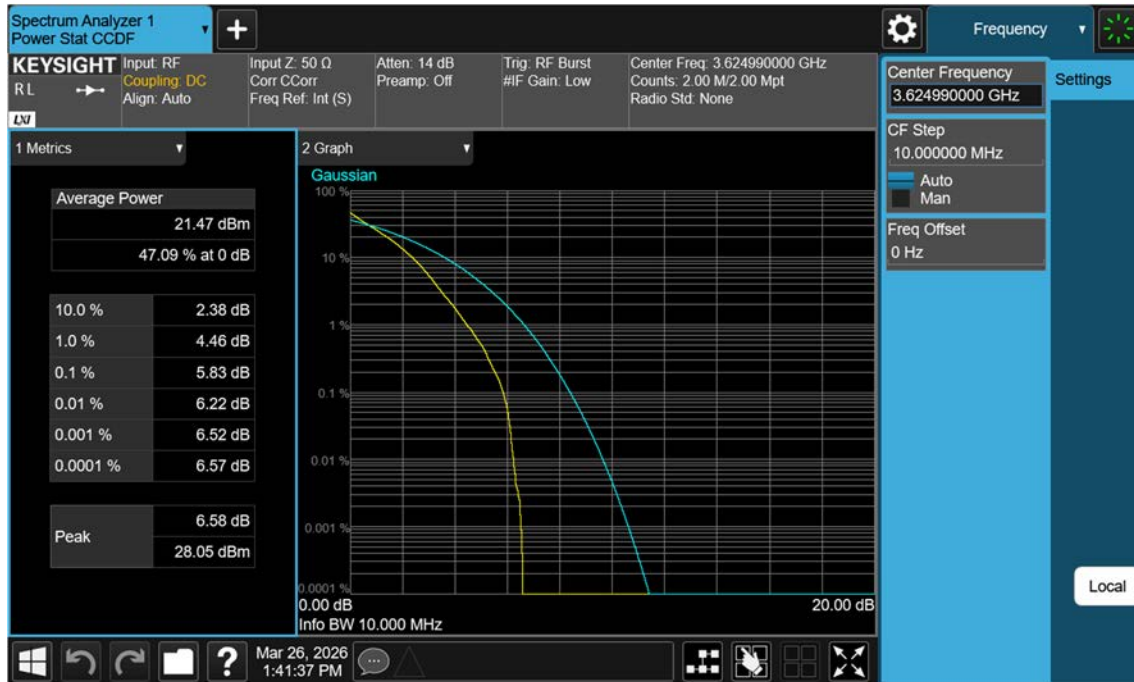
9. TEST PLOTS

9.1 PEAK-TO-AVERAGE RATIO

NR n48_10 M_PAR_Mid_PI/2 BPSK_FullRB



NR n48_10 M_PAR_Mid_QPSK_FullRB



NR n48_10 M_PAR_Mid_16QAM_FullRB



NR n48_10 M_PAR_Mid_64QAM_FullRB



NR n48_10 M_PAR_Mid_256QAM_FullIRB



NR n48_20 M_PAR_Mid_PI/2 BPSK_FullRB



NR n48_20 M_PAR_Mid_QPSK_FullRB



NR n48_20 M_PAR_Mid_16QAM_FullRB



NR n48_20 M_PAR_Mid_64QAM_FullRB



NR n48_20 M_PAR_Mid_256QAM_FullIRB



NR n48_30 M_PAR_Mid_PI/2 BPSK_FullRB



NR n48_30 M_PAR_Mid_QPSK_FullRB



NR n48_30 M_PAR_Mid_16QAM_FullRB



NR n48_30 M_PAR_Mid_64QAM_FullRB



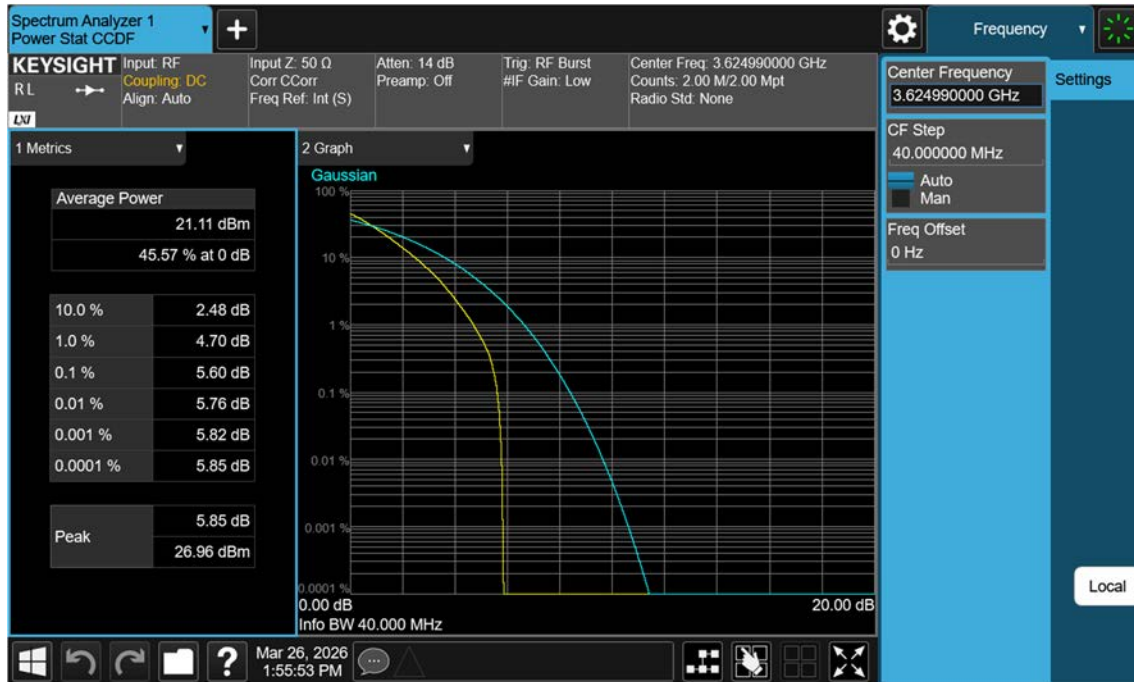
NR n48_30 M_PAR_Mid_256QAM_FullIRB



NR n48_40 M_PAR_Mid_PI/2 BPSK_FullRB



NR n48_40 M_PAR_Mid_QPSK_FullRB



NR n48_40 M_PAR_Mid_16QAM_FullRB



NR n48_40 M_PAR_Mid_64QAM_FullRB

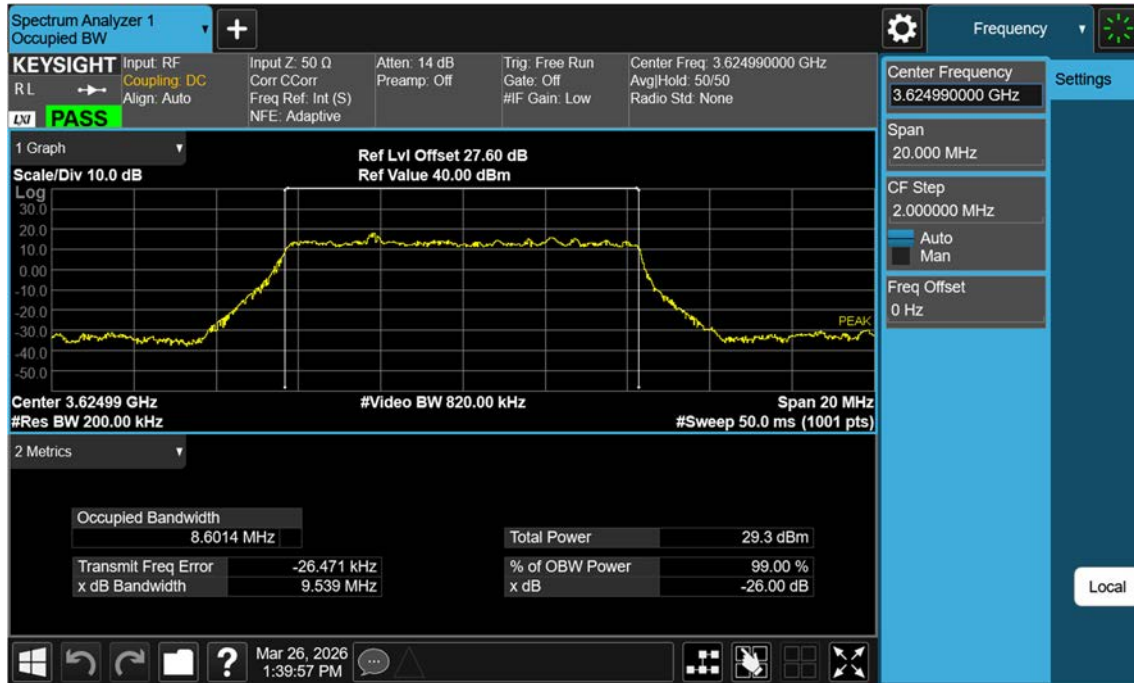


NR n48_40 M_PAR_Mid_256QAM_FullIRB

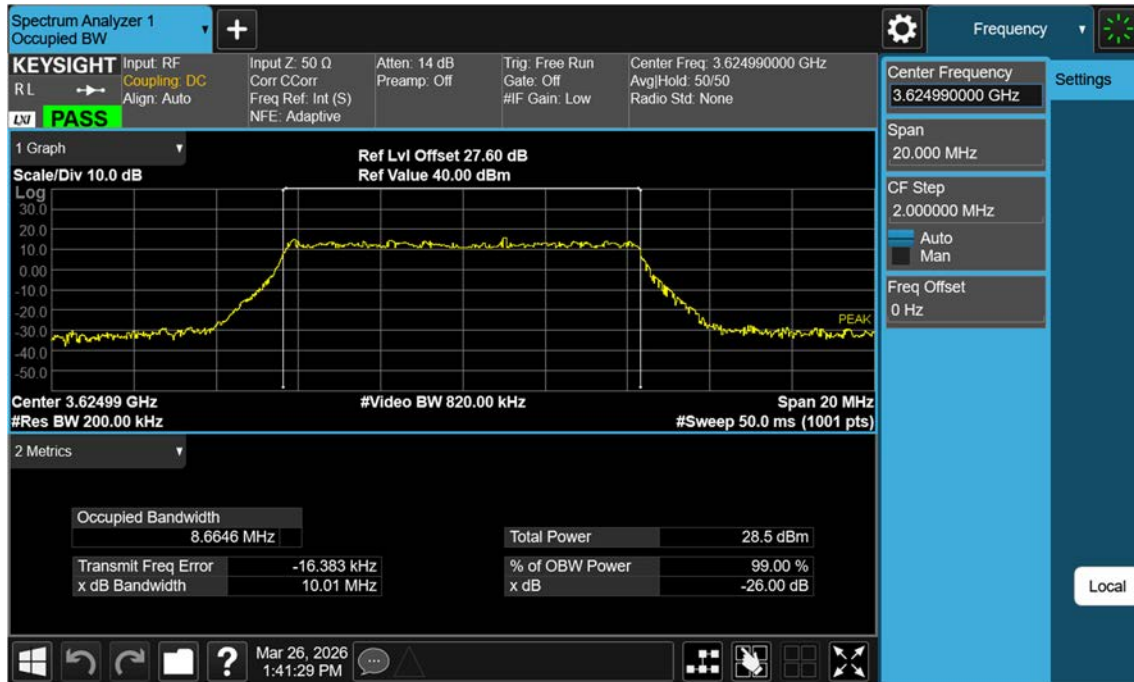


9.2 OCCUPIED BANDWIDTH

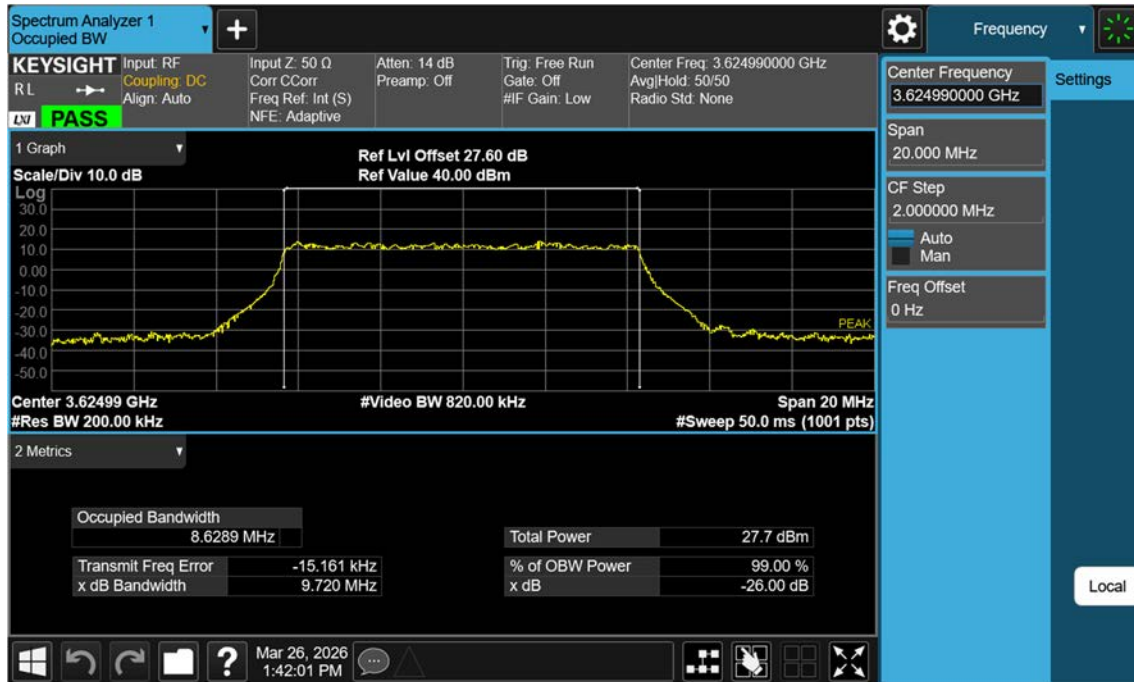
NR n48_10 M_OBW_Mid_PI/2 BPSK_FullRB



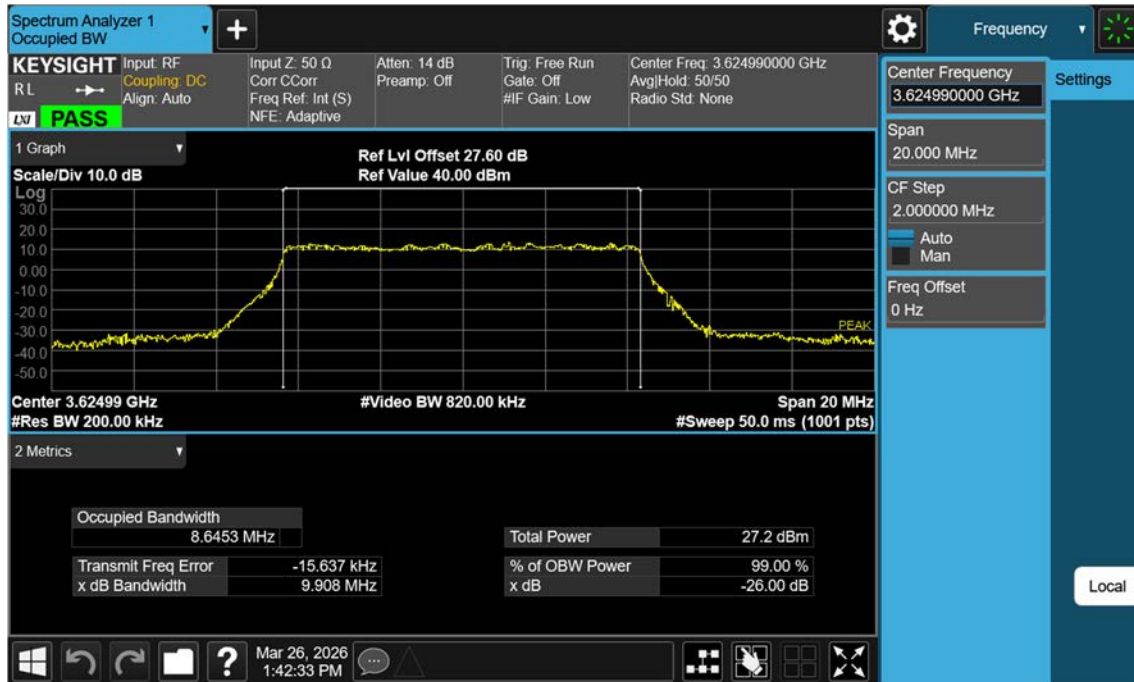
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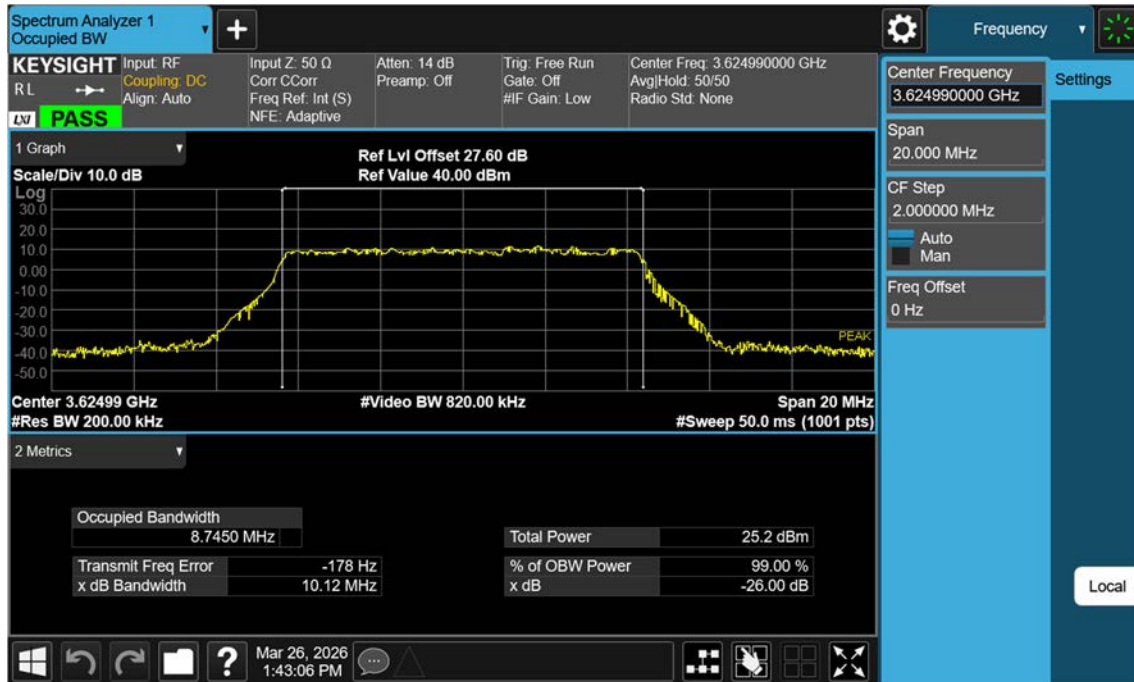
NR n48_10 M_OBW_Mid_16QAM_FullRB



NR n48_10 M_OBW_Mid_64QAM_FullRB



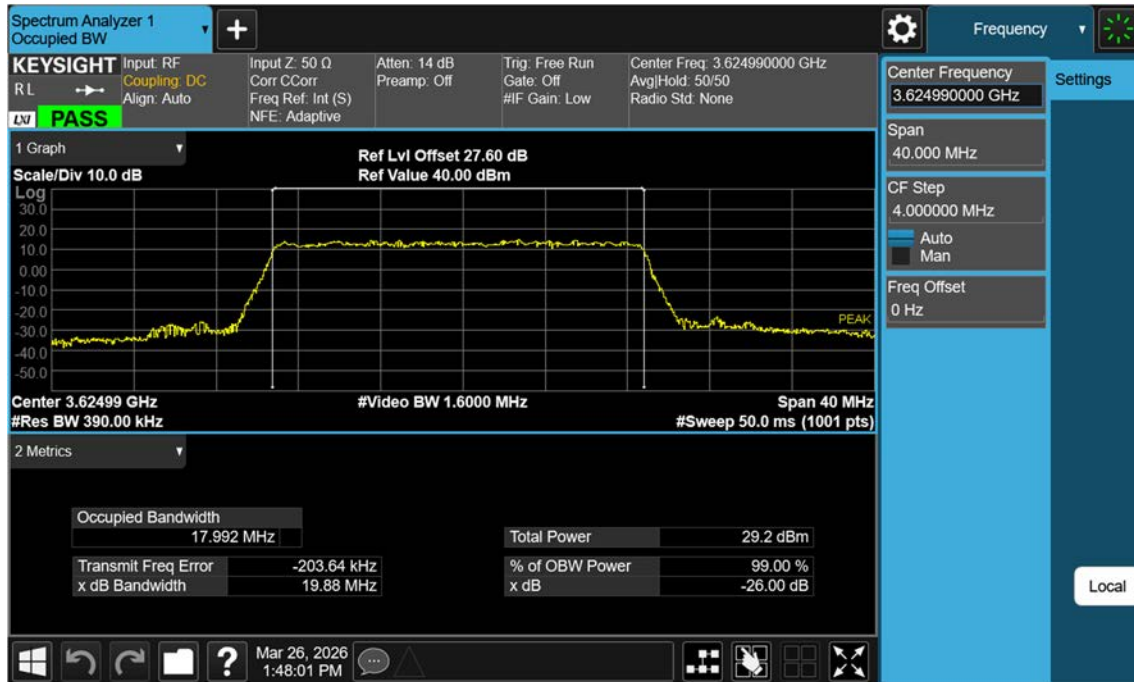
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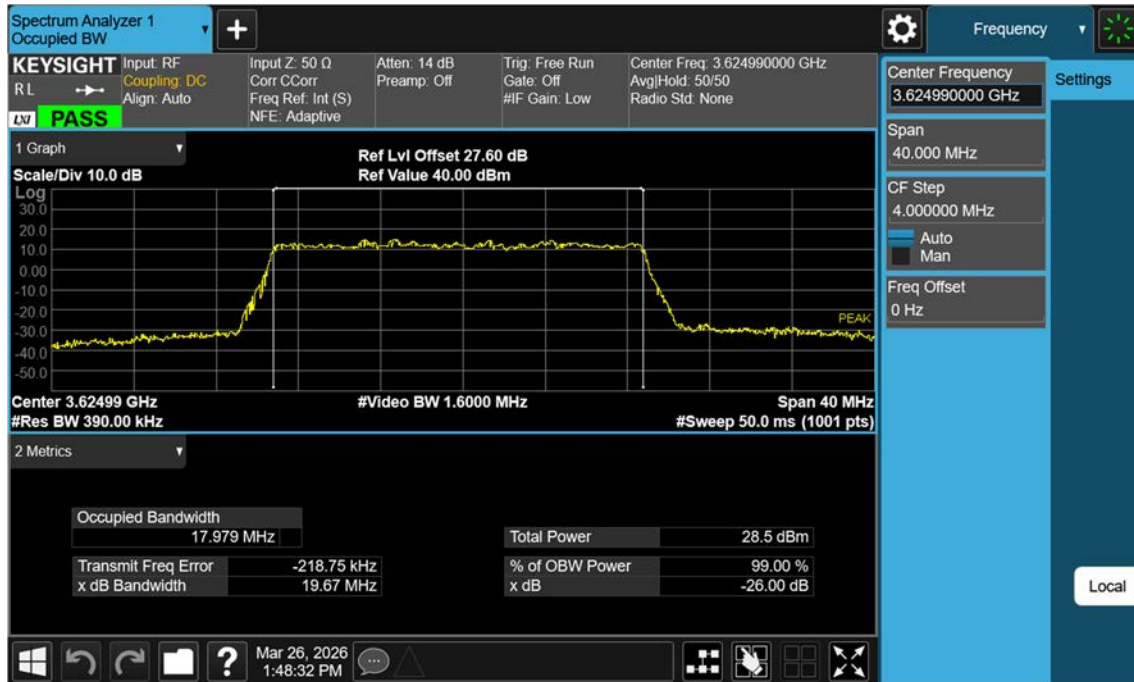
NR n48_20 M_OBW_Mid_PI/2 BPSK_FullRB



NR n48_20 M_OBW_Mid_QPSK_FullRB



NR n48_20 M_OBW_Mid_16QAM_FullRB



NR n48_20 M_OBW_Mid_64QAM_FullRB



NR n48_20 M_OBW_Mid_256QAM_FullRB



NR n48_30 M_OBW_Mid_PI/2 BPSK_FullRB



NR n48_30 M_OBW_Mid_QPSK_FullRB



NR n48_30 M_OBW_Mid_16QAM_FullRB



NR n48_30 M_OBW_Mid_64QAM_FullRB



NR n48_30 M_OBW_Mid_256QAM_FullRB



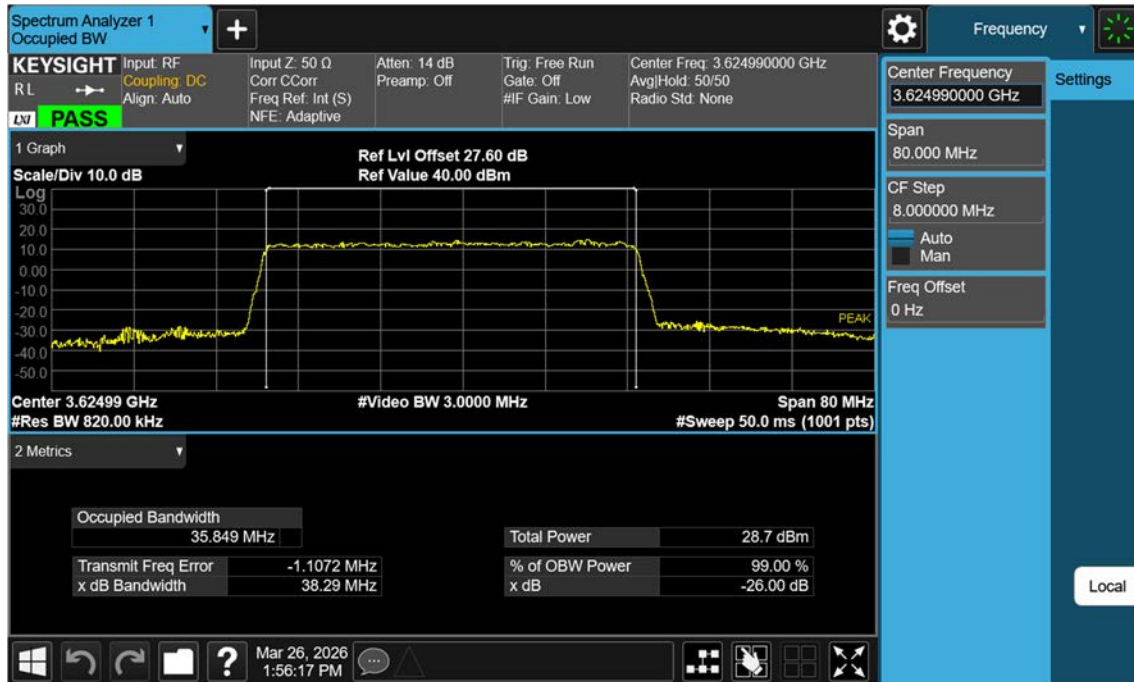
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NR n48_40 M_OBW_Mid_QPSK_FullRB



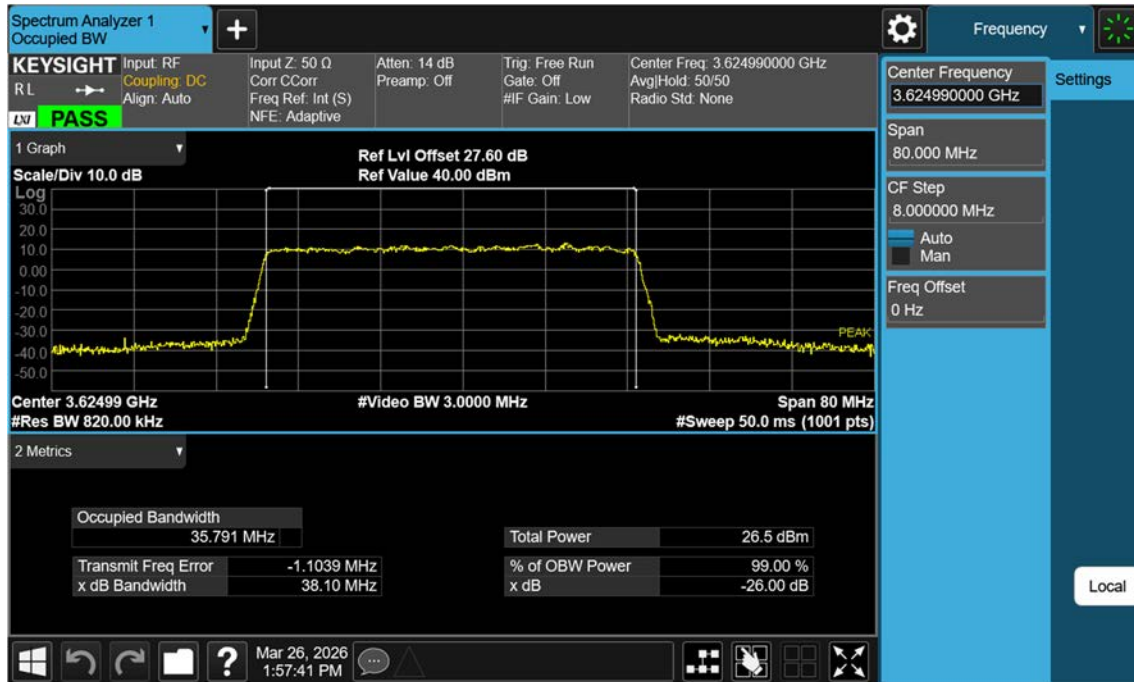
NR n48_40 M_OBW_Mid_16QAM_FullRB



NR n48_40 M_OBW_Mid_64QAM_FullRB



NR n48_40 M_OBW_Mid_256QAM_FullRB



9.3 CONDUCTED SPURIOUS EMISSIONS

NR n48_10 M_Conducted Spurious Emissions(30 M-10 G)_Low_PI/2 BPSK_1RB



NR n48_10 M_Conducted Spurious Emissions(30 M-10 G)_Mid_PI/2 BPSK_1RB



NR n48_10 M_Conducted Spurious Emissions(30 M-10 G)_High_PI/2 BPSK_1RB



NR n48_20 M_Conducted Spurious Emissions(30 M-10 G)_Low_PI/2 BPSK_1RB



NR n48_20 M_Conducted Spurious Emissions(30 M-10 G)_Mid_PI/2 BPSK_1RB



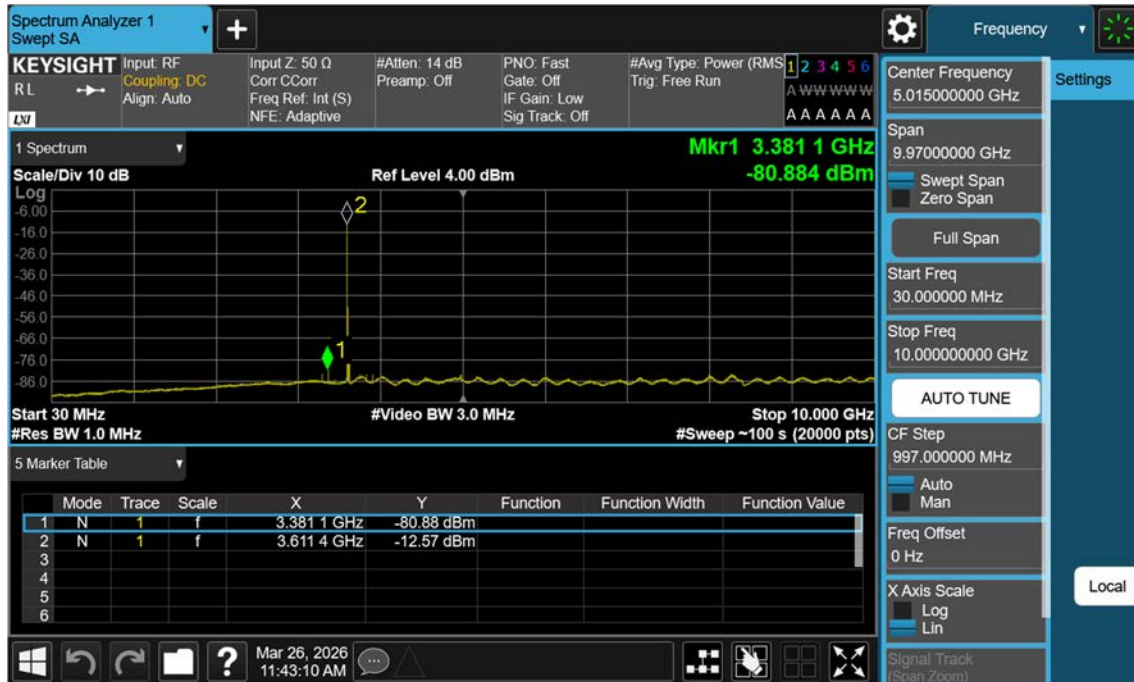
NR n48_20 M_Conducted Spurious Emissions(30 M-10 G)_High_PI/2 BPSK_1RB



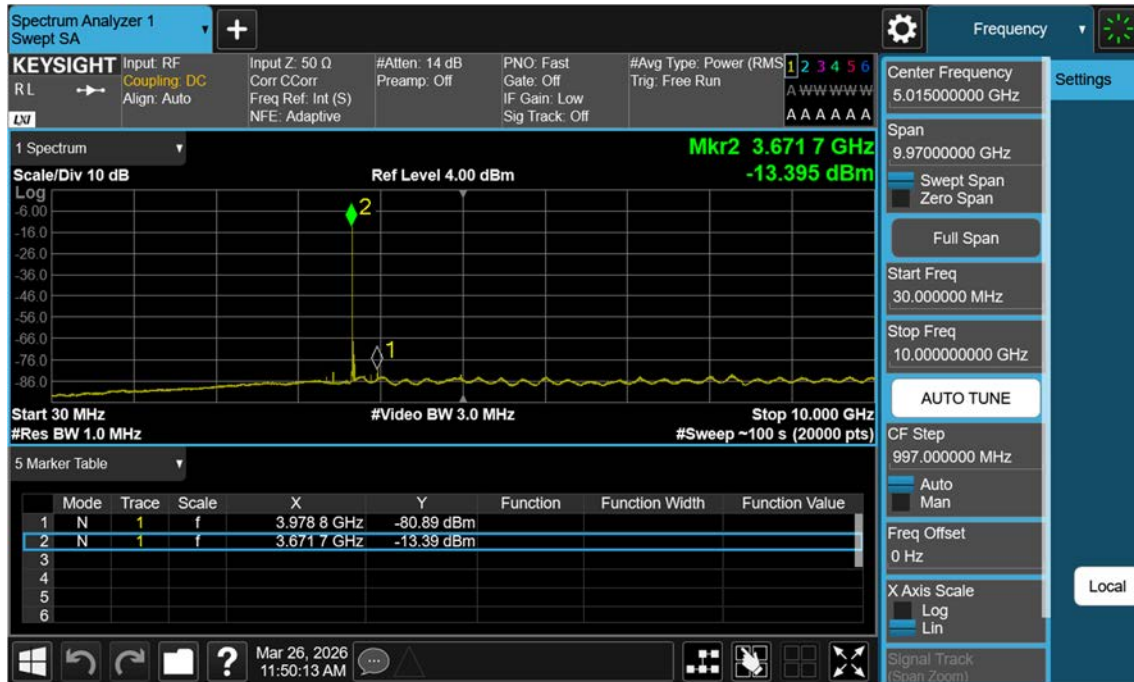
NR n48_30 M_Conducted Spurious Emissions(30 M-10 G)_Low_PI/2 BPSK_1RB



NR n48_30 M_Conducted Spurious Emissions(30 M-10 G)_Mid_PI/2 BPSK_1RB



NR n48_30 M_Conducted Spurious Emissions(30 M-10 G)_High_PI/2 BPSK_1RB



NR n48_40 M_Conducted Spurious Emissions(30 M-10 G)_Low_PI/2 BPSK_1RB



NR n48_40 M_Conducted Spurious Emissions(30 M-10 G)_Mid_PI/2 BPSK_1RB



NR n48_40 M_Conducted Spurious Emissions(30 M-10 G)_High_PI/2 BPSK_1RB



NR n48_10 M_Conducted Spurious Emissions(Above10 G)_Low_PI/2 BPSK_1RB



NR n48_10 M_Conducted Spurious Emissions(Above10 G)_Mid_PI/2 BPSK_1RB



NR n48_10 M_Conducted Spurious Emissions(Above10 G)_High_PI/2 BPSK_1RB



NR n48_20 M_Conducted Spurious Emissions(Above10 G)_Low_PI/2 BPSK_1RB



NR n48 _20 M_Conducted Spurious Emissions(Above10 G)_Mid_PI/2 BPSK_1RB



NR n48_20 M_Conducted Spurious Emissions(Above10 G)_High_PI/2 BPSK_1RB



NR n48_30 M_Conducted Spurious Emissions(Above10 G)_Low_PI/2 BPSK_1RB



NR n48_30 M_Conducted Spurious Emissions(Above10 G)_Mid_PI/2 BPSK_1RB



NR n48_30 M_Conducted Spurious Emissions(Above10 G)_High_PI/2 BPSK_1RB



NR n48_40 M_Conducted Spurious Emissions(Above10 G)_Low_PI/2 BPSK_1RB



NR n48_40 M_Conducted Spurious Emissions(Above10 G)_Mid_PI/2 BPSK_1RB

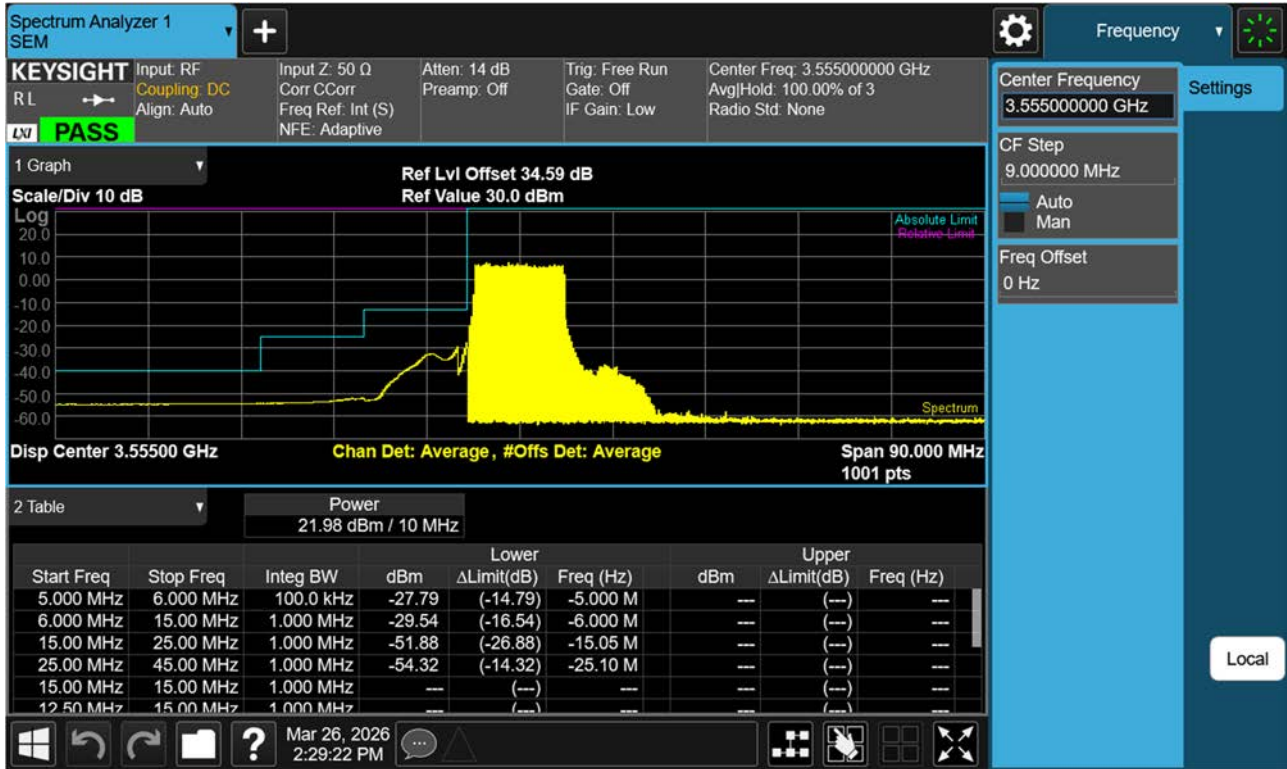


NR n48_40 M_Conducted Spurious Emissions(Above10 G)_High_PI/2 BPSK_1RB



9.4 CHANNEL EDGE

NR n48_10 M BandEdge(Lower)_Low_3555.00 MHz_PI/2 BPSK_FullIRB



NR n48_10 M_BandEdge(Upper)_Low_3555.00 MHz_PI/2 BPSK_FullRB

