



# ELEMENT WASHINGTON DC LLC

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## PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT

**Applicant Name:**

Telit Communications S.p.A.  
Viale Stazione di Prosecco 5/b  
Trieste, 34010  
Italy

**Date of Testing:**

01/11/2024 - 01/21/2024

**Test Report Issue Date:**

01/24/2024

**Test Site/Location:**

Element Lab., Columbia, MD, USA

**Test Report Serial No.:**

1M2312260131-03.RI7

**FCC ID:**

**RI7LE910C1SNX**

**IC:**

**5131A-LE910C1SNX**

**APPLICANT:**

**Telit Communications S.p.A.**

**Application Type:**

Class II Permissive Change

**ISED Application Type:**

Class III Permissive Change

**Model/HVIN:**

LE910C4-SNX

**Additional Model/HVIN:**

LE910C4-SNXD

**EUT Type:**

Module

**FCC Classification:**

PCS Licensed Transmitter (PCB)

**FCC Rule Part:**

27

**ISED Specification:**

RSS-130 Issue 2, RSS-139 Issue 4

**Test Procedure(s):**

ANSI C63.26-2015

**Permissive Change Description:**

Software update to change LTE Cat. 1 to LTE Cat. 4

**FCC Original Grant Date:**

05/04/2023

**ISED Original Grant Date:**

05/17/2023

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in §2.947. Test results reported herein relate only to the item(s) tested.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

**RJ Ortanez**  
**Executive Vice President**



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Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	ERP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
LTE Band 12	10 MHz	QPSK	704.0 - 711.0	0.212	23.26	8M96G7D
		16QAM	704.0 - 711.0	0.159	22.02	8M96W7D
	5 MHz	QPSK	701.5 - 713.5	0.205	23.13	4M51G7D
		16QAM	701.5 - 713.5	0.158	21.99	4M50W7D
	3 MHz	QPSK	700.5 - 714.5	0.214	23.29	2M70G7D
		16QAM	700.5 - 714.5	0.167	22.22	2M70W7D
	1.4 MHz	QPSK	699.7 - 715.3	0.208	23.17	1M10G7D
		16QAM	699.7 - 715.3	0.160	22.03	1M10W7D
LTE Band 13	10 MHz	QPSK	782.0	0.187	22.72	8M99G7D
		16QAM	782.0	0.158	22.00	8M99W7D
	5 MHz	QPSK	779.5 - 784.5	0.204	23.09	4M51G7D
		16QAM	779.5 - 784.5	0.156	21.92	4M52W7D

### EUT Overview (<1GHz)

Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
LTE Band 66/4	20 MHz	QPSK	1720.0 - 1770.0	0.533	27.27	17M9G7D
		16QAM	1720.0 - 1770.0	0.394	25.95	17M9W7D
	15 MHz	QPSK	1717.5 - 1772.5	0.557	27.46	13M4G7D
		16QAM	1717.5 - 1772.5	0.413	26.16	13M5W7D
	10 MHz	QPSK	1715.0 - 1775.0	0.541	27.33	9M03G7D
		16QAM	1715.0 - 1775.0	0.396	25.98	9M00W7D
	5 MHz	QPSK	1712.5 - 1777.5	0.532	27.26	4M50G7D
		16QAM	1712.5 - 1777.5	0.395	25.97	4M53W7D
	3 MHz	QPSK	1711.5 - 1778.5	0.516	27.13	2M71G7D
		16QAM	1711.5 - 1778.5	0.402	26.05	2M71W7D
	1.4 MHz	QPSK	1710.7 - 1779.3	0.512	27.09	1M10G7D
		16QAM	1710.7 - 1779.3	0.394	25.95	1M10W7D

### EUT Overview (>1GHz)

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# 1.0 INTRODUCTION

## 1.1 Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Innovation, Science and Economic Development Canada.

## 1.2 Element Test Location

These measurement tests were conducted at the Element laboratory located at 7185 Oakland Mills Road, Columbia, MD 21046. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014.

## 1.3 Test Facility / Accreditations

**Measurements were performed at Element lab located in Columbia, MD 21046, U.S.A.**

- Element Washington DC LLC is an ISO 17025-2017 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.01 for Specific Absorption Rate (SAR), Hearing Aid Compatibility (HAC) testing, where applicable, and Electromagnetic Compatibility (EMC) testing for FCC and Innovation, Science, and Economic Development Canada rules.
- Element Washington DC LLC TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC 17065-2012 by A2LA (Certificate number 2041.03) in all scopes of FCC Rules and ISED Standards (RSS).
- Element Washington DC LLC facility is a registered (2451B) test laboratory with the site description on file with ISED.
- Element Washington DC LLC is a Recognized U.S. Certification Assessment Body (CAB # US0110) for ISED Canada as designated by NIST under the U.S. and Canada Mutual Recognition Agreement.

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## 2.0 PRODUCT INFORMATION

### 2.1 Equipment Description

The Equipment Under Test (EUT) is the **Telit Module FCC ID: RI7LE910C1SNX / IC: 5131A-LE910C1SNX**. The test data contained in this report pertains only to the emissions due to the EUT's licensed transmitters that operate under the provisions of Part 27, RSS-130, and RSS-139. This device is tested as mobile equipment.

**Test Device Serial No.:** 350532429997438, 3505324299997875

### 2.2 Device Capabilities

This device contains the following capabilities:

LTE B2, B5, B12, B13, and B66/4

This device supports LTE Cat. 4 operations.

### 2.3 Test Configuration

The EUT was tested per the guidance of ANSI C63.26-2015. See Section 7.0 of this test report for a description of the radiated and antenna port conducted emissions tests.

### 2.4 Software and Firmware

Testing was performed on device(s) using the following software/firmware version installed on the EUT.

Model Name	Modem FW Version
LE910C4-SNX	MOF.703007
LE910C4-SNXD	MOF.803007

### 2.5 EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and no modifications were made during testing.

### 2.6 Antenna Information:

The following antenna information is declared by the manufacturer:

Antenna Type: Dipole Antenna  
 Antenna Gain: 1.5 dBi for LTE B12, and B13  
 Antenna Gain: 3.5 dBi for LTE B66/4  
 Antenna Input Impedance: 50 ohm

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## 3.0 DESCRIPTION OF TESTS

### 3.1 Evaluation Procedure

The measurement procedures described in the “American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services” (ANSI C63.26-2015) were used in the measurement of the EUT.

**Deviation from Measurement Procedure.....None**

### 3.2 Radiated Power and Radiated Spurious Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. The test site inside the chamber is a 6m x 5.2m elliptical, obstruction-free area in accordance with Figure 5.7 of Clause 5 in ANSI C63.4-2014. Absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections for measurements above 1GHz. For measurements below 1GHz, the absorbers are removed. A raised turntable is used for radiated measurement. The turn table is a continuously rotatable, remote-controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. An 80cm tall test table made of Styrodur is placed on top of the turn table. A Styrodur pedestal is placed on top of the test table to bring the total table height to 1.5m.

The equipment under test was transmitting while connected to its integral antenna and is placed on a turntable 3 meters from the receive antenna. The receive antenna height is adjusted between 1 and 4 meter height, the turntable is rotated through 360 degrees, and the EUT is manipulated through all orthogonal planes representative of its typical use to achieve the highest reading on the receive spectrum analyzer.

For radiated power measurements, substitution method is used per the guidance of ANSI C63.26-2015. For emissions below 1GHz, a half-wave dipole is substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer level previously recorded from the spurious emission from the EUT. The power of the emission is calculated using the following formula:

$$P_d [dBm] = P_g [dBm] - \text{cable loss} [dB] + \text{antenna gain} [dBd/dBi];$$

where  $P_d$  is the dipole equivalent power,  $P_g$  is the generator output into the substitution antenna, and the antenna gain is the gain of the substitute antenna used relative to either a half-wave dipole (dBd) or an isotropic source (dBi). The substitute level is equal to  $P_g [dBm] - \text{cable loss} [dB]$ .

For radiated spurious emissions measurements, the field strength conversion method is used per the formulas in Section 5.2.7 of ANSI C63.26-2015. Field Strength (EIRP) is calculated using the following formulas:

$$E_{[dB\mu V/m]} = \text{Measured amplitude level}_{[dBm]} + 107 + \text{Cable Loss}_{[dB]} + \text{Antenna Factor}_{[dB/m]}$$

And

$$\text{EIRP}_{[dBm]} = E_{[dB\mu V/m]} + 20\log D - 104.8; \text{ where } D \text{ is the measurement distance in meters.}$$

All radiated measurements are performed in a chamber that meets the site requirements per ANSI C63.4-2014. Additionally, radiated emissions below 30MHz are also validated on an Open Area Test Site to assert correlation with the chamber measurements per the requirements of KDB 414788 D01 v01r01.

Radiated power and radiated spurious emission levels are investigated with the receive antenna horizontally and vertically polarized per ANSI C63.26-2015.

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## 4.0 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 uncertainty shown below 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.

Contribution	Expanded Uncertainty ( $\pm$ dB)
Conducted Bench Top Measurements	1.13
Radiated Disturbance (<1GHz)	4.98
Radiated Disturbance (>1GHz)	5.07
Radiated Disturbance (>18GHz)	5.09

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## 5.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST). Measurements antennas used during testing were calibrated in accordance to the requirements of ANSI C63.5-2017.

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	ETS-001	EMC Cable and Switch System	12/11/2023	Annual	12/11/2024	ETS-001
-	ETS-002	EMC Cable and Switch System	12/11/2023	Annual	12/11/2024	ETS-002
-	LTx4	Licensed Transmitter Cable Set	11/15/2023	Annual	11/15/2024	LTx4
Anritsu	MT8821C	Radio Communication Analyzer	N/A			6201525694
Espec	SCP-220	Environmental Chamber	5/25/2022	Annual	5/25/2024	OCPS5H0612K05
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	2/27/2023	Biennial	2/27/2025	00125518
Keysight Technologies	N9030A	PXA Signal Analyzer	8/7/2023	Annual	8/7/2024	MY54490576
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	9/25/2023	Annual	9/25/2024	100342
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	3/2/2023	Biennial	3/2/2025	A051107

**Table 5-1. Test Equipment**

**Notes:**

1. For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.
2. Equipment with a calibration date of "N/A" shown in this list was not used to make direct calibrated measurements.

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## 6.0 SAMPLE CALCULATIONS

### Emission Designator

#### QPSK Modulation

**Emission Designator = 8M62G7D**

- LTE BW = 8.62 MHz
- G = Phase Modulation
- 7 = Quantized/Digital Info
- D = Data transmission, telemetry, telecommand

#### QAM Modulation

**Emission Designator = 8M45W7D**

- LTE BW = 8.45 MHz
- W = Amplitude/Angle Modulated
- 7 = Quantized/Digital Info
- D = Data transmission, telemetry, telecommand

### Spurious Radiated Emission – LTE Band

#### **Example: Middle Channel LTE Mode 2<sup>nd</sup> Harmonic (1564 MHz)**

The average spectrum analyzer reading at 3 meters with the EUT on the turntable was  $-81.0$  dBm. The gain of the substituted antenna is 8.1 dBi. The signal generator connected to the substituted antenna terminals is adjusted to produce a reading of  $-81.0$  dBm on the spectrum analyzer. The loss of the cable between the signal generator and the terminals of the substituted antenna is 2.0 dB at 1564 MHz. So 6.1 dB is added to the signal generator reading of  $-30.9$  dBm yielding  $-24.80$  dBm. The fundamental EIRP was 25.501 dBm so this harmonic was 25.501 dBm  $- (-24.80)$ .

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## 7.0 TEST RESULTS

### 7.1 Summary

Company Name: Telit Communications S.p.A.  
 FCC ID: RI7LE910C1SNX  
 FCC Classification: PCS Licensed Transmitter (PCB)  
 Mode(s): LTE

Test Condition	Test Description	FCC Part Section(s)	RSS Section(s)	Test Limit	Test Result	Reference
<b>CONDUCTED</b>	Transmitter Conducted Output Power Effective Radiated Power (LTE Band 13) Effective Radiated Power (LTE Band 12) Equivalent Isotropic Radiated Power (LTE Band 4, 66)	2.1046(a), 2.1046 27.50(b)(10) 27.50(c)(10) 27.50(d)(4)	RSS-Gen(6.12) RSS-130(4.6) RSS-130(4.6) RSS-139(5.5)	≤ 3 Watts max. ERP (LTE B12, 13) ≤ 1 Watt max. EIRP (LTE B66/4)	<b>PASS</b>	Section 7.2
	Occupied Bandwidth	2.1049(h)	RSS-Gen(6.7)	N/A	<b>PASS</b>	Section 7.3
	Conducted Band Edge / Spurious Emissions (LTE Band 13)	2.1051, 27.53(c)	RSS-Gen(6.13), RSS-130(4.7)	Undesirable emissions must meet the limits detailed in sections 27.53(c)	<b>PASS</b>	Sections 7.4, 7.5
	Conducted Band Edge / Spurious Emissions (LTE Band 12)	2.1051, 27.53(g)	RSS-Gen(6.13), RSS-130(4.7)	≥ 43 + 10 log (P[Watts]) dB of attenuation below transmitter power	<b>PASS</b>	Sections 7.4, 7.5
	Conducted Band Edge / Spurious Emissions(LTE Band 4, 66)	2.1051, 27.53(h)	RSS-Gen(6.13), RSS-139(5.6)	≥ 43 + 10 log (P[Watts]) dB of attenuation below transmitter power	<b>PASS</b>	Sections 7.4, 7.5
	Peak-to-Average Ratio (LTE Band 12, 13)	N/A	RSS-130(4.6.1)	≤ 13 dB	<b>PASS</b>	Section 7.6
	Peak-to-Average Ratio (LTE Band 4, 66)	27.50(d)(5)	RSS-139(5.5)	≤ 13 dB	<b>PASS</b>	Section 7.6
	Frequency Stability	2.1055, 27.54	RSS-Gen(6.11), RSS-130(4.5), RSS-139(5.4)	Fundamental emissions stay within authorized frequency block	<b>PASS</b>	Section 7.8
<b>RADIATED</b>	Radiated Spurious Emissions (LTE Band 13)	2.1053, 27.53(c), 27.53(f)	RSS-Gen(6.13), RSS-130(4.7)	Undesirable emissions must meet the limits detailed in sections 27.53(c) and 27.53(f)	<b>PASS</b>	Section 7.7
	Radiated Spurious Emissions (LTE Band 12)	2.1053, 27.53(g)	RSS-Gen(6.13), RSS-130(4.7)	≥ 43 + 10 log (P[Watts]) dB of attenuation below transmitter power	<b>PASS</b>	Section 7.7
	Radiated Spurious Emissions (LTE Band 4, 66)	2.1053, 27.53(h)(1)	RSS-Gen(6.13), RSS-139(5.6)	≥ 43 + 10 log (P[Watts]) dB of attenuation below transmitter power	<b>PASS</b>	Section 7.7

**Table 7-1. Summary Table**

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**Notes:**

- 1) All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
- 2) The analyzer plots shown in Section 7.0 were taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables, directional couplers, and attenuators used as part of the system to maintain a link between the call box and the EUT at all frequencies of interest.
- 3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables, attenuators, and couplers.
- 4) For conducted spurious emissions, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is EMC Software Tool v1.2.2.
- 5) For FCC compliance, ERP requirements are provided in 27.50(b)(10) and 27.50(c)(10) for LTE Band 13 and 12, respectively. In both cases, the limit for mobile devices is 30W ERP, however, compliance is addressed in this report by applying the tighter 3W ERP limit that corresponds to portable stations.

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## 7.2 Conducted Output Power Data and ERP/EIRP

### Test Overview

All 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 Procedure Used

ANSI C63.26-2015 – Section 5.2

### Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



**Figure 7-1. Test Instrument & Measurement Setup**

### Test Notes

1. Conducted power measurements were evaluated using various combinations of RB size, RB offset, modulation, and channel bandwidth. Channel bandwidth data is shown in the tables below based only on the channel bandwidths that were supported in this device.
2. ERP/EIRP is calculated with conducted power and antenna gain.

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Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]	Ant Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
10 MHz	QPSK	23060	704.0	1 / 25	23.91	1.50	23.26	0.212	34.77	-11.51
		23095	707.5	1 / 25	23.87	1.50	23.22	0.210	34.77	-11.55
		23130	711.0	1 / 25	23.71	1.50	23.06	0.202	34.77	-11.71
	16-QAM	23060	704.0	1 / 25	22.67	1.50	22.02	0.159	34.77	-12.75
		23095	707.5	1 / 25	22.42	1.50	21.77	0.150	34.77	-13.00
		23130	711.0	1 / 25	22.65	1.50	22.00	0.159	34.77	-12.77
5 MHz	QPSK	23035	701.5	1 / 12	23.56	1.50	22.91	0.195	34.77	-11.86
		23095	707.5	1 / 12	23.76	1.50	23.11	0.205	34.77	-11.66
		23155	713.5	1 / 12	23.78	1.50	23.13	0.205	34.77	-11.64
	16-QAM	23035	701.5	1 / 12	22.48	1.50	21.83	0.153	34.77	-12.94
		23095	707.5	1 / 12	22.64	1.50	21.99	0.158	34.77	-12.78
		23155	713.5	1 / 12	22.47	1.50	21.82	0.152	34.77	-12.95
3 MHz	QPSK	23025	700.5	1 / 0	23.75	1.50	23.10	0.204	34.77	-11.67
		23095	707.5	1 / 7	23.77	1.50	23.12	0.205	34.77	-11.65
		23165	714.5	1 / 7	23.94	1.50	23.29	0.214	34.77	-11.48
	16-QAM	23025	700.5	1 / 0	22.67	1.50	22.02	0.159	34.77	-12.75
		23095	707.5	1 / 7	22.61	1.50	21.96	0.157	34.77	-12.81
		23165	714.5	1 / 7	22.87	1.50	22.22	0.167	34.77	-12.55
1.4 MHz	QPSK	23017	699.7	1 / 0	23.82	1.50	23.17	0.208	34.77	-11.60
		23095	707.5	1 / 5	23.67	1.50	23.02	0.200	34.77	-11.75
		23173	715.3	1 / 3	23.73	1.50	23.08	0.203	34.77	-11.69
	16-QAM	23017	699.7	1 / 3	22.49	1.50	21.84	0.153	34.77	-12.93
		23095	707.5	1 / 3	22.61	1.50	21.96	0.157	34.77	-12.81
		23173	715.3	1 / 5	22.68	1.50	22.03	0.160	34.77	-12.74

**Table 7-2. Conducted power measurements – B12**

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]	Ant Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
10 MHz	QPSK	23230	782.0	1 / 49	23.37	1.50	22.72	0.187	34.77	-12.05
	16-QAM	23230	782.0	1 / 25	22.65	1.50	22.00	0.158	34.77	-12.77
5 MHz	QPSK	23205	779.5	1 / 24	23.34	1.50	22.69	0.186	34.77	-12.08
		23230	782.0	1 / 12	23.66	1.50	23.01	0.200	34.77	-11.76
		23255	784.5	1 / 12	23.74	1.50	23.09	0.204	34.77	-11.68
	16-QAM	23205	779.5	1 / 12	22.08	1.50	21.43	0.139	34.77	-13.34
		23230	782.0	1 / 12	22.54	1.50	21.89	0.154	34.77	-12.88
		23255	784.5	1 / 12	22.57	1.50	21.92	0.156	34.77	-12.85

**Table 7-3. Conducted power measurements – B13**

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	<b>PART 27 / RSS-130 &amp; RSS-139 MEASUREMENT REPORT</b>		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.R17	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 13 of 94

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]	Ant Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
20 MHz	QPSK	132072	1720.0	1 / 50	23.70	3.50	27.20	0.524	30.00	-2.80
		132322	1745.0	1 / 50	23.77	3.50	27.27	0.533	30.00	-2.73
		132572	1770.0	1 / 0	23.60	3.50	27.10	0.513	30.00	-2.90
	16-QAM	132072	1720.0	1 / 50	22.42	3.50	25.92	0.390	30.00	-4.08
		132322	1745.0	1 / 50	22.45	3.50	25.95	0.394	30.00	-4.05
		132572	1770.0	1 / 50	22.40	3.50	25.90	0.389	30.00	-4.10
15 MHz	QPSK	132047	1717.5	1 / 37	23.45	3.50	26.95	0.495	30.00	-3.05
		132322	1745.0	1 / 37	23.96	3.50	27.46	0.557	30.00	-2.54
		132597	1772.5	1 / 37	23.75	3.50	27.25	0.531	30.00	-2.75
	16-QAM	132047	1717.5	1 / 37	22.54	3.50	26.04	0.402	30.00	-3.96
		132322	1745.0	1 / 37	22.47	3.50	25.97	0.395	30.00	-4.03
		132597	1772.5	1 / 37	22.66	3.50	26.16	0.413	30.00	-3.84
10 MHz	QPSK	132022	1715.0	1 / 25	23.83	3.50	27.33	0.541	30.00	-2.67
		132322	1745.0	1 / 0	23.43	3.50	26.93	0.493	30.00	-3.07
		132622	1775.0	1 / 25	23.56	3.50	27.06	0.508	30.00	-2.94
	16-QAM	132022	1715.0	1 / 25	22.24	3.50	25.74	0.375	30.00	-4.26
		132322	1745.0	1 / 0	22.39	3.50	25.89	0.388	30.00	-4.11
		132622	1775.0	1 / 25	22.48	3.50	25.98	0.396	30.00	-4.02
5 MHz	QPSK	131997	1712.5	1 / 12	23.64	3.50	27.14	0.518	30.00	-2.86
		132322	1745.0	1 / 12	23.76	3.50	27.26	0.532	30.00	-2.74
		132647	1777.5	1 / 12	23.55	3.50	27.05	0.507	30.00	-2.95
	16-QAM	131997	1712.5	1 / 12	22.45	3.50	25.95	0.393	30.00	-4.05
		132322	1745.0	1 / 12	22.30	3.50	25.80	0.380	30.00	-4.20
		132647	1777.5	1 / 12	22.47	3.50	25.97	0.395	30.00	-4.03
3 MHz	QPSK	131987	1711.5	1 / 7	23.63	3.50	27.13	0.516	30.00	-2.87
		132322	1745.0	1 / 7	23.51	3.50	27.01	0.502	30.00	-2.99
		132657	1778.5	1 / 7	23.32	3.50	26.82	0.481	30.00	-3.18
	16-QAM	131987	1711.5	1 / 7	22.55	3.50	26.05	0.402	30.00	-3.95
		132322	1745.0	1 / 7	22.52	3.50	26.02	0.400	30.00	-3.98
		132657	1778.5	1 / 7	22.14	3.50	25.64	0.367	30.00	-4.36
1.4 MHz	QPSK	131979	1710.7	1 / 3	23.59	3.50	27.09	0.512	30.00	-2.91
		132322	1745.0	1 / 3	23.43	3.50	26.93	0.493	30.00	-3.07
		132665	1779.3	1 / 3	23.39	3.50	26.89	0.489	30.00	-3.11
	16-QAM	131979	1710.7	1 / 3	22.21	3.50	25.71	0.373	30.00	-4.29
		132322	1745.0	1 / 3	22.45	3.50	25.95	0.394	30.00	-4.05
		132665	1779.3	1 / 3	22.14	3.50	25.64	0.367	30.00	-4.36

**Table 7-4. Conducted power measurements – B66/4**

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	<b>PART 27 / RSS-130 &amp; RSS-139 MEASUREMENT REPORT</b>		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.R17	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 14 of 94

### 7.3 Occupied Bandwidth

#### Test Overview

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. All modes of operation were investigated and the worst-case configuration results are reported in this section.

#### Test Procedure Used

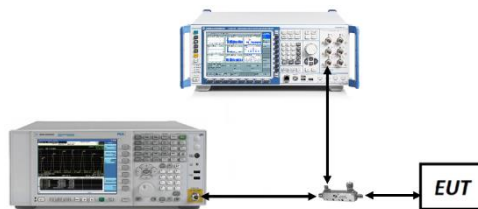
ANSI C63.26-2015 – Section 5.4.4

#### Test Settings

1. The signal analyzer’s automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth and the 26dB 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  $\geq 3 \times$  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

#### Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



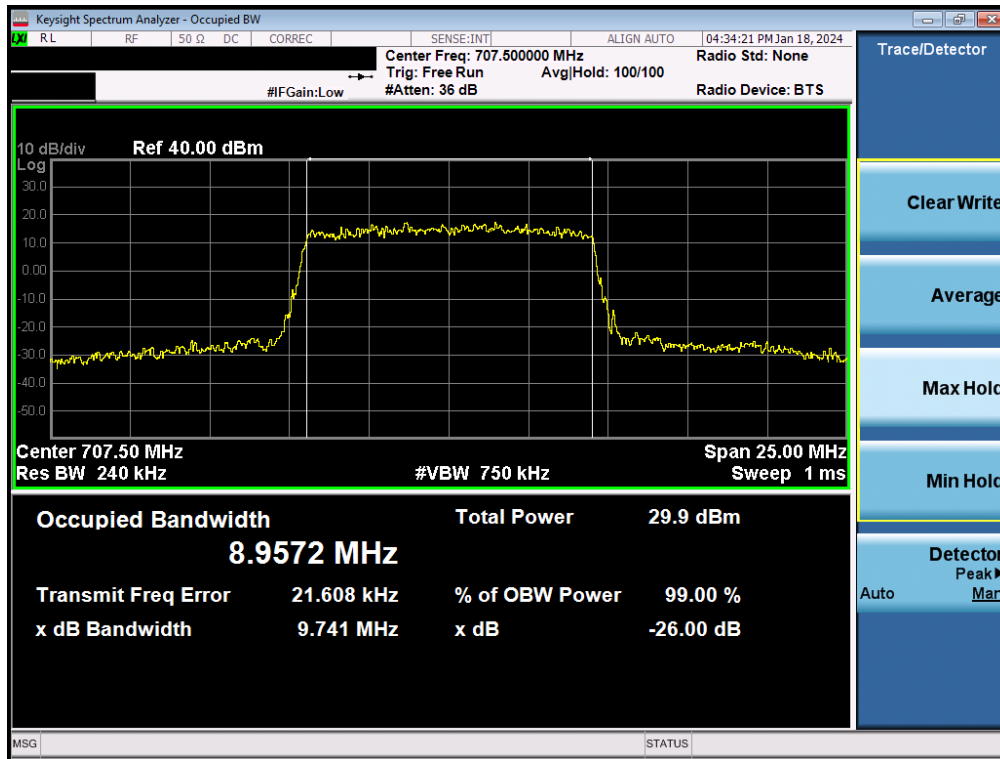
**Figure 7-2. Test Instrument & Measurement Setup**

#### Test Notes

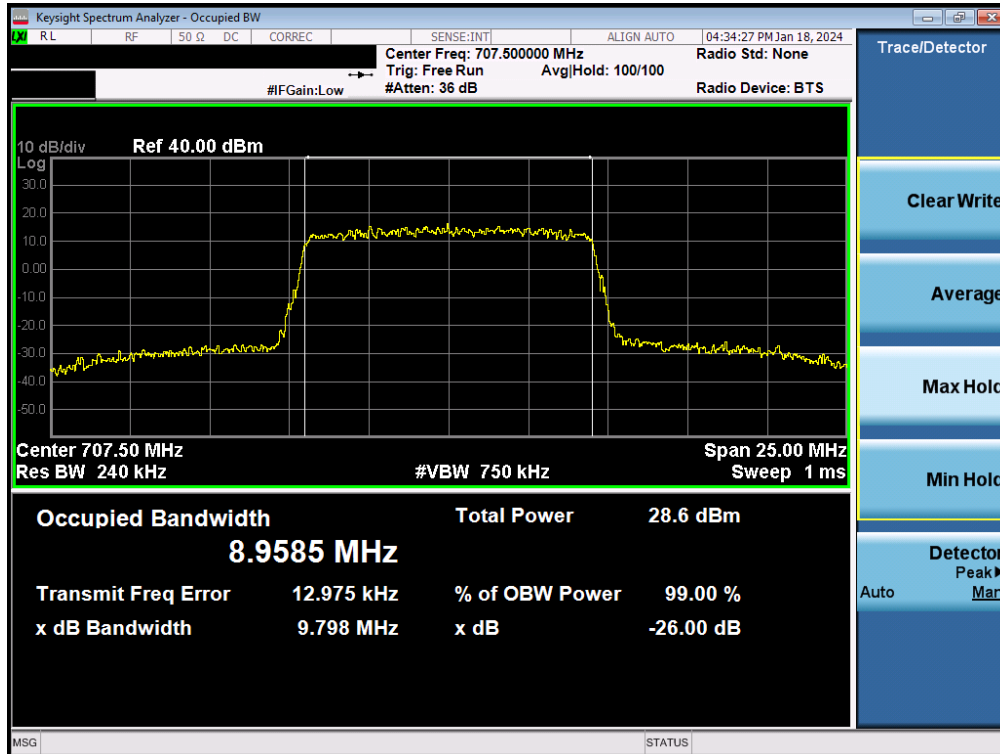
None.

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	<b>PART 27 / RSS-130 &amp; RSS-139 MEASUREMENT REPORT</b>		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.R17	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 15 of 94

## LTE Band 12



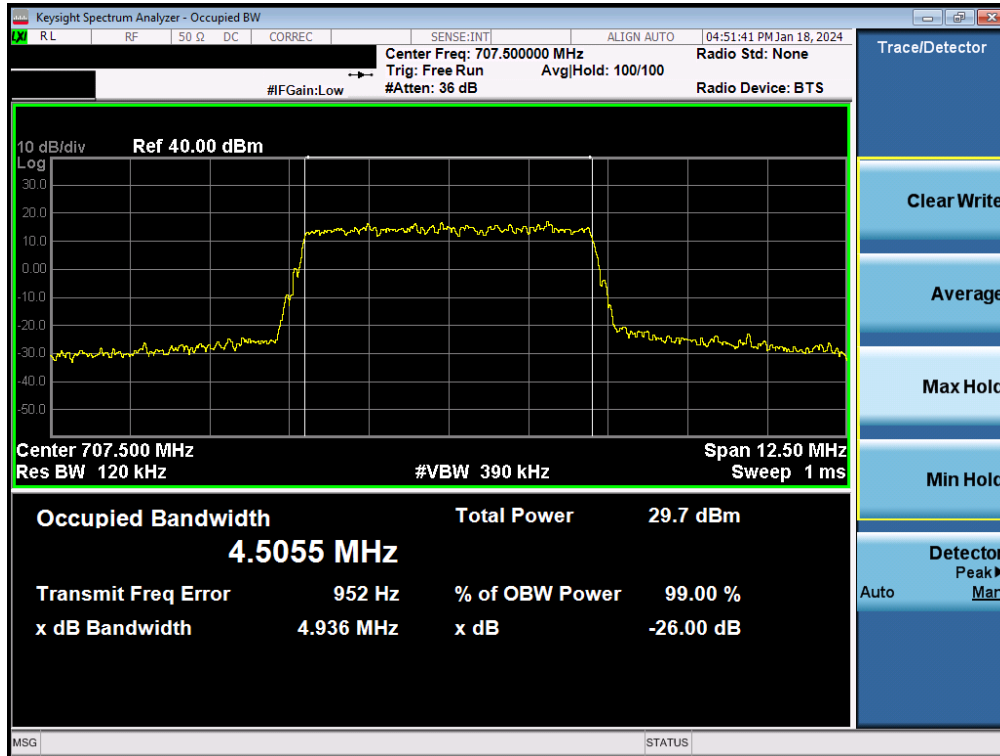
Plot 7-1. Occupied Bandwidth Plot (LTE Band 12 - 10MHz QPSK - Full RB)



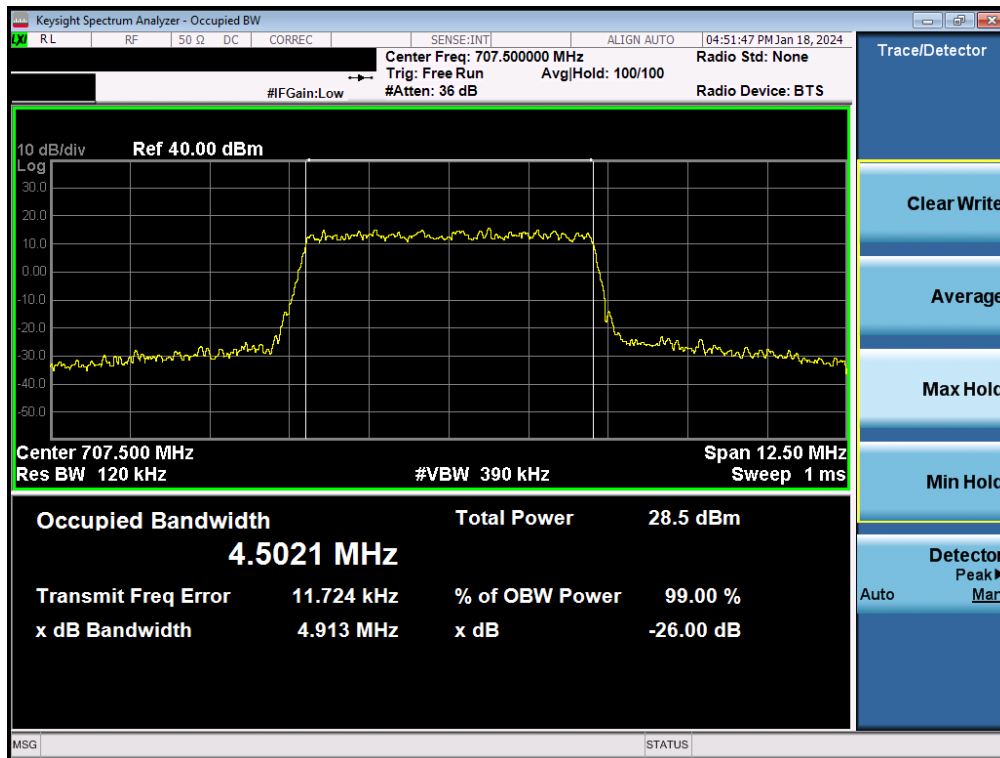
Plot 7-2. Occupied Bandwidth Plot (LTE Band 12 - 10MHz 16-QAM - Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.R17	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 16 of 94



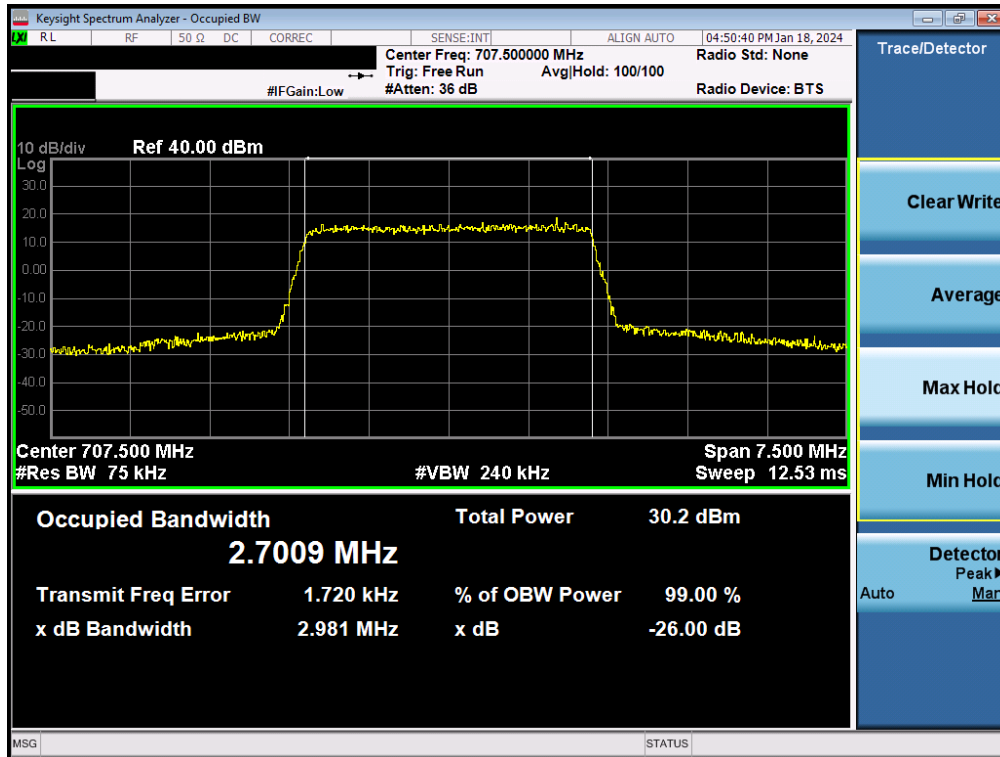


Plot 7-3. Occupied Bandwidth Plot (LTE Band 12 - 5MHz QPSK - Full RB)

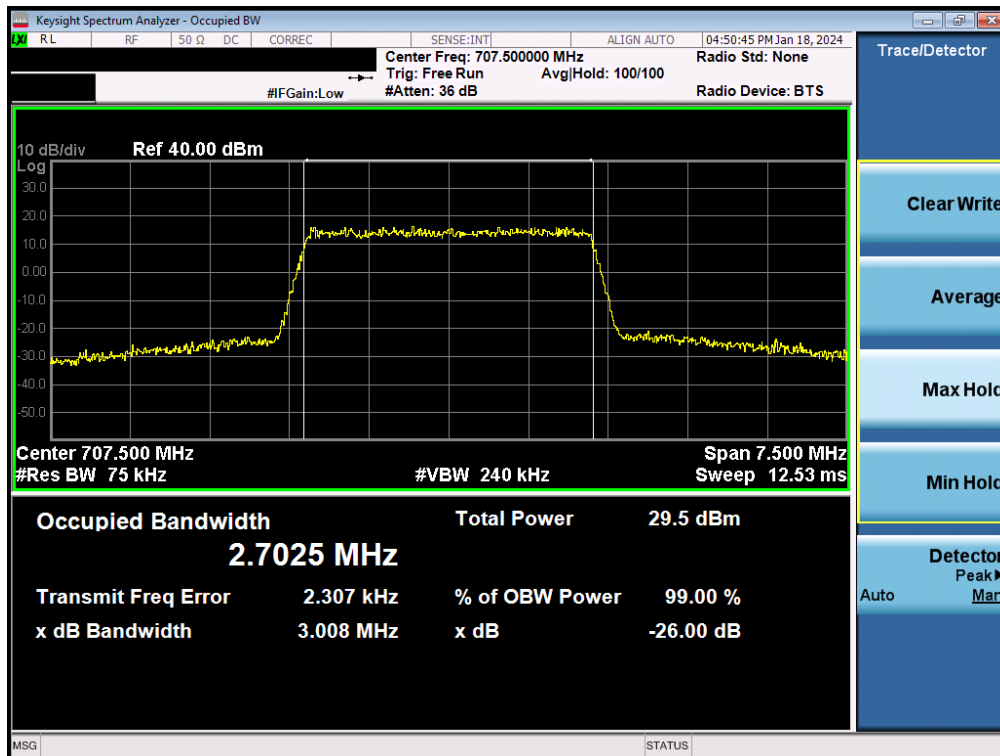


Plot 7-4. Occupied Bandwidth Plot (LTE Band 12 - 5MHz 16-QAM - Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.R17	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 17 of 94

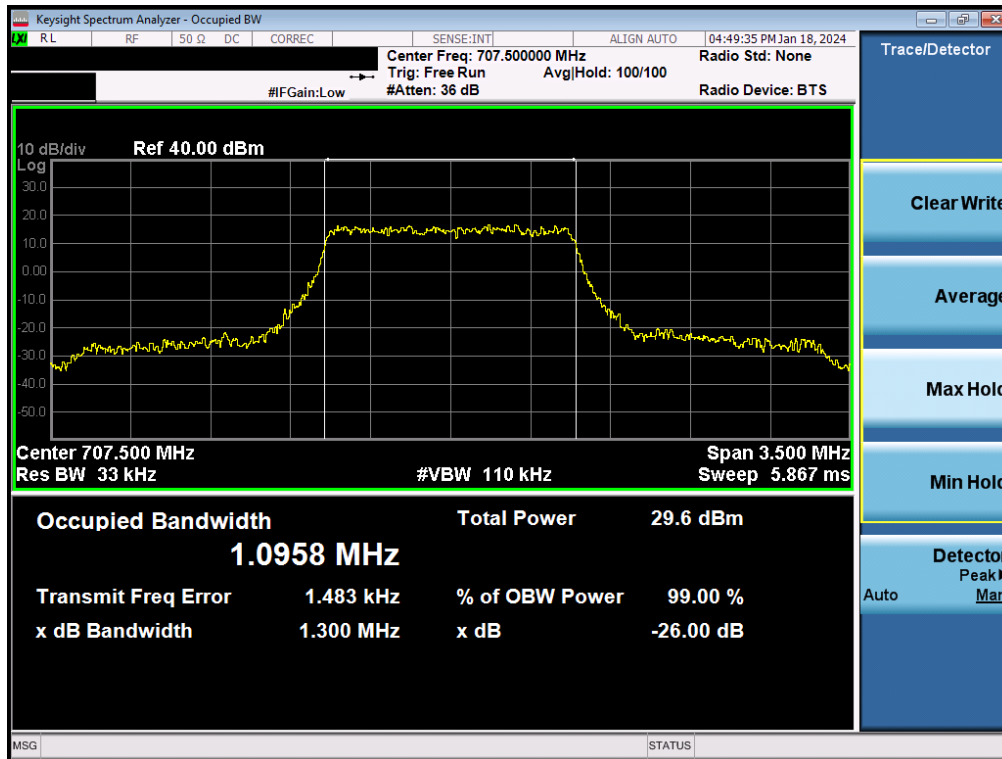


Plot 7-5. Occupied Bandwidth Plot (LTE Band 12 - 3MHz QPSK - Full RB)

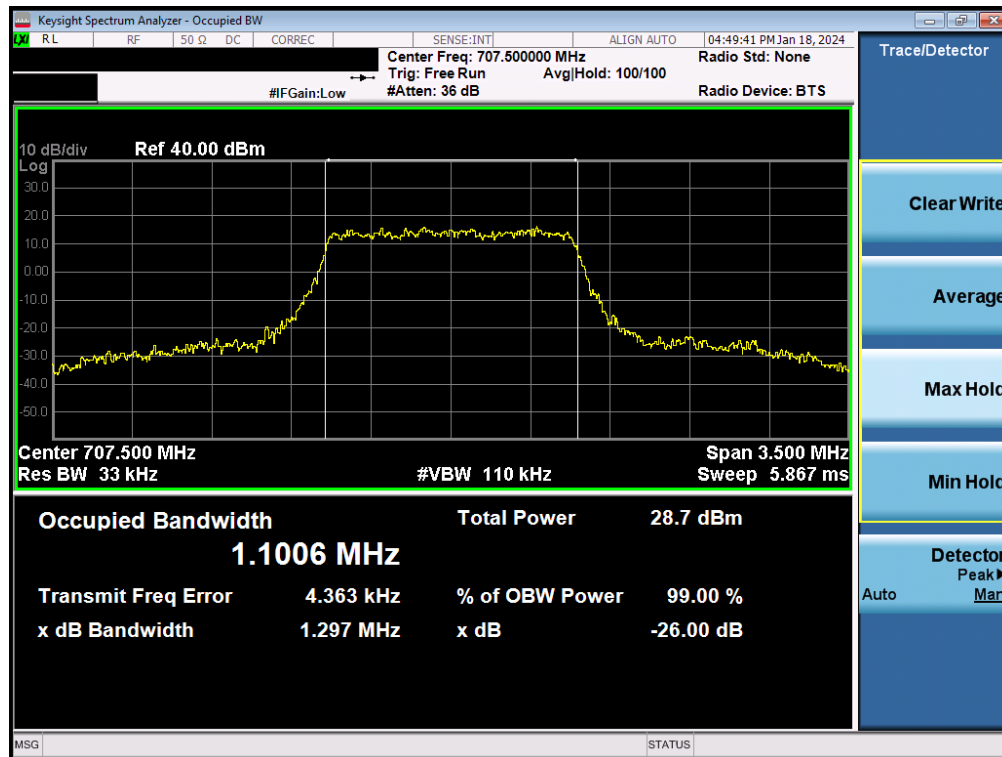


Plot 7-6. Occupied Bandwidth Plot (LTE Band 12 - 3MHz 16-QAM - Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.R17	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 18 of 94



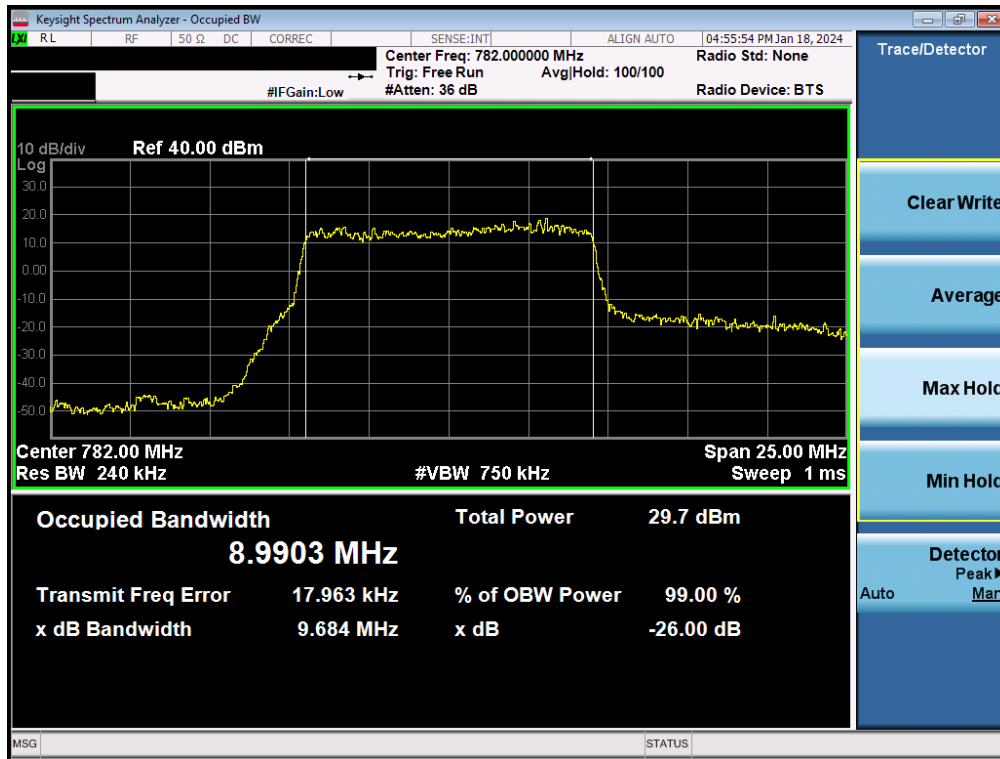
Plot 7-7. Occupied Bandwidth Plot (LTE Band 12 – 1.4MHz QPSK - Full RB)



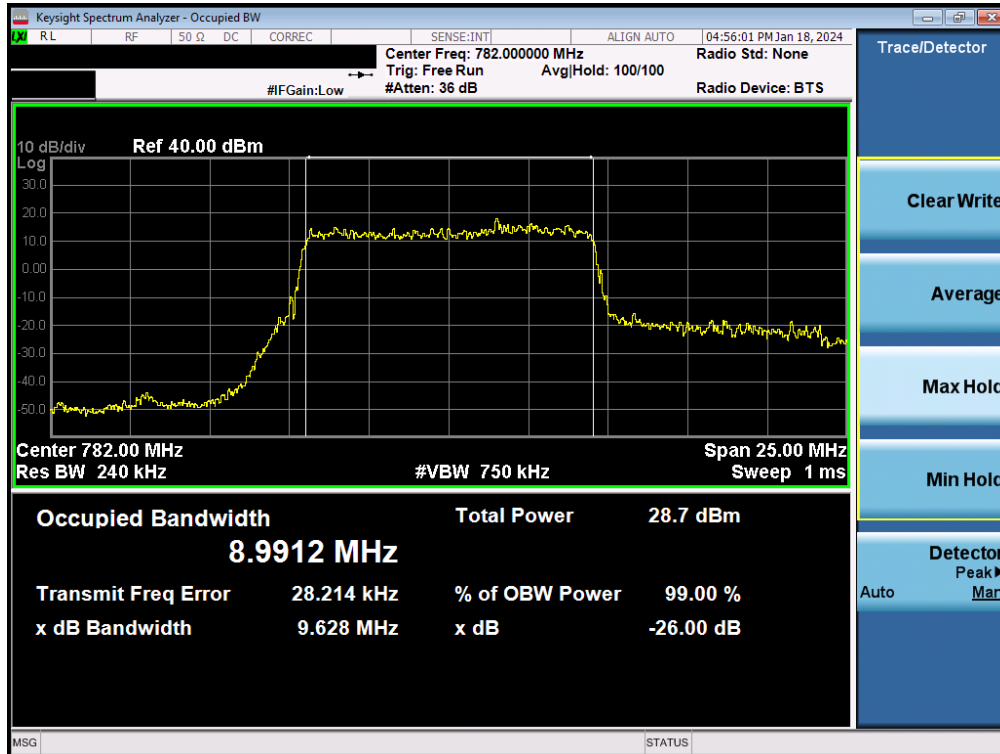
Plot 7-8. Occupied Bandwidth Plot (LTE Band 12 – 1.4MHz 16-QAM - Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.R17	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 19 of 94

### LTE Band 13

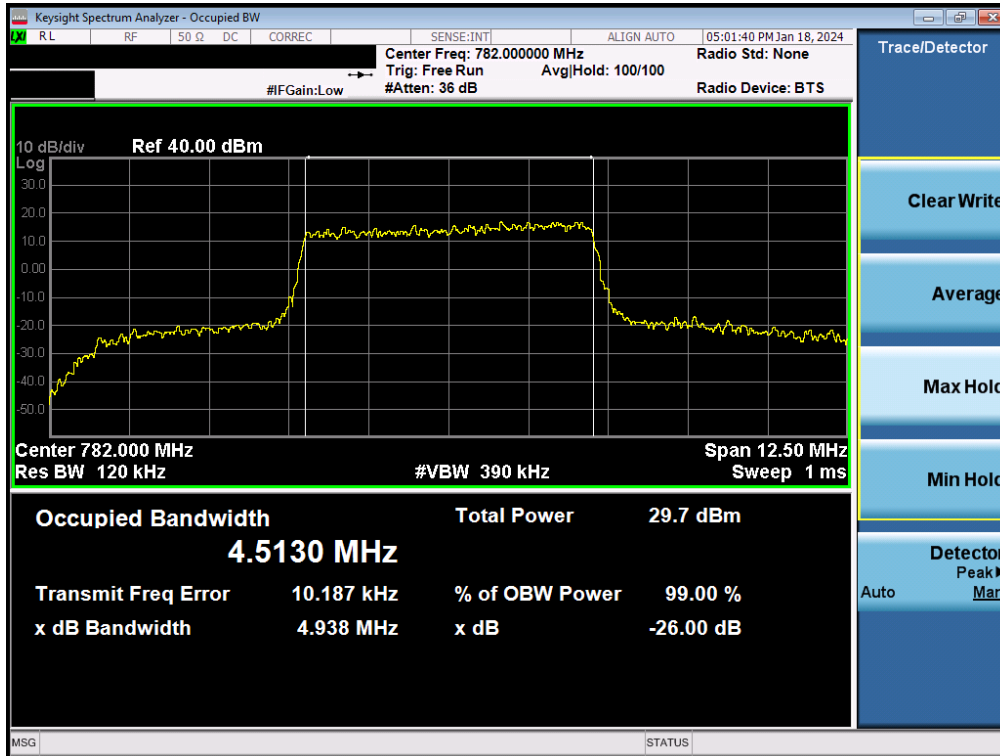


Plot 7-9. Occupied Bandwidth Plot (LTE Band 13 - 10MHz QPSK - Full RB)

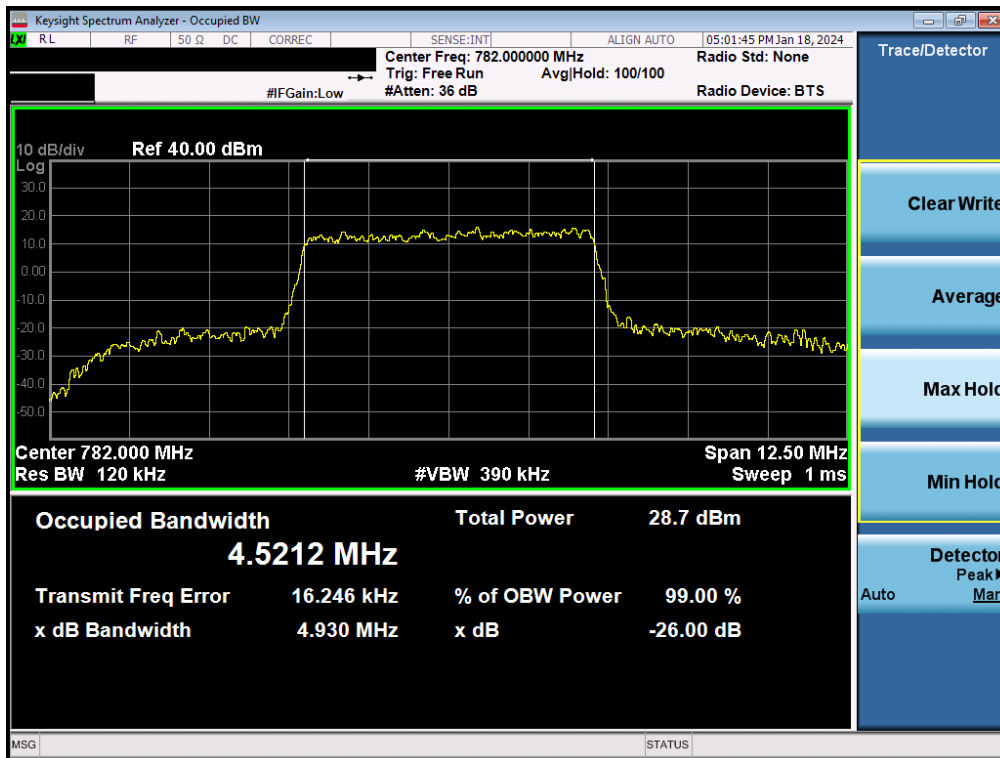


Plot 7-10. Occupied Bandwidth Plot (LTE Band 13 - 10MHz 16-QAM - Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
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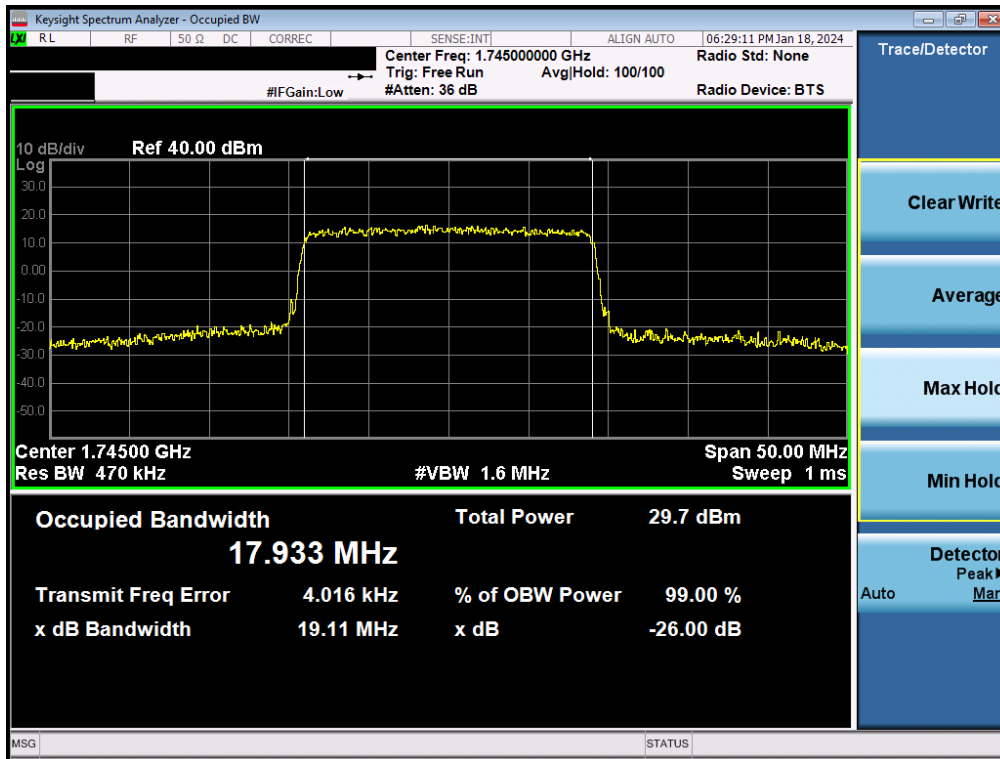
Plot 7-11. Occupied Bandwidth Plot (LTE Band 13 - 5MHz QPSK - Full RB)



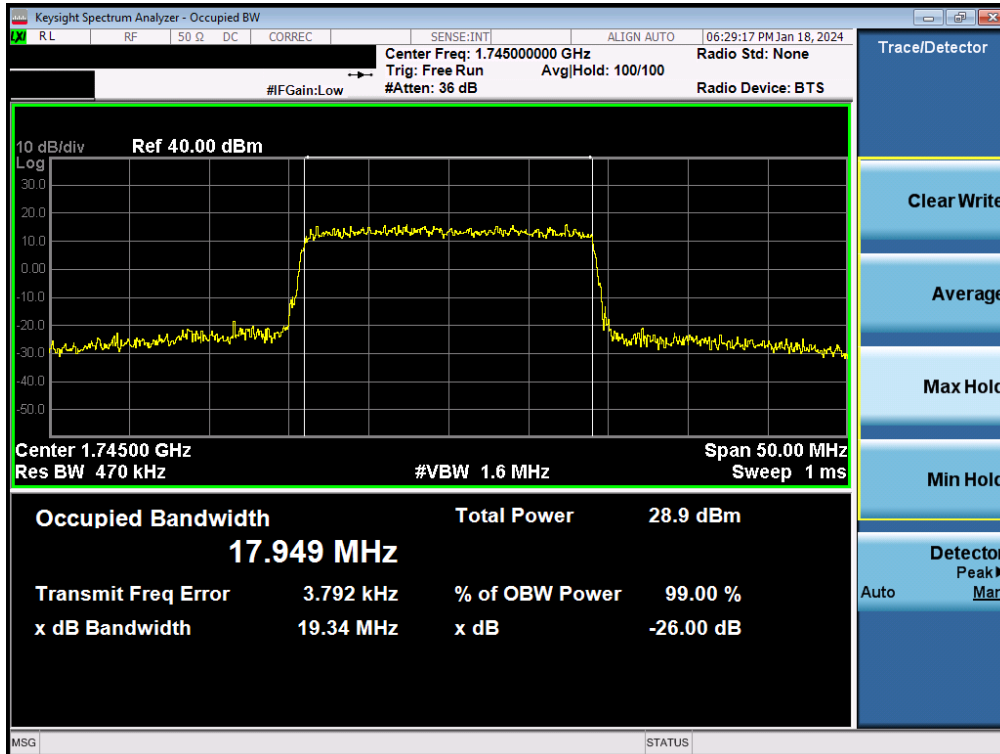
Plot 7-12. Occupied Bandwidth Plot (LTE Band 13 - 5MHz 16-QAM - Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.R17	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 21 of 94

### LTE Band 66/4

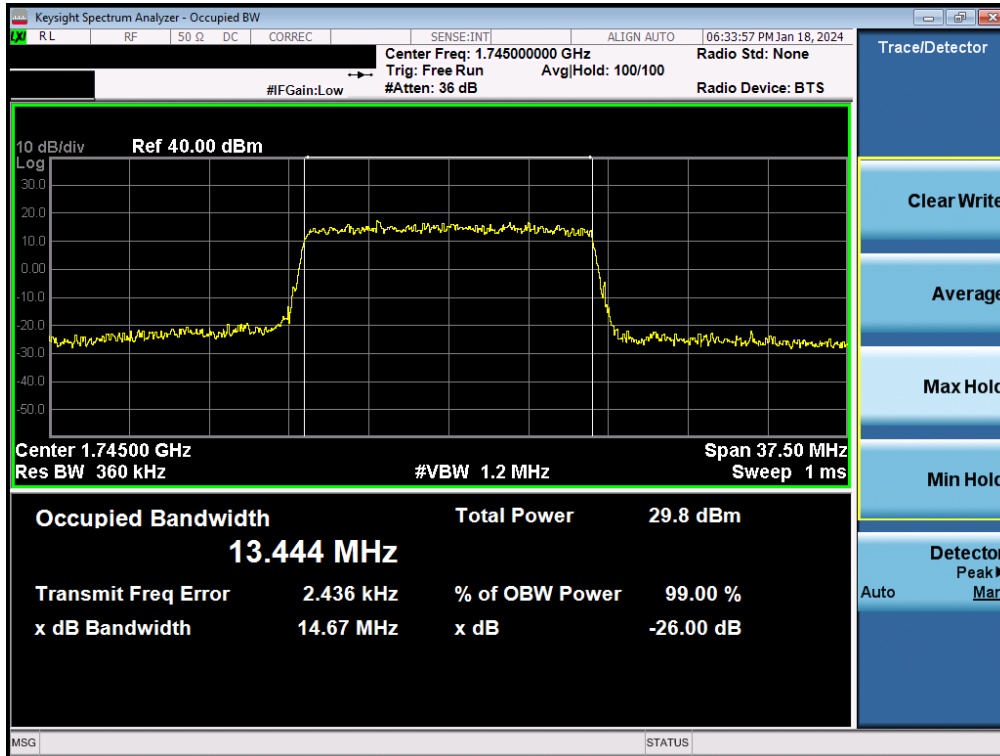


Plot 7-13. Occupied Bandwidth Plot (LTE Band 66/4 - 20MHz QPSK - Full RB)

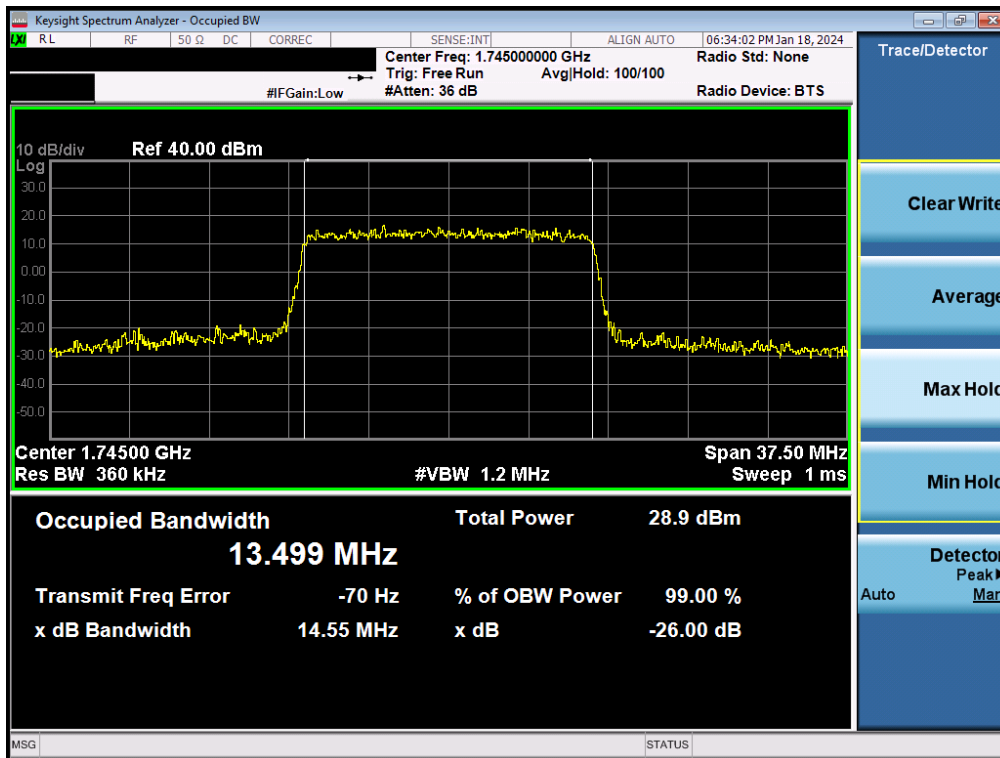


Plot 7-14. Occupied Bandwidth Plot (LTE Band 66/4 - 20MHz 16-QAM - Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.R17	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 22 of 94



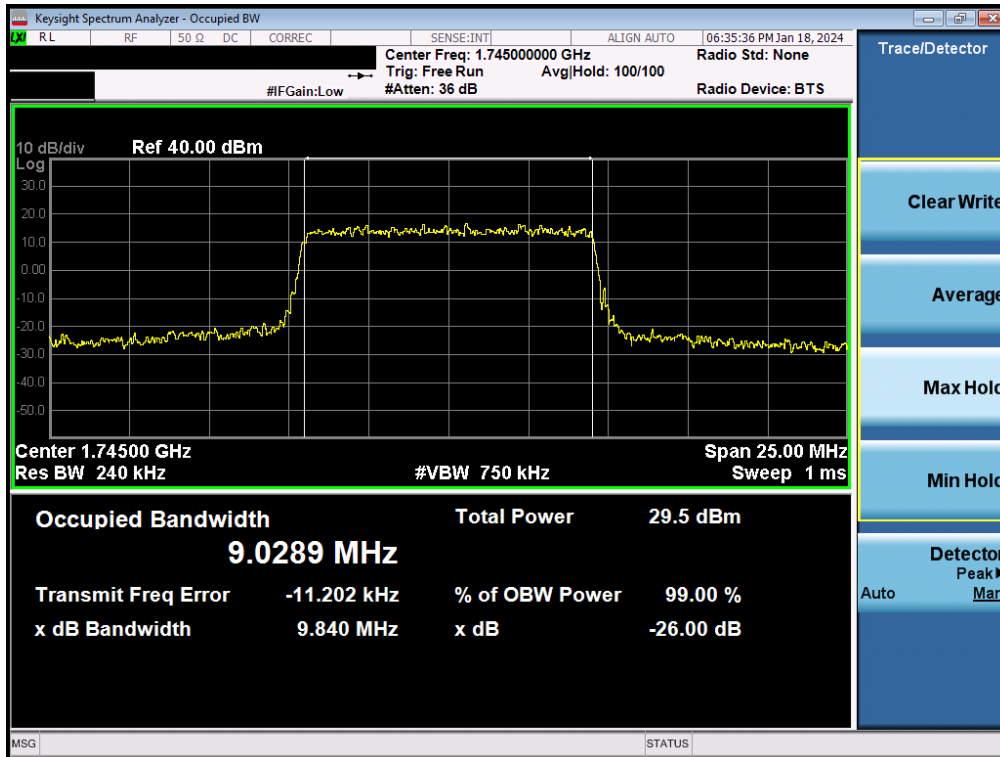
Plot 7-15. Occupied Bandwidth Plot (LTE Band 66/4 - 15MHz QPSK - Full RB)



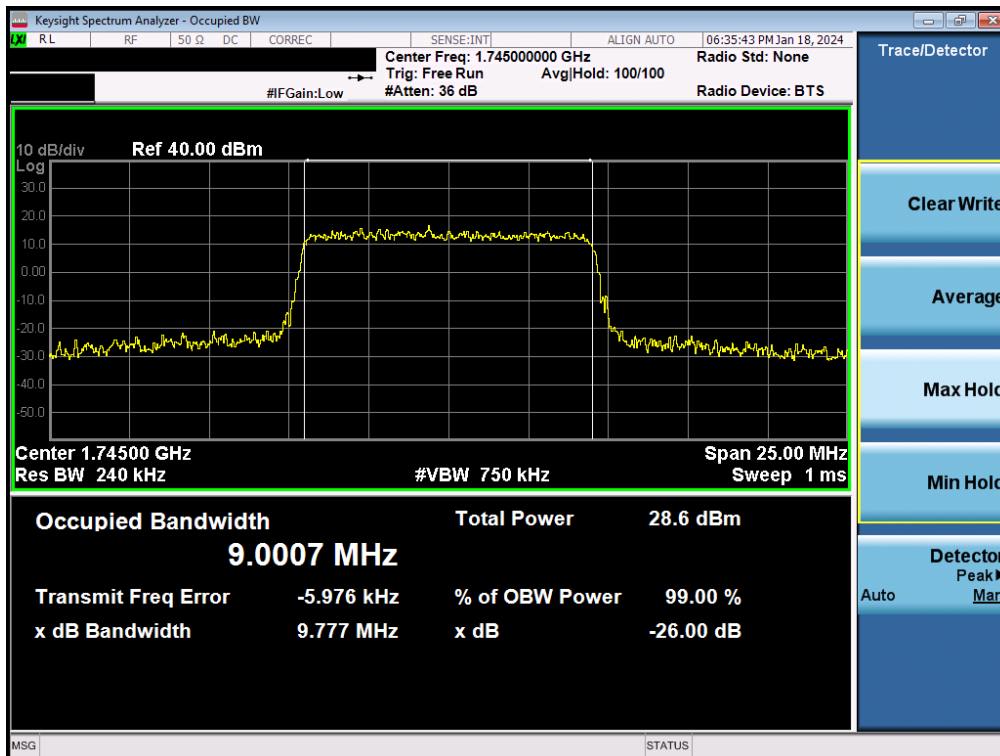
Plot 7-16. Occupied Bandwidth Plot (LTE Band 66/4 - 15MHz 16-QAM - Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.R17	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 23 of 94





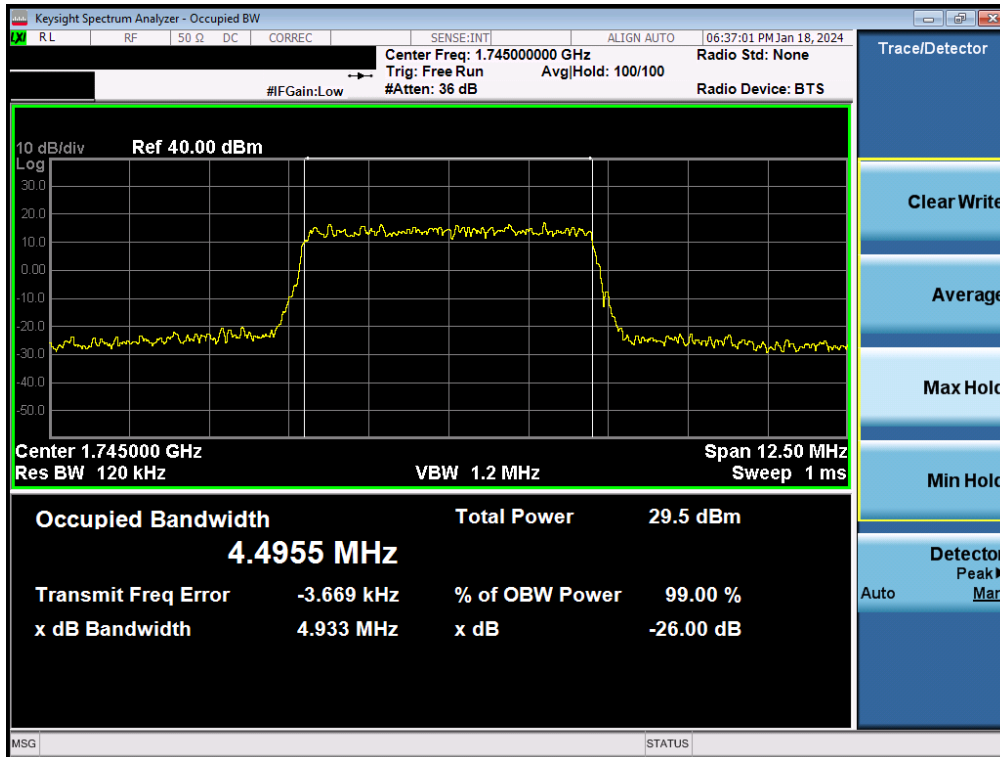
Plot 7-17. Occupied Bandwidth Plot (LTE Band 66/4 - 10MHz QPSK - Full RB)



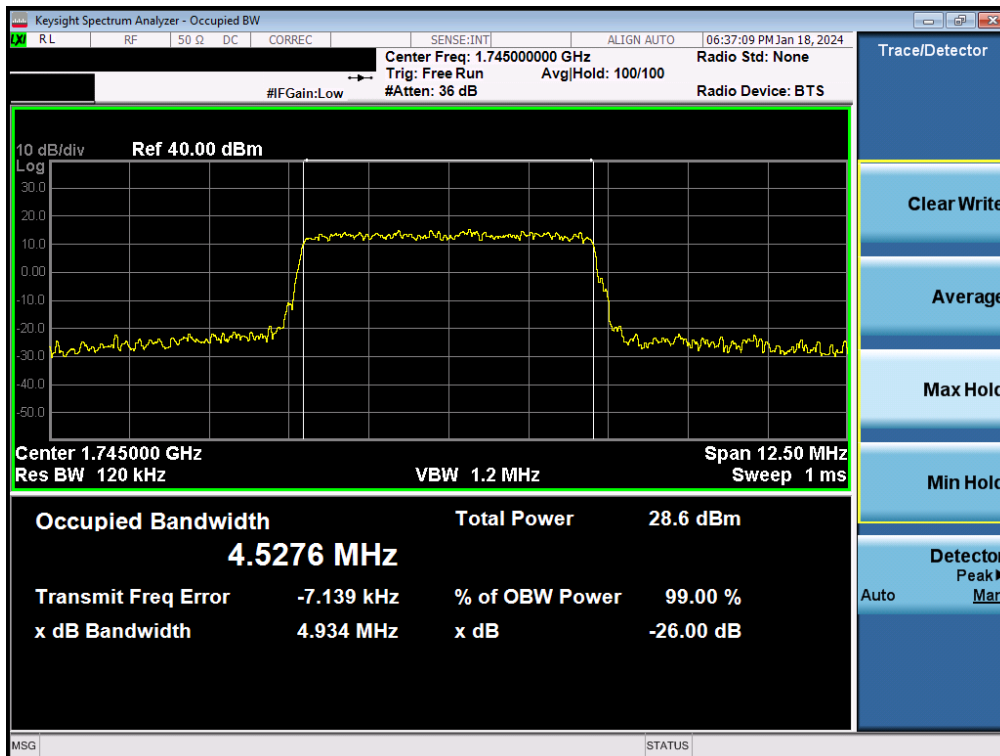
Plot 7-18. Occupied Bandwidth Plot (LTE Band 66/4 - 10MHz 16-QAM - Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.R17	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 24 of 94



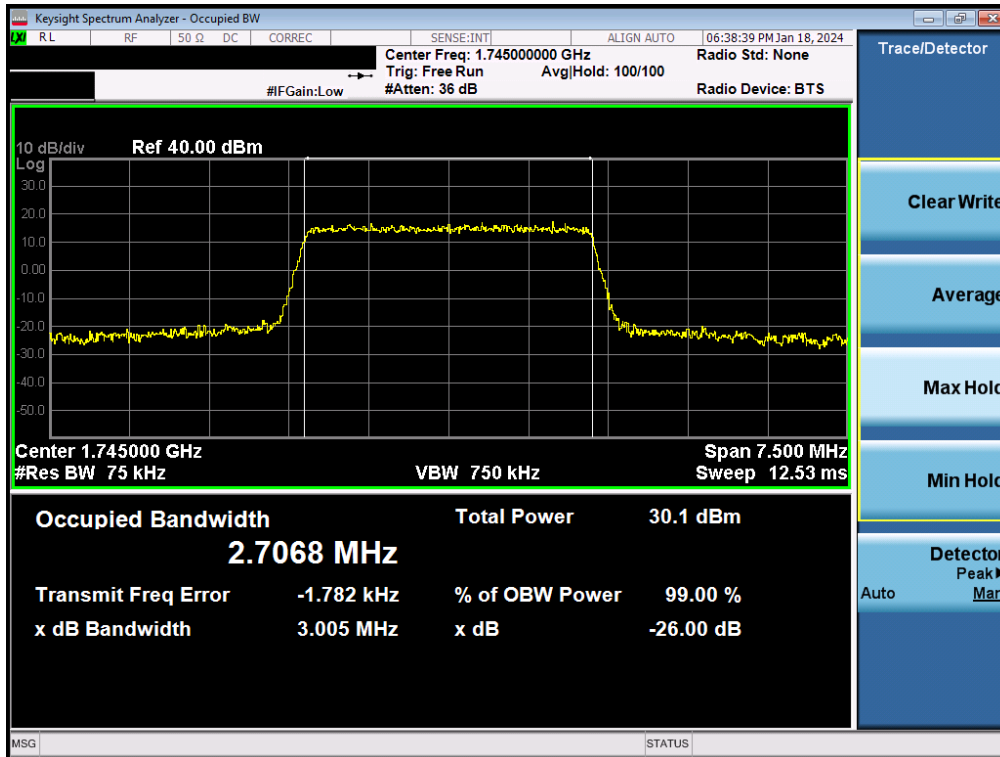


Plot 7-19. Occupied Bandwidth Plot (LTE Band 66/4 - 5MHz QPSK - Full RB)

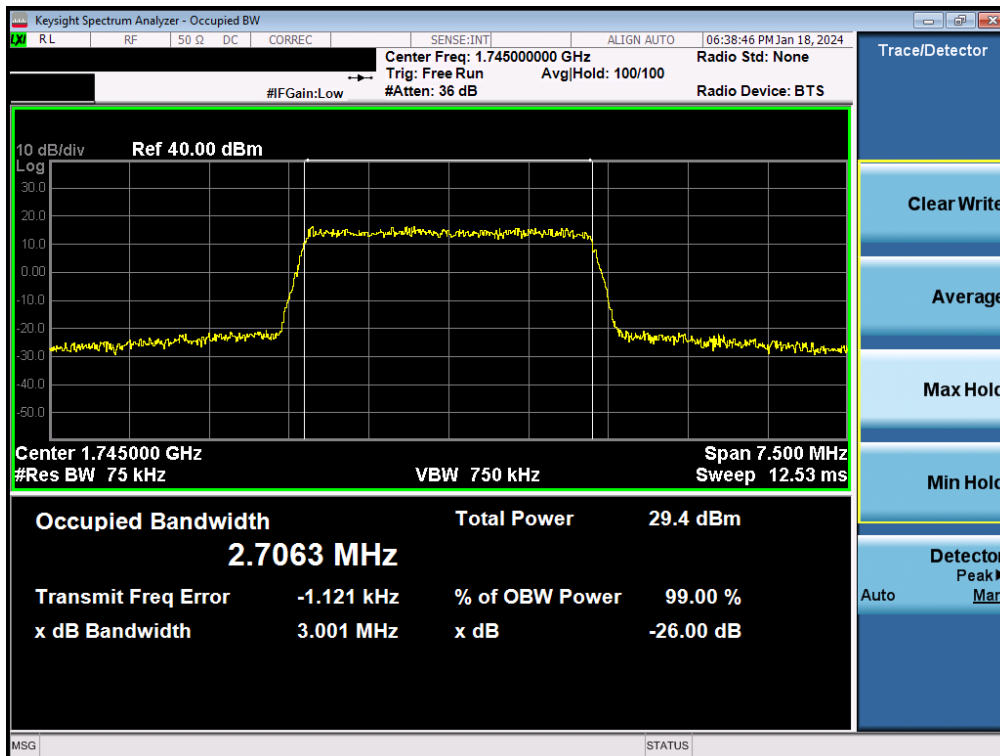


Plot 7-20. Occupied Bandwidth Plot (LTE Band 66/4 - 5MHz 16-QAM - Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.R17	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 25 of 94

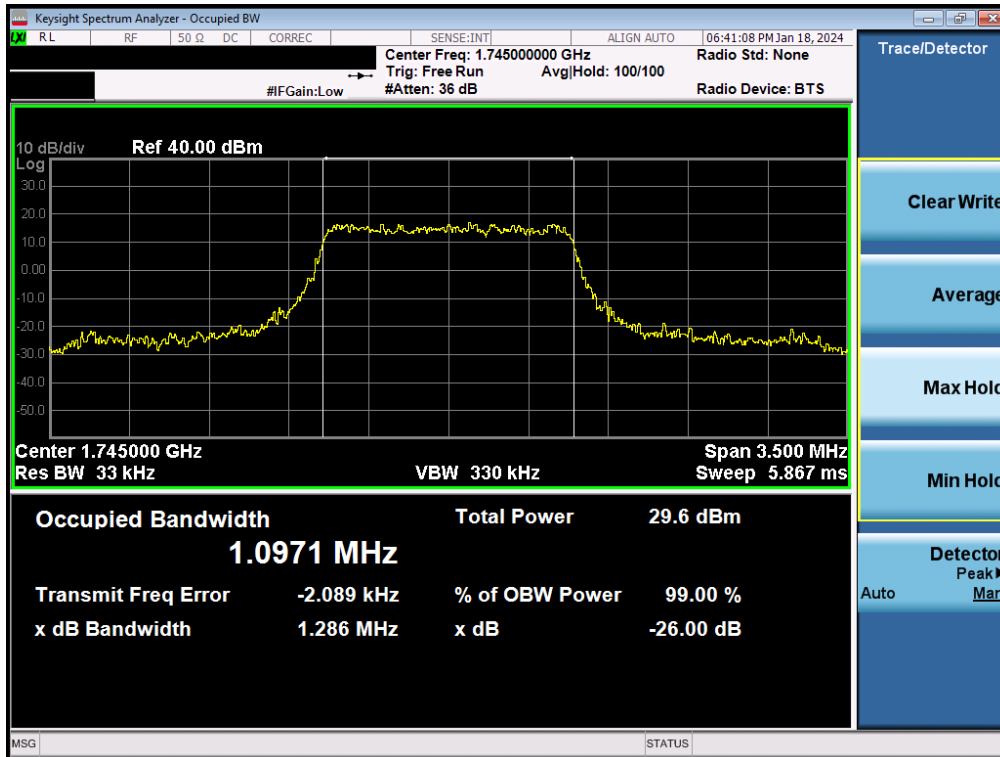


Plot 7-21. Occupied Bandwidth Plot (LTE Band 66/4 - 3MHz QPSK - Full RB)

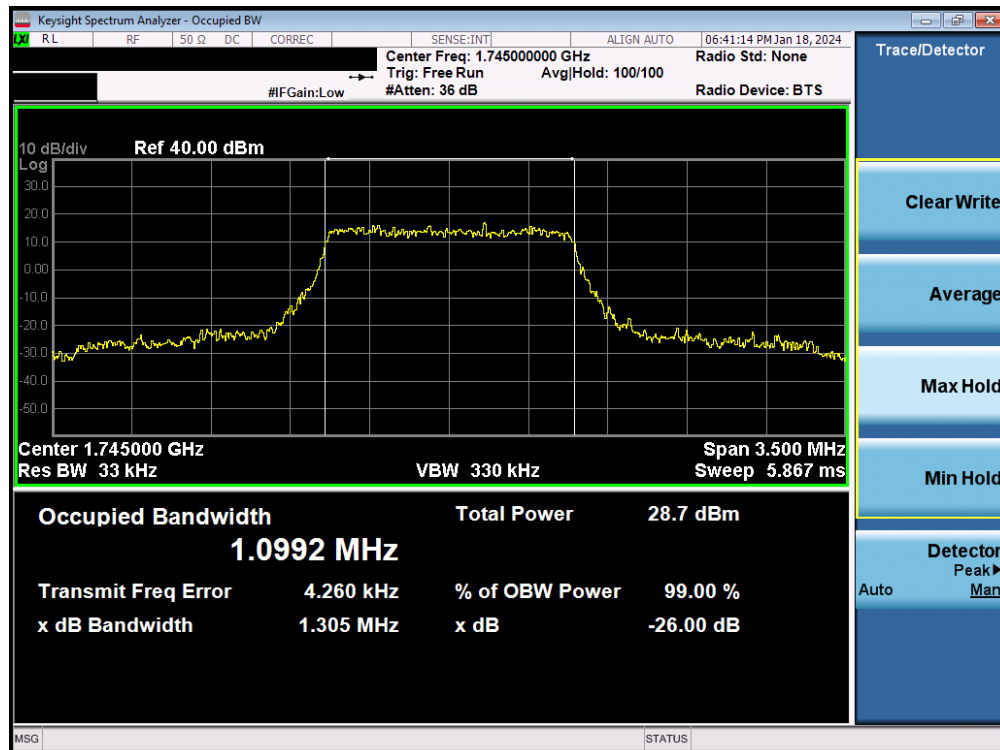


Plot 7-22. Occupied Bandwidth Plot (LTE Band 66/4 - 3MHz 16-QAM - Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.R17	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 26 of 94



Plot 7-23. Occupied Bandwidth Plot (LTE Band 66/4 - 1.4MHz QPSK - Full RB)



Plot 7-24. Occupied Bandwidth Plot (LTE Band 66/4 - 1.4MHz 16-QAM - Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.R17	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 27 of 94

## 7.4 Spurious and Harmonic Emissions at Antenna Terminal

### 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 10<sup>th</sup> 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 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.

***The minimum permissible attenuation level of any spurious emission is  $43 + 10 \log_{10}(P_{[Watts]})$ , where  $P$  is the transmitter power in Watts.***

### Test Procedure Used

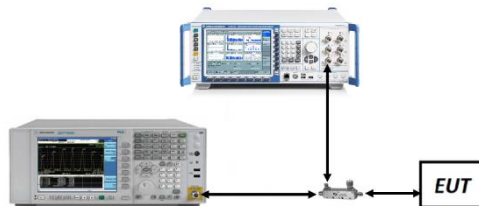
ANSI C63.26-2015 – Section 5.7.4

### Test Settings

1. Start frequency was set to 30MHz and stop frequency was set to 18GHz (separated into at least two plots per channel)
2. RBW  $\geq$  100kHz
3. VBW  $\geq$  3 x RBW
4. Detector = RMS
5. Trace mode = max hold
6. Sweep time = auto couple
7. The trace was allowed to stabilize

### Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



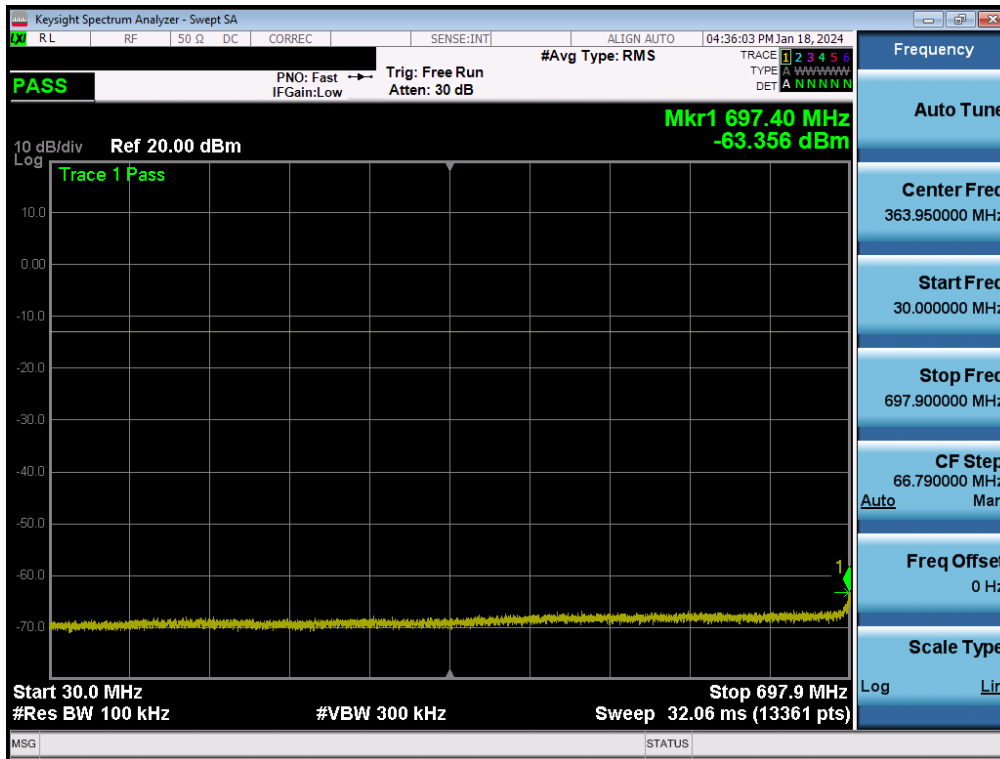
**Figure 7-3. Test Instrument & Measurement Setup**

### Test Notes

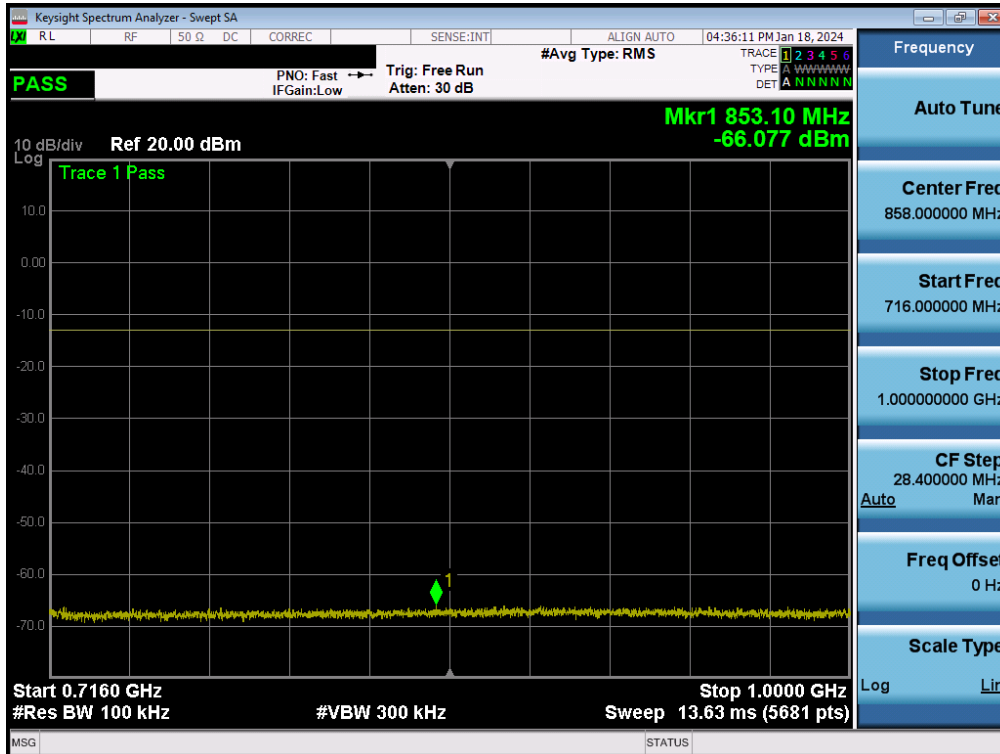
Per Part 27 and RSS-139, compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth 100 kHz or greater for B12 and B13, 1MHz for B66/4.

FCC ID: RI7LE910C1SNX IC: 5131A-LE910C1SNX	<b>PART 27 / RSS-130 &amp; RSS-139 MEASUREMENT REPORT</b>		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.RI7	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 28 of 94

## LTE Band 12

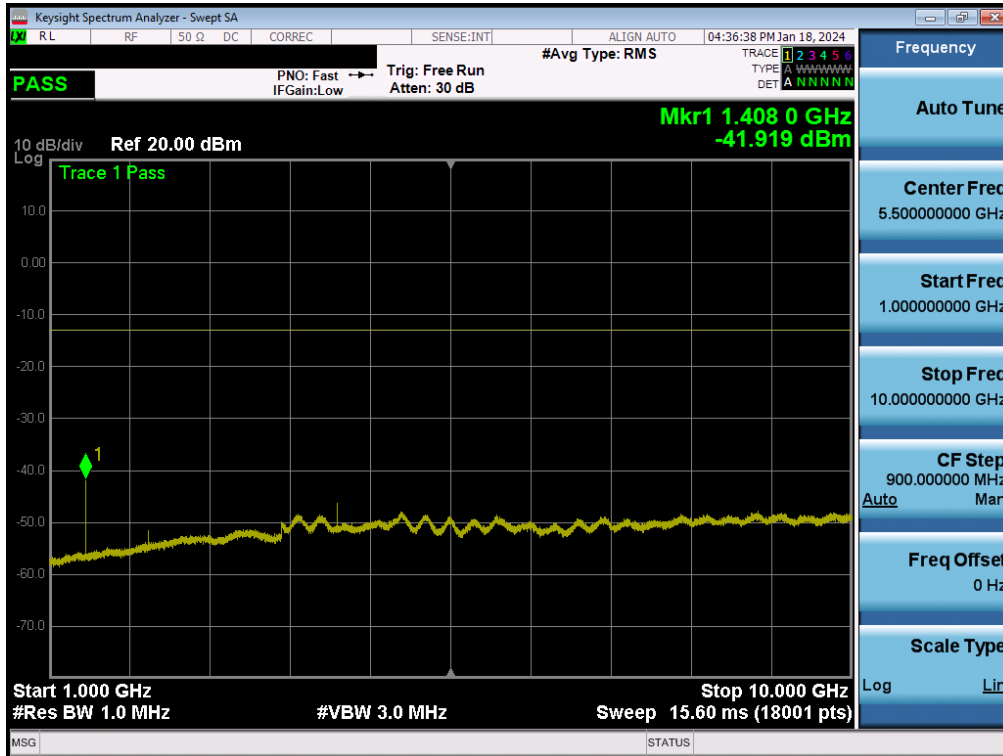


Plot 7-25. Conducted Spurious Plot (LTE Band 12 - 10MHz QPSK - 1 RB - Low Channel)

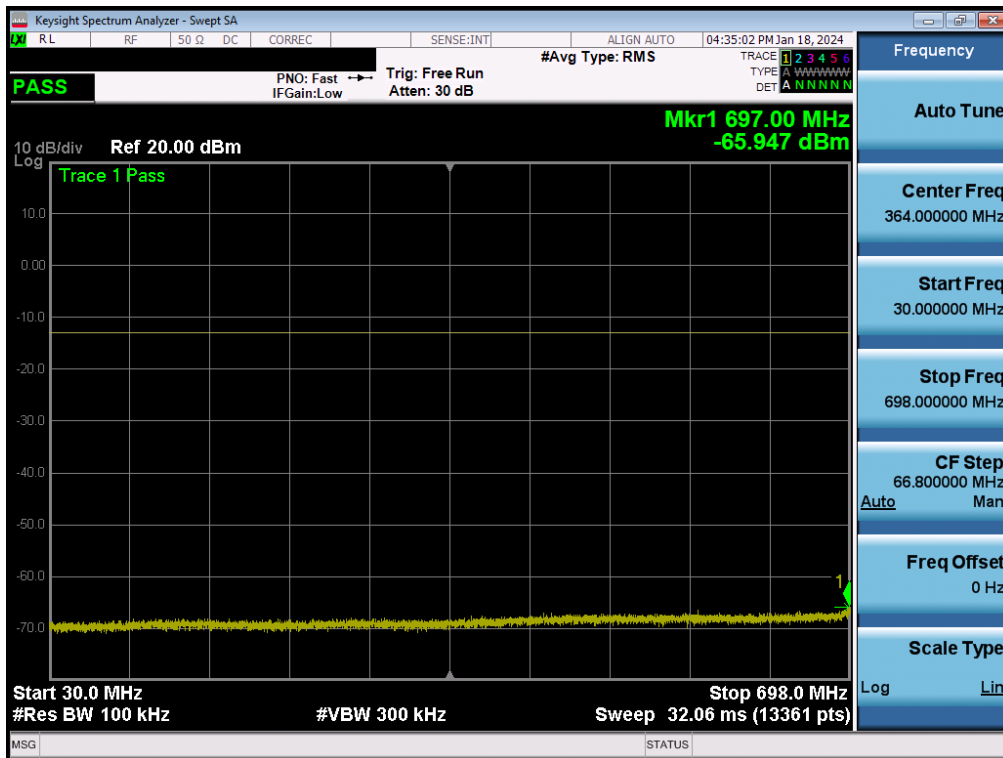


Plot 7-26. Conducted Spurious Plot (LTE Band 12 - 10MHz QPSK - 1 RB - Low Channel)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
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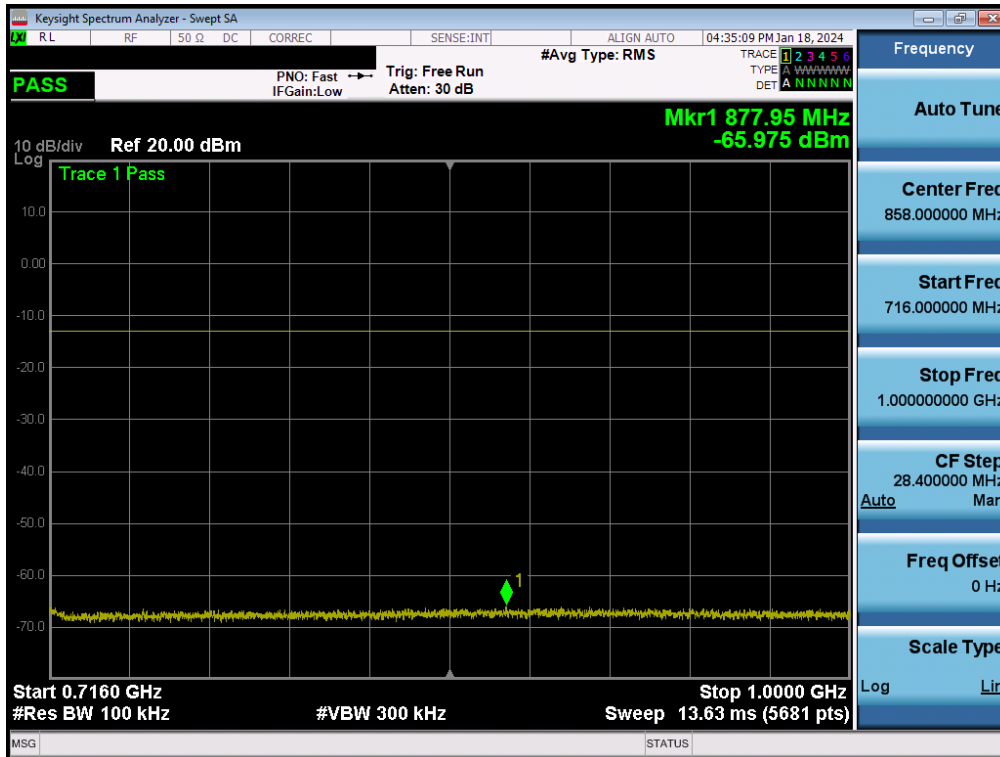


Plot 7-27. Conducted Spurious Plot (LTE Band 12 - 10MHz QPSK - 1 RB - Low Channel)

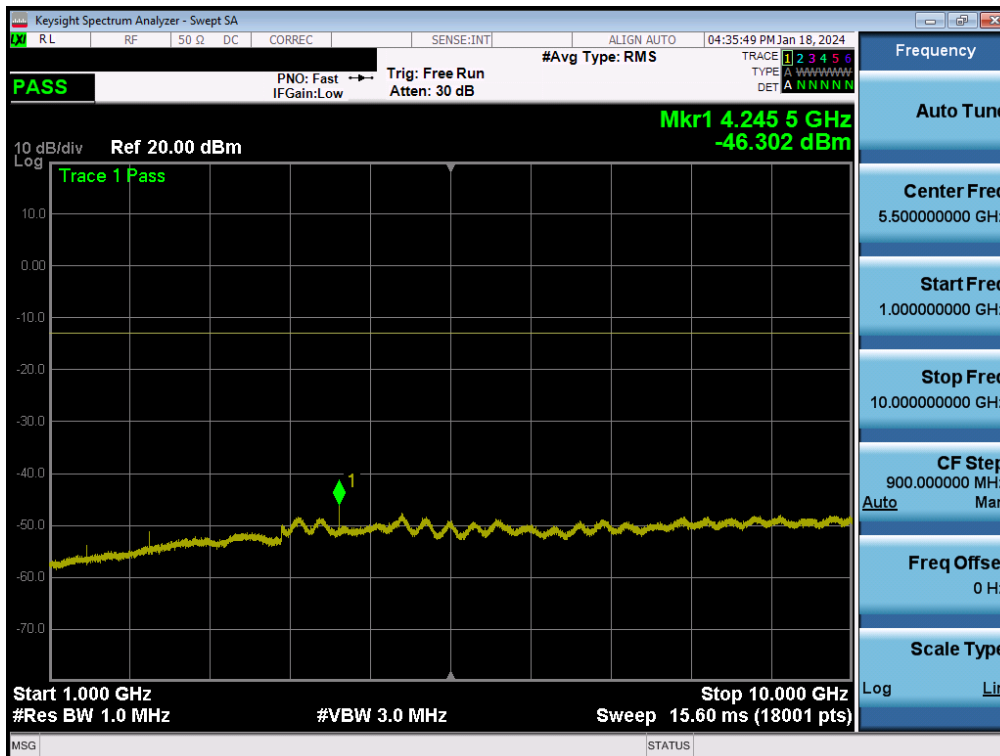


Plot 7-28. Conducted Spurious Plot (LTE Band 12 - 10MHz QPSK - 1 RB - Mid Channel)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
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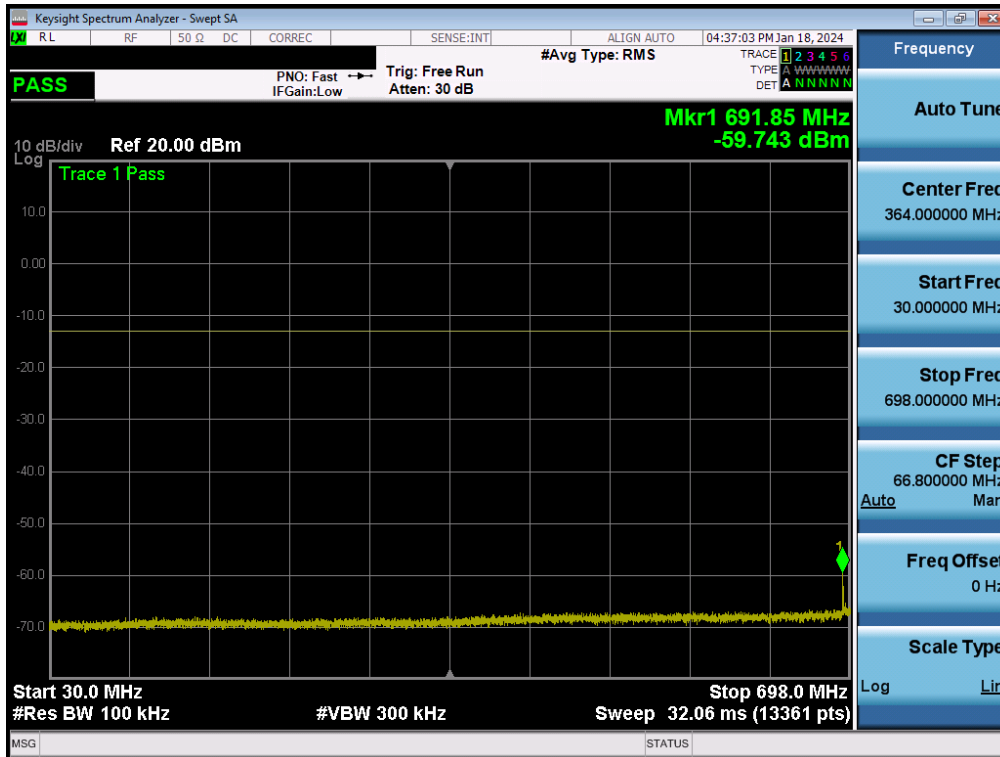
Plot 7-29. Conducted Spurious Plot (LTE Band 12 - 10MHz QPSK - 1 RB - Mid Channel)



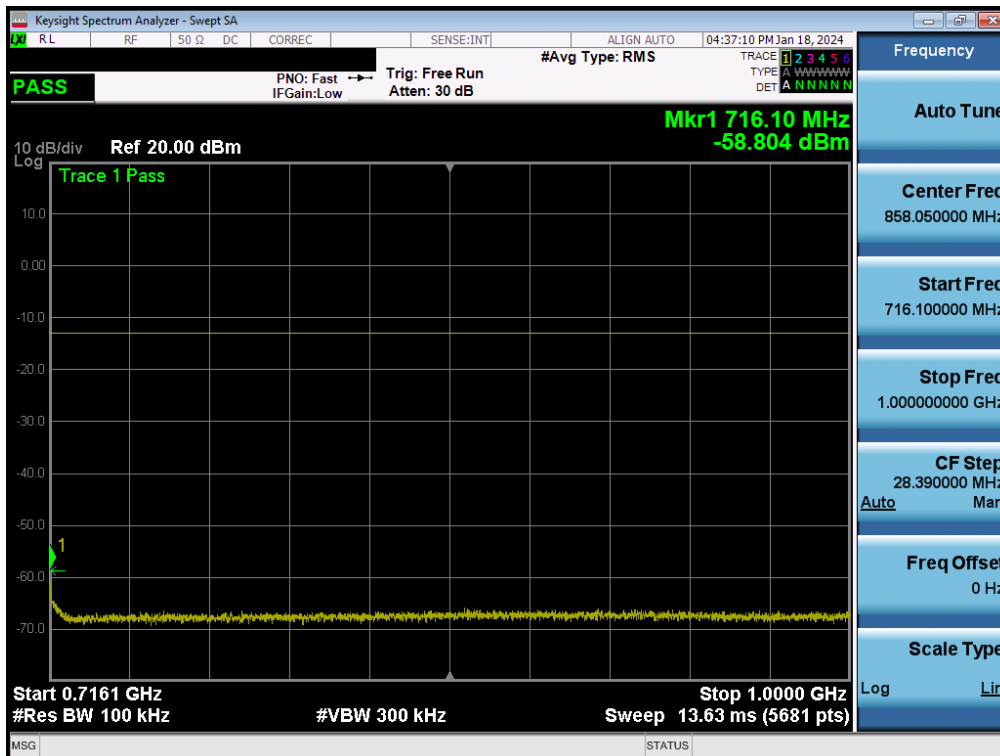
Plot 7-30. Conducted Spurious Plot (LTE Band 12 - 10MHz QPSK - 1 RB - Mid Channel)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.R17	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 31 of 94





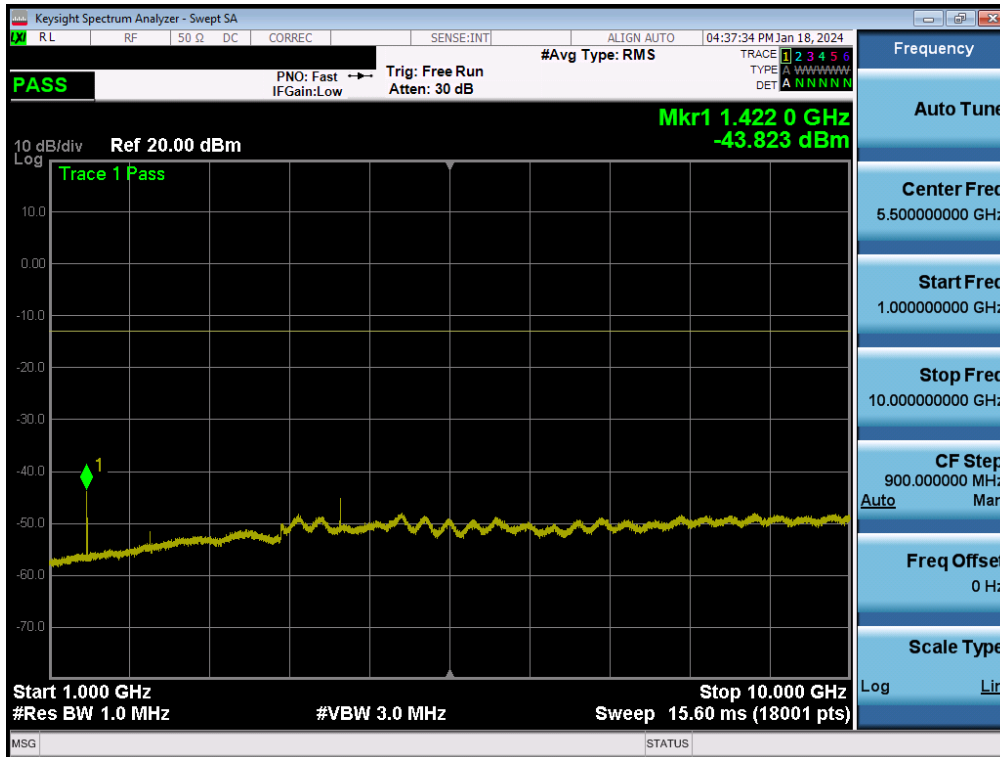
Plot 7-31. Conducted Spurious Plot (LTE Band 12 - 10MHz QPSK - 1 RB - High Channel)



Plot 7-32. Conducted Spurious Plot (LTE Band 12 - 10MHz QPSK - 1 RB - High Channel)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.R17	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 32 of 94

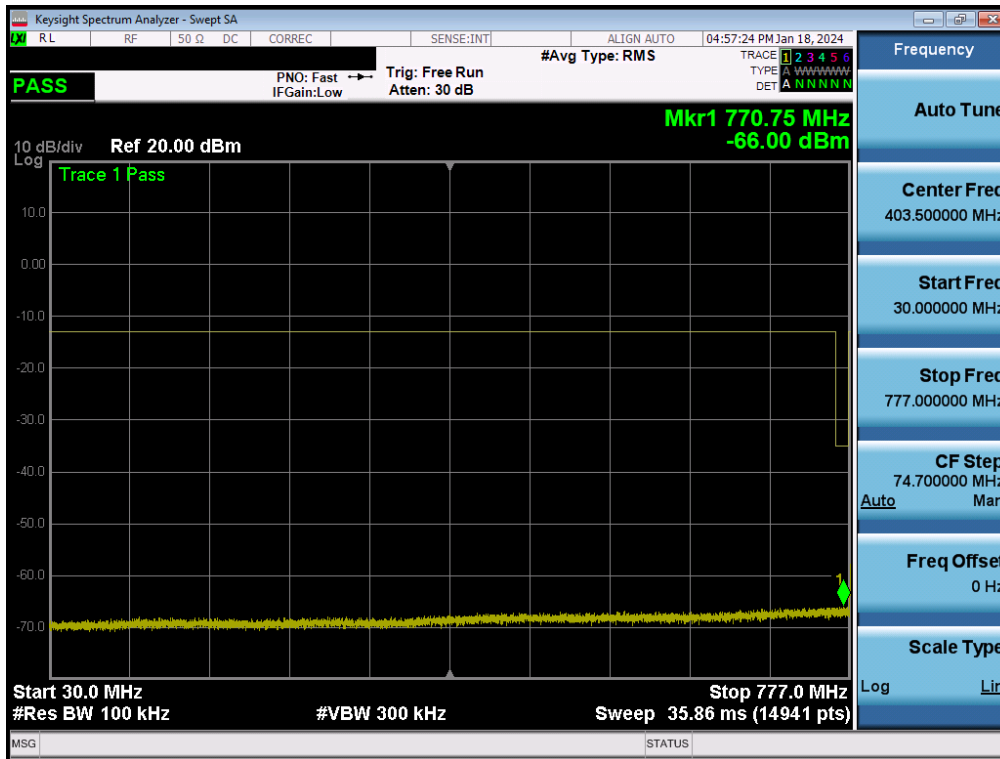




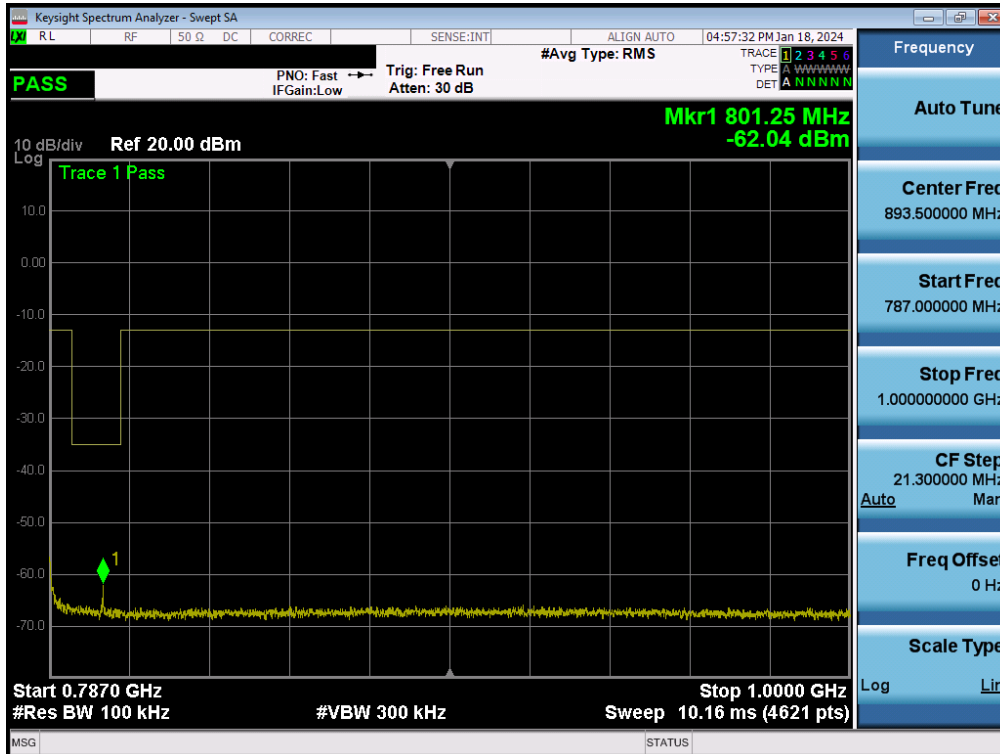
Plot 7-33. Conducted Spurious Plot (LTE Band 12 - 10MHz QPSK - 1 RB - High Channel)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
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### LTE Band 13



Plot 7-34. Conducted Spurious Plot (LTE Band 13 - 10MHz QPSK - 1 RB)

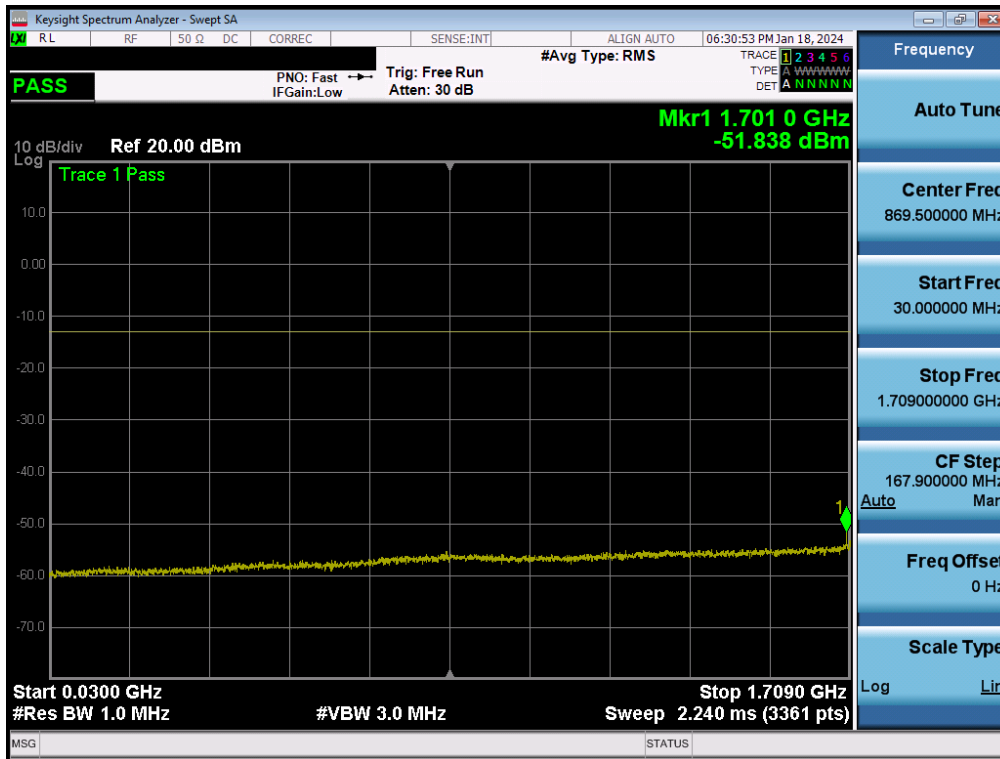


Plot 7-35. Conducted Spurious Plot (LTE Band 13 - 10MHz QPSK - 1 RB)

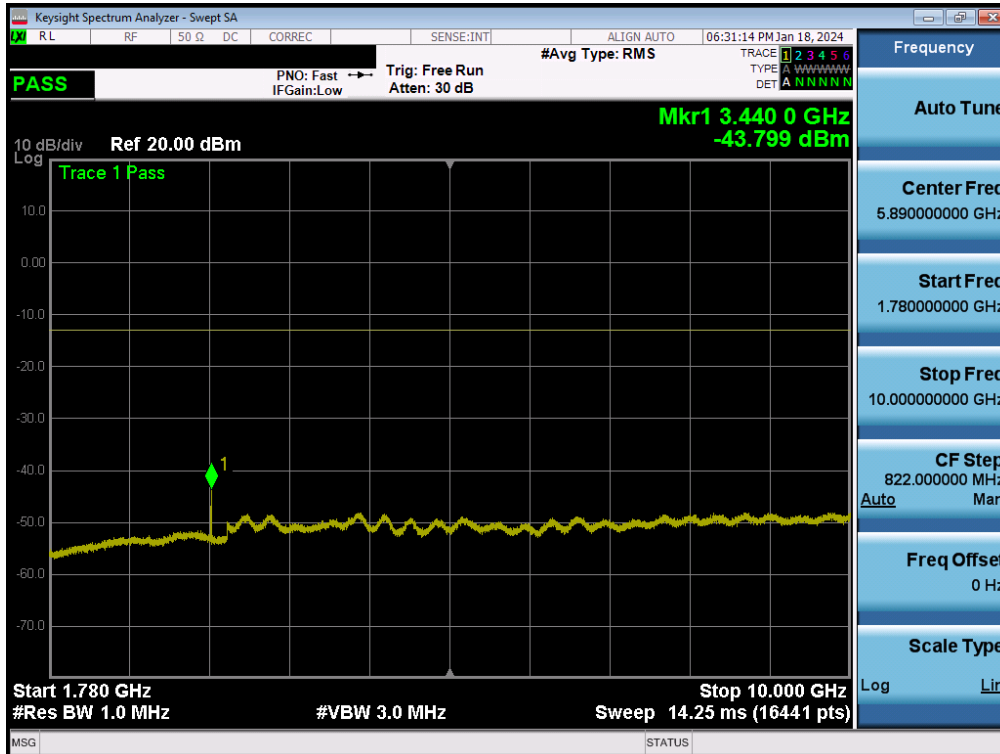
FCC ID: RI7LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.RI7	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 34 of 94



# LTE Band 66/4

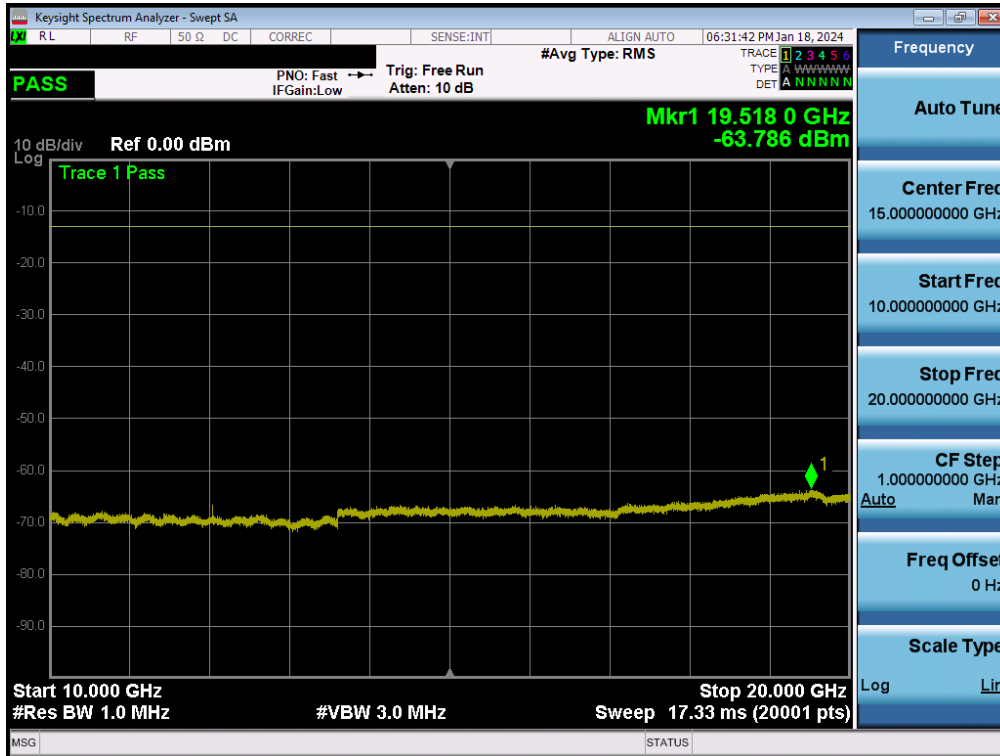


Plot 7-37. Conducted Spurious Plot (LTE Band 66/4 - 20MHz QPSK - 1 RB - Low Channel)

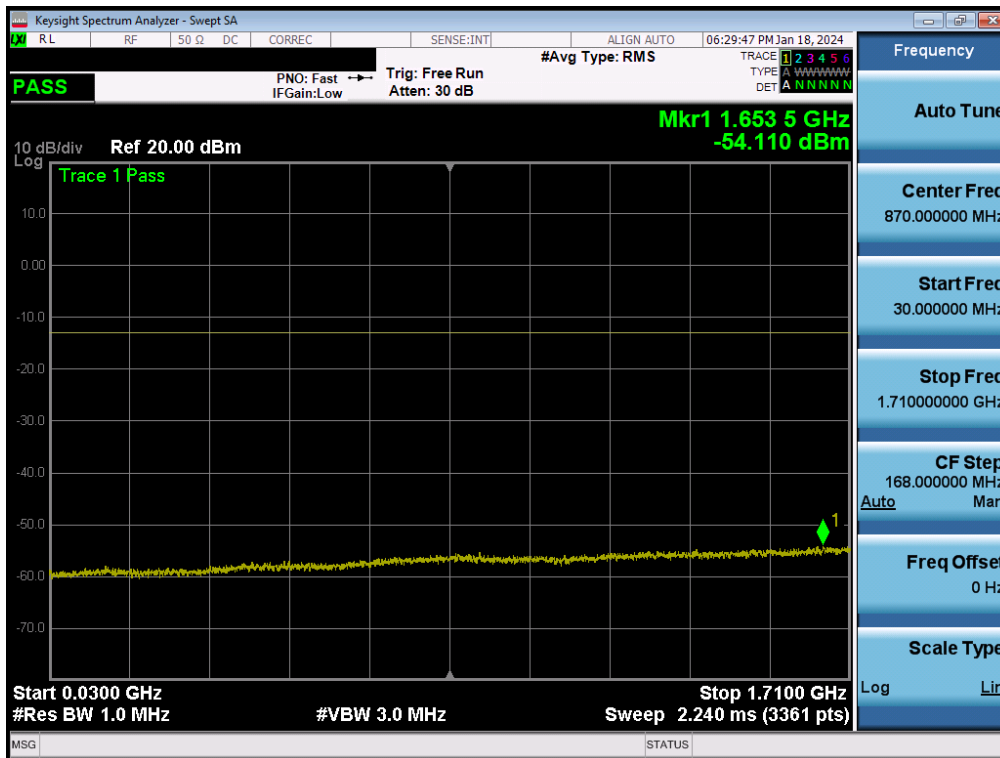


Plot 7-38. Conducted Spurious Plot (LTE Band 66/4 - 20MHz QPSK - 1 RB - Low Channel)

FCC ID: RI7LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
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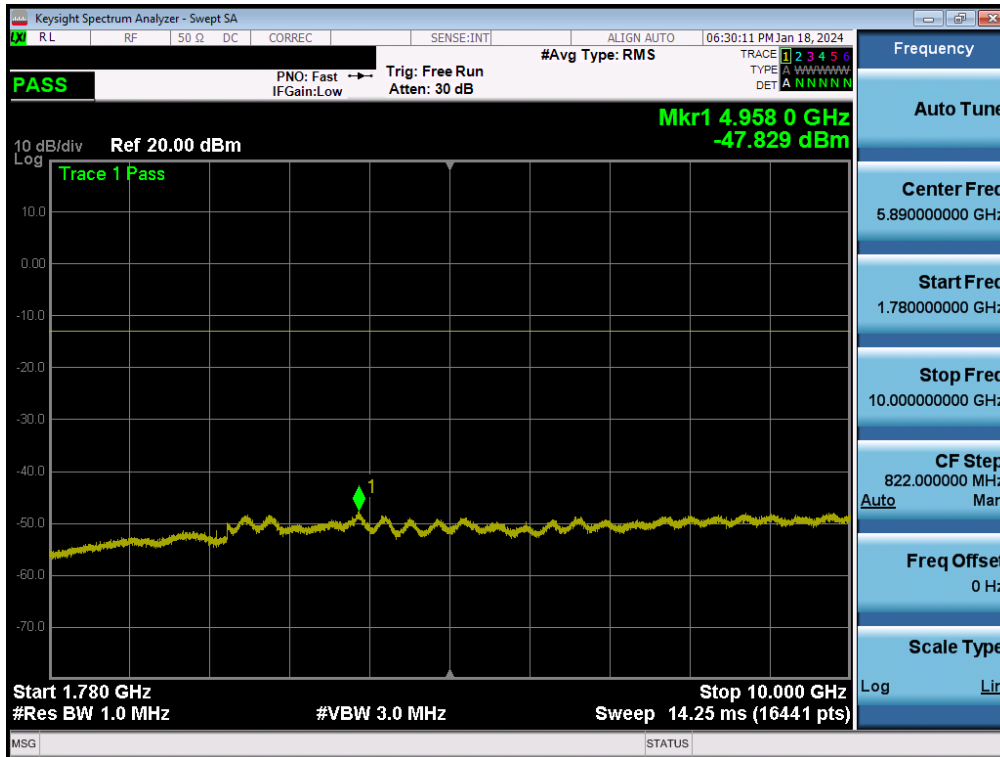


Plot 7-39. Conducted Spurious Plot (LTE Band 66/4 - 20MHz QPSK - 1 RB - Low Channel)

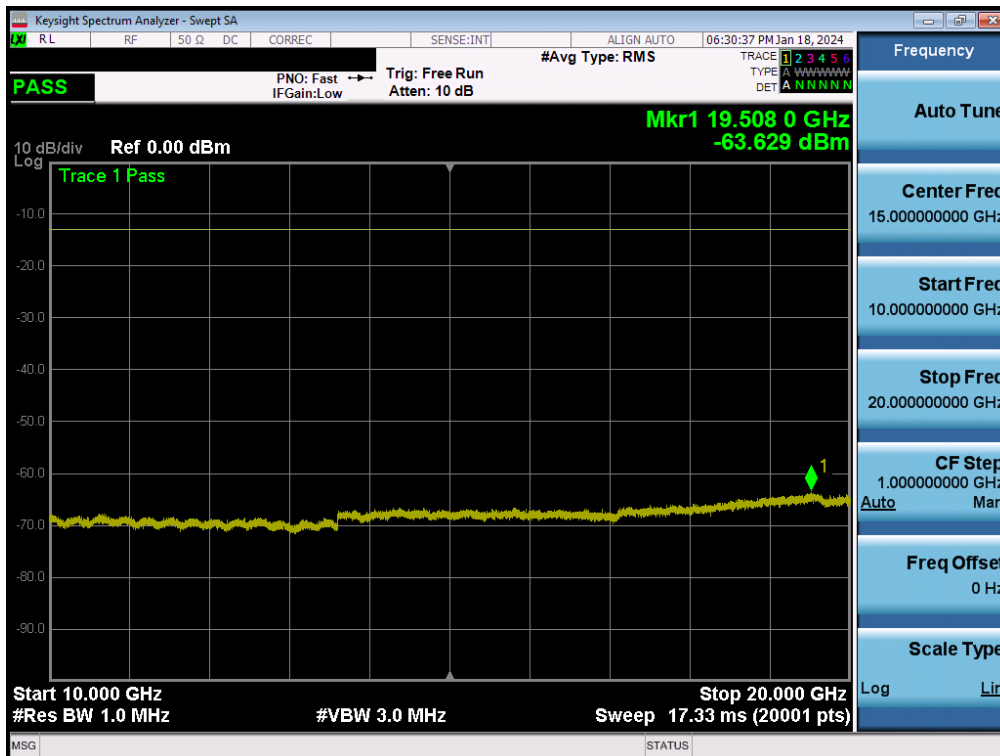


Plot 7-40. Conducted Spurious Plot (LTE Band 66/4 - 20MHz QPSK - 1 RB - Mid Channel)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
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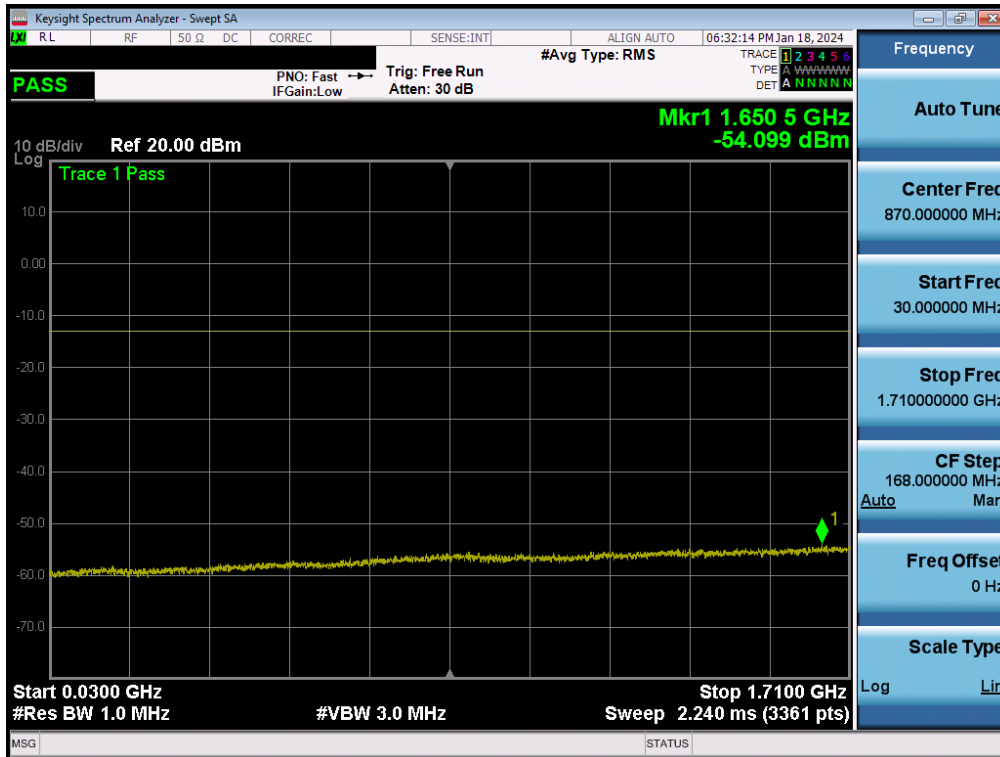


Plot 7-41. Conducted Spurious Plot (LTE Band 66/4 - 20MHz QPSK - 1 RB - Mid Channel)

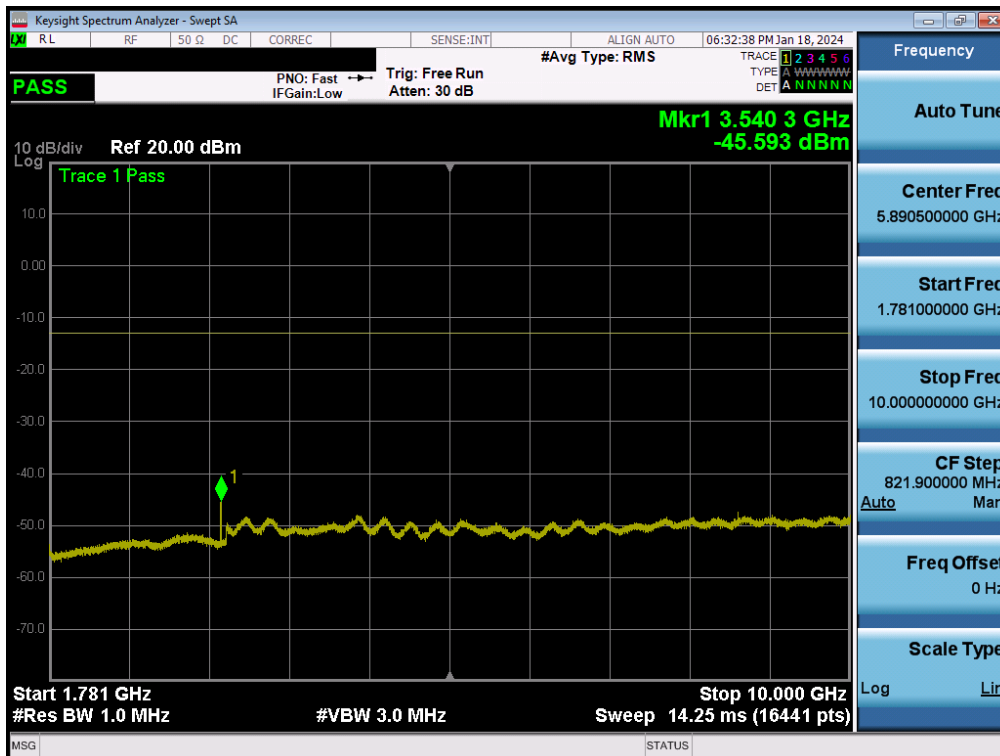


Plot 7-42. Conducted Spurious Plot (LTE Band 66/4 - 20MHz QPSK - 1 RB - Mid Channel)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.R17	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 38 of 94

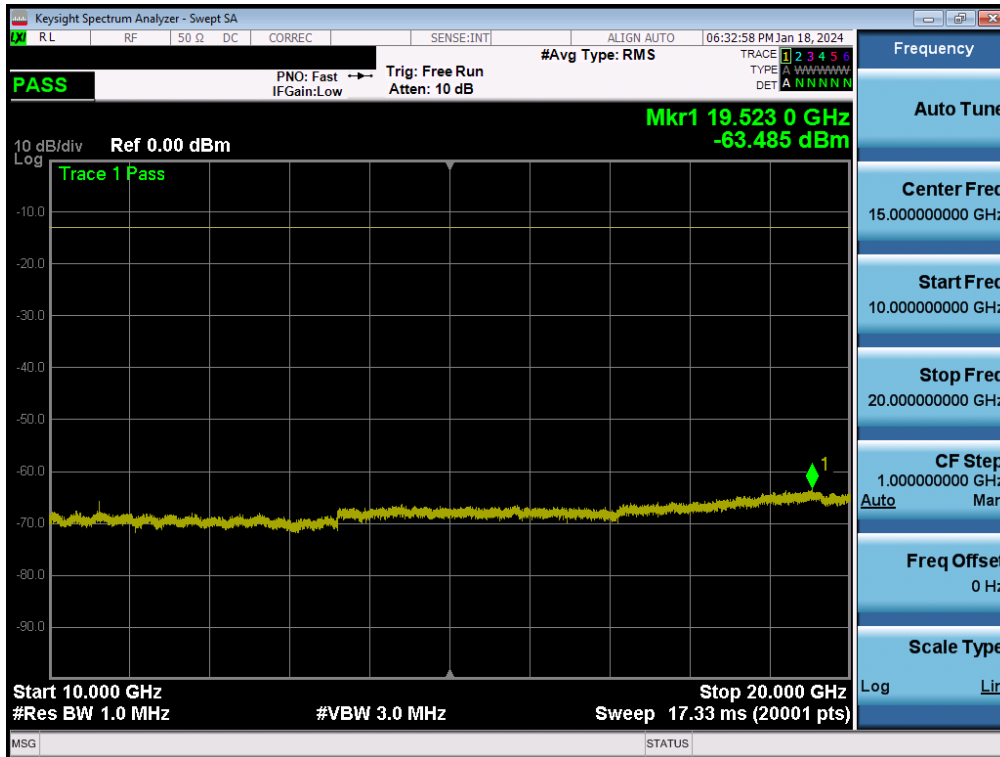


Plot 7-43. Conducted Spurious Plot (LTE Band 66/4 - 20MHz QPSK - 1 RB - High Channel)



Plot 7-44. Conducted Spurious Plot (LTE Band 66/4 - 20MHz QPSK - 1 RB - High Channel)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.R17	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 39 of 94



Plot 7-45. Conducted Spurious Plot (LTE Band 66/4 - 20MHz QPSK - 1 RB - High Channel)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.RI7	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 40 of 94



## 7.5 Band Edge Emissions at Antenna Terminal

### Test Overview

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.

***The minimum permissible attenuation level of any spurious emission is  $43 + 10 \log_{10}(P_{\text{Watts}})$ , where  $P$  is the transmitter power in Watts.***

### Test Procedure Used

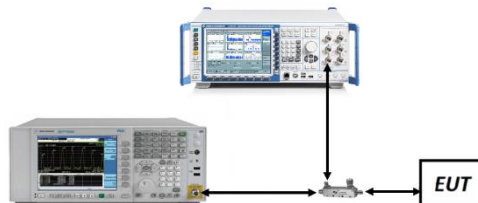
ANSI C63.26-2015 – Section 5.7.3

### 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. RBW  $\geq$  1% of the emission bandwidth
4. VBW  $\geq$  3 x RBW
5. Detector = RMS
6. Number of sweep points  $\geq$  2 x Span/RBW
7. Trace mode = trace average for continuous emissions, max hold for pulse emissions
8. Sweep time = auto couple
9. The trace was allowed to stabilize

### Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



**Figure 7-4. Test Instrument & Measurement Setup**

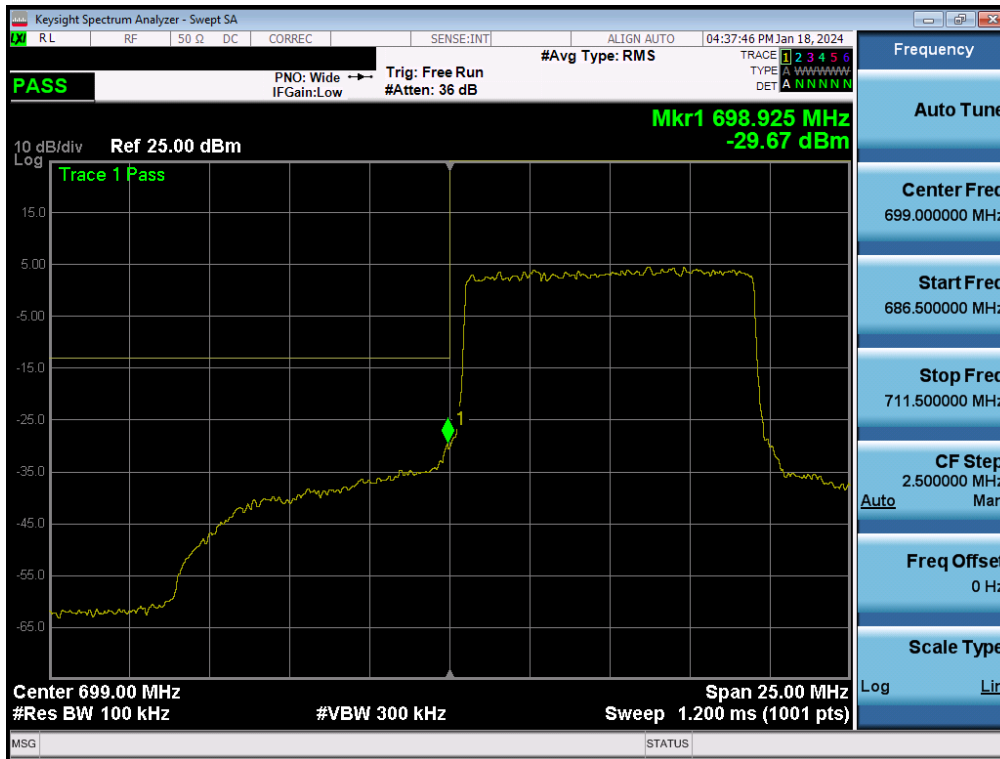
FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	<b>PART 27 / RSS-130 &amp; RSS-139 MEASUREMENT REPORT</b>		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.RI7	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 41 of 94

**Test Notes**

1. Per 27.53(h) for FCC and RSS-139(5.6) for ISED for AWS band operation, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to demonstrate compliance with the out-of-band emissions limit. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.
2. Per 27.53(g) for FCC and RSS-130(4.7.1) for ISED for operations in the 663 - 698 MHz and 698 – 746MHz bands, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.
3. Per 27.53(c)(5) for FCC and RSS-130(4.7.2) for ISED for operations in the 776-788 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.
4. For all plots showing emissions in the 763 – 775MHz and 793 – 805MHz band, the FCC limit per 27.53(c)(4) and ISED limit per RSS-130(4.7.2) is  $65 + 10 \log_{10}(P) = -35\text{dBm}$  in a 6.25kHz bandwidth.

<b>FCC ID:</b> RI7LE910C1SNX <b>IC:</b> 5131A-LE910C1SNX	<b>PART 27 / RSS-130 &amp; RSS-139 MEASUREMENT REPORT</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1M2312260131-03.RI7	<b>Test Dates:</b> 01/11/2024 - 01/21/2024	<b>EUT Type:</b> Module	Page 42 of 94

## LTE Band 12

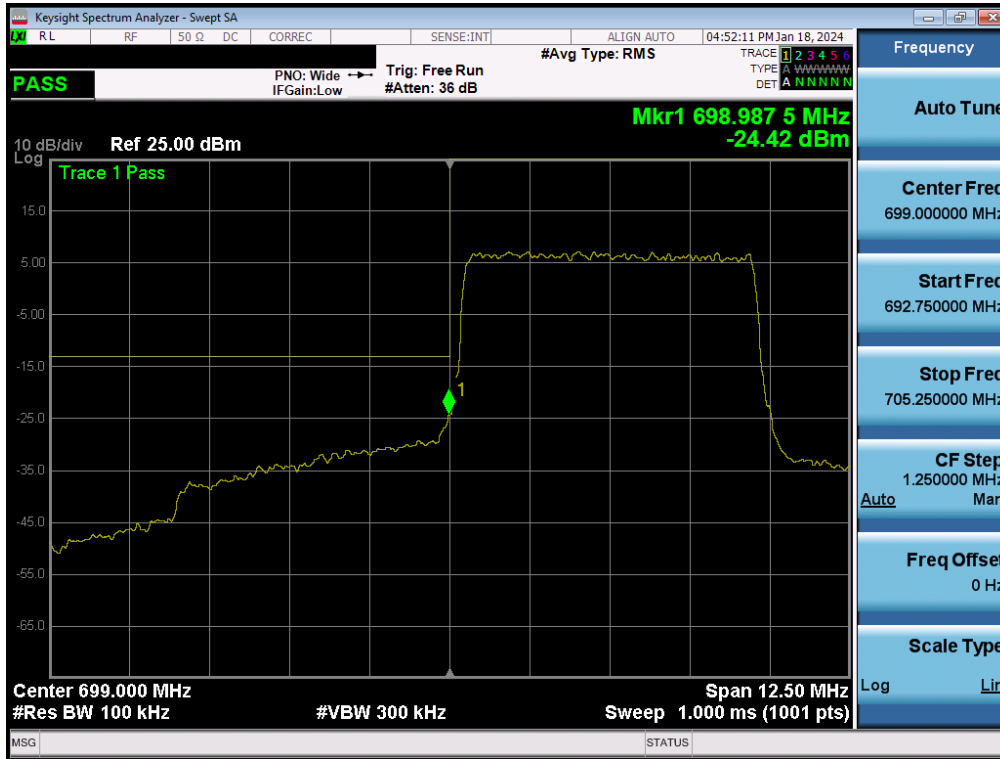


Plot 7-46. Lower Band Edge Plot (LTE Band 12 - 10MHz QPSK – Full RB)



Plot 7-47. Upper Band Edge Plot (LTE Band 12 - 10MHz QPSK – Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
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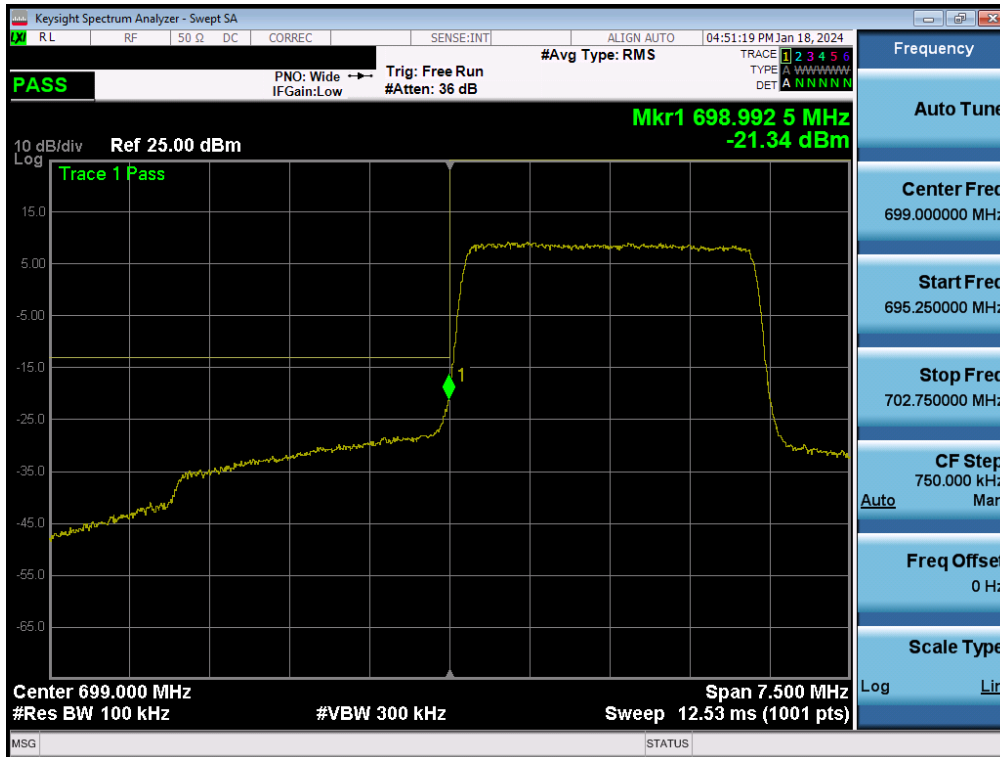


Plot 7-48. Lower Band Edge Plot (LTE Band 12 - 5MHz QPSK – Full RB)

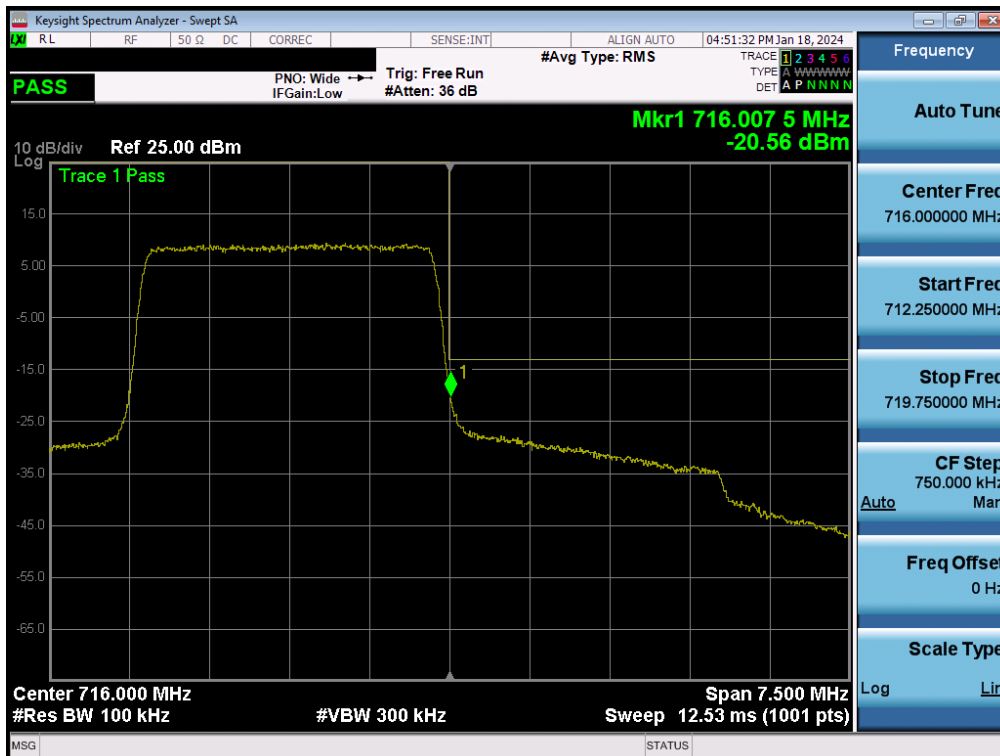


Plot 7-49. Upper Band Edge Plot (LTE Band 12 - 5MHz QPSK – Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.R17	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 44 of 94

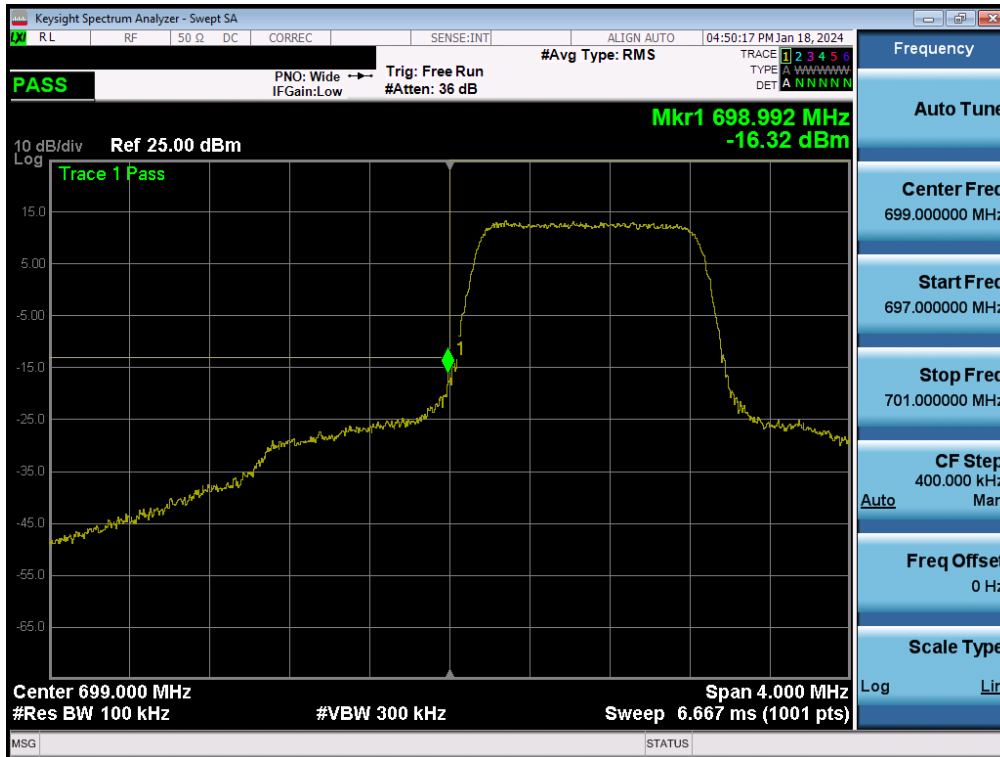


Plot 7-50. Lower Band Edge Plot (LTE Band 12 - 3MHz QPSK - Full RB)



Plot 7-51. Upper Band Edge Plot (LTE Band 12 - 3MHz QPSK - Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.R17	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 45 of 94



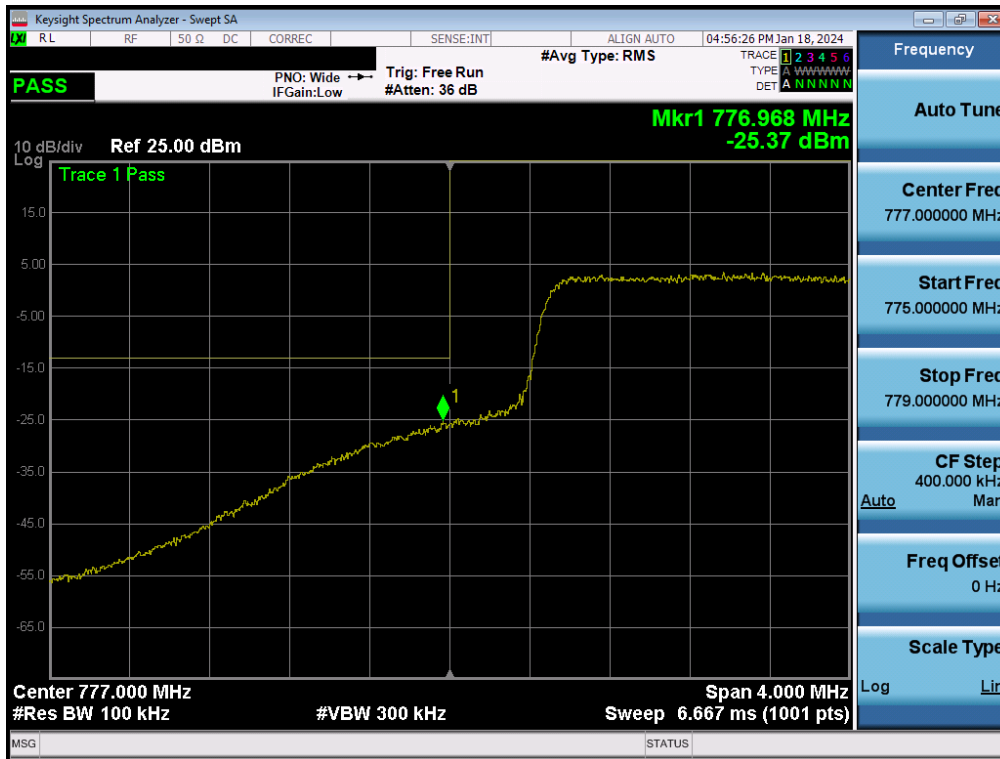
Plot 7-52. Lower Band Edge Plot (LTE Band 12 – 1.4MHz QPSK – Full RB)



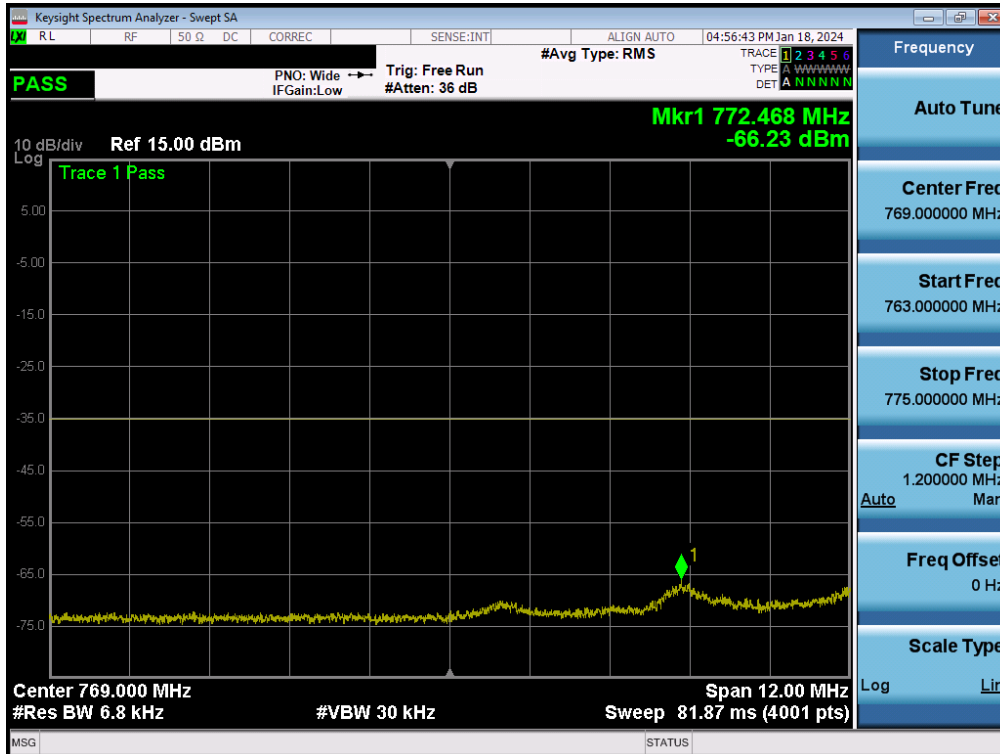
Plot 7-53. Upper Band Edge Plot (LTE Band 12 – 1.4MHz QPSK – Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
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# LTE Band 13



Plot 7-54. Lower Band Edge Plot (LTE Band 13 - 10MHz QPSK – Full RB)



Plot 7-55. Lower Emission Mask Plot (LTE Band 13 - 10MHz QPSK – Full RB)

FCC ID: RI7LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
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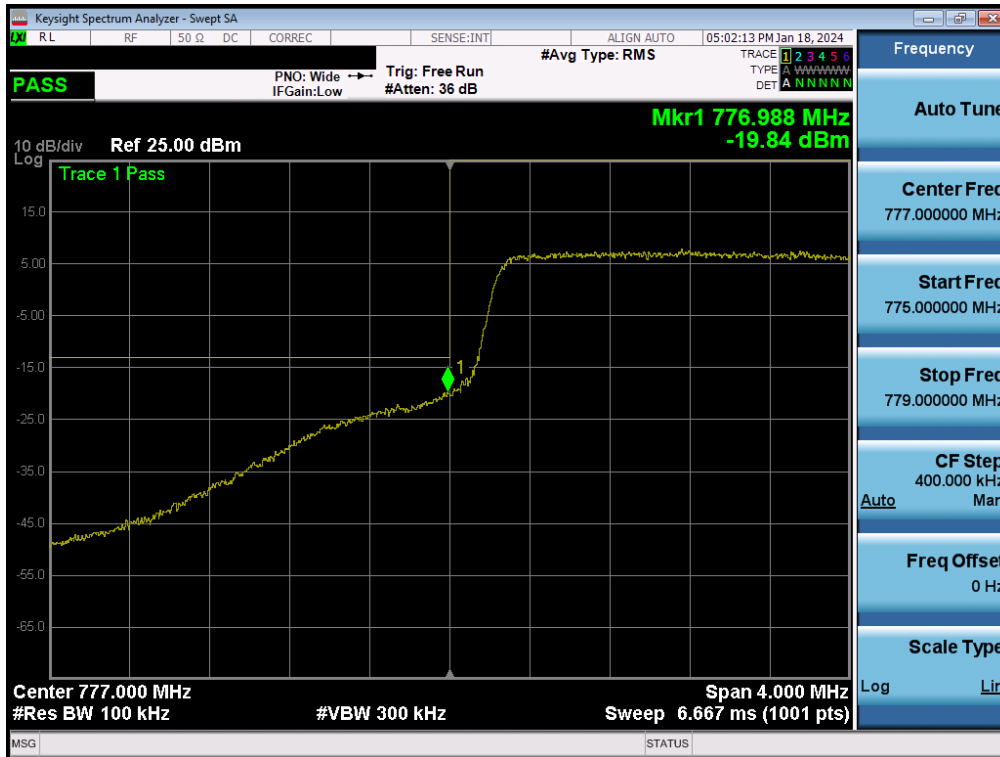
Plot 7-56. Upper Band Edge Plot (LTE Band 13 - 10MHz QPSK – Full RB)



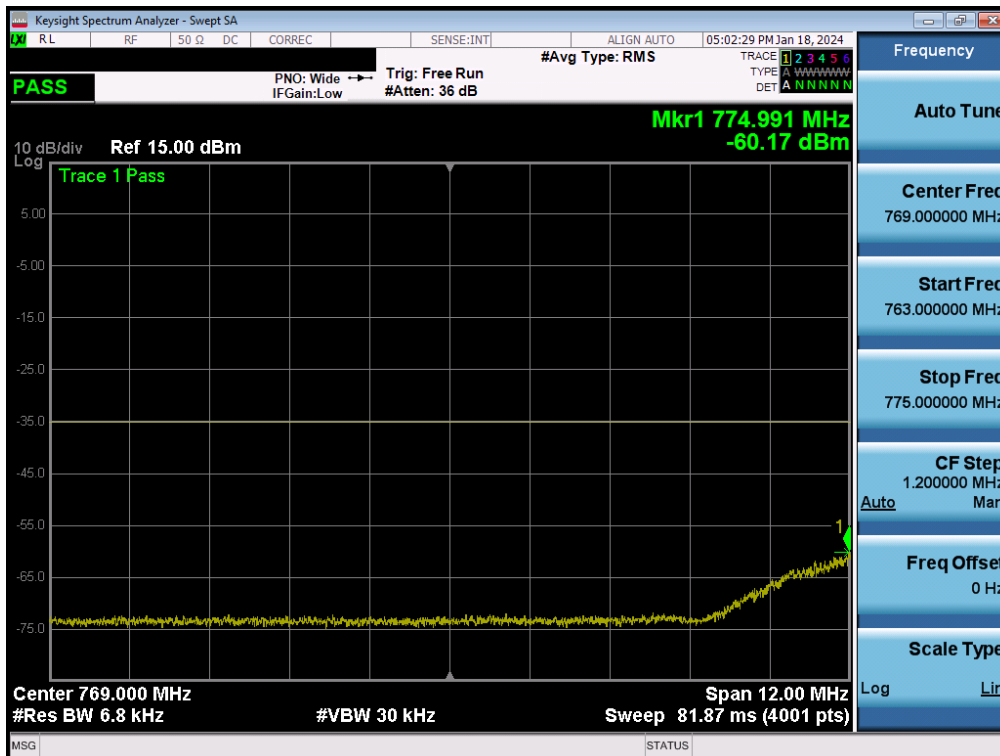
Plot 7-57. Upper Emission Mask Plot (LTE Band 13 - 10MHz QPSK – Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-58. Lower Band Edge Plot (LTE Band 13 - 5MHz QPSK – Full RB)



Plot 7-59. Lower Emission Mask Plot (LTE Band 13 - 5MHz QPSK – Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.R17	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 49 of 94



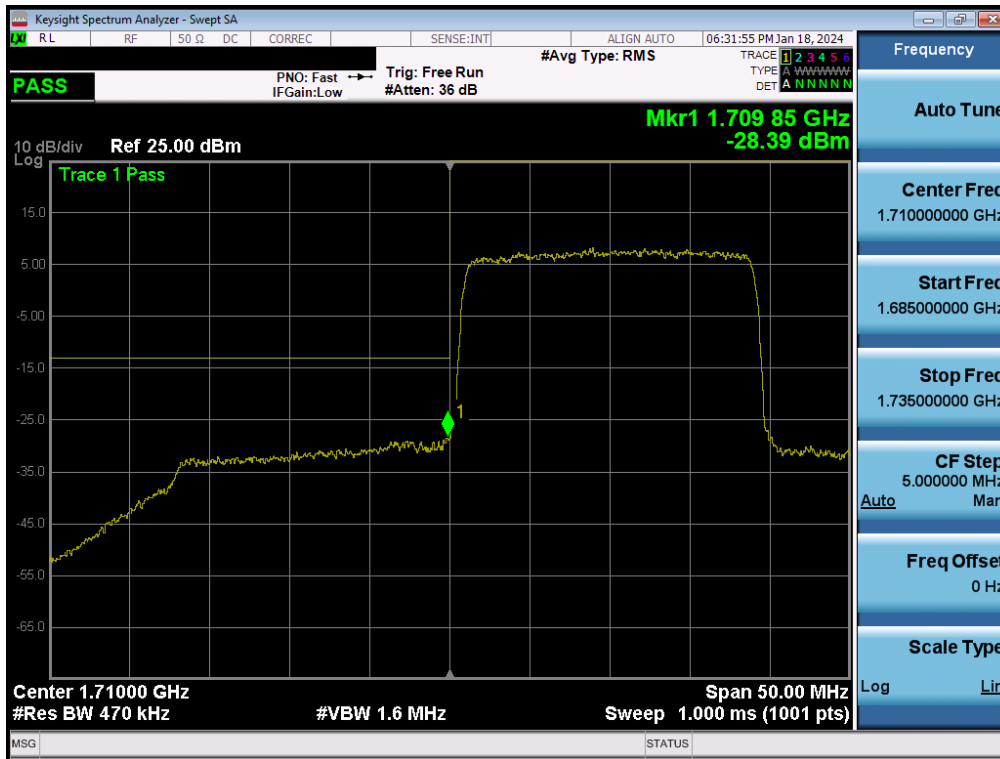
Plot 7-60. Upper Band Edge Plot (LTE Band 13 - 5MHz QPSK – Full RB)



Plot 7-61. Upper Emission Mask Plot (LTE Band 13 - 5MHz QPSK – Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
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### LTE Band 66/4



Plot 7-62. Lower Band Edge Plot (LTE Band 66/4 - 20MHz QPSK – Full RB)



Plot 7-63. Lower Extended Band Edge Plot (LTE Band 66/4 - 20MHz QPSK – Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
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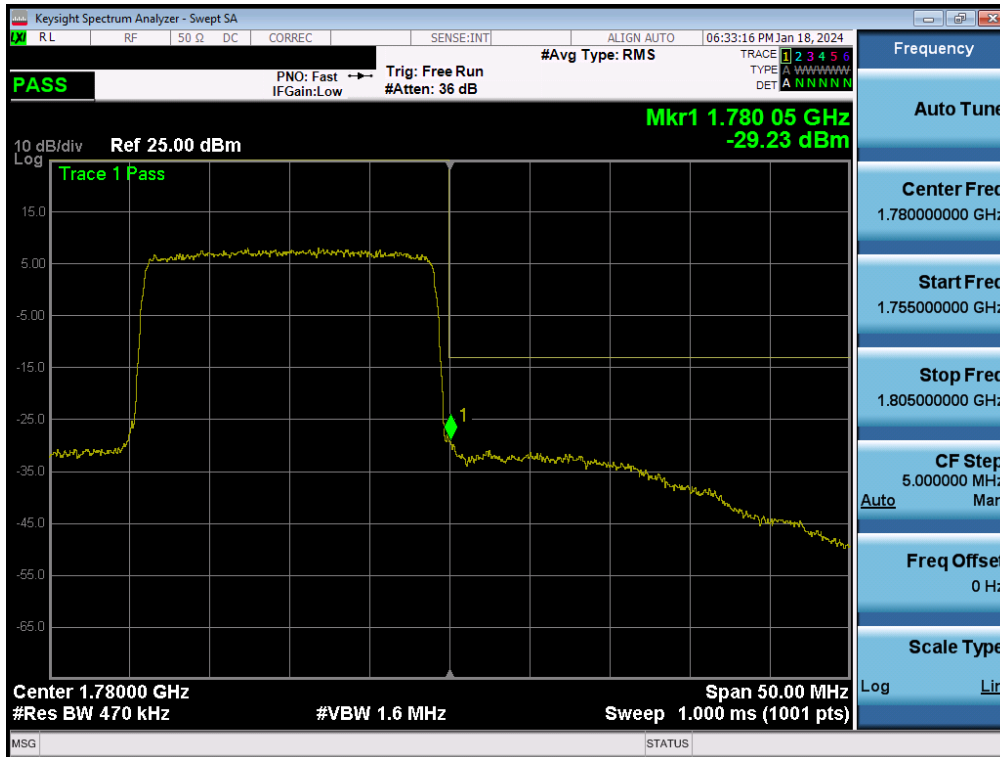


Plot 7-64. Upper Band Edge Plot (LTE Band 4 - 20MHz QPSK – Full RB)

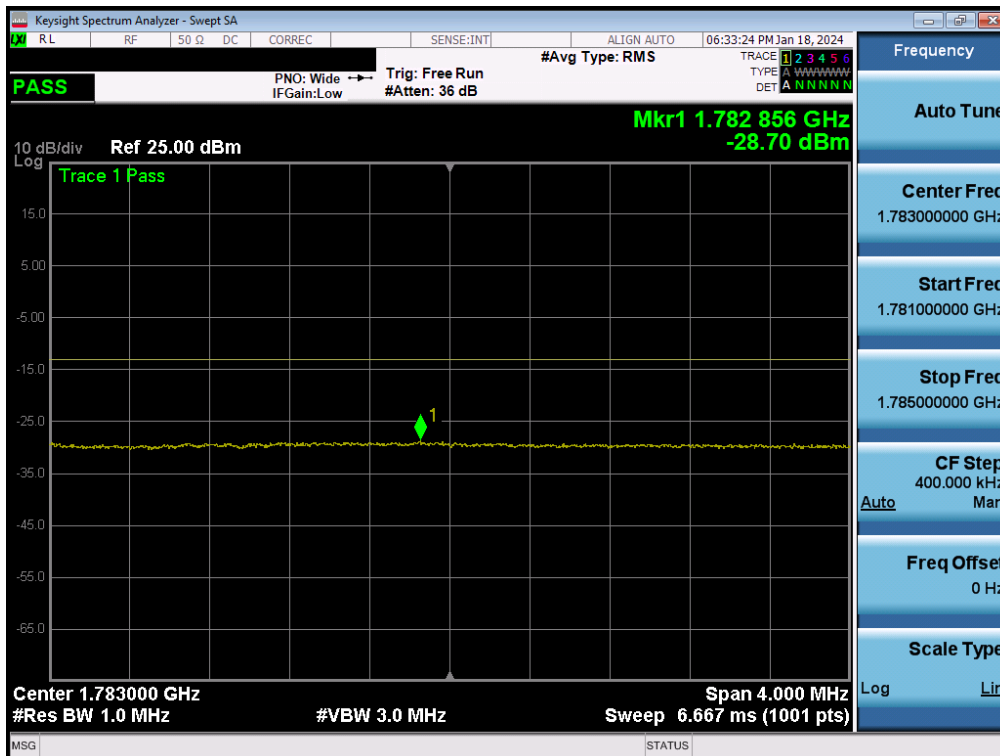


Plot 7-65. Upper Extended Band Edge Plot (LTE Band 4 - 20MHz QPSK – Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
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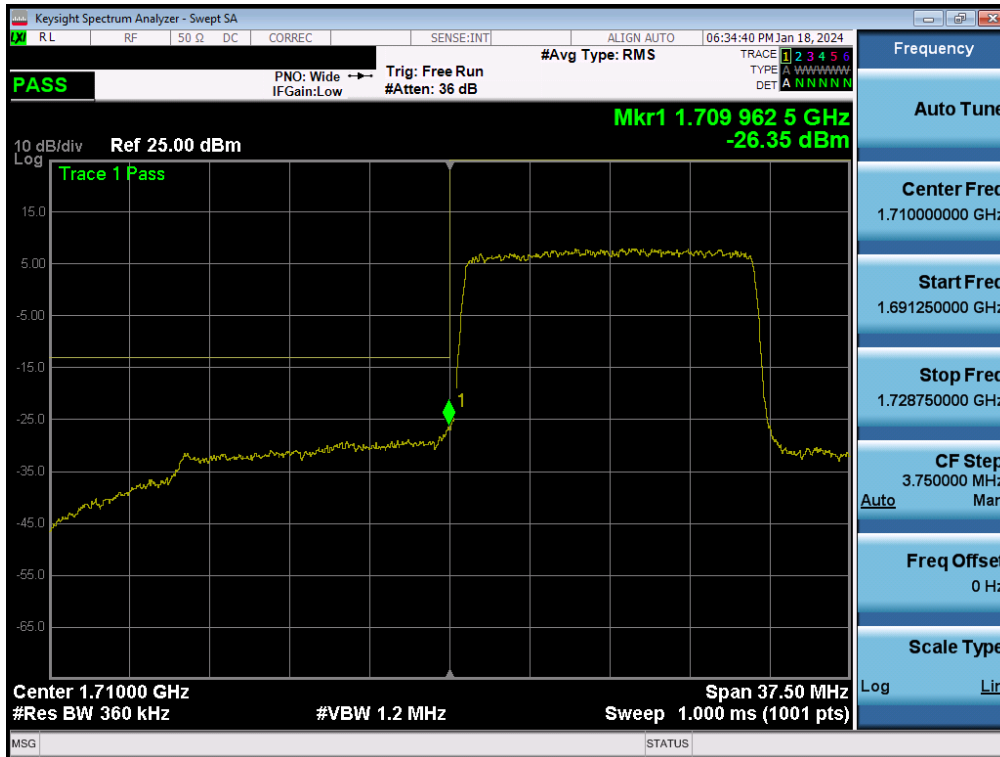


Plot 7-66. Upper Band Edge Plot (LTE Band 66 - 20MHz QPSK – Full RB)



Plot 7-67. Channel Edge Plot (LTE Band 66 - 20MHz QPSK – Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-68. Lower Band Edge Plot (LTE Band 66/4 - 15MHz QPSK – Full RB)

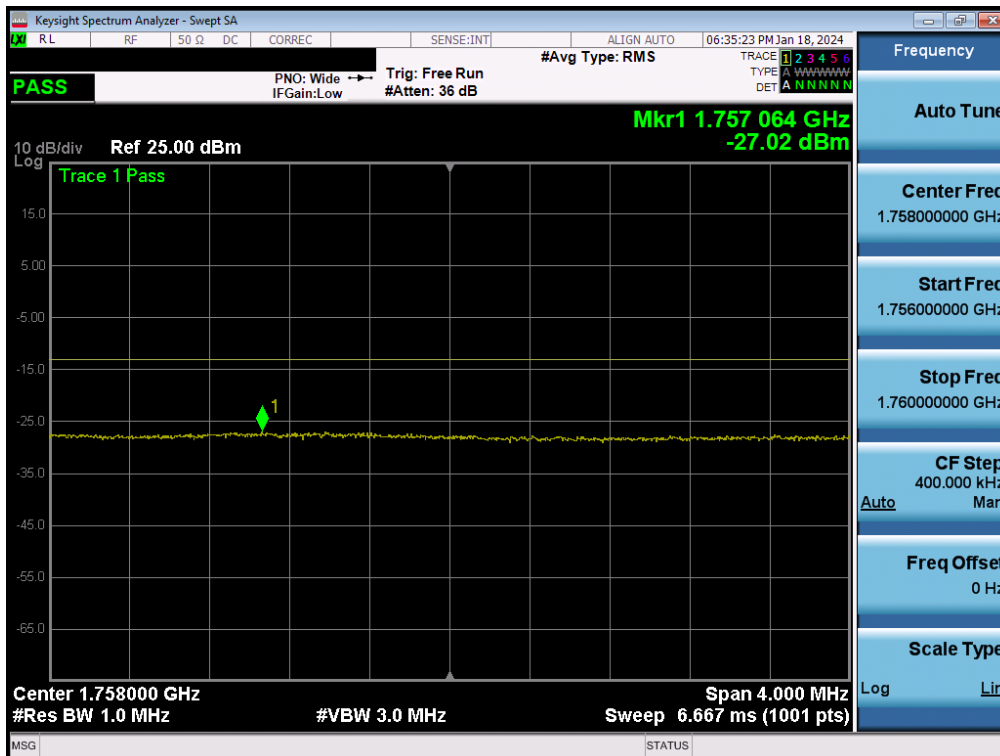


Plot 7-69. Lower Extended Band Edge Plot (LTE Band 66/4 - 15MHz QPSK – Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-70. Upper Band Edge Plot (LTE Band 4 - 15MHz QPSK – Full RB)



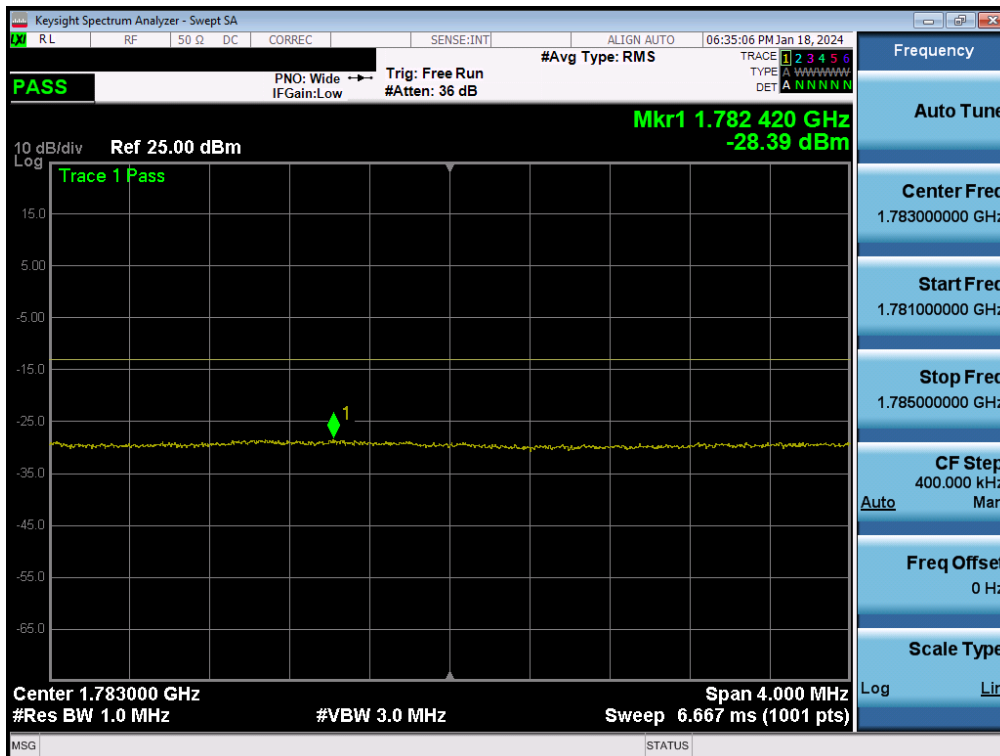
Plot 7-71. Upper Extended Band Edge Plot (LTE Band 4 - 15MHz QPSK – Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
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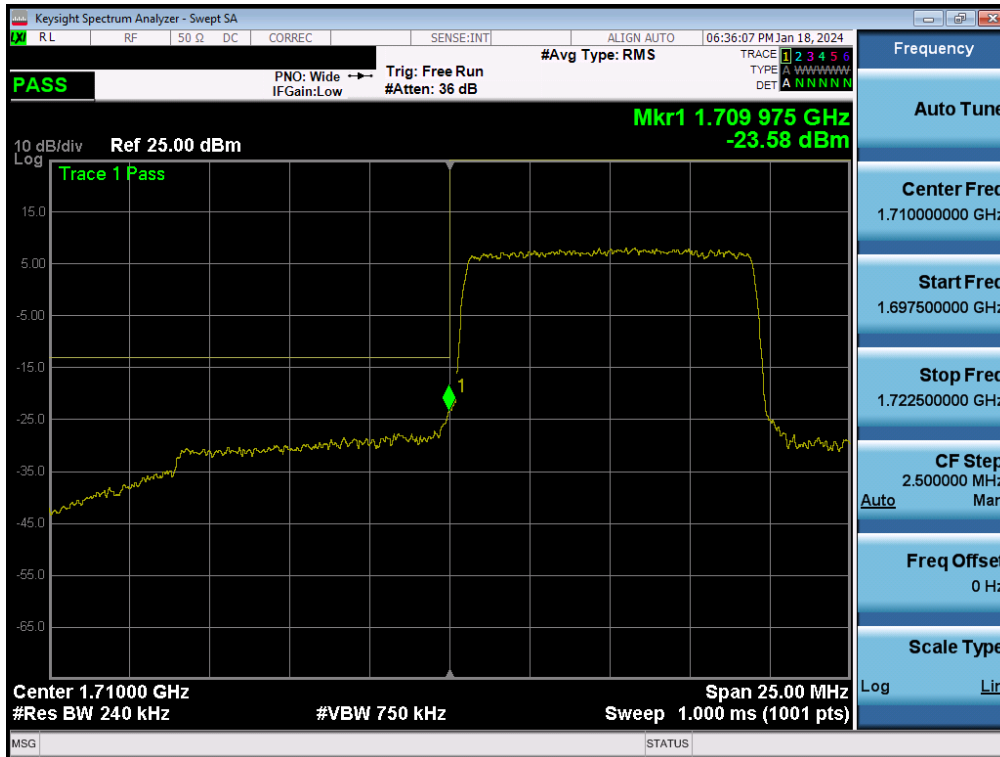
Plot 7-72. Upper Band Edge Plot (LTE Band 66 - 15MHz QPSK – Full RB)



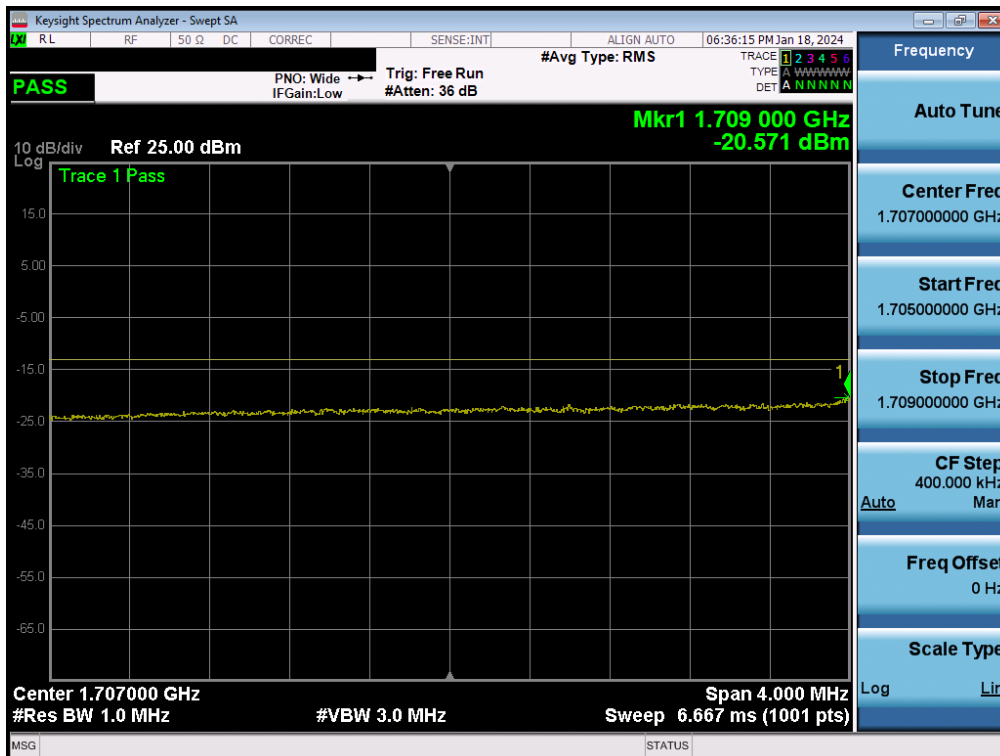
Plot 7-73. Upper Extended Band Edge Plot (LTE Band 66 - 15MHz QPSK – Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
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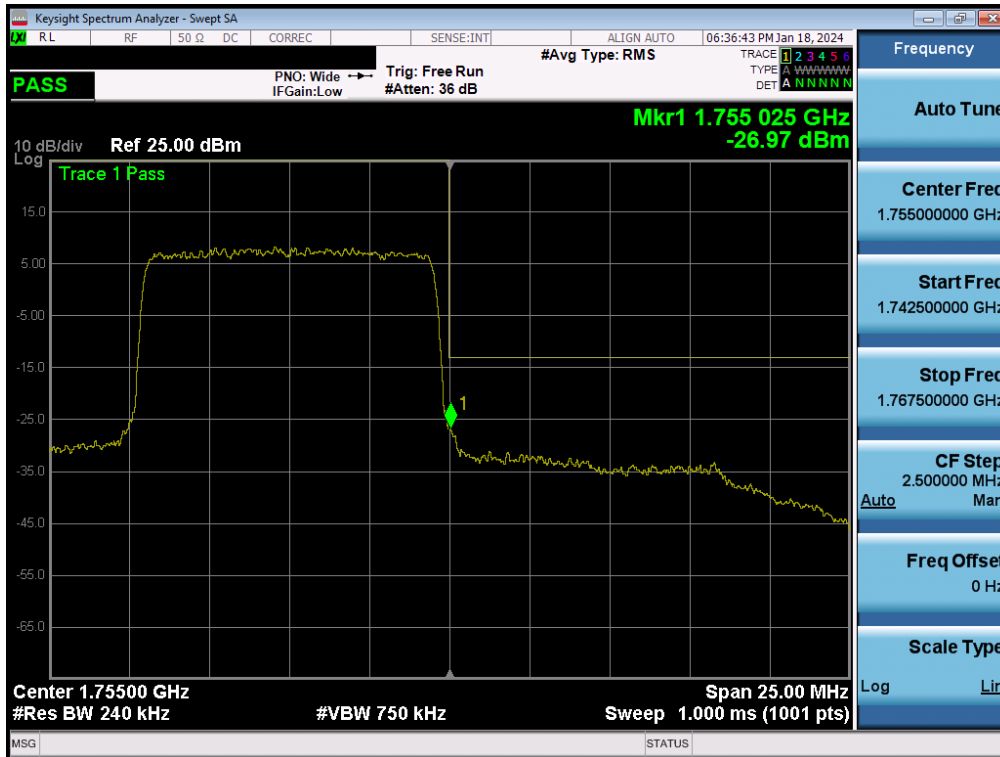


Plot 7-74. Lower Band Edge Plot (LTE Band 66/4 - 10MHz QPSK – Full RB)

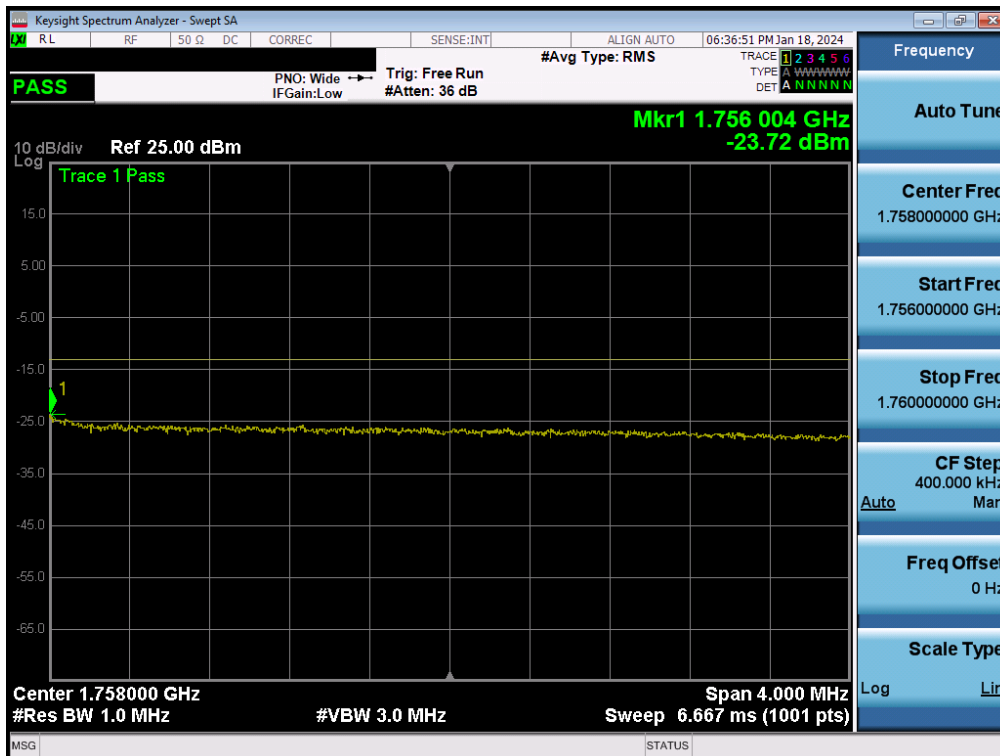


Plot 7-75. Lower Extended Band Edge Plot (LTE Band 66/4 - 10MHz QPSK – Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-76. Upper Band Edge Plot (LTE Band 4 - 10MHz QPSK – Full RB)

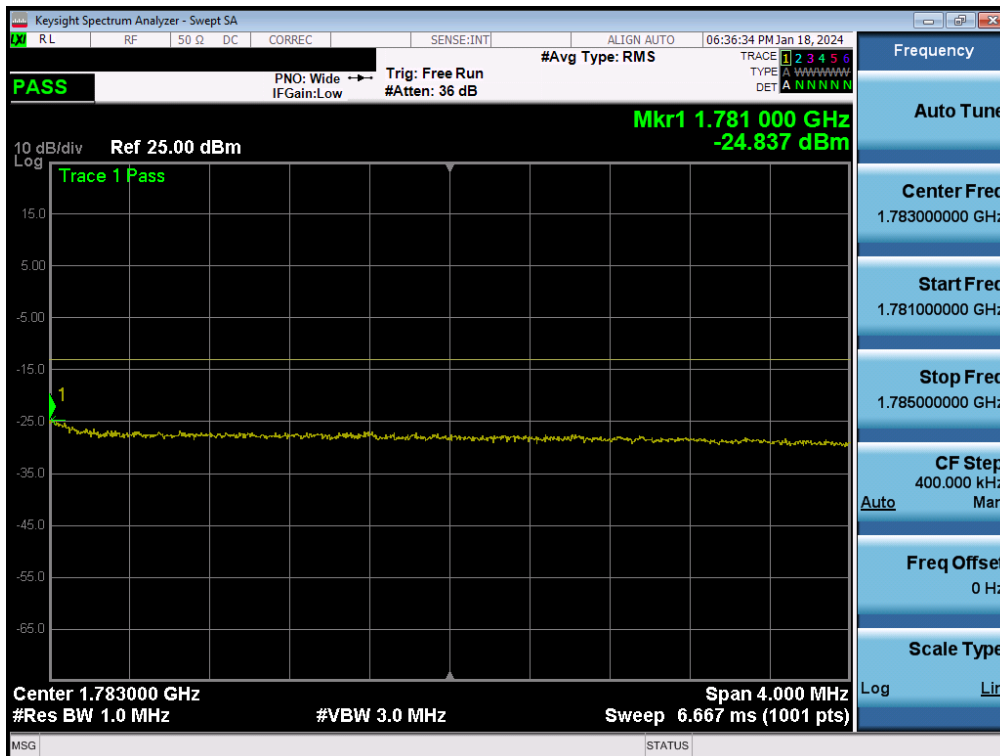


Plot 7-77. Upper Extended Band Edge Plot (LTE Band 4 - 10MHz QPSK – Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.R17	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 58 of 94

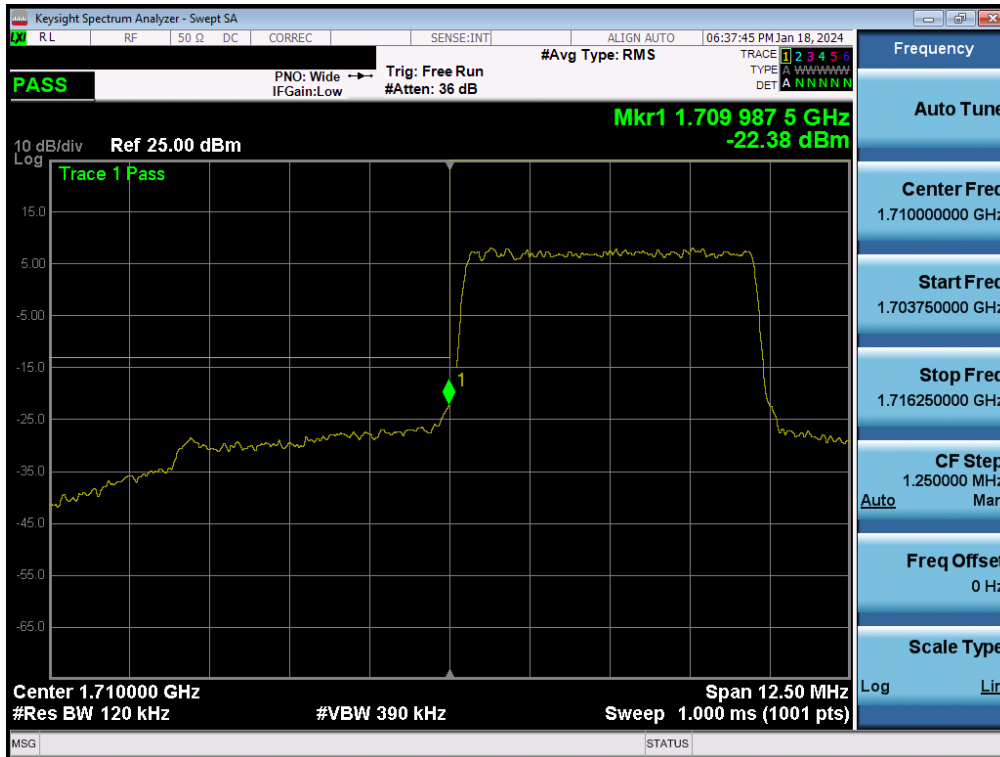


Plot 7-78. Upper Band Edge Plot (LTE Band 66 - 10MHz QPSK – Full RB)

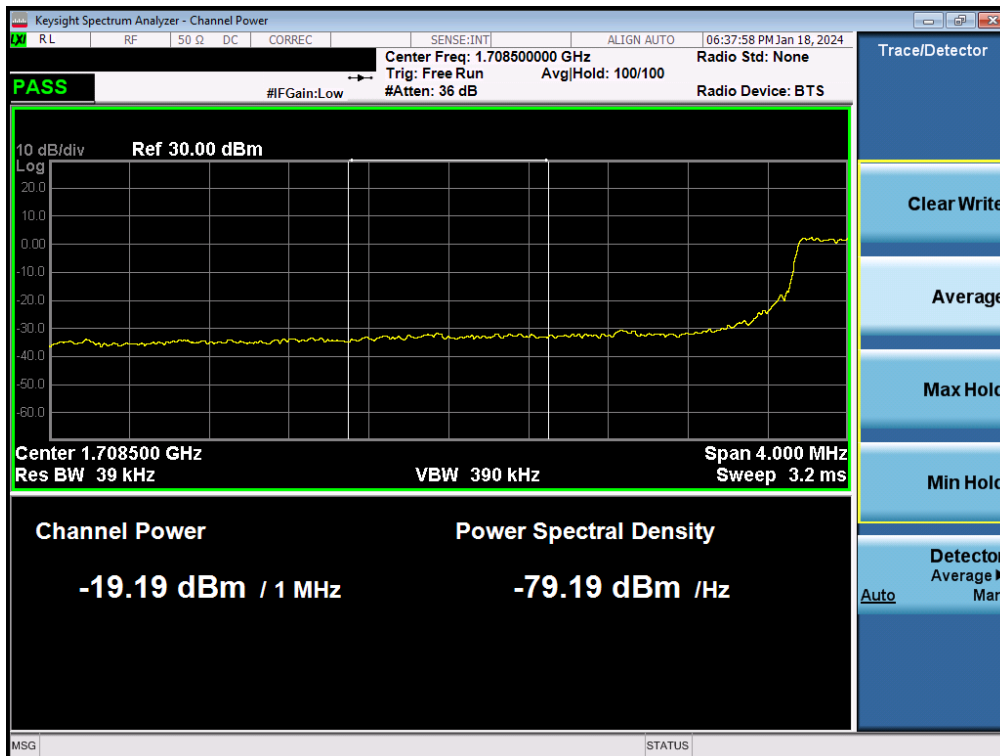


Plot 7-79. Upper Extended Band Edge Plot (LTE Band 66 - 10MHz QPSK – Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.R17	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 59 of 94

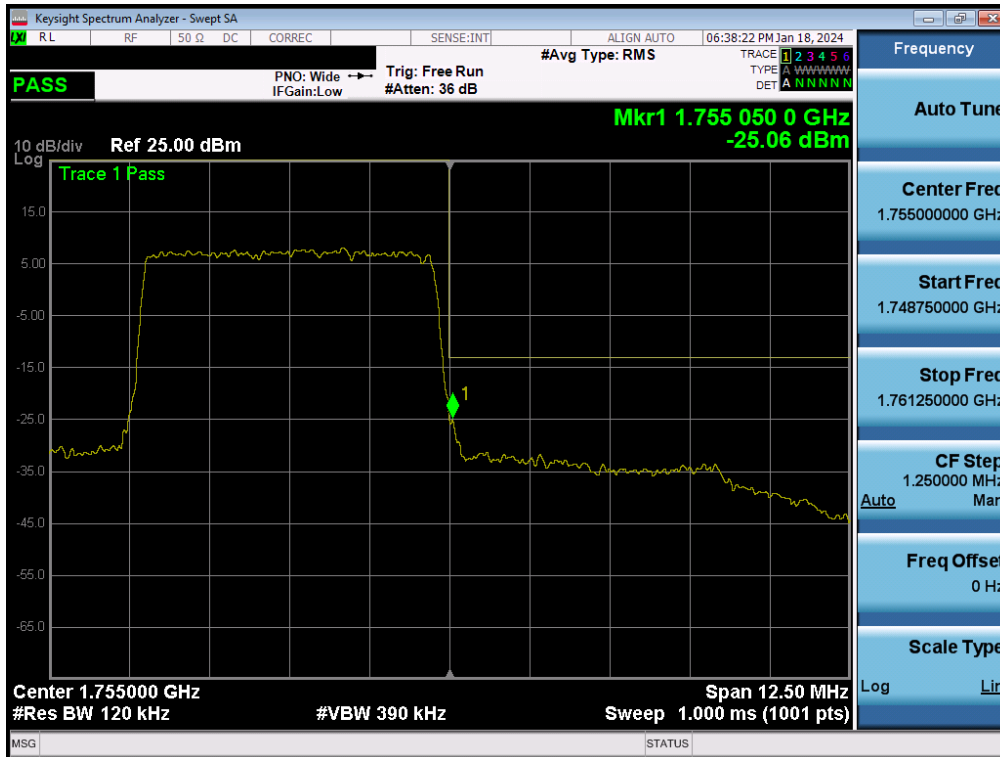


Plot 7-80. Lower Band Edge Plot (LTE Band 66/4 - 5MHz QPSK – Full RB)

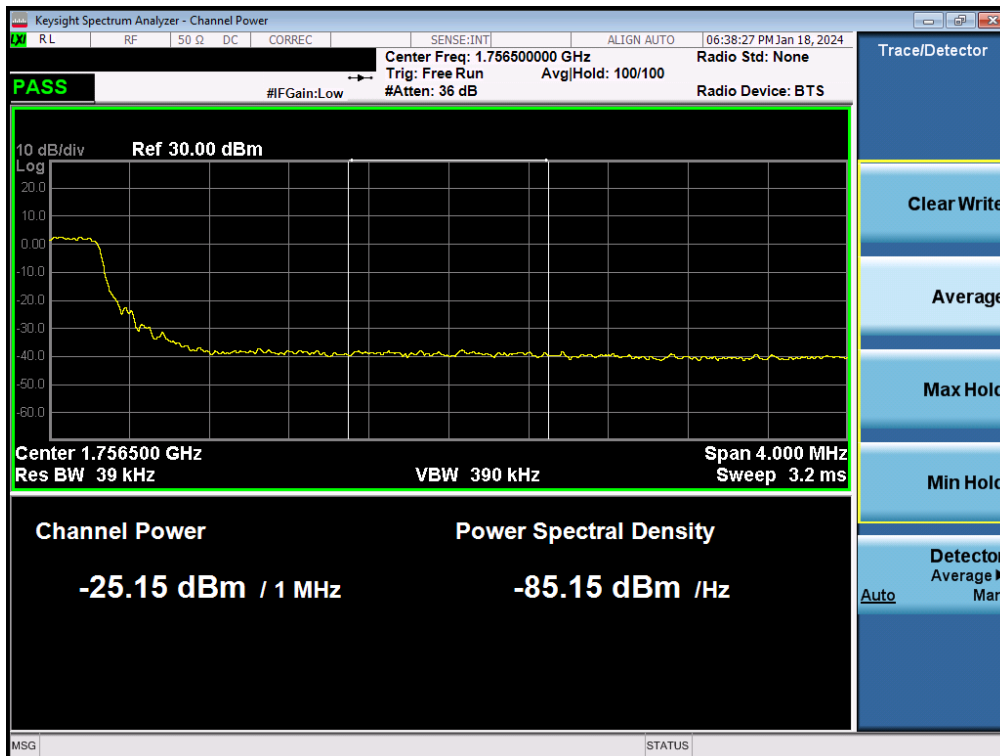


Plot 7-81. Lower Extended Band Edge Plot (LTE Band 66/4 - 5MHz QPSK – Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.R17	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 60 of 94



Plot 7-82. Upper Band Edge Plot (LTE Band 4 - 5MHz QPSK – Full RB)

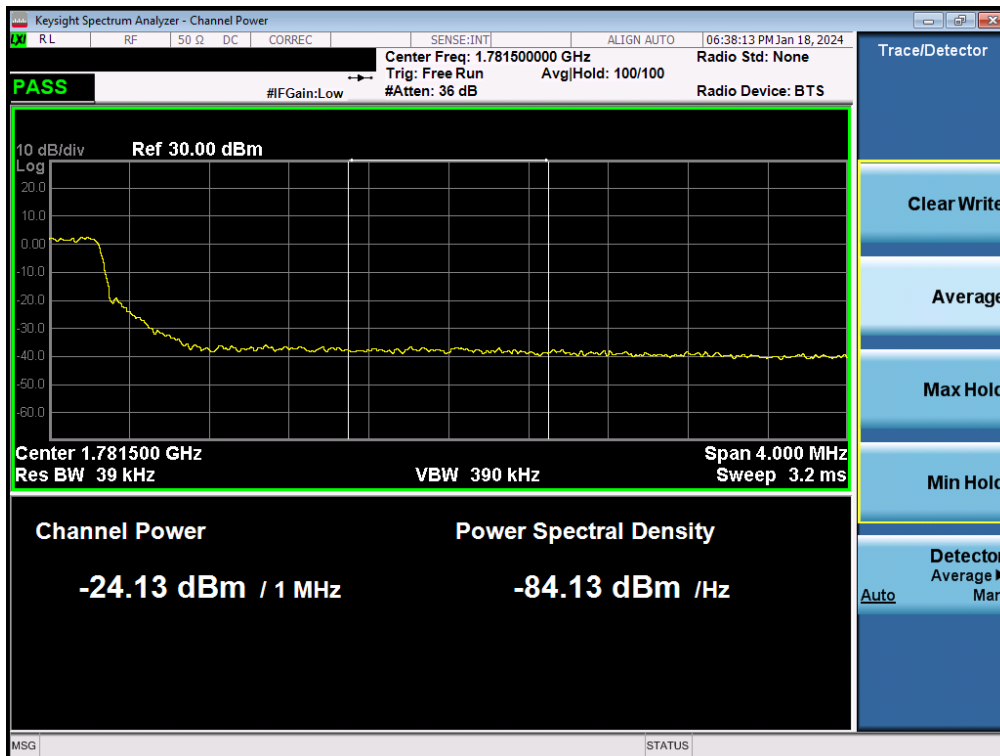


Plot 7-83. Upper Extended Band Edge Plot (LTE Band 4 - 5MHz QPSK – Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.R17	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 61 of 94

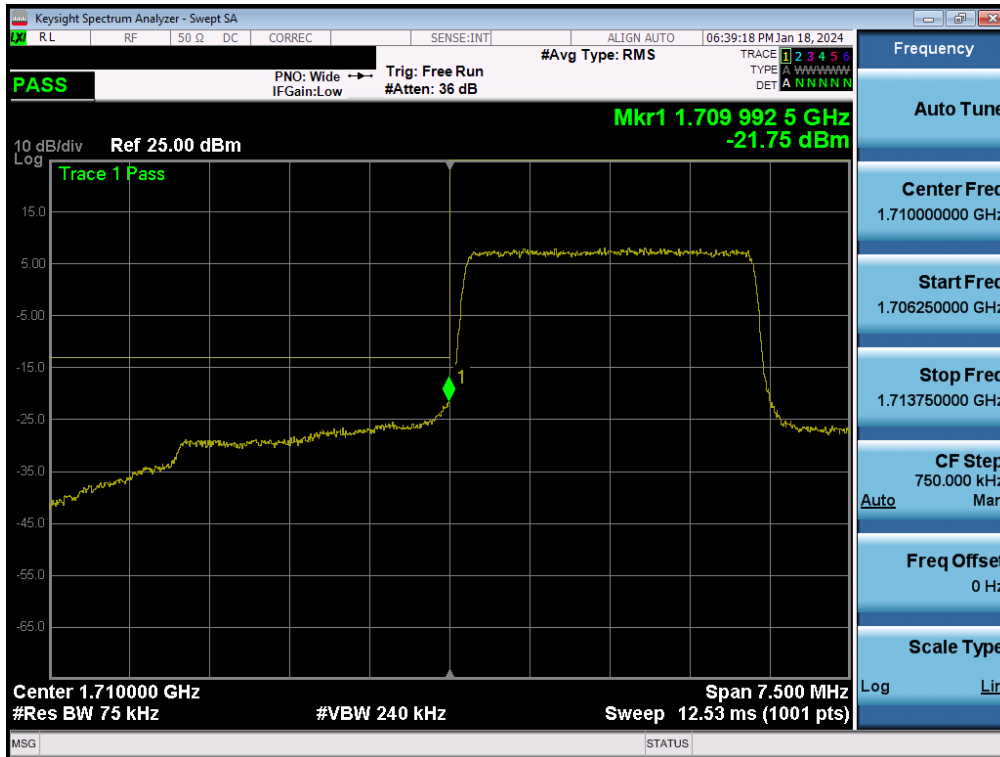


Plot 7-84. Upper Band Edge Plot (LTE Band 66 - 5MHz QPSK – Full RB)

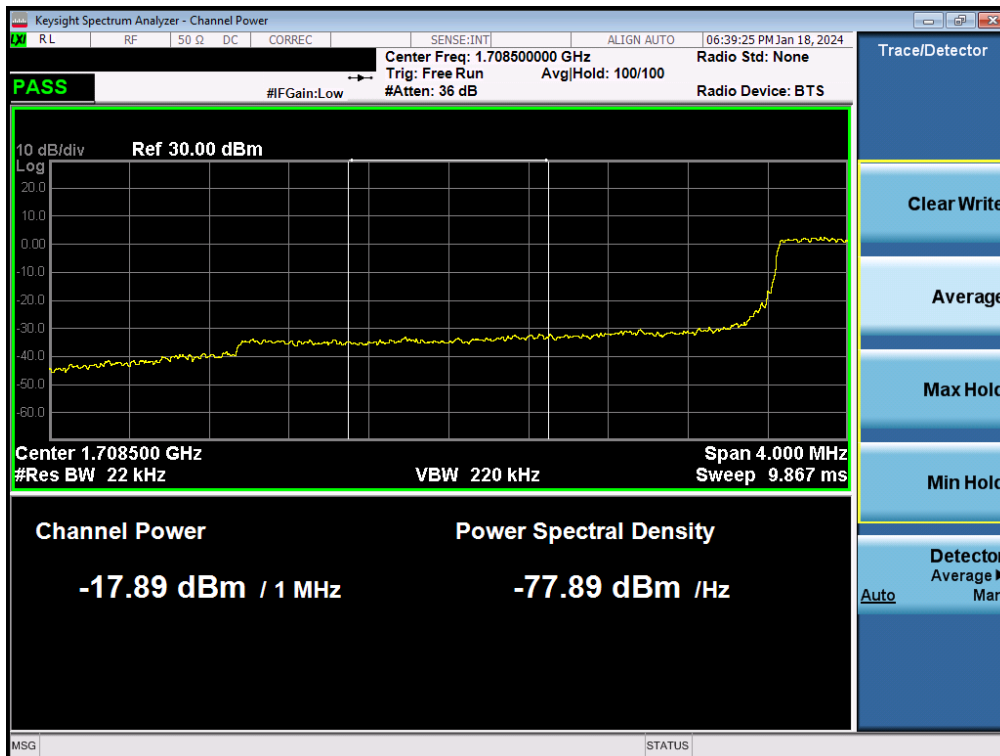


Plot 7-85. Upper Extended Band Edge Plot (LTE Band 66 - 5MHz QPSK – Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-86. Lower Band Edge Plot (LTE Band 66/4 - 3MHz QPSK – Full RB)



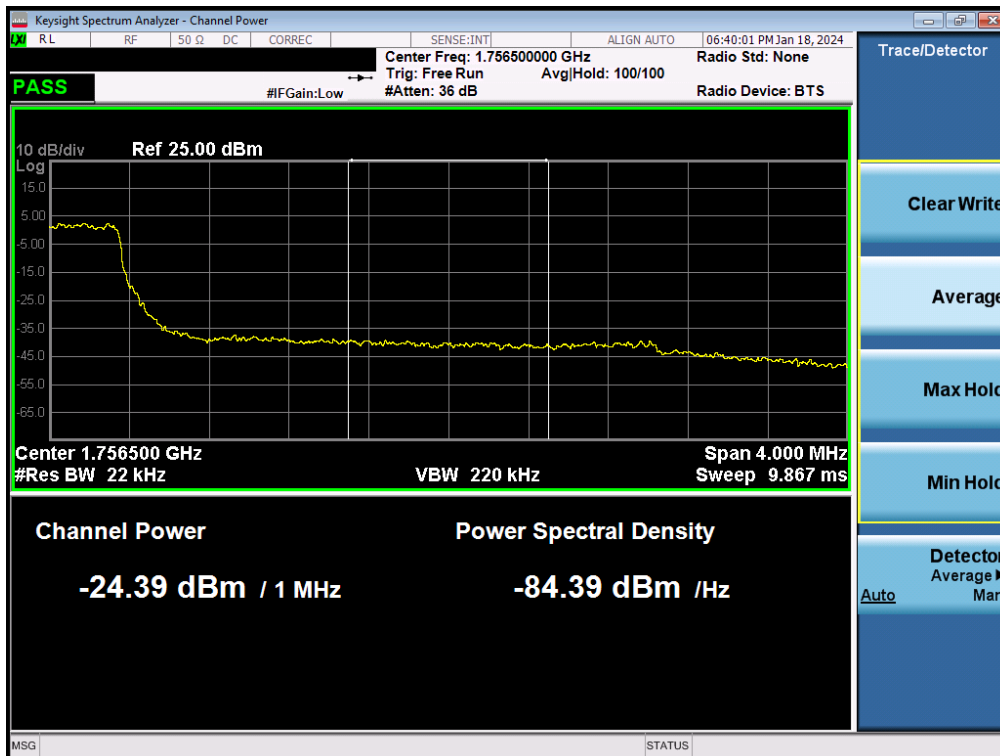
Plot 7-87. Lower Extended Band Edge Plot (LTE Band 66/4 - 3MHz QPSK – Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.RI7	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 63 of 94





Plot 7-88. Upper Band Edge Plot (LTE Band 4 - 3MHz QPSK – Full RB)



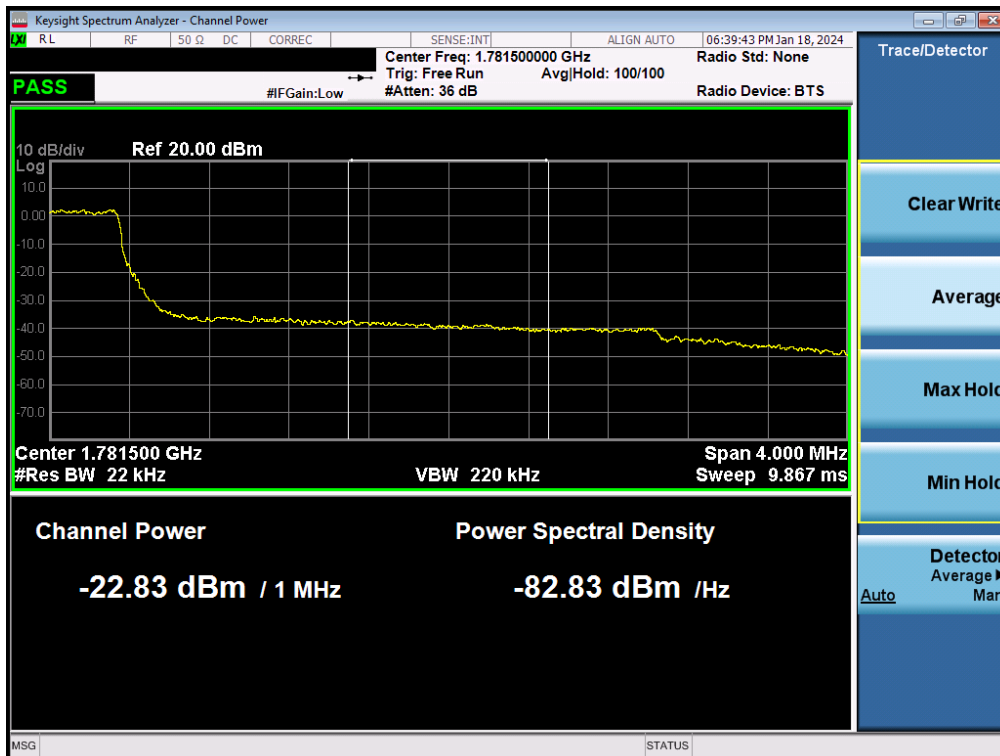
Plot 7-89. Upper Extended Band Edge Plot (LTE Band 4 - 3MHz QPSK – Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.R17	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 64 of 94



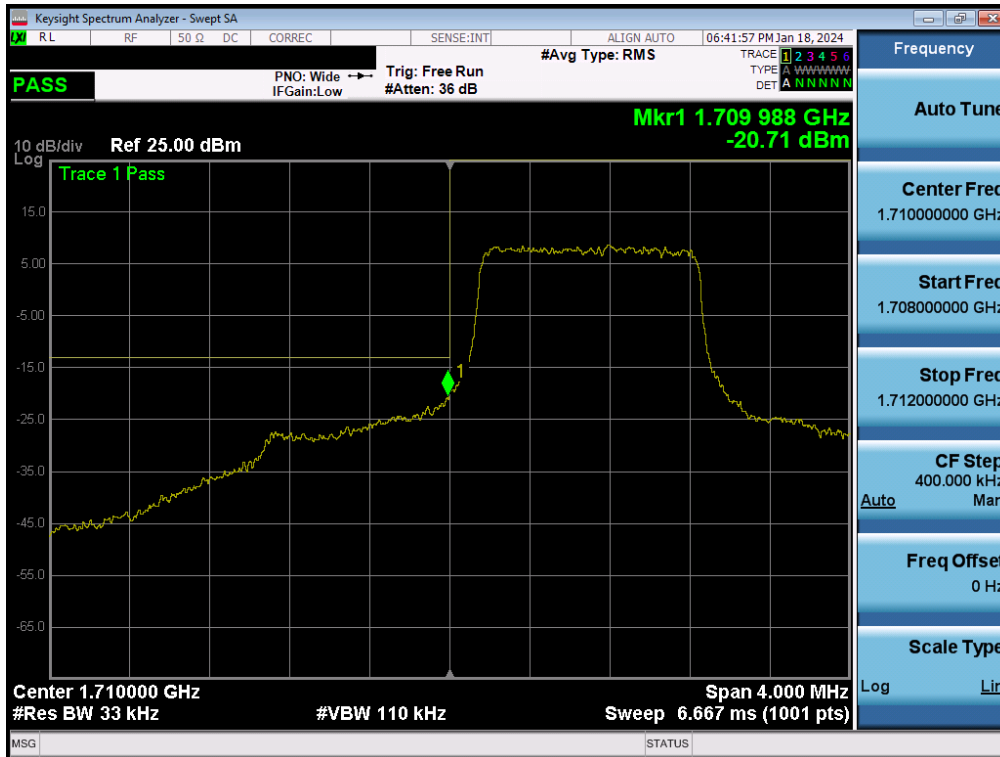


Plot 7-90. Upper Band Edge Plot (LTE Band 66 - 3MHz QPSK – Full RB)

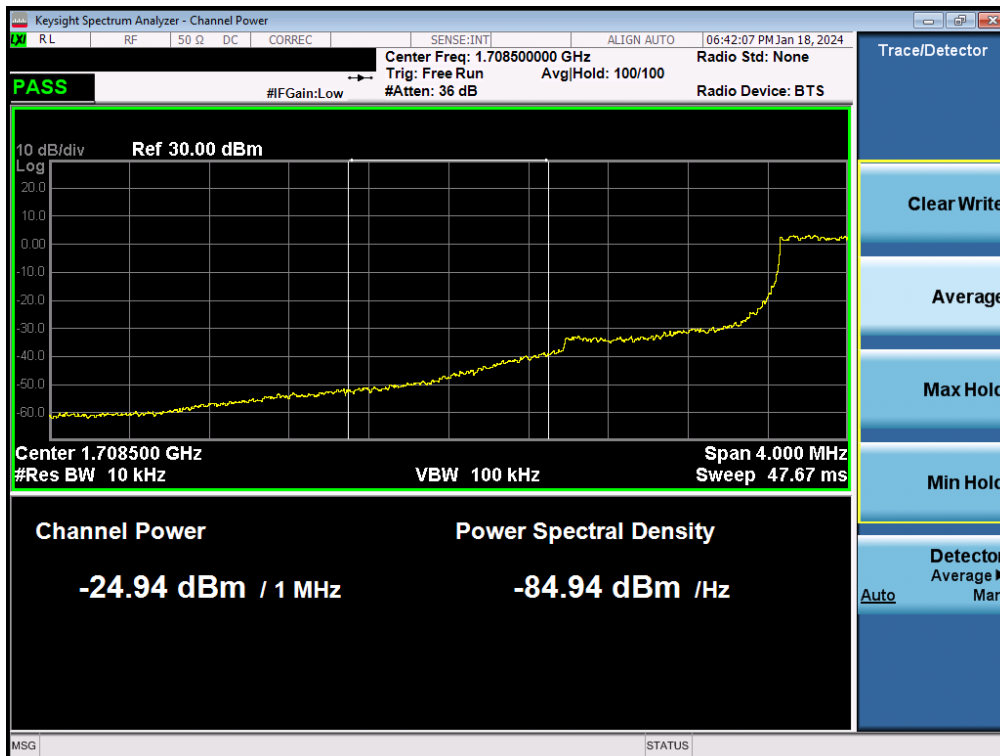


Plot 7-91. Upper Extended Band Edge Plot (LTE Band 66 - 3MHz QPSK – Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-92. Lower Band Edge Plot (LTE Band 66/4 – 1.4MHz QPSK – Full RB)

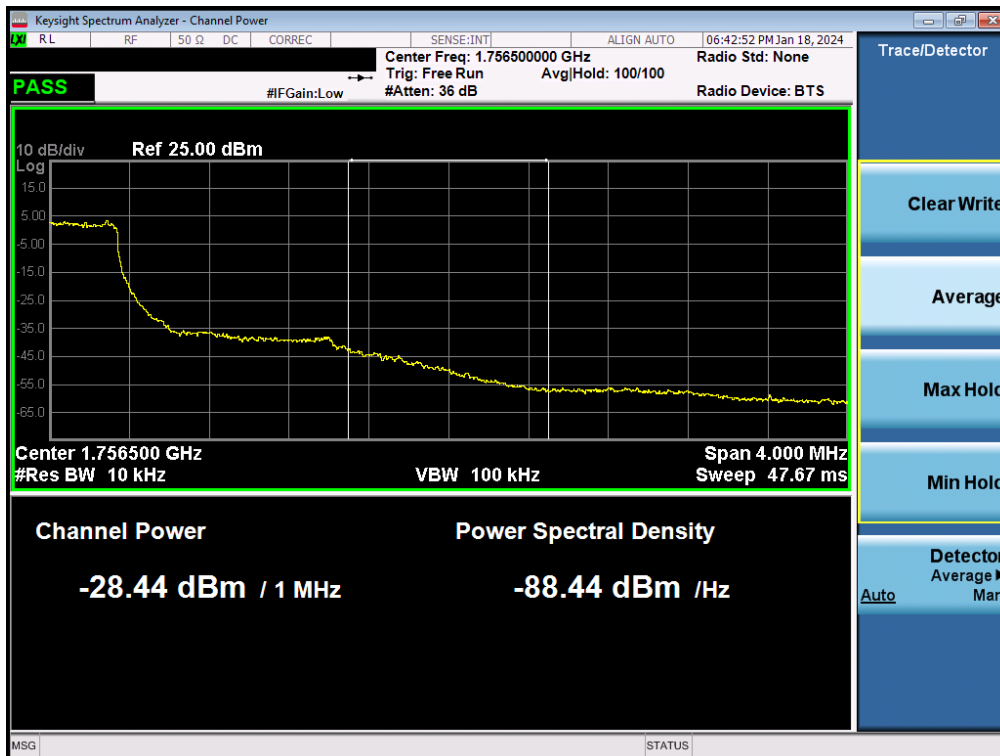


Plot 7-93. Lower Extended Band Edge Plot (LTE Band 66/4 – 1.4MHz QPSK – Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.R17	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 66 of 94



Plot 7-94. Upper Band Edge Plot (LTE Band 4 – 1.4MHz QPSK – Full RB)

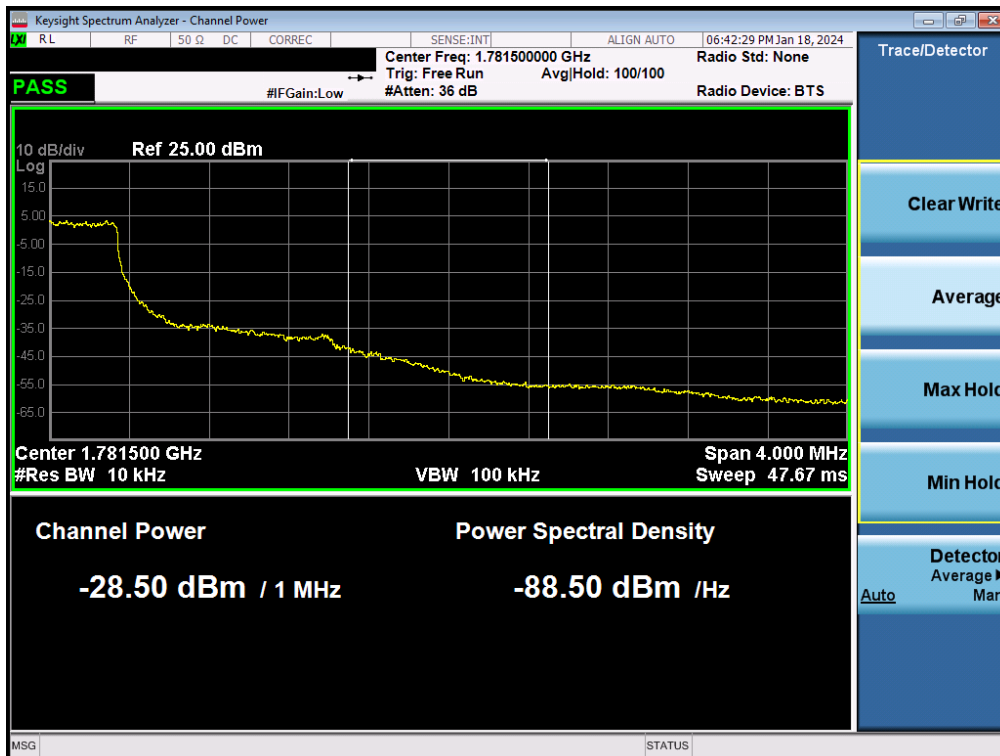


Plot 7-95. Upper Extended Band Edge Plot (LTE Band 4 – 1.4MHz QPSK – Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.R17	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 67 of 94



Plot 7-96. Upper Band Edge Plot (LTE Band 66 – 1.4MHz QPSK – Full RB)



Plot 7-97. Upper Extended Band Edge Plot (LTE Band 66 – 1.4MHz QPSK – Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
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## 7.6 Peak-Average Ratio

### Test Overview

A peak to average ratio measurement is performed at the conducted port of the EUT. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level.

### Test Procedure Used

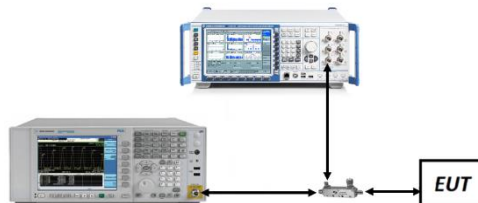
ANSI C63.26-2015 – Section 5.2.3.4

### Test Settings

1. The signal analyzer's CCDF measurement profile is enabled
2. Frequency = carrier center frequency
3. Measurement BW  $\geq$  OBW or specified reference bandwidth
4. The signal analyzer was set to collect one million samples to generate the CCDF curve
5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power

### Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



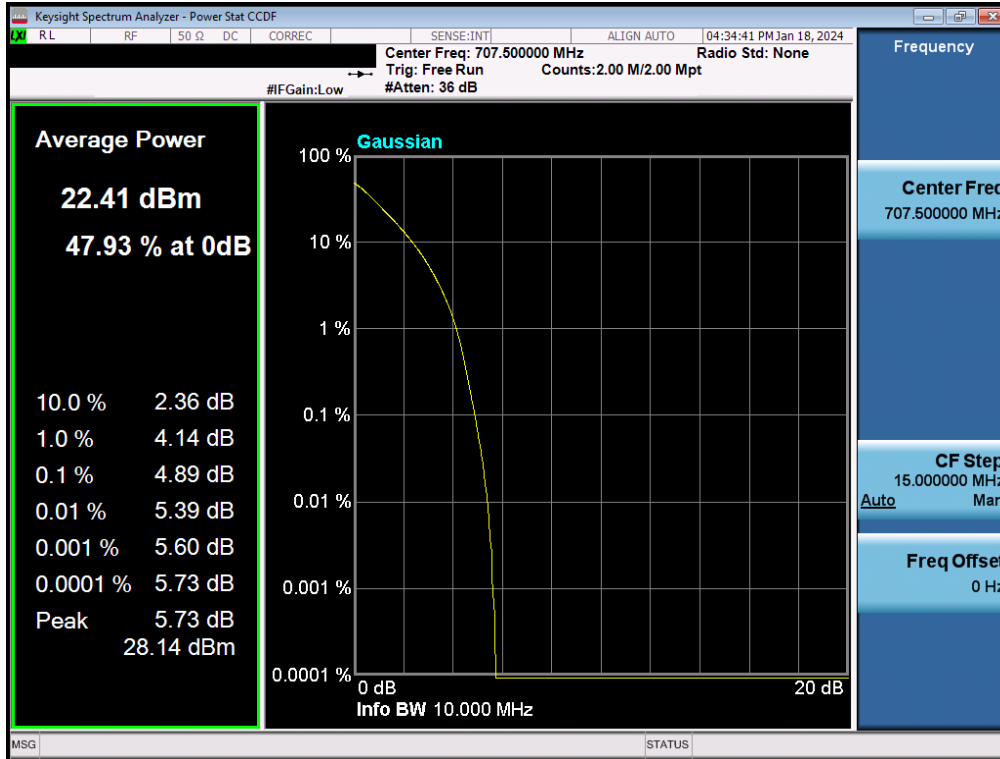
**Figure 7-5. Test Instrument & Measurement Setup**

### Test Notes

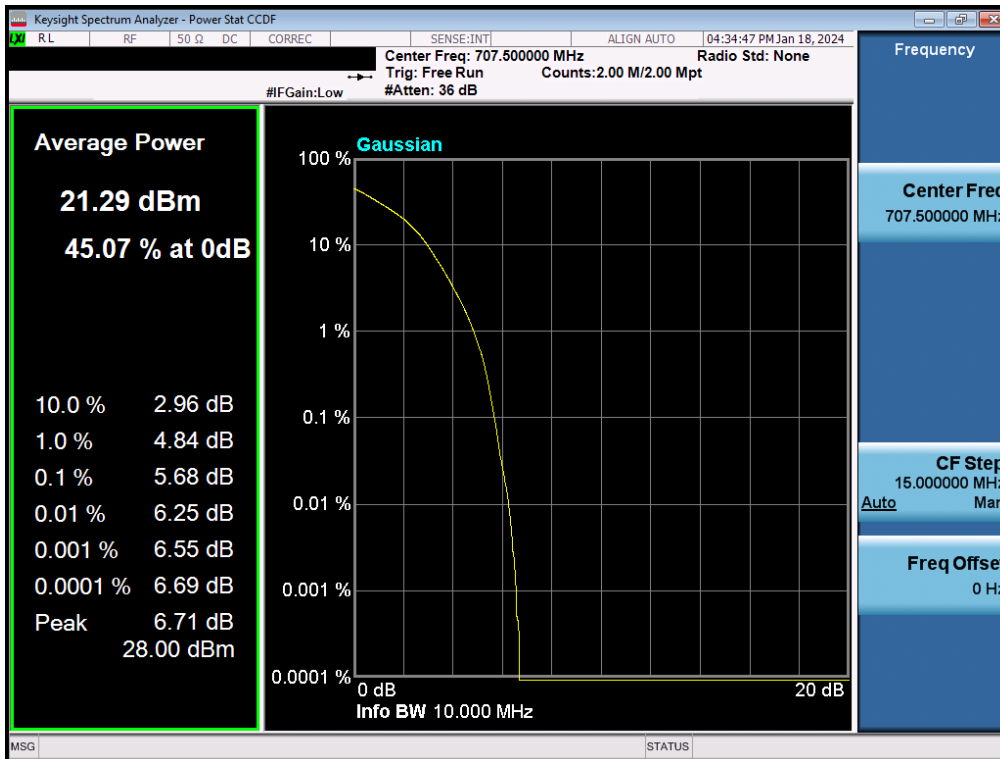
None.

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	<b>PART 27 / RSS-130 &amp; RSS-139 MEASUREMENT REPORT</b>		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.RI7	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 69 of 94

## LTE Band 12

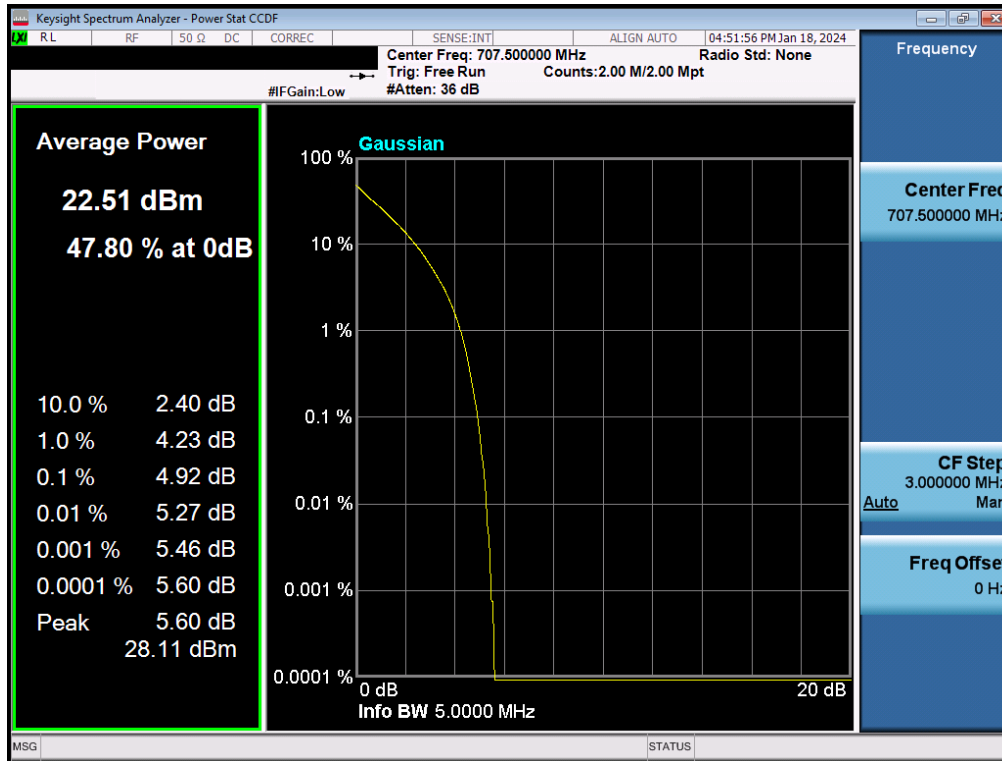


Plot 7-98. PAR Plot (LTE Band 12 - 10MHz QPSK - Full RB)

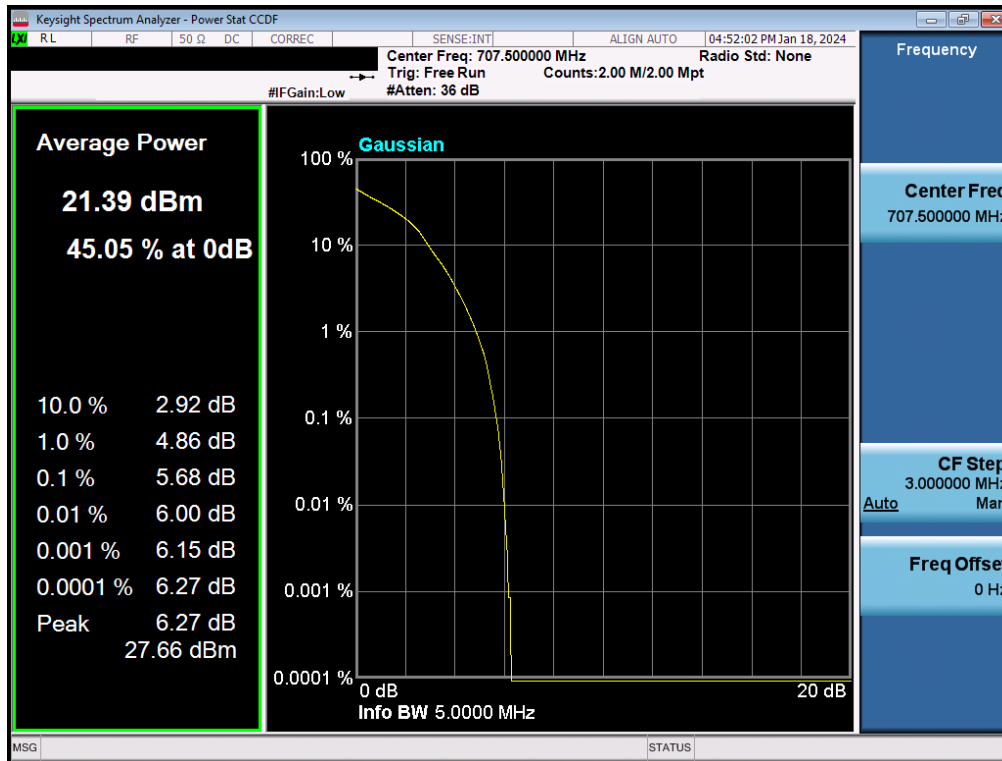


Plot 7-99. PAR Plot (LTE Band 12 - 10MHz 16-QAM - Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
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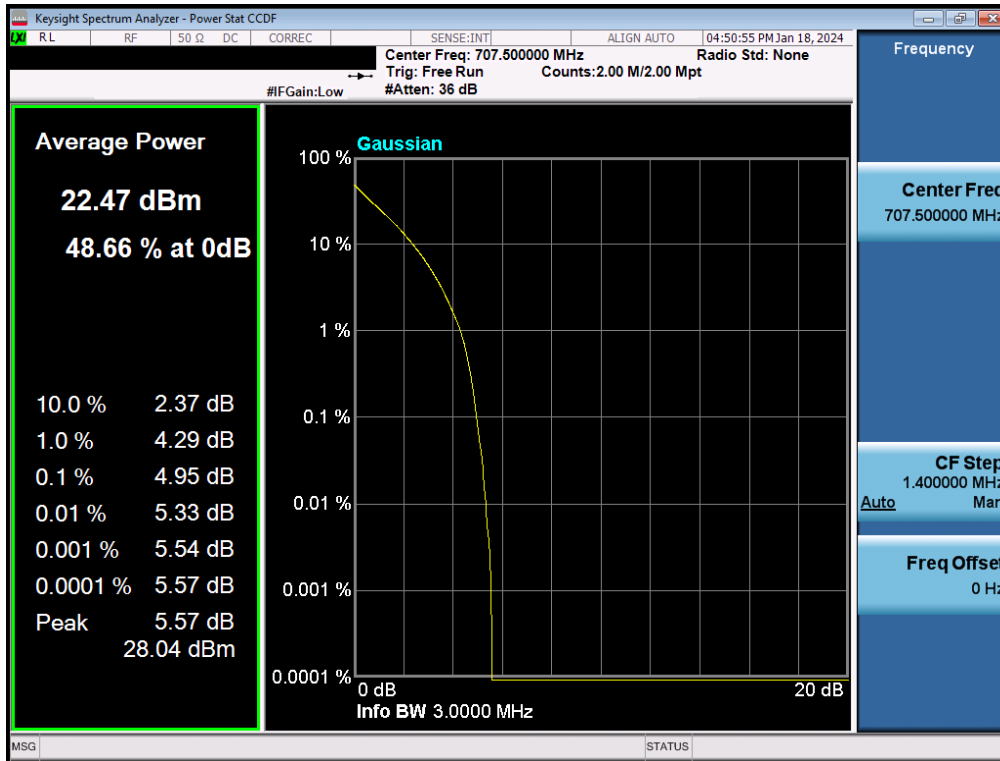
Plot 7-100. PAR Plot (LTE Band 12 - 5MHz QPSK - Full RB)



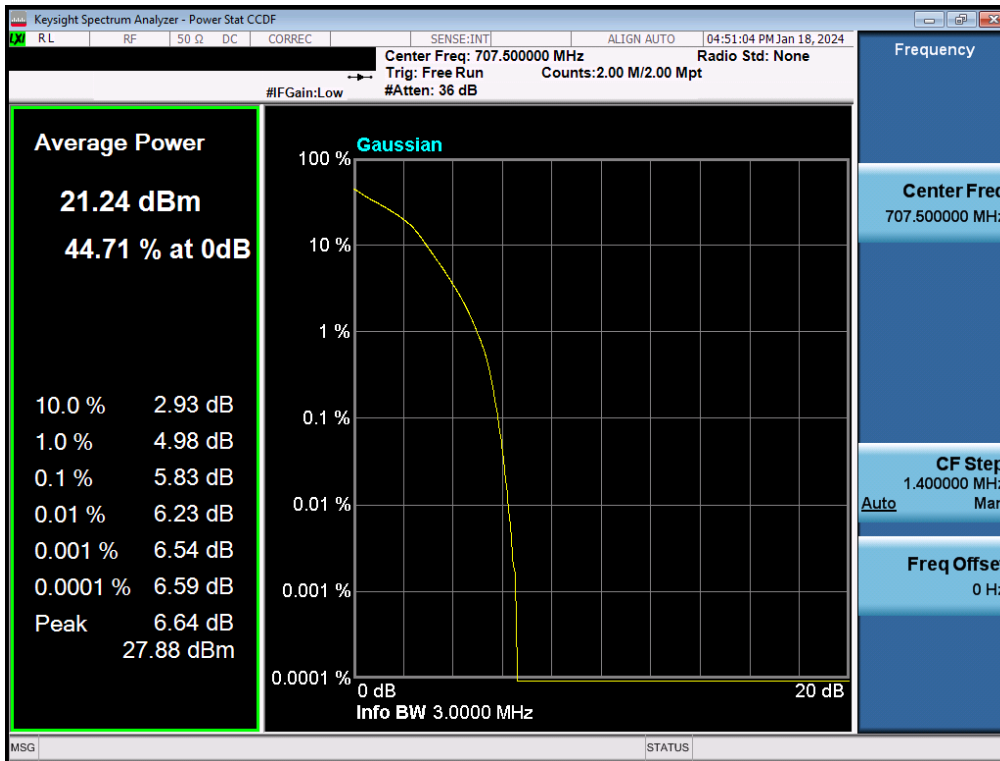
Plot 7-101. PAR Plot (LTE Band 12 - 5MHz 16-QAM - Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.R17	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 71 of 94





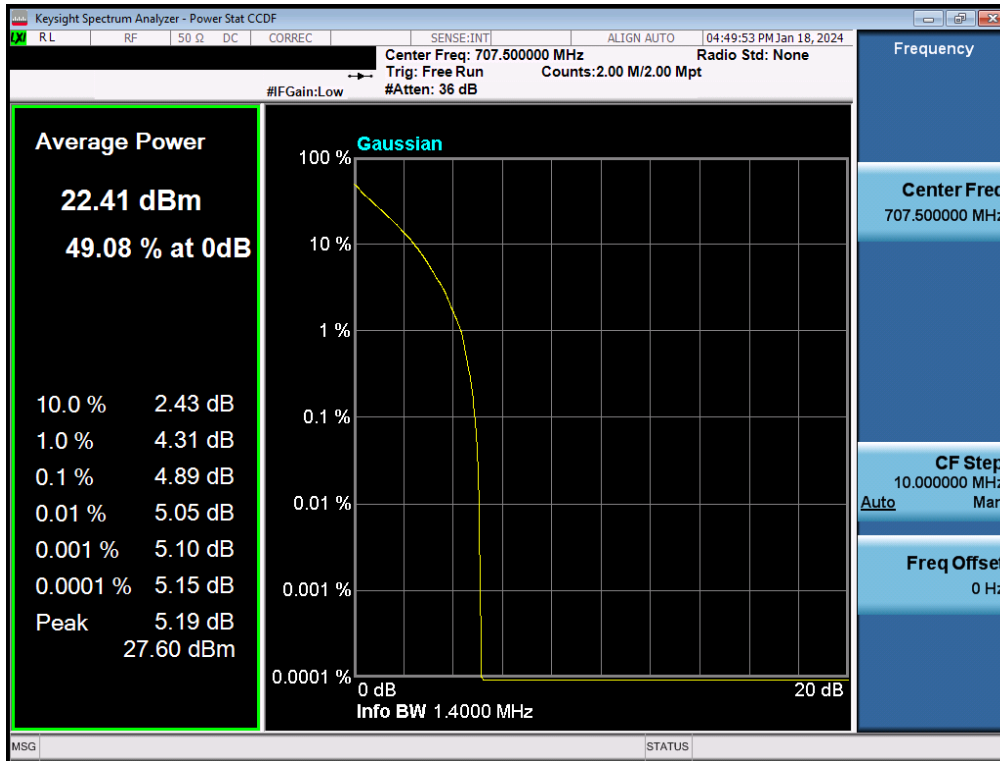
Plot 7-102. PAR Plot (LTE Band 12 - 3MHz QPSK - Full RB)



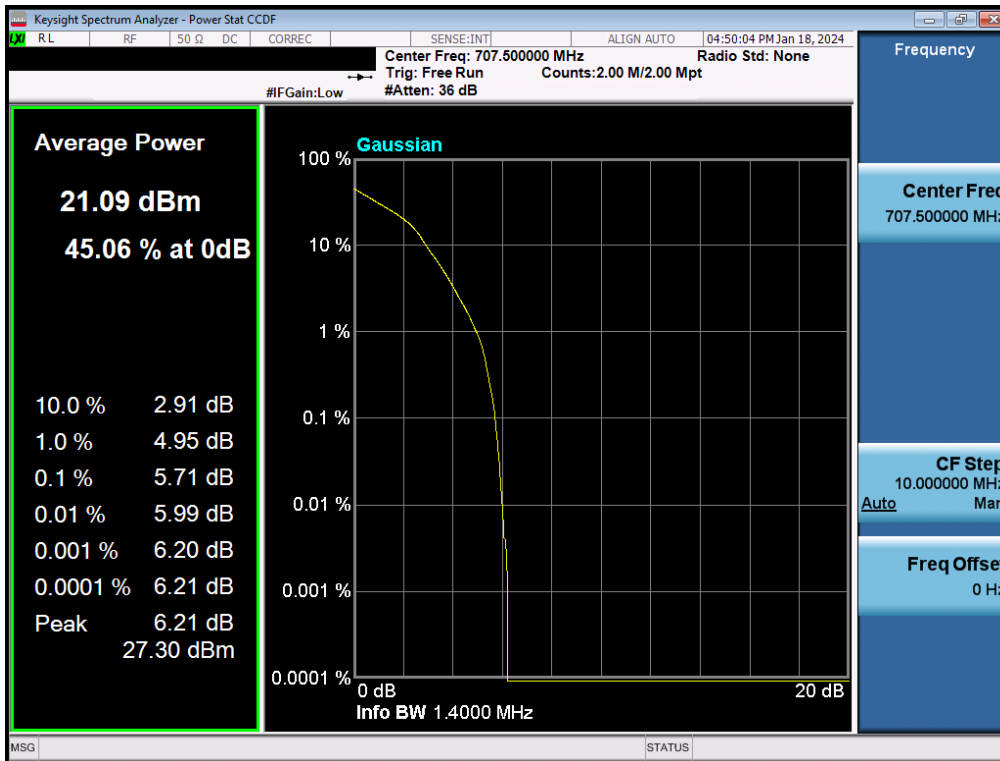
Plot 7-103. PAR Plot (LTE Band 12 - 3MHz 16-QAM - Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-104. PAR Plot (LTE Band 12 - 1.4MHz QPSK - Full RB)



Plot 7-105. PAR Plot (LTE Band 12 - 1.4MHz 16-QAM - Full RB)

FCC ID: R17LE910C1SNX IC: 5131A-LE910C1SNX	PART 27 / RSS-130 & RSS-139 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2312260131-03.R17	Test Dates: 01/11/2024 - 01/21/2024	EUT Type: Module	Page 73 of 94