Element Materials Technology
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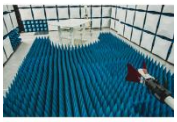

PART 27 MEASUREMENT REPORT

Applicant Name:
Apple Inc.
One Apple Park Way
Cupertino, CA 95014
United States

Date of Testing:
06/07/2023 - 07/31/2023
Test Report Issue Date:
8/11/2023
Test Site/Location:
Element Materials Technology Morgan Hill, CA, USA
Test Report Serial No.:
1C2305020014-05.BCG

FCC ID:	**BCG-A2986**
APPLICANT:	**Apple Inc.**

Application Type:	Certification
Model:	A2986, A2987
EUT Type:	Watch
FCC Classification:	PCS Licensed Transmitter Worn on Body (PCT)
FCC Rule Part:	27
Test Procedure(s):	ANSI C63.26-2015, ANSI/TIA-603-E-2016, KDB 971168 D01 v03r01

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

ACCREDITED
CERT #2041.02

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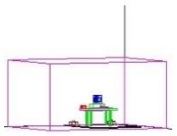
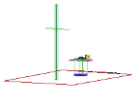


MEASUREMENT REPORT
FCC Part 27



Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	OBW [MHz]	ERP		EIRP		Emission Designator
					Max. Power [mW]	Max. Power [dBm]	Max. Power [mW]	Max. Power [dBm]	
LTE Band 12	1.4 MHz	QPSK	699.7 - 715.3	1.1089	0.243	-6.15	0.398	-4.00	1M11G7W
		16QAM	699.7 - 715.3	1.1105	0.215	-6.68	0.352	-4.53	1M11D7W
	3 MHz	QPSK	700.5 - 714.5	2.7367	0.243	-6.15	0.398	-4.00	2M74G7W
		16QAM	700.5 - 714.5	2.7354	0.214	-6.70	0.351	-4.55	2M74D7W
	5 MHz	QPSK	701.5 - 713.5	4.5680	0.243	-6.15	0.398	-4.00	4M57G7W
		16QAM	701.5 - 713.5	4.5590	0.225	-6.48	0.369	-4.33	4M56D7W
	10 MHz	QPSK	704.0 - 711.0	9.1027	0.243	-6.15	0.398	-4.00	9M10G7W
		16QAM	704.0 - 711.0	5.4362	0.214	-6.70	0.351	-4.55	5M44D7W
LTE Band 17	5 MHz	QPSK	706.5 - 713.5	4.5680	0.243	-6.15	0.398	-4.00	4M57G7W
		16QAM	706.5 - 713.5	4.5590	0.216	-6.66	0.354	-4.51	4M56D7W
	10 MHz	QPSK	709.0 - 711.0	9.1027	0.243	-6.15	0.398	-4.00	9M10G7W
		16QAM	709.0 - 711.0	5.4362	0.211	-6.75	0.347	-4.60	5M44D7W
LTE Band 13	5 MHz	QPSK	779.5 - 784.5	4.5723	0.432	-3.65	0.708	-1.50	4M57G7W
		16QAM	779.5 - 784.5	4.5620	0.384	-4.16	0.630	-2.01	4M56D7W
	10 MHz	QPSK	782.0	9.0859	0.432	-3.65	0.708	-1.50	9M09G7W
		16QAM	782.0	5.4931	0.372	-4.30	0.610	-2.15	5M49D7W

Overview Table (<1GHz Band)

Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	OBW [MHz]	PAR at 0.1% [dB]	EIRP		Emission Designator
						Max. Power [mW]	Max. Power [dBm]	
WCDMA1700	5 MHz	Spread Spectrum	1712.4 - 1752.6	4.0877	3.14	17.179	12.35	4M09F9W
LTE Band 4	1.4 MHz	QPSK	1710.7 - 1754.3	1.1020	5.96	19.498	12.90	1M10G7W
		16QAM	1710.7 - 1754.3	1.1043	6.50	17.061	12.32	1M10D7W
	3 MHz	QPSK	1711.5 - 1753.5	2.7366	5.87	19.498	12.90	2M74G7W
		16QAM	1711.5 - 1753.5	2.7348	6.59	17.022	12.31	2M73D7W
	5 MHz	QPSK	1712.5 - 1752.5	4.5569	5.84	19.498	12.90	4M56G7W
		16QAM	1712.5 - 1752.5	4.5594	6.46	17.219	12.36	4M56D7W
	10MHz	QPSK	1715.0 - 1750.0	9.1115	5.73	19.498	12.90	9M11G7W
		16QAM	1715.0 - 1750.0	5.4765	6.38	17.061	12.32	5M48D7W
	15 MHz	QPSK	1717.5 - 1747.5	13.6884	5.91	19.454	12.89	13M7G7W
		16QAM	1717.5 - 1747.5	6.2813	6.42	16.866	12.27	6M28D7W
	20 MHz	QPSK	1720.0 - 1745.0	18.2512	5.53	19.498	12.90	18M3G7W
		16QAM	1720.0 - 1745.0	8.2207	6.45	17.100	12.33	8M22D7W
LTE Band 66	1.4 MHz	QPSK	1710.7 - 1779.3	1.1020	5.67	19.498	12.90	1M10G7W
		16QAM	1710.7 - 1779.3	1.1043	6.34	16.749	12.24	1M10D7W
	3 MHz	QPSK	1711.5 - 1778.5	2.7366	5.70	19.498	12.90	2M74G7W
		16QAM	1711.5 - 1778.5	2.7348	6.37	17.100	12.33	2M73D7W
	5 MHz	QPSK	1712.5 - 1777.5	4.5569	5.74	19.498	12.90	4M56G7W
		16QAM	1712.5 - 1777.5	4.5594	6.28	16.866	12.27	4M56D7W
	10 MHz	QPSK	1715.0 - 1775.0	9.1115	5.68	19.498	12.90	9M11G7W
		16QAM	1715.0 - 1775.0	5.4765	6.22	17.100	12.33	5M48D7W
	15 MHz	QPSK	1717.5 - 1772.5	13.6884	5.95	19.498	12.90	13M7G7W
		16QAM	1717.5 - 1772.5	6.2813	6.24	17.140	12.34	6M28D7W
	20 MHz	QPSK	1720.0 - 1770.0	18.2512	5.62	19.498	12.90	18M3G7W
		16QAM	1720.0 - 1770.0	8.2207	6.25	17.258	12.37	8M22D7W

Overview Table (>1GHz Bands)

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 Materials Technology Test Location

These measurement tests were conducted at the Element Materials Technology facility located at 18855 Adams Court, Morgan Hill, CA 95037. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014 and KDB 414788 D01 v01r01.

1.3 Test Facility / Accreditations

Measurements were performed at Element Materials Technology located in Morgan Hill, CA 95037, U.S.A.

- Element Materials Technology Morgan Hill is an ISO 17025-2017 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.02 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 Materials Technology Morgan Hill facility is a registered (22831) 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 Agreements (MRAs)

2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Apple Watch FCC ID: BCG-A2986**. 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.

Test Device Serial No.: HLXY14F4J1, H6H5Y6X1J6, KM6Q5256HG, DLCGVD000GU00000HU

2.2 Device Capabilities

This device contains the following capabilities:

850/1700/1900 WCDMA/HSPA, Multi-band LTE, 802.11b/g/n WLAN, 802.11a/n UNII, 802.15.4 ab-NB, Bluetooth (1x, EDR, HDR4, HDR8, LE1M, LE2M), NFC, UWB, 60.5GHz Transmitter.

This device supports simultaneous transmission operations, which allows for multiple transmitters to transmit simultaneously on the same antenna. The table below shows all configurations possible.

Simultaneous Tx Config	Antenna FCM					
	WLAN	Bluetooth	802.15.4ab - NB	LTE/WCDMA	UNII	UWB
	802.11 b/g/n	BDR, EDR, HDR4/8, LE1/2M	O-QPSK	Mid/High Band	802.11 a/n	Ch.5/Ch.9
Config 1	✓	×	×	✓	×	✓
Config 2	×	✓	×	✓	×	✓
Config 3	×	✓	✓	✓	×	×
Config 4	✓	×	✓	✓	×	×
Config 5	×	✓	×	✓	✓	×
Config 6	×	✓	×	✓	×	✓
Config 7	✓	×	×	✓	×	×
Config 8	✓	×	✓	×	×	×
Config 9	✓	×	×	×	×	✓
Config 10	×	✓	×	×	✓	×
Config 11	×	✓	×	✓	×	×
Config 12	×	✓	✓	×	×	×
Config 13	×	✓	×	×	×	✓
Config 14	×	×	✓	✓	×	×
Config 15	×	×	×	✓	✓	×
Config 16	×	×	×	✓	×	✓

Table 2-1. Simultaneous Transmission Configurations

✓ = Support; × = Not Support

Note:

All the above simultaneous transmission configurations have been tested and the worst case configuration was found to be config 5 and reported in RF UNII, RF Bluetooth and RF Part 27b test reports.

2.3 Antenna Description

Following antenna gains provided by manufacturer were used for testing.

Band	Antenna Gain (dBi)	
	Antenna BCM	Antenna FCM
LTE Band 12/17	-29.5	-
LTE Band 13	-27.0	-
LTE Band 4/66	-	-11.6
WCDMA1700	-	-11.6

Table 2-2. Highest Antenna Gain

2.4 Test Support Equipment

1	Apple Macbook	Model:	A1398	S/N:	FVFDHG8TP3XY
	w/AC/DC Adapter	Model:	A1435	S/N:	N/A
2	Apple USB-C cable	Model:	N/A	S/N:	N/A
	w/ Charging Dock	Model:	A2921	S/N:	DQ8137601FE08V22H
	w/ Cradle	Model:	N/A	S/N:	CYV203500YQE1EN01MP2K
3	Apple Magnetic Charger	Model:	A2515	S/N:	DLC217301Z91NR11B
	Apple Magnetic Charger	Model:	A2515	S/N:	DLC217301YM1NR112
4	Pathfinder Mocha X3100	Model:	920-13353-01	S/N:	DLCGMW0007D00000N7
	SiP Socket	Model:	X3100 P2 PF037	S/N:	DLCGQG000UT00000XJ
5	DC Power Supply	Model:	KPS3010D	S/N:	N/A
6	Store Sample Wristband	Model:	N/A	S/N:	DLC316300CU1QGKA2

Table 2-3. Test Support Equipment

2.5 Test Configuration

The EUT was tested per the guidance of ANSI C63.26-2015, TIA-603-E-2016 and KDB 971168 D01 v03r01. See Section 7.0 of this test report for a description of the radiated and antenna port conducted emissions tests.

The worst case configuration was investigated for all combinations of various types of non-metal wristbands. The EUT was also investigated with and without wireless charger. The worst case configuration found was used for all testing.

For emissions from 1GHz – 18GHz, low, mid, and high channels were tested with highest power and worst case configuration. The emissions below 1GHz and above 18GHz were tested with the highest transmitting power and the worst case channel.

The EUT was manipulated through three orthogonal planes of X-orientation (flatbed), Y-orientation (landscape), and Z-orientation (portrait) during the testing. Only the worst case emissions were reported in this test report.

This device only supports 27RBs or less for 16-QAM uplink.

2.6 Software and Firmware

The test was conducted with firmware version watchOS 10.0 installed on the EUT.

2.7 EMI Suppression Device(s)/Modifications

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

3.0 DESCRIPTION OF TESTS

3.1 Evaluation Procedure

The measurement procedures described in the document titled “Land Mobile FM or PM – Communications Equipment – Measurements and Performance Standards” (ANSI C63.26-2015/TIA-603-E-2016) and “Procedures for Compliance Measurement of the Fundamental Emission Power of Licensed Wideband (> 1 MHz) Digital Transmission Systems” (KDB 971168 D01 v03r01) were used in the measurement of the EUT.

3.2 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 spurious emissions measurements and calculations, conversion method is used per the formulas in KDB 971168 Section 5.8.4. 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

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

All radiated measurements are performed in a chamber that meets the site requirements per ANSI C63.4-2014.

Per KDB 414788 D01 v01r01, radiated emission test sites other than open-field test sites (e.g., shielded anechoic chambers), may be employed for emission measurements below 30MHz if characterized so that the measurements correspond to those obtained at an open-field test site. To determine test site equivalency, a reference sample transmitting at 149kHz was measured on an open field test site (asphalt with no ground plane) and then measured in the 3m semi-anechoic chamber. A calibrated 60cm loop antenna was used while the reference device was rotated through the X, Y and Z axis in order to capture the worst case level. A maximum deviation of 2.77dB at 149kHz was measured when comparing the 3 meter semi-anechoic chamber to the open field site.

Radiated spurious emission levels are investigated with the receive antenna horizontally and vertically polarized per ANSI C63.26-2015 and TIA-603-E-2016.

4.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.23-2012. 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 (±dB)
Conducted Bench Top Measurements	1.77
Radiated Disturbance (<30MHz)	4.38
Radiated Disturbance (30MHz-1GHz)	4.75
Radiated Disturbance (1-18GHz)	5.20
Radiated Disturbance (>18GHz)	4.72

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
Agilent Technologies	N9030A	3Hz-44GHz PXA Signal Analyzer	6/21/2023	Annual	6/21/2024	MY49430244
ATM	180-442A-KF	20dB Nominal Gain Horn Antenna	11/1/2022	Annual	11/1/2023	T058701-01
ESPEC	SU-241	Tabletop Temperature Chamber	11/10/2022	Annual	11/10/2023	92009574
ETS-Lindgren	3117	Double Ridged Guide Antenna (1-18 GHz)	3/30/2023	Annual	3/30/2024	00218555
Keysight Technology	N9040B	UXA Signal Analyzer	3/10/2023	Annual	3/10/2024	MY57212015
Rohde & Schwarz	TS-PR18	Pre-Amplifier (1GHz - 18GHz)	6/2/2023	Annual	6/2/2024	100050
Rohde & Schwarz	FSV40	Signal Analyzer (10Hz-40GHz)	5/11/2023	Annual	5/11/2024	101619
Rohde & Schwarz	ESW44	EMI Test Receiver	6/6/2023	Annual	6/6/2024	101668
Rohde & Schwarz	TS-PR8	Pre-Amplifier (30MHz - 8GHz)	6/22/2023	Annual	6/22/2024	102356
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	10/13/2022	Annual	10/13/2023	161616
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	12/16/2022	Annual	12/16/2023	164715
Rohde & Schwarz	TS-PR1840	Pre-Amplifier (18GHz - 40GHz)	6/2/2023	Annual	6/2/2024	100050
Rohde & Schwarz	HFH2-Z2	Loop Antenna	5/1/2023	Annual	5/1/2024	100519
Rohde & Schwarz	ENV216	Two-Line V-Network	6/8/2023	Annual	6/8/2024	192052
Schwarzbeck	VULB 9162	Bilog Antenna (30MHz - 6GHz)	4/17/2023	Annual	4/17/2024	00304

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.

6.0 SAMPLE CALCULATIONS

Emission Designator

WCDMA Emission Designator

Emission Designator = 4M16F9W
WCDMA BW = 4.16 MHz
F = Frequency Modulation
9 = Composite Digital Info
W = Combination (Audio/Data)

QPSK Modulation

Emission Designator = 8M62G7W
BW = 8.62 MHz
G = Phase Modulation
7 = Quantized/Digital Info
W = Combination of Any

QAM Modulation

Emission Designator = 8M45D7W
LTE BW = 8.45 MHz
D = Amplitude/Angle Modulated
7 = Quantized/Digital Info
W = Combination of Any

Spurious Radiated Emission

Example: Middle Channel LTE Mode 2nd 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 analzyer. 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).

7.0 TEST RESULTS

7.1 Summary

Company Name: Apple Inc.

FCC ID: BCG-A2986

FCC Classification: PCS Licensed Transmitter Worn on Body (PCT)

Mode(s): WCDMA/LTE

Test Condition	Test Description	FCC Part Section(s)	Test Limit	Test Result	Reference
CONDUCTED	Occupied Bandwidth	2.1049	N/A	N/A	Section 7.2
	Conducted Band Edge / Spurious Emissions	2.1051, 27.53	-13 dBm at Band Edge and for all out-of-band emissions	PASS	Sections 7.3, 7.4
	Peak-Average Ratio	27.50(d)(5)	< 13 dB	PASS	Section 7.5
	Transmitter Conducted Output Power	2.1046	N/A	N/A	See RF Exposure Report
	Frequency Stability	2.1055, 27.54	Fundamental emissions stay within authorized frequency block over the temperature and voltage range as tested	PASS	Section 7.8
	Effective Radiated Power / Equivalent Isotropic Radiated Power (LTE Band 12/17)	27.50(b)(10)	< 3 Watts max. ERP	PASS	Section 7.6
	Effective Radiated Power / Equivalent Isotropic Radiated Power (LTE Band 13)	27.50(c)(10)	< 3 Watts max. ERP	PASS	Section 7.6
	Equivalent Isotropic Radiated Power (WCDMA)	27.50(d)(4)	< 1 Watts max. EIRP	PASS	Section 7.6
	Equivalent Isotropic Radiated Power (LTE Band 4/66)			PASS	Section 7.6
RADIATED	Radiated Spurious Emissions (LTE Band 13)	2.1053, 27.53(f)	< -70 dBW/MHz (for wideband signals) < -80 dBW (for discrete emissions less than 700Hz BW) For all emissions in the band 1559 - 1610 MHz	PASS	Section 7.7
	Radiated Spurious Emissions	2.1053, 27.53	-13 dBm for all out-of-band emissions	PASS	Section 7.7

Table 7-1. Summary of Test Results

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 were all 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. All conducted emissions measurements are performed with automated test software to capture the corresponding plots necessary to show compliance. The measurement software utilized is Element EMC Software Tool v1.1.

7.2 Occupied Bandwidth

§2.1049

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. All ports were tested and only the worst case data were reported.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 4.2

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 ≥ 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

Test Setup

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

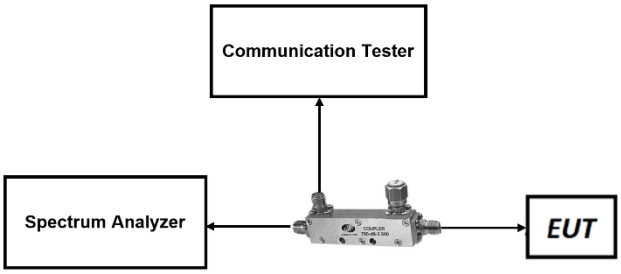
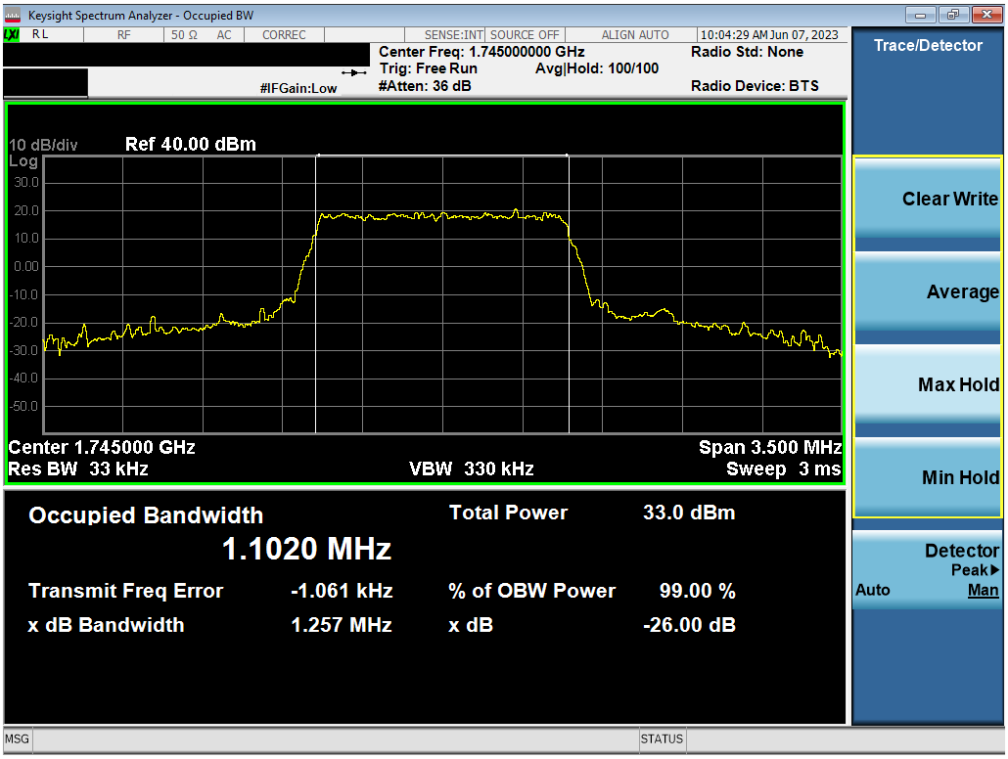


Figure 7-1. Test Instrument & Measurement Setup

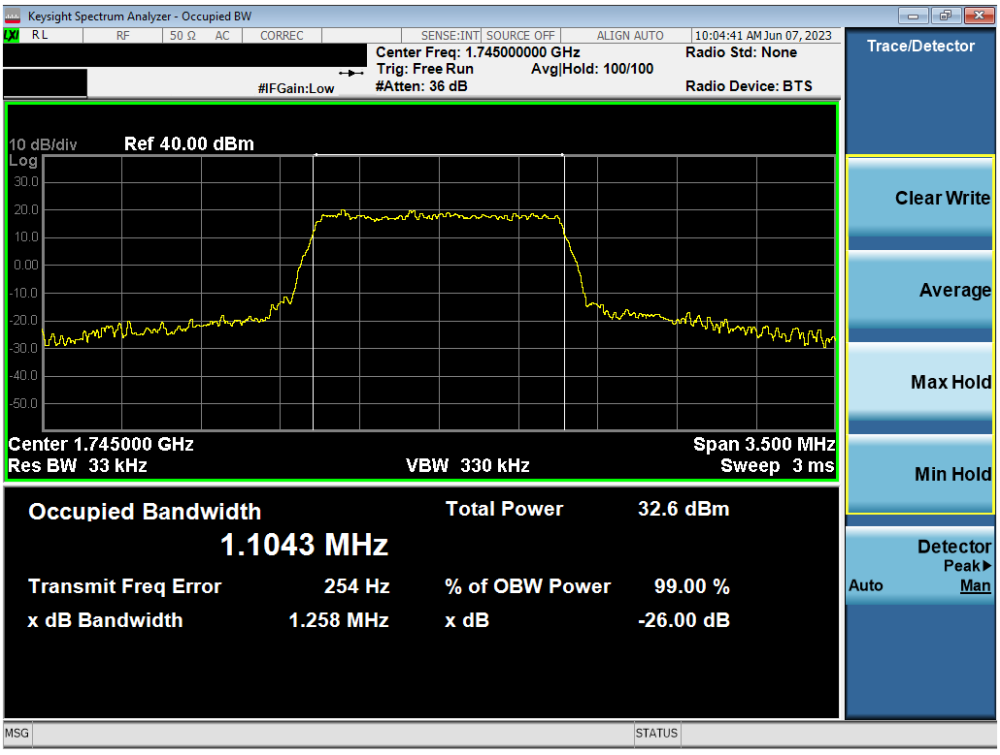
Test Notes

None.

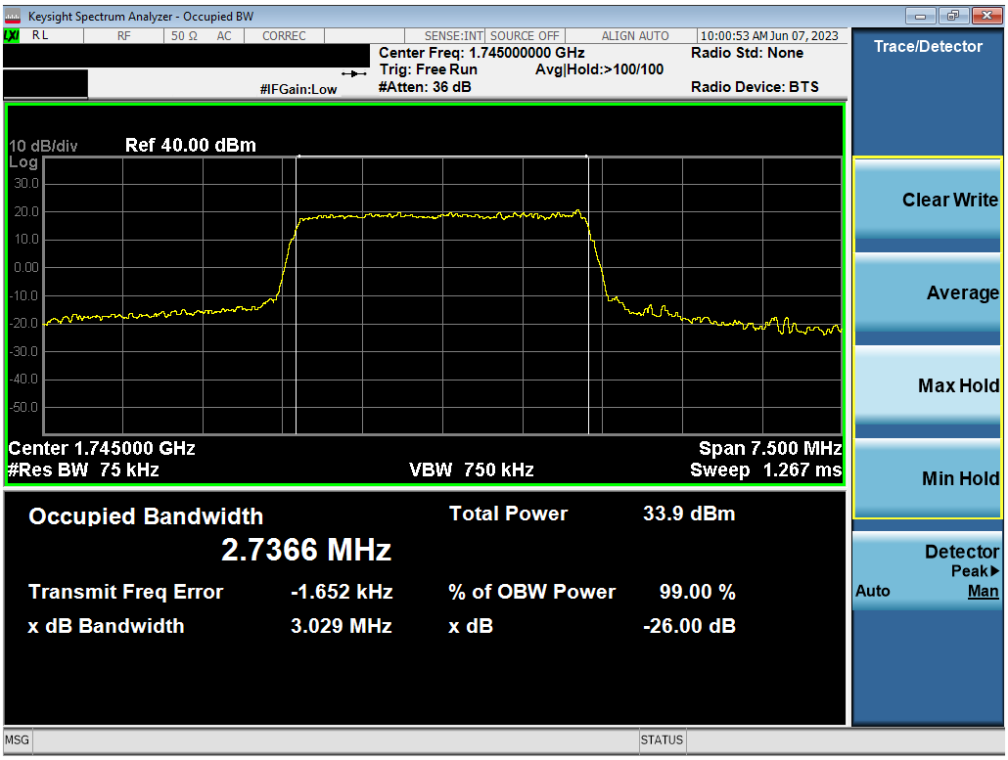
LTE Band 66/4



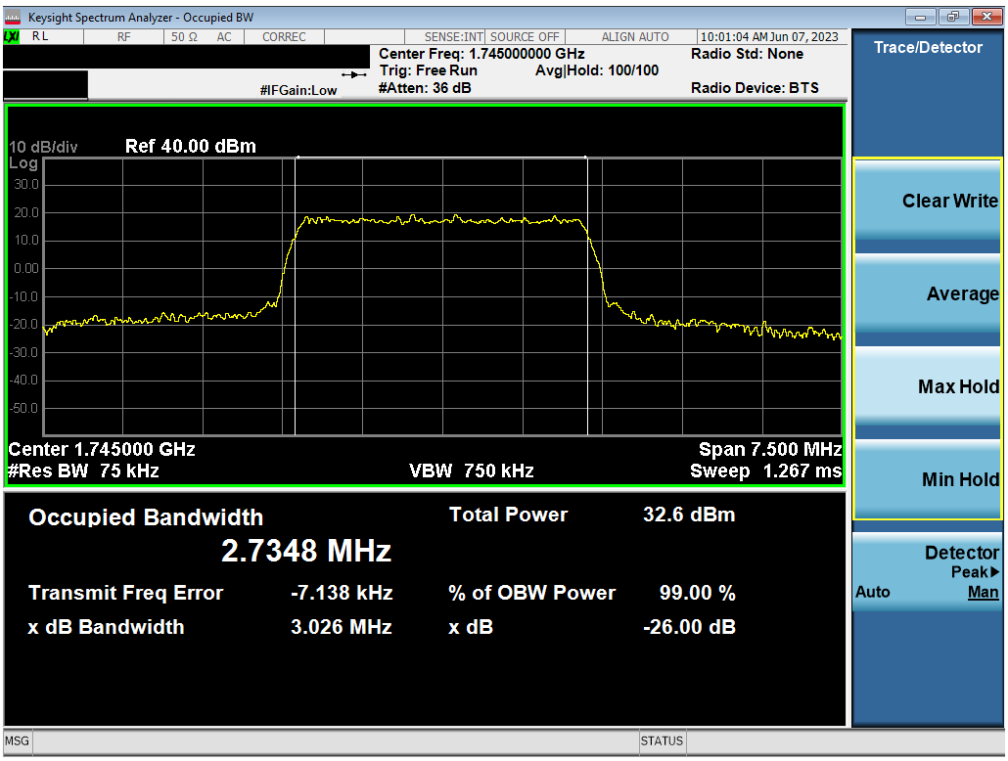
Plot 7-1. Occupied Bandwidth Plot (LTE Band 66/4 - 1.4MHz QPSK - Full RB)



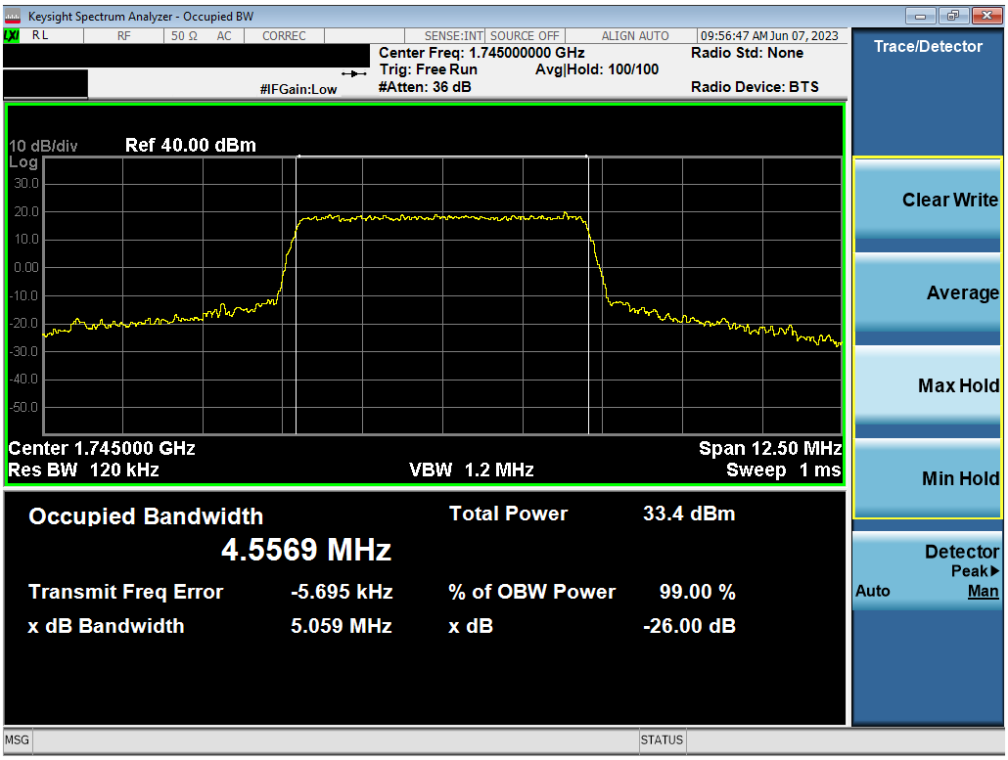
Plot 7-2. Occupied Bandwidth Plot (LTE Band 66/4 - 1.4MHz 16-QAM - Full RB)



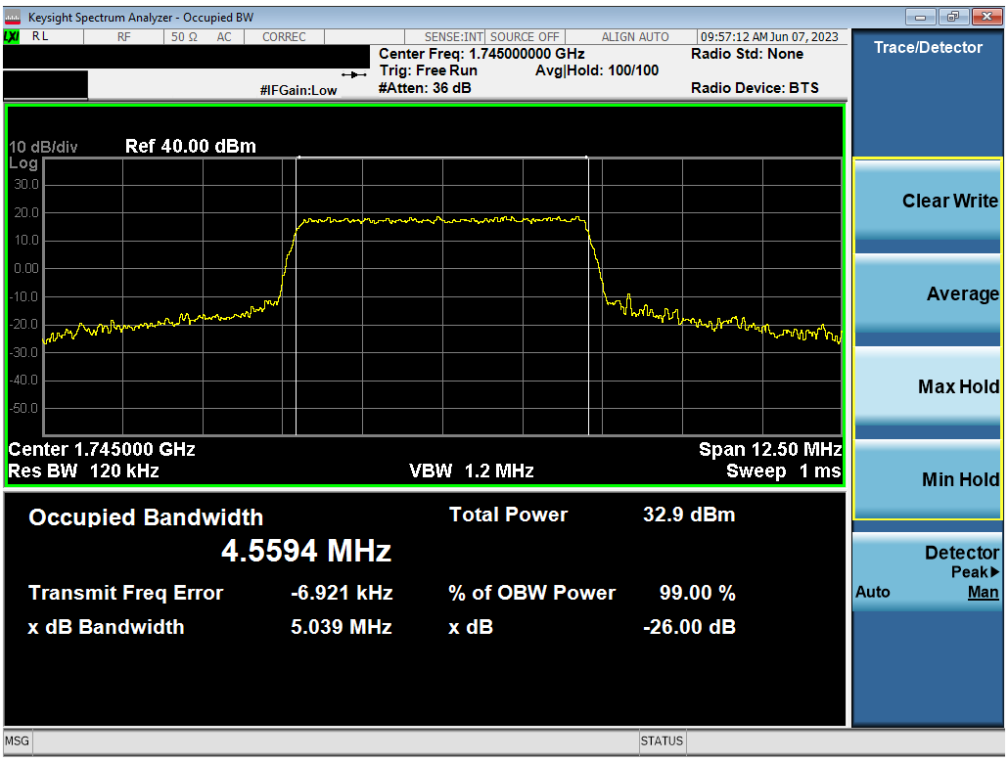
Plot 7-3. Occupied Bandwidth Plot (LTE Band 66/4 - 3MHz QPSK - Full RB)



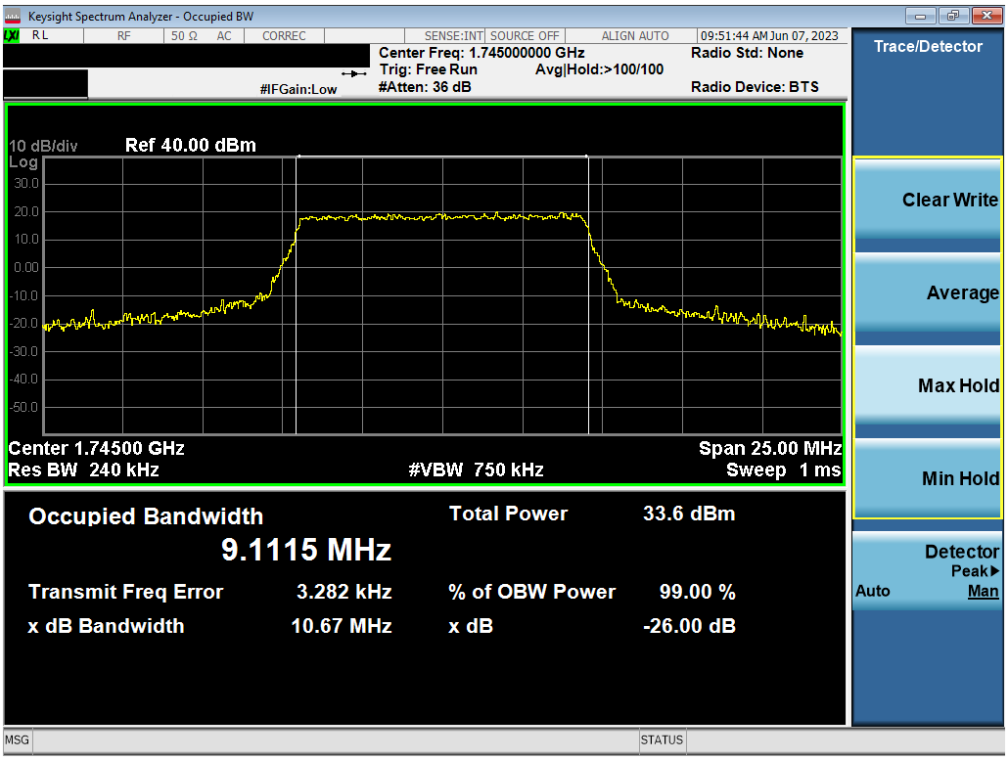
Plot 7-4. Occupied Bandwidth Plot (LTE Band 66/4 - 3MHz 16-QAM - Full RB)



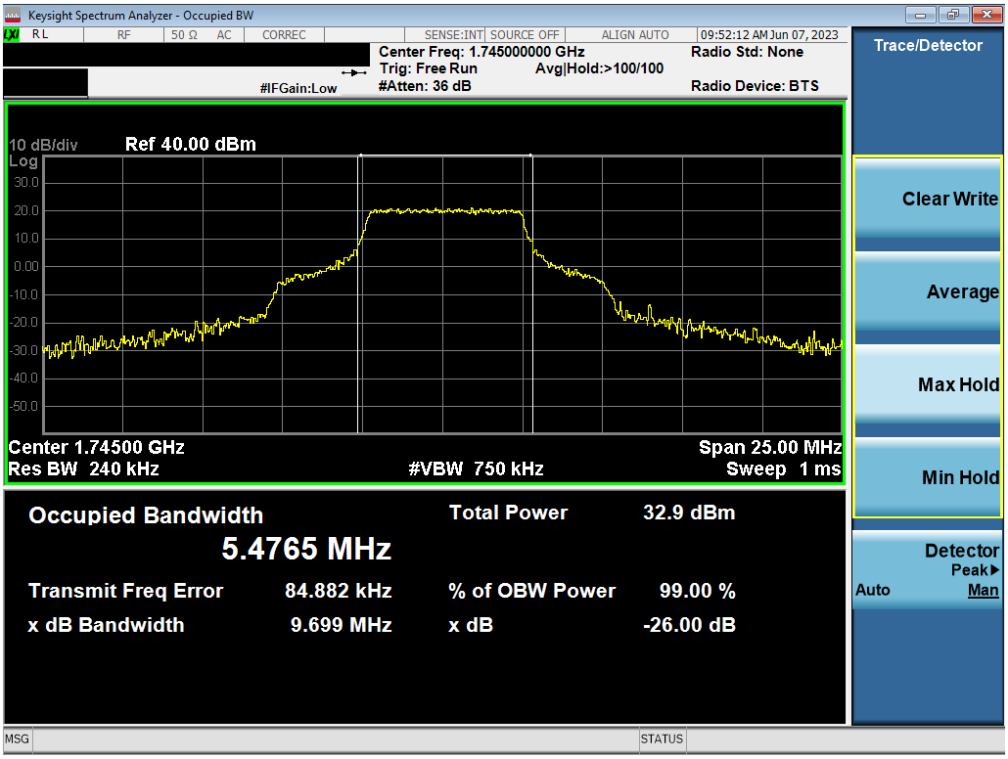
Plot 7-5. Occupied Bandwidth Plot (LTE Band 66/4 - 5MHz QPSK - Full RB)



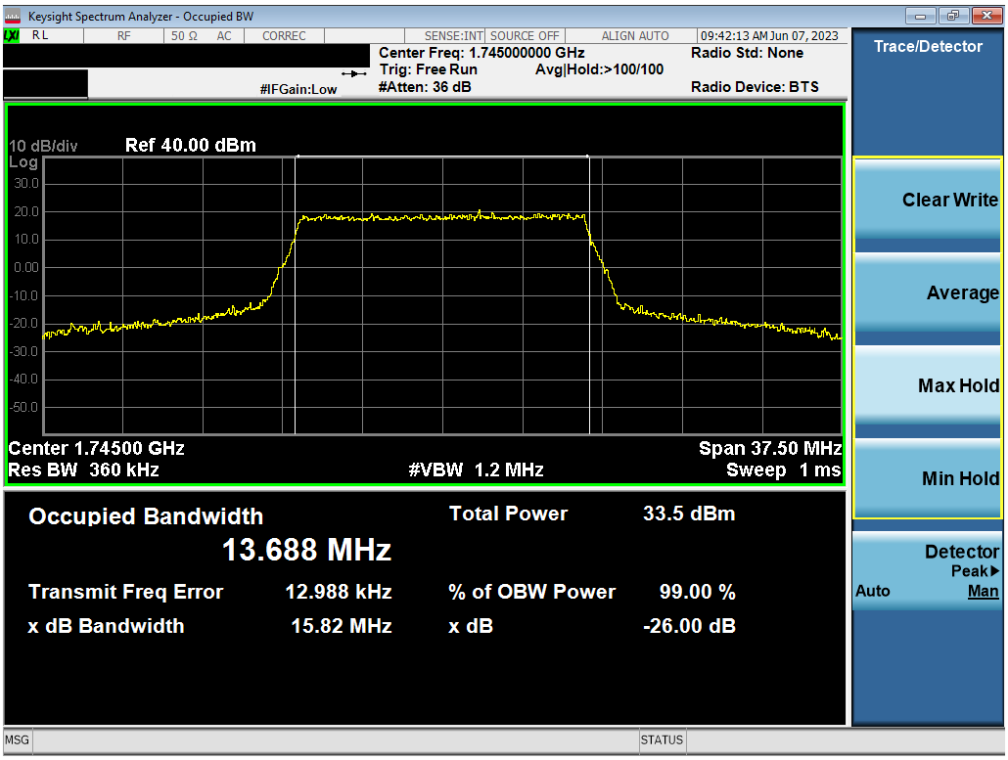
Plot 7-6. Occupied Bandwidth Plot (LTE Band 66/4 - 5MHz 16-QAM - Full RB)



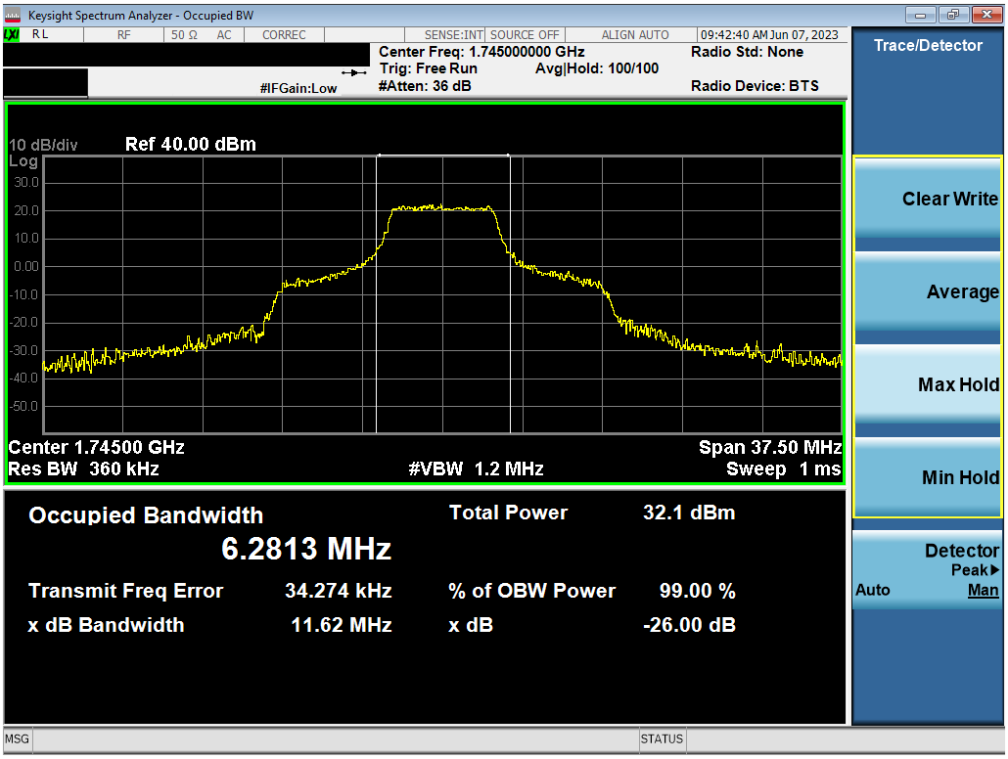
Plot 7-7. Occupied Bandwidth Plot (LTE Band 66/4 - 10MHz QPSK - Full RB)



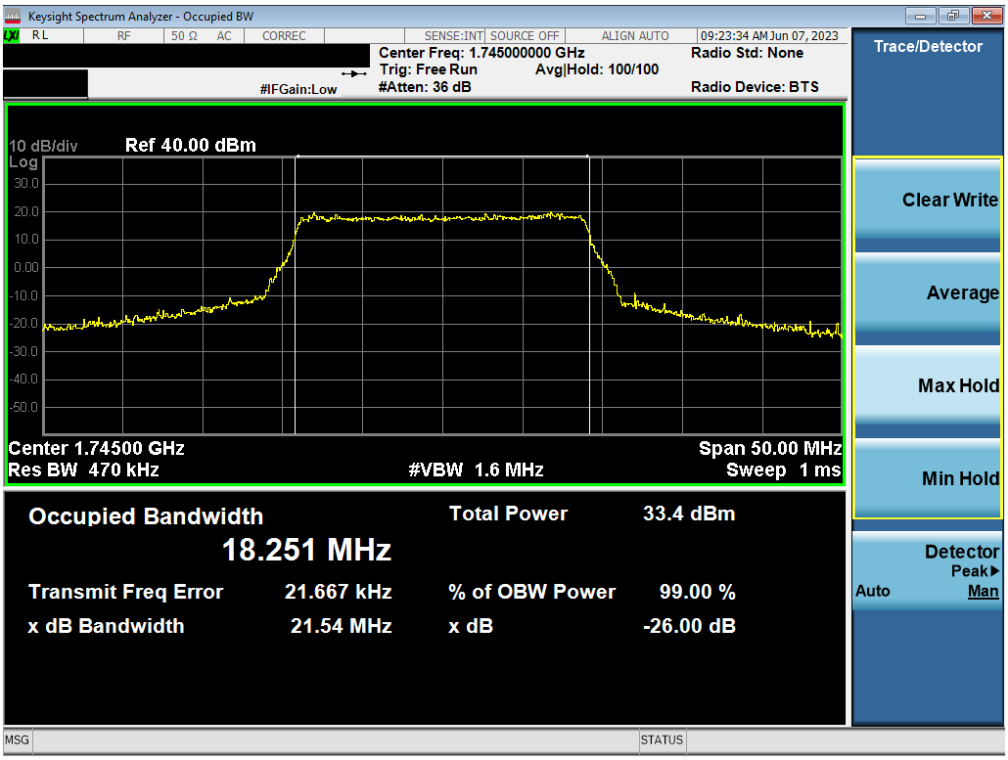
Plot 7-8. Occupied Bandwidth Plot (LTE Band 66/4 - 10MHz 16-QAM - Full RB)



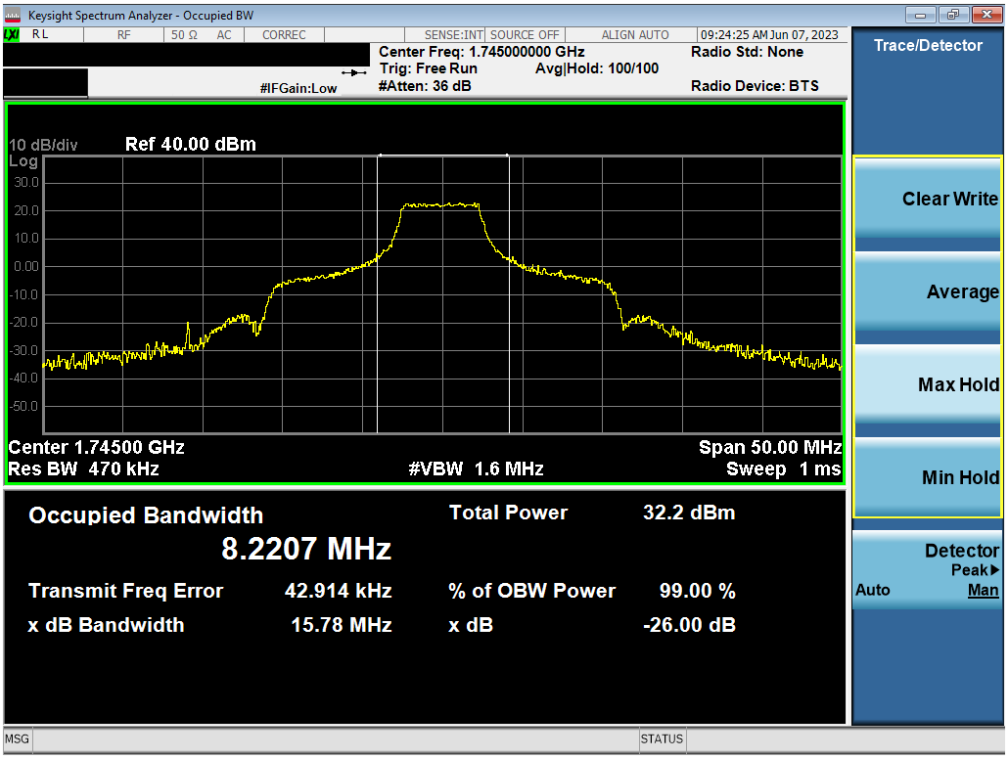
Plot 7-9. Occupied Bandwidth Plot (LTE Band 66/4 - 15MHz QPSK - Full RB)



Plot 7-10. Occupied Bandwidth Plot (LTE Band 66/4 - 15MHz 16-QAM - Full RB)

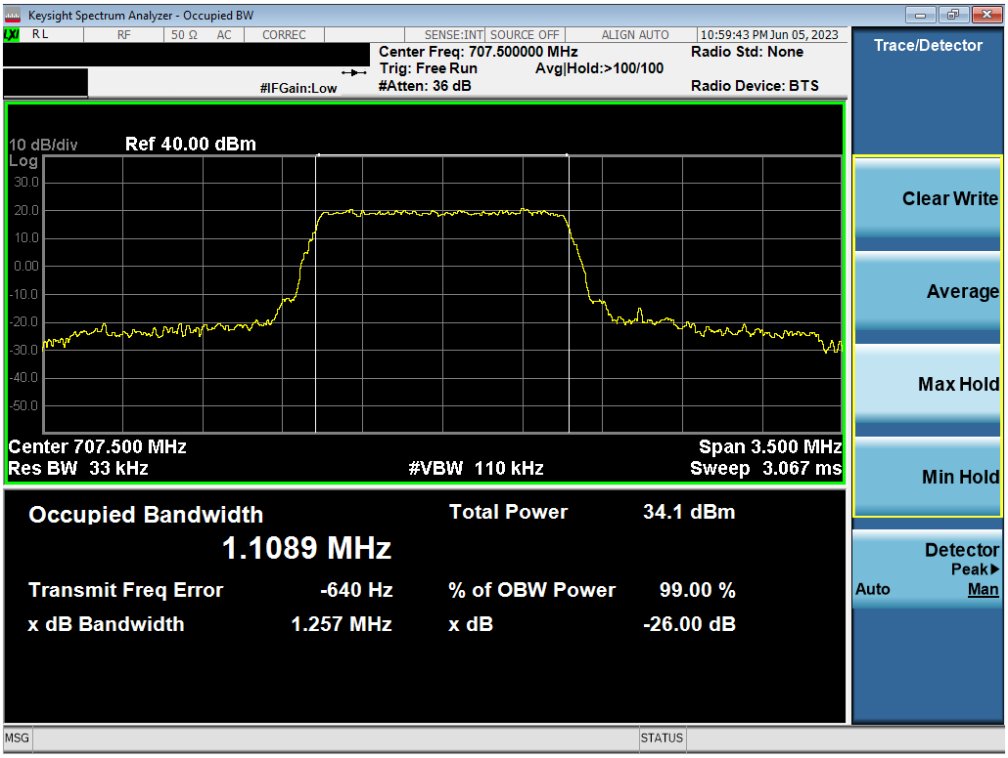


Plot 7-11. Occupied Bandwidth Plot (LTE Band 66/4 - 20MHz QPSK - Full RB)

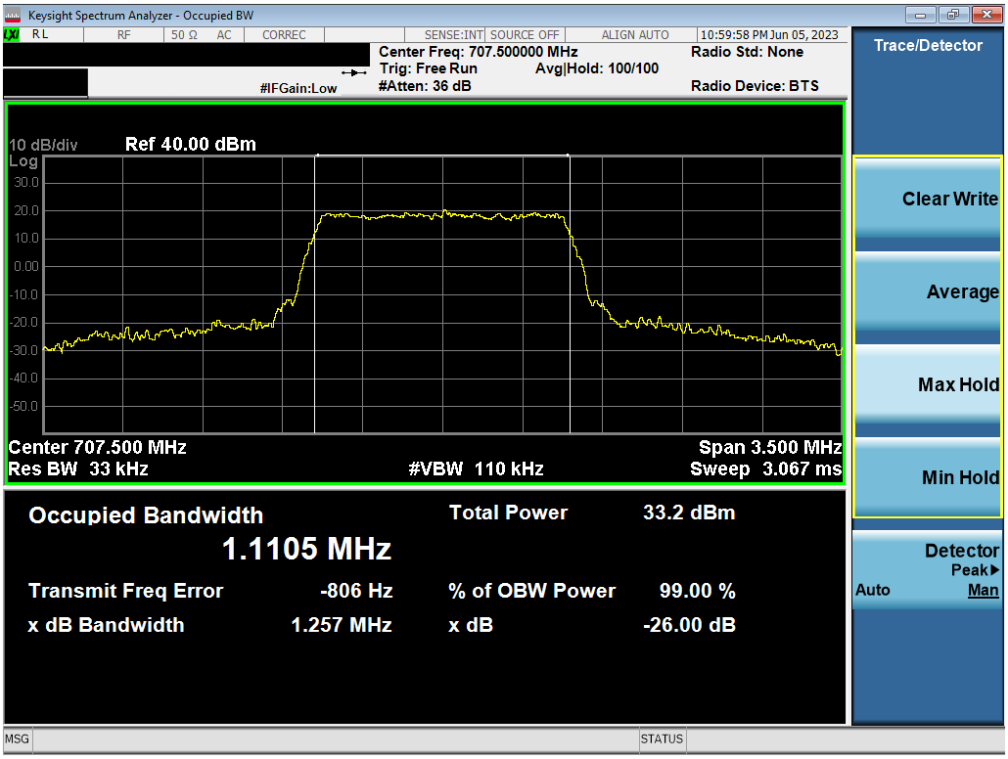


Plot 7-12. Occupied Bandwidth Plot (LTE Band 66/4 - 20MHz 16-QAM - Full RB)

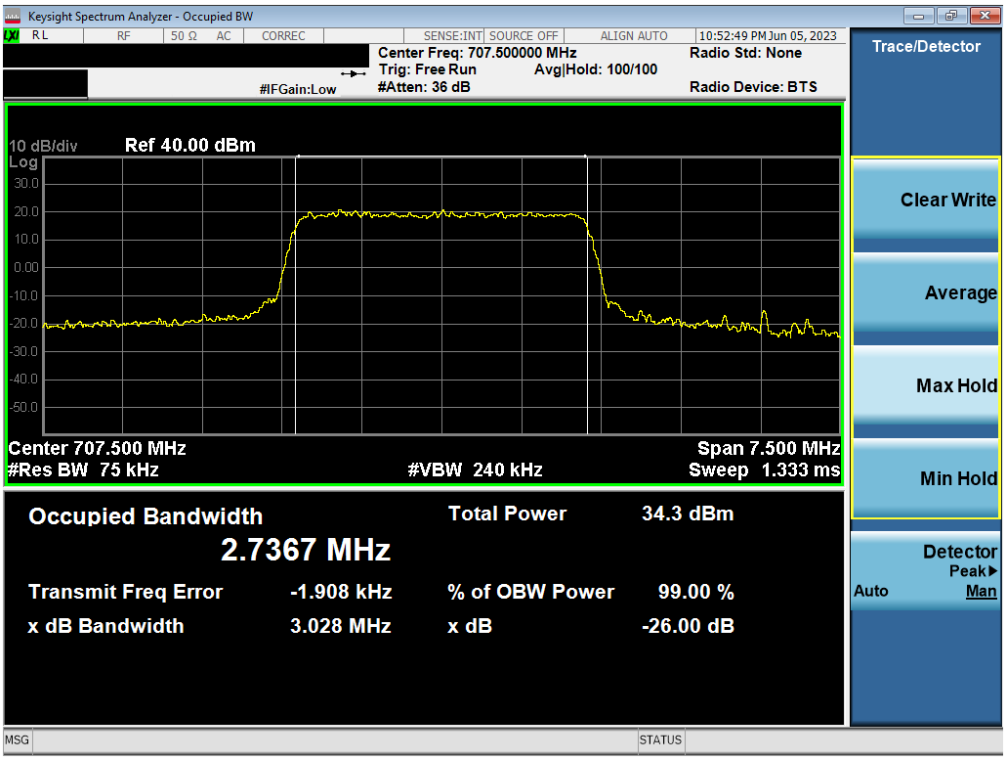
LTE Band 12/17



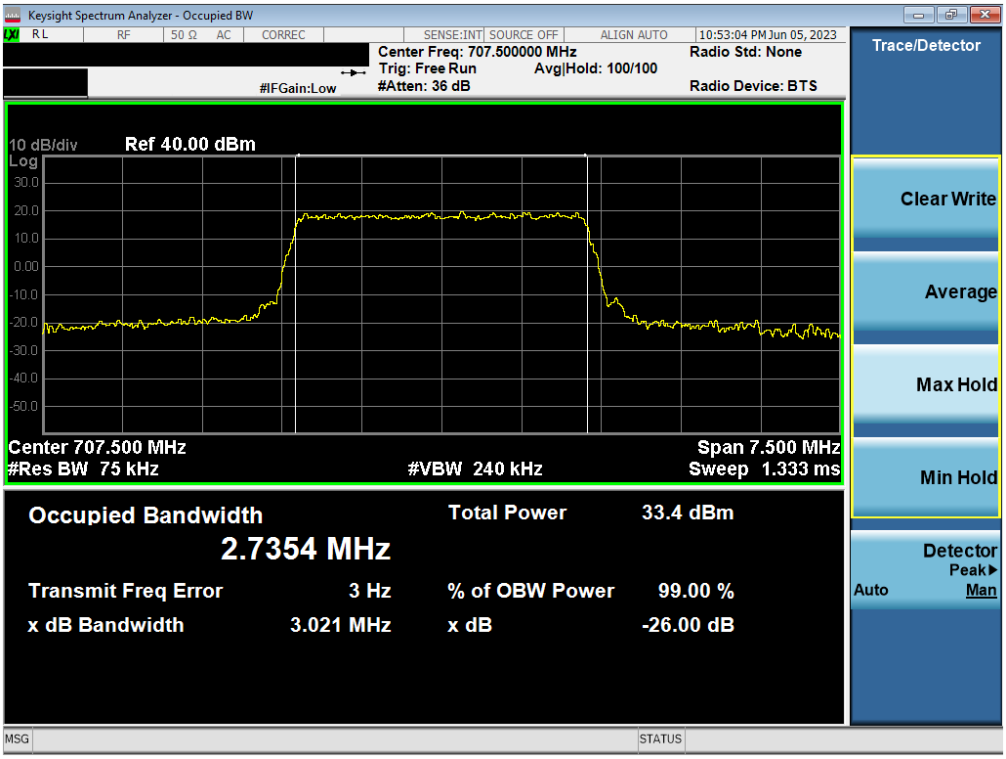
Plot 7-13. Occupied Bandwidth Plot (LTE Band 12 – 1.4MHz QPSK - Full RB)



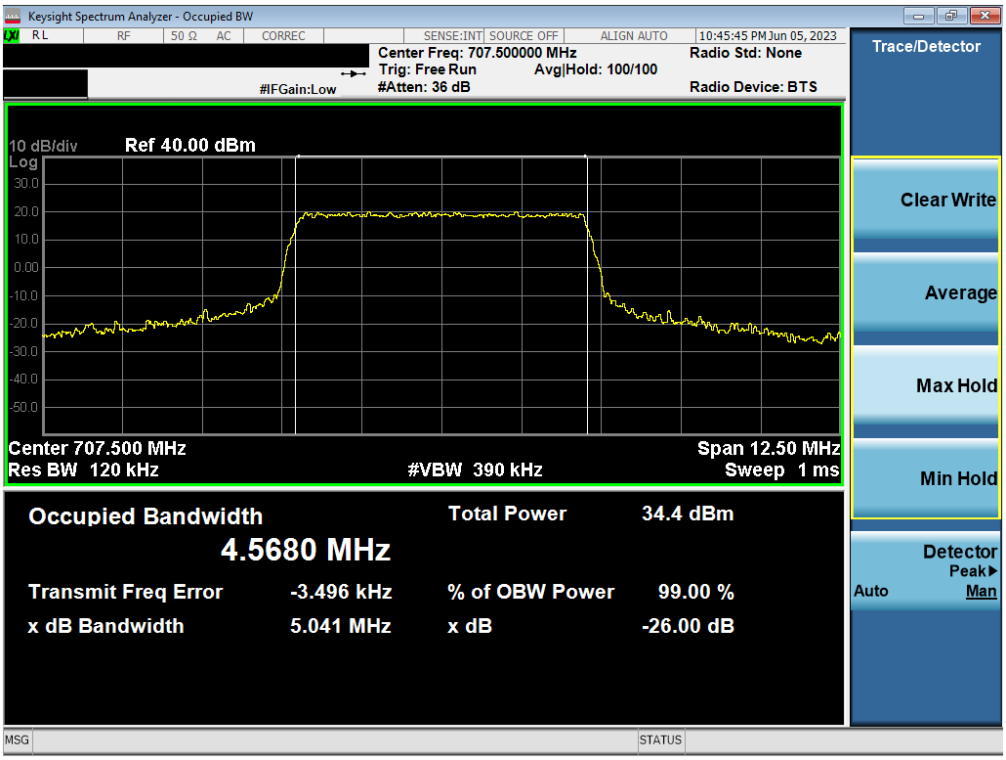
Plot 7-14. Occupied Bandwidth Plot (LTE Band 12 – 1.4MHz 16-QAM - Full RB)



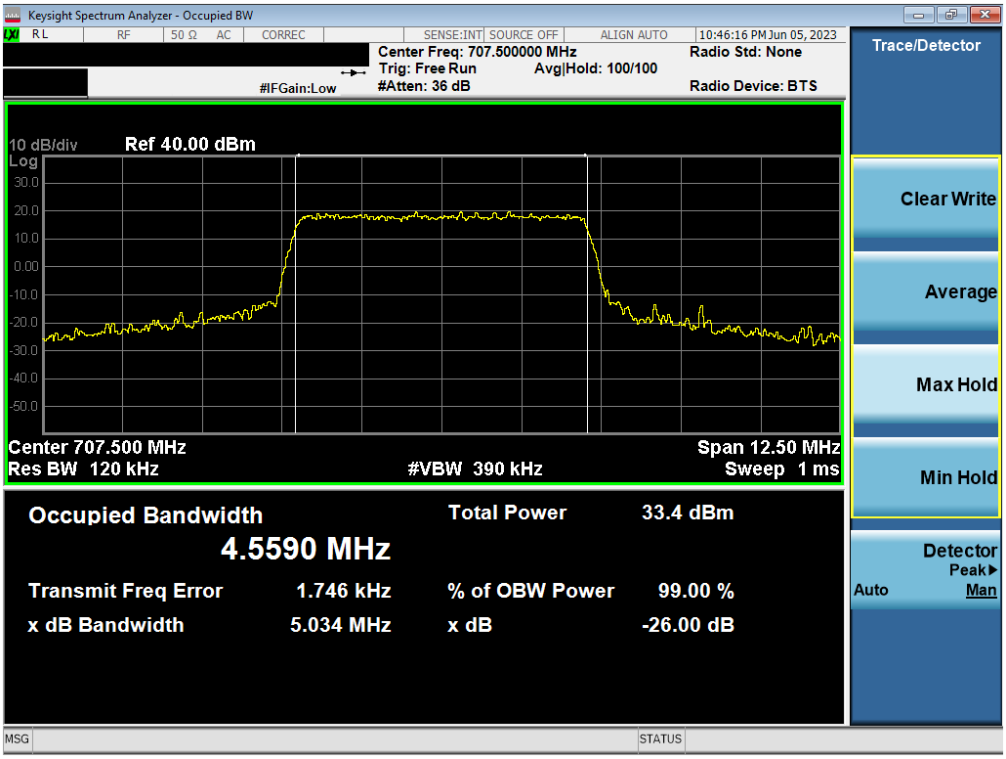
Plot 7-15. Occupied Bandwidth Plot (LTE Band 12 - 3MHz QPSK - Full RB)



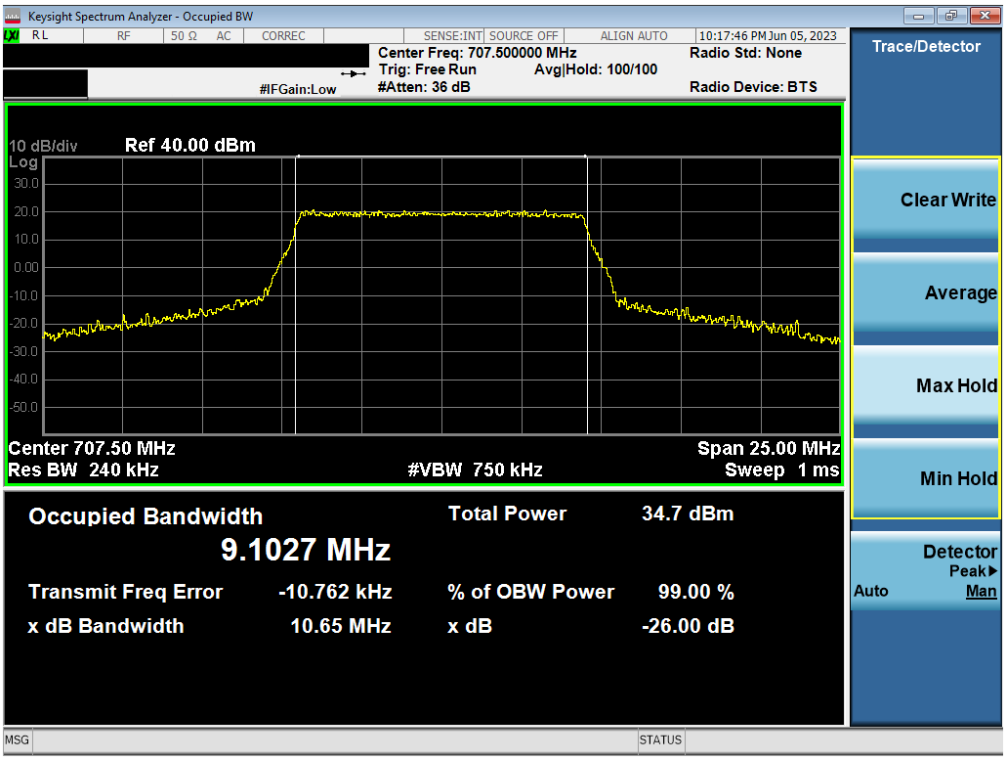
Plot 7-16. Occupied Bandwidth Plot (LTE Band 12 - 3MHz 16-QAM - Full RB)



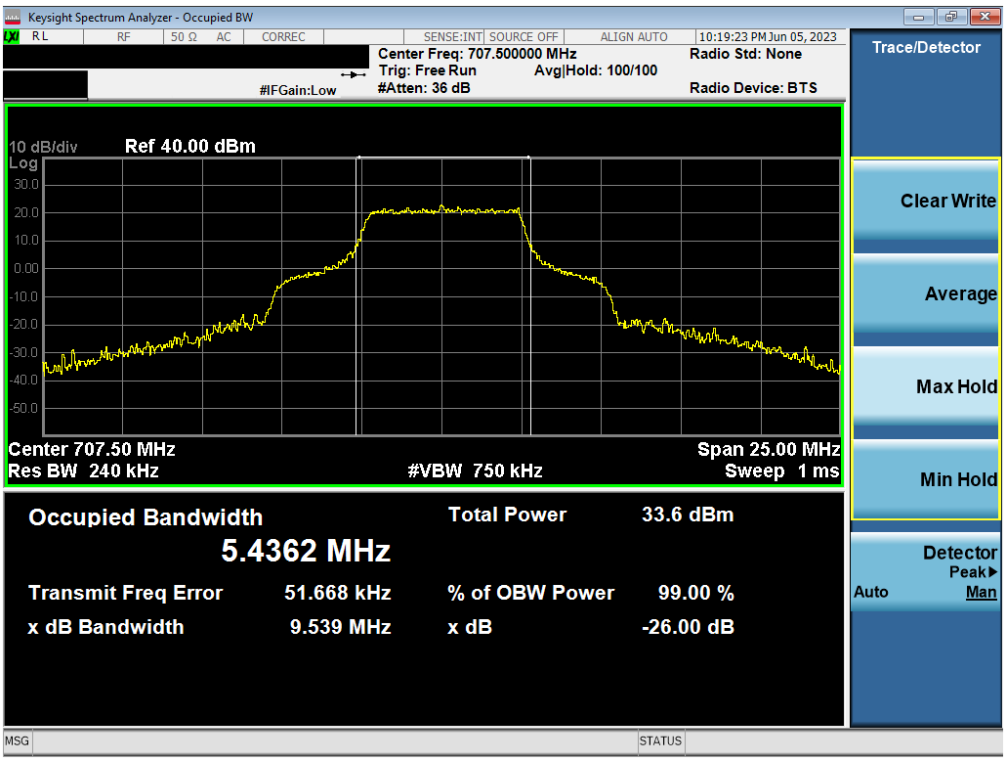
Plot 7-17. Occupied Bandwidth Plot (LTE Band 12/17 - 5MHz QPSK - Full RB)



Plot 7-18. Occupied Bandwidth Plot (LTE Band 12/17 - 5MHz 16-QAM - Full RB)

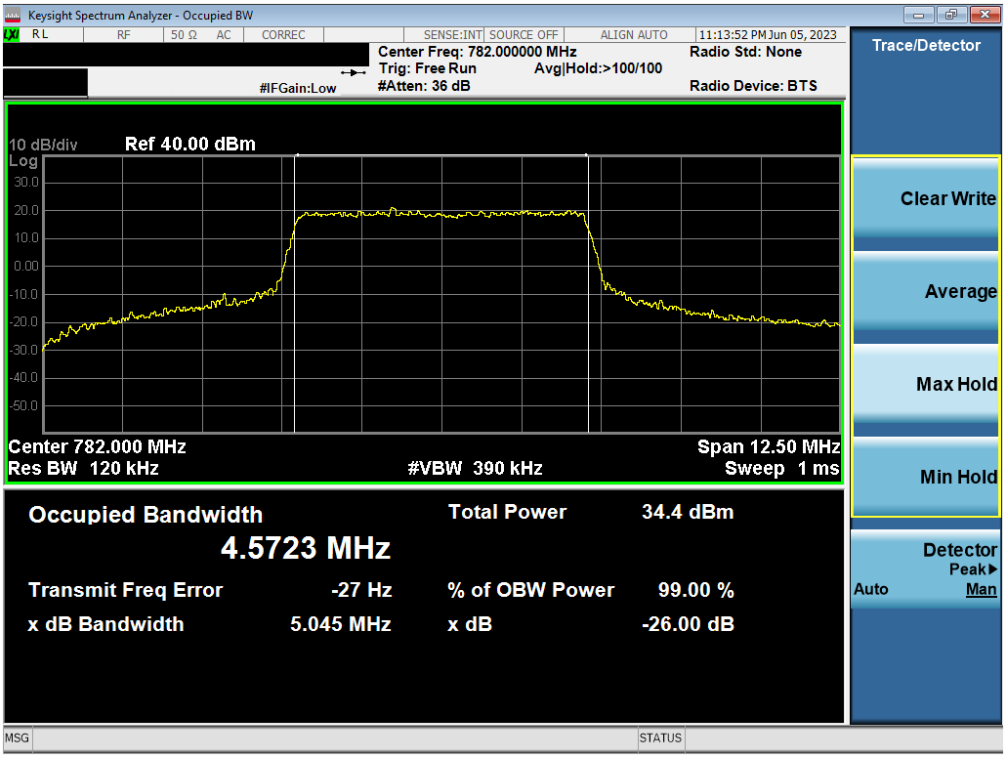


Plot 7-19. Occupied Bandwidth Plot (LTE Band 12/17 - 10MHz QPSK - Full RB)

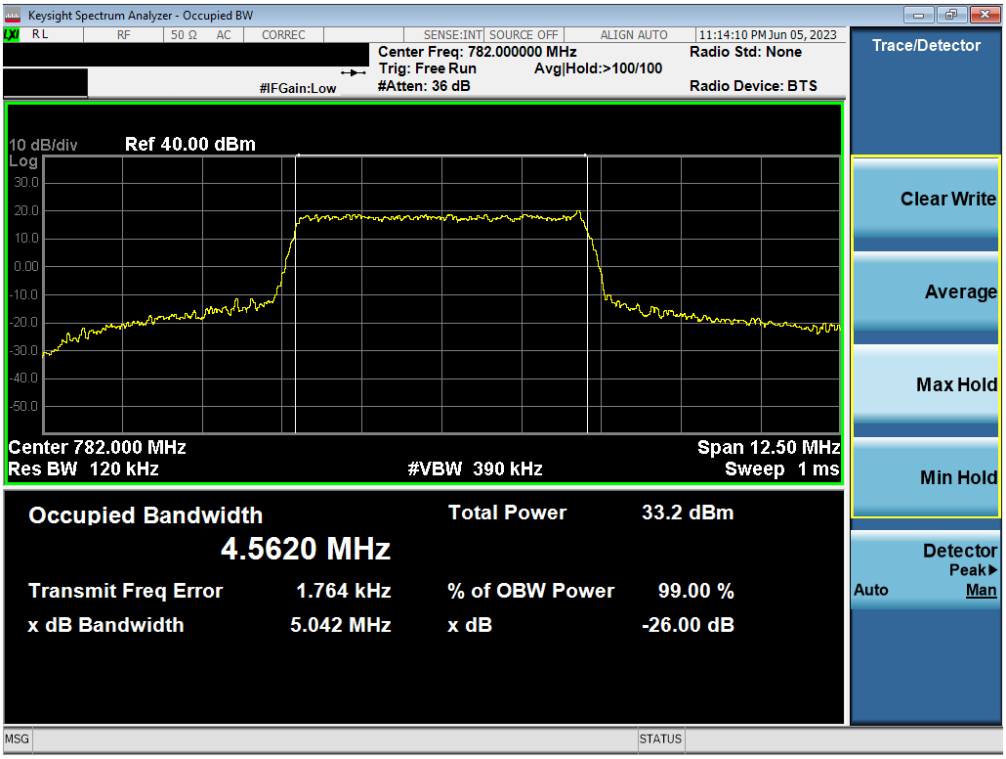


Plot 7-20. Occupied Bandwidth Plot (LTE Band 12/17 - 10MHz 16-QAM - Full RB)

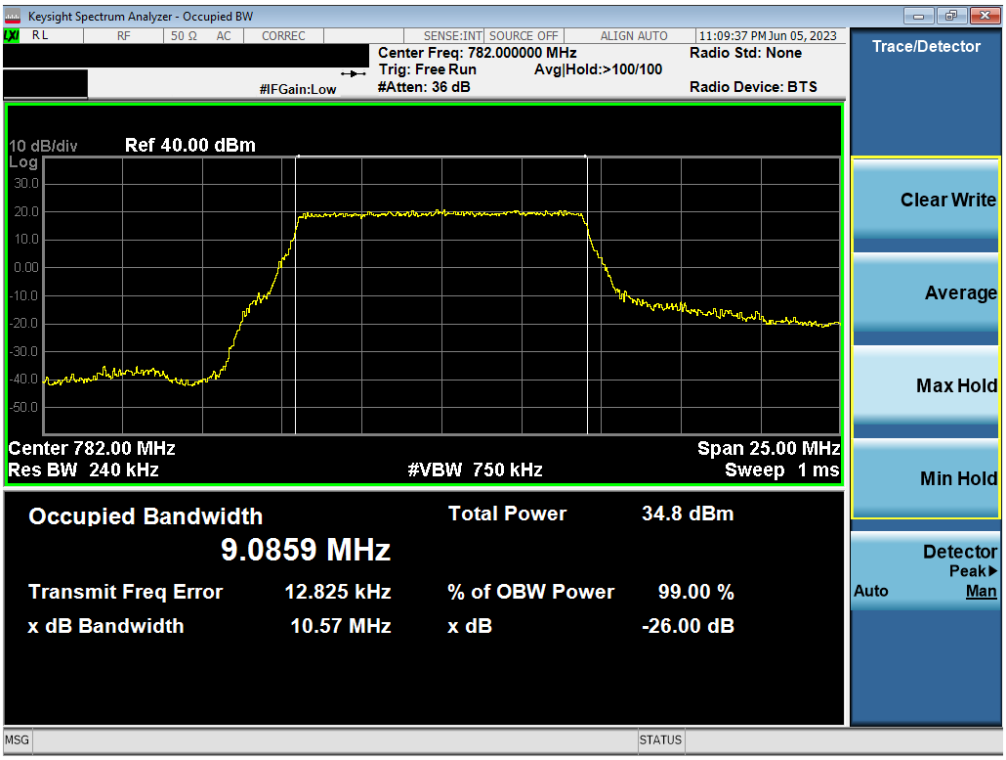
LTE Band 13



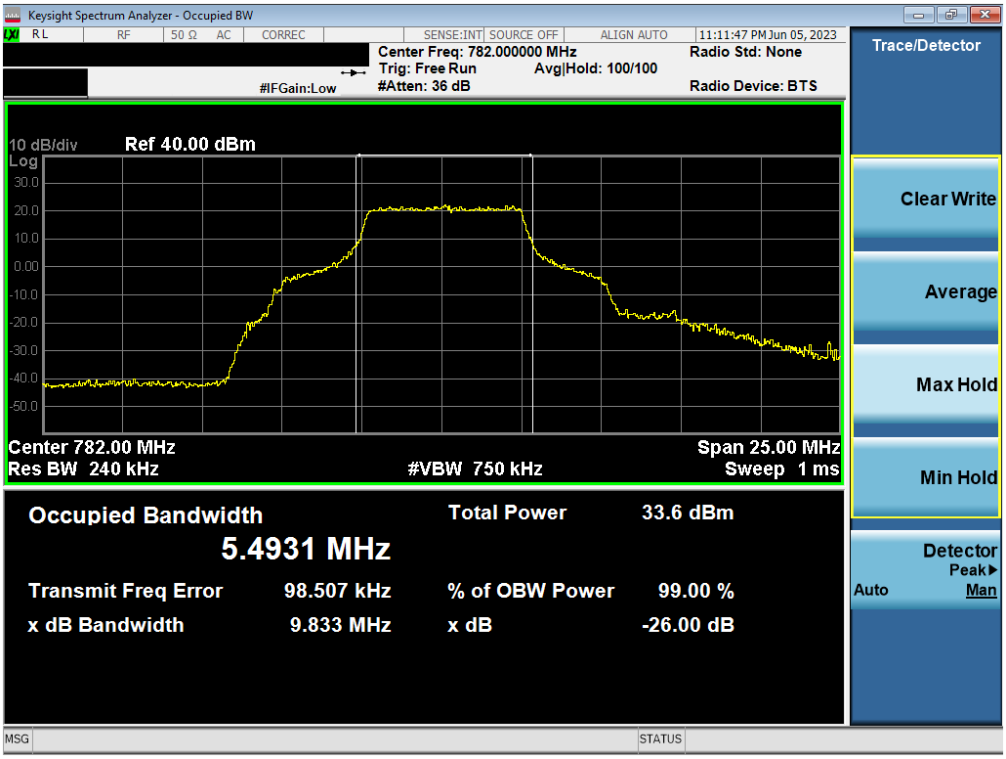
Plot 7-21. Occupied Bandwidth Plot (LTE Band 13 - 5MHz QPSK - Full RB)



Plot 7-22. Occupied Bandwidth Plot (LTE Band 13 - 5MHz 16-QAM - Full RB)

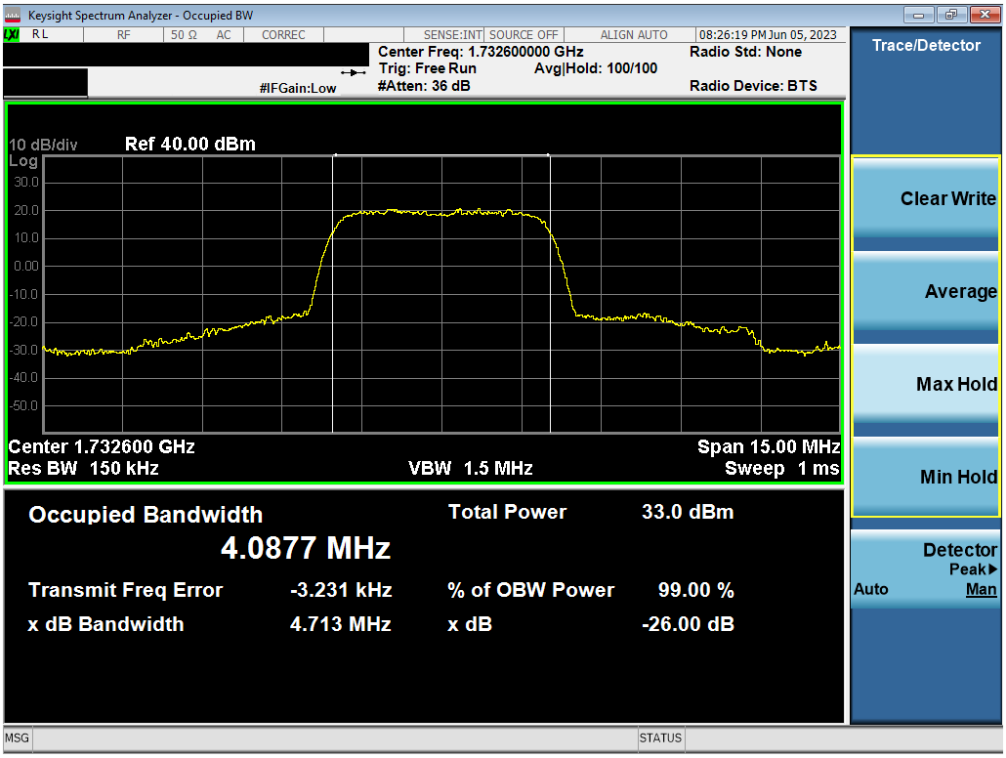


Plot 7-23. Occupied Bandwidth Plot (LTE Band 13 - 10MHz QPSK - Full RB)



Plot 7-24. Occupied Bandwidth Plot (LTE Band 13 - 10MHz 16-QAM - Full RB)

WCDMA AWS



Plot 7-25. Occupied Bandwidth Plot (WCDMA, Ch. 1413)

7.3 Spurious and Harmonic Emissions at Antenna Terminal

§2.1051, §27.53

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 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. All ports were tested and only the worst case data were reported.

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

KDB 971168 D01 v03r01 – Section 6.0

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 ≥ 100kHz
3. VBW ≥ 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.

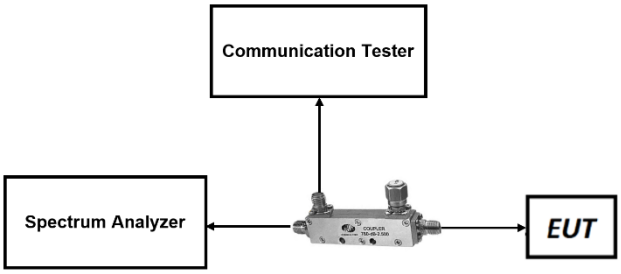
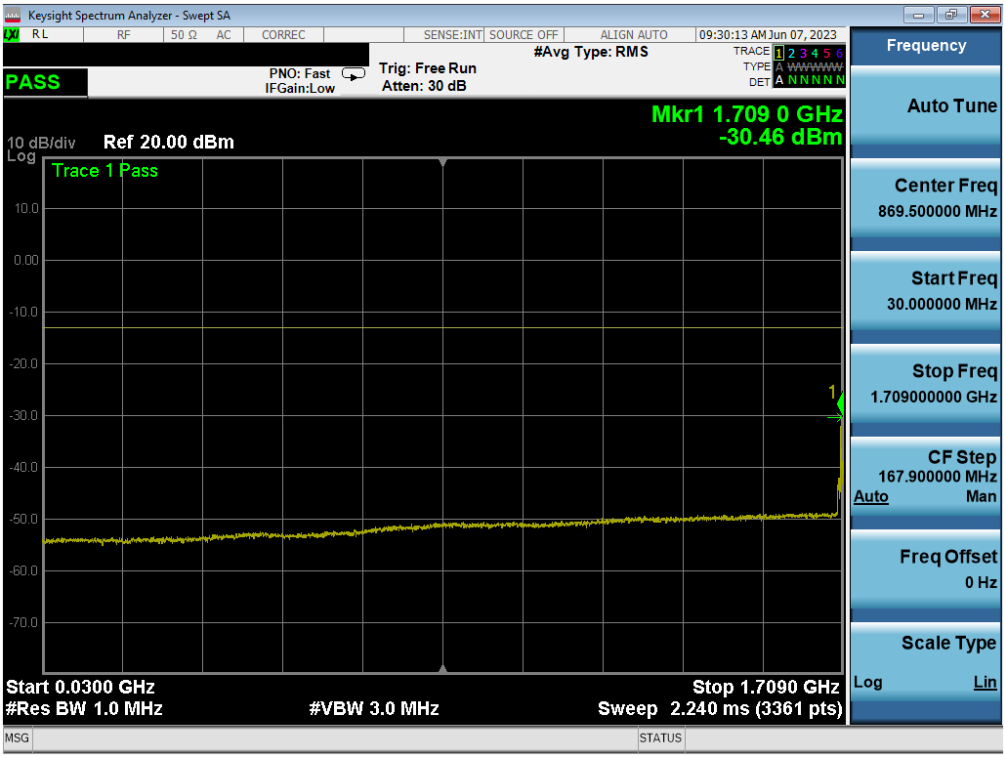


Figure 7-2. Test Instrument & Measurement Setup

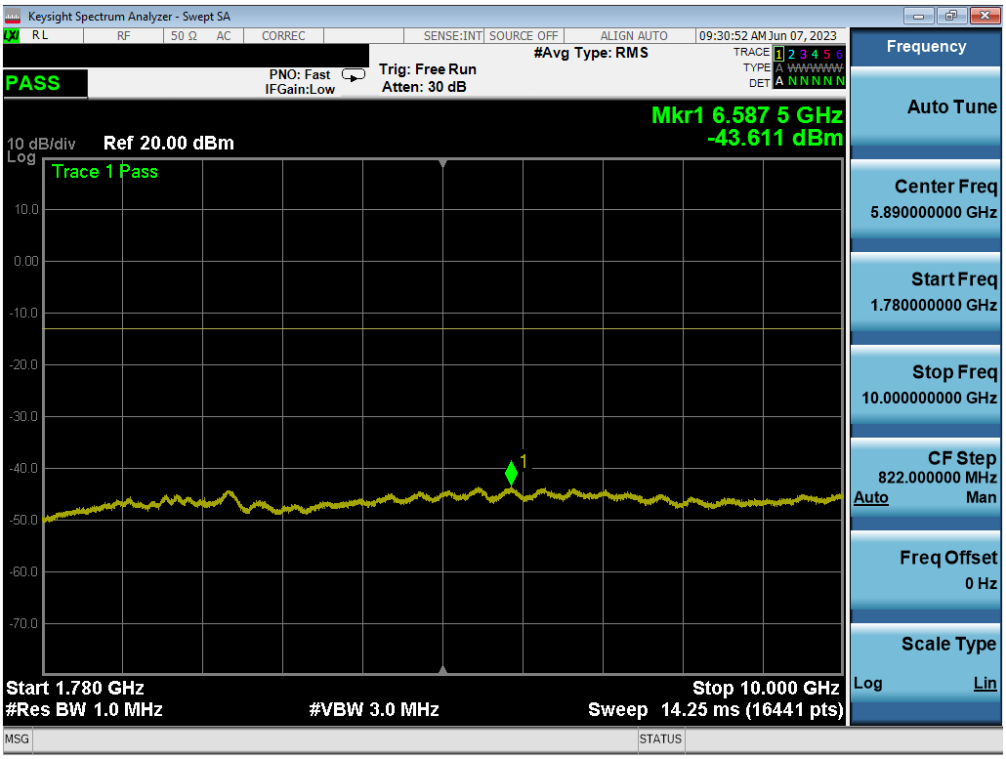
Test Notes

1. Per Part 27, compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth 100 kHz or greater for measurements below 1GHz. However, 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. 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.

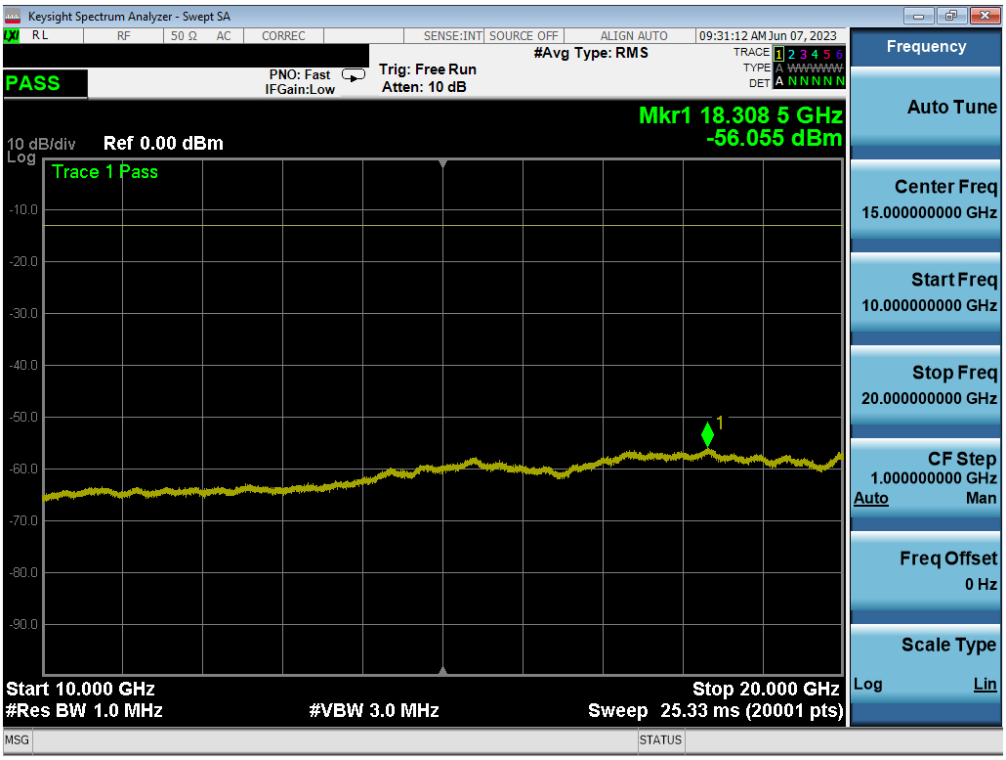
LTE Band 66/4



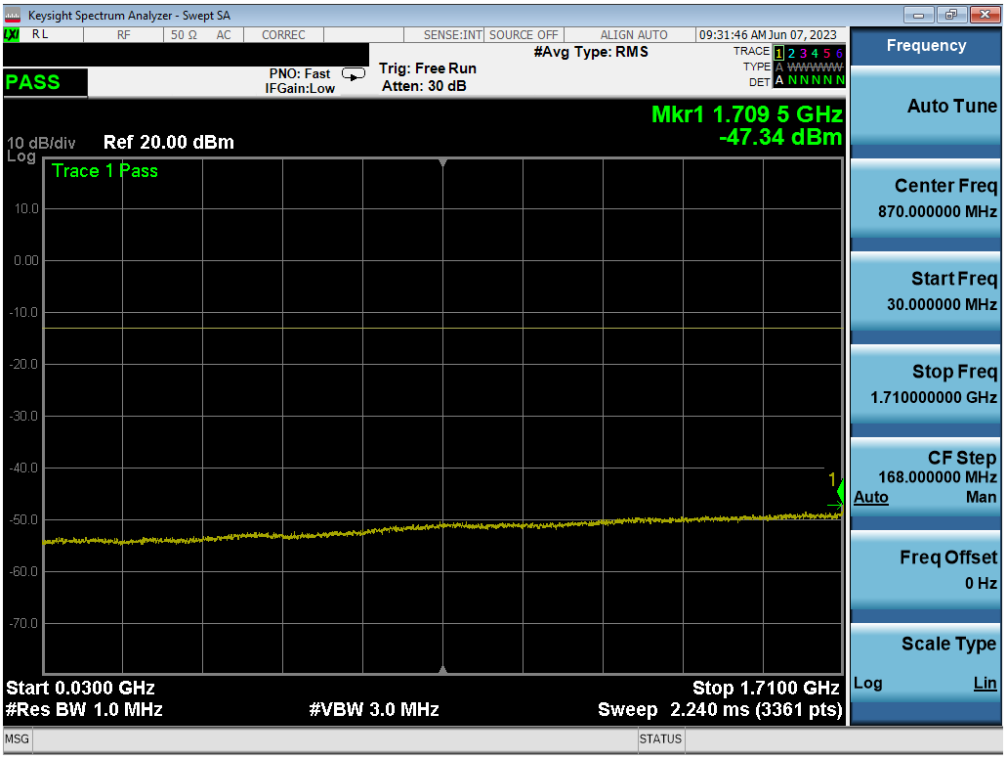
Plot 7-26. Conducted Spurious Plot (LTE Band 66/4 - 20MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



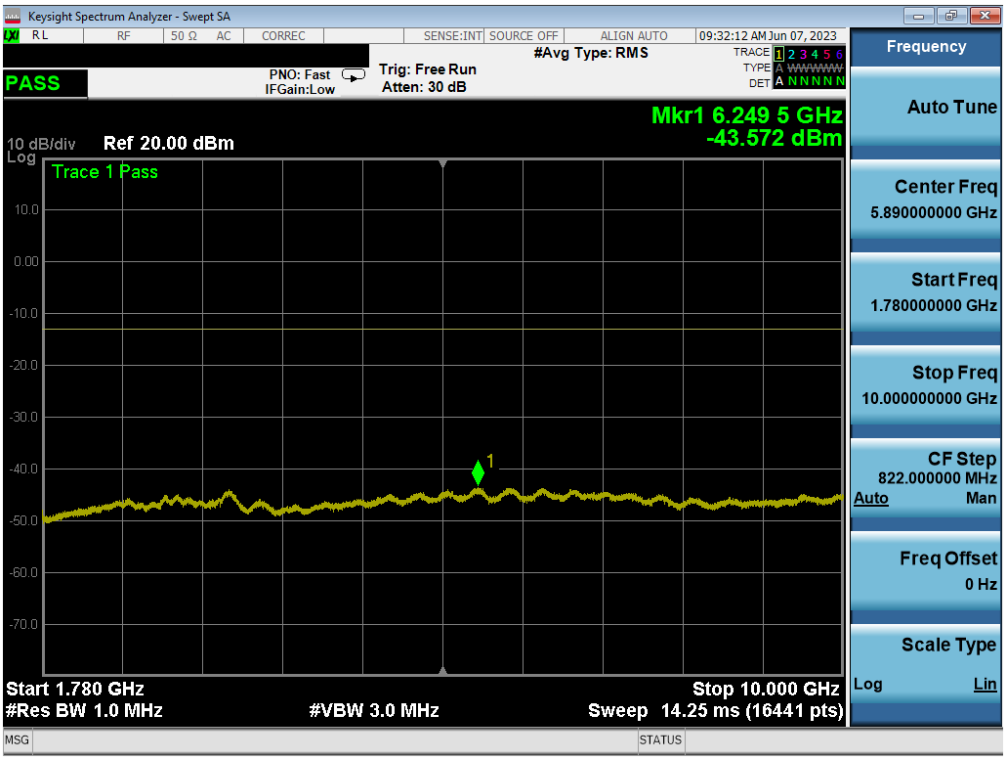
Plot 7-27. Conducted Spurious Plot (LTE Band 66/4 - 20MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



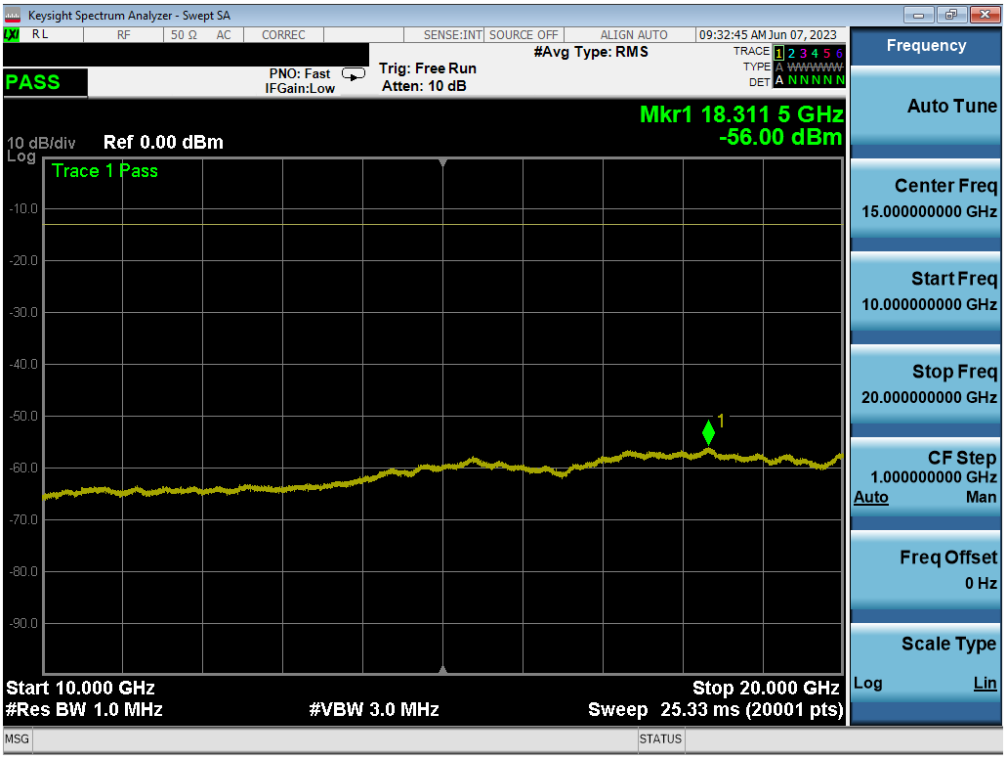
Plot 7-28. Conducted Spurious Plot (LTE Band 66/4 - 20MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



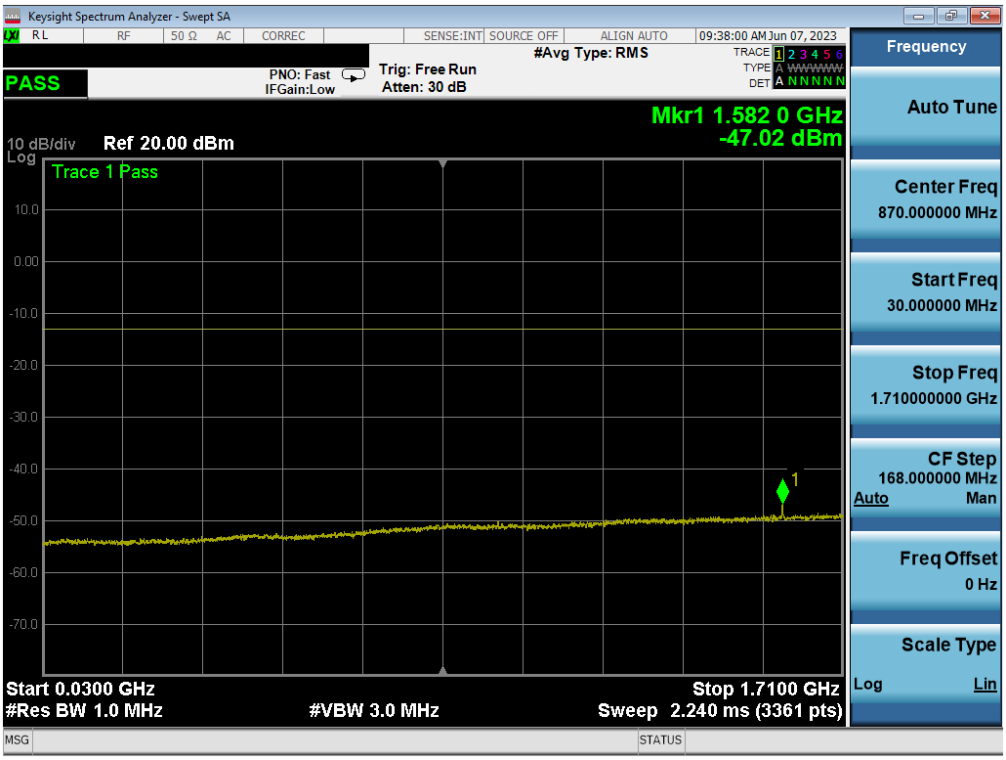
Plot 7-29. Conducted Spurious Plot (LTE Band 66/4 - 20MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



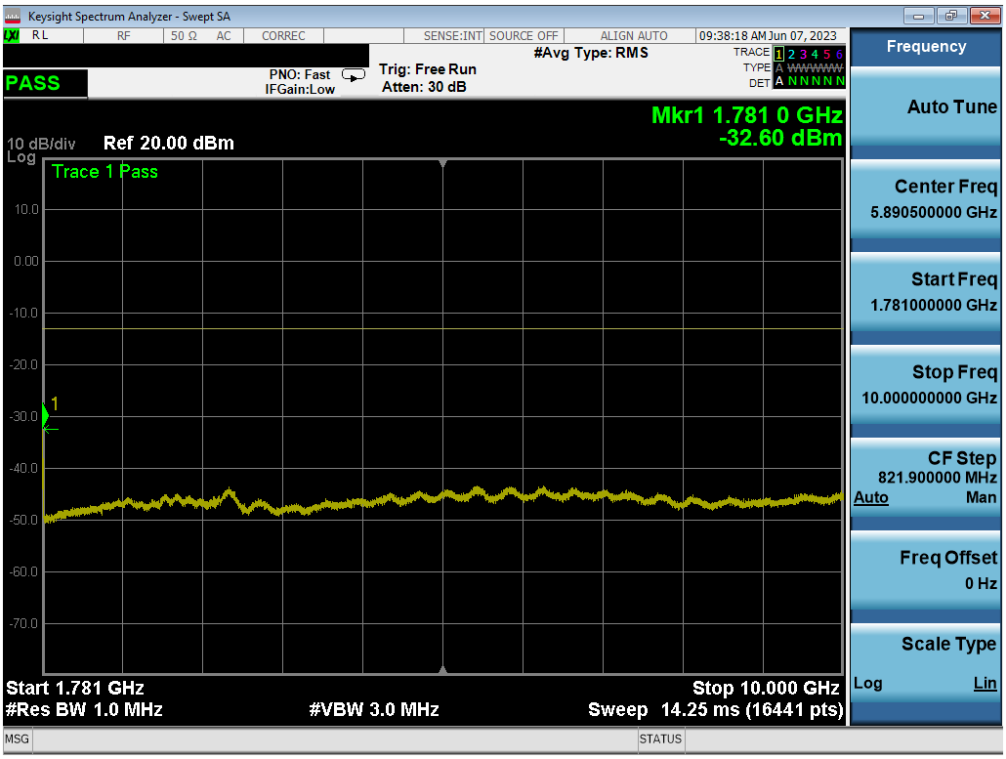
Plot 7-30. Conducted Spurious Plot (LTE Band 66/4 - 20MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



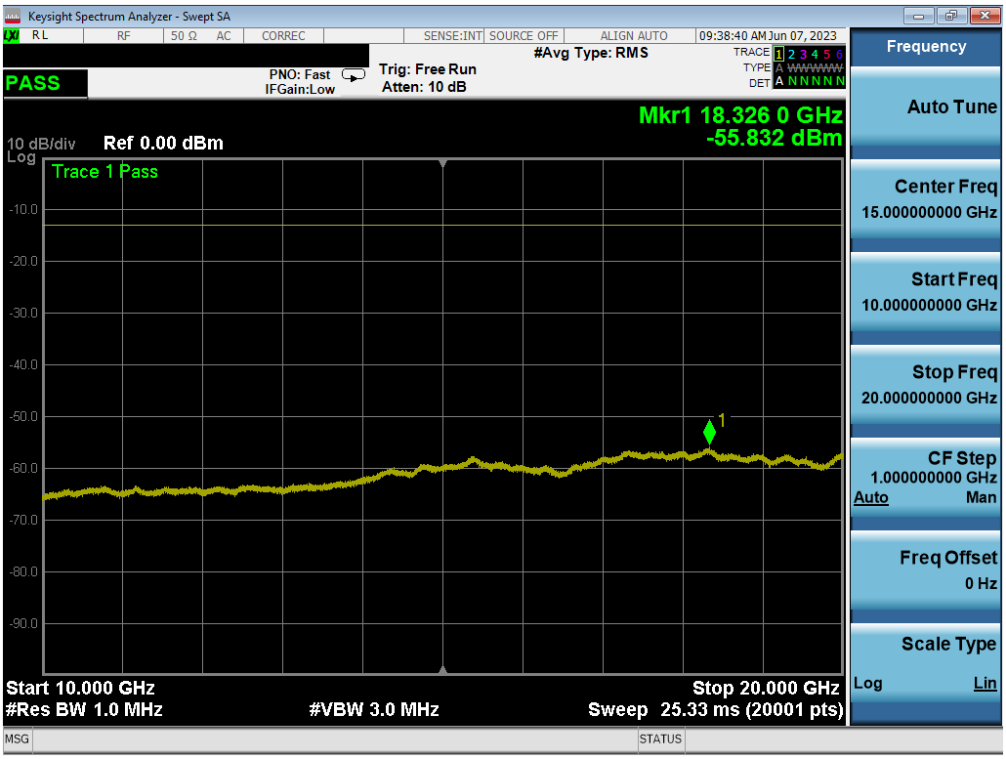
Plot 7-31. Conducted Spurious Plot (LTE Band 66/4 - 20MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



Plot 7-32. Conducted Spurious Plot (LTE Band 66/4 - 20MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

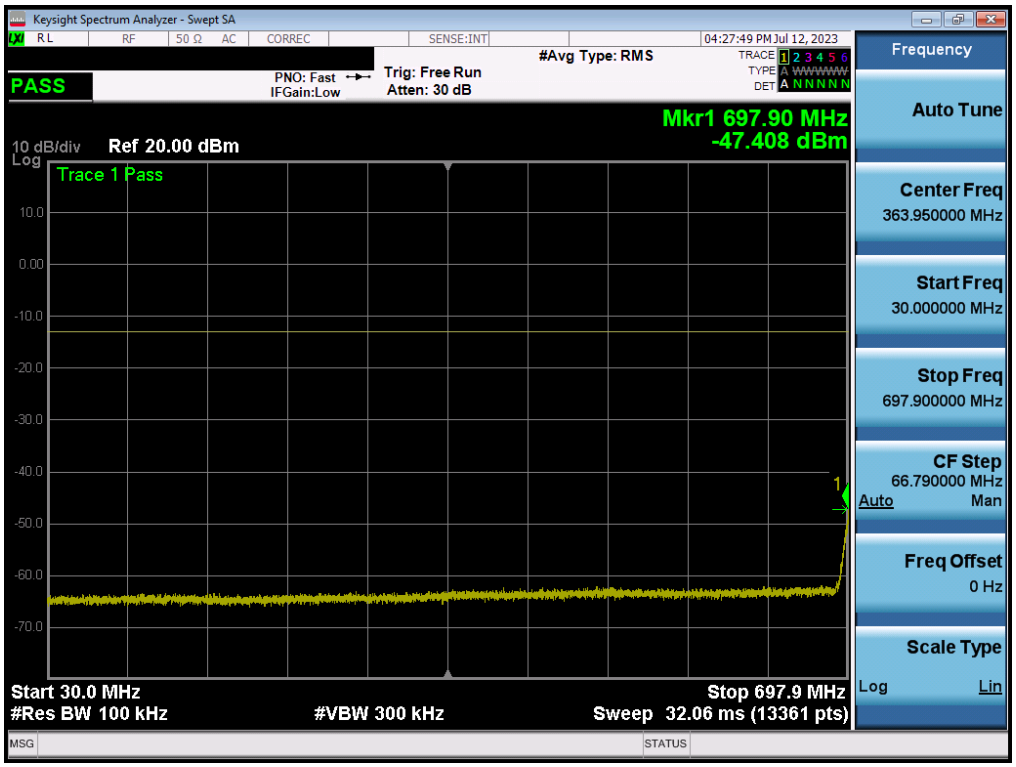


Plot 7-33. Conducted Spurious Plot (LTE Band 66/4 - 20MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

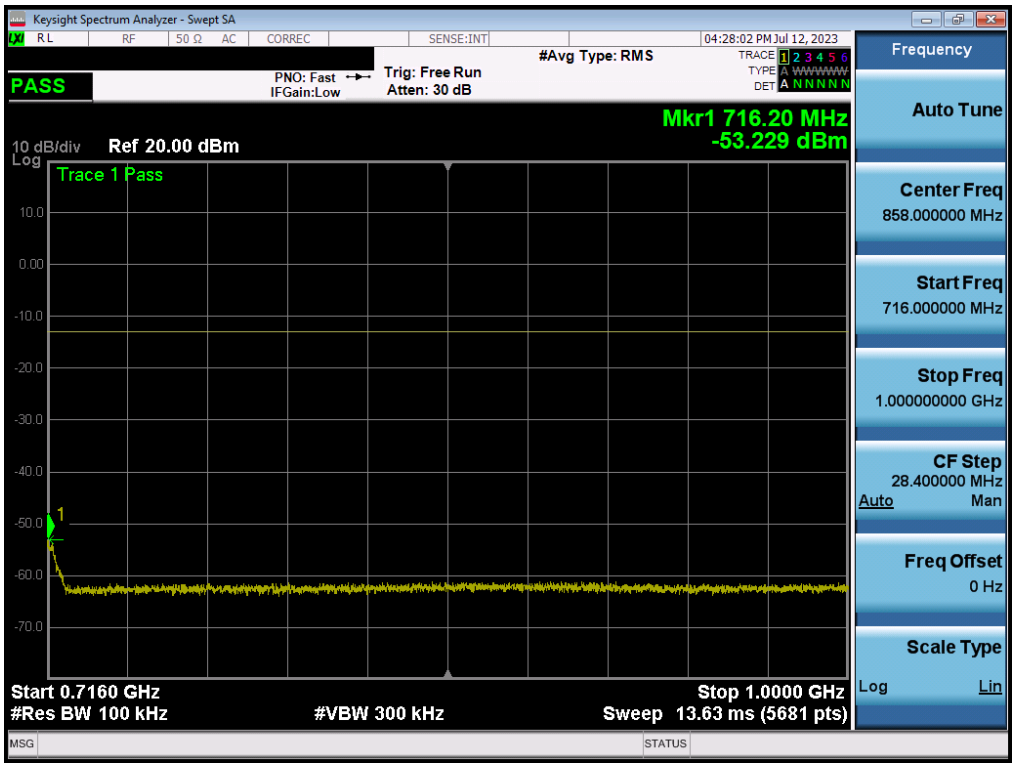


Plot 7-34. Conducted Spurious Plot (LTE Band 66/4 - 20MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

LTE Band 12/17

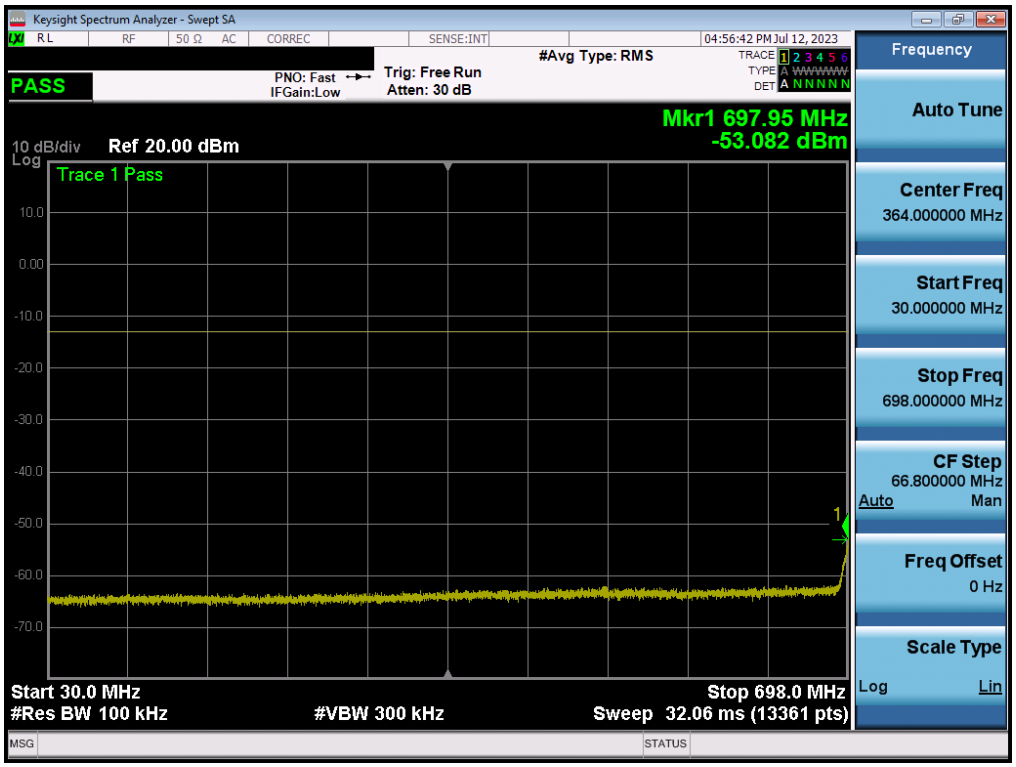


Plot 7-35. Conducted Spurious Plot (LTE Band 12/17 - 10MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

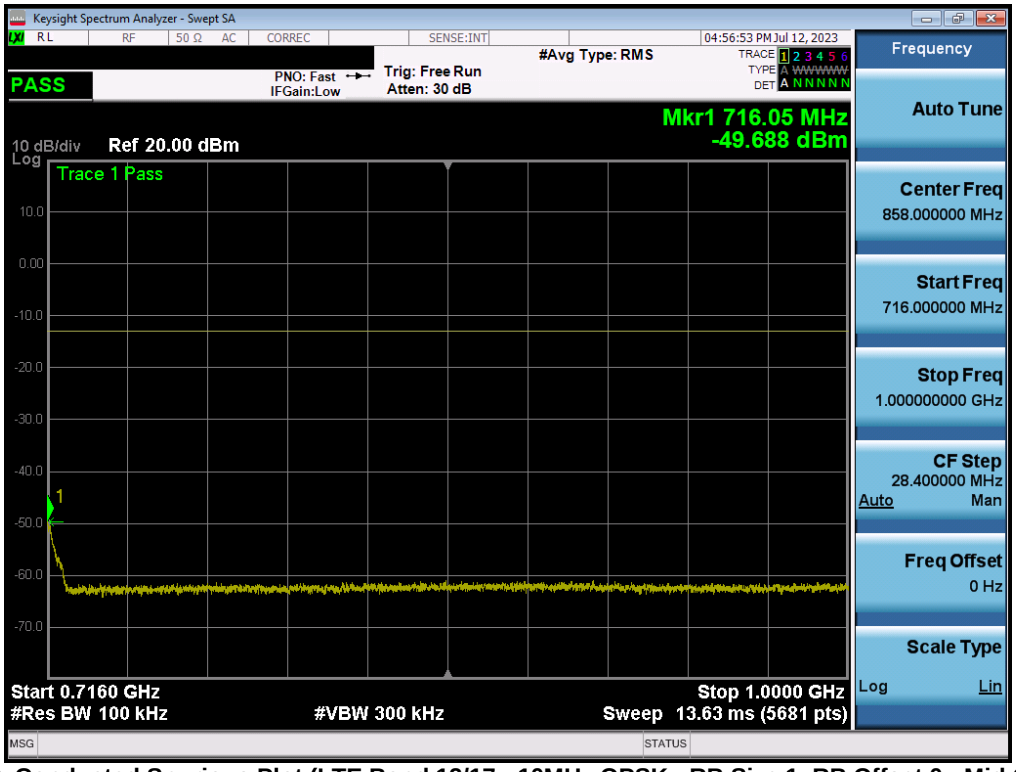


Plot 7-36. Conducted Spurious Plot (LTE Band 12/17 - 10MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

Plot 7-37. Conducted Spurious Plot (LTE Band 12/17 - 10MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

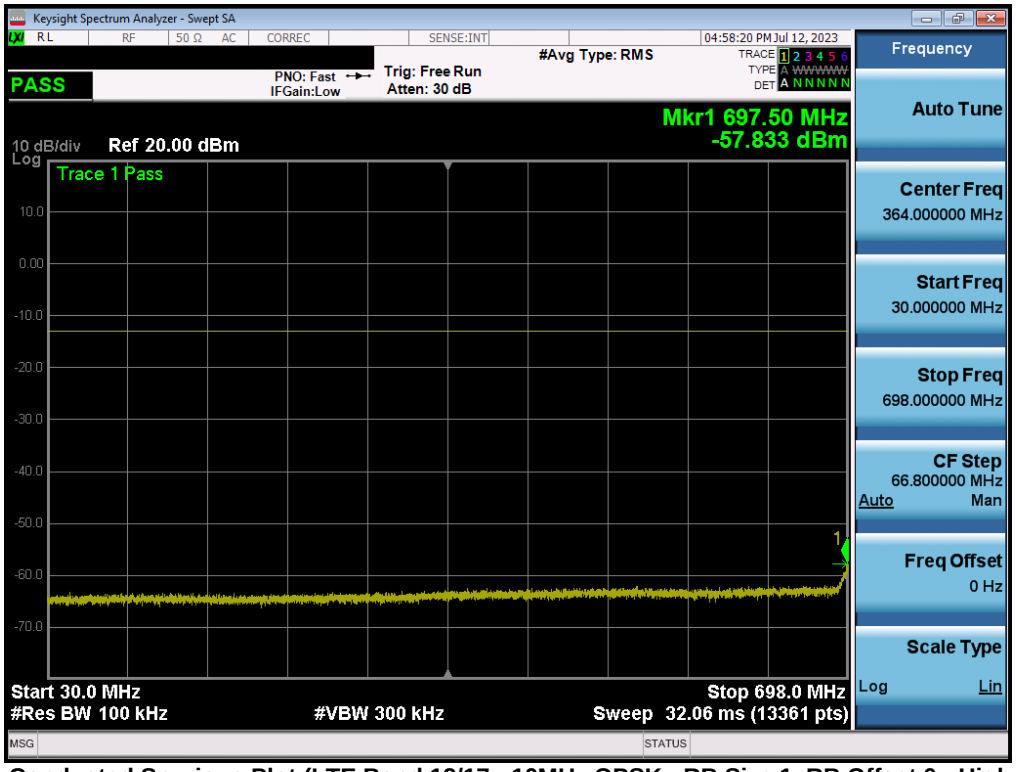


Plot 7-38. Conducted Spurious Plot (LTE Band 12/17 - 10MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

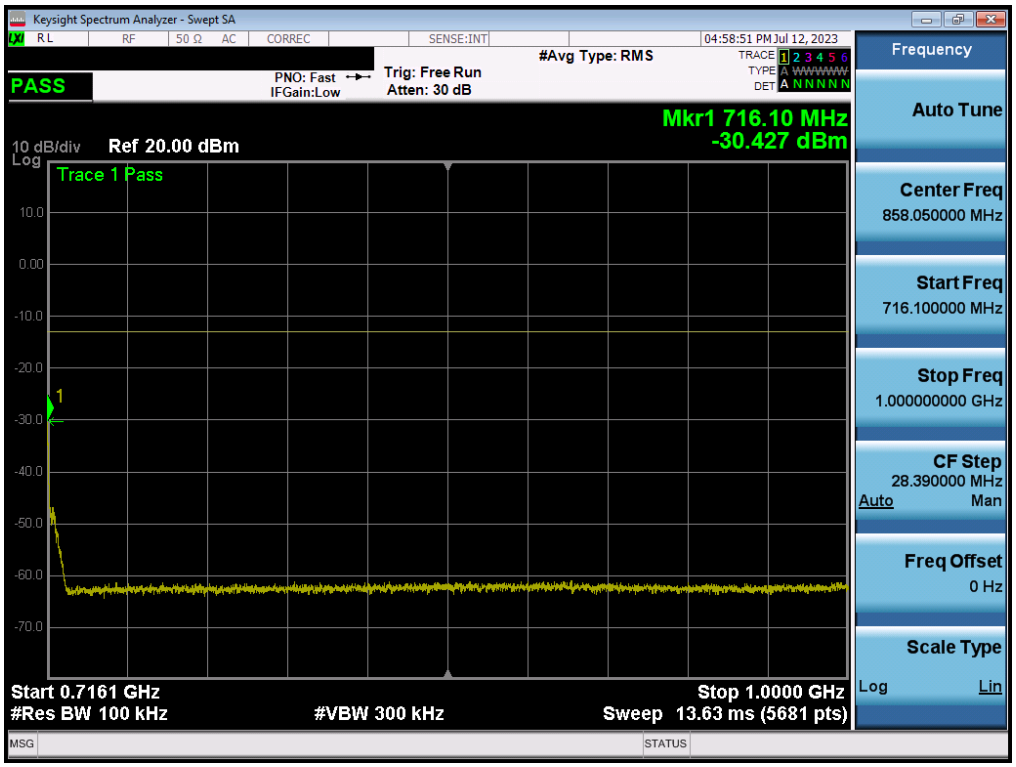


Plot 7-39. Conducted Spurious Plot (LTE Band 12/17 - 10MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

Plot 7-40. Conducted Spurious Plot (LTE Band 12/17 - 10MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



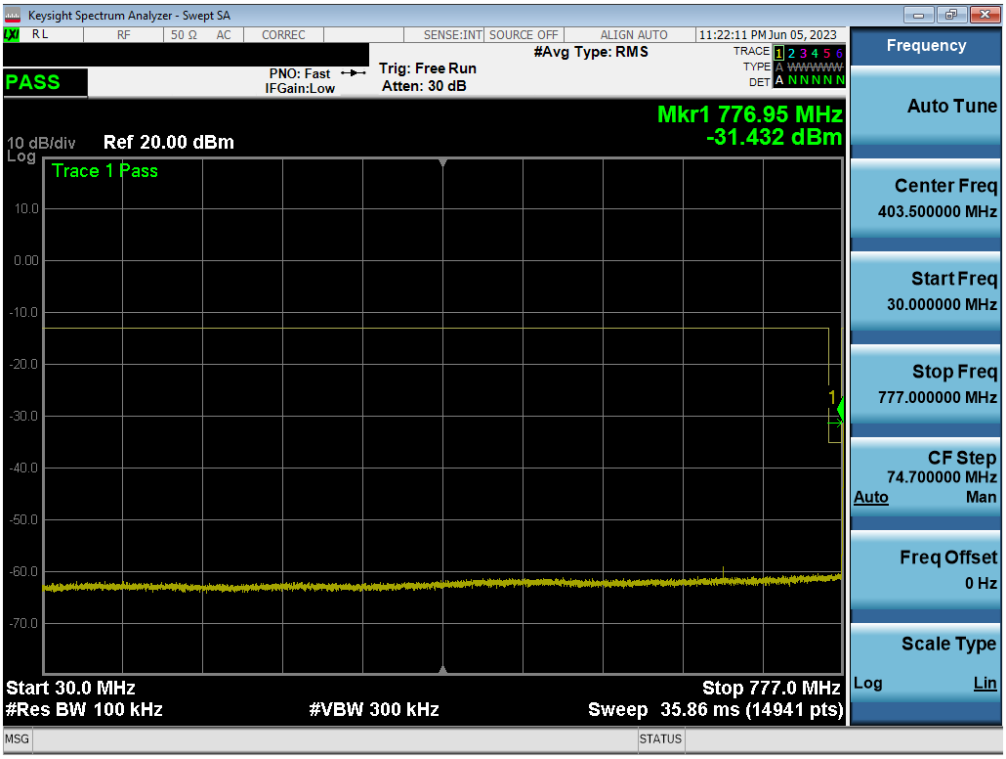
Plot 7-41. Conducted Spurious Plot (LTE Band 12/17 - 10MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



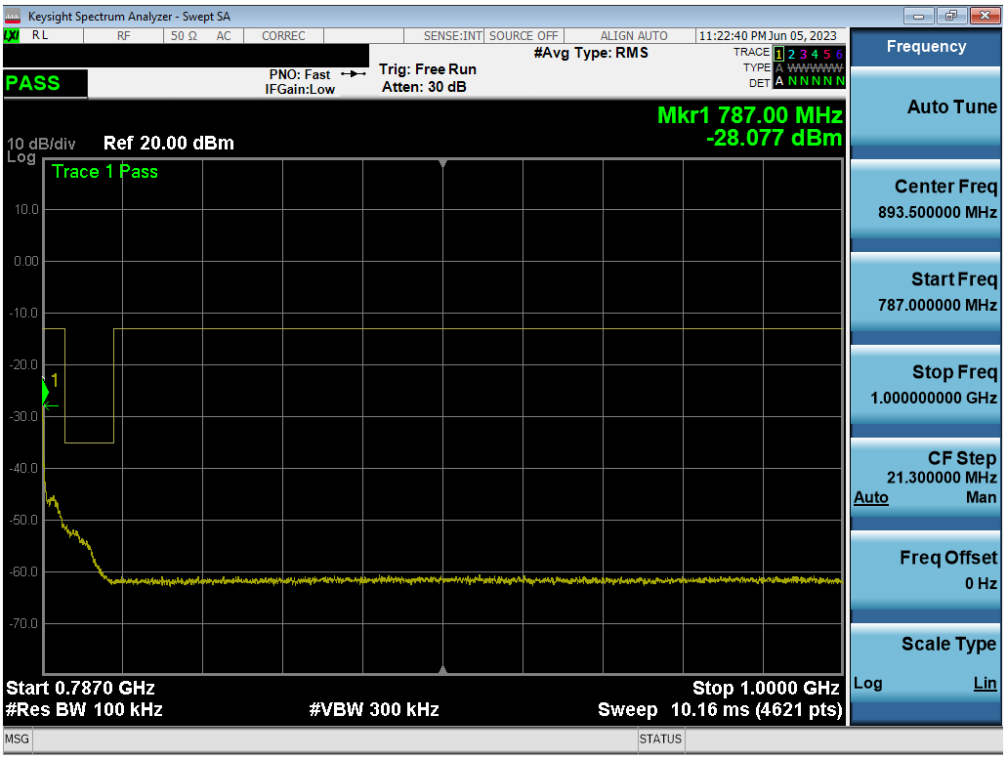
Plot 7-42. Conducted Spurious Plot (LTE Band 12/17 - 10MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

Plot 7-43. Conducted Spurious Plot (LTE Band 12/17 - 10MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

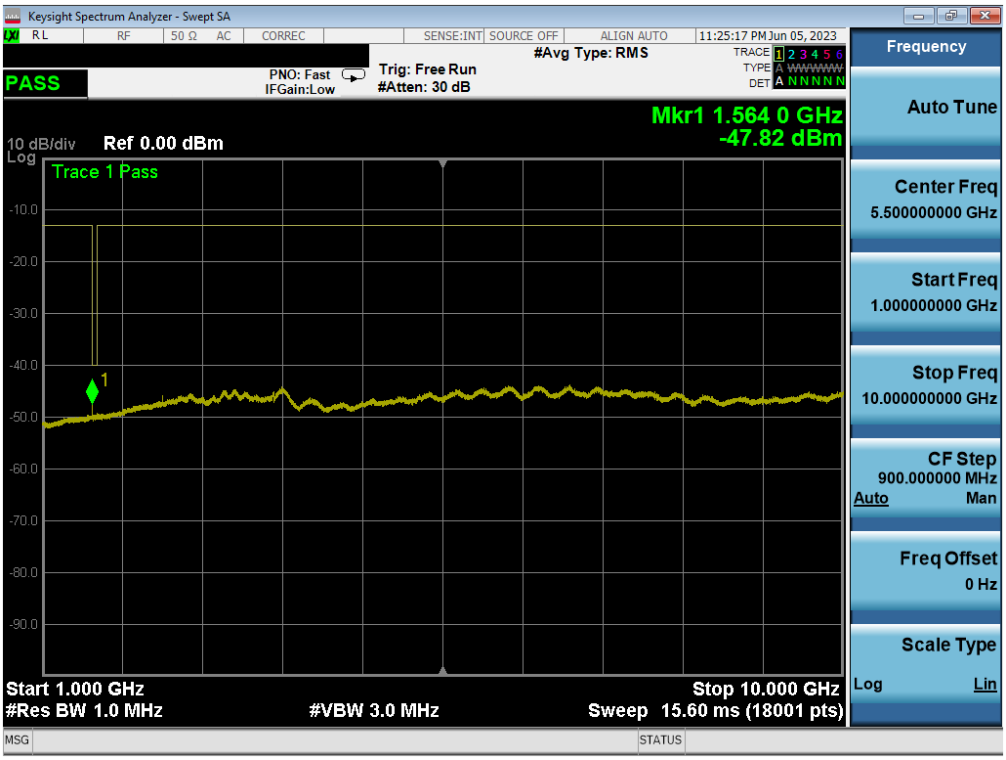
LTE Band 13



Plot 7-44. Conducted Spurious Plot (LTE Band 13 - 10MHz QPSK - RB Size 1, RB Offset 0)

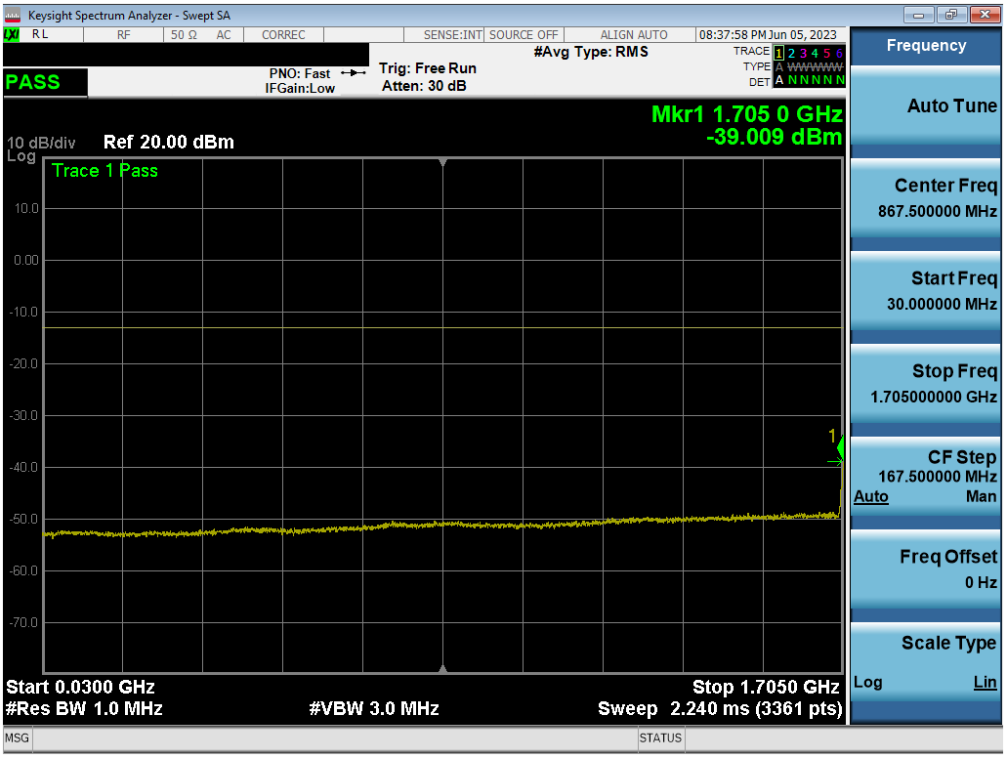


Plot 7-45. Conducted Spurious Plot (LTE Band 13 - 10MHz QPSK - RB Size 1, RB Offset 0)

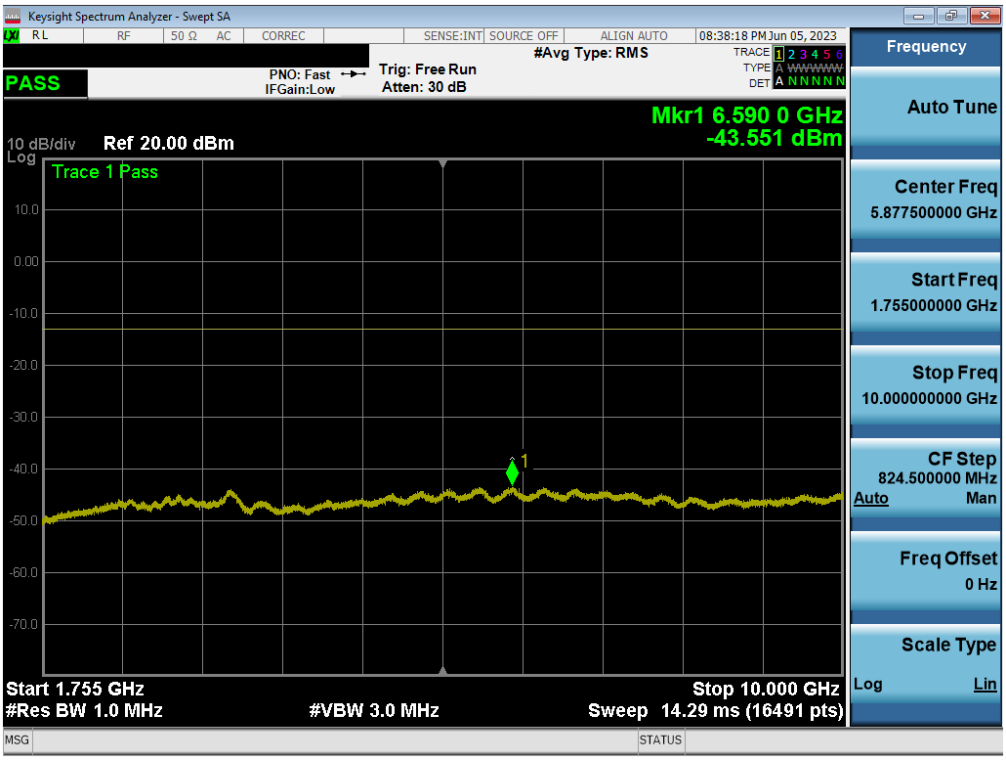


Plot 7-46. Conducted Spurious Plot (LTE Band 13 - 10MHz QPSK - RB Size 1, RB Offset 0)

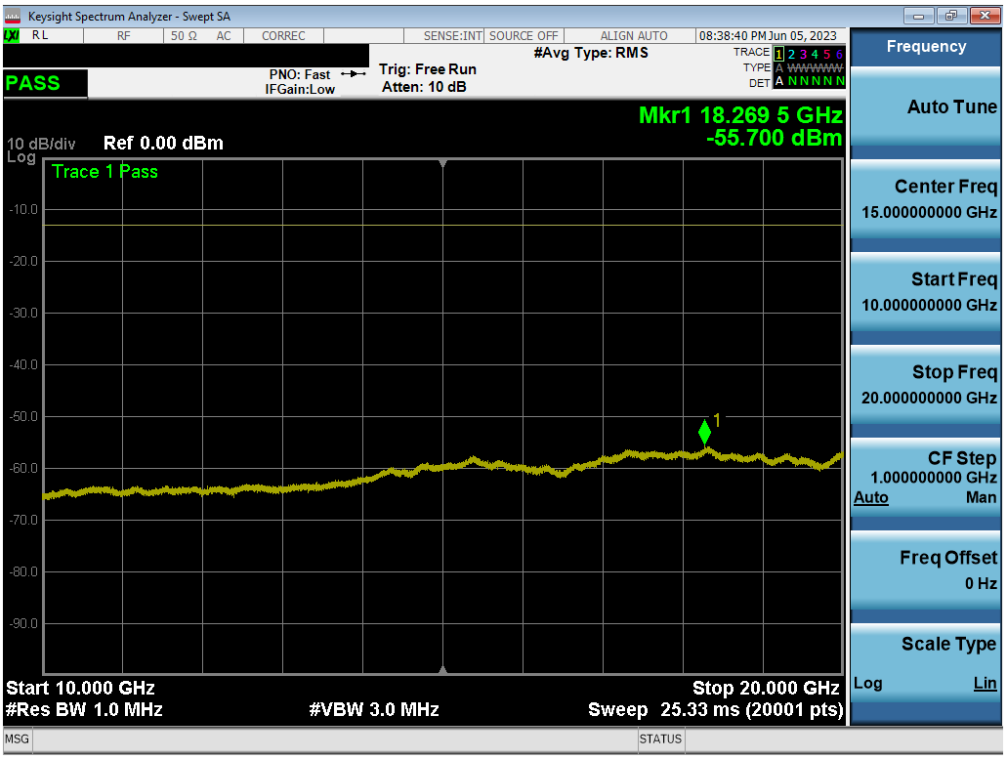
WCDMA AWS



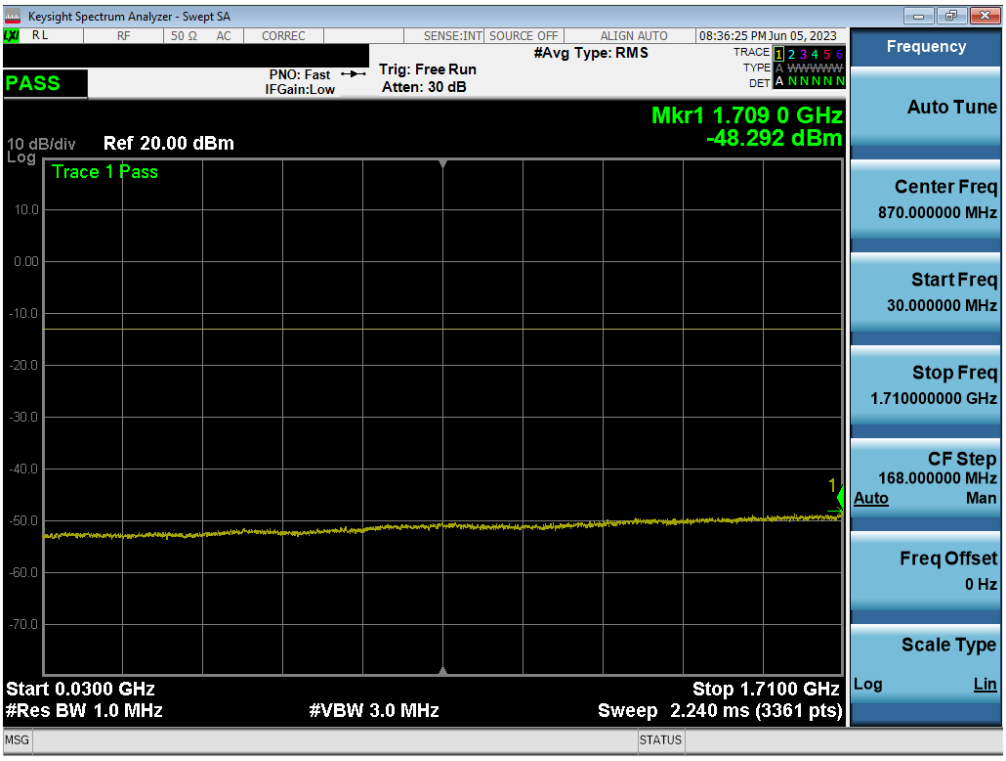
Plot 7-47. Conducted Spurious Plot (WCDMA Ch. 1312- Low Channel)



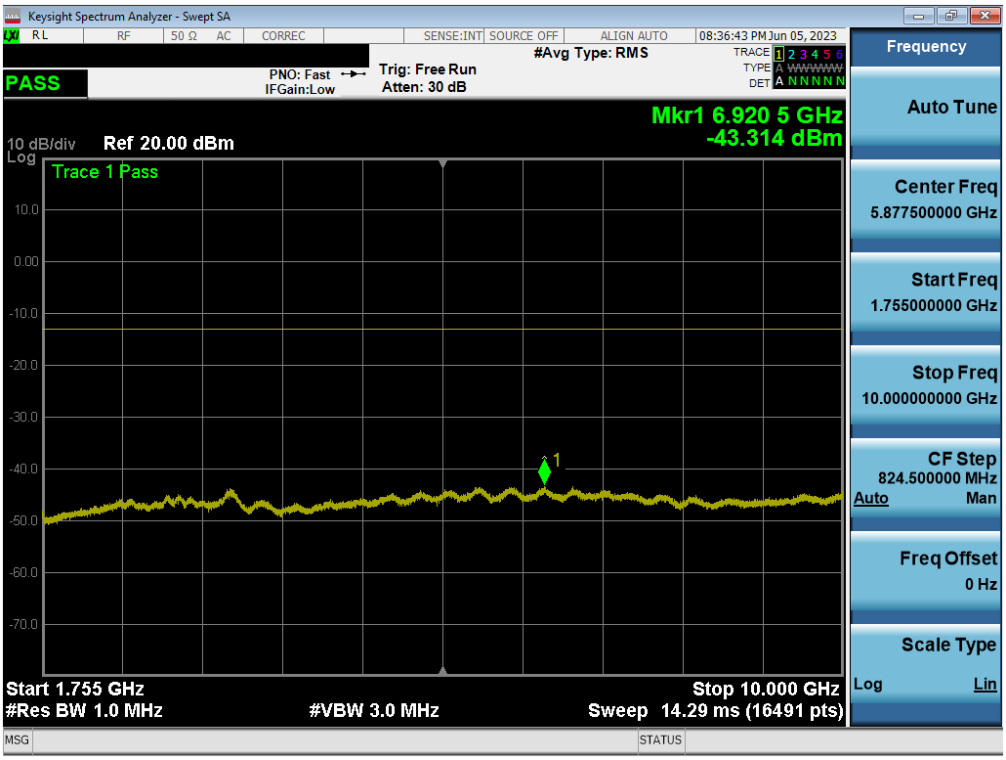
Plot 7-48. Conducted Spurious Plot (WCDMA Ch. 1312- Low Channel)



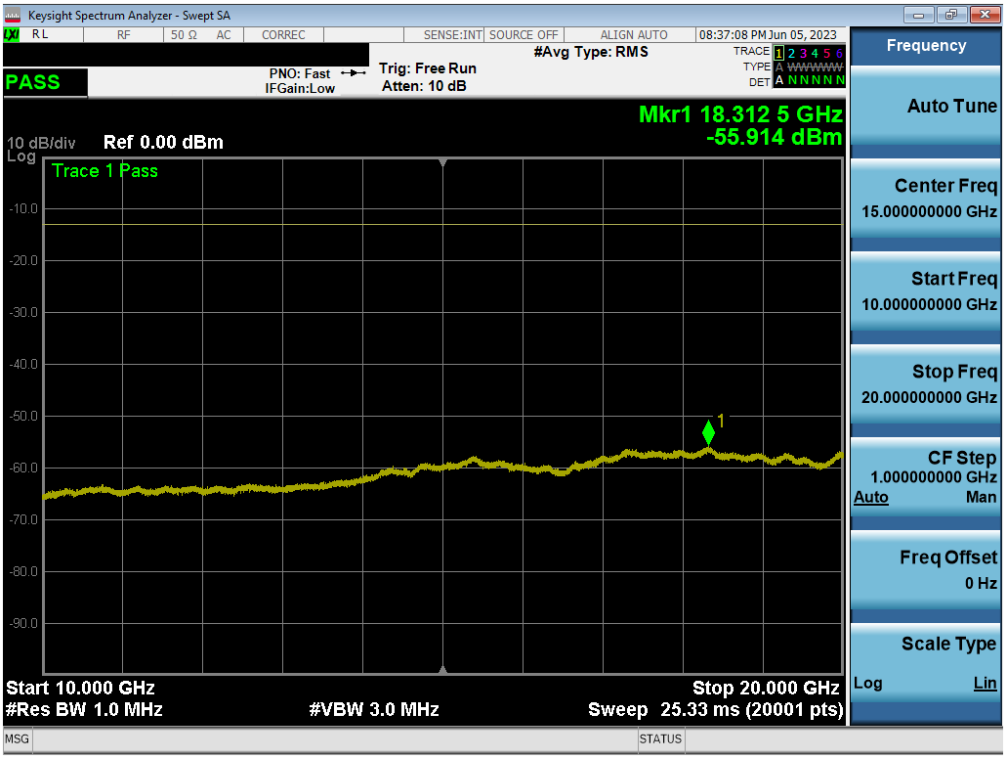
Plot 7-49. Conducted Spurious Plot (WCDMA Ch. 1312- Low Channel)



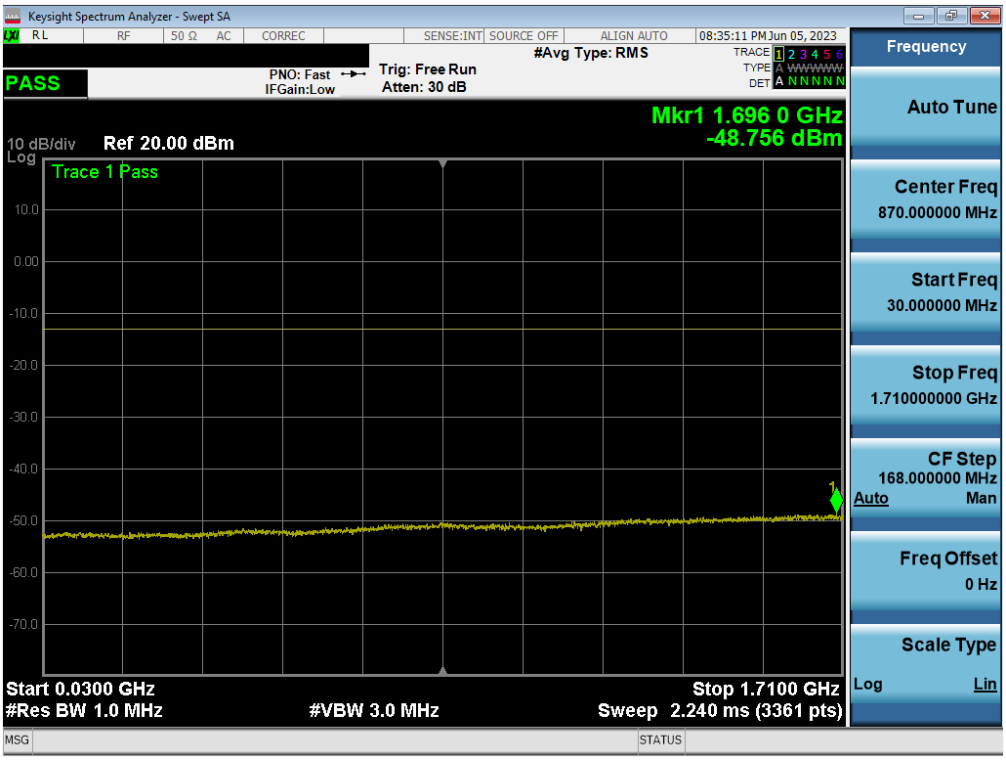
Plot 7-50. Conducted Spurious Plot (WCDMA Ch. 1413- Mid Channel)



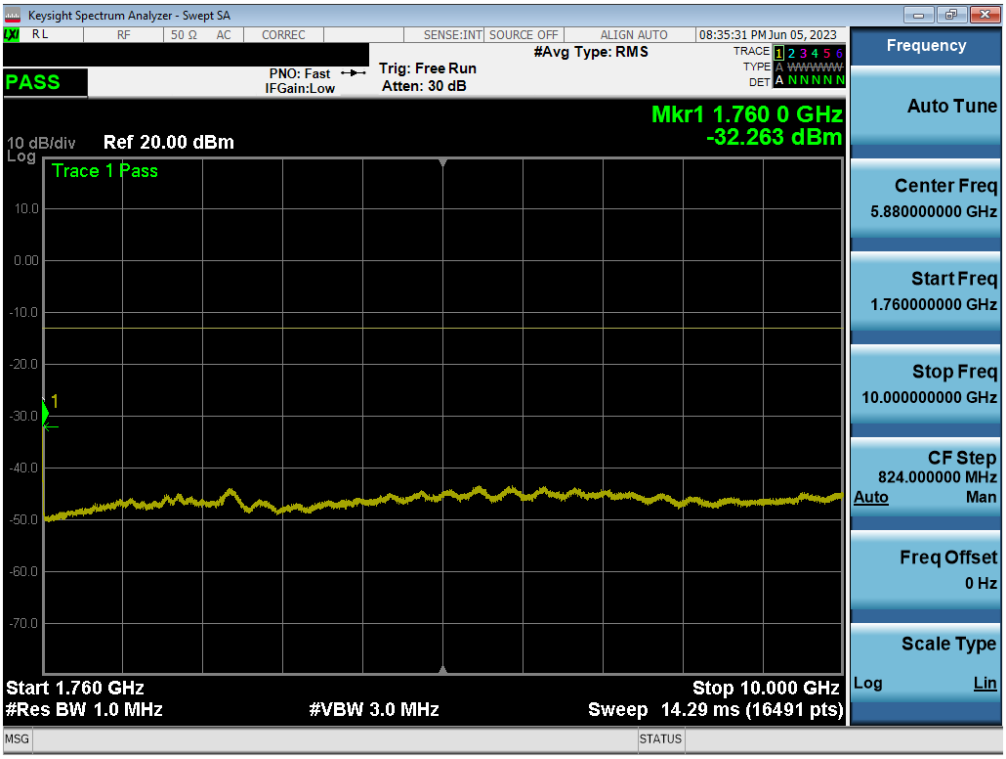
Plot 7-51. Conducted Spurious Plot (WCDMA Ch. 1413- Mid Channel)



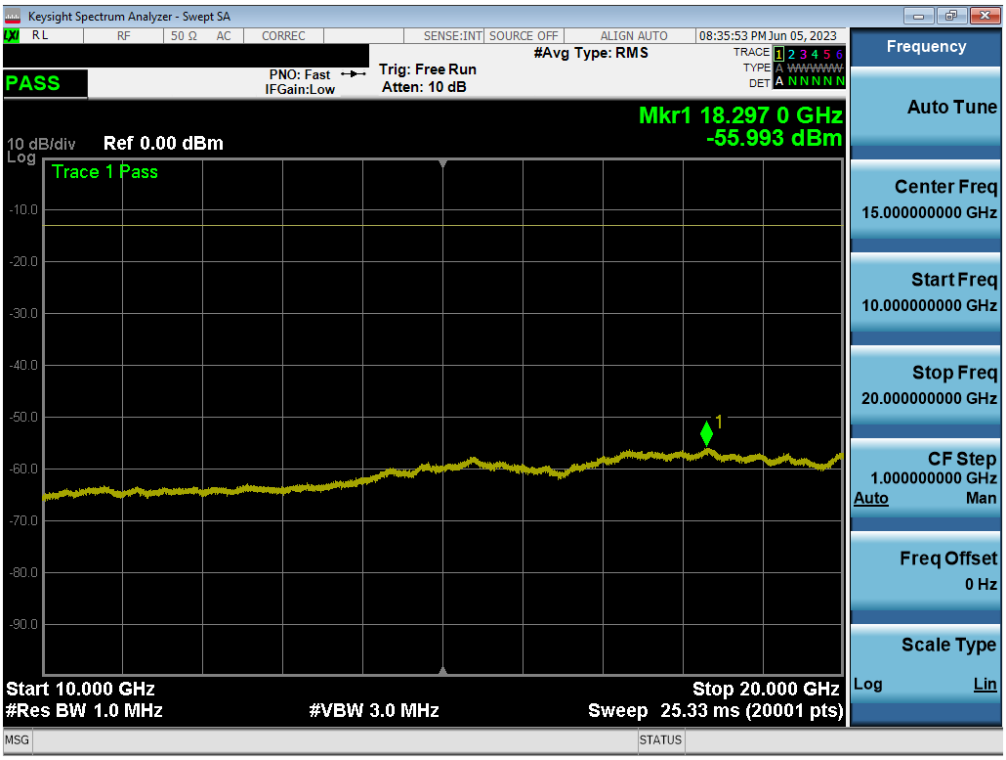
Plot 7-52. Conducted Spurious Plot (WCDMA Ch. 1413- Mid Channel)



Plot 7-53. Conducted Spurious Plot (WCDMA Ch. 1513- High Channel)



Plot 7-54. Conducted Spurious Plot (WCDMA Ch. 1513- High Channel)



Plot 7-55. Conducted Spurious Plot (WCDMA Ch. 1513- High Channel)

7.4 Band Edge Emissions at Antenna Terminal

§2.1051, §27.53

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. All ports were tested and only the worst case data was reported.

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

KDB 971168 D01 v03r01 – Section 6.0

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 ≥ 1% of the emission bandwidth
4. VBW ≥ 3 x RBW
5. Detector = RMS
6. Number of sweep points ≥ 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.

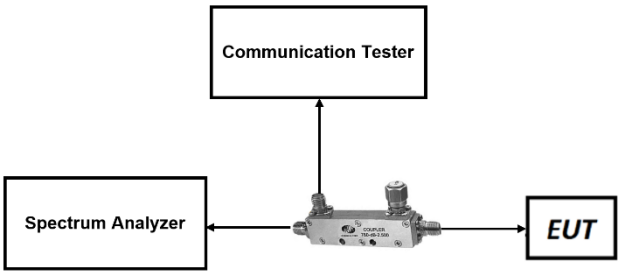


Figure 7-3. Test Instrument & Measurement Setup

Test Notes

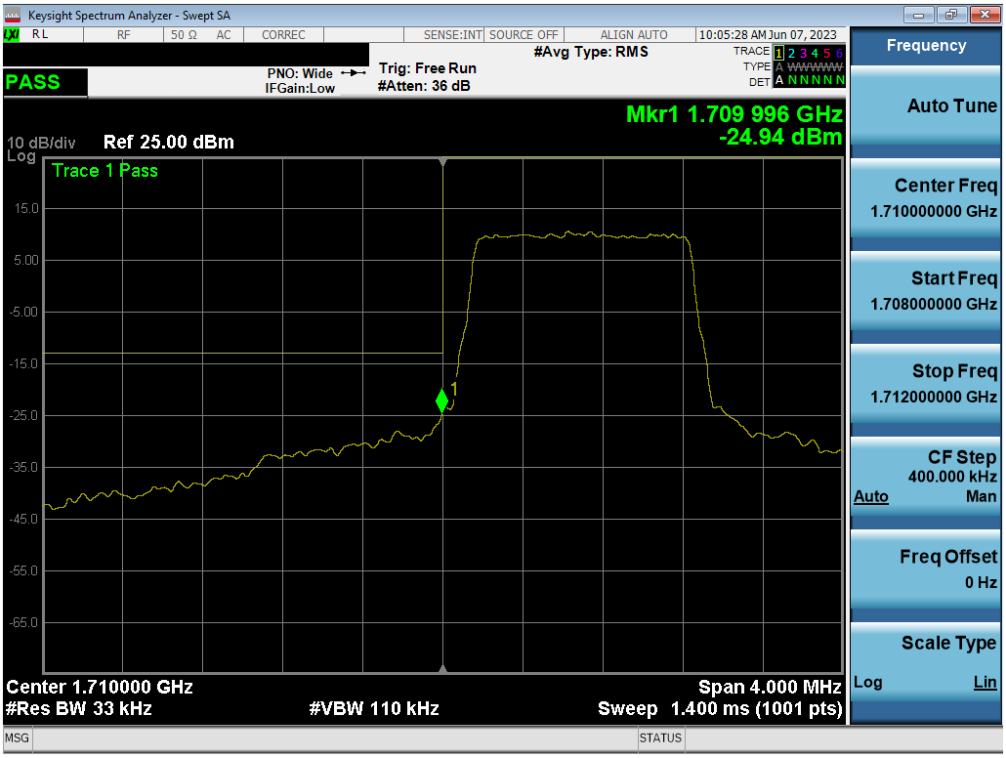
1. Per 27.53(h) in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to demonstrate compliance with the out-of-band emissions limit. The emission 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 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.

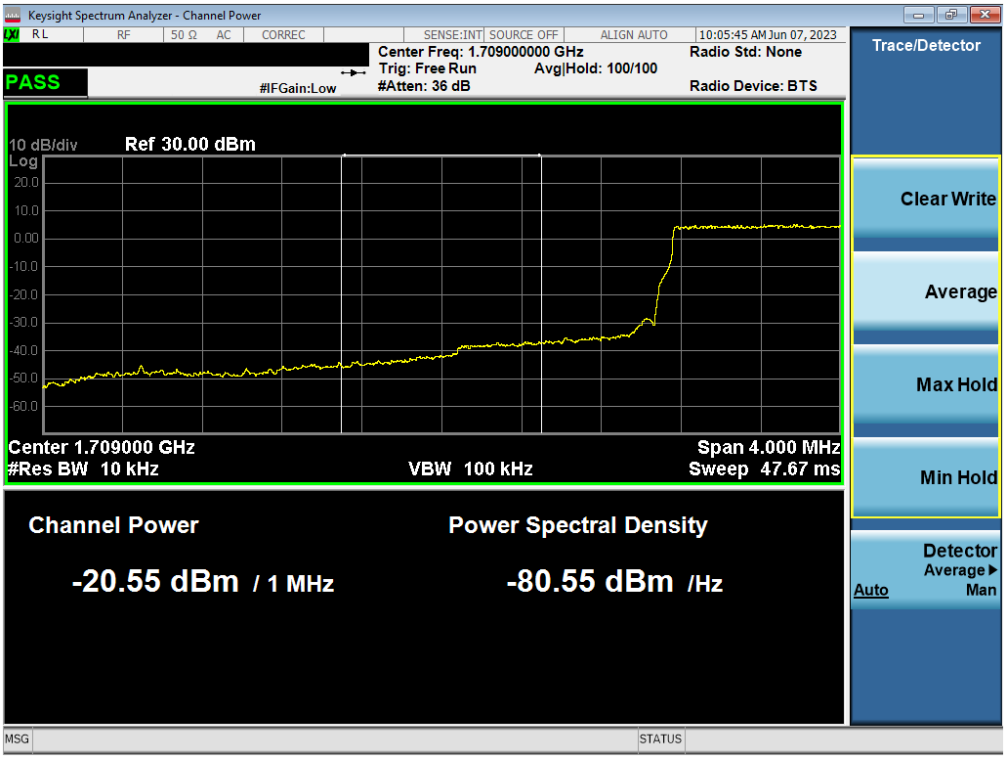
3. Per 27.53(c)(5) for operations in the 776-788 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

4. For all plots showing emissions in the 763 – 775MHz and 793 – 805MHz band, the FCC limit per 27.53(c)(4) is $65 + 10 \log_{10}(P) = -35$dBm in a 6.25kHz bandwidth.

LTE Band 66

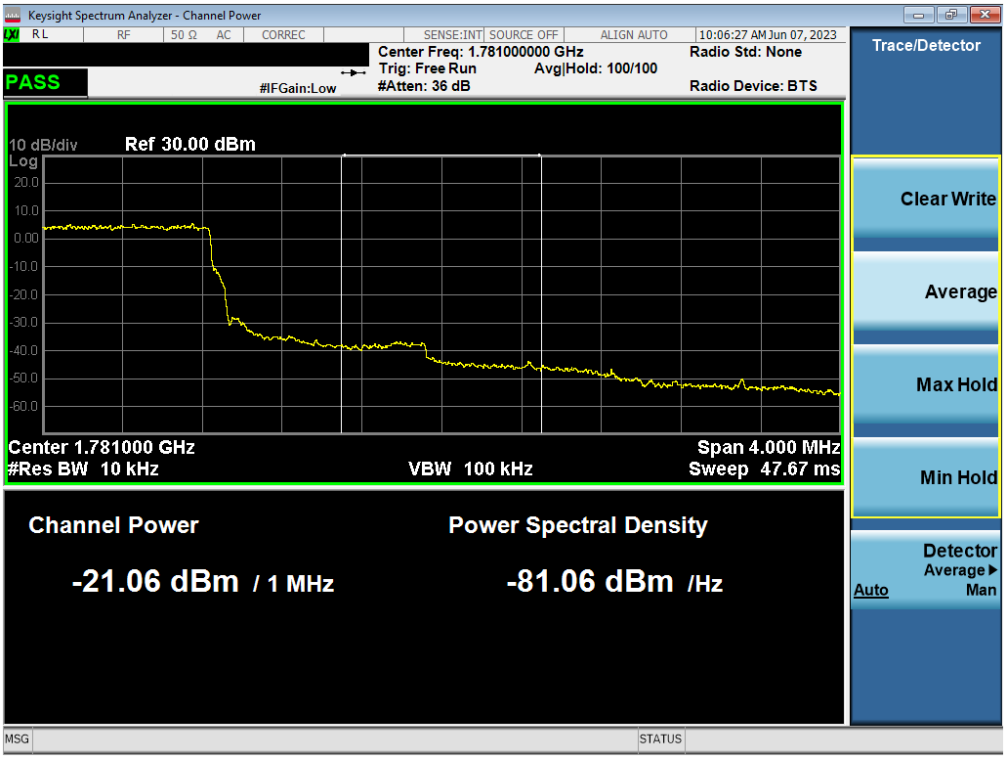


Plot 7-56. Lower Band Edge Plot (LTE Band 66 – 1.4MHz QPSK – Full RB)

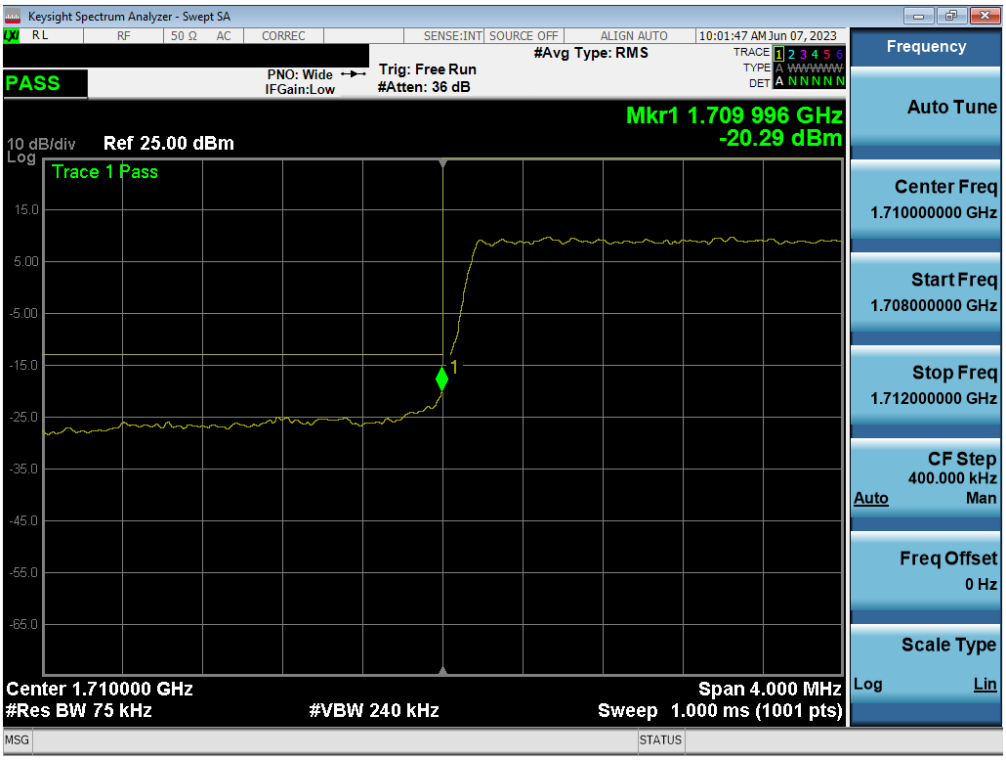


Plot 7-57. Lower Extended Band Edge Plot (LTE Band 66 – 1.4MHz QPSK – Full RB)

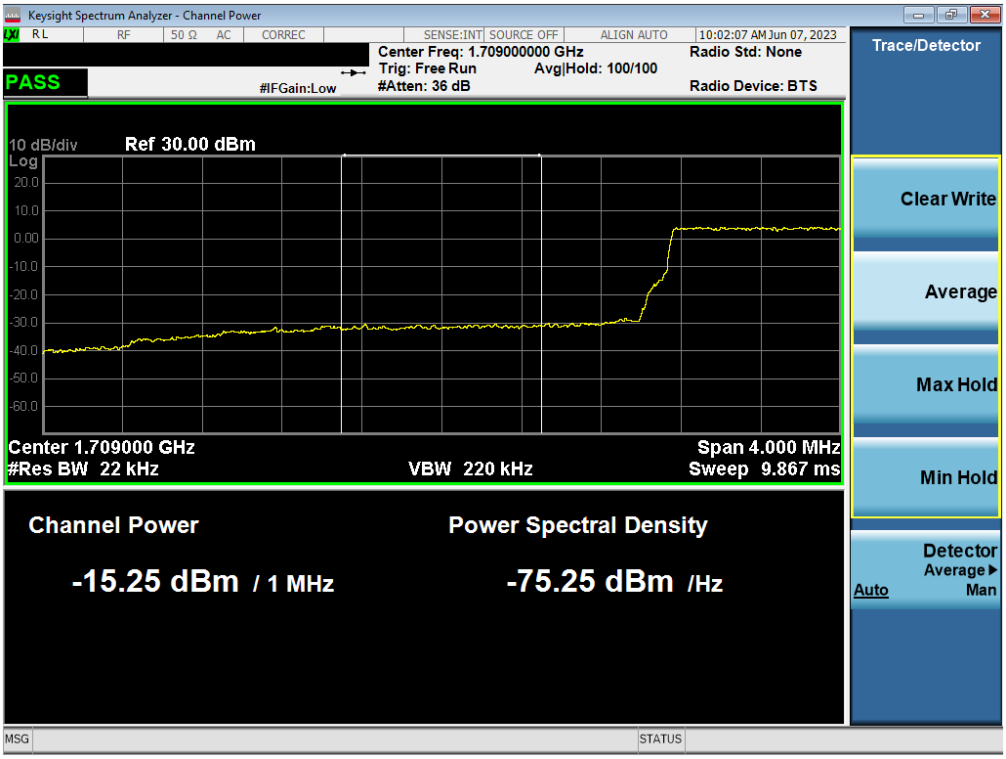
Plot 7-58. Upper Band Edge Plot (LTE Band 66 – 1.4MHz QPSK – Full RB)



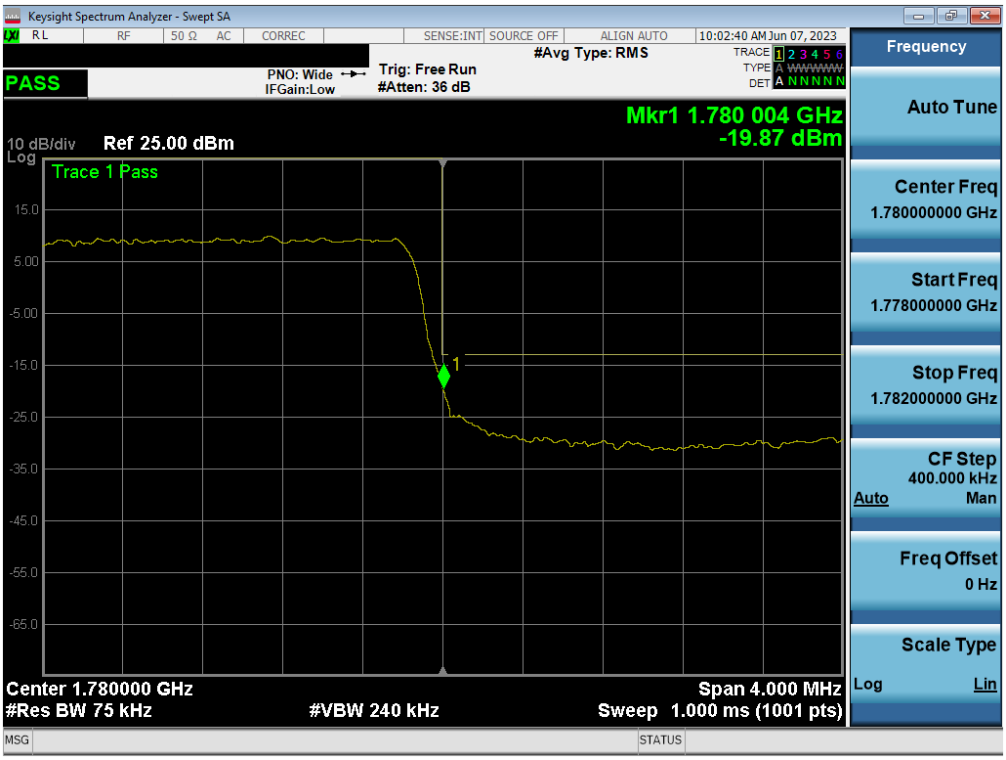
Plot 7-59. Upper Extended Band Edge Plot (LTE Band 66 – 1.4MHz QPSK – Full RB)



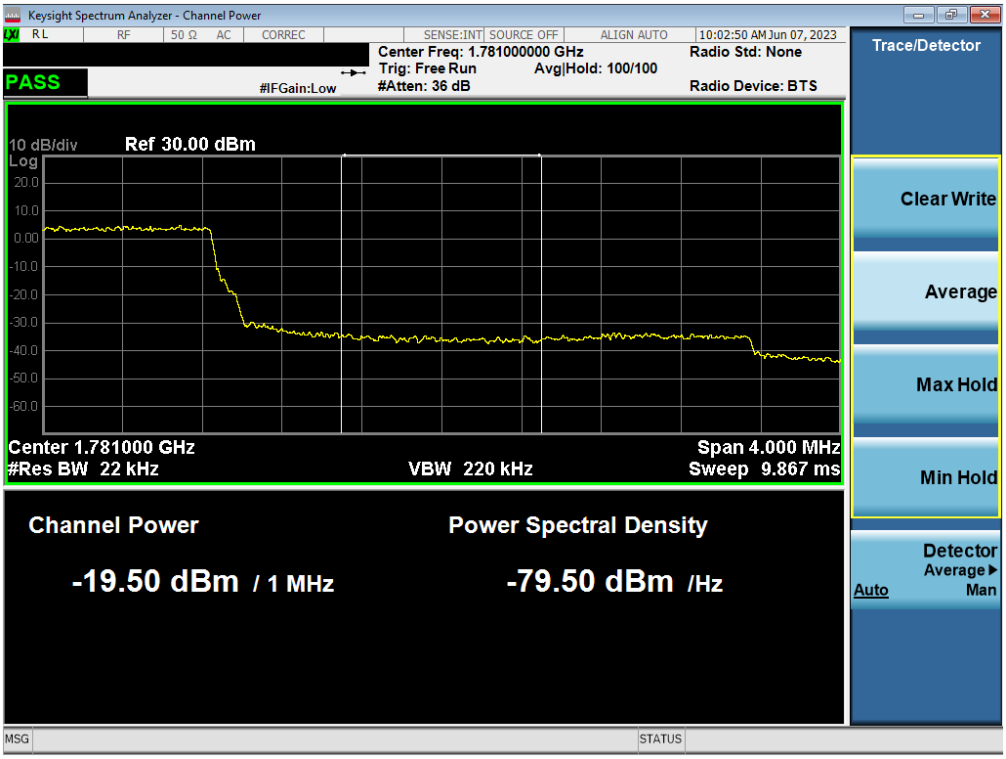
Plot 7-60. Lower Band Edge Plot (LTE Band 66 - 3MHz QPSK – Full RB)



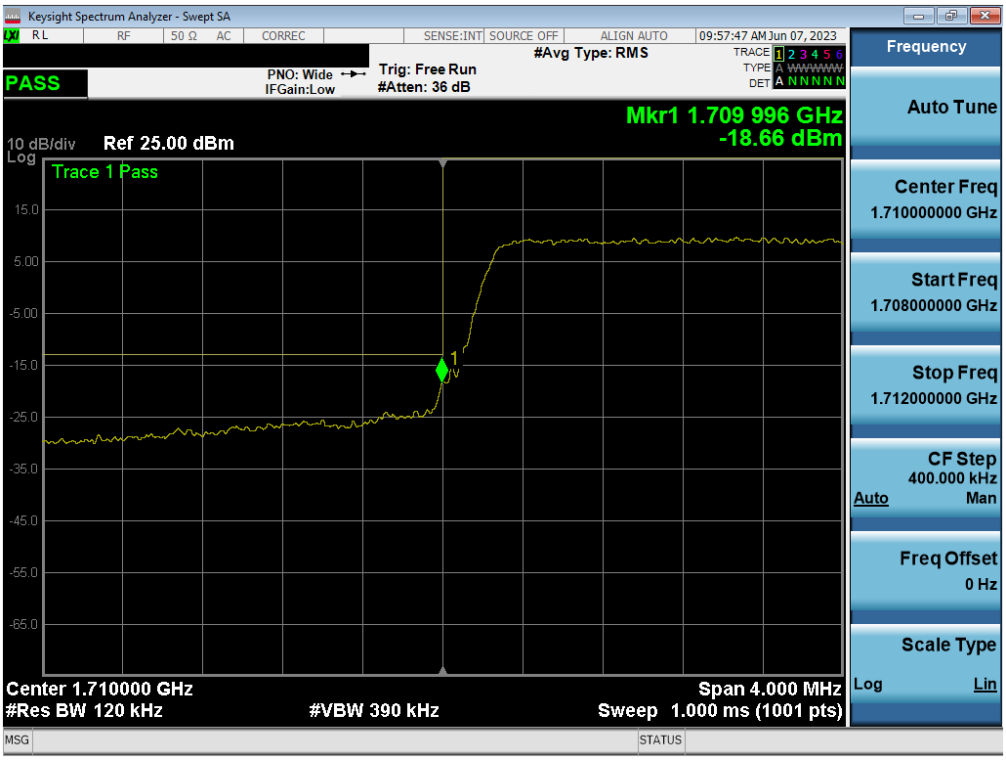
Plot 7-61. Lower Extended Band Edge Plot (LTE Band 66 - 3MHz QPSK – Full RB)



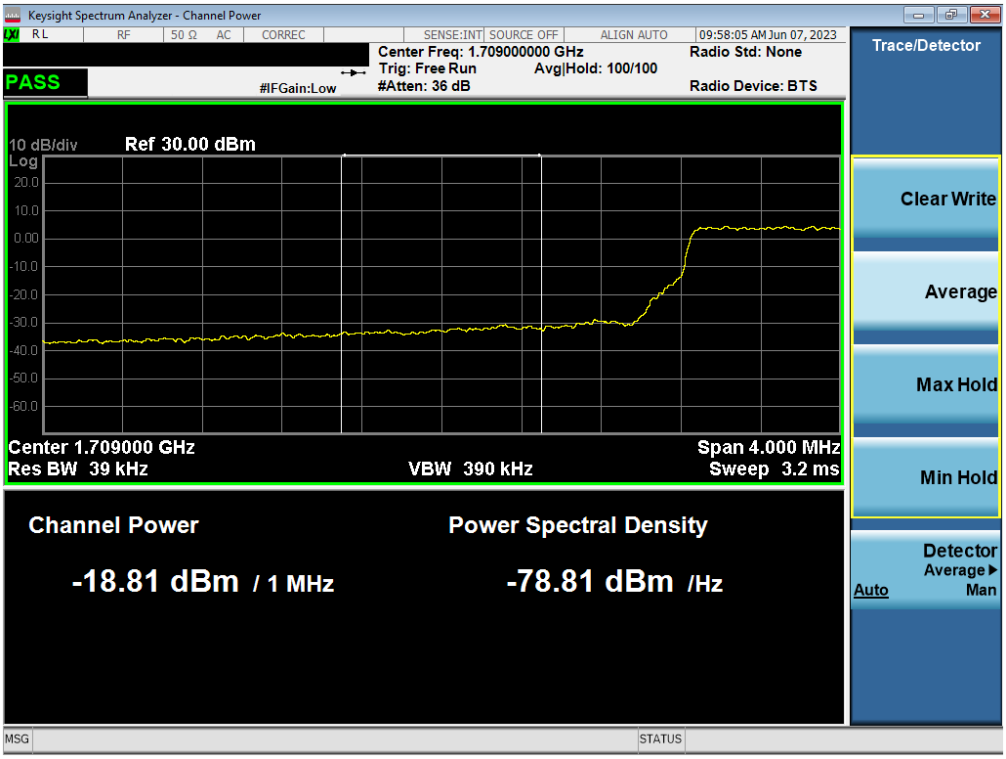
Plot 7-62. Upper Band Edge Plot (LTE Band 66 - 3MHz QPSK – Full RB)



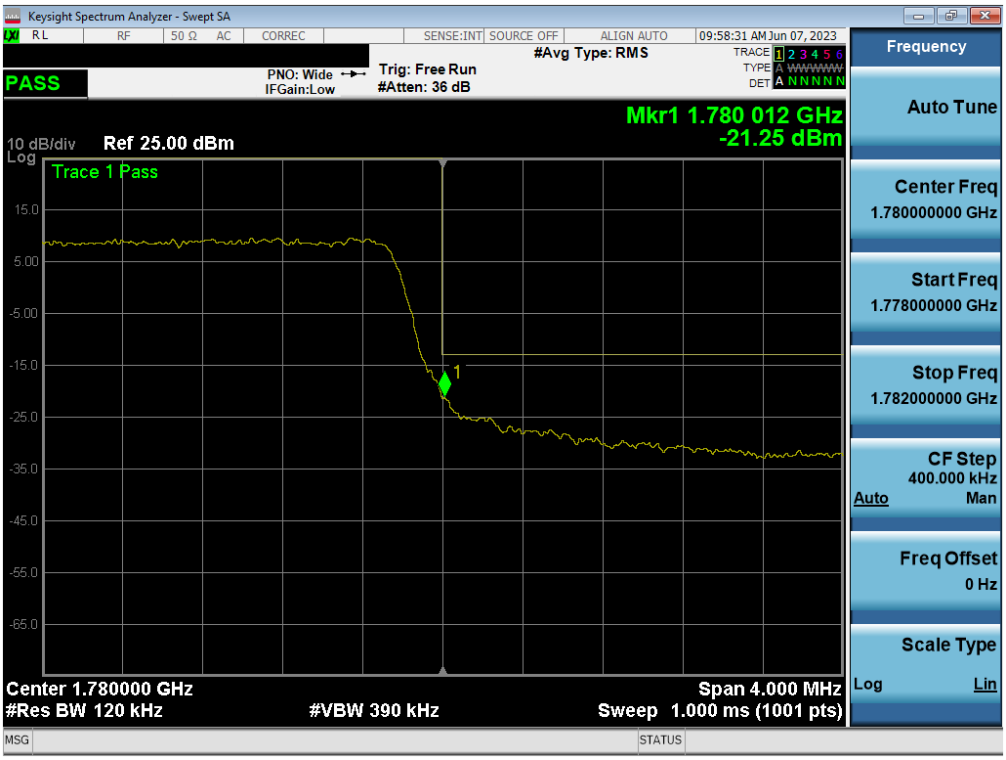
Plot 7-63. Upper Extended Band Edge Plot (LTE Band 66 - 3MHz QPSK – Full RB)



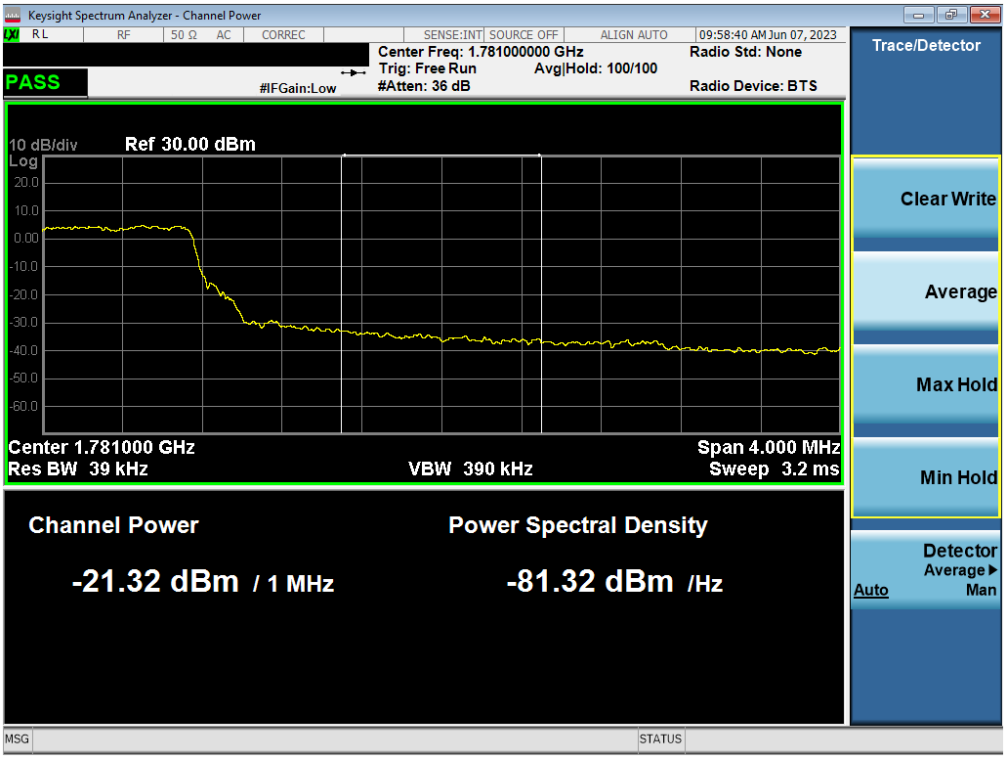
Plot 7-64. Lower Band Edge Plot (LTE Band 66 - 5MHz QPSK – Full RB)



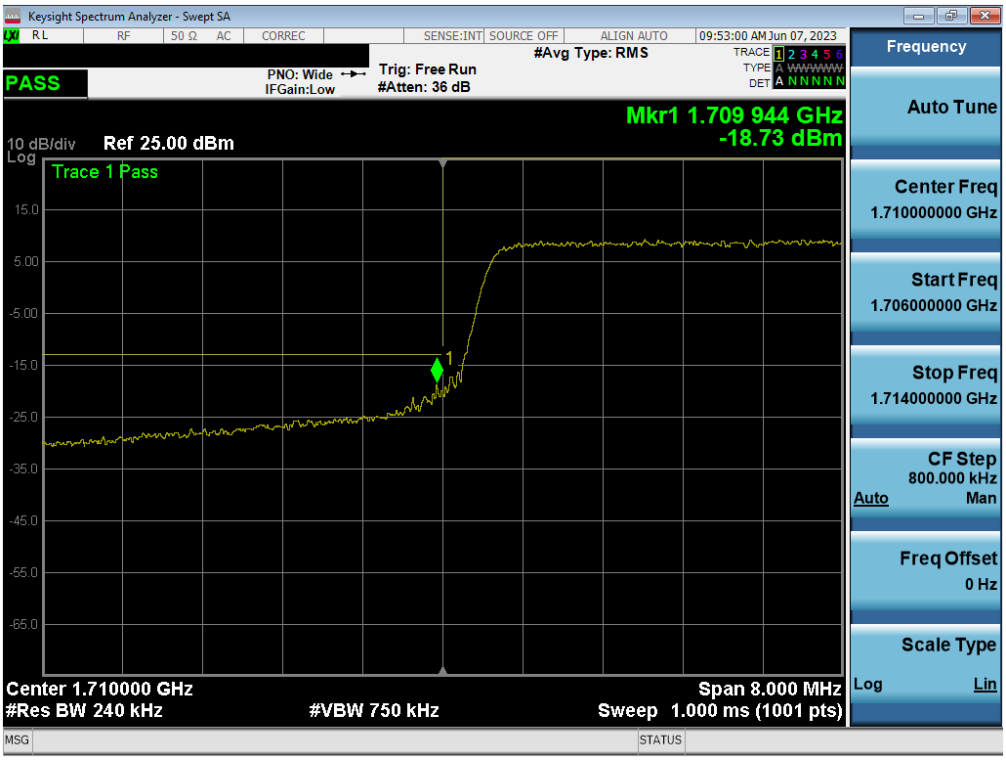
Plot 7-65. Lower Extended Band Edge Plot (LTE Band 66 - 5MHz QPSK – Full RB)



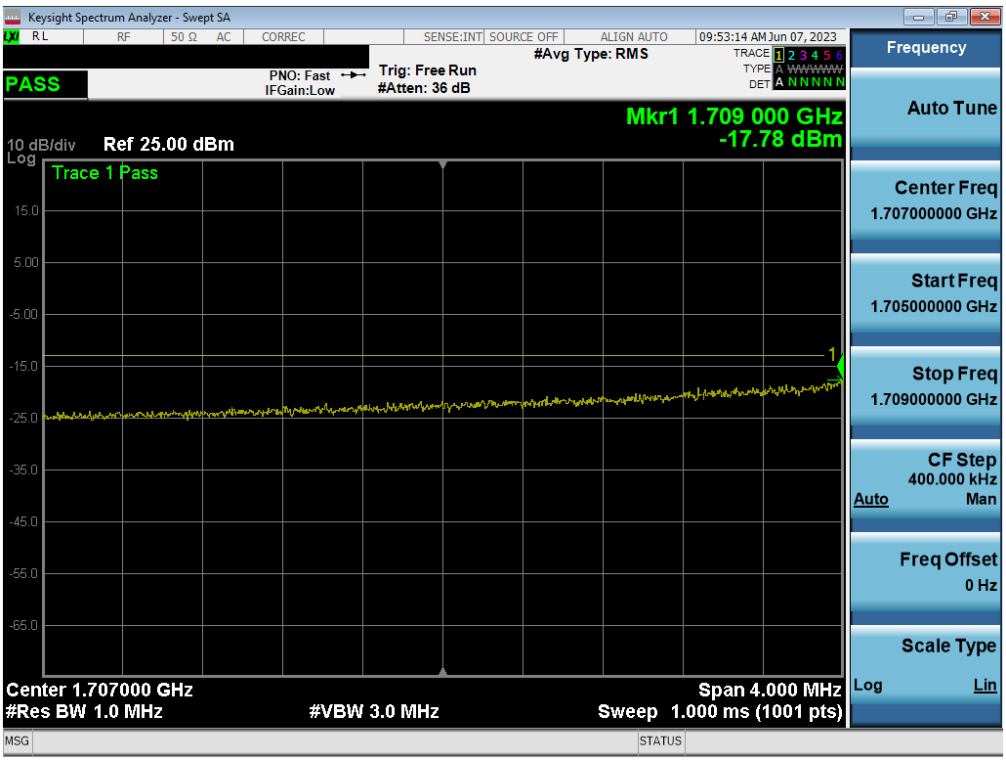
Plot 7-66. Upper Band Edge Plot (LTE Band 66 - 5MHz QPSK – Full RB)



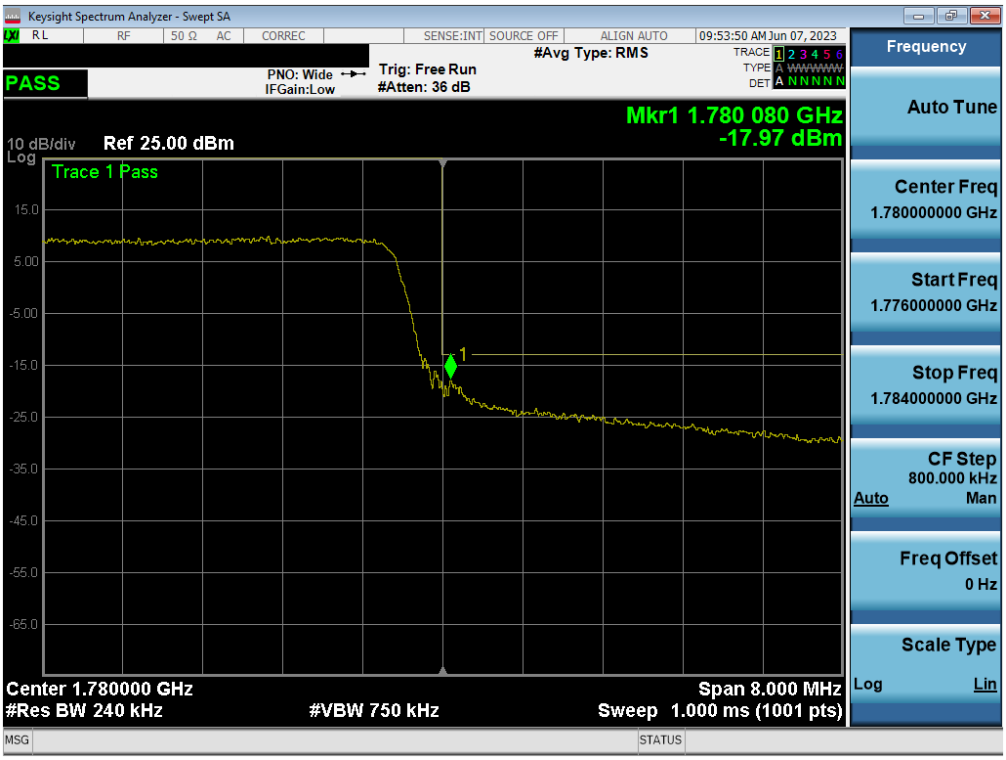
Plot 7-67. Upper Extended Band Edge Plot (LTE Band 66 - 5MHz QPSK – Full RB)



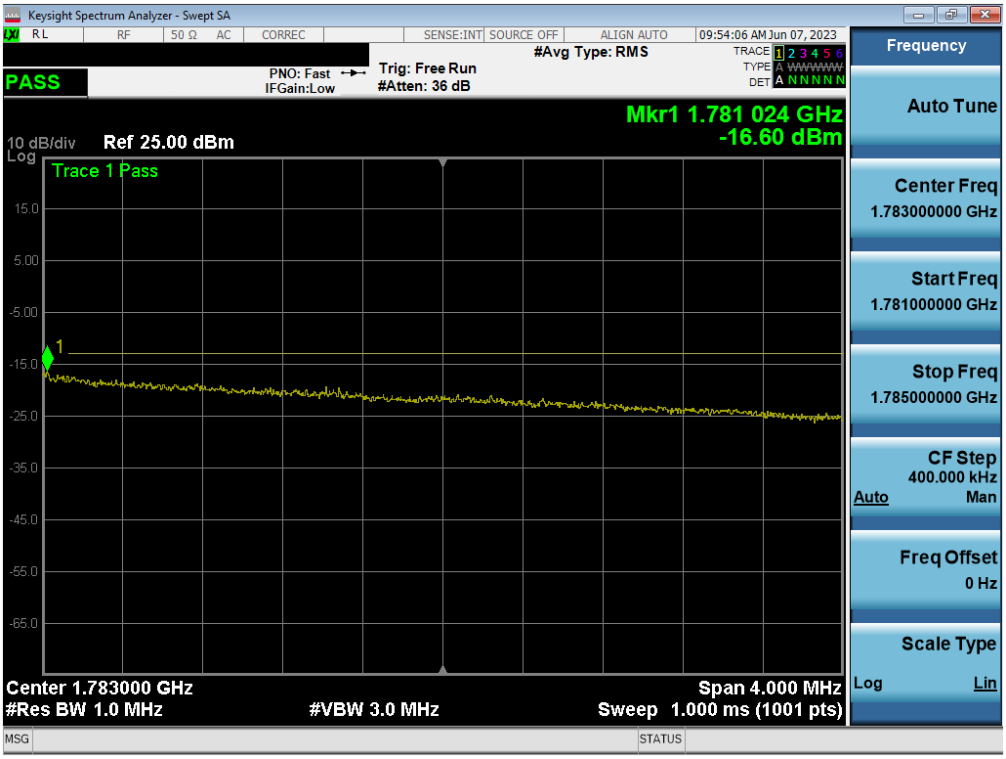
Plot 7-68. Lower Band Edge Plot (LTE Band 66 - 10MHz QPSK – Full RB)



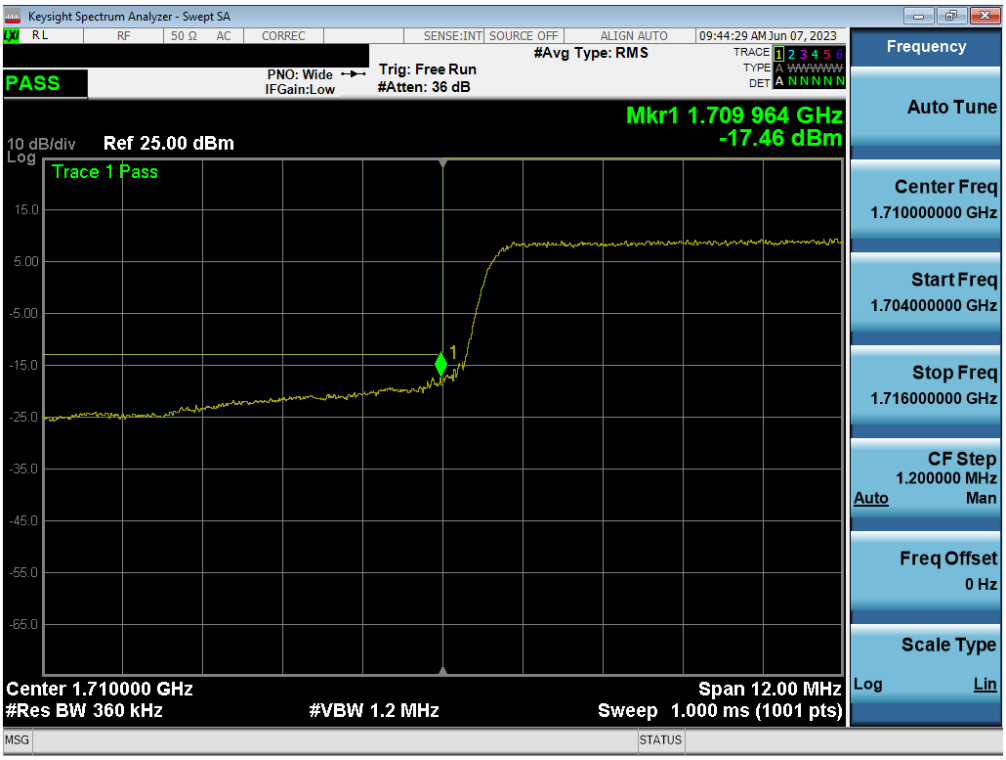
Plot 7-69. Lower Extended Band Edge Plot (LTE Band 66 - 10MHz QPSK – Full RB)



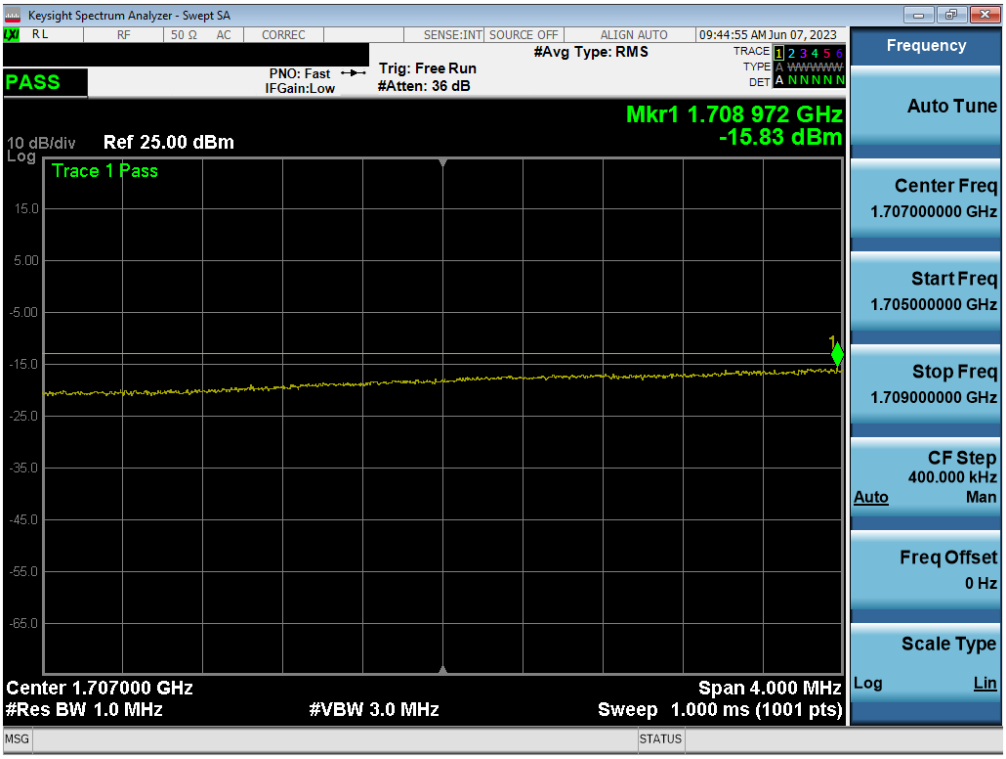
Plot 7-70. Upper Band Edge Plot (LTE Band 66 - 10MHz QPSK – Full RB)



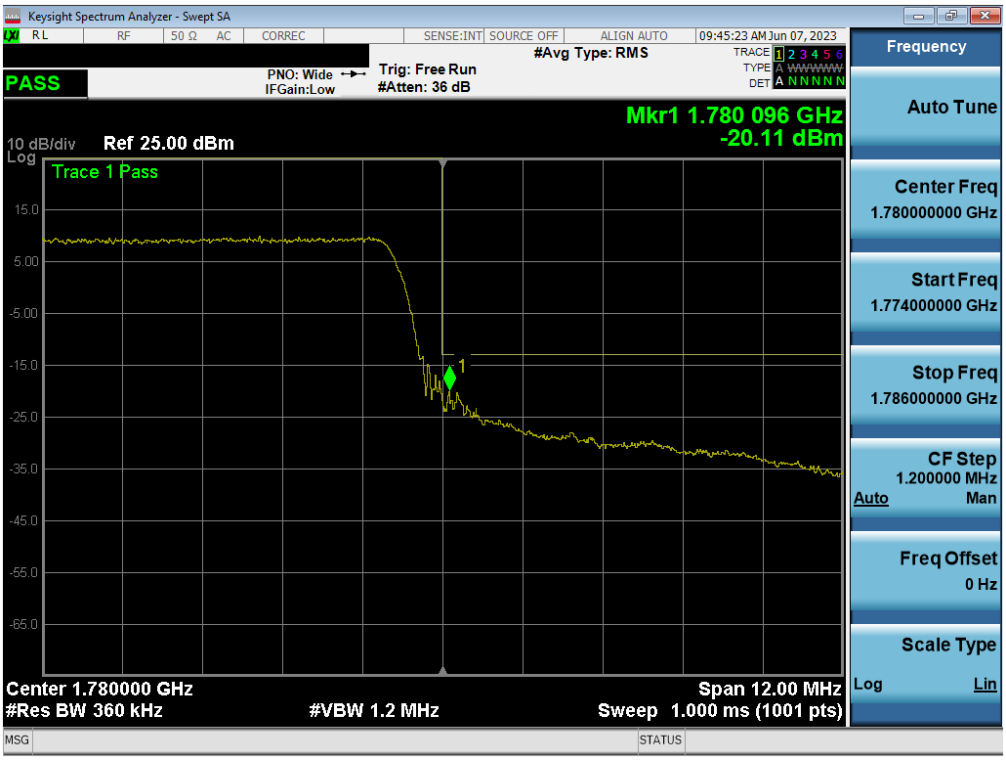
Plot 7-71. Upper Extended Band Edge Plot (LTE Band 66 - 10MHz QPSK – Full RB)



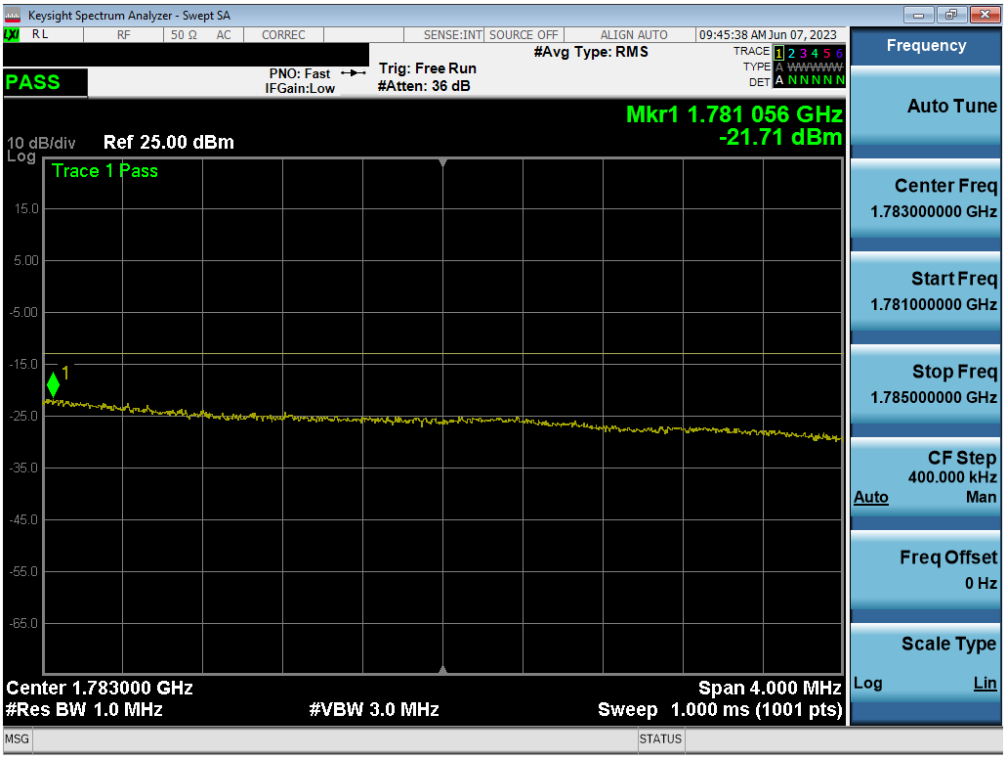
Plot 7-72. Lower Band Edge Plot (LTE Band 66 - 15MHz QPSK – Full RB)



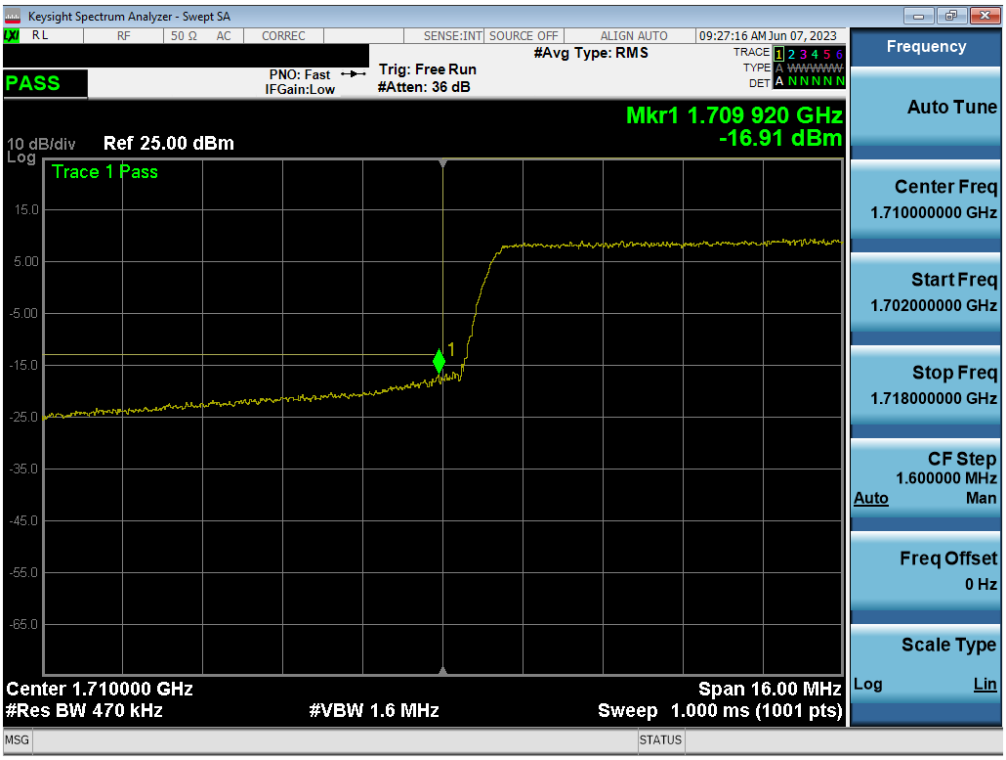
Plot 7-73. Lower Extended Band Edge Plot (LTE Band 66 - 15MHz QPSK – Full RB)



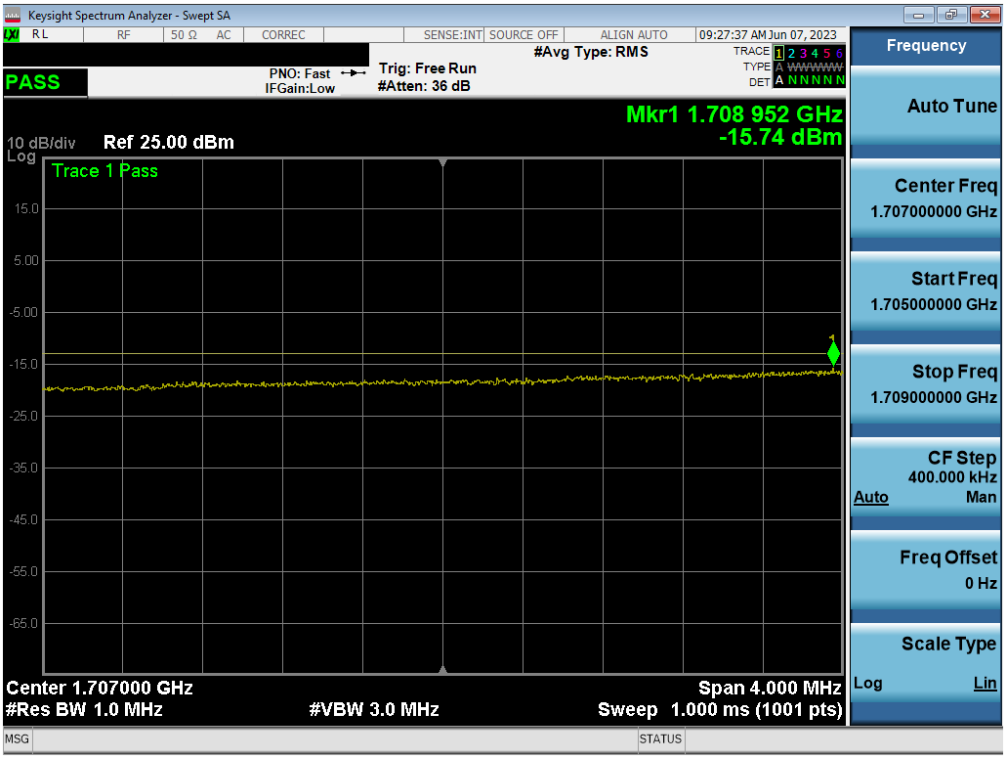
Plot 7-74. Upper Band Edge Plot (LTE Band 66 - 15MHz QPSK – Full RB)



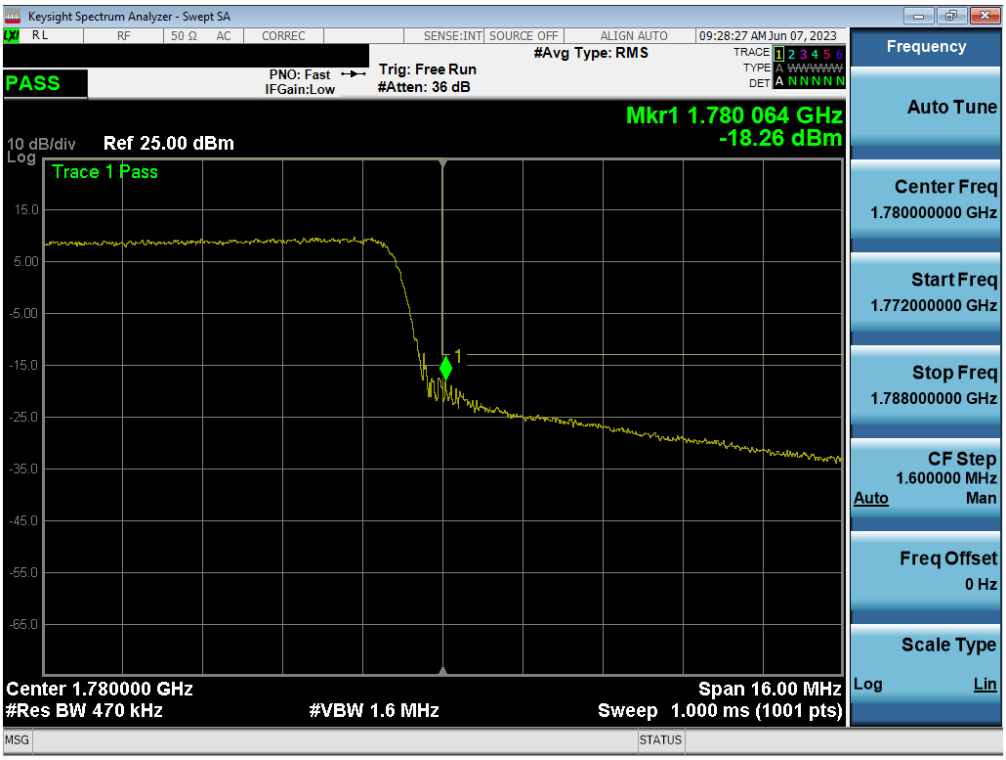
Plot 7-75. Upper Extended Band Edge Plot (LTE Band 66 - 15MHz QPSK – Full RB)



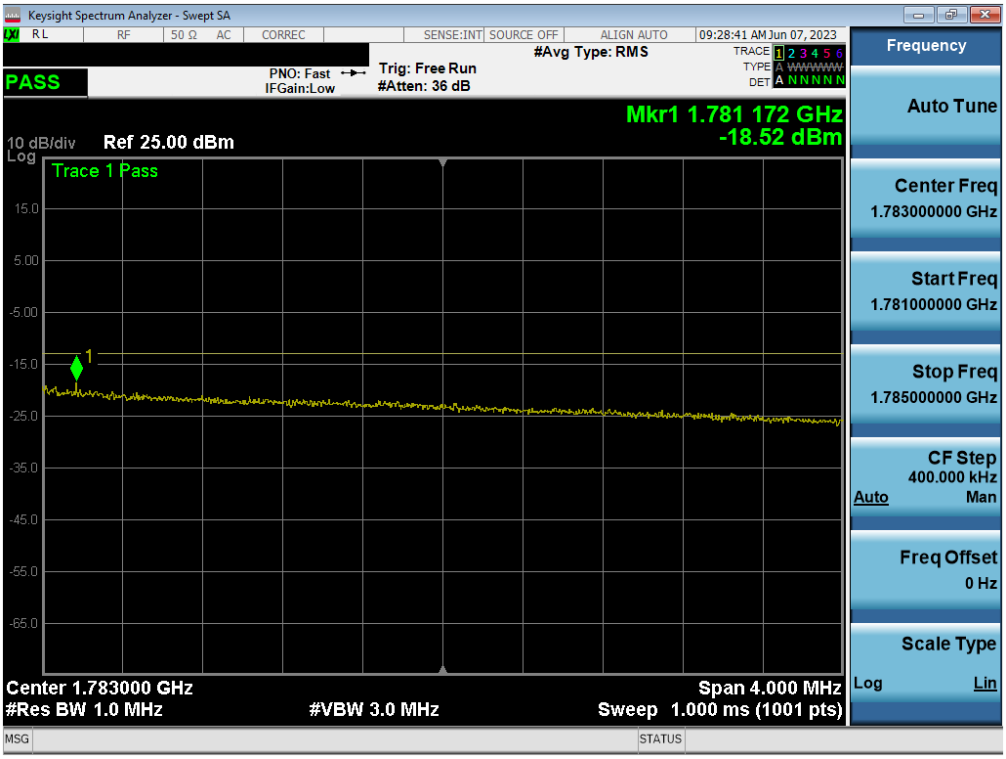
Plot 7-76. Lower Band Edge Plot (LTE Band 66 - 20MHz QPSK – Full RB)



Plot 7-77. Lower Extended Band Edge Plot (LTE Band 66 - 20MHz QPSK – Full RB)

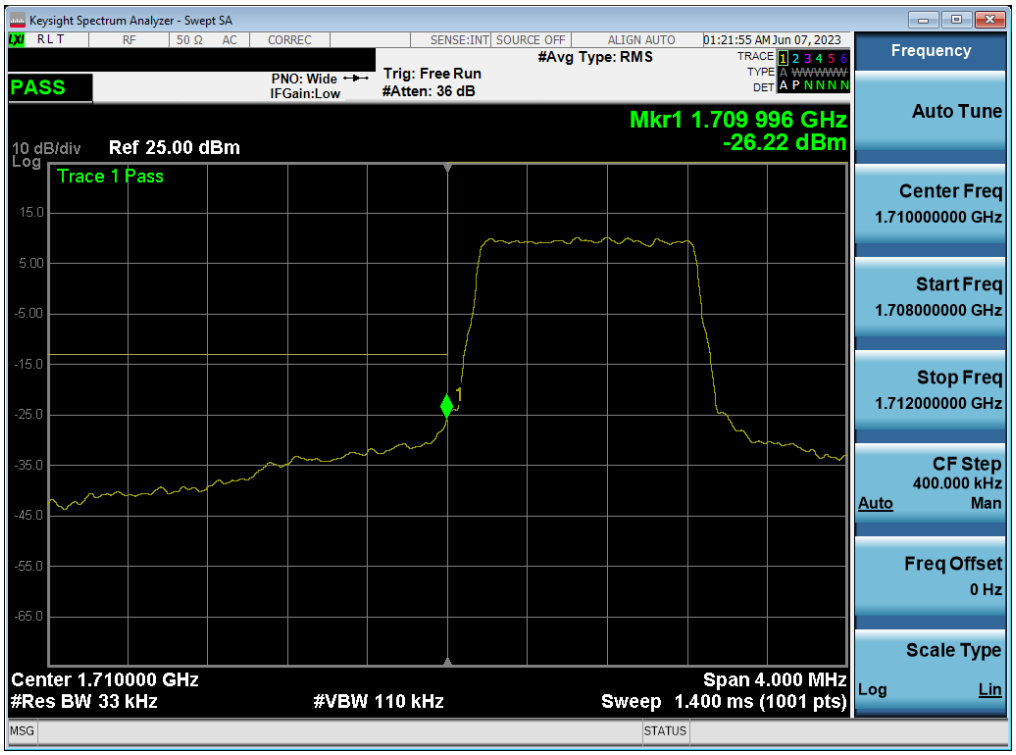


Plot 7-78. Upper Band Edge Plot (LTE Band 66 - 20MHz QPSK – Full RB)

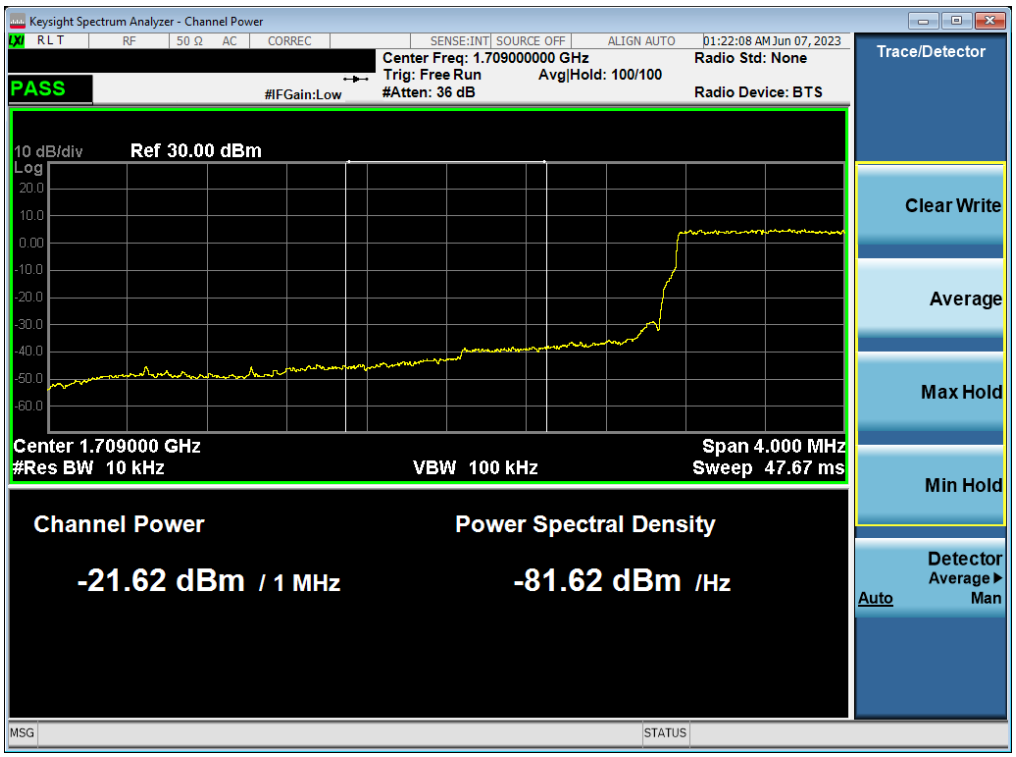


Plot 7-79. Upper Extended Band Edge Plot (LTE Band 66 - 20MHz QPSK – Full RB)

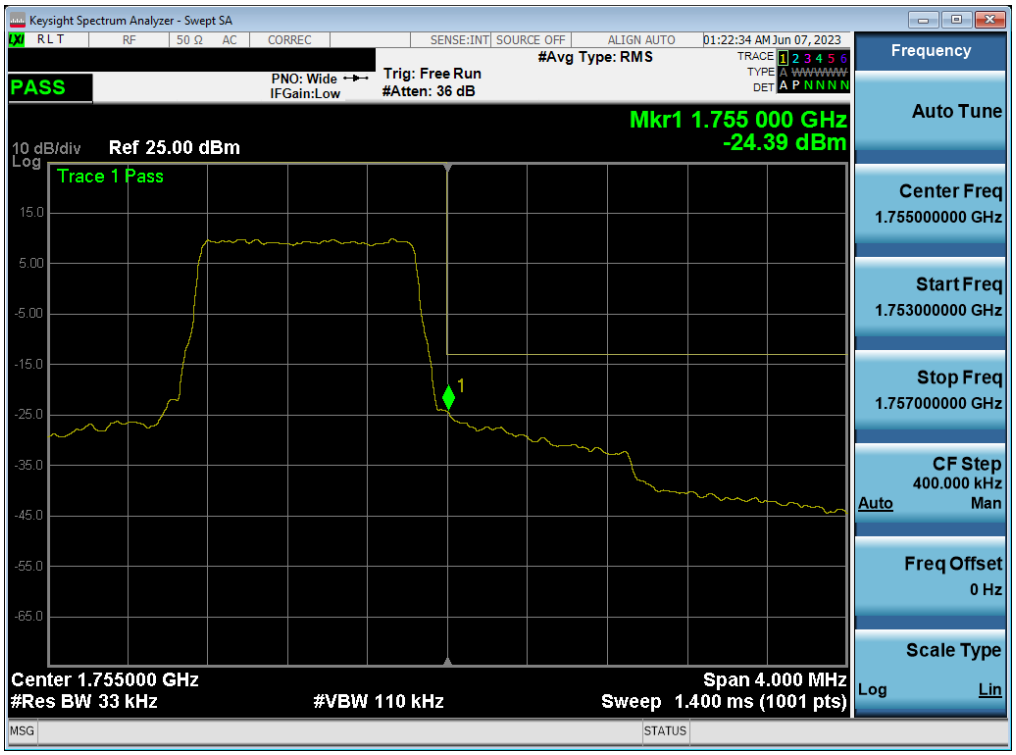
LTE Band 4



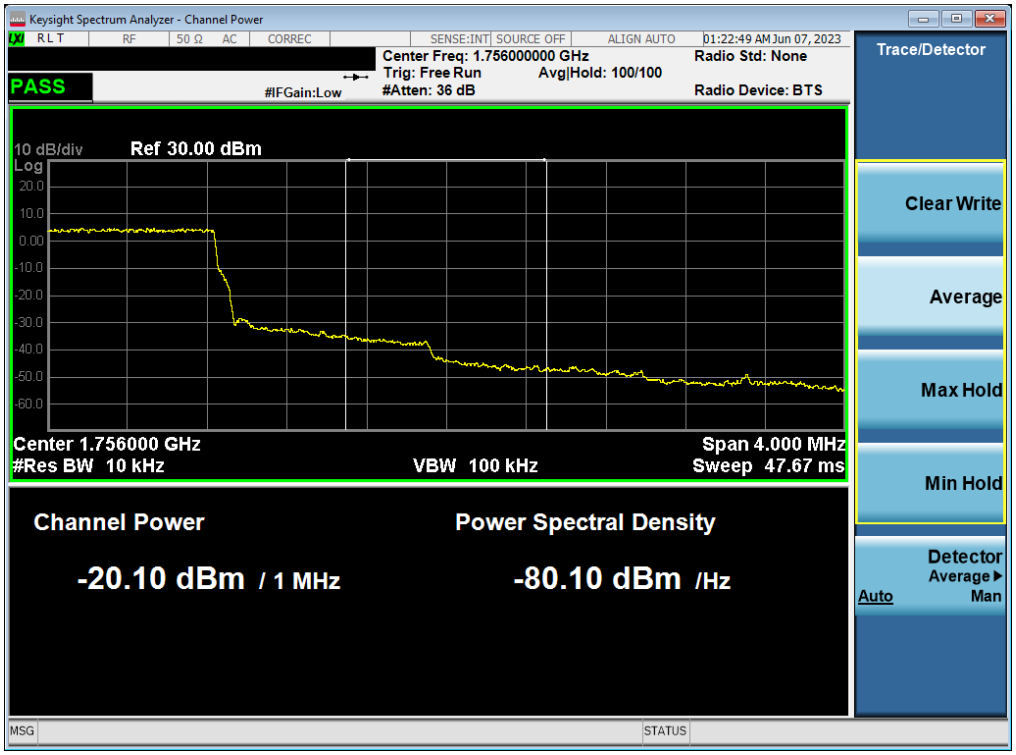
Plot 7-80. Lower Band Edge Plot (LTE Band 4 – 1.4MHz QPSK – Full RB)



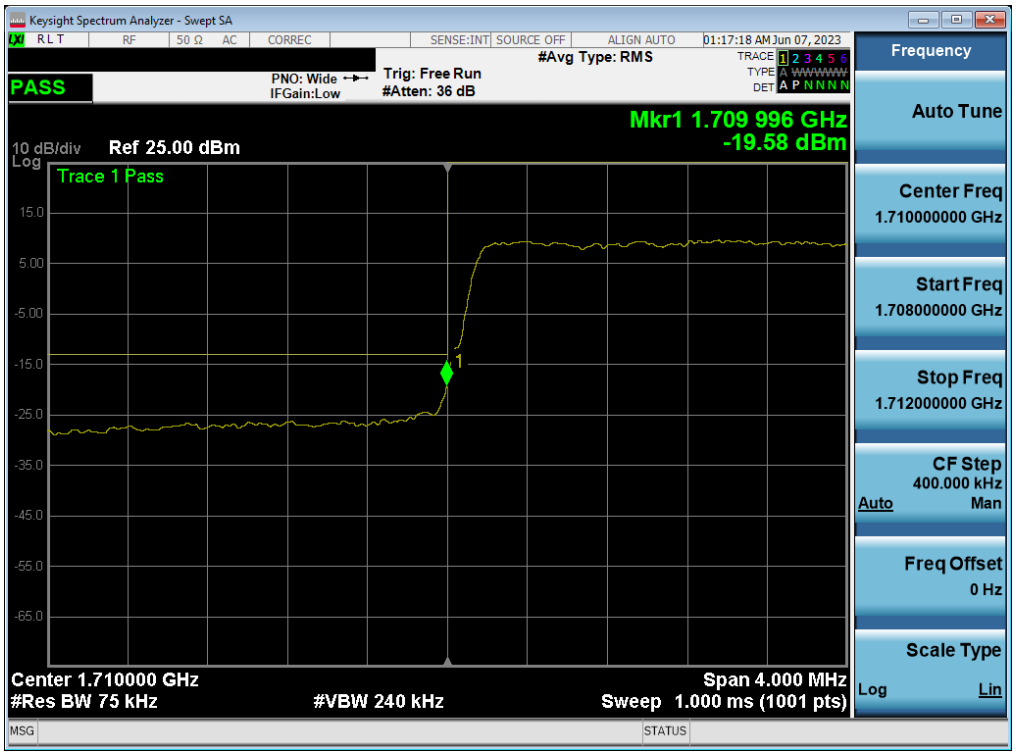
Plot 7-81. Lower Extended Band Edge Plot (LTE Band 4 – 1.4MHz QPSK – Full RB)



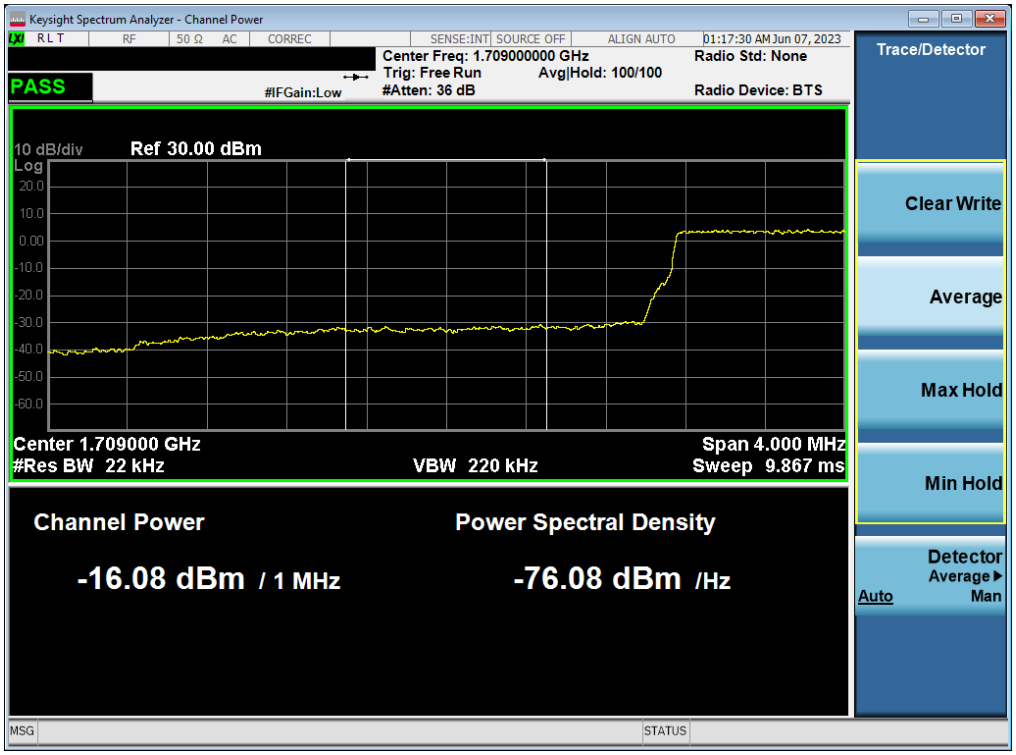
Plot 7-82. Upper Band Edge Plot (LTE Band 4 – 1.4MHz QPSK – Full RB)



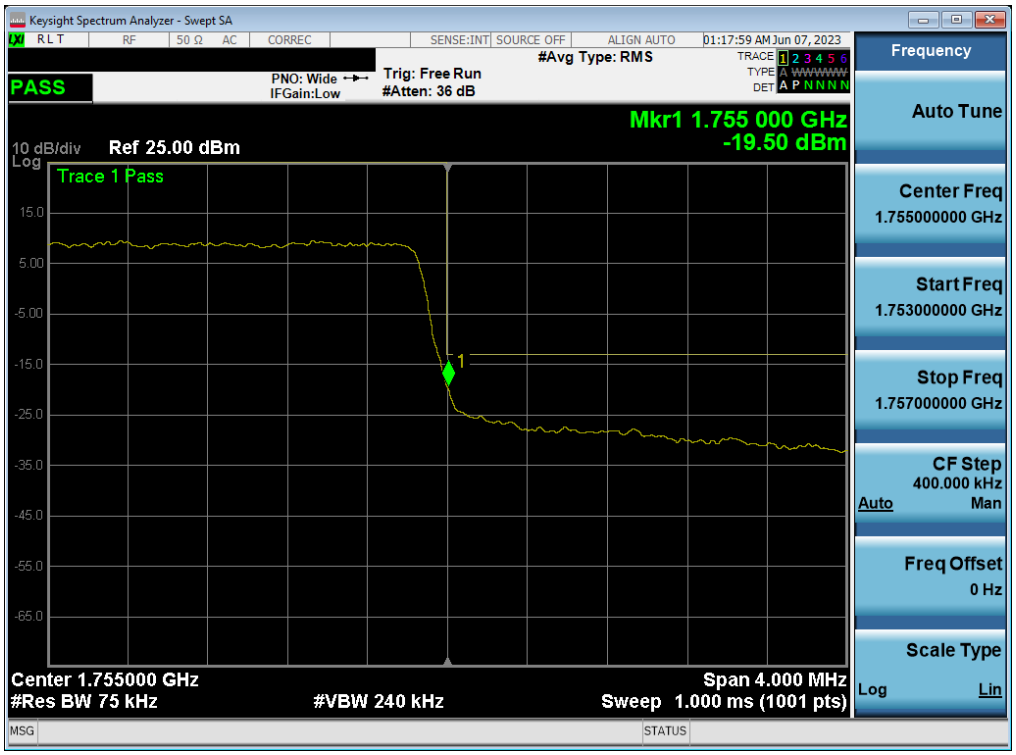
Plot 7-83. Upper Extended Band Edge Plot (LTE Band 4 – 1.4MHz QPSK – Full RB)



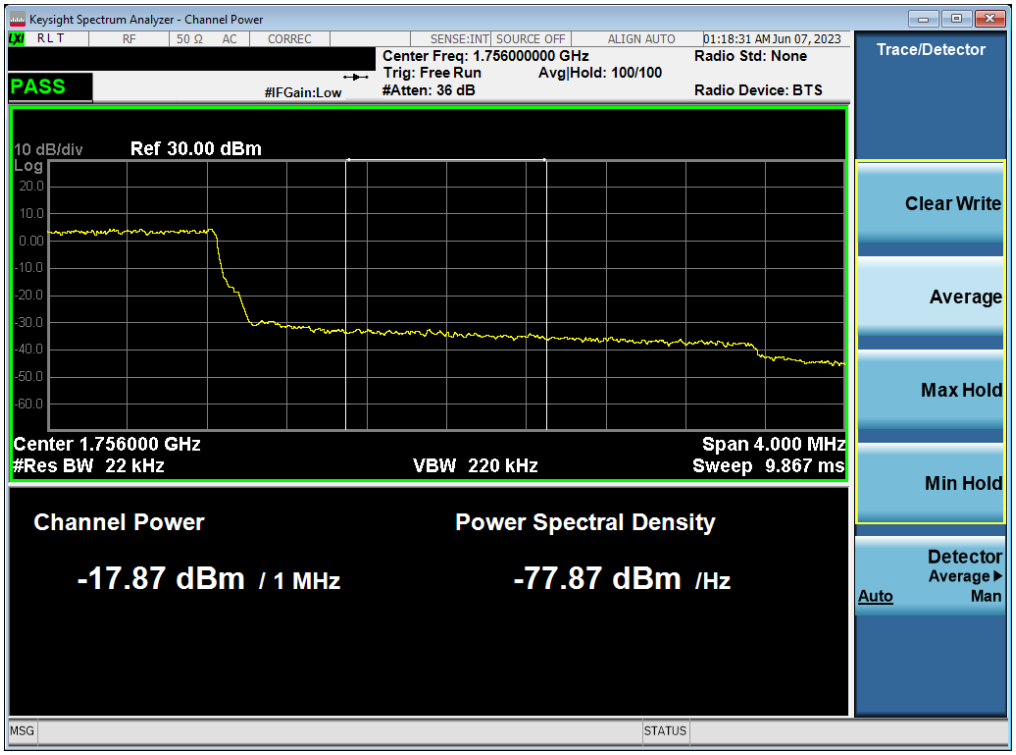
Plot 7-84. Lower Band Edge Plot (LTE Band 4 - 3MHz QPSK – Full RB)



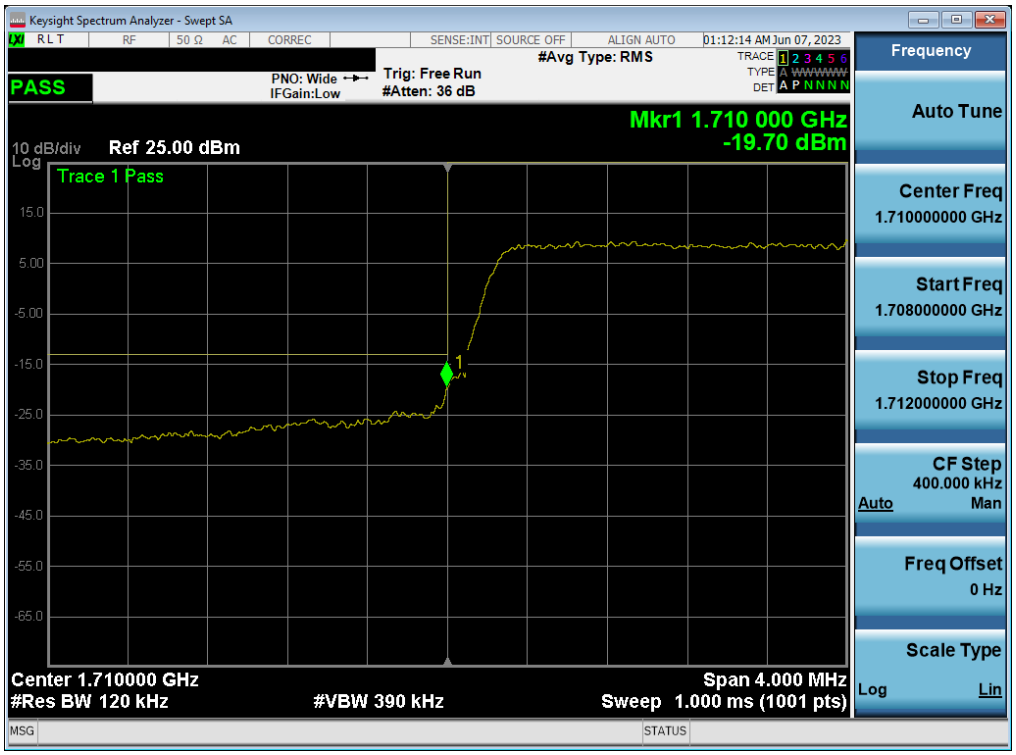
Plot 7-85. Lower Extended Band Edge Plot (LTE Band 4 - 3MHz QPSK – Full RB)



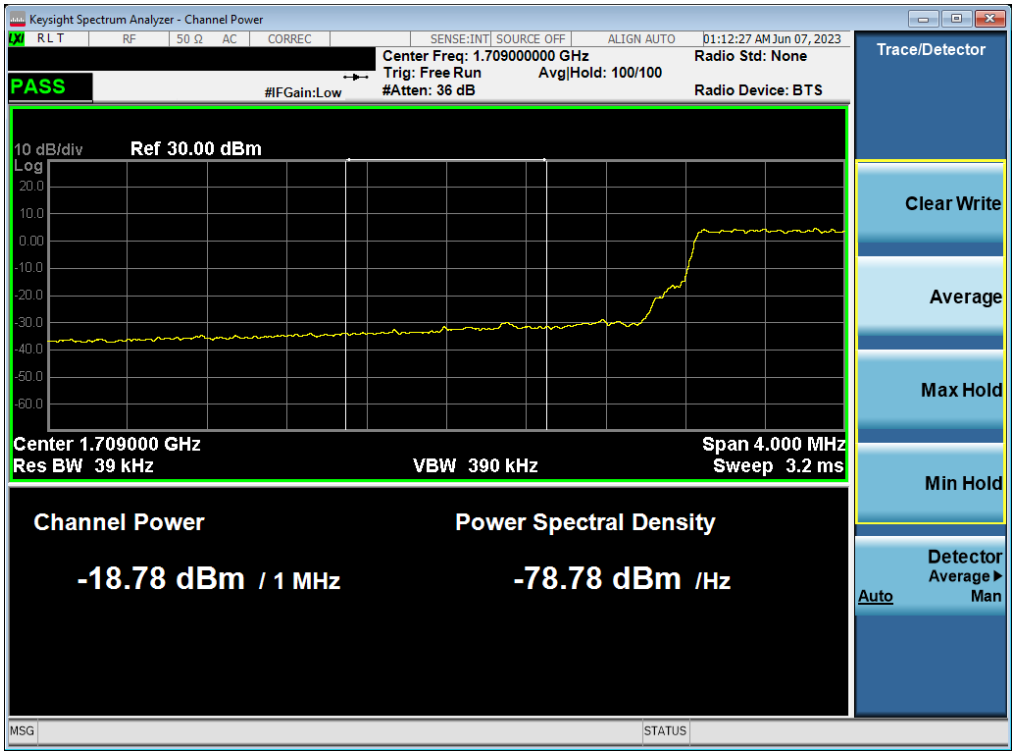
Plot 7-86. Upper Band Edge Plot (LTE Band 4 - 3MHz QPSK – Full RB)



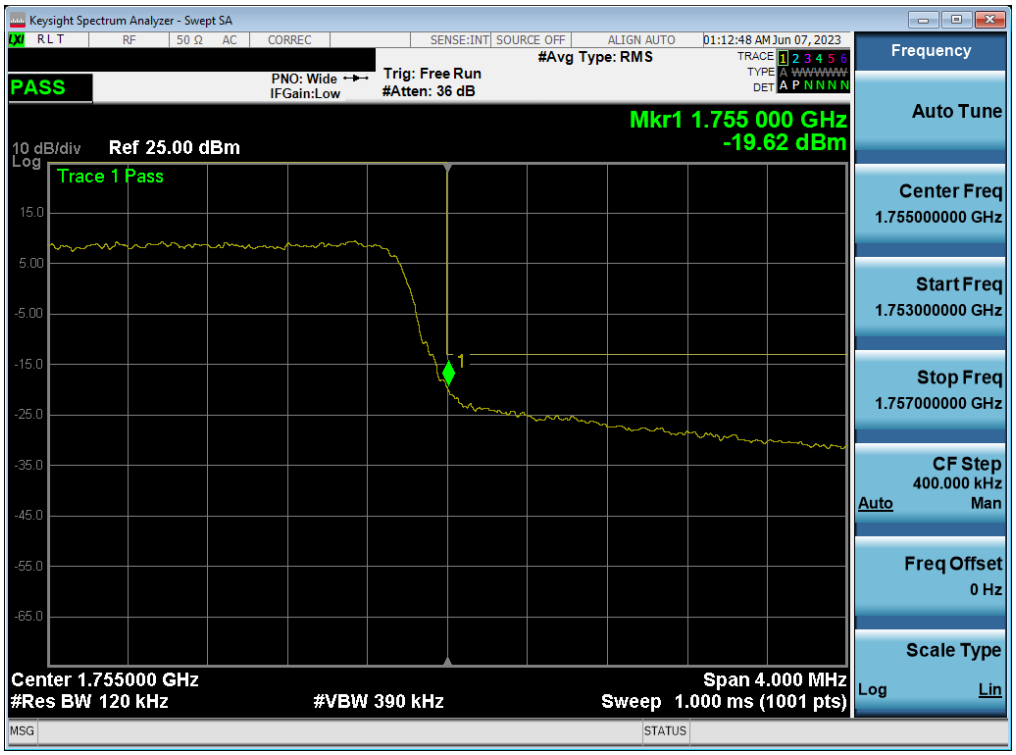
Plot 7-87. Upper Extended Band Edge Plot (LTE Band 4 - 3MHz QPSK – Full RB)



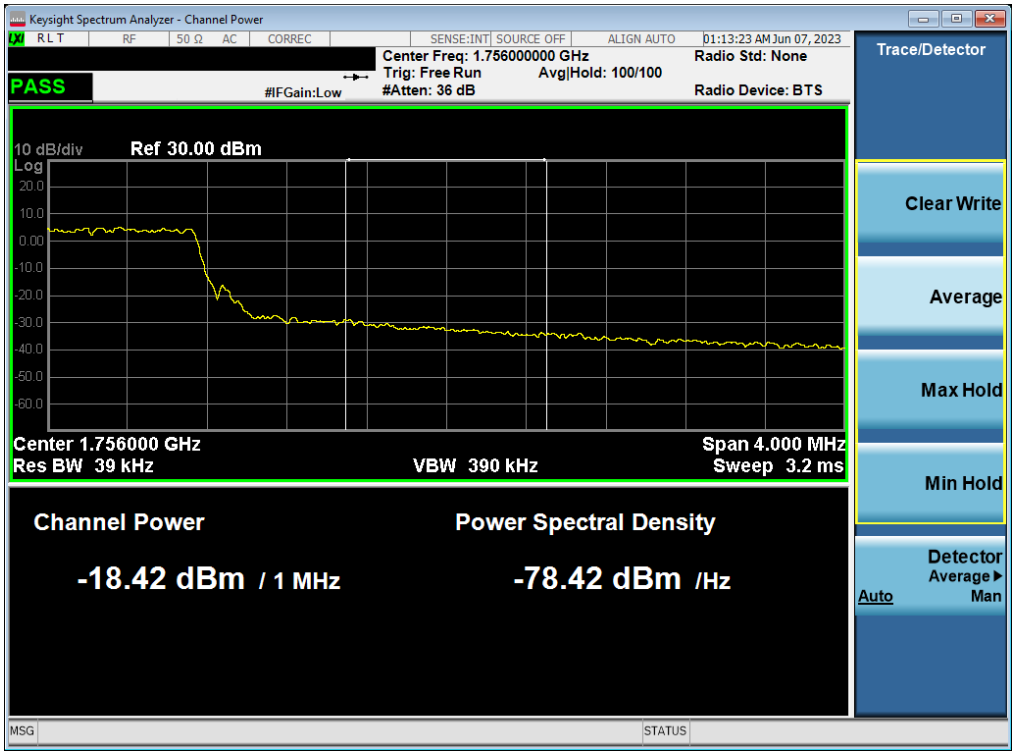
Plot 7-88. Lower Band Edge Plot (LTE Band 4 - 5MHz QPSK – Full RB)



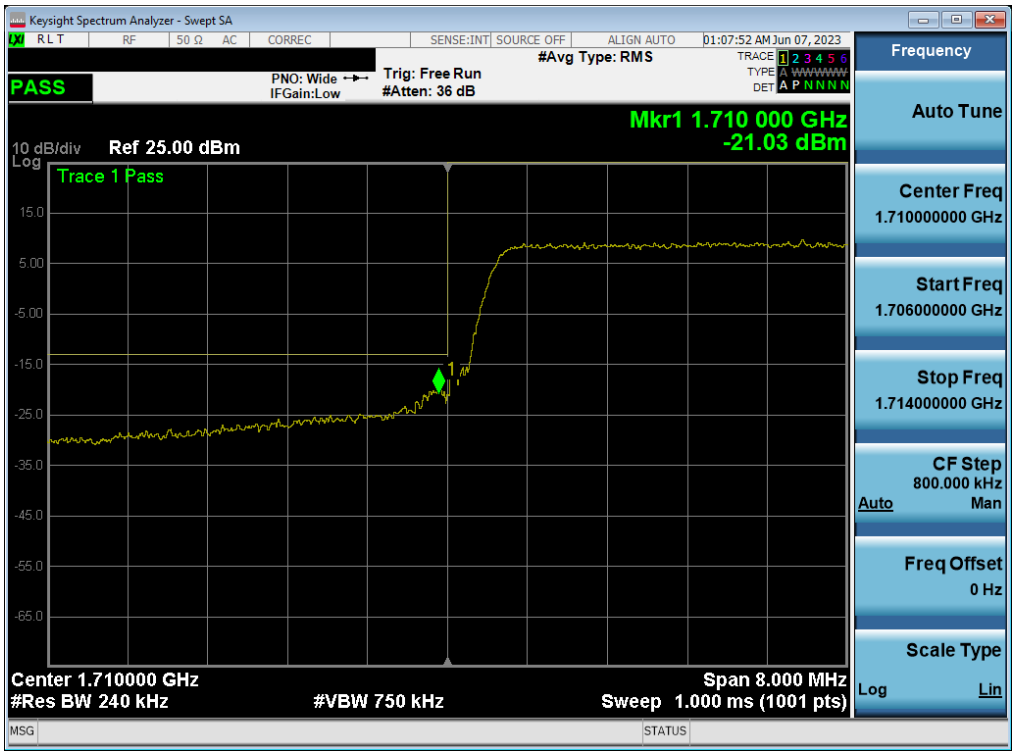
Plot 7-89. Lower Extended Band Edge Plot (LTE Band 4 - 5MHz QPSK – Full RB)



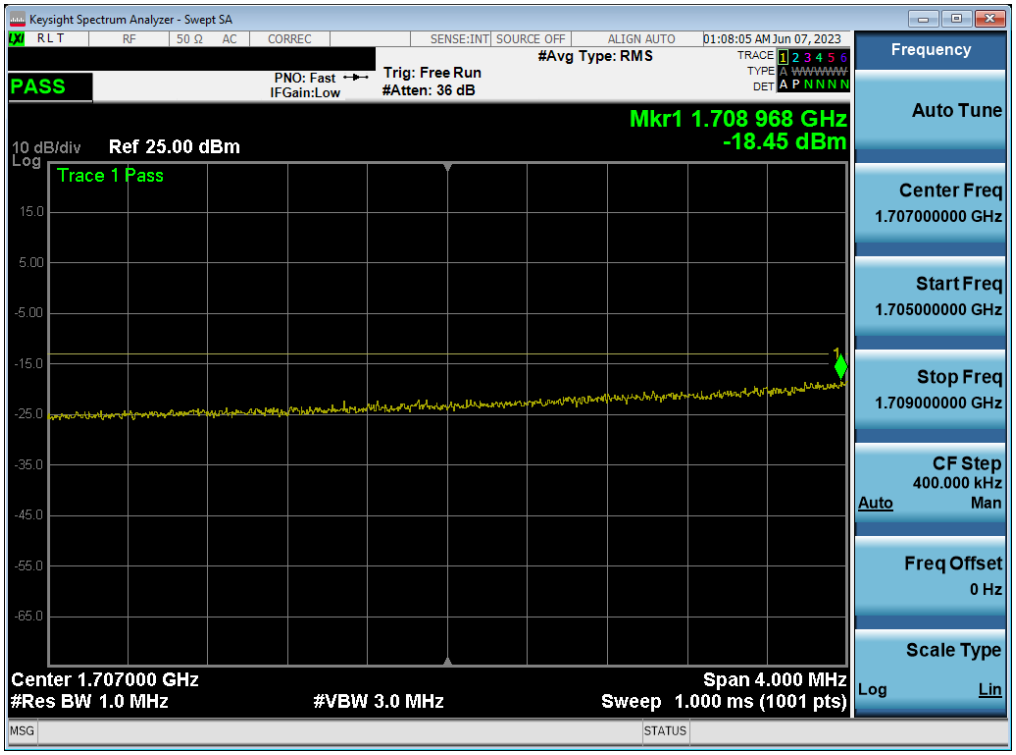
Plot 7-90. Upper Band Edge Plot (LTE Band 4 - 5MHz QPSK – Full RB)



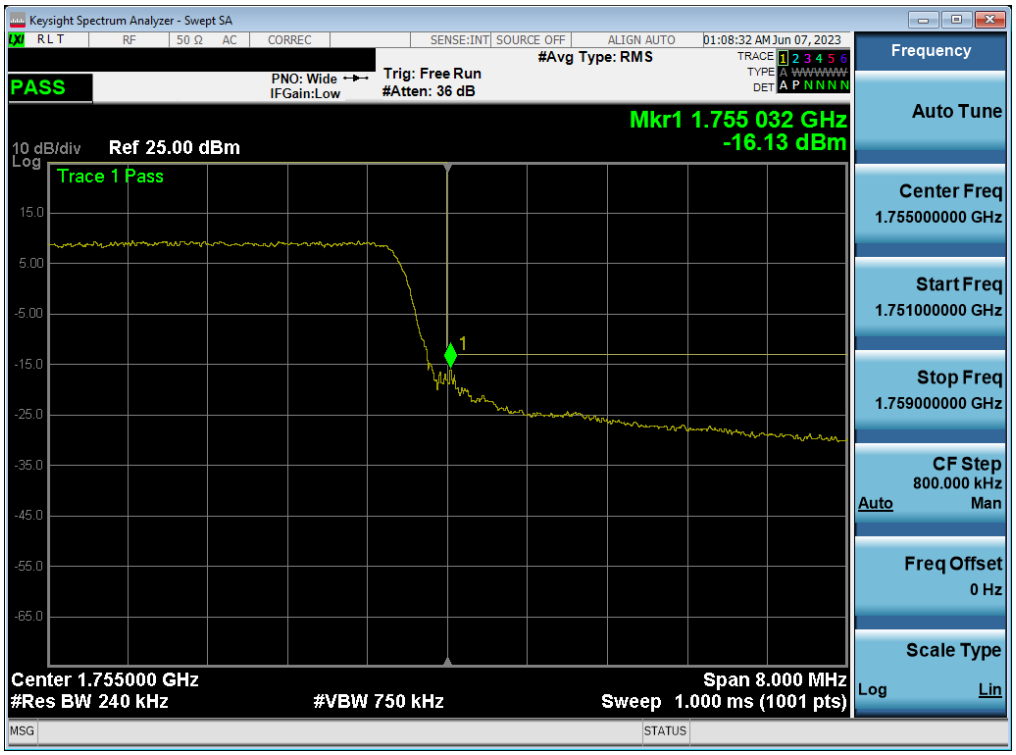
Plot 7-91. Upper Extended Band Edge Plot (LTE Band 4 - 5MHz QPSK – Full RB)



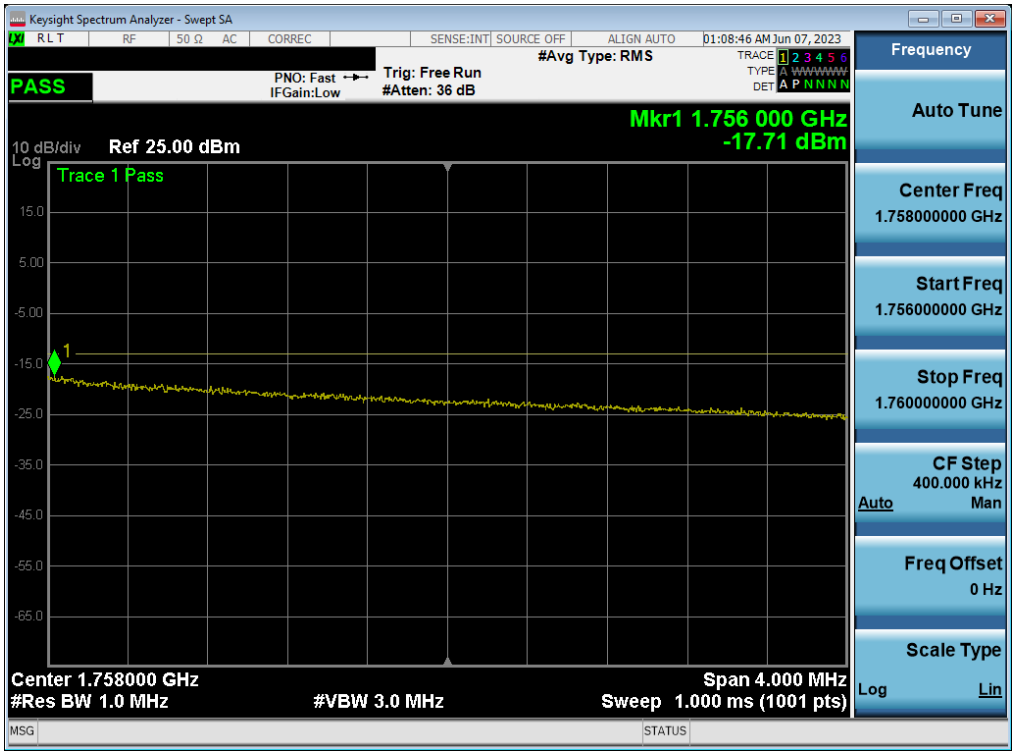
Plot 7-92. Lower Band Edge Plot (LTE Band 4 - 10MHz QPSK – Full RB)



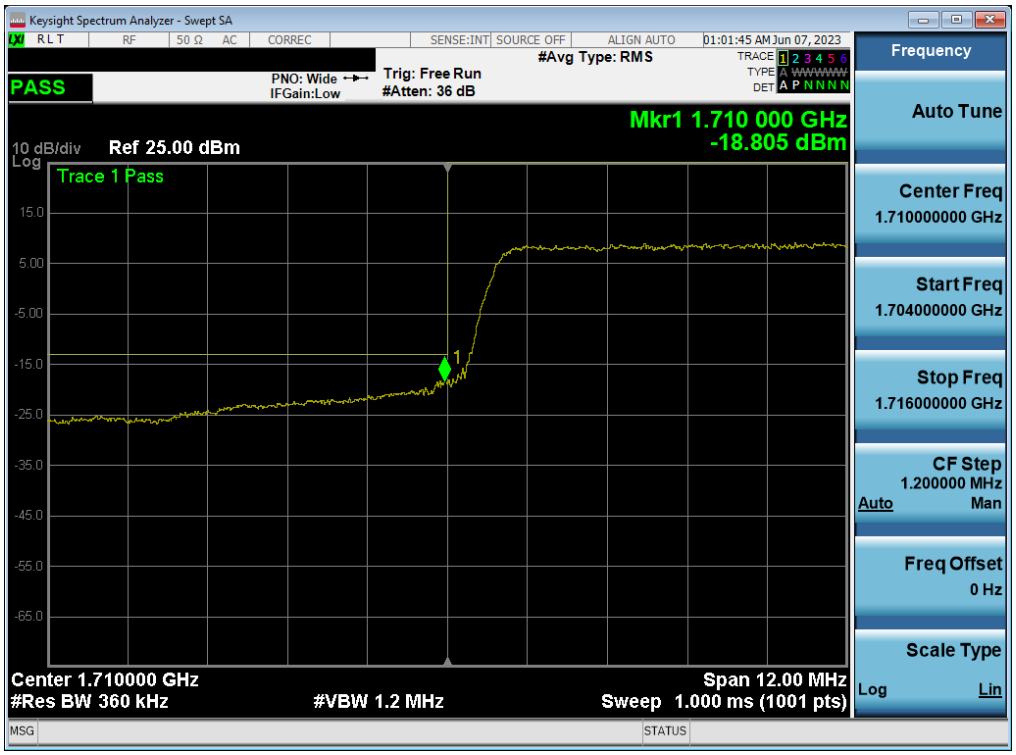
Plot 7-93. Lower Extended Band Edge Plot (LTE Band 4 - 10MHz QPSK – Full RB)



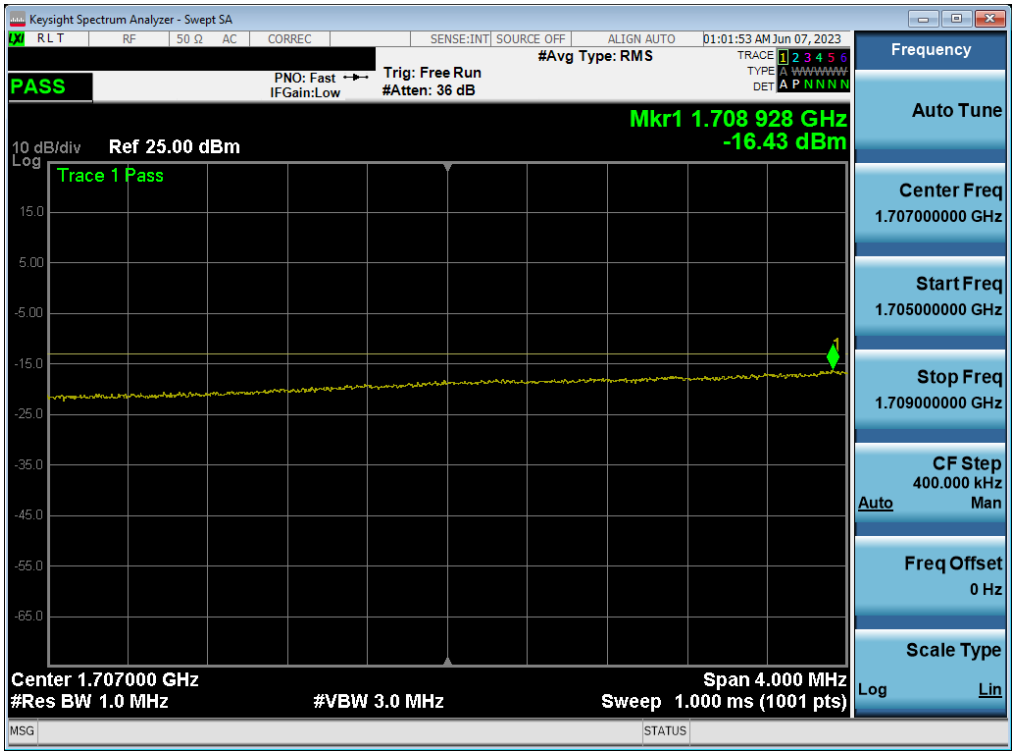
Plot 7-94. Upper Band Edge Plot (LTE Band 4 - 10MHz QPSK – Full RB)



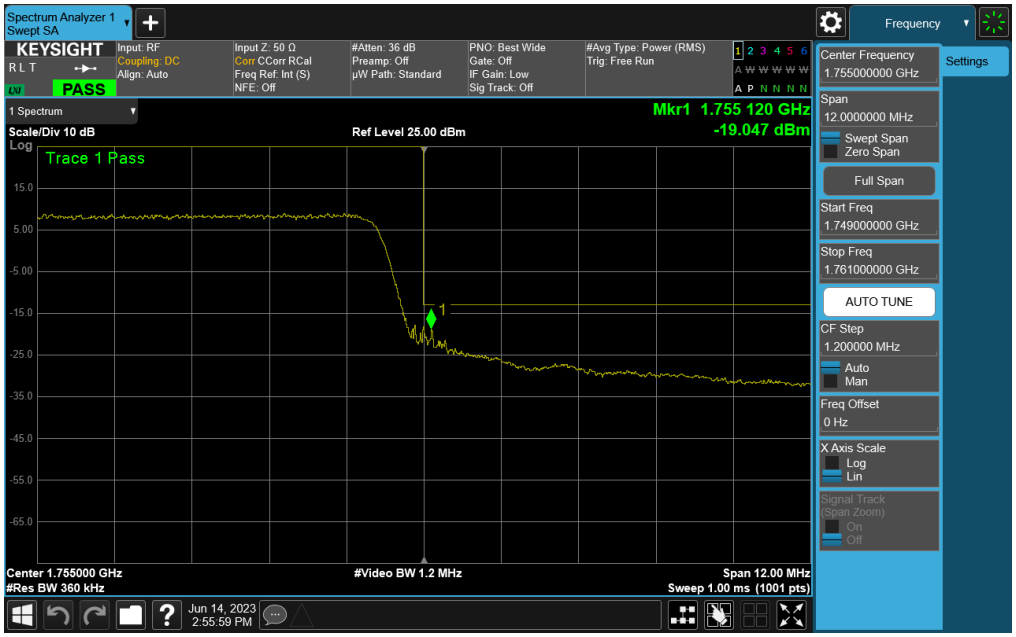
Plot 7-95. Upper Extended Band Edge Plot (LTE Band 4 - 10MHz QPSK – Full RB)



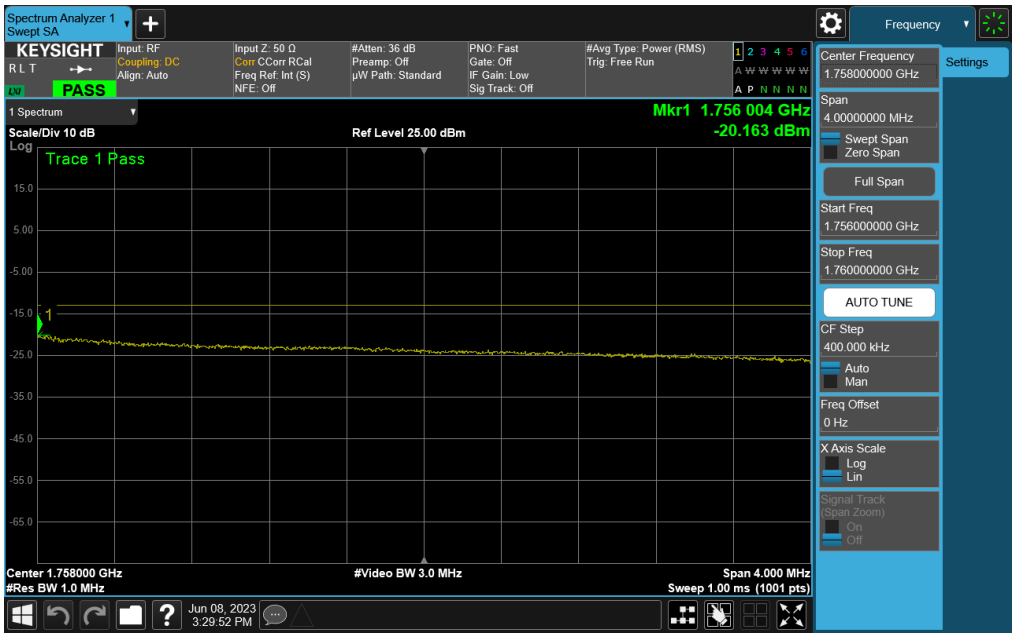
Plot 7-96. Lower Band Edge Plot (LTE Band 4 - 15MHz QPSK – Full RB)



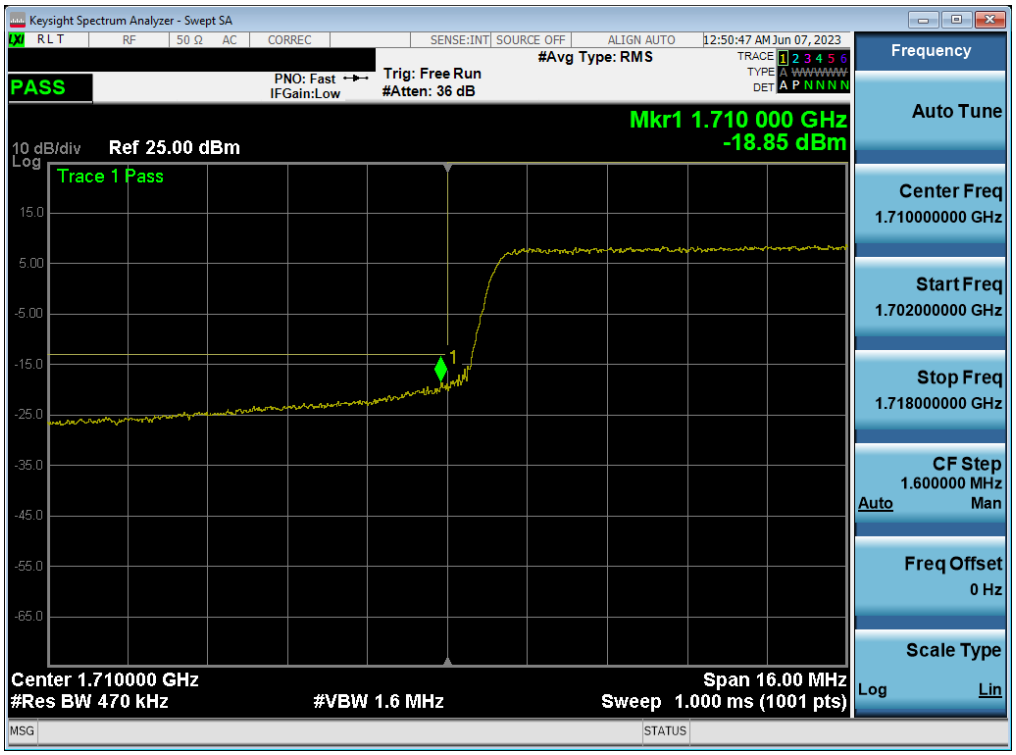
Plot 7-97. Lower Extended Band Edge Plot (LTE Band 4 - 15MHz QPSK – Full RB)



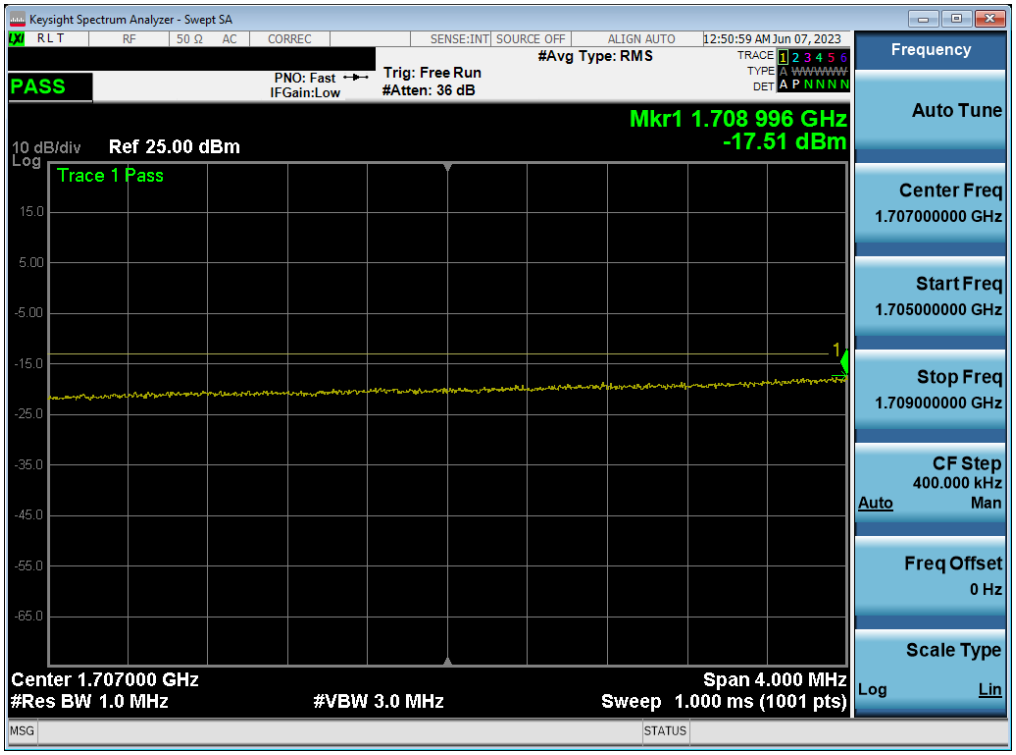
Plot 7-98. Upper Band Edge Plot (LTE Band 4 - 15MHz QPSK – Full RB)



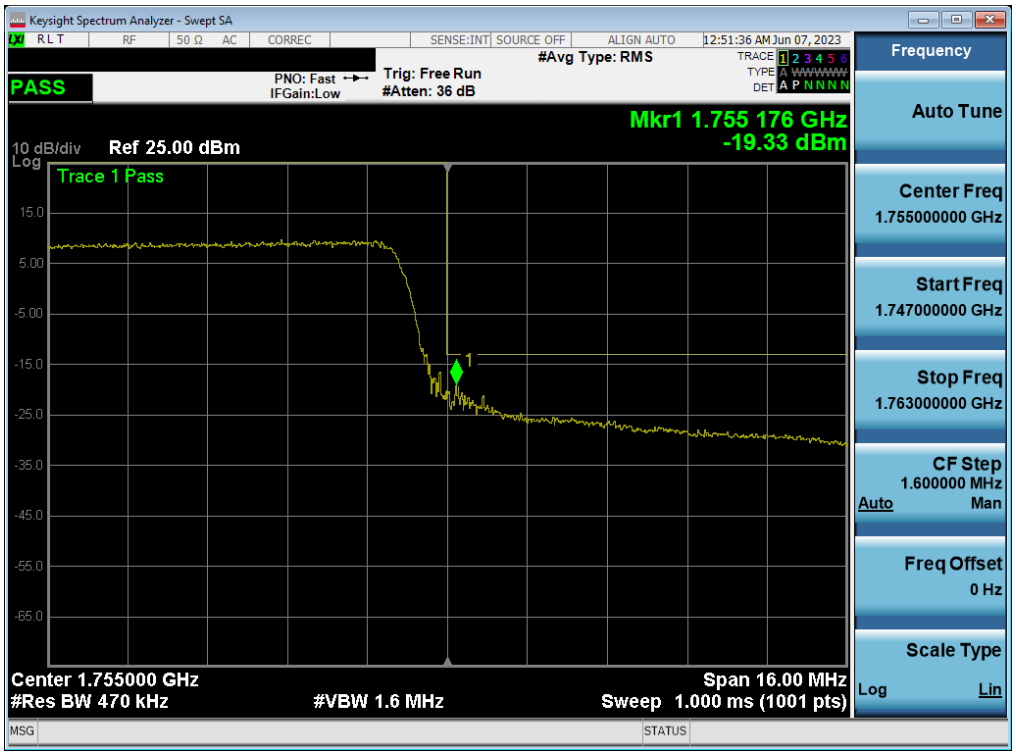
Plot 7-99. Upper Extended Band Edge Plot (LTE Band 4 - 15MHz QPSK – Full RB)



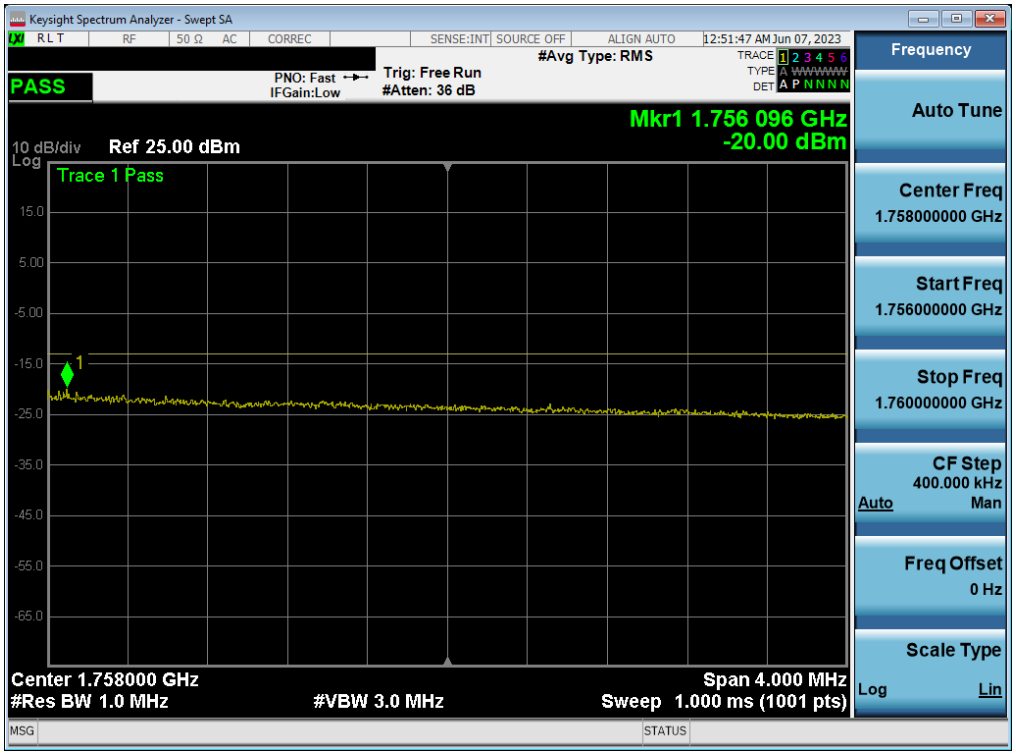
Plot 7-100. Lower Band Edge Plot (LTE Band 4 - 20MHz QPSK – Full RB)



Plot 7-101. Lower Extended Band Edge Plot (LTE Band 4 - 20MHz QPSK – Full RB)

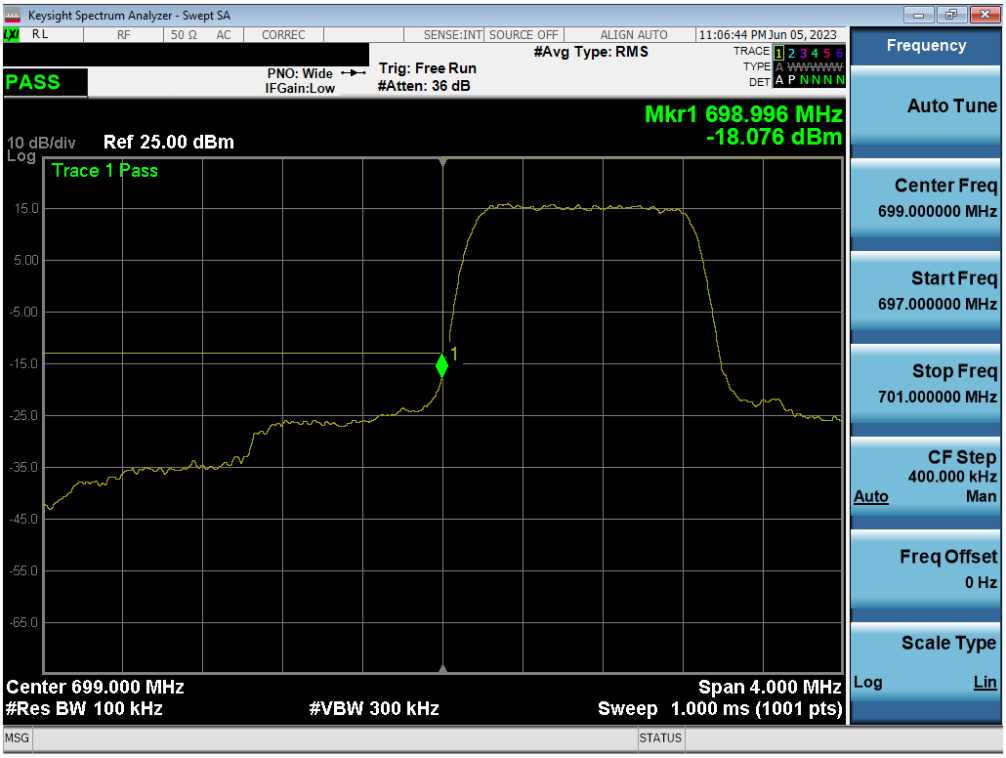


Plot 7-102. Upper Band Edge Plot (LTE Band 4 - 20MHz QPSK – Full RB)

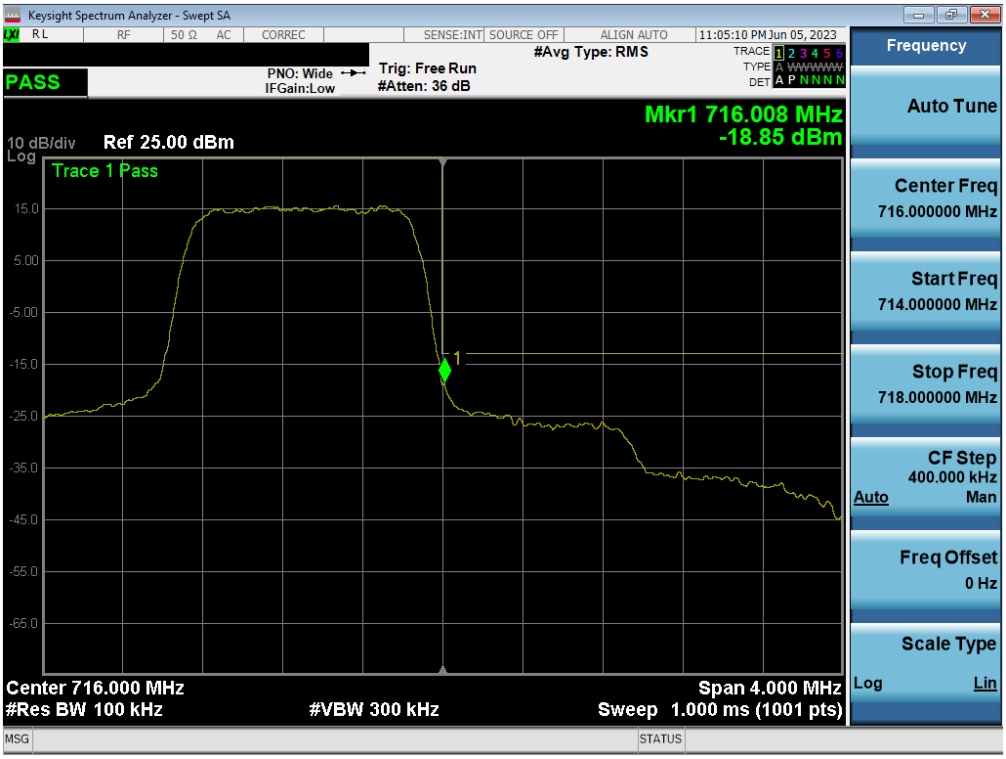


Plot 7-103. Upper Extended Band Edge Plot (LTE Band 4 - 20MHz QPSK – Full RB)

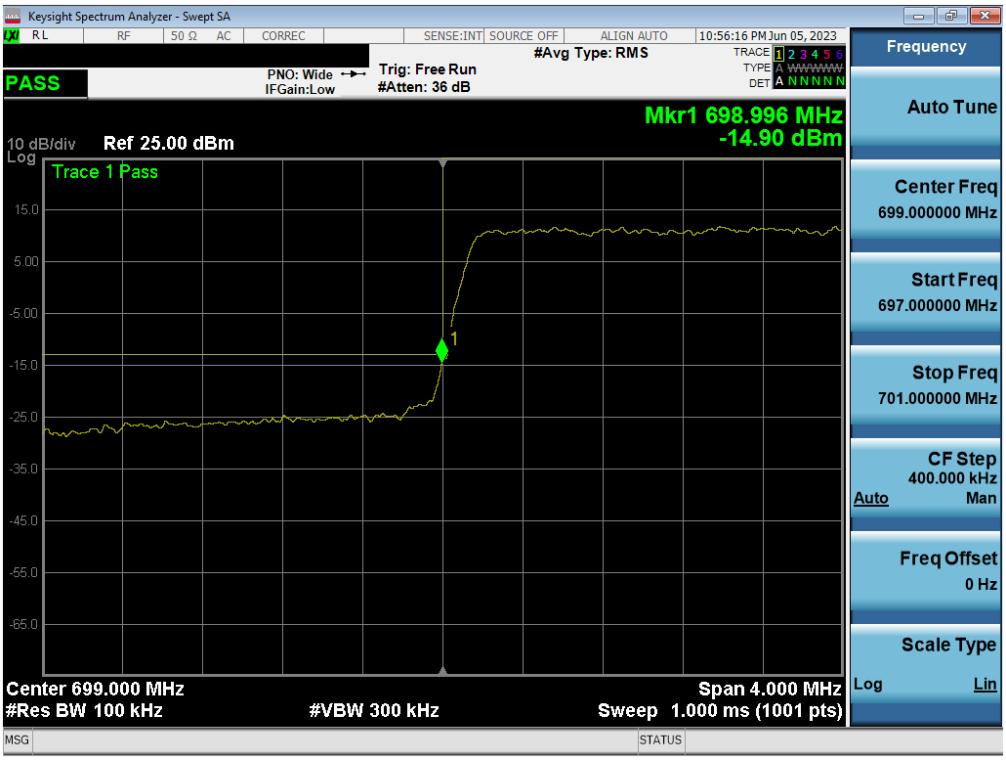
LTE Band 12



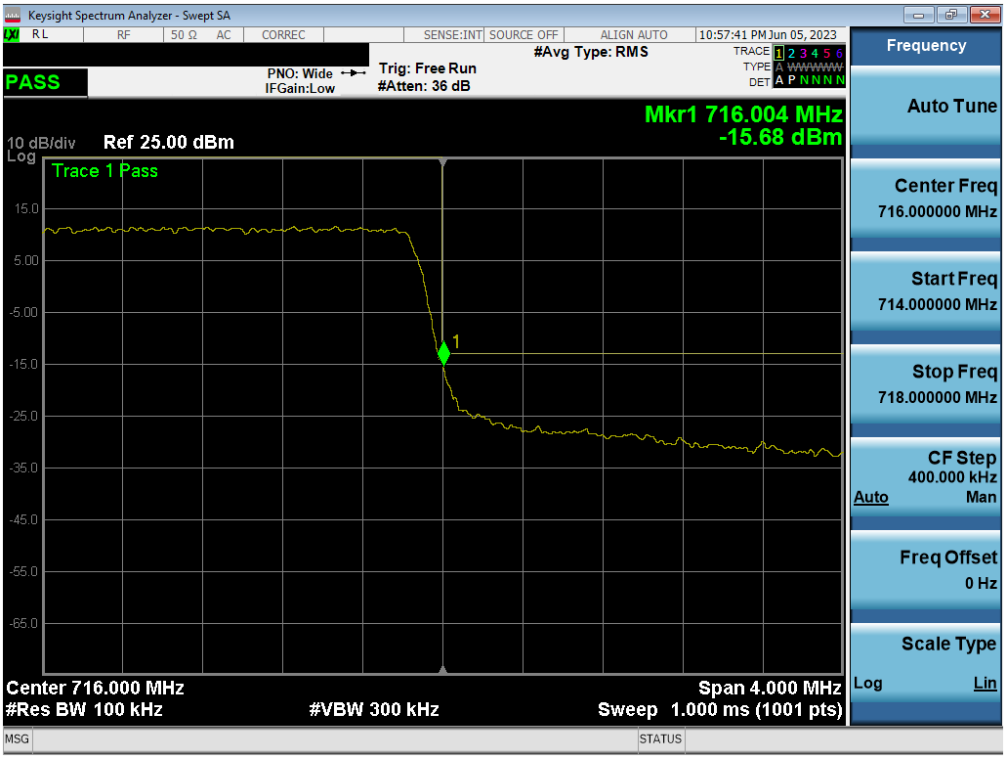
Plot 7-104. Lower Band Edge Plot (LTE Band 12 – 1.4MHz QPSK – Full RB)



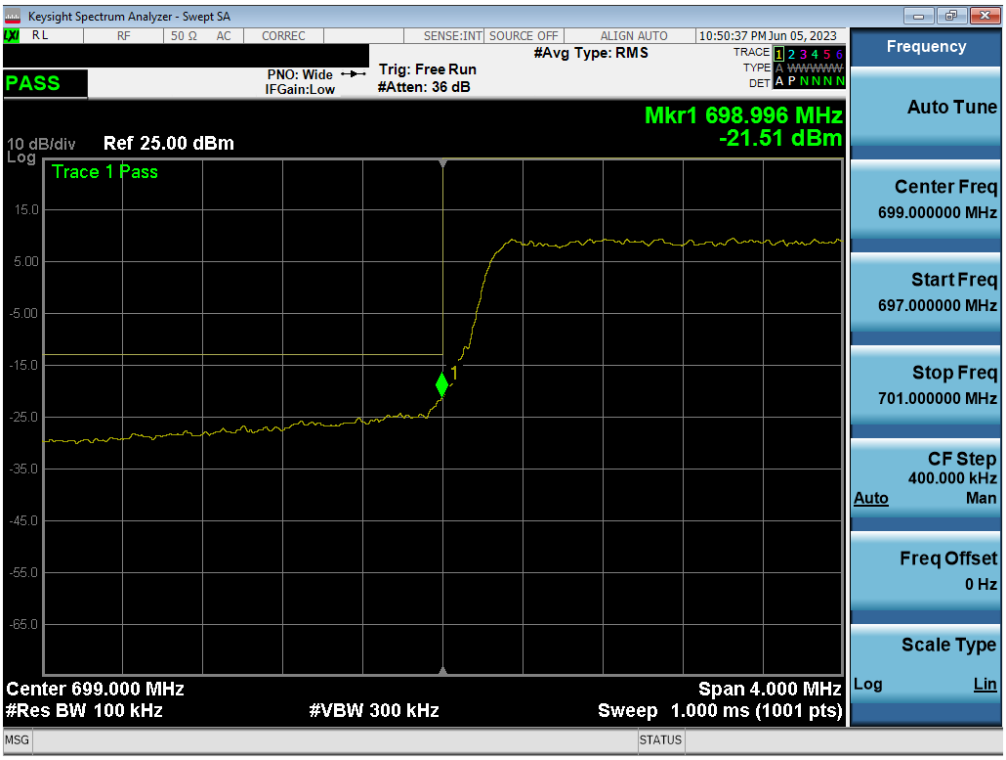
Plot 7-105. Upper Band Edge Plot (LTE Band 12 – 1.4MHz QPSK – Full RB)



Plot 7-106. Lower Band Edge Plot (LTE Band 12 - 3MHz QPSK – Full RB)

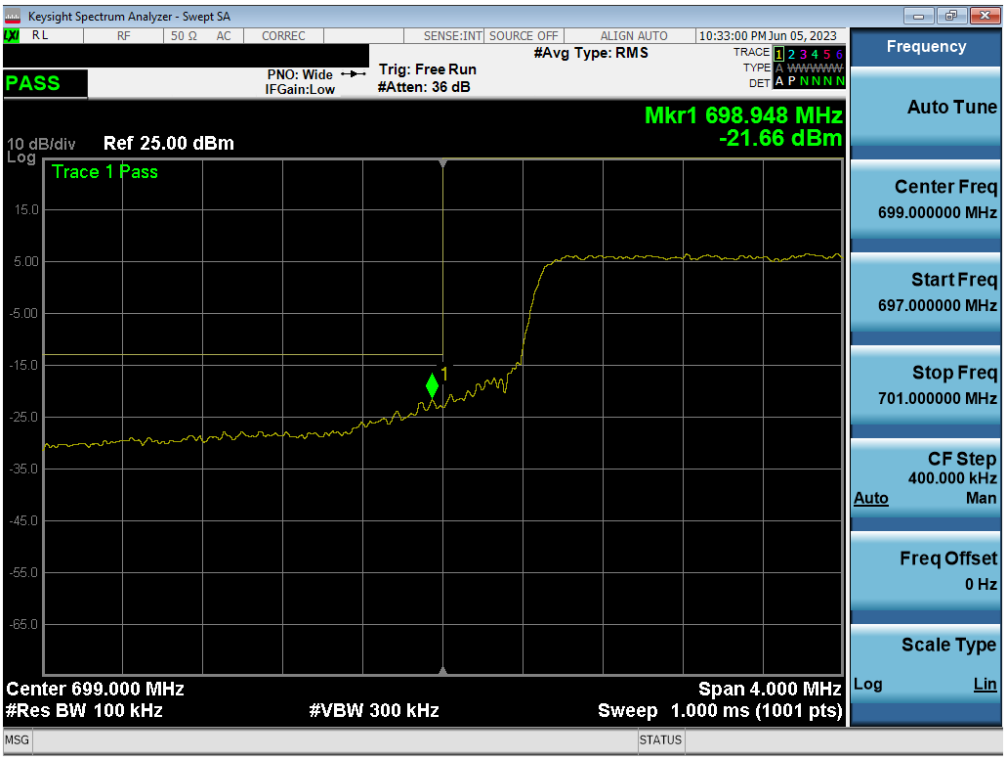


Plot 7-107. Upper Band Edge Plot (LTE Band 12 - 3MHz QPSK – Full RB)



Plot 7-108. Lower Band Edge Plot (LTE Band 12 - 5MHz QPSK – Full RB)

Plot 7-109. Upper Band Edge Plot (LTE Band 12 - 5MHz QPSK – Full RB)



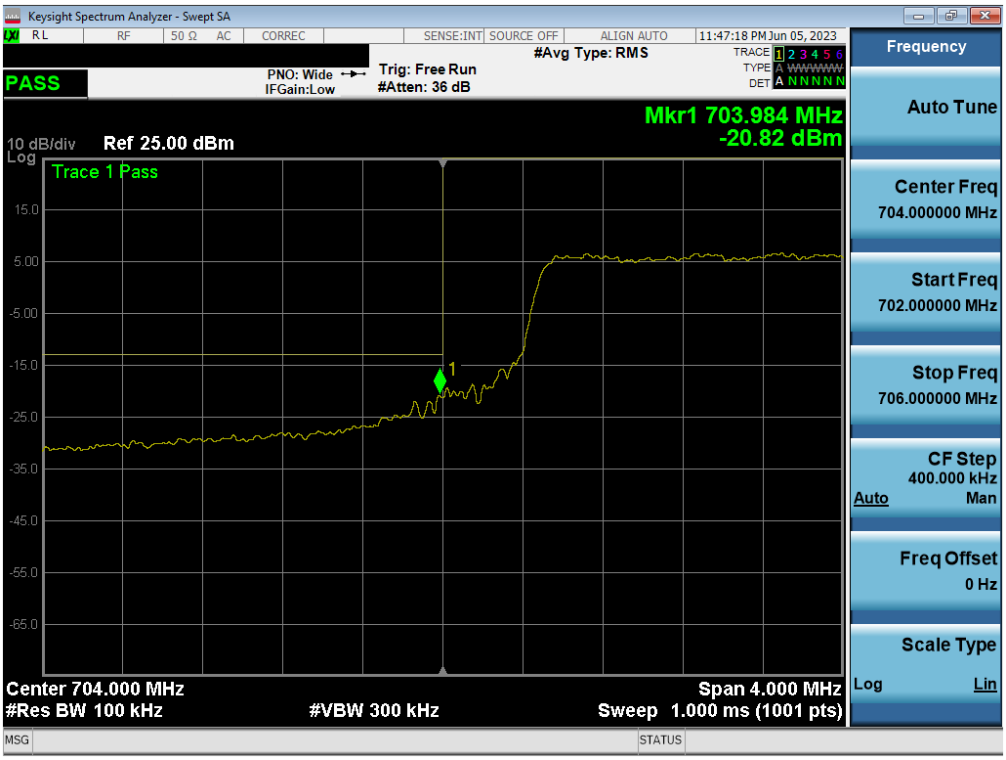
Plot 7-110. Lower Band Edge Plot (LTE Band 12 - 10MHz QPSK – Full RB)

Plot 7-111. Upper Band Edge Plot (LTE Band 12 - 10MHz QPSK – Full RB)

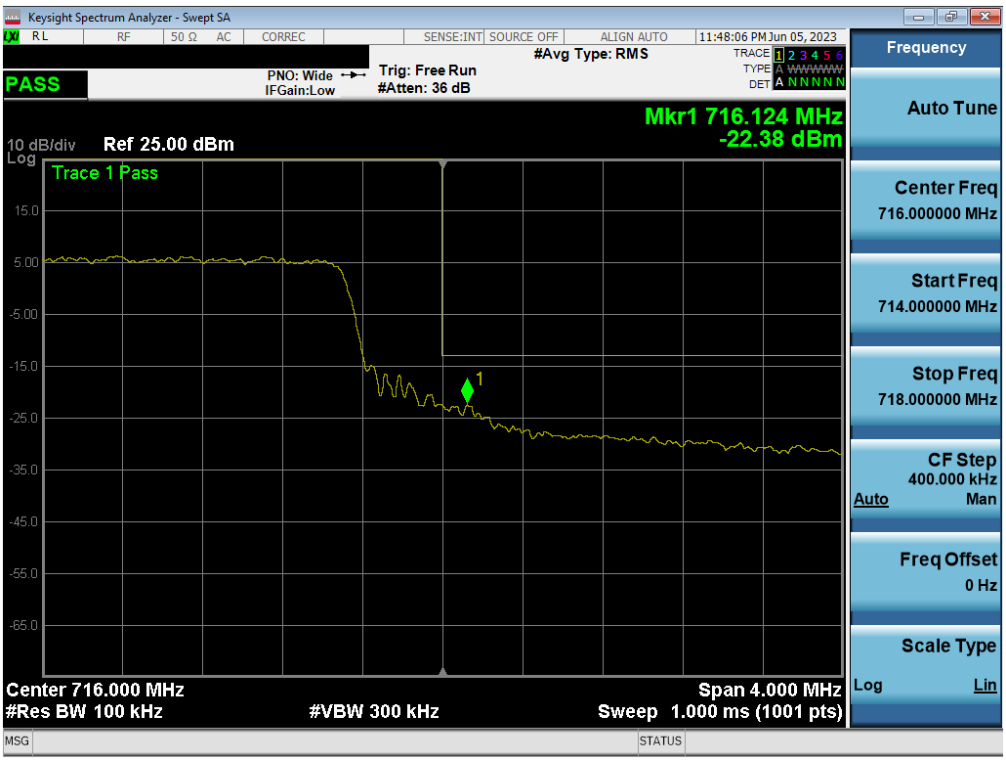
LTE Band 17

Plot 7-112. Lower Band Edge Plot (LTE Band 17 - 5MHz QPSK – Full RB)

Plot 7-113. Upper Band Edge Plot (LTE Band 17 - 5MHz QPSK – Full RB)



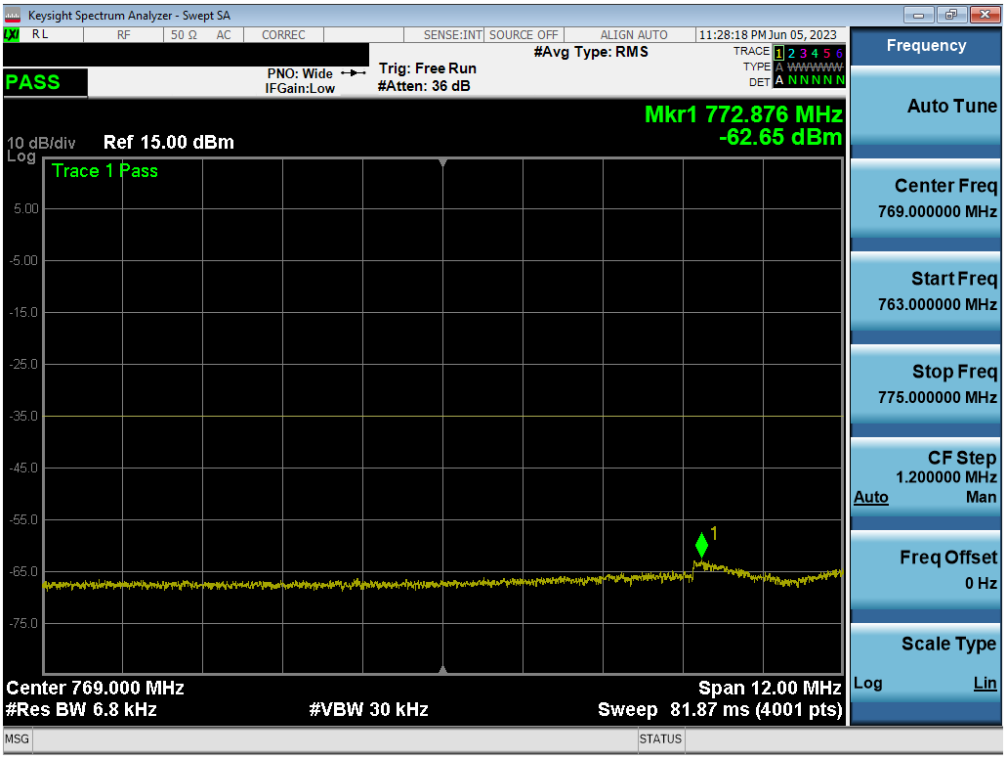
Plot 7-114. Lower Band Edge Plot (LTE Band 17 - 10MHz QPSK – Full RB)



Plot 7-115. Upper Band Edge Plot (LTE Band 17 - 10MHz QPSK – Full RB)

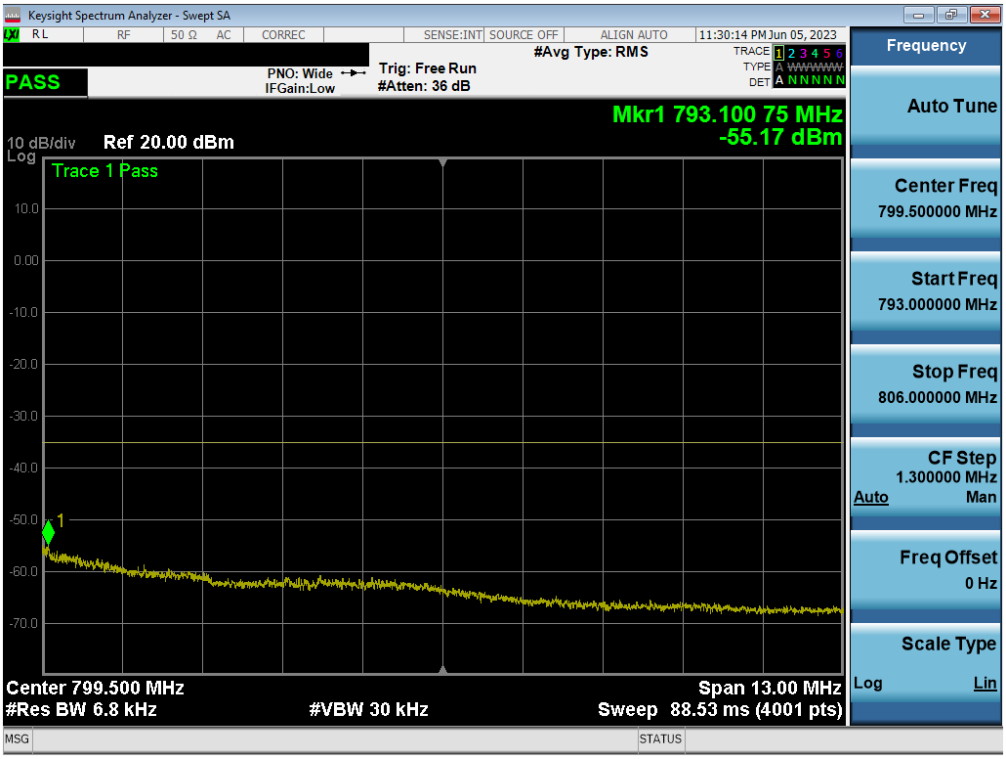
LTE Band 13

Plot 7-116. Lower Band Edge Plot (LTE Band 13 - 5MHz QPSK – Full RB)

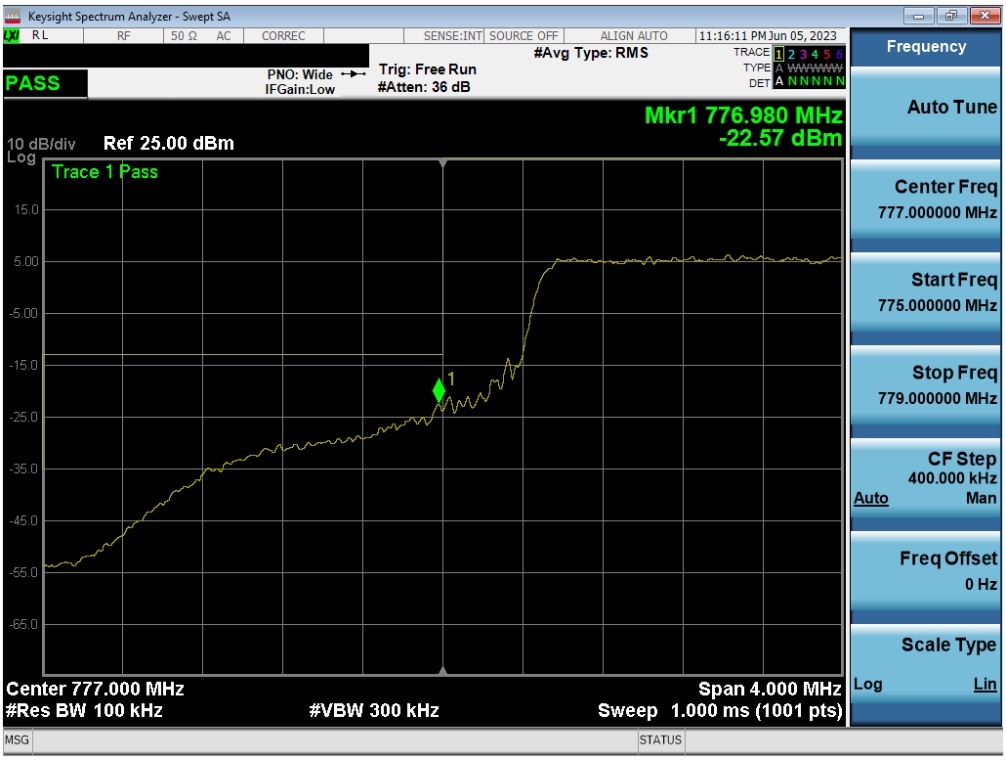


Plot 7-117. Lower Emission Mask Plot (LTE Band 13 - 5MHz QPSK – Full RB)

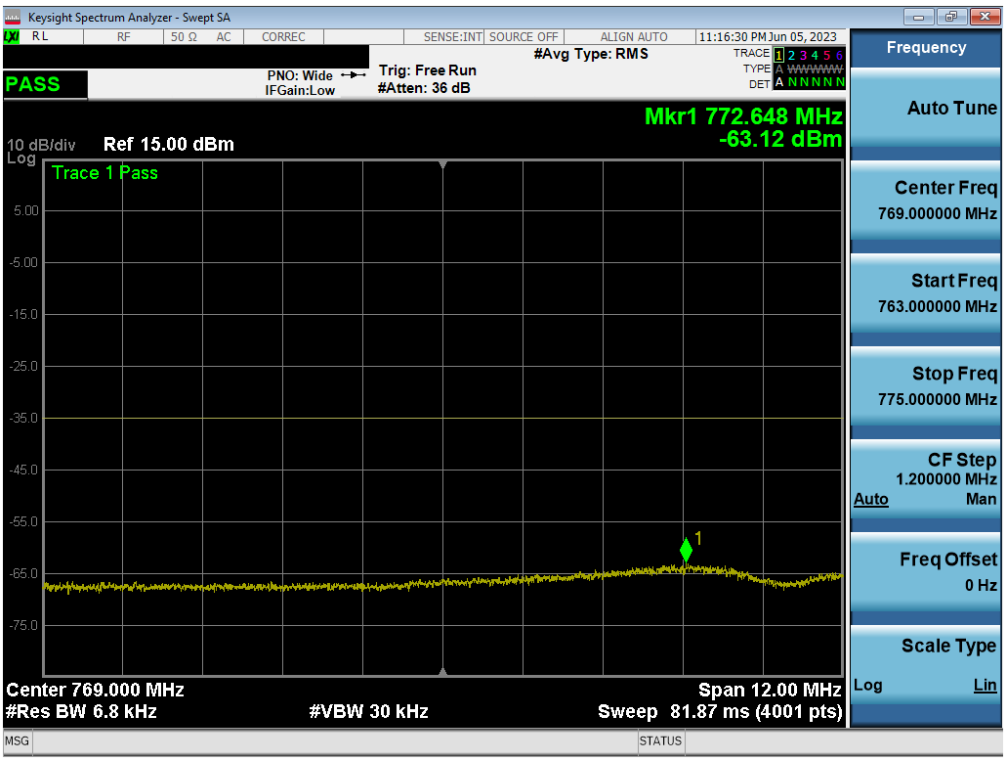
Plot 7-118. Upper Band Edge Plot (LTE Band 13 - 5MHz QPSK – Full RB)



Plot 7-119. Upper Emission Mask Plot (LTE Band 13 - 5MHz QPSK – Full RB)

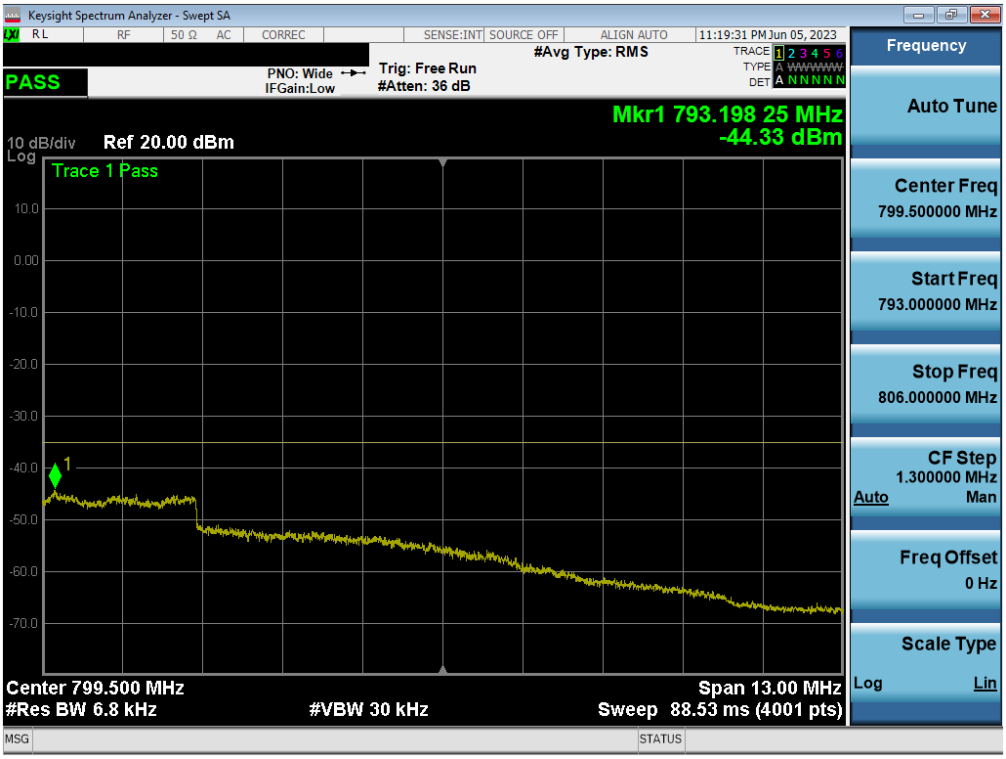


Plot 7-120. Lower Band Edge Plot (LTE Band 13 - 10MHz QPSK – Full RB)



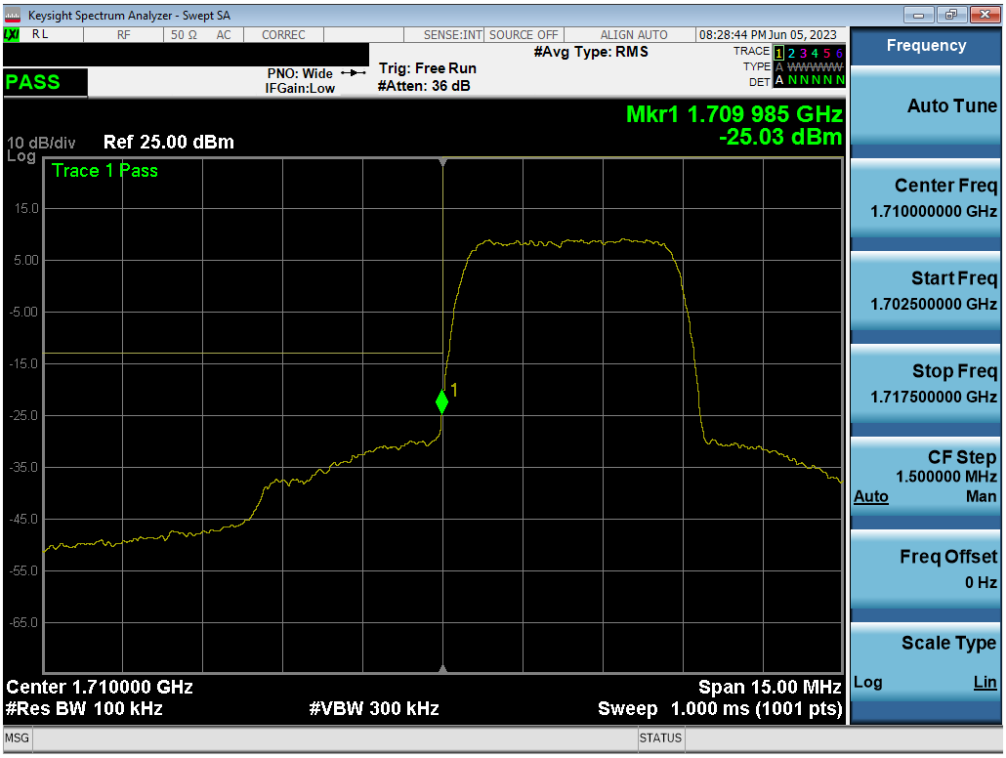
Plot 7-121. Lower Emission Mask Plot (LTE Band 13 - 10MHz QPSK – Full RB)

Plot 7-122. Upper Band Edge Plot (LTE Band 13 - 10MHz QPSK – Full RB)

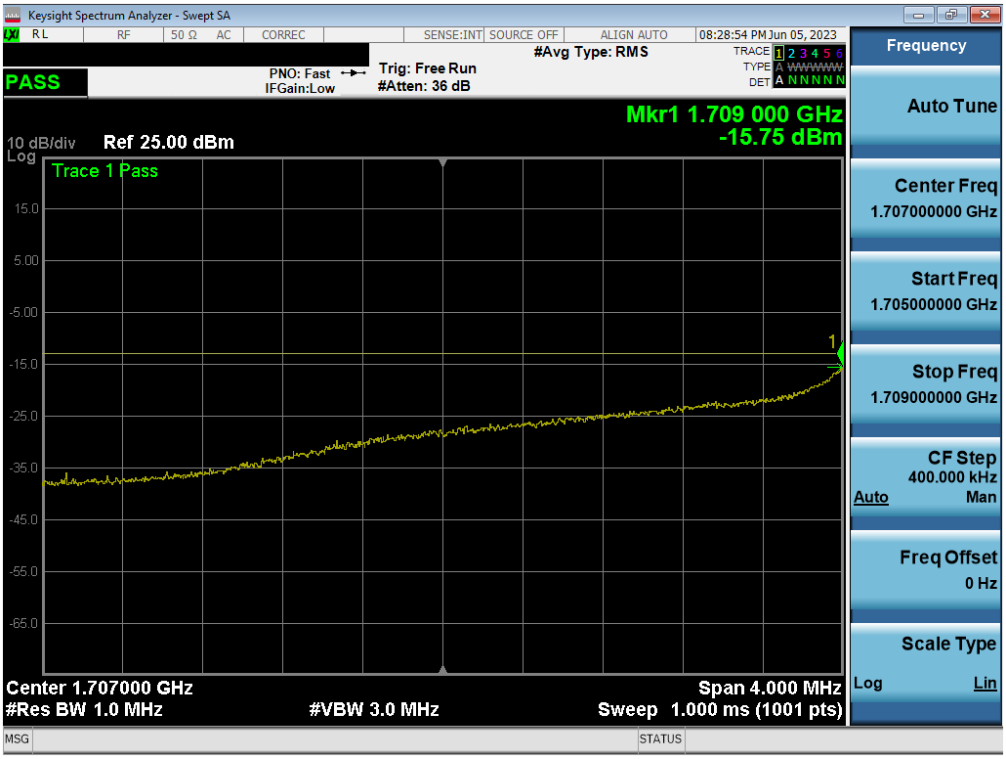


Plot 7-123. Upper Emission Mask Plot (LTE Band 13 - 10MHz QPSK – Full RB)

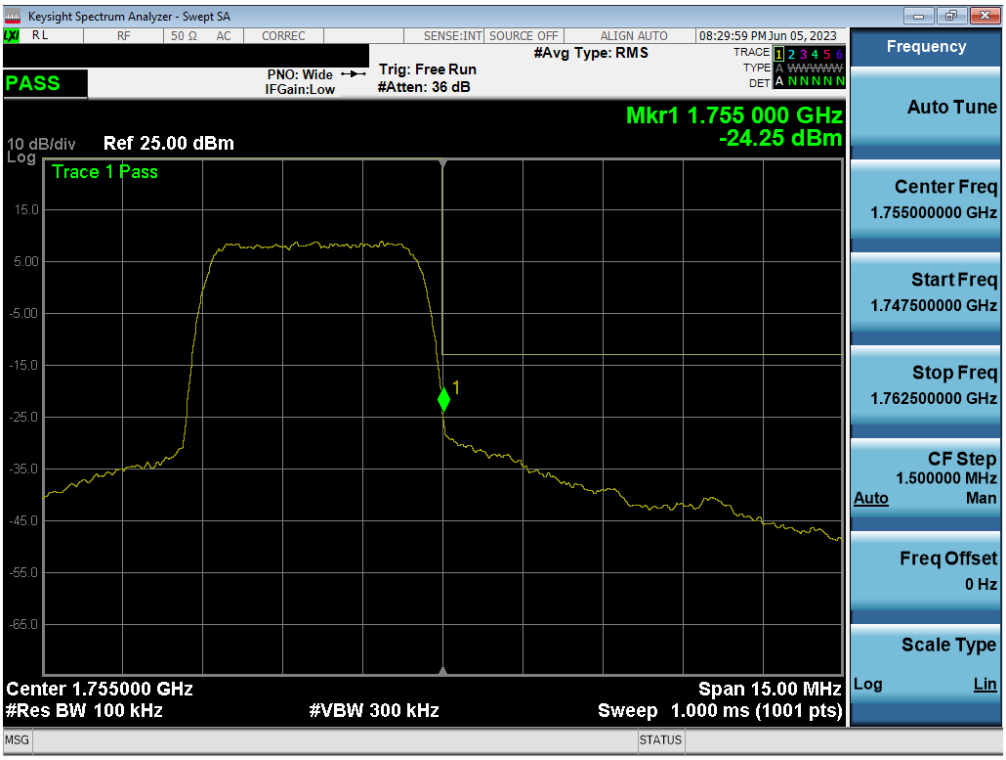
WCDMA AWS



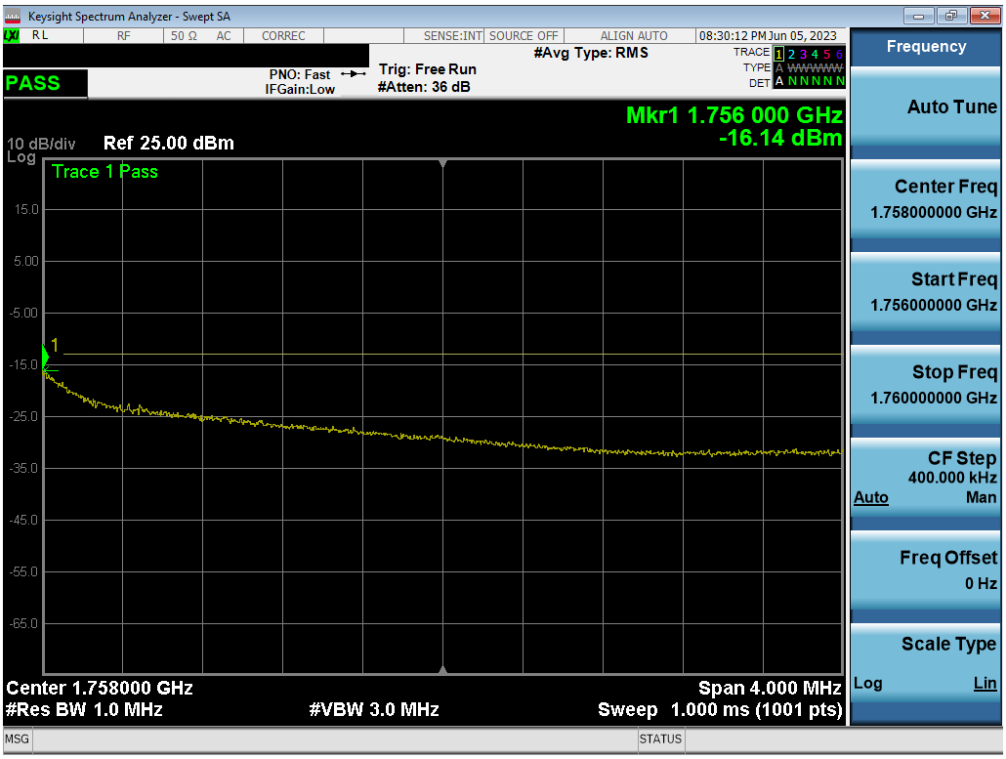
Plot 7-124. Lower Band Edge Plot (WCDMA AWS – Ch. 1312)



Plot 7-125. Lower Extended Band Edge Plot (WCDMA AWS – Ch. 1312)



Plot 7-126. Upper Band Edge Plot (WCDMA AWS – Ch. 1513)



Plot 7-127. Upper Extended Band Edge Plot (WCDMA AWS – Ch. 1513)

7.5 Peak-Average Ratio

§27.50(d)(5)

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. All ports were tested and only the worst case data were reported.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 5.7.1

Test Settings

1. The signal analyzer's CCDF measurement profile is enabled
2. Frequency = carrier center frequency
3. Measurement BW ≥ 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.

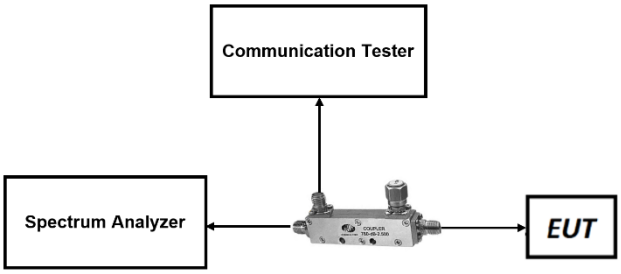
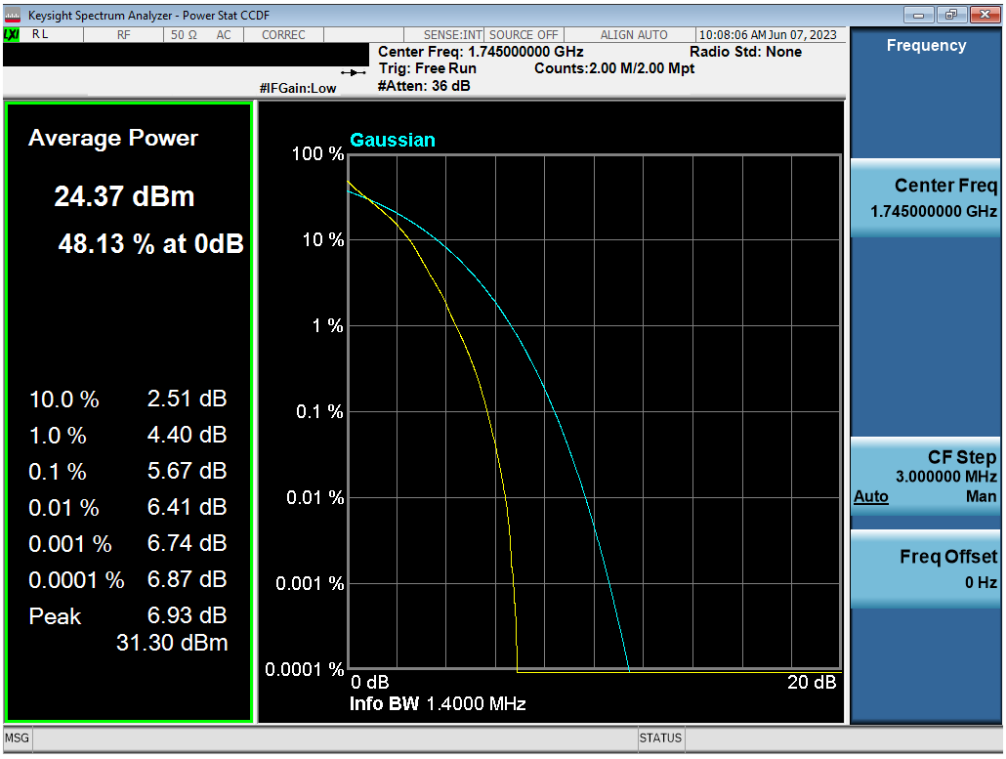


Figure 7-4. Test Instrument & Measurement Setup

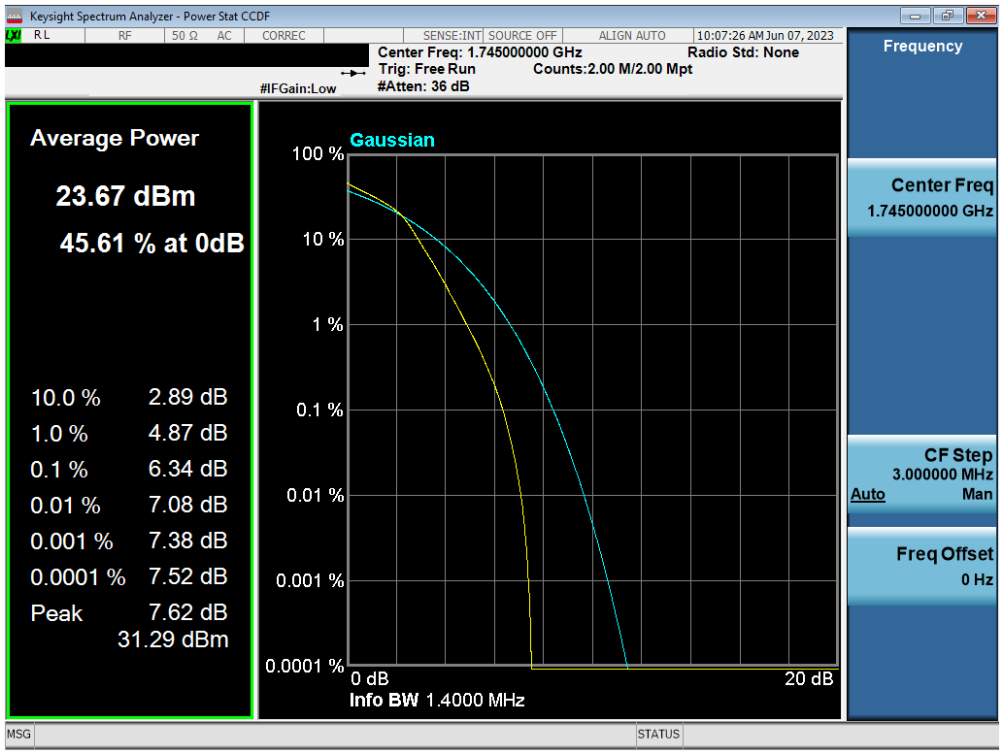
Test Notes

None.

LTE Band 66



Plot 7-128. PAR Plot (LTE Band 66 - 1.4MHz QPSK - Full RB)



Plot 7-129. PAR Plot (LTE Band 66 - 1.4MHz 16-QAM - Full RB)