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PART 27 MEASUREMENT REPORT

Applicant Name:
Samsung Electronics Co., Ltd.
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Yeongtong-gu, Suwon-si
Gyeonggi-do, 16677, Korea

Date of Testing:
09/08 - 11/09/2023
Test Report Issue Date:
11/09/2023
Test Site/Location:
Element lab., Columbia, MD, USA
Test Report Serial No.:
1M2309070100-04.A3L

FCC ID:	A3LSMA156U
Applicant Name:	Samsung Electronics Co., Ltd.

Application Type:	Certification
Model:	SM-A156U
Additional Model(s):	SM-A156U1/DS, SM-S156V
EUT Type:	Portable Handset
FCC Classification:	PCS Licensed Transmitter Held to Ear (PCE)
FCC Rule Part:	27
Test Procedure(s):	ANSI C63.26-2015

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]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
LTE Band 30	10 MHz	QPSK	2310.0	0.097	19.87	9M03G7D
		16QAM	2310.0	0.078	18.92	9M05W7D
	5 MHz	QPSK	2307.5 - 2312.5	0.101	20.03	4M57G7D
		16QAM	2307.5 - 2312.5	0.079	18.97	4M52W7D
LTE Band 7	20 MHz	QPSK	2510.0 - 2560.0	0.190	22.78	18M0G7D
		16QAM	2510.0 - 2560.0	0.158	21.98	18M0W7D
	15 MHz	QPSK	2507.5 - 2562.5	0.191	22.81	13M5G7D
		16QAM	2507.5 - 2562.5	0.161	22.07	13M5W7D
	10 MHz	QPSK	2505.0 - 2565.0	0.183	22.63	9M03G7D
		16QAM	2505.0 - 2565.0	0.153	21.84	9M05W7D
	5 MHz	QPSK	2502.5 - 2567.5	0.182	22.59	4M56G7D
		16QAM	2502.5 - 2567.5	0.157	21.96	4M52W7D
LTE Band 41(PC2)	20 MHz	QPSK	2506.0 - 2680.0	0.402	26.04	18M0G7D
		16QAM	2506.0 - 2680.0	0.309	24.90	17M9W7D
	15 MHz	QPSK	2503.5 - 2682.5	0.404	26.06	13M5G7D
		16QAM	2503.5 - 2682.5	0.311	24.93	13M5W7D
	10 MHz	QPSK	2501.0 - 2685.0	0.398	26.00	9M03G7D
		16QAM	2501.0 - 2685.0	0.306	24.85	8M99W7D
	5 MHz	QPSK	2498.5 - 2687.5	0.405	26.07	4M53G7D
		16QAM	2498.5 - 2687.5	0.306	24.86	4M51W7D
LTE Band 41(PC3)/38	20 MHz	QPSK	2506.0 - 2680.0	0.286	24.57	18M0G7D
		16QAM	2506.0 - 2680.0	0.221	23.45	18M0W7D
	15 MHz	QPSK	2503.5 - 2682.5	0.287	24.57	13M5G7D
		16QAM	2503.5 - 2682.5	0.219	23.41	13M5W7D
	10 MHz	QPSK	2501.0 - 2685.0	0.288	24.60	9M00G7D
		16QAM	2501.0 - 2685.0	0.222	23.46	9M01W7D
	5 MHz	QPSK	2498.5 - 2687.5	0.287	24.57	4M52G7D
		16QAM	2498.5 - 2687.5	0.218	23.39	4M51W7D
NR Band n41(PC2)	100 MHz	$\pi/2$ BPSK	2546.0 - 2640.0	0.421	26.24	96M8G7D
		QPSK	2546.0 - 2640.0	0.414	26.17	97M8G7D
		16QAM	2546.0 - 2640.0	0.393	25.94	97M8W7D
	90 MHz	$\pi/2$ BPSK	2541.0 - 2645.0	0.413	26.15	87M2G7D
		QPSK	2541.0 - 2645.0	0.404	26.06	88M0G7D
	80 MHz	16QAM	2541.0 - 2645.0	0.390	25.91	87M7W7D
		$\pi/2$ BPSK	2536.0 - 2650.0	0.408	26.10	77M3G7D
	70 MHz	QPSK	2536.0 - 2650.0	0.405	26.07	77M8G7D
		16QAM	2536.0 - 2650.0	0.384	25.84	77M9W7D
	60 MHz	$\pi/2$ BPSK	2531.0 - 2655.0	0.414	26.17	64M4G7D
		QPSK	2531.0 - 2655.0	0.420	26.23	67M6G7D
	50 MHz	16QAM	2531.0 - 2655.0	0.370	25.68	67M5W7D
		$\pi/2$ BPSK	2526.0 - 2660.0	0.414	26.17	58M1G7D
	40 MHz	QPSK	2526.0 - 2660.0	0.390	25.91	58M2G7D
		16QAM	2526.0 - 2660.0	0.375	25.74	58M1W7D
	30 MHz	$\pi/2$ BPSK	2521.0 - 2665.0	0.425	26.28	46M0G7D
		QPSK	2521.0 - 2665.0	0.416	26.19	47M6G7D
	20 MHz	16QAM	2521.0 - 2665.0	0.375	25.74	47M7W7D
		$\pi/2$ BPSK	2516.0 - 2670.0	0.431	26.34	35M9G7D
	15 MHz	QPSK	2516.0 - 2670.0	0.396	25.97	38M1G7D
		16QAM	2516.0 - 2670.0	0.383	25.83	38M0W7D
	10 MHz	$\pi/2$ BPSK	2511.0 - 2675.0	0.430	26.33	27M0G7D
		QPSK	2511.0 - 2675.0	0.410	26.12	28M0G7D
	5 MHz	16QAM	2511.0 - 2675.0	0.393	25.94	28M0W7D
		$\pi/2$ BPSK	2506.0 - 2680.0	0.443	26.46	18M1G7D
	2.5 MHz	QPSK	2506.0 - 2680.0	0.411	26.13	18M3G7D
		16QAM	2506.0 - 2680.0	0.377	25.76	18M3W7D
	1.25 MHz	$\pi/2$ BPSK	2506.0 - 2680.0	0.377	25.76	13M0G7D
		QPSK	2506.0 - 2680.0	0.331	25.20	13M6G7D
	0.75 MHz	16QAM	2506.0 - 2680.0	0.386	25.87	13M7W7D
		$\pi/2$ BPSK	2506.0 - 2680.0	0.416	26.19	8M63G7D
	0.5 MHz	QPSK	2506.0 - 2680.0	0.434	26.37	8M64G7D
		16QAM	2506.0 - 2680.0	0.408	26.10	8M59W7D

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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 **Samsung Portable Handset FCC ID: A3LSMA156U**. 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.: 0679M, 0520M, 0504M, 0499M, 0705M

2.2 Device Capabilities

This device contains the following capabilities:

850/1900 GSM/GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Multi-band LTE, Multi-band 5G NR (FR1), 802.11b/g/n WLAN, 802.11a/n/ac UNII (5GHz), Bluetooth (1x, EDR, LE), NFC

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 software/firmware version A156USQU0AWIB installed on the EUT.

2.5 EMI Suppression Device(s)/Modifications

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

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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
-	AP2-001	EMC Cable and Switch System	1/11/2023	Annual	1/11/2024	AP2-001
-	AP2-002	EMC Cable and Switch System	1/11/2023	Annual	1/11/2024	AP2-002
-	ETS-001	EMC Cable and Switch System	1/11/2023	Annual	1/11/2024	ETS-001
-	ETS-002	EMC Cable and Switch System	1/11/2023	Annual	1/11/2024	ETS-002
-	LTx1	Licensed Transmitter Cable Set	1/12/2023	Annual	1/12/2024	LTx1
-	LTx2	Licensed Transmitter Cable Set	1/12/2023	Annual	1/12/2024	LTx2
-	LTx3	Licensed Transmitter Cable Set	1/12/2023	Annual	1/12/2024	LTx3
-	LTx4	Licensed Transmitter Cable Set	1/12/2023	Annual	1/12/2024	LTx4
-	LTx5	Licensed Transmitter Cable Set	1/12/2023	Annual	1/12/2024	LTx5
Anritsu	MT8821C	Radio Communication Analyzer	N/A			6201525694
Emco	3115	Horn Antenna (1-18GHz)	8/8/2022	Biennial	8/8/2024	9704-5182
Emco	3116	Horn Antenna (18 - 40GHz)	7/5/2023	Biennial	7/5/2025	9203-2178
Keysight Technologies	N9030A	PXA Signal Analyzer (3Hz-26.5GHz)	8/7/2023	Annual	8/7/2024	MY49430494
Keysight Technologies	N9030A	PXA Signal Analyzer (44GHz)	3/15/2023	Annual	3/15/2024	MY52350166
Rohde & Schwarz	CMW500	Radio Communication Tester	N/A			112347
Rohde & Schwarz	TC-TA18	Cross Polarized Vivaldi Test Antenna	9/28/2022	Biennial	9/28/2024	101058
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	9/25/2023	Annual	9/25/2024	100342
Rohde & Schwarz	ESW44	EMI Test Receiver (2Hz-44GHz)	3/1/2023	Annual	3/1/2024	101716
Rohde & Schwarz	VULB9163	Bi-Log Antenna	2/21/2023	Biennial	2/21/2025	00301
Sunol	JB6	LB6 Antenna	8/30/2022	Biennial	8/30/2024	A082816

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

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

Example: Spurious emission at 3700.40 MHz

The receive 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 3700.40 MHz. So 6.1 dB is added to the signal generator reading of -30.9 dBm yielding -24.80 dBm. The fundamental EIRP was 25.50 dBm so this harmonic was 25.50 dBm $- (-24.80) = 50.3$ dBc.

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7.0 TEST RESULTS

7.1 Summary

Company Name: Samsung Electronics Co., Ltd.
 FCC ID: A3LSMA156U
 FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)
 Mode(s): LTE/NR/ULCA

Test Condition	Test Description	FCC Part Section(s)	Test Limit	Test Result	Reference
CONDUCTED	Transmitter Conducted Output Power*	2.1046(a), 2.1046(c)	N/A	PASS	Section 7.2
	Occupied Bandwidth	2.1049(h)	N/A	PASS	Section 7.3
	Conducted Band Edge / Spurious Emissions (LTE Band 30)	2.1051, 27.53(a)(4)	Undesirable emissions must meet the limits detailed in 27.53(a)(4)	PASS	Sections 7.4, 7.5
	Conducted Band Edge / Spurious Emissions (LTE Band 7, 38, 41; NR Band n41)	2.1051, 27.53(m)(4)	Undesirable emissions must meet the limits detailed in 27.53(m)(4)	PASS	Sections 7.4, 7.5
	Frequency Stability	2.1055, 27.54	Fundamental emissions stay within authorized frequency block	PASS	Section 7.8
RADIATED	Equivalent Isotropic Radiated Power (LTE Band 30)	27.50(a)(3)	≤ 250mW / 5MHz max. EIRP	PASS	Section 7.6
	Equivalent Isotropic Radiated Power (LTE Band 7, 38, 41; NR Band n41)	27.50(h)(2)	≤ 2 Watts max. EIRP	PASS	Section 7.6
	Radiated Spurious Emissions (LTE Band 30)	2.1053, 27.53(a)(4)	Undesirable emissions must meet the limits detailed in 27.53(a)(4)	PASS	Section 7.7
	Radiated Spurious Emissions (LTE Band 7, 38, 41; NR Band n41)	2.1053, 27.53(m)	Undesirable emissions must meet the limits detailed in 27.53(m)	PASS	Section 7.7

* The only transmitter output conducted powers included in this report are those where the Pmax value, per the tune-up document, is higher than any of the DSI power levels. For the remaining conducted power measurements, see the **RF Exposure Report**.

Table 7-1. Summary of Test Results (FCC)

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 EMC Software Tool v1.2.2.

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7.2 Conducted Output Power Data

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.

A-MPR is implemented in this device when operating at Power Class 2 in LTE Band 41 per the A-MPR specification in 3GPP TS 36.101. The conducted powers are shown herein to cover the different A-MPR levels specified in the standard. Measurement equipment was set up with triggering/gating on the spectrum analyzer such that powers were measured only during the on-time of the signal.

Test Procedure Used

ANSI C63.26-2015 – Section 5.2

Test Settings

1. Span = 2 x OBW to 3 x OBW
2. Detector = RMS
3. Trace mode = trace average for continuous emissions, max hold for pulse emissions
4. Sweep time = auto couple
5. The trace was allowed to stabilize
6. Please see test notes below for RBW and VBW settings

Test Setup

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

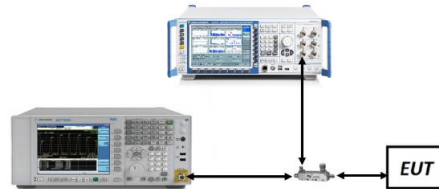


Figure 7-1. Test Instrument & Measurement Setup

Test Notes

1. Uplink carrier aggregation is only supported in this EUT while operating in Power Class 3.
2. 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.
3. All other conducted power measurements are contained in the RF exposure report for this filing.
4. Conducted power was found to reduce for the higher order QAM modulations when compared to 16QAM. Due to this trend, only the worst-case QAM (16QAM) powers are included in this section.

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Power State	Band	Bandwidth (PCC + SCC)	PCC				SCC				ULCA Tx. Power [dBm]				
			Modulation	UL Channel	UL Frequency	UL # RB	UL RB Offset	Modulation	UL Channel	UL Frequency		UL # RB	UL RB Offset		
Max	LTE B41 (PC3)	20MHz + 20MHz	QPSK	39750	2506.0	1	99	QPSK	39948	2525.8	1	0	24.16		
				40620	2593.0	1	99		40818	2612.8	1	0	23.15		
				41490	2680.0	1	0		41292	2660.2	1	99	23.83		
			QPSK	39750	2506	100	0	QPSK	39948	2525.8	100	0	22.19		
				16-QAM	39750	2506	100		0	16-QAM	39948	2525.8	100	0	21.23
				64-QAM	39750	2506	100		0	64-QAM	39948	2525.8	100	0	20.98
				256-QAM	39750	2506	100		0	256-QAM	39948	2525.8	100	0	19.43

Table 7-1. Conducted Power Data (ULCA LTE B41(PC3))

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Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
100 MHz	π/2 BPSK	509202	2546.01	1 / 1	26.28
		518598	2592.99	1 / 1	26.21
		528000	2640.00	1 / 271	26.14
	QPSK	509202	2546.01	1 / 1	26.54
		518598	2592.99	1 / 1	26.29
		528000	2640.00	1 / 271	26.26
16-QAM	509202	2546.01	1 / 1	25.36	
90 MHz	π/2 BPSK	508200	2541.00	1 / 122	26.41
		518598	2592.99	1 / 1	26.11
		528996	2644.98	1 / 243	26.11
	QPSK	508200	2541.00	1 / 122	26.54
		518598	2592.99	1 / 1	26.18
		528996	2644.98	1 / 243	26.19
16-QAM	508200	2541.00	1 / 122	25.41	
80 MHz	π/2 BPSK	507204	2536.02	1 / 1	26.31
		518598	2592.99	1 / 1	26.07
		529998	2649.99	1 / 215	26.16
	QPSK	507204	2536.02	1 / 1	26.49
		518598	2592.99	1 / 1	26.19
		529998	2649.99	1 / 215	26.31
16-QAM	507204	2536.02	1 / 1	25.36	
70 MHz	π/2 BPSK	506202	2531.01	1 / 94	26.43
		518598	2592.99	1 / 1	25.87
		531000	2655.00	1 / 187	26.10
	QPSK	506202	2531.01	1 / 94	26.80
		518598	2592.99	1 / 1	26.02
		531000	2655.00	1 / 187	26.17
16-QAM	506202	2531.01	1 / 94	25.42	
60 MHz	π/2 BPSK	505200	2526.00	1 / 81	26.43
		518598	2592.99	1 / 1	25.80
		531996	2659.98	1 / 160	26.23
	QPSK	505200	2526.00	1 / 81	26.48
		518598	2592.99	1 / 1	25.84
		531996	2659.98	1 / 160	26.32
16-QAM	505200	2526.00	1 / 81	25.54	
50 MHz	π/2 BPSK	504204	2521.02	1 / 66	26.54
		518598	2592.99	1 / 1	25.75
		532998	2664.99	1 / 131	26.31
	QPSK	504204	2521.02	1 / 66	26.76
		518598	2592.99	1 / 1	25.80
		532998	2664.99	1 / 131	26.43
16-QAM	504204	2521.02	1 / 66	25.54	
40 MHz	π/2 BPSK	503202	2516.01	1 / 53	26.60
		518598	2592.99	1 / 1	25.71
		534000	2670.00	1 / 104	26.21
	QPSK	503202	2516.01	1 / 53	26.54
		518598	2592.99	1 / 1	25.72
		534000	2670.00	1 / 104	26.26
16-QAM	503202	2516.01	1 / 53	25.63	
30 MHz	π/2 BPSK	502200	2511.00	1 / 39	26.59
		518598	2592.99	1 / 39	25.69
		534996	2674.98	1 / 39	26.35
	QPSK	502200	2511.00	1 / 39	26.69
		518598	2592.99	1 / 39	25.72
		534996	2674.98	1 / 39	26.45
16-QAM	502200	2511.00	1 / 39	25.74	
20 MHz	π/2 BPSK	501204	2506.02	1 / 25	26.72
		518598	2592.99	1 / 25	25.54
		535998	2679.99	1 / 25	26.48
	QPSK	501204	2506.02	1 / 25	26.70
		518598	2592.99	1 / 25	25.83
		535998	2679.99	1 / 25	26.37
16-QAM	501204	2506.02	1 / 25	25.56	
15 MHz	π/2 BPSK	500700	2503.50	1 / 19	26.63
		518598	2592.99	1 / 19	25.67
		536496	2682.48	1 / 19	26.26
	QPSK	500700	2503.50	1 / 19	26.67
		518598	2592.99	1 / 19	25.71
		536496	2682.48	1 / 19	26.27
16-QAM	500700	2503.50	1 / 36	25.67	
10 MHz	π/2 BPSK	500202	2501.01	1 / 1	26.45
		518598	2592.99	1 / 12	25.55
		537000	2685.00	1 / 1	25.96
	QPSK	500202	2501.01	1 / 1	26.68
		518598	2592.99	1 / 12	25.57
		537000	2685.00	1 / 1	26.05
16-QAM	500202	2501.01	1 / 1	25.46	

Table 7-2. Conducted Power Data (NR Band n41)

FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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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 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.

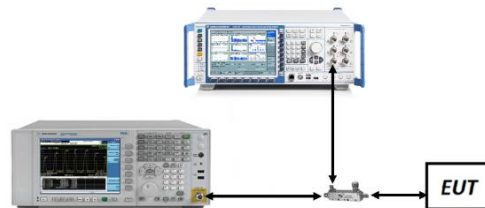


Figure 7-2. Test Instrument & Measurement Setup

Test Notes

None.

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Mode	Bandwidth	Modulation	OBW [MHz]
LTE Band 30	10MHz	QPSK	9.03
		16QAM	9.05
	5 MHz	QPSK	4.57
		16QAM	4.52
LTE Band 7	20 MHz	QPSK	18.03
		16QAM	18.03
	15 MHz	QPSK	13.52
		16QAM	13.52
	10 MHz	QPSK	9.03
		16QAM	9.05
	5 MHz	QPSK	4.56
		16QAM	4.52
LTE Band 41 (PC2)	20 MHz	QPSK	17.99
		16QAM	17.94
	15 MHz	QPSK	13.51
		16QAM	13.54
	10 MHz	QPSK	9.03
		16QAM	8.99
	5 MHz	QPSK	4.53
		16QAM	4.51
LTE Band 41(PC3)/38	20 MHz	QPSK	17.97
		16QAM	17.98
	15 MHz	QPSK	13.52
		16QAM	13.54
	10 MHz	QPSK	9.00
		16QAM	9.01
	5 MHz	QPSK	4.52
		16QAM	4.51
NR Band n41(PC2)	100 MHz	$\pi/2$ BPSK	96.84
		QPSK	97.78
		16QAM	97.80
	90 MHz	$\pi/2$ BPSK	87.24
		QPSK	87.99
		16QAM	87.74
	80 MHz	$\pi/2$ BPSK	77.32
		QPSK	77.79
		16QAM	77.89
	70 MHz	$\pi/2$ BPSK	64.52
		QPSK	67.11
		16QAM	67.77
	60 MHz	$\pi/2$ BPSK	58.08
		QPSK	58.18
		16QAM	58.14
	50 MHz	$\pi/2$ BPSK	46.05
		QPSK	47.56
		16QAM	47.66
	40 MHz	$\pi/2$ BPSK	35.88
		QPSK	38.11
		16QAM	37.96
	30MHz	$\pi/2$ BPSK	26.98
		QPSK	27.96
		16QAM	27.97
	20 MHz	$\pi/2$ BPSK	18.05
		QPSK	18.28
		16QAM	18.27
	15 MHz	$\pi/2$ BPSK	13.00
		QPSK	13.60
		16QAM	13.67
	10 MHz	$\pi/2$ BPSK	8.63
		QPSK	8.64
16QAM		8.59	

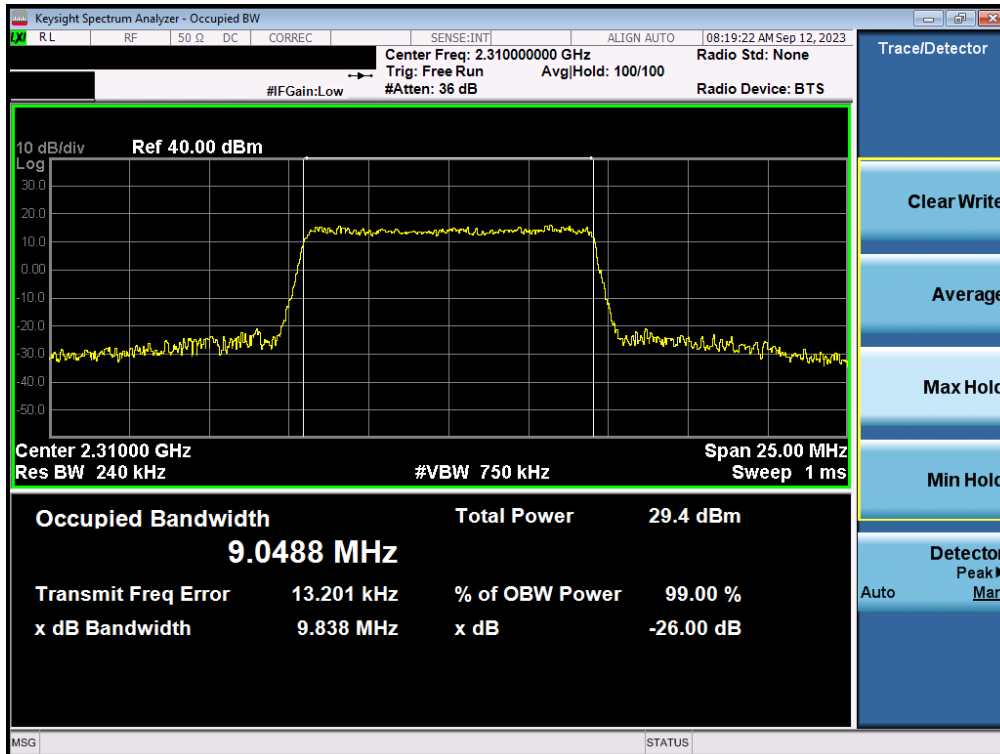
Table 7-3. Occupied Bandwidth Test Results

FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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LTE Band 30

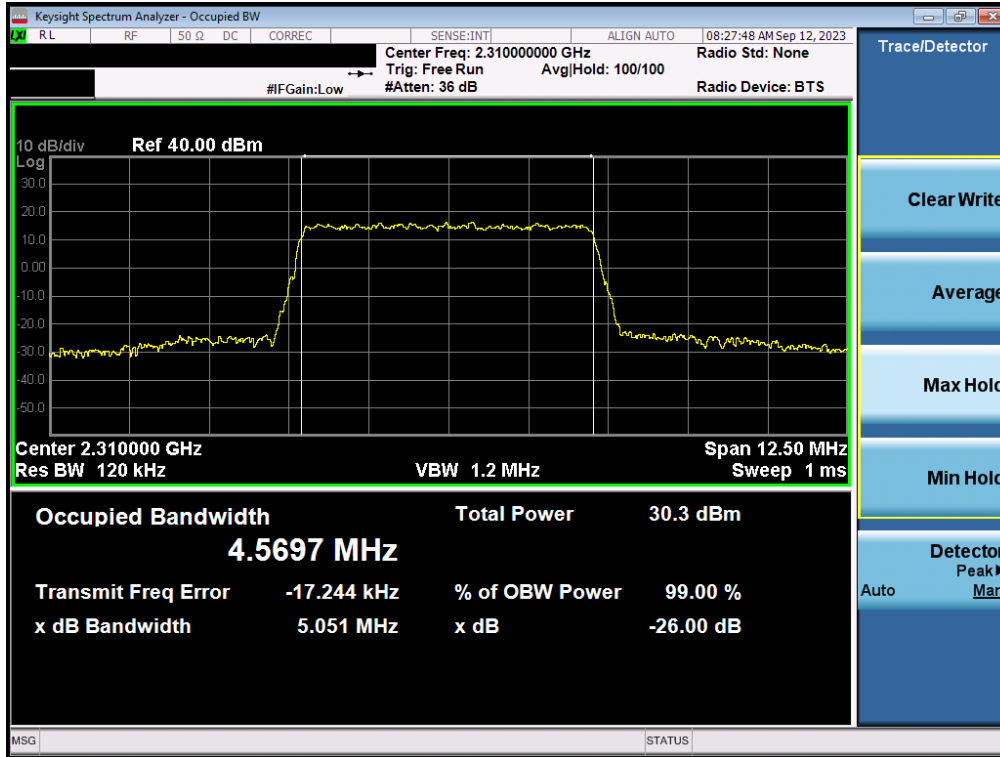


Plot 7-4. Occupied Bandwidth Plot (LTE Band 30 - 10MHz QPSK - Full RB)

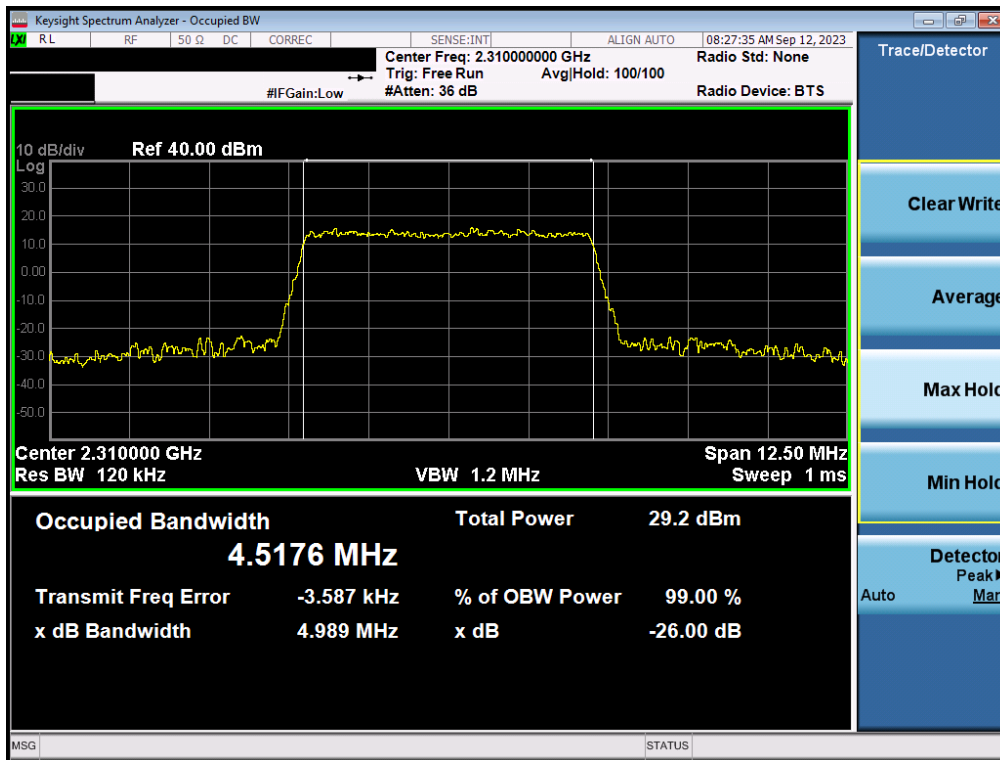


Plot 7-5. Occupied Bandwidth Plot (LTE Band 30 - 10MHz 16-QAM - Full RB)

FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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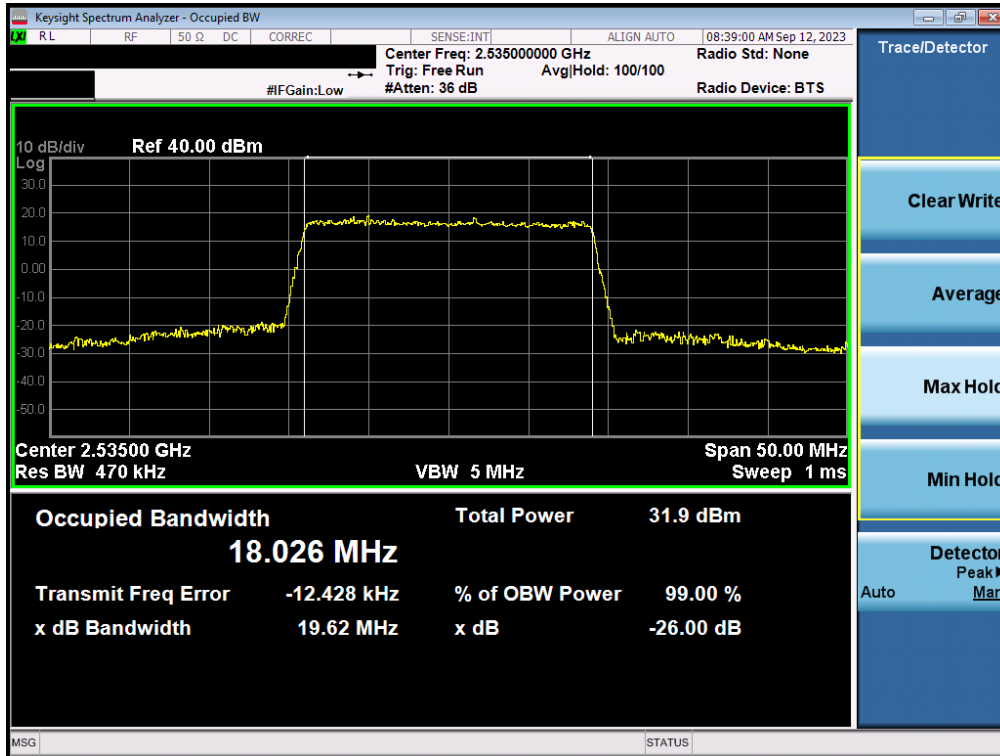
Plot 7-6. Occupied Bandwidth Plot (LTE Band 30 - 5MHz QPSK - Full RB)



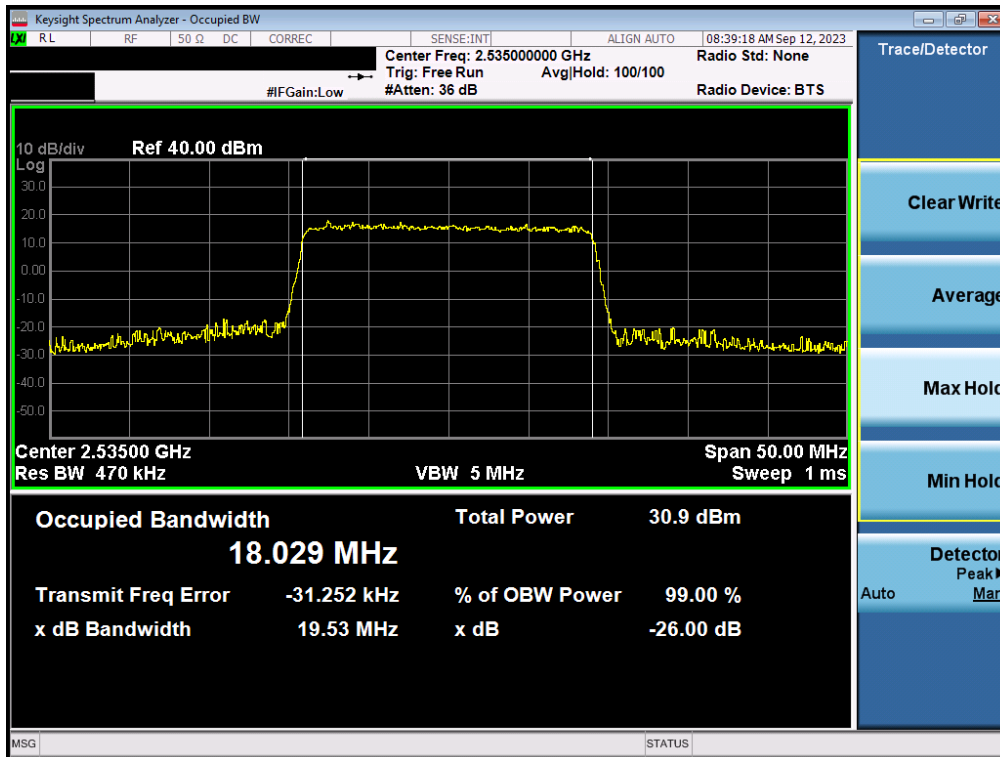
Plot 7-7. Occupied Bandwidth Plot (LTE Band 30 - 5MHz 16-QAM - Full RB)

FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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LTE Band 7

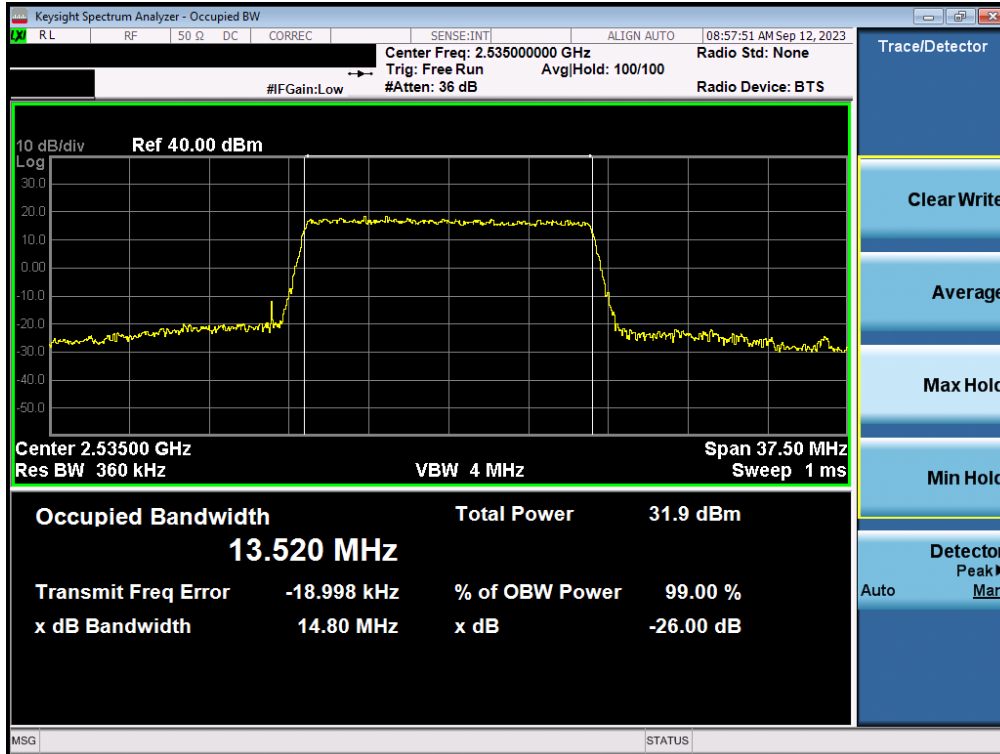


Plot 7-8. Occupied Bandwidth Plot (LTE Band 7 - 20MHz QPSK - Full RB)

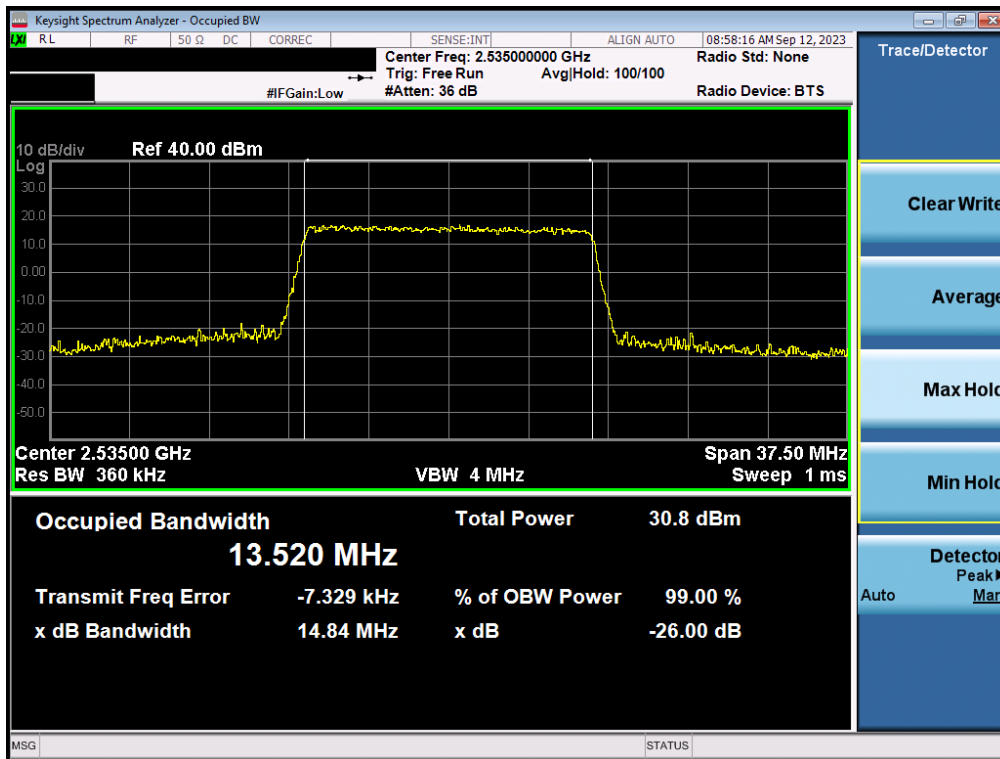


Plot 7-9. Occupied Bandwidth Plot (LTE Band 7 - 20MHz 16-QAM - Full RB)

FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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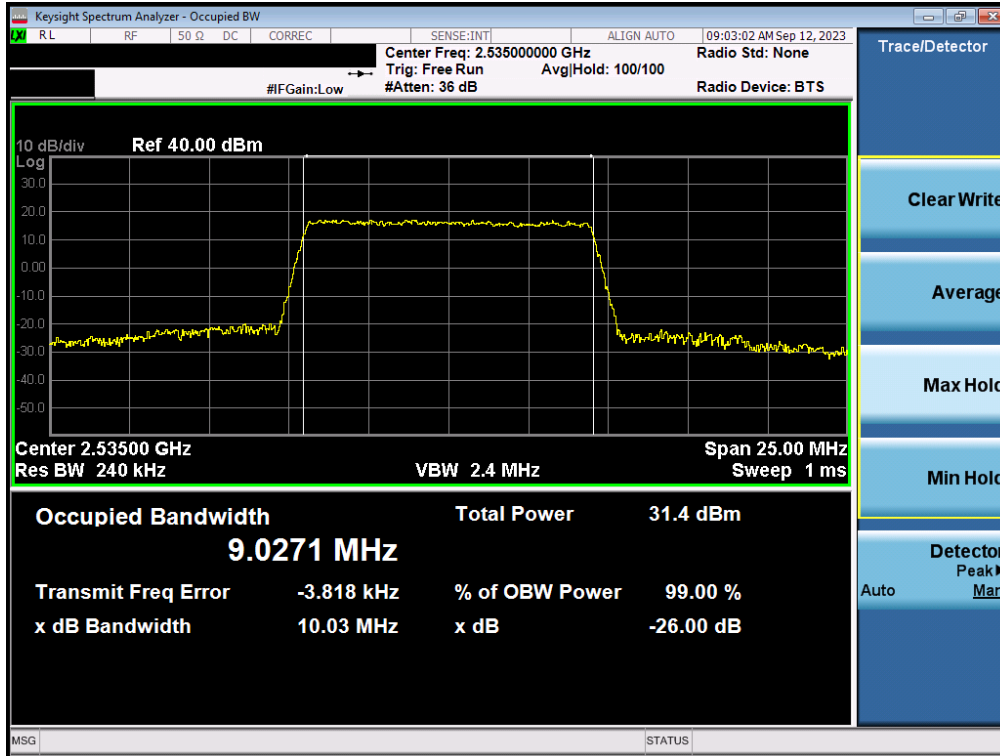


Plot 7-10. Occupied Bandwidth Plot (LTE Band 7 - 15MHz QPSK - Full RB)

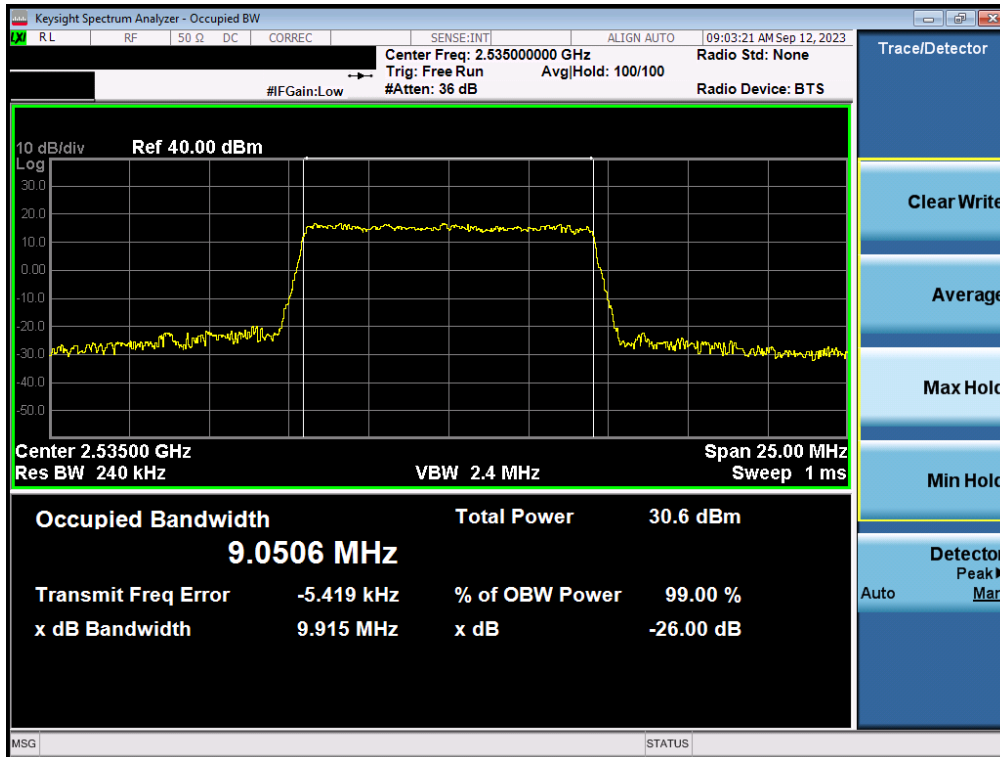


Plot 7-11. Occupied Bandwidth Plot (LTE Band 7 - 15MHz 16-QAM - Full RB)

FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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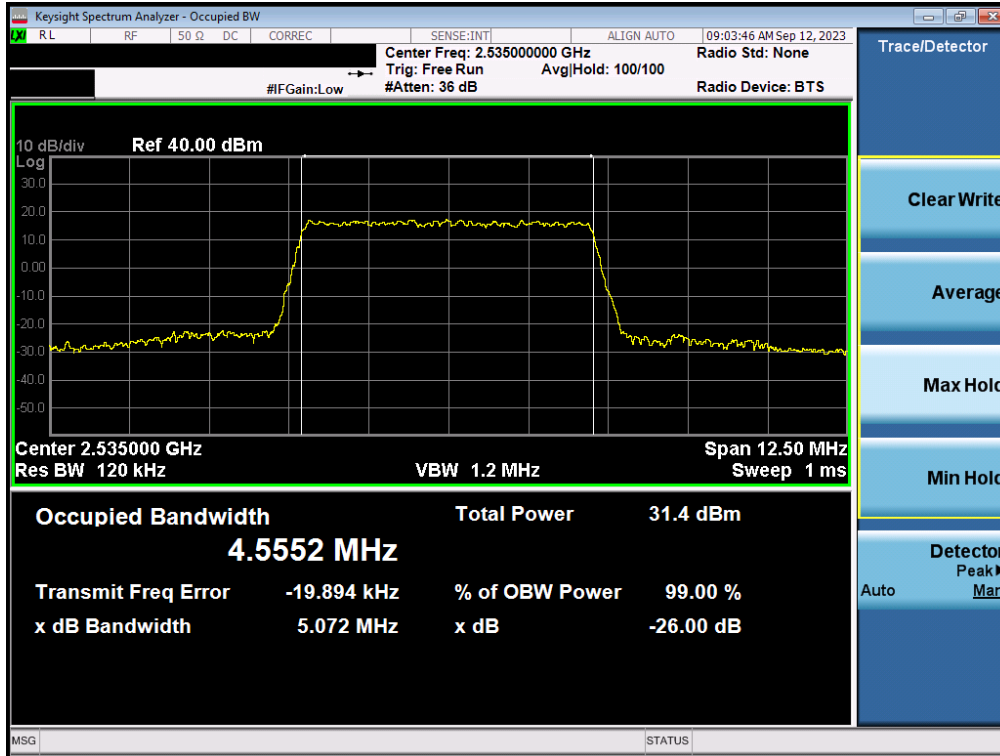


Plot 7-12. Occupied Bandwidth Plot (LTE Band 7 - 10MHz QPSK - Full RB)

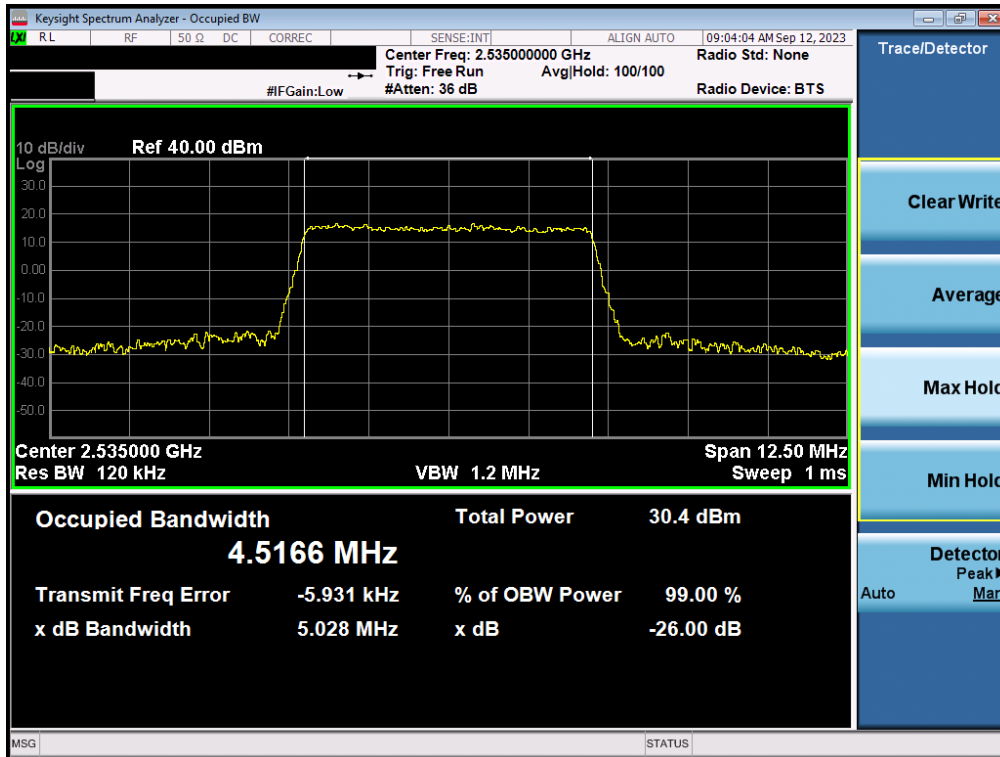


Plot 7-13. Occupied Bandwidth Plot (LTE Band 7 - 10MHz 16-QAM - Full RB)

FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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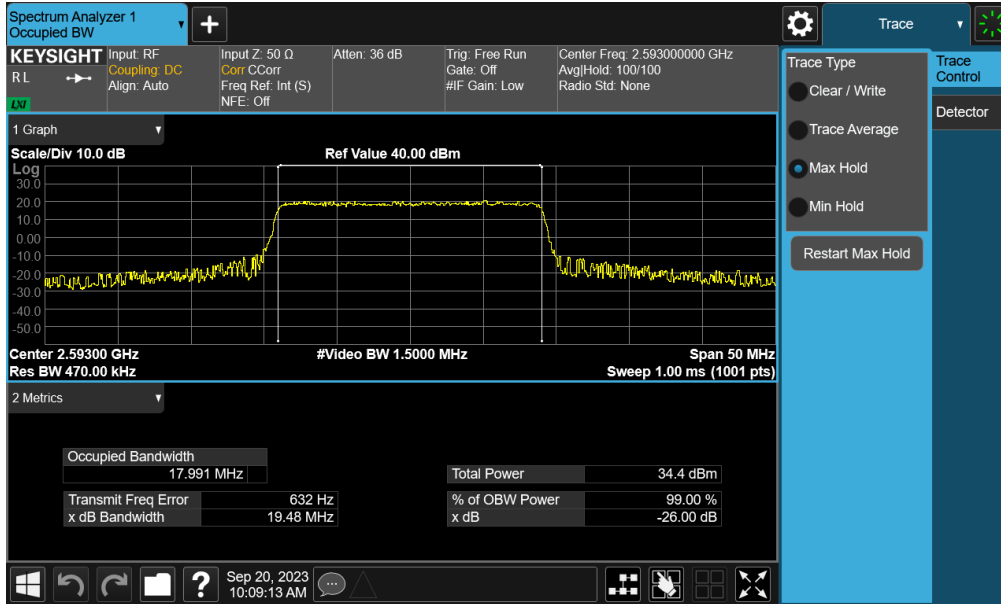
Plot 7-14. Occupied Bandwidth Plot (LTE Band 7 - 5MHz QPSK - Full RB)



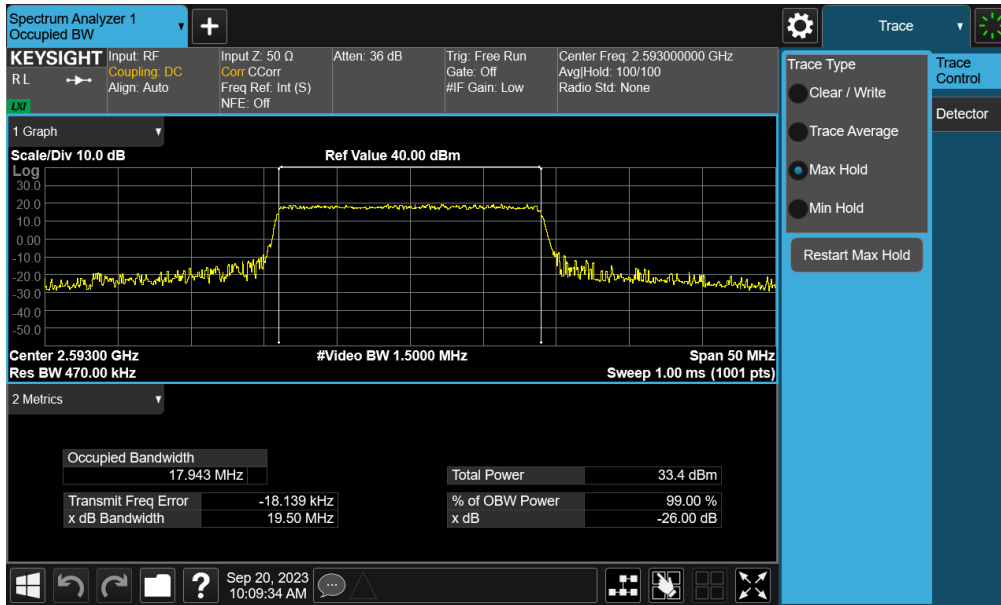
Plot 7-15. Occupied Bandwidth Plot (LTE Band 7 - 5MHz 16-QAM - Full RB)

FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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LTE Band 41(PC2)

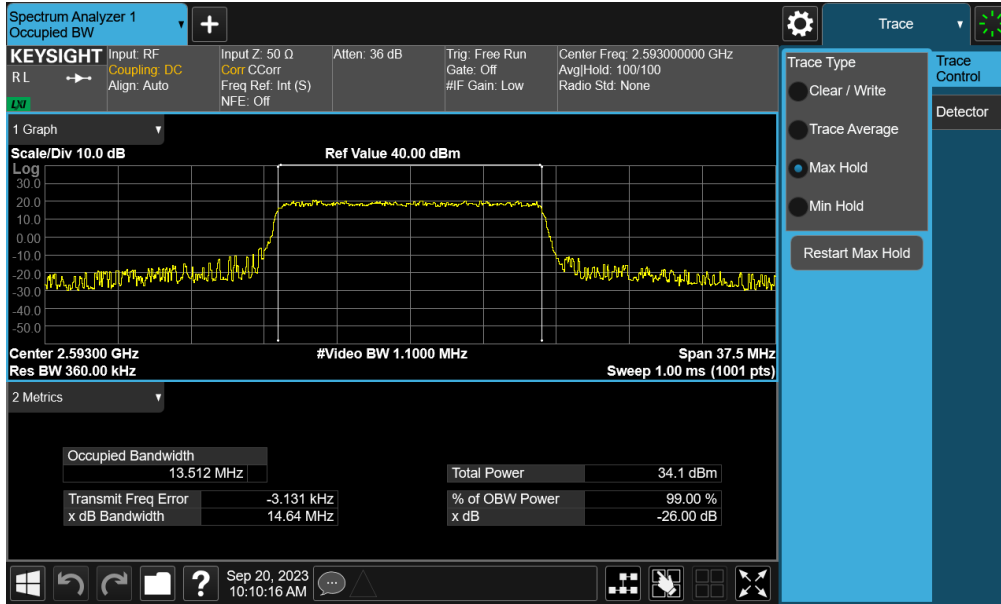


Plot 7-16. Occupied Bandwidth Plot (LTE Band 41(PC2) - 20MHz QPSK - Full RB)

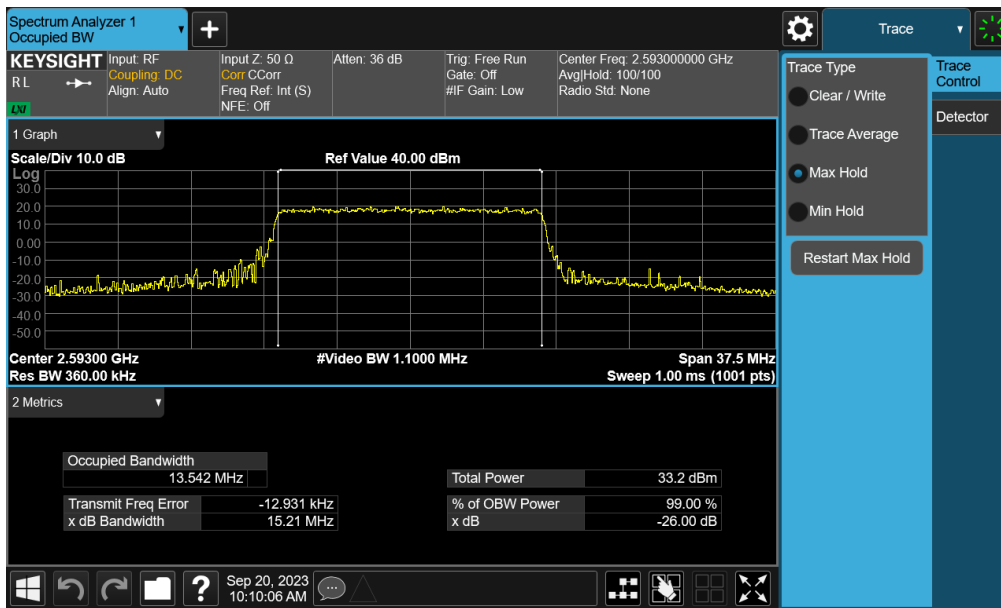


Plot 7-17. Occupied Bandwidth Plot (LTE Band 41(PC2) - 20MHz 16-QAM - Full RB)

FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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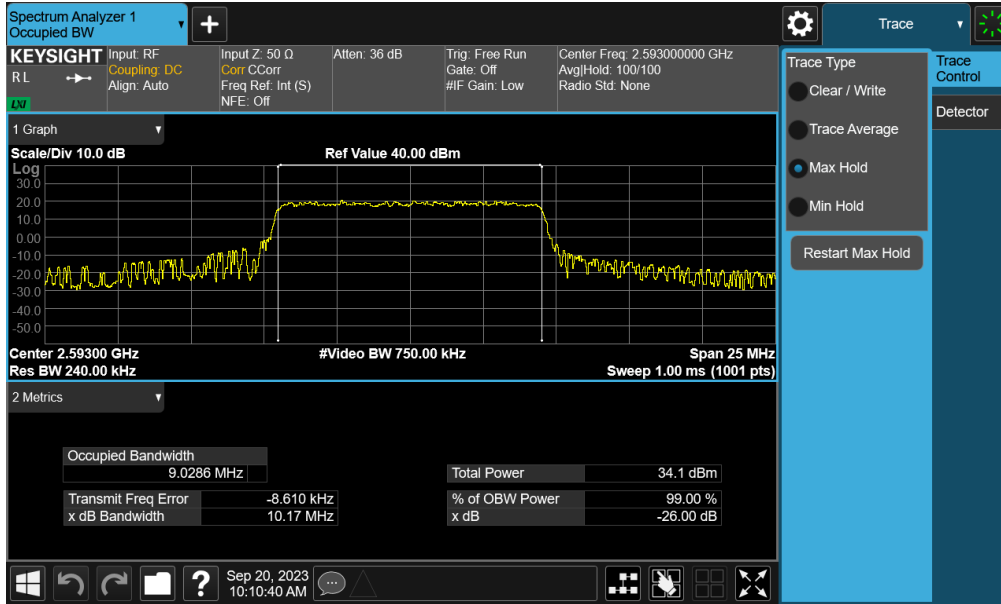


Plot 7-18. Occupied Bandwidth Plot (LTE Band 41(PC2) - 15MHz QPSK - Full RB)

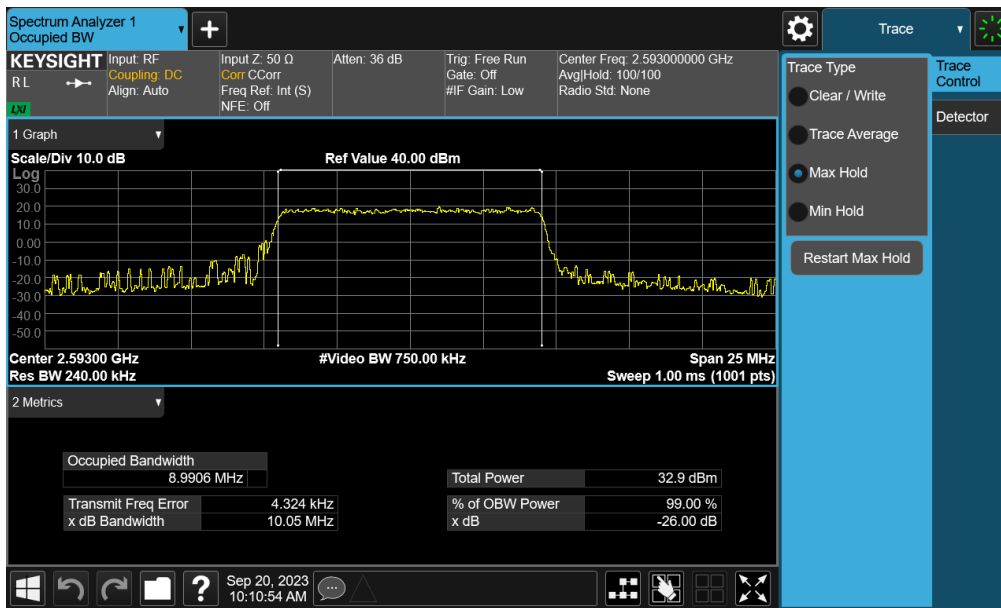


Plot 7-19. Occupied Bandwidth Plot (LTE Band 41(PC2) - 15MHz 16-QAM - Full RB)

FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-20. Occupied Bandwidth Plot (LTE Band 41(PC2) - 10MHz QPSK - Full RB)

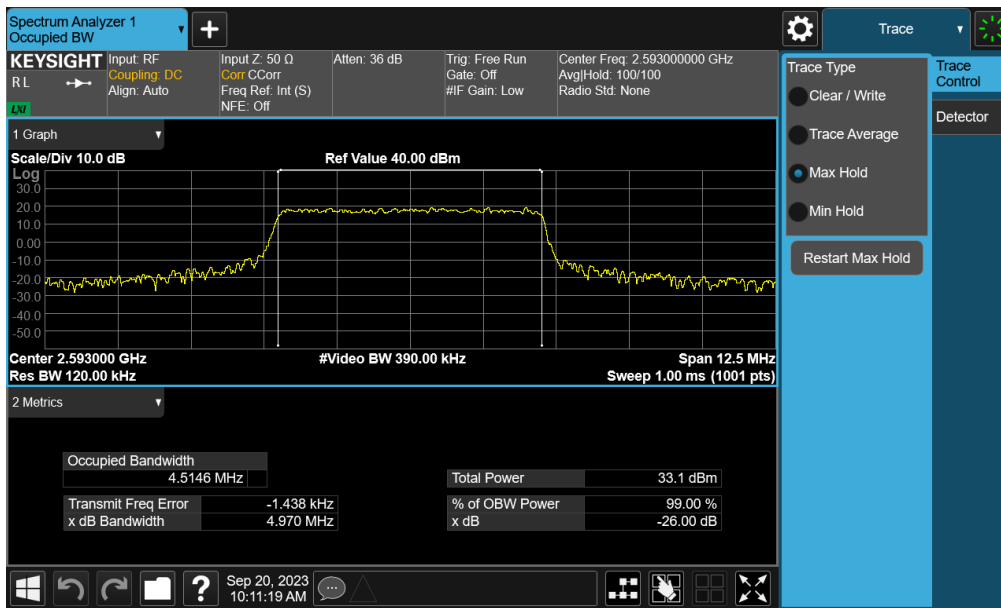


Plot 7-21. Occupied Bandwidth Plot (LTE Band 41(PC2) - 10MHz 16-QAM - Full RB)

FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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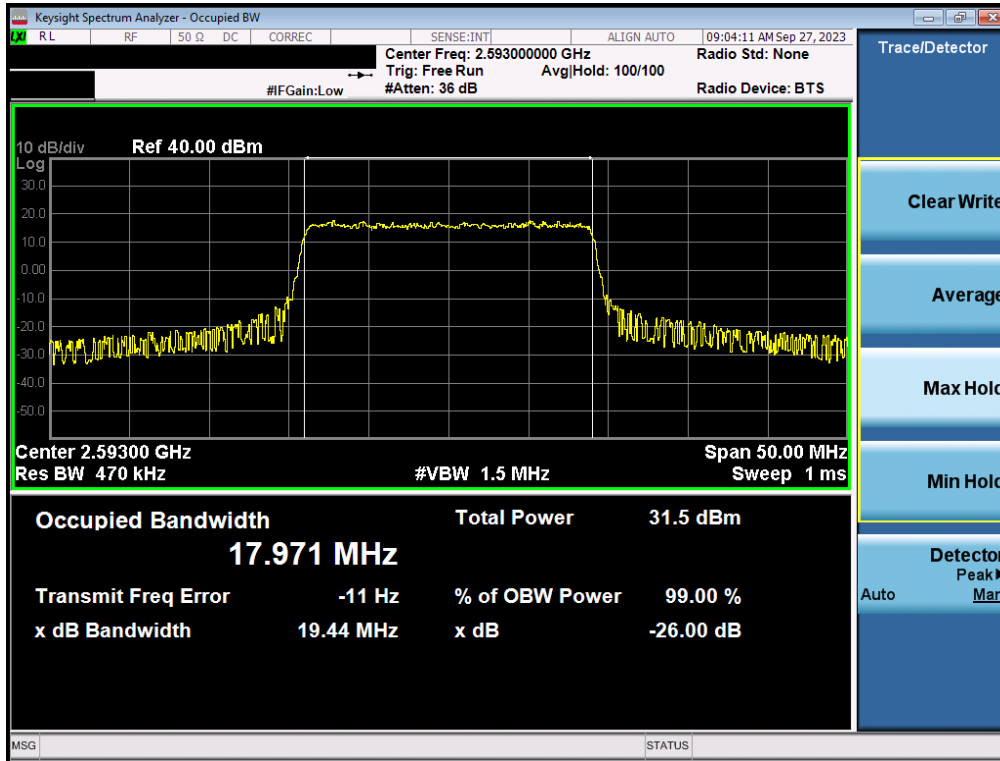
Plot 7-22. Occupied Bandwidth Plot (LTE Band 41(PC2) - 5MHz QPSK - Full RB)



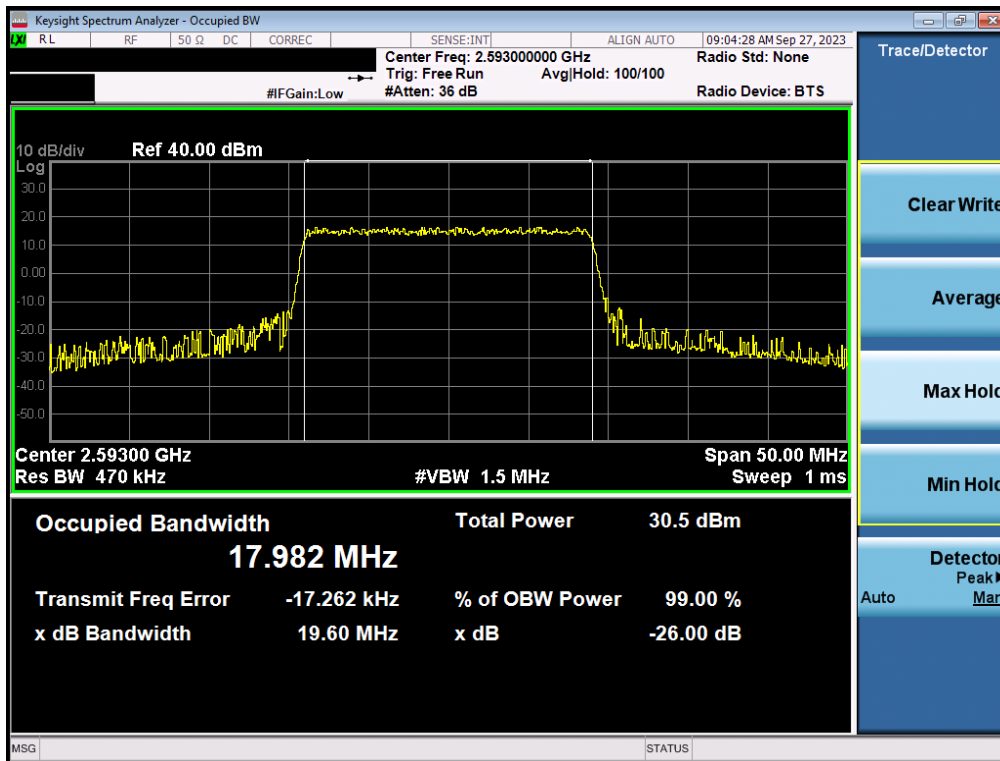
Plot 7-23. Occupied Bandwidth Plot (LTE Band 41(PC2) - 5MHz 16-QAM - Full RB)

FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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LTE Band 41(PC3)/38

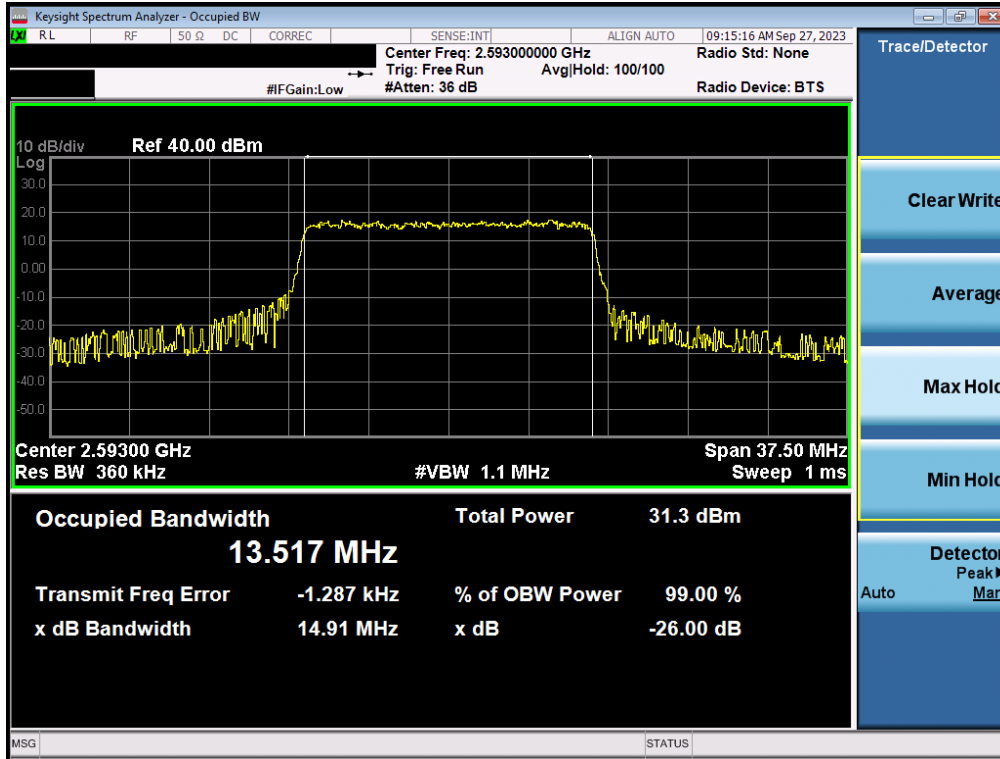


Plot 7-24. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 20MHz QPSK - Full RB)

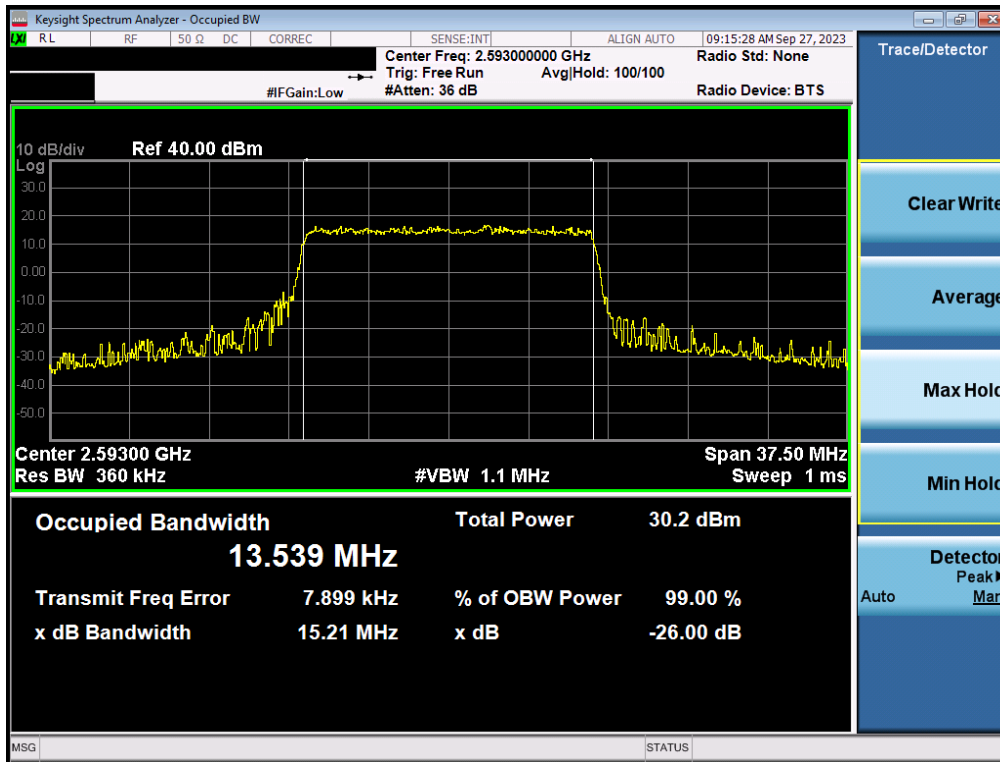


Plot 7-25. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 20MHz 16-QAM - Full RB)

FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-26. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 15MHz QPSK - Full RB)

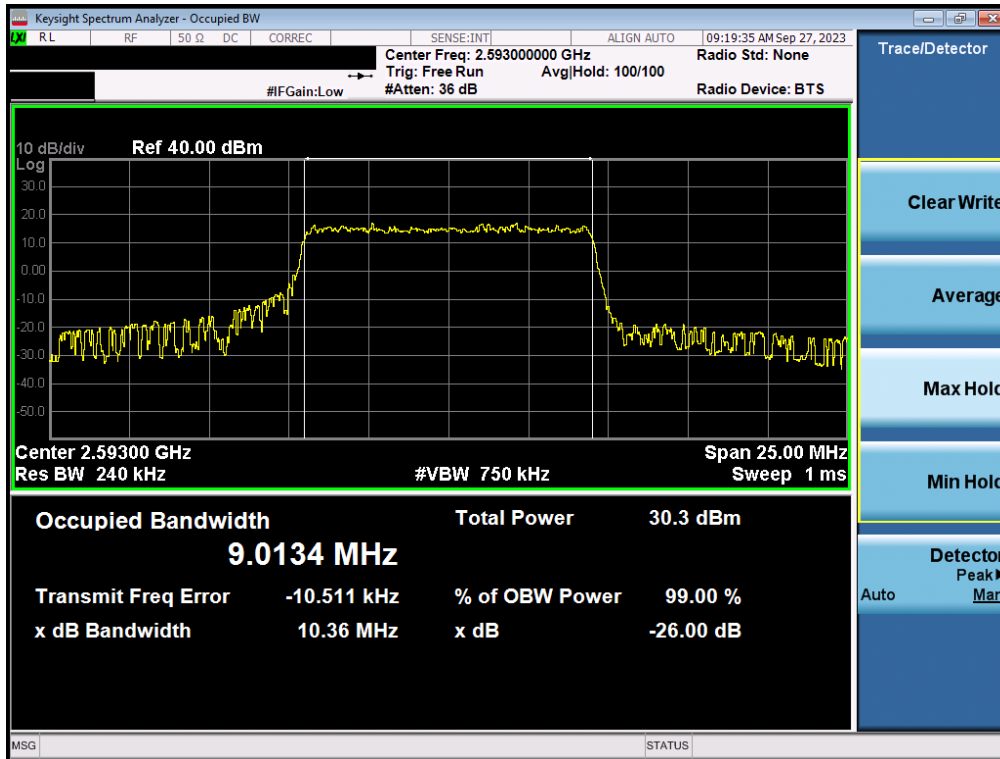


Plot 7-27. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 15MHz 16-QAM - Full RB)

FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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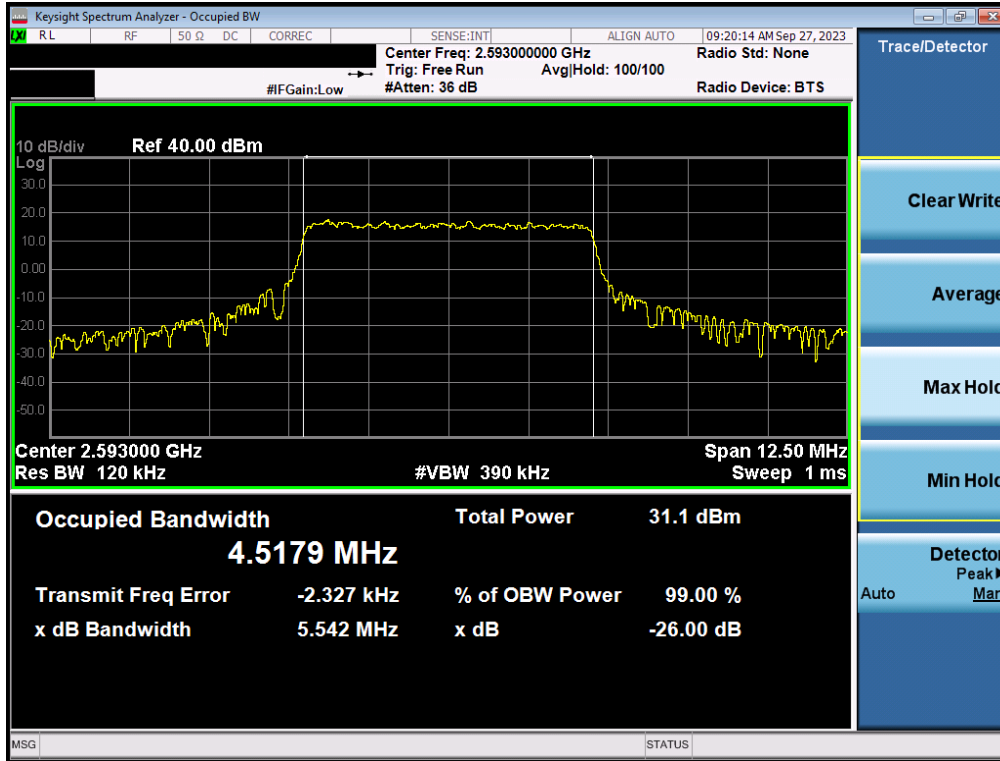


Plot 7-28. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 10MHz QPSK - Full RB)

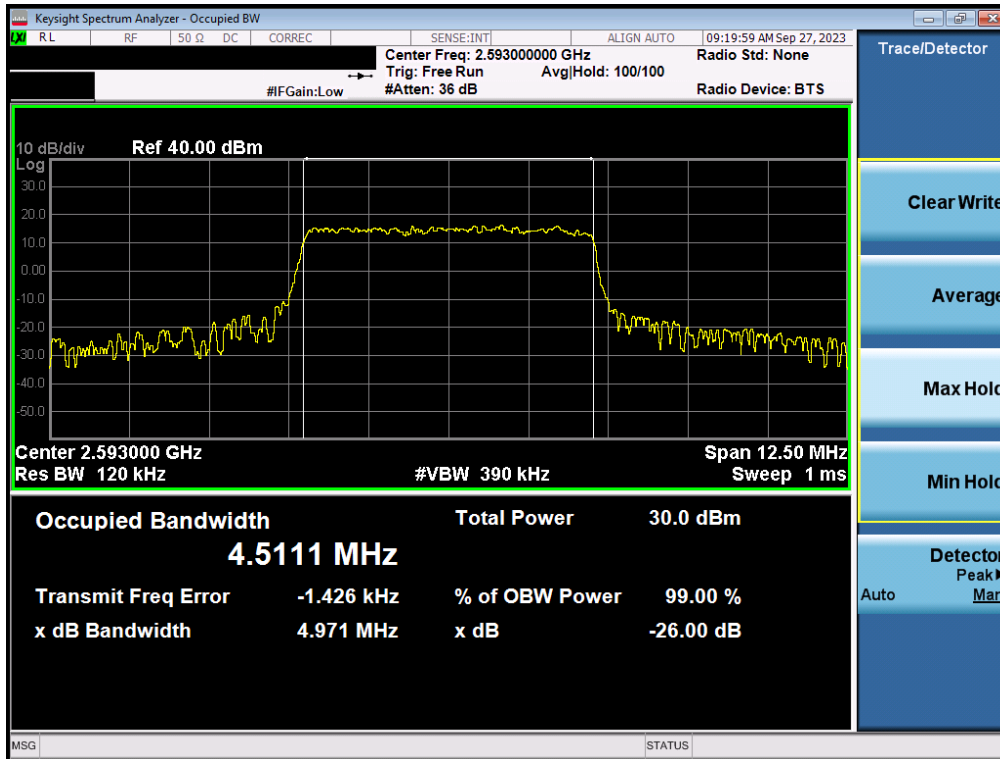


Plot 7-29. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 10MHz 16-QAM - Full RB)

FCC ID: A3LSMA156U		PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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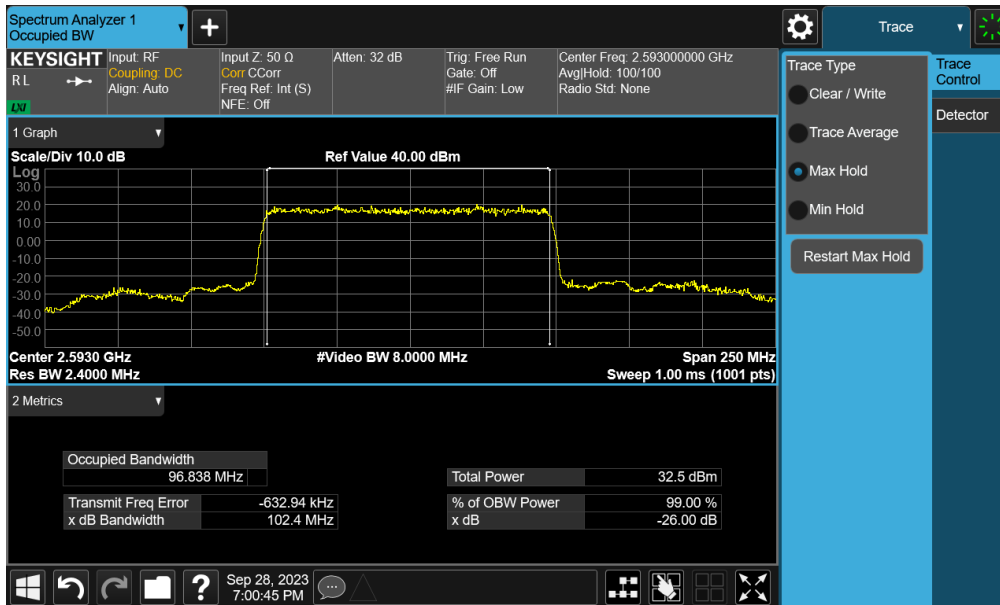
Plot 7-30. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 5MHz QPSK - Full RB)



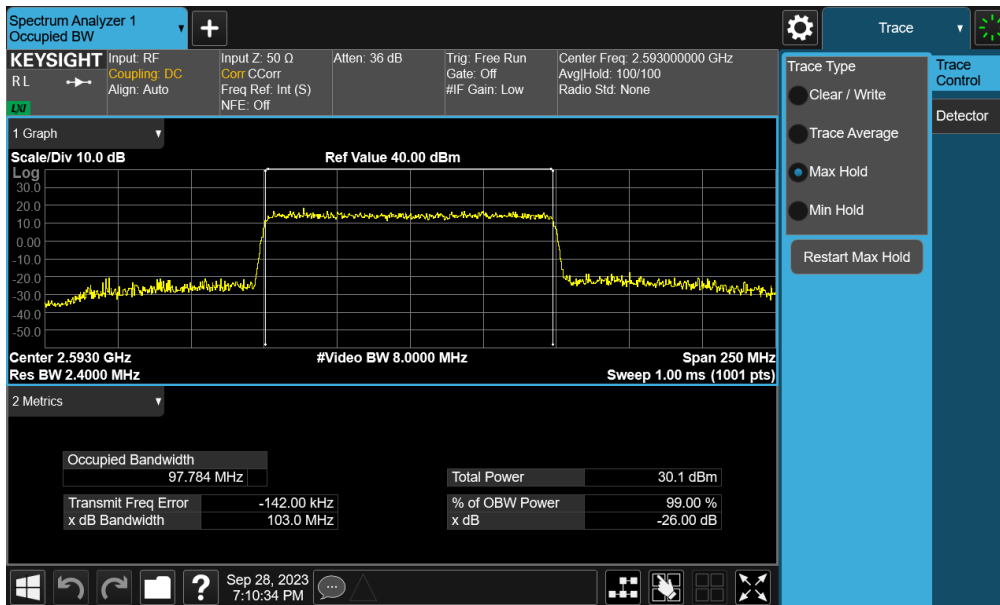
Plot 7-31. Occupied Bandwidth Plot (LTE Band 41(PC3)/38 - 5MHz 16-QAM - Full RB)

FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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NR Band n41

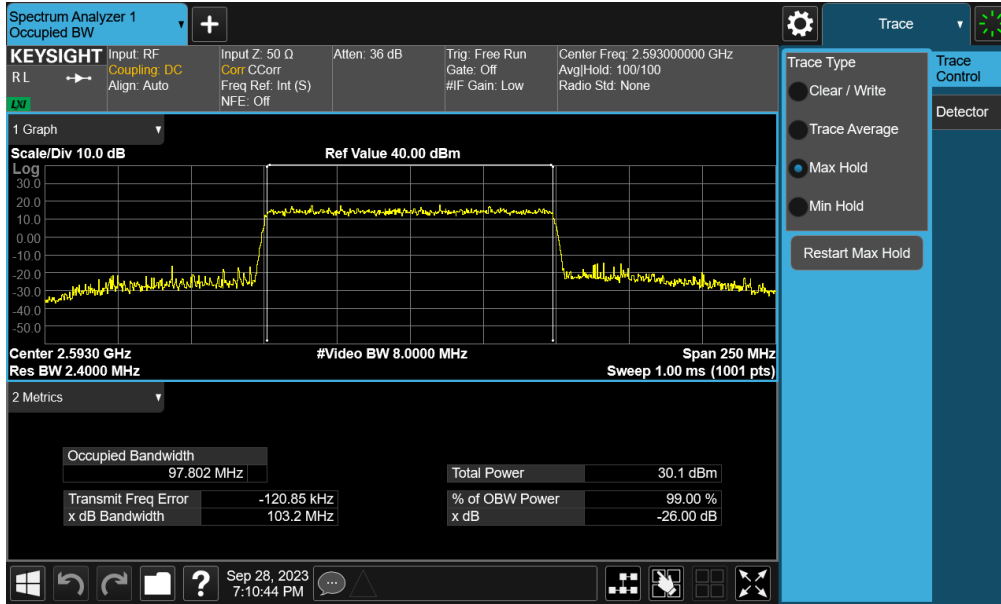


Plot 7-32. Occupied Bandwidth Plot (NR Band n41 - 100MHz $\pi/2$ BPSK - Full RB)

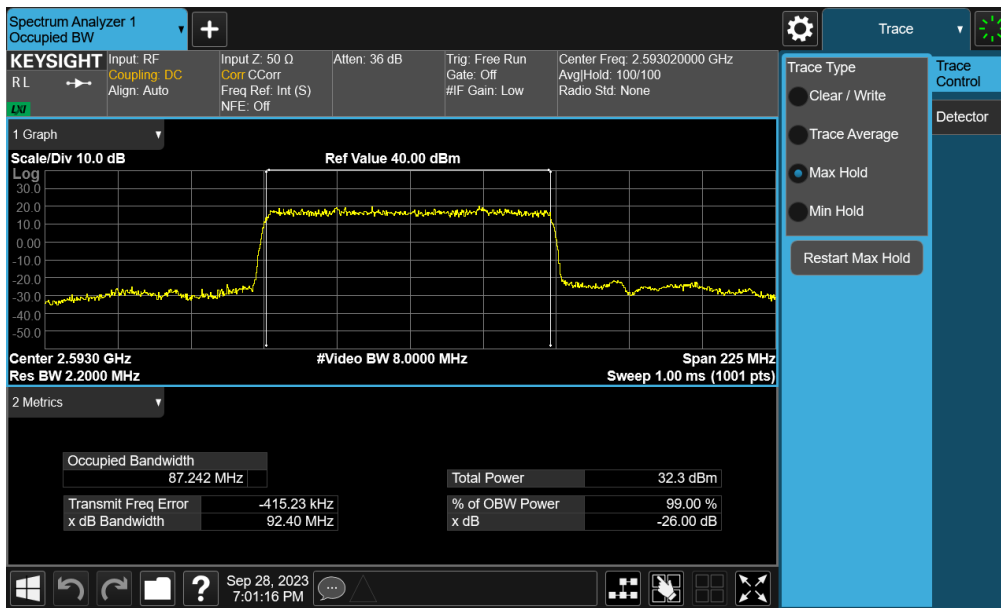


Plot 7-33. Occupied Bandwidth Plot (NR Band n41 - 100MHz QPSK - Full RB)

FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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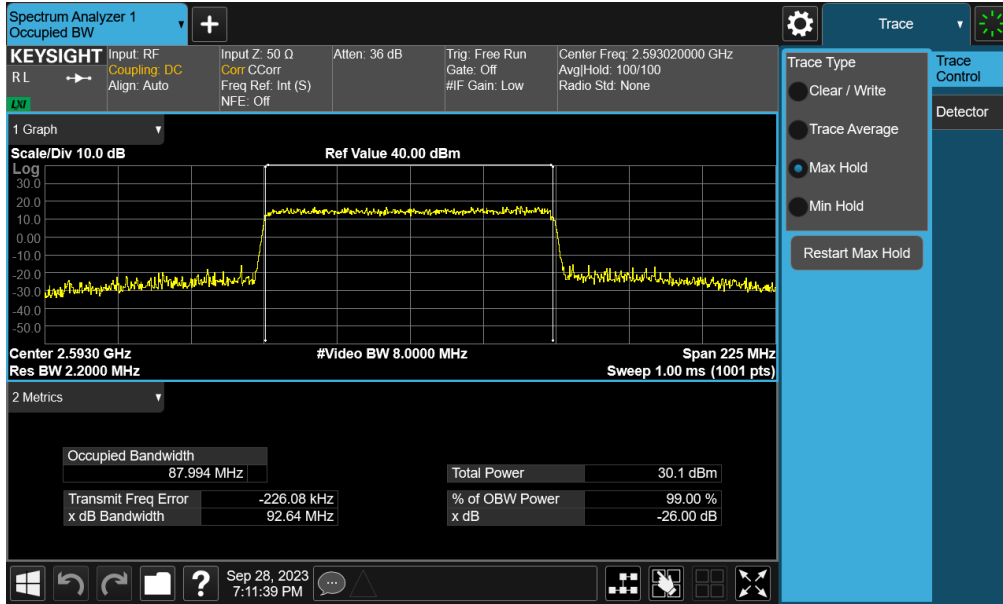


Plot 7-34. Occupied Bandwidth Plot (NR Band n41 - 100MHz 16-QAM - Full RB)

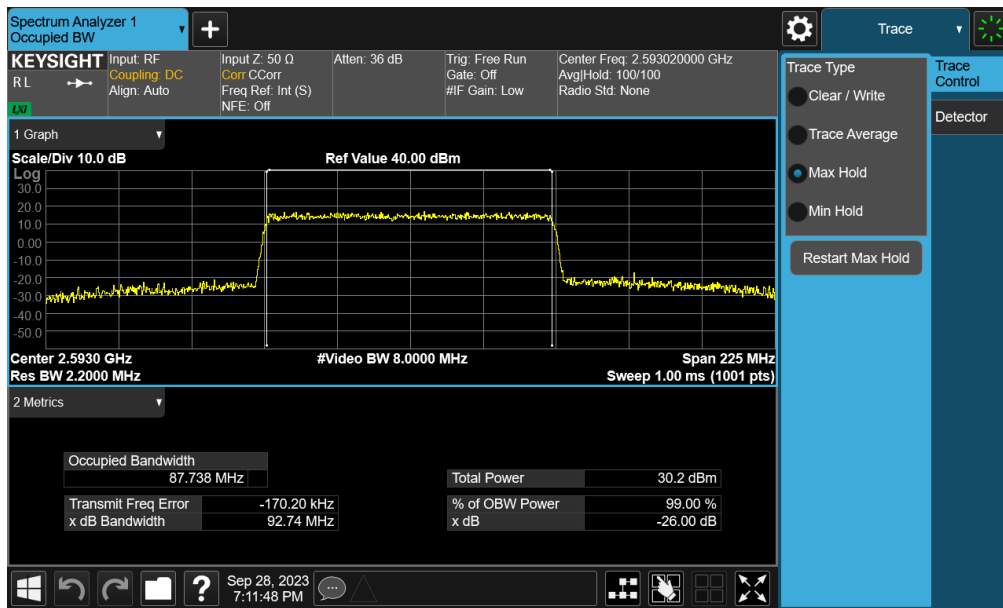


Plot 7-35. Occupied Bandwidth Plot (NR Band n41 - 90MHz $\pi/2$ BPSK - Full RB)

FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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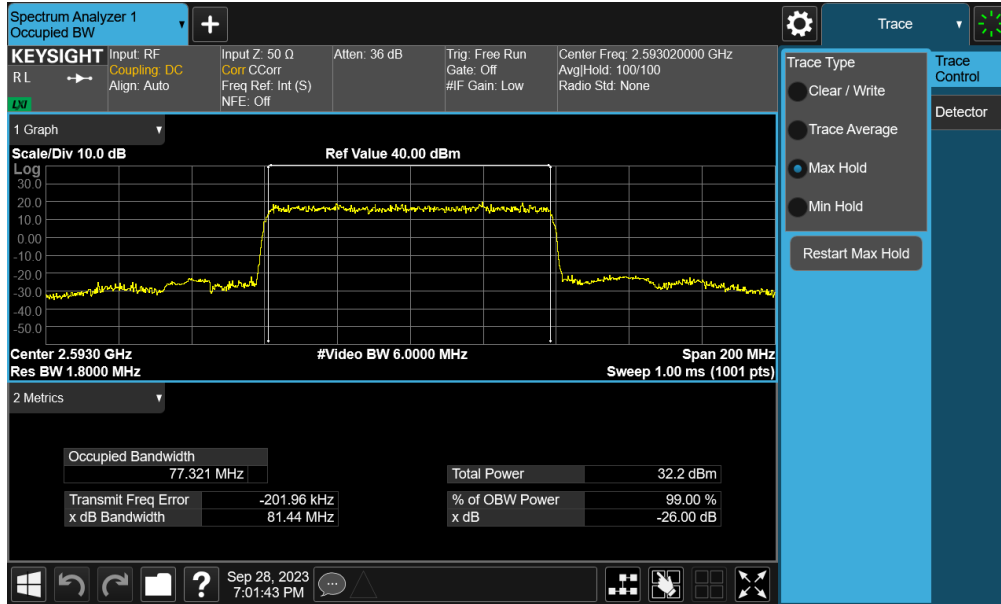


Plot 7-36. Occupied Bandwidth Plot (NR Band n41 - 90MHz QPSK - Full RB)

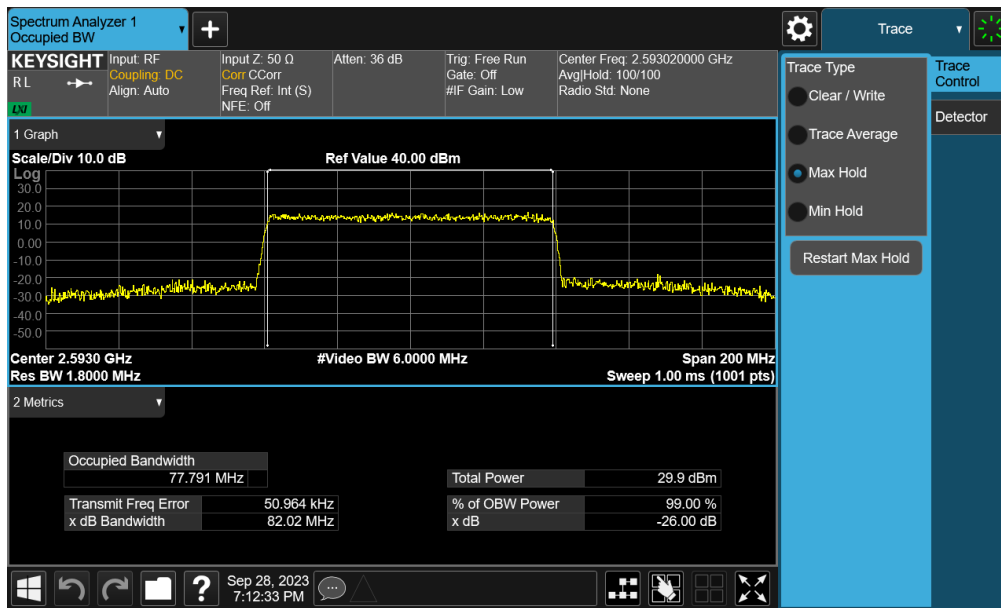


Plot 7-37. Occupied Bandwidth Plot (NR Band n41 - 90MHz 16-QAM - Full RB)

FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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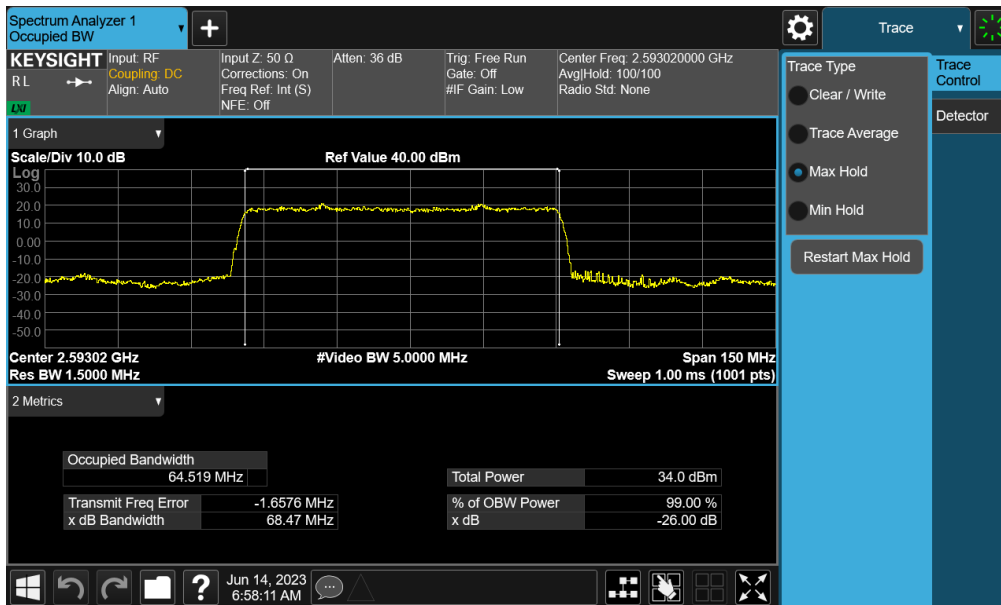
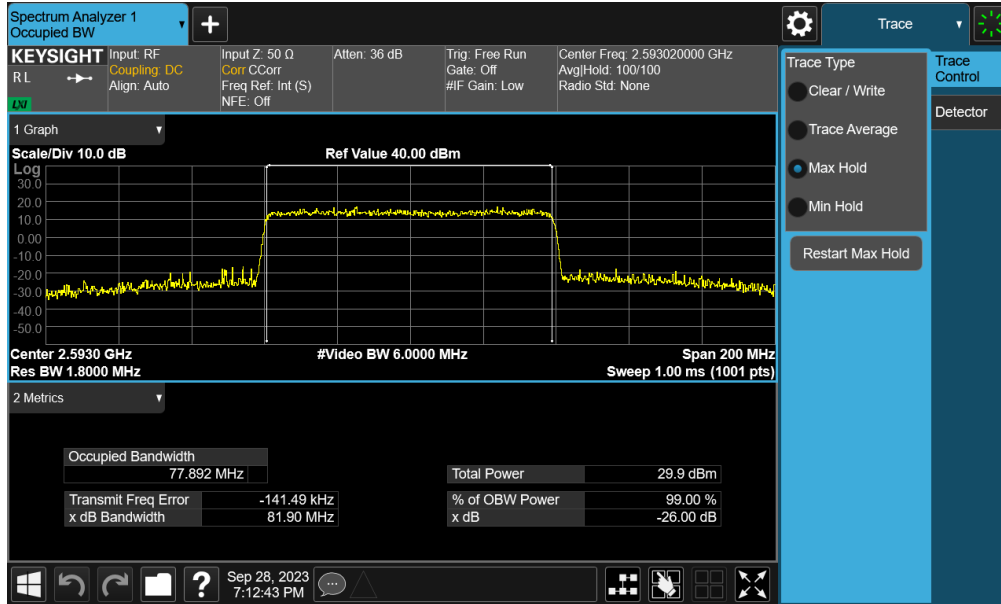


Plot 7-38. Occupied Bandwidth Plot (NR Band n41 - 80MHz $\pi/2$ BPSK - Full RB)

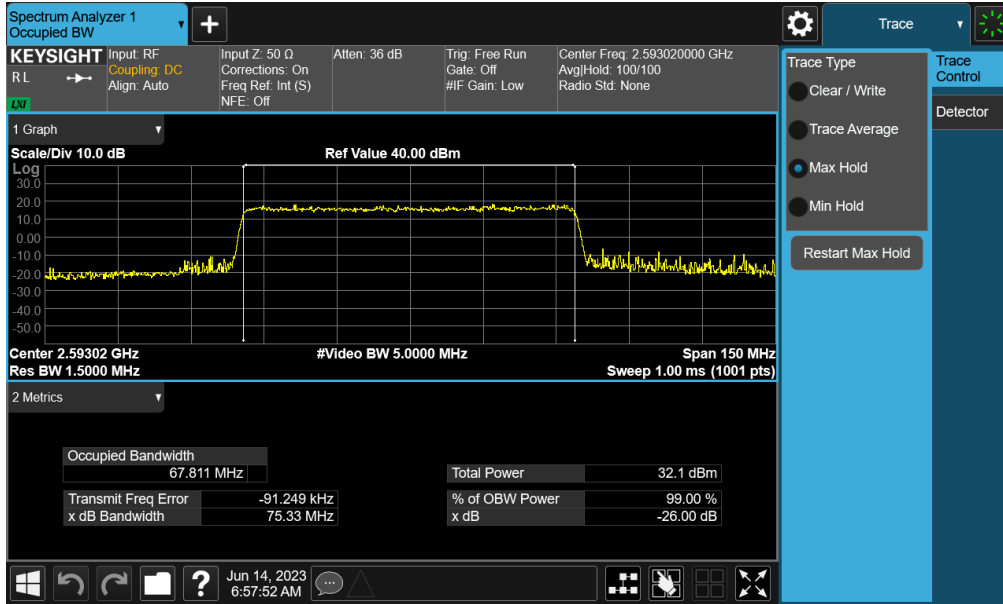


Plot 7-39. Occupied Bandwidth Plot (NR Band n41 - 80MHz QPSK - Full RB)

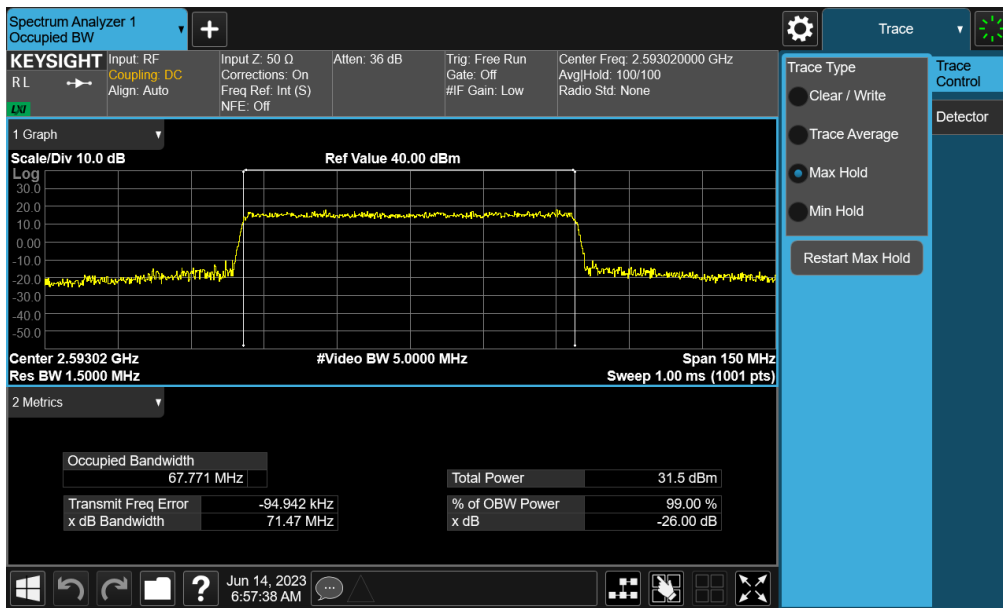
FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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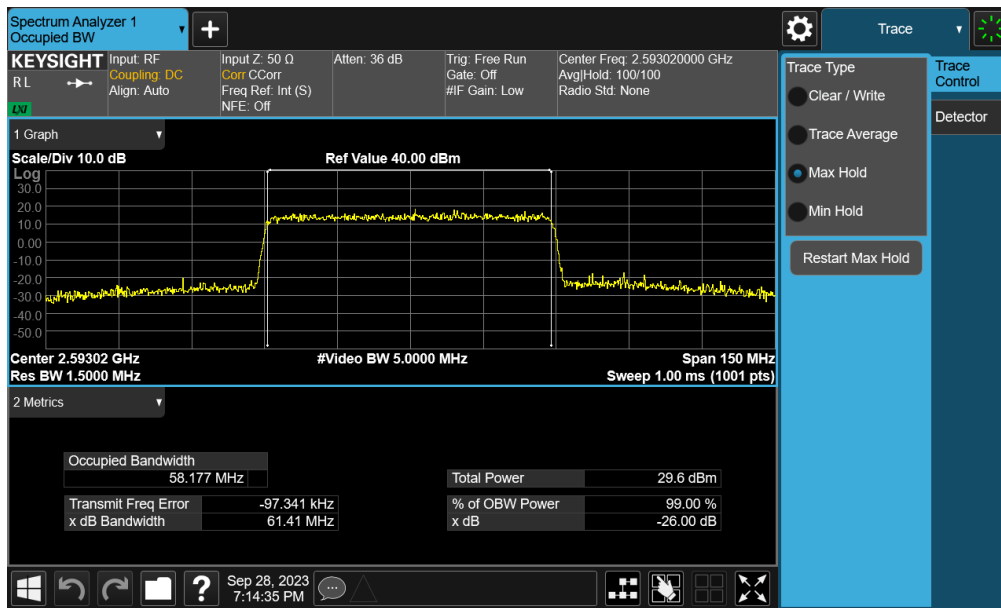
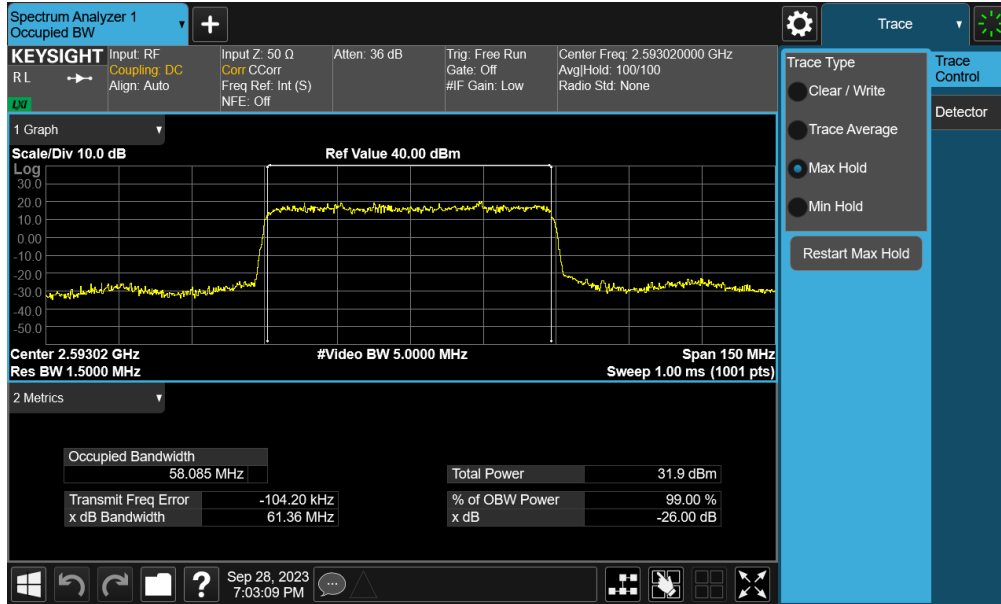


Plot 7-42. Occupied Bandwidth Plot (NR Band n41 - 70MHz QPSK - Full RB)

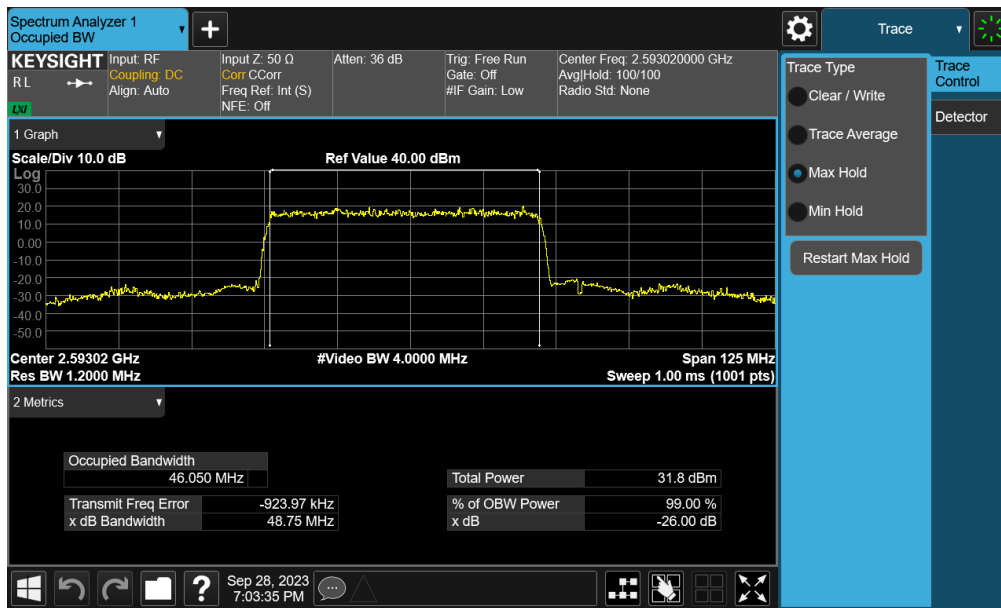
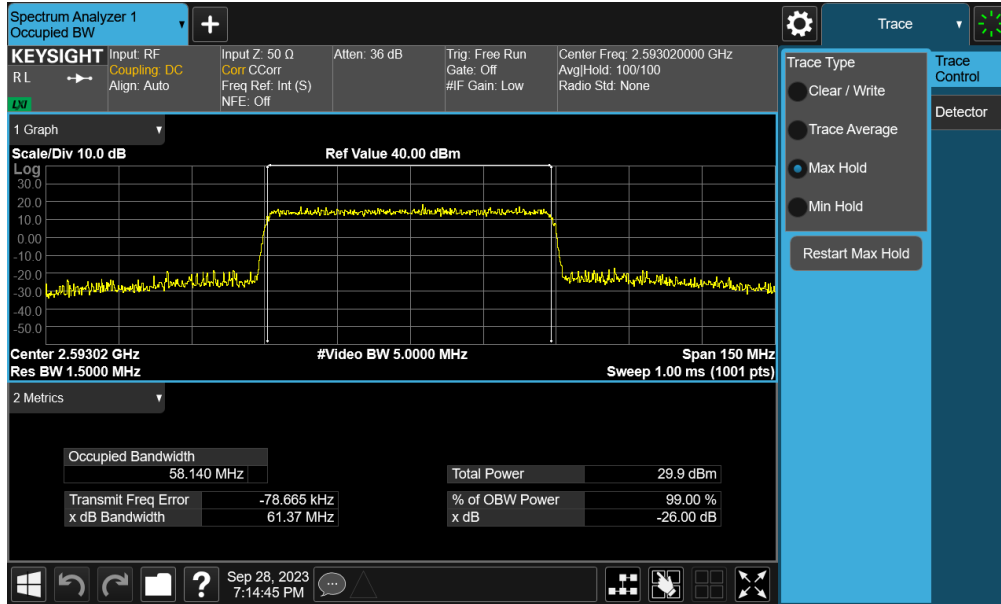


Plot 7-43. Occupied Bandwidth Plot (NR Band n41 - 70MHz 16-QAM - Full RB)

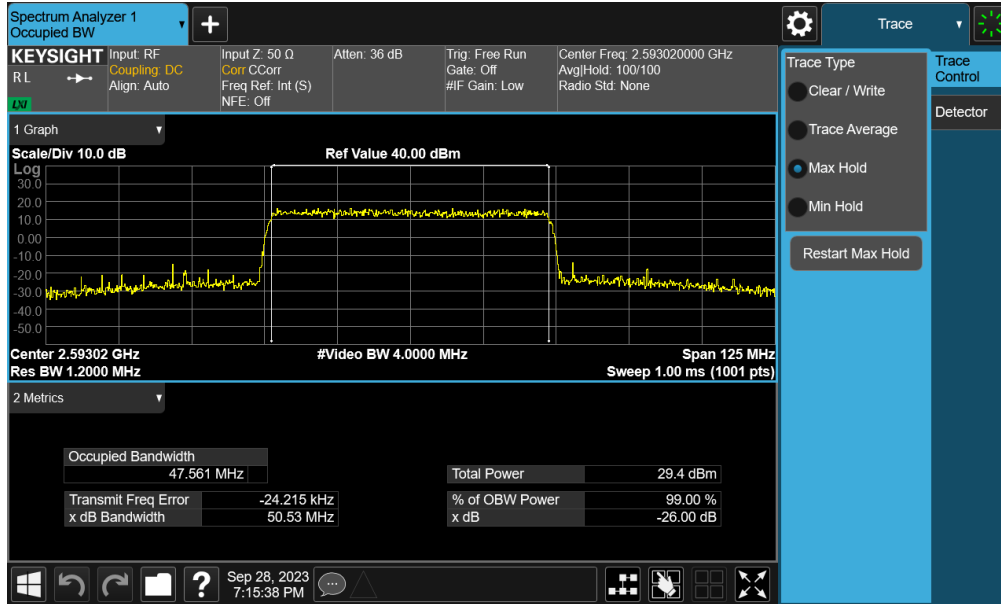
FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2309070100-04.A3L	Test Dates: 09/08 - 11/09/2023	EUT Type: Portable Handset	Page 35 of 100



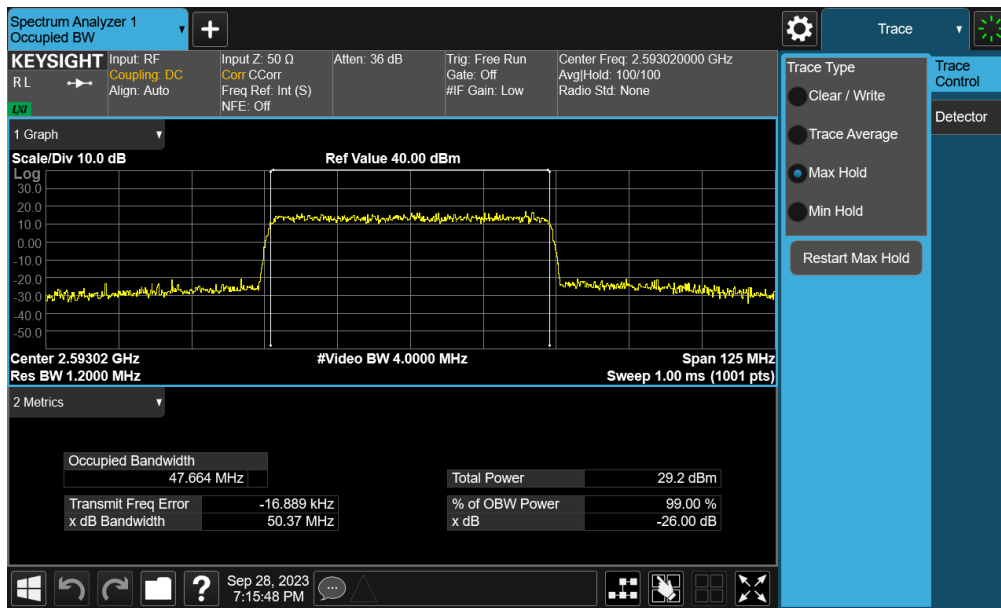
FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2309070100-04.A3L	Test Dates: 09/08 - 11/09/2023	EUT Type: Portable Handset	Page 36 of 100



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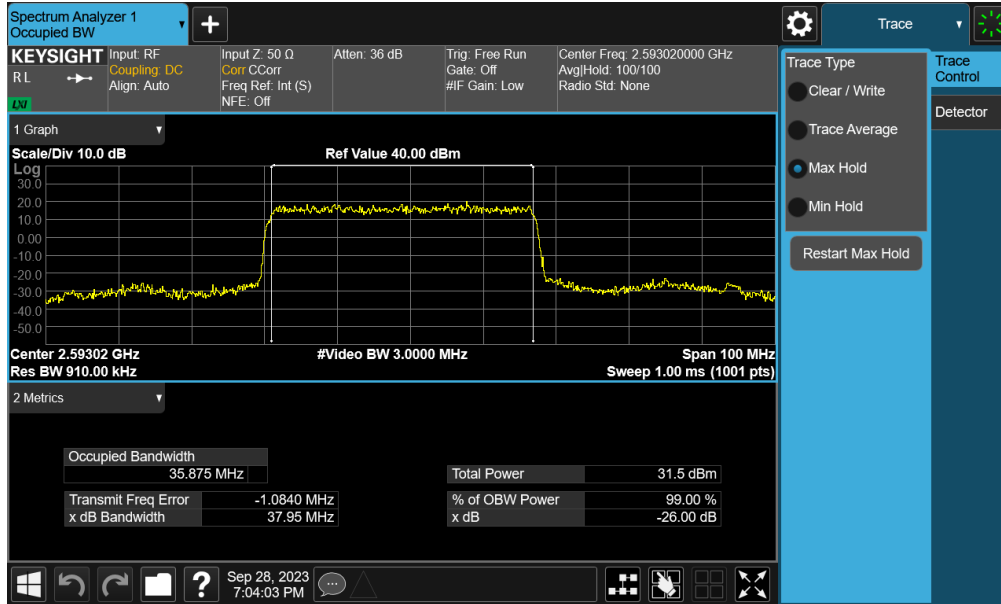


Plot 7-48. Occupied Bandwidth Plot (NR Band n41 - 50MHz QPSK - Full RB)

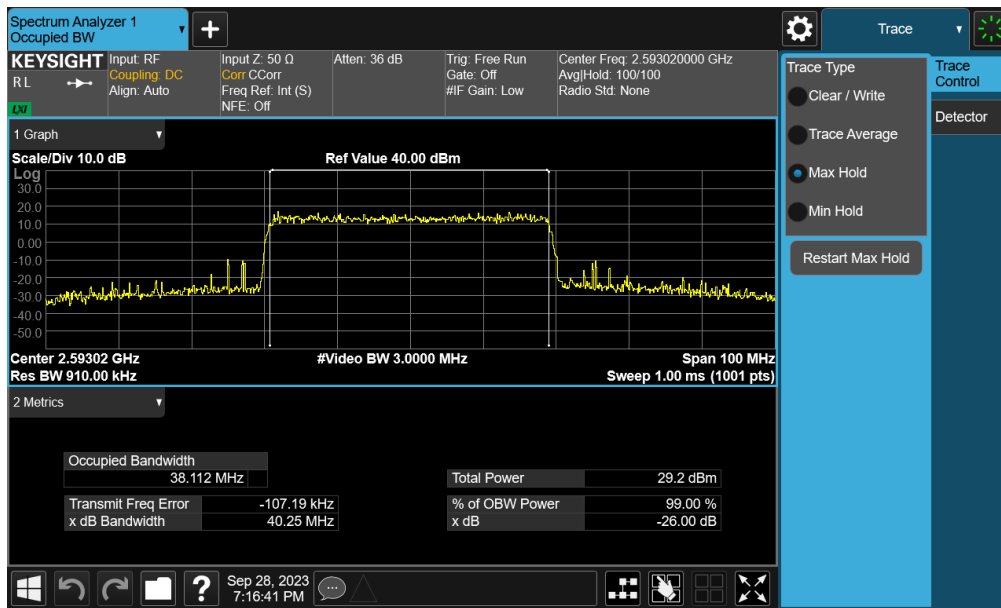


Plot 7-49. Occupied Bandwidth Plot (NR Band n41 - 50MHz 16-QAM - Full RB)

FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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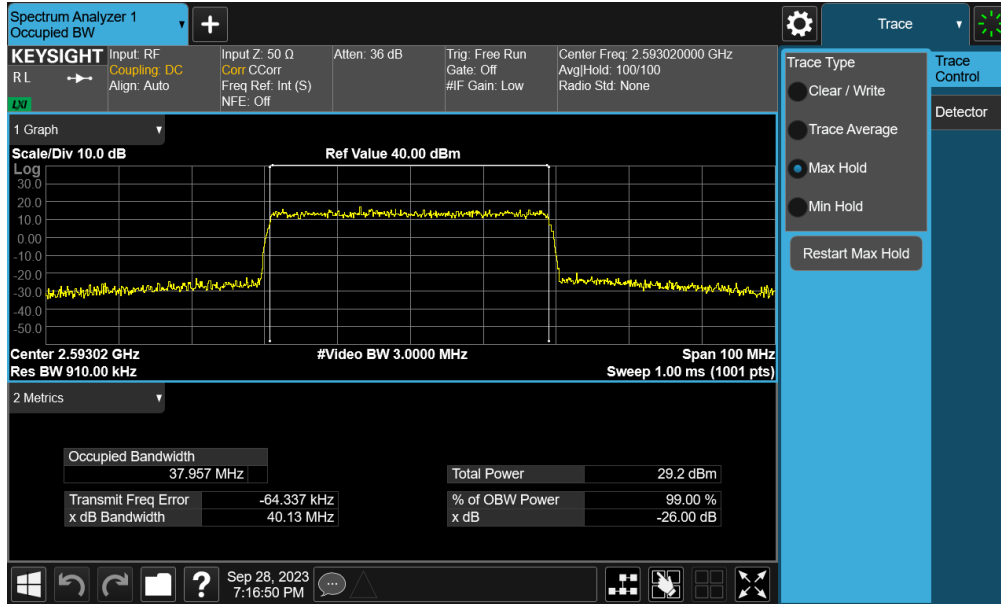


Plot 7-50. Occupied Bandwidth Plot (NR Band n41 - 40MHz $\pi/2$ BPSK - Full RB)

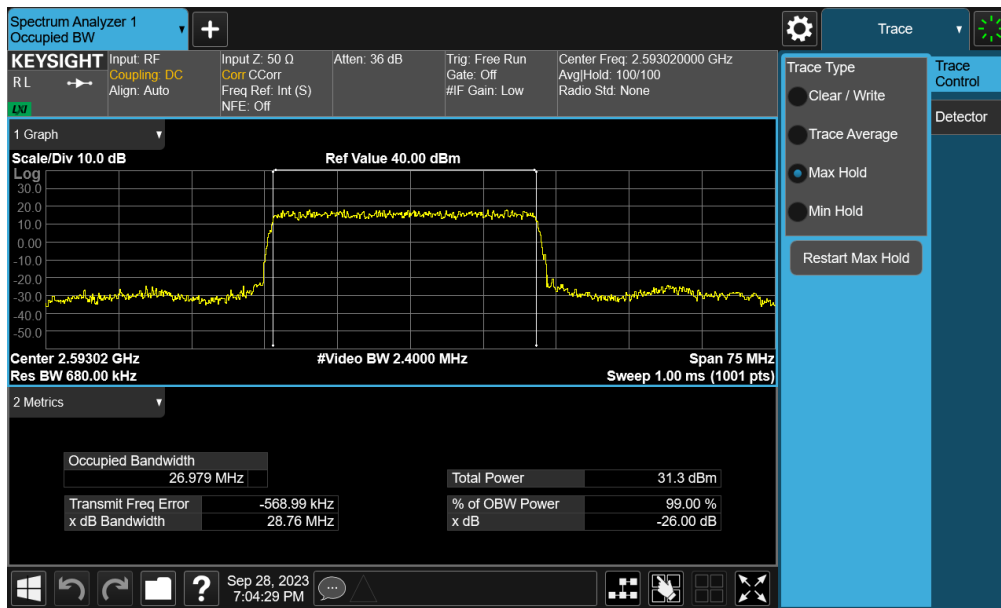


Plot 7-51. Occupied Bandwidth Plot (NR Band n41 - 40MHz QPSK - Full RB)

FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2309070100-04.A3L	Test Dates: 09/08 - 11/09/2023	EUT Type: Portable Handset	Page 39 of 100

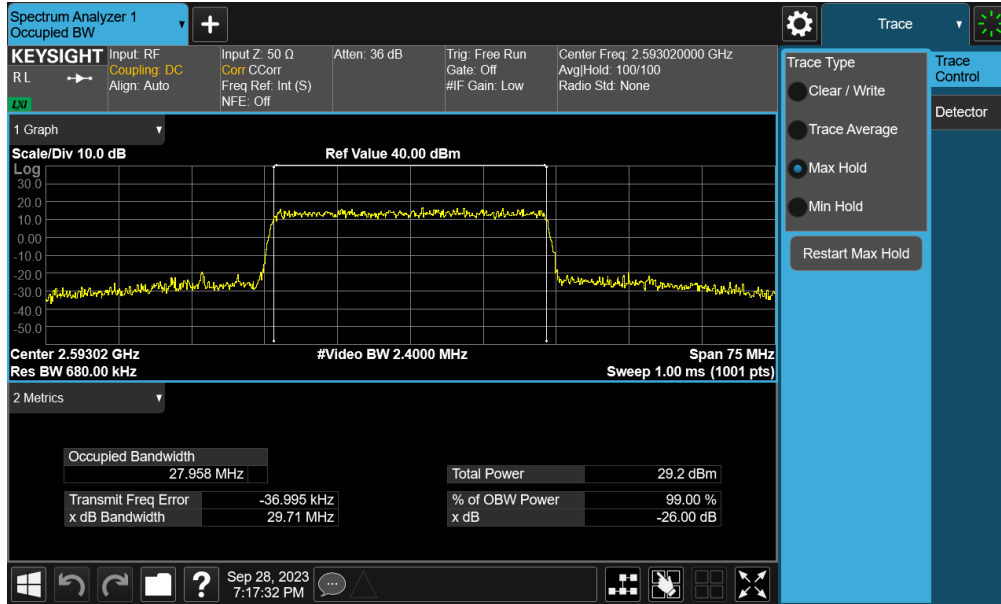


Plot 7-52. Occupied Bandwidth Plot (NR Band n41 - 40MHz 16-QAM - Full RB)

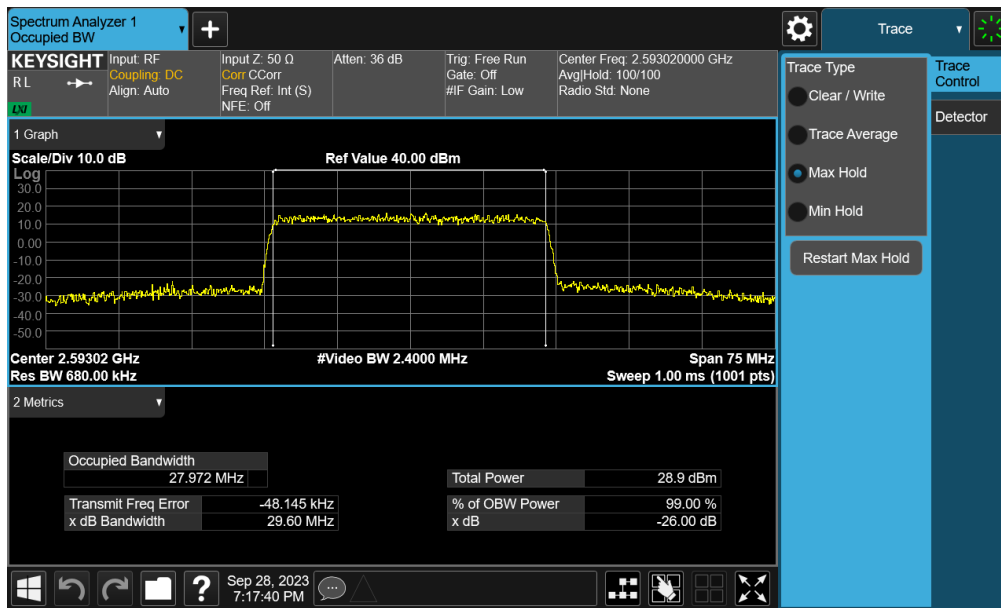


Plot 7-53. Occupied Bandwidth Plot (NR Band n41 - 30MHz $\pi/2$ BPSK - Full RB)

FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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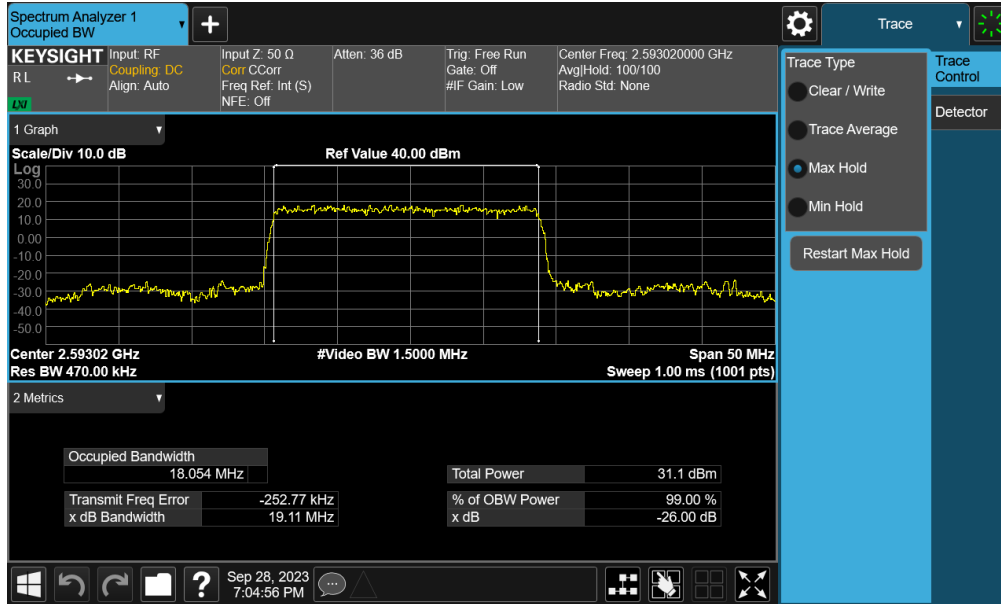


Plot 7-54. Occupied Bandwidth Plot (NR Band n41 - 30MHz QPSK - Full RB)

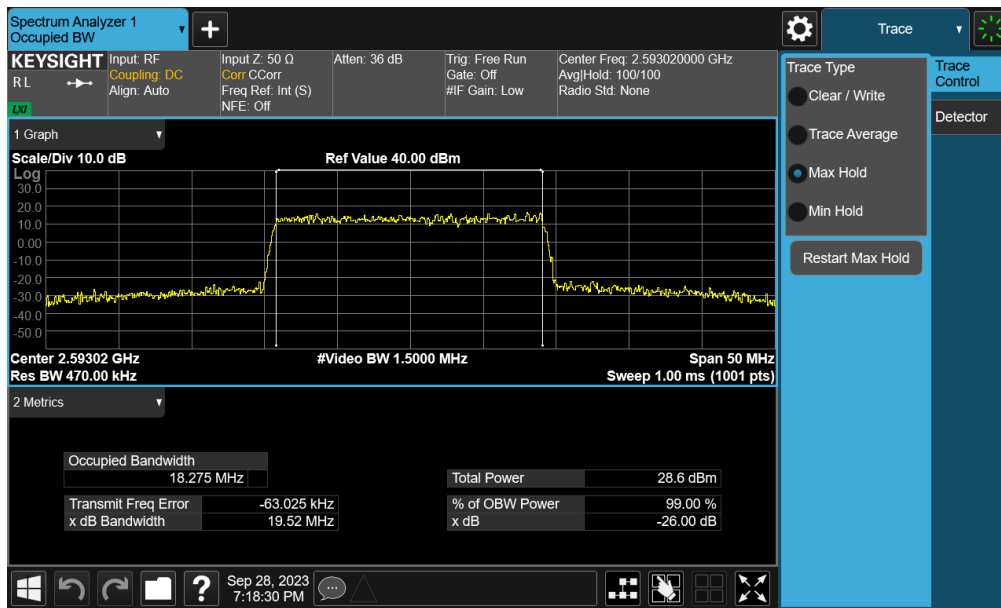


Plot 7-55. Occupied Bandwidth Plot (NR Band n41 - 30MHz 16-QAM - Full RB)

FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2309070100-04.A3L	Test Dates: 09/08 - 11/09/2023	EUT Type: Portable Handset	Page 41 of 100

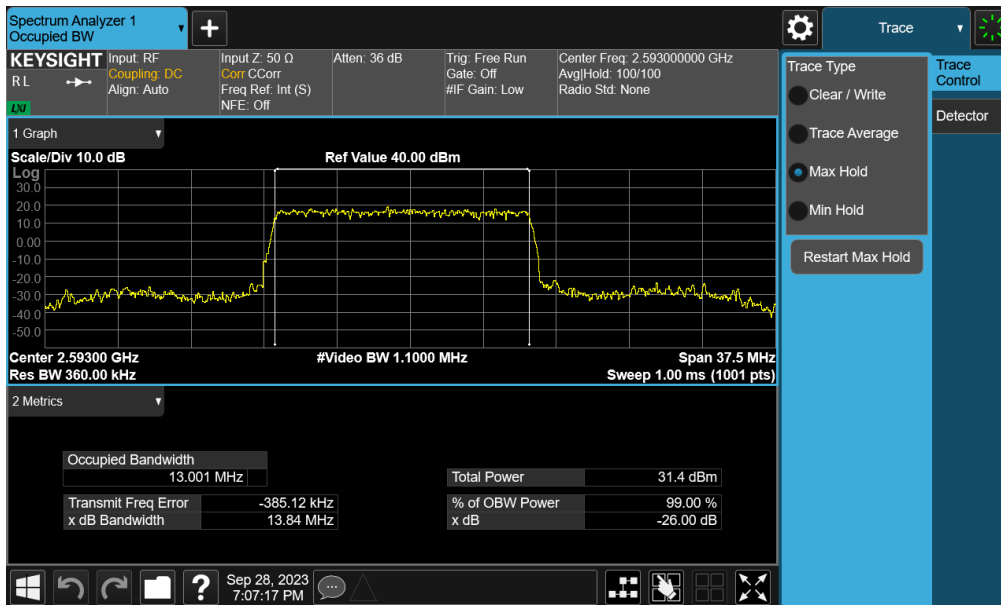
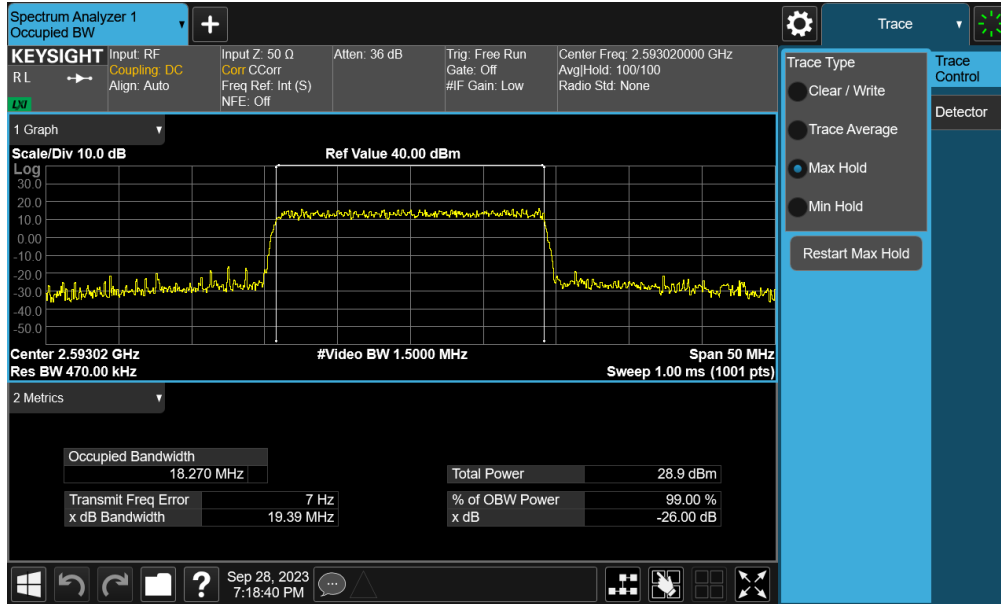


Plot 7-56. Occupied Bandwidth Plot (NR Band n41 - 20MHz $\pi/2$ BPSK - Full RB)

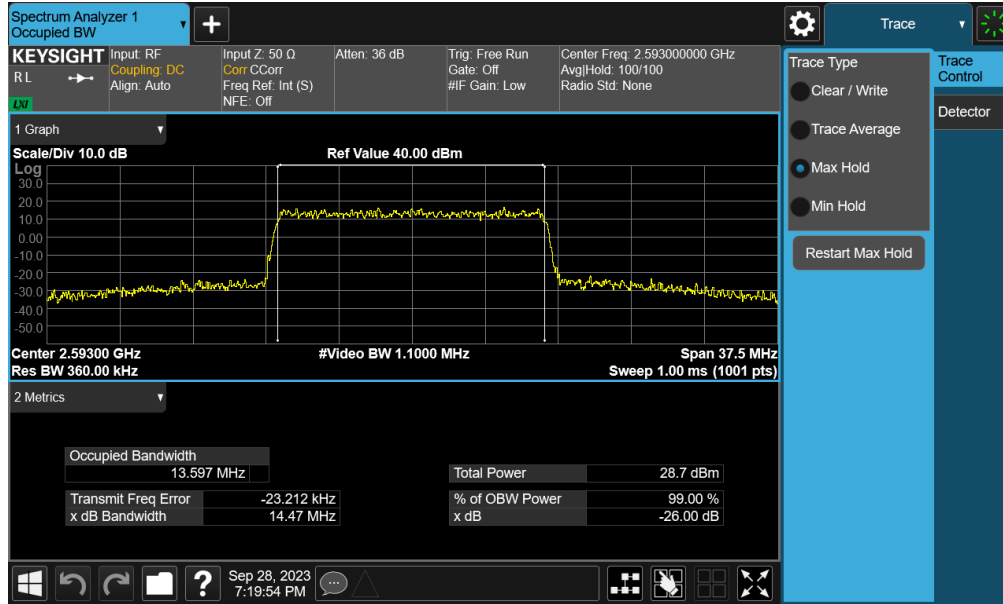


Plot 7-57. Occupied Bandwidth Plot (NR Band n41 - 20MHz QPSK - Full RB)

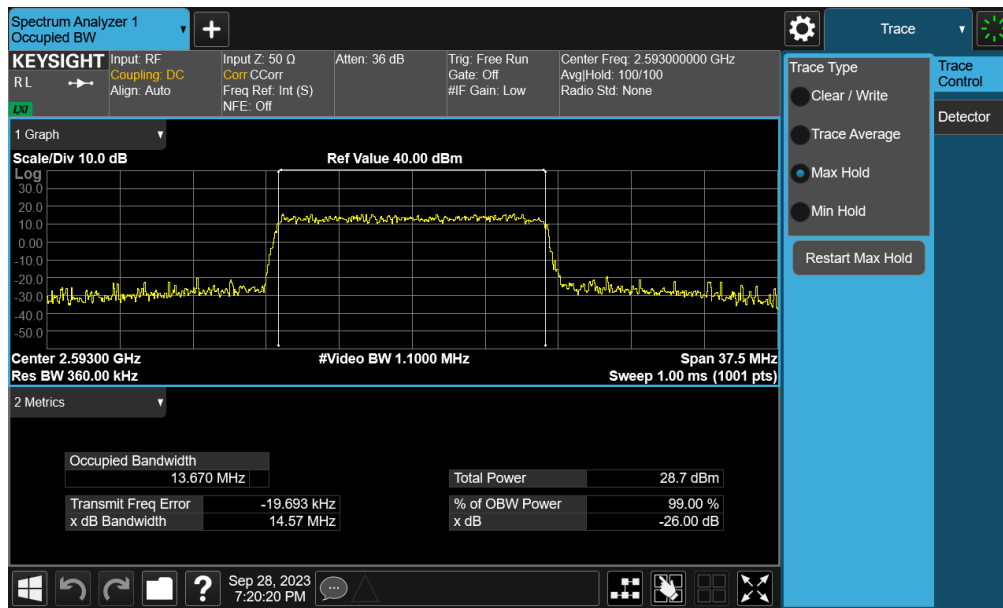
FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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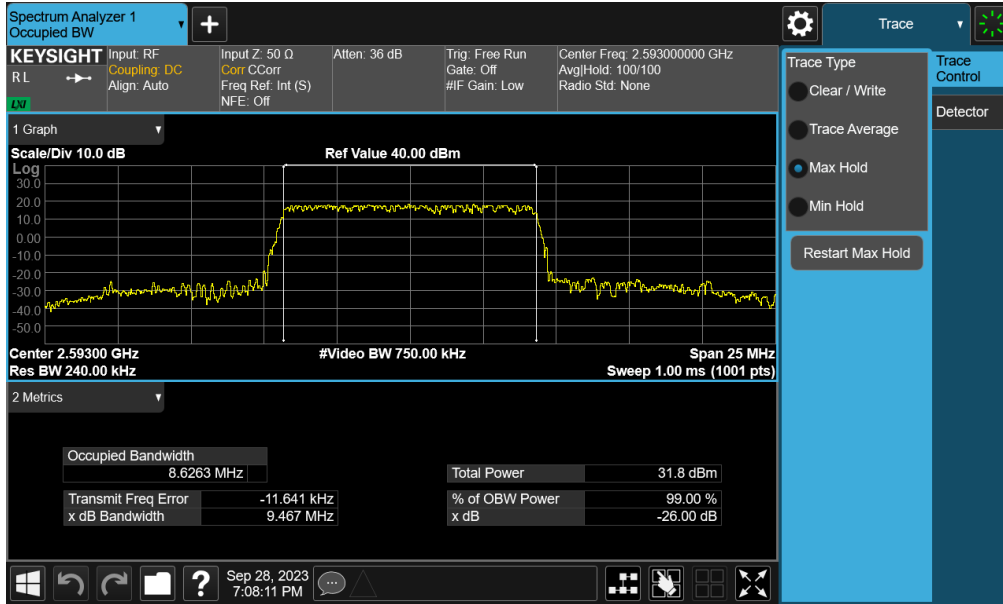


Plot 7-60. Occupied Bandwidth Plot (NR Band n41 - 15MHz QPSK - Full RB)

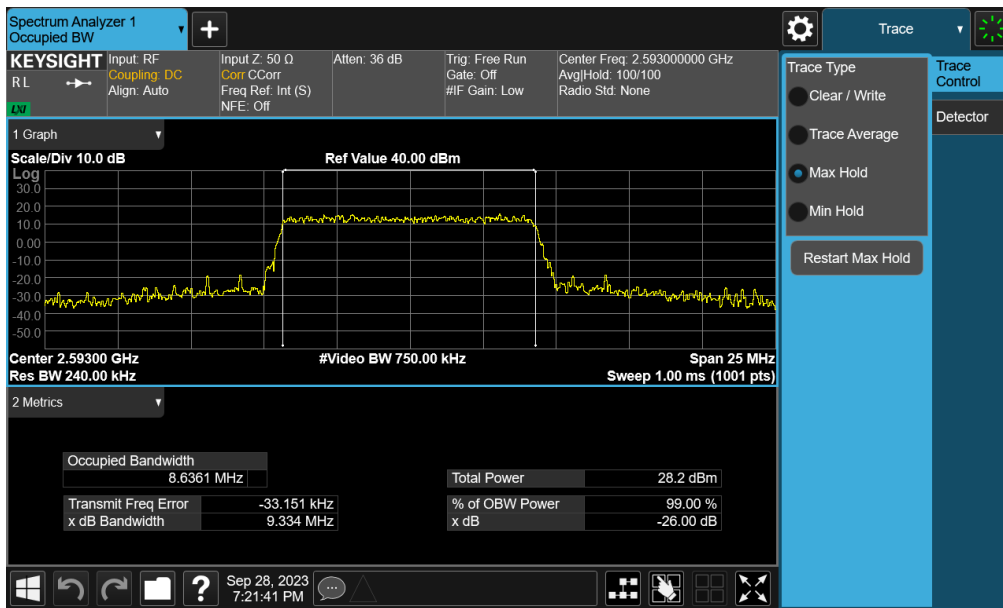


Plot 7-61. Occupied Bandwidth Plot (NR Band n41 - 15MHz 16-QAM - Full RB)

FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-62. Occupied Bandwidth Plot (NR Band n41 - 10MHz $\pi/2$ BPSK - Full RB)



Plot 7-63. Occupied Bandwidth Plot (NR Band n41 - 10MHz QPSK - Full RB)

FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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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 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.

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

For Band 30, the minimum permissible attenuation level of any spurious emission <2288MHz and >2365MHz is $70 + 10 \log_{10}(P_{[Watts]})$.

For Band 7 and 41, the minimum permissible attenuation level of any spurious emission is $55 + 10 \log_{10}(P_{[Watts]})$.

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 10GHz (separated into at least two plots per channel)
2. Detector = RMS
3. Trace mode = trace average for continuous emissions, max hold for pulse emissions
4. Sweep time = auto couple
5. The trace was allowed to stabilize
6. Please see test notes below for RBW and VBW settings

Test Setup

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

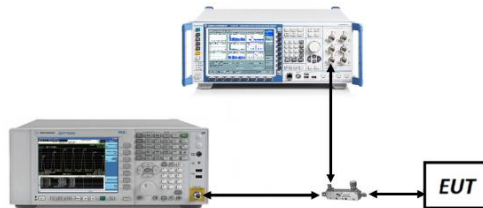


Figure 7-3. Test Instrument & Measurement Setup

Test Notes

1. Per Part 27, RSS-195 and RSS-199, compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz.
2. For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) 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.

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Mode	Bandwidth	Channel	Range [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]
LTE-B30	10MHz	Mid	30.0 - 2288.0	-52.49	-40	-12.49
		Mid	2365.0 - 15000.0	-52.10	-40	-12.49
		Mid	15000.0 - 27000.0	-59.40	-40	-12.49
LTE-B7	20MHz	Low	30.0 - 2500.0	-51.52	-25	-26.52
		Low	2570.0 - 15000.0	-45.59	-25	-20.59
		Low	15000.0 - 27000.0	-58.62	-25	-33.62
		Mid	30.0 - 2500.0	-51.59	-25	-26.59
		Mid	2570.0 - 15000.0	-45.54	-25	-20.54
		Mid	15000.0 - 27000.0	-58.34	-25	-33.34
		High	30.0 - 2500.0	-51.51	-25	-26.51
		High	2570.0 - 15000.0	-43.41	-25	-18.41
		High	15000.0 - 27000.0	-58.80	-25	-33.80
LTE-B41 PC2	20MHz	Low	30.0 - 2475.0	-43.28	-25	-18.28
		Low	2690.0 - 15000.0	-39.17	-25	-18.28
		Low	15000.0 - 27000.0	-53.34	-25	-18.28
		Mid	30.0 - 2500.0	-42.87	-25	-17.87
		Mid	2690.0 - 15000.0	-38.72	-25	-13.72
		Mid	15000.0 - 27000.0	-52.37	-25	-27.37
		High	30.0 - 2500.0	-43.60	-25	-18.60
		High	2690.0 - 15000.0	-38.70	-25	-18.60
		High	15000.0 - 27000.0	-53.42	-25	-18.60
LTE-B41 PC3	20MHz	Low	30.0 - 2475.0	-43.44	-25	-18.44
		Low	2690.0 - 15000.0	-39.02	-25	-14.02
		Low	15000.0 - 27000.0	-52.91	-25	-27.91
		Mid	30.0 - 2500.0	-37.00	-25	-12.00
		Mid	2690.0 - 15000.0	-38.40	-25	-13.39
		Mid	15000.0 - 27000.0	-52.71	-25	-27.71
		High	30.0 - 2500.0	-42.82	-25	-17.82
		High	2690.0 - 15000.0	-38.69	-25	-13.69
		High	15000.0 - 27000.0	-53.04	-25	-28.04
LTE-B41 PC3 ULCA	20+20MHz	Low	30.0 - 2475.0	-42.68	-25	-17.67
		Low	2496.0 - 2690.0	18.36	-	-
		Low	2690.0 - 15000.0	-38.27	-25	-13.27
		Low	15000.0 - 27000.0	-53.28	-25	-28.28
		Mid	30.0 - 2496.0	-40.11	-25	-15.11
		Mid	2496.0 - 2690.0	17.61	-	-
		Mid	2690.0 - 15000.0	-38.07	-25	-13.07
		Mid	15000.0 - 27000.0	-52.72	-25	-27.72
		High	30.0 - 2496.0	-42.70	-25	-17.70
		High	2496.0 - 2690.0	17.10	-	-
		High	2690.0 - 15000.0	-37.95	-25	-12.95
		High	15000.0 - 27000.0	-52.58	-25	-27.58

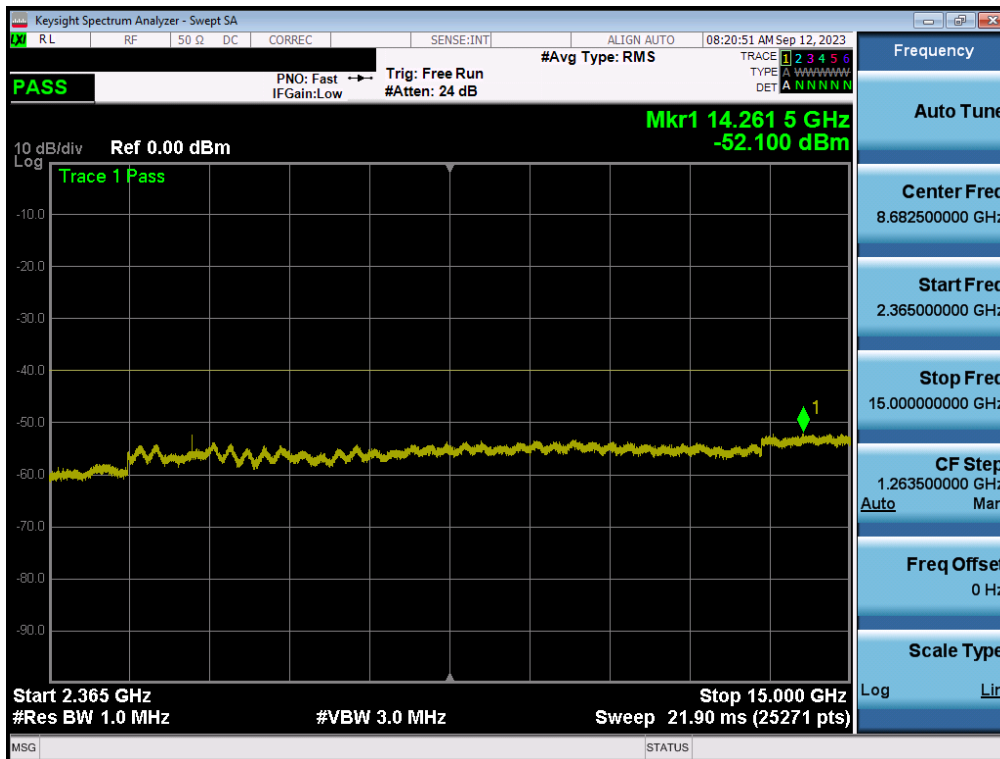
Table 7-65. Spurious and Harmonic Emissions Test Results

FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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LTE Band 30



Plot 7-66. Conducted Spurious Plot (LTE Band 30 - 10MHz QPSK - RB Size 1, RB Offset 0)



Plot 7-67. Conducted Spurious Plot (LTE Band 30 - 10MHz QPSK - RB Size 1, RB Offset 0)

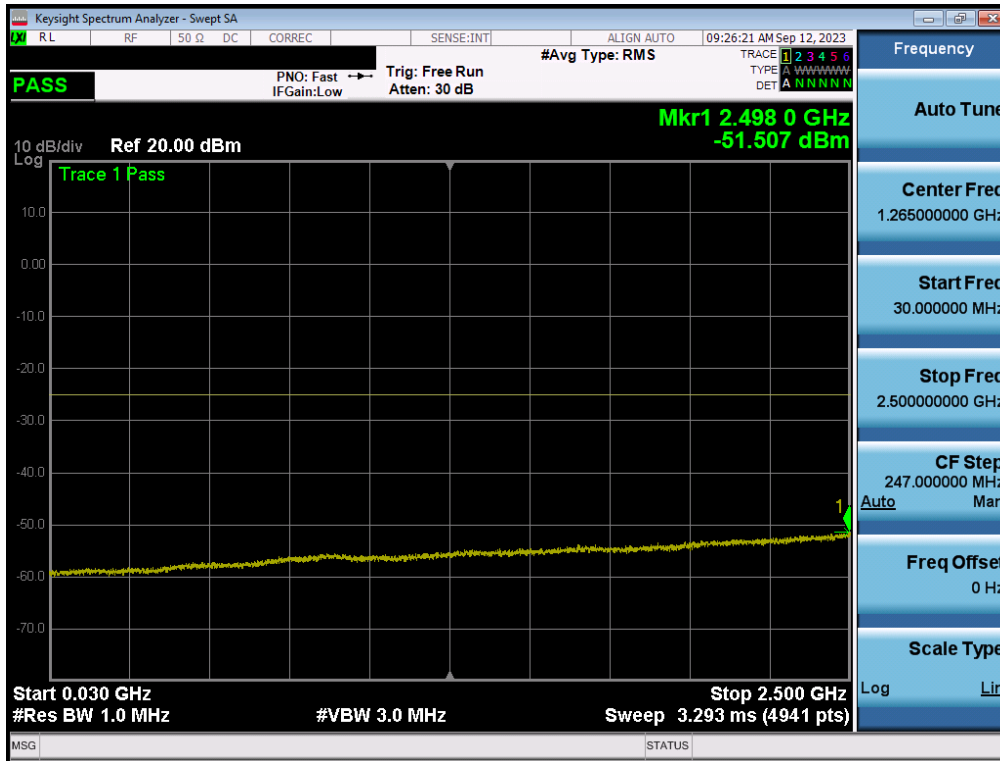
FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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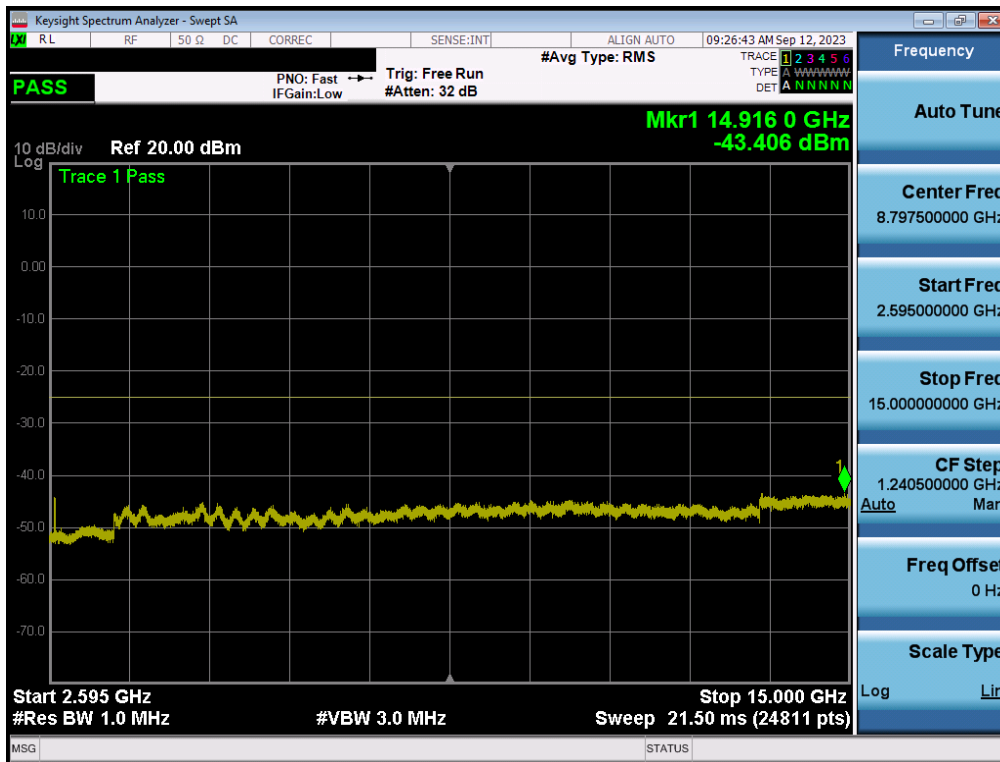
Plot 7-68. Conducted Spurious Plot (LTE Band 30 - 10MHz QPSK - RB Size 1, RB Offset 0)

FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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LTE Band 7



Plot 7-69. Conducted Spurious Plot (LTE Band 7 - 20MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-70. Conducted Spurious Plot (LTE Band 7 - 20MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

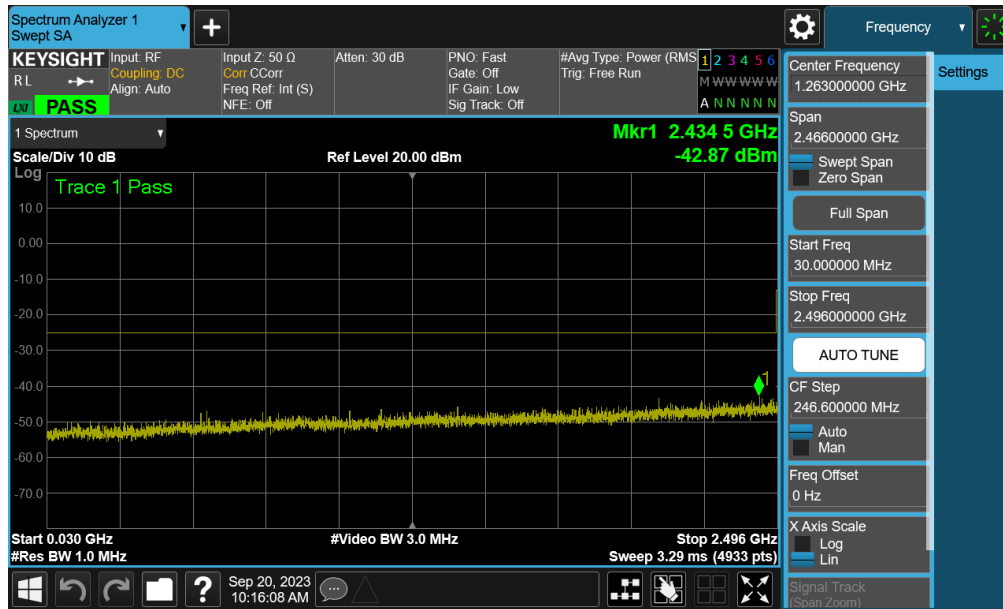
FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2309070100-04.A3L	Test Dates: 09/08 - 11/09/2023	EUT Type: Portable Handset	Page 51 of 100



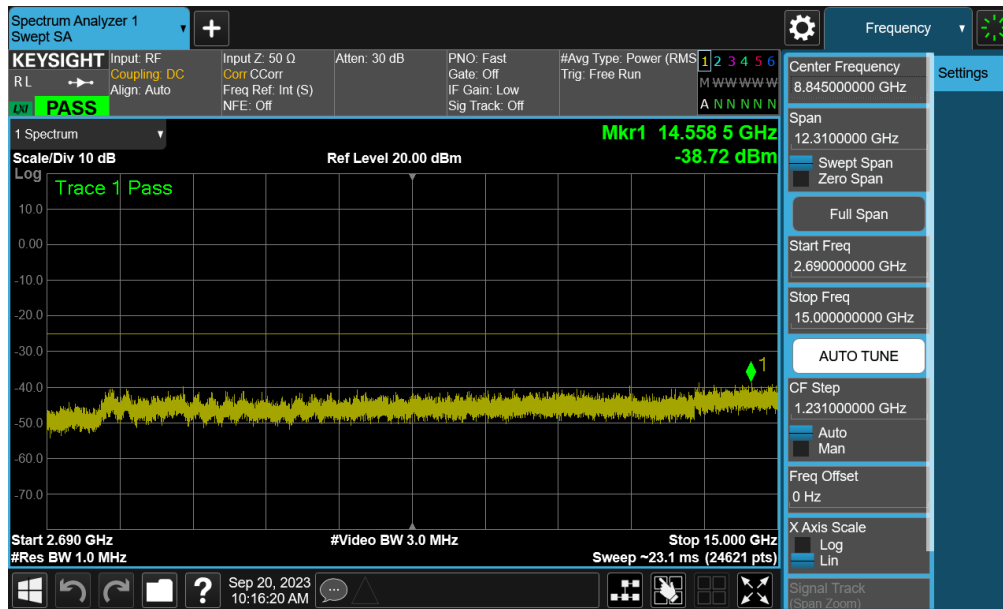
Plot 7-71. Conducted Spurious Plot (LTE Band 7 - 20MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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LTE Band 41(PC2)

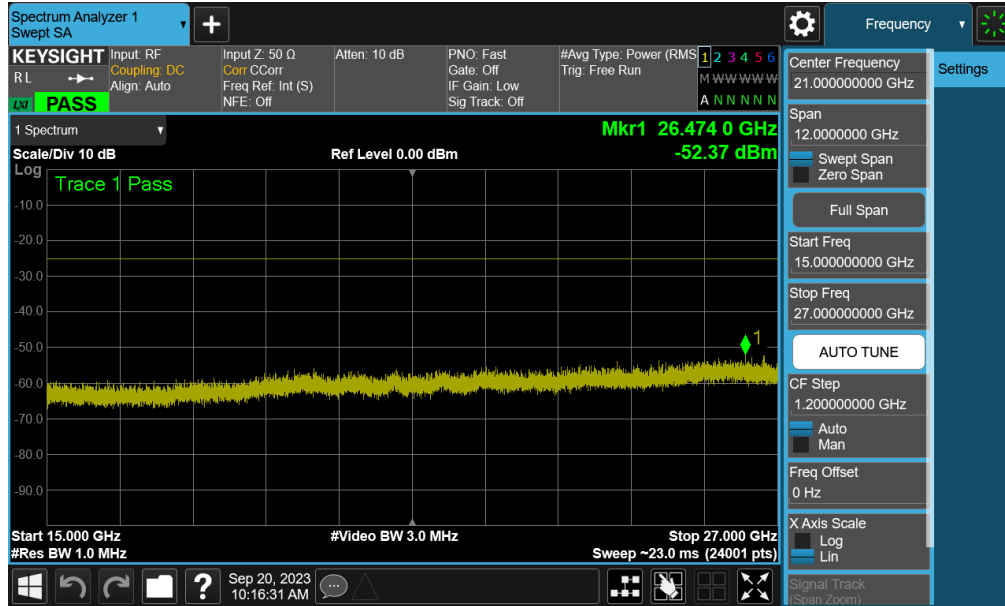


Plot 7-72. Conducted Spurious Plot (LTE Band 41(PC2) - 20MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



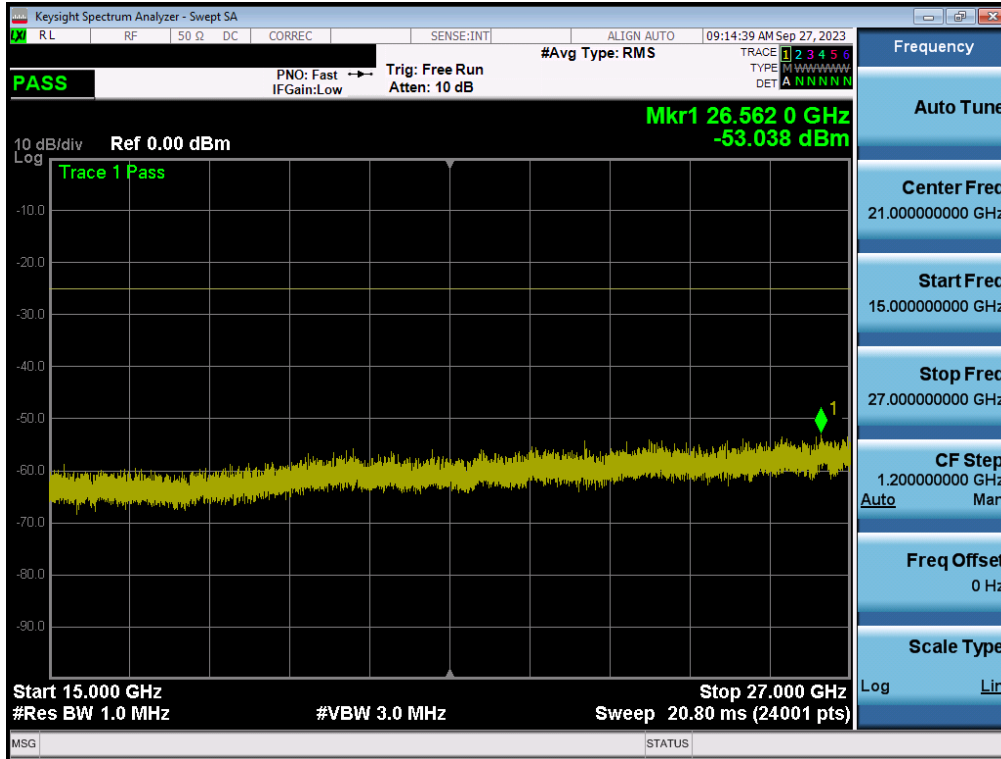
Plot 7-73. Conducted Spurious Plot (LTE Band 41(PC2) - 20MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-74. Conducted Spurious Plot (LTE Band 41(PC2) - 20MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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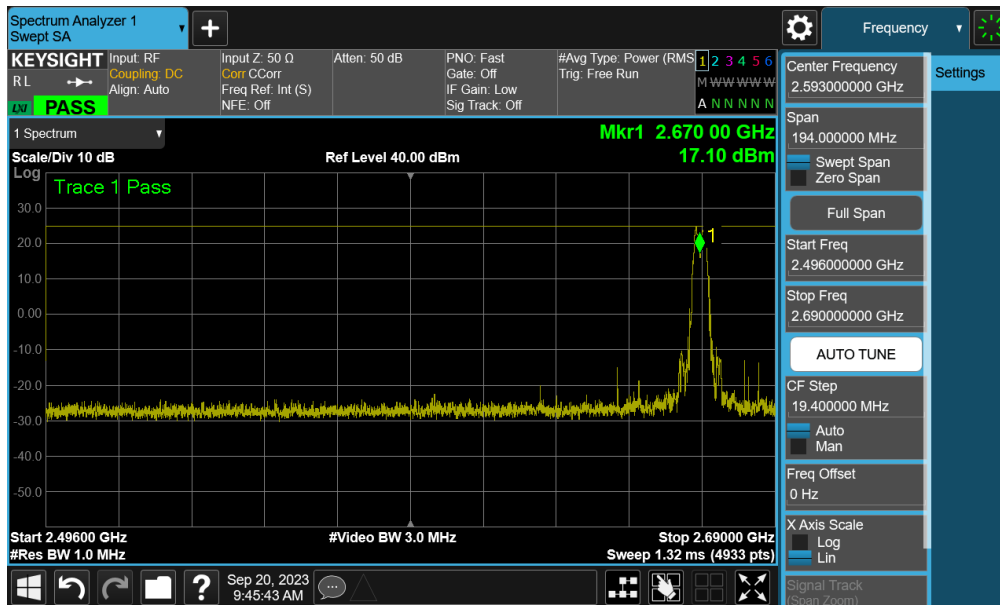
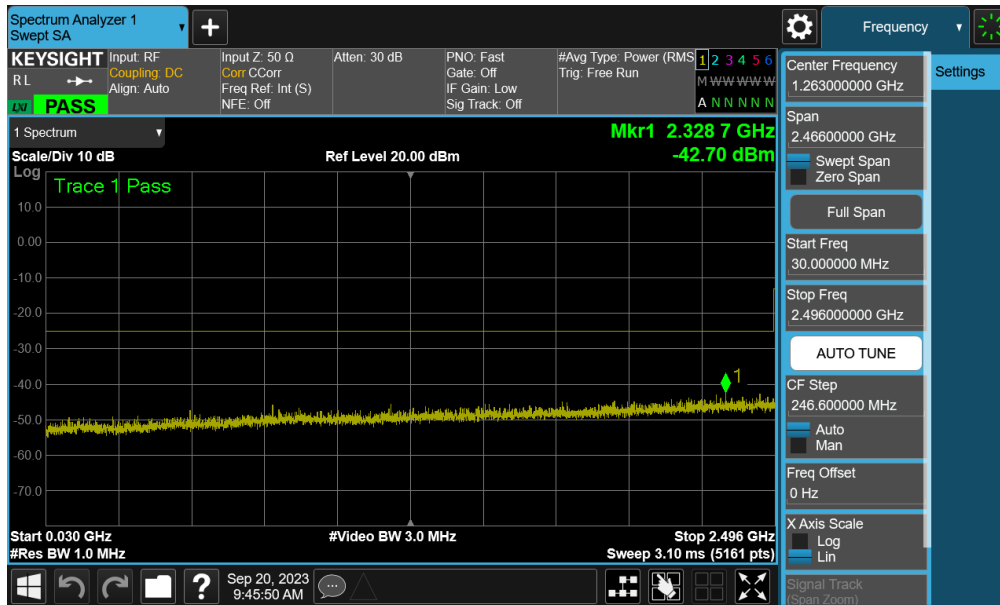


Plot 7-77. Conducted Spurious Plot (LTE Band 41(PC3)/38 - 20MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

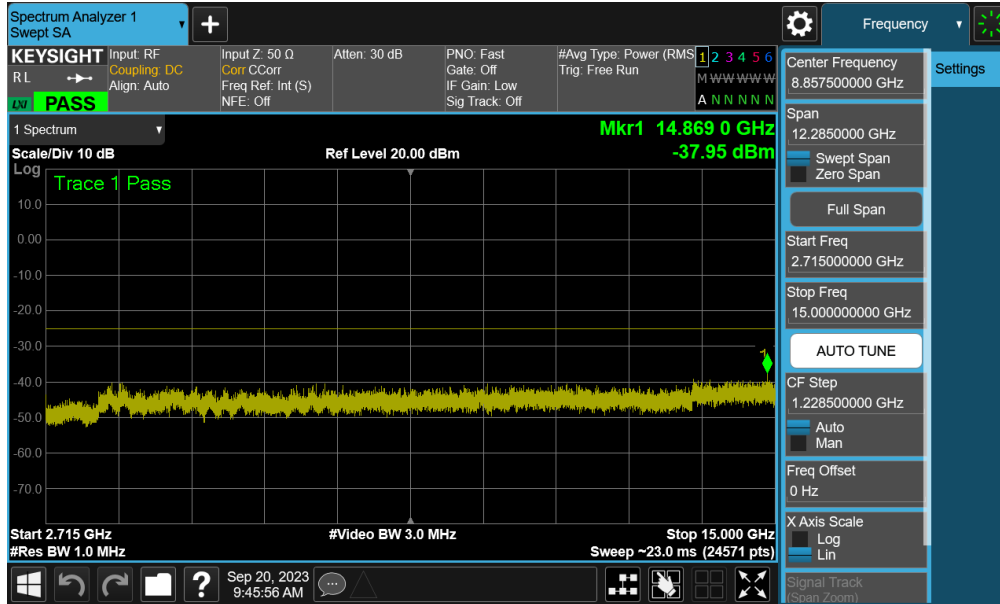
)

FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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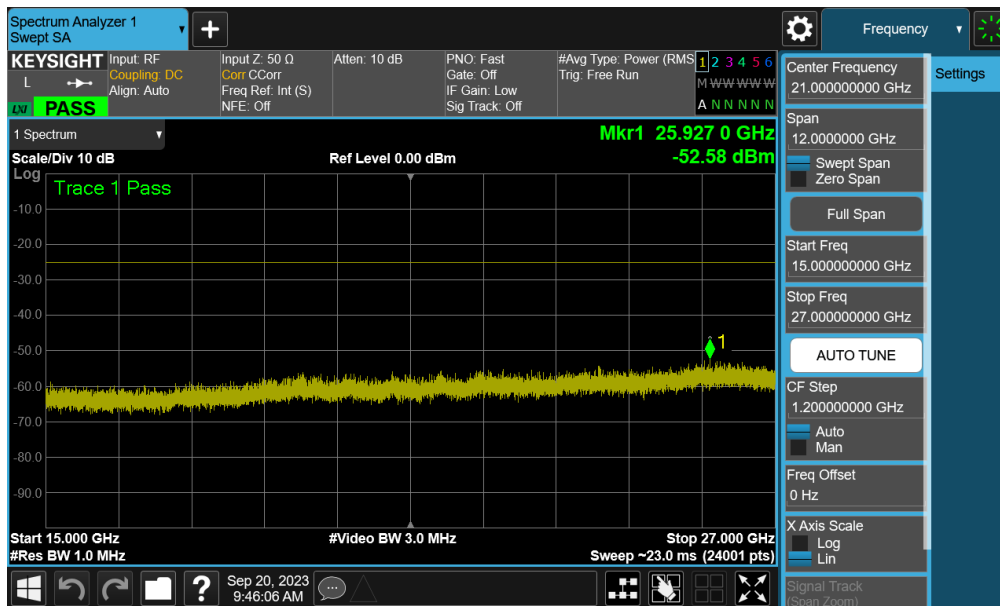
ULCA - LTE B41(PC3)



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Plot 7-80. Conducted Spurious Plot (ULCA LTE B41(PC3) - 20MHz QPSK - RB Size 1, RB Offset 0 - High Channel Ant1)



Plot 7-81. Conducted Spurious Plot (ULCA LTE B41(PC3) - 20MHz QPSK - RB Size 1, RB Offset 0 - High Channel Ant1)

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Mode	Bandwidth	Channel	Range [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]
NR-n41 PC2	100MHz	Low	30.0 - 2470.0	-43.73	-25	-18.72
		Low	2690.0 - 1500.0	-38.23	-25	-13.23
		Low	15000.0 - 27000.0	-52.08	-25	-27.08
		Mid	30.0 - 2470.0	-43.37	-25	-18.37
		Mid	2690.0 - 1500.0	-38.72	-25	-13.72
		Mid	15000.0 - 27000.0	-51.92	-25	-26.92
		High	30.0 - 2470.0	-44.03	-25	-19.03
		High	2690.0 - 1500.0	-37.57	-25	-12.57
		High	15000.0 - 27000.0	-51.94	-25	-26.94

Table 7-82. Spurious and Harmonic Emissions Test Results

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