

**ELEMENT WASHINGTON DC LLC** 

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## Part 96 MEASUREMENT REPORT

#### **Applicant Name:**

Samsung Electronics Co., Ltd. 129, Samsung-ro, Yeongtong-gu, Suwon-si Gyeonggi-do, 16677, Korea

#### Date of Testing:

09/02/2022 - 11/21/2022 **Test Report Issue Date:** 11/22/2022 **Test Site/Location:** Element Lab., Columbia, MD, USA **Test Report Serial No.:** 1M2209010097-07.A3L

## FCC ID: APPLICANT:

## A3LSMS916U

Samsung Electronics Co., Ltd.

Application Type:	Certification
Model:	SM-S916U
Additional Models:	SM-S916U1
EUT Type:	Portable Handset
FCC Classification:	Citizens Band End User Devices (CBE)
FCC Rule Part(s):	96
Test Procedure(s):	ANSI C63.26-2015, KDB 940660 D01 v03,
	WINNF-18-IN-00178 v1.0.0.00,
	WINNF-TS-0122 v1.0.2, KDB 648474 D03 v01r04

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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## MEASUREMENT REPORT FCC Part 96

				Ell	Emission	
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	Max. Power [W]	Max. Power [dBm]	Emission Designator
	40 MHz	QPSK	3570.0 - 3680.0	0.112	20.50	37M8G7D
	40 1011 12	16QAM	3570.0 - 3680.0	0.094	19.73	37M7W7D
	35 MHz	QPSK	3567.5 - 3682.5	0.110	20.42	32M7G7D
LTE Band 48 (2CC ULCA)	55 WI 12	16QAM	3567.5 - 3682.5	0.098	19.92	32M7W7D
ANT F	30 MHz	QPSK	3565.0 - 3685.0	0.108	20.35	27M7G7D
	30 10112	16QAM	3565.0 - 3685.0	0.091	19.58	27M9W7D
	25 MHz	QPSK	3562.5 - 3687.5	0.113	20.54	23M0G7D
	23 1011 12	16QAM	3562.5 - 3687.5	0.101	20.06	23M0W7D
	20 MHz	QPSK	3560.0 - 3690.0	0.138	21.39	18M0G7D
	20 1011 12	16QAM	3560.0 - 3690.0	0.106	20.26	17M9W7D
	15 MHz	QPSK	3557.5 - 3692.5	0.137	21.35	13M5G7D
LTE Band 48	15 MHZ	16QAM	3557.5 - 3692.5	0.105	20.22	13M5W7D
ANT F	10 MHz	QPSK	3555.0 - 3695.0	0.142	21.51	9M00G7D
		16QAM	3555.0 - 3695.0	0.109	20.37	9M02W7D
	5 MHz	QPSK	3552.5 - 3697.5	0.138	21.40	4M51G7D
		16QAM	3552.5 - 3697.5	0.115	20.60	4M50W7D
	40 MHz	π/2 BPSK	3570.0 - 3680.0	0.141	21.50	35M9G7D
		QPSK	3570.0 - 3680.0	0.143	21.55	38M0G7D
		16QAM	3570.0 - 3680.0	0.122	20.87	37M9W7D
	30 MHz	π/2 BPSK	3565.0 - 3685.0	0.133	21.23	27M0G7D
		QPSK	3565.0 - 3685.0	0.136	21.33	27M9G7D
		16QAM	3565.0 - 3685.0	0.111	20.47	28M0W7D
NR Band n48		π/2 BPSK	3560.0 - 3690.0	0.143	21.55	18M0G7D
ANT F	20 MHz	QPSK	3560.0 - 3690.0	0.134	21.28	18M3G7D
		16QAM	3560.0 - 3690.0	0.123	20.91	18M3W7D
I F		π/2 BPSK	3557.5 - 3692.5	0.146	21.66	13M0G7D
	15 MHz	QPSK	3557.5 - 3692.5	0.148	21.69	13M7G7D
		16QAM	3557.5 - 3692.5	0.129	21.11	13M6W7D
Ι Γ		π/2 BPSK	3555.0 - 3695.0	0.139	21.42	8M65G7D
	10 MHz	QPSK	3555.0 - 3695.0	0.144	21.58	8M66G7D
		16QAM	3555.0 - 3695.0	0.120	20.80	8M68W7D

**EUT Overview** 

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			Tx Frequency Range [MHz]	EIRP	
Mode	Bandwidth	Modulation		Max. Power [W]	Max. Power [dBm]
NR Band n48 ANT C	40 MHz	π/2 BPSK	3570.0 - 3680.0	0.051	17.11
		QPSK	3570.0 - 3680.0	0.046	16.67
		16QAM	3570.0 - 3680.0	0.038	15.74

**EUT Overview** 

			Tx Frequency Range [MHz]	EIRP	
Mode	Bandwidth	Modulation		Max. Power [W]	Max. Power [dBm]
NR Band n48 ANT I	40 MHz	π/2 BPSK	3570.0 - 3680.0	0.022	13.37
		QPSK	3570.0 - 3680.0	0.020	13.11
		16QAM	3570.0 - 3680.0	0.018	12.64

#### **EUT Overview**

				EIRP	
Mode	Bandwidth	Modulation	tion Tx Frequency Max. Power [MHz]		Max. Power [dBm]
NR Band n48 ANT D	40 MHz	π/2 BPSK	3570.0 - 3680.0	0.026	14.15
		QPSK	3570.0 - 3680.0	0.026	14.17
		16QAM	3570.0 - 3680.0	0.023	13.56

**EUT Overview** 

**Note:** EIRP levels shown in the table above are measured over the full channel bandwidth. These values will appear on the Grant of Authorization.

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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.

### **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 a OnGo Alliance Approved Test Lab (ATL)
- Element Washington DC LLC is a WInnForum Approved Test Lab
- 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: A3LSMS916U**. The test data contained in this report pertains only to the emissions due to the EUT's LTE Band 48 operation in the CBRS band. Per FCC Part 96, this device is evaluated as a Citizens Band End User Devices (CBE).

**Test Device Serial No.:** 0613M,0381M, 2569M, 1741M, 2650M, 1554M, 2597M, 2681M, 2660M, 2612M, 0620M, 0087M, 2044M

### 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 and FR2), 802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII (5GHz and 6GHz), Bluetooth (1x, EDR, LE), NFC, UWB, Wireless Power Transfer

This device uses a tuner circuit that dynamically updates the antenna impedance parameters to optimize antenna performance for certain bands and modes of operation. The tuner for this device was set to simulate a "free space" condition where the transmit antenna is matched to the medium into which it is transmitting and, thus, the power is at its maximum level.

## 2.3 Test Configuration

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

This device supports wireless charging capability and, thus, is subject to the test requirements of KDB 648474 D03 v01r04. Additional radiated spurious emission measurements were performed with the EUT lying flat on an authorized wireless charging pad (WCP) Model: EP-N5100 while operating under normal conditions in a simulated call or data transmission configuration. The worst case radiated emissions data is shown in this report.

### 2.4 Software and Firmware

Testing was performed on device(s) using software/firmware version S916USQU0AVJS 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 Measurement 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:

 $P_{d [dBm]} = P_{g [dBm]} - cable loss [dB] + antenna gain [dBd/dBi];$ 

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  $P_{g [dBm]}$  – 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:

$$\begin{split} E_{[dB\mu V/m]} &= Measured \ amplitude \ level_{[dBm]} + 107 + Cable \ Loss_{[dB]} + Antenna \ Factor_{[dB/m]} \\ And \\ EIRP_{[dBm]} &= E_{[dB\mu V/m]} + 20logD - 104.8; \ where \ D \ is the measurement \ distance \ in \ meters. \end{split}$$

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 (±dB)
Conducted Bench Top Measurements	1.13
Radiated Disturbance (<1GHz)	4.98
Radiated Disturbance (>1GHz)	5.07
Radiated Disturbance (>18GHz)	5.09

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## 5.0 TEST EQUIPMENT CALIBRATION DATA

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

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	ETS	EMC Cable and Switch System	5/10/2021	Biennial	5/10/2023	ETS
-	LTx4	Licensed Transmitter Cable Set	7/29/2022	Annual	7/29/2023	LTx4
-	LTx5	LIcensed Transmitter Cable Set	7/29/2022	Annual	7/29/2023	LTx5
Anritsu	MT8821C	Radio Communication Analyzer		N/A		6200901190
Anritsu	MT8821C	Radio Communication Analyzer		N/A		6201525694
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	4/20/2021	Biennial	4/20/2023	00125518
Keysight Technologies	N9030A	PXA Signal Analyzer (44GHz)	2/14/2022	Annual	2/14/2023	MY52350166
Keysight Technologies	N9030B	PXA Signal Analyzer, Multi-touch	7/29/2022	Annual	7/29/2023	MY57141001
Rohde & Schwarz	CMW500	Radio Communication Tester	N/A		112347	
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	8/29/2022	Annual	8/29/2023	100342
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	8/30/2022	Biennial	8/30/2024	A051107

#### Notes:

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

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## 6.0 SAMPLE CALCULATIONS

### **Emission Designator**

#### **QPSK Modulation**

#### Emission Designator = 8M62G7D

LTE BW = 8.62 MHz

G = Phase Modulation

7 = Quantized/Digital Info

D = Data transmission, telemetry, telecommand

#### **QAM Modulation**

#### Emission Designator = 8M45W7D

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

## Spurious Radiated Emission – LTE Band

#### Example: Middle Channel LTE Mode 2<sup>nd</sup> Harmonic (7250 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).

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## 7.0 TEST RESULTS

### 7.1 Summary

Company Name:	Samsung Electronics Co., Ltd.
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FCC Classification:	Citizens Band End User Devices (CBE)
Mode(s):	LTE/NR

Test Condition	Test Description	FCC Part Section(s)	Test Limit	Test Result	Reference
	Conducted Power	2.1046(a), 2.1046(c)	N/A	PASS	Section 7.2
	Occupied Bandwidth	2.1049(h)	N/A	PASS	Section 7.3
Ð	Conducted Band Edge / Spurious Emissions (EUD)	2.1051, 96.41(e)(ii)	<ul> <li>-13 dBm/MHz at frequencies within 0-B MHz of channel edge (where B is the bandwidth of the assigned channel)</li> <li>-25 dBm/MHz at frequencies greater than B MHz above and below channel edge</li> <li>-40 dBm/MHz at frequencies below 3530 MHz and above 3720 MHz</li> </ul>	PASS	Sections 7.4, 7.5
CONDUCTED	Additional Maximum Power Reduction (A-MPR)	2.1046	N/A	PASS	Section 7.6
CON	Frequency Stability	2.1055	Fundamental emissions stay within authorized frequency block	PASS	Section 7.10
	End User Device Additional Requirements (CBSD Protocol)	96.47	End User Devices may operate only if they can positively receive and decode an authorization signal transmitted by a CBSD, including the frequencies and power limits for their operation. An End User Device must discontinue operations, change frequencies, or change its operational power level within 10 seconds of receiving instructions from its associated CBSD.	PASS	Section 7.11
	Uplink Carrier Aggregation	96.41(e)	> 43 + 10log(P[Watts]) at Band Edge and for all out-of- band emissions	PASS	Section 7.7
RADIATED	Equivalent Isotropic Radiated Power (EIRP) (EUD)	96.41(b)	23 dBm/10MHz	PASS	Section 7.8
RADI	Radiated Spurious Emissions	2.1053, 96.41(e)	-40 dBm/MHz	PASS	Section 7.9

#### 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.
- For conducted spurious emissions, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is EMC Software Tool v1.1.

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- 5) NR band n48 operates from four different antennas (Ant F, Ant C, Ant I, and Ant D) and the worst case mode was investigated to be Ant F. Therefore, all full tests are tested for Ant F, while Ant C, Ant I, and Ant D only include test results for there widest bandwidths.
- 6) For conducted powers it was investigated that 64QAM and 256QAM modes were lower than the measured 16QAM power due to MPR, which 64QAM and 256 QAM are excluded in the report.

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## 7.2 Conducted Output Power Data

#### **Test Overview**

The EUT is set up to transmit at maximum power for LTE. All power levels 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 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 =  $2 \times OBW$  to  $3 \times OBW$
- 2. RBW = 1% to 5% of the OBW
- 3. Number of measurement points in sweep  $\geq$  2 x span / RBW
- 4. Sweep = auto-couple (less than transmission burst duration)
- 5. Detector = RMS (power)
- 6. Trigger was set to enable power measurements only on full power bursts
- 7. Trace was allowed to stabilize
- 8. Spectrum analyzer's "Channel Power" function was used to compute the power by integrating the spectrum across the OBW of the signal

#### Test Setup

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



Figure 7-1. Test Instrument & Measurement Setup

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### Test Notes

- 1. A-MPR was only applied for test purposes to the 2CC case since the 1CC case was compliant for all testing at max power.
- 2. A-MPR was verified to comply with the "CA\_NS\_10" specification in the 3GPP TS 36.101 standard by setting the MCC to a U.S. code and the MNC to a U.S. carrier supporting LTE B48 operation.
- 3. 256QAM operations does not employ A-MPR.
- 4. 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.

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Bandwidth	Modulation Channel 1		Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
N		55340	3560.0	1 / 13	22.27
MHz	QPSK	55990	3625.0	1 / 13	22.28
20 N		56640	3690.0	1 / 37	22.31
7	16-QAM	55340	3560.0	1 / 13	20.78
N		55315	3557.5	1 / 28	22.23
MHz	QPSK	55990	3625.0	1 / 28	22.20
15 1		56665	3692.5	1 / 28	22.35
~	16-QAM	55315	3557.5	1 / 28	20.74
И		55290	3555.0	1 / 17	22.39
MHz	QPSK	55990	3625.0	1 / 17	22.39
10 1		56690	3695.0	1 / 17	22.50
-	16-QAM	55290	3555.0	1 / 17	20.89
N		55265	3552.5	1/3	22.53
MHz	QPSK	55990	3625.0	1/3	22.49
5 N		56715	3697.5	1/3	22.54
	16-QAM	55265	3552.5	1/3	21.23

Table 7-1. Conducted Power Output Data (LTE Band 48)

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Bandwidth	Modulation		PCC			scc		Conducted
Bandwidth	woodulation	Bandwidth [MHz]	Frequency [MHz]	RB / Offset	Bandwidth [MHz]	Frequency [MHz]	RB / Offset	Power [dBm]
		20	3560.0	1 / 99	20	3579.8	1 / 0	22.49
N	QPSK	20	3625.0	1 / 99	20	3644.8	1/0	22.36
H		20	3690.0	1 / 0	20	3670.2	1 / 99	22.38
40 MHz		20	3560.0	1 / 99	20	3579.8	1/0	21.39
ব	16-QAM	20	3625.0	1 / 99	20	3644.8	1 / 0	21.36
		20	3690.0	1 / 0	20	3670.2	1 / 99	21.55
		20	3560.0	1 / 99	15	3577.1	1 / 0	22.41
N	QPSK	20	3625.0	1 / 99	15	3642.1	1/0	22.26
H		20	3690.0	1 / 0	15	3672.9	1 / 74	22.10
35 MHz		20	3560.0	1 / 99	15	3577.1	1 / 0	21.58
e7	16-QAM	20	3625.0	1 / 99	15	3642.1	1/0	21.36
		20	3690.0	1 / 0	15	3672.9	1 / 74	21.10
	QPSK	20	3560.0	1 / 99	10	3574.4	1 / 0	22.34
N		20	3625.0	1 / 99	10	3639.4	1 / 0	22.27
HM		20	3690.0	1 / 0	10	3675.6	1 / 49	21.76
30 MHz		20	3560.0	1 / 99	10	3574.4	1 / 0	21.24
	16-QAM	20	3625.0	1 / 99	10	3639.4	1/0	21.37
		20	3690.0	1 / 0	10	3675.6	1 / 49	20.63
		20	3560.0	1 / 99	5	3571.7	1 / 0	22.53
N	QPSK	20	3625.0	1 / 99	5	3636.7	1 / 0	22.28
25 MHz		20	3690.0	1 / 0	5	3678.3	1 / 24	22.18
55		20	3560.0	1 / 99	5	3571.7	1 / 0	21.72
	16-QAM	20	3625.0	1 / 99	5	3636.7	1 / 0	21.37
		20	3690.0	1 / 0	5	3678.3	1 / 24	21.18

Table 7-2. Conducted Power Output Data (ULCA LB48)

			PCC SCC																			
Test Case	Case NS MCC N	MNC	MNC	Channel BW [MHz]	Channel Frequency [MHz]	RB Size	RB Offset	Channel Frequency [MHz]	RB Size	RB Offset	A-MPR [dB]	Modulation	MPR [dB]	Maximum Target Output Power [dBm]	A-MPR Measured Power [dBm]							
1				20 + 20	3560	100	0	3579.8	100	0	≤ 11	QPSK	0	23.00	12.69							
'				20 + 20	3300	100	0	5579.0	100	0	211	16-QAM	1	22.00	12.68							
2					20 + 20	3560	1	99	3579.8	1	0	≤ 11	QPSK	0	23.00	19.57						
2				20 + 20	3300	I	33	001 0.0	1	0	211	16-QAM	1	22.00	19.53							
3											20 + 20	3625	100	0	3644.8	100	0	≤ 4.5	QPSK	0	23.00	19.11
3	NR 01	210	910	20 + 20	3025	100	0	3044.0	100	0	≥ 4.5	16-QAM	1	22.00	19.11							
4	NS_01	310 910	310 910	310	5_01 310	310 910	910	910	20 + 20	3625	4	99	3644.8	4	0	< 1 E	QPSK	0	23.00	22.78		
4				20 + 20	3625	1	99	3644.8	1	0	≤ 4.5	16-QAM	1	22.00	22.68							
5					20 + 20	3670.2	100	0	3690	100	0	< 11	QPSK	0	23.00	12.86						
э				20 + 20	30/0.2	100	0	3090	100	0	≤ 11	16-QAM	1	22.00	12.84							
6				20 + 20	3670.2	1	99	3690	1	0	≤ 11	QPSK	0	23.00	19.59							
0				20 + 20	3070.2	I	99	3090	1	0	- 11	16-QAM	1	22.00	19.47							

Table 7-3. A-MPR Conducted Power Output Data (ULCA LB48)

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Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
		638000	3570.0	1 / 26	22.01
	π/2 BPSK	641666	3625.0	1 / 26	22.13
HZ		645332	3680.0	1 / 26	22.06
40 MHz		638000	3570.0	1 / 53	22.41
40	QPSK	641666	3625.0	1 / 26	22.16
		645332	3680.0	1 / 53	22.27
	16-QAM	638000	3570.0	1 / 26	21.11
		637666	3565.0	1 / 19	21.68
	π/2 BPSK	641666	3625.0	1 / 19	21.86
30 MHz		645666	3685.0	1 / 19	21.72
Σ		637666	3565.0	1 / 39	22.04
30	QPSK	641666	3625.0	1 / 39	22.02
		645666	3685.0	1 / 39	21.83
	16-QAM	637666	3565.0	20.71	
		637334	3560.0	1 / 25	22.08
	π/2 BPSK	641666	3625.0	1 / 13	22.02
보		646000	3690.0	1 / 37	22.33
20 MHz		637334	3560.0	1 / 25	22.14
20	QPSK	641666	3625.0	1 / 25	21.91
		646000	3690.0	1 / 37	22.38
	16-QAM	637334	3560.0	1 / 25	21.05
		637166	3557.5	1 / 19	22.13
	π/2 BPSK	641666	3625.0	1 / 19	22.29
15 MHz		646166	3692.5	1 / 19	22.09
Σ		637166	3557.5	1 / 19	22.40
15	QPSK	641666	3625.0	1 / 19	22.38
		646166	3692.5	1 / 19	21.63
	16-QAM	637166	3557.5	1 / 19	21.35
		637000	3555.0	1 / 12	21.95
	π/2 BPSK	641666	3625.0	1 / 12	21.99
Ê Ê		646332	3695.0	1 / 17	21.59
10 MHz		637000	3555.0	1 / 12	22.44
10	QPSK	641666	3625.0	1 / 12	22.23
		646332	3695.0	1 / 17	21.46
	16-QAM	637000	3555.0	1 / 12	21.04

Table 7-4. Conducted Power Output Data (NR Band 48 – ANT F)

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Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
	T/2 BPSK QPSK	638000	3570.0	1 / 26	19.67
		641666	3625.0	1 / 53	19.76
MHz		645332	3680.0	1 / 79	19.72
		638000	3570.0	1 / 26	19.70
40		641666	3625.0	1 / 53	19.78
		645332	3680.0	1 / 79	19.82
	16-QAM	645332	3680.0	1 / 79	19.36

Table 7-5. Conducted Power Output Data (NR Band 48 – ANT C)

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
	π/2 BPSK	638000	3570.0	1 / 53	20.64
		641666	3625.0	1 / 53	20.93
MHz		645332	3680.0	1 / 53	20.43
	QPSK	638000	3570.0	1 / 53	20.74
40		641666	3625.0	1 / 53	20.83
		645332	3680.0	1 / 53	20.77
	16-QAM	638000	3570.0	1 / 53	20.14

Table 7-6. Conducted Power Output Data (NR Band 48 - ANT I)

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
	π/2 BPSK QPSK	638000	3570.0	1 / 53	18.54
		641666	3625.0	1 / 53	18.95
MHz		645332	3680.0	1 / 53	18.33
Σ		638000	3570.0	1 / 53	18.77
40		641666	3625.0	1 / 53	18.95
		645332	3680.0	1 / 53	18.95
	16-QAM	645332	3680.0	1 / 53	18.19

Table 7-7. Conducted Power Output Data (NR Band 48 – ANT D)

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	NR (SCS 30kHz)						LTE					NR	LTE	EN-DC
NR Band	NR Bandwidth [MHz]	NR Channel	NR Frequency [MHz]	Mod.	NR RB#/Offset	LTE Band	LTE Bandwidth [MHz]	LTE Channel	LTE Frequency [MHz]	Mod.	LTE RB#/Offset	Power [dBm]	Conducted Power [dBm]	Total Tx. Power [dBm]
				QPSK	100/0					QPSK	100/0	18.70	21.76	23.50
- 10				QPSK	100/0					QPSK	1/50	17.29	22.23	23.44
n48 ANT F	40	Mid	3625	QPSK	1/53	B2	20	Mid	1880	QPSK	100/0	18.77	21.82	23.57
ANTE				QPSK	1/53					QPSK	1/50	17.22	22.38	23.54
				16Q	1/53					16Q	1/50	18.71	21.80	23.53

Table 7-8. Conducted Power Output Data (EN-DC: NR Band n48 - LTE Band 2)

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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

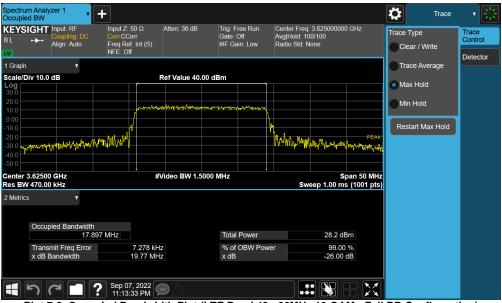
FCC ID: A3LSMS916U	element	PART 96 MEASUREMENT REPORT	Approved by: Technical Manager	
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## LTE Band 48

Spectrur Occupie	n Analyzer 1 d BW	•	+										Ö	Trace	- * 影
RL	IGHT Input: R ↔ Couplin Align: A	g: DC	Input Z: 5 Corr CCo Freq Ref: NFE: Off	rr : Int (S)	Atten: 36 dB	G	ate: I	ree Run Off ain: Low		Center Freq: Avg Hold: 10 Radio Std: N	00/100	00 GHz	Trace Ty Clea	pe r / Write	Trace Control Detector
1 Graph		•											Trace	e Average	Delection
	iv 10.0 dB			·	Ref Value 40	.00 dBm			<b>1</b> —				Max	Hold	
Log 30.0 20.0 10.0				popular	กปลุการกรระสมอาจ	monalla	vAyo	๛๛๛๛					Min H	Hold	
0.00			.t. tall						Ì	W		PEAK	Resta	rt Max Hold	
-30.0 -40.0 -50.0	n an	Andrew of the second	havaltaahdi.							White have n	the filter of the second	Marca/all Pitan			
Center 3	3.62500 GHz 470.00 kHz			#	Video BW 1.5	5000 MH	z		ļ	Sw		5pan 50 MHz s (1001 pts)			
2 Metrics		•													
	Occupied Bar		8 MHz			T	otal	Power			29.0 d	Bm			
	Transmit Free x dB Bandwid			6.647 kH 19.37 MH			₀ of dB	OBW Po	мe	r	99.00 -26.00				
	5	72	Sep 07												

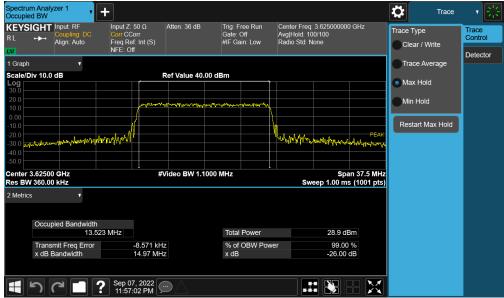
Plot 7-1. Occupied Bandwidth Plot (LTE Band 48 - 20MHz QPSK - Full RB Configuration)



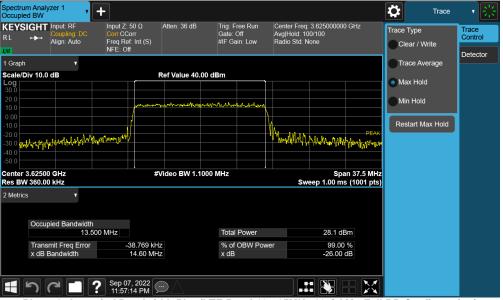
Plot 7-2. Occupied Bandwidth Plot (LTE Band 48 - 20MHz 16-QAM - Full RB Configuration)

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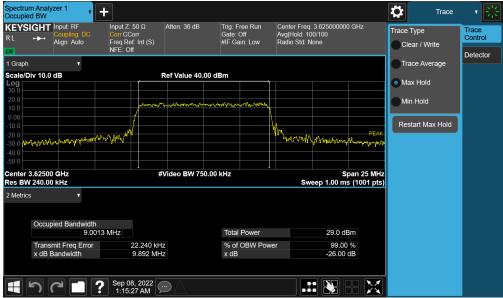
Plot 7-3. Occupied Bandwidth Plot (LTE Band 48 - 15MHz QPSK - Full RB Configuration)



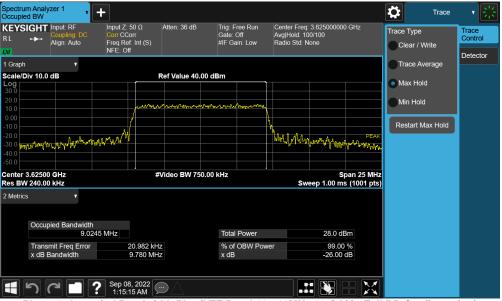
Plot 7-4. Occupied Bandwidth Plot (LTE Band 48 - 15MHz 16-QAM - Full RB Configuration)

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Plot 7-5. Occupied Bandwidth Plot (LTE Band 48 - 10MHz QPSK - Full RB Configuration)



Plot 7-6. Occupied Bandwidth Plot (LTE Band 48 - 10MHz 16-QAM - Full RB Configuration)

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Plot 7-7. Occupied Bandwidth Plot (LTE Band 48 - 5MHz QPSK - Full RB Configuration)



Plot 7-8. Occupied Bandwidth Plot (LTE Band 48 - 5MHz 16-QAM - Full RB Configuration)

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## **ULCA LTE Band 48**

Keysight Spectrum Analy	zer - Occup	ied BW											- đ 🗙
XIRL RF	50 Ω	AC (	CORREC		Cent	SENSE:IN er Freq: 3		000 GHz	ALIGN AUT		7 PM Sep 30, 2022 td: None	Trac	e/Detector
				↔	, Trig:	Free Run			d: 100/100				
,		#	#IFGain	n:Low	#Atte	en: 36 dB				Radio D	evice: BTS		
10 dB/div Ref	30.00	dBm							•				
20.0													<b>.</b>
10.0				-	and the second	why prove	resound	and the state of t	¥				Clear Write
0.00						¥							
-10.0			_						1				
20.0	م. ماسلومیروس	t at more	~						hunderson	ma with me			Averag
-30.0 splandstallerarlinds											- marker with the		
-40.0													
-50.0													Max Hole
-60.0													muntion
Center 3.63500 G	·U-										400.0 MIL		
Res BW 910 kHz						¢VB₩ ′	1.5 MF	łz		sµan Si	100.0 MHz weep 1 ms		
													Min Hole
Occupied B	andw	vidth				Tot	tal Po	ower	30	.1 dBm			
		37.	80	3 M	Ηz								Detecto
Transmit Era			0.5	5.348		0/ -	I OD	W Pow		99.00 %		Auto	Peakl Mai
Transmit Fre								w Pow				Auto	<u>ivia</u>
x dB Bandwig	dth		4	0.20 N	ЛНz	x d	B		-2	6.00 dB			
SG									STA	rus			

Plot 7-9. Occupied Bandwidth Plot (ULCA LB48 - 20+20MHz QPSK - Full RB Configuration)



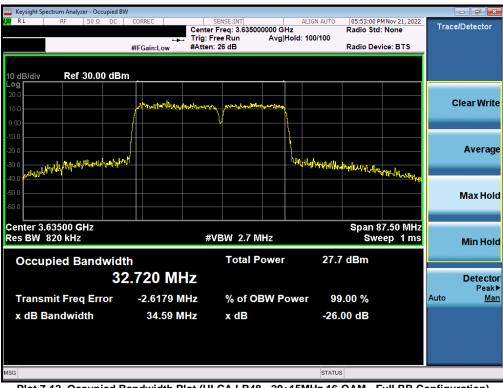
Plot 7-10. Occupied Bandwidth Plot (ULCA LB48 - 20+20MHz 16-QAM - Full RB Configuration)

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Plot 7-11. Occupied Bandwidth Plot (ULCA LB48 - 20+15MHz QPSK - Full RB Configuratio)



Plot 7-12. Occupied Bandwidth Plot (ULCA LB48 - 20+15MHz 16-QAM - Full RB Configuration)

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Plot 7-13. Occupied Bandwidth Plot (ULCA LB48 - 20+10MHz QPSK - Full RB Configuration)



Plot 7-14. Occupied Bandwidth Plot (ULCA LB48 - 20+10MHz 16-QAM - Full RB Configuration)

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🔤 Keysight Spectrum Analyzer - Occupied B	3W							- 0 ×
XIRL RF 50Ω AC		SENSE:INT Center Freq: 3.6350	000000 GHz	F	07:14:26 PM Radio Std:	1 Sep 30, 2022 None	Trace	/Detector
		Trig: Free Run Atten: 36 dB	Avg Hold:		adio Devi	ce: BTS		
10 dB/div Ref 30.00 dB	m							
20.0		L. GANGA						
10.0		washing from the set					c	lear Write
0.00								
-10.0			d k					A
-20.0 -30.0 what many in many in the set			Health Harah Madain	maynolown	ntuk			Average
-40.0						na han han han han han han han han han h		
-50.0								Max Hold
-60.0								Maxilolu
Center 3.63500 GHz					Snan 6	2.50 MHz		
Res BW 620 kHz		#VBW 2.2	MHz			ep 1 ms		Min Hold
Occupied Bandwid	th	Total	Power	30.9 d	lBm			
				50.5 0				
2	3.002 MHz							Detector Peak▶
Transmit Freq Error	-7.4720 MH	z % of C	BW Powe	r 99.0	0 %		Auto	<u>Man</u>
x dB Bandwidth	24.62 MH	z x dB		-26.00	) dB			
MSG				STATUS				
1150				514105				

Plot 7-15. Occupied Bandwidth Plot (ULCA LB48 - 20+5MHz QPSK - Full RB Configuration)



Plot 7-16. Occupied Bandwidth Plot (ULCA LB48 - 20+5MHz 16-QAM - Full RB Configuration)

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## NR Band n48 – Ant F

Spectrum Analyzer 1 Occupied BW + Ö Trace Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Off Center Freq: 3.624990000 GHz Avg|Hold: 100/100 Radio Std: None Trig: Free Run Gate: Off #IF Gain: Low KEYSIGHT Input: RF Atten: 36 dB Trace Control Тгасе Туре Align: Auto Clear / Write Detector 1 Graph Trace Average Scale/Div 10.0 dB Ref Value 30.00 dBm Max Hold Min Hold Restart Max Hold Center 3.62499 GHz Res BW 910.00 kHz Span 100 MHz Sweep 1.00 ms (1001 pts) #Video BW 3.0000 MHz 2 Metrics v Occupied Bandwidth 35.882 MHz Total Power 29.7 dBm Transmit Freq Error x dB Bandwidth -1.1019 MHz 38.09 MHz % of OBW Power x dB 99.00 % -26.00 dB モ っ c i ? Oct 02, 2022 💬  $\mathbb{X}$ 

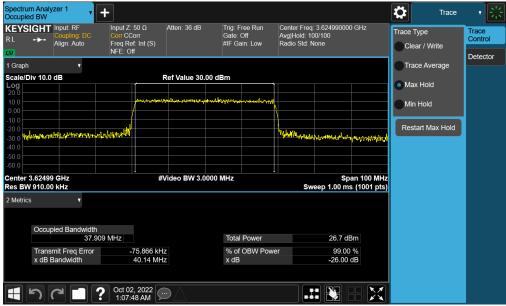
Plot 7-17. Occupied Bandwidth Plot (NR Band n48 - 40MHz π/2 BPSK - Full RB Configuration - Ant F)

Spectrum Occupied			+								₽	Trace	· * 😤
KEYSI RL		nput: RF Coupling: DC Align: Auto	Input Z: Corr CC Freq Re NFE: Of	orr f: Int (S)	Atten: 36 dB	Gat	: Free Run e: Off Gain: Low	Center Fr Avg Hold: Radio Std		00 GHz	Trace Type Clear / N		Trace Control
1 Graph Scale/Di Log 20.0	v 10.0 c	T IB			tef Value 30.						Trace A		Detector
10.0 0.00 -10.0 -20.0 -30.0	telfan Josephy	charry the free spectro at			artano na provinsi na provi La provinsi na p	alla federal terben per d	**************************************	herton	พารคิญญารสะกิจรุปประ	nternery trans	Min Hol		
-40.0 -50.0 -60.0 Center 3 Res BW				#V	ideo BW 3.0	0000 MHz				pan 100 MHz ns (1001 pts)			
2 Metrics	Occupi	▼ ed Bandwidth 37.9	י 976 MHz			То	tal Power		27.2 c	JBm			
		hit Freq Error andwidth		143.51 kHz 40.14 MHz		% x c	of OBW Pow IB	ver	99.0 -26.00				
	う (		<b>?</b> Oct 02 1:07:2										

Plot 7-18. Occupied Bandwidth Plot (NR Band n48 - 40MHz QPSK - Full RB Configuration - Ant F)

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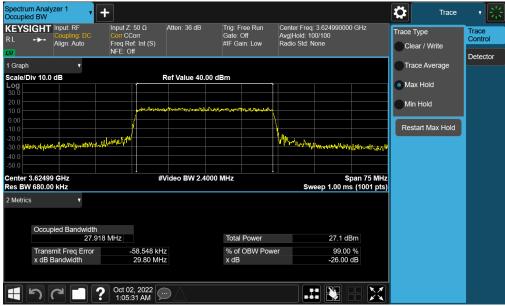
Plot 7-19. Occupied Bandwidth Plot (NR Band n48 - 40MHz 16-QAM - Full RB Configuration - Ant F)



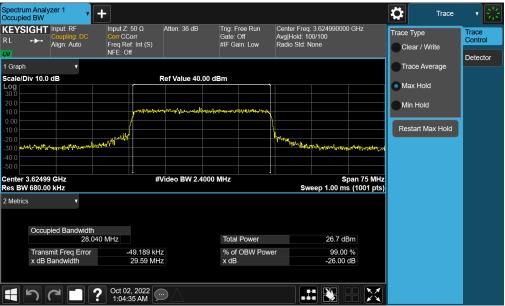
Plot 7-20. Occupied Bandwidth Plot (NR Band n48 - 30MHz π/2 BPSK - Full RB Configuration - Ant F)

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Plot 7-21. Occupied Bandwidth Plot (NR Band n48 - 30MHz QPSK - Full RB Configuration - Ant F)



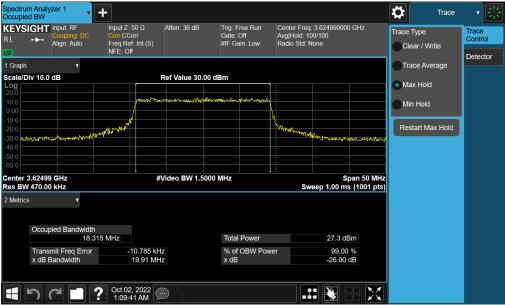
Plot 7-22. Occupied Bandwidth Plot (NR Band n48 - 30MHz 16-QAM - Full RB Configuration - Ant F)

FCC ID: A3LSMS916U	element	PART 96 MEASUREMENT REPORT	Approved by: Technical Manager	
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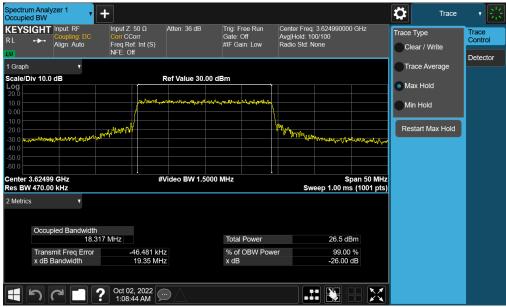
Plot 7-23. Occupied Bandwidth Plot (NR Band n48 - 20MHz  $\pi/2$  BPSK - Full RB Configuration - Ant F)



Plot 7-24. Occupied Bandwidth Plot (NR Band n48 - 20MHz QPSK - Full RB Configuration - Ant F)

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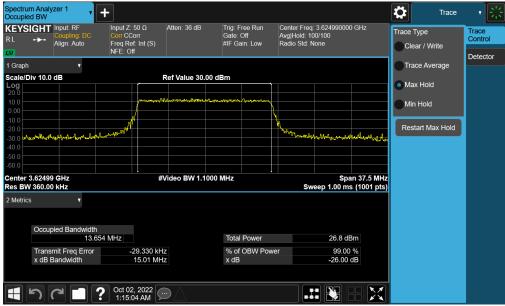
Plot 7-25. Occupied Bandwidth Plot (NR Band n48 - 20MHz 16-QAM - Full RB Configuration - Ant F)



Plot 7-26. Occupied Bandwidth Plot (NR Band n48 - 15MHz  $\pi/2$  BPSK - Full RB Configuration - Ant F)

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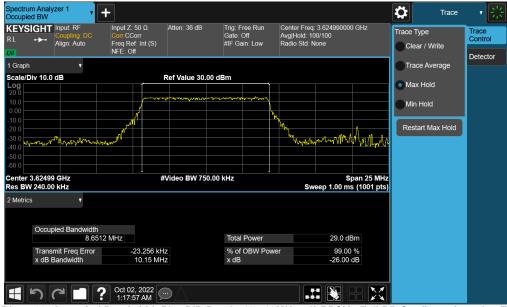
Plot 7-27. Occupied Bandwidth Plot (NR Band n48 - 15MHz QPSK - Full RB Configuration - Ant F)



Plot 7-28. Occupied Bandwidth Plot (NR Band n48 - 15MHz 16-QAM - Full RB Configuration - Ant F)

FCC ID: A3LSMS916U	element	PART 96 MEASUREMENT REPORT	Approved by: Technical Manager	
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Plot 7-29. Occupied Bandwidth Plot (NR Band n48 - 10MHz  $\pi/2$  BPSK - Full RB Configuration - Ant F)



Plot 7-30. Occupied Bandwidth Plot (NR Band n48 - 10MHz QPSK - Full RB Configuration - Ant F)

FCC ID: A3LSMS916U	element	PART 96 MEASUREMENT REPORT	Approved by: Technical Manager
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Plot 7-31. Occupied Bandwidth Plot (NR Band n48 - 10MHz 16-QAM - Full RB Configuration - Ant F)

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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 10<sup>th</sup> harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst-case configuration. All modes of operation were investigated and the worst-case configuration results are reported in this section.

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

#### 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 at least 10 \* the fundamental frequency (separated into at least two plots per channel)
- 2. Detector = RMS
- 3. Trace mode = Max Hold
- 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. 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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## LTE Band 48

bectrum Analyzer 1 wept SA Ö + Frequency #Avg Type: Power (RMS 1 2 3 4 5 Trig: Free Run PNO: Fast Gate: Off IF Gain: Low Sig Track: Off KEYSIGHT Input: RF Input Z: 50 Ω #Atten: 24 dB Center Frequency 1.770000000 GHz Settings Corr CCorr Freq Ref: Int (S) NFE: Off ↔ Alian: Auto ANNNN PASS Mkr1 3.253 0 GHz 1 Spectrum . 3.48000000 GHz -43.55 dBm Scale/Div 10 dB Ref Level 0.00 dBm Swept Span Zero Span Trace 1 Pass Full Span Start Freq 30.000000 MHz Stop Freq 3.510000000 GHz 1 AUTO TUNE CF Step 348.000000 MHz Auto Man Freq Offse X Axis Scale Start 30 MHz #Res BW 1.0 MHz Stop 3.510 GHz Sweep 4.64 ms (6961 pts) #Video BW 3.0 MHz Log Sep 07, 2022 . 11:34:10 PM  $\mathbb{X}$  $\blacksquare$ Plot 7-32. Conducted Spurious Plot (LTE Band 48 - 20MHz QPSK - Low Channel)

ectrum Analyzer 1 vept SA + Ö Frequency PNO: Fast Gate: Off IF Gain: Low Sig Track: Off KEYSIGHT Input: RF Input Z: 50 Ω #Atten: 20 dB #Avg Type: Power (RMS 1 2 3 4 5 ( Trig: Free Run Center Frequency 9.305000000 GHz Settings CCon M <del>WW WW</del> Alian: Auto Freq Ref: Int (S) NFE: Off ANNNN PASS Mkr1 3.867 0 GHz -44.82 dBm 1 Spectrum 11.3900000 GHz Scale/Div 10 dB Ref Level 0.00 dBm Swept Span Zero Span Loa Trace 1 Pass Full Span Start Freq 3.610000000 GHz Stop Freq 15.000000000 GHz 1 AUTO TUNE CF Step 1.139000000 GHz Auto Man Freq Offset X Axis Scale Start 3.610 GHz #Res BW 1.0 MHz #Video BW 3.0 MHz Stop 15.000 GHz Sweep ~21.2 ms (22781 pts) Log Sep 07, 2022
11:35:43 PM  $\mathbb{X}$ 

Plot 7-33. Conducted Spurious Plot (LTE Band 48 - 20MHz QPSK - Low Channel)

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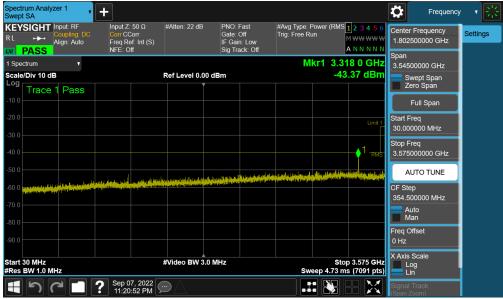
Plot 7-34. Conducted Spurious Plot (LTE Band 48 - 20MHz QPSK - Low Channel)

Spectrum Analyzer 1 Swept SA	+					Frequency	/ * 张
KEYSIGHT     Input: RF       R L     Coupling: DC       Align: Auto	Input Ζ: 50 Ω # Corr CCorr Freq Ref: Int (S) NFE: Off		PNO: Fast Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Power (F Trig: Free Run	RMS <mark>123456</mark> M <del>WWWWW</del> ANNNNN	Center Frequency 32.000000000 GHz	Settings
1 Spectrum 🔻					5.602 9 GHz	Span 10.0000000 GHz	
Scale/Div 10 dB	R	ef Level 0.00 dBr	n		-49.85 dBm	Swept Span Zero Span	
-10.0					_	Full Span	
-20.0						Start Freq 27.000000000 GHz	
-30.0					Limit 1	Stop Freq 37.000000000 GHz	
-50.0	The street by Allerday	deller and the second second second	sussility of the different surgery		1 RMS	AUTO TUNE	
-60.0		All and a second se	and the second secon	ar félden son a til i den fan stil ble marke blek beskelde		CF Step 1.000000000 GHz	
-70.0						Auto Man	
-90.0						Freq Offset 0 Hz	
Start 27.000 GHz #Res BW 1.0 MHz	#	video BW 3.0 MH	z		Stop 37.000 GHz 5 ms (24001 pts)	X Axis Scale Log Lin	
	? Sep 07, 2022					Signal Track (Span Zoom)	

Plot 7-35. Conducted Spurious Plot (LTE Band 48 - 20MHz QPSK - Low Channel)

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Plot 7-36. Conducted Spurious Plot (LTE Band 48 - 20MHz QPSK - Mid Channel)



Plot 7-37. Conducted Spurious Plot (LTE Band 48 - 20MHz QPSK - Mid Channel)

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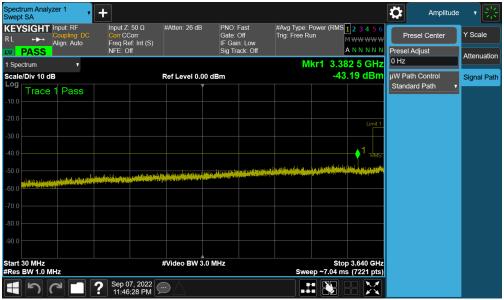
Plot 7-38. Conducted Spurious Plot (LTE Band 48 - 20MHz QPSK - Mid Channel)



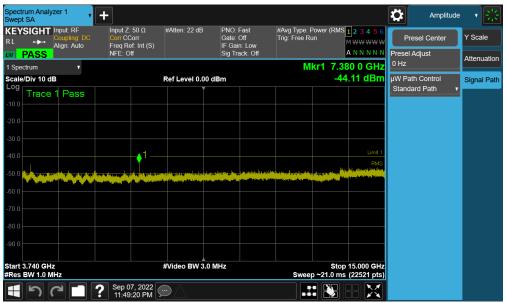
Plot 7-39. Conducted Spurious Plot (LTE Band 48 - 20MHz QPSK - Mid Channel)

FCC ID: A3LSMS916U	element)	PART 96 MEASUREMENT REPORT	Approved by: Technical Manager
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Plot 7-40. Conducted Spurious Plot (LTE Band 48 - 20MHz QPSK - High Channel)



Plot 7-41. Conducted Spurious Plot (LTE Band 48 - 20MHz QPSK - High Channel)

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Spectrum Analyzer 1 Swept SA	• +					Amplitude	- 7 条
R L + Align: Auto	Freq Ref: Int (S)	Atten: 10 dB	PNO: Fast Gate: Off IF Gain: Low	#Avg Type: Power (RMS Trig: Free Run	M <del>WWWW</del>	Presel Center	Y Scale
PASS     Spectrum	NFE: Off		Sig Track: Off	Mkr1 25.7		Presel Adjust 0 Hz	Attenuation
Scale/Div 10 dB		Ref Level 0.00 dE	m		2.17 dBm		Signal Path
Log Trace 1 Pass		Ĭ				Standard Path 🔹	
-20.0							
-30.0							
-40.0					Limit 1		
-50.0					↓1		
-60.0	Provident in the little of the state		ti p <sub>ini ba</sub> ntela formena fitta (elegia Segun esta esta esta esta esta esta esta esta	المعادية بالمرجعة ويورزونها والمحكولة ووالع المحكمة محمد ومعاد محمد وها المحكولة المحد ومعاد			
-70.0	Polarecte, Abberley						
-80.0							
-90.0							
Start 15.000 GHz		#Video BW 3.0 MI	Hz	Sto	27.000 GHz		
#Res BW 1.0 MHz				Sweep ~23.0 m			
<b>1</b> 27	Sep 07, 2022 11:50:03 PM	$\square $				list Obergen	

Plot 7-42. Conducted Spurious Plot (LTE Band 48 - 20MHz QPSK - High Channel)

Spectrum Analyzer 1 Swept SA	+					Amplitude	- * 崇
KEYSIGHT       Input: RF         R L       Imput: RF         Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref: Int (S)	#Atten: 6 dB	PNO: Fast Gate: Off IF Gain: Low	#Avg Type: Power (RMS Trig: Free Run	M <del>WWWW</del>	Presel Center	Y Scale
DASS	NFE: Off		Sig Track: Off		ΑΝΝΝΝΝ	Presel Adjust 0 Hz	Attenuation
1 Spectrum 🔻				Mkr1 38.5			
Scale/Div 10 dB		Ref Level 0.00 d	IBm	-47	7.83 dBm	µW Path Control Standard Path	Signal Path
Trace 1 Pass						Standard Path V	
-10.0							
-20.0							
-30.0							
(0.0					Limit 1		
-40.0					1		
-50.0				المثلثة المتحر مقاطع والمالية والمراجع القامين المحرين. محمد المحروف المحروف المحروف المحروف المحروف المحروف المحروف			
-60.0 Protection and additional interfact	and the second	د المولية المحافظ بين بالكلي الم الفقيم بالأكار والدرب بالكلي وال	and the second states and a second states and a second state of the second states are set of the second states and second states are set of the second states are second states are second states are set of the second states are second are second states are second	a particular and a second s			
-70.0							
-80.0							
-90.0							
Start 27.000 GHz #Res BW 1.0 MHz		#Video BW 3.0 I	MHz	Stop Sweep ~22.9 ms	39.000 GHz (24001 pts)		
	Sep 07, 2022 11:50:53 PM	$\Box$					

Plot 7-43. Conducted Spurious Plot (LTE Band 48 - 20MHz QPSK - High Channel)

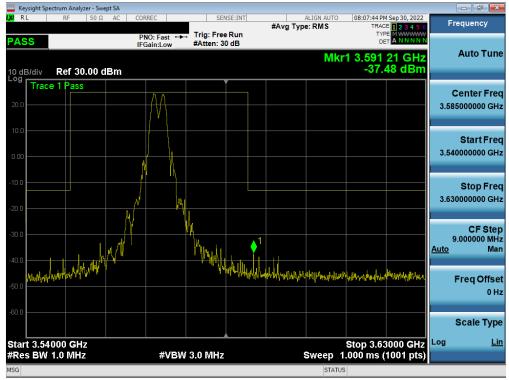
FCC ID: A3LSMS916U	element	PART 96 MEASUREMENT REPORT	Approved by: Technical Manager
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## ULCA LB48

🔤 Keysight S	pectrum Analy												
🗶 RL	RF	50 Ω	AC	CORREC		SEN	SE:INT	#Ava T	ALIGN AL Type: RMS		54 PM Sep 30, 2022 TRACE 1 2 3 4 5 6		requency
PASS				PNO: Fast IFGain:Low		g: Free ten: 20		· ·					
				in outline of						Mkr1 3.	261 9 GHz		Auto Tun
10 dB/div Log	Ref 0.		m							-4/	.084 dBm		
Trac	e 1 Pass	;											Center Fre
-10.0												1.7	70000000 GH
-20.0													Start Fre
-30.0												3	0.000000 MH
-40.0											1		Stop Fre
											_   ∳' _	3.5	10000000 GH
-50.0									and a contactored		electropetal parate		
-60.0 10 10 10 10		والمعالية ورو	and the second					al patenti il più	all he had been		الأربال دريا أأانه بالا		CF Ste
COLUMN THE PARTY		and a lot										34 Auto	8.000000 MI Ma
-70.0												<u>Auto</u>	
													Freq Offs
-80.0													01
-90.0													
-90.0													Scale Typ
											- 0.540.01	Log	L
Start 30   #Res BW		7		#V	BW 3.0	MHz			Swee	Sto 0 4.667 m	p 3.510 GHz is (7001 pts)	_	
ISG										TATUS			

Plot 7-44. Conducted Spurious Plot (ULCA LB48 - 20+20MHz QPSK - Low Channel)



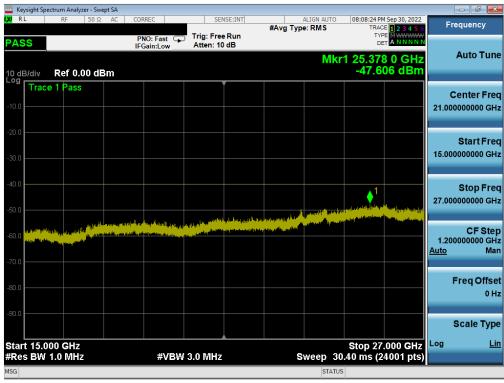
Plot 7-45. Conducted Spurious Plot (ULCA LB48 - 20+20MHz QPSK - Low Channel)

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🔤 Keysight Spectru	m Analyzer - Swe	ept SA									
LXI RL	RF 50 Ω	AC (	CORREC	SEI	NSE:INT	#Avg Ty	ALIGN AUTO		E 1 2 3 4 5 6	Fre	quency
PASS			PNO: Fast G	Trig: Free #Atten: 2		#Avg iy	pe. KWS	TYP			
1 og	ef 0.00 dE	3m					MI	(r1 3.87) -46.3	7 9 GHz 78 dBm		Auto Tune
-10.0	Pass										enter Freq 000000 GHz
-20.0											Start Freq 000000 GHz
-40.0	Juan - Britathéléne	den ser harrige	ala daqtara atq	l hi wan in this i see a		Ingthe Uppersonal Ma	an and the second state of the	an significations of southers	and Formation and the		Stop Freq 000000 GHz
-60.0		, da <sub>en d</sub> ifik ander <sub>en d</sub> eren								1.1370 <u>Auto</u>	CF Step 000000 GHz Man
-80.0										F	req Offset 0 Hz
								<b>0</b> 4 4E			cale Type Lin
Start 3.630 ( #Res BW 1.0			#VBV	/ 3.0 MHz			Sweep 22	Stop 15. 2.84 ms (2	.000 GHz 2841 pts)	9	<u></u>
MSG							STATUS	5			

Plot 7-46. Conducted Spurious Plot (ULCA LB48 - 20+20MHz QPSK - Low Channel)



Plot 7-47. Conducted Spurious Plot (ULCA LB48 - 20+20MHz QPSK - Low Channel)

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Spectrum Analyzer 1 Swept SA	+				Frequency	· • 👬
KEYSIGHT Input: RF R L Coupling: DC Align: Auto	Input Z: 50 Ω Atte Corr CCorr Freq Ref: Int (S) NFE: Off	in: 10 dB PNO: Fi Gate: O IF Gain: Sig Trac	T TIG: Free Ru	ower (RMS <mark>1</mark> 23456 n M <del>W W W W</del> A N N N N N	Center Frequency 32.000000000 GHz	Settings
1 Spectrum v Scale/Div 10 dB	Ref	Level 0.00 dBm	Mkr	1 36.710 0 GHz -46.55 dBm	Span 10.0000000 GHz Swept Span	
Log Trace 1 Pass					Zero Span Full Span	
30.0					Start Freq 27.000000000 GHz	
				<b>↓</b> 1 :	Stop Freq 37.000000000 GHz	
50.0 Mattack and a part of a part of a dama of the 60.0					AUTO TUNE CF Step	
					1.00000000 GHz Auto Man	
					Freq Offset 0 Hz	
Start 27.000 GHz Res BW 1.0 MHz	#Vio	leo BW 3.0 MHz	Sweep	Stop 37.000 GHz ~19.4 ms (20001 pts)	X Axis Scale Log Lin	
	Cct 01, 2022 5:48:30 AM	$\land$			Signal Track (Span Zoom)	

Plot 7-48. Conducted Spurious Plot (ULCA LB48 - 20+20MHz QPSK - Low Channel)

	Spectrum Analy										
K <mark>X</mark> IRL	RF	50 Ω	AC	CORREC		SENSE:INT		ALIGN AUTO		Sep 30, 2022	Frequency
					Trig	Free Run	#Avg Ty	/pe: RMS	TYP	E 1 2 3 4 5 6 E MWWWW	
PASS				PNO: Fast IFGain:Low		n: 20 dB			DE	E M WWWWW T A N N N N N	
								MI	kr1 3.328		Auto Tune
								IVIT		24 dBm	
10 dB/div Log	Ref 0.	00 dB	sm						-44.3/	24 UDIII	
Tra Tra	ice 1 Pass					Ť					
											Center Freq
-10.0											1.802500000 GHz
-20.0											
											Start Freq
~~~~											30.000000 MHz
-30.0											
-40.0										— <u> 1 —</u> 4	Stop Freq
											3.575000000 GHz
-50.0											3.575000000 GHZ
								i la matanada	Land a bits a still a	alat gardijire	
				هانداديا	PART BUILDER	N lan constant a station of later of the second station of the sec	China Managara ang Pangarang Pangarang Pangarang Pangarang Pangarang Pangarang Pangarang Pangarang Pangarang P Pangarang Pangarang Pang	Complication of the lot of the second se	والأسر والمراجع	States and an and a state	CF Step
-60.0 MPT	In the second		والمتحدث والمح	is full on addition diff.	i i sa ji sa di	and the second					354.500000 MHz
(Child)	ALL REAL PROPERTY.										Auto Man
-70.0											
											Freq Offset
-80.0											0 Hz
-90.0											
											Scale Type
Start 30									Stop 3.	575 GHz	Log <u>Lin</u>
#Res BV	V 1.0 MH;	7		#V	BW 3.0 N	Hz		Sweep 4	.767 ms (	7151 pts)	
MSG								STATUS			
								UNATOR			

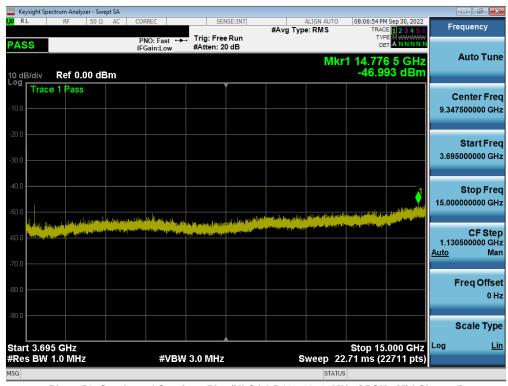
Plot 7-49. Conducted Spurious Plot (ULCA LB48 - 20+20MHz QPSK - Mid Channel)

FCC ID: A3LSMS916U	element	PART 96 MEASUREMENT REPORT	Approved by: Technical Manager
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W     RL     RF     50 Ω     AC     CORREC     SENSE:INT     ALIGN AUTO     08:06:16 PM Sep 30,2022       PASS     PNO: Fast     →     Trig: Free Run IFGain:Low     Trig: Free Run #Atten: 30 dB     #Avg Type: RMS     Trace 1 2 3 4 5 6 TYPE INNINNIN     Trig: Area 1 2 3 4 5 6 TYPE INNINNIN     Trig: Free Run PASS     Trig: Free Run Trig: Free Run PASS     Mkr1 3.701 875 GHz -43.52 dBm     Auto 1
PASS PNO: Fast IFGain:Low #Atten: 30 dB Trig: Free Run #Atten: 30 dB Mkr1 3.701 875 GHz 10 dB/div Ref 30.00 dBm -43.52 dBm
10 dB/div Ref 30.00 dBm -43.52 dBm
Trace 1 Pass
20.0 3.647500000
0.00 3.57500000
-10.0 Stop Stop 3.720000000
-200 CF 14.50000
Auto
-30.0 -50.0 -50.0 -50.0
-60.0 Scale
Start 3.57500 GHz         Stop 3.72000 GHz         Log           #Res BW 1.0 MHz         #VBW 3.0 MHz         Sweep 1.000 ms (1001 pts)         Log

Plot 7-50. Conducted Spurious Plot (ULCA LB48 - 20+20MHz QPSK - Mid Channel)



Plot 7-51. Conducted Spurious Plot (ULCA LB48 - 20+20MHz QPSK - Mid Channel)

FCC ID: A3LSMS916U	element	PART 96 MEASUREMENT REPORT	Approved by: Technical Manager	
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	ectrum Analyzer -	Swept SA									
LXI RL	RF 50	Ω AC	CORREC	SEN	ISE:INT	#Avg Typ	ALIGN AUTO		4 Sep 30, 2022	Fre	quency
PASS			PNO: Fast 😱 IFGain:Low	Trig: Free Atten: 10		#/(g ))P		TYF			
10 dB/div Log	Ref 0.00	dBm					Mk	r1 25.78 -46.9	6 0 GHz 33 dBm	ľ í	Auto Tune
-10.0	e 1 Pass										enter Freq 000000 GHz
-20.0											Start Freq 000000 GHz
-40.0						A Berry Constanting	Mirikana , Miria	and the second s	1 haibitellyricellining		Stop Freq 000000 GHz
-60.0 <mark>(jndku)</mark>		an an an Angli Pangapat An an an Angli Pangapat Angli Pangapat Panga Pangapat Pangapat Pang	paka su la posta su p	Alla Francisco Astron	andrik kary ya dan dan dan dan dan dan dan dan dan da					1.200 <u>Auto</u>	CF Step 000000 GHz Man
-80.0										F	req Offset 0 Hz
-90.0											cale Type Lin
Start 15.0 #Res BW			#VBW	3.0 MHz		s	weep 3	27 Stop 0.40 ms (2	000 0112	_	<u></u>
MSG							STAT	JS			

Plot 7-52. Conducted Spurious Plot (ULCA LB48 - 20+20MHz QPSK - Mid Channel)



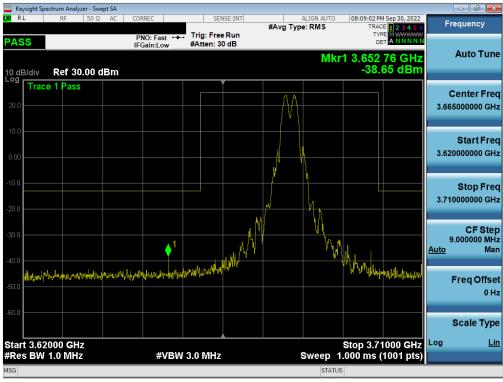
Plot 7-53. Conducted Spurious Plot (ULCA LB48 - 20+20MHz QPSK - Mid Channel)

FCC ID: A3LSMS916U	element)	PART 96 MEASUREMENT REPORT	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 48 of 120	
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	Spectrum Analyz	zer - Swep	ot SA									[	
L <mark>XI</mark> RL	RF	50 Ω	AC	CORREC		SEN	ISE:INT	#Ava Tu	ALIGN AUT		M Sep 30, 2022	Fre	equency
PASS				PNO: Fas IFGain:Lo		Trig: Free #Atten: 20		#/( <b>1</b> 81)	pe. rune	TΥ			
10 dB/div	Ref 0.0	00 dB	m						Ν	/kr1 3.37 -46.6	2 0 GHz 34 dBm		Auto Tune
-10.0	ice 1 Pass												enter Freq 5000000 GHz
-20.0												30.	Start Freq .000000 MHz
-40.0										ا بسی است		3.620	Stop Freq 0000000 GHz
-60.0	al, digenerated for				in Solarsk o Françsis			n ( 11 an ( 14 19 ( States) Ann an Ann an				359. <u>Auto</u>	CF Step 000000 MHz Man
-80.0												F	Freq Offset 0 Hz
-90.0 Start 30										Stop 3	3.620 GHz	Log	Scale Type <u>Lin</u>
	V 1.0 MHz			#\	VBW	3.0 MHz				6.309 ms	(7281 pts)		
MSG									STA	IUS			

Plot 7-54. Conducted Spurious Plot (ULCA LB48 - 20+20MHz QPSK - High Channel)



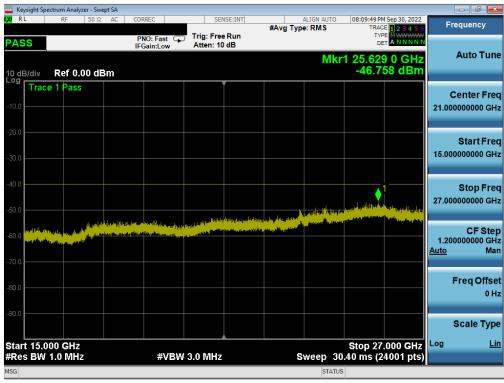
Plot 7-55. Conducted Spurious Plot (ULCA LB48 - 20+20MHz QPSK - High Channel)

FCC ID: A3LSMS916U	element)	PART 96 MEASUREMENT REPORT	Approved by: Technical Manager	
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	rum Analyzer - S	wept SA									
LXI RL	RF 50	Ω AC	CORREC		SE:INT	#Avg Typ	ALIGN AUT e: RMS	TRA	M Sep 30, 2022	Freque	ncy
PASS			PNO: Fast 🕞 IFGain:Low	Trig: Free #Atten: 20			Ν	∎ /kr1 3.98		Aut	o Tune
	Ref 0.00 c	IBm					_	-45.9	30 dBm		
-10.0	1 Pass									Cento 9.3700000	er Freq 000 GHz
-20.0										Sta 3.7400000	rt Freq 000 GHz
-40.0	ر بنار روا					a silence (ile., an ast t		) Talk in the second	n we have been a start of the	Sto 15.0000000	p Freq 000 GHz
-60.0	a sa ata ata		n karan k	ing since payona point and a solution of the second second second second second second second second second se			stantificita Di			C 1.1260000 <u>Auto</u>	F Step 000 GHz Man
-80.0										Freq	Offset 0 Hz
-90.0								<u> </u>			e Type Lin
Start 3.740 #Res BW 1			#VBW	3.0 MHz		s	weep	stop 1: 22.52 ms (2	5.000 GHz 22521 pts)	209	<u>cm</u>
MSG							STA	TUS			

Plot 7-56. Conducted Spurious Plot (ULCA LB48 - 20+20MHz QPSK - High Channel)



Plot 7-57. Conducted Spurious Plot (ULCA LB48 - 20+20MHz QPSK - High Channel)

FCC ID: A3LSMS916U	element	PART 96 MEASUREMENT REPORT	Approved by: Technical Manager
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Spectrum Analyzer 1 Swept SA KEYSIGHT Input: RF	+ Input Ζ: 50 Ω Atten: 10 d	B PNO: Fast	#Avg Type: Power (RMS 1 2 3 4 5 6	Frequency v
RL + Align: Auto	Corr CCorr Freq Ref: Int (S) NFE: Off	Gate: Off IF Gain: Low Sig Track: Off	Trig: Free Run M WW WW A N N N N	32.000000000 GHz
1 Spectrum			Mkr1 36.167 5 GHz	10.000000000112
Scale/Div 10 dB	Ref Level	0.00 dBm	-47.04 dBm	Swept Span Zero Span
10.0				Full Span
20.0				Start Freq 27.00000000 GHz
40.0			<b>_</b> 1	Stop Freq 37.00000000 GHz
بمرجوع ومعتد ومعروبية والمراجع والمراجع والمراجع	in the second			AUTO TUNE
				CF Step 1.000000000 GHz
70.0				Auto Man
				Freq Offset 0 Hz
tart 27.000 GHz Res BW 1.0 MHz	#Video BV	V 3.0 MHz	Stop 37.000 GHz Sweep ~19.4 ms (20001 pts)	
<b>1</b> n c <b>1</b> 2	Oct 01, 2022 5:52:26 AM			Signal Track (Span Zoom)

Plot 7-58. Conducted Spurious Plot (ULCA LB48 - 20+20MHz QPSK - High Channel)

FCC ID: A3LSMS916U	element	PART 96 MEASUREMENT REPORT	Approved by: Technical Manager
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# NR Band n48 – Ant F

Imput: RF         L       Imput: RF         Align: Auto         PASS	Input Ζ: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Off	#Atten: 22 dB	PNO: Fast Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Po Trig: Free Ru	ower (RMS 1 2 3 4 5 6 n M WWWWW A N N N N N		Setti
Spectrum v cale/Div 10 dB		Ref Level 0.00 c	dBm	Mł	(r1 3.243 5 GHz -46.20 dBm	3.48000000 GHz	
Trace 1 Pass						Full Span Start Freq	
10.0						30.000000 MHz Stop Freq 3.510000000 GHz	
	and the star string to a local design of	an airean an Anna an An	فالمراغو والحرينا فالمتحد ومغربا والتحديد والمراجع			AUTO TUNE	
70.0						348.000000 MHz	
						Freq Offset 0 Hz	
tart 30 MHz Res BW 1.0 MHz		#Video BW 3.0 I	MHz	Swe	Stop 3.510 GHz ep 4.67 ms (7001 pts)		

Plot 7-59. Conducted Spurious Plot (NR Band n48 - 40MHz QPSK - Low Channel - Ant F)



Plot 7-60. Conducted Spurious Plot (NR Band n48 - 40MHz QPSK - Low Channel - Ant F)

FCC ID: A3LSMS916U	element	PART 96 MEASUREMENT REPORT	Approved by: Technical Manager
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Spectrum Analyzer 1 Swept SA	+			Frequency v
KEYSIGHT     Input: RF       R L     Imput: RF       QM     PASS	Input Z: 50 Ω Atte Corr CCorr Freq Ref: Int (S) NFE: Off	n: 10 dB PNO: Fast Gate: Off IF Gain: Lov Sig Track: C		21.000000000 GHz
1 Spectrum v Scale/Div 10 dB	Ref	Level 0.00 dBm	Mkr1 26.994 5 GH -51.66 dBr	Z 12.0000000 GHz
Trace 1 Pass				Zero Span Full Span
				Start Freq 15.00000000 GHz
40.0				Stop Freq 27.00000000 GHz
	يەر بەلدانلارىرىيىلار رو	ورايىغانى بىرىم ياقان ريىرون والافرىد	The state of the second st	AUTO TUNE
50.0 However, in the sector of				CF Step 1.200000000 GHz
				Man Freq Offset
90.0				0 Hz X Axis Scale
Start 15.000 GHz Res BW 1.0 MHz	<b>7</b> Oct 02, 2022	leo BW 3.0 MHz	Stop 27.000 GF Sweep ~23.0 ms (24001 pt	
	1:24:08 AM			(Span Zoom)

Plot 7-61. Conducted Spurious Plot (NR Band n48 - 40MHz QPSK - Low Channel - Ant F)

Spectrum Analyzer 1 Swept SA	+			Frequency 🔹 🚬
KEYSIGHT       Input: RF         R L       Imput: RF         Coupling: DC       Align: Auto         VV       PASS	Input Z: 50 Ω #Atten: 6 dB Corr CCorr Freq Ref: Int (S) NFE: Off	PNO: Fast Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Power (RMS 1 2 3 4 5 6 Trig: Free Run M WWWWW A N N N N N	Center Frequency 32.00000000 GHz
1 Spectrum 🔹			Mkr1 36.965 4 GHz	Span _10.0000000 GHz
Scale/Div 10 dB Log Trace 1 Pass	Ref Level 0.00 d	Bm	-50.67 dBm	Swept Span Zero Span
-10.0				Full Span
-20.0				Start Freq 27.00000000 GHz
				Stop Freq 37.000000000 GHz
-50.0	To be the self-transmission of the self-transm	وروب ومنافد والطاطر ومنافعاتهم	1	AUTO TUNE
		a a a faithe a state of the second		CF Step 1.000000000 GHz
-70.0				Auto Man
				Freq Offset 0 Hz
Start 27.000 GHz #Res BW 1.0 MHz	#Video BW 3.0 N	ЛНz	Stop 37.000 GHz Sweep ~19.6 ms (24001 pts)	X Axis Scale
4 7 C 🗆	? Oct 02, 2022 1:24:51 AM			Signal Track (Span Zoom)

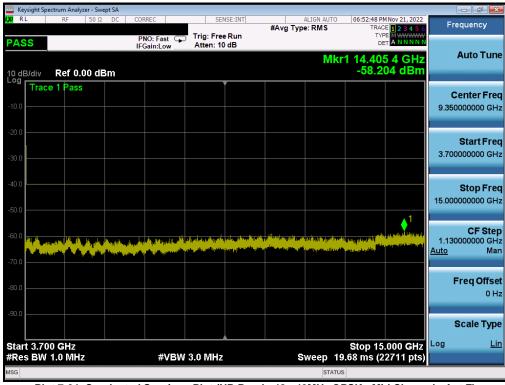
Plot 7-62. Conducted Spurious Plot (NR Band n48 - 40MHz QPSK - Low Channel - Ant F)

FCC ID: A3LSMS916U	element)	PART 96 MEASUREMENT REPORT	Approved by: Technical Manager
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🚾 Keysight Spectrum Analyzer - Swept SA 🚽				
LX/RL RF 50Ω DC	CORREC SENSE:I	ALIGN AUTO #Avg Type: RMS	06:55:00 PM Nov 21, 2022 TRACE 1 2 3 4 5 6	Frequency
PASS	PNO: Fast Trig: Free Ru IFGain:Low #Atten: 20 dB	n		
10 dB/div Ref 0.00 dBm		MI	r1 3.278 7 GHz -50.980 dBm	Auto Tune
-10.0				Center Freq 1.790000000 GHz
-20.0				Start Freq 30.000000 MHz
-40.0				<b>Stop Freq</b> 3.550000000 GHz
-60.0	in the second second second second second second second			CF Step 352.000000 MHz Auto Man
-80.0				<b>Freq Offset</b> 0 Hz
-90.0				Scale Type
Start 30 MHz #Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep 4	Stop 3.550 GHz .767 ms (7151 pts)	Log <u>Lin</u>
MSG		STATU	S	

Plot 7-63. Conducted Spurious Plot (NR Band n48 - 40MHz QPSK - Mid Channel - Ant F)



Plot 7-64. Conducted Spurious Plot (NR Band n48 - 40MHz QPSK - Mid Channel - Ant F)

FCC ID: A3LSMS916U	element)	PART 96 MEASUREMENT REPORT	Approved by: Technical Manager
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EYSIGHT Input: RF L + Coupling: DC Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Off	Atten: 10 dB	PNO: Fast Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Power Trig: Free Run	(RMS <mark>123456</mark> M <del>WWWW</del> ANNNNN	Center Frequency 21.000000000 GHz Span	Setting
Spectrum v cale/Div 10 dB		Ref Level 0.00 d	Bm	Mkr1 2	26.992 5 GHz -52.52 dBm	12.0000000 GHz Swept Span Zero Span	
Trace 1 Pass						Full Span Start Freq	
						15.00000000 GHz Stop Freq 27.000000000 GHz	
	ter fillen per en el fille des res del destantes		en de la sua président de la company de la compan Reference de la company de			AUTO TUNE CF Step	
						1.20000000 GHz Auto Man	
0.0 art 15.000 GHz		#Video BW 3.0	ALJ-		Stop 27.000 GHz	Freq Offset 0 Hz X Axis Scale	
art 15.000 GHZ tes BW 1.0 MHz	<b>?</b> Oct 02, 2022	#Video BW 3.0 F			3.0 ms (24001 pts)	Log Lin Signal Track	

Plot 7-65. Conducted Spurious Plot (NR Band n48 - 40MHz QPSK - Mid Channel - Ant F)

Spectrum Analyzer 1 Swept SA	+			Frequency 🔻 🗦
KEYSIGHT     Input: RF       R L     Image: Coupling: DC       Align: Auto     Align: Auto	Input Z: 50 Ω #Atten: 6 dB Corr CCorr Freq Ref: Int (S) NFE: Off	PNO: Fast Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Power (RMS 1 2 3 4 5 6 Trig: Free Run A N N N N	133.00000000 GH2
1 Spectrum 🔹			Mkr1 38.584 5 GHz	12.000000000112
Scale/Div 10 dB	Ref Level 0.0	0 dBm	-49.44 dBm	Swept Span Zero Span
				Full Span
20.0				Start Freq 27.00000000 GHz
40.0				Stop Freq 39.00000000 GHz
				AUTO TUNE
60.0 <mark>Hand Mondra and And King Kang dina 1</mark> 994 to 60.0 <mark>Angendian Panatan Ing Kang Kang Kang Kang Kang Kang Kang Ka</mark>		Construction and a state of the factor is	n a stál a transmiser a stál a st Internet a stál a st	CF Step 1.200000000 GHz
80.0				Auto Man
				Freq Offset 0 Hz
tart 27.000 GHz Res BW 1.0 MHz	#Video BW 3.	.0 MHz	Stop 39.000 GHz Sweep ~22.9 ms (24001 pts)	
4 h C 🗆	<b>?</b> Oct 02, 2022			Signal Track (Span Zoom)

Plot 7-66. Conducted Spurious Plot (NR Band n48 - 40MHz QPSK - Mid Channel - Ant F)

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Spectrum Analyzer 1 Swept SA	+					Frequency	- * 崇
KEYSIGHT     Input: RF       R L     Coupling: DC       Align: Auto     Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Off		PNO: Fast Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Power Trig: Free Run	(RMS <mark>1</mark> 23456 MWWWWW ANNNNN	Center Frequency 1.835000000 GHz Span	Settings
1 Spectrum V				Mkr1	3.623 6 GHz	3.61000000 GHz	
Scale/Div 10 dB	F	tef Level 0.00 dB	m		-45.02 dBm	Swept Span Zero Span	
-10.0 Trace 1 Pass						Full Span	
-20.0						Start Freq 30.000000 MHz	
-40.0					1 <u>.</u>	Stop Freq 3.640000000 GHz	
-50.0 -60.0						AUTO TUNE	
-60.0						CF Step 361.000000 MHz	
						Auto Man	
						Freq Offset 0 Hz	
Start 30 MHz #Res BW 1.0 MHz	#	Video BW 3.0 MH	Hz	Sweep ~7	Stop 3.640 GHz .24 ms (7281 pts)	X Axis Scale Log Lin	
	Oct 02, 2022 1:26:00 AM					Signal Track (Span Zoom)	

Plot 7-67. Conducted Spurious Plot (NR Band n48 - 40MHz QPSK - High Channel - Ant F)

Spectrum Analyzer 1 Swept SA	+			Frequency V
KEYSIGHT       Input: RF         R L          W       PASS	Input Z: 50 Ω #Atten: 24 dB Corr CCorr Freq Ref: Int (S) NFE: Off	PNO: Fast #Av Gate: Off Trig IF Gain: Low Sig Track: Off	vg Type: Power (RMS 1 2 3 4 5 6 ): Free Run A N N N N N	Center Frequency 9.370000000 GHz
1 Spectrum V			Mkr1 14.895 2 GHz	Span 11.2600000 GHz
Scale/Div 10 dB	Ref Level 0.00 c	iBm	-44.71 dBm	Swept Span Zero Span
-10.0				Full Span
-20.0				Start Freq 3.740000000 GHz
-30.0				Stop Freq 15.00000000 GHz
-50.0 Automatical and a standard		n dag dan pangan dalah tersebagan dalam berakan dari periodak dalam berakan dari periodak dalam berakan dalam b Berakan dag dari periodak d	ter sen en fil til finde for en son fra metter for fil ter son en til fil ter son en til til ter son en til til Er en son en ter son til ter programmen gra for som en til ter som en til ter som en til ter som en til ter som	AUTO TUNE
-60.0				CF Step 1.126000000 GHz
-70.0				Auto Man
-90.0				Freq Offset 0 Hz
Start 3.740 GHz #Res BW 1.0 MHz	#Video BW 3.0 I	MHz	Stop 15.000 GHz Sweep ~21.0 ms (22561 pts)	X Axis Scale
	<b>?</b> Oct 02, 2022 1:28:34 AM			Signal Track (Span Zoom)

Plot 7-68. Conducted Spurious Plot (NR Band n48 - 40MHz QPSK - High Channel - Ant F)

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Spectrum Analyzer 1 Swept SA KEYSIGHT RL + Coupling DC	HINDUT Z: 50 Ω A Corr CCorr	tten: 10 dB	PNO: Fast Gate: Off	#Avg Type: Power (RM Trig: Free Run		Frequency Center Frequency	Settings
Align: Auto	Freq Ref: Int (S) NFE: Off		IF Gain: Low Sig Track: Off		M₩₩₩₩₩ A N N N N N	21.000000000 GHz Span	
1 Spectrum V		- f I I O OO d		Mkr1 26.9	995 0 GHz 2.41 dBm	12.0000000 GHz	
Scale/Div 10 dB		ef Level 0.00 di	3m		2.41 UBIII	Swept Span Zero Span	
10.0						Full Span	
30.0						Start Freq 15.000000000 GHz	
40.0						Stop Freq 27.000000000 GHz	
50.0	and the second	dimenter state and the state of a state	Nagour at the layer of the sector gave	a second a thread of the second state of the second state of the second state of the second state of the second			
		dilinano, patènan lantimi	and the second secon			CF Step 1.200000000 GHz	
30.0						Auto Man	
						Freq Offset 0 Hz	
tart 15.000 GHz Res BW 1.0 MHz	#\	/ideo BW 3.0 M	IHz	Sto Sweep ~23.0 m	p 27.000 GHz is (24001 pts)	X Axis Scale Log Lin	
- n c - :	Oct 02, 2022					Signal Track (Span Zoom)	

Plot 7-69. Conducted Spurious Plot (NR Band n48 - 40MHz QPSK - High Channel - Ant F)

Spectrum Analyzer 1 Swept SA	+			Frequency 🔹
KEYSIGHT       Input: RF         R L       →→         Align: Auto         W       PASS	Input Z: 50 Ω #Atten: 6 dB Corr CCorr Freq Ref: Int (S) NFE: Off	PNO: Fast Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Power (RMS 1 2 3 4 5 6 Trig: Free Run A N N N N N	33.00000000 GHz
1 Spectrum V	Ref Level 0.00	_   •	Mkr1 38.572 5 GHz -48.66 dBm	12.0000000 0112
Log Trace 1 Pass				Zero Span
				Full Span Start Freq 27.00000000 GHz
				Stop Freq 39.000000000 GHz
-50.0	an firm on a black firm ( ) and ( ) an	internet internet internet internet		AUTO TUNE
-60.0 <b>Contracting and the second sec</b>				CF Step 1.200000000 GHz Auto
-80.0				Man Freq Offset
-30.0 Start 27.000 GHz #Res BW 1.0 MHz	#Video BW 3.0	) MHz	Stop 39.000 GHz Sweep ~22.9 ms (24001 pts)	
	? Oct 02, 2022			Signal Track (Span Zoom)

Plot 7-70. Conducted Spurious Plot (NR Band n48 - 40MHz QPSK - High Channel - Ant F)

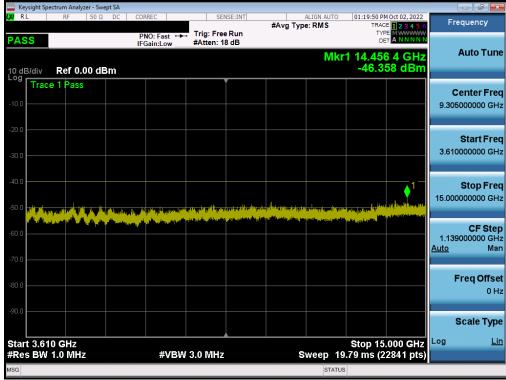
FCC ID: A3LSMS916U	element)	PART 96 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 57 of 139
1M2209010097-07.A3L	09/02/2022 - 11/21/2022	Portable Handset	Fage 57 01 159
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## NR Band n48 – Ant C

	ctrum Analyze										_	
LXI RL	RF	50 Ω D	C COR	RREC	SE	NSE:INT	#Avg Typ	ALIGN AUTO		4 Oct 02, 2022 E 1 2 3 4 5 6	Fre	equency
PASS				NO: Fast ↔ Gain:Low	Trig: Fre #Atten: 2				TYF DE			
10 dB/div Log	Ref 0.0	) dBm						Mł	(r1 3.13) -48.5	) 7 GHz 64 dBm		Auto Tune
Trac	e 1 Pass					Ĭ					С	enter Freq
-10.0											1.770	000000 GHz
-20.0												Start Freq
-30.0											30.	.000000 MHz
-40.0												Stop Freq
-50.0											3.510	000000 GHz
un lucio	, ALLAN DER MAN	atol of the		(Player) (PLAN)	a Salaha Managaraha (		A na fean an thail a féinne Á	a na figura a la chaile Carl figura a la chaileanta				CF Step
-60.0	ساداندا کرد. بیلوی										348. <u>Auto</u>	.000000 MHz Man
-70.0												_
-80.0											F	Freq Offset 0 Hz
-90.0												
												Scale Type
Start 30 M #Res BW				#VB/	V 3.0 MHz	,		Sween_4	Stop 3	.510 GHz 7001 pts)	Log	Lin
MSG	1.9 11112				- 0.0 IVII 12			STATUS		roorptoj		

Plot 7-71. Conducted Spurious Plot (NR Band n48 - 40MHz QPSK - Low Channel - Ant C)



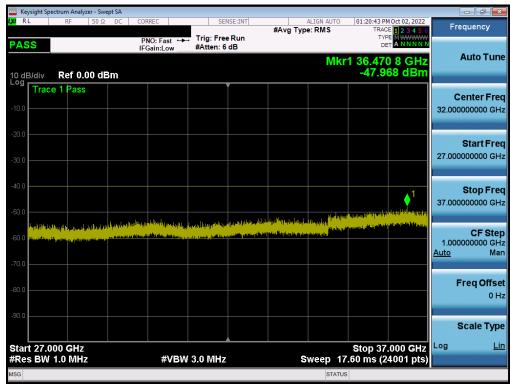
Plot 7-72. Conducted Spurious Plot (NR Band n48 - 40MHz QPSK - Low Channel - Ant C)

FCC ID: A3LSMS916U	element)	PART 96 MEASUREMENT REPORT	Approved by: Technical Manager				
Test Report S/N:	Test Dates:	EUT Type:	Page 58 of 139				
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	ectrum Analyzer -										
LXI RL	RF 5	0Ω DC	CORREC	SEN	ISE:INT	#Avg Typ	ALIGN AUTO		M Oct 02, 2022	Fr	equency
PASS			PNO: Fast ↔ IFGain:Low	Trig: Free Atten: 10				TY D			
10 dB/div Log	Ref 0.00	dBm					MI	kr1 26.36 -50.1	2 0 GHz 50 dBm		Auto Tune
-10.0	e 1 Pass										Center Freq 0000000 GHz
-20.0										15.00	Start Freq 0000000 GHz
-40.0			ور دارور ور دارور ور در					an a la social provident de fitte d	<u>1</u>	27.00	Stop Fred
-60.0	hill for hy for your dealers of the second	galaga <mark>di sugaranananananananananananananananananana</mark>	e seguine a seguine d'an la section de la différence a section de la seguine de la différence	, bis dilities also appending a	n a na san an a	<u>na majinan ni ilanda na</u>	and a set of the set o	leser grichtsetä-zötildätt		1.20 <u>Auto</u>	CF Step 0000000 GHz Mar
-80.0											Freq Offse 0 Ha
-90.0 Start 15.0								Stop-27	.000 GHz	Log	Scale Type Lin
#Res BW			#VBW	3.0 MHz		s	weep	20.80 ms (2	4001 pts)		
MSG							STAT	rus			

Plot 7-73. Conducted Spurious Plot (NR Band n48 - 40MHz QPSK - Low Channel - Ant C)



Plot 7-74. Conducted Spurious Plot (NR Band n48 - 40MHz QPSK - Low Channel - Ant C)

FCC ID: A3LSMS916U	element	PART 96 MEASUREMENT REPORT	Approved by: Technical Manager				
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