

ELEMENT WASHINGTON DC LLC

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PART 27 MEASUREMENT REPORT

Applicant Name:

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

Date of Testing:

9/8/2023 - 11/2/2023 **Test Report Issue Date:** 11/10/2023 **Test Site/Location:** Element lab., Columbia, MD, USA **Test Report Serial No.:** 1M2309070100-03.A3L

FCC ID: APPLICANT:

A3LSMA156U

Samsung Electronics Co., Ltd.

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

Antenna-1								
				E	RP	Ell	RP	
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	Max. Power [W]	Max. Power [dBm]	Max. Power [W]	Max. Power [dBm]	Emission Designator
	20 MHz	QPSK	673.0 - 688.0	0.087	19.37	0.142	21.52	18M0G7D
		16QAM	673.0 - 688.0	0.074	18.68	0.121	20.83	18M0W7D
-	15 MHz	QPSK	670.5 - 690.5	0.093	19.69	0.153	21.84	13M5G7D
LTE Band 71		16QAM	670.5 - 690.5	0.079	18.97	0.129	21.12	13M5W7D
LIE Band /1	10 MHz	QPSK	668.0 - 693.0	0.092	19.62	0.150	21.77	9M04G7D
		16QAM	668.0 - 693.0	0.077	18.86	0.126	21.01	8M97W7D
5 MHz	QPSK	665.5 - 695.5	0.092	19.65	0.151	21.80	4M52G7D	
		16QAM	665.5 - 695.5	0.079	19.00	0.130	21.15	4M50W7D
	10 MHz	QPSK	704.0 - 711.0	0.104	20.18	0.171	22.33	9M00G7D
		16QAM	704.0 - 711.0	0.086	19.35	0.141	21.50	9M01W7D
	5 MHz	QPSK	701.5 - 713.5	0.103	20.13	0.169	22.28	4M51G7D
LTE Band 12		16QAM	701.5 - 713.5	0.082	19.13	0.134	21.28	4M50W7D
LIE Dariu 12	3 MHz	QPSK	700.5 - 714.5	0.101	20.05	0.166	22.20	2M70G7D
-		16QAM	700.5 - 714.5	0.080	19.02	0.131	21.17	2M71W7D
	1.4 MHz	QPSK	699.7 - 715.3	0.100	20.00	0.164	22.15	1M10G7D
		16QAM	699.7 - 715.3	0.079	18.97	0.129	21.12	1M10W7D
	10 MHz	QPSK	782.0	0.063	18.02	0.104	20.17	9M00G7D
LTE Band 13		16QAM	782.0	0.053	17.23	0.087	19.38	9M00W7D
LIE Danu 13	5 MHz	QPSK	779.5 - 784.5	0.066	18.21	0.109	20.36	4M52G7D
	2 IVIHZ	16QAM	779.5 - 784.5	0.055	17.39	0.090	19.54	4M51W7D
		π/2 BPSK	673.0 - 688.0	0.064	18.07	0.105	20.22	17M9G7D
	20 MHz	QPSK	673.0 - 688.0	0.064	18.09	0.106	20.24	19M0G7D
		16QAM	673.0 - 688.0	0.055	17.43	0.091	19.58	19M0W7D
		π/2 BPSK	670.5 - 690.5	0.067	18.24	0.109	20.39	13M5G7D
	15 MHz	QPSK	670.5 - 690.5	0.063	18.01	0.104	20.16	14M2G7D
ND David v 74		16QAM	670.5 - 690.5	0.056	17.48	0.092	19.63	14M2W7D
NR Band n71		π/2 BPSK	668.0 - 693.0	0.068	18.34	0.112	20.49	9M02G7D
	10 MHz	QPSK	668.0 - 693.0	0.063	17.98	0.103	20.13	9M33G7D
		16QAM	668.0 - 693.0	0.055	17.44	0.091	19.59	9M33W7D
		π/2 BPSK	665.5 - 695.5	0.067	18.27	0.110	20.42	4M51G7D
	5 MHz	QPSK	665.5 - 695.5	0.065	18.13	0.107	20.28	4M50G7D
		16QAM	665.5 - 695.5	0.052	17.15	0.085	19.30	4M51W7D

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	Antenna-1					
				EI	RP	
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	Max. Power [W]	Max. Power [dBm]	Emission Designator
WCDMA1700	N/A	Spread Spectrum	1712.4 - 1752.6	0.172	22.35	4M15F9W
	00 MI I-	QPSK	1720.0 - 1770.0	0.301	24.78	18M0G7D
	20 MHz	16QAM	1720.0 - 1770.0	0.249	23.96	17M9W7D
		QPSK	1717.5 - 1772.5	0.294	24.68	13M5G7D
	15 MHz	16QAM	1717.5 - 1772.5	0.238	23.76	13M4W7D
	10 MHz	QPSK	1715.0 - 1775.0	0.301	24.79	9M01G7D
LTE Band 66		16QAM	1715.0 - 1775.0	0.242	23.84	8M96W7D
LIE Danu oo	5 MHz	QPSK	1712.5 - 1777.5	0.297	24.73	4M50G7D
		16QAM	1712.5 - 1777.5	0.246	23.91	4M51W7D
	3 MHz	QPSK	1711.5 - 1778.5	0.290	24.62	2M70G7D
		16QAM	1711.5 - 1778.5	0.236	23.73	2M70W7D
1.4 MF		QPSK	1710.7 - 1779.3	0.288	24.60	1M09G7D
		16QAM	1710.7 - 1779.3	0.234	23.69	1M09W7D
	15 MHz	π/2 BPSK	1702.5	0.197	22.93	13M5G7D
		QPSK	1702.5	0.193	22.86	14M2G7D
		16QAM	1702.5	0.155	21.90	14M2W7D
	10 MHz	π/2 BPSK	1700.0 - 1705.0	0.205	23.11	9M04G7D
NR Band n70		QPSK	1700.0 - 1705.0	0.199	22.99	9M34G7D
		16QAM	1700.0 - 1705.0	0.141	21.50	9M33W7D
	5 MHz	π/2 BPSK	1697.5 - 1707.5	0.211	23.24	4M49G7D
		QPSK	1697.5 - 1707.5	0.208	23.17	4M50G7D
		16QAM	1697.5 - 1707.5	0.135	21.30	4M51W7D
		π/2 BPSK	1730.0 - 1760.0	0.176	22.44	38M8G7D
	40 MHz	QPSK	1730.0 - 1760.0	0.175	22.43	38M8G7D
		16QAM	1730.0 - 1760.0	0.131	21.16	38M7W7D
		π/2 BPSK	1725.0 - 1765.0	0.159	22.00	28M8G7D
	30 MHz	QPSK	1725.0 - 1765.0	0.168	22.25	28M7G7D
		16QAM	1725.0 - 1765.0	0.132	21.21	28M7W7D
		π/2 BPSK	1722.5-1767.5	0.168	22.25	23M0W7D
	25MHz	QPSK	1722.5-1767.5	0.176	22.44	23M9W7D
		16QAM	1722.5-1767.5	0.131	21.17	23M6W7D
		π/2 BPSK	1720.0 - 1770.0	0.159	22.02	18M0G7D
NR Band n66	20 MHz	QPSK	1720.0 - 1770.0	0.175	22.44	19M0G7D
		16QAM	1720.0 - 1770.0	0.128	21.08	19M0W7D
		π/2 BPSK	1717.5 - 1772.5	0.164	22.16	13M5G7D
	15 MHz	QPSK	1717.5 - 1772.5	0.170	22.31	14M2G7D
		16QAM	1717.5 - 1772.5	0.133	21.23	14M2W7D
		π/2 BPSK	1715.0 - 1775.0	0.167	22.23	9M02G7D
	10 MHz	QPSK	1715.0 - 1775.0	0.168	22.25	9M33G7D
		16QAM	1715.0 - 1775.0	0.125	20.97	9M33W7D
		π/2 BPSK	1712.5 - 1777.5	0.157	21.97	4M51G7D
	5 MHz	QPSK	1712.5 - 1777.5	0.165	22.16	4M50G7D
		16QAM	1712.5 - 1777.5	0.123	20.89	4M50W7D

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	Antenna-2					
				EI	RP	
Mode	Bandwidth	Modulation Tx Frequency Range [MHz]		Max. Power [W]	Max. Power [dBm]	Emission Designator
	20 MHz	QPSK	1720.0 - 1770.0	0.088	19.44	18M0G7D
	20 1011 12	16QAM	1720.0 - 1770.0	0.071	18.52	17M9W7D
	15 MHz	QPSK	1717.5 - 1772.5	0.088	19.43	13M5G7D
		16QAM	1717.5 - 1772.5	0.072	18.56	13M5W7D
	10 MHz	QPSK	1715.0 - 1775.0	0.086	19.36	8M99G7D
		16QAM	1715.0 - 1775.0	0.067	18.26	9M01W7D
LTE Band 66	5 MI I-	QPSK	1712.5 - 1777.5	0.085	19.30	4M50G7D
	5 MHz	16QAM	1712.5 - 1777.5	0.067	18.27	4M51W7D
	2 MU	QPSK	1711.5 - 1778.5	0.083	19.17	2M69G7D
	3 MHz	16QAM	1711.5 - 1778.5	0.065	18.13	2M70W7D
	4 4 141-	QPSK	1710.7 - 1779.3	0.081	19.07	1M10G7D
	1.4 MHz	16QAM	1710.7 - 1779.3	0.068	18.30	1M10W7D
	40 MHz	π/2 BPSK	1730.0 - 1760.0	0.075	18.78	38M7G7D
		QPSK	1730.0 - 1760.0	0.074	18.72	38M8G7D
		16QAM	1730.0 - 1760.0	0.061	17.84	38M8W7D
	30 MHz	π/2 BPSK	1725.0 - 1765.0	0.073	18.60	28M7G7D
		QPSK	1725.0 - 1765.0	0.075	18.75	28M7G7D
		16QAM	1725.0 - 1765.0	0.058	17.63	28M7W7D
	25MHz	π/2 BPSK	1722.5-1767.5	0.063	17.99	23M0W7D
		QPSK	1722.5-1767.5	0.062	17.91	23M9W7D
		16QAM	1722.5-1767.5	0.048	16.82	23M8W7D
		π/2 BPSK	1720.0 - 1770.0	0.075	18.77	18M0G7D
NR Band n66	20 MHz	QPSK	1720.0 - 1770.0	0.073	18.62	19M0G7D
		16QAM	1720.0 - 1770.0	0.058	17.61	19M0W7D
		π/2 BPSK	1717.5 - 1772.5	0.075	18.77	13M5G7D
	15 MHz	QPSK	1717.5 - 1772.5	0.073	18.62	14M2G7D
		16QAM	1717.5 - 1772.5	0.058	17.61	14M2W7D
		π/2 BPSK	1715.0 - 1775.0	0.075	18.77	9M04G7D
	10 MHz	QPSK	1715.0 - 1775.0	0.075	18.74	9M32G7D
		16QAM	1715.0 - 1775.0	0.058	17.64	9M33W7D
		π/2 BPSK	1712.5 - 1777.5	0.073	18.61	4M51G7D
	5 MHz	QPSK	1712.5 - 1777.5	0.075	18.77	4M49G7D
		16QAM	1712.5 - 1777.5	0.057	17.59	4M52W7D

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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, 0705M, 0504M

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

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.

Band	Ant1	Ant2			
B66/4/n66	Main Ant	Upper (M3) Ant			
Table 2-1. Antenna Naming Convention					

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.

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 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:

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

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 $P_{g \text{ [dBm]}}$ – 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 S		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

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 2nd Harmonic (1564 MHz)

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

Test Condition	Test Description	FCC Part Section(s)	Test Limit	Test Result	Reference
	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
B	Conducted Band Edge / Spurious Emissions (LTE Band 13)	2.1051, 27.53(c), 27.53(f)	Undesirable emissions must meet the limits detailed in sections 27.53(c) and 27.53(f)	PASS	Sections 7.4, 7.5
CONDUCTED	Conducted Band Edge / Spurious Emissions (LTE Band 12, 17, 71; NR Band n71)	2.1051, 27.53(g)	≥ 43 + 10 log (P[Watts]) dB of attenuation below transmitter power	PASS	Sections 7.4, 7.5
Ö	Conducted Band Edge / Spurious Emissions (WCDMA AWS; LTE Band 4, 66; NR Band n70, n66)	2.1051, 27.53(h)	≥ 43 + 10 log (P[Watts]) dB of attenuation below transmitter power	PASS	Sections 7.4, 7.5
	Peak-to-Average Ratio (WCDMA AWS; LTE Band 4, 66; NR Band n70, n66)	27.50(d)(5)	≤ 13 dB	PASS	Section 7.6
	Frequency Stability	2.1055, 27.54	Fundamental emissions stay within authorized frequency block	PASS	Section 7.9
	Effective Radiated Power (LTE Band 13)	27.50(b)(10)	≤ 3 Watts max. ERP	PASS	Section 7.7
	Effective Radiated Power (LTE Band 12, 17, 71; NR Band n71)	27.50(c)(10)	≤ 3 Watts max. ERP	PASS	Section 7.7
RADIATED	Equivalent Isotropic Radiated Power (WCDMA AWS; LTE Band 4, 66; NR Band n70, n66)	27.50(d)(4)	≤ 1 Watt max. EIRP	PASS	Section 7.7
RADI	Radiated Spurious Emissions (LTE Band 13)	2.1053, 27.53(c), 27.53(f)	Undesirable emissions must meet the limits detailed in sections 27.53(c) and 27.53(f)	PASS	Section 7.8
	Radiated Spurious Emissions (LTE Band 12, 17, 71; NR Band n71)	2.1053, 27.53(g)	≥ 43 + 10 log (P[Watts]) dB of attenuation below transmitter power	PASS	Section 7.8
	Radiated Spurious Emissions (WCDMA AWS; LTE Band 4, 66; NR Band n70, n66)	2.1053, 27.53(h)(1)	≥ 43 + 10 log (P[Watts]) dB of attenuation below transmitter power	PASS	Section 7.8

* 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

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Notes:

- 1) All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
- 2) The analyzer plots shown in Section 7.0 were taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables, directional couplers, and attenuators used as part of the system to maintain a link between the call box and the EUT at all frequencies of interest.
- 3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables, attenuators, and couplers.
- For conducted spurious emissions, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is EMC Software Tool v1.2.2.

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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.

Test Procedure Used

ANSI C63.26-2015 – Section 5.2

Test Settings

- 1. Detector = RMS
- 2. Trace mode = trace average for continuous emissions, max hold for pulse emissions
- 3. Sweep time = auto couple
- 4. The trace was allowed to stabilize
- 5. 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. Conducted power measurements were evaluated using various combinations of RB size, RB offset, modulation, and channel bandwidth. Channel bandwidth data is shown in the tables below based only on the channel bandwidths that were supported in this device.
- 2. All other conducted power measurements are contained in the RF exposure report for this filing.
- 3. 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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3GPP Release	Mode	3GPP 34.121 Subtest	AWS Band [dBm]		Bm]
Version		Sublest			1513
99	WCDMA	12.2 kbps RMC	24.74	24.61	24.41
Table 7.2 Conducted Power, WCDMA AWS					

Table 7-2. Conducted Power – WCDMA AWS

Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
<u>N</u>		132072	1720.0	1 / 0	25.20
НИ	QPSK	132322	1745.0	1 / 50	24.66
20 MHz		132572	1770.0	1 / 50	24.63
5	16-QAM	132572	1770.0	1 / 50	23.97
N		132047	1717.5	1 / 0	25.06
MHz	QPSK	132322	1745.0	1 / 0	24.76
15 N		132597	1772.5	1 / 0	24.62
-	16-QAM	132597	1772.5	1 / 0	24.01
N		132022	1715.0	1 / 0	25.09
НИ	QPSK 01 16-QAM	132322	1745.0	1 / 0	24.86
0 1		132622	1775.0	1 / 0	24.55
-		132622	1775.0	1 / 0	23.71
N		131997	1712.5	1 / 0	25.12
MHz	QPSK	132322	1745.0	1 / 0	24.69
5 N		132647	1777.5	1 / 24	24.49
1	16-QAM	132647	1777.5	1 / 24	23.72
N		131987	1711.5	1 / 0	25.09
MHz	QPSK	132322	1745.0	1 / 0	24.57
3 V		132657	1778.5	1 / 0	24.36
	16-QAM	132657	1778.5	1 / 0	23.58
4		131979	1710.7	1 / 0	25.09
MHz	QPSK	132322	1745.0	1 / 0	24.46
1.4		132665	1779.3	1 / 0	24.26
	16-QAM	132665	1779.3	1 / 0	23.76

Table 7-3. Conducted Power - LTE Band 66/4 - Ant2

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Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
		346000	1730.0	1 / 1	24.63
	Π/2 BPSK	349000	1745.0	1 / 1	24.36
Ηz		352000	1760.0	1 / 108	23.96
W	04 QPSK		1730.0	1/1	24.39
40	QPSK	349000	1745.0	1/1	24.25
		352000	1760.0	1 / 108	23.84
	16-QAM	352000	1760.0	1 / 108	23.31
		345000	1725.0	1 / 1	24.55
	π/2 BPSK	349000	1745.0	1 / 1	24.20
F		353000	1765.0	1 / 158	23.79
30 MHz		345000	1725.0	1 / 1	24.55
30	QPSK	349000	1745.0	1 / 1	24.27
		353000	1765.0	1 / 158	23.88
	16-QAM	353000	1765.0	1 / 1	23.11
		344500	1722.5	1 / 66	23.81
	π/2 BPSK	349000	1745.0	1 / 1	23.89
Hz		353500	1767.5	1 / 66	23.17
25 MHz		344500	1722.5	1 / 66	23.71
25	QPSK	349000	1745.0	1 / 1	23.80
			1767.5	1 / 66	23.04
	16-QAM	349000	1745.0	1 / 1	22.97
		344000	1720.0	1 / 1	24.70
	π/2 BPSK	349000	1745.0	1 / 1	23.96
ZHW QPSI		354000	1770.0	1 / 1	23.95
W		344000	1720.0	1 / 53	24.63
20	QPSK	349000	1745.0	1 / 1	23.87
		354000	1770.0	1 / 53	23.75
	16-QAM	354000	1770.0	1 / 1	23.08
		343500	1717.5	1 / 1	24.70
	π/2 BPSK	349000	1745.0	1 / 1	23.96
Hz		354500	1772.5	1 / 1	23.95
15 MHz		343500	1717.5	1 / 39	24.63
15	QPSK	349000	1745.0	1 / 1	23.87
		354500	1772.5	1 / 39	23.75
	16-QAM	354500	1772.5	1 / 1	23.08
		343000	1715.0	1 / 26	24.58
	π/2 BPSK	349000	1745.0	1 / 1	24.13
MHz		355000	1775.0	1 / 1	23.95
M		343000	1715.0	1 / 26	24.89
10	QPSK	349000	1745.0	1 / 1	23.96
		355000	1775.0	1 / 50	23.87
	16-QAM	355000	1775.0	1 / 50	23.11
		342500	1712.5	1 / 23	24.60
	π/2 BPSK	349000	1745.0	1 / 12	23.89
Ŧ		355500	1777.5	1 / 12	23.79
5 MHz		342500	1712.5	1 / 23	24.86
5	QPSK	349000	1745.0	1 / 12	23.91
		355500	1777.5	1 / 12	23.89
	16-QAM	349000	1745.0	1 / 12	23.03

Table 7-4. Conducted Power - NR Band n66 - Ant2

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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]
WCDMA-AWS	5MHz	GMSK	4.154
	20MHz	QPSK	18.01
	2010112	16QAM	17.97
	15MHz	QPSK	13.48
LTE-B71	TOMITZ	16QAM	13.49
	10MHz	QPSK	9.04
	TOIVITIZ	16QAM	8.97
	5MHz	QPSK	4.52
	SIMITZ	16QAM	4.50
	10MHz	QPSK	9.00
LTE-B12	TOIMINZ	16QAM	9.01
	5MHz	QPSK	4.51
		16QAM	4.50
	3MHz	QPSK	2.70
		16QAM	2.71
	1.4MHz	QPSK	1.10
		16QAM	1.10
	10MHz	QPSK	9.00
LTE-B13	TOIMINZ	16QAM	9.00
LIE-DIS	5MHz	QPSK	4.52
	SIMITZ	16QAM	4.51
	20MHz	QPSK	18.02
	2010172	16QAM	17.95
	15MHz	QPSK	13.52
		16QAM	13.45
		QPSK	9.01
LTE-B66-4	10MHz	16QAM	8.96
LIC-D00-4	5MHz	QPSK	4.50
		16QAM	4.51
	3MHz	QPSK	2.70
		16QAM	2.70
	1.4MHz	QPSK	1.09
	1.411172	16QAM	1.09

Table 7-5. Occupied Bandwidth Results – Ant1

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Mode	Bandwidth	Modulation	OBW [MHz]
		π/2 BPSK	17.92
	20MHz	QPSK	18.98
		16QAM	19.01
		π/2 BPSK	13.50
	15MHz	QPSK	14.17
NR-n71		16QAM	14.20
		π/2 BPSK	9.02
	10MHz	QPSK	9.33
		16QAM	9.33
		π/2 BPSK	4.51
	5MHz	QPSK	4.50
		16QAM	4.51
		π/2 BPSK	13.50
	15MHz	QPSK	14.18
		16QAM	14.21
NR-n70		π/2 BPSK	9.04
	10MHz	QPSK	9.34
		16QAM	9.33
		π/2 BPSK	4.49
	5MHz	QPSK	4.50
		16QAM	4.51
		π/2 BPSK	38.80
	40MHz	QPSK	38.79
		16QAM	38.70
		π/2 BPSK	28.75
	30MHz	QPSK	28.71
		16QAM	28.65
		π/2 BPSK	23.04
	25MHz	QPSK	23.85
		16QAM	23.60
		π/2 BPSK	17.98
NR-n66	20MHz	QPSK	18.99
		16QAM	18.99
		π/2 BPSK	13.51
	15MHz	QPSK	14.16
		16QAM	14.18
		π/2 BPSK	9.02
	10MHz	QPSK	9.33
		16QAM	9.33
		π/2 BPSK	4.51
	5MHz	QPSK	4.50
		16QAM	4.50

Table 7-6. Occupied Bandwidth Results – Ant1

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LTE Band 71 – ANT1

Keysight Spectrum Analyzer - Occupied BW 09:28:07 AM Sep 13, 2023 ALIGN AUTO Center Freq: 680.500000 MHz Trig: Free Run Avg|Ho #Atten: 36 dB Trace/Detector Radio Std: None Avg|Hold: 100/100 #IFGain:Low Radio Device: BTS Ref 40.00 dBm 10 dB/div **Clear Write** Average Max Hold Span 50.00 MHz Center 680.50 MHz Res BW 470 kHz #VBW 1.6 MHz Sweep 1 ms **Min Hold Total Power** 31.4 dBm Occupied Bandwidth 18.014 MHz Detector Peak▶ <u>Man</u> 8.708 kHz Auto **Transmit Freq Error** % of OBW Power 99.00 % x dB Bandwidth 19.44 MHz x dB -26.00 dB MSG STATUS





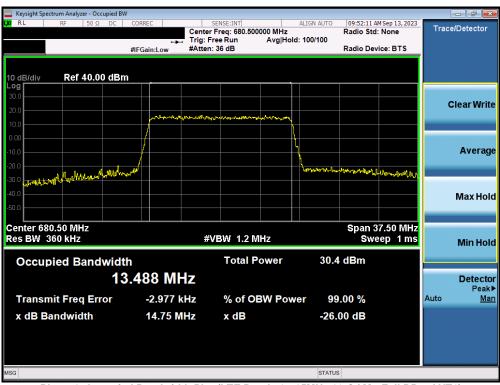
Plot 7-2. Occupied Bandwidth Plot (LTE Band 71 - 20MHz 16-QAM - Full RB – ANT1)

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Keysight Spectrum Analyzer - Occupied	BW						
LXI RL RF 50Ω DC	CORREC	SENSE:INT	ALIGN AUTO		Sep 13, 2023	Trace	Detector
		er Freq: 680.500000 MHz Free Run Avg H	: old: 100/100	Radio Std:	None		Detector
		en: 36 dB		Radio Devi	ce: BTS		
10 dB/div Ref 40.00 dB	sm		- 				
30.0							
20.0						c	lear Write
10.0	meren - and - and -	Wertender marketer of the bard on	γ				
			l.				
0.00			<u>h</u>				
-10.0							Average
-20.0			to and the second	lilmon have the sport		_	
-20.0 -30.0 -tution to a state of the state	Mu ^{ana}			"l""""""""""""""""""""""""""""""""""""	maynera		
-40.0							
-50.0							Max Hold
-50.0							
Center 680.50 MHz				Span 37	7.50 MHz		
Res BW 360 kHz		#VBW 1.2 MHz			ep 1 ms		Min Hold
					<u> </u>		MILL HOLD
Occupied Bandwid	ith	Total Power	31.3	dBm			
							Detector
	3.484 MHz						Detector Peak▶
Transmit Freq Error	-17.255 kHz	% of OBW Po	wer 99	.00 %		Auto	Man
-							
x dB Bandwidth	14.78 MHz	x dB	-26.	00 dB			
MSG			STATUS				

Plot 7-3. Occupied Bandwidth Plot (LTE Band 71 - 15MHz QPSK - Full RB - ANT1)



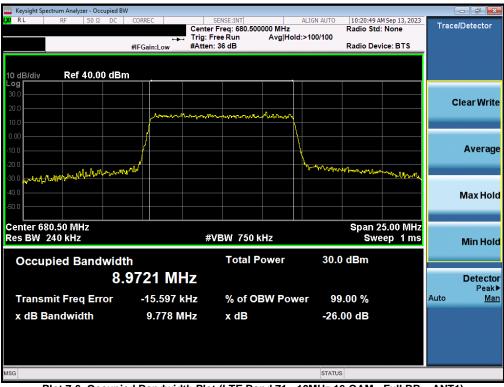
Plot 7-4. Occupied Bandwidth Plot (LTE Band 71 - 15MHz 16-QAM - Full RB – ANT1)

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Keysight Spectrum Analyzer - Occupied I	BW				
LX RL RF 50 Ω DC	CORREC	SENSE:INT		3 AM Sep 13, 2023	Trace/Detector
		ter Freq: 680.500000 MHz : Free Run Avg H	Radio S old:>100/100	td: None	The construction
		en: 36 dB		evice: BTS	
10 dB/div Ref 40.00 dB	im				
30.0					
					Clear Writ
20.0	Annaly	mmmmmmmmmlymmm	N		
10.0					
0.00	/				
-10.0	/				Averag
-20.0	/				
	when he		mon low proposed	MANY MANY MANY MANY	
-40.0					Max Hol
-50.0					
Center 680.50 MHz				25.00 MHz	
Res BW 240 kHz		#VBW 750 kHz	Si	veep 1ms	Min Hol
		T . (.] D	007.10		
Occupied Bandwid	lth	Total Power	30.7 dBm		
9	.0434 MHz				Detecto
					Peak
Transmit Freq Error	-13.220 kHz	% of OBW Po	wer 99.00 %		Auto <u>Ma</u>
x dB Bandwidth	9.875 MHz	x dB	-26.00 dB		
	9.07 J WITZ	X UD	-20.00 UB		
MSG			STATUS		
			011100		

Plot 7-5. Occupied Bandwidth Plot (LTE Band 71 - 10MHz QPSK - Full RB – ANT1)



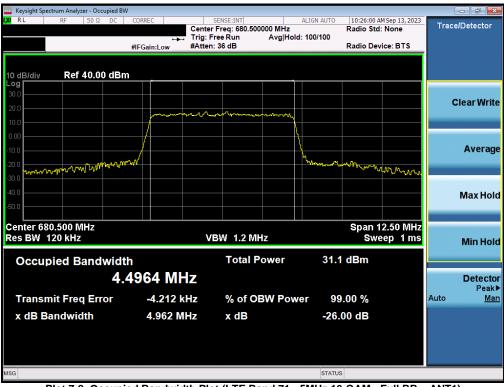
Plot 7-6. Occupied Bandwidth Plot (LTE Band 71 - 10MHz 16-QAM - Full RB - ANT1)

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10 dB/div Ref 40.00 dBm	#IFGain:Low #Atte	SENSE:INT er Freq: 680.500000 MHz Free Run Avg Hol en: 36 dB	ALIGN AUTO 10:25:48 A Radio Std d:>100/100 Radio Dev		Trace/D	Detector
Log	#IFGain:Low #Atte	Free Run Avg Hol	d:>100/100			
Log	in Guilleow	en: 36 dB	Radio Dev	ice: BTS		
Log						
Log						
Log						
20.0						
30.0					C14	ear Write
20.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				
10.0	bit. Challe and Aller	are reach of much of an or or and				
0.00						
-10.0						Average
	1		\			J
-20.0	~ I		Jun martine	mom		
-40.0					Ν	/lax Hold
-50.0						
Contor 690 500 Milia				2.50 MH-		
	1	BM 12 MHz				
Res DW 120 KII2			346	sep Tills		Vin Hold
Occupied Bandwidth	1	Total Power	31.0 dBm			
4.0	015/ WIHZ					
Transmit Fred Error	-4.783 kHz	% of OBW Pow	ver 99.00 %		Auto	Man
x dB Bandwidth	4.970 MHz	x dB	-26.00 dB			
Center 680.500 MHz Res BW 120 kHz Occupied Bandwidth		VBW 1.2 MHz Total Power % of OBW Pow x dB	31.0 dBm	2.50 MHz eep 1 ms		Min Hold Detector Peak►

Plot 7-7. Occupied Bandwidth Plot (LTE Band 71 - 5MHz QPSK - Full RB – ANT1)



Plot 7-8. Occupied Bandwidth Plot (LTE Band 71 - 5MHz 16-QAM - Full RB – ANT1)

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LTE Band 12 – ANT1

Keysight Spectrum Analyzer - Occupied BW 10:34:10 AM Sep 13, 2023 SENSE:IN ALIGN AUTO Center Freq: 707.500000 MHz Trig: Free Run Avg|Ho #Atten: 36 dB Trace/Detector Radio Std: None Avg|Hold: 100/100 Radio Device: BTS #IFGain:Low Ref 40.00 dBm 10 dB/div .og **Clear Write** Average Max Hold Center 707.50 MHz Res BW 240 kHz Span 25.00 MHz #VBW 750 kHz Sweep 1 ms Min Hold Occupied Bandwidth Total Power 31.8 dBm 8.9987 MHz Detector Peak Transmit Freq Error -1.861 kHz % of OBW Power 99.00 % Auto Man x dB Bandwidth 9.841 MHz -26.00 dB x dB STATUS MSG

Plot 7-9. Occupied Bandwidth Plot (LTE Band 12 - 10MHz QPSK - Full RB - ANT1)



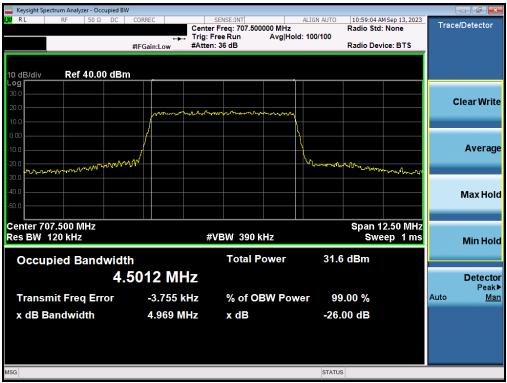
Plot 7-10. Occupied Bandwidth Plot (LTE Band 12 - 10MHz 16-QAM - Full RB - ANT1)

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Keysight Spectrum Analyzer - Occupied BW					
L <mark>X/</mark> R L RF 50 Ω DC C	ORREC Cente	SENSE:INT r Freq: 707.500000 MHz		8:54 AM Sep 13, 2023	Trace/Detector
	🛶 Trig: F	Free Run Avg Hol	ld: 100/100		
#1	IFGain:Low #Atter	n: 36 dB	Radi	o Device: BTS	
10 dB/div Ref 40.00 dBm Log					
30.0	وي وي ال				
20.0					Clear Write
10.0					
0.00					
-10.0			\mathbf{i}		Average
-20.0					
-30.0	<u>میں والی ال</u>			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
-40.0	وي وي ال				
-50.0					Max Hold
Center 707.500 MHz				an 12.50 MHz	
Res BW 120 kHz	#	VBW 390 kHz		Sweep 1 ms	Min Hold
Occupied Bandwidth		Total Power	32.0 dBr	n	
	420 MU-				Detector
4.3	138 MHz				Detector Peak►
Transmit Freq Error	-2.824 kHz	% of OBW Pov	ver 99.00 %	6	Auto <u>Man</u>
x dB Bandwidth	5.006 MHz	x dB	-26.00 di	R	
MSG			STATUS		





Plot 7-12. Occupied Bandwidth Plot (LTE Band 12 - 5MHz 16-QAM - Full RB - ANT1)

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Keysight Spectrum Analyzer - Occupie					
LX/ RL RF 50 Ω D		SENSE:INT AL	IGN AUTO 10:43:27 AM Radio Std: N		Trace/Detector
	Trig:	Free Run Avg Hold: 1	00/100		
	#IFGain:Low #Atte	en: 36 dB	Radio Devic	e: BTS	
10 dB/div Ref 40.00 d	Bm				
Log					
30.0					Clear Write
20.0	and a second and a s	water			
10.0					
0.00	<u>}</u>	\			
-10.0					Average
-20.0	- Annone		and the second of the second		
-30.0			a star a set to the set of the	**p-qthatp-7 ¹⁰ ~4	
-40.0					
					Max Hold
-50.0					
Center 707.500 MHz			Span 7.5	500 MHz	
#Res BW 75 kHz		#VBW 240 kHz		3.8 ms	Min Hold
					Minitiona
Occupied Bandwi	dth	Total Power	31.5 dBm		
	2.7021 MHz				Detector
					Peak►
Transmit Freq Error	-1.439 kHz	% of OBW Power	99.00 %		Auto <u>Man</u>
x dB Bandwidth	2.957 MHz	x dB	-26.00 dB		
	2.007 11112	A dB	20.00 08		
MSG			STATUS		

Plot 7-13. Occupied Bandwidth Plot (LTE Band 12 - 3MHz QPSK - Full RB - ANT1)



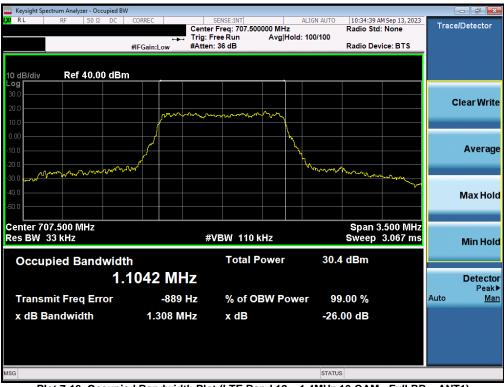
Plot 7-14. Occupied Bandwidth Plot (LTE Band 12 - 3MHz 16-QAM - Full RB - ANT1)

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Keysight Spectrum Analyzer - Occupied BW					- 6 2
LX/ RL RF 50 Ω DC	CORREC Cente	SENSE:INT r Freg: 707.500000 MHz		31 AM Sep 13, 2023 Std: None	Trace/Detector
	Trig: I		d: 100/100	Device: BTS	
	#IFGain:Low #Atter	1: 36 GB	Radio	Device: B15	
10 dB/div Ref 40.00 dBm Log					
30.0					Clear Writ
20.0	mann	ma-manna			Clear writ
10.0					
0.00	/	\ \ \ \ \ \ _			
-10.0		L _v			Averag
-20.0	vů/		John Marine	- A.s	
-30.0			~ · · · · · · · · · · · · · · · · · · ·	and the ford	
-40.0					Max Hol
-50.0					
Center 707.500 MHz			Spa	n 3.500 MHz	
Res BW 33 kHz	#	VBW 110 kHz		p 3.067 ms	Min Hol
		Tetel Deserve	04.4.10		Militio
Occupied Bandwidt		Total Power	31.1 dBm		
1.0	0972 MHz				Detecto
Transmit Freq Error	-1.592 kHz	% of OBW Pow	er 99.00 %		Peak Auto Ma
x dB Bandwidth	1.294 MHz				
	1.294 MHZ	x dB	-26.00 dB		
MSG			STATUS		

Plot 7-15. Occupied Bandwidth Plot (LTE Band 12 – 1.4MHz QPSK - Full RB – ANT1)



Plot 7-16. Occupied Bandwidth Plot (LTE Band 12 – 1.4MHz 16-QAM - Full RB – ANT1)

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LTE Band 13 – ANT1

Keysight Spectrum Analyzer - Occupied BW	1				
L <mark>XI</mark> RL RF 50Ω DC	CORREC	SENSE:INT Center Freq: 782.000000 I	ALIGN AUTO	10:41:09 AM Sep 12, 2023 Radio Std: None	Trace/Detector
		Trig: Free Run Av	g Hold: 100/100		
	#IFGain:Low	#Atten: 36 dB		Radio Device: BTS	
10 dB/div Ref 40.00 dBm	<u> </u>				
Log 30.0					
20.0					Clear Write
10.0	mound	an an an an an	~~		
0.00	/		<u>}</u>		
-10.0	/		۲		Average
-20.0	1		here and		Average
-20.0	ممسرور		11.000	Warren Martin Martin	
-40.0					
-50.0 margaret margaret					Max Hold
-50.0					
Center 782.00 MHz				Span 25.00 MHz	
Res BW 240 kHz		#VBW 750 kHz		Sweep 1ms	Min Hold
Occupied Bandwidt	b	Total Pow	ər 31.1	2 dBm	
			51 51.2		
9.0	0043 MH	Z			Detector Peak►
Transmit Freq Error	15.333 kH	z % of OBW	Power 99	9.00 %	Auto <u>Man</u>
x dB Bandwidth	9.923 MI			.00 dB	
	9.923 WI		-20.		
MSG		th Diet // TE Den	STATU	-	

Plot 7-17. Occupied Bandwidth Plot (LTE Band 13 - 10MHz QPSK - Full RB - ANT1)



Plot 7-18. Occupied Bandwidth Plot (LTE Band 13 - 10MHz 16-QAM - Full RB - ANT1)

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Keysight Spectrum Analyzer - Occu							
LXI RL RF 50 Ω		SENSE:INT Center Freg: 782.000	ALIGN AUTO	10:45:03 At Radio Std:	M Sep 12, 2023	Trac	e/Detector
		Trig: Free Run	Avg Hold: 100/100				
	#IFGain:Low	#Atten: 36 dB		Radio Dev	ice: BTS		
10 dB/div Ref 40.00	0 dBm						
Log 30.0	ريني المعام		کر پاک	<u>المعا</u> ل			
20.0	ر و و و و و و و و و و و و و و و و و و و		<u>م الم الم الم الم الم الم الم الم الم ال</u>	<u>المعا</u> ل		1	Clear Write
10.0	·····	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	my	و ما ا			
0.00				<u>ا مع</u> اد			
-10.0							Average
				i se			Average
-20.0 -30.0	Wwwww		William .	Much mary grow	mann		
See.	ر هم الملحة ا		کی کے				
-40.0			ر المالي الم المالي المالي				Max Hold
-50.0			<u>کور کا ا</u>				
Center 782.000 MHz				Snan 1	2.50 MHz		
Res BW 120 kHz		#VBW 390 k	Hz		eep 1 ms		Min Hold
							WIITTION
Occupied Bandy	width	Total P	ower 31.	.0 dBm			
	4.5177 MH	7					Detector
							Peak►
Transmit Freq Erro	ror -1.826 kH	Iz % of OF	BW Power 9	9.00 %		Auto	<u>Man</u>
x dB Bandwidth	5.006 MH	Hz xdB	-26	5.00 dB			
MSG			STATU	us			

Plot 7-19. Occupied Bandwidth Plot (LTE Band 13 - 5MHz QPSK - Full RB - ANT1)



Plot 7-20. Occupied Bandwidth Plot (LTE Band 13 - 5MHz 16-QAM - Full RB - ANT1)

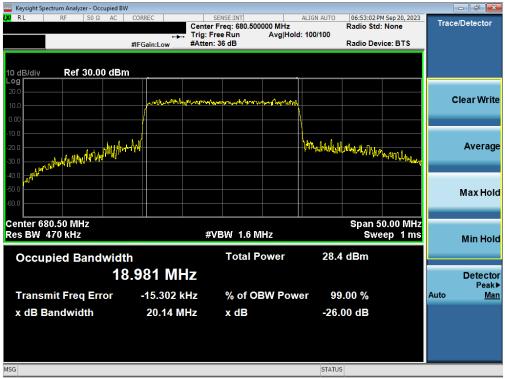
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NR Band n71 – ANT1

🔤 Keysight Spectrum Analyz													- 0 ×
LXIRL RF	50 Ω	AC C	ORREC			NSE:INT req: 680.50	000 MH-		IGN AUTO	06:55:03 P	M Sep 20, 2023	Trac	e/Detector
					rig: Fre	e Run			00/100	Radio Stu	. None		
		#	IFGain:Lo	w #	Atten: 3	6 dB				Radio Dev	rice: BTS		
	30.00	dBm											
20.0													
10.0			TVr40	logontro	hyunputerlip	wowwww.	- Manual March					(Clear Write
			{										
0.00													
-10.0			1										•
-20.0			1					m.	Hum herow	mount	140. m/h		Average
	monterp	Alther an									In Her		
-40.0													
-50.0													Max Hold
-60.0													
Center 680.50 MH	17									Snan 5	0.00 MHz		
Res BW 470 kHz	12				#VE	3W 1.6 N	1Hz				ep 1 ms		Min Hold
													ιντη μοια
Occupied Ba	andv	vidth				Total F	ower		30.6	dBm			
		17	924	MHz	,								Detector
													Peak▶
Transmit Free	l Erro	r	-559.	75 kHz	Z	% of O	BW Po	wer	99	.00 %		Auto	<u>Man</u>
x dB Bandwid	lth		19.0)5 MHz	Z	x dB			-26.	00 dB			
MSG									STATUS				
									014100				

Plot 7-21. Occupied Bandwidth Plot (NR Band n71 - 20MHz DFT-s-OFDM BPSK - Full RB - ANT1)



Plot 7-22. Occupied Bandwidth Plot (NR Band n71 - 20MHz CP-OFDM QPSK - Full RB - ANT1)

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Keysight Spectrum Analyzer - Occ	upied BW									
<mark>LXI</mark> RL RF 50 Ω	AC COR	REC		NSE:INT	000 MIL-	ALIGN AUTO	06:53:12 P Radio Std	M Sep 20, 2023	Trac	e/Detector
			Talas Free	req: 680.500 e Run		d: 100/100	Radio Std	: None		
	#IFG	ain:Low	#Atten: 3				Radio Dev	vice: BTS		
10 dB/div Ref 30.00) dBm									
20.0										
		marcharth	mound	- www.man	Mr. Anno					Clear Write
10.0						l				
0.00	/									
-10.0						1.				
-20.0	date of all all all all all all all all all al					Hotel Contraction	and water of			Average
-20.0 -30.0	Water Aller Marin						Lee . Amalan Aber ¹ h	the hashes here		
-40.0										
N ¹²										
-50.0										Max Hold
-60.0										
Center 680.50 MHz							Snan 5	0.00 MHz		
Res BW 470 kHz			#VF	3W 1.6 M	Hz			ep 1 ms		
			<i>"</i> • •					sep into		Min Hold
Occupied Band	width			Total P	ower	28.3	dBm			
o o o a prodi Barra			-							_
	19.0	10 MI	ΠZ							Detector Peak►
Transmit Freq Err	or -	34.772	۲	% of O	3W Pow	ver 99	.00 %		Auto	Peak► <u>Man</u>
x dB Bandwidth		20.13 M	IHz	x dB		-26	00 dB			
		LOFIC				20.				
MSG						STATUS	6			

Plot 7-23. Occupied Bandwidth Plot (NR Band n71 - 20MHz CP-OFDM 16-QAM - Full RB - ANT1)



Plot 7-24. Occupied Bandwidth Plot (NR Band n71 - 15MHz DFT-s-OFDM BPSK - Full RB - ANT1)

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Keysight Spectrum Analyzer - Occupied BW						e ×
KL RF 50Ω AC C	ORREC	SENSE:INT er Freq: 680.500000 MHz	ALIGN AUTO 07:01:00 Radio Sto	PM Sep 20, 2023	Trace/De	tector
			old: 100/100	a: None		
#		n: 36 dB		vice: BTS		
10 dB/div Ref 30.00 dBm						
Log						
20.0						
10.0	www.why.how	when the setting and the	ң		Clea	r Write
0.00	/					_
-10.0						
-20.0	s ⁴		Malawater the shorts	0.00	A	verage
-20.0 -30.0			· · · · · · · · · · · · · · · · · · ·	Milynter		
-30.0 When the second s						
-50.0					Ma	ax Hold
-60.0						
Center 680.50 MHz				37.50 MHz		
Res BW 360 kHz	*	≇VBW 1.2 MHz	Sw	eep 1 ms	М	in Hold
Occurried Developidth		Total Power	28.4 dBm			
Occupied Bandwidth		TOTAL FOWER	20.4 UBIII			
14.1	169 MHz				D	etector
						Peak▶
Transmit Freq Error	-1.759 kHz	% of OBW Po	wer 99.00 %		Auto	<u>Man</u>
x dB Bandwidth	15.01 MHz	x dB	-26.00 dB			
	13.01 WINZ	A UD	-20.00 00			
MSG			STATUS			
MSG			STATUS			

Plot 7-25. Occupied Bandwidth Plot (NR Band n71 - 15MHz QPSK - Full RB - ANT1)



Plot 7-26. Occupied Bandwidth Plot (NR Band n71 - 15MHz CP-OFDM 16-QAM - Full RB - ANT1)

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Plot 7-27. Occupied Bandwidth Plot (NR Band n71 - 10MHz DFT-s-OFDM BPSK - Full RB – ANT1)

Keysight Spectrum Analyzer - Occupied BW					
XIRL RF 50Ω AC	🛶 Trig	SENSE:INT ter Freq: 680.500000 Mi : Free Run Avg en: 36 dB	ALIGN AUTO Hz Hold: 100/100	07:08:47 PM Sep 20, 202 Radio Std: None Radio Device: BTS	Trace/Detector
10 dB/div Ref 30.00 dBm					
20.0	Mr.mmmuth	Lang Muser Magnet	~		Clear Wri
-10.0 -20.0 -30.0	Phy ^d		Jan Whene York	Multune	Averag الم
40.0 50.0 60.0					Max Ho
Center 680.50 MHz Res BW 240 kHz		#VBW 750 kHz		Span 25.00 M⊦ Sweep 1 m	
Occupied Bandwidth 9.3	3320 MHz	Total Powe	r 27.9	dBm	Detect Peal
Transmit Freq Error	-5.315 kHz	% of OBW F		.00 %	Auto <u>M</u> a
x dB Bandwidth	9.931 MHz	x dB	-26.	00 dB	
SG			STATUS	3	

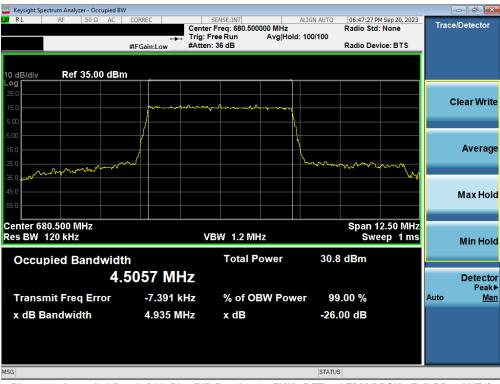
Plot 7-28. Occupied Bandwidth Plot (NR Band n71 - 10MHz CP-OFDM QPSK - Full RB – ANT1)

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Keysight Spectrum Analyzer - Occup	ied BW				_	
<mark>LXI</mark> RL RF 50 Ω	AC CORREC	SENSE:INT		:58 PM Sep 20, 2023	Trace	Detector
		nter Freq: 680.500000 MH: ig: Free Run Avg H	z Radio łold: 100/100	Std: None	11400/	Deteotor
		tten: 36 dB		Device: BTS		
10 dB/div Ref 30.00	dBm					
20.0						
	Allo mon have a	M Jamo have the way with the	.A		С	ear Write
10.0						
0.00						
-10.0						
-20.0	and Miller					Average
whi/whi'l	1		Uripping in a start	my work way wou at		
V				- Wit		
-40.0						
-50.0						Max Hold
-60.0						mux nonu
Center 680.50 MHz			Spa	n 25.00 MHz		_
Res BW 240 kHz		#VBW 750 kHz		Sweep 1ms		Min Hold
						mininoid
Occupied Bandw	vidth	Total Power	27.9 dBm	1		
	9.3253 MHz					Dete ster
	9.3293 MINZ					Detector Peak▶
Transmit Freq Erro	r -21.424 kHz	% of OBW Po	ower 99.00 %	·	Auto	Man
					/ luto	man
x dB Bandwidth	9.950 MHz	x dB	-26.00 dE	3		
MSG			STATUS			

Plot 7-29. Occupied Bandwidth Plot (NR Band n71 - 10MHz CP-OFDM 16-QAM - Full RB – ANT1)



Plot 7-30. Occupied Bandwidth Plot (NR Band n71 - 5MHz DFT-s-OFDM BPSK - Full RB - ANT1)

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🔤 Keysight Spectrum Analyzer - Occupied BV	v				
IXI RL RF 50Ω AC	CORREC	SENSE:INT Center Freq: 680.5000	ALIGN AUTO	06:51:01 PM Sep 20, 2023 Radio Std: None	Trace/Detector
		Talas Francis Disea	Avg Hold: 100/100	Radio Std. None	
	#IFGain:Low	#Atten: 36 dB		Radio Device: BTS	
10 dB/div Ref 30.00 dBr	n				
Log					
20.0					Clear Write
10.0	mm	er hor hander our the the real	menn		Clear write
0.00	/		<u>\</u>		
-10.0	(
	w.N				Average
-20.0 -30.0	NYY I		** **U*UnyAf	montersational	/ Workigo
				1 000 40	
-40.0					
-50.0					Max Hold
-60.0					
				0 40 50 MU	
Center 680.500 MHz Res BW 120 kHz		VBW 1.2 MH	-	Span 12.50 MHz Sweep 1 ms	
Res BW 120 KH2			2	Sweep This	Min Hold
Occupied Bandwidt	h	Total Po	ower 27.6	i dBm	
4.	4977 MI	1Z			Detector
Transmit Freq Error	-7.855		W Power 99	.00 %	Peak▶ Auto Man
x dB Bandwidth	4.876 M	lHz x dB	-26.	00 dB	
MSG			STATU		
mod			STATU		

Plot 7-31. Occupied Bandwidth Plot (NR Band n71 - 5MHz CP-OFDM QPSK - Full RB - ANT1)

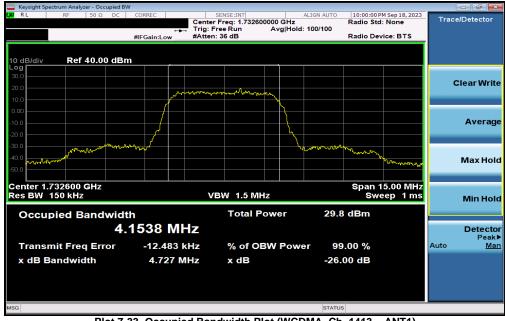


Plot 7-32. Occupied Bandwidth Plot (NR Band n71 - 5MHz CP-OFDM 16-QAM - Full RB - ANT1)

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WCDMA AWS – ANT1



Plot 7-33. Occupied Bandwidth Plot (WCDMA, Ch. 1413 - ANT1)

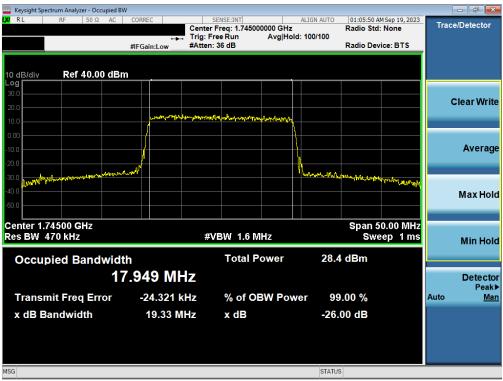
FCC ID: A3LSMA156U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager	
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LTE Band 66/4 - ANT1

Keysight Spectrum Analyz												[
🗶 RL RF	50 Ω	AC	CORRE	C		NSE:INT	00000 GHz	AL	IGN AUTO	01:05:39 At Radio Std:	MSep 19, 2023	Trac	e/Detector
					Trig: Fre	e Run	Avg Hol	ld: 1	100/100	Radio Sta.	None		
			#IFGai	n:Low	#Atten:	36 dB				Radio Dev	ice: BTS		
10 dB/div Ref	40.00	dBm	1										
Log													
30.0													Clear Write
20.0				والمعادل والعراس	الالايهور والمعروان	www.www.	Viel Burkelow la De						
10.0			/				1	+					
0.00			\rightarrow					$\left\{ + \right\}$					
-10.0			_/					╢					Average
-20.0			_										
-30.0 Home marker	Martin	whyle have	John P					71	warder	1 Million to	have been		
-40.0													
-50.0													Max Hold
-30.0													_
Center 1.74500 G	Hz										0.00 MHz		
Res BW 470 kHz					#V	BW 1.6 P	MHz			Swe	ep 1 ms		Min Hold
						T - 4 - 1 4			04.4	-10			
Occupied Ba	and					Total	ower		31.1	dBm			
		18	.01	6 M⊦	z								Detector
	_												Peak
Transmit Freq	Erro	or	-1	7.542 k	Hz	% of O	BW Pov	vei	r 99	.00 %		Auto	Mar
x dB Bandwid	th		1	9.20 M	Hz	x dB			-26.	00 dB			
MSG									STATUS				
						() TF P				0.001/			

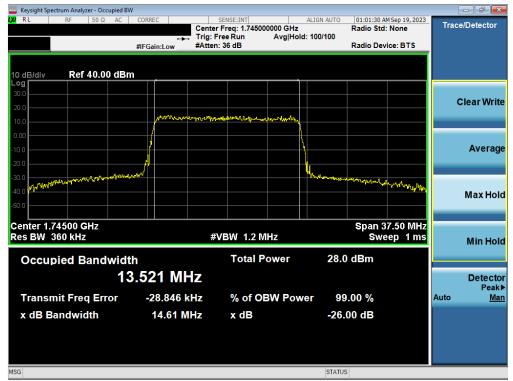
Plot 7-34. Occupied Bandwidth Plot (LTE Band 66/4 - 20MHz QPSK - Full RB - ANT1)



Plot 7-35. Occupied Bandwidth Plot (LTE Band 66/4 - 20MHz 16-QAM - Full RB - ANT1)

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Plot 7-36. Occupied Bandwidth Plot (LTE Band 66/4 - 15MHz QPSK - Full RB - ANT1)



Plot 7-37. Occupied Bandwidth Plot (LTE Band 66/4 - 15MHz 16-QAM - Full RB - ANT1)

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www.www.com.com.com.com.com.com.com.com.com.com	/				
IX RL RF 50Ω AC			ALIGN AUTO 00 GHz Avg Hold: 100/100	12:59:06 AM Sep 19, 2023 Radio Std: None	Trace/Detector
	#IFGain:Low	#Atten: 36 dB		Radio Device: BTS	
10 dB/div Ref 40.00 dBn	n				
20.0					Clear Write
10.0	man	have have have been have	man la		
-10.0					Average
-30.0 -40.0 m/h-101/101/101/101/101/101/101/101/101/101				ward many have a start	Max Hold
Center 1.74500 GHz Res BW 240 kHz		#VBW 750 kHz	2	Span 25.00 MHz Sweep 1 ms	Min Hold
Occupied Bandwidt	h	Total Pov	ver 27.9) dBm	
	0107 MH	lz			Detector Peak▶
Transmit Freq Error	-18.117 k	Hz % of OBW	Power 99	9.00 %	Auto <u>Man</u>
x dB Bandwidth	9.743 M	Hz x dB	-26	00 dB	
MSG			STATU	S	

Plot 7-38. Occupied Bandwidth Plot (LTE Band 66/4 - 10MHz QPSK - Full RB - ANT1)



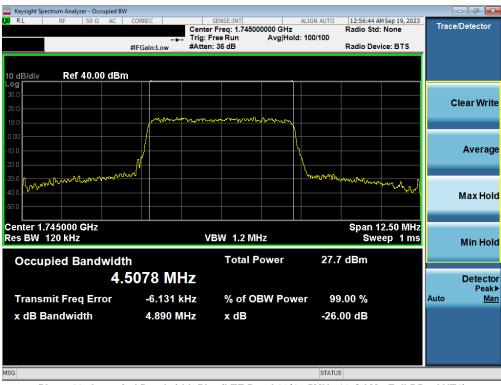
Plot 7-39. Occupied Bandwidth Plot (LTE Band 66/4 - 10MHz 16-QAM - Full RB - ANT1)

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Keysight Spectrum Analyzer - Occupied BW									
<mark>ΙΧΊ</mark> RL RF 50 Ω AC (ORREC		ISE:INT		ALIGN AUTO		M Sep 19, 2023	Trac	e/Detector
		Talas Dasa	eq: 1.74500		I: 100/100	Radio Std	None	inac	0.000000
#	IFGain:Low	#Atten: 36		, angli ion		Radio Dev	ice: BTS		
10 dB/div Ref 40.00 dBm									
30.0									
									Clear Write
20.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	man	Whenner	man					
10.0									
0.00	- 1								
-10.0					}				Average
-20.0	/				h				5
-30.0 mmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmm	4				have	www.			
-30.0 ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~						- William	A MANANA AND		
-40.0									Max Hold
-50.0									
Center 1.745000 GHz							2.50 MHz		
Res BW 120 kHz		VBV	V 1.2 MH	Z		Swe	ep 1 ms		Min Hold
									minitiona
Occupied Bandwidth			Total P	ower	30.	5 dBm			
15	017 MH	7							Detector
4.5									Peak ►
Transmit Freq Error	-5.713 k	Hz	% of OE	3W Pow	er 99	9.00 %		Auto	Man
x dB Bandwidth	4.924 M	Hz	x dB		-26	00 dB			
x ab banawidan	-1.02-1 10	112	A GD		20				
MSG					STATU	S			

Plot 7-40. Occupied Bandwidth Plot (LTE Band 66/4 - 5MHz QPSK - Full RB - ANT1)



Plot 7-41. Occupied Bandwidth Plot (LTE Band 66/4 - 5MHz 16-QAM - Full RB - ANT1)

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Keysight Spectrum Analyzer - Occupied BW							
<mark>μα</mark> RL RF 50Ω AC (CORREC	SENSE:INT	ALIGN AUT		MSep 19, 2023	Trac	e/Detector
		nter Freq: 1.7450000 ig: Free Run	Avg Hold: 100/100	Radio Std	: None		
#		tten: 36 dB		Radio Dev	rice: BTS		
10 dB/div Ref 40.00 dBm							
30.0							
							Clear Write
20.0	where we wanter a star	mound when the	milener				
10.0			h				
0.00	/		\				
-10.0							Average
-20.0	J		N N				Ŭ
-20.0 -30.0 100-110-110110-110-110110-10-10-10-10-10	K		And the second	with the second states	a 41 Ib		
-40.0							Max Hold
-50.0							
Center 1.745000 GHz					.500 MHz		
#Res BW 75 kHz		VBW 750 kHz	4	Sweep	12.53 ms		Min Hold
							mininoid
Occupied Bandwidth		Total Po	wer 3'	1.3 dBm			
26	996 MHz						Detector
2.0							Peak ►
Transmit Freq Error	-1.015 kHz	% of OB	W Power	99.00 %		Auto	Man
x dB Bandwidth	2.961 MHz	x dB	-2	6.00 dB			
x ab banamatin	2.001 11112	A GD		0.00 08			
MSG			STA	TUS			

Plot 7-42. Occupied Bandwidth Plot (LTE Band 66/4 - 3MHz QPSK - Full RB - ANT1)



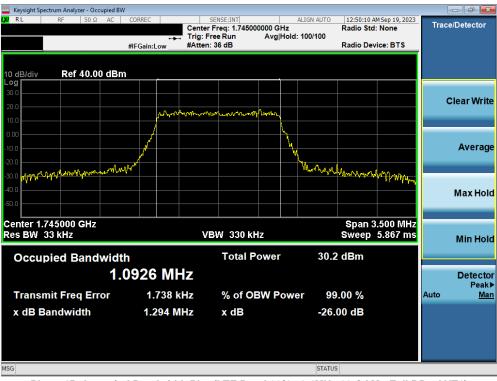
Plot 7-43. Occupied Bandwidth Plot (LTE Band 66/4 - 3MHz 16-QAM - Full RB - ANT1)

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Off RL RF 50 Ω AC CORREC SENSE:INT ALIGN AUTO 12:50:02 AM Sep 19, 2023 Center Freq: 1.745000000 GHz Radio Std: None Radio Std: None Radio Device: BTS Radio Device: BTS Radio Device: BTS Clear W 10 dB/div Ref 40.00 dBm	/rite
Trig: Free Run Avg Hold: 100/100 #/FGain:Low #Atten: 36 dB Radio Device: BTS	
10 dB/div Ref 40.00 dBm Clear W 20 0 0 <td< td=""><td></td></td<>	
Log 200 200 100 000 100 000 100 000 100 000 100 0000 000 000 000 000 000 000 000 000 000 000 000	
Log 200 200 100 000 100 000 100 000 100 000 100 0000 000 000 000 000 000 000 000 000 000 000 000	
300	
Clear W Clear W 000 0	
10.0 0.00 -10.	age
0.00 -10.0	age
.100 Aver	age
	age
20.0 Marine	
30.0 Armaladar Anton march 1911 Anna Mar	
-40.0 Max H	hold
-50.0	
Center 1.745000 GHz Span 3.500 MHz	
Res BW 33 kHz VBW 330 kHz Sweep 5.867 ms Min H	lold
Occupied Bandwidth Total Power 30.8 dBm	
1.0927 MHz Dete	ctor eak ►
	Man
x dB Bandwidth 1.259 MHz x dB -26.00 dB	
MSG STATUS	

Plot 7-44. Occupied Bandwidth Plot (LTE Band 66/4 - 1.4MHz QPSK - Full RB - ANT1)



Plot 7-45. Occupied Bandwidth Plot (LTE Band 66/4 - 1.4MHz 16-QAM - Full RB - ANT1)

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NR Band n66 – ANT1

www.www.com.com.com.com.com.com.com.com.com.com	lyzer - Occu	upied BW									
LXIRL RF	50 Ω	AC	CORREC		SENSE:INT	00000 CH-	ALIGN AUTO	10:25:21 P	M Sep 20, 2023	Trace	/Detector
					ter Freq: 1.7450 j: Free Run	Avg Hold	I: 100/100	Radio Sta	None		
			#IFGain:Low		ten: 36 dB			Radio Dev	rice: BTS		
10 dB/div Re	f 40.00	dBm									
	1 40.00	ubili									
30.0											
20.0										c	lear Write
10.0			months	[++?1 ⁴⁹ /8*******	silling and the second s	Mr. M. Mary					
0.00											
-10.0											Average
-20.0											
-30.0		llen, by Phy					Work and May	₽ ₽ ₽ ₽ ₽ ₽ ₽			
-40.0								. U. Indersila	" vibiliner hubi		
											Max Hold
-50.0											
Center 1.74500	CH2							Snan 1	00.0 MHz		
#Res BW 1 MHz					#VBW 3 MH	7			ep 1 ms		
wittes Brit Hillin						15			seb i illo		Min Hold
Occupied I	Band	Nidth			Total F	ower	32.5	i dBm			
Cocupica	Daman										
		38	.799 🛚	/IHZ							Detector
Transmit Fre		or	-120.6	2 FM-	% of O	BW Pow	or 00	.00 %		Auto	Peak▶ Man
		51				DWFOW				Auto	Indii
x dB Bandwi	idth		41.09	MHz	x dB		-26.	00 dB			
MSG							STATUS	5			

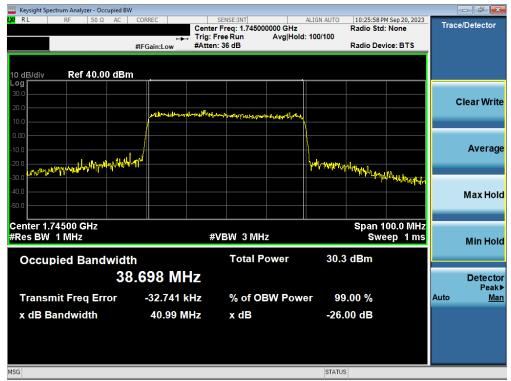
Plot 7-46. Occupied Bandwidth Plot (NR Band n66 - 40.0MHz DFT-s-OFDM BPSK - Full RB - ANT1)



Plot 7-47. Occupied Bandwidth Plot (NR Band n66 - 40.0MHz CP-OFDM QPSK - Full RB - ANT1)

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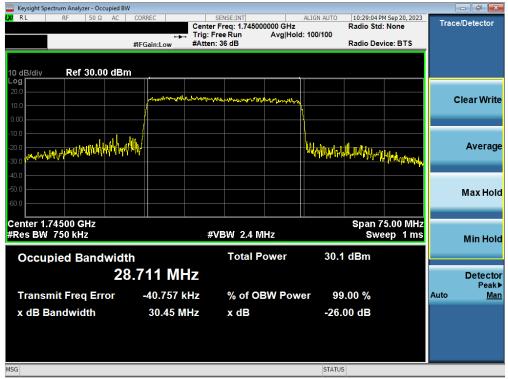
Plot 7-48. Occupied Bandwidth Plot (NR Band n66 - 40.0MHz CP-OFDM 16QAM - Full RB - ANT1)



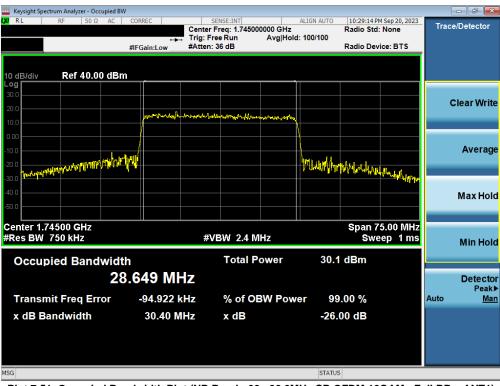
Plot 7-49. Occupied Bandwidth Plot (NR Band n66 - 30.0MHz DFT-s-OFDM BPSK - Full RB - ANT1)

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Plot 7-50. Occupied Bandwidth Plot (NR Band n66 - 30.0MHz CP-OFDM QPSK - Full RB – ANT1)



Plot 7-51. Occupied Bandwidth Plot (NR Band n66 - 30.0MHz CP-OFDM 16QAM - Full RB - ANT1)

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Öccu	rum Analy bied BW		+									\$	Trace	▼ <mark>*</mark> *
KEY RL	SIGHT ↔	Input: RF Coupling: DC Align: Auto	Input Z: 5 Corr CCo Freg Ref:	rr	tten: 36 dB	Gate:	ree Run Off ain: Low	A	Center Freq: Avg Hold: 10 Radio Std: N) GHz		туре	Trace Control
LXI		Aligh. Auto	NFE: Off	iiii (3)		#1F 06	ani. Low		taulo siu. N	lone		C	lear / Write	Detector
1 Gra	ph	۲										T	ace Average	Delector
	e/Div 10.0	dB		Re	f Value 40.00	dBm						Ĭ.,		
Log 30.0												• M	ax Hold	
20.0				and second and a	mythemak	r Mary Mark	*m-weller					ОМ	in Hold	
10.0 0.00														
-10.0								$\left \right $				Re	start Max Hold	
-20.0			mollowell					1.	Martin -	Minere				
-40.0	. With proven								an one of the second	hthe states	Mary Mary			
-50.0														
	er 1.74500 3W 620.00			#Vid	leo BW 2.000	0 MHz			6		in 62.5 MHz			
									SW	eep 1.00 m	s (1001 pts)			
2 Met	rics	۲												
	Occup	bied Bandwidth	า 042 MHz			Total	Power			32.1 dE	2m			
	Tropo			40.96 kHz			OBW Pov	vor		99.00				
		mit Freq Error 3andwidth		40.96 KHZ 4.43 MHz		x dB	OBW POV	vei		-26.00				
			0 0 - 7 07	0000	Δ.									
	5		? Sep 27, 1:30:3	1 PM										

Plot 7-52. Occupied Bandwidth Plot (NR Band n66 - 25.0MHz DFT-s-OFDM BPSK - Full RB - ANT1)

Spectrur Occupie	n Analy d BW	zer 1	•	+											Trace	- 7 蒜
KEYSI RL	IGHT	Input: RF Coupling: Align: Aut			orr f: Int (S)	Atten: 36 dB	Ga	ite: (ree Run Off ain: Low	Avg	er Freq: Hold: 10 o Std: N		0 GHz	Trace	Type ear / Write	Trace Control
<u>L</u> ∭ 1 Graph	_	•		NFE: OI	if										ace Average	Detector
Scale/D	iv 10.0	dB			م	Ref Value 40.	00 dBm							 Ma 	x Hold	
20.0 10.0					penno	have the standard from the second	-mmmm	-	oppedperson george					Mir	n Hold	
0.00 -10.0 -20.0	et la a t	a Astelatio	w.	_{qeq} nc.pdj.s.Hs.W) Mari	Milana	www.thetaywwy.ty		Res	start Max Hold	
-40.0	ry Minda.	ang 10 Abada - i									di terra	a a al da colas la d	un in the second second			
-50.0 Center 1 Res BW					#∨	/ideo BW 2.0	0000 MH	z			Sw		an 62.5 MHz s (1001 pts)			
2 Metrics		V K112										66P 1.00 III	5 (1001 pta)			
	Occup	oied Band														
				52 MHz					Power			29.8 di				
		mit Freq E Bandwidth			59.345 kHz 25.28 MHz			of dB	OBW Powe	er		99.00 -26.00				
	う (2			7, 2023 01 PM											

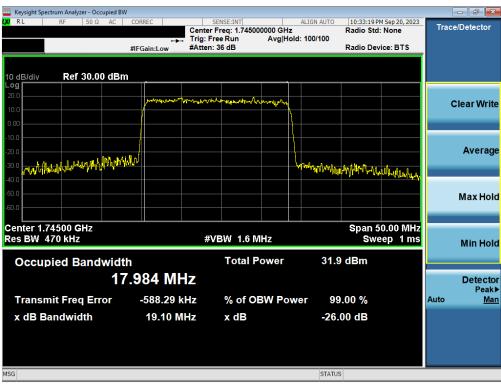
Plot 7-53. Occupied Bandwidth Plot (NR Band n66 - 25.0MHz CP-OFDM QPSK - Full RB - ANT1)

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Spectrur Occupie		zer 1	+								4	Trace	- * 絵
KEYSI RL	IGHT ↔	Input: RF Coupling: DC Align: Auto	Freq Re	orr f: Int (S)	Atten: 36 dB	Gate:	Free Run Off ain: Low	Center Freq Avg Hold: 1 Radio Std: 1) GHz	Trace Cle	Type ear / Write	Trace Control
1 Graph		_	NFE: Of	f								ace Average	Detector
Scale/D	iv 10.0	dB		F	Ref Value 40.0	00 dBm						Ŭ	
Log 30.0											• Ma	ix Hold	
20.0				munutur	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	holder and	whenweiter				Mi	n Hold	
0.00											Res	tart Max Hold	
-20.0	N.N. MAR	way and a state of the state of	atuli-tittitte					Winter	in way with with	Maria Malana			
-30.0													
-50.0													
Center 1 Res BW				#\	/ideo BW 2.0	000 MHz		Sw	Spa veep 1.00 ms	an 62.5 MHz s (1001 pts)			
2 Metrics	;	v											
	Occup	ied Bandwid				T -4-1	D		00.0 -	2			
	Trana	23 nit Freg Erro	.860 MHz	60.076 kHz	-		Power		29.9 dE 99.00				
		andwidth		25.29 MHz		x dB			-26.00				
	り (? Sep 27	7, 2023 35 PM									

Plot 7-54. Occupied Bandwidth Plot (NR Band n66 - 25.0MHz CP-OFDM 16QAM - Full RB – ANT1)



Plot 7-55. Occupied Bandwidth Plot (NR Band n66 - 20.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)

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Keysight Spectrum Analyzer - Occ	upied BW									
LXI RL RF 50 Ω	AC COR	REC		NSE:INT		ALIGN AUTO		M Sep 20, 2023	Trac	e/Detector
				req: 1.74500		d: 100/100	Radio Std	: None	mac	
	#IEC	⊶ ain:Low	#Atten: 3		Avginoid	1. 100/100	Radio Dev	rice: BTS		
	#11 0			• •••						
10 dB/div Ref 40.00) dBm									
Log										
30.0										Clear Write
20.0										
10.0		mound	nuuna	- Marthan Martin	An Monoral				_	
						1				
0.00										
-10.0	1					-				Average
-20.0						hours Mr. M.	A 10 01			
						¶ wv il} ⊧	4 1 m/1444	Phillip Autor		
33.0										
-40.0										Max Hold
-50.0										
Center 1.74500 GHz							Span 5	0.00 MHz		
Res BW 470 kHz			#VE	3W 1.6 M	Hz		Swe	ep 1 ms		Min Hold
										Minifiold
Occupied Band	width			Total P	ower	29.8	dBm			
	18.9	90 MF	1Z							Detector
Terrer it For F		F7 470-		0/ -6 0	DIA/ D		00.0/		0	Peak►
Transmit Freq Err	or -	57.176 k	HZ	% of O	BW Pow	er 99	.00 %		Auto	<u>Man</u>
x dB Bandwidth		20.12 M	Hz	x dB		-26.	00 dB			
						201	_			
MSG						STATUS				
mod						STATUS				

Plot 7-56. Occupied Bandwidth Plot (NR Band n66 - 20.0MHz CP-OFDM QPSK - Full RB - ANT1)

Weysight Spectrum Analyzer - Occupied B R L RF 50 Ω AC	CORREC Center	SENSE:INT Freq: 1.745000000 GH Free Run Avg H : 36 dB	Iz Radio Iold: 100/100	22 PM Sep 20, 2023 Std: None Device: BTS	Trace/D	etector
10 dB/div Ref 30.00 dBr Log 20.0 10.0 0.00		hander der Unie Mannen ander andere ander	tro.		Cle	ar Write
-10.0 -20.0 -30.0 -40.0			hallagaranan (pyrox-ai	Hundrowand		Average
-50.0					N	lax Hold
Center 1.74500 GHz Res BW 470 kHz Occupied Bandwid	th	VBW 1.6 MHz Total Power		n 50.00 MHz weep 1 ms	Γ	/lin Hold
13 Transmit Freq Error	8.994 MHz -48.157 kHz	% of OBW Pc	ower 99.00 %		l Auto	Detector Peak▶ Man
x dB Bandwidth	-46.157 KHZ 20.10 MHz	x dB	-26.00 dB		All	iman
MSG			STATUS			

Plot 7-57. Occupied Bandwidth Plot (NR Band n66 - 20.0MHz CP-OFDM 16QAM - Full RB - ANT1)

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www.www.www.www.www.www.www.www.www.ww					
LX/ RL RF 50Ω AC	CORREC	SENSE:INT Center Freq: 1.74500	ALIGN AUTO	10:39:23 PM Sep 2 Radio Std: None	
	↔ #IFGain:Low	Trig: Free Run #Atten: 36 dB	Avg Hold: 100/100	Radio Device: B	TS
	#IFGall1:LOW	#Atten: 00 dB		Radio Device. D	
10 dB/div Ref 35.00 dBr	20				
Log					
25.0					Clear Write
15.0	Lahmeryhoriger	hand have been have been been been been been been been be	Mar Hand		
5.00					
-5.00	r				A
-15.0	<u>j</u>				Average
-25.0 -35.0 <mark>พระคญบามหาศักรณ์ที่ไ</mark> ป ที่ได้เป็นไป	n nd		hyphyner prop	Marthulint martha	
-45.0					
-45.0					Max Hold
Center 1.74500 GHz				Span 37.50	
Res BW 360 kHz		#VBW 1.2 N	Hz	Sweep	1 ms Min Hold
Occupied Bandwidt	h	Total P	ower 31	.8 dBm	
	3.506 M⊦	7			Detector
					Peak►
Transmit Freq Error	-398.92 k	Hz % of O	3W Power 9	9.00 %	Auto <u>Man</u>
x dB Bandwidth	14.28 M	Hz x dB	-26	5.00 dB	
MSG			STAT	US	

Plot 7-58. Occupied Bandwidth Plot (NR Band n66 - 15.0MHz DFT-s-OFDM BPSK - Full RB - ANT1)

Keysight Spectrum Analyzer - Occupied BW		SENSE:INT	ALIGN AUTO		Sep 20, 2023	_	- 🗗 🗙
	🛶 Trig: F		Hold: 100/100	Radio Std: Radio Devid		Trace	Delector
#IF(Gain:Low #Atten:	. 36 08		Radio Devid	Ce. DTS		
10 dB/div Ref 30.00 dBm							
20.0							
10.0	mall-maline	ᡣᢦᡲ᠁ᡘᡊᠰᡙᠯᡤᡃᢛᢛᡍ᠈ᢕᢔᢛᡇᡨᠣᡬ᠊ᠬᡗᡫᡫᢩᡣᡳᠰ	՝ ՝			C	lear Write
-10.0							
-20.0 -20.0 MWW WWW WWWWWWWWWWWWWWWWWWWWWWWWWWWW			- Markhaller	deal and			Average
-30.0 Hit Ala			- r vy vyr	httphymy,	There and the second second		
-40.0							
-60.0							Max Hold
Center 1.74500 GHz				Snan 37	'.50 MHz		
Res BW 360 kHz	#\	/BW 1.2 MHz			ep 1 ms		Min Hold
Occupied Bandwidth		Total Power	29.8 (dBm			
14.1	63 MHz						Detector
Transmit Freq Error	29.670 kHz	% of OBW Po	ower 99.(00 %		Auto	Peak▶ <u>Man</u>
x dB Bandwidth	15.01 MHz	x dB	-26.00	0 dB			
MSG			STATUS				

Plot 7-59. Occupied Bandwidth Plot (NR Band n66 - 15.0MHz CP-OFDM QPSK - Full RB - ANT1)

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XX R L RF 50 Ω AC CORREC SENSE:INT ALIGN AUTO 10:38:19 PM Sep 20, 2023	
	etector
Center Fred. 1.74500000 GHz Radio Std. None	elector
#IFGain:Low #Atten: 36 dB Radio Device: BTS	
#irodifictow written or db fitten of the brief brief	
10 dB/div Ref 40.00 dBm	
	ear Write
10.0	_
	Average
20.0 30.0 Water Water Martin	
+40.0	lax Hold
-50.0	
Center 1.74500 GHz Span 37.50 MHz	
Res BW 360 kHz #VBW 1.2 MHz Sweep 1 ms	Min Hold
Occupied Bandwidth Total Power 29.8 dBm	
14.177 MHz	Detector
Transmit Freg Error -26 882 kHz % of OBW Power 99 00 %	Peak▶ Man
Transmit Freq Error -26.882 kHz % of OBW Power 99.00 %	iman
x dB Bandwidth 15.09 MHz x dB -26.00 dB	
MSG STATUS	

Plot 7-60. Occupied Bandwidth Plot (NR Band n66 - 15.0MHz CP-OFDM 16QAM - Full RB - ANT1)

www.www.www.analyzer - Occupied BW						
	Trig: F	SENSE:INT r Freq: 1.745000000 GHz Free Run Avg Ho n: 36 dB	Radio Id: 100/100	24 PM Sep 20, 2023 Std: None Device: BTS	Trace	/Detector
10 dB/div Ref 40.00 dBm	manna	monum			с	lear Write
10 0 0.00 						Average
-30.0 -40.0 -50.0			-			Max Hold
Center 1.74500 GHz Res BW 240 kHz Occupied Bandwidth		VBW 750 kHz Total Power		n 25.00 MHz sweep 1 ms		Min Hold
9.0 Transmit Freg Error	227 MHz -205.09 kHz	% of OBW Pov	ver 99.00 %		Auto	Detector Peak▶ Man
x dB Bandwidth	9.614 MHz	x dB	-26.00 dB			
MSG						

Plot 7-61. Occupied Bandwidth Plot (NR Band n66 - 10.0MHz DFT-s-OFDM BPSK - Full RB - ANT1)

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Keysight Spectrum Analyzer - Occupied	IBW					e X
LXI RL RF 50Ω AC		SENSE:INT	ALIGN AUTO	10:44:21 PM Sep 20	,2023 Trace/De	tector
		Center Freq: 1.74500 Trig: Free Run	0000 GHz Avg Hold: 100/100	Radio Std: None	indecibe	
		#Atten: 36 dB	Avginola. 100/100	Radio Device: B1	rs	
10 dB/div Ref 30.00 dE	3m					
20.0						
	mound	www.uuthanharmanne	Muhay.		Clea	r Write
10.0						
0.00						
-10.0						
-20.0	IRANA A		WAD 0		Δ	verage
-10.0 -20.0 -30.0	ปาย ป้ายะ		ստույլերի	MUL MUMANAN	ш.	g.
				11 11 11 11 11		
-40.0						
-50.0					Ma	ax Hold
-60.0						
Center 1.74500 GHz				Span 25.00	MHz	_
Res BW 240 kHz		#VBW 750 k	Hz	Sweep	mo	in Hold
						minolu
Occupied Bandwig	dth	Total P	ower 29.	3 dBm		
	9.3349 MHz	-				
	2.3349 MIL	Z				etector Peak▶
Transmit Freq Error	-21.092 kH	z % of OE	BW Power 99	9.00 %	Auto	Man
x dB Bandwidth	9.960 MH	z xdB	-26	00 dB		
	3.300 MIT		-20			
MSG			STATU	s		
			STATS			

Plot 7-62. Occupied Bandwidth Plot (NR Band n66 - 10.0MHz CP-OFDM QPSK - Full RB - ANT1)



Plot 7-63. Occupied Bandwidth Plot (NR Band n66 - 10.0MHz CP-OFDM 16QAM - Full RB - ANT1)

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Keysight Spectrum Analyzer - Occupied BW							
LXI RL RF 50Ω AC	CORREC	SENSE:INT	ALIGN AUTO		M Sep 20, 2023	Trac	e/Detector
		er Freq: 1.745000000 Gi Free Run Avgil	Hz Hold: 100/100	Radio Std	: None	IIIuc	
		en: 36 dB		Radio Dev	vice: BTS		
	In Gam. Low						
10 dB/div Ref 35.00 dBm	<u> </u>						
Log							
25.0							lear Write
15.0		~~^~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~				
5.00			_ <u> </u>				
-5.00	/						
			}				Average
-15.0							Average
-25.0	nr		the day				
-35.0 March Marmon Marmon	M ²		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Varmon .	mont		
-45.0					~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		M
							Max Hold
-55.0							
Center 1.745000 GHz				Snan 1	2.50 MHz		
Res BW 120 kHz		VBW 1.2 MHz			ep 1 ms		
					op me		Min Hold
Occupied Bandwidt	h	Total Power	32.1	dBm			
4.	5134 MHz						Detector
	00.070			00.0/		•	Peak►
Transmit Freq Error	-26.970 kHz	% of OBW P	ower 99	.00 %		Auto	<u>Man</u>
x dB Bandwidth	4.915 MHz	x dB	-26.	00 dB			
MSG			STATUS	5			

Plot 7-64. Occupied Bandwidth Plot (NR Band n66 - 5.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)

Keysight Spectrum Analyzer - Occupied Β' μα RL RF 50 Ω AC	CORREC Center		ALIGN AUTO GHz g Hold: 100/100	10:49:39 PM Sep 20, Radio Std: None	2023 Trace/Detector
	#IFGain:Low #Atten	: 36 dB		Radio Device: BT	
10 dB/div Ref 30.00 dBr	n				
20.0		and the	Lond		Clear Write
-10.0					
-20.0 -30.0 phalland marine from the second s	mul		Lu hank	YMM MM	Average
-40.0					Max Hold
-60.0				Span 12.50 N	
Res BW 120 kHz	v	BW 1.2 MHz		Sweep 1	
Occupied Bandwid	th	Total Powe	r 28.9	dBm	
	4960 MHz				Detector Peak►
Transmit Freq Error	-10.318 kHz	% of OBW I	Power 99.	.00 %	Auto <u>Man</u>
x dB Bandwidth	4.880 MHz	x dB	-26.0	00 dB	
MSG			STATUS		

Plot 7-65. Occupied Bandwidth Plot (NR Band n66 - 5.0MHz CP-OFDM QPSK - Full RB – ANT1)

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Plot 7-66. Occupied Bandwidth Plot (NR Band n66 - 5.0MHz CP-OFDM 16QAM - Full RB - ANT1)

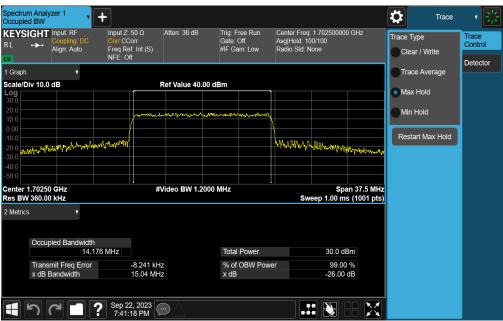
FCC ID: A3LSMA156U		PART 27 MEASUREMENT REPORT			
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NR Band n70 – ANT1

Spectru Occupie		zer 1 ,	+								₽	Trace	- * 崇
RL	-	Input: RF Coupling: DC Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref: Int NFE: Off		Gate:	ree Run Off ain: Low	1	Center Freq Avg Hold: 10 Radio Std: N		0 GHz	Trace Type Clear / W	rite	Trace Control
1 Graph		•									Trace Ave	erage	Detector
Scale/E	0iv 10.0	dB		Ref Value 3	5.00 dBm						Max Hold		
15.0 5.00				wasangay ang	Inn	man and a second					Min Hold		
-5.00 -15.0 -25.0		Van Marthalit	dippedmentaria					hinteran	han and the second s		Restart Ma	ax Hold	
-35.0										nor myralfordera			
	1.70250 / 360.00			#Video BW 1	1.2000 MHz			Sw		an 37.5 MHz s (1001 pts)			
2 Metric	s	v											
	Occup	ied Bandwidth 13.50	00 MHz		Total	Power			32.2 d	Bm			
		nit Freq Error andwidth		69 kHz 4 MHz	% of x dB	OBW Po	wer		99.00 -26.00) %			
	5	2	Sep 22, 20 7:39:10 P										

Plot 7-67. Occupied Bandwidth Plot (NR Band n70 - 15.0MHz DFT-s-OFDM BPSK - Full RB - ANT1)



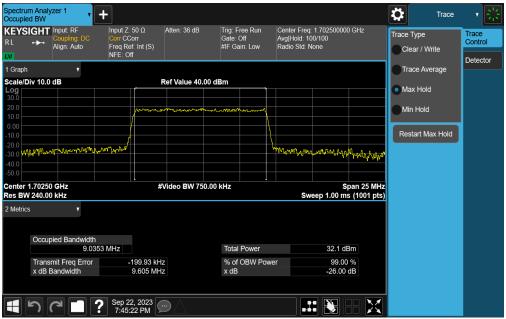
Plot 7-68. Occupied Bandwidth Plot (NR Band n70 - 15.0MHz CP-OFDM QPSK - Full RB – ANT1)

FCC ID: A3LSMA156U		PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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Spectrum Occupied		zer 1	,	+											Trace	- * 景
KEYSI RL	GHT ·≁·	Input: RF Coupling Align: Au	: DC	Input Z: Corr CC Freq Re NFE: Of	orr f: Int (S)	Atten: 36 dB		Gate: (ree Run Off iin: Low	Avg H	r Freq: lold: 10 Std: N		0 GHz	Trace Cl	Type ear / Write	Trace Control Detector
1 Graph			•											Tr	ace Average	Deteotor
Scale/Di	iv 10.0	dB			, F	Ref Value 40.	00 dB	m						O M:	ax Hold	
Log 30.0																
20.0					moun	- Marthamarga	and the second second	por the second	mann					Mi	n Hold	
0.00										{					start Max Hold	
-10.0		hhham	κ.Aγ	NAMANA						how	Martan .	๗๚ _{๚ๅ๚๛๛๛๛๛} ๅ		Re		
-30.0	W.	P										10 00	and a second flow			
-40.0																
Center 1					! #\	/ideo BW 1.2	2000 M	Hz					an 37.5 MHz			
Res BW		kHz									Sw	eep 1.00 m	s (1001 pts)			
2 Metrics			•													
	Occup	ied Ban		h 214 MHz				T-4-1	D			00.0 -	Dee			
	T				0 704 1-1 1-				Power			30.0 d				
		mit Freq Bandwidt			33.784 kHz 15.07 MHz			% of x dB	OBW Powe	er		99.00 -26.00				
	າ (2			2, 2023 41 PM	\Box										

Plot 7-69. Occupied Bandwidth Plot (NR Band n70 - 15.0MHz CP-OFDM 16QAM - Full RB – ANT1)



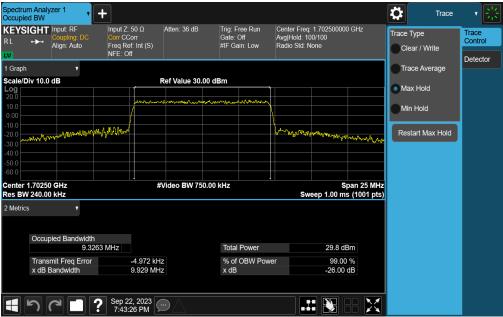
Plot 7-70. Occupied Bandwidth Plot (NR Band n70 - 10.0MHz DFT-s-OFDM BPSK - Full RB - ANT1)

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Spectrum Occupied	d BW		•	+										₿	٦	Frace	· ₩
KEYSI RL	GHT ·✦·	Input: RF Coupling: Align: Au	DC	Input Z: 5 Corr CCc Freq Ref NFE: Off	orr : Int (S)	Atten: 36 dB		Gate: (ree Run Off in: Low	Center Avg Ho Radio	old: 10		00 GHz		e Type lear / Write	;	Trace Control
1 Graph		,												€Т	race Avera	ge	Deteolor
Scale/Di	iv 10.0	dB			ہ	Ref Value 30.0	0 dB	m							lax Hold		
20.0 10.0 0.00				/	magnomle	aga,na ay mayayaa	مم	vir ^ለ ንሥ	mhaethapatha						lin Hold		
-00.0	stroped Vier	varaquilad	hran	www.www						MANY	the part	ᠮᡃᡳᡍ ^ᡘ ᡀᢇ _{ᠾᠬᢦᡀ᠋}	Merrindym	Re	estart Max I	Hold	
-40.0 -50.0 -60.0																	
Center 1 Res BW					#\	/ideo BW 750	.00 k	Hz			Sw		Span 25 MH ns (1001 pt				
2 Metrics		۲	•														
	Occup	ied Band	lwidth														
				7 MHz				Total	Power			29.8	dBm				
		mit Freq I Bandwidth			3.684 kHz 9.927 MHz			% of x dB	OBW Pow	er		99.0 -26.0	00 % 0 dB				
	า (Sep 22 7:43:4													

Plot 7-71. Occupied Bandwidth Plot (NR Band n70 - 10.0MHz CP-OFDM QPSK - Full RB – ANT1)



Plot 7-72. Occupied Bandwidth Plot (NR Band n70 - 10.0MHz CP-OFDM 16QAM - Full RB - ANT1)

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Spectrur Occupie		zer 1	• +										₽	Trace	- * 影
KEYSI RL	IGHT ·✦·	Input: RF Coupling: [Align: Auto		: Ζ: 50 Ω CCorr Ref: Int (S) : Off	Atten: 36 dB		Gate:	ree Run Off ain: Low		Center Frec Avg Hold: 1 Radio Std: I		00 GHz	Trace Cl	Type ear / Write	Trace Control
1 Graph		٧											Tra	ace Average	Delector
Scale/D	iv 10.0	dB			Ref Value 35	5.00 dE	3m		-					ax Hold	
25.0													U		
15.0 5.00				- /~~~			^	<u>^,</u>	۲				Mi	n Hold	
-5.00				/					Ą				-		
-15.0									\square				Res	start Max Hold	
-25.0	بها کاالریہ	- Myra	-manhhh							"ምለሳሲሲሲ	pront	mm			
-45.0									⊢						
-55.0											_				
Center 1 Res BW					Video BW 1.3	2000 N	/Hz			Sv		an 12.5 MHz 1s (1001 pts)			
2 Metrics	;	•									-				
	Occur	ied Bandw	idth												
	Occup		4.4932 MHz				Total	Power			32.6 0	IBm			
	Transi	mit Freq Ei	rror	-8.038	kHz		% of	OBW Po	we	r	99.0	0 %			
	x dB E	andwidth		4.909 N	ИHz		x dB				-26.00) dB			
	う (? Sep 7:5	0 22, 2023 54:50 PM	\Box										

Plot 7-73. Occupied Bandwidth Plot (NR Band n70 - 5.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)



Plot 7-74. Occupied Bandwidth Plot (NR Band n70 - 5.0MHz CP-OFDM QPSK - Full RB - ANT1)

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Spectrur Occupie		zer 1	•	F									\$	Trace	v	$\frac{x^{1}x}{x^{1}x}$
KEYS RL	IGHT ↔	Input: RF Coupling: Align: Aut		Input Z: 5 Corr CCo Freq Ref: NFE: Off		Atten: 36 dB	C	Trig: Free Run Gate: Off #IF Gain: Low	Avg	iter Freq: Hold: 10 lio Std: N		0 GHz	Trace Cl	Type ear / Write	Trace Contr	rol
1 Graph		•											Tr	ace Average	Dete	
Scale/D 20.0 10.0 0.00	iv 10.0	dB			Í	Ref Value 30.		m 	• •					ax Hold in Hold		
	ᢧᡙ᠕ᡃᠬ	᠕ᠰᡎ	~~~~	www					hmu	ᠬᠰ᠋ᡔᠬᡝᡟ	an a	man	Re	start Max Hold		
-40.0 -50.0 -60.0	4 70250					ideo BW 1.2	000 M					an 12.5 MHz				
Res BW					v	IUEO BVV 1.2	000 141	n2		Sw		s (1001 pts)				
2 Metrics		•														
	Occup	bied Band	width 4.5146	6 MHz				Total Power			29.8 di	Bm				
		mit Freq E 3andwidth	Error	-1	5.357 kH: .845 MH:			% of OBW Po x dB	wer		99.00 -26.00)%				
	5	2]?	Sep 22, 7:56:44	2023 4 PM	Δ										

Plot 7-75. Occupied Bandwidth Plot (NR Band n66 - 5.0MHz CP-OFDM 16QAM - Full RB - ANT1)

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Mode	Bandwidth	Modulation	OBW [MHz]
	20MHz	QPSK	17.96
		16QAM	17.94
	15MHz	QPSK	13.55
	TOMITZ	16QAM	13.46
	10MHz	QPSK	8.99
		16QAM	9.01
LTE-B66-4	5MHz	QPSK	4.50
		16QAM	4.51
	2004-	QPSK	2.69
	3MHz	16QAM	2.70
	1.4MHz	QPSK	1.10
	1.4IVI⊓Z	16QAM	1.10
		π/2 BPSK	38.74
	40MHz	QPSK	38.77
		16QAM	38.75
		π/2 BPSK	28.72
	30MHz	QPSK	28.67
		16QAM	28.69
		π/2 BPSK	23.04
	25MHz	QPSK	23.86
		16QAM	23.82
		π/2 BPSK	18.03
NR-n66	20MHz	QPSK	19.01
		16QAM	18.97
		π/2 BPSK	13.51
	15MHz	QPSK	14.17
		16QAM	14.21
		π/2 BPSK	9.04
	10MHz	QPSK	9.32
		16QAM	9.33
		π/2 BPSK	4.51
	5MHz	QPSK	4.49
		16QAM	4.52

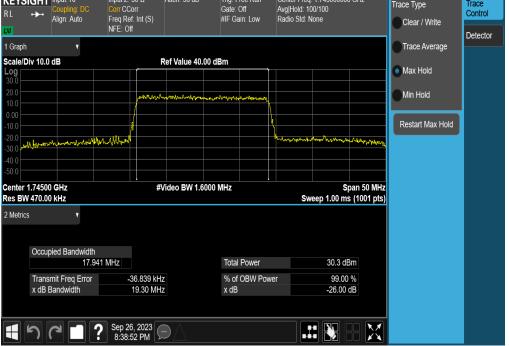
Table 7-7. Occupied Bandwidth Test Result - Ant2

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LTE Band 66/4 - ANT2





Plot 7-77. Occupied Bandwidth Plot (LTE Band 66/4 - 20MHz 16-QAM - Full RB - ANT2)

FCC ID: A3LSMA156U		PART 27 MEASUREMENT REPORT	Approved by: Technical Manager			
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Spectru Occupie		zer 1	•	+											т	race	,	5
KEYS RL	SIGHT +→-	Input: RF Coupling Align: Au			Corr ef: Int (S)	Atten: 36 dB	G	ate: (ree Run Off in: Low		Center Freq: Avg Hold: 10 Radio Std: N) GHz	Trace Cl	Type ear / Write		Trace Control	
1 Graph	<u></u> ו	, ,	,	NFE: O	ff									Tr	ace Averaç	ie	Detector	i
Scale/I		dB			_	Ref Value 40.	.00 dBn	n		-					ax Hold	,-		
30.0 20.0					amoldi	᠂᠆ᡤᡔᡢᡀ᠀ᢂᠼᢪ᠋ᢩ᠕ᡔᠬᠰ᠋ᡁ	()		n-Colourn						in Hold			
10.0					/					ļ				Po	start Max H	loid		
-10.0 -20.0 -30.0	Anaron	porten allena	hter	whiter						1	hunnon	alvanplorates	manhumpy	Re		1010		
-40.0																		
Center Res BV					#	Video BW 1.2	2000 MH	lz		<u> </u>	Sw		an 37.5 MHz s (1001 pts)					
2 Metric		,																
	000	bied Band	huidth															
	Occu			45 MHz			1	Total	Power			31.1 dE	3m					
		mit Freq Bandwidt			-3.428 k⊦ 14.56 M⊦			% of ‹ dB	OBW Pov	ver		99.00 -26.00						
	5			? Sep 2 8:46:	6, 2023 44 PM													

Plot 7-78. Occupied Bandwidth Plot (LTE Band 66/4 - 15MHz QPSK - Full RB - ANT2)



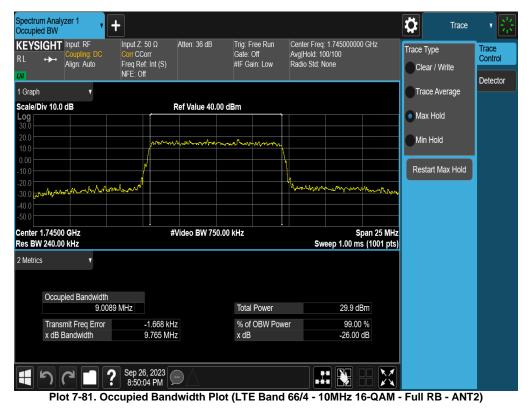
Plot 7-79. Occupied Bandwidth Plot (LTE Band 66/4 - 15MHz 16-QAM - Full RB - ANT2)

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Spectrur Occupie	n Analyzer 1 d BW	+									\$	Trace	- 7 袋
KEYS RL	IGHT Input: RF Coupling: DC Align: Auto			Atten: 36 dB	Gate:	Free Run Off ain: Low	A	Center Freq: Avg Hold: 10 Radio Std: N) GHz	Trace	Type ear / Write	Trace Control
LXI		NFE: O											Detector
1 Graph	•		_								Tr	ace Average	
Log 🖂	iv 10.0 dB			Ref Value 40.	00 dBm						• Ma	ax Hold	
30.0 — 20.0 —			monte	hylman	Mr.M. John Com	Marlanally					Mi	n Hold	
10.0 0.00													
-10.0	ala han a far a	Jum walk	í				h	WMmanny	www.hymmyr	markalan	Re	start Max Hold	
-40.0													
-50.0	1.74500 GHz			Video BW 75	0.00 kH=					oan 25 MHz			
	240.00 kHz		#	VIDEO BW / D	0.00 KHZ			Sw		s (1001 pts)			
2 Metrics	5 v												
	Occupied Bandwid				T -4-	D			04.0 -15	2			
		917 MHz	0.004 111			Power			31.0 dE				
	Transmit Freq Erro x dB Bandwidth		6.061 kH; 9.719 MH;		% O	OBW Pov	ver	_	99.00 -26.00				
	561	? Sep 2 8:49:	6, 2023 52 PM										

Plot 7-80. Occupied Bandwidth Plot (LTE Band 66/4 - 10MHz QPSK - Full RB - ANT2)

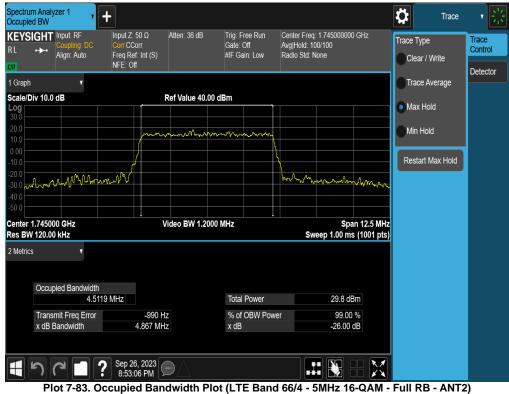


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Spectrur Occupie	n Analyzer 1 d BW	+					₽	Trace	- 1 🔆
	GHT Input: RF ← Coupling: DC Align: Auto	Input Z: 50 Ω Corr CCorr Freq Ref: Int (S)	Atten: 36 dB	Trig: Free Run Gate: Off #IF Gain: Low	Center Free Avg Hold: 1 Radio Std: 1			e Type Xlear / Write	Trace Control
LXI		NFE: Off							Detector
1 Graph	• iv 10.0 dB		Ref Value 40.00	dPm				race Average	
			Rei Value 40.00				• •	lax Hold	
20.0 10.0		mm	mmm	Jamma and and a start and a start a st				1in Hold	
0.00					h			estart Max Hold	
-20.0 -30.0	ᢌᡗᠧ᠆ᠰᠧᡊᡆᡗᡃᡅᡐᡧ᠆ᡗ᠕ᢦᡣ	March 1			when	hand mar and the second s	way		
-50.0									
	.745000 GHz 120.00 kHz		Video BW 1.2000) MHz	Sv	Span 12.5 veep 1.00 ms (1001			
2 Metrics									
	Occupied Bandwidth								
		53 MHz		Total Power		30.7 dBm			
	Transmit Freq Error x dB Bandwidth	1.932 ki 4.905 Mi		% of OBW Pow x dB	er	99.00 % -26.00 dB			
	1 C [Sep 26, 2023 8:52:52 PM							

Plot 7-82. Occupied Bandwidth Plot (LTE Band 66/4 - 5MHz QPSK - Full RB - ANT2)

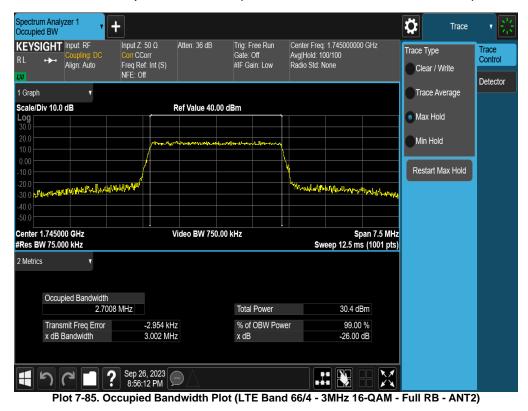


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	rum Analy bied BW	/zer 1	+									\$	Trace	· *
KEY RL	SIGHT • → •	Input: RF Coupling: DC Align: Auto	Input Z: Corr CC Frea Re		Atten: 36 dB	Gate	Free Run e: Off Gain: Low		Center Freq Avg Hold: 10 Radio Std: N) GHz	Trace	Type ear / Write	Trace Control
LXI			NFE: O											Detector
1 Gra	ph	•										Tr	ace Average	
Scale Log	/Div 10.0	dB		_	Ref Value 40	.00 dBm		+				ОМ	ax Hold	
30.0								┼						
20.0 10.0				from	monney	low of the	manthreen	١,				M	in Hold	
0.00				/				$\left \right $						
-10.0 -20.0			ليتم الدر					Ē	A. 01			Re	start Max Hold	
-30.0	and and and	anyaa Muunnali Ma	Calute Wildow					┢	wallow a	weddland all far wegi	Wards the Work of Barry I			
-40.0 -50.0								L						
Cente	er 1.74500	00 GHz		<u> </u>	video BW 75	0.00 kHz				Sp	an 7.5 MHz			
#Res	BW 75.00	00 kHz							Sw	eep 12.5 ms	s (1001 pts)			
2 Met	rics	•												
	Occup	bied Bandwidt				_								
			947 MHz				al Power			31.2 dE				
		mit Freq Error 3andwidth		-1.259 kH 2.957 MH		% x d	of OBW Po B	we	r	99.00 -26.00				
			Con 2	e 2022 🗌	~ ^									
E	ר <u>י</u>		? Sep 2 8:55:	6, 2023 59 PM	\mathbb{D}									

Plot 7-84. Occupied Bandwidth Plot (LTE Band 66/4 - 3MHz QPSK - Full RB - ANT2)



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Spectrur Occupie	d BW	•	+										Trace	▼ <mark>\$</mark> *
KEYS RL	IGHT .≁	Input: RF Coupling: DC Align: Auto		Corr ef: Int (S)	Atten: 36 dB	Gate	Free Rui Off ain: Low		Center Freq Avg Hold: 10 Radio Std: N) GHz	Trace Cl	Type ear / Write	Trace Control
LM 1 Graph		_	NFE: C	Off									ace Average	Detector
Scale/D		dB			Ref Value 40.	.00 dBm							9	
Log 30.0												• M	ax Hold	
20.0				, and the		whenter	ᢦᡆ᠋ᢌ᠕ᢩᡵᡗᡰᠬᡘ᠆ᠶᡒ	\				M	in Hold	
0.00								L L						
-10.0		Red 0	a N Dalward	V ^A				31	η. Γελ Πουα ΠΑ	A RA		Ке	start Max Hold	
-30.0	and heads	nny Willin	⁰⁴⁰ 10, J. 101444						ade Ondered (/ ^{አፈ} በት-አያበት _{የሚ} በ-አሳ	Way			
-50.0														
Center ' Res BW					Video BW 33	0.00 kHz			Su		oan 3.5 MHz s (1001 pts)			
2 Metrics		v v							JW	eep 5.67 m	s (1001 pis)			
_														
	Occup	ied Bandwidt	h											
			981 MHz				I Power			30.7 df				
		mit Freq Erroi Bandwidth	1	239 H 1.274 MH		% o x dE	f OBW }	Powe	er	99.00 -26.00				
						A de								
	5		Sep 2	26, 2023	\frown \land									
	-)(9:00	:24 PM										

Plot 7-86. Occupied Bandwidth Plot (LTE Band 66/4 - 1.4MHz QPSK - Full RB - ANT2)



Plot 7-87. Occupied Bandwidth Plot (LTE Band 66/4 - 1.4MHz 16-QAM - Full RB - ANT2)

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NR Band n66 – ANT2

Spectrun	n Analyzer 1 J BW	+					Trace	
KEYSI RL	GHT Input: RF Coupling: DC Align: Auto	Input Ζ: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Off	Atten: 36 dB	Trig: Free Run Gate: Off #IF Gain: Low	Center Fred Avg Hold: 1 Radio Std: I		Trace Type Clear / Write	Trace Control
1 Graph	•						Trace Average	Delector
Scale/Di Log 30.0 20.0	v 10.0 dB		Ref Value 40.00				Max Hold	
10.0 0.00 -10.0			and the second of the second o	ๆางใหม่ม _ี เหล่าๆให้รูปใหญ่ๆ-ไปให้ทางไ			Min Hold Restart Max Hold	
-20.0 -30.0		mand			hours	wind when the second		
-50.0 Center 1	.74500 GHz		Video BW 3.000	00 MHz		Span 100 M		
2 Metrics	V 1.0000 MHz V				54	veep 1.00 ms (1001 p	5)	
	Occupied Bandwidth 38.74	40 MHz		Total Power		31.3 dBm		
	Transmit Freq Error x dB Bandwidth	-37.357 kH 41.11 MH		% of OBW Powe x dB	er	99.00 % -26.00 dB		
	2 C	Sep 26, 2023 5:13:23 PM						

Plot 7-88. Occupied Bandwidth Plot (NR Band n66 - 40.0MHz DFT-s-OFDM BPSK - Full RB - ANT2)

Spectrun Occupied	n Analyzer 1 J BW	+							Ö	Trace	- * 影
	GHT Input: RF ↔ Coupling: DC Align: Auto	Input Ζ: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Off	Atten: 36 dB	Trig: Free Run Gate: Off #IF Gain: Low	Avg Ho	Freq: 1.74 bld: 100/10 Std: None		GHz	Trace Type Clear / Write	;	Trace Control
1 Graph	v		B-61/-1 40.00						Trace Avera	ge	Detector
Log 30.0 20.0 10.0 0.00 -10.0	v 10.0 dB	aurone ductosentral	Ref Value 40.00			ปหายเจ		The and the second second	Max Hold Min Hold Restart Max	Hold	
	.74500 GHz V 1.0000 MHz		∜Video BW 3.00	00 MHz		Sweep		n 100 MHz (1001 pts)			
2 Metrics	Occupied Bandwidth	66 MHz		Total Power			29.1 dBr	n			
	Transmit Freq Error x dB Bandwidth	-9.482 ki 41.08 Mi		% of OBW Po x dB	ower		99.00 % -26.00 di				
	1 C [Sep 26, 2023 5:17:42 PM									

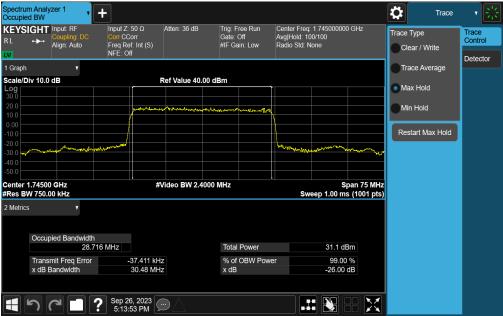
Plot 7-89. Occupied Bandwidth Plot (NR Band n66 - 40.0MHz CP-OFDM QPSK - Full RB - ANT2)

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Spectru Occupie		zer 1	• +									\$	Trace	• 影
RL	L + Align: Auto Corr CCorr Freq Ref: Int (S)			Atten: 36 dB	Free Run e: Off Gain: Low	Center F Avg Holo Radio St	I: 100/		GHz	Trace Ty Clear	Trace Control Detector			
1 Graph		v										Trace	e Average	Detector
	Div 10.0	dB		R	ef Value 30.	00 dBm						Max	Hold	
Log 20.0 10.0 0.00				, after a law	verstan Min-mayana	ግሽ በመ ለሰጥታ	and you and the state of the st					Min H		
-10.0 -20.0 -30.0	winger h	w.m.m.n.y	unphilipped					handhalad	dyn.,	malloment	where the west	Resta	rt Max Hold	
-40.0 -50.0 -60.0														
	1.74500 W 1.000			₽. #V	ideo BW 3.0	000 MHz			Swee		an 100 MHz s (1001 pts)			
2 Metric	s	•												
	Occup	ied Bandw	idth 38.754 MHz			Tot	al Power			29.2 dB	ßm			
		mit Freq Eri Bandwidth		15.055 kHz 40.95 MHz		% (x d	of OBW Pow	er		99.00 -26.00 d				
	A GD L	Januwiulin		40.55 MHZ		Xu	0			-20.00 (
	ษ (2		6, 2023 58 PM					÷					

Plot 7-90. Occupied Bandwidth Plot (NR Band n66 - 40.0MHz CP-OFDM 16QAM - Full RB – ANT2)



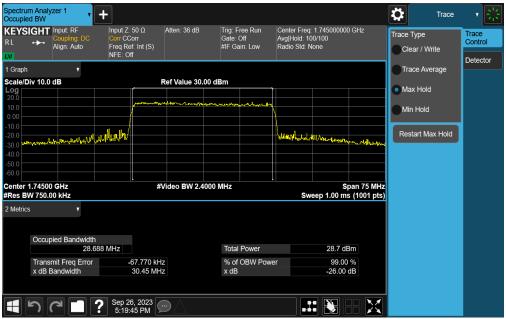
Plot 7-91. Occupied Bandwidth Plot (NR Band n66 - 30.0MHz DFT-s-OFDM BPSK - Full RB - ANT2)

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Spectrun Occupied		zer 1	•	+										\$	Trace	- * ※
KEYSI RL	Align: Auto Freq Ref: Int (S)			orr : Int (S)				Gate: Off Avg H			enter Freq: 1.745000000 GHz /g Hold: 100/100 adio Std: None			Type ear / Write	Trace Control Detector	
1 Graph		,												Tra	ace Average	Delector
Scale/Di	iv 10.0	dB			F	Ref Value 30.0	0 dBr	n						O M	ax Hold	
Log 20.0 10.0 0.00					لية معين المريكي ويريس المريس المريس ويريس و ويريس ويريس ويري	hanner	~ * ***	A.U. Ange	-million and the second						n Hold	
-10.0 -20.0 -30.0	mullan	stantintal	yuund	whiteh						heatheas	u.	Inventionalise	malan and	Res	start Max Hold	
-40.0 -50.0 -60.0																
Center 1 #Res BV					#\	/ideo BW 2.40	00 M	Hz			Swe		oan 75 MHz 5 (1001 pts)			
2 Metrics		1														
	Occup	ied Band														
				'3 MHz					Power			28.8 dE				
		mit Freq Bandwidtl			2.356 kHz 30.44 MHz			% of (x dB	DBW Powe	er		99.00 -26.00				
	า (Sep 26 5:19:3	, 2023 6 PM											

Plot 7-92. Occupied Bandwidth Plot (NR Band n66 - 30.0MHz CP-OFDM QPSK - Full RB – ANT2)



Plot 7-93. Occupied Bandwidth Plot (NR Band n66 - 30.0MHz CP-OFDM 16QAM - Full RB - ANT2)

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Spectrun Occupied		zer 1	• +											₿		Trace	- * 影
KEYSI RL	GHT ·≁·	Input: RF Coupling: Align: Aute	DC C D F	nput Z: Corr CC Freq Re IFE: Of	orr f: Int (S)	Atten: 36 dB		Gate: (ree Run Off in: Low		Center Freq Avg Hold: 10 Radio Std: N	00/100	000 GHz		e Type lear / W	rite	Trace Control Detector
1 Graph		T												○ ⊤	race Ave	erage	
Scale/Di	iv 10.0	dB			,	Ref Value 40.	00 dB	lm							lax Hold		
Log 30.0																	
20.0 10.0					Contra verter	margaline	****	unin the	monte					_ ∩	lin Hold		
0.00				(ł							
-10.0 -20.0	.1			Jaw						ų				Re	estart Ma	IX Hold	
	hm	and there is	walker	مارسرار						1	www. who	an Calendar a	wylanda yw arwenna	-			
-40.0																	
Center 1	.74500	GHz			#\	Video BW 2.0	000 N	1Hz				s	pan 62.5 M	HZ			
Res BW											Sw		ms (1001 p				
2 Metrics		v															
	Occup	ied Band	width														
			23.041 M	Hz				Total	Power			30.9	dBm				
		mit Freq E Bandwidth			499.91 kH 24.41 MH			% of x dB	OBW Po	we	r	99. -26.0	00 %				
	X UD E	อสานพิเนิโก			24.4 I WH	2		x uB				-20.0					
	ר נ]?	Sep 26 5:59:5	6, 2023 55 PM												

Plot 7-94. Occupied Bandwidth Plot (NR Band n66 - 25.0MHz DFT-s-OFDM BPSK - Full RB – ANT2)



Plot 7-95. Occupied Bandwidth Plot (NR Band n66 - 25.0MHz CP-OFDM QPSK - Full RB - ANT2)

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