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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:

09/06/2024 - 10/30/2024

Test Report Issue Date:

10/30/2024

Test Site/Location:

Element Lab., Columbia, MD, USA

Test Report Serial No.:

1M2408260067-03-R1.A3L

FCC ID:

A3LSMS938U

APPLICANT:

Samsung Electronics Co., Ltd.

Application Type:

Certification

Model:

SM-S938U

Additional Model(s):

SM-S938U1

EUT Type:

Portable Handset

FCC Classification:

PCS Licensed Transmitter Held to Ear (PCE)

FCC Rule Part:

27

Test Procedure(s):

ANSI C63.26-2015, 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.

This revised Test Report (S/N: 1M2408260067-03-R1.A3L) supersedes and replaces the previously issued test report (S/N: 1M2408260067-03.A3L) on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

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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FCC Part 27

Antenna-1						
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	ERP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
LTE Band 71	20 MHz	QPSK	673.0 - 688.0	0.082	19.16	18M0G7D
		16QAM	673.0 - 688.0	0.070	18.42	18M0W7D
	15 MHz	QPSK	670.5 - 690.5	0.082	19.13	13M5G7D
		16QAM	670.5 - 690.5	0.065	18.13	13M5W7D
	10 MHz	QPSK	668.0 - 693.0	0.079	18.98	9M02G7D
		16QAM	668.0 - 693.0	0.071	18.53	9M02W7D
LTE Band 12	5 MHz	QPSK	665.5 - 695.5	0.080	19.05	4M53G7D
		16QAM	665.5 - 695.5	0.069	18.41	4M52W7D
	10 MHz	QPSK	704.0 - 711.0	0.098	19.92	8M99G7D
		16QAM	704.0 - 711.0	0.083	19.19	9M01W7D
	5 MHz	QPSK	701.5 - 713.5	0.103	20.13	4M52G7D
		16QAM	701.5 - 713.5	0.082	19.16	4M52W7D
LTE Band 13	3 MHz	QPSK	700.5 - 714.5	0.098	19.92	2M72G7D
		16QAM	700.5 - 714.5	0.082	19.13	2M72W7D
	1.4 MHz	QPSK	699.7 - 715.3	0.097	19.88	1M10G7D
		16QAM	699.7 - 715.3	0.083	19.19	1M11W7D
	10 MHz	QPSK	782.0	0.060	17.78	9M00G7D
		16QAM	782.0	0.052	17.13	9M01W7D
NR Band n71	5 MHz	QPSK	779.5 - 784.5	0.061	17.84	4M53G7D
		16QAM	779.5 - 784.5	0.052	17.16	4M53W7D
		16QAM	779.5 - 784.5	0.052	17.16	4M53W7D
	35 MHz	TTI/2 BPSK	680.5	0.065	18.16	32M4G7D
		QPSK	680.5	0.062	17.90	33M8G7D
		16QAM	680.5	0.073	18.62	33M8W7D
	30 MHz	TTI/2 BPSK	678.0 - 683.0	0.083	19.19	28M7G7D
		QPSK	678.0 - 683.0	0.080	19.01	28M8G7D
		16QAM	678.0 - 683.0	0.070	18.47	28M8W7D
	25 MHz	TTI/2 BPSK	675.5 - 685.5	0.083	19.20	23M0G7D
		QPSK	675.5 - 685.5	0.082	19.15	23M9G7D
		16QAM	675.5 - 685.5	0.068	18.32	23M9W7D
	20 MHz	TTI/2 BPSK	673.0 - 688.0	0.075	18.74	17M9G7D
		QPSK	673.0 - 688.0	0.076	18.80	19M0G7D
		16QAM	673.0 - 688.0	0.063	17.98	19M0W7D
	15 MHz	TTI/2 BPSK	670.5 - 690.5	0.080	19.03	13M5G7D
		QPSK	670.5 - 690.5	0.076	18.81	14M1G7D
		16QAM	670.5 - 690.5	0.066	18.20	14M1W7D
	10 MHz	TTI/2 BPSK	668.0 - 693.0	0.079	18.95	8M99G7D
		QPSK	668.0 - 693.0	0.076	18.81	9M34G7D
		16QAM	668.0 - 693.0	0.066	18.17	9M32W7D
	5 MHz	TTI/2 BPSK	665.5 - 695.5	0.081	19.11	4M51G7D
		QPSK	665.5 - 695.5	0.079	18.95	4M51G7D
		16QAM	665.5 - 695.5	0.065	18.10	4M50W7D
NR Band n12	15 MHz	TTI/2 BPSK	706.5 - 708.5	0.087	19.42	13M5G7D
		QPSK	706.5 - 708.5	0.086	19.32	14M2G7D
		16QAM	706.5 - 708.5	0.072	18.55	14M2W7D
	10 MHz	TTI/2 BPSK	704.0 - 711.0	0.091	19.58	9M00G7D
		QPSK	704.0 - 711.0	0.088	19.43	9M32G7D
		16QAM	704.0 - 711.0	0.074	18.69	9M35W7D
	5 MHz	TTI/2 BPSK	701.5 - 713.5	0.093	19.69	4M51G7D
		QPSK	701.5 - 713.5	0.083	19.17	4M52G7D
		16QAM	701.5 - 713.5	0.066	18.22	4M53W7D

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Antenna-1						
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
WCDMA1700	N/A	Spread Spectrum	1712.4 - 1752.6	0.216	23.34	4M17F9W
LTE Band 66/4	20 MHz	QPSK	1720.0 - 1770.0	0.182	22.61	18M0G7D
		16QAM	1720.0 - 1770.0	0.151	21.78	18M0W7D
	15 MHz	QPSK	1717.5 - 1772.5	0.203	23.08	13M5G7D
		16QAM	1717.5 - 1772.5	0.171	22.34	13M5W7D
	10 MHz	QPSK	1715.0 - 1775.0	0.202	23.05	9M03G7D
		16QAM	1715.0 - 1775.0	0.163	22.11	9M05W7D
	5 MHz	QPSK	1712.5 - 1777.5	0.202	23.05	4M53G7D
		16QAM	1712.5 - 1777.5	0.164	22.15	4M51W7D
	3 MHz	QPSK	1711.5 - 1778.5	0.206	23.13	2M72G7D
		16QAM	1711.5 - 1778.5	0.163	22.13	2M72W7D
	1.4 MHz	QPSK	1710.7 - 1779.3	0.201	23.04	1M10G7D
		16QAM	1710.7 - 1779.3	0.158	21.98	1M11W7D
		64QAM	1710.7 - 1779.3	0.136	21.34	0M00W7D
		256QAM	1710.7 - 1779.3	0.001	0.00	0M00W7D
NR Band n70	15 MHz	$\pi/2$ BPSK	1702.5	0.134	21.26	13M5G7D
		QPSK	1702.5	0.136	21.34	14M2G7D
		16QAM	1702.5	0.103	20.13	14M2W7D
	10 MHz	$\pi/2$ BPSK	1700.0 - 1705.0	0.139	21.43	9M01G7D
		QPSK	1700.0 - 1705.0	0.141	21.49	9M34G7D
		16QAM	1700.0 - 1705.0	0.098	19.93	9M34W7D
	5 MHz	$\pi/2$ BPSK	1697.5 - 1707.5	0.138	21.39	4M50G7D
		QPSK	1697.5 - 1707.5	0.133	21.25	4M50G7D
		16QAM	1697.5 - 1707.5	0.102	20.10	4M49W7D
NR Band n66	45 MHz	$\pi/2$ BPSK	1732.5 - 1757.5	0.172	22.35	43M2G7D
		QPSK	1732.5 - 1757.5	0.173	22.37	43M5G7D
		16QAM	1732.5 - 1757.5	0.129	21.09	43M6W7D
	40 MHz	$\pi/2$ BPSK	1730.0 - 1760.0	0.166	22.19	38M8G7D
		QPSK	1730.0 - 1760.0	0.161	22.08	38M8G7D
		16QAM	1730.0 - 1760.0	0.124	20.92	38M9W7D
	35 MHz	$\pi/2$ BPSK	1727.5 - 1762.5	0.162	22.09	32M4G7D
		QPSK	1727.5 - 1762.5	0.163	22.13	33M8G7D
		16QAM	1727.5 - 1762.5	0.121	20.83	33M8W7D
	30MHz	$\pi/2$ BPSK	1725.0 - 1765.0	0.169	22.28	28M7G7D
		QPSK	1725.0 - 1765.0	0.176	22.45	28M7G7D
		16QAM	1725.0 - 1765.0	0.129	21.09	28M8W7D
	25 MHz	$\pi/2$ BPSK	1722.5 - 1767.5	0.168	22.25	23M1G7D
		QPSK	1722.5 - 1767.5	0.175	22.43	23M9G7D
		16QAM	1722.5 - 1767.5	0.136	21.35	23M9W7D
	20 MHz	$\pi/2$ BPSK	1720.0 - 1770.0	0.158	21.99	18M0G7D
		QPSK	1720.0 - 1770.0	0.161	22.06	19M0G7D
		16QAM	1720.0 - 1770.0	0.132	21.20	19M1W7D
	15 MHz	$\pi/2$ BPSK	1717.5 - 1772.5	0.163	22.11	13M5G7D
		QPSK	1717.5 - 1772.5	0.158	21.98	14M2G7D
		16QAM	1717.5 - 1772.5	0.132	21.20	14M2W7D
	10 MHz	$\pi/2$ BPSK	1715.0 - 1775.0	0.160	22.04	9M02G7D
		QPSK	1715.0 - 1775.0	0.163	22.13	9M37G7D
		16QAM	1715.0 - 1775.0	0.126	20.99	9M38W7D
	5 MHz	$\pi/2$ BPSK	1712.5 - 1777.5	0.159	22.02	4M53G7D
		QPSK	1712.5 - 1777.5	0.161	22.07	4M55G7D
		16QAM	1712.5 - 1777.5	0.138	21.39	4M55W7D

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Antenna-2						
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	ERP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
LTE Band 71	20 MHz	QPSK	673.0 - 688.0	0.053	17.22	18M0G7D
		16QAM	673.0 - 688.0	0.043	16.38	18M0W7D
	15 MHz	QPSK	670.5 - 690.5	0.053	17.22	13M5G7D
		16QAM	670.5 - 690.5	0.043	16.30	13M5W7D
	10 MHz	QPSK	668.0 - 693.0	0.052	17.14	8M99G7D
		16QAM	668.0 - 693.0	0.044	16.39	8M98W7D
LTE Band 12	10 MHz	QPSK	665.5 - 695.5	0.054	17.32	4M53G7D
		16QAM	665.5 - 695.5	0.045	16.50	4M54W7D
	5 MHz	QPSK	704.0 - 711.0	0.058	17.62	8M99G7D
		16QAM	704.0 - 711.0	0.047	16.73	8M99W7D
	3 MHz	QPSK	701.5 - 713.5	0.057	17.58	4M53G7D
		16QAM	701.5 - 713.5	0.047	16.75	4M53W7D
	1.4 MHz	QPSK	700.5 - 714.5	0.056	17.51	2M71G7D
		16QAM	700.5 - 714.5	0.050	17.03	2M72W7D
	1.4 MHz	QPSK	699.7 - 715.3	0.057	17.53	1M11G7D
		16QAM	699.7 - 715.3	0.049	16.94	1M11W7D
LTE Band 13	10 MHz	QPSK	782.0	0.092	19.65	9M05G7D
		16QAM	782.0	0.079	18.95	9M03W7D
	5 MHz	QPSK	779.5 - 784.5	0.093	19.67	4M54G7D
		16QAM	779.5 - 784.5	0.080	19.05	4M52W7D
NR Band n71	35 MHz	$\pi/2$ BPSK	680.5	0.162	22.10	32M4G7D
		QPSK	680.5	0.161	22.06	33M8G7D
		16QAM	680.5	0.133	21.25	33M8W7D
	30 MHz	$\pi/2$ BPSK	678.0 - 683.0	0.171	22.34	28M8G7D
		QPSK	678.0 - 683.0	0.171	22.33	28M8G7D
		16QAM	678.0 - 683.0	0.129	21.10	28M9W7D
	25 MHz	$\pi/2$ BPSK	675.5 - 685.5	0.169	22.27	23M0G7D
		QPSK	675.5 - 685.5	0.175	22.42	23M9G7D
		16QAM	675.5 - 685.5	0.124	20.95	23M9W7D
	20 MHz	$\pi/2$ BPSK	673.0 - 688.0	0.085	19.28	17M9G7D
		QPSK	673.0 - 688.0	0.080	19.04	19M0G7D
		16QAM	673.0 - 688.0	0.062	17.91	19M0W7D
	15 MHz	$\pi/2$ BPSK	670.5 - 690.5	0.086	19.35	13M5G7D
		QPSK	670.5 - 690.5	0.091	19.61	14M2G7D
		16QAM	670.5 - 690.5	0.070	18.42	14M2W7D
	10 MHz	$\pi/2$ BPSK	668.0 - 693.0	0.088	19.44	8M97G7D
		QPSK	668.0 - 693.0	0.083	19.20	9M35G7D
		16QAM	668.0 - 693.0	0.066	18.20	9M34W7D
	5 MHz	$\pi/2$ BPSK	665.5 - 695.5	0.086	19.35	4M54G7D
		QPSK	665.5 - 695.5	0.089	19.51	4M52G7D
		16QAM	665.5 - 695.5	0.073	18.64	4M59W7D
NR Band n12	15 MHz	$\pi/2$ BPSK	706.5 - 708.5	0.100	19.99	13M5G7D
		QPSK	706.5 - 708.5	0.099	19.96	14M2G7D
		16QAM	706.5 - 708.5	0.078	18.89	14M2W7D
	10 MHz	$\pi/2$ BPSK	704.0 - 711.0	0.100	19.99	8M98G7D
		QPSK	704.0 - 711.0	0.105	20.20	9M33G7D
		16QAM	704.0 - 711.0	0.078	18.92	9M34W7D
	5 MHz	$\pi/2$ BPSK	701.5 - 713.5	0.101	20.04	4M52G7D
		QPSK	701.5 - 713.5	0.103	20.12	4M53G7D
		16QAM	701.5 - 713.5	0.079	18.95	4M53W7D

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Antenna-2						
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
LTE Band 66/4	20 MHz	QPSK	1720.0 - 1770.0	0.104	20.18	18M0G7D
		16QAM	1720.0 - 1770.0	0.091	19.58	18M1W7D
	15 MHz	QPSK	1717.5 - 1772.5	0.116	20.65	13M5G7D
		16QAM	1717.5 - 1772.5	0.103	20.14	13M5W7D
	10 MHz	QPSK	1715.0 - 1775.0	0.115	20.62	9M05G7D
		16QAM	1715.0 - 1775.0	0.098	19.91	9M04W7D
	5 MHz	QPSK	1712.5 - 1777.5	0.115	20.62	4M55G7D
		16QAM	1712.5 - 1777.5	0.099	19.95	4M55W7D
	3 MHz	QPSK	1711.5 - 1778.5	0.117	20.70	2M73G7D
		16QAM	1711.5 - 1778.5	0.098	19.93	2M73W7D
	1.4 MHz	QPSK	1710.7 - 1779.3	0.115	20.61	1M11G7D
		16QAM	1710.7 - 1779.3	0.095	19.78	1M11W7D
		64QAM	1710.7 - 1779.3	0.001	0.00	0M00W7D
		256QAM	1710.7 - 1779.3	0.001	0.00	0M00W7D
NR Band n70	15 MHz	$\pi/2$ BPSK	1702.5	0.107	20.29	13M5G7D
		QPSK	1702.5	0.104	20.17	14M2G7D
		16QAM	1702.5	0.086	19.33	14M2W7D
	10 MHz	$\pi/2$ BPSK	1700.0 - 1705.0	0.111	20.45	8M99G7D
		QPSK	1700.0 - 1705.0	0.112	20.50	9M36G7D
		16QAM	1700.0 - 1705.0	0.088	19.43	9M37W7D
	5 MHz	$\pi/2$ BPSK	1697.5 - 1707.5	0.114	20.58	4M52G7D
		QPSK	1697.5 - 1707.5	0.107	20.30	4M54G7D
NR Band n66	45 MHz	$\pi/2$ BPSK	1732.5 - 1757.5	0.074	18.71	43M0G7D
		QPSK	1732.5 - 1757.5	0.075	18.75	43M4G7D
		16QAM	1732.5 - 1757.5	0.058	17.62	43M3W7D
	40 MHz	$\pi/2$ BPSK	1730.0 - 1760.0	0.076	18.78	38M5G7D
		QPSK	1730.0 - 1760.0	0.076	18.78	38M7G7D
		16QAM	1730.0 - 1760.0	0.058	17.66	38M6W7D
	35 MHz	$\pi/2$ BPSK	1727.5 - 1762.5	0.077	18.84	32M3G7D
		QPSK	1727.5 - 1762.5	0.075	18.74	33M7G7D
		16QAM	1727.5 - 1762.5	0.055	17.42	33M6W7D
	30MHz	$\pi/2$ BPSK	1725.0 - 1765.0	0.076	18.81	28M7G7D
		QPSK	1725.0 - 1765.0	0.075	18.76	28M7G7D
		16QAM	1725.0 - 1765.0	0.057	17.54	28M6W7D
	25 MHz	$\pi/2$ BPSK	1722.5 - 1767.5	0.076	18.78	23M1G7D
		QPSK	1722.5 - 1767.5	0.077	18.89	23M9G7D
		16QAM	1722.5 - 1767.5	0.055	17.41	23M9W7D
	20 MHz	$\pi/2$ BPSK	1720.0 - 1770.0	0.073	18.65	17M9G7D
		QPSK	1720.0 - 1770.0	0.070	18.48	19M0G7D
		16QAM	1720.0 - 1770.0	0.051	17.11	19M0W7D
	15 MHz	$\pi/2$ BPSK	1717.5 - 1772.5	0.075	18.74	13M5G7D
		QPSK	1717.5 - 1772.5	0.077	18.87	14M2G7D
		16QAM	1717.5 - 1772.5	0.053	17.25	14M2W7D
	10 MHz	$\pi/2$ BPSK	1715.0 - 1775.0	0.071	18.50	9M00G7D
		QPSK	1715.0 - 1775.0	0.069	18.38	9M37G7D
		16QAM	1715.0 - 1775.0	0.052	17.13	9M38W7D
	5 MHz	$\pi/2$ BPSK	1712.5 - 1777.5	0.073	18.65	4M52G7D
		QPSK	1712.5 - 1777.5	0.072	18.59	4M55G7D
		16QAM	1712.5 - 1777.5	0.054	17.34	4M54W7D

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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

Measurements were conducted at the Element laboratory(ies) indicated in Section 1.3 below. All measurement facilities are compliant with the test site requirements specified in ANSI C63.4-2014 and KDB 414788 D01 v01r01.

1.3 Test Facility / Accreditations

Measurements were performed at Element lab located in Columbia, MD 21046, U.S.A. (“MD”)

- 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 Agreements (MRAs).

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LSMS938U**. 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.: 0286M, 0334M, 0099M, 0084M, 0081M

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/be WLAN, 802.11a/n/ac/ax/be 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 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.

Band	Ant1	Ant2
WCDMA	Ant A	-
LTE Band 66/4	Ant A	Ant F
LTE Band B71, B12, B13	Ant A	Ant E
NR Band n70, n66	Ant A	Ant F
NR Band n71, n12	Ant A	Ant E

Table 2-1. Antenna Naming Convention

2.4 Software and Firmware

Testing was performed on device(s) using software/firmware version S938USQUOAXI5 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:

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

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 $P_g [\text{dBm}] - \text{cable loss} [\text{dB}]$.

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

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

And

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

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

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

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4.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4-2014. All measurement uncertainty values are shown with a coverage factor of $k = 2$ to indicate a 95% level of confidence. The measurement uncertainty shown below meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

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

Table 4-1. Measurement Uncertainty Budget – MD

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5.0 TEST EQUIPMENT CALIBRATION DATA

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

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	AP2	EMC Cable and Switch System	4/2/2024	Annual	4/2/2025	AP2
-	AP1	EMC Cable and Switch System	4/2/2024	Annual	4/2/2025	AP1
-	ETS	EMC Cable and Switch System	4/2/2024	Annual	4/2/2025	ETS
-	LTx1	Licensed Transmitter Cable Set	4/2/2024	Annual	4/2/2025	LTx1
-	LTx4	Licensed Transmitter Cable Set	4/2/2024	Annual	4/2/2025	LTx4
-	LTx5	Licensed Transmitter Cable Set	4/2/2024	Annual	4/2/2025	LTx5
Agilent	N9030A	50GHz PXA Signal Analyzer	4/23/2024	Annual	4/23/2025	US51350301
Anritsu	MT8821C	Radio Communication Analyzer	N/A			6201381794
Emco	3116	Horn Antenna (18 - 40GHz)	7/5/2023	Triennial	7/5/2025	9203-2178
Espec	ESX-2CA	Environmental Chamber	9/26/2024	Annual	9/26/2026	17620
ETS Lindgren	3164-08	Quad Ridge Horn Antenna	3/29/2023	Biennial	3/29/2025	128337
ETS Lindgren	3164-10	Quad Ridge Horn 400MHz - 10000MHz	7/13/2023	Biennial	7/13/2025	00166283
Keysight Technologies	N9020A	MXA Signal Analyzer	4/11/2024	Annual	4/11/2025	MY54500644
Keysight Technologies	N9030A	PXA Signal Analyzer	2/29/2024	Annual	3/1/2025	MY55410501
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator	N/A			11208010032
Mini-Circuits	SSG-4000HP	Synthesized Signal Generator	N/A			11403100002
Rohde & Schwarz	CMW500	Radio Communication Tester	N/A			112347
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	10/16/2024	Annual	10/16/2025	100342
Rohde & Schwarz	FSW26	2Hz-26.5GHz Signal and Spectrum Analyzer	3/8/2024	Annual	3/8/2025	103187
Sunol	JB6	LB6 Antenna	3/2/2023	Biennial	3/2/2025	A082816

Table 5-1. Test Equipment Calibration Table

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 EMISSION DESIGNATORS

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

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7.0 TEST RESULTS

7.1 Summary

Company Name: Samsung Electronics Co., Ltd.
 FCC ID: A3LSMS938U
 FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)
 Mode(s): WCDMA/LTE/NR

Test Condition	Test Description	FCC Part Section(s)	Test Limit	Test Result	Reference
CONDUCTED	Transmitter Conducted Output Power*	2.1046(a), 2.1046(c)	N/A	PASS	Section 7.2
	Occupied Bandwidth	2.1049(h)	N/A	PASS	Section 7.3
	Conducted Band Edge / Spurious Emissions (LTE Band 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 Band Edge / Spurious Emissions (LTE Band 12, 17, 71; NR Band n12, n71)	2.1051, 27.53(g)	$\geq 43 + 10 \log (P[\text{Watts}])$ dB of attenuation below transmitter power	PASS	Sections 7.4, 7.5
	Conducted Band Edge / Spurious Emissions (WCDMA AWS; LTE Band 4, 66; NR Band n70, n66)	2.1051, 27.53(h)	$\geq 43 + 10 \log (P[\text{Watts}])$ 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
RADIATED	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 n12, n71)	27.50(c)(10)	≤ 3 Watts max. ERP	PASS	Section 7.7
	Equivalent Isotropic Radiated Power (WCDMA AWS; LTE Band 4, 66; NR Band n70, n66)	27.50(d)(4)	≤ 1 Watt max. ERP	PASS	Section 7.7
	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 n12, n71)	2.1053, 27.53(g)	$\geq 43 + 10 \log (P[\text{Watts}])$ 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)	$\geq 43 + 10 \log (P[\text{Watts}])$ 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

Notes:

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

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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.

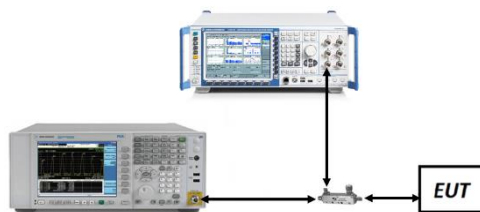


Figure 7-1. Test Instrument & Measurement Setup

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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Bandwidth	Modulation	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
20 MHz	QPSK	1720.0	1 / 0	24.13
		1745.0	1 / 50	24.18
		1770.0	1 / 99	24.04
	16-QAM	1720.0	1 / 0	23.38
15 MHz	QPSK	1717.5	1 / 50	24.61
		1745.0	1 / 50	24.79
		1772.5	1 / 50	23.91
	16-QAM	1717.5	1 / 50	23.95
10 MHz	QPSK	1715.0	1 / 37	24.57
		1745.0	1 / 37	24.70
		1775.0	1 / 0	23.85
	16-QAM	1715.0	1 / 37	23.71
5 MHz	QPSK	1712.5	1 / 25	24.57
		1745.0	1 / 49	24.66
		1777.5	1 / 0	23.93
	16-QAM	1712.5	1 / 0	23.75
3 MHz	QPSK	1711.5	1 / 24	24.65
		1745.0	1 / 12	24.70
		1778.5	1 / 0	23.85
	16-QAM	1711.5	1 / 0	23.74
1.4 MHz	QPSK	1710.7	1 / 7	24.56
		1745.0	1 / 7	24.58
		1779.3	1 / 7	23.73
	16-QAM	1710.7	1 / 0	23.59

Table 7-2. Max Conducted Power Test Results - LTE 66/4 - Ant2

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Bandwidth	Modulation	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
45 MHz	$\pi/2$ BPSK	1732.5	1 / 1	22.92
		1745.0	1 / 1	23.04
		1757.5	1 / 1	22.96
	QPSK	1732.5	1 / 1	22.93
		1745.0	1 / 1	23.09
		1757.5	1 / 1	22.88
	16-QAM	1745.0	1 / 1	22.15
40 MHz	$\pi/2$ BPSK	1730.0	1 / 108	23.18
		1745.0	1 / 1	23.06
		1760.0	1 / 1	23.23
	QPSK	1730.0	1 / 108	23.26
		1745.0	1 / 1	23.11
		1760.0	1 / 1	23.17
	16-QAM	1745.0	1 / 1	22.19
35 MHz	$\pi/2$ BPSK	1727.5	1 / 1	23.14
		1745.0	1 / 1	23.17
		1762.5	1 / 1	23.21
	QPSK	1727.5	1 / 1	23.07
		1745.0	1 / 1	23.08
		1762.5	1 / 1	23.15
	16-QAM	1745.0	1 / 1	21.95
30 MHz	$\pi/2$ BPSK	1725.0	1 / 80	23.08
		1745.0	1 / 80	23.14
		1765.0	1 / 80	23.07
	QPSK	1725.0	1 / 80	22.91
		1745.0	1 / 80	23.09
		1765.0	1 / 80	23.13
	16-QAM	1745.0	1 / 80	22.08
25 MHz	$\pi/2$ BPSK	1722.5	1 / 66	23.18
		1745.0	1 / 1	23.07
		1767.5	1 / 1	23.04
	QPSK	1722.5	1 / 66	23.05
		1745.0	1 / 1	23.22
		1767.5	1 / 1	23.15
	16-QAM	1722.5	1 / 66	22.07
20 MHz	$\pi/2$ BPSK	1720.0	1 / 1	22.97
		1745.0	1 / 1	22.98
		1770.0	1 / 53	23.02
	QPSK	1720.0	1 / 1	22.78
		1745.0	1 / 1	22.82
		1770.0	1 / 53	22.72
	16-QAM	1770.0	1 / 53	21.97
15 MHz	$\pi/2$ BPSK	1717.5	1 / 1	23.11
		1745.0	1 / 1	23.07
		1772.5	1 / 1	23.05
	QPSK	1717.5	1 / 1	22.92
		1745.0	1 / 1	23.21
		1772.5	1 / 1	22.95
	16-QAM	1772.5	1 / 1	22.11
10 MHz	$\pi/2$ BPSK	1715.0	1 / 50	22.90
		1745.0	1 / 50	22.83
		1775.0	1 / 1	22.93
	QPSK	1715.0	1 / 50	22.96
		1745.0	1 / 50	22.66
		1775.0	1 / 1	22.88
	16-QAM	1715.0	1 / 50	21.79
5 MHz	$\pi/2$ BPSK	1712.5	1 / 12	22.92
		1745.0	1 / 12	22.99
		1777.5	1 / 12	22.94
	QPSK	1712.5	1 / 12	22.91
		1745.0	1 / 12	22.93
		1777.5	1 / 12	23.00
	16-QAM	1712.5	1 / 12	22.00

Table 7-3. Max Conducted Power Test Results - NR n66 - Ant2

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Bandwidth	Modulation	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
15 MHz	$\pi/2$ BPSK	1702.5	1 / 77	23.82
	QPSK	1702.5	1 / 77	23.84
	16-QAM	1702.5	1 / 77	22.53
10 MHz	$\pi/2$ BPSK	1700.0	1 / 50	23.80
		1702.5	1 / 50	23.98
		1705.0	1 / 50	23.97
	QPSK	1700.0	1 / 50	23.82
		1702.5	1 / 50	23.77
		1705.0	1 / 50	24.17
	16-QAM	1705.0	1 / 50	22.63
5 MHz	$\pi/2$ BPSK	1697.5	1 / 12	23.62
		1702.5	1 / 12	23.91
		1707.5	1 / 23	24.11
	QPSK	1697.5	1 / 12	23.59
		1702.5	1 / 12	23.70
		1707.5	1 / 23	23.98
	16-QAM	1707.5	1 / 23	22.70

Table 7-4. Max Conducted Power Test Results - NR n70 - 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 $\geq 3 \times$ RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize
8. If necessary, steps 2 – 7 were repeated after changing the RBW such that it would be within 1 – 5% of the 99% occupied bandwidth observed in Step 7

Test Setup

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

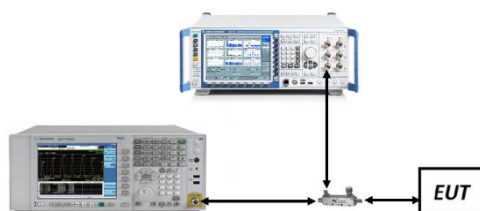


Figure 7-2. Test Instrument & Measurement Setup

Test Notes

None.

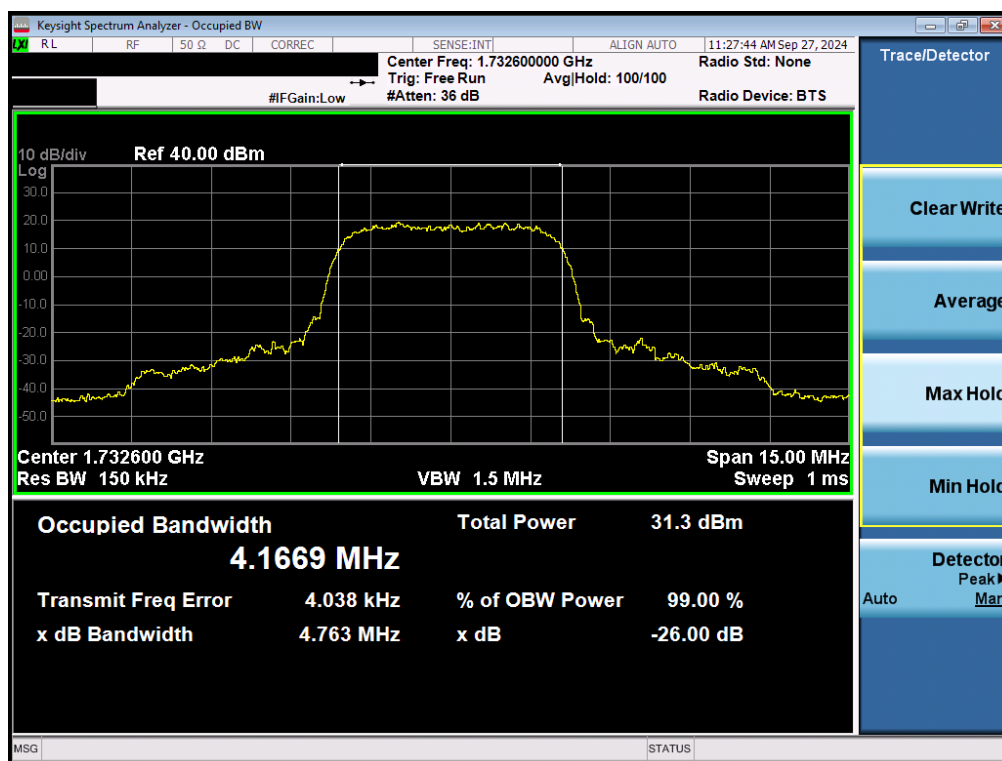
FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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Mode	Bandwidth	Modulation	OBW [MHz]
WCDMA-AWS	5MHz	GMSK	4.167
LTE-B71	20MHz	QPSK	17.99
		16QAM	17.97
	15MHz	QPSK	13.52
		16QAM	13.46
	10MHz	QPSK	9.02
		16QAM	9.02
	5MHz	QPSK	4.53
		16QAM	4.54
LTE-B12	10MHz	QPSK	8.99
		16QAM	9.01
	5MHz	QPSK	4.52
		16QAM	4.52
	3MHz	QPSK	2.72
		16QAM	2.72
	1.4MHz	QPSK	1.10
		16QAM	1.11
LTE-B13	10MHz	QPSK	9.00
		16QAM	9.01
	5MHz	QPSK	4.53
		16QAM	4.53
LTE-B66-4	20MHz	QPSK	17.99
		16QAM	18.03
	15MHz	QPSK	13.55
		16QAM	13.53
	10MHz	QPSK	9.03
		16QAM	9.05
	5MHz	QPSK	4.53
		16QAM	4.51
	3MHz	QPSK	2.72
		16QAM	2.72
	1.4MHz	QPSK	1.10
		16QAM	1.11

Table 7-5. Occupied Bandwidth Results – Ant1

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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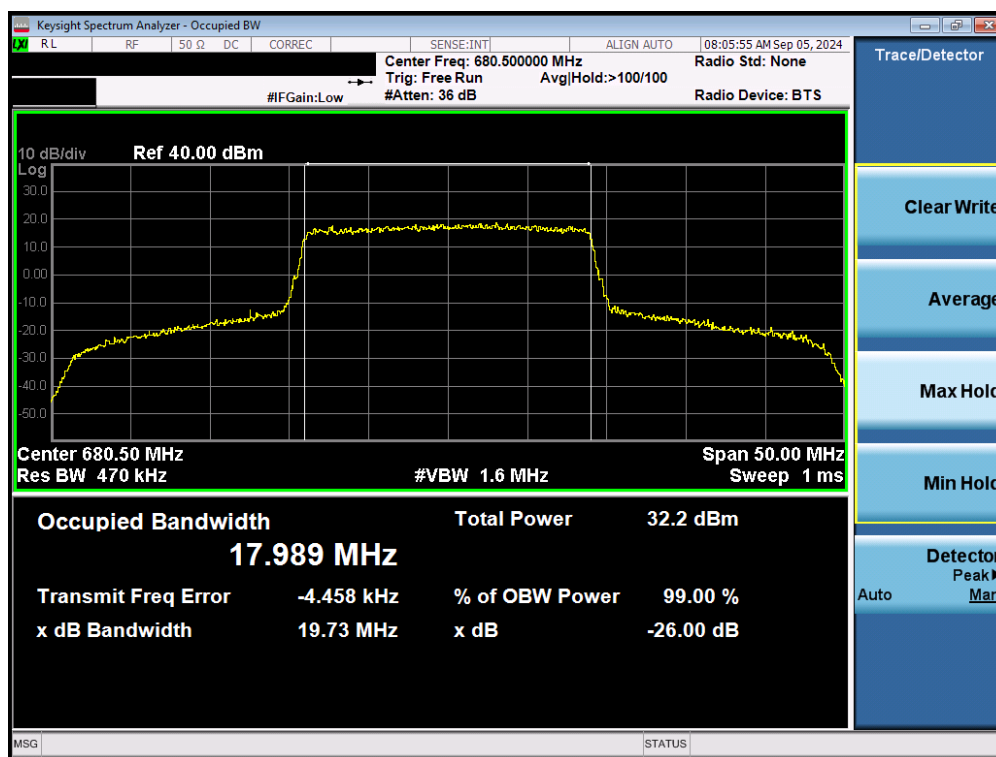
WCDMA AWS – ANT1



Plot 7-1. Occupied Bandwidth Plot (WCDMA, Ch. 1413 – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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LTE Band 71 – ANT1

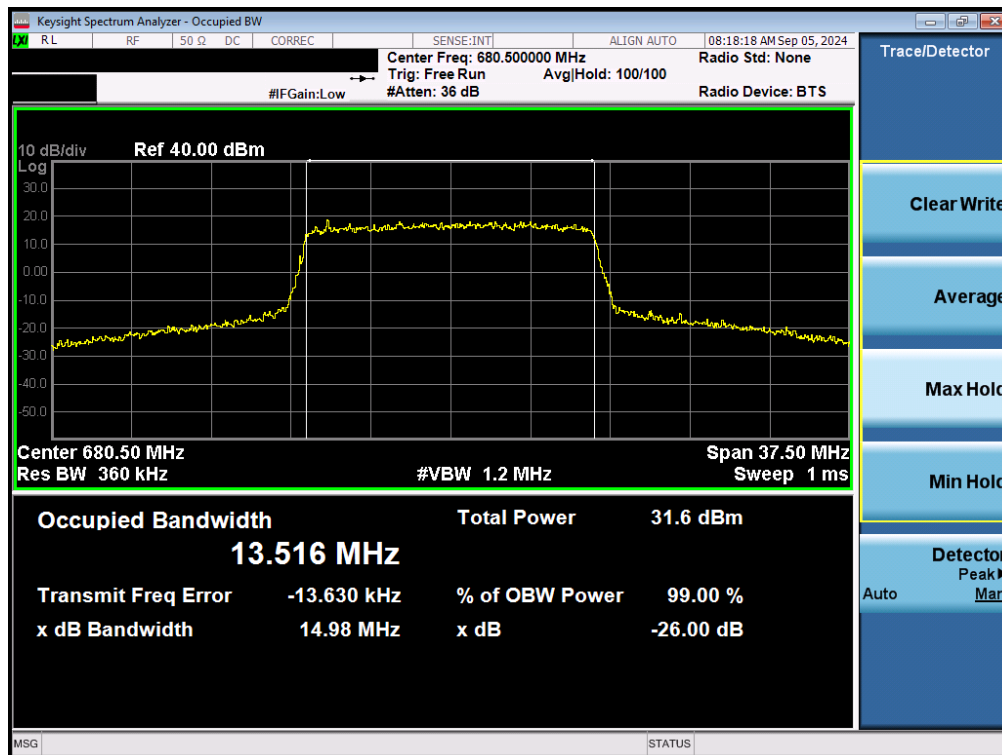


Plot 7-2. Occupied Bandwidth Plot (LTE Band 71 - 20MHz QPSK - Full RB – ANT1)

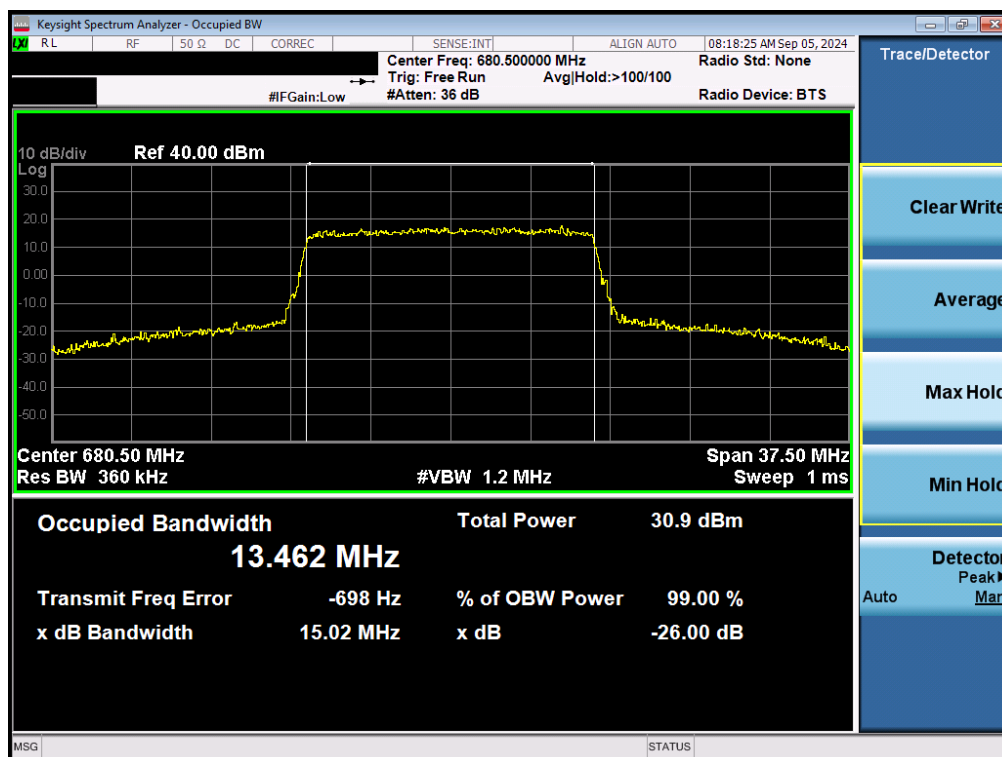


Plot 7-3. Occupied Bandwidth Plot (LTE Band 71 - 20MHz 16-QAM - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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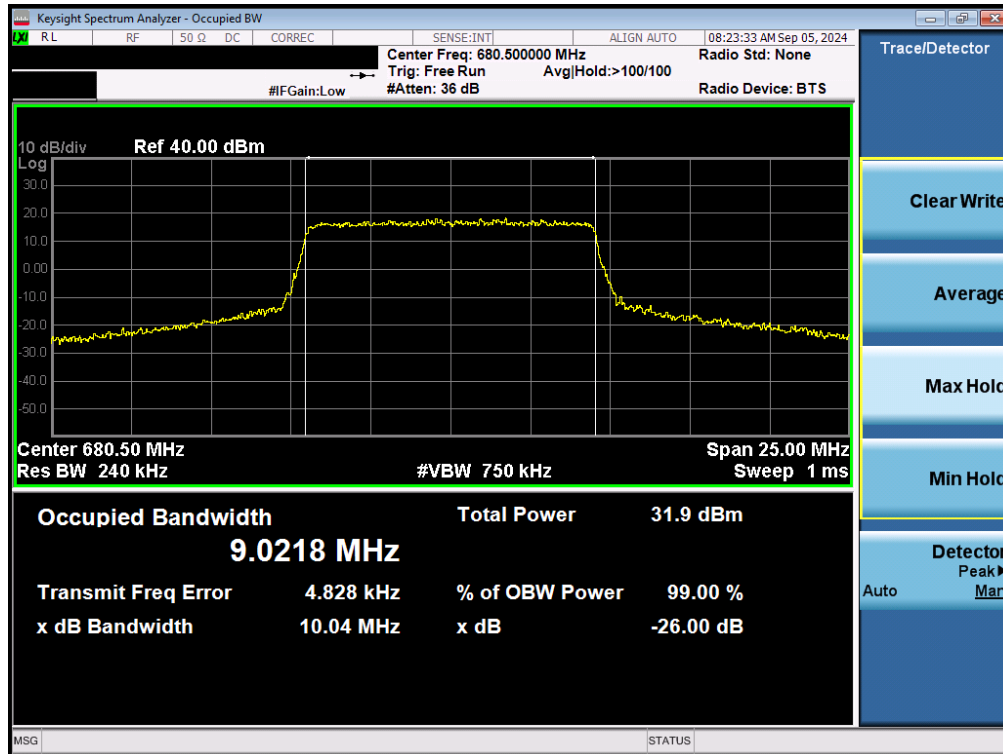


Plot 7-4. Occupied Bandwidth Plot (LTE Band 71 - 15MHz QPSK - Full RB – ANT1)



Plot 7-5. Occupied Bandwidth Plot (LTE Band 71 - 15MHz 16-QAM - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-6. Occupied Bandwidth Plot (LTE Band 71 - 10MHz QPSK - Full RB – ANT1)

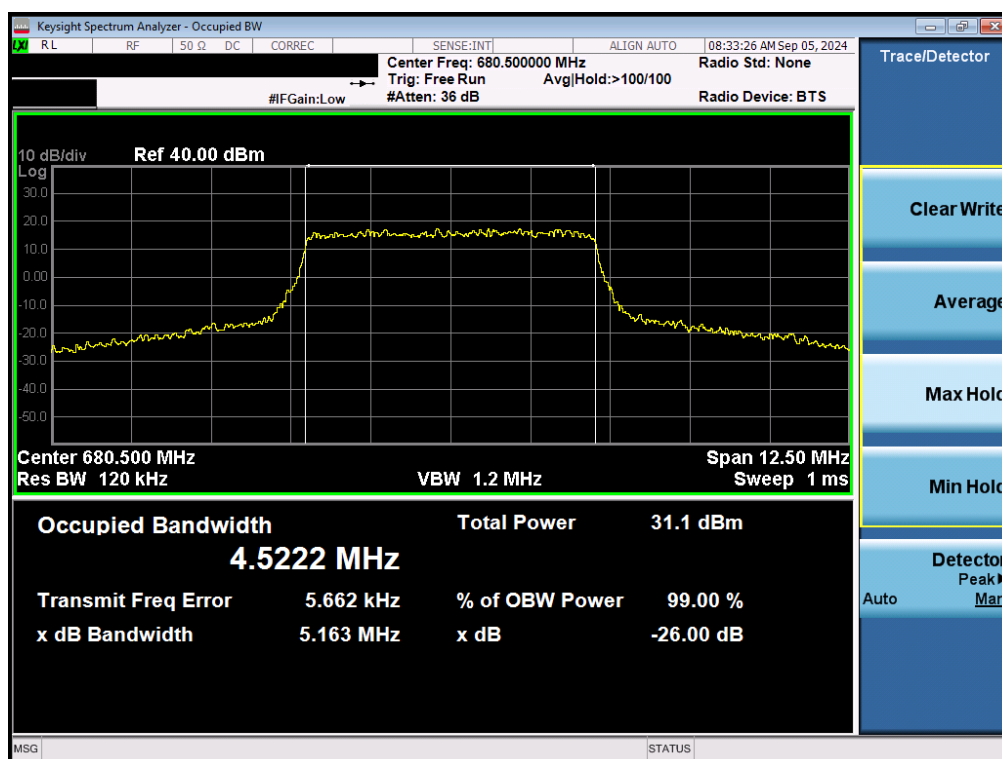


Plot 7-7. Occupied Bandwidth Plot (LTE Band 71 - 10MHz 16-QAM - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2408260067-03-R1.A3L	Test Dates: 09/06/2024 - 10/30/2024	EUT Type: Portable Handset	Page 23 of 272



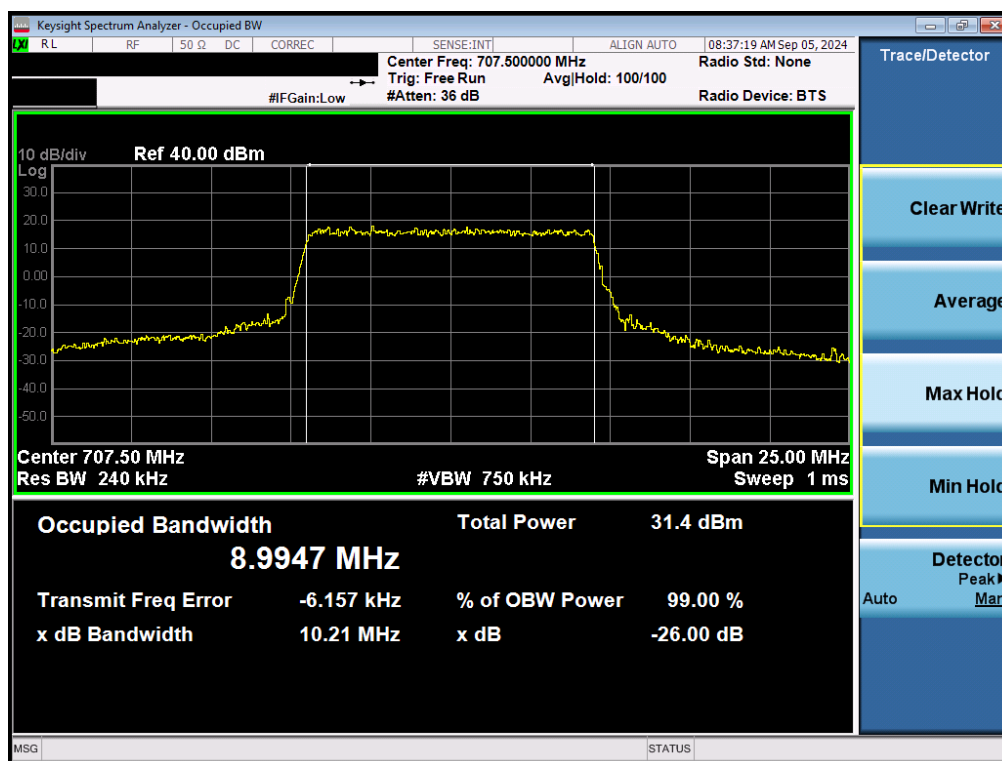
Plot 7-8. Occupied Bandwidth Plot (LTE Band 71 - 5MHz QPSK - Full RB – ANT1)



Plot 7-9. Occupied Bandwidth Plot (LTE Band 71 - 5MHz 16-QAM - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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LTE Band 12 – ANT1



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



Plot 7-11. Occupied Bandwidth Plot (LTE Band 12 - 10MHz 16-QAM - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2408260067-03-R1.A3L	Test Dates: 09/06/2024 - 10/30/2024	EUT Type: Portable Handset	Page 25 of 272

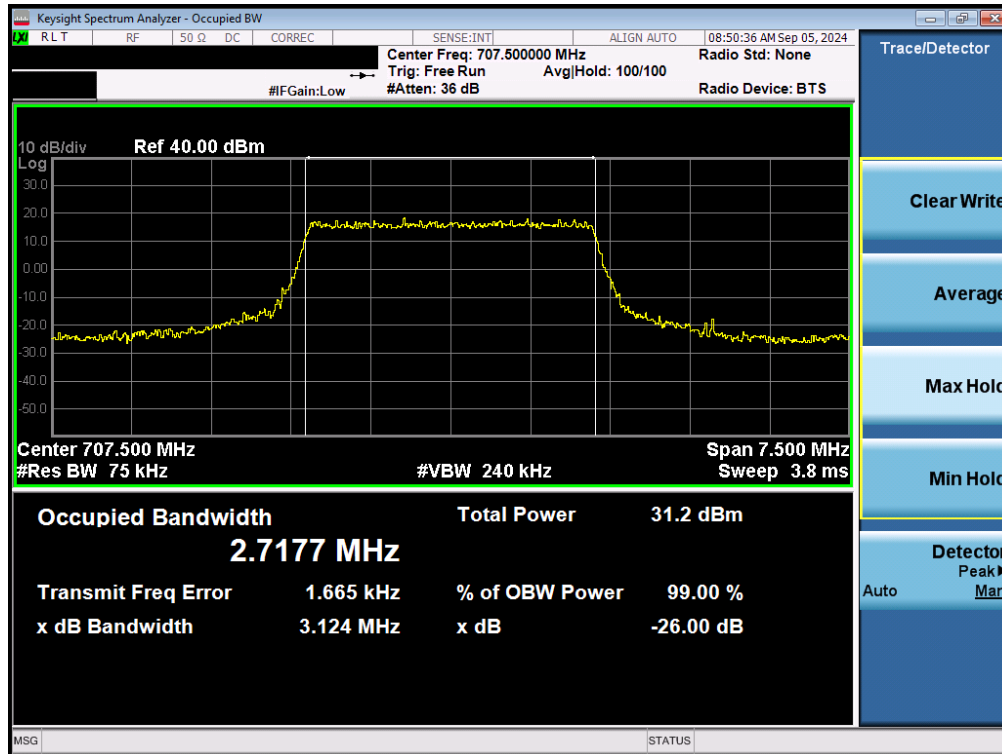


Plot 7-12. Occupied Bandwidth Plot (LTE Band 12 - 5MHz QPSK - Full RB – ANT1)



Plot 7-13. Occupied Bandwidth Plot (LTE Band 12 - 5MHz 16-QAM - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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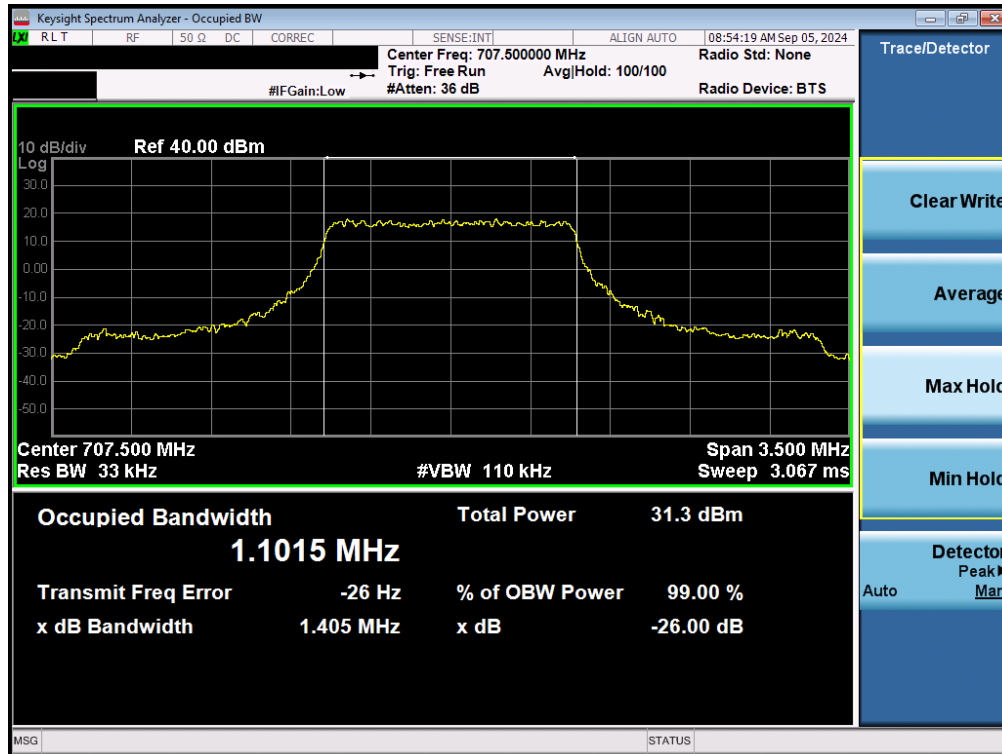


Plot 7-14. Occupied Bandwidth Plot (LTE Band 12 - 3MHz QPSK - Full RB – ANT1)

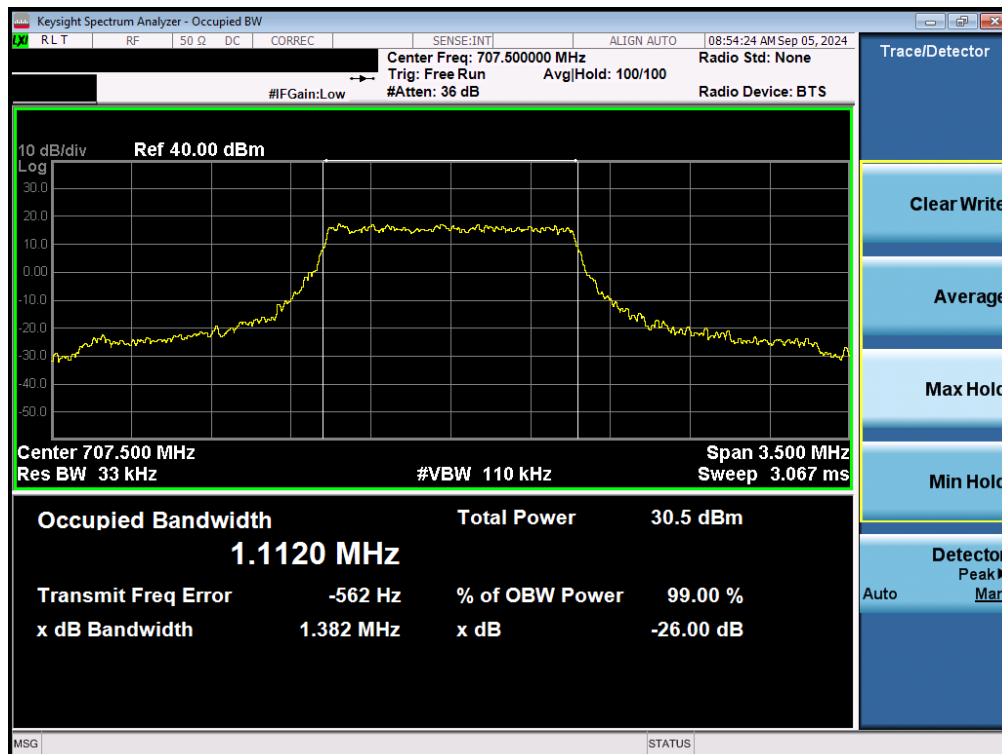


Plot 7-15. Occupied Bandwidth Plot (LTE Band 12 - 3MHz 16-QAM - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2408260067-03-R1.A3L	Test Dates: 09/06/2024 - 10/30/2024	EUT Type: Portable Handset	Page 27 of 272



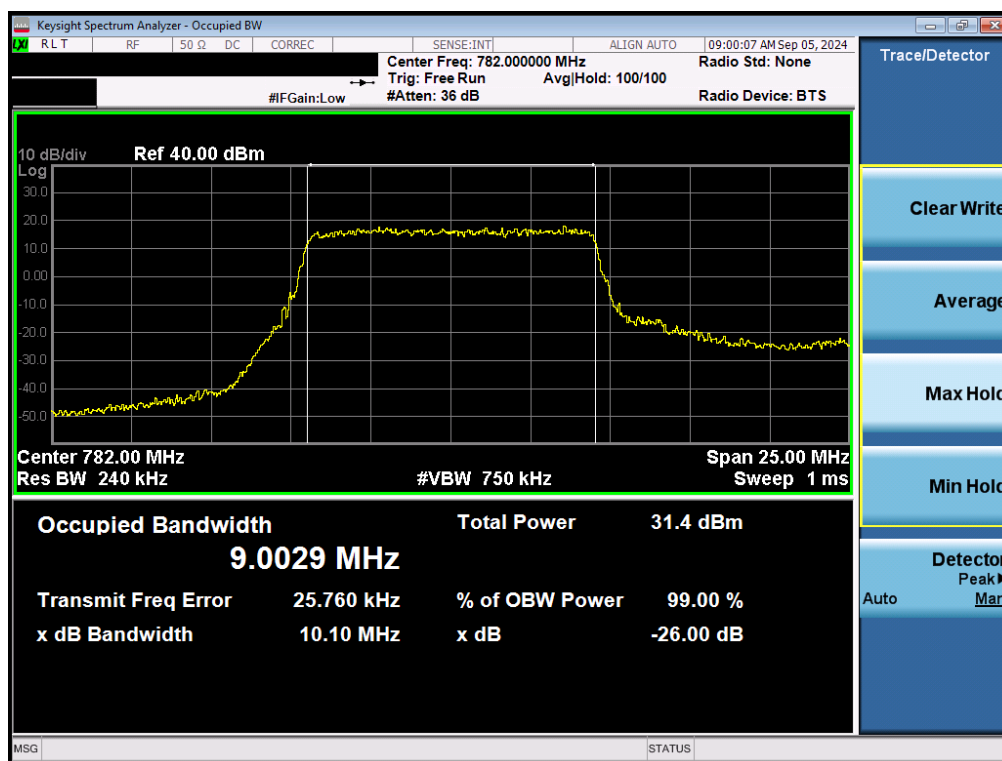
Plot 7-16. Occupied Bandwidth Plot (LTE Band 12 – 1.4MHz QPSK - Full RB – ANT1)



Plot 7-17. Occupied Bandwidth Plot (LTE Band 12 – 1.4MHz 16-QAM - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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LTE Band 13 – ANT1



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



Plot 7-19. Occupied Bandwidth Plot (LTE Band 13 - 10MHz 16-QAM - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2408260067-03-R1.A3L	Test Dates: 09/06/2024 - 10/30/2024	EUT Type: Portable Handset	Page 29 of 272



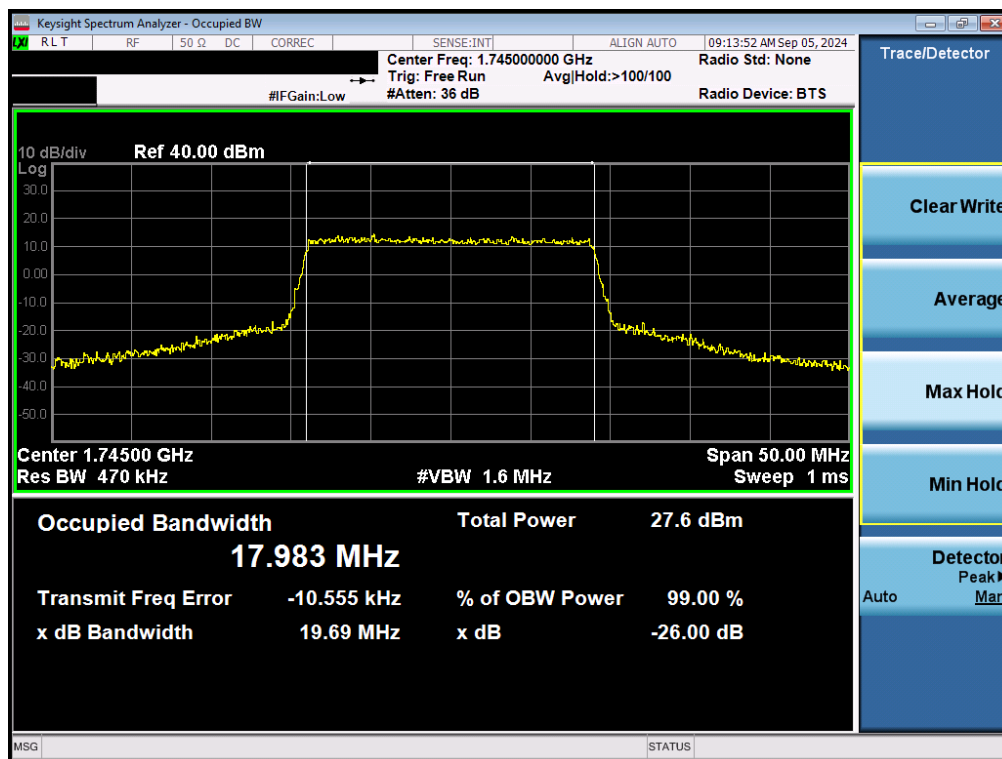
Plot 7-20. Occupied Bandwidth Plot (LTE Band 13 - 5MHz QPSK - Full RB – ANT1)



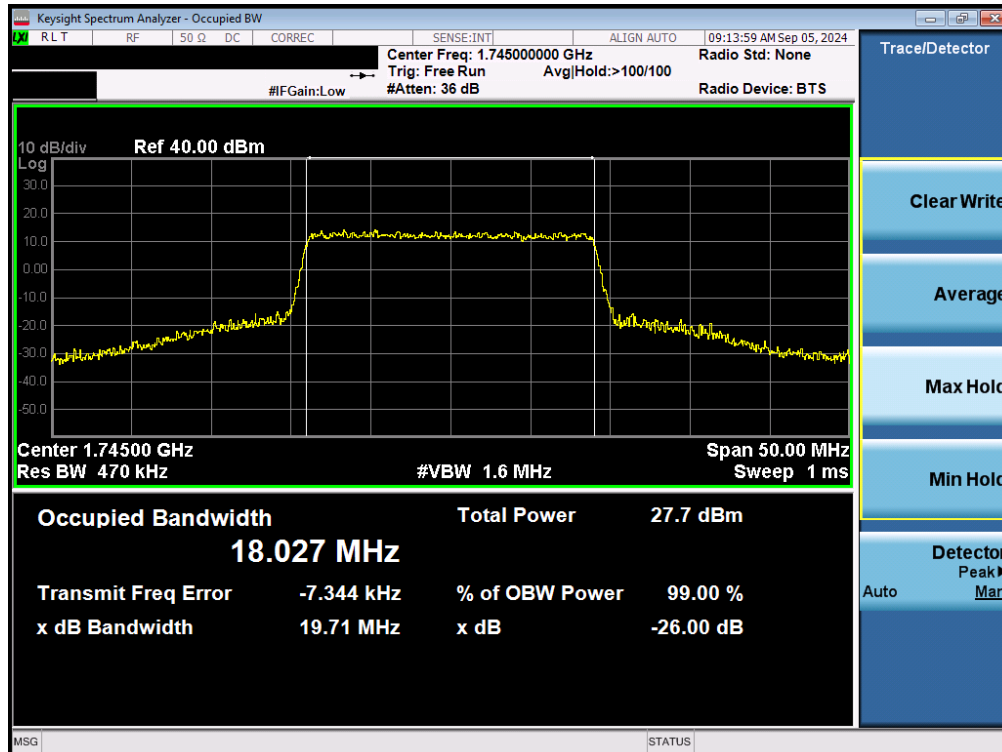
Plot 7-21. Occupied Bandwidth Plot (LTE Band 13 - 5MHz 16-QAM - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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LTE Band 66/4 - ANT1

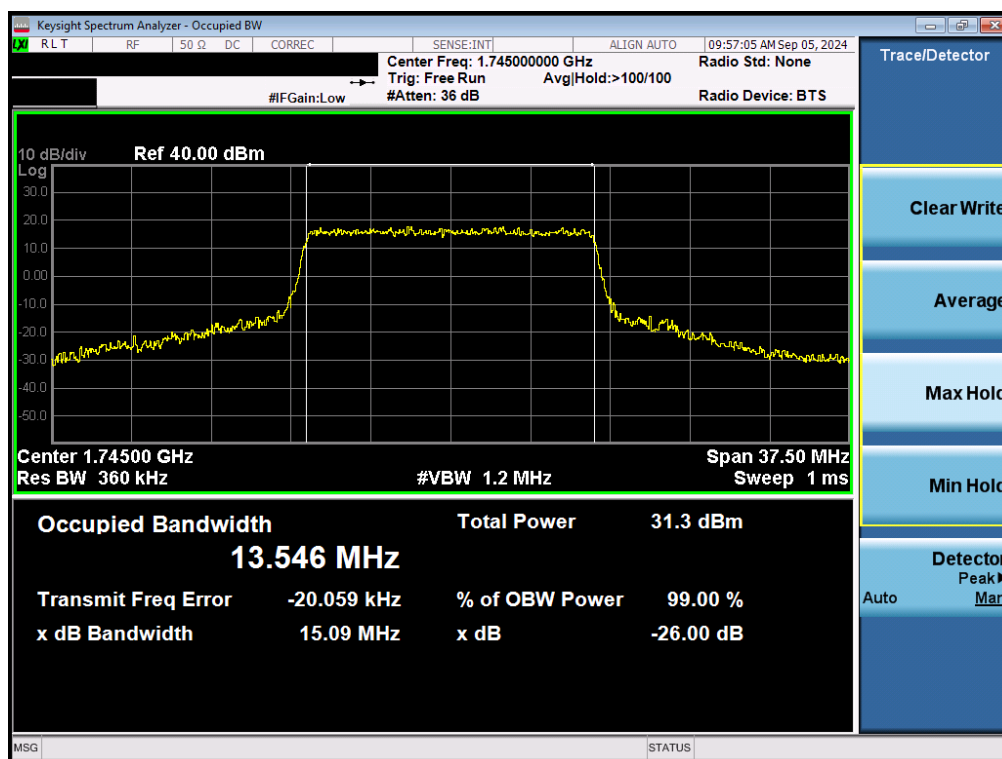


Plot 7-22. Occupied Bandwidth Plot (LTE Band 66/4 - 20MHz QPSK - Full RB - ANT1)

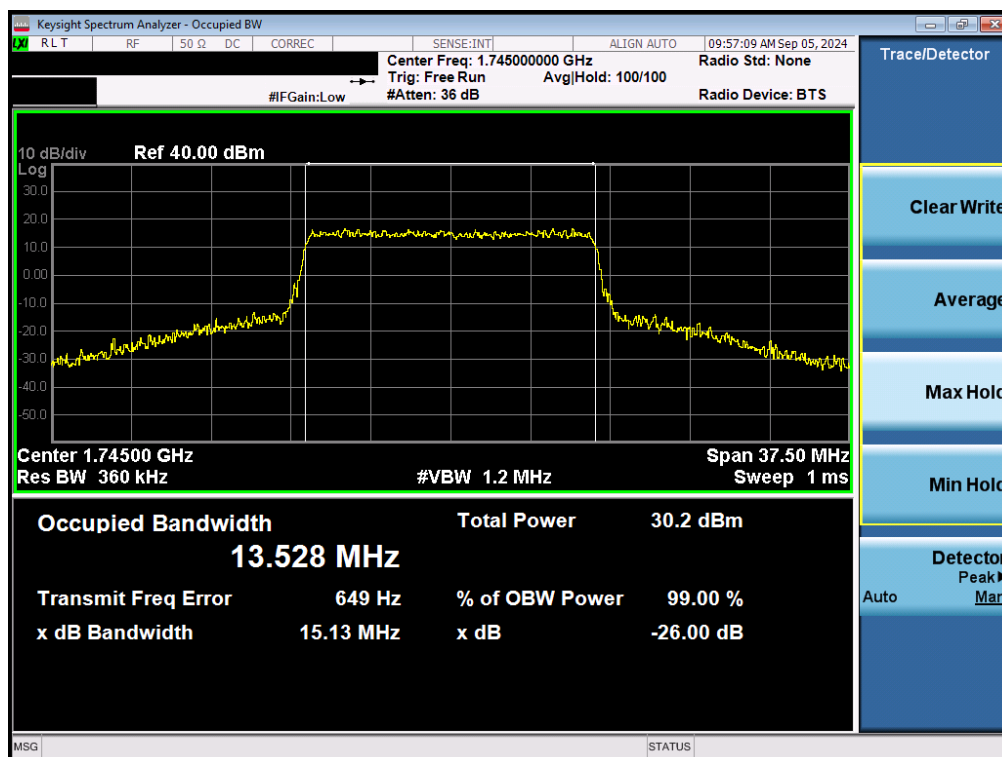


Plot 7-23. Occupied Bandwidth Plot (LTE Band 66/4 - 20MHz 16-QAM - Full RB - ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-24. Occupied Bandwidth Plot (LTE Band 66/4 - 15MHz QPSK - Full RB - ANT1)

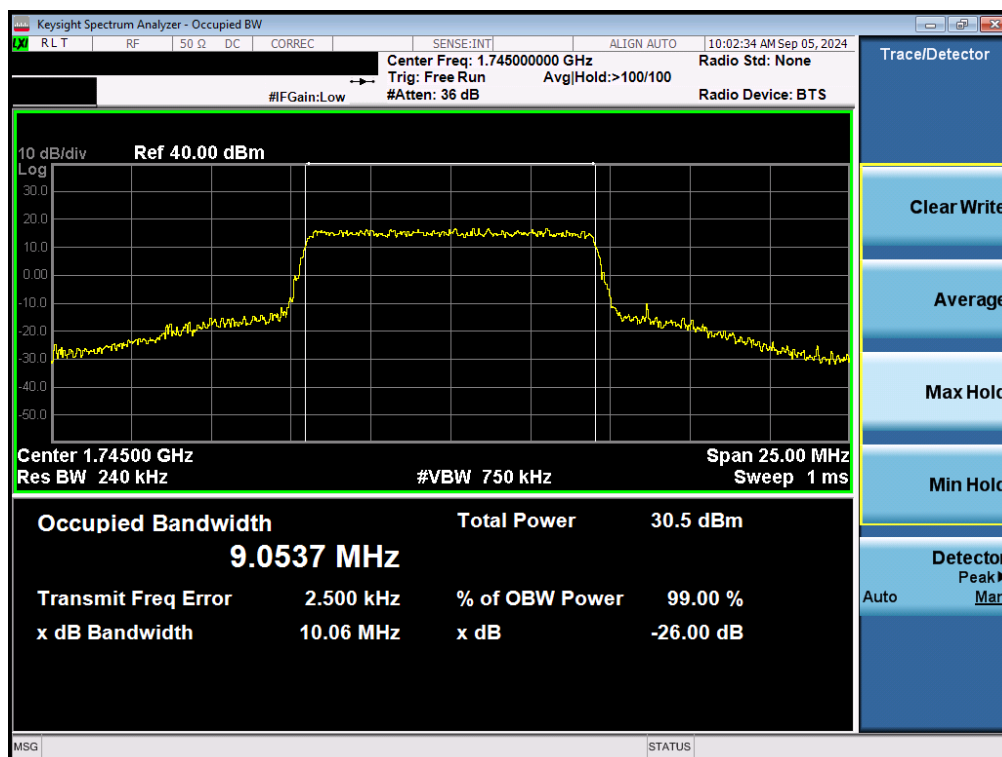


Plot 7-25. Occupied Bandwidth Plot (LTE Band 66/4 - 15MHz 16-QAM - Full RB - ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2408260067-03-R1.A3L	Test Dates: 09/06/2024 - 10/30/2024	EUT Type: Portable Handset	Page 32 of 272

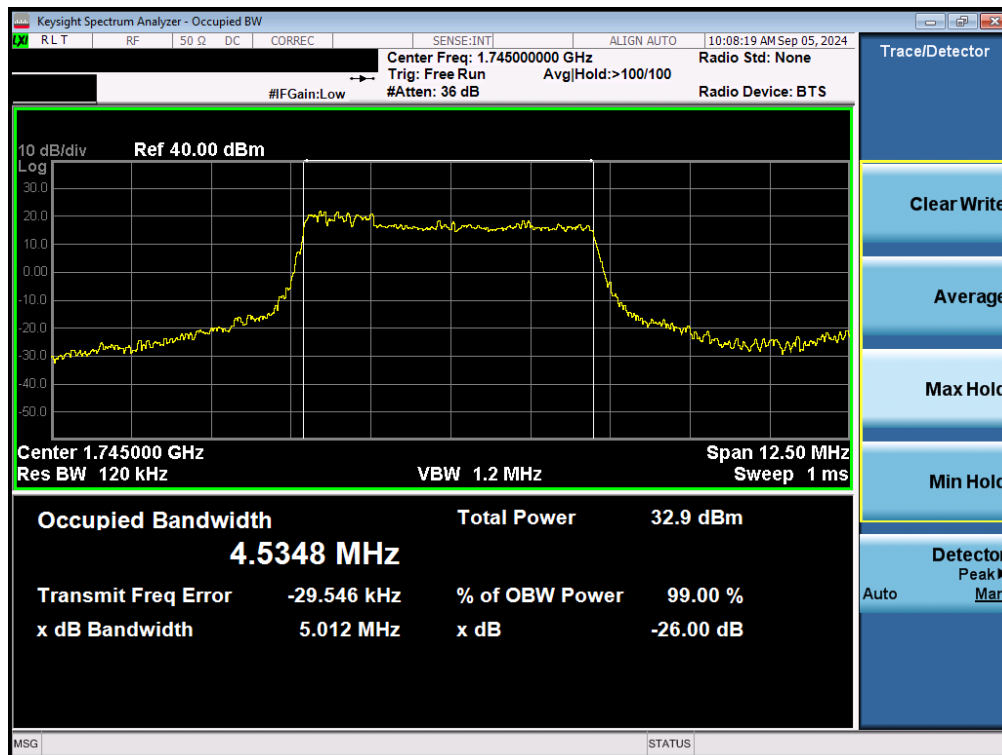


Plot 7-26. Occupied Bandwidth Plot (LTE Band 66/4 - 10MHz QPSK - Full RB - ANT1)

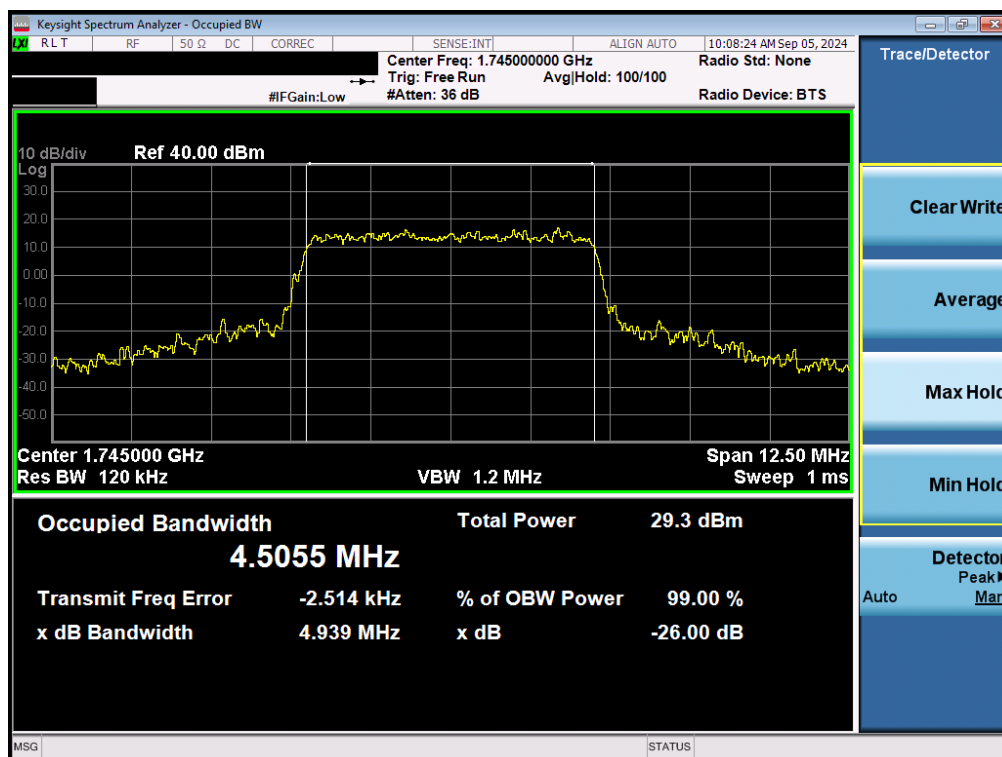


Plot 7-27. Occupied Bandwidth Plot (LTE Band 66/4 - 10MHz 16-QAM - Full RB - ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2408260067-03-R1.A3L	Test Dates: 09/06/2024 - 10/30/2024	EUT Type: Portable Handset	Page 33 of 272

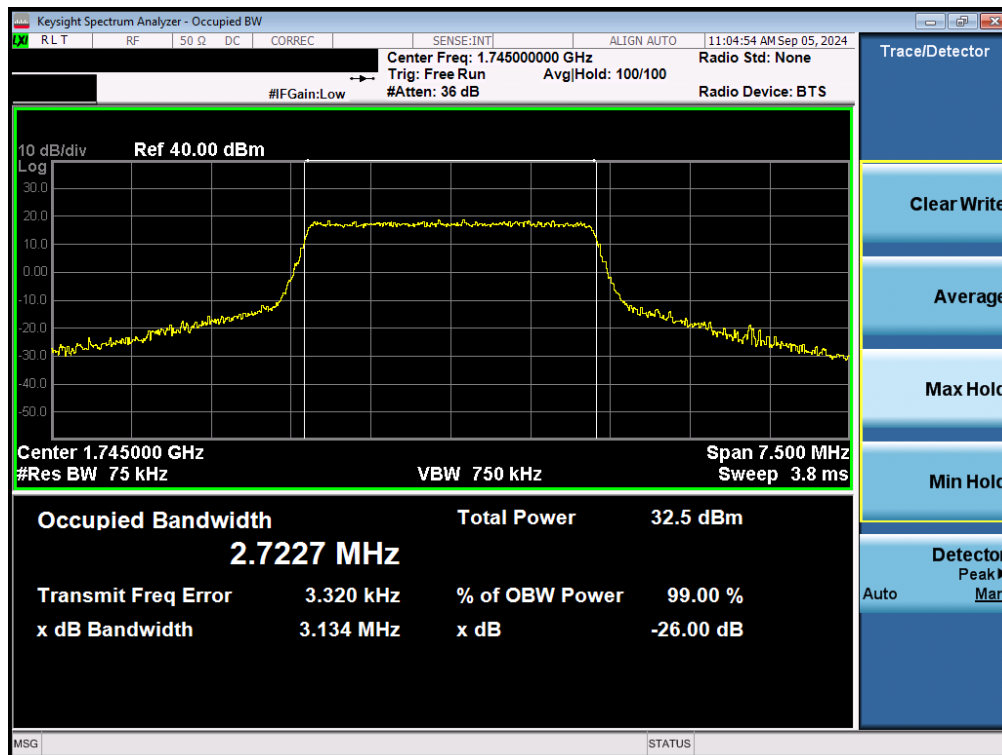


Plot 7-28. Occupied Bandwidth Plot (LTE Band 66/4 - 5MHz QPSK - Full RB - ANT1)

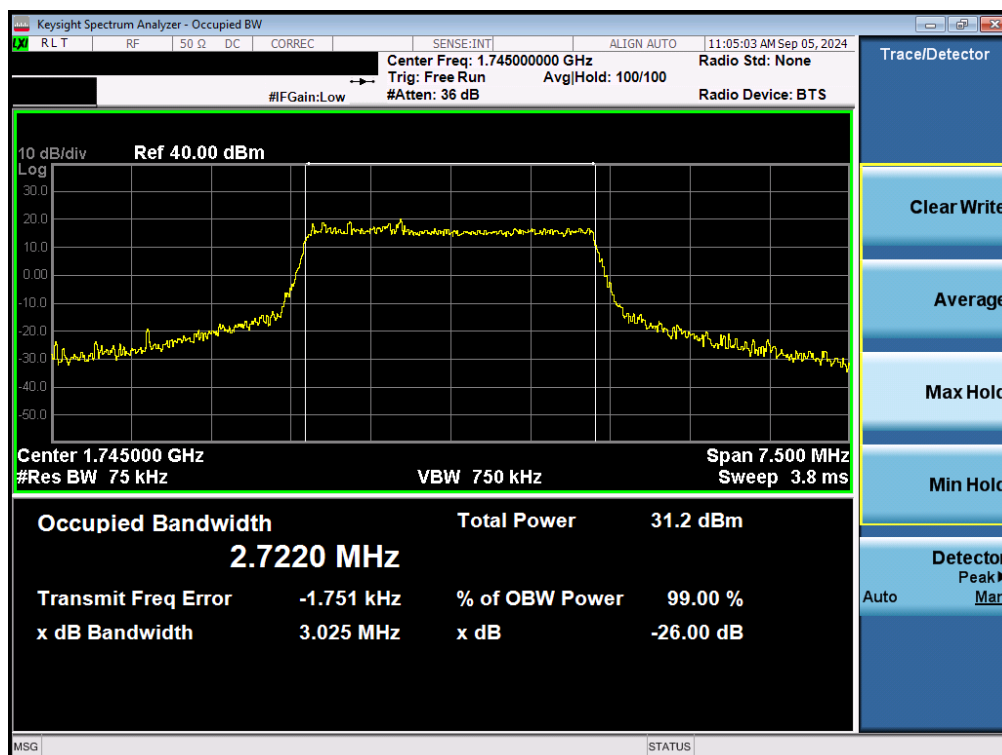


Plot 7-29. Occupied Bandwidth Plot (LTE Band 66/4 - 5MHz 16-QAM - Full RB - ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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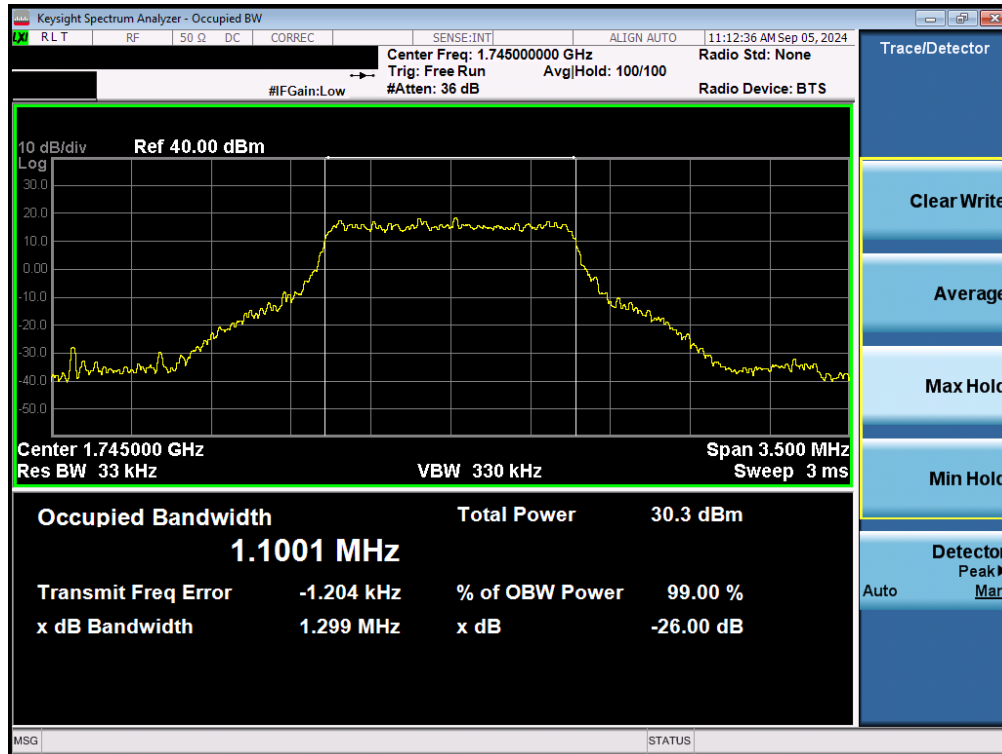


Plot 7-30. Occupied Bandwidth Plot (LTE Band 66/4 - 3MHz QPSK - Full RB - ANT1)

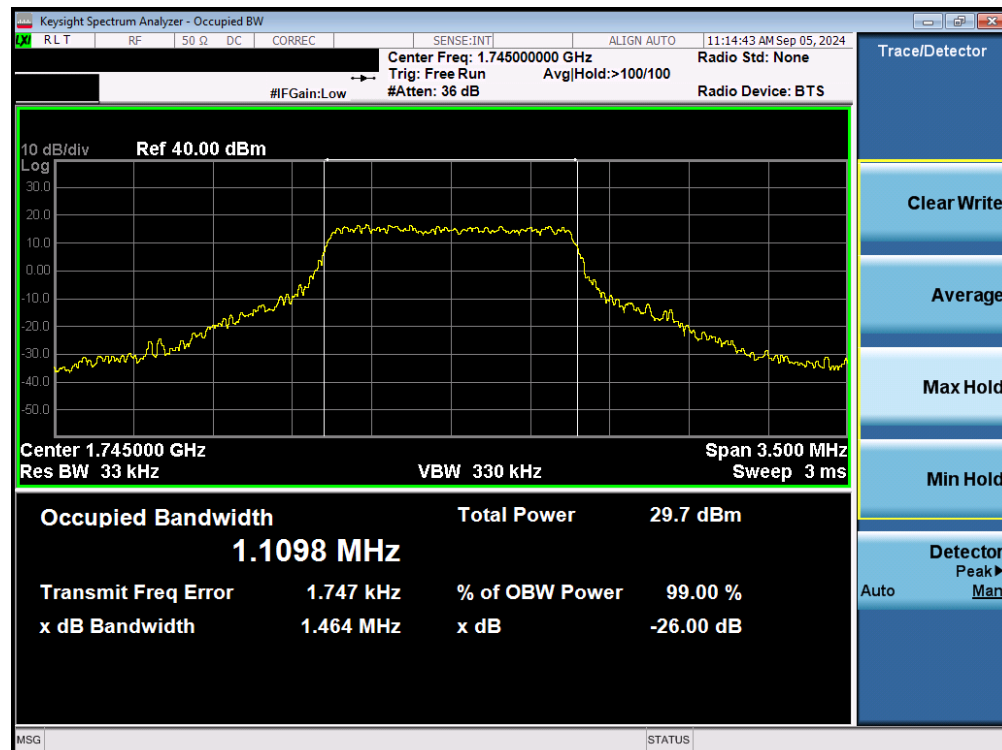


Plot 7-31. Occupied Bandwidth Plot (LTE Band 66/4 - 3MHz 16-QAM - Full RB - ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-32. Occupied Bandwidth Plot (LTE Band 66/4 - 1.4MHz QPSK - Full RB - ANT1)



Plot 7-33. Occupied Bandwidth Plot (LTE Band 66/4 - 1.4MHz 16-QAM - Full RB - ANT1)

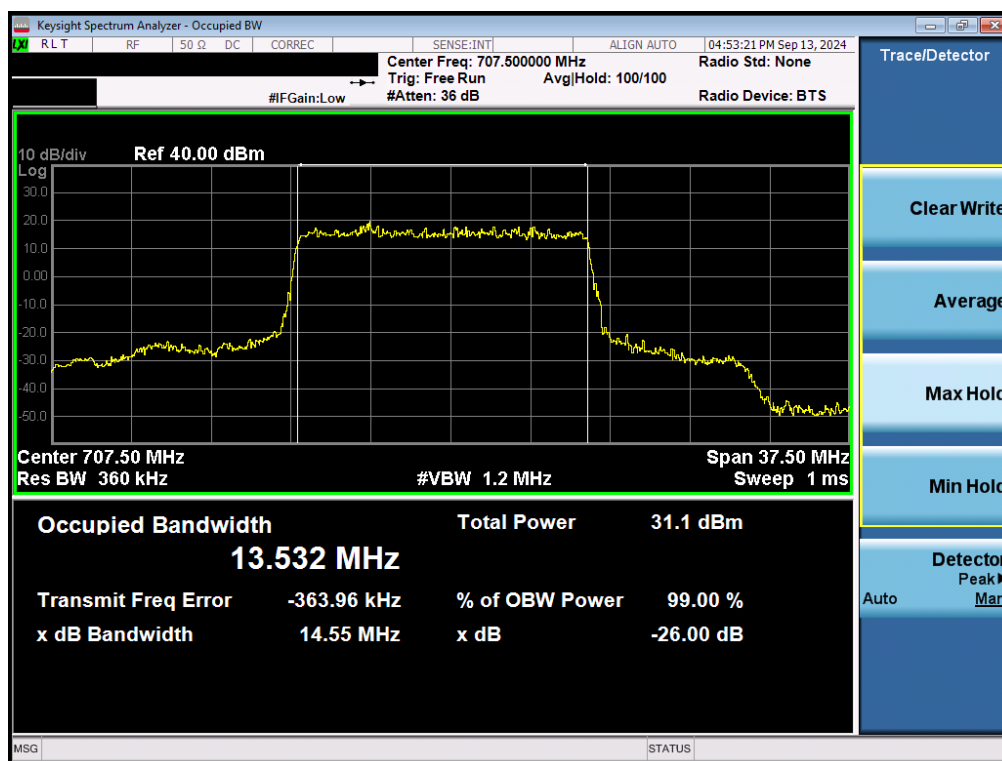
FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2408260067-03-R1.A3L	Test Dates: 09/06/2024 - 10/30/2024	EUT Type: Portable Handset	Page 36 of 272

Mode	Bandwidth	Modulation	OBW [MHz]
NR-n12	15MHz	$\pi/2$ BPSK	13.53
		QPSK	14.24
		16QAM	14.21
	10MHz	$\pi/2$ BPSK	9.00
		QPSK	9.32
		16QAM	9.35
	5MHz	$\pi/2$ BPSK	4.51
		QPSK	4.52
		16QAM	4.53
NR-n71	35MHz	$\pi/2$ BPSK	32.36
		QPSK	33.82
		16QAM	33.77
	30MHz	$\pi/2$ BPSK	28.74
		QPSK	28.76
		16QAM	28.82
	25MHz	$\pi/2$ BPSK	23.00
		QPSK	23.89
		16QAM	23.89
	20MHz	$\pi/2$ BPSK	17.93
		QPSK	18.95
		16QAM	19.04
	15MHz	$\pi/2$ BPSK	13.47
		QPSK	14.14
		16QAM	14.13
	10MHz	$\pi/2$ BPSK	8.99
		QPSK	9.34
		16QAM	9.32
	5MHz	$\pi/2$ BPSK	4.51
		QPSK	4.51
		16QAM	4.50
NR-n70	15MHz	$\pi/2$ BPSK	13.49
		QPSK	14.19
		16QAM	14.17
	10MHz	$\pi/2$ BPSK	9.01
		QPSK	9.34
		16QAM	9.34
	5MHz	$\pi/2$ BPSK	4.50
		QPSK	4.50
		16QAM	4.49
NR-n66	45MHz	$\pi/2$ BPSK	43.18
		QPSK	43.53
		16QAM	43.64
	40MHz	$\pi/2$ BPSK	38.79
		QPSK	38.78
		16QAM	38.87
	35MHz	$\pi/2$ BPSK	32.43
		QPSK	33.76
		16QAM	33.80
	30MHz	$\pi/2$ BPSK	28.69
		QPSK	28.73
		16QAM	28.82
	25MHz	$\pi/2$ BPSK	23.12
		QPSK	23.93
		16QAM	23.91
	20MHz	$\pi/2$ BPSK	18.00
		QPSK	19.03
		16QAM	19.13
	15MHz	$\pi/2$ BPSK	13.50
		QPSK	14.21
		16QAM	14.21
	10MHz	$\pi/2$ BPSK	9.02
		QPSK	9.37
		16QAM	9.38
	5MHz	$\pi/2$ BPSK	4.53
		QPSK	4.55
		16QAM	4.55

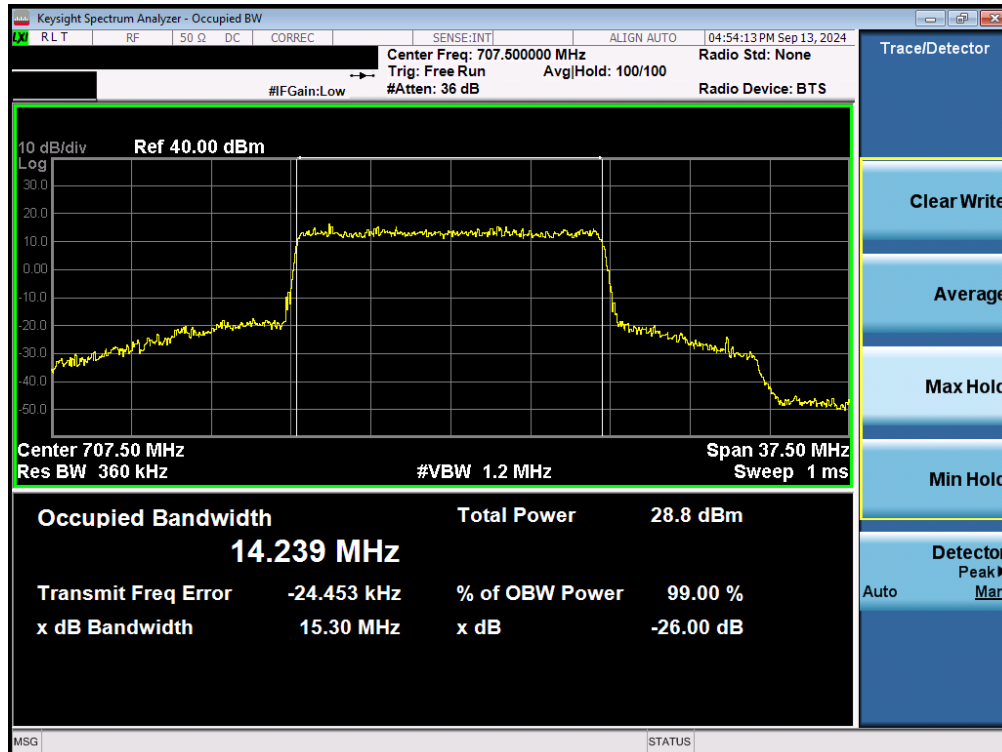
Table 7-6. Occupied Bandwidth Results – Ant1

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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NR Band n12 – ANT1

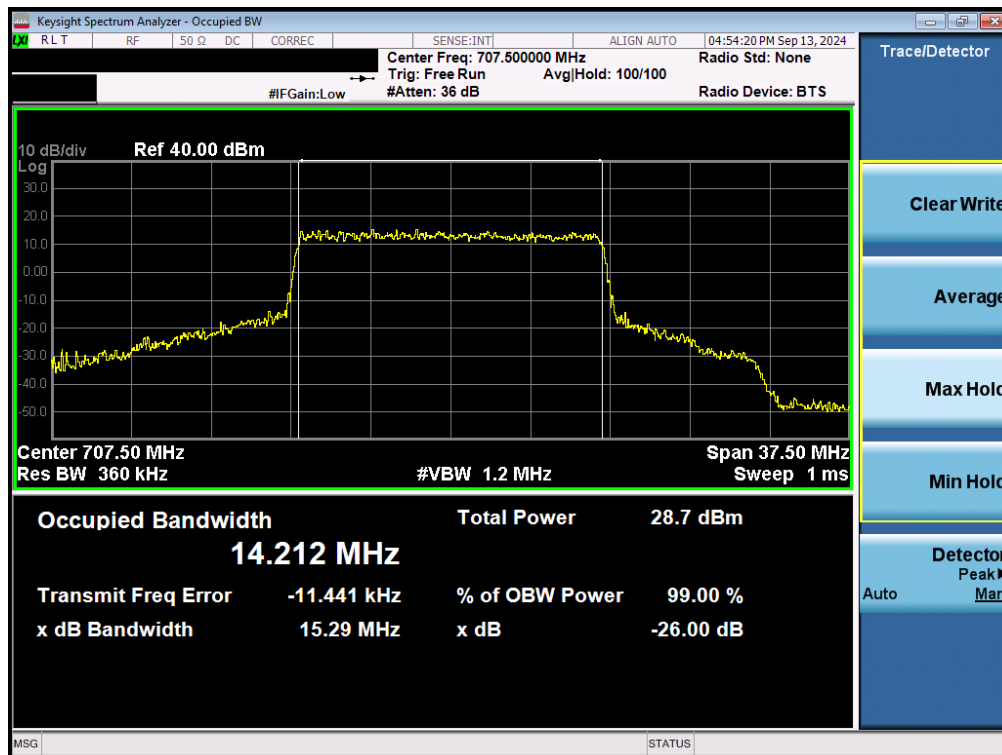


Plot 7-34. Occupied Bandwidth Plot (NR Band n12 - 15MHz DFT-s-OFDM BPSK - Full RB – ANT1)

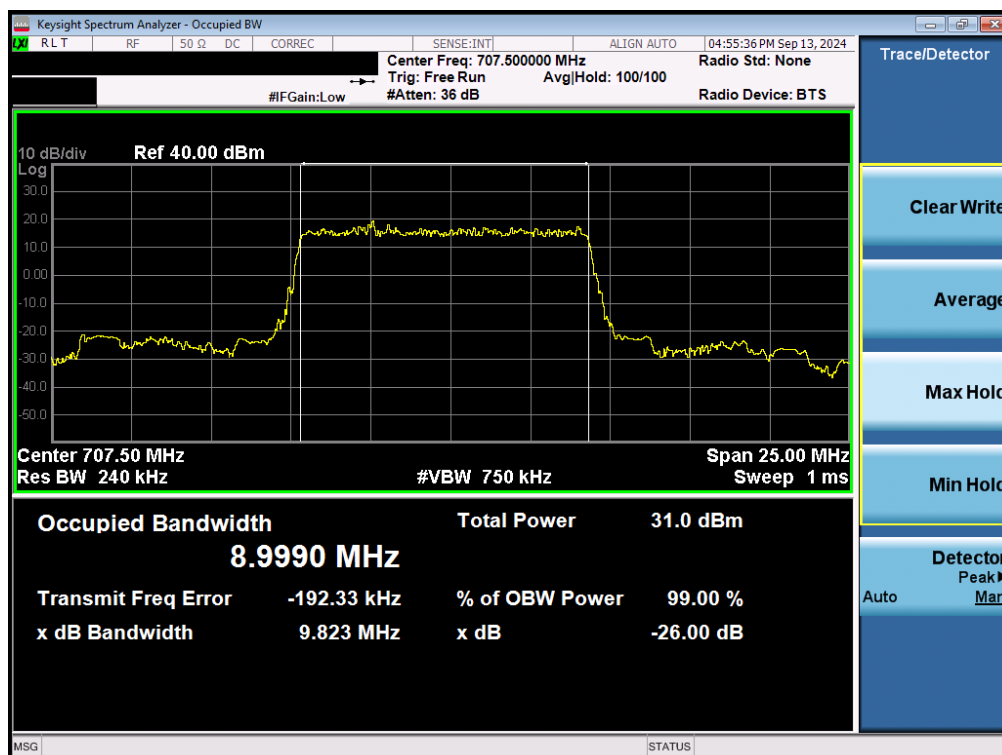


Plot 7-35. Occupied Bandwidth Plot (NR Band n12 - 15MHz QPSK - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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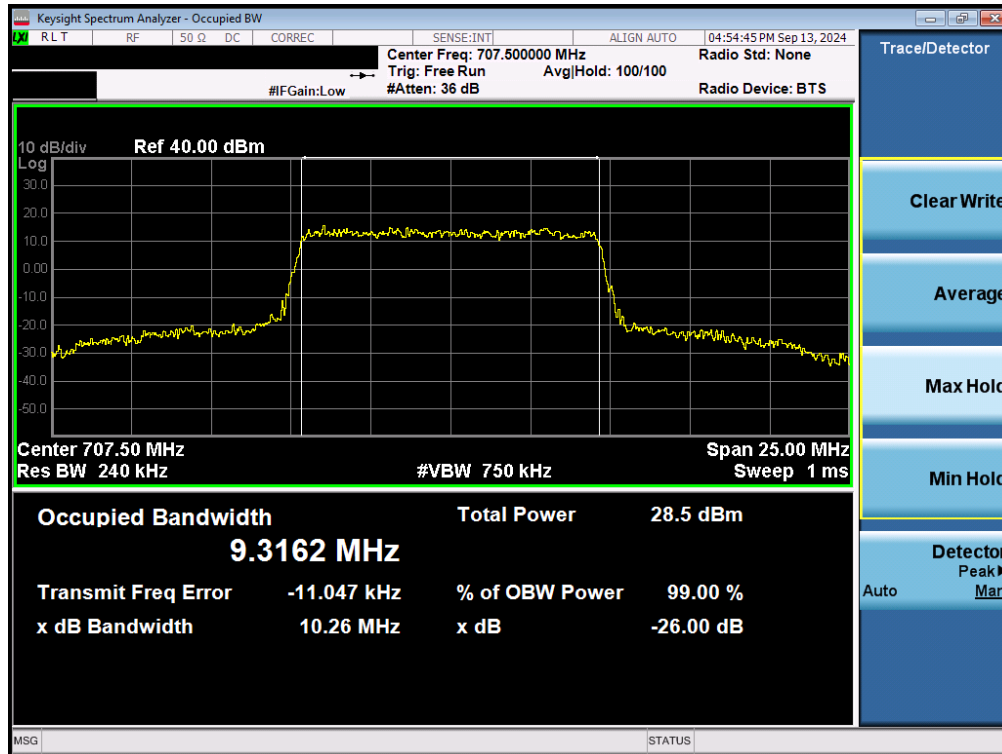


Plot 7-36. Occupied Bandwidth Plot (NR Band n12 - 15MHz CP-OFDM 16-QAM - Full RB – ANT1)

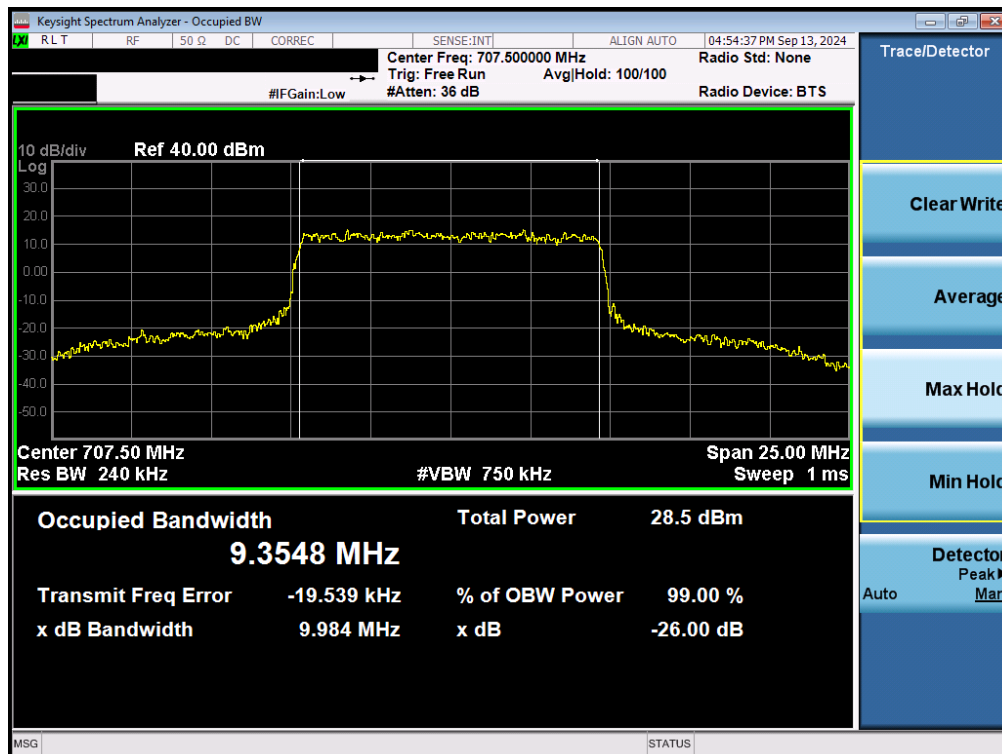


Plot 7-37. Occupied Bandwidth Plot (NR Band n12 - 10MHz DFT-s-OFDM BPSK - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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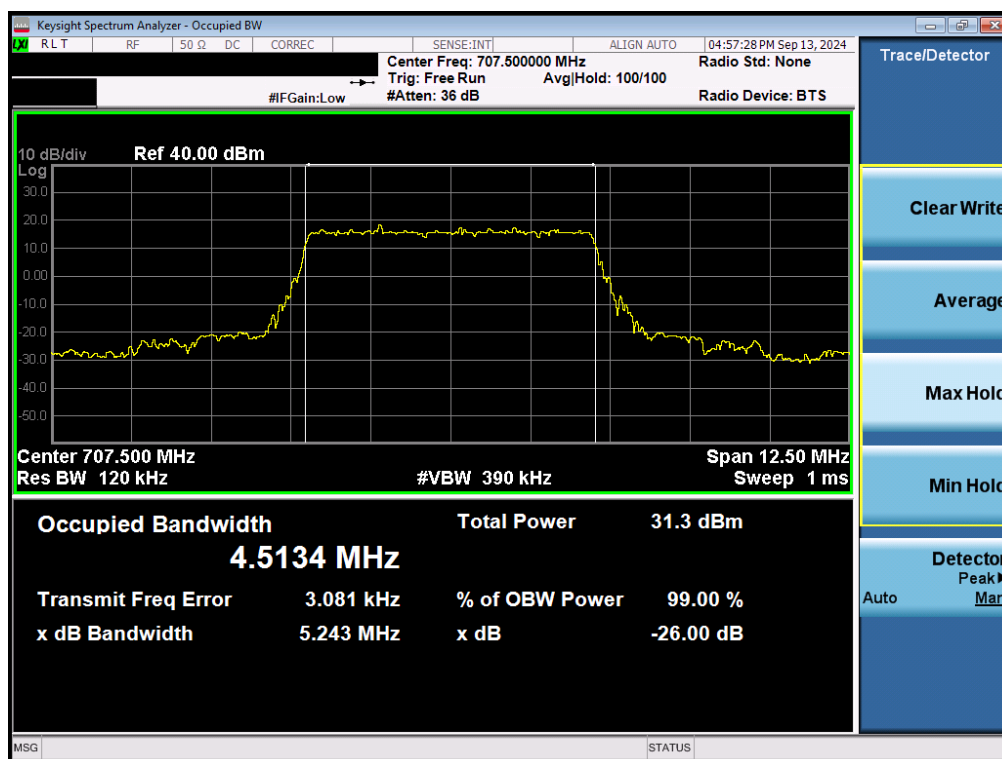


Plot 7-38. Occupied Bandwidth Plot (NR Band n12 - 10MHz CP-OFDM QPSK - Full RB – ANT1)

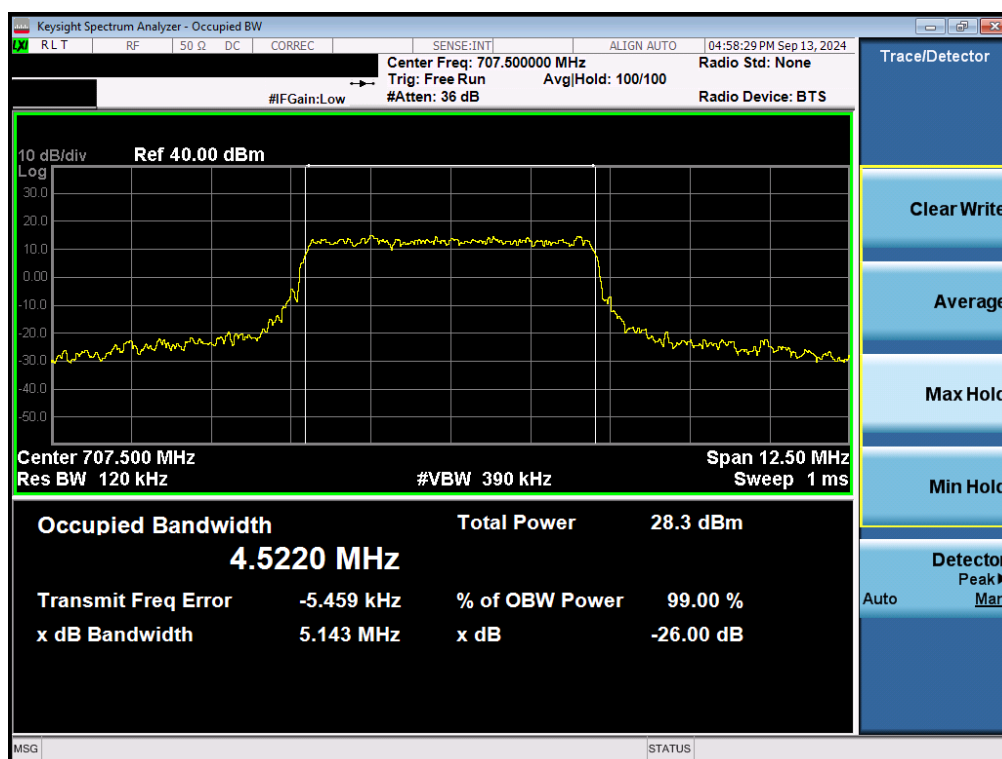


Plot 7-39. Occupied Bandwidth Plot (NR Band n12 - 10MHz CP-OFDM 16-QAM - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2408260067-03-R1.A3L	Test Dates: 09/06/2024 - 10/30/2024	EUT Type: Portable Handset	Page 40 of 272

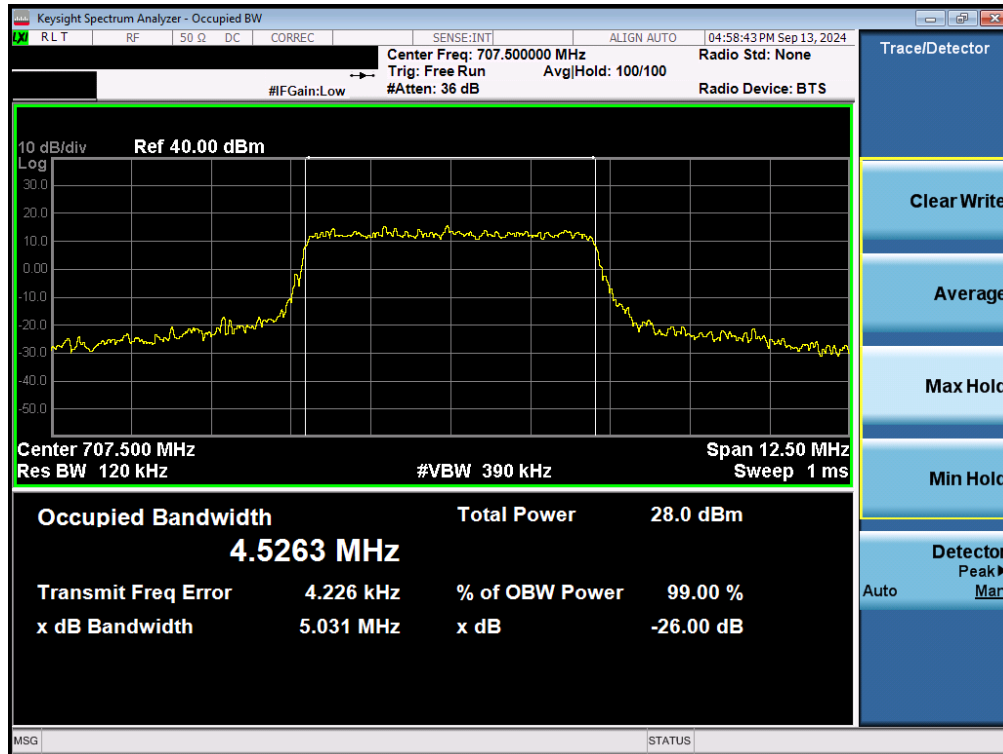


Plot 7-40. Occupied Bandwidth Plot (NR Band n12 - 5MHz DFT-s-OFDM BPSK - Full RB – ANT1)



Plot 7-41. Occupied Bandwidth Plot (NR Band n12 - 5MHz CP-OFDM QPSK - Full RB – ANT1)

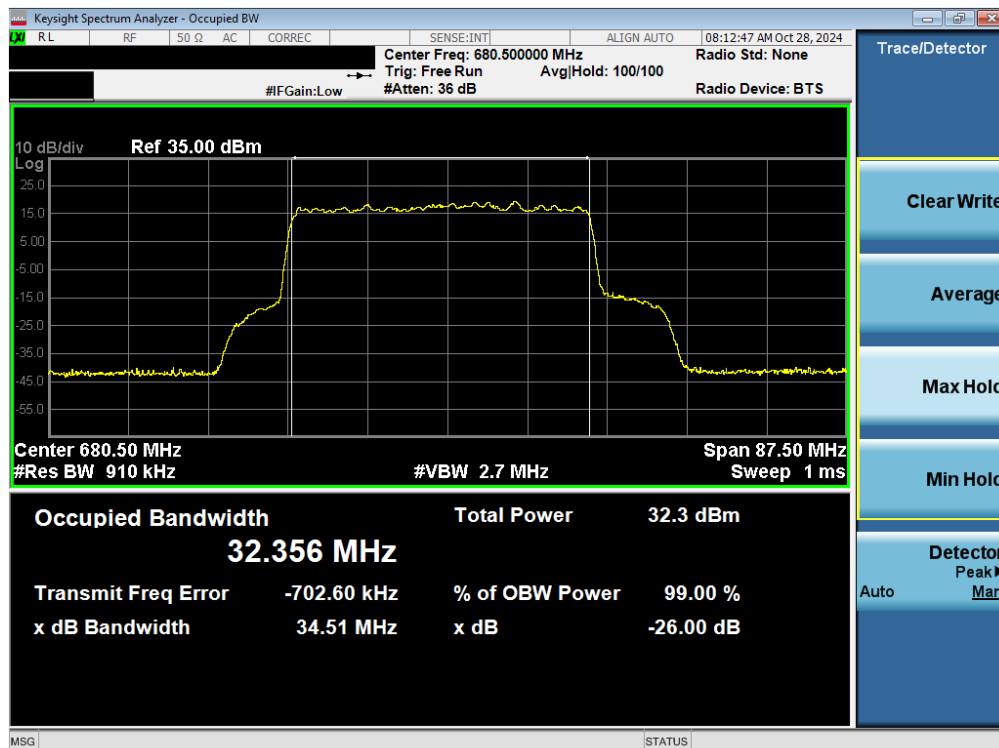
FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2408260067-03-R1.A3L	Test Dates: 09/06/2024 - 10/30/2024	EUT Type: Portable Handset	Page 41 of 272



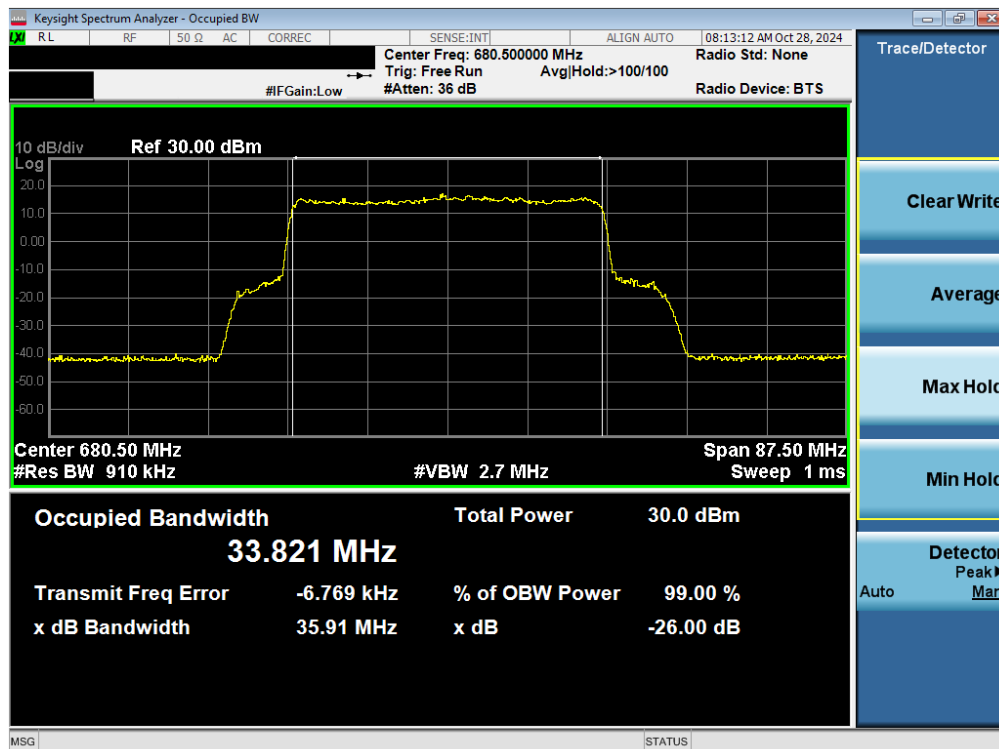
Plot 7-42. Occupied Bandwidth Plot (NR Band n12 - 5MHz CP-OFDM 16-QAM - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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NR Band n71 – ANT1

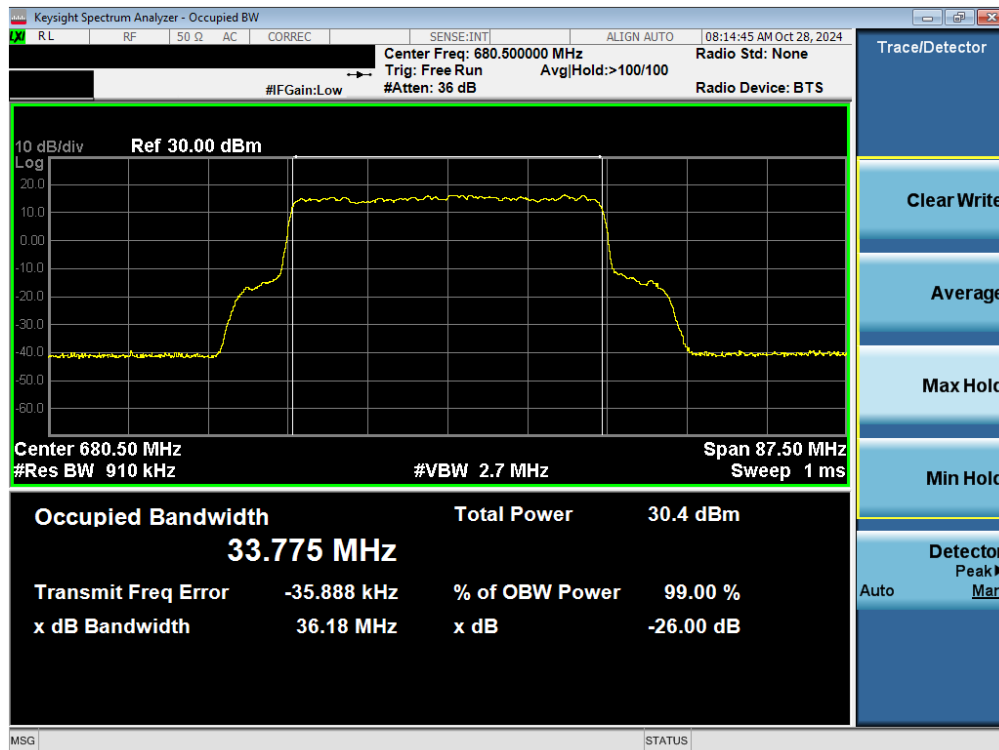


Plot 7-43. Occupied Bandwidth Plot (NR Band n71 - 35MHz DFT-s-OFDM BPSK - Full RB – ANT1)

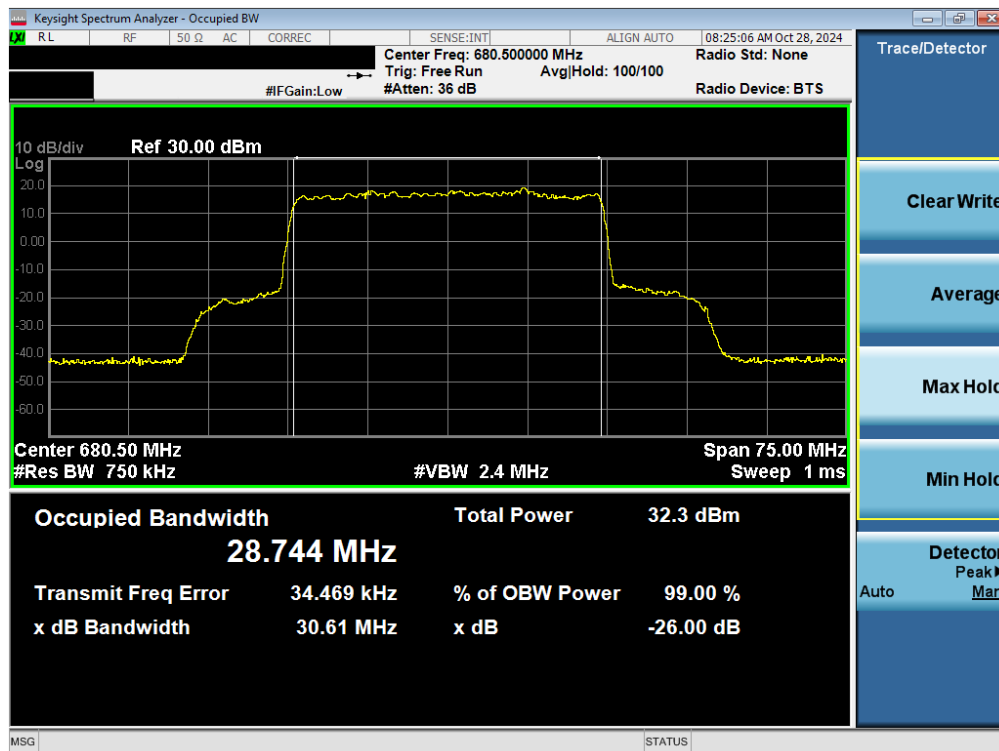


Plot 7-44. Occupied Bandwidth Plot (NR Band n71 - 35MHz CP-OFDM QPSK - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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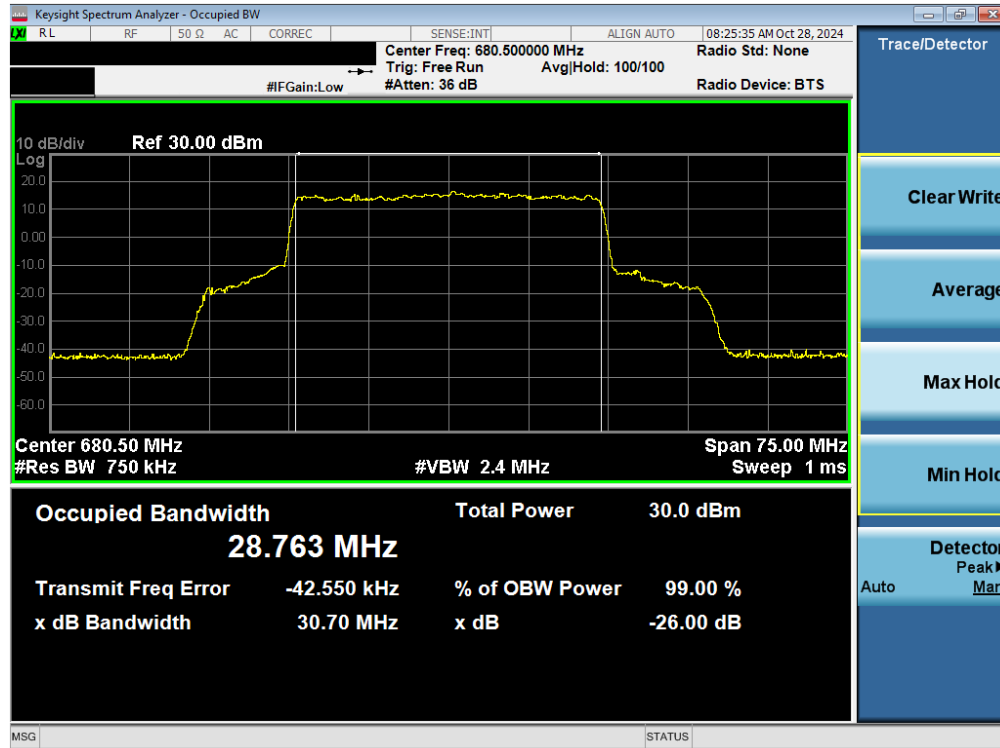


Plot 7-45. Occupied Bandwidth Plot (NR Band n71 - 35MHz CP-OFDM 16-QAM - Full RB – ANT1)

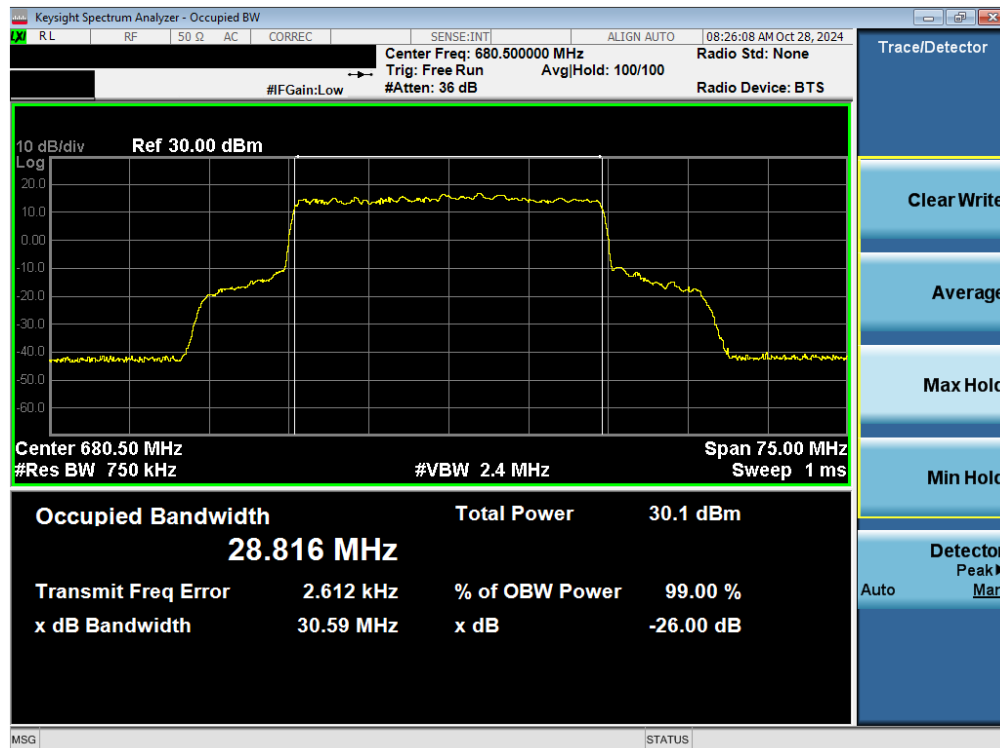


Plot 7-46. Occupied Bandwidth Plot (NR Band n71 - 30MHz DFT-s-OFDM BPSK - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2408260067-03-R1.A3L	Test Dates: 09/06/2024 - 10/30/2024	EUT Type: Portable Handset	Page 44 of 272

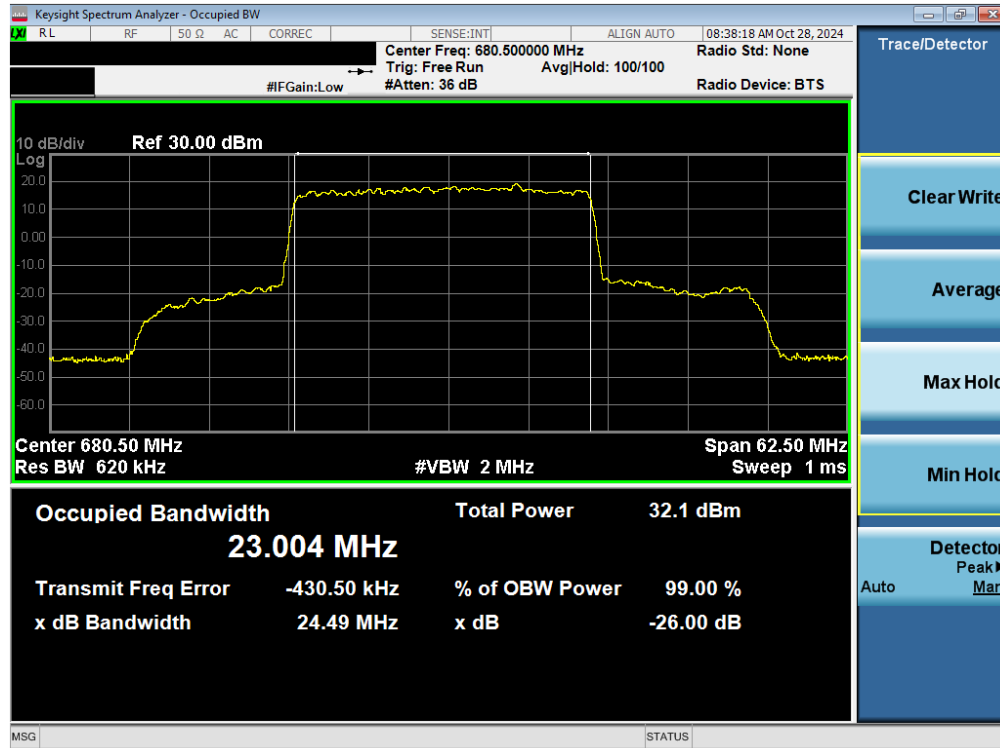


Plot 7-47. Occupied Bandwidth Plot (NR Band n71 – 30MHz CP-OFDM QPSK - Full RB – ANT1)

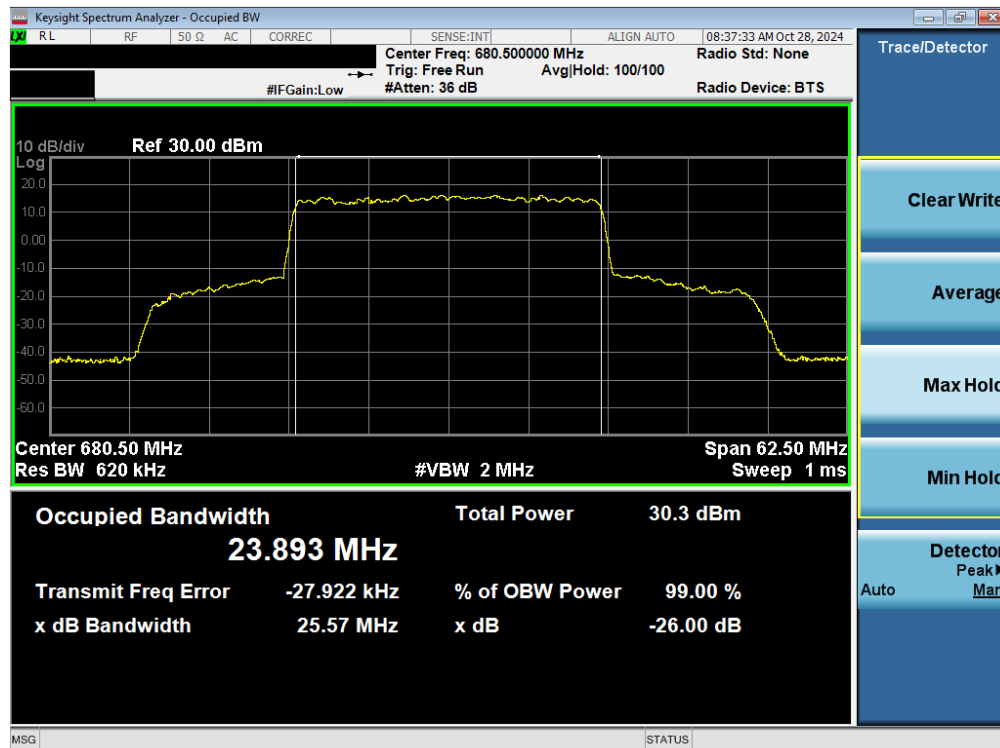


Plot 7-48. Occupied Bandwidth Plot (NR Band n71 - 30MHz CP-OFDM 16-QAM - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2408260067-03-R1.A3L	Test Dates: 09/06/2024 - 10/30/2024	EUT Type: Portable Handset	Page 45 of 272

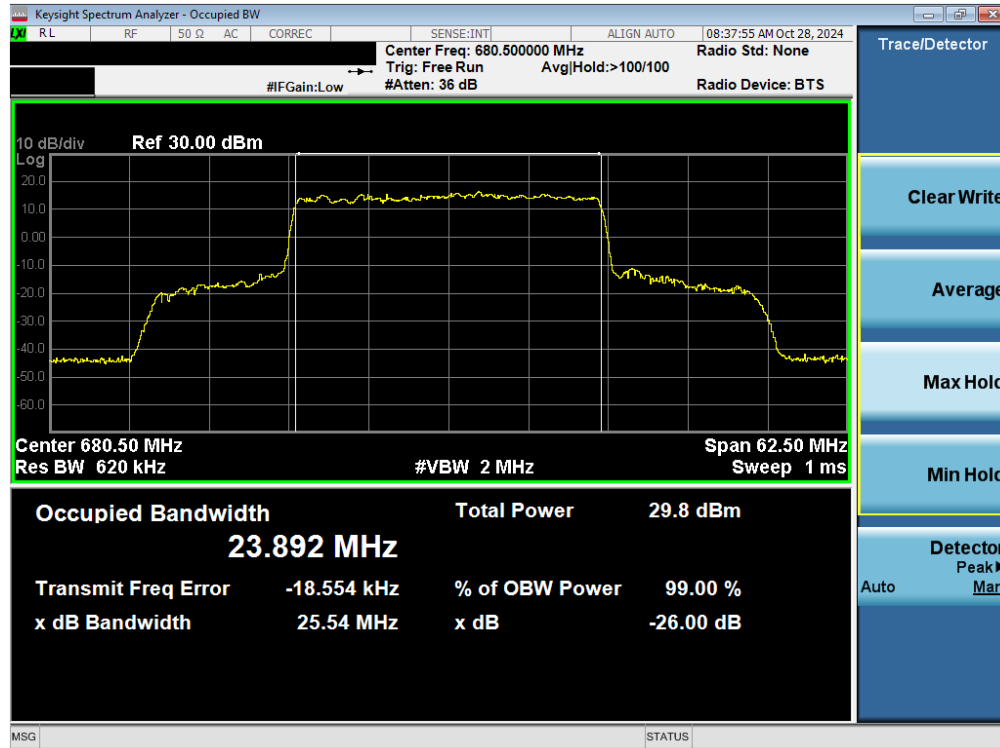


Plot 7-49. Occupied Bandwidth Plot (NR Band n71 - 25MHz DFT-s-OFDM BPSK - Full RB – ANT1)

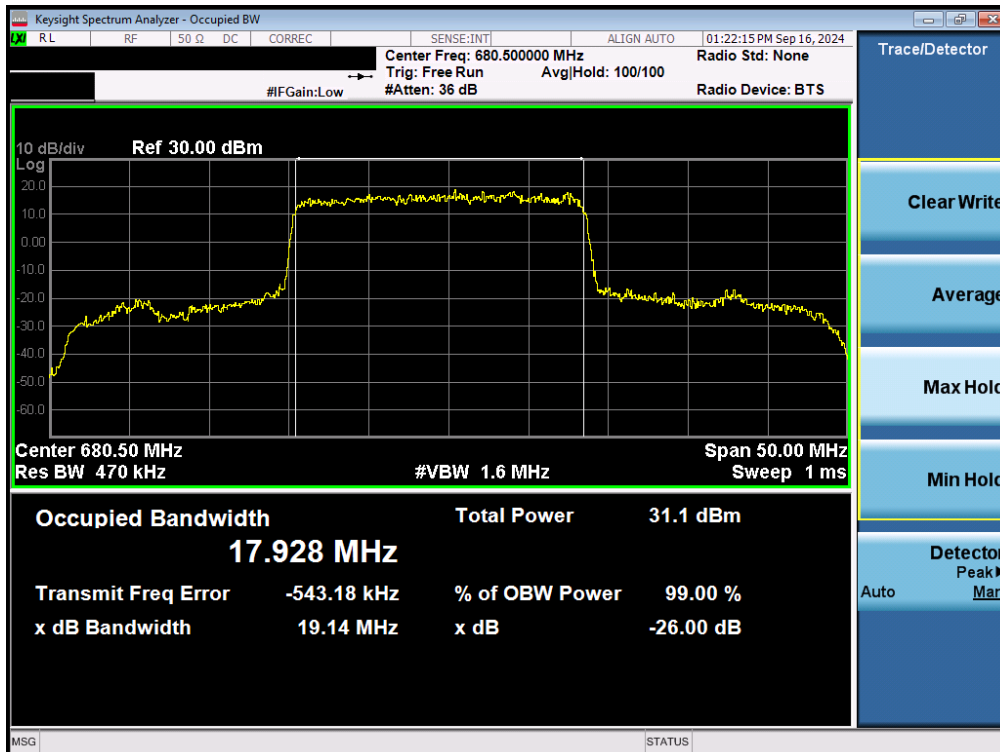


Plot 7-50. Occupied Bandwidth Plot (NR Band n71 – 25MHz CP-OFDM QPSK - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2408260067-03-R1.A3L	Test Dates: 09/06/2024 - 10/30/2024	EUT Type: Portable Handset	Page 46 of 272

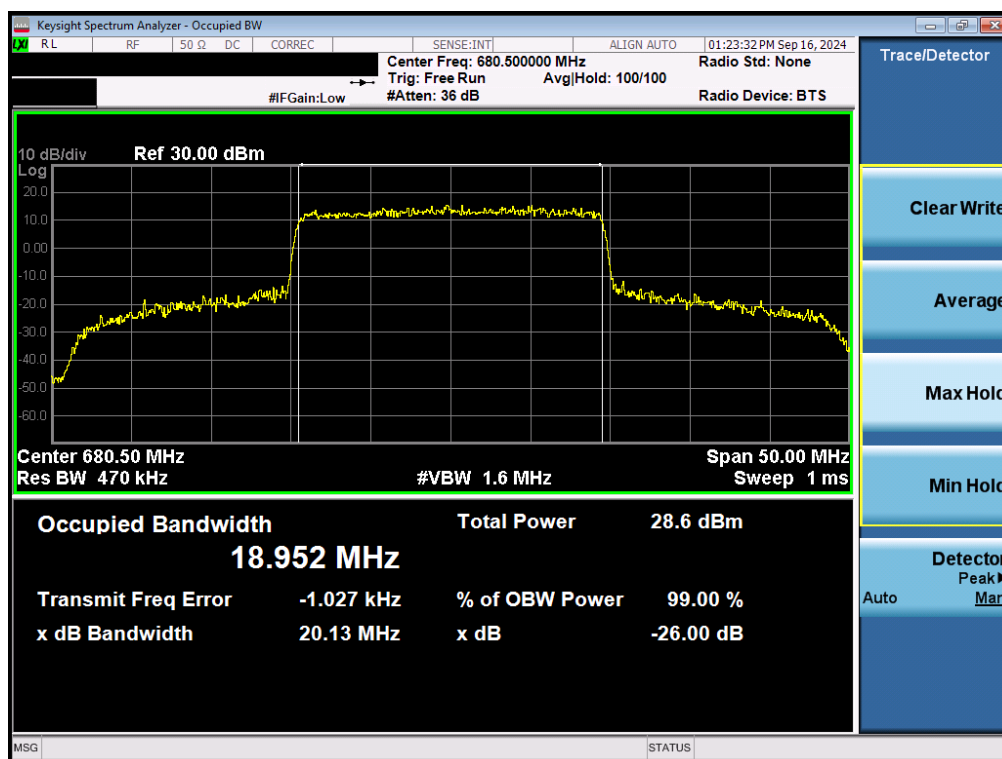


Plot 7-51. Occupied Bandwidth Plot (NR Band n71 - 25MHz CP-OFDM 16-QAM - Full RB – ANT1)

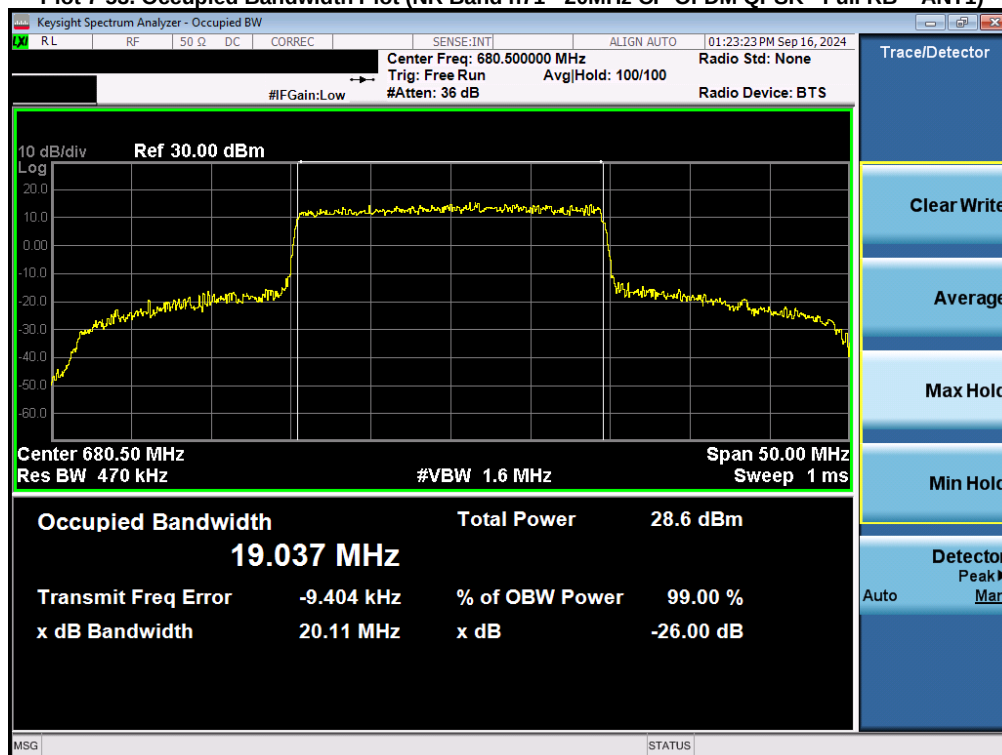


Plot 7-52. Occupied Bandwidth Plot (NR Band n71 - 20MHz DFT-s-OFDM BPSK - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2408260067-03-R1.A3L	Test Dates: 09/06/2024 - 10/30/2024	EUT Type: Portable Handset	Page 47 of 272

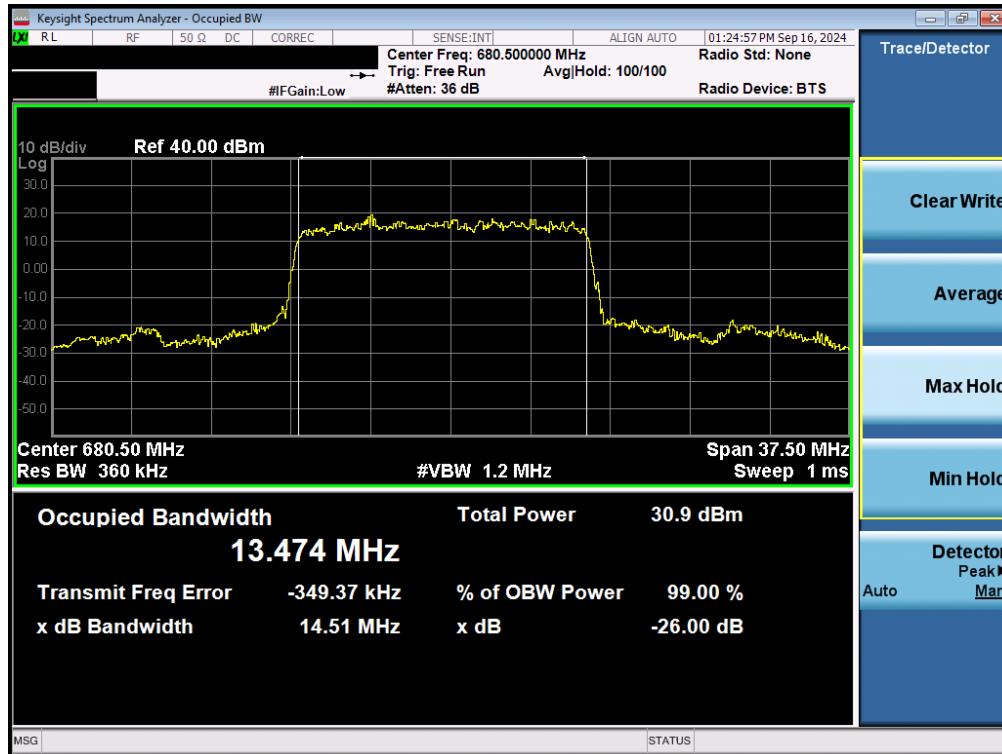


Plot 7-53. Occupied Bandwidth Plot (NR Band n71 - 20MHz CP-OFDM QPSK - Full RB - ANT1)

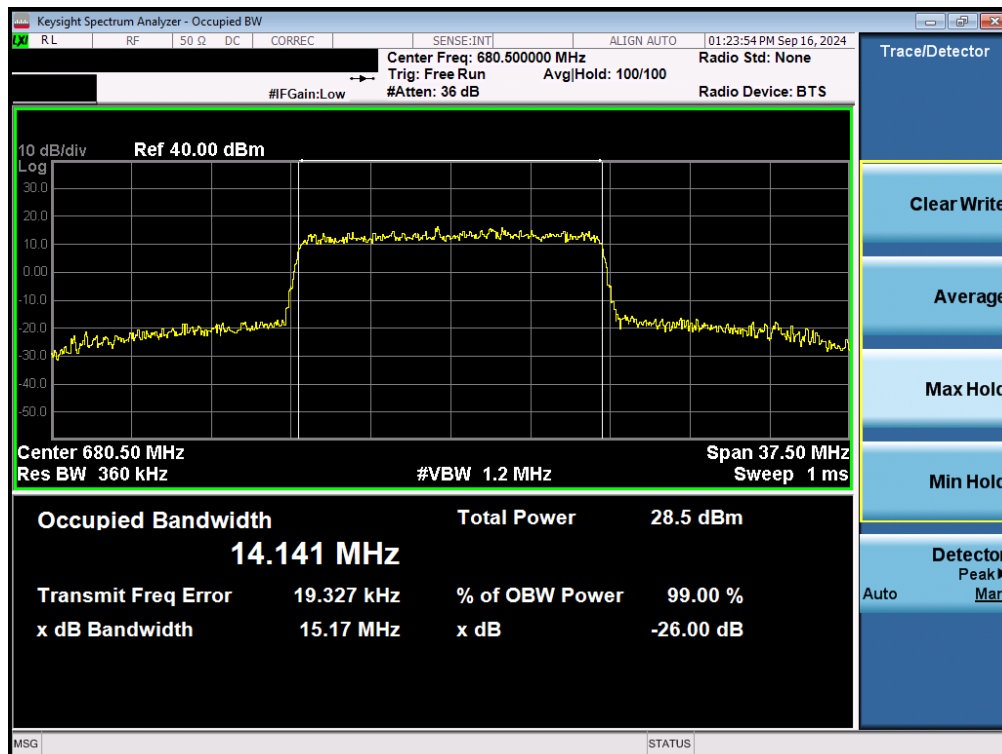


Plot 7-54. Occupied Bandwidth Plot (NR Band n71 - 20MHz CP-OFDM 16-QAM - Full RB - ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2408260067-03-R1.A3L	Test Dates: 09/06/2024 - 10/30/2024	EUT Type: Portable Handset	Page 48 of 272

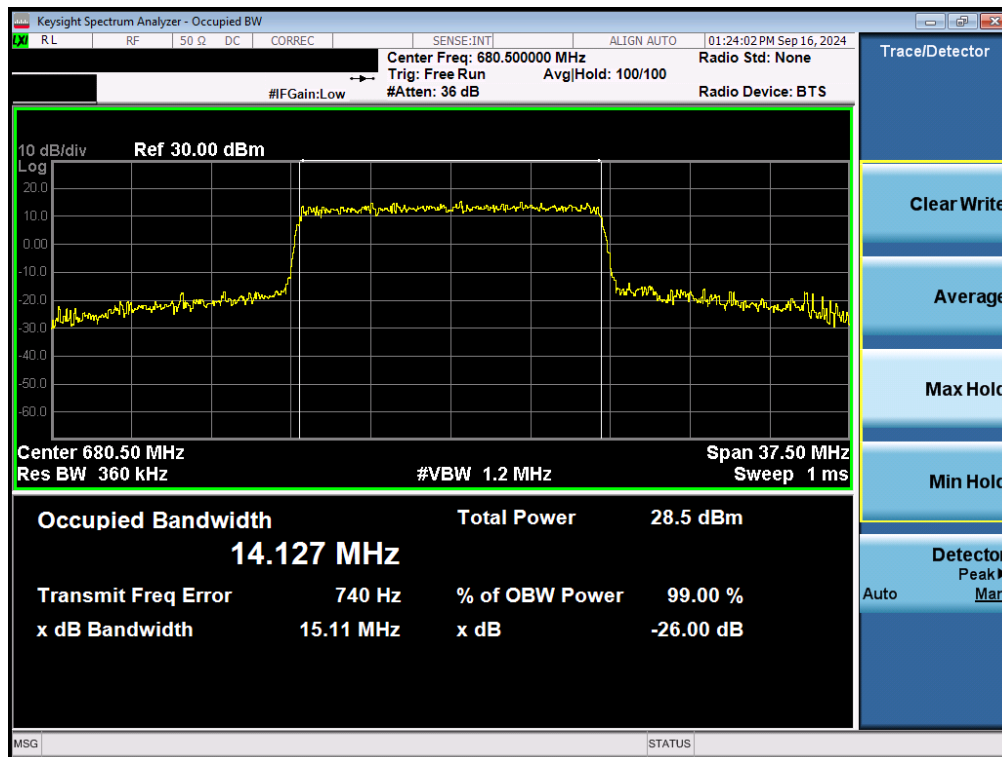


Plot 7-55. Occupied Bandwidth Plot (NR Band n71 - 15MHz DFT-s-OFDM BPSK - Full RB – ANT1)

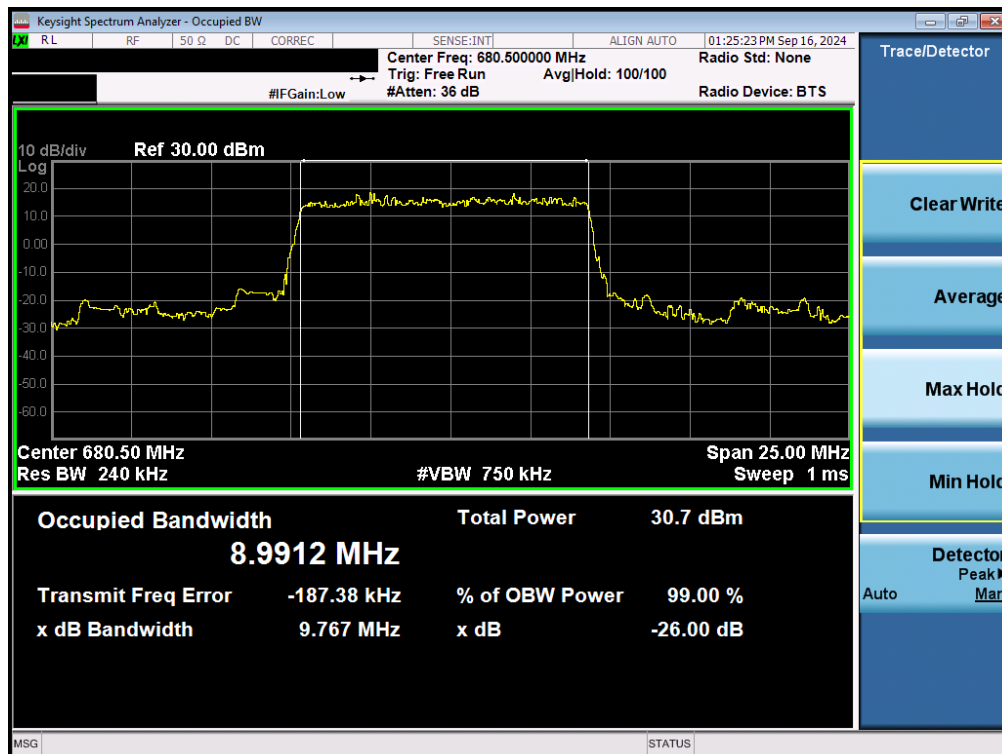


Plot 7-56. Occupied Bandwidth Plot (NR Band n71 - 15MHz QPSK - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2408260067-03-R1.A3L	Test Dates: 09/06/2024 - 10/30/2024	EUT Type: Portable Handset	Page 49 of 272

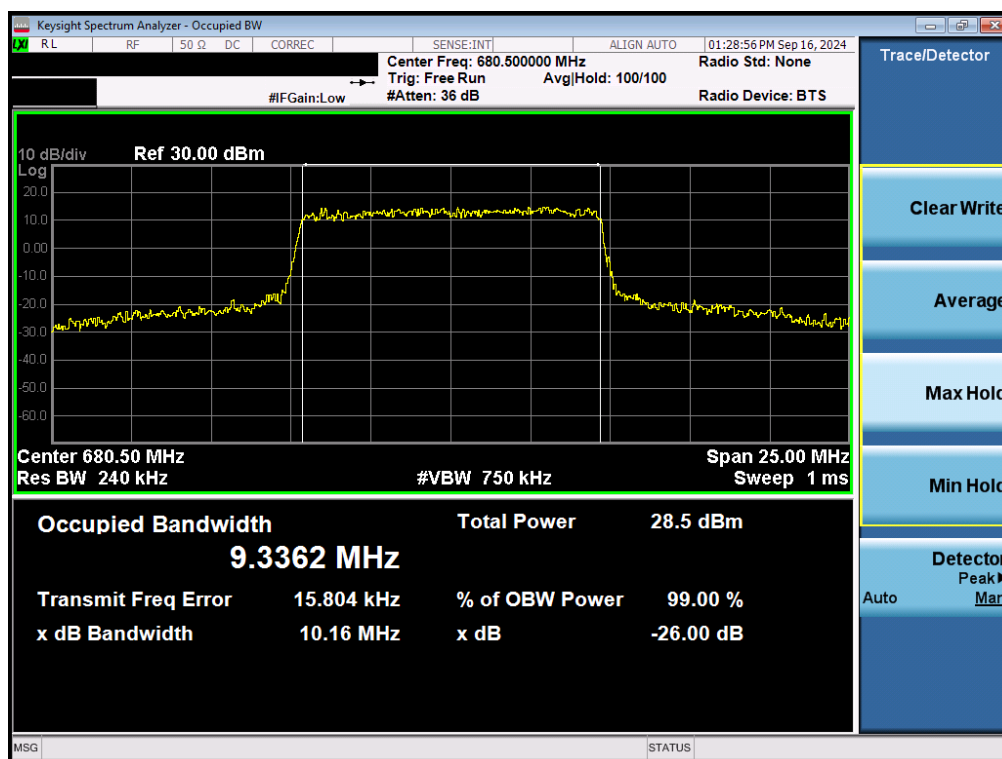


Plot 7-57. Occupied Bandwidth Plot (NR Band n71 - 15MHz CP-OFDM 16-QAM - Full RB – ANT1)

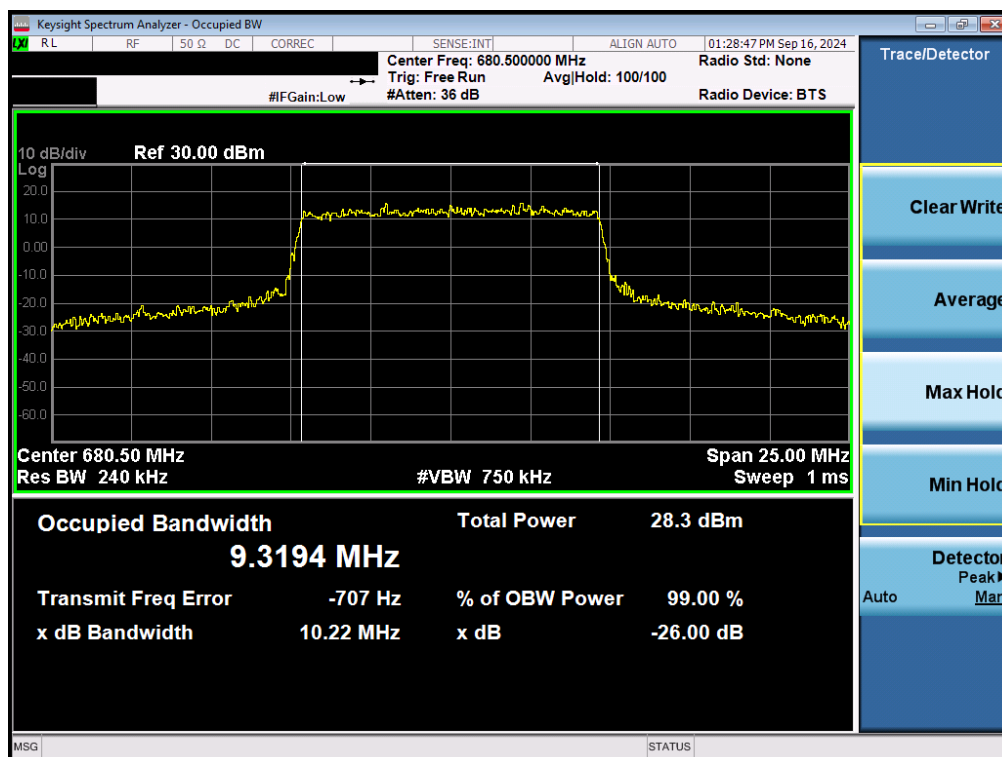


Plot 7-58. Occupied Bandwidth Plot (NR Band n71 - 10MHz DFT-s-OFDM BPSK - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-59. Occupied Bandwidth Plot (NR Band n71 - 10MHz CP-OFDM QPSK - Full RB – ANT1)

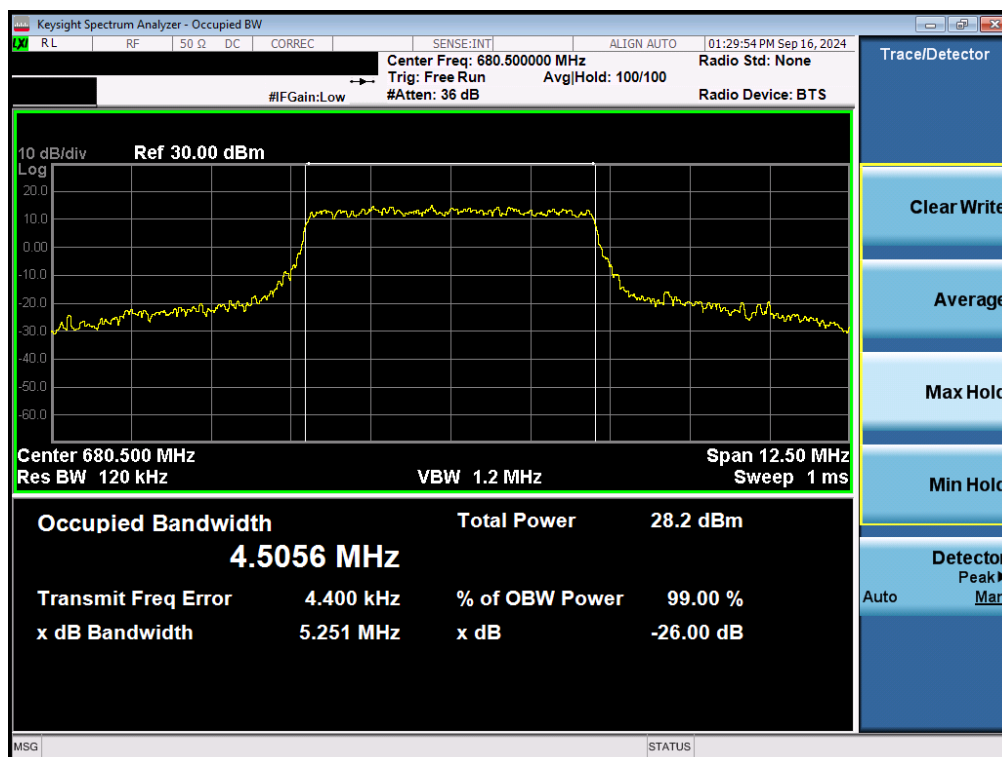


Plot 7-60. Occupied Bandwidth Plot (NR Band n71 - 10MHz CP-OFDM 16-QAM - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2408260067-03-R1.A3L	Test Dates: 09/06/2024 - 10/30/2024	EUT Type: Portable Handset	Page 51 of 272

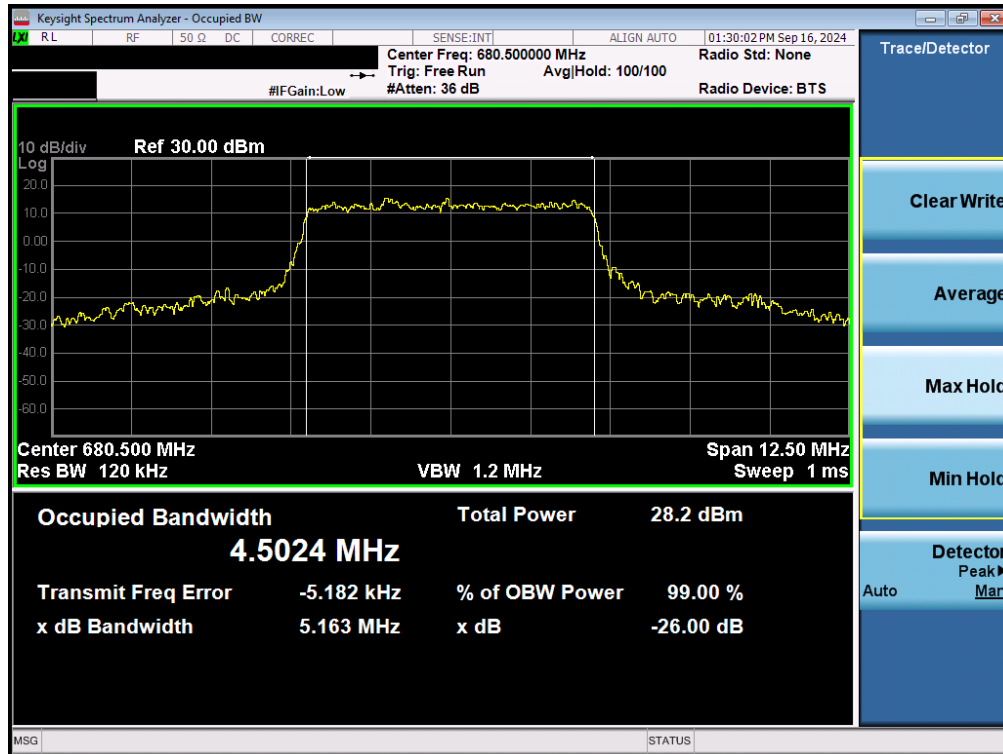


Plot 7-61. Occupied Bandwidth Plot (NR Band n71 - 5MHz DFT-s-OFDM BPSK - Full RB – ANT1)



Plot 7-62. Occupied Bandwidth Plot (NR Band n71 - 5MHz CP-OFDM QPSK - Full RB – ANT1)

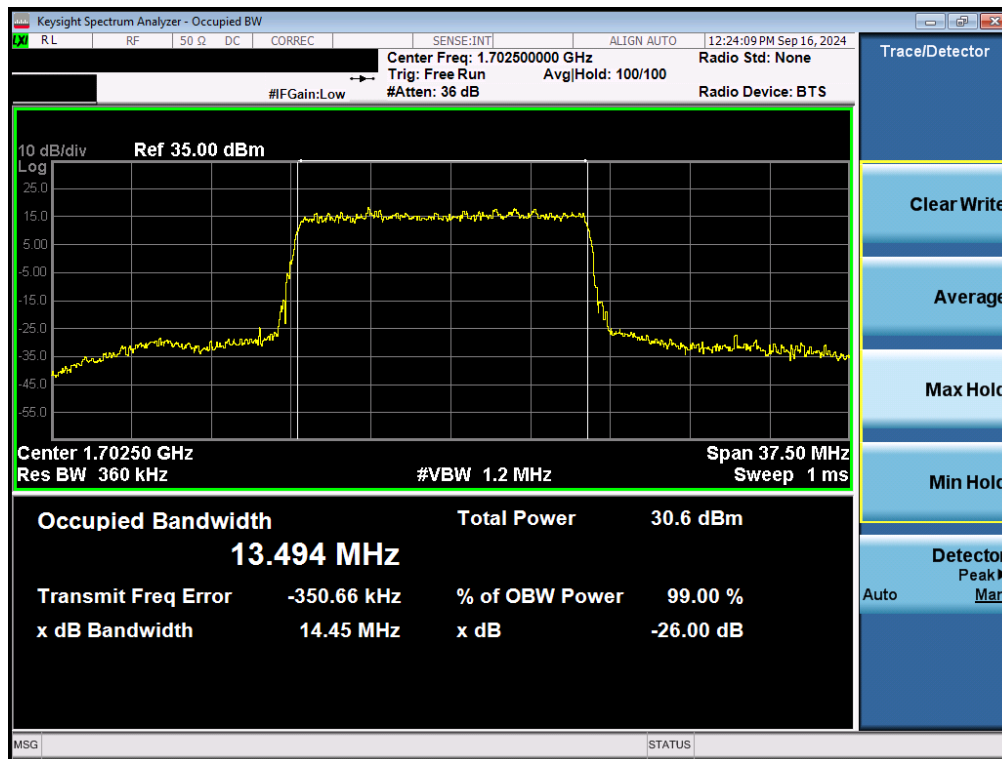
FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2408260067-03-R1.A3L	Test Dates: 09/06/2024 - 10/30/2024	EUT Type: Portable Handset	Page 52 of 272



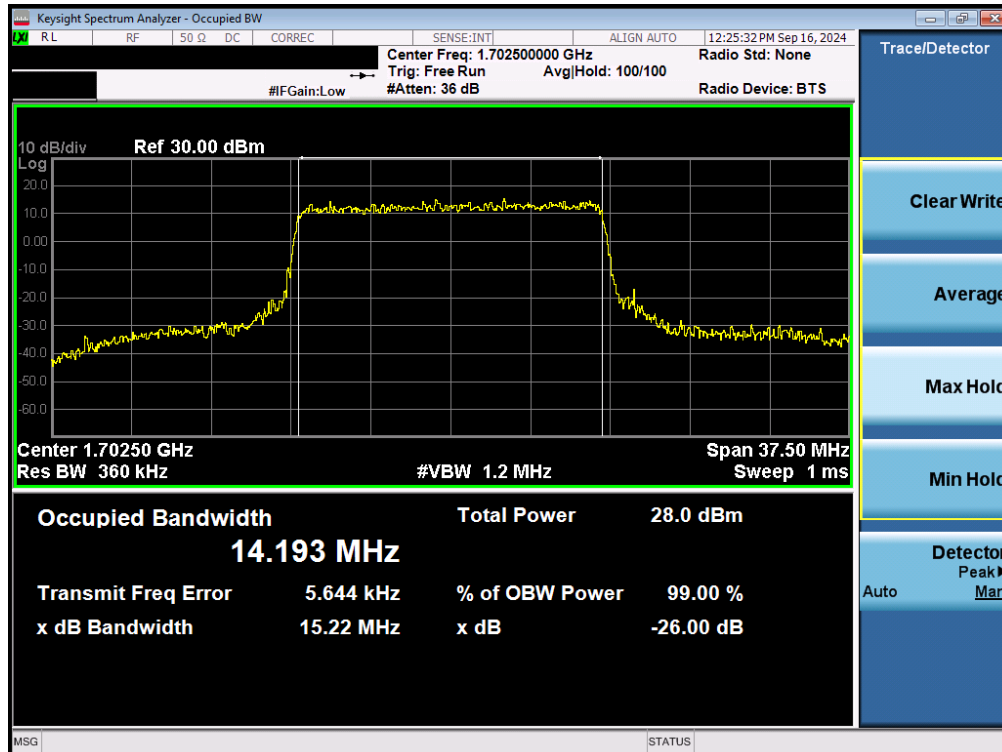
Plot 7-63. Occupied Bandwidth Plot (NR Band n71 - 5MHz CP-OFDM 16-QAM - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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NR Band n70 – ANT1

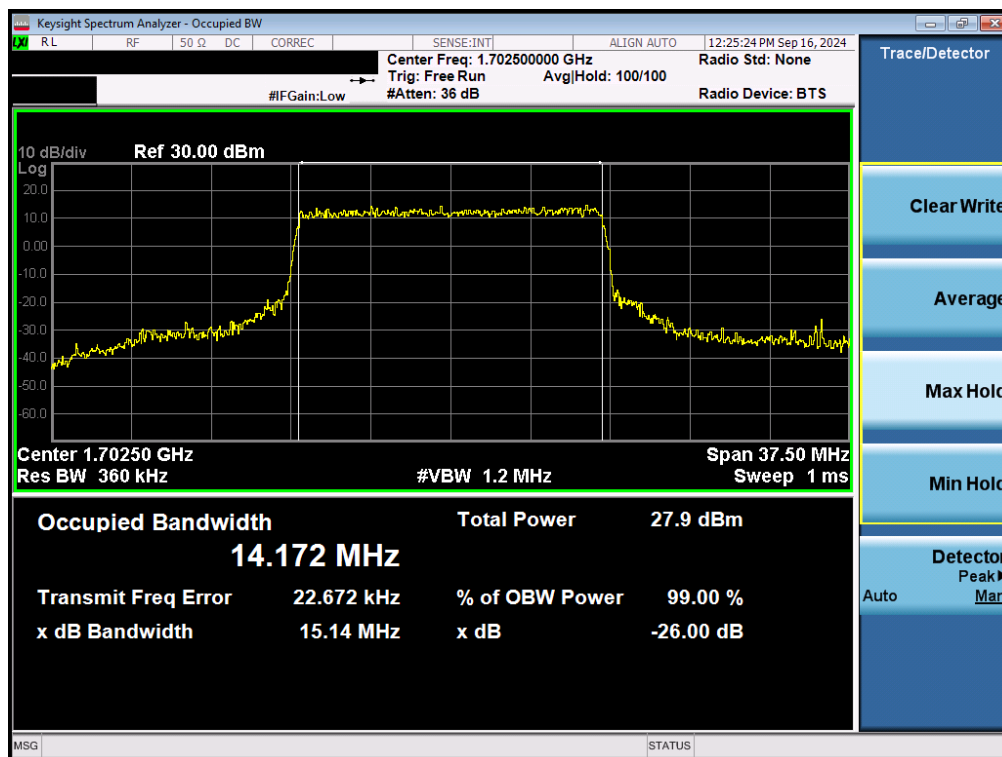


Plot 7-64. Occupied Bandwidth Plot (NR Band n70 - 15.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)

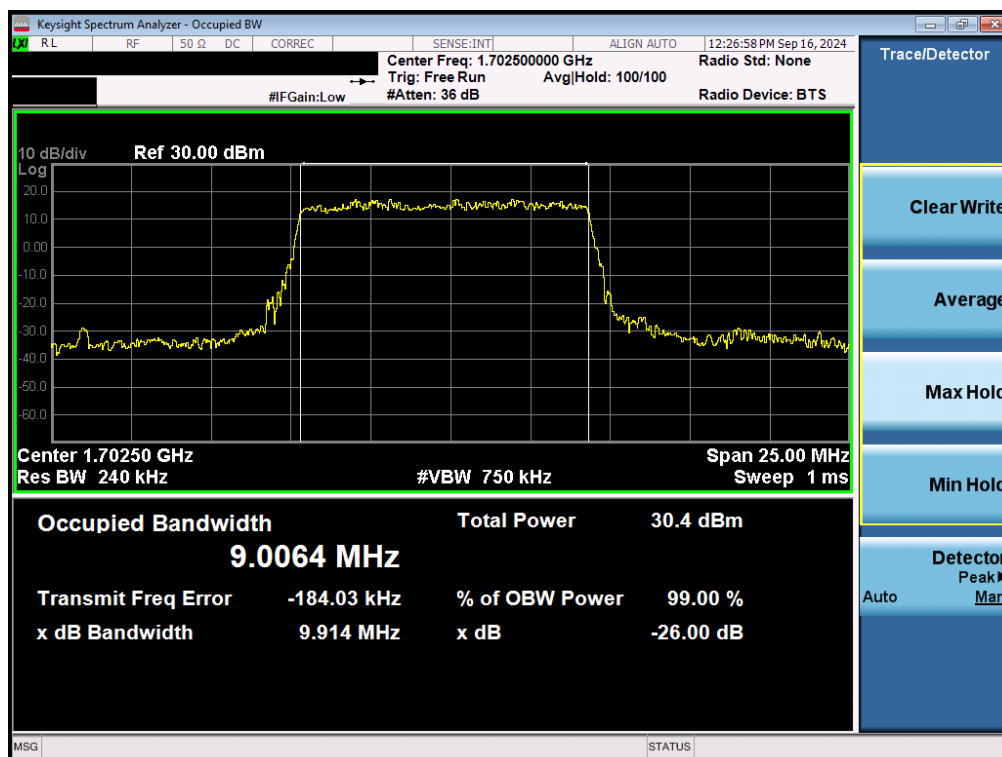


Plot 7-65. Occupied Bandwidth Plot (NR Band n70 - 15.0MHz CP-OFDM QPSK - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-66. Occupied Bandwidth Plot (NR Band n70 - 15.0MHz CP-OFDM 16QAM - Full RB – ANT1)

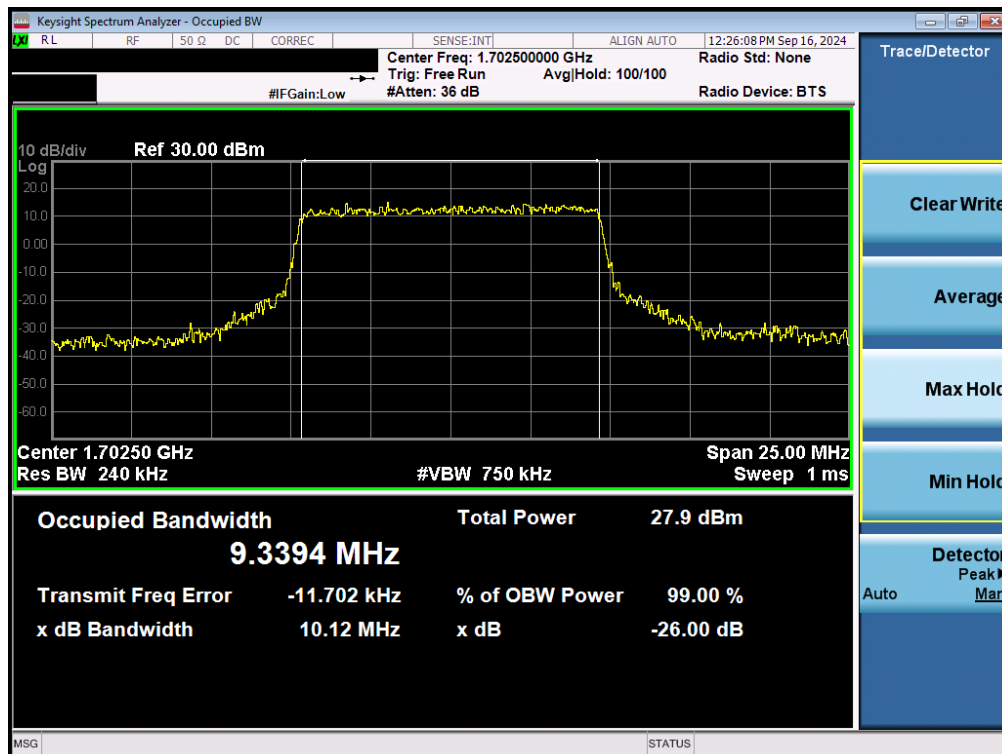


Plot 7-67. Occupied Bandwidth Plot (NR Band n70 - 10.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2408260067-03-R1.A3L	Test Dates: 09/06/2024 - 10/30/2024	EUT Type: Portable Handset	Page 55 of 272

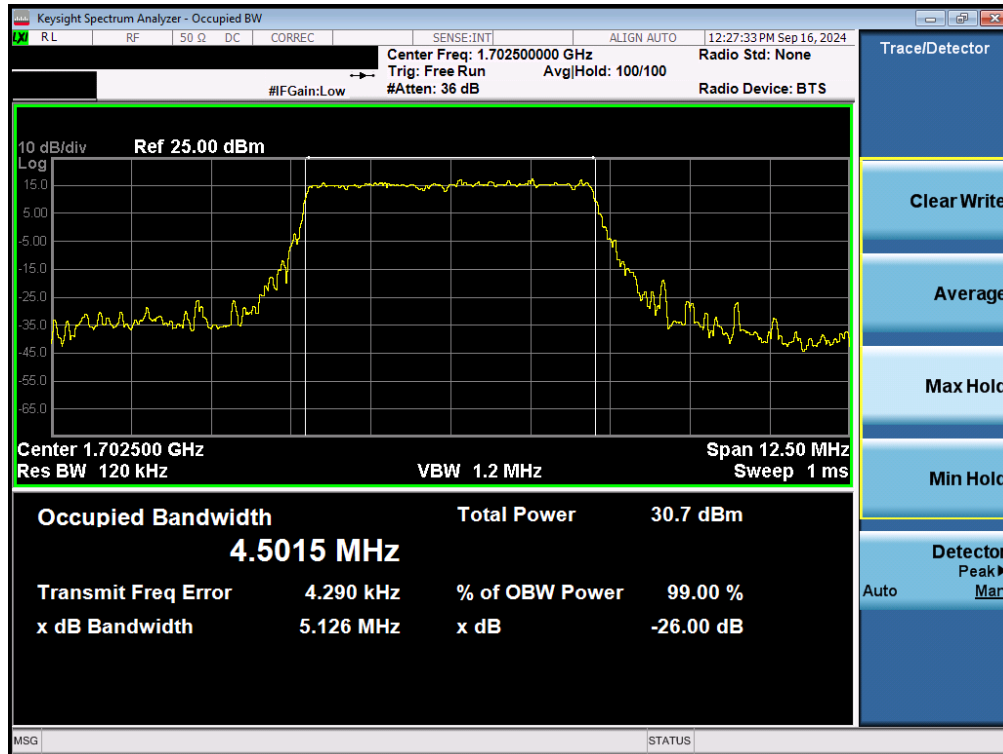


Plot 7-68. Occupied Bandwidth Plot (NR Band n70 - 10.0MHz CP-OFDM QPSK - Full RB – ANT1)

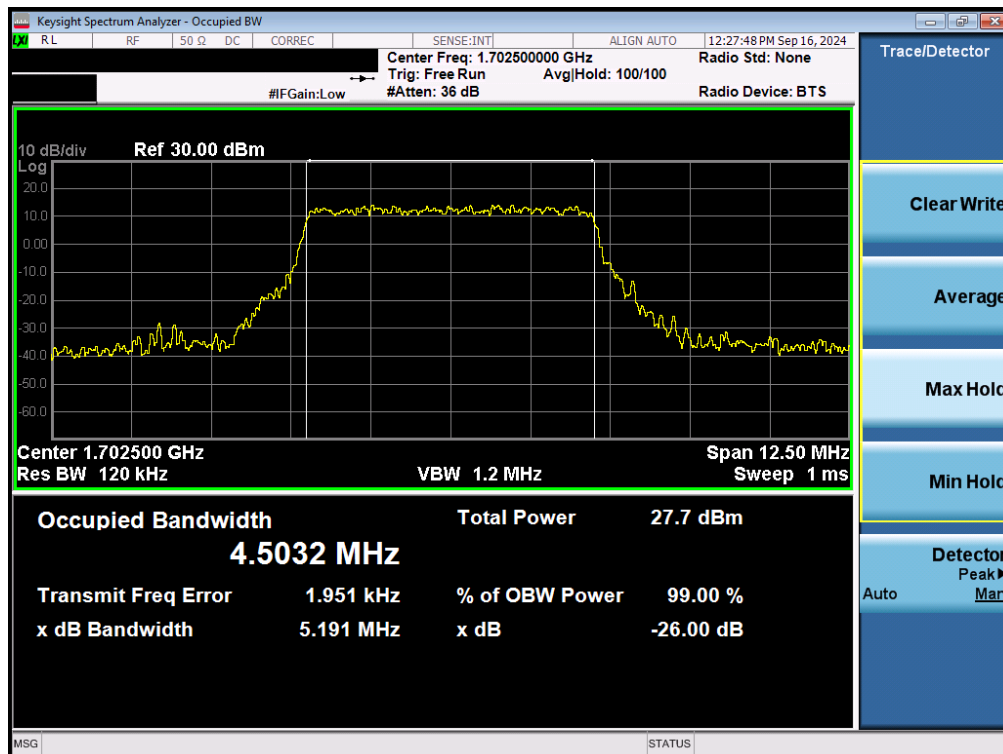


Plot 7-69. Occupied Bandwidth Plot (NR Band n70 - 10.0MHz CP-OFDM 16QAM - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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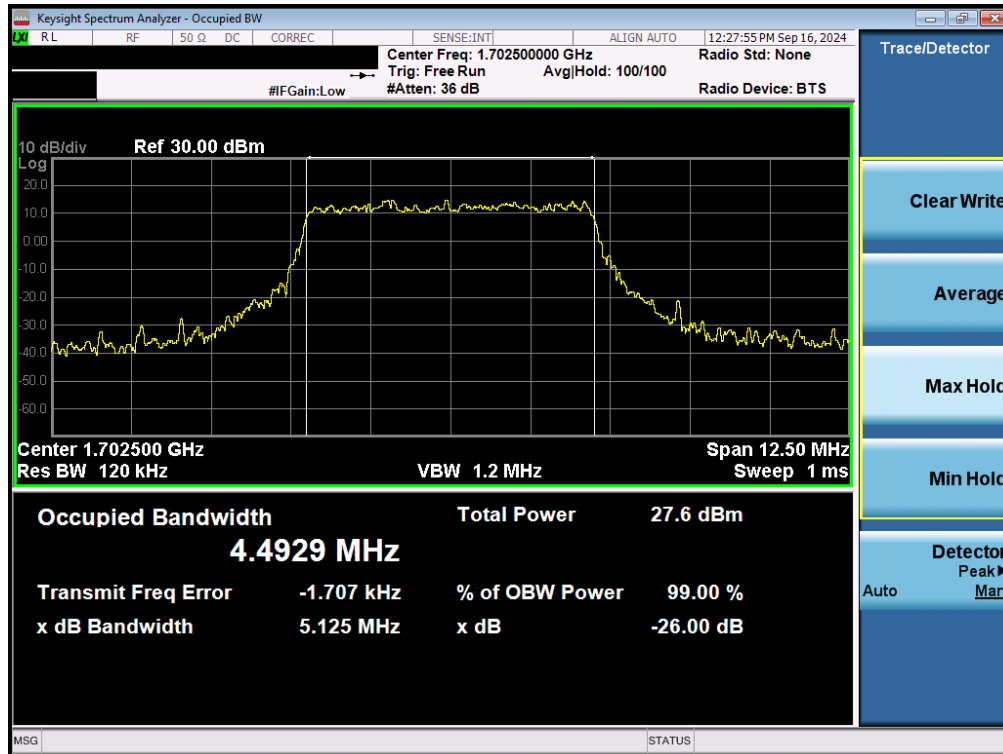


Plot 7-70. Occupied Bandwidth Plot (NR Band n70 - 5.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)



Plot 7-71. Occupied Bandwidth Plot (NR Band n70 - 5.0MHz CP-OFDM QPSK - Full RB – ANT1)

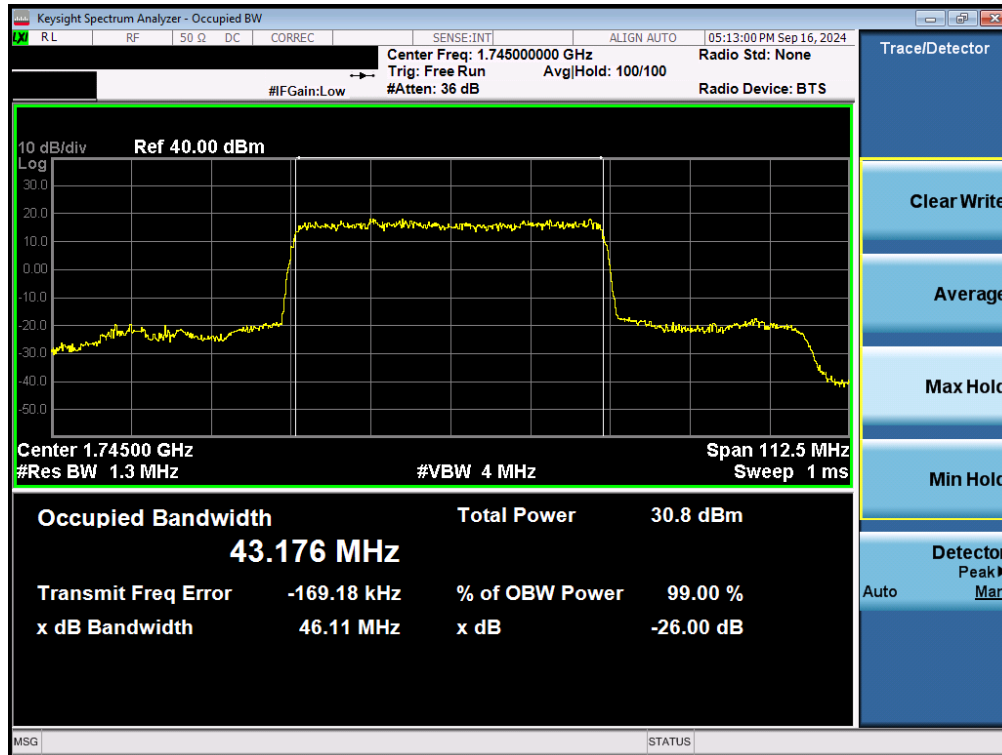
FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2408260067-03-R1.A3L	Test Dates: 09/06/2024 - 10/30/2024	EUT Type: Portable Handset	Page 57 of 272



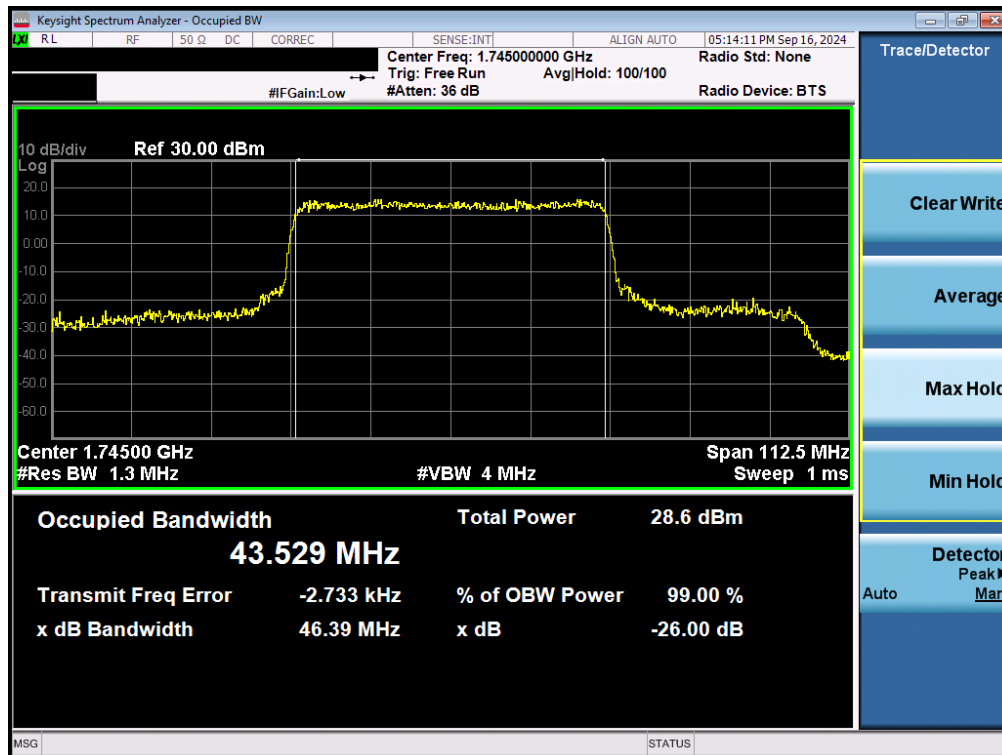
Plot 7-72. Occupied Bandwidth Plot (NR Band n66 - 5.0MHz CP-OFDM 16QAM - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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NR Band n66 – ANT1

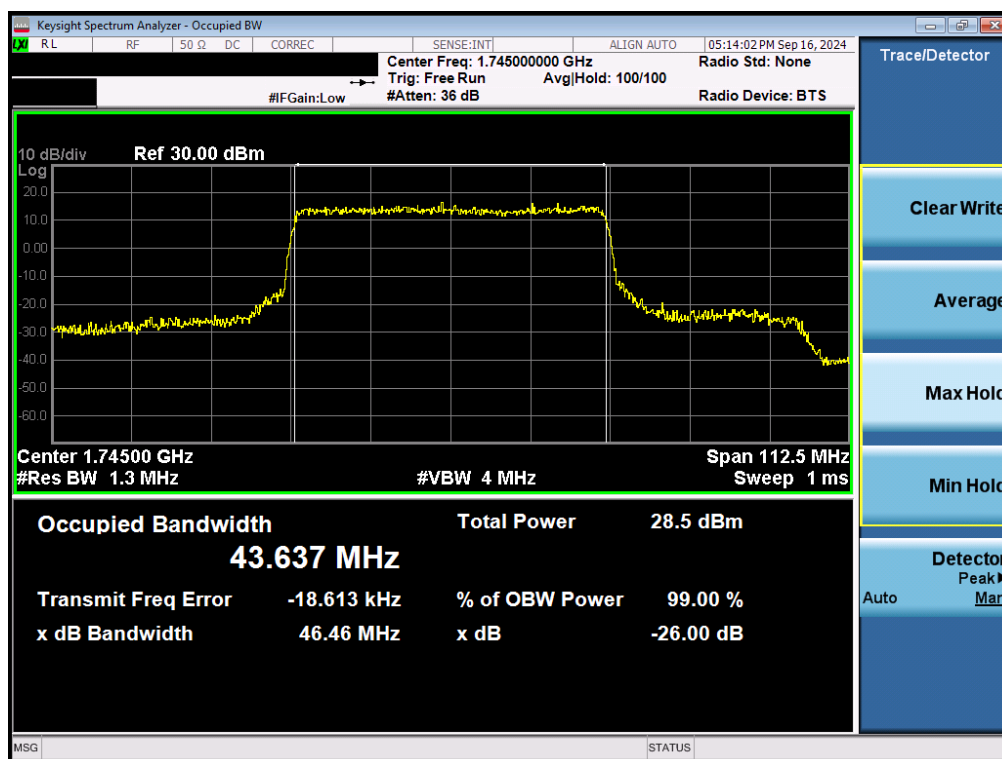


Plot 7-73. Occupied Bandwidth Plot (NR Band n66 - 45.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)

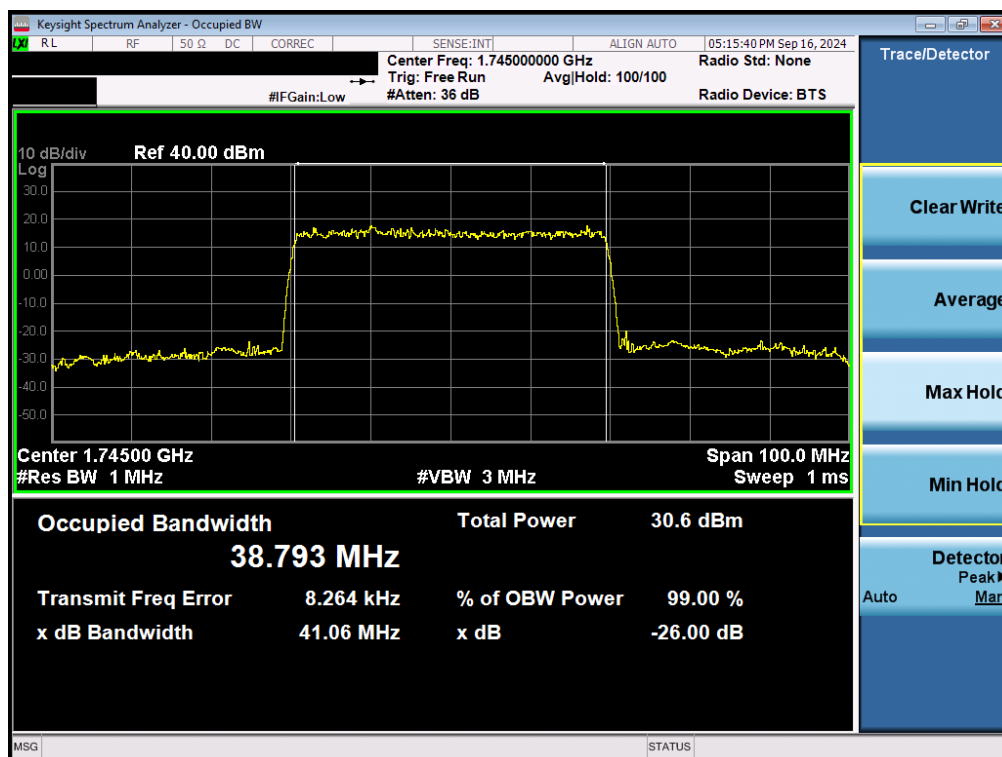


Plot 7-74. Occupied Bandwidth Plot (NR Band n66 - 45.0MHz CP-OFDM QPSK - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2408260067-03-R1.A3L	Test Dates: 09/06/2024 - 10/30/2024	EUT Type: Portable Handset	Page 59 of 272

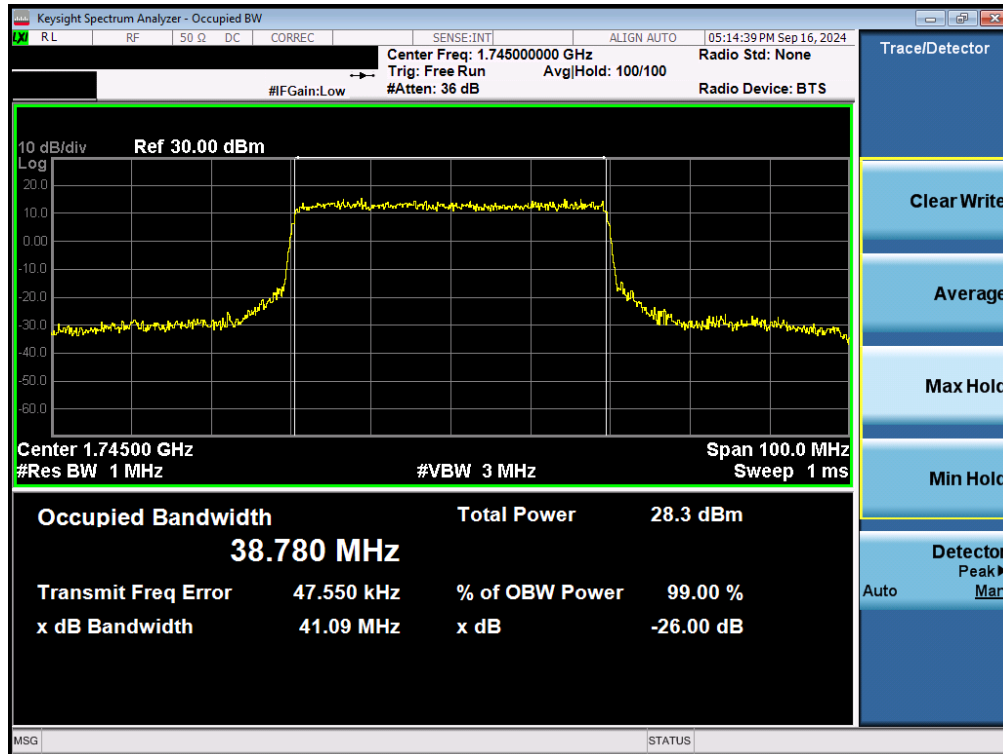


Plot 7-75. Occupied Bandwidth Plot (NR Band n66 - 45.0MHz CP-OFDM 16QAM - Full RB – ANT1)

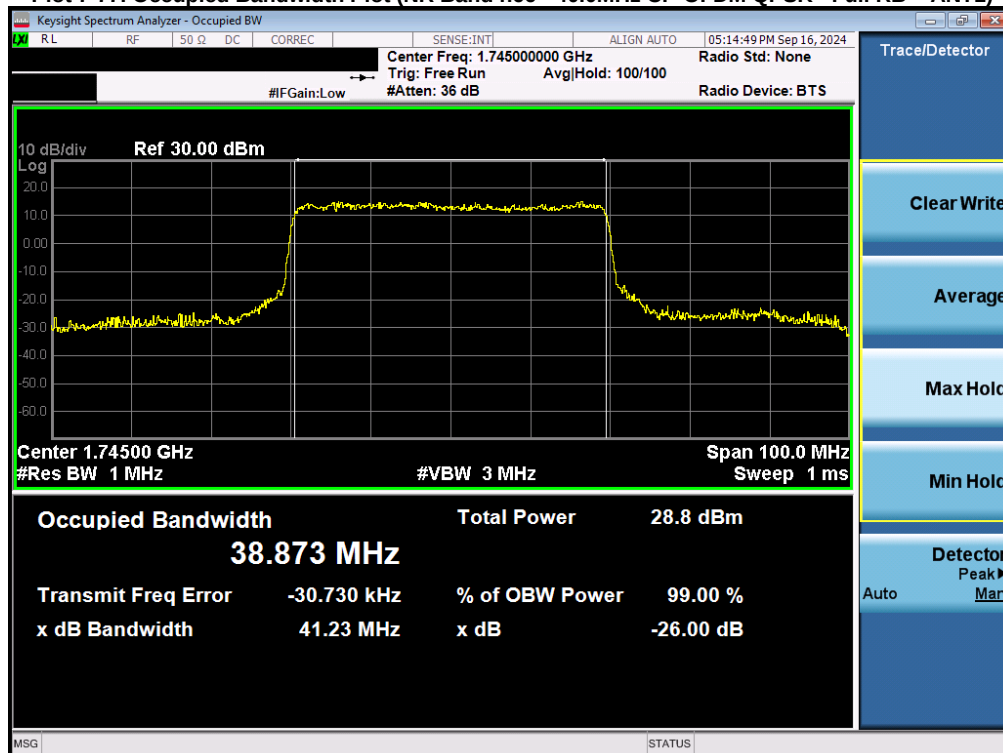


Plot 7-76. Occupied Bandwidth Plot (NR Band n66 - 40.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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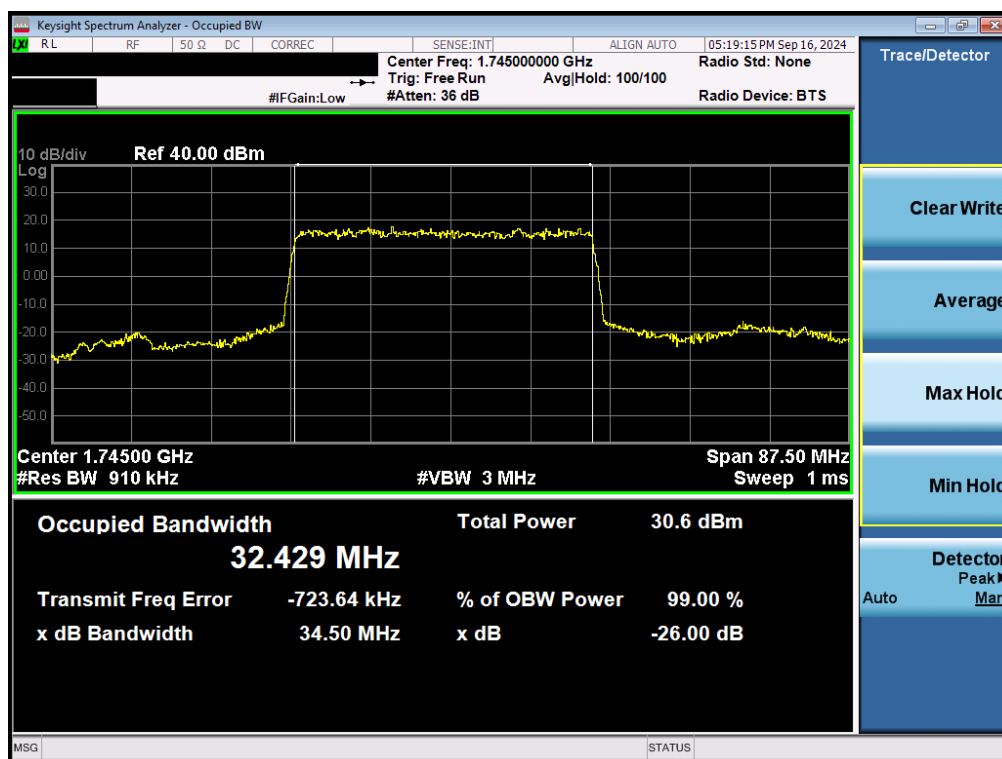


Plot 7-77. Occupied Bandwidth Plot (NR Band n66 - 40.0MHz CP-OFDM QPSK - Full RB - ANT1)

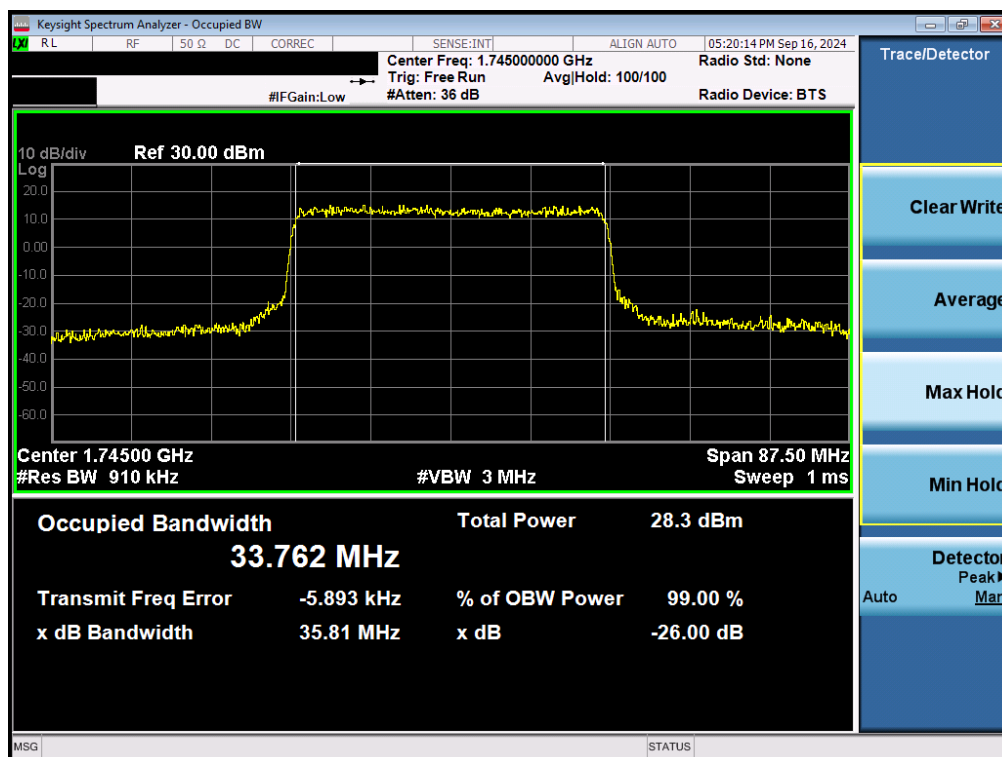


Plot 7-78. Occupied Bandwidth Plot (NR Band n66 - 40.0MHz CP-OFDM 16QAM - Full RB - ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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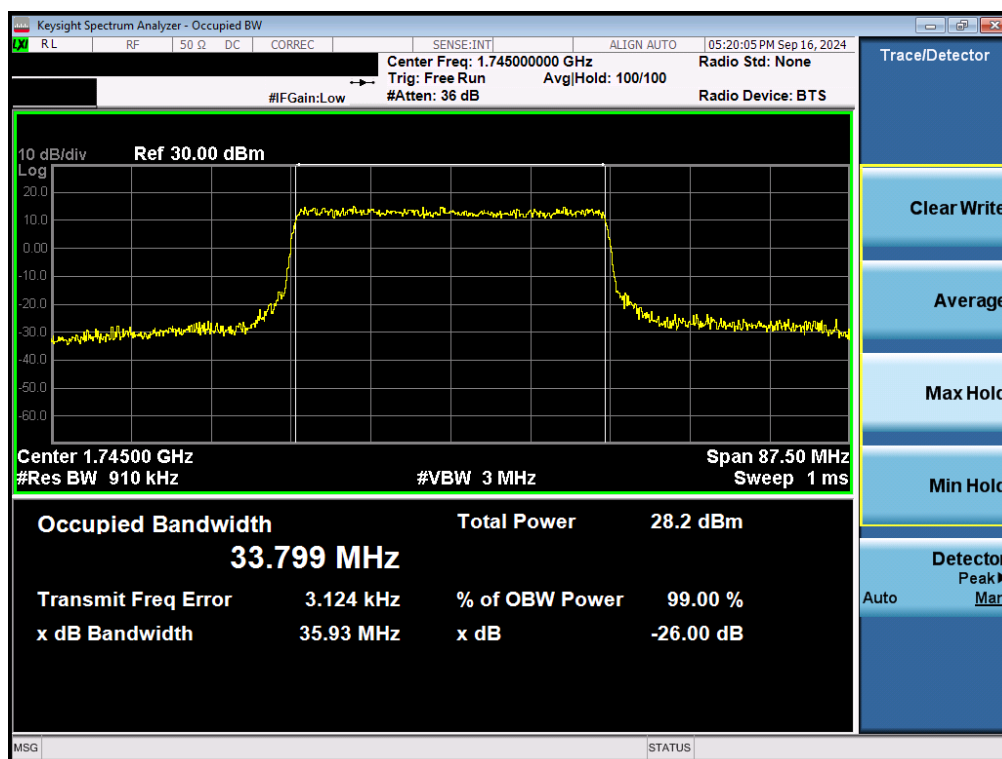


Plot 7-79. Occupied Bandwidth Plot (NR Band n66 - 35.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)

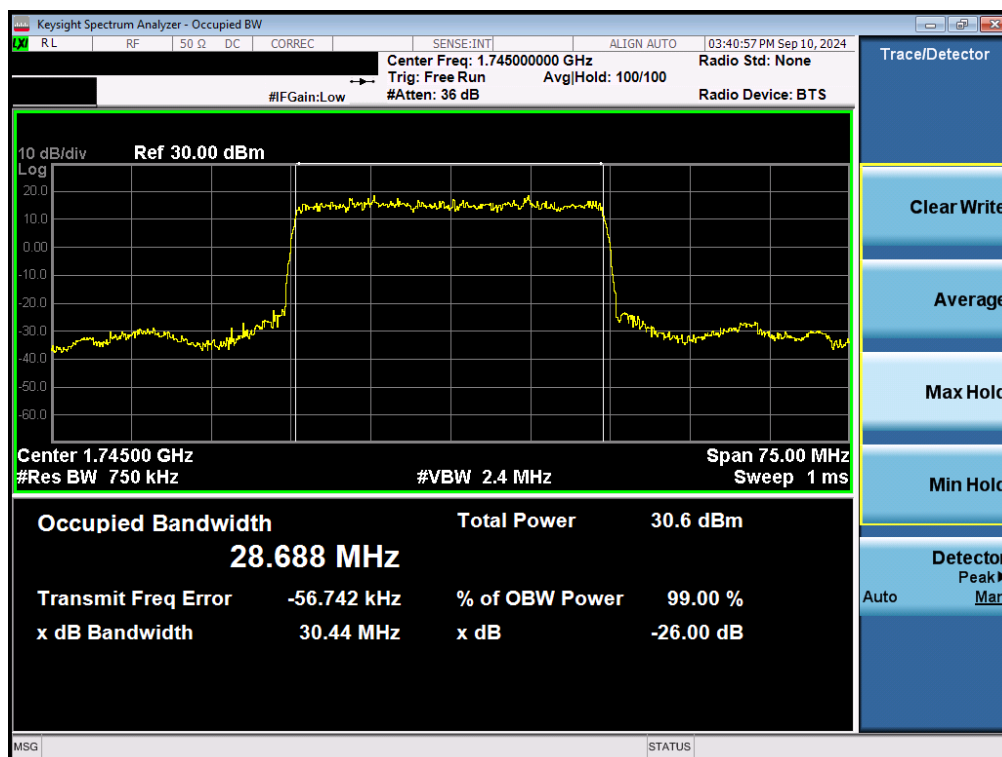


Plot 7-80. Occupied Bandwidth Plot (NR Band n66 - 35.0MHz CP-OFDM QPSK - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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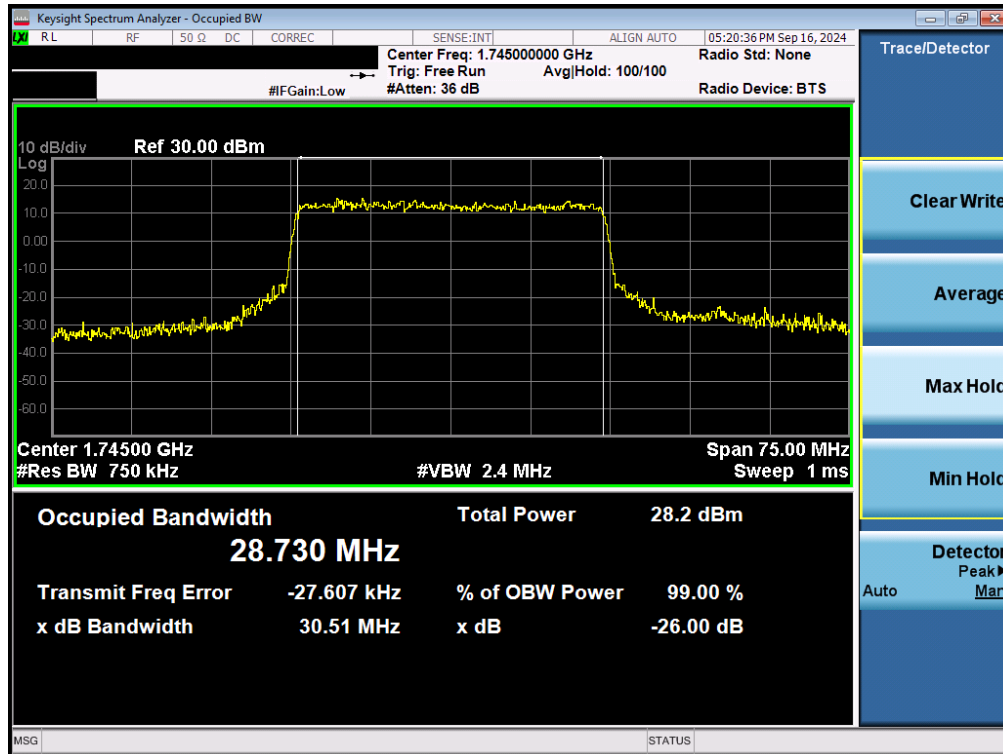


Plot 7-81. Occupied Bandwidth Plot (NR Band n66 - 35.0MHz CP-OFDM 16QAM - Full RB – ANT1)

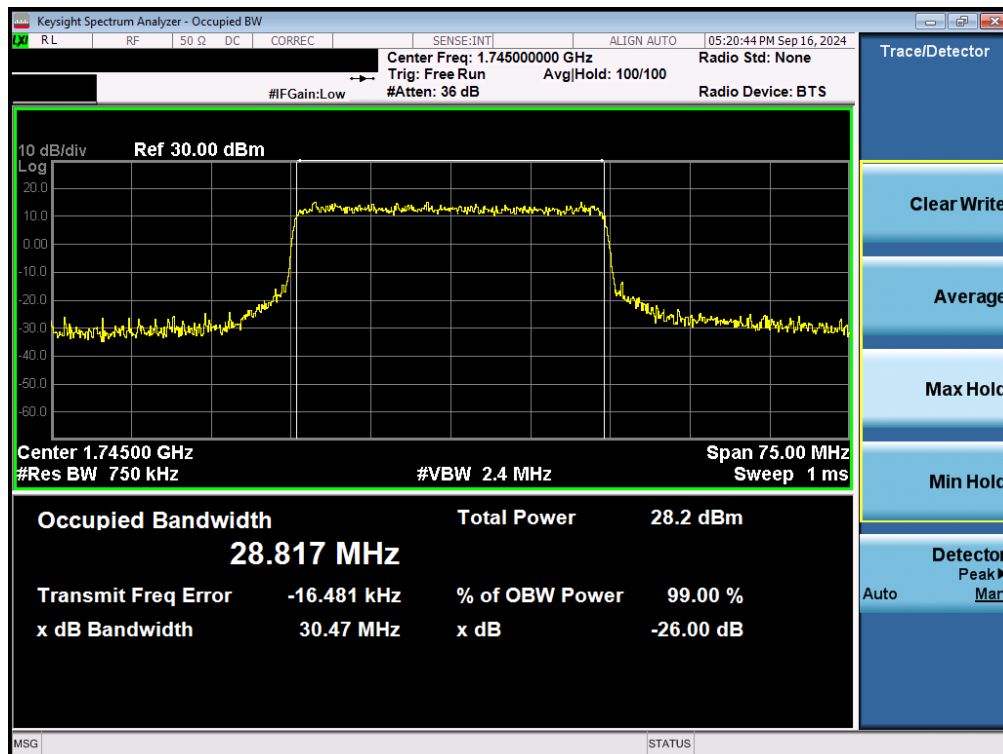


Plot 7-82. Occupied Bandwidth Plot (NR Band n66 - 30.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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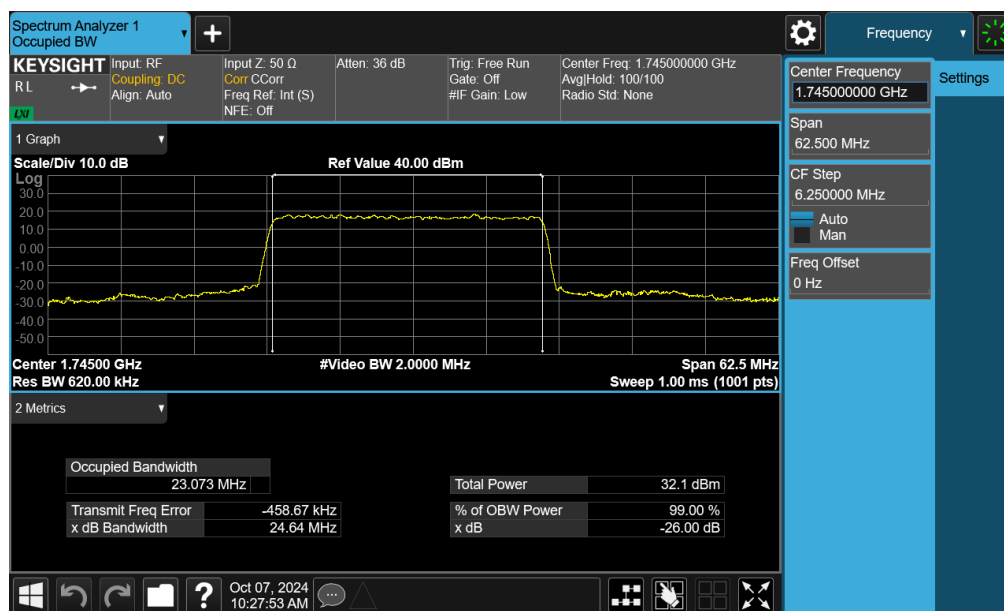


Plot 7-83. Occupied Bandwidth Plot (NR Band n66 - 30.0MHz CP-OFDM QPSK - Full RB – ANT1)

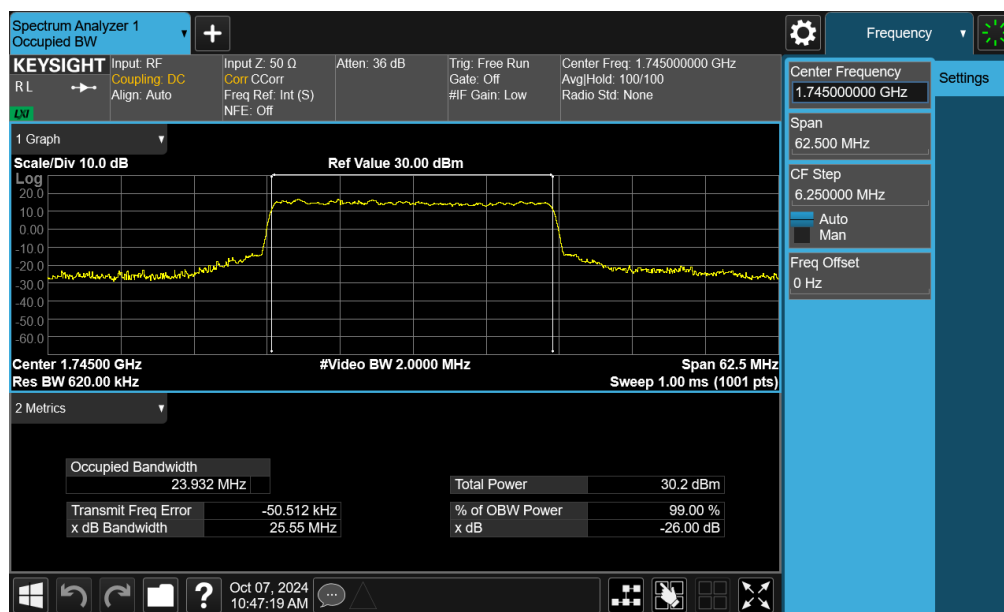


Plot 7-84. Occupied Bandwidth Plot (NR Band n66 - 30.0MHz CP-OFDM 16QAM - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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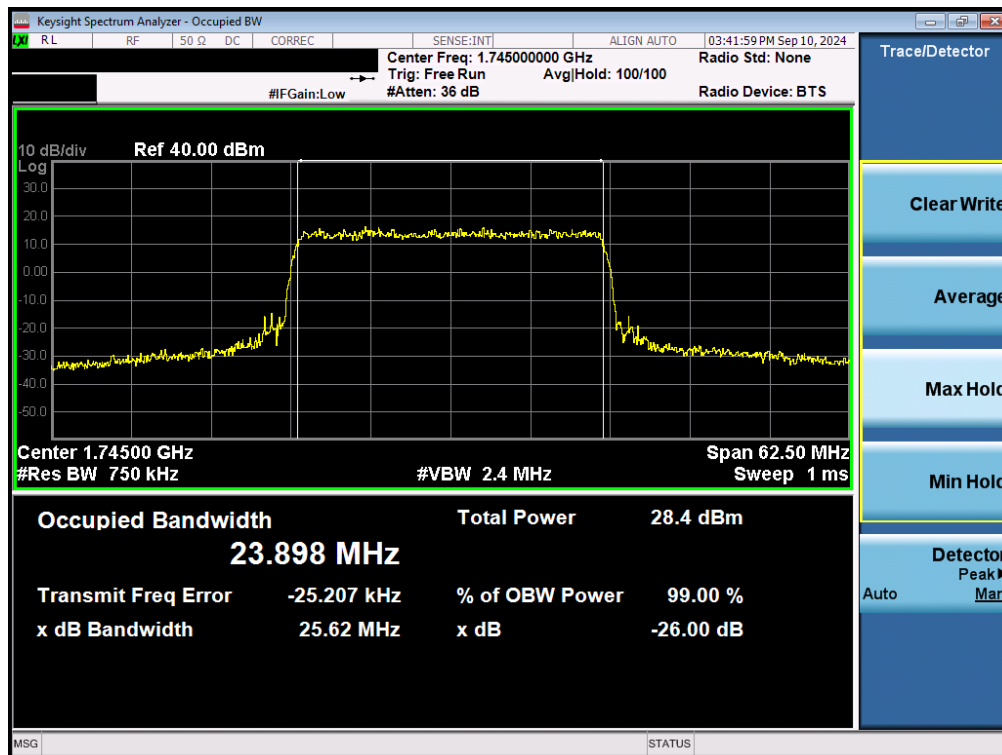


Plot 7-85. Occupied Bandwidth Plot (NR Band n66 - 25.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)

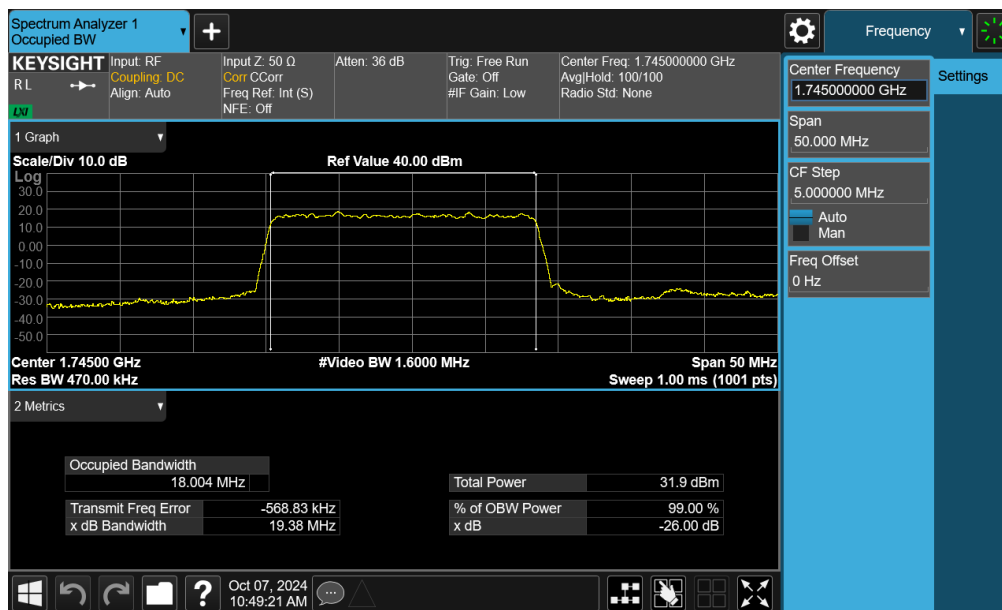


Plot 7-86. Occupied Bandwidth Plot (NR Band n66 - 25.0MHz CP-OFDM QPSK - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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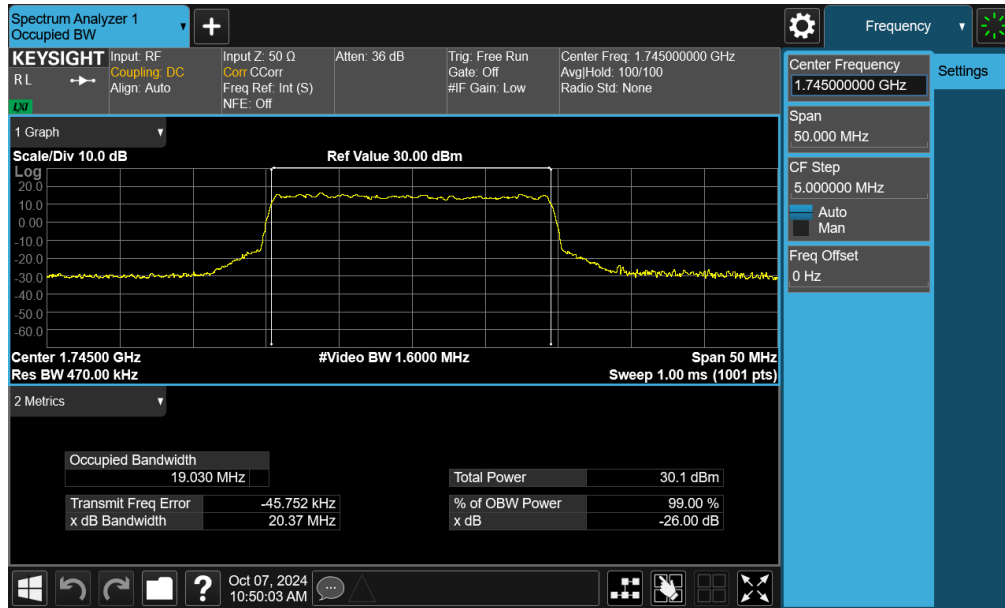


Plot 7-87. Occupied Bandwidth Plot (NR Band n66 - 25.0MHz CP-OFDM 16QAM - Full RB – ANT1)

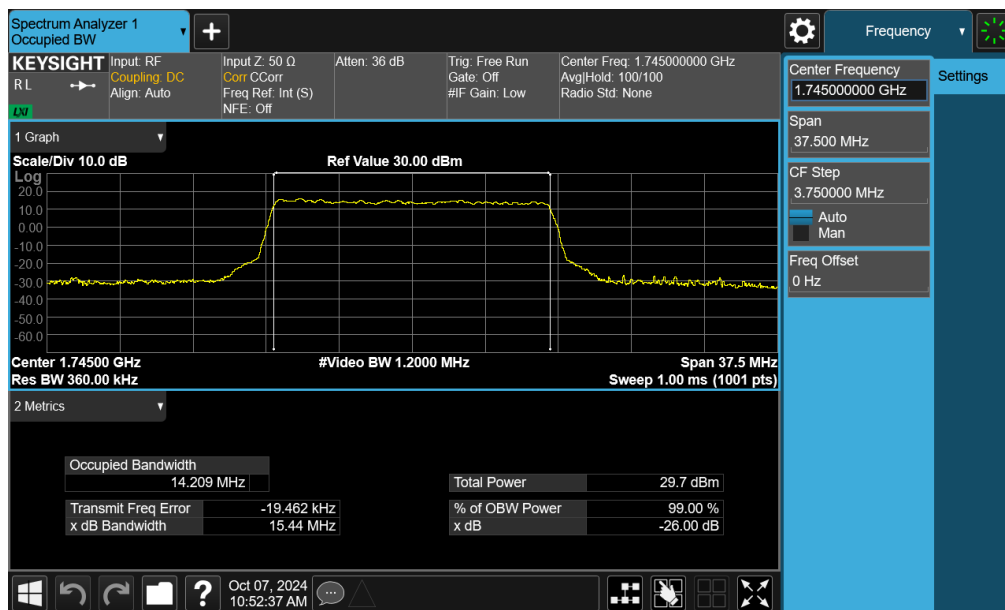
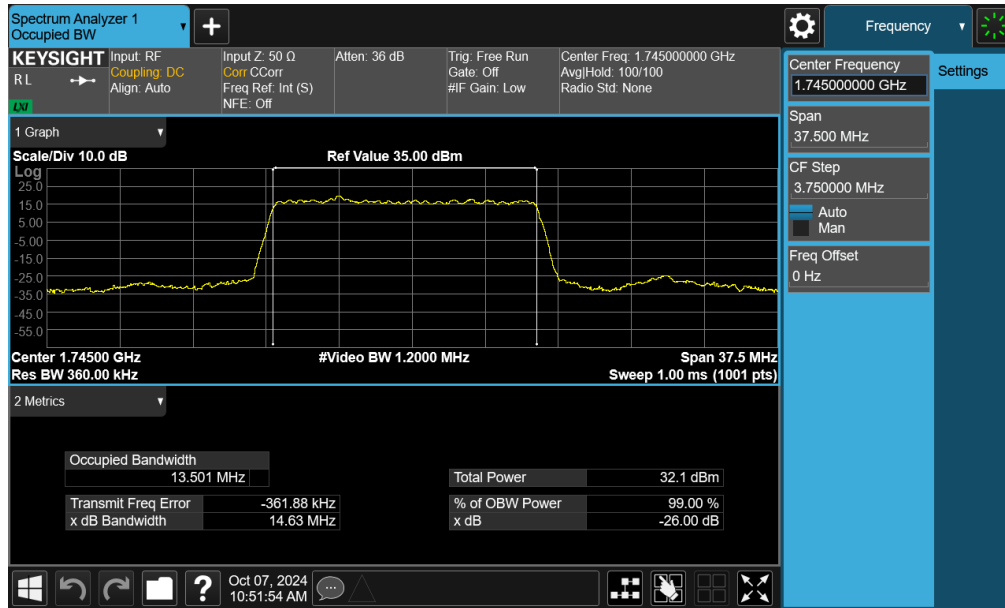


Plot 7-88. Occupied Bandwidth Plot (NR Band n66 - 20.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)

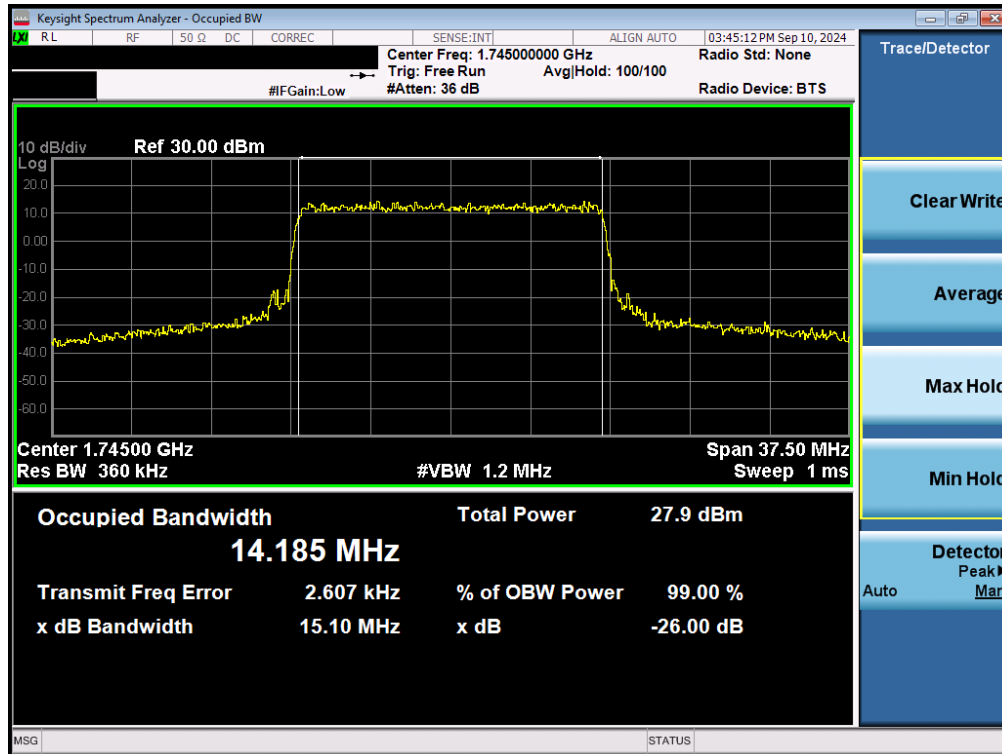
FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2408260067-03-R1.A3L	Test Dates: 09/06/2024 - 10/30/2024	EUT Type: Portable Handset	Page 66 of 272



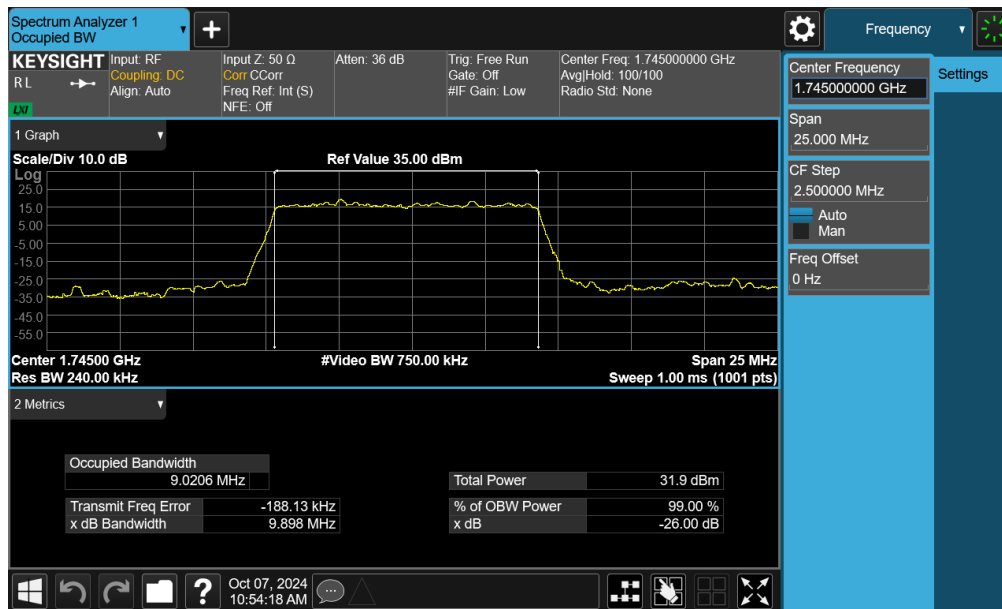
FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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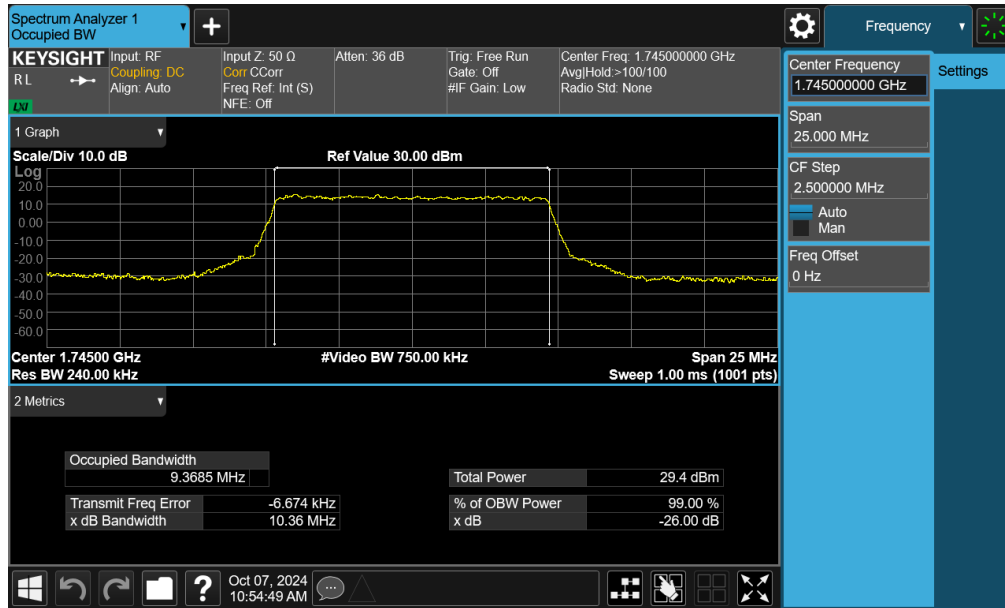


Plot 7-93. Occupied Bandwidth Plot (NR Band n66 - 15.0MHz CP-OFDM 16QAM - Full RB – ANT1)



Plot 7-94. Occupied Bandwidth Plot (NR Band n66 - 10.0MHz DFT-s-OFDM BPSK - Full RB – ANT1)

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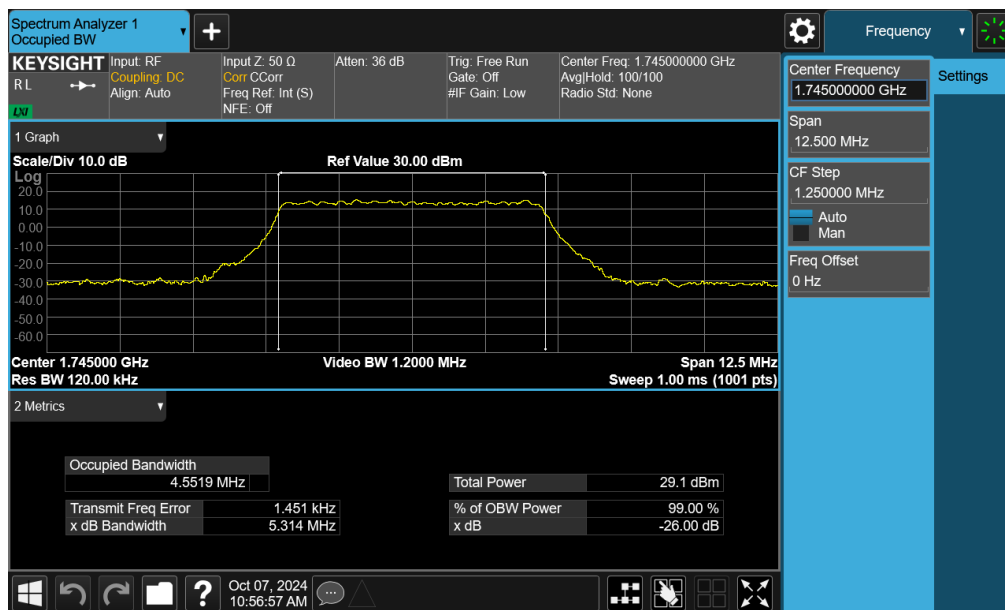
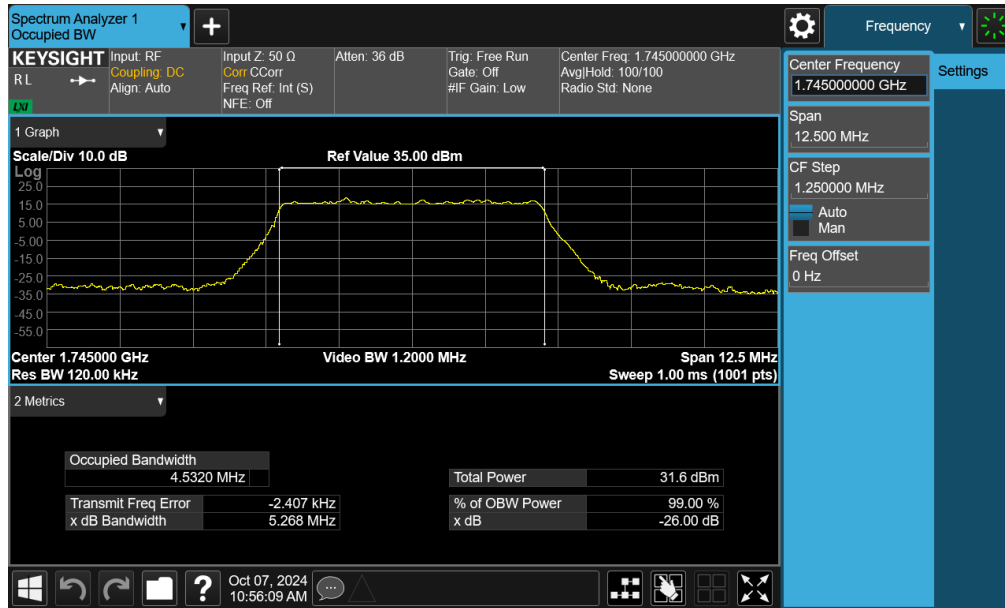


Plot 7-95. Occupied Bandwidth Plot (NR Band n66 - 10.0MHz CP-OFDM QPSK - Full RB – ANT1)

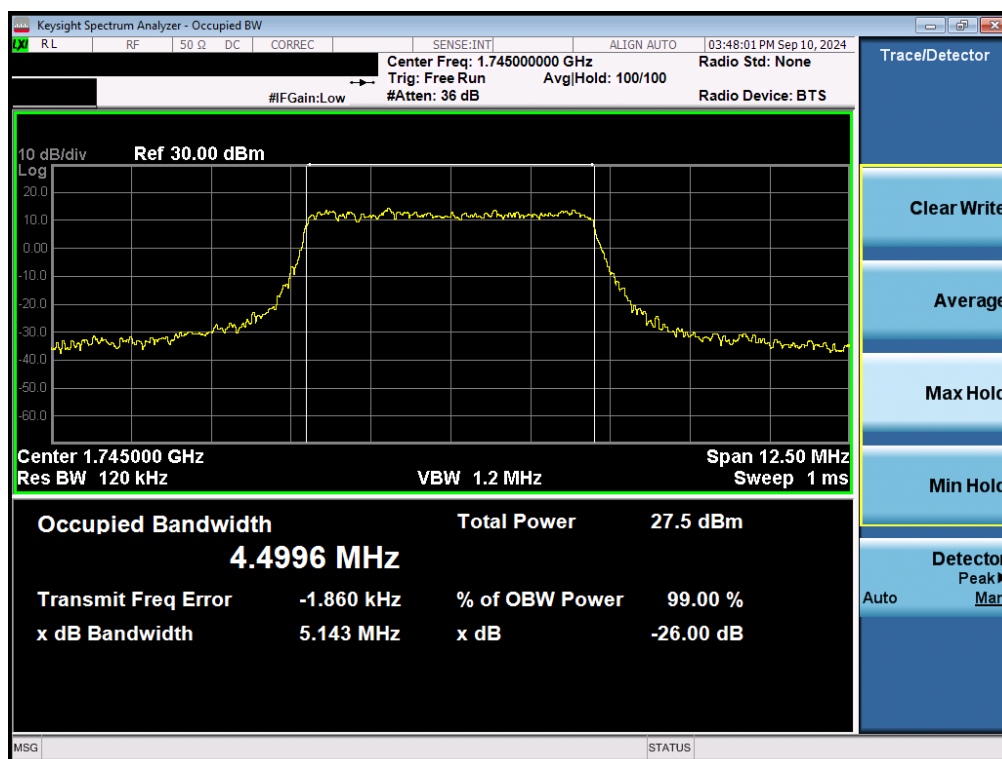


Plot 7-96. Occupied Bandwidth Plot (NR Band n66 - 10.0MHz CP-OFDM 16QAM - Full RB – ANT1)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-99. Occupied Bandwidth Plot (NR Band n66 - 5.0MHz CP-OFDM 16QAM - Full RB – ANT1)

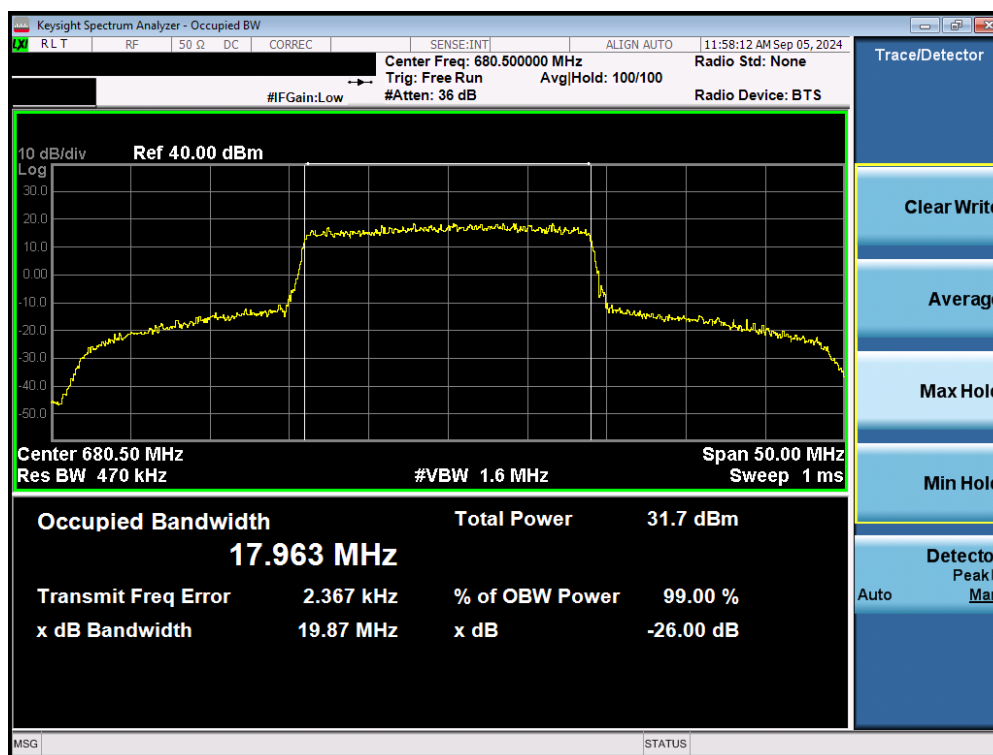
FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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Mode	Bandwidth	Modulation	OBW [MHz]
LTE-B71	20MHz	QPSK	17.96
		16QAM	17.98
	15MHz	QPSK	13.47
		16QAM	13.50
	10MHz	QPSK	8.99
		16QAM	8.98
	5MHz	QPSK	4.53
		16QAM	4.54
LTE-B12	10MHz	QPSK	8.99
		16QAM	8.99
	5MHz	QPSK	4.53
		16QAM	4.53
	3MHz	QPSK	2.71
		16QAM	2.72
	1.4MHz	QPSK	1.11
		16QAM	1.11
LTE-B13	10MHz	QPSK	9.05
		16QAM	9.03
	5MHz	QPSK	4.54
		16QAM	4.52
LTE-B66-4	20MHz	QPSK	17.98
		16QAM	18.06
	15MHz	QPSK	13.53
		16QAM	13.51
	10MHz	QPSK	9.05
		16QAM	9.04
	5MHz	QPSK	4.55
		16QAM	4.55
	3MHz	QPSK	2.73
		16QAM	2.73
	1.4MHz	QPSK	1.11
		16QAM	1.11

Table 7-7. Occupied Bandwidth Results – Ant2

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
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LTE Band 71 – ANT2



Plot 7-100. Occupied Bandwidth Plot (LTE Band 71 - 20MHz QPSK - Full RB – ANT2)



Plot 7-101. Occupied Bandwidth Plot (LTE Band 71 - 20MHz 16-QAM - Full RB – ANT2)

FCC ID: A3LSMS938U	PART 27 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2408260067-03-R1.A3L	Test Dates: 09/06/2024 - 10/30/2024	EUT Type: Portable Handset	Page 74 of 272