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PART 24 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 - 11/08/2024

Test Report Issue Date:

11/10/2024

Test Site/Location:

Element Lab., Columbia, MD, USA

Test Report Serial No.:

1M2408260069-05.A3L

FCC ID:

A3LSMS938B

APPLICANT:

Samsung Electronics Co., Ltd.

Application Type:

Certification

Model:

SM-S938B/DS

Additional Model:

SM-S938B

EUT Type:

Portable Handset

FCC Classification:

PCS Licensed Transmitter Held to Ear (PCE)

FCC Rule Part:

24

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.

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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Antenna-1						
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
GSM/GPRS	N/A	GMSK	1850.2 - 1909.8	0.817	29.12	245KGXW
EDGE	N/A	8-PSK	1850.2 - 1909.8	0.320	25.05	242KG7W
WCDMA	N/A	Spread Spectrum	1852.4 - 1907.6	0.212	23.26	4M18F9W
LTE Band 25/2	20 MHz	QPSK	1860 - 1905	0.280	24.47	18M0G7D
		16QAM	1860 - 1905	0.235	23.72	18M0W7D
	15 MHz	QPSK	1857.5 - 1907.5	0.282	24.50	13M5G7D
		16QAM	1857.5 - 1907.5	0.226	23.55	13M6W7D
	10 MHz	QPSK	1855 - 1910	0.289	24.61	9M03G7D
		16QAM	1855 - 1910	0.240	23.79	9M02W7D
	5 MHz	QPSK	1852.5 - 1912.5	0.289	24.60	4M53G7D
		16QAM	1852.5 - 1912.5	0.241	23.83	4M52W7D
	3 MHz	QPSK	1851.5 - 1913.5	0.283	24.51	2M73G7D
		16QAM	1851.5 - 1913.5	0.232	23.65	2M72W7D
	1.4 MHz	QPSK	1850.7 - 1914.3	0.280	24.48	1M11G7D
		16QAM	1850.7 - 1914.3	0.226	23.54	1M11W7D
NR Band n25/2	40 MHz	$\pi/2$ BPSK	1870 - 1895	0.208	23.19	38M7G7D
		QPSK	1870 - 1895	0.209	23.21	38M7G7D
		16QAM	1870 - 1895	0.177	22.47	38M8W7D
	35 MHz	$\pi/2$ BPSK	1867.5 - 1897.5	0.218	23.39	32M4G7D
		QPSK	1867.5 - 1897.5	0.213	23.28	33M7G7D
		16QAM	1867.5 - 1897.5	0.185	22.68	33M8W7D
	30 MHz	$\pi/2$ BPSK	1865 - 1900	0.214	23.31	28M8G7D
		QPSK	1865 - 1900	0.228	23.59	28M7G7D
		16QAM	1865 - 1900	0.183	22.63	28M7W7D
	25 MHz	$\pi/2$ BPSK	1862.5 - 1902.5	0.219	23.40	23M0G7D
		QPSK	1862.5 - 1902.5	0.222	23.46	23M9G7D
		16QAM	1862.5 - 1902.5	0.177	22.47	23M9W7D
	20 MHz	$\pi/2$ BPSK	1860 - 1905	0.211	23.24	18M0G7D
		QPSK	1860 - 1905	0.218	23.38	19M0G7D
		16QAM	1860 - 1905	0.183	22.63	19M0W7D
	15 MHz	$\pi/2$ BPSK	1857.5 - 1907.5	0.220	23.42	13M5G7D
		QPSK	1857.5 - 1907.5	0.219	23.41	14M2G7D
		16QAM	1857.5 - 1907.5	0.179	22.53	14M2W7D
	10 MHz	$\pi/2$ BPSK	1855 - 1910	0.211	23.24	9M01G7D
		QPSK	1855 - 1910	0.217	23.36	9M33G7D
		16QAM	1855 - 1910	0.173	22.37	9M34W7D
	5 MHz	$\pi/2$ BPSK	1852.5 - 1912.5	0.214	23.30	4M52G7D
		QPSK	1852.5 - 1912.5	0.212	23.27	4M53G7D
		16QAM	1852.5 - 1912.5	0.179	22.53	4M50W7D

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Antenna-2						
Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
LTE Band 25/2	20 MHz	QPSK	1860 - 1905	0.159	22.01	18M0G7D
		16QAM	1860 - 1905	0.131	21.18	18M0W7D
	15 MHz	QPSK	1857.5 - 1907.5	0.160	22.04	13M6G7D
		16QAM	1857.5 - 1907.5	0.129	21.09	13M5W7D
	10 MHz	QPSK	1855 - 1910	0.162	22.11	9M02G7D
		16QAM	1855 - 1910	0.134	21.26	9M03W7D
	5 MHz	QPSK	1852.5 - 1912.5	0.165	22.18	4M52G7D
		16QAM	1852.5 - 1912.5	0.134	21.27	4M54W7D
	3 MHz	QPSK	1851.5 - 1913.5	0.163	22.11	2M72G7D
		16QAM	1851.5 - 1913.5	0.130	21.14	2M72W7D
	1.4 MHz	QPSK	1850.7 - 1914.3	0.159	22.01	1M10G7D
		16QAM	1850.7 - 1914.3	0.133	21.23	1M11W7D
NR Band n25/2	40 MHz	$\pi/2$ BPSK	1870 - 1895	0.133	21.23	38M7G7D
		QPSK	1870 - 1895	0.136	21.32	38M7G7D
		16QAM	1870 - 1895	0.111	20.44	38M8W7D
	35 MHz	$\pi/2$ BPSK	1867.5 - 1897.5	0.133	21.24	32M3G7D
		QPSK	1867.5 - 1897.5	0.140	21.45	33M7G7D
		16QAM	1867.5 - 1897.5	0.115	20.59	33M8W7D
	30 MHz	$\pi/2$ BPSK	1865 - 1900	0.138	21.39	28M7G7D
		QPSK	1865 - 1900	0.139	21.43	28M7G7D
		16QAM	1865 - 1900	0.110	20.41	28M7W7D
	25 MHz	$\pi/2$ BPSK	1862.5 - 1902.5	0.133	21.25	23M0G7D
		QPSK	1862.5 - 1902.5	0.137	21.36	23M9G7D
		16QAM	1862.5 - 1902.5	0.112	20.47	23M9W7D
	20 MHz	$\pi/2$ BPSK	1860 - 1905	0.133	21.23	18M0G7D
		QPSK	1860 - 1905	0.136	21.33	19M0G7D
		16QAM	1860 - 1905	0.109	20.38	19M0W7D
	15 MHz	$\pi/2$ BPSK	1857.5 - 1907.5	0.131	21.17	13M5G7D
		QPSK	1857.5 - 1907.5	0.136	21.33	14M2G7D
		16QAM	1857.5 - 1907.5	0.110	20.40	14M2W7D
	10 MHz	$\pi/2$ BPSK	1855 - 1910	0.129	21.12	9M01G7D
		QPSK	1855 - 1910	0.137	21.35	9M32G7D
		16QAM	1855 - 1910	0.108	20.35	9M34W7D
	5 MHz	$\pi/2$ BPSK	1852.5 - 1912.5	0.133	21.25	4M50G7D
		QPSK	1852.5 - 1912.5	0.131	21.18	4M53G7D
		16QAM	1852.5 - 1912.5	0.117	20.69	4M50W7D

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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: A3LSMS938B**. 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 24 and RSS-133.

Test Device Serial No.: 0675R, 0670R, 0741M, 0734M, 0286M, 0334M, 0099M, 0084M, 0081M

2.2 Device Capabilities

This device contains the following capabilities:

800/1900 GSM/GPRS/EDGE, GSM/GPRS/EDGE, WCDMA/HSPA, Multi-band LTE, Multi-band 5G NR, WLAN, UNII, Bluetooth (1x, EDR, LE), NFC, WPT, UWB

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-P2400 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	Ant 1	Ant 2
GSM/GPRS PCS	Ant A	N/A
WCDMA PCS	Ant A	N/A
LTE Band 25/2	Ant A	Ant F
NR Band 25/2	Ant A	Ant F

Table 2-1. Antenna Naming Convention

2.4 Software and Firmware

Testing was performed on device(s) using software/firmware version S938BXXU0AXHN 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:

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

where P_d is the dipole equivalent power, P_g is the generator output into the substitution antenna, and the antenna gain is the gain of the substitute antenna used relative to either a half-wave dipole (dBd) or an isotropic source (dBi). The substitute level is equal to $P_g \text{ [dBm]} - \text{cable loss [dB]}$.

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

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

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 – MD

Notes:

- 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.
- 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

GSM Emission Designator

Emission Designator = 250KGXW

GSM BW = 250 kHz

G = Phase Modulation

X = Cases not otherwise covered

W = Combination (Audio/Data)

EDGE Emission Designator

Emission Designator = 250KG7W

EDGE BW = 250 kHz

G = Phase Modulation

7 = Quantized/Digital Info

W = Combination (Audio/Data)

WCDMA Emission Designator

Emission Designator = 4M16F9W

WCDMA BW = 4.16 MHz

F = Frequency Modulation

9 = Composite Digital Info

W = Combination (Audio/Data)

QPSK Modulation

Emission Designator = 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: A3LSMS938B
 FCC Classification: PCS Licensed Transmitter Held to Ear (PCE)
 Mode(s): GSM/GPRS/EDGE/WCDMA/LTE/NR

Test Condition	Test Description	FCC Part Section(s)	RSS Section(s)	Test Limit	Test Result	Reference
CONDUCTED	Transmitter Conducted Output Power*	2.1046(a), 2.1046(c)	RSS-Gen(6.12)	N/A	PASS	See RF Exposure Report
	Occupied Bandwidth	2.1049(h)	RSS-Gen(6.7)	N/A	PASS	Section 7.2
	Conducted Band Edge / Spurious Emissions	2.1051, 24.238(a)	RSS-Gen(6.13), RSS-133(6.5)	> 43 + 10log10(P[Watts]) at Band Edge and for all out-of-band emissions	PASS	Sections 7.3, 7.4
	Peak-to-Average Ratio	24.232(d)	RSS-133(6.4)	≤ 13 dB	PASS	Section 7.5
	Frequency Stability	2.1055, 24.235	RSS-Gen(6.11), RSS-133(6.3)	Fundamental emissions stay within authorized frequency block **Carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm	PASS	Section 7.8
RADIATED	Equivalent Isotropic Radiated Power	24.232(c)	RSS-Gen(6.12), RSS-133(6.4)	< 2 Watts max. EIRP	PASS	Section 7.6
	Radiated Spurious Emissions	2.1053, 24.238(a)	RSS-Gen(6.13), RSS-133(6.5)	≥ 43 + 10 log (P[Watts]) dB of attenuation below transmitter power ***Spurious emissions from receivers shall not exceed the limits detailed in RSS-Gen(7.3)	PASS	Section 7.7

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

Table 7-1. Summary of Test Results

Notes:

- 1) All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
- 2) The analyzer plots were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables, directional couplers, and attenuators used as part of the system to maintain a link between the call box and the EUT at all frequencies of interest.
- 3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables, attenuators, and couplers.
- 4) All conducted emissions measurements are performed with automated test software to capture the corresponding plots necessary to show compliance. The measurement software utilized is EMC Software Tool v2.3.0.
- 5) Data was leveraged from model SM-S938U for the certification of SM-S938B/DS. See Table 7-2 for spotcheck results.

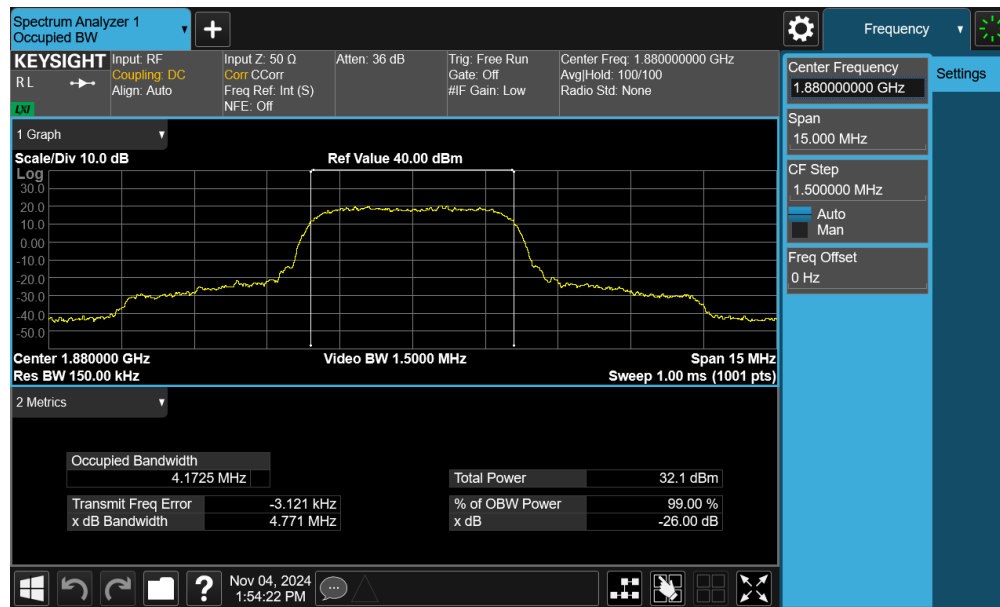
FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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FCC Rules	Test Item	Test Case	Units	Limit	Reference Model: SM-S938U	Variant Model: SM-S938B	Deviation (dB)	Max Deviation (dB)	Pass/Fail
24	Conducted Output Power	Mid Ch., 1880MHz, Ant A	dBm	N/A	23.15	22.57	-0.58	1	PASS
	Occupied Bandwidth	Mid Ch., 1880MHz, Ant A	dBm	8	4.177	4.173	-	N/A	PASS
	EIRP	Low Ch., 1852.40MHz, Ant A	dBm	N/A	23.26	22.68	-0.58	3	PASS
	RSE	Mid Ch., 3760MHz, Ant A	dBm	-13	-58.50	-59.17	-0.67	3	PASS

Table 7-2. Summary of Spot-Checks – WCDMA 1900

3GPP Release Version	Mode	3GPP 34.121 Subtest	PCS Band [dBm]
99	WCDMA	12.2 kbps RMC	9400
			22.57

Table 7-3. Conducted Output Power Measurements (Spot-check)



Plot 7-1. Occupied Bandwidth (Spot-check)

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1852.40	WCDMA1900	V	179	332	20.08	2.60	22.68	0.186	33.01	-10.33

Table 7-4. EIRP Measurements (Spot-check)

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3760.00	V	-	-	-77.93	7.02	36.09	-59.17	-13.00	-46.17

Table 7-8. Radiated Spurious Measurements (Spot-check)

- Each spot check test on the EUT was performed using the same procedure and setting that were used to perform the test on the corresponding reference device.
- All test cases were performed to verify the variant EUT is still in compliance with the spot checked results to the reference device and was performed using the guidance of ANSI C63.26-2015.

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7.2 Conducted Power

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.

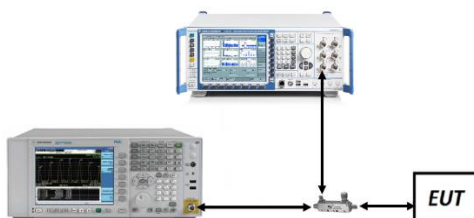


Figure 7-1. Test Instrument & Measurement Setup

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	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
20 MHz	QPSK	26140	1860.0	1 / 0	23.43
		26365	1882.5	1 / 99	23.60
		26590	1905.0	1 / 50	23.58
	16-QAM	26590	1905.0	1 / 50	22.82
15 MHz	QPSK	26115	1857.5	1 / 37	23.46
		26365	1882.5	1 / 74	23.47
		26615	1907.5	1 / 37	23.41
	16-QAM	26115	1857.5	1 / 37	22.75
10 MHz	QPSK	26090	1855.0	1 / 25	23.36
		26365	1882.5	1 / 25	23.70
		26640	1910.0	1 / 0	23.46
	16-QAM	26640	1910.0	1 / 0	22.90
5 MHz	QPSK	26065	1852.5	1 / 0	23.45
		26365	1882.5	1 / 24	23.77
		26665	1912.5	1 / 24	23.55
	16-QAM	26365	1882.5	1 / 24	23.14
3 MHz	QPSK	26055	1851.5	1 / 7	23.45
		26365	1882.5	1 / 7	23.70
		26675	1913.5	1 / 14	23.48
	16-QAM	26055	1851.5	1 / 7	22.80
1.4 MHz	QPSK	26047	1850.7	1 / 5	23.43
		26365	1882.5	1 / 3	23.53
		26683	1914.3	1 / 3	23.51
	16-QAM	26683	1914.3	1 / 0	22.87

Table 7-2. Conducted Powers – LTE Band 25/2 – Ant2

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Bandwidth	Modulation	Channel	Frequency [MHz]	RB Size/Offset	Conducted Power [dBm]
40 MHz	$\pi/2$ BPSK	374000	1870.0	1 / 214	22.67
		376500	1882.5	1 / 214	22.76
		379000	1895.0	1 / 214	22.71
	QPSK	374000	1870.0	1 / 214	22.64
		376500	1882.5	1 / 214	22.70
		379000	1895.0	1 / 214	22.47
	16-QAM	376500	1882.5	1 / 214	21.69
35 MHz	$\pi/2$ BPSK	373500	1867.5	1 / 186	22.68
		376500	1882.5	1 / 94	22.71
		379500	1897.5	1 / 94	22.85
	QPSK	373500	1867.5	1 / 186	22.47
		376500	1882.5	1 / 94	22.83
		379500	1897.5	1 / 94	22.76
	16-QAM	376500	1882.5	1 / 94	21.84
30 MHz	$\pi/2$ BPSK	372000	1865.0	1 / 158	22.83
		376500	1882.5	1 / 158	22.74
		381000	1900.0	1 / 158	22.81
	QPSK	372000	1865.0	1 / 158	22.59
		376500	1882.5	1 / 158	22.81
		381000	1900.0	1 / 158	22.83
	16-QAM	376500	1882.5	1 / 158	21.65
25 MHz	$\pi/2$ BPSK	372000	1862.5	1 / 66	22.67
		376500	1882.5	1 / 131	22.78
		381000	1902.5	1 / 66	22.81
	QPSK	372000	1862.5	1 / 66	22.62
		376500	1882.5	1 / 131	22.74
		381000	1902.5	1 / 66	22.69
	16-QAM	372000	1862.5	1 / 66	21.51
20 MHz	$\pi/2$ BPSK	372000	1860.0	1 / 53	22.52
		376500	1882.5	1 / 53	22.76
		381000	1905.0	1 / 104	22.70
	QPSK	372000	1860.0	1 / 53	22.45
		376500	1882.5	1 / 53	22.71
		381000	1905.0	1 / 104	22.47
	16-QAM	372000	1860.0	1 / 53	21.42
15 MHz	$\pi/2$ BPSK	371500	1857.5	1 / 1	22.58
		376500	1882.5	1 / 77	22.70
		381500	1907.5	1 / 77	22.84
	QPSK	371500	1857.5	1 / 1	22.76
		376500	1882.5	1 / 77	22.57
		381500	1907.5	1 / 77	22.51
	16-QAM	371500	1857.5	1 / 1	21.44
10 MHz	$\pi/2$ BPSK	371000	1855.0	1 / 50	22.51
		376500	1882.5	1 / 1	22.65
		382000	1910.0	1 / 26	22.69
	QPSK	371000	1855.0	1 / 50	22.37
		376500	1882.5	1 / 1	22.73
		382000	1910.0	1 / 26	22.72
	16-QAM	371000	1855.0	1 / 50	21.39
5 MHz	$\pi/2$ BPSK	370500	1852.5	1 / 23	22.61
		376500	1882.5	1 / 1	22.78
		382500	1912.5	1 / 1	22.73
	QPSK	370500	1852.5	1 / 23	22.62
		376500	1882.5	1 / 1	22.55
		382500	1912.5	1 / 1	22.46
	16-QAM	370500	1852.5	1 / 23	21.73

Table 7-3. Conducted Powers – NR Band n25/2 – 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.

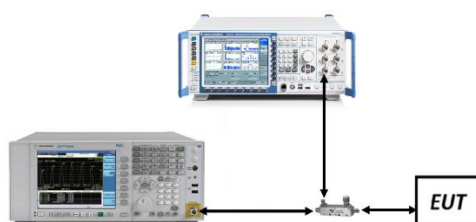


Figure 7-2. Test Instrument & Measurement Setup

Test Notes

None.

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Mode	Bandwidth	Modulation	OBW [MHz]
GSM-PCS	N/A	GMSK	0.245
GSM-PCS EDGE		8-PSK	0.242
WCDMA-PCS		Spread Spectrum	4.177
LTE-B25-2	20MHz	QPSK	18.03
		16QAM	18.00
	15MHz	QPSK	13.50
		16QAM	13.55
	10MHz	QPSK	9.03
		16QAM	9.02
	5MHz	QPSK	4.53
		16QAM	4.52
	3MHz	QPSK	2.73
		16QAM	2.72
	1.4MHz	QPSK	1.11
		16QAM	1.11

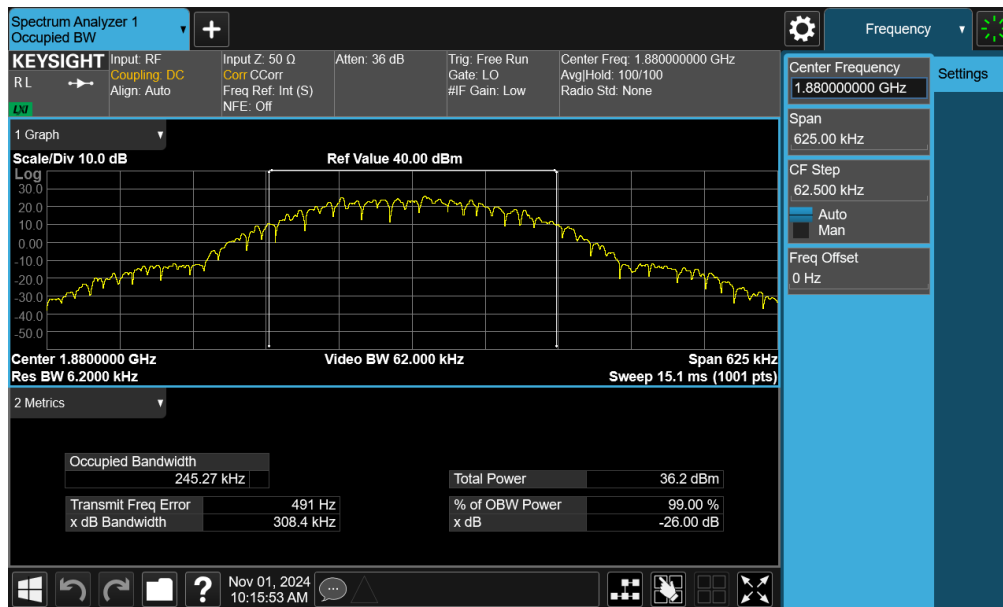
Table 7-4. Occupied Bandwidth Test Results – Ant1

Mode	Bandwidth	Modulation	OBW [MHz]
NR-n25-2	40MHz	BPSK	38.70
		QPSK	38.71
		16QAM	38.76
	35MHz	BPSK	32.41
		QPSK	33.72
		16QAM	33.76
	30MHz	BPSK	28.80
		QPSK	28.71
		16QAM	28.74
	25MHz	BPSK	23.04
		QPSK	23.93
		16QAM	23.86
	20MHz	BPSK	17.98
		QPSK	18.99
		16QAM	19.05
	15MHz	BPSK	13.53
		QPSK	14.19
		16QAM	14.17
	10MHz	BPSK	9.01
		QPSK	9.33
		16QAM	9.34
	5MHz	BPSK	4.52
		QPSK	4.53
		16QAM	4.50

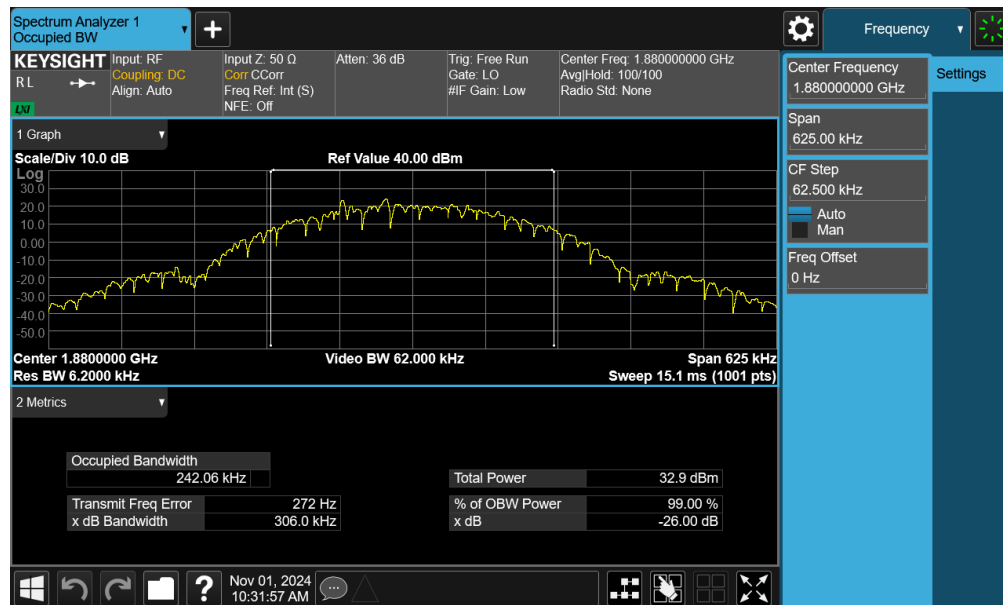
Table 7-5. Occupied Bandwidth Test Results – Ant1

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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GSM/GPRS PCS – Ant1



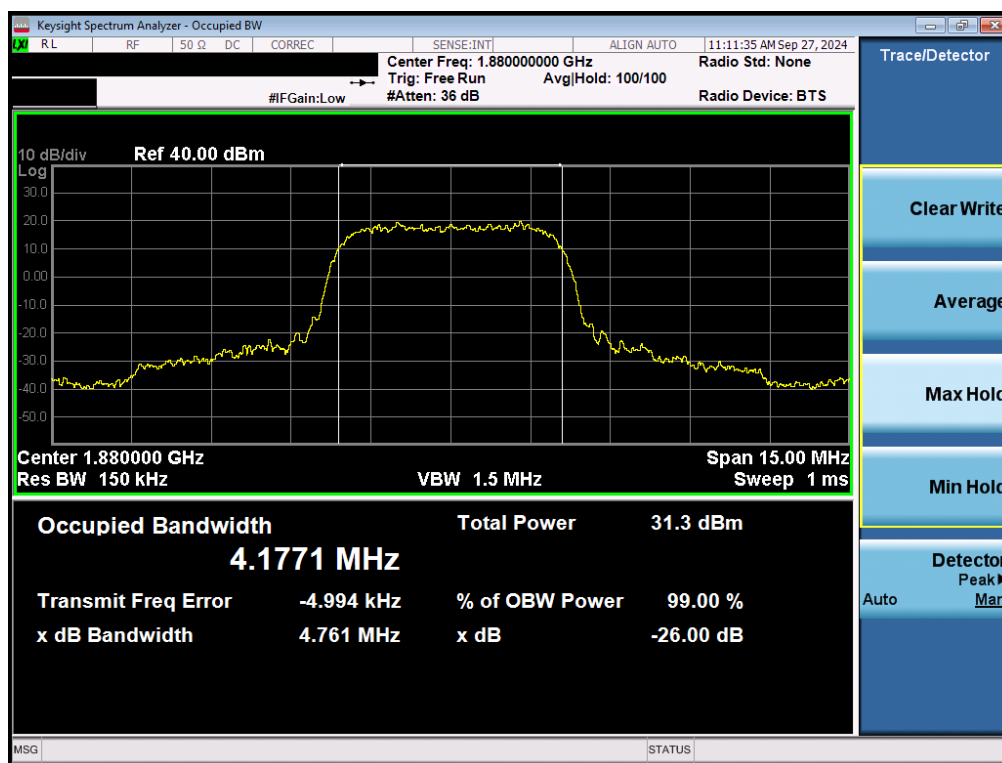
Plot 7-1. Occupied Bandwidth Plot (GPRS, Ch. 661 - Ant1)



Plot 7-2. Occupied Bandwidth Plot (EDGE, Ch. 661 - Ant1)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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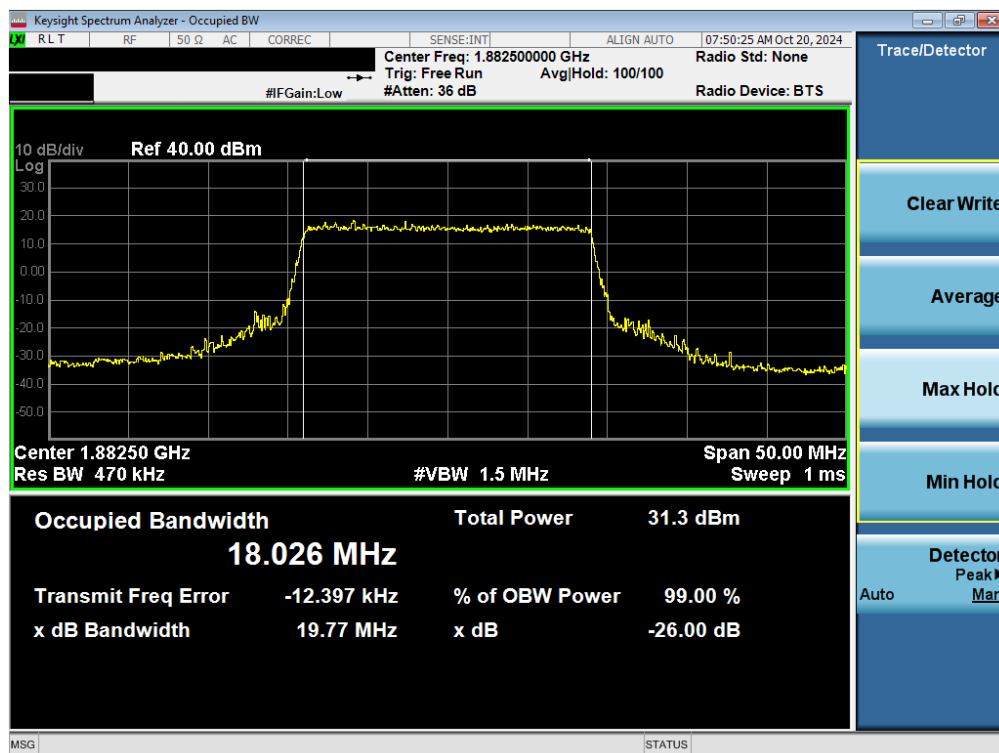
WCDMA PCS – Ant1



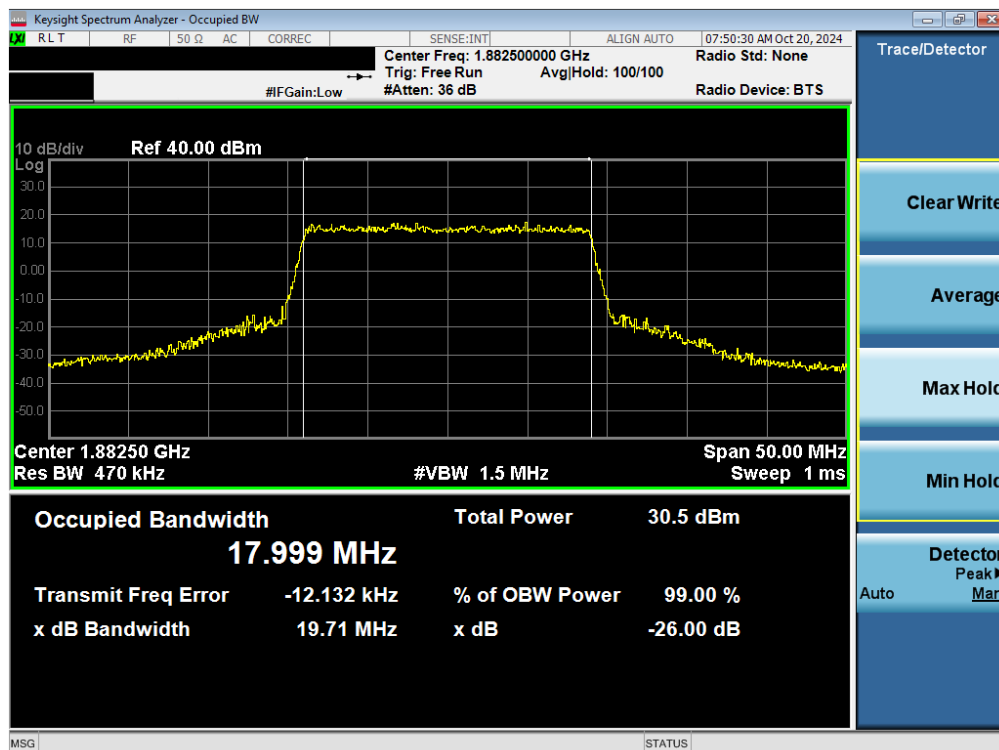
Plot 7-3. Occupied Bandwidth Plot (WCDMA, Ch. 9400 - Ant1)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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LTE Band 25/2 – Ant1

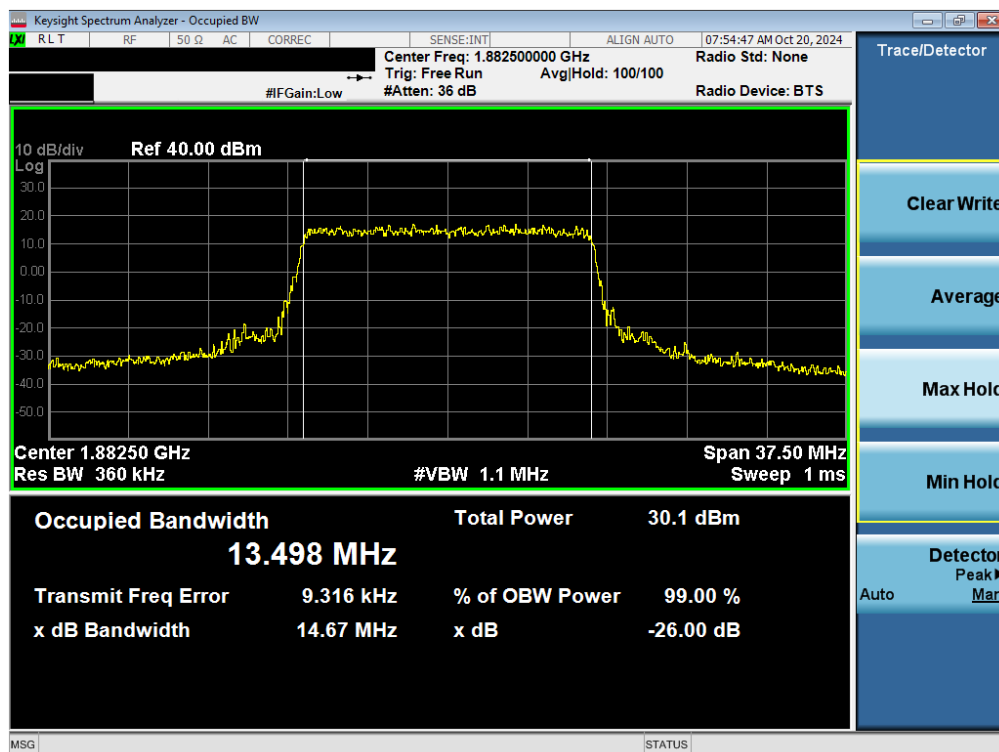


Plot 7-4. Occupied Bandwidth Plot (LTE Band 25/2 - 20MHz QPSK - Full RB - Ant1)

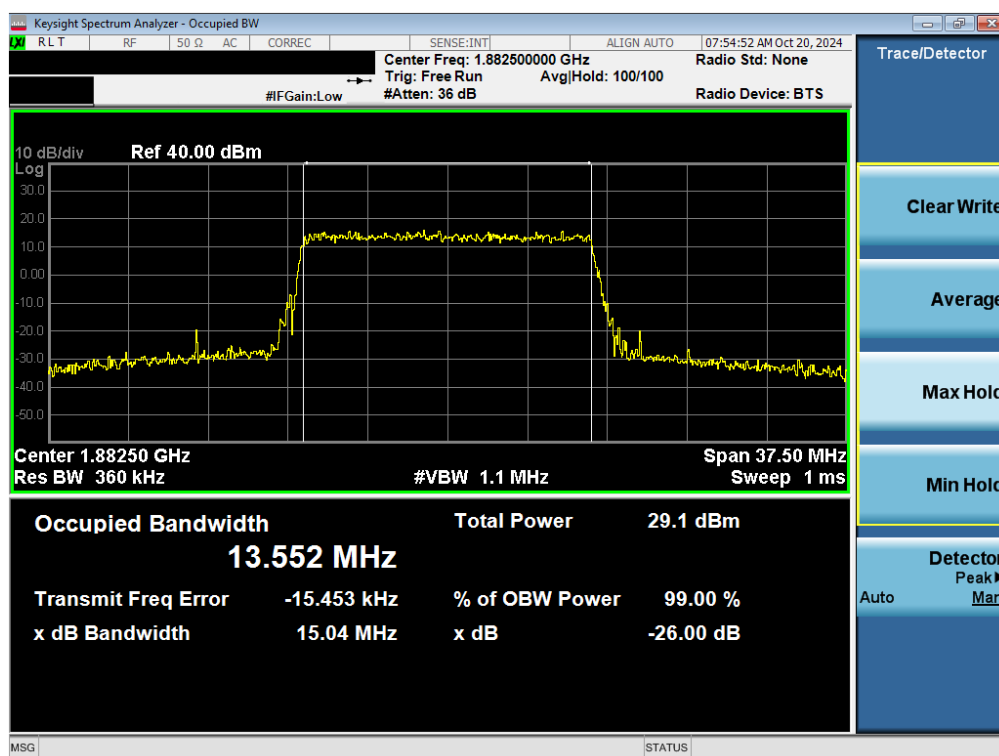


Plot 7-5. Occupied Bandwidth Plot (LTE Band 25/2 - 20MHz 16-QAM - Full RB - Ant1)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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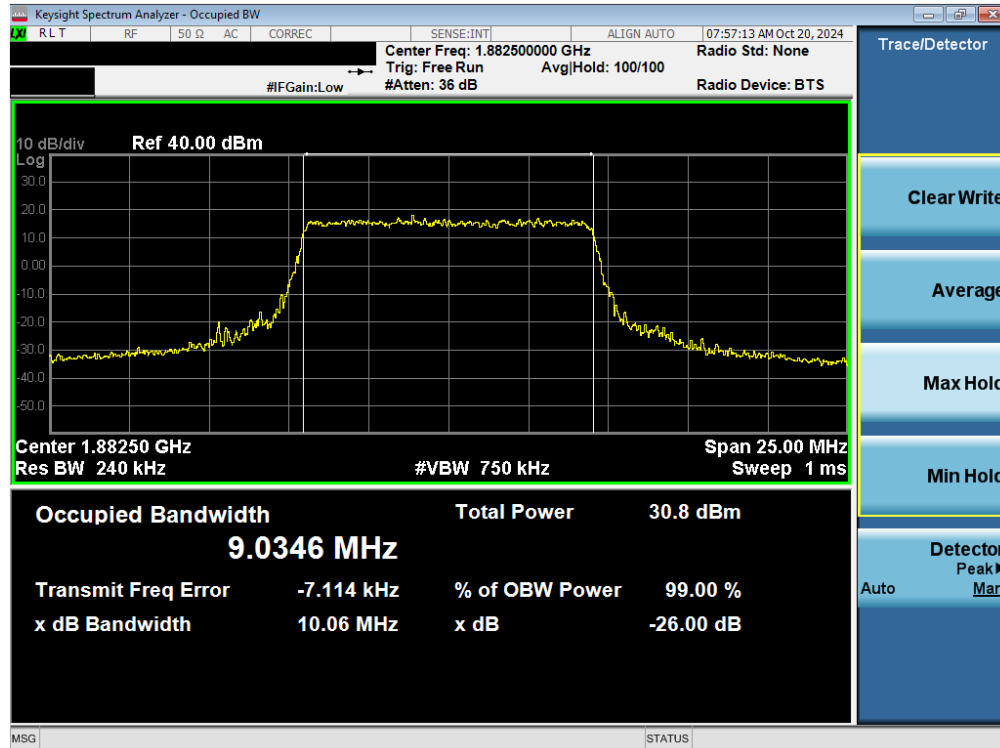


Plot 7-6. Occupied Bandwidth Plot (LTE Band 25/2 - 15MHz QPSK - Full RB - Ant1)

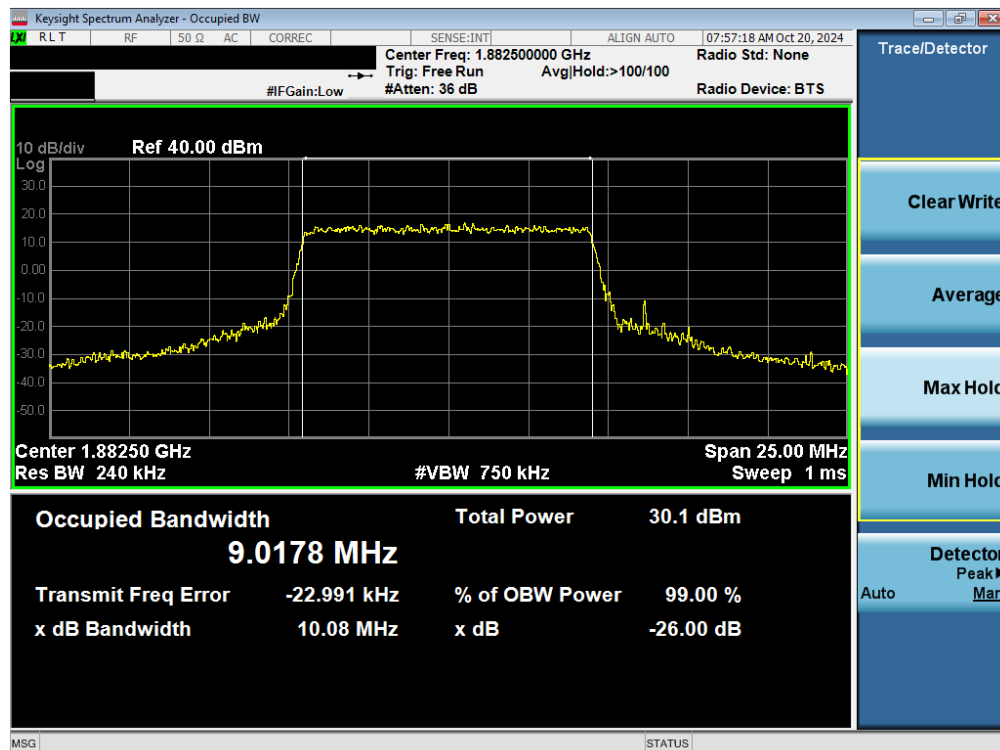


Plot 7-7. Occupied Bandwidth Plot (LTE Band 25/2 - 15MHz 16-QAM - Full RB - Ant1)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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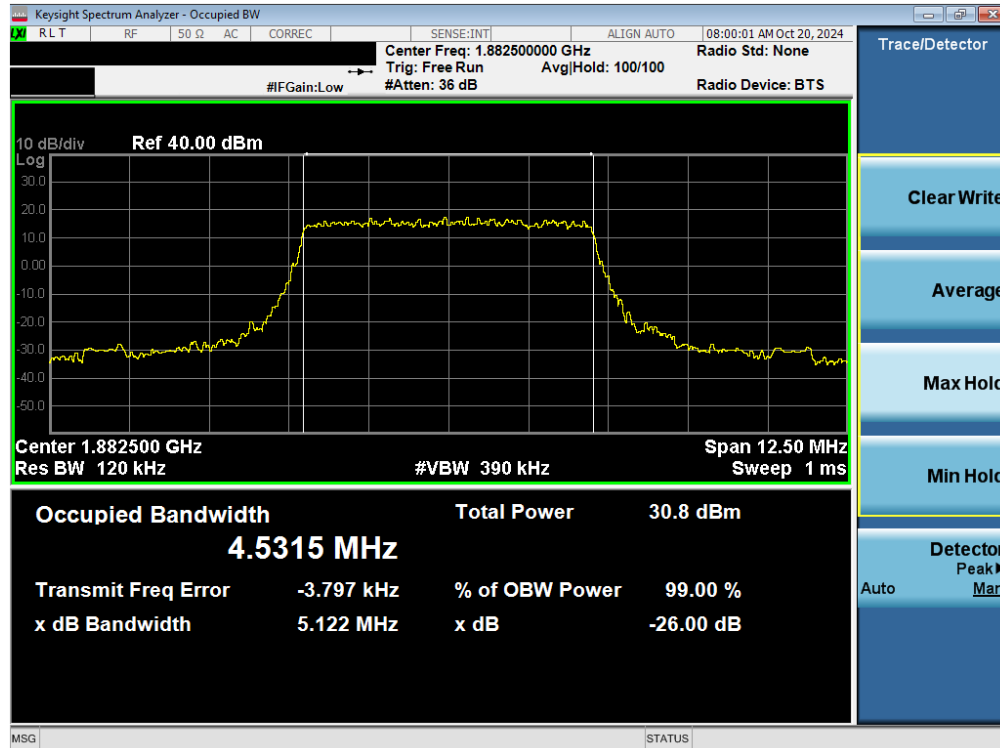


Plot 7-8. Occupied Bandwidth Plot (LTE Band 25/2 - 10MHz QPSK - Full RB - Ant1)

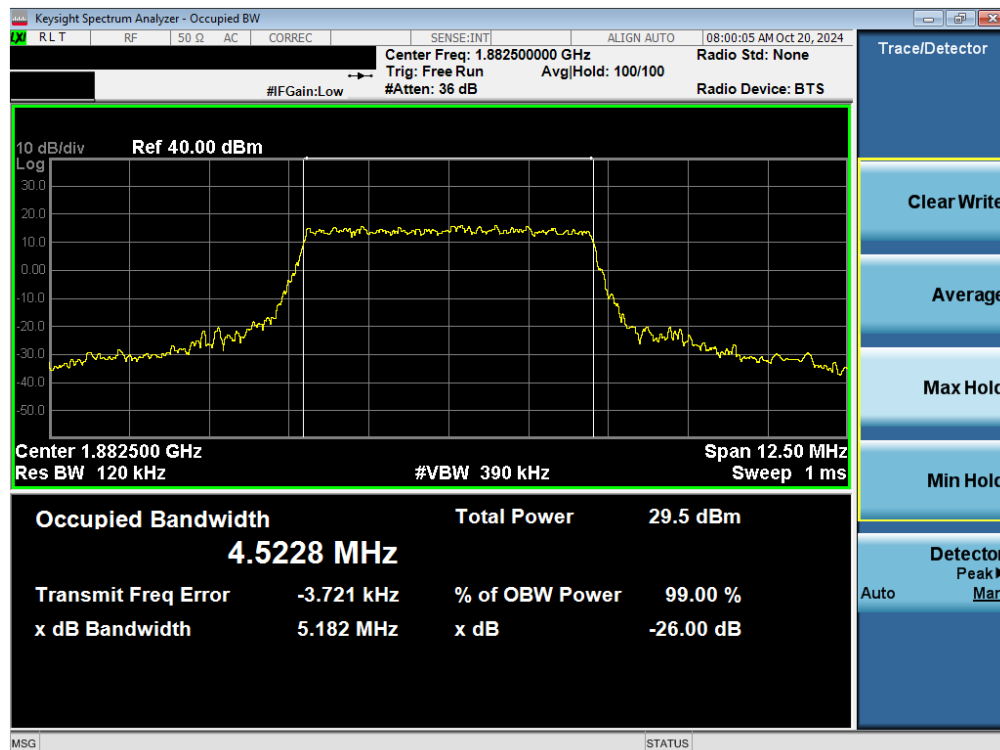


Plot 7-9. Occupied Bandwidth Plot (LTE Band 25/2 - 10MHz 16-QAM - Full RB - Ant1)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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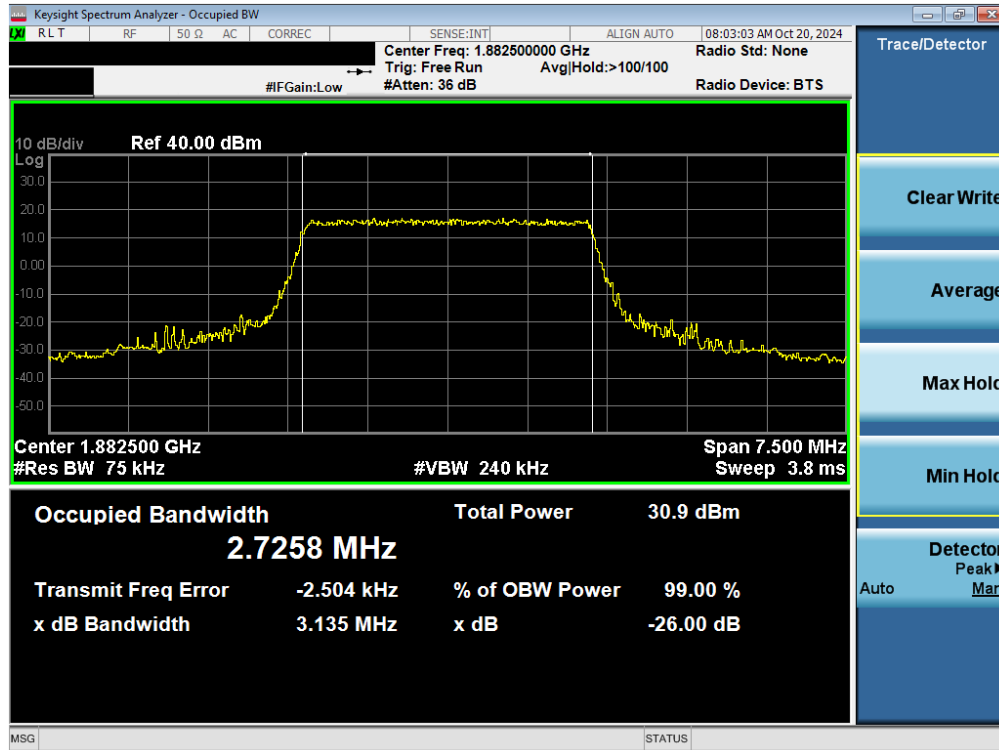


Plot 7-10. Occupied Bandwidth Plot (LTE Band 25/2 - 5MHz QPSK - Full RB - Ant1)

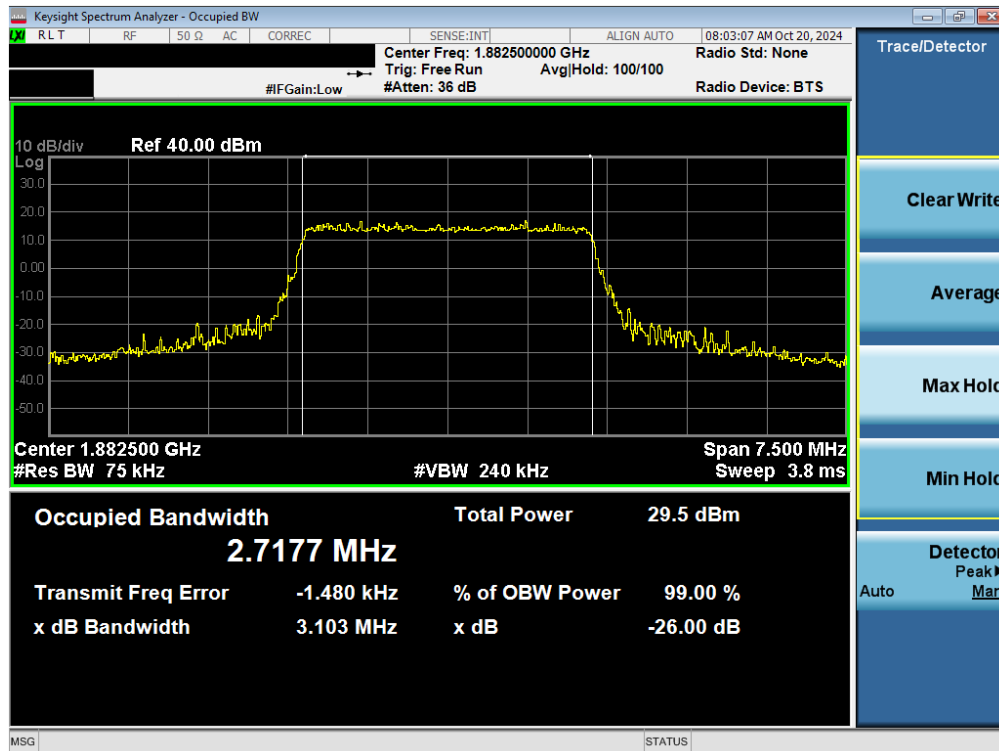


Plot 7-11. Occupied Bandwidth Plot (LTE Band 25/2 - 5MHz 16-QAM - Full RB - Ant1)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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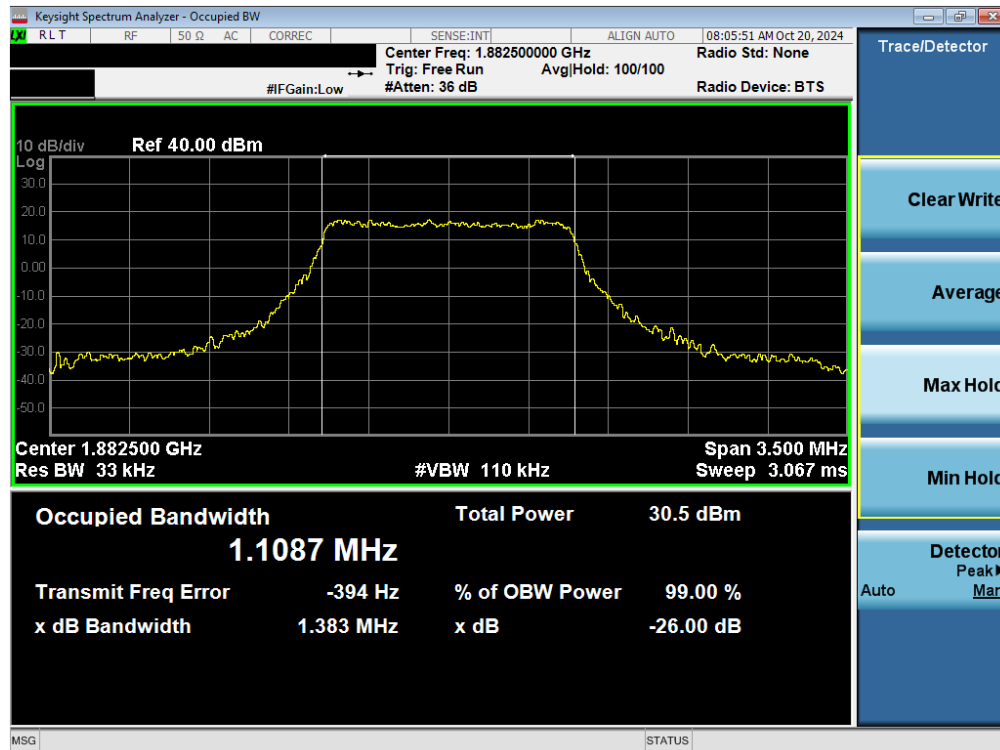


Plot 7-12. Occupied Bandwidth Plot (LTE Band 25/2 - 3MHz QPSK - Full RB - Ant1)

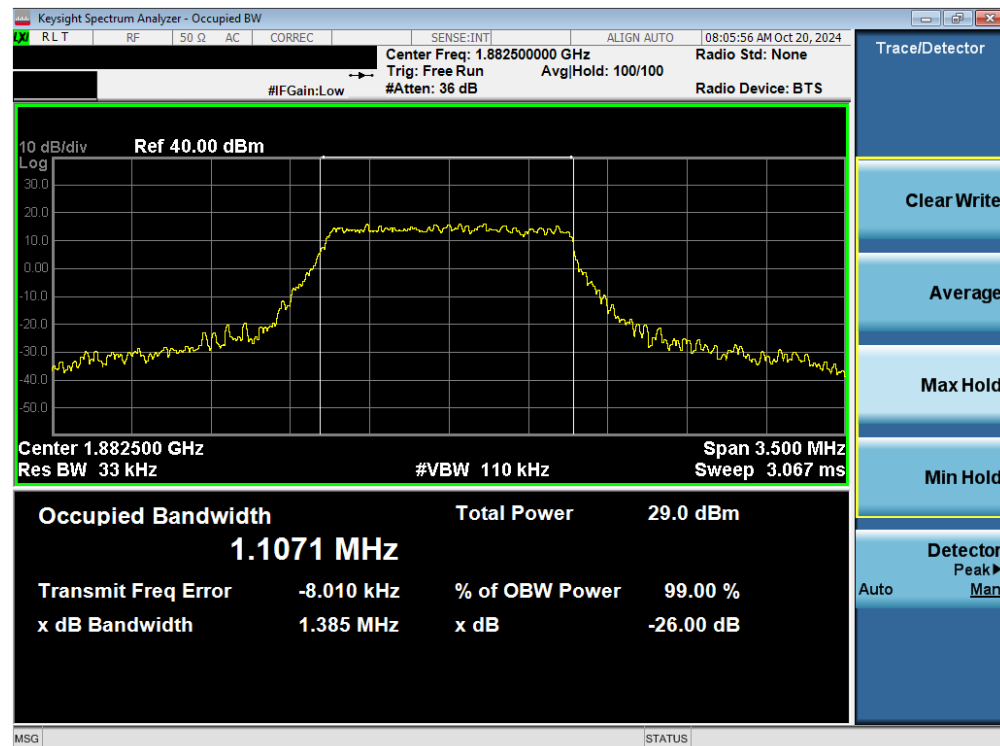


Plot 7-13. Occupied Bandwidth Plot (LTE Band 25/2 - 3MHz 16-QAM - Full RB - Ant1)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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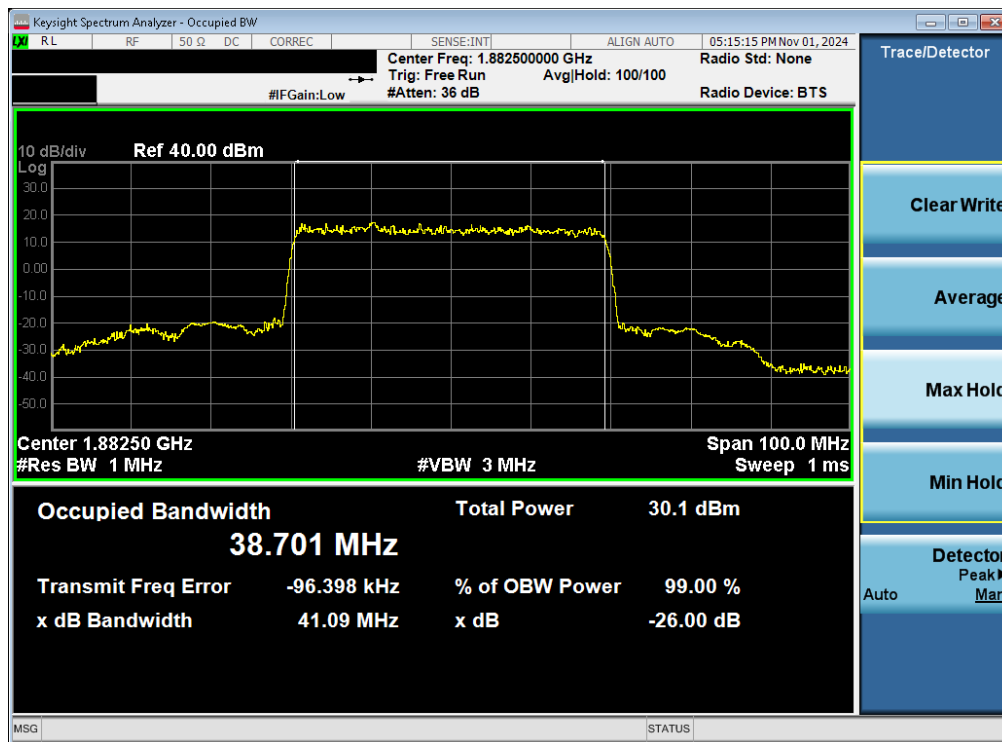
Plot 7-14. Occupied Bandwidth Plot (LTE Band 25/2 - 1.4MHz QPSK - Full RB - Ant1)



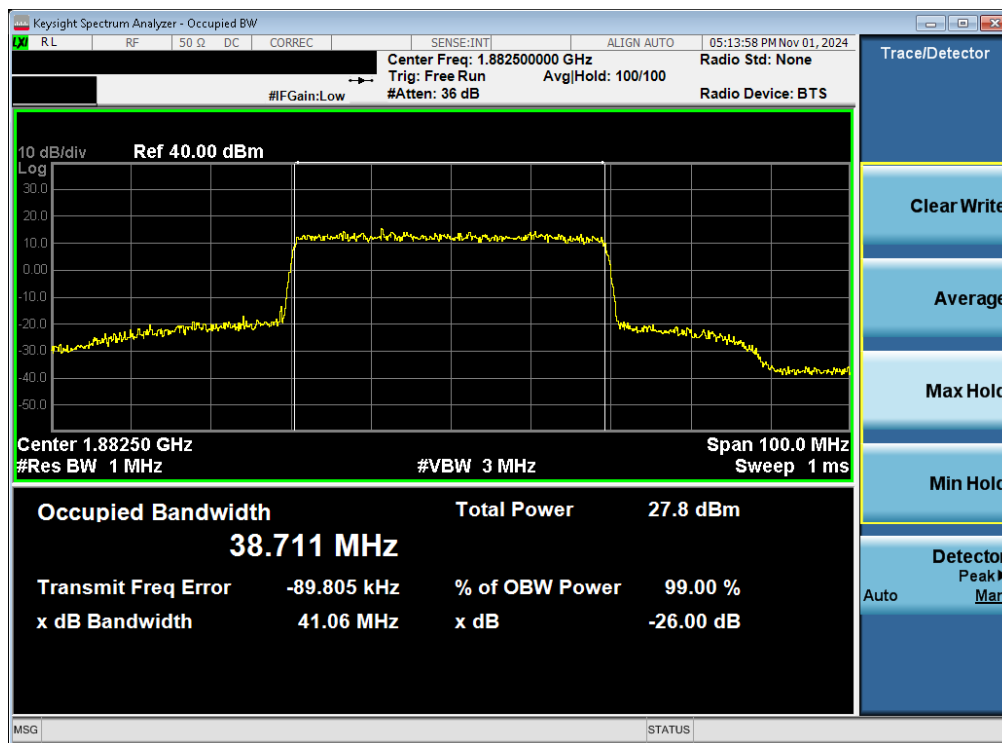
Plot 7-15. Occupied Bandwidth Plot (LTE Band 25/2 - 1.4MHz 16-QAM - Full RB - Ant1)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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NR Band n25/2 – Ant1

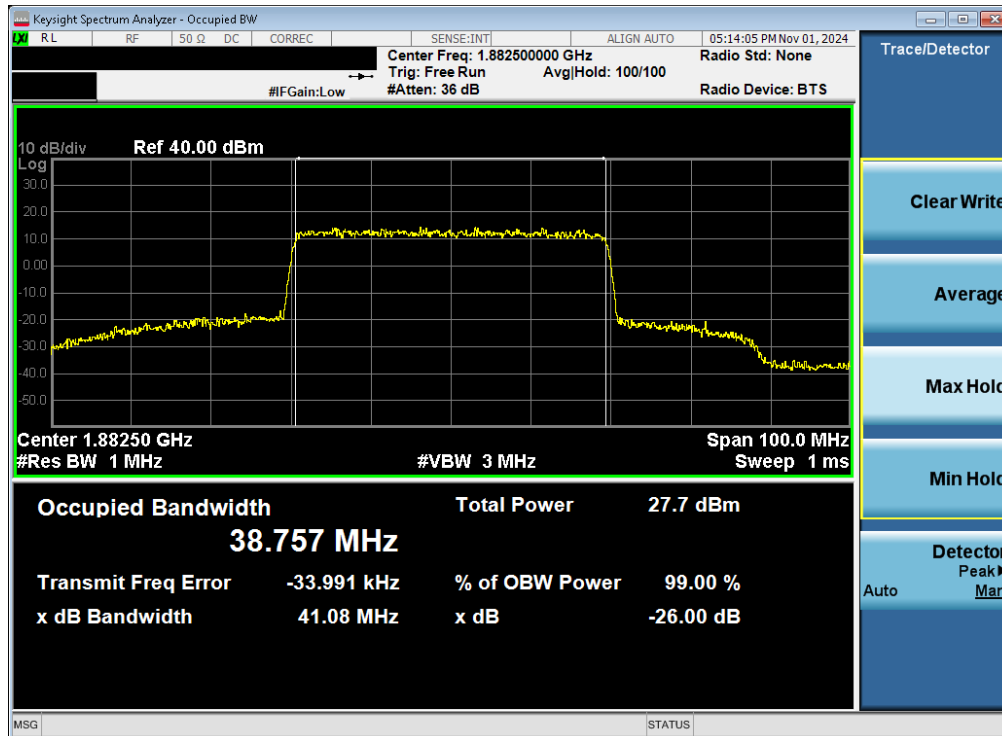


Plot 7-16. Occupied Bandwidth Plot (NR Band n25/2 - 40.0MHz DFT-s-OFDM BPSK - Full RB - ANT1)

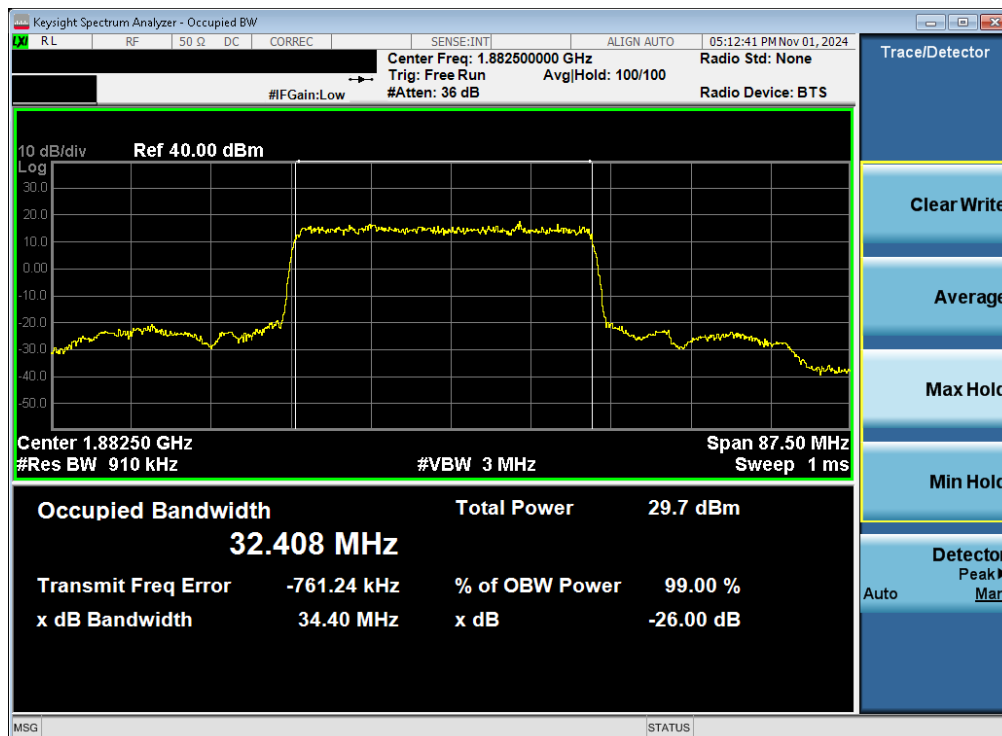


Plot 7-17. Occupied Bandwidth Plot (NR Band n25/2 - 40.0MHz CP-OFDM QPSK - Full RB - ANT1)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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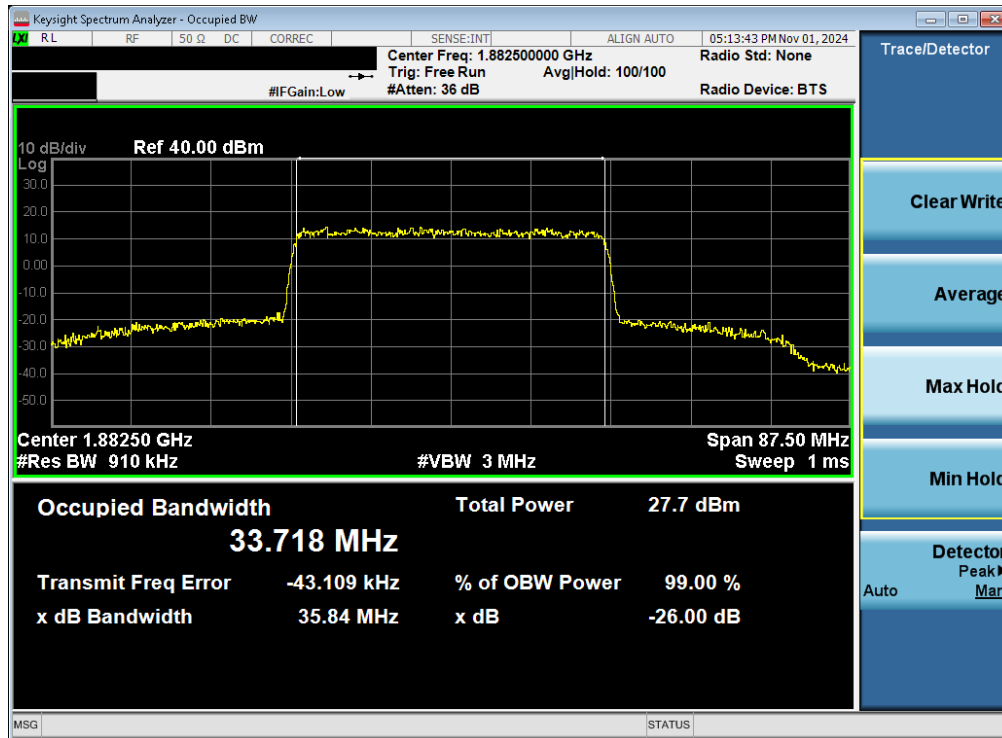


Plot 7-18. Occupied Bandwidth Plot (NR Band n25/2 - 40.0MHz CP-OFDM 16QAM - Full RB - ANT1)

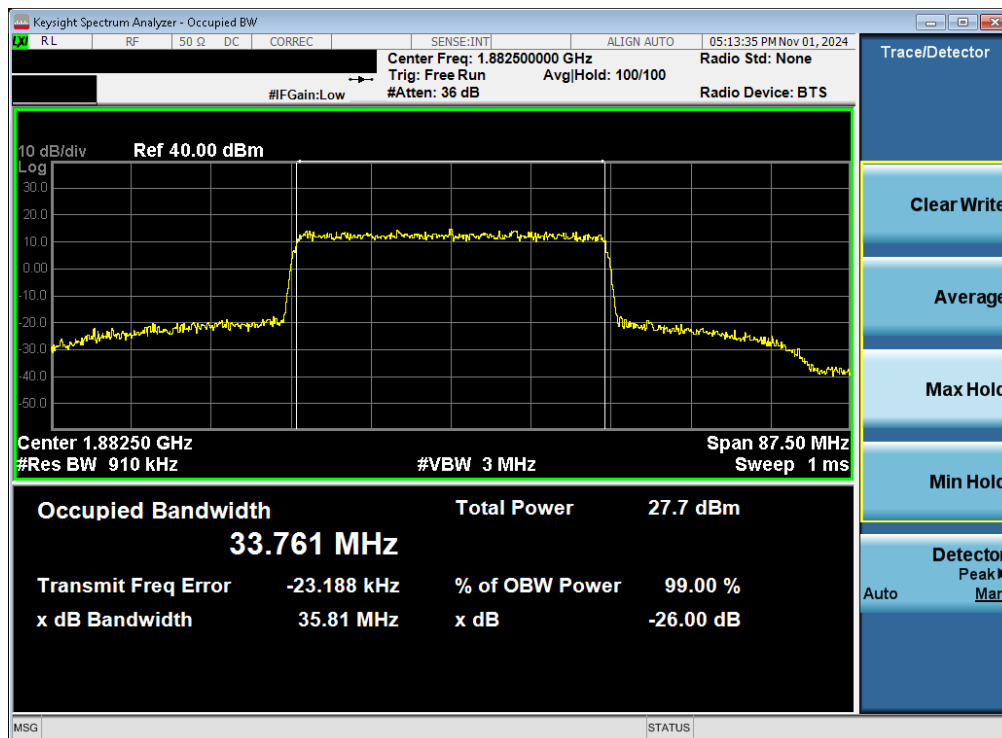


Plot 7-19. Occupied Bandwidth Plot (NR Band n25/2 - 35.0MHz DFT-s-OFDM BPSK - Full RB - ANT1)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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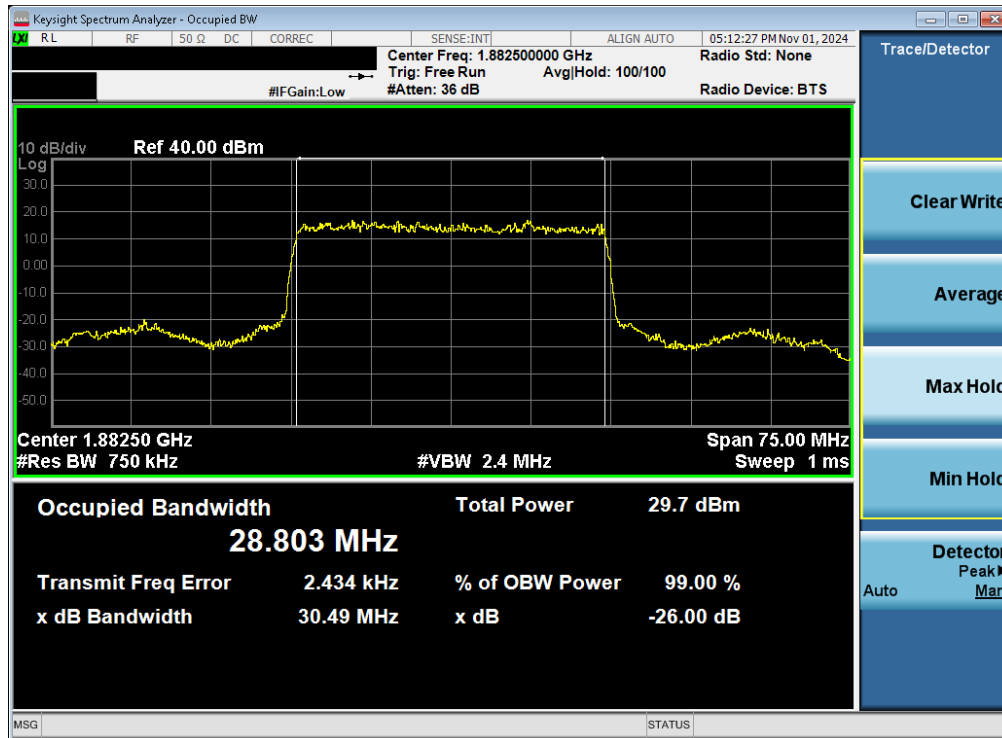


Plot 7-20. Occupied Bandwidth Plot (NR Band n25/2 - 35.0MHz CP-OFDM QPSK - Full RB - ANT1)

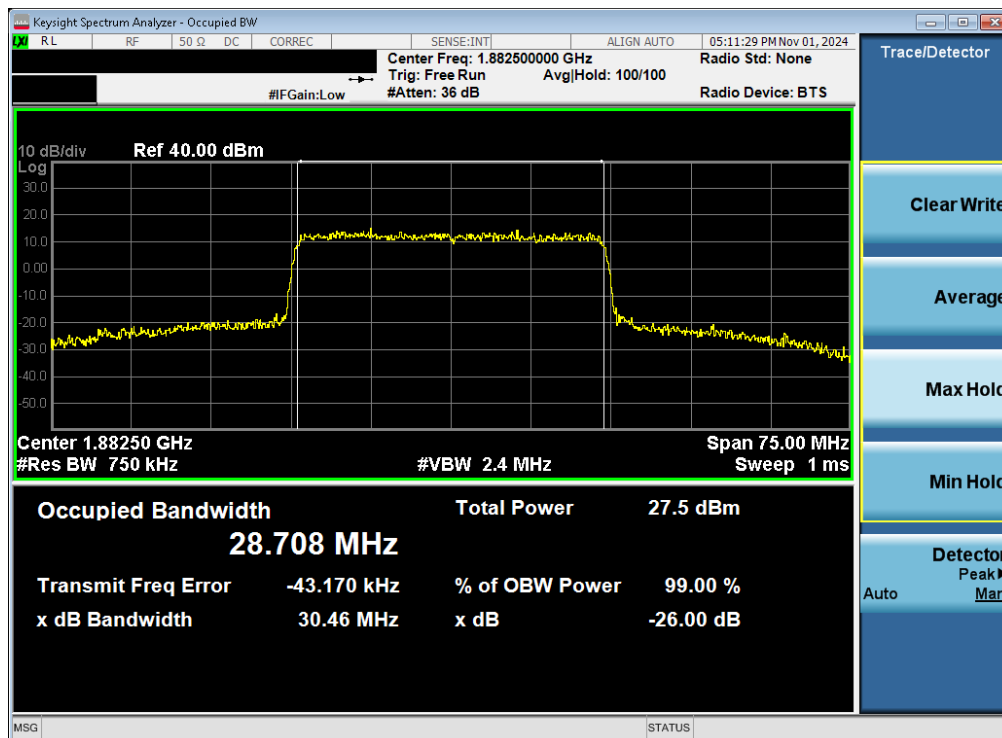


Plot 7-21. Occupied Bandwidth Plot (NR Band n25/2 - 35.0MHz CP-OFDM 16QAM - Full RB - ANT1)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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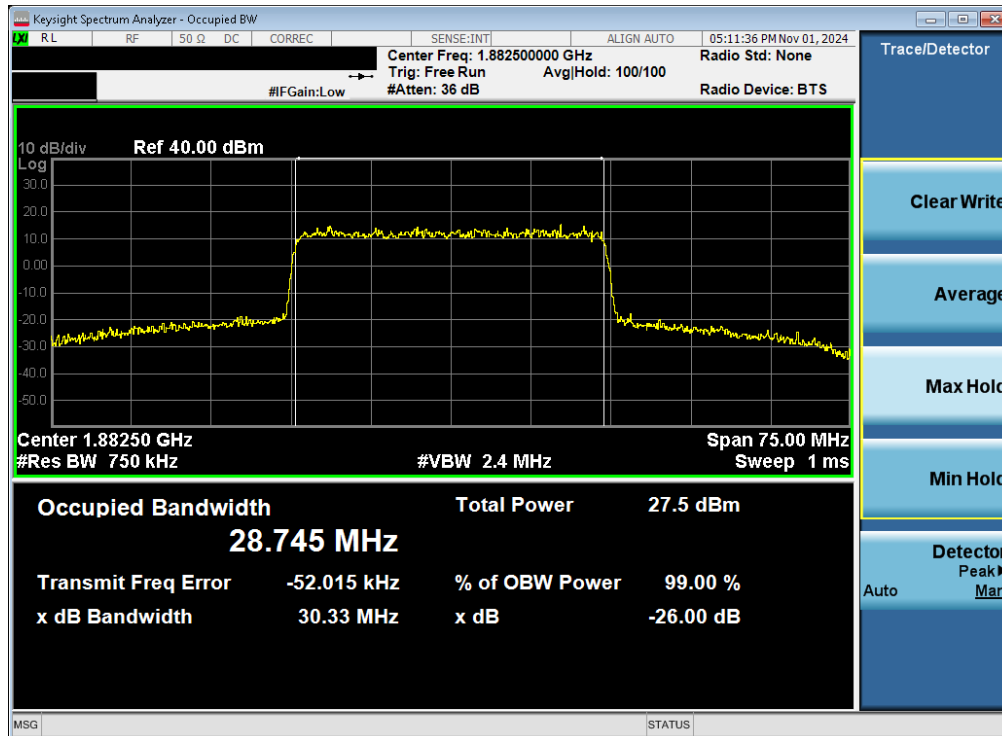


Plot 7-22. Occupied Bandwidth Plot (NR Band n25/2 - 30.0MHz DFT-s-OFDM BPSK - Full RB - ANT1)

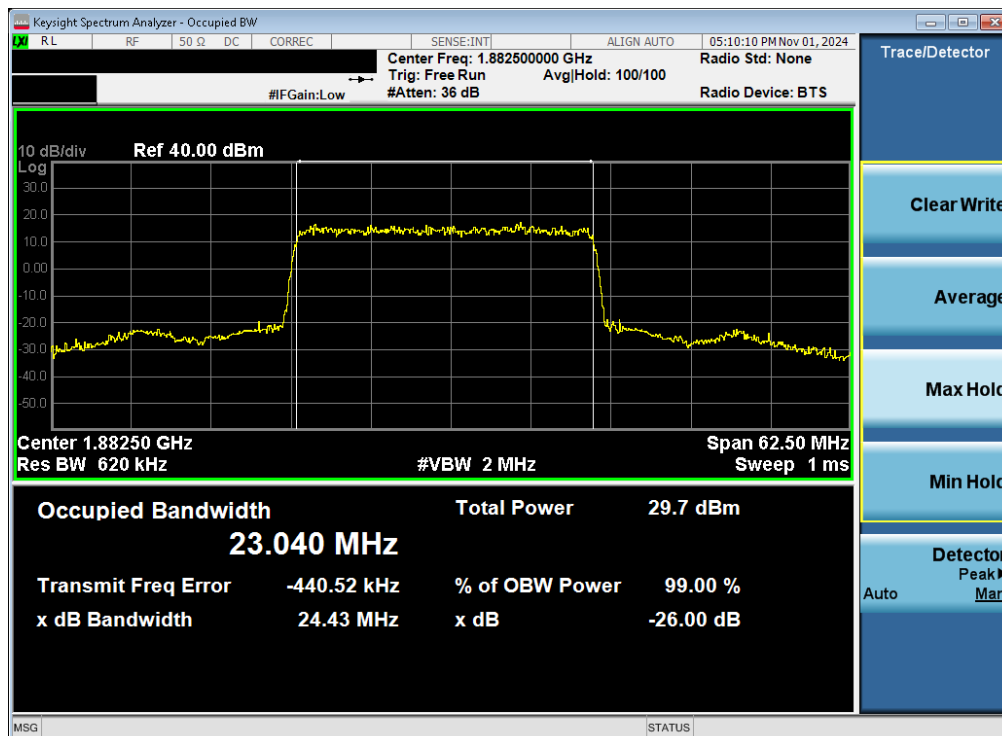


Plot 7-23. Occupied Bandwidth Plot (NR Band n25/2 - 30.0MHz CP-OFDM QPSK - Full RB - ANT1)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2408260069-05.A3L	Test Dates: 09/06/2024 - 11/08/2024	EUT Type: Portable Handset	Page 29 of 175

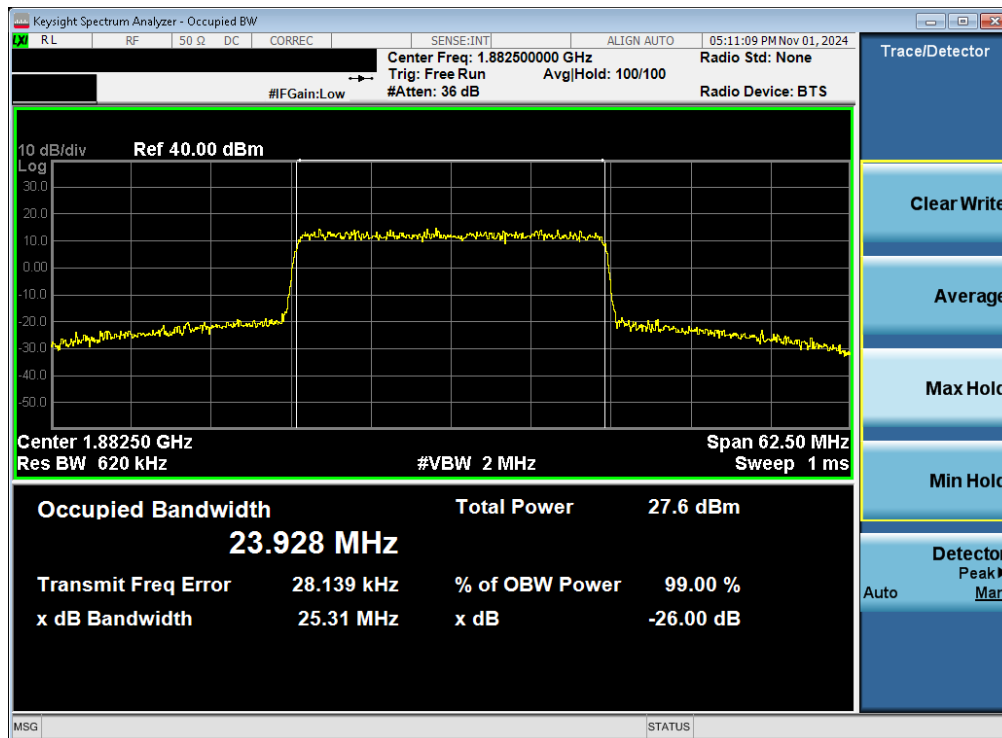


Plot 7-24. Occupied Bandwidth Plot (NR Band n25/2 - 30.0MHz CP-OFDM 16QAM - Full RB - ANT1)

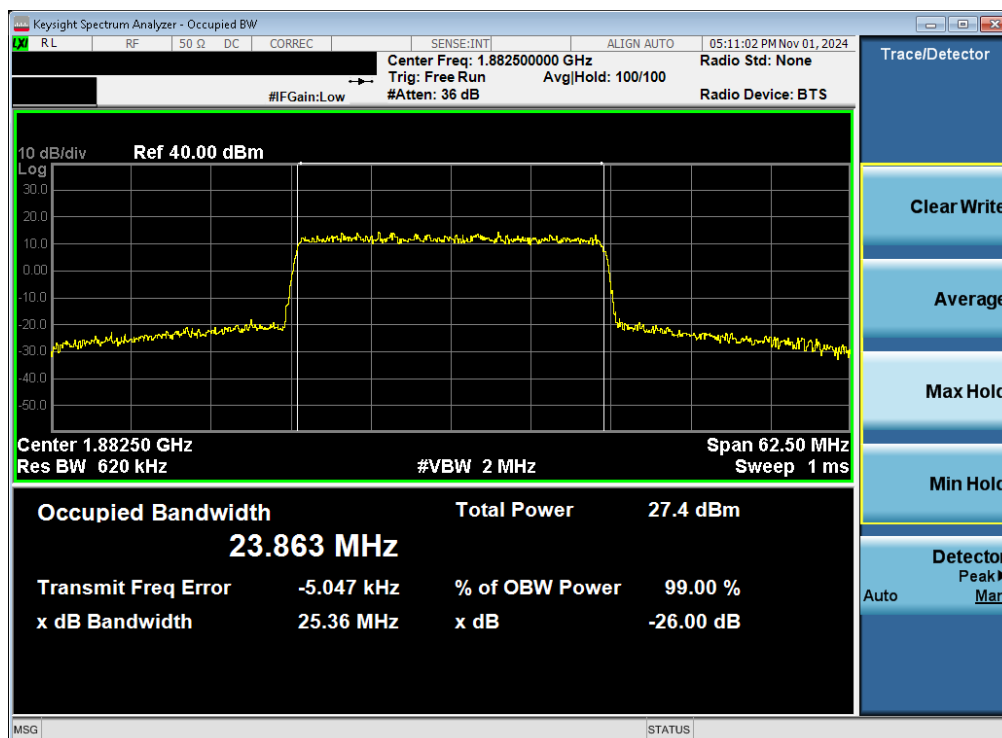


Plot 7-25. Occupied Bandwidth Plot (NR Band n25/2 - 25.0MHz DFT-s-OFDM BPSK - Full RB - ANT1)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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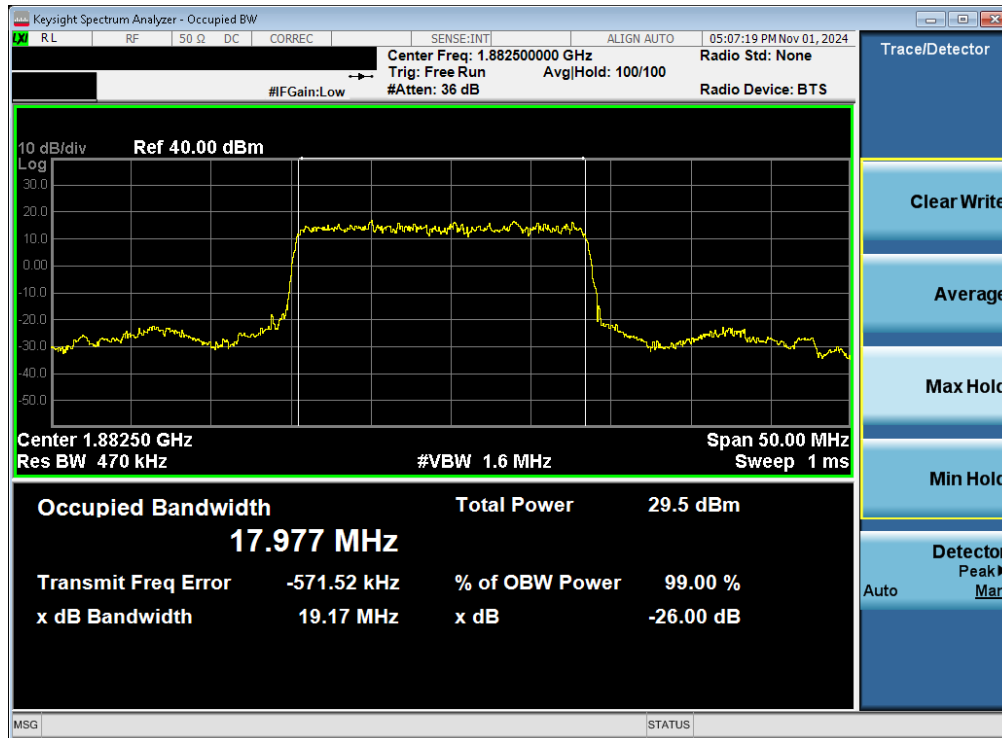


Plot 7-26. Occupied Bandwidth Plot (NR Band n25/2 - 25.0MHz CP-OFDM QPSK - Full RB - ANT1)

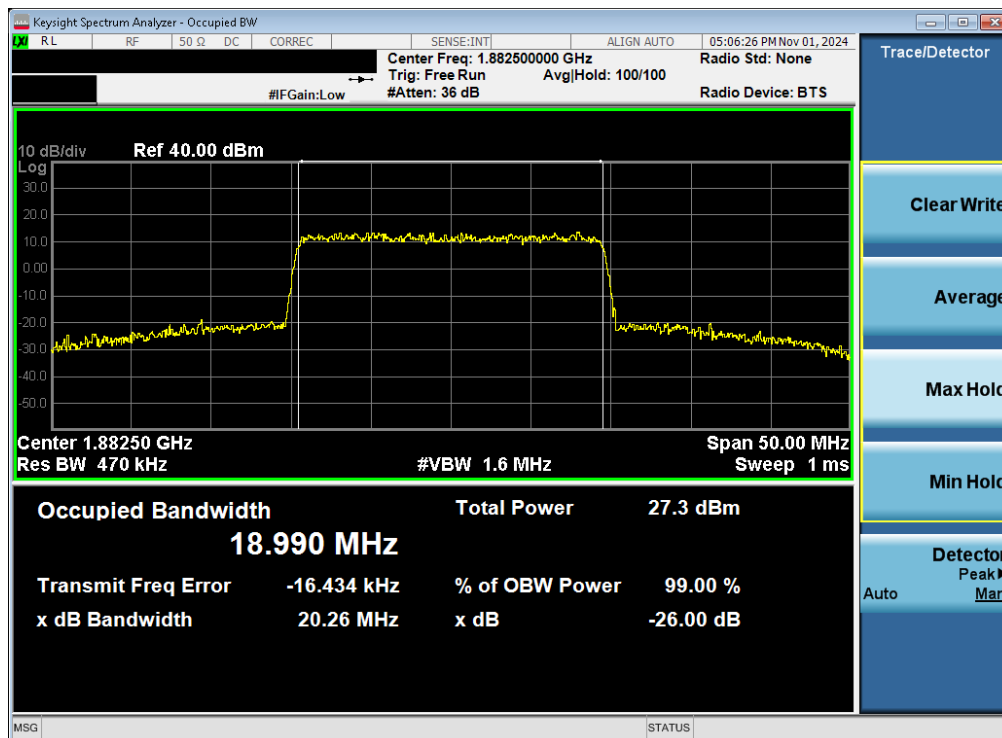


Plot 7-27. Occupied Bandwidth Plot (NR Band n25/2 - 25.0MHz CP-OFDM 16QAM - Full RB - ANT1)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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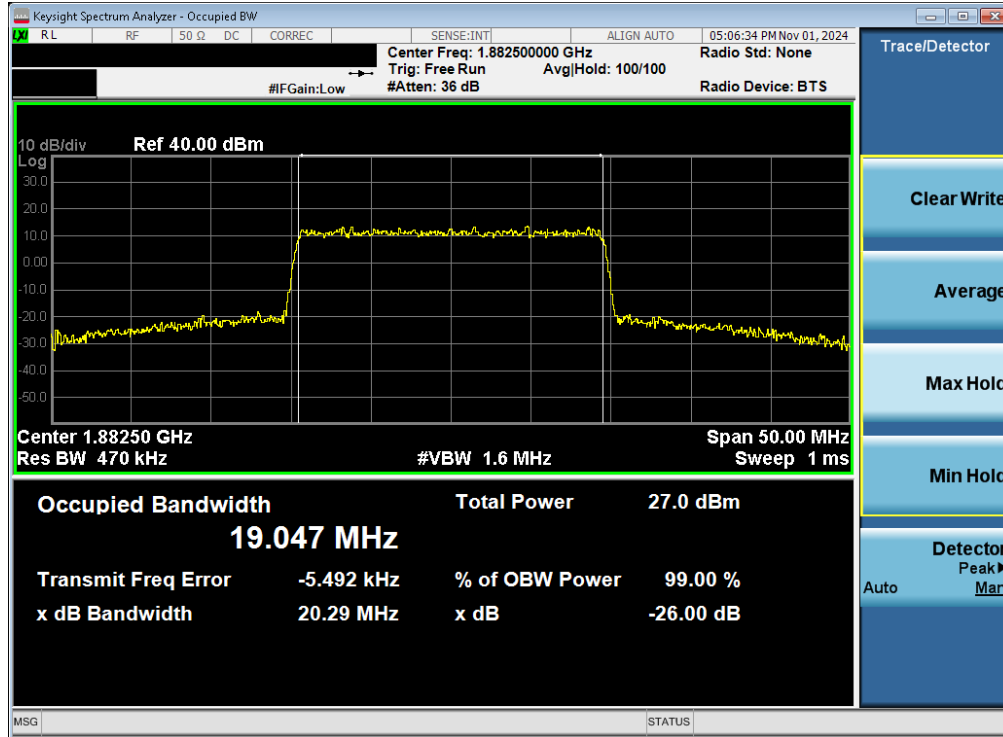


Plot 7-28. Occupied Bandwidth Plot (NR Band n25/2 - 20.0MHz DFT-s-OFDM BPSK - Full RB - ANT1)

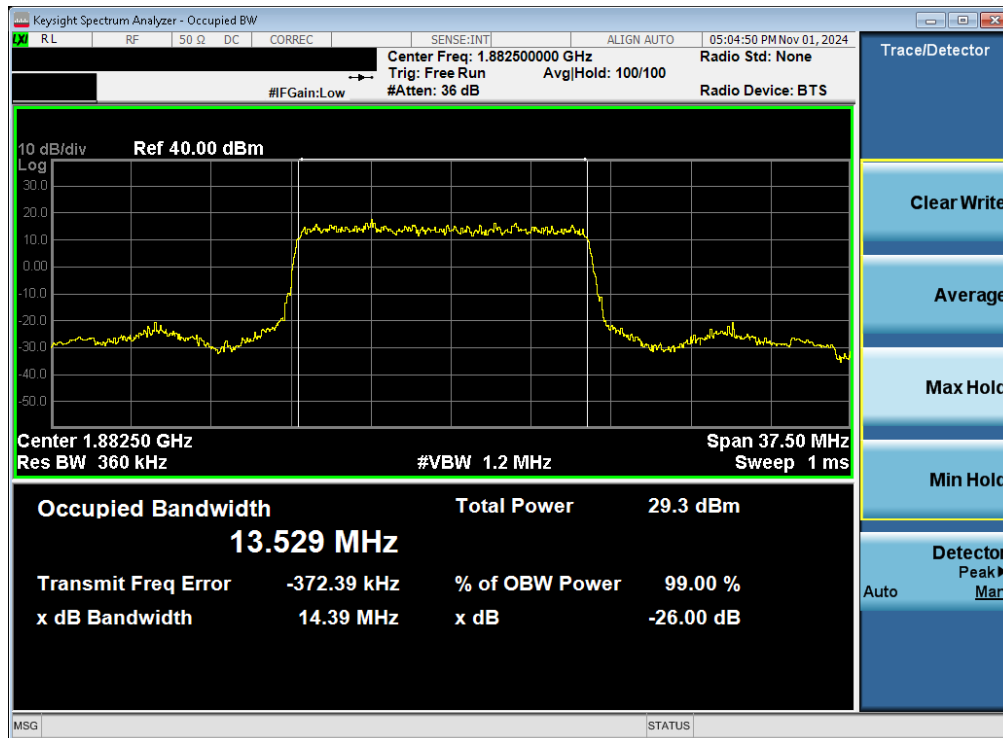


Plot 7-29. Occupied Bandwidth Plot (NR Band n25/2 - 20.0MHz CP-OFDM QPSK - Full RB - ANT1)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2408260069-05.A3L	Test Dates: 09/06/2024 - 11/08/2024	EUT Type: Portable Handset	Page 32 of 175

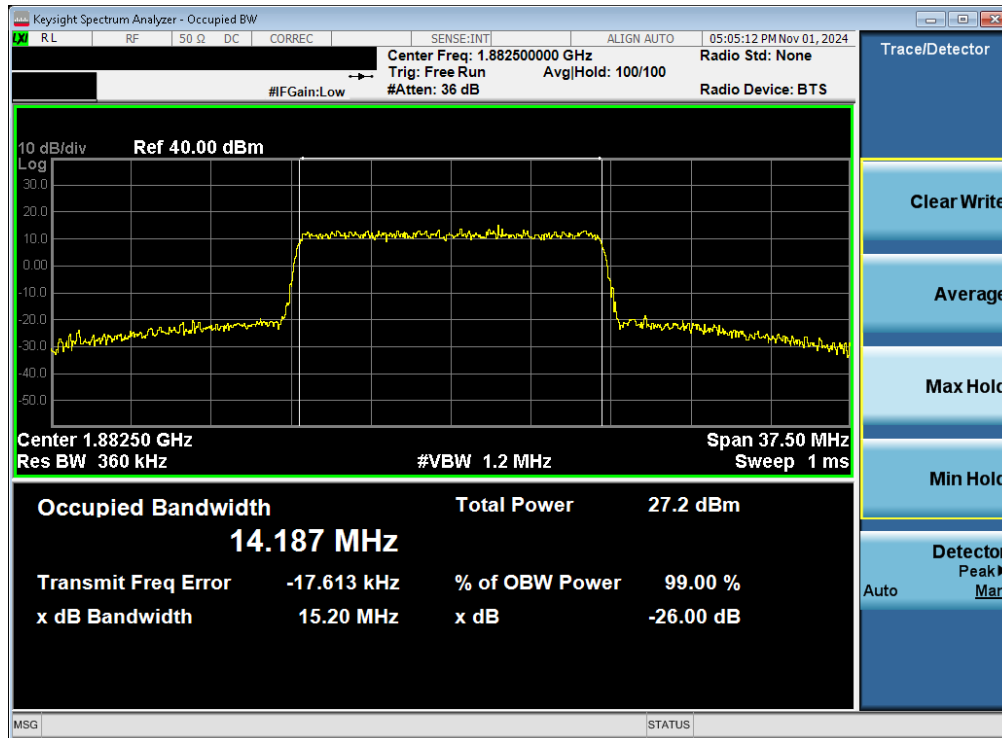


Plot 7-30. Occupied Bandwidth Plot (NR Band n25/2 - 20.0MHz CP-OFDM 16QAM - Full RB - ANT1)

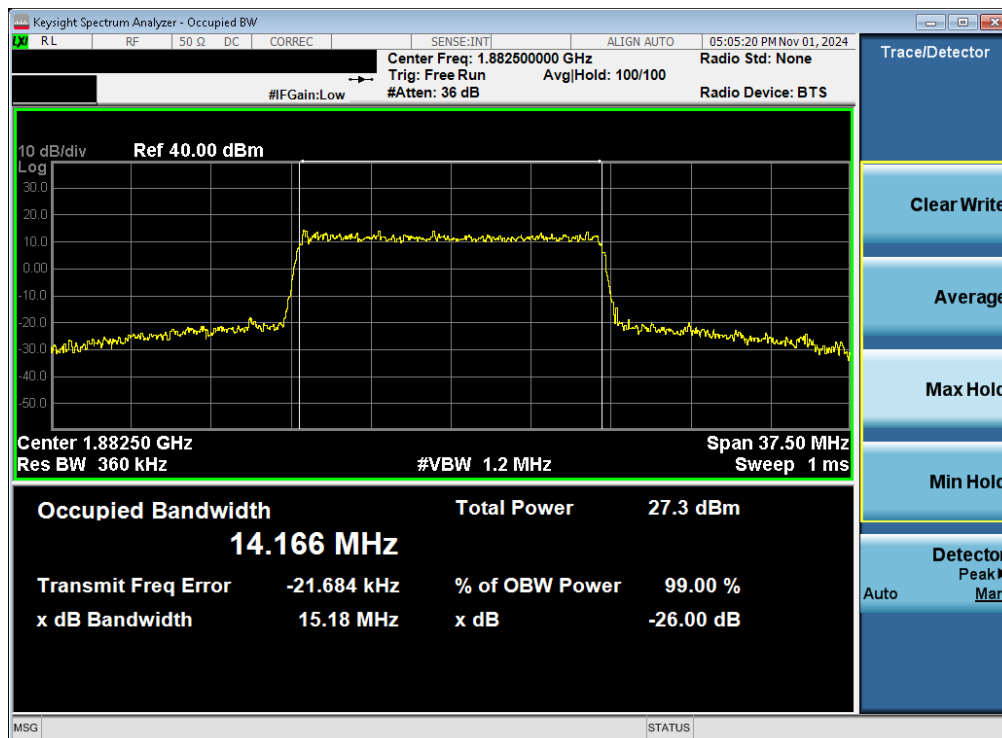


Plot 7-31. Occupied Bandwidth Plot (NR Band n25/2 - 15.0MHz DFT-s-OFDM BPSK - Full RB - ANT1)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2408260069-05.A3L	Test Dates: 09/06/2024 - 11/08/2024	EUT Type: Portable Handset	Page 33 of 175

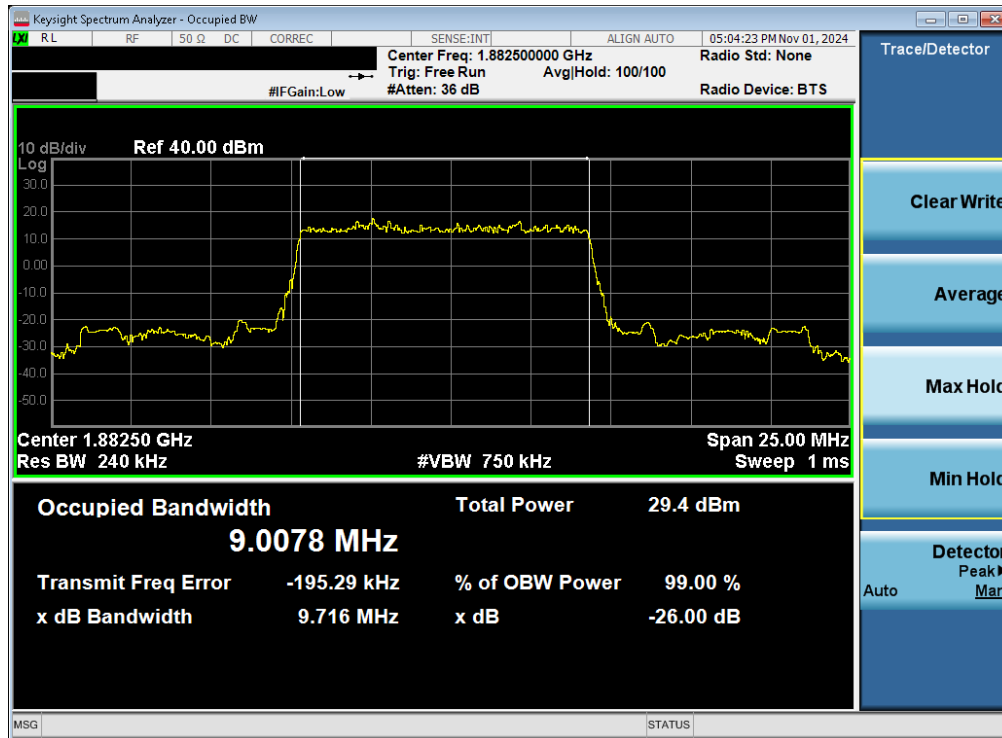


Plot 7-32. Occupied Bandwidth Plot (NR Band n25/2 - 15.0MHz CP-OFDM QPSK - Full RB - ANT1)

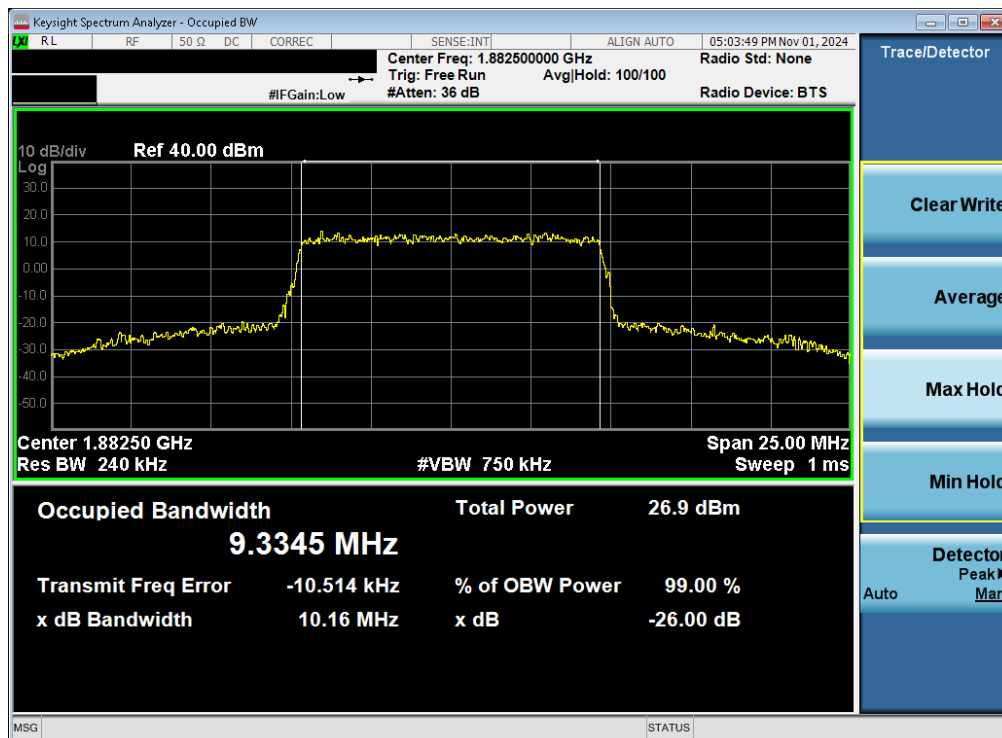


Plot 7-33. Occupied Bandwidth Plot (NR Band n25/2 - 15.0MHz CP-OFDM 16QAM - Full RB - ANT1)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2408260069-05.A3L	Test Dates: 09/06/2024 - 11/08/2024	EUT Type: Portable Handset	Page 34 of 175

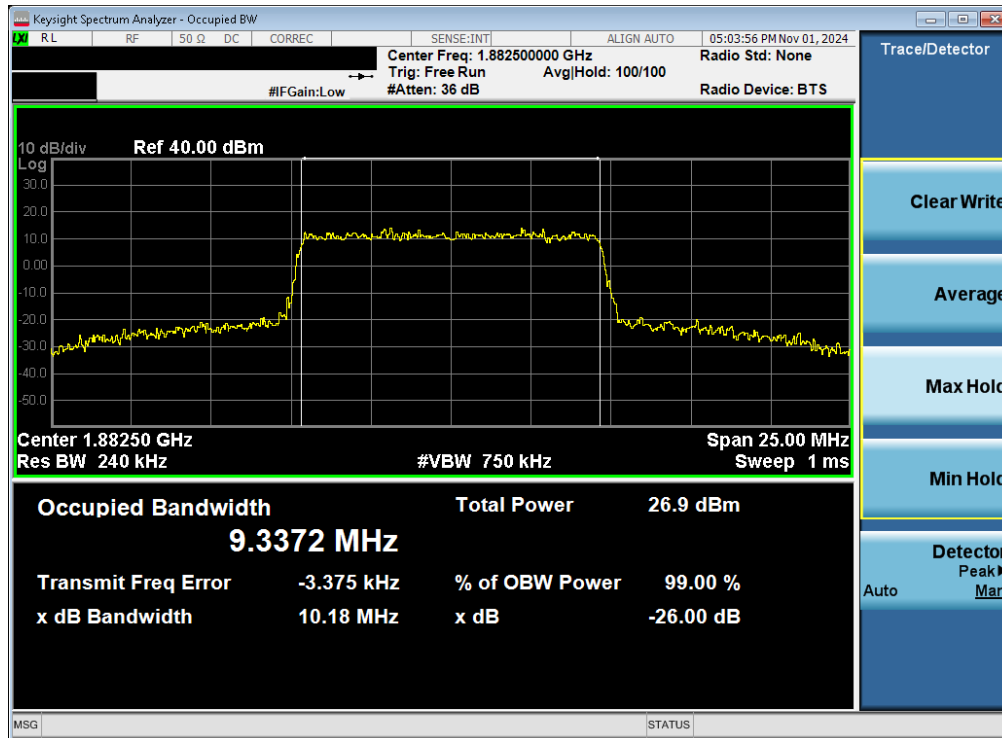


Plot 7-34. Occupied Bandwidth Plot (NR Band n25/2 - 10.0MHz DFT-s-OFDM BPSK - Full RB - ANT1)

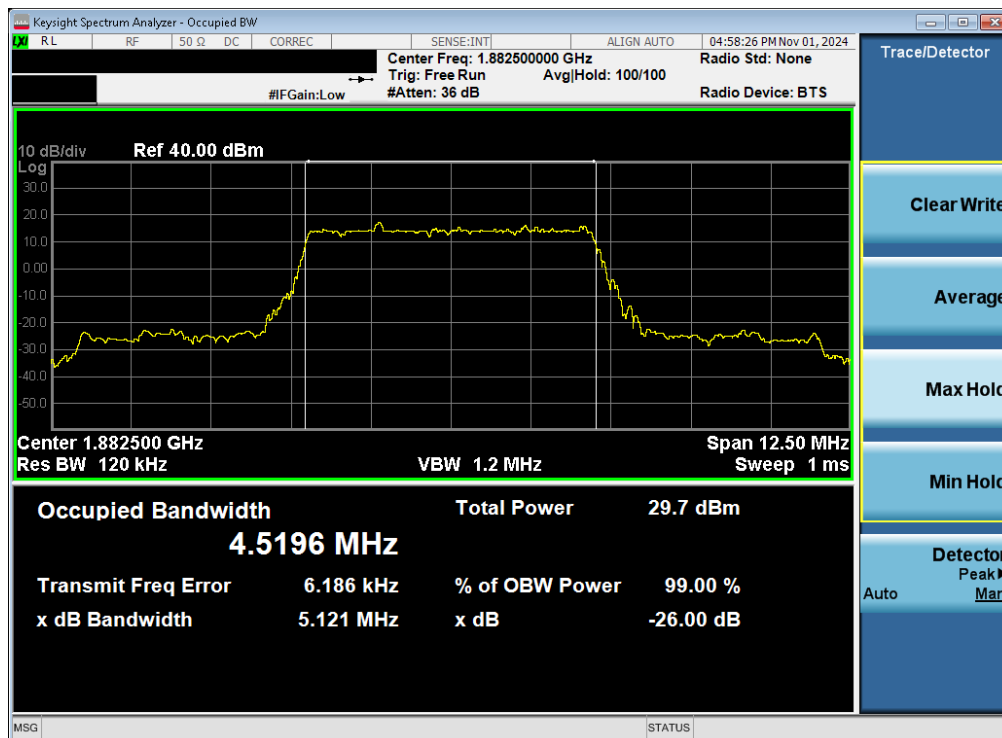


Plot 7-35. Occupied Bandwidth Plot (NR Band n25/2 - 10.0MHz CP-OFDM QPSK - Full RB - ANT1)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2408260069-05.A3L	Test Dates: 09/06/2024 - 11/08/2024	EUT Type: Portable Handset	Page 35 of 175

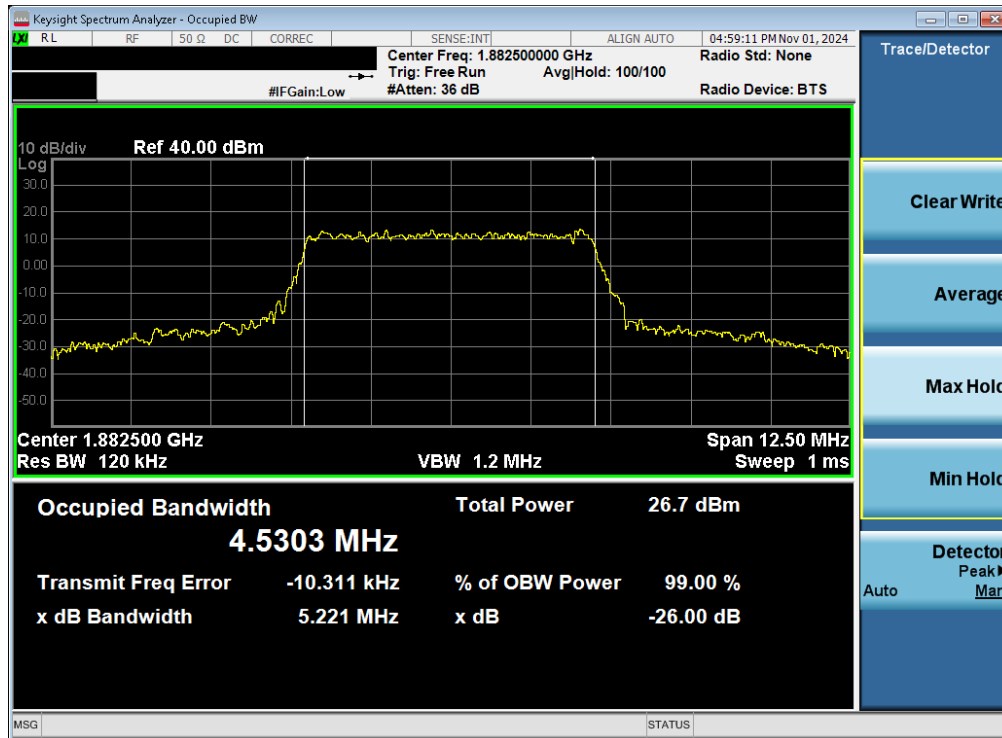


Plot 7-36. Occupied Bandwidth Plot (NR Band n25/2 - 10.0MHz CP-OFDM 16QAM - Full RB - ANT1)

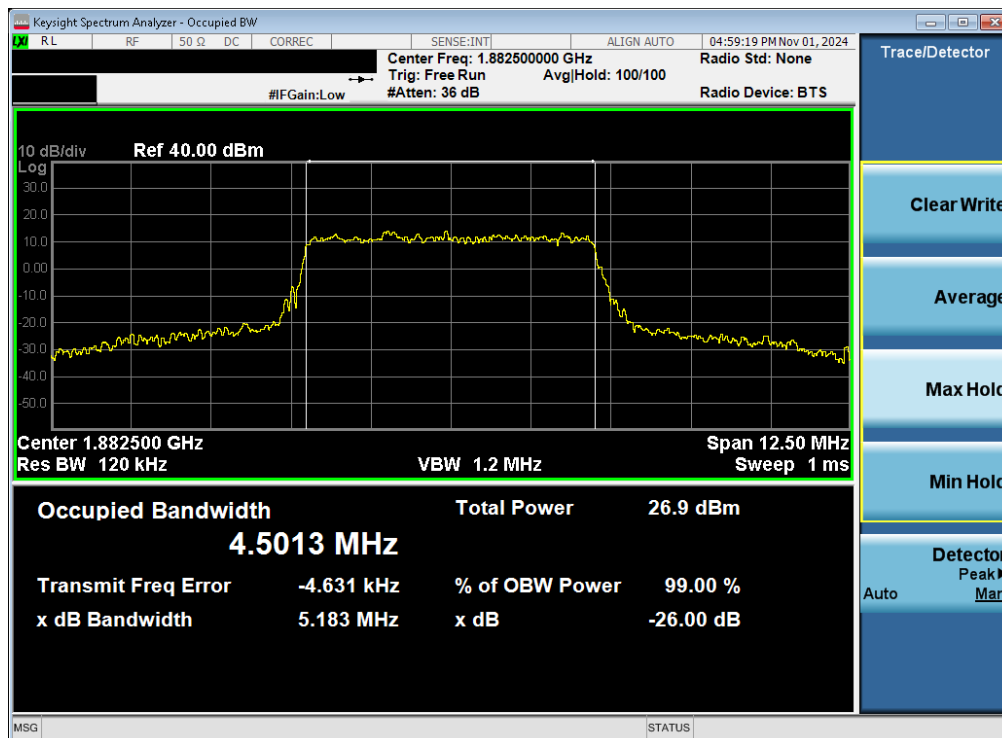


Plot 7-37. Occupied Bandwidth Plot (NR Band n25/2 - 5.0MHz DFT-s-OFDM BPSK - Full RB - ANT1)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-38. Occupied Bandwidth Plot (NR Band n25/2 - 5.0MHz CP-OFDM QPSK - Full RB - ANT1)



Plot 7-39. Occupied Bandwidth Plot (NR Band n25/2 - 5.0MHz CP-OFDM 16QAM - Full RB - ANT1)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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Mode	Bandwidth	Modulation	OBW [MHz]
LTE-B25-2	20MHz	QPSK	18.00
		16QAM	17.97
	15MHz	QPSK	13.56
		16QAM	13.53
	10MHz	QPSK	9.02
		16QAM	9.03
	5MHz	QPSK	4.52
		16QAM	4.54
	3MHz	QPSK	2.72
		16QAM	2.72
	1.4MHz	QPSK	1.10
		16QAM	1.11

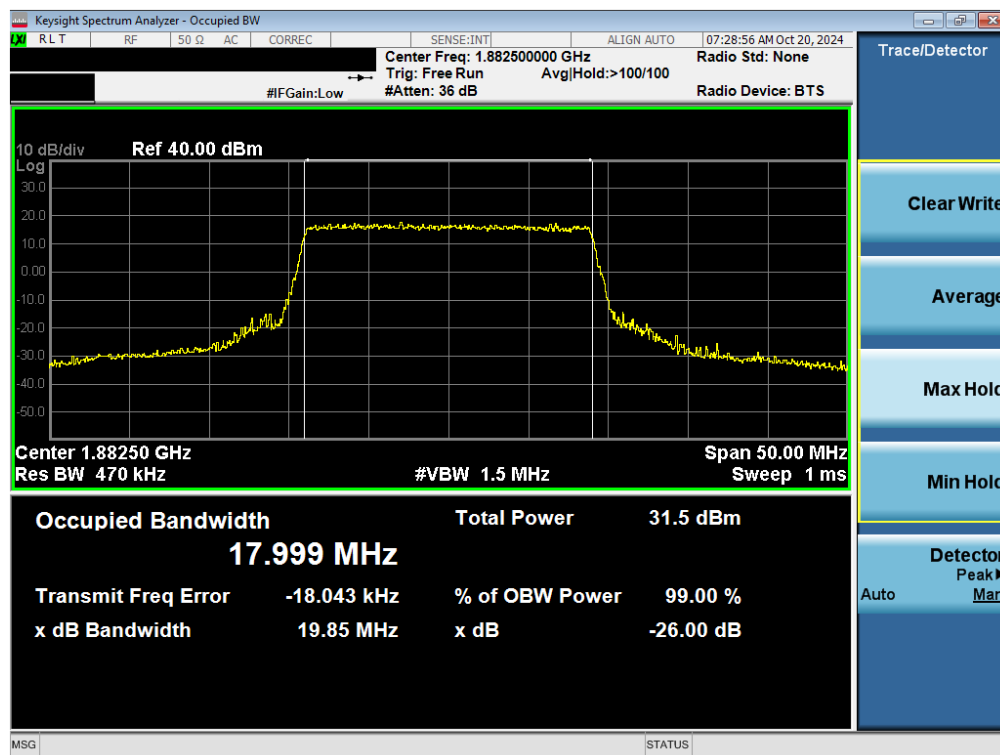
Table 7-6. Occupied Bandwidth Test Results – Ant2

Mode	Bandwidth	Modulation	OBW [MHz]
NR-n25-2	40MHz	BPSK	38.74
		QPSK	38.74
		16QAM	38.83
	35MHz	BPSK	32.34
		QPSK	33.69
		16QAM	33.77
	30MHz	BPSK	28.69
		QPSK	28.75
		16QAM	28.68
	25MHz	BPSK	23.02
		QPSK	23.95
		16QAM	23.86
	20MHz	BPSK	18.00
		QPSK	18.98
		16QAM	19.00
	15MHz	BPSK	13.52
		QPSK	14.18
		16QAM	14.16
	10MHz	BPSK	9.01
		QPSK	9.32
		16QAM	9.34
	5MHz	BPSK	4.50
		QPSK	4.53
		16QAM	4.50

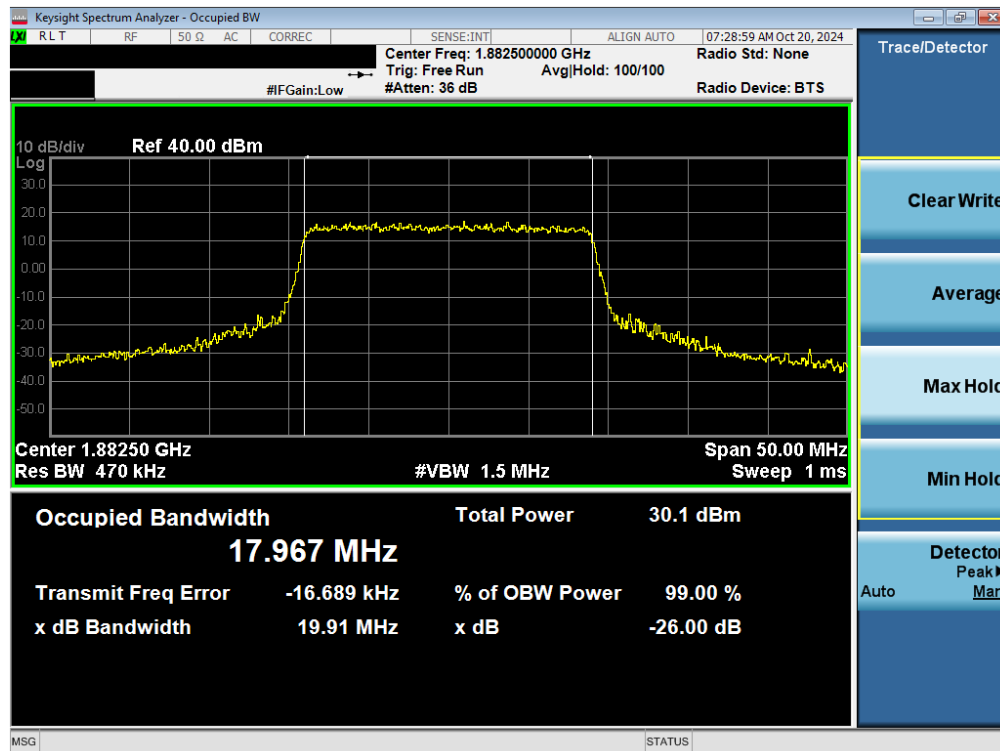
Table 7-7. Occupied Bandwidth Test Results – Ant2

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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LTE Band 25/2 – Ant2

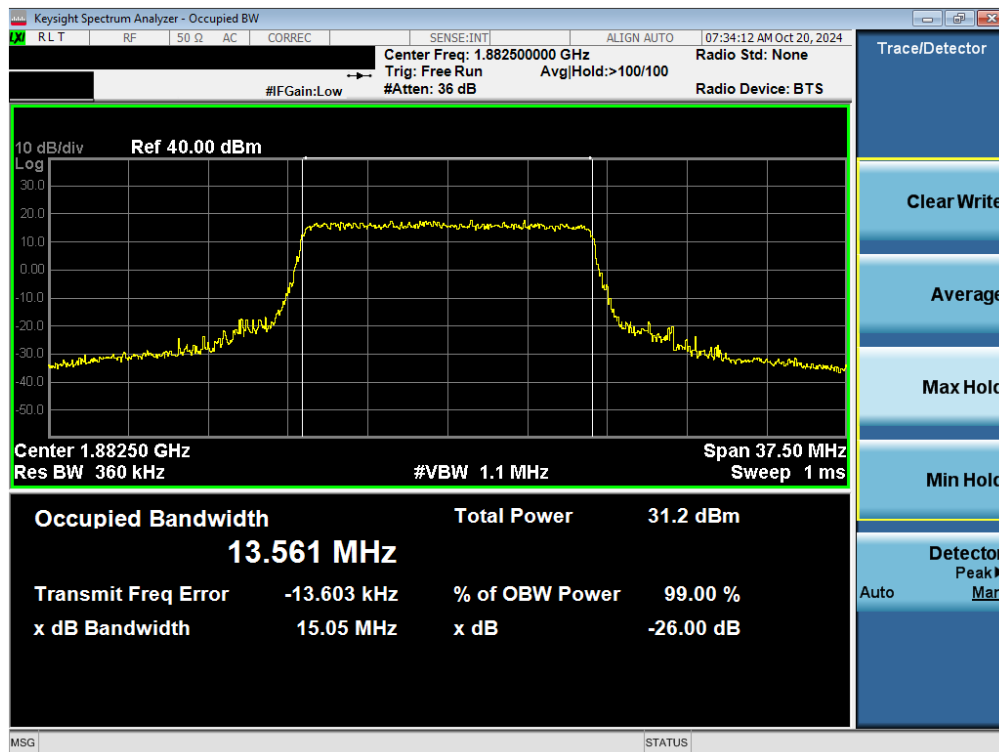


Plot 7-40. Occupied Bandwidth Plot (LTE Band 25/2 - 20MHz QPSK - Full RB - Ant2)

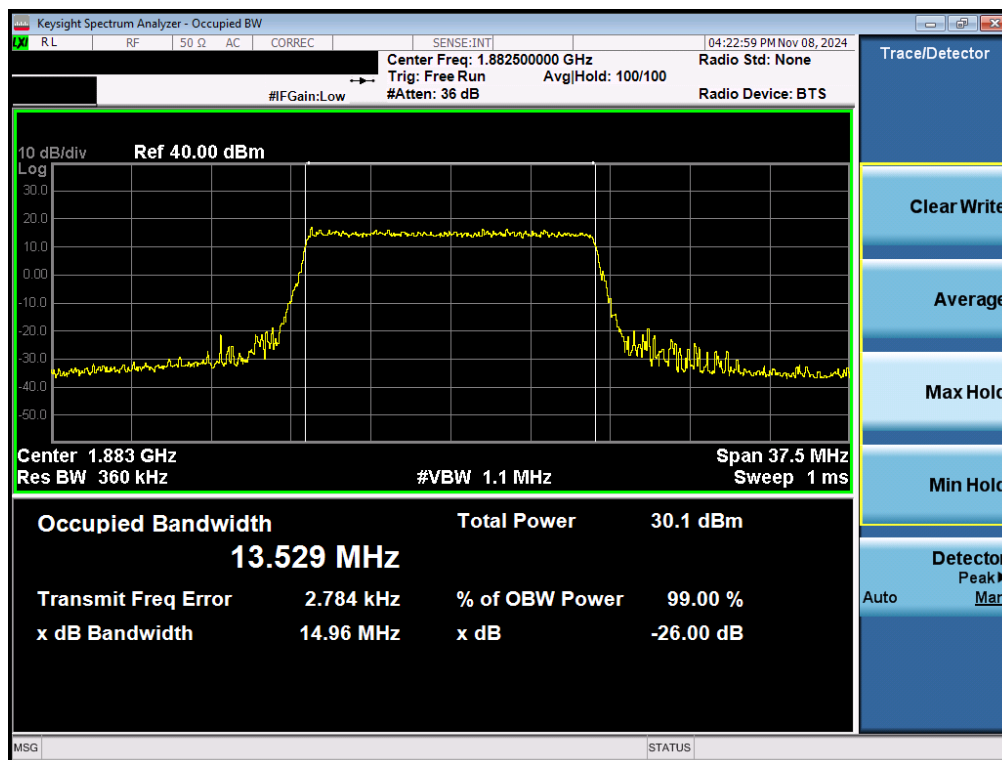


Plot 7-41. Occupied Bandwidth Plot (LTE Band 25/2 - 20MHz 16-QAM - Full RB - Ant2)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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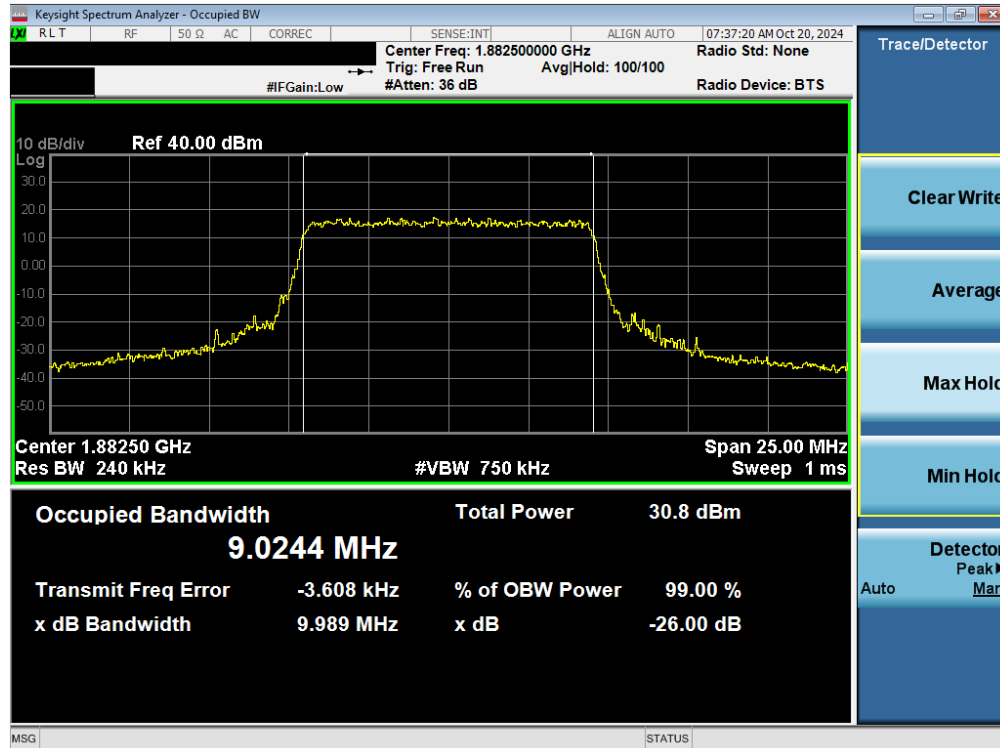


Plot 7-42. Occupied Bandwidth Plot (LTE Band 25/2 - 15MHz QPSK - Full RB - Ant2)

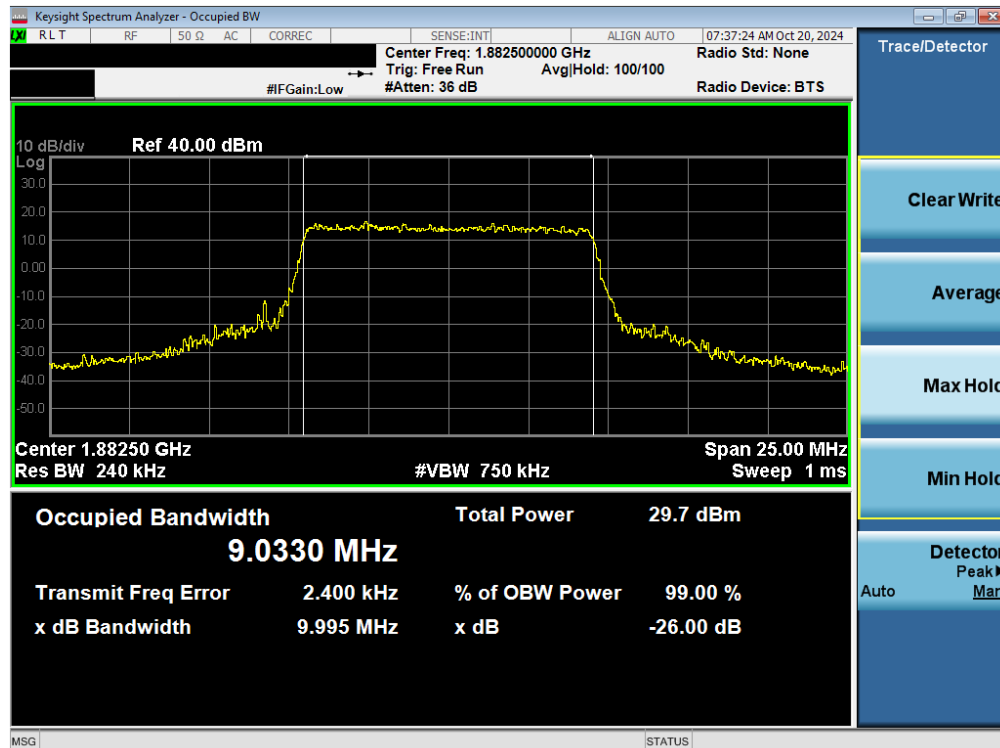


Plot 7-43. Occupied Bandwidth Plot (LTE Band 25/2 - 15MHz 16-QAM - Full RB - Ant2)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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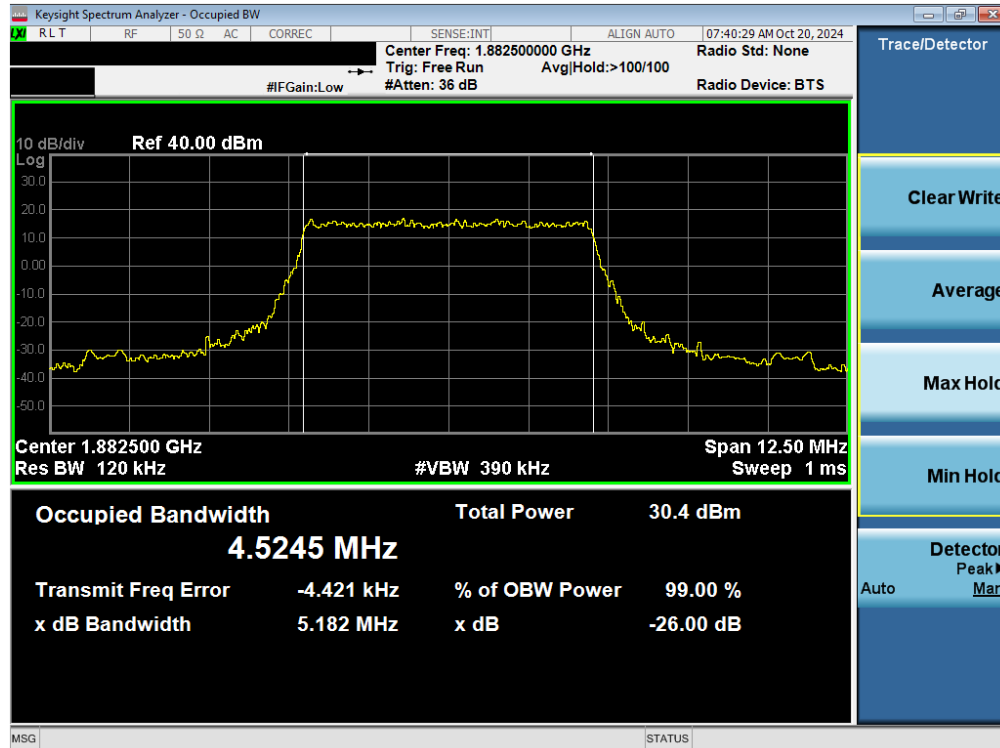


Plot 7-44. Occupied Bandwidth Plot (LTE Band 25/2 - 10MHz QPSK - Full RB - Ant2)

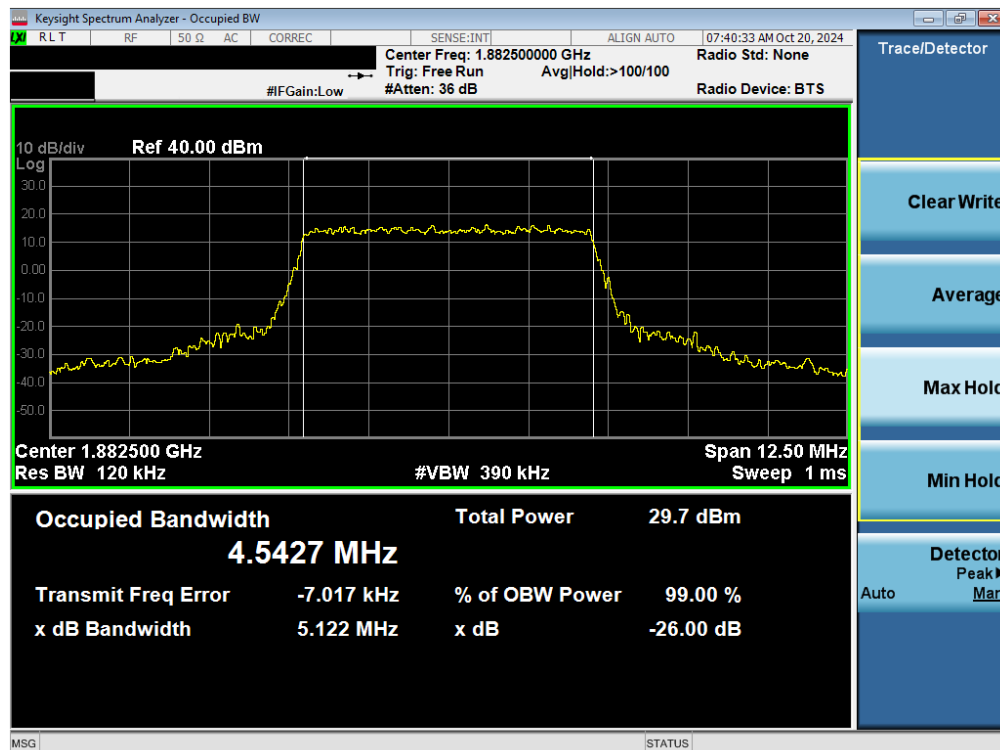


Plot 7-45. Occupied Bandwidth Plot (LTE Band 25/2 - 10MHz 16-QAM - Full RB - Ant2)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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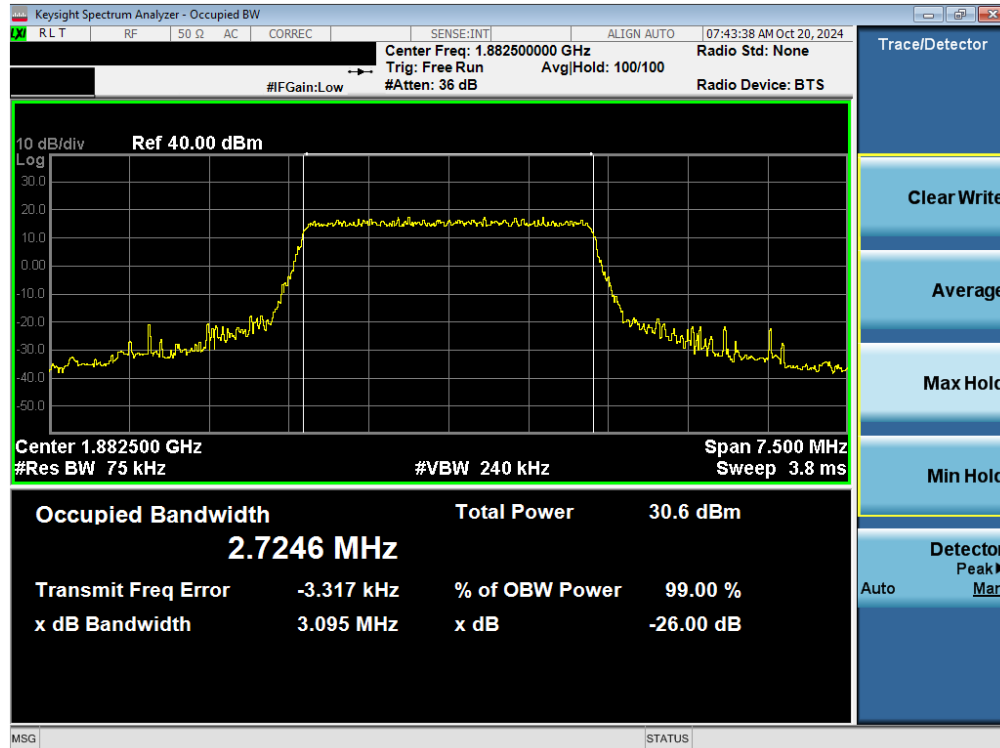


Plot 7-46. Occupied Bandwidth Plot (LTE Band 25/2 - 5MHz QPSK - Full RB - Ant2)

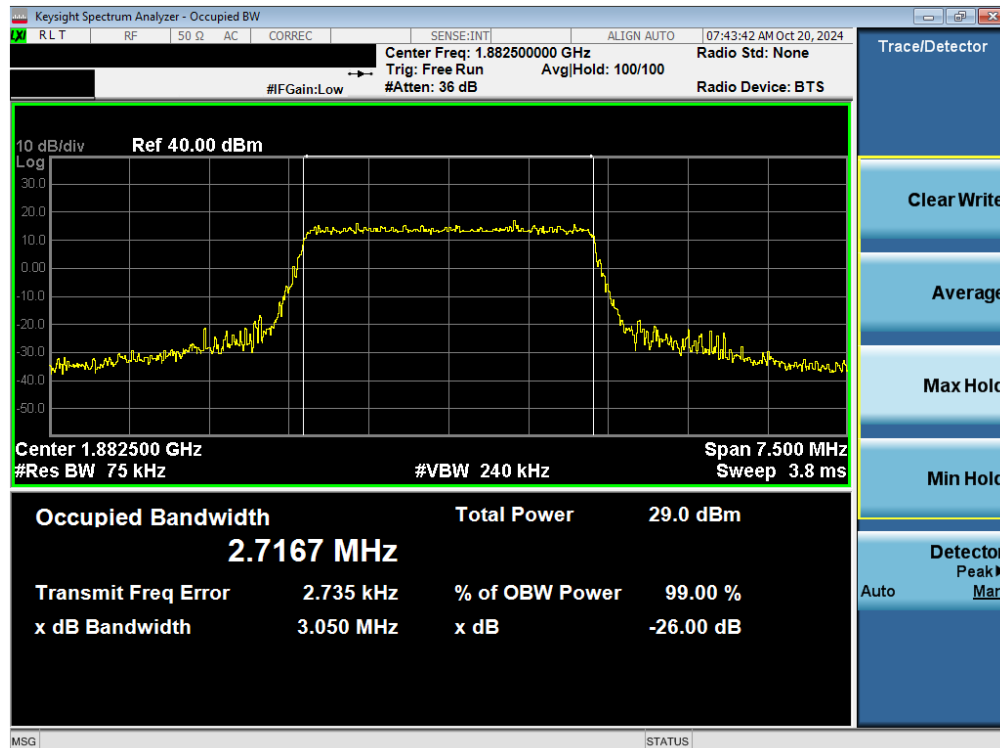


Plot 7-47. Occupied Bandwidth Plot (LTE Band 25/2 - 5MHz 16-QAM - Full RB - Ant2)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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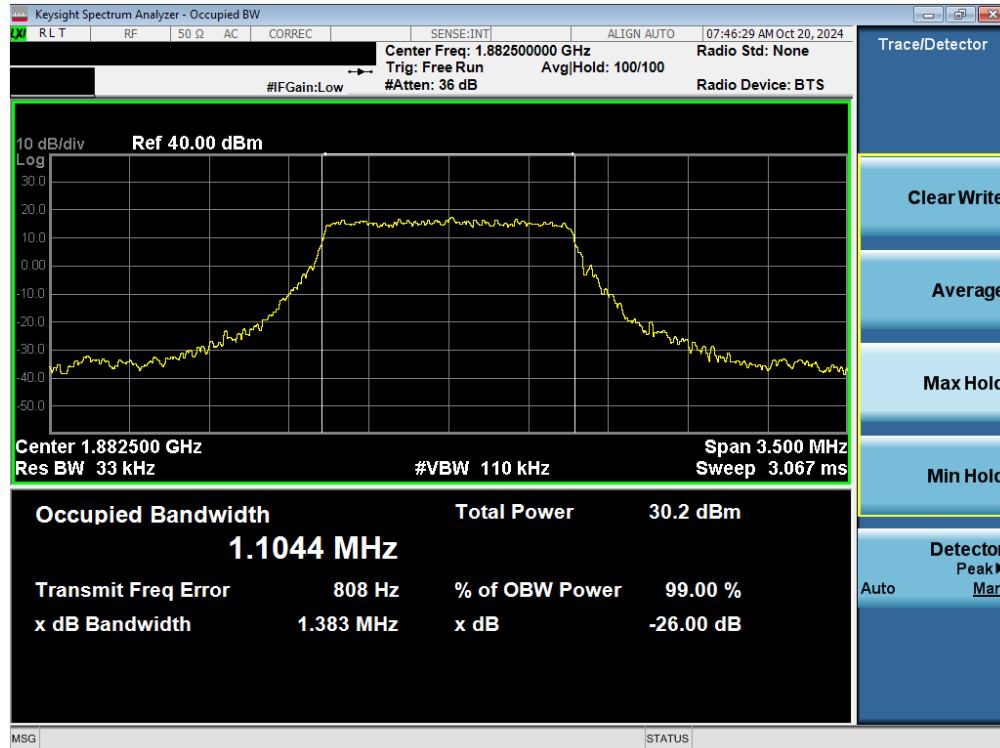


Plot 7-48. Occupied Bandwidth Plot (LTE Band 25/2 - 3MHz QPSK - Full RB - Ant2)

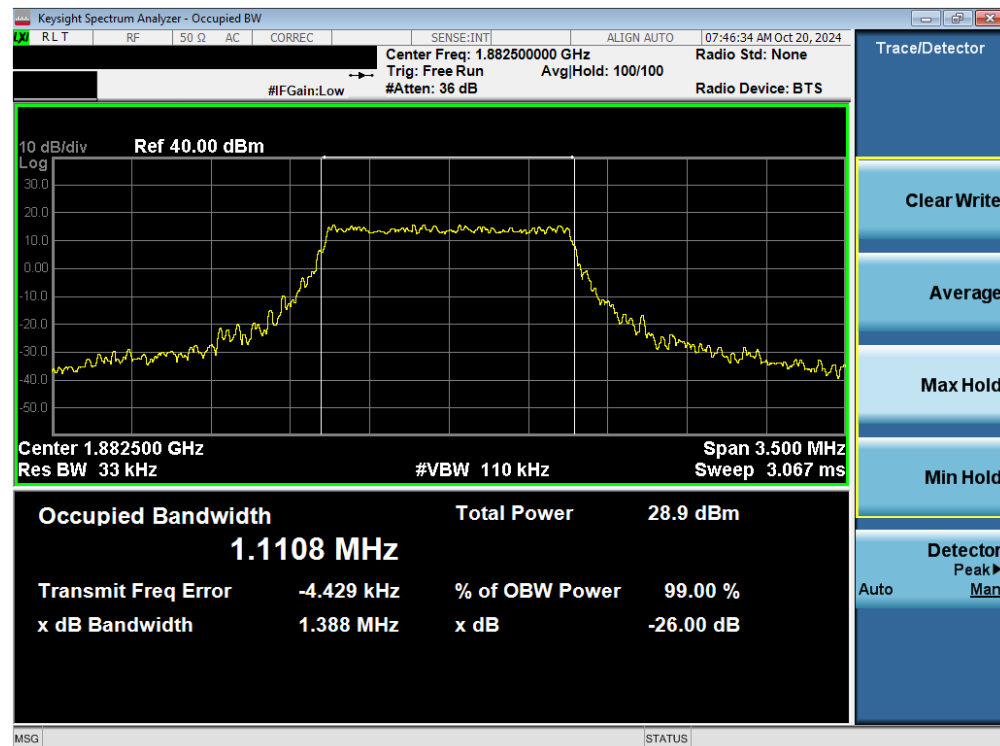


Plot 7-49. Occupied Bandwidth Plot (LTE Band 25/2 - 3MHz 16-QAM - Full RB - Ant2)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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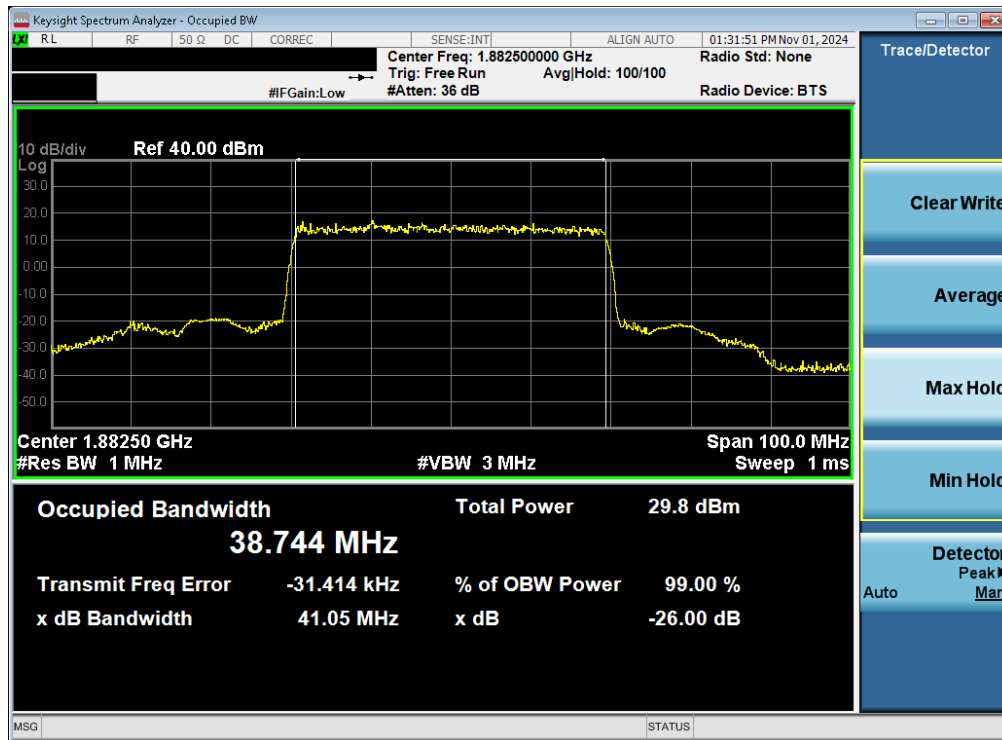
Plot 7-50. Occupied Bandwidth Plot (LTE Band 25/2 - 1.4MHz QPSK - Full RB - Ant2)



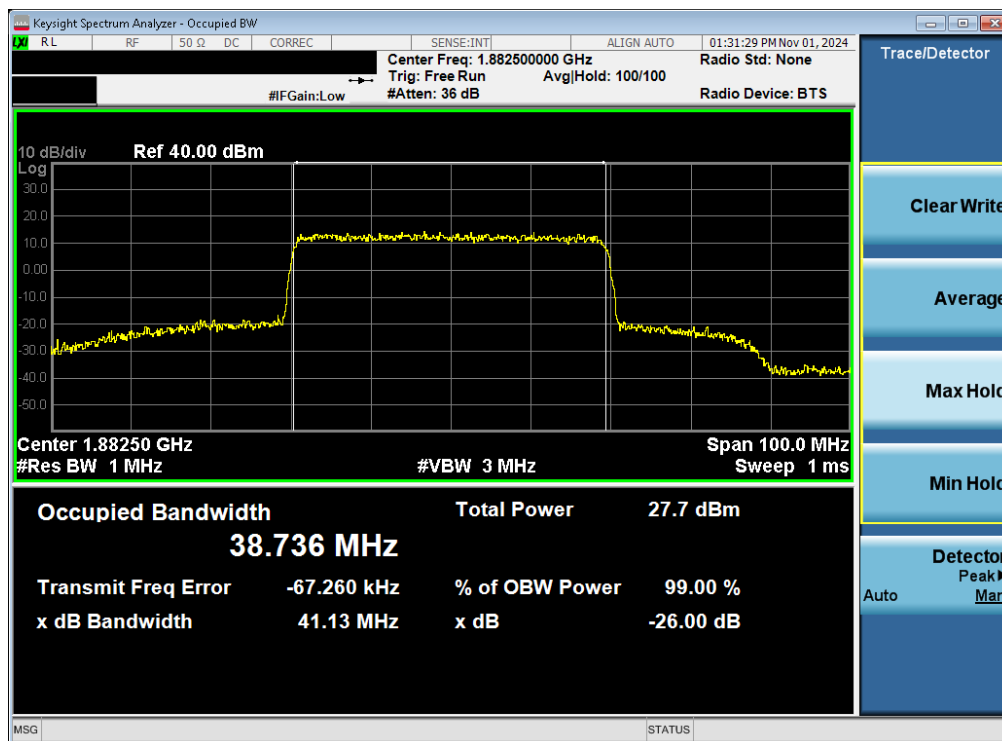
Plot 7-51. Occupied Bandwidth Plot (LTE Band 25/2 - 1.4MHz 16-QAM - Full RB - Ant2)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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NR Band n25/2 – Ant2

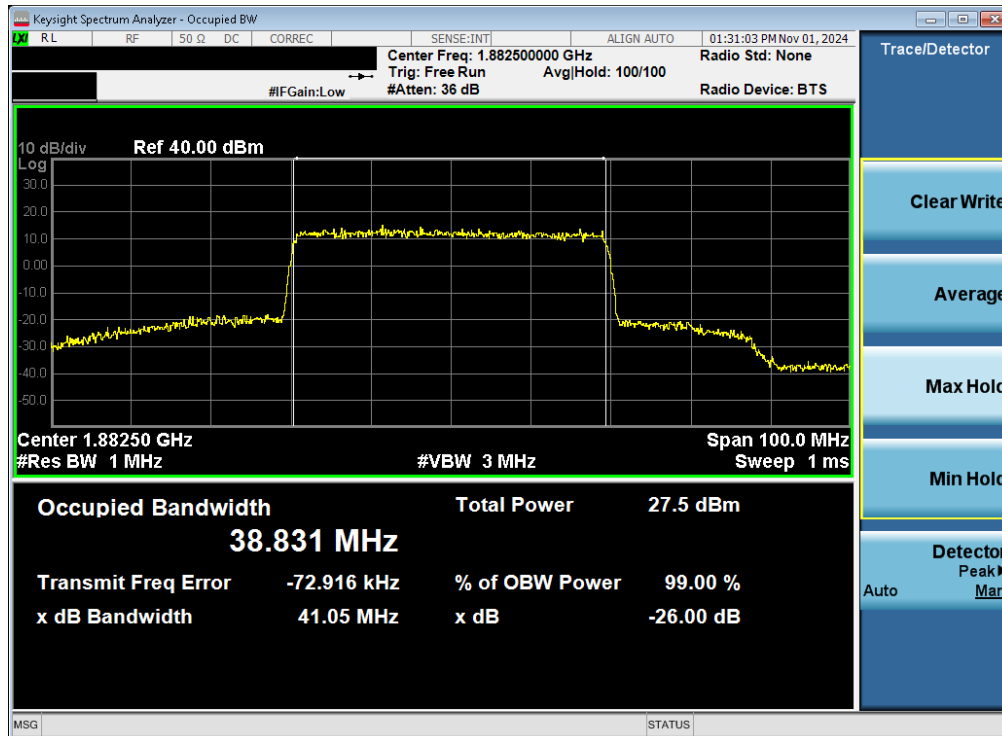


Plot 7-52. Occupied Bandwidth Plot (NR Band n25/2 - 40.0MHz DFT-s-OFDM BPSK - Full RB - ANT2)

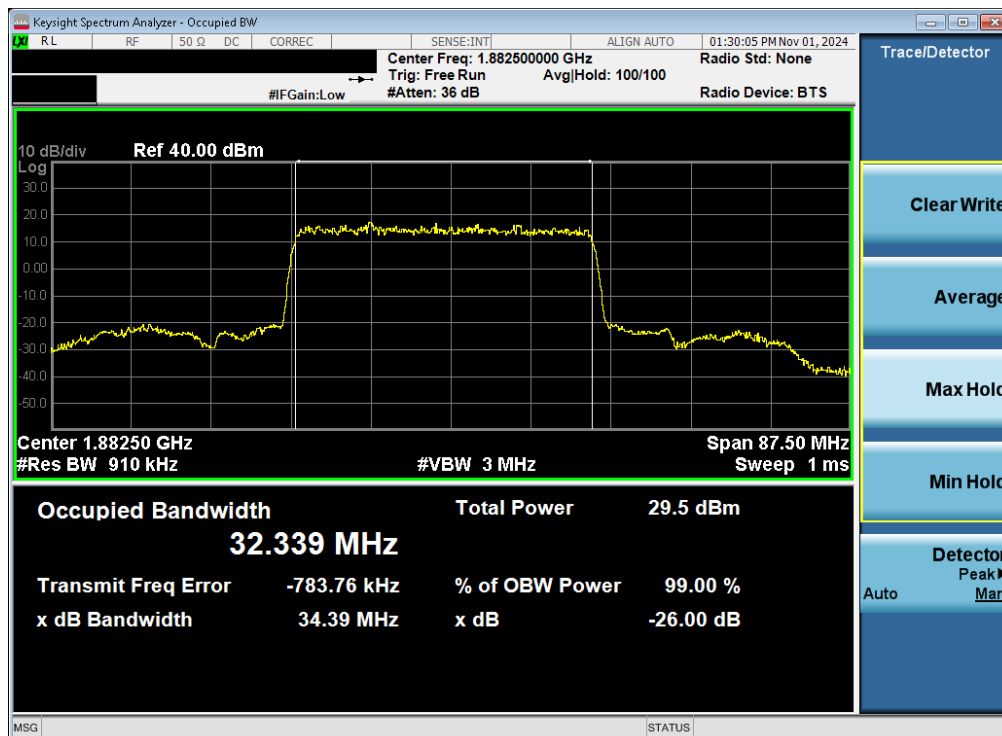


Plot 7-53. Occupied Bandwidth Plot (NR Band n25/2 - 40.0MHz CP-OFDM QPSK - Full RB - ANT2)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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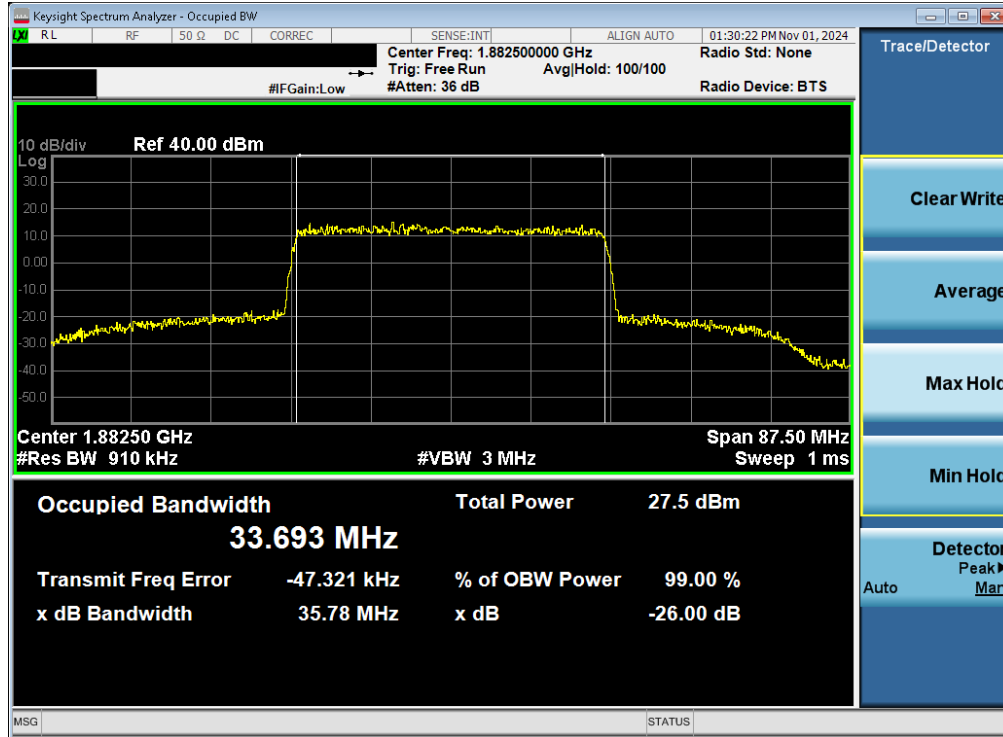


Plot 7-54. Occupied Bandwidth Plot (NR Band n25/2 - 40.0MHz CP-OFDM 16QAM - Full RB - ANT2)

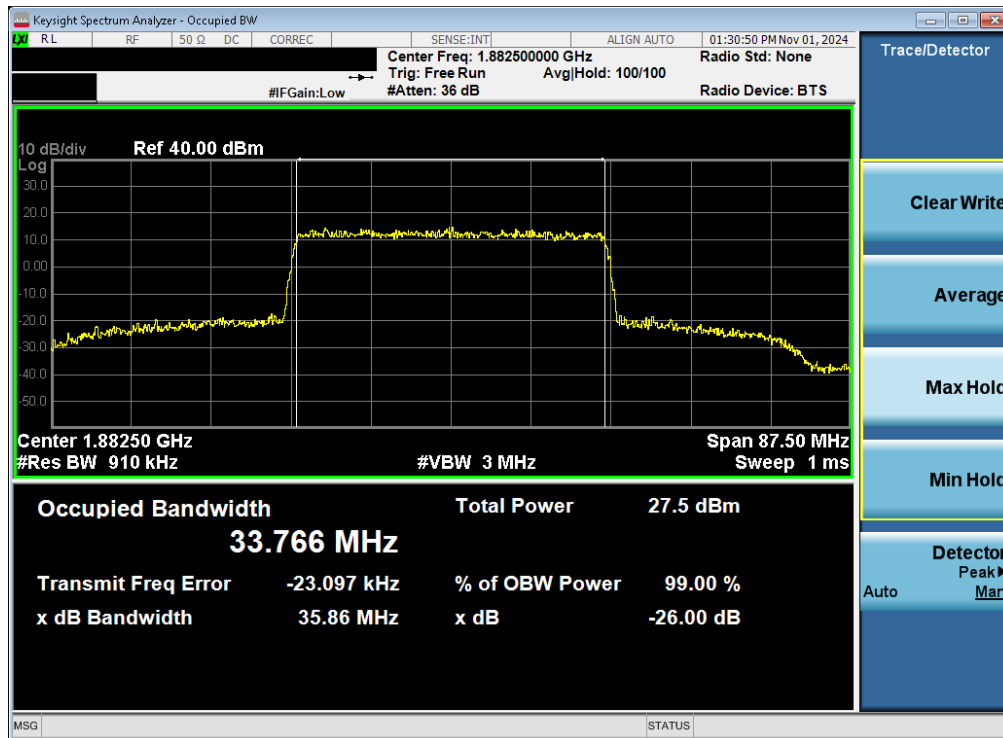


Plot 7-55. Occupied Bandwidth Plot (NR Band n25/2 - 35.0MHz DFT-s-OFDM BPSK - Full RB - ANT2)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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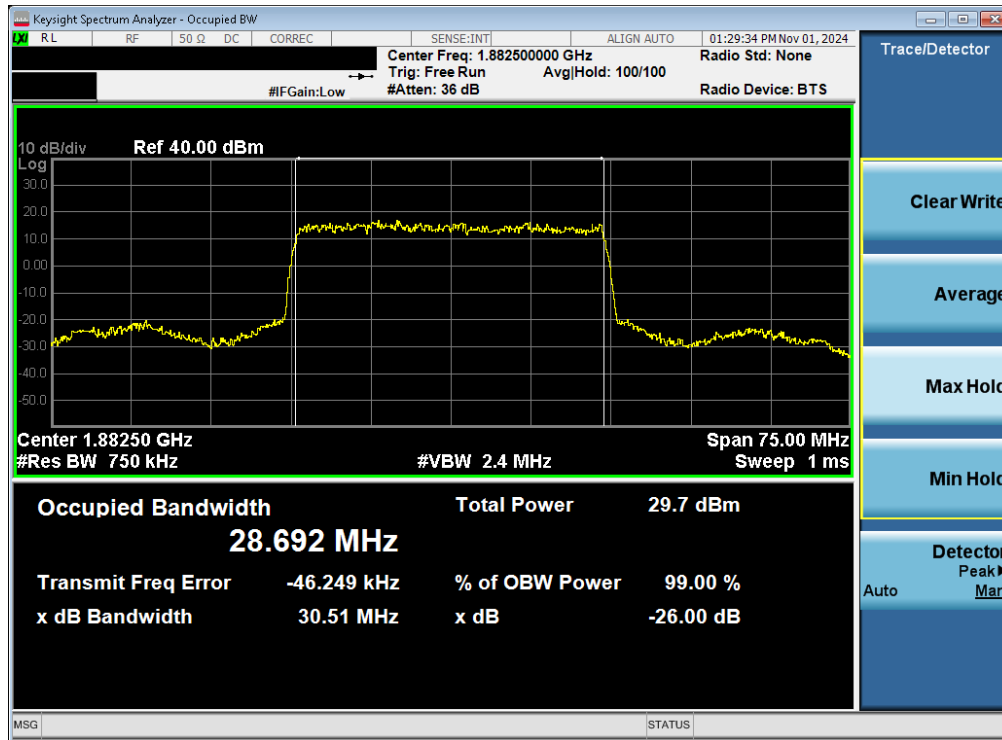


Plot 7-56. Occupied Bandwidth Plot (NR Band n25/2 - 35.0MHz CP-OFDM QPSK - Full RB - ANT2)

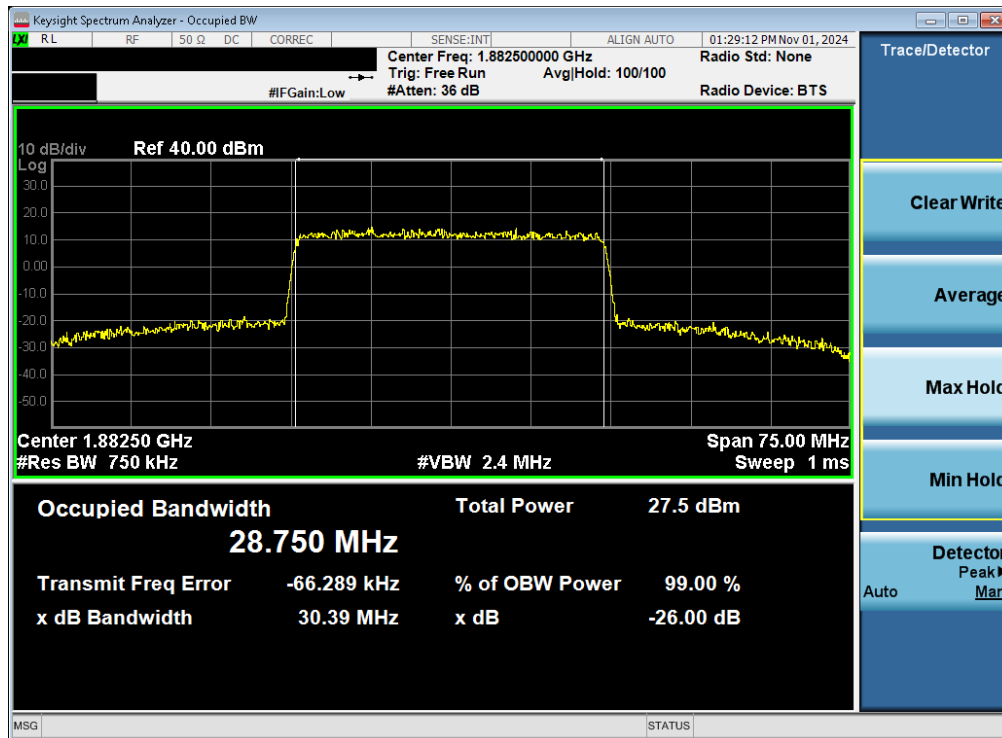


Plot 7-57. Occupied Bandwidth Plot (NR Band n25/2 - 35.0MHz CP-OFDM 16QAM - Full RB - ANT2)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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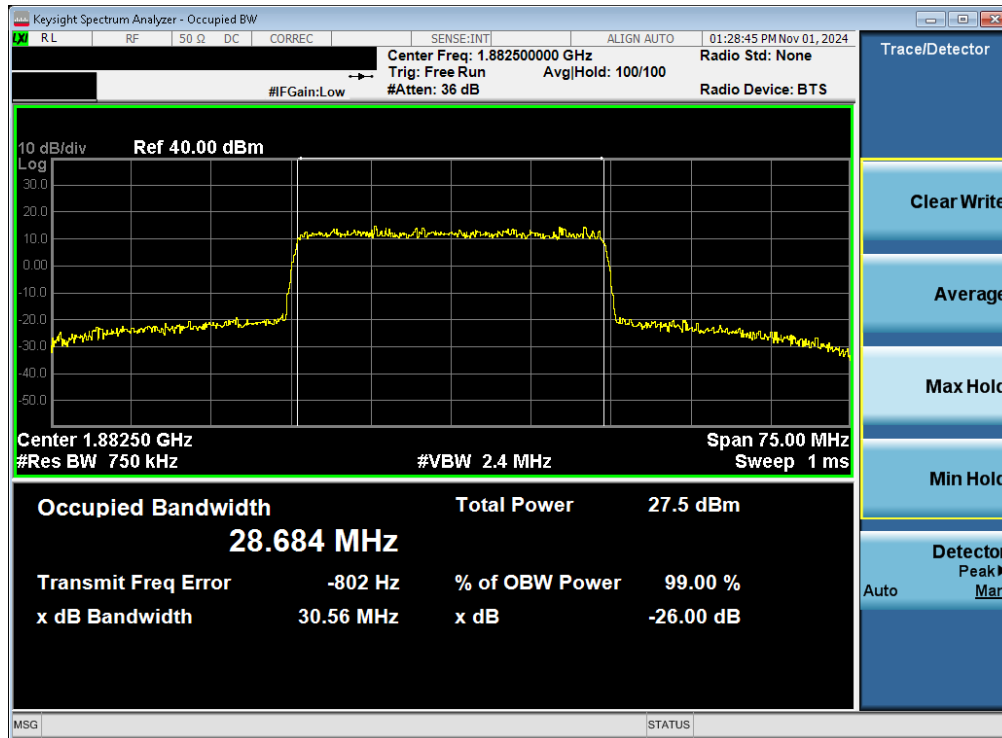


Plot 7-58. Occupied Bandwidth Plot (NR Band n25/2 - 30.0MHz DFT-s-OFDM BPSK - Full RB - ANT2)

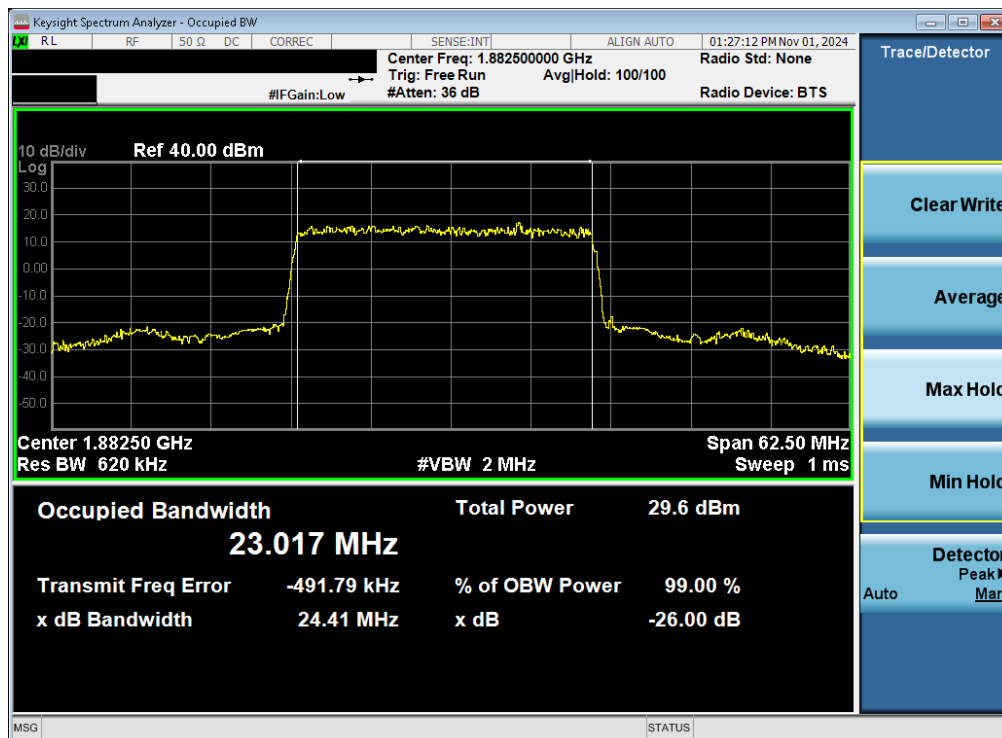


Plot 7-59. Occupied Bandwidth Plot (NR Band n25/2 - 30.0MHz CP-OFDM QPSK - Full RB - ANT2)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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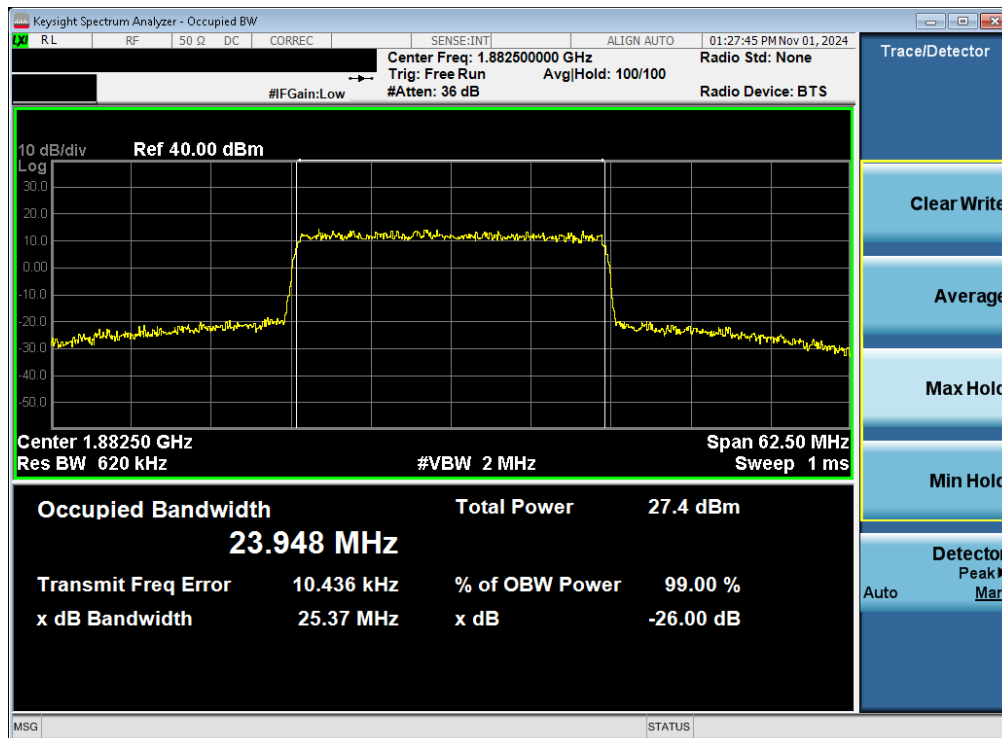


Plot 7-60. Occupied Bandwidth Plot (NR Band n25/2 - 30.0MHz CP-OFDM 16QAM - Full RB - ANT2)

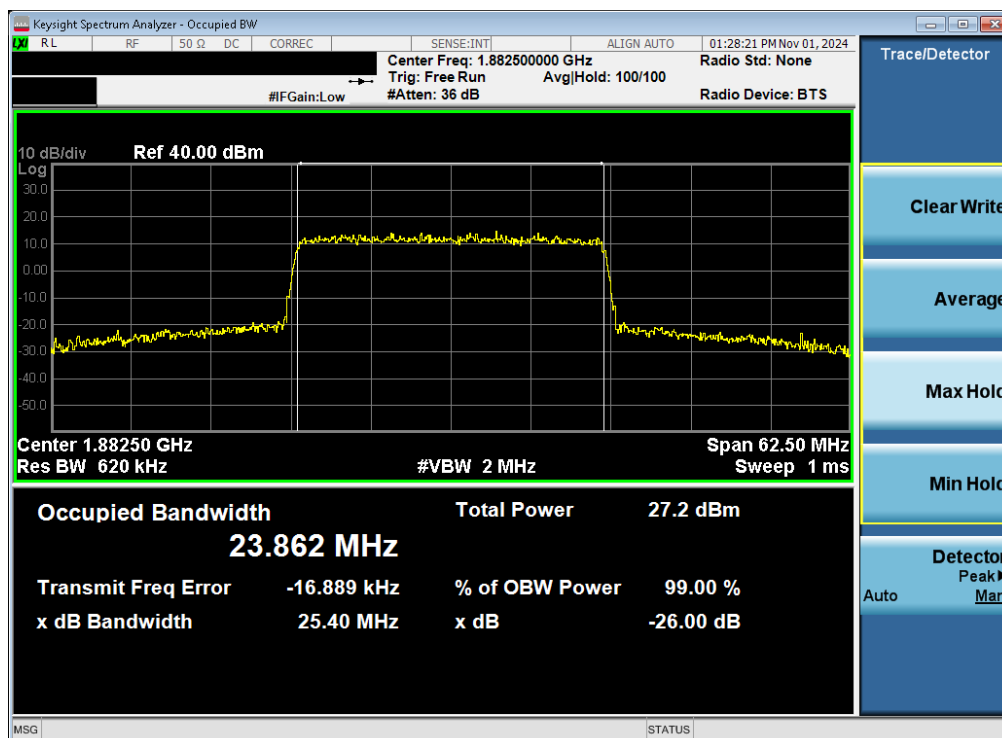


Plot 7-61. Occupied Bandwidth Plot (NR Band n25/2 - 25.0MHz DFT-s-OFDM BPSK - Full RB - ANT2)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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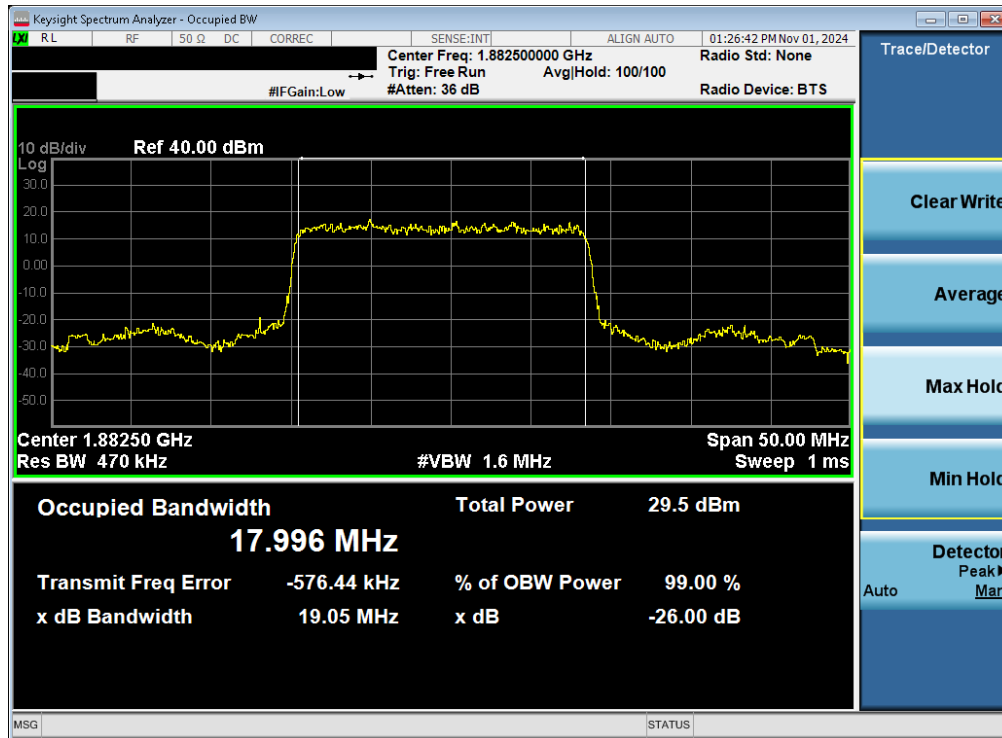


Plot 7-62. Occupied Bandwidth Plot (NR Band n25/2 - 25.0MHz CP-OFDM QPSK - Full RB - ANT2)

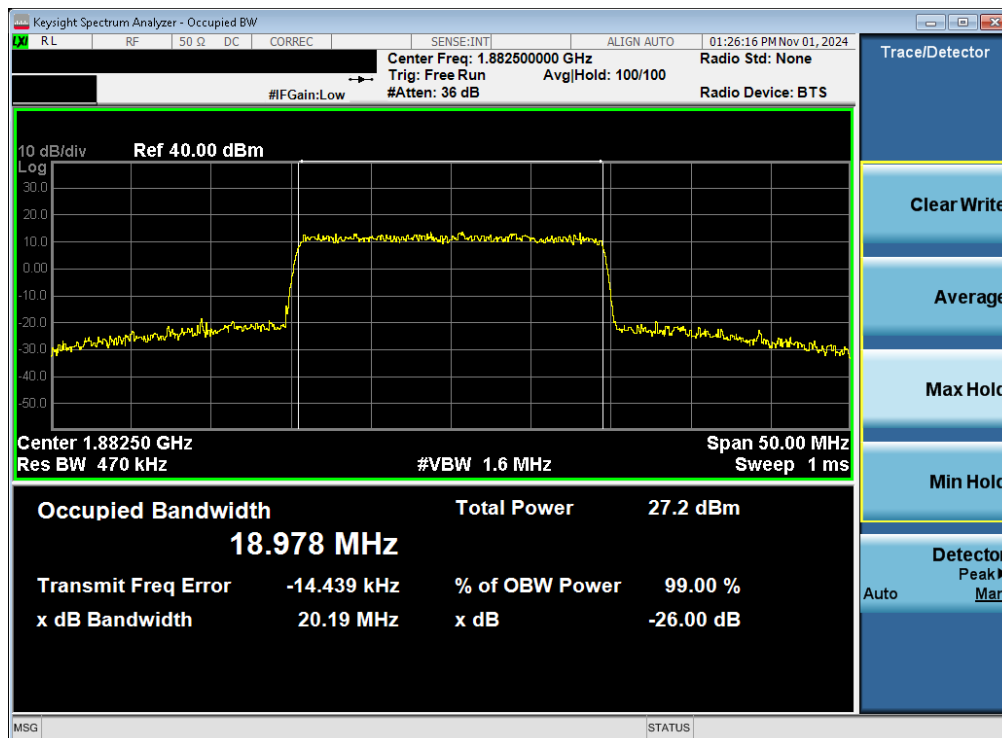


Plot 7-63. Occupied Bandwidth Plot (NR Band n25/2 - 25.0MHz CP-OFDM 16QAM - Full RB - ANT2)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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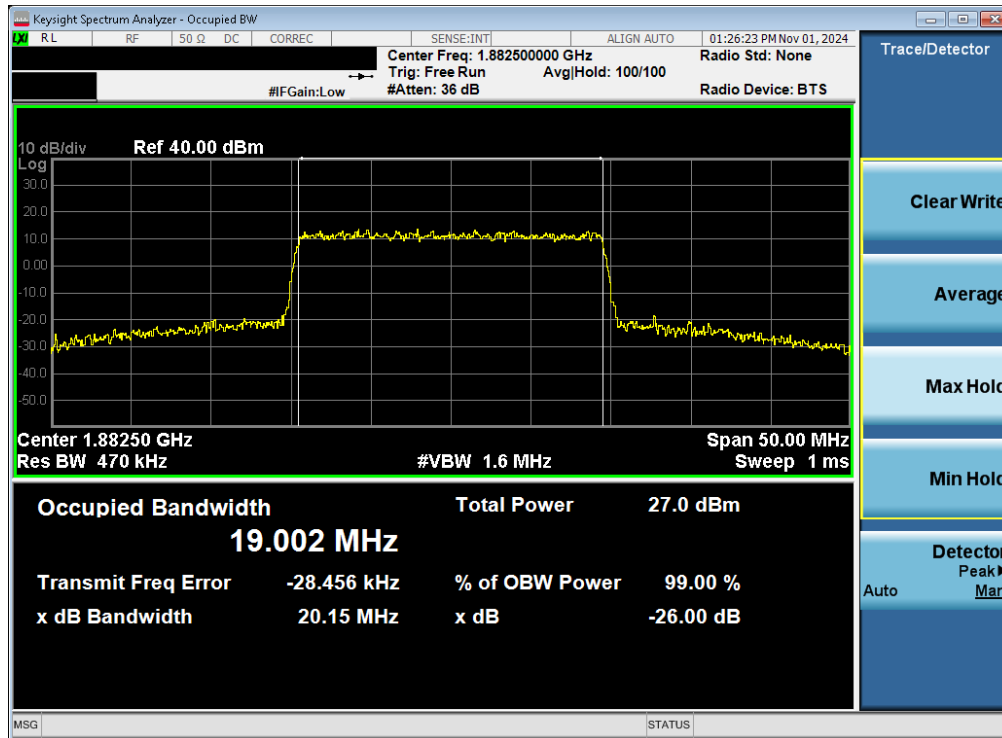


Plot 7-64. Occupied Bandwidth Plot (NR Band n25/2 - 20.0MHz DFT-s-OFDM BPSK - Full RB - ANT2)

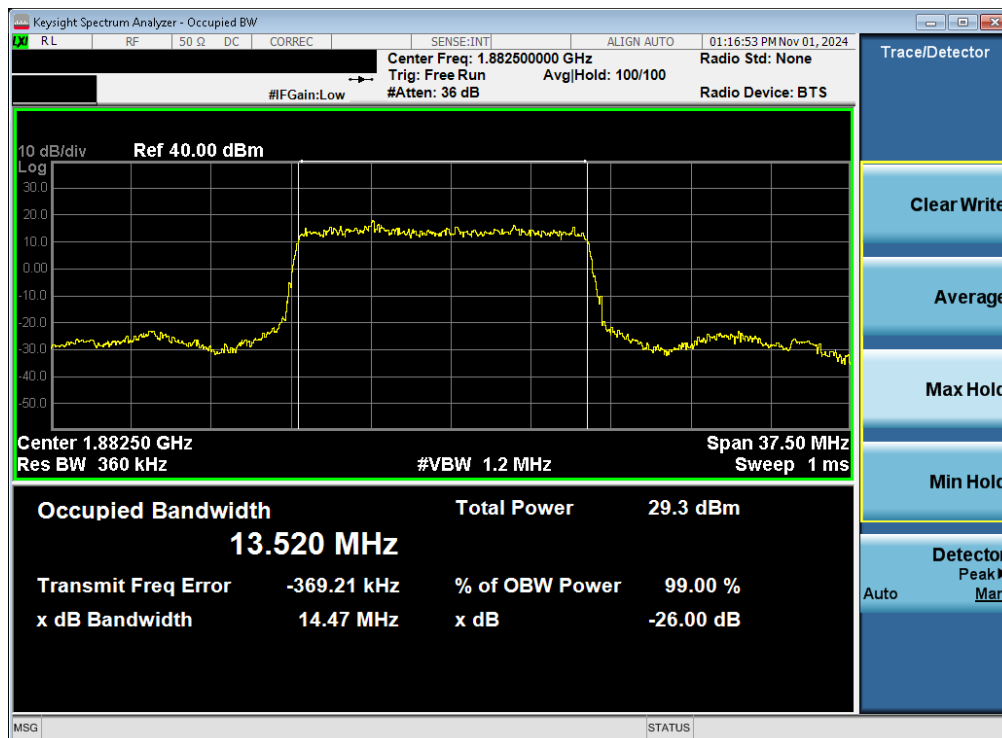


Plot 7-65. Occupied Bandwidth Plot (NR Band n25/2 - 20.0MHz CP-OFDM QPSK - Full RB - ANT2)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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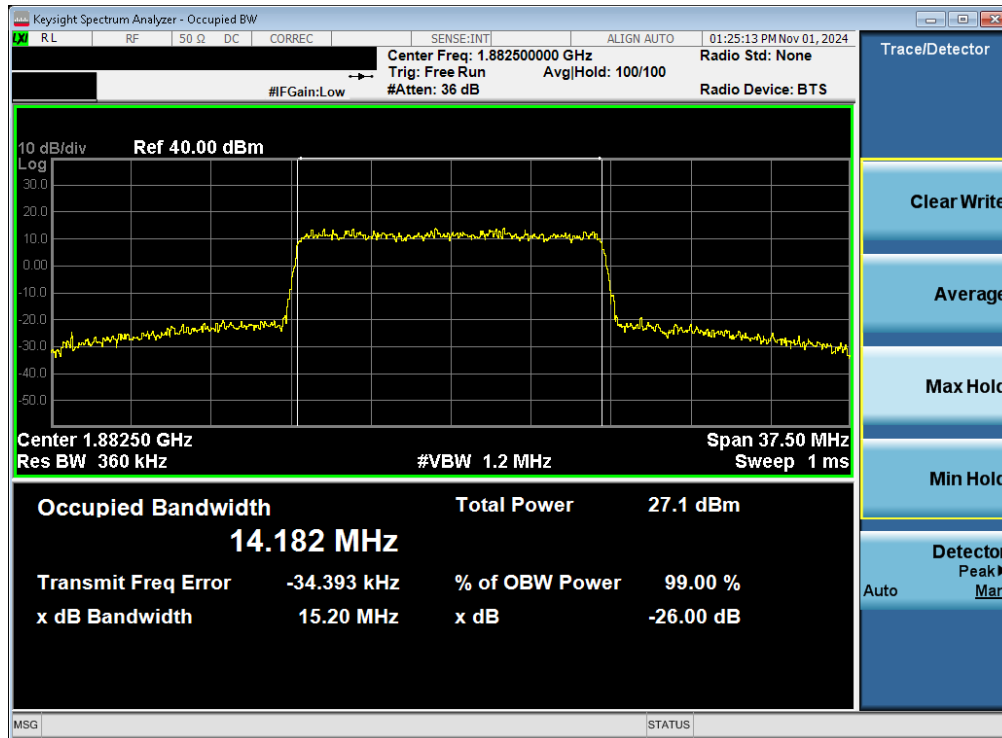


Plot 7-66. Occupied Bandwidth Plot (NR Band n25/2 - 20.0MHz CP-OFDM 16QAM - Full RB - ANT2)

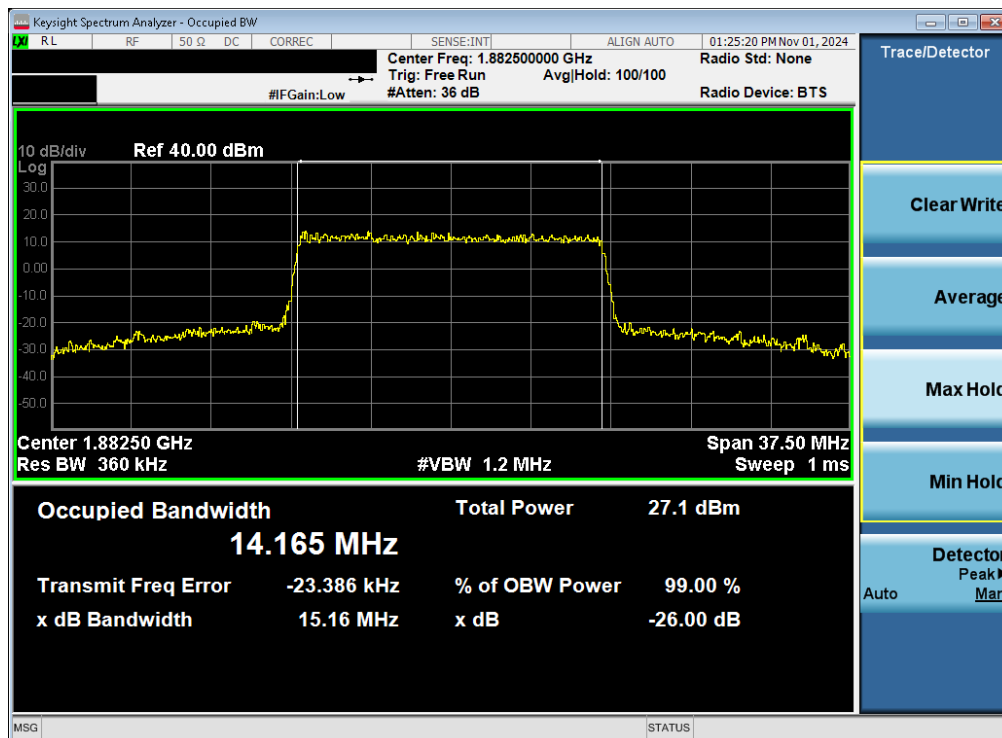


Plot 7-67. Occupied Bandwidth Plot (NR Band n25/2 - 15.0MHz DFT-s-OFDM BPSK - Full RB - ANT2)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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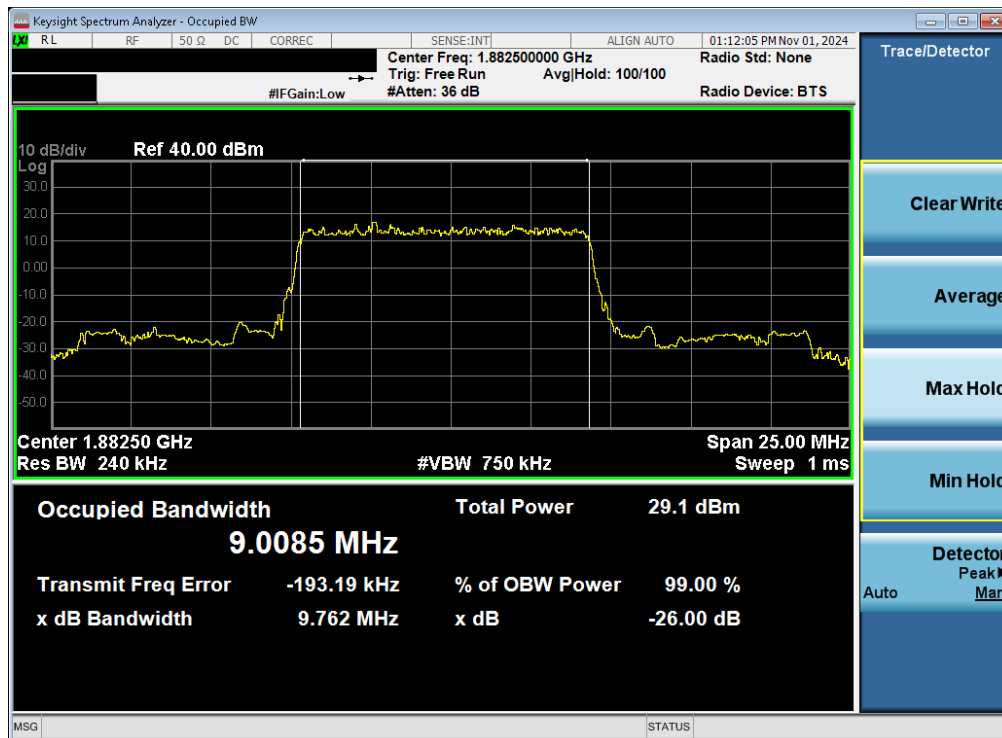


Plot 7-68. Occupied Bandwidth Plot (NR Band n25/2 - 15.0MHz CP-OFDM QPSK - Full RB - ANT2)

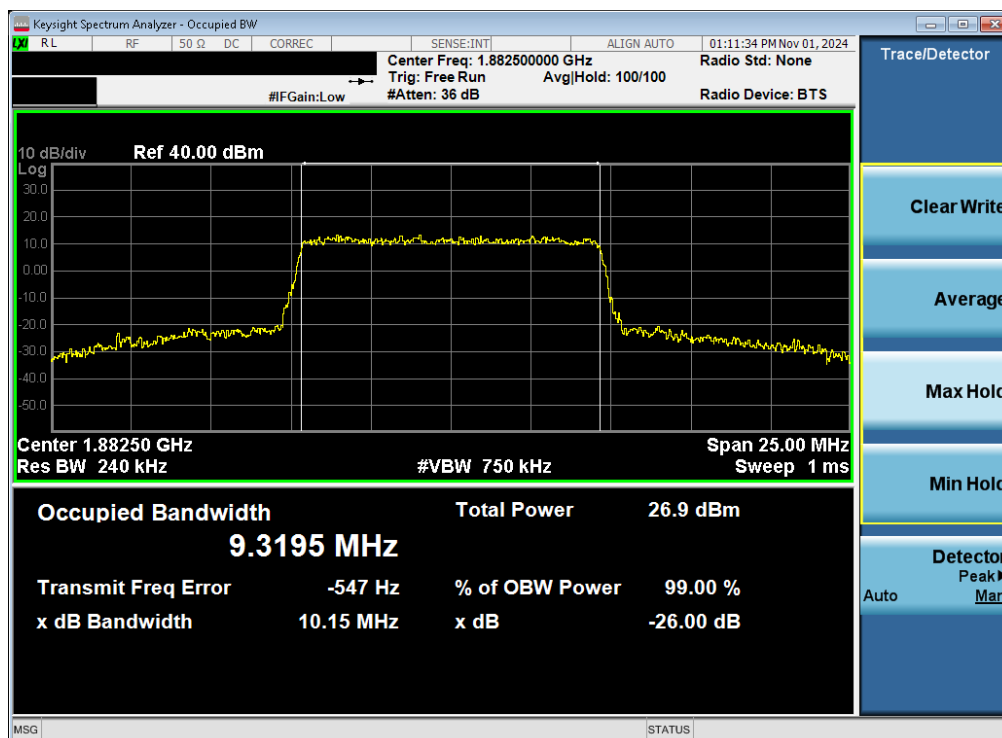


Plot 7-69. Occupied Bandwidth Plot (NR Band n25/2 - 15.0MHz CP-OFDM 16QAM - Full RB - ANT2)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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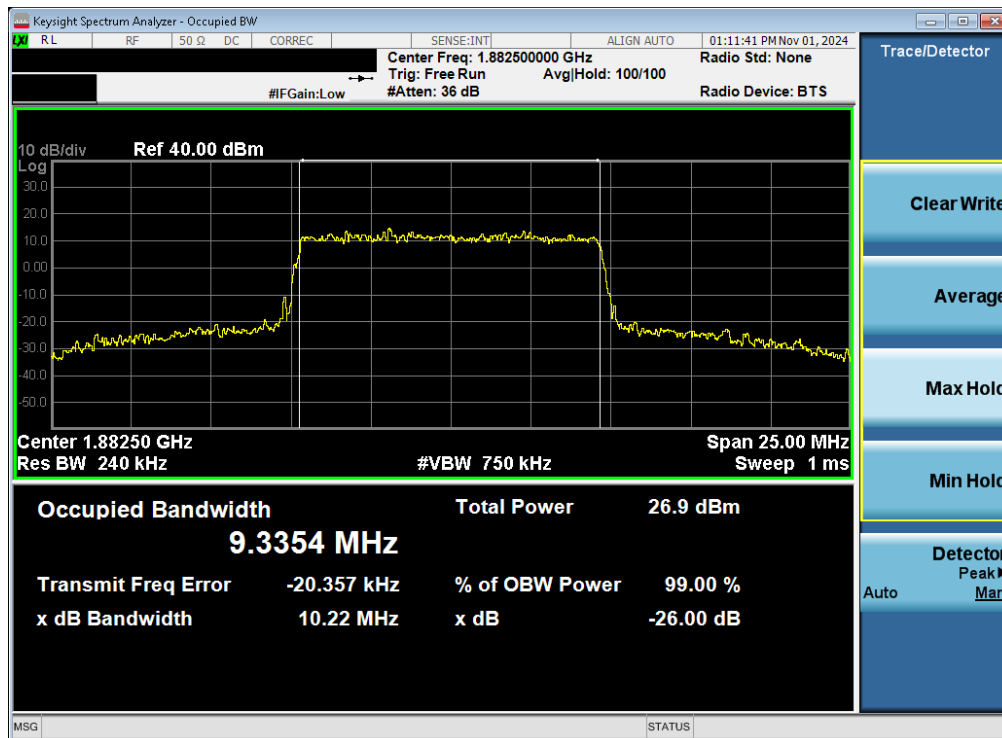


Plot 7-70. Occupied Bandwidth Plot (NR Band n25/2 - 10.0MHz DFT-s-OFDM BPSK - Full RB - ANT2)

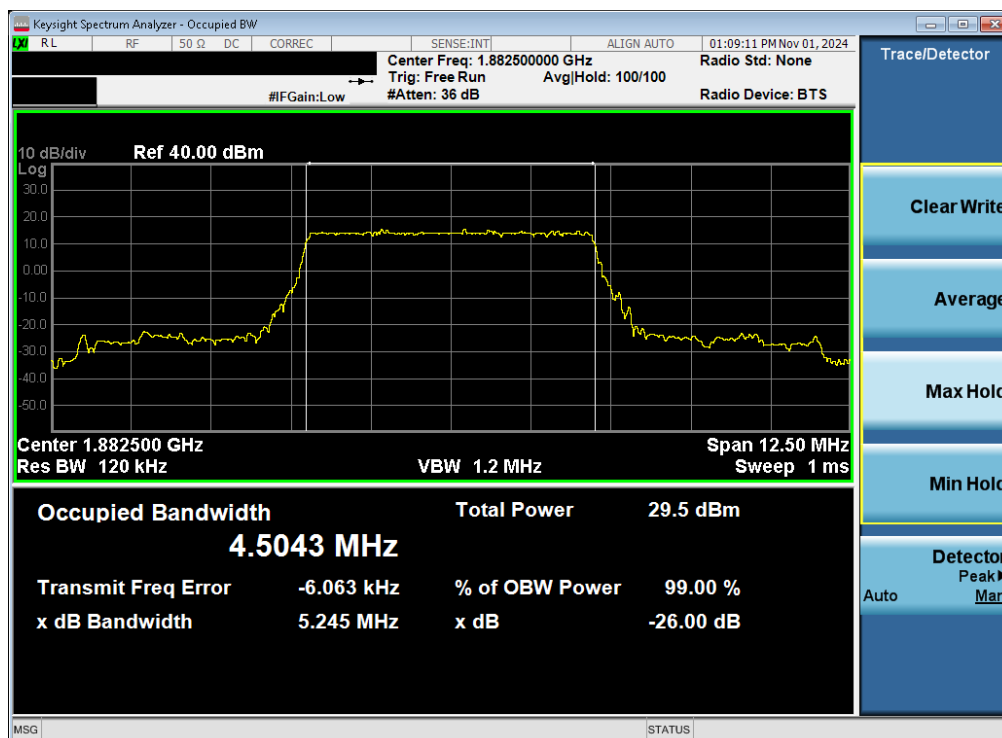


Plot 7-71. Occupied Bandwidth Plot (NR Band n25/2 - 10.0MHz CP-OFDM QPSK - Full RB - ANT2)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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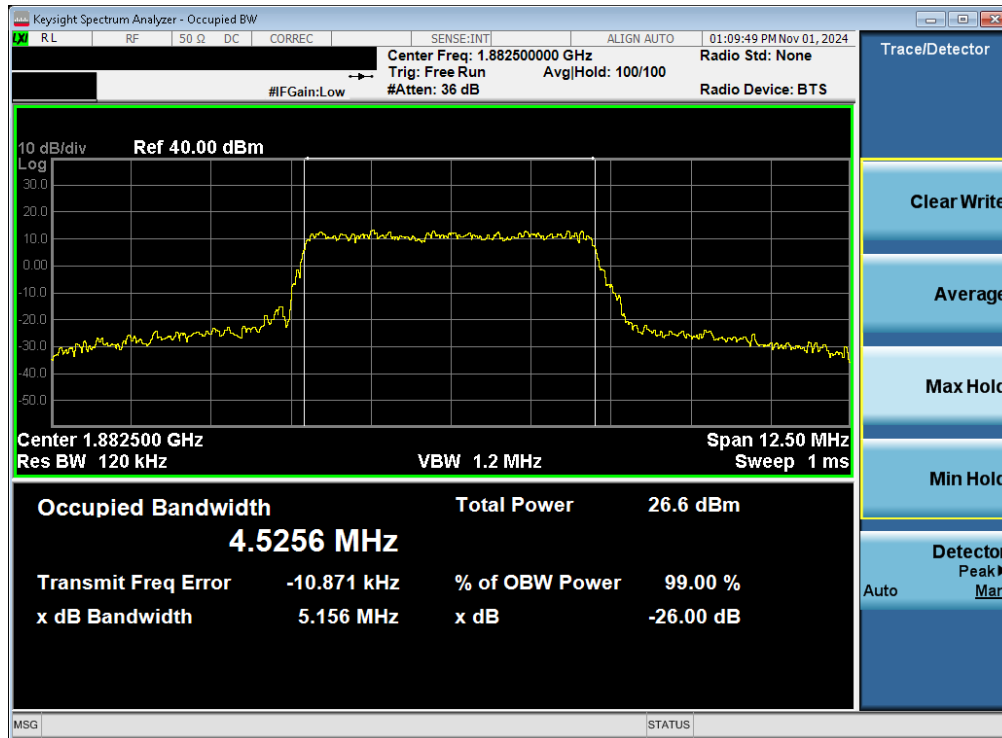


Plot 7-72. Occupied Bandwidth Plot (NR Band n25/2 - 10.0MHz CP-OFDM 16QAM - Full RB - ANT2)

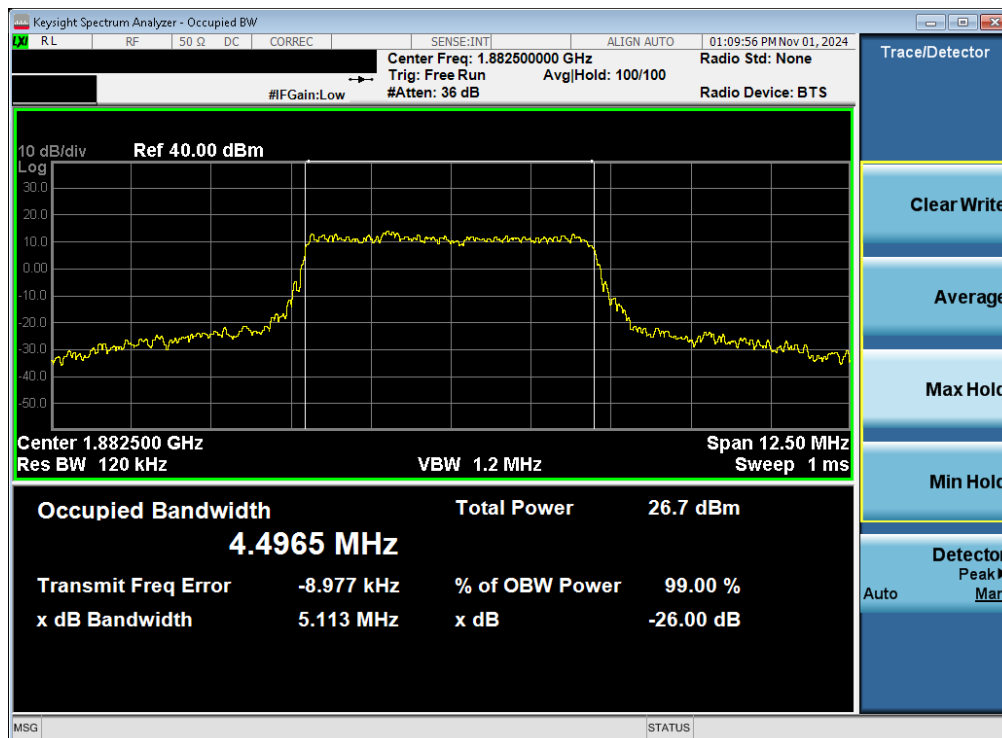


Plot 7-73. Occupied Bandwidth Plot (NR Band n25/2 - 5.0MHz DFT-s-OFDM BPSK - Full RB - ANT2)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-74. Occupied Bandwidth Plot (NR Band n25/2 - 5.0MHz CP-OFDM QPSK - Full RB - ANT2)



Plot 7-75. Occupied Bandwidth Plot (NR Band n25/2 - 5.0MHz CP-OFDM 16QAM - Full RB - ANT2)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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7.4 Spurious and Harmonic Emissions at Antenna Terminal

Test Overview

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst-case configuration. All modes of operation were investigated and the worst-case configuration results are reported in this section.

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

Test Procedure Used

ANSI C63.26-2015 – Section 5.7.4

Test Settings

1. Start frequency was set to 30MHz and stop frequency was set to 20GHz (separated into at least two plots per channel)
2. Detector = RMS
3. Trace mode = trace average for continuous emissions, max hold for pulse emissions
4. Sweep time = auto couple
5. The trace was allowed to stabilize
6. Please see test notes below for RBW and VBW settings

Test Setup

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



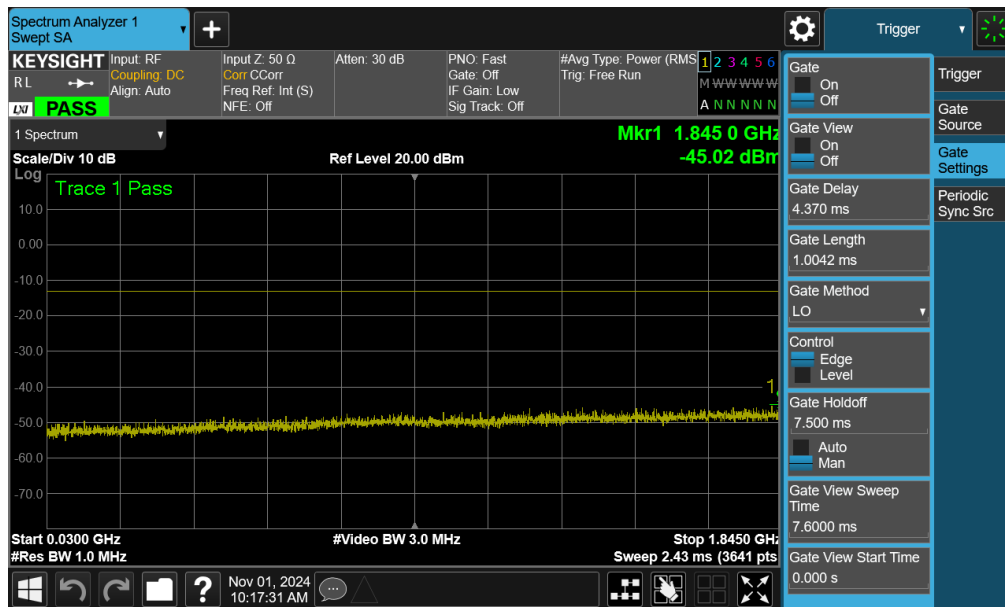
Figure 7-3. Test Instrument & Measurement Setup

Test Notes

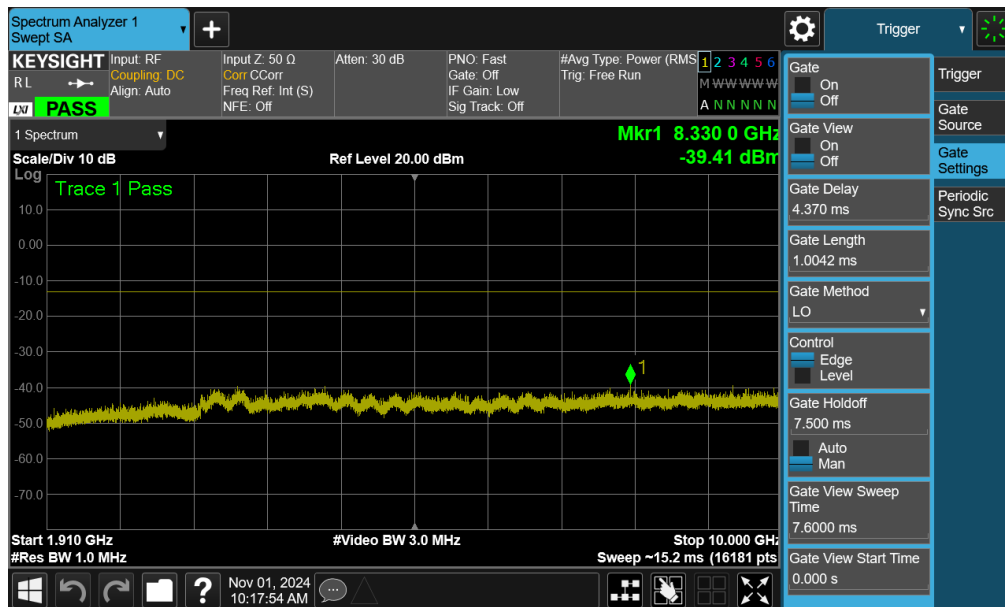
1. Per Part 24 and RSS-133, compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz.
2. For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) were investigated to determine the worst case configuration. All modes of operation were investigated and the worst-case configuration results are reported in this section.

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GSM/GPRS PCS – Ant1

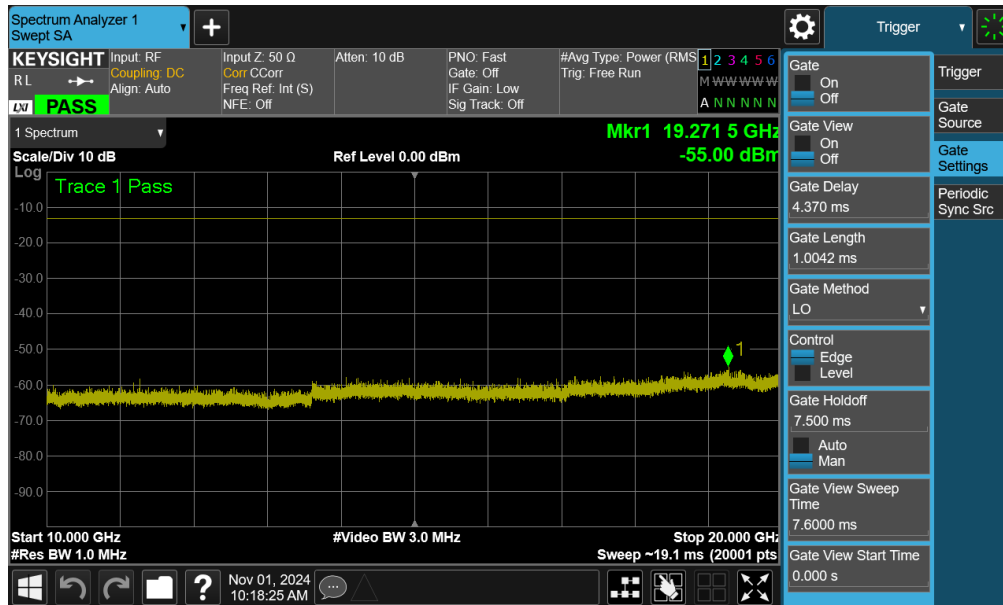


Plot 7-76. Conducted Spurious Plot (GPRS Ch. 512 - Ant1)

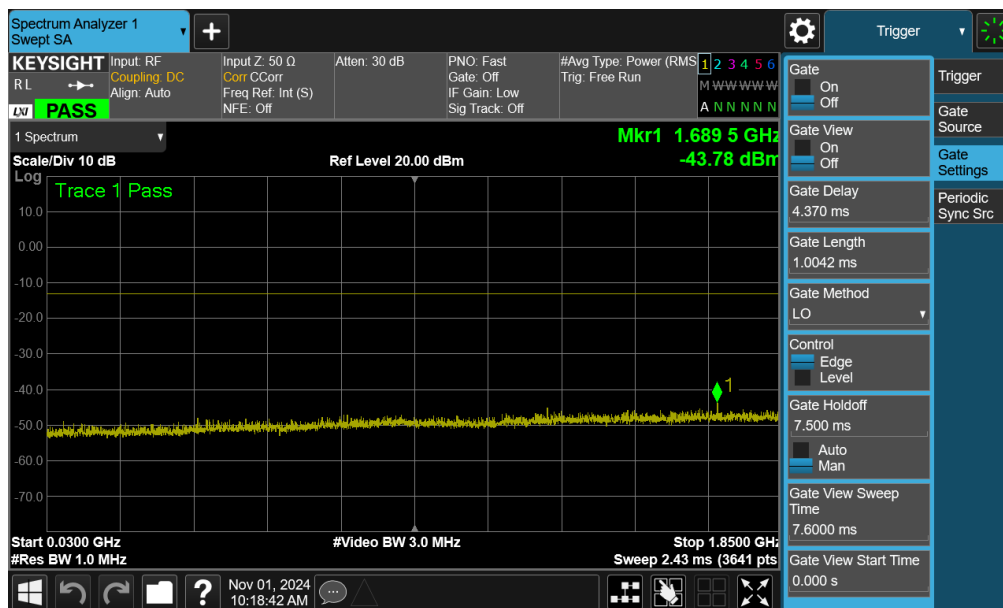


Plot 7-77. Conducted Spurious Plot (GPRS Ch. 512 - Ant1)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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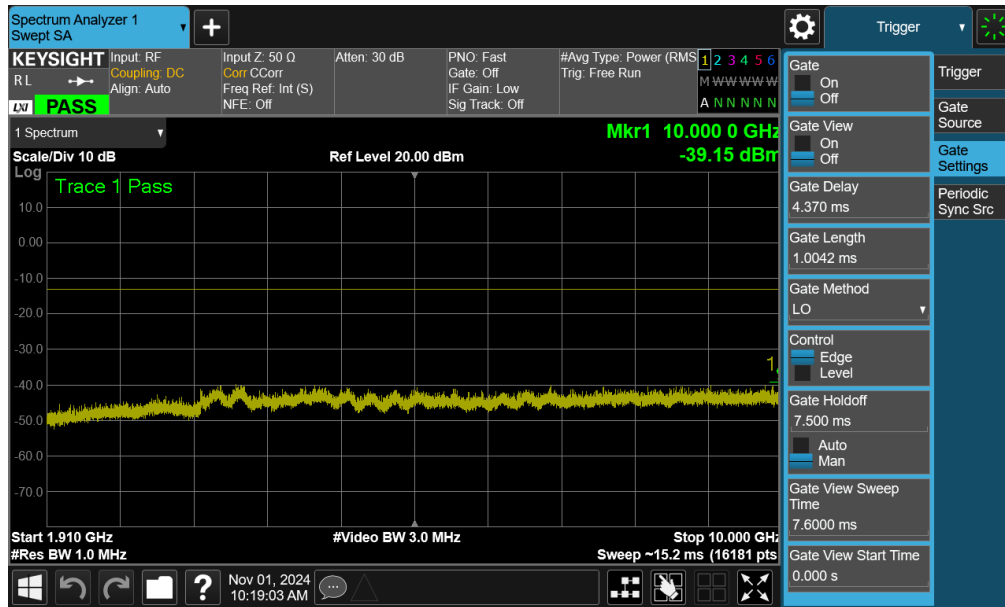


Plot 7-78. Conducted Spurious Plot (GPRS Ch. 512 - Ant1)

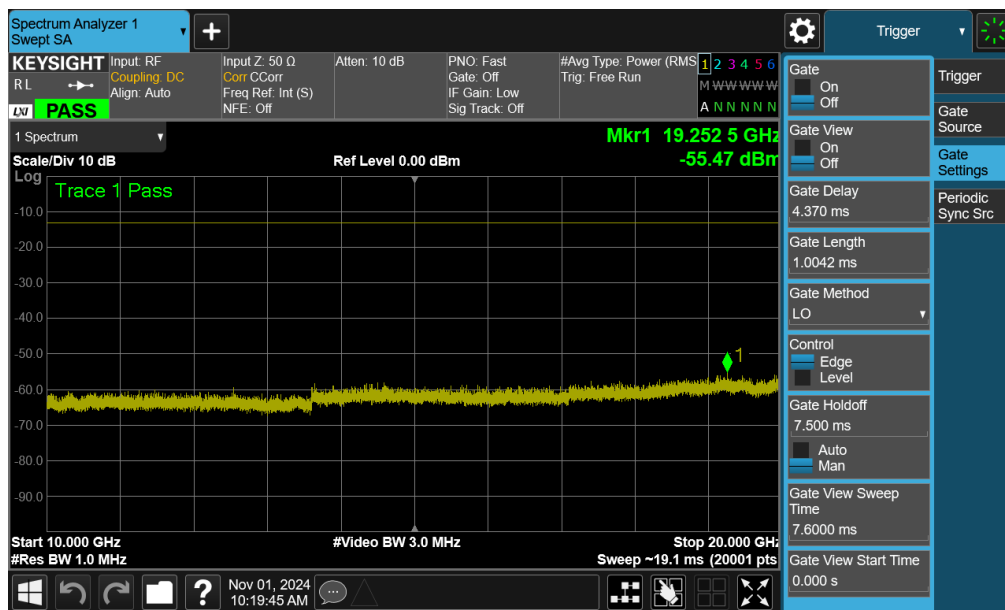


Plot 7-79. Conducted Spurious Plot (GPRS Ch. 661 - Ant1)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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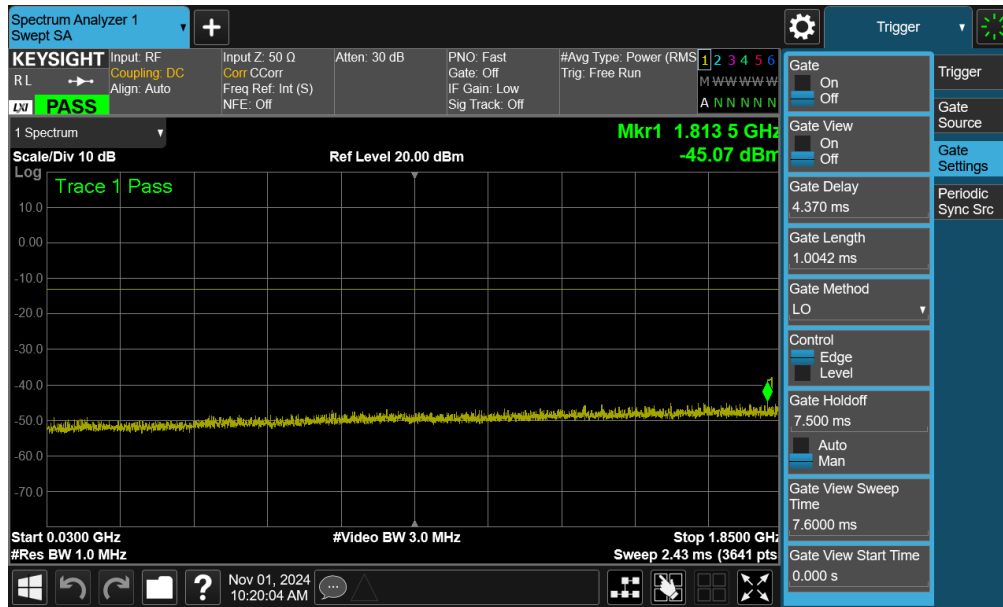


Plot 7-80. Conducted Spurious Plot (GPRS Ch. 661 - Ant1)

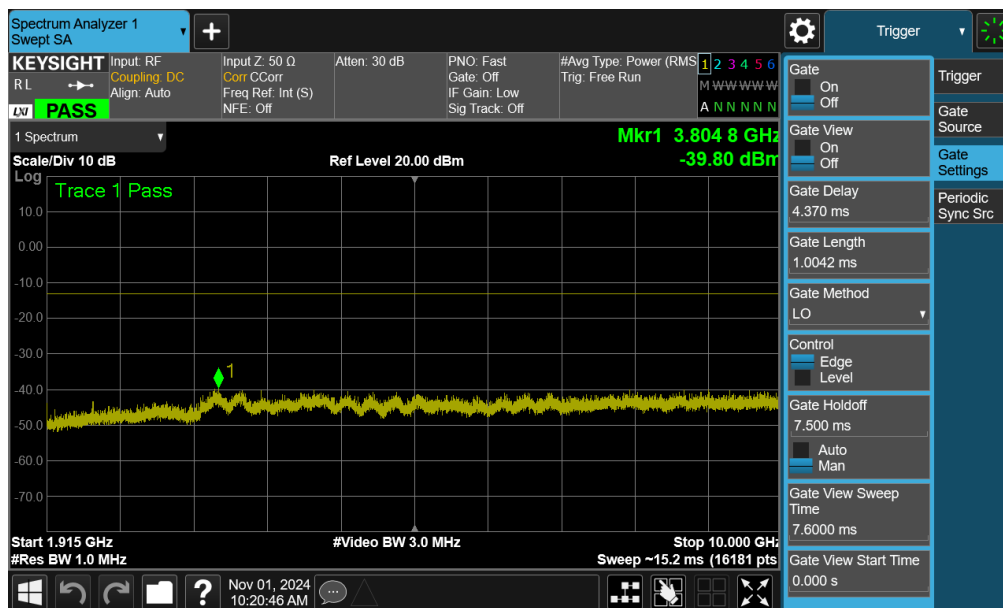


Plot 7-81. Conducted Spurious Plot (GPRS Ch. 661 - Ant1)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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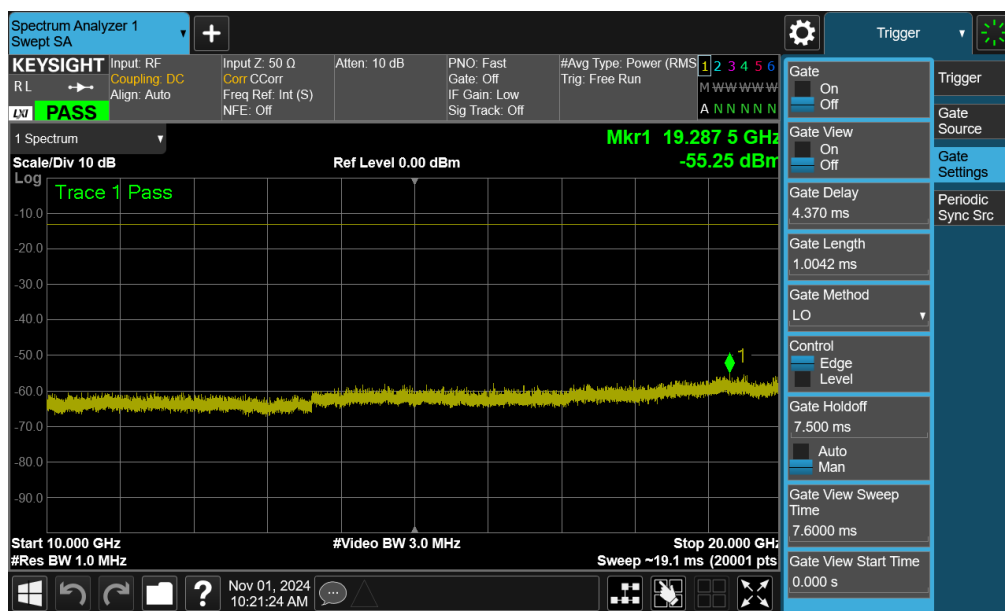


Plot 7-82. Conducted Spurious Plot (GPRS Ch. 810 - Ant1)



Plot 7-83. Conducted Spurious Plot (GPRS Ch. 810 - Ant1)

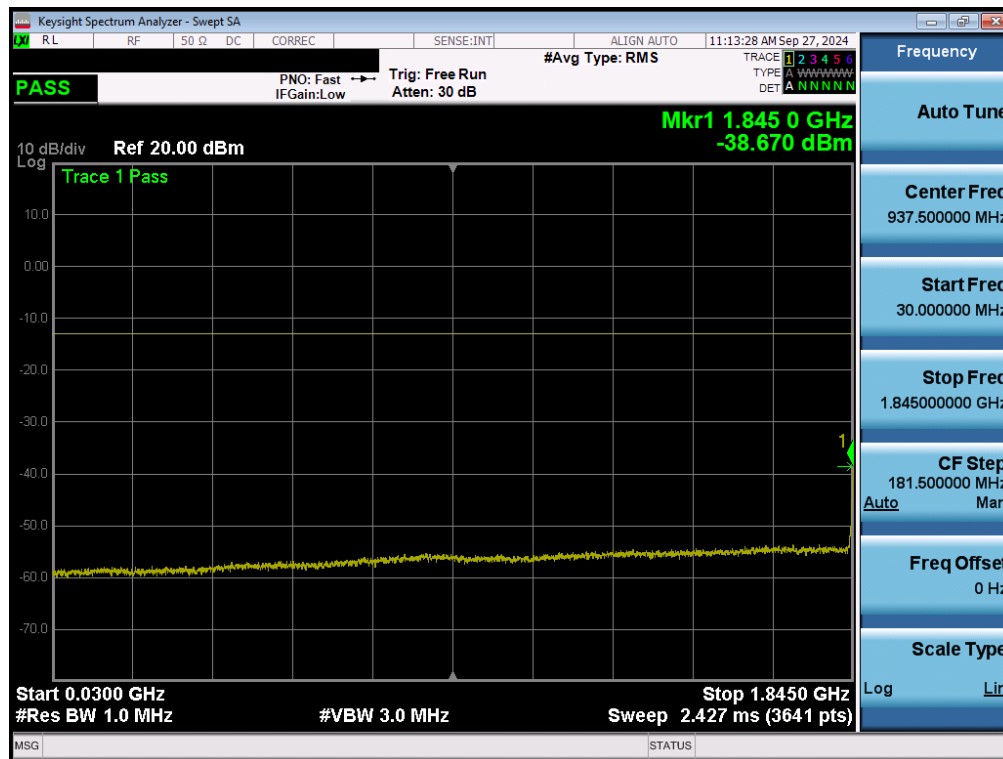
FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2408260069-05.A3L	Test Dates: 09/06/2024 - 11/08/2024	EUT Type: Portable Handset	Page 61 of 175



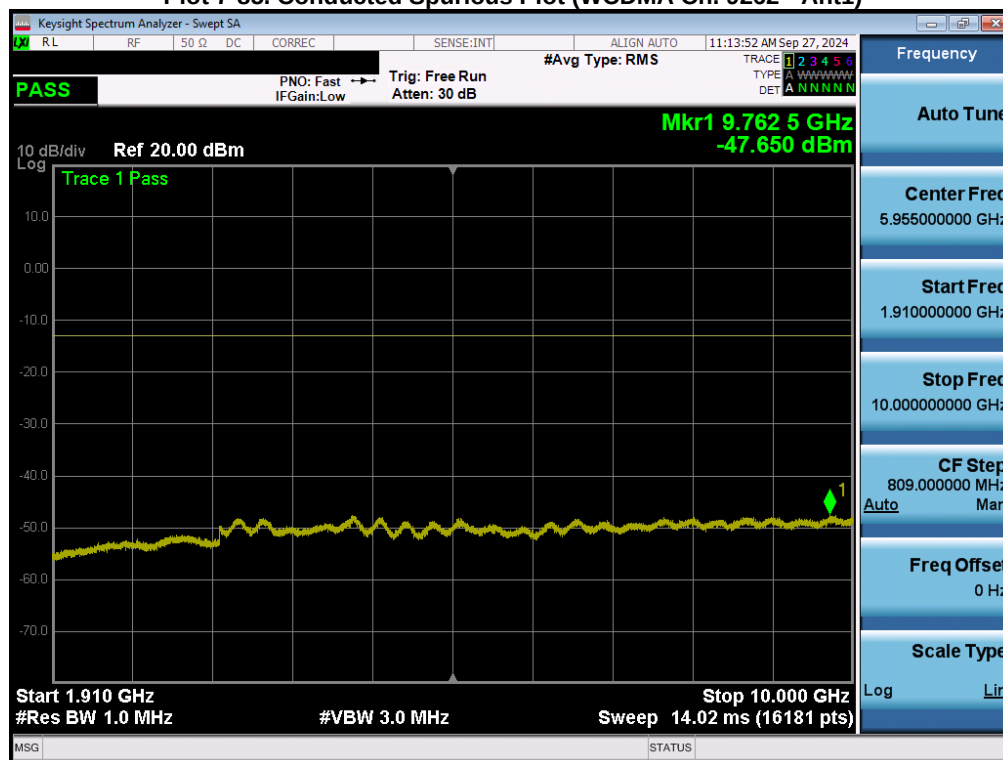
Plot 7-84. Conducted Spurious Plot (GPRS Ch. 810 - Ant1)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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WCDMA PCS – Ant1

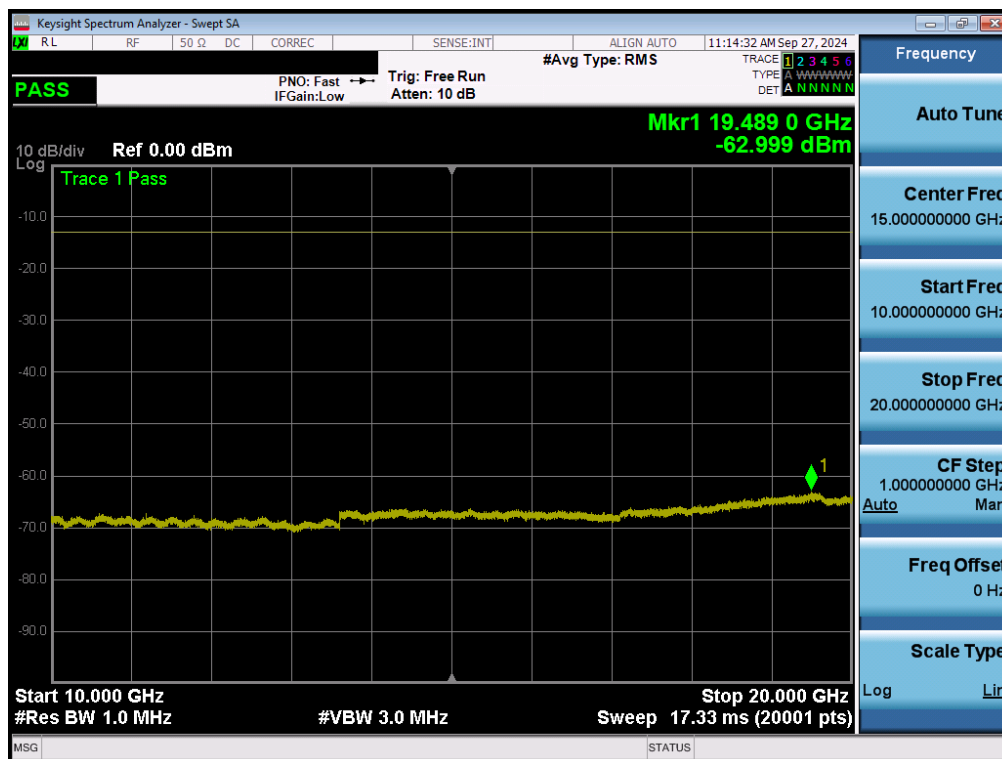


Plot 7-85. Conducted Spurious Plot (WCDMA Ch. 9262 - Ant1)

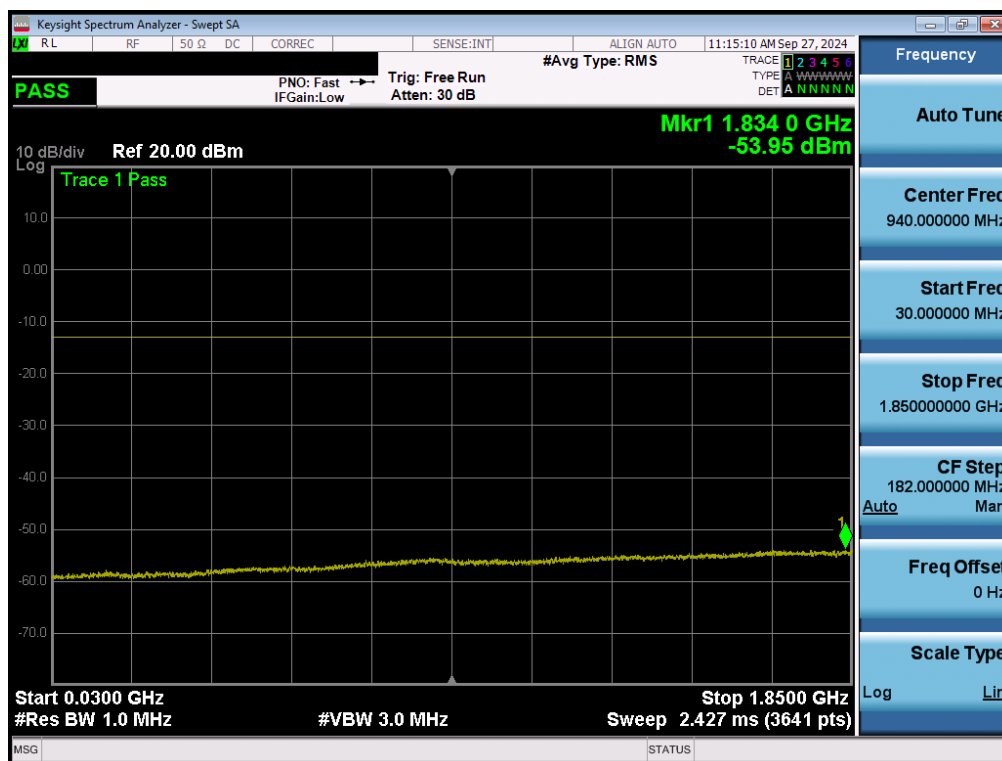


Plot 7-86. Conducted Spurious Plot (WCDMA Ch. 9262 - Ant1)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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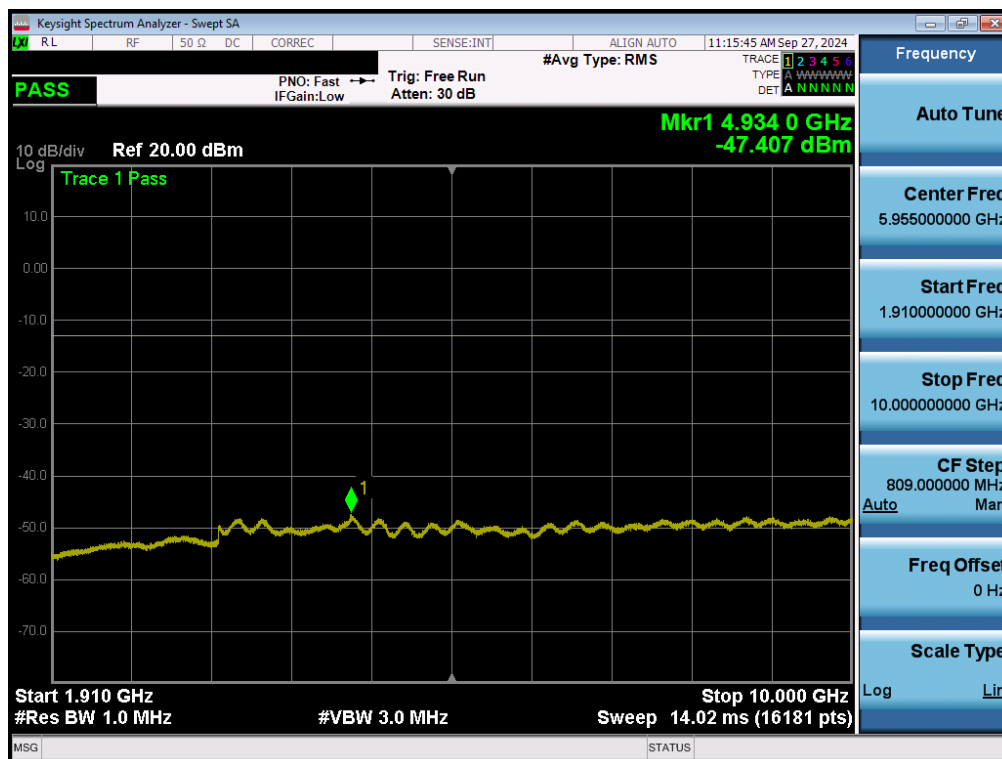


Plot 7-87. Conducted Spurious Plot (WCDMA Ch. 9262 - Ant1)

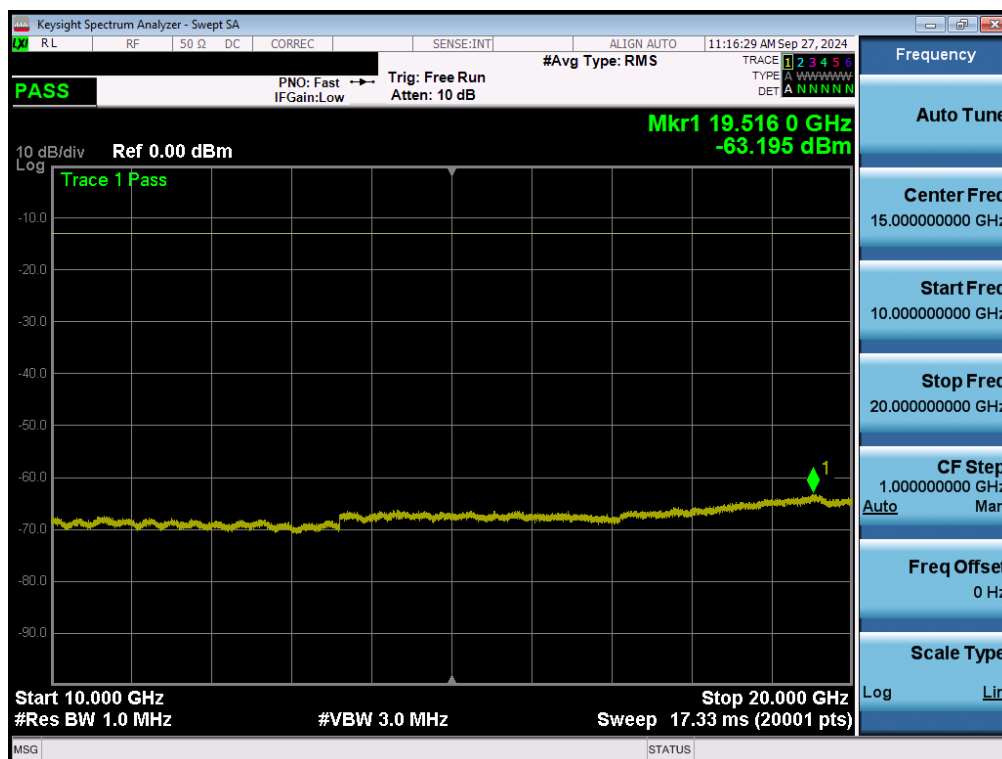


Plot 7-88. Conducted Spurious Plot (WCDMA Ch. 9400 - Ant1)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2408260069-05.A3L	Test Dates: 09/06/2024 - 11/08/2024	EUT Type: Portable Handset	Page 64 of 175

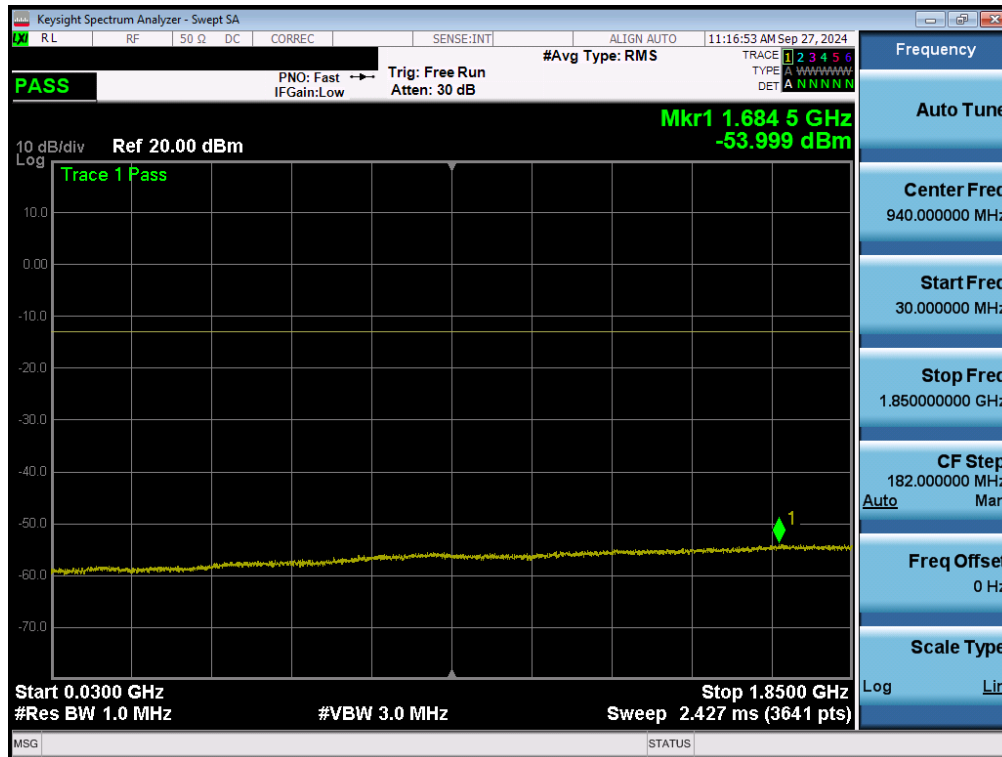


Plot 7-89. Conducted Spurious Plot (WCDMA Ch. 9400 - Ant1)

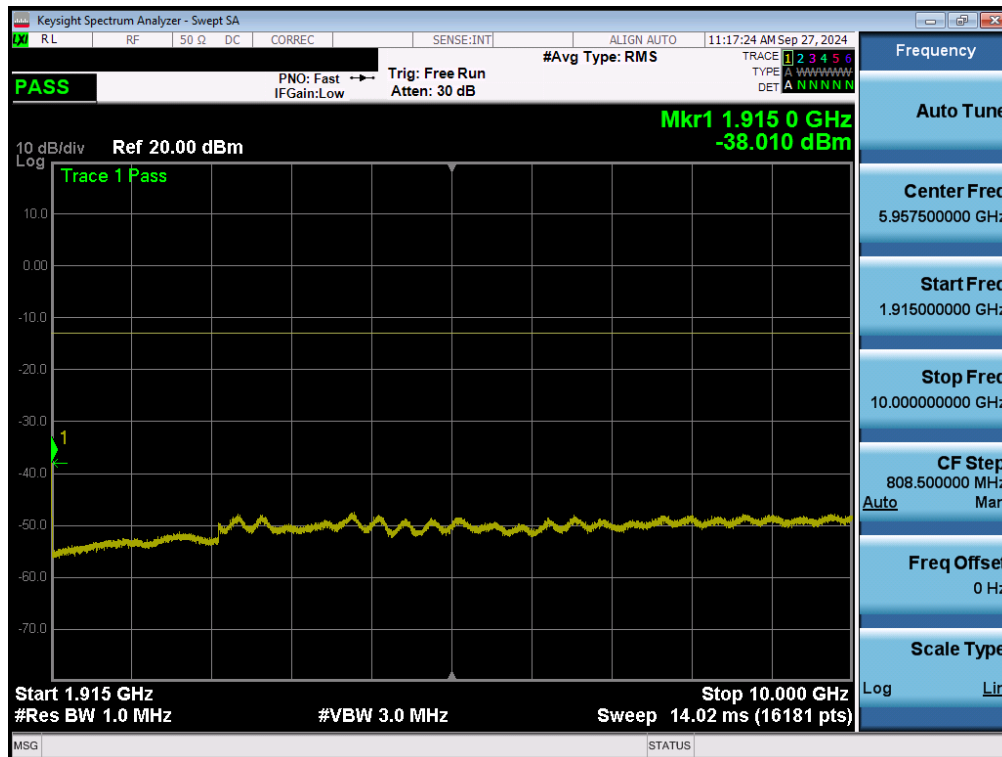


Plot 7-90. Conducted Spurious Plot (WCDMA Ch. 9400 - Ant1)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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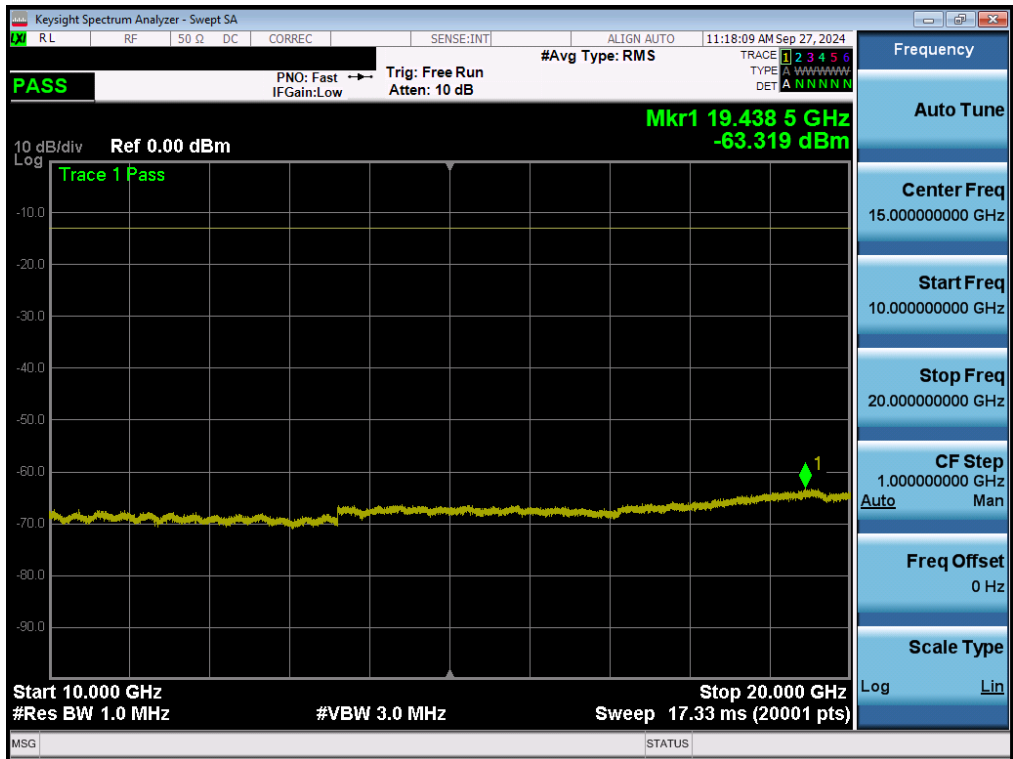


Plot 7-91. Conducted Spurious Plot (WCDMA Ch. 9538 - Ant1)



Plot 7-92. Conducted Spurious Plot (WCDMA Ch. 9538 - Ant1)

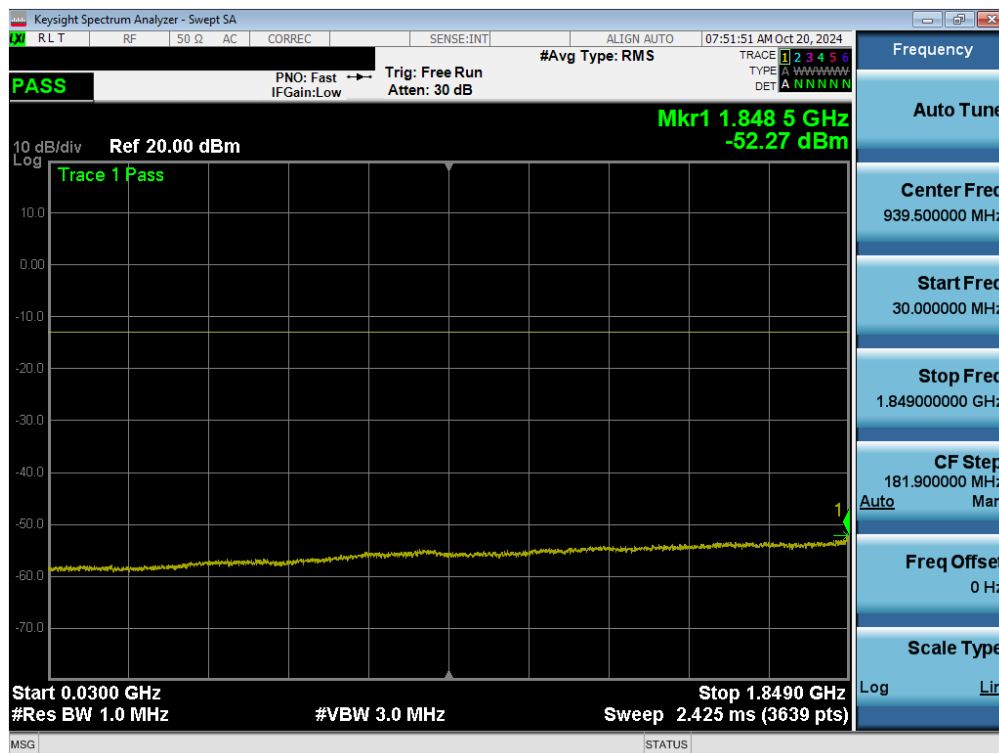
FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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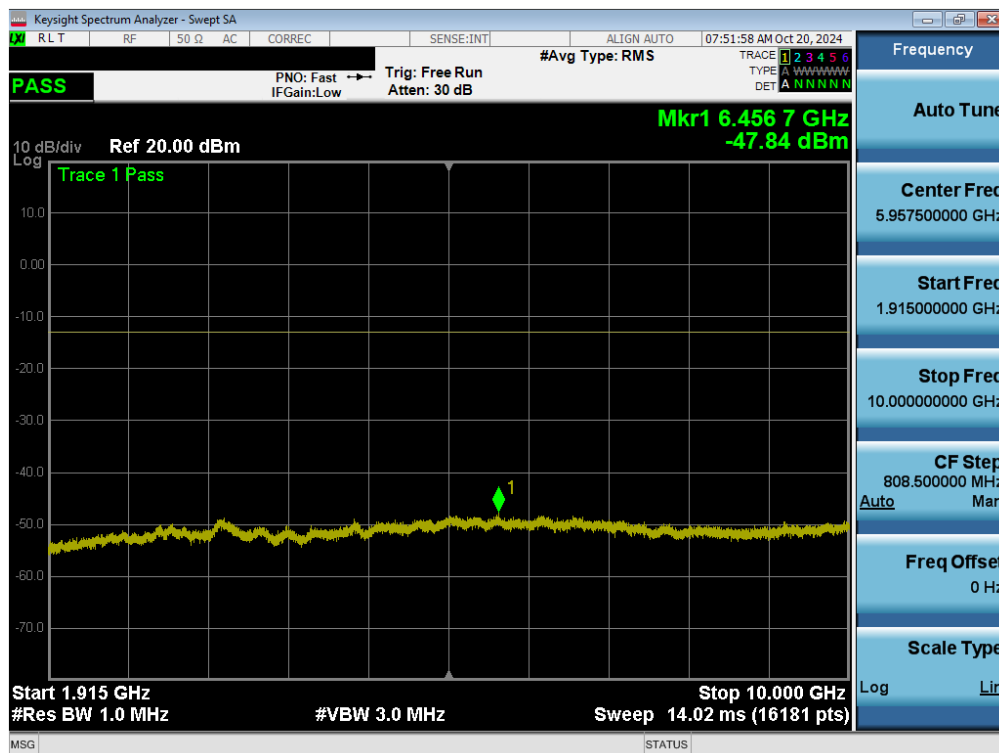
Plot 7-93. Conducted Spurious Plot (WCDMA Ch. 9538 - Ant1)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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LTE Band 25/2 – Ant1



Plot 7-94. Conducted Spurious Plot (LTE Band 25/2 - 20MHz QPSK - 1RB - Low Channel - Ant1)



Plot 7-95. Conducted Spurious Plot (LTE Band 25/2 - 20MHz QPSK - 1RB - Low Channel - Ant1)

FCC ID: A3LSMS938B	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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