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**PART 30 MEASUREMENT REPORT****Applicant Name:**

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

**Date of Testing:**

9/12/2022 – 11/14/2022

**Test Report Issue Date:**

11/15/2022

**Test Site/Location:**

Element lab., Columbia, MD, USA

**Test Report Serial No.:**

1M2209010098-13.A3L

**FCC ID:**

**A3LSMS918U**

**APPLICANT:**

**Samsung Electronics Co., Ltd.**

**Application Type:**

Certification

**Model:**

SM-S918U

**Additional Models:**

SM-S918U1

**EUT Type:**

Portable Handset

**FCC Classification:**

Part 30 Mobile Transmitter (5GM)

**FCC Rule Part(s):**

30

**Test Procedure(s):**

ANSI C63.26-2015, KDB 971168 D01 v03r01,  
KDB 842590 D01 v01r02

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	Band	Bandwidth [MHz]	Tx Frequency [MHz]	CCs Active	Modulation	Mode	EIRP		Emission Designator
							Max Power [W]	Max Power [dBm]	
M - Patch	NR-n258-R1	50	24275 - 24425	1	QPSK	SISO	0.667	28.24	45M9G7D
					QPSK	2Tx	2.051	33.12	45M9G7D
					$\pi/2$ BPSK	2Tx	2.080	33.18	45M8G7D
					16QAM	2Tx	1.140	30.57	45M7W7D
					64QAM	2Tx	0.540	27.32	46M2W7D
		100	24300 - 24400	1	QPSK	SISO	0.615	27.89	95M0G7D
					QPSK	2Tx	2.113	33.25	95M0G7D
					$\pi/2$ BPSK	2Tx	2.046	33.11	91M9G7D
					16QAM	2Tx	1.274	31.05	94M8W7D
					64QAM	2Tx	0.640	28.06	95M6W7D
				2	QPSK	2Tx	0.682	28.34	195MG7D
					$\pi/2$ BPSK	2Tx	0.687	28.37	192MG7D
					16QAM	2Tx	0.425	26.28	194MW7D
					64QAM	2Tx	0.281	24.49	195MW7D
N - Patch	NR-n258-R1	50	24275 - 24425	1	QPSK	SISO	0.344	25.36	-
					QPSK	2Tx	0.838	29.23	-
					$\pi/2$ BPSK	2Tx	0.832	29.20	-
					16QAM	2Tx	0.426	26.29	-
					64QAM	2Tx	0.217	23.36	-
		100	24300 - 24400	1	QPSK	SISO	0.319	25.04	-
					QPSK	2Tx	0.793	28.99	-
					$\pi/2$ BPSK	2Tx	0.818	29.13	-
					16QAM	2Tx	0.466	26.68	-
					64QAM	2Tx	0.211	23.25	-
				2	QPSK	2Tx	0.226	23.54	-
					$\pi/2$ BPSK	2Tx	0.228	23.58	-
					16QAM	2Tx	0.139	21.43	-
					64QAM	2Tx	0.090	19.52	-

EUT Overview (Band n258, 24.25 – 24.45GHz)

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Antenna	Band	Bandwidth [MHz]	Tx Frequency [MHz]	CCs Active	Modulation	Mode	EIRP		Emission Designator
							Max Power [W]	Max Power [dBm]	
M - Patch	NR-n258-R2	50	24775 - 25225	1	QPSK	SISO	0.802	29.04	45M9G7D
					QPSK	2Tx	2.203	33.43	45M9G7D
					$\pi/2$ BPSK	2Tx	2.280	33.58	45M9G7D
					16QAM	2Tx	1.294	31.12	46M2W7D
					64QAM	2Tx	0.614	27.88	46M2W7D
		100	24800 - 25200	1	QPSK	SISO	0.785	28.95	94M9G7D
					QPSK	2Tx	2.280	33.58	94M9G7D
					$\pi/2$ BPSK	2Tx	2.415	33.83	91M7G7D
					16QAM	2Tx	1.380	31.40	94M4W7D
					64QAM	2Tx	0.653	28.15	95M0W7D
				2	QPSK	2Tx	0.824	29.16	195MG7D
					$\pi/2$ BPSK	2Tx	0.771	28.87	192MG7D
					16QAM	2Tx	0.474	26.76	195MW7D
					64QAM	2Tx	0.333	25.23	195MW7D
				3	QPSK	2Tx	0.783	28.94	296MG7D
					$\pi/2$ BPSK	2Tx	0.771	28.87	293MG7D
					16QAM	2Tx	0.486	26.87	295MW7D
					64QAM	2Tx	0.339	25.30	295MW7D
				4	QPSK	2Tx	0.698	28.44	396MG7D
					$\pi/2$ BPSK	2Tx	0.706	28.49	395MG7D
					16QAM	2Tx	0.446	26.49	396MW7D
					64QAM	2Tx	0.282	24.50	395MW7D
N - Patch	NR-n258-R2	50	24775 - 25225	1	QPSK	SISO	0.673	28.28	-
					QPSK	2Tx	1.000	30.00	-
					$\pi/2$ BPSK	2Tx	1.016	30.07	-
					16QAM	2Tx	0.533	27.27	-
					64QAM	2Tx	0.264	24.21	-
		100	24800 - 25200	1	QPSK	SISO	0.643	28.08	-
					QPSK	2Tx	1.028	30.12	-
					$\pi/2$ BPSK	2Tx	1.012	30.05	-
					16QAM	2Tx	0.545	27.36	-
					64QAM	2Tx	0.258	24.11	-
				2	QPSK	2Tx	0.269	24.29	-
					$\pi/2$ BPSK	2Tx	0.296	24.71	-
					16QAM	2Tx	0.177	22.47	-
					64QAM	2Tx	0.109	20.36	-
				3	QPSK	2Tx	0.258	24.11	-
					$\pi/2$ BPSK	2Tx	0.284	24.53	-
					16QAM	2Tx	0.160	22.05	-
					64QAM	2Tx	0.109	20.37	-
				4	QPSK	2Tx	0.229	23.59	-
					$\pi/2$ BPSK	2Tx	0.232	23.65	-
					16QAM	2Tx	0.141	21.49	-
					64QAM	2Tx	0.096	19.81	-

### EUT Overview (Band n258, 24.75 – 25.25GHz)

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Antenna	Band	Bandwidth [MHz]	Tx Frequency [MHz]	CCs Active	Modulation	Mode	EIRP		Emission Designator
							Max Power [W]	Max Power [dBm]	
M - Patch	NR-n261	50	27525 - 28325	1	QPSK	SISO	0.938	29.72	46M3G7D
					QPSK	2Tx	2.046	33.11	46M3G7D
					$\pi/2$ BPSK	2Tx	2.080	33.18	46M0G7D
					16QAM	2Tx	1.074	30.31	46M0W7D
					64QAM	2Tx	0.499	26.98	46M1W7D
		100	27550 - 28300	1	QPSK	SISO	0.957	29.81	94M7G7D
					QPSK	2Tx	2.410	33.82	94M7G7D
					$\pi/2$ BPSK	2Tx	2.477	33.94	91M8G7D
					16QAM	2Tx	1.542	31.88	94M6W7D
					64QAM	2Tx	0.785	28.95	95M1W7D
				2	QPSK	2Tx	0.887	29.48	195MG7D
					$\pi/2$ BPSK	2Tx	0.883	29.46	192MG7D
					16QAM	2Tx	0.553	27.43	195MW7D
					64QAM	2Tx	0.335	25.25	196MW7D
				3	QPSK	2Tx	0.841	29.25	294MG7D
					$\pi/2$ BPSK	2Tx	0.838	29.23	292MG7D
					16QAM	2Tx	0.521	27.17	295MW7D
					64QAM	2Tx	0.355	25.50	294MW7D
				4	QPSK	2Tx	0.783	28.94	394MG7D
					$\pi/2$ BPSK	2Tx	0.774	28.89	393MG7D
					16QAM	2Tx	0.484	26.85	394MW7D
					64QAM	2Tx	0.305	24.84	395MW7D
N - Patch	NR-n261	50	27525 - 28325	1	QPSK	SISO	0.675	28.29	-
					QPSK	2Tx	0.851	29.30	-
					$\pi/2$ BPSK	2Tx	0.834	29.21	-
					16QAM	2Tx	0.514	27.11	-
					64QAM	2Tx	0.234	23.70	-
		100	27550 - 28300	1	QPSK	SISO	0.656	28.17	-
					QPSK	2Tx	0.929	29.68	-
					$\pi/2$ BPSK	2Tx	0.818	29.13	-
					16QAM	2Tx	0.502	27.01	-
					64QAM	2Tx	0.247	23.92	-
				2	QPSK	2Tx	0.263	24.20	-
					$\pi/2$ BPSK	2Tx	0.264	24.22	-
					16QAM	2Tx	0.165	22.18	-
					64QAM	2Tx	0.098	19.92	-
				3	QPSK	2Tx	0.255	24.07	-
					$\pi/2$ BPSK	2Tx	0.256	24.08	-
					16QAM	2Tx	0.159	22.01	-
					64QAM	2Tx	0.098	19.91	-
				4	QPSK	2Tx	0.227	23.56	-
					$\pi/2$ BPSK	2Tx	0.233	23.68	-
					16QAM	2Tx	0.144	21.57	-
					64QAM	2Tx	0.089	19.50	-

### EUT Overview (Band n261)

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Antenna	Band	Bandwidth [MHz]	Tx Frequency [MHz]	CCs Active	Modulation	Mode	EIRP		Emission Designator
							Max Power [W]	Max Power [dBm]	
M - Patch	NR-n260	50	37025 - 39975	1	QPSK	SISO	0.504	27.02	46M5G7D
					QPSK	2Tx	0.998	29.99	46M5G7D
					$\pi/2$ BPSK	2Tx	1.038	30.16	45M9G7D
					16QAM	2Tx	0.618	27.91	46M2W7D
					64QAM	2Tx	0.259	24.13	46M3W7D
		100	37050 - 39950	1	QPSK	SISO	0.604	27.81	95M9G7D
					QPSK	2Tx	1.021	30.09	95M9G7D
					$\pi/2$ BPSK	2Tx	1.012	30.05	92M4G7D
					16QAM	2Tx	0.628	27.98	95M7W7D
					64QAM	2Tx	0.310	24.91	95M6W7D
				2	QPSK	2Tx	0.410	26.13	195MG7D
					$\pi/2$ BPSK	2Tx	0.412	26.15	192MG7D
					16QAM	2Tx	0.284	24.54	195MW7D
					64QAM	2Tx	0.189	22.77	196MW7D
				3	QPSK	2Tx	0.403	26.05	295MG7D
					$\pi/2$ BPSK	2Tx	0.404	26.06	292MG7D
					16QAM	2Tx	0.284	24.53	295MW7D
					64QAM	2Tx	0.187	22.71	297MW7D
				4	QPSK	2Tx	0.356	25.51	396MG7D
					$\pi/2$ BPSK	2Tx	0.351	25.45	396MG7D
					16QAM	MIMO	0.251	23.99	396MW7D
					64QAM	2Tx	0.167	22.24	395MW7D
N - Patch	NR-n260	50	37025 - 39975	1	QPSK	SISO	0.800	29.03	-
					QPSK	2Tx	1.125	30.51	-
					$\pi/2$ BPSK	2Tx	0.984	29.93	-
					16QAM	2Tx	0.611	27.86	-
					64QAM	2Tx	0.282	24.50	-
		100	37050 - 39950	1	QPSK	SISO	0.767	28.85	-
					QPSK	2Tx	1.274	31.05	-
					$\pi/2$ BPSK	2Tx	1.309	31.17	-
					16QAM	2Tx	0.684	28.35	-
					64QAM	2Tx	0.281	24.49	-
				2	QPSK	2Tx	0.254	24.04	-
					$\pi/2$ BPSK	2Tx	0.254	24.05	-
					16QAM	2Tx	0.160	22.03	-
					64QAM	2Tx	0.136	21.33	-
				3	QPSK	2Tx	0.181	22.57	-
					$\pi/2$ BPSK	2Tx	0.179	22.54	-
					16QAM	2Tx	0.161	22.06	-
					64QAM	2Tx	0.130	21.15	-
				4	QPSK	2Tx	0.165	22.18	-
					$\pi/2$ BPSK	2Tx	0.166	22.20	-
					16QAM	2Tx	0.116	20.63	-
					64QAM	2Tx	0.076	18.80	-

### EUT Overview (Band n260)

**Note:** Due to similar antenna performance from the antennas after thorough investigation, the Occupied Bandwidth was only measured on one antenna for each band.

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## 1.0 INTRODUCTION

### 1.1 Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission.

### 1.2 Element Test Location

These measurement tests were conducted at the Element laboratory located at 7185 Oakland Mills Road, Columbia, MD 21046. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014.

### 1.3 Test Facility / Accreditations

**Measurements were performed at Element lab located in Columbia, MD 21046, U.S.A.**

- Element Washington DC LLC is an ISO 17025-2017 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.01 for Specific Absorption Rate (SAR), Hearing Aid Compatibility (HAC) testing, where applicable, and Electromagnetic Compatibility (EMC) testing for FCC and Innovation, Science, and Economic Development Canada rules.
- Element Washington DC LLC TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC 17065-2012 by A2LA (Certificate number 2041.03) in all scopes of FCC Rules and ISED Standards (RSS).
- Element Washington DC LLC facility is a registered (2451B) test laboratory with the site description on file with ISED.
- Element Washington DC LLC is a Recognized U.S. Certification Assessment Body (CAB # US0110) for ISED Canada as designated by NIST under the U.S. and Canada Mutual Recognition Agreement.

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## 2.0 PRODUCT INFORMATION

### 2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Portable Handset FCC ID: A3LSMS918U**. The test data contained in this report pertains only to the emissions due to the EUT's 5G mmWave function.

The EUT contains two patch antennas, referred to herein as Ant1 (M-Patch) and Ant2 (N-Patch). Each of the antennas is comprised of two separate antenna feeds - one for horizontal and one for vertical polarization. Only one array antenna can be active at a time.

Antenna	Name
Ant1	M Patch
Ant2	N Patch

The EUT supports both 50MHz bandwidth and 100MHz bandwidth. The EUT supports 1CC for 50MHz bandwidth and upto 4CC for 100MHz bandwidth. The table below indicates the supported bandwidths and component carriers for the Frequency ranges tested.

# CC's	BW (MHz)	Total CC BW (MHz)	Channel	24.25 - 24.45GHz (n258-R1)	24.75 - 25.25GHz (n258-R2)	27.5 - 28.35GHz (n261)	37 - 40GHz (n260)
1CC	50	50	Low	x	x	x	x
			Mid	x	x	x	x
			High	x	x	x	x
	100	100	Low	x	x	x	x
			Mid	x	x	x	x
			High	x	x	x	x
2CC	50	100	Low	-	-	-	-
			Mid	-	-	-	-
			High	-	-	-	-
	100	200	Low	-	x	x	x
			Mid	x	x	x	x
			High	-	x	x	x
3CC	50	150	Low	-	-	-	-
			Mid	-	-	-	-
			High	-	-	-	-
	100	300	Low	-	x	x	x
			Mid	-	x	x	x
			High	-	x	x	x
4CC	50	200	Low	-	-	-	-
			Mid	-	-	-	-
			High	-	-	-	-
	100	400	Low	-	x	x	x
			Mid	-	x	x	x
			High	-	x	x	x

The EUT supports a subcarrier spacing (SCS) of 120kHz with two transmission schemes, CP-OFDM and DFT-s-OFDM, with pi/2-BPSK, QPSK, 16-QAM, and 64-QAM modulations. Different Beam IDs are supported, each corresponding to a different position in space for each antenna. During testing, FTM (Factory Test Mode) was used to operate the transmitter. MIMO operation was achieved by enabling two Beam IDs at the same time: one is from the list of H Beam IDs and other is from the list of V Beam IDs.

**Test Device Serial No.:** 0141M, 0132M, 0167M, 0152M

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## 2.2 Device Capabilities

This device contains the following capabilities:

850/1900 GSM/GPRS/EDGE, 850/1700/1900 WCDMA/HSPA, Multi-band LTE, Multi-band 5G NR (FR1 and FR2), 802.11b/g/n/ax WLAN, 802.11a/n/ac/ax UNII (5GHz and 6GHz), Bluetooth (1x, EDR, LE), NFC, UWB, Wireless Power Transfer

## 2.3 Test Configuration

The EUT was tested per the guidance of ANSI C63.26-2015 and KDB 842590 D01 v01r02. See Section 7.0 of this test report for a description of the radiated tests.

EIRP Simulation data for all Beam IDs was used to help determine the worst case Beam ID for SISO operation and Beam ID pair for 2Tx (DFT-s-OFDM) and MIMO (CP-OFDM) operation. Several additional Beam ID's were also investigated to determine the Beam ID's producing the highest measured EIRP.

All testing was performed using FTM (Factory Test Mode) software at continuous Tx operation. When implemented out in the field, the EUT will operate with a maximum uplink configuration as allowed by the 5G network/carrier. The FTM software was also used for the EUT operation in the EN-DC mode.

While operating in the FR2 band, this device supports anchor band operation with either an LTE carrier or an NR FR1 carrier. Both were investigated during FR2 measurements.

## 2.4 Software and Firmware

The test was conducted with firmware version S918USQU0AVJH installed on the EUT.

## 2.5 EMI Suppression Device(s)/Modifications

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

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## 3.0 DESCRIPTION OF TESTS

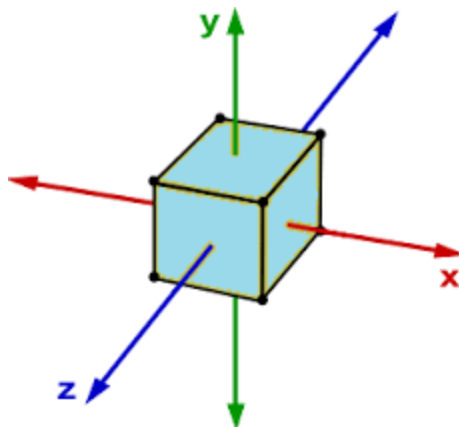
### 3.1 Measurement Procedure

The measurement procedures described in the document titled "American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services" (ANSI C63.26-2015) and the guidance provided in KDB 842590 D01 v01r02 were used in the measurement of the EUT.

### 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 for radiated emissions measurements in the spurious domain. 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 for measurements above 1GHz.

Radiated power (EIRP) measurements were performed in a full anechoic chamber (FAC) conforming to the site validation requirements of CISPR 16-1-4. Radiated spurious emission measurements from 30MHz - 18GHz were performed in a semi anechoic chamber (SAC) conforming to the site validation requirements of CISPR 16-1-4. A positioner was used to manipulate the EUT through several positions in space by rotating about the roll axis as shown in the figure below. The positioner was mounted on top of a turntable bringing the total EUT height to 1.5m.



**Figure 3-1. Rotation of the EUT Through Three Orthogonal Planes**

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The equipment under test was transmitting while connected to its integral antenna and is placed on a turntable. The measurement antenna is in the far field of the EUT per formula  $2D^2/\lambda$  where D is the larger between the dimension of the measurement antenna and the transmitting antenna of the EUT. In this case, "D" is the largest dimension of the measurement antenna. The EUT is manipulated through all orthogonal planes representative of its typical use to achieve the highest reading on the receive spectrum analyzer.

Frequency Range (GHz)	Wavelength(cm)	Far Field Distance (m)	Measurement Distance (m)
18-40	0.749	0.54	1.00
40-60	0.500	1.39	1.50
60-90	0.333	0.91	1.00
90-140	0.214	0.58	1.00
140-200	0.150	0.39	1.00

**Table 3-1. Far-Field Distance & Measurement Distance per Frequency Range**

Radiated power levels are investigated while the receive antenna was rotated through all angles to determine the worst case polarization/positioning. It was determined that H=0 degree and V=90 degree are the worst case positions when the EUT was transmitting horizontally and vertically polarized beams, respectively.

The maximized power level is recorded using the spectrum analyzer "Channel Power" function with the integration bandwidth set to at least the emissions' occupied bandwidth. The EIRP is calculated from the raw power level measured with the spectrum analyzer using the formulas shown below.

### Effective Isotropic Radiated Power Sample Calculation

The measured e.i.r.p is converted to E-field in V/m. Then, the distance correction is applied before converting back to calculated e.i.r.p, as explained in ANSI C63.26-2015.

$$\begin{aligned}
 \text{Field Strength [dB}\mu\text{V/m]} &= \text{Measured Value [dBm]} + \text{AFCL [dB/m]} + 107 \\
 &= -32.74 \text{ dBm} + (40.7 \text{ dB/m} + 8.78 \text{ dB}) + 107 = 123.74 \text{ dB}\mu\text{V/m} \\
 &= 10^{(123.74/20)/1000000} = 1.54 \text{ V/m} \\
 \text{e.i.r.p. [dBm]} &= 10 * \log((\text{E-Field} * D_m)^2/30) + 30 \text{ dB} \\
 &= 10 * \log((1.54 \text{ V/m} * 1.00 \text{ m})^2/30) + 30 \text{ dB} \\
 &= 18.98 \text{ dBm e.i.r.p.}
 \end{aligned}$$

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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  $U_{\text{CISPR}}$  measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

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

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## 5.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to an accredited ISO/IEC 17025 calibration facility. 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
N/A	AP2-001	EMC Cable and Switch System	8/11/2022	Annual	8/11/2023	AP2-001
N/A	AP2-002	EMC Cable and Switch System	8/11/2022	Annual	8/11/2023	AP2-002
N/A	ETS-001	EMC Cable and Switch System	8/11/2022	Annual	8/11/2023	ETS-001
N/A	ETS-002	EMC Cable and Switch System	8/11/2022	Annual	8/11/2023	ETS-002
EMCO	3115	Horn Antenna (1-18GHz)	8/8/2022	Biennial	8/8/2024	9704-5182
Espec	SCP-220	Temperature Chamber	5/25/2022	Biennial	5/25/2024	OCP55H0612K05
ETS-Lindgren	3116C	DRG Horn Antenna	5/11/2021	Biennial	5/11/2023	218893
ETS-Lindgren	3117	1-18 GHz DRG Horn (Medium)	4/20/2021	Biennial	4/20/2023	125518
Keysight Technologies	N9030A	3Hz-44GHz PXA Signal Analyzer	8/18/2022	Annual	8/18/2023	MY49430494
Keysight Technologies	N9030A	PXA Signal Analyzer (44GHz)	2/14/2022	Annual	2/14/2023	MY52350166
Narda	180-422-KF	Horn (Small)	8/30/2022	Biennial	8/30/2024	U157403-01
OML, Inc.	M08RH	WR-08 Horn Antenna, 24dBi, 90 to 140 GHz	10/6/2021	Biennial	10/6/2023	17111701
OML, Inc.	M19RH	WR-19 Horn Antenna, 24dBi, 40 to 60 GHz	10/12/2021	Biennial	10/12/2023	17111701
OML, Inc.	M12RH	WR-12 Horn Antenna, 24dBi, 60 to 90 GHz	11/16/2021	Biennial	11/16/2023	17111701
OML, Inc.	M05RH	WR-05 Horn Antenna, 24dBi, 140 to 220 GHz	9/27/2022	Biennial	9/27/2024	18073001
Rohde & Schwarz	FSW67	Signal / Spectrum Analyzer	12/16/2021	Annual	12/16/2022	1312.8000K67
Sunol Sciences	JB5	Bi-Log Antenna (30M-5GHz)	8/30/2022	Biennial	8/30/2024	A051107
UTiFlex	UTiFlex	FAC mmWave UTiFlex 40GHz	3/9/2022	Annual	3/9/2023	234142-001
UTiFlex	UTiFlex	FAC mmWave UTiFlex 40GHz	8/15/2022	Annual	8/15/2023	232062-001
Virginia Diodes Inc	SAX253	SAX Module (90 - 140GHz)	2/24/2021	Biennial	2/24/2023	SAX253
Virginia Diodes Inc	SAX252	SAX Module (60 - 90GHz)	2/24/2021	Biennial	2/24/2023	SAX252
Virginia Diodes Inc	SAX254	SAX Module (140 - 220GHz)	2/24/2021	Biennial	2/24/2023	SAX254
Virginia Diodes Inc	SAX411	SAX Module (40 - 60GHz)	2/24/2021	Biennial	2/24/2023	SAX411

**Table 5-1. Test Equipment**

### 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.

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## 6.0 SAMPLE CALCULATIONS

### Emission Designator

#### $\pi/2$ BPSK/ QPSK Modulation

**Emission Designator = 800MG7D**

BW = 800 MHz

G = Phase Modulation

7 = Quantized/Digital Info

D = Data transmission, telemetry, telecommand

#### QAM Modulation

**Emission Designator = 802MW7D**

BW = 802 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: A3LSMS918U  
 FCC Classification: Part 30 Mobile Transmitter (5GM)  
 Mode(s): TDD

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
2.1049	Occupied Bandwidth	N/A	RADIATED	PASS	Section 7.2
2.1046, 30.202	Equivalent Isotropic Radiated Power	43dBm		PASS	Section 7.3
2.1051, 30.203	Spurious Emissions	-13dBm/MHz for all out-of-band emissions		PASS	Section 7.4
2.1051, 30.203	Out-of-Band Emissions at the Band Edge	-13dBm/MHz for all out-of-band emissions, -5dBm/MHz from the band edge up to 10% of the channel BW		PASS	Section 7.5
2.1055	Frequency Stability	Fundamental emissions stay within authorized frequency block		PASS	Section 7.6

**Table 7-1. Summary of Radiated Test Results**

#### Notes:

- 1) All modes of operation and modulations were investigated. The test results shown in the following sections represent the worst case emissions.
- 2) This report contains references to "n258-R1" and "n258-R2". These correspond to n258 Range 1, operating from 24.25 – 24.45GHz, and n258 Range 2, operating from 24.75 – 25.25GHz, respectively, as defined in Part 30.4(a).
- 3) Per 2.1057(a)(2), spurious emissions were investigated up to 100GHz for n258-R1, n258-R2 and n261. Per 2.1057(a)(3), spurious emissions were investigated up to 200GHz for n260.
- 4) The radiated RF output power and all out-of-band emissions in the spurious domain are evaluated to the limits first as EIRP measurements to determine if the "early-exit" condition of KDB 842590 D01 applies. If not, then additional TRP measurements are performed.
- 5) "CC" refers to "Component Carriers".
- 6) Beam IDs were chosen based on which Beam ID produces the highest EIRP during EIRP simulation.
- 7) All testing was performed using FTM (Factory Test Mode) software at continuous Tx operation (100% duty cycle).
- 8) The CP-OFDM and DFT-s-OFDM transmission schemes were investigated fully for each test type and only the worst case data is included.

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## 7.2 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 5.4.3

### Test Settings

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99% occupied 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 Notes

1. The EUT supports CP-OFDM and DFT-s-OFDM. OBW was measured for both waveforms and the worst case has been included in the report.
2. Due to similar antenna performance from both patch antennas, the Occupied Bandwidth was only measured on one antenna (Ant 1 – M-Patch) for each band.

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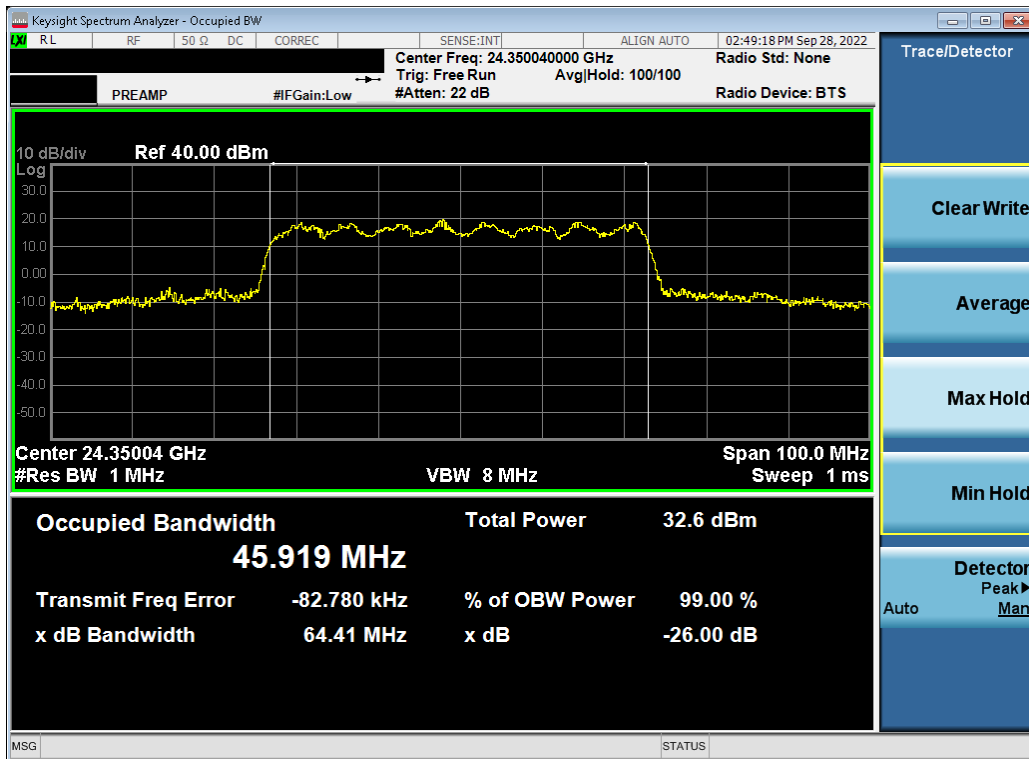


## Band n258-R1

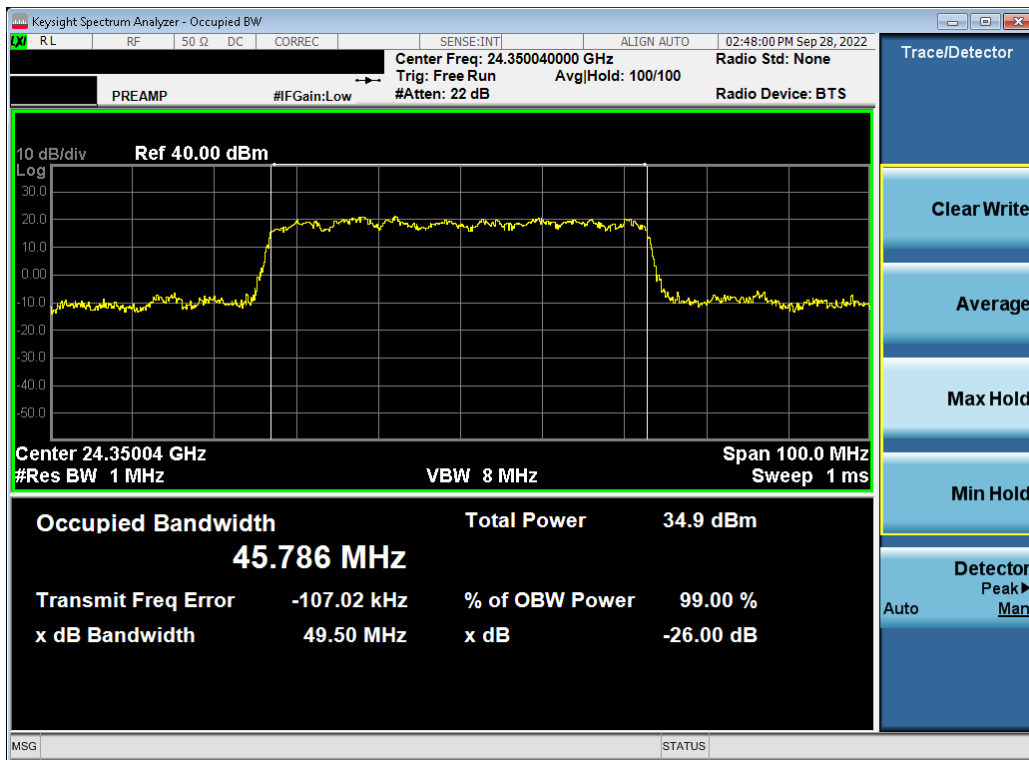
Antenna	Bandwidth [MHz]	CCs Active	Transmission Scheme	Modulation	OBW [MHz]
M Patch	50	1	CP-OFDM	QPSK	45.92
			DFT-s-OFDM	$\pi/2$ BPSK	45.79
			CP-OFDM	16QAM	45.65
			CP-OFDM	64QAM	46.20
	100	1	CP-OFDM	QPSK	94.96
			DFT-s-OFDM	$\pi/2$ BPSK	91.87
			CP-OFDM	16QAM	94.83
			CP-OFDM	64QAM	95.63
		2	CP-OFDM	QPSK	194.52
			DFT-s-OFDM	$\pi/2$ BPSK	191.62
			CP-OFDM	16QAM	194.41
			CP-OFDM	64QAM	194.99

**Table 7-2. Summary of Ant 1 Occupied Bandwidths (n258-R1)**

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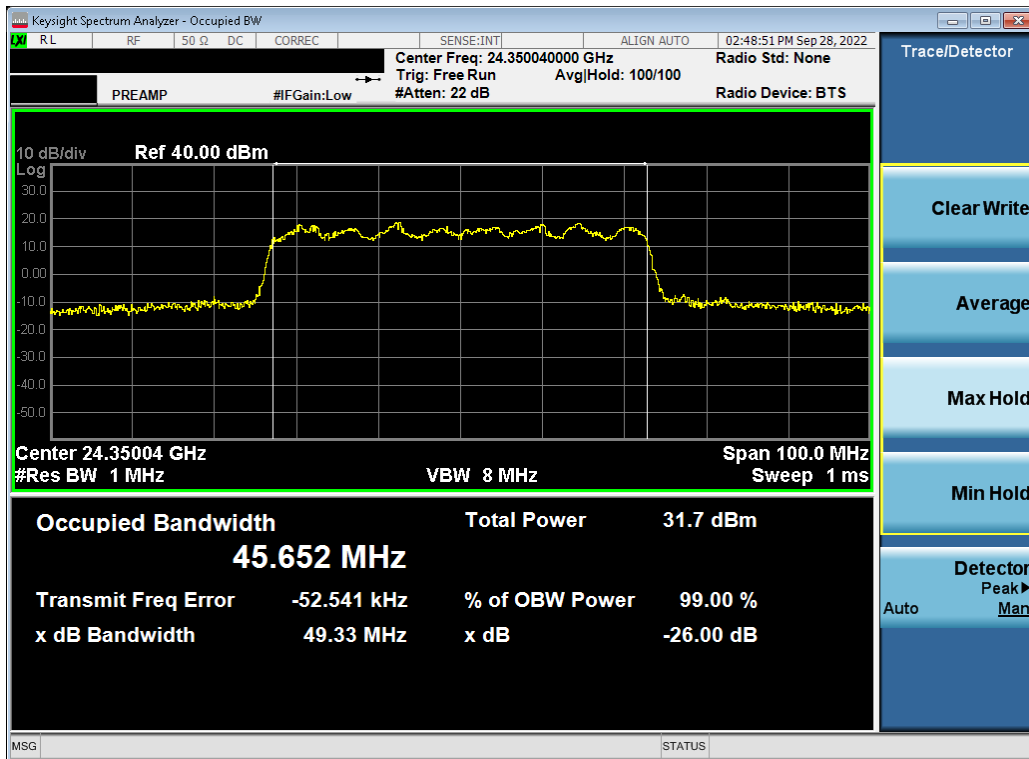


Plot 7-1. Ant 1 Occupied Bandwidth Plot (50MHz-1CC – QPSK – Mid Channel)

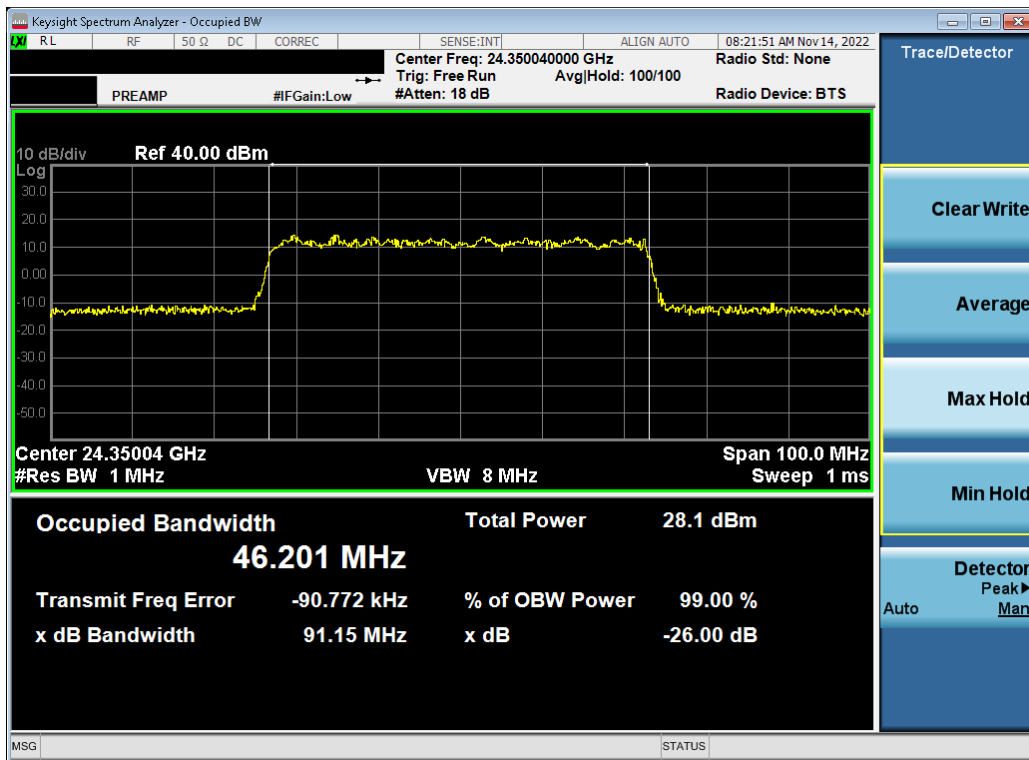


Plot 7-2. Ant 1 Occupied Bandwidth Plot (50MHz-1CC – pi/2-BPSK – Mid Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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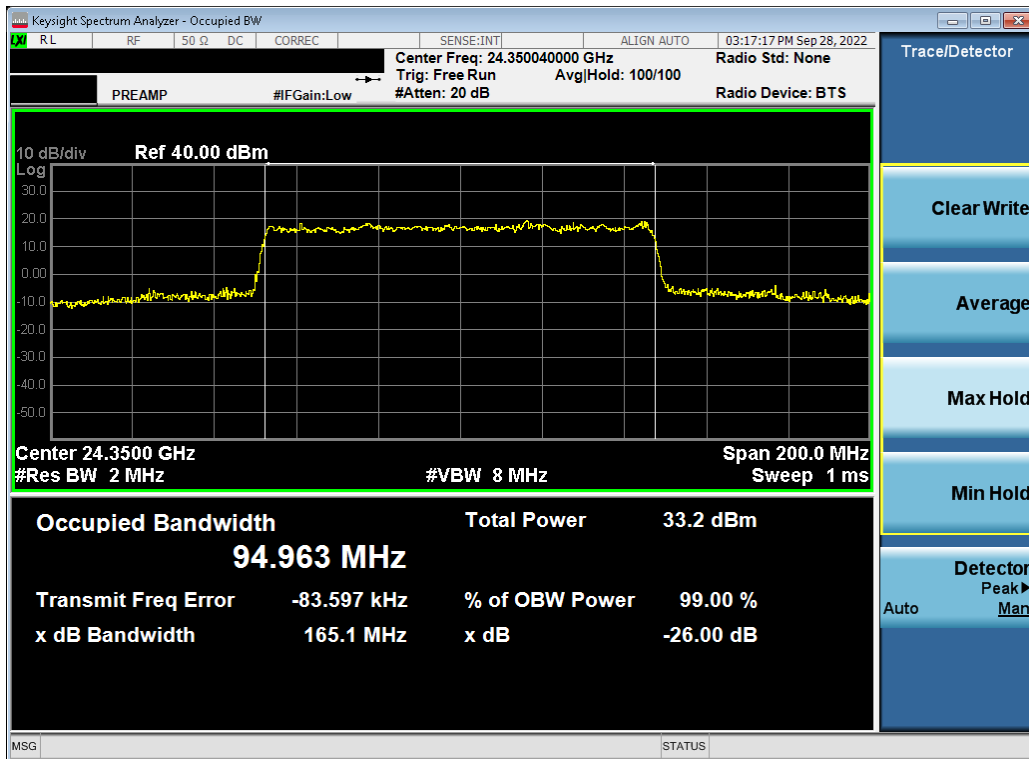


Plot 7-3. Ant 1 Occupied Bandwidth Plot (50MHz-1CC – 16QAM – Mid Channel)

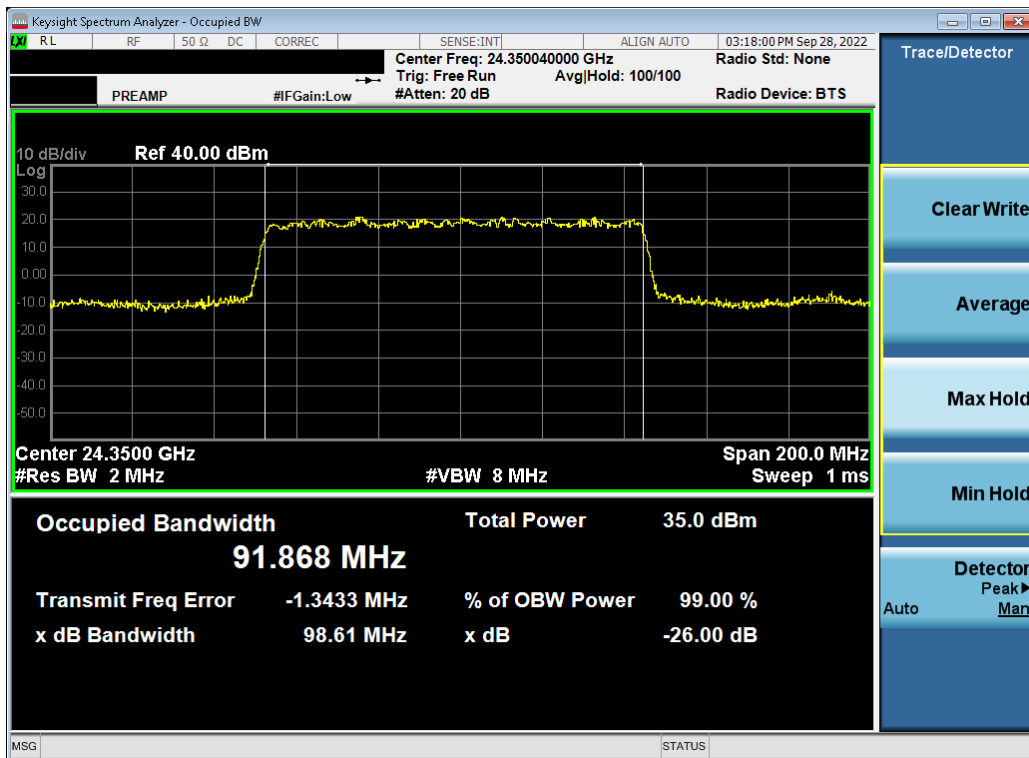


Plot 7-4. Ant 1 Occupied Bandwidth Plot (50MHz-1CC – 64QAM – Mid Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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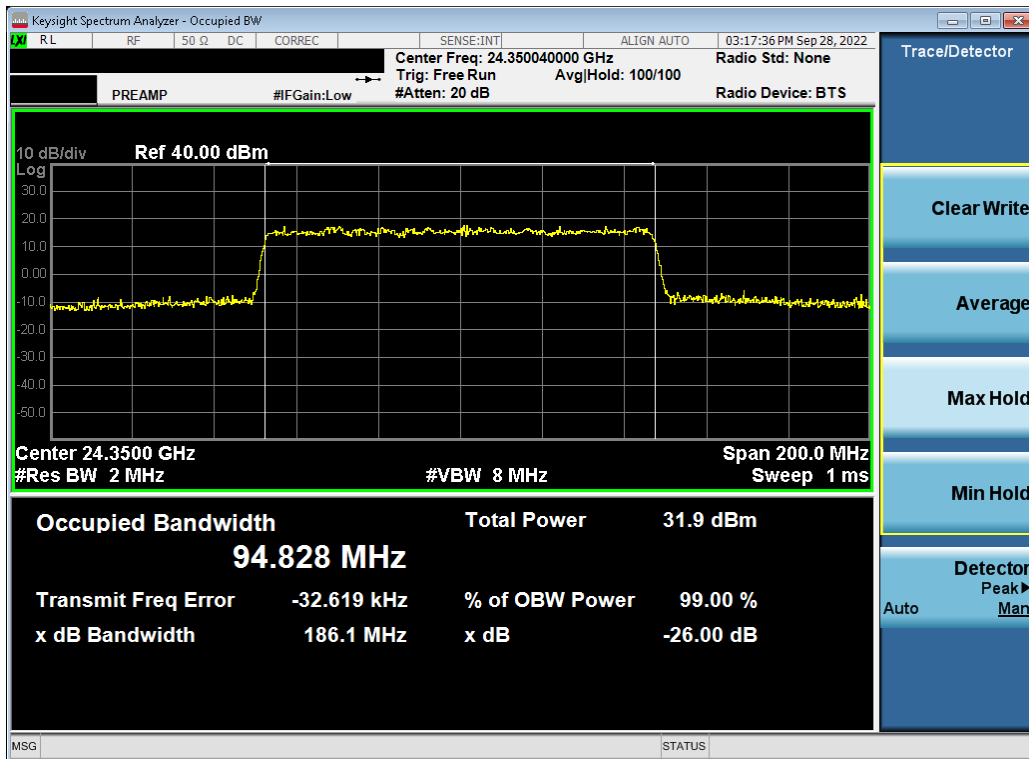


Plot 7-5. Ant 1 Occupied Bandwidth Plot (100MHz-1CC – QPSK – Mid Channel)

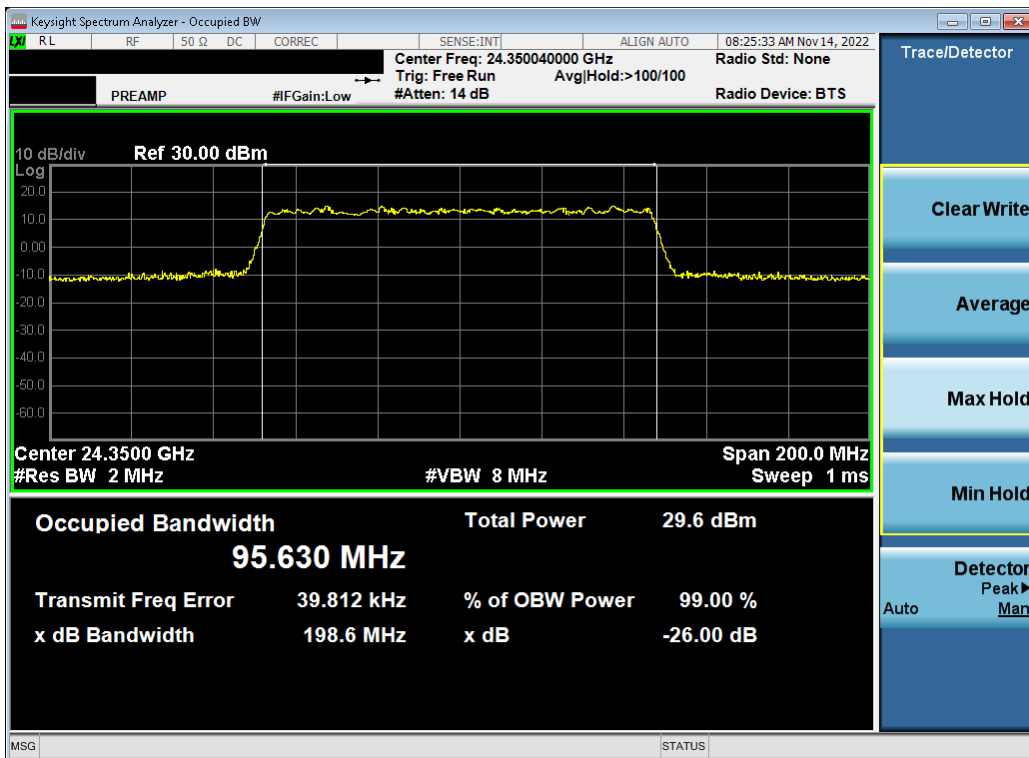


Plot 7-6. Ant 1 Occupied Bandwidth Plot (100MHz-1CC – pi/2-BPSK – Mid Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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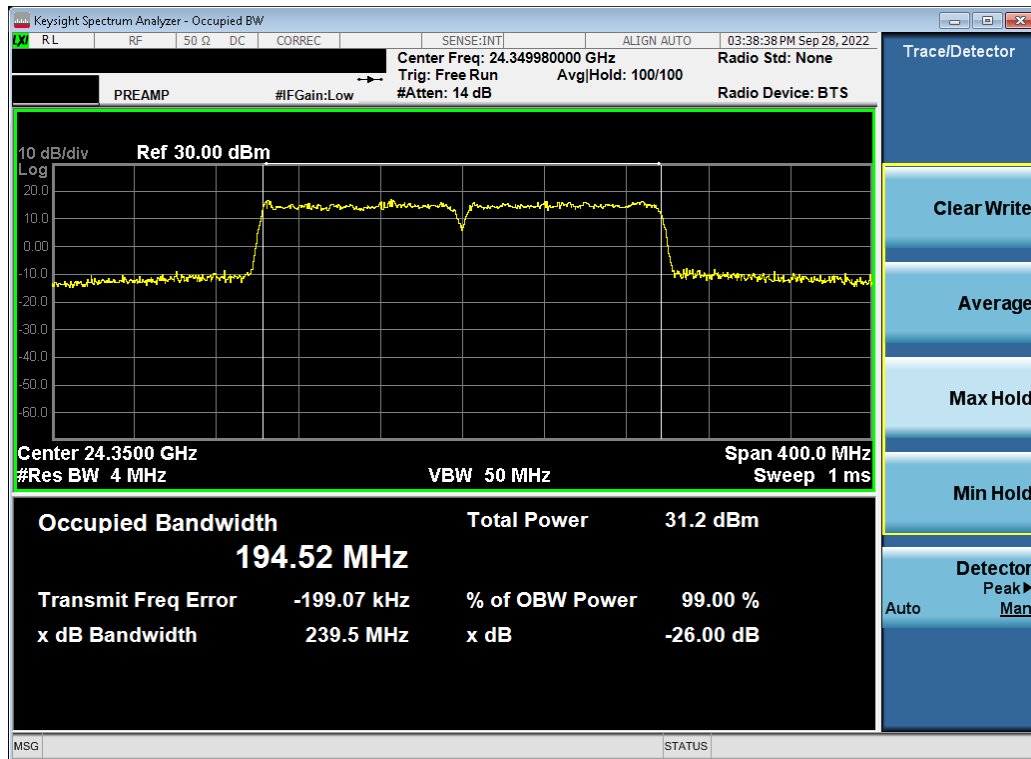


Plot 7-7. Ant 1 Occupied Bandwidth Plot (100MHz-1CC – 16QAM – Mid Channel)

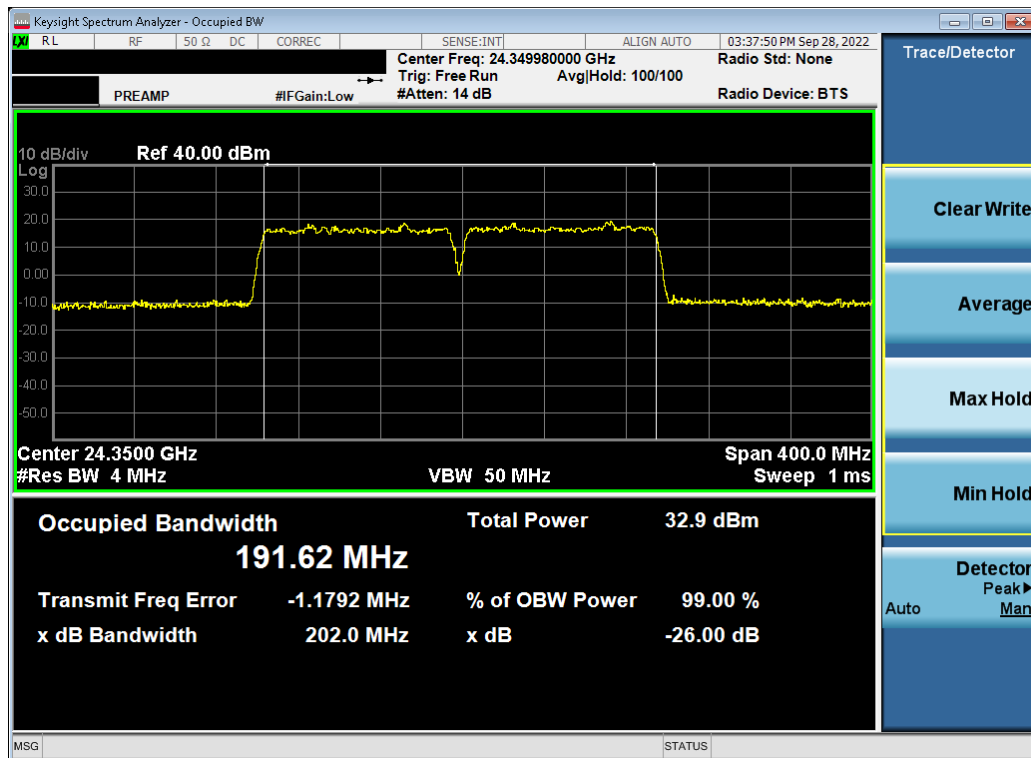


Plot 7-8. Ant 1 Occupied Bandwidth Plot (100MHz-1CC – 64QAM – Mid Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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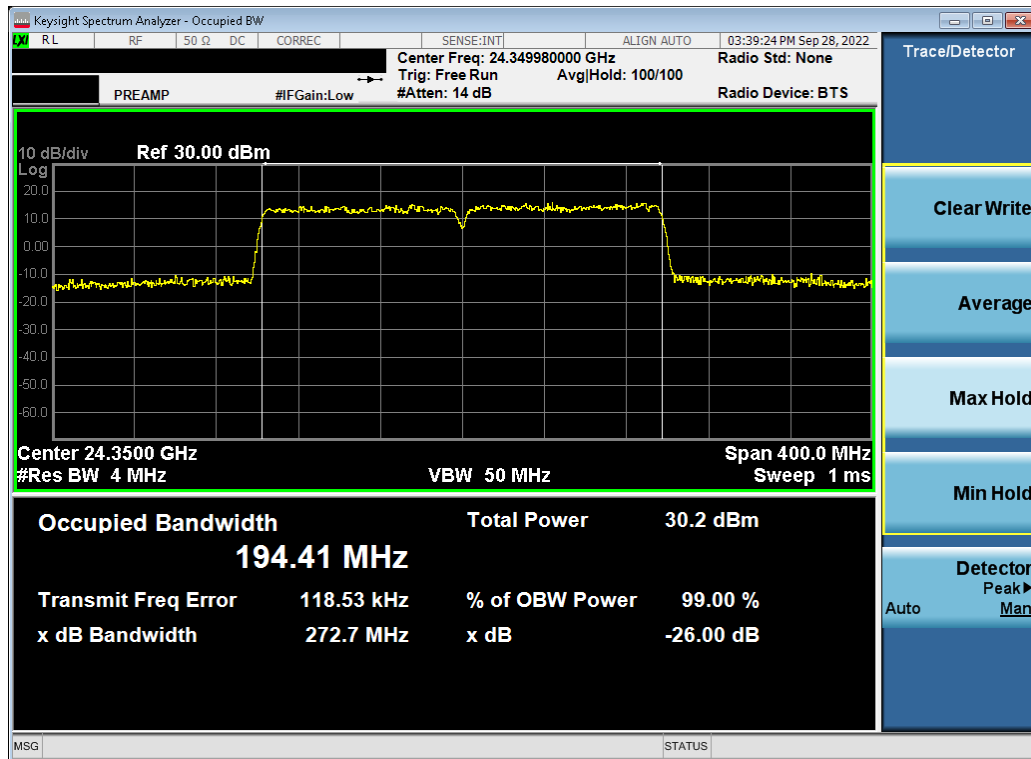


Plot 7-9. Ant 1 Occupied Bandwidth Plot (100MHz-2CC – QPSK – Mid Channel)

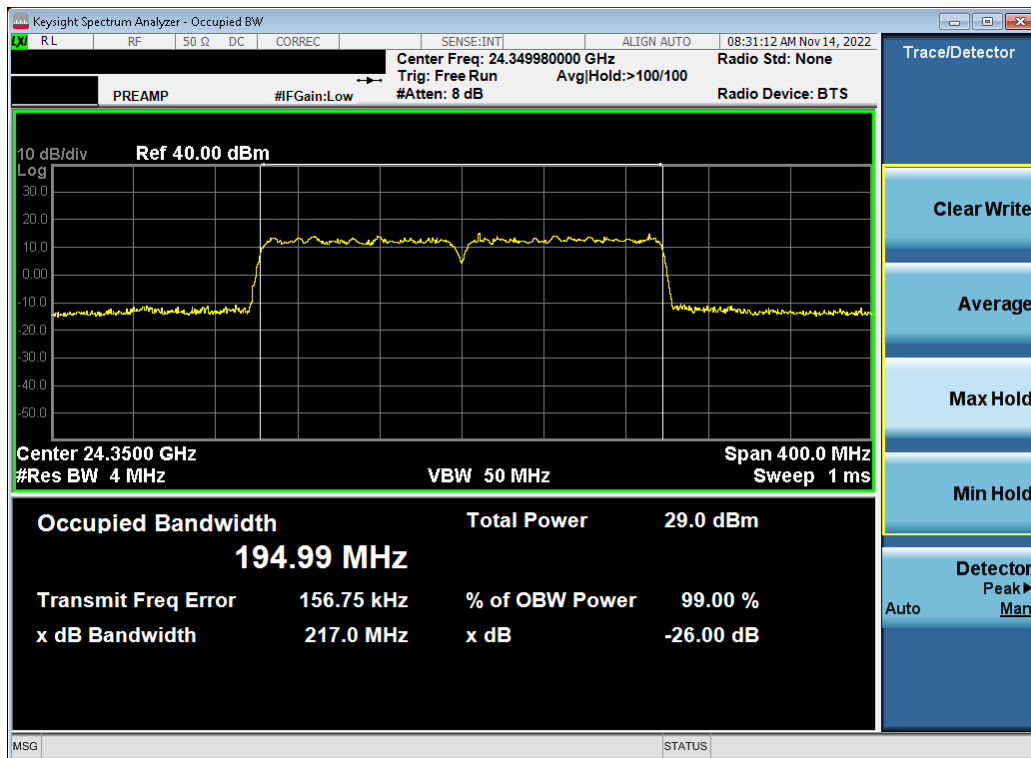


Plot 7-10. Ant 1 Occupied Bandwidth Plot (100MHz-2CC – pi/2-BPSK – Mid Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Plot 7-11. Ant 1 Occupied Bandwidth Plot (100MHz-2CC – 16QAM – Mid Channel)



Plot 7-12. Ant 1 Occupied Bandwidth Plot (100MHz-2CC – 64QAM – Mid Channel)

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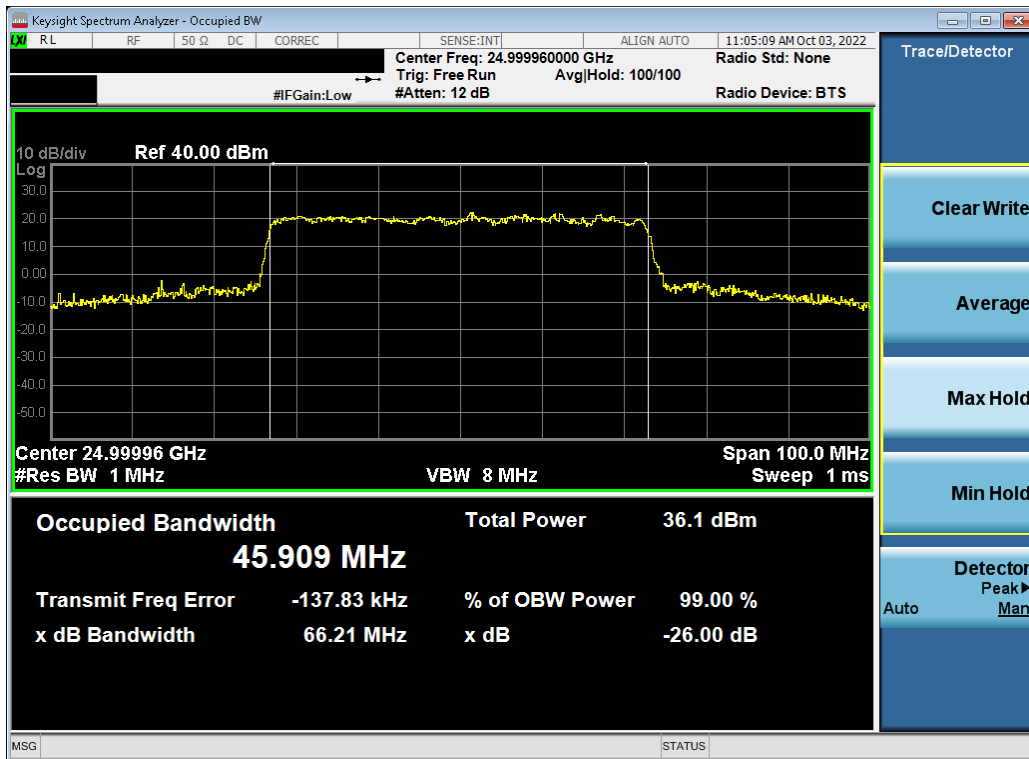
## Band n258-R2

Antenna	Bandwidth [MHz]	CCs Active	Transmission Scheme	Modulation	OBW [MHz]
M Patch	50	1	CP-OFDM	QPSK	45.91
			DFT-s-OFDM	$\pi/2$ BPSK	45.86
			CP-OFDM	16QAM	46.20
			CP-OFDM	64QAM	46.17
	100	1	CP-OFDM	QPSK	94.89
			DFT-s-OFDM	$\pi/2$ BPSK	91.70
			CP-OFDM	16QAM	94.40
			CP-OFDM	64QAM	95.04
		2	CP-OFDM	QPSK	194.61
			DFT-s-OFDM	$\pi/2$ BPSK	191.94
			CP-OFDM	16QAM	194.51
			CP-OFDM	64QAM	195.25
		3	CP-OFDM	QPSK	295.50
			DFT-s-OFDM	$\pi/2$ BPSK	292.78
			CP-OFDM	16QAM	295.36
			CP-OFDM	64QAM	295.05
		4	CP-OFDM	QPSK	395.59
			DFT-s-OFDM	$\pi/2$ BPSK	394.79
			CP-OFDM	16QAM	395.60
			CP-OFDM	64QAM	395.23

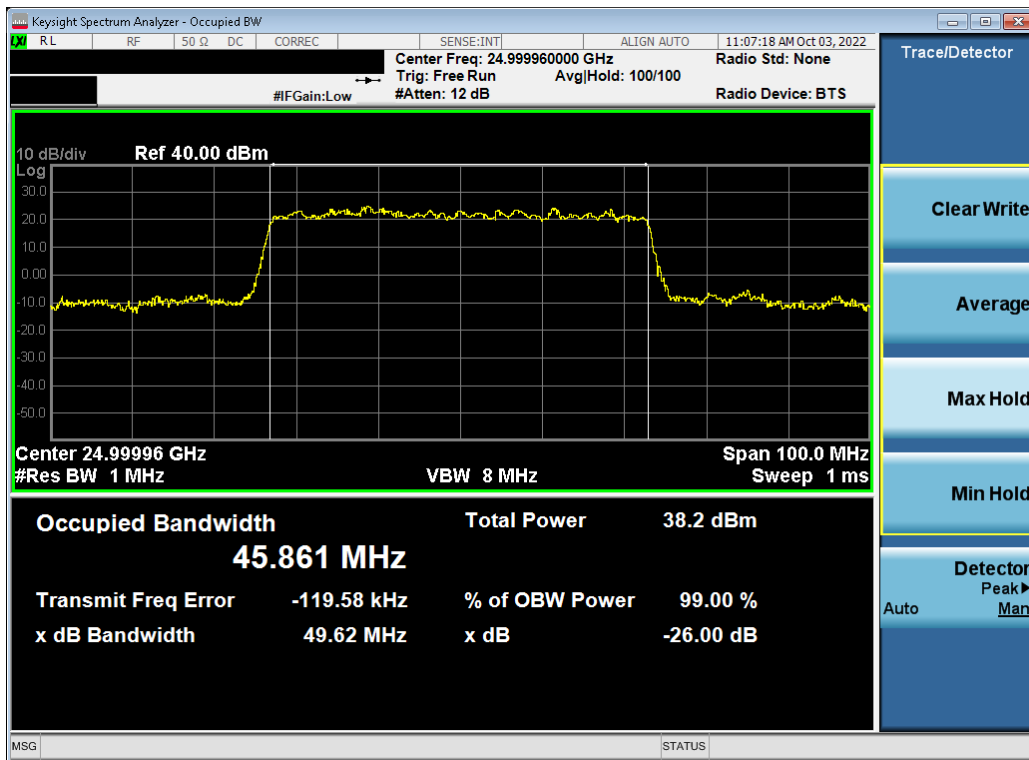
**Table 7-3. Summary of Ant 1 Occupied Bandwidths (n258-R2)**

<b>FCC ID:</b> A3LSMS918U	<b>PART 30 MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Technical Manager
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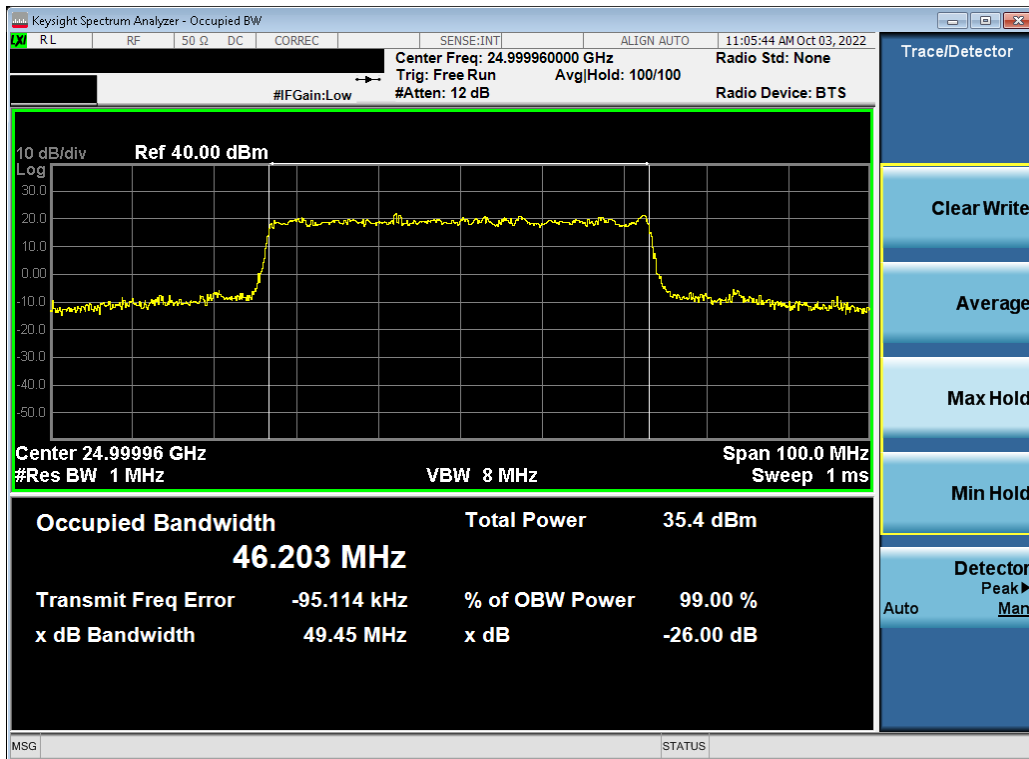


Plot 7-13. Ant 1 Occupied Bandwidth Plot (50MHz-1CC – QPSK – Mid Channel)

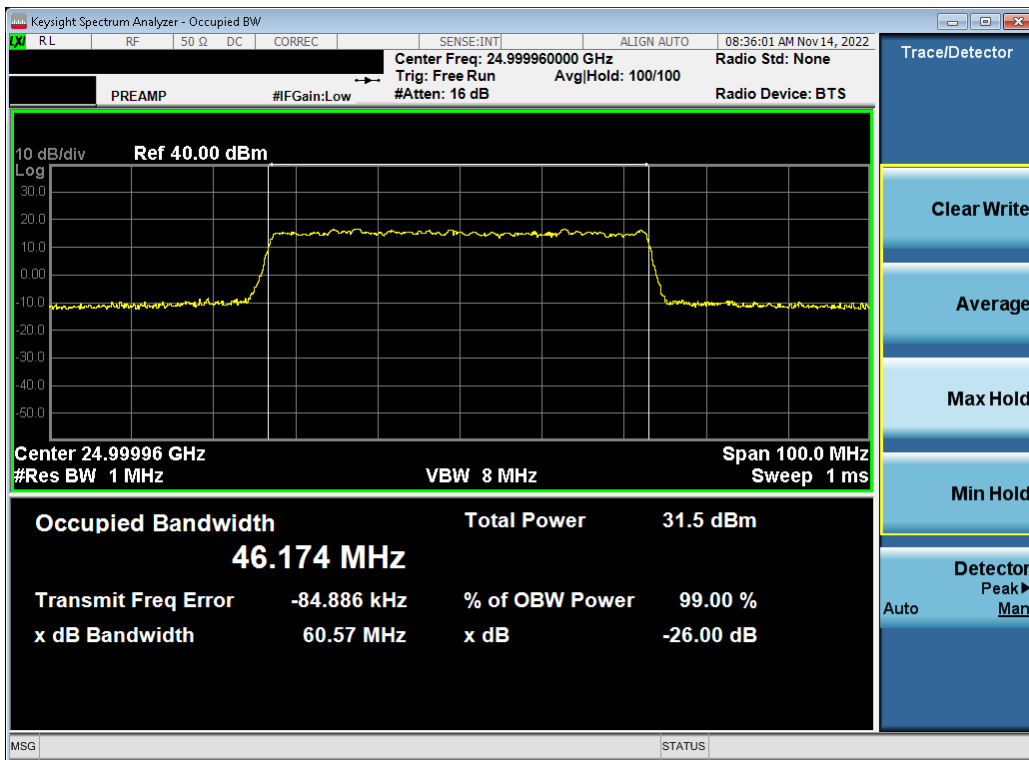


Plot 7-14. Ant 1 Occupied Bandwidth Plot (50MHz-1CC – pi/2-BPSK – Mid Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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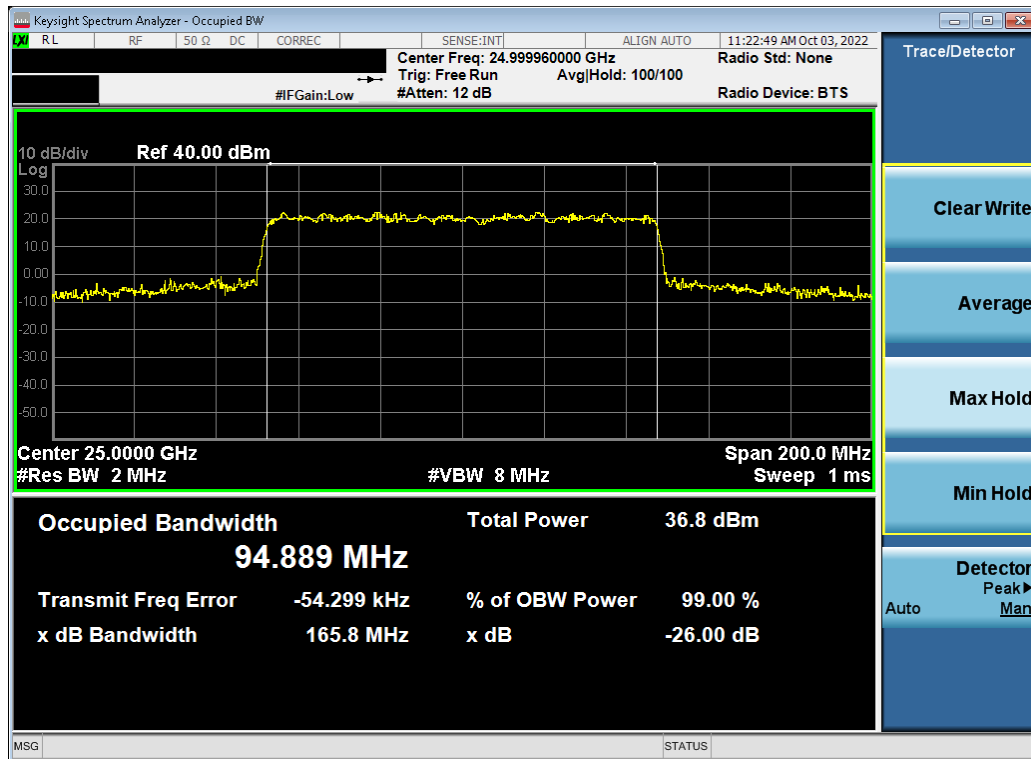


Plot 7-15. Ant 1 Occupied Bandwidth Plot (50MHz-1CC – 16QAM – Mid Channel)

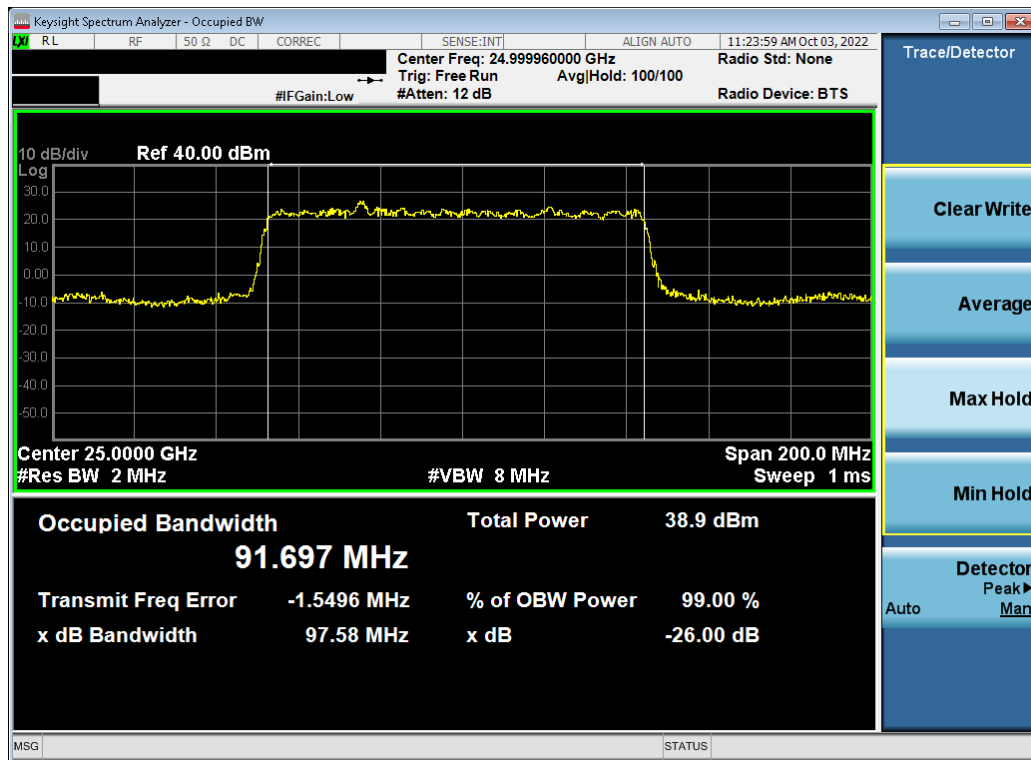


Plot 7-16. Ant 1 Occupied Bandwidth Plot (50MHz-1CC – 64QAM – Mid Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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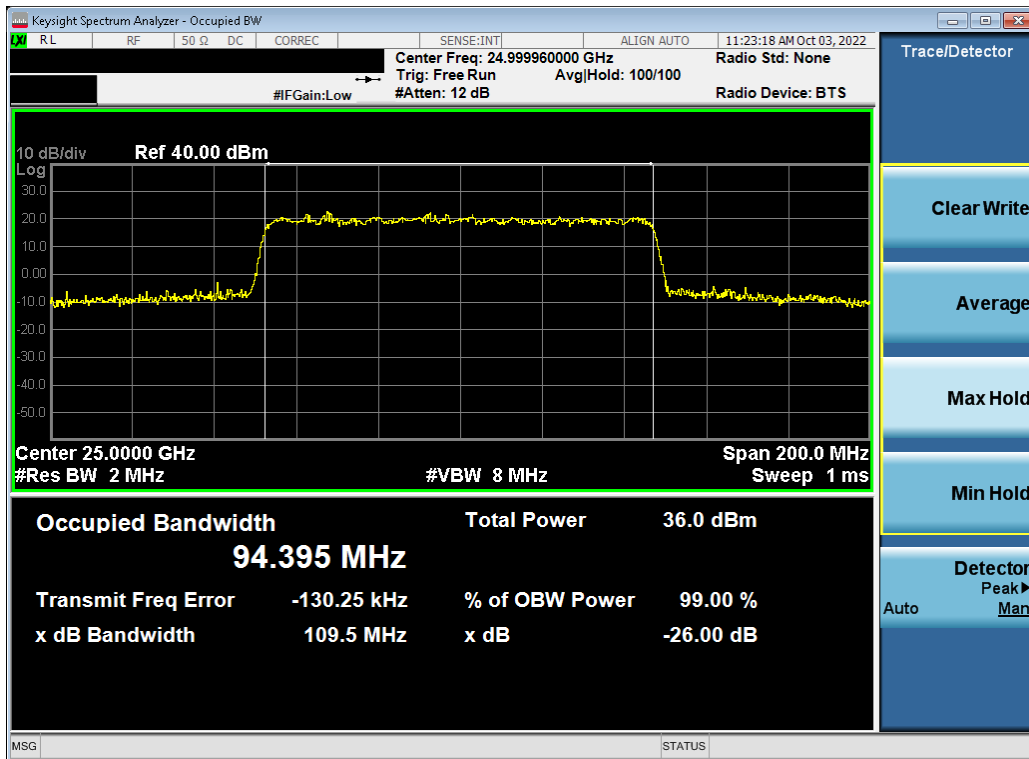


Plot 7-17. Ant 1 Occupied Bandwidth Plot (100MHz-1CC – QPSK – Mid Channel)

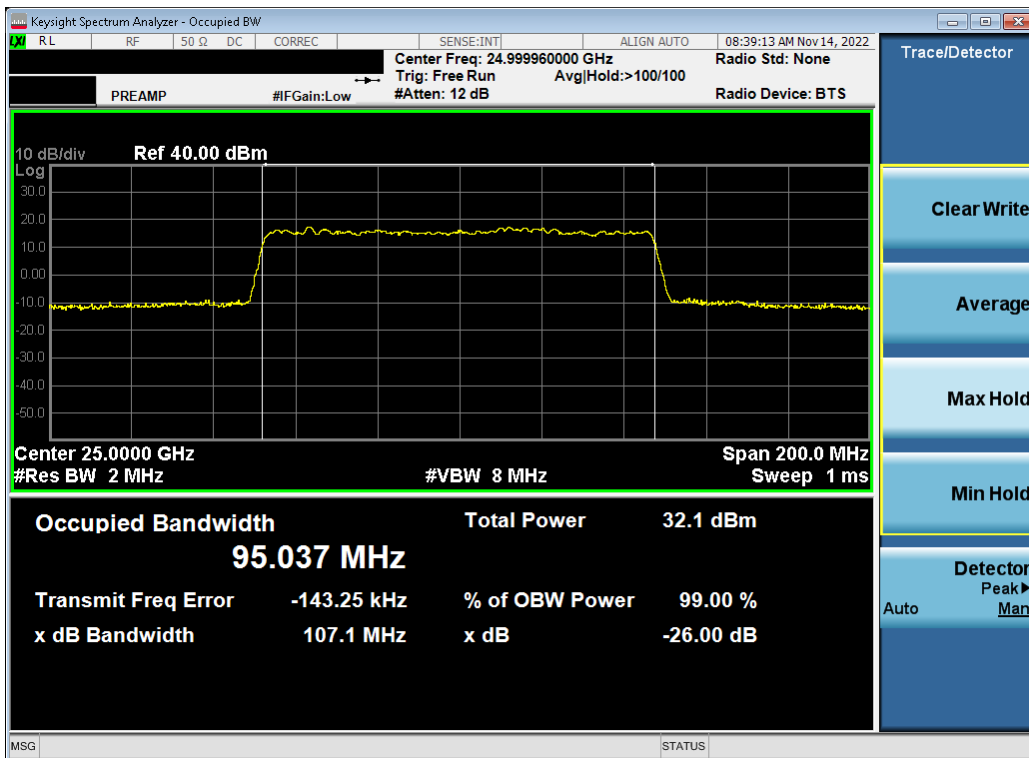


Plot 7-18. Ant 1 Occupied Bandwidth Plot (100MHz-1CC – pi/2-BPSK – Mid Channel)

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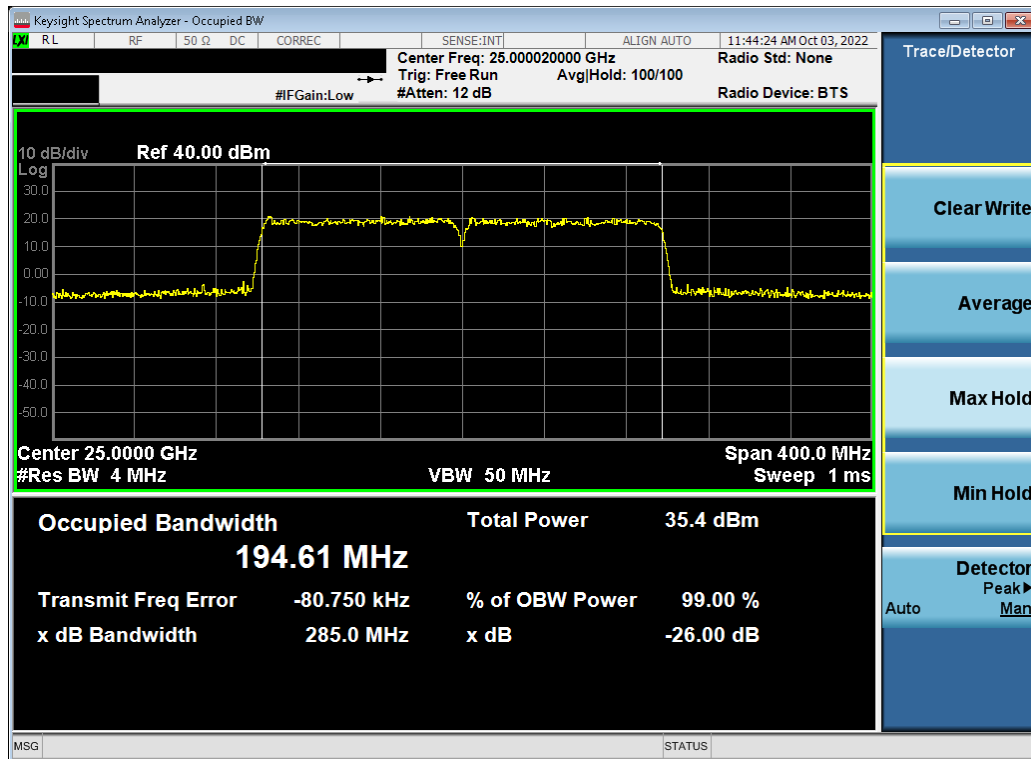


Plot 7-19. Ant 1 Occupied Bandwidth Plot (100MHz-1CC – 16QAM – Mid Channel)

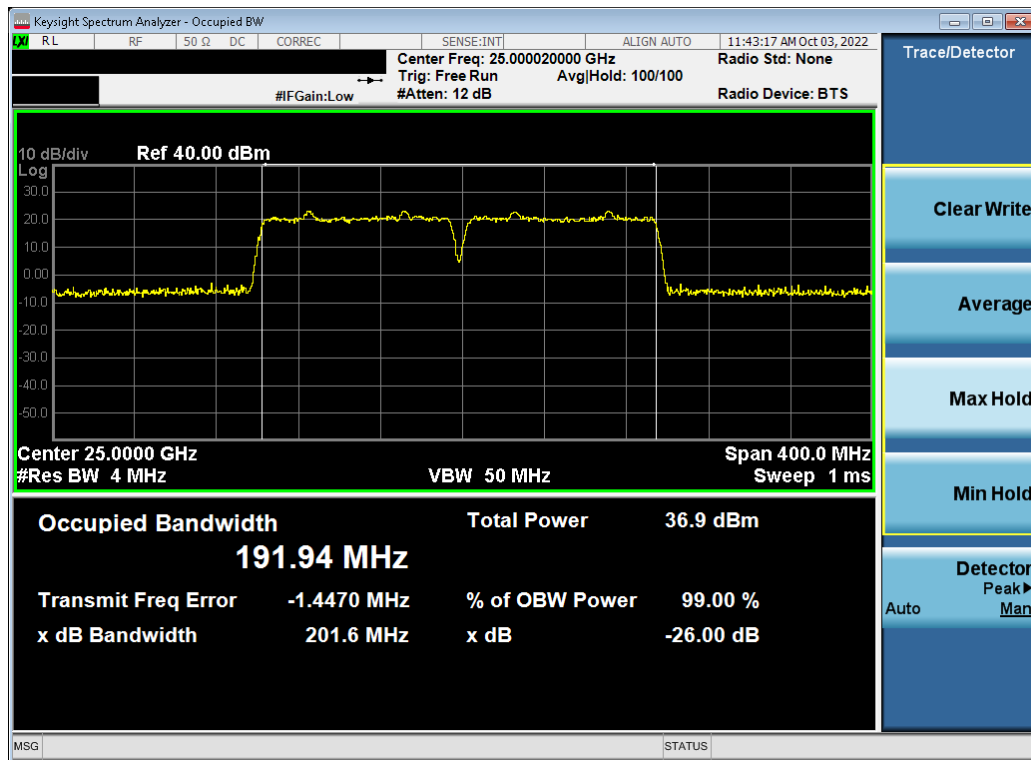


Plot 7-20. Ant 1 Occupied Bandwidth Plot (100MHz-1CC – 64QAM – Mid Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2209010098-13.A3L	Test Dates: 9/12/2022 – 11/14/2022	EUT Type: Portable Handset	Page 28 of 214

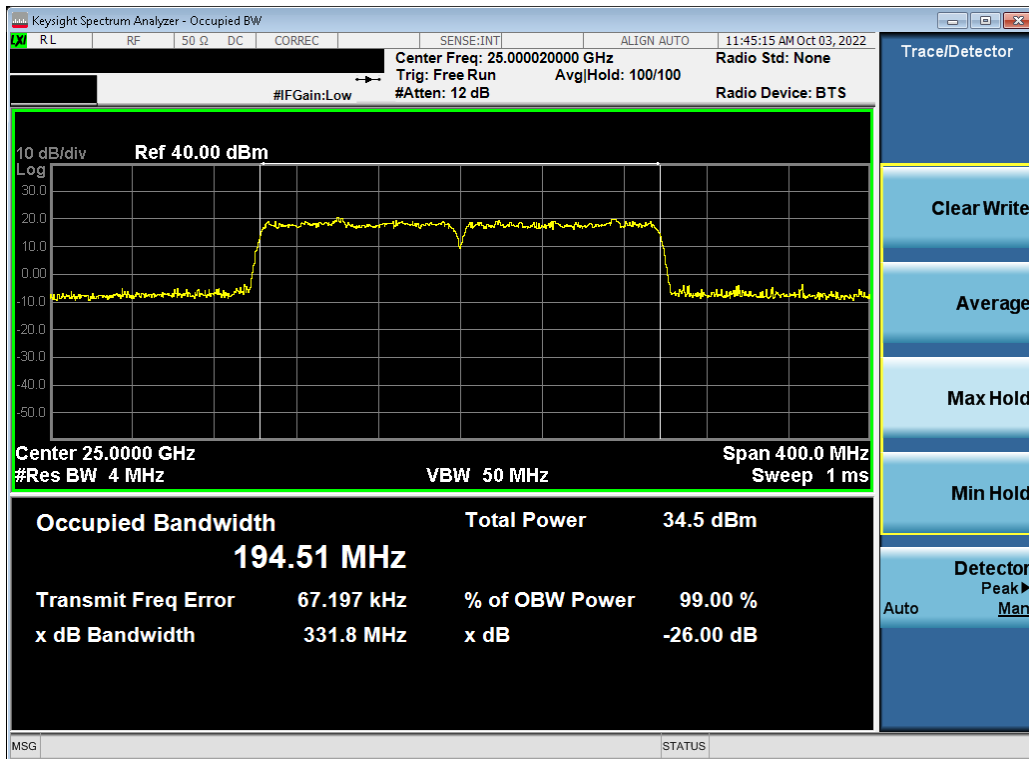


Plot 7-21. Ant 1 Occupied Bandwidth Plot (100MHz-2CC – QPSK – Mid Channel)

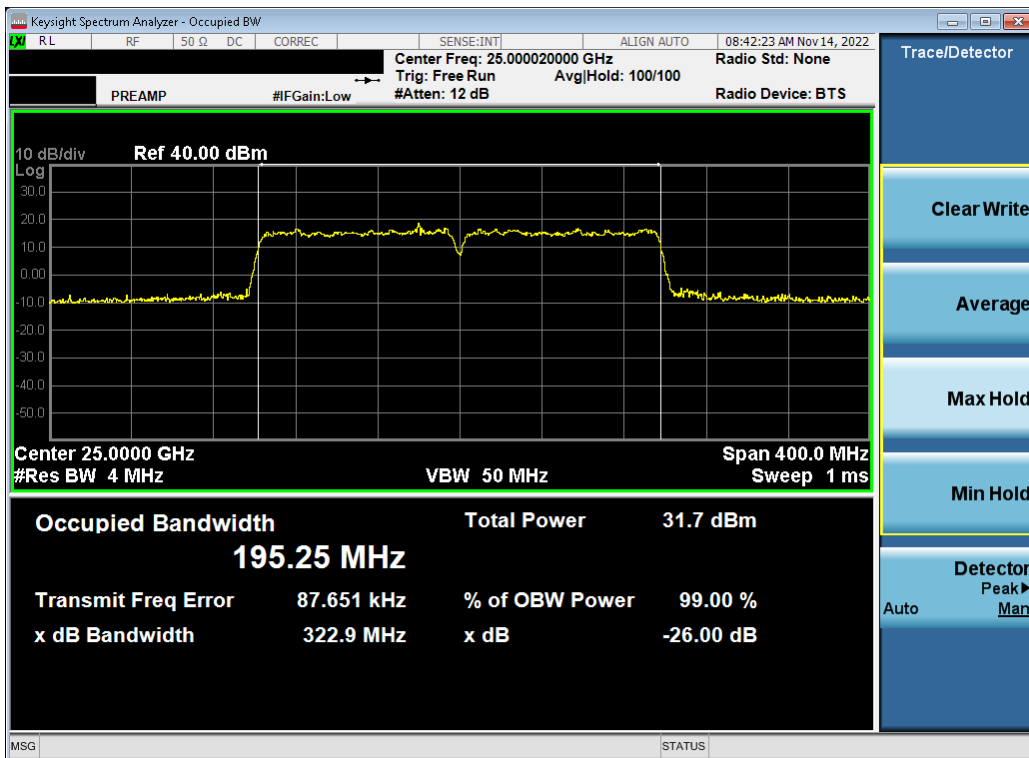


Plot 7-22. Ant 1 Occupied Bandwidth Plot (100MHz-2CC – pi/2-BPSK – Mid Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2209010098-13.A3L	Test Dates: 9/12/2022 – 11/14/2022	EUT Type: Portable Handset	Page 29 of 214

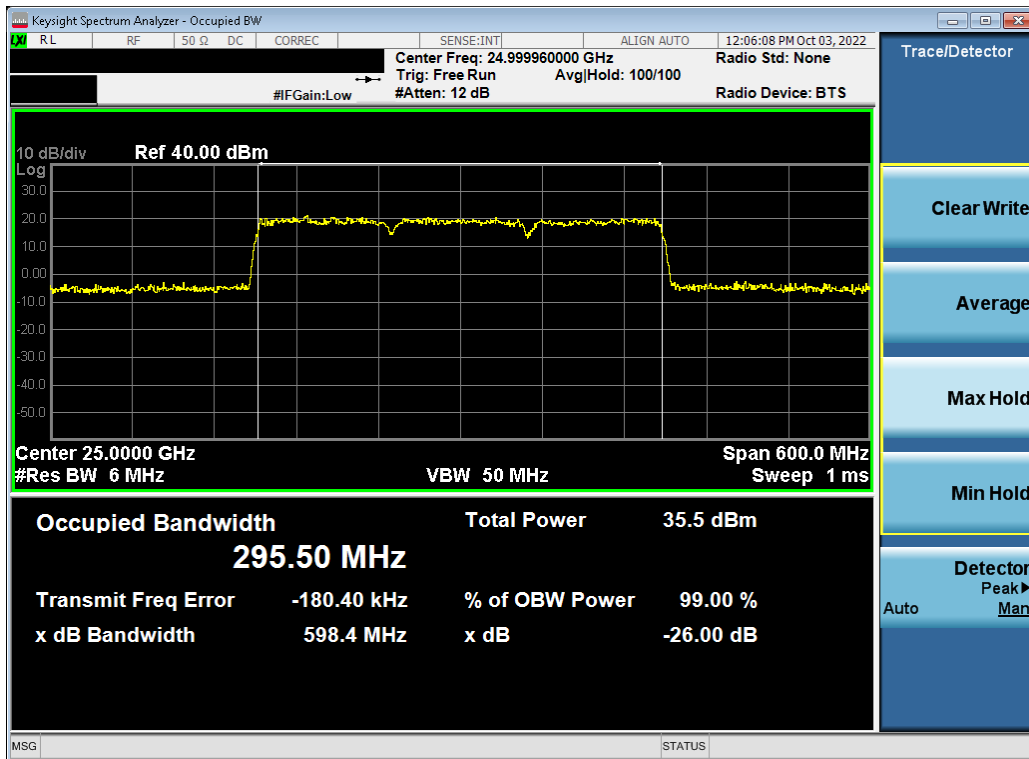


Plot 7-23. Ant 1 Occupied Bandwidth Plot (100MHz-2CC – 16QAM – Mid Channel)

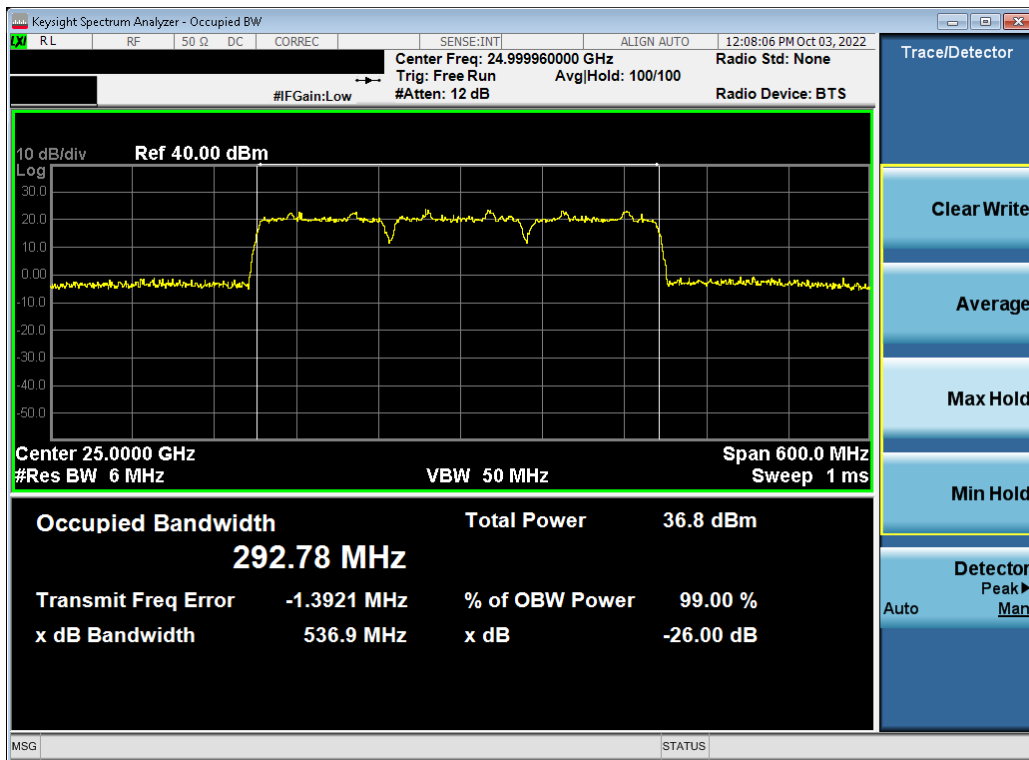


Plot 7-24. Ant 1 Occupied Bandwidth Plot (100MHz-2CC – 64QAM – Mid Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2209010098-13.A3L	Test Dates: 9/12/2022 – 11/14/2022	EUT Type: Portable Handset	Page 30 of 214

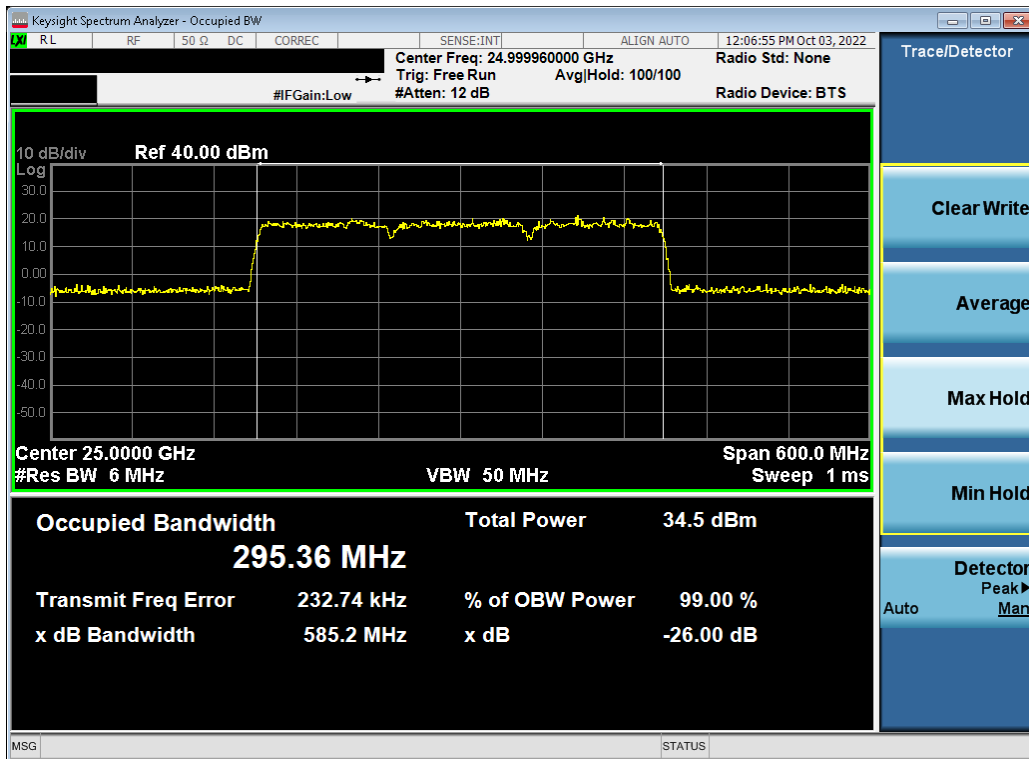


Plot 7-25. Ant 1 Occupied Bandwidth Plot (100MHz-3CC – QPSK – Mid Channel)

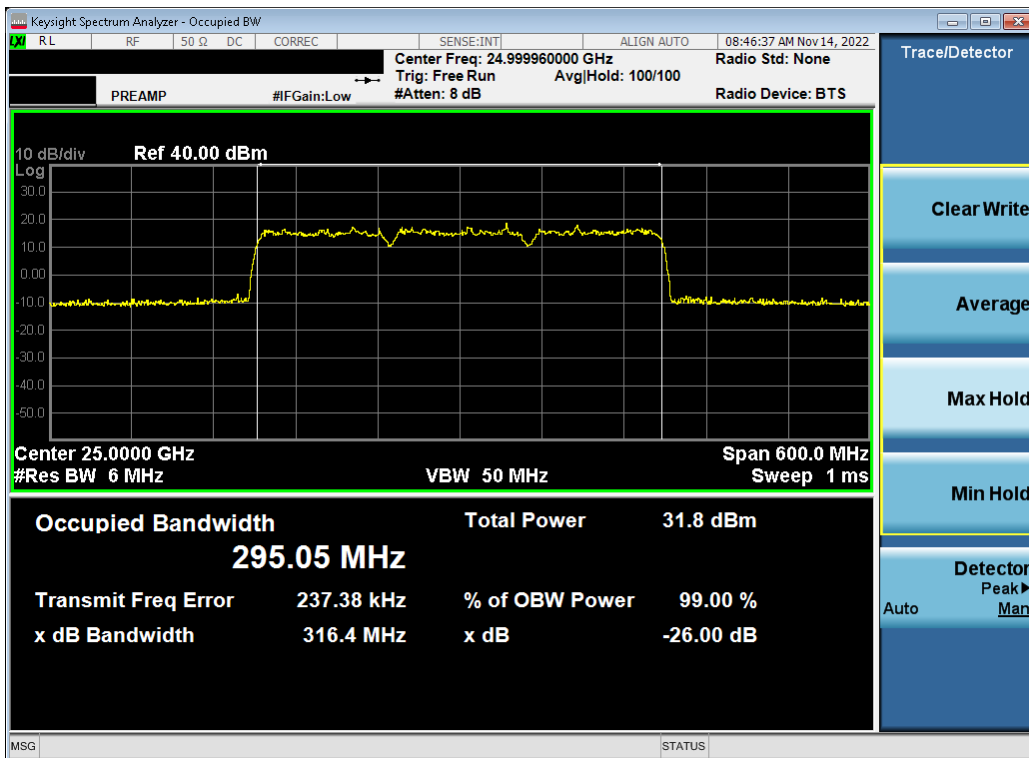


Plot 7-26. Ant 1 Occupied Bandwidth Plot (100MHz-3CC – pi/2-BPSK – Mid Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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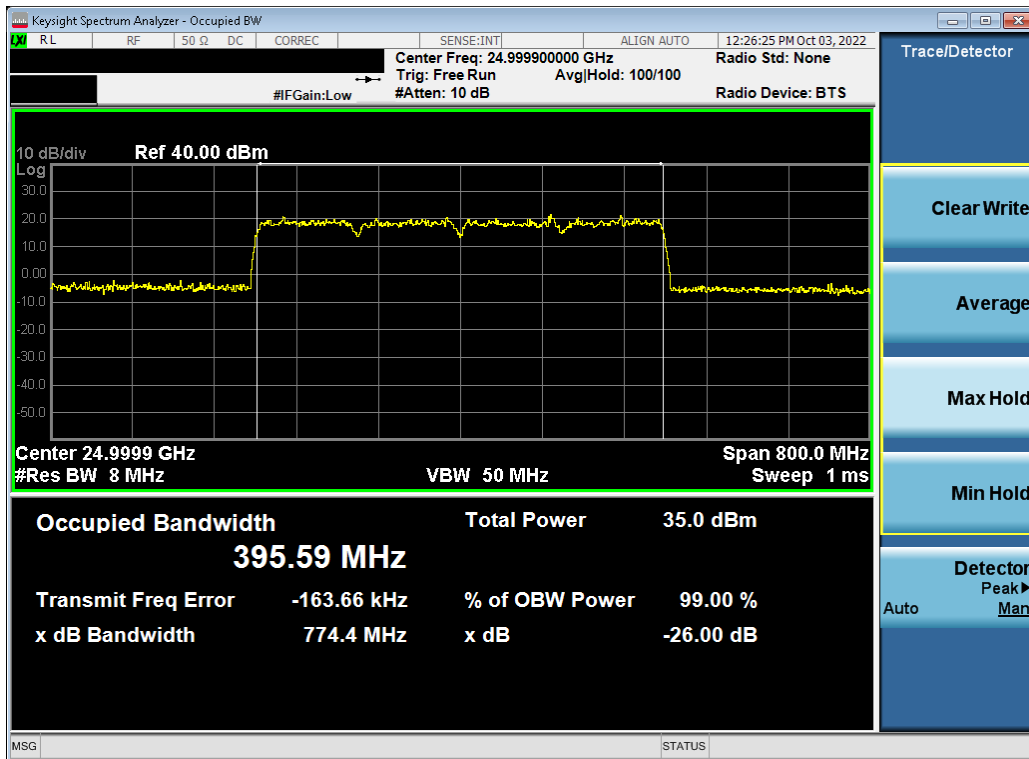
Plot 7-27. Ant 1 Occupied Bandwidth Plot (100MHz-3CC – 16QAM – Mid Channel)



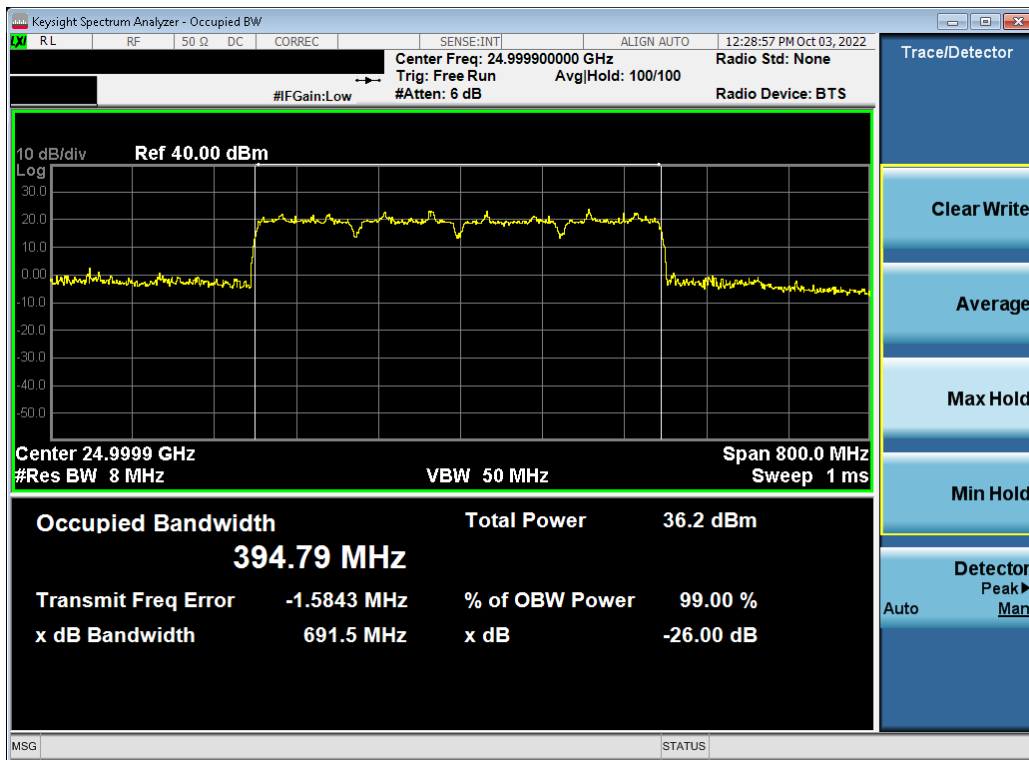
Plot 7-28. Ant 1 Occupied Bandwidth Plot (100MHz-3CC – 64QAM – Mid Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2209010098-13.A3L	Test Dates: 9/12/2022 – 11/14/2022	EUT Type: Portable Handset	Page 32 of 214



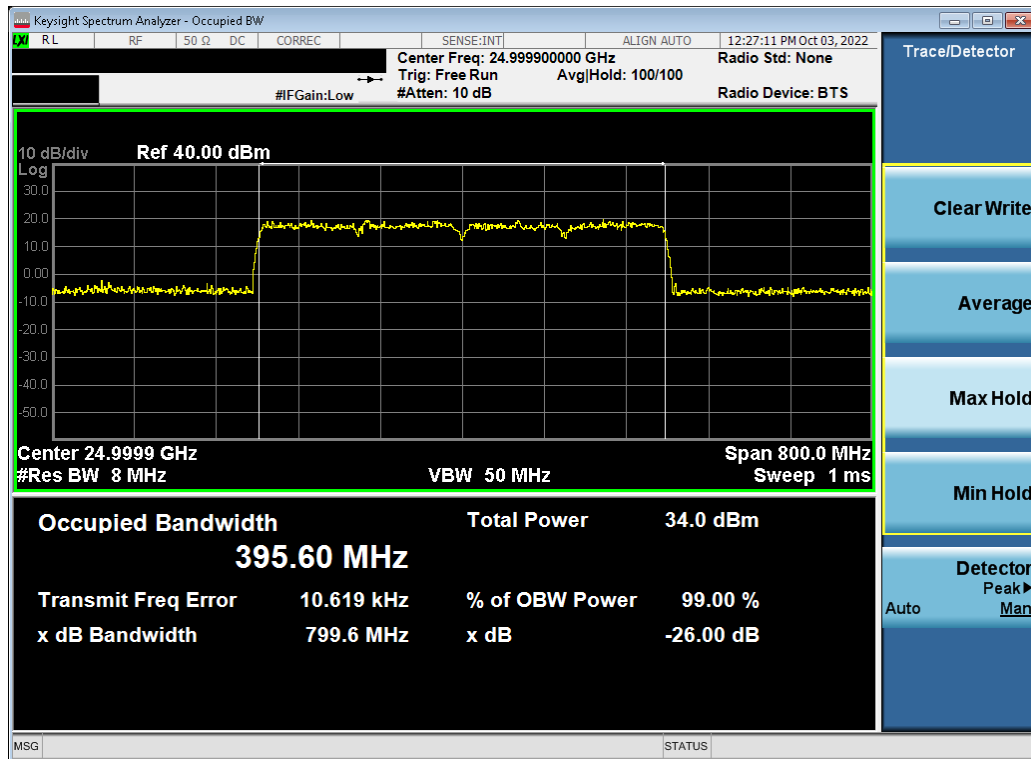


Plot 7-29. Ant 1 Occupied Bandwidth Plot (100MHz-4CC – QPSK – Mid Channel)

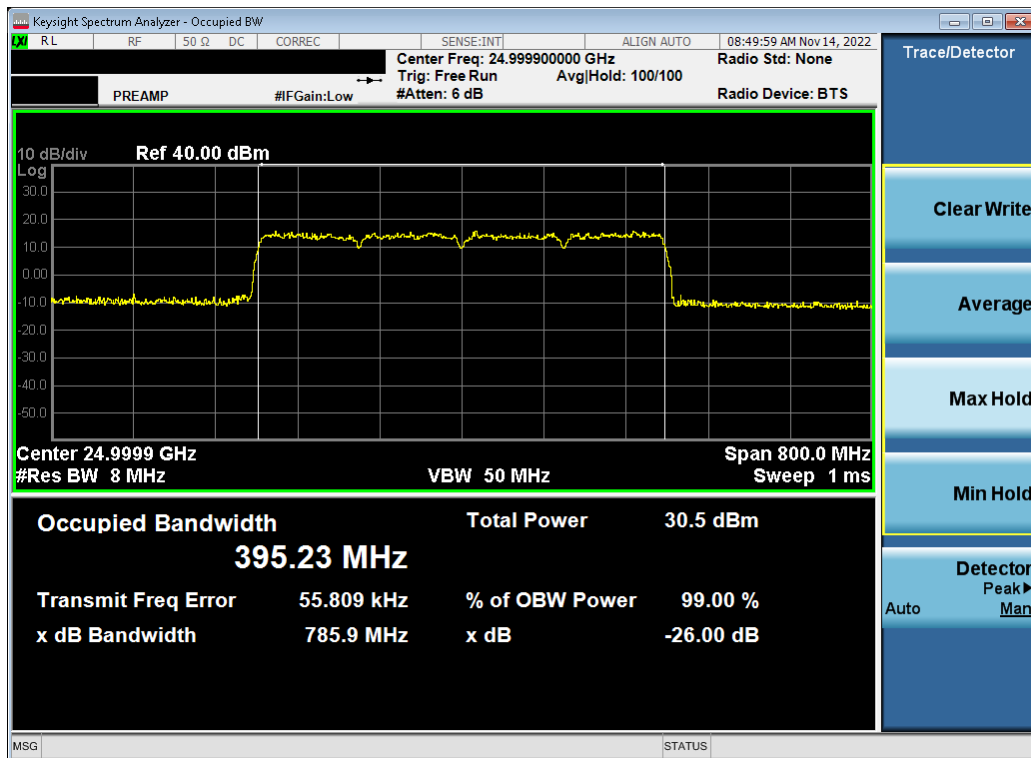


Plot 7-30. Ant 1 Occupied Bandwidth Plot (100MHz-4CC – pi/2-BPSK – Mid Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Plot 7-31. Ant 1 Occupied Bandwidth Plot (100MHz-4CC – 16QAM – Mid Channel)



Plot 7-32. Ant 1 Occupied Bandwidth Plot (100MHz-4CC – 64QAM – Mid Channel)

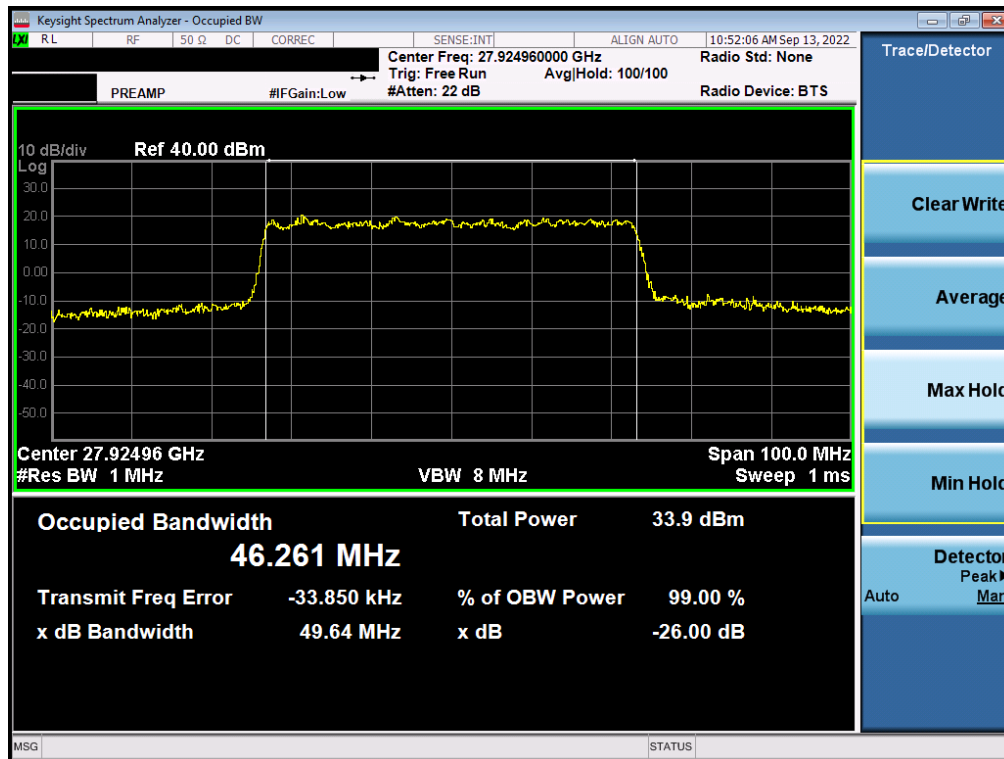
FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2209010098-13.A3L	Test Dates: 9/12/2022 – 11/14/2022	EUT Type: Portable Handset	Page 34 of 214

## Band n261

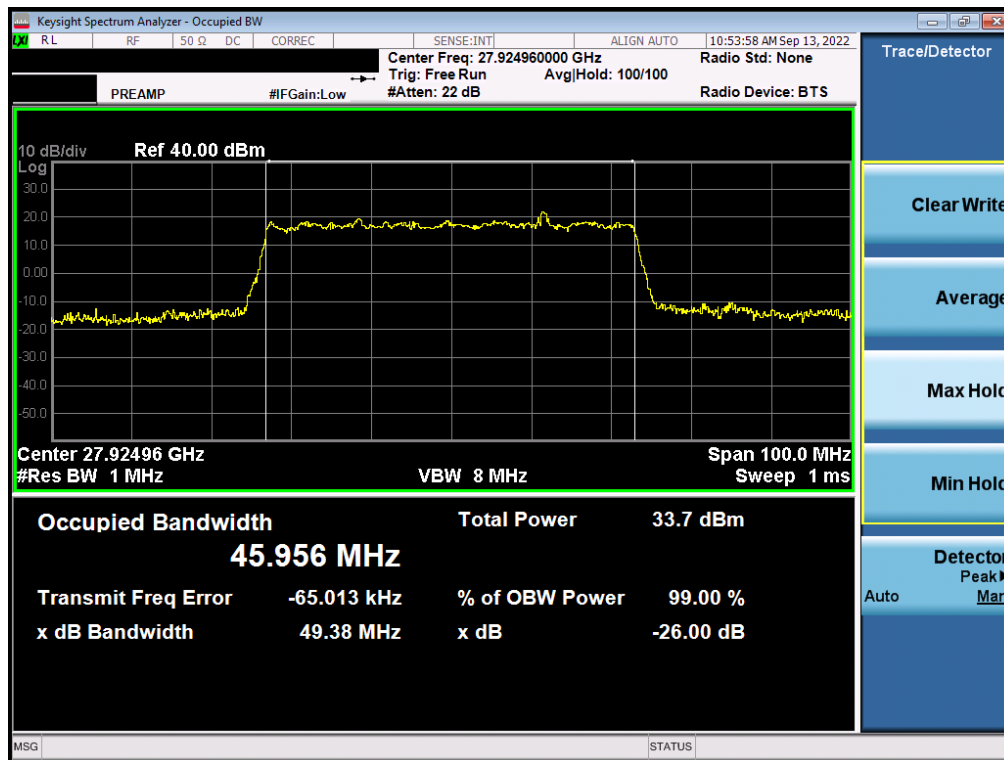
Antenna	Bandwidth [MHz]	CCs Active	Transmission Scheme	Modulation	OBW [MHz]
M Patch	50	1	DFT-s-OFDM	QPSK	46.26
			DFT-s-OFDM	$\pi/2$ BPSK	45.96
			CP-OFDM	16QAM	45.99
			CP-OFDM	64QAM	46.06
	100	1	CP-OFDM	QPSK	94.75
			DFT-s-OFDM	$\pi/2$ BPSK	91.83
			CP-OFDM	16QAM	94.64
			CP-OFDM	64QAM	95.09
		2	CP-OFDM	QPSK	195.32
			DFT-s-OFDM	$\pi/2$ BPSK	192.06
			CP-OFDM	16QAM	194.69
			CP-OFDM	64QAM	195.50
		3	CP-OFDM	QPSK	293.71
			DFT-s-OFDM	$\pi/2$ BPSK	291.76
			CP-OFDM	16QAM	294.61
			CP-OFDM	64QAM	294.15
		4	CP-OFDM	QPSK	394.04
			DFT-s-OFDM	$\pi/2$ BPSK	392.55
			CP-OFDM	16QAM	393.56
			CP-OFDM	64QAM	394.73

Table 7-4. Summary of Ant 1 Occupied Bandwidths (n261)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2209010098-13.A3L	Test Dates: 9/12/2022 – 11/14/2022	EUT Type: Portable Handset	Page 35 of 214

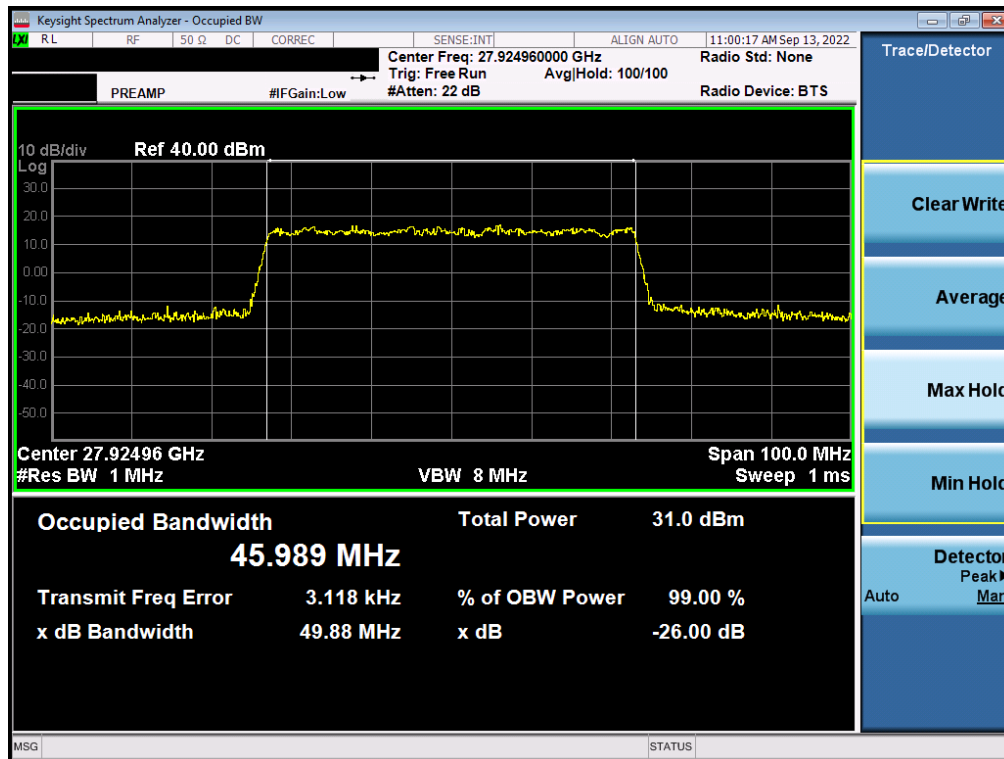


Plot 7-33. Ant 1 Occupied Bandwidth Plot (50MHz-1CC – QPSK – Mid Channel)

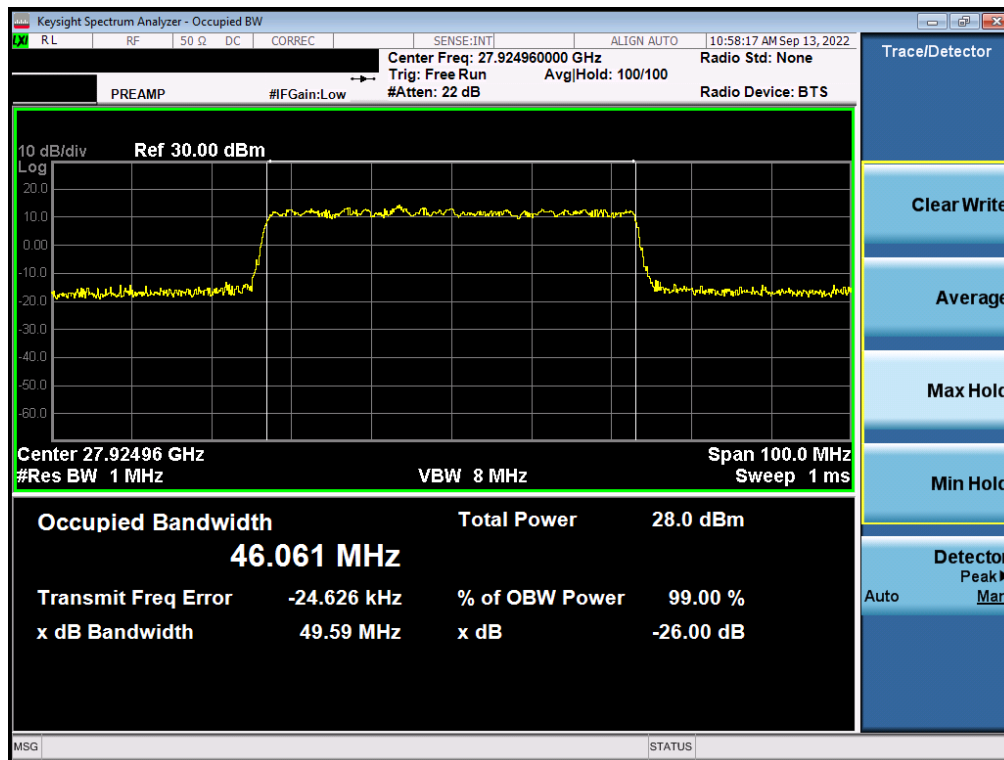


Plot 7-34. Ant 1 Occupied Bandwidth Plot (50MHz-1CC – pi/2-BPSK – Mid Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2209010098-13.A3L	Test Dates: 9/12/2022 – 11/14/2022	EUT Type: Portable Handset	Page 36 of 214

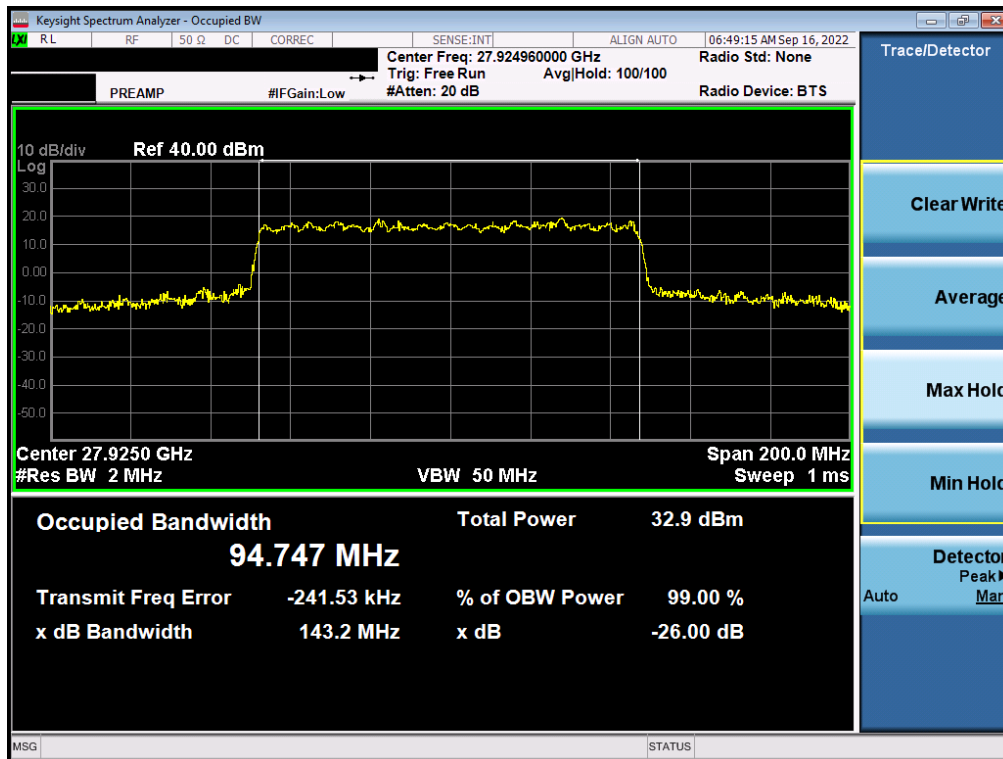


Plot 7-35. Ant 1 Occupied Bandwidth Plot (50MHz-1CC – 16QAM – Mid Channel)

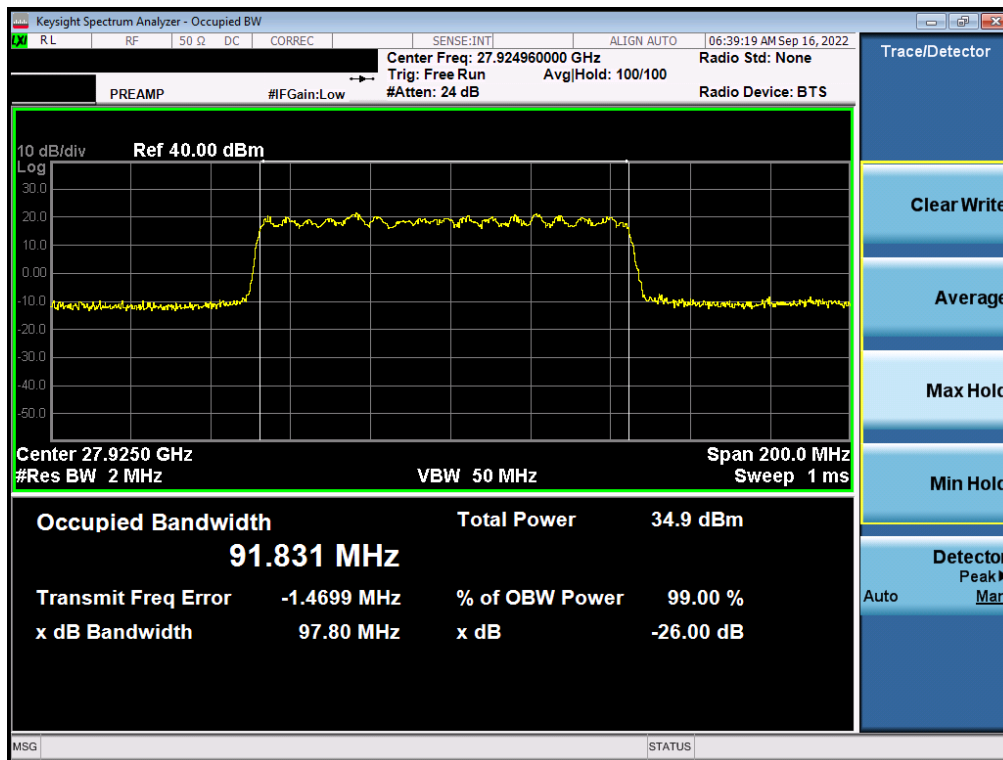


Plot 7-36. Ant 1 Occupied Bandwidth Plot (50MHz-1CC – 64QAM – Mid Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2209010098-13.A3L	Test Dates: 9/12/2022 – 11/14/2022	EUT Type: Portable Handset	Page 37 of 214

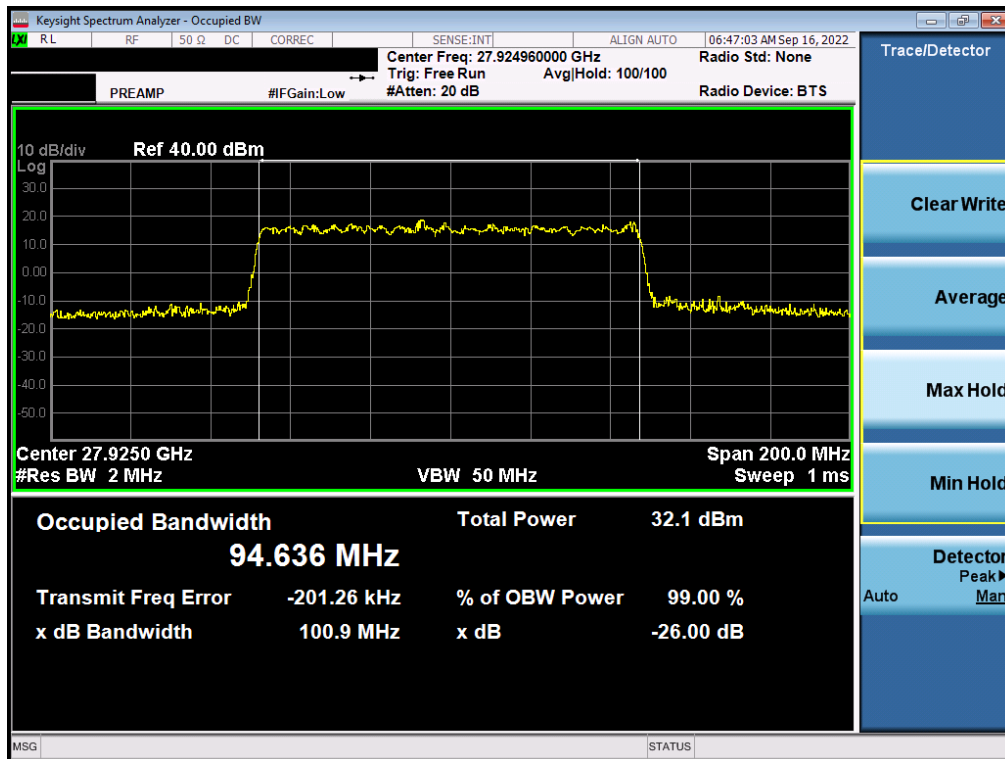


Plot 7-37. Ant 1 Occupied Bandwidth Plot (100MHz-1CC – QPSK – Mid Channel)

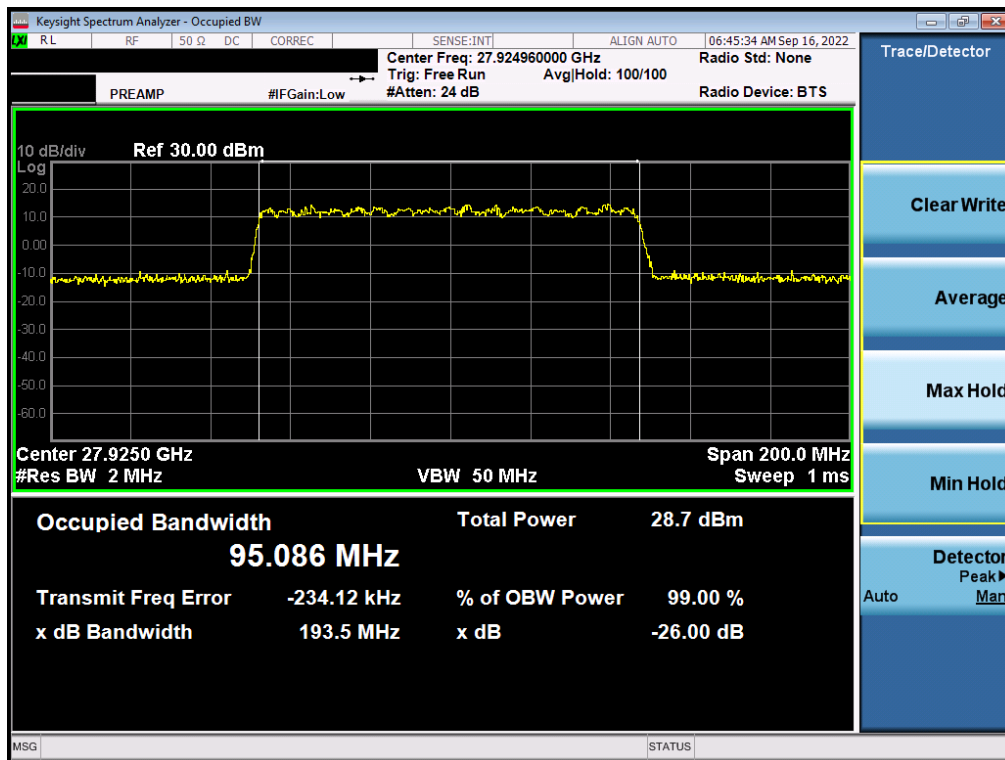


Plot 7-38. Ant 1 Occupied Bandwidth Plot (100MHz-1CC – pi/2-BPSK – Mid Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2209010098-13.A3L	Test Dates: 9/12/2022 – 11/14/2022	EUT Type: Portable Handset	Page 38 of 214

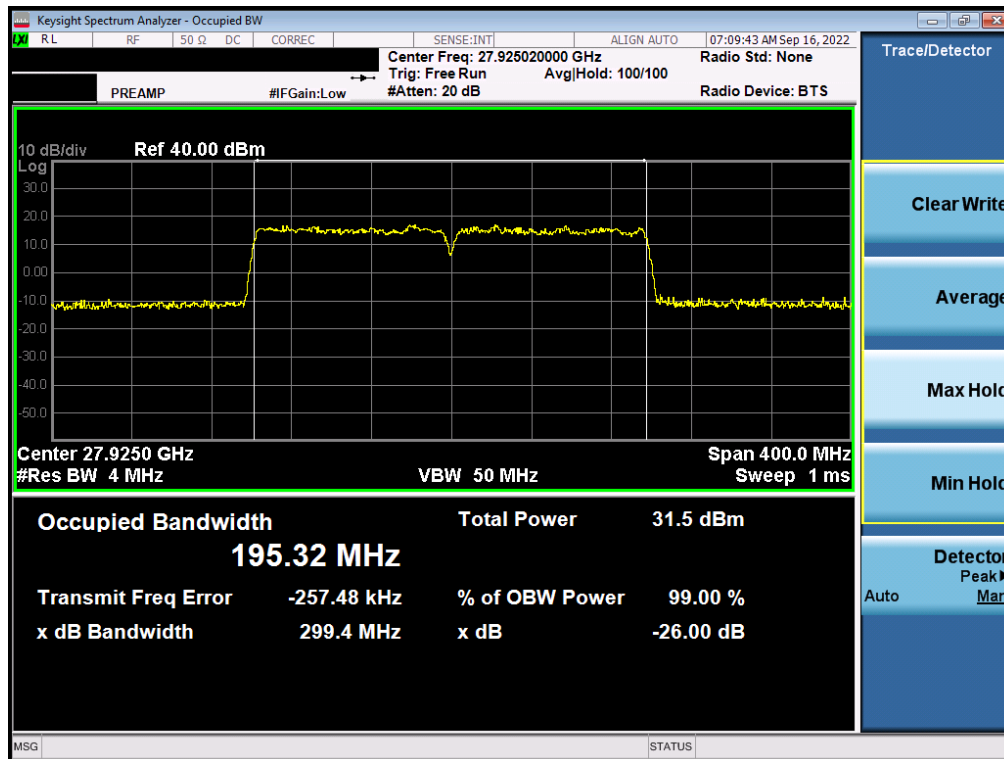


Plot 7-39. Ant 1 Occupied Bandwidth Plot (100MHz-1CC - 16QAM - Mid Channel)

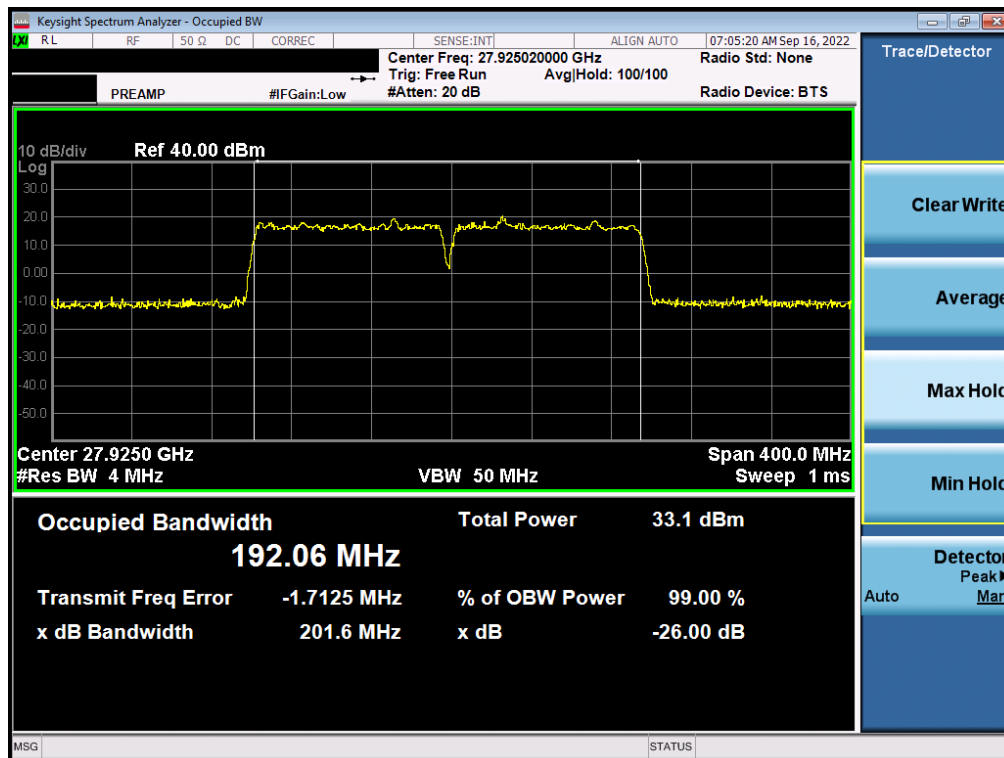


Plot 7-40. Ant 1 Occupied Bandwidth Plot (100MHz-1CC - 64QAM - Mid Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2209010098-13.A3L	Test Dates: 9/12/2022 - 11/14/2022	EUT Type: Portable Handset	Page 39 of 214



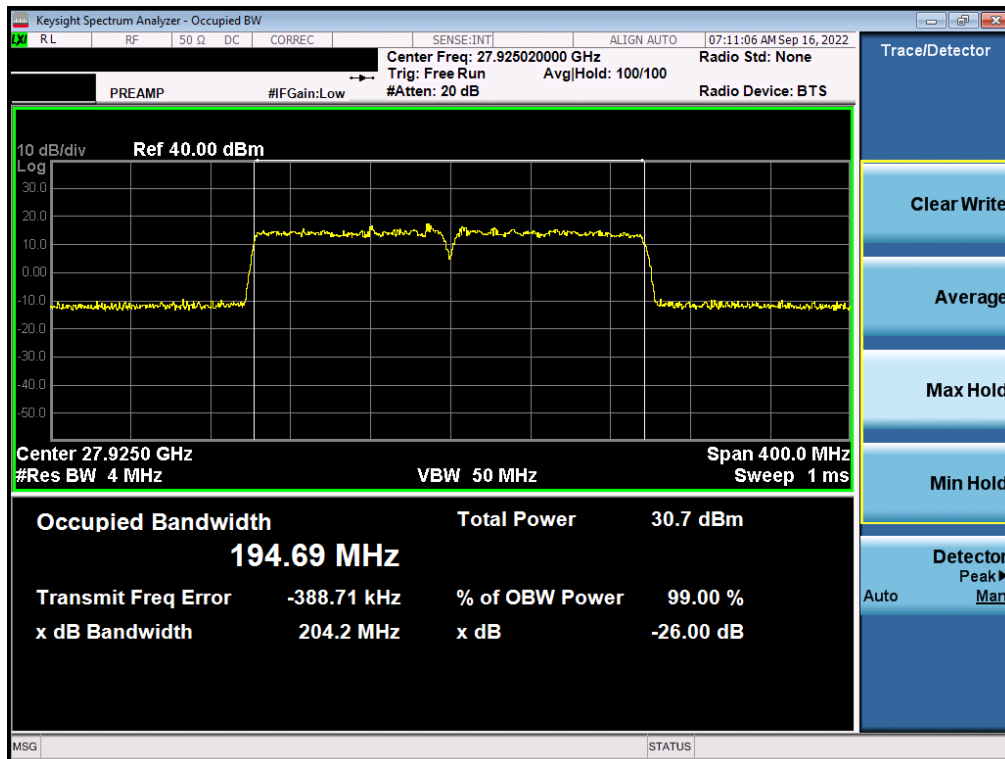
Plot 7-41. Ant 1 Occupied Bandwidth Plot (100MHz-2CC – QPSK – Mid Channel)



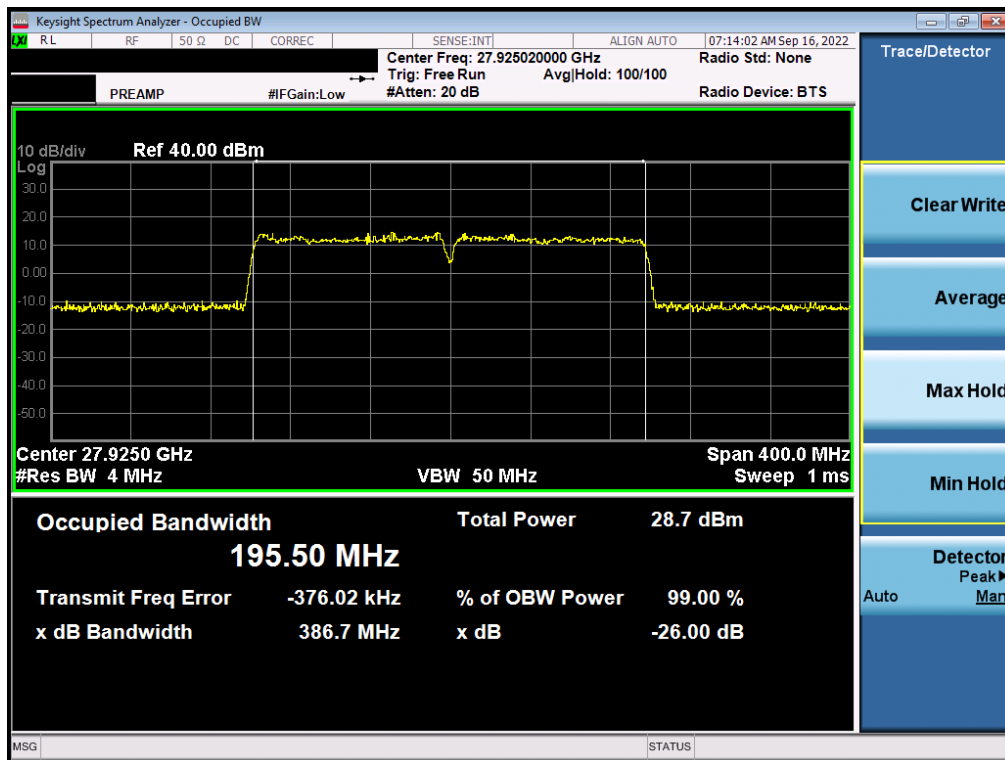
Plot 7-42. Ant 1 Occupied Bandwidth Plot (100MHz-2CC – pi/2-BPSK – Mid Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2209010098-13.A3L	Test Dates: 9/12/2022 – 11/14/2022	EUT Type: Portable Handset	Page 40 of 214



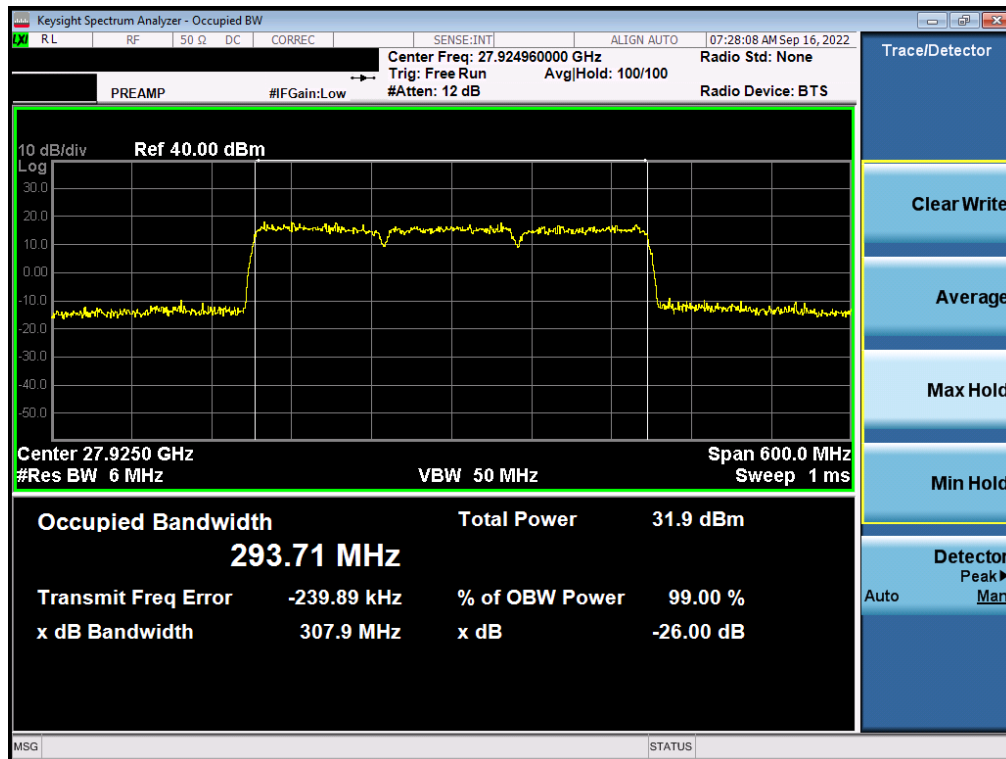


Plot 7-43. Ant 1 Occupied Bandwidth Plot (100MHz-2CC – 16QAM – Mid Channel)

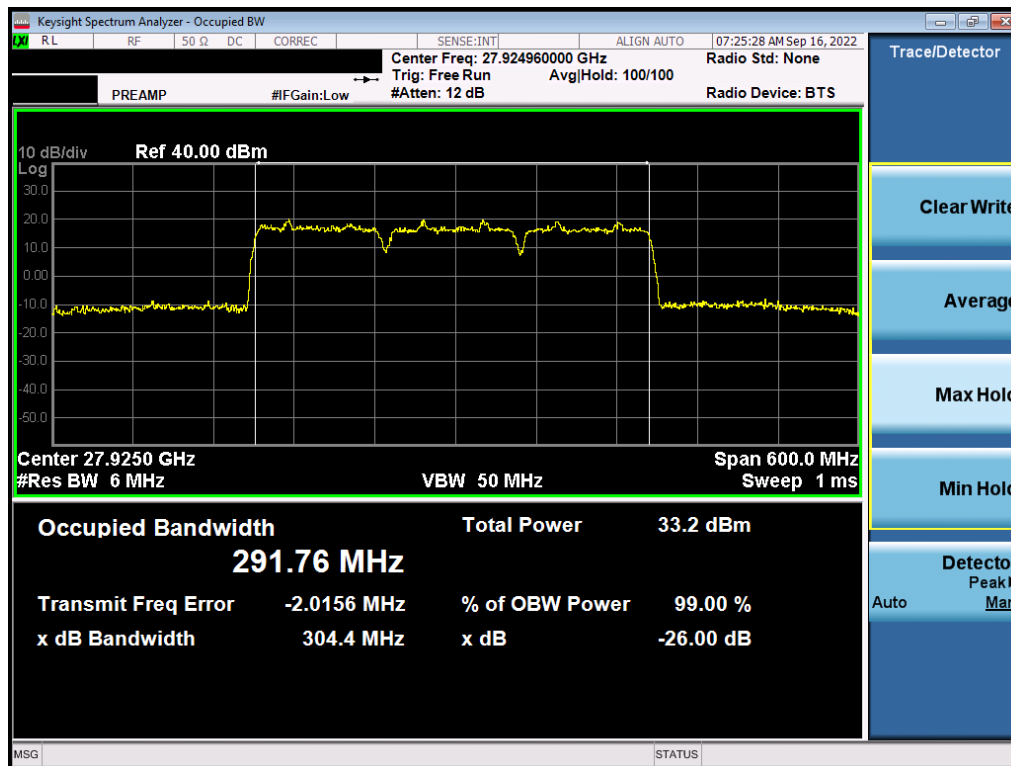


Plot 7-44. Ant 1 Occupied Bandwidth Plot (100MHz-2CC – 64QAM – Mid Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2209010098-13.A3L	Test Dates: 9/12/2022 – 11/14/2022	EUT Type: Portable Handset	Page 41 of 214

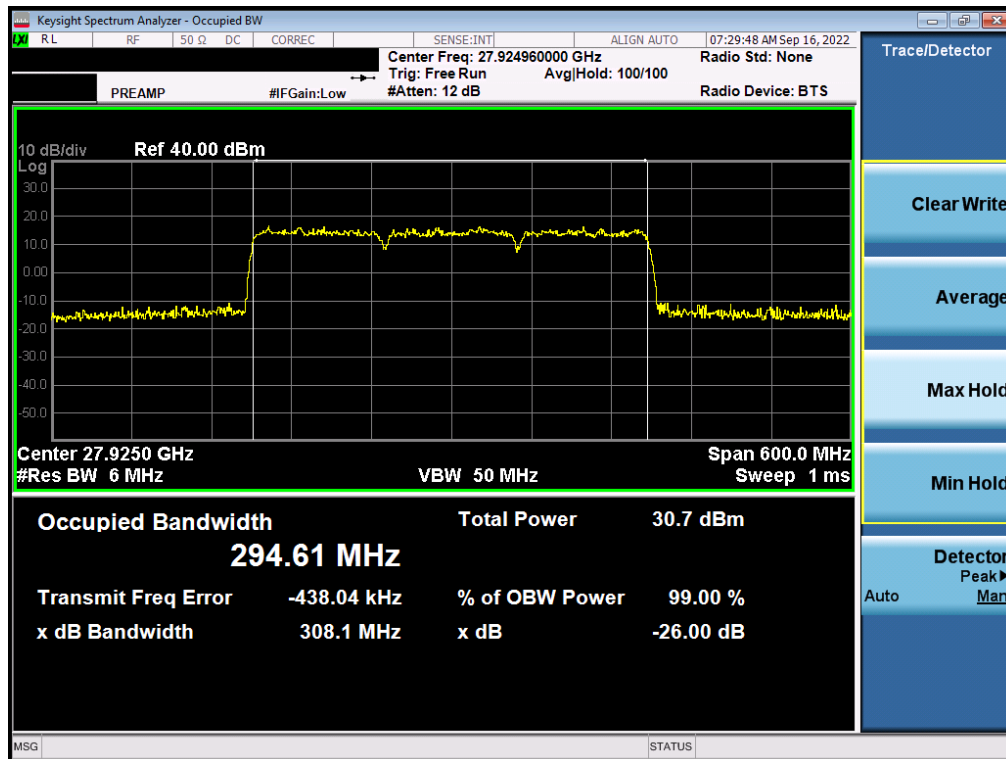


Plot 7-45. Ant 1 Occupied Bandwidth Plot (100MHz-3CC – QPSK – Mid Channel)

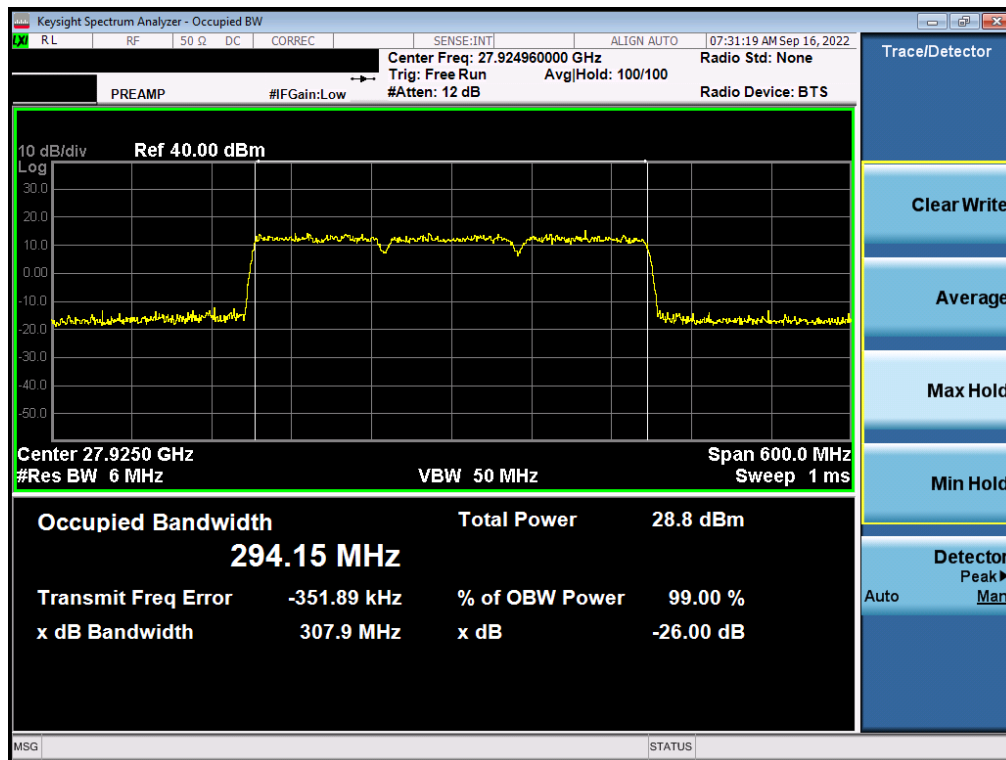


Plot 7-46. Ant 1 Occupied Bandwidth Plot (100MHz-3CC – pi/2-BPSK – Mid Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2209010098-13.A3L	Test Dates: 9/12/2022 – 11/14/2022	EUT Type: Portable Handset	Page 42 of 214

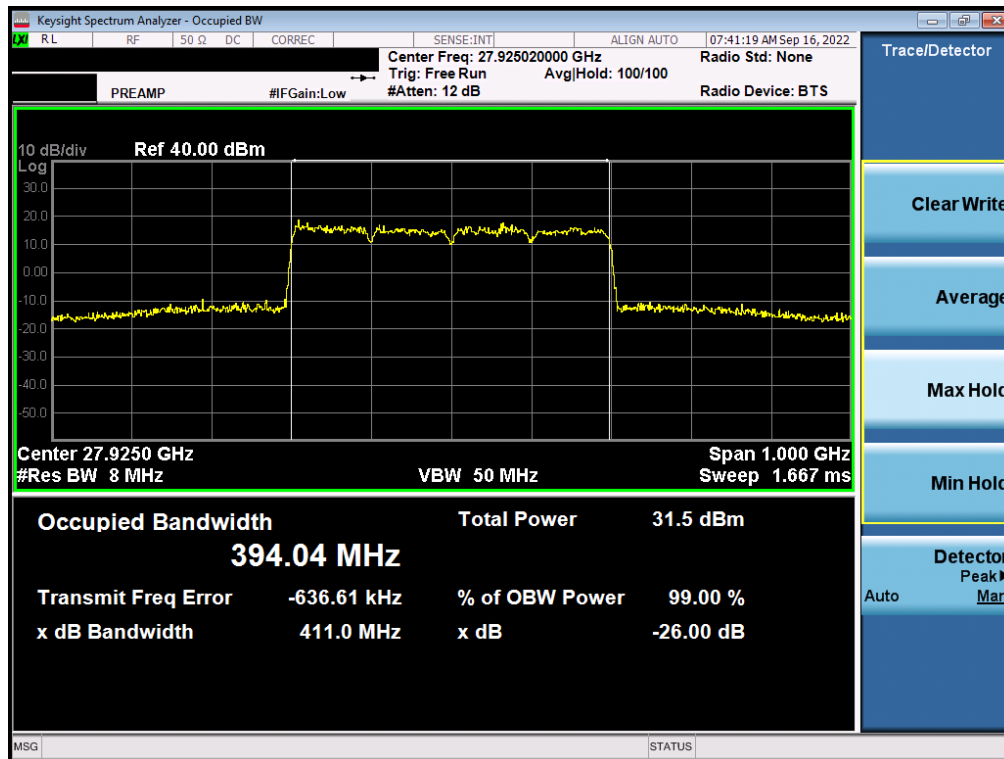


Plot 7-47. Ant 1 Occupied Bandwidth Plot (100MHz-3CC – 16QAM – Mid Channel)

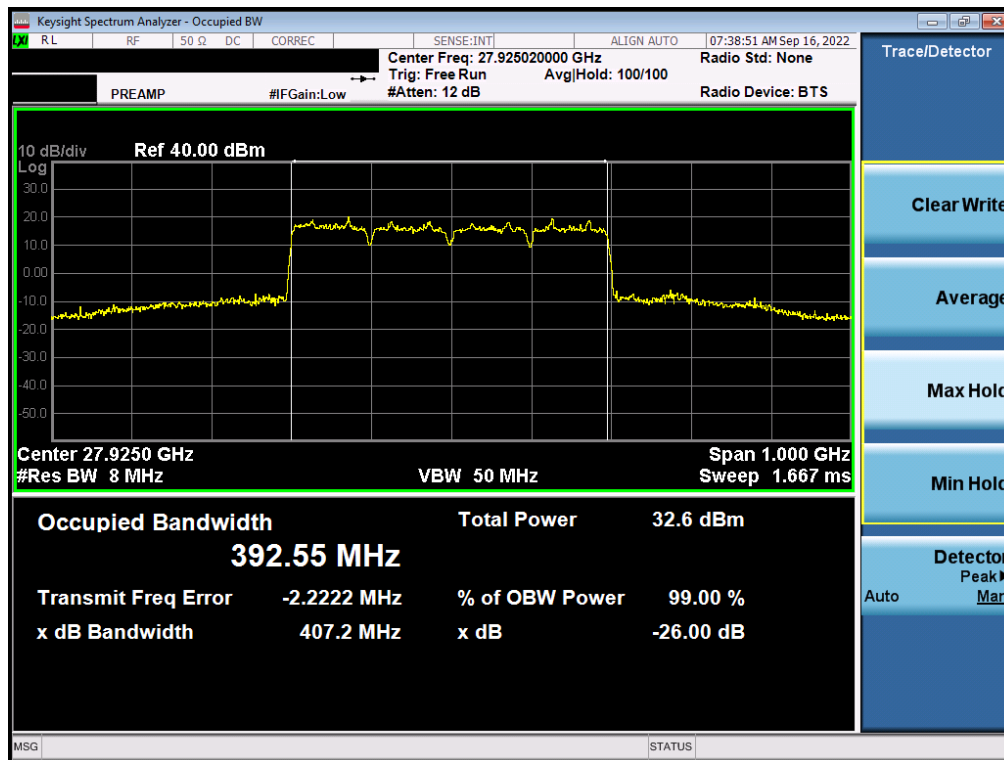


Plot 7-48. Ant 1 Occupied Bandwidth Plot (100MHz-3CC – 64QAM – Mid Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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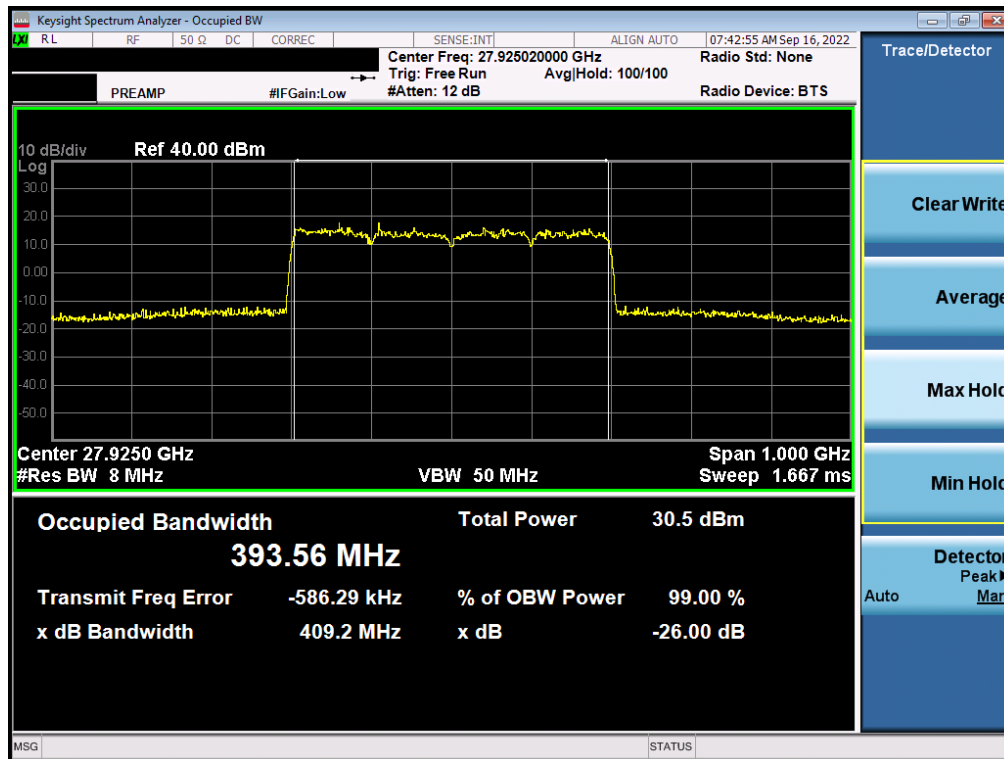


Plot 7-49. Ant 1 Occupied Bandwidth Plot (100MHz-4CC – QPSK – Mid Channel)

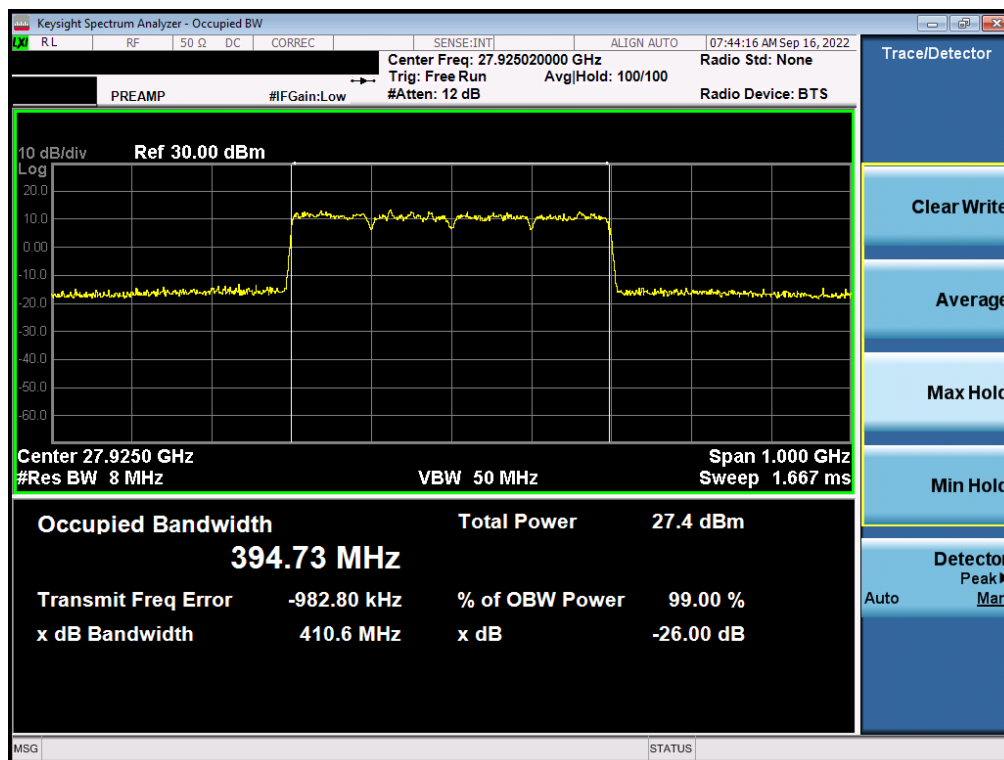


Plot 7-50. Ant 1 Occupied Bandwidth Plot (100MHz-4CC – pi/2-BPSK – Mid Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Plot 7-51. Ant 1 Occupied Bandwidth Plot (100MHz-4CC – 16QAM – Mid Channel)



Plot 7-52. Ant 1 Occupied Bandwidth Plot (100MHz-4CC – 64QAM – Mid Channel)

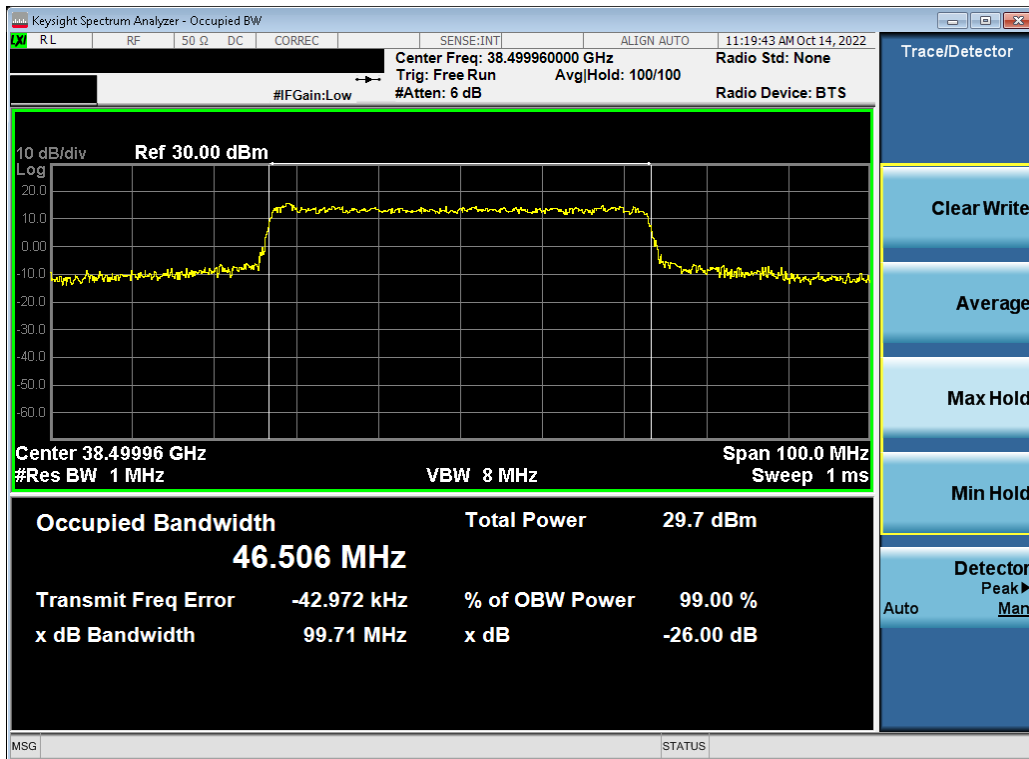
FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2209010098-13.A3L	Test Dates: 9/12/2022 – 11/14/2022	EUT Type: Portable Handset	Page 45 of 214

## Band n260

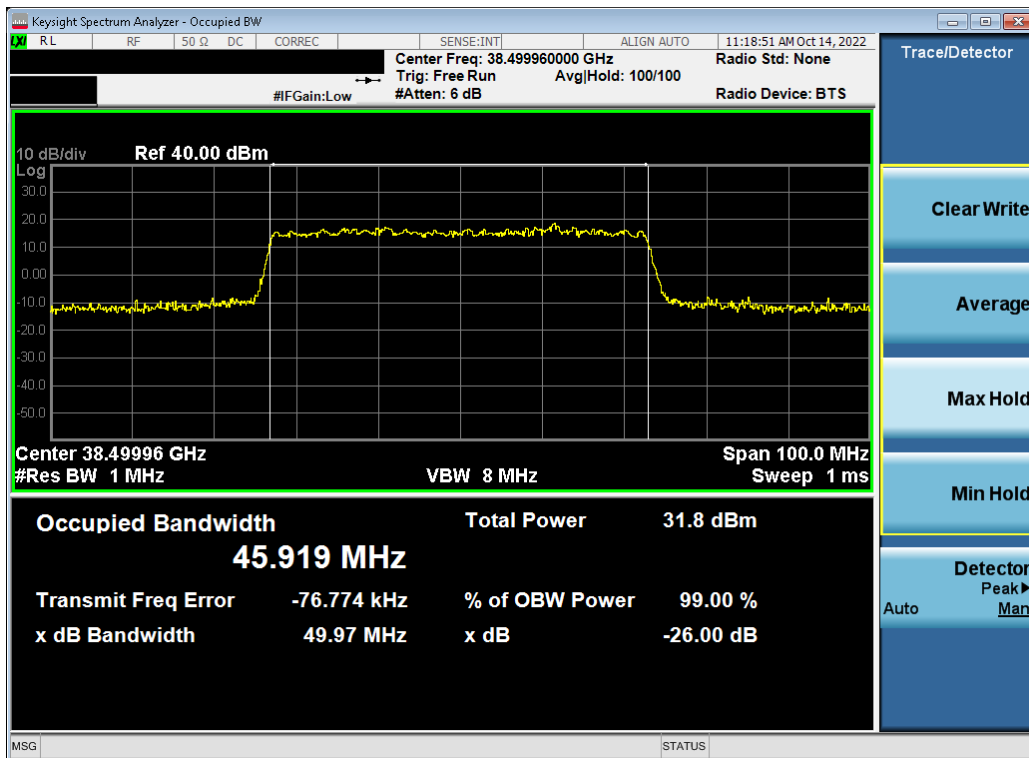
Antenna	Bandwidth [MHz]	CCs Active	Transmission Scheme	Modulation	OBW [MHz]
M Patch	50	1	CP-OFDM	QPSK	46.51
			DFT-s-OFDM	$\pi/2$ BPSK	45.92
			CP-OFDM	16QAM	46.20
			CP-OFDM	64QAM	46.26
	100	1	CP-OFDM	QPSK	95.93
			DFT-s-OFDM	$\pi/2$ BPSK	92.42
			CP-OFDM	16QAM	95.74
			CP-OFDM	64QAM	95.60
		2	CP-OFDM	QPSK	194.93
			DFT-s-OFDM	$\pi/2$ BPSK	191.97
			CP-OFDM	16QAM	194.66
			CP-OFDM	64QAM	195.72
		3	CP-OFDM	QPSK	294.92
			DFT-s-OFDM	$\pi/2$ BPSK	292.48
			CP-OFDM	16QAM	294.51
			CP-OFDM	64QAM	296.99
		4	CP-OFDM	QPSK	396.10
			DFT-s-OFDM	$\pi/2$ BPSK	395.84
			CP-OFDM	16QAM	396.03
			CP-OFDM	64QAM	395.26

Table 7-5. Summary of Ant 1 Occupied Bandwidths (n260)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2209010098-13.A3L	Test Dates: 9/12/2022 – 11/14/2022	EUT Type: Portable Handset	Page 46 of 214

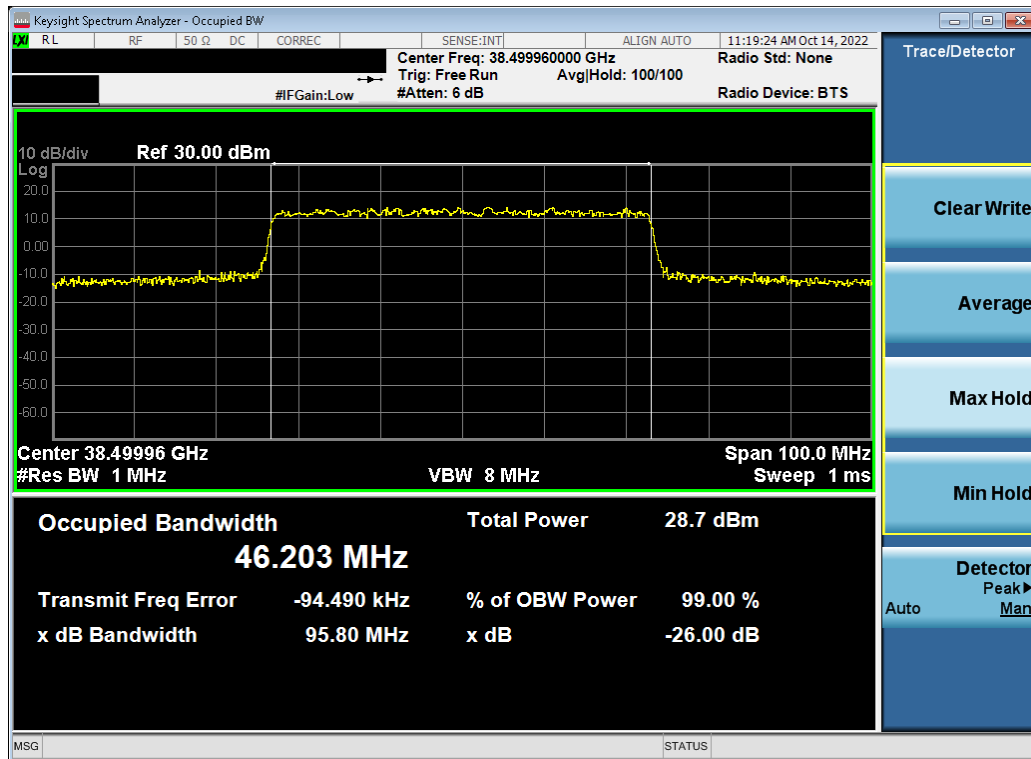


Plot 7-53. Ant 1 Occupied Bandwidth Plot (50MHz-1CC – QPSK – Mid Channel)

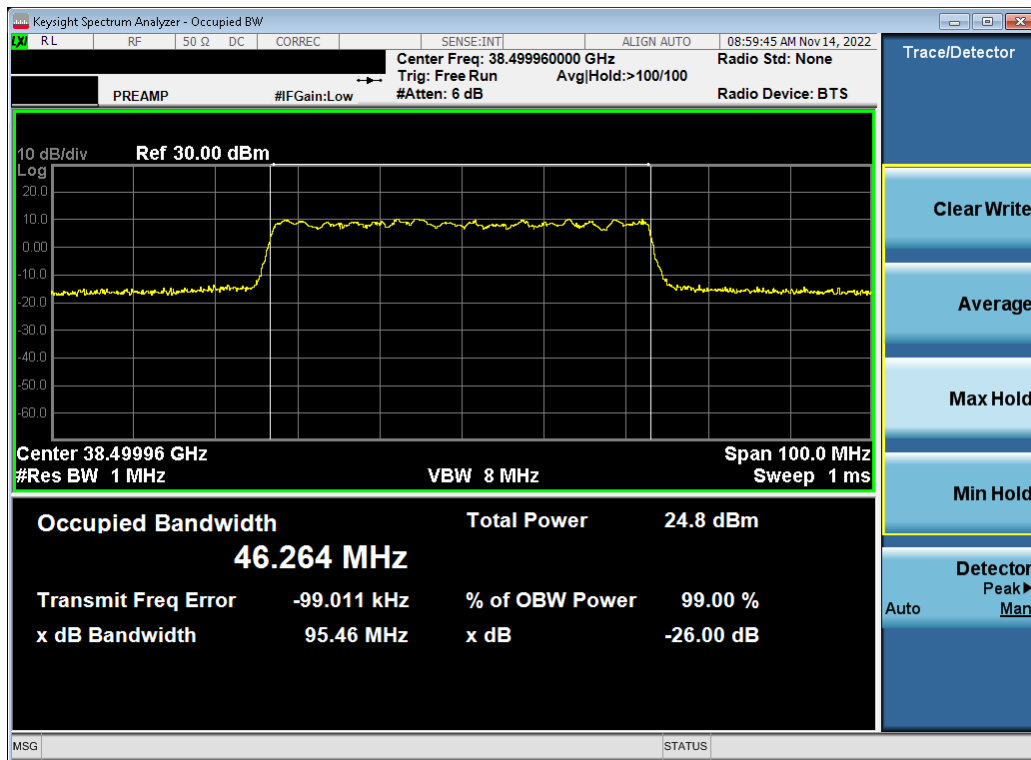


Plot 7-54. Ant 1 Occupied Bandwidth Plot (50MHz-1CC – pi/2-BPSK – Mid Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2209010098-13.A3L	Test Dates: 9/12/2022 – 11/14/2022	EUT Type: Portable Handset	Page 47 of 214



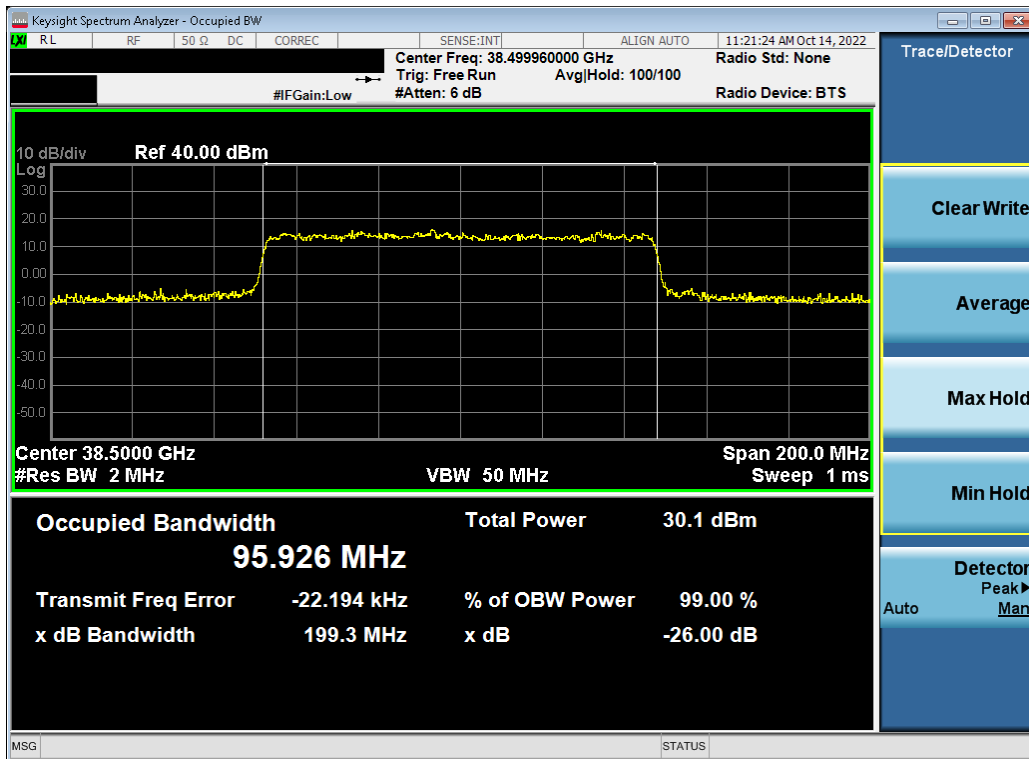
Plot 7-55. Ant 1 Occupied Bandwidth Plot (50MHz-1CC – 16QAM – Mid Channel)



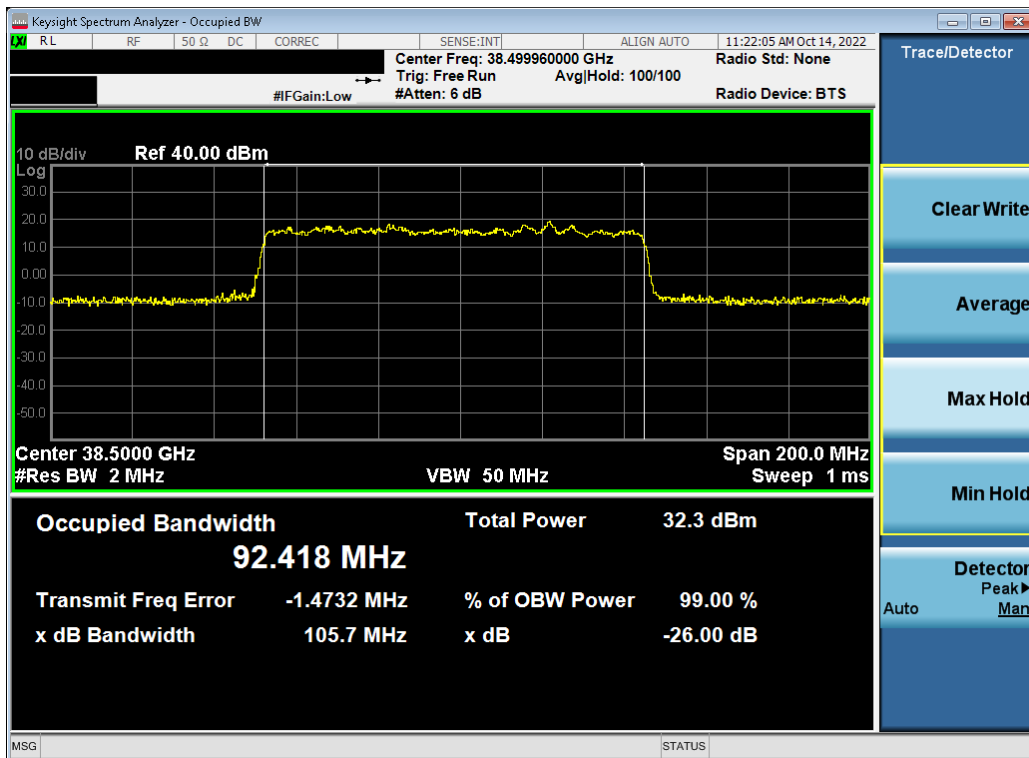
Plot 7-56. Ant 1 Occupied Bandwidth Plot (50MHz-1CC – 64QAM – Mid Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2209010098-13.A3L	Test Dates: 9/12/2022 – 11/14/2022	EUT Type: Portable Handset	Page 48 of 214



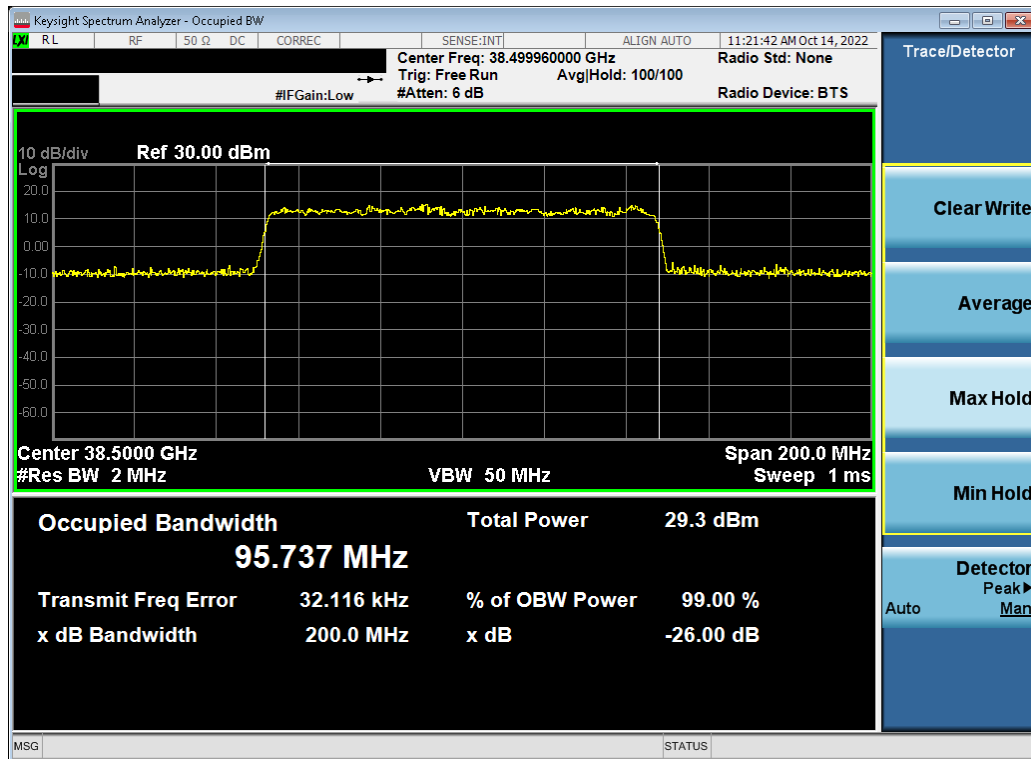


Plot 7-57. Ant 1 Occupied Bandwidth Plot (100MHz-1CC – QPSK – Mid Channel)

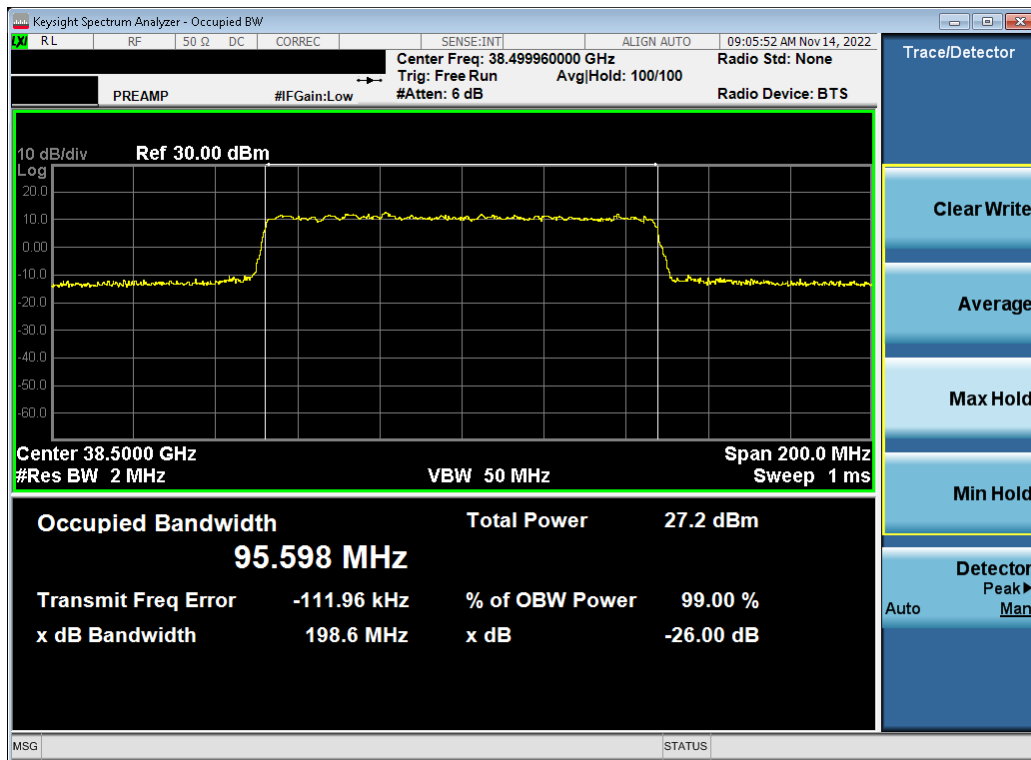


Plot 7-58. Ant 1 Occupied Bandwidth Plot (100MHz-1CC – pi/2-BPSK – Mid Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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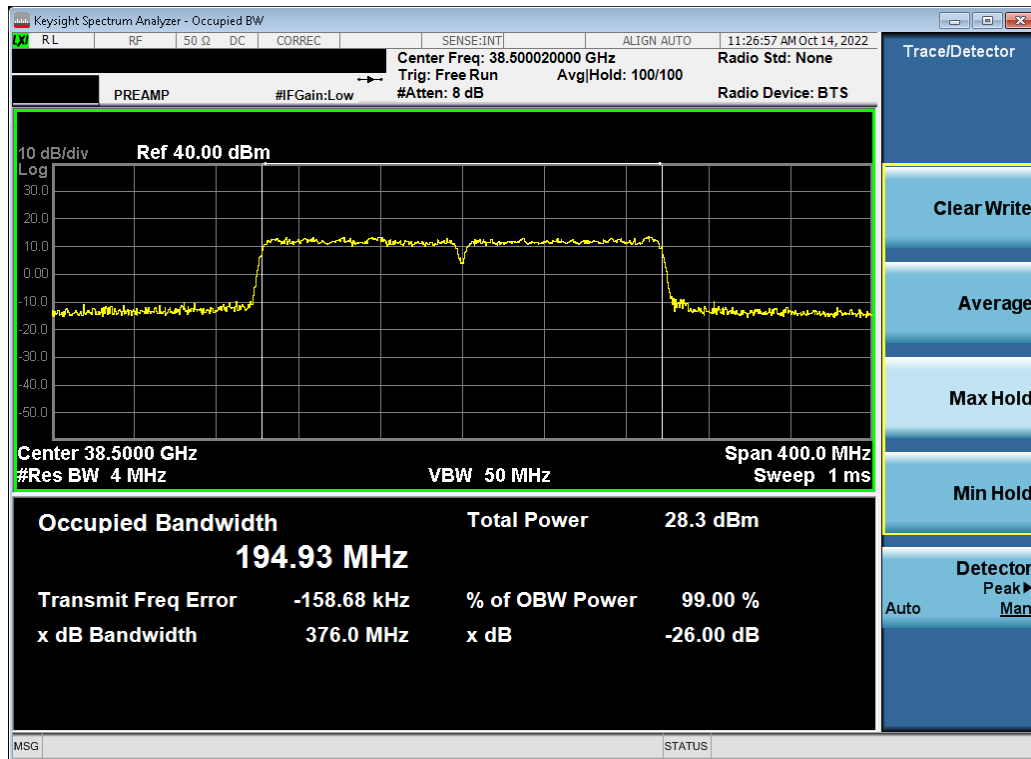


Plot 7-59. Ant 1 Occupied Bandwidth Plot (100MHz-1CC – 16QAM – Mid Channel)

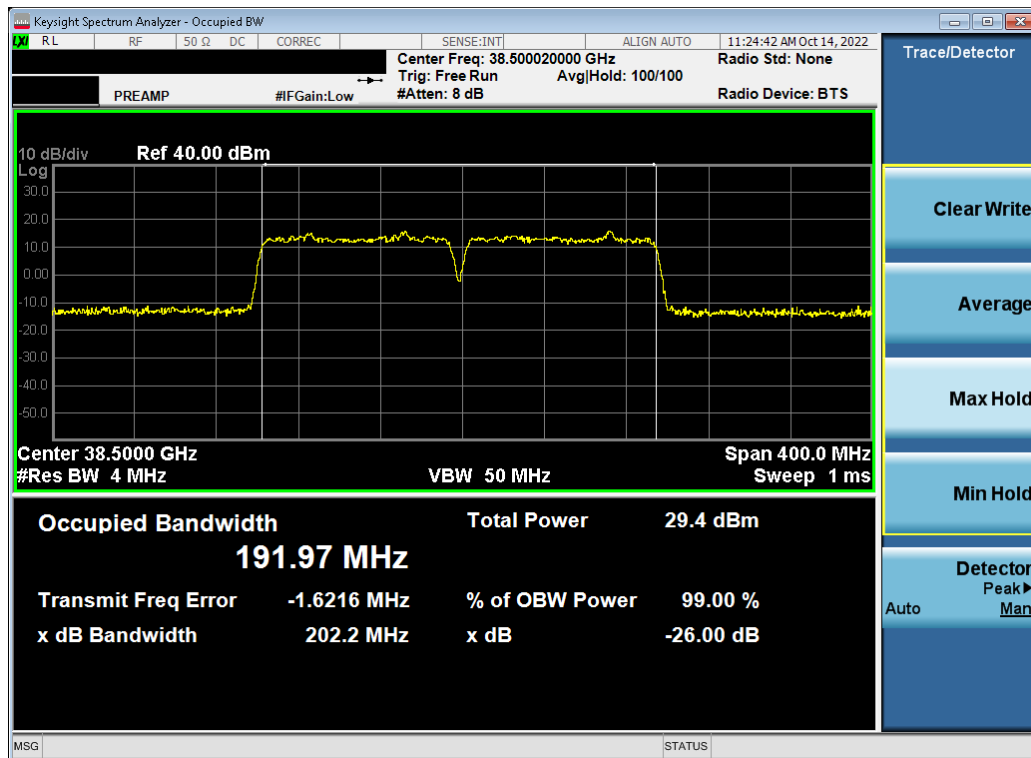


Plot 7-60. Ant 1 Occupied Bandwidth Plot (100MHz-1CC – 64QAM – Mid Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2209010098-13.A3L	Test Dates: 9/12/2022 – 11/14/2022	EUT Type: Portable Handset	Page 50 of 214

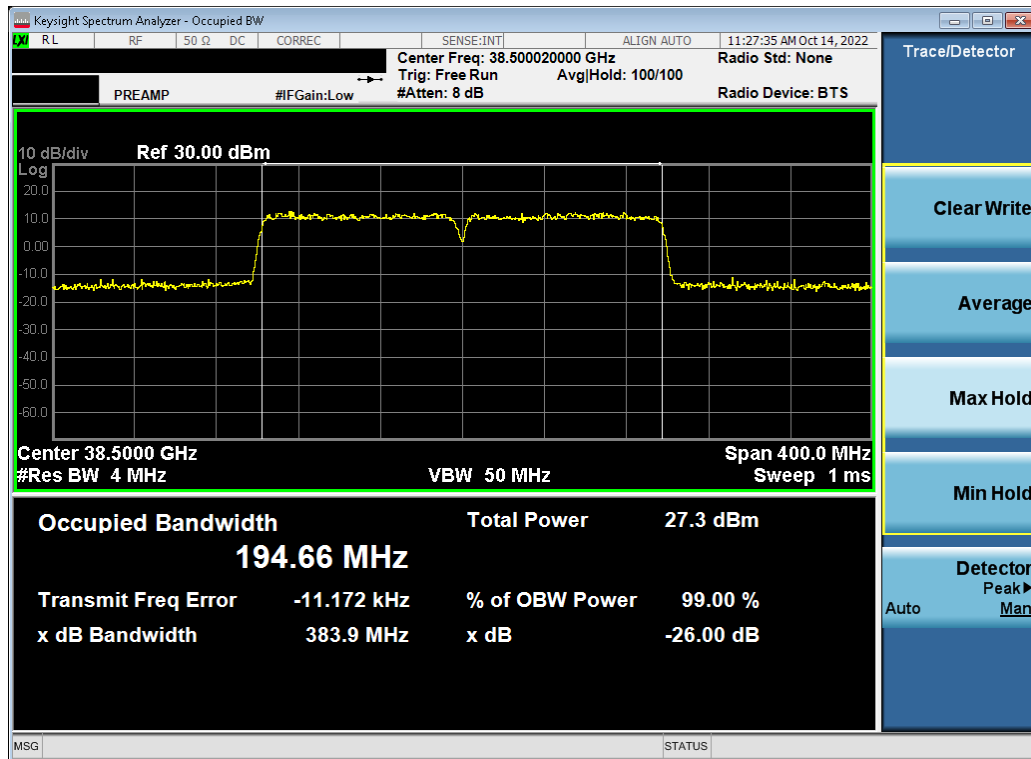


Plot 7-61. Ant 1 Occupied Bandwidth Plot (100MHz-2CC – QPSK – Mid Channel)

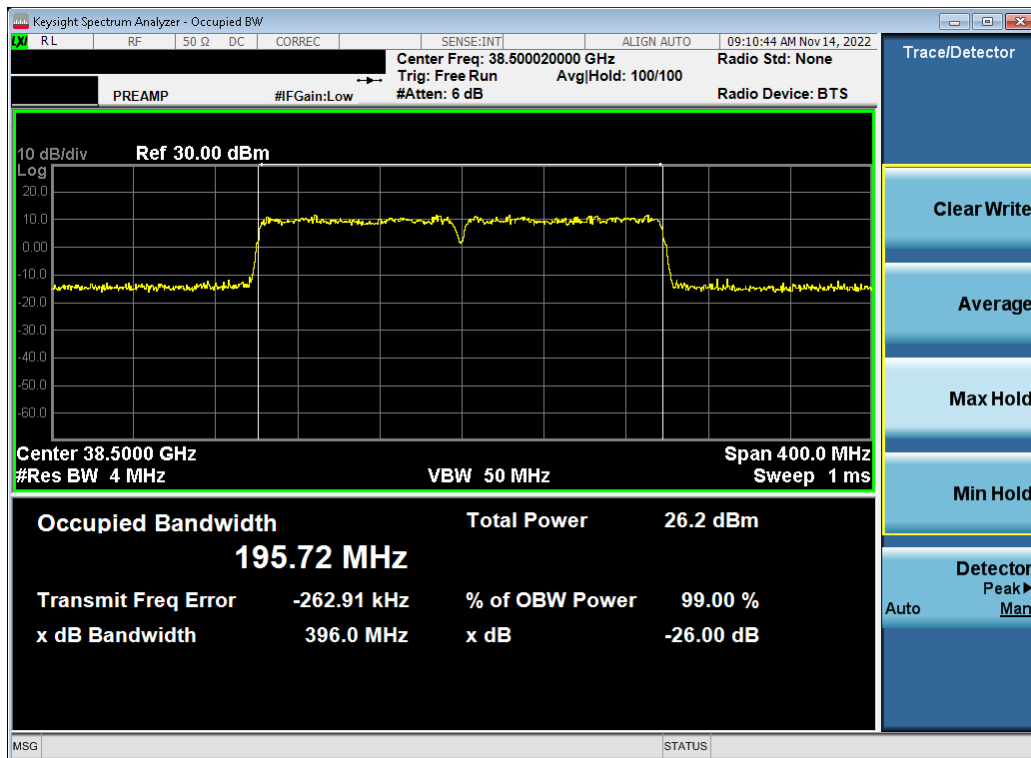


Plot 7-62. Ant 1 Occupied Bandwidth Plot (100MHz-2CC – pi/2-BPSK – Mid Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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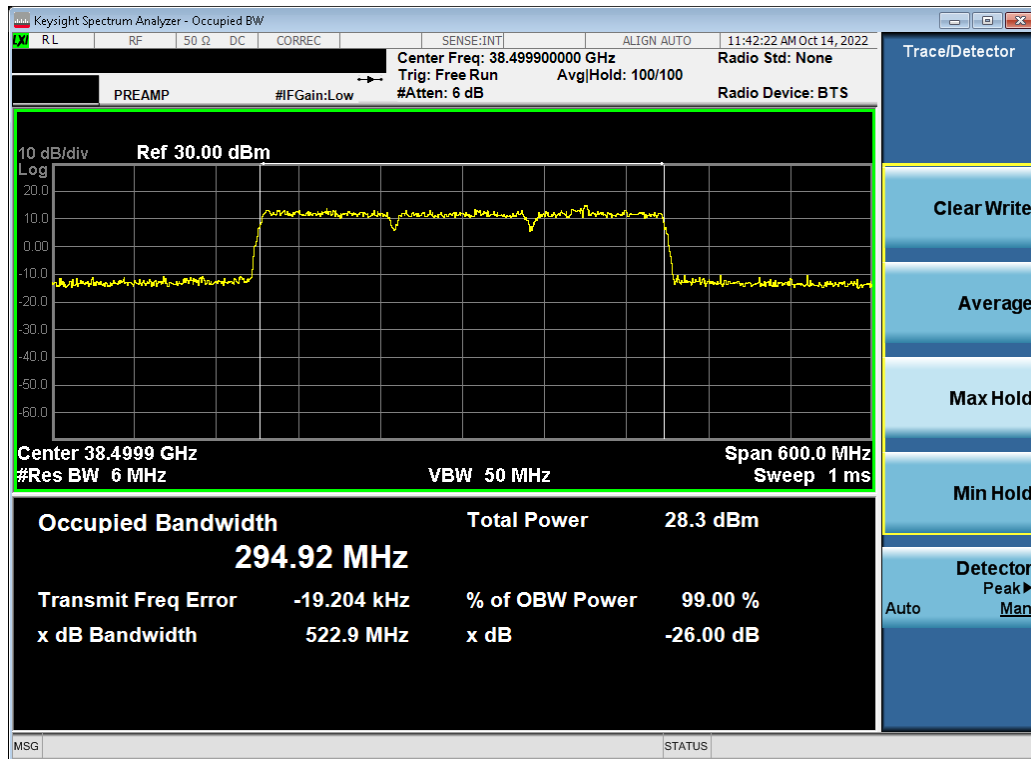


Plot 7-63. Ant 1 Occupied Bandwidth Plot (100MHz-2CC – 16QAM – Mid Channel)

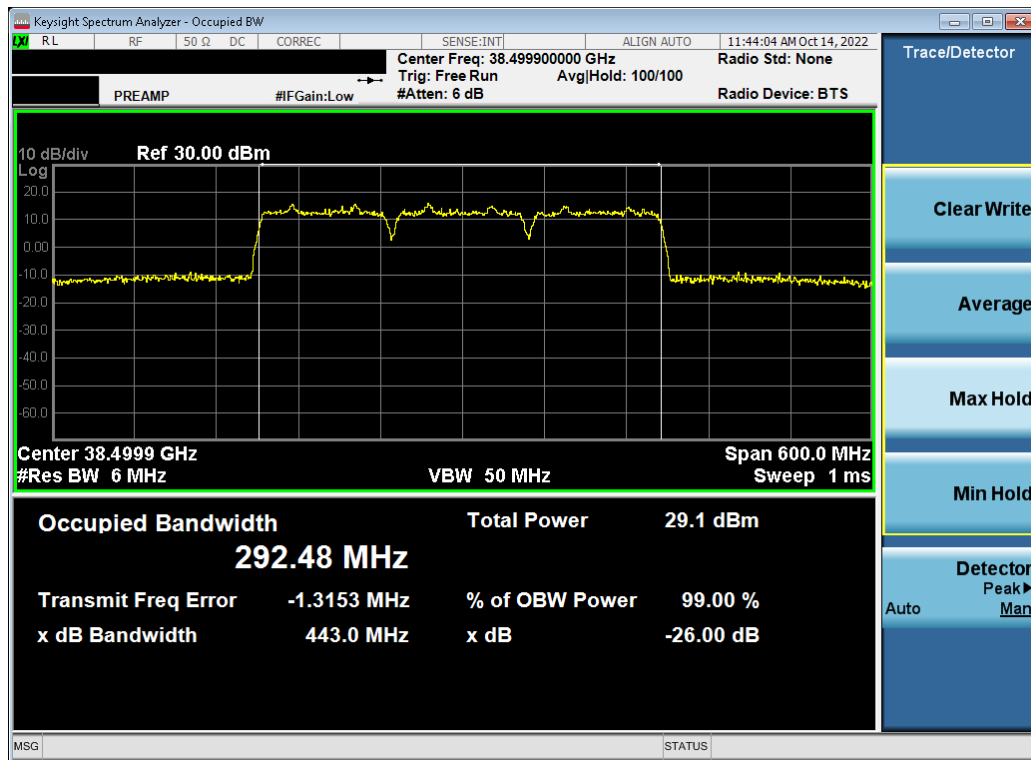


Plot 7-64. Ant 1 Occupied Bandwidth Plot (100MHz-2CC – 64QAM – Mid Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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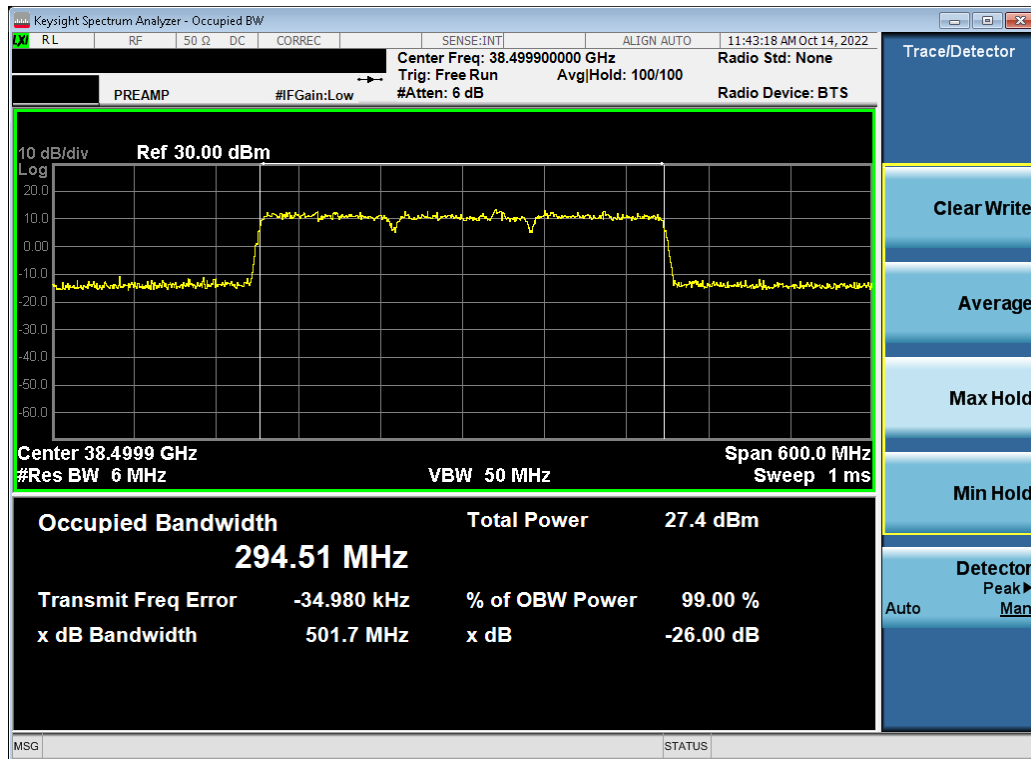


Plot 7-65. Ant 1 Occupied Bandwidth Plot (100MHz-3CC – QPSK – Mid Channel)

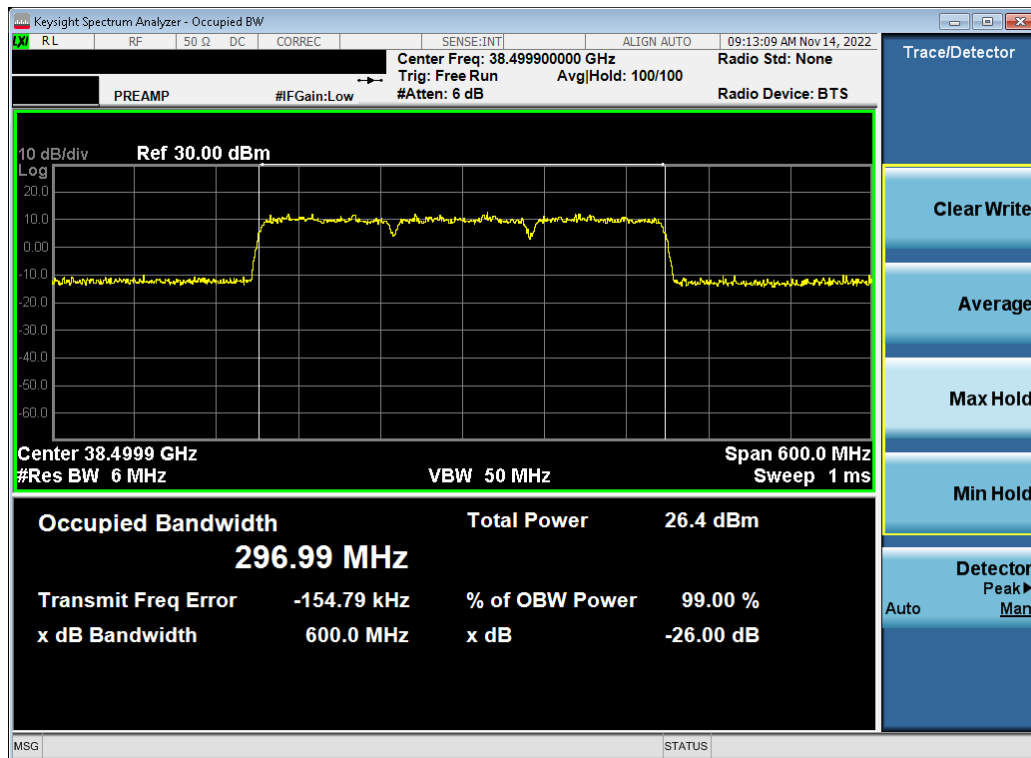


Plot 7-66. Ant 1 Occupied Bandwidth Plot (100MHz-3CC – pi/2-BPSK – Mid Channel)

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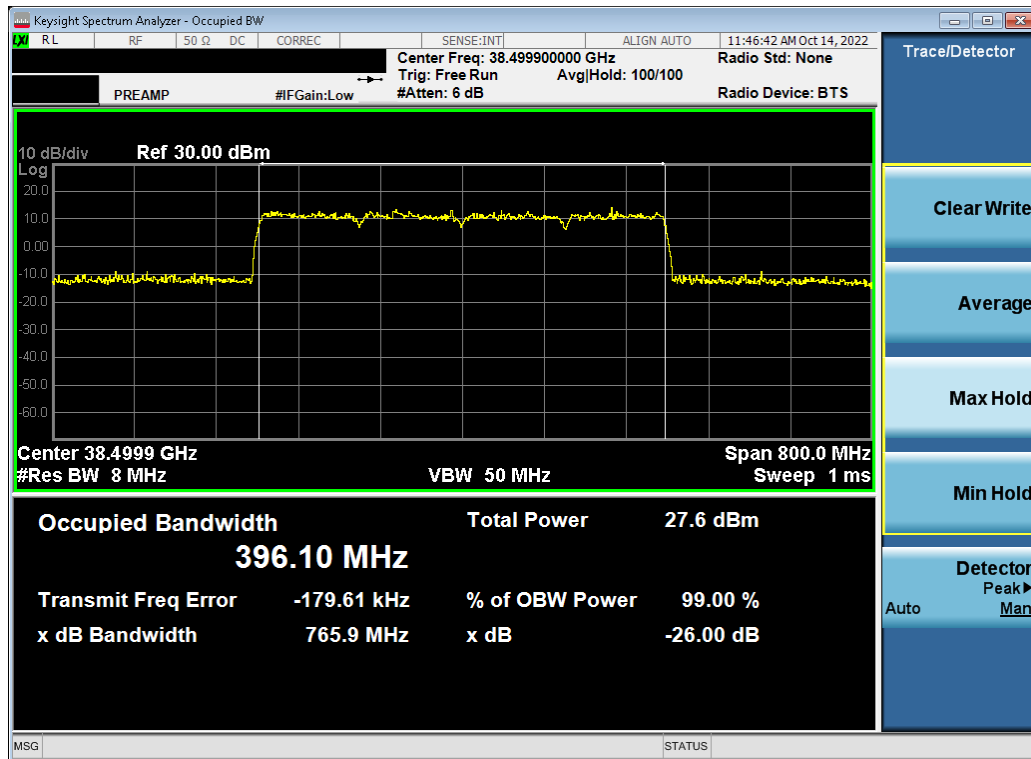


Plot 7-67. Ant 1 Occupied Bandwidth Plot (100MHz-3CC – 16QAM – Mid Channel)

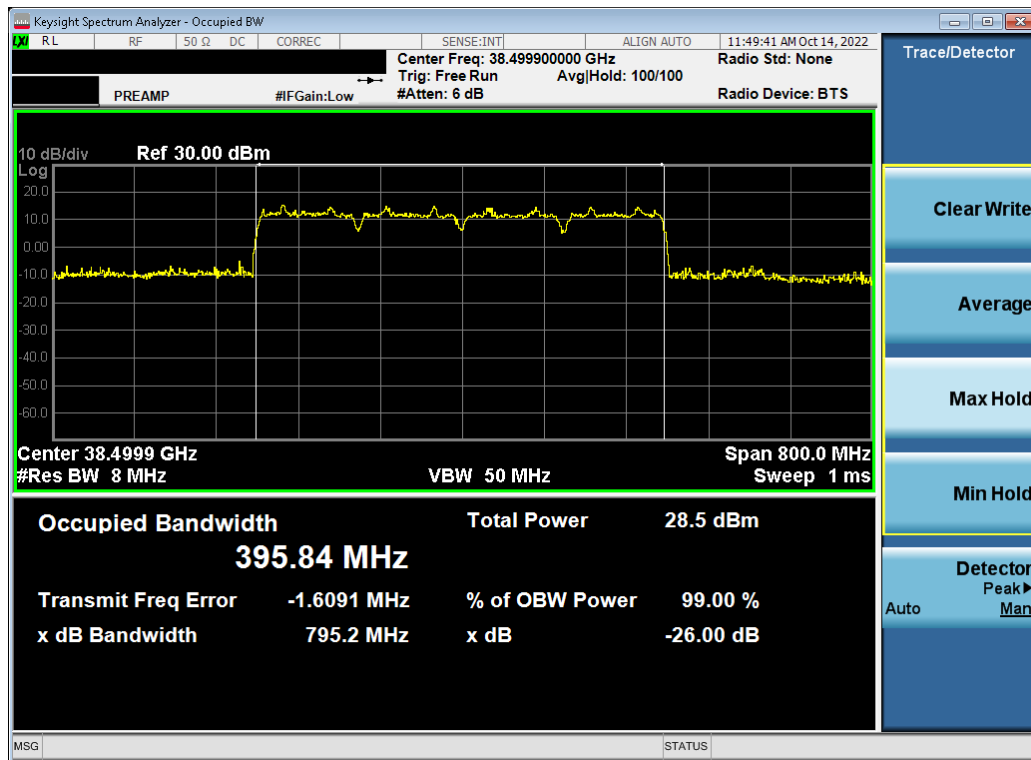


Plot 7-68. Ant 1 Occupied Bandwidth Plot (100MHz-3CC – 64QAM – Mid Channel)

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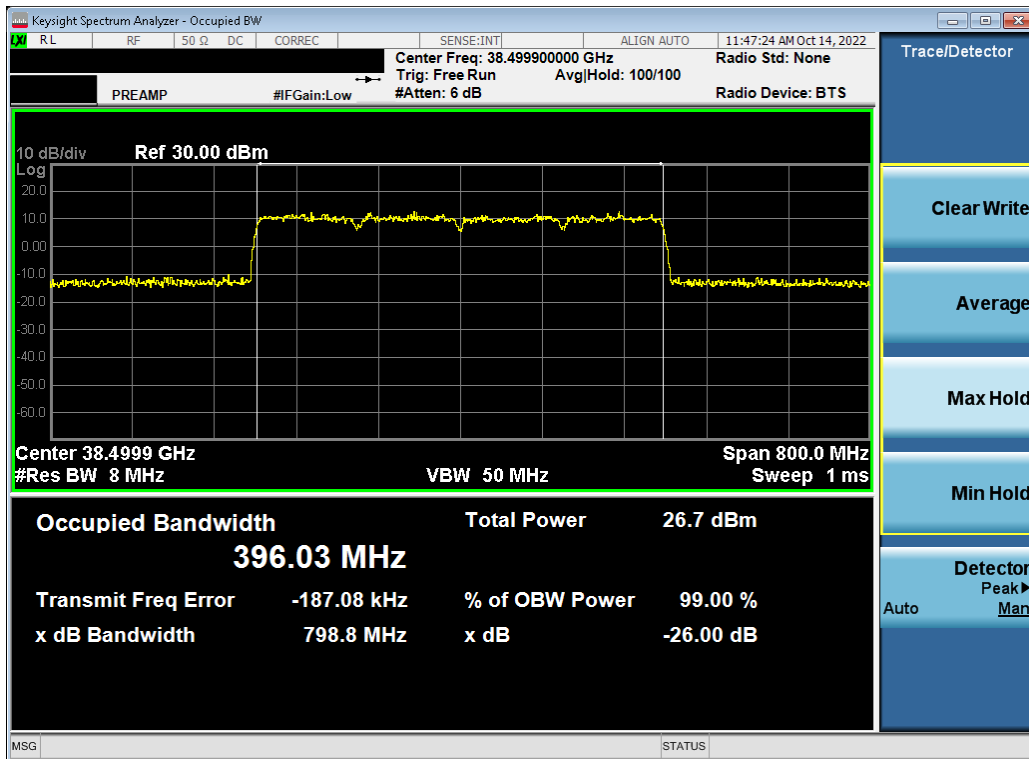


Plot 7-69. Ant 1 Occupied Bandwidth Plot (100MHz-4CC – QPSK – Mid Channel)

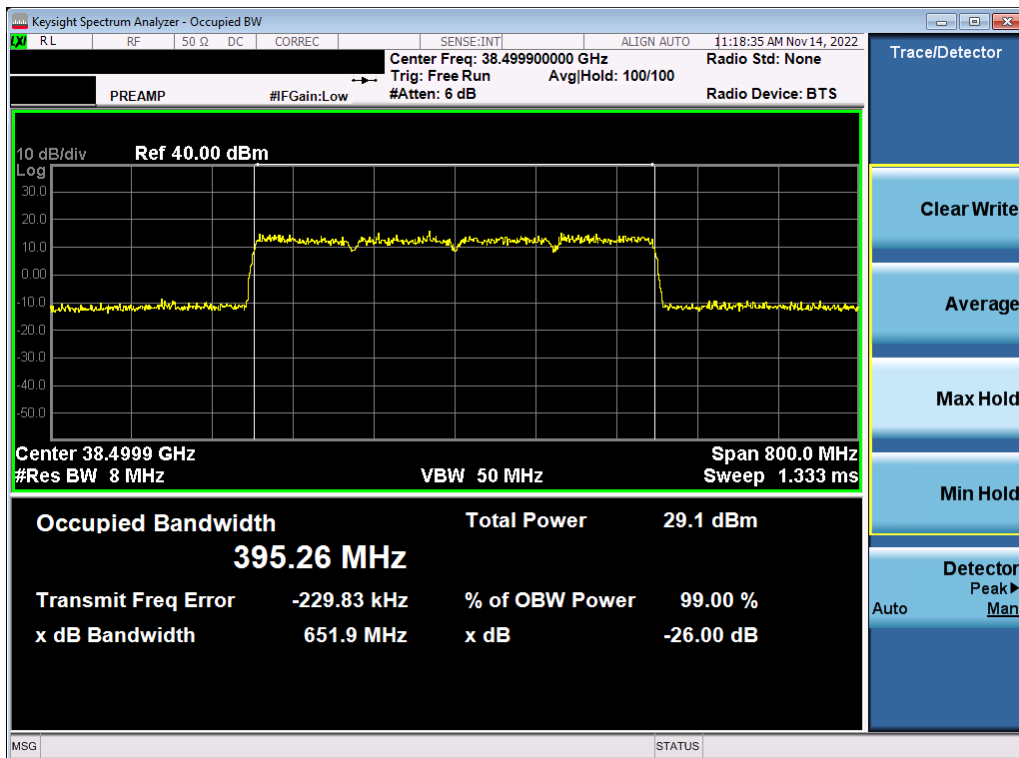


Plot 7-70. Ant 1 Occupied Bandwidth Plot (100MHz-4CC – pi/2-BPSK – Mid Channel)

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Plot 7-71. Ant 1 Occupied Bandwidth Plot (100MHz-4CC – 16QAM – Mid Channel)



Plot 7-72. Ant 1 Occupied Bandwidth Plot (100MHz-4CC – 64QAM – Mid Channel)

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## 7.3 Equivalent Isotropic Radiated Power

### Test Overview

Equivalent Isotropic Radiated Power (EIRP) measurements are performed using broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

***The average power of the sum of all antenna elements is limited to a maximum EIRP of +43 dBm.***

### Test Procedures Used

ANSI C63.26-2015 – Section 5.2.4.4.1  
KDB 842590 D01 v01r02 – Section 4.2

### Test Settings

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation.
2. RBW = 1 – 5% of the expected OBW
3. VBW  $\geq 3 \times$  RBW
4. Span = 2x to 3x the OBW
5. No. of sweep points  $\geq 2 \times$  span / RBW
6. Sweep time = Auto
7. Detector = RMS
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation.
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

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## Test Notes

- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below. Both H-Beam and V-Beam were investigated and the worst-case measurements were reported below.
- 2) Elements within the same antenna array are correlated to produce beamforming array gain. Antenna arrays cannot be correlated with another antenna array. During testing, only one antenna array was active.
- 3) EIRP measurements for all bands were taken at 1m test distance as was required for far-field conditions (see Table 3-1).
- 4) The average EIRP reported below is calculated per section 5.2.7 of ANSI C63.26-2015 which states: EIRP (dBm) = E (dBμV/m) + 20log(D) – 104.8; where D is the measurement distance (in the far field region) in m. The field strength at the antenna terminals E is calculated as: E (dBμV/m) = Spectrum Analyzer Channel Power Level (dBm) + Antenna Factor (dB/m) + Cable Loss (dB) + 107.
- 5) All EIRP measurements were made with the appropriate offset levels loaded into the spectrum analyzer as determined from the measurement distance, antenna factor, cable loss, and the equations in Note 4 above.
- 6) Radiated power levels are investigated while the receive antenna was rotated through all angles to determine the worst case polarization/positioning.
- 7) This device supports transmission of H-polarized and V-polarized beams from the antenna array in both CP-OFDM and DFT-s-OFDM transmission schemes. SISO and MIMO operation is also supported for some configurations. As part of the testing, all modes are investigated fully on the channel showing the highest simulated EIRP using QPSK modulation. The configuration that shows the highest measured EIRP was then used to determine the EIRP for the low and high channels and for the additional modulations.
- 8) Several BeamID's are investigated based on the provided simulated data to determine the worst-case BeamID.
- 9) For each band and antenna array configuration tested, worst case EIRP plots are displayed for all total bandwidths tested (50MHz, 100MHz, 200MHz, 300MHz, and 400MHz). Since these EIRP plots were measured separately from the data in the EIRP tables, results displayed in the plots may marginally differ from the corresponding results displayed in EIRP data tables. However, any differences are negligible and well within the stated measurement uncertainty.

## Sample Calculation

The offset level loaded into the spectrum analyzer allows for a direct conversion of the raw channel power level measured by the analyzer into an EIRP. This offset level is frequency dependent and is calculated as follows:

$$\text{Offset Level [dB]} = \text{Antenna Factor [dB/m]} + \text{Cable Loss [dB]} + 20 \text{ Log}(\text{Distance [m]}) + 107 - 104.8 .$$

For example, to measure an EIRP at a frequency of 24400MHz with an antenna factor of 40.40dB/m, a cable loss of 7.68dB, and a measurement distance of 1 meter, an offset level of:

$$\text{Offset Level} = 40.40\text{dB/m} + 7.68\text{dB} + 20 \text{ Log}(1 \text{ meter}) + 107 - 104.8 = \mathbf{50.28 \text{ dB}}$$

shall be loaded into the spectrum analyzer.

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## Band n258-R1 Beam ID Configurations

Mode	Channel	Polarization	Beam ID	Beam ID Pair
SISO	Low	H	163	
		V	26	
	Mid	H	165	
		V	26	
	High	H	165	
		V	36	
MIMO	Low	2Tx/MIMO	37	165
	Mid	2Tx/MIMO	37	165
	High	2Tx/MIMO	37	165

Table 7-6. Ant 1 Worst Case Beam ID

Mode	Channel	Polarization	Beam ID	Beam ID Pair
SISO	Low	H	168	
		V	41	
	Mid	H	168	
		V	41	
	High	H	168	
		V	41	
MIMO	Low	2Tx/MIMO	31	159
	Mid	2Tx/MIMO	31	159
	High	2Tx/MIMO	31	159

Table 7-7. Ant 2 Worst Case Beam ID

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## Band n258-R1

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
50	1	Low	24275.04	DFT-s-OFDM	QPSK	37+165	H + V	2Tx	H	256	306.9	1 / 12	33.12
				CP-OFDM	QPSK	37+165	H + V	MIMO	H	256	306.9	1 / 12	29.48
				DFT-s-OFDM	$\pi/2$ BPSK	37+165	H + V	2Tx	H	256	306.9	1 / 12	33.18
				DFT-s-OFDM	16QAM	37+165	H + V	2Tx	H	256	306.9	1 / 12	30.57
				DFT-s-OFDM	64QAM	37+165	H + V	2Tx	H	256	306.9	1 / 12	27.32
		Mid	24350.04	DFT-s-OFDM	QPSK	37+165	H + V	2Tx	H	255	307.6	1 / 19	32.53
		High	24424.92	DFT-s-OFDM	QPSK	37+165	H + V	2Tx	H	256	308.4	1 / 16	33.05
				DFT-s-OFDM	QPSK	36	V	SISO	V	286	280.7	1 / 19	27.84
				DFT-s-OFDM	QPSK	165	H	SISO	H	279	48.5	1 / 12	28.24
				CP-OFDM	QPSK	36	V	SISO	V	286	280.7	1 / 19	24.61
				CP-OFDM	QPSK	165	H	SISO	H	279	48.5	1 / 12	24.78

**Table 7-8. Ant 1 EIRP Data (Band n258-R1 – 50MHz-1CC)**

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100	1	Low	24300.00	DFT-s-OFDM	QPSK	37+165	H + V	2Tx	H	256	307.0	1 / 33	32.98
		Mid	24350.04	DFT-s-OFDM	QPSK	37+165	H + V	2Tx	H	256	307.1	1 / 42	32.73
		High	24399.96	DFT-s-OFDM	QPSK	37+165	H + V	2Tx	H	256	306.8	1 / 33	33.25
				DFT-s-OFDM	QPSK	36	V	SISO	V	286	279.1	1 / 42	27.79
				DFT-s-OFDM	QPSK	165	H	SISO	H	278	47.5	1 / 42	27.89
				CP-OFDM	QPSK	37+165	H + V	MIMO	H	256	306.8	1 / 33	30.08
				CP-OFDM	QPSK	36	V	SISO	V	286	279.1	1 / 42	24.62
				CP-OFDM	QPSK	165	H	SISO	H	278	47.5	1 / 42	24.91
				DFT-s-OFDM	$\pi/2$ BPSK	37+165	H + V	2Tx	H	256	306.8	1 / 33	33.11
				DFT-s-OFDM	16QAM	37+165	H + V	2Tx	H	256	306.8	1 / 33	31.05
				DFT-s-OFDM	64QAM	37+165	H + V	2Tx	H	256	306.8	1 / 33	28.06

**Table 7-9. Ant 1 EIRP Data (Band n258-R1 – 100MHz-1CC)**

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100+100	2	Mid	24349.98	DFT-s-OFDM	QPSK	37+165	H + V	2Tx	H	255	306.9	64 / 0	28.34
				CP-OFDM	QPSK	37+165	H + V	MIMO	H	255	306.9	66 / 0	26.25
				DFT-s-OFDM	$\pi/2$ BPSK	37+165	H + V	2Tx	H	255	306.9	64 / 0	28.37
				DFT-s-OFDM	16QAM	37+165	H + V	2Tx	H	255	306.9	64 / 0	26.28
				DFT-s-OFDM	64QAM	37+165	H + V	2Tx	H	255	306.9	1 / 33	24.49

**Table 7-10. Ant 1 EIRP Data (Band n258-R1 – 100MHz-2CC)**

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Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
50	1	Low	24275.04	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	318	94.1	1 / 13	28.86
			24350.04	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	318	93.2	1 / 13	28.62
		High	24424.92	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	316	92.2	1 / 13	29.23
				DFT-s-OFDM	QPSK	41	V	SISO	V	32	126.9	1 / 16	25.36
				DFT-s-OFDM	QPSK	168	H	SISO	H	279	282.2	1 / 16	24.77
				CP-OFDM	QPSK	31+159	H + V	MIMO	V	316	92.2	1 / 13	25.46
				CP-OFDM	QPSK	41	V	SISO	V	32	126.9	1 / 16	22.09
				CP-OFDM	QPSK	168	H	SISO	H	279	282.2	1 / 16	21.46
				DFT-s-OFDM	$\pi/2$ BPSK	31+159	H + V	2Tx	V	316	92.2	1 / 13	29.20
				DFT-s-OFDM	16QAM	31+159	H + V	2Tx	V	316	92.2	1 / 13	26.29
				DFT-s-OFDM	64QAM	31+159	H + V	2Tx	V	316	92.2	1 / 13	23.36

Table 7-11. Ant 2 EIRP Data (Band n258-R1 – 50MHz-1CC)

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100	1	Low	24300.00	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	318.0	94.0	1 / 23	28.74
				DFT-s-OFDM	QPSK	168	H	SISO	H	279	281.7	1 / 23	24.94
				CP-OFDM	QPSK	168	H	SISO	H	279	281.7	1 / 23	21.76
		Mid	24350.04	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	318	94.1	1 / 42	28.67
				CP-OFDM	QPSK	31+159	H + V	MIMO	V	318	94.1	1 / 42	25.58
				DFT-s-OFDM	$\pi/2$ BPSK	31+159	H + V	2Tx	V	318	94.1	1 / 42	29.13
				DFT-s-OFDM	16QAM	31+159	H + V	2Tx	V	318	94.1	1 / 42	26.68
				DFT-s-OFDM	64QAM	31+159	H + V	2Tx	V	318	94.1	1 / 42	23.25
		High	24399.96	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	317	91.8	1 / 23	28.99
				DFT-s-OFDM	QPSK	41	V	SISO	V	31	127.6	1 / 33	25.04
				CP-OFDM	QPSK	41	V	SISO	V	31	127.6	1 / 33	21.84

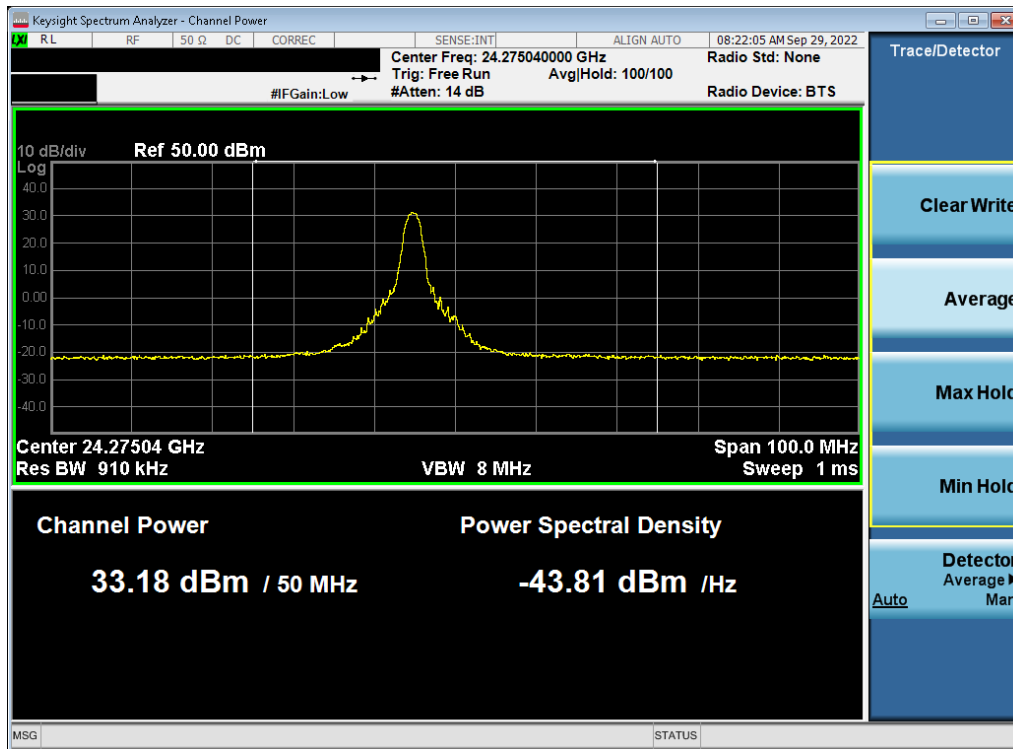
Table 7-12. Ant 2 EIRP Data (Band n258-R1 – 100MHz-1CC)

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100+100	2	Mid	24349.98	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	318	92.5	64 / 0	23.54
				CP-OFDM	QPSK	31+159	H + V	MIMO	V	318	92.5	66 / 0	21.42
				DFT-s-OFDM	$\pi/2$ BPSK	31+159	H + V	2Tx	V	318	92.5	64 / 0	23.58
				DFT-s-OFDM	16QAM	31+159	H + V	2Tx	V	318	92.5	64 / 0	21.43
				DFT-s-OFDM	64QAM	31+159	H + V	2Tx	V	318	92.5	1 / 42	19.52

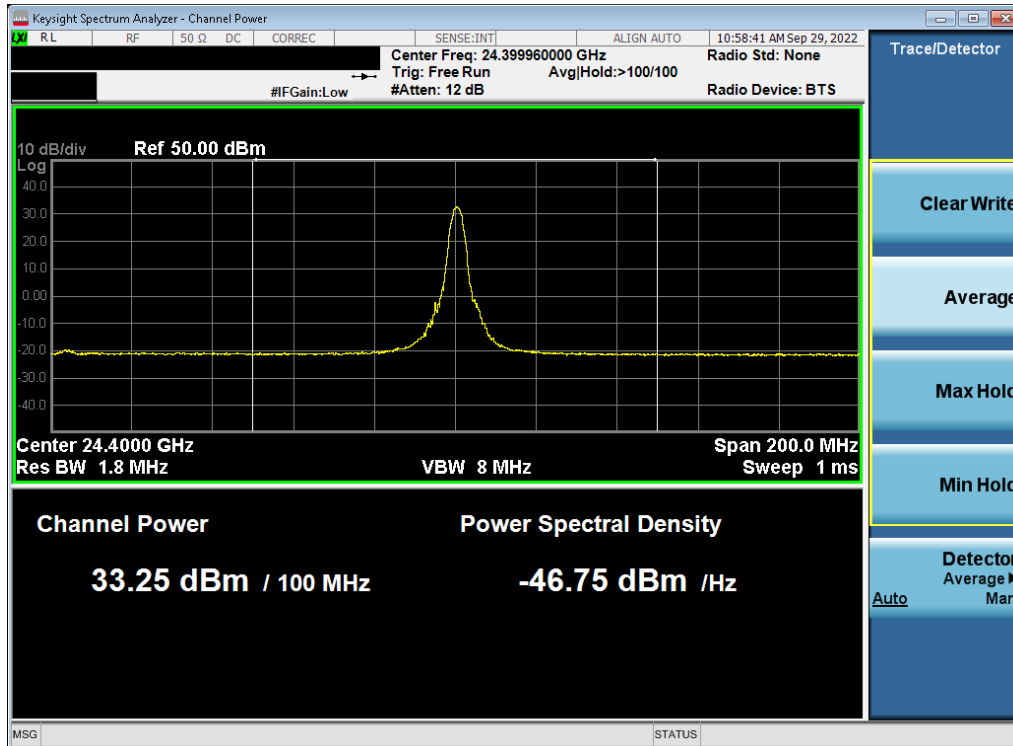
Table 7-13. Ant 2 EIRP Data (Band n258-R1 – 100MHz-2CC)

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## Worst-Case EIRP Plots (n258-R1)

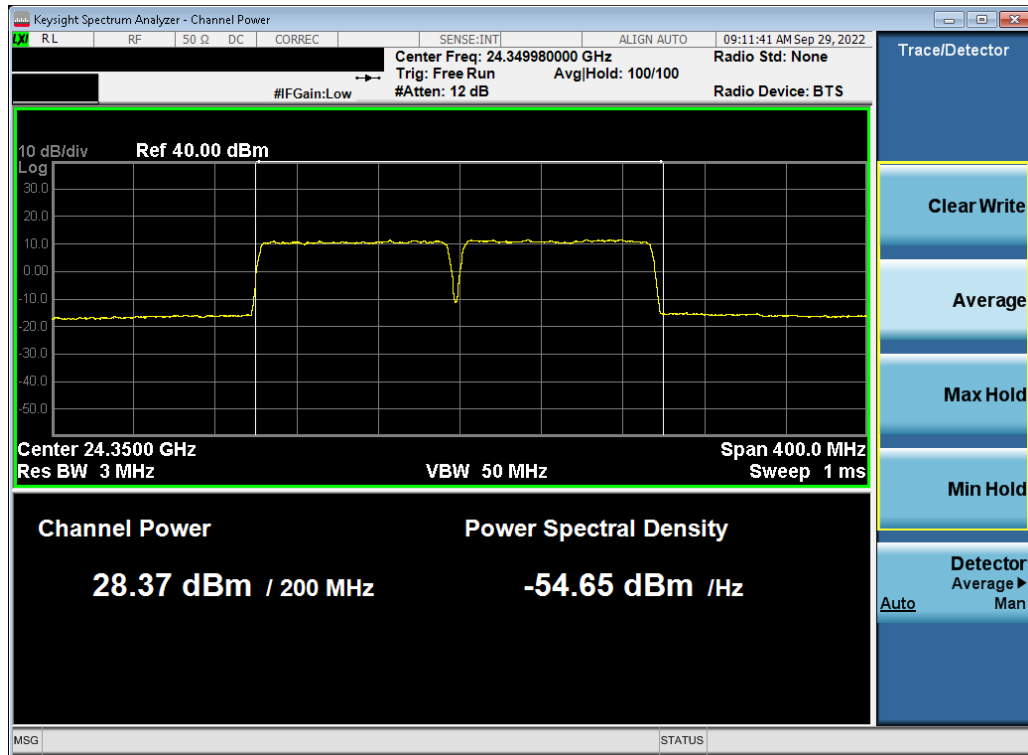


Plot 7-73. Ant 1 EIRP Plot (Band n258-R1 – 50MHz-1CC –  $\pi/2$ -BPSK – Low Channel)

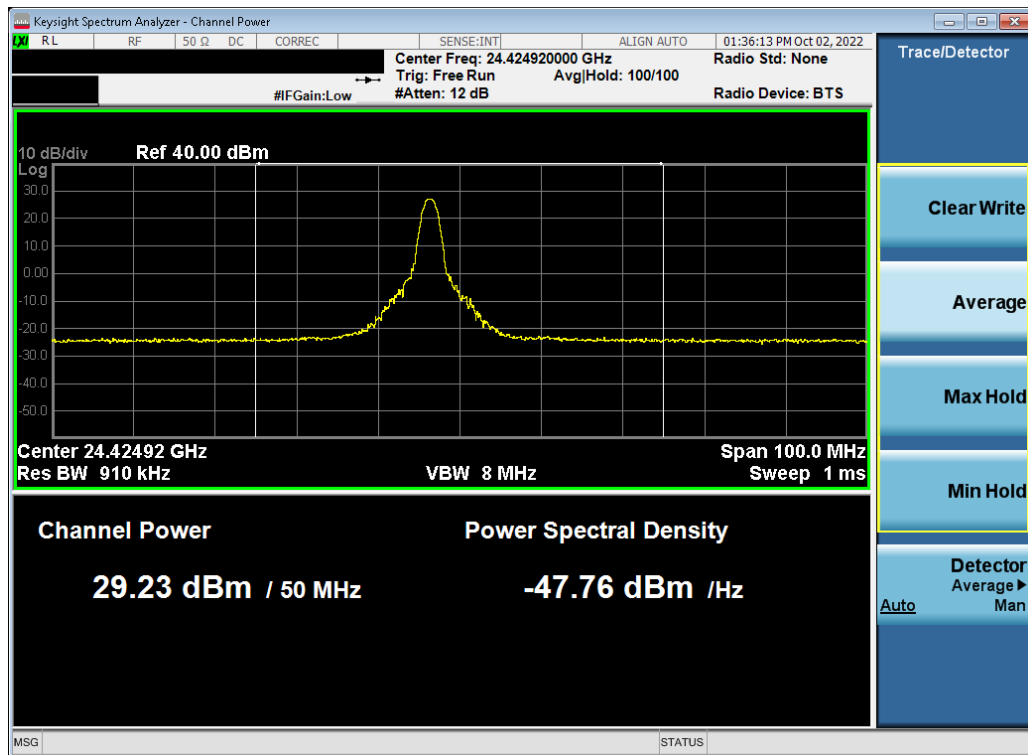


Plot 7-74. Ant 1 EIRP Plot (Band n258-R1 – 100MHz-1CC – QPSK – High Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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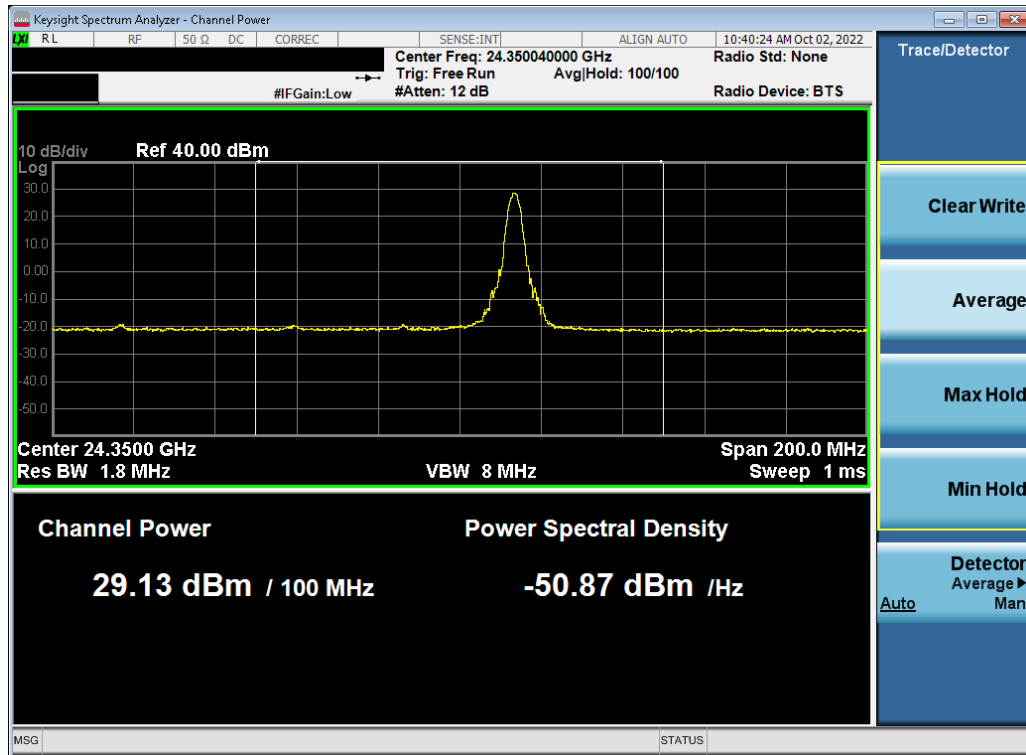


Plot 7-75. Ant 1 EIRP Plot (Band n258-R1 – 100MHz-2CC –  $\pi/2$ -BPSK – Mid Channel)

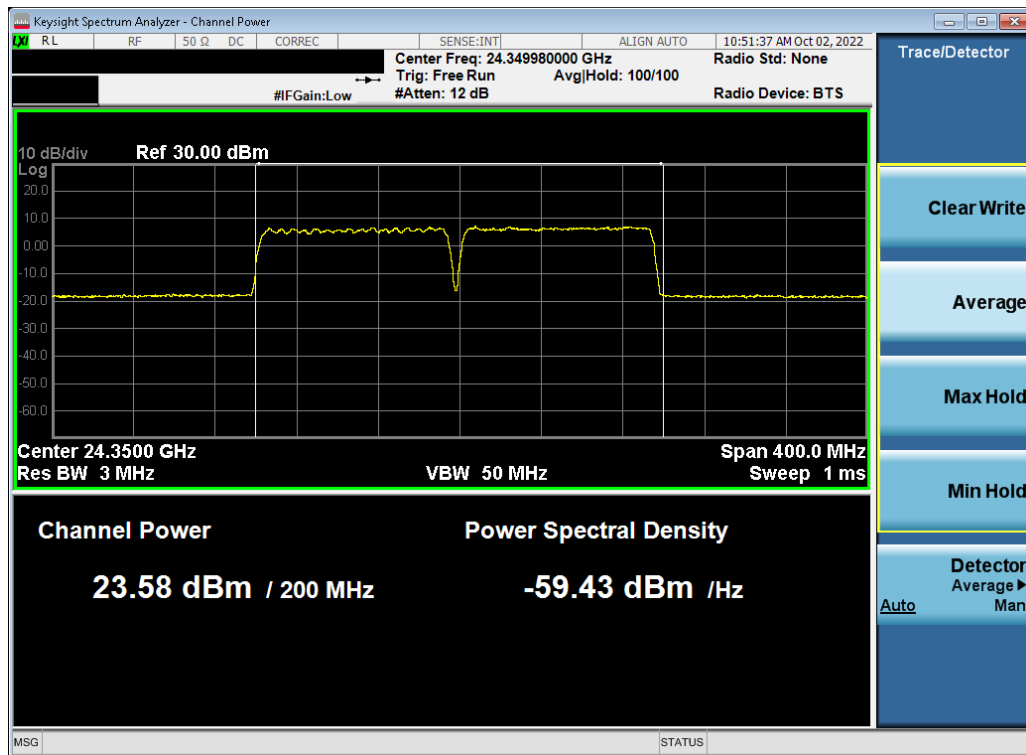


Plot 7-76. Ant 2 EIRP Plot (Band n258-R1 – 50MHz-1CC – QPSK – High Channel)

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Plot 7-77. Ant 2 EIRP Plot (Band n258-R1 – 100MHz-1CC –  $\pi/2$ -BPSK – Mid Channel)



Plot 7-78. Ant 2 EIRP Plot (Band n258-R1 – 100MHz-2CC –  $\pi/2$ -BPSK – Mid Channel)

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## Band n258-R2 Beam ID Configurations

Mode	Channel	Polarization	Beam ID	Beam ID Pair
SISO	Low	H	163	
		V	36	
	Mid	H	163	
		V	36	
	High	H	163	
		V	36	
MIMO	Low	2Tx/MIMO	37	165
	Mid	2Tx/MIMO	37	165
	High	2Tx/MIMO	37	165

Table 7-14. Ant 1 Worst Case Beam ID

Mode	Channel	Polarization	Beam ID	Beam ID Pair
SISO	Low	H	168	
		V	31	
	Mid	H	168	
		V	31	
	High	H	168	
		V	31	
MIMO	Low	2Tx/MIMO	31	159
	Mid	2Tx/MIMO	31	159
	High	2Tx/MIMO	31	159

Table 7-15. Ant 2 Worst Case Beam ID

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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## Band n258-R2

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
50	1	Low	24775.08	DFT-s-OFDM	$\pi/2$ BPSK	37+165	H + V	2Tx	H	255	307.4	1 / 19	33.24
				DFT-s-OFDM	QPSK	36	V	SISO	V	285	277.1	1 / 19	28.65
				CP-OFDM	QPSK	36	V	SISO	V	285	277.1	1 / 19	25.62
				DFT-s-OFDM	$\pi/2$ BPSK	37+165	H + V	2Tx	H	254	307.1	1 / 16	33.44
		High	25224.96	DFT-s-OFDM	QPSK	37+165	H + V	2Tx	H	256	307.5	1 / 12	33.43
				DFT-s-OFDM	QPSK	163	H	SISO	H	298	109.4	1 / 19	29.04
				CP-OFDM	QPSK	37+165	H + V	MIMO	H	256	307.5	1 / 12	29.70
				CP-OFDM	QPSK	163	H	SISO	H	298	109.4	1 / 19	25.80
				DFT-s-OFDM	$\pi/2$ BPSK	37+165	H + V	2Tx	H	256	307.5	1 / 12	33.58
				DFT-s-OFDM	16QAM	37+165	H + V	2Tx	H	256	307.5	1 / 12	31.12
				DFT-s-OFDM	64QAM	37+165	H + V	2Tx	H	256	307.5	1 / 12	27.88

Table 7-16. Ant 1 EIRP Data (Band n258-R2 – 50MHz-1CC)

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100	1	Low	24800.04	DFT-s-OFDM	QPSK	37+165	H + V	2Tx	H	257	306.8	1 / 33	33.58
				CP-OFDM	QPSK	37+165	H + V	MIMO	H	257	306.8	1 / 33	30.40
				DFT-s-OFDM	$\pi/2$ BPSK	37+165	H + V	2Tx	H	257	306.8	1 / 33	33.83
				DFT-s-OFDM	16QAM	37+165	H + V	2Tx	H	257	306.8	1 / 33	31.40
				DFT-s-OFDM	64QAM	37+165	H + V	2Tx	H	257	306.8	1 / 33	28.15
		Mid	24999.96	DFT-s-OFDM	QPSK	37+165	H + V	2Tx	H	256	307.5	1 / 23	33.58
				DFT-s-OFDM	QPSK	36	V	SISO	V	286	276.5	1 / 42	28.60
				CP-OFDM	QPSK	36	V	SISO	V	286	276.5	1 / 42	25.44
		High	25200.00	DFT-s-OFDM	QPSK	37+165	H + V	2Tx	H	257	306.9	1 / 33	32.31
				DFT-s-OFDM	QPSK	163	H	SISO	H	298	108.3	1 / 33	28.95
				CP-OFDM	QPSK	163	H	SISO	H	298	108.3	1 / 33	25.76

Table 7-17. Ant 1 EIRP Data (Band n258-R2 – 100MHz-1CC)

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100+100	2	Low	24850.02	DFT-s-OFDM	QPSK	37+165	H + V	2Tx	H	257	307.1	64 / 0	28.97
				DFT-s-OFDM	QPSK	37+165	H + V	2Tx	H	255	307.4	64 / 0	29.16
		Mid	25000.02	CP-OFDM	QPSK	37+165	H + V	MIMO	H	255	307.4	66 / 0	26.74
				DFT-s-OFDM	$\pi/2$ BPSK	37+165	H + V	2Tx	H	255	307.4	64 / 0	28.87
				DFT-s-OFDM	16QAM	37+165	H + V	2Tx	H	255	307.4	64 / 0	26.76
				DFT-s-OFDM	64QAM	37+165	H + V	2Tx	H	255	307.4	1 / 33	25.23
		High	25150.02	DFT-s-OFDM	QPSK	37+165	H + V	2Tx	H	256	307.8	64 / 0	28.95

Table 7-18. Ant 1 EIRP Data (Band n258-R2 – 100MHz-2CC)

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100+100+100	3	Low	24900.00	DFT-s-OFDM	QPSK	37+165	H + V	2Tx	H	256	307.5	64 / 0	28.94
				CP-OFDM	QPSK	37+165	H + V	MIMO	H	256	307.5	66 / 0	26.82
				DFT-s-OFDM	$\pi/2$ BPSK	37+165	H + V	2Tx	H	256	307.5	64 / 0	28.87
				DFT-s-OFDM	16QAM	37+165	H + V	2Tx	H	256	307.5	64 / 0	26.87
				DFT-s-OFDM	64QAM	37+165	H + V	2Tx	H	256	307.5	1 / 33	25.30
		Mid	24999.96	DFT-s-OFDM	QPSK	37+165	H + V	2Tx	H	255	306.7	64 / 0	28.60
		High	25100.04	DFT-s-OFDM	QPSK	37+165	H + V	2Tx	H	256	306.9	64 / 0	28.81

Table 7-19. Ant 1 EIRP Data (Band n258-R2 – 100MHz-3CC)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2209010098-13.A3L	Test Dates: 9/12/2022 – 11/14/2022	EUT Type: Portable Handset	Page 66 of 214

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100+100+100+100	4	Low	24949.98	DFT-s-OFDM	QPSK	37+165	H + V	2Tx	H	256	307.0	64 / 0	28.44
				CP-OFDM	QPSK	37+165	H + V	MIMO	H	256	307.0	66 / 0	26.45
				DFT-s-OFDM	$\pi/2$ BPSK	37+165	H + V	2Tx	H	256	307.0	64 / 0	28.49
				DFT-s-OFDM	16QAM	37+165	H + V	2Tx	H	256	307.0	64 / 0	26.49
				DFT-s-OFDM	64QAM	37+165	H + V	2Tx	H	256	307.0	1 / 33	24.50
		Mid	25000.02	DFT-s-OFDM	$\pi/2$ BPSK	37+165	H + V	2Tx	H	255	307.5	64 / 0	28.19
		High	25050.06	DFT-s-OFDM	$\pi/2$ BPSK	37+165	H + V	2Tx	H	257	308.0	64 / 0	28.45
				DFT-s-OFDM	$\pi/2$ BPSK	37+165	H + V	2Tx	H	257	308.0	64 / 0	28.45

Table 7-20. Ant 1 EIRP Data (Band n258-R2 – 100MHz-4CC)

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
50	1	Low	24775.08	DFT-s-OFDM	QPSK	168	H	SISO	H	108	92.5	1 / 12	24.99
				CP-OFDM	QPSK	168	H	SISO	H	108	92.5	1 / 12	21.50
				DFT-s-OFDM	$\pi/2$ BPSK	31+159	H + V	2Tx	V	32	90.6	1 / 16	28.12
		Mid	24999.96	DFT-s-OFDM	$\pi/2$ BPSK	31+159	H + V	2Tx	V	32	82.3	1 / 16	29.54
		High	25224.96	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	48	86.6	1 / 12	30.00
				DFT-s-OFDM	QPSK	31	V	SISO	V	42	278.3	1 / 16	28.28
				CP-OFDM	QPSK	31+159	H + V	MIMO	V	48	86.6	1 / 16	26.53
				CP-OFDM	QPSK	31	V	SISO	V	42	278.3	1 / 16	25.22
				DFT-s-OFDM	$\pi/2$ BPSK	31+159	H + V	2Tx	V	48	86.6	1 / 16	30.07
				DFT-s-OFDM	16QAM	31+159	H + V	2Tx	V	48	86.6	1 / 16	27.27
				DFT-s-OFDM	64QAM	31+159	H + V	2Tx	V	48	86.6	1 / 16	24.21
				DFT-s-OFDM	64QAM	31+159	H + V	2Tx	V	48	86.6	1 / 16	24.21
				DFT-s-OFDM	64QAM	31+159	H + V	2Tx	V	48	86.6	1 / 16	24.21

Table 7-21. Ant 2 EIRP Data (Band n258-R2 – 50MHz-1CC)

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100	1	Low	24800.04	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	46	88.8	1 / 42	28.94
				DFT-s-OFDM	QPSK	168	H	SISO	H	108	94.8	1 / 23	24.84
				CP-OFDM	QPSK	168	H	SISO	H	108	94.8	1 / 23	21.53
		Mid	24999.96	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	33	83.3	1 / 33	29.28
		High	25200.00	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	47	86.1	1 / 33	30.12
				DFT-s-OFDM	QPSK	31	V	SISO	V	42	279.0	1 / 33	28.08
				CP-OFDM	QPSK	31+159	H + V	MIMO	V	47	86.1	1 / 33	26.45
				CP-OFDM	QPSK	31	V	SISO	V	42	279.0	1 / 33	24.83
				DFT-s-OFDM	$\pi/2$ BPSK	31+159	H + V	2Tx	V	47	86.1	1 / 33	30.05
				DFT-s-OFDM	16QAM	31+159	H + V	2Tx	V	47	86.1	1 / 33	27.36
				DFT-s-OFDM	64QAM	31+159	H + V	2Tx	V	47	86.1	1 / 33	24.11
				DFT-s-OFDM	64QAM	31+159	H + V	2Tx	V	47	86.1	1 / 33	24.11

Table 7-22. Ant 2 EIRP Data (Band n258-R2 – 100MHz-1CC)

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100+100	2	Low	24850.02	DFT-s-OFDM	$\pi/2$ BPSK	31+159	H + V	2Tx	V	45	89.5	64 / 0	23.82
		Mid	25000.02	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	33	84.3	64 / 0	24.29
				CP-OFDM	QPSK	31+159	H + V	MIMO	V	33	84.3	66 / 0	22.21
				DFT-s-OFDM	$\pi/2$ BPSK	31+159	H + V	2Tx	V	33	84.3	64 / 0	24.71
				DFT-s-OFDM	16QAM	31+159	H + V	2Tx	V	33	84.3	64 / 0	22.47
				DFT-s-OFDM	64QAM	31+159	H + V	2Tx	V	33	84.3	1 / 42	20.36
		High	25150.02	DFT-s-OFDM	$\pi/2$ BPSK	31+159	H + V	2Tx	V	34	85.9	64 / 0	24.53
				DFT-s-OFDM	$\pi/2$ BPSK	31+159	H + V	2Tx	V	34	85.9	64 / 0	24.53

Table 7-23. Ant 2 EIRP Data (Band n258-R2 – 100MHz-2CC)

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100+100+100	3	Low	24900.00	DFT-s-OFDM	$\pi/2$ BPSK	31+159	H + V	2Tx	V	46	87.5	64 / 0	23.79
		Mid	24999.96	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	33	84.8	64 / 0	24.11
				CP-OFDM	QPSK	31+159	H + V	MIMO	V	33	84.8	66 / 0	22.05
				DFT-s-OFDM	$\pi/2$ BPSK	31+159	H + V	2Tx	V	33	84.8	64 / 0	24.53
				DFT-s-OFDM	16QAM	31+159	H + V	2Tx	V	33	84.8	64 / 0	22.05
				DFT-s-OFDM	64QAM	31+159	H + V	2Tx	V	33	84.8	1 / 42	20.37
		High	25100.04	DFT-s-OFDM	$\pi/2$ BPSK	31+159	H + V	2Tx	V	46	82.5	64 / 0	24.42
				DFT-s-OFDM	$\pi/2$ BPSK	31+159	H + V	2Tx	V	46	82.5	64 / 0	24.42

Table 7-24. Ant 2 EIRP Data (Band n258-R2 – 100MHz-3CC)

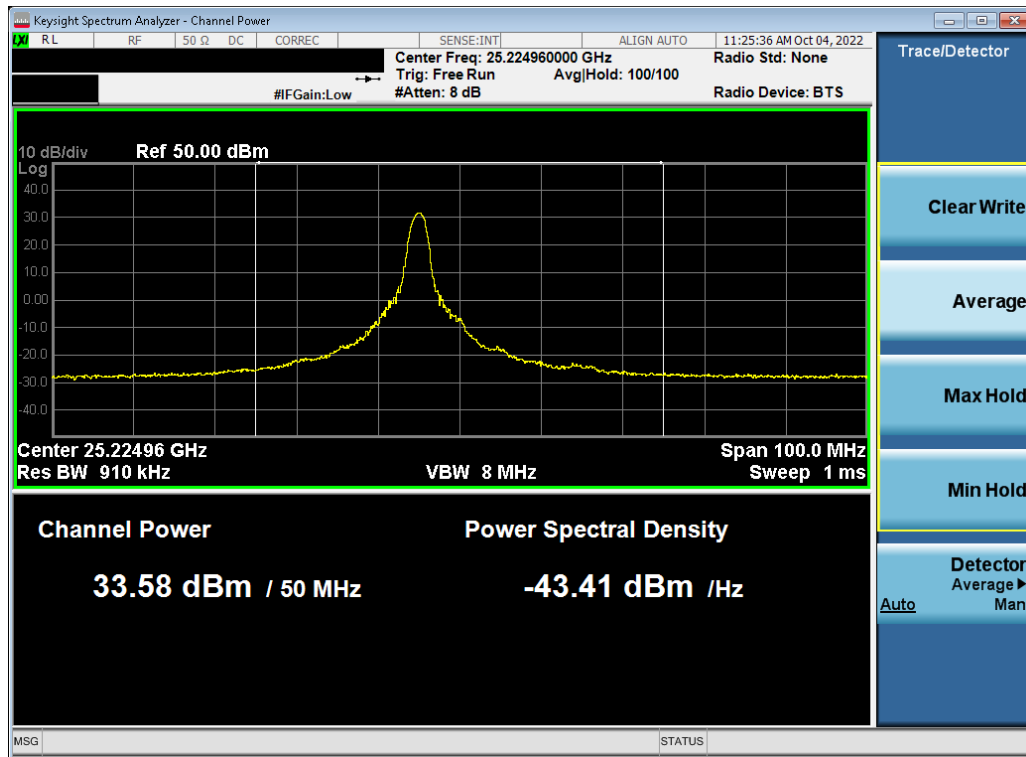
FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)										Approved by: Technical Manager		
Test Report S/N: 1M2209010098-13.A3L	Test Dates: 9/12/2022 – 11/14/2022	EUT Type: Portable Handset										Page 67 of 214	

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100+100+100+100	4	Low	24949.98	DFT-s-OFDM	$\pi/2$ BPSK	31+159	H + V	2Tx	V	46	90.7	64 / 0	23.25
		Mid	25000.02	DFT-s-OFDM	$\pi/2$ BPSK	31+159	H + V	2Tx	V	32	85.1	64 / 0	23.57
		High	25050.06	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	32	84.6	64 / 0	23.59
				CP-OFDM	QPSK	31+159	H + V	MIMO	V	32	84.6	66 / 0	21.51
				DFT-s-OFDM	$\pi/2$ BPSK	31+159	H + V	2Tx	V	32	84.6	64 / 0	23.65
				DFT-s-OFDM	16QAM	31+159	H + V	2Tx	V	32	84.6	64 / 0	21.49
				DFT-s-OFDM	64QAM	31+159	H + V	2Tx	V	32	84.6	1 / 42	19.81

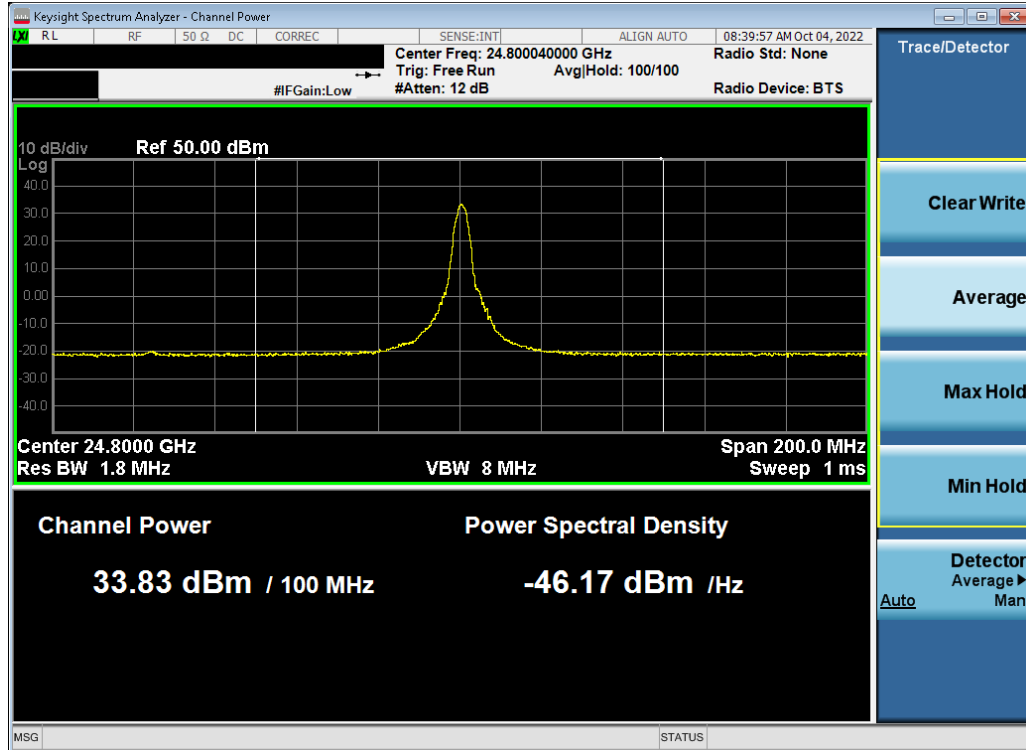
**Table 7-25. Ant 2 EIRP Data (Band n258-R2 – 100MHz-4CC)**

<b>FCC ID:</b> A3LSMS918U	<b>PART 30 MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1M2209010098-13.A3L	<b>Test Dates:</b> 9/12/2022 – 11/14/2022	<b>EUT Type:</b> Portable Handset	Page 68 of 214

## Worst-Case EIRP Plots (n258-R2)

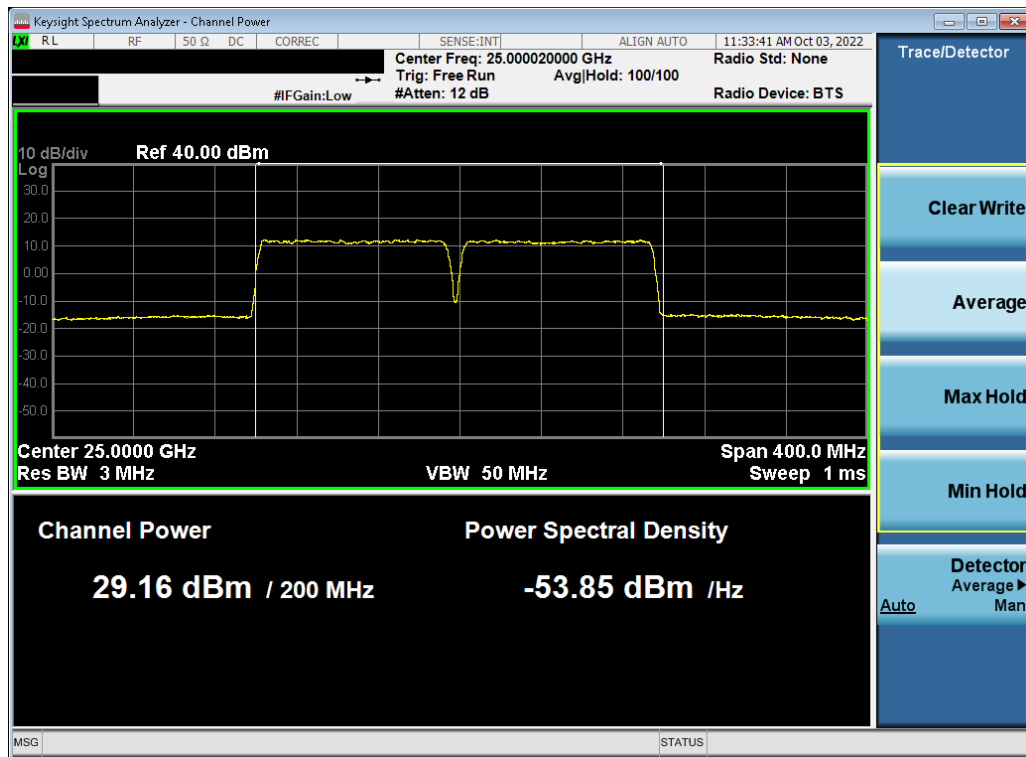


Plot 7-79. Ant 1 EIRP Plot (Band n258-R2 - 50MHz-1CC -  $\pi/2$ -BPSK - High Channel)

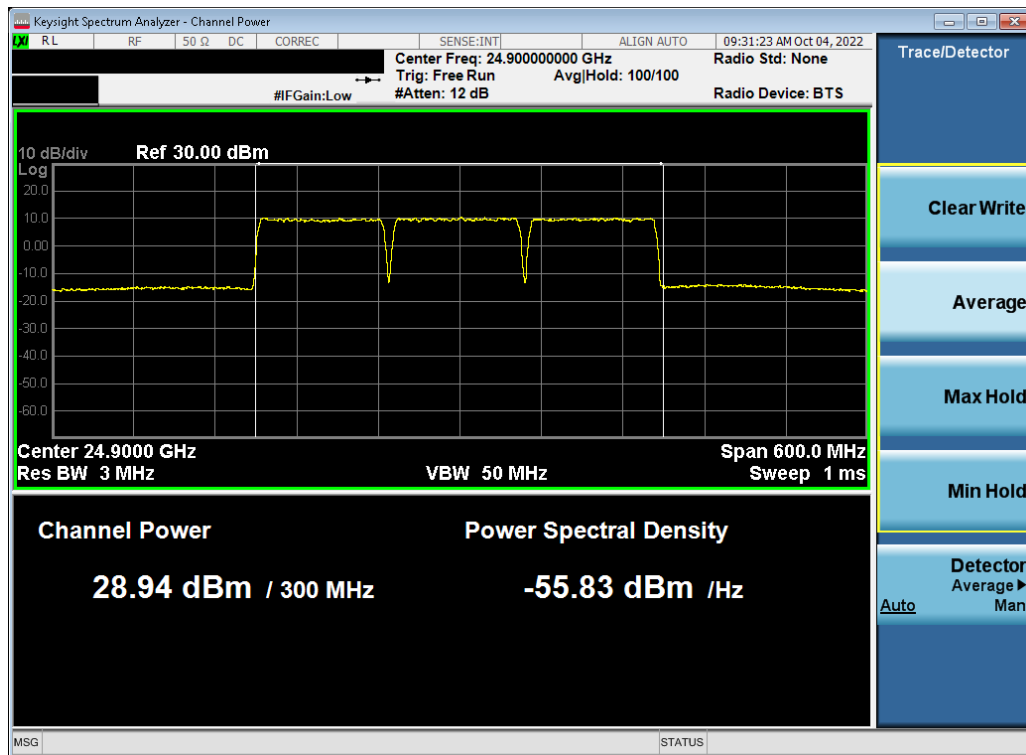


Plot 7-80. Ant 1 EIRP Plot (Band n258-R2 - 100MHz-1CC -  $\pi/2$ -BPSK - Low Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2209010098-13.A3L	Test Dates: 9/12/2022 - 11/14/2022	EUT Type: Portable Handset	Page 69 of 214

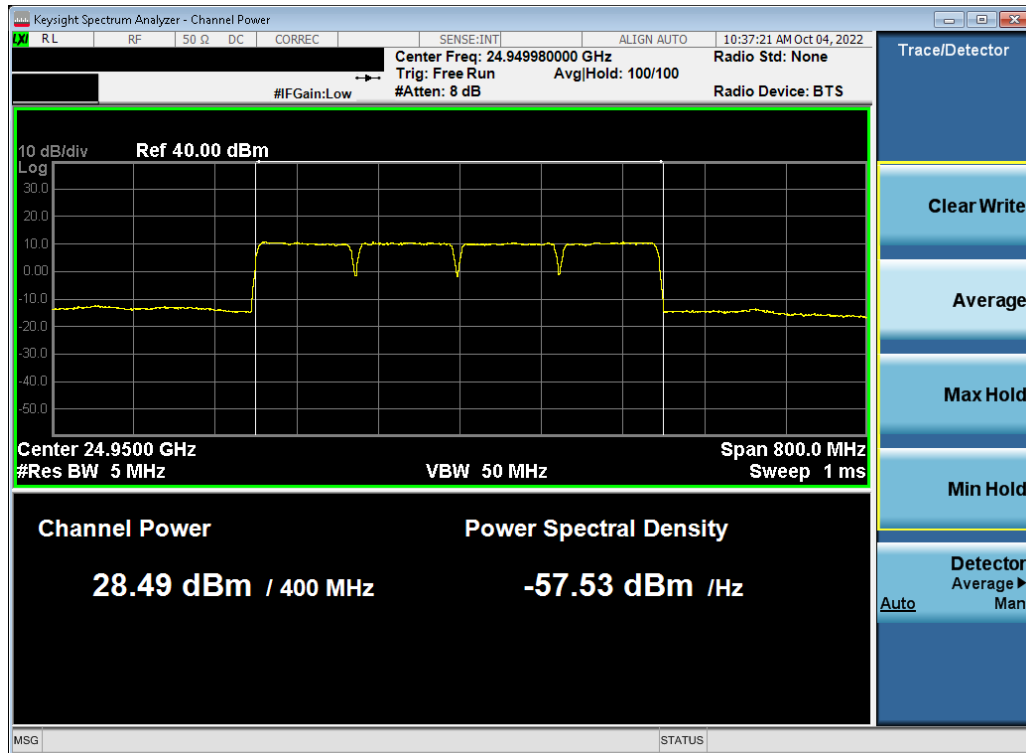


Plot 7-81. Ant 1 EIRP Plot (Band n258-R2 – 100MHz-2CC – QPSK – Mid Channel)

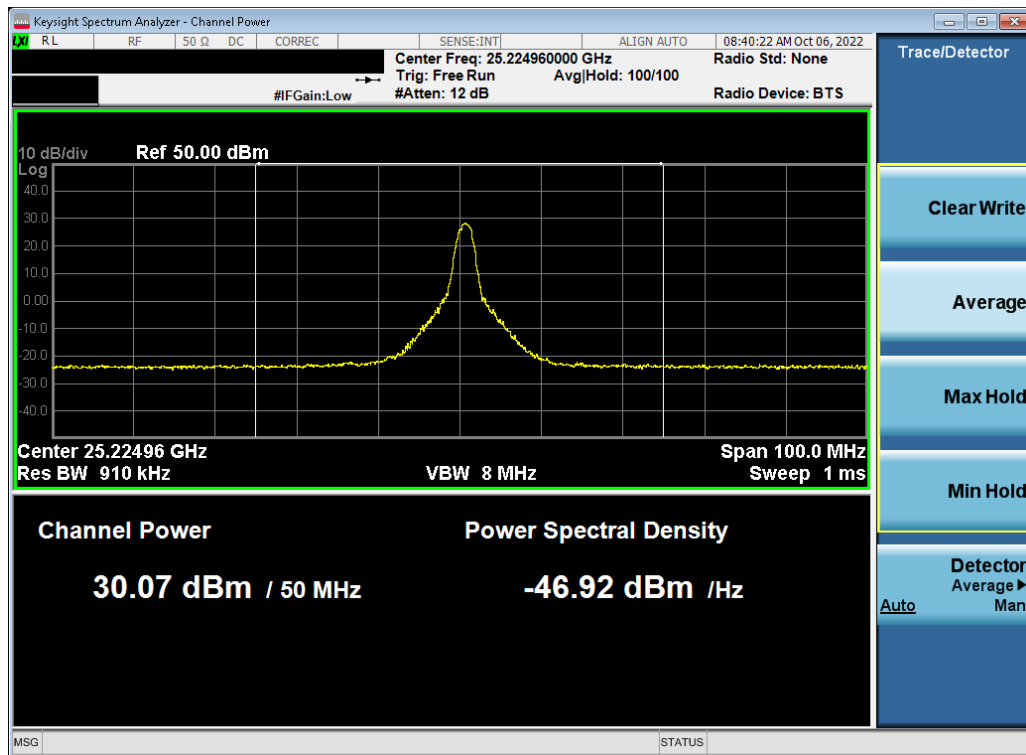


Plot 7-82. Ant 1 EIRP Plot (Band n258-R2 – 100MHz-3CC – QPSK – Low Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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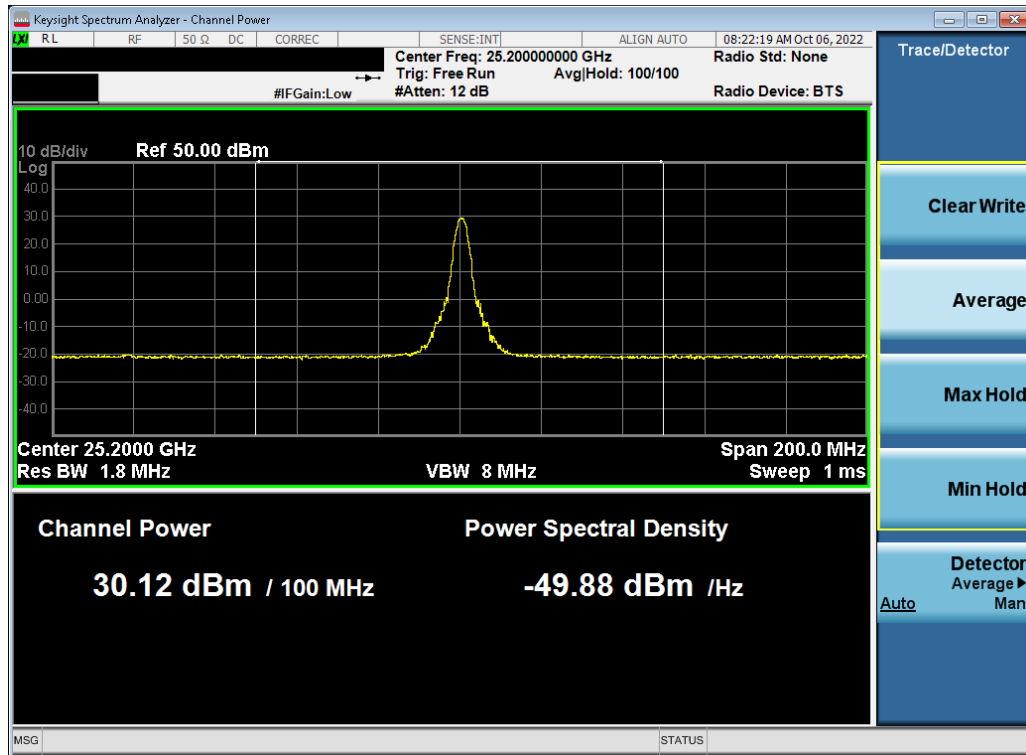


Plot 7-83. Ant 1 EIRP Plot (Band n258-R2 – 100MHz-4CC –  $\pi/2$ -BPSK – Low Channel)

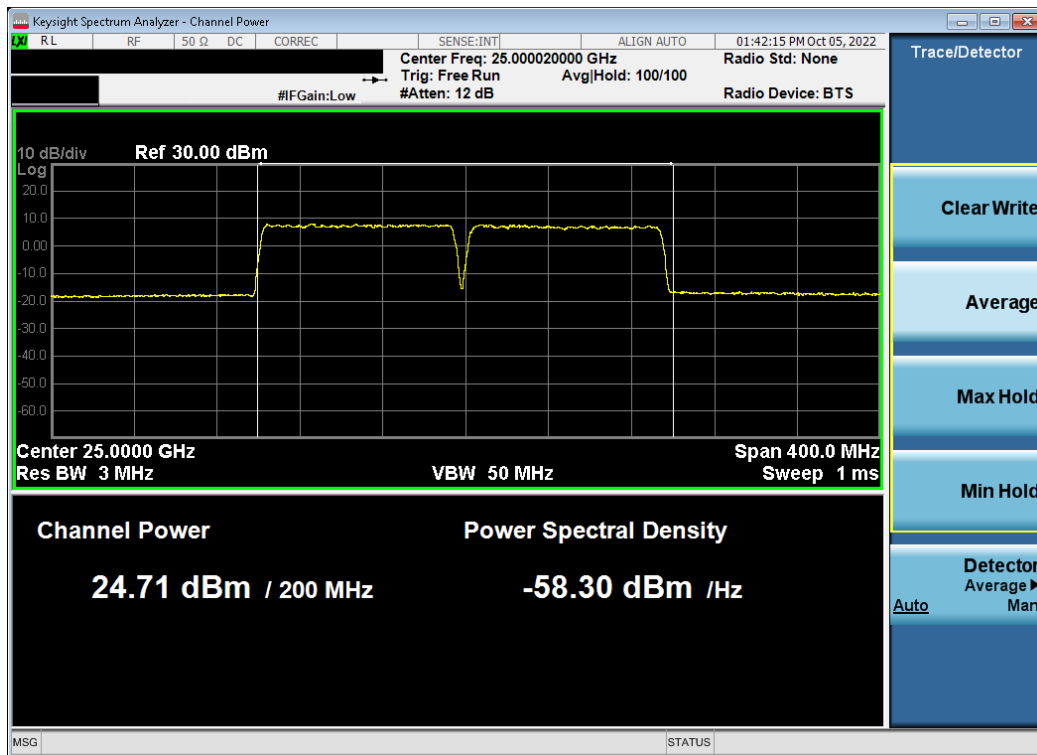


Plot 7-84. Ant 2 EIRP Plot (Band n258-R2 – 50MHz-1CC –  $\pi/2$ -BPSK – High Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2209010098-13.A3L	Test Dates: 9/12/2022 – 11/14/2022	EUT Type: Portable Handset	Page 71 of 214



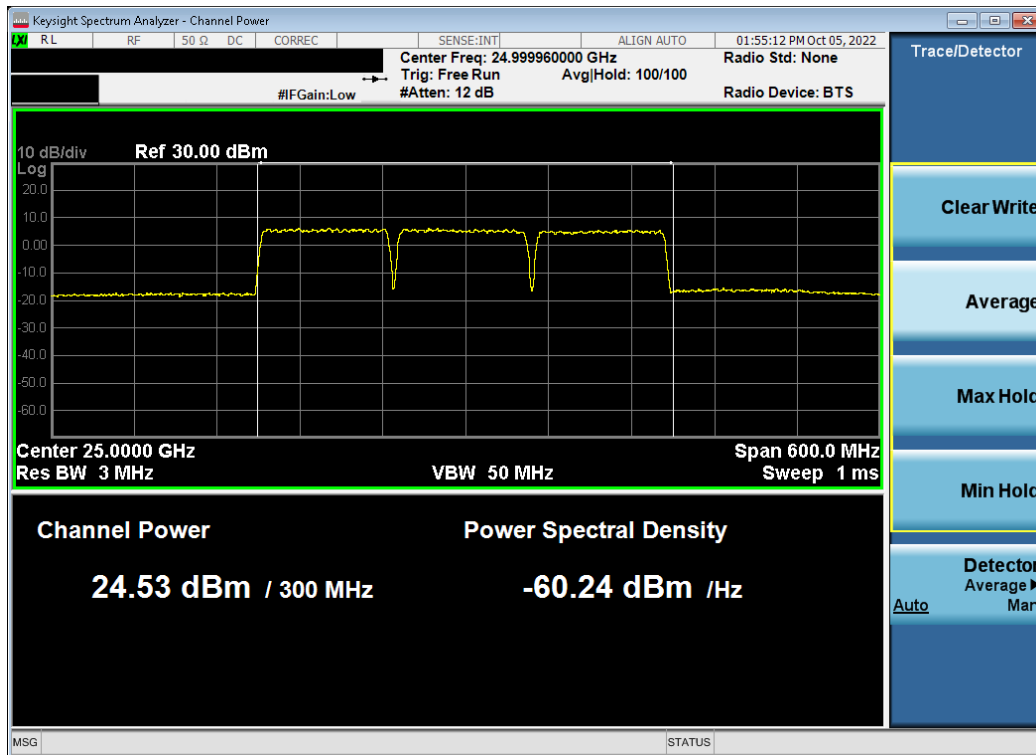
Plot 7-85. Ant 2 EIRP Plot (Band n258-R2 – 100MHz-1CC – QPSK – High Channel)



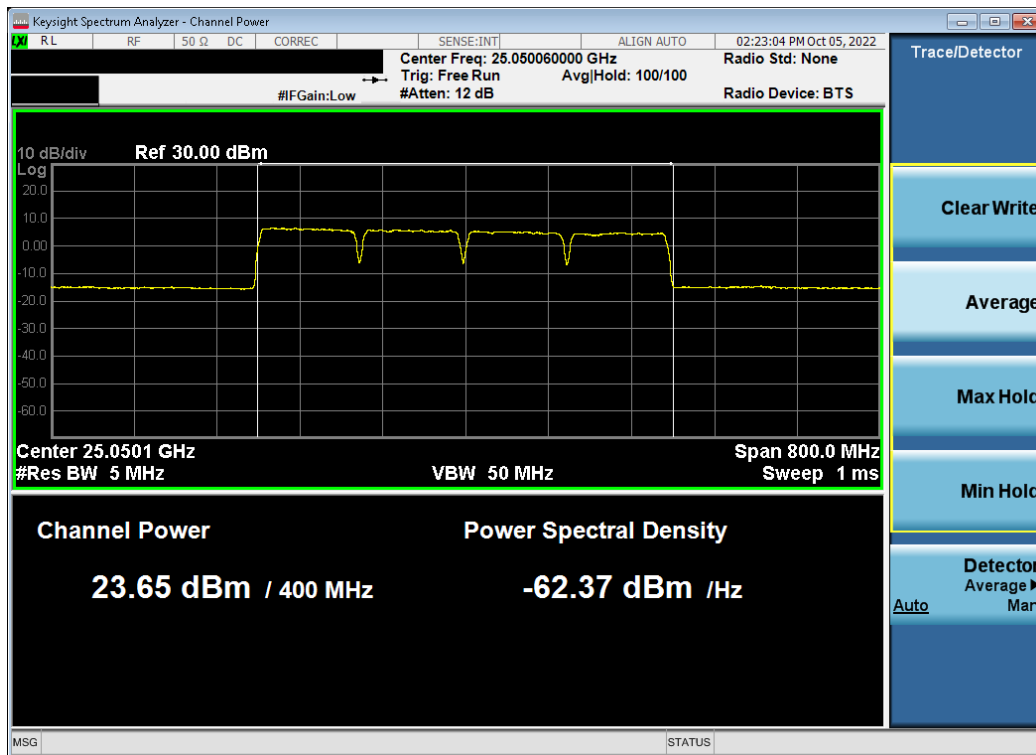
Plot 7-86. Ant 2 EIRP Plot (Band n258-R2 – 100MHz-2CC –  $\pi/2$ -BPSK – Mid Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2209010098-13.A3L	Test Dates: 9/12/2022 – 11/14/2022	EUT Type: Portable Handset	Page 72 of 214





Plot 7-87. Ant 2 EIRP Plot (Band n258-R2 – 100MHz-3CC –  $\pi/2$ -BPSK – Mid Channel)



Plot 7-88. Ant 2 EIRP Plot (Band n258-R2 – 100MHz-4CC –  $\pi/2$ -BPSK – High Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2209010098-13.A3L	Test Dates: 9/12/2022 – 11/14/2022	EUT Type: Portable Handset	Page 73 of 214

## Band n261 Beam ID Configurations

Mode	Channel	Polarization	Beam ID	Beam ID Pair
SISO	Low	H	163	
		V	36	
	Mid	H	154	
		V	35	
	High	H	154	
		V	35	
MIMO	Low	2Tx/MIMO	36	164
	Mid	2Tx/MIMO	27	155
	High	2Tx/MIMO	27	155

Table 7-26. Ant 1 Worst Case Beam ID

Mode	Channel	Polarization	Beam ID	Beam ID Pair
SISO	Low	H	169	
		V	31	
	Mid	H	169	
		V	31	
	High	H	169	
		V	31	
MIMO	Low	2Tx/MIMO	31	159
	Mid	2Tx/MIMO	31	159
	High	2Tx/MIMO	31	159

Table 7-27. Ant 2 Worst Case Beam ID

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2209010098-13.A3L	Test Dates: 9/12/2022 – 11/14/2022	EUT Type: Portable Handset	Page 74 of 214

## Band n261

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
50	1	Low	27525.00	DFT-s-OFDM	QPSK	36+164	H + V	2Tx	H	252	294.1	1 / 12	33.11
				CP-OFDM	QPSK	36+164	H + V	MIMO	H	252	294.1	1 / 16	29.18
				DFT-s-OFDM	$\pi/2$ BPSK	36+164	H + V	2Tx	H	257	299.2	1 / 12	33.18
				DFT-s-OFDM	16QAM	36+164	H + V	2Tx	H	257	299.2	1 / 16	30.31
		Mid	27924.96	DFT-s-OFDM	64QAM	36+164	H + V	2Tx	H	257	299.2	1 / 16	26.98
				DFT-s-OFDM	QPSK	27+155	H + V	2Tx	H	290	254.1	1 / 16	31.76
				DFT-s-OFDM	QPSK	35	V	SISO	V	313	105.0	1 / 12	27.24
				CP-OFDM	QPSK	35	V	SISO	V	313	105.0	1 / 19	24.02
		High	28324.92	DFT-s-OFDM	QPSK	27+155	H + V	2Tx	H	249	296.0	1 / 19	32.67
				DFT-s-OFDM	QPSK	154	H	SISO	H	284	88.3	1 / 12	29.72
				CP-OFDM	QPSK	154	H	SISO	H	284	88.3	1 / 16	26.71

**Table 7-28. Ant 1 EIRP Data (Band n261 – 50MHz-1CC)**

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100	1	Low	27550.08	DFT-s-OFDM	$\pi/2$ BPSK	36+164	H + V	2Tx	H	250	292.5	1 / 23	32.61
				DFT-s-OFDM	QPSK	35	V	SISO	V	312	105.1	1 / 42	27.79
		Mid	27924.96	CP-OFDM	QPSK	35	V	SISO	V	312	105.1	1 / 42	24.80
				DFT-s-OFDM	$\pi/2$ BPSK	27+155	H + V	2Tx	H	250	295.6	1 / 42	33.32
		High	28299.96	DFT-s-OFDM	QPSK	27+155	H + V	2Tx	H	251	294.4	1 / 23	33.82
				DFT-s-OFDM	QPSK	154	H	SISO	H	284	88.7	1 / 33	29.81
				CP-OFDM	QPSK	27+155	H + V	MIMO	H	251	294.4	1 / 23	30.76
				CP-OFDM	QPSK	154	H	SISO	H	284	88.7	1 / 23	26.85
				DFT-s-OFDM	$\pi/2$ BPSK	27+155	H + V	2Tx	H	251	294.4	1 / 23	33.94
				DFT-s-OFDM	16QAM	27+155	H + V	2Tx	H	251	294.4	1 / 23	31.88
				DFT-s-OFDM	64QAM	27+155	H + V	2Tx	H	251	294.4	1 / 23	28.95

**Table 7-29. Ant 1 EIRP Data (Band n261 – 100MHz-1CC)**

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100+100	2	Low	27600.06	DFT-s-OFDM	QPSK	36+164	H + V	2Tx	H	248	286.1	64 / 0	24.45
				DFT-s-OFDM	QPSK	27+155	H + V	2Tx	H	252	295.5	64 / 0	29.43
		High	28249.98	DFT-s-OFDM	QPSK	27+155	H + V	2Tx	H	250	295.8	64 / 0	29.48
				CP-OFDM	QPSK	27+155	H + V	MIMO	H	250	295.8	66 / 0	27.39
				DFT-s-OFDM	$\pi/2$ BPSK	27+155	H + V	2Tx	H	250	295.8	64 / 0	29.46
				DFT-s-OFDM	16QAM	27+155	H + V	2Tx	H	250	295.8	64 / 0	27.43
				DFT-s-OFDM	64QAM	27+155	H + V	2Tx	H	250	295.8	64 / 0	25.25

**Table 7-30. Ant 1 EIRP Data (Band n261 – 100MHz-2CC)**

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100+100+100	3	Low	27650.04	DFT-s-OFDM	QPSK	36+164	H + V	2Tx	H	248	287.7	64 / 0	24.06
				DFT-s-OFDM	QPSK	27+155	H + V	2Tx	H	250	295.6	64 / 0	29.12
		High	28200.00	DFT-s-OFDM	QPSK	27+155	H + V	2Tx	H	252	295.5	64 / 0	29.25
				CP-OFDM	QPSK	27+155	H + V	MIMO	H	252	295.5	66 / 0	27.21
				DFT-s-OFDM	$\pi/2$ BPSK	27+155	H + V	2Tx	H	252	295.5	64 / 0	29.23
				DFT-s-OFDM	16QAM	27+155	H + V	2Tx	H	252	295.5	64 / 0	27.17
				DFT-s-OFDM	64QAM	27+155	H + V	2Tx	H	252	295.5	1 / 23	25.50

**Table 7-31. Ant 1 EIRP Data (Band n261 – 100MHz-3CC)**

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2209010098-13.A3L	Test Dates: 9/12/2022 – 11/14/2022	EUT Type: Portable Handset	Page 75 of 214

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100+100+100+100	4	Low	27700.02	DFT-s-OFDM	QPSK	36+164	H + V	2Tx	H	250	287.6	64 / 0	23.76
		Mid	27925.02	DFT-s-OFDM	QPSK	27+155	H + V	2Tx	H	252	295.8	64 / 0	28.94
				CP-OFDM	QPSK	27+155	H + V	MIMO	H	252	295.8	66 / 0	24.76
				DFT-s-OFDM	$\pi/2$ BPSK	27+155	H + V	2Tx	H	252	295.8	64 / 0	28.89
				DFT-s-OFDM	16QAM	27+155	H + V	2Tx	H	252	295.8	64 / 0	26.85
				DFT-s-OFDM	64QAM	27+155	H + V	2Tx	H	252	295.8	64 / 0	24.84
	High		28150.02	DFT-s-OFDM	QPSK	27+155	H + V	2Tx	H	250	294.6	64 / 0	28.81

Table 7-32. Ant 1 EIRP Data (Band n261 – 100MHz-4CC)

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
50	1	Low	27525.00	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	43	262.6	1 / 16	28.94
				DFT-s-OFDM	QPSK	31	V	SISO	V	41	263.0	1 / 16	28.29
				DFT-s-OFDM	QPSK	169	H	SISO	H	56	230.3	1 / 19	22.70
				CP-OFDM	QPSK	31	V	SISO	V	41	263.0	1 / 16	24.91
				CP-OFDM	QPSK	169	H	SISO	H	56	230.3	1 / 19	19.51
				DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	30	264.4	1 / 19	28.46
		Mid	27924.96	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	37	265.0	1 / 19	29.30
				CP-OFDM	QPSK	31+159	H + V	MIMO	V	37	265.0	1 / 19	26.03
				DFT-s-OFDM	$\pi/2$ BPSK	31+159	H + V	2Tx	V	37	265.0	1 / 19	29.21
				DFT-s-OFDM	16QAM	31+159	H + V	2Tx	V	37	265.0	1 / 19	27.11
				DFT-s-OFDM	64QAM	31+159	H + V	2Tx	V	37	265.0	1 / 19	23.70
				DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	37	265.0	1 / 19	23.70

Table 7-33. Ant 2 EIRP Data (Band n261 – 50MHz-1CC)

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100	1	Low	27550.08	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	43	261.0	1 / 33	28.72
				DFT-s-OFDM	QPSK	31	V	SISO	V	44	261.9	1 / 22	28.17
				DFT-s-OFDM	QPSK	169	H	SISO	H	56	229.1	1 / 22	20.75
				CP-OFDM	QPSK	31	V	SISO	V	44	261.9	1 / 33	24.94
				CP-OFDM	QPSK	169	H	SISO	H	56	229.1	1 / 22	19.79
		Mid	27924.96	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	31	261.8	1 / 33	27.72
				DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	36	264.7	1 / 23	29.68
				CP-OFDM	QPSK	31+159	H + V	MIMO	V	36	264.7	1 / 33	25.88
				DFT-s-OFDM	$\pi/2$ BPSK	31+159	H + V	2Tx	V	36	264.7	1 / 33	29.13
				DFT-s-OFDM	16QAM	31+159	H + V	2Tx	V	36	264.7	1 / 33	27.01
				DFT-s-OFDM	64QAM	31+159	H + V	2Tx	V	36	264.7	1 / 33	23.92

Table 7-34. Ant 2 EIRP Data (Band n261 – 100MHz-1CC)

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100+100	2	Low	27600.06	DFT-s-OFDM	$\pi/2$ BPSK	31+159	H + V	2Tx	V	30	261.2	64 / 0	23.19
		Mid	27925.02	DFT-s-OFDM	$\pi/2$ BPSK	31+159	H + V	2Tx	V	45	260.1	64 / 0	23.68
		High	28249.98	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	37	266.2	64 / 0	24.20
				CP-OFDM	QPSK	31+159	H + V	MIMO	V	37	266.2	66 / 0	22.11
				DFT-s-OFDM	$\pi/2$ BPSK	31+159	H + V	2Tx	V	37	266.2	64 / 0	24.22
				DFT-s-OFDM	16QAM	31+159	H + V	2Tx	V	37	266.2	64 / 0	22.18
				DFT-s-OFDM	64QAM	31+159	H + V	2Tx	V	37	266.2	64 / 0	19.92

Table 7-35. Ant 2 EIRP Data (Band n261 – 100MHz-2CC)

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100+100+100	3	Low	27650.04	DFT-s-OFDM	$\pi/2$ BPSK	31+159	H + V	2Tx	V	43	259.2	64 / 0	23.22
		Mid	27924.96	DFT-s-OFDM	$\pi/2$ BPSK	31+159	H + V	2Tx	V	44	260.8	64 / 0	23.31
		High	28200.00	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	34	264.4	64 / 0	24.07
				CP-OFDM	QPSK	31+159	H + V	MIMO	V	34	264.4	66 / 0	21.80
				DFT-s-OFDM	$\pi/2$ BPSK	31+159	H + V	2Tx	V	34	264.4	64 / 0	24.08
				DFT-s-OFDM	16QAM	31+159	H + V	2Tx	V	34	264.4	64 / 0	22.01
				DFT-s-OFDM	64QAM	31+159	H + V	2Tx	V	34	264.4	64 / 0	19.91

Table 7-36. Ant 2 EIRP Data (Band n261 – 100MHz-3CC)

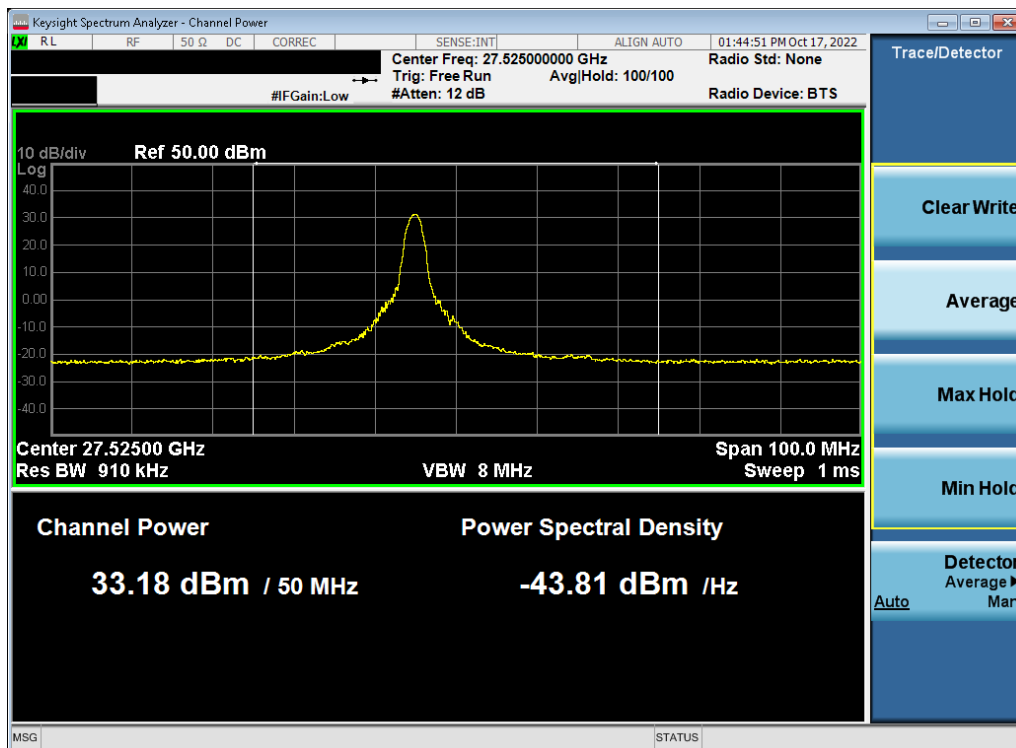
FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)										Approved by: Technical Manager		
Test Report S/N: 1M2209010098-13.A3L	Test Dates: 9/12/2022 – 11/14/2022	EUT Type: Portable Handset										Page 76 of 214	

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100+100+100+100	4	Low	27700.02	DFT-s-OFDM	$\pi/2$ BPSK	31+159	H + V	2Tx	V	42	260.4	64 / 0	22.65
		Mid	27925.02	DFT-s-OFDM	$\pi/2$ BPSK	31+159	H + V	2Tx	V	46	260.4	64 / 0	22.66
		High	28150.02	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	34	264.8	64 / 0	23.56
				CP-OFDM	QPSK	31+159	H + V	MIMO	V	34	264.8	66 / 0	21.53
				DFT-s-OFDM	$\pi/2$ BPSK	31+159	H + V	2Tx	V	34	264.8	64 / 0	23.68
				DFT-s-OFDM	16QAM	31+159	H + V	2Tx	V	34	264.8	64 / 0	21.57
				DFT-s-OFDM	64QAM	31+159	H + V	2Tx	V	34	264.8	64 / 0	19.50

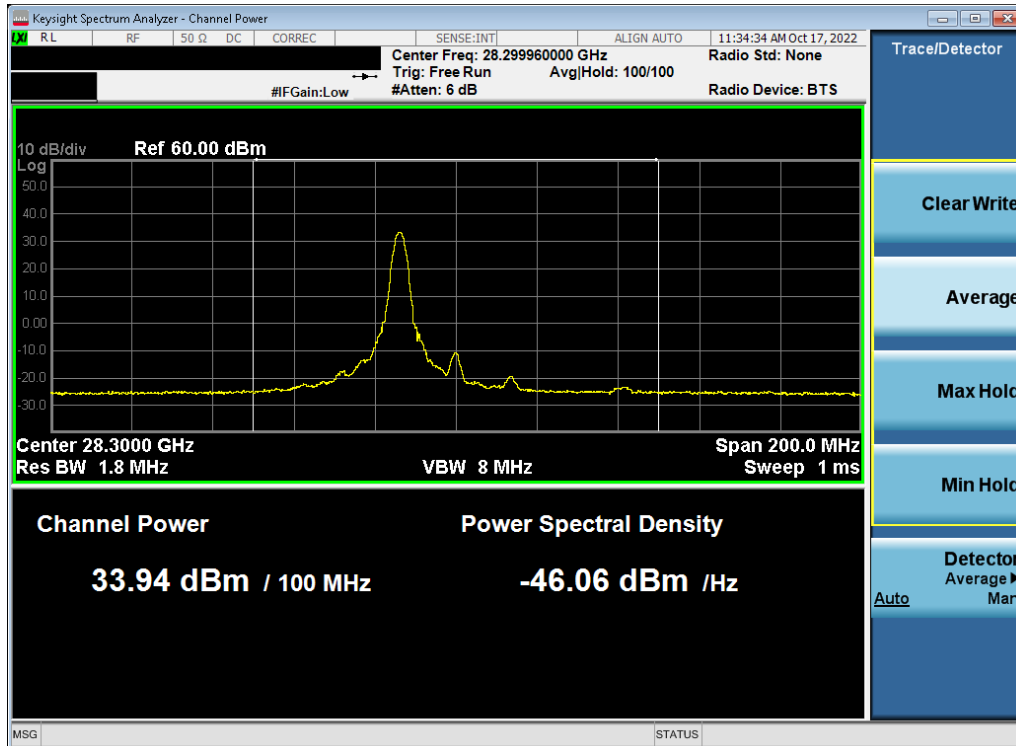
**Table 7-37. Ant 2 EIRP Data (Band n261 – 100MHz-4CC)**

<b>FCC ID:</b> A3LSMS918U	<b>PART 30 MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1M2209010098-13.A3L	<b>Test Dates:</b> 9/12/2022 – 11/14/2022	<b>EUT Type:</b> Portable Handset	Page 77 of 214

## Worst-Case EIRP Plots (n261)

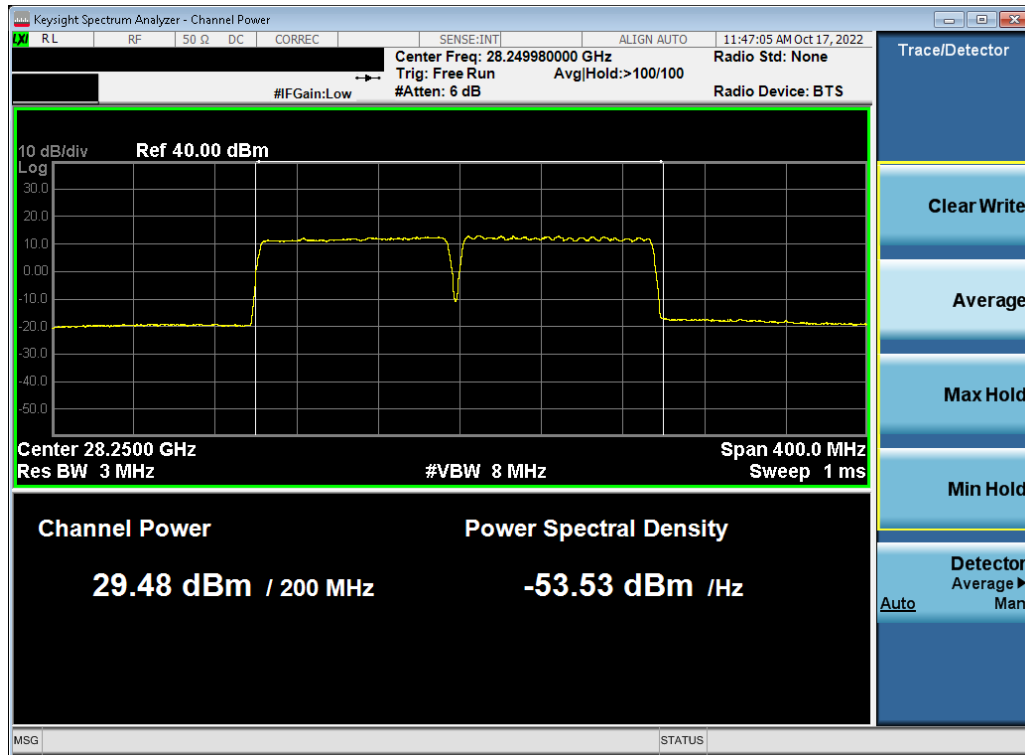


Plot 7-89. Ant 1 EIRP Plot (Band n261 – 50MHz-1CC –  $\pi/2$ -BPSK – Low Channel)

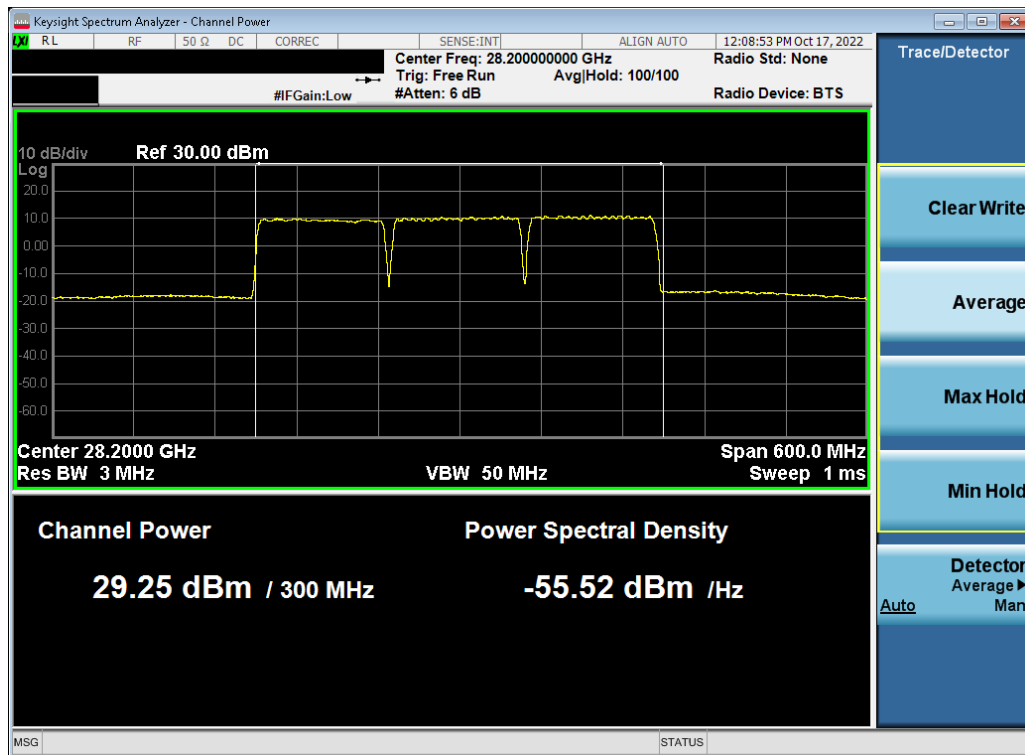


Plot 7-90. Ant 1 EIRP Plot (Band n261 – 100MHz-1CC –  $\pi/2$ -BPSK – High Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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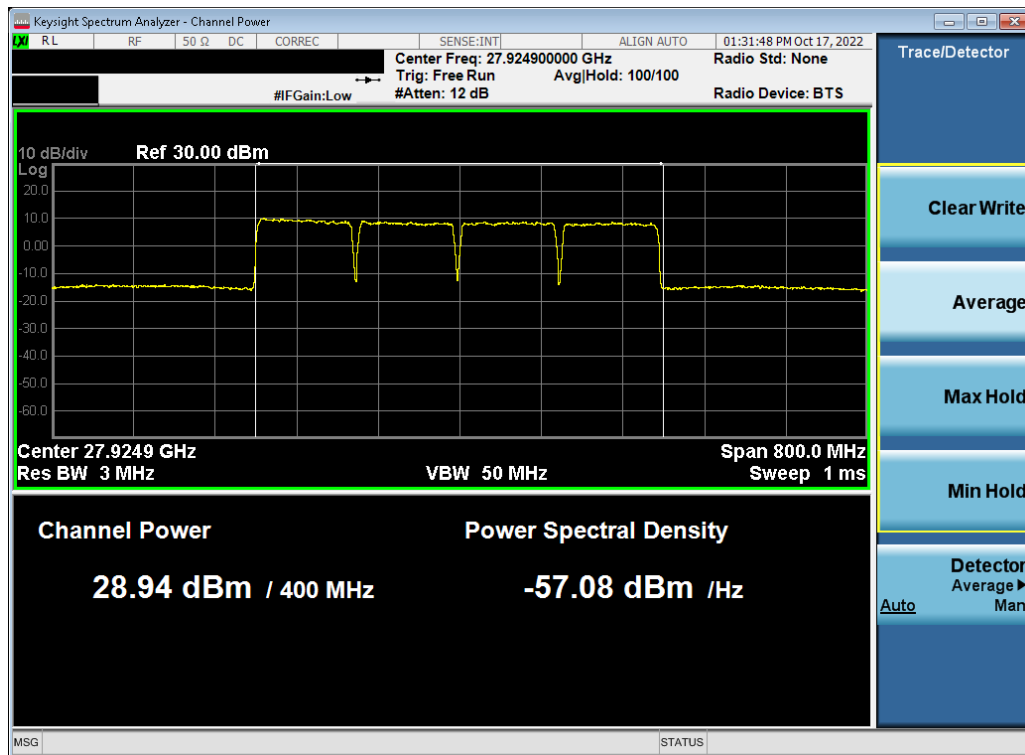


Plot 7-91. Ant 1 EIRP Plot (Band n261 - 100MHz-2CC - QPSK - High Channel)

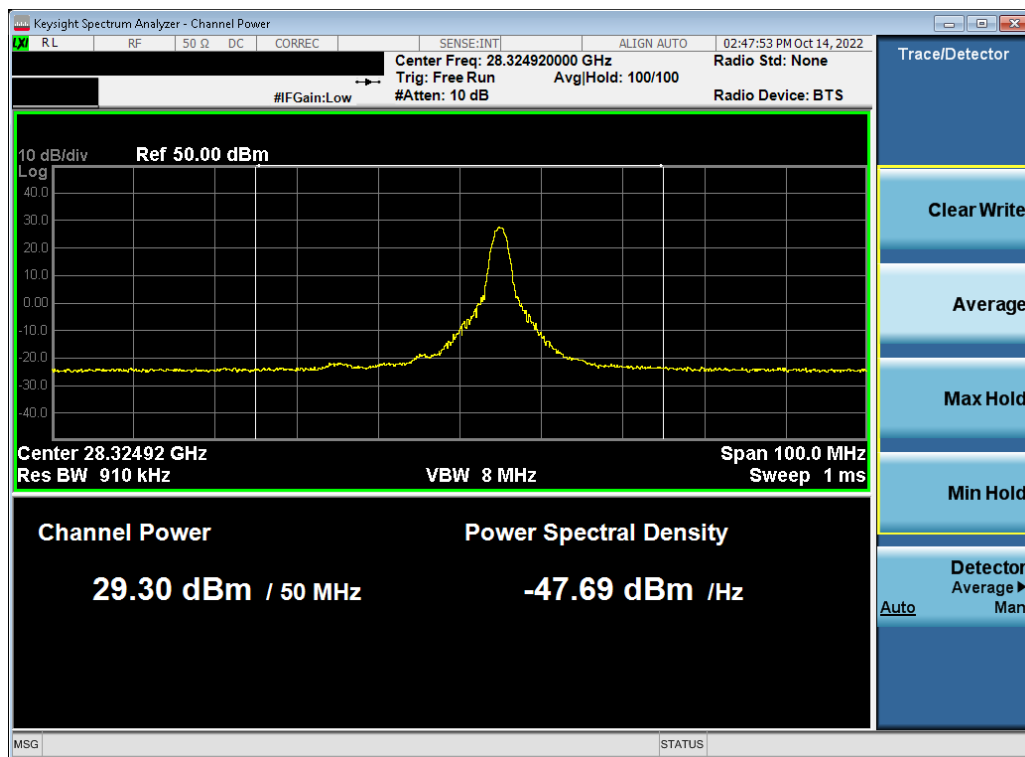


Plot 7-92. Ant 1 EIRP Plot (Band n261 - 100MHz-3CC - QPSK - High Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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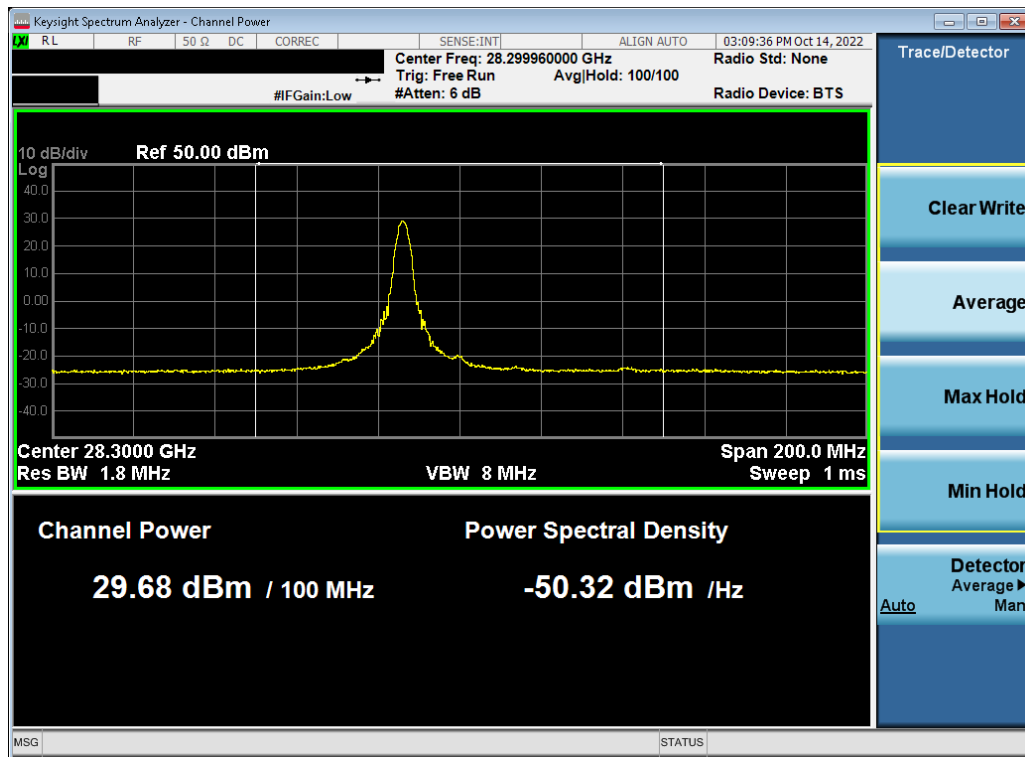
Plot 7-93. Ant 1 EIRP Plot (Band n261 - 100MHz-4CC - QPSK - Mid Channel)



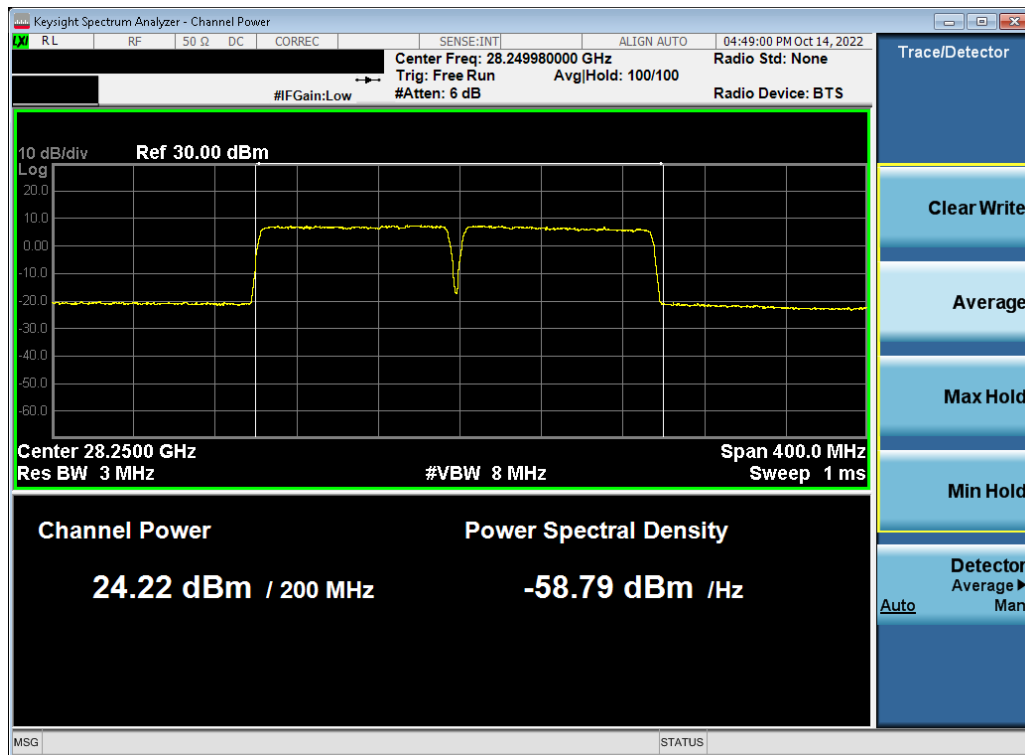
Plot 7-94. Ant 2 EIRP Plot (Band n261 - 50MHz-1CC - QPSK - High Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2209010098-13.A3L	Test Dates: 9/12/2022 - 11/14/2022	EUT Type: Portable Handset	Page 80 of 214



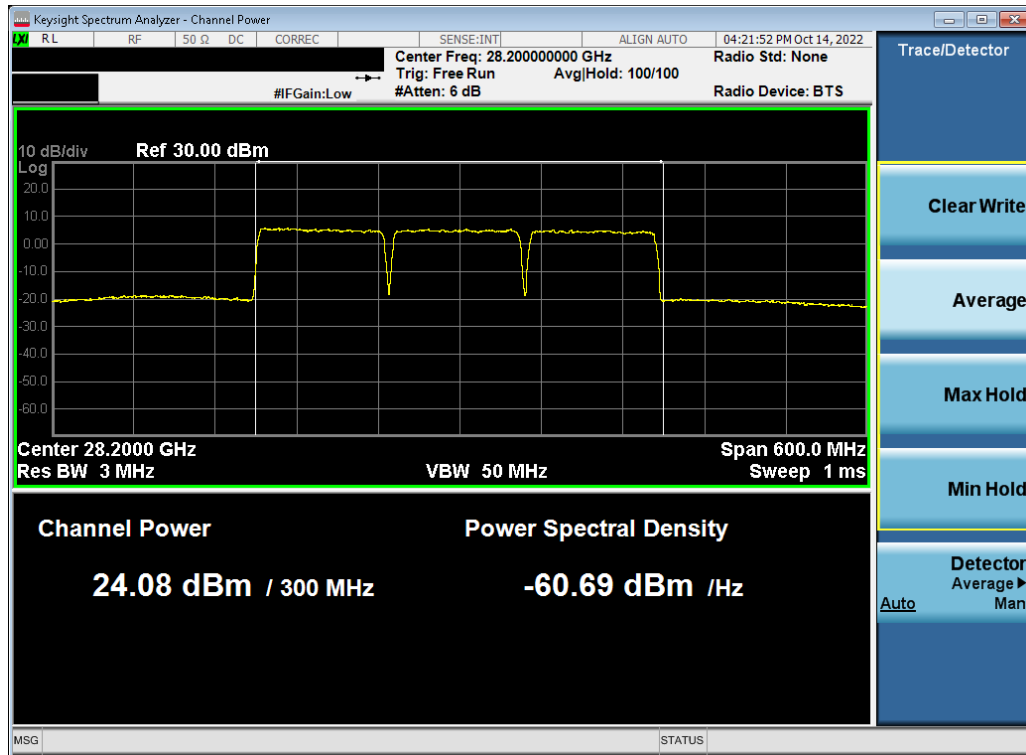


Plot 7-95. Ant 2 EIRP Plot (Band n261 – 100MHz-1CC – QPSK – High Channel)

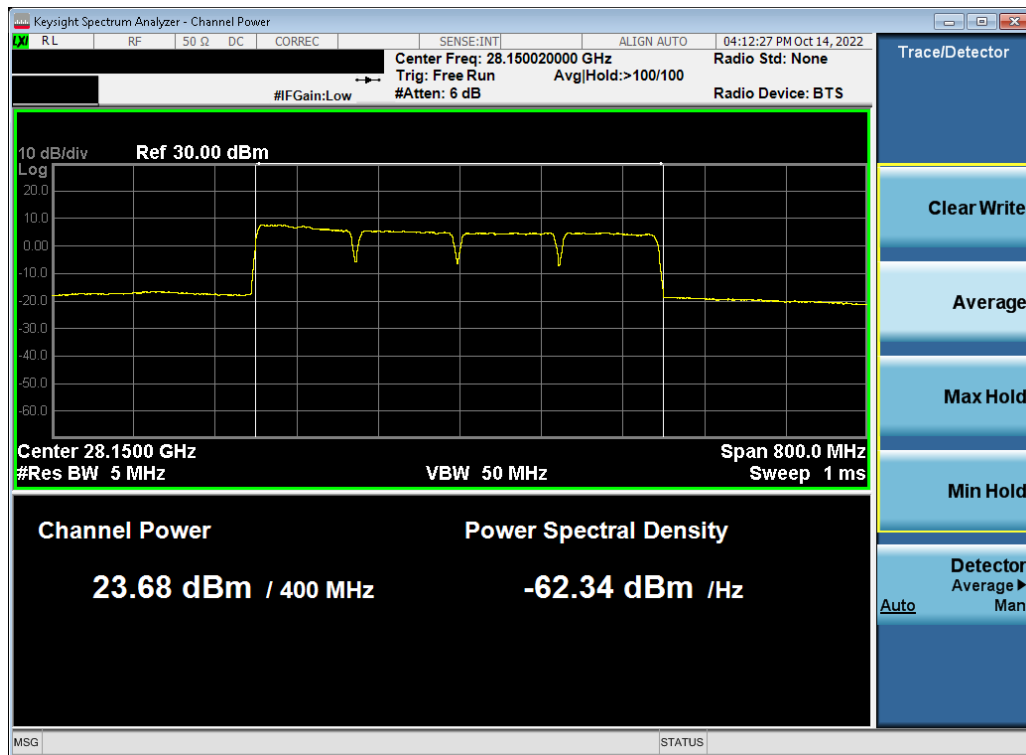


Plot 7-96. Ant 2 EIRP Plot (Band n261 – 100MHz-2CC –  $\pi/2$ -BPSK – High Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2209010098-13.A3L	Test Dates: 9/12/2022 – 11/14/2022	EUT Type: Portable Handset	Page 81 of 214



Plot 7-97. Ant 2 EIRP Plot (Band n261 – 100MHz-3CC –  $\pi/2$ -BPSK – High Channel)



Plot 7-98. Ant 2 EIRP Plot (Band n261 – 100MHz-4CC –  $\pi/2$ -BPSK – High Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1M2209010098-13.A3L	Test Dates: 9/12/2022 – 11/14/2022	EUT Type: Portable Handset	Page 82 of 214

## Band n260 Beam ID Configurations

Mode	Channel	Polarization	Beam ID	Beam ID Pair
SISO	Low	H	164	
		V	34	
	Mid	H	154	
		V	27	
	High	H	154	
		V	25	
MIMO	Low	2Tx/MIMO	25	153
	Mid	2Tx/MIMO	26	154
	High	2Tx/MIMO	25	153

Table 7-38. Ant 1 Worst Case Beam ID

Mode	Channel	Polarization	Beam ID	Beam ID Pair
SISO	Low	H	168	
		V	32	
	Mid	H	159	
		V	32	
	High	H	167	
		V	32	
MIMO	Low	2Tx/MIMO	31	159
	Mid	2Tx/MIMO	39	167
	High	2Tx/MIMO	39	167

Table 7-39. Ant 2 Worst Case Beam ID

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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## Band n260

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
50	1	Low	37025.04	DFT-s-OFDM	QPSK	25+153	H + V	2Tx	V	249	295.6	1 / 19	<b>26.80</b>
		Mid	38499.96	DFT-s-OFDM	QPSK	26+154	H + V	2Tx	V	251	86.0	1 / 12	<b>29.35</b>
		High	39975.00	DFT-s-OFDM	QPSK	25+153	H + V	2Tx	V	111	119.8	1 / 19	29.99
				DFT-s-OFDM	QPSK	25	V	SISO	H	98	26.5	1 / 19	25.50
				DFT-s-OFDM	QPSK	154	H	SISO	V	250	82.0	1 / 16	27.02
				CP-OFDM	QPSK	25+153	H + V	MIMO	V	111	119.8	1 / 19	26.64
				CP-OFDM	QPSK	25	V	SISO	H	98	26.5	1 / 19	22.16
				CP-OFDM	QPSK	154	H	SISO	V	250	82.0	1 / 16	23.72
				DFT-s-OFDM	$\pi/2$ BPSK	25+153	H + V	2Tx	V	111	119.8	1 / 19	<b>30.16</b>
				DFT-s-OFDM	16QAM	25+153	H + V	2Tx	V	111	119.8	1 / 19	27.91
				DFT-s-OFDM	64QAM	25+153	H + V	2Tx	V	111	119.8	1 / 19	24.13

**Table 7-40. Ant 1 EIRP Data (Band n260 – 50MHz-1CC)**

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100	1	Low	37050.00	DFT-s-OFDM	QPSK	25+153	H + V	2Tx	V	250	295.2	1 / 32	<b>27.05</b>
		Mid	38499.96	DFT-s-OFDM	QPSK	26+154	H + V	2Tx	V	249	85.7	1 / 33	<b>27.90</b>
		High	39949.92	DFT-s-OFDM	QPSK	154	H	SISO	V	249	88.6	1 / 23	27.81
				CP-OFDM	QPSK	154	H	SISO	V	249	88.6	1 / 23	24.66
				DFT-s-OFDM	QPSK	25+153	H + V	2Tx	V	110	117.6	1 / 23	<b>30.09</b>
				DFT-s-OFDM	QPSK	25	V	SISO	H	99	26.2	1 / 42	25.48
				CP-OFDM	QPSK	25+153	H + V	MIMO	V	110	117.6	1 / 23	26.92
				CP-OFDM	QPSK	25	V	SISO	H	99	26.2	1 / 42	22.21
				DFT-s-OFDM	$\pi/2$ BPSK	25+153	H + V	2Tx	V	110	117.6	1 / 23	<b>30.05</b>
				DFT-s-OFDM	16QAM	25+153	H + V	2Tx	V	110	117.6	1 / 23	27.98
				DFT-s-OFDM	64QAM	25+153	H + V	2Tx	V	110	117.6	1 / 23	24.91

**Table 7-41. Ant 1 EIRP Data (Band n260 – 100MHz-1CC)**

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100+100	2	Low	37099.98	DFT-s-OFDM	QPSK	25+153	H + V	2Tx	V	251	295.6	64 / 0	<b>22.15</b>
		Mid	38500.02	DFT-s-OFDM	QPSK	26+154	H + V	2Tx	V	239	90.5	64 / 0	<b>22.59</b>
		High	39899.94	DFT-s-OFDM	QPSK	25+153	H + V	2Tx	V	110	118.6	64 / 0	26.13
				CP-OFDM	QPSK	25+153	H + V	MIMO	V	110	118.6	66 / 0	24.57
				DFT-s-OFDM	$\pi/2$ BPSK	25+153	H + V	2Tx	V	110	118.6	64 / 0	<b>26.15</b>
				DFT-s-OFDM	16QAM	25+153	H + V	2Tx	V	110	118.6	64 / 0	24.54
				DFT-s-OFDM	64QAM	25+153	H + V	2Tx	V	110	118.6	64 / 0	22.77

**Table 7-42. Ant 1 EIRP Data (Band n260 – 100MHz-2CC)**

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100+100+100	3	Low	37149.96	DFT-s-OFDM	QPSK	25+153	H + V	2Tx	V	249	295.2	64 / 0	<b>22.01</b>
		Mid	38499.96	DFT-s-OFDM	QPSK	26+154	H + V	2Tx	V	237	91.1	64 / 0	<b>22.46</b>
		High	39849.96	DFT-s-OFDM	QPSK	25+153	H + V	2Tx	V	250	298.2	64 / 0	26.05
				CP-OFDM	QPSK	25+153	H + V	MIMO	V	250	298.2	66 / 0	24.55
				DFT-s-OFDM	$\pi/2$ BPSK	25+153	H + V	2Tx	V	250	298.2	64 / 0	<b>26.06</b>
				DFT-s-OFDM	16QAM	25+153	H + V	2Tx	V	250	298.2	64 / 0	24.53
				DFT-s-OFDM	64QAM	25+153	H + V	2Tx	V	250	298.2	64 / 0	22.71

**Table 7-43. Ant 1 EIRP Data (Band n260 – 100MHz-3CC)**

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100+100+100+100	4	Low	37199.94	DFT-s-OFDM	QPSK	25+153	H + V	2Tx	V	249	295.5	64 / 0	21.76
		Mid	38500.02	DFT-s-OFDM	QPSK	26+154	H + V	2Tx	V	251	90.4	64 / 0	22.18
		High	39799.98	DFT-s-OFDM	QPSK	25+153	H + V	2Tx	V	250	298.6	64 / 0	25.51
				CP-OFDM	QPSK	25+153	H + V	MIMO	V	250	298.6	66 / 0	23.99
				DFT-s-OFDM	$\pi/2$ BPSK	25+153	H + V	2Tx	V	250	298.6	64 / 0	25.45
				DFT-s-OFDM	16QAM	25+153	H + V	2Tx	V	250	298.6	64 / 0	23.99
				DFT-s-OFDM	64QAM	25+153	H + V	2Tx	V	250	298.6	64 / 0	22.24

Table 7-44. Ant 1 EIRP Data (Band n260 – 100MHz-4CC)

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
50	1	Low	37025.04	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	18	264.4	1 / 16	25.93
		Mid	38499.96	DFT-s-OFDM	QPSK	39+167	H + V	2Tx	V	317	151.5	1 / 19	30.36
		High	39975.00	DFT-s-OFDM	QPSK	39+167	H + V	2Tx	V	2	249.0	1 / 16	30.51
				DFT-s-OFDM	QPSK	32	V	SISO	H	22	279.2	1 / 19	29.03
				DFT-s-OFDM	QPSK	167	H	SISO	V	352	160.9	1 / 12	27.01
				CP-OFDM	QPSK	39+167	H + V	MIMO	V	2	249.0	1 / 16	26.45
				CP-OFDM	QPSK	32	V	SISO	H	22	279.2	1 / 19	25.46
				CP-OFDM	QPSK	167	H	SISO	V	352	160.9	1 / 12	23.90
				DFT-s-OFDM	$\pi/2$ BPSK	39+167	H + V	2Tx	V	2	249.0	1 / 16	29.93
				DFT-s-OFDM	16QAM	39+167	H + V	2Tx	V	2	249.0	1 / 16	27.86
				DFT-s-OFDM	64QAM	39+167	H + V	2Tx	V	2	249.0	1 / 16	24.50

Table 7-45. Ant 2 EIRP Data (Band n260 – 50MHz-1CC)

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100	1	Low	37050.00	DFT-s-OFDM	$\pi/2$ BPSK	31+159	H + V	2Tx	V	14	265.1	1 / 42	25.52
		Mid	38499.96	DFT-s-OFDM	$\pi/2$ BPSK	39+167	H + V	2Tx	V	317	150.6	1 / 40	29.83
		High	39949.92	DFT-s-OFDM	QPSK	39+167	H + V	2Tx	V	7	249.0	1 / 33	31.05
				DFT-s-OFDM	QPSK	32	V	SISO	H	22	279.5	1 / 33	28.85
				DFT-s-OFDM	QPSK	167	H	SISO	V	358	161.5	1 / 22	27.01
				CP-OFDM	QPSK	39+167	H + V	MIMO	V	7	249.0	1 / 33	27.15
				CP-OFDM	QPSK	32	V	SISO	H	22	279.5	1 / 33	25.82
				CP-OFDM	QPSK	167	H	SISO	V	358	161.5	1 / 22	23.77
				DFT-s-OFDM	$\pi/2$ BPSK	39+167	H + V	2Tx	V	7	249.0	1 / 33	31.17
				DFT-s-OFDM	16QAM	39+167	H + V	2Tx	V	7	249.0	1 / 33	28.35
				DFT-s-OFDM	64QAM	39+167	H + V	2Tx	V	7	249.0	1 / 33	24.49

Table 7-46. Ant 2 EIRP Data (Band n260 – 100MHz-1CC)

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100+100	2	Low	37099.98	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	19	263.7	64 / 0	21.34
		Mid	38500.02	DFT-s-OFDM	QPSK	39+167	H + V	2Tx	V	319	152.7	64 / 0	22.68
		High	39899.94	DFT-s-OFDM	QPSK	39+167	H + V	2Tx	V	7	248.7	64 / 0	24.04
				CP-OFDM	QPSK	39+167	H + V	MIMO	V	7	248.7	66 / 0	21.48
				DFT-s-OFDM	$\pi/2$ BPSK	39+167	H + V	2Tx	V	7	248.7	64 / 0	24.05
				DFT-s-OFDM	16QAM	39+167	H + V	2Tx	V	7	248.7	1 / 33	22.03
				DFT-s-OFDM	64QAM	39+167	H + V	2Tx	V	7	248.7	1 / 33	21.33

Table 7-47. Ant 2 EIRP Data (Band n260 – 100MHz-2CC)

Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100+100+100	3	Low	37149.96	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	20	263.9	64 / 0	20.62
		Mid	38499.96	DFT-s-OFDM	QPSK	39+167	H + V	2Tx	V	315	152.6	64 / 0	22.45
		High	39849.96	DFT-s-OFDM	QPSK	39+167	H + V	2Tx	V	7	248.7	64 / 0	22.57
				CP-OFDM	QPSK	39+167	H + V	MIMO	V	7	248.7	66 / 0	21.01
				DFT-s-OFDM	$\pi/2$ BPSK	39+167	H + V	2Tx	V	7	248.7	64 / 0	22.54
				DFT-s-OFDM	16QAM	39+167	H + V	2Tx	V	7	248.7	1 / 33	22.06
				DFT-s-OFDM	64QAM	39+167	H + V	2Tx	V	7	248.7	1 / 33	21.15

Table 7-48. Ant 2 EIRP Data (Band n260 – 100MHz-3CC)

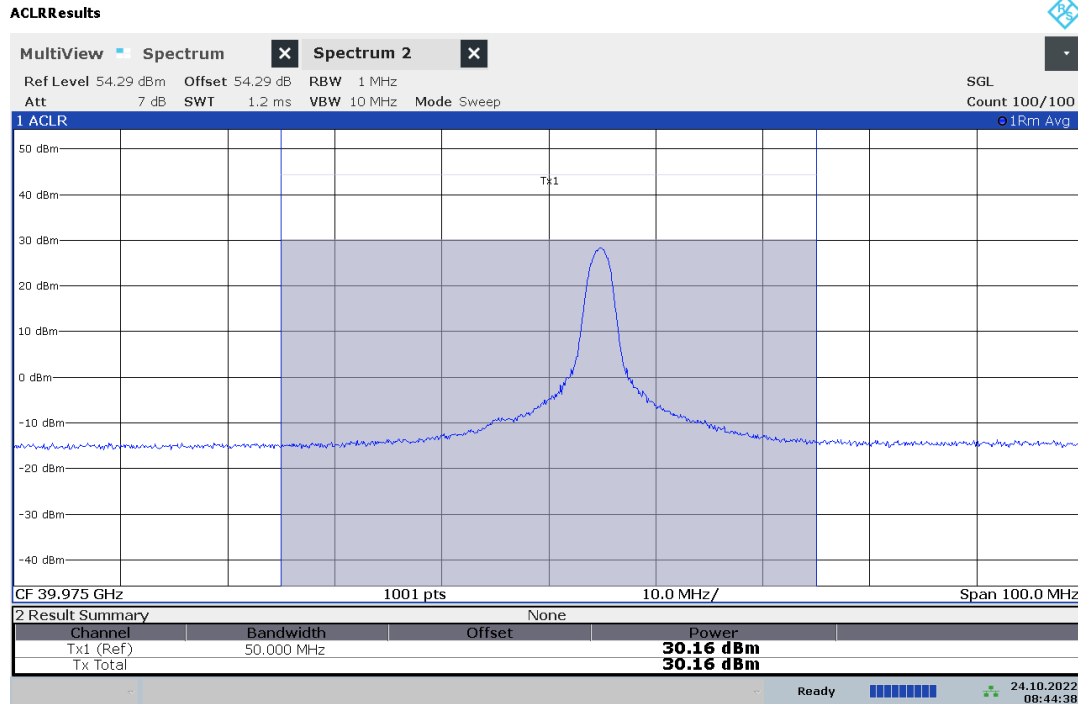
FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)										Approved by: Technical Manager		
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Bandwidth [MHz]	CCs Active	Channel	Frequency [MHz]	Transmission Scheme	Modulation	Beam ID	Beam Pol.	Ant. Div.	Ant. Pol. [H/V]	Positioner Roll [degrees]	Turntable Azimuth [degrees]	RB Size/Offset	EIRP [dBm]
100+100+100+100	4	Low	37199.94	DFT-s-OFDM	QPSK	31+159	H + V	2Tx	V	19	265.4	64 / 0	19.29
		Mid	38500.02	DFT-s-OFDM	QPSK	39+167	H + V	2Tx	V	318	152.3	64 / 0	21.90
		High	39799.98	DFT-s-OFDM	QPSK	39+167	H + V	2Tx	V	7	249.7	64 / 0	22.18
				CP-OFDM	QPSK	39+167	H + V	MIMO	V	7	249.7	66 / 0	20.59
				DFT-s-OFDM	$\pi/2$ BPSK	39+167	H + V	2Tx	V	7	249.7	64 / 0	22.20
				DFT-s-OFDM	16QAM	39+167	H + V	2Tx	V	7	249.7	64 / 0	20.63
				DFT-s-OFDM	64QAM	39+167	H + V	2Tx	V	7	249.7	64 / 0	18.80

**Table 7-49. Ant 2 EIRP Data (Band n260 – 100MHz-4CC)**

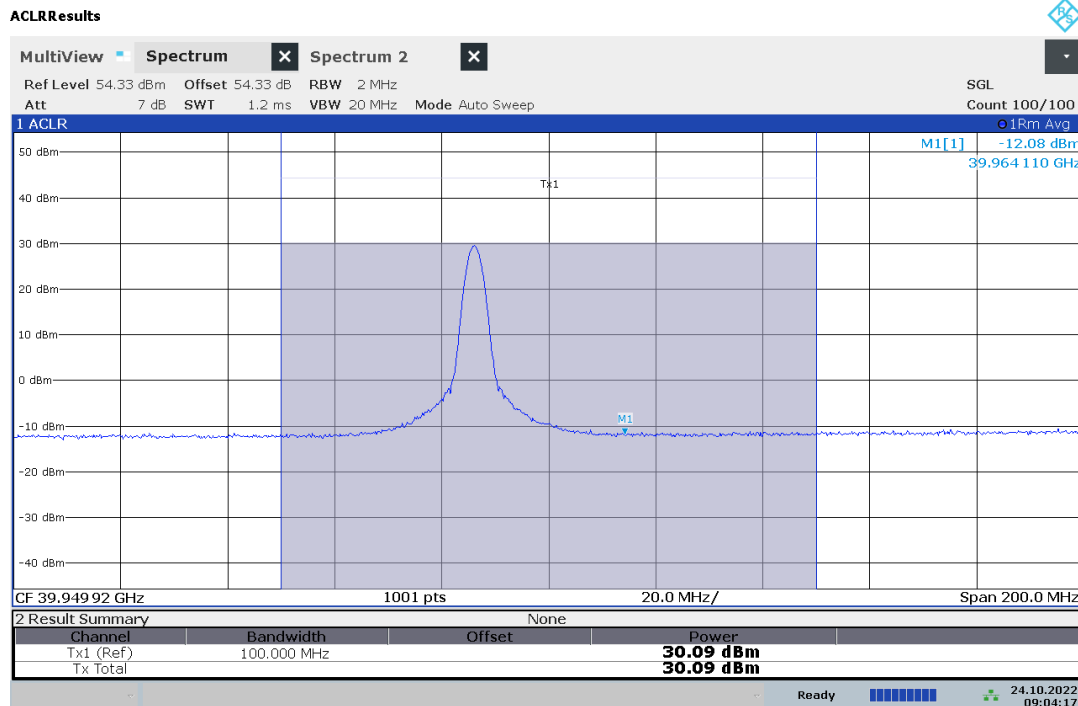
<b>FCC ID:</b> A3LSMS918U	<b>PART 30 MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 1M2209010098-13.A3L	<b>Test Dates:</b> 9/12/2022 – 11/14/2022	<b>EUT Type:</b> Portable Handset	Page 86 of 214

## Worst-Case EIRP Plots (n260)



08:44:38 24.10.2022

Plot 7-99. Ant 1 EIRP Plot (Band n260 – 50MHz-1CC –  $\pi/2$ -BPSK – High Channel)

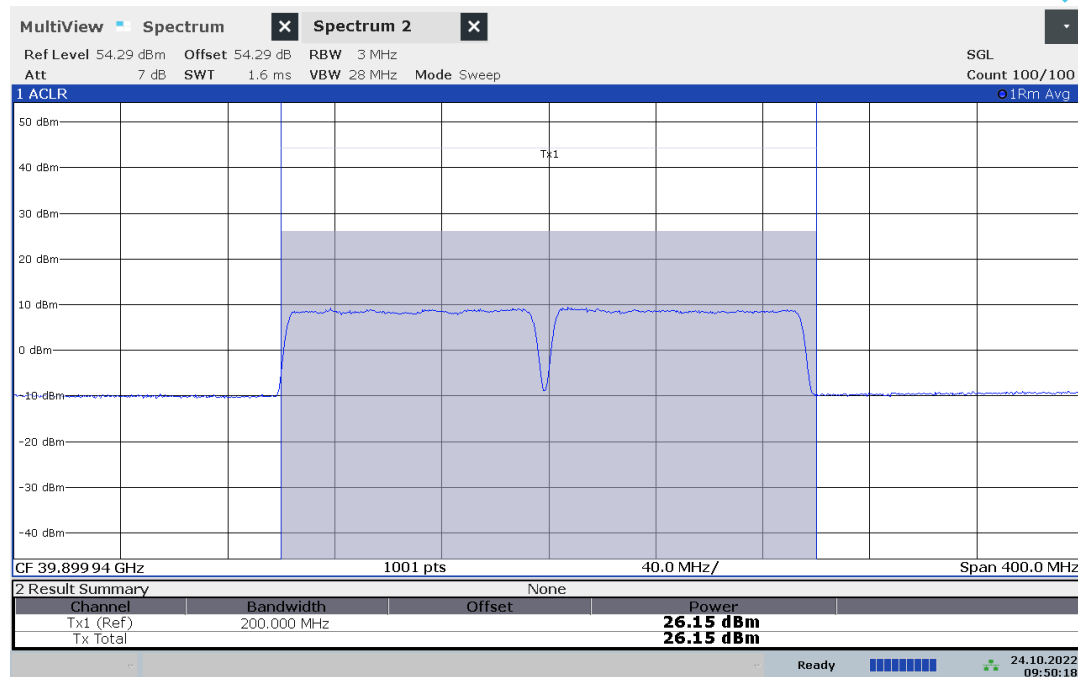


09:04:18 24.10.2022

Plot 7-100. Ant 1 EIRP Plot (Band n260 – 100MHz-1CC – QPSK – High Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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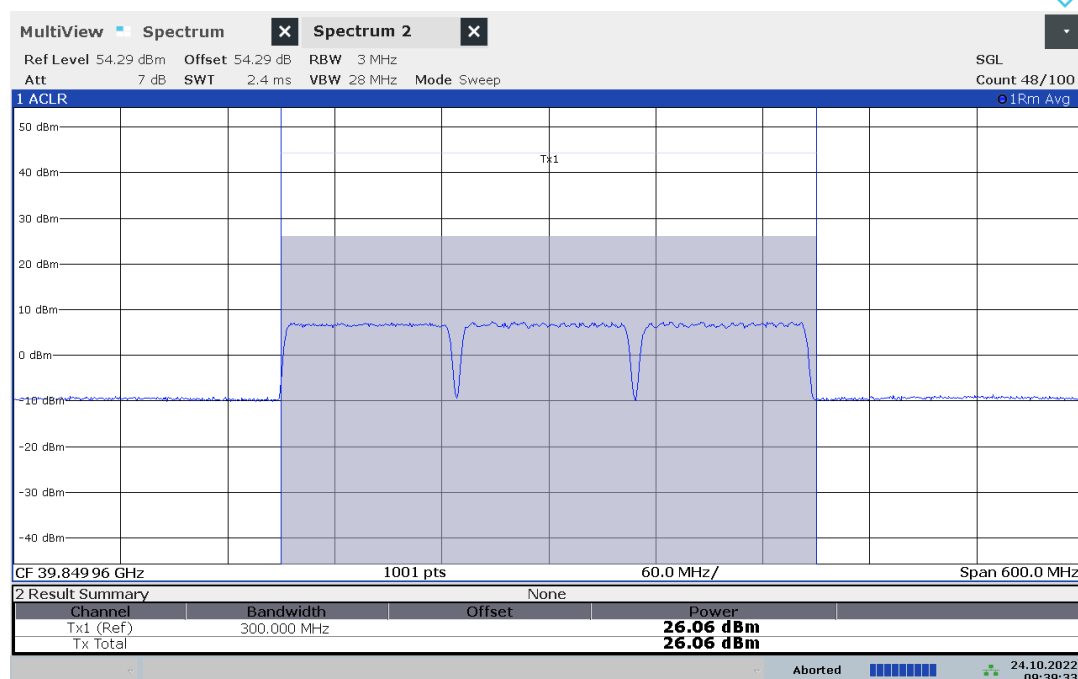
# ACLRRResults



09:50:19 24.10.2022

Plot 7-101. Ant 1 EIRP Plot (Band n260 – 100MHz-2CC –  $\pi/2$ -BPSK – High Channel)

# ACLRRResults



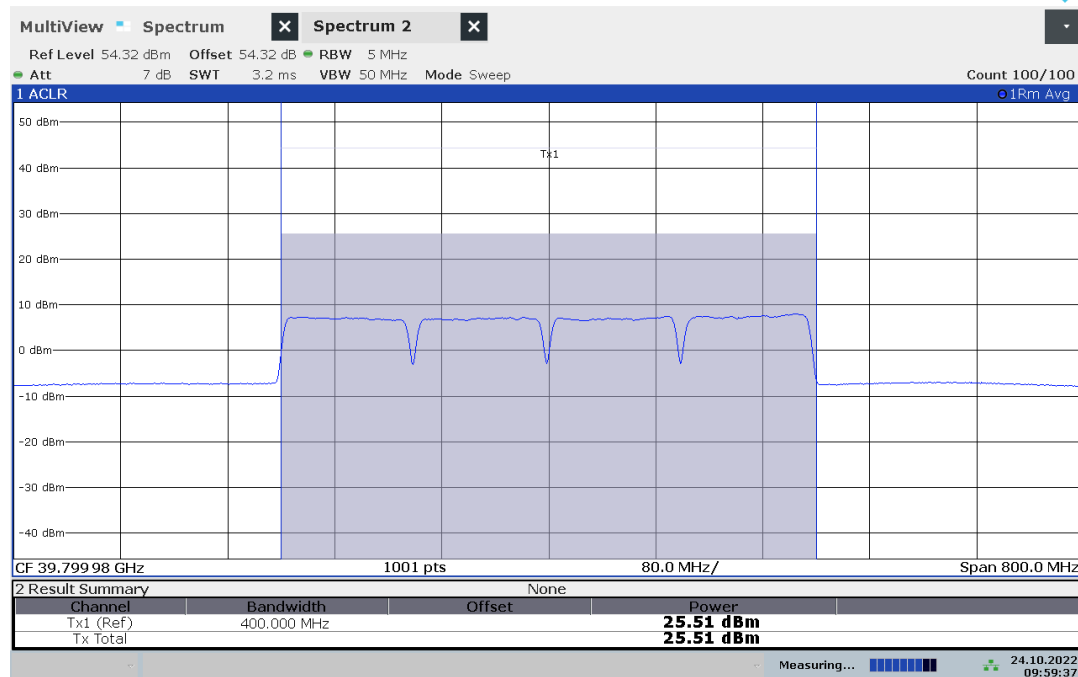
09:39:34 24.10.2022

Plot 7-102. Ant 1 EIRP Plot (Band n260 – 100MHz-3CC –  $\pi/2$ -BPSK – High Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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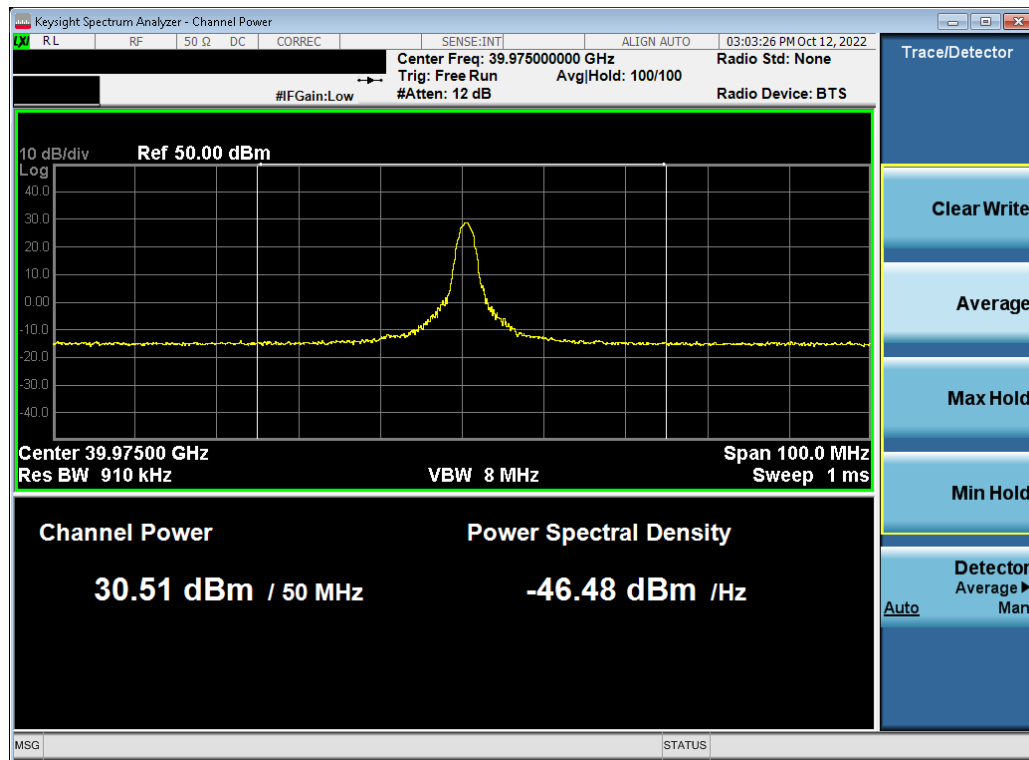


# ACLRRResults



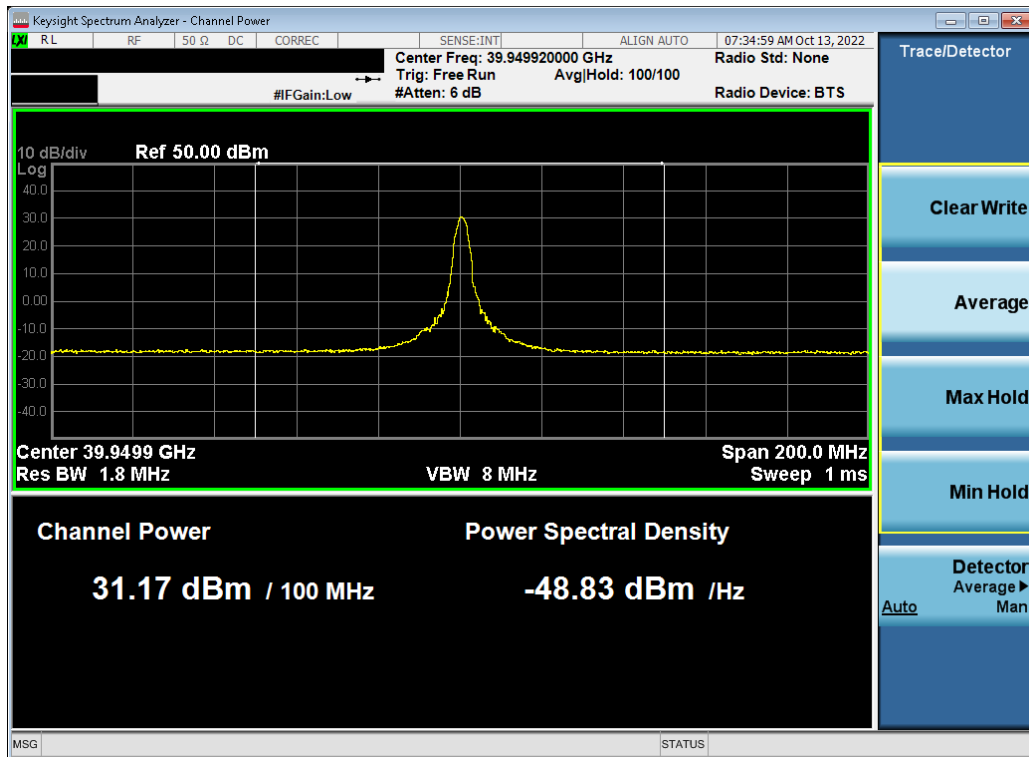
09:59:37 24.10.2022

Plot 7-103. Ant 1 EIRP Plot (Band n260 – 100MHz-4CC – QPSK – High Channel)

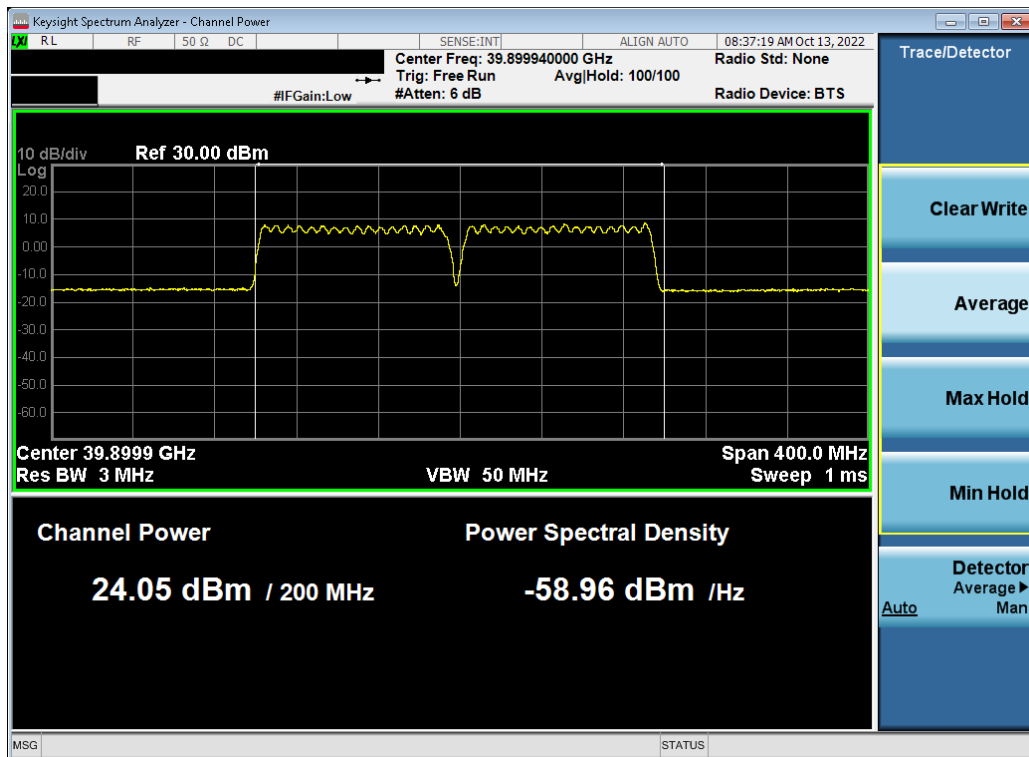


Plot 7-104. Ant 2 EIRP Plot (Band n260 – 50MHz-1CC – QPSK – High Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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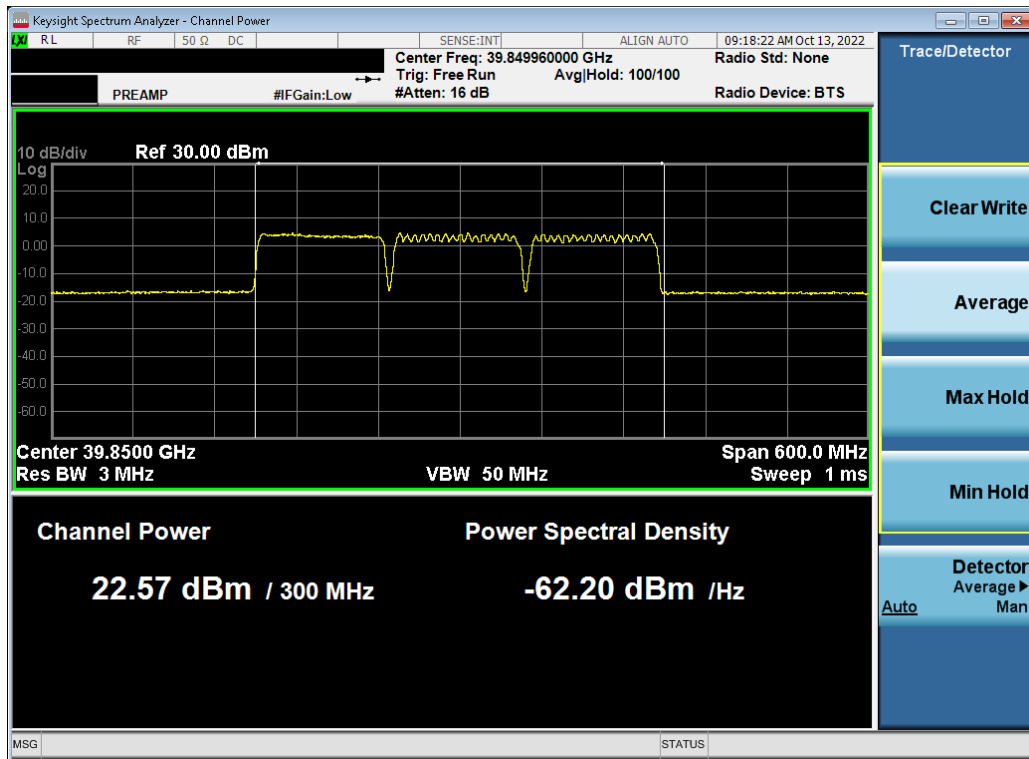


Plot 7-105. Ant 2 EIRP Plot (Band n260 – 100MHz-1CC –  $\pi/2$ -BPSK – High Channel)

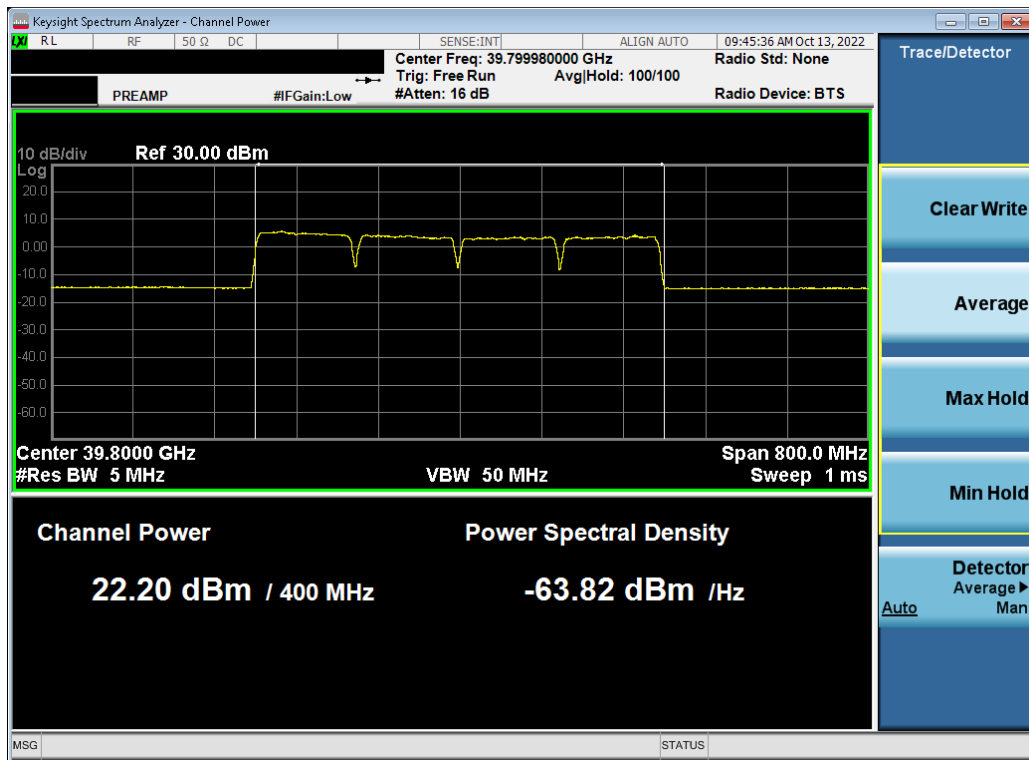


Plot 7-106. Ant 2 EIRP Plot (Band n260 – 100MHz-2CC –  $\pi/2$ -BPSK – High Channel)

FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Plot 7-107. Ant 2 EIRP Plot (Band n260 – 100MHz-3CC – QPSK – High Channel)



Plot 7-108. Ant 2 EIRP Plot (Band n260 – 100MHz-4CC –  $\pi/2$ -BPSK – High Channel)

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## 7.4 Radiated Spurious and Harmonic Emissions

§2.1051, §30.203

### Test Overview

Radiated spurious emissions measurements are performed using the field strength conversion method described in ANSI C63.26-2015 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using hybrid (biconical/log) antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

***The conductive power or total radiated power of any emissions outside a licensee's frequency block shall be -13dBm/1MHz.***

### Test Procedure Used

ANSI C63.26-2015 – Section 5.5.4  
KDB 842590 D01 v01r02 – Section 4.4.3

### Test Settings

1. Start frequency was set to 30MHz and stop frequency was set to 100 GHz for n261/n258 and 200GHz for n260. Several plots are used to show investigations in this entire span.
2. Detector = RMS
3. Trace mode = trace average
4. Sweep time = auto couple
5. Number of sweep points  $\geq 2 \times \text{Span/RBW}$
6. The trace was allowed to stabilize
7. RBW = 1MHz, VBW = 3MHz

### Test Notes

- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst-case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 2) All radiated spurious emissions were measured as EIRP to compare with the §30.203 TRP limits. Emissions that were found to be non-compliant using the EIRP method were re-measured using the Spherical Grid TRP Method per KDB 842590 D01 Section 4.4.3.3.4.
- 3) The plots in this section were taken with the analyzer set to max hold. All final measurements shown in the tables that accompany the plots were taken with trace averaging performed over 100 sweeps while the analyzer was triggering on a specific emission of interest.
- 4) Elements within the same antenna array are correlated to produce beamforming array gain. Antenna arrays cannot be correlated with another antenna array. During testing, only one antenna array was active.

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- 5) The plots from 1 – 200GHz show corrected average EIRP levels. The average EIRP reported below is calculated per section 5.2.7 of ANSI C63.26-2015 which states:  $EIRP (dBm) = E (dB\mu V/m) + 20\log(D) - 104.8$ ; where D is the measurement distance (in the far field region) in m. The field strength E is calculated  $E (dB\mu V/m) = \text{Spectrum Analyzer Level (dBm)} + \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)} + \text{Harmonic Mixer Conversion Loss (dB)} + 107$ . All appropriate Antenna Factors and Cable Losses have been applied in the spectrum analyzer for each measurement. For measurements > 40GHz, a Harmonic Mixer Conversion Loss was also applied to the spectrum analyzer.
- 6) Emissions below 18GHz were measured at a 3 meter test distance, while emissions above 18GHz were measured at the appropriate far field distance. The far field of the mmWave signal is based on formula:  $R > 2D^2/\text{wavelength}$ , where D is the larger between the dimension of the measurement antenna and the transmitting antenna of the EUT. In this case, D is the largest dimension of the measurement antenna.

Frequency Range (GHz)	Wavelength(cm)	Far Field Distance (m)	Measurement Distance (m)
18-40	0.749	0.54	1.00
40-60	0.500	1.39	1.50
60-90	0.333	0.91	1.00
90-140	0.214	0.58	1.00
140-200	0.150	0.39	1.00

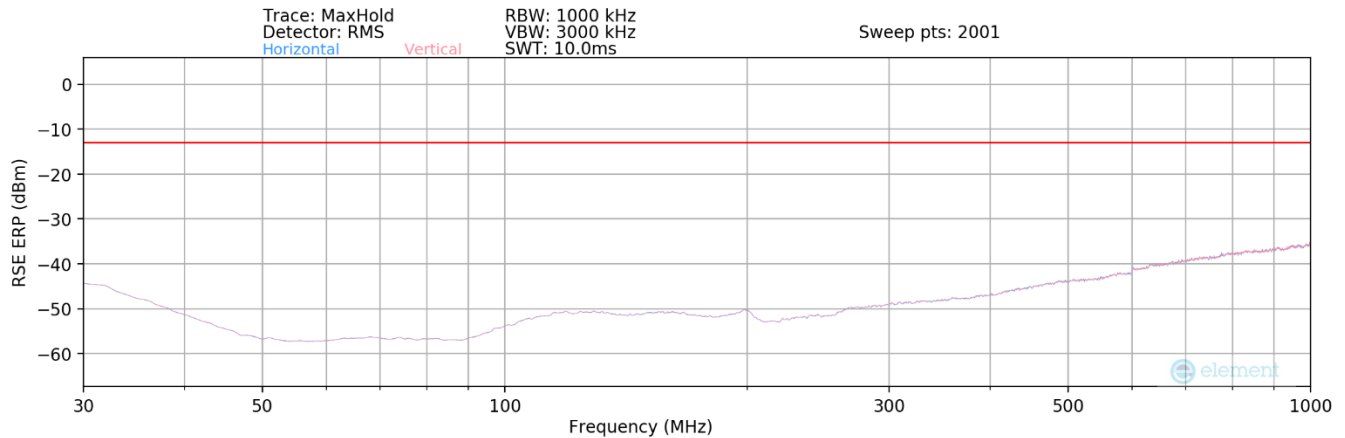
**Table 7-50. Far-Field Distance & Measurement Distance per Frequency Range**

- 7) All emissions from 30MHz - 40GHz were measured using a spectrum analyzer with an internal preamplifier. Emissions >40GHz were measured using a harmonic mixer with the spectrum analyzer.
- 8) All RSE's were measured with 1CC. It was determined that adding more CC's causes the overall amplitude of just 1CC to decrease, therefore, 1CC is the worst case for the purposes of spurious emissions measurements.
- 9) The "-" shown in the following RSE tables are used to denote a noise floor measurement.
- 10) All RSE's were investigated in EN-DC mode and with 802.11 chipset active. It was determined that there is no new emission introduced by EN-DC mode, or the 802.11 chipset. For EN-DC mode, n261 uses LTE B2, B5, B12, B13, B48 and B66, n260 uses LTE B2, B5, B12, B13, B14, B30, B48 and B66 and n258 uses LTE B2, B5, B12, B14, B30, B66, and B71.
- 11) Additionally, this device supports anchor bands operating in FR1 spectrum. The n261 band uses NR Bands n2, n5, n25, n41, n48, n66, and n77 as anchor bands. The n260 band uses NR Bands n2, n5, n12, n25, n30, n41, n48, n66, and n77 as anchor bands. The n258 band uses NR Bands n2, n5, n12, n25, n30, n41, and n66 as anchor bands.
- 12) LTE and FR1 anchor bands supports default configuration and Tx hopping configuration. Both configurations were investigated. There was no discernible difference in the spurious emission levels when using different LTE and NR FR1 anchor bands. Thus, FR1 Band n41 was used as a representative anchor band for EN-DC and NR-DC investigations.

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## Band n258-R1 – Ant 1

### 30MHz - 1GHz



Plot 7-109. Ant 1 - n258-R1 Radiated Spurious Plot (1CC QPSK Mid Channel 2Tx – NR-DC Anchor Band n41)

### Spurious Emissions ERP Sample Calculation (n258-R1)

The raw radiated spurious level is converted to field strength in dBuV/m. Then, the RSE ERP level is calculated by applying the additional factors shown below for a test distance of 3 meter.

$$\text{RSE ERP (dBm)} = \text{Analyzer Level (dBm)} + 107 + \text{AFCL (dB/m)} + 20\text{Log(Dm)} - 104.8 - 2.15 \text{ (dB)}$$

Frequency [MHz]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Antenna Height [cm]	Turntable Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
121.72	Low	50	2Tx	QPSK	H	-	-	-69.35	-13.00	-56.35
322.66	Mid	50	2Tx	QPSK	H	-	-	-67.31	-13.00	-54.31
792.00	High	50	2Tx	QPSK	H	-	-	-57.22	-13.00	-44.22

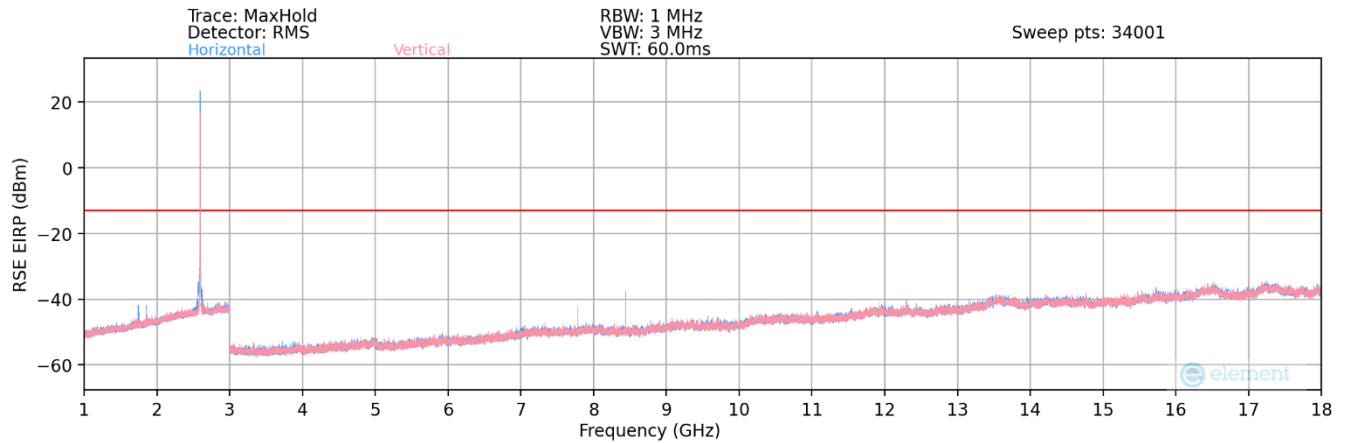
Table 7-51. Ant 1 - n258-R1 Radiated Spurious Emissions Table (30MHz - 1GHz)

### Notes

The RSE ERP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, and cable losses. Measurements were performed at a distance of 3 meter.

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## 1GHz - 18GHz



**Plot 7-110. Ant 1 - n258-R1 Radiated Spurious Plot (1CC QPSK Mid Channel 2Tx – NR-DC Anchor Band n41)**

### Spurious Emissions EIRP Sample Calculation (n258-R1)

The raw radiated spurious level is converted to field strength in dBuV/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 3 meter.

$$\text{RSE EIRP (dBm)} = \text{Analyzer Level (dBm)} + 107 + \text{AFCL (dB/m)} + 20\text{Log(Dm)} - 104.8$$

Frequency [MHz]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Antenna Height [cm]	Turntable Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
8367.24	Low	50	2Tx	QPSK	H	122	300	-42.49	-13.00	-29.49
7778.70	Mid	50	2Tx	QPSK	V	143	81	-43.79	-13.00	-30.79
8442.07	Mid	50	2Tx	QPSK	H	110	344	-39.95	-13.00	-26.95
8517.34	High	50	2Tx	QPSK	H	252	310	-42.64	-13.00	-29.64

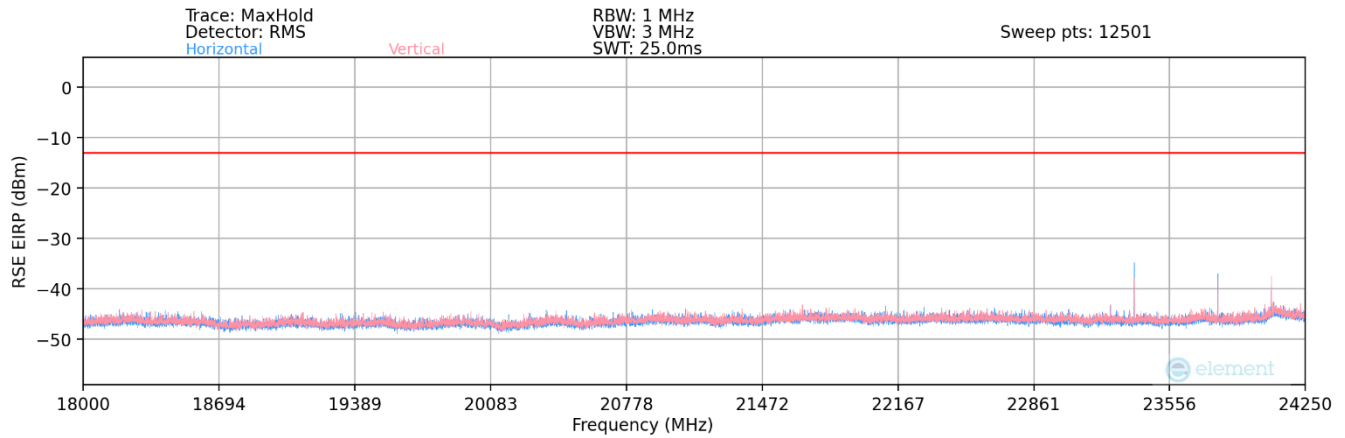
**Table 7-52. Ant 1 - n258-R1 Radiated Spurious Emissions Table (1GHz - 18GHz)**

#### Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, and cable losses. Measurements were performed at a distance of 3 meter.

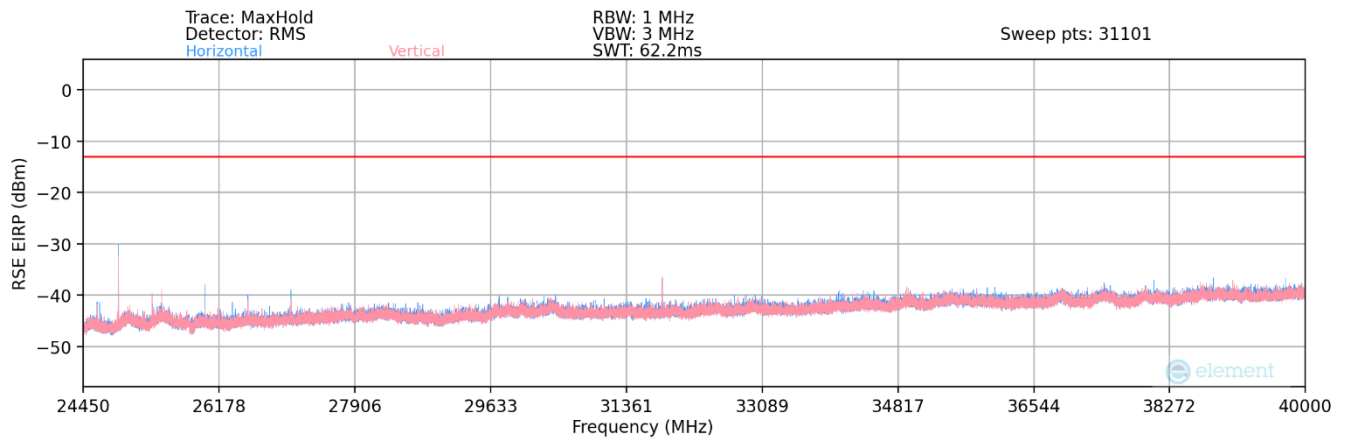
FCC ID: A3LSMS918U	PART 30 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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## 18GHz - 24.25GHz



Plot 7-111. Ant 1 - n258-R1 Radiated Spurious Plot (1CC QPSK Mid Channel 2Tx – NR-DC Anchor Band n41)

## 24.45GHz - 40GHz



Plot 7-112. Ant 1 - n258-R1 Radiated Spurious Plot (1CC QPSK Mid Channel 2Tx – NR-DC Anchor Band n41)

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## Spurious Emissions EIRP Sample Calculation (n258-R1)

The raw radiated spurious level is converted to field strength in dBuV/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 1 meter.

$$\text{RSE EIRP (dBm)} = \text{Analyzer Level (dBm)} + 107 + \text{AFCL (dB/m)} + 20\text{Log(Dm)} - 104.8$$

Frequency [MHz]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Antenna Height [cm]	Turntable Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
23450.10	Low	50	2Tx	QPSK	H	302	302.4	-33.07	-13.00	-20.07
23727.10	Low	50	2Tx	QPSK	H	302	305.5	-38.89	-13.00	-25.89
24582.00	Low	50	2Tx	QPSK	H	304	310.7	-37.56	-13.00	-24.56
24824.00	Low	50	2Tx	QPSK	H	305	314.0	-32.07	-13.00	-19.07
23374.82	Mid	50	2Tx	QPSK	H	317	345.6	-36.61	-13.00	-23.61
23802.29	Mid	50	2Tx	QPSK	H	317	345.5	-38.72	-13.00	-25.72
24899.50	Mid	50	2Tx	QPSK	H	290	317.6	-29.24	-13.00	-16.24
25447.85	Mid	50	2Tx	QPSK	H	290	316.4	-35.40	-13.00	-22.40
31817.02	Mid	50	2Tx	QPSK	V	295	282.6	-32.54	-13.00	-19.54
23299.75	High	50	2Tx	QPSK	H	304	301.9	-34.81	-13.00	-21.81
23877.15	High	50	2Tx	QPSK	H	304	310.0	-36.62	-13.00	-23.62
24974.20	High	50	2Tx	QPSK	H	304	310.0	-29.20	-13.00	-16.20
27168.60	High	50	2Tx	QPSK	H	299	301.4	-35.00	-13.00	-22.00

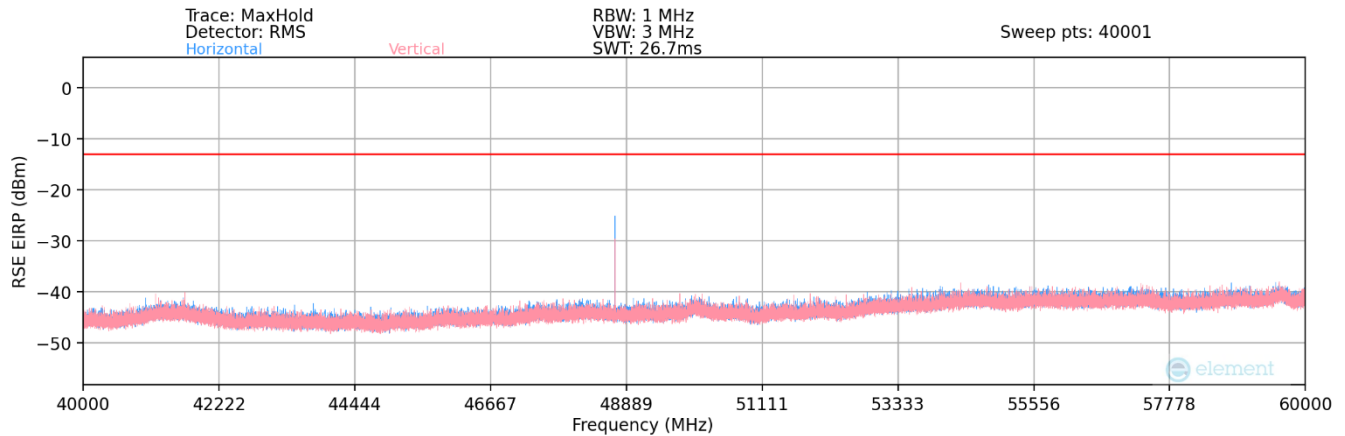
**Table 7-53. Ant 1 - n258-R1 Radiated Spurious Emissions Table (18GHz - 40GHz)**

### Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, and cable losses. Measurements were performed at a distance of 1 meter

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## 40GHz - 60GHz



Plot 7-113. Ant 1 - n258-R1 Radiated Spurious Plot (1CC QPSK Mid Channel 2Tx – NR-DC Anchor Band n41)

### Spurious Emissions EIRP Sample Calculation (n258-R1)

The raw radiated spurious level is converted to field strength in dBuV/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 1.5 meter.

**RSE EIRP (dBm)** = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) – 104.8 + Harmonic Mixer Conversion Loss [dB]

Frequency [MHz]	Channel	Bandwidth (MHz)	EUT Beam Pol.	Modulation	Antenna Polarization [H/V]	Antenna Height [cm]	Turntable Azimuth [degrees]	Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
48550.08	Low	50	2Tx	QPSK	H	284	307.4	-24.57	-13.00	-11.57
48700.08	Mid	50	2Tx	QPSK	H	282	307.4	-25.32	-13.00	-12.32
48849.84	High	50	2Tx	QPSK	H	285	310.4	-23.13	-13.00	-10.13

Table 7-54. Ant 1 - n258-R1 Radiated Spurious Emissions Table (40GHz - 60GHz)

### Notes

The RSE EIRP level is taken directly from the spectrum analyzer which includes the appropriate antenna factors, cable losses, and harmonic mixer conversion losses. Measurements were performed at a distance of 1.5 meter.

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