

Part 96 MEASUREMENT REPORT**Applicant Name:**

Wilson Electronics
3301 E. Deseret Dr.
St. George, UT 84790
United States

Date of Testing:

3/24/2025 – 6/5/2025

Test Report Issue Date:

6/9/2025

Test Site/Location:

Element Lab., Columbia, MD, USA

Test Report Serial No.:

1M2505270053-01.UPO

FCC ID:

UPO308-0007-2

APPLICANT:

Wilson Electronics

Application Type:

Certification

Model:

308-0007-2

EUT Type:

Optical Radio Unit

FCC Classification:

Category A and B Citizens Broadband Radio Service
Devices (CBSD)

FCC Rule Part(s):

96

Test Procedure(s):

ANSI C63.26-2015, KDB 940660 D01 v03, WINNF-TS-0122
v.1.0.2

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



FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 1 of 65

T A B L E O F C O N T E N T S

1.0	INTRODUCTION	4
1.1	Scope	4
1.2	Element Test Location.....	4
1.3	Test Facility / Accreditations.....	4
2.0	PRODUCT INFORMATION.....	5
2.1	Equipment Description	5
2.2	Device Capabilities.....	5
2.3	Test Configuration	5
2.4	Software and Firmware	5
2.5	EMI Suppression Device(s)/Modifications	5
3.0	DESCRIPTION OF TESTS	6
3.1	Measurement Procedure.....	6
3.2	Radiated Power and Radiated Spurious Emissions	6
4.0	MEASUREMENT UNCERTAINTY	7
5.0	TEST EQUIPMENT CALIBRATION DATA	8
6.0	SAMPLE EMISSION DESIGNATORS	9
7.0	TEST RESULTS	10
7.1	Summary.....	10
7.2	Conducted Output Power/EIRP Data	12
7.3	Occupied Bandwidth	15
7.4	Conducted Power / EIRP Per 10MHz.....	23
7.5	Power Spectral Density	31
7.6	Spurious and Harmonic Emissions at Antenna Terminal	39
7.7	Band Edge Emissions at Antenna Terminal.....	47
7.8	Peak-Average Ratio	51
7.9	Radiated Spurious Emissions Measurements.....	55
7.10	Frequency Stability / Temperature Variation	62
8.0	CONCLUSION.....	65

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 2 of 65

MEASUREMENT REPORT

FCC Part 96

Mode	Bandwidth	Modulation	Tx Frequency Range [MHz]	EIRP		Emission Designator
				Max. Power [W]	Max. Power [dBm]	
LTE Band 48	40 MHz	QPSK	3570.0 - 3680.0	0.139	21.42	38M5G7D
		16QAM	3570.0 - 3680.0	0.136	21.32	38M5W7D
		64QAM	3570.0 - 3680.0	0.136	21.33	38M5W7D
		256QAM	3570.0 - 3680.0	0.123	20.90	38M4W7D
	20 MHz	QPSK	3560.0 - 3690.0	0.104	20.19	18M1G7D
		16QAM	3560.0 - 3690.0	0.131	21.18	18M1W7D
		64QAM	3560.0 - 3690.0	0.116	20.64	18M1W7D
		256QAM	3560.0 - 3690.0	0.119	20.76	18M0W7D
	10 MHz	QPSK	3555.0 - 3695.0	0.151	21.78	9M01G7D
		16QAM	3555.0 - 3695.0	0.151	21.79	8M99W7D
		64QAM	3555.0 - 3695.0	0.146	21.64	9M03W7D
		256QAM	3555.0 - 3695.0	0.139	21.42	9M00W7D

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

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 3 of 65

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

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

1.3 Test Facility / Accreditations

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

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

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 4 of 65

2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Wilson Electronics Optical Radio Unit FCC ID: UPO308-0007-2**. The test data contained in this report pertains only to the emissions due to the EUT's LTE Band 48 operation in the CBRS band. Per FCC Part 96, this device is evaluated as a Category A and B Citizens Broadband Radio Service Device (CBSD).

Test Device Serial No.: 900200000479

2.2 Device Capabilities

This device contains the following capabilities:

LTE Band 48

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

2.3 Test Configuration

The EUT was tested per the guidance of ANSI C63.26-2015. See Section 7.0 of this test report for a description of the radiated and antenna port conducted emissions tests.

2.4 Antenna Description

The EUT employs two cross polarized antennas with a maximum gain of 0.00 dBi in the CBRS band.

2.5 Software and Firmware

Testing was performed on device(s) using hardware version 2.0 and software version 5.69 installed on the EUT.

2.6 EMI Suppression Device(s)/Modifications

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

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 5 of 65

3.0 DESCRIPTION OF TESTS

3.1 Measurement Procedure

The measurement procedures described in the “American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services” (ANSI C63.26-2015) were used in the measurement of the EUT.

Deviation from Measurement Procedure.....None

3.2 Radiated Power and Radiated Spurious Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. The test site inside the chamber is a 6m x 5.2m elliptical, obstruction-free area in accordance with Figure 5.7 of Clause 5 in ANSI C63.4-2014. Absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections for measurements above 1GHz. For measurements below 1GHz, the absorbers are removed. A raised turntable is used for radiated measurement. The turn table is a continuously rotatable, remote-controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. An 80cm tall test table made of Styrodur is placed on top of the turn table. A Styrodur pedestal is placed on top of the test table to bring the total table height to 1.5m.

The equipment under test was transmitting while connected to its integral antenna and is placed on a turntable 3 meters from the receive antenna. The receive antenna height is adjusted between 1 and 4 meter height, the turntable is rotated through 360 degrees, and the EUT is manipulated through all orthogonal planes representative of its typical use to achieve the highest reading on the receive spectrum analyzer.

For radiated power measurements, substitution method is used per the guidance of ANSI C63.26-2015. For emissions below 1GHz, a half-wave dipole is substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer level previously recorded from the spurious emission from the EUT. The power of the emission is calculated using the following formula:

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

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

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

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

And

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

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

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

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 6 of 65

4.0 MEASUREMENT UNCERTAINTY

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

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

Table 4-1. Measurement Uncertainty Budget

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 7 of 65

5.0 TEST EQUIPMENT CALIBRATION DATA

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

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	ETS	EMC Cable and Switch System	12/11/2024	Annual	12/11/2025	ETS-001
-	WL40-1	Licensed Transmitter Cable Set	2/25/2025	Annual	2/25/2026	WL40-1
Agilent	N9030A	50GHz PXA Signal Analyzer	4/23/2024	Annual	4/23/2025	US51350301
Emco	3115	Horn Antenna (1-18GHz)	6/7/2024	Biennial	6/7/2026	9704-5182
Emco	3116	Horn Antenna (18-40GHz)	7/5/2023	Triennial	7/5/2025	9203-2178
Keysight Technologies	N9020A	MXA Signal Analyzer	4/11/2024	Annual	4/11/2025	MY54500644
Keysight Technologies	N9030A	PXA Signal Analyzer (44GHz)	8/26/2024	Annual	8/26/2025	MY54490576
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	10/16/2024	Annual	10/16/2025	100342
Rohde & Schwarz	FSW67	Signal / Spectrum Analyzer	5/12/2025	Annual	5/12/2026	103200
Sunol	JB5	Bi-Log Antenna (30MHz - 5GHz)	9/11/2024	Biennial	9/11/2026	A051107
Sunol	DRH-118	Horn Antenna (1-18GHz)	2/13/2024	Biennial	2/13/2026	A042511

Table 5-1. Test Equipment Calibration Table

Notes:

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

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 8 of 65

6.0 SAMPLE EMISSION DESIGNATORS

Emission Designator

QPSK Modulation

Emission Designator = 8M62G7D

LTE BW = 8.62 MHz

G = Phase Modulation

7 = Quantized/Digital Info

D = Data transmission, telemetry, telecommand

QAM Modulation

Emission Designator = 8M45W7D

LTE BW = 8.45 MHz

W = Amplitude/Angle Modulated

7 = Quantized/Digital Info

D = Data transmission, telemetry, telecommand

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 9 of 65

7.0 TEST RESULTS

7.1 Summary

Company Name: Wilson Electronics
 FCC ID: UPO308-0007-2
 FCC Classification: Category A and B Citizens Broadband Radio Service Devices (CBSD)
 Mode(s): Wilson Electronics

Test Condition	Test Description	FCC Part Section(s)	Test Limit	Test Result	Reference
CONDUCTED	Conducted Power	2.1046(a), 2.1046(c)	NA	PASS	Section 7.2
	Occupied Bandwidth	2.1049(h)	NA	PASS	Section 7.3
	Conducted Band Edge / Spurious Emissions (CBSD)	2.1051, 96.41(e)(i)	-13 dBm/MHz at frequencies within 0-10 MHz of above the upper SAS-assigned channel edge and within 0-10MHz below the lower SAS-assigned channel edge -25 dBm/MHz at frequencies greater than 10 MHz above and below channel edge -emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz	PASS	Sections 7.6, 7.7
	Peak-Average Ratio	96.41(g)	≤13dBm	PASS	Section 7.8
	Frequency Stability	2.1055	Fundamental emissions stay within authorized frequency block	PASS	Section 7.10
	Category A CBSD Additional Requirements (CBSD Protocol)	96.43	Category A CBSDs shall not be deployed or operated outdoors with antennas exceeding 6 meters height above terrain. CBSDs deployed or operated outdoors with antennas exceeding 6 meters height above terrain will be classified as, and subject to, the operational requirements of Category B CBSDs. When registering with an SAS, Category A CBSDs must transmit all information required under 96.39. This transmission shall also indicate whether the device will be operated indoors or outdoors. And CBSD operated at higher power than specified for Category A CBSDs in 96.41 will be classified as, and subject to, the operational requirements of a Category B CBSD	PASS	SAS Protocol Report
	Category B CBSD Additional Requirements (CBSD Protocol)	96.45	Category B CBSDs must be professionally installed. In the 3550-3650 MHz band, Category B CBSDs must be authorized consistent with information received from an ESC, as described in 96.15. Category B CBSDs are limited to outdoor operations. When registering with an SAS, Category B CBSDs must transmit all information required under 96.39 plus the following additional information: antenna gain, beamwidth, azimuth, down tilt angle, and antenna height above ground level.	PASS	SAS Protocol Report
	Equivalent Isotropic Radiated Power (EIRP) (Category A CBSD)	96.41(b)	30 dBm/10MHz	PASS	Section 7.4
	Equivalent Isotropic Radiated Power (EIRP) (Category B CBSD)	96.41(b)	47 dBm/10MHz	PASS	Section 7.4
	Power Spectral Density (Category A CBSD)	96.41(b)	20 dBm/10MHz	PASS	Section 7.5
RADIATED	Power Spectral Density (Category B CBSD)	96.41(b)	37 dBm/10MHz	PASS	Section 7.5
	Radiated Spurious Emissions	2.1053, 96.41(e)	-40 dBm/MHz	PASS	Section 7.9

Table 7-1. Summary of Test Results

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 10 of 65

Notes:

- 1) All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
- 2) The analyzer plots were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables, directional couplers, and attenuators used as part of the system to maintain a link between the call box and the EUT at all frequencies of interest.
- 3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables, attenuators, and couplers.
- 4) For conducted spurious emissions, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is EMC Software Tool 2.3.0.

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 11 of 65

7.2 Conducted Output Power/EIRP Data

Test Overview

The EUT is set up to transmit at maximum power for LTE. All power levels are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst-case configuration. All modes of operation were investigated and the worst-case configuration results are reported in this section.

A-MPR is implemented in this device per the A-MPR specification in 3GPP TS 36.101. The conducted powers are shown herein to cover the different A-MPR levels specified in the standard. Measurement equipment was set up with triggering/gating on the spectrum analyzer such that powers were measured only during the on-time of the signal.

Test Procedure Used

ANSI C63.26-2015 – Section 5.2

Test Settings

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

Test Setup

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



Figure 7-1. Test Instrument & Measurement Setup

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 12 of 65

Test Notes

1. 256QAM operations does not employ A-MPR.
2. Conducted power measurements were evaluated using various combinations of modulation and channel bandwidth. Channel bandwidth data is shown in the tables below based only on the channel bandwidths that were supported in this device.
3. It was determined that both outputs of the device behave identically. To obtain MIMO output power a correction of 3dB was added to SISO measurements.

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 13 of 65

Bandwidth	Modulation	Channel	Frequency [MHz]	Conducted Power [dBm]	MIMO Conducted Power [dBm]	Directional Ant Gain [dBi]	EIRP [dBm]	EIRP [Watts]
20 MHz	QPSK	55340	3560.0	19.80	22.80	0.00	22.80	0.190
		55990	3625.0	19.74	22.74	0.00	22.74	0.188
		56640	3690.0	20.19	23.19	0.00	23.19	0.208
	16-QAM	55340	3560.0	19.91	22.91	0.00	22.91	0.195
		55990	3625.0	21.18	24.18	0.00	24.18	0.262
		56640	3690.0	20.22	23.22	0.00	23.22	0.210
	64-QAM	55340	3560.0	20.20	23.20	0.00	23.20	0.209
		55990	3625.0	20.64	23.64	0.00	23.64	0.231
		56640	3690.0	20.15	23.15	0.00	23.15	0.206
	256-QAM	55340	3560.0	20.02	23.02	0.00	23.02	0.200
		55990	3625.0	20.76	23.76	0.00	23.76	0.238
		56640	3690.0	20.12	23.12	0.00	23.12	0.205
10 MHz	QPSK	55290	3555.0	21.78	24.78	0.00	24.78	0.300
		55990	3625.0	20.93	23.93	0.00	23.93	0.247
		56690	3695.0	21.16	24.16	0.00	24.16	0.260
	16-QAM	55290	3555.0	21.79	24.79	0.00	24.79	0.302
		55990	3625.0	20.95	23.95	0.00	23.95	0.248
		56690	3695.0	21.05	24.05	0.00	24.05	0.254
	64-QAM	55290	3555.0	21.64	24.64	0.00	24.64	0.291
		55990	3625.0	20.66	23.66	0.00	23.66	0.232
		56690	3695.0	21.16	24.16	0.00	24.16	0.261
	256-QAM	55290	3555.0	21.42	24.42	0.00	24.42	0.276
		55990	3625.0	20.88	23.88	0.00	23.88	0.244
		56690	3695.0	21.02	24.02	0.00	24.02	0.253

Table 7-2. Conducted Power/EIRP Results

Bandwidth	Modulation	PCC		SCC		Conducted Power [dBm]	MIMO Power [dBm]	Directional Ant Gain [dBi]	EIRP [dBm]	EIRP [Watts]
		Bandwidth [MHz]	Frequency [MHz]	Bandwidth [MHz]	Frequency [MHz]					
40 MHz	QPSK	20	3560.0	20	3579.8	21.42	24.42	0.00	24.42	0.277
		20	3625.0	20	3644.8	20.92	23.92	0.00	23.92	0.247
		20	3690.0	20	3670.2	20.36	23.36	0.00	23.36	0.217
	16QAM	20	3560.0	20	3579.8	21.32	24.32	0.00	24.32	0.270
		20	3625.0	20	3644.8	20.73	23.73	0.00	23.73	0.236
		20	3690.0	20	3670.2	20.34	23.34	0.00	23.34	0.216
	64QAM	20	3560.0	20	3579.8	21.33	24.33	0.00	24.33	0.271
		20	3625.0	20	3644.8	20.65	23.65	0.00	23.65	0.232
		20	3690.0	20	3670.2	20.27	23.27	0.00	23.27	0.212
	256QAM	20	3560.0	20	3579.8	20.90	23.90	0.00	23.90	0.245
		20	3625.0	20	3644.8	20.56	23.56	0.00	23.56	0.227
		20	3690.0	20	3670.2	20.23	23.23	0.00	23.23	0.210

Table 7-3. CA Conducted Power/EIRP Results

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 14 of 65

7.3 Occupied Bandwidth

Test Overview

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Procedure Used

ANSI C63.26-2015 – Section 5.4.4

Test Settings

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth and the 26dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 – 5% of the expected OBW
3. VBW $\geq 3 \times$ RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize
8. If necessary, steps 2 – 7 were repeated after changing the RBW such that it would be within 1 – 5% of the 99% occupied bandwidth observed in Step 7

Test Setup

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



Figure 7-2. Test Instrument & Measurement Setup

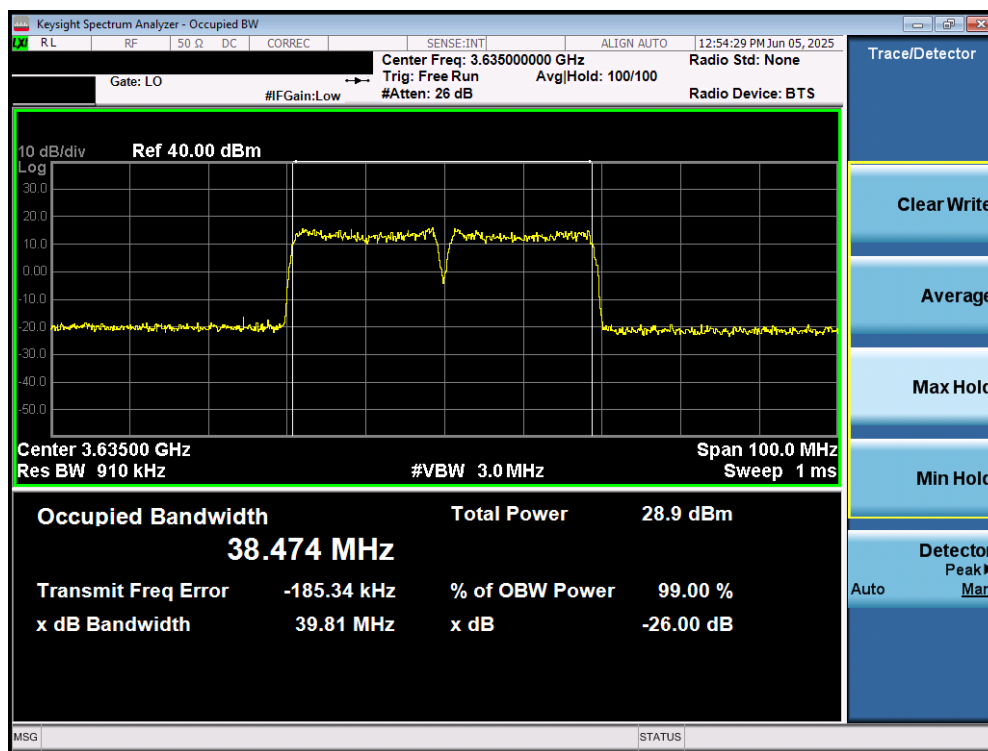
Test Notes

1. As both outputs are identical, only one set of OBW data has been included.

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 15 of 65

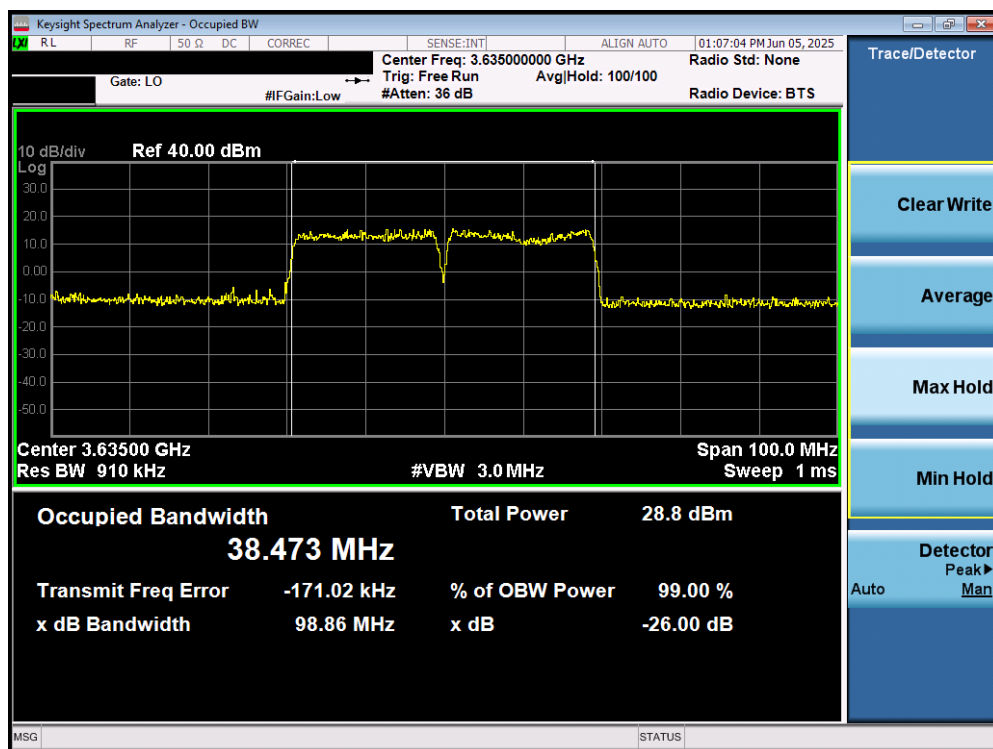
Mode	Bandwidth	Modulation	OBW [MHz]
LTE Band 48	40 MHz	QPSK	38.47
		16QAM	38.47
		64QAM	38.45
		256QAM	38.43
	20 MHz	QPSK	18.07
		16QAM	18.08
		64QAM	18.09
		256QAM	18.03
	10 MHz	QPSK	9.01
		16QAM	8.99
		64QAM	9.03
		256QAM	9.00

Table 7-4. Occupied Bandwidth Results

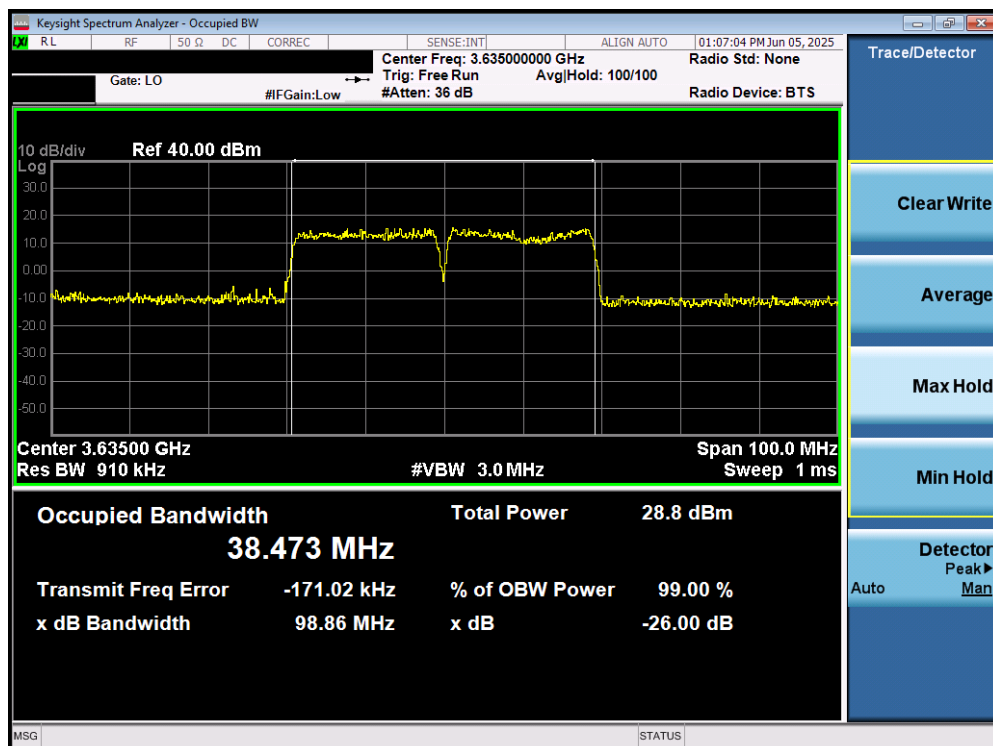


Plot 7.1. Occupied Bandwidth Plot (20+20MHz QPSK)

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 16 of 65

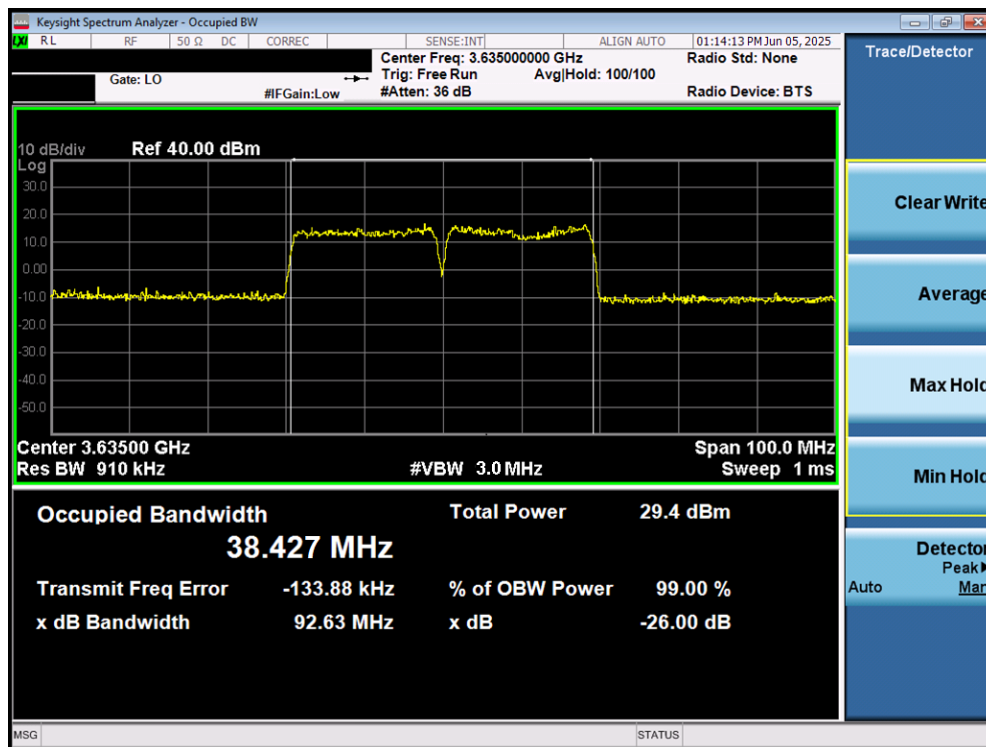


Plot 7.2. Occupied Bandwidth Plot (20+20MHz 16QAM)

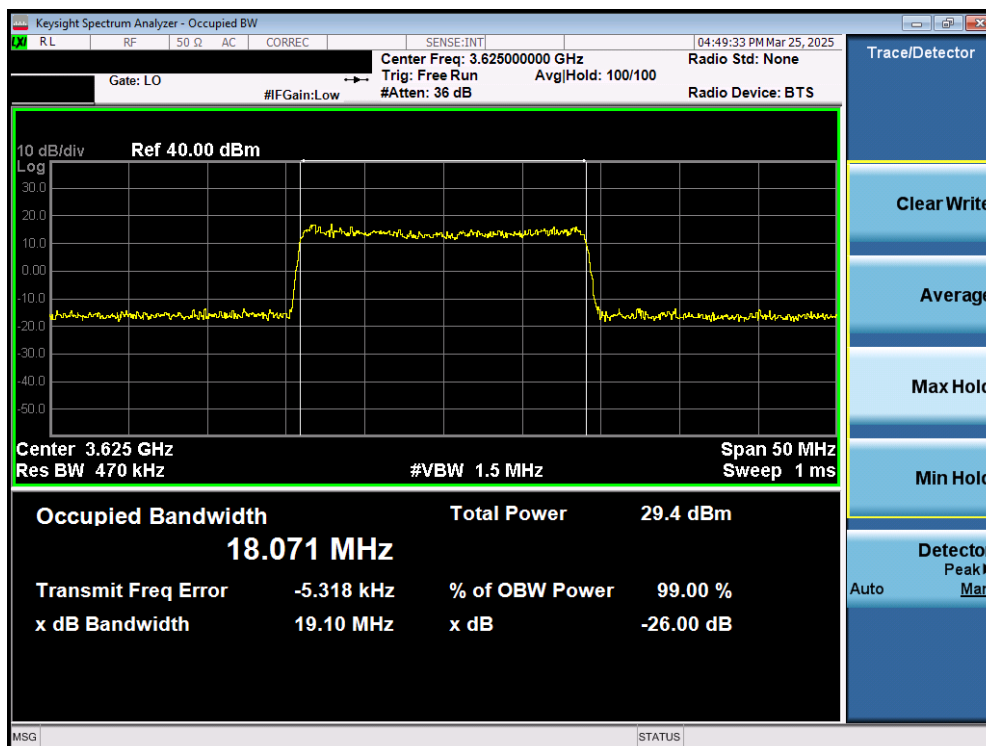


Plot 7.3. Occupied Bandwidth Plot (20+20MHz 64QAM)

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 17 of 65

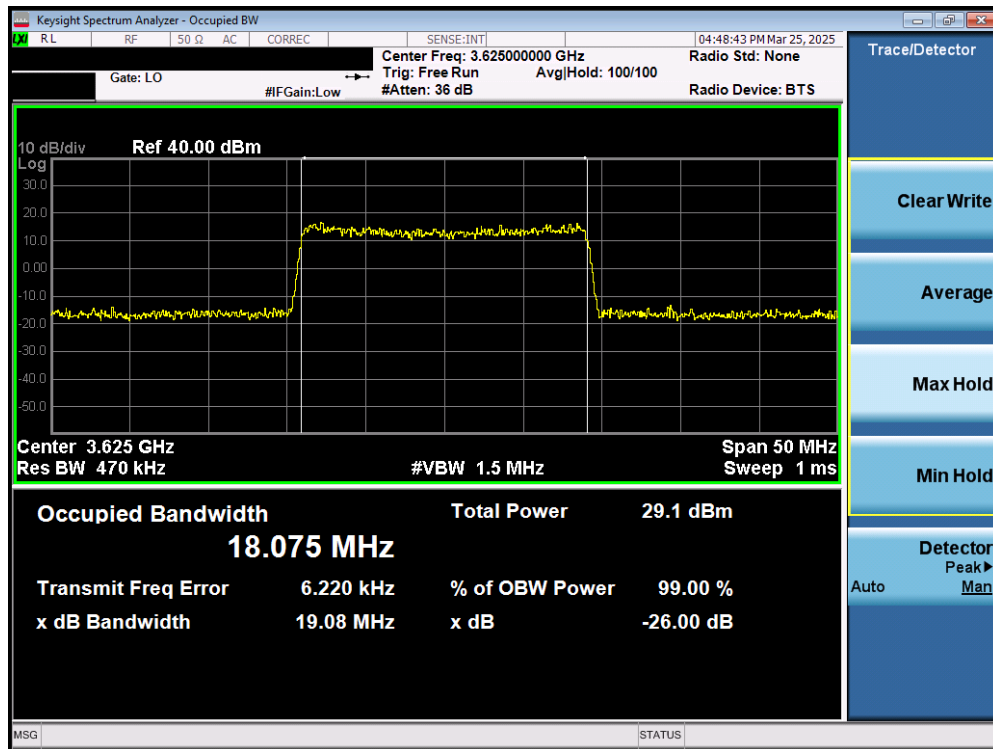


Plot 7.4. Occupied Bandwidth Plot (20+20MHz 256QAM)

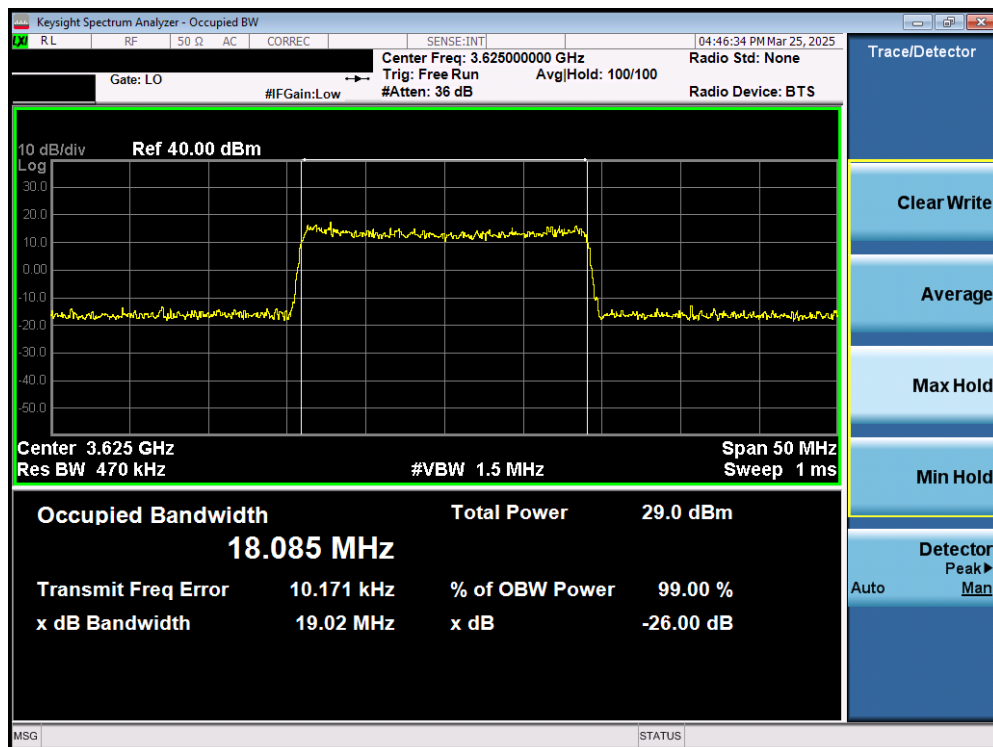


Plot 7.5. Occupied Bandwidth Plot (20MHz QPSK)

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 18 of 65

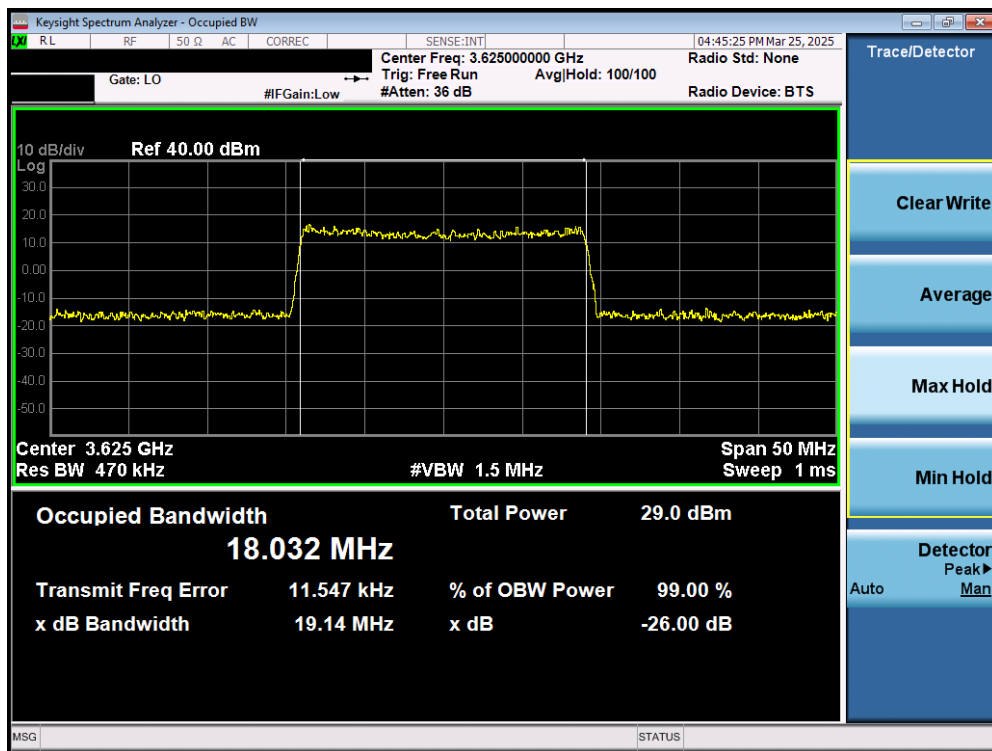


Plot 7.6. Occupied Bandwidth Plot (20MHz 16QAM)

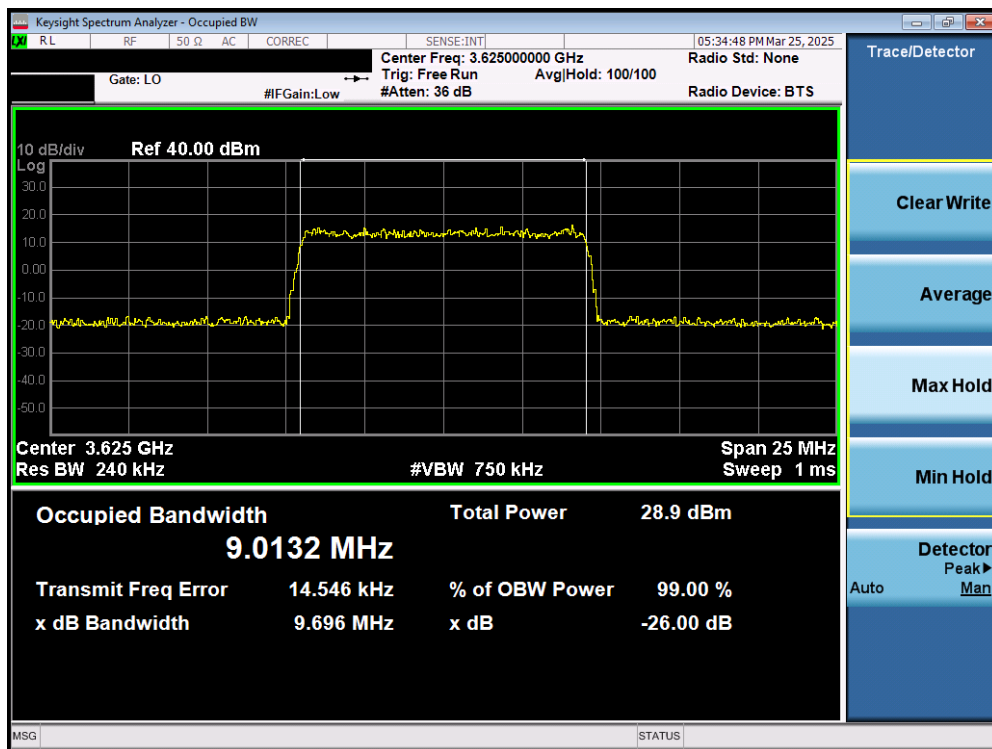


Plot 7.7. Occupied Bandwidth Plot (20MHz 64QAM)

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 19 of 65

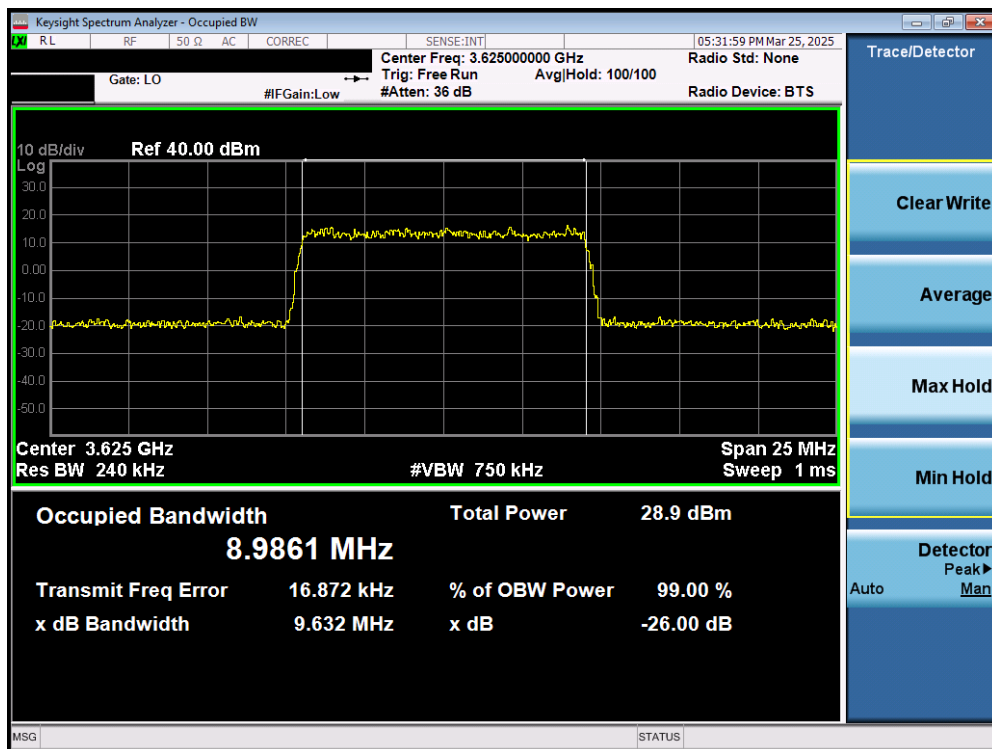


Plot 7.8. Occupied Bandwidth Plot (20MHz 256QAM)

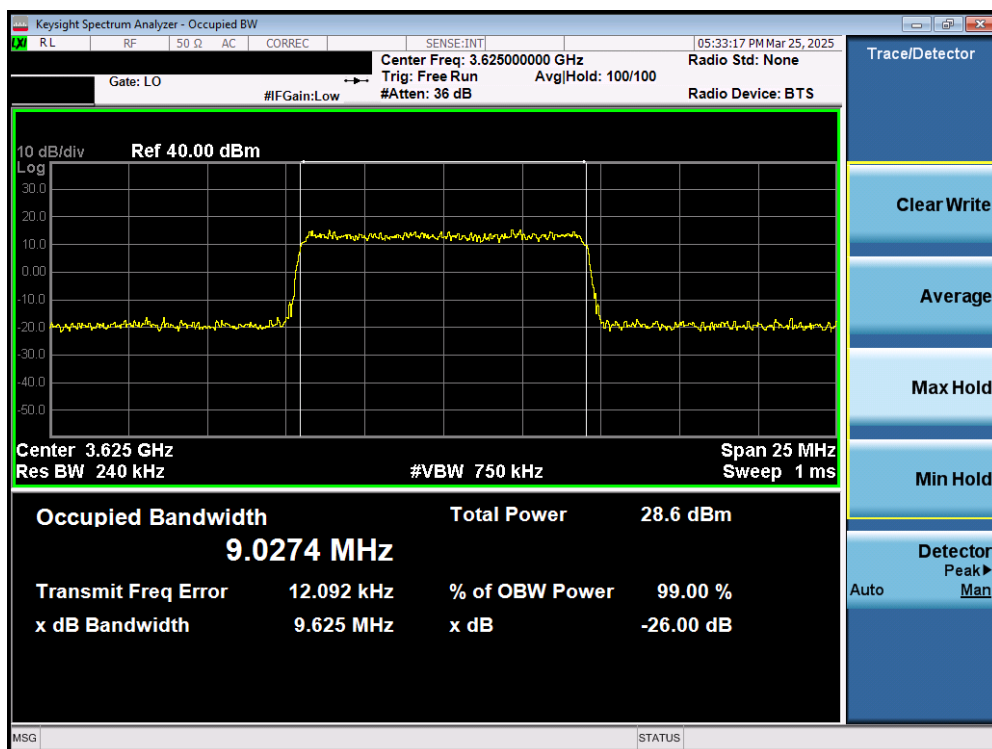


Plot 7.9. Occupied Bandwidth Plot (10MHz QPSK)

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 20 of 65

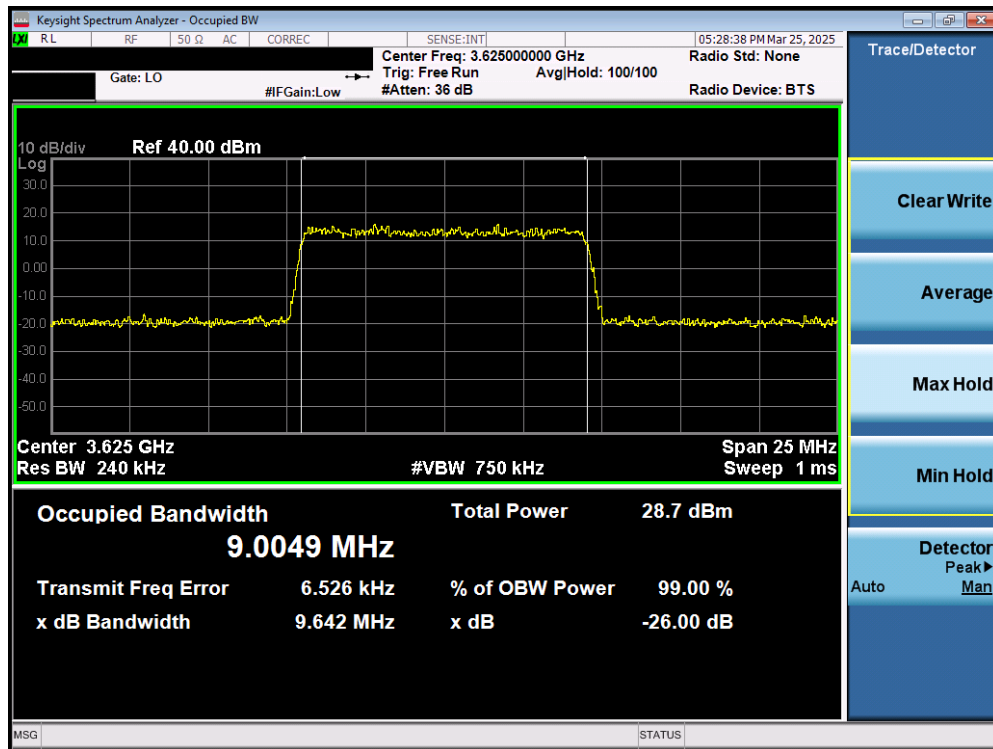


Plot 7.10. Occupied Bandwidth Plot (10MHz 16QAM)



Plot 7.11. Occupied Bandwidth Plot (10MHz 64QAM)

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 21 of 65



Plot 7.12. Occupied Bandwidth Plot (10MHz 256QAM)

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 22 of 65

7.4 Conducted Power / EIRP Per 10MHz

Test Overview

The spectrum analyzer was connected to the antenna terminal while the EUT was operating at its maximum power control level, as defined in ANSI C63.26-2015, and at the appropriate frequencies. The spectrum analyzer was gate as to only measure during on periods.

The e.i.r.p./10MHz for a Category B CBSD must be less than 47dBm/10MHz.

The e.i.r.p./10MHz for a Category A CBSD must be less than 30dBm/10MHz

Test Procedure Used

ANSI C63.26-2015 – Section 5.2.4.4.1

ANSI C63.26-2015 – Section 5.2.4.5

ANSI C63.26-2015 – Section 6.4.3.2.3

Test Settings

1. Span = 2x to 3X the OBW
2. RBW = 10MHz
3. VBW $\geq 3 \times$ RBW
4. Set number of sweep points $\geq 2 \times$ span / RBW
5. Sweep Time = auto couple
6. Detector = RMS
7. Trace mode = average
8. Trigger = Level

Test Setup

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



Figure 7-3. Test Instrument & Measurement Setup

Test Notes

- 1) Compliance with Category B limits is shown by comparison to the stricter Category A limit.
- 2) As both outputs of the device are identical, MIMO results are obtained by adding 3dB to SISO measurements.

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 23 of 65

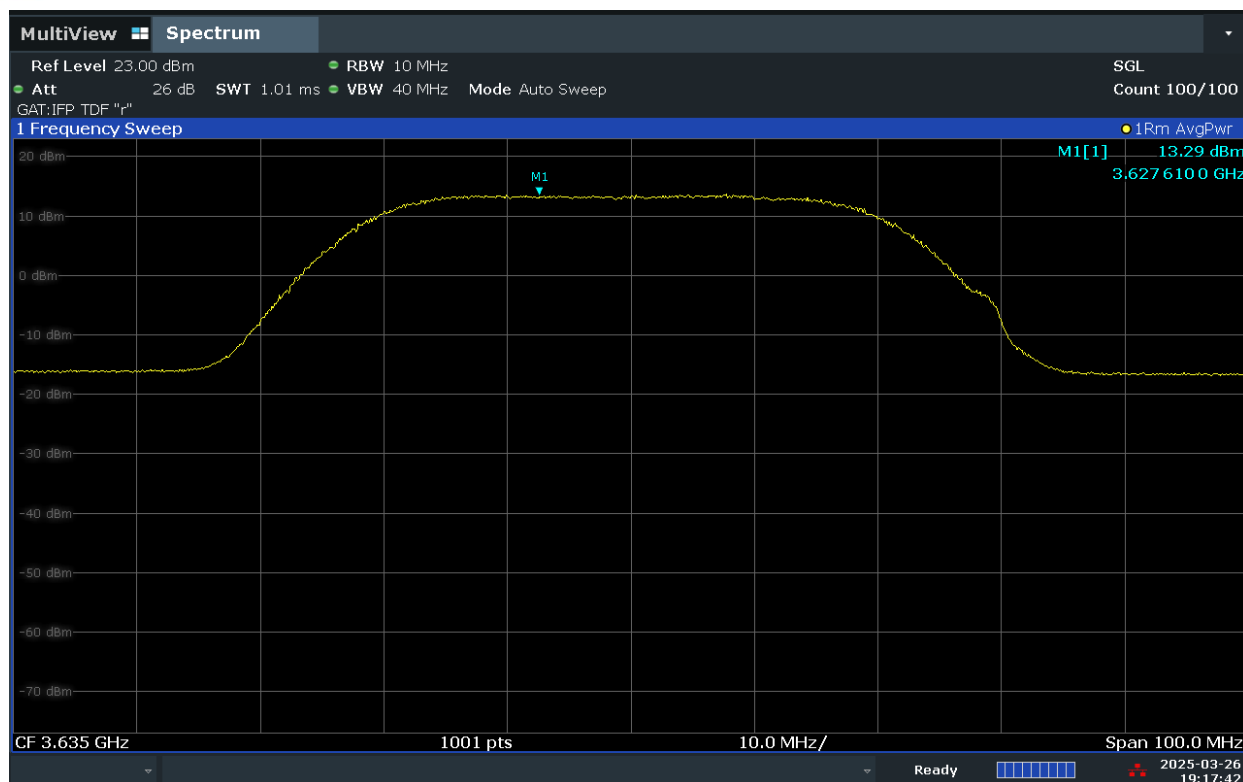
Bandwidth	Modulation	Channel	Frequency [MHz]	Conducted Power [dBm/10MHz]	MIMO Conducted Power [dBm/10MHz]	Directional Ant Gain [dBi]	EIRP [dBm/10MHz]	EIRP [Watts/10MHz]	EIRP Limit [dBm/10MHz]	Margin [dB]
20 MHz	QPSK	55340	3560.0	19.57	22.57	0.00	22.57	0.181	30.00	-7.43
		55990	3625.0	19.10	22.10	0.00	22.10	0.162	30.00	-7.90
		56640	3690.0	17.39	20.39	0.00	20.39	0.109	30.00	-9.61
	16-QAM	55340	3560.0	19.06	22.06	0.00	22.06	0.161	30.00	-7.94
		55990	3625.0	18.85	21.85	0.00	21.85	0.153	30.00	-8.15
		56640	3690.0	17.34	20.34	0.00	20.34	0.108	30.00	-9.66
	64-QAM	55340	3560.0	19.39	22.39	0.00	22.39	0.173	30.00	-7.61
		55990	3625.0	19.16	22.16	0.00	22.16	0.164	30.00	-7.84
		56640	3690.0	17.49	20.49	0.00	20.49	0.112	30.00	-9.51
	256-QAM	55340	3560.0	19.56	22.56	0.00	22.56	0.180	30.00	-7.44
		55990	3625.0	18.91	21.91	0.00	21.91	0.155	30.00	-8.09
		56640	3690.0	17.49	20.49	0.00	20.49	0.112	30.00	-9.51
10 MHz	QPSK	55290	3555.0	20.95	23.95	0.00	23.95	0.248	30.00	-6.05
		55990	3625.0	19.37	22.37	0.00	22.37	0.173	30.00	-7.63
		56690	3695.0	20.30	23.30	0.00	23.30	0.214	30.00	-6.70
	16-QAM	55290	3555.0	21.04	24.04	0.00	24.04	0.254	30.00	-5.96
		55990	3625.0	19.28	22.28	0.00	22.28	0.169	30.00	-7.72
		56690	3695.0	20.36	23.36	0.00	23.36	0.217	30.00	-6.64
	64-QAM	55290	3555.0	21.02	24.02	0.00	24.02	0.252	30.00	-5.98
		55990	3625.0	19.08	22.08	0.00	22.08	0.161	30.00	-7.92
		56690	3695.0	20.74	23.74	0.00	23.74	0.237	30.00	-6.26
	256-QAM	55290	3555.0	20.38	23.38	0.00	23.38	0.218	30.00	-6.62
		55990	3625.0	19.26	22.26	0.00	22.26	0.168	30.00	-7.74
		56690	3695.0	20.42	23.42	0.00	23.42	0.220	30.00	-6.58

Table 7-5 E.I.R.P. / 10MHz Measurements

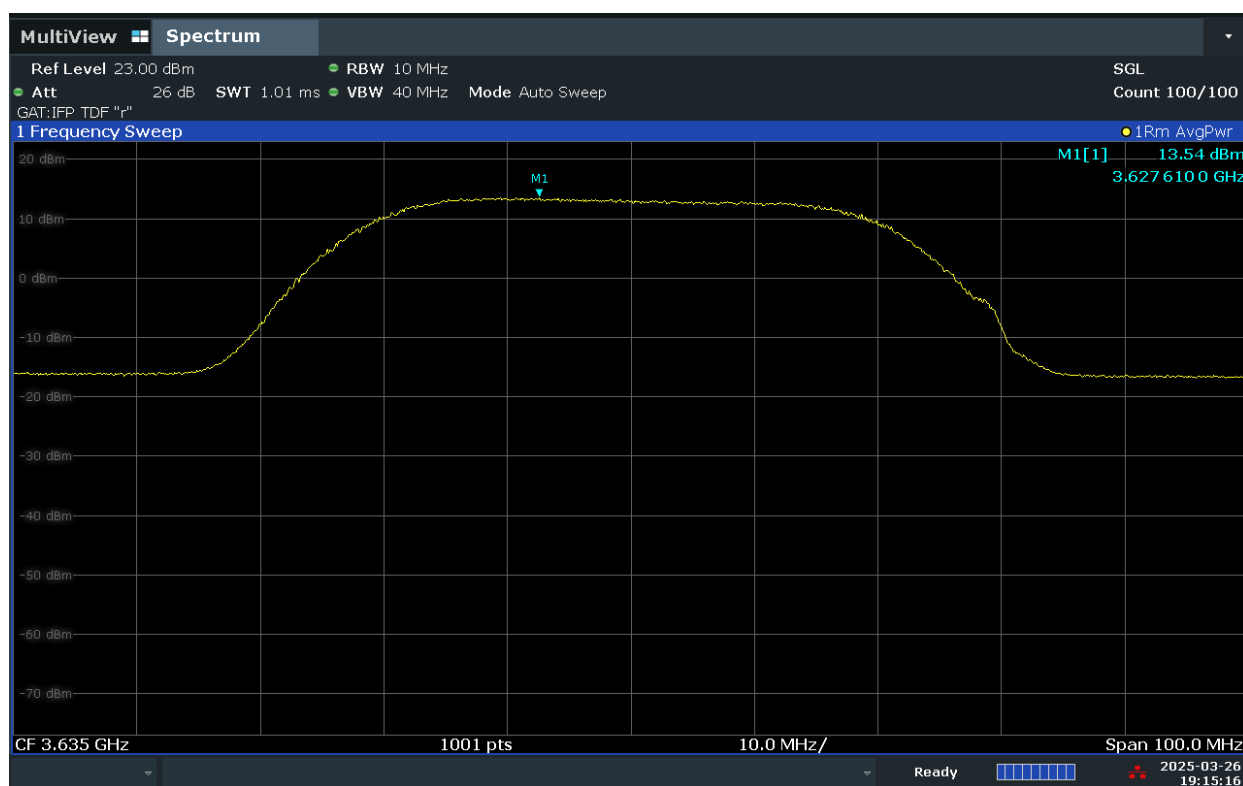
Bandwidth	Modulation	PCC		SCC		Conducted Power [dBm/10MHz]	MIMO Conducted Power [dBm/10MHz]	Antenna Gain [dBi]	EIRP [dBm/10MHz]	EIRP Limit [dBm/10MHz]	Margin [dB]
		Bandwidth [MHz]	Frequency [MHz]	Bandwidth [MHz]	Frequency [MHz]						
40 MHz	QPSK	20	3560.0	20	3579.8	13.04	16.04	0.00	16.04	30.00	-13.96
		20	3625.0	20	3644.8	13.29	16.29	0.00	16.29	30.00	-13.71
		20	3690.0	20	3670.2	14.31	17.31	0.00	17.31	30.00	-12.69
	16QAM	20	3560.0	20	3579.8	15.71	18.71	0.00	18.71	30.00	-11.29
		20	3625.0	20	3644.8	13.54	16.54	0.00	16.54	30.00	-13.46
		20	3690.0	20	3670.2	14.35	17.35	0.00	17.35	30.00	-12.65
	64QAM	20	3560.0	20	3579.8	15.67	18.67	0.00	18.67	30.00	-11.33
		20	3625.0	20	3644.8	13.81	16.81	0.00	16.81	30.00	-13.19
		20	3690.0	20	3670.2	14.03	17.03	0.00	17.03	30.00	-12.97
	256QAM	20	3560.0	20	3579.8	15.09	18.09	0.00	18.09	30.00	-11.91
		20	3625.0	20	3644.8	13.70	16.70	0.00	16.70	30.00	-13.30
		20	3690.0	20	3670.2	14.35	17.35	0.00	17.35	30.00	-12.65

Table 7-6 CA E.I.R.P. / 10MHz Measurements

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT			Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit		Page 24 of 65

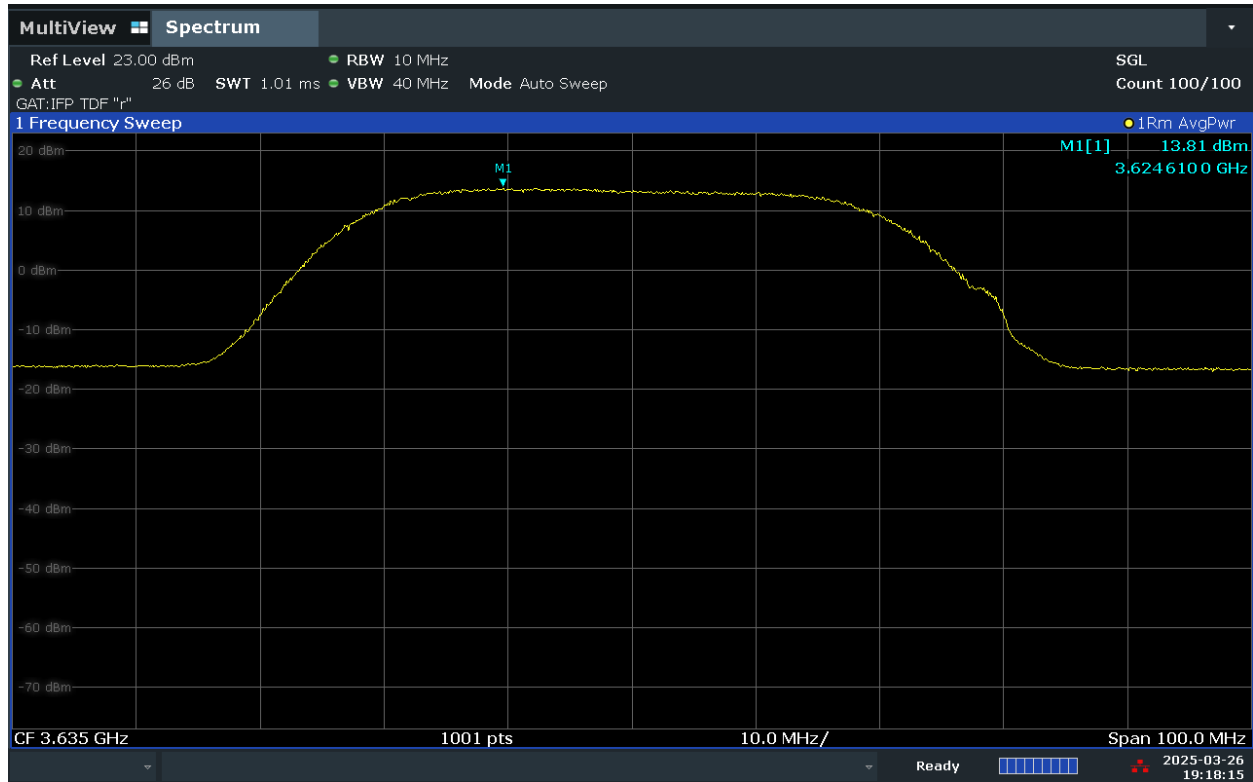


Plot 7.13. Power/10MHz Plot (20+20MHz QPSK – Mid Channel)

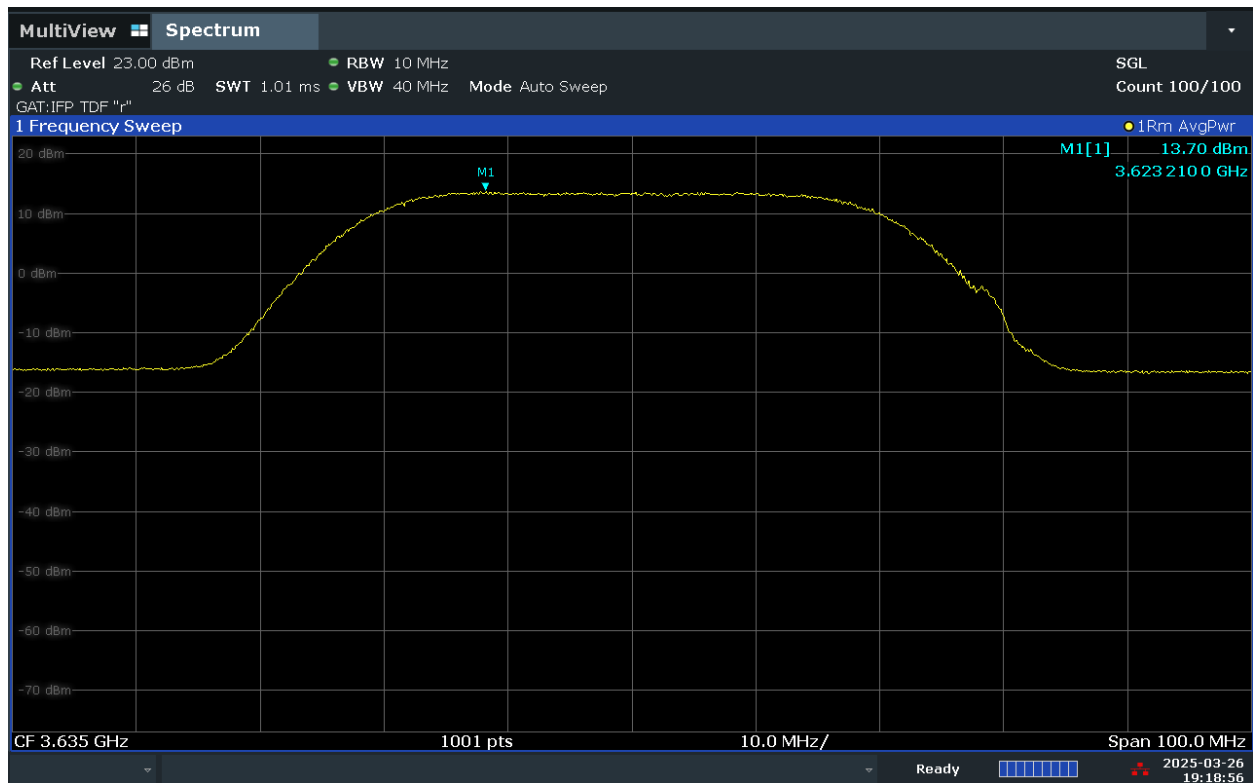


Plot 7.14. Power/10MHz Plot (20+20MHz 16QAM – Mid Channel)

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 25 of 65

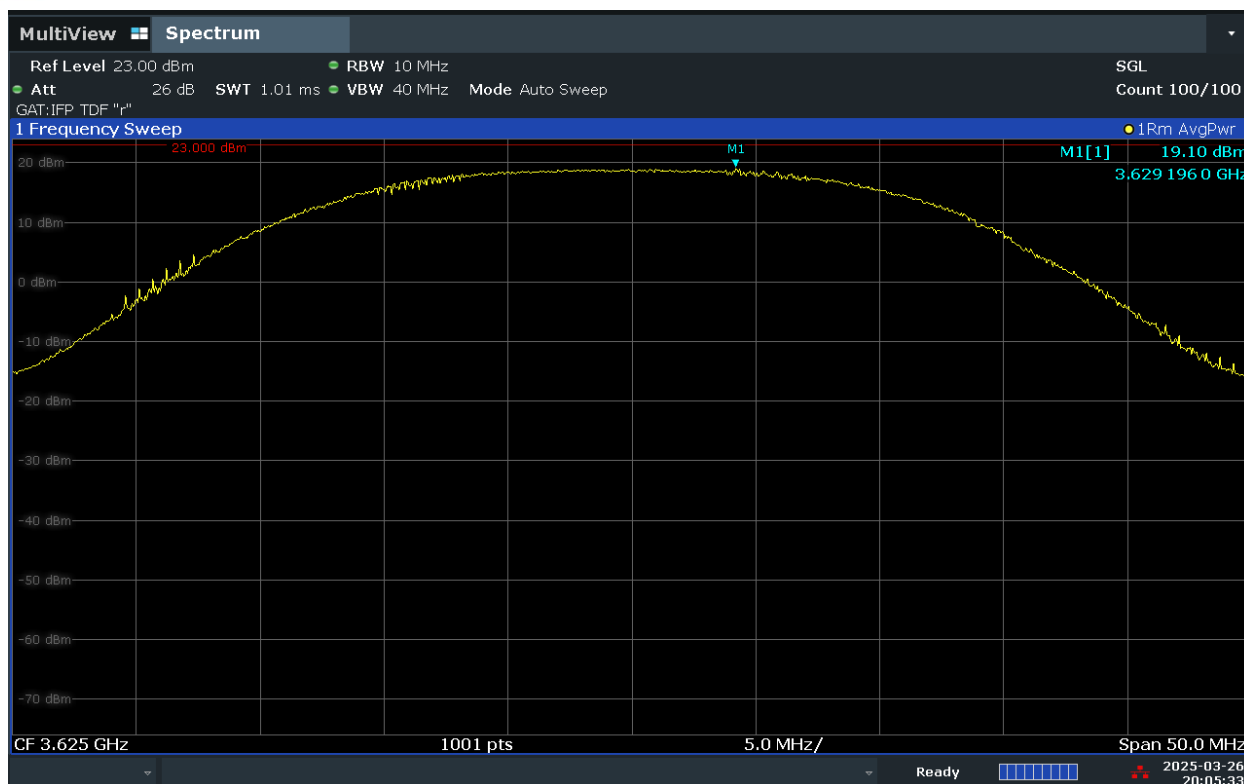


Plot 7.15. Power/10MHz Plot (20+20MHz 64QAM – Mid Channel)

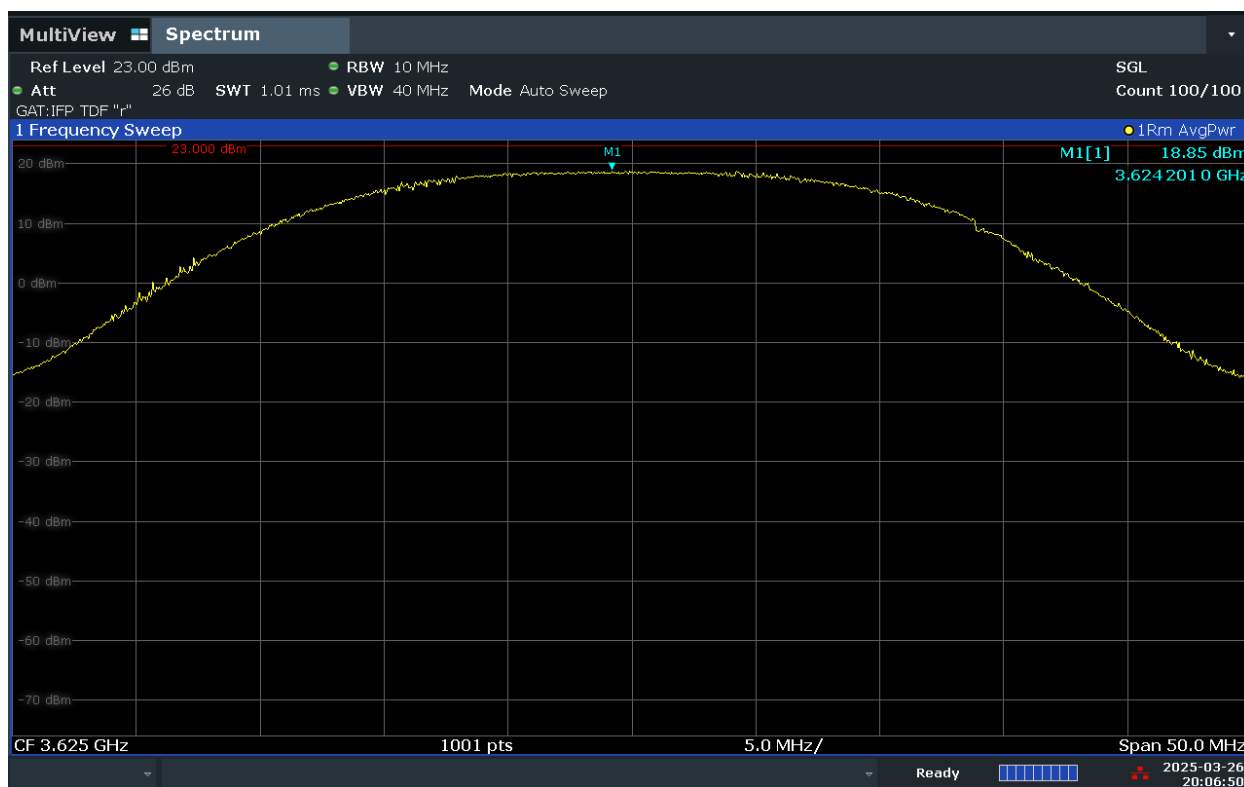


Plot 7.16. Power/10MHz Plot (20+20MHz 256QAM – Mid Channel)

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 26 of 65

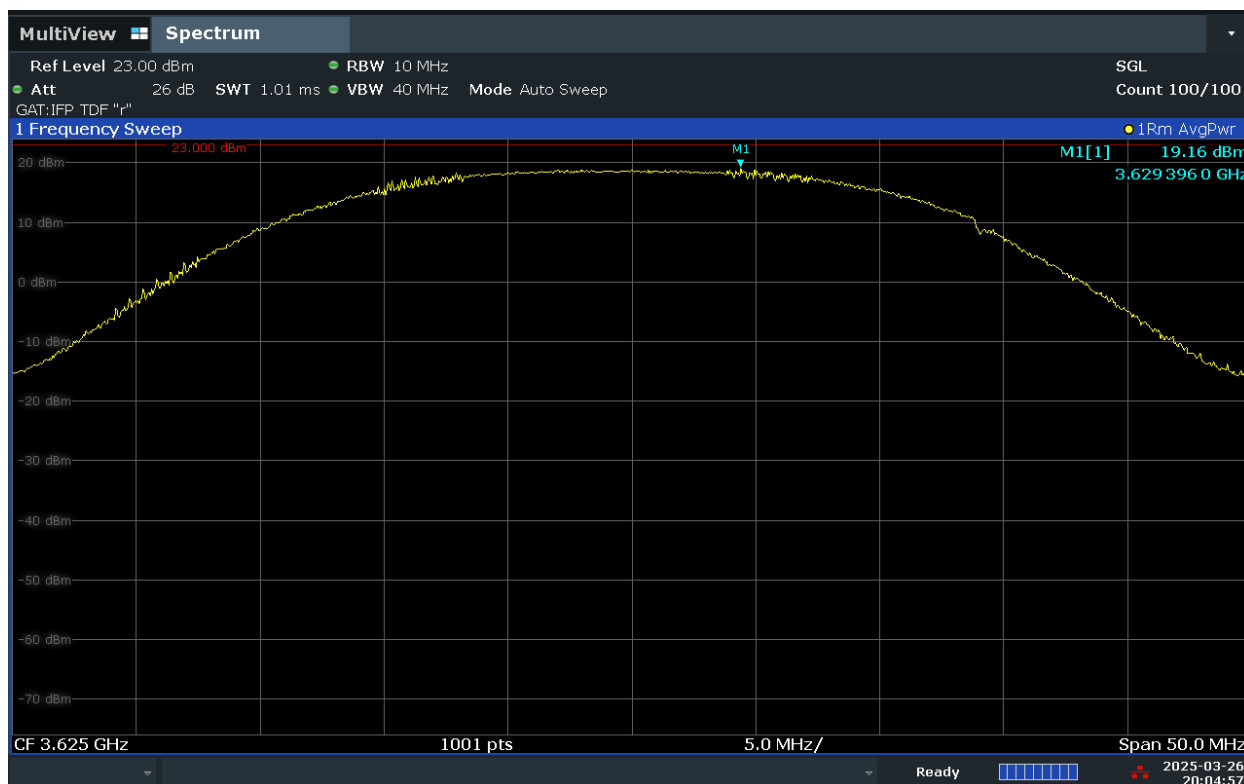


Plot 7.17. Power/10MHz Plot (20MHz QPSK – Mid Channel)

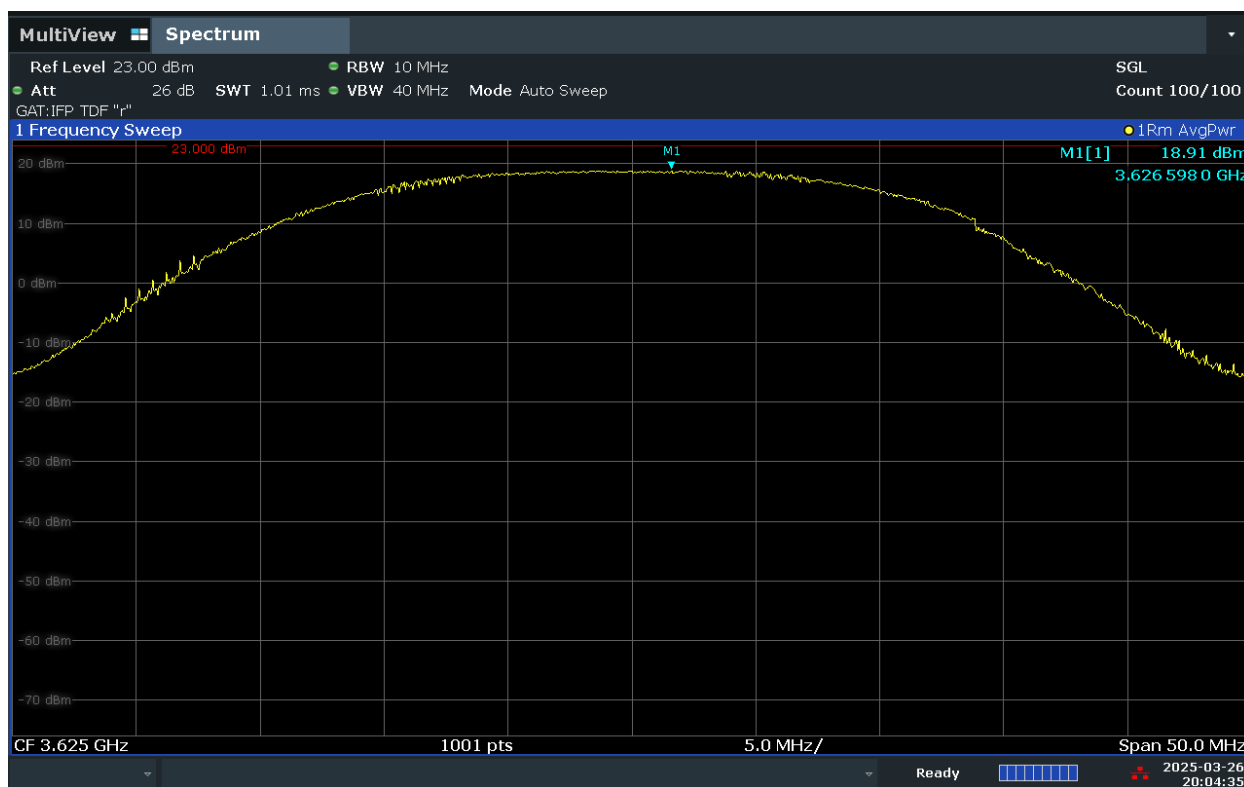


Plot 7.18. Power/10MHz Plot (20MHz 16QAM – Mid Channel)

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 27 of 65

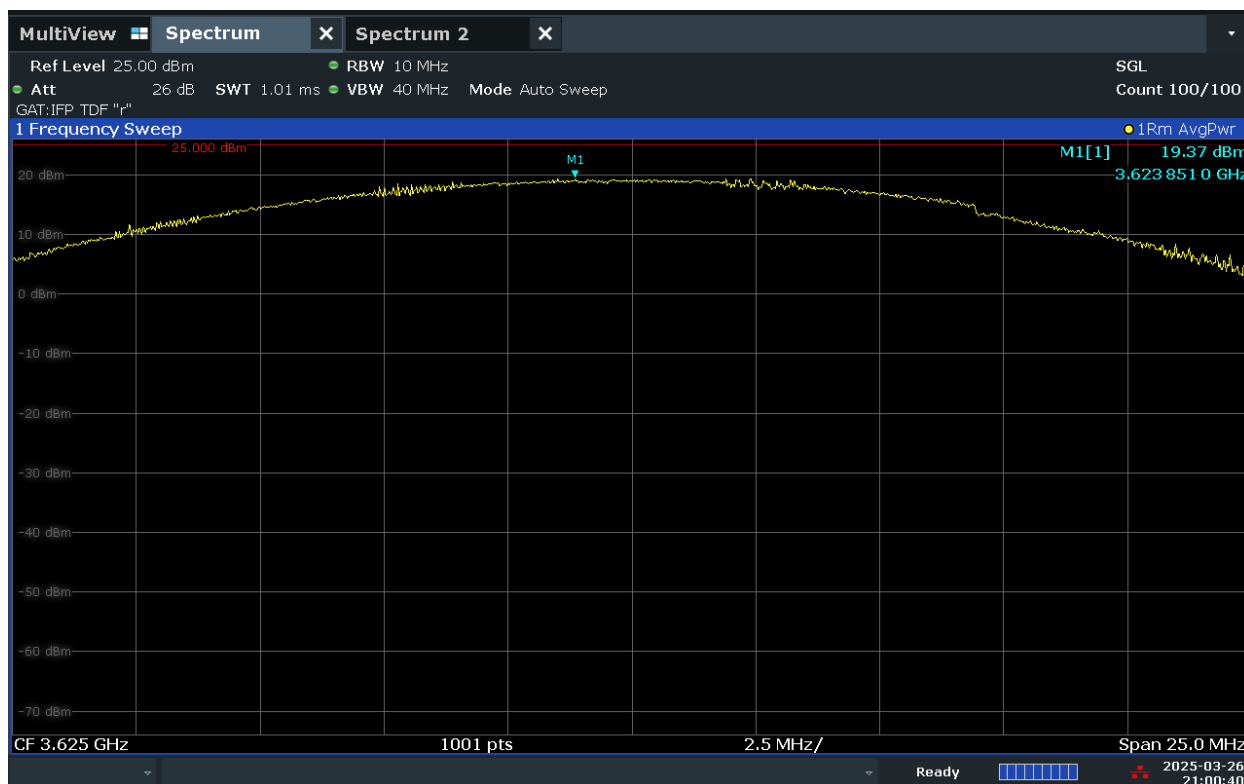


Plot 7.19. Power/10MHz Plot (20MHz 64QAM – Mid Channel)

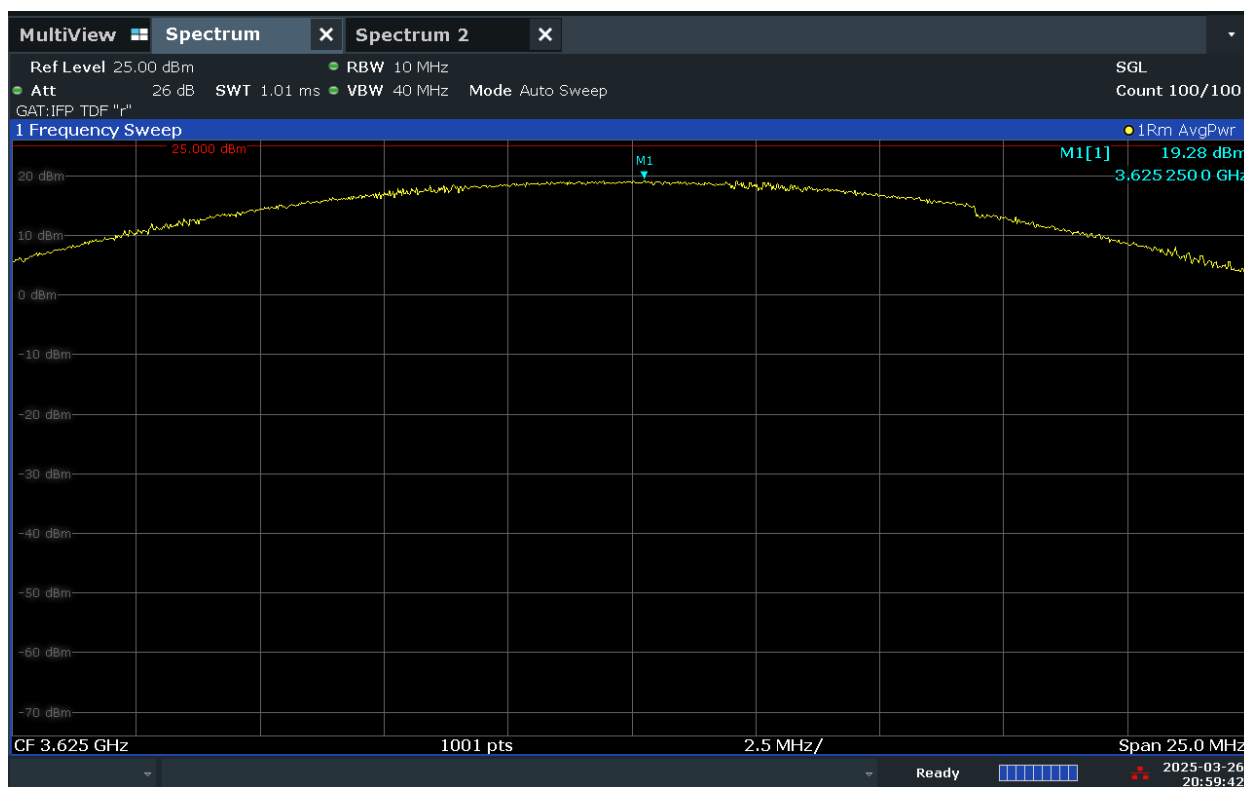


Plot 7.20. Power/10MHz Plot (20MHz 256QAM – Mid Channel)

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 28 of 65

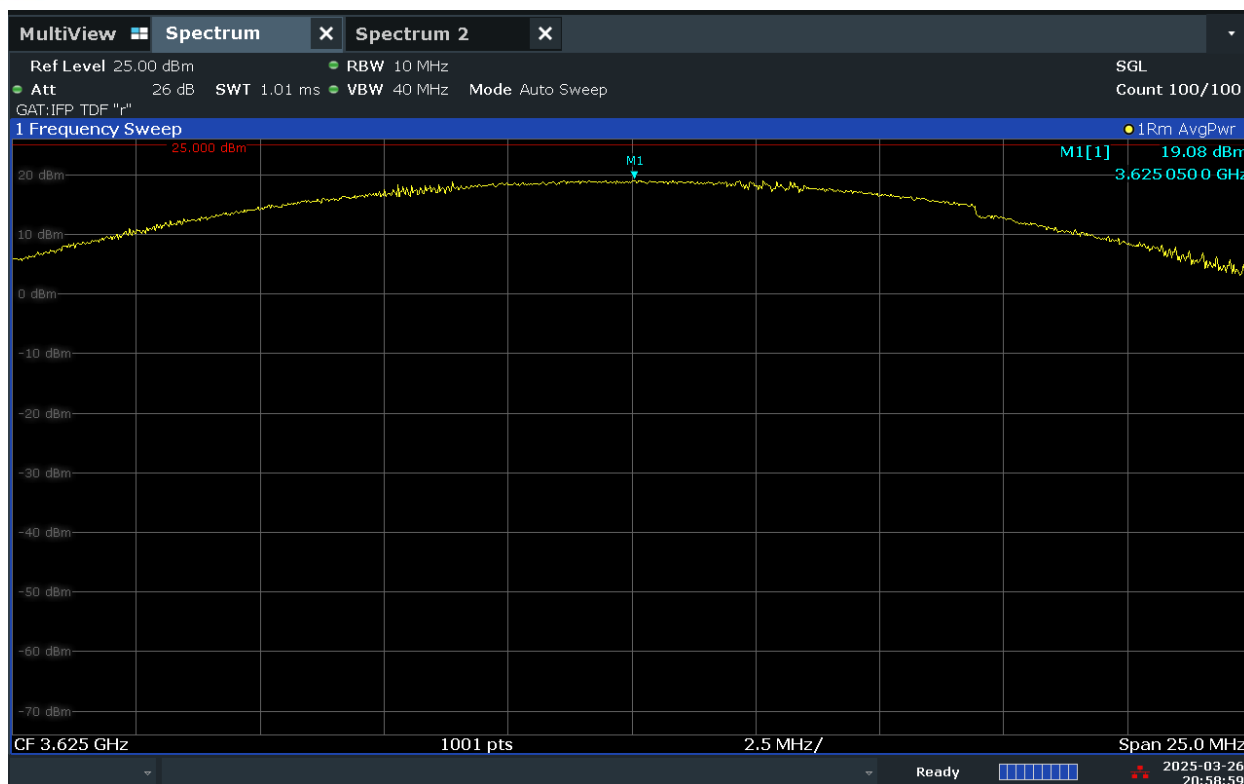


Plot 7.21. Power/10MHz Plot (10MHz QPSK – Mid Channel)

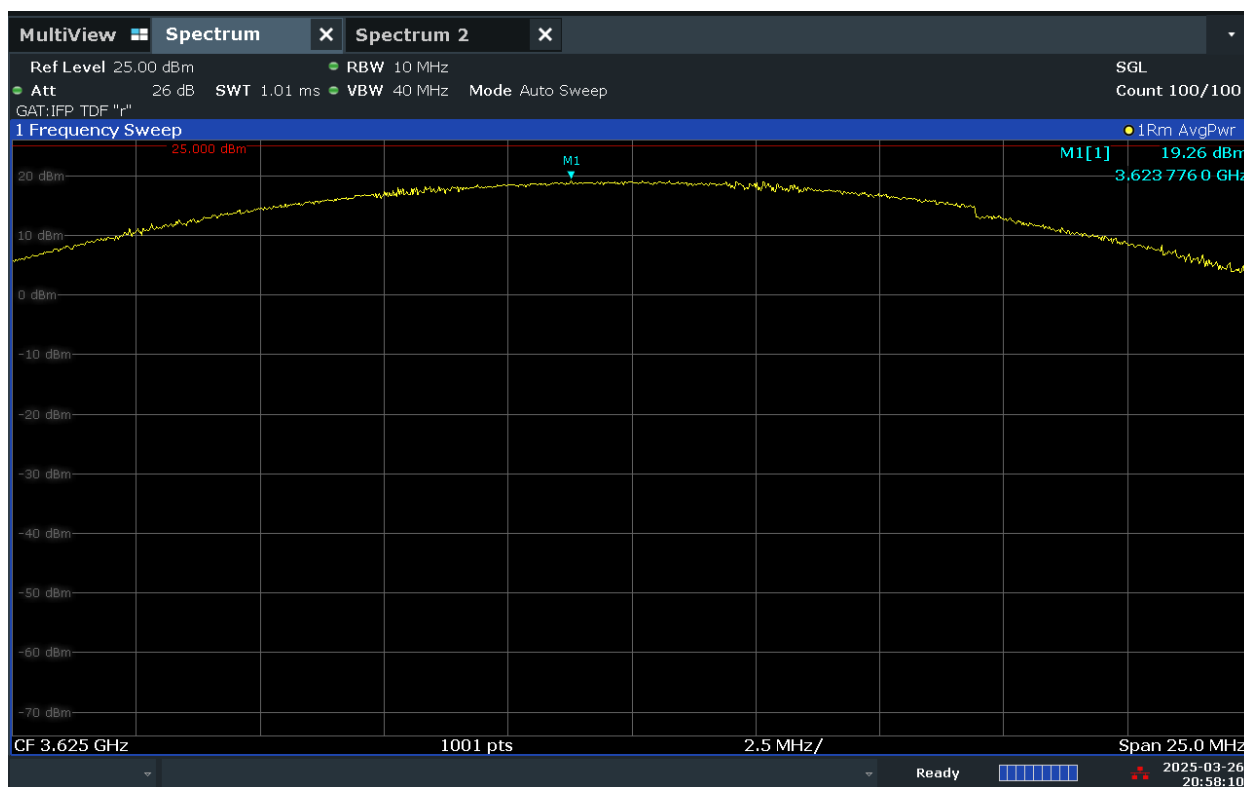


Plot 7.22. Power/10MHz Plot (10MHz 16QAM – Mid Channel)

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 29 of 65



Plot 7.23. Power/10MHz Plot (10MHz 64QAM – Mid Channel)



Plot 7.24. Power/10MHz Plot (10MHz 256QAM – Mid Channel)

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 30 of 65

7.5 Power Spectral Density

Test Overview

The spectrum analyzer was connected to the antenna terminal while the EUT was operating at its maximum power control level, as defined in ANSI C63.26-2015, and at the appropriate frequencies. The spectrum analyzer was gate as to only measure during on periods.

The power spectral density for a Category B CBSD must be less than 37dBm/MHz.

The power spectral density for a Category A CBSD must be less than 20dBm/MHz

Test Procedure Used

ANSI C63.26-2015 – Section 5.2.4.4.1
ANSI C63.26-2015 – Section 5.2.4.5
ANSI C63.26-2015 – Section 6.4.3.2.3

Test Settings

9. Span = 2x to 3X the OBW
10. RBW = 10MHz
11. VBW $\geq 3 \times$ RBW
12. Set number of sweep points $\geq 2 \times$ span / RBW
13. Sweep Time = auto couple
14. Detector = RMS
15. Trace mode = average
16. Trigger = Level

Test Setup

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



Figure 7-4. Test Instrument & Measurement Setup

Test Notes

1. Compliance with Category B limits is shown by comparison to the stricter Category A limit.
2. As both outputs of the device are identical, MIMO results are obtained by adding 3dB to SISO measurements.

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 31 of 65

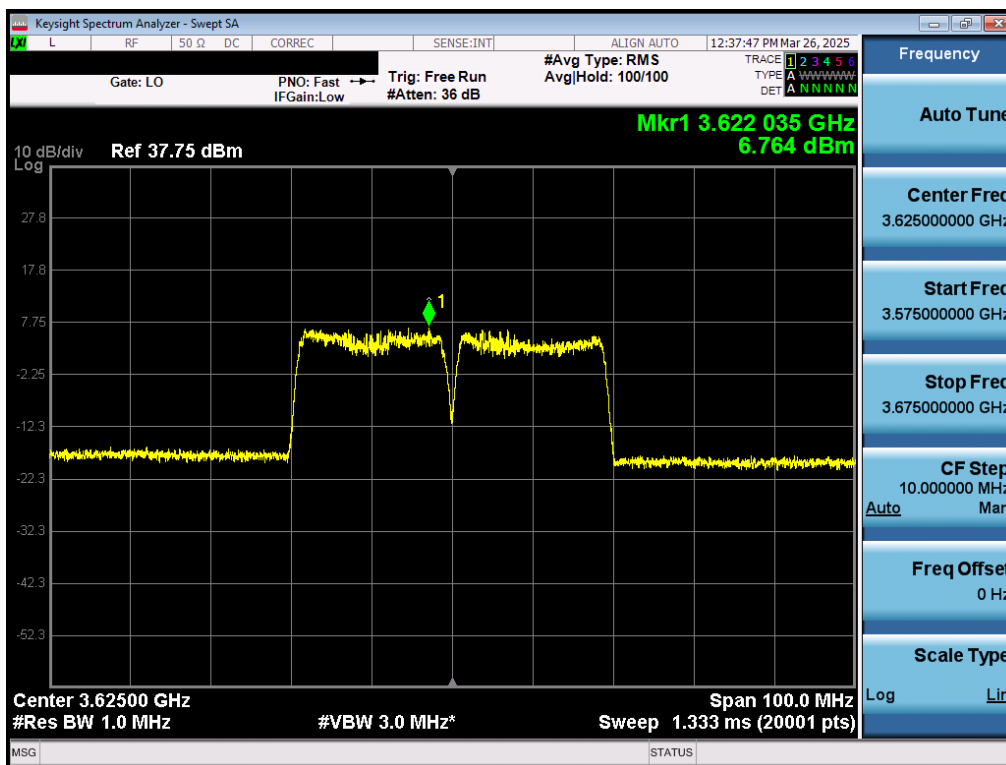
Bandwidth	Modulation	Channel	Frequency [MHz]	Conducted PSD [dBm/MHz]	MIMO Conducted PSD [dBm/MHz]	Directional Ant Gain [dBi]	EIRP PSD [dBm/MHz]	EIRP PSD [Watts/MHz]	EIRP PSD Limit [dBm/MHz]	Margin [dB]
20 MHz	QPSK	55340	3560.0	10.86	13.86	0.00	13.86	0.024	20.00	-6.14
		55990	3625.0	9.07	12.07	0.00	12.07	0.016	20.00	-7.93
		56640	3690.0	9.33	12.33	0.00	12.33	0.017	20.00	-7.67
	16-QAM	55340	3560.0	10.55	13.55	0.00	13.55	0.023	20.00	-6.45
		55990	3625.0	10.28	13.28	0.00	13.28	0.021	20.00	-6.72
		56640	3690.0	9.65	12.65	0.00	12.65	0.018	20.00	-7.35
	64-QAM	55340	3560.0	11.00	14.00	0.00	14.00	0.025	20.00	-6.00
		55990	3625.0	10.15	13.15	0.00	13.15	0.021	20.00	-6.85
		56640	3690.0	9.07	12.07	0.00	12.07	0.016	20.00	-7.93
	256-QAM	55340	3560.0	10.86	13.86	0.00	13.86	0.024	20.00	-6.14
		55990	3625.0	9.91	12.91	0.00	12.91	0.020	20.00	-7.09
		56640	3690.0	8.88	11.88	0.00	11.88	0.015	20.00	-8.13
10 MHz	QPSK	55290	3555.0	13.73	16.73	0.00	16.73	0.047	20.00	-3.27
		55990	3625.0	12.23	15.23	0.00	15.23	0.033	20.00	-4.77
		56690	3695.0	11.20	14.20	0.00	14.20	0.026	20.00	-5.80
	16-QAM	55290	3555.0	13.03	16.03	0.00	16.03	0.040	20.00	-3.97
		55990	3625.0	12.19	15.19	0.00	15.19	0.033	20.00	-4.81
		56690	3695.0	11.53	14.53	0.00	14.53	0.028	20.00	-5.47
	64-QAM	55290	3555.0	13.28	16.28	0.00	16.28	0.043	20.00	-3.72
		55990	3625.0	12.13	15.13	0.00	15.13	0.033	20.00	-4.87
		56690	3695.0	11.51	14.51	0.00	14.51	0.028	20.00	-5.49
	256-QAM	55290	3555.0	12.92	15.92	0.00	15.92	0.039	20.00	-4.08
		55990	3625.0	12.18	15.18	0.00	15.18	0.033	20.00	-4.82
		56690	3695.0	11.32	14.32	0.00	14.32	0.027	20.00	-5.68

Table 7-7 Power Spectral Density Measurements

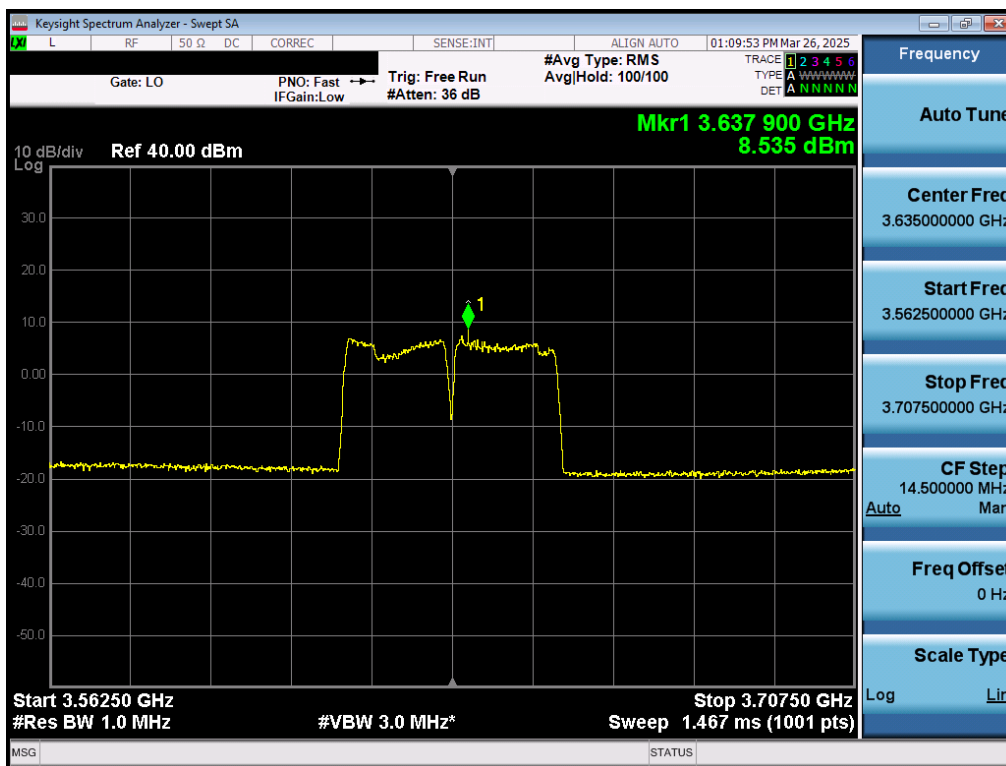
Bandwidth	Modulation	PCC		SCC		Conducted PSD [dBm/MHz]	MIMO Conducted PSD [dBm/MHz]	Directional Antenna Gain [dBi]	EIRP PSD [dBm/MHz]	EIRP PSD Limit [dBm/MHz]	Margin [dB]
		Bandwidth [MHz]	Frequency [MHz]	Bandwidth [MHz]	Frequency [MHz]						
40 MHz	QPSK	20	3560.0	20	3579.8	8.54	11.54	0.00	11.54	20.00	-8.46
		20	3625.0	20	3644.8	6.76	9.76	0.00	9.76	20.00	-10.24
		20	3690.0	20	3670.2	7.90	10.90	0.00	10.90	20.00	-9.10
	16QAM	20	3560.0	20	3579.8	8.29	11.29	0.00	11.29	20.00	-8.71
		20	3625.0	20	3644.8	8.54	11.54	0.00	11.54	20.00	-8.47
		20	3690.0	20	3670.2	8.44	11.44	0.00	11.44	20.00	-8.57
	64QAM	20	3560.0	20	3579.8	8.35	11.35	0.00	11.35	20.00	-8.65
		20	3625.0	20	3644.8	7.73	10.73	0.00	10.73	20.00	-9.27
		20	3690.0	20	3670.2	7.84	10.84	0.00	10.84	20.00	-9.16
	256QAM	20	3560.0	20	3579.8	8.13	11.13	0.00	11.13	20.00	-8.87
		20	3625.0	20	3644.8	7.42	10.42	0.00	10.42	20.00	-9.58
		20	3690.0	20	3670.2	8.08	11.08	0.00	11.08	20.00	-8.92

Table 7-8 CA Power Spectral Density Measurements

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT			Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit		Page 32 of 65

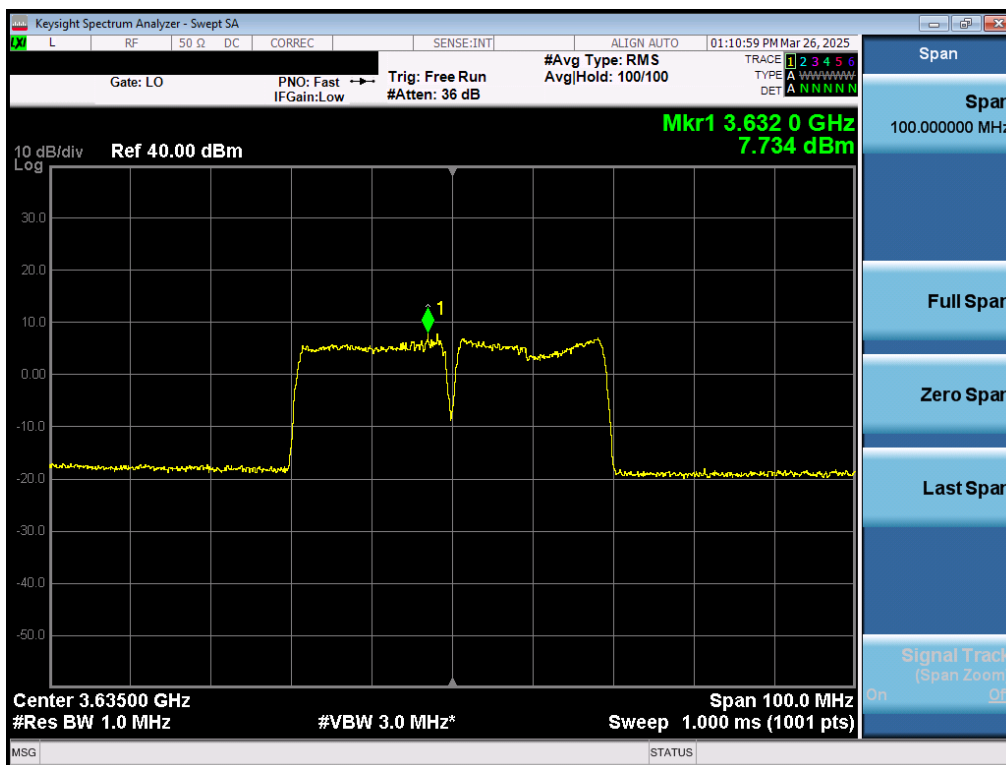


Plot 7.25. Power Spectral Density Plot (20+20MHz QPSK – Mid Channel)

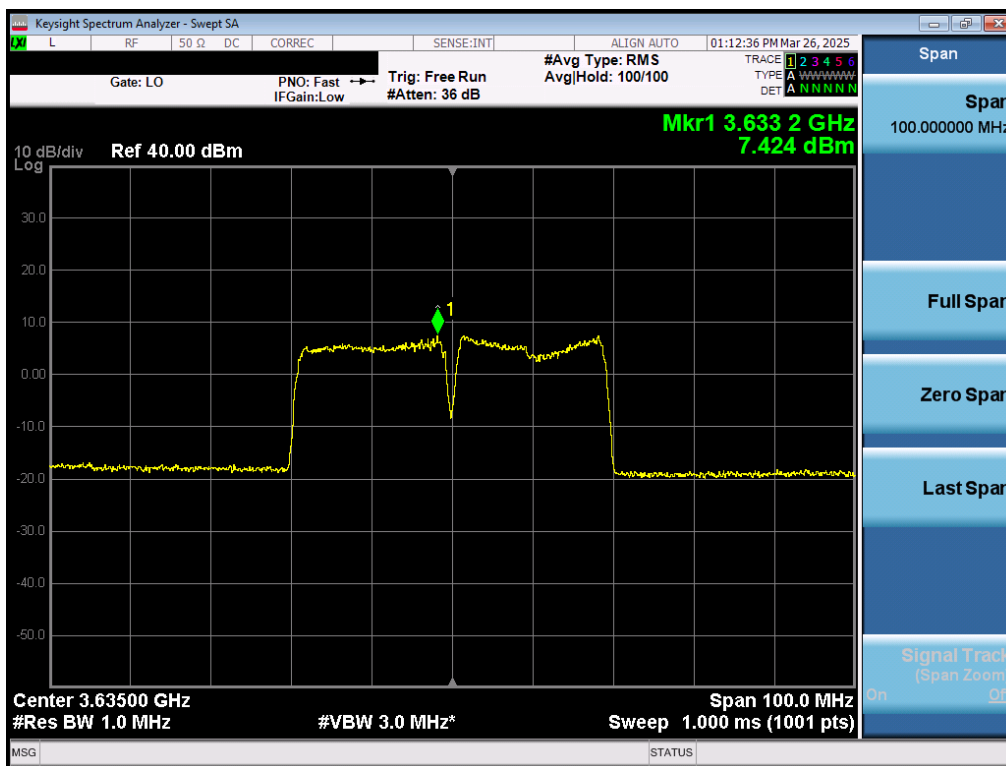


Plot 7.26. Power Spectral Density Plot (20+20MHz 16QAM – Mid Channel)

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 33 of 65

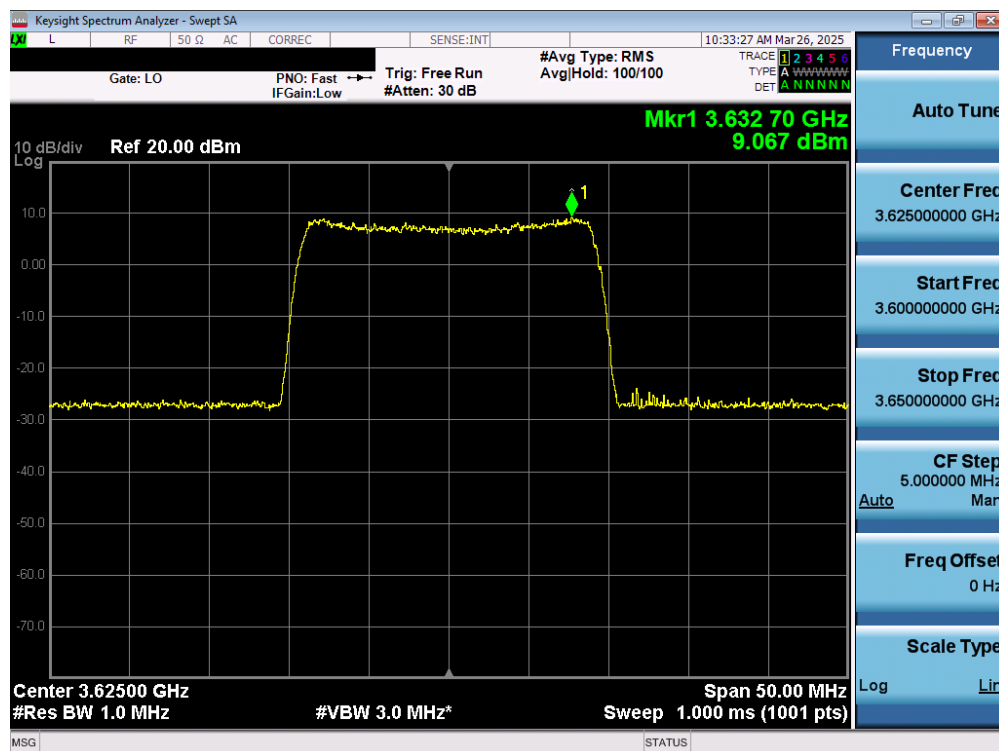


Plot 7.27. Power Spectral Density Plot (20+20MHz 64QAM– Mid Channel)

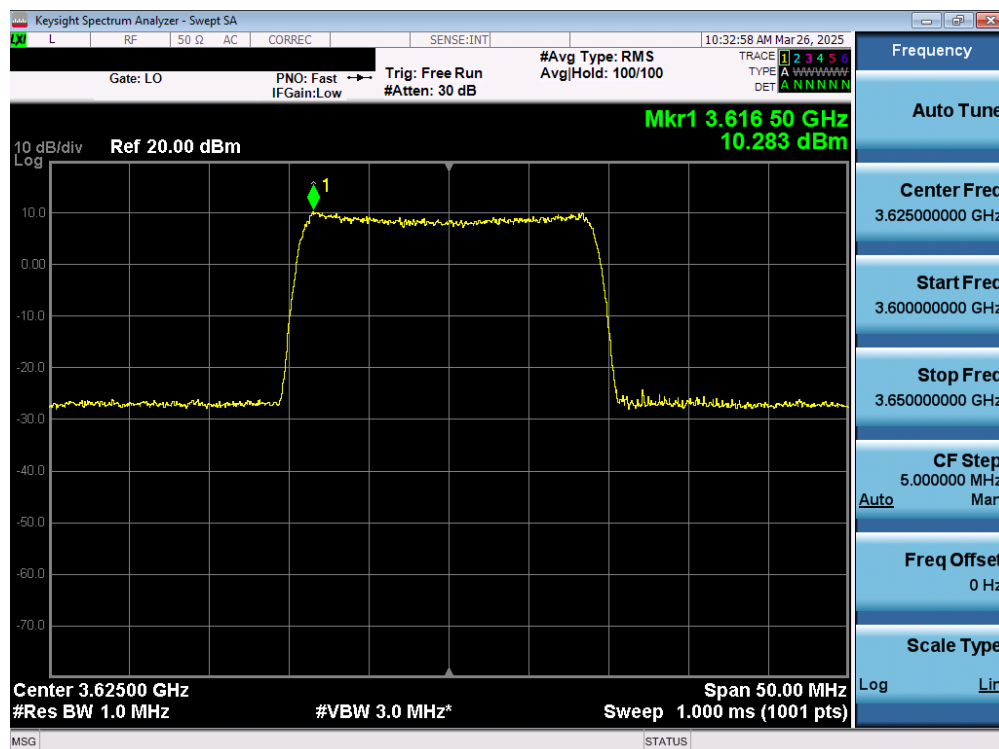


Plot 7.28. Power Spectral Density Plot (20+20MHz 256QAM– Mid Channel)

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 34 of 65

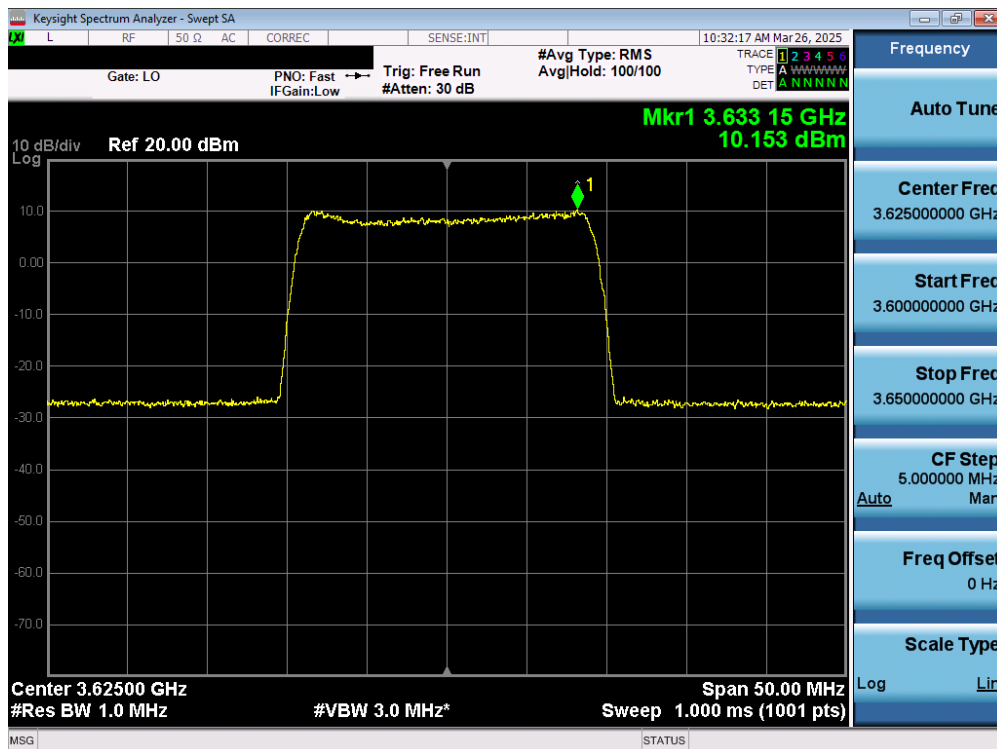


Plot 7.29. Power Spectral Density Plot (20MHz QPSK– Mid Channel)

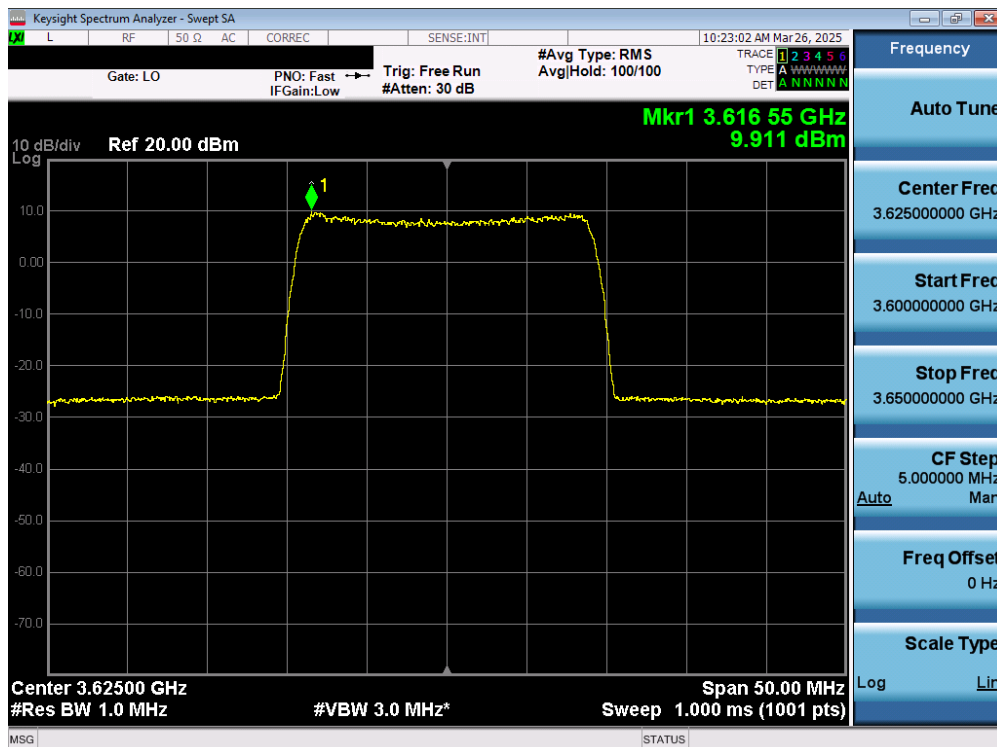


Plot 7.30. Power Spectral Density Plot (20MHz 16QAM – Mid Channel)

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 35 of 65

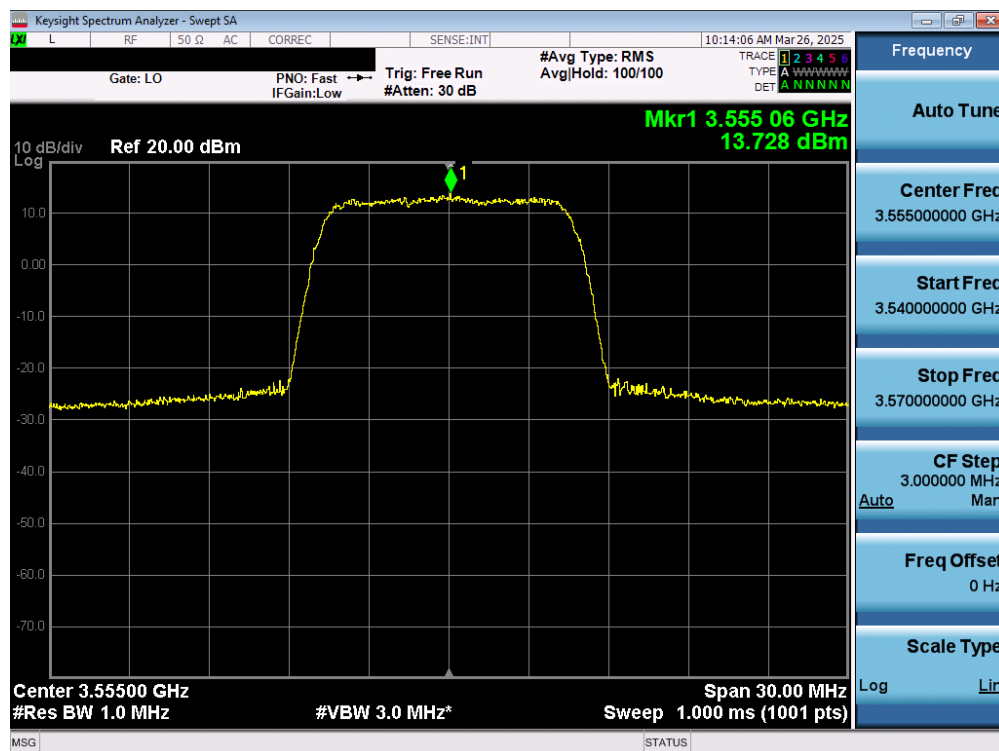


Plot 7.31. Power Spectral Density Plot (20MHz 64QAM – Mid Channel)

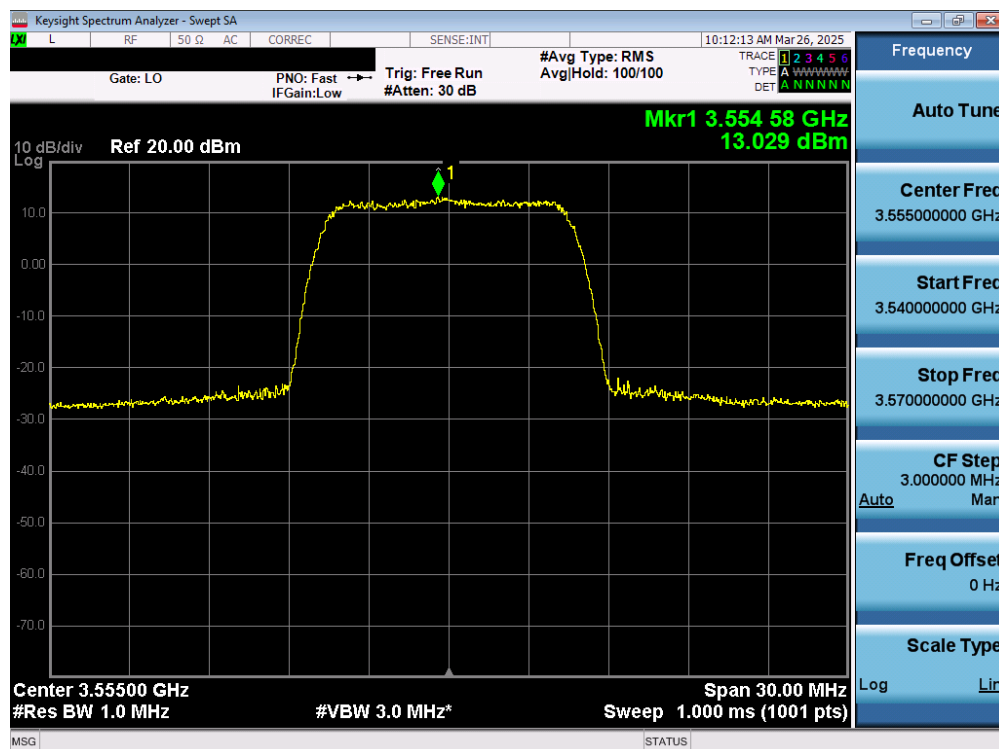


Plot 7.32. Power Spectral Density Plot (20MHz 256QAM – Mid Channel)

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 36 of 65

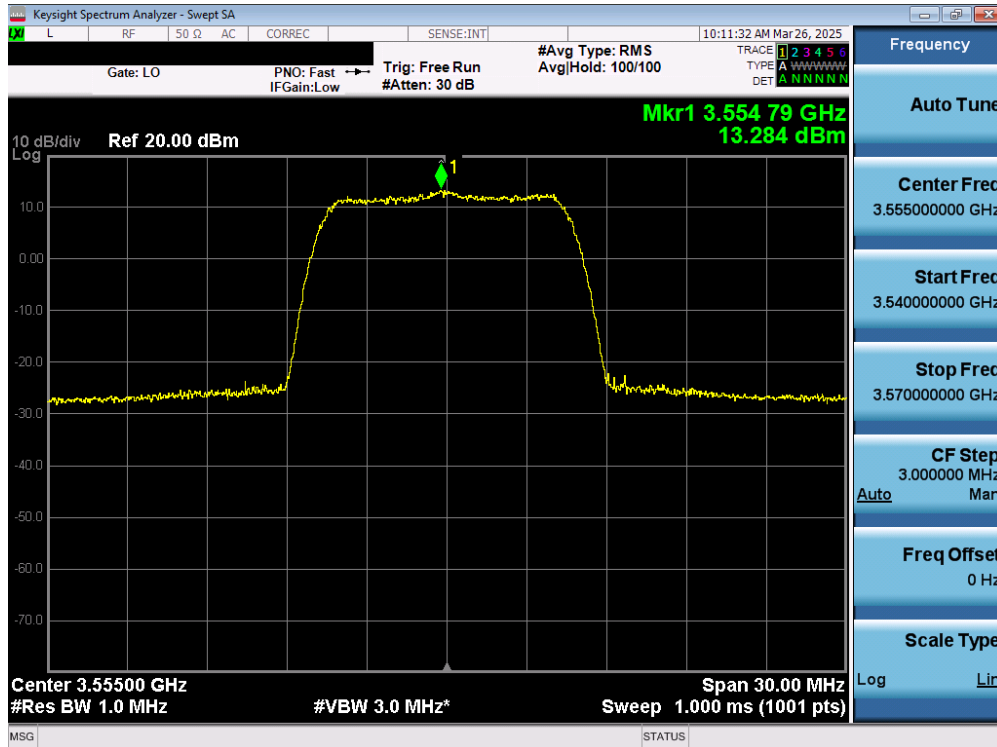


Plot 7.33. Power Spectral Density Plot (10MHz QPSK – Low Channel)

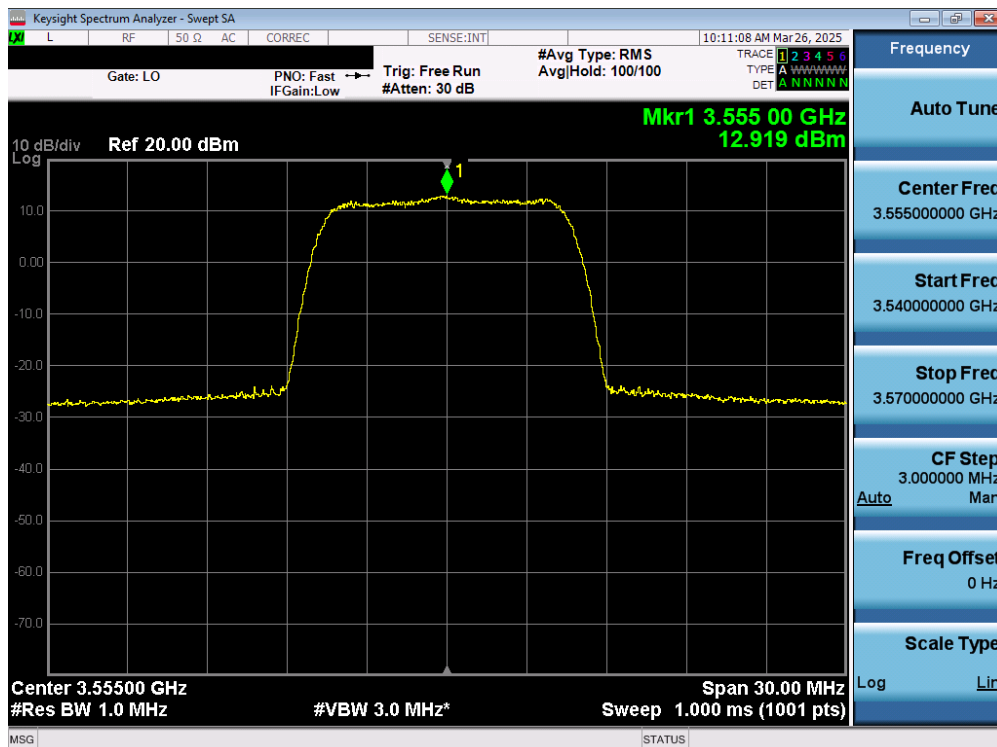


Plot 7.34. Power Spectral Density Plot (10MHz 16QAM – Low Channel)

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 37 of 65



Plot 7.35. Power Spectral Density Plot (10MHz 64QAM – Low Channel)



Plot 7.36. Power Spectral Density Plot (10MHz 256QAM – Low Channel)

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 38 of 65

7.6 Spurious and Harmonic Emissions at Antenna Terminal

Test Overview

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

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

Test Procedure Used

ANSI C63.26-2015 – Section 5.7.4

Test Settings

1. Start frequency was set to 30MHz and stop frequency was set to at least 10 * the fundamental frequency (separated into at least two plots per channel)
2. Detector = RMS
3. Trace mode = Average
4. Sweep time = auto couple
5. The trace was allowed to stabilize
6. Please see test notes below for RBW and VBW settings

Test Setup

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



Figure 7-5. Test Instrument & Measurement Setup

Test Notes

1. Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz.
2. As both outputs of the device are identical, MIMO results are obtained by adding 3dB to SISO measurements.
3. For Spurious Emissions plots starting below 3530MHz or above 3720MHz, compliance in the omitted spectrum is verified by the Band Edge Emissions results in section 7.7.

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 39 of 65

Bandwidth	Modulation	Channel	Frequency [MHz]	Highest spurious emission [dBm]	MIMO Spurious Level [dBm]	Limit [dBm]	Margin [dB]
10MHz	QPSK	55290	3555	-43.06	-40.06	-40.00	-0.06
		55990	3625	-43.86	-40.86	-40.00	-0.86
		56690	3695	-44.39	-41.39	-40.00	-1.39

Table 7-9 MIMO Spurious Emission Results



Plot 7.37. Conducted Spurious Plot (10MHz QPSK, Low Channel)

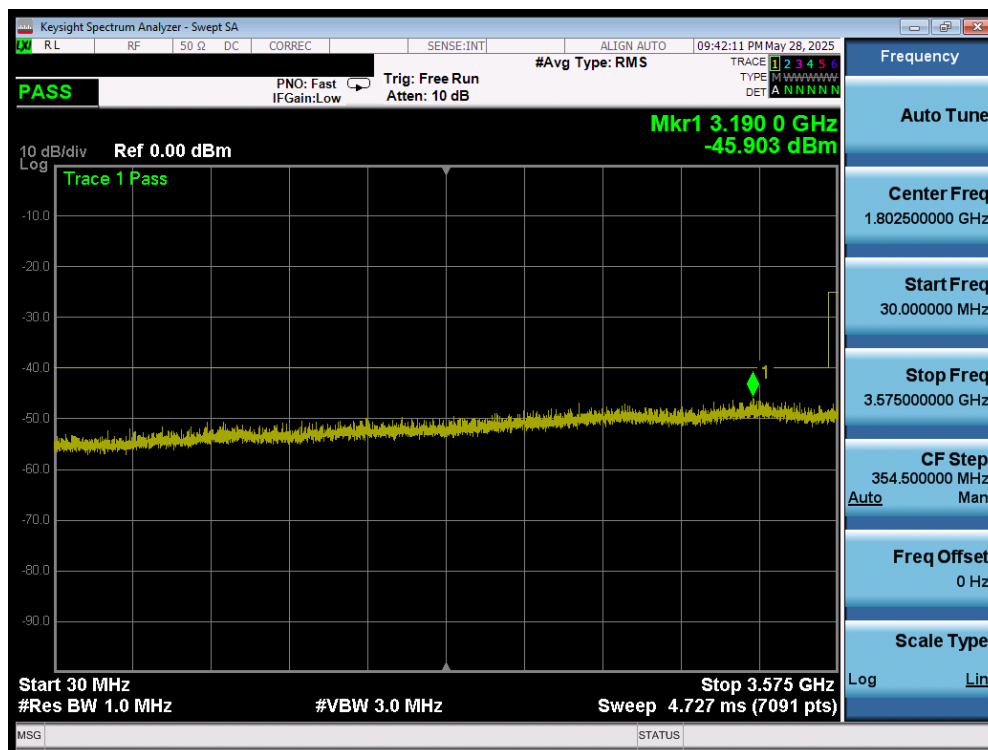
FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 40 of 65

Plot 7.38. Conducted Spurious Plot (10MHz QPSK, Low Channel)

Plot 7.39. Conducted Spurious Plot (10MHz QPSK, Low Channel)

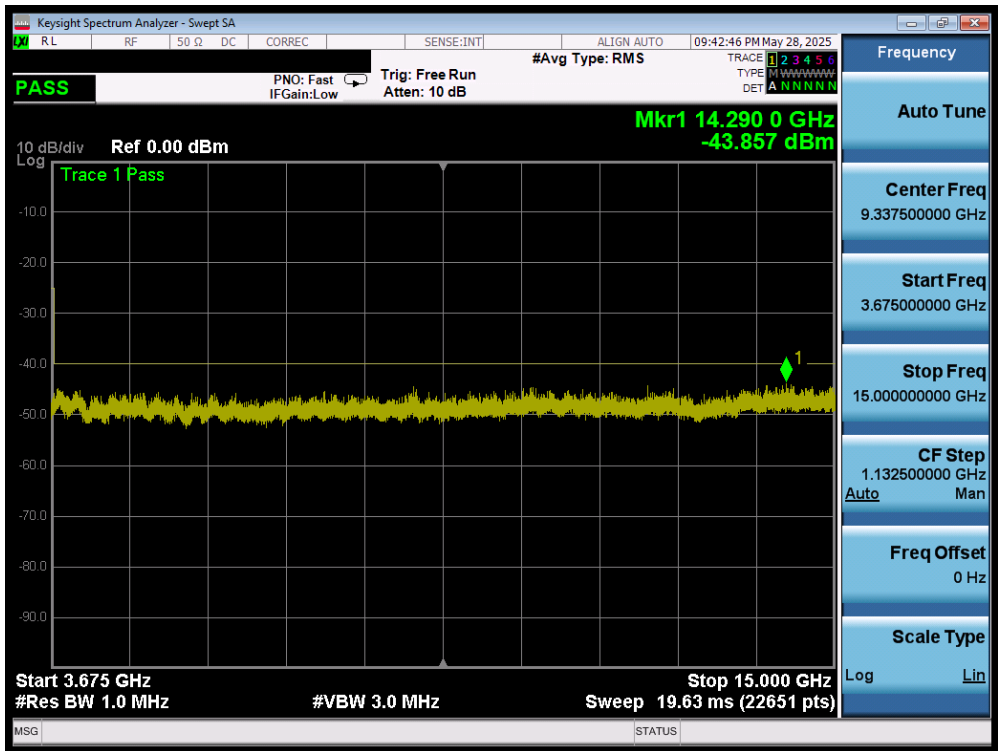


Plot 7.40. Conducted Spurious Plot (10MHz QPSK, Low Channel)



Plot 7.41. Conducted Spurious Plot (10MHz QPSK, Mid Channel)

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 42 of 65

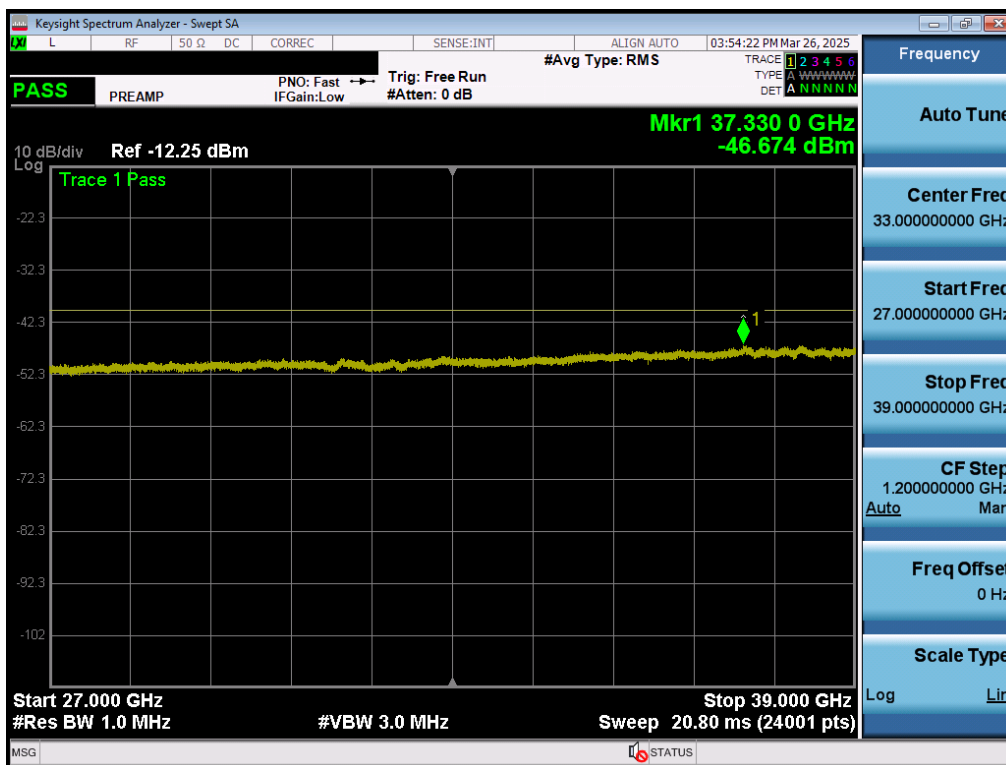


Plot 7.42. Conducted Spurious Plot (10MHz QPSK, Mid Channel)

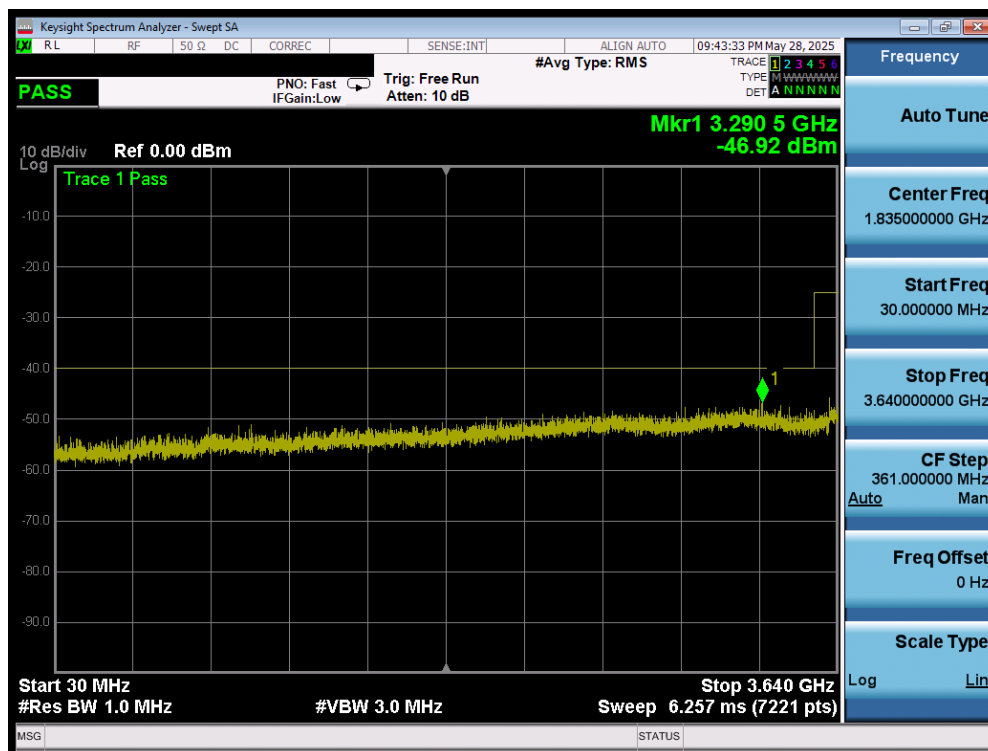


Plot 7.43. Conducted Spurious Plot (10MHz QPSK, Mid Channel)

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 43 of 65

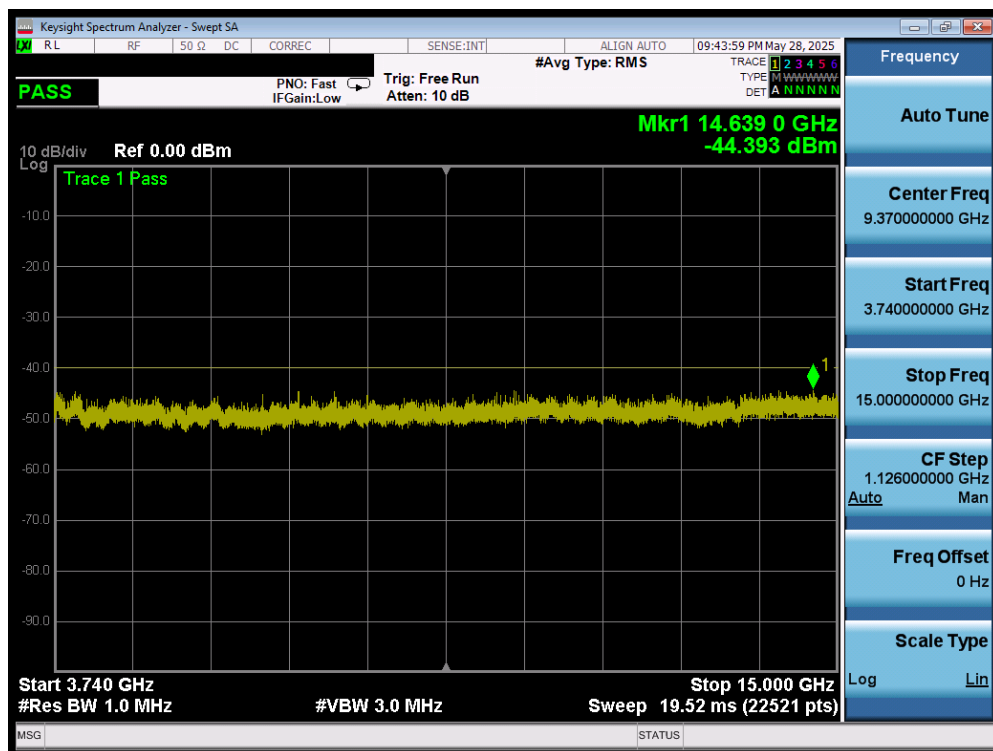


Plot 7.44. Conducted Spurious Plot (10MHz QPSK, Mid Channel)



Plot 7.45. Conducted Spurious Plot (10MHz QPSK, High Channel)

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 44 of 65

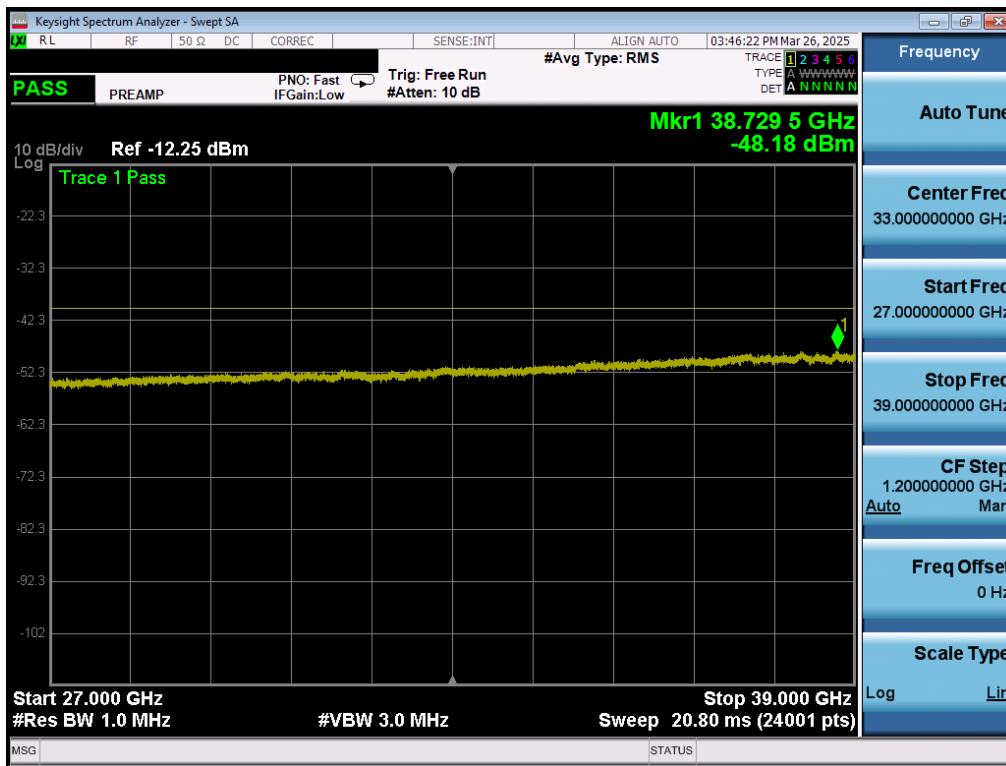


Plot 7.46. Conducted Spurious Plot (10MHz QPSK, High Channel)



Plot 7.47. Conducted Spurious Plot (10MHz QPSK, High Channel)

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 45 of 65



Plot 7.48. Conducted Spurious Plot (10MHz QPSK, High Channel)

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 46 of 65

7.7 Band Edge Emissions at Antenna Terminal

Test Overview

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

For an End User Device, the conducted power of any emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed -13 dBm/MHz within 0 to B MHz (where B is the bandwidth in MHz of the assigned channel or multiple contiguous channels of the End User Device) above the upper CBSD-assigned channel edge and within 0 to B MHz below the lower CBSD-assigned channel edge. At all frequencies greater than B MHz above the upper CBSD assigned channel edge and less than B MHz below the lower CBSD-assigned channel edge, the conducted power of any end user device emission shall not exceed -25 dBm/MHz. The conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed -40 dBm/MHz.

Test Procedure Used

ANSI C63.26-2015 – Section 5.7.3

Test Settings

1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW $\geq 1\%$ of the emission bandwidth
4. VBW $\geq 3 \times$ RBW
5. Detector = RMS
6. Number of sweep points $\geq 2 \times$ Span/RBW
7. Trace mode = trace average
8. Sweep time = auto couple
9. The trace was allowed to stabilize

Test Setup

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



Figure 7-6. Test Instrument & Measurement Setup

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 47 of 65

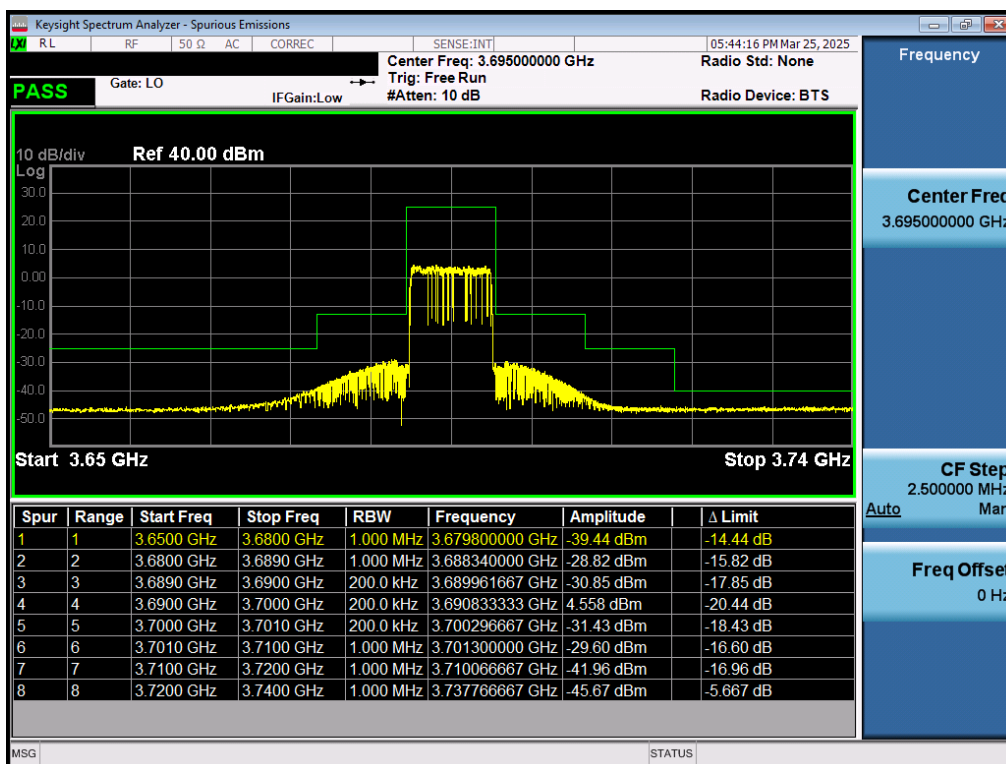
Test Notes

1. Per 96.41€(i), compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's authorized frequency channel, a resolution bandwidth of no less than one percent of the fundamental emission bandwidth may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full reference bandwidth (i.e., 1 MHz or 1 percent of emission bandwidth, as specified). The fundamental emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.
2. Only plots for the worst case channel are included in this report.
3. As both outputs of the device are identical, MIMO results are obtained by adding 3dB to SISO measurements.

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 48 of 65

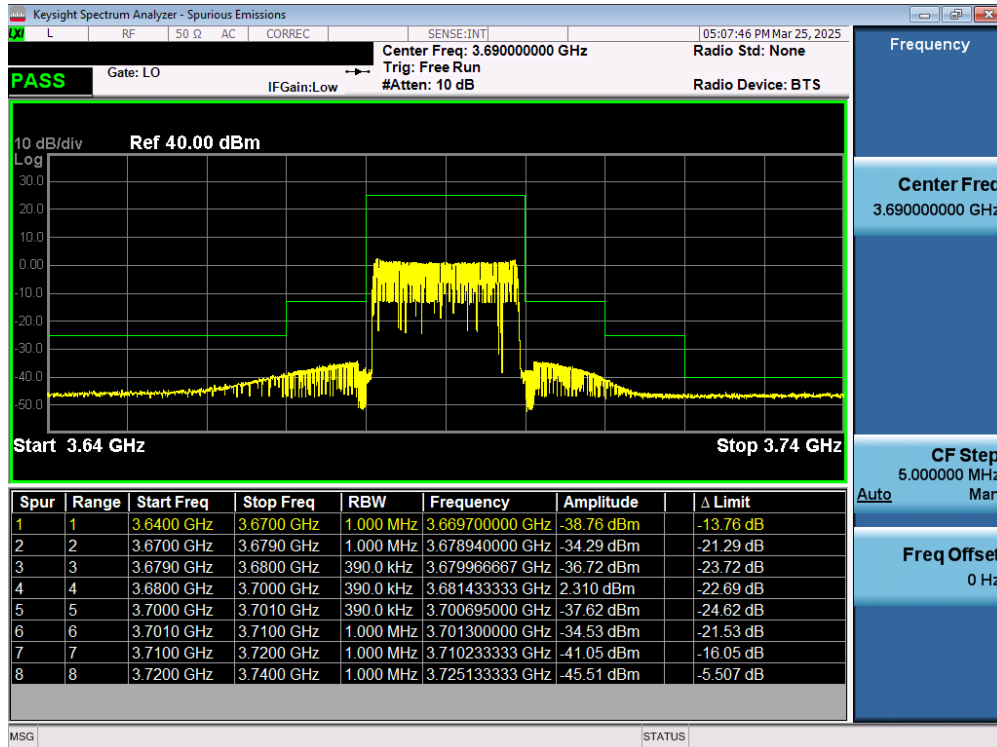
Bandwidth	Modulation	Frequency [MHz]	Worst Case Band Edge Emission [dBm]	MIMO Spurious Level [dBm]	Limit [dBm]	Margin [dB]
10MHz	QPSK	3555	-45.71	-42.71	-40.00	-2.71
		3625	-38.61	-35.61	-25.00	-10.61
		3695	-45.67	-42.67	-40.00	-2.67
20MHz	QPSK	3560	-46.05	-43.05	-40.00	-3.05
		3625	-32.40	-29.40	-25.00	-4.40
		3690	-45.51	-42.51	-40.00	-2.51
40MHz	QPSK	3570	-45.61	-42.61	-40.00	-2.61
		3625	-31.34	-28.34	-25.00	-3.34
		3680	-45.09	-42.09	-40.00	-2.09

Table 7-10 MIMO Band Edge Emission Results

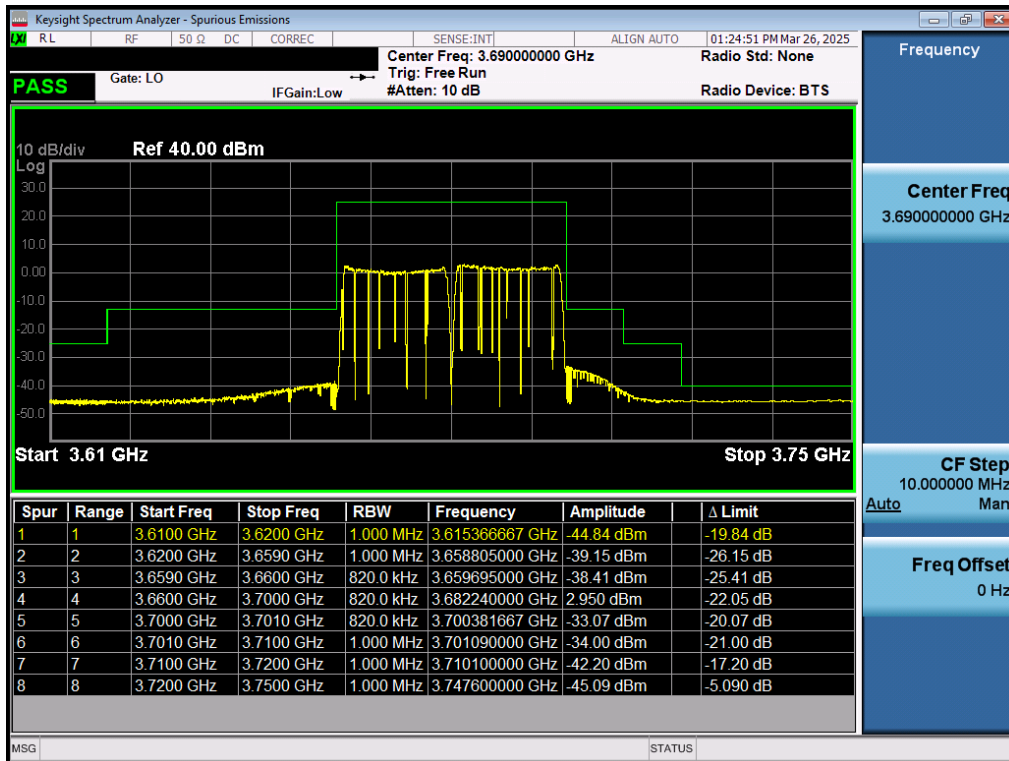


Plot 7.49. Conducted Band Edge Plot (10MHz, QPSK, High Channel)

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 49 of 65



Plot 7.50. Conducted Band Edge Plot (20MHz, QPSK, High Channel)



Plot 7.51. Conducted Band Edge Plot (20+20MHz, QPSK, High Channel)

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 50 of 65

7.8 Peak-Average Ratio

Test Overview

A peak to average ratio measurement is performed at the conducted port of the EUT. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level.

Test Procedure Used

ANSI C63.26-2015 – Section 5.2.3.4

Test Settings

1. The signal analyzer's CCDF measurement profile is enabled
2. Frequency = carrier center frequency
3. Measurement BW $\geq$ OBW or specified reference bandwidth
4. The signal analyzer was set to collect one million samples to generate the CCDF curve
5. The spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power

Test Setup

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



Figure 7-7. Test Instrument & Measurement Setup

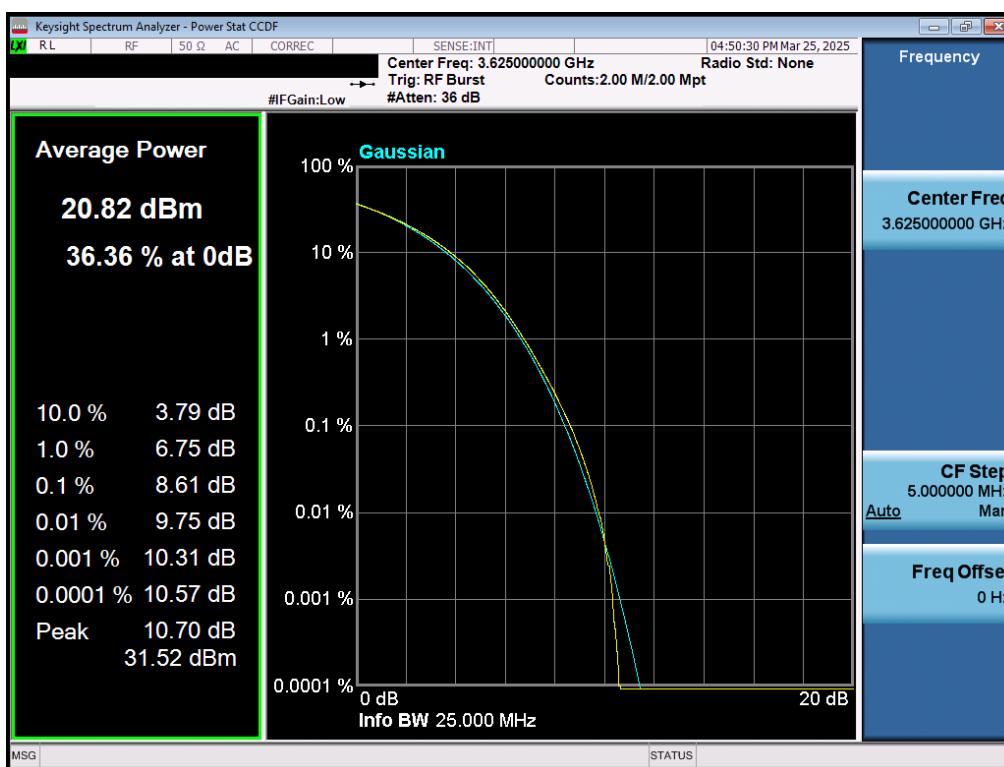
Test Notes

None.

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 51 of 65

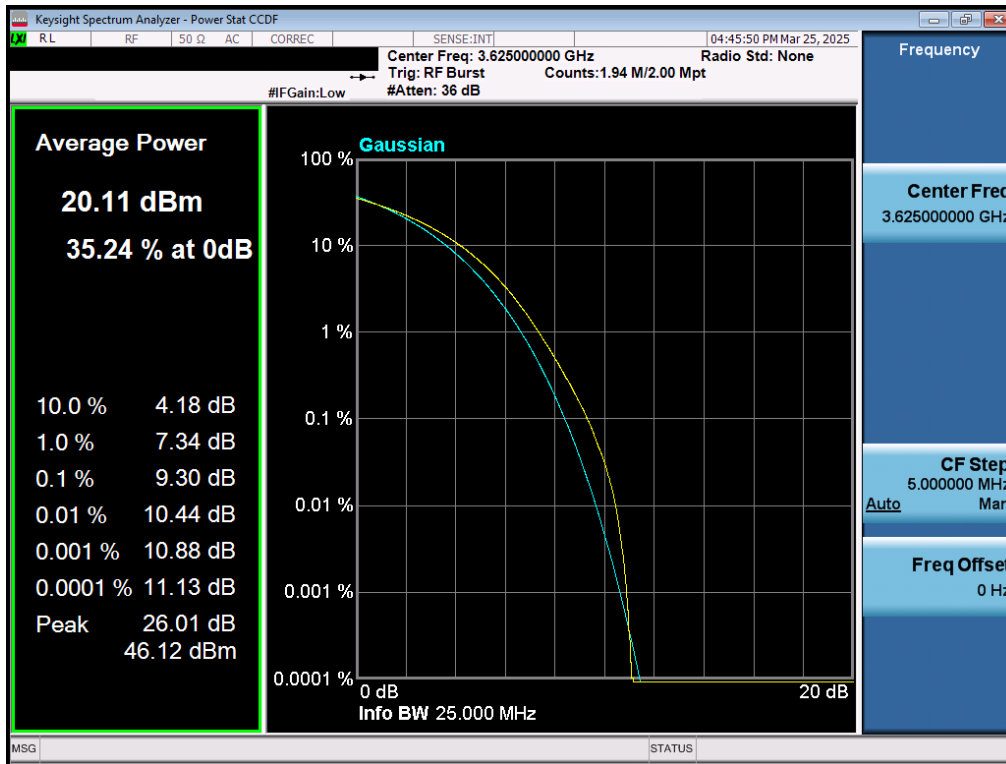
Mode	Bandwidth	Modulation	PAR at 0.1% [dB]	PAR Limit [dB]	Margin [dB]
LTE Band 48	20 MHz	QPSK	8.61	13.00	-4.39
		16QAM	9.21	13.00	-3.79
		64QAM	9.22	13.00	-3.78
		256QAM	9.30	13.00	-3.70
	10 MHz	QPSK	8.91	13.00	-4.09
		16QAM	9.01	13.00	-3.99
		64QAM	8.93	13.00	-4.07
		256QAM	9.06	13.00	-3.94

Table 7-11 Peak to Average Power Ratio Measurements

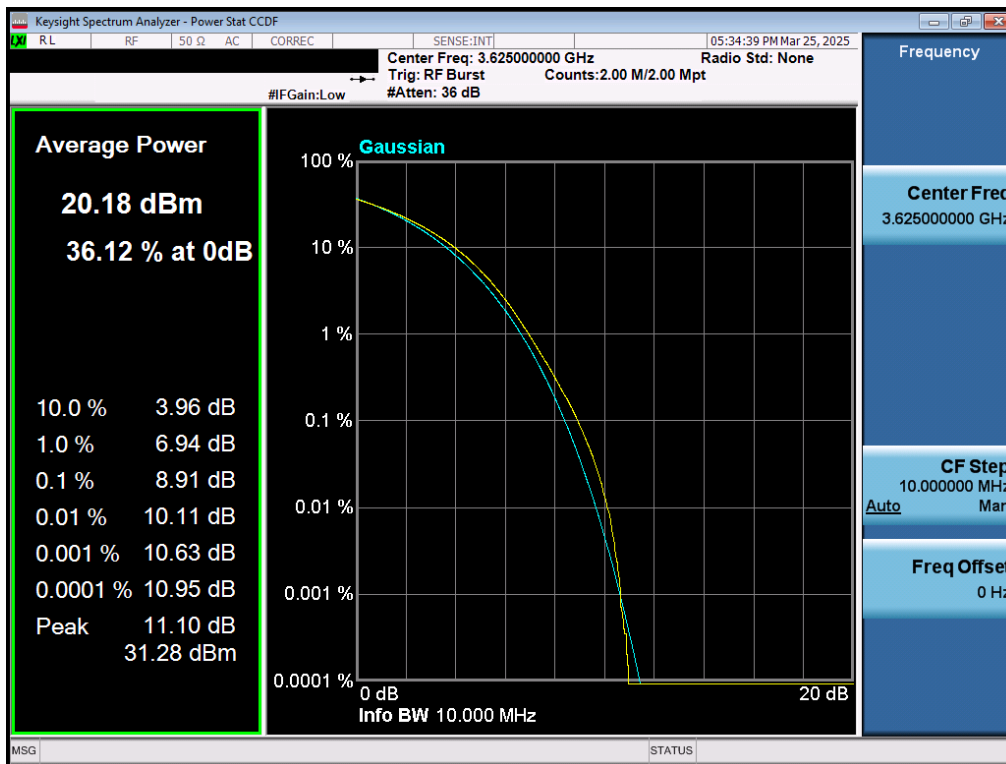


Plot 7.52. Peak-Average Ratio Plot (20MHz QPSK)

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 52 of 65

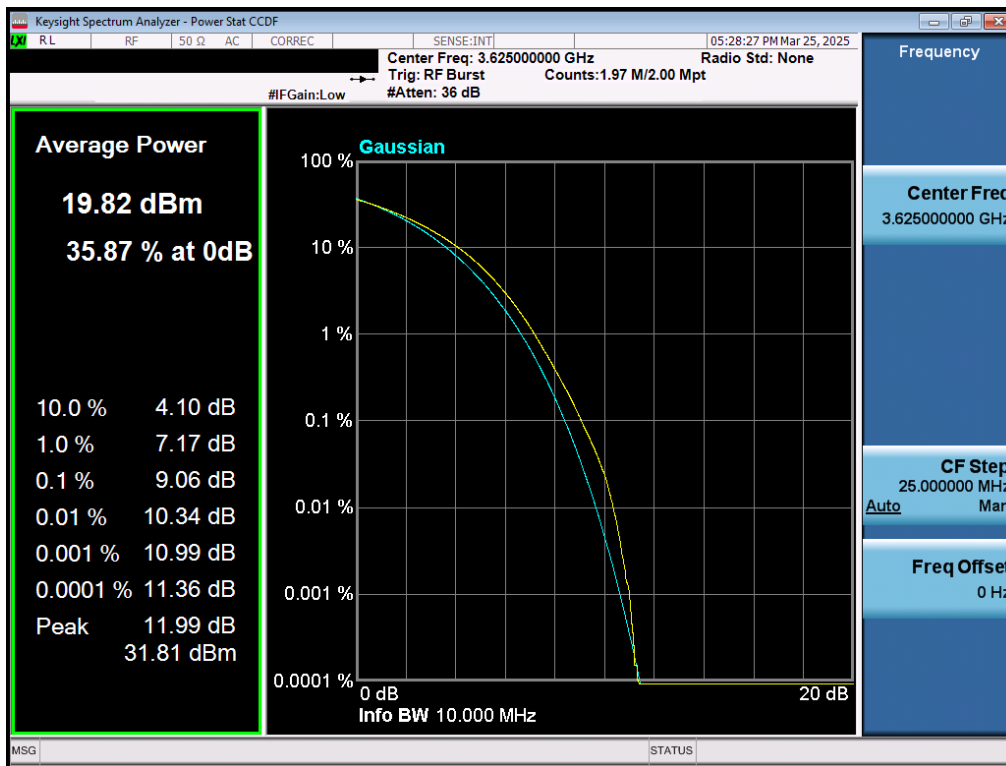


Plot 7.53. Peak-Average Ratio Plot (20MHz 256QAM)



Plot 7.54. Peak-Average Ratio Plot (10MHz QPSK)

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 53 of 65



Plot 7.55. Peak-Average Ratio Plot (10MHz 256QAM)

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 54 of 65

7.9 Radiated Spurious Emissions Measurements

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.

Test Procedures Used

ANSI C63.26-2015 – Section 5.5.4

Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW $\geq 3 \times$ RBW
3. Span = 1.5 times the OBW
4. No. of sweep points $\geq 2 \times$ span / RBW
5. Detector = RMS
6. Trace mode = Max Hold (In cases where the level is within 2dB of the limit, the final measurement is taken using triggering/gating and trace averaging.)
7. The trace was allowed to stabilize

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 55 of 65

Test Setup

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

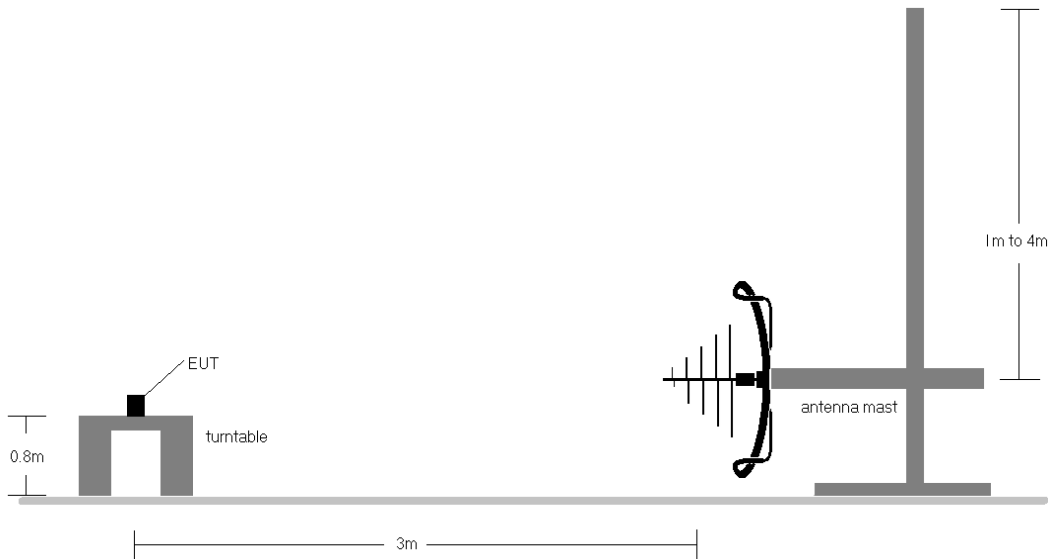


Figure 7-8. Test Instrument & Measurement Setup < 1GHz

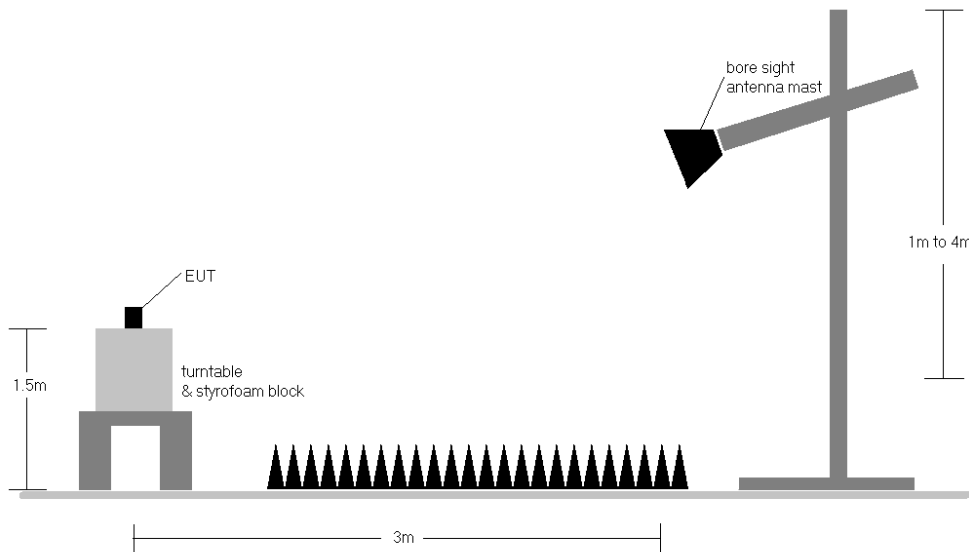


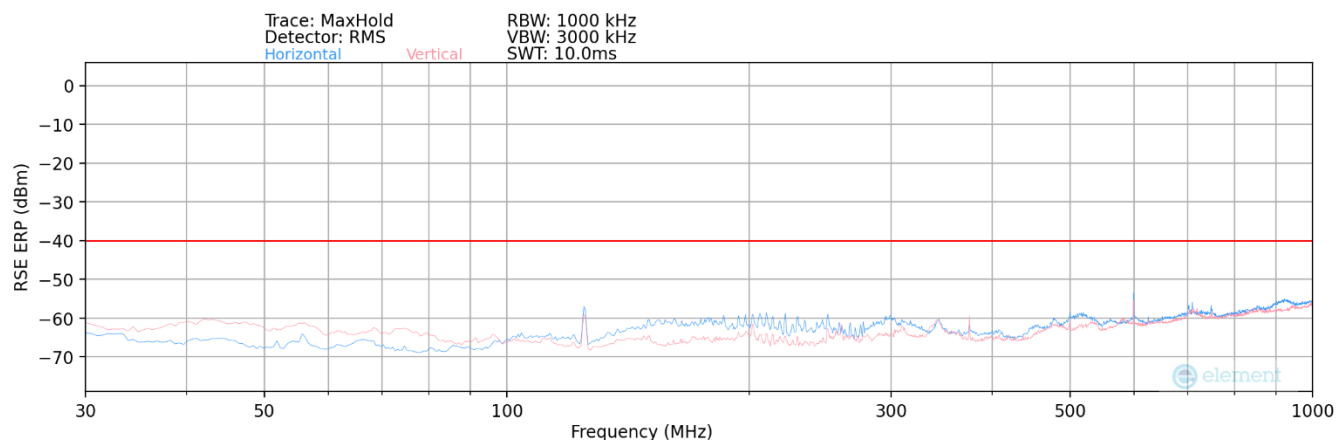
Figure 7-9. Test Instrument & Measurement Setup >1 GHz

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 56 of 65

Test Notes

- 1) Field strengths are calculated using the Measurement quantity conversions in ANSI C63.26-2015 Section 5.2.7:
 - a) $E(\text{dB}\mu\text{V/m}) = \text{Measured amplitude level (dBm)} + 107 + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}$
 - b) $\text{EIRP (dBm)} = E(\text{dB}\mu\text{V/m}) + 20\log D - 104.8$; where D is the measurement distance in meters.
- 2) 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.
- 3) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 4) Emissions below 18GHz were measured at a 3-meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.
- 5) The "-" shown in the following RSE tables are used to denote a noise floor measurement.

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 57 of 65

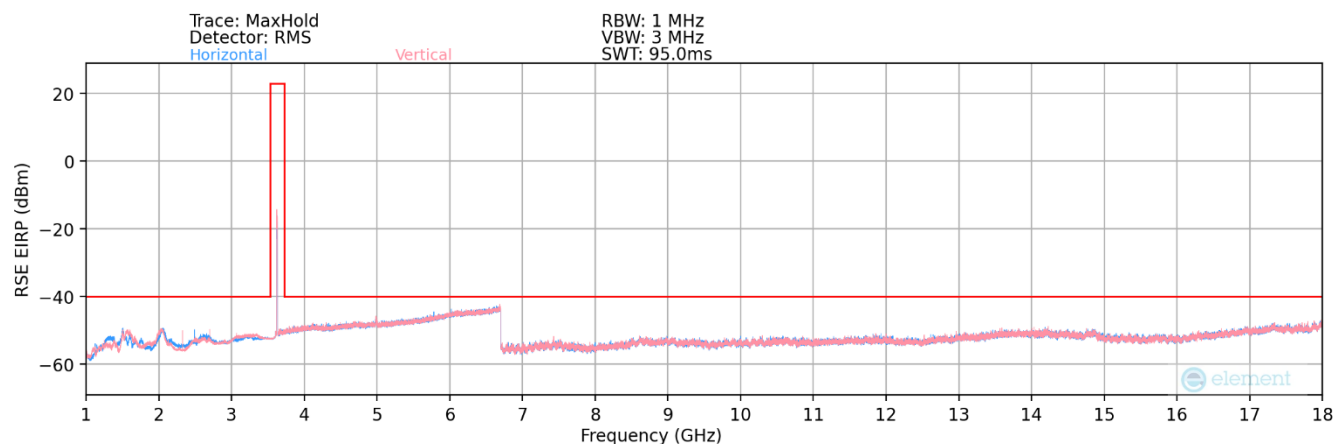


Plot 7.56. Radiated Spurious Plot 30MHz-1GHz – Mid Channel

Bandwidth (MHz):	10
Frequency (MHz):	3555.0
Modulation Signal:	256QAM
Detector / Trace Mode:	RMS / Max Hold
RBW / VBW:	1MHz / 3MHz

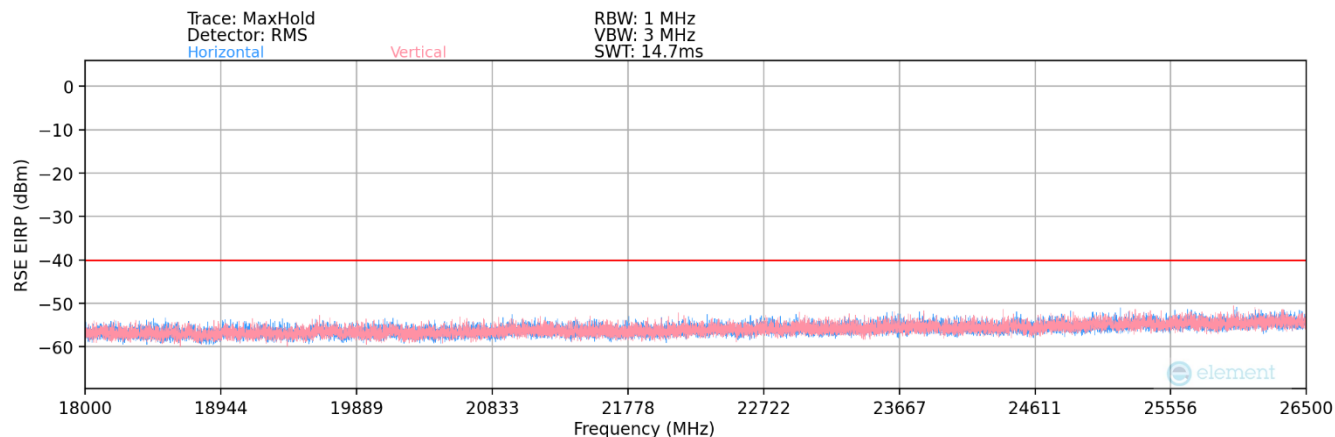
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
125.00	H	215	117	-83.49	20.52	44.03	-53.38	-40.00	-13.38
213.75	H	283	259	-79.10	17.76	45.66	-51.75	-40.00	-11.75

Table 7-12. Radiated Spurious Data 30MHz-1GHz – Mid Channel

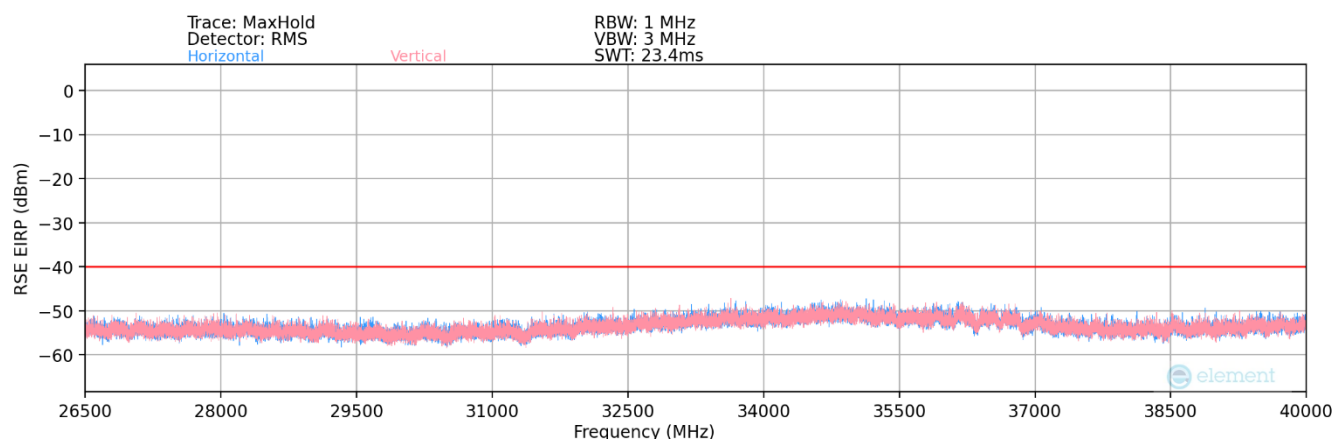


Plot 7.57. Radiated Spurious Plot 1-18GHz – Mid Channel

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 58 of 65



Plot 7.58. Radiated Spurious Plot 18-26.5GHz – Mid Channel



Plot 7.59. Radiated Spurious Plot 26.5-40GHz – Mid Channel

Bandwidth (MHz):	10
Frequency (MHz):	3555.0
Modulation Signal:	256QAM
Detector / Trace Mode:	RMS / Max Hold
RBW / VBW:	1MHz / 3MHz

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
7110.00	V	141	299	-63.23	9.56	53.33	-41.93	-40.00	-1.93
10665.00	V	126	102	-71.52	12.94	48.42	-46.84	-40.00	-6.84
14220.00	V	-	-	-79.56	15.46	42.90	-52.36	-40.00	-12.36
17775.00	V	-	-	-79.98	17.27	44.29	-50.97	-40.00	-10.97
21330.00	V	-	-	-58.79	2.88	51.09	-53.71	-40.00	-13.71

Table 7-13. Radiated Spurious Data 1-40GHz - Low Channel

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT			Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit		Page 59 of 65

Bandwidth (MHz):	10
Frequency (MHz):	3625.0
Modulation Signal:	256QAM
Detector / Trace Mode:	RMS / Max Hold
RBW / VBW:	1MHz / 3MHz

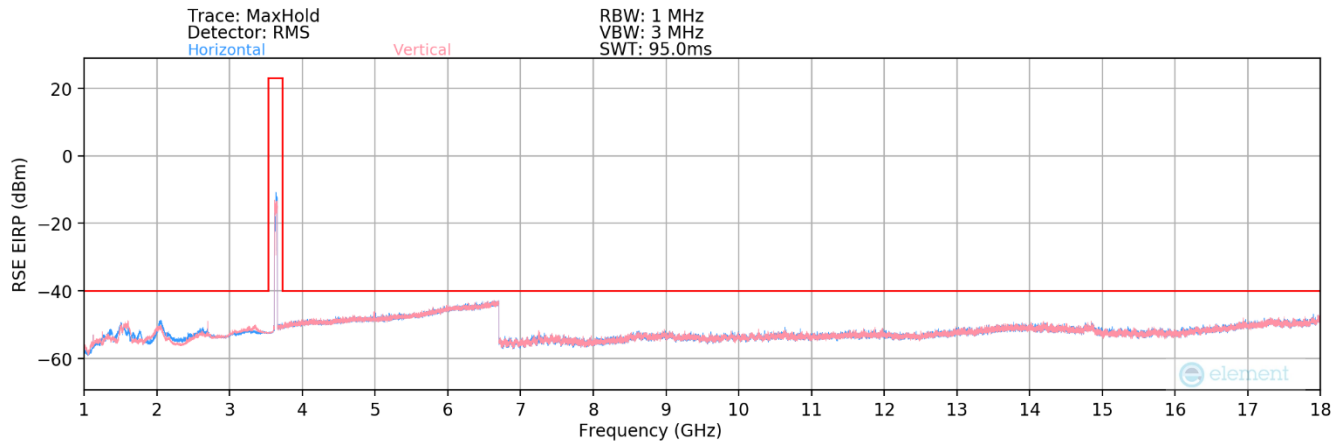
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1600.00	V	-	-	-74.00	9.31	42.31	-52.95	-40.00	-12.95
2000.00	V	-	-	-75.93	9.31	40.38	-54.88	-40.00	-14.88
7250.00	V	151	263	-73.90	9.31	42.41	-52.85	-40.00	-12.85
10875.00	V	-	-	-79.23	12.69	40.46	-54.80	-40.00	-14.80
14500.00	V	-	-	-80.03	15.58	42.55	-52.71	-40.00	-12.71
18125.00	V	-	-	-58.12	1.10	49.98	-54.82	-40.00	-14.82

Table 7-14. Radiated Spurious Data 1-40GHz - Mid Channel

Bandwidth (MHz):	10
Frequency (MHz):	3695.0
Modulation Signal:	256QAM
Detector / Trace Mode:	RMS / Max Hold
RBW / VBW:	1MHz / 3MHz

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
7390.00	V	-	-	-77.43	9.94	39.51	-55.75	-40.00	-15.75
11085.00	V	-	-	-79.31	12.80	40.49	-54.77	-40.00	-14.77
14780.00	V	-	-	-80.10	15.34	42.24	-53.02	-40.00	-13.02

Table 7-15. Radiated Spurious Data 1-40GHz – High Channel



Plot 7.60. Radiated Spurious Plot 1-18GHz – Mid Channel – Carrier Aggregation

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 60 of 65

PCC Bandwidth (MHz):	20
PCC Frequency (MHz):	3560.0
SCC Bandwidth (MHz):	20
SCC Frequency (MHz):	3579.8
Modulation Signal:	QPSK
Detector / Trace Mode:	RMS / MaxHold
RBW / VBW:	1MHz / 3MHz

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
7120.00	V	129	278	-74.06	9.70	42.64	-52.62	-40.00	-12.62
10680.00	V	-	-	-79.44	13.08	40.64	-54.62	-40.00	-14.62
14240.00	V	-	-	-79.56	15.38	42.82	-52.44	-40.00	-12.44
17800.00	V	-	-	-80.02	17.11	44.09	-51.16	-40.00	-11.16

Table 7-16. Radiated Spurious Data 1-40GHz - Low Channel – Carrier Aggregation

PCC Bandwidth (MHz):	20
PCC Frequency (MHz):	3625.0
SCC Bandwidth (MHz):	20
SCC Frequency (MHz):	3644.8
Modulation Signal:	QPSK
Detector / Trace Mode:	RMS / MaxHold
RBW / VBW:	1MHz / 3MHz

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
7250.00	V	163	207	-73.20	9.31	43.11	-52.15	-40.00	-12.15
10875.00	V	156	212	-76.57	12.69	43.12	-52.14	-40.00	-12.14
14500.00	V	-	-	-77.70	15.58	44.88	-50.38	-40.00	-10.38
18125.00	V	-	-	-58.92	1.10	49.18	-55.62	-40.00	-15.62
21750.00	V	-	-	-59.22	2.78	50.56	-54.24	-40.00	-14.24
25375.00	V	-	-	-58.82	4.84	53.02	-51.78	-40.00	-11.78

Table 7-17. Radiated Spurious Data 1-40GHz - Mid Channel – Carrier Aggregation

PCC Bandwidth (MHz):	20
PCC Frequency (MHz):	3690.0
SCC Bandwidth (MHz):	20
SCC Frequency (MHz):	3670.2
Modulation Signal:	QPSK
Detector / Trace Mode:	RMS / MaxHold
RBW / VBW:	1MHz / 3MHz

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
7380.00	V	-	-	-75.65	10.14	41.49	-53.77	-40.00	-13.77
11070.00	V	160	198	-76.22	12.63	43.41	-51.85	-40.00	-11.85
14760.00	V	-	-	-80.19	15.48	42.29	-52.97	-40.00	-12.97
18450.00	V	-	-	-57.92	1.15	50.23	-54.57	-40.00	-14.57
22140.00	V	-	-	-58.90	3.27	51.37	-53.43	-40.00	-13.43

Table 7-18. Radiated Spurious Data 1-40GHz - High Channel – Carrier Aggregation

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT			Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit		Page 61 of 65

7.10 Frequency Stability / Temperature Variation

Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI C63.26-2015. The frequency stability of the transmitter is measured by:

- a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.
- b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

For Part 96, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Test Procedure Used

ANSI C63.26-2015 – Section 5.6

Test Settings

1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
2. The equipment is turned on in a “standby” condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

Test Setup

The EUT was connected via an RF cable to a spectrum analyzer with the EUT placed inside an environmental chamber.

Test Notes

None

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 62 of 65

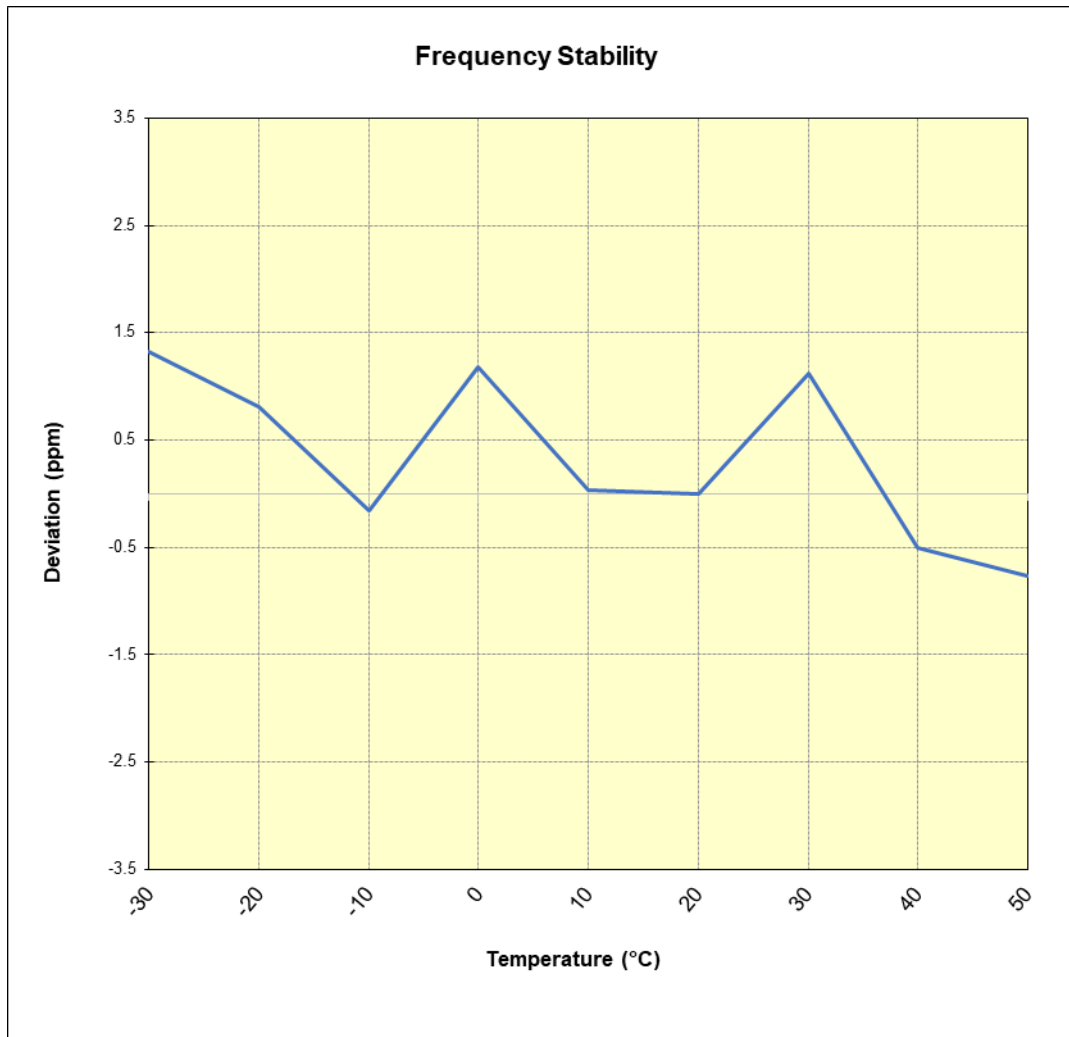
LTE Band 48

Operating Frequency (Hz):	3,690,000,000
Ref. Voltage (VDC):	48.00

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	48.00	- 30	3,690,004,239	4,899	0.0001328
		- 20	3,690,002,345	3,005	0.0000814
		- 10	3,689,998,765	-575	-0.0000156
		0	3,690,003,679	4,339	0.0001176
		+ 10	3,689,999,456	116	0.0000031
		+ 20 (Ref)	3,689,999,340	0	0.0000000
		+ 30	3,690,003,479	4,139	0.0001122
		+ 40	3,689,997,498	-1,842	-0.0000499
		+ 50	3,689,996,510	-2,830	-0.0000767
85 %	40.80	+ 20	3,689,999,841	501	0.0000136
Battery Endpoint	55.20	+ 20	3,690,000,842	1,502	0.0000407

Table 7-19. Frequency Stability Data

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 63 of 65



Plot 7.61. Frequency Stability Chart

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 64 of 65

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Wilson Electronics Optical Radio Unit FCC ID: UPO308-0007-2** complies with all of the CBSD Category A and B requirements of Part 96 of the FCC Rules for LTE operation only.

FCC ID: UPO308-0007-2	PART 96 MEASUREMENT REPORT		Approved by: Technical Manager
Test Report S/N: 1M2505270053-01.UPO	Test Dates: 3/24/2025 – 6/5/2025	EUT Type: Optical Radio Unit	Page 65 of 65