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United States of America
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CERTIFICATION TEST REPORT

Manufacturer: Chandler Systems, Inc.
710 Orange Street
Ashland, Ohio 44805 USA

Applicant: Same as Above

Product Name: Legacy View Valve

Product Description: The Legacy View Valve controls water softening and water filtering appliances. The valve controller can operate several different models of softeners and filters and gives the user the ability to change settings and view information about water treated by the appliance. The Legacy View Valve can be connected to via Bluetooth using a Google or Apple App, giving the user a convenient user interface to interact with.

**Operating Voltage/Freq.
of EUT During Testing:** 120V/60 Hz

Model: EVB-034-C

FCC ID: SWP-EVB-034-C

Testing Commenced: 2025-01-20

Testing Ended: 2025-01-23

Summary of Test Results: In Compliance, with Modifications

The EUT complies with the EMC requirements when manufactured identically as the unit tested in this report, including any required modifications and/or manufacturer's statement. Any changes to the design or build of this unit subsequent to this testing may deem it non-compliant.

Rules:

- FCC Part 15 Subpart C, Section 15.247
- FCC15.207 - Conducted Limits
- FCC Part 15.31(e)
- ANSI C63.10:2013



Order No(s): F2P33844

Applicant: Chandler Systems, Inc.
Model: EVB-034-C

Evaluation Conducted by:

Erik Tobin, EMC Engineer

Report Reviewed by:

Ken Littell, Vice President of Operations

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1 ADMINISTRATIVE INFORMATION

1.1 Measurement Location:

F2 Labs in Middlefield, Ohio. Site description and attenuation data are on file with the FCC's Sampling and Measurement Branch at the FCC Laboratory in Columbia, MD.

1.2 Measurement Procedure:

All measurements were performed according ANSI C63.10 and recommended FCC procedure of measurement under Section 15.247 and in KDB558074. A list of the measurement equipment can be found in Section 6.

1.3 Uncertainty Budget:

The uncertainty in EMC measurements arises from several factors which affect the results, some associated with environmental conditions in the measurement room, the test equipment being used and the measurement techniques adopted.

The measurement uncertainty budgets detailed below are calculated from the test and calibration data, and are expressed with a 95% confidence factor. Note: Only measurements listed below which relate to tests included in this Test Report are applicable to it.

Measurement Range	Expanded Uncertainty	Combined Uncertainty
Radiated Emissions <1 GHz @ 3m	±5.07dB	±2.54dB
Radiated Emissions <1 GHz @10m	±5.09dB	±2.55dB
Radiated Emissions 1 GHz to 2.7 GHz	±3.62dB	±1.81dB
Radiated Emissions 2.7 GHz to 18 GHz	±3.10dB	±1.55dB
AC Power Line Conducted Emissions, 150kHz to 30 MHz	±2.76dB	±1.38dB

This Uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

1.4 Document History

Document Number	Description	Issue Date	Approved By
F2P33844-01E	First Issue	2025-01-27	K. Littell



2 SUMMARY OF TEST RESULTS

Test Name	Standard(s)	Results
Occupied Bandwidth	CFR 47 Part 15.247(a)(2) / KDB558074	Complies
Conducted Output Power	CFR 47 Part 15.247(b)(2) / KDB558074	Complies
Voltage Variations	CFR 47 Part 15.31(e)	Complies
Conducted Spurious Emissions	CFR 47 Part 15.247(d) / Part 15.207 / KDB558074	Complies
Radiated Spurious Emissions with Trace Antenna, -4.35dBi Gain	CFR 47 Part 15.247(d) / Part 15.209 / KDB558074	Complies
Peak Power Spectral Density	CFR 47 Part 15.247(e) / KDB558074	Complies
Frequency Separation	ANSI 63.10 2013 (7.8.2)	Not Applicable
Number of Hopping Frequencies	ANSI 63.10 2013 (7.8.3)	Not Applicable
Dwell Time	ANSI 63.10 2013 (7.8.4)	Not Applicable
Conducted Emissions	CFR 47 Part 15.207(a)	Complies

Modifications Made to the Equipment
nRF52840 module set to +5dBm. nRF21540 (FEM) module set to 18.



3 TABLE OF MEASURED RESULTS

Test		Low Channel 2402 MHz	Mid Channel 2440 MHz	High Channel 2480 MHz
1 Mbps:				
Conducted Output Power: +5dBm, 18 FEM Gain		24.77mW / 13.94dBm	29.44mW / 14.69dBm	36.14mW / 15.58dBm
Conducted Output Power Limit		1 Watt / 30dBm	1 Watt / 30dBm	1 Watt / 30dBm
-6dB Occupied Bandwidth		725.96kHz	711.54kHz	706.73kHz
99% Occupied Bandwidth		1.067 MHz	1.077 MHz	1.072 MHz
Occupied Bandwidth Limit		>500kHz	>500kHz	>500kHz
Voltage Variations*	Nominal	120V	--	--
	-15%	22.59mW/13.54dBm	26.42mW/14.22dBm	32.21mW/15.08dBm
	+15%	22.28mW/13.48dBm	26.06mW/14.16dBm	31.92mW/15.04dBm
Limit		1W / 30dBm	1W / 30dBm	1W / 30dBm
Peak Power Spectral Density		7.65dBm	7.25dBm	7.15dBm
Peak Power Spectral Density Limit		8dBm	8dBm	8dBm

**To meet the requirements of 15.31, voltage was varied by $\pm 15\%$ of the nominal voltage. All tests were then performed at the highest output power voltage setting.*



Test		Low Channel 2402 MHz	Mid Channel 2440 MHz	High Channel 2480 MHz
2Mbps:				
Conducted Output Power: +5dBm, 18 FEM Gain		24.89mW / 13.96dBm	26.65mW / 14.72dBm	36.73mW / 15.65dBm
Conducted Output Power Limit		1 Watt / 30dBm	1 Watt / 30dBm	1 Watt / 30dBm
-6dB Occupied Bandwidth		1.226 MHz	1.329 MHz	1.257 MHz
99% Occupied Bandwidth		2.083 MHz	2.099 MHz	2.115 MHz
Occupied Bandwidth Limit		>500kHz	>500kHz	>500kHz
Voltage Variations*	Nominal	120V	--	--
	-15%	22.54mW/13.53dBm	26.42mW/14.22dBm	32.14mW/15.07dBm
	+15%	13.67dBm/23.28mW	26.49mW/14.23dBm	32.28mW/15.09dBm
Limit		1W / 30dBm	1W / 30dBm	1W / 30dBm
Peak Power Spectral Density		4.60dBm	4.52dBm	5.34dBm
Peak Power Spectral Density Limit		8dBm	8dBm	8dBm

**To meet the requirements of 15.31, voltage was varied by $\pm 15\%$ of the nominal voltage. All tests were then performed at the highest output power voltage setting.*



4 ENGINEERING STATEMENT

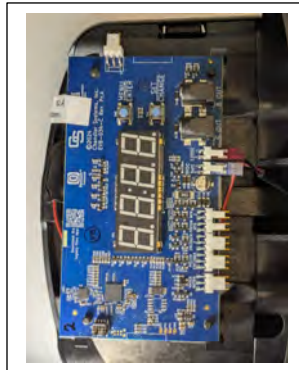
This report has been prepared on behalf of Chandler Systems, Inc. to provide documentation for the testing described herein. This equipment has been tested and found to comply with Part 15.247 of the FCC Rules using ANSI C63.10 and KDB558074 standards. The test results found in this test report relate only to the items tested.



5 EUT INFORMATION AND DATA

5.1 Equipment Under Test:

Product: Legacy View Valve
Model(s): EVB-034-C
Serial No.: 1
Software Version: Terraterm V5
FCC ID: SWP-EVB-034-C



5.2 Trade Name:

Chandler Systems, Inc.

5.3 Power Supply:

Device	Manufacturer	Model Number	Serial Number
Power Supply	Chandler Systems, Inc.	2001X125	None Specified

5.4 Applicable Rules:

CFR 47, Part 15.247, subpart C

5.5 Antenna:

Trace Antenna

5.6 Accessories: None

5.7 Test Item Condition:

The equipment to be tested was received in good condition.



5.9 Testing Algorithm:

EUT was set to transmit a continuous modulated signal on low, mid and high channels in the 2.4 GHz Bluetooth band. GFSK modulation was used at 1MB and 2MB. The highest emissions were recorded in the data tables.

**6 LIST OF MEASUREMENT INSTRUMENTATION**

Equipment Type	Asset Number	Manufacturer	Model	Serial Number	Calibration Due Date
Shielded Chamber 2014	CL166-E	AlbatrossProjects	B83117-DF435-T261	US140023	2025-03-31
Receiver	CL151	Rohde & Schwarz	ESU40	100319	2025-04-09
Horn Antenna 18-26.5 GHz	CL114	A.H. Systems, Inc.	SAS-572	237	2026-01-09
Antenna, JB3 Combination	CL175	Sunol Sciences	JB3	A030315	2025-09-18
Amplifier w/Monopole & 18"	CL163-Loop	A.H. Systems, Inc.	EHA-52B	100	2025-02-15
Horn Antenna (18 GHz)	CL333	ETS Lindgren	DRHA18G	J203061349	2025-02-22
Spectrum Analyzer	CL147	Agilent	E7402A	MY45101241	2025-04-10
LISN	CL181	Com-Power	LI-125A	191226	2026-11-20
LISN	CL182	Com-Power	LI-125A	191225	2026-11-21
Preamplifier	CL284	A.H. Systems, Inc.	PAM-0101	131	2025-04-10
Pre-Amplifier	CL189	Com-Power	PAM-840A	461303	2026-04-10
Software:	EMC 32, Version 8.53.0		Software Verified: 2025-01-20 to 2025-01-23		
Software:	Tile Version 3.4.B.3		Software Verified: 2025-01-20 to 2025-01-23		
Temp/Hum Rec	CL293	Thermpro	TP50	1	2025-05-31
Temp/Hum Rec	CL294	Thermpro	TP50	2	2026-04-27
Transient Limiter	0202	Hewlett Packard	11947A	3107A00729	2025-04-09
Spectrum Analyzer	CL147	Agilent	E7402A	MY45101241	2025-04-10
LISN	CL181	Com-Power	LI-125A	191226	2026-11-20
LISN	CL182	Com-Power	LI-125A	191225	2026-11-21
Temp/Hum Rec	CL293	Thermpro	TP50	1	2025-05-31



7 OCCUPIED BANDWIDTH

7.1 Requirements:

The 6dB bandwidth shall be greater than 500 kHz.

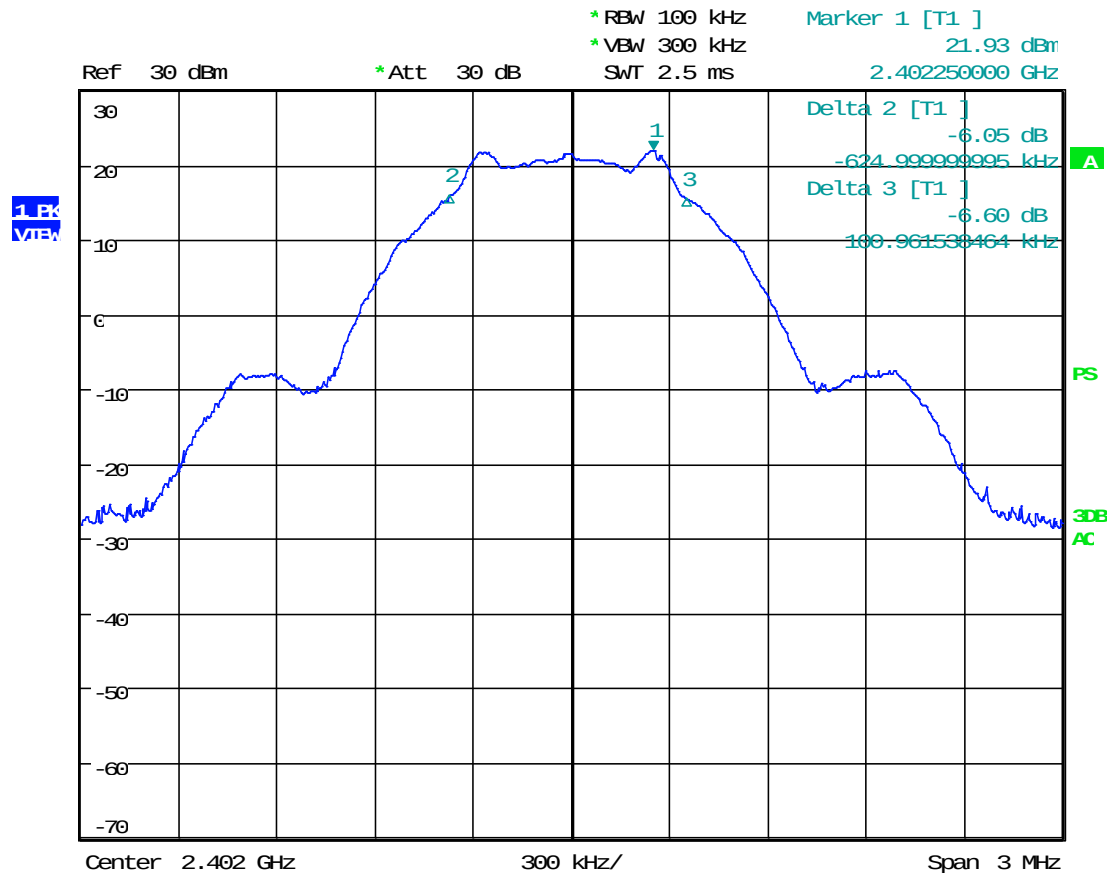
Bandwidth measurements were made at the low, mid and high frequencies with the Resolution Bandwidth set at 30 kHz (video bandwidth set at 100 kHz) for the 99% OBW, and 100kHz Resolution Bandwidth and 300kHz Video Bandwidth for the 6dB OBW. The span was set at 5 MHz. The bandwidth was measured using the analyzer's marker function.



7.2 Occupied Bandwidth Test Data

Test Date:	2025-01-21	Test Engineer:	E. Tobin
Standard(s):	CFR 47 Part 15.247(a)(2); KDB558074	Air Temperature:	19.5°C
		Relative Humidity:	23%

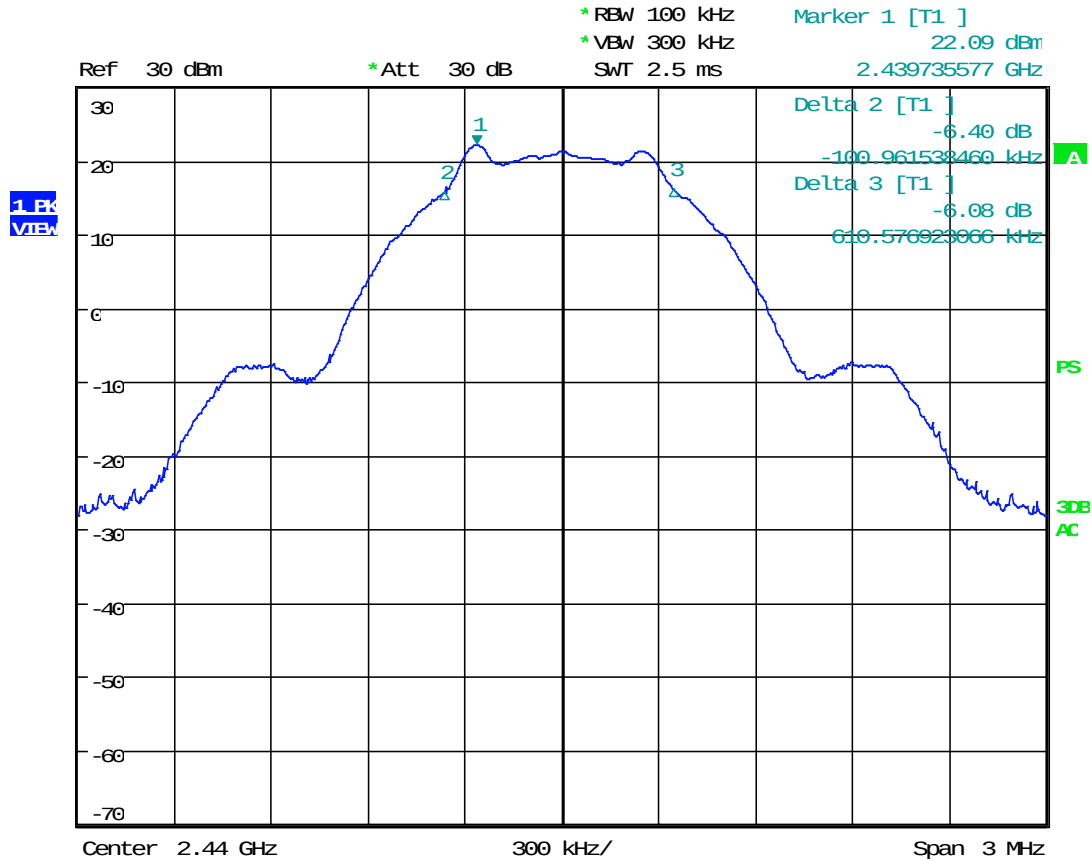
1 Mbps, -6dB: Low Channel



Date: 21.JAN.2025 10:46:32



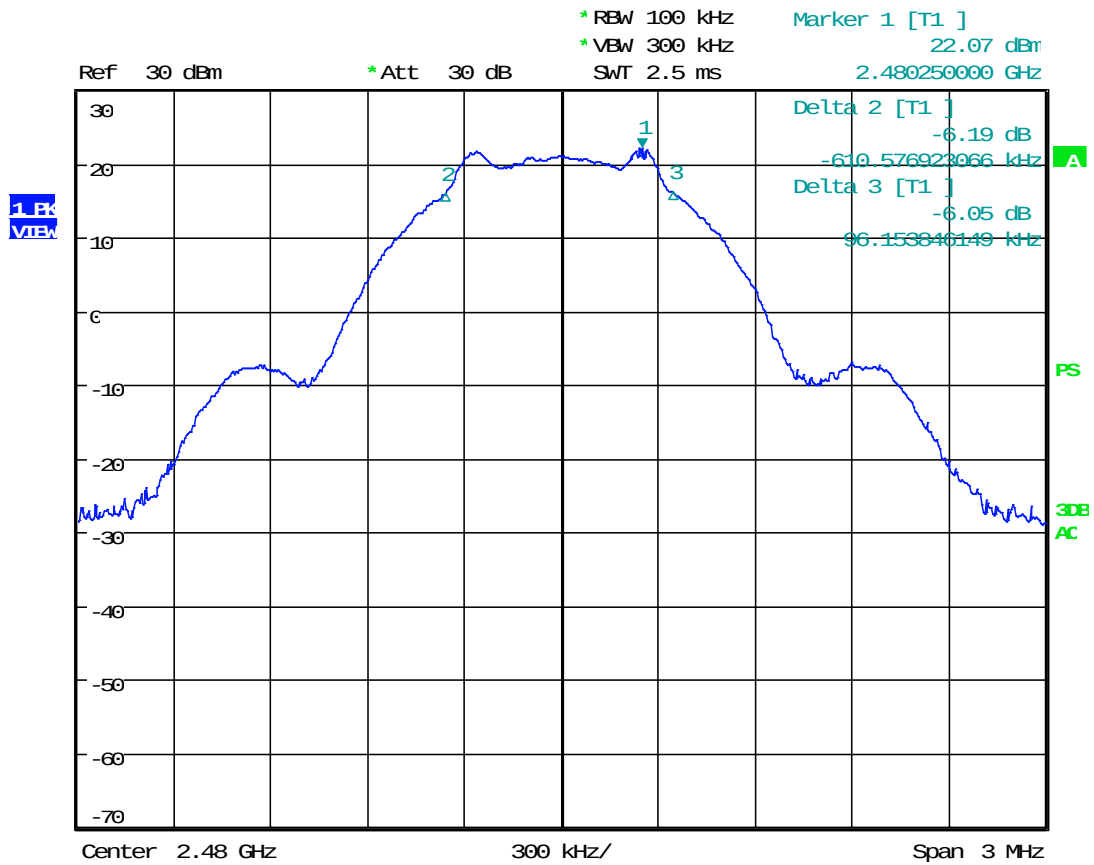
1 Mbps, -6dB: Mid Channel



Date: 21.JAN.2025 10:49:09



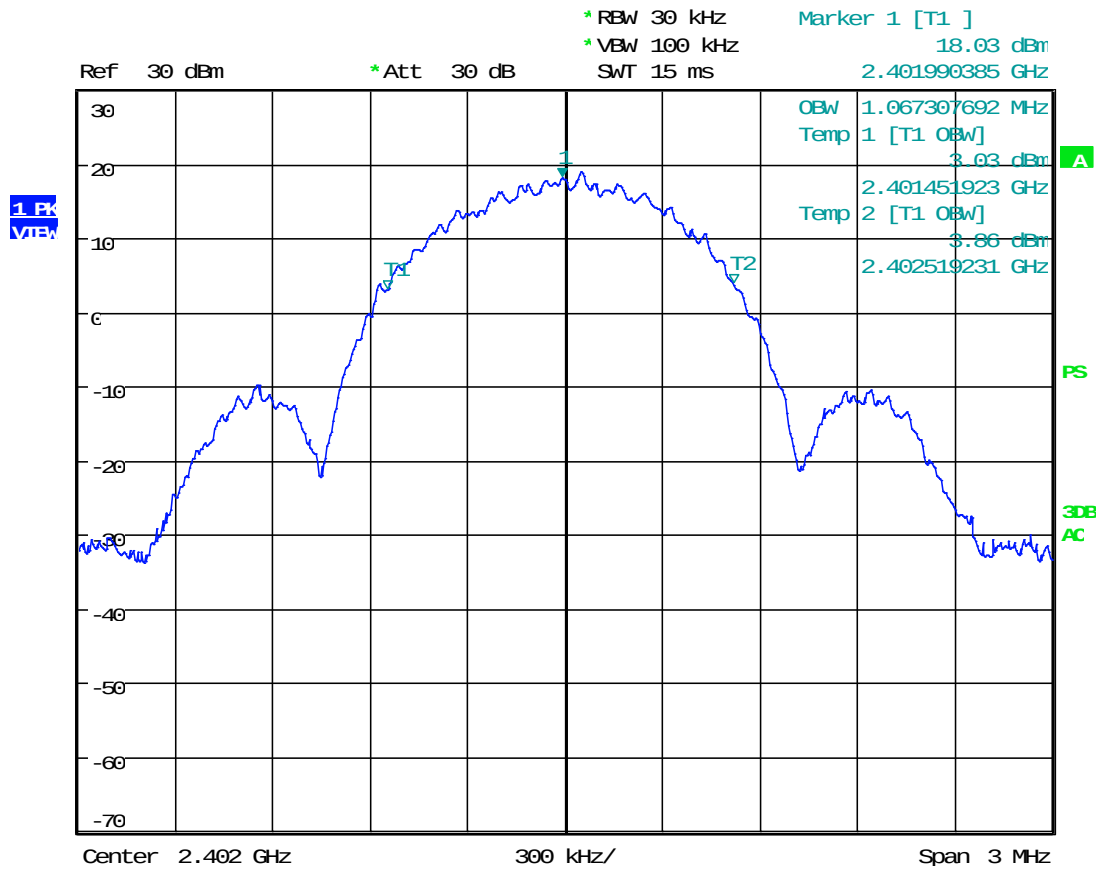
1 Mbps, -6dB: High Channel



Date: 21.JAN.2025 10:50:23



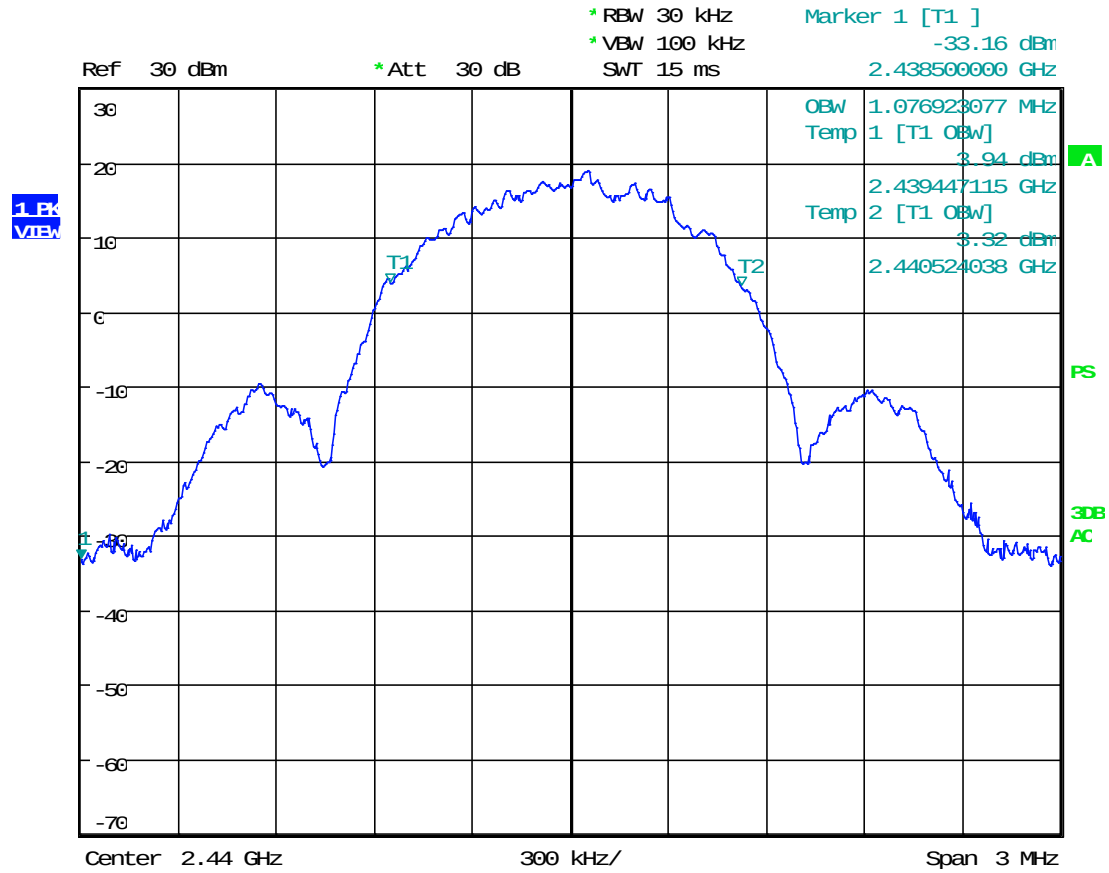
1 Mbps, 99%: Low Channel



Date: 21.JAN.2025 10:40:24



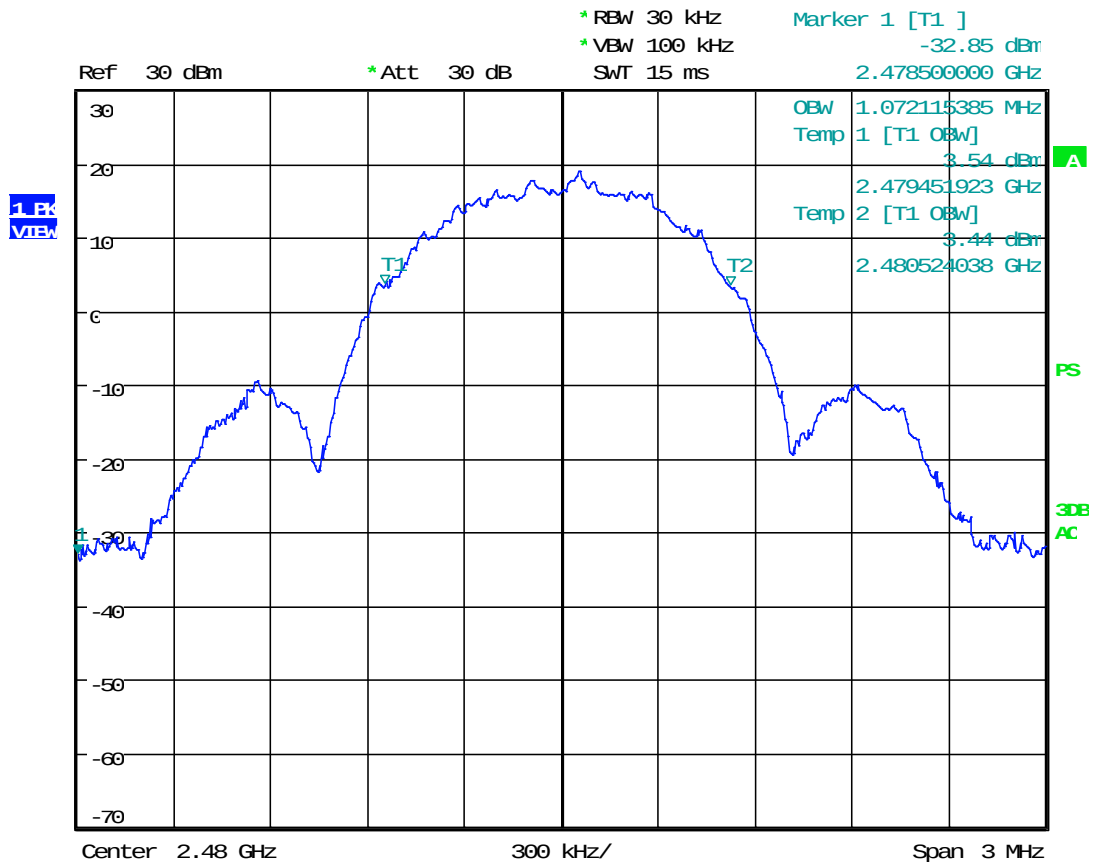
1 Mbps, 99%: Mid Channel



Date: 21.JAN.2025 10:41:08



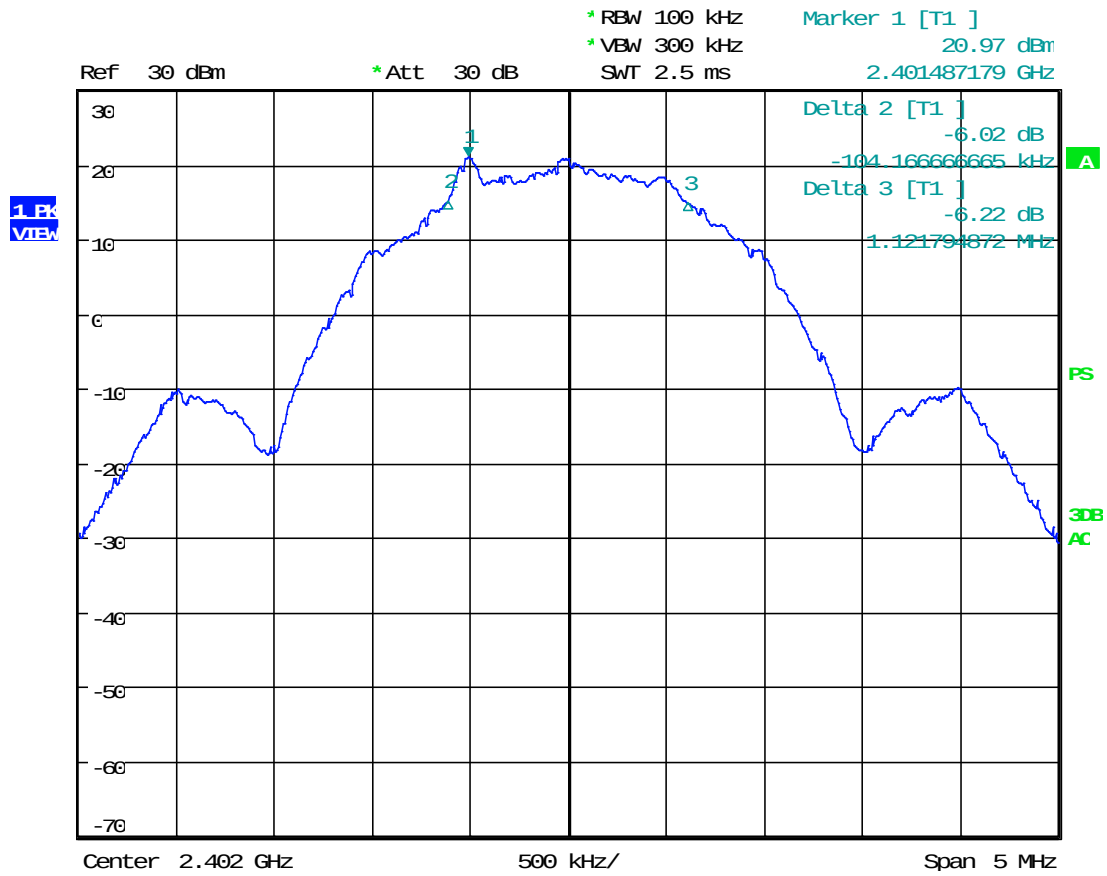
1 Mbps, 99%: High Channel



Date: 21.JAN.2025 10:43:03



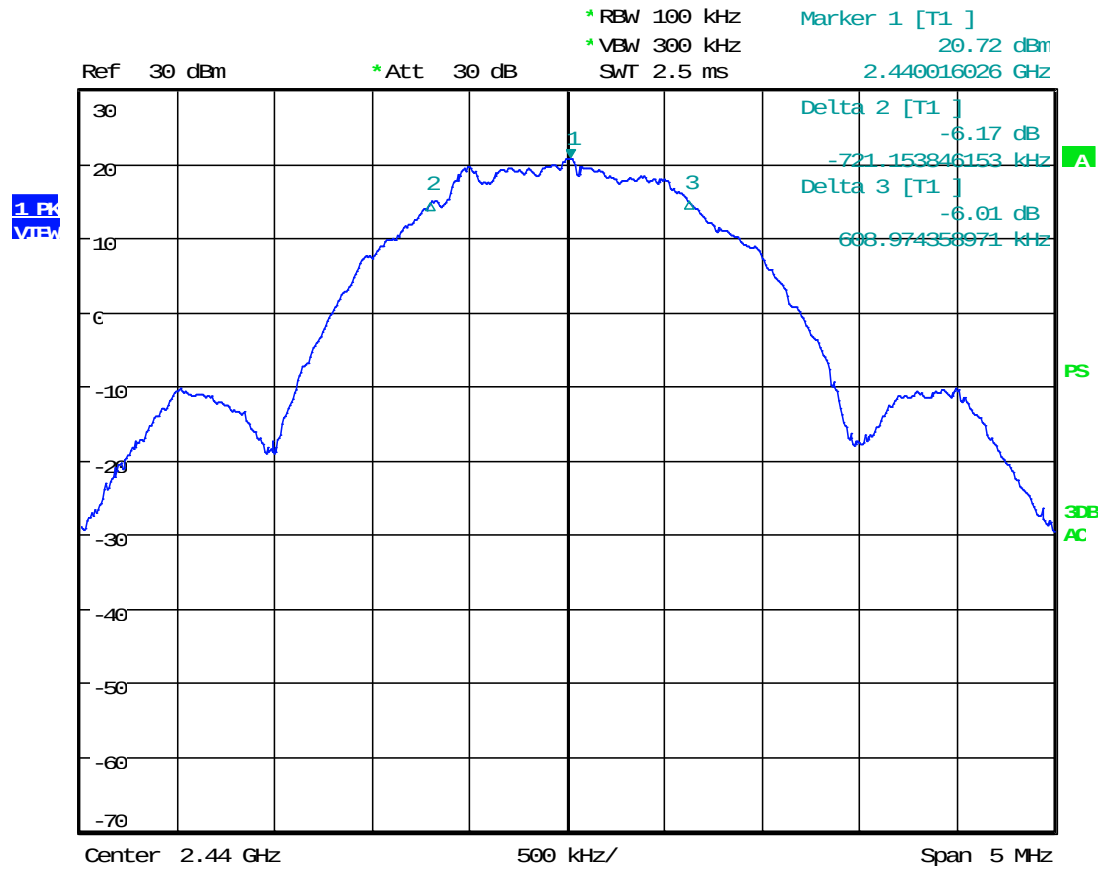
2 Mbps, -6dB: Low Channel



Date: 21.JAN.2025 11:22:11



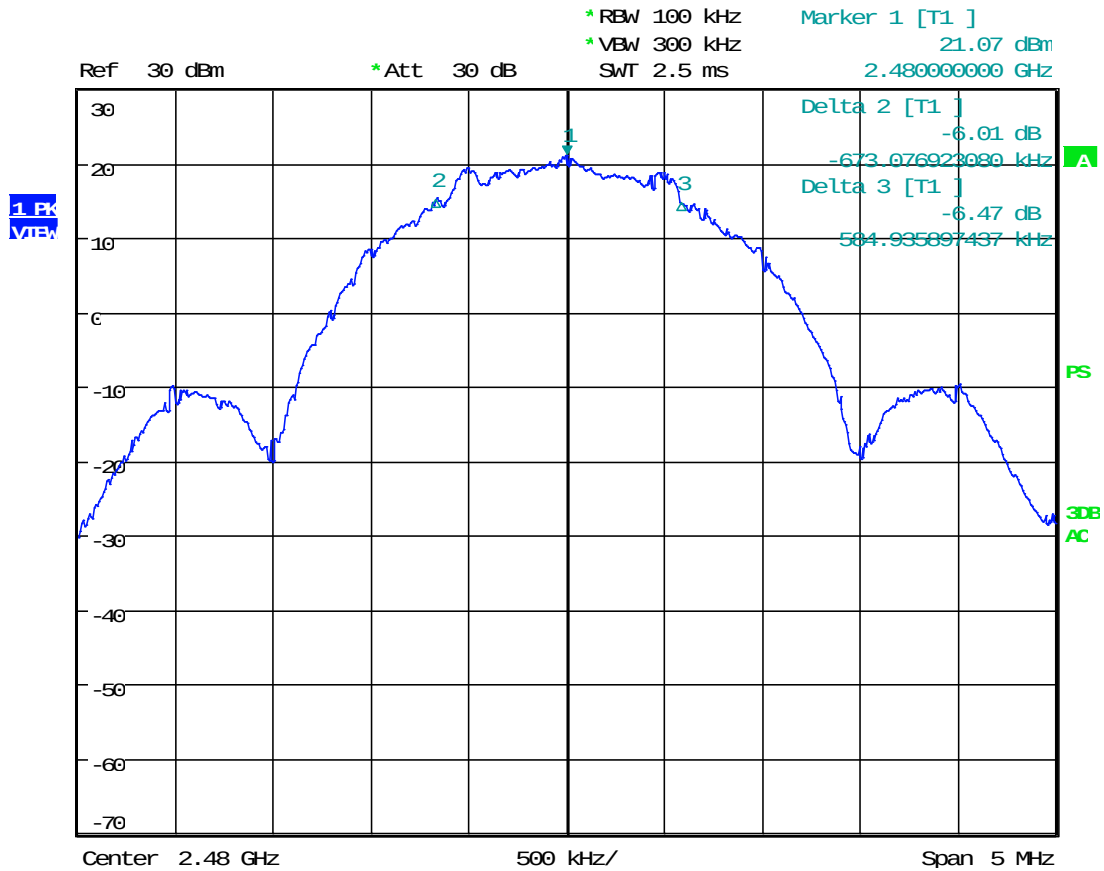
2 Mbps, -6dB: Mid Channel



Date: 21.JAN.2025 11:23:31



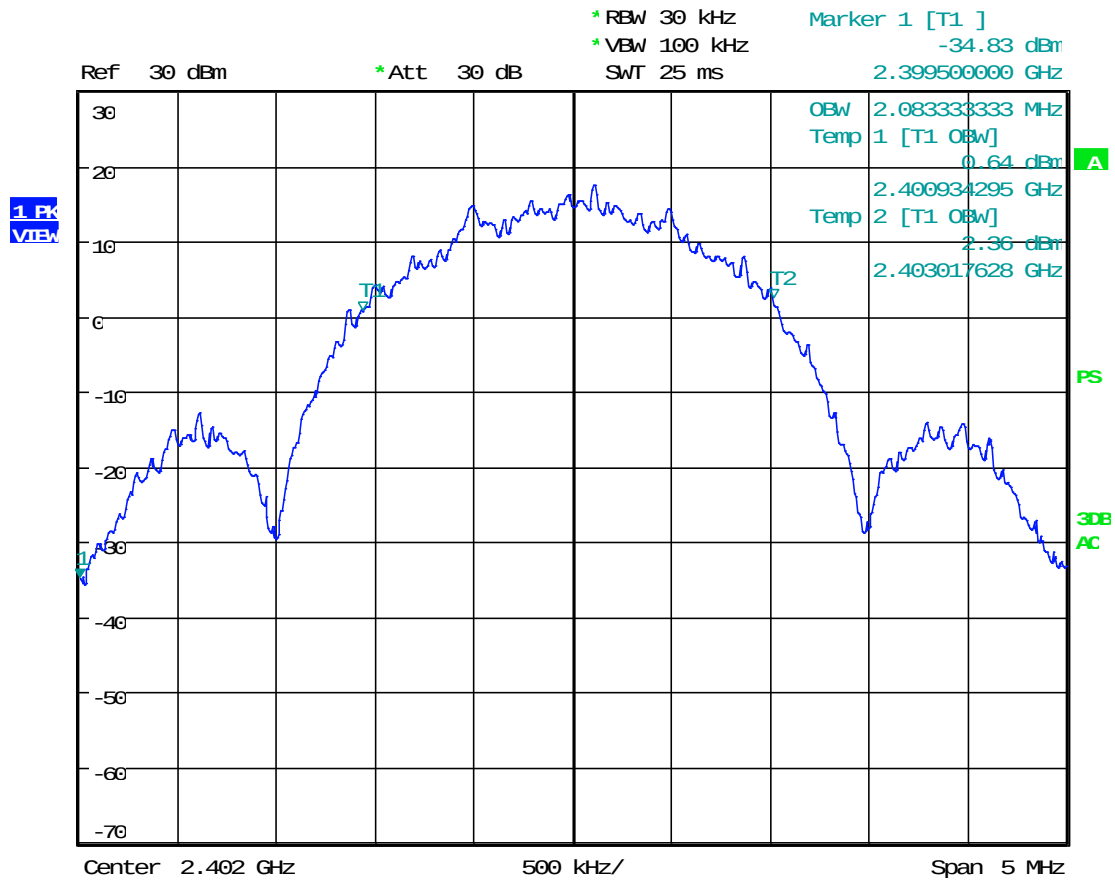
2 Mbps, -6dB: High Channel



Date: 21.JAN.2025 11:24:37



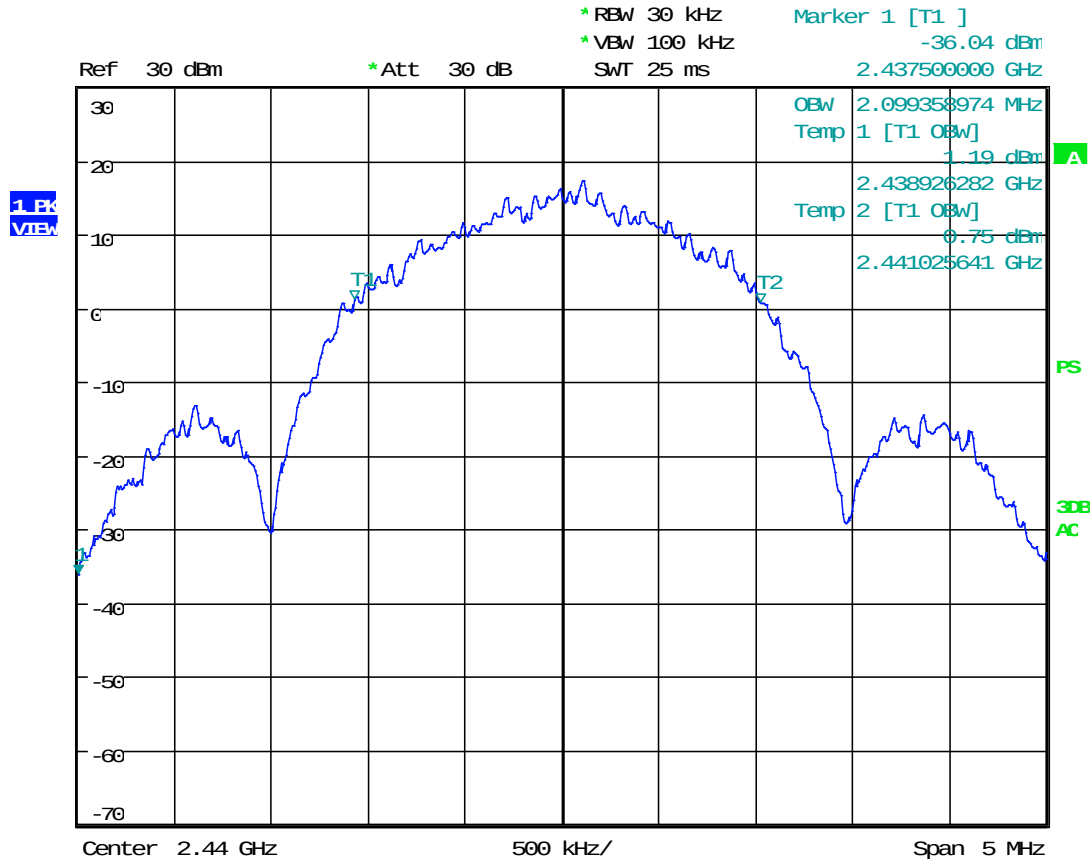
2 Mbps, 99%: Low Channel



Date: 21.JAN.2025 11:28:07



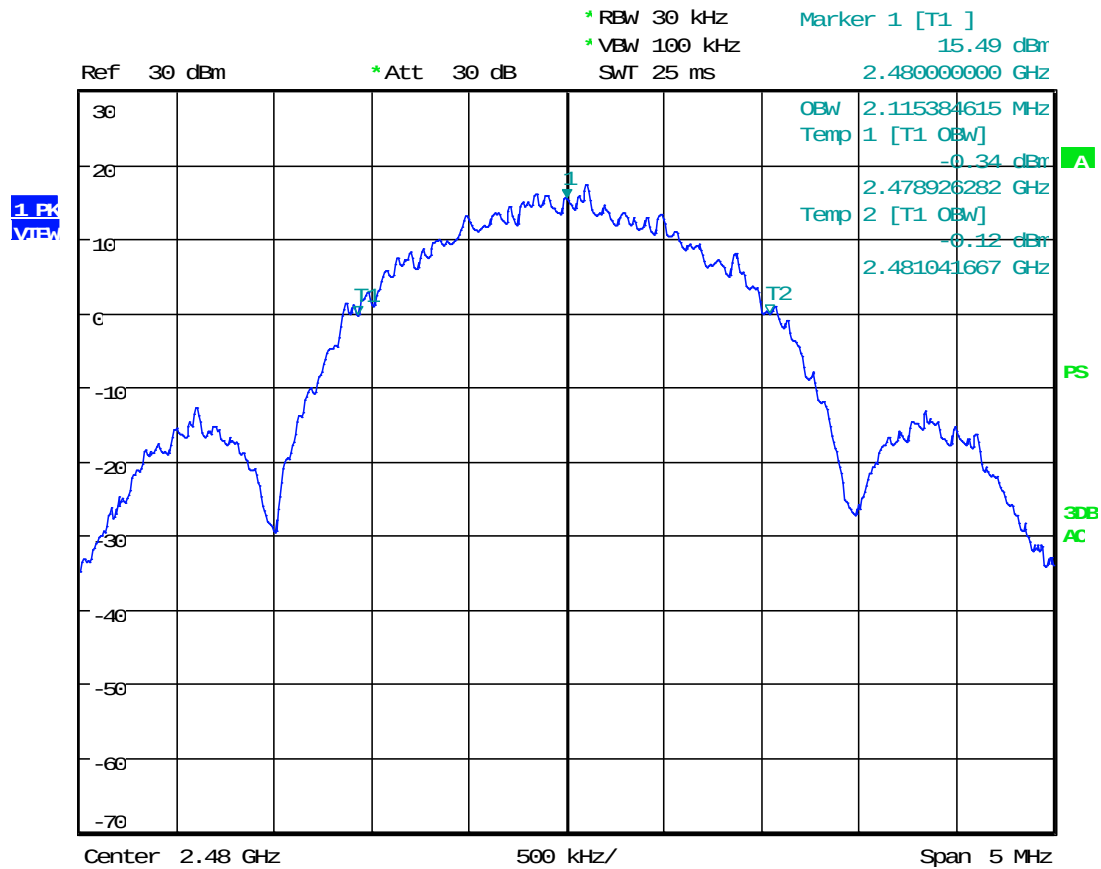
2 Mbps, 99%: Mid Channel



Date: 21.JAN.2025 11:28:51



2 Mbps, 99%: High Channel



Date: 21.JAN.2025 11:26:21



8 CONDUCTED OUTPUT POWER

The EUT antenna port was fitted with an SMA connector and directly connected to the input of the receiver. The peak power output was measured.

8.1 Requirements:

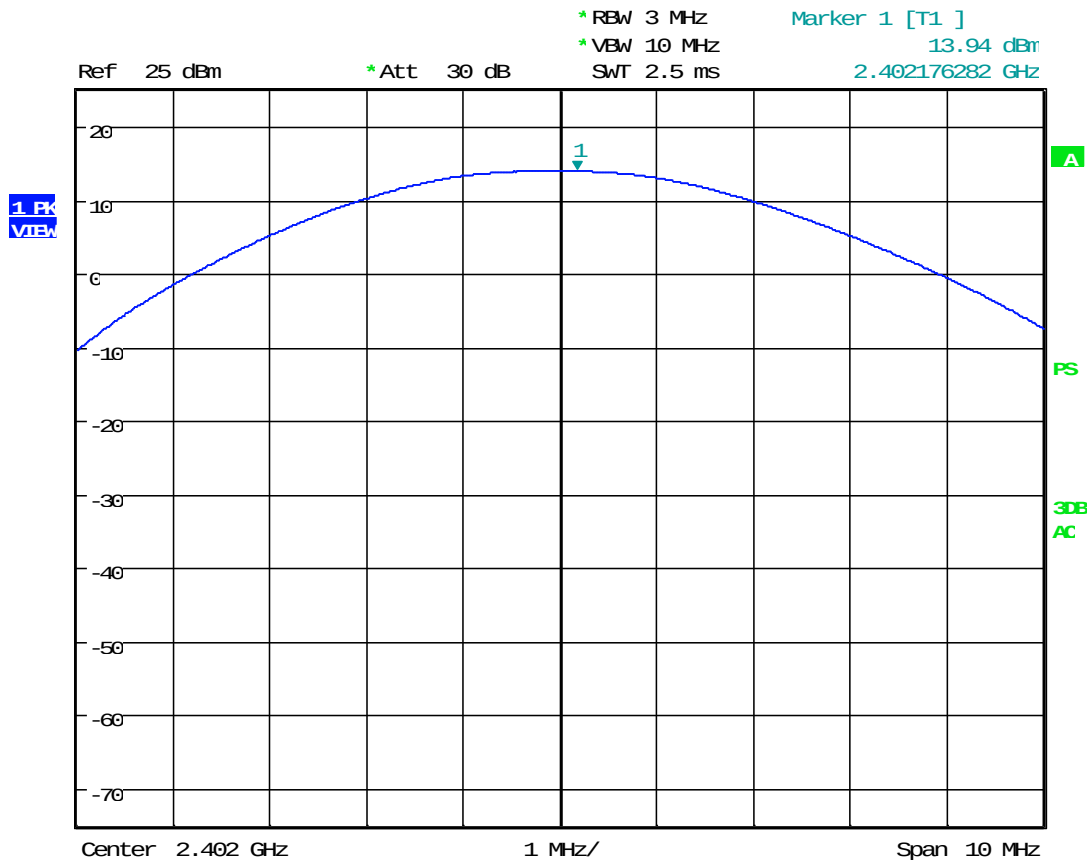
The peak power output shall be 1 watt (30 dBm) or less when using an antenna with a gain of less than 6dBi. For antennas having a gain of more than 6dBi, the limit is reduced by 1dB for every dB the antenna gain is over 6dBi.



8.2 Conducted Output Power Test Data

Test Date:	2025-01-22	Test Engineer:	E. Tobin
Standards:	CFR 47 Part 15.247(b)(3); KDB558074	Air Temperature:	20.0°C
		Relative Humidity:	25%

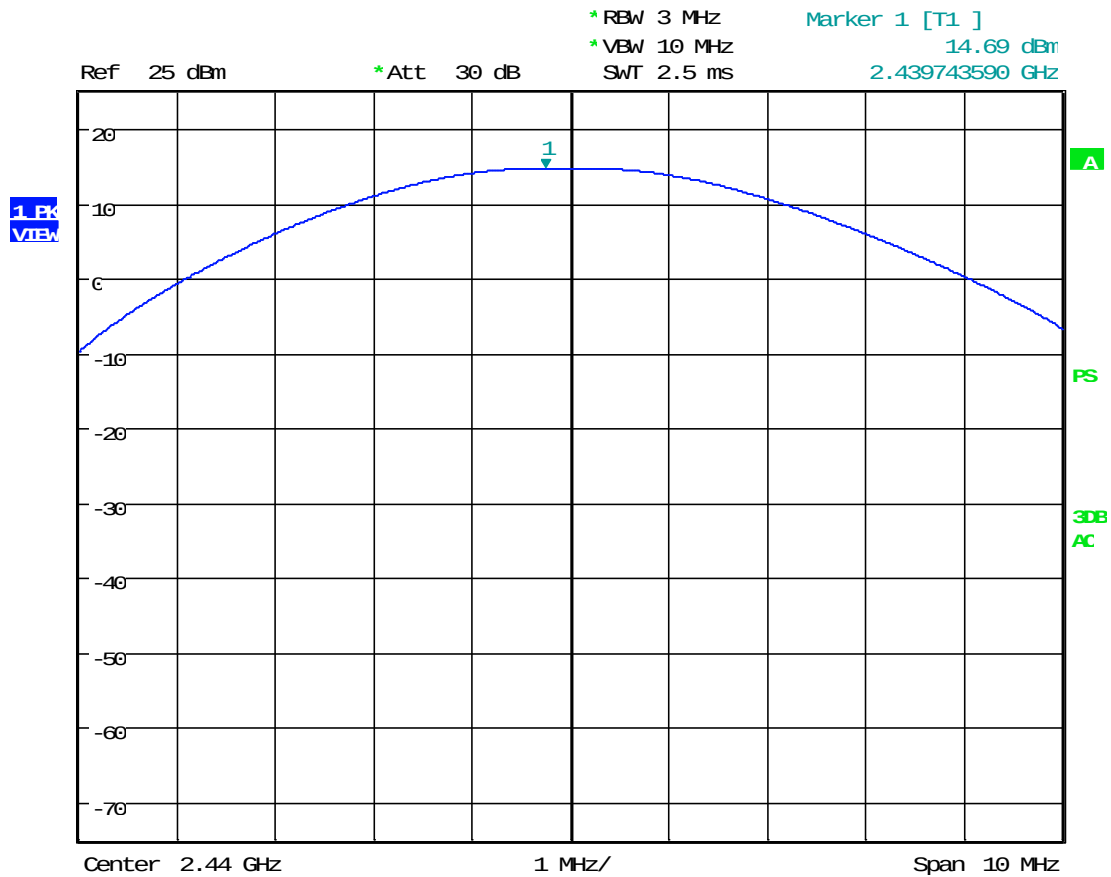
1 Mbps: Low Channel



Date: 22.JAN.2025 14:58:15



1 Mbps: Mid Channel



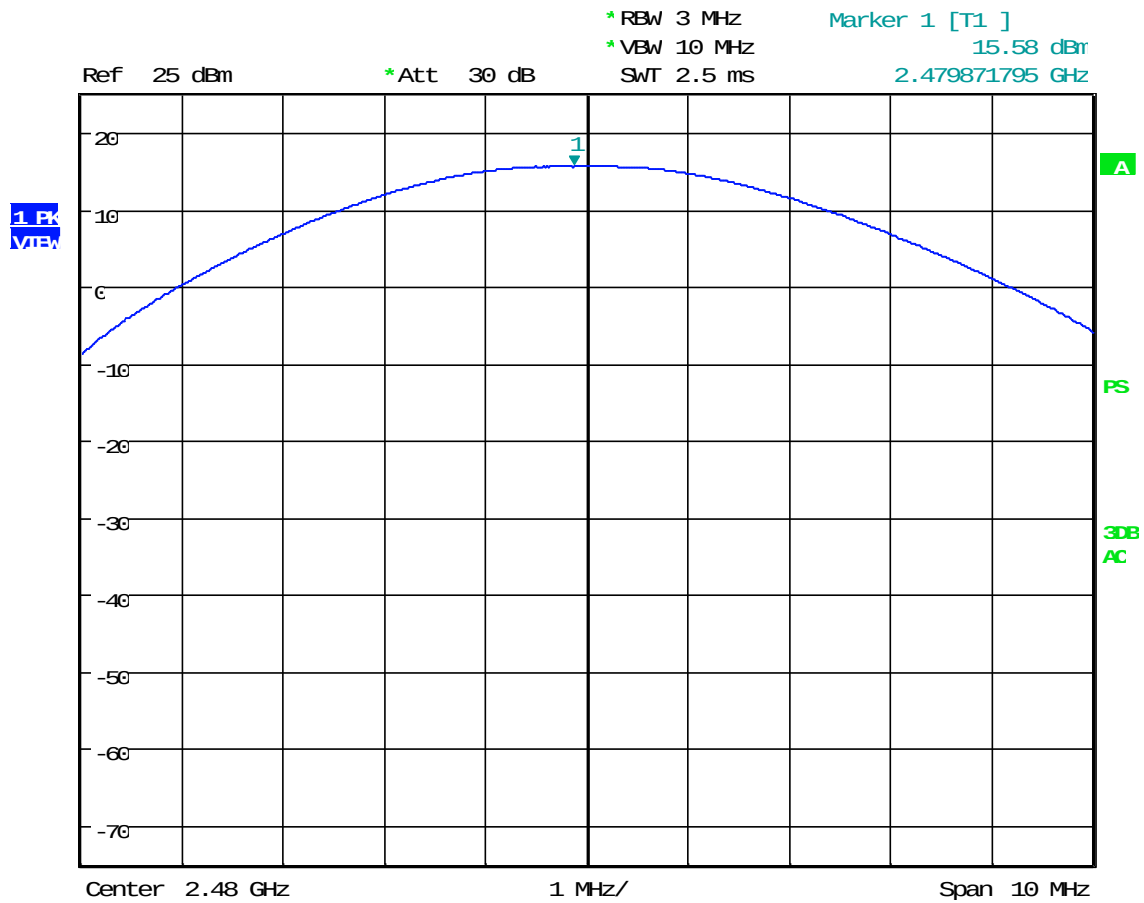
Date: 22.JAN.2025 14:58:51



Order No(s): F2P33844

Applicant: Chandler Systems, Inc.
Model: EVB-034-C

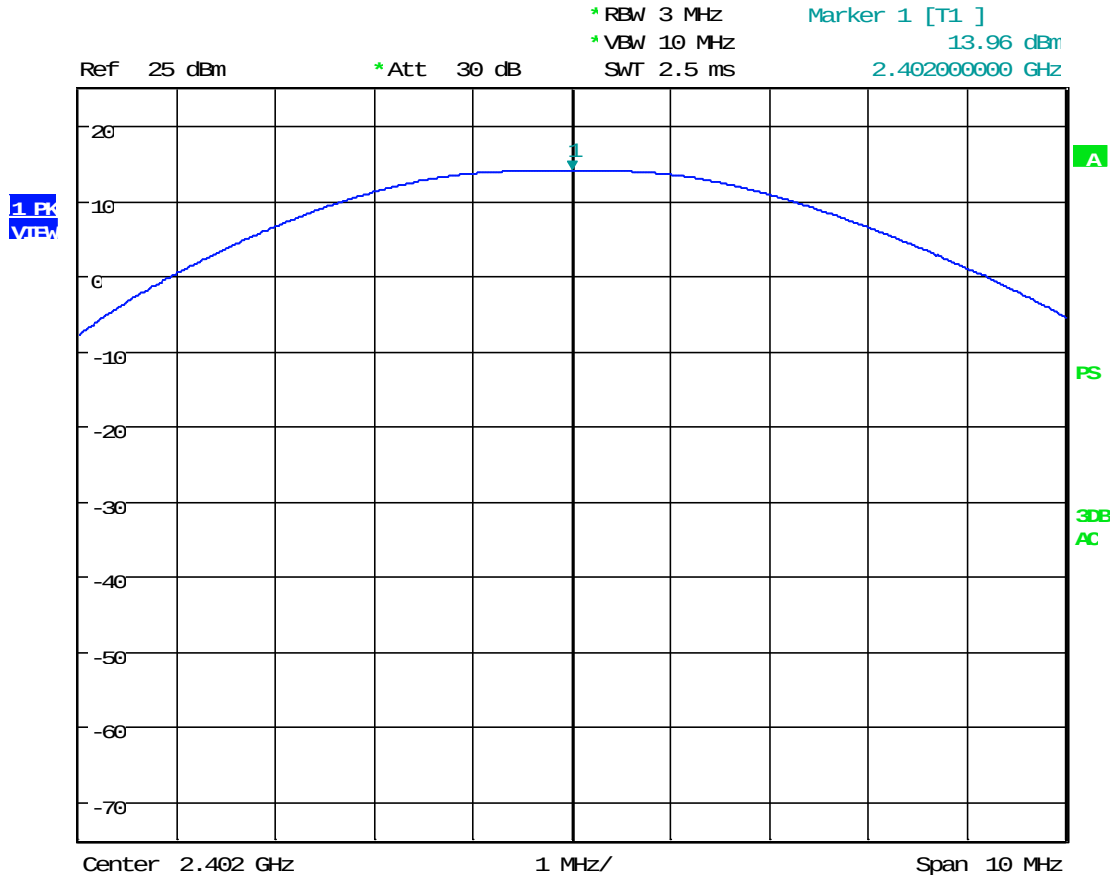
1 Mbps: High Channel



Date: 22.JAN.2025 14:59:16



2 Mbps: Low Channel



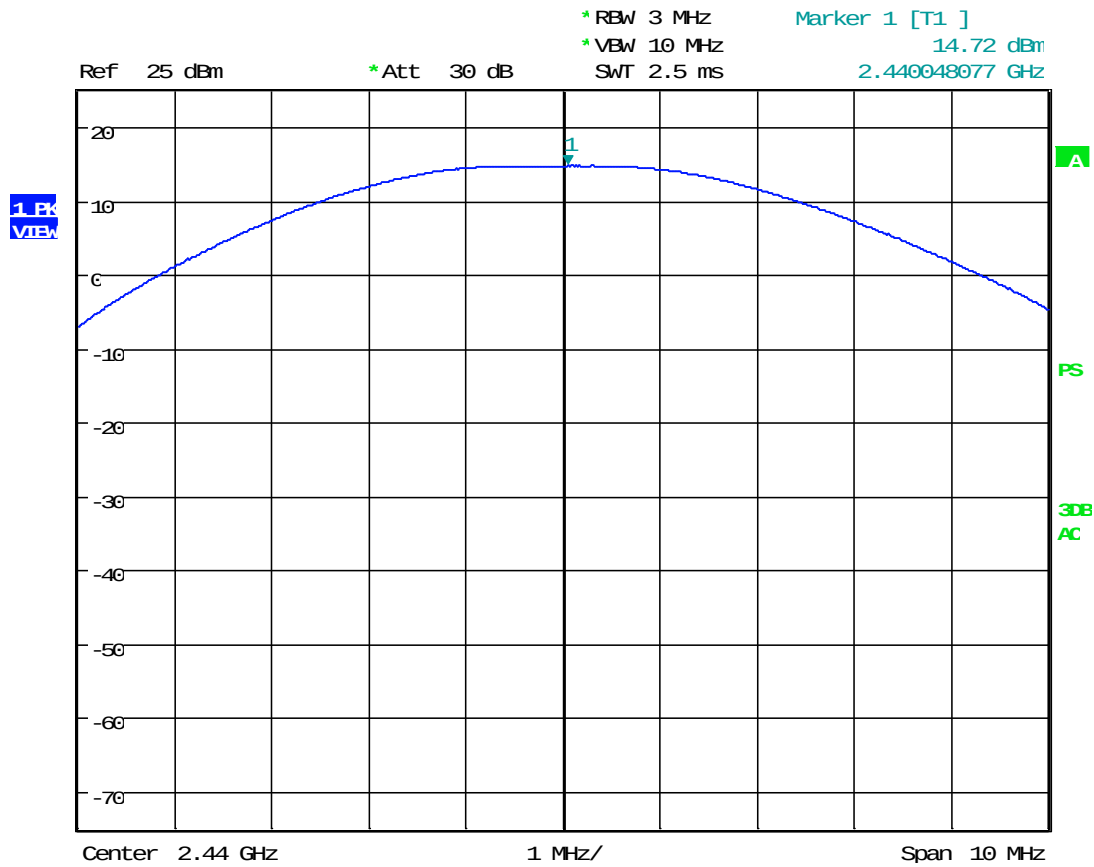
Date: 22.JAN.2025 15:00:18



Order No(s): F2P33844

Applicant: Chandler Systems, Inc.
Model: EVB-034-C

2 Mbps: Mid Channel



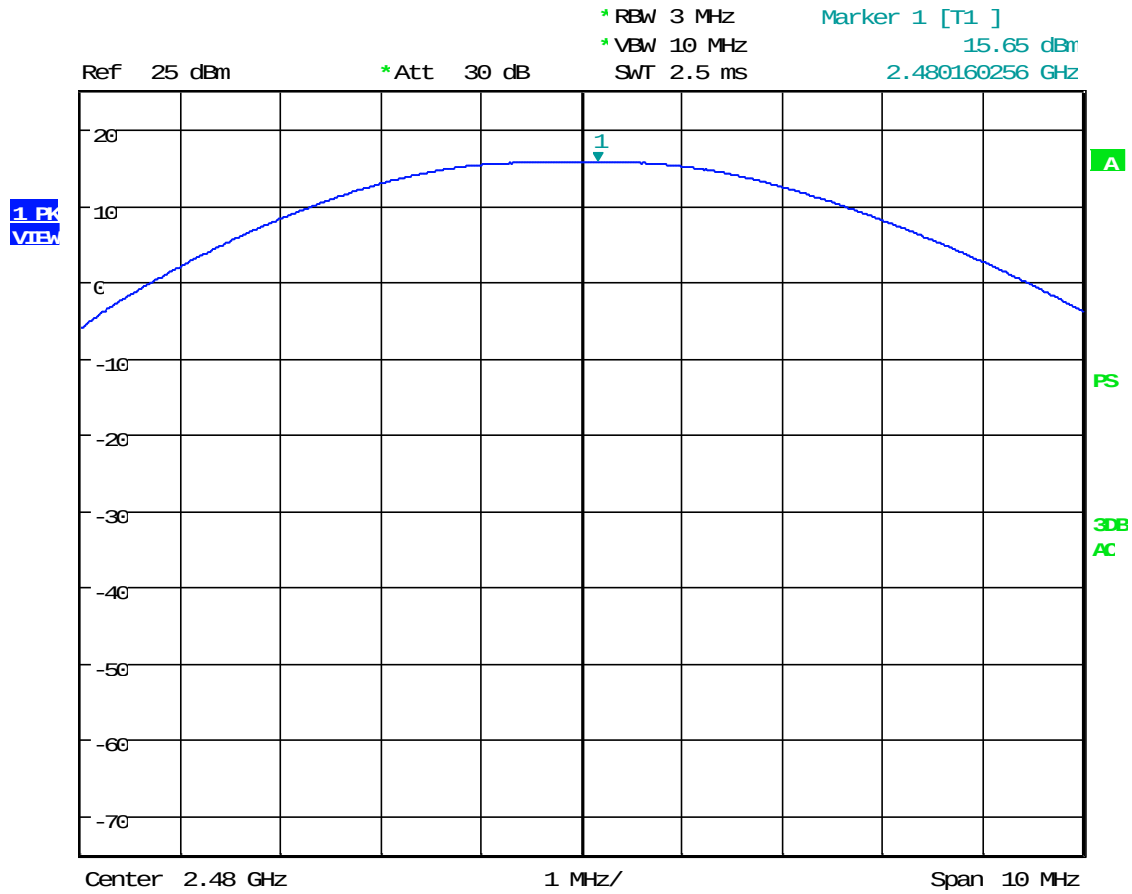
Date: 22.JAN.2025 15:00:54



Order No(s): F2P33844

Applicant: Chandler Systems, Inc.
Model: EVB-034-C

2 Mbps: High Channel



Date: 22.JAN.2025 15:01:21



9 VOLTAGE VARIATIONS

9.1 Requirements

For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery-operated equipment, the equipment tests shall be performed using a new battery.

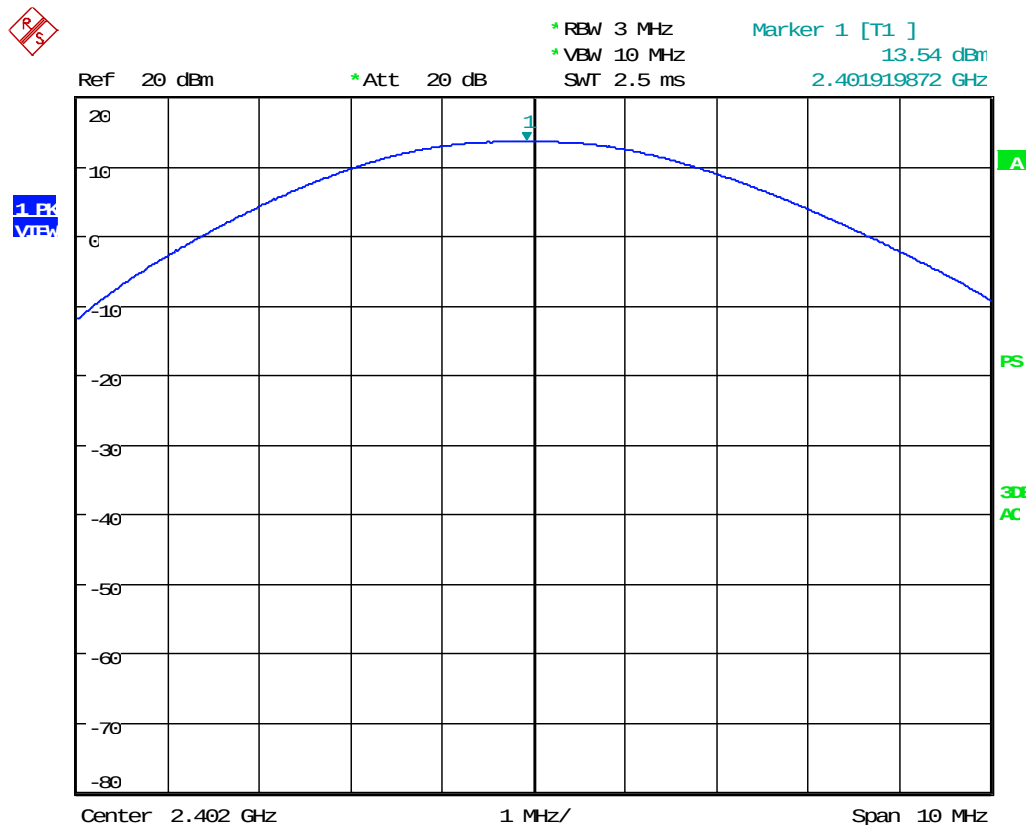


9.2 Voltage Variations Test Data

Test Date(s):	2025-01-23	Test Engineer:	E. Tobin
Rule:	15.31(e)	Air Temperature:	20.3° C
Test Results:	Complies	Relative Humidity:	25%

Nominal Voltage: 120V

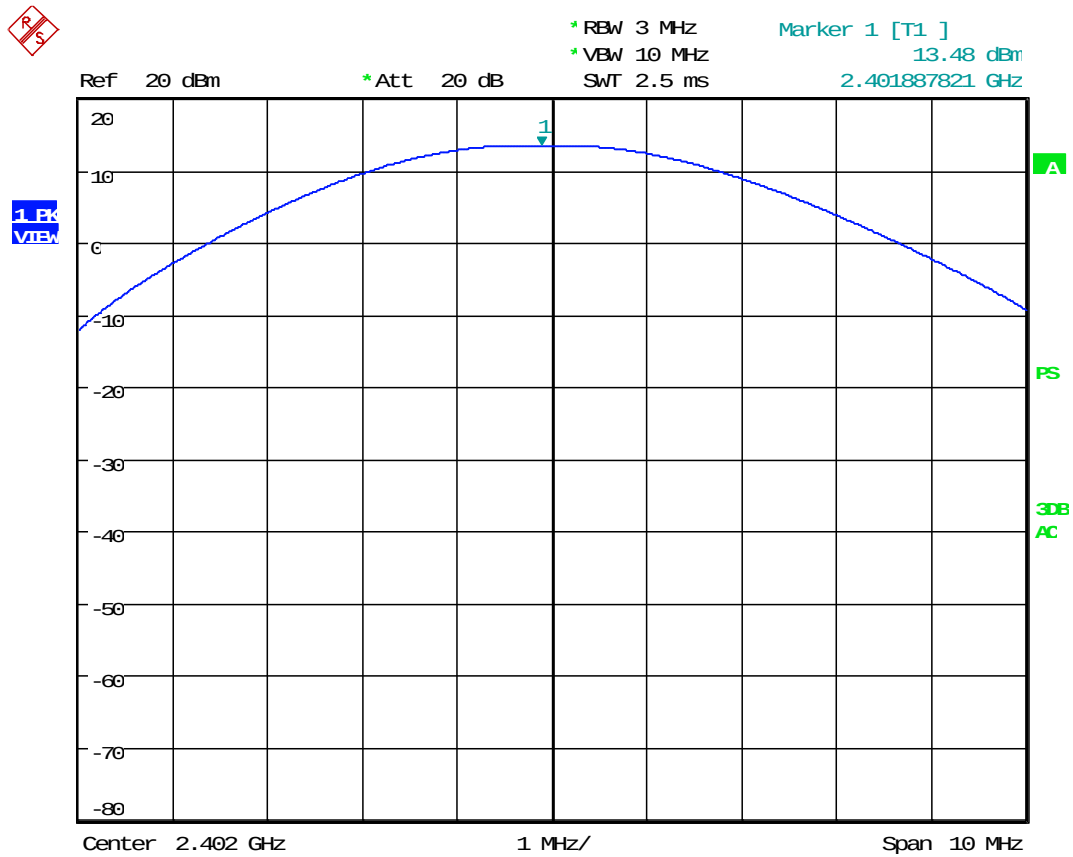
1 Mbps, -15% (102V): Low Channel



Date: 23.JAN.2025 15:12:42



1 Mbps, +15% (138V): Low Channel



Date: 23.JAN.2025 15:04:31

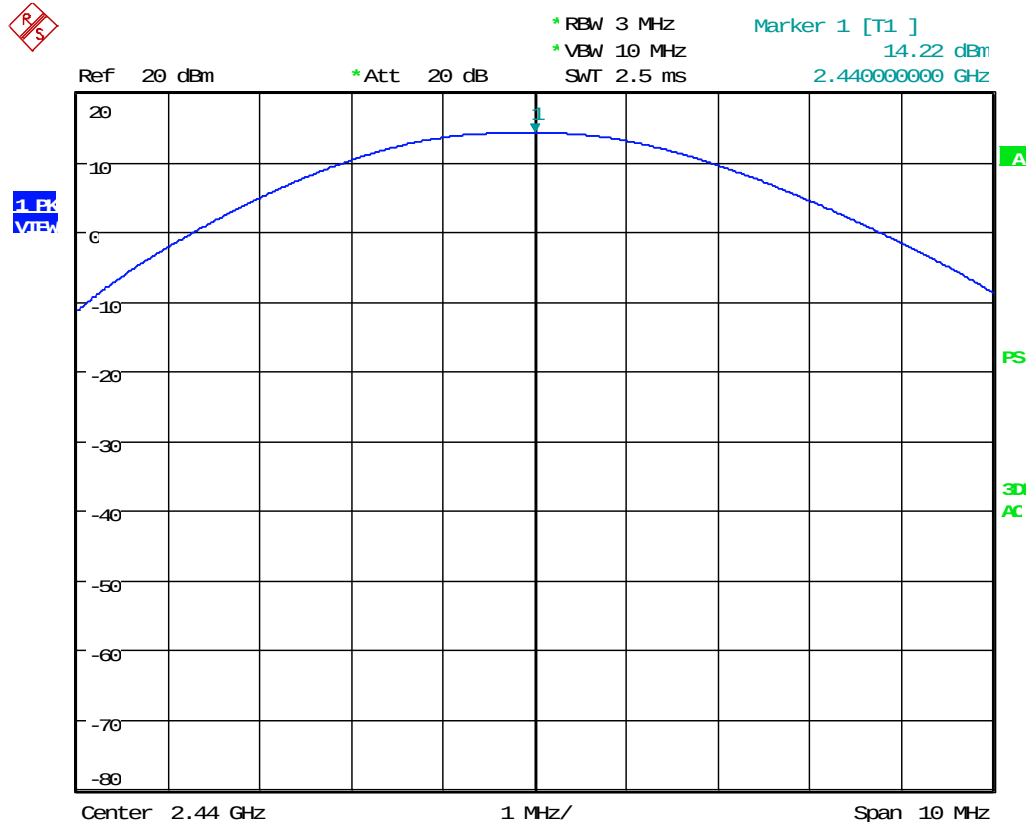


Order No(s): F2P33844

Applicant: Chandler Systems, Inc.
Model: EVB-034-C

Nominal Voltage: 120V

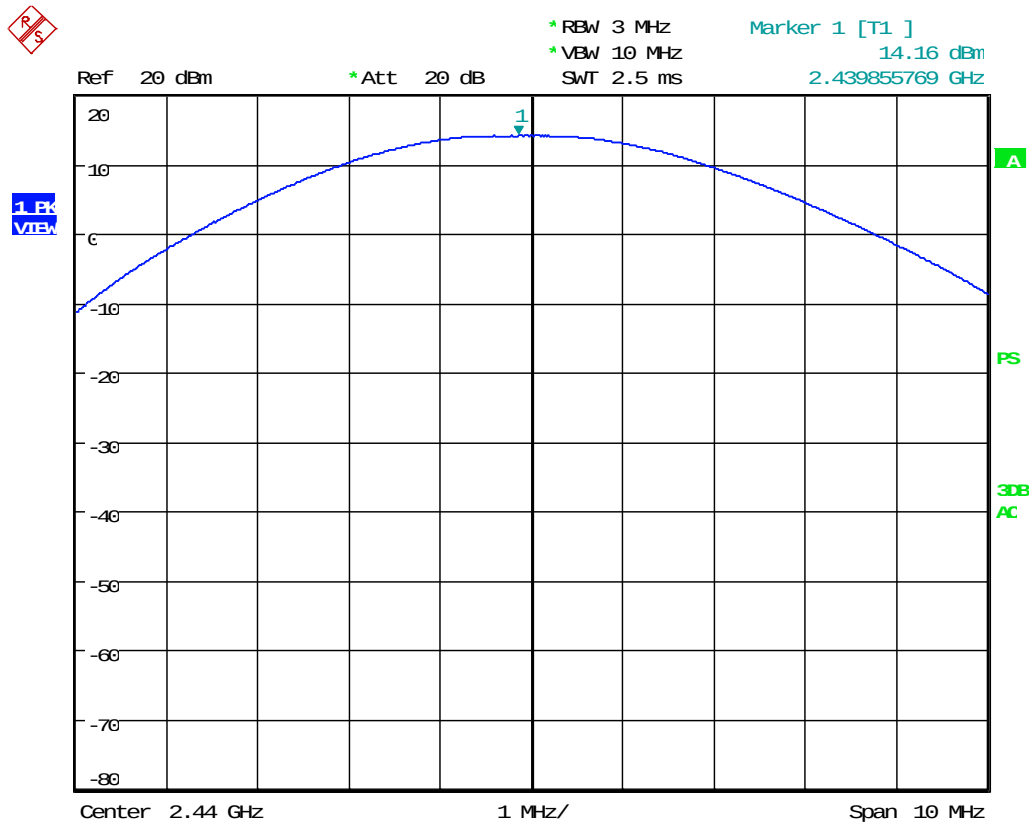
1 Mbps, -15% (102V): Mid Channel



Date: 23.JAN.2025 15:13:06



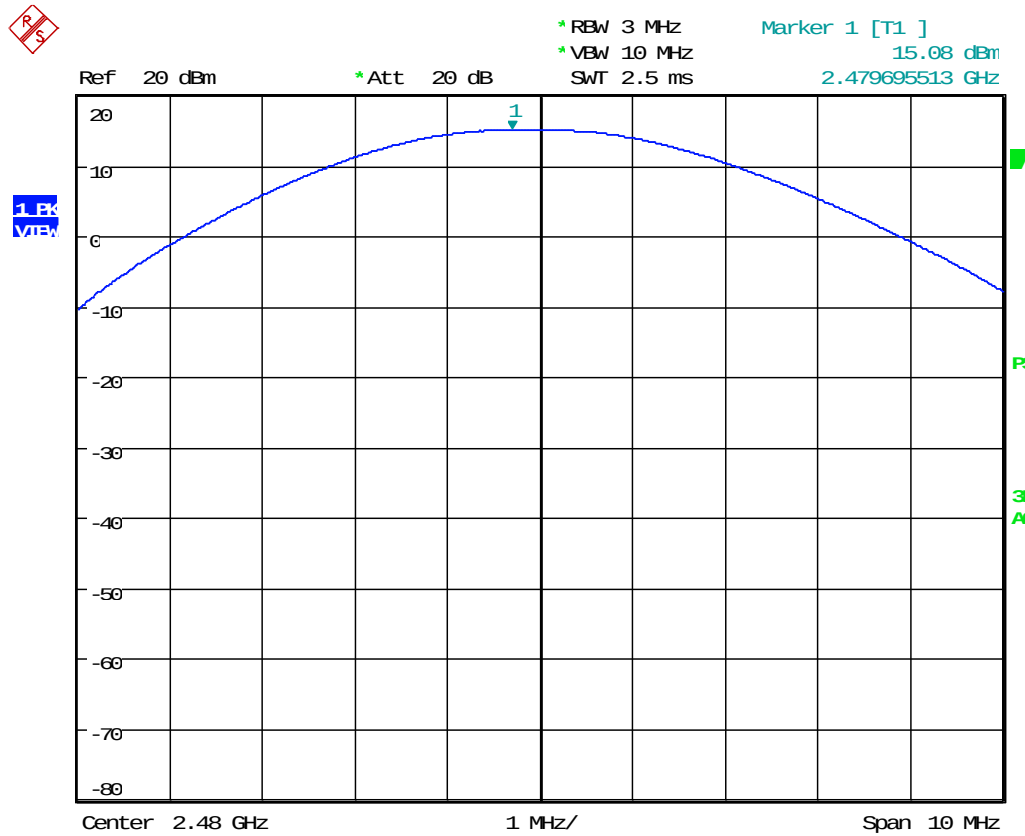
1 Mbps, +15% (138V): Mid Channel



Date: 23.JAN.2025 15:05:05

Nominal Voltage: 120V

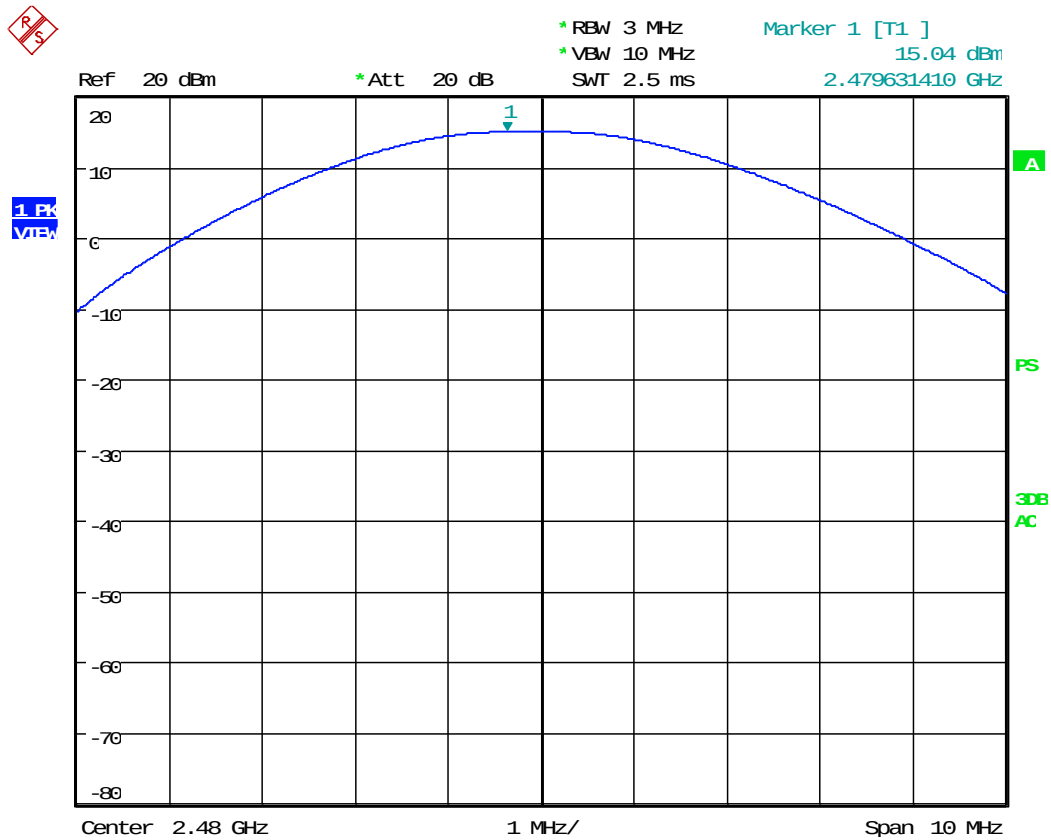
1 Mbps, -15% (102V): High Channel



Date: 23.JAN.2025 15:13:31



1 Mbps, +15% (138V): High Channel



Date: 23.JAN.2025 15:05:38

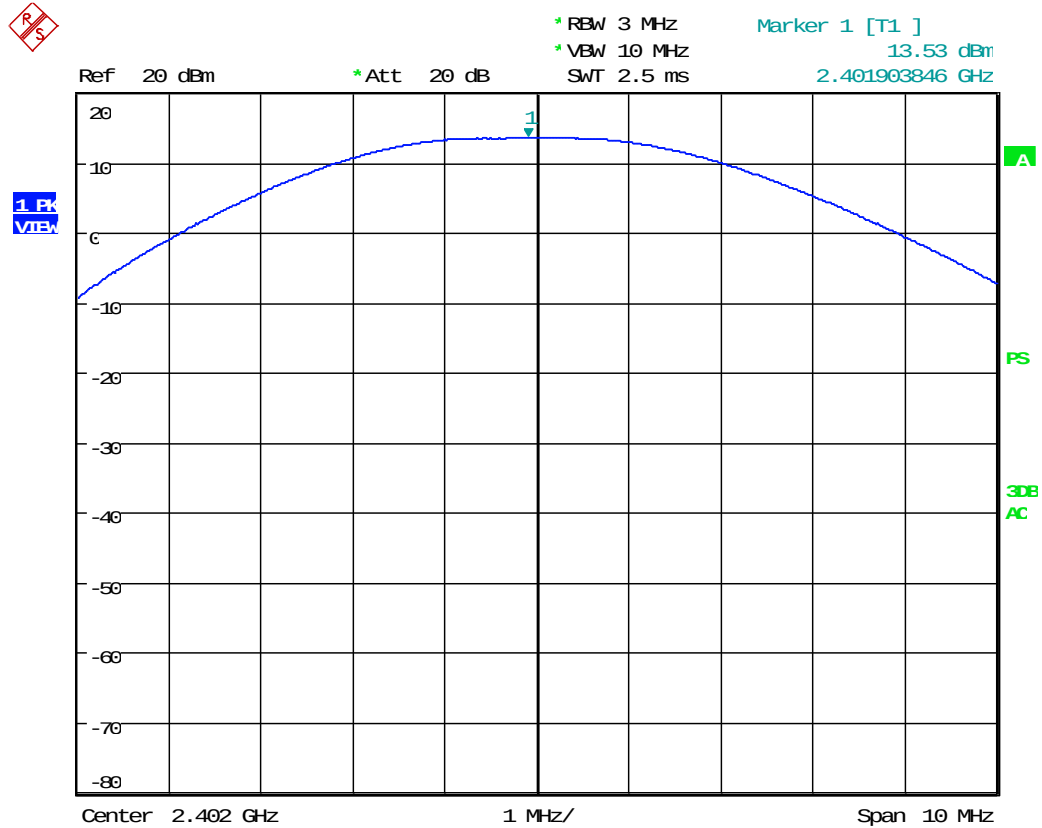


Order No(s): F2P33844

Applicant: Chandler Systems, Inc.
Model: EVB-034-C

Nominal Voltage: 120V

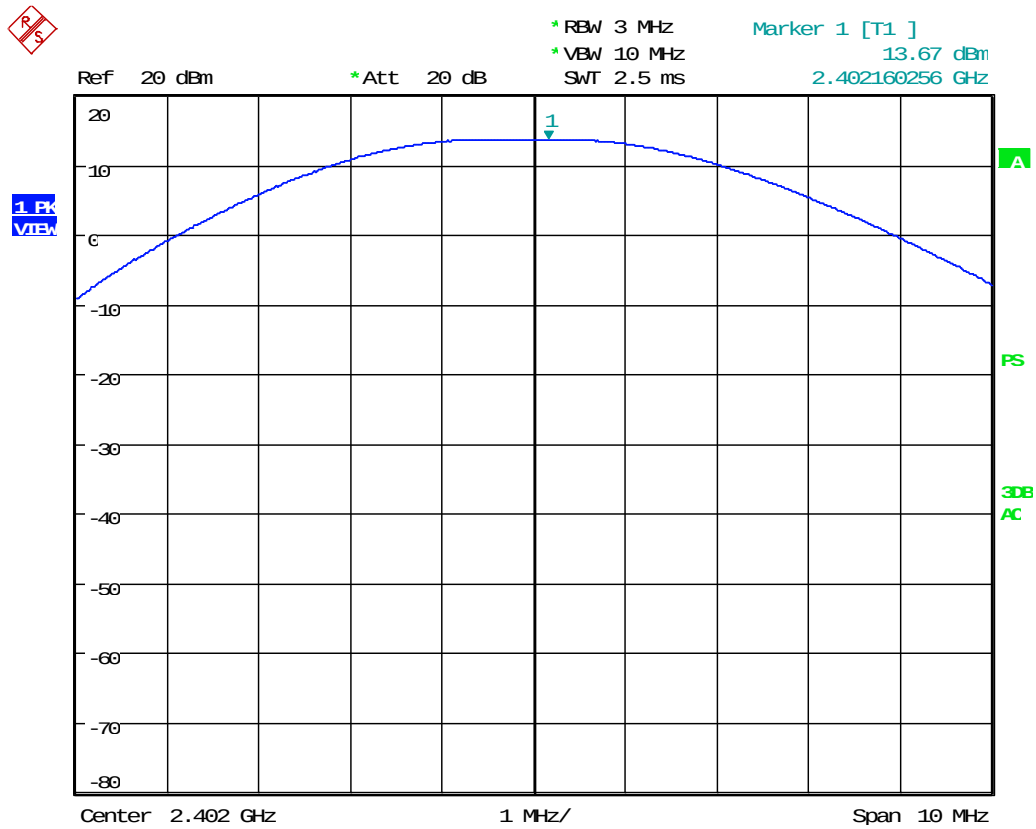
2 Mbps, -15% (102V): Low Channel



Date: 23.JAN.2025 15:10:57



2 Mbps, +15% (138V): Low Channel



Date: 23.JAN.2025 15:33:25

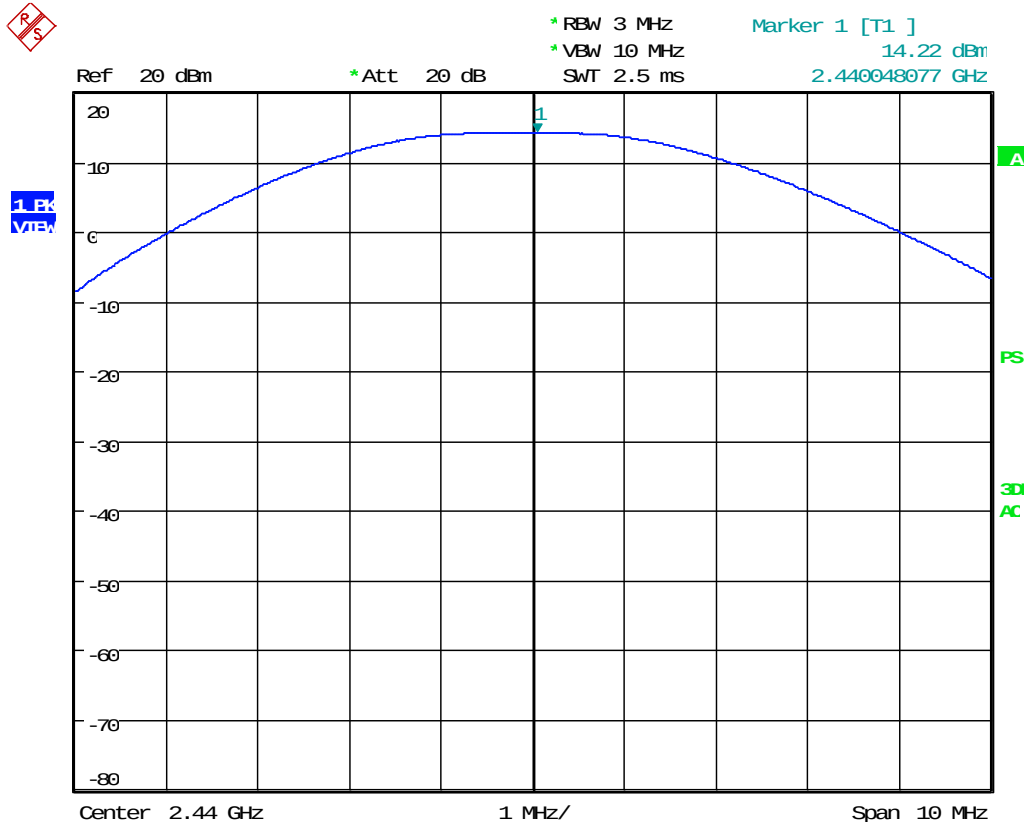


Order No(s): F2P33844

Applicant: Chandler Systems, Inc.
Model: EVB-034-C

Nominal Voltage: 120V

2 Mbps, -15% (102V): Mid Channel



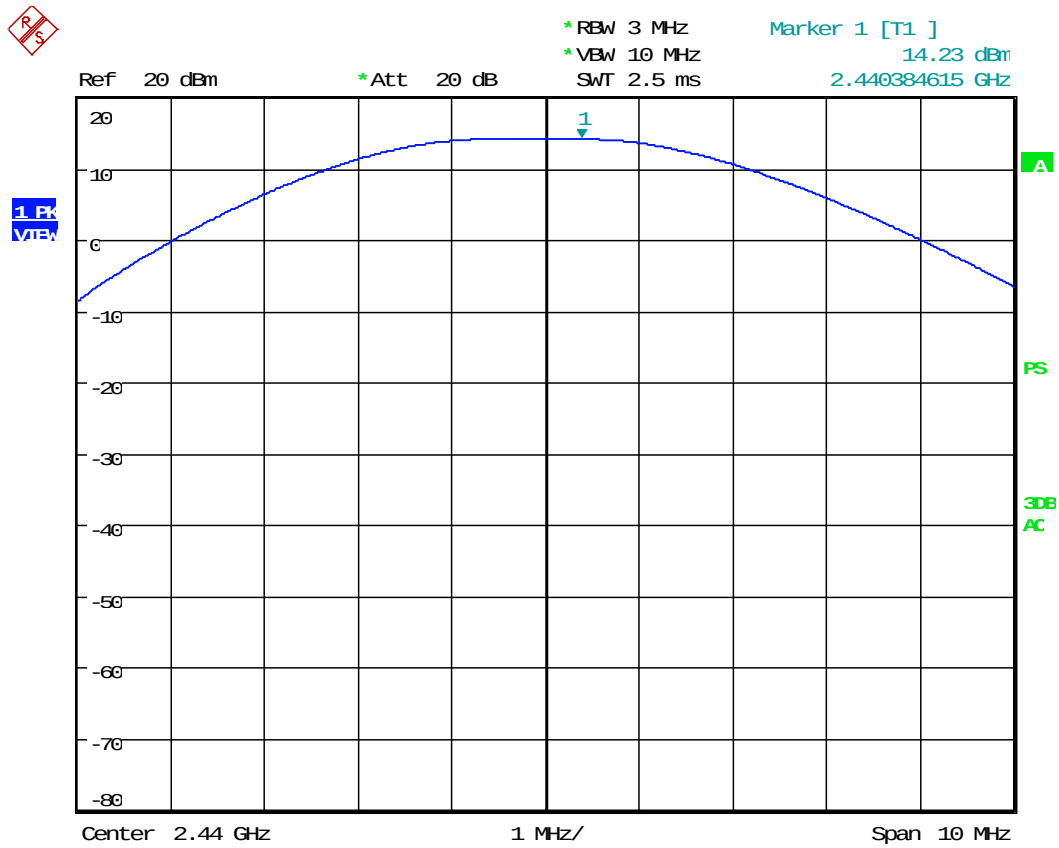
Date: 23.JAN.2025 15:11:34



Order No(s): F2P33844

Applicant: Chandler Systems, Inc.
Model: EVB-034-C

2 Mbps, +15% (138V): Mid Channel



Date: 23.JAN.2025 15:08:04

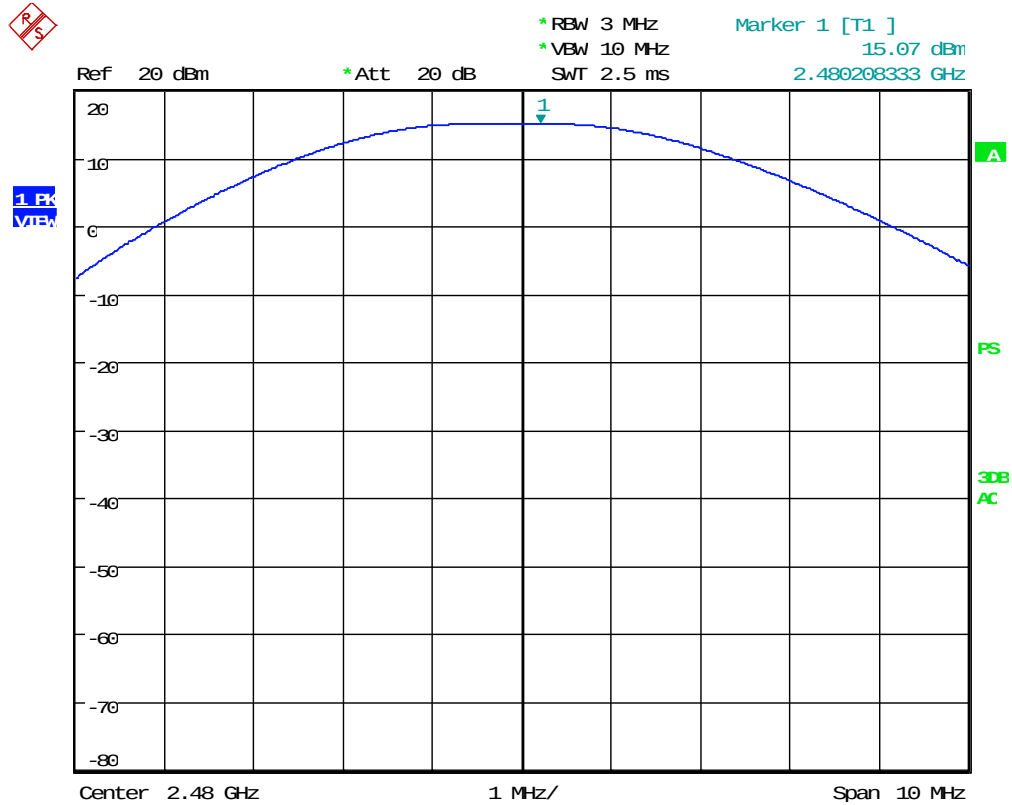


Order No(s): F2P33844

Applicant: Chandler Systems, Inc.
Model: EVB-034-C

Nominal Voltage: 120V

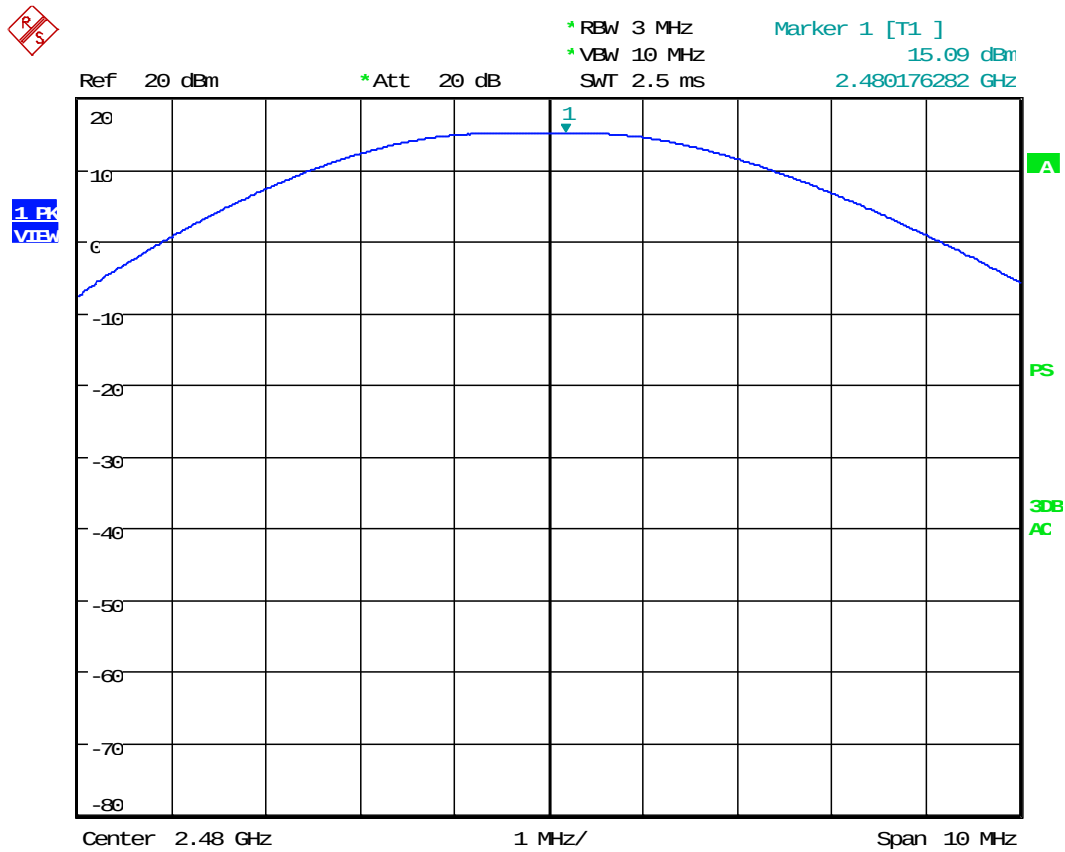
2 Mbps, -15% (102V): High Channel



Date: 23.JAN.2025 15:11:58



2 Mbps, +15% (138V): High Channel



Date: 23.JAN.2025 15:08:29



10 CONDUCTED SPURIOUS EMISSIONS

The following tests were performed to demonstrate compliance.

RF Antenna Conducted Test

The EUT antenna port was fitted with an SMA connector and directly connected to the input of the spectrum analyzer.

10.1 Requirements:

All Spurious Emissions must be at least 20dB down from the highest emission level measured within the authorized band up through the tenth harmonic.

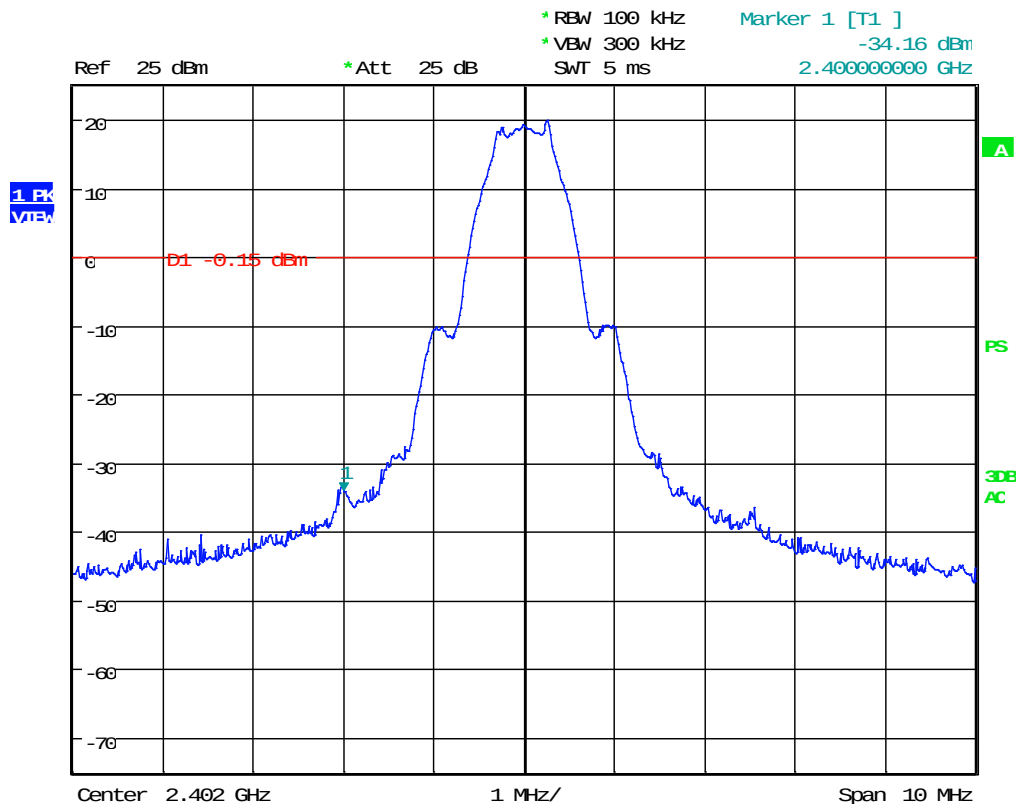
Spurious emissions measurements were made at the low, mid, and upper channels with the appropriate spectrum analyzer impulse bandwidth. Additionally, 20dB down points were measured for the low and high channels to verify band edge compliance.



10.2 Conducted Spurious Emissions Test Data

Test Date:	2025-01-21	Test Engineer:	E. Tobin
Standards:	CFR 47 Part 15.247(d) / Part 15.207 KDB558074	Air Temperature:	20.3°C
Results:	Complies	Relative Humidity:	23%

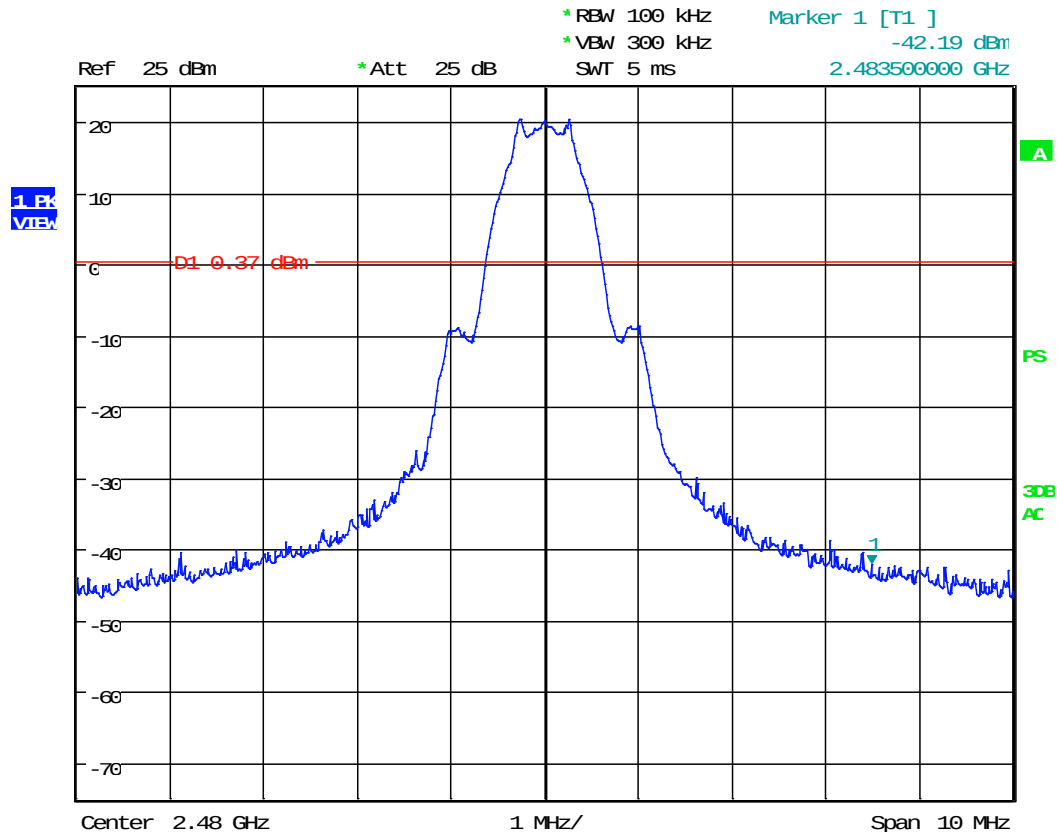
1 Mbps, Lower Band Edge (2400 MHz)



Date: 21.JAN.2025 13:25:37



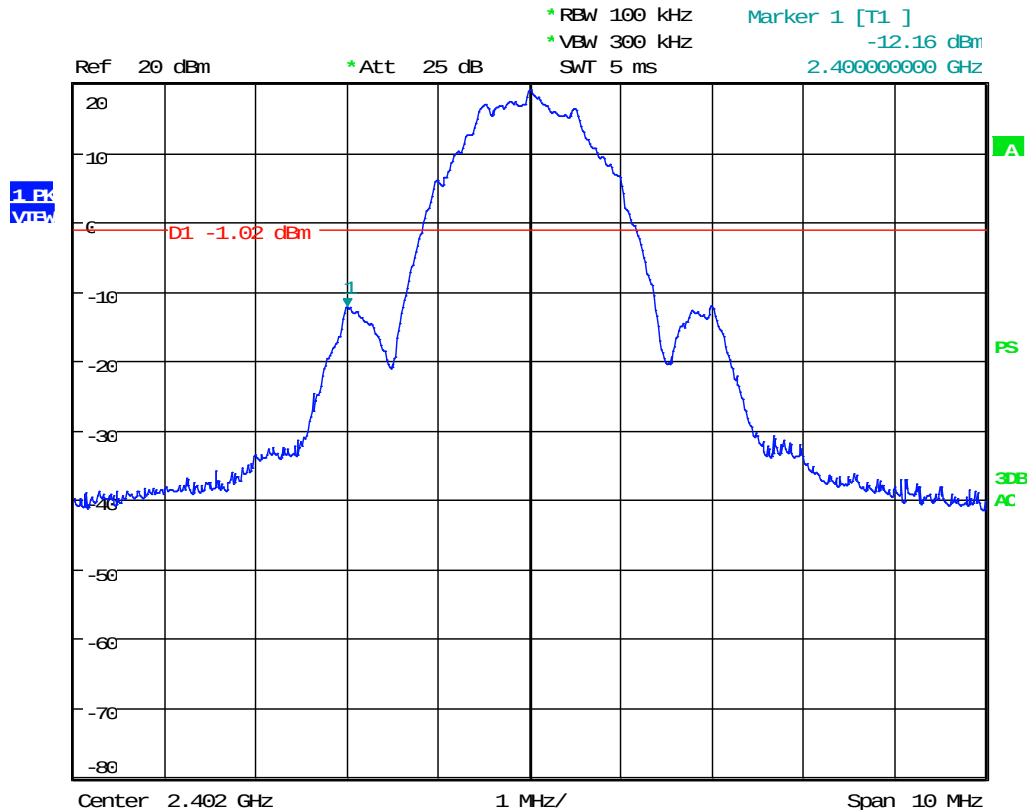
1 Mbps, Upper Band Edge (2483.5 MHz)



Date: 21.JAN.2025 13:39:33



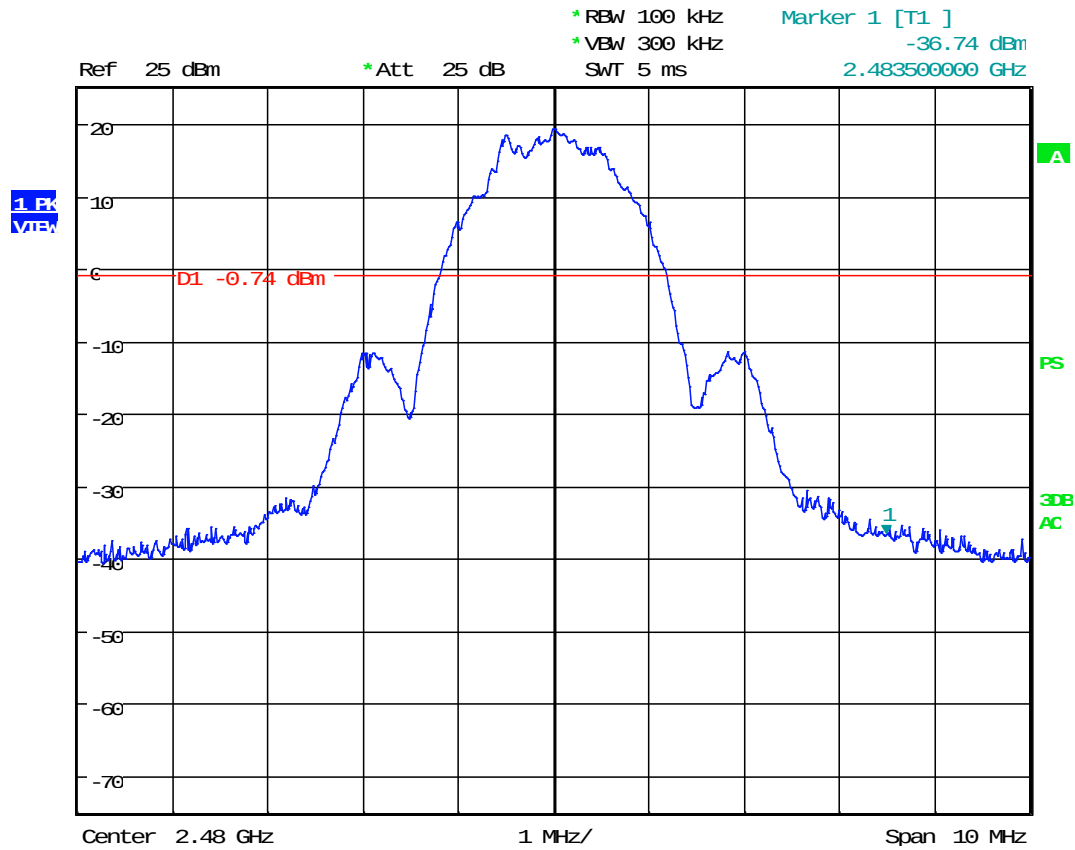
2 Mbps, Lower Band Edge (2400 MHz)



Date: 21.JAN.2025 13:59:03



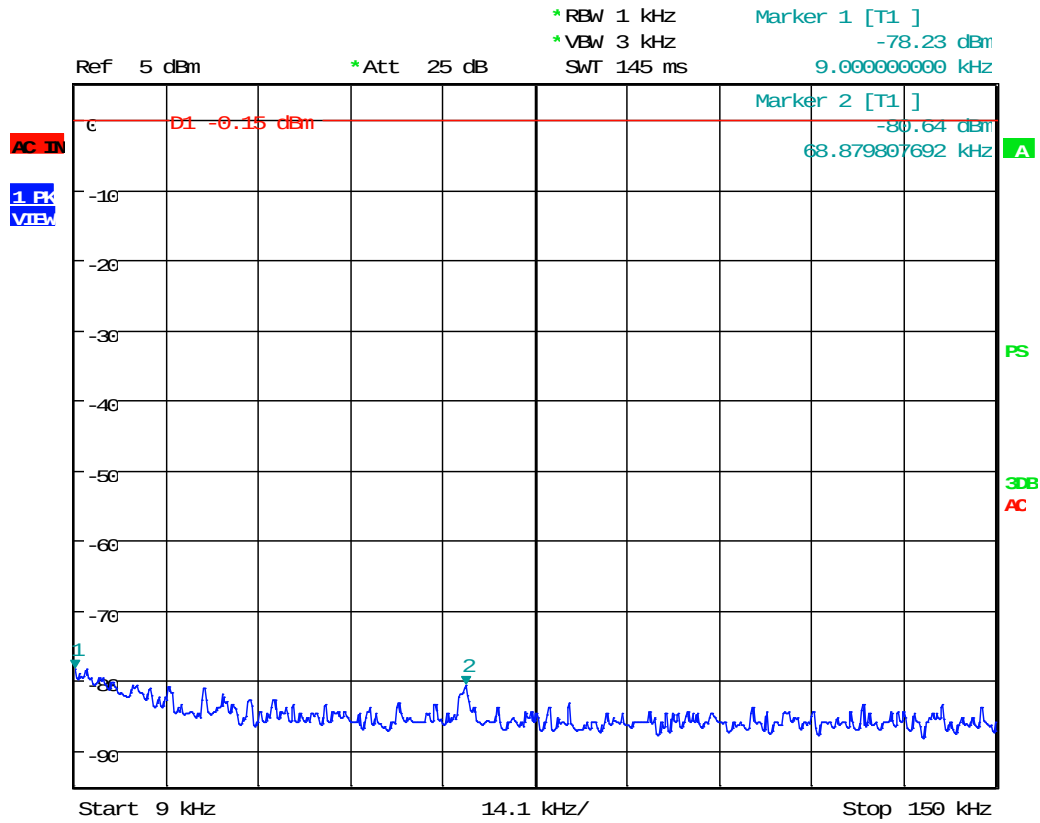
2 Mbps, Upper Band Edge (2483.5 MHz)



Date: 21.JAN.2025 14:32:07



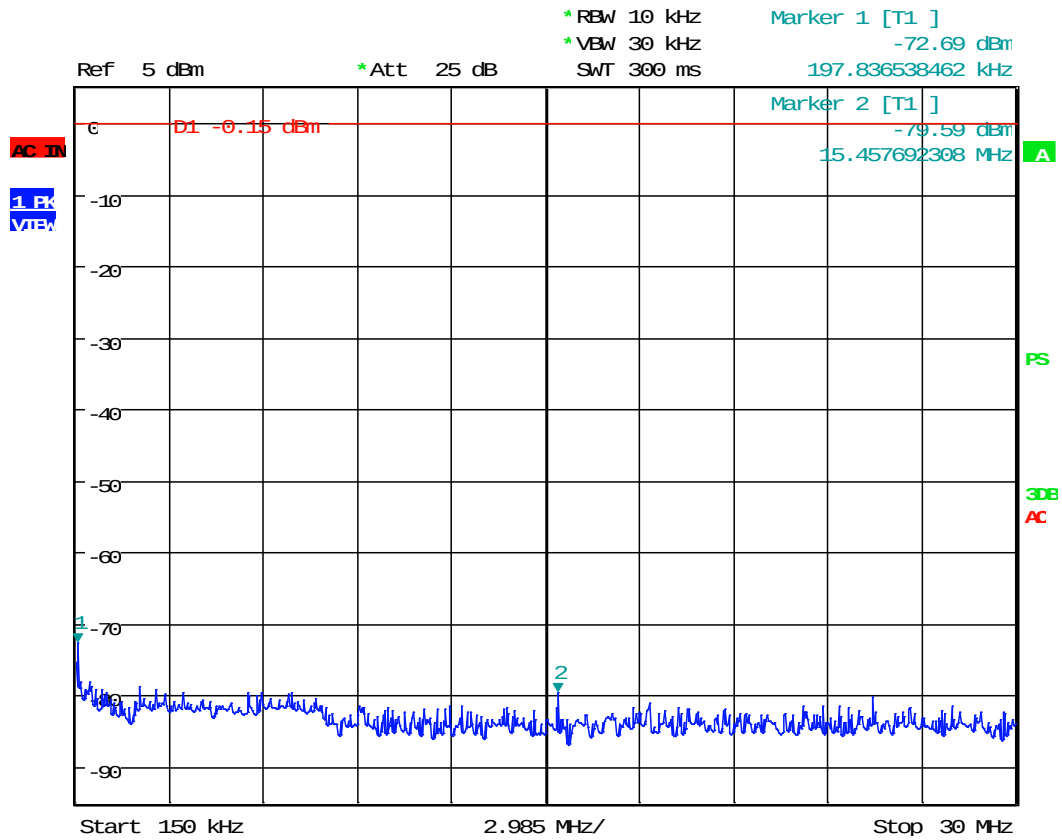
1 Mbps, Low Channel: 0.009 MHz to 0.15 MHz



Date: 21.JAN.2025 13:27:56



1 Mbps, Low Channel: 0.15 MHz to 30 MHz



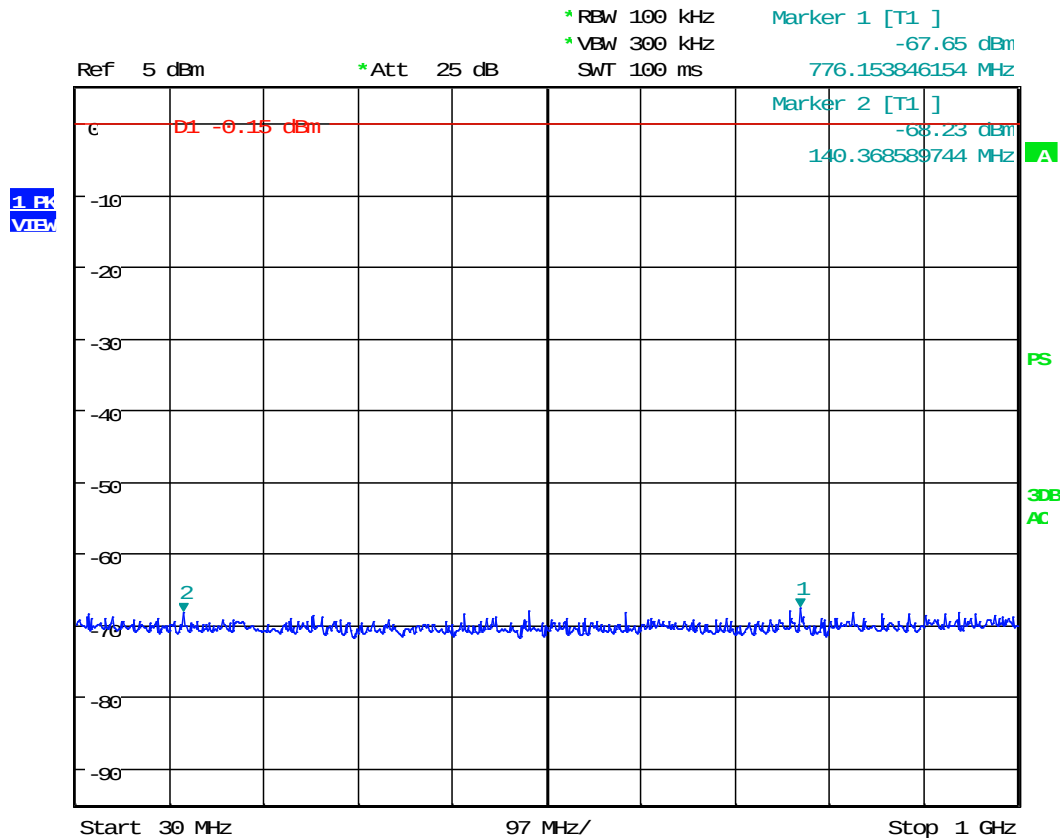
Date: 21.JAN.2025 13:28:44



Order No(s): F2P33844

Applicant: Chandler Systems, Inc.
Model: EVB-034-C

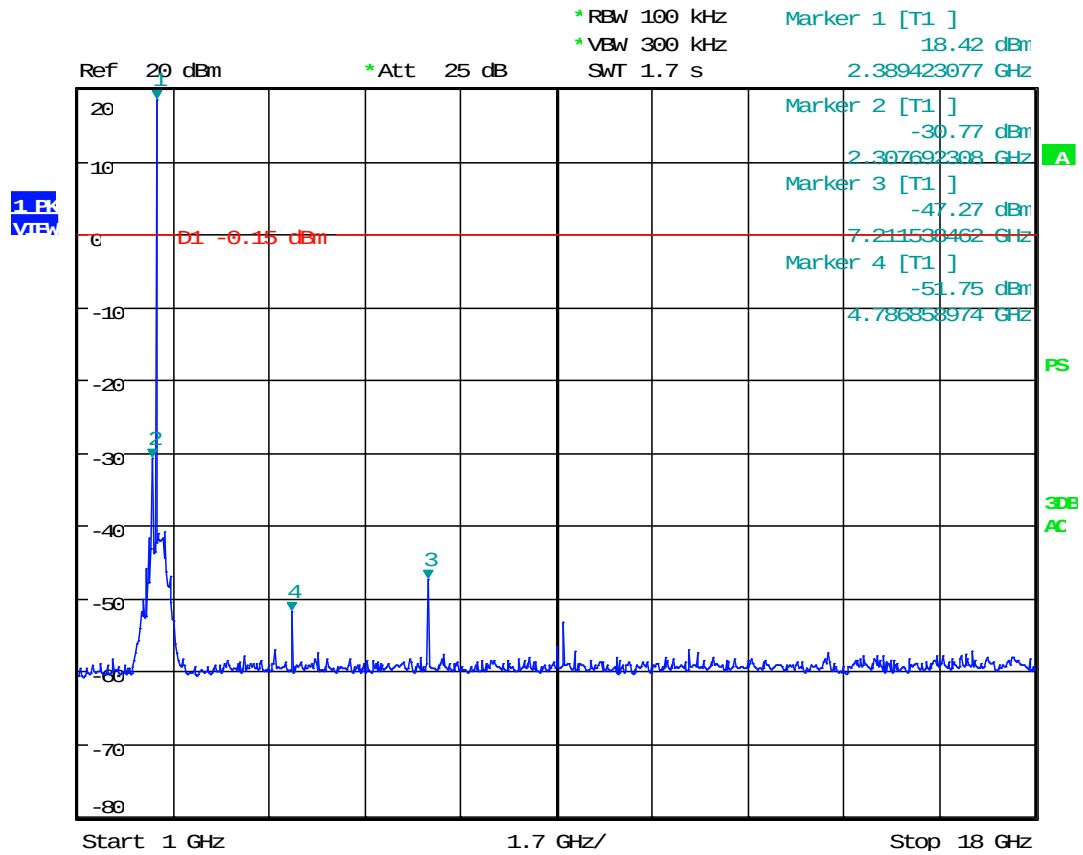
1 Mbps, Low Channel: 30 MHz to 1000 MHz



Date: 21.JAN.2025 13:29:37



1 Mbps, Low Channel: 1 GHz to 18 GHz



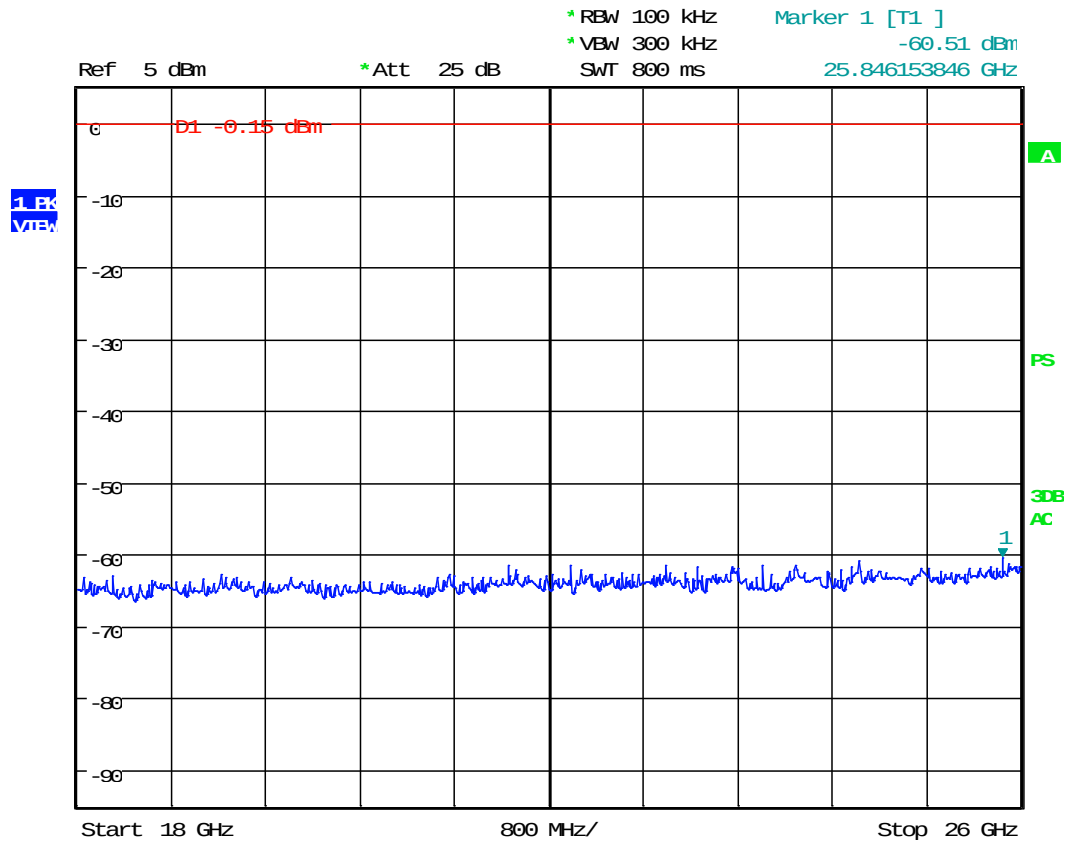
Date: 21.JAN.2025 13:31:06



Order No(s): F2P33844

Applicant: Chandler Systems, Inc.
Model: EVB-034-C

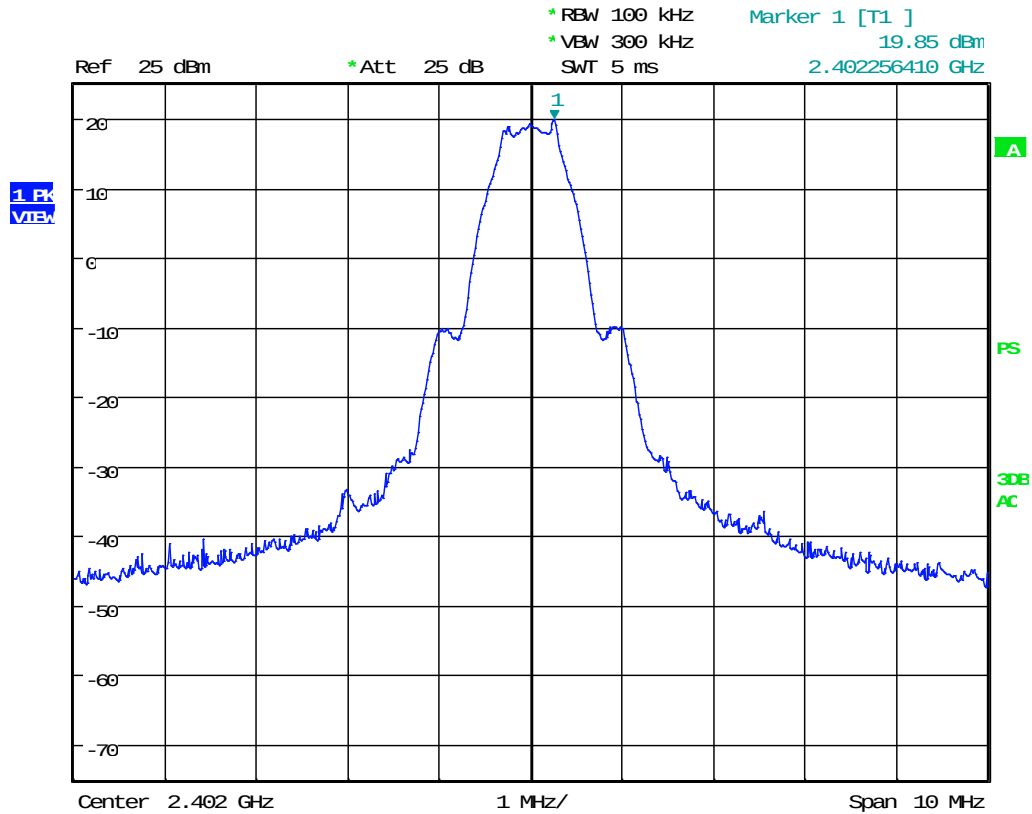
1 Mbps, Low Channel: 18 GHz to 26 GHz



Date: 21.JAN.2025 13:31:39



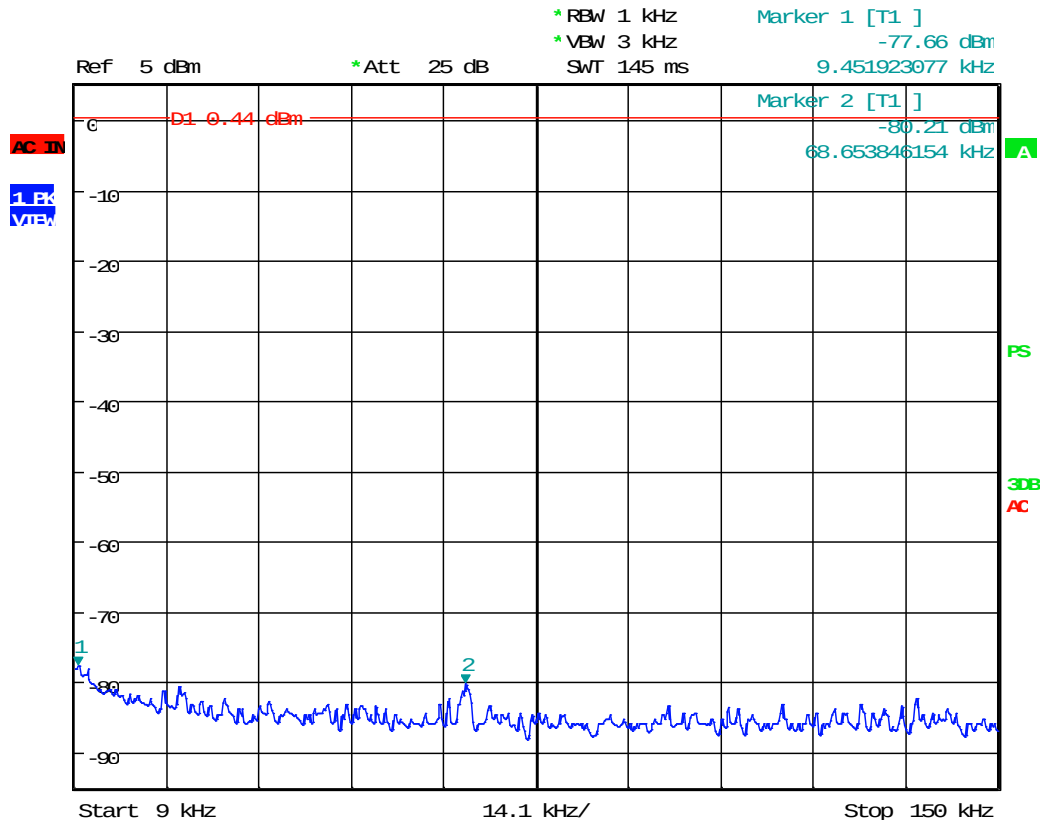
1 Mbps, Low Channel: Spur Reference



Date: 21.JAN.2025 13:24:23



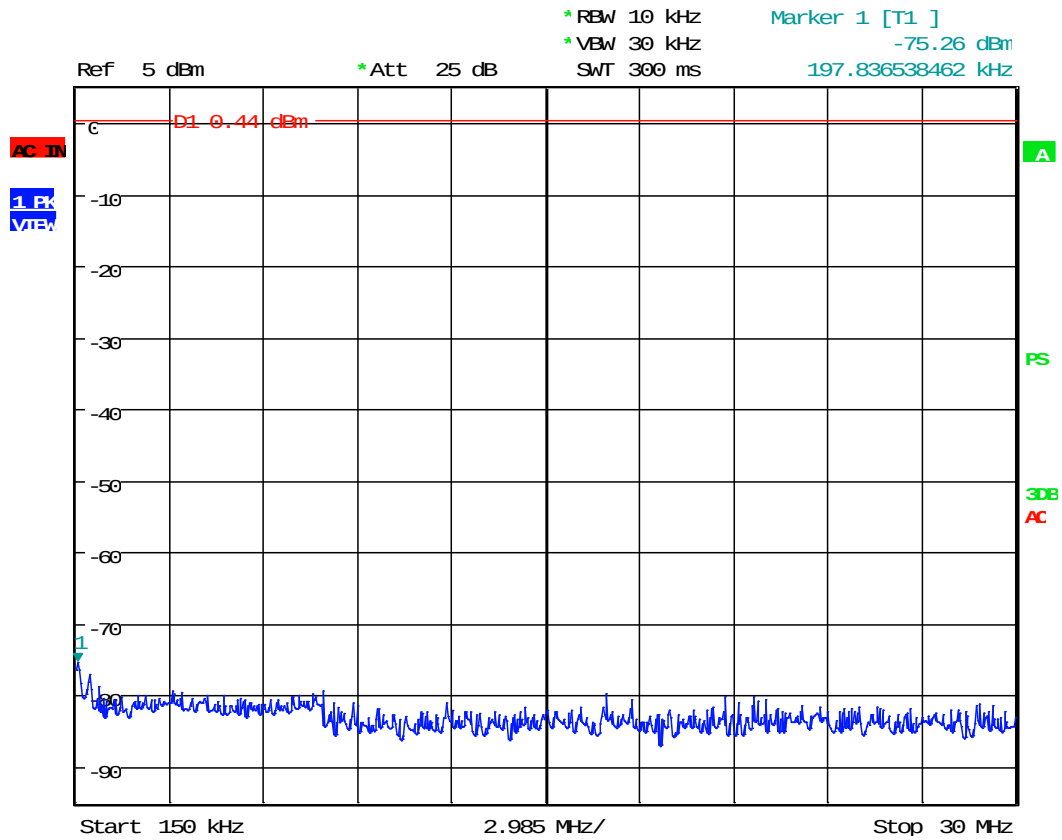
1 Mbps, Mid Channel: 0.009 MHz to 0.15 MHz



Date: 21.JAN.2025 13:34:37



1 Mbps, Mid Channel: 0.15 MHz to 30 MHz



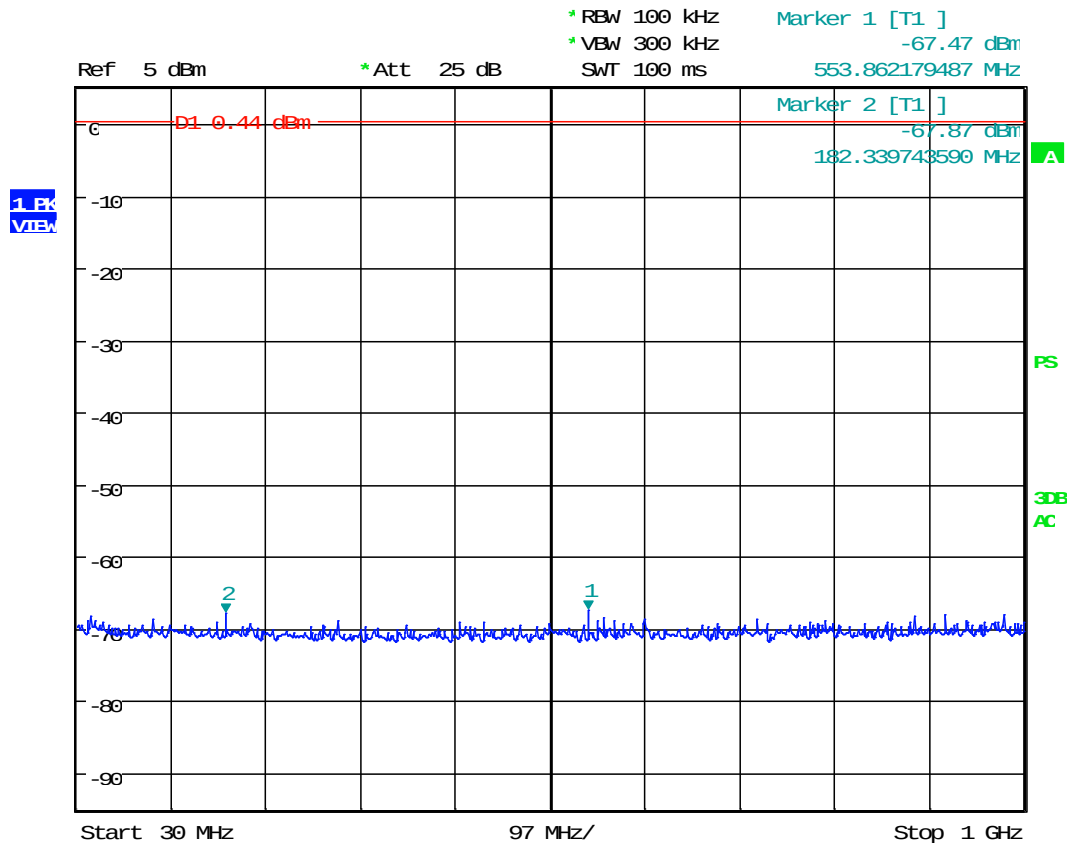
Date: 21.JAN.2025 13:35:14



Order No(s): F2P33844

Applicant: Chandler Systems, Inc.
Model: EVB-034-C

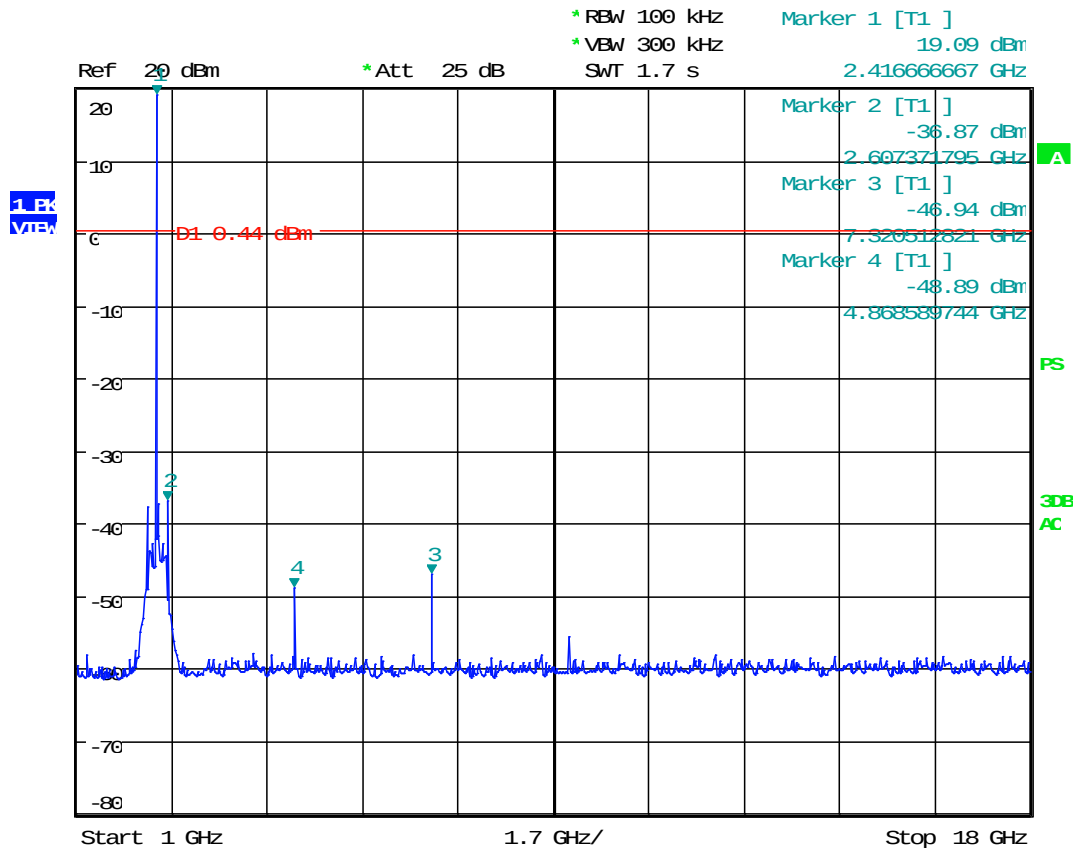
1 Mbps, Mid Channel: 30 MHz to 1000 MHz



Date: 21.JAN.2025 13:35:53



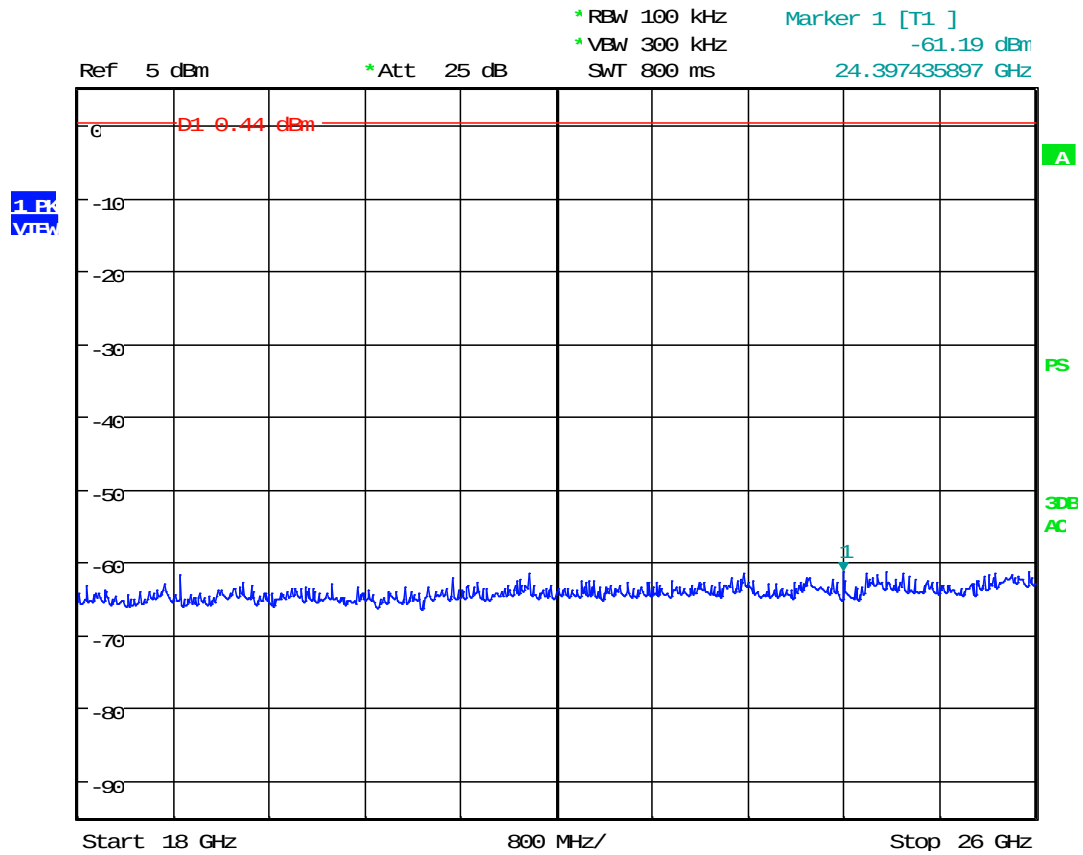
1 Mbps, Mid Channel: 1 GHz to 18 GHz



Date: 21.JAN.2025 13:36:56



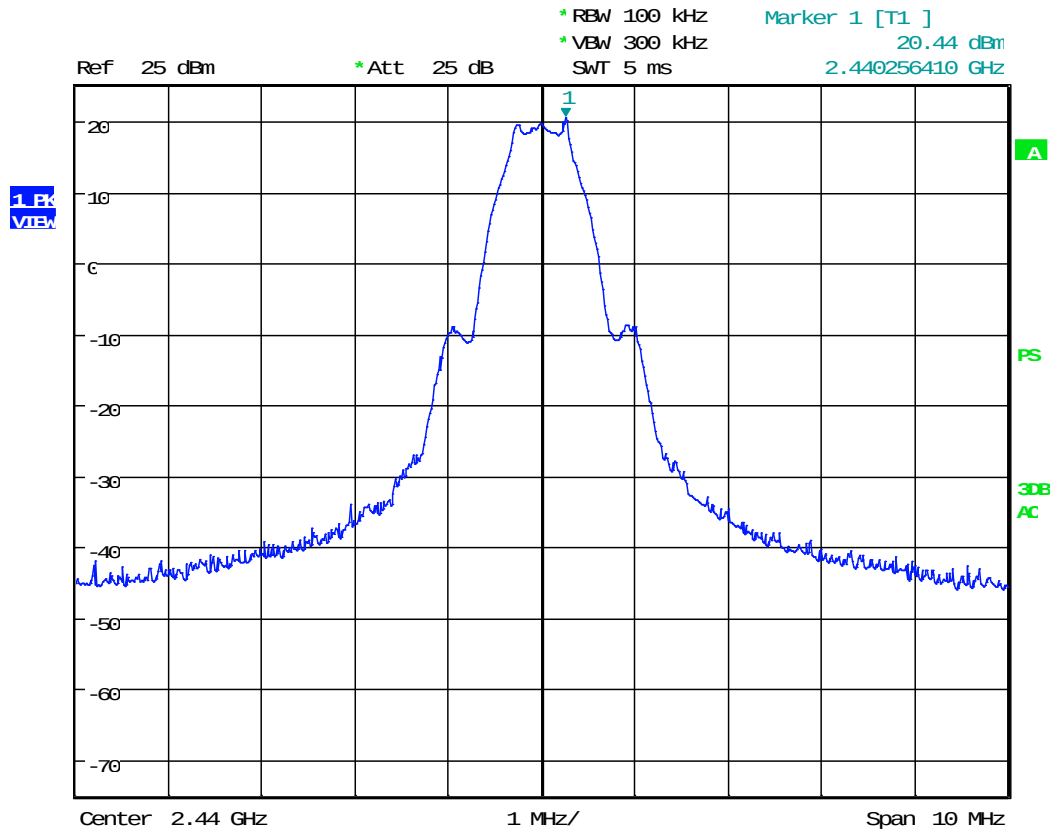
1 Mbps, Mid Channel: 18 GHz to 26 GHz



Date: 21.JAN.2025 13:37:29



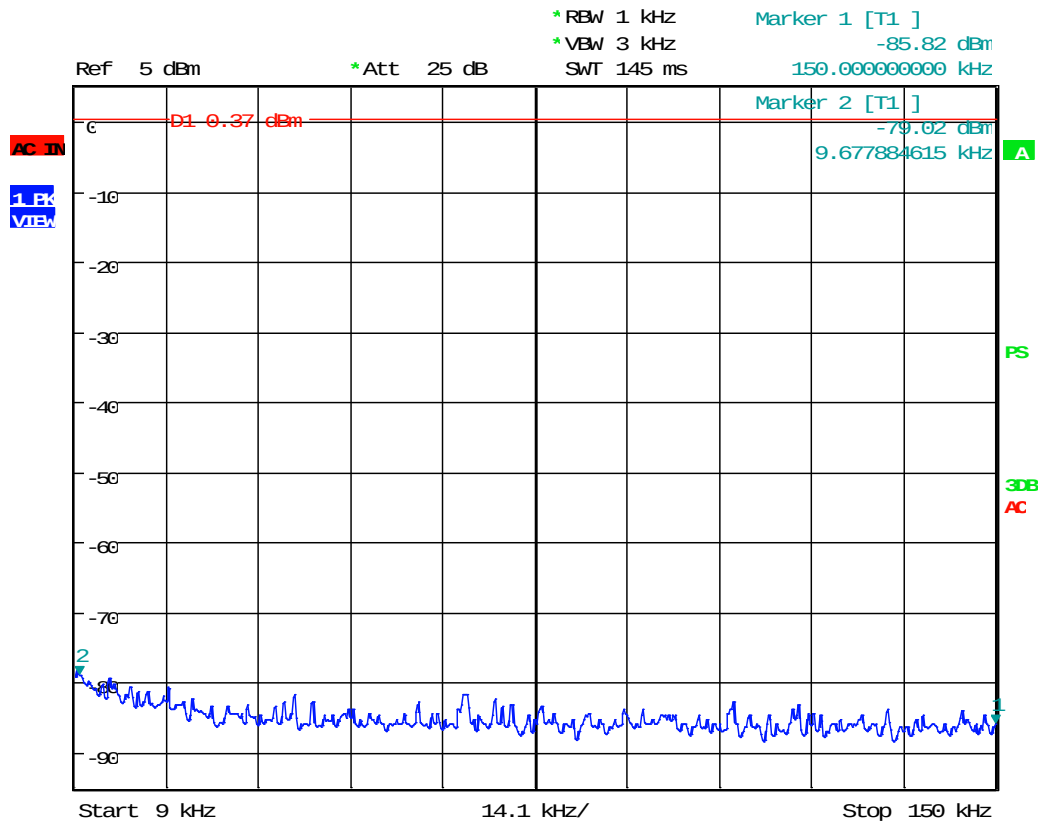
1 Mbps, Mid Channel: Spur Reference



Date: 21.JAN.2025 13:33:09



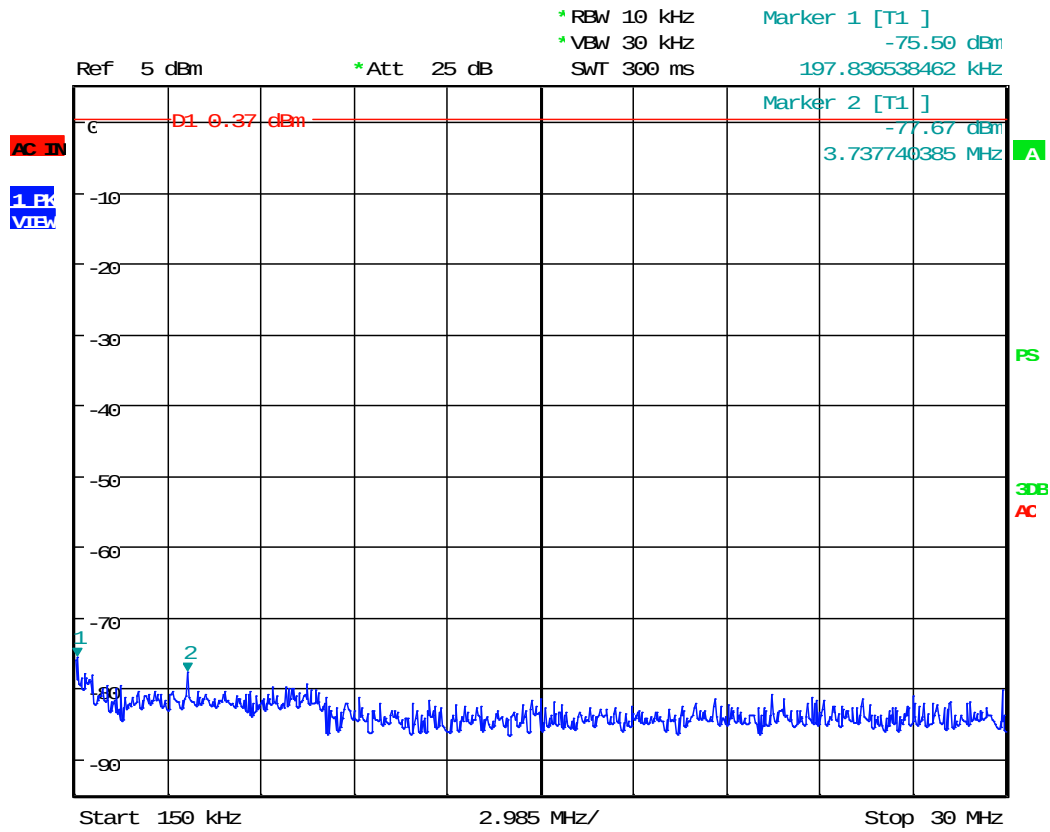
1 Mbps, High Channel: 0.009 MHz to 0.15 MHz



Date: 21.JAN.2025 13:40:35



1 Mbps, High Channel: 0.15 MHz to 30 MHz



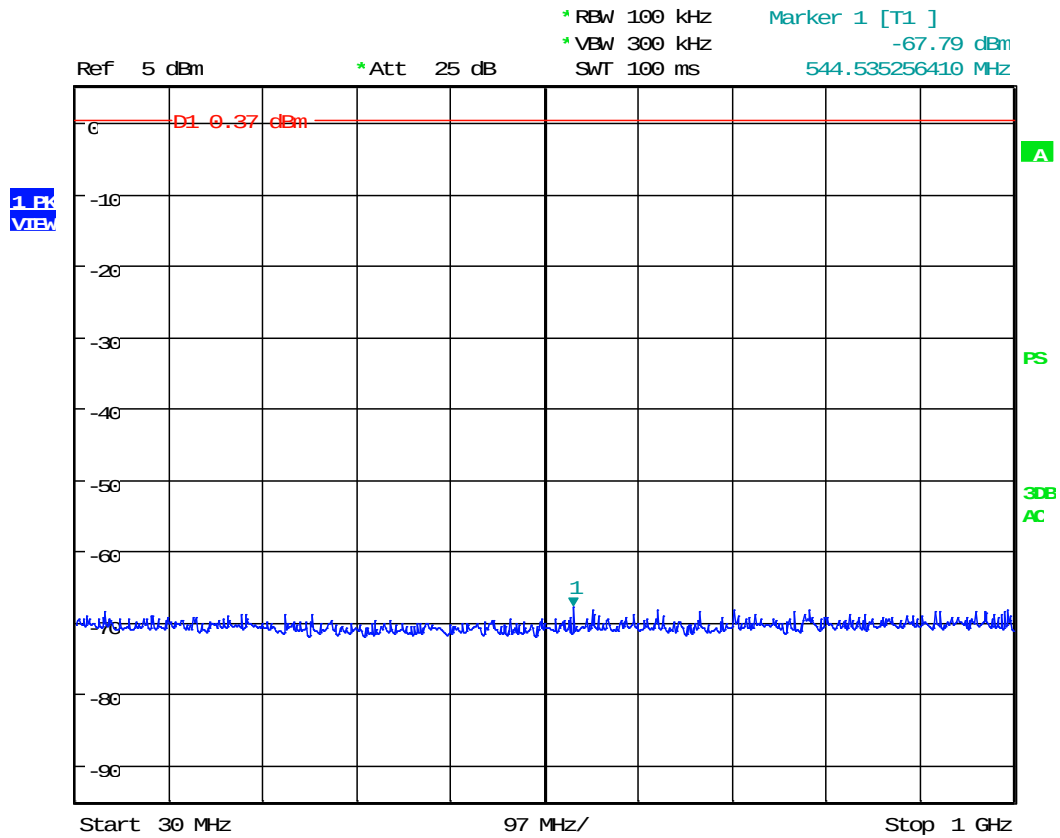
Date: 21.JAN.2025 13:41:15



Order No(s): F2P33844

Applicant: Chandler Systems, Inc.
Model: EVB-034-C

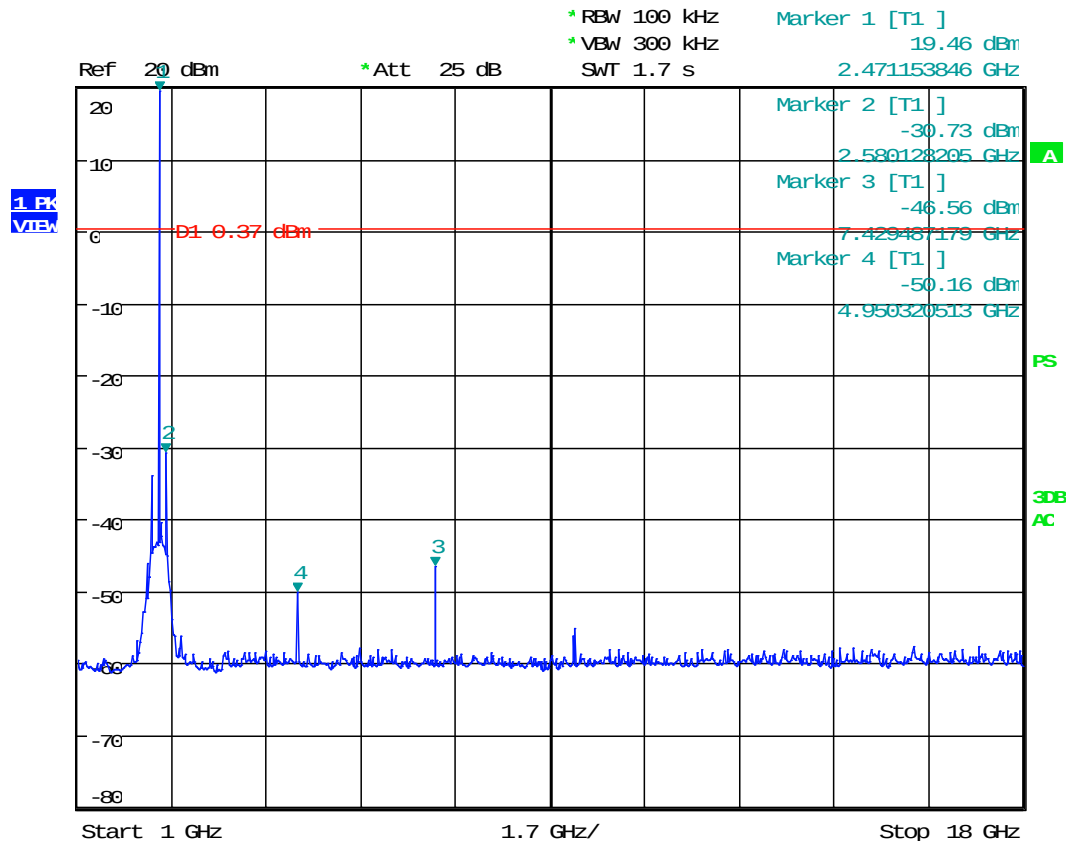
1 Mbps, High Channel: 30 MHz to 1000 MHz



Date: 21.JAN.2025 13:41:50



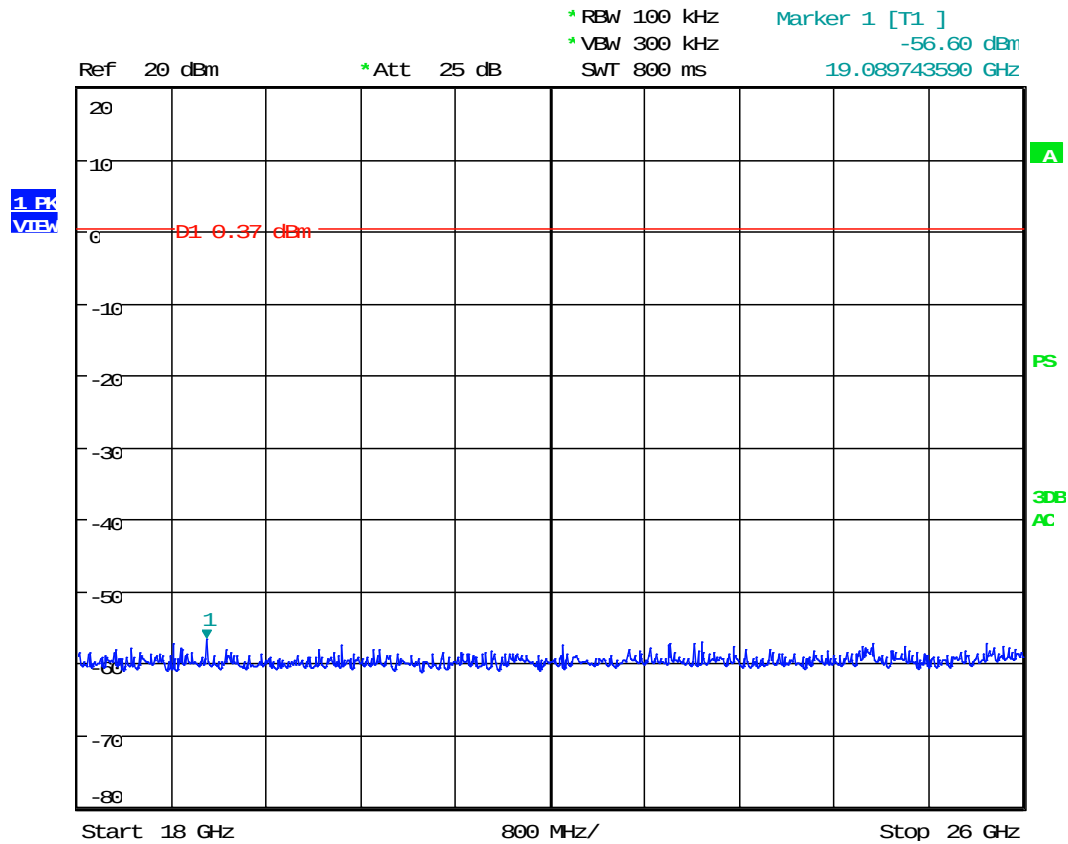
1 Mbps, High Channel: 1 GHz to 18 GHz



Date: 21.JAN.2025 13:42:52



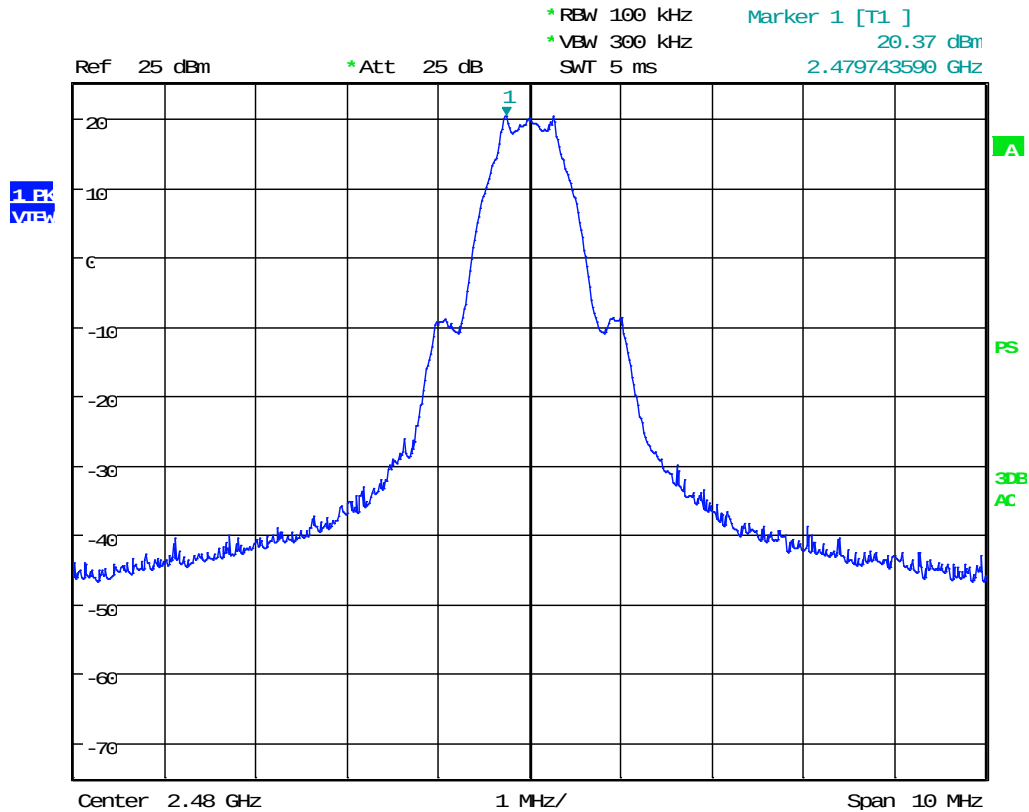
1 Mbps, High Channel: 18 GHz to 26 GHz



Date: 21.JAN.2025 13:43:16



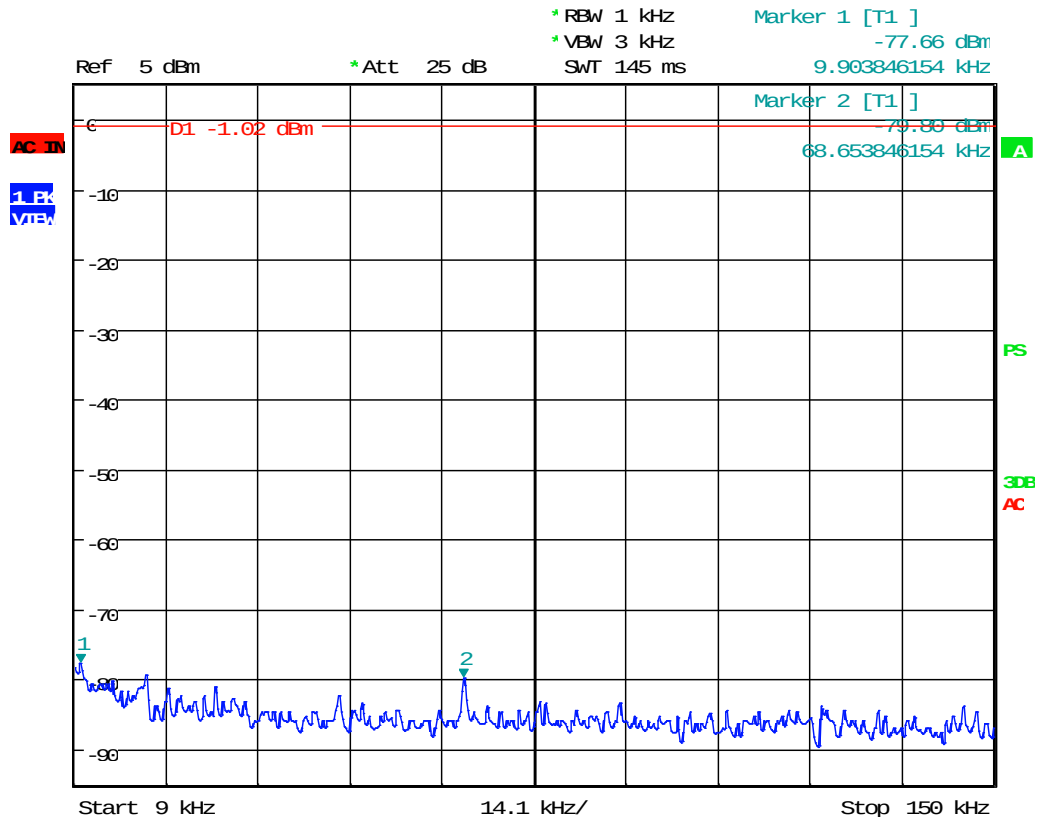
1 Mbps, High Channel: Spur Reference



Date: 21.JAN.2025 13:38:49



2 Mbps, Low Channel: 0.009 MHz to 0.15 MHz



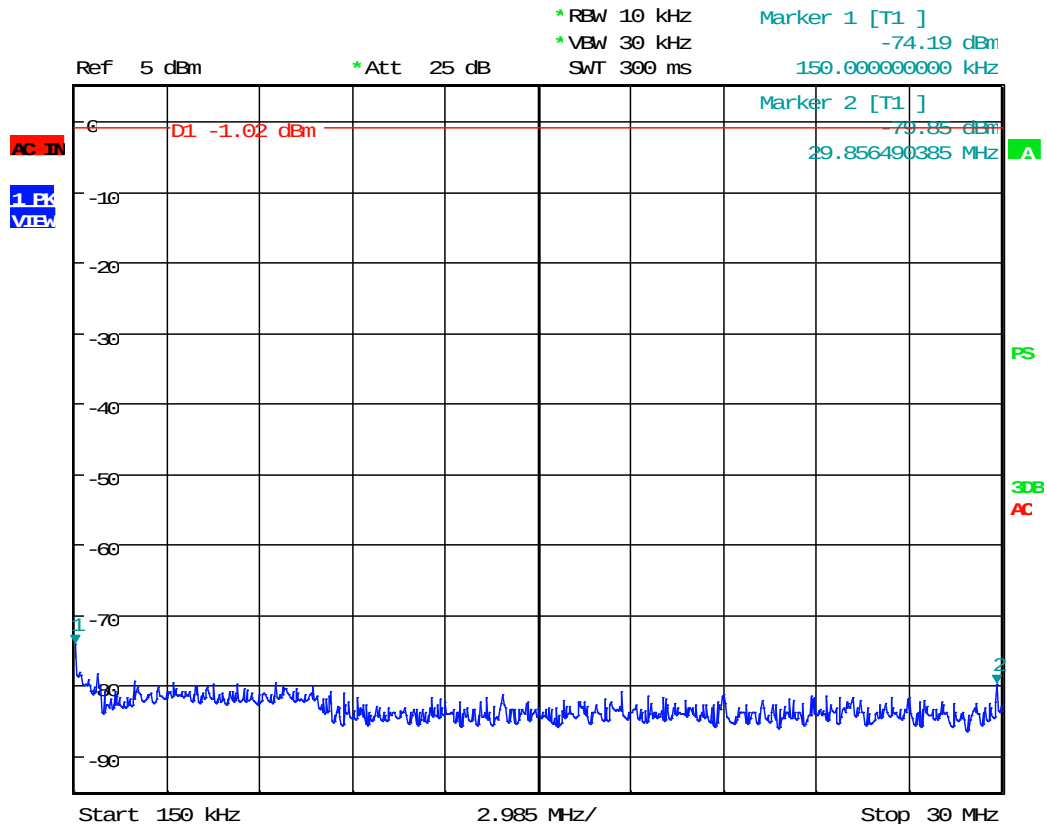
Date: 21.JAN.2025 13:59:52



Order No(s): F2P33844

Applicant: Chandler Systems, Inc.
Model: EVB-034-C

2 Mbps, Low Channel: 0.15 MHz to 30 MHz



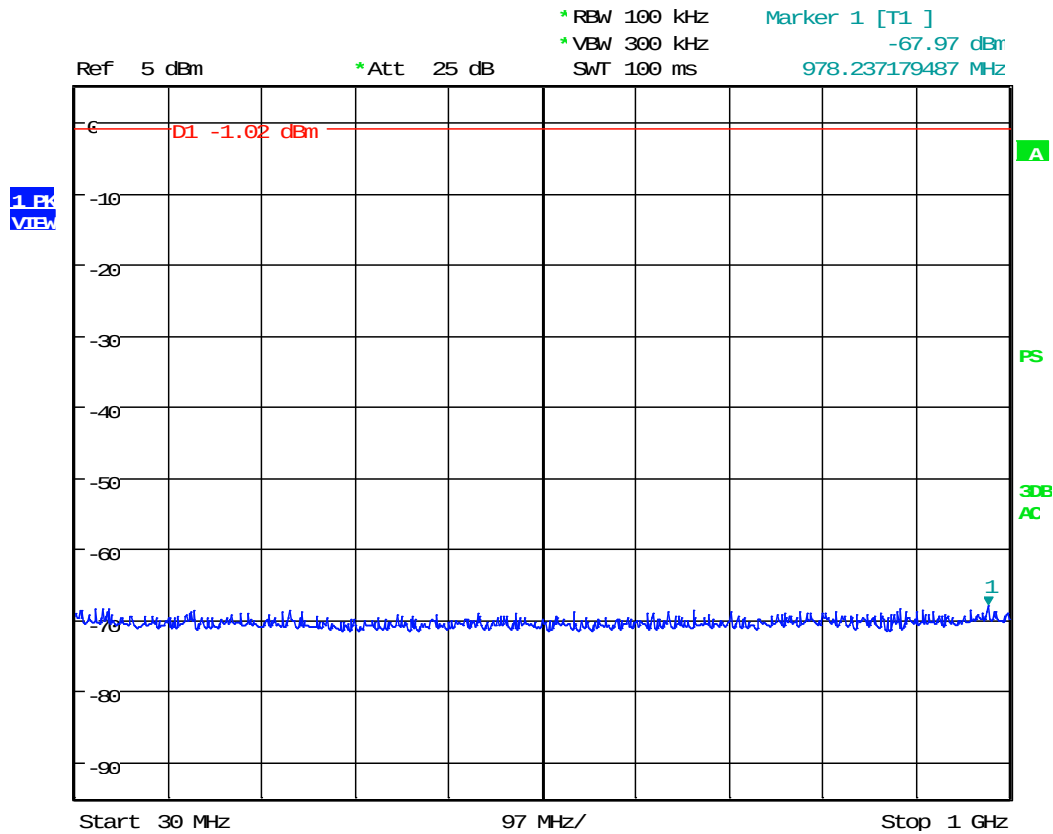
Date: 21.JAN.2025 14:00:39



Order No(s): F2P33844

Applicant: Chandler Systems, Inc.
Model: EVB-034-C

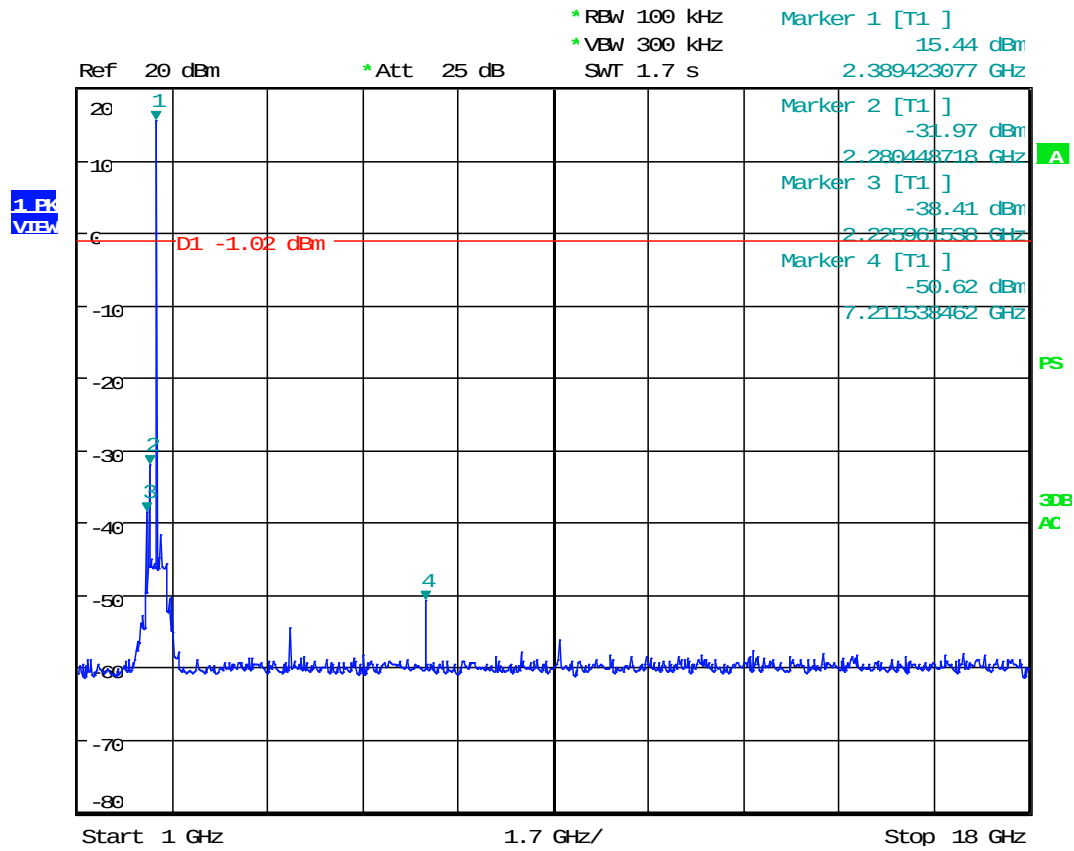
2 Mbps, Low Channel: 30 MHz to 1000 MHz



Date: 21.JAN.2025 14:01:18



2 Mbps, Low Channel: 1 GHz to 18 GHz



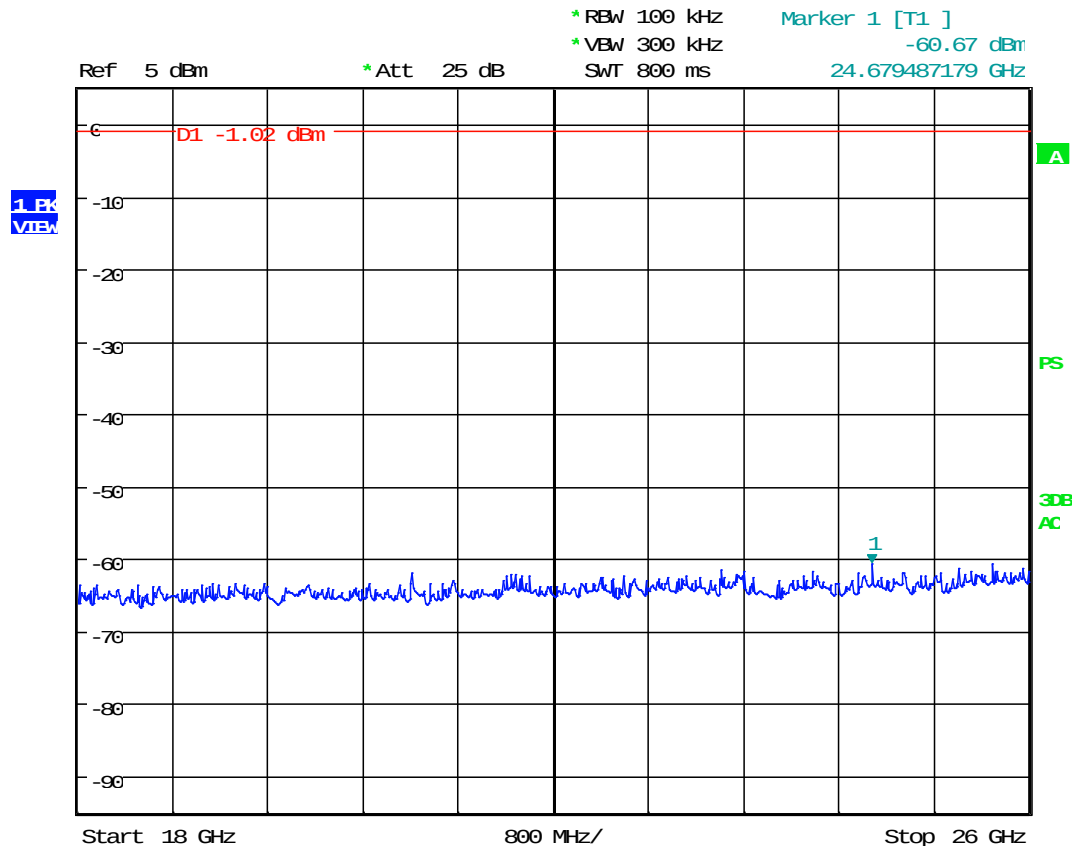
Date: 21.JAN.2025 14:05:33



Order No(s): F2P33844

Applicant: Chandler Systems, Inc.
Model: EVB-034-C

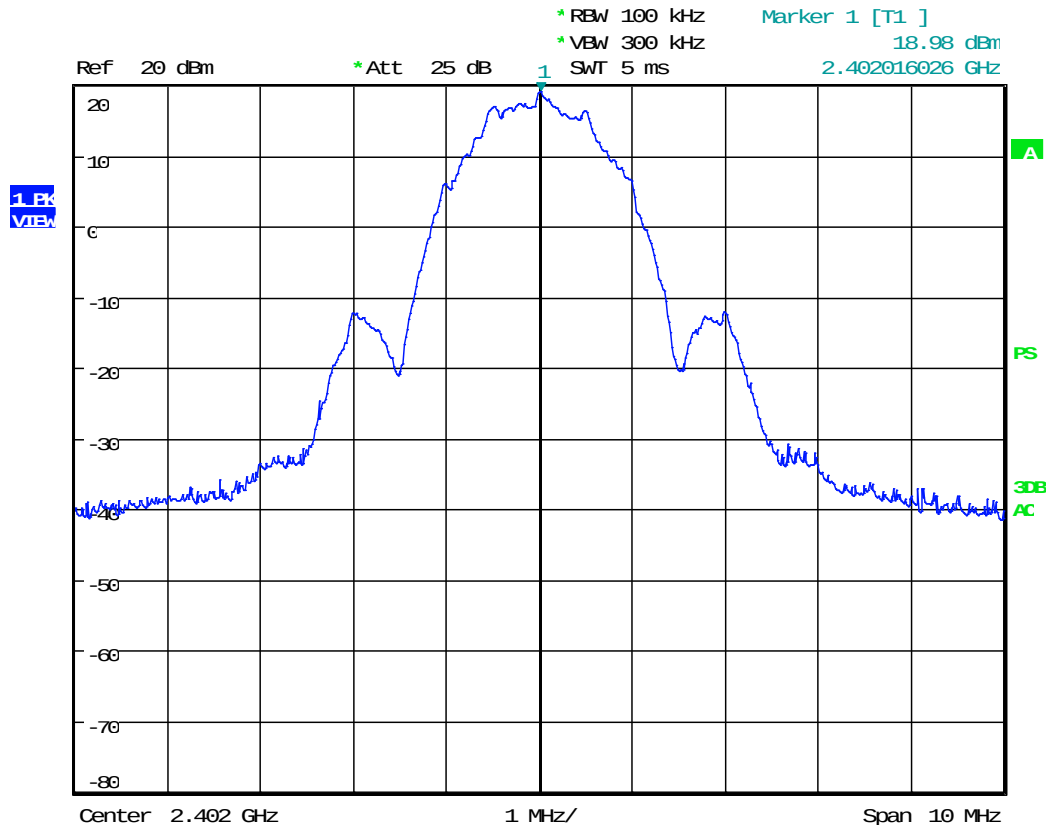
2 Mbps, Low Channel: 18 GHz to 26 GHz



Date: 21.JAN.2025 14:05:57



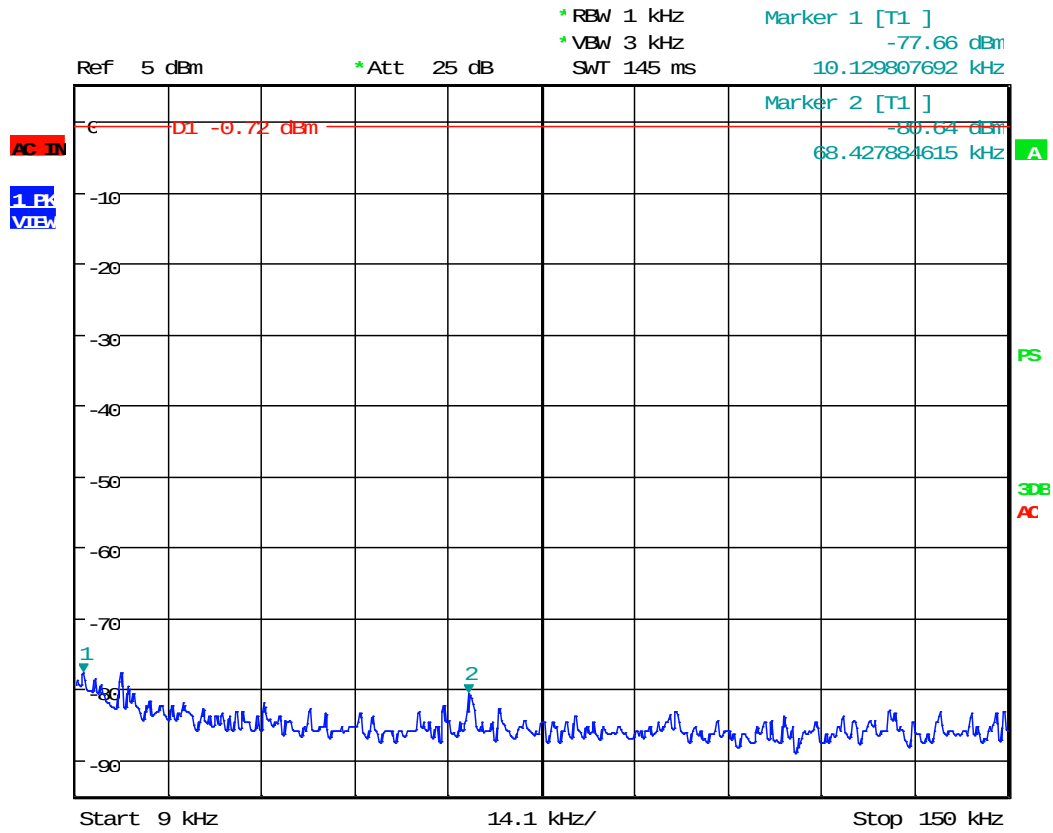
2 Mbps, Low Channel: Spur Reference



Date: 21.JAN.2025 13:57:32



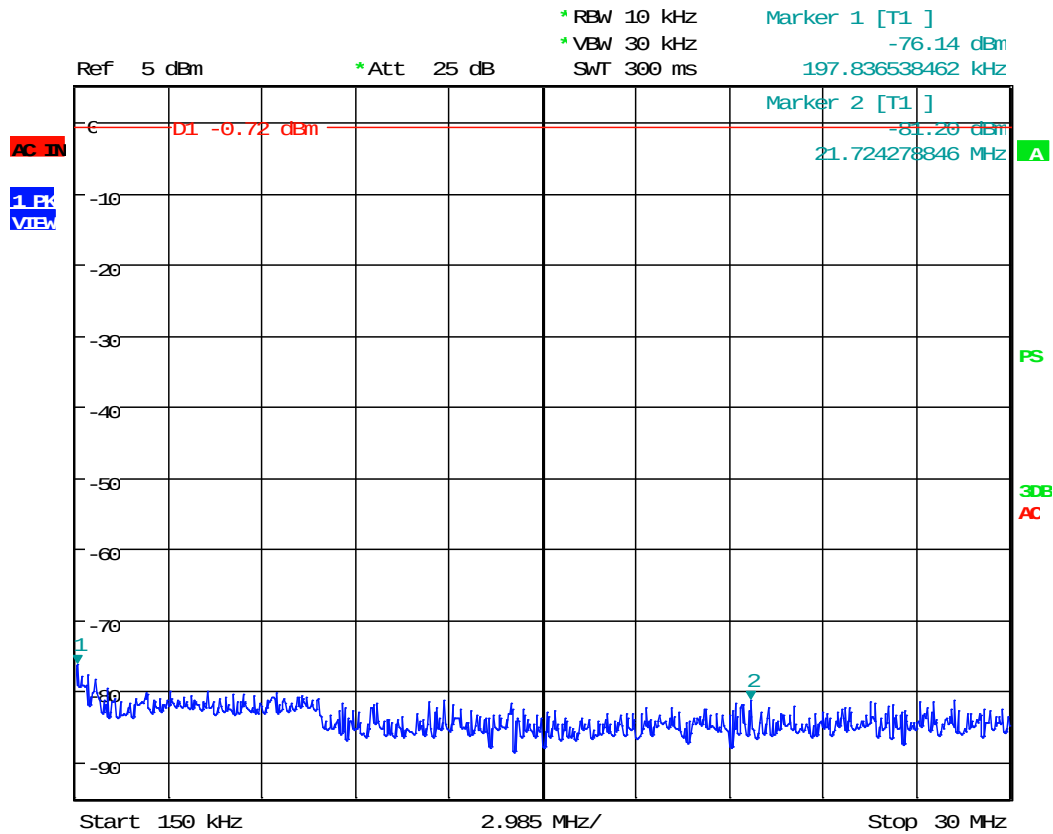
2 Mbps, Mid Channel: 0.009 MHz to 0.15 MHz



Date: 21.JAN.2025 14:14:46



2 Mbps, Mid Channel: 0.15 MHz to 30 MHz



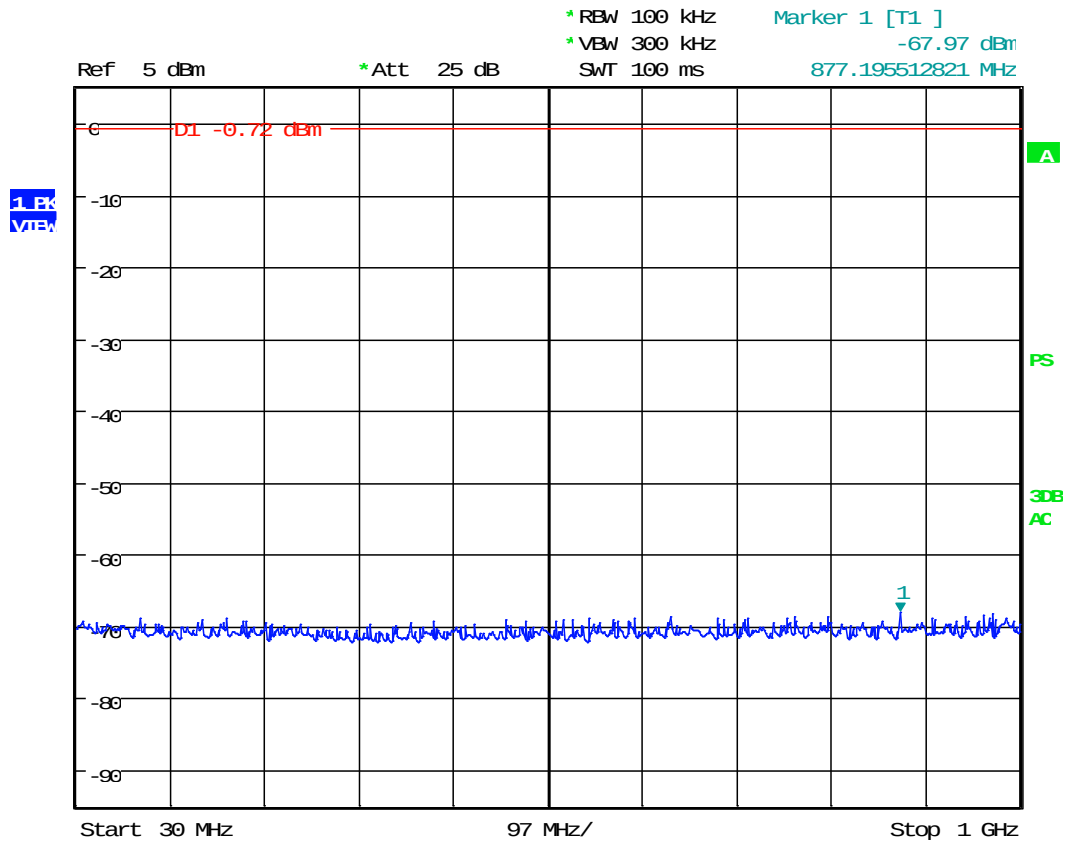
Date: 21.JAN.2025 14:21:34



Order No(s): F2P33844

Applicant: Chandler Systems, Inc.
Model: EVB-034-C

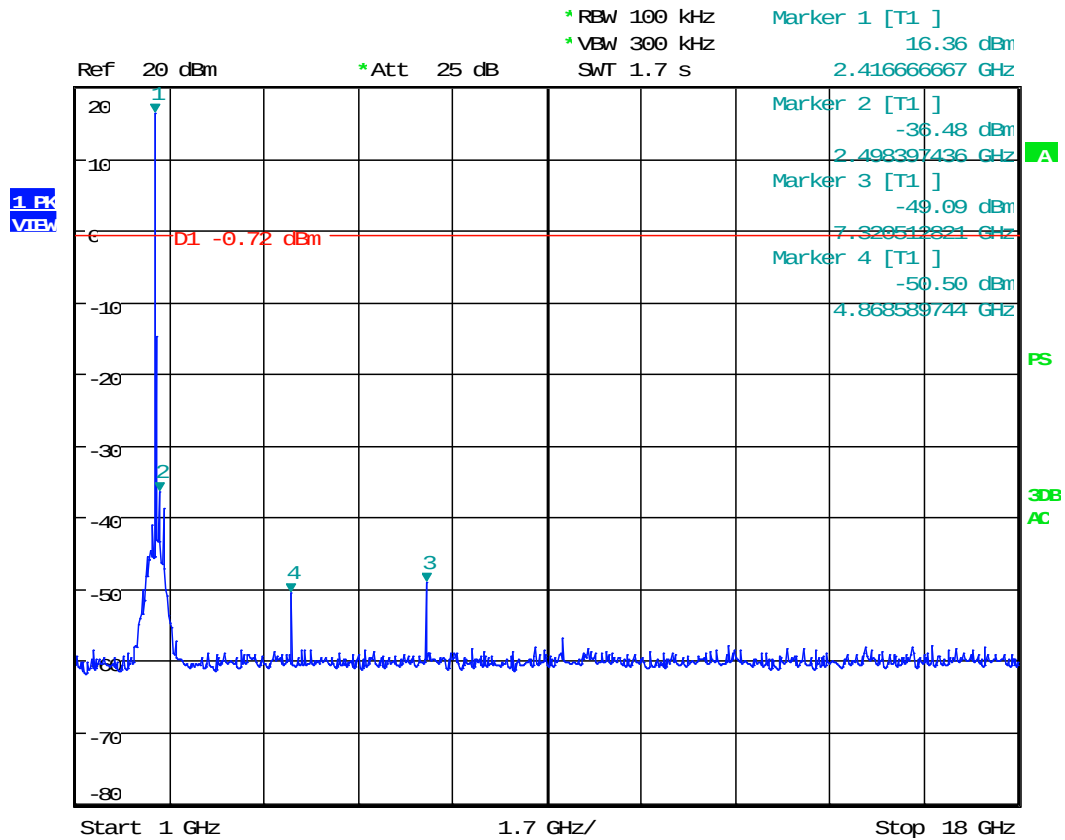
2 Mbps, Mid Channel: 30 MHz to 1000 MHz



Date: 21.JAN.2025 14:22:16



2 Mbps, Mid Channel: 1 GHz to 18 GHz



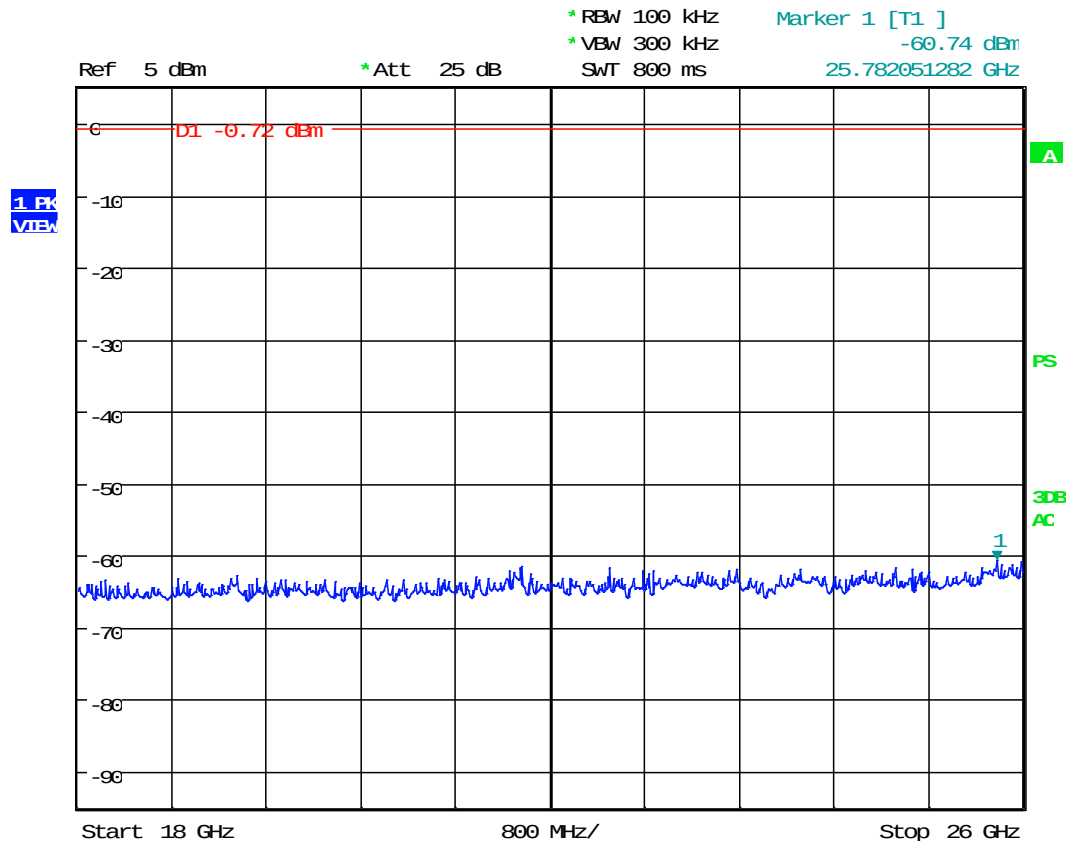
Date: 21.JAN.2025 14:23:15



Order No(s): F2P33844

Applicant: Chandler Systems, Inc.
Model: EVB-034-C

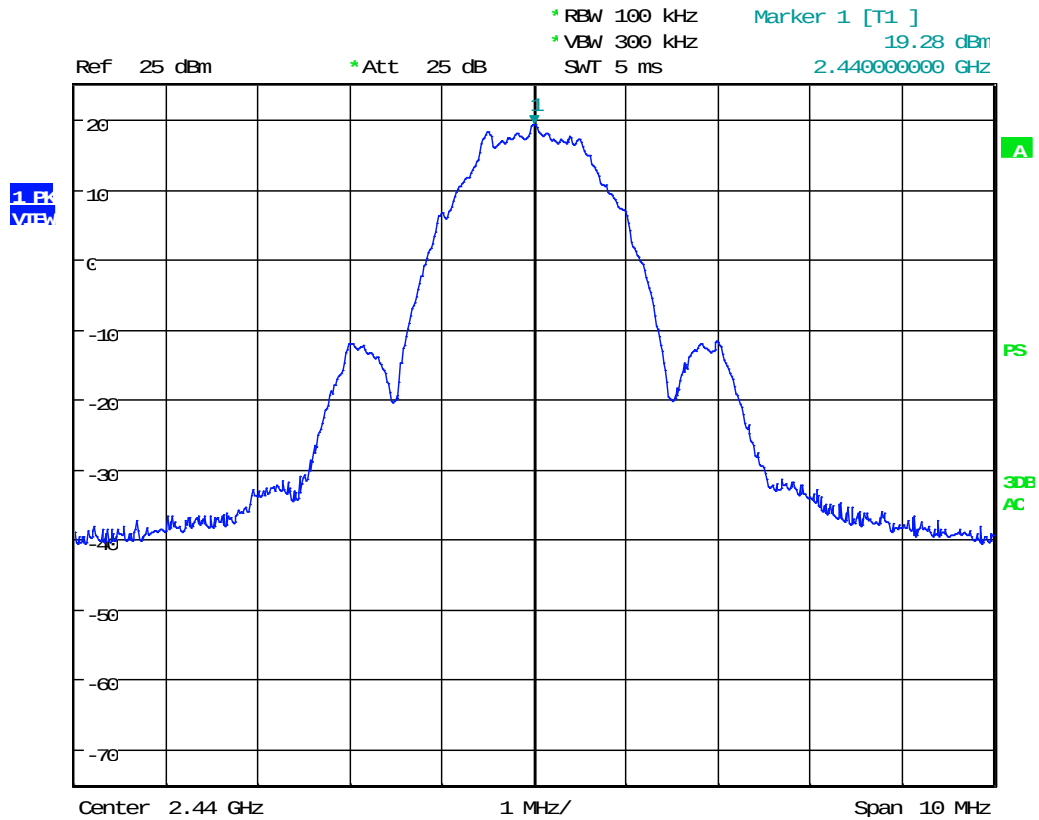
2 Mbps, Mid Channel: 18 GHz to 26 GHz



Date: 21.JAN.2025 14:23:39



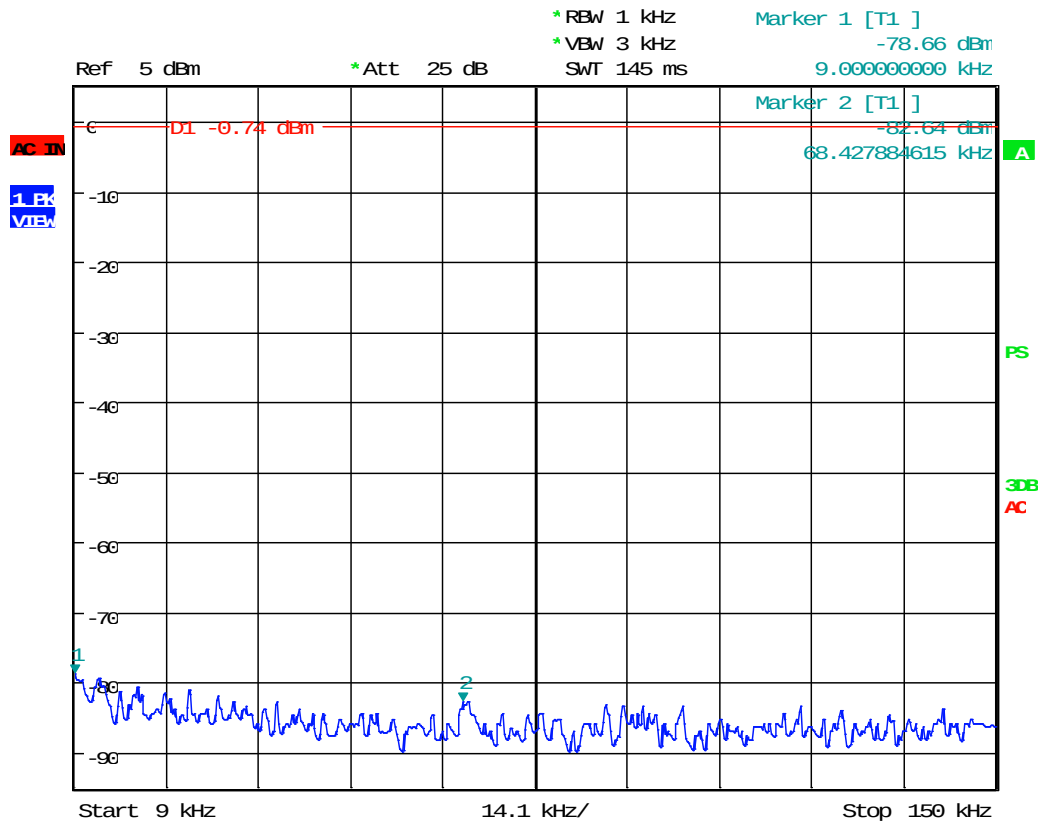
2 Mbps, Mid Channel: Spur Reference



Date: 21.JAN.2025 14:07:27



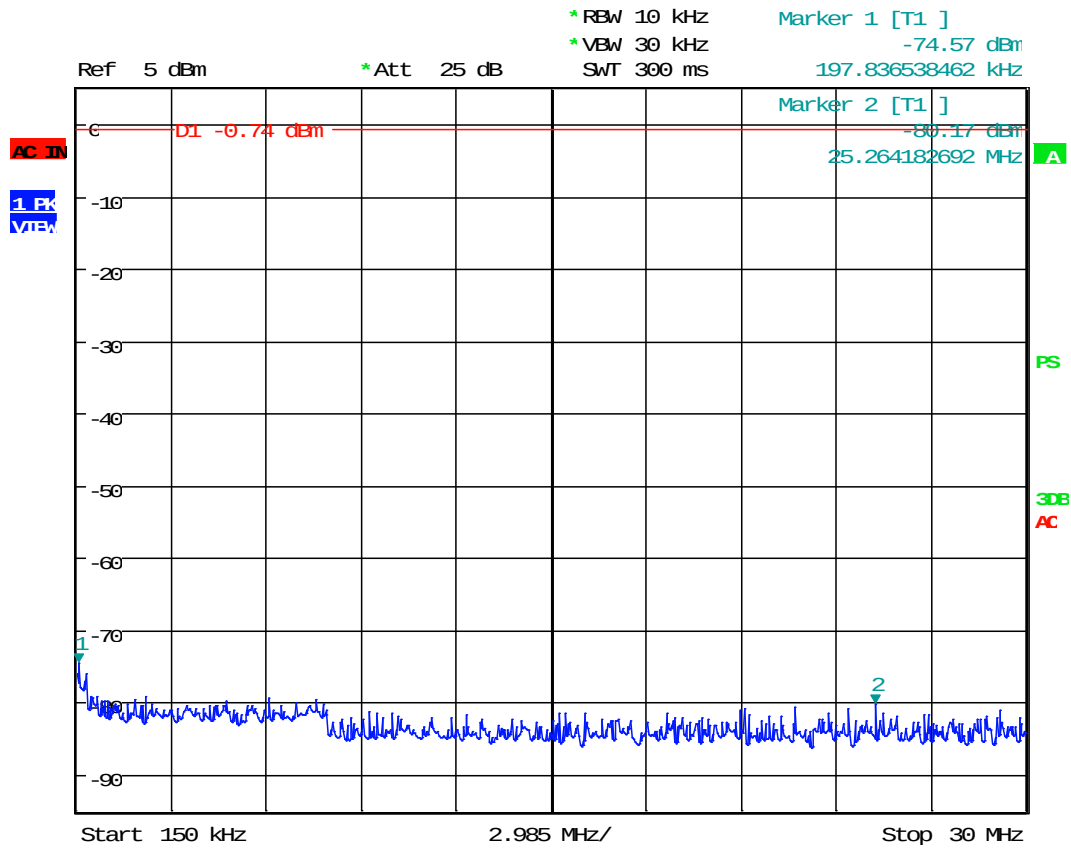
2 Mbps, High Channel: 0.009 MHz to 0.15 MHz



Date: 21.JAN.2025 14:32:47



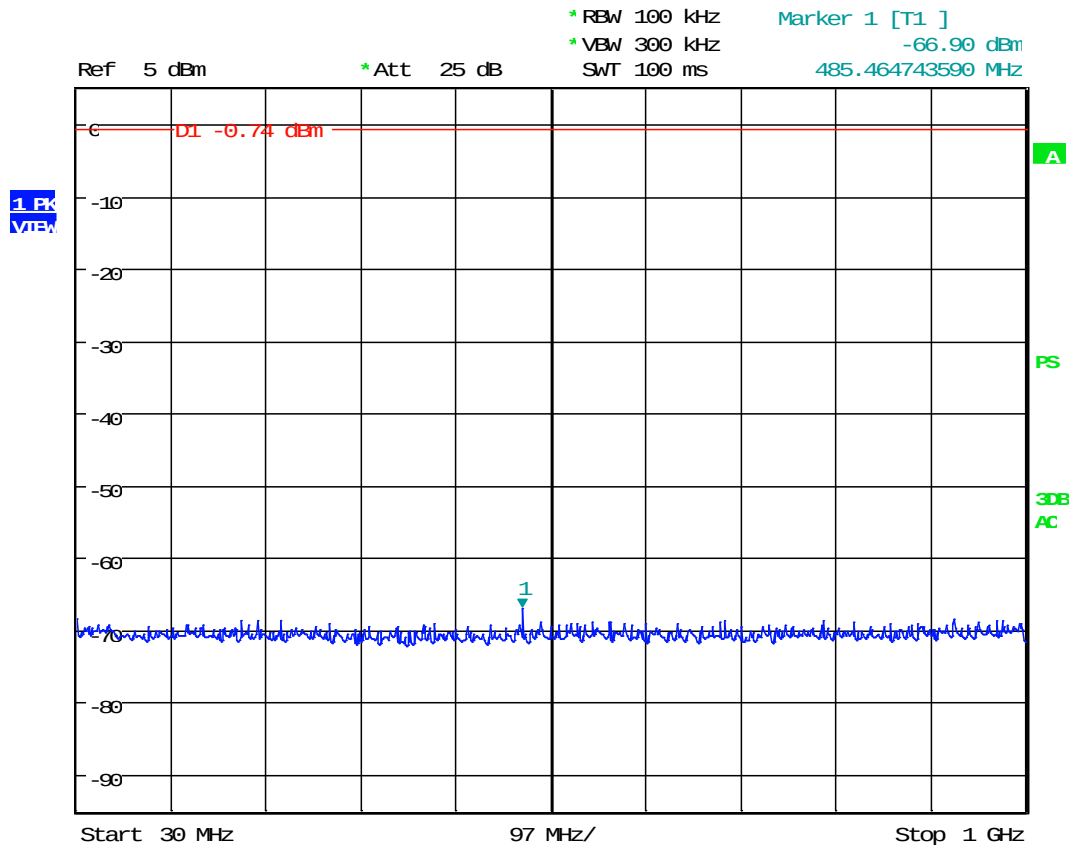
2 Mbps, High Channel: 0.15 MHz to 30 MHz



Date: 21.JAN.2025 14:33:32



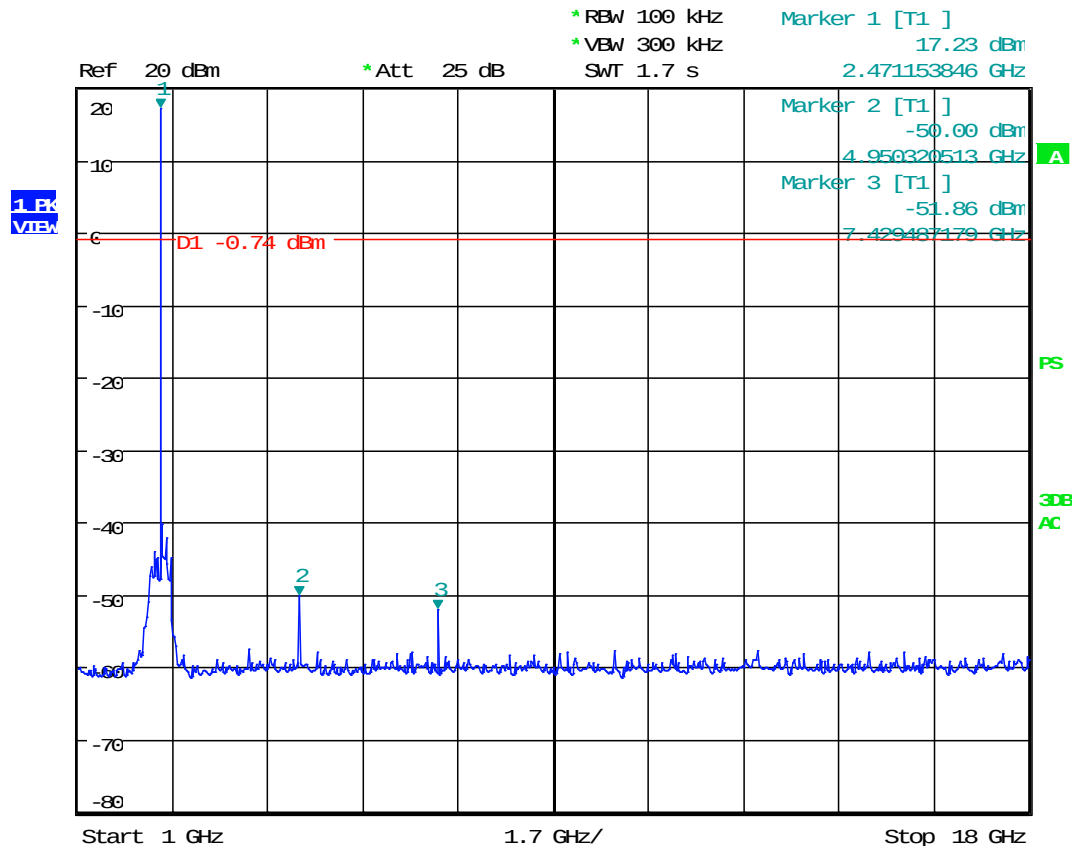
2 Mbps, High Channel: 30 MHz to 1000 MHz



Date: 21.JAN.2025 14:34:07



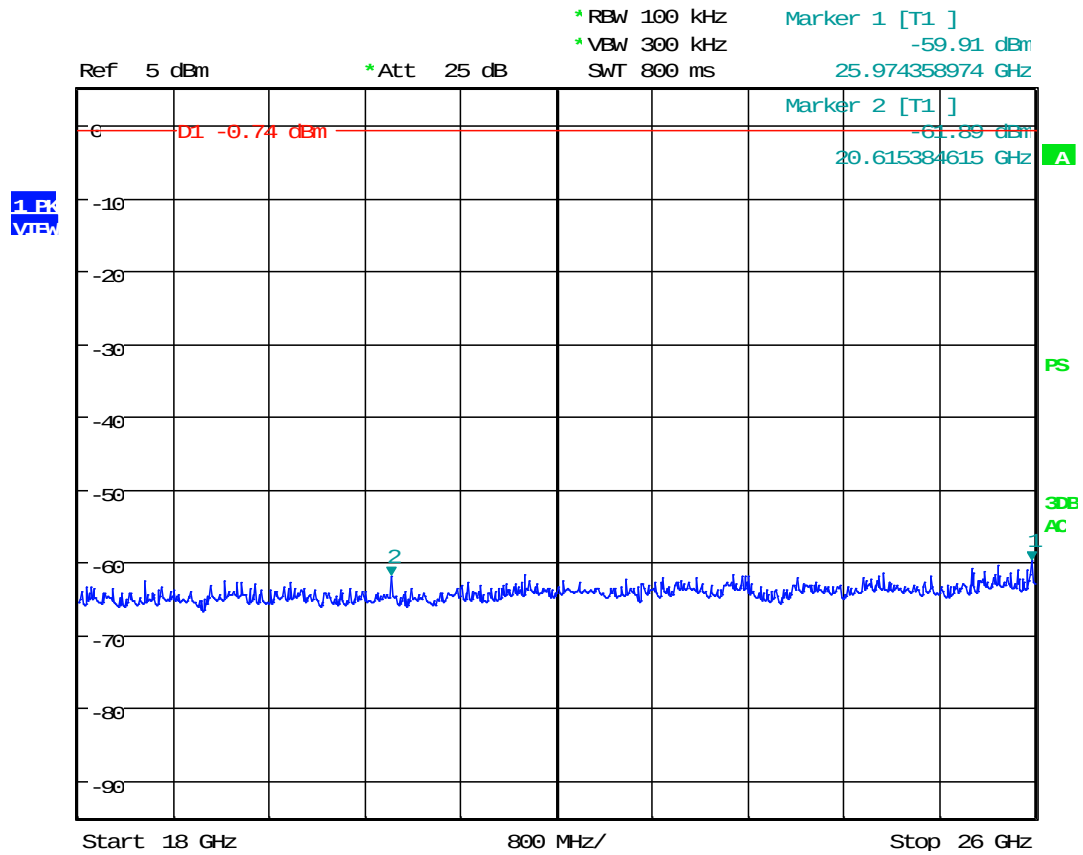
2 Mbps, High Channel: 1 GHz to 18 GHz



Date: 21.JAN.2025 14:35:00



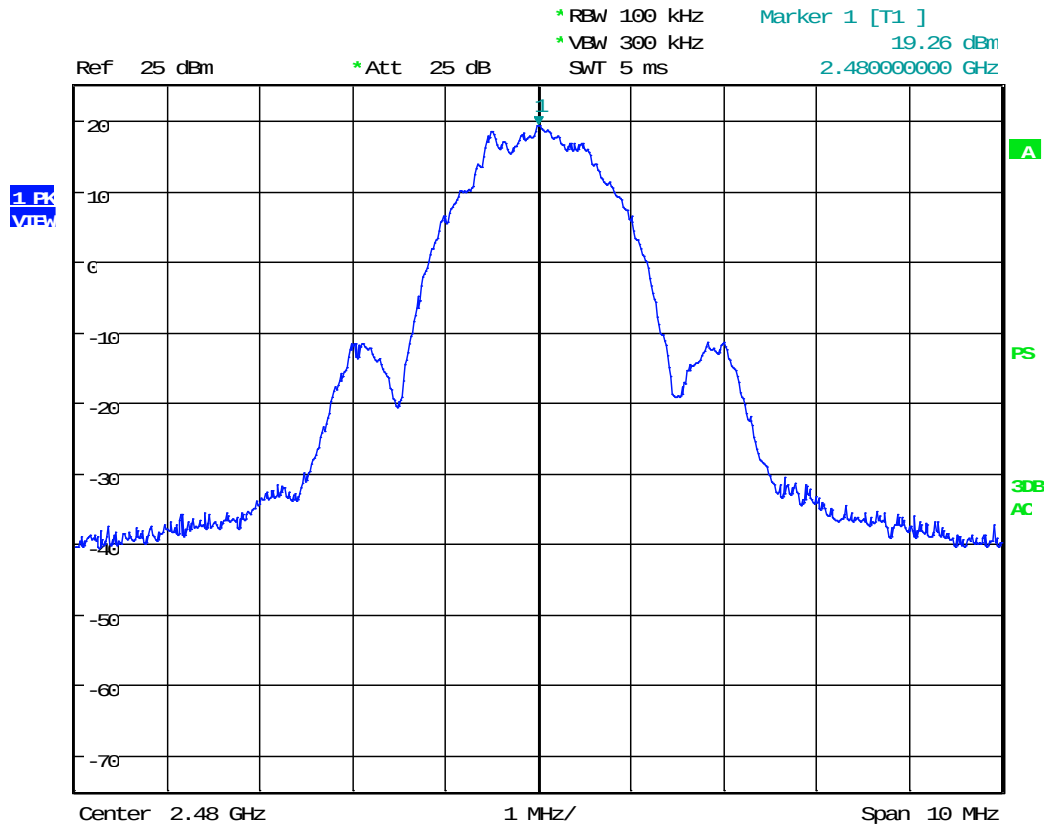
2 Mbps, High Channel: 18 GHz to 26 GHz



Date: 21.JAN.2025 14:35:35



2 Mbps, High Channel: Spur Reference



Date: 21.JAN.2025 14:28:59



11 RADIATED SPURIOUS EMISSIONS

The EUT antenna port was fitted with its Trace Antenna, -4.35dBi Gain. Radiated emissions were measured in a Semi-Anechoic Chamber. All emissions generated that fall in the restricted bands per FCC Part 15.205 were examined.

11.1 Requirements:

All emissions that fall in the restricted bands defined in FCC Part 15.205 shall not exceed the maximum field strength listed in FCC Part 15.209(a).

Scans were performed from 9kHz to 10 GHz at the low, mid, and high channels and the high channel was determined to be the worst case. The tables of measured results follow in data presented and include measurements from all channels.



11.2 Radiated Spurious Emissions Test Data

Test Date(s):	2025-01-22 to 2025-01-23	Test Engineer:	E. Tobin
Standards:	CFR 47 Part 15.247(d); Part 15.209 / KDB558074	Air Temperature:	23.0°C
		Relative Humidity:	25%

Notes: Plots are peak, max hold prescan data included only to determine what frequencies to investigate and measure. The EUT was initially placed in a semi-anechoic chamber, and rotated in all three orthogonal positions to maximize the emissions. Characterization measurements were then performed to determine at which frequencies significant emissions occurred. These graphs are shown below.

The equipment was fully exercised with all cabling attached to the EUT and was positioned on the Semi-Anechoic Chamber for maximum emissions. While the equipment was energized, the receiving antenna was scanned from 1.0 meter to 4.0 meters in both vertical and horizontal polarities while the turntable was adjusted 360 degrees to determine the maximum field strength. The tables of measured results can be found below.

Some of the frequencies did not change with the EUT on or off. At those frequencies, the test distance was shortened to 1 meter and still no emissions from the EUT were visible or over the ambient or limit.

In the following plots, the black line indicates ambient noise and the red line indicates the measurement with the EUT on. Emissions to be found by the EUT were measured and listed in tables. The plots are for reference only and the limit lines are not actual limit lines but merely a guide.

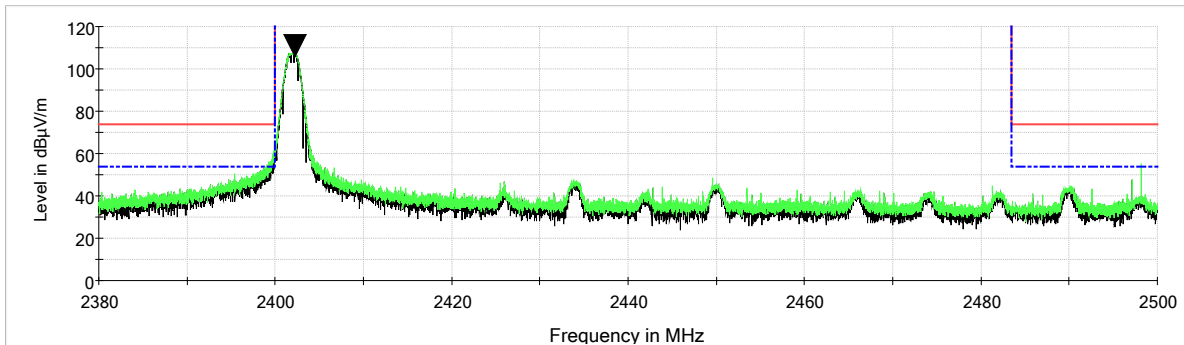
The 2 Mbps BLE bandwidth was found to be the worst-case emissions.

**1 Mbps, Measurements: Band Edges**

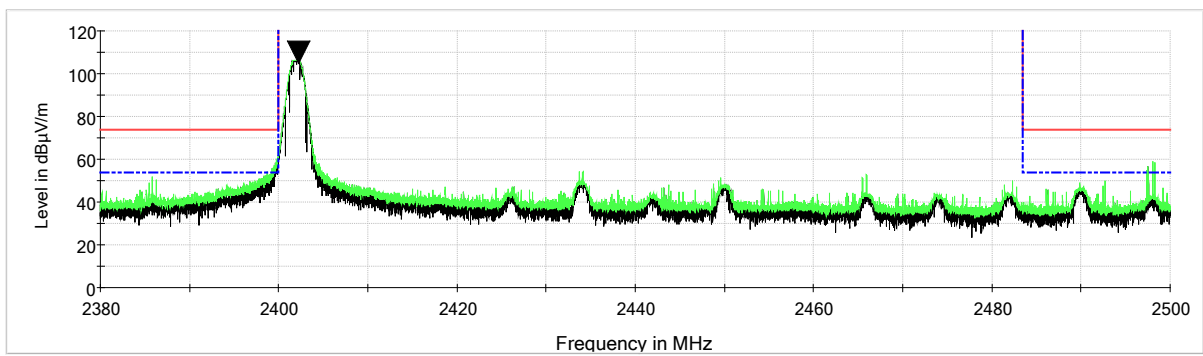
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)	Comment
2383.744000	58.1	34.1	1000.000	150.0	V	285.0	-11.5	19.9	54.0	
2383.744000	59.0	34.9	1000.000	140.0	H	213.0	-11.5	19.1	54.0	
2384.524000	57.1	33.8	1000.000	140.0	H	213.0	-11.5	20.2	54.0	
2384.524000	56.0	33.2	1000.000	150.0	V	285.0	-11.5	20.8	54.0	
2385.820000	53.8	35.0	1000.000	140.0	V	290.0	-11.5	19.0	54.0	
2385.820000	53.5	34.7	1000.000	150.0	H	36.0	-11.5	19.3	54.0	
2390.000000	48.9	34.8	1000.000	140.0	V	290.0	-11.5	19.2	54.0	
2390.000000	49.1	34.6	1000.000	150.0	H	36.0	-11.5	19.4	54.0	
2400.000000	67.0	54.4	1000.000	150.0	H	36.0	-11.5	32.3	86.7	
2400.000000	66.8	54.4	1000.000	140.0	V	290.0	-11.5	32.3	86.7	
2402.000000	107.4	106.6	1000.000	140.0	V	290.0	-11.5	-	-	
2402.000000	107.6	106.7	1000.000	150.0	H	36.0	-11.5	-	-	
2480.000000	107.3	106.5	1000.000	140.0	H	210.0	-11.4	-	-	
2480.000000	107.0	106.2	1000.000	150.0	V	285.0	-11.4	-	-	
2483.500000	56.6	42.7	1000.000	140.0	H	213.0	-11.4	11.3	54.0	
2483.500000	56.3	42.8	1000.000	150.0	V	285.0	-11.4	11.2	54.0	
2488.000000	50.8	37.8	1000.000	140.0	H	213.0	-11.4	16.2	54.0	
2488.000000	50.6	37.7	1000.000	150.0	V	285.0	-11.4	16.3	54.0	
2488.000000	56.6	42.7	1000.000	140.0	H	213.0	-11.4	11.3	54.0	
2497.528000	56.4	34.4	1000.000	150.0	H	36.0	-11.4	19.6	54.0	
2497.528000	56.3	34.5	1000.000	140.0	V	290.0	-11.4	19.5	54.0	
2498.080000	57.4	35.8	1000.000	150.0	H	36.0	-11.4	18.2	54.0	
2498.080000	57.5	35.9	1000.000	140.0	V	290.0	-11.4	18.1	54.0	
2498.332000	57.0	35.0	1000.000	140.0	V	290.0	-11.4	19.0	54.0	
2498.332000	56.9	34.9	1000.000	150.0	H	36.0	-11.4	19.1	54.0	



1 Mbps, Band Edge: 2402 MHz – Vertical

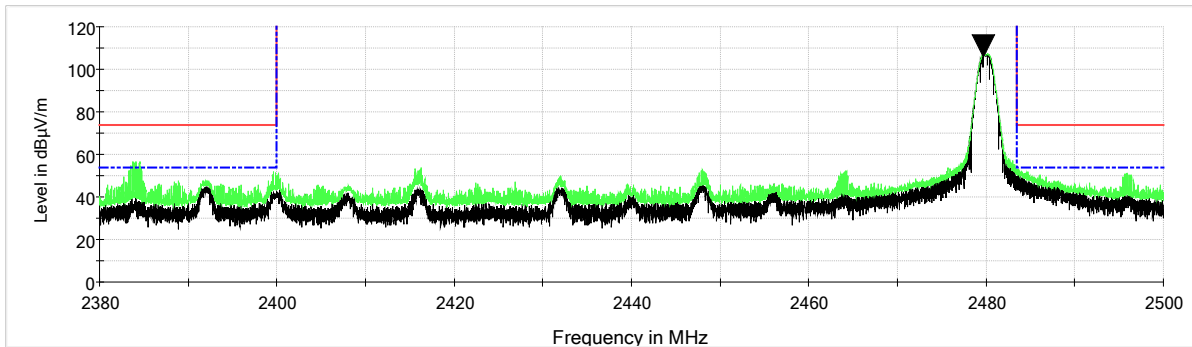


1 Mbps, Band Edge: 2402 MHz – Horizontal

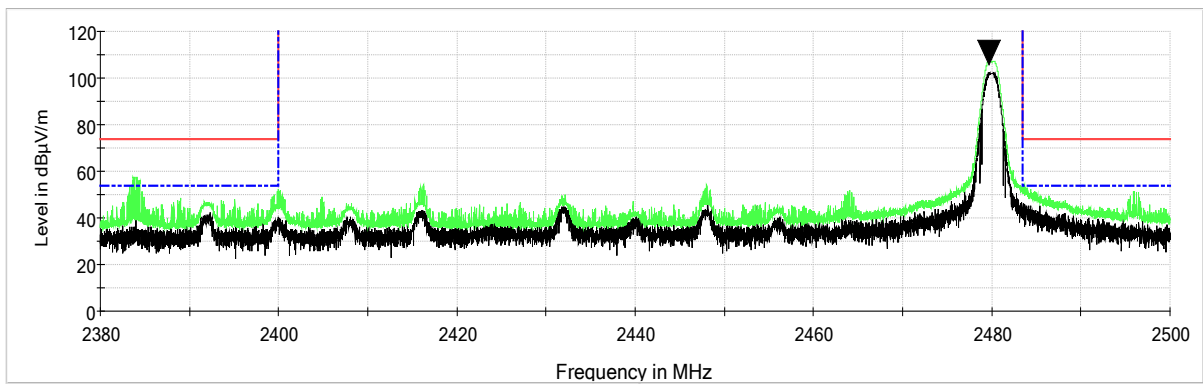




1 Mbps, Band Edge: 2480 MHz – Vertical



1 Mbps, Band Edge: 2480 MHz – Horizontal



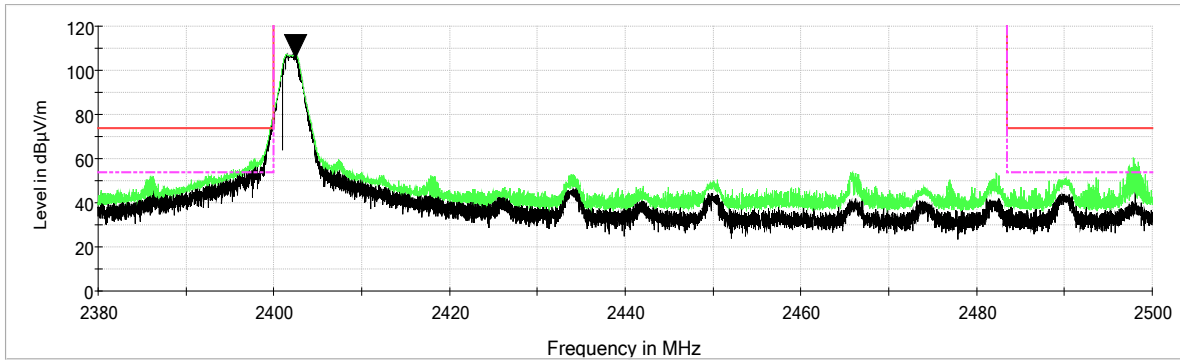


2 Mbps, Band Edges: Measurements

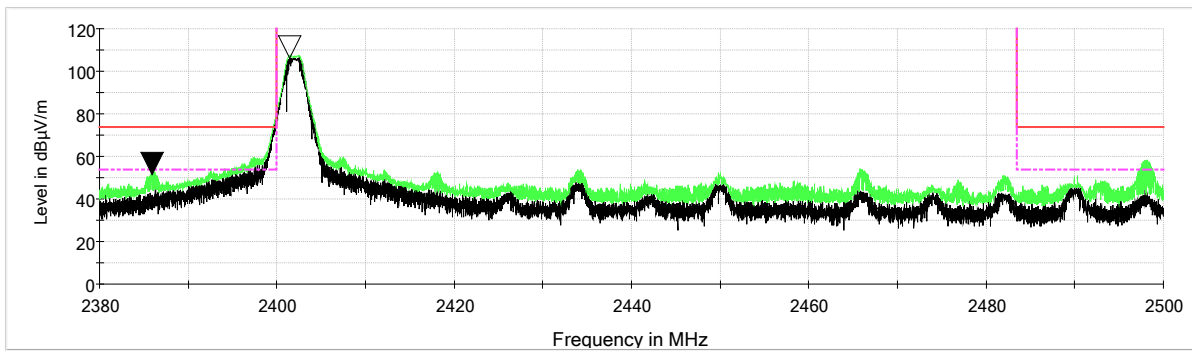
Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBμV/m)	Comment
2383.924000	58.4	34.8	1000.000	130.0	H	145.0	-11.5	19.2	54.0	
2383.924000	54.9	33.2	1000.000	140.0	V	90.0	-11.5	20.8	54.0	
2384.512000	53.7	32.6	1000.000	140.0	V	90.0	-11.5	21.4	54.0	
2384.512000	57.1	33.9	1000.000	130.0	H	145.0	-11.5	20.1	54.0	
2385.964000	54.5	35.8	1000.000	120.0	V	0.0	-11.5	18.2	54.0	
2385.964000	54.7	36.5	1000.000	150.0	H	160.0	-11.5	17.5	54.0	
2390.000000	51.3	38.0	1000.000	150.0	H	160.0	-11.5	16.0	54.0	
2390.000000	52.0	37.5	1000.000	120.0	V	0.0	-11.5	16.5	54.0	
2400.000000	82.1	72.8	1000.000	150.0	H	160.0	-11.5	12.4	85.2	
2400.000000	81.7	72.5	1000.000	120.0	V	0.0	-11.5	12.7	85.2	
2402.000000	107.3	105.2	1000.000	150.0	H	160.0	-11.5	-	-	
2402.000000	107.1	105.0	1000.000	120.0	V	0.0	-11.5	-	-	
2480.000000	106.8	104.7	1000.000	140.0	V	90.0	-11.4	-	-	
2480.000000	107.1	104.9	1000.000	130.0	H	145.0	-11.4	-	-	
2483.500000	62.6	48.8	1000.000	140.0	V	90.0	-11.4	5.2	54.0	
2483.500000	63.0	49.3	1000.000	130.0	H	145.0	-11.4	4.7	54.0	
2488.000000	55.0	42.1	1000.000	140.0	V	90.0	-11.4	11.9	54.0	
2488.000000	55.3	42.2	1000.000	130.0	H	145.0	-11.4	11.8	54.0	
2497.876000	57.4	35.6	1000.000	150.0	H	160.0	-11.4	18.4	54.0	
2497.876000	57.6	35.7	1000.000	120.0	V	0.0	-11.4	18.3	54.0	



2 Mbps, Band Edge: 2402 MHz – Vertical

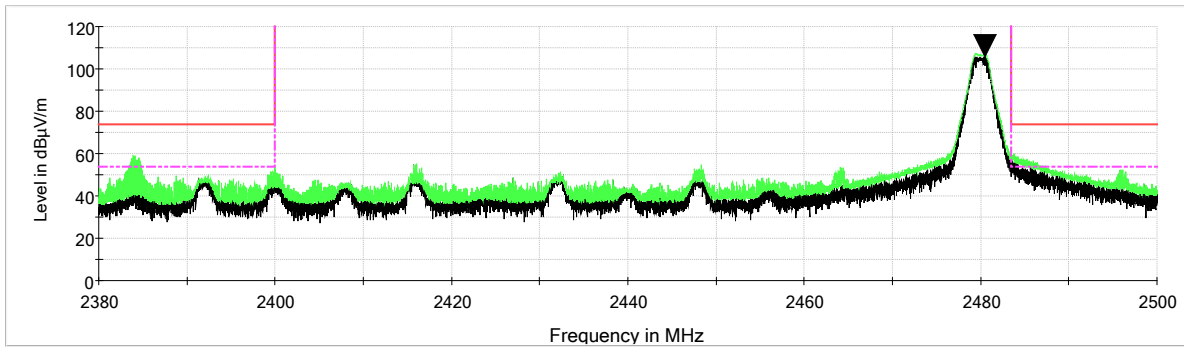


2 Mbps, Band Edge: 2402 MHz– Horizontal

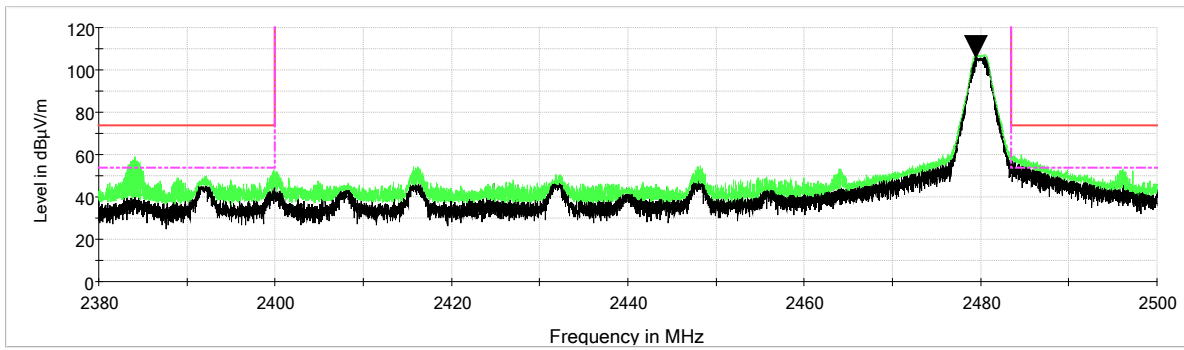




2 Mbps, Band Edge: 2480 MHz – Vertical

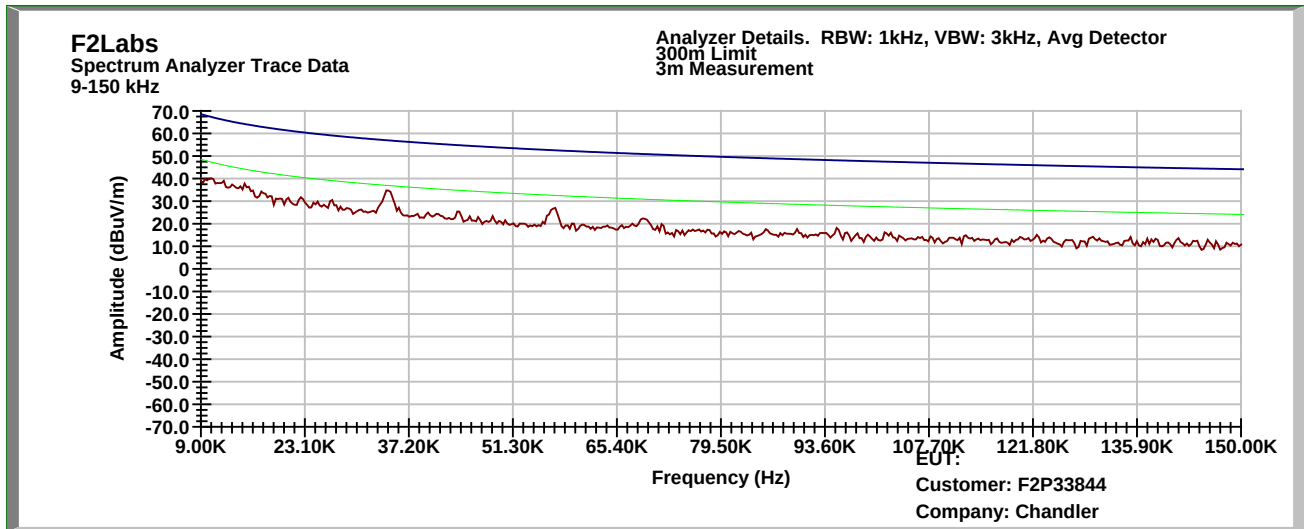


2 Mbps, Band Edge: 2480 MHz– Horizontal

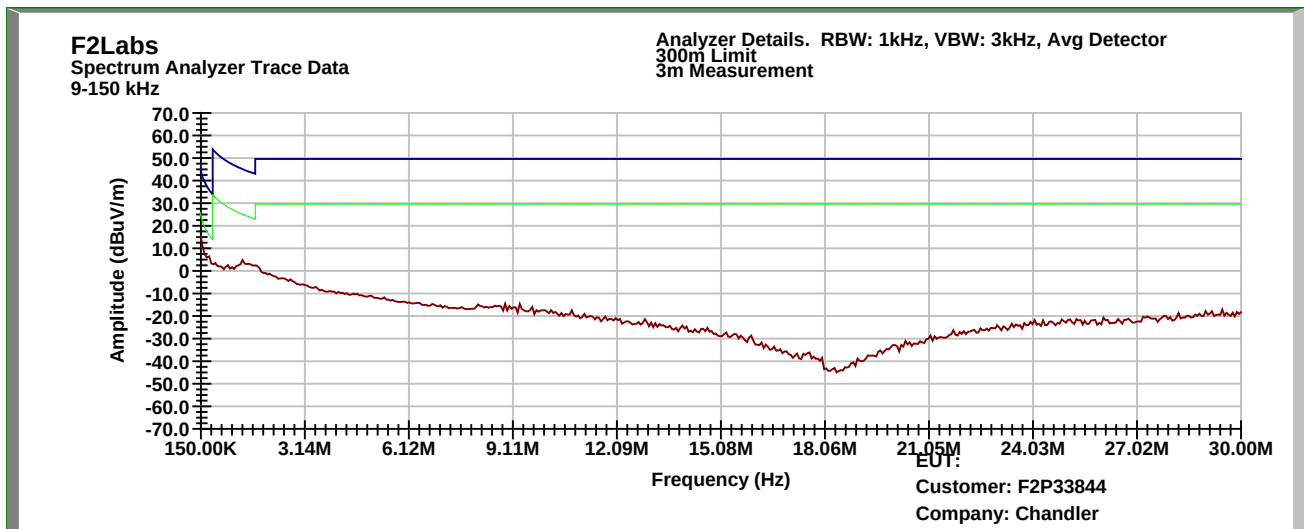




Radiated Spurious Emissions: 0.009 MHz to 0.15 MHz

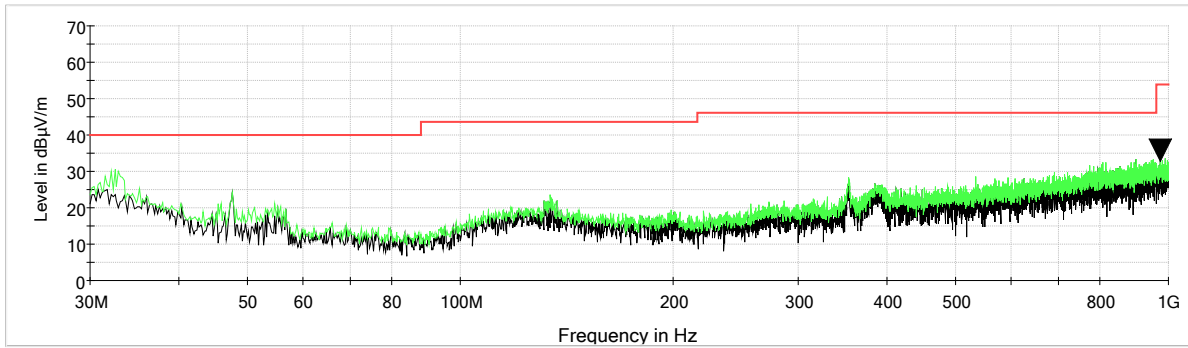


Radiated Spurious Emissions: 0.15 MHz to 30 MHz

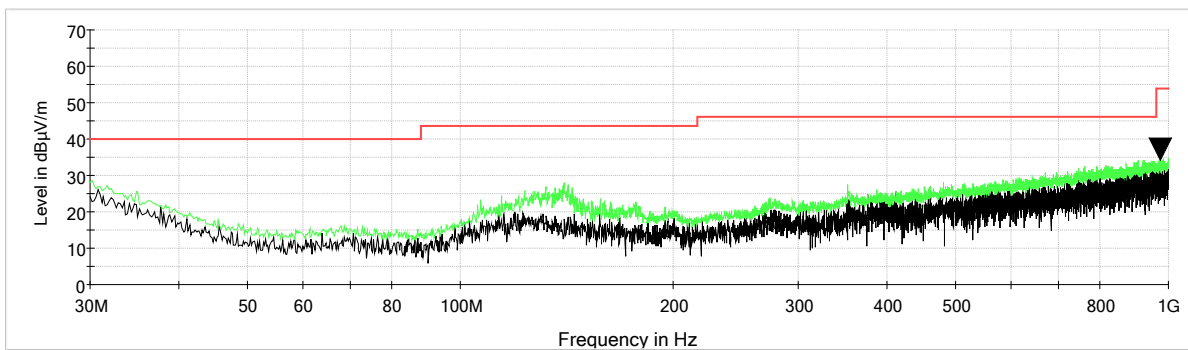




Radiated Spurious Emissions: 30 MHz to 1000 MHz - Vertical



Radiated Spurious Emissions: 30 MHz to 1000 MHz - Horizontal



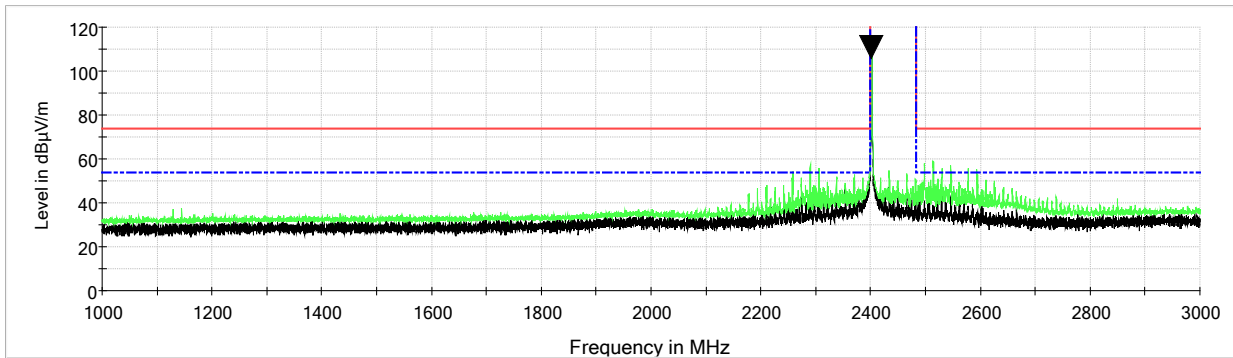


Measurements: Greater Than 1 GHz

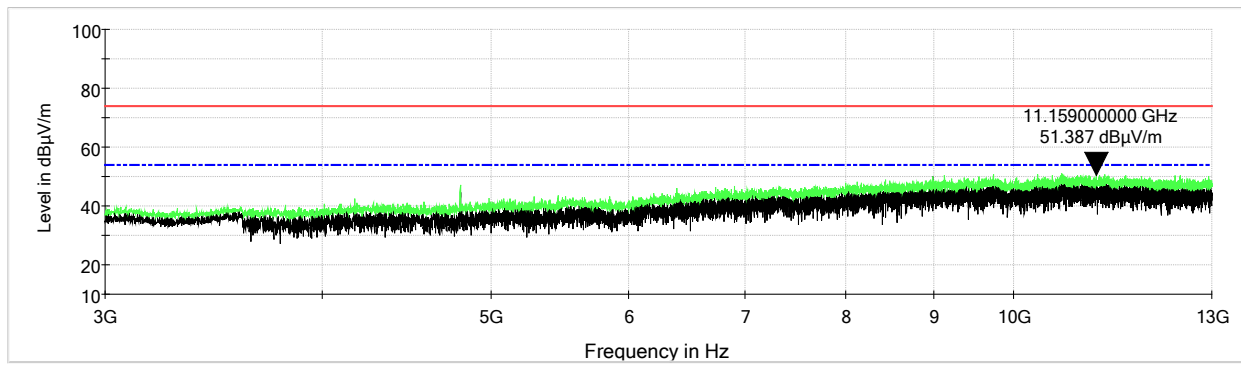
Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBμV/m)	Comment
2290.000000	58.5	35.1	1000.000	150.0	V	0.0	-11.9	18.9	54.0	
2290.000000	58.2	35.2	1000.000	150.0	H	0.0	-11.9	18.8	54.0	
2306.200000	58.5	35.2	1000.000	150.0	H	0.0	-11.8	18.8	54.0	
2306.200000	58.7	34.9	1000.000	150.0	V	356.0	-11.8	19.1	54.0	
2514.200000	59.3	35.0	1000.000	150.0	H	0.0	-11.4	19.0	54.0	
2514.200000	61.7	37.5	1000.000	150.0	V	1.0	-11.4	16.5	54.0	
2546.200000	56.2	40.6	1000.000	150.0	H	0.0	-11.5	13.4	54.0	
2578.200000	55.6	39.2	1000.000	150.0	V	2.0	-11.5	14.8	54.0	
2578.200000	52.1	35.3	1000.000	150.0	H	0.0	-11.5	18.7	54.0	
4804.000000	52.6	48.2	1000.000	150.0	V	0.0	-6.6	5.8	54.0	
4804.000000	56.8	53.0	1000.000	150.0	H	3.0	-6.6	1.0	54.0	



Radiated Spurious Emissions: 1 GHz to 3 GHz - Vertical

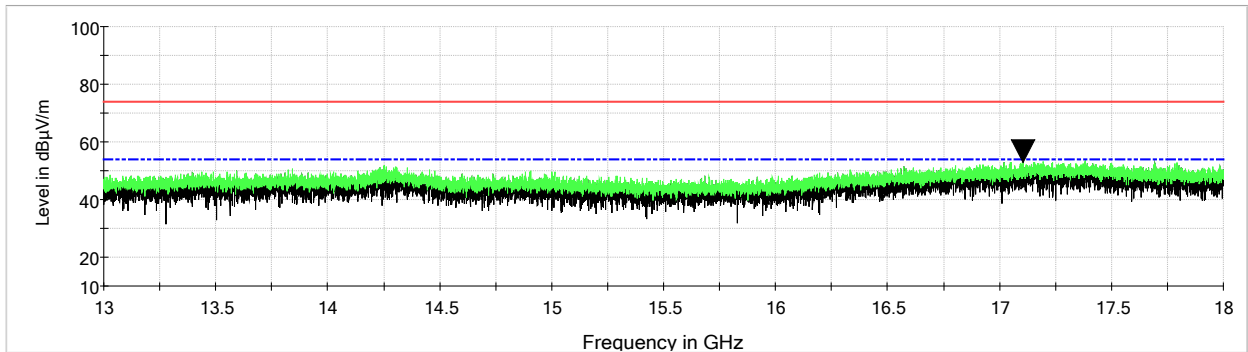


Radiated Spurious Emissions: 3 GHz to 13 GHz - Vertical

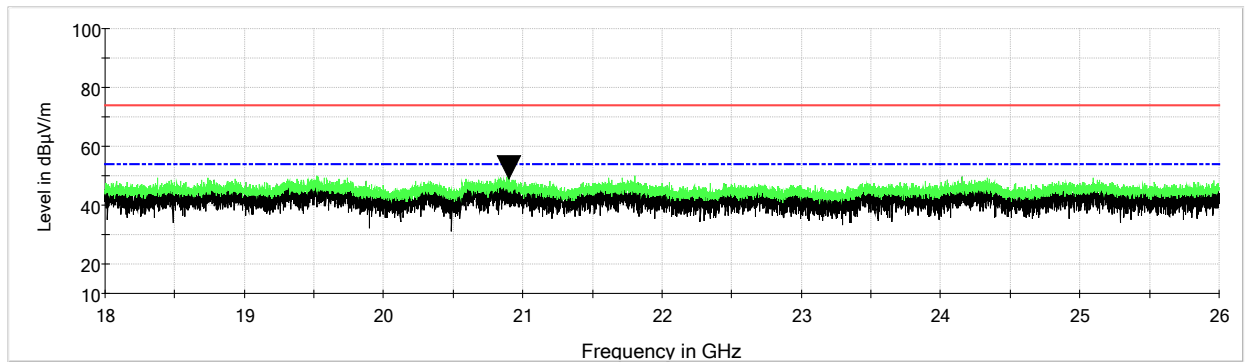




Radiated Spurious Emissions: 13 GHz to 18 GHz - Vertical

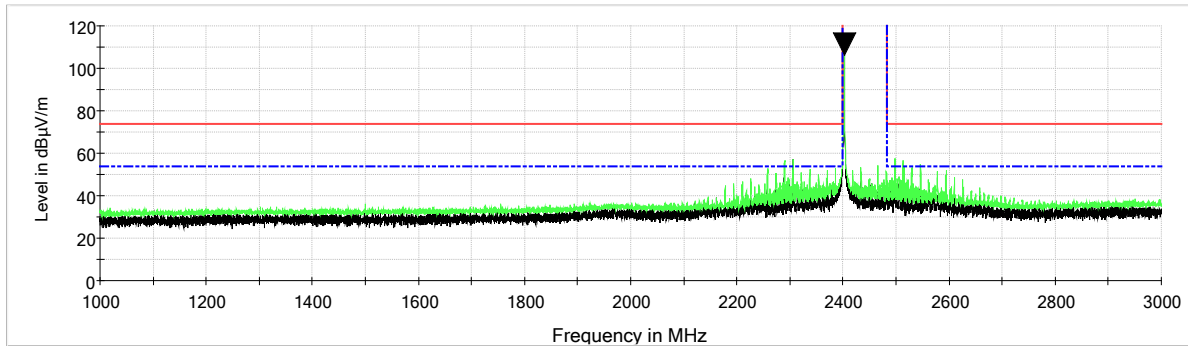


Radiated Spurious Emissions: 18 GHz to 26 GHz - Vertical

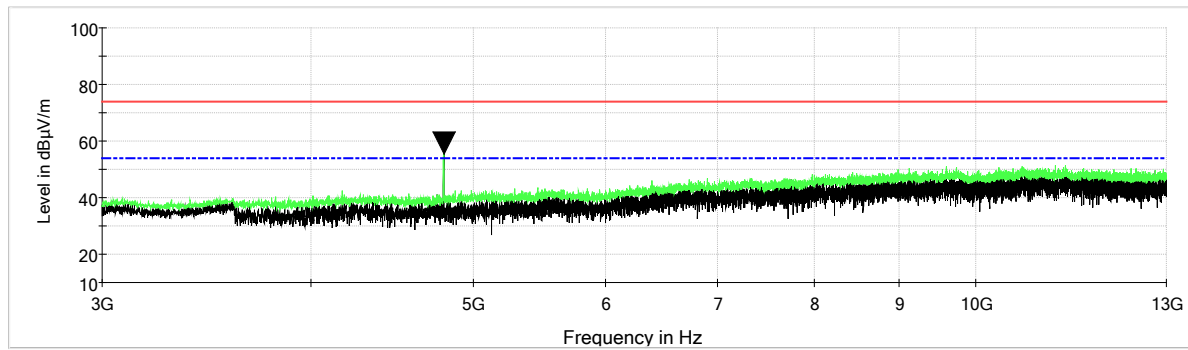




Radiated Spurious Emissions: 1 GHz to 3 GHz - Horizontal

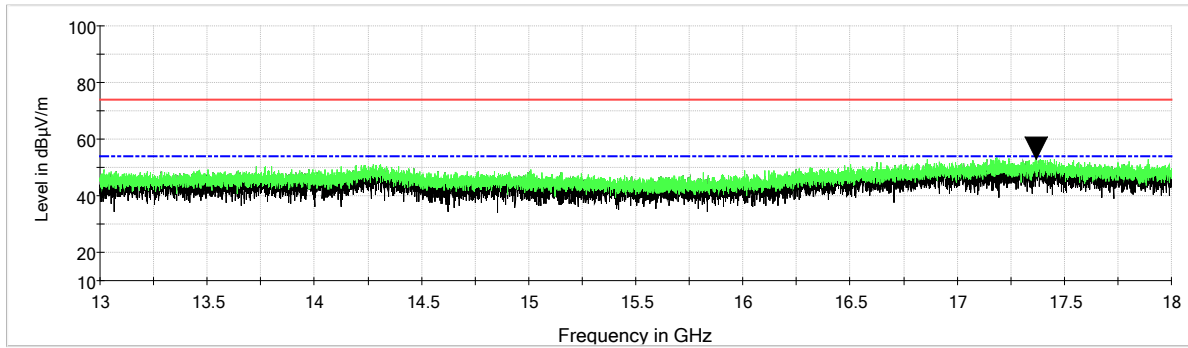


Radiated Spurious Emissions: 3 GHz to 13 GHz - Horizontal

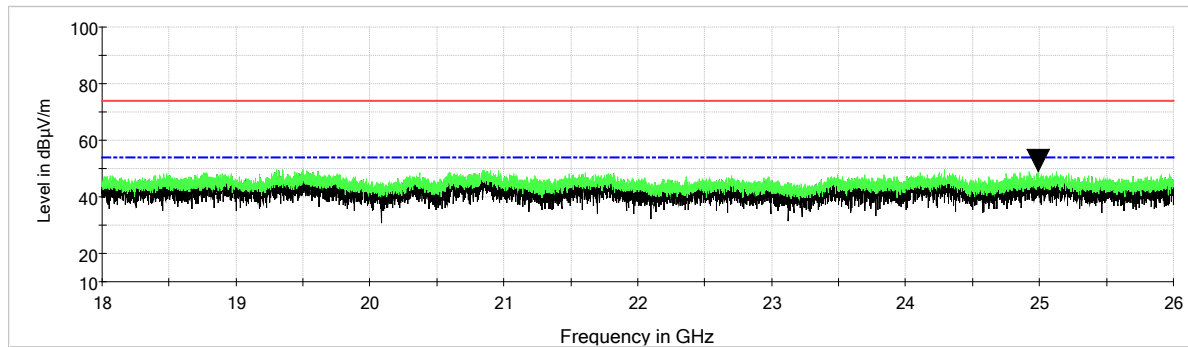




Radiated Spurious Emissions: 13 GHz to 18 GHz - Horizontal



Radiated Spurious Emissions: 18 GHz to 26 GHz - Horizontal





12 PEAK POWER SPECTRAL DENSITY (PSD)

Peak power spectral density measurements were performed.

12.1 Requirements:

The peak power spectral density shall not exceed +8dBm in any 3 kHz band during any time interval of continuous transmission.

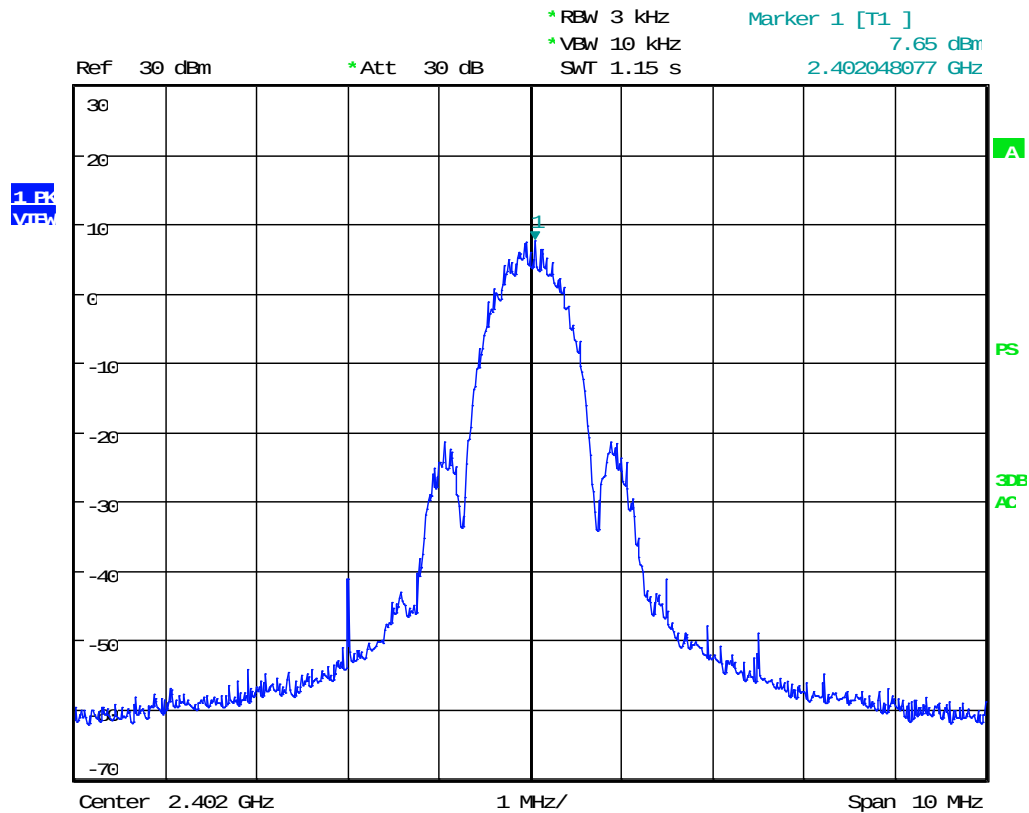
Power spectral density measurements were performed at a resolution bandwidth of 3 kHz (video bandwidth set at 10 KHz). The peak spectral densities were measured at the low, mid, and upper channels.



12.2 Peak Power Spectral Density Test Data

Test Date(s):	2025-01-21	Test Engineer:	E. Tobin
Standards:	CFR 47 Part 15.247(e); KDB558074	Air Temperature:	20.3°C
		Relative Humidity:	23%

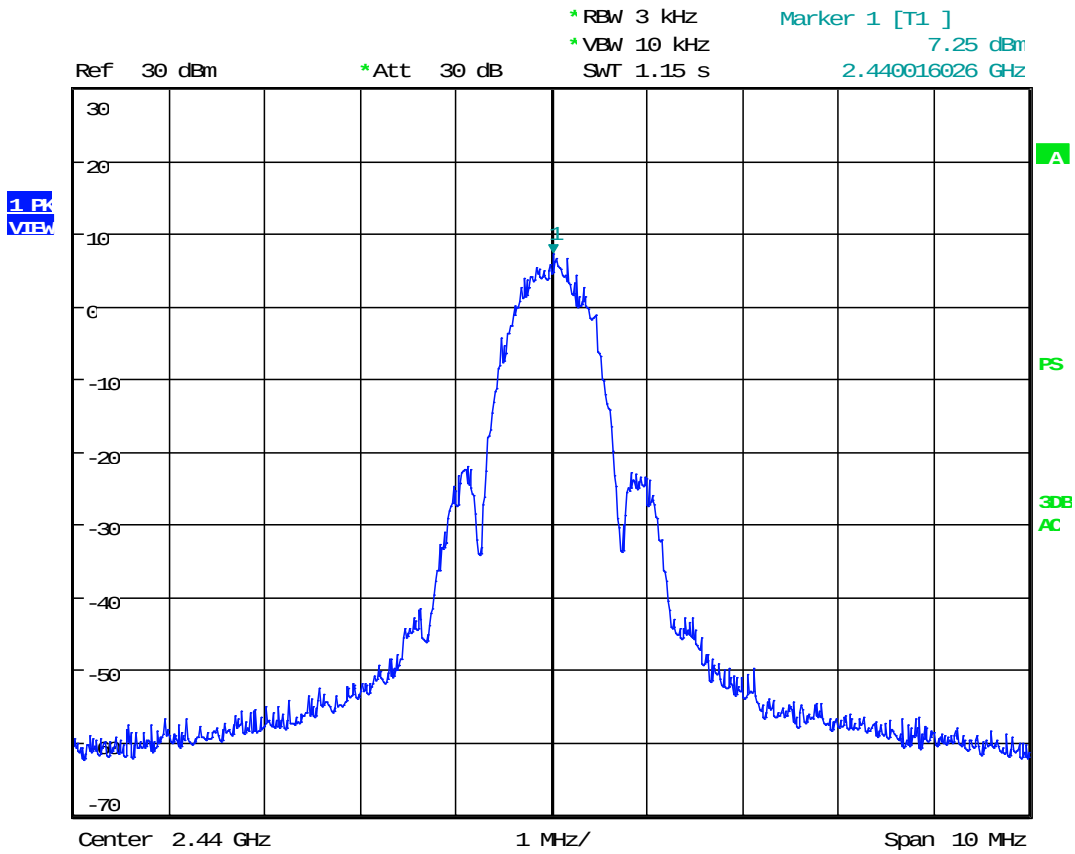
1 Mbps: Low Channel



Date: 21.JAN.2025 12:20:45



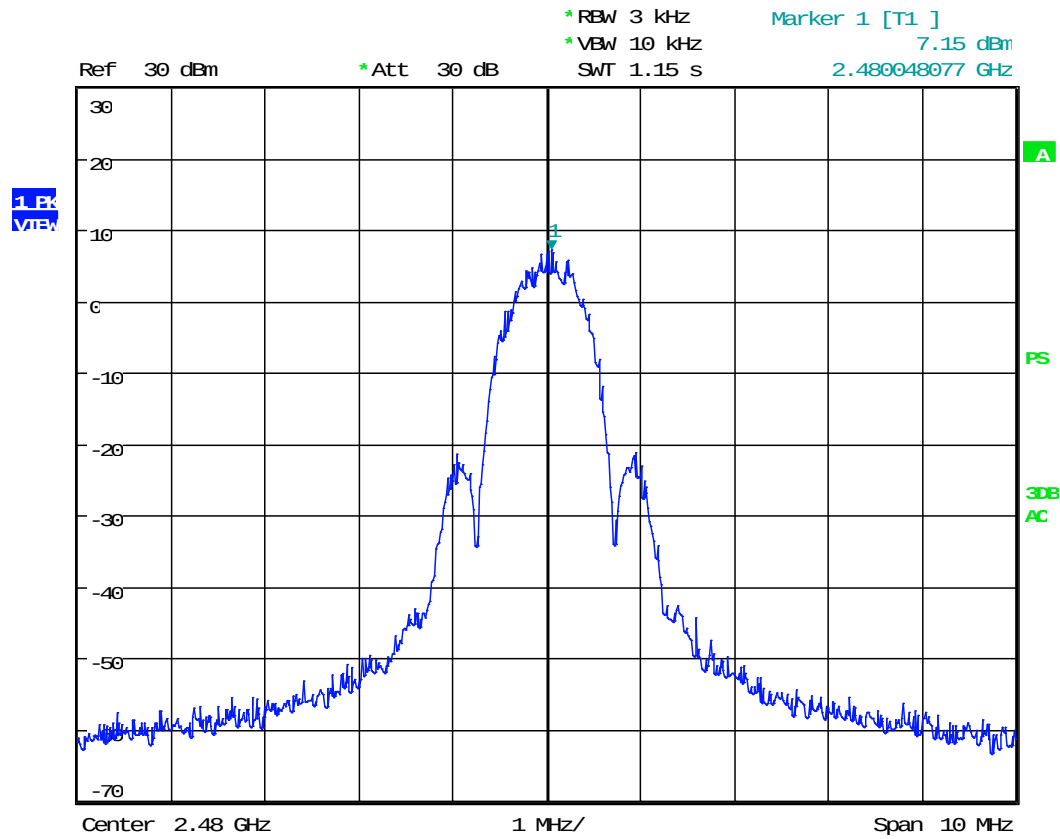
1 Mbps: Mid Channel



Date: 21.JAN.2025 12:22:37



1 Mbps: High Channel



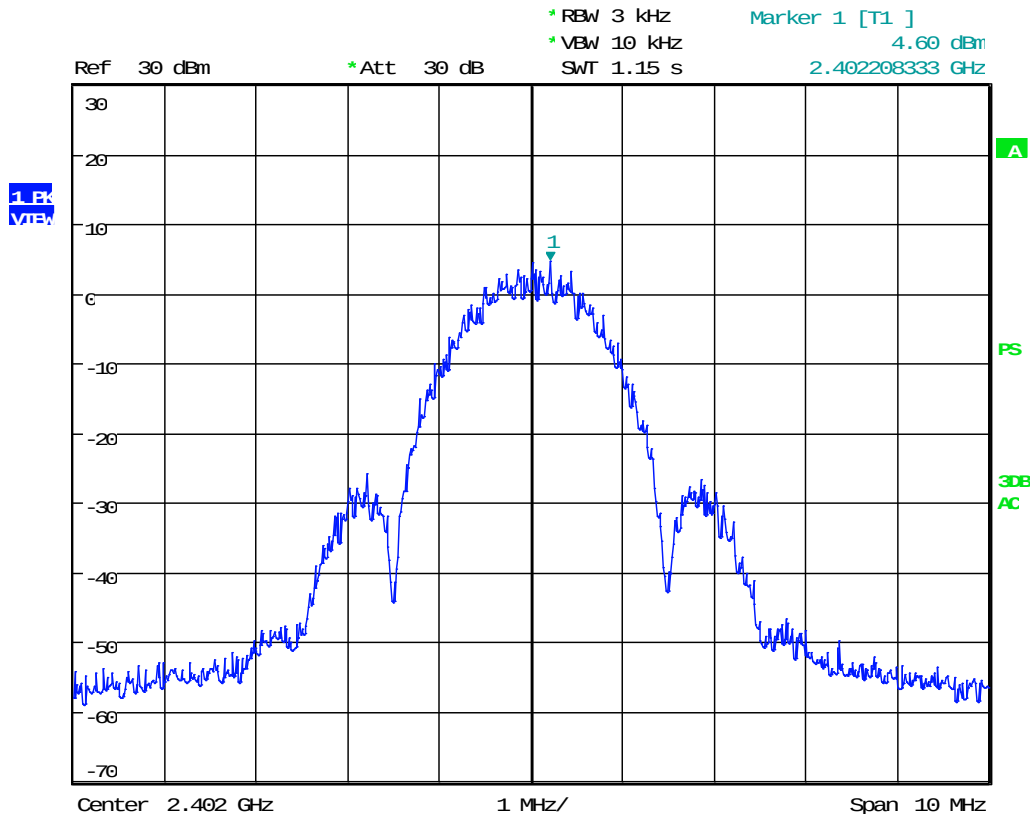
Date: 21.JAN.2025 12:23:22



Order No(s): F2P33844

Applicant: Chandler Systems, Inc.
Model: EVB-034-C

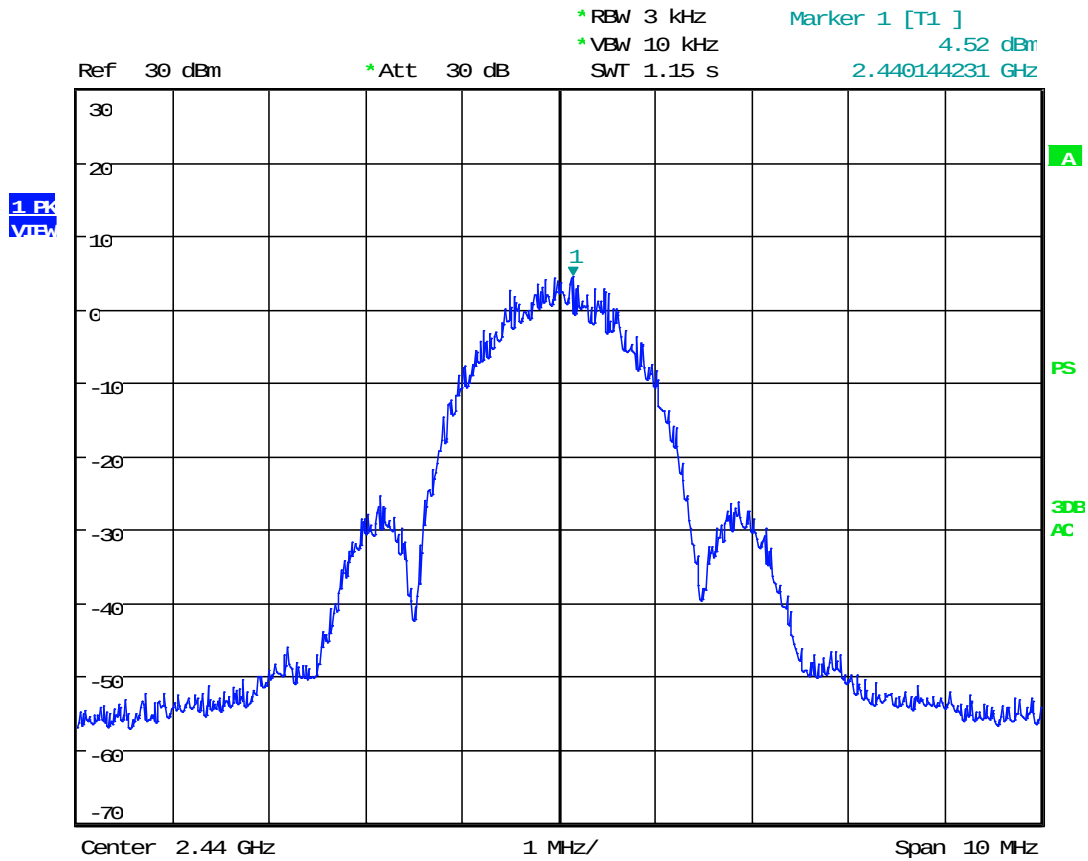
2 Mbps: Low Channel



Date: 21.JAN.2025 12:24:24



2 Mbps: Mid Channel



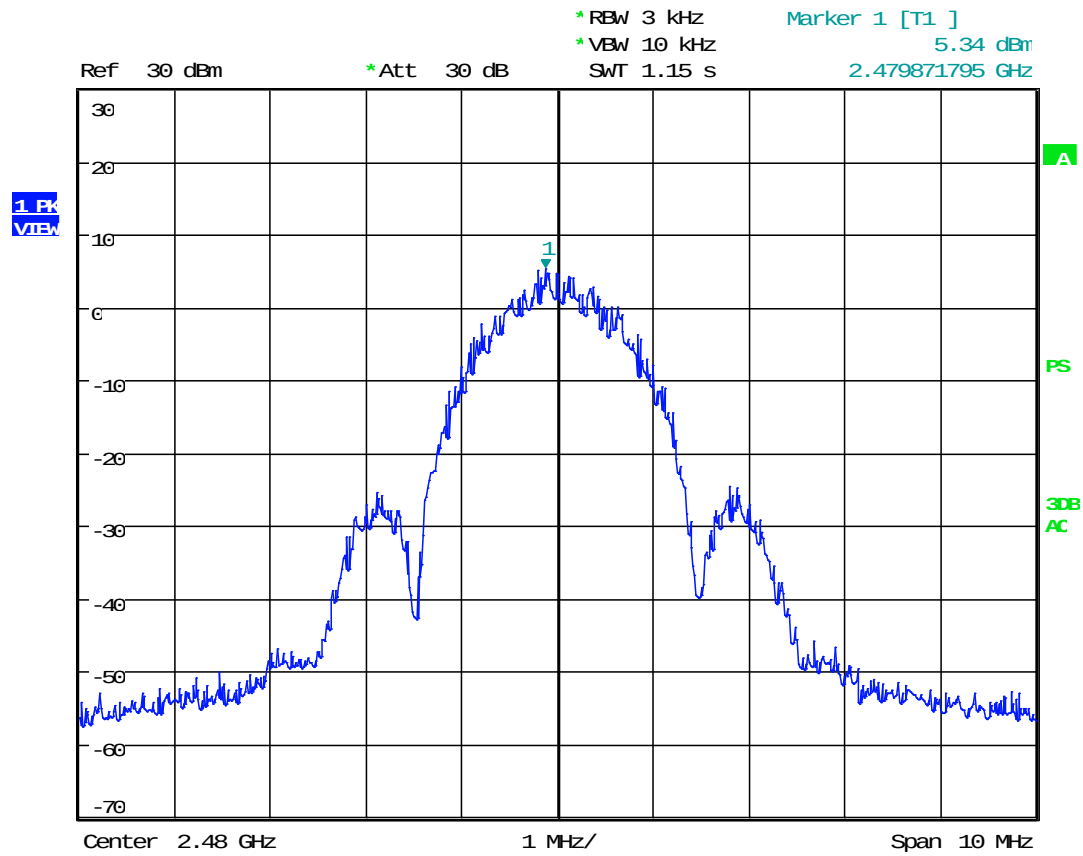
Date: 21.JAN.2025 12:25:30



Order No(s): F2P33844

Applicant: Chandler Systems, Inc.
Model: EVB-034-C

2 Mbps: High Channel



Date: 21.JAN.2025 12:26:20



13 CONDUCTED EMISSIONS

13.1 Requirements

In accordance with FCC CFR 47 Part 15.207(a), "Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency of Emission (MHz)	Conducted Limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

13.2 Procedure

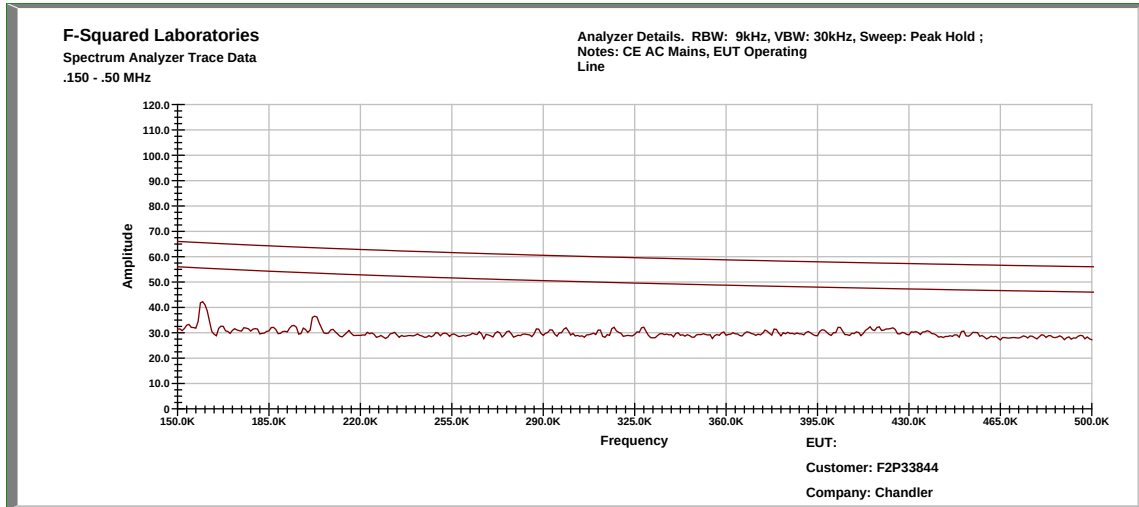
The EUT was placed on a 1.0 x 1.5 meter non-conductive table, 0.8 meter above a horizontal ground plane and 0.4 meter from a vertical ground plane. Power was provided to the EUT through a LISN bonded to a 3 x 2 meter ground plane. The LISN and peripherals were supplied power through a filtered AC power source. The output of the LISN was connected to the input of the receiver via a transient limiter, and emissions in the range 150 kHz to 30 MHz were measured. The measurements were recorded using the quasi-peak and average detectors as directed by the standard, and the resolution bandwidth during testing was 9 kHz. The raw measurements were corrected to allow for attenuation from the LISN, transient limiter and cables.



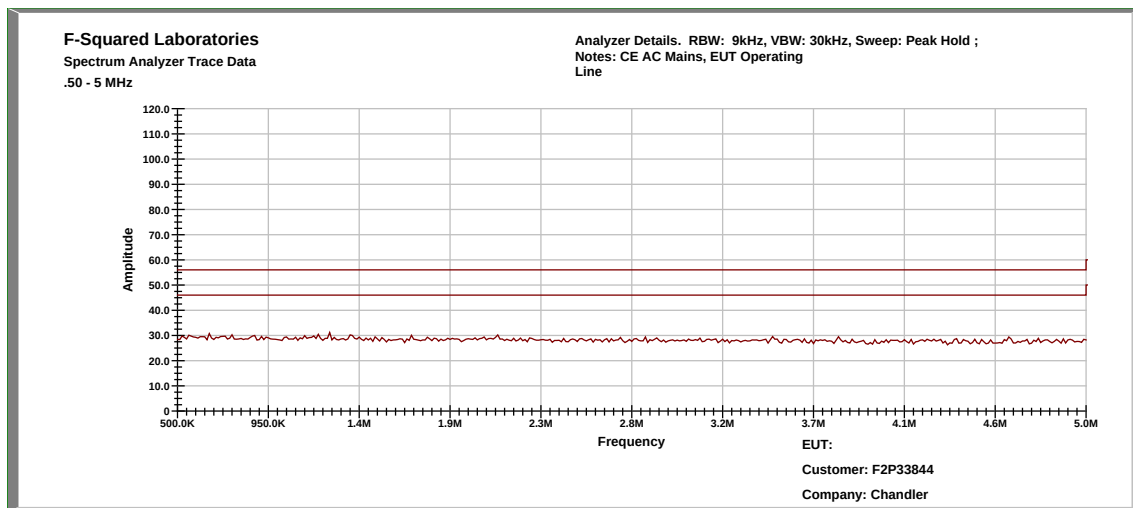
13.3 Conducted Emissions Test Data

Test Date(s):	2025-01-23	Test Engineer:	E. Tobin
Rule:	15.207	Air Temperature:	20.8° C
Test Results:	Complies	Relative Humidity:	22%

Conducted Test – Live: 0.15 MHz to 0.5 MHz



Conducted Test – Live: 0.5 MHz to 5.0 MHz

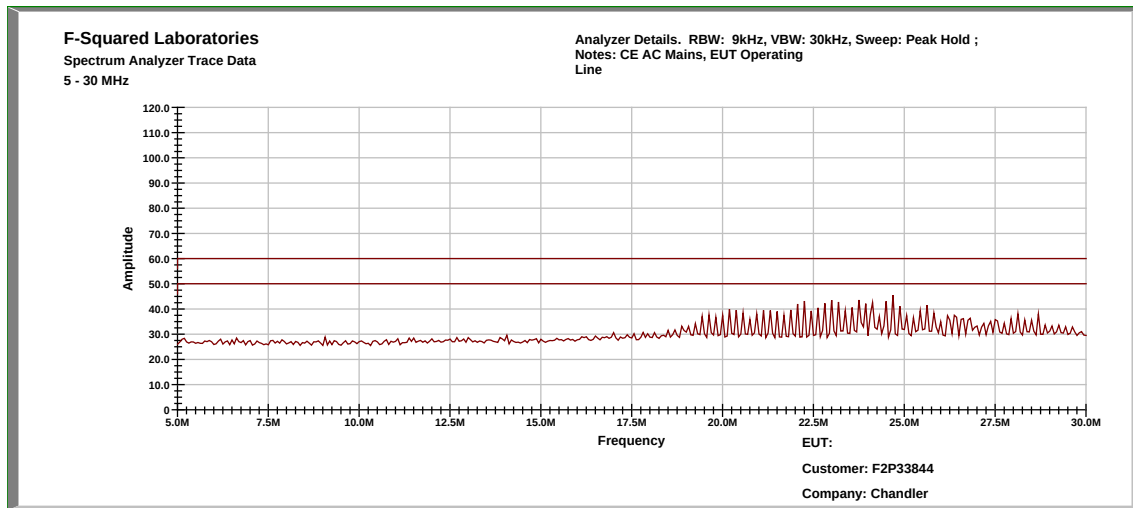




Order No(s): F2P33844

Applicant: Chandler Systems, Inc.
Model: EVB-034-C

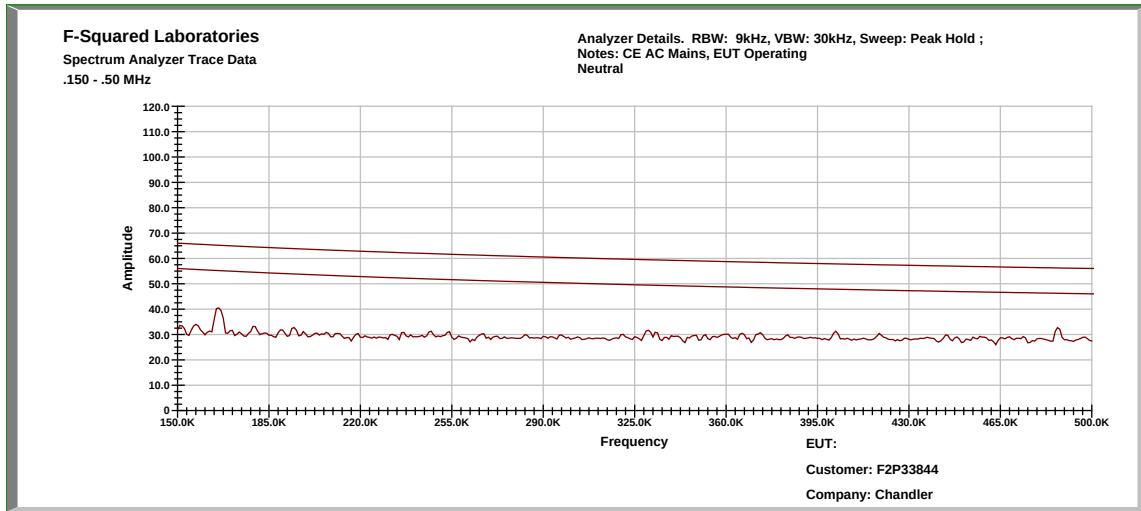
Conducted Test – Live: 5.0 MHz to 30.0 MHz



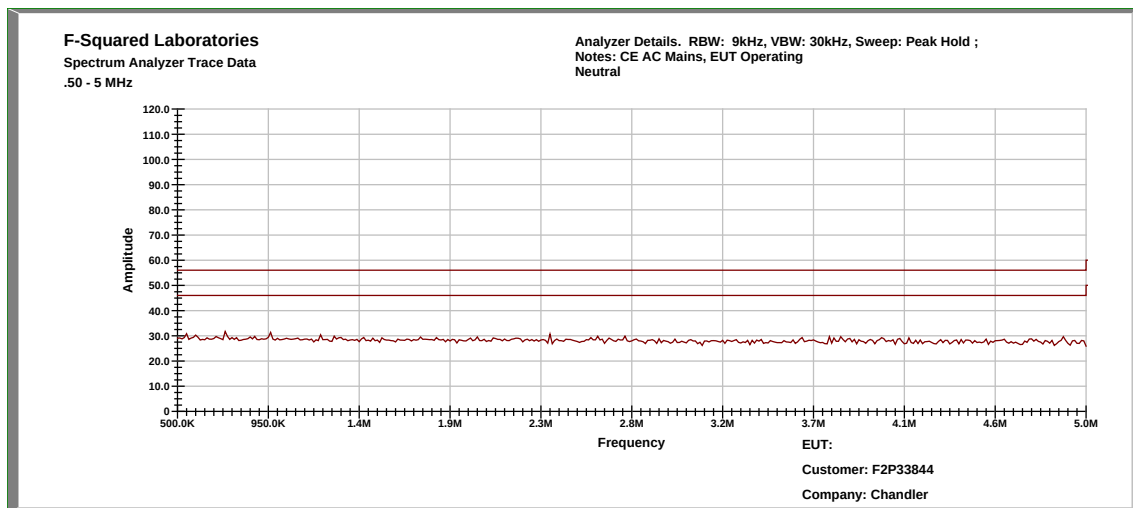
Note: Peak scans below AVG limit.



Conducted Test – Neutral: 0.15 MHz to 0.5 MHz



Conducted Test – Neutral: 0.5 MHz to 5.0 MHz

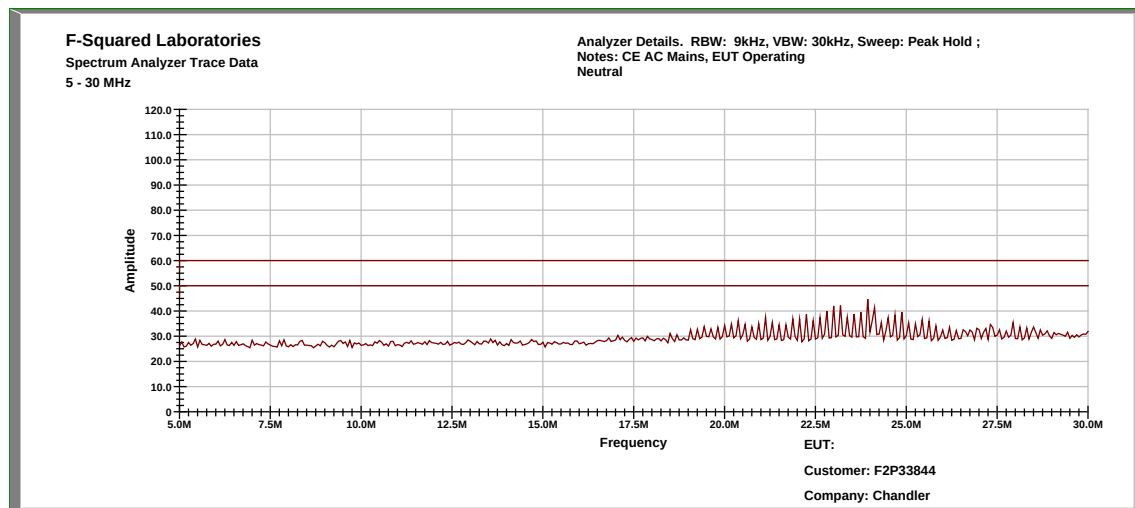




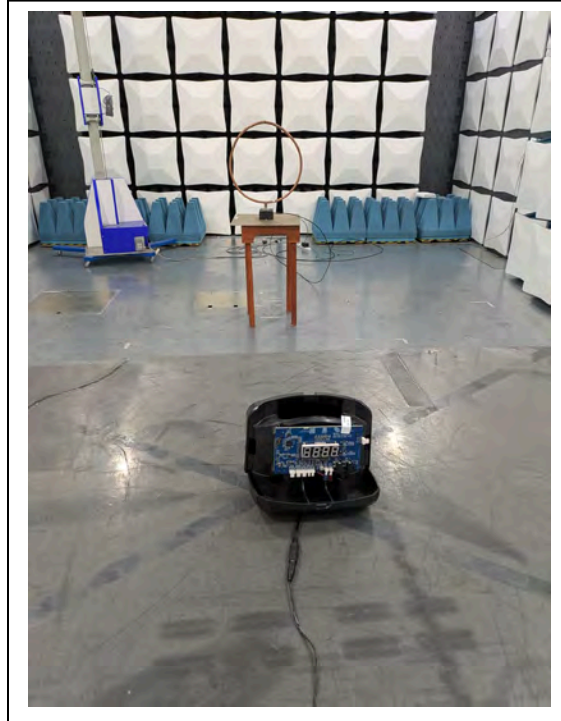
Order No(s): F2P33844

Applicant: Chandler Systems, Inc.
Model: EVB-034-C

Conducted Test – Neutral: 5.0 MHz to 30.0 MHz



Note: Peak scans below AVG limit.

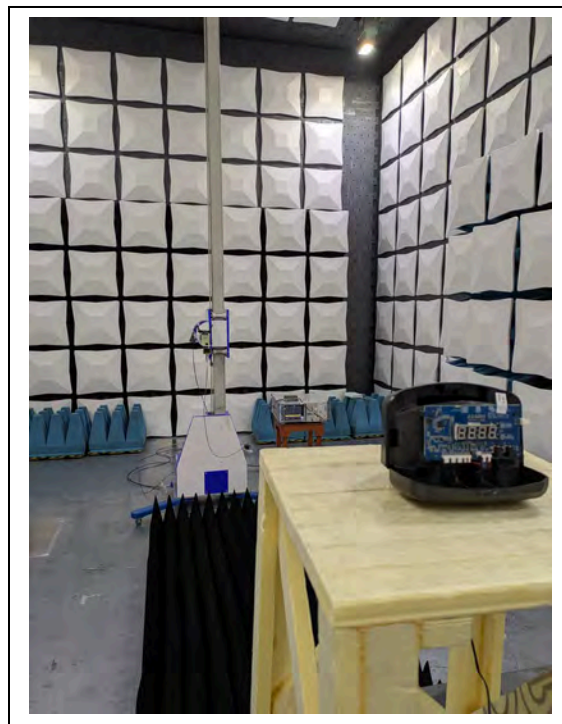
14 TEST SETUP PHOTOGRAPH(S)**Radiated Spurious Emission: 0.009 MHz to 30 MHz****Radiated Spurious Emission: 30 MHz to 1000 MHz**



Radiated Spurious Emission: 1 GHz to 18 GHz

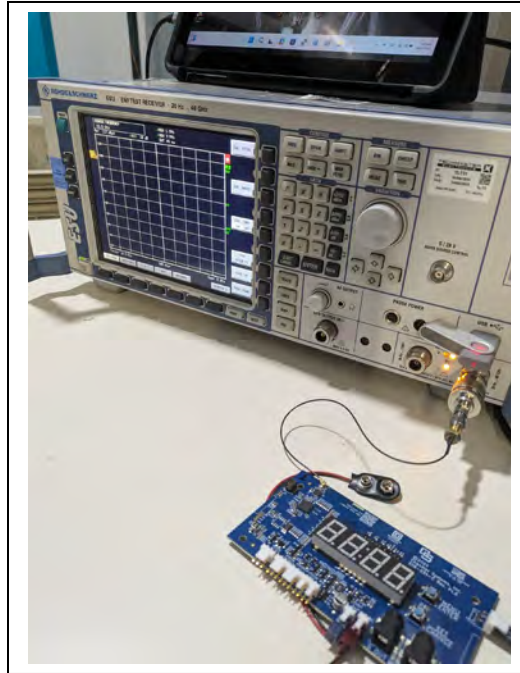


Radiated Spurious Emission: 18 GHz to 26 GHz





Conducted Output Power, Peak Power Spectral Density, Occupied Bandwidth, and Conducted Spurious Emissions



Conducted Emissions

