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CERTIFICATION TEST REPORT

Manufacturer: Precision Fermentation | DBA Sennos
302 East Pettigrew Street, Dibrell B100
Durham, North Carolina 27701 USA

Applicant: Same as Above

Product Name: M3 Sensor Stack

Product Description: Wireless in-tank sensor device used to collect, analyze, and transmit process data during fluid-based production operations.

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

Model(s): SENSTK-M3-01

FCC ID: 2BOZ2SENSTK-M3-01

Testing Commenced: 2026-07-17

Testing Ended: 2026-07-28

Summary of Test Results: In Compliance

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.

Standards:

- ❖ **FCC Part 15 Subpart C, Section 15.249**
- ❖ **FCC Part 15 Subpart C, Section 15.215(c) – Additional provisions to the general radiated emission limitations**
- ❖ **FCC15.207 - Conducted Limits**
- ❖ **FCC Part 15 Subpart A, Section 15.31(e) – Measurement Standards**
- ❖ **ANSI C63.10-2020/Cor 1-2023**



Order No(s): F2P33561B, F2P33561B-C4

Applicant: Precision Fermentation | DBA Sennos
Model(s): SENSTK-M3-01

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 to ANSI C63.10 and recommended FCC procedure under Section 15.249. 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 using a coverage factor of $k=2$. The Uncertainty for a laboratory is referred to as U_{lab} . For Radiated and Conducted Emissions, the Expanded Uncertainty is compared to the U_{cispr} values to determine if a specific margin is required to deem compliance.

U_{lab}

Measurement Range	Combined Uncertainty	Expanded Uncertainty
Radiated Emissions <1 GHz @ 3m	2.54dB	5.07dB
Radiated Emissions <1 GHz @ 10m	2.55dB	5.09dB
Radiated Emissions 1 GHz to 2.7 GHz	1.81dB	3.62dB
Radiated Emissions 2.7 GHz to 18 GHz	1.55dB	3.10dB
AC Power Line Conducted Emissions, 150kHz to 30 MHz	1.38dB	2.76dB
AC Power Line Conducted Emissions, 9kHz to 150kHz	1.66dB	3.32dB

U_{cispr}

Measurement Range	Expanded Uncertainty
Radiated Emissions <1 GHz @ 3m	5.2dB
Radiated Emissions <1 GHz @ 10m	5.2dB
Radiated Emissions 1 GHz to 2.7 GHz	Under Consideration
Radiated Emissions 2.7 GHz to 18 GHz	Under Consideration
AC Power Line Conducted Emissions, 150kHz to 30 MHz	3.6dB
AC Power Line Conducted Emissions, 9kHz to 150kHz	4.0dB

If U_{lab} is less than or equal to U_{cispr} , then:

- compliance is deemed to occur if no measured disturbance exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance exceeds the disturbance limit.

If U_{lab} is greater than U_{cispr} in table 1, then:

- compliance is deemed to occur if no measured disturbance, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit.

Note: Only measurements listed in the above tables that relate to tests included in this Test Report are applicable.



1.4 Document History:

Document Number	Description	Issue Date	Approved By
F2P33561B-01E	First Issue	2026-08-04	K. Littell



2 SUMMARY OF TEST RESULTS

Test Name	Standard(s)	Results
99% Occupied Bandwidth	CFR 47 Part 15.215(c)	Complies
-20dB Occupied Bandwidth	CFR 47 Part 15.215(c)	Complies
Field Strength of Emissions	CFR 47 Part 15.249(a)(d)	Complies
Variation of the Input Power	CFR 47 Part 15.31(e)	Complies
Conducted Emissions	CFR 47 Part 15.207(a)	Complies

Note: Product was operated using an AC to DC power supply, so Voltage Variation testing in 15.31(3)(e) was performed at the nominal voltage, and then the 85% and 115% of that voltage was tested also. The output power at the Low, Mid, and High channels was measured to verify how much the power and frequency were affected by the variation of the input power. No shift in frequency or power was measured at either of the varied voltages on any of the channels.

Modifications Made to the Equipment
None



3 TABLES OF MEASURED RESULTS

The following results are worst-case from all 802.11b and 802.11g modes that include: 802.11b - 1M, 2M, 5.5M, and 11M; 802.11g - 6M, 9M, 12M, 18M, 24M, 36M, 48M, 54M.

Occupied Bandwidth: Wi-Fi

Test	Low Channel 2412 MHz	Mid Channel 2437 MHz	High Channel 2472 MHz
802.11b DBPSK/DSSS:			
-20dB	15.305 MHz	15.385 MHz	15.064 MHz
99%	12.981 MHz	12.981 MHz	12.981 MHz
802.11g BPSK/OFDM:			
-20dB	20.833 MHz	20.754 MHz	21.955 MHz
99%	18.349 MHz	17.949 MHz	18.670 MHz

Occupied Bandwidth: BLE

Test	Low Channel 2402 MHz	Mid Channel 2440 MHz	High Channel 2480 MHz
GFSK 1Mbps:			
-20dB	1.173 MHz	1.168 MHz	1.163 MHz
99%	1.029 MHz	1.053 MHz	1.063 MHz
GFSK 2Mbps:			
-20dB	2.375 MHz	2.413 MHz	2.394 MHz
99%	2.067 MHz	2.087 MHz	2.096 MHz

**Field Strength: Wi-Fi**

Mod	Frequency (MHz)	Field Strength		Limit	
		mV/m	dBuV/m	mV/m	dBuV/m
802.11b DBPSK/DSSS	2412	13.032	82.3	50.0	94
	2437	11.092	80.9	50.0	94
	2472	10.471	80.4	50.0	94
802.11g BPSK/OFDM	2412	25.704	88.2	50.0	94
	2437	22.909	87.2	50.0	94
	2472	18.621	85.4	50.0	94

Field Strength: BLE

Mod	Frequency (MHz)	Field Strength		Limit	
		mV/m	dBuV/m	mV/m	dBuV/m
GFSK (1M)	2402	27.861	88.9	50.0	94
	2440	25.704	88.2	50.0	94
	2480	20.417	86.2	50.0	94
GFSK (2M)	2402	19.724	85.9	50.0	94
	2440	25.119	88.0	50.0	94
	2480	22.131	86.9	50.0	94



4 ENGINEERING STATEMENT

This report has been prepared on behalf of Precision Fermentation | DBA Sennos to provide documentation for the testing described herein. This equipment has been tested and found to comply with part 15.249 of the FCC Rules using ANSI C63.10 standard. 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: M3 Sensor Stack

Model(s): SENSTK-M3-01

Serial No.: M3.12-837

Firmware: v2.0

Hardware: Sennos M3

FCC ID: **2BOZ2SENSTK-M3-01**

5.2 Trade Name:

Precision Fermentation | DBA Sennos

5.3 Power Supply:

Anker A2013

5.4 Applicable Rules:

CFR 47, Part 15.249, subpart C

5.5 Antenna:

Whip Antenna

5.6 Accessories:

Device	Manufacturer	Model Number	Serial Number
Laptop	Dell	Latitude 9430	None Specified
Accessory Software Version:		ESP RF Test Tool V3.6	

5.7 Test Item Condition:

The equipment to be tested was received in good condition.

5.8 Testing Algorithm:

EUT was set to continuously transmit the modulated carrier at low, mid and high channels. Wi-Fi attenuation set to 0; Bluetooth power set to 12.

**6 LIST OF MEASUREMENT INSTRUMENTATION**

Equipment Type	Asset Number	Manufacturer	Model	Serial Number	Calibration Due Date
Shielded Chamber	CL166-E	Albatross Projects	B83117-DF435-T261	US140023	2027-05-07
Receiver	CL151	Rohde & Schwarz	ESU40	100319	2027-04-08
Pre-Amplifier	CL153	Agilent	83006-69007	MY57280115	2027-04-10
Pre-Amplifier	CL189	Com-Power	PAM-840A	461303	2028-04-07
Pre-Amplifier	CL284	A.H. Systems, Inc.	PAM-0101	131	2027-04-09
Antenna, JB3 Combination	CL175	Sunol Sciences	JB3	A030315	2026-09-02
Low Loss Cable Set	CL315 / CL318	Fairview Microwave	FMC0202914-72/FMC0202914-240	None Spec.	2027-04-10
Horn Antenna	CL098	Emco	3115	9809-5580	2027-01-15
Horn Antenna 18-26.5 GHz	CL114	A.H. Systems, Inc.	SAS-572	237	2028-02-18
Amplifier w/Monopole & 18" Loop	CL163-Loop	A.H. Systems, Inc.	EHA-52B	100	2027-05-04
Software:	Tile Version 3.4.B.3		Software Verified: 2026-07-17 to 2026-07-28		
Software:	EMC 32, Version 8.53.0		Software Verified: 2026-07-17 to 2026-07-21		
Temp/Hum Rec	CL327	Thermpro	TP50	8	2028-03-20
Receiver	CL204	Rohde & Schwarz	ESR7	101714	2027-04-09
Transient Limiter	CL102	Hewlett Packard	11947A	3107A03325	2026-04-07
Software:	Tile Version 3.4.B.3.		Software Verified: 2025-04-21		
LISN	CL184	Com-Power	LI-125A	191213	2026-11-02
LISN	CL185	Com-Power	LI-125A	191214	2026-11-02
Temp/Hum Rec	CL297	Extech	445703	0721	2027-10-08



7 OCCUPIED BANDWIDTH

7.1 Requirements:

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the -20dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage.

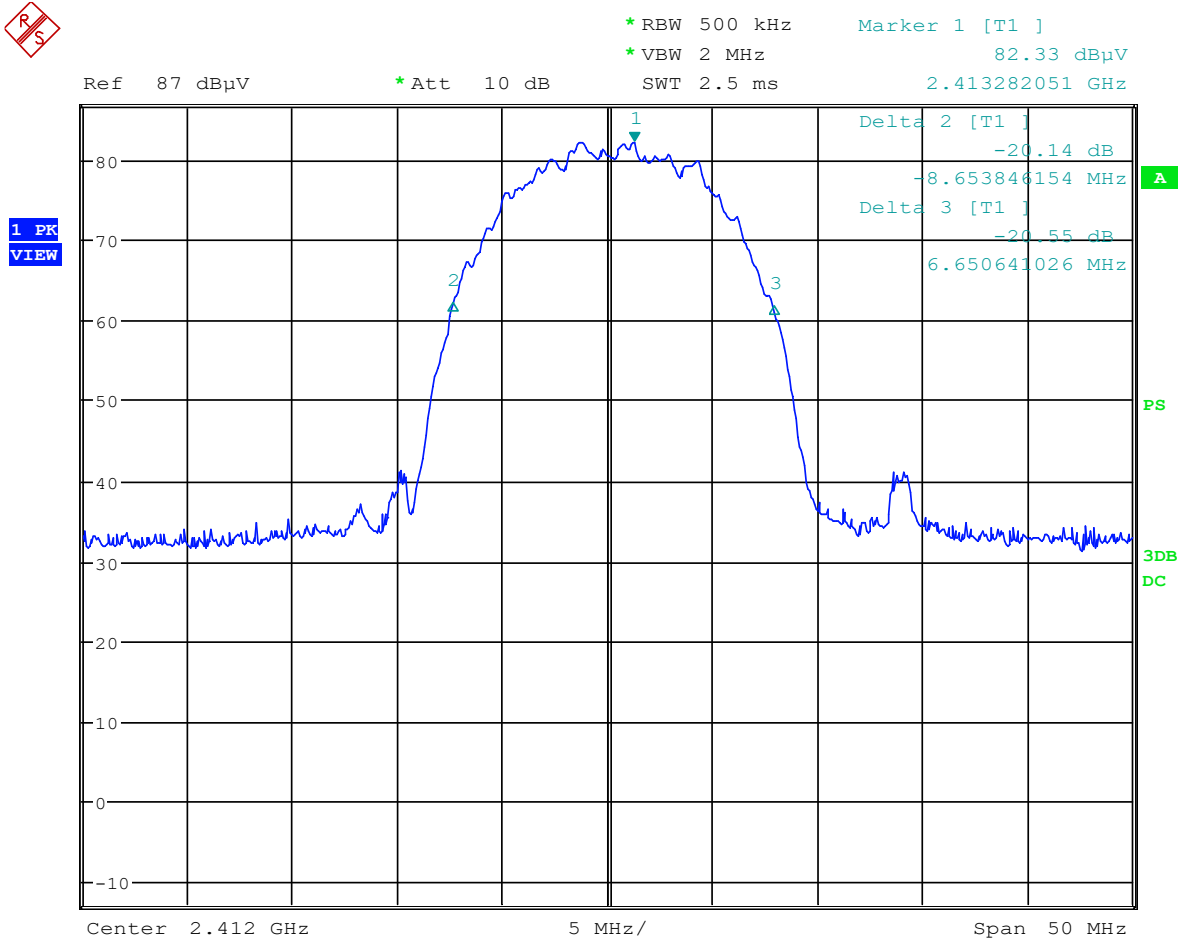
Bandwidth measurements were made at the low, mid and high frequencies. The bandwidth was measured using the analyzer's marker function.



7.2 Occupied Bandwidth Test Data

Test Date(s):	2026-07-21	Test Engineer(s):	E. Tobin
Standards:	CFR 47 Part 15.215(c)	Air Temperature:	20.8°C
		Relative Humidity:	48%

Wi-Fi, 802.11b DBPSK/DSSS 1 Mbps: -20dB, 2412 MHz



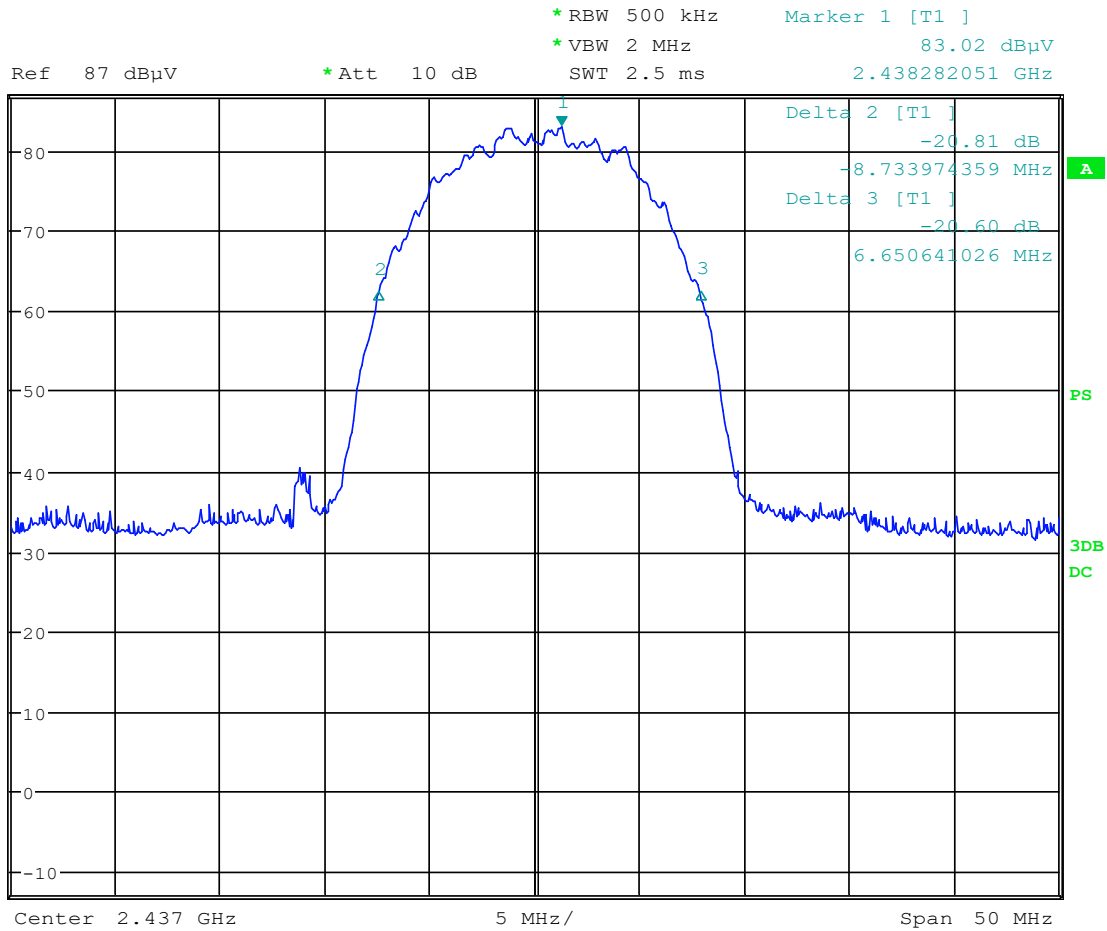
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Wi-Fi, 802.11b DBPSK/DSSS 1 Mbps: -20dB, 2437 MHz



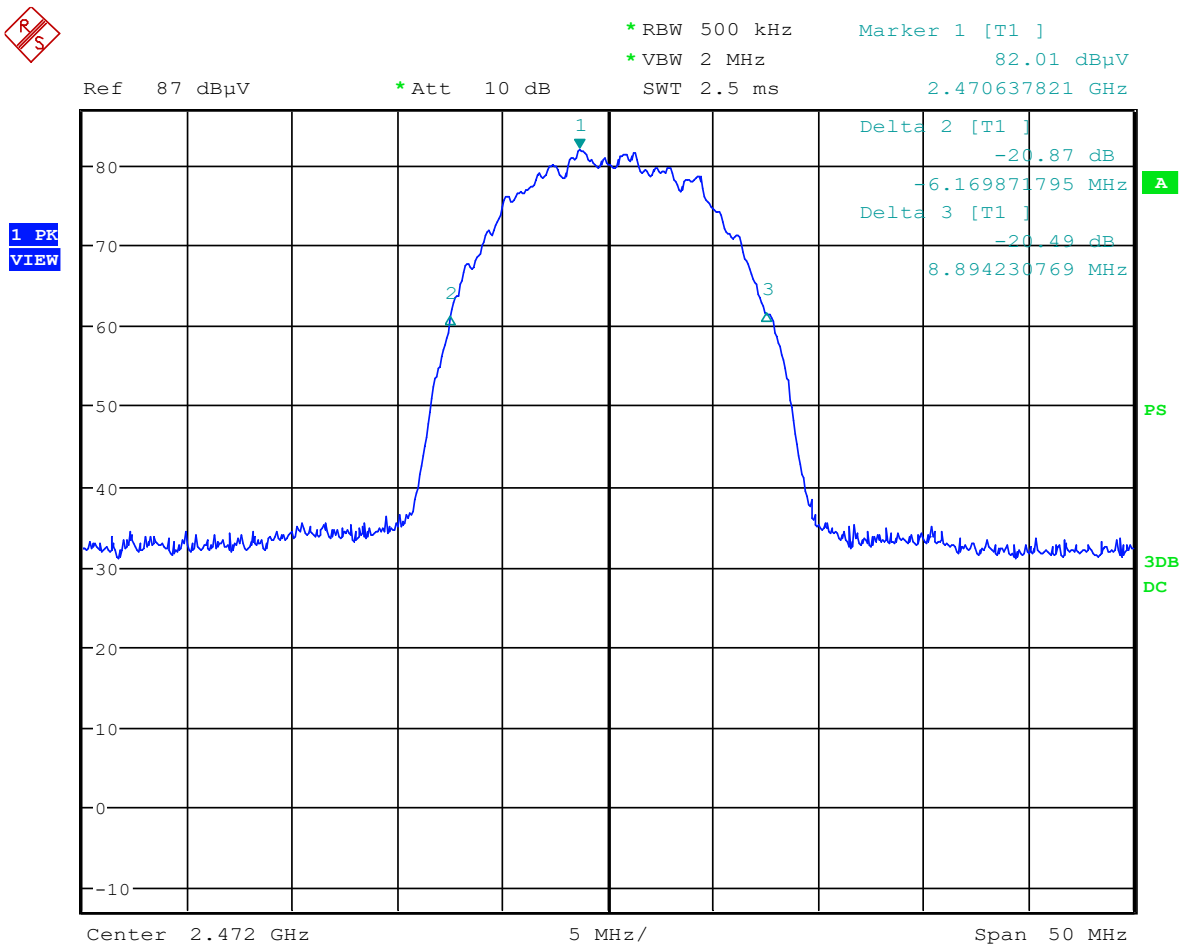
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VIEW



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Wi-Fi, 802.11b DBPSK/DSSS 1 Mbps: -20dB, 2472 MHz



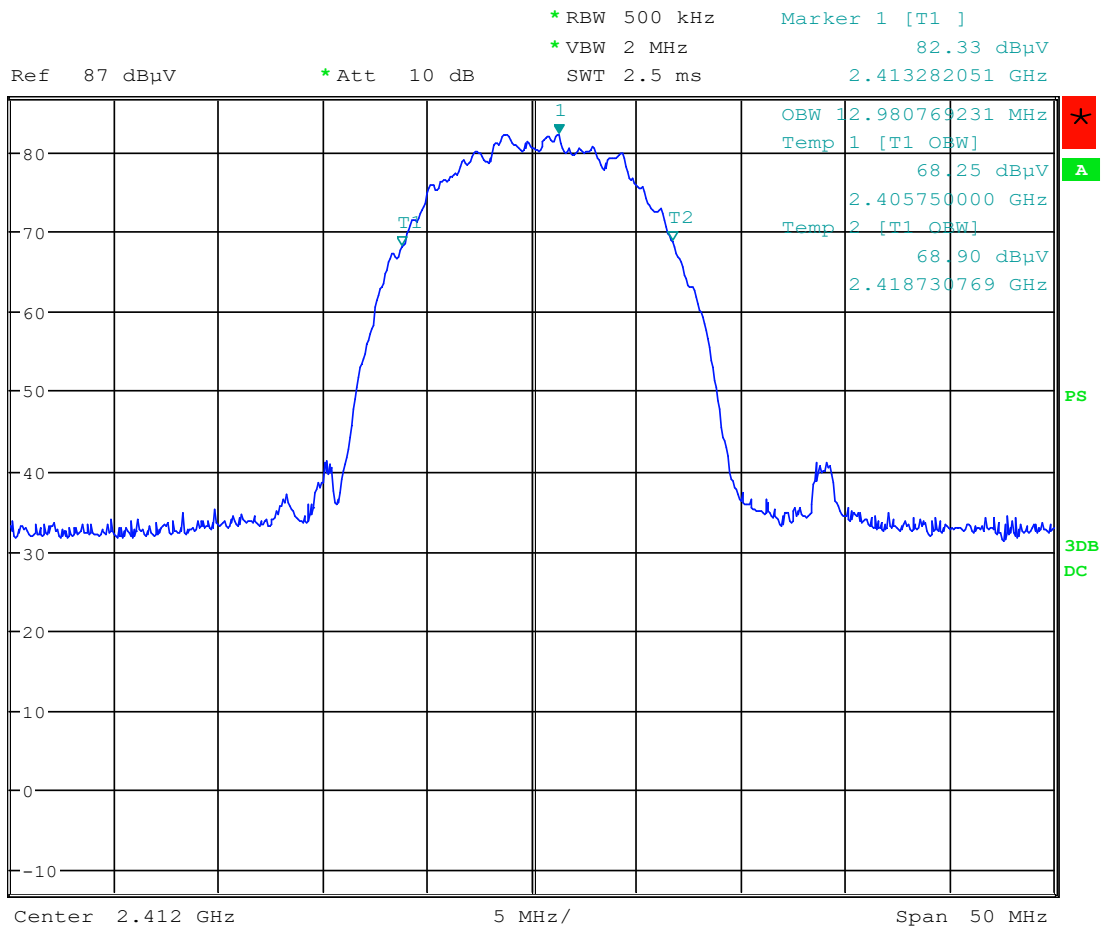
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Wi-Fi, 802.11b DBPSK/DSSS 1 Mbps: 99%, 2412 MHz



1 PK
VIEW



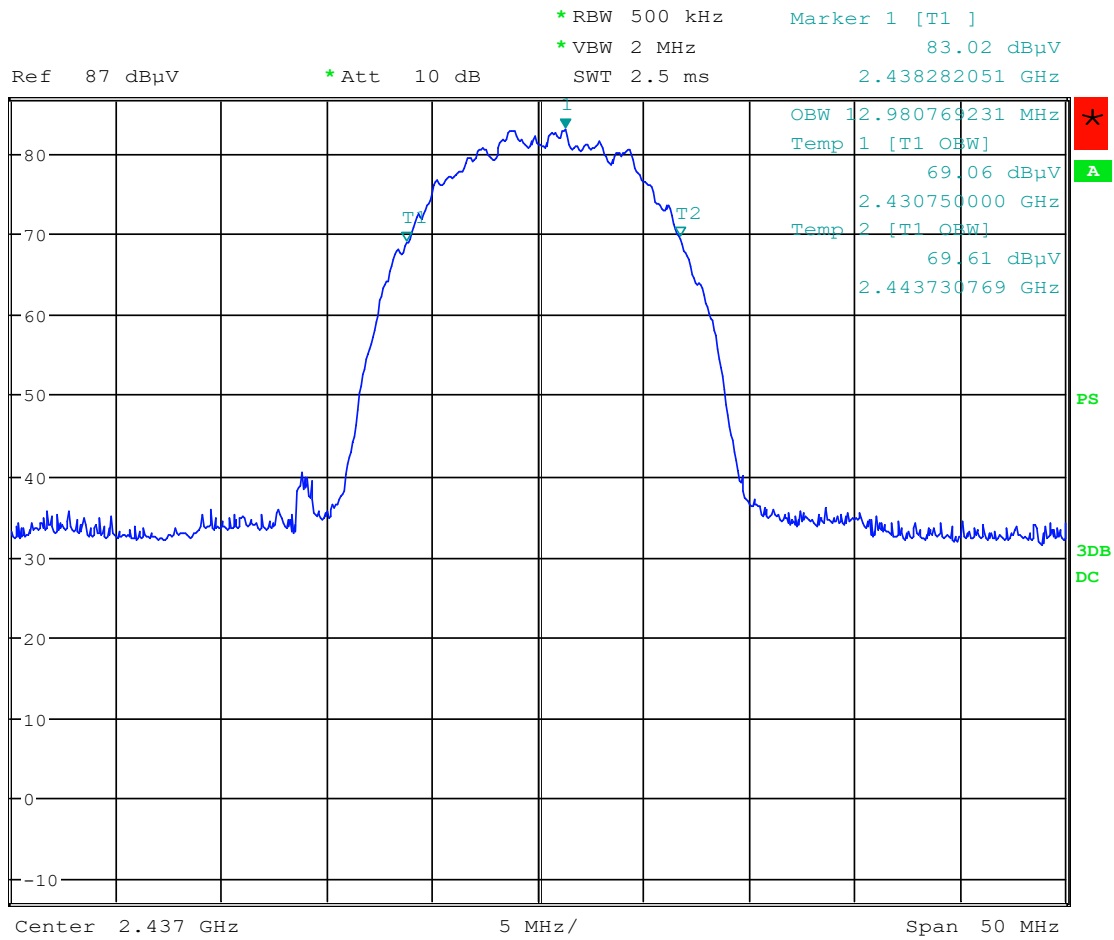
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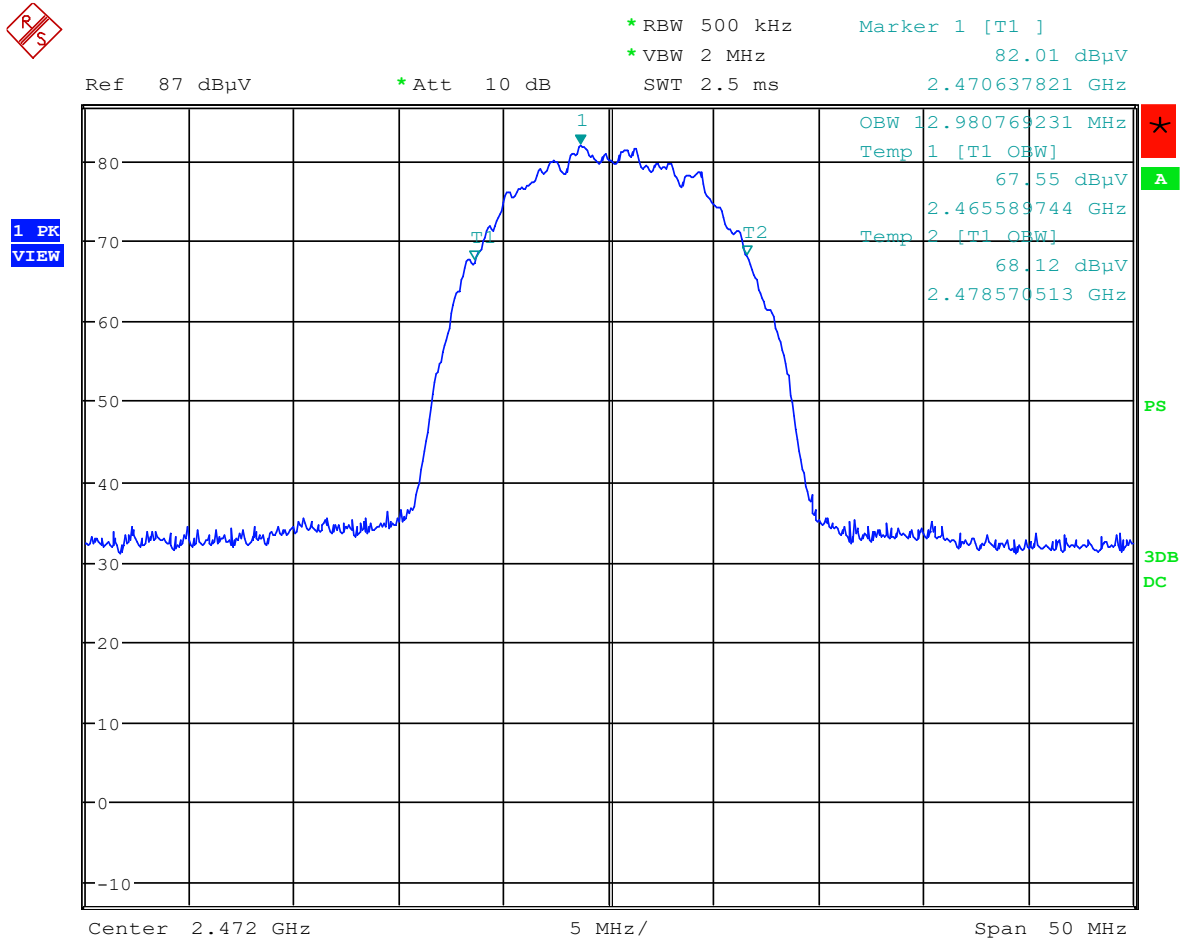
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VIEW



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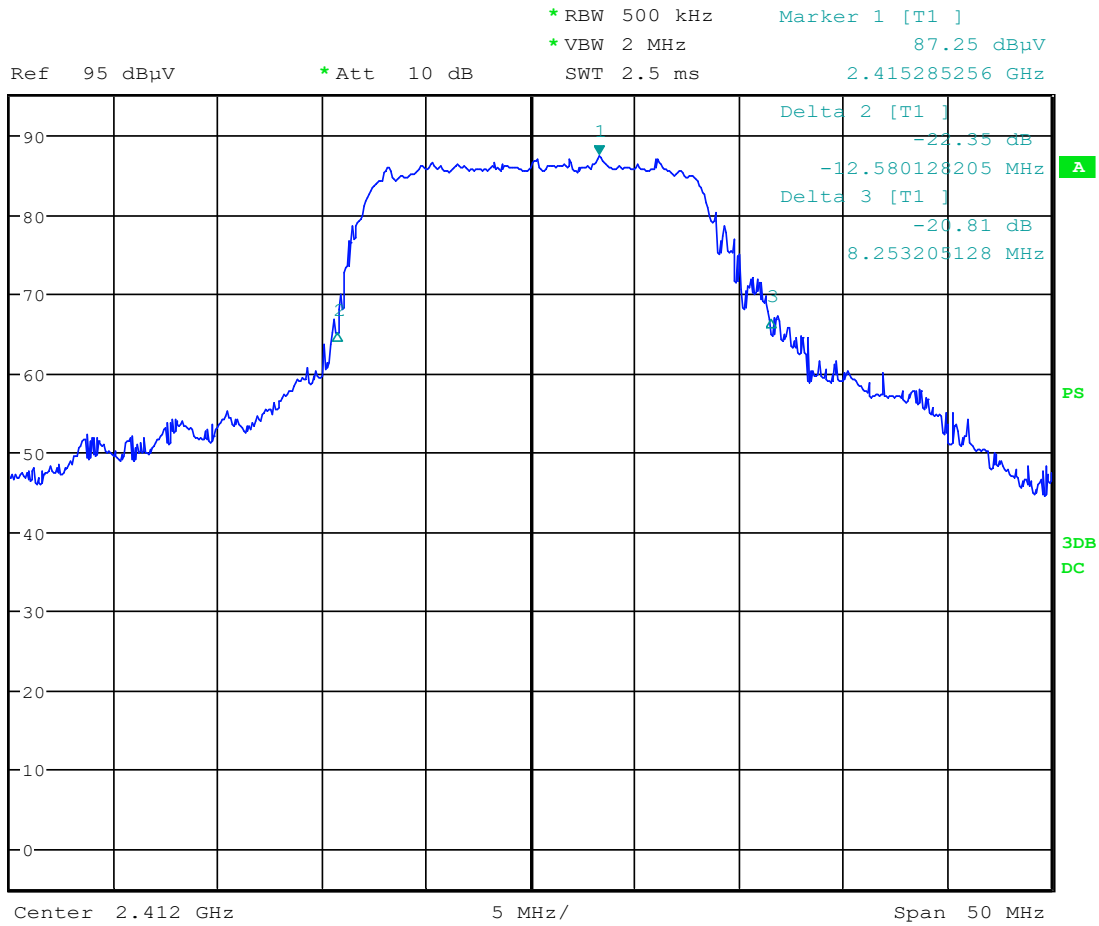
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Wi-Fi, 802.11g BPSK/OFDM 6 Mbps: -20dB, 2412 MHz



1 PK
VIEW



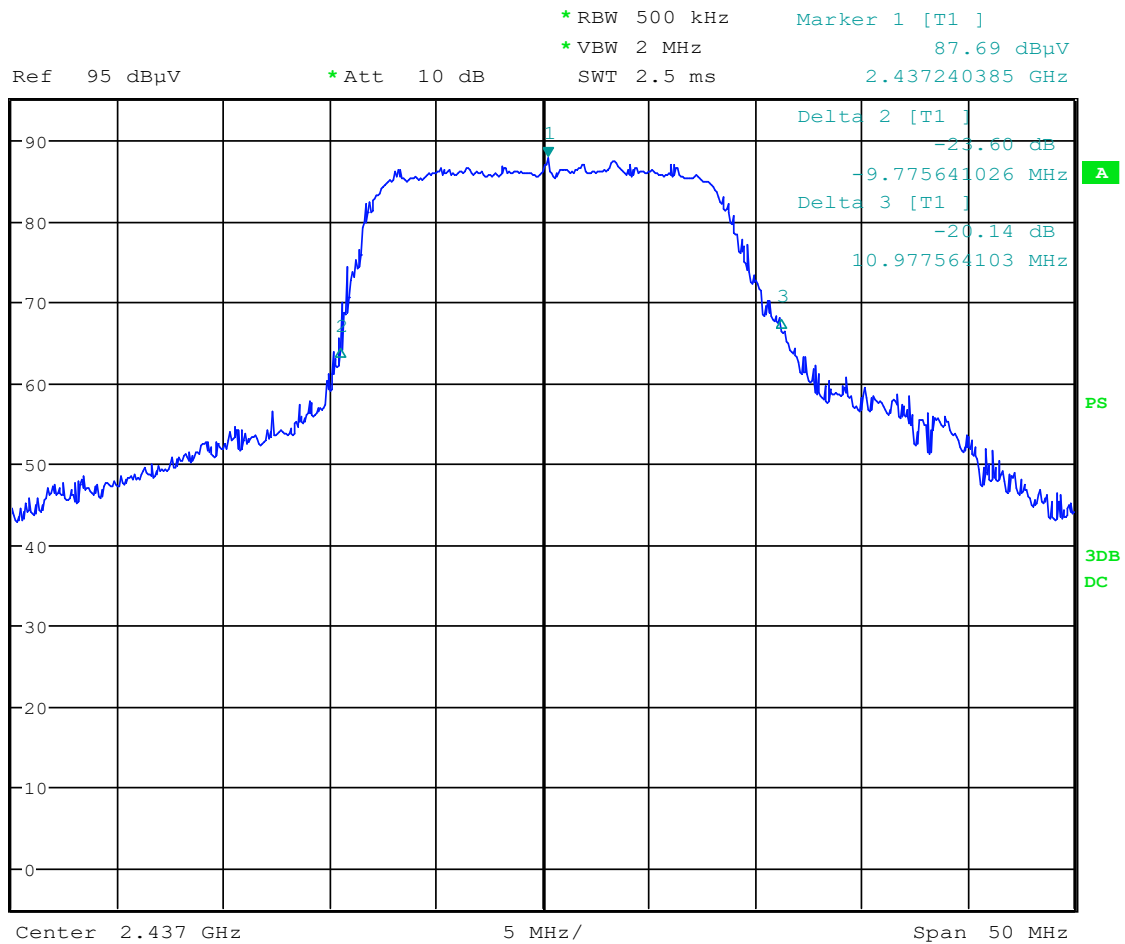
Date: 21.JUL.2026 10:45:13



Wi-Fi, 802.11g BPSK/OFDM 6 Mbps: -20dB, 2437 MHz



1 PK
VIEW



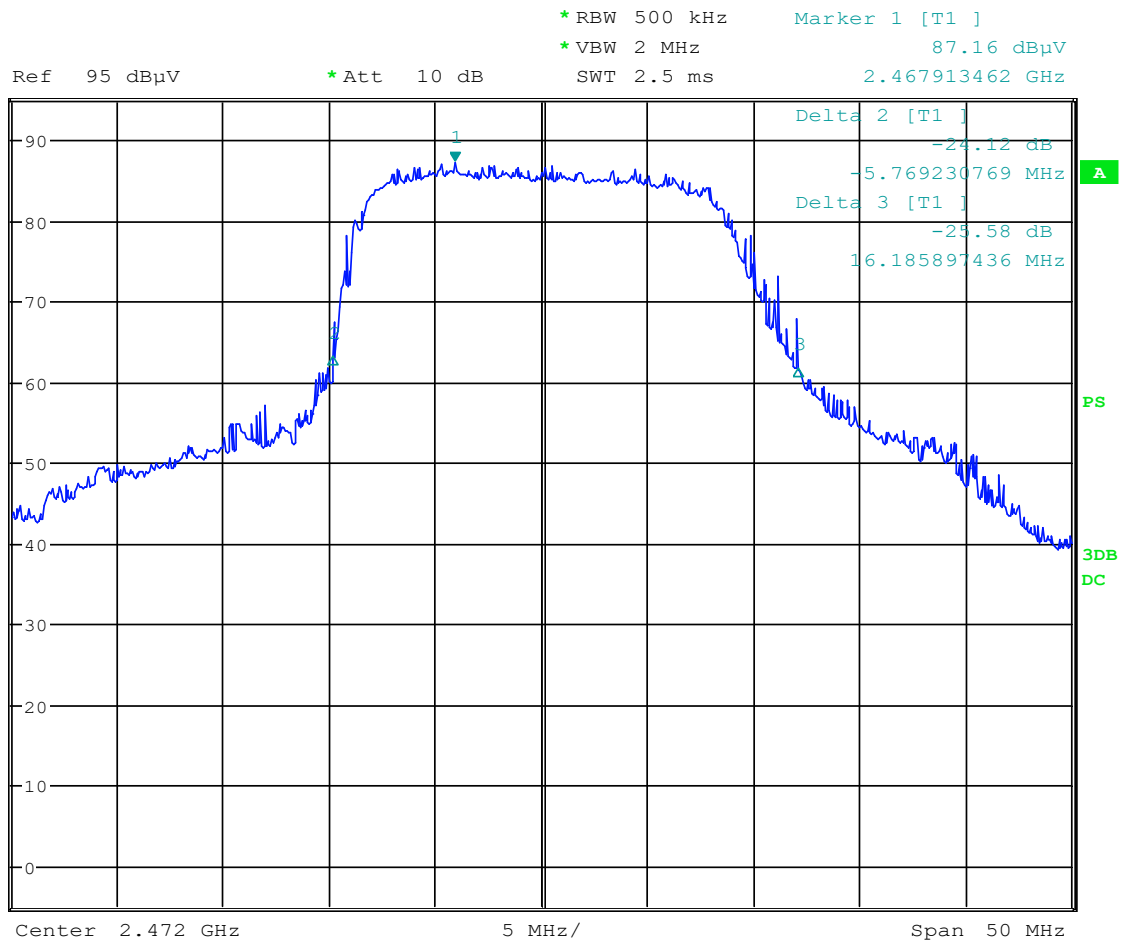
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Wi-Fi, 802.11g BPSK/OFDM 6 Mbps: -20dB, 2472 MHz



1 PK
VIEW



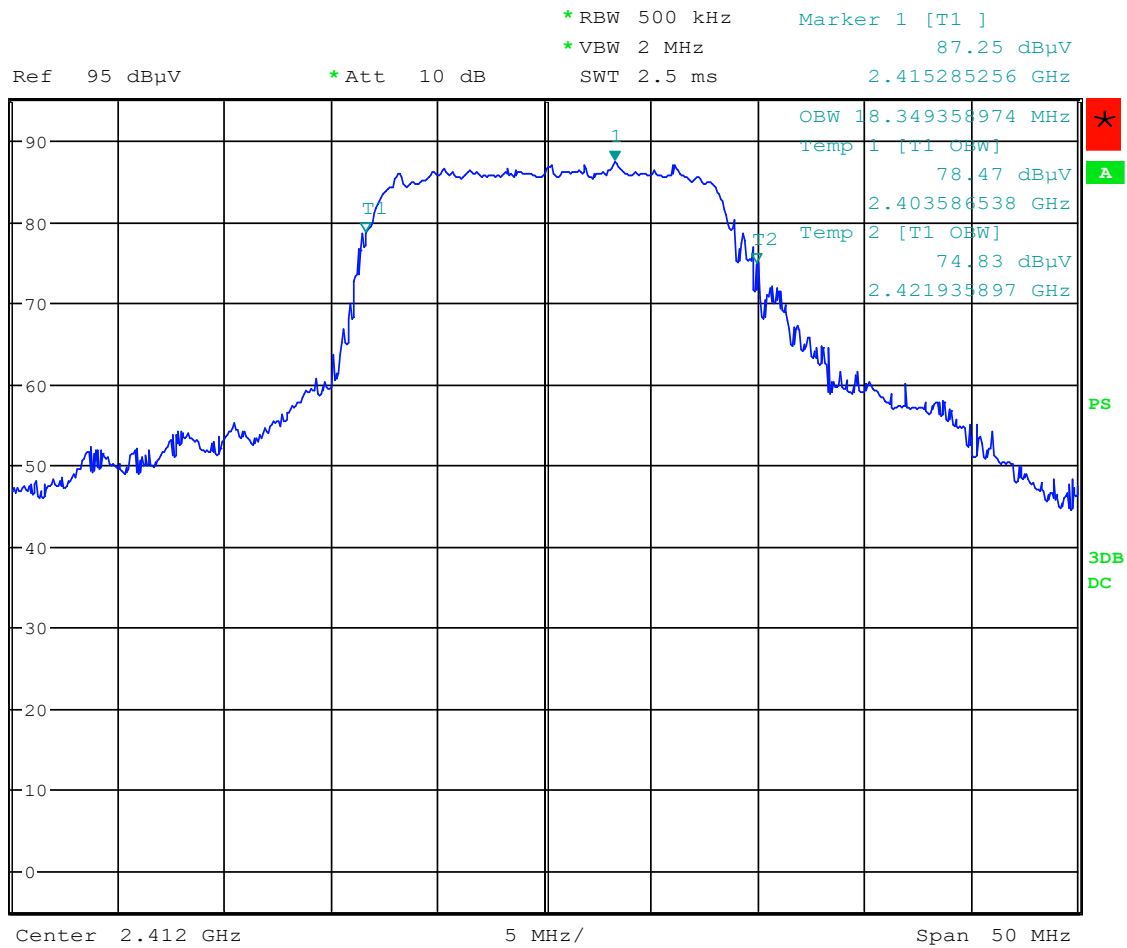
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Wi-Fi, 802.11g BPSK/OFDM 6 Mbps: 99%, 2412 MHz



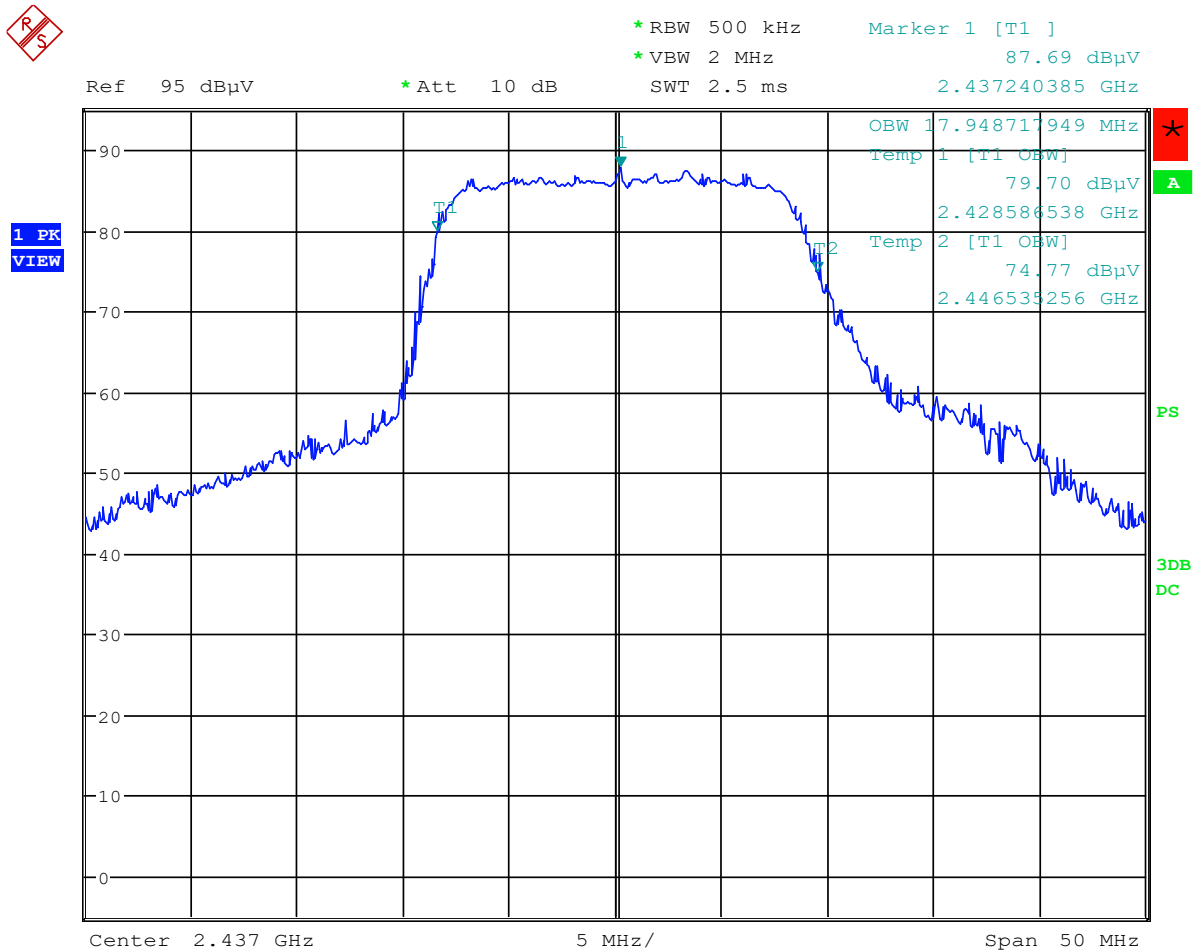
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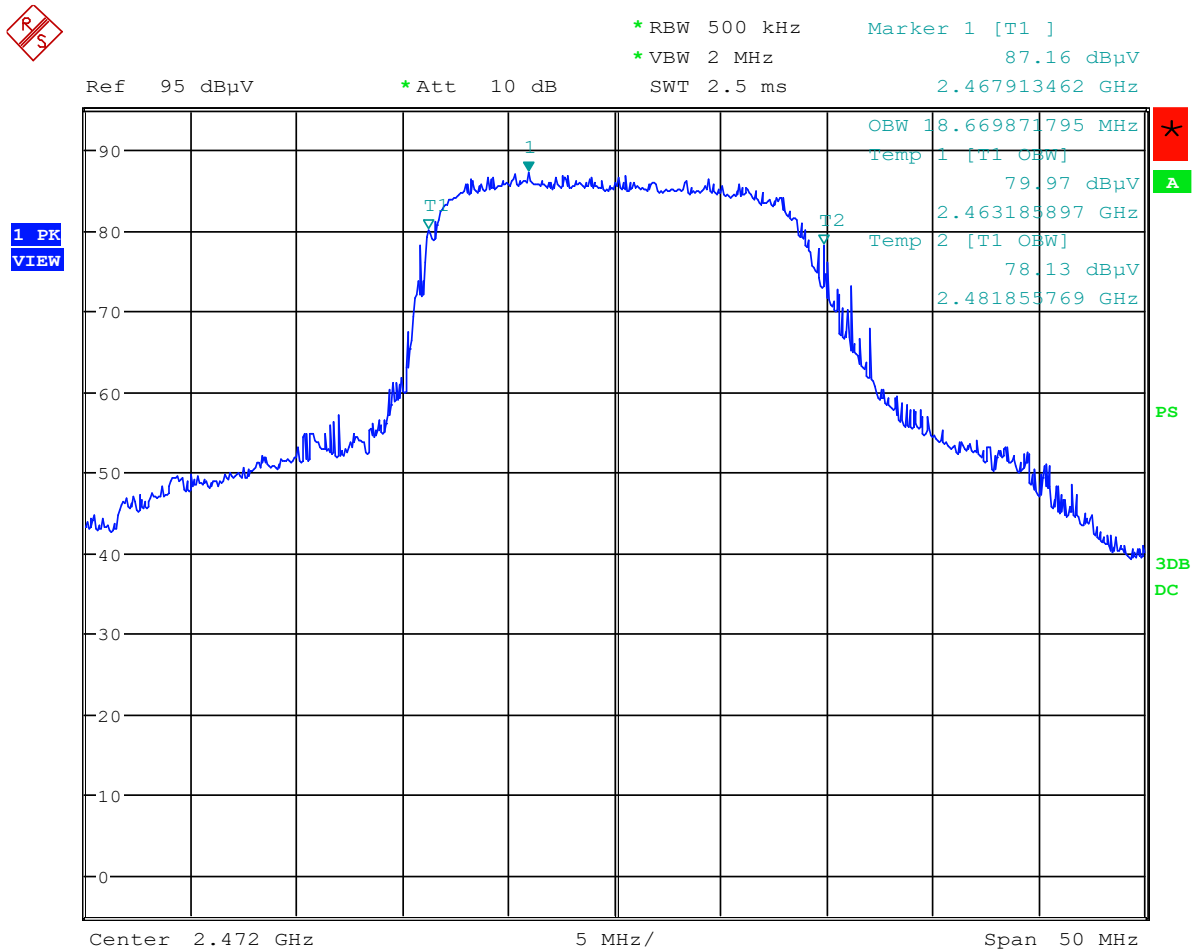
Wi-Fi, 802.11g BPSK/OFDM 6 Mbps: 99%, 2437 MHz



Date: 21.JUL.2026 10:47:01



Wi-Fi, 802.11g BPSK/OFDM 6 Mbps: 99%, 2472 MHz



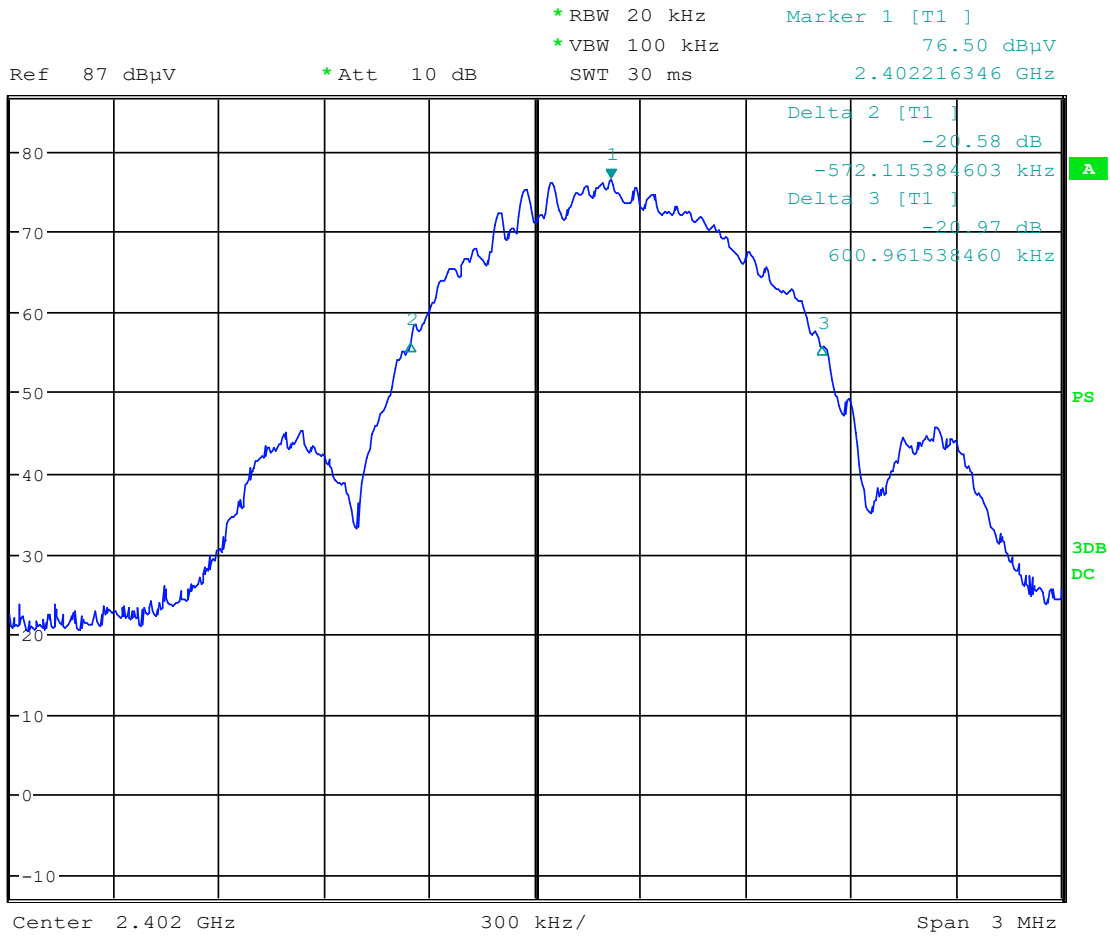
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BLE, GFSK 1Mbps: -20dB, 2402 MHz



1 PK
VIEW



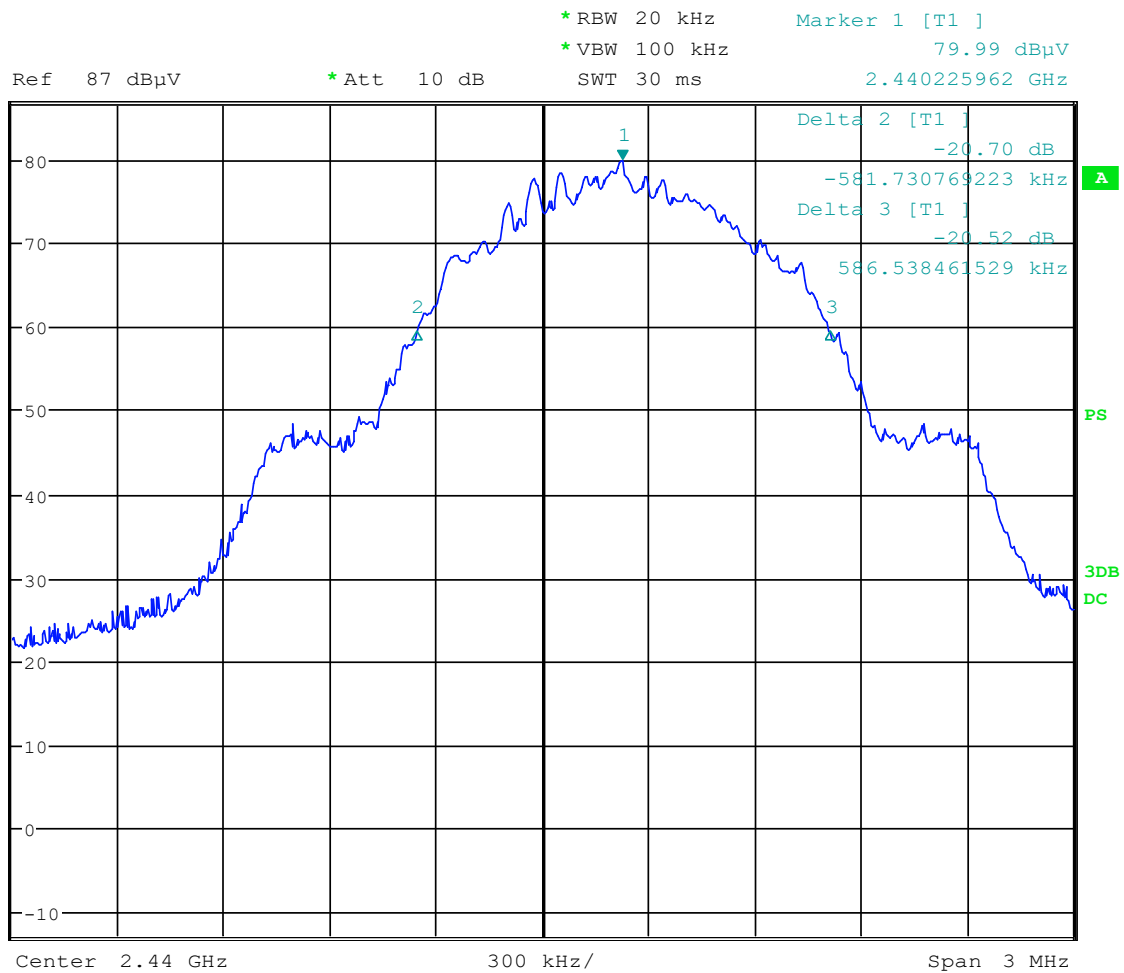
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BLE, GFSK 1Mbps: -20dB, 2440 MHz



1 PK
VIEW



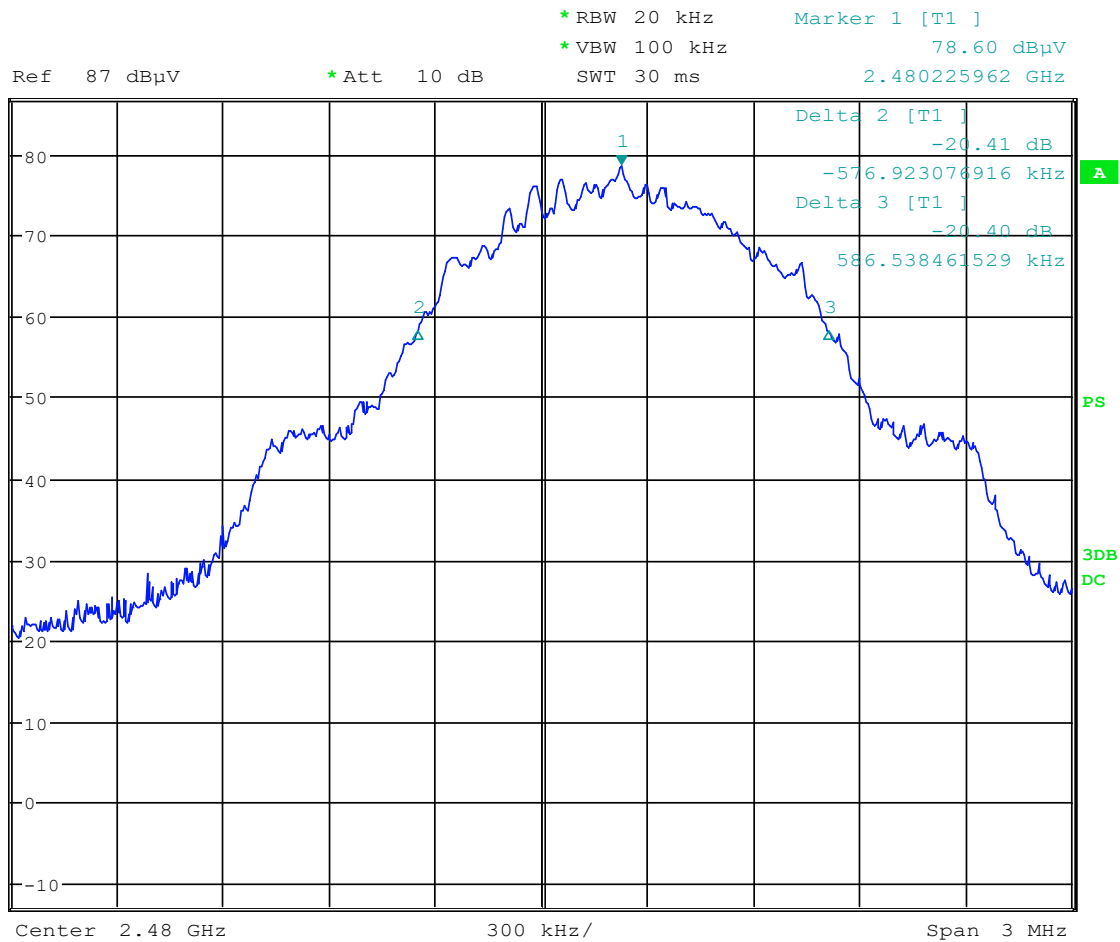
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BLE, GFSK 1Mbps: -20dB, 2480 MHz



1 PK
VIEW



Date: 21.JUL.2026 10:28:17



BLE, GFSK 1Mbps: 99%, 2402 MHz



* RBW 20 kHz

Marker 1 [T1]

* VBW 100 kHz

76.50 dBμV

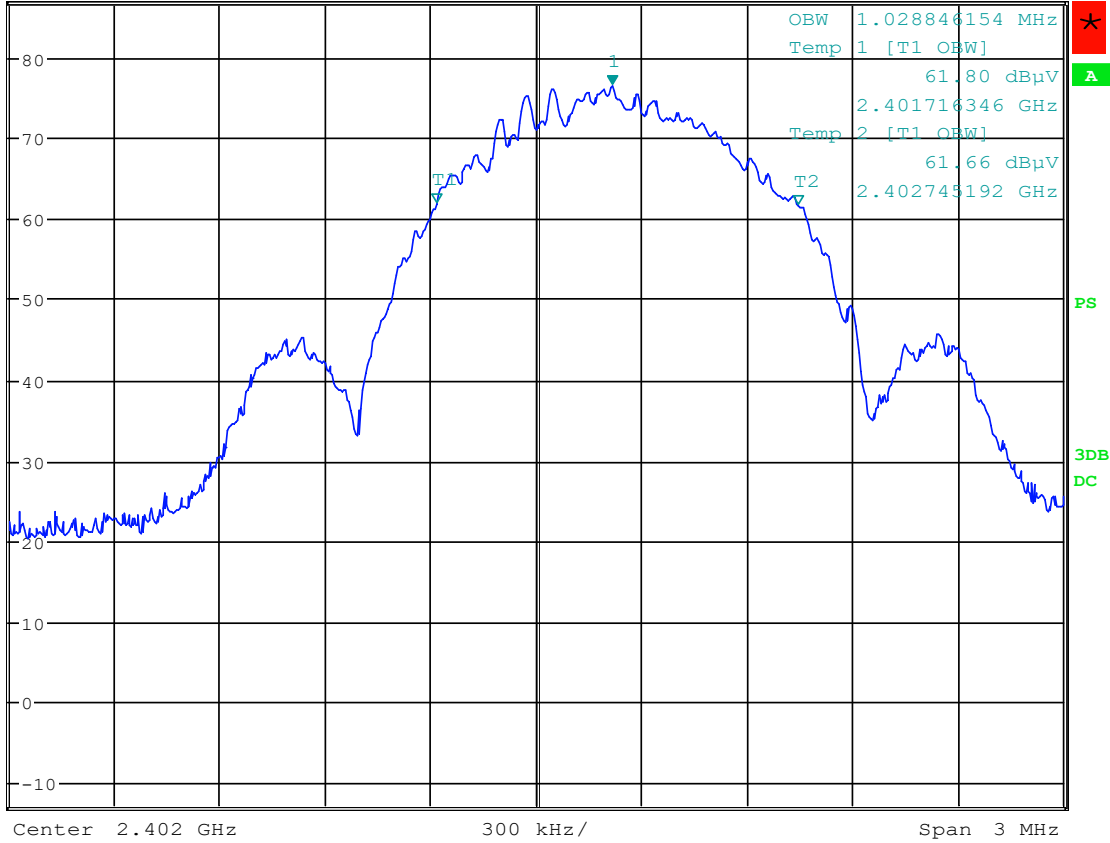
Ref 87 dBμV

* Att 10 dB

SWT 30 ms

2.402216346 GHz

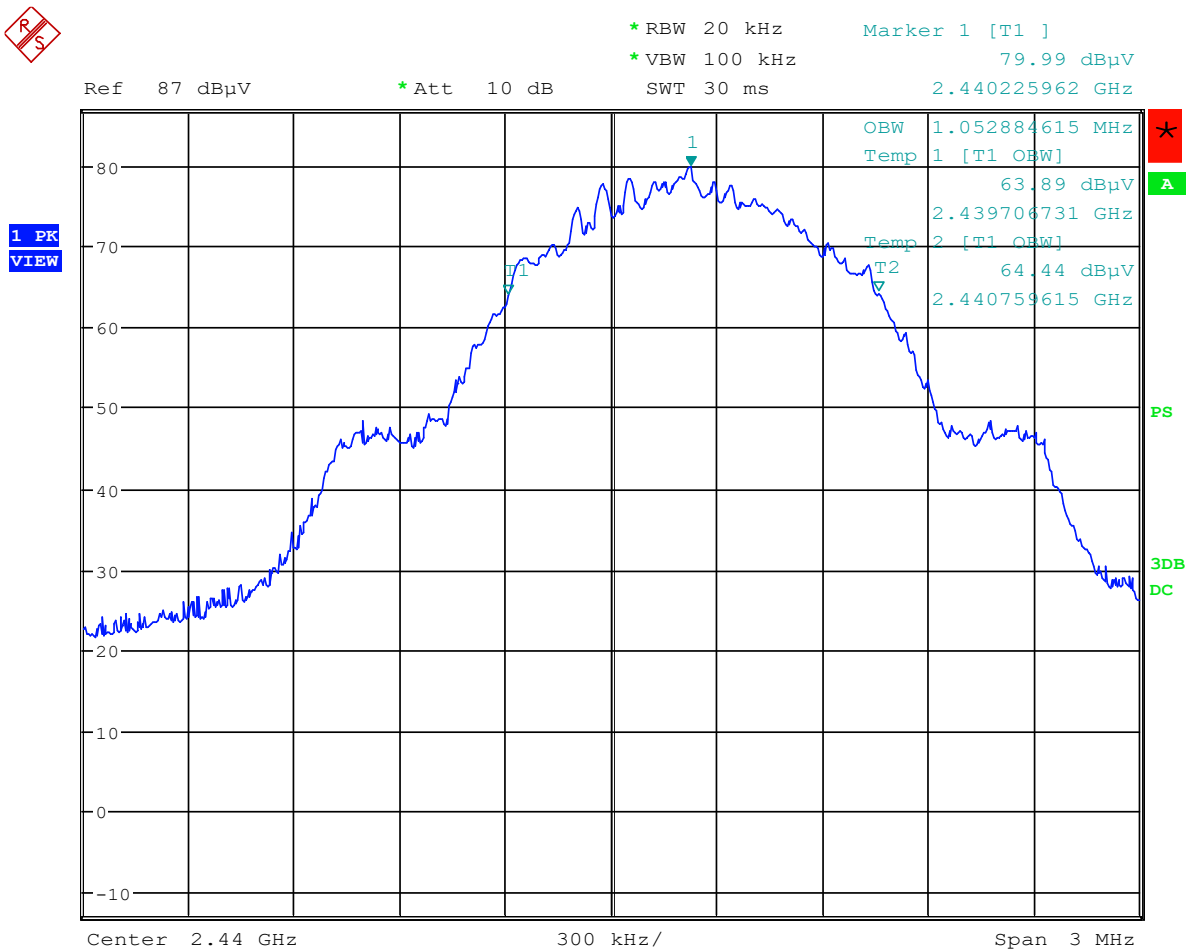
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VIEW



Date: 21.JUL.2026 10:25:49



BLE, GFSK 1Mbps: 99%, 2440 MHz



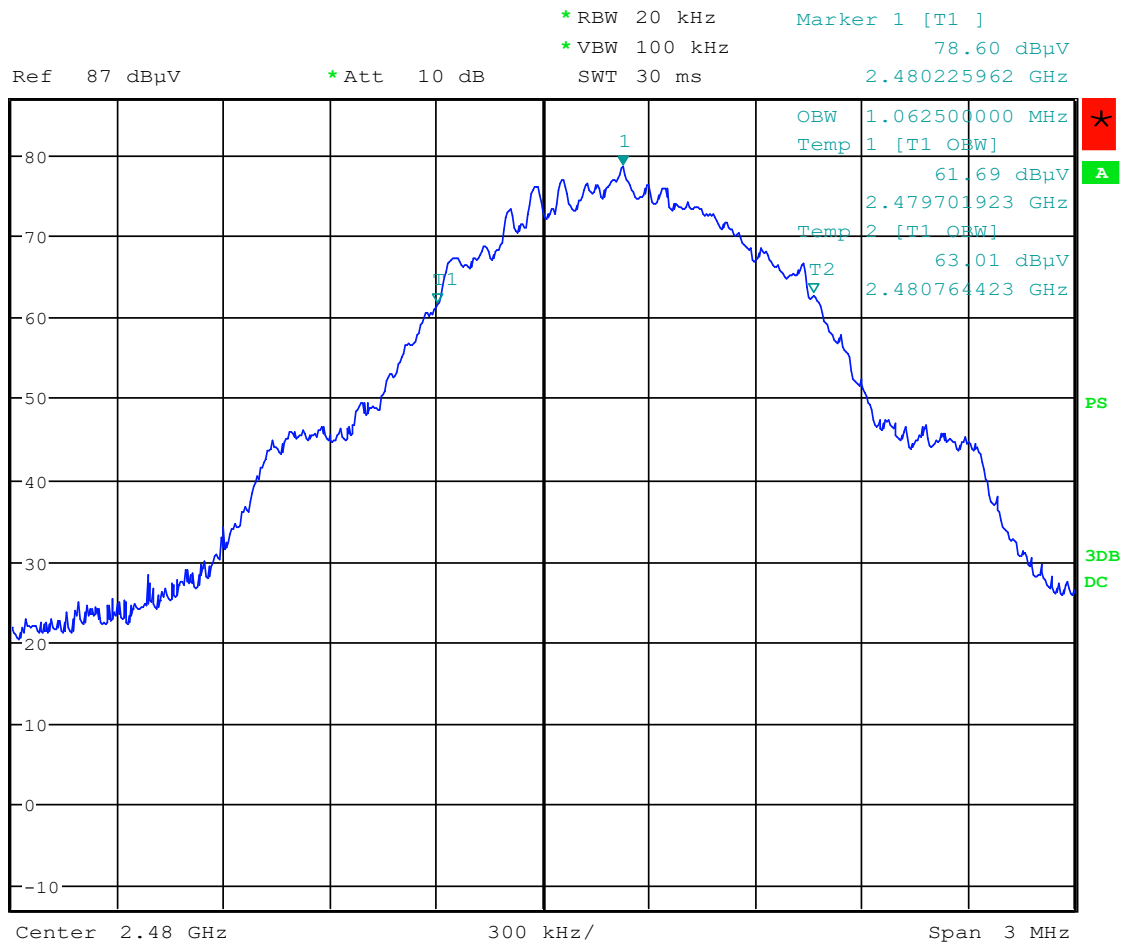
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BLE, GFSK 1Mbps: 99%, 2480 MHz



1 PK
VIEW



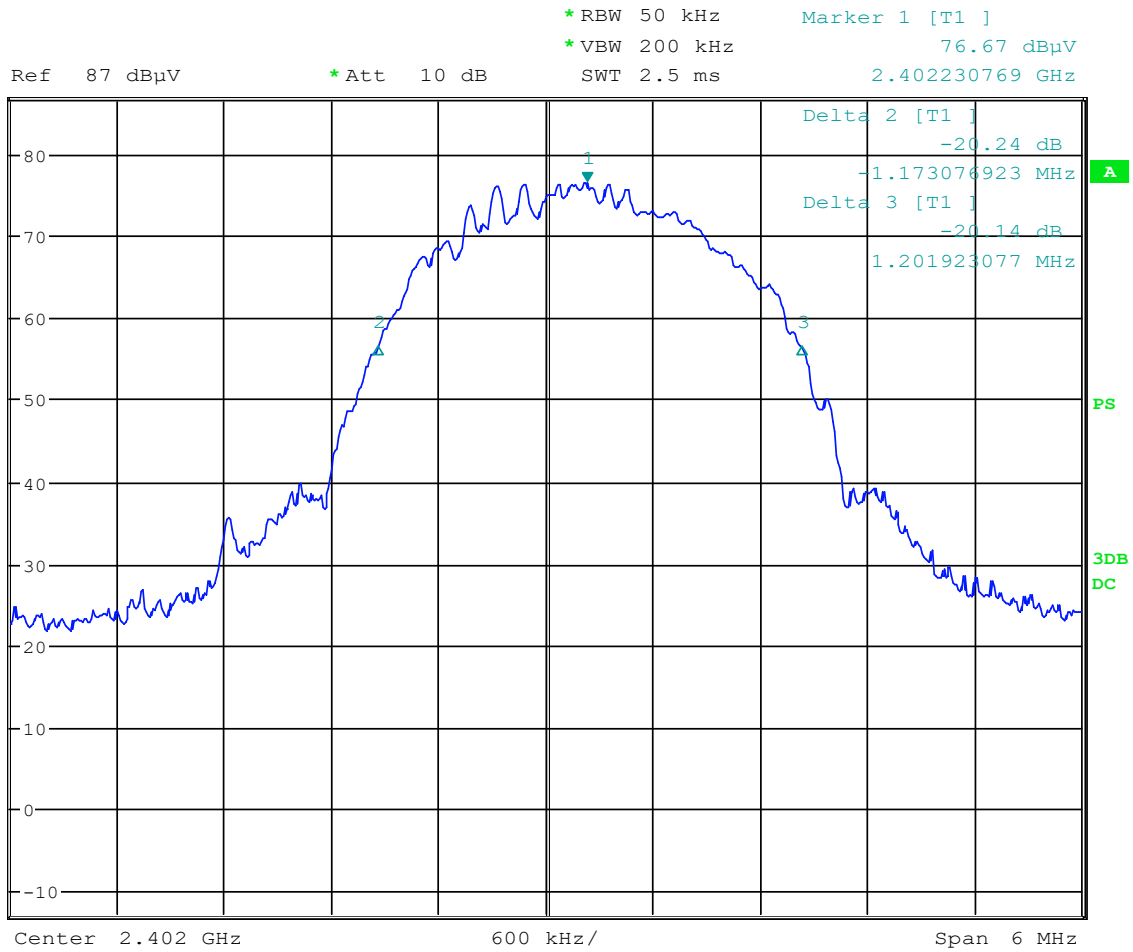
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BLE, GFSK 2Mbps: -20dB, 2402 MHz



1 PK
VIEW



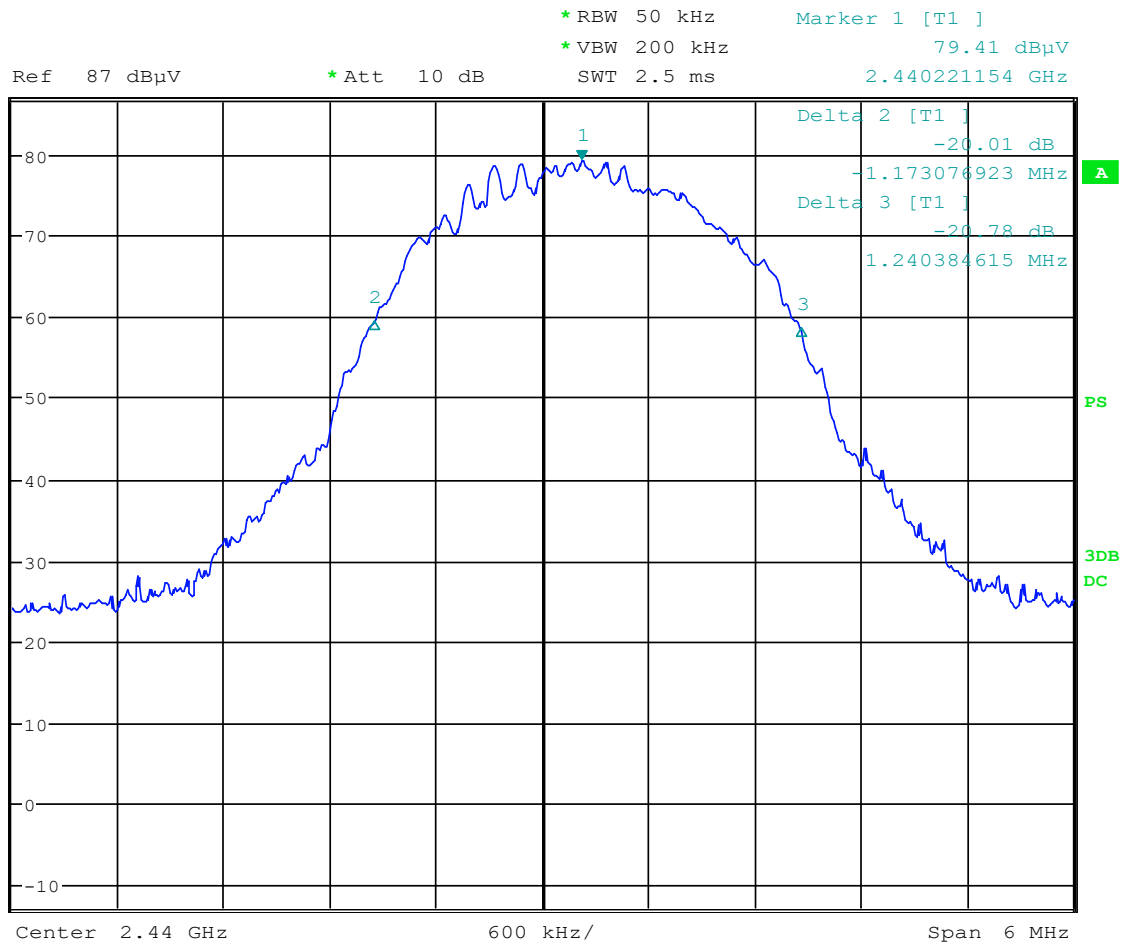
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BLE, GFSK 2Mbps: -20dB, 2440 MHz



1 PK
VIEW



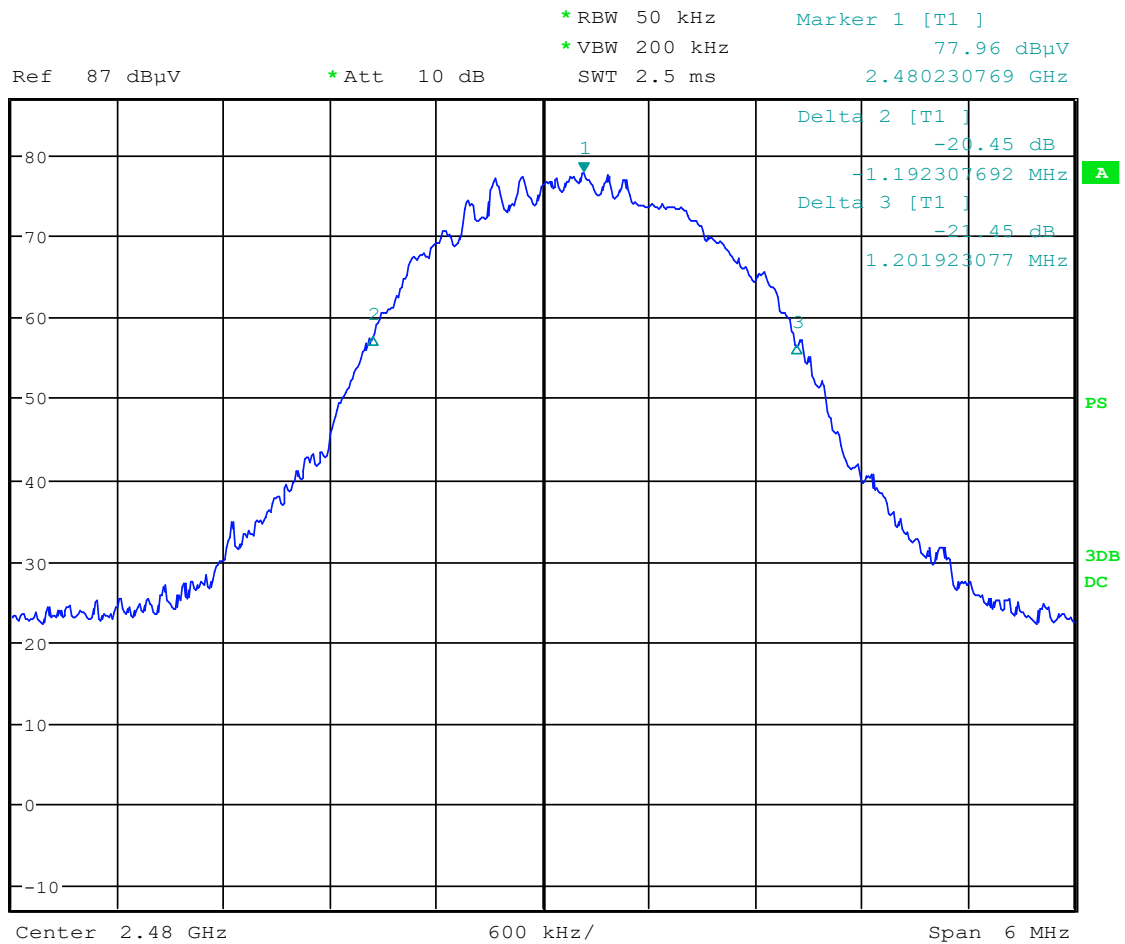
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BLE, GFSK 2Mbps: -20dB, 2480 MHz



1 PK
VIEW



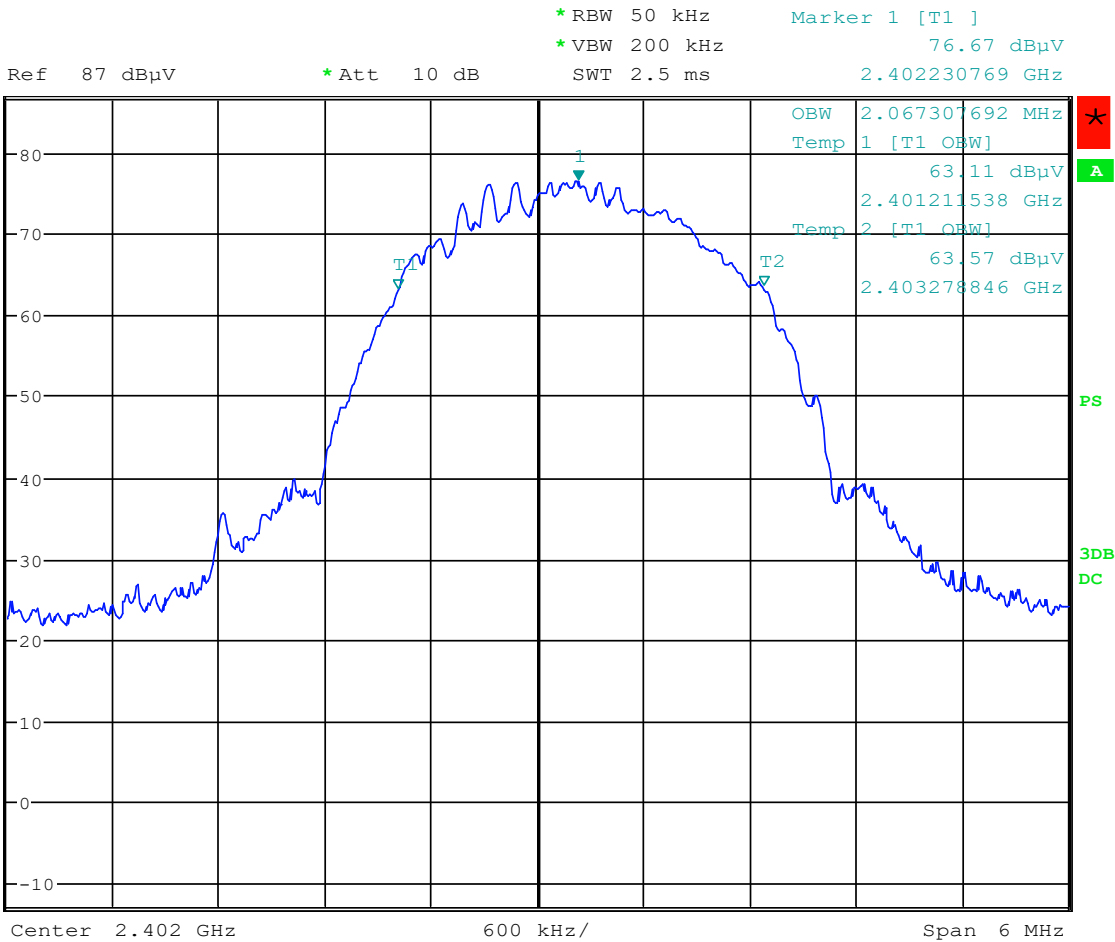
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BLE, GFSK 2Mbps: 99%, 2402MHz



1 PK
VIEW



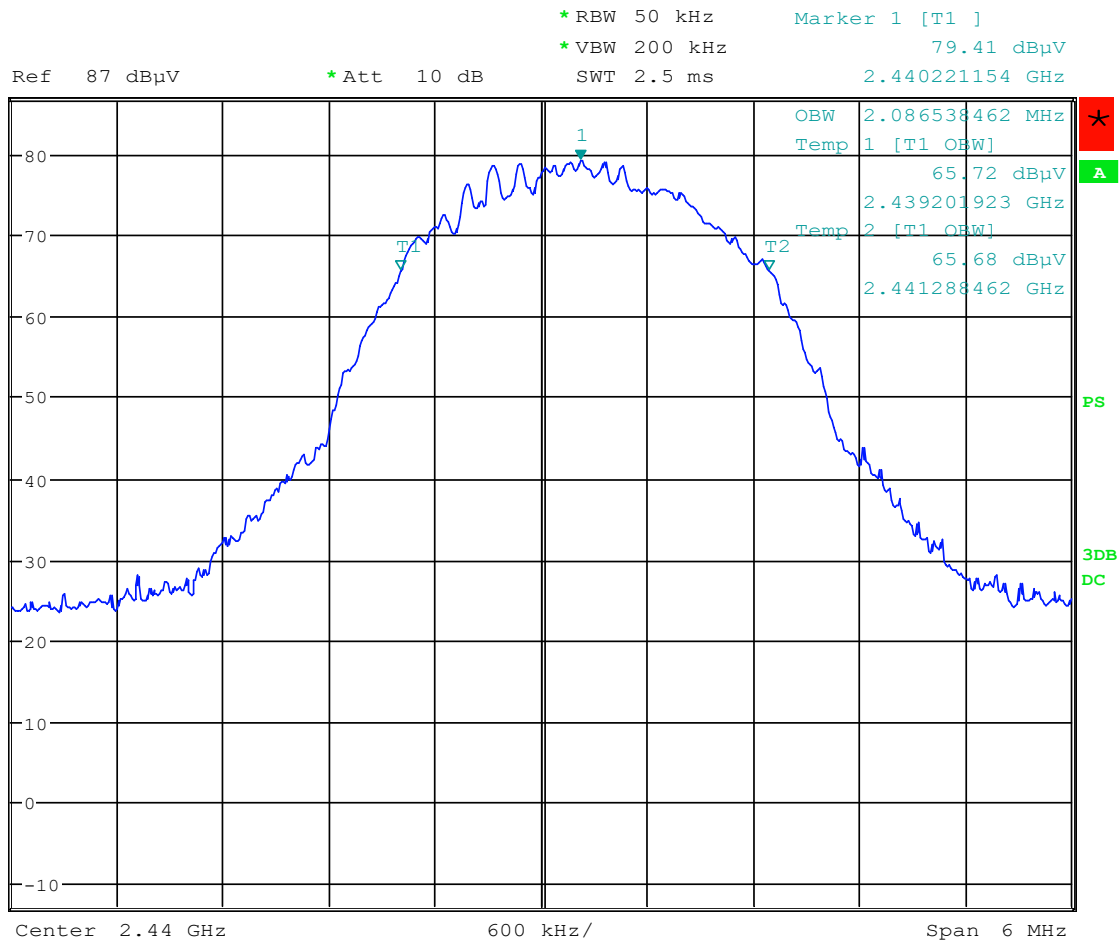
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BLE, GFSK 2Mbps: 99%, 2440 MHz



1 PK
VIEW



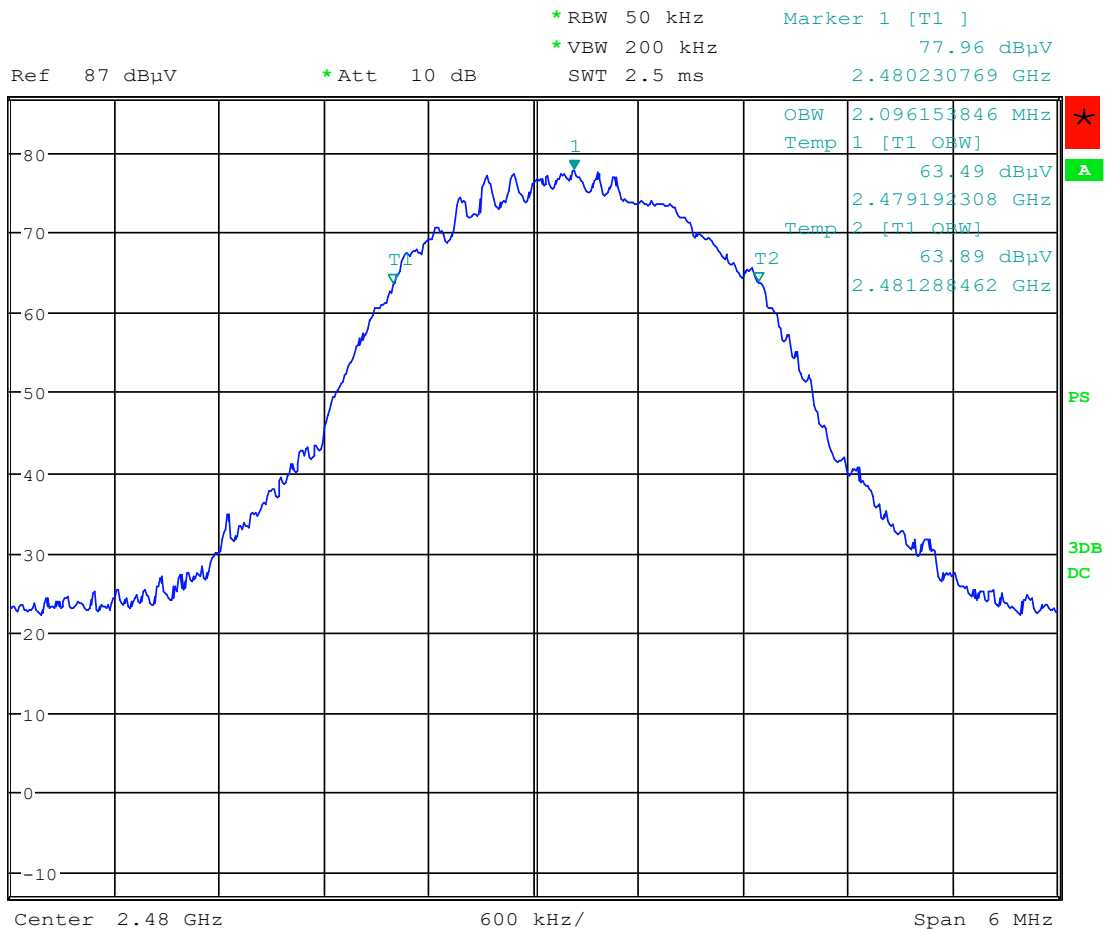
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BLE, GFSK 2Mbps: 99%, 2480 MHz



1 PK
VIEW



Date: 21.JUL.2026 10:33:48



8 FIELD STRENGTH OF EMISSIONS FROM INTENTIONAL RADIATORS

(a) Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency	Field Strength of Fundamental (millivolts/meter)	Field Strength of Harmonics (microvolts/meter)
902-928 MHz	50	500
2400-2483.5 MHz	50	500
5725-5875 MHz	50	500
24.0-24.25 GHz	250	2500

(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

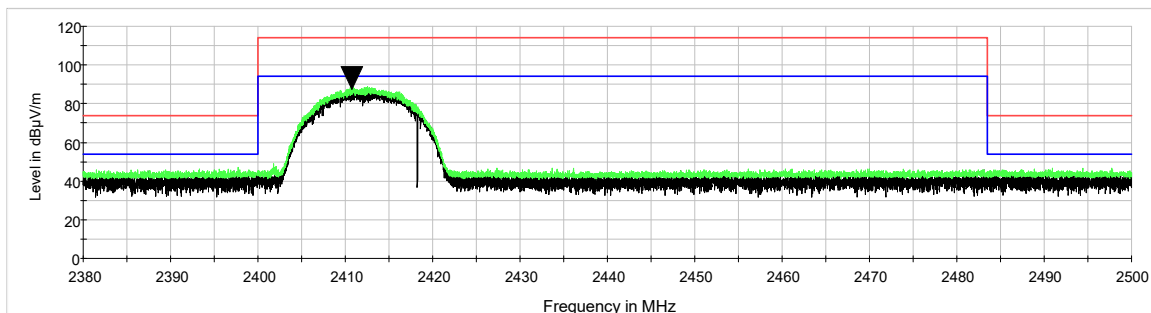
NOTE: During the pre-scan evaluation, the EUT was rotated in all possible directions to find the maximum emissions. The orthogonal position that showed the highest emissions was used. The antenna was raised between 1 and 4 meters and the EUT turntable was rotated 360 degrees to maximize the emissions.



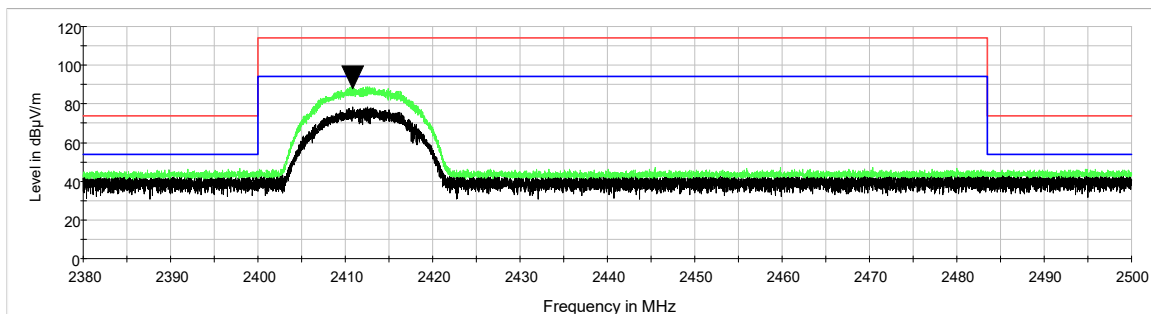
8.1 Test Data - Field Strength of Emissions from Intentional Radiators

Test Date(s):	2026-07-17	Test Engineer(s):	E. Tobin
Standards:	CFR 47 Part 15.249(a)	Air Temperature:	22.0°C
		Relative Humidity:	39.1%

Wi-Fi, 2412 MHz: Vertical – 802.11b DBPSK/DSSS 1 Mbps

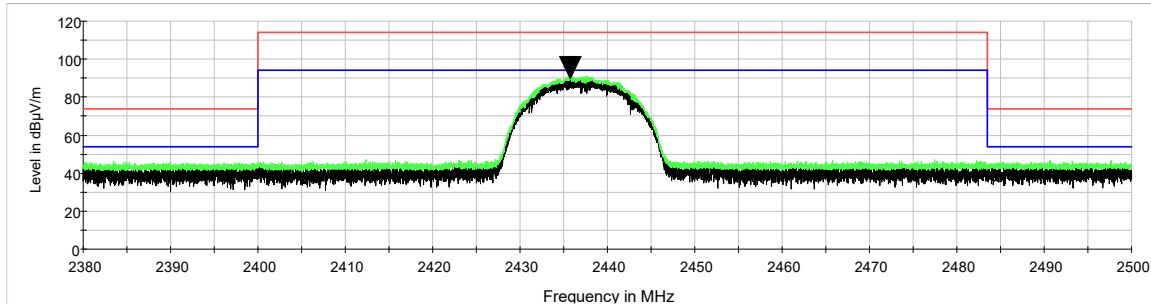


Wi-Fi, 2412 MHz: Horizontal – 802.11b DBPSK/DSSS 1 Mbps

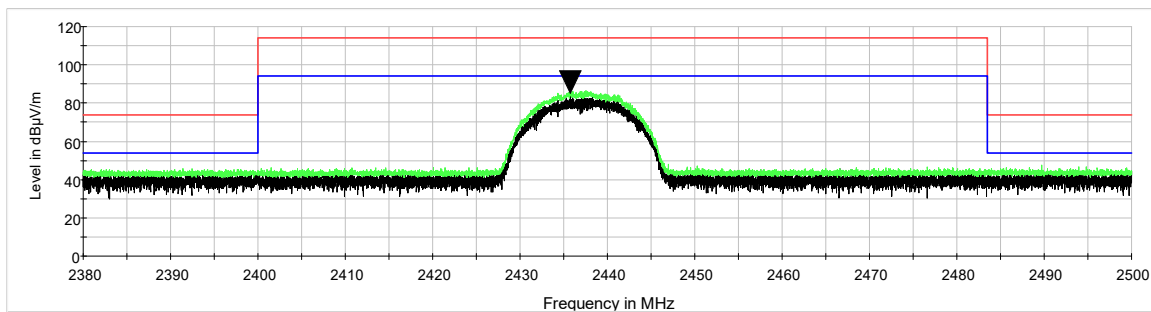




Wi-Fi, 2437 MHz: Vertical – 802.11b DBPSK/DSSS 1 Mbps

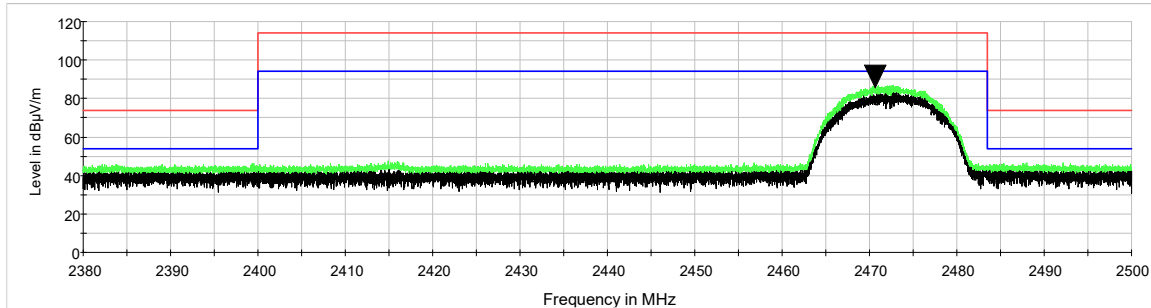


Wi-Fi, 2437 MHz: Horizontal – 802.11b DBPSK/DSSS 1 Mbps

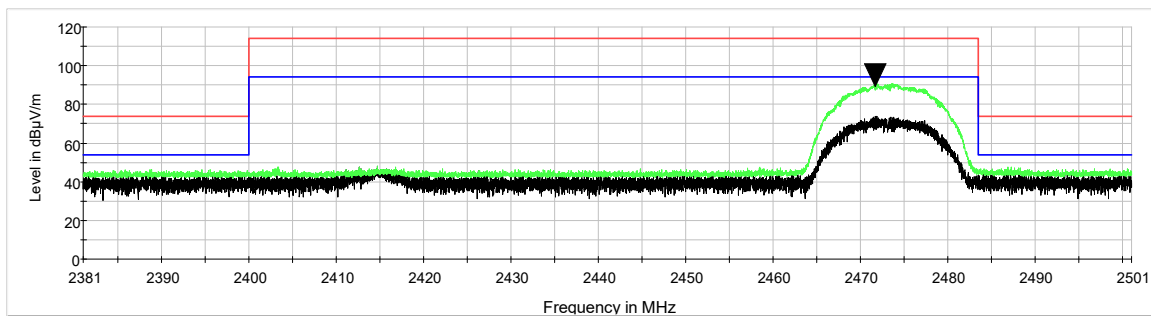




Wi-Fi, 2472 MHz: Vertical – 802.11b DBPSK/DSSS 1 Mbps

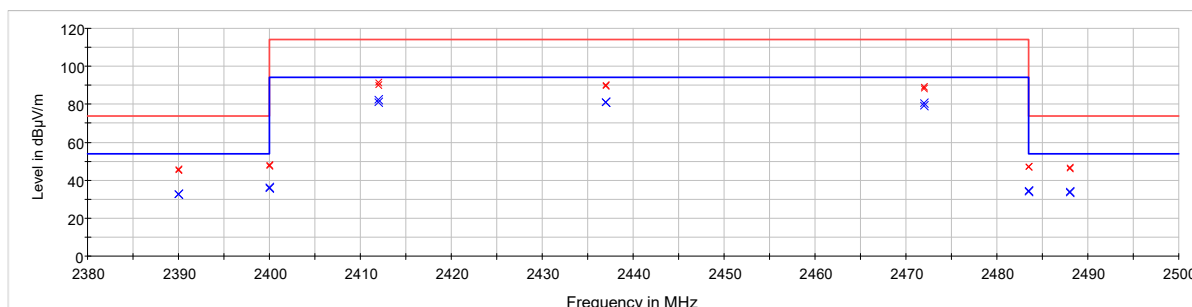


Wi-Fi, 2472 MHz: Horizontal – 802.11b DBPSK/DSSS 1 Mbps



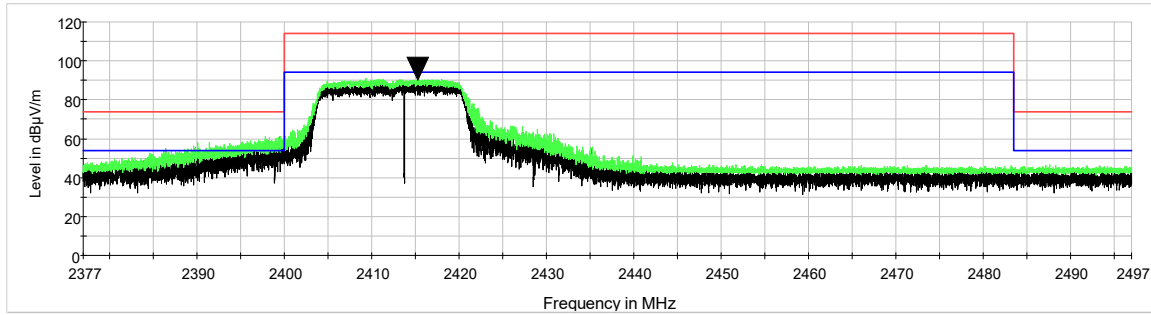
**Wi-Fi, 802.11b DBPSK/DSSS 1 Mbps: Band Edge and Field Strength of the Fundamentals**

Frequency MHz	MaxPeak dBμV/m	Average dBμV/m	Meas. Time ms	Bandwidth kHz	Height cm	Pol.	Azimuth deg	Corr. dB	Margin - AVG dB	Limit - AVG dBμV/m
2390.000000	45.3	32.4	1000.0	1000.000	150.0	H	340.0	8.4	21.6	54.0
2390.000000	45.8	32.5	1000.0	1000.000	190.0	V	350.0	8.4	21.5	54.0
2400.000000	47.9	36.4	1000.0	1000.000	190.0	V	350.0	8.4	17.6	54.0
2400.000000	47.7	35.6	1000.0	1000.000	150.0	H	340.0	8.4	18.4	54.0
2412.000000	91.3	82.3	1000.0	1000.000	190.0	V	350.0	8.4	11.7	94.0
2412.000000	89.9	80.9	1000.0	1000.000	150.0	H	340.0	8.4	13.1	94.0
2437.000000	90.0	80.9	1000.0	1000.000	120.0	H	340.0	8.5	13.1	94.0
2437.000000	89.9	80.9	1000.0	1000.000	140.0	H	340.0	8.5	13.1	94.0
2472.000000	88.2	79.2	1000.0	1000.000	140.0	V	330.0	8.8	14.8	94.0
2472.000000	89.4	80.4	1000.0	1000.000	130.0	H	340.0	8.8	13.6	94.0
2483.500000	47.3	34.4	1000.0	1000.000	130.0	H	340.0	8.9	19.6	54.0
2483.500000	47.3	34.0	1000.0	1000.000	140.0	V	330.0	8.9	20.0	54.0
2488.000000	46.8	33.8	1000.0	1000.000	130.0	H	340.0	8.9	20.2	54.0
2488.000000	46.3	33.6	1000.0	1000.000	140.0	V	330.0	8.9	20.4	54.0

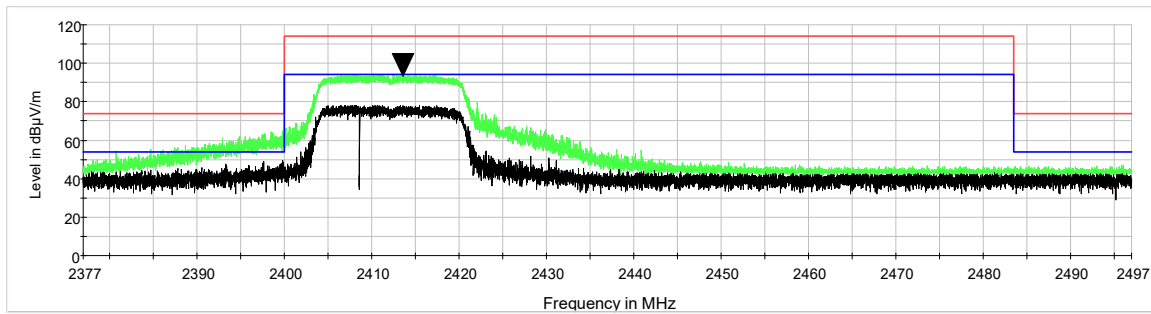




Wi-Fi, 2412 MHz: Vertical – 802.11g BPSK/OFDM 6 Mbps

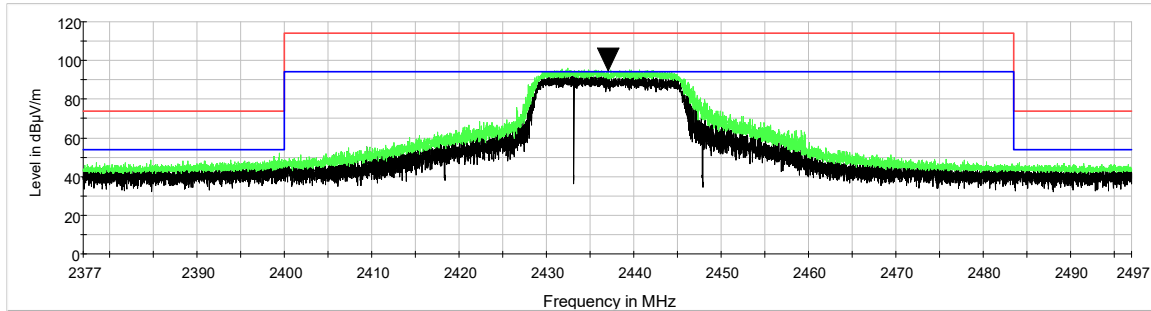


Wi-Fi, 2412 MHz: Horizontal – 802.11g BPSK/OFDM 6 Mbps

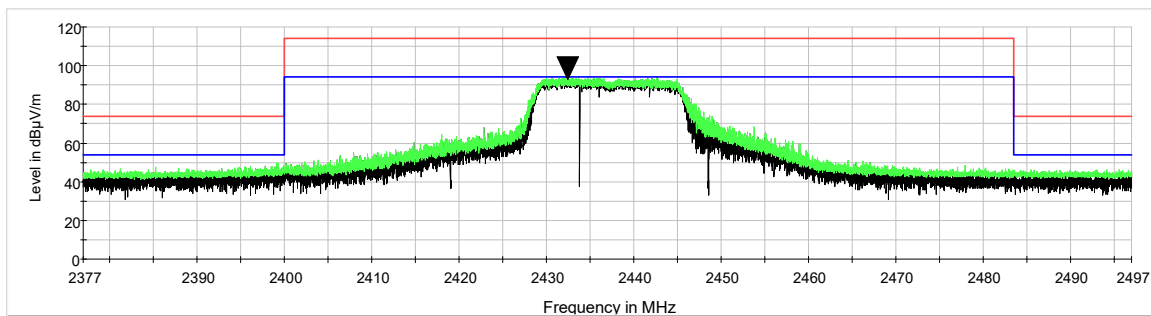




Wi-Fi, 2437 MHz: Vertical – 802.11g BPSK/OFDM 6 Mbps

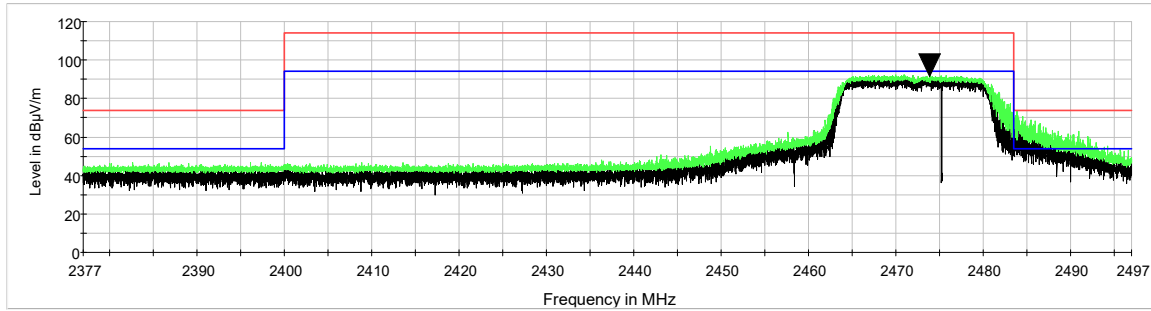


Wi-Fi, 2437 MHz: Horizontal – 802.11g BPSK/OFDM 6 Mbps

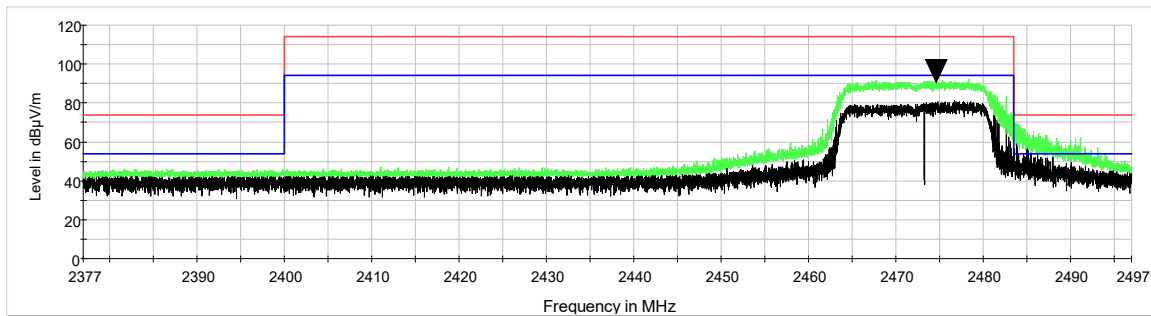




Wi-Fi, 2472 MHz: Vertical – 802.11g BPSK/OFDM 6 Mbps

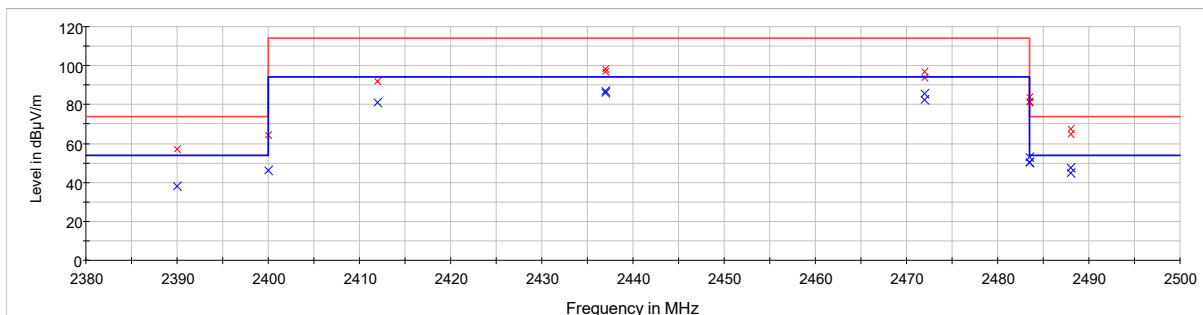


Wi-Fi, 2472 MHz: Horizontal – 802.11g BPSK/OFDM 6 Mbps



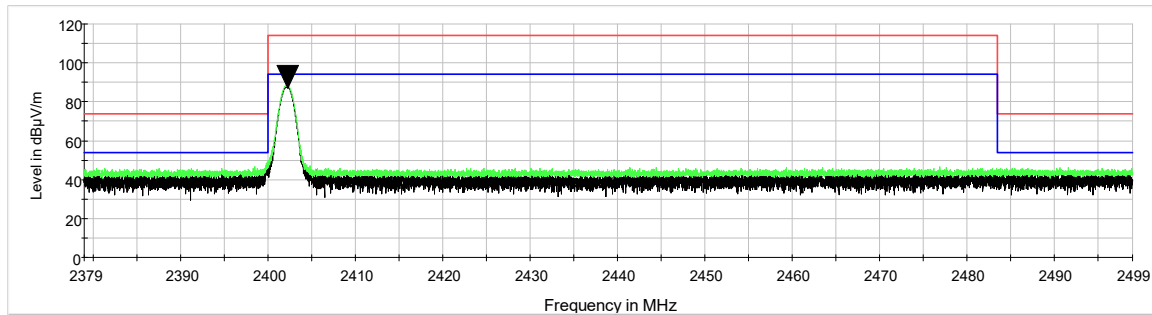
**Wi-Fi, 802.11g HT20: Band Edge and Field Strength of the Fundamentals**

Frequency MHz	MaxPeak dBμV/m	Average dBμV/m	Meas. Time ms	Bandwidth kHz	Height cm	Pol.	Azimuth deg	Corr. dB	Margin - AVG dB	Limit - AVG dBμV/m
2390.000000	57.0	38.1	1000.0	1000.000	150.0	V	325.0	8.4	15.9	54.0
2400.000000	64.2	46.4	1000.0	1000.000	150.0	V	325.0	8.4	7.6	54.0
2412.000000	91.9	81.0	1000.0	1000.000	150.0	V	325.0	8.4	13.0	94.0
2412.000000	90.3	88.2	1000.0	1000.000	140.0	H	340.0	8.4	13.0	94.0
2437.000000	98.1	87.2	1000.0	1000.000	190.0	V	345.0	8.5	6.8	94.0
2437.000000	96.8	85.8	1000.0	1000.000	140.0	H	340.0	8.5	8.2	94.0
2472.000000	93.6	82.3	1000.0	1000.000	180.0	H	340.0	8.8	11.7	94.0
2472.000000	96.7	85.4	1000.0	1000.000	180.0	V	350.0	8.8	8.6	94.0
2483.500000	83.7	53.0	1000.0	1000.000	180.0	V	350.0	8.9	1.0	54.0
2483.500000	81.0	50.3	1000.0	1000.000	180.0	H	340.0	8.9	3.7	54.0
2488.000000	67.5	47.6	1000.0	1000.000	180.0	V	350.0	8.9	6.4	54.0
2488.000000	64.8	45.0	1000.0	1000.000	180.0	H	340.0	8.9	9.0	54.0

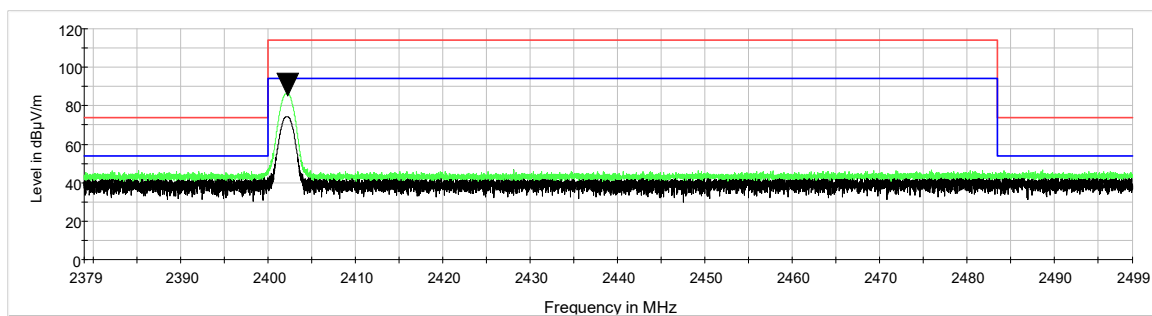




BLE, 2402 MHz: Vertical – GFSK 1Mbps

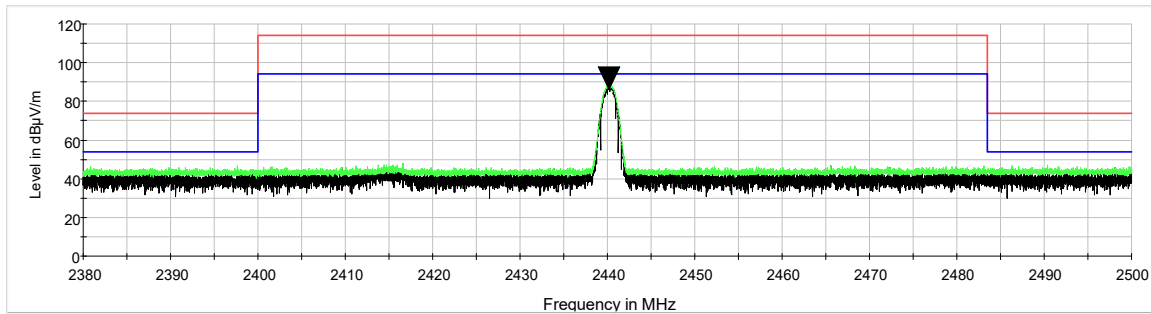


BLE, 2402 MHz: Horizontal – GFSK 1Mbps

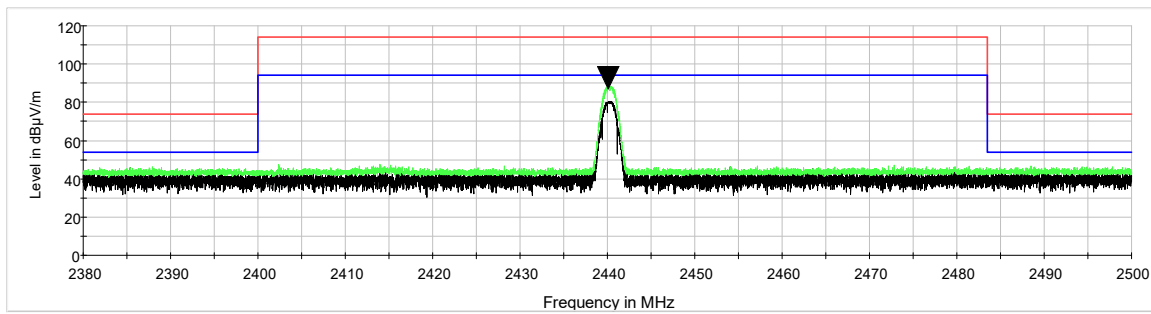




BLE, 2440 MHz: Vertical – GFSK 1Mbps

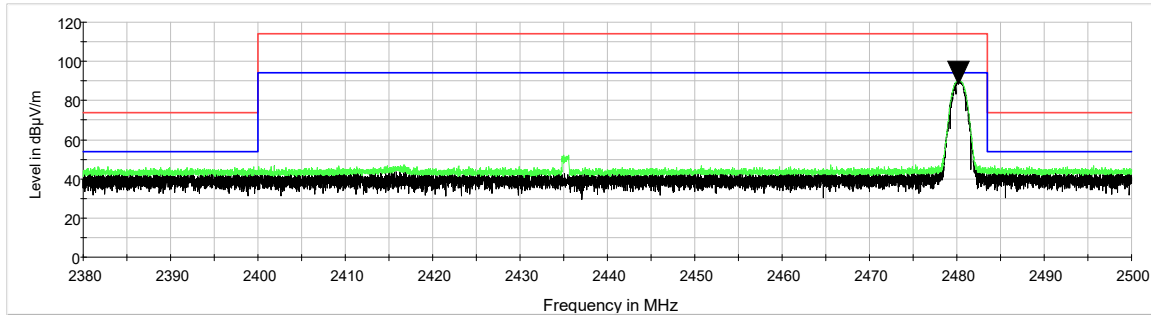


BLE, 2440 MHz: Horizontal – GFSK 1Mbps

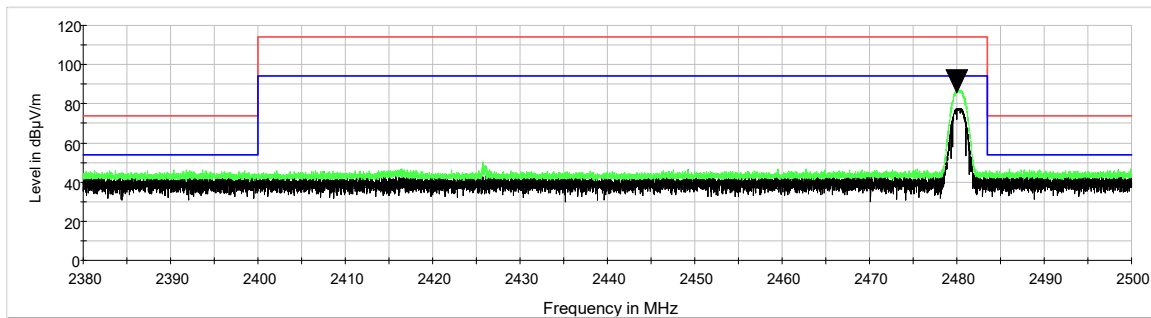




BLE, 2480 MHz: Vertical – GFSK 1Mbps

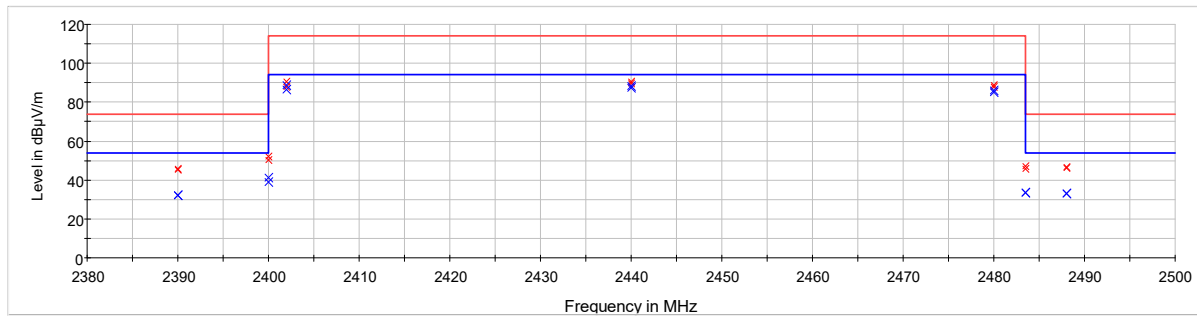


BLE, 2480 MHz: Horizontal – GFSK 1Mbps



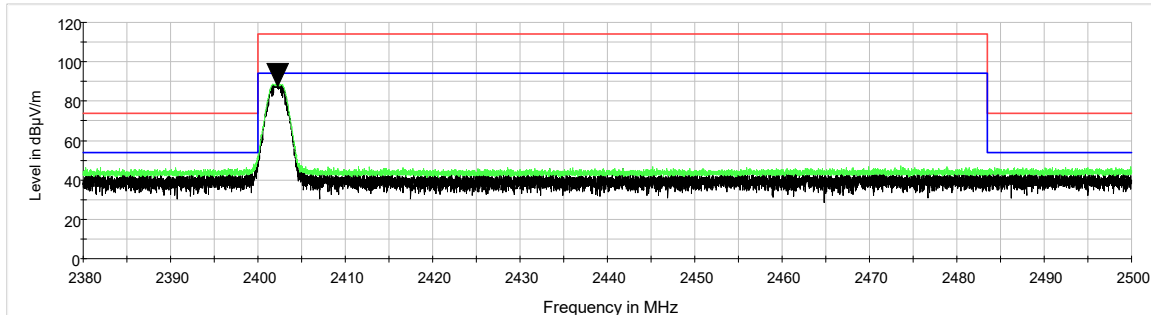
**BLE, GFSK 1 Mbps: Band Edge and Field Strength of the Fundamentals**

Frequency MHz	MaxPeak dBμV/m	Average dBμV/m	Meas. Time ms	Bandwidth kHz	Height cm	Pol..	Azimuth deg	Corr. dB	Margin - AVG dB	Limit - AVG dBμV/m
2390.000000	45.4	32.3	1000.0	1000.000	180.0	V	345.0	8.4	21.7	54.0
2390.000000	45.6	32.3	1000.0	1000.000	130.0	H	20.0	8.4	21.7	54.0
2400.000000	50.2	39.1	1000.0	1000.000	130.0	H	20.0	8.4	14.9	54.0
2400.000000	52.1	41.1	1000.0	1000.000	180.0	V	345.0	8.4	12.9	54.0
2402.000000	87.9	86.6	1000.0	1000.000	130.0	H	20.0	8.4	7.4	94.0
2402.000000	90.4	88.9	1000.0	1000.000	180.0	V	345.0	8.4	5.1	94.0
2440.000000	90.6	88.2	1000.0	1000.000	180.0	V	350.0	8.5	5.8	94.0
2440.000000	89.8	87.5	1000.0	1000.000	130.0	H	340.0	8.5	6.5	94.0
2480.000000	87.9	85.3	1000.0	1000.000	140.0	V	5.0	8.9	8.7	94.0
2480.000000	88.6	86.2	1000.0	1000.000	170.0	H	340.0	8.9	7.8	94.0
2483.500000	45.9	33.4	1000.0	1000.000	140.0	V	5.0	8.9	20.6	54.0
2483.500000	47.3	33.7	1000.0	1000.000	170.0	H	340.0	8.9	20.3	54.0
2488.000000	46.4	33.0	1000.0	1000.000	140.0	V	5.0	8.9	21.0	54.0
2488.000000	46.0	33.1	1000.0	1000.000	170.0	H	340.0	8.9	20.9	54.0

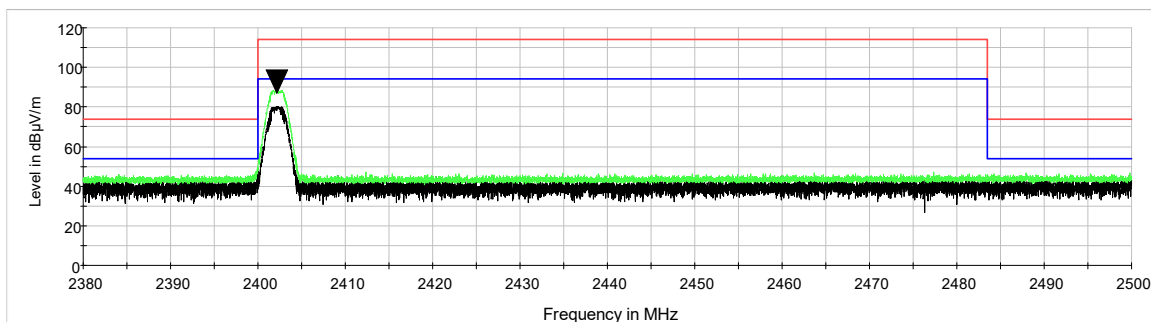




BLE, 2402 MHz: Vertical – GFSK 2Mbps

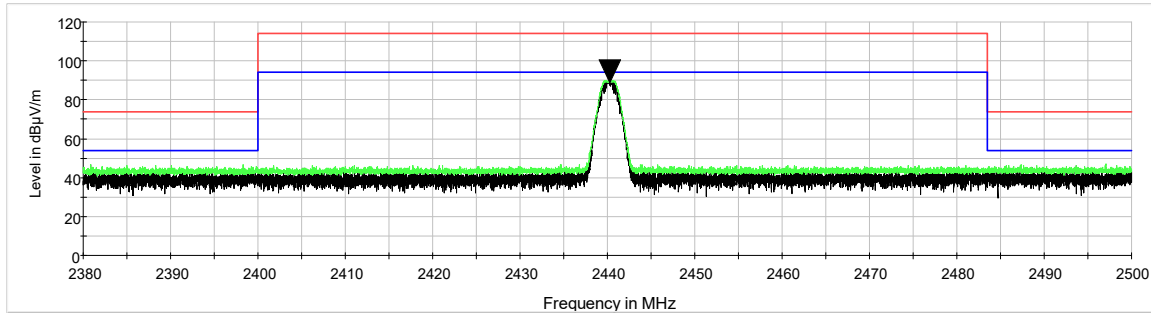


BLE, 2402 MHz: Horizontal – GFSK 2Mbps

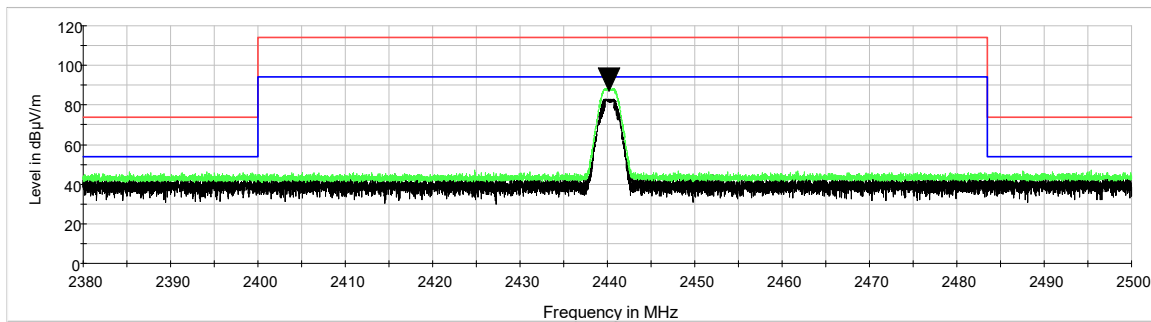




BLE, 2440 MHz: Vertical – GFSK 2Mbps

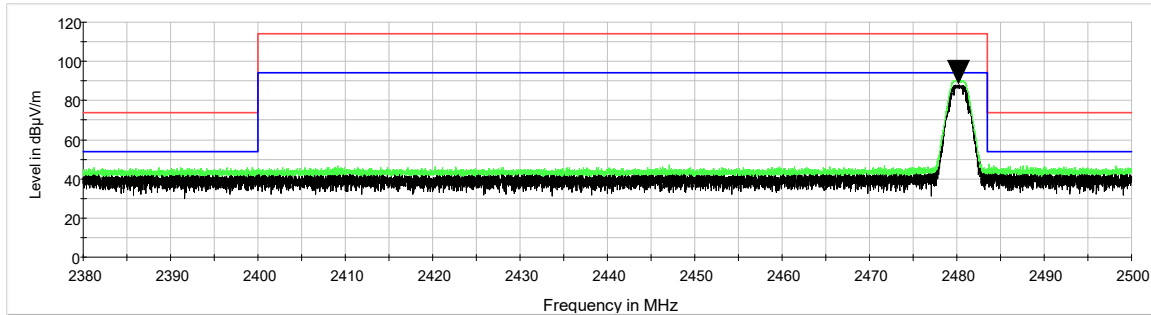


BLE, 2440 MHz: Horizontal – GFSK 2Mbps

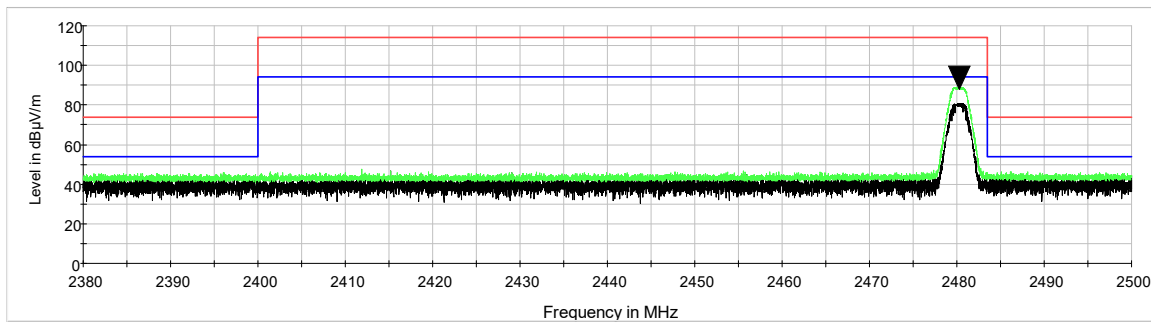




BLE, 2480 MHz: Vertical – GFSK 2Mbps

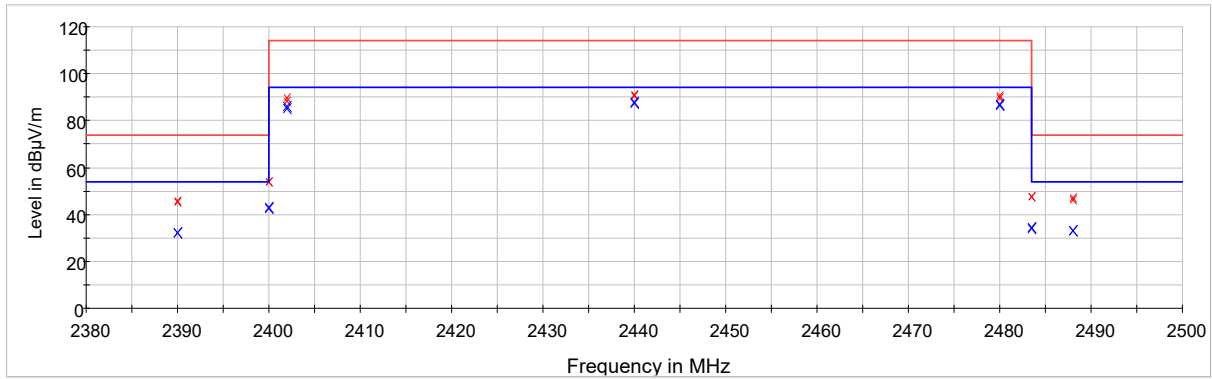


BLE, 2480 MHz: Horizontal – GFSK 2Mbps



**BLE, GFSK 2Mbps: Band Edge and Field Strength of the Fundamentals**

Frequency MHz	MaxPeak dBμV/m	Average dBμV/m	Meas. Time ms	Bandwidth kHz	Height cm	Pol.	Azimuth deg	Corr. dB	Margin - AVG dB	Limit - AVG dBμV/m
2390.000000	45.5	32.3	1000.0	1000.000	125.0	H	340.0	8.4	21.7	54.0
2390.000000	45.3	32.3	1000.0	1000.000	180.0	V	345.0	8.4	21.7	54.0
2400.000000	53.9	42.6	1000.0	1000.000	180.0	V	345.0	8.4	11.4	54.0
2400.000000	54.1	42.8	1000.0	1000.000	125.0	H	340.0	8.4	11.2	54.0
2402.000000	88.3	85.2	1000.0	1000.000	180.0	V	345.0	8.4	8.8	94.0
2402.000000	89.7	85.9	1000.0	1000.000	125.0	H	340.0	8.4	8.1	94.0
2440.000000	91.1	88.0	1000.0	1000.000	180.0	V	345.0	8.5	6.0	94.0
2440.000000	90.7	87.6	1000.0	1000.000	140.0	H	340.0	8.5	6.4	94.0
2480.000000	89.8	86.6	1000.0	1000.000	130.0	H	20.0	8.9	7.4	94.0
2480.000000	90.7	86.9	1000.0	1000.000	150.0	V	350.0	8.9	7.1	94.0
2483.500000	47.5	34.3	1000.0	1000.000	150.0	V	350.0	8.9	19.7	54.0
2483.500000	47.5	34.1	1000.0	1000.000	130.0	H	20.0	8.9	19.9	54.0
2488.000000	46.9	33.2	1000.0	1000.000	150.0	V	350.0	8.9	20.8	54.0
2488.000000	46.1	33.1	1000.0	1000.000	130.0	H	20.0	8.9	20.9	54.0





8.2 Test Data – Spurious Emissions

Notes: Plots are peak, max hold pre-scan data included only to determine what frequencies to investigate and measure. During the pre-scan evaluation, the EUT was rotated in all possible directions to find the maximum emissions. The orthogonal position that showed the highest emissions was used. At some frequencies, no emissions from the EUT were measurable over the ambient noise floor. The readings did not change with EUT on and EUT off.

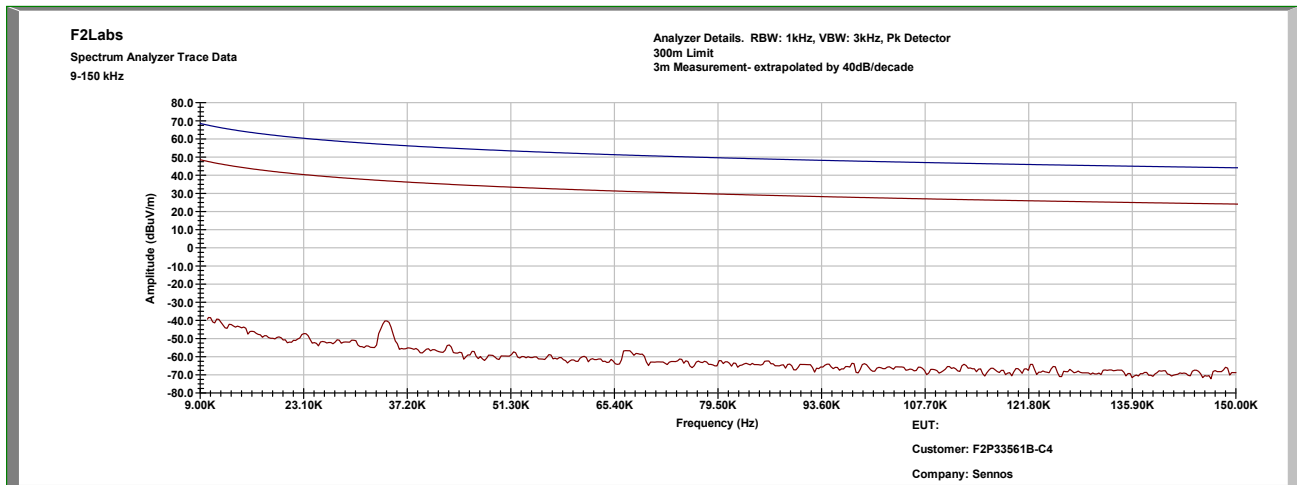
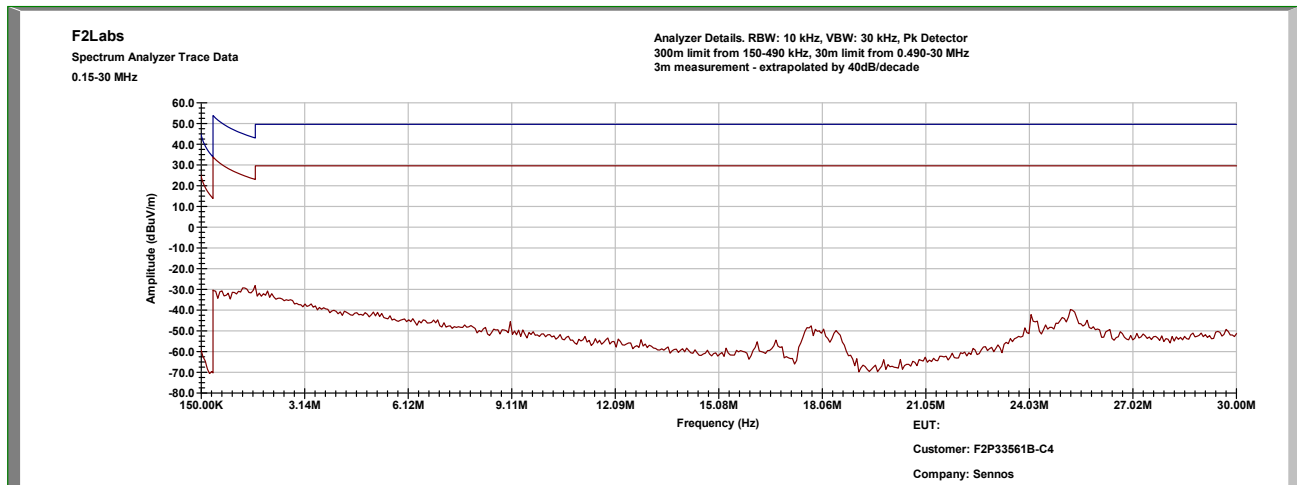
At least 6 of the highest frequencies were measured per ANSI 63.4 in a 3-meter anechoic chamber. Frequencies below 1 GHz were measured using a quasi-peak detector. The antenna was raised between 1 and 4 meters and the EUT turntable was rotated 360 degrees to maximize the emissions. Some of the frequencies 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. Frequencies were scanned from 9kHz to 26 GHz and the highest emissions are listed below.

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 below.

Unless otherwise noted, test data presented was Mid Channel, determined to be worst-case.



Test Date(s):	2026-07-20	Test Engineer(s):	E. Tobin
Standards:	CFR 47 Part 15.249(d) / Part 15.209	Air Temperature:	21.0°C
		Relative Humidity:	43%

Wi-Fi, 802.11b DBPSK/DSSS 1 Mbps: Characterization Scan, 9 kHz to 150 kHz**Wi-Fi, 802.11b DBPSK/DSSS 1 Mbps: Characterization Scan, 150 kHz to 30 MHz**

Note: Peak trace extrapolated to limit by 40dB per decade. Peak trace below AVG/QP limit.

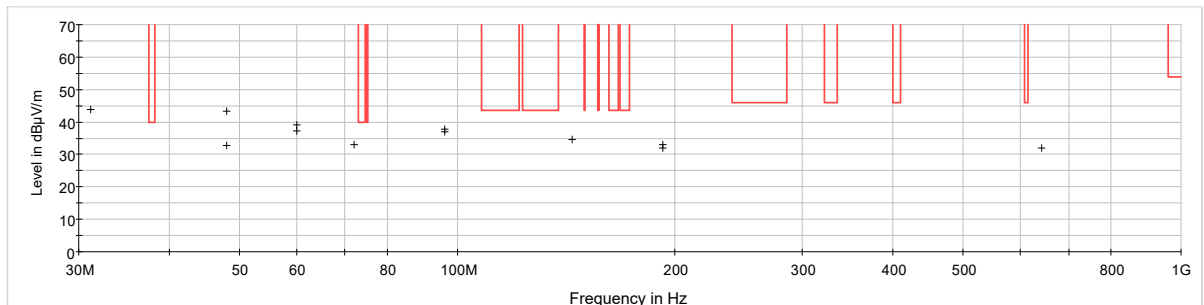


Measurements

Wi-Fi, 802.11b DBPSK/DSSS 1 Mbps: 30 MHz to 1000 MHz

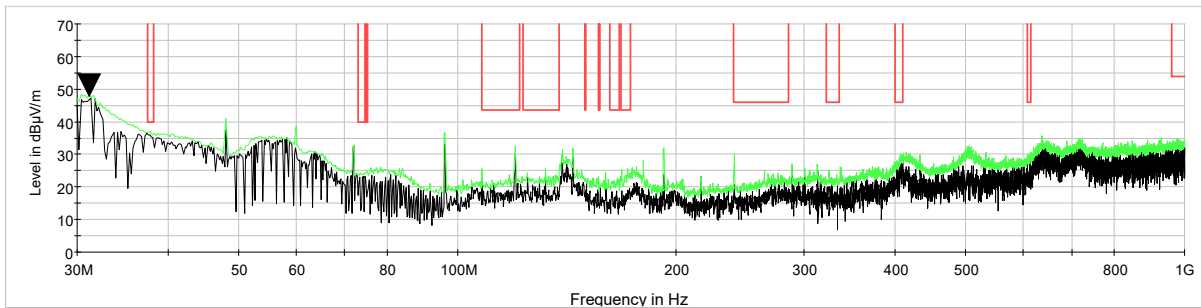
Note: Chart below includes data from all channels.

Frequency (MHz)	Ant. Pol.	Ant. Height (cm)	Azimuth (degrees)	Reading (dBμV)	Corr. Factors (dB)	Emission (dBμV/m)	Limit (dBμV/m)	Margin (dB)
48.042000	H	200.00	348.00	64.0	-31.2	32.80	40.0	-7.2
48.042000	V	100.00	0.00	74.6	-31.2	43.40	40.0	3.4
60.070000	H	200.00	0.00	71.5	-32.4	39.10	40.0	-0.9
60.070000	V	100.00	6.00	69.5	-32.4	37.10	40.0	-2.9
72.098000	V	100.00	0.00	64.5	-31.5	33.00	40.0	-7.0
96.154000	H	200.00	358.00	68.6	-30.7	37.90	43.5	-5.6
96.154000	V	100.00	0.00	67.6	-30.7	36.90	43.5	-6.6
144.266000	H	200.00	0.00	61.2	-26.6	34.60	43.5	-8.9
192.184000	H	200.00	348.00	60.3	-27.3	33.00	43.5	-10.5
192.184000	V	100.00	0.00	59.2	-27.3	31.90	43.5	-11.6
642.652000	H	200.00	0.00	47.1	-18.3	28.80	46.0	-17.2
642.652000	H	200.00	0.00	50.3	-18.3	32.00	46.0	-14.0

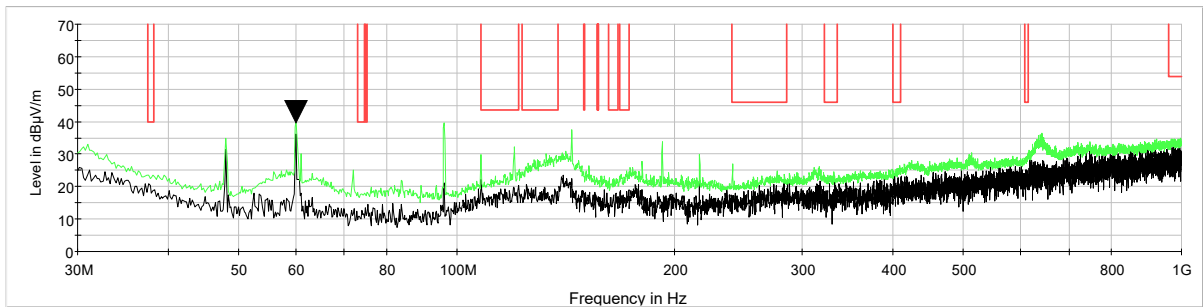




Wi-Fi, 802.11b DBPSK/DSSS 1 Mbps: 30 MHz to 1000 MHz, Vertical



Wi-Fi, 802.11b DBPSK/DSSS 1 Mbps: 30 MHz to 1000 MHz, Horizontal



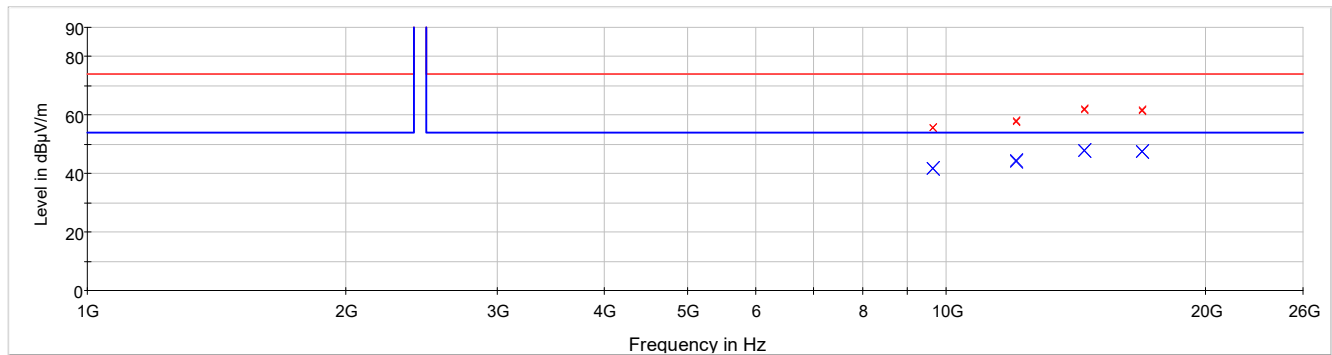


Measurements

Wi-Fi, 802.11b DBPSK/DSSS 1 Mbps: 1 GHz to 18 GHz

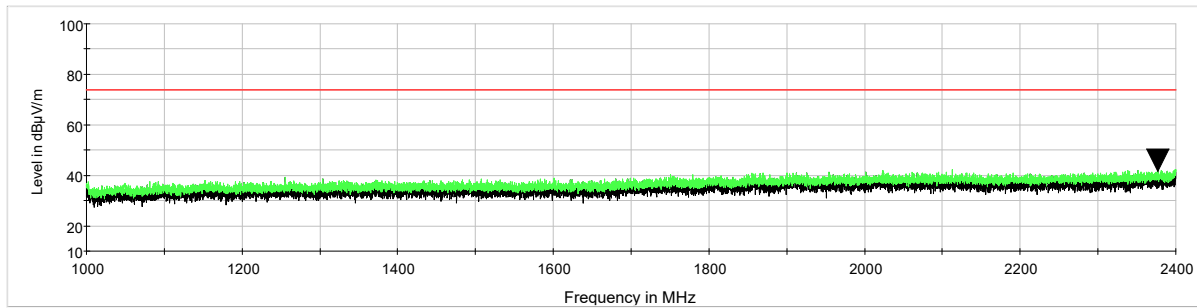
Note: Chart below includes data from all channels.

Frequency MHz	MaxPeak dBμV/m	Average dBμV/m	Bandwidth kHz	Height cm	Pol.	Azimuth deg	Corr. dB	Margin - AVG dB	Limit - AVG dBμV/m
9648.000000	55.5	41.7	1000.000	150.0	H	351.0	14.5	12.3	54.0
9648.000000	55.6	41.7	1000.000	150.0	V	0.0	14.5	12.3	54.0
12060.000000	58.2	44.3	1000.000	150.0	H	0.0	17.2	9.7	54.0
12060.000000	57.8	44.3	1000.000	150.0	V	2.0	17.2	9.7	54.0
14472.000000	61.8	47.9	1000.000	150.0	H	0.0	20.6	6.1	54.0
14472.000000	62.1	47.9	1000.000	150.0	V	0.0	20.6	6.1	54.0
16884.000000	61.4	47.7	1000.000	150.0	H	0.0	20.4	6.3	54.0
16884.000000	61.7	47.7	1000.000	150.0	V	5.0	20.4	6.3	54.0

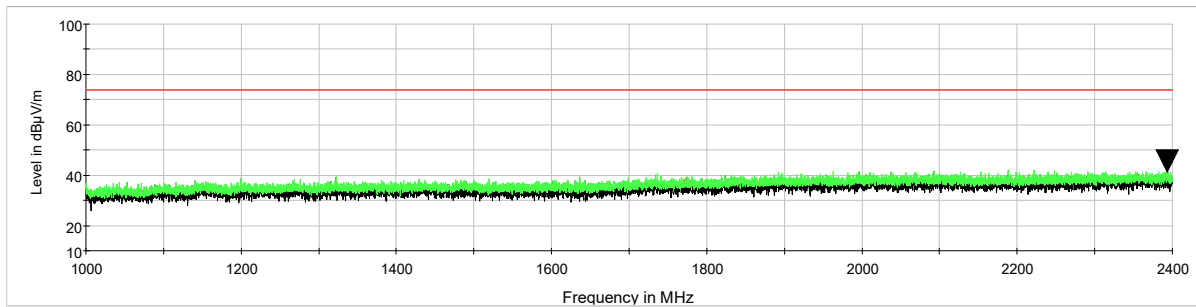




Wi-Fi, 802.11b DBPSK/DSSS 1 Mbps: 1 GHz to 2.4 GHz, Vertical

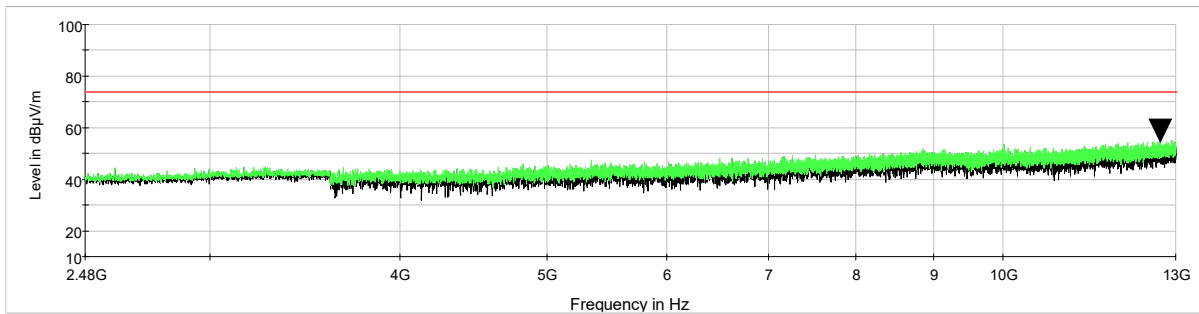


Wi-Fi, 802.11b DBPSK/DSSS 1 Mbps: 1 GHz to 2.4 GHz, Horizontal

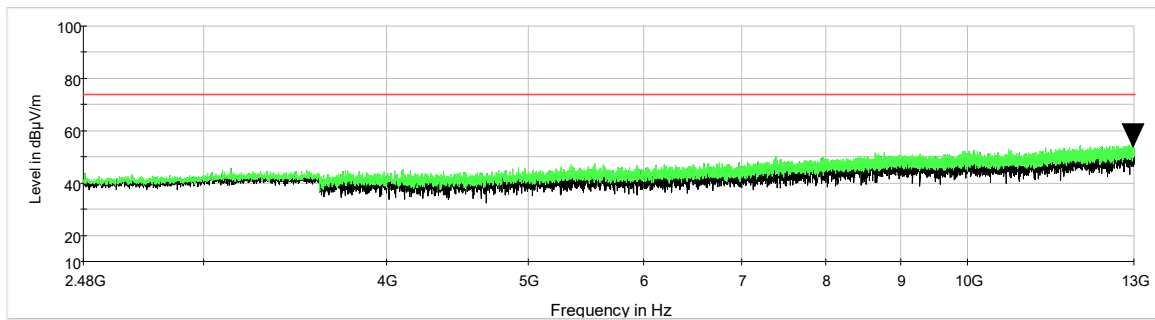




Wi-Fi, 802.11b DBPSK/DSSS 1 Mbps: 2.48 GHz to 13 GHz, Vertical

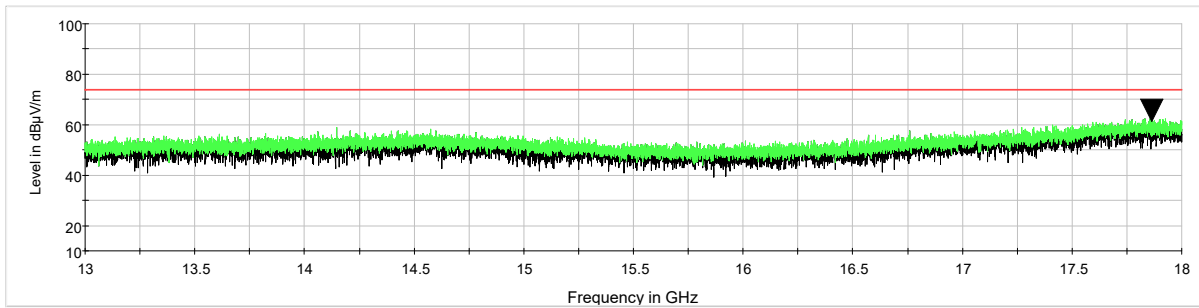


Wi-Fi, 802.11b DBPSK/DSSS 1 Mbps: 2.48 GHz to 13 GHz, Horizontal

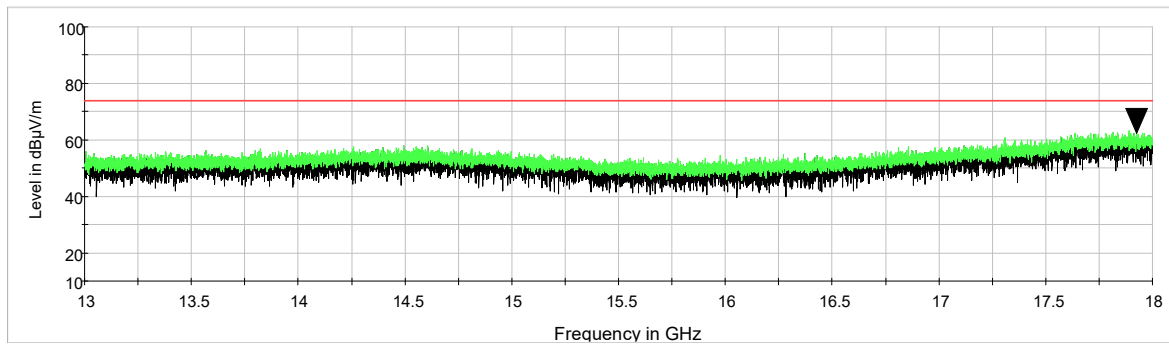




Wi-Fi, 802.11b DBPSK/DSSS 1 Mbps: 13 GHz to 18 GHz, Vertical

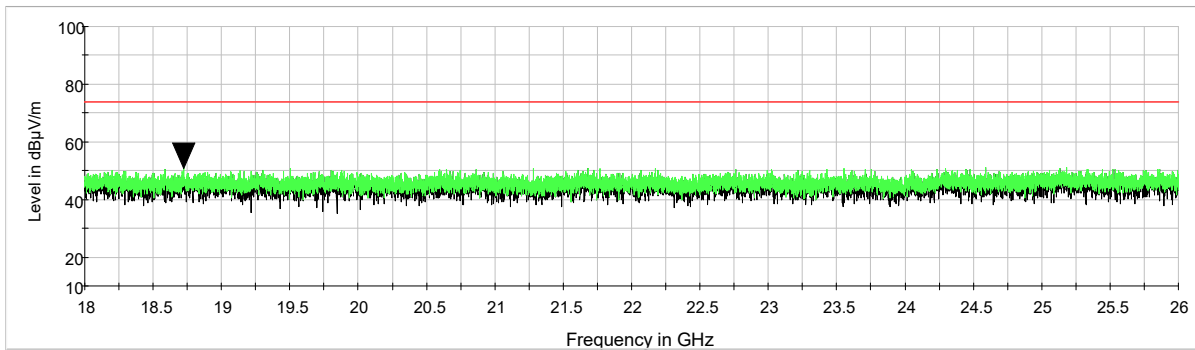


Wi-Fi, 802.11b DBPSK/DSSS 1 Mbps: 13 GHz to 18 GHz, Horizontal

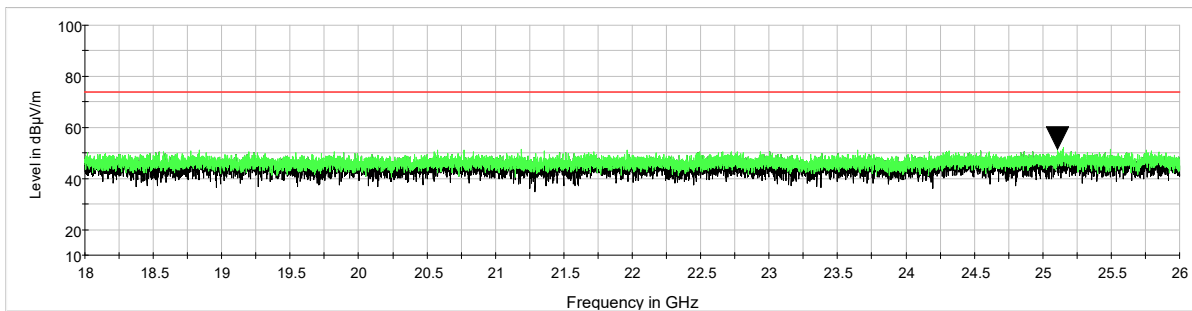




Wi-Fi, 802.11b DBPSK/DSSS 1 Mbps: 18 GHz to 26 GHz, Vertical

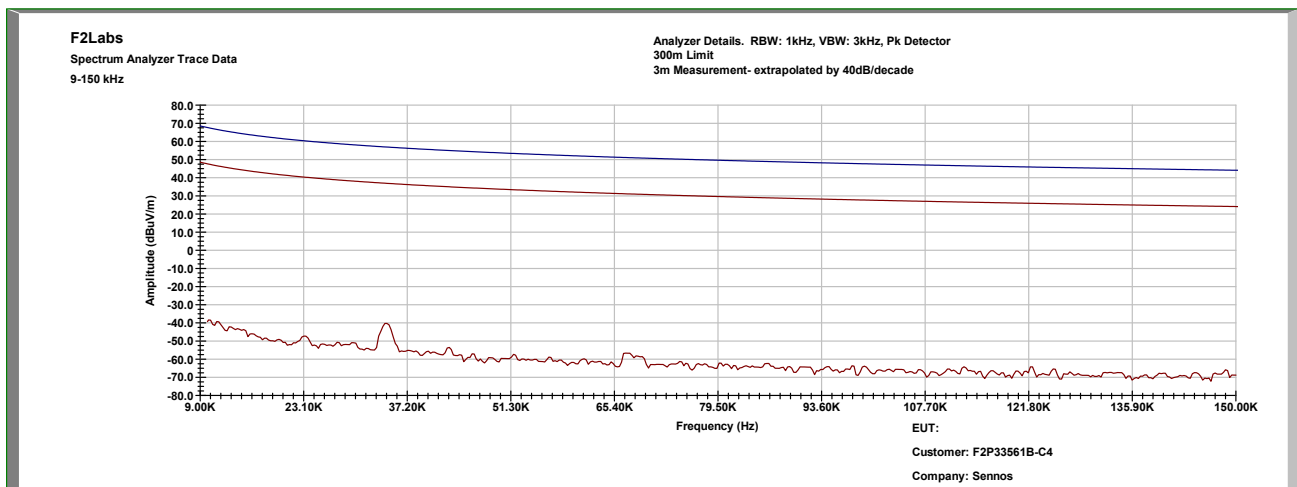


Wi-Fi, 802.11b DBPSK/DSSS 1 Mbps: 18 GHz to 26 GHz, Horizontal

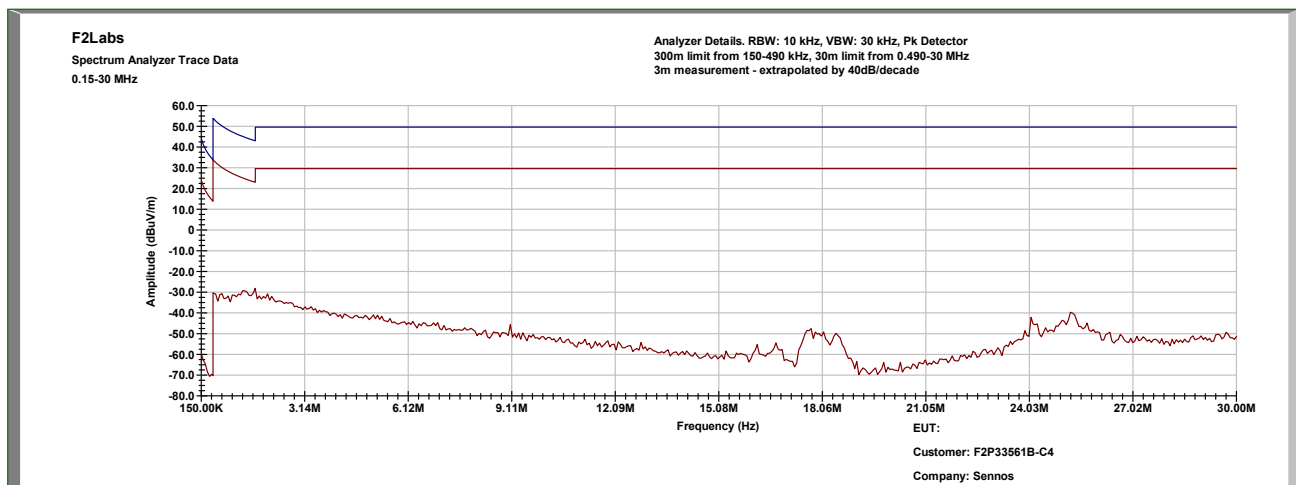




Wi-Fi, 802.11g BPSK/OFDM 6 Mbps: Characterization Scan, 9 kHz to 150 kHz



Wi-Fi, 802.11g BPSK/OFDM 6 Mbps: Characterization Scan, 150 kHz to 30 MHz



Note: Peak trace extrapolated to limit by 40dB per decade. Peak trace below AVG/QP limit.

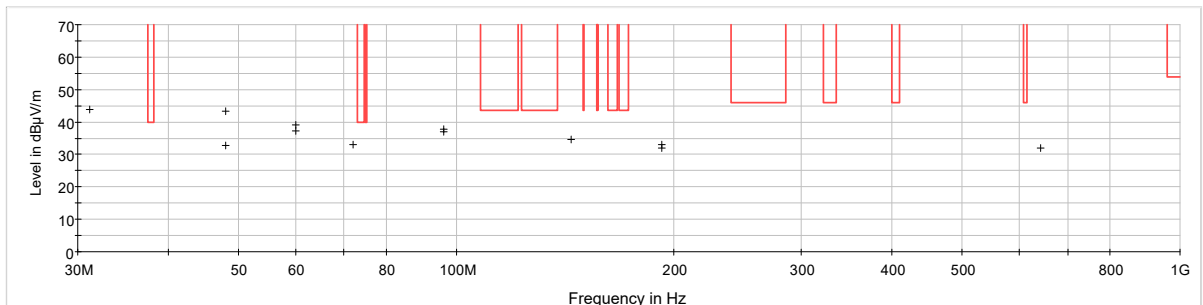


Measurements

Wi-Fi 802.11g BPSK/OFDM 6 Mbps: 30 MHz to 1000 MHz

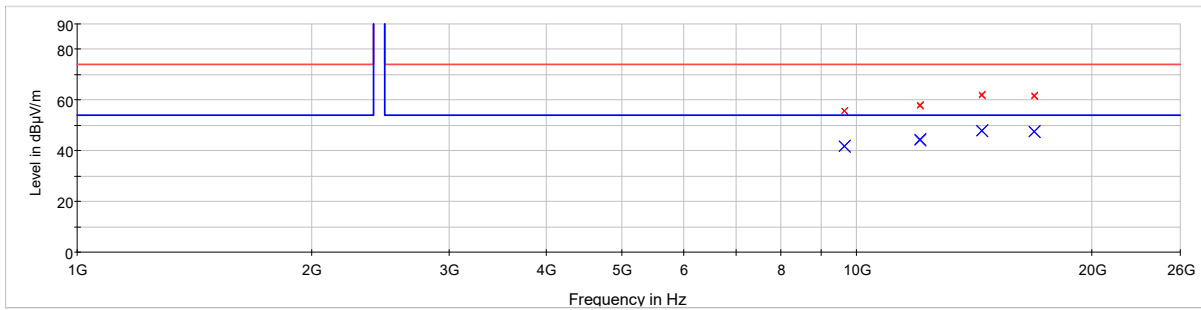
Note: Chart below includes data from all channels.

Frequency (MHz)	Ant. Pol.	Ant. Height (cm)	Azimuth (degrees)	Reading (dBμV)	Corr. Factors (dB)	Emission (dBμV/m)	Limit (dBμV/m)	Margin (dB)
48.042000	H	200.00	348.00	64.0	-31.2	32.80	40.0	-7.2
48.042000	V	100.00	0.00	74.6	-31.2	43.40	40.0	3.4
60.070000	H	200.00	0.00	71.5	-32.4	39.10	40.0	-0.9
60.070000	V	100.00	6.00	69.5	-32.4	37.10	40.0	-2.9
72.098000	V	100.00	0.00	64.5	-31.5	33.00	40.0	-7.0
96.154000	H	200.00	358.00	68.6	-30.7	37.90	43.5	-5.6
96.154000	V	100.00	0.00	67.6	-30.7	36.90	43.5	-6.6
144.266000	H	200.00	0.00	61.2	-26.6	34.60	43.5	-8.9
192.184000	H	200.00	348.00	60.3	-27.3	33.00	43.5	-10.5
192.184000	V	100.00	0.00	59.2	-27.3	31.90	43.5	-11.6
642.652000	H	200.00	0.00	47.1	-18.3	28.80	46.0	-17.2
642.652000	H	200.00	0.00	50.3	-18.3	32.00	46.0	-14.0

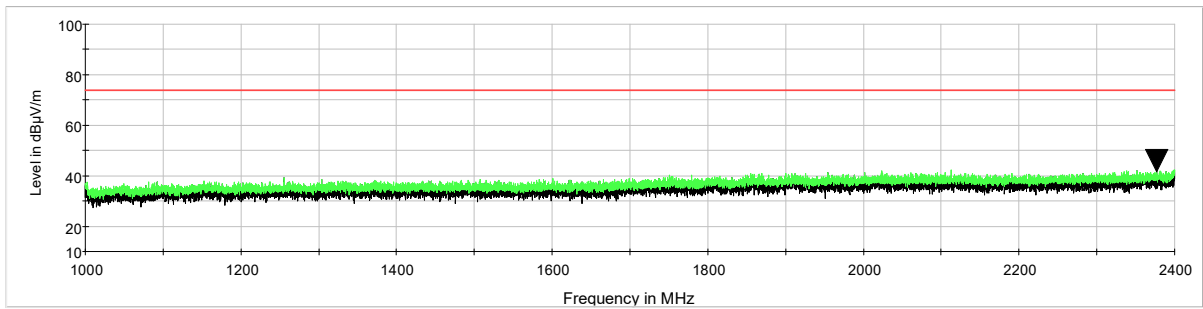




Wi-Fi, 802.11g BPSK/OFDM 6 Mbps: 30 MHz to 1000 MHz, Vertical



Wi-Fi, 802.11g BPSK/OFDM 6 Mbps: 30 MHz to 1000 MHz, Horizontal



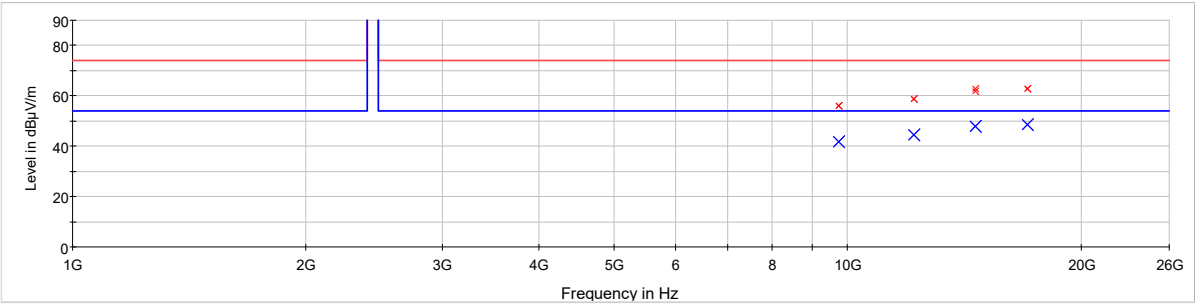


Measurements

Wi-Fi 802.11g BPSK/OFDM 6 Mbps: 1 GHz to 18 GHz

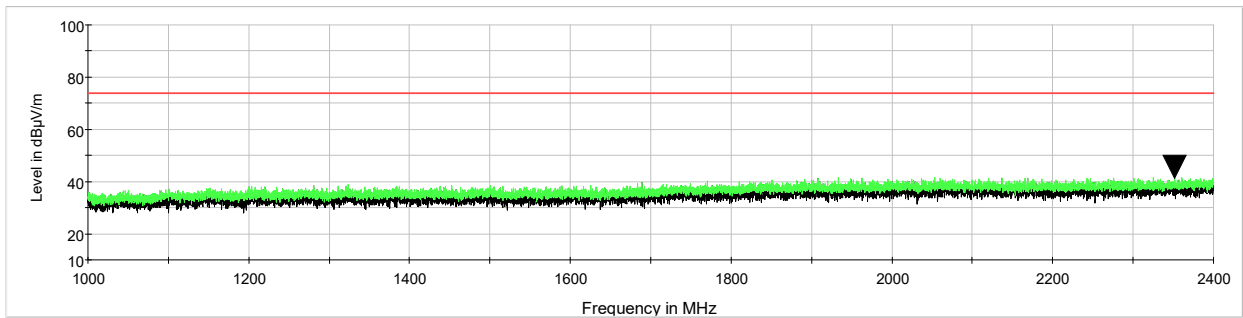
Note: Chart below includes data from all channels.

Frequency MHz	MaxPeak dBµV/m	Average dBµV/m	Bandwidth kHz	Height cm	Pol.	Azimuth deg	Corr. dB	Margin - AVG dB	Limit - AVG dBµV/m
9748.000000	56.0	41.9	1000.000	150.0	H	0.0	14.7	12.1	54.0
9748.000000	56.0	41.9	1000.000	150.0	V	353.0	14.7	12.1	54.0
12185.000000	58.8	44.6	1000.000	150.0	H	6.0	17.2	9.4	54.0
12185.000000	58.6	44.5	1000.000	150.0	V	2.0	17.2	9.5	54.0
14622.000000	61.7	48.0	1000.000	150.0	H	359.0	20.6	6.0	54.0
14622.000000	62.7	48.0	1000.000	150.0	V	348.0	20.6	6.0	54.0
17059.000000	62.8	48.7	1000.000	150.0	H	0.0	21.2	5.3	54.0
17059.000000	62.7	48.7	1000.000	150.0	V	8.0	21.2	5.3	54.0

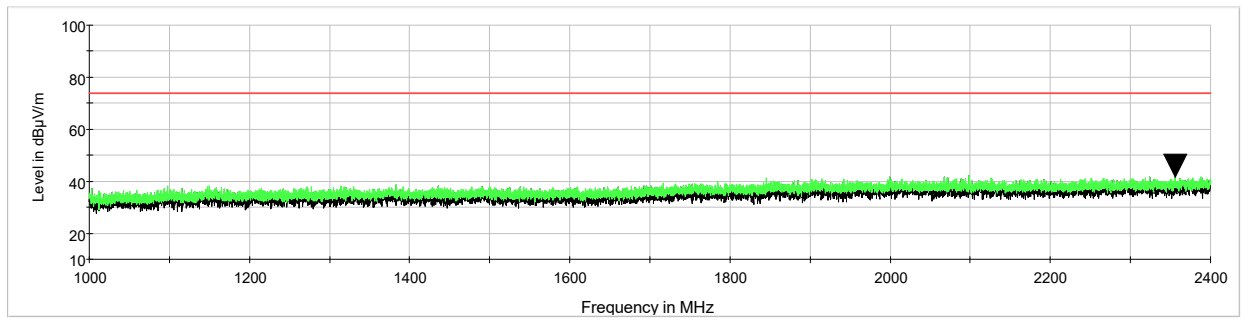




Wi-Fi, 802.11g BPSK/OFDM 6 Mbps: 1 GHz to 2.4 GHz, Vertical

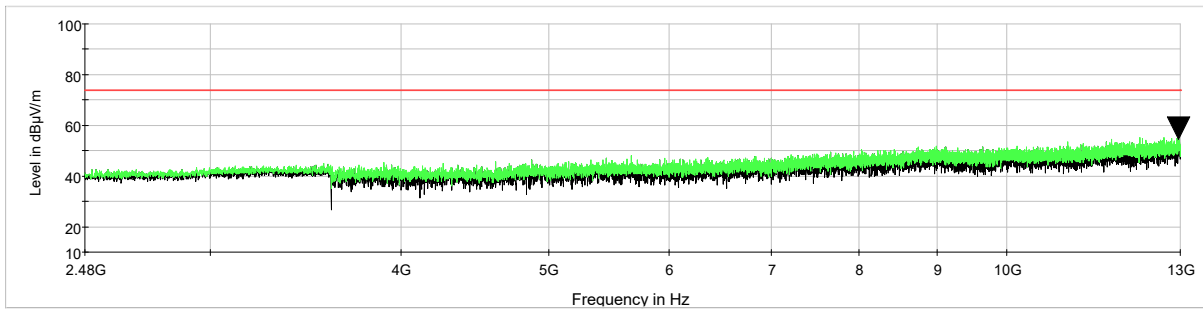


Wi-Fi, 802.11g BPSK/OFDM 6 Mbps: 1 GHz to 2.4 GHz, Horizontal

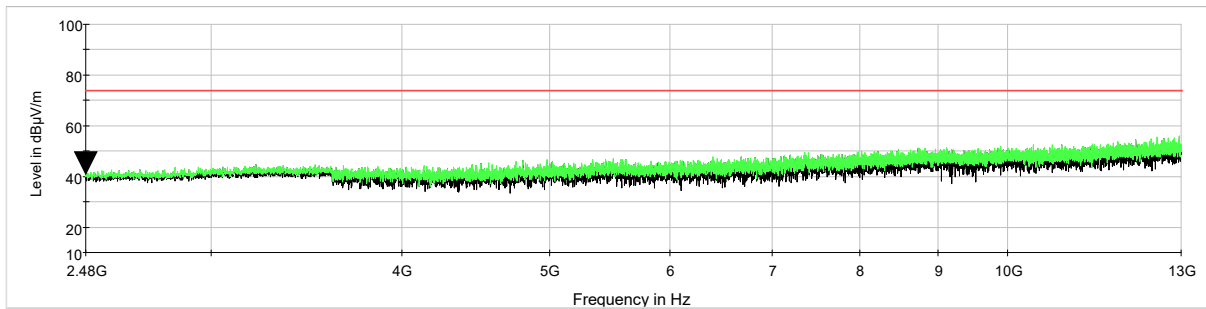




Wi-Fi, 802.11g BPSK/OFDM 6 Mbps: 2.4 GHz to 13 GHz, Vertical

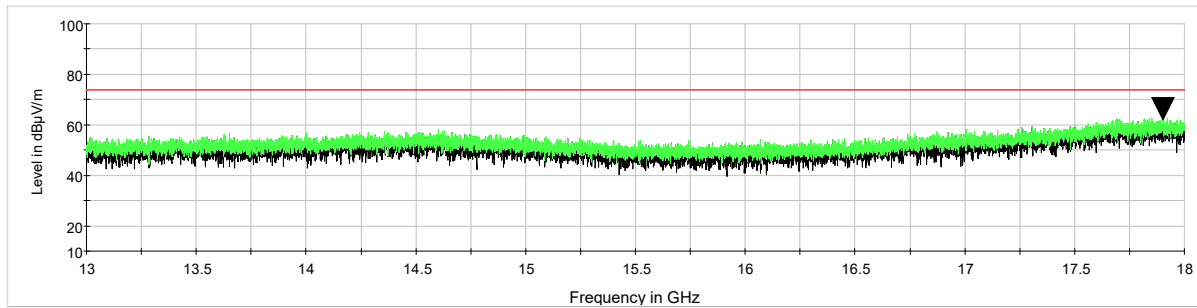


Wi-Fi, 802.11g BPSK/OFDM 6 Mbps: 2.4 GHz to 13 GHz, Horizontal

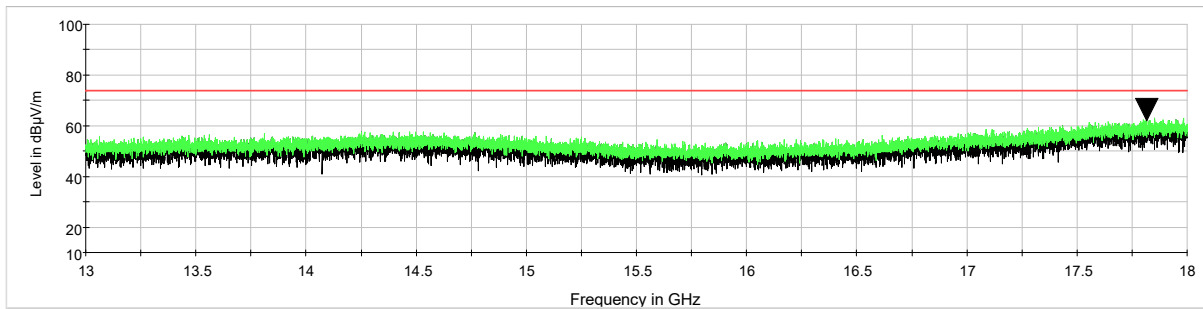




Wi-Fi, 802.11g BPSK/OFDM 6 Mbps: 13 GHz to 18 GHz, Vertical

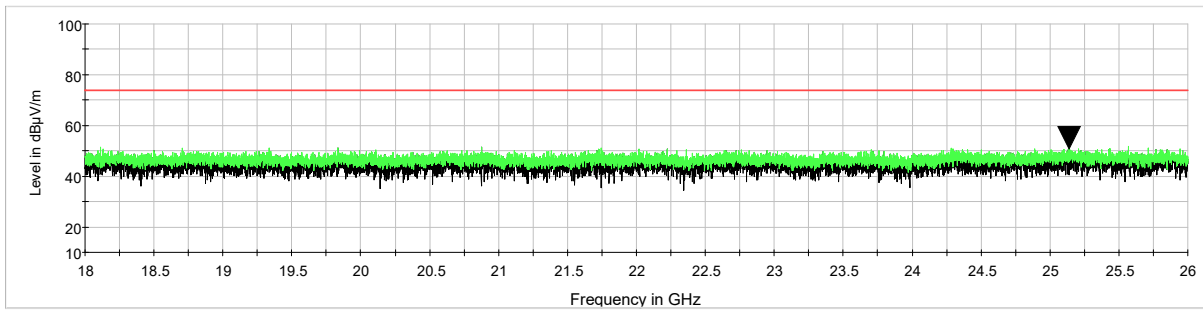


Wi-Fi, 802.11g BPSK/OFDM 6 Mbps: 13 GHz to 18 GHz, Horizontal

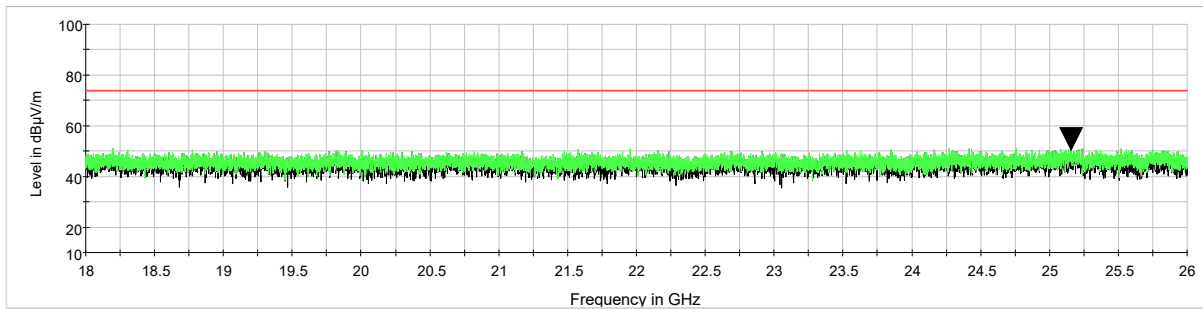




Wi-Fi, 802.11g BPSK/OFDM 6 Mbps: 18 GHz to 26 GHz, Vertical

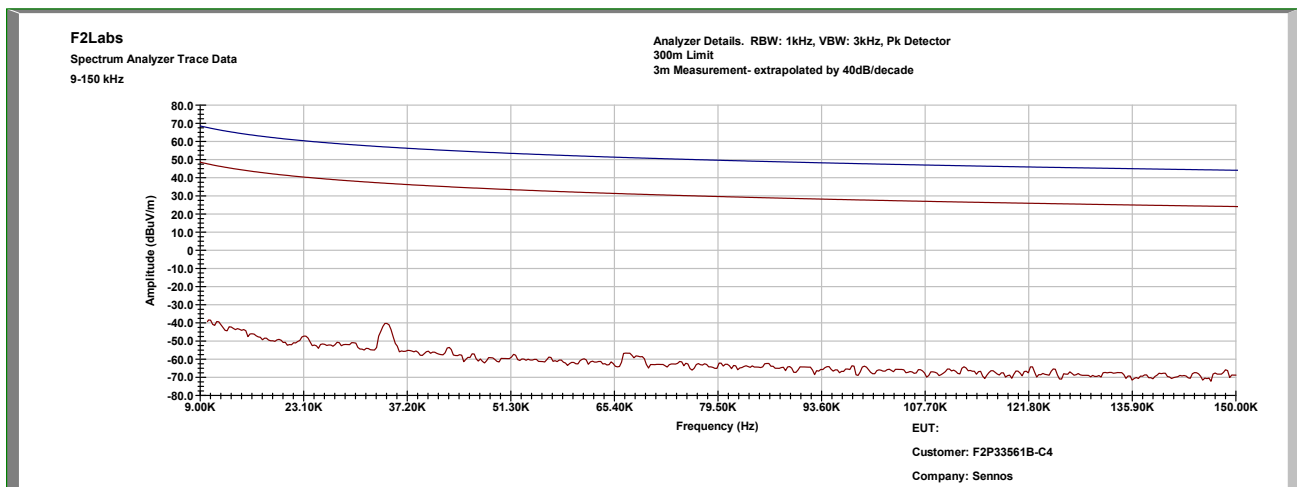


Wi-Fi, 802.11g BPSK/OFDM 6 Mbps: 18 GHz to 26 GHz, Horizontal

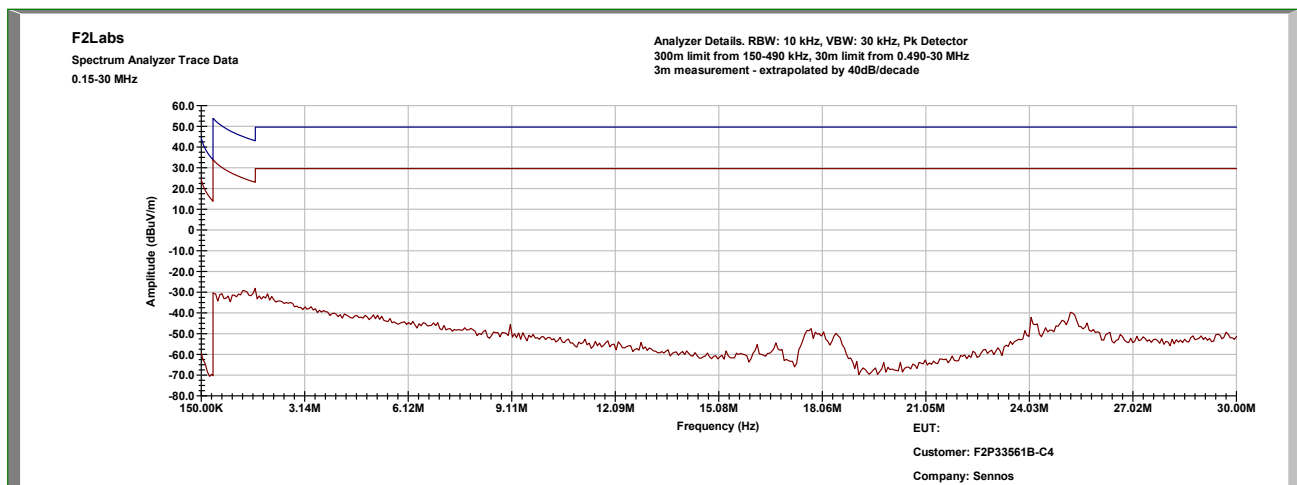




BLE, GFSK 1Mbps: Characterization Scan, 9 kHz to 150 kHz



BLE, GFSK 1Mbps: Characterization Scan, 150 kHz to 30 MHz



Note: Peak trace extrapolated to limit by 40dB per decade. Peak trace below AVG/QP limit.

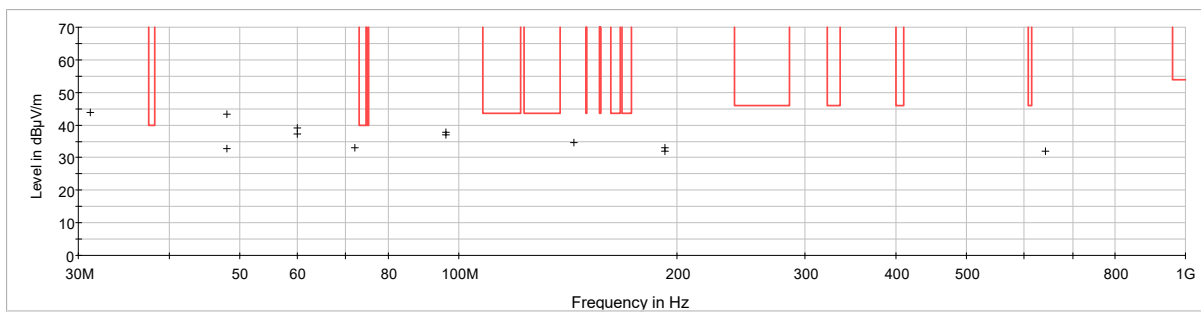


Measurements

BLE, GFSK 1Mbps: 30 MHz to 1000 MHz

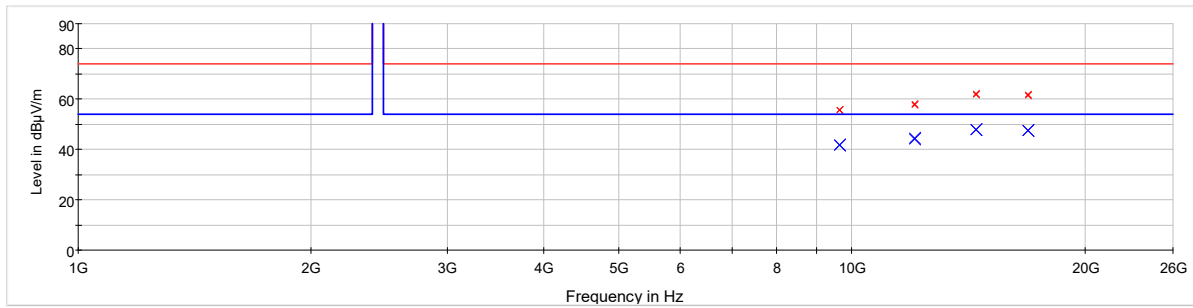
Note: Chart below includes data from all channels.

Frequency (MHz)	Ant. Pol.	Ant. Height (cm)	Azimuth (degrees)	Reading (dBμV)	Corr. Factors (dB)	Emission (dBμV/m)	Limit (dBμV/m)	Margin (dB)
48.042000	H	200.00	348.00	64.0	-31.2	32.80	40.0	-7.2
60.070000	H	200.00	0.00	71.5	-32.4	39.10	40.0	-0.9
60.070000	V	100.00	6.00	69.5	-32.4	37.10	40.0	-2.9
72.098000	V	100.00	0.00	64.5	-31.5	33.00	40.0	-7.0
96.154000	H	200.00	358.00	68.6	-30.7	37.90	43.5	-5.6
96.154000	V	100.00	0.00	67.6	-30.7	36.90	43.5	-6.6
144.266000	H	200.00	0.00	61.2	-26.6	34.60	43.5	-8.9
192.184000	H	200.00	348.00	60.3	-27.3	33.00	43.5	-10.5
192.184000	V	100.00	0.00	59.2	-27.3	31.90	43.5	-11.6
642.652000	H	200.00	0.00	47.1	-18.3	28.80	46.0	-17.2
642.652000	H	200.00	0.00	50.3	-18.3	32.00	46.0	-14.0

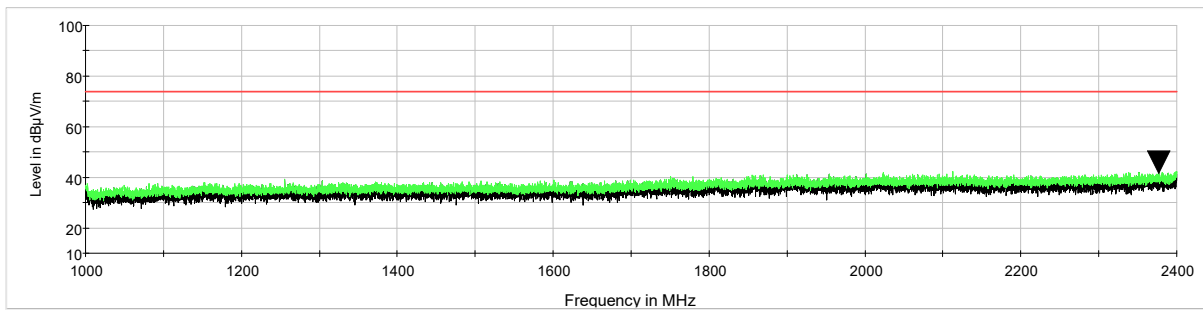




BLE, GFSK 1Mbps: 30 MHz to 1000 MHz, Vertical



BLE, GFSK 1Mbps: 30 MHz to 1000 MHz, Horizontal



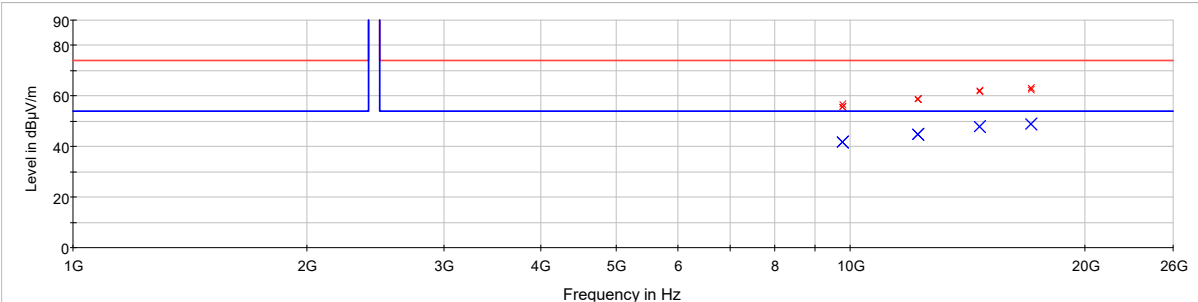


Measurements

BLE, GFSK 1Mbps: 1 GHz to 18 GHz

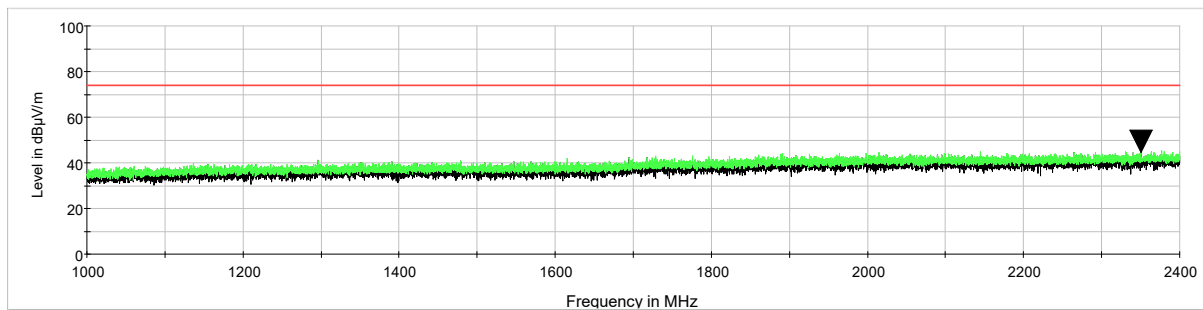
Note: Chart below includes data from all channels.

Frequency MHz	MaxPeak dBµV/m	Average dBµV/m	Bandwidth kHz	Height cm	Pol.	Azimuth deg	Corr. dB	Margin - AVG dB	Limit - AVG dBµV/m
9760.000000	55.7	41.9	1000.000	150.0	H	5.0	14.7	12.1	54.0
9760.000000	55.7	41.9	1000.000	150.0	H	0.0	14.7	12.1	54.0
9760.000000	56.7	41.9	1000.000	150.0	V	0.0	14.7	12.1	54.0
12200.000000	58.8	44.7	1000.000	150.0	H	356.0	17.2	9.3	54.0
12200.000000	58.8	44.7	1000.000	150.0	H	0.0	17.2	9.3	54.0
12200.000000	58.8	44.7	1000.000	150.0	V	2.0	17.2	9.3	54.0
14640.000000	62.1	47.9	1000.000	150.0	V	0.0	20.6	6.1	54.0
14640.000000	61.8	47.9	1000.000	150.0	H	8.0	20.6	6.1	54.0
17080.000000	63.2	48.8	1000.000	150.0	V	0.0	21.3	5.2	54.0
17080.000000	62.6	48.8	1000.000	150.0	H	358.0	21.3	5.2	54.0

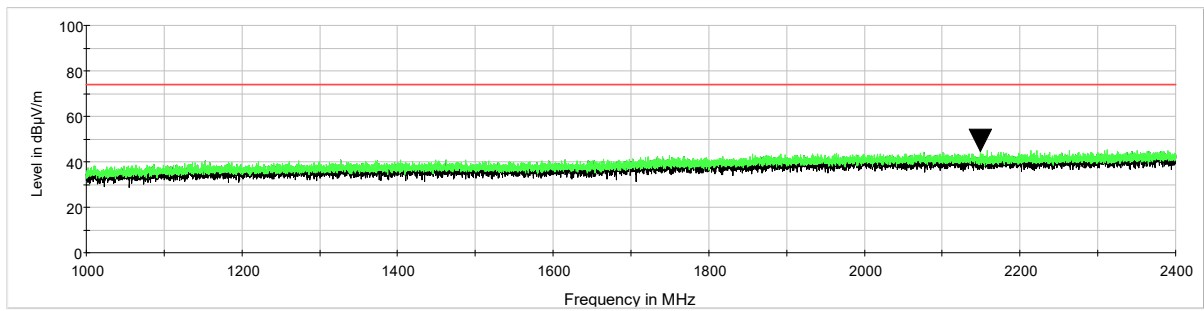




BLE, GFSK 1Mbps: 1 GHz to 2.4 GHz, Vertical

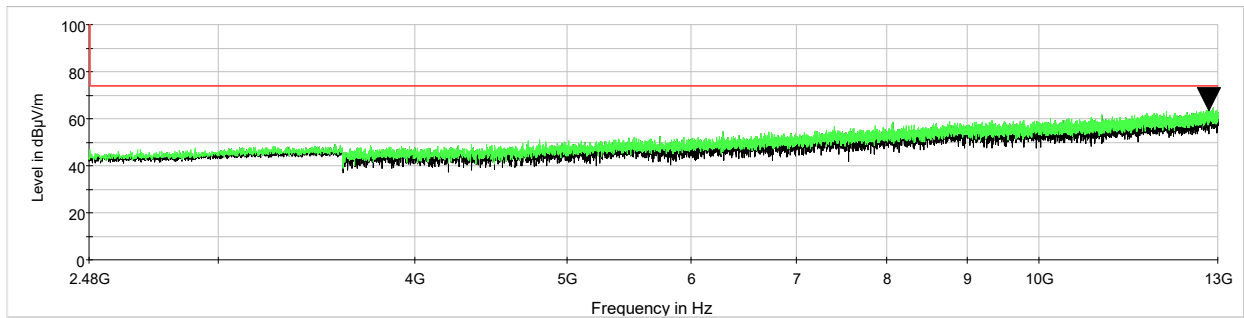


BLE, GFSK 1Mbps: 1 GHz to 2.4 GHz, Horizontal

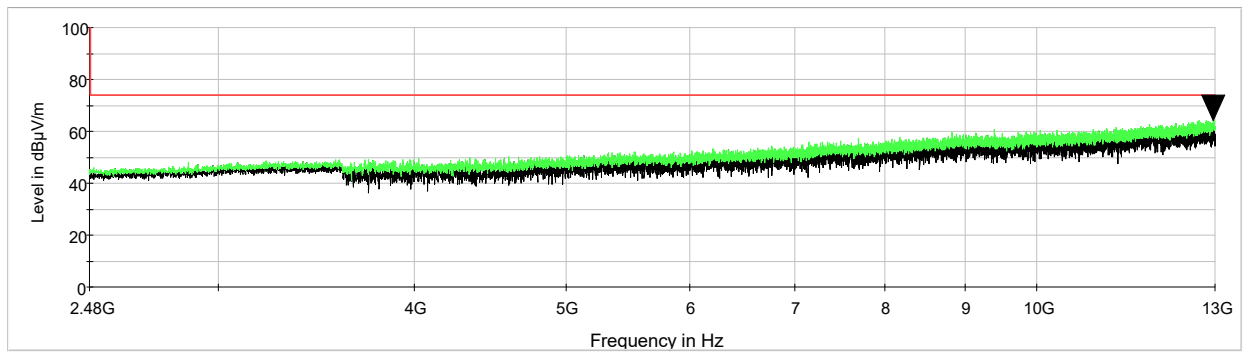




BLE, GFSK 1Mbps: 2.48 GHz to 13 GHz, Vertical

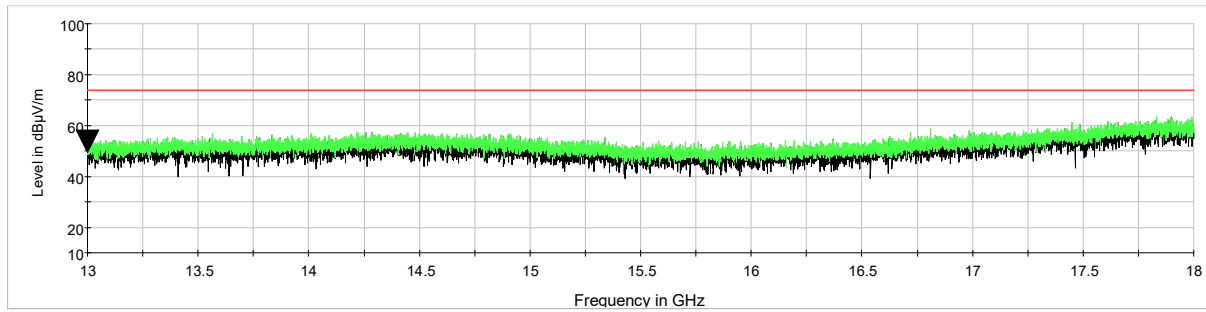


BLE, GFSK 1Mbps: 2.48 GHz to 13 GHz, Horizontal

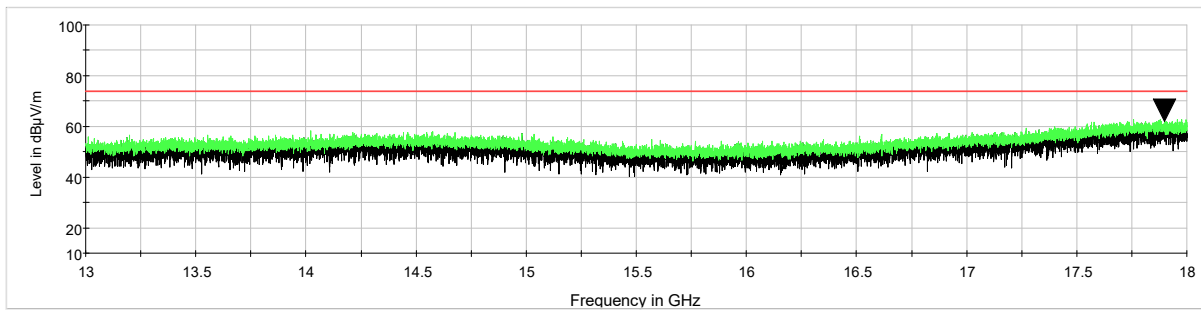




BLE, GFSK 1Mbps: 13 GHz to 18 GHz, Vertical

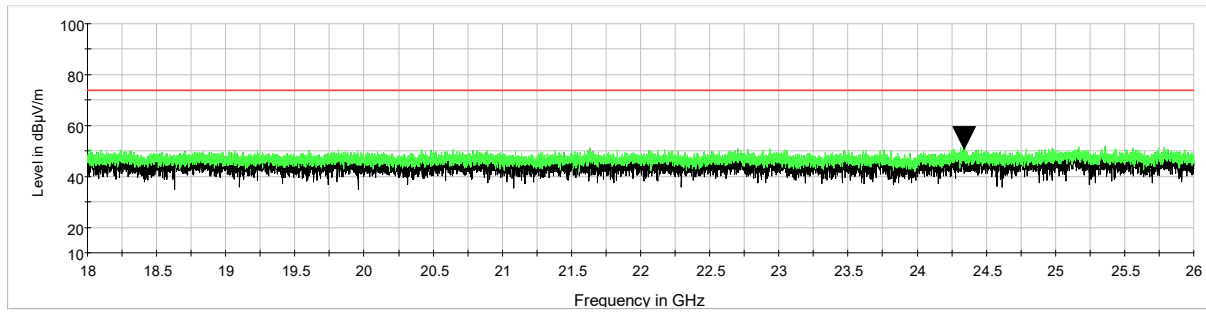


BLE, GFSK 1Mbps: 13 GHz to 18 GHz, Horizontal

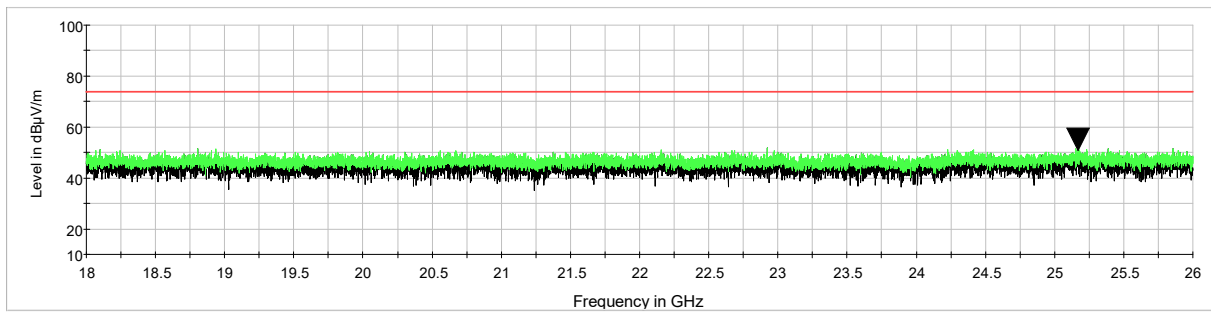




BLE, GFSK 1Mbps: 18 GHz to 26 GHz, Vertical

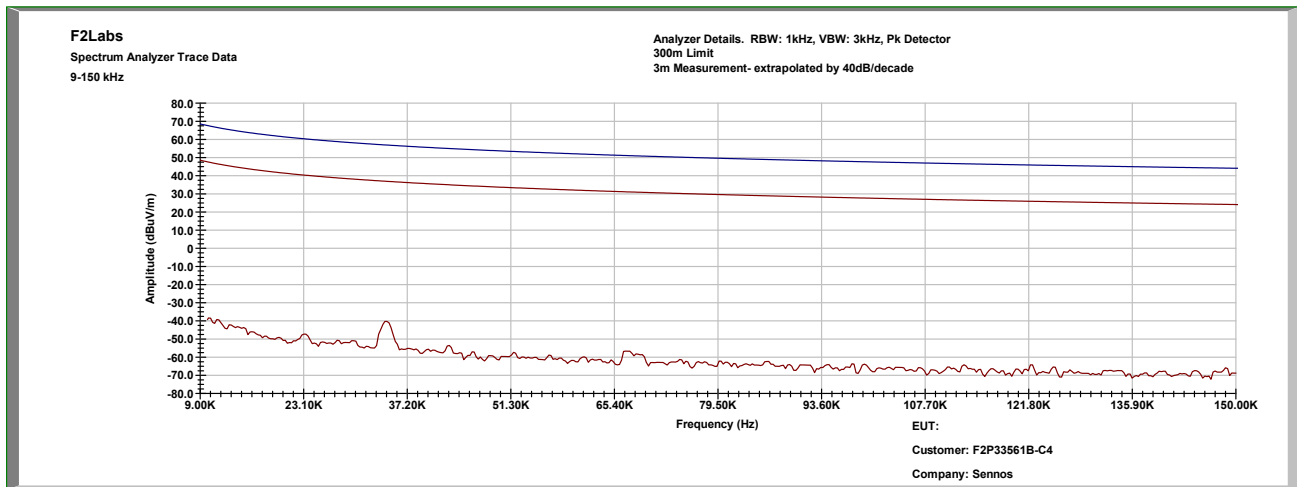


BLE, GFSK 1Mbps: 18 GHz to 26 GHz, Horizontal

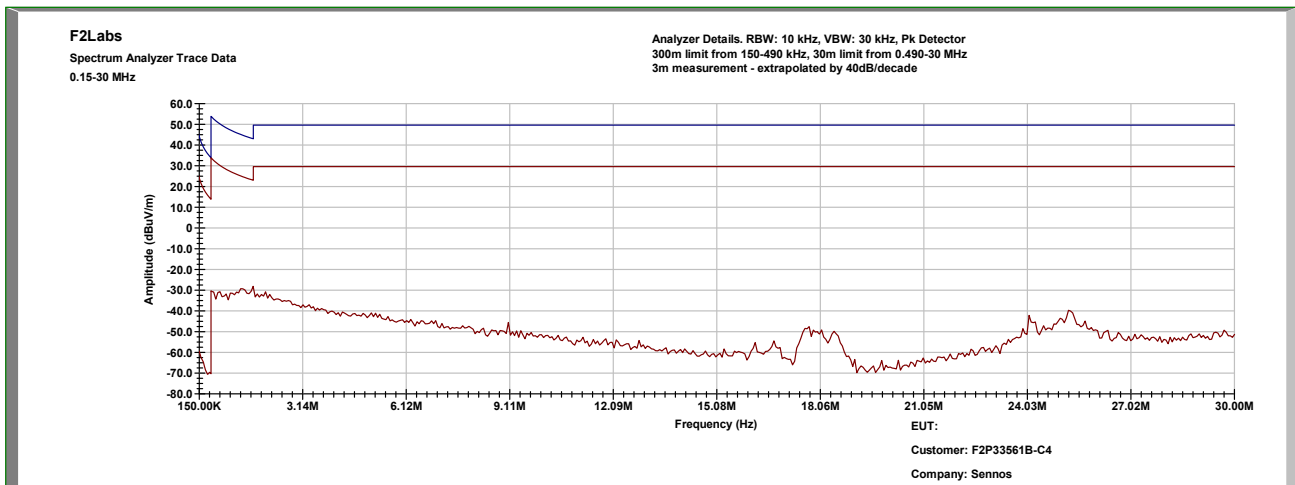




BLE, GFSK 2Mbps: Characterization Scan, 9 kHz to 150 kHz



BLE, GFSK 2Mbps: Characterization Scan, 150 kHz to 30 MHz



Note: Peak trace extrapolated to limit by 40dB per decade. Peak trace below AVG/QP limit.

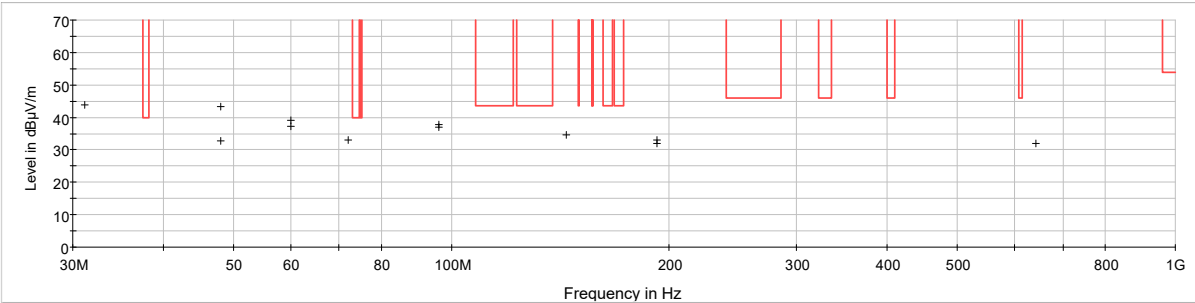


Measurements

BLE, GFSK 2Mbps: 30 MHz to 1000 MHz

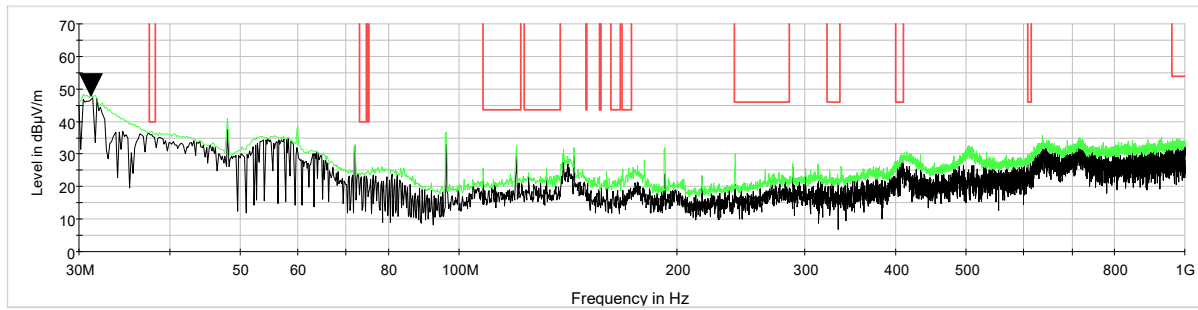
Note: Chart below includes data from all channels.

Frequency (MHz)	Ant. Pol.	Ant. Height (cm)	Azimuth (degrees)	Reading (dBµV)	Corr. Factors (dB)	Emission (dBµV/m)	Limit (dBµV/m)	Margin (dB)
48.042000	H	200.00	348.00	64.0	-31.2	32.80	40.0	-7.2
60.070000	H	200.00	0.00	71.5	-32.4	39.10	40.0	-0.9
60.070000	V	100.00	6.00	69.5	-32.4	37.10	40.0	-2.9
72.098000	V	100.00	0.00	64.5	-31.5	33.00	40.0	-7.0
96.154000	H	200.00	358.00	68.6	-30.7	37.90	43.5	-5.6
96.154000	V	100.00	0.00	67.6	-30.7	36.90	43.5	-6.6
144.266000	H	200.00	0.00	61.2	-26.6	34.60	43.5	-8.9
192.184000	H	200.00	348.00	60.3	-27.3	33.00	43.5	-10.5
192.184000	V	100.00	0.00	59.2	-27.3	31.90	43.5	-11.6
642.652000	H	200.00	0.00	47.1	-18.3	28.80	46.0	-17.2
642.652000	H	200.00	0.00	50.3	-18.3	32.00	46.0	-14.0

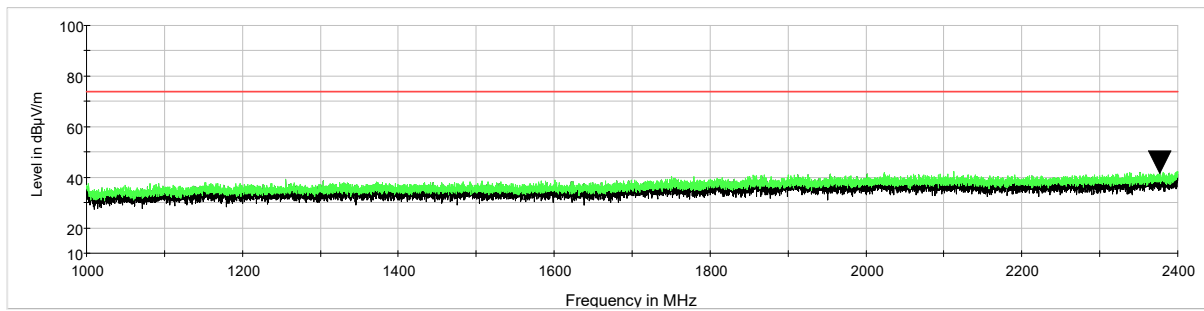




BLE, GFSK 2Mbps: 30 MHz to 1000 MHz, Vertical



BLE, GFSK 2Mbps: 30 MHz to 1000 MHz, Horizontal



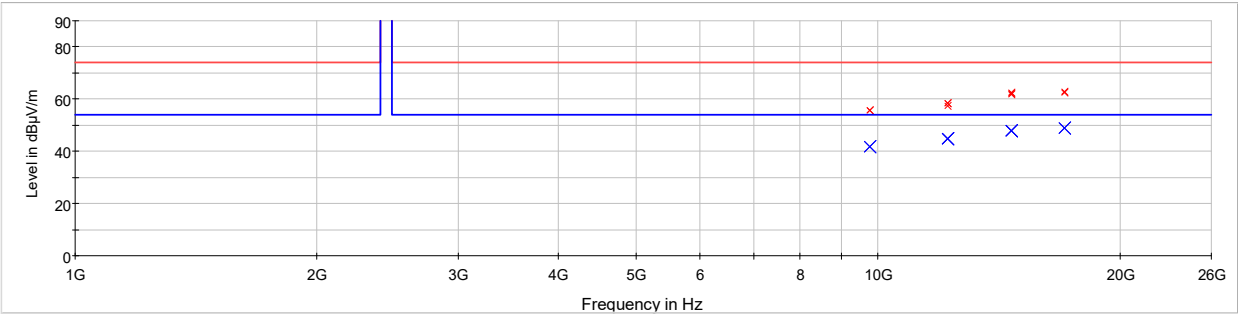


Measurements

BLE, GFSK 2Mbps: 1 GHz to 18 GHz

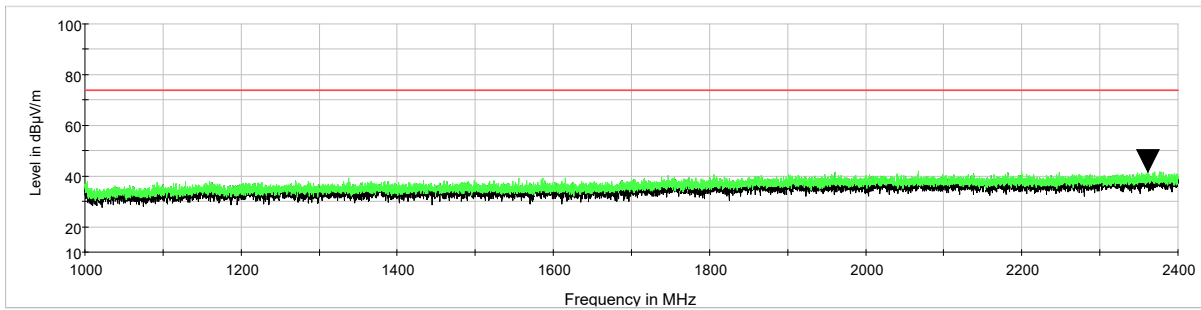
Note: Chart below includes data from all channels.

Frequency MHz	MaxPeak dBμV/m	Average dBμV/m	Bandwidth kHz	Height cm	Pol.	Azimuth deg	Corr. dB	Margin - AVG dB	Limit - AVG dBμV/m
9760.000000	55.8	41.9	1000.000	150.0	V	0.0	14.7	12.1	54.0
9760.000000	55.7	41.9	1000.000	150.0	H	358.0	14.7	12.1	54.0
12200.000000	57.6	44.7	1000.000	150.0	V	0.0	17.2	9.3	54.0
12200.000000	58.5	44.7	1000.000	150.0	V	2.0	17.2	9.3	54.0
12200.000000	58.5	44.7	1000.000	150.0	H	0.0	17.2	9.3	54.0
14640.000000	62.1	47.9	1000.000	150.0	V	356.0	20.6	6.1	54.0
14640.000000	61.9	47.9	1000.000	150.0	H	358.0	20.6	6.1	54.0
14640.000000	62.3	47.9	1000.000	150.0	V	0.0	20.6	6.1	54.0
17080.000000	63.0	48.8	1000.000	150.0	H	0.0	21.3	5.2	54.0
17080.000000	62.4	48.8	1000.000	150.0	V	0.0	21.3	5.2	54.0

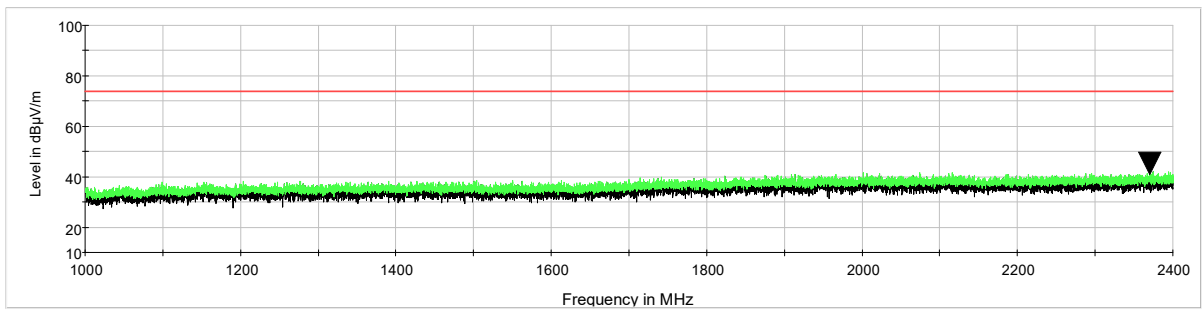




BLE, GFSK 2Mbps: 1 GHz to 2.4 GHz, Vertical

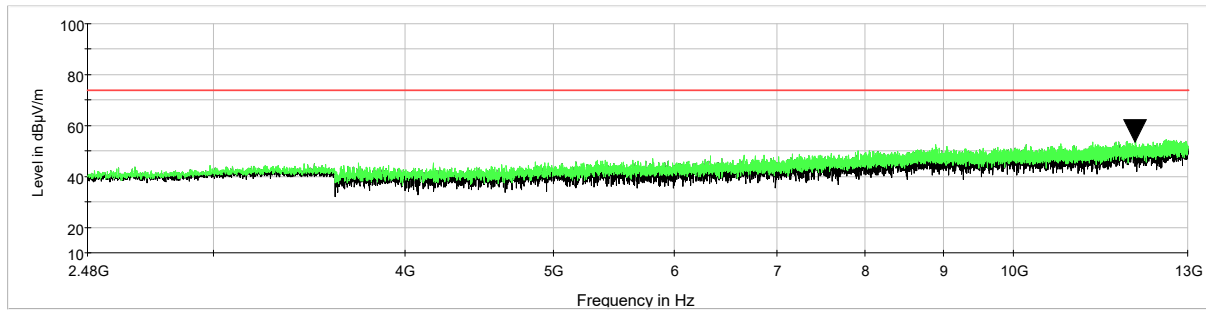


BLE, GFSK 2Mbps: 1 GHz to 2.4 GHz, Horizontal

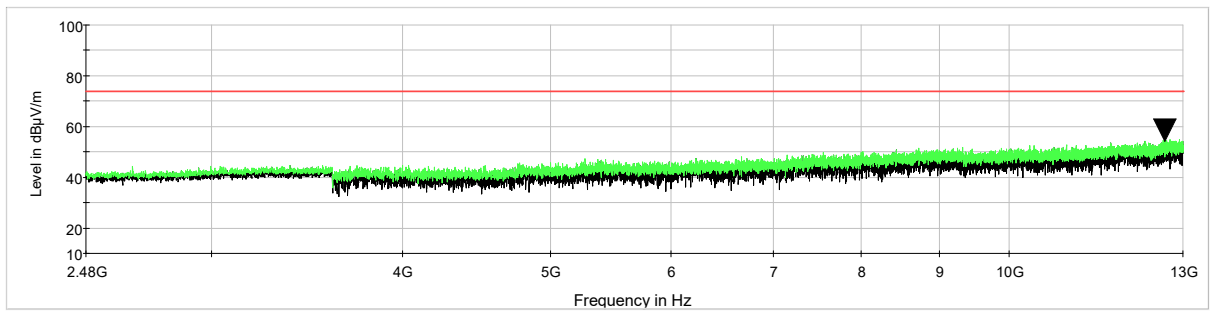




BLE, GFSK 2Mbps: 2.48 GHz to 13 GHz, Vertical

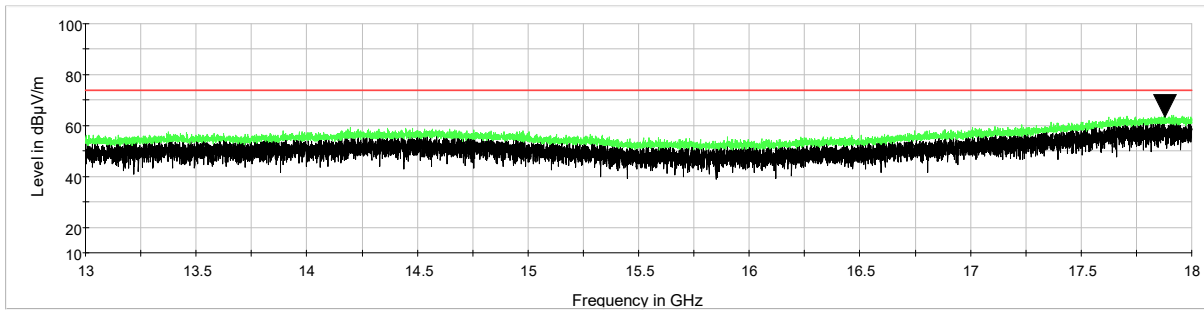


BLE, GFSK 2Mbps: 2.48 GHz to 13 GHz, Horizontal

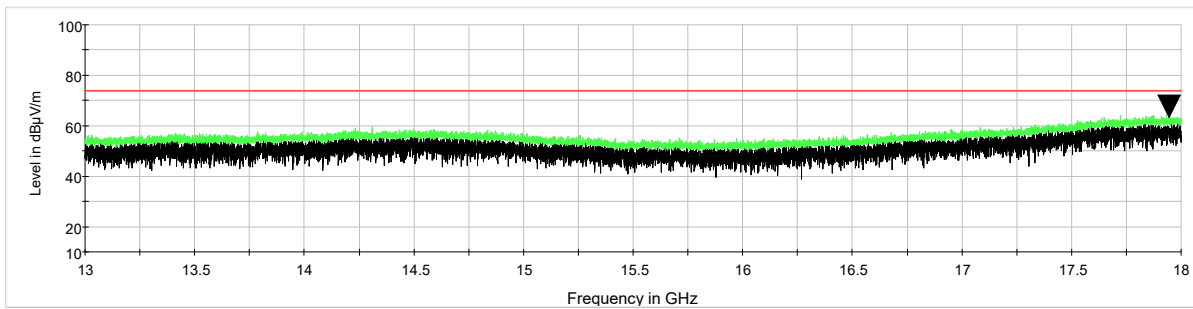




BLE, GFSK 2Mbps: 13 GHz to 18 GHz, Vertical

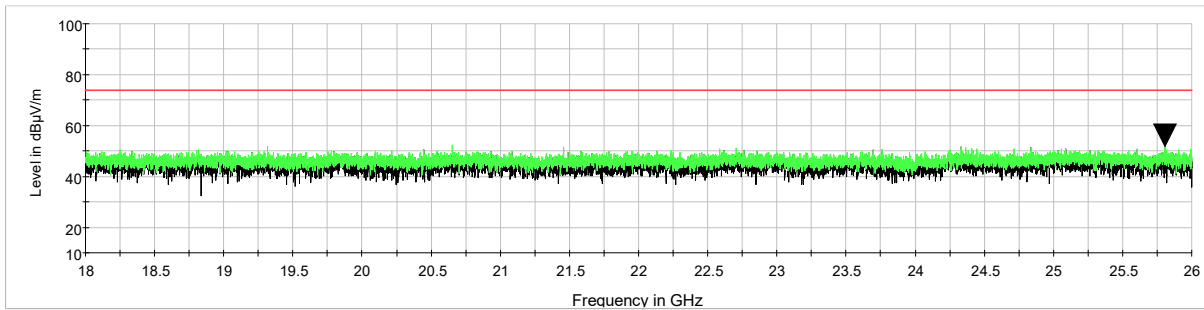


BLE, GFSK 2Mbps: 13 GHz to 18 GHz, Horizontal

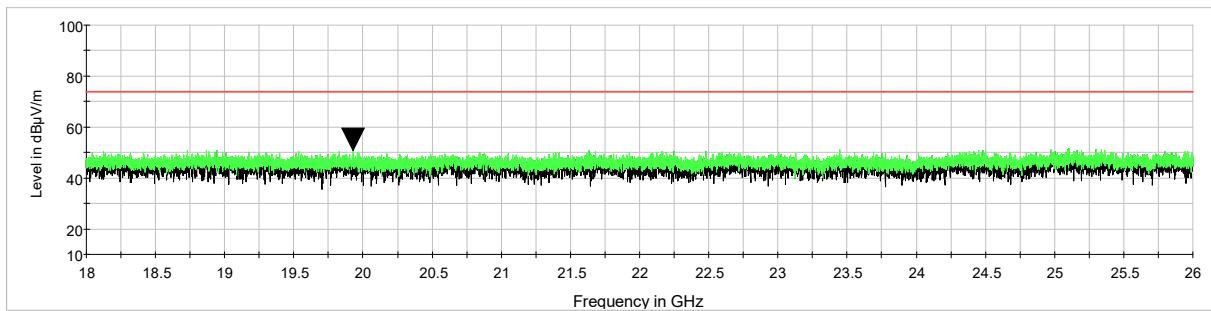




BLE, GFSK 2Mbps: 18 GHz to 26 GHz, Vertical



BLE, GFSK 2Mbps: 18 GHz to 26 GHz, Horizontal





7 VOLTAGE VARIATIONS

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. A nominal voltage of 120VAC was used and then 100VAC and 138VAC were used as the 85% and 115% variations.

RESULTS: The results showed that the fundamental frequency did not move outside the frequency band and the field strength did not increase above the limit during the variations.



Test Date:	2026-07-20	Test Engineer:	E. Tobin
Rule:	RSS GEN Part 6.11	Air Temperature:	21.1° C
Test Results:	Pass	Relative Humidity:	45%

Wi-Fi, 802.11b DBPSK/DSSS 1 Mbps: -15%

Frequency MHz	MaxPeak dBμV/m	Average dBμV/m	Average mV/m	Bandwidth kHz	Height cm	Pol.	Azimuth deg	Corr. dB	Margin - AVG dB	Limit - AVG dBμV/m	Limit - AVG mV/m
2412.000000	89.5	80.5	10.6	1000.000	150.0	H	340.0	4.6	13.5	94.0	50.0
2412.000000	90.1	81.0	11.2	1000.000	190.0	V	350.0	4.6	13.0	94.0	50.0
2437.000000	87.4	78.4	8.3	1000.000	140.0	V	340.0	4.6	15.6	94.0	50.0
2437.000000	90.4	81.4	11.7	1000.000	120.0	H	340.0	4.6	12.6	94.0	50.0
2472.000000	89.6	80.6	10.7	1000.000	130.0	H	340.0	4.8	13.4	94.0	50.0
2472.000000	83.9	74.9	5.6	1000.000	140.0	V	340.0	4.8	19.1	94.0	50.0

Wi-Fi, 802.11b DBPSK/DSSS 1 Mbps: +15%

Frequency MHz	MaxPeak dBμV/m	Average dBμV/m	Average mV/m	Bandwidth kHz	Height cm	Pol.	Azimuth deg	Corr. dB	Margin - AVG dB	Limit - AVG dBμV/m	Limit - AVG mV/m
2412.000000	89.4	80.4	10.5	1000.000	150.0	H	340.0	4.6	13.6	94.0	50.0
2412.000000	89.9	80.7	10.8	1000.000	190.0	V	350.0	4.6	13.3	94.0	50.0
2437.000000	87.2	78.2	8.1	1000.000	140.0	V	340.0	4.6	15.8	94.0	50.0
2437.000000	90.3	81.3	11.6	1000.000	120.0	H	340.0	4.6	12.7	94.0	50.0
2472.000000	89.5	80.5	10.6	1000.000	130.0	H	340.0	4.8	13.5	94.0	50.0
2472.000000	83.9	74.9	5.6	1000.000	140.0	V	330.0	4.8	19.1	94.0	50.0

**Wi-Fi, 802.11g BPSK/OFDM 6 Mbps: -15%**

Frequency MHz	MaxPeak dBμV/m	Average dBμV/m	Average mV/m	Bandwidth kHz	Height cm	Pol.	Azimuth deg	Corr. dB	Margin - AVG dB	Limit - AVG dBμV/m	Limit - AVG mV/m
2412.000000	95.7	84.5	16.8	1000.000	140.0	H	340.0	4.6	9.5	94.0	50.0
2412.000000	90.3	79.1	9.0	1000.000	150.0	V	325.0	4.6	14.9	94.0	50.0
2437.000000	94.3	83.9	15.7	1000.000	140.0	H	340.0	4.6	10.1	94.0	50.0
2437.000000	94.6	83.8	15.5	1000.000	190.0	V	345.0	4.6	10.2	94.0	50.0
2472.000000	94.0	82.7	13.6	1000.000	180.0	V	350.0	4.8	11.3	94.0	50.0
2472.000000	94.9	83.6	15.1	1000.000	180.0	H	340.0	4.8	10.4	94.0	50.0

Wi-Fi, 802.11g BPSK/OFDM 6 Mbps: +15%

Frequency MHz	MaxPeak dBμV/m	Average dBμV/m	Average mV/m	Bandwidth kHz	Height cm	Pol.	Azimuth deg	Corr. dB	Margin - AVG dB	Limit - AVG dBμV/m	Limit - AVG mV/m
2412.000000	95.9	84.6	17.0	1000.000	140.0	H	340.0	4.6	9.4	94.0	50.0
2412.000000	90.8	79.5	9.4	1000.000	150.0	V	325.0	4.6	14.5	94.0	50.0
2437.000000	94.3	83.9	15.7	1000.000	140.0	H	340.0	4.6	10.1	94.0	50.0
2437.000000	94.7	83.9	15.7	1000.000	190.0	V	345.0	4.6	10.1	94.0	50.0
2472.000000	94.0	82.8	13.8	1000.000	180.0	V	350.0	4.8	11.2	94.0	50.0
2472.000000	95.1	84.0	15.8	1000.000	180.0	H	340.0	4.8	10.0	94.0	50.0

**Wi-Fi, 802.11b DBPSK/DSSS 1 Mbps: -15%**

Frequency MHz	MaxPeak dBμV/m	Average dBμV/m	Average mV/m	Bandwidth kHz	Height cm	Pol.	Azimuth deg	Corr. dB	Margin - AVG dB	Limit - AVG dBμV/m	Limit - AVG mV/m
2412.000000	89.5	80.5	10.6	1000.000	150.0	H	340.0	4.6	13.5	94.0	50.0
2412.000000	90.1	81.0	11.2	1000.000	190.0	V	350.0	4.6	13.0	94.0	50.0
2437.000000	87.4	78.4	8.3	1000.000	140.0	V	340.0	4.6	15.6	94.0	50.0
2437.000000	90.4	81.4	11.7	1000.000	120.0	H	340.0	4.6	12.6	94.0	50.0
2472.000000	89.6	80.6	10.7	1000.000	130.0	H	340.0	4.8	13.4	94.0	50.0
2472.000000	83.9	74.9	5.6	1000.000	140.0	V	340.0	4.8	19.1	94.0	50.0

Wi-Fi, 802.11b DBPSK/DSSS 1 Mbps: +15%

Frequency MHz	MaxPeak dBμV/m	Average dBμV/m	Average mV/m	Bandwidth kHz	Height cm	Pol.	Azimuth deg	Corr. dB	Margin - AVG dB	Limit - AVG dBμV/m	Limit - AVG mV/m
2412.000000	89.4	80.4	10.5	1000.000	150.0	H	340.0	4.6	13.6	94.0	50.0
2412.000000	89.9	80.7	10.8	1000.000	190.0	V	350.0	4.6	13.3	94.0	50.0
2437.000000	87.2	78.2	8.1	1000.000	140.0	V	340.0	4.6	15.8	94.0	50.0
2437.000000	90.3	81.3	11.6	1000.000	120.0	H	340.0	4.6	12.7	94.0	50.0
2472.000000	89.5	80.5	10.6	1000.000	130.0	H	340.0	4.8	13.5	94.0	50.0
2472.000000	83.9	74.9	5.6	1000.000	140.0	V	330.0	4.8	19.1	94.0	50.0

**BLE, GFSK 1Mbps: -15%**

Frequency MHz	MaxPeak dB μ V/m	Average dB μ V/m	Average mV/m	Bandwidth kHz	Height cm	Pol.	Azimuth deg	Corr. dB	Margin - AVG dB	Limit - AVG dB μ V/m	Limit - AVG mV/m
2402.000000	90.7	88.3	26.0	1000.000	180.0	V	345.0	4.6	5.7	94.0	50.0
2402.000000	89.8	87.3	23.2	1000.000	130.0	H	20.0	4.6	6.7	94.0	50.0
2440.000000	92.0	89.6	30.2	1000.000	130.0	H	340.0	4.6	4.4	94.0	50.0
2440.000000	92.6	90.1	32.0	1000.000	180.0	V	350.0	4.6	3.9	94.0	50.0
2480.000000	92.7	90.4	33.1	1000.000	170.0	H	340.0	4.9	3.6	94.0	50.0
2480.000000	88.8	86.4	20.9	1000.000	140.0	V	5.0	4.9	7.6	94.0	50.0

BLE, GFSK 1Mbps: +15%

Frequency MHz	MaxPeak dB μ V/m	Average dB μ V/m	Average mV/m	Bandwidth kHz	Height cm	Pol.	Azimuth deg	Corr. dB	Margin - AVG dB	Limit - AVG dB μ V/m	Limit - AVG mV/m
2402.000000	89.5	87.2	22.9	1000.000	130.0	H	20.0	4.6	6.8	94.0	50.0
2402.000000	90.6	88.2	25.7	1000.000	180.0	V	345.0	4.6	5.8	94.0	50.0
2440.000000	92.5	90.2	32.4	1000.000	180.0	V	350.0	4.6	3.8	94.0	50.0
2440.000000	91.6	89.2	28.8	1000.000	130.0	H	340.0	4.6	4.8	94.0	50.0
2480.000000	88.9	86.6	21.4	1000.000	140.0	V	5.0	4.9	7.4	94.0	50.0
2480.000000	92.7	90.3	32.7	1000.000	170.0	H	340.0	4.9	3.7	94.0	50.0

**BLE, GFSK 2Mbps: -15%**

Frequency MHz	MaxPeak dB μ V/m	Average dB μ V/m	Average mV/m	Bandwidth kHz	Height cm	Pol.	Azimuth deg	Corr. dB	Margin - AVG dB	Limit - AVG dB μ V/m	Limit - AVG mV/m
2402.000000	90.1	87.0	22.4	1000.000	180.0	V	345.0	4.6	7.0	94.0	50.0
2402.000000	87.9	84.8	17.4	1000.000	125.0	H	340.0	4.6	9.2	94.0	50.0
2440.000000	91.7	88.2	25.7	1000.000	180.0	V	345.0	4.6	5.8	94.0	50.0
2440.000000	91.1	88.0	25.1	1000.000	140.0	H	340.0	4.6	6.0	94.0	50.0
2480.000000	90.1	87.0	22.4	1000.000	130.0	H	20.0	4.9	7.0	94.0	50.0
2480.000000	89.6	86.5	21.1	1000.000	150.0	V	350.0	4.9	7.5	94.0	50.0

BLE, GFSK 2Mbps: +15%

Frequency MHz	MaxPeak dB μ V/m	Average dB μ V/m	Average mV/m	Bandwidth kHz	Height cm	Pol.	Azimuth deg	Corr. dB	Margin - AVG dB	Limit - AVG dB μ V/m	Limit - AVG mV/m
2402.000000	88.9	85.6	19.1	1000.000	125.0	H	340.0	4.6	8.4	94.0	50.0
2402.000000	91.0	87.6	24.0	1000.000	180.0	V	345.0	4.6	6.4	94.0	50.0
2440.000000	91.1	88.0	25.1	1000.000	180.0	V	345.0	4.6	6.0	94.0	50.0
2440.000000	91.1	88.0	25.1	1000.000	140.0	H	340.0	4.6	6.0	94.0	50.0
2480.000000	90.8	87.3	23.2	1000.000	130.0	H	20.0	4.9	6.7	94.0	50.0
2480.000000	90.2	87.0	22.4	1000.000	150.0	H	350.0	4.9	7.0	94.0	50.0



9 CONDUCTED EMISSIONS

9.1 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.

9.2 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.

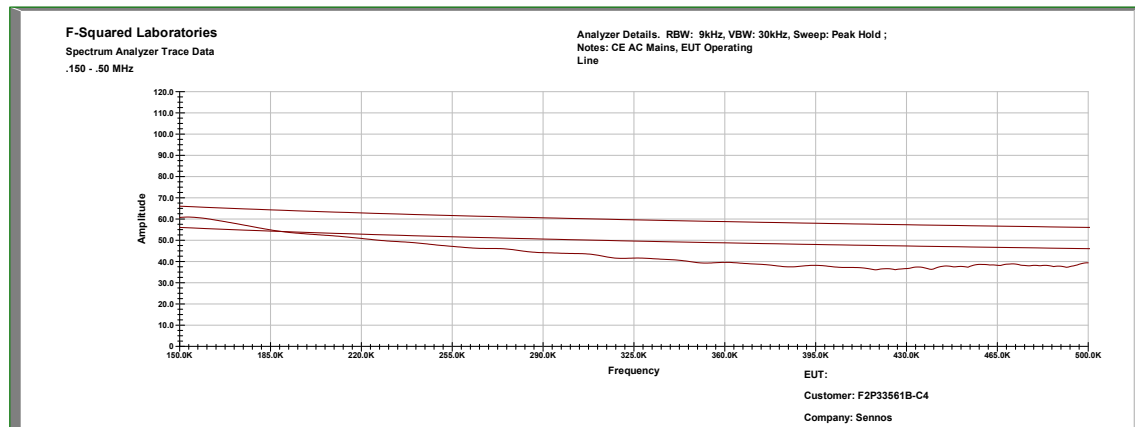


9.3 Conducted Emissions Test Data

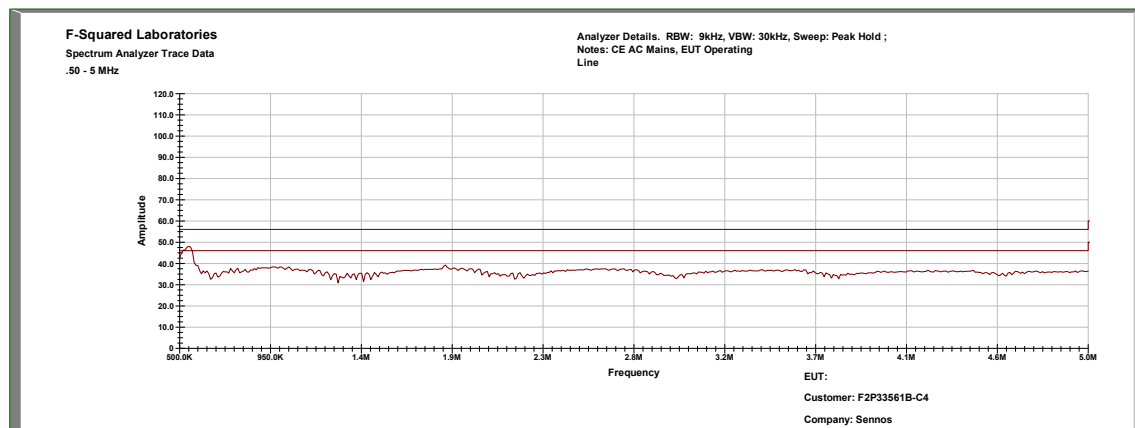
Test Date(s):	2026-07-28	Test Engineer:	E. Tobin
Rule:	15.207	Air Temperature:	22.3° C
Test Results:	Complies	Relative Humidity:	47%

Note: The data below represents worst case results of all modulations.

Conducted Test – Live: 0.15 MHz to 0.5 MHz

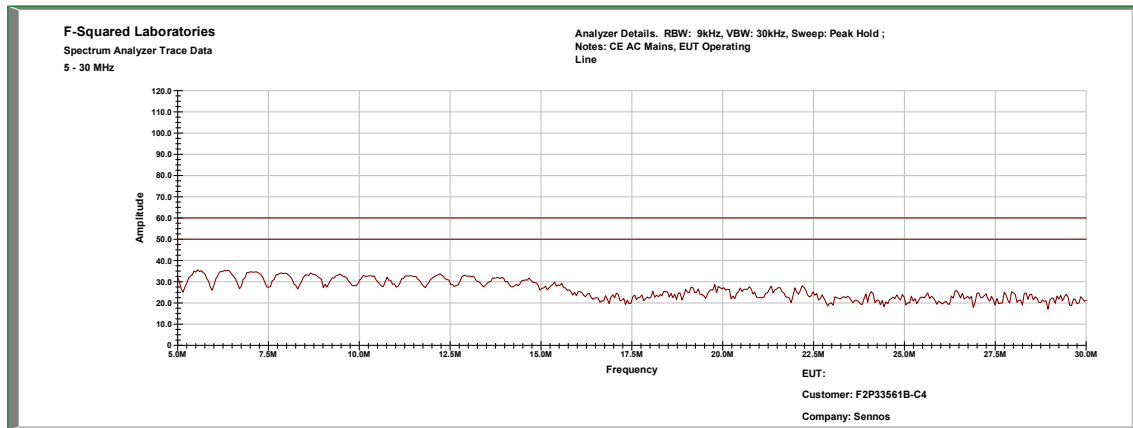


Conducted Test – Live: 0.5 MHz to 5.0 MHz





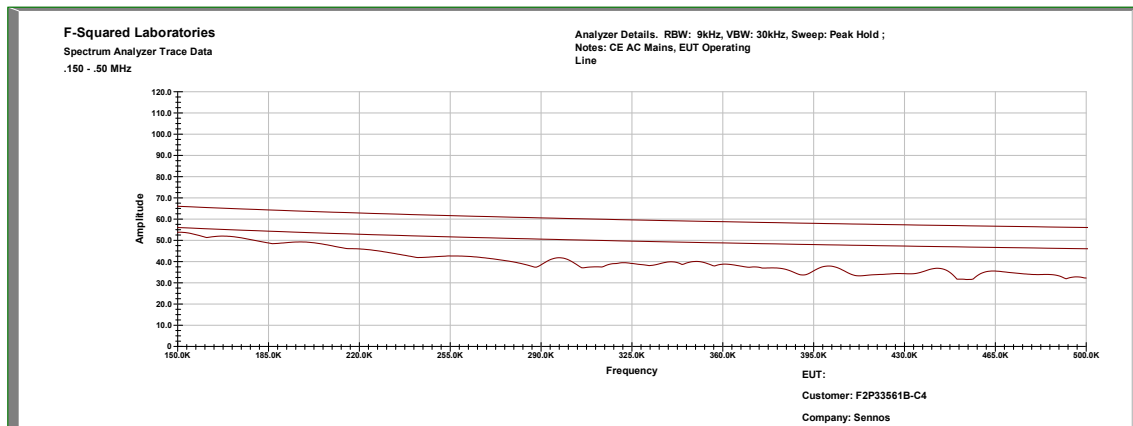
Conducted Test – Live: 5.0 MHz to 30.0 MHz



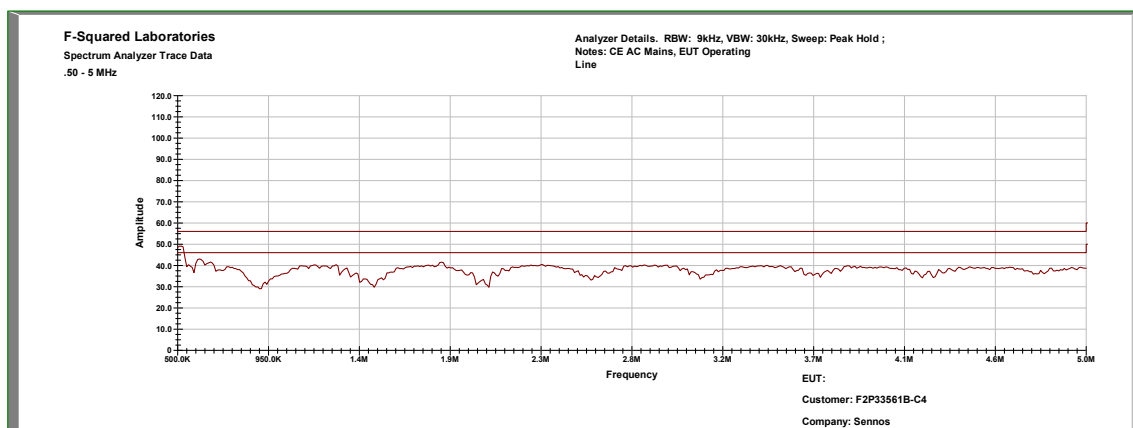
Top Discrete Measurements								
No.	Conductor	Frequency (MHz)	Detector	Level (dBμV)	Adjustment (dB)	Results (dBμV)	Limit (dBμV)	Margin (dB)
1	Live	0.15	Quasi-Peak	40.7	11.88	52.58	66.0	-13.4
			Average	23.5	11.88	35.38	56.0	-20.6
2	Live	0.155	Quasi-Peak	28.9	11.832	40.73	65.7	-25.0
			Average	13.5	11.832	25.33	55.7	-30.4
3	Live	0.168	Quasi-Peak	23.1	11.647	34.75	65.0	-30.3
			Average	8.1	11.647	19.75	55.0	-35.3
4	Live	0.518	Quasi-Peak	30.9	10.558	41.46	56.0	-14.5
			Average	19.6	10.558	30.16	46.0	-15.8
5	Live	0.545	Quasi-Peak	31.2	10.555	41.76	56.0	-14.2
			Average	19.5	10.555	30.06	46.0	-15.9

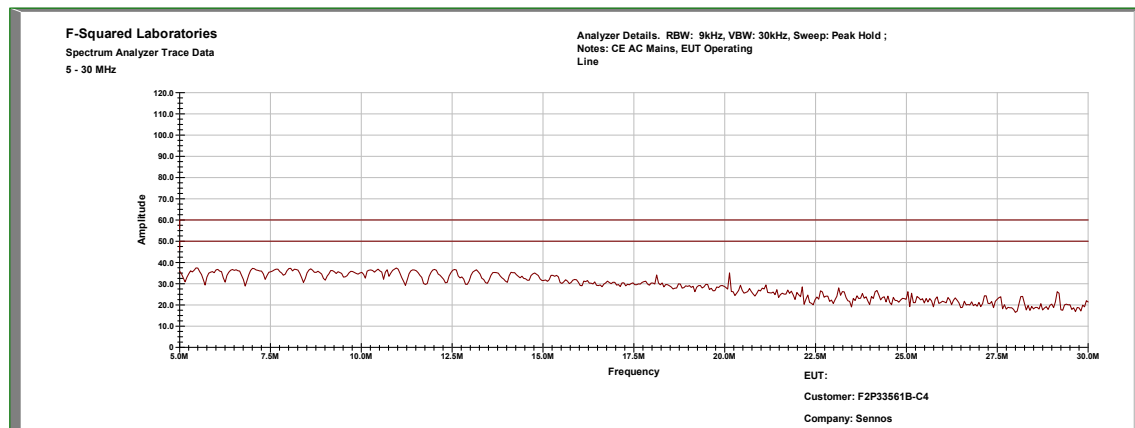


Conducted Test – Neutral: 0.15 MHz to 0.5 MHz



Conducted Test – Neutral: 0.5 MHz to 5.0 MHz

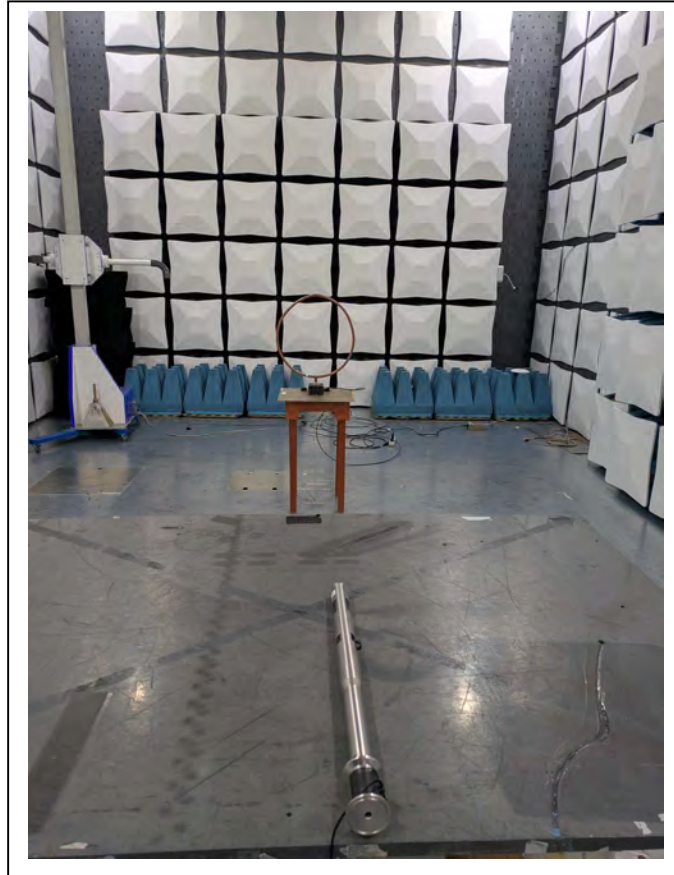


**Conducted Test – Neutral: 5.0 MHz to 30.0 MHz**

Top Discrete Measurements								
No.	Conductor	Frequency (MHz)	Detector	Level (dBμV)	Adjustment (dB)	Results (dBμV)	Limit (dBμV)	Margin (dB)
1	Neutral	0.518	Quasi-Peak	37.2	10.558	47.76	56.0	-8.2
			Average	29.2	10.558	39.76	46.0	-6.2

10 PHOTOGRAPHS - TEST SETUPS

Radiated Emissions, 9kHz to 30 MHz

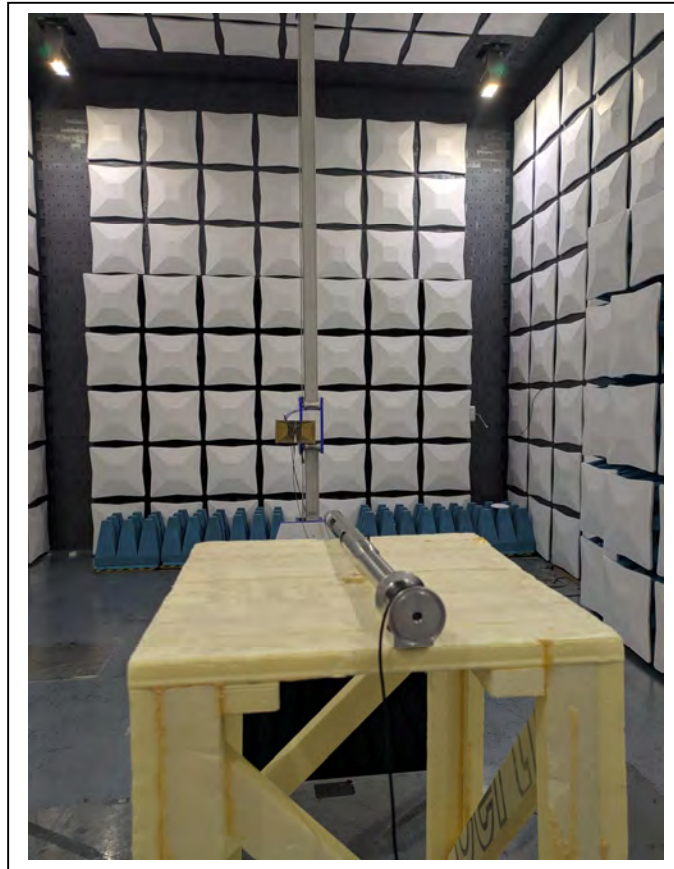


Radiated Emissions, 30 MHz to 1000 MHz





Radiated Emissions, 1 GHz to 18 GHz; Occupied Bandwidth; Voltage Variations



Radiated Emissions, 18 GHz to 26 GHz





Conducted Emissions

