

FCC/ISED Test Report

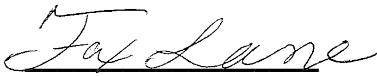
Prepared for: Garmin International, Inc.

Address: 1200 E. 151st Street
Olathe, Kansas, 66062, USA

Product: A04913

Test Report No: R20251104-00-E16 **Rev:** E

Approved by:


Fox Lane,
EMC Test Engineer

Date: January 22, 2026

Total Pages: 33

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REVISION PAGE

Rev. No.	Date	Description
0	9 January 2026	Issued by FLane Prepared by FLane, ESchmidt
A	15 January 2026	Updated table header in radiated emissions section – FL
B	16 January 2026	Added extra points to 30MHz-1GHz table – FL
D	20 January 2026	Added FVIN, Firmware rev number, SW version, and test firm registration number – FL
E	22 January 2026	Corrected Test firm registration number – FL



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1.0 SUMMARY OF TEST RESULTS

The worst-case measurements were reported in this report. Summary of test results presented in this report correspond to the following section:

- (1) US Code of Federal Regulations, Title 47, Part 15
- (2) ISSED RSS-Gen, Issue 5
- (3) ISSED RSS-247, Issue 4

APPLIED STANDARDS AND REGULATIONS		
Standard Section	Test Type	Result
FCC Part 15.35 RSS Gen, Issue 5, Section 6.10	Duty Cycle	Pass
FCC Part 15.247(b)(3) RSS-247 Issue 4 Section 6.3	Peak output power	Pass
FCC Part 15.247(a)(2) RSS-247 Issue 4 Section 6.3	Bandwidth	Pass
FCC Part 15.209 RSS-Gen Issue 5, Section 7.3	Receiver Radiated Emissions	Pass
FCC Part 15.209 (restricted bands), 15.247 (unrestricted) RSS-247 Issue 4 Section 6.6, RSS-Gen Issue 5, Section 8.9	Transmitter Radiated Emissions	Pass
FCC Part 15.247(e) RSS-247 Issue 4 Section 6.3	Power Spectral Density	Pass
FCC Part 15.209, 15.247(d) RSS-247 Issue 4 Section 6.6	Band Edge Measurement	Pass
FCC Part 15.207 RSS-Gen Issue 5, Section 8.8	Conducted Emissions	N/A*

*EUT is solely DC powered



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2.0 EUT DESCRIPTION

2.1 EQUIPMENT UNDER TEST

Summary and Operating Condition:

EUT	A04913
FCC ID	IPH-A04913
IC ID	1792A-A04913
HVIN	A04913
FVIN	N/A
Device FW Rev	1.35
SW	ble_tool_p.exe Version 2.0
EUT Received	20 November 2025
EUT Tested	21 November 2025 - 2 January 2026
Serial No.	3522637990 (Radiated Sample) 3522637995 (Conducted Sample)
Operating Band	2400 – 2483.5 MHz
Device Type	☒ GMSK ☐ GFSK ☐ BT BR ☐ BT EDR 2MB ☐ BT EDR 3MB ☐ 802.11x
Power Supply / Voltage	External 12VDC Marine Battery

NOTE: For more detailed features description, please refer to the manufacturer's specifications or user's manual.

2.2 DESCRIPTION OF TEST MODES

The operating range of the EUT is dependent on the device type found in section 2.1:

GMSK 1MB Transmissions

Channel	Frequency
Low	2402 MHz
Mid	2440 MHz
High	2480 MHz

These are the only representative channels tested in the frequency range according to FCC Part 15.31 and RSS-Gen Table A1. See the operational description for a list of all channel frequencies and designations. Power setting 8 was used for testing.

2.3 DESCRIPTION OF SUPPORT UNITS

None

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3.0 LABORATORY AND GENERAL TEST DESCRIPTION

3.1 LABORATORY DESCRIPTION

All testing was performed at the following Facility:

The Nebraska Center for Excellence in Electronics (NCEE Labs)
4740 Discovery Drive
Lincoln, NE 68521

A2LA Certificate Number: 1953.01

FCC Accredited Test Site Designation No: US1060

FCC Test Firm Registration Number: 134067

Industry Canada Test Site Registration No: 4294A

NCC CAB Identification No: US0177

Environmental conditions varied slightly throughout the tests:

Relative humidity of $35 \pm 4\%$

Temperature of $22 \pm 3^{\circ}$ Celsius



3.2 TEST PERSONNEL

No.	PERSONNEL	TITLE	ROLE
1	Fox Lane	Test Engineer	Testing and Report
2	Blake Winter	Test Engineer	Testing
4	Ethan Schmidt	Test Engineer	Testing and Report

Notes: All personnel are permanent staff members of NCEE Labs. No testing or review was sub-contracted or performed by sub-contracted personnel.



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3.3 TEST EQUIPMENT

DESCRIPTION AND MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CALIBRATION DATE	CALIBRATION DUE DATE
Keysight MXE Signal Analyzer (44GHz)	N9038A	MY59050109	July 14, 2025	July 15, 2027
Keysight MXE Signal Analyzer (26.5GHz)	N9038A	MY56400083	July 15, 2025	July 16, 2027
Keysight EXA Signal Analyzer	N9010A	MY56070862	July 14, 2025	July 14, 2027
SunAR RF Motion	JB1	A082918-1	July 25, 2025	July 25, 2026
ETS EMCO Red Horn Antenna	3117	00274578	February 4, 2025	February 4, 2026
Com-Power LISN, Single Phase	LI-220C	20070017	July 15, 2025	July 16, 2027
Agilent Preamp*	87405A	3207A01475	July 18, 2025	July 18, 2027
ETS Red Preamplifier (Orange)*	3115-PA	00218576	July 18, 2025	July 18, 2027
Trilithic High Pass Filter*	6HC330	23042	July 18, 2025	July 18, 2027
Rohde & Schwarz Power Meter	NRP8S	105033	July 16, 2025	July 17, 2027
ETS – Lindgren- VSWR on 10m Chamber	10m Semi-anechoic chamber-VSWR	4740 Discovery Drive	May 15, 2024	May 15, 2027
NCEE Labs-NSA on 10m Chamber*	10m Semi-anechoic chamber-NSA	NCEE-001	May 22, 2024	May 22, 2026
RF Cables (3m Ant. to Control room Bulkhead)	MFR-57500	1E3874	July 18, 2025	July 18, 2027
RF Cable (antenna to 10m chamber bulkhead)*	FSCM 64639	01E3872	July 18, 2025	July 18, 2027
RF Cable (10m chamber bulkhead to control room bulkhead)*	FSCM 64639	01E3874	July 18, 2025	July 18, 2027
RF Cable (control room bulkhead to test receiver)*	FSCM 64639	01F1206	July 18, 2025	July 18, 2027
N connector bulkhead (10m chamber)*	PE9128	NCEEBH1	July 18, 2025	July 18, 2027
N connector bulkhead (control room)*	PE9128	NCEEBH2	July 18, 2025	July 18, 2027
TDK Emissions Lab Software	V11.25	700307	NA	NA

*Internal Characterization

Notes:

All equipment is owned by NCEE Labs and stored permanently at NCEE Labs facilities.

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3.4 GENERAL TEST PROCEDURE AND SETUP FOR RADIO MEASUREMENTS

Measurement type presented in this report (Please see the checked box below):

Conducted ☒

The conducted measurements were performed by connecting the output of the transmitter directly into a spectrum analyzer using an impedance matched cable and connector soldered to the EUT in place of the antenna. The information regarding resolution bandwidth, video bandwidth, span and the detector used can be found in the graphs provided in Appendix C. All the radio measurements were performed using the sections from ANSI C63.10, details about the section used can be found in the spectrum analyzer titles on the graph.



Figure 1 - Bandwidth Measurements Test Setup

Radiated ☒

All the radiated measurements were taken at a distance of 3m from the EUT. The information regarding resolution bandwidth, video bandwidth, span and the detector used can be found in the graphs provided in Appendix C. All the radio measurements were performed using the sections from ANSI C63.10, details about the section used can be found in the spectrum analyzer titles on the graph.

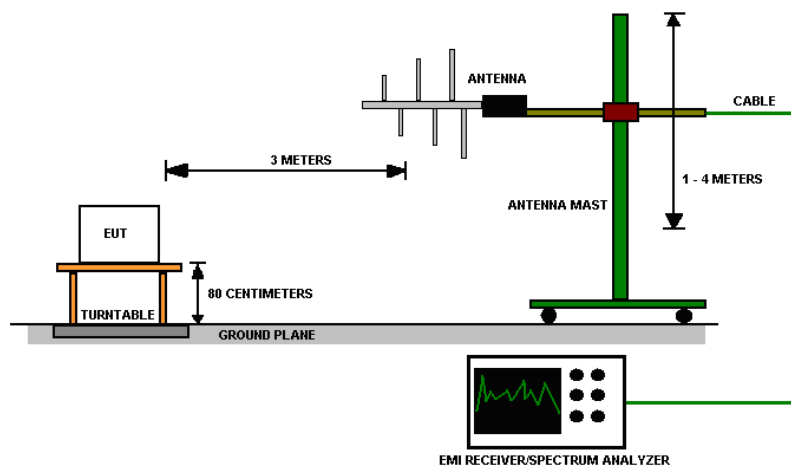


Figure 2 - Radiated Emissions Test Setup

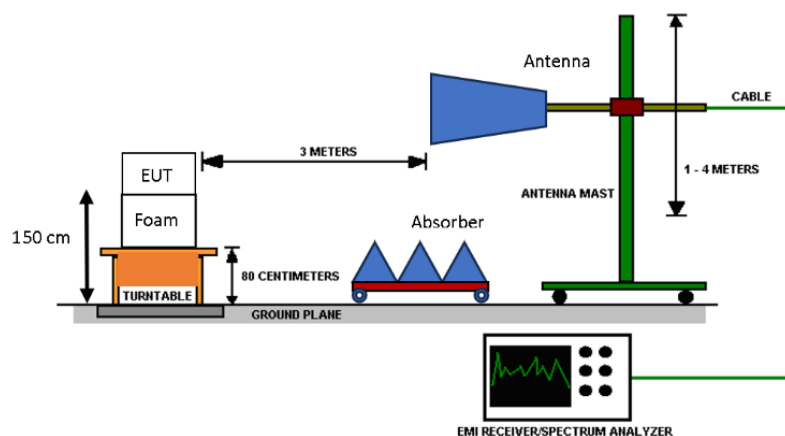


Figure 3 - Radiated Emissions Test Setup, >1GHz



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4.0 RESULTS

DTS Radio Measurements									
CHANNEL	Mode	Occupied BW (kHz)	6 dB BW (kHz)		PSD (dBm)	RESULT			
Low	GMSK	1054.60	708.20		-8.12	PASS			
Mid	GMSK	1059.70	722.40		-8.814	PASS			
High	GMSK	1059.20	677.80		-9.557	PASS			
Occupied Bandwidth Lim = N/A; 6dB Bandwidth Lim = N/A			Peak Output Power Lim = 30dBm; PSD Lim = 8dBm						
Unrestricted Band-Edge									
CHANNEL	Mode	Band edge /Measurement Frequency (MHz)	Relative Highest out of band level (dBuV)	Relative Fundamental (dBuV)	Delta (dB)	Min Delta (dB)	Result		
Low	GMSK	2400.00	60.855	113.17	52.32	30.00	PASS		
High	GMSK	2483.50	50.829	111.979	61.15	30.00	PASS		
Peak Restricted Band-Edge									
CHANNEL	Mode	Band edge /Measurement Frequency (MHz)	Highest out of band level (dBuV/m @ 3m)	Detector	Limit (dBuV/m @ 3m)	Margin	Result		
Low	GMSK	2390.00	54.073	Peak	73.98	19.91	PASS		
High	GMSK	2483.50	55.379	Peak	73.98	18.60	PASS		
*Limit shown is the peak limit taken from FCC Part 15.209									
Average Restricted Band-Edge									
CHANNEL	Mode	Band edge /Measurement Frequency (MHz)	Highest out of band level (dBuV/m @ 3m)	DCCF for Emissions (dB)	Corrected Out of band level (dBuV/m @ 3m)	Detector	Limit (dBuV/m @ 3m)	Margin	Result
Low	GMSK	2390.00	42.34	4.055	46.39	Average	53.98	7.59	PASS
High	GMSK	2483.50	42.838	4.055	46.89	Average	53.98	7.09	PASS
*Limit shown is the average limit taken from FCC Part 15.209									

Average Power Measurements					
Channel	AVG Power Meter [AP] (dBm)	Duty Cycle [DC]	DCCF (for Power) (dB)	Corrected AVG Power [CAP] (dB)	Corrected AVG Power [CAP] (mW)
Low	4.01	0.627	-2.027	6.037	4.015
Mid	3.34	0.627	-2.027	5.367	3.441
High	4.01	0.627	-2.027	6.037	4.015
CAP = AP – DCCF					
For more information regarding duty cycle and DCCF see section 4.3					



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4.1 OUTPUT POWER

Test Method:

All output power measurements were performed using section 11.9.2.3.1 from ANSI C63.10-2020

Limits of power measurements:

For FCC Part 15.247 Device:

The maximum allowed output power is 30 dBm.

Test procedures:

Details can be found in section 3.4 of this report.

Deviations from test standard:

No deviation.

Test setup:

Details can be found in section 3.4 of this report.

EUT operating conditions:

Details can be found in section 2.1 of this report.

Test results:

Pass

Comments:

1. All the measurements were found to be compliant.
2. Tabulated data is listed in section 4.0.



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4.2 BANDWIDTH

Test Method:

All the radio measurements were performed using the sections from ANSI C63.10, details about the section used can be found in the spectrum analyzer titles on the graph.

Limits of bandwidth measurements:

For FCC Part 15.247 Device:

The 99% occupied bandwidth is for informational/documentation purposes only. The 6dB bandwidth of the signal must be greater than 500 kHz.

Test procedures:

Details can be found in section 3.4 of this report.

Deviations from test standard:

No deviation.

Test setup:

Test setup details can be found in section 3.4 of this report.

EUT operating conditions:

Details can be found in section 2.1 of this report.

Test results:

Pass

Comments:

1. All the bandwidth plots can be found in Appendix C.
2. All the measurements were found to be compliant.
3. Tabulated data is listed in section 4.0.

4.3 DUTY CYCLE

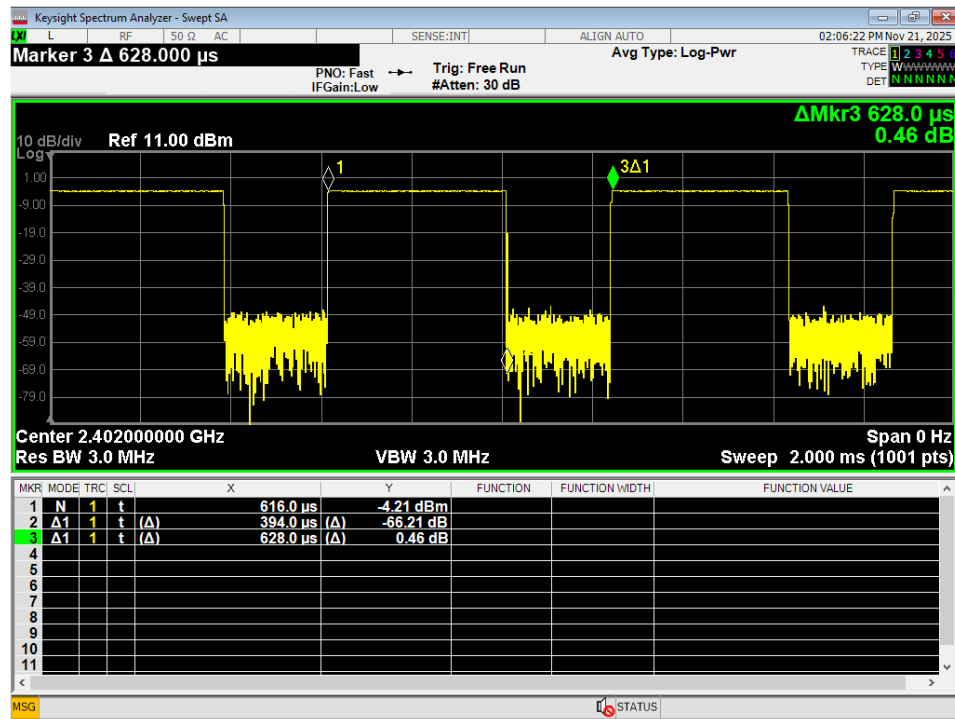


Figure 4 – Duty Cycle, GMSK

The following duty cycle and duty cycle correction factors (DCCF) were used where applicable.

Duty Cycle correction factor (for emissions) = $20 \cdot \log(\text{Duty cycle})$

Duty Cycle correction factor (for power) = $10 \cdot \log(\text{Duty Cycle})$

Duty cycle for GMSK: 0.627

Duty cycle correction factor (for emissions) for GMSK: 4.055dB

Duty Cycle correction factor (for power) for GMSK: 2.027dB

4.4 RADIATED EMISSIONS

Test Method:

ANSI C63.10-2020, Section 6.5, 6.6

Limits for radiated emissions measurements:

Emissions radiated outside of the specified bands shall be applied to the limits in 15.209 as followed:

FREQUENCIES (MHz)	FIELD STRENGTH ($\mu\text{V/m}$)	MEASUREMENT DISTANCE (m)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	3
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = $20 * \log * \text{Emission level } (\mu\text{V/m})$.
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits by more than 20dB under any condition of modulation.
4. The EUT was tested for spurious emissions while running off of battery power and external USB power. The worse-case emissions were produced while running off of USB power, so results from this mode are presented.



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Test procedures:

- a. The EUT was placed on the top of a rotating table above the ground plane in a 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. The table was 0.8m high for measurements from 30MHz-1Ghz and 1.5m for measurements from 1GHz and higher.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna was a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are used to make the measurement.
- d. For each suspected emission, the EUT was arranged to maximize its emissions and then the antenna height was varied from 1 meter to 4 meters and the rotating table was turned from 0 degrees to 360 degrees to find the maximum emission reading.
- e. The test-receiver system was set to use a peak detector with a specified resolution bandwidth. For spectrum analyzer measurements, the composite maximum of several analyzer sweeps was used for final measurements.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- g. The EUT was maximized in all 3 orthogonal positions. The results are presented for the axis that had the highest emissions.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequencies below 1GHz.

2. The resolution bandwidth 1 MHz for all measurements and at frequencies above 1GHz, A peak detector was used for all measurements above 1GHz. Measurements were made with an EMI Receiver.

Deviations from test standard:

No deviation.

EUT operating conditions

Details can be found in section 2.1 of this report.

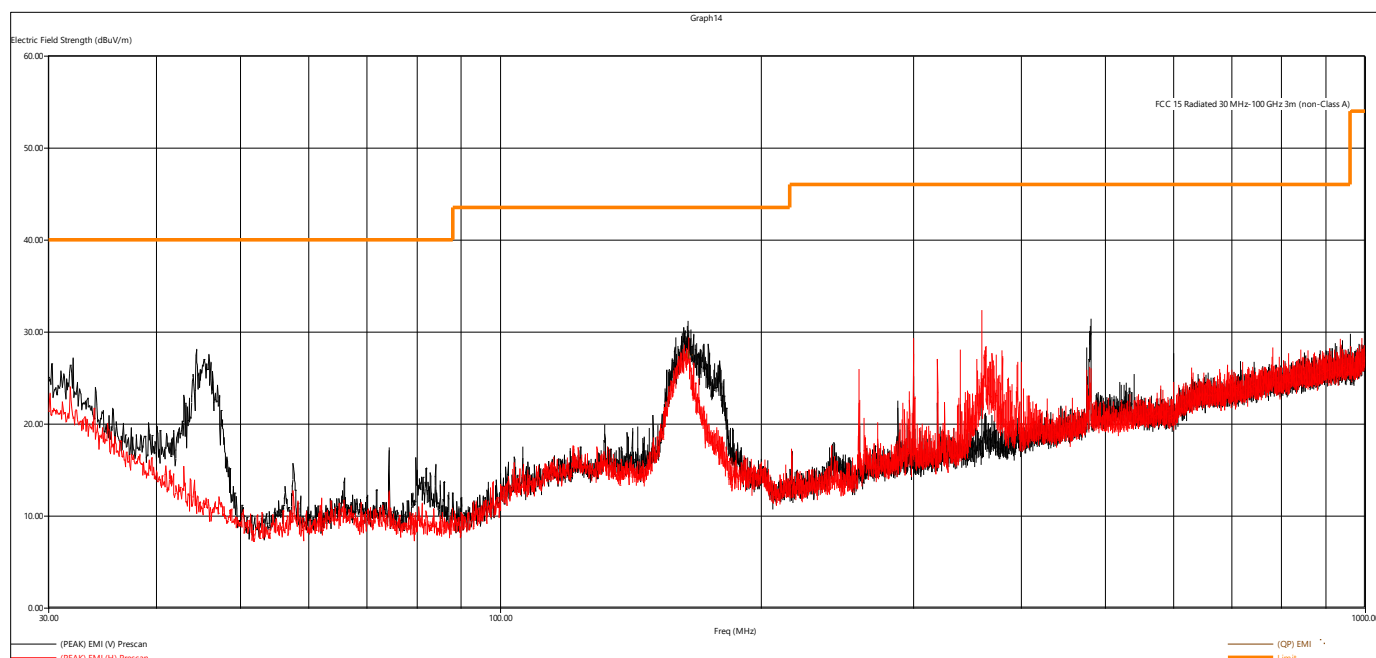


Figure 5 - Radiated Emissions Plot, Receive

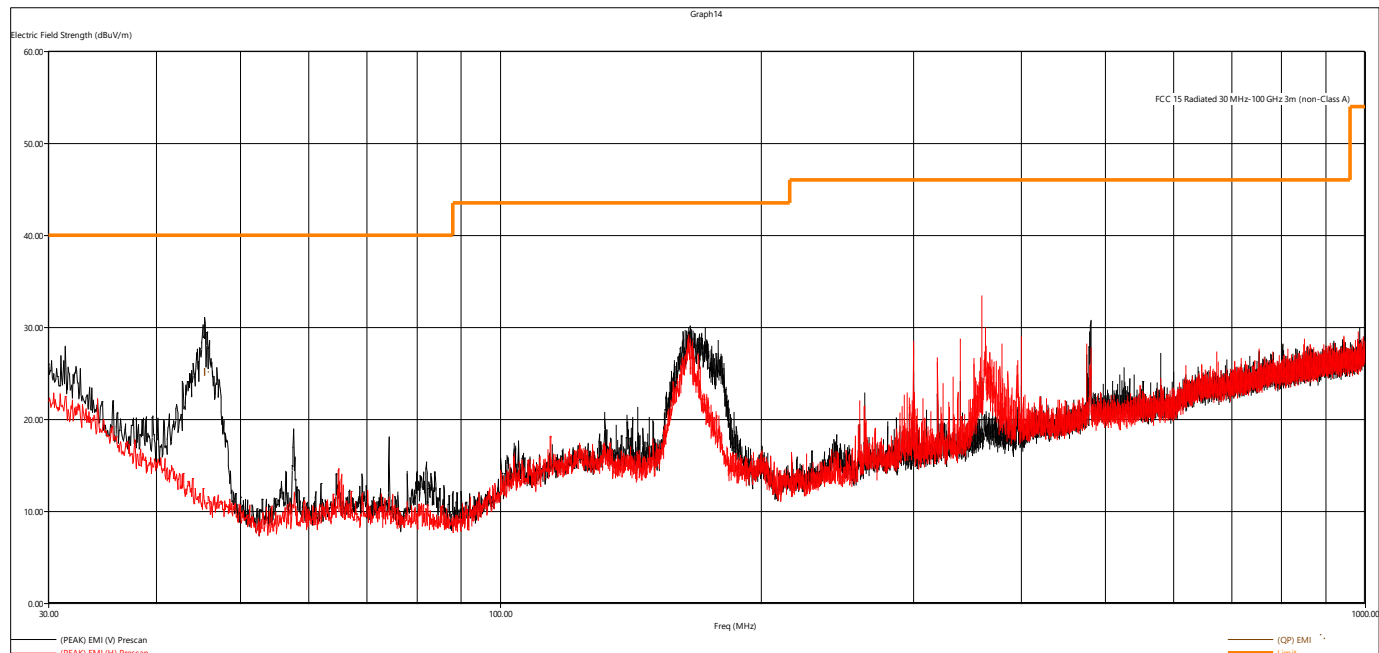


Figure 6 - Radiated Emissions Plot, GMSK

Quasi-Peak Measurements, 30MHz – 1GHz							
Frequency	Level	Limit	Margin	Height	Angle	Pol	Modulation
MHz	dBμV/m	dBμV/m	dB	cm.	deg.		
164.423280	27.44	43.52	16.08	110.98	257.50	V	RX
45.381600	25.12	40.00	14.88	105.37	109.50	V	GMSK
45.912000	17.76	59.23	41.47	104.05	116.25	V	GMSK
264.424560	6.99	59.23	52.24	110.68	247.00	V	GMSK
481.338960	19.32	41.23	21.91	323.04	314.75	V	GMSK

The EUT was maximized in all 3 orthogonal axes. The worst-case is shown in the plot and table above.

Peak Measurements, 30MHz – 1GHz					
Frequency	Peak EMI (H)	Peak EMI (V)	Limit	Margin (H)	Margin (V)
MHz	dBμV/m	dBμV/m	dBuV/m	dB	dB
45.48	11.20	31.09	40.00	28.80	8.91
165.72	25.59	30.13	43.52	17.93	13.39
172.38	21.65	30.00	43.52	21.87	13.52
360.06	33.44	24.52	46.02	12.58	21.50
Peak level compared to quasi-peak limit to demonstrate compliance					



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Peak Radiated Emissions. >1GHz								
Freq (Max)	(PEAK) EMI	Limit	(PEAK) Margin	Twr Ht	Ttbl Ang	Pol	Channel	Modulation
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg)			
1263.490000	22.17	53.98	31.81	515.64	179.00	V		RX
2401.190000	25.77	53.98	28.21	147.88	110.00	V		RX
4782.140000	47.63	73.98	26.35	231.34	128.00	V	Low	GMSK
4792.660000	49.21	73.98	24.77	482.26	53.25	H	Mid	GMSK
4779.510000	49.59	73.98	24.39	468.41	52.75	H	High	GMSK

Average Radiated Emissions, >1GHz								
Freq (Max)	(CISPR AVG) EMI	Limit	(CISPR AVG) Margin	Twr Ht	Ttbl Ang	Pol	Channel	Modulation
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg)			
1263.496000	22.17	53.98	31.81	515.64	179.00	V		RX
2401.190000	25.77	53.98	28.21	147.88	110.00	V		RX
4782.140000	33.05	53.98	20.93	231.34	128.00	V	Low	GMSK
4792.660000	34.20	53.98	19.78	482.26	53.25	H	Mid	GMSK
4779.510000	33.60	53.98	20.38	468.41	52.75	H	High	GMSK

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB)
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. Margin value = Emission level - Limit value
4. All other emissions, including those up to 25GHz, were investigated and found to be at least 20dB below applicable limit, or more than 15dB below the applicable limit when the laboratory noise floor is within 20dB of the limit. Worst case emissions are tabulated above.

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4.5 CONDUCTED SPURIOUS EMISSIONS

Test Method:

ANSI C63.10-2020, Section 6.7

Limits of spurious emissions:

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

Test procedures:

The highest emissions level was measured and recorded. All spurious measurements were evaluated to 30dB below the fundamental. More details can be found in section 3.4 of this report.

Deviations from test standard:

None.

Test setup:

Test setup details can be found in section 3.4 of this report.

EUT operating conditions:

Details can be found in section 2.1 of this report.

Test results:

Note that the limit shown on the plots does not apply. It is a line for reference.

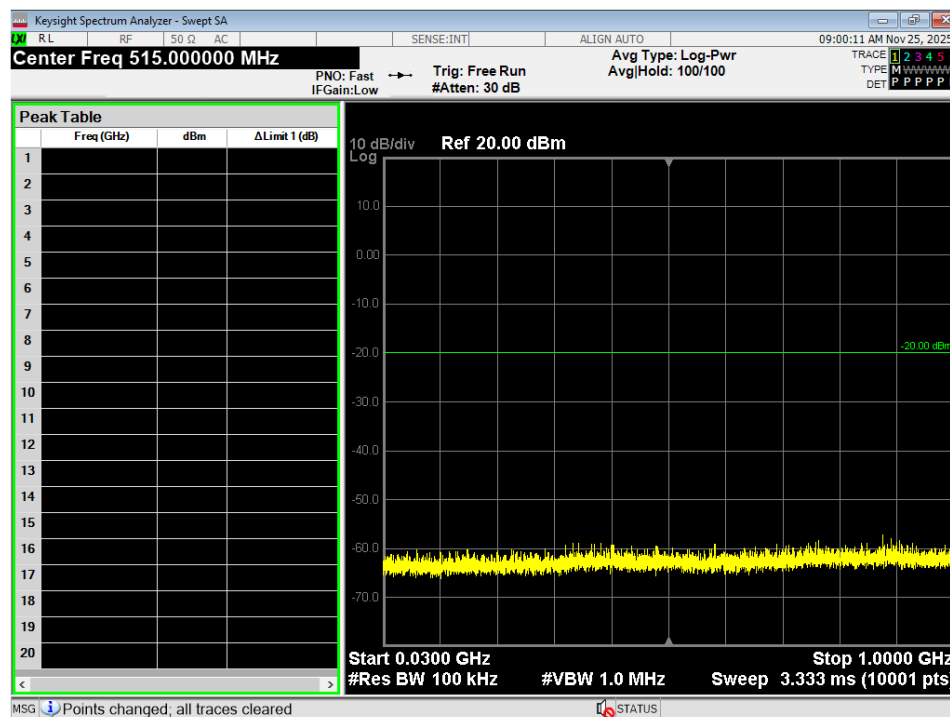


Figure 7 - Conducted Spurious Plot, 30MHz – 1GHz, RX

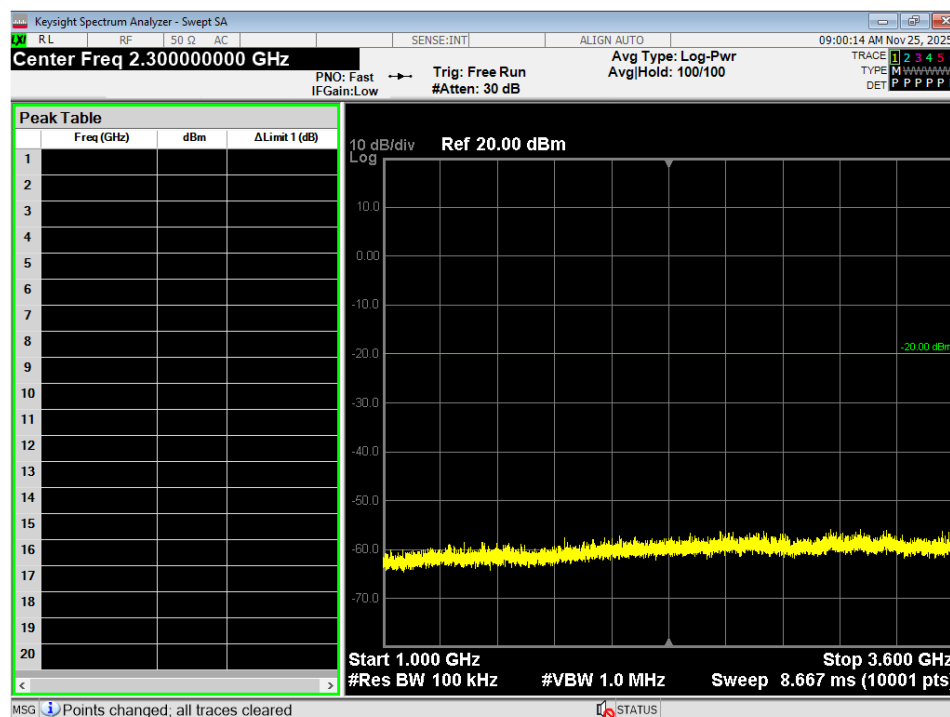


Figure 8 - Conducted Spurious Plot, 1GHz – 3.6GHz, RX

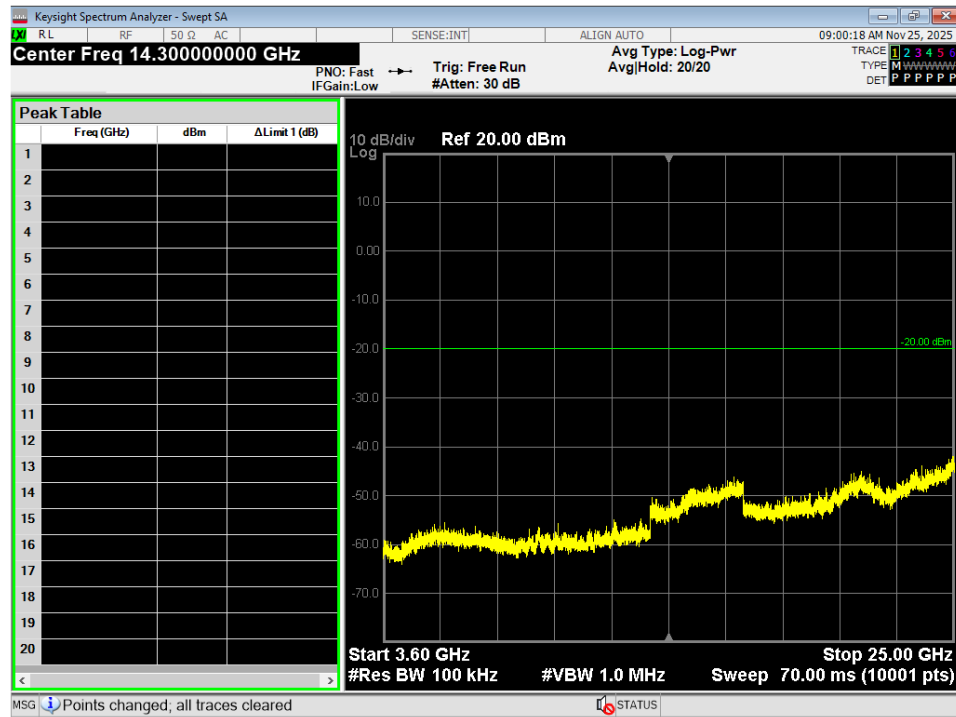


Figure 9 - Conducted Spurious Plot, 3.6GHz – 25GHz, RX

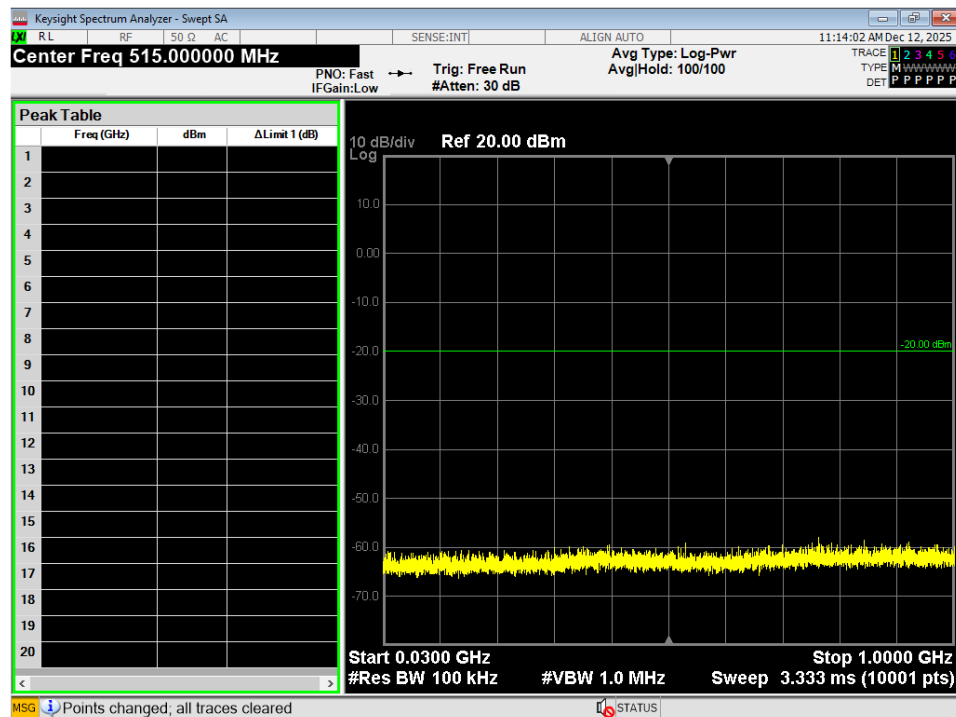


Figure 10 - Conducted Spurious Plot, 30MHz – 1GHz, GMSK Low

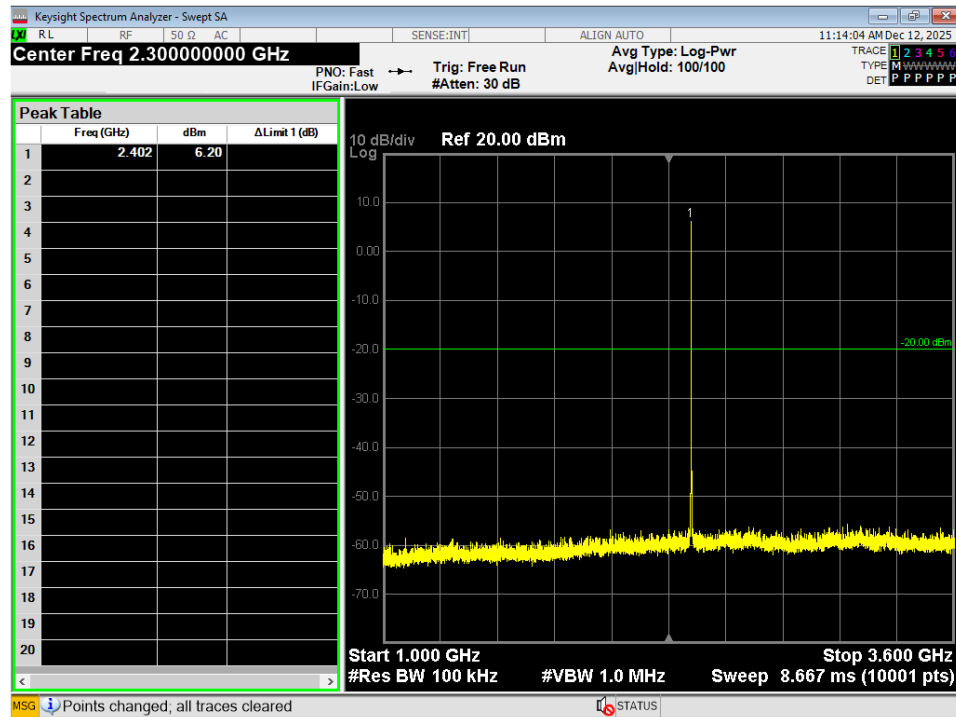


Figure 11 - Conducted Spurious Plot, 1GHz – 3.6GHz, GMSK Low

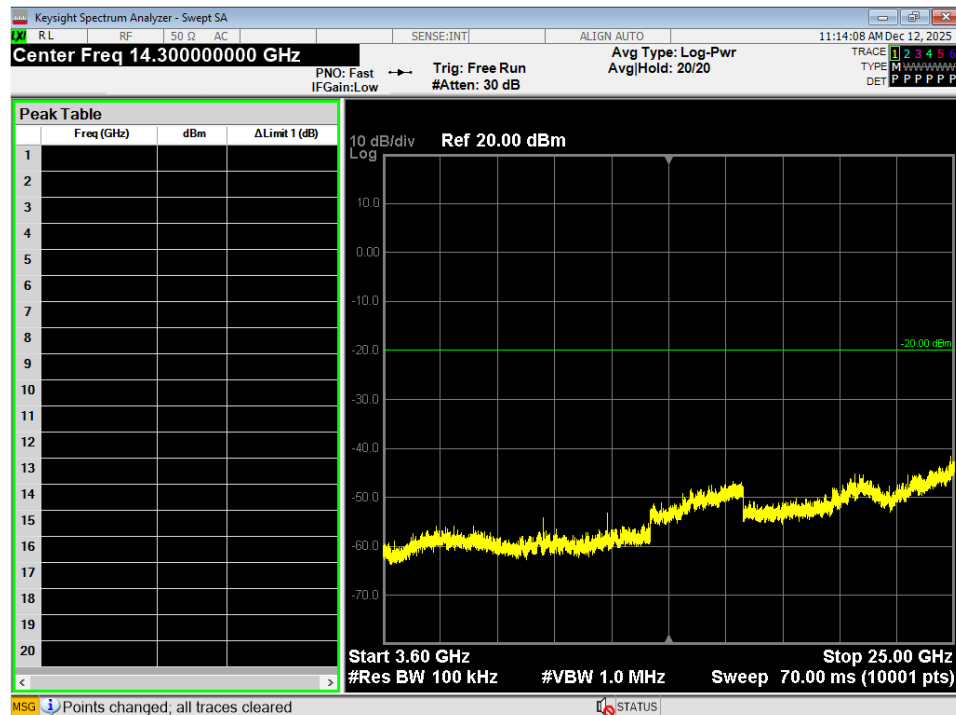


Figure 12 - Conducted Spurious Plot, 3.6GHz – 25GHz, GMSK Low

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4.6 BAND EDGES

Test Method:

All the radio measurements were performed using the sections from ANSI C63.10, details about the section used can be found in the spectrum analyzer titles on the graph.

Limits of band-edge measurements:

For FCC Part 15.247 Device:

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c))

Test procedures:

The highest emissions level beyond the band-edge was measured and recorded. All band edge measurements were evaluated to the general limits in Part 15.209. More details can be found in section 3.4 of this report.

Deviations from test standard:

No deviation.

Test setup:

Test setup details can be found in section 3.4 of this report.

EUT operating conditions:

Details can be found in section 2.1 of this report.

Test results:

Pass

Comments:

1. All the band edge plots can be found in Appendix C.
2. If the device falls under FCC Part 15.247 (Details can be found in summary of test results), compliance is shown in the unrestricted band edges by showing minimum delta of 20 dB between peak and the band edge.
3. The restricted band edge compliance is shown by comparing it to the general limit defined in Part 15.209.
4. Tabulated data is listed in section 4.0.



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4.7 POWER SPECTRAL DENSITY

Test Method:

All the radio measurements were performed using the sections from ANSI C63.10, details about the section used can be found in the spectrum analyzer titles on the graph.

Limits of power measurements:

For FCC Part 15.247 Device:

The maximum PSD allowed is 8 dBm.

Test procedures:

Details can be found in section 3.4 of this report.

Deviations from test standard:

No deviation.

Test setup:

Details can be found in section 3.4 of this report.

EUT operating conditions:

Details can be found in section 2.1 of this report.

Test results:

Pass

Comments:

1. All the Power Spectral Density (PSD) plots can be found in Appendix C.
2. All the measurements were found to be compliant.
3. Tabulated data is listed in section 4.0.



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APPENDIX A: SAMPLE CALCULATION

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor, Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF - (-CF + AG) + AV$$

where FS = Field Strength

RA = Receiver Amplitude

AF = Antenna Factor

CF = Cable Attenuation Factor

AG = Amplifier Gain

AV = Averaging Factor (if applicable)

Assume a receiver reading of 55 dB μ V is obtained. The Antenna Factor of 12 and a Cable Factor of 1.1 is added. The Amplifier Gain of 20 dB is subtracted, giving a field strength of 48.1 dB μ V/m.

$$FS = 55 + 12 - (-1.1 + 20) + 0 = 48.1 \text{ dB}\mu\text{V/m}$$

The 48.1 dB μ V/m value can be mathematically converted to its corresponding level in μ V/m.

$$\text{Level in } \mu\text{V/m} = \text{Common Antilogarithm} [(48.1 \text{ dB}\mu\text{V/m})/20] = 254.1 \mu\text{V/m}$$

AV is calculated by taking the $20 \cdot \log(T_{\text{on}}/100)$ where T_{on} is the maximum transmission time in any 100ms window.

EIRP Calculations

In cases where direct antenna port measurement is not possible or would be inaccurate, output power is measured in EIRP. The maximum field strength is measured at a specified distance and the EIRP is calculated using the following equation;

$$EIRP (\text{Watts}) = [\text{Field Strength (V/m)} \times \text{antenna distance (m)}]^2 / 30$$

$$\text{Power (watts)} = 10^{[\text{Power (dBm)}]/10} / 1000$$

$$\text{Voltage (dB}\mu\text{V)} = \text{Power (dBm)} + 107 \text{ (for } 50\Omega \text{ measurement systems)}$$

$$\text{Field Strength (V/m)} = 10^{[\text{Field Strength (dB}\mu\text{V/m)} / 20] / 10^6}$$

$$\text{Gain} = 1 \text{ (numeric gain for isotropic radiator)}$$

$$\text{Conversion from 3m field strength to EIRP (d=3):}$$

$$EIRP = [FS(\text{V/m}) \times d^2]/30 = FS [0.3] \quad \text{for } d = 3$$

$$EIRP(\text{dBm}) = FS(\text{dB}\mu\text{V/m}) - 10(\log 10^9) + 10\log[0.3] = FS(\text{dB}\mu\text{V/m}) - 95.23$$

$10\log(10^9)$ is the conversion from micro to milli



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APPENDIX B – MEASUREMENT UNCERTAINTY

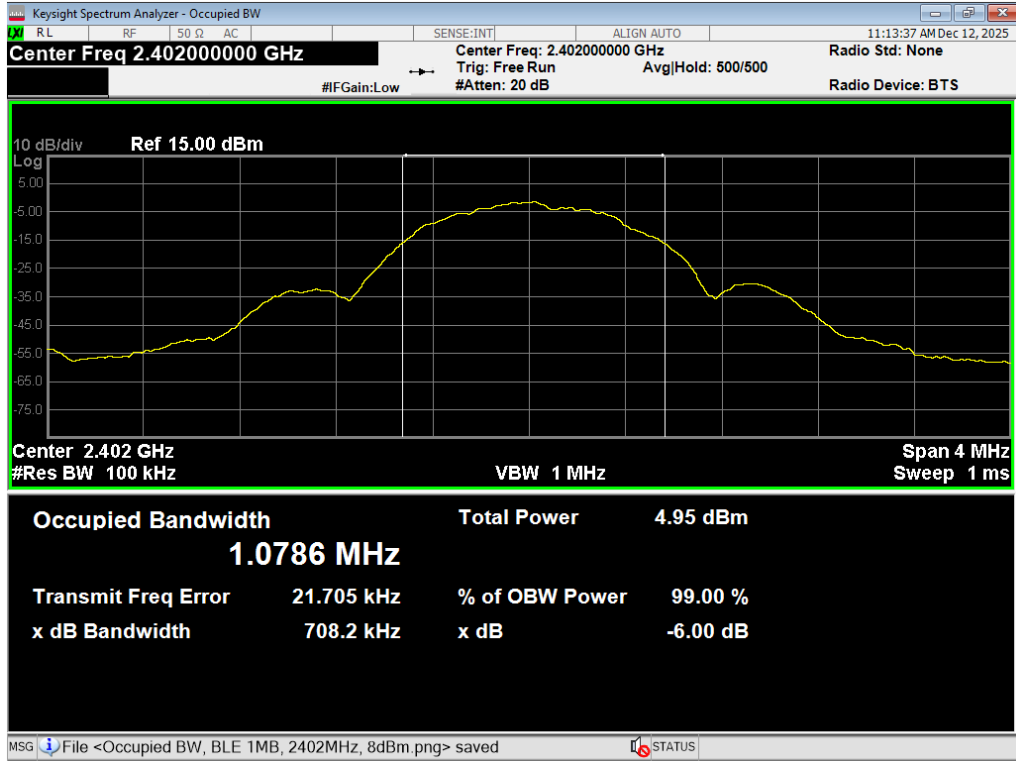
NCEE Labs does not add uncertainty levels to measurement levels

Where relevant, the following measurement uncertainty levels have been for tests performed in this test report:

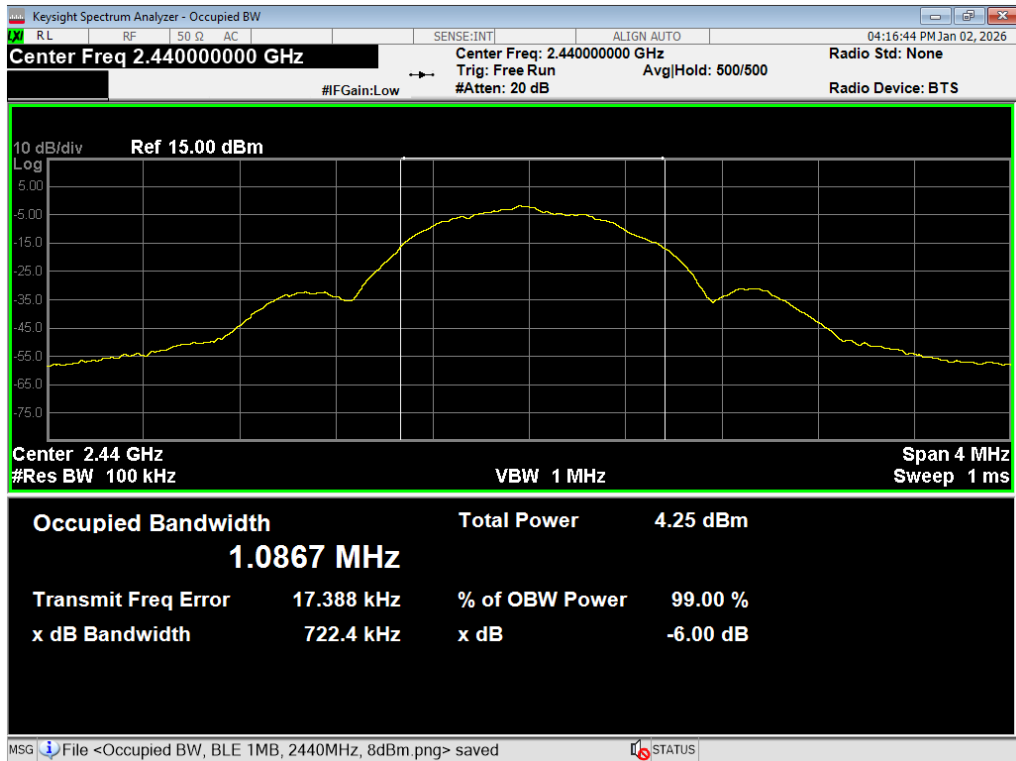
Test	Frequency Range	Uncertainty Value (dB)
Radiated Emissions, 3m	30MHz - 1GHz	±4.31
Radiated Emissions, 3m	1GHz - 18GHz	±5.08
Emissions limits, conducted	30MHz – 18GHz	±3.03

Expanded uncertainty values are calculated to a confidence level of 95%.

APPENDIX C – GRAPHS AND TABLES



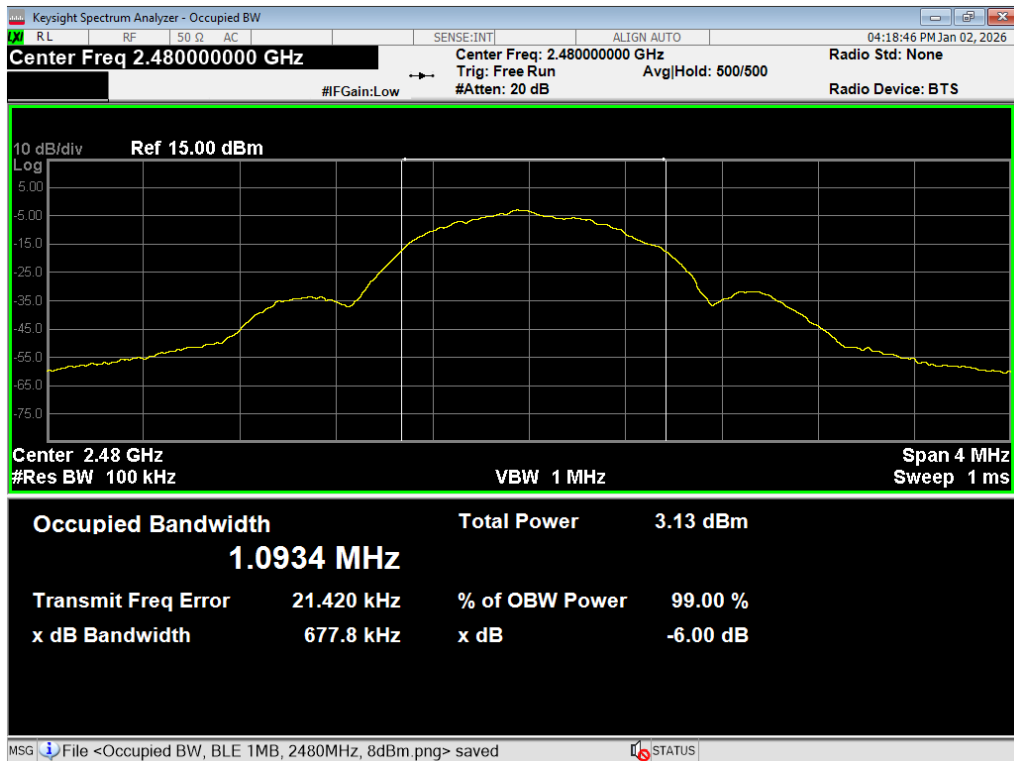
01 6dB BW, BLE 1MB, 2402MHz



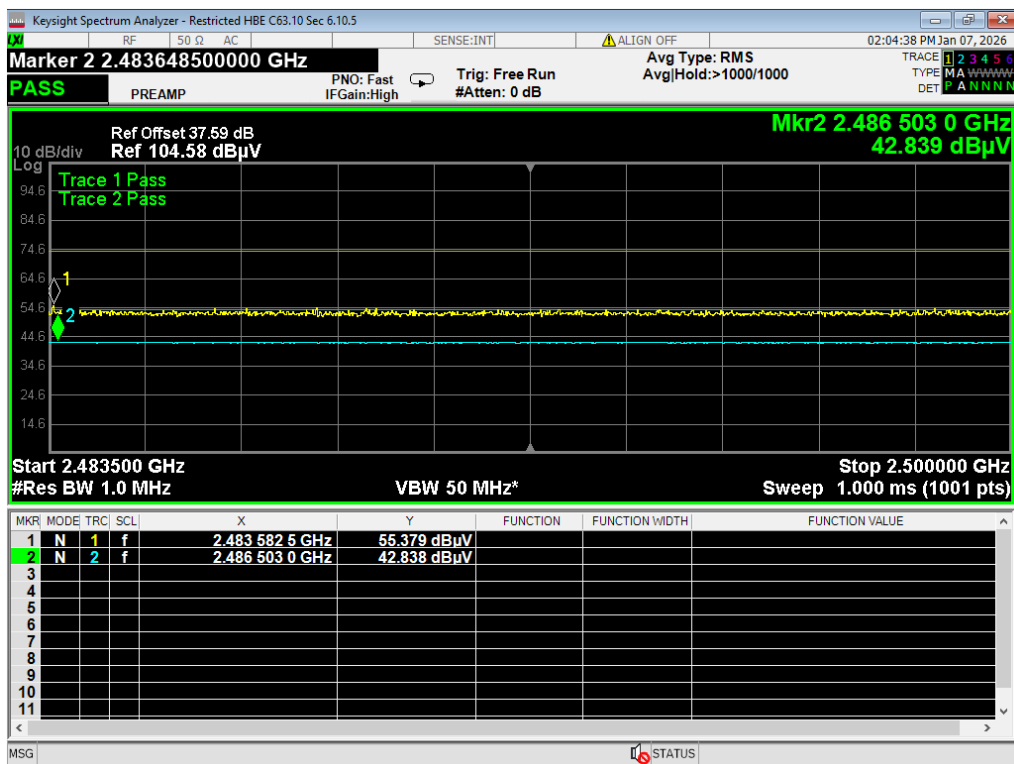
02 6dB BW, BLE 1MB, 2440MHz



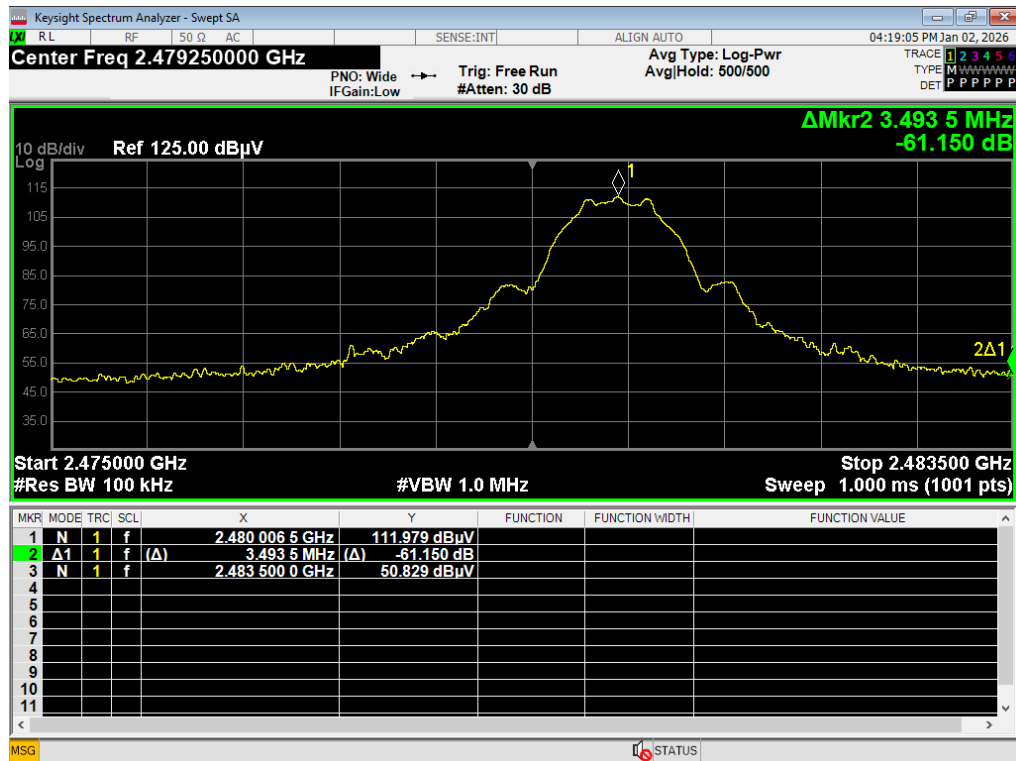
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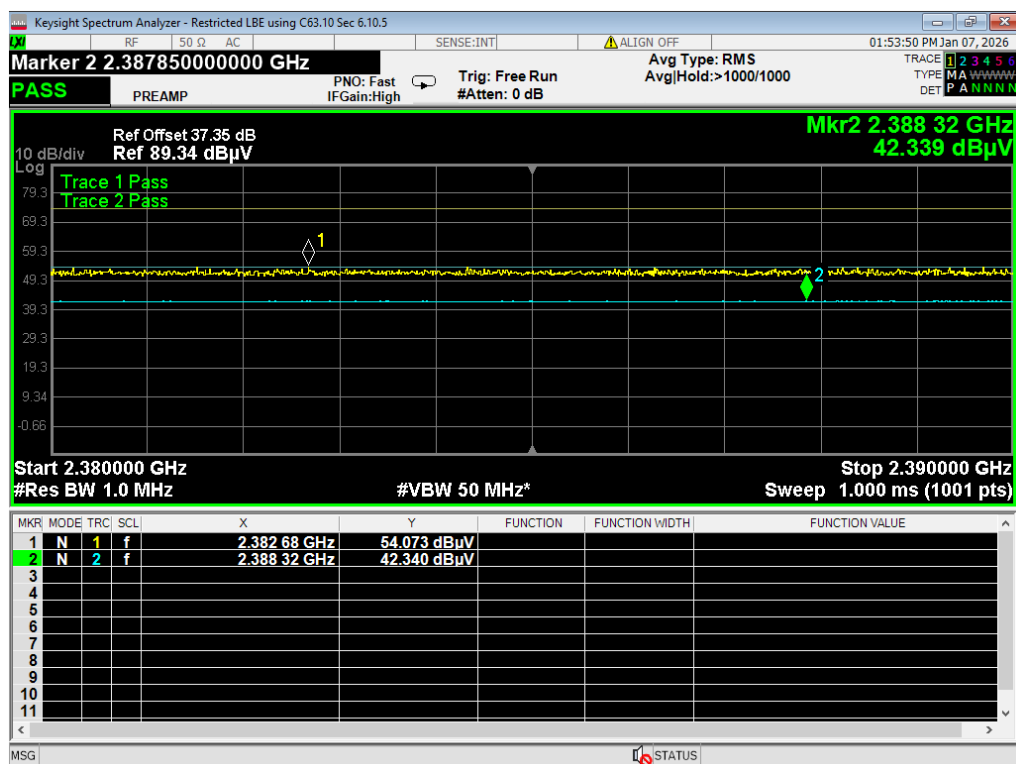
03 6dB BW, BLE 1MB, 2480MHz



04 HBE Restricted, BLE 1MB, 2480MHz

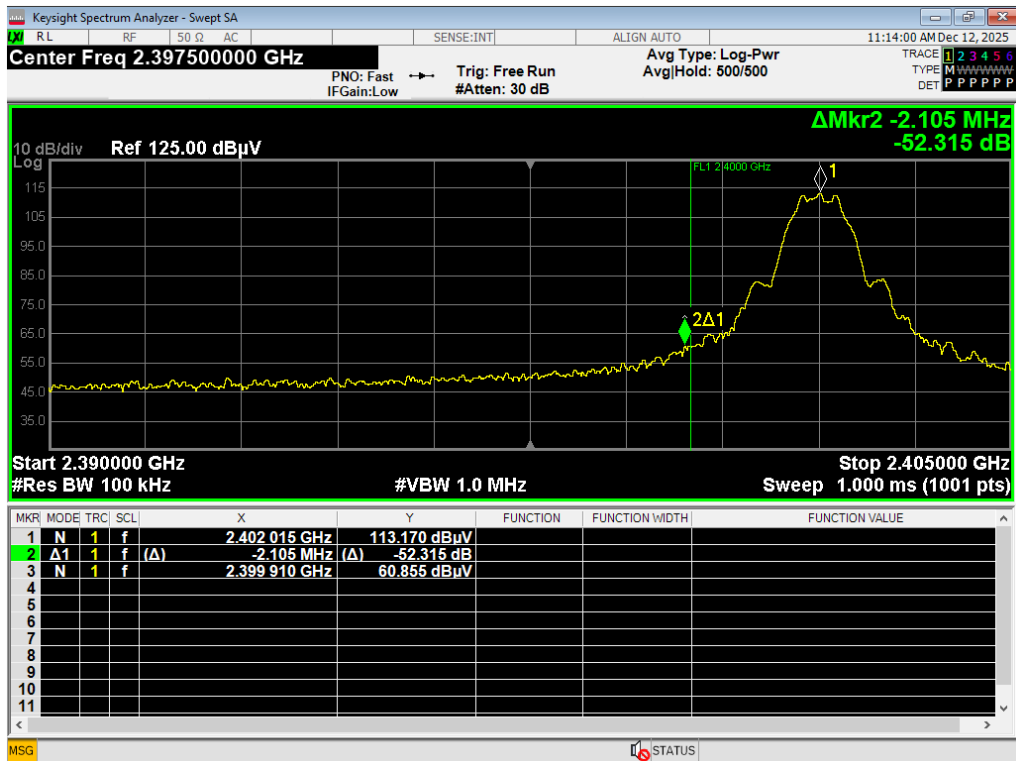


05 HBE Unrestricted, BLE 1MB, 2480MHz

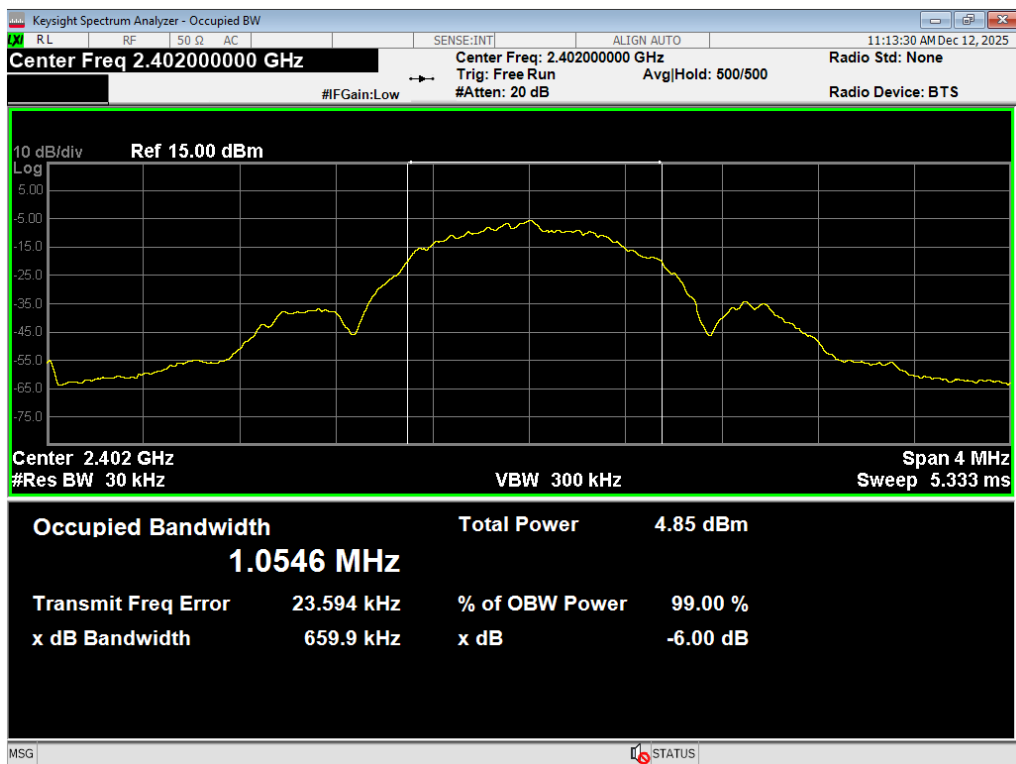


06 LBE Restricted, BLE 1MB, 2402MHz

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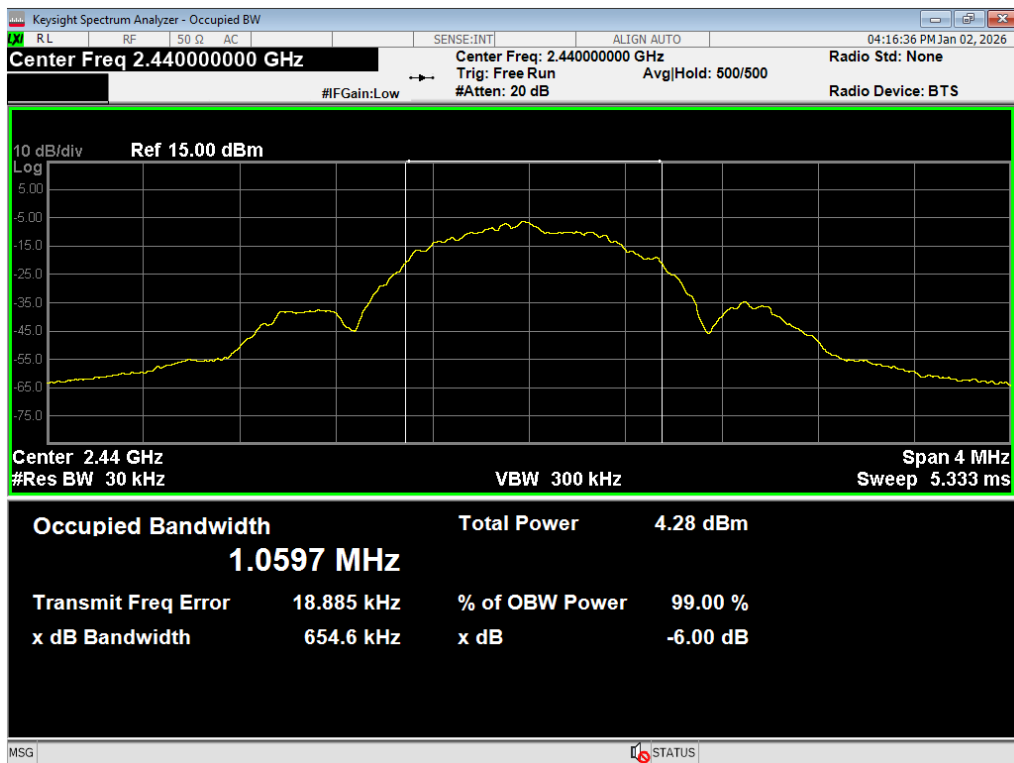


07 LBE Unrestricted, BLE 1MB, 2402MHz

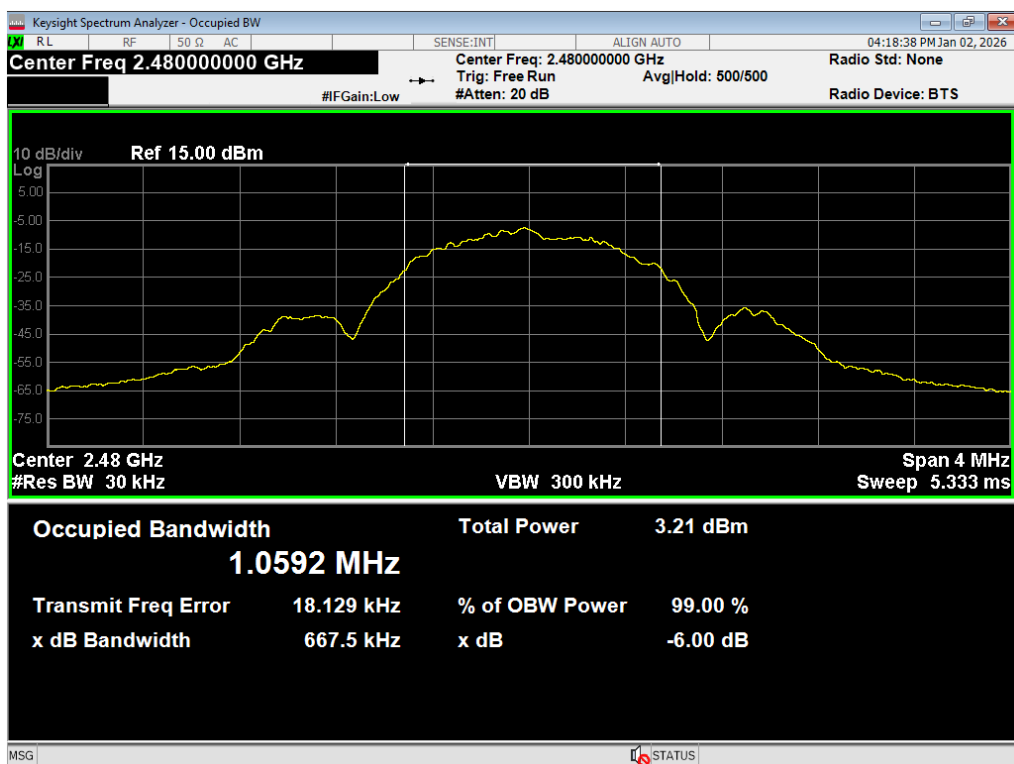


08 Occupied BW, BLE 1MB, 2402MHz

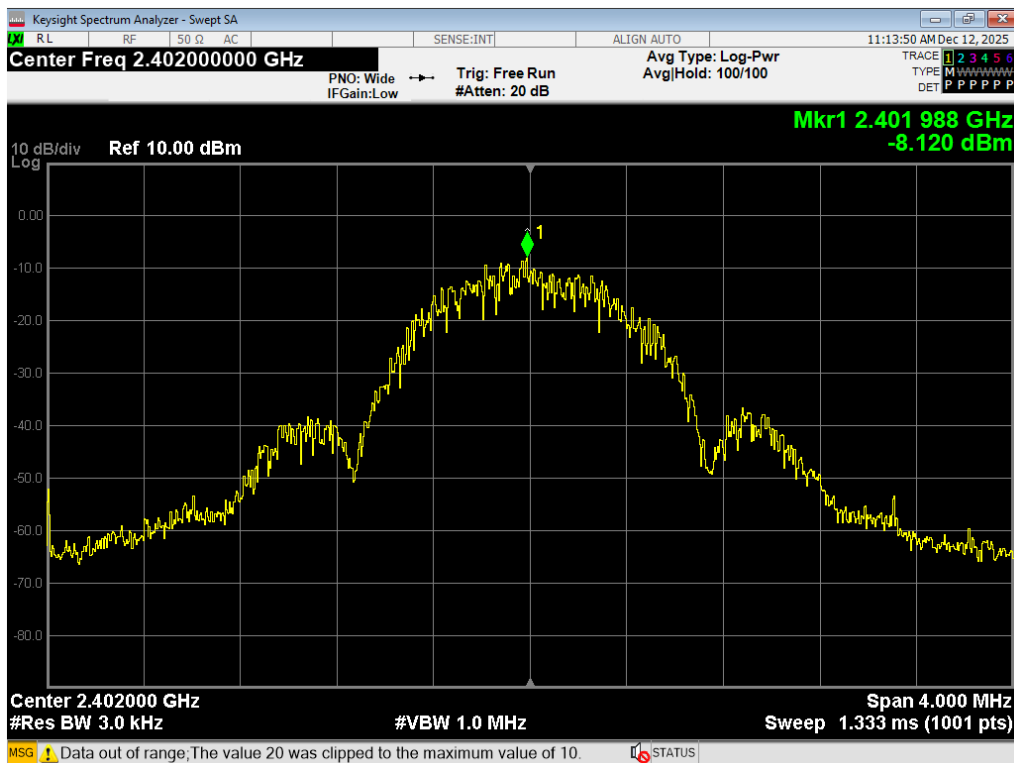
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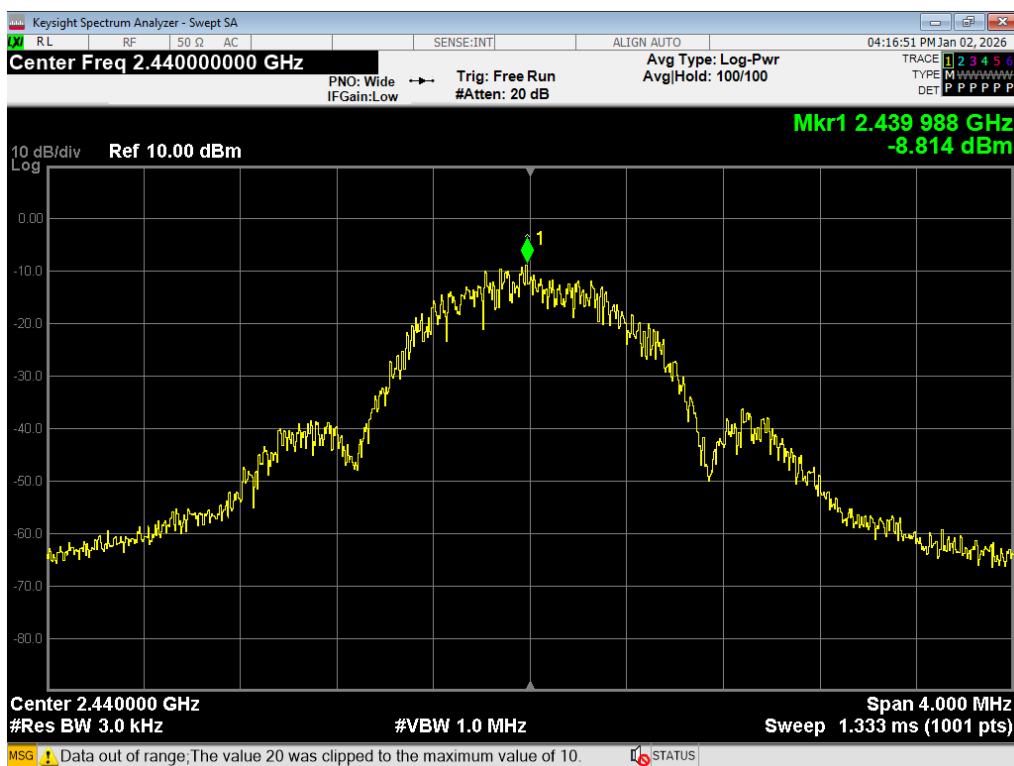
09 Occupied BW, BLE 1MB, 2440MHz



10 Occupied BW, BLE 1MB, 2480MHz



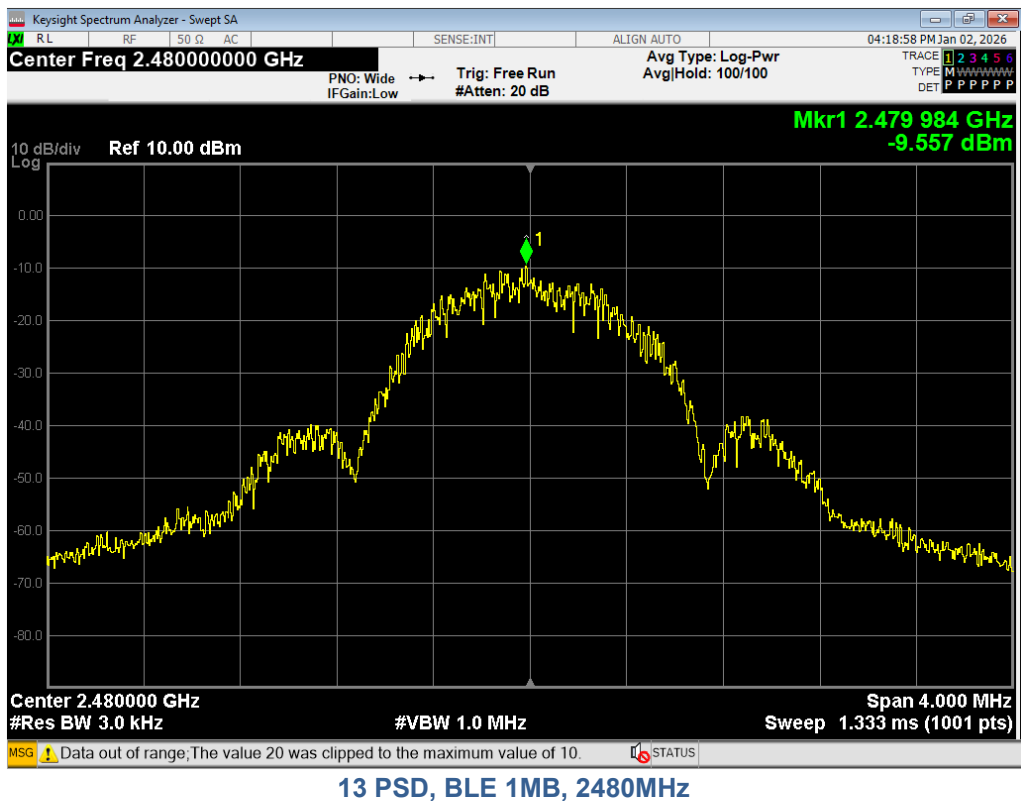
11 PSD, BLE 1MB, 2402MHz



12 PSD, BLE 1MB, 2440MHz



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