

FCC/ISED Test Report

Prepared for: Hudl Inc.

Address: 600 P Street, Ste 400
Lincoln, NE 68508

Product: Titan T3

Test Report No: R20251010-71-E1 **Rev:** 0

Approved by:


Fox Lane,
EMC Test Engineer

Date: January 15, 2026

Total Pages: 42

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REVISION PAGE

Rev. No.	Date	Description
0	15 January 2026	Issued by FLane Prepared by FLane/ESchmidt

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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



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2.0 EUT DESCRIPTION

2.1 EQUIPMENT UNDER TEST

Summary and Operating Condition:

EUT	Titan T3
FCC ID	2BS3T-T3
IC ID	34857-T3
EUT Received	30 October 2025
EUT Tested	30 October 2025 - 17 November 2025
Serial No.	EMC 1 (Radiated sample, Lab Assigned Serial Number)
Operating Band	2400 – 2483.5 MHz
Device Type	☒ GMSK ☐ GFSK ☐ BT BR ☐ BT EDR 2MB ☐ BT EDR 3MB ☐ 802.11x
Power Supply / Voltage	Internal Battery / 5VDC Charger: Garmin (Phi Hong) Model: PSA105R-050Q (Representative Power Supply)

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

GMSK 2MB Transmissions:

Channel	Frequency
Low	2404 MHz
Mid	2440 MHz
High	2478 MHz

Power setting 13 was used for testing.

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.

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
 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	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
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.

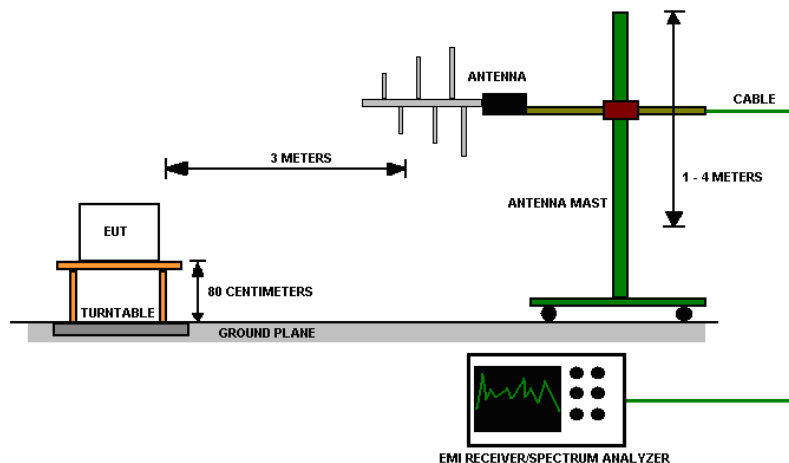


Figure 2 - Radiated Emissions Test Setup

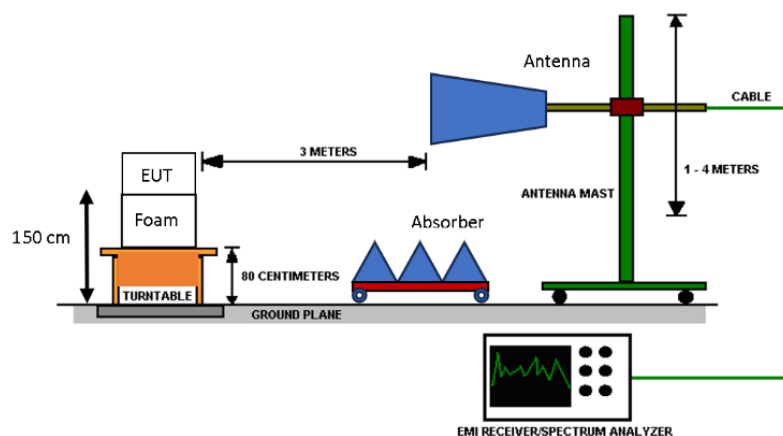


Figure 3 - Radiated Emissions Test Setup, >1GHz

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4.0 RESULTS

DTS Radio Measurements							
CHANNEL	Mode	Occupied BW (kHz)	6 dB BW (kHz)	PSD (dBm)	Peak OUTPUT POWER (dBm)	Peak OUTPUT POWER (mW)	RESULT
Low	GMSK 1MB	1034.10	669.80	-14.025	3.117	2.050	PASS
Mid	GMSK 1MB	1046.80	736.50	-5.458	8.277	6.725	PASS
High	GMSK 1MB	1042.50	726.30	-6.843	8.347	6.834	PASS
Low	GMSK 2MB	2074.20	1345.00	-19.544	3.065	2.025	PASS
Mid	GMSK 2MB	2095.40	1390.00	-11.696	7.447	5.555	PASS
High	GMSK 2MB	2076.50	1368.00	-13.74	8.132	6.504	PASS
Occupied Bandwidth Lim = N/A; 6dB Bandwidth Lim = >500kHz				Peak Output Power Lim = 30dBm; PSD Lim = 8dBm For PSD and Peak Output power; antenna corrections and cable corrections were added to the raw measurement along with an EIRP conversion of 11.77			
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 1MB	2400.00	68.919	30.503	-38.42	30.00	PASS
Low	GMSK 2MB	2400.00	69.489	20.266	-49.22	30.00	PASS
High	GMSK 1MB	2483.50	64.272	16.489	-47.78	30.00	PASS
High	GMSK 2MB	2483.50	64.721	16.815	-47.91	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 1MB	2390.00	55.031	Peak	73.98	18.95	PASS
Low	GMSK 2MB	2390.00	55.435	Peak	73.98	18.55	PASS
High	GMSK 1MB	2483.50	60.361	Peak	73.98	13.62	PASS
High	GMSK 2MB	2483.50	58.252	Peak	73.98	15.73	PASS
*Limit shown is the peak limit taken from FCC Part 15.209							

Average Restricted Band-Edge, Low Data Rate									
CHANNEL	Mode	Band edge /Measurement Frequency (MHz)	Peak 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 1MB	2390.00	55.03	10.458	44.57	Peak	53.98	9.41	PASS
Low	GMSK 2MB	2390.00	55.44	10.458	44.98	Peak	53.98	9.00	PASS
High	GMSK 1MB	2483.50	60.36	10.458	49.90	Peak	53.98	4.08	PASS
High	GMSK 2MB	2483.50	58.25	10.458	47.79	Peak	53.98	6.19	PASS
*Limit shown is the average limit taken from FCC Part 15.209 **Detector used was Peak, DCCF subtracted from peak level to convert to average									



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4.1 OUTPUT POWER

Test Method:

All measurements were performed using section 11.9.1.1 from ANSI C63.10.

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 output power 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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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.



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4.3 DUTY CYCLE

The manufacturer has declared 30% as the worst-case duty cycle for all modulations present in this report.

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

Duty Cycle correction factor (for emissions) = $20 * \log(1 / \text{Duty cycle})$

Duty Cycle correction factor (for power) = $10 * \log(1 / \text{Duty Cycle})$

Duty cycle for GMSK 1MB and 2MB: 0.300

Duty cycle correction factor (for emissions): 10.458dB

Duty Cycle correction factor (for power): 5.229dB

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.

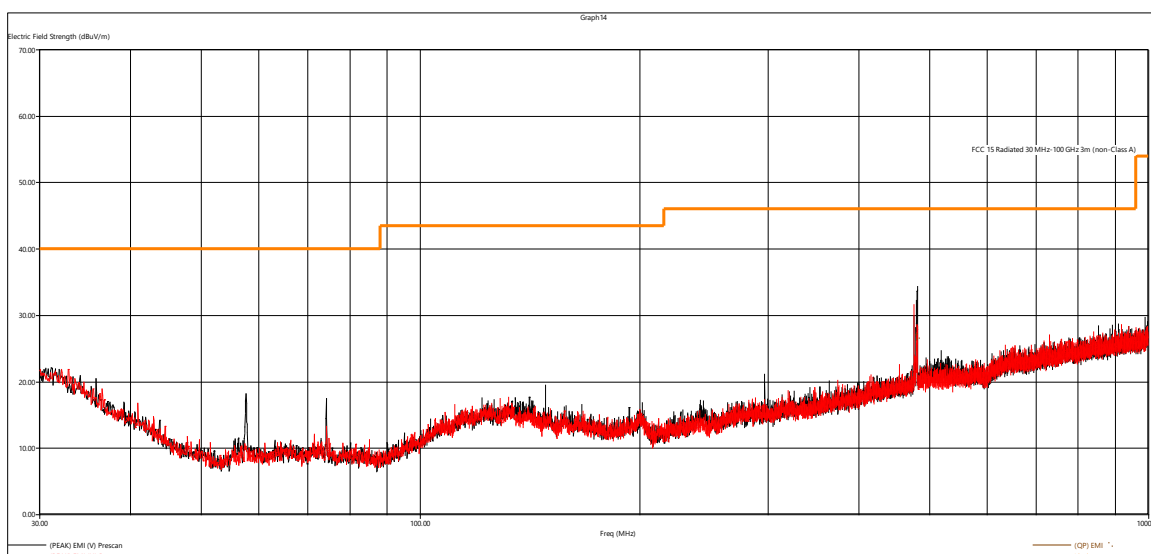


Figure 4 - Radiated Emissions Plot, Receive

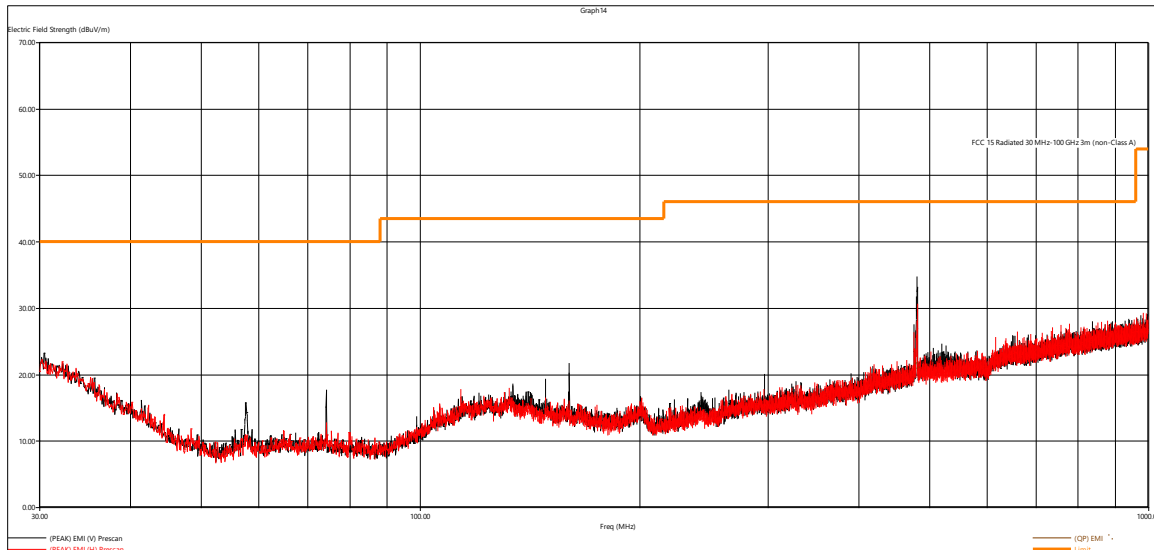


Figure 5 - Radiated Emissions Plot, GMSK 1MB

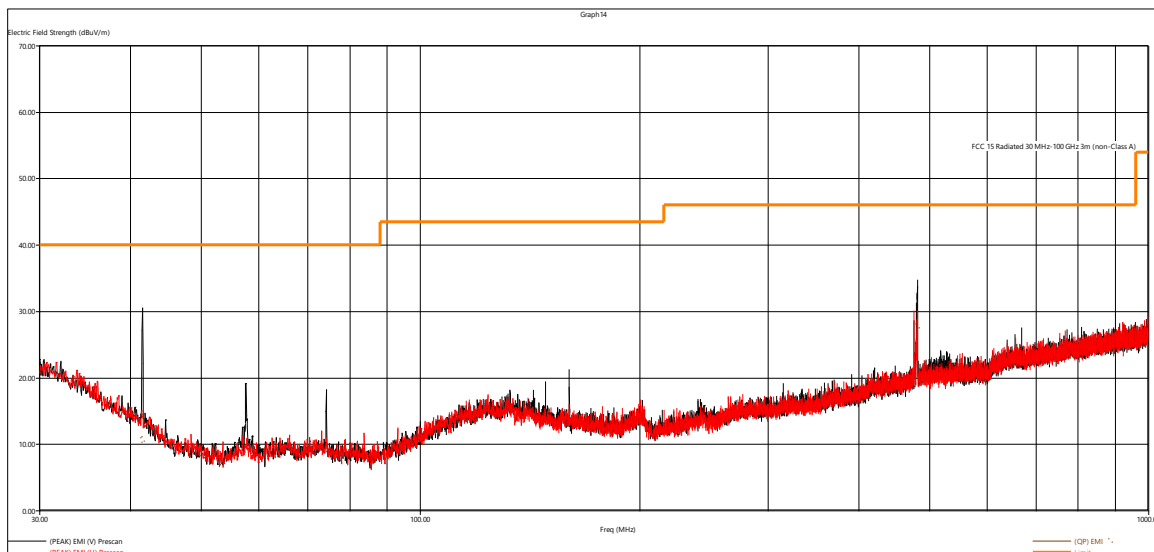


Figure 6 - Radiated Emissions Plot, GMSK 2MB

Quasi-Peak Measurements, 30MHz – 1GHz							
Frequency	Level	Limit	Margin	Height	Angle	Pol	Modulation
MHz	dBμV/m	dBμV/m	dB	cm.	deg.		
481.262640	26.71	46.02	19.31	306.58	133.50	V	RX
480.460800	21.24	46.02	24.78	313.68	271.50	V	GMSK 1MB
41.499840	10.60	40.00	29.40	300.25	157.50	V	GMSK 2MB
481.245840	27.75	46.02	18.27	160.13	281.00	V	GMSK 2MB

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



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Peak Radiated Emissions

Freq (Max)	(PEAK) EMI	Limit	(PEAK) Margin	Twr Ht	Ttbl Ang	Pol	Channel	Modulation
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg)			
4804.350000	64.53	73.98	9.45	359.77	256.50	H	Low	GMSK 1MB
7320.386000	56.49	73.98	17.49	112.25	314.00	H	Mid	GMSK 1MB
4880.054000	65.78	73.98	8.20	410.70	139.75	V	Mid	GMSK 1MB
4960.242000	67.56	73.98	6.42	489.44	60.00	H	High	GMSK 1MB
7439.498000	61.37	73.98	12.61	280.49	237.50	H	High	GMSK 1MB
4807.002000	63.60	73.98	10.38	290.28	257.25	H	Low	GMSK 2MB
7320.972000	57.83	73.98	16.15	353.44	232.50	H	Mid	GMSK 2MB
4880.610000	65.24	73.98	8.74	436.01	137.00	V	Mid	GMSK 2MB
4956.894000	65.02	73.98	8.96	500.00	300.00	H	High	GMSK 2MB
7432.668000	59.22	73.98	14.76	285.08	238.25	H	High	GMSK 2MB

Average Radiated Emissions

Freq (Max)	(AVG) EMI RAW	DCCF	(AVG) EMI Corrected	Limit	(AVG) Margin	Twr Ht	Ttbl Ang	Pol	Channel	Modulation
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg)			
4804.350000	60.03	10.458	49.572	53.98	4.408	359.77	256.50	H	Low	GMSK 1MB
7320.386000	47.94	10.458	37.482	53.98	16.498	112.25	314.00	H	Mid	GMSK 1MB
4880.054000	61.88	10.458	51.422	53.98	2.558	410.70	139.75	V	Mid	GMSK 1MB
4960.242000	63.53	10.458	53.072	53.98	0.908	489.44	60.00	H	High	GMSK 1MB
7439.498000	53.68	10.458	43.222	53.98	10.758	280.49	237.50	H	High	GMSK 1MB
4807.002000	56.37	10.458	45.912	53.98	8.068	290.28	257.25	H	Low	GMSK 2MB
7320.972000	49.70	10.458	39.242	53.98	14.738	353.44	232.50	H	Mid	GMSK 2MB
4880.610000	58.18	10.458	47.722	53.98	6.258	436.01	137.00	V	Mid	GMSK 2MB
4956.894000	57.52	10.458	47.062	53.98	6.918	500.00	300.00	H	High	GMSK 2MB
7432.668000	51.81	10.458	41.352	53.98	12.628	285.08	238.25	H	High	GMSK 2MB

AVG EMI Corrected = AVG EMI RAW – DCCF (For Emissions)

For more information on DCCF, see section 4.3

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 = Limit value – Emission level

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4.5 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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4.6 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.

4.7 CONDUCTED AC MAINS EMISSIONS

Test Method: ANSI C63.10-2020, Section(s) 6.2

Limits for conducted emissions measurements:

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

Notes:

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

Test Procedures:

- a. The EUT was placed 0.8m above a ground reference plane and 0.4 meters from the conducting wall of a shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). The LISN provides 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference as well as the ground.
- c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels over 10dB under the prescribed limits are not reported.
- d. Results were compared to the 15.207 limits.

Deviation from the test standard:

No deviation

EUT operating conditions:

Details can be found in section 2.1 of this report.

Test Results:

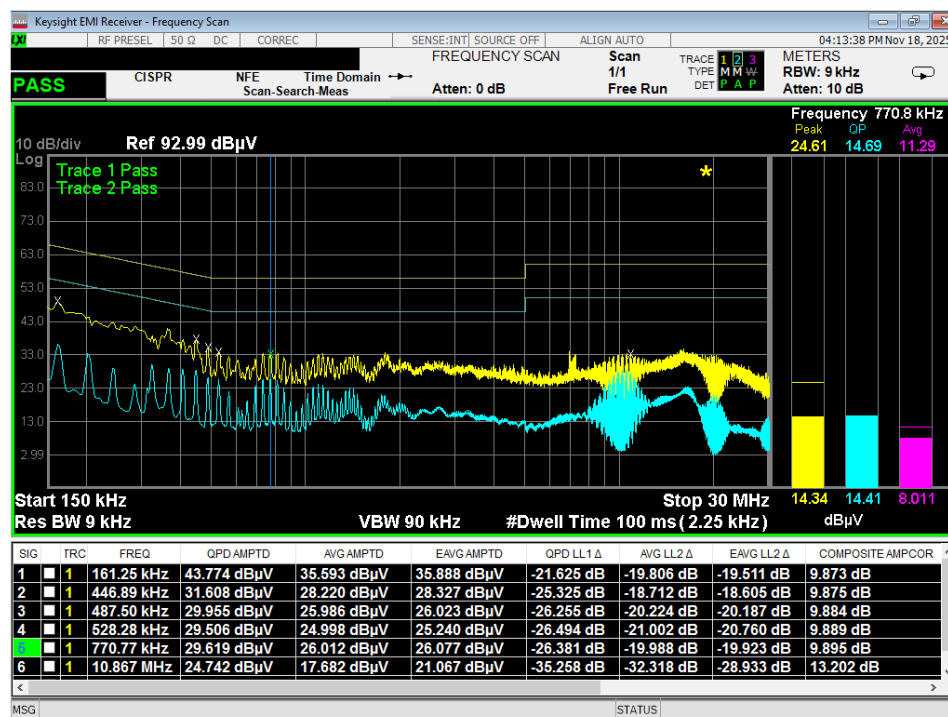


Figure 7 – Conducted Emissions Plot, TX, Line

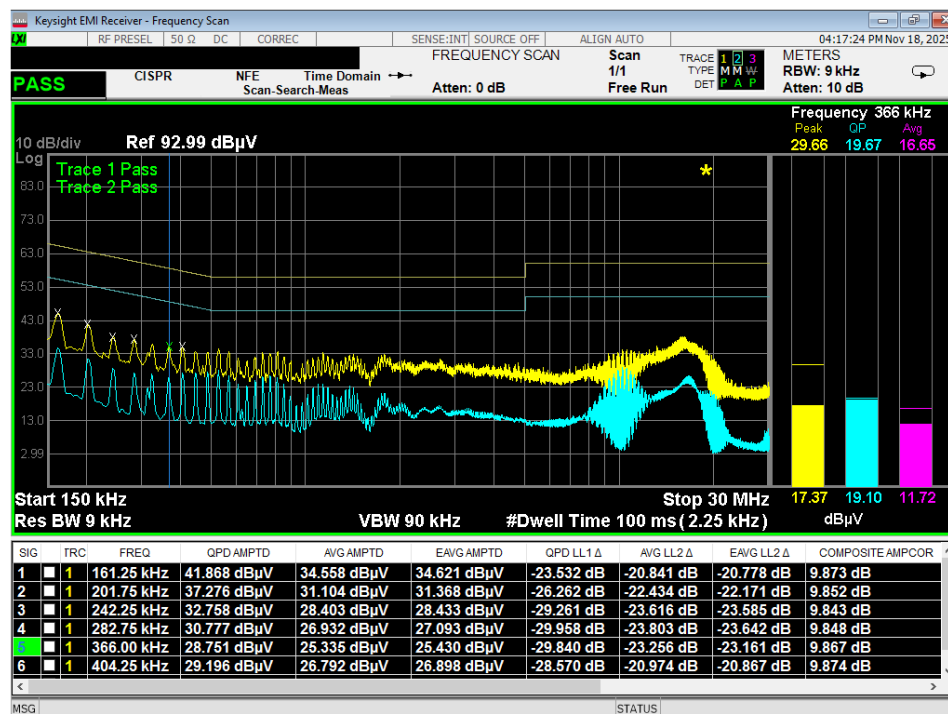


Figure 8 – Conducted Emissions Plot, TX, Neutral

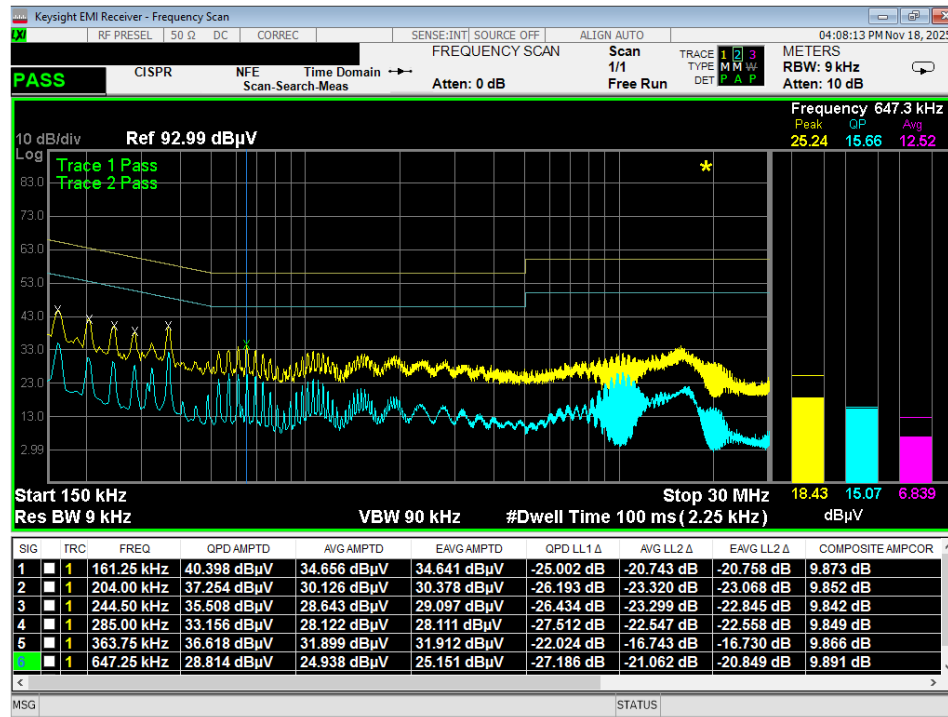


Figure 9 – Conducted Emissions Plot, IDLE, Line

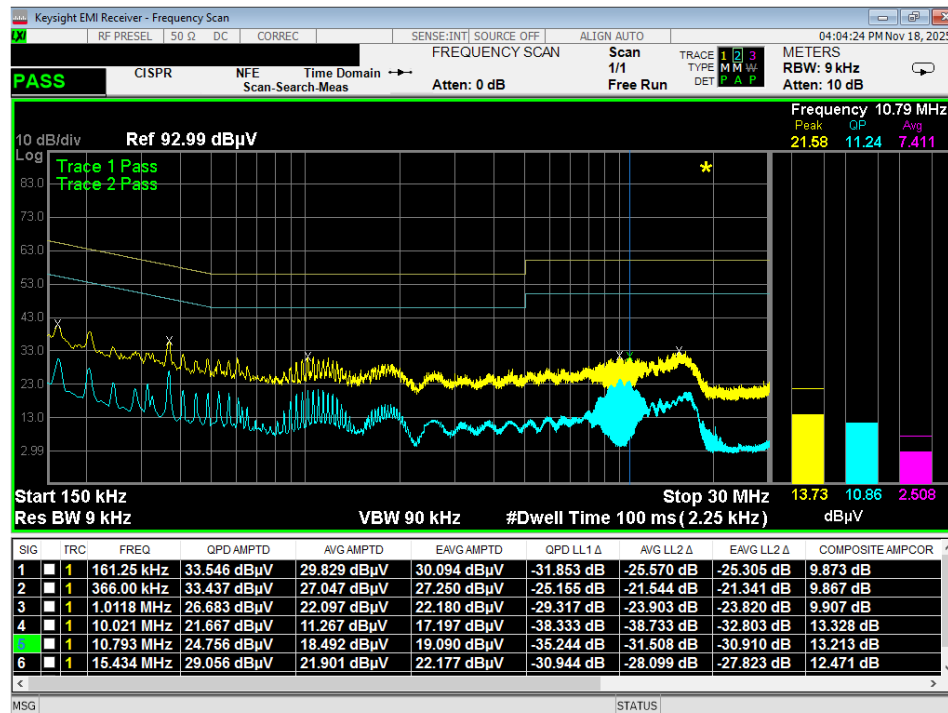


Figure 10 – Conducted Emissions Plot, IDLE, Neutral

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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

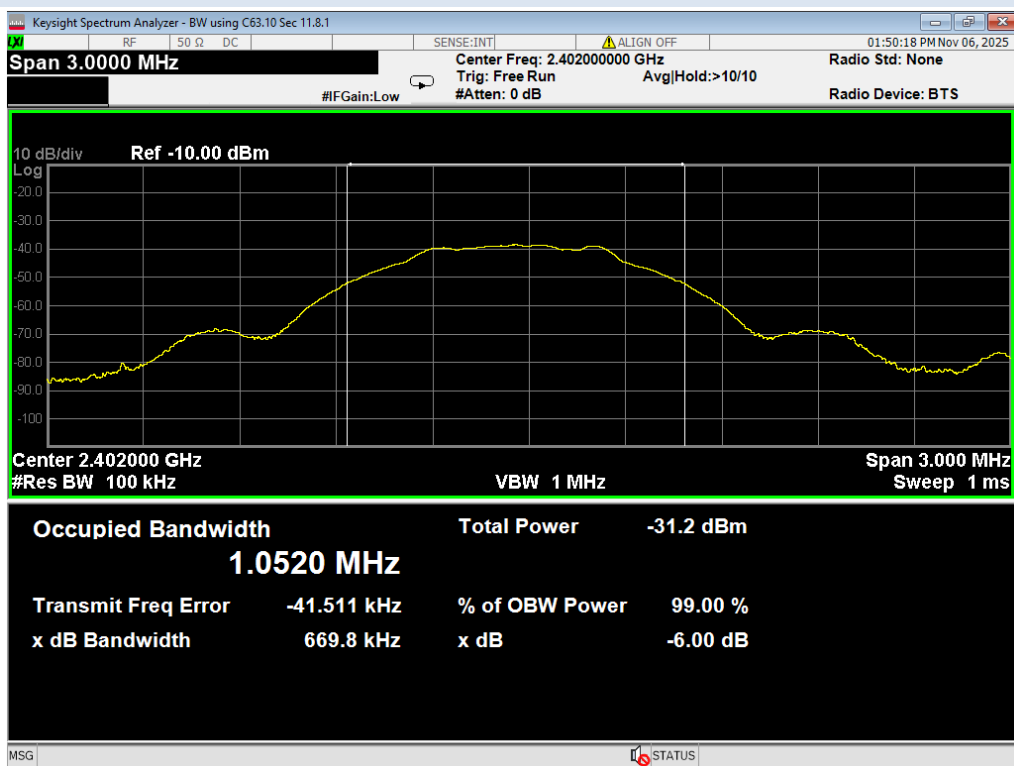
NCEE Labs does not add uncertainty levels to measurement levels

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

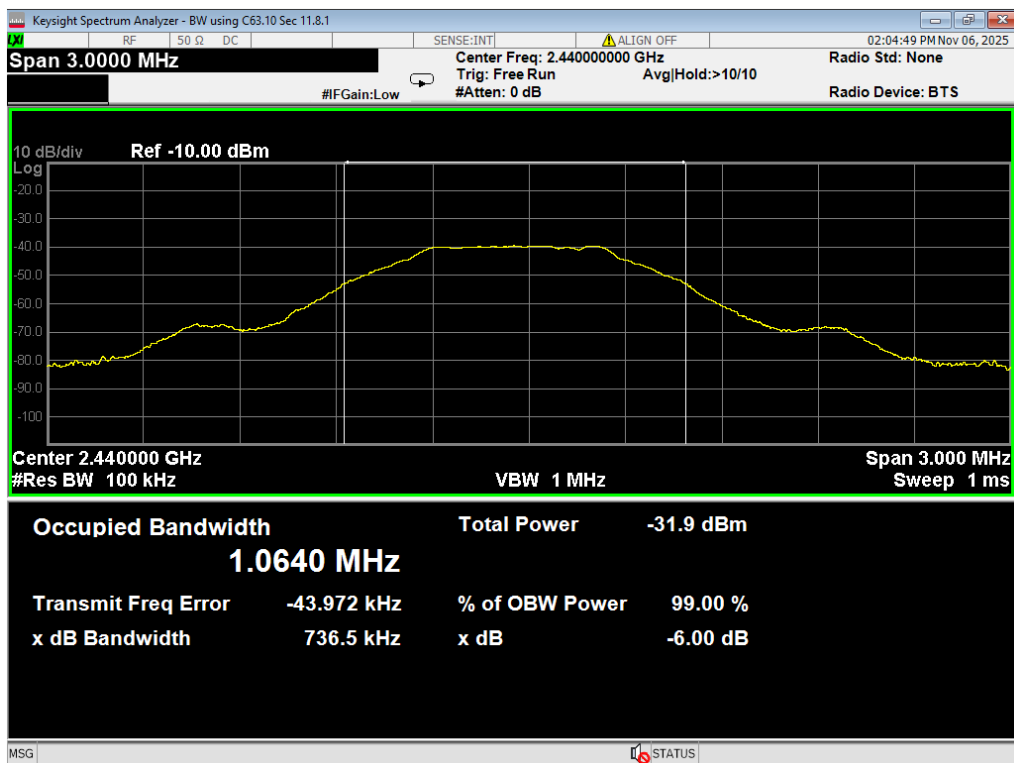
Test	Frequency Range	Uncertainty Value (dB)
Radiated Emissions, 3m	30MHz - 1GHz	± 4.31
Radiated Emissions, 3m	1GHz - 18GHz	± 5.08
Emissions limits, conducted	30MHz – 18GHz	± 3.03

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

APPENDIX C – GRAPHS AND TABLES

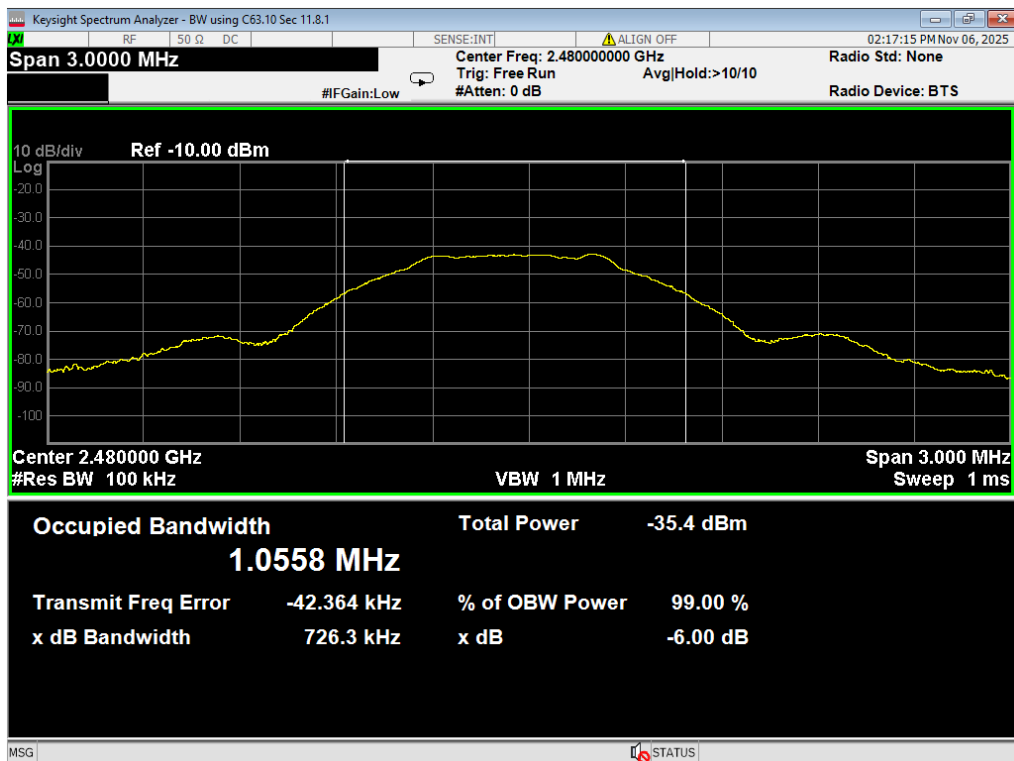


01 6dB BW, BLE 1MB, 2402MHz

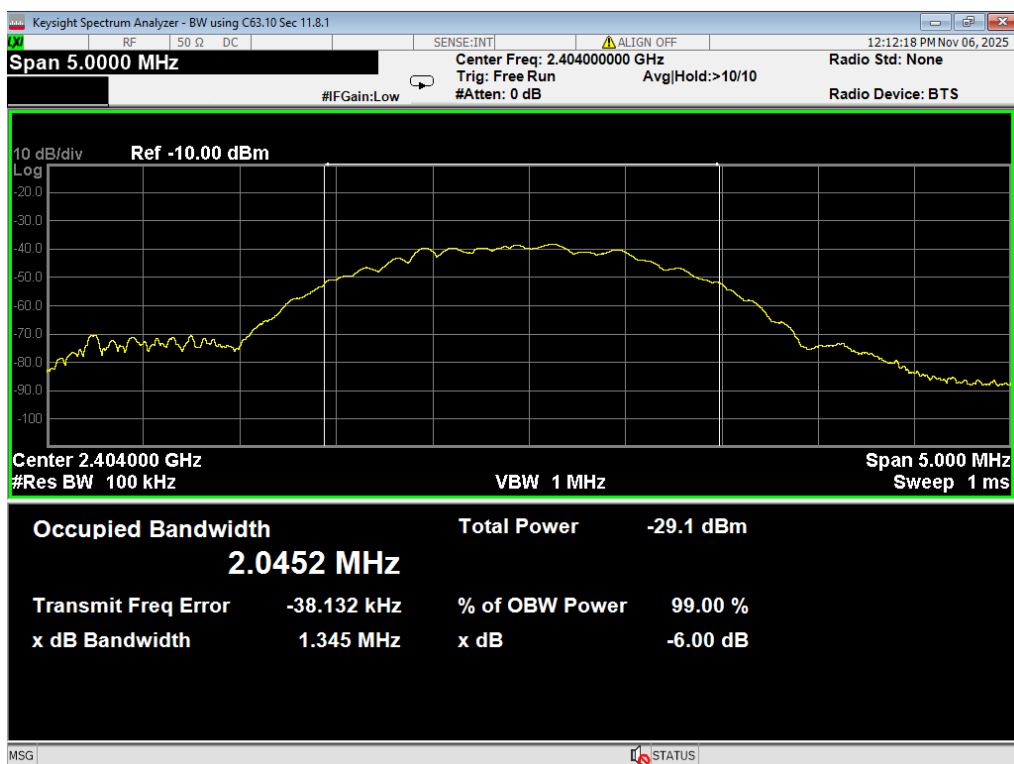


02 6dB BW, BLE 1MB, 2440MHz

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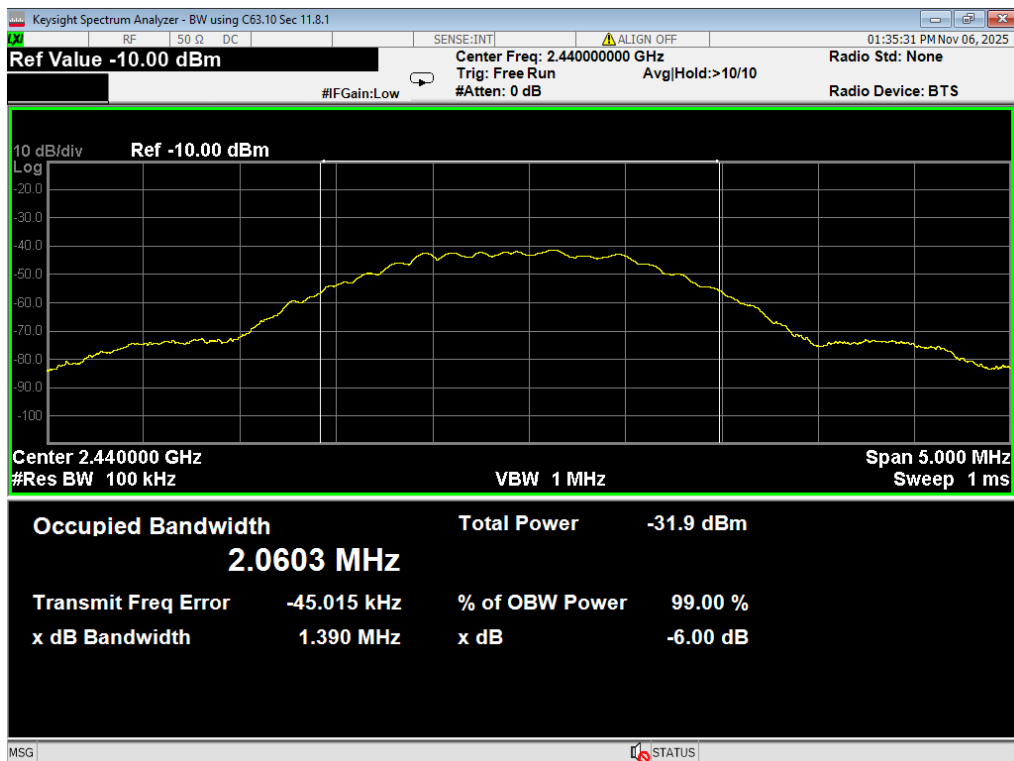


03 6dB BW, BLE 1MB, 2480MHz

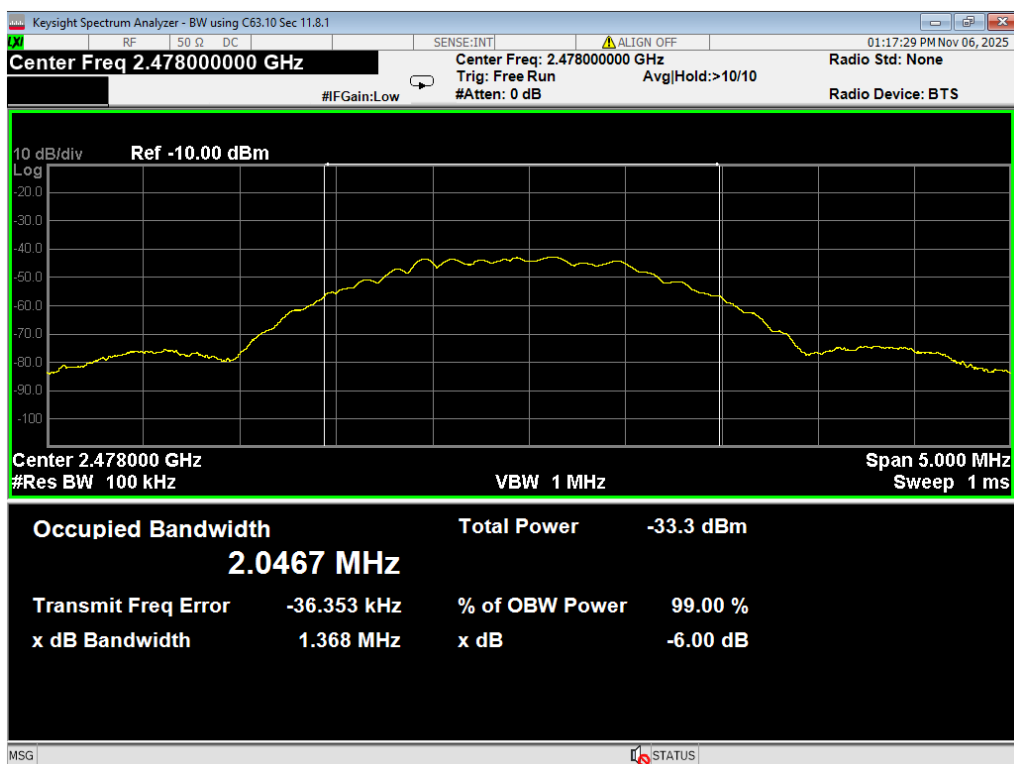


04 6dB BW, BLE 2MB, 2404MHz

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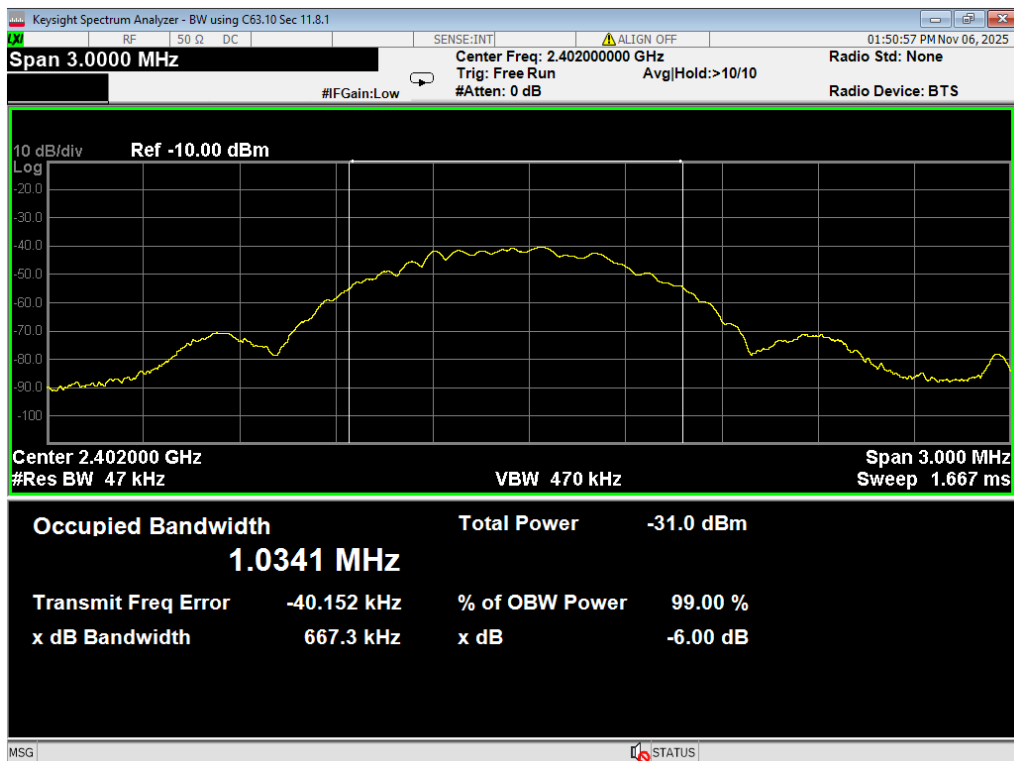


05 6dB BW, BLE 2MB, 2440MHz

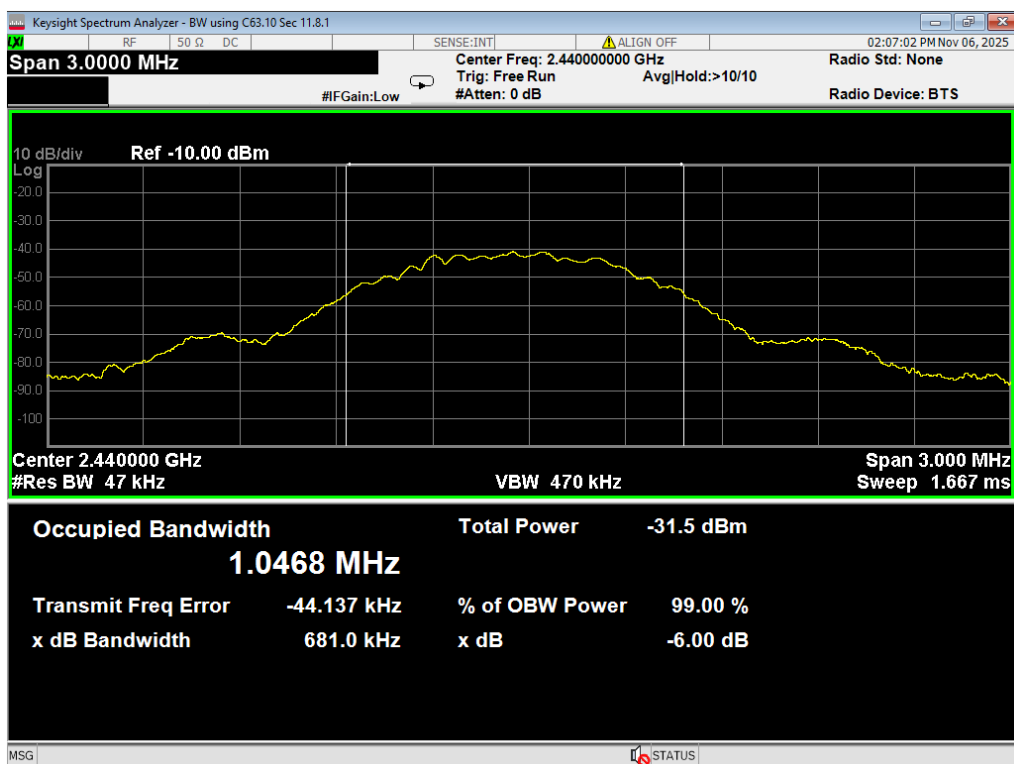


06 6dB BW, BLE 2MB, 2478MHz

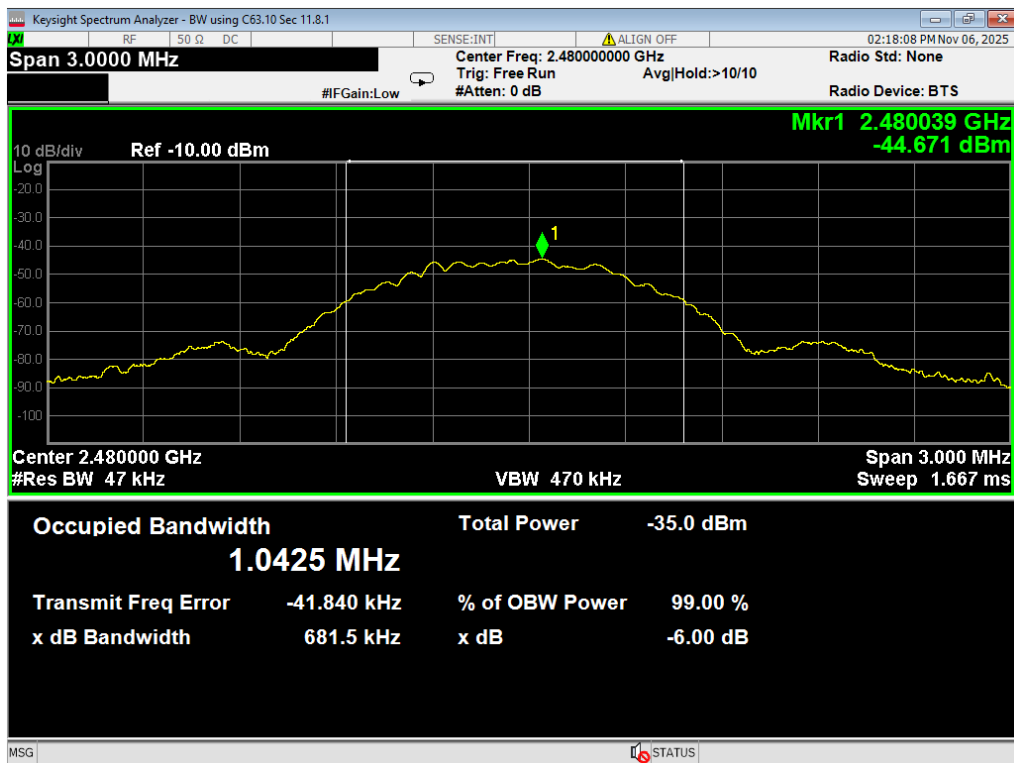
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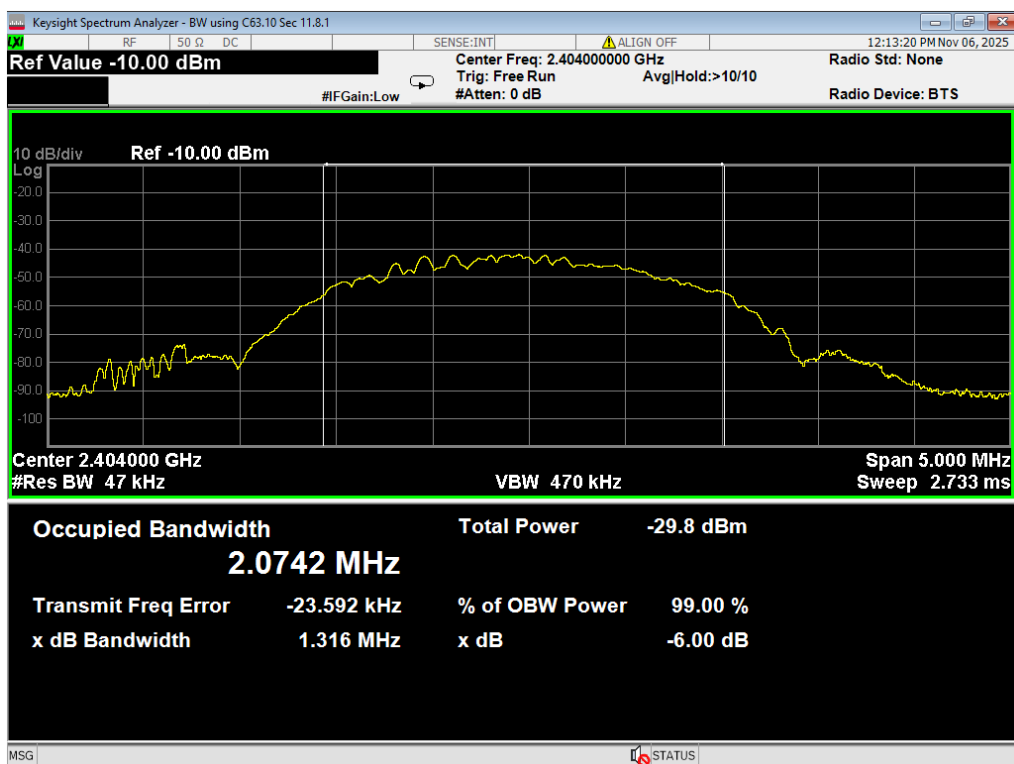
07 OBW, BLE 1MB, 2402MHz



08 OBW, BLE 1MB, 2440MHz

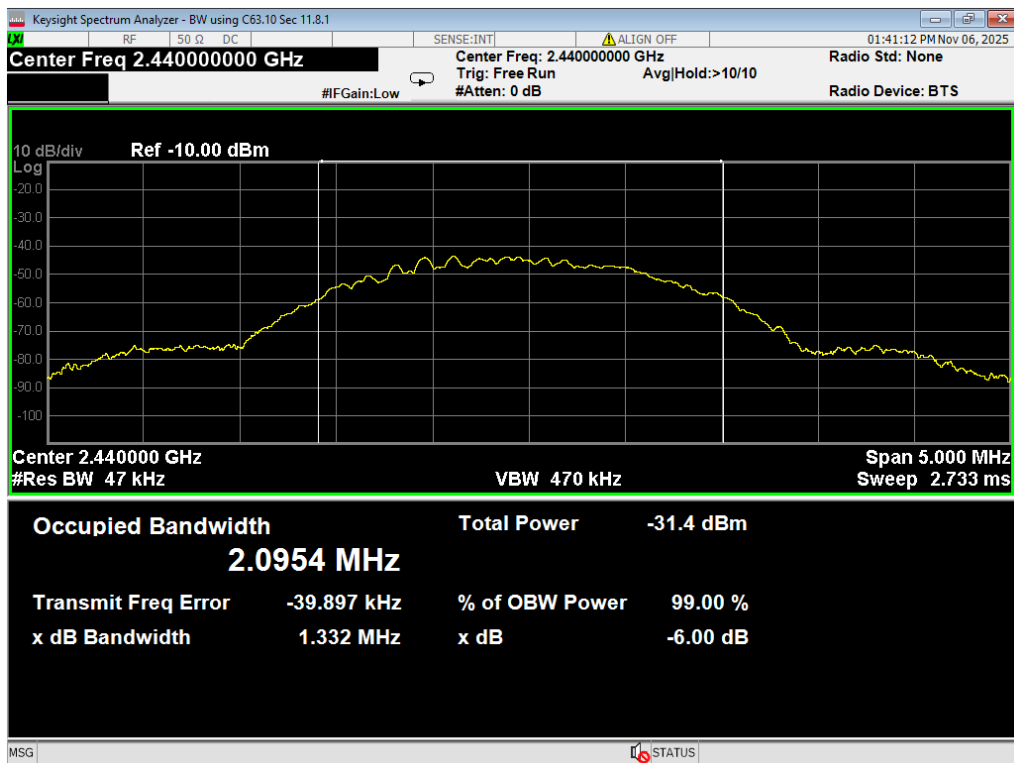


09 OBW, BLE 1MB, 2480MHz

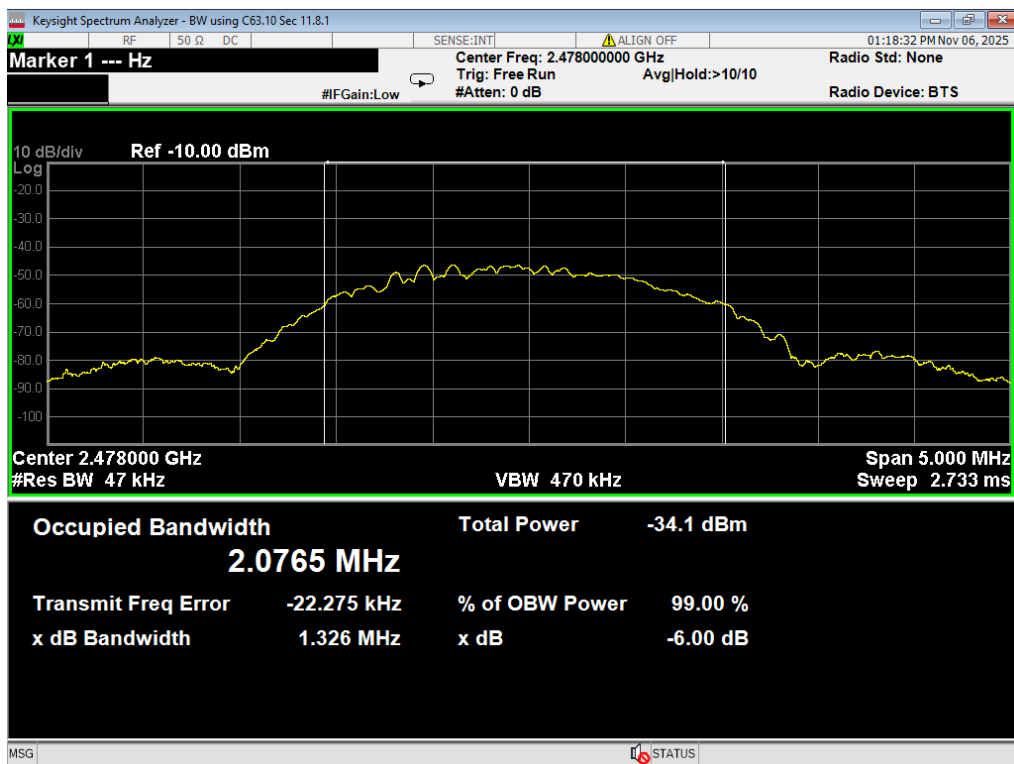


10 OBW, BLE 2MB, 2404MHz

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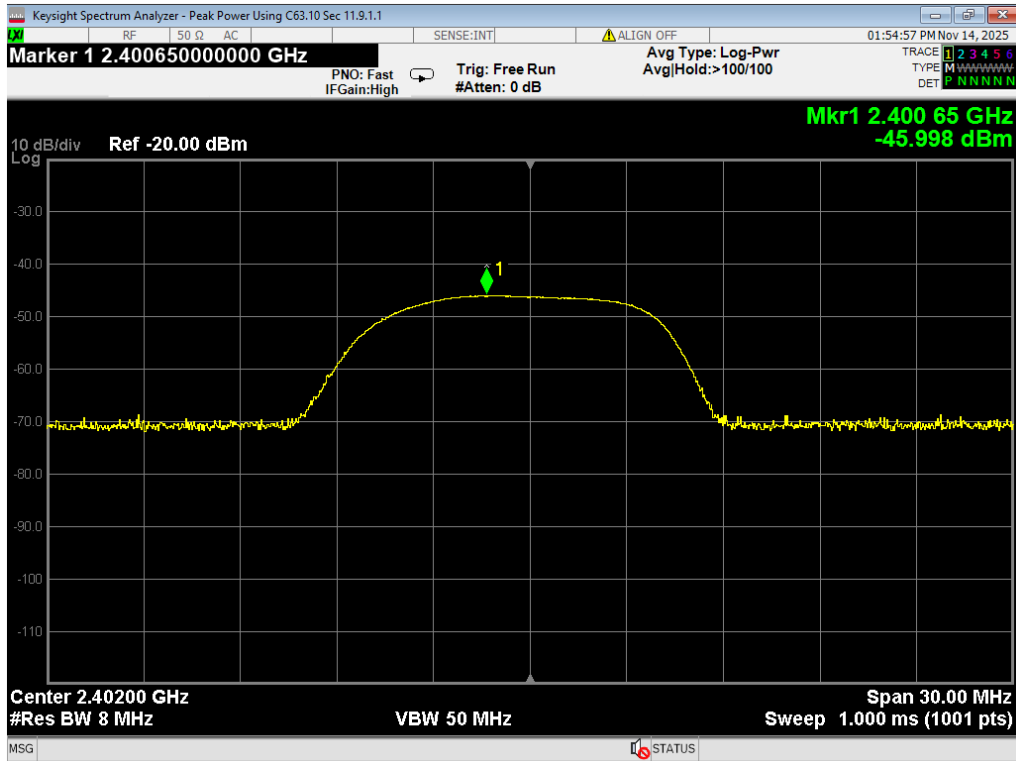


11 OBW, BLE 2MB, 2440MHz

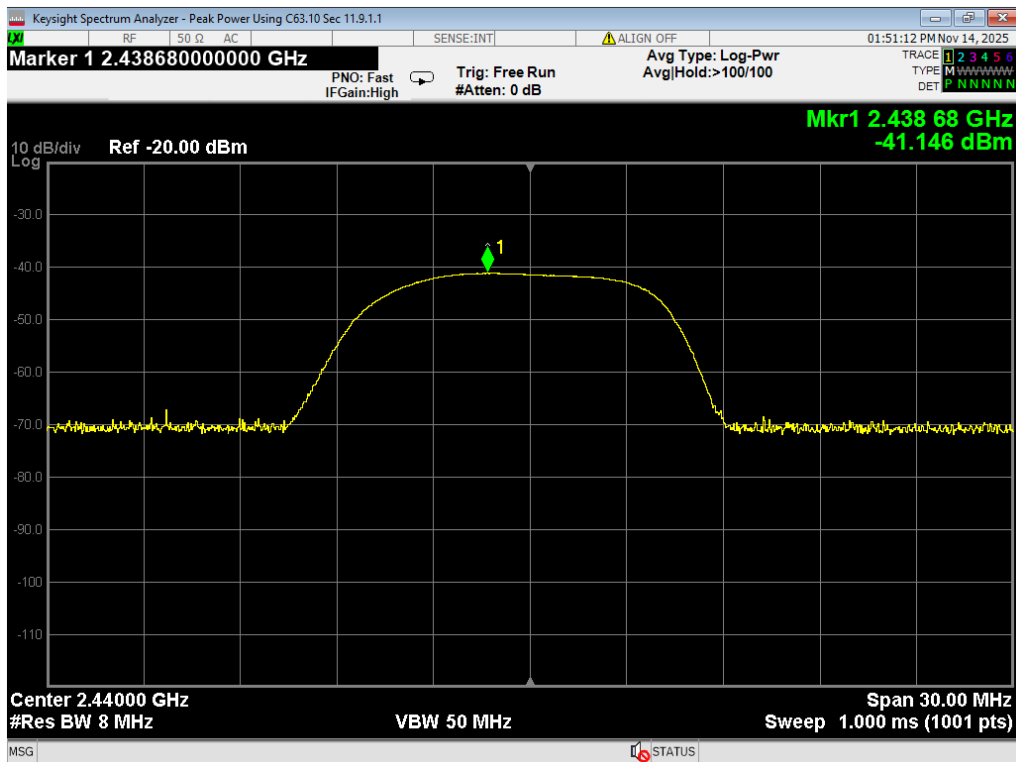


12 OBW, BLE 2MB, 2478MHz

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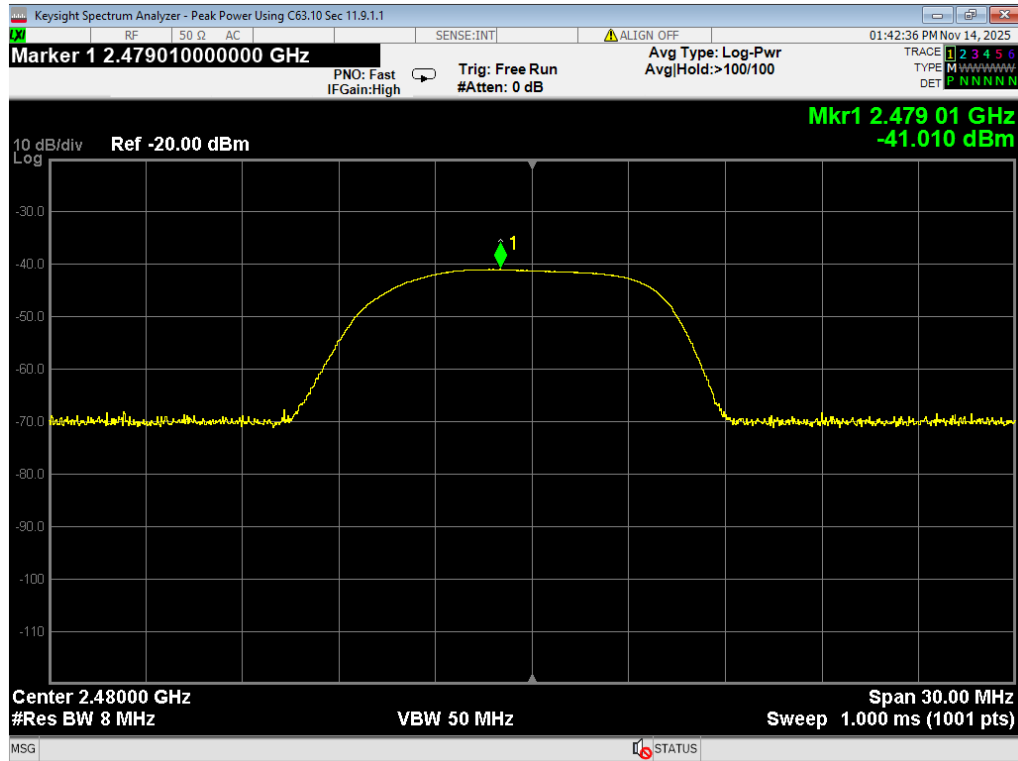


13 Peak Power, BLE 1MB, 2402MHz, Pwr13, RAW

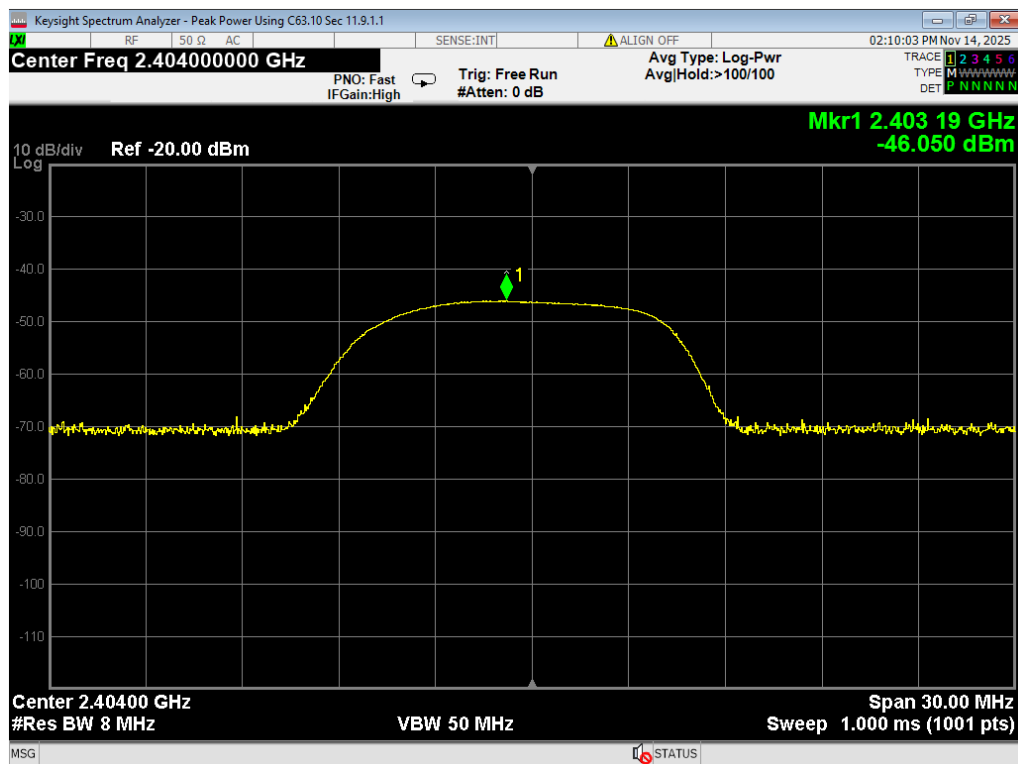


14 Peak Power, BLE 1MB, 2440MHz, Pwr13, RAW

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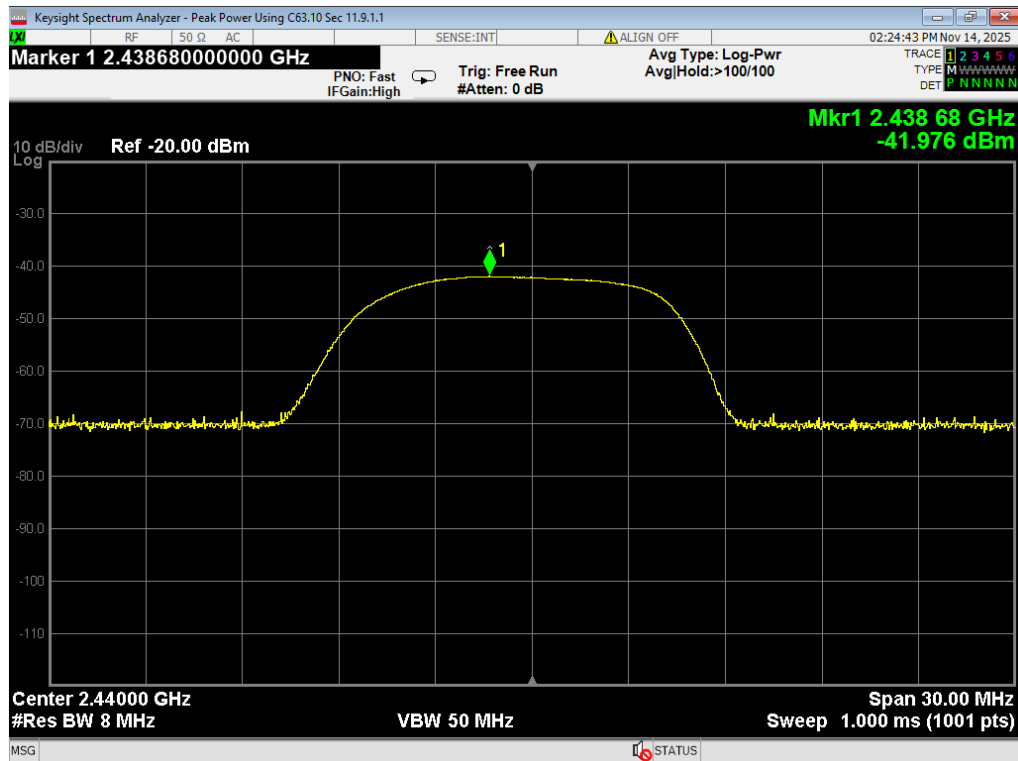


15 Peak Power, BLE 1MB, 2480MHz, Pwr13, RAW

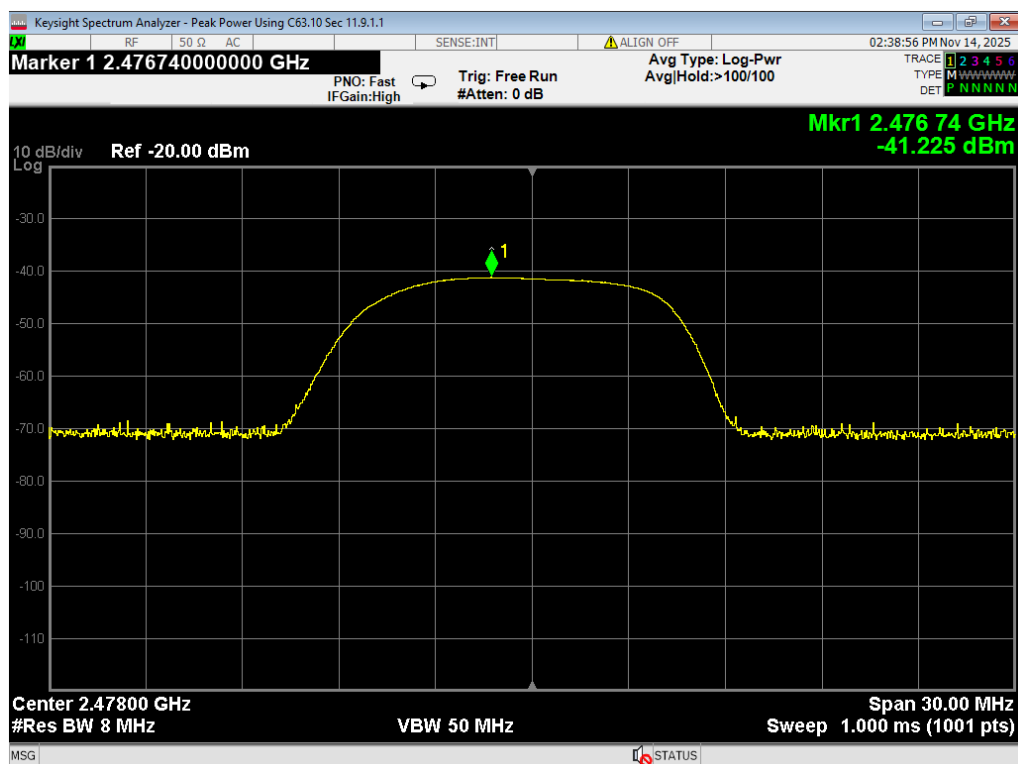


16 Peak Power, BLE 2MB, 2404MHz, Pwr13, RAW

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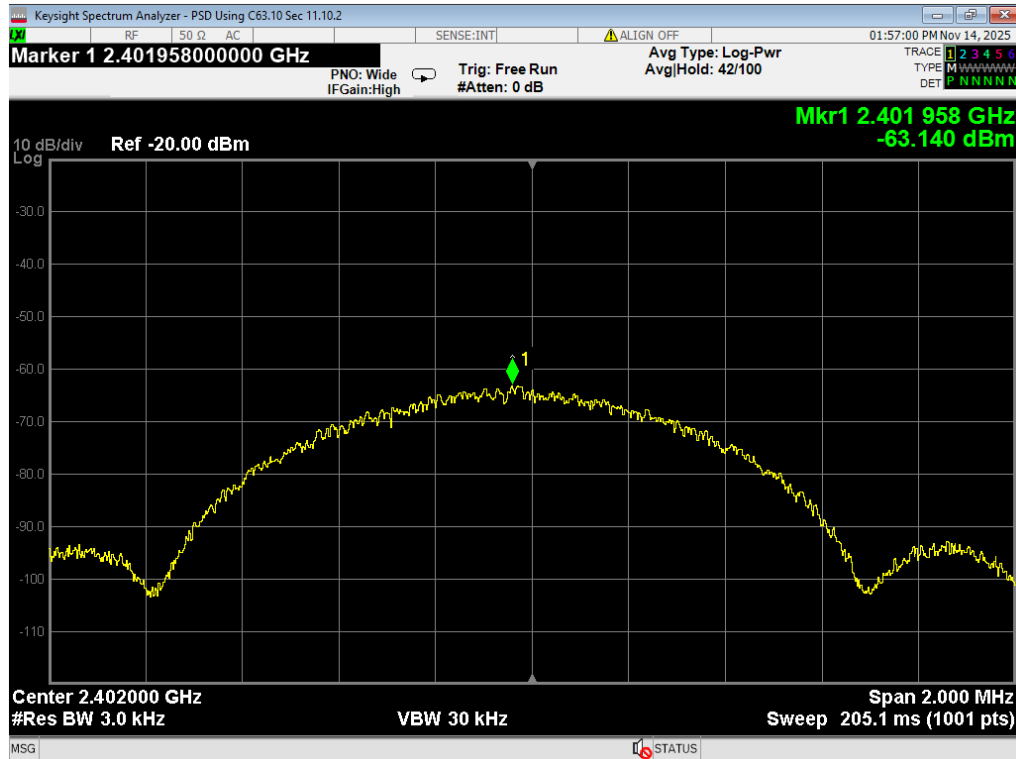


17 Peak Power, BLE 2MB, 2440MHz, Pwr13, RAW

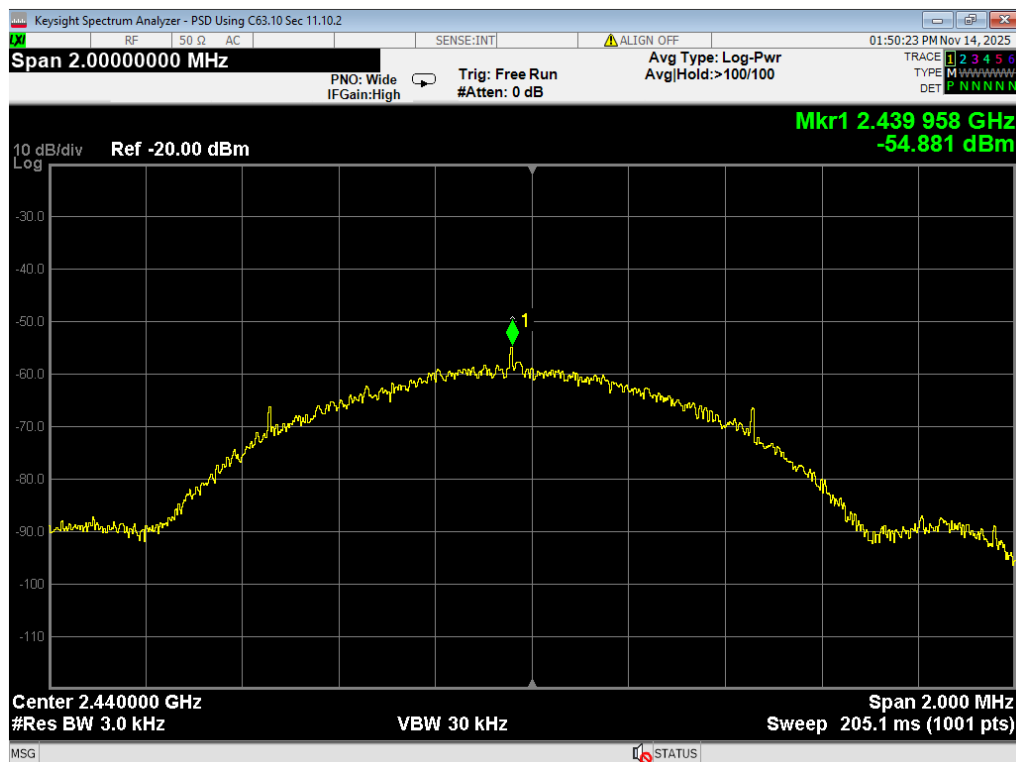


18 Peak Power, BLE 2MB, 2478MHz, Pwr13, RAW

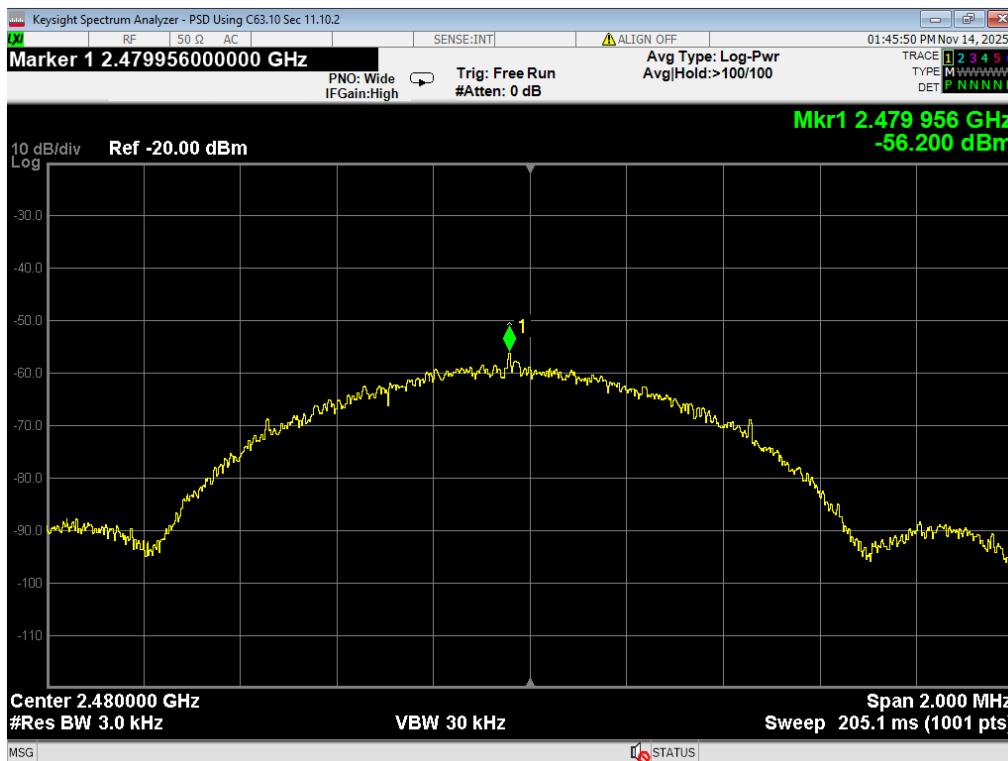
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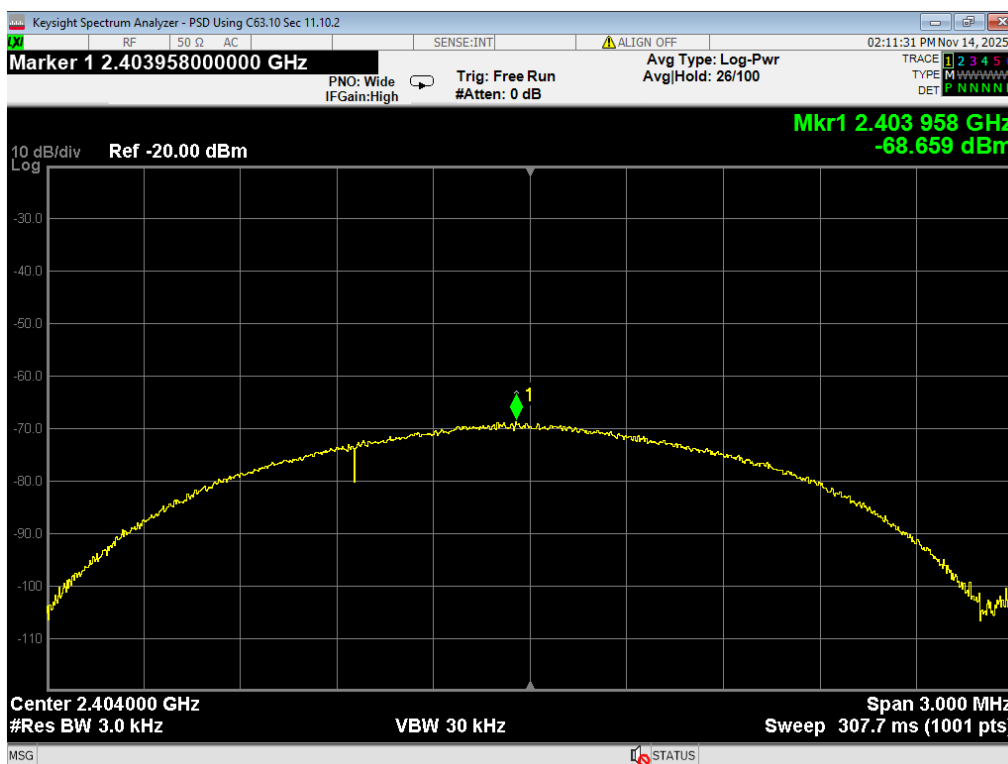
19 PSD, BLE 1MB, 2402MHz, Pwr13, RAW



20 PSD, BLE 1MB, 2440MHz, Pwr13, RAW



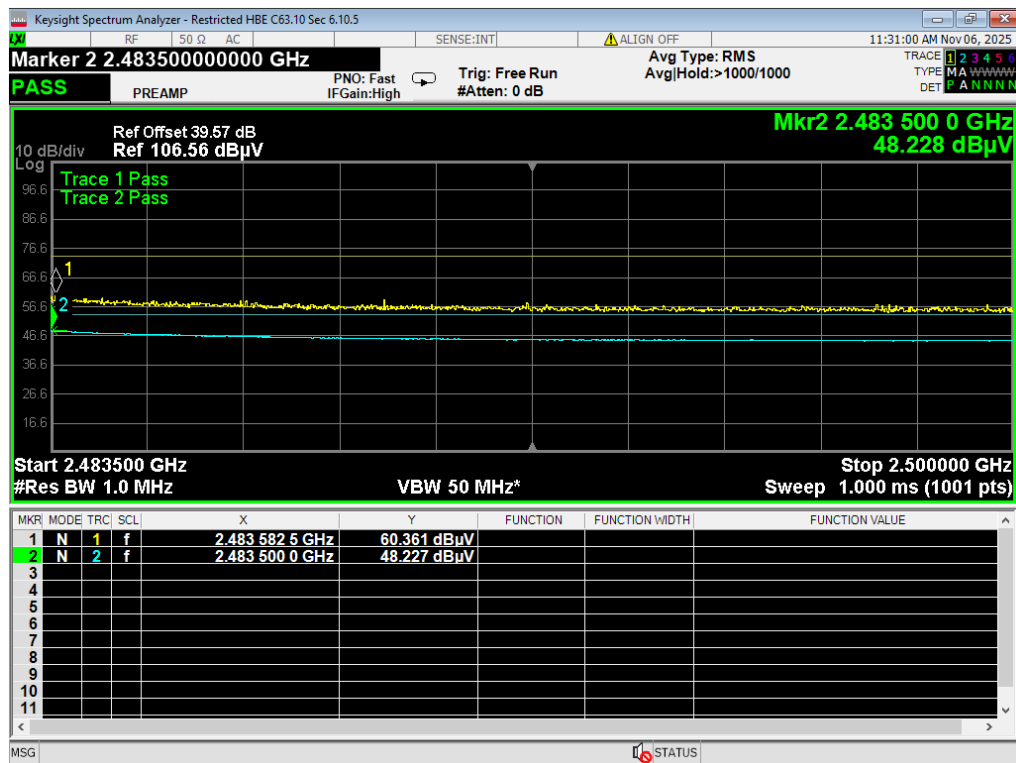
21 PSD, BLE 1MB, 2480MHz, Pwr13, RAW



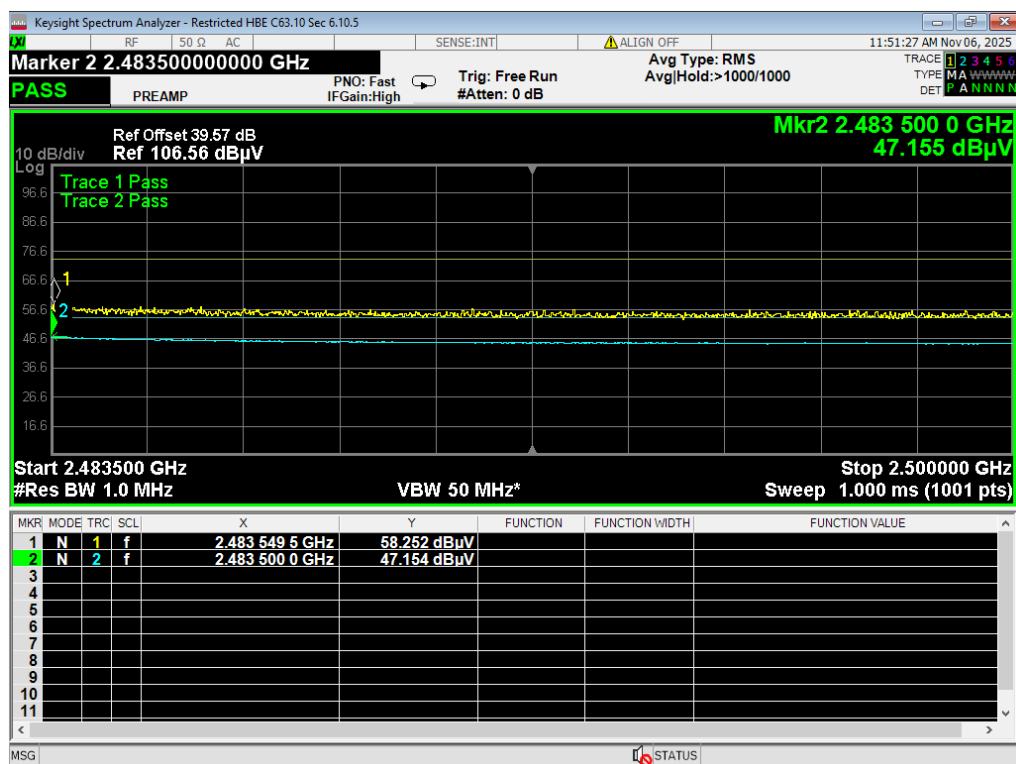
22 PSD, BLE 2MB, 2404MHz, Pwr13, RAW



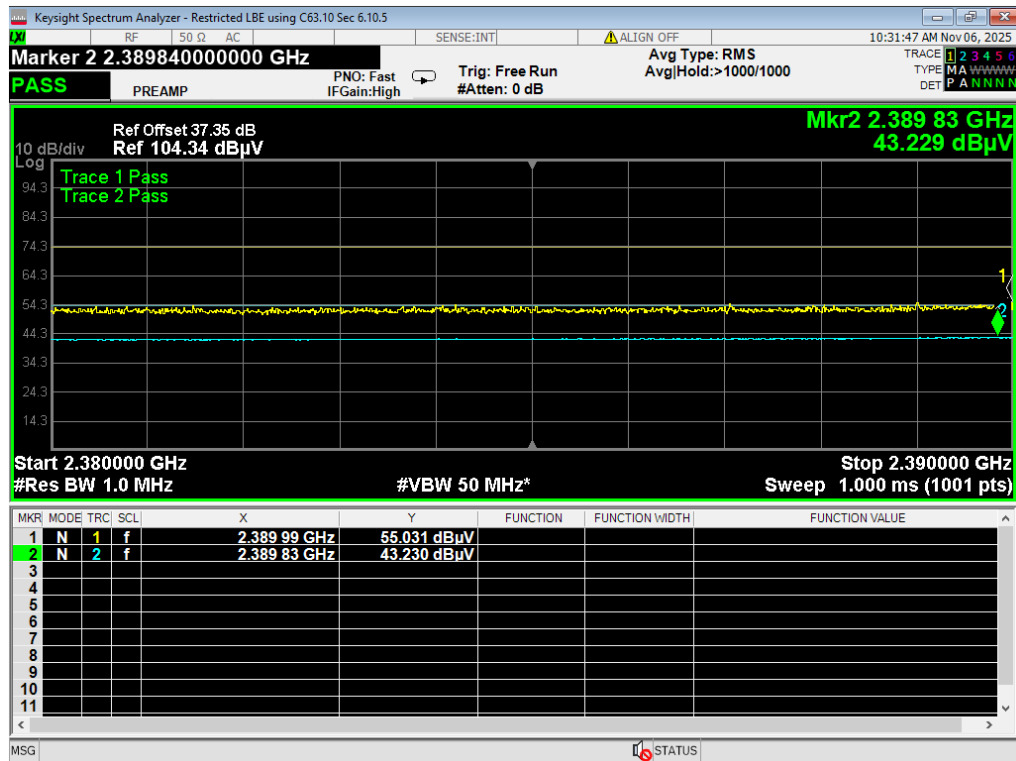
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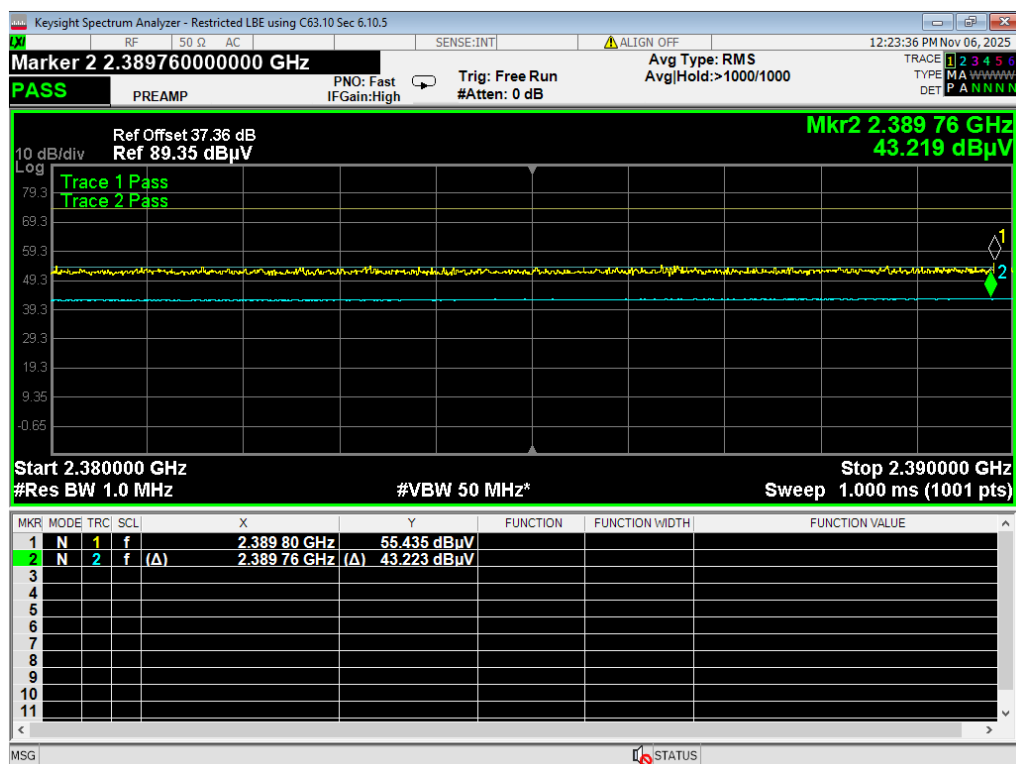
25 HBE Restricted BLE 1M, 2480MHz



26 HBE Restricted BLE 2M, 2478MHz

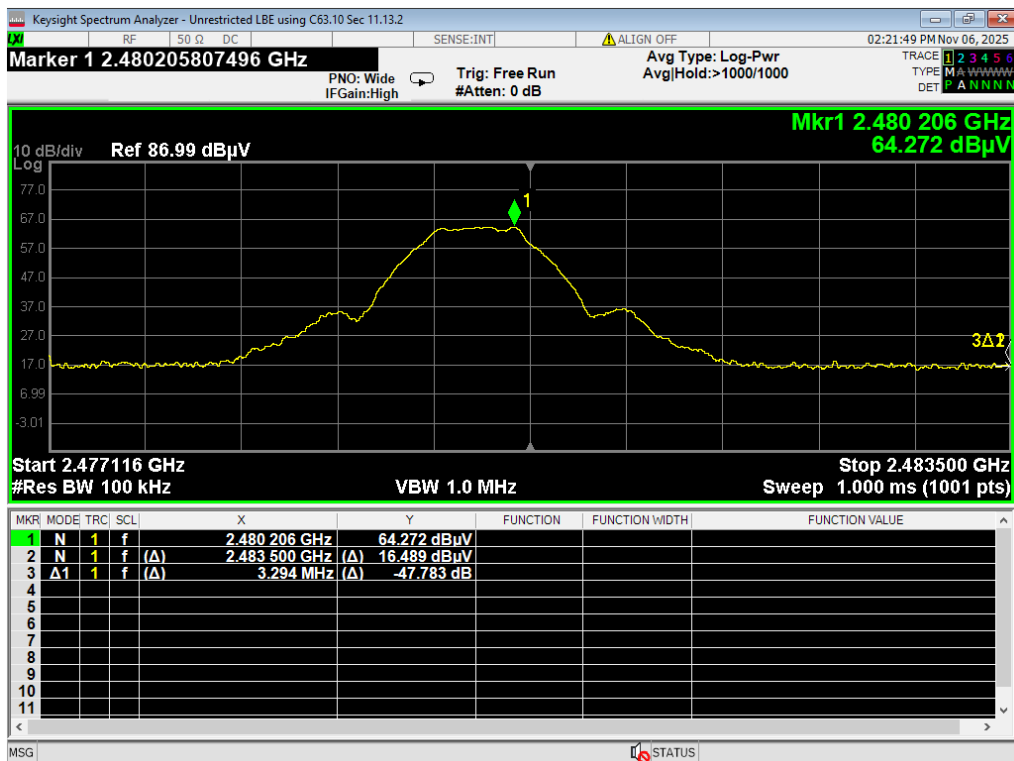


27 LBE Restricted BLE 1M, 2402MHz

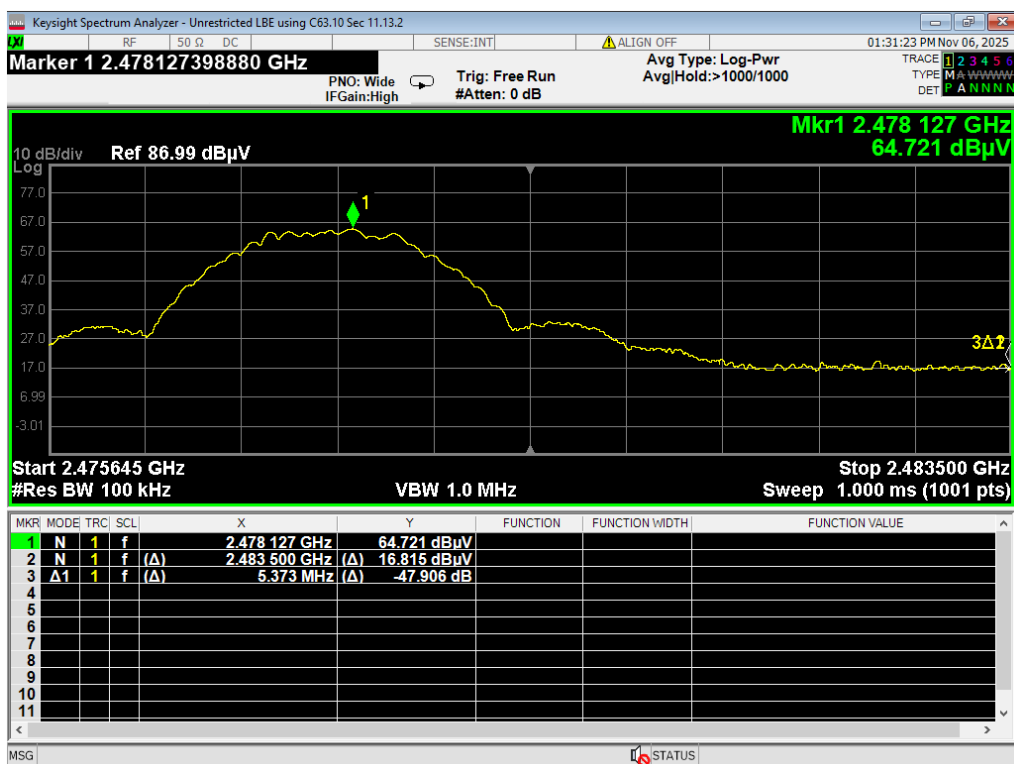


28 LBE Restricted BLE 2M, 2404MHz

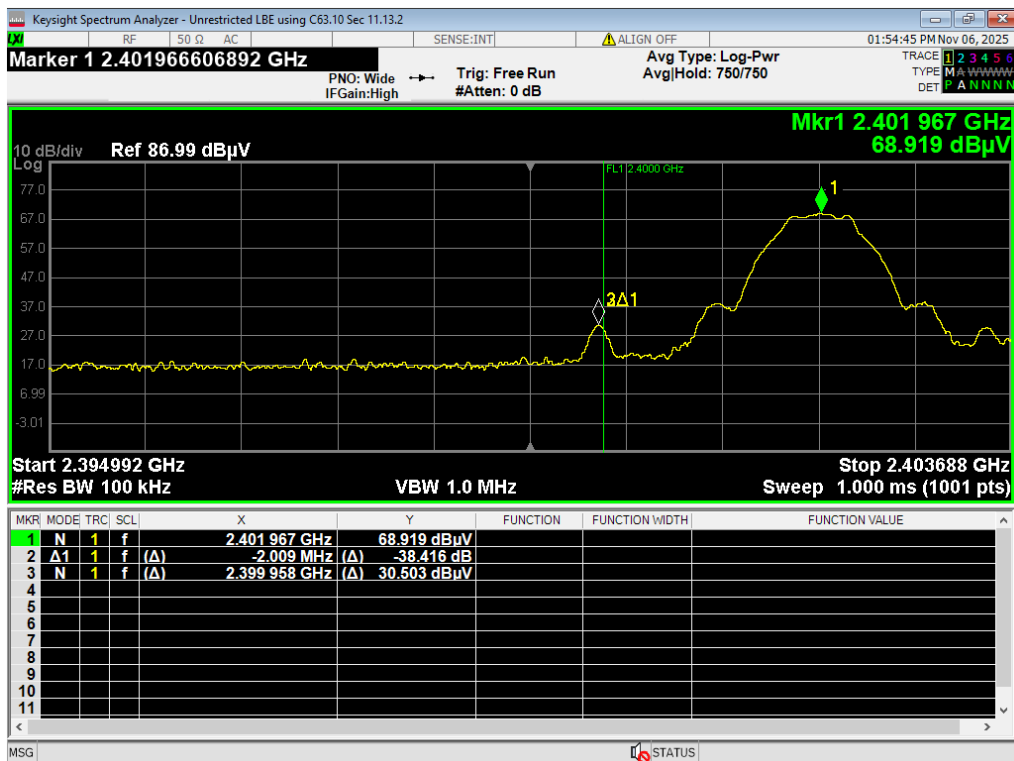
	Report Number: R20251010-71-E1	Rev	0
	Prepared for: Hudl Inc.		



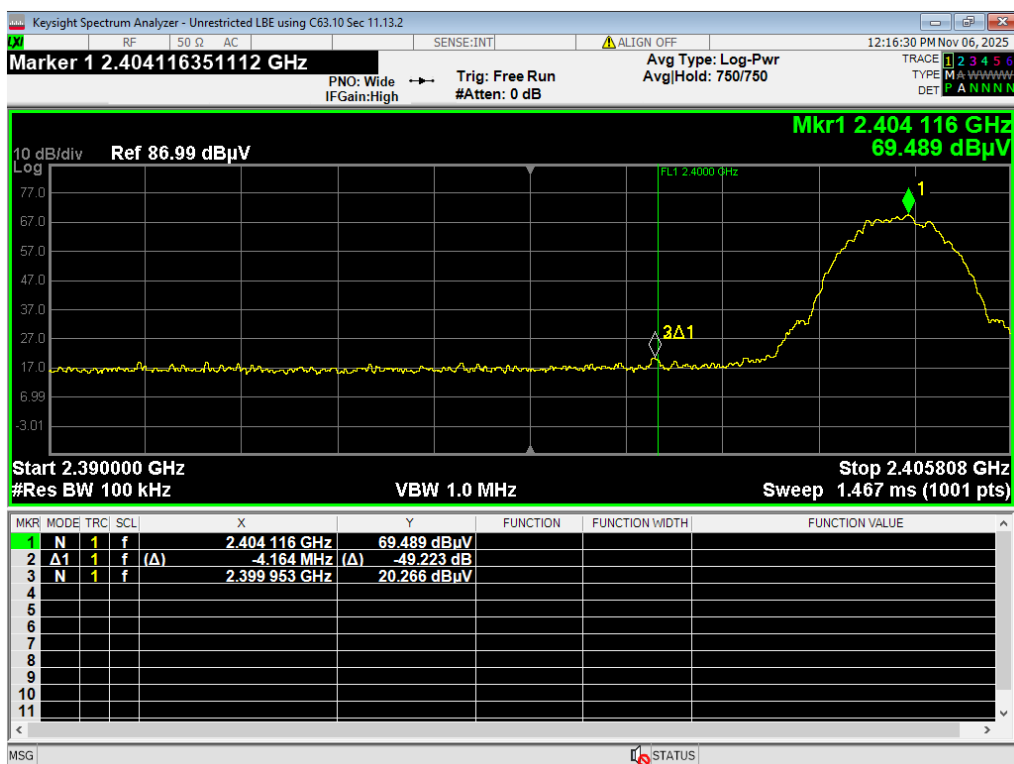
29 HBE Unrestricted, BLE 1MB, 2480MHz



30 HBE Unrestricted, BLE 2MB, 2478MHz



31 LBE Unrestricted, BLE 1MB, 2402MHz



32 LBE Unrestricted, BLE 2MB, 2404MHz



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