



**Technical Report to the FCC and ISED Regarding
Gentex Corporation - Homelink® VI**

**Model: IECHL6A
FCC ID: NZLIECHL6A
ISED: 4112A-IECHL6A**

**Emission Designator: 1M06L1D
11/19/2025**

A report concerning approval for Gentex Corporation Homelink® model IECHL6A
Please issue grant immediately upon review.

Measurements Made by:

Bolay Pacheco  Digitally signed by Bolay Pacheco
Date: 2025.11.20 12:06:09 -05'00'

Bolay Pacheco
Laboratory Validation Engineer III
Gentex Corporation

Report Prepared

Patricia  Digitally signed by
Szeszulski Patricia Szeszulski
Date: 2025.11.19
14:40:22 -05'00'

Patricia Szeszulski
Laboratory Validation Engineer I
Gentex Corporation

Report Reviewed by:

Michael  Digitally signed by
Foster Michael Foster
Date: 2025.11.20
07:21:07 -05'00'

Michael Foster
Laboratory Regulatory Engineer I
Gentex Corporation

Report Submitted by:

Brian  Digitally signed by
Miller Brian Miller
Date: 2025.11.19
14:35:48 -05'00'

Brian Miller
Laboratory Group Leader – Regulatory II
Gentex Corporation

Report Approved by:

Jason Vargo  Digitally signed by Jason
Laboratory Manager Vargo Laboratory Manager I
Date: 2025.11.19 14:43:09
-05'00'

Jason Vargo
Laboratory Manager I
Gentex Corporation

Test Report Revision

REV Number	Date	Author	Description
1.0	10/31/2025	Patricia Szeszulski	Initial Release
2.0	11/19/2025	Patricia Szeszulski	Updated per reviewer's comments

Results relate only to the items tested as received.

Compliance has been evaluated based on the Lab Manual section 7.6.2. The decision rule used regarding measurement uncertainty was to determine results solely on whether the measured values met the defined acceptance criteria without factoring in measurement uncertainty values.

Lab Project ID#:2025-15018 Test ID: 128187, 128190
FCC Report Form for 15.247 Bluetooth LE – 3m
Revision: 04/25/2025 Approved By: Jason Vargo
Uncontrolled copy if printed unless stamped as a Lab Controlled Document

Model: IECHL6A

Date: 11/19/2025
Page 2 of 38

1. General Information

1.1. Product Description

The Gentex Corporation HomeLink® HLVI Universal Garage Door Opener is a low-power transceiver OEM device that is installed into the automotive rearview mirror. The installation is provided by trained technicians during the manufacture of the automobile. It is powered by the 12 Volt system of the automobile.

This Universal Garage Door Opener has the capability to

1. Learn the frequency and bit code format of the user's existing garage door remote control devices
2. Transmit and receive frequency hopping spread spectrum in the 902 to 928 MHz band using an internal antenna as per Federal Communications Commission "Code of Federal Regulations", Title 47, Part 15.247
3. Transmit and receive frequency digital transmission system in the 2402 to 2480MHz band using an internal antenna as per Federal Communications Commission "Code of Federal Regulations", Title 47, Part 15.247.

The unit is designed for the periodic operation of a control signal, which typically activates a garage door opener receiver.

The unit is supplied to the automobile manufacturer without harness. For testing purposes, a typical assembly and 2-conductor cable harness were used to power to the unit.

The three-button HomeLink® unit replaces up to three hand-held transmitters. In addition to the typical operation of the garage door, the unit will learn the radio frequency codes of other transmitter types to activate entry door locks, estate gates, security systems, and home or office lighting.

The antenna system is an integral part of the unit. It cannot be altered nor replaced by the user. The service of this system is only available from the Automobile Manufacturer's Dealerships and Gentex Corporation.

1.2. Related Grants

This device will have functionality that is covered under 47 CFR 15.247. The device will have an FCC ID # of NZLIECHL6A and an ISED ID # of 4112A-IECHL6A under both rule parts. Separate reports were submitted for functionality covered under 47 CFR 15.231 and 47 CFR 15.247 DSS requirements.

1.3. Test Methodology

Radiated Emissions testing was performed according to ANSI C63.10:2020+Cor.1-2023 and ANSI C63.10a:2024. The power source for this product is a 12V automotive vehicle battery.

Conducted measurements were performed using a power supply.

Measurements were performed per FCC OET KDB 558074.

The unit is supplied to the automobile manufacturer without harness. For testing purposes, a 2-conductor cable harness was used to interface to the unit. The unit ground is provided through the negative terminal of the harness.

1.4. Test Facility

The 3-meter semi-anechoic chamber where these measurements were taken, is located on the grounds of Gentex Corporation's Corporate Labs, in the city of Zeeland, county of Ottawa, state of Michigan, United States of America.

For radiated measurements above 1 GHz, RF absorbing material is placed between the antenna and EUT in accordance with ANSI C63.4:2014 Section 5.5 and chamber manufacturer's instructions.

The 3m chamber has been added to our A2LA scope of accreditation on 05/20/2016 and includes accreditation to ANSI C63.4:2014 and ANSI C63.10:2020+Cor.1-2023 and ANSI C63.10a:2024. The report filed with ISED, dated February 11, 2015, was accepted via a letter dated February 11, 2015. Our 3m chamber is registered with the ISED, CAB Identifier US0204, under Site# 4112A-2 and FCC under registration number 357351.

Corporate Mailing/Shipping Address

Gentex Corporation
600 N. Centennial Street
Zeeland, MI 49464

Site Address

Gentex Corporation
380 Riley Street
Zeeland, MI 49423

1.5. Accreditation

The Gentex Corporate EMC Lab is accredited to ISO/IEC 17025 by the American Association for Laboratory Accreditation (A2LA). Our laboratory scope and accreditation certificate #[2529.01](#) are available from their web site www.a2la.org. Our scope of accreditation covers ANSI C63.4:2014, ANSI C63.10:2020+Cor.1-2023 and ANSI C63.10a:2024, and Radiated Emissions at 3m, FCC 47 CFR Part 15, ISED RSS-210, and ISED RSS-247.

2. Product Labeling

2.1. Identifiers

The FCC Identifier assigned is FCC ID: NZLIECHL6A. The ISED certification number is 4112A-IECHL6A. These identifiers will be labeled on the product housing.

The label will be placed on the exterior of the HL housing using laser etching that will permanently affix the label.

Because of the small size of the device and because the installation is inside a portion of the automobile, the following statements will appear in the user's manual. Refer to attachment "Users Manual.pdf" for the entire text of the user's manual.

"This device complies with FCC rules Part 15 and with ISED RSS-247. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference,
- (2) This device must accept any interference that may be received including interference that may cause undesired operation.

WARNING: The transmitter has been tested and complies with FCC and ISED rules. Changes or modifications not expressly approved by the party responsible for the compliance could void the user's authority to operate the device."

The term “ISED:” before the certification/registration number only signifies that ISED technical specifications were met.

ISED: 4112A-IECHL6A

FCC ID: NZLIECHL6A

MODEL: IECHL6A

2.2. Label Drawing and Location on Product

The label drawing and location of the label on the assembly is included in the “Label Location.pdf” attachment.

3. Test Configuration

Radiated Emission measurements presented in the report were made in accordance with ANSI C63.10:2020+Cor.1-2023 and ANSI C63.10a:2024. The EUT was placed on a 1 x 1.5m non-metallic table elevated 80cm above a conducting ground plane for measurements below 1GHz and elevated to 1.5m for measurements above 1GHz. The harness was run down the edge of the test table to a power supply beneath the turntable

For radiated measurements above 1 GHz, RF absorbing material is placed between the antenna and EUT in accordance with ANSI C63.4:2014 Section 5.5 and chamber manufacturer’s instructions.

For conducted measurements, a non-metallic table approximately 80cm x 90cm, 85cm above the floor was used.

4. Powerline Conducted Emissions Measurements

Powerline Conducted Measurements are not required for this product as the part is powered via 12V battery.

5. Emissions Data

5.1. Date(s) Tested: 10/23/2025-10/30/2025, 11/12/2025-11/28/2025

5.2. Test Method Deviations: None

5.3. Temperature and Humidity conditions

	Measured Value	Unit
Temperature	21.5-22.9	°C
Humidity	40.3-47.8	%R.H.

5.4. Summary of Results (Part 15.247)

Measurement		Margin (dB)	Frequency (MHz)
Worst Case Spurious Emission	53.86 dBuV/m	0.14	17360 MHz
Maximum Peak Conducted Output Power	5.95 dBm	24.05	-
Minimum 6dB Bandwidth	695 kHz	195 kHz	-
Maximum 99% bandwidth	1055 kHz	-	-
Maximum Power Spectral Density	2.48 dBm	5.52	-

- **DTS (6dB) Bandwidth:** Per FCC 15.247(a)(2) and RSS-247 paragraph 5.2 (a), the minimum 6dB bandwidth shall be at least 500kHz for all systems using digital modulation techniques.

- **Band Edge Measurement Requirement:** Per section 15.247(d), 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).

- **Measurement Uncertainty:** The standard uncertainty of measurement has been determined in accordance with the ISO Guide to the Expression of Uncertainty in Measurements. The estimation of measurement uncertainty reported is the expanded uncertainty for a coverage factor of $k=2.26$ and confidence interval of approximately 95%.

Expanded Uncertainty $U_{(k=2.26)}$ is as follows:

- Radiated Emissions – Bicon (30-250 MHz): 4.1 dB
- Radiated Emissions – LPA (250-1000 MHz): 5.0 dB
- Radiated Emissions – DRWG (26.5 GHz): 4.2 dB
- Conducted Emissions: 1.04 dB
- Frequency: 0.007 ppm

5.5. Test Equipment Setup and Procedure

5.5.1. Sample(s) Used for Measurements

Sample ID(s):	905-7115-160872-1, 905-7115-161149-1
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5.5.2. Test Equipment

Equipment Used						
ID / Serial #	Manufacturer	Description	Type	Cal / PM Due Date	Last Cal Date	Interval
6595	Rohde & Schwarz	ESR26	EMI Receiver	11/19/2025	11/19/2024	1 year
CF GCL	Megaphase / Pasternack	CBL 94, CBL 96, CBL 158, AT26, Port N3	Cable and Feedthroughs	8/31/2026	8/31/2025	1 year
H6192	EMCO	3148 Log Periodic RX	Antenna	05/13/2027	5/13/2024	3 year
8893	Com-Power	AHA-118 Double Ridged Waveguide Horn	Antenna	04/22/2027	4/22/2024	3 year
Tower 2	ETS-Lindgren	2171B Boresight Tower	Antenna Positioner	VBU	N/A	VBU
S/N: PJ2246	Lindgren	3M Chamber	Shielded Enclosure	12/31/2025	7/23/2025	Quarterly
H4554	Fluke	87	Multimeter	01/29/2026	1/29/2025	1 year
SW30	Gentex	3m Chamber Software	Software	3/31/2026	3/31/2025	1 year
SW48	Gentex	Gentex Emissions Measurement Software	Software	3/31/2026	3/31/2025	1 year
Absorber 1	ETS-Lindgren	EHP-12PCL	Absorber Material	VBU	N/A	VBU
SW44	Gentex	HomeLink Diagnostic Application	Software	3/31/2026	3/31/2025	1 year
7362	Omega	iBTHX-W Virtual	Chart Recorder	03/31/2026	3/31/2025	1 year
6539	Stanley	Tape Measure	Measurement Tool	06/19/2026	6/19/2023	3 year
7691	A.H. Systems Inc.	SAS-571 Double Ridged Guide Horn	Antenna	7/5/2026	7/5/2023	3 year
7257	ETS-Lindgren	3116C Double Ridged Waveguide Horn	Antenna	6/27/2028	6/27/2025	3 year
S/N:419726	AIM-TTI	PL303-P	Power Supply	VBU	N/A	VBU
S/N:2053240	Miteq	AMF-4D-00501800-24-10P, 30 dB	Preamplifier	12/31/2025	12/17/2024	1 year
CBL 147	Megaphase	EMC2-S1S1-96	Cable	10/31/2026	10/14/2025	1 year
S/N:2069595	Miteq	AMF-4F-18002650-20-10P, 30 dB	Preamplifier	10/31/2026	10/14/2025	1 year
FLT009	Mini-Circuits	ZHFG-K4000+, 4500 MHz High Pass Filter, DC - 18 GHz	Filter	1/31/2026	1/21/2025	1 year
CBL 149	Megaphase	GC19-S1S1-72	Cable	10/31/2026	10/14/2025	1 year
CBL 146	Megaphase	EMC2-S1S1-72	Cable	10/31/2026	10/14/2025	1 year
CBL 119	MegaPhase	KB18-N1S1-36	Cable	4/30/2026	4/6/2025	1 year
AT55	Pasternack	PE7094-10, 10 dB, DC to 18 GHz, 2W	Attenuator	1/31/2026	1/16/2025	1 year
AT56	Pasternack	PE7094-10, 10 dB, DC to 18 GHz, 2W	Attenuator	1/31/2026	1/16/2025	1 year
H6187	EMCO	3110B Biconical RX	Antenna	05/13/2027	5/13/2024	3 year
S/N:273123	Sonoma Instrument Co.	310N, 32dB	Preamplifier	12/31/2025	12/16/2024	1 year

5.5.3. Test Equipment Setup and Procedure

EMI Receiver Settings Emissions:

Detector Function : Peak
Resolution Bandwidth :100kHz (below 1GHz)
:1MHz (above 1GHz)
Video Bandwidth: :300kHz (below 1GHz)
:3MHz (above 1GHz)

EMI Receiver (in Spectrum Analyzer mode) Settings Occupied Bandwidth:

Detector : Peak
Resolution Bandwidth :1 MHz (to determine peak level)
:10 kHz (to determine occupied bandwidth)
Video Bandwidth :3 MHz (to determine peak level)
:30 kHz (to determine occupied bandwidth)

Spectrum Analyzer Settings for Conducted measurements:

Detector Function : Peak
Resolution Bandwidth :120kHz (below 1GHz)
:1MHz (above 1GHz)
Video Bandwidth: :300kHz (below 1GHz)
:3MHz (above 1GHz)

For the testing, the EUT was placed at the center of a non-conducting table 80cm above the ground plane pursuant to ANSI C63.10:2020+Cor.1-2023 and ANSI C63.10a:2024 for stand-alone equipment. The 2-conductor harness was routed down the edge of the test table to a power supply beneath the turntable.

Equipment is placed in one of the three orthogonal orientations, End, side, and flat. These orientations are described below in figure 6.2.3.

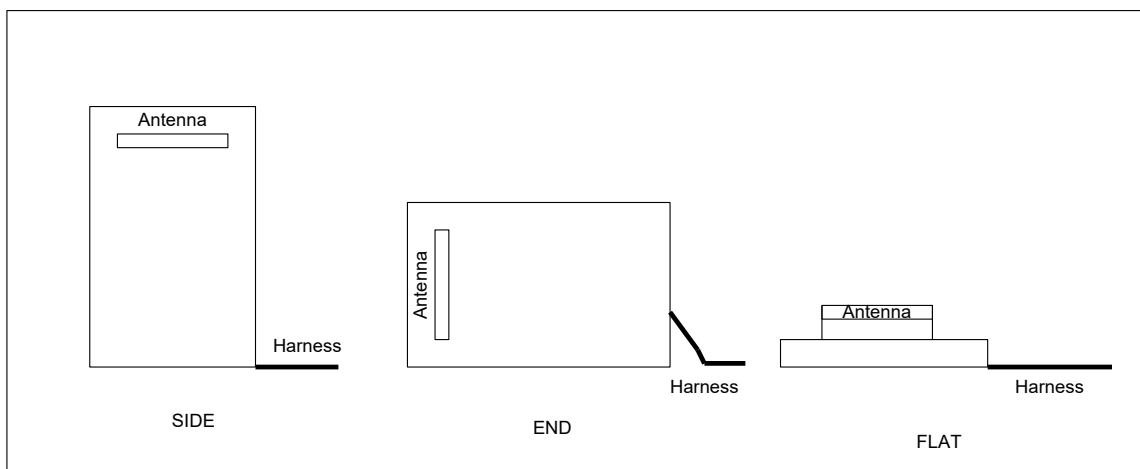


Figure 6.2.3 EUT Orthogonal Orientations

While in the prescribed orientation, the vertical antenna positioner sweeps in elevation from 1 to 4m in height until the operator finds the peak. The 3m turntable is then rotated through 360 degrees until a peak is found. The table is stopped at the peak location and the peak in elevation re-verified. Procedure is repeated for applicable orientations/measurement antenna polarizations. Radiated testing was performed in the in-vehicle position only.

5.6. Measured Data – See Appendix A

6. Formulas and Sample Calculations

6.1. Calculation of ISED Limits from RSS-247 and 47 CFR Part 15.247

The Peak Tx Spurious Emissions limit for the fundamental is given by:
Limit dBuV/m = 1W ERP = 127.38 dBuV/m, which is the fundamental limit.

The Rx Spurious Emissions limit for the fundamental is given by:
Limit dBuV/m = $20 \cdot \log(200 \mu\text{V/m}) = 46.0 \text{ dBuV/m}$

The Rx Spurious Emissions limit for the harmonics is given by:
Limit dBuV/m = $20 \cdot \log(500 \mu\text{V/m}) = 54.0 \text{ dBuV/m}$

6.2. Antenna Gain

Antenna Gain Data can be found in the Antenna Gain report submission

7. Power Targets

Frequency (MHz)	Memory Map Value (decimal)
2402-2480	80

Appendix A

A. Radiated Measurements

1. TX Measurements

Measurement Settings:

Measurement Frequency: Below 1GHz

Span: 500kHz or greater

RBW: 100/120kHz

VBW: 300kHz or 3 x RBW

Sweep Time: 25ms

Attenuation: Auto

Measurement Frequency: Above 1GHz

Span: 500kHz or greater

RBW: 1MHz

VBW: 3MHz or 3 x RBW

Sweep Time: 25ms

Attenuation: Auto

This measurement is a radiated measurement performed with a receiver. Prior to measurement the EUT is placed into a continuous transmit mode with 100% duty cycle via a communications board attached to the EUT.

i. DUT Transmitting at 2402MHz (Fundamental)

Peak/Average Measurement - 2402MHz

Frequency (MHz)	Orientation (Flat/End/Side)	Measurement Polarization (H/V)	Peak Measurement (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Average Measurement (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)
2402	Side	V	99.64	127.3	27.66	99.4	-	-
4804	Side	V	51.09	74.0	22.91	37.94	54.0	16.06
7206	Side	H	55.2	74.0	18.80	42.43	54.0	11.57
9608	Side	H	58.3*	74.0	15.70	45.62*	54.0	8.38
12010	Side	H	56.02*	74.0	17.98	43.47*	54.0	10.53
14412	Side	H	58.03*	74.0	15.97	45.15*	54.0	8.85
16814	Side	V	58.1*	74.0	15.90	45.71*	54.0	8.29
19216	Side	H	58.9*	74.0	15.10	45.9*	54.0	8.10
21618	Side	H	59.02*	74.0	14.98	46.11*	54.0	7.89
24020	Side	V	60.12*	74.0	13.88	48*	54.0	5.99

*Indicates Noise floor measurement

ii. DUT Transmitting at 2440MHz (Fundamental)

Peak/Average Measurement - 2440MHz

Frequency (MHz)	Orientation (Flat/End/Side)	Measurement Polarization (H/V)	Peak Measurement (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Average Measurement (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)
2440	Side	H	101.46	127.3	25.84	101.44	-	-
4880	Side	H	51.13	74.0	22.87	37.89	54.0	16.11
7320	Side	H	55.18	74.0	18.82	42.37	54.0	11.63
9760	Side	V	58.16*	74.0	15.84	45.37*	54.0	8.63
12200	Side	H	54.03*	74.0	19.97	41.98*	54.0	12.02
14640	Side	V	56.18*	74.0	17.82	44.22*	54.0	9.78
17080	Side	V	58.47*	74.0	15.53	45.95*	54.0	8.05
19520	Side	V	57.34*	74.0	16.66	44.91*	54.0	9.09
21960	Side	H	56.03*	74.0	17.97	43.9*	54.0	10.10
24400	Side	H	61.53*	74.0	12.47	47.89*	54.0	5.13

*Indicates Noise floor measurement

iii. DUT Transmitting at 2480MHz (Fundamental)

Peak/Average Measurement - 2480MHz

Frequency (MHz)	Orientation (Flat/End/Side)	Measurement Polarization (H/V)	Peak Measurement (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Average Measurement (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)
2480	Side	H	101.53	127.3	25.77	101.51	-	-
4960	Side	V	50.17	74.0	23.83	37.6	54.0	16.40
7440	Side	H	55.77	74.0	18.23	43.07	54.0	10.93
9920	Side	V	59.05*	74.0	14.95	45.81*	54.0	8.19
12400	Side	H	55.1*	74.0	18.90	42.58*	54.0	11.42
14880	Side	V	58.12*	74.0	15.88	45.28*	54.0	8.72
17360	Side	V	58.13*	74.0	15.87	45.91*	54.0	8.09
19840	Side	H	59.34*	74.0	14.66	47.12*	54.0	6.88
22320	Side	H	58.6*	74.0	15.40	45.68*	54.0	8.32
24800	Side	H	61.03*	74.0	12.97	47.97*	54.0	6.03

*Indicates Noise floor measurement

2. TX Spurious Emissions

Measurements described in this section were taken according to ANSI C63.10:2020+Cor.1-2023 and ANSI C63.10a:2024. on the Gentex Corporation 3m test table. Pre-Scan measurements were taken with the transmitter on to identify which emissions to maximize during the final measurement. Maximized data can be found in the table below. No significant emissions were identified in the region from 1000MHz to 25000MHz . Harmonics measurement data can be found in section 1 above.

* Measurements include Cable corrections and Antenna Factors

Measurement Settings:

Measurement Frequency: Below 1GHz

Span: 500kHz or greater

RBW: 100/120kHz VBW: 300kHz or 3 x RBW

Sweep Time: 25ms

Attenuation: Auto

Measurement Frequency: Above 1GHz

Span: 500kHz or greater

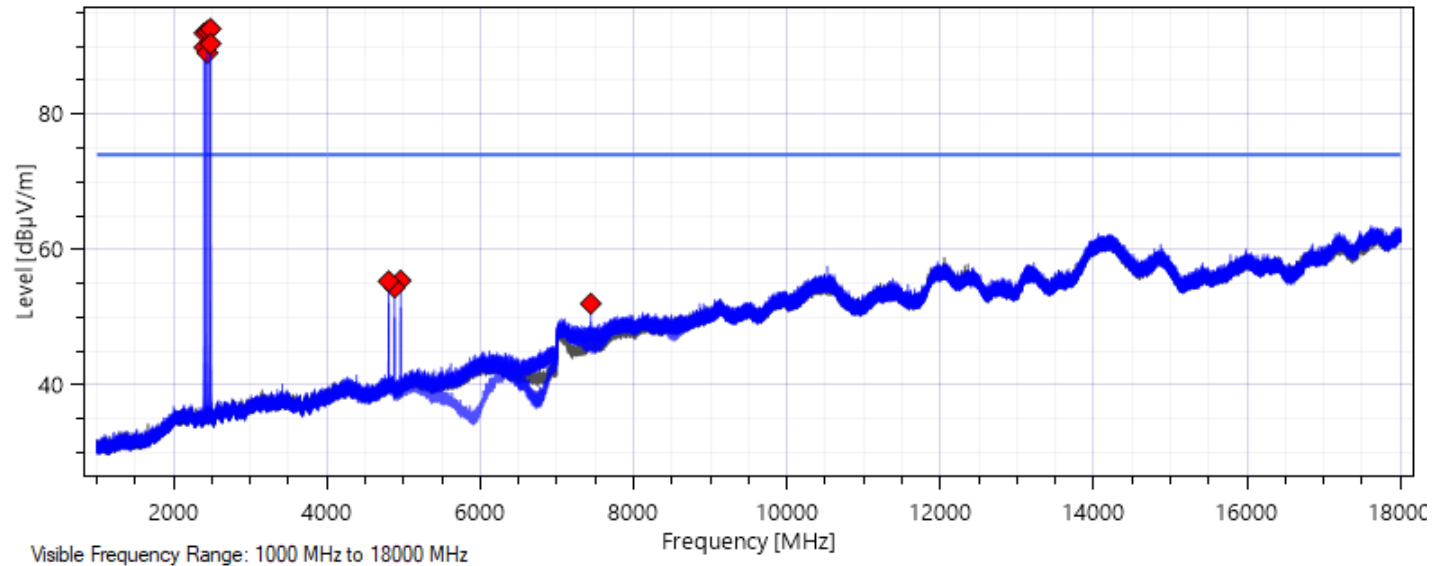
RBW: 1MHz VBW: 3MHz or 3 x RBW

Sweep Time: 25ms

Attenuation: Auto

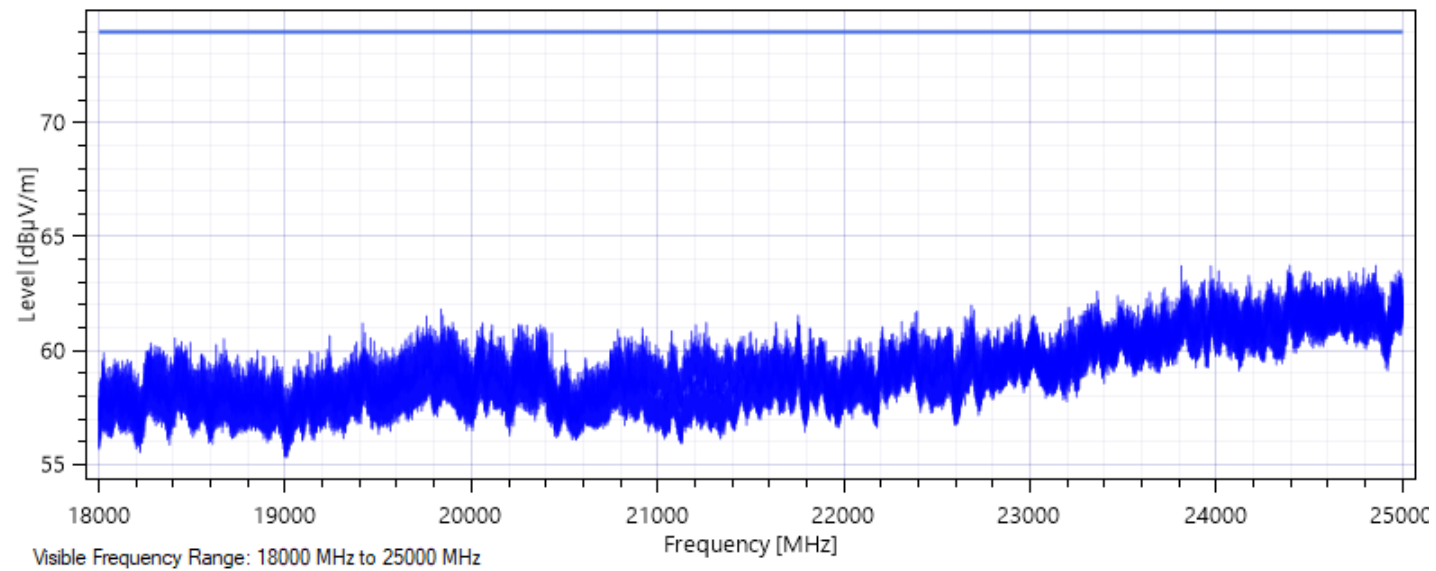
Test Mode	Detector	Frequency (MHz)		Worst-Case Orientation	Antenna Polarization	Frequencies (MHz)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
		Start	Stop						
TX	Quasi-Peak	30	88	Side	V	34	24.15	40	-15.85
TX	Quasi-Peak	30	88	Side	V	36	25.23	40	-14.77
TX	Quasi-Peak	30	88	Side	V	40	26.54	40	-13.46
TX	Quasi-Peak	30	88	Side	H	50	22.36	40	-17.64
TX	Quasi-Peak	30	88	Side	V	56	24.15	40	-15.85
TX	Quasi-Peak	30	88	Side	V	66	19.35	40	-20.65
TX	Quasi-Peak	216	1000	Side	V	500	27.59	46	-18.41
TX	Quasi-Peak	216	1000	Side	H	785	30.24	46	-15.76
TX	Quasi-Peak	216	1000	Side	H	826	35.46	46	-10.54
TX	Quasi-Peak	216	1000	Side	V	831	37.85	46	-8.15

Emissions Sweep 1000MHz to 18000MHz



Frequency (MHz)	Notes
2402	Fundamental data can be found in section 1
2440	Fundamental data can be found in section 1
2480	Fundamental data can be found in section 1
4803.5	2 nd harmonic of 2402 data can be found in section 1
4880.5	2 nd Harmonic of 2440 data can be found in section 1
4960	2 nd harmonic of 2480 data can be found in section 1
7440	3 rd harmonic of 2480 can be found in section 1

Emissions Sweep 18GHz to 25GHz



3. Restricted Band-Edge Measurement

Measurement Settings:

RBW: 1MHz

VBW: 3x RBW

Sweep time: No faster than Coupled (auto) time

Detector: Peak and Average

Trace: Max Hold

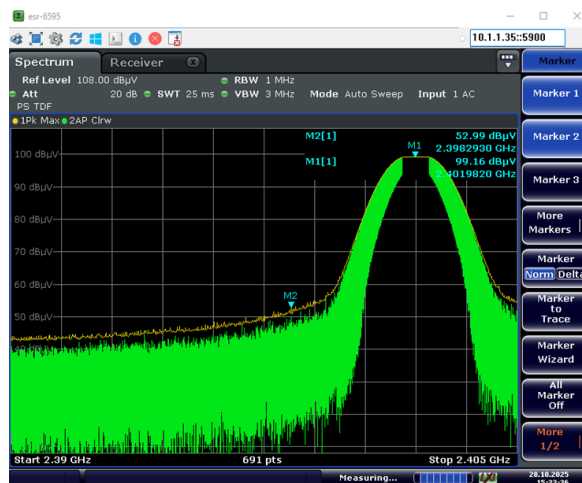
Per section 15.205 only spurious emissions are permitted in the frequency bands 2310-2390MHz and 2483.5-2500MHz and shall not exceed the limits shown in 15.209.

This measurement is a conducted measurement performed with a receiver. Prior to measurement the EUT is placed into a continuous transmit mode via a communications board attached to the EUT.

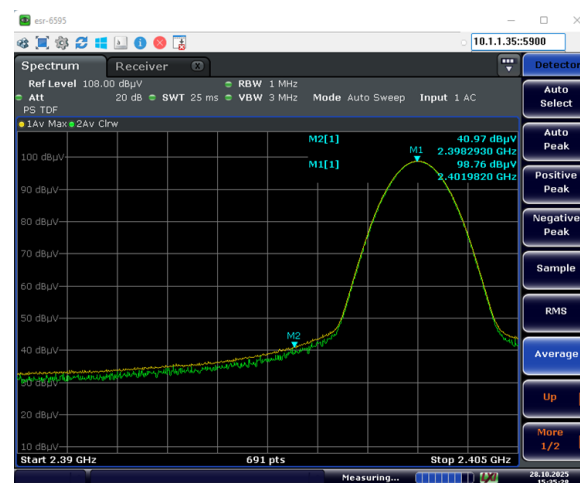
The restricted band edge measurement was performed with the transmitter set separately at 2402MHz and 2480MHz. For each of the measurements the emissions were below the limit

Measurement Frequency	Antenna Polarization	Measurement (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
2398.2	Horizontal	52.99	74	21.01	Peak
2398.2	Horizontal	40.97	54	13.03	Average
2398.7	Vertical	53.73	74	20.27	Peak
2398.7	Vertical	40.97	54	13.03	Average
2483.5	Horizontal	42.81	74	31.19	Peak
2483.5	Horizontal	43.48	54	10.52	Average
2483.5	Vertical	52.95	74	21.05	Peak
2483.5	Vertical	41.83	54	12.17	Average

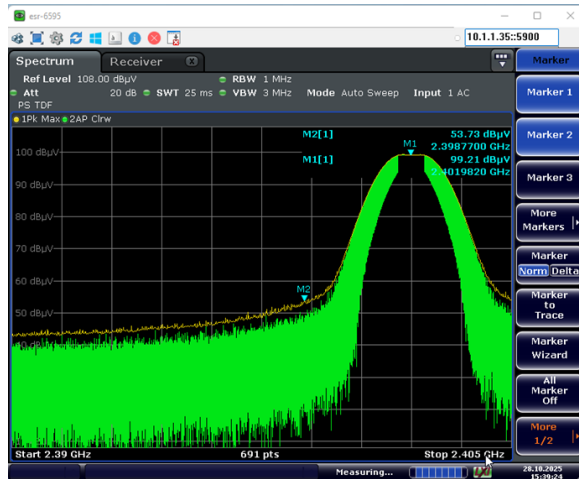
2402 MHz Peak Horizontal



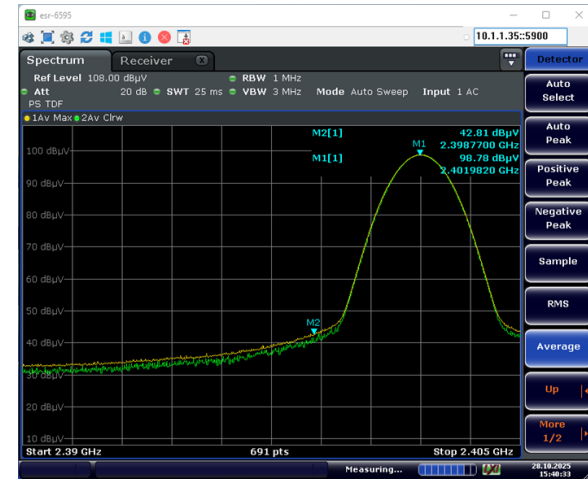
2402 MHz Average Horizontal



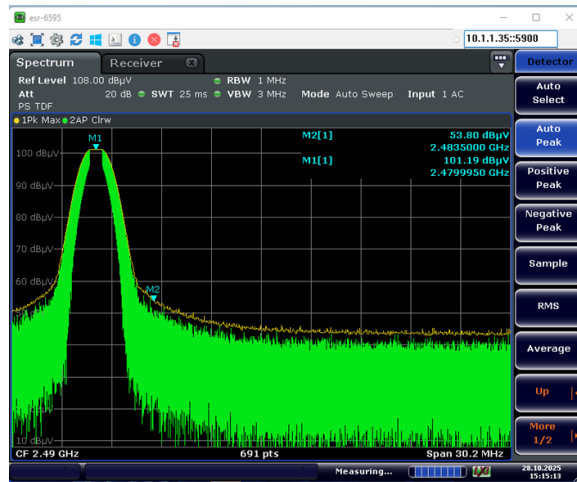
2402 MHz Peak Vertical



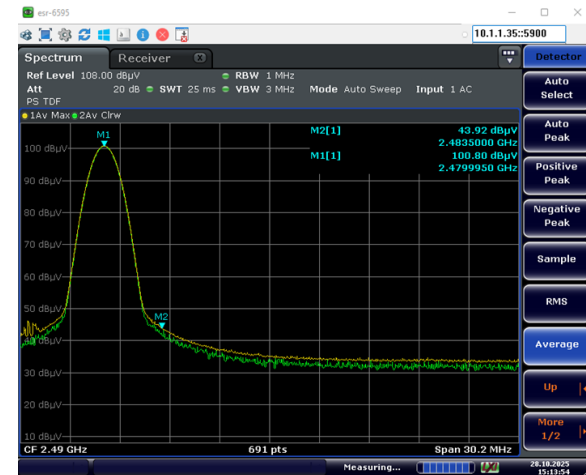
2402 MHz Average Vertical



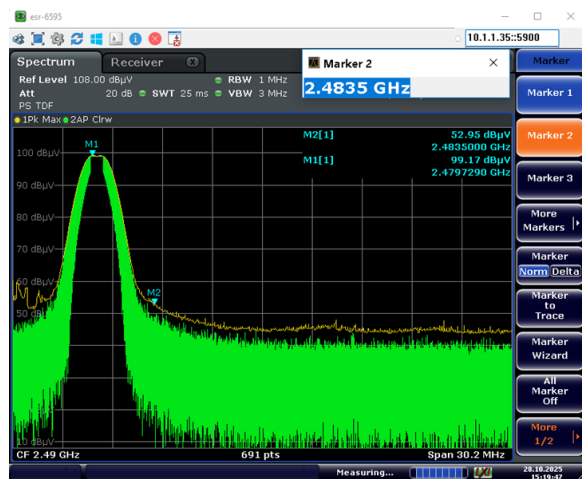
2480 MHz Peak Horizontal



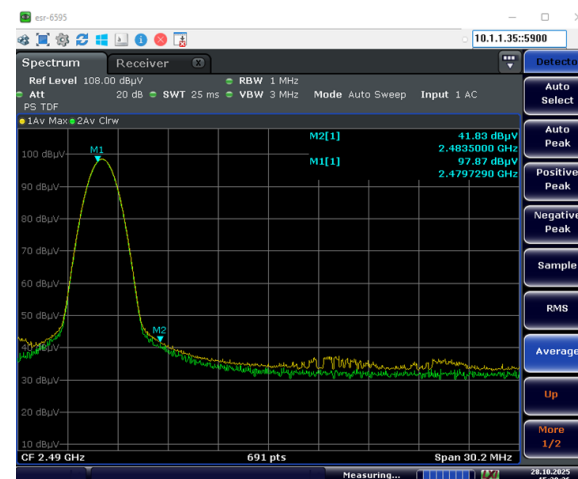
2480 MHz Average Horizontal



2480 MHz Peak Vertical



2480 MHz Average Vertical



B. Conducted Emissions

1. 99% Bandwidth

Measurement Settings:

Frequency Span: 2-5 times the OBW

RBW: 1 to 5% of the OBW without going below 10kHz

VBW: 3 times the RBW

Detector: Peak

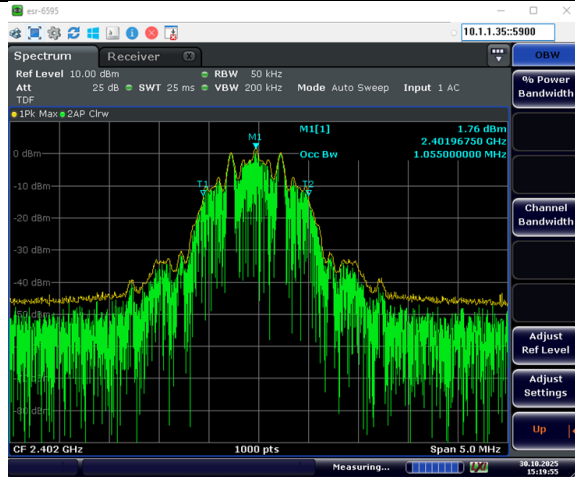
Trace Max Hold

This Measurements is a conducted measurement. Prior to the measurement the EUT is placed into a continuous transmit mode via a communications board attached to the EUT.

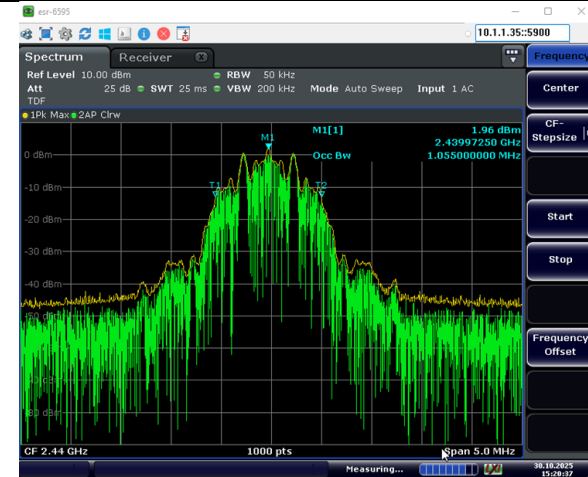
In the measurement of the 99% bandwidth, the transmit frequency was set to the low, middle, and high channels of operation.

Channel #	Frequency (MHz)	Bandwidth (kHz)
0	2402	1055
19	2440	1055
39	2480	1055

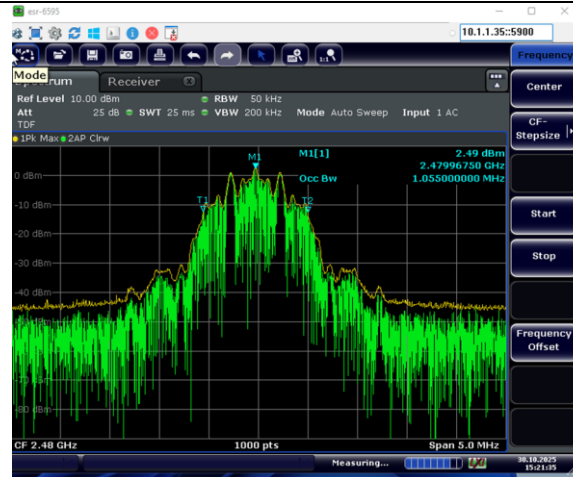
2402 MHz



2440 MHz



2480 MHz



2. 6dB Bandwidth

Measurement Settings:

RBW: in the range of 1 to 5% of the OBW but not less than 100kHz

VBW: Equal to or greater than 3 times the RBW

Span: Greater than the DTS bandwidth

Sweep time: No faster than the coupled (auto) time

Detector: Peak

Trace mode: Max Hold

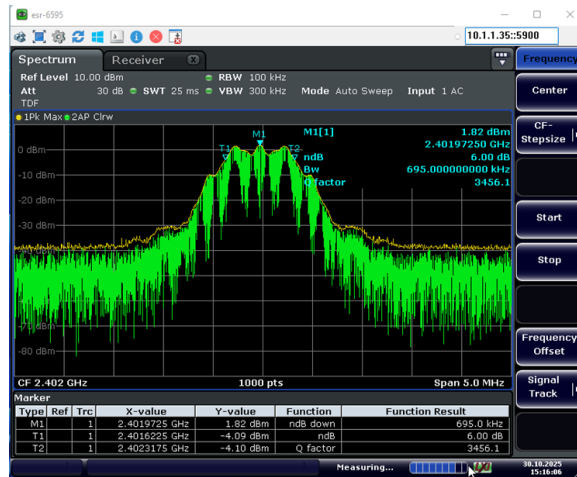
6dB Bandwidth Requirement: Per 15.247(a)(2), systems using digital modulation may operate in the 2400-2483.5 MHz bands. The minimum 6dB bandwidth shall be at least 500 kHz

This measurement is a conducted measurement performed with the receiver per test method ANSI C63.10 section 11.8. Prior to measurement the EUT is placed into a continuous transmit mode via a communication board attached to the EUT.

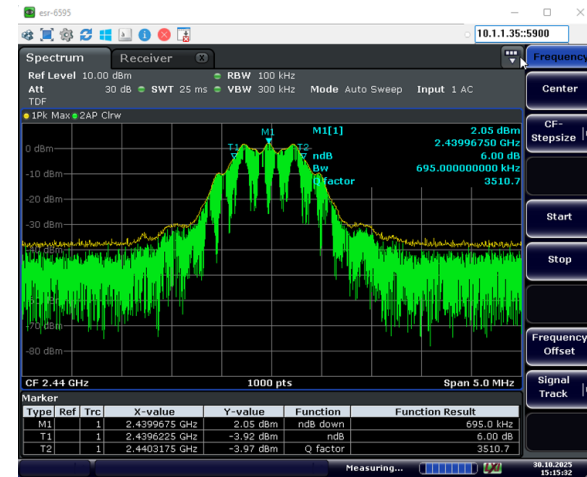
In the measurement of the 6dB bandwidth, the transmit frequency was set to low, middle, and high channels of operation.

Channel #	Frequency (MHz)	6dB Bandwidth (kHz)	Limit (kHz)
0	2402	695	>500
19	2440	695	>500
39	2480	695	>500

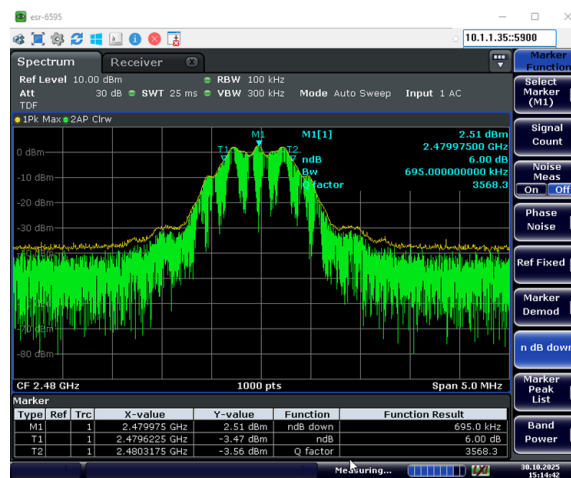
2402 MHz



2440 MHz



2480 MHz



3. Peak Output Power

Measurement Settings:

RBW: Greater than the worst case DTS occupied bandwidth

VBW: Equal to or greater than 3 times the RBW

Span: Equal to or greater than 3 times the RBW

Sweep time no faster than coupled (auto) time

Detector: Peak

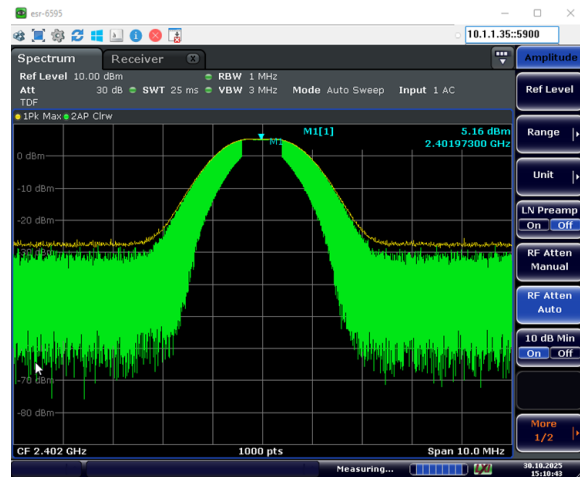
Peak Output Power Requirement: Per 15.247(b)(3) The maximum Peak Conducted Output Power of the intentional radiator shall not exceed the 1W (30dBm) for systems using digital modulation in the 2400-2483.5MHz

This measurement is a conducted measurement performed with the receiver per test method ANSI C63.10 section 11.9. Prior to measurement the EUT is placed into a continuous transmit mode via a communications board attached to the EUT.

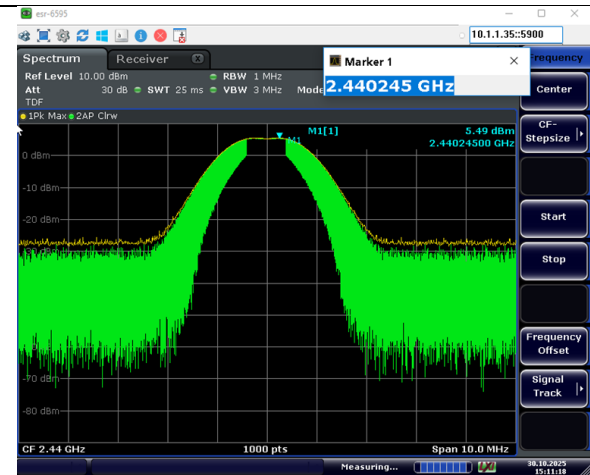
In the measurement of the Peak Output Power, the transmit frequency was set to low, middle, and high channels of operation.

Channel #	Frequency (MHz)	Power Output (dBm)	Limit (dBm)	Margin
0	2402	5.16	30	24.84
19	2440	5.49	30	24.51
39	2480	5.95	30	24.05

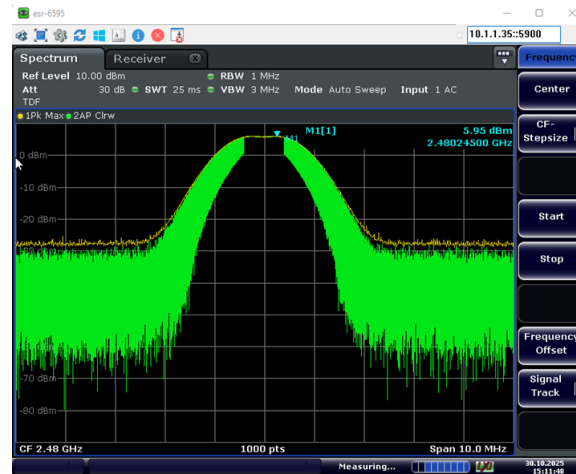
2402 MHz



2440 MHz



2480 MHz



4. Power Spectral Density

Measurement Settings:

Span: Greater than 1.5 times the DTS bandwidth

RBW: set to between 3kHz and 100kHz

VBW: Equal to or greater than 3 times the RBW

Sweep time: No faster than the coupled (auto) time

Detector: Peak

Trace mode: Max hold

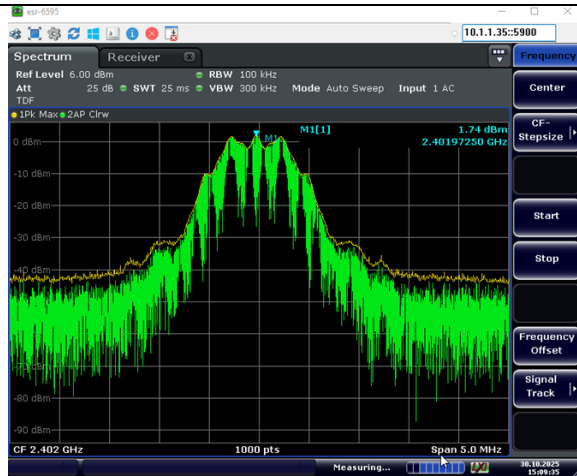
Power Spectral Density requirement: Per 15.247(e) for digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission. The same method of determining the conducted output power shall be used to determine the power spectral density.

This measurement is a conducted measurement performed with the receiver per test method ANSI C63.10 section 11.10. Prior to measurement the EUT is placed into a continuous transmit mode via communications board attached to the EUT.

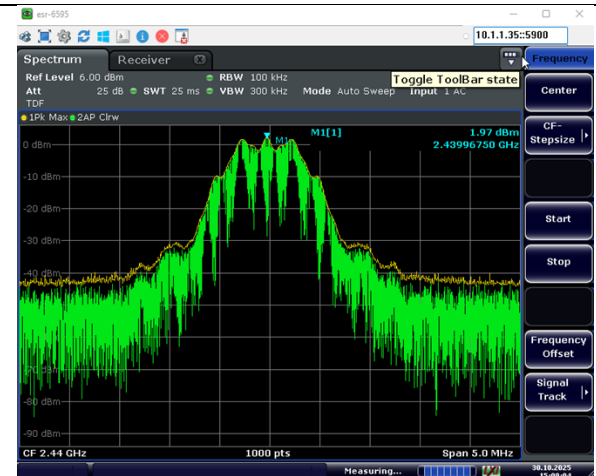
In the measurement of the power spectral density, the transmit frequency was set to low, middle, and high channels of operation.

Channel #	Frequency (MHz)	Measurement PPSD (dBm)	Limit (dBm)	Margin
0	2402	1.74	8	6.26
19	2440	1.97	8	6.03
39	2480	2.48	8	5.52

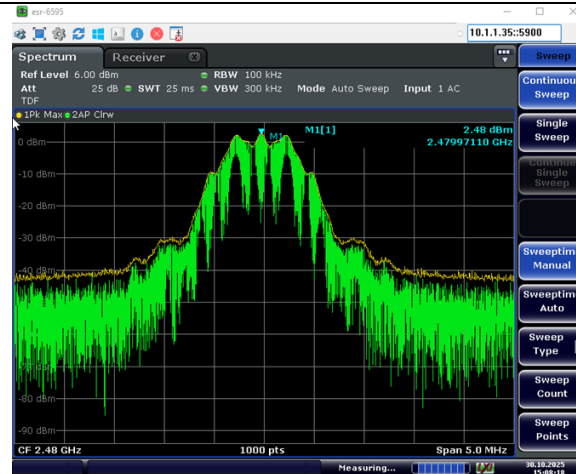
2402 MHz



2440MHz



2480 MHz



5. Conducted Emissions Sweep – 30MHz to 25GHz

Sweep 1: Peak - 100 kHz

Segment: 1

Start Frequency: 30 MHz

End Frequency: 1000 MHz

Band: Band 1

Detector: Peak

Sweep Mode: FFT

Attenuator: 5 dB

Pre-Amp: On

Max Hold Trace Mode: Off

Bandwidth Filter: EMI (6dB)

RBW: 100 kHz

Step Size: AUTO (25 kHz)

Dwell Time: 10ms

Notch Filter (2.4 - 2.5 GHz): Disabled

Notch Filter (5.725 - 5.875 GHz): Disabled

Sweep 1: Peak - 100 kHz

Segment: 2

Start Frequency: 1000 MHz

End Frequency: 4000 MHz

Band: Band 2

Detector: Peak

Sweep Mode: FFT

Attenuator: 10 dB

Pre-Amp: On

Max Hold Trace Mode: Off

Bandwidth Filter: EMI (6dB)

RBW: 100 kHz

Step Size: AUTO (25 kHz)

Dwell Time: 10ms

Notch Filter (2.4 - 2.5 GHz): Disabled

Notch Filter (5.725 - 5.875 GHz): Disabled

Sweep 1: Peak - 100 kHz

Segment: 3

Start Frequency: 4000 MHz

End Frequency: 18000 MHz

Band: Band 3

Detector: Peak

Sweep Mode: FFT

Attenuator: 5 dB

Pre-Amp: On

Max Hold Trace Mode: Off

Bandwidth Filter: EMI (6dB)

RBW: 100 kHz

Step Size: AUTO (25 kHz)

Dwell Time: 10ms

Notch Filter (2.4 - 2.5 GHz): Disabled

Notch Filter (5.725 - 5.875 GHz): Disabled

Sweep 1: Peak - 100 kHz

Segment: 4

Start Frequency: 18000 MHz

End Frequency: 26000 MHz

Band: Band 4

Detector: Peak

Sweep Mode: FFT

Attenuator: 5 dB

Pre-Amp: On

Max Hold Trace Mode: Off

Bandwidth Filter: EMI (6dB)

RBW: 100 kHz

Step Size: AUTO (25 kHz)

Dwell Time: 10ms

Notch Filter (2.4 - 2.5 GHz): Disabled

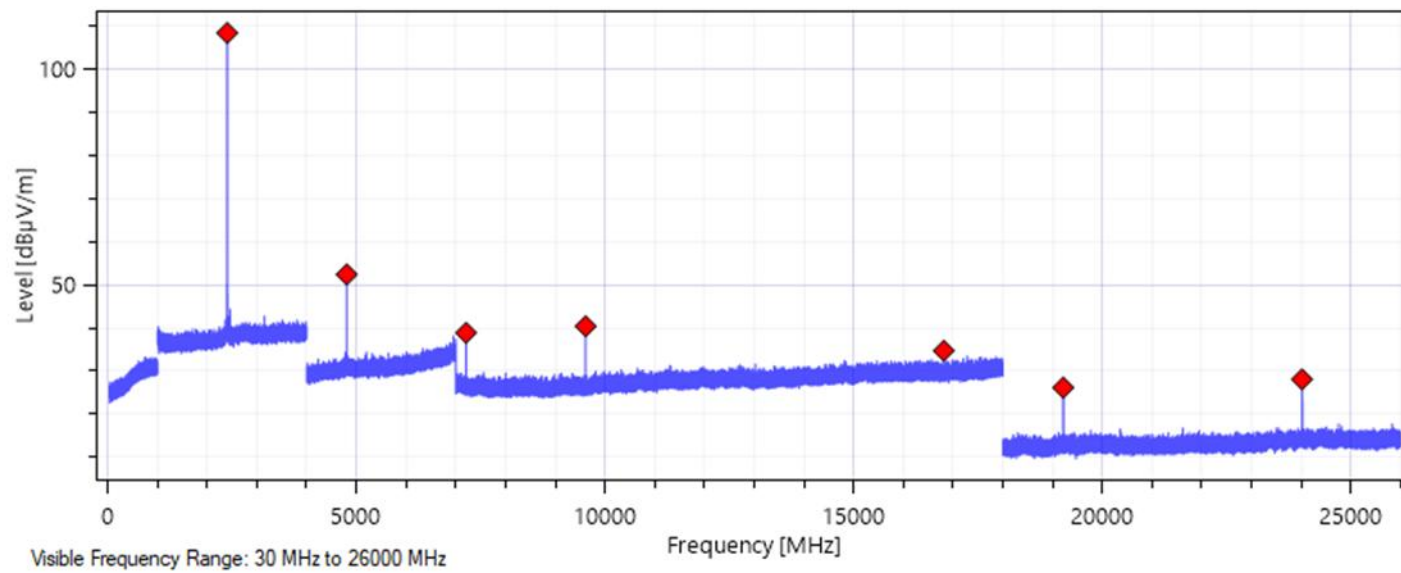
Notch Filter (5.725 - 5.875 GHz): Disabled

Per section 15.247(d), 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).

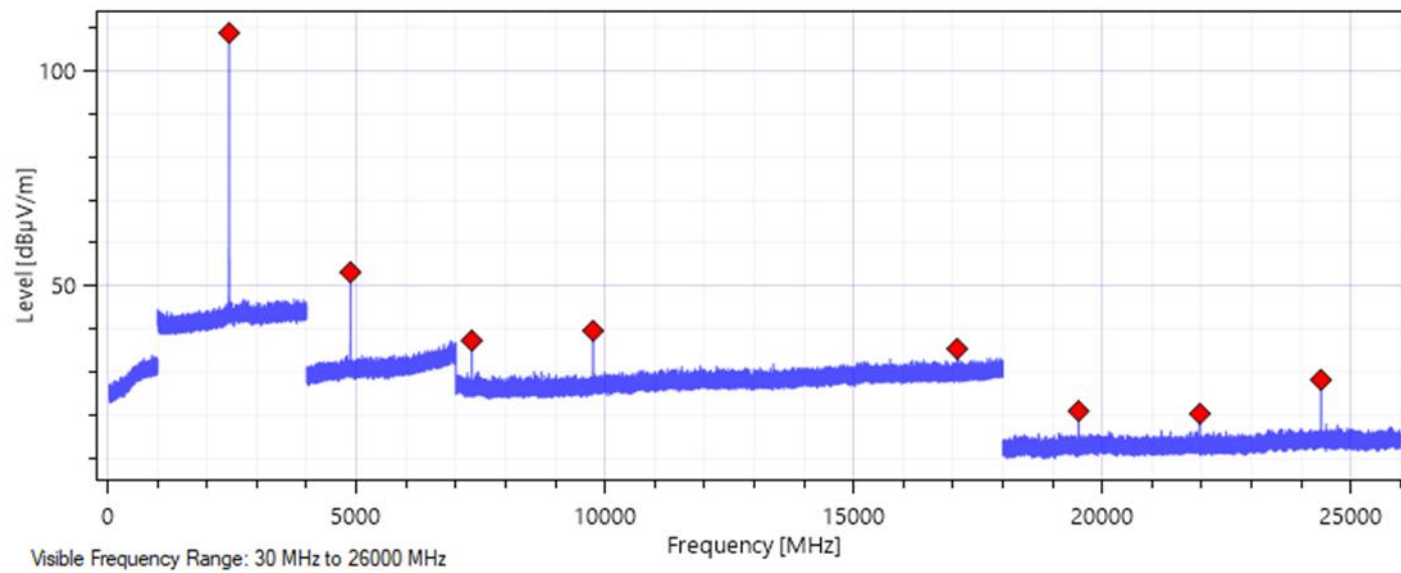
This measurement is a conducted measurement performed with a receiver. Prior to measurement the EUT is placed into a continuous transmit mode via a communications board attached to the EUT.

The band edge measurement was performed with the transmitter set separately at the low, mid, and high channel of operation. For each of the measurements the emissions were greater than 20dB below the peak of the signal.

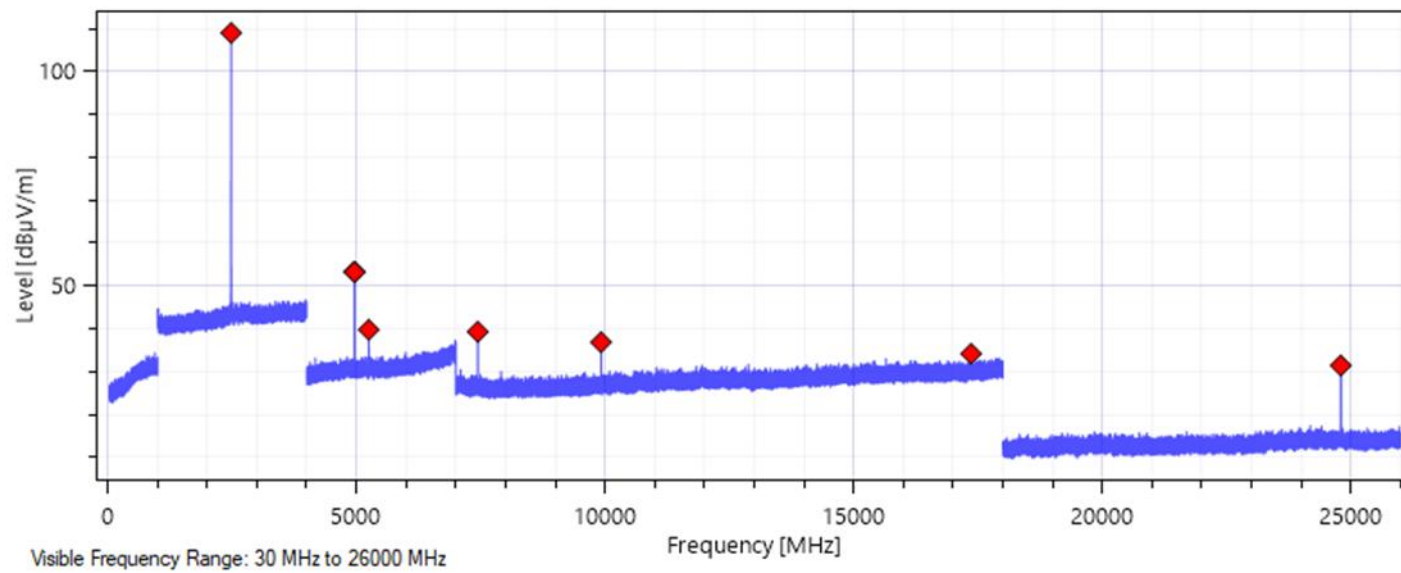
Channel	Worst-Case Delta (dB)	Limit (dB)	Margin
Low	56.07	20	36.1
Mid	55.724		35.7
High	55.652		35.7



Frequency (MHz)	Level (dBμV/m)
2,401.975000	108.52
4,803.450000	52.45
7,205.175000	38.883
9,608.875000	40.417
16,812.050000	34.748
19,213.775000	26.17
24,017.200000	28.097



Frequency(MHz)	Level(dBμV/m)
2,439.975000	108.955
4,879.450000	53.213
7,319.175000	37.3
9,758.875000	39.606
17,081.525000	35.401
19,521.750000	20.912
21,961.975000	20.281
24,397.200000	28.163



Frequency (MHz)	Level (dBμV/m)
2,479.975000	109.032
4,959.450000	53.38
4,960.425000	53.284
5,247.500000	39.85
7,440.650000	39.361
9,918.875000	36.933
17,361.525000	34.244
24,797.200000	31.52