

TEST REPORT

Report Number: 15496277-E5V3

Applicant : APPLE, INC.
1 APPLE PARK WAY
CUPERTINO, CA 95014, U.S.A

Model : A3258 (PARENT)
A3519, A3520, A3521 (VARIANTS)

Brand : APPLE

FCC ID : BCG-E8947A (PARENT)
BCG-E8951A, BCG-E8952A, BCG-E8953A (VARIANTS)

IC : 579C-E8947A (PARENT)
579C-E8951A, 579C-E8952A, 579C-E8953A (VARIANTS)

EUT Description : SMARTPHONE

Test Standard(s) : FCC 47 CFR PART 15 SUBPART C
ISED RSS-247 ISSUE 3
ISED RSS-GEN ISSUE 5 + A1 + A2

Date Of Issue:
August 18, 2025

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REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	08/05/25	Initial Issue	Francisco Guarnero
V2	08/14/25	Addressed TCB questions and comments for pg 1, and sections 6.6, 8, &10. Retest data for section 9.4.2 and Low power radiated.	Francisco Guarnero
V3	08/18/2025	Addressed TCB Feedback for section 6.6, 10.2.1 & Appendix A	Francisco Guarnero

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: APPLE INC.
1 APPLE PARK WAY
CUPERTINO, CA 95014, U.S.A

EUT DESCRIPTION: SMARTPHONE

MODEL: A3258
A3519, A3520, A3521 (VARIANTS)

BRAND: APPLE

SERIAL NUMBER: J6HHCW000670000YAV (Conducted)
J3XKVHG144 (Radiated)

SAMPLE RECEIPT DATE: 2025/02/28

DATE TESTED: APRIL 9 – AUGUST 18, 2025

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Complies
ISED RSS-247 Issue 3	Complies
ISED RSS-GEN Issue 5 + A1 + A2	Complies

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not considered unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by A2LA, NIST, any agency of the Federal Government, or any agency of the U.S. government.

Approved & Released For
UL Verification Services Inc. By:



Frank Ibrahim
Staff Engineer
Consumer Technology Division
UL Verification Services Inc.

Prepared By:



Francisco Guarnero
Senior Test Engineer
Consumer Technology Division
UL Verification Services Inc.

2. TEST SUMMARY

This report contains data provided by the customer which can impact the validity of results. UL Verification Services Inc. is only responsible for correctly integrating customer-provided data with measurements performed by UL Verification Services Inc.

Below is a list of the data provided by the customer:

1. Antenna gain and type (see section 6.3)
2. Cable loss (see section 6.3)

FCC Clause	ISED Clause	Requirement	Result	Comment
See Comment		Duty Cycle	Reporting purposes only	ANSI C63.10 Section 11.6.
-	RSS-GEN 6.7	99% OBW	Reporting purposes only	ANSI C63.10 Section 6.9.3.
15.247 (a) (2)	RSS-247 5.2 (a)	6dB BW	Complies	None.
15.247 (b) (3)	RSS-247 5.4 (d)	Output Power	Complies	None.
See Comment		Average power	Reporting purposes only	Per ANSI C63.10, Section 11.9.2.3.2.
15.247 (e)	RSS-247 5.2 (b)	PSD	Complies	None.
15.247 (d)	RSS-247 5.5	Conducted Spurious Emissions	Complies	None.
15.209, 15.205	RSS-GEN 8.9, 8.10	Radiated Emissions	Complies	None.
15.207	RSS-Gen 8.8	AC Mains Conducted Emissions	Complies	None.

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with:

- FCC 47 CFR Part 2
- FCC 47 CFR Part 15C
- *ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024
- KDB 558074 D01 15.247 Meas Guidance
- KDB 414788 D01 Radiated Test Site
- KDB 484596 D01 Referencing Test Data
- RSS-GEN Issue 5 + A1 + A2
- RSS-247 Issue 3

*Note: The use of ANSI C63.10-2020 + Cor. 1-2023 + C63.10a-2024 does not deviate from the testing procedures of ANSI C63.10-2020

4. FACILITIES AND ACCREDITATION

UL Verification Services Inc. is accredited by A2LA, certification #0751.05, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

	Address	ISED CABID	ISED Company Number	FCC Registration
☐	Building 1: 47173 Benicia Street, Fremont, CA 94538, USA	US0104	2324A	550739
☒	Building 2: 47266 Benicia Street, Fremont, CA 94538, USA			
☒	Building 3: 843 Auburn Court, Fremont, CA 94538 USA			
☐	Building 4: 47658 Kato Rd, Fremont, CA 94538 USA			
☒	Building 5: 47670 Kato Rd, Fremont, CA 94538 USA			

5. DECISION RULES AND MEASUREMENT UNCERTAINTY

5.1. METROLOGICAL TRACEABILITY

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and where applicable is traceable to recognized national standards.

5.2. DECISION RULES

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

5.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	U _{LAB}
Conducted Antenna Port Emission Measurement	1.94
Power Spectral Density	2.466
Time Domain Measurements Using SA	3.39
RF Power Measurement Direct Method Using Power Meter	1.3 (Peak), 0.45 (Ave)
Radio Frequency (Spectrum Analyzer)	141.16 Hz
Occupied Bandwidth	1.2%
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.78 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.40 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	2.87 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	6.01 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.73 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.51 dB

Uncertainty figures are valid to a confidence level of 95%.

5.4. SAMPLE CALCULATION

RADIATED EMISSIONS

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

$36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} = 28.9 \text{ dBuV/m}$

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:

Final Voltage (dBuV) = Measured Voltage (dBuV) + Cable Loss (dB) + Limiter Factor (dB) + LISN Insertion Loss.

$36.5 \text{ dBuV} + 0 \text{ dB} + 10.1 \text{ dB} + 0 \text{ dB} = 46.6 \text{ dBuV}$

6. EQUIPMENT UNDER TEST

6.1. EUT DESCRIPTION

The Apple iPhone is a smartphone with cellular GSM, GPRS, EGPRS, WCDMA, LTE, 5G NR1, 5G NR2, IEEE 802.11a/b/g/n/ac/ax/be, Bluetooth (BT), Ultra-Wideband (UWB), Global Positioning System (GPS), Near-Field Communication (NFC), Narrow-Band (NB) UNII, 802.15.4, 802.15.4ab-Narrow Band (NB), Wireless Power Transfer (WPT) and Mobile Satellite Service (MSS) technologies. The rechargeable battery is not user accessible. This device is not user-serviceable and requires special tools to disassemble.

6.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

Antenna	Configuration	Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
ANT 4	High Power	2405 - 2475	802.15.4	20.76	119.12
	Low Power			9.11	8.15
ANT 3	High Power			20.46	111.17
	Low Power			9.42	8.75

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

The antenna(s) gain, type and cable loss, as provided by the manufacturer' are as follows:

Frequency Band (GHz)	Antenna Type	Antenna Peak Gain ANT 4 (dBi)	Antenna Peak Gain ANT 3 (dBi)	Cable Loss ANT 4 (dB)	Cables Loss ANT 3 (dB)
2.4	IFA	0.0	-3.5	1.56	2.29

The cables were used for RF antenna port tests that had been offset to the test equipment during testing.

6.4. SOFTWARE AND FIRMWARE

The EUT firmware version installed during testing was 23A258.

6.5. WORST-CASE CONFIGURATION AND MODE

The EUT was investigated in three orthogonal orientations X, Y and Z on ANT 4, and ANT 3. It was determined that X (Flatbed) was the worst-case orientation for ANT 4 and ANT 3.

Radiated band edge, harmonic, and spurious emissions from 1GHz to 18GHz were performed with the EUT was set to transmit at highest power on Low/Middle/High channels.

Radiated emissions below 1GHz, 18-26GHz and power line conducted emissions were performed with the EUT transmits at the channel with the highest output power as worst-case scenario. There were no emissions found below 30MHz within 20dB of the limit.

For below 1GHz tests were performed with EUT connected to AC power adapter as the worst case; and for above 1GHz, the worst-case configuration reported was tested with EUT only. For AC line conducted emission, test was investigated with AC power adapter and with laptop.

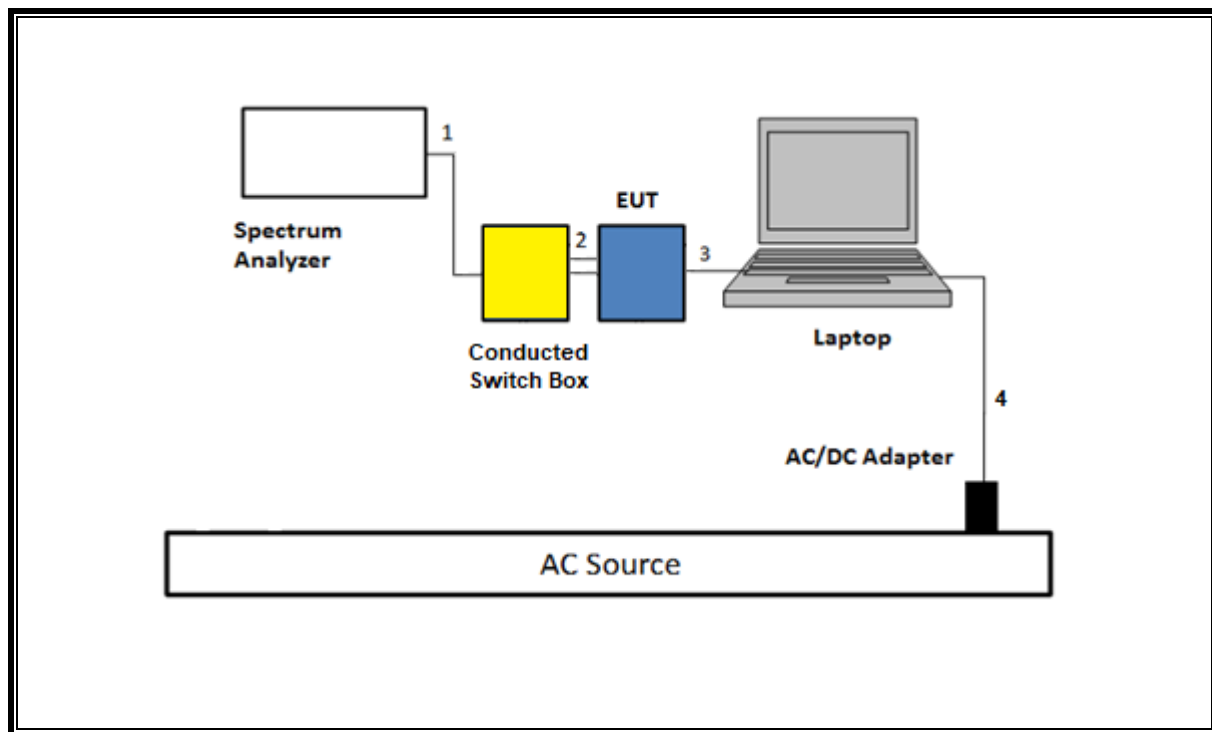
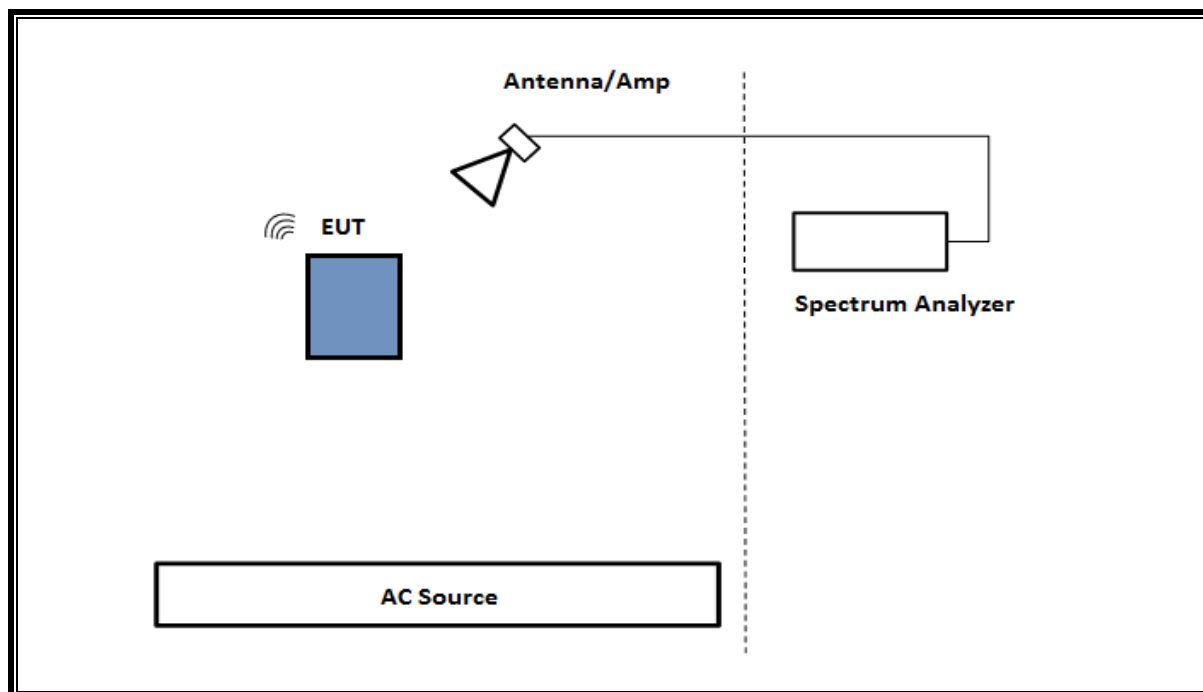
For simultaneous transmission of multiple channels in the 2.4GHz and 5GHz bands. No noticeable emission was found.

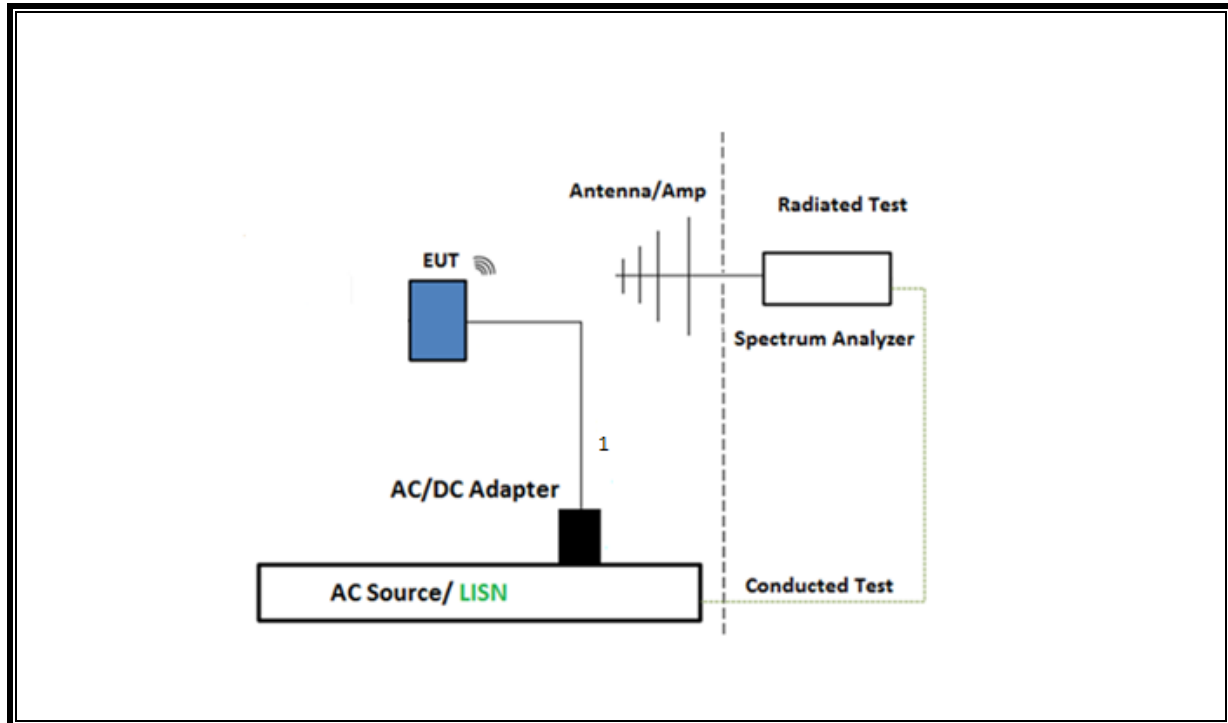
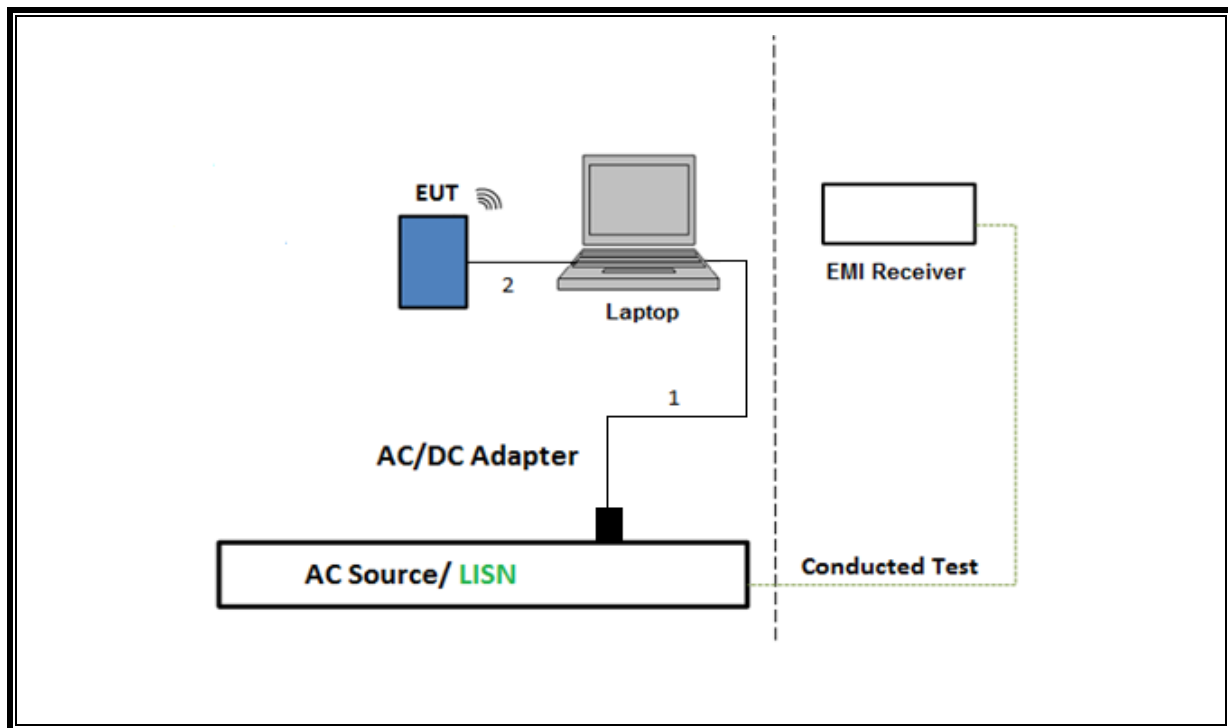
6.6. DESCRIPTION OF TEST SETUP

SUPPORT TEST EQUIPMENT						
Description		Manufacturer	Model	Serial Number		FCC ID/ DoC
Laptop		Apple	Macbook Pro	C02VD7SAHV22		BCGA1708
Laptop AC/DC adapter		Liteon Technology	A1424	NSW25679		DoC
EUT AC/DC adapter		Apple	A1720	C3D8417A7R93KVPA8		DoC
Conducted Switch Box		UL	n/a	208281		N/A
I/O CABLES (RF CONDUCTED TEST)						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	SMA	1	SMA	Shielded	0.75	To spectrum Analyzer
2	Antenna	2	SMA	Un-shielded	0.2	To Conducted Switch Box
3	USB-C	1	USB-C	Shielded	1.0	N/A
4	AC	1	AC	Un-shielded	2	N/A
I/O CABLES (RF RADIATED AND AC LINE CONDUCTED TEST)						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	AC	Un-shielded	2	N/A
2	USB	1	USB	Shielded	1	N/A

TEST SETUP

The EUT setup is shown as below. Test software exercised the radio card.

SETUP DIAGRAM FOR CONDUCTED TESTS**SETUP DIAGRAM FOR RADIATED TESTS Above 1 GHz**

SETUP DIAGRAM FOR Below 1GHz and AC LINE CONDUCTED TEST**TEST SETUP- AC LINE CONDUCTED: LAPTOP CONFIGURATION**

7. MEASUREMENT METHOD

On Time and Duty Cycle: ANSI C63.10 Section 11.6

6 dB BW: ANSI C63.10 Section 11.8.1 $RBW \geq DTS\ BW$

Occupied BW (99%): ANSI C63.10 Section 6.9.3

Output Power: ANSI C63.10 Section 11.9.1.2 Method PKPM1 Peak-reading power meter

Output Power: ANSI C63.10 Section 11.9.2.3.2 Measurement using gated average power meter

PSD: ANSI C63.10 Section 11.10.2 Method PKPSD (peak PSD)

Radiated emissions restricted frequency bands: ANSI C63.10 Section 11.12.1

Conducted emissions in restricted frequency bands: ANSI C63.10 Section 11.12.2

Band-edge: ANSI C63.10 Section 11.12.2.4 and 13: Peak Measurement

Band-edge: ANSI C63.10 Section 11.12.2.5 and 13: Average Measurement

AC Power Line Conducted Emissions: ANSI C63.10 Section 6.2

Radiated emissions non-restricted frequency bands ANSI C63.10 Section 11.11

Radiated Spurious Emissions Below 30MHz: ANSI C63.10 Section 6.4

8. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment were utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	Manufacturer	Model	ID Num	Cal Due
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	84796	2026/4/30
RF Filter Box, 1-18GHz, 12 Port	UL-FR1	Frankenstein	230878	2026/1/31
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	191428	2026/2/28
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	84797	2026/5/31
RF Filter Box, 1-18GHz, 17 Ports	UL-FR1	RAT 2	225079	2026/5/31
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	235670	2026/2/28
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	84796	2026/4/30
RF Filter Box, 1-18GHz, 12 Port	UL-FR1	Frankenstein	230878	2026/1/31
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	191428	2026/2/28
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	206806	2027/3/31
Filter Box	UL-FR1	RATS 1.0, 1 Amp, 6 Port	173233	2026/4/29
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	235266	2026/2/28
Amplifier 9 KHz - 1 GHz	SONOMA INSTRUMENT	310N	230311	2026/5/31
Antenna, Broadband Hybrid, 30MHz to 3GHz	Sunol Sciences Corp.	JB3	80813	2025/9/29
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	235670	2026/2/28
Antenna, Horn 18-26.5GHz	A.R.A	MWH-1826/B	81105	2025/08/31
Link File, RF Amplifier Assembly, 18-26.5GHz, 60dB Gain	Amplical	AMP18G26.5-60	220194	2026/04/29
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	226079	2026/2/28
Antenna, Passive Loop, 30Hz - 1MHz	Electro-Metrics	EM-6871	170014	2025/08/31
Antenna, Passive Loop, 100kHz to 30MHz	Electro-Metrics	EM-6872	170016	2025/08/31
Spectrum Analyzer, PXA, 3Hz to 44GHz	N9030A	Keysight Technologies Inc	80397	2026/01/31
Spectrum Analyzer, PXA, 3Hz to 44GHz	N9030A	Keysight Technologies Inc	125179	2026/02/28
Conducted Switch Box	UL-FR1	CSB	245782	2025/07/31
Conducted Switch Box	UL-FR1	CSB	208281	*2025/05/31
Power Meter, P-series single channel	Keysight Technologies Inc	N1911A	90715	2026/01/31
Power Sensor, P - series, 50MHz to 18GHz, Wideband	Keysight Technologies Inc	N1921A	81319	2026/01/31
Power Meter, P-series single channel	Keysight Technologies Inc	N1911A	90718	2026/01/31
Power Sensor, P - series, 50MHz to 18GHz, Wideband	Keysight Technologies Inc	N1921A	90419	2026/01/31

AC Line Conducted				
Description	Manufacturer	Model	ID Num	Cal Due
EMI Test Receiver 9kHz-7GHz	Rohde & Schwarz	ESR	171646	2026/02/28
LISN for Conducted Emissions CISPR-16	FISCHER CUSTOM COMMUNICATIONS	FCC-LISN-50/250-25-2-01-480V	175765	2026/01/31
Transient Limiter	TE	TBFL1	207996	2025/09/30
UL AUTOMATION SOFTWARE				
Radiated Software	UL	UL EMC	Ver 9.5, May 1, 2023	
Conducted Software	UL	UL EMC	2020.8.16	
AC Line Conducted Software	UL	UL EMC	Ver 9.5, Mar 3, 2023	

*Testing is completed before equipment expiration date.

9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

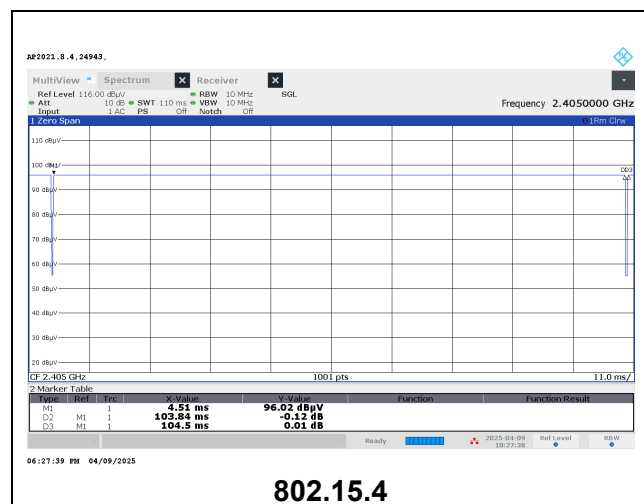
PROCEDURE

ANSI C63.10, Section 11.6: Zero-Span Spectrum Analyzer Method.

ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
2.4GHz Band						
802.15.4, 2405MHz	103.84	104.50	0.994	99.37%	0.00	0.010

DUTY CYCLE PLOTS



9.2. 99% BANDWIDTH**LIMITS**

None; for reporting purposes only.

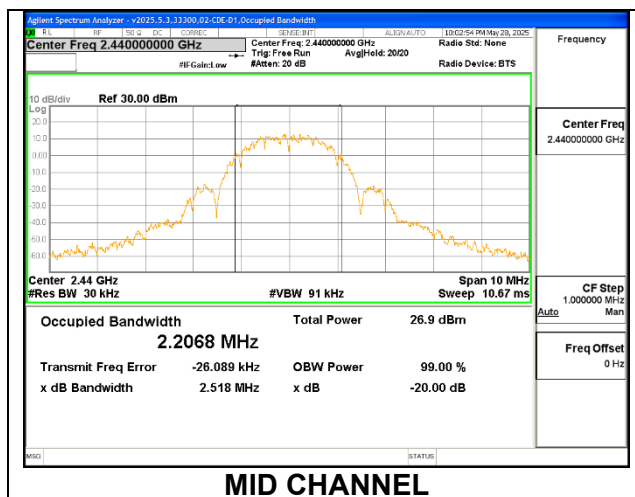
RESULTS

Only High-Power modes results are reported; it covers all Low Power modes. Only Mid channel plot is reported to show the analyzer's settings.

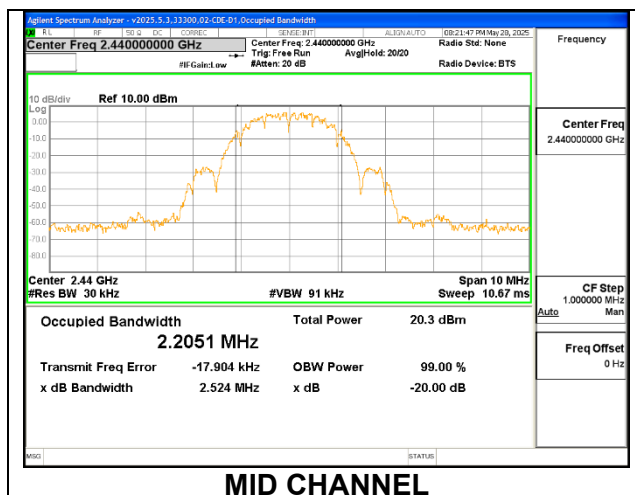
9.2.1. HIGH POWER

ANT 4

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2405	2.1874
Middle	2440	2.2068
High	2475	2.2040

ANT 3

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2405	2.2026
Middle	2440	2.2051
High	2475	2.1905



9.3. 6 dB BANDWIDTH**LIMITS**

FCC §15.407 (e)

RSS-247 5.2 (a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

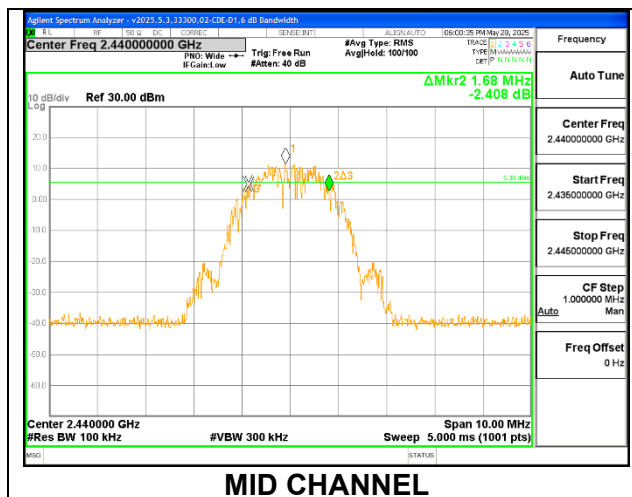
RESULTS

Only High-Power modes results are reported; it covers all Low Power modes. Only Mid channel plot is reported to show the analyzer's settings.

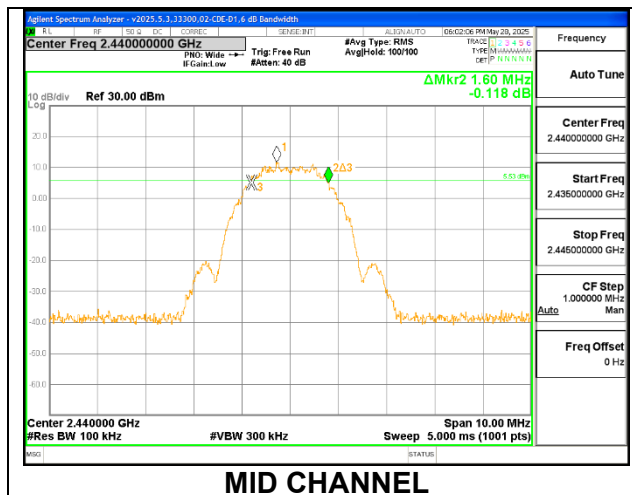
9.3.1. HIGH POWER

ANT 4

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2405	1.60	0.5
Middle	2440	1.68	0.5
High	2475	1.60	0.5

ANT 3

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2405	1.63	0.5
Middle	2440	1.60	0.5
High	2475	1.63	0.5



9.4. OUTPUT POWER

LIMITS

FCC §15.247 (b) (3)

RSS-247 5.4 (d)

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

TEST PROCEDURE

Measurements were performed using a wideband RF power meter.

The power output was measured on the EUT antenna port using SMA cable with 10dB attenuator connected to a power meter via wideband peak power sensor. Peak output power was read directly from the power meter.

DIRECTIONAL ANTENNA GAIN

For 1 TX:

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

RESULTS

9.4.1. **HIGH POWER****ANT 4**

Tested By:	33300
Date:	7/4/2025

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2405	20.76	30	-9.24
Middle	2440	20.70	30	-9.30
High	2475	20.69	30	-9.31

ANT 3

Tested By:	33300
Date:	7/4/2025

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2405	20.46	30	-9.54
Middle	2440	20.43	30	-9.57
High	2475	20.36	30	-9.64

9.4.2. **LOW POWER****ANT 4**

Tested By:	33300
Date:	8/14/2025

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2405	9.11	30	-20.89
Middle	2440	9.04	30	-20.96
High	2475	9.08	30	-20.92

ANT 3

Tested By:	33300
Date:	8/14/2025

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2405	9.34	30	-20.66
Middle	2440	9.42	30	-20.58
High	2475	9.32	30	-20.68

9.5. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

Measurements were performed using a wideband RF power meter.

The power output was measured on the EUT antenna port using SMA cable with 10dB attenuator connected to a power meter via wideband average power sensor. Gated average output power was read directly from power meter.

RESULTS

9.5.1. **HIGH POWER****ANT 4**

Tested By:	33300
Date:	7/4/2025

Channel	Frequency (MHz)	AV power (dBm)
Low	2405	20.24
Middle	2440	20.20
High	2475	20.21

ANT 3

Tested By:	33300
Date:	7/4/2025

Channel	Frequency (MHz)	AV power (dBm)
Low	2405	19.99
Middle	2440	19.94
High	2475	19.91

9.5.2. **LOW POWER****ANT 4**

Tested By:	33300
Date:	7/4/2025

Channel	Frequency (MHz)	AV power (dBm)
Low	2405	8.74
Middle	2440	8.69
High	2475	8.73

ANT 3

Tested By:	33300
Date:	7/4/2025

Channel	Frequency (MHz)	AV power (dBm)
Low	2405	8.95
Middle	2440	8.99
High	2475	8.90

9.6. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

RSS-247 (5.2) (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

RESULTS

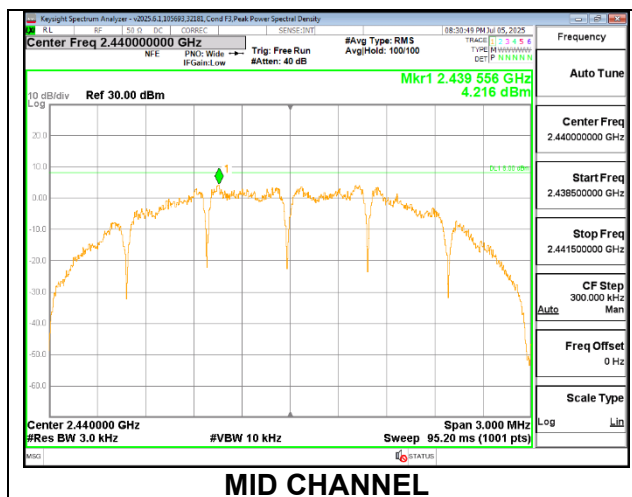
Only Mid channel plot is reported to show the analyzer's settings.

Only High-Power modes results are reported; it covers all Low Power modes.

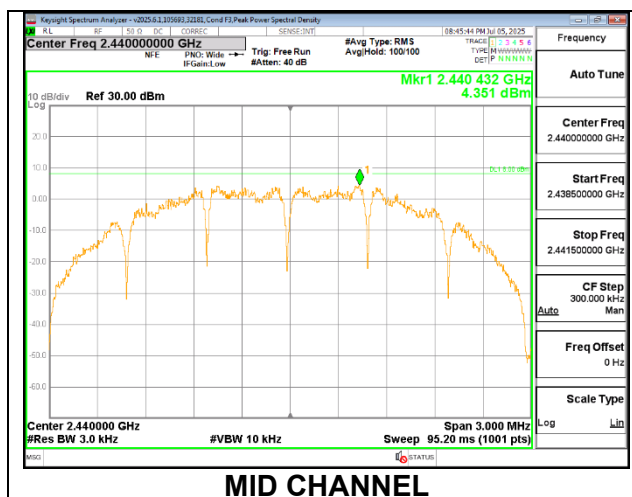
9.6.1. HIGH POWER

ANT 4

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2405	4.182	8	-3.82
Middle	2440	4.216	8	-3.78
High	2475	4.274	8	-3.73

**ANT 3**

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2405	4.424	8	-3.58
Middle	2440	4.351	8	-3.65
High	2475	4.562	8	-3.44



9.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

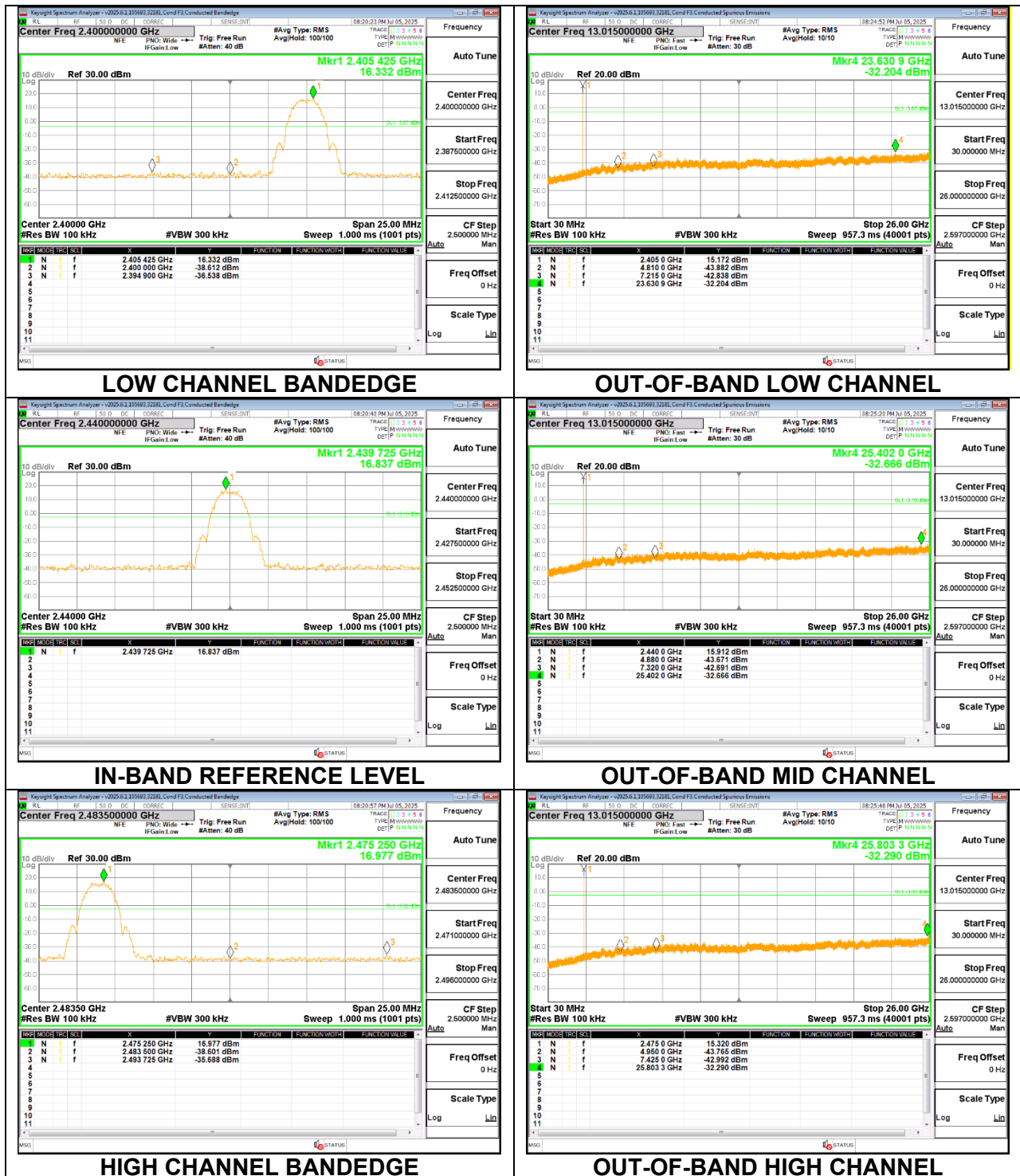
RSS-247 5.5

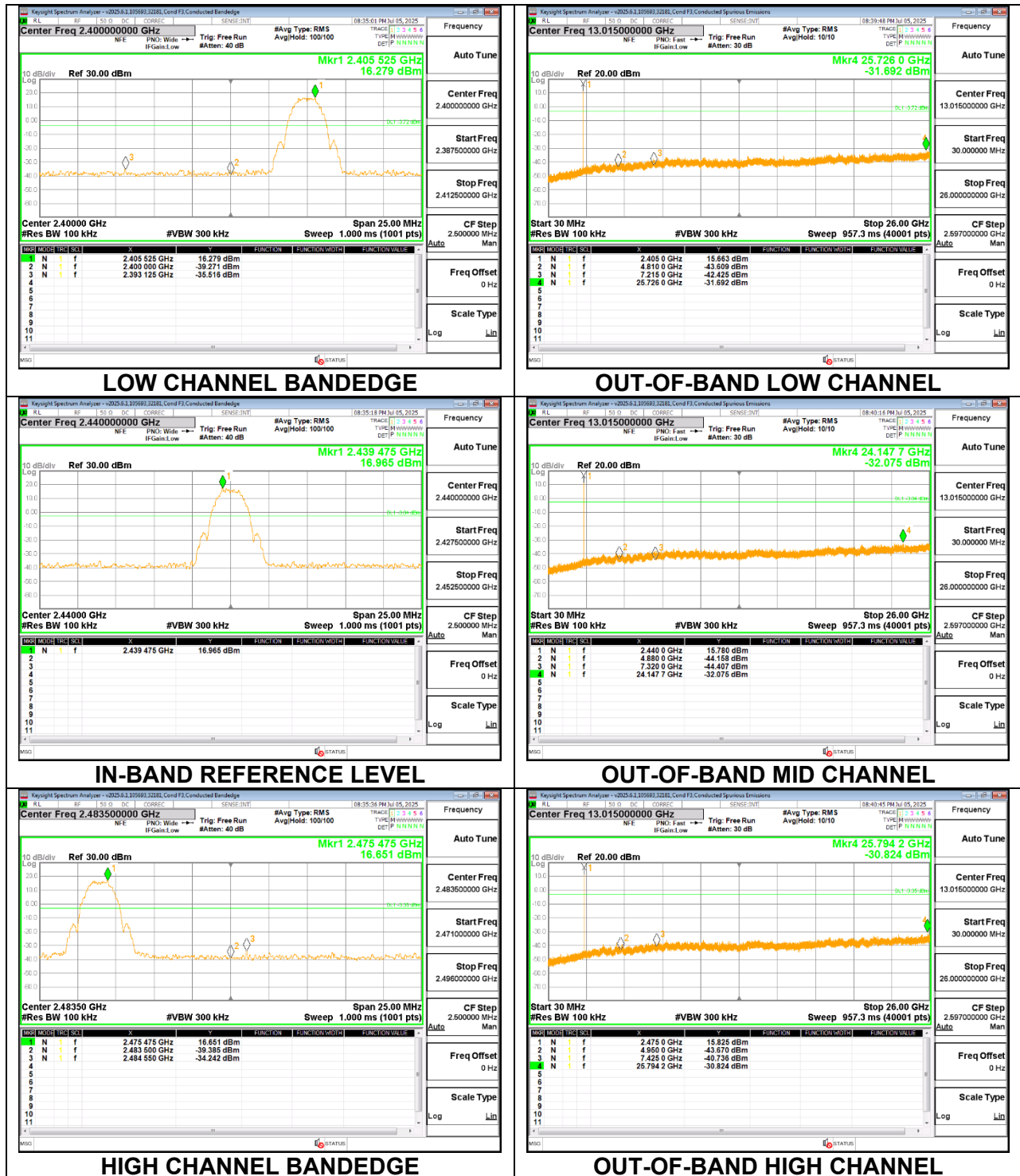
Output power was measured based on the use of a peak measurement; therefore, the required attenuation is 20 dBc.

RESULTS

9.7.1. HIGH POWER

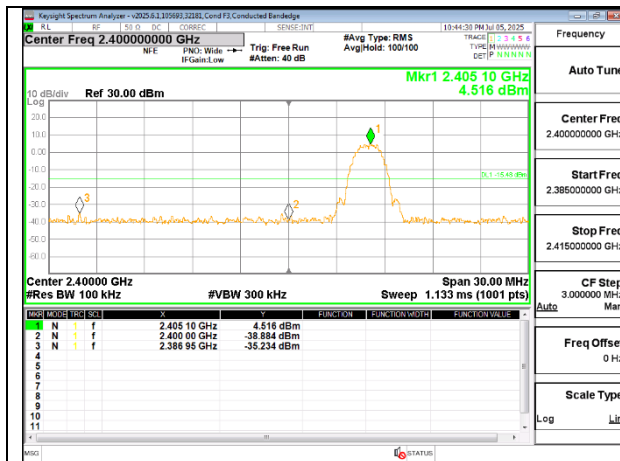
ANT 4



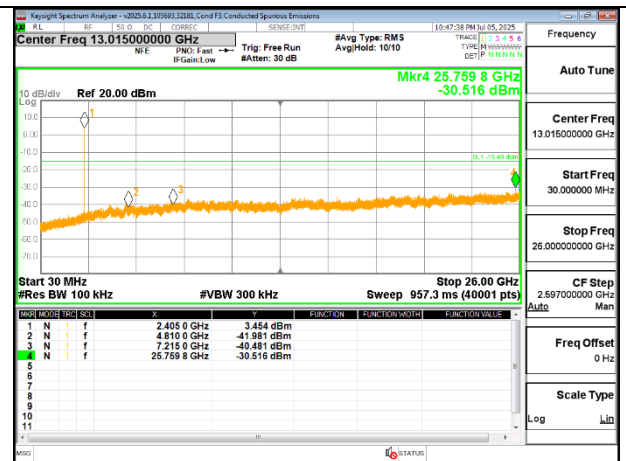
ANT 3

9.7.2. LOW POWER

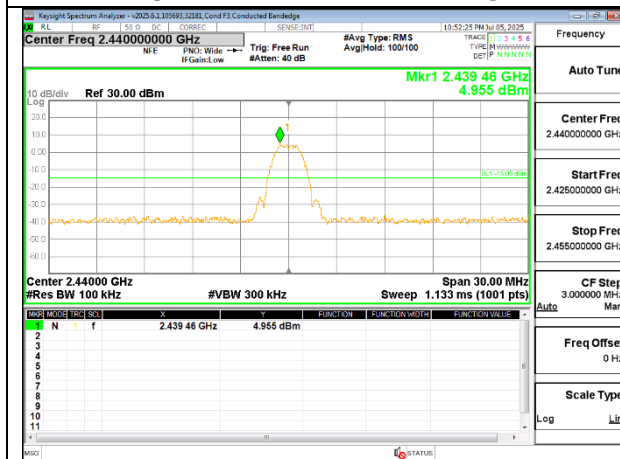
ANT 4



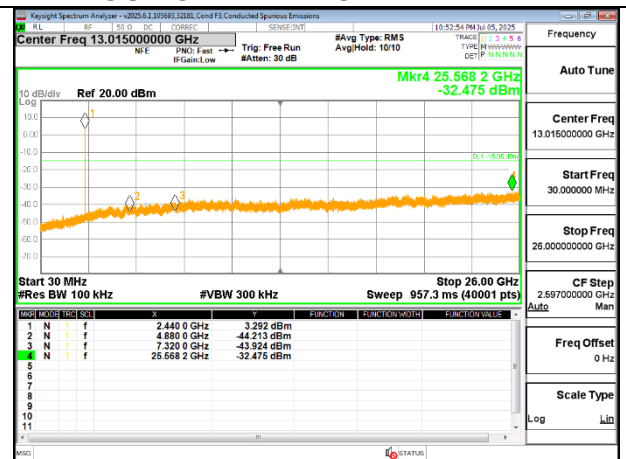
LOW CHANNEL BANDEDGE



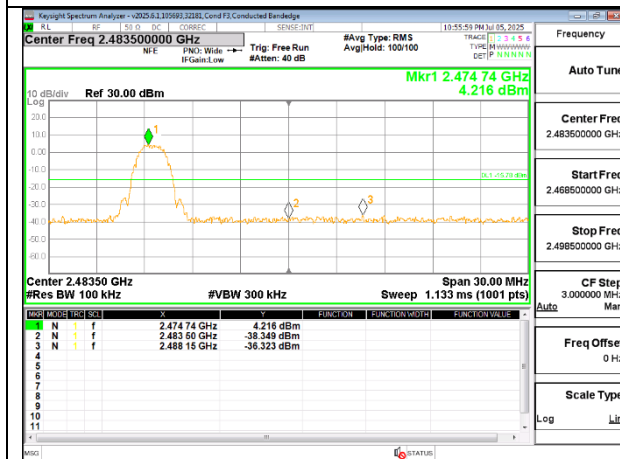
OUT-OF-BAND LOW CHANNEL



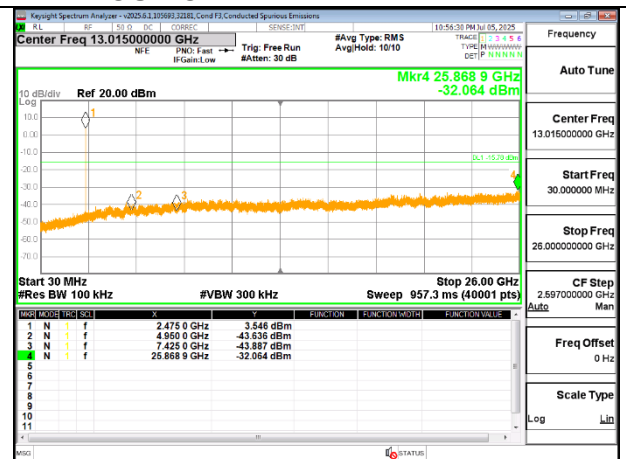
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL

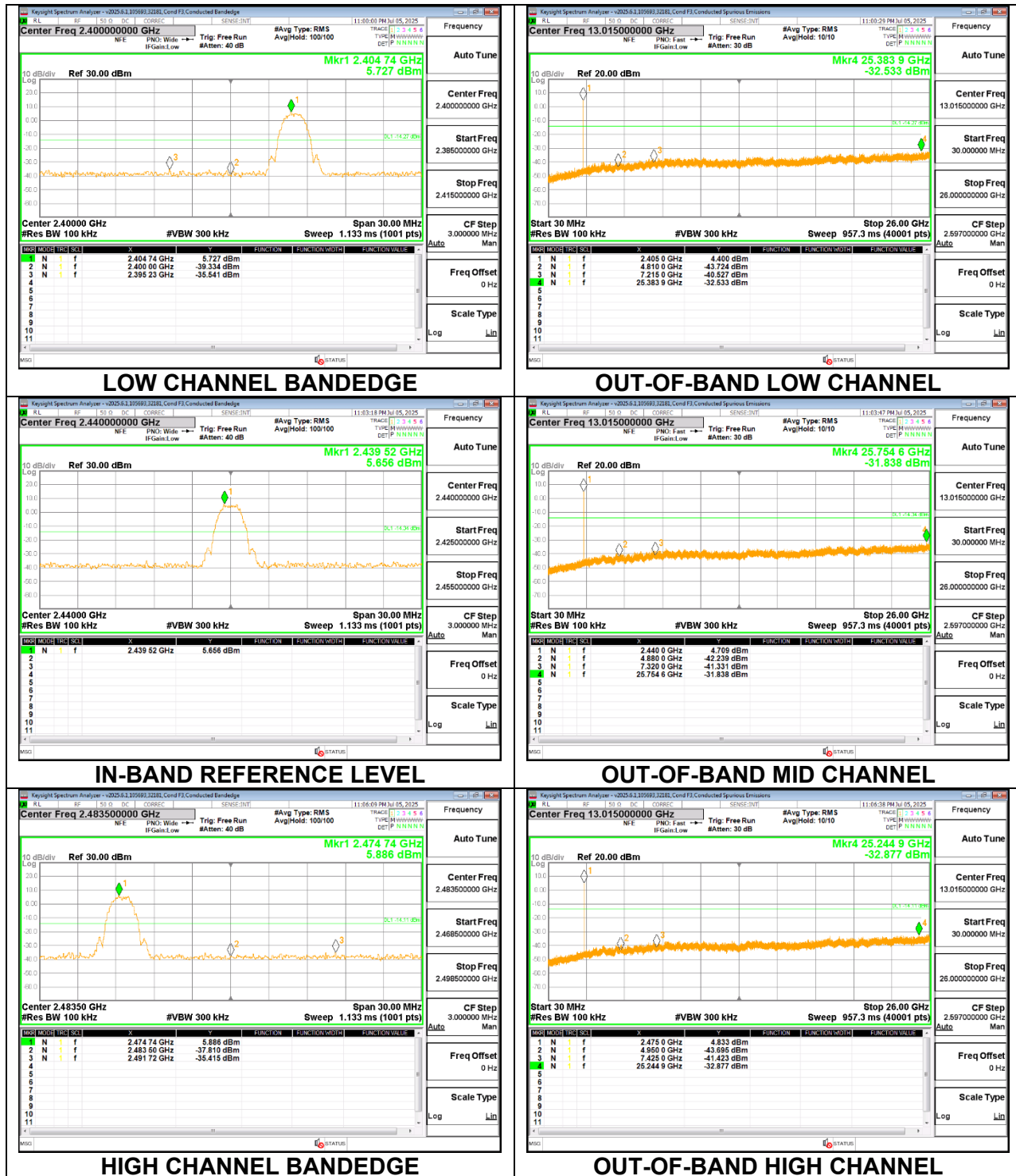


HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

ANT 3



10. RADIATED TEST RESULTS

LIMITS

FCC §15.205 and §15.209

RSS-GEN, Section 8.9 and 8.10.

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
0.009-0.490	2400/F(kHz) @ 300 m	-
0.490-1.705	24000/F(kHz) @ 30 m	-
1.705 - 30	30 @ 30m	-
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz: 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For pre-scans above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 KHz for peak measurements.

For final measurements above 1 GHz, the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and as applicable for average measurements.

The spectrum from 1 GHz to 18 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band. Below 1GHz and above 18GHz emissions, the channel with the highest output power was tested.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

Note: The limits in CFR 47, Part 15, Subpart C, paragraph 15.209(a), are identical to those in RSS-Gen section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as report in the table) using free space impedance of 377 Ohms. For example, the measurement at frequency X kHz resulted in a level of Y dBuV/m, which is equivalent to $Y-51.5 = Z$ dBuA/m, which has the same margin, W dB to the corresponding RSS-Gen Table 6 limit as it has to 15.209(a) limit.

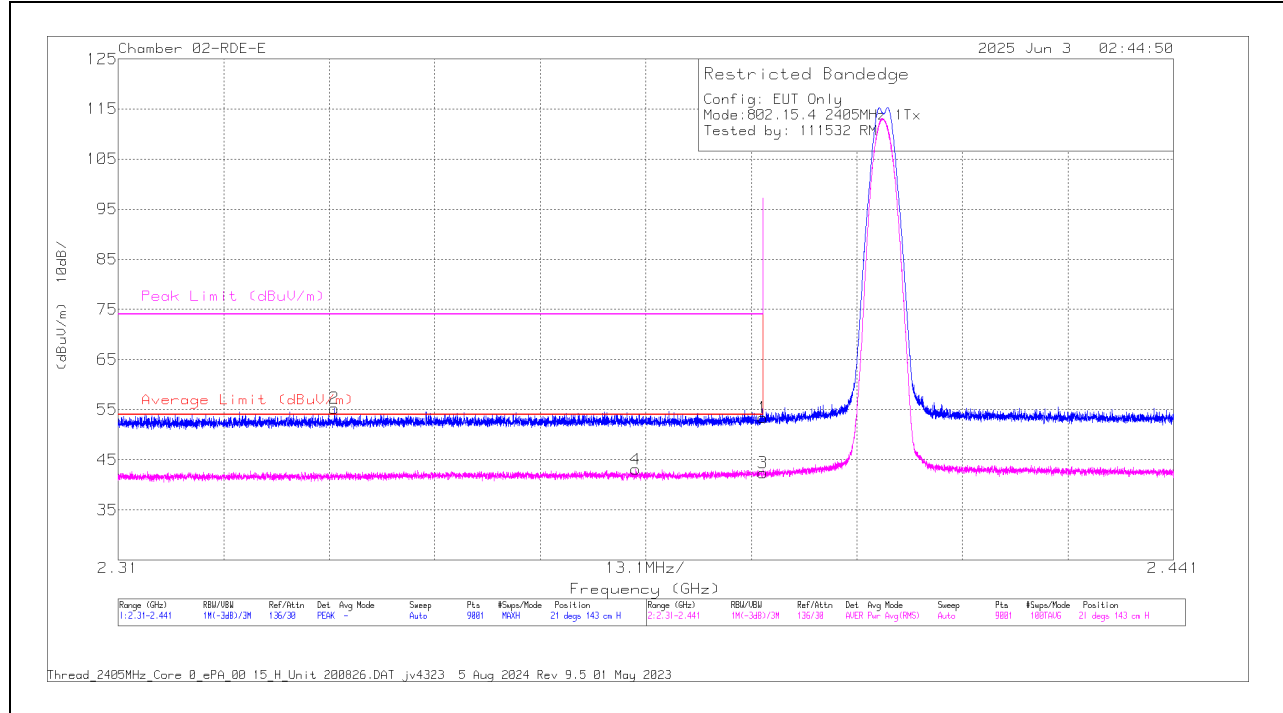
Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

KDB 414788 Open Field Site(OFS) and Chamber Correlation Justification

OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

KDB 558074 D01 15.247 Meas Guidance v05r02

Use of a duty cycle correction factor (DCCF) is permitted for calculating average radiated field strength emission levels for an FHSS device in 15.247. This DCCF can be applied when the field strength limit (e.g., within a Government Restricted band) and the conditions specified in Section 15.35(c) can be satisfied. The average radiated field strength is calculated by subtracting the DCCF from the maximum radiated field strength level as determined through measurement. The maximum radiated field strength level represents the worst-case (maximum amplitude) RMS measurement of the emission(s) during continuous transmission (i.e., not including any time intervals during which the transmitter is off or is transmitting at a reduced power level). Note that Section 15.35(c) specifies that the DCCF shall represent the worst-case (greatest duty cycle) over any 100 msec transmission period.

10.1. TRANSMITTER ABOVE 1 GHz**10.1.1. ANT4, 802.15.4 HIGH POWER BANDEDGE****LOW CHANNEL****HORIZONTAL RESULT**

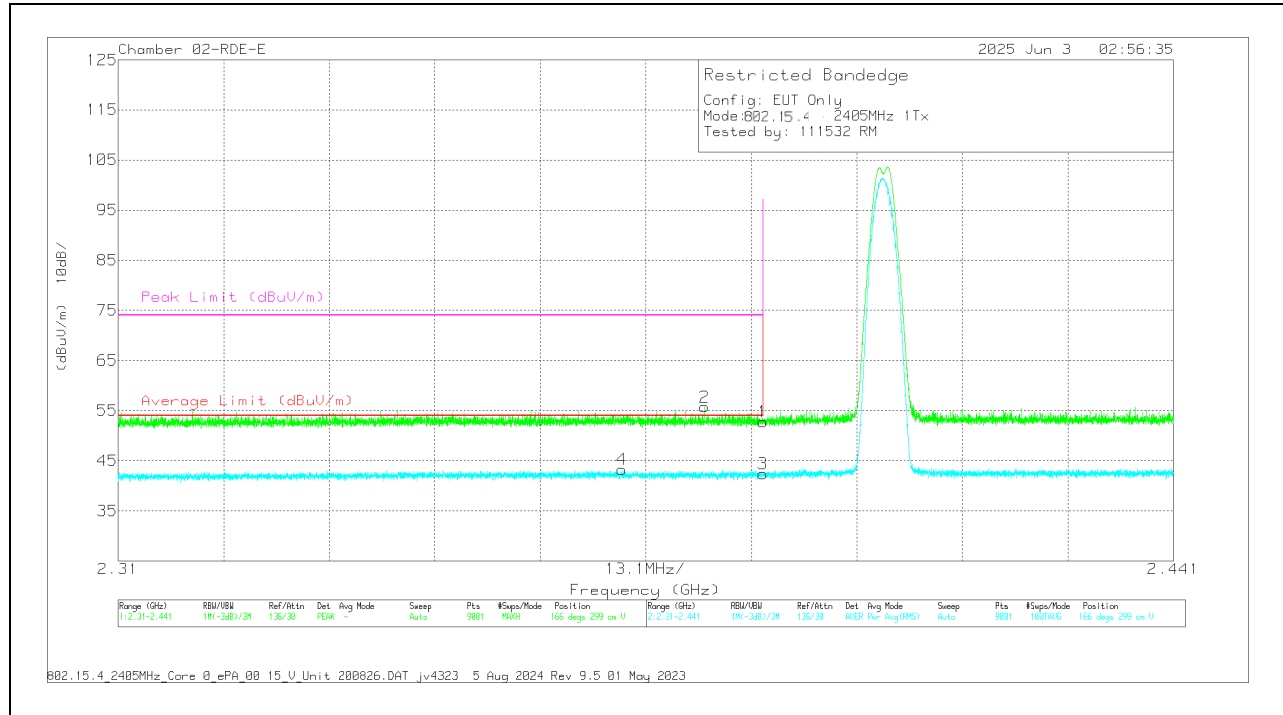
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	84796 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	60.97	Pk	32.1	0	-39.7	53.37	-	-	74	-20.63	21	143	H
2	* 2.336841	63.07	Pk	31.9	0	-39.73	55.24	-	-	74	-18.76	21	143	H
3	* 2.39	49.97	RMS	32.1	0	-39.7	42.37	54	-11.63	-	-	21	143	H
4	* 2.37425	50.71	RMS	32.1	0	-39.72	43.09	54	-10.91	-	-	21	143	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	84796 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	60.39	Pk	32.1	0	-39.7	52.79	-	-	74	-21.21	166	299	V
2	* 2.382809	63.3	Pk	32.1	0	-39.68	55.72	-	-	74	-18.28	166	299	V
3	* 2.39	50.02	RMS	32.1	0	-39.7	42.42	54	-11.58	-	-	166	299	V
4	* 2.372503	50.93	RMS	32.1	0	-39.72	43.31	54	-10.69	-	-	166	299	V

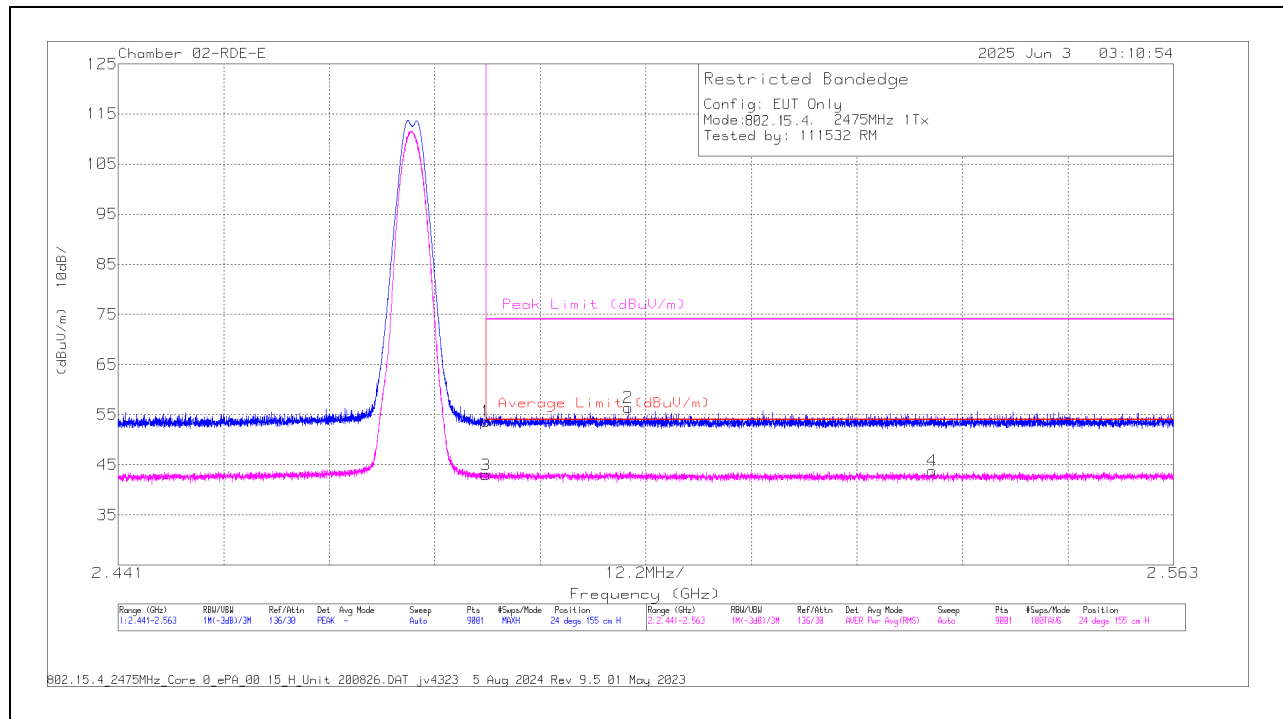
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

HIGH CHANNEL

HORIZONTAL RESULT



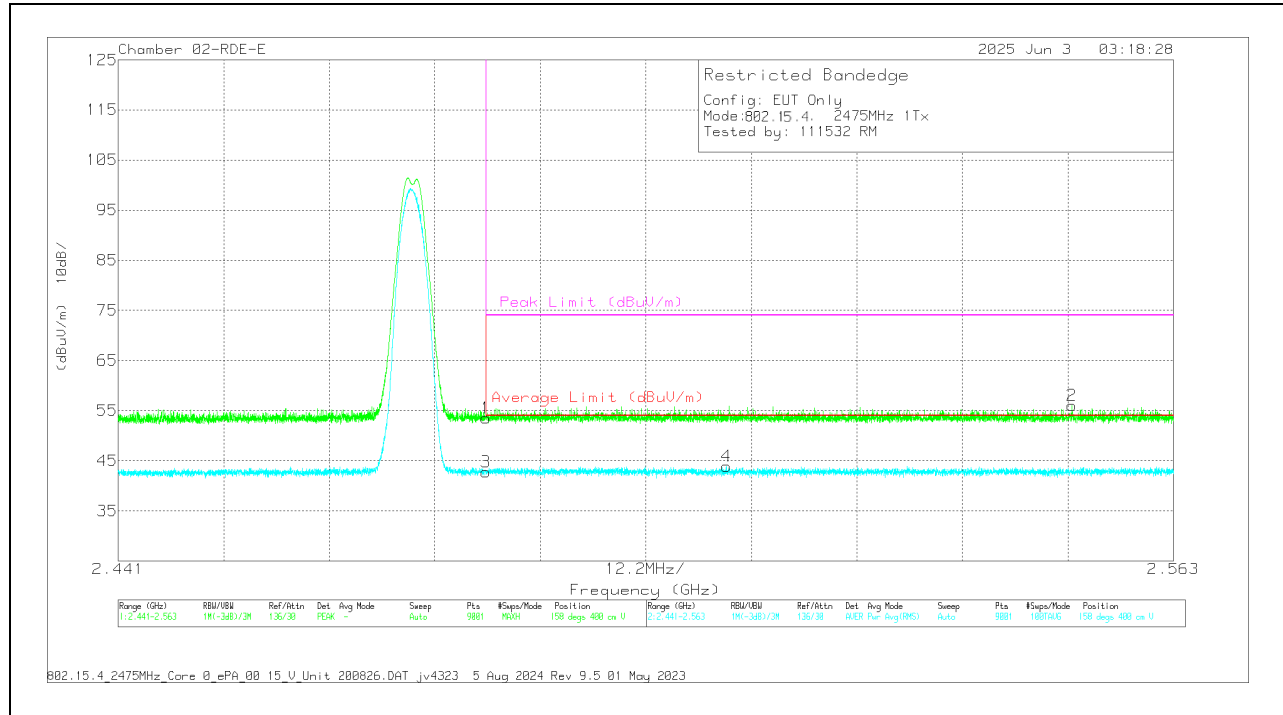
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	84796 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	60.73	Pk	32.5	0	-39.58	53.65	-	-	74	-20.35	24	155	H
2	* 2.499969	63.41	Pk	32.5	0	-39.51	56.4	-	-	74	-17.6	24	155	H
3	* 2.4835	50.04	RMS	32.5	0	-39.58	42.96	54	-11.04	-	-	24	155	H
4	2.535106	50.82	RMS	32.5	0	-39.52	43.8	54	-10.2	-	-	24	155	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	84796 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	60.65	Pk	32.5	0	-39.58	53.57	-	-	74	-20.43	158	400	V
2	2.551278	63	Pk	32.5	0	-39.49	56.01	-	-	74	-17.99	158	400	V
3	* 2.4835	49.86	RMS	32.5	0	-39.58	42.78	54	-11.22	-	-	158	400	V
4	2.511301	50.85	RMS	32.5	0	-39.5	43.85	54	-10.15	-	-	158	400	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

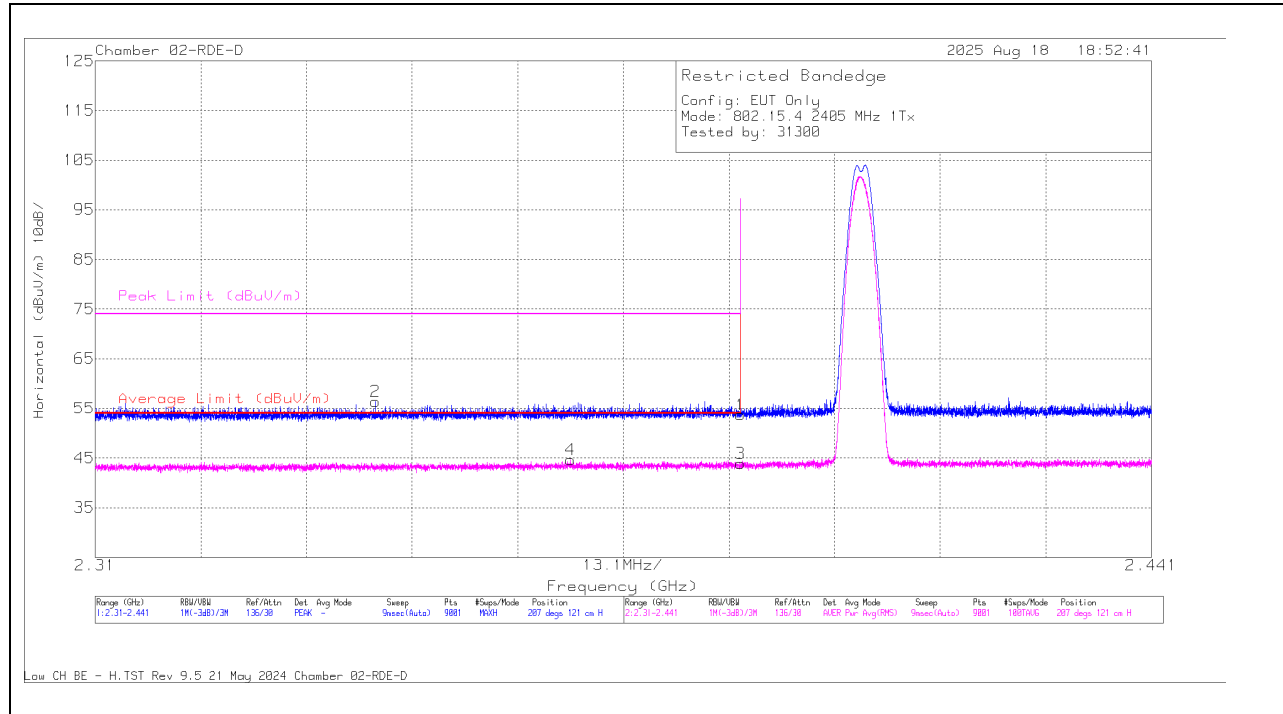
Pk - Peak detector

RMS - RMS detection

10.1.2. ANT4, 802.15.4 LOW POWER BANDEDGE

LOW CHANNEL

HORIZONTAL RESULT



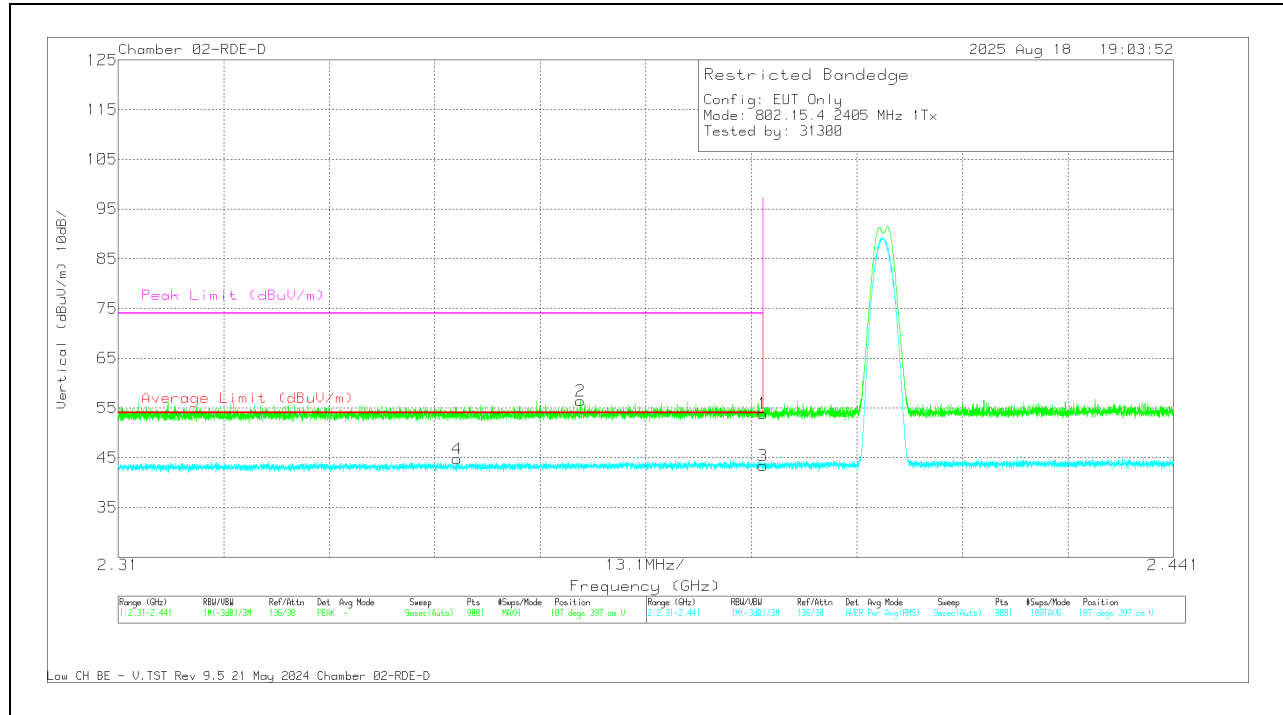
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226674 ACF (dB/m)	Amp/Cbl/Pad (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	60.08	Pk	32.2	-38.6	0	53.68	-	-	74	-20.32	207	121	H
2	* 2.34476	62.99	Pk	32	-38.6	0	56.39	-	-	74	-17.61	207	121	H
3	* 2.39	50.28	RMS	32.2	-38.6	0	43.88	54	-10.12	-	-	207	121	H
4	* 2.368966	50.96	RMS	32.1	-38.4	0	44.66	54	-9.34	-	-	207	121	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT

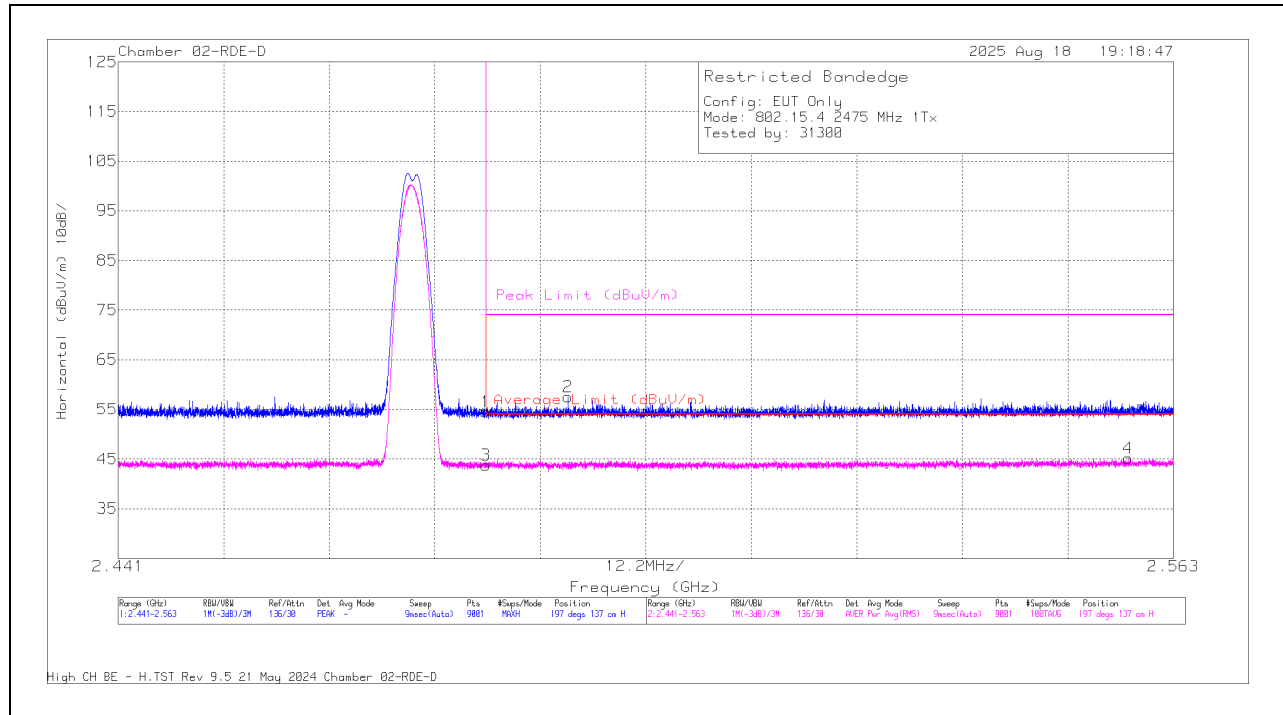


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226674 ACF (dB/m)	Amp/Cbl/Pad (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	60.29	Pk	32.2	-38.6	0	53.89	-	-	74	-20.11	107	397	V
2	* 2.367394	62.94	Pk	32.1	-38.6	0	56.44	-	-	74	-17.56	107	397	V
3	* 2.39	49.75	RMS	32.2	-38.6	0	43.35	54	-10.65	-	-	107	397	V
4	* 2.352096	51.33	RMS	32	-38.6	0	44.73	54	-9.27	-	-	107	397	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

HIGH CHANNEL**HORIZONTAL RESULT**

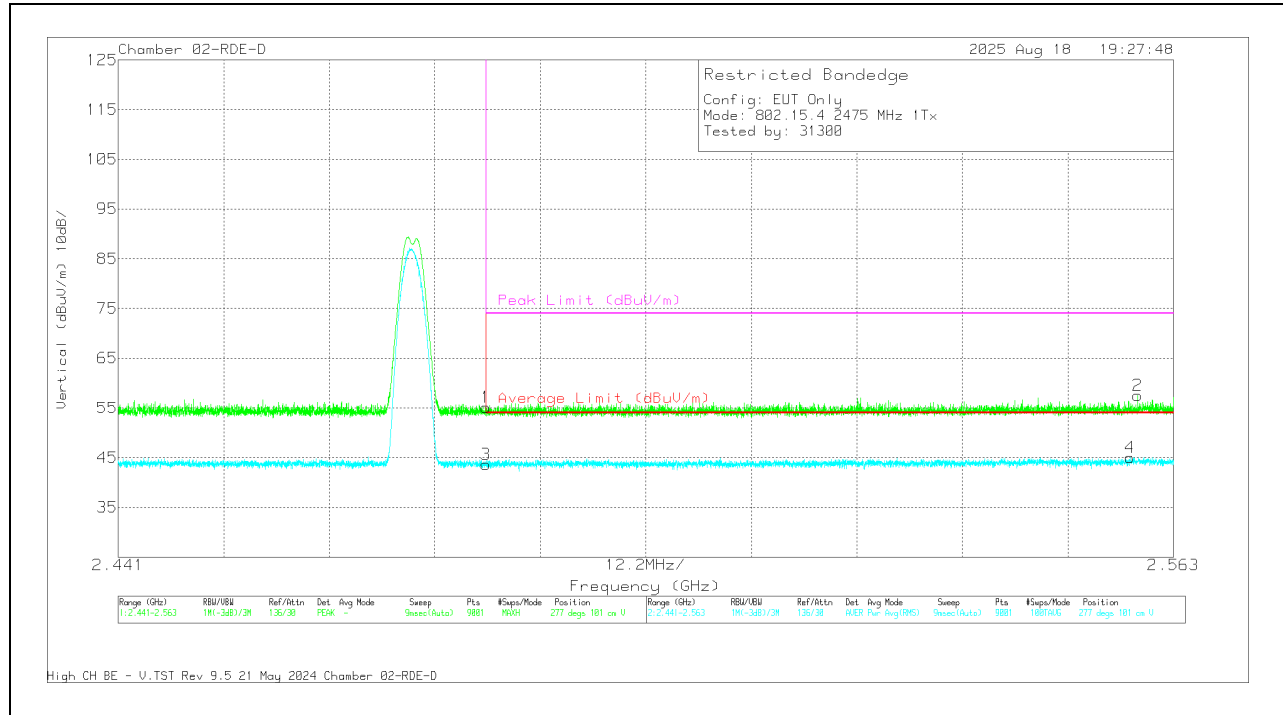
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226674 ACF (dB/m)	Amp/Cbl/Pad (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	60.62	Pk	32.2	-38.3	0	54.52	-	-	74	-19.48	197	137	H
2	* 2.492987	63.56	Pk	32.2	-38.2	0	57.56	-	-	74	-16.44	197	137	H
3	* 2.4835	49.91	RMS	32.2	-38.3	0	43.81	54	-10.19	-	-	197	137	H
4	2.557744	50.8	RMS	32.4	-38	0	45.2	54	-8.8	-	-	197	137	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226674 ACF (dB/m)	Amp/Cbl/Pad (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	61.28	Pk	32.2	-38.3	0	55.18	-	-	74	-18.82	277	101	V
2	2.558883	63.13	Pk	32.4	-38	0	57.53	-	-	74	-16.47	277	101	V
3	* 2.4835	49.71	RMS	32.2	-38.3	0	43.61	54	-10.39	-	-	277	101	V
4	2.557961	50.59	RMS	32.4	-38	0	44.99	54	-9.01	-	-	277	101	V

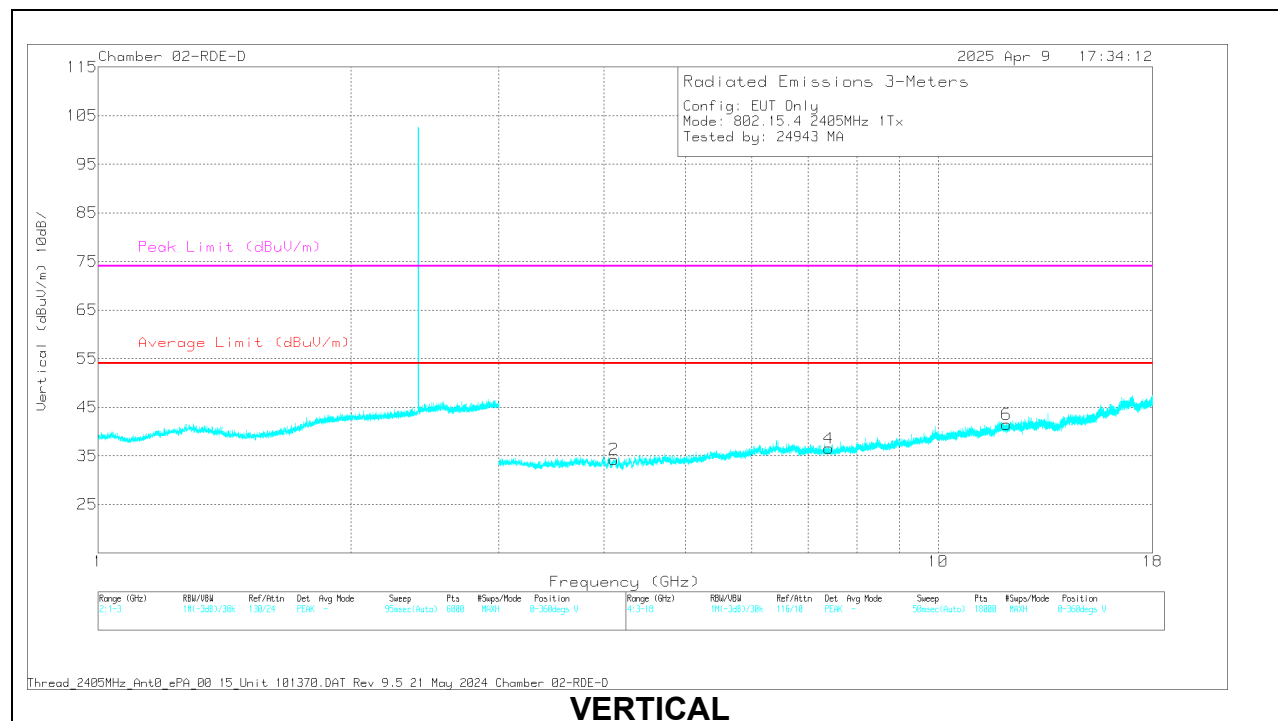
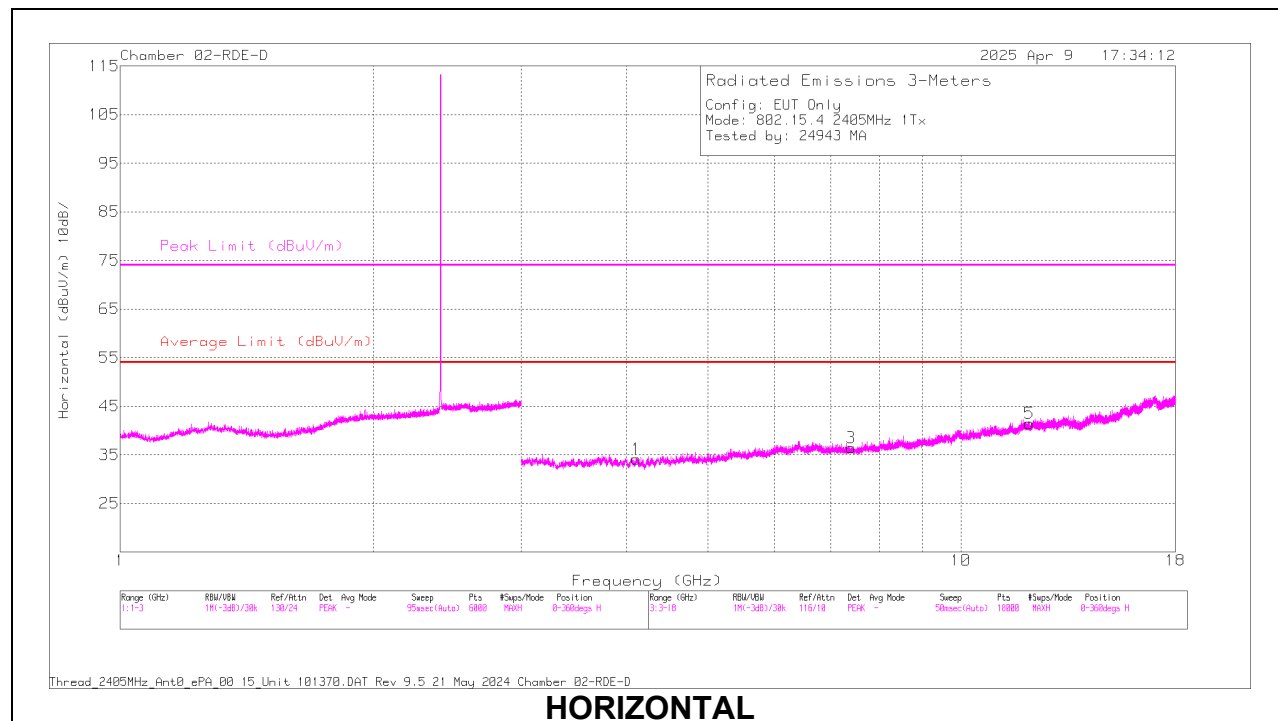
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

10.1.3. ANT4, 802.15.4 HIGH POWER, HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



RADIATED EMISSIONS

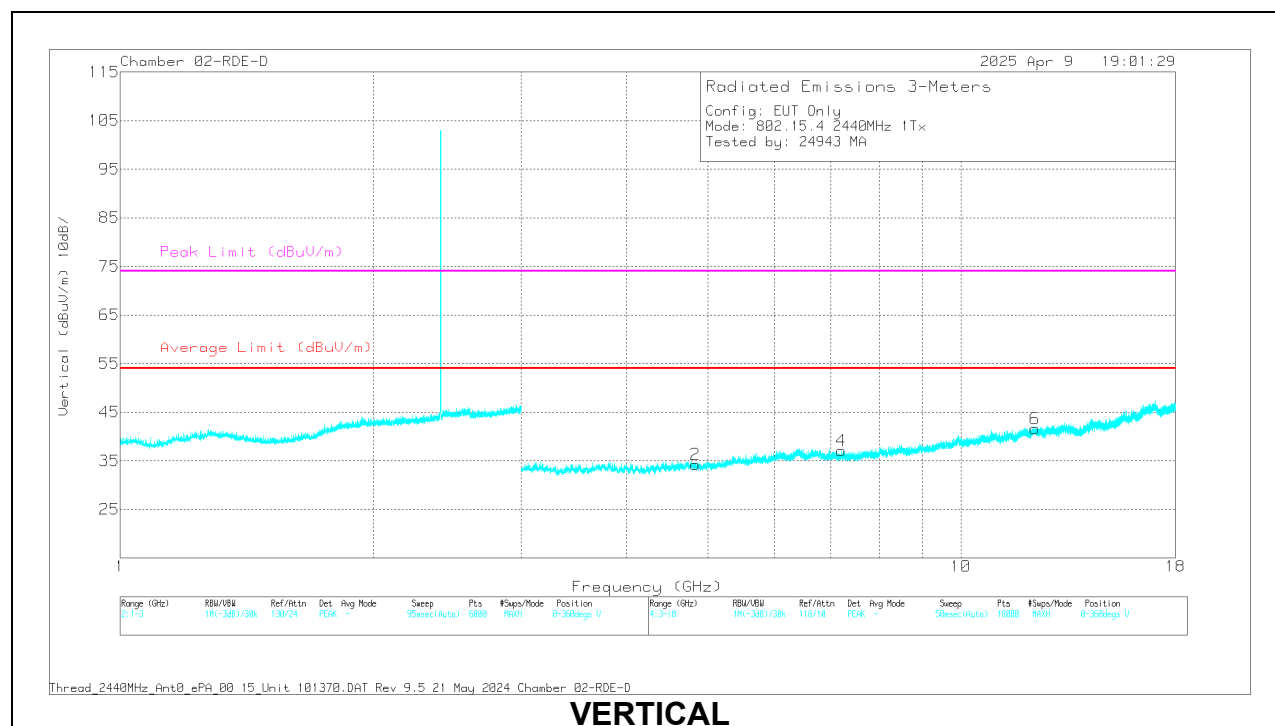
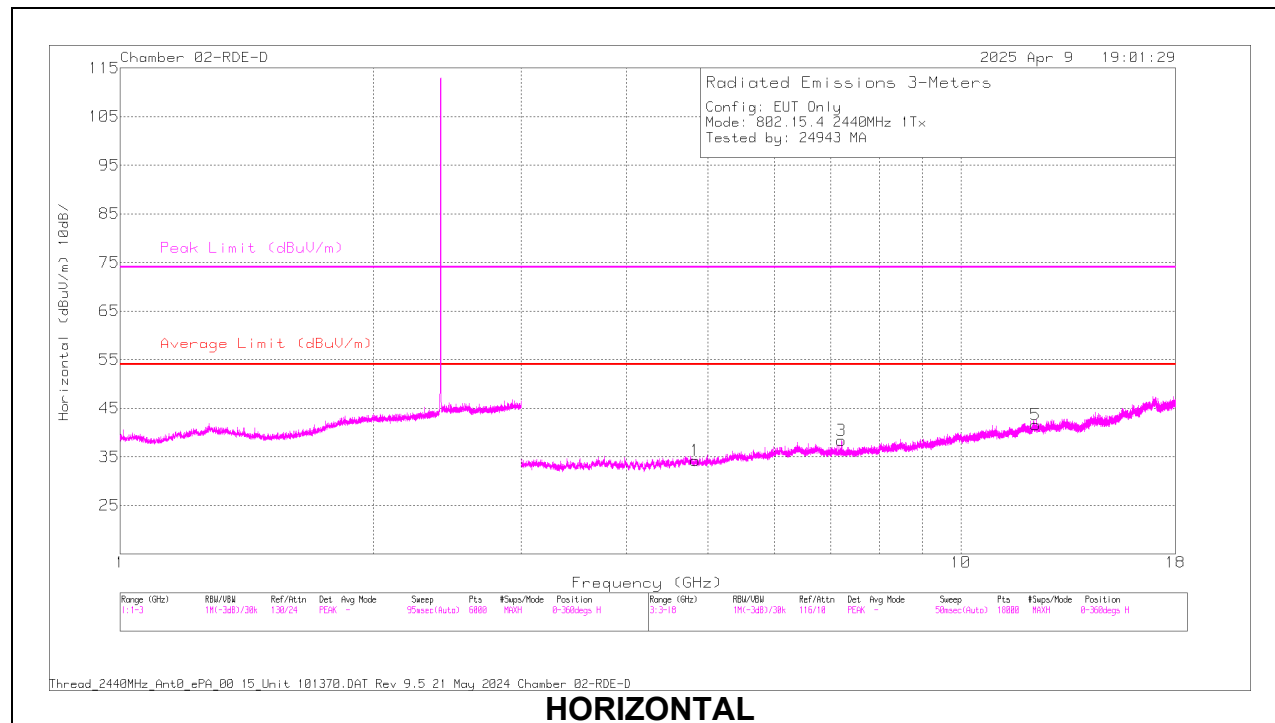
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	226674 ACF (dB/m)	Amp/Cbl/Filtr (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4116.998	56.89	PK2	33.4	-45.8	0	44.49	-	-	74	-29.51	360	101	H
	* 4110.073	45.38	MAv1	33.4	-45.9	0	32.88	54	-21.12	-	-	360	101	H
2	* 4110.549	56.55	PK2	33.4	-45.9	0	44.05	-	-	74	-29.95	360	101	V
	* 4112.18	45.15	MAv1	33.4	-45.9	0	32.65	54	-21.35	-	-	360	101	V
3	* 7419.538	53.38	PK2	35.7	-42.4	0	46.68	-	-	74	-27.32	360	101	H
	* 7421.498	41.57	MAv1	35.7	-42.5	0	34.77	54	-19.23	-	-	360	101	H
4	* 7412.165	52.93	PK2	35.7	-42.5	0	46.13	-	-	74	-27.87	360	200	V
	* 7404.516	41.6	MAv1	35.7	-42.4	0	34.9	54	-19.1	-	-	360	200	V
5	* 12072.965	52.57	PK2	38.8	-39.9	0	51.47	-	-	74	-22.53	360	101	H
	* 12072.485	40.81	MAv1	38.8	-40	0	39.61	54	-14.39	-	-	360	101	H
6	* 12073.439	52.54	PK2	38.8	-39.8	0	51.54	-	-	74	-22.46	360	200	V
	* 12052.274	40.73	MAv1	38.8	-39.7	0	39.83	54	-14.17	-	-	360	200	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL RESULTS



RADIATED EMISSIONS

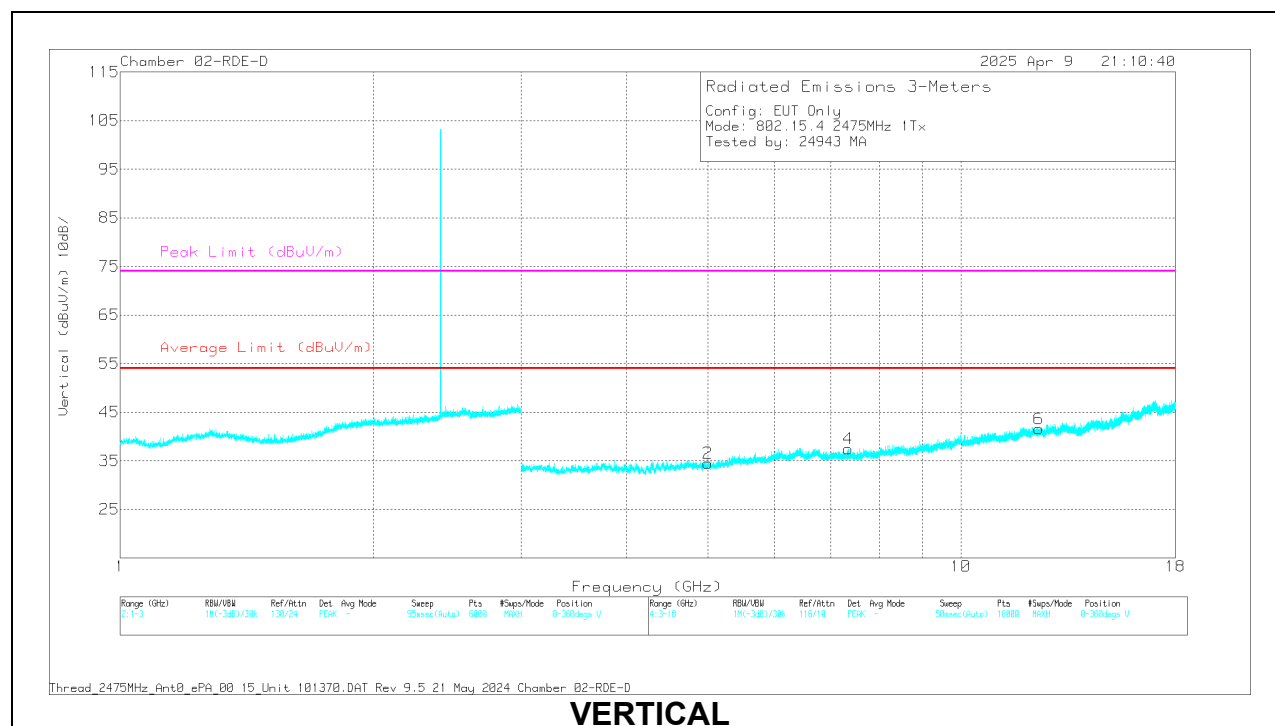
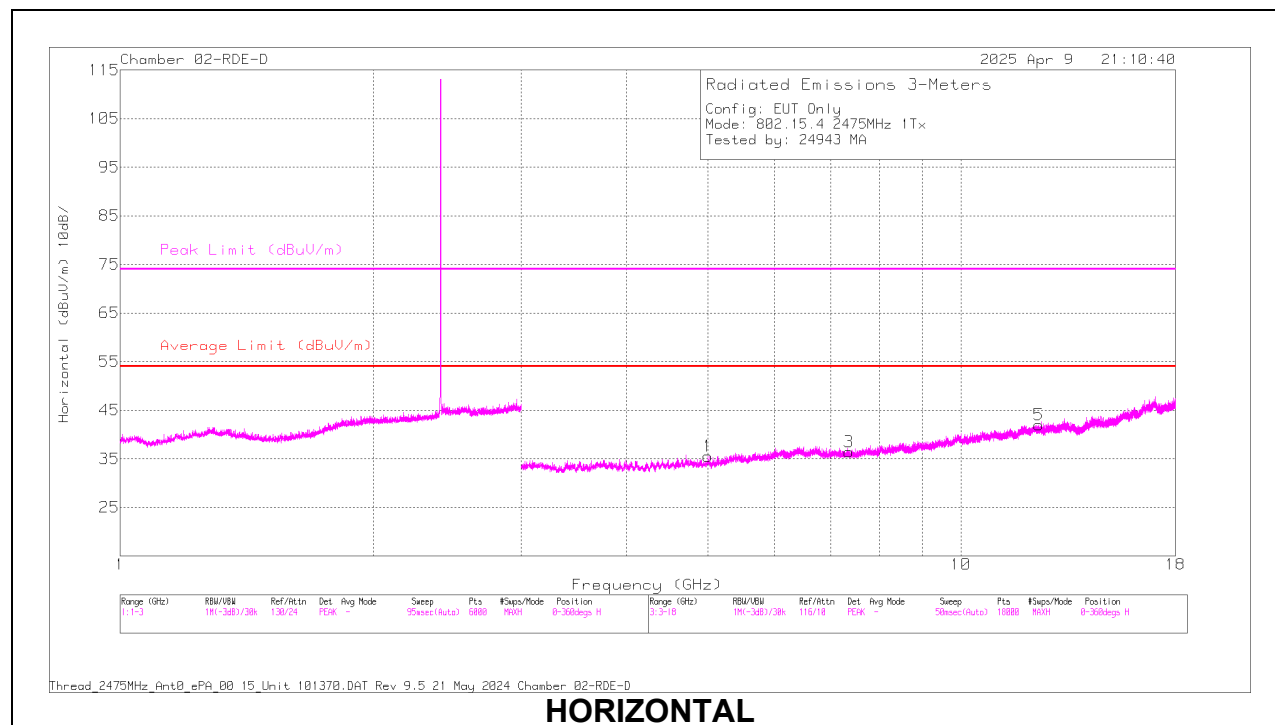
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	226674 ACF (dB/m)	Amp/Cbl/Filtr (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4827.929	55.87	PK2	34.1	-45.4	0	44.57	-	-	74	-29.43	360	101	H
	* 4816.169	44.21	MAv1	34.1	-45.3	0	33.01	54	-20.99	-	-	360	101	H
2	* 4829.578	55.65	PK2	34.1	-45.3	0	44.45	-	-	74	-29.55	222	101	V
	* 4836.374	44.16	MAv1	34.1	-45.2	0	33.06	54	-20.94	-	-	222	101	V
3	7213.479	54.7	PK2	35.7	-42.5	0	47.9	-	-	-	-	222	109	H
	7213.319	44.98	MAv1	35.7	-42.5	0	38.18	-	-	-	-	222	109	H
4	7216.572	53.73	PK2	35.7	-42.3	0	47.13	-	-	-	-	191	217	V
	7213.314	42.79	MAv1	35.7	-42.5	0	35.99	-	-	-	-	191	217	V
5	* 12260.955	52.88	PK2	38.9	-39.6	0	52.18	-	-	74	-21.82	222	200	H
	* 12256.395	40.92	MAv1	38.9	-39.5	0	40.32	54	-13.68	-	-	222	200	H
6	* 12252.374	52.38	PK2	38.9	-39.6	0	51.68	-	-	74	-22.32	191	200	V
	* 12258.641	40.62	MAv1	38.9	-39.5	0	40.02	54	-13.98	-	-	191	200	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL RESULTS



RADIATED EMISSIONS

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	226674 ACF (dB/m)	Amp/Cbl/Filtr (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5014.586	55.41	PK2	34.2	-45	0	44.61	-	-	74	-29.39	360	101	H
	* 5021.932	43.85	MAv1	34.1	-45.1	0	32.85	54	-21.15	-	-	360	101	H
2	* 4982.432	55.01	PK2	34.1	-45.2	0	43.91	-	-	74	-30.09	360	101	V
	* 5001.334	43.88	MAv1	34.2	-45	0	33.08	54	-20.92	-	-	360	101	V
3	* 7345.924	53.13	PK2	35.7	-42.5	0	46.33	-	-	74	-27.67	360	200	H
	* 7336.808	41.75	MAv1	35.8	-42.5	0	35.05	54	-18.95	-	-	360	200	H
4	* 7366.272	53.45	PK2	35.7	-42.5	0	46.65	-	-	74	-27.35	360	200	V
	* 7333.561	41.94	MAv1	35.7	-42.6	0	35.04	54	-18.96	-	-	360	200	V
5	* 12371.252	51.8	PK2	38.8	-39.7	0	50.9	-	-	74	-23.1	360	200	H
	* 12395.283	40.52	MAv1	38.9	-39.7	0	39.72	54	-14.28	-	-	360	200	H
6	* 12374.325	51.94	PK2	38.8	-39.7	0	51.04	-	-	74	-22.96	360	200	V
	* 12380.85	40.26	MAv1	38.8	-39.7	0	39.36	54	-14.64	-	-	360	200	V

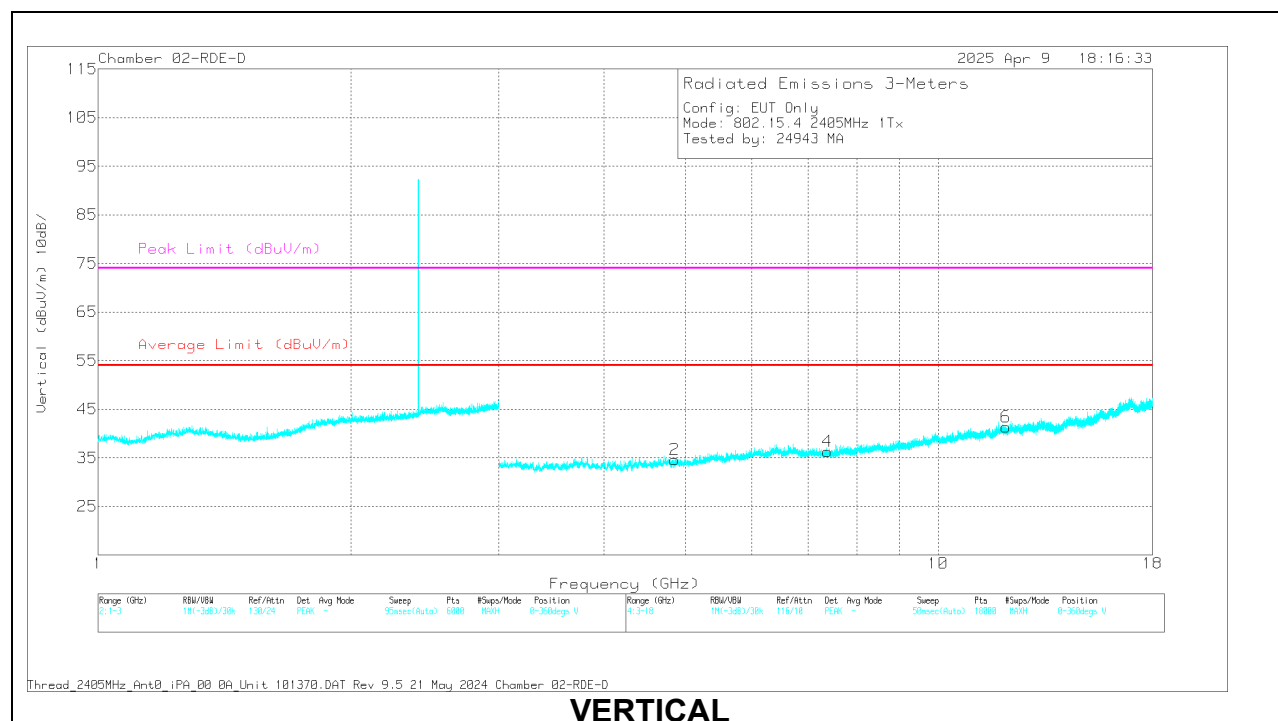
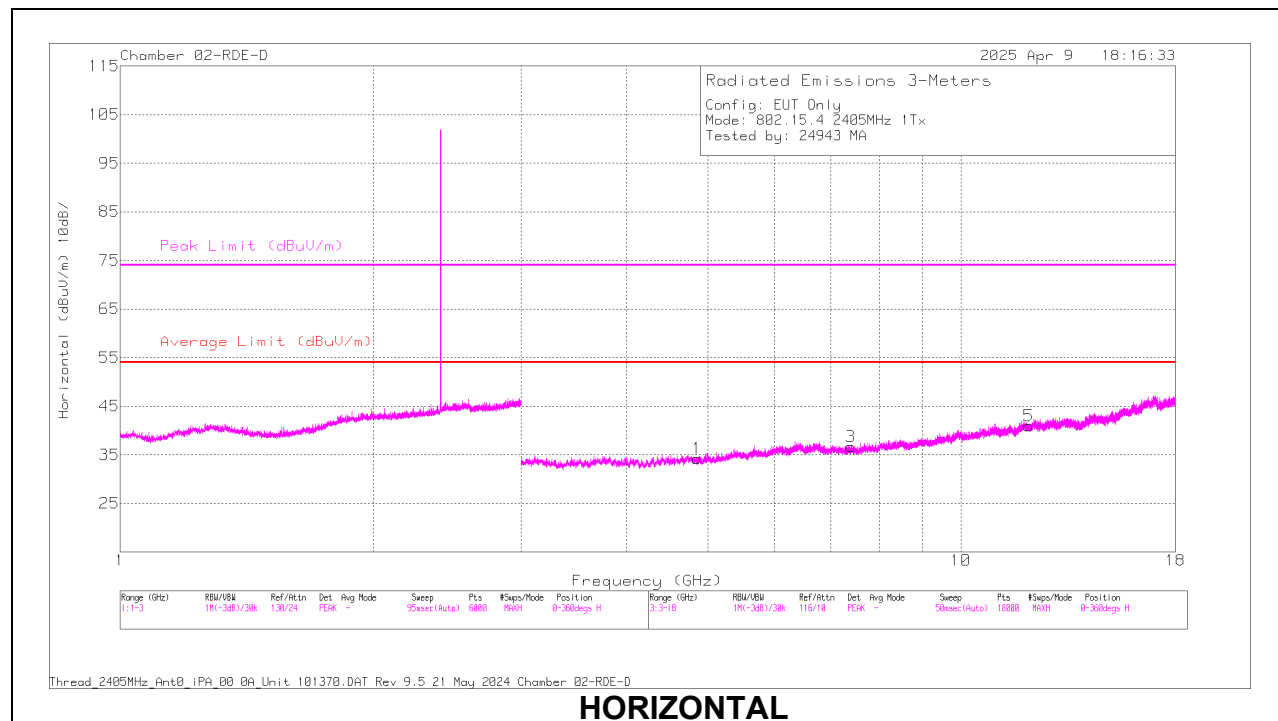
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

10.1.4. ANT4, 802.15.4 LOW POWER, HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



RADIATED EMISSIONS

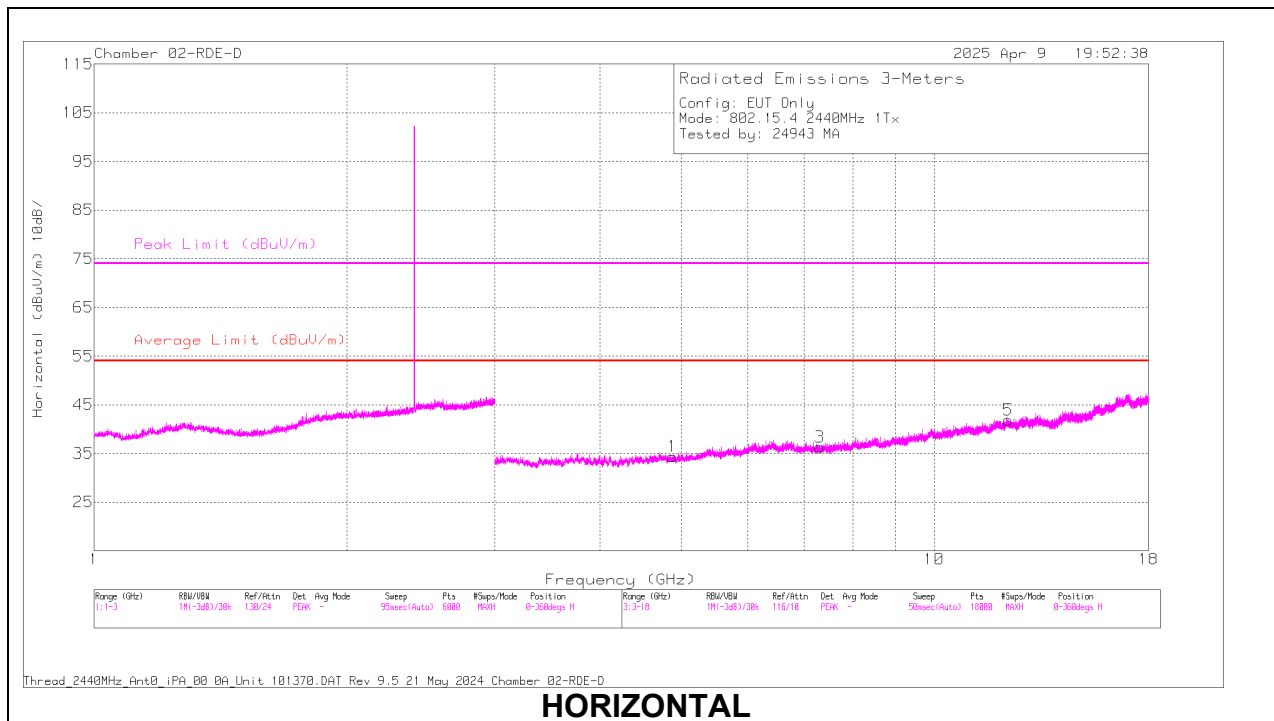
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	226674 ACF (dB/m)	Ampl/Cbl/Filtr (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4856.139	55.73	PK2	34.2	-45.2	0	44.73	-	-	74	-29.27	360	200	H
	* 4841.148	44.22	MAv1	34.1	-45.5	0	32.82	54	-21.18	-	-	360	200	H
2	* 4841.848	55.5	PK2	34.1	-45.4	0	44.2	-	-	74	-29.8	360	200	V
	* 4838.395	44.01	MAv1	34.1	-45.4	0	32.71	54	-21.29	-	-	360	200	V
3	* 7401.833	53.26	PK2	35.7	-42.2	0	46.76	-	-	74	-27.24	360	101	H
	* 7406.441	41.49	MAv1	35.7	-42.4	0	34.79	54	-19.21	-	-	360	101	H
4	* 7369.641	53.14	PK2	35.7	-42.4	0	46.44	-	-	74	-27.56	360	101	V
	* 7397.703	41.48	MAv1	35.7	-42.5	0	34.68	54	-19.32	-	-	360	101	V
5	* 12030.016	52.29	PK2	38.8	-39.9	0	51.19	-	-	74	-22.81	360	101	H
	* 12029.611	40.8	MAv1	38.8	-39.9	0	39.7	54	-14.3	-	-	360	101	H
6	* 12062.96	52.14	PK2	38.8	-40	0	50.94	-	-	74	-23.06	360	101	V
	* 12035.685	40.86	MAv1	38.8	-39.7	0	39.96	54	-14.04	-	-	360	101	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

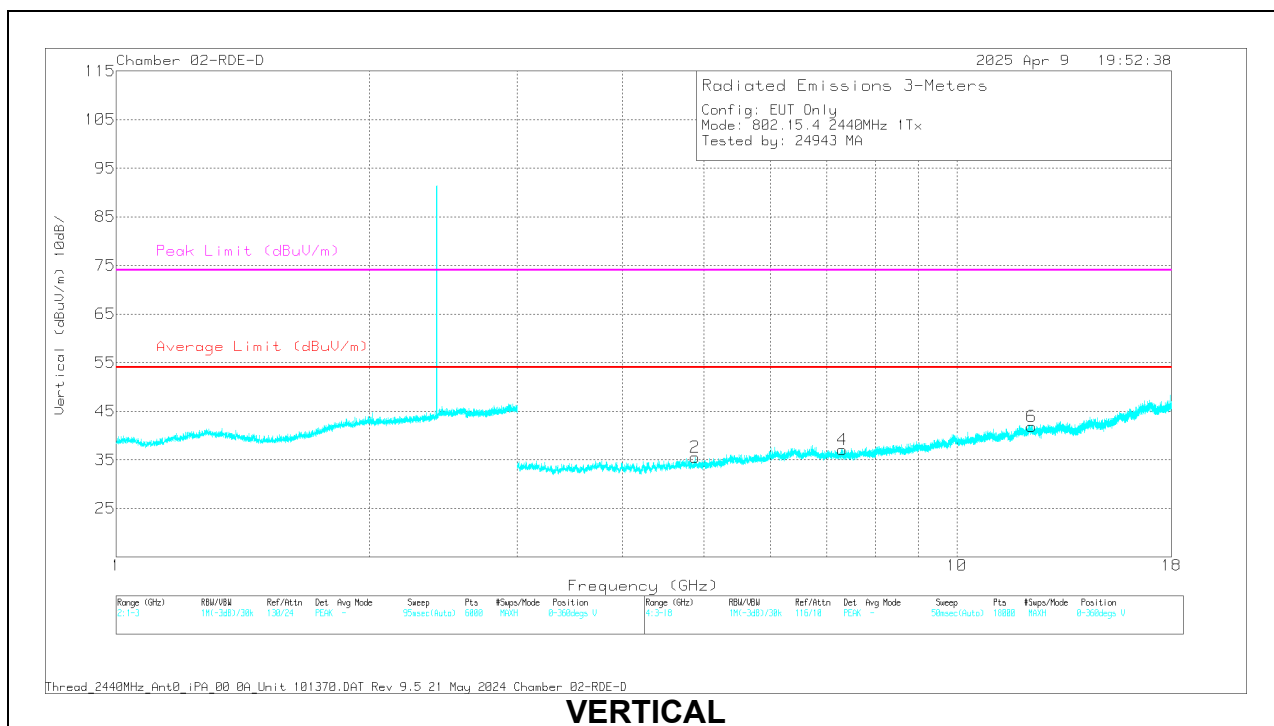
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

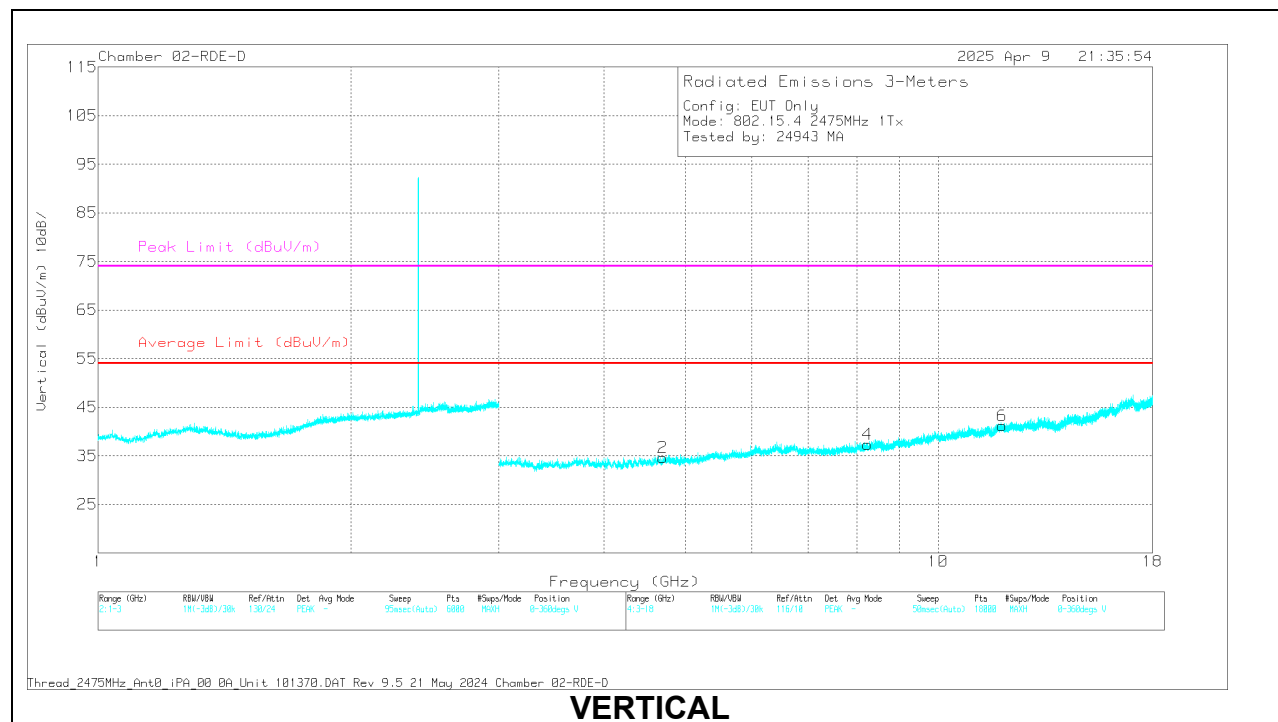
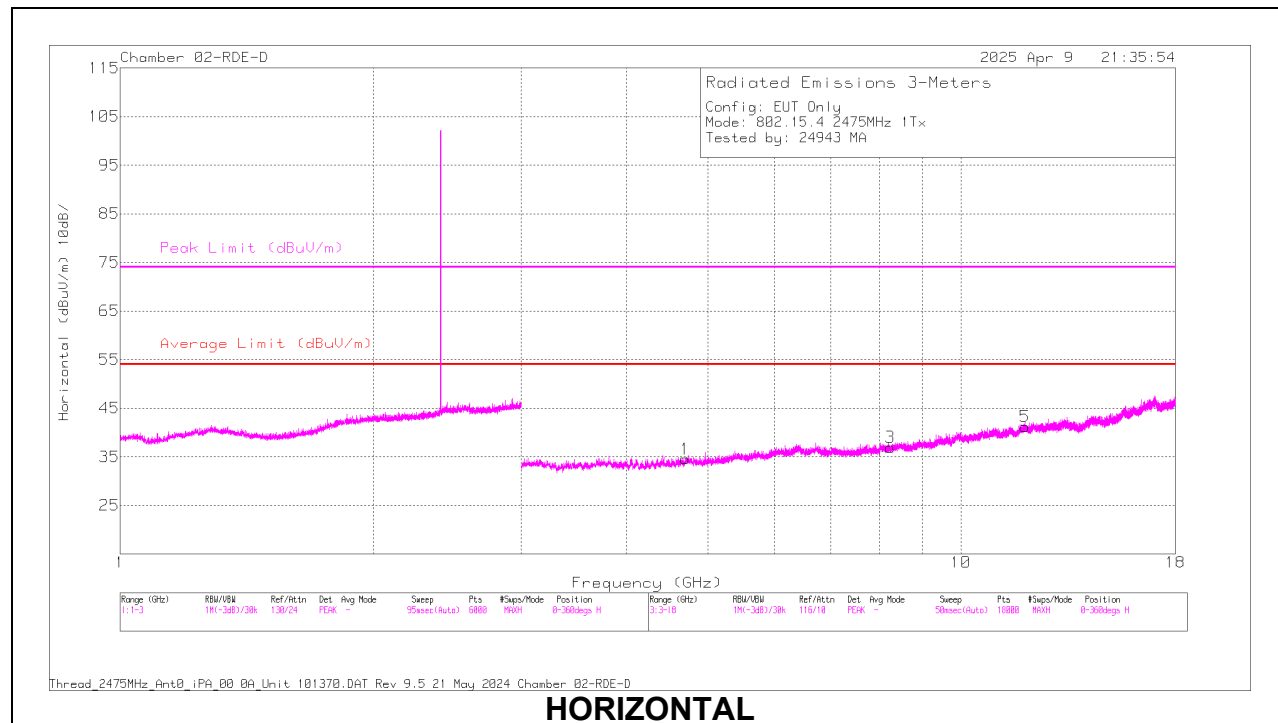
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	226674 ACF (dB/m)	Amp/Cbl/Filtr (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4873.521	55.13	PK2	34.2	-45.1	0	44.23	-	-	74	-29.77	360	101	H
	* 4894.739	43.65	MAv1	34.2	-45.1	0	32.75	54	-21.25	-	-	360	101	H
2	* 4869.352	55.26	PK2	34.2	-45.1	0	44.36	-	-	74	-29.64	360	200	V
	* 4877.157	43.76	MAv1	34.2	-45	0	32.96	54	-21.04	-	-	360	200	V
3	* 7321.493	53.03	PK2	35.7	-42.6	0	46.13	-	-	74	-27.87	360	200	H
	* 7301.764	41.79	MAv1	35.7	-42.5	0	34.99	54	-19.01	-	-	360	200	H
4	* 7299.015	54.18	PK2	35.7	-42.4	0	47.48	-	-	74	-26.52	360	200	V
	* 7306.388	41.94	MAv1	35.8	-42.8	0	34.94	54	-19.06	-	-	360	200	V
5	* 12258.278	52.19	PK2	38.9	-39.5	0	51.59	-	-	74	-22.41	360	101	H
	* 12260.478	40.66	MAv1	38.9	-39.5	0	40.06	54	-13.94	-	-	360	101	H
6	* 12283.106	52.29	PK2	38.9	-39.6	0	51.59	-	-	74	-22.41	360	200	V
	* 12266.31	40.65	MAv1	38.9	-39.6	0	39.95	54	-14.05	-	-	360	200	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL RESULTS



RADIATED EMISSIONS

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	226674 ACF (dB/m)	Amp/Cbl/Filtr (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4701.913	56.41	PK2	34.1	-46	0	44.51	-	-	74	-29.49	360	200	H
	* 4720.998	44.85	MAv1	34.1	-45.8	0	33.15	54	-20.85	-	-	360	200	H
2	* 4708.526	56.38	PK2	34	-45.8	0	44.58	-	-	74	-29.42	360	200	V
	* 4717.486	44.88	MAv1	34.1	-45.9	0	33.08	54	-20.92	-	-	360	200	V
3	* 8242.032	53.72	PK2	35.9	-42	0	47.62	-	-	74	-26.38	360	200	H
	* 8232.805	41.74	MAv1	35.9	-42.1	0	35.54	54	-18.46	-	-	360	200	H
4	* 8232.734	53.1	PK2	35.9	-42.1	0	46.9	-	-	74	-27.1	360	101	V
	* 8262.578	41.52	MAv1	35.9	-42.1	0	35.32	54	-18.68	-	-	360	101	V
5	* 11935.933	52.35	PK2	38.7	-39.8	0	51.25	-	-	74	-22.75	360	200	H
	* 11935.133	40.72	MAv1	38.7	-39.7	0	39.72	54	-14.28	-	-	360	200	H
6	* 11908.998	52.13	PK2	38.6	-39.8	0	50.93	-	-	74	-23.07	360	200	V
	* 11922.753	40.54	MAv1	38.7	-39.9	0	39.34	54	-14.66	-	-	360	200	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

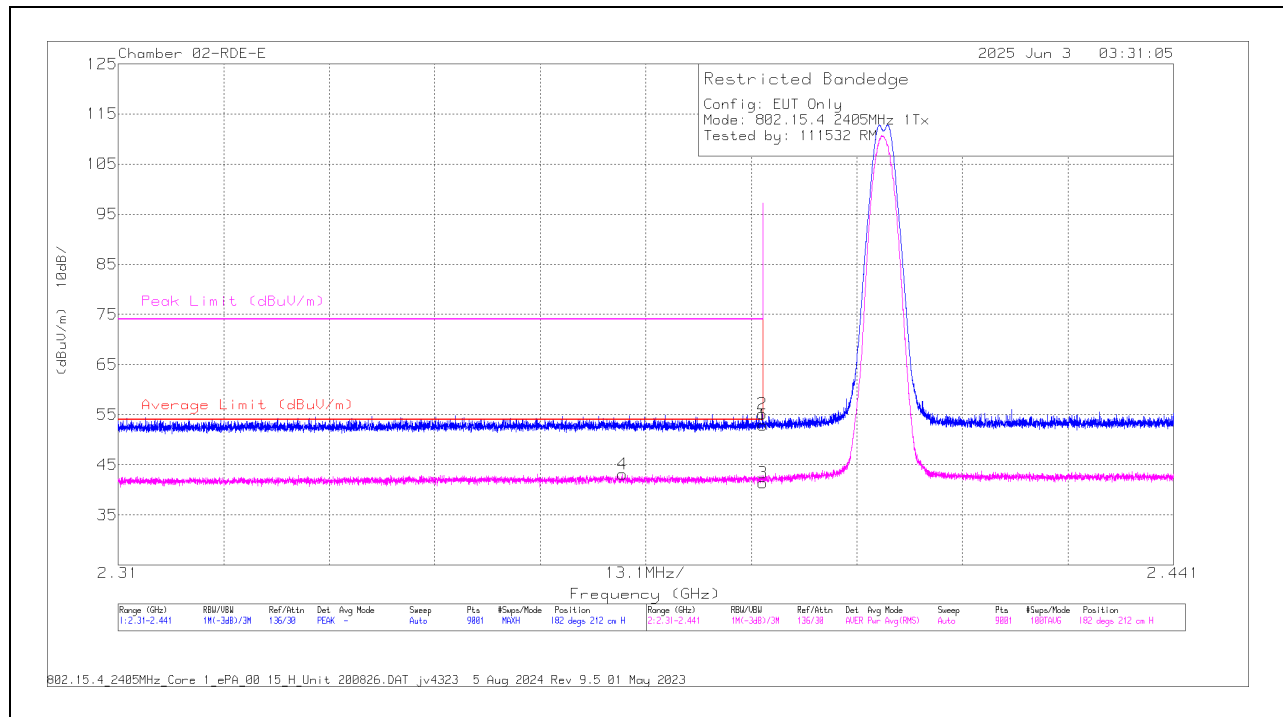
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

10.1.5. ANT3, 802.15.4 HIGH POWER BANDEGE

LOW CHANNEL

HORIZONTAL RESULT



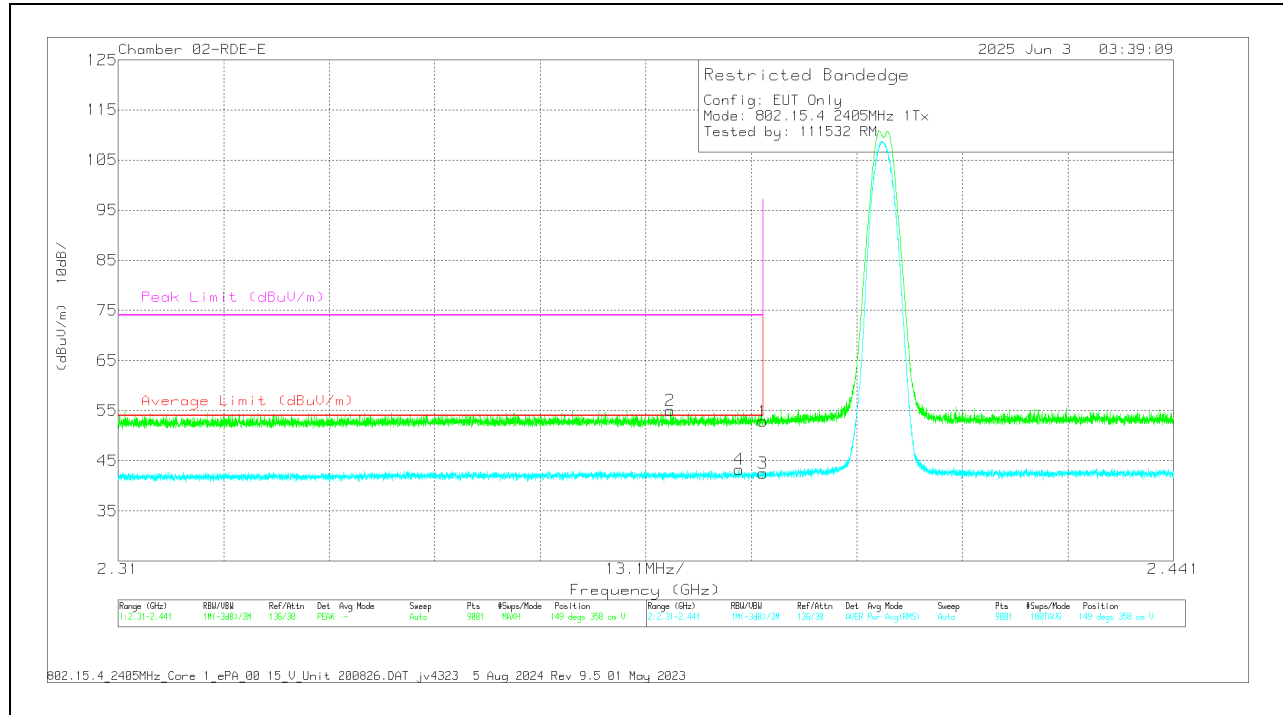
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	84796 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	60.51	Pk	32.1	0	-39.7	52.91	-	-	74	-21.09	182	212	H
2	* 2.389942	62.78	Pk	32.1	0	-39.7	55.18	-	-	74	-18.82	182	212	H
3	* 2.39	49.04	RMS	32.1	0	-39.7	41.44	54	-12.56	-	-	182	212	H
4	* 2.372605	50.73	RMS	32.1	0	-39.72	43.11	54	-10.89	-	-	182	212	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	84796 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	60.45	Pk	32.1	0	-39.7	52.85	-	-	74	-21.15	149	358	V
2	* 2.378515	62.67	Pk	32.1	0	-39.7	55.07	-	-	74	-18.93	149	358	V
3	* 2.39	50.12	RMS	32.1	0	-39.7	42.52	54	-11.48	-	-	149	358	V
4	* 2.387045	50.85	RMS	32.1	0	-39.71	43.24	54	-10.76	-	-	149	358	V

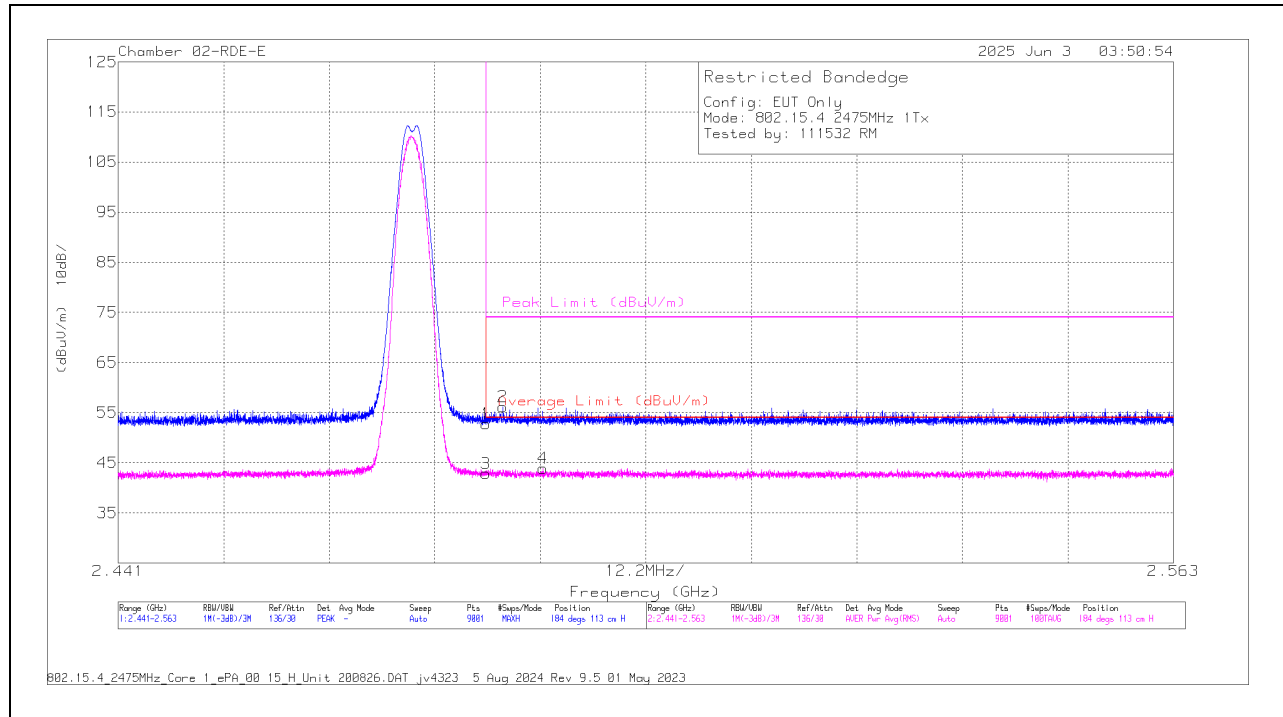
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

HIGH CHANNEL

HORIZONTAL RESULT



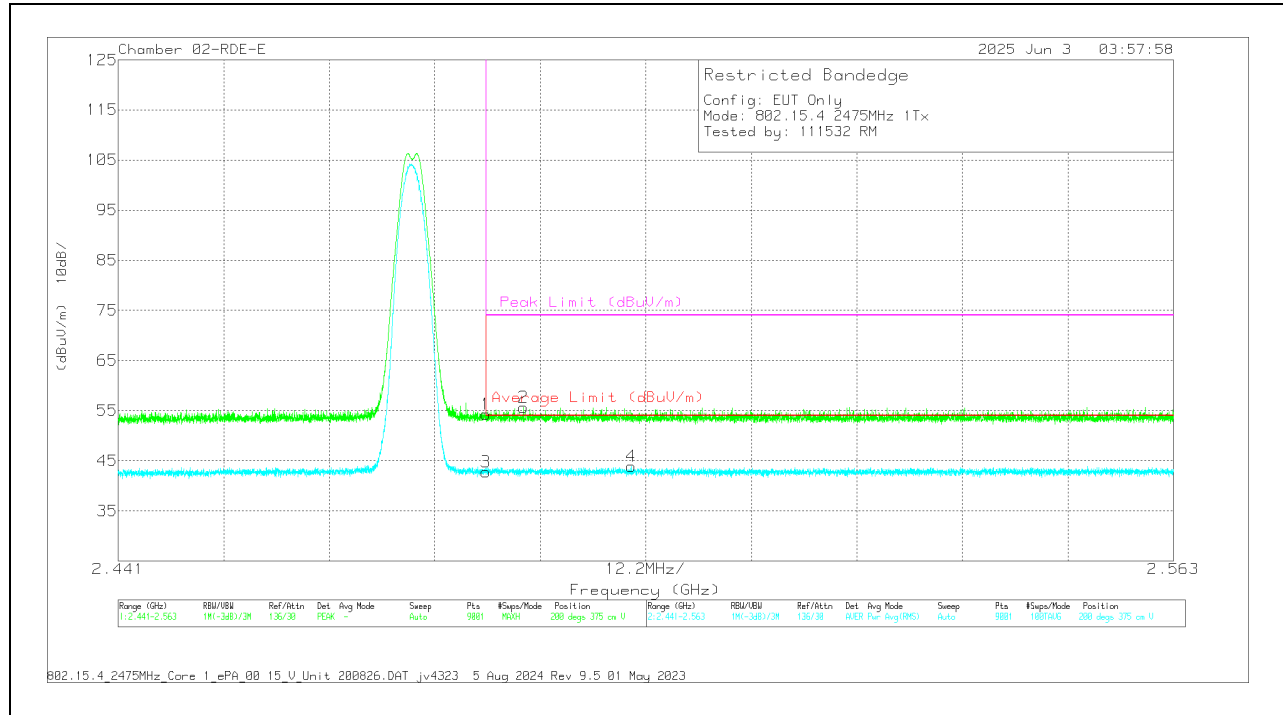
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	84796 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	59.88	Pk	32.5	0	-39.58	52.8	-	-	74	-21.2	184	113	H
2	* 2.485491	63.19	Pk	32.5	0	-39.57	56.12	-	-	74	-17.88	184	113	H
3	* 2.4835	49.91	RMS	32.5	0	-39.58	42.83	54	-11.17	-	-	184	113	H
4	* 2.490073	50.94	RMS	32.5	0	-39.57	43.87	54	-10.13	-	-	184	113	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	84796 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	61.32	Pk	32.5	0	-39.58	54.24	-	-	74	-19.76	200	375	V
2	* 2.48785	62.73	Pk	32.5	0	-39.57	55.66	-	-	74	-18.34	200	375	V
3	* 2.4835	49.82	RMS	32.5	0	-39.58	42.74	54	-11.26	-	-	200	375	V
4	2.500294	50.93	RMS	32.5	0	-39.51	43.92	54	-10.08	-	-	200	375	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

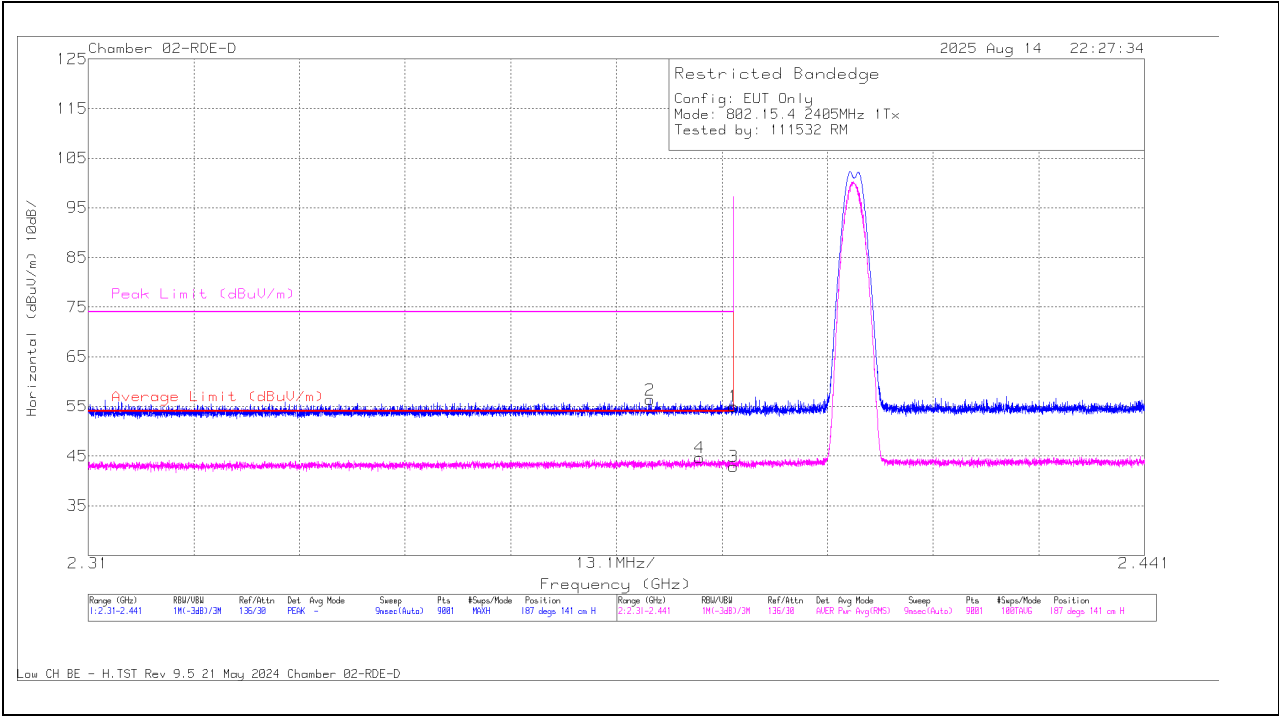
Pk - Peak detector

RMS - RMS detection

10.1.6. ANT3, 802.15.4 LOW POWER BANDEDGE

LOW CHANNEL

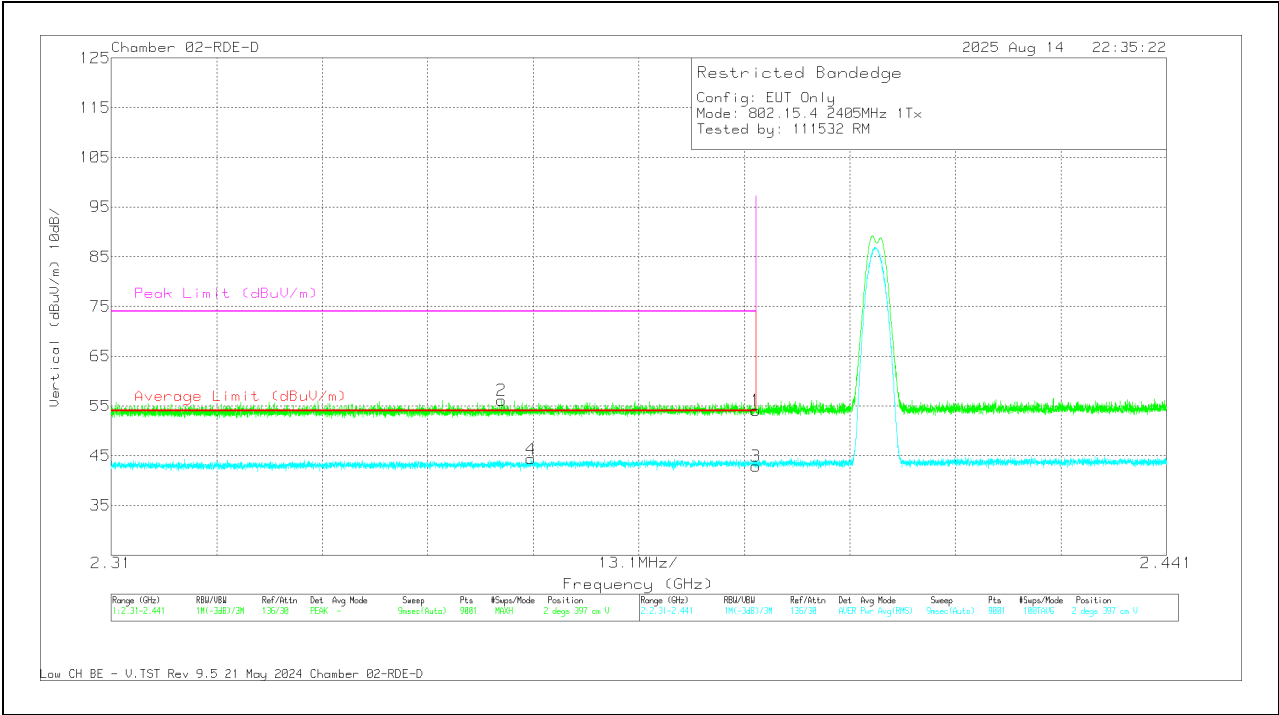
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226674 ACF (dB/m)	Amp/Cbl/Pad (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	61.39	Pk	32.2	-38.6	0	54.99	-	-	74	-19.01	187	141	H
2	* 2.379665	62.82	Pk	32.1	-38.6	0	56.32	-	-	74	-17.68	187	141	H
3	* 2.39	49.3	RMS	32.2	-38.6	0	42.9	54	-11.1	-	-	187	141	H
4	* 2.385837	51	RMS	32.2	-38.5	0	44.7	54	-9.3	-	-	187	141	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT

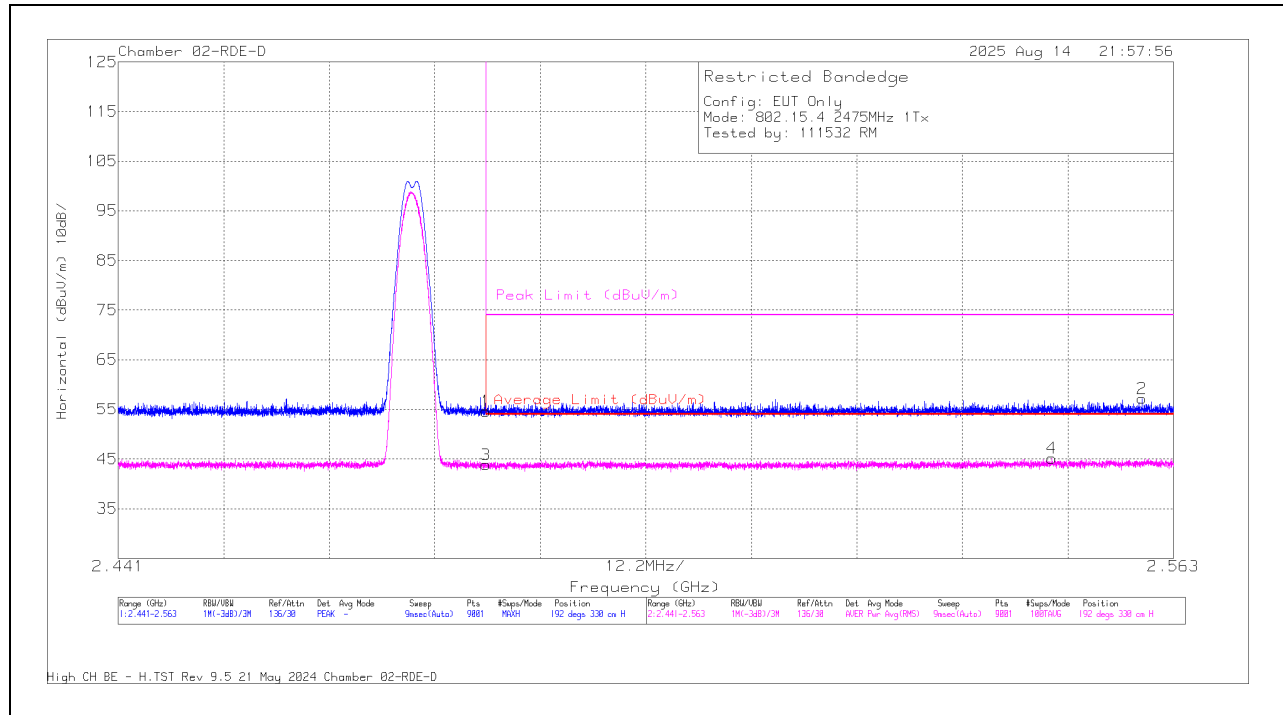


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226674 ACF (dB/m)	Amp/Cbl/Pad (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	60.54	Pk	32.2	-38.6	0	54.14	-	-	74	-19.86	2	397	V
2	* 2.358486	62.68	Pk	32.1	-38.6	0	56.18	-	-	74	-17.82	2	397	V
3	* 2.39	49.29	RMS	32.2	-38.6	0	42.89	54	-11.11	-	-	2	397	V
4	* 2.362125	50.84	RMS	32.1	-38.6	0	44.34	54	-9.66	-	-	2	397	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

HIGH CHANNEL

HORIZONTAL RESULT



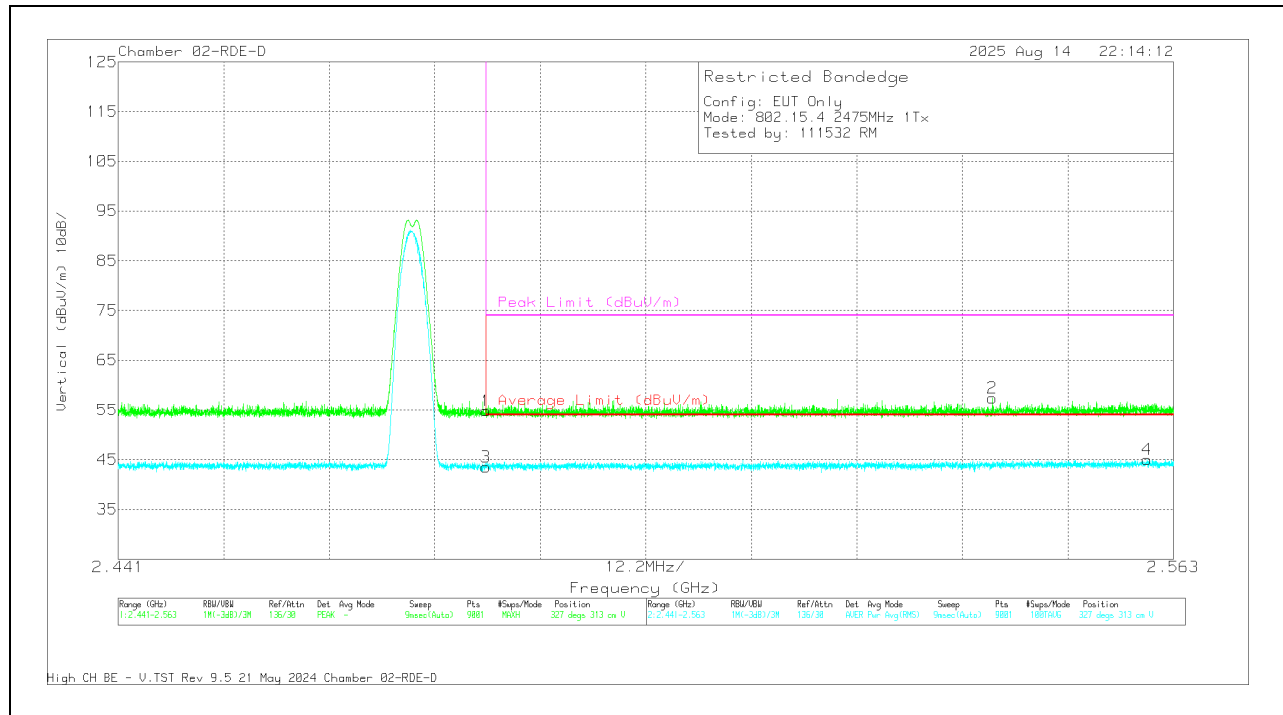
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226674 ACF (dB/m)	Amp/Cbl/Pad (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	60.72	Pk	32.2	-38.3	0	54.62	-	-	74	-19.38	192	330	H
2	2.559371	62.8	Pk	32.4	-38	0	57.2	-	-	74	-16.8	192	330	H
3	* 2.4835	49.94	RMS	32.2	-38.3	0	43.84	54	-10.16	-	-	192	330	H
4	2.548919	50.82	RMS	32.4	-38.1	0	45.12	54	-8.88	-	-	192	330	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226674 ACF (dB/m)	Amp/Cbl/Pad (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	60.92	Pk	32.2	-38.3	0	54.82	-	-	74	-19.18	327	313	V
2	2.542074	63.3	Pk	32.3	-38.2	0	57.4	-	-	74	-16.6	327	313	V
3	* 2.4835	49.58	RMS	32.2	-38.3	0	43.48	54	-10.52	-	-	327	313	V
4	2.559967	50.66	RMS	32.4	-38	0	45.06	54	-8.94	-	-	327	313	V

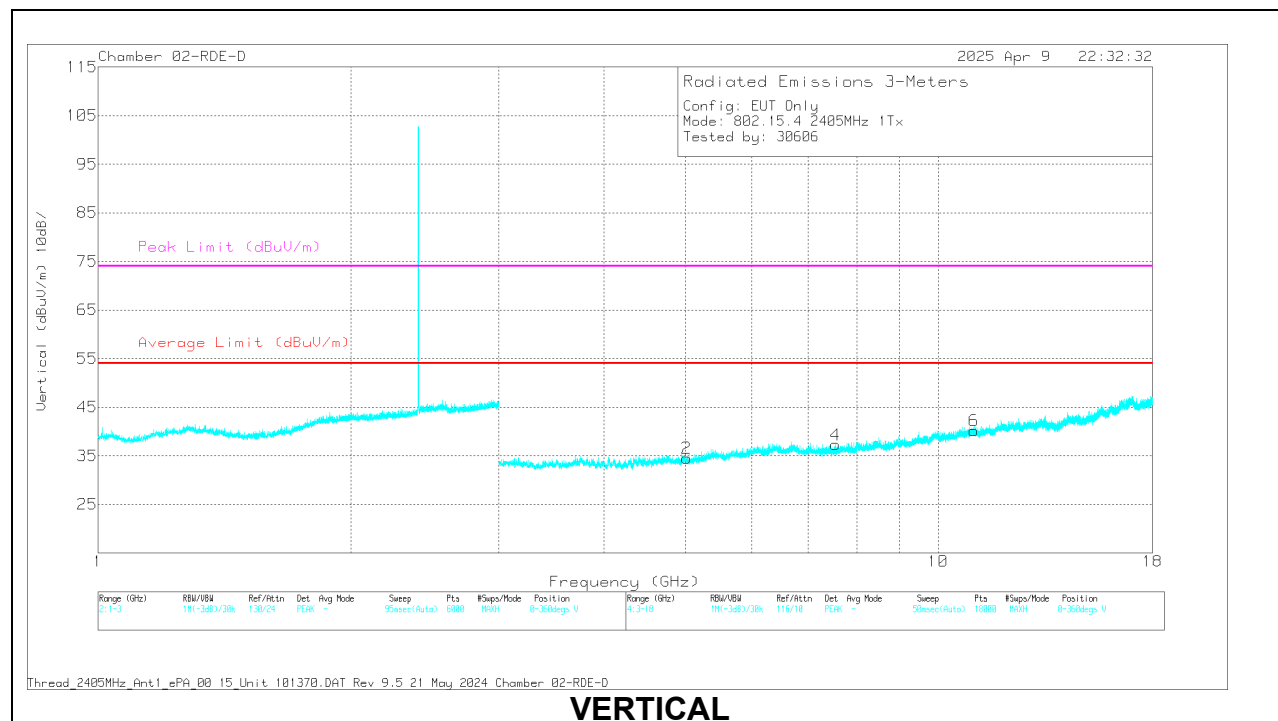
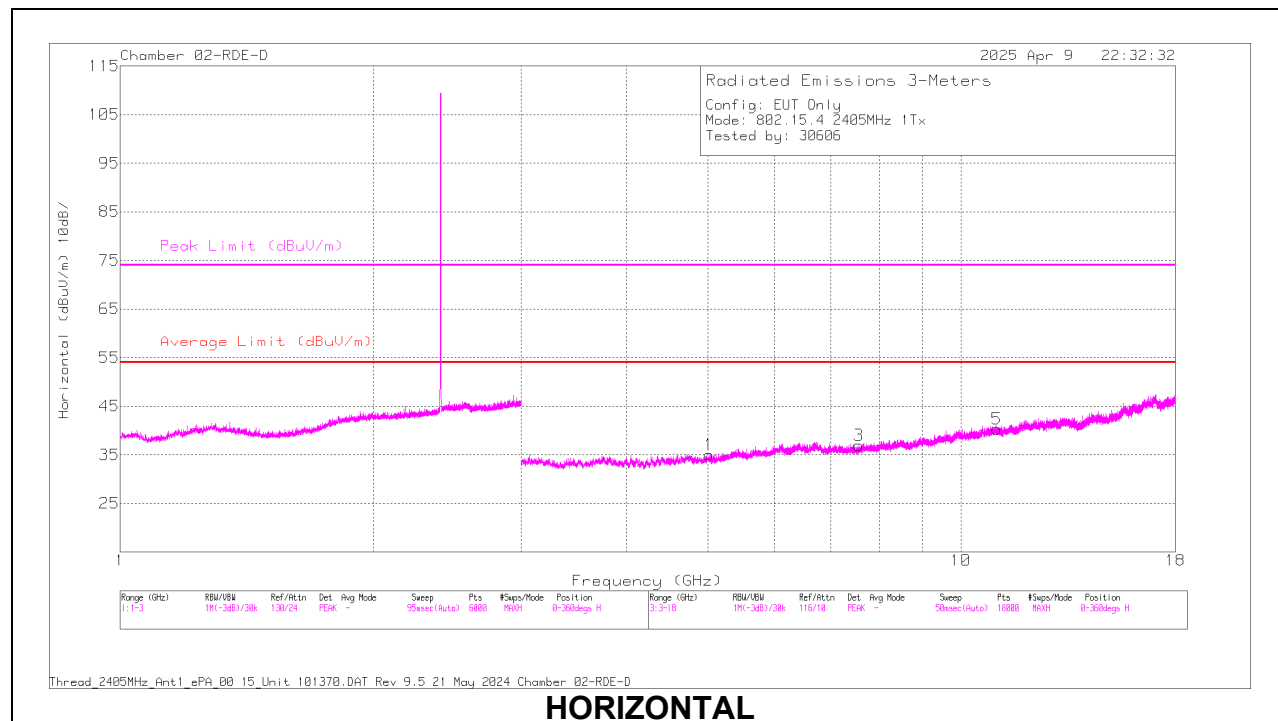
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

10.1.7. ANT3, 802.15.4 HIGH POWER, HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



RADIATED EMISSIONS

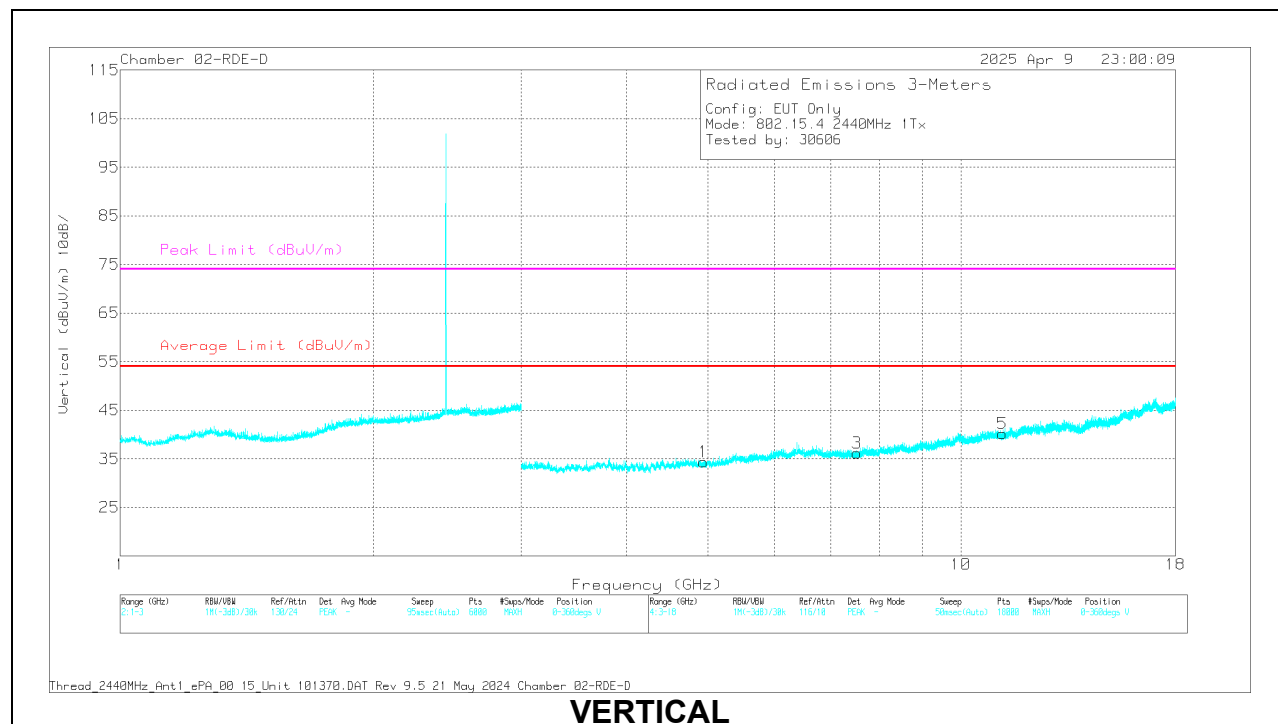
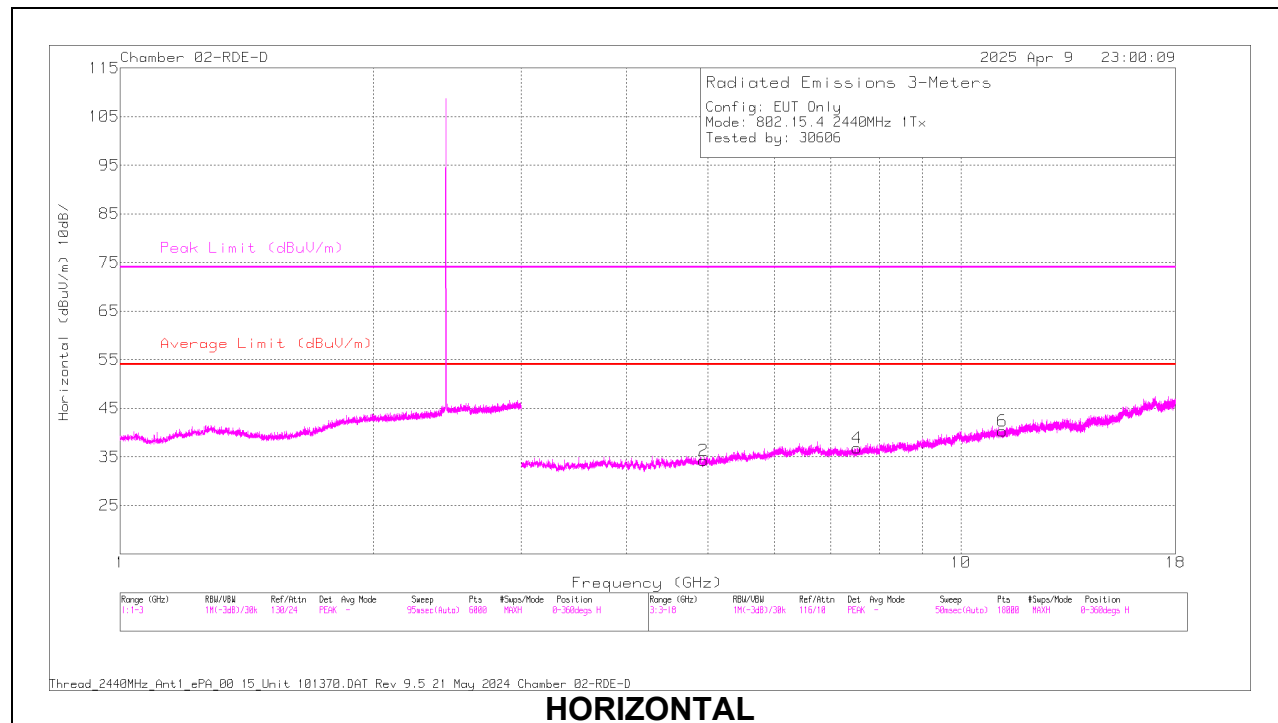
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226674 ACF (dB/m)	Amp/Cbl/Filtr (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 5.030002	55.36	PK2	34.1	-44.9	0	44.56	-	-	74	-29.44	1	101	H
	* 5.006735	43.96	MAv1	34.2	-45	0	33.16	54	-20.84	-	-	1	101	H
2	* 5.0323	55.41	PK2	34.1	-44.9	0	44.61	-	-	74	-29.39	1	101	V
	* 5.023402	43.96	MAv1	34.1	-45.1	0	32.96	54	-21.04	-	-	1	101	V
3	* 7.559318	53.68	PK2	35.8	-42.5	0	46.98	-	-	74	-27.02	1	200	H
	* 7.565042	41.5	MAv1	35.8	-42.5	0	34.8	54	-19.2	-	-	1	200	H
4	* 7.567951	52.92	PK2	35.8	-42.2	0	46.52	-	-	74	-27.48	1	200	V
	* 7.538329	41.54	MAv1	35.8	-42.5	0	34.84	54	-19.16	-	-	1	200	V
5	* 11.039328	53.02	PK2	37.9	-40.4	0	50.52	-	-	74	-23.48	1	200	H
	* 11.026057	41.55	MAv1	37.9	-40.5	0	38.95	54	-15.05	-	-	1	200	H
6	* 11.042311	53.18	PK2	37.9	-40.4	0	50.68	-	-	74	-23.32	1	200	V
	* 11.034057	41.41	MAv1	37.9	-40.5	0	38.81	54	-15.19	-	-	1	200	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL RESULTS



RADIATED EMISSIONS

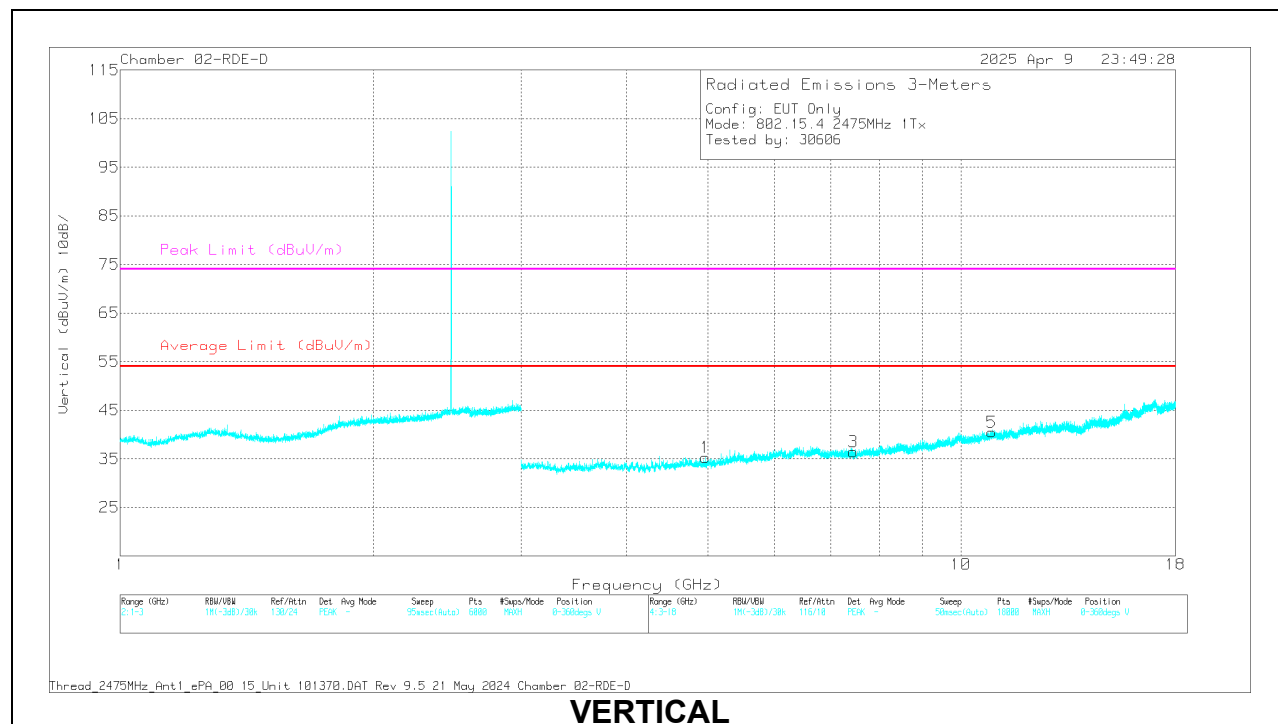
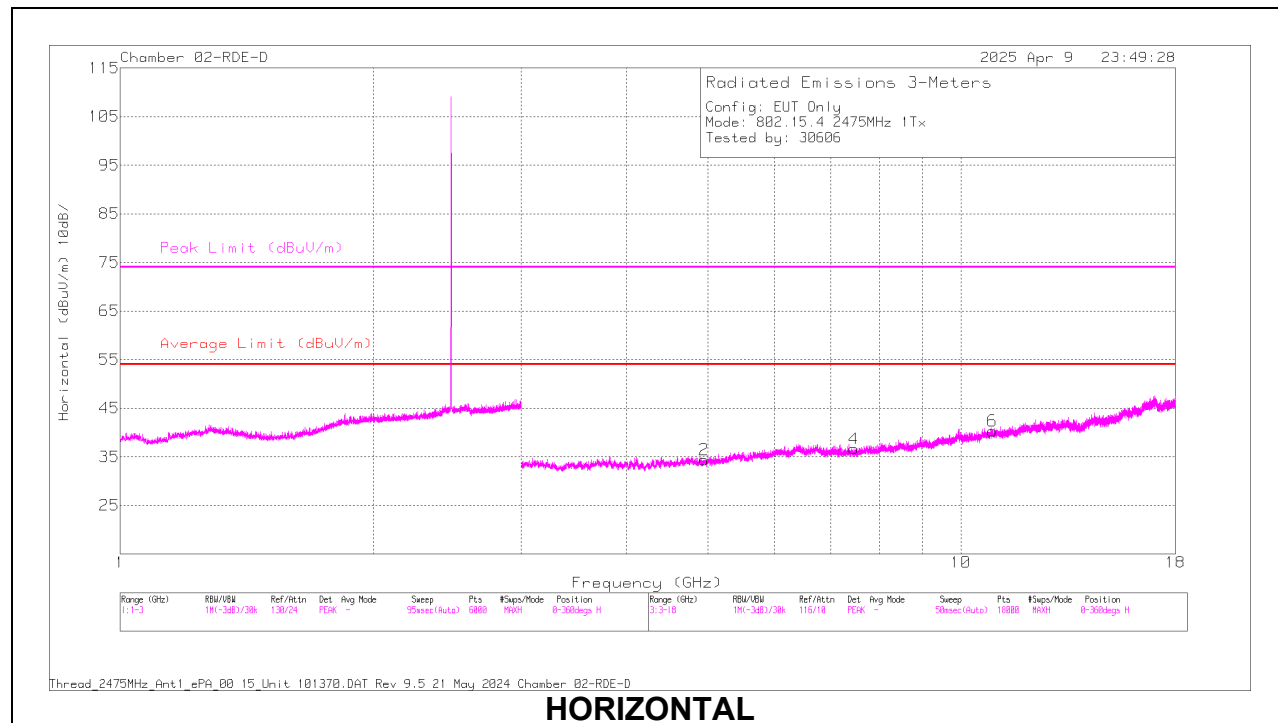
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226674 ACF (dB/m)	Amp/Cbl/Filtr (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.940464	55.29	PK2	34.1	-45.1	0	44.29	-	-	74	-29.71	2	200	H
	* 4.954176	43.68	MAv1	34.1	-45.2	0	32.58	54	-21.42	-	-	2	200	H
2	* 4.957624	55.28	PK2	34.1	-45.1	0	44.28	-	-	74	-29.72	2	101	V
	* 4.940584	43.67	MAv1	34.1	-45.1	0	32.67	54	-21.33	-	-	2	101	V
3	* 7.519598	53.06	PK2	35.7	-42.5	0	46.26	-	-	74	-27.74	2	200	H
	* 7.534513	41.56	MAv1	35.8	-42.4	0	34.96	54	-19.04	-	-	2	200	H
4	* 7.519602	52.98	PK2	35.7	-42.6	0	46.08	-	-	74	-27.92	2	200	V
	* 7.507638	41.45	MAv1	35.8	-42.6	0	34.65	54	-19.35	-	-	2	200	V
5	* 11.210075	52.89	PK2	38	-40.5	0	50.39	-	-	74	-23.61	2	200	H
	* 11.192408	41.03	MAv1	38	-40.5	0	38.53	54	-15.47	-	-	2	200	H
6	* 11.191846	52.47	PK2	38	-40.7	0	49.77	-	-	74	-24.23	2	200	V
	* 11.189868	41.14	MAv1	38	-40.7	0	38.44	54	-15.56	-	-	2	200	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL RESULTS



RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	226674 ACF (dB/m)	Amp/Cbl/Filtr (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.954347	55.71	PK2	34.1	-45.1	0	44.71	-	-	74	-29.29	0	200	H
	* 4.958525	43.85	MAv1	34.1	-45.1	0	32.85	54	-21.15	-	-	0	200	H
2	* 4.977623	55.54	PK2	34.1	-45	0	44.64	-	-	74	-29.36	0	200	V
	* 4.955037	43.75	MAv1	34.1	-45	0	32.85	54	-21.15	-	-	0	200	V
3	* 7.479872	53.61	PK2	35.7	-42.7	0	46.61	-	-	74	-27.39	0	200	H
	* 7.479828	41.75	MAv1	35.7	-42.7	0	34.75	54	-19.25	-	-	0	200	H
4	* 7.434238	53.15	PK2	35.7	-42.6	0	46.25	-	-	74	-27.75	0	101	V
	* 7.450469	41.6	MAv1	35.7	-42.5	0	34.8	54	-19.2	-	-	0	101	V
5	* 10.886109	53.06	PK2	37.9	-40.6	0	50.36	-	-	74	-23.64	0	200	H
	* 10.879069	41.49	MAv1	37.9	-40.8	0	38.59	54	-15.41	-	-	0	200	H
6	* 10.897106	53.14	PK2	37.9	-40.6	0	50.44	-	-	74	-23.56	0	200	V
	* 10.865128	41.73	MAv1	37.8	-40.7	0	38.83	54	-15.17	-	-	0	200	V

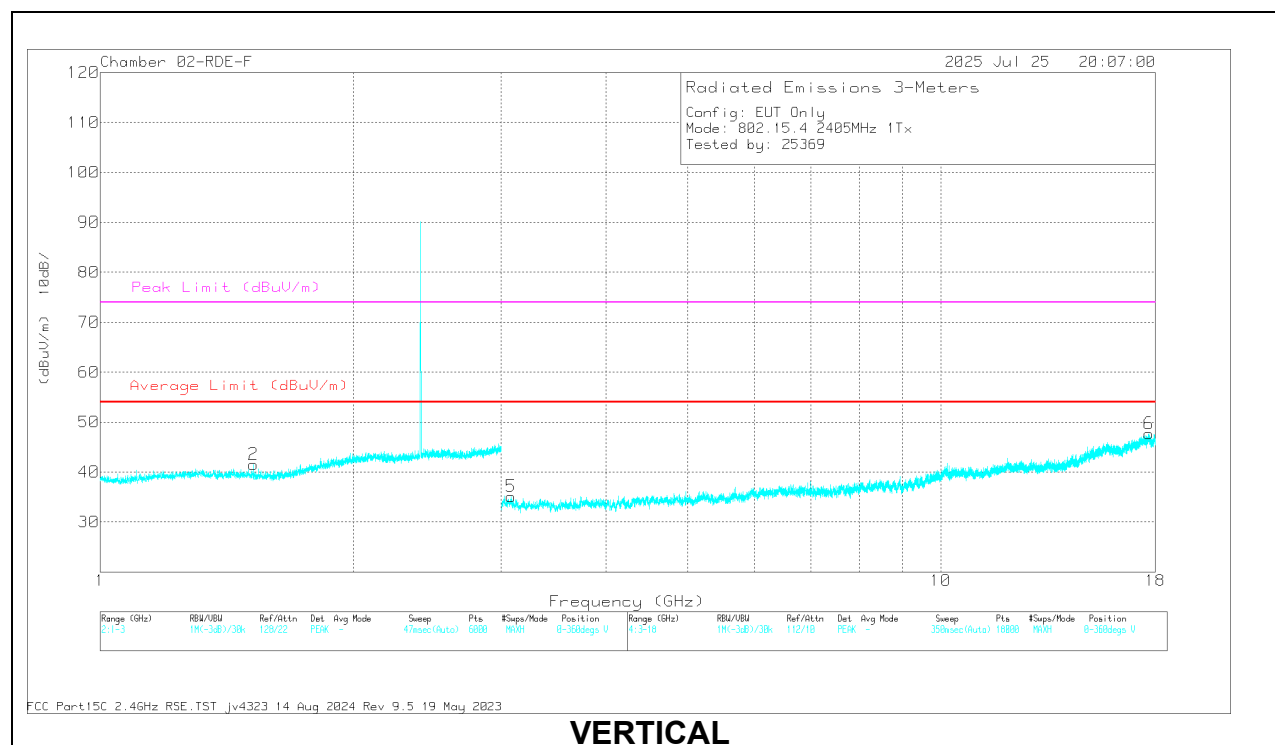
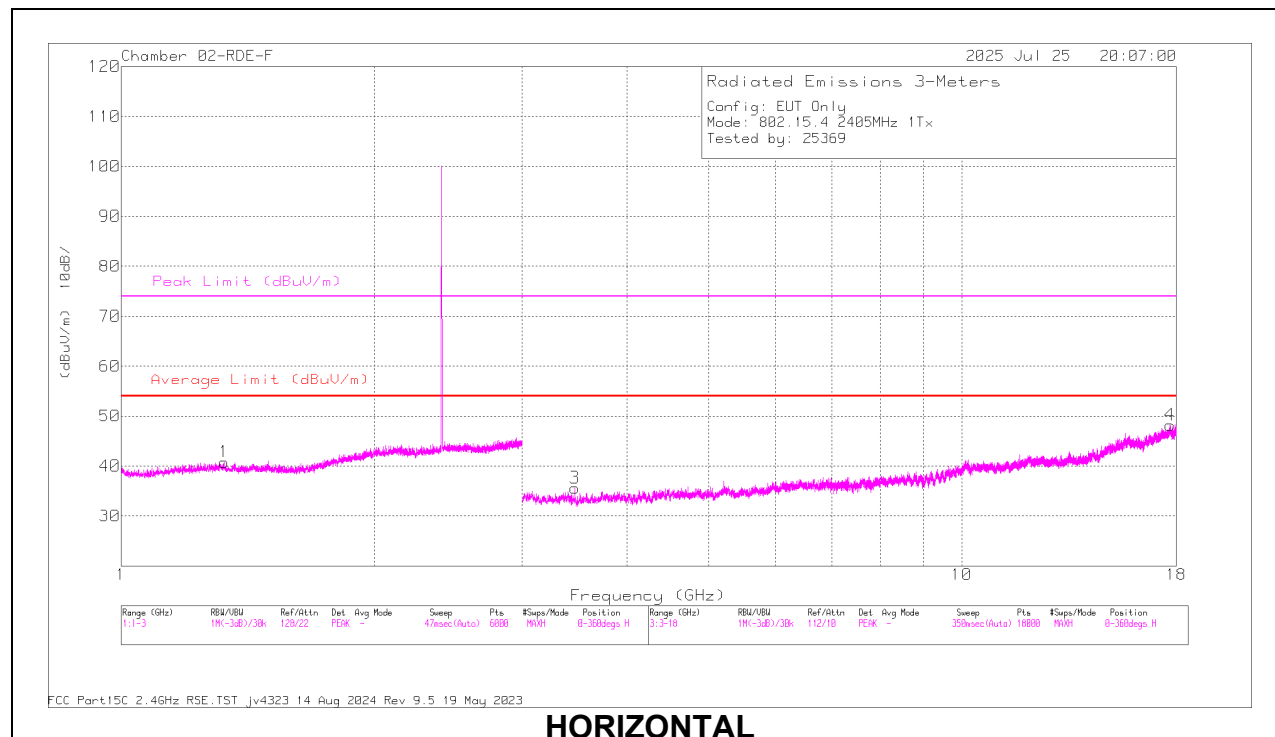
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

10.1.8. ANT3, 802.15.4 LOW POWER, HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



RADIATED EMISSIONS

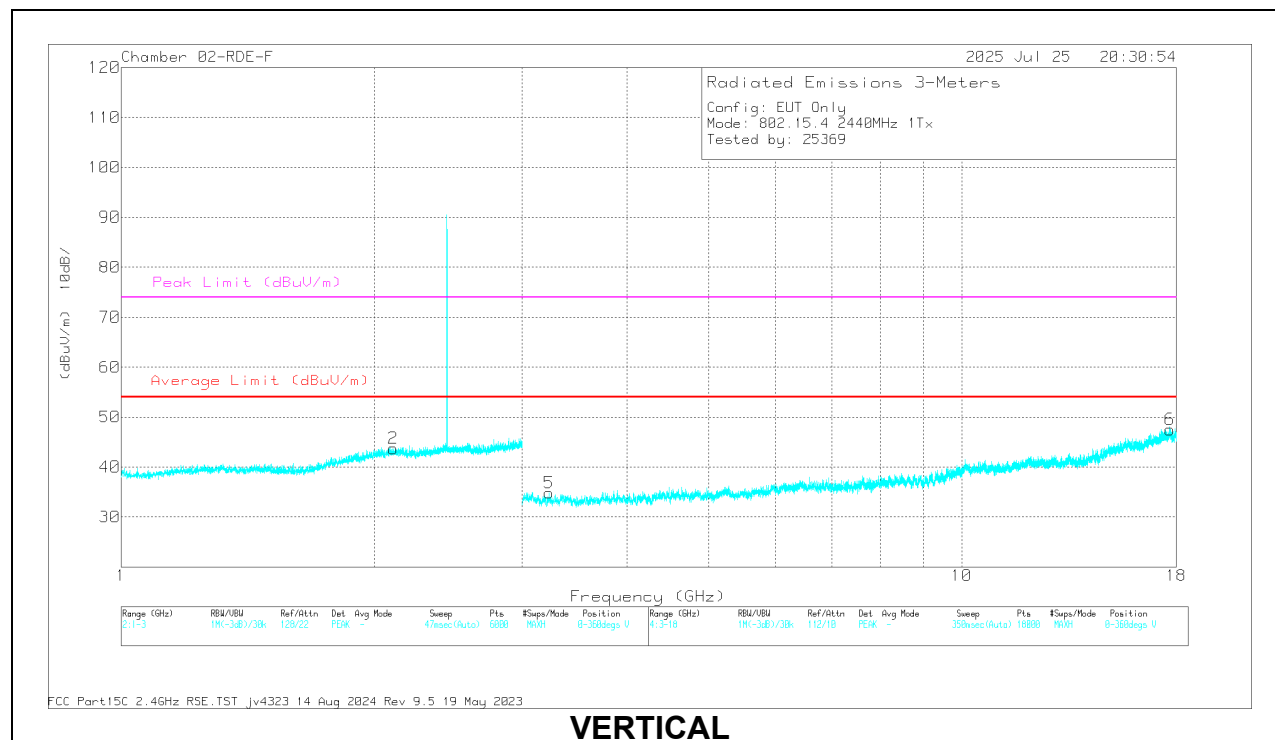
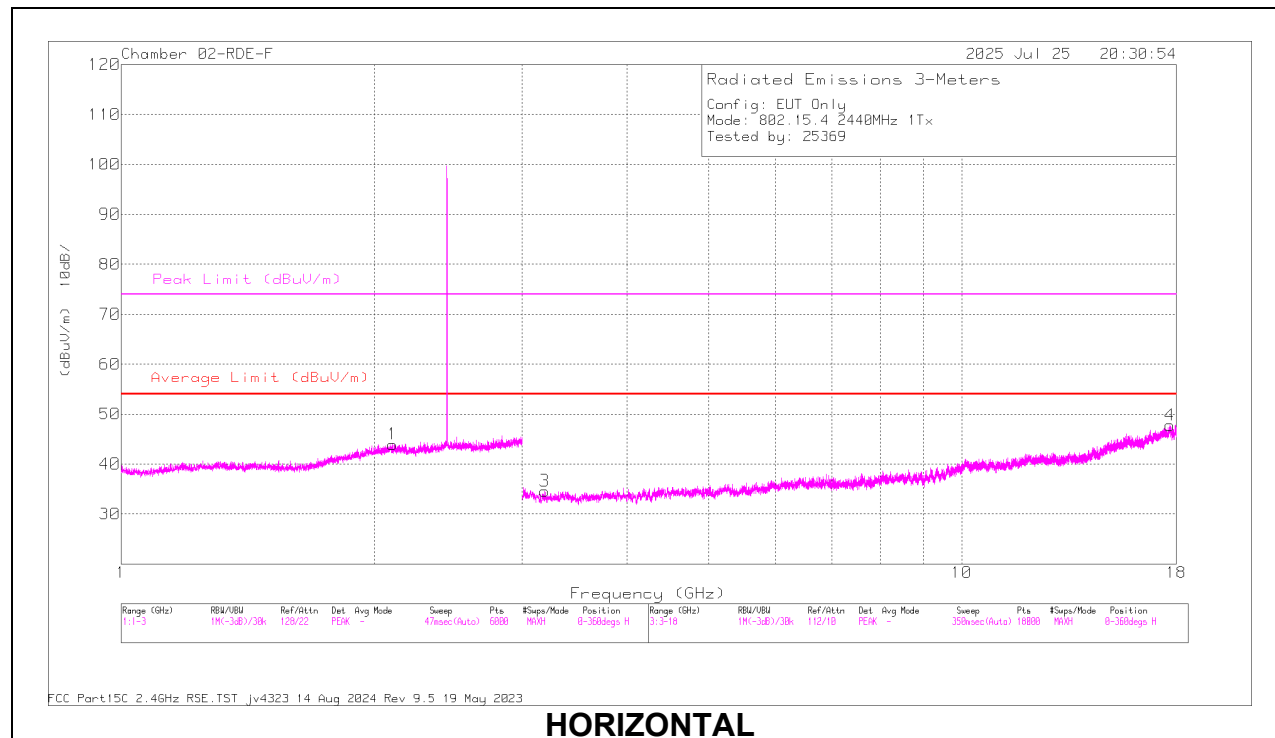
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206806 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.325647	59.86	PK2	28.5	0	-38.47	49.89	-	-	74	-24.11	0	200	H
	* 1.323533	48.42	MAv1	28.5	0	-38.35	38.57	54	-15.43	-	-	0	200	H
2	* 1.520781	59.74	PK2	28.3	0	-38.34	49.7	-	-	74	-24.3	0	200	V
	* 1.522023	48.28	MAv1	28.3	0	-38.4	38.18	54	-15.82	-	-	0	200	V
3	3.465911	55.75	PK2	32.8	0	-44.68	43.87	-	-	-	-	0	101	H
	3.465417	44.07	MAv1	32.8	0	-44.58	32.29	-	-	-	-	0	101	H
4	* 17.702902	53.63	PK2	41.8	0	-37.75	57.68	-	-	74	-16.32	0	101	H
	* 17.702984	41.46	MAv1	41.8	0	-37.79	45.47	54	-8.53	-	-	0	101	H
5	3.081931	57.29	PK2	32.9	0	-45.41	44.78	-	-	-	-	0	101	V
	3.083804	45.69	MAv1	32.9	0	-45.56	33.03	-	-	-	-	0	101	V
6	17.69863	53.12	PK2	41.8	0	-37.65	57.27	-	-	-	-	0	101	V
	17.699596	41.42	MAv1	41.8	0	-37.5	45.72	-	-	-	-	0	101	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL RESULTS



RADIATED EMISSIONS

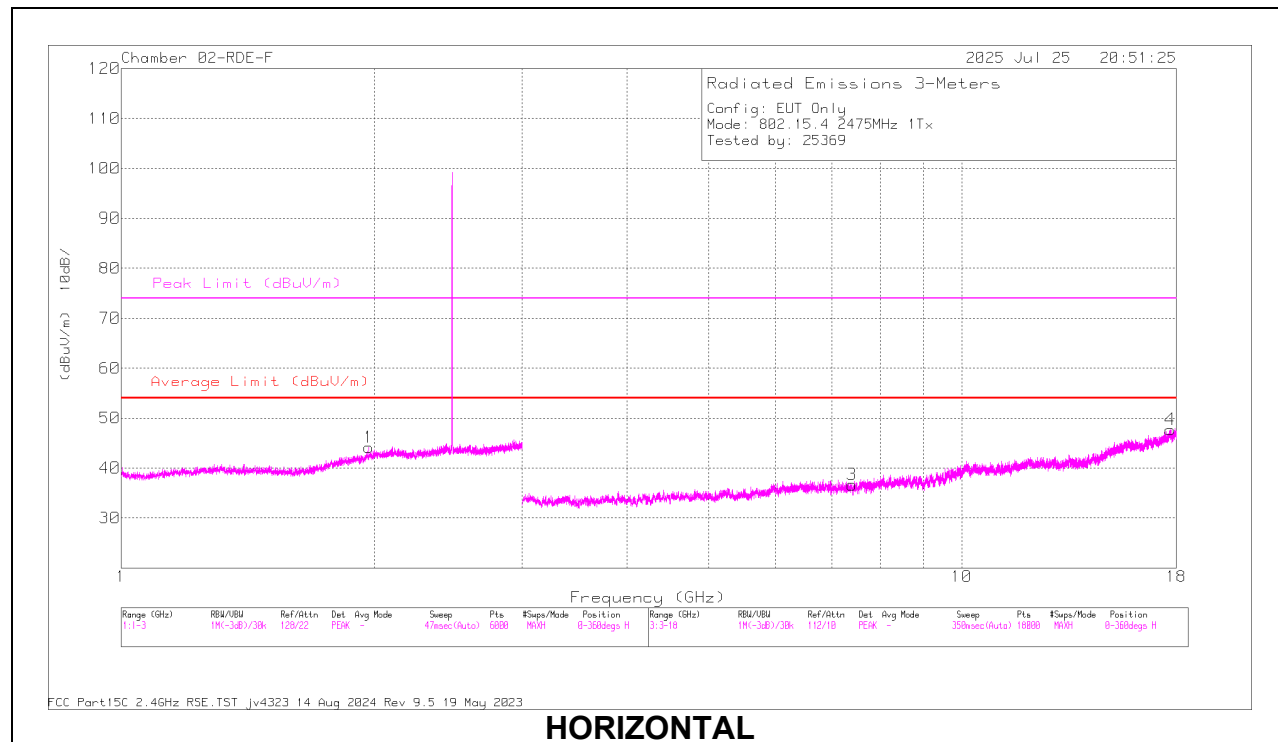
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206806 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.102591	60.04	PK2	31.9	0	-38.64	53.3	-	-	-	-	2	200	H
	2.104374	48.41	MAv1	31.9	0	-38.9	41.41	-	-	-	-	2	200	H
2	2.106673	60.14	PK2	31.9	0	-38.93	53.11	-	-	-	-	2	101	V
	2.107732	48.65	MAv1	31.9	0	-38.9	41.65	-	-	-	-	2	101	V
3	3.192947	56.54	PK2	32.8	0	-45.48	43.86	-	-	-	-	2	200	H
	3.191719	44.54	MAv1	32.8	0	-45.23	32.11	-	-	-	-	2	200	H
4	17.687453	53.02	PK2	41.8	0	-37.4	57.42	-	-	-	-	2	101	H
	17.690026	41.28	MAv1	41.8	0	-37.6	45.48	-	-	-	-	2	101	H
5	3.226574	56.69	PK2	32.8	0	-45.49	44	-	-	-	-	2	101	V
	3.225495	45.08	MAv1	32.8	0	-45.6	32.28	-	-	-	-	2	101	V
6	17.683962	52.73	PK2	41.8	0	-37.49	57.04	-	-	-	-	2	200	V
	17.685464	40.93	MAv1	41.8	0	-37.55	45.18	-	-	-	-	2	200	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

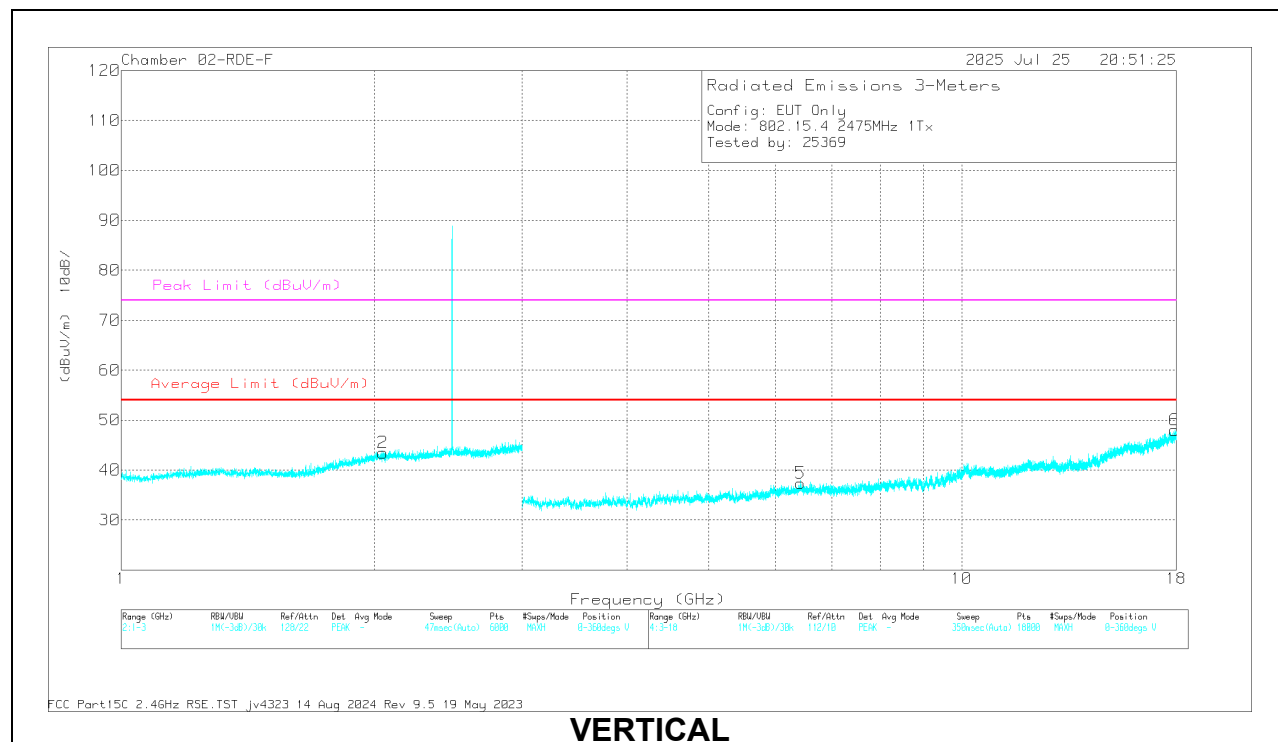
PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206806 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.97141	60.23	PK2	31.3	0	-39.1	52.43	-	-	-	-	2	101	H
	1.971696	48.54	MAv1	31.3	0	-38.95	40.89	-	-	-	-	2	101	H
2	2.046818	60.59	PK2	31.7	0	-38.88	53.41	-	-	-	-	2	101	V
	2.046221	48.7	MAv1	31.7	0	-38.82	41.58	-	-	-	-	2	101	V
3	* 7.406553	54.75	PK2	35.6	0	-43.57	46.78	-	-	74	-27.22	2	101	H
	* 7.409475	42.99	MAv1	35.6	0	-43.74	34.85	54	-19.15	-	-	2	101	H
4	* 17.707012	52.76	PK2	41.8	0	-37.7	56.86	-	-	74	-17.14	2	101	H
	* 17.709908	41.67	MAv1	41.8	0	-37.51	45.96	54	-8.04	-	-	2	101	H
5	6.423192	55.47	PK2	35.7	0	-43.86	47.31	-	-	-	-	2	200	V
	6.423551	44.02	MAv1	35.7	0	-43.79	35.93	-	-	-	-	2	200	V
6	* 17.919962	53.35	PK2	41.6	0	-37.1	57.85	-	-	74	-16.15	2	101	V
	* 17.922125	41.29	MAv1	41.6	0	-37.18	45.71	54	-8.29	-	-	2	101	V

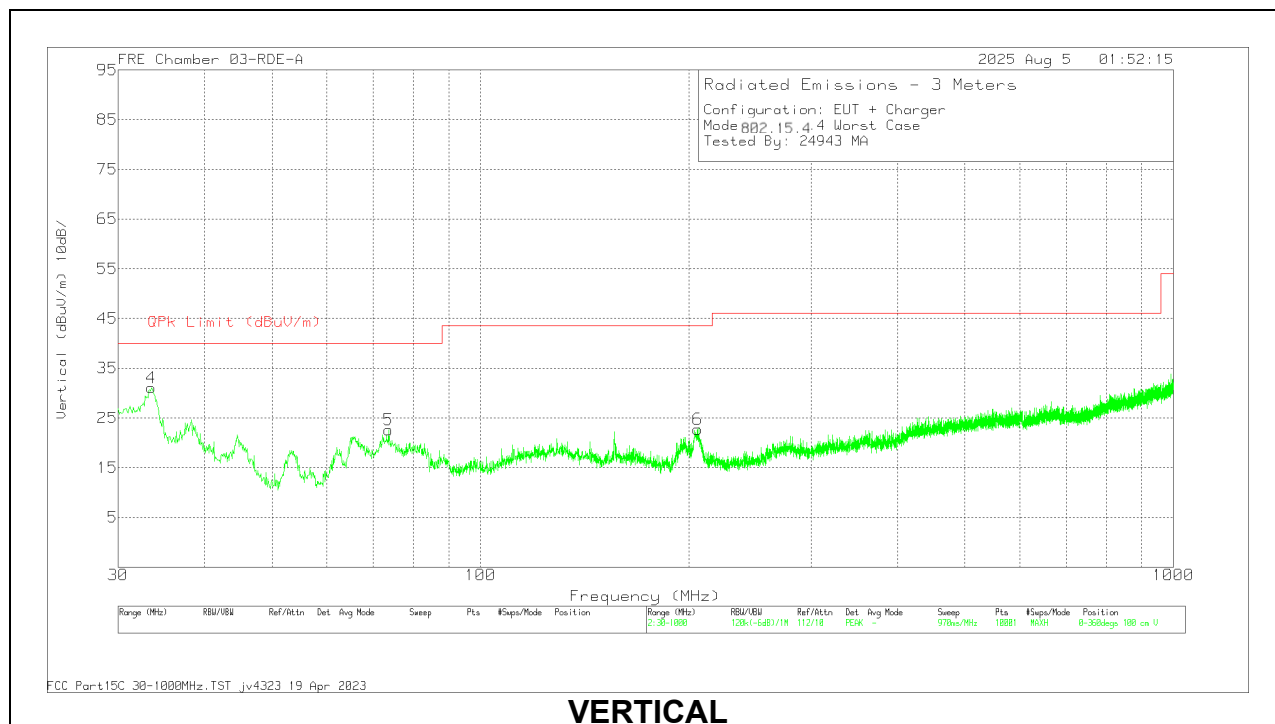
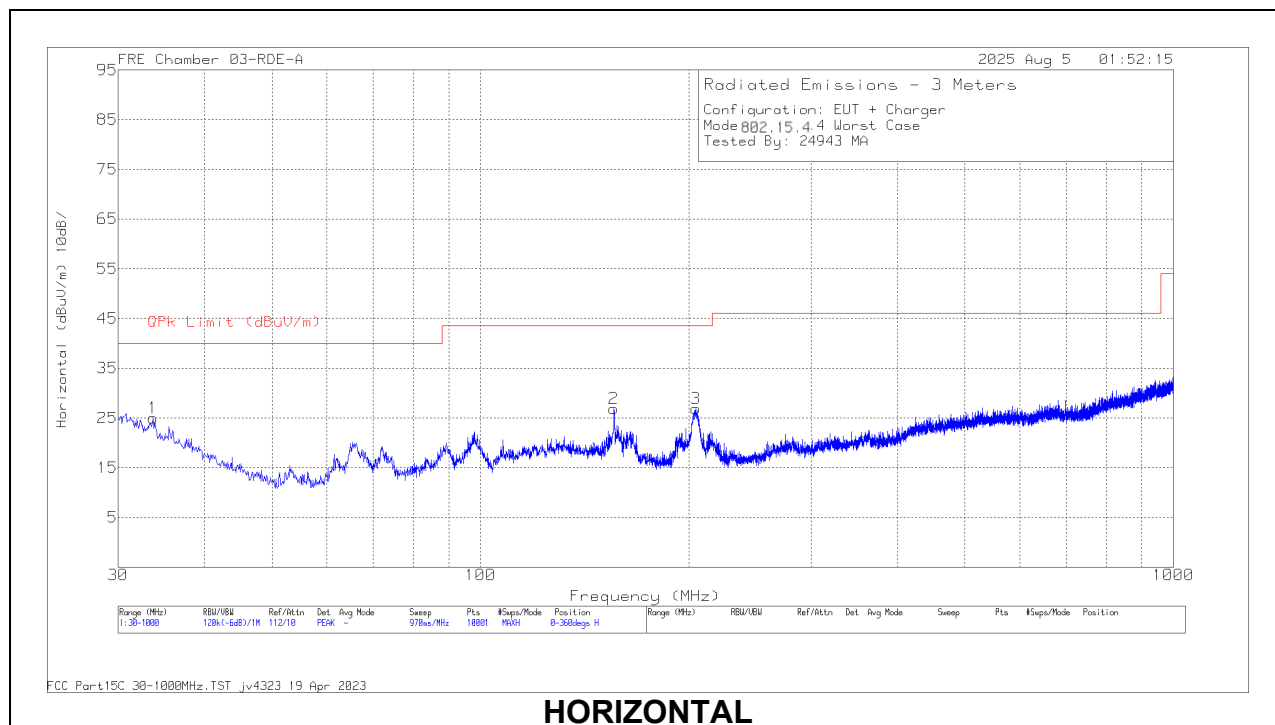
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

10.2. WORST CASE BELOW 1 GHz

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION)

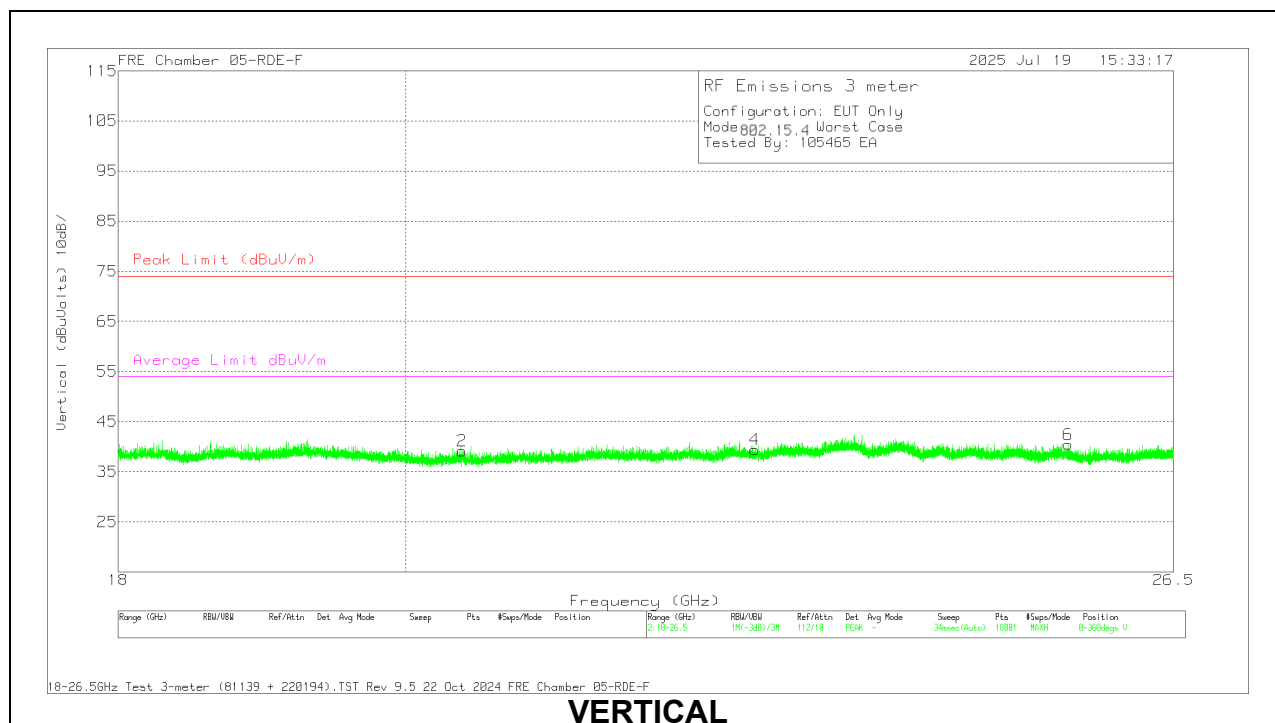
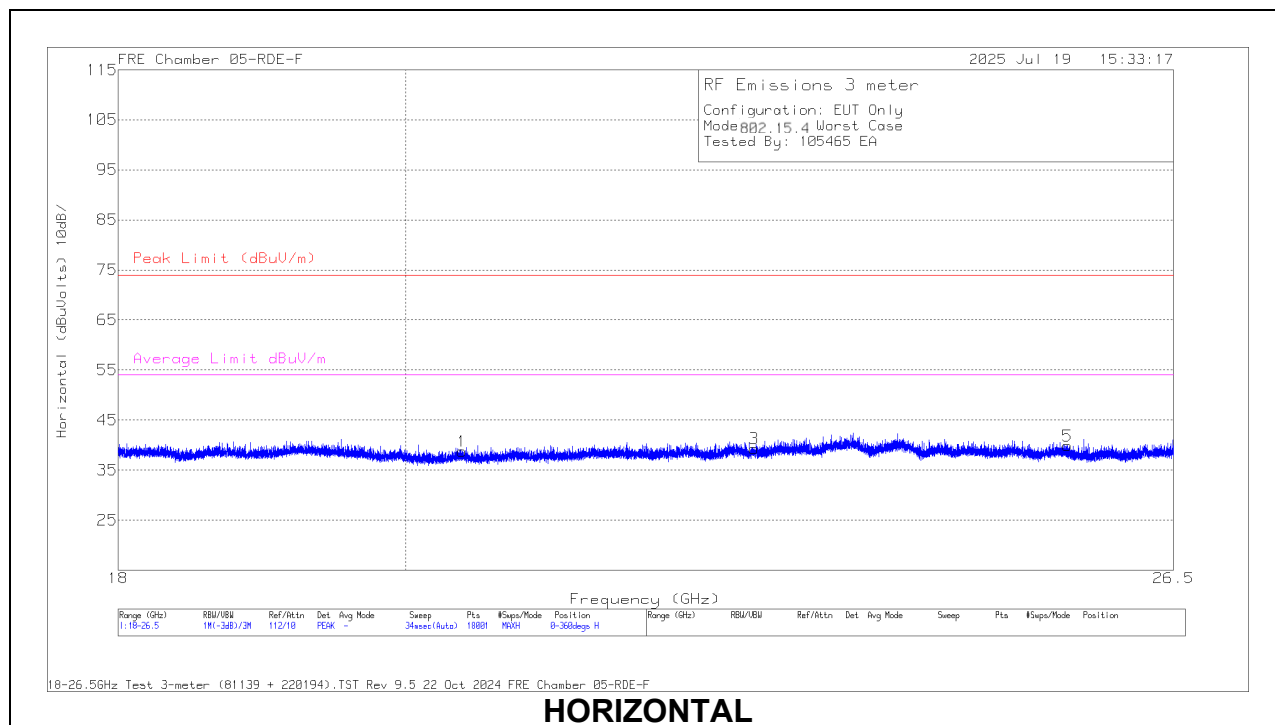


Below 1GHz Data

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80813 ACF (dB/m)	CBL AMP (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	33.3398	24.43	Qp	24.4	-31.3	17.53	40	-22.47	352	167	H
2	156.088	36.14	Qp	18.3	-29.4	25.04	43.52	-18.48	79	196	H
3	207.006	37.19	Qp	16.3	-29.1	24.39	43.52	-19.13	223	154	H
4	* 73.223	33.17	Qp	13.9	-30.5	16.57	40	-23.43	132	112	V
5	206.553	31.17	Qp	16.3	-29.3	18.17	43.52	-25.35	283	152	V
6	33.7002	32.17	Qp	24.2	-31.3	25.07	40	-14.93	201	121	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Qp - Quasi-Peak detector

10.3. WORST CASE 18-26 GHZ**SPURIOUS EMISSIONS 18-26 GHz (WORST-CASE CONFIGURATION)**

Radiated Emissions

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	81139 ACF (dB/m)	CBL/AMP	Cbl (dB)	DCCF (dB)	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	PK Margin (dB)	Average Limit dBuV/m	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	20.417545	54.93	PK2	33.4	-62.4	13.7	0	39.63	74	-34.37	-	-	312	143	H
	20.419374	43.07	MAv1	33.4	-62.4	13.7	0	27.77	-	-	54	-26.23	312	143	H
2	20.418808	54.81	PK2	33.4	-62.4	13.7	0	39.51	74	-34.49	-	-	6	189	V
	20.417566	43.03	MAv1	33.4	-62.4	13.7	0	27.73	-	-	54	-26.27	6	189	V
3	22.72132	56.03	PK2	33.5	-62.5	14.5	0	41.53	74	-32.47	-	-	27	170	H
	22.719938	44.14	MAv1	33.5	-62.5	14.5	0	29.64	-	-	54	-24.36	27	170	H
4	22.728317	55.89	PK2	33.5	-62.5	14.5	0	41.39	74	-32.61	-	-	262	194	V
	22.733716	44.15	MAv1	33.5	-62.5	14.5	0	29.65	-	-	54	-24.35	262	194	V
5	25.493356	54.13	PK2	34.3	-62.8	15.4	0	41.03	74	-32.97	-	-	356	234	H
	25.493291	42.7	MAv1	34.3	-62.8	15.4	0	29.6	-	-	54	-24.4	356	234	H
6	25.496418	54	PK2	34.3	-62.8	15.4	0	40.9	74	-33.1	-	-	0	116	V
	25.495785	42.52	MAv1	34.3	-62.8	15.4	0	29.42	-	-	54	-24.58	0	116	V

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

11. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

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

*Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

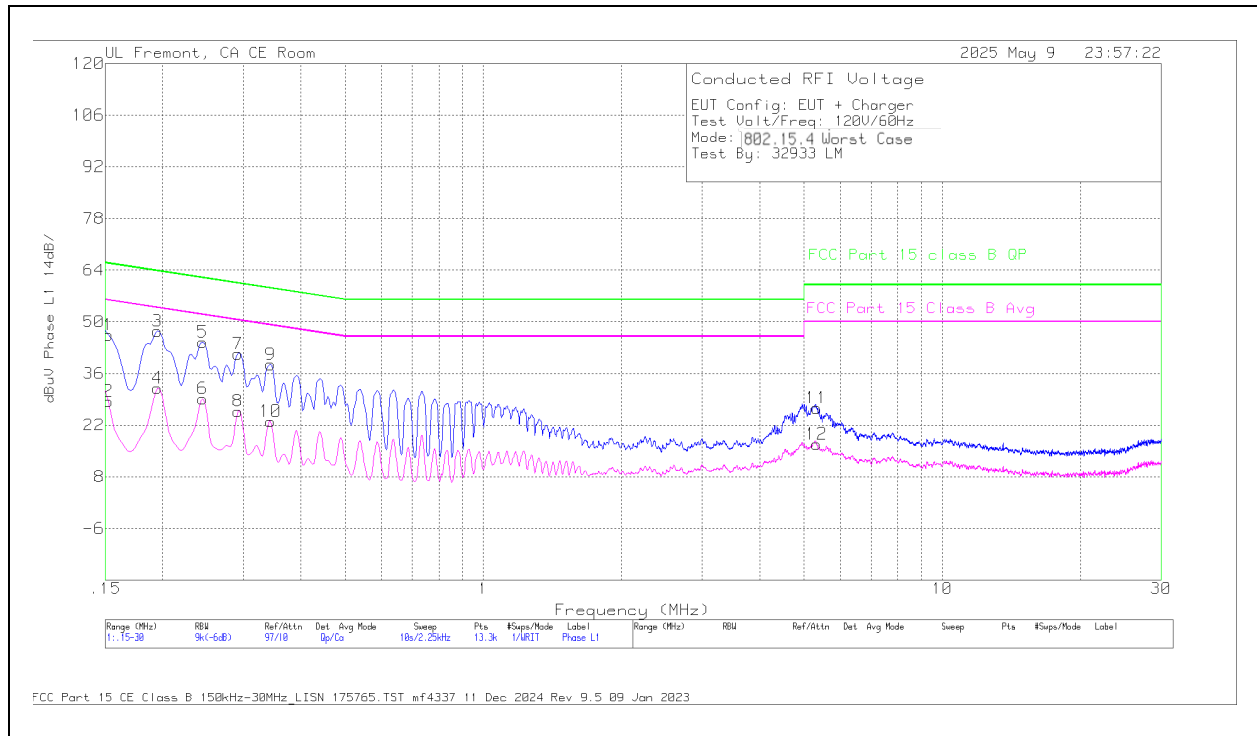
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

11.1. AC POWER LINE WITH AC/DC ADAPTER

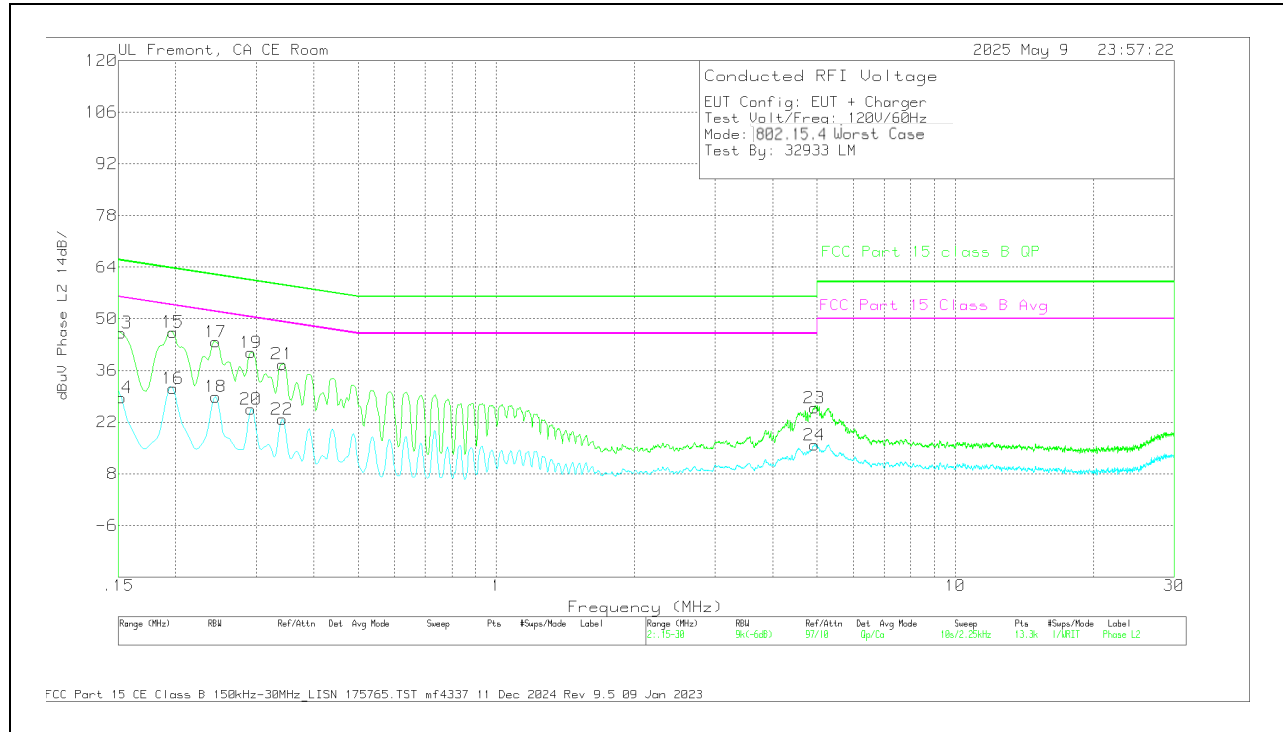
LINE 1 RESULTS



Range 1: Phase L1 15 - 30MHz												
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	CBL(dB)	LISN (dB)	CBL(dB)	10dB Atten (dB)	Corrected Reading (dBuV)	FCC Part 15 Class B Avg (dBuV)	Margin (dB)	FCC Part 15 class B QP (dBuV)	Margin (dB)
2	.1523	9.37	Ca	.5	.1	8.5	10	28.47	55.88	-27.41	-	-
4	.195	13.42	Ca	.1	.1	8.4	10	32.02	53.82	-21.8	-	-
6	.2445	11.07	Ca	-.1	0	8.2	10	29.17	51.94	-22.77	-	-
8	.2918	7.75	Ca	0	0	8	10	25.75	50.47	-24.72	-	-
10	.3435	4.98	Ca	-.3	0	8.3	10	22.98	49.12	-26.14	-	-
12	5.3205	-1.67	Ca	.2	0	8.3	10	16.83	50	-33.17	-	-
1	.1523	27.32	Qp	.5	.1	8.5	10	46.42	-	-	65.88	-19.46
3	.195	28.86	Qp	.1	.1	8.4	10	47.46	-	-	63.82	-16.36
5	.2445	26.38	Qp	-.1	0	8.2	10	44.48	-	-	61.94	-17.46
7	.2918	23.32	Qp	0	0	8	10	41.32	-	-	60.47	-19.15
9	.3435	20.42	Qp	-.3	0	8.3	10	38.42	-	-	59.12	-20.7
11	5.3205	8.15	Qp	.2	0	8.3	10	26.65	-	-	60	-33.35

Qp - Quasi-Peak detector
Ca - CISPR average detection

LINE 2 RESULTS



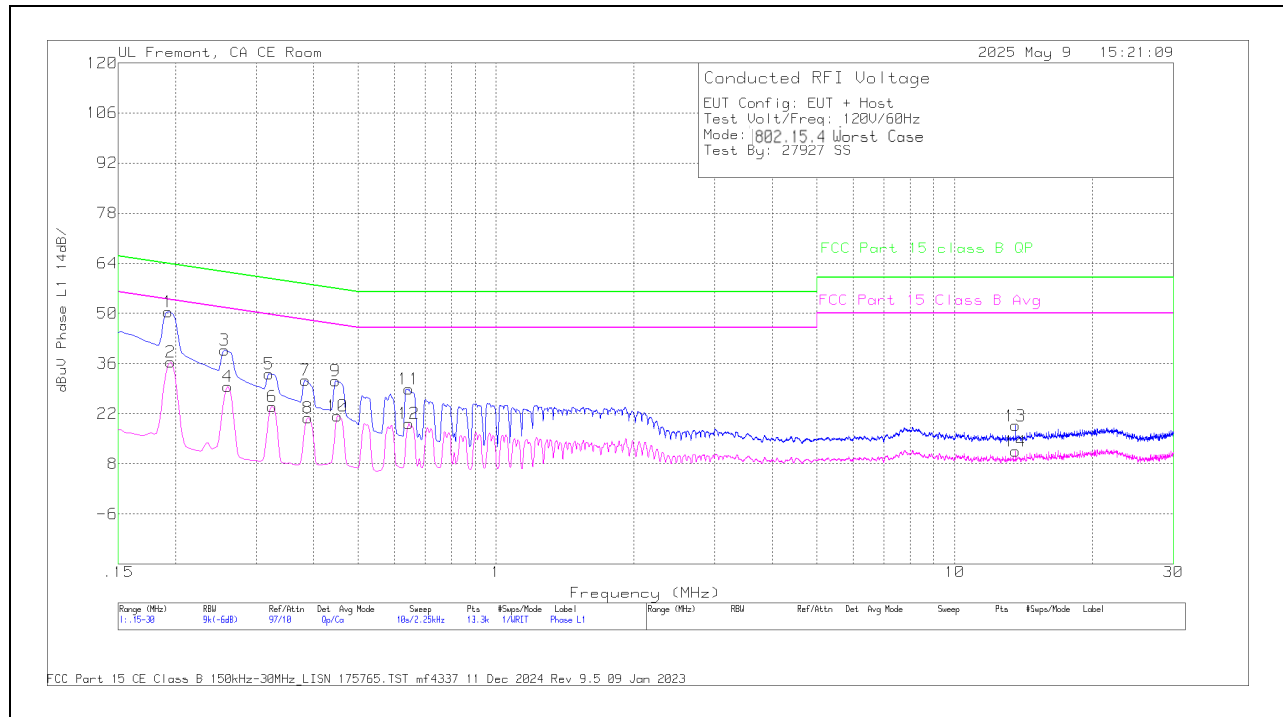
Range 2: Phase L2 .15 - 30MHz												
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	CBL(dB)	LISN (dB)	CBL(dB)	10dB Atten (dB)	Corrected Reading dBuV	FCC Part 15 Class B Avg (dBuV)	Margin (dB)	FCC Part 15 class B QP (dBuV)	Margin (dB)
14	.1523	9.51	Ca	.5	.1	8.5	10	28.61	55.88	-27.27	-	-
16	.1973	12.62	Ca	.1	0	8.4	10	31.12	53.73	-22.61	-	-
18	.2445	10.77	Ca	-.1	0	8.2	10	28.87	51.94	-23.07	-	-
20	.2918	7.48	Ca	0	0	8	10	25.48	50.47	-24.99	-	-
22	.3413	4.75	Ca	-.3	0	8.3	10	22.75	49.17	-26.42	-	-
24	4.9313	-2.61	Ca	.2	0	8.2	10	15.79	46	-30.21	-	-
13	.1523	27.1	Qp	.5	.1	8.5	10	46.2	-	-	65.88	-19.68
15	.1973	27.87	Qp	.1	0	8.4	10	46.37	-	-	63.73	-17.36
17	.2445	25.64	Qp	-.1	0	8.2	10	43.74	-	-	61.94	-18.2
19	.2918	22.85	Qp	0	0	8	10	40.85	-	-	60.47	-19.62
21	.3413	19.7	Qp	-.3	0	8.3	10	37.7	-	-	59.17	-21.47
23	4.9313	7.41	Qp	.2	0	8.2	10	25.81	-	-	56	-30.19

Qp - Quasi-Peak detector

Ca - CISPR average detection

11.2. AC POWER LINE WITH LAPTOP

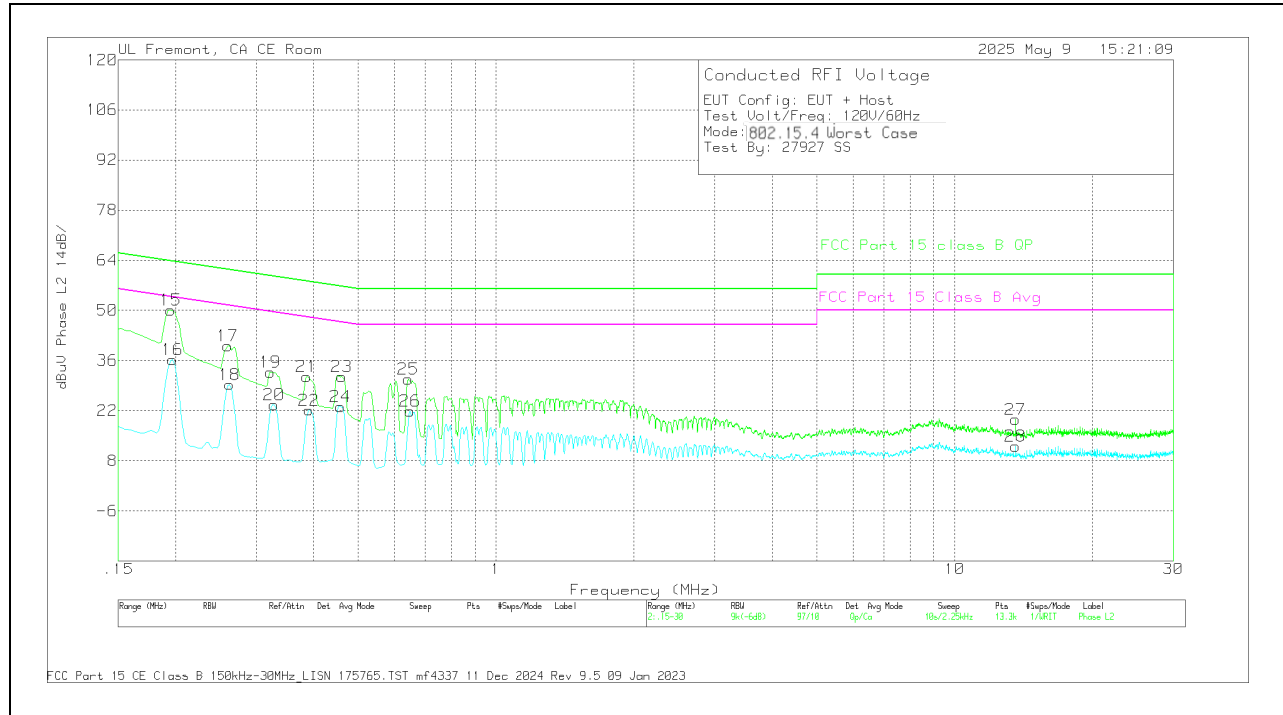
LINE 1 RESULTS



Range 1: Phase L1 15 - 30MHz													
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	CBL(dB)	LISN (dB)	CBL(dB)	10dB Atten (dB)	DCCF (dB)	Corrected Reading dBuV	FCC Part 15 Class B Avg (dBuV)	Margin (dB)	FCC Part 15 class B QP (dBuV)	Margin (dB)
2	.195	17.87	Ca	.1	.1	8.4	10	0	36.47	53.82	-17.35	-	-
4	.2603	11.44	Ca	-.1	0	8.2	10	0	29.54	51.42	-21.88	-	-
6	.3255	5.95	Ca	-.2	0	8.2	10	0	23.95	49.57	-25.62	-	-
8	.3885	2.97	Ca	-.5	0	8.3	10	0	20.77	48.1	-27.33	-	-
10	.4515	2.18	Ca	.2	0	8.9	10	0	21.28	46.85	-25.57	-	-
12	.645	.77	Ca	.1	0	8.4	10	0	19.27	46	-26.73	-	-
14	13.56	-7.04	Ca	.2	.1	8.2	10	0	11.46	50	-38.54	-	-
1	.1928	31.76	Qp	.2	.1	8.4	10	0	50.46	-	-	63.92	-13.46
3	.2558	21.69	Qp	-.1	0	8.2	10	0	39.79	-	-	61.57	-21.78
5	.3199	15.04	Qp	-.2	0	8.2	10	0	33.04	-	-	59.71	-26.67
7	.384	13.58	Qp	-.5	0	8.3	10	0	31.38	-	-	58.19	-26.81
9	.447	12.02	Qp	.2	0	8.9	10	0	31.12	-	-	56.93	-25.81
11	.645	10.39	Qp	.1	0	8.4	10	0	28.89	-	-	56	-27.11
13	13.56	.13	Qp	.2	.1	8.2	10	0	18.63	-	-	60	-41.37

Qp - Quasi-Peak detector
 Ca - CISPR average detection

LINE 2 RESULTS



Range 2: Phase L2 .15 - 30MHz													
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	CBL(dB)	LISN (dB)	CBL(dB)	10dB Atten (dB)	DCCF (dB)	Corrected Reading dBuV	FCC Part 15 Class B Avg (dBuV)	Margin (dB)	FCC Part 15 class B QP (dBuV)	Margin (dB)
16	.1973	17.72	Ca	.1	0	8.4	10	0	36.22	53.73	-17.51	-	-
18	.2625	11.21	Ca	-.1	0	8.2	10	0	29.31	51.35	-22.04	-	-
20	.3278	5.69	Ca	-.2	0	8.2	10	0	23.69	49.51	-25.82	-	-
22	.3908	4.33	Ca	-.5	0	8.3	10	0	22.13	48.05	-25.92	-	-
24	.4583	4.15	Ca	.2	0	8.7	10	0	23.05	46.72	-23.67	-	-
26	.6495	3.36	Ca	.1	0	8.4	10	0	21.86	46	-24.14	-	-
28	13.56	-6.49	Ca	.2	.1	8.2	10	0	12.01	50	-37.99	-	-
15	.195	31.63	Qp	.1	0	8.4	10	0	50.13	-	-	63.82	-13.69
17	.2603	22.05	Qp	-.1	0	8.2	10	0	40.15	-	-	61.42	-21.27
19	.3221	14.76	Qp	-.2	0	8.2	10	0	32.76	-	-	59.65	-26.89
21	.3863	13.76	Qp	-.5	0	8.3	10	0	31.56	-	-	58.14	-26.58
23	.4605	12.74	Qp	.1	0	8.7	10	0	31.54	-	-	56.68	-25.14
25	.6428	12.38	Qp	.1	0	8.4	10	0	30.88	-	-	56	-25.12
27	13.56	1.01	Qp	.2	.1	8.2	10	0	19.51	-	-	60	-40.49

Qp - Quasi-Peak detector
Ca - CISPR average detection

13. SETUP PHOTOS

Please refer to 15496277-EP1 for setup photos

APPENDIX A – SPOT CHECK EVALUATION

MODEL DIFFERENCES

The manufacturer hereby declares the following for models A3258, A3519, A3520 and A3521.

These models have the same PCB layout, design, common components, antennas, antenna locations and housing cases, except for FR2 is removed from variants and disabled/enabled cellular bands via software as shown below.

Model	FCC ID	IC ID	Feature Difference	Sim Support	Reference Model
A3258	BCG-E8947A	579C-E8947A	-With FR2 -No B11/21 -No UL MIMO	eSIM	-
A3519	BCG-E8951A	579C-E8951A	-Without FR2 -Added B11/21 -No UL MIMO	eSIM	A3258
A3520	BCG-E8952A	579C-E8952A	-Without FR2 -No B14, B29, B71, B11/21 -No UL MIMO	eSIM+pSIM	
A3521	BCG-E8953A	579C-E8953A	-Without FR2 -No B14, B29, B71, B11/21, B53 -No UL MIMO, MSS	pSIM+pSIM	

The spot check plan allows for data reuse from the reference model where the variant model data meets the limits and has not changed by more than the criteria from KDB 484596 D01 v03 equation (4).

$$d_{dB} = |V_{dB} - R_{dB}| \quad (1)$$

$$d_{dB} \leq d_{dBmax} \quad (2)$$

$$d_{dBmax}(M_{dB}) = \begin{cases} (3 + M_{dB}/20) \text{ dB} & , \text{ for } 0 \leq M_{dB} \leq 60 \text{ dB} \\ 6 \text{ dB} & , \text{ for } M_{dB} > 60 \text{ dB} \end{cases} \quad (4)$$

Where d_{dB} is deviation between the variant and the reference model, V_{dB} is variant spot check level, R_{dB} is the corresponding reference measurement level, d_{dBmax} is the maximum deviation d_{dB} allowed, and M_{dB} is the margin in dB.

SPOT CHECK VERIFICATION RESULTS SUMMARY FOR A3519

A3519 SPOT CHECK RESULTS										
Equipment Class / Technology	Frequency (GHz)	Mode	Test Item	Channel	Measured Frequency	Original Model: A3258	Sub Model: A3519	Delta (dB)	Margin	Remarks
						FCC ID : BCG-E8947A IC : 579C-E8947A	FCC ID : BCG-E8951A IC : 579C-E8951A			
DTS / Thread	2.4	802.15.4 Thread, ANT4	Output Power (dBm)	Low	Fundamental High Power	20.76	20.59	-0.17	-9.24	Note 1
		802.15.4 Low Power ANT4, AVG, Horiz	Radiated Bandedge (dBuV/m)	High	2.557744 GHz	45.20	45.17	-0.03	-8.80	Note 1
		802.15.4 Thread (worst-case) QP, Vert.	RSE (dBuV/m)	Mid	33.7002 MHz	25.07	24.73	-0.34	-14.93	Note 1

Note 1: Deviation from reference to variant within the value allowed by equation (4) in KDB 484596. Additional tests not required.

SPOT CHECK VERIFICATION RESULTS SUMMARY FOR A3520

A3520 SPOT CHECK RESULTS										
Equipment Class / Technology	Frequency (GHz)	Mode	Test Item	Channel	Measured Frequency	Original Model: A3258	Sub Model: A3520	Delta (dB)	Margin	Remarks
						FCC ID : BCG-E8947A IC : 579C-E8947A	FCC ID : BCG-E8952A IC : 579C-E8952A			
DTS / Thread	2.4	802.15.4 Thread, ANT4	Output Power (dBm)	Low	Fundamental High Power	20.76	20.64	-0.12	-9.24	Note 1
		802.15.4 Low Power ANT4, AVG, Horiz.	Radiated Bandedge (dBuV/m)	High	2.557744 GHz	45.20	45.09	-0.11	-8.80	Note 1
		802.15.4 Thread (worst-case) QP, Vert.	RSE (dBuV/m)	Mid	33.7002 MHz	25.07	24.32	-0.75	-14.93	Note 1

Note 1: Deviation from reference to variant within the value allowed by equation (4) in KDB 484596. Additional tests not required.

SPOT CHECK VERIFICATION RESULTS SUMMARY FOR A3521

A3521 SPOT CHECK RESULTS										
Equipment Class / Technology	Frequency (GHz)	Mode	Test Item	Channel	Measured Frequency	Original Model: A3258	Sub Model: A3521	Delta (dB)	Margin	Remarks
						FCC ID : BCG-E8947A IC : 579C-E8947A	FCC ID : BCG-E8953A IC : 579C-E8953A			
DTS / Thread	2.4	802.15.4 Thread, ANT4	Output Power (dBm)	Low	Fundamental High Power	20.76	20.51	-0.25	-9.24	Note 1
		802.15.4 Low Power ANT4, AVG, Horiz	Radiated Bandedge (dBuV/m)	High	2.557744 GHz	45.20	45.22	0.02	-8.80	Note 1
		802.15.4 Thread (worst-case) QP, Vert.	RSE (dBuV/m)	Mid	33.7002 MHz	25.07	25.18	0.11	-14.93	Note 1

Note 1: Deviation from reference to variant within the value allowed by equation (4) in KDB 484596. Additional tests not required.

END OF REPORT