TEST REPORT

Report Number: 15387930-E1V3

Applicant	:	SRAM LLC 1000 W Fulton Market 4th Floor Chicago, IL 60607, United States
Model	:	13300
Brand	:	SRAM
FCC ID	:	C9O-SPMB3
IC	:	10161A-SPMB3
EUT Description	:	Electronic Seatpost
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:
2024-10-23

Prepared by:
UL VERIFICATION SERVICES
47173 Benicia Street
Fremont, CA 94538 U.S.A.
TEL: (510) 319-4000
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ACCREDITED
CERT #0751.05

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	2024-08-19	Initial Issue	
V2	2024-10-11	Updated Section 8	Kiya Kedida
V3	2024-10-23	Updated Section 8	Kiya Kedida

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SRAM LLC
1000 W Fulton Market 4th Floor
Chicago, IL 60607, United States

EUT DESCRIPTION: Electronic Bicycle Seatpost with BLE, AIREA and ANT+

MODEL: 13300

BRAND: SRAM

SERIAL NUMBER: Conducted: 1804731234
Radiated: 1804731248

SAMPLE RECEIPT DATE: 2024-07-19

DATE TESTED: 2024-07-23 & 2024-07-25

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC 47 CFR 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 taken into account 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 duly 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.

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Approved & Released For
UL Verification Services Inc. By:

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Staff Engineer
Consumer Technology Division
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Prepared By:

Glenn Escano
Senior Test Engineer
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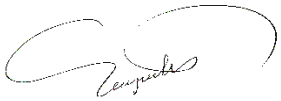

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Senior Laboratory Engineer
Consumer Technology Division
UL Verification Services Inc.

2nd Reviewed By:

Kiya Kedida
Senior Project Engineer
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UL Verification Services Inc.

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2. TEST RESULTS 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)

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	Compliant	None.
15.247 (b) (3)	RSS-247 5.4 (d)	Output Power	Compliant	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	Compliant	None.
15.247 (d)	RSS-247 5.5	Conducted Spurious Emissions	Compliant	None.
15.209, 15.205	RSS-GEN 8.9, 8.10	Radiated Emissions	Compliant	None.
15.207	RSS-Gen 8.8	AC Mains Conducted Emissions	NA	A.C. line conducted was not evaluated because the E.U.T. uses the battery

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3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with;
- FCC CFR 47 Part 2
- FCC CFR 47 Part 15
- FCC KDB 558074 D01 15.247 Meas Guidance
- ANSI C63.10-2013
- KDB 414788 D01 Radiated Test Site
- RSS-247 Issue 3.
- RSS-GEN Issue 5 + A1 + A2.

4. FACILITIES AND ACCREDITATION

UL Verification Services Inc. is accredited by A2LA, Certificate Number 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, U.S.A.	US0104	2324A	550739
☐	Building 2: 47266 Benicia Street Fremont, CA 94538, U.S.A.	US0104	22541	550739
☒	Building 4: 47658 Kato Rd Fremont, CA 94538, U.S.A.	US0104	2324B	550739

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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 regularly, 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

PARAMETER	U_{Lab}
Radio Frequency (Spectrum Analyzer)	141.16 Hz
Occupied Bandwidth	1.22%
Power Spectral Density	2.47 dB
RF Power Measurement Direct Method Using Power Meter	1.3 dB (PK) / 0.45 dB (AV)
Unwanted Emissions, Conducted	1.94 dB
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
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.29 dB
Time Domain Measurements	3.39%
Temperature	0.57˚C
Humidity	3.39%
DC Supply Voltages	0.57%

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

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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 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

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6. EQUIPMENT UNDER TEST

6.1. EUT DESCRIPTION

The EUT is an Electronic Bicycle Seatpost with BLE, AIREA and ANT+.

6.2. MAXIMUM OUTPUT POWER

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

Frequency Range (MHz)	Mode	Peak		Average	
		Output Power (dBm)	Output Power (mW)	Output Power (dBm)	Output Power (mW)
2402 - 2480	BLE	6.55	4.52	6.44	4.41

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

The antenna gain and type, as provided by the manufacturer, are as follows:

The radio utilizes a ceramic chip antenna, with a maximum gain of 1.1 dBi.

6.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was version B-1.0.

The test utility software used during testing was nRF Connect version 4.28.1.

6.5. WORST-CASE CONFIGURATION AND MODE

Radiated emissions below 1GHz and above 18GHz were performed with the EUT set to transmit at the channel with the highest output power as the worst-case scenario.

Band edge and radiated emissions between 1GHz and 18GHz were performed with the EUT set to transmit at the highest power on low, middle, and high channels.

The fundamental of the EUT was investigated in three orthogonal orientations X, Y, & Z. It was determined that X orientation was the worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

The worst-case data rate as provided by the client was 1Mbps.

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6.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List			
Description	**Manufacturer**	**Model**	**Serial Number**
Phone	Apple	MT3K2LL/A	F71Z4FB4KXKN
DC Power Supply	TDK-Lambda	ZUP20-10	DoC

I/O CABLES (CONDUCTED EMISSIONS)

I/O CABLE LIST						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	AC	1	AC	Un-shielded	1.5	AC Main to DC Supply, to Analyzer/ Power Meter
2	DC	1	DC	Shielded	0.5	Power Supply to EUT
3	Antenna Port	1	SMA	Un-shielded	0.1	EUT to Analyzer

TEST SETUP

The EUT is normally powered by a custom Li-Ion battery at 7.4V. The phone is used for setting up purposes and was removed during testing.

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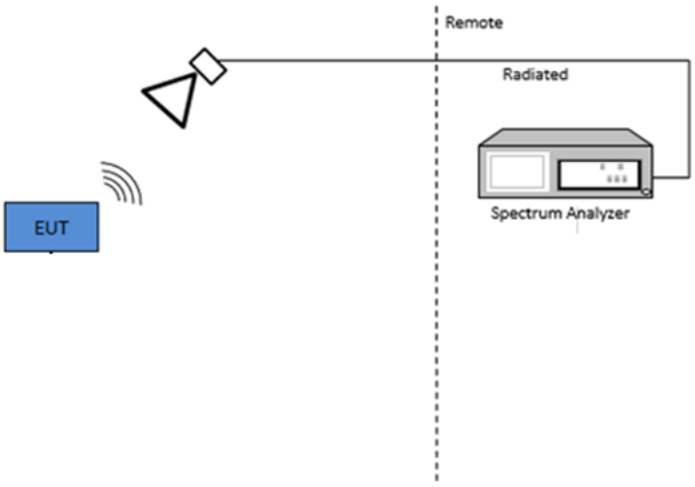
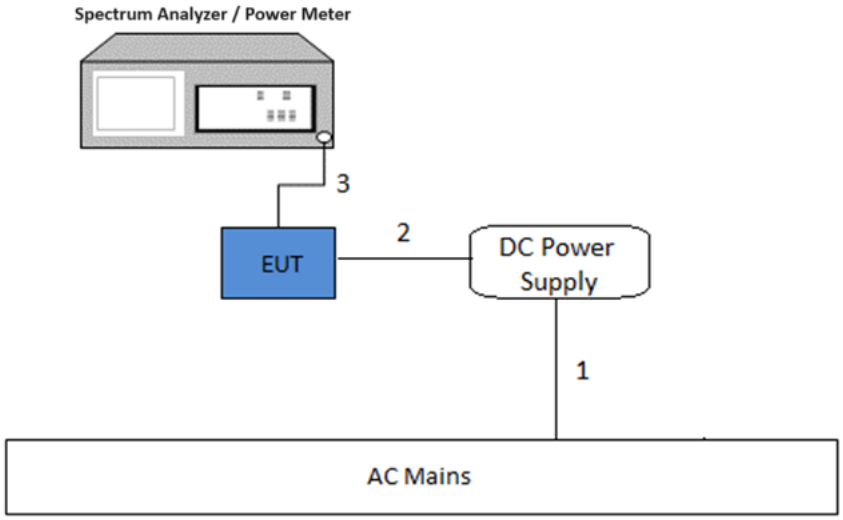
SETUP DIAGRAM

Radiated Configuration



Conducted Configuration



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7. MEASUREMENT METHOD

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

6 dB BW: ANSI C63.10 Subclause -11.8.1 RBW ≥ DTS BW

Occupied BW (99%): ANSI C63.10-2013 Section 6.9.3

Output Power: ANSI C63.10 Subclause -11.9.1.3 Method PKPM1 Peak-reading power meter

Output Power: ANSI C63.10 Subclause -11.9.2.3.2 Method AVGPM-G (Measurement using a gated RF average-reading power meter)

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

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

Radiated emissions restricted frequency bands: ANSI C63.10 Subclause -11.12.1

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

Band-edge: ANSI C63.10 Section 6.10

Radiated Spurious Emissions Below 30MHz: ANSI C63.10-2013 Section 6.4

* *The A.C. line conducted was not evaluated because a custom Li-Ion 7.4VDC battery powers the E.U.T.*

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8. TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST					
Description	**Manufacturer**	**Model**	**ID Num**	**Cal Due**	**Last Cal**
Antenna, Broadband Hybrid, 30MHz to 3GHz	SunAR RF Motion	JB3	203089	2025-04-30	2023-04-09
Amplifier, 9KHz to 1GHz, 32dB	SONOMA INSTRUMENT	310	175953	2025-03-31	2024-03-25
Antenna, Horn 1-18GHz	ETS-Lindgren (Cedar Park, Texas)	3117	80404	2024-08-31	2023-08-08
RF Filter Box, 1-18GHz	FREMONT	n/a	197920	2025-03-31	2024-03-30
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	225688	2025-02-11	2024-02-11
Antenna, Horn 18 to 26.5GHz	ARA	MWH-1826/B	199659	2024-12-31	2022-12-06
Amplifier 18-26.5GHz, +5Vdc, 60dB min	AMPLICAL	AMP18G26.5-60	234683	2025-05-31	2024-05-13
Antenna, Passive Loop 30Hz - 1MHz	ELECTRO METRICS	EM-6871	170013	2024-07-31	2023-07-28
Antenna, Passive Loop 100KHz - 30MHz	ELECTRO METRICS	EM-6872	170015	2024-07-31	2023-07-28
Spectrum Analyzer, PXA, 2Hz to 26.5GHz	Keysight Technologies Inc	N9030B	245121	2025-02-07	2024-02-07
Power Meter, P-series single channel	Keysight Technologies Inc	N1911A	90733	2025-01-31	2024-01-25
Power Sensor, P - series, 50MHz to 18GHz, Wideband	Keysight Technologies Inc	N1921A	90391	2025-06-30	2024-06-17
10dB Fixed Attenuator	Pasternack Enterprises	PE7087-10	236193	Verified	Verified
UL TEST SOFTWARE LIST					
Radiated Software	UL	UL EMC	Ver 2023-01-18, 2023-03-03, 2023-05-01		
Antenna Port Software	UL	UL RF	Ver 2022-08-16		

NOTES:

1. The equipment listed above calibrated during the testing period was set for test after the calibration.
2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before the equipment expiration date.
3. 10dB fixed attenuator was verified before testing by transmitting signal through attenuator to a network analyze and see the rated attenuation value of 10dB loss on the reading.

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9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

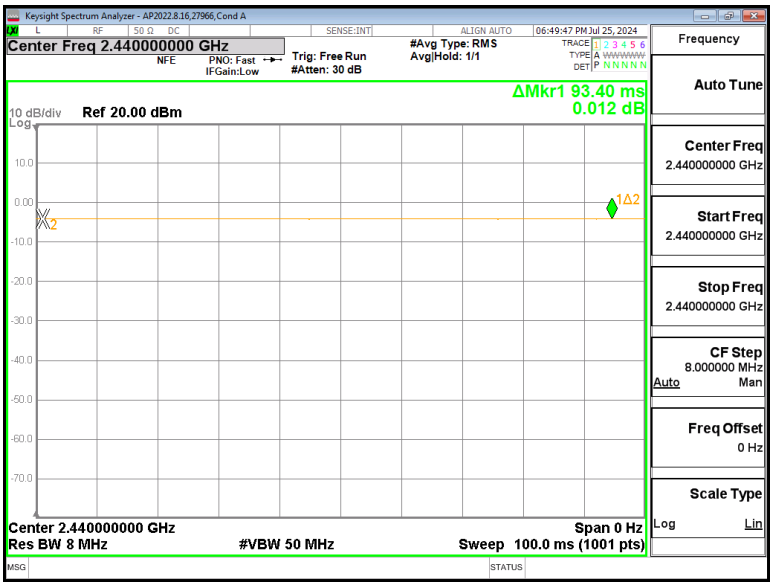
PROCEDURE

KDB 558074 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						
BLE	93.400	93.400	1.000	100.00	0.00	0.010

DUTY CYCLE PLOTS



DUTY CYCLE BLE

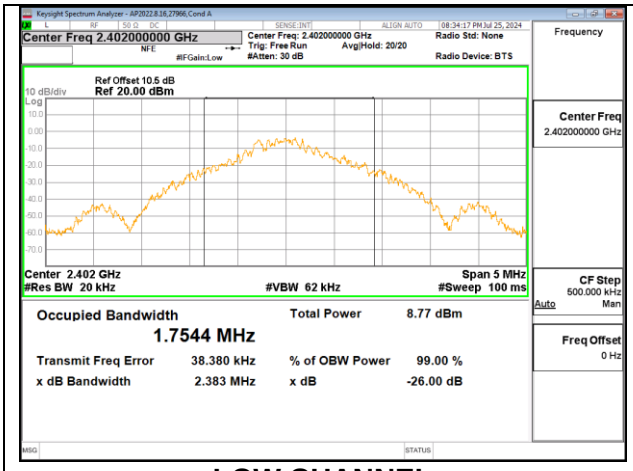
9.2. 99% BANDWIDTH

LIMITS

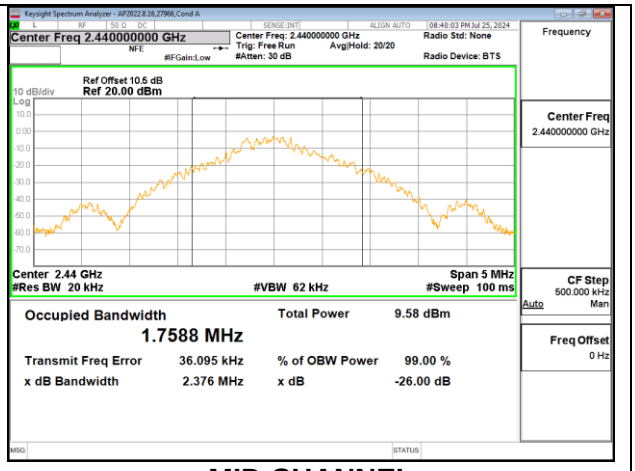
None; for reporting purposes only.

RESULTS

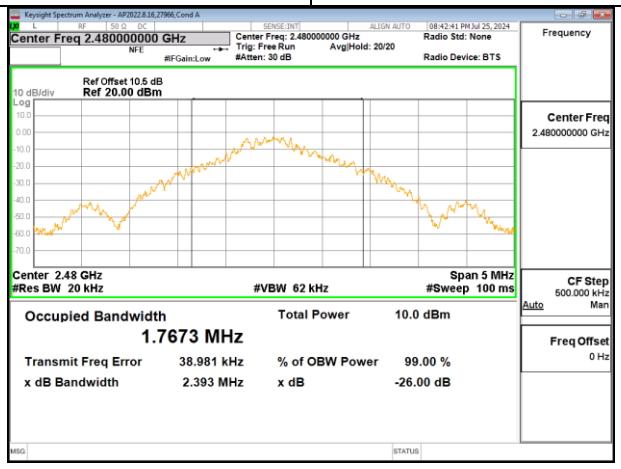
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.7544
Middle	2440	1.7588
High	2480	1.7673



LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

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9.3. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

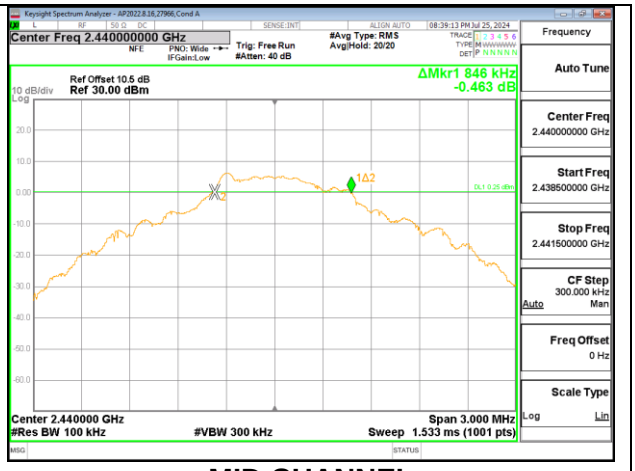
RSS-247 5.2 (a)

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

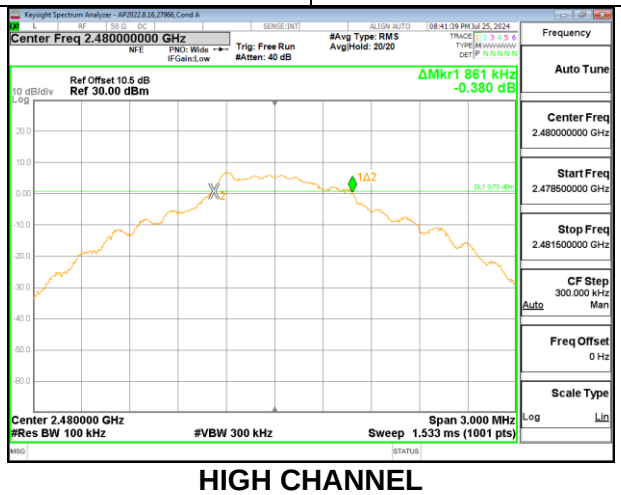
RESULTS

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.846	0.5
Middle	2440	0.846	0.5
High	2480	0.861	0.5

LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

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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

The transmitter output is connected to a power meter.

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

RESULTS

Tested By:	PV27966
Date:	2024-07-25

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	5.36	30	-24.640
Middle	2440	6.06	30	-23.940
High	2480	6.55	30	-23.450

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9.5. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

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

RESULTS

Tested By:	PV 27966
Date:	2024-07-25

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	5.22
Middle	2440	5.93
High	2480	6.44

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9.6. POWER SPECTRAL DENSITY

LIMITS

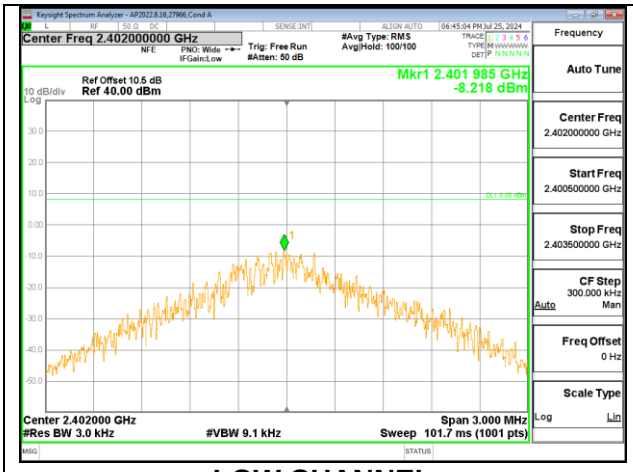
FCC §15.247 (e)

RSS-247 (5.2) (b)

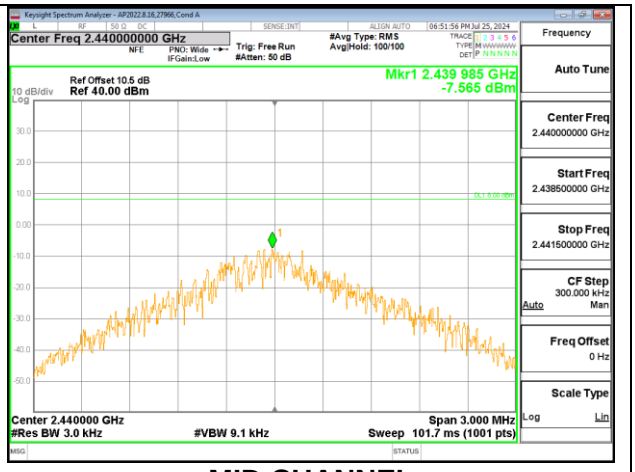
The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

RESULTS

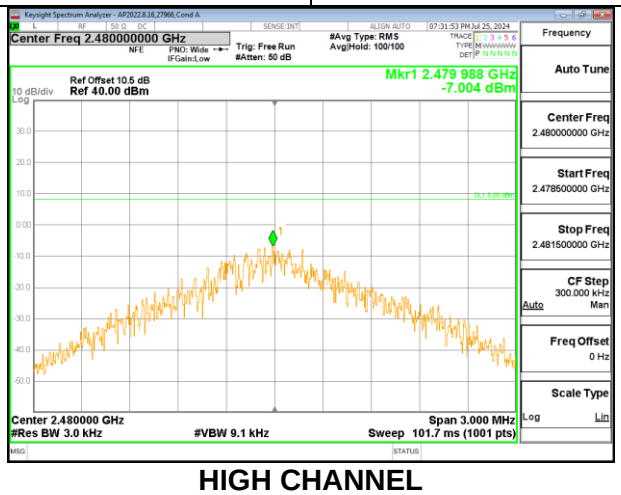
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	-8.218	8	-16.22
Middle	2440	-7.565	8	-15.57
High	2480	-7.004	8	-15.00



LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

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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 dB.

RESULTS

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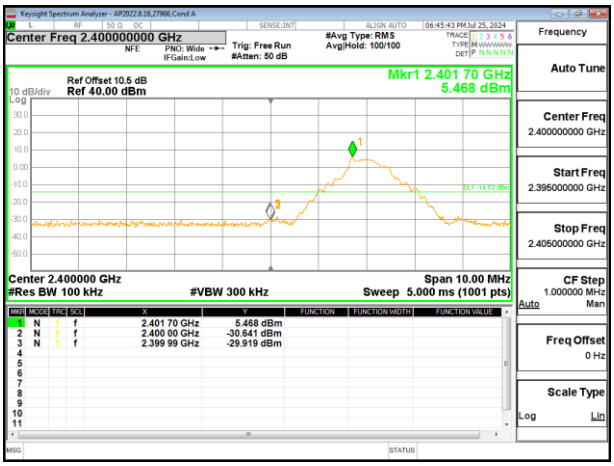
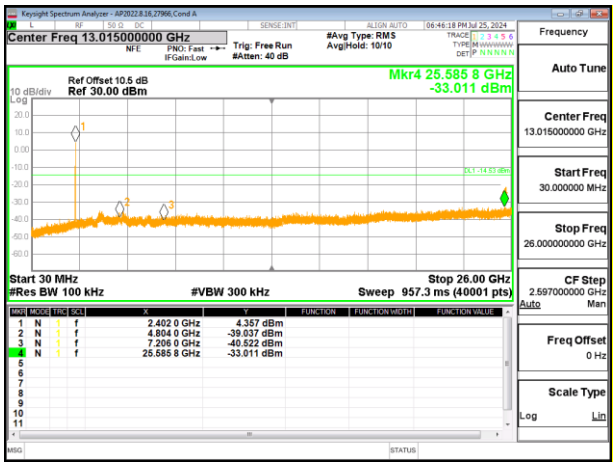
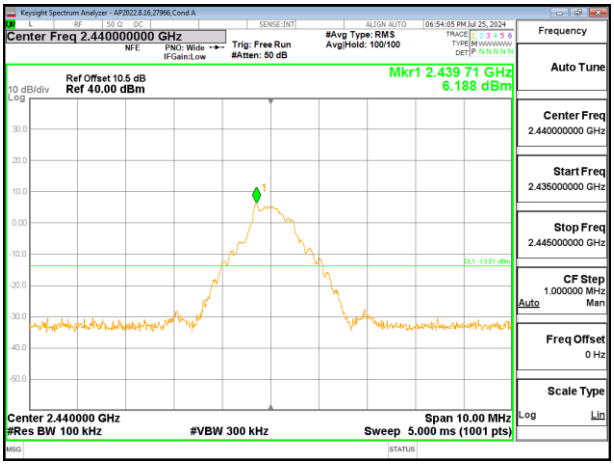


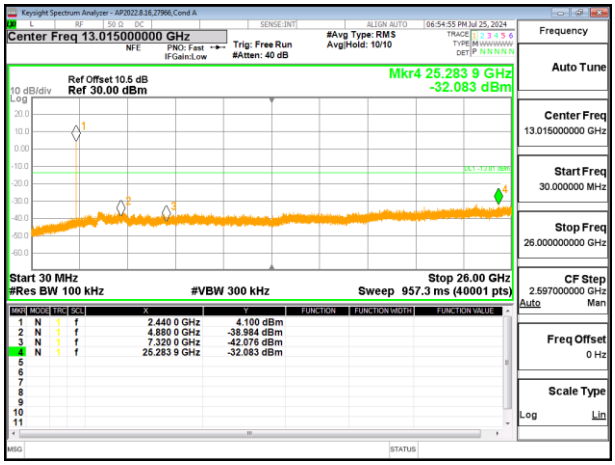
LOW CHANNEL BANDEDGE



OUT-OF-BAND LOW CHANNEL

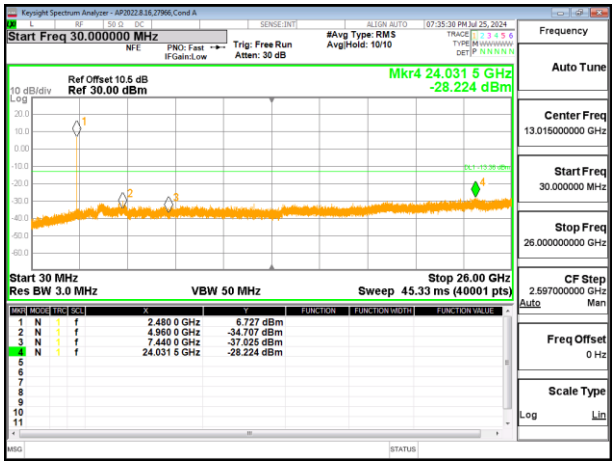


IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL

HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

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10. RADIATED TEST RESULTS

10.1. LIMITS AND PROCEDURE

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, and 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 in the 30-1000MHz range, 9kHz for peak and/or quasi-peak detection measurements in the 0.15-30MHz range and 200Hz for peak and/or quasi-peak detection measurements in the 9 to 150kHz range. Peak detection is used unless otherwise noted as quasi-peak or average (9-90kHz and 110-490kHz).

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.

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The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated 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.

For below 30MHz testing, the investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel), parallel and perpendicular are the worst orientations, therefore testing was performed on these two orientations only.

Based 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.

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 reported in the table), using the 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.

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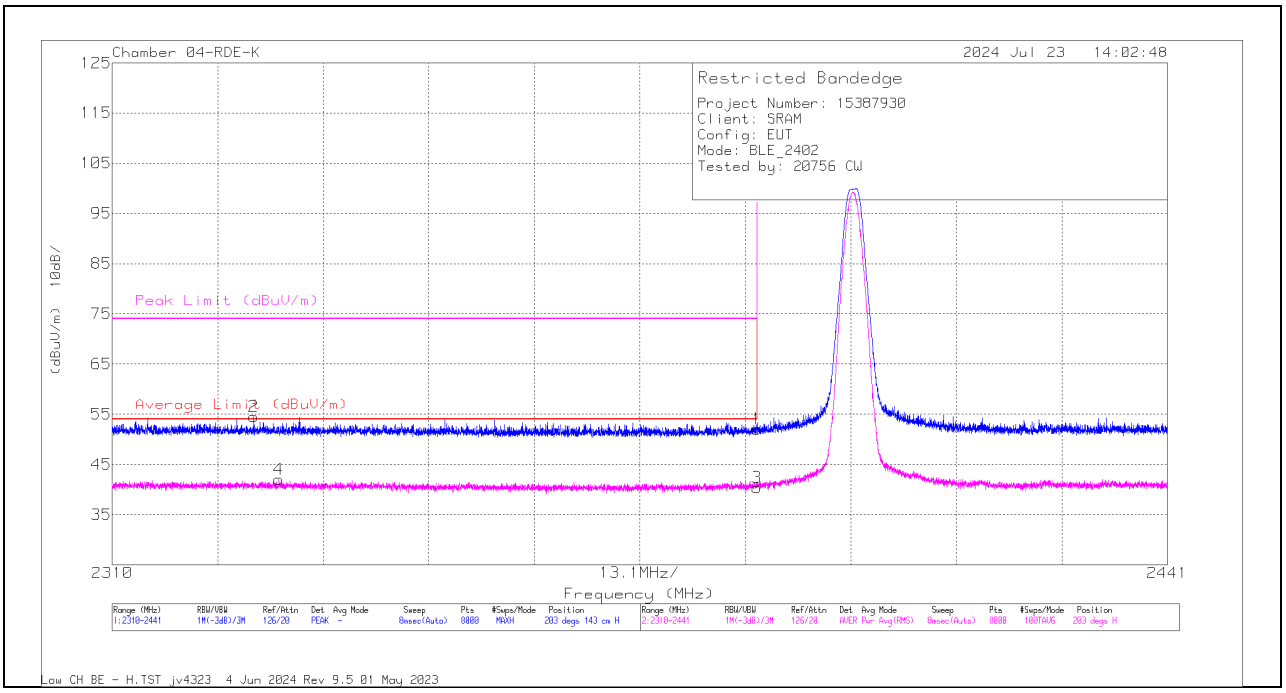
10.2. TRANSMITTER ABOVE 1 GHz

Antenna 1

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80404 3m ACF (dB/m)	Amp/Cbl/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2327.573	57.24	Pk	32.7	-35.4	54.54	-	-	74	-19.46	203	143	H
4	* 2330.701	44.81	RMS	32.6	-35.4	42.01	54	-11.99	-	-	203	143	H
1	* 2390	55.08	Pk	32.2	-35.2	52.08	-	-	74	-21.92	203	143	H
3	* 2390	43.37	RMS	32.2	-35.2	40.37	54	-13.63	-	-	203	143	H

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

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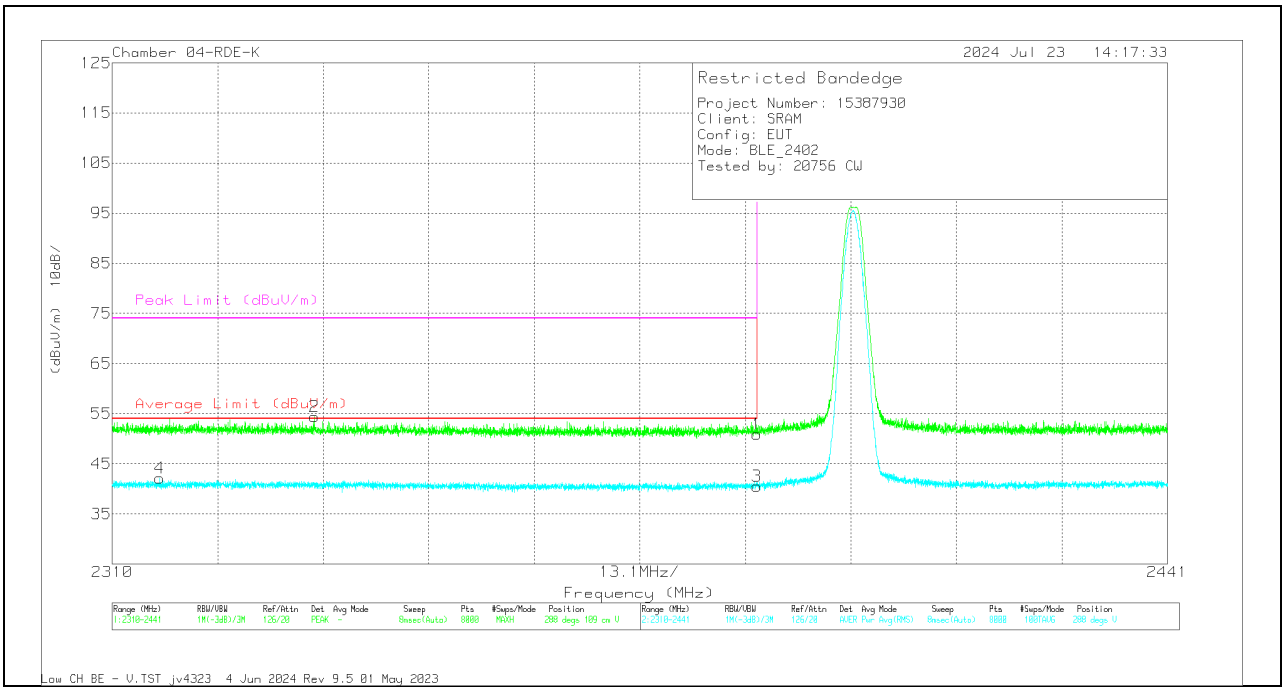
VERTICAL RESULT



Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80404 3m ACF (dB/m)	Amp/Cbl/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	* 2315.896	44.94	RMS	32.6	-35.4	42.14	54	-11.86	-	-	288	109	V
2	* 2335.073	57.24	Pk	32.6	-35.4	54.44	-	-	74	-19.56	288	109	V
1	* 2390	53.91	Pk	32.2	-35.2	50.91	-	-	74	-23.09	288	109	V
3	* 2390	43.5	RMS	32.2	-35.2	40.5	54	-13.5	-	-	288	109	V

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

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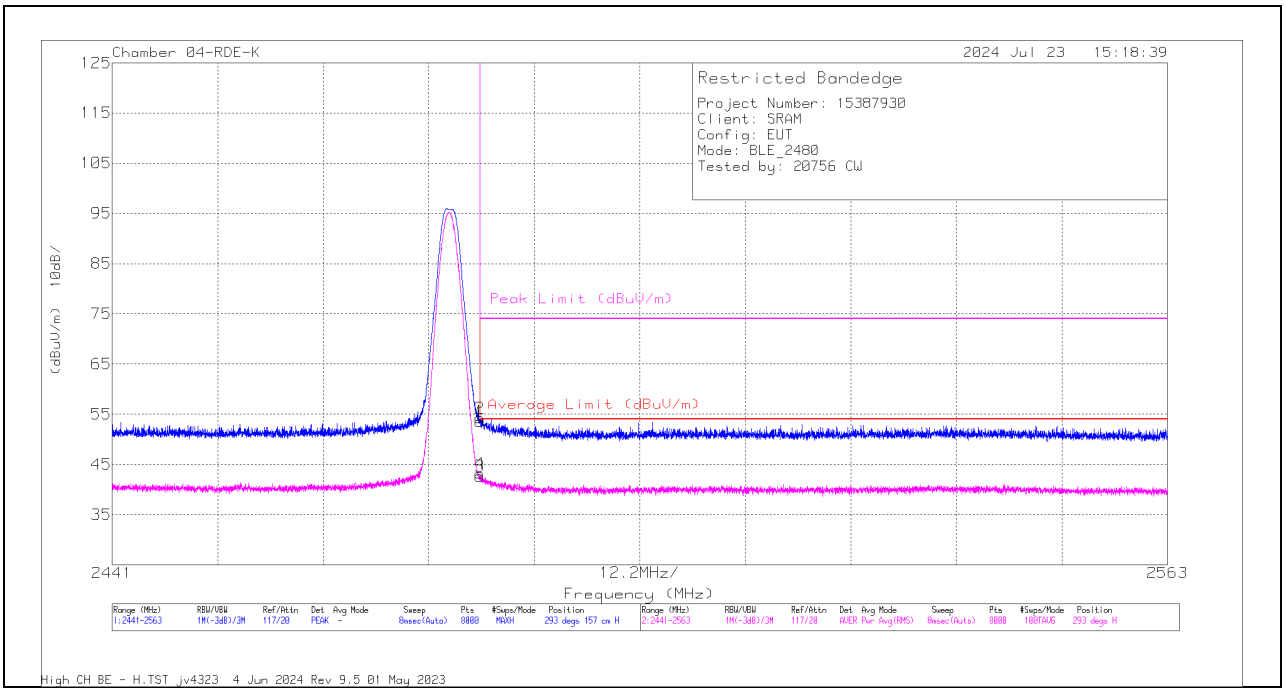
BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80404 3m ACF (dB/m)	Amp/Cbl/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2483.5	56.08	Pk	32.2	-34.8	53.48	-	-	74	-20.52	293	157	H
3	* 2483.5	45.24	RMS	32.2	-34.8	42.64	54	-11.36	-	-	293	157	H
4	* 2483.507	45.8	RMS	32.2	-34.8	43.2	54	-10.8	-	-	293	157	H
2	* 2483.538	56.82	Pk	32.2	-34.8	54.22	-	-	74	-19.78	293	157	H

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

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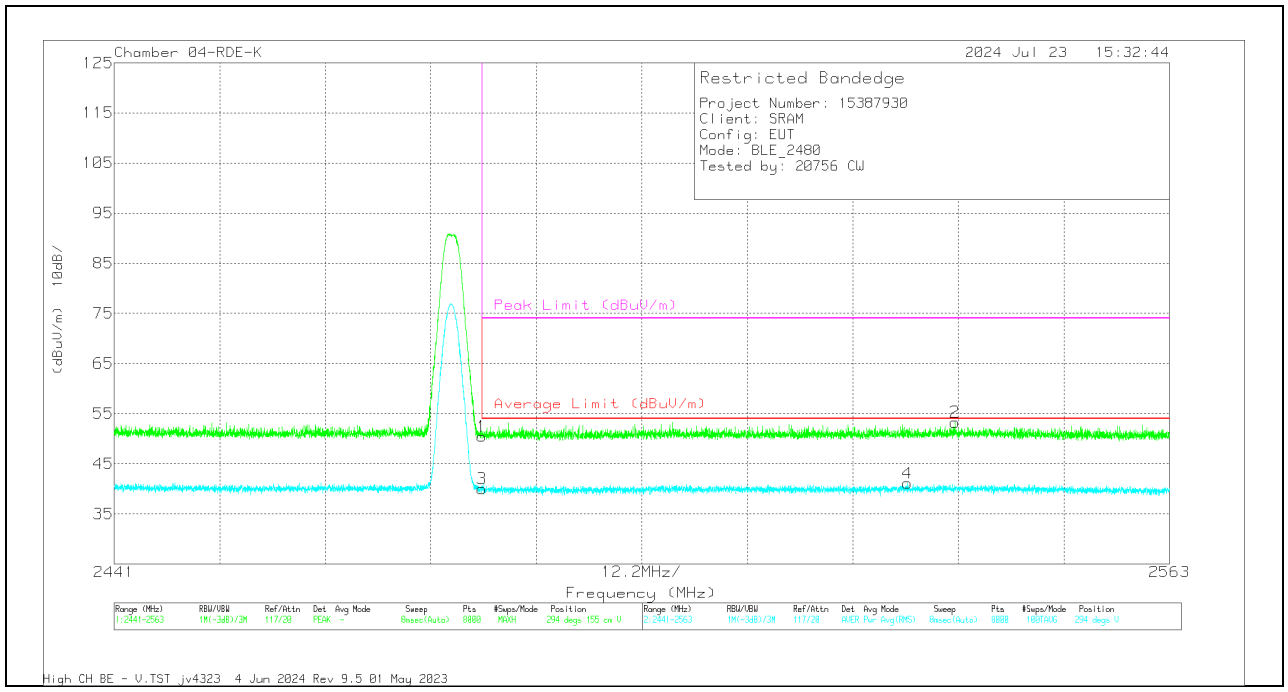
VERTICAL RESULT



Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80404 3m ACF (dB/m)	Amp/Cbl/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2483.5	53.06	Pk	32.2	-34.8	50.46	-	-	74	-23.54	294	155	V
3	* 2483.5	42.65	RMS	32.2	-34.8	40.05	54	-13.95	-	-	294	155	V
4	* 2532.71	43.39	RMS	32.3	-34.6	41.09	54	-12.91	-	-	294	155	V
2	* 2538.232	55.53	Pk	32.4	-34.6	53.33	-	-	74	-20.67	294	155	V

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

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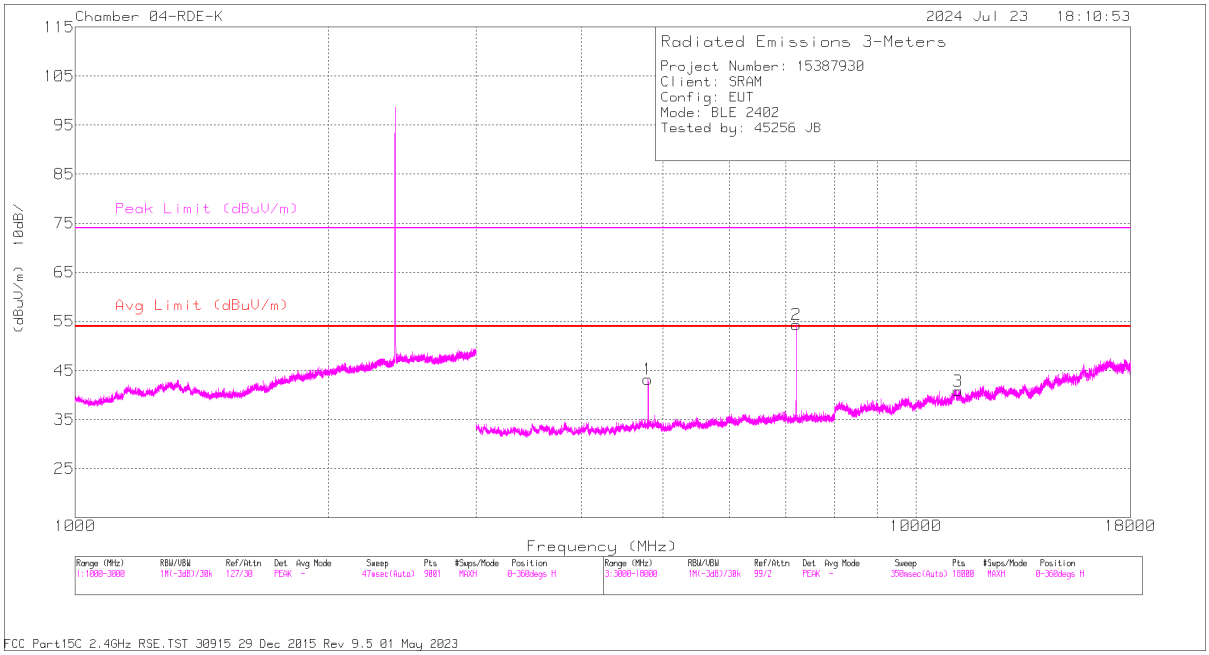
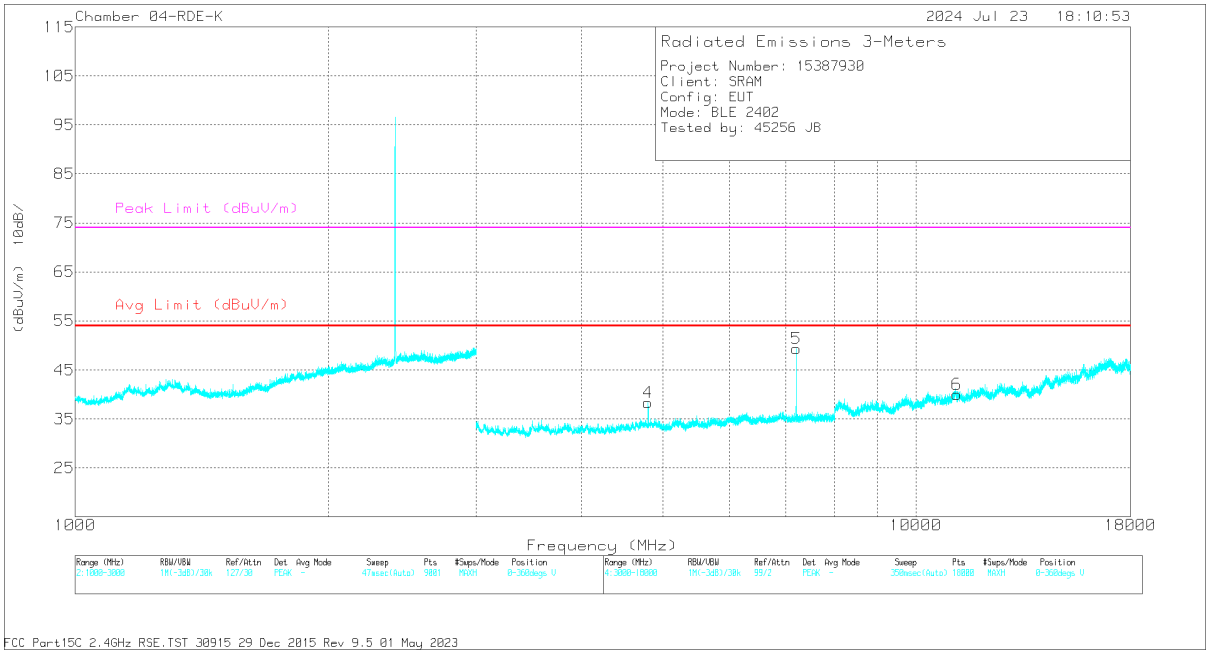
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80404 3m ACF (dB/m)	Amp/Cbl/Fltr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4803.61	54.66	PK2	34.9	-41	48.56	-	-	74	-25.44	347	219	H
	* 4803.916	47.47	MAv1	34.9	-41	41.37	54	-12.63	-	-	347	219	H
3	* 11223.648	48.68	PK2	38	-36	50.68	-	-	74	-23.32	139	382	H
	* 11223.478	36.99	MAv1	38	-36	38.99	54	-15.01	-	-	139	382	H
4	* 4804.683	55.1	PK2	34.8	-41	48.9	-	-	74	-25.1	336	239	V
	* 4803.576	47.83	MAv1	34.9	-41	41.73	54	-12.27	-	-	336	239	V
6	* 11189.507	48.33	PK2	38	-36.7	49.63	-	-	74	-24.37	224	246	V
	* 11188.033	37.2	MAv1	38	-36.7	38.5	54	-15.5	-	-	224	246	V
2	7205.11	60.03	PK2	36.1	-38.9	57.23	-	-	-	-	78	145	H
5	7205.12	60.43	PK2	36.1	-38.9	57.63	-	-	-	-	83	106	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

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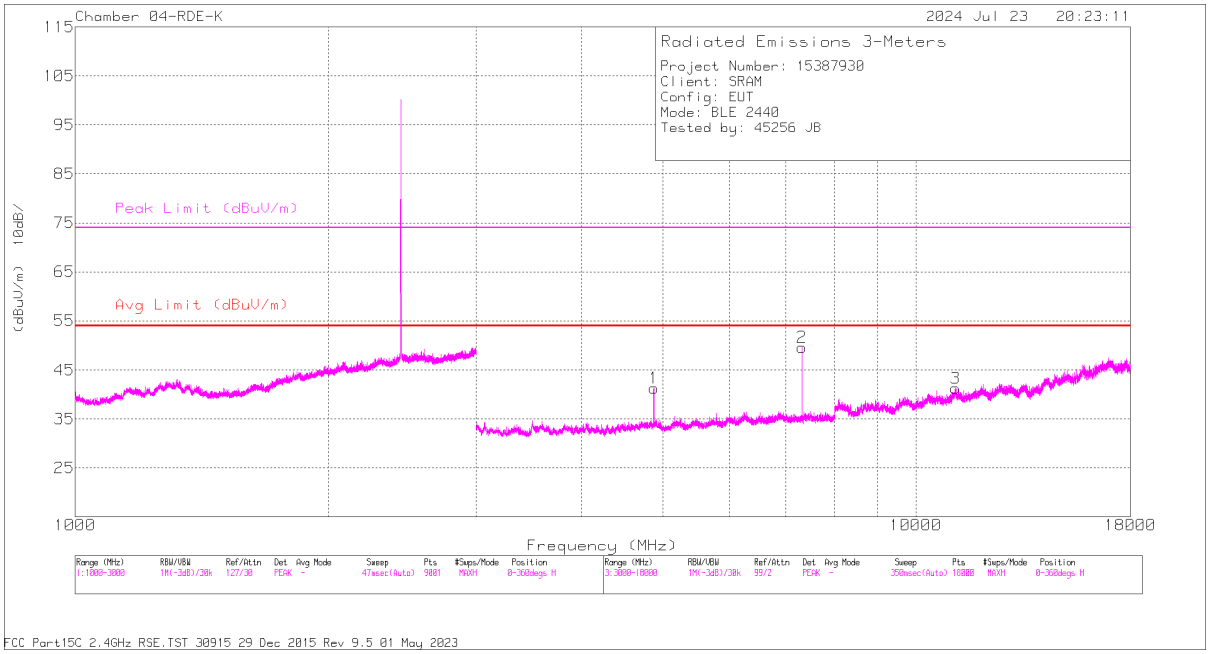
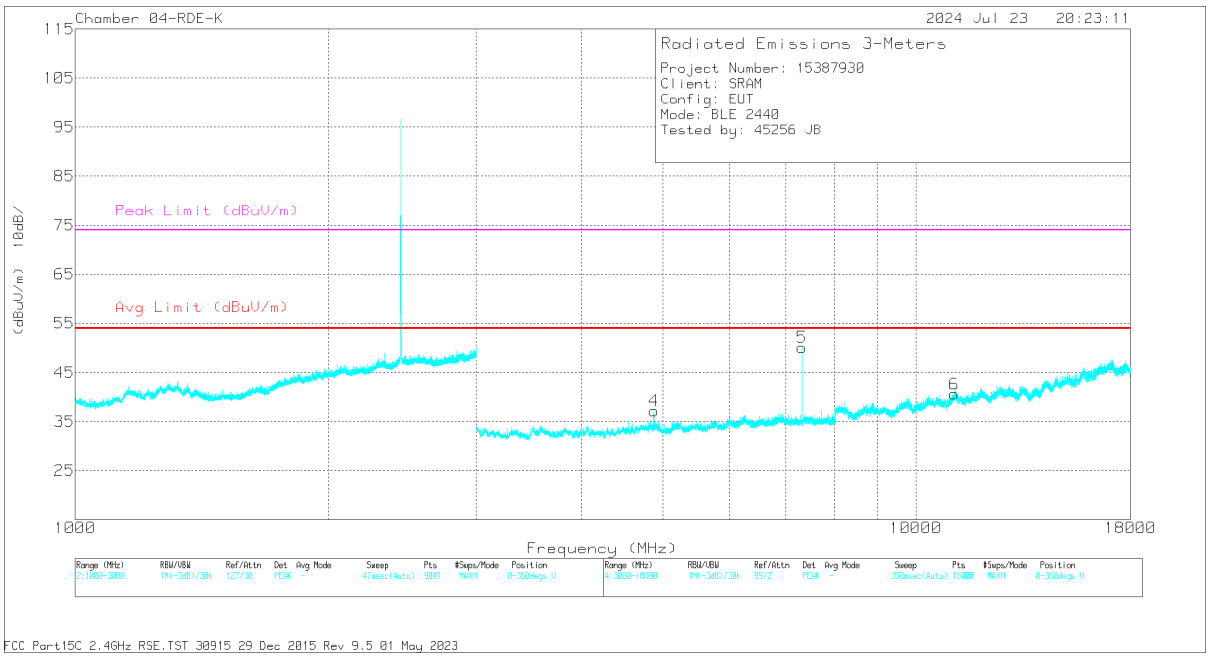
MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80404 3m ACF (dB/m)	Amp/Cbl/Fltr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4880.485	54.58	PK2	34.4	-41	47.98	-	-	74	-26.02	7	325	H
	* 4879.755	46.55	MAv1	34.4	-41	39.95	54	-14.05	-	-	7	325	H
2	* 7318.983	58.77	PK2	36	-38.5	56.27	-	-	74	-17.73	84	120	H
	* 7319.074	53.73	MAv1	36	-38.5	51.23	54	-2.77	-	-	84	120	H
3	* 11154.183	49.63	PK2	38.1	-36.3	51.43	-	-	74	-22.57	182	230	H
	* 11153.499	37.81	MAv1	38.1	-36.3	39.61	54	-14.39	-	-	182	230	H
4	* 4880.112	51.86	PK2	34.4	-41	45.26	-	-	74	-28.74	182	361	V
	* 4879.988	41.13	MAv1	34.4	-41	34.53	54	-19.47	-	-	182	361	V
5	* 7318.996	58.68	PK2	36	-38.5	56.18	-	-	74	-17.82	84	137	V
	* 7319.122	53.45	MAv1	36	-38.5	50.95	54	-3.05	-	-	84	137	V
6	* 11112.866	48.94	PK2	37.8	-37	49.74	-	-	74	-24.26	246	177	V
	* 11111.391	37.62	MAv1	38	-37.1	38.52	54	-15.48	-	-	246	177	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

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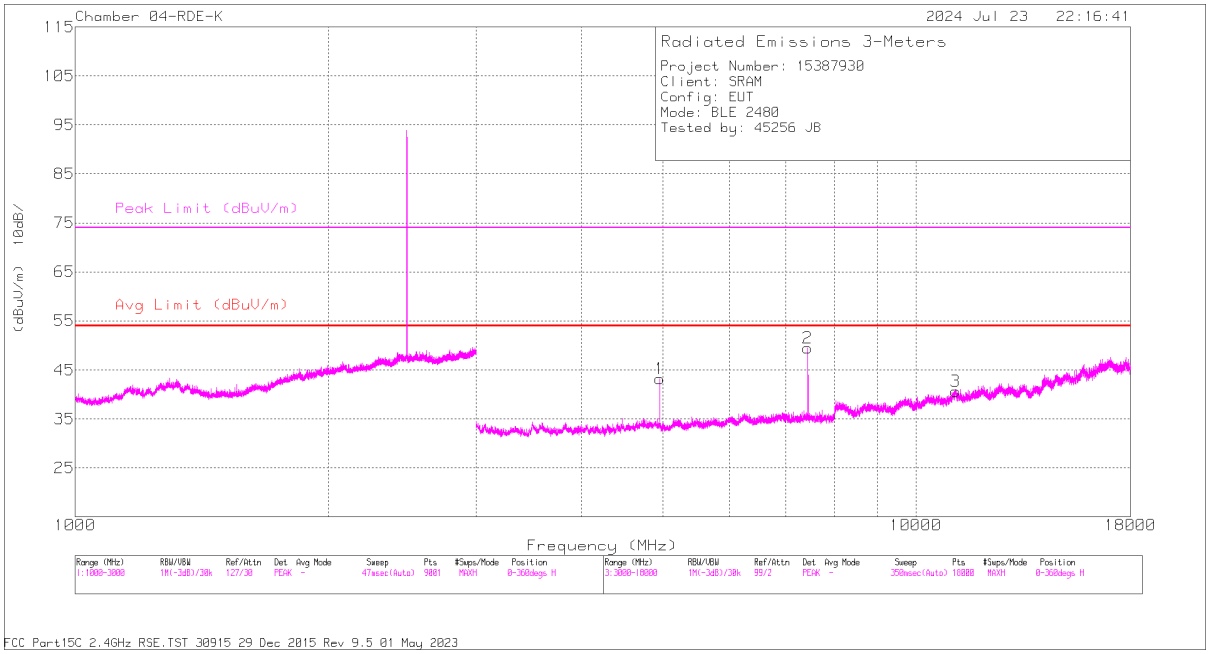
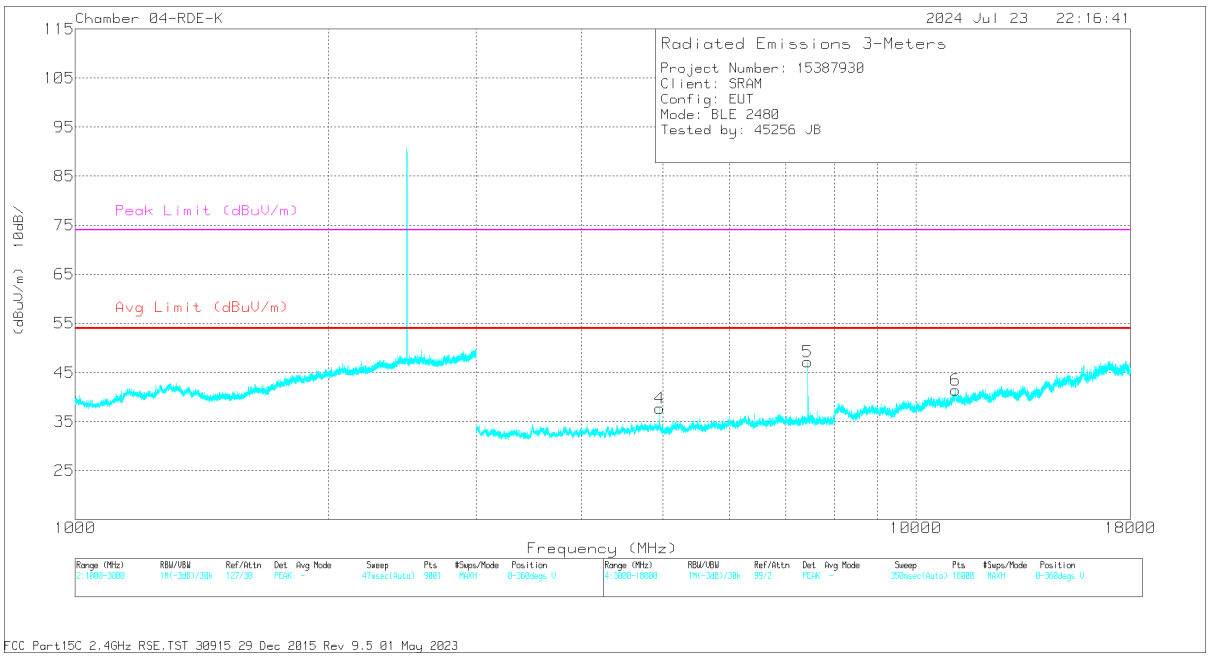
HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80404 3m ACF (dB/m)	Amp/Cbl/Fltr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4960.726	56.02	PK2	34.1	-41	49.12	-	-	74	-24.88	338	298	H
	* 4959.605	48.82	MAv1	34.1	-41	41.92	54	-12.08	-	-	338	298	H
2	* 7438.906	57.23	PK2	35.8	-38.3	54.73	-	-	74	-19.27	284	103	H
	* 7439.175	51.84	MAv1	35.8	-38.3	49.34	54	-4.66	-	-	284	103	H
3	* 11142.001	49.69	PK2	38	-36.4	51.29	-	-	74	-22.71	69	371	H
	* 11141.168	38.05	MAv1	37.9	-36.4	39.55	54	-14.45	-	-	69	371	H
4	* 4959.262	56.07	PK2	34.1	-41	49.17	-	-	74	-24.83	350	280	V
	* 4959.711	49.38	MAv1	34.1	-41	42.48	54	-11.52	-	-	350	280	V
5	* 7438.897	57.57	PK2	35.8	-38.3	55.07	-	-	74	-18.93	281	111	V
	* 7439.09	52.14	MAv1	35.8	-38.3	49.64	54	-4.36	-	-	281	111	V
6	* 11144.411	49.56	PK2	38	-36.4	51.16	-	-	74	-22.84	317	297	V
	* 11145.269	37.97	MAv1	37.9	-36.4	39.47	54	-14.53	-	-	317	297	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

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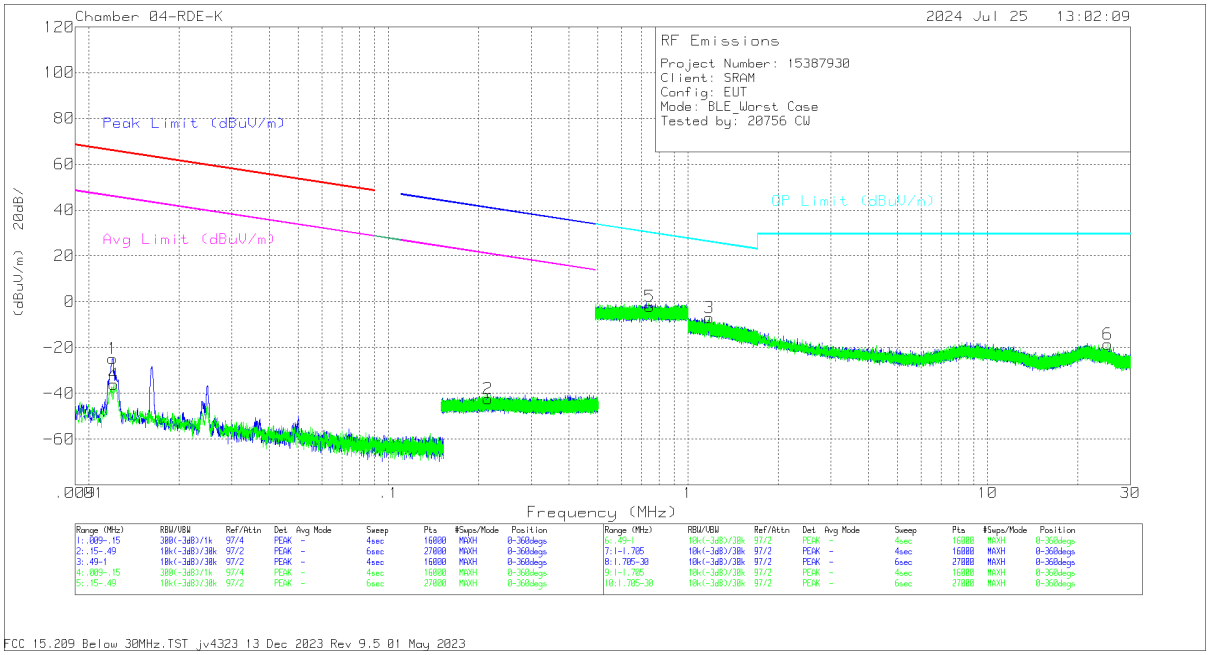
10.3. WORST CASE BELOW 30MHz

SPURIOUS EMISSIONS BELOW 30 MHz (WORST-CASE CONFIGURATION)



ANTENNA - FACE ON/OFF

Below 30MHz Data

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF)	Amp/Cbl (dB)	Dist Corr 300m	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
1	.012	26.23	Pk	60.1	-31.1	-80	-24.77	65.99	-90.76	45.99	-70.76	0-360	On
4	.0121	14.9	Pk	60.1	-31.1	-80	-36.1	65.92	-102.02	45.92	-82.02	0-360	Off
2	.2148	13.39	Pk	56.3	-32.1	-80	-42.41	40.98	-83.39	20.98	-63.39	0-360	On

Pk - Peak detector

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF)	Amp/Cbl (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity
5	.7451	13.63	Pk	56.4	-32.1	-40	-2.07	30.17	-32.24	0-360	Off
3	1.1757	19.17	Pk	45.8	-32.1	-40	-7.13	26.22	-33.35	0-360	On
6	25.2525	19.31	Pk	33.6	-31.4	-40	-18.49	29.5	-47.99	0-360	Off

Pk - Peak detector

Note: The Limits in FCC 47 CRF, 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 reported in the table) using the 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.

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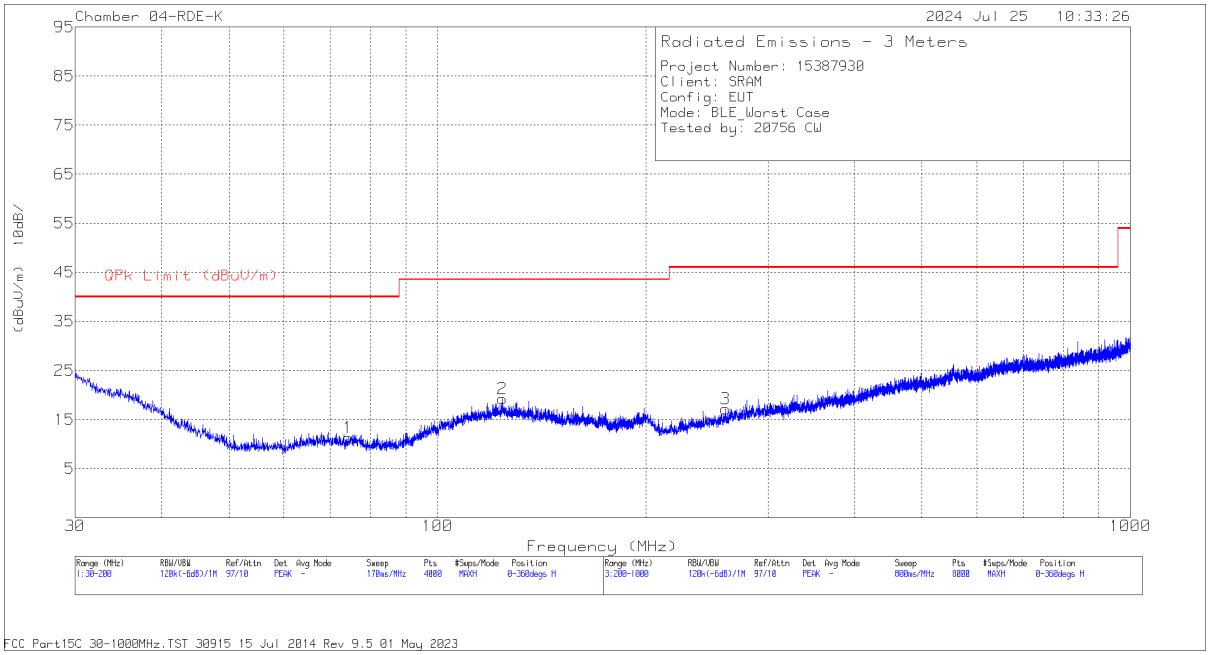
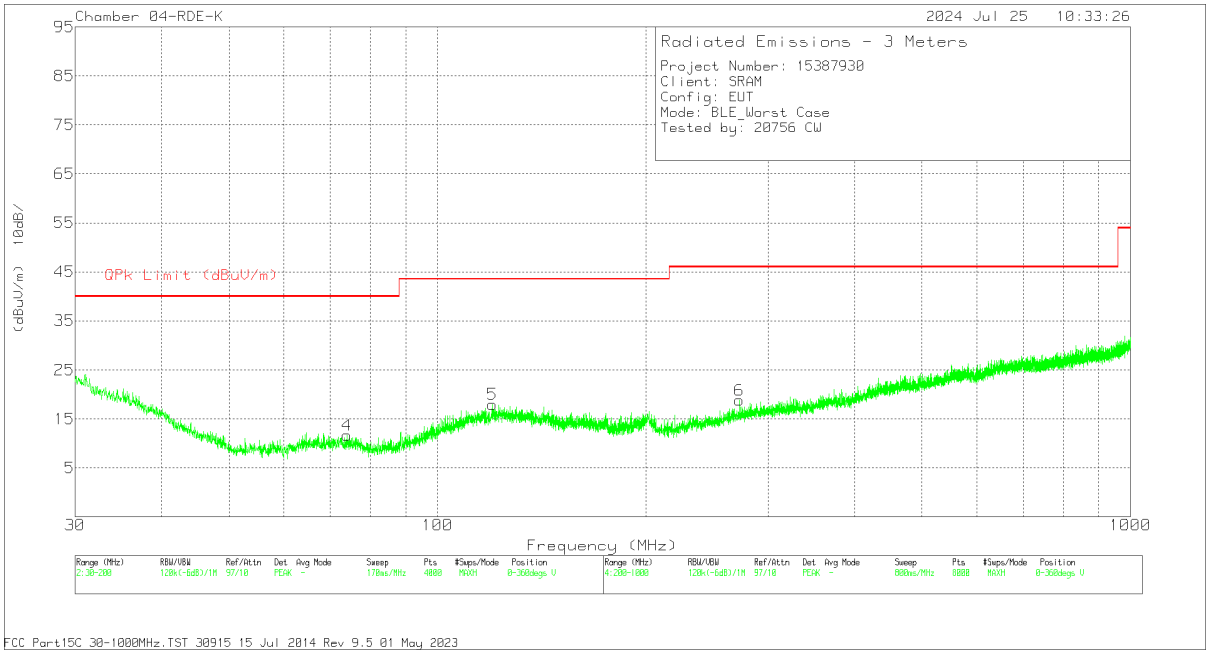
10.4. WORST CASE BELOW 1 GHz

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



HORIZONTAL



VERTICAL

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Below 1GHz Data

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	203089 ACF (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 74.2965	28.36	Pk	14.1	-31.2	11.26	40	-28.74	0-360	199	H
2	* 123.948	28.01	Pk	20	-30.2	17.81	43.52	-25.71	310	137	H
	* 123.948	21.27	Qp	20	-30.2	11.07	43.52	-32.45	310	137	H
4	* 74.0839	28.84	Pk	14.1	-31.3	11.64	40	-28.36	0-360	101	V
5	* 120.123	28.35	Pk	19.9	-30.3	17.95	43.52	-25.57	0-360	101	V
3	* 260.308	28.61	Pk	18	-29.4	17.21	46.02	-28.81	0-360	399	H
6	* 272.709	29.5	Pk	19	-29.7	18.8	46.02	-27.22	0-360	299	V

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

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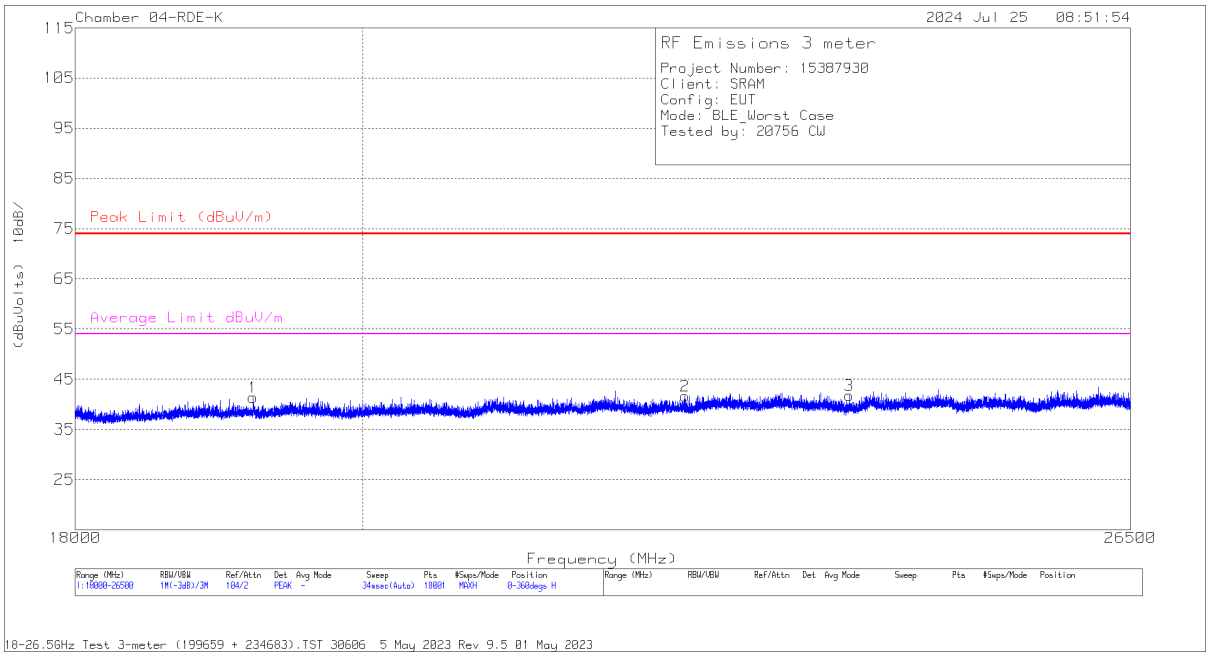
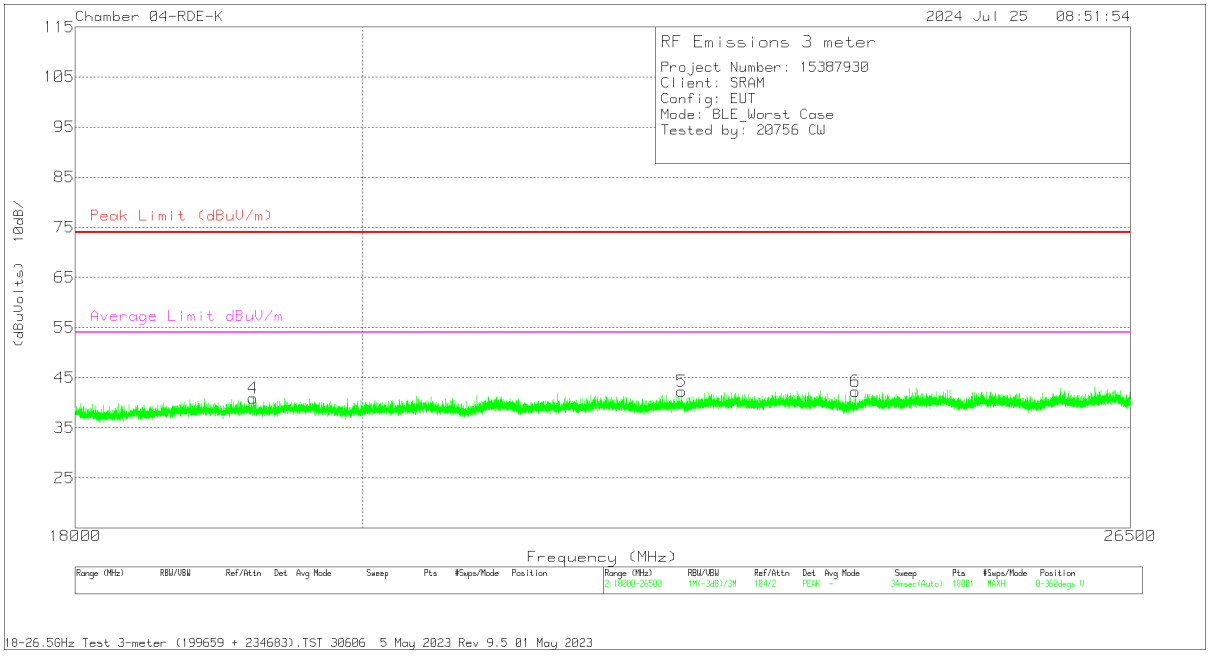
10.5. WORST CASE 18-26 GHz

SPURIOUS EMISSIONS 18-26 GHz (WORST-CASE CONFIGURATION)



HORIZONTAL



VERTICAL

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47173 Benicia Street, Fremont, CA 94538; USA TEL:(510) 319-4000 FAX:(510) 661-0888

18 – 26GHz DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Horn ACF (dB/m)	234683 Amp/Cbl (dB)	Cable (dB)	Corrected Reading (dBuV)	Peak Limit (dBuV/m)	PK Margin (dB)	Average Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 19213.611	52.65	Pk	32.5	-62.5	18.7	41.35	74	-32.65	54	-12.65	0-360	101	H
2	* 22509.248	50.8	Pk	33.3	-62.6	20.1	41.6	74	-32.4	54	-12.4	0-360	199	H
3	* 23905.608	49.82	Pk	33.7	-62.5	20.7	41.72	74	-32.28	54	-12.28	0-360	199	H
4	* 19213.611	52.23	Pk	32.5	-62.5	18.7	40.93	74	-33.07	54	-13.07	0-360	101	V
5	* 22480.442	51.49	Pk	33.3	-62.6	20.1	42.29	74	-31.71	54	-11.71	0-360	200	V
6	* 23957.553	50.44	Pk	33.7	-62.6	20.7	42.24	74	-31.76	54	-11.76	0-360	200	V

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

UL VERIFICATION SERVICES
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