

TEST REPORT

Report Number : 15159030-E1V4

Applicant : Cerebrum Sensor Technologies
8103 Orion Ave
Van Nuys, CA 91406-1435
United States

Model : CRBRMECOV2

FCC ID : 2BKU7-CRBRMECOV2

EUT Description : Tire Mounted Sensor

Test Standard(s) : FCC 47 CFR PART 15 SUBPART C

Date Of Issue:
2026-02-24

Prepared by:
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REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	2025-12-04	Initial Issue	---
V2	2025-12-10	Updated sections 6.5(BE statement), 8(cal. dates) and 11(unit reference)	F. de Anda
V3	2025-12-16	Updated Heading(version) and section 11(unit reference)	F. de Anda
V4	2026-02-24	Updated Section 3(to latest ANSI reference)	F. de Anda

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Cerebrum Sensor Technologies,

EUT DESCRIPTION: Tire Mounted Sensor

MODEL: CRBRMECOV2

SERIAL NUMBER: Radiated: TS00003XXR
Conducted: TS00003XXC

SAMPLE RECEIPT DATE: 2024-04-01

DATE TESTED: 2024-05-20 TO 2024-06-21

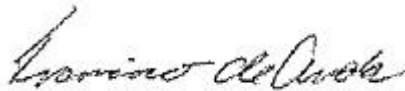
APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC 47 CFR Part 15 Subpart C	Complies

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.

Approved & Released For
UL Verification Services Inc. By:



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UL Verification Services Inc.

Prepared By:



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Consumer Technology Division
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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)

Requirement Description	Requirement Clause Number (FCC)	Result	Comment
Duty Cycle	See Comment	Reporting purposes only	ANSI C63.10 Section 11.6.
99% OBW	See Comment	Reporting purposes only	ANSI C63.10 Section 6.9.3.
6dB BW	15.247 (a) (2)	Complies	None.
Output Power	15.247 (b) (3)	Complies	None
Average Power	See Comment	Reporting purposes only	Per ANSI C63.10, Section 11.9.2.3.2.
PSD	15.247 (e)	Complies	None.
Conducted Spurious Emissions	15.247 (d)	Complies	None.
Radiated Emissions	15.209, 15.205	Complies	None.
AC Mains Conducted Emissions	15.207	Complies	None.

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with

- ANSI C63.10-2020+Cor.1-2023
- FCC CFR 47 Part 2
- FCC CFR 47 Part 15
- KDB 558074 D01 15.247 Meas Guidance
- KDB 414788 D01 Radiated Test Site
- RSS-247 Issue 4
- 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, 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}
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%.

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 EUT is a tire mounted pressure sensor.

6.2. MAXIMUM OUTPUT POWER

The transmitter has maximum peak conducted output powers as follows:

Frequency Range (MHz)	Mode	Peak	
		Output Power (dBm)	Output Power (mW)
2402 - 2480	BLE(1Mbps)	6.94	4.94

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

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

The radio utilizes a Chip, with a maximum gain of 1.3 dBi.

6.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was STMicroelectronics DTM firmware v2.1

The test utility software installed during testing was v2.1

6.5. WORST-CASE CONFIGURATIONS

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

Radiated emissions between 1GHz and 18GHz were performed with the EUT set to transmit at the highest power on low, mid and high channels. Bandedge tests were performed on low and high channels.

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

EUT supports the following data rates:

BLE (1Mbps): 1Mbps

6.6. DESCRIPTION OF TEST SETUP

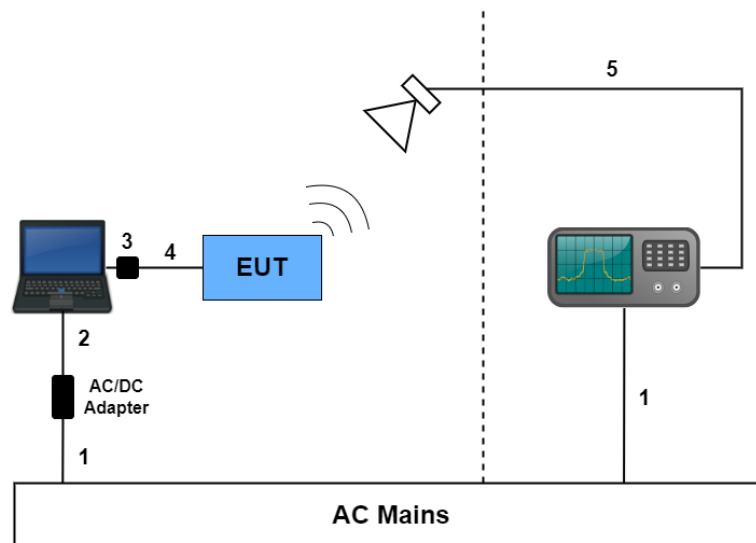
SUPPORT TEST EQUIPMENT						
Description		Manufacturer	Model	Serial Number		FCC ID/ DoC
Laptop		Lenovo	T460s	PC0K7DPE		Doc
Laptop AC/DC Adapter		Lenovo	ADLX90NLC2A	11S45N0247Z1ZS9B73H8M0		Doc
USB-to-UART Adapter		Silicon Labs	CP2104	CNT-003B		Doc
I/O CABLES (CONDUCTED TEST)						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	3	AC	Un-shielded	1.25	AC Mains to Spectrum Analyzer/AC/DC Adapter
2	DC	1	DC	Shielded	1	AC/DC Adapter to Laptop
3	USB to UART Adapter	1	USB-A	Shielded	0.05	Laptop to USB Adapter
4	Jumper Wire	4	Pin Header	Un-shielded	0.2	EUT to USB Adapter
5	SMA Cable	1	SMA	Shielded	0.17	EUT to Spectrum Analyzer
I/O CABLES (RADIATED TEST)						
Cable No.	Port	# Of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	3	AC	Un-shielded	1.25	AC Mains to Spectrum Analyzer/AC/DC Adapter
2	DC	1	DC	Shielded	1	AC/DC Adapter to Laptop
3	USB to UART Adapter	1	USB-A	Shielded	0.05	Laptop to USB Adapter
4	Jumper Wire	4	Pin Header	Un-shielded	0.2	EUT to USB Adapter
5	SMA Cable	1	SMA	Shielded	10	EUT to Horn Antenna

TEST SETUP

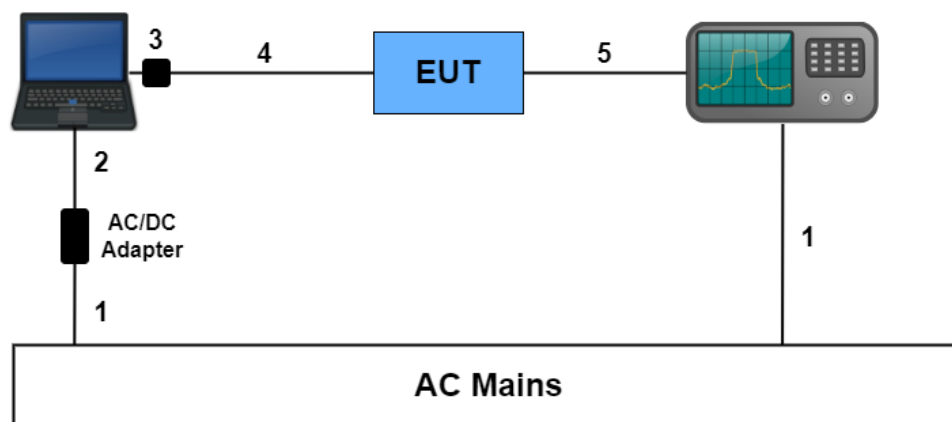
The EUT is connected and powered by a laptop via a USB-UART adapter. The EUT is normally powered by a Li-Ion battery at 3.0V. The laptop controls the EUT using the BlueNRG GUI.

SETUP DIAGRAM

Radiated Configuration



Conducted/AC Line Configuration



7. MEASUREMENT METHOD

Test Item	Test Method
On Time and Duty Cycle	ANSI C63.10 Section 11.6
6 dB BW	ANSI C63.10 Subclause -11.8.1 RBW $\geq$ DTS BW
99% BW	ANSI C63.10, Subclause 6.9.3.
Conducted Output Power (AVG)	ANSI C63.10 Subclause -11.9.2.3.2 Method AVGPM G (Measurement using an gated RF average-reading power meter)
Conducted Output Power (PK)	ANSI C63.10 Subclause 11.9.1.2 Method PKPM1 Peak-reading power meter
Power Spectral Density	ANSI C63.10 Section 11.10.2 Method PKPSD (peak PSD)
Radiated emissions non-restricted frequency bands	ANSI C63.10 Subclause -11.11 & Clause 13
Radiated emissions restricted frequency bands	ANSI C63.10 Subclause -11.12.1 & Clause 13
Conducted emissions in restricted frequency bands	ANSI C63.10 Subclause -11.12.2
Band-edge (Peak Detection)	ANSI C63.10 Subclause -11.13.3.2 & Clause 13: Integration method -Peak detection
Band-edge (Trace Averaging)	ANSI C63.10 Subclause -11.13.3.3 & Clause 13: Integration method -Trace averaging with continuous transmission at full power
Radiated Spurious Emissions Below 30MHz	ANSI C63.10 Subclause 6.4 & Clause 13
AC Power Line Conducted Emissions	ANSI C63.10, Subclause 6.2

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 2GHz	Sunol Sciences Corp.	JB1	203089	2025-04-30	2024-04-09
Amplifier, 9KHz to 1GHz, 32dB	SONOMA INSTRUMENT	310	175953	2025-05-17	2024-05-17
Antenna, Horn 1-18GHz	ETS-Lindgren (Cedar Park, Texas)	3117	80404	2024-08-31	2023-08-25
Antenna, Horn 1-18GHz	ETS-Lindgren (Cedar Park, Texas)	3117	222741	2024-08-31	2022-08-31
RF Filter Box, 1-18GHz	FREMONT	6 Port Silver box	197920	2025-03-31	2024-03-30
RF Filter Box, 1-18GHz	FREMONT	n/a	171875	2025-03-31	2024-03-23
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	225688	2025-02-28	2024-02-11
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	230547	2025-02-28	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	2024-05-11
Antenna, Passive Loop 30Hz-1MHz	ELECTRO METRICS	EM-6871	219909	2024-06-30	2023-06-20
Antenna, Passive Loop 100kHz – 30MHz	ELECTRO METRICS	EM-6872	219911	2024-12-31	2023-12-05
Spectrum Analyzer, PXA, 2Hz to 26.5GHz	Keysight Technologies Inc	N9030B	85201	2025-02-07	2024-01-30
Power Meter, P-series single channel	Keysight Technologies Inc	N1911A	90718	2025-01-31	2024-01-25
Power Sensor, P-series, 50MHz to 18GHz, Wideband	Keysight Technologies Inc	N1921A	90388	2024-06-30	2023-06-23
AC Line Conducted					
LISN	Fischer Custom Communications, Inc.	FCC-LISN-50/250-25-2-01-480V	175765	2025-01-31	2024-01-26
EMI TEST RECEIVER	Rohde & Schwarz	ESR	171646	2025-02-28	2024-02-27
Transient Limiter	TE	TBFL1	207996	2024-08-31	2023-08-10
UL TEST SOFTWARE LIST					
Radiated Software	UL	UL EMC	Rev 9.5, Ver 2023-05-01		
Antenna Port Software	UL	UL RF	Ver 2022-08-16		
AC Line Conducted Software	UL	UL EMC	Rev 9.5, 2023-03-03		

Note: all testing was completed before calibration due date or after calibration was completed.

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

Test By:	27966 PV
Date:	2023-05-20

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 (1Mbps)	0.290	0.624	0.465	46.47%	3.33	3.448

DUTY CYCLE PLOTS



BLE (1Mbps)

9.2. 99% BANDWIDTH

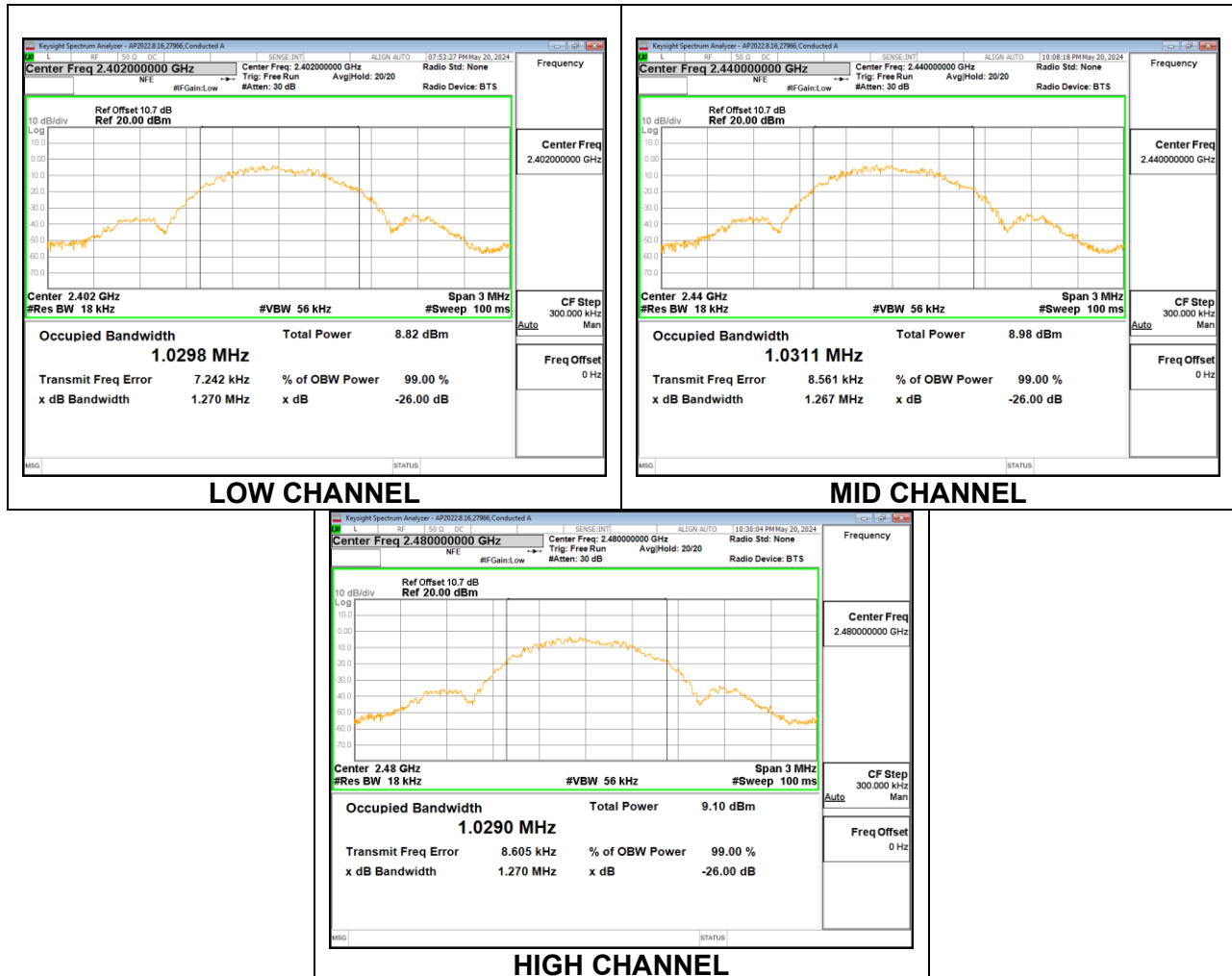
LIMITS

None; for reporting purposes only.

RESULTS

9.2.1. BLE (1Mbps)

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.0298
Middle	2440	1.0311
High	2480	1.0290



9.3. 6 dB BANDWIDTH

LIMITS

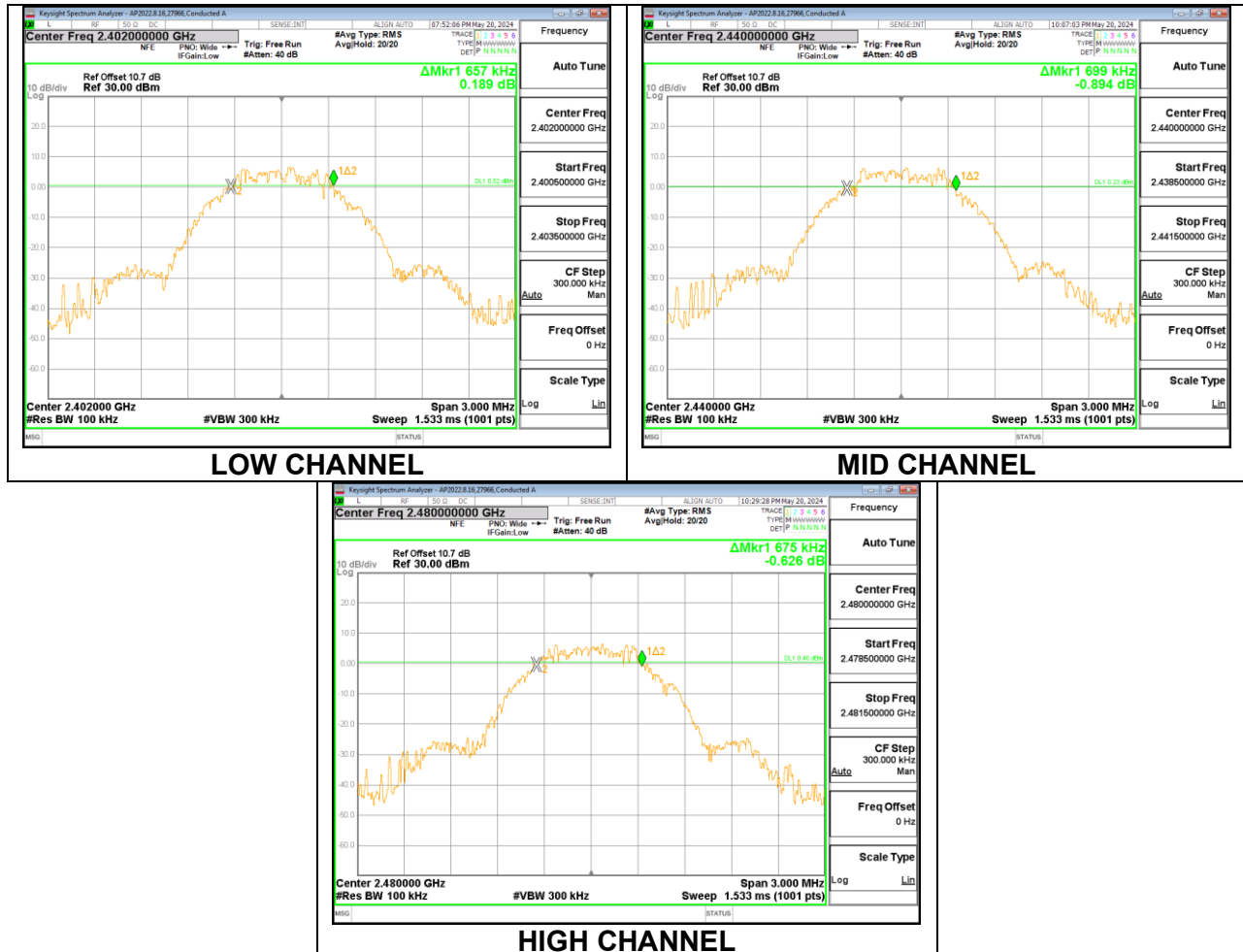
FCC §15.247 (a) (2)

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

RESULTS

9.3.1. BLE (1Mbps)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.657	0.5
Middle	2440	0.699	0.5
High	2480	0.675	0.5



9.4. OUTPUT POWER

LIMITS

FCC §15.247 (b) (3)

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 SMA cable with 10dB attenuator connected to a power meter via wideband power sensor. Peak output power was read directly from power meter.

RESULTS

9.4.1. BLE (1Mbps)

Tested By:	27966 PV
Date:	2023-05-20

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	6.71	30	-23.290
Middle	2440	6.83	30	-23.170
High	2480	6.94	30	-23.060

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 SMA cable with 10dB attenuator connected to a power meter via wideband power sensor. Gated average output power was read directly from power meter.

RESULTS

9.5.1. BLE (1Mbps)

Tested By:	27966 PV
Date:	2023-05-20

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	6.58
Middle	2440	6.73
High	2480	6.85

9.6. POWER SPECTRAL DENSITY

LIMITS

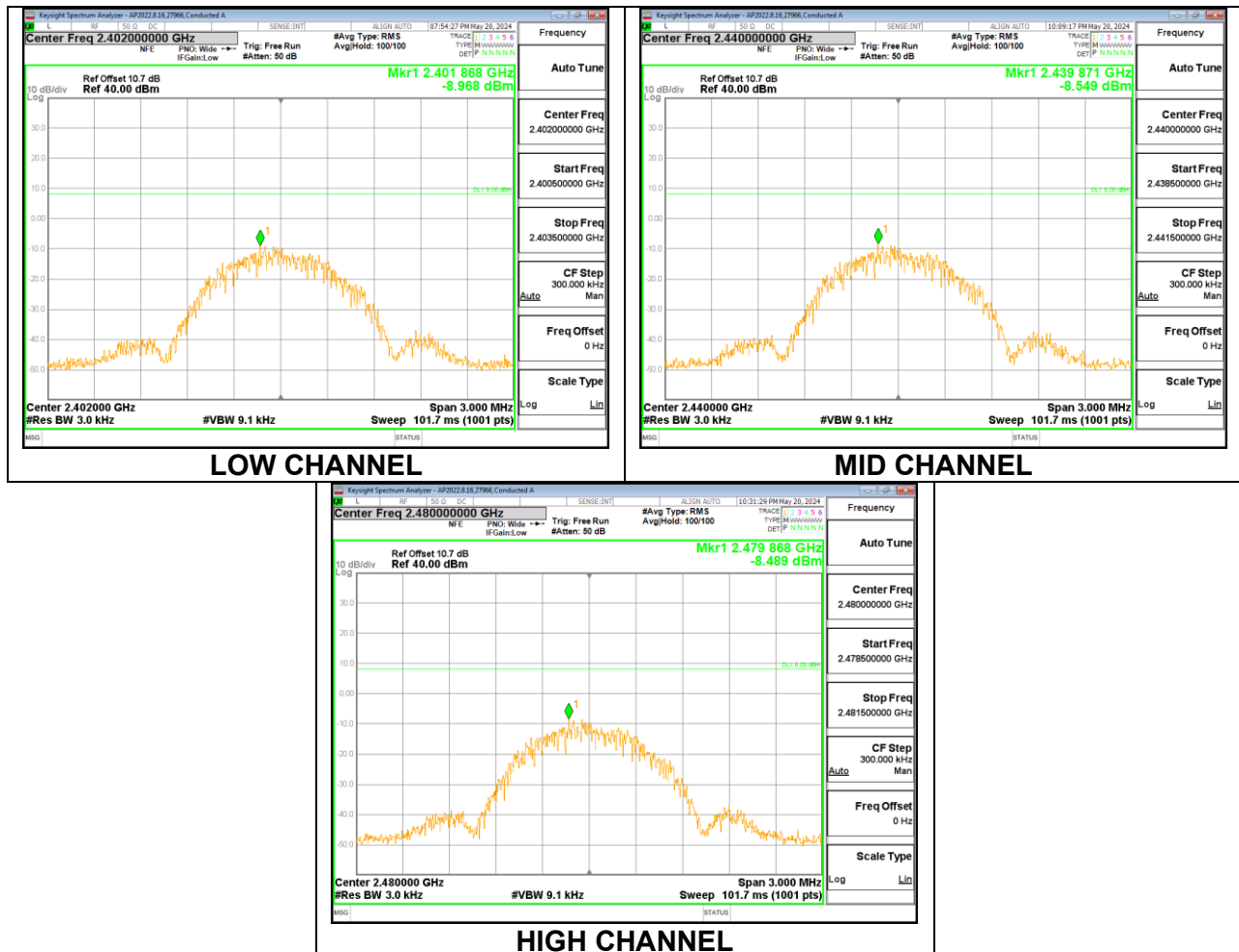
FCC §15.247 (e)

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

9.6.1. BLE (1Mbps)

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	-8.968	8	-16.97
Middle	2440	-8.549	8	-16.55
High	2480	-8.489	8	-16.49



9.7. CONDUCTED SPURIOUS EMISSIONS

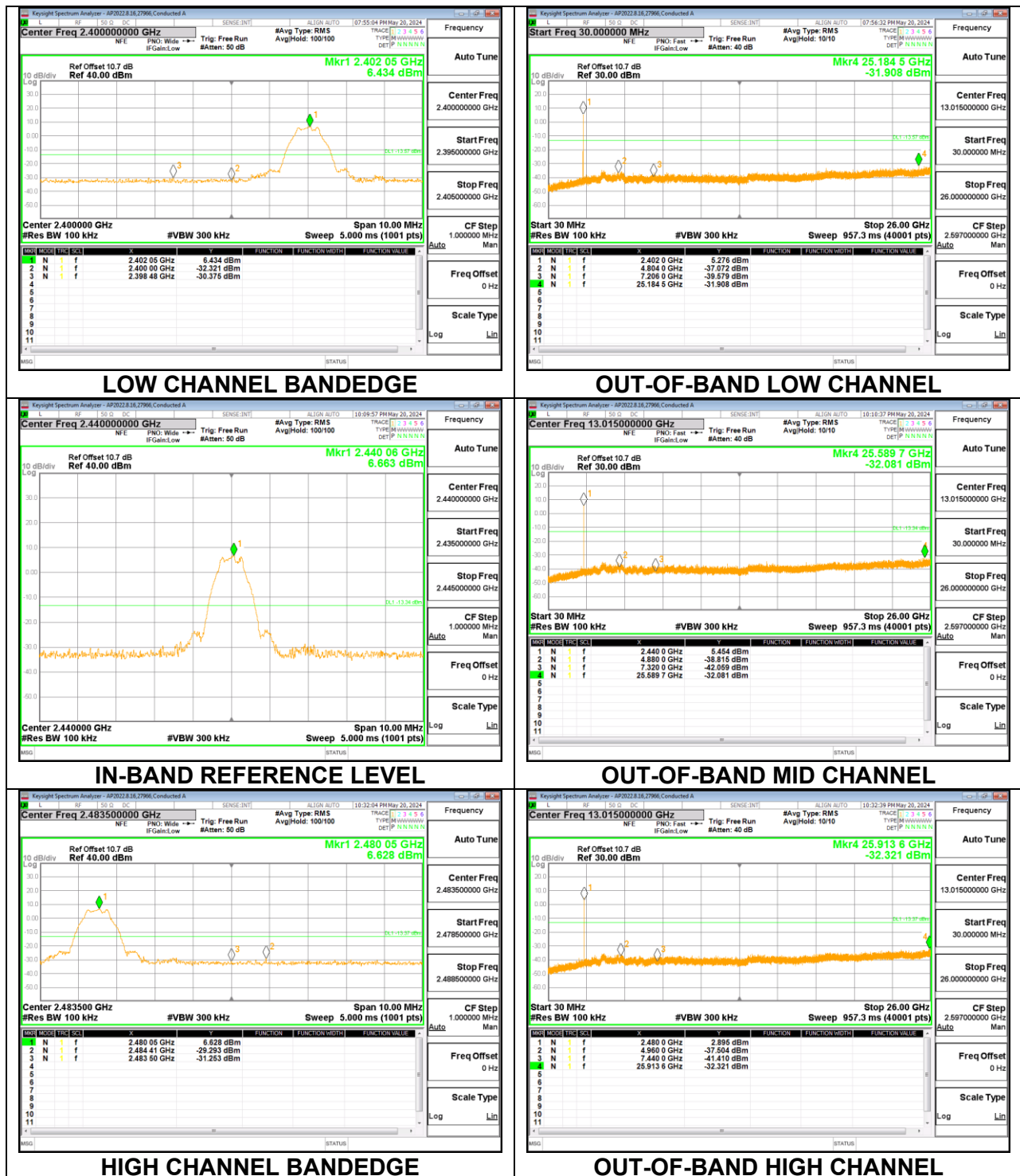
LIMITS

FCC §15.247 (d)

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

RESULTS

9.7.1. BLE (1Mbps)



10. RADIATED TEST RESULTS

10.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

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 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.

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.

2D antenna use - For below 30MHz testing, 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. Blue color trace on plots: Parallel orientation. Green color trace on plots: Perpendicular orientation.

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.

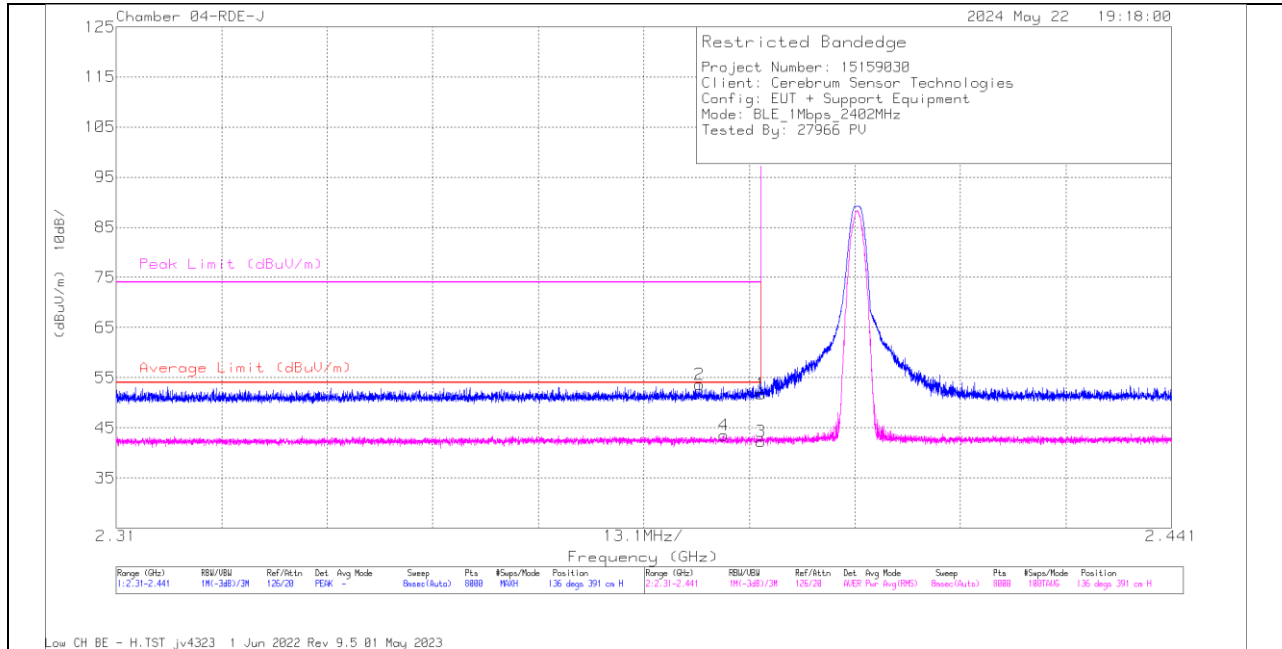
NOTE: The limits in FCC 47 CFR, Part 15, Subpart C, paragraph 15.209(a), are identical to those in RSS-Gen section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table), using the free space impedance 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 15.209(a) limit.

10.2. TRANSMITTER ABOVE 1 GHz

10.2.1. BLE (1Mbps)

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Trace Markers

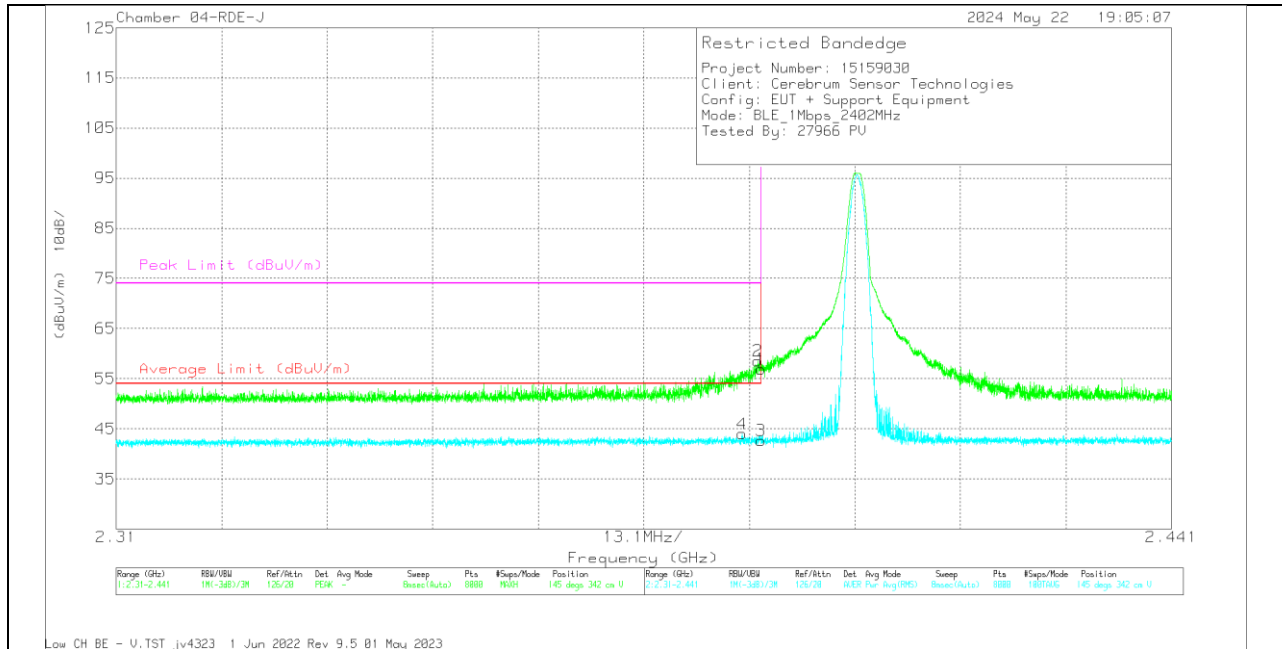
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF 3m (dB/m)	Amp/Cbl/Pad (dB)	DC Corr	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2390	56.52	Pk	32	-36.7	0	51.82	-	-	74	-22.18	136	391	H
2	* 2382.403	58.44	Pk	32	-36.8	0	53.64	-	-	74	-20.36	136	391	H
3	* 2390	44.91	RMS	32	-36.7	3.33	43.54	54	-10.46	-	-	136	391	H
4	* 2385.416	46.18	RMS	32	-36.7	3.33	44.81	54	-9.19	-	-	136	391	H

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

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF 3m (dB/m)	Amp/Cbl/Pad (dB)	DC Corr	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2390	61.57	Pk	32	-36.7	0	56.87	-	-	74	-17.13	145	342	V
2	* 2389.625	63.2	PK	32	-36.7	0	58.5	-	-	74	-15.5	145	342	V
3	* 2390	45.29	RMS	32	-36.7	3.33	43.92	54	-10.08	-	-	145	342	V
4	* 2387.692	46.57	RMS	32	-36.7	3.33	45.2	54	-8.8	-	-	145	342	V

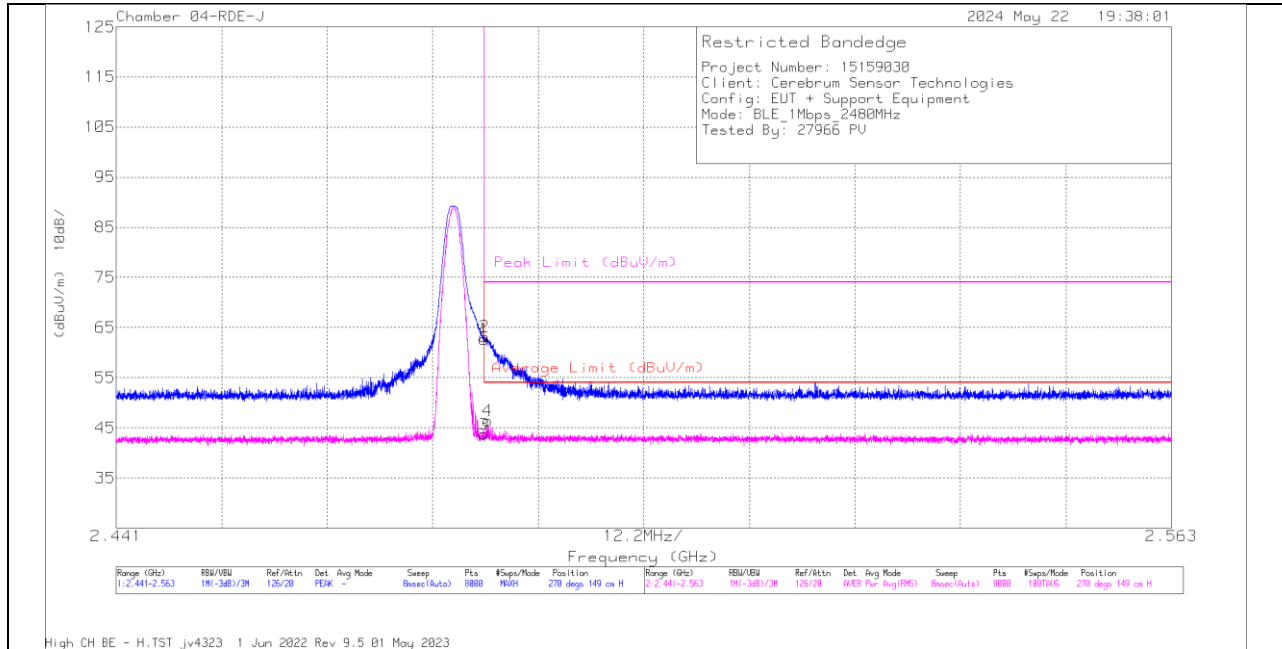
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Trace Markers

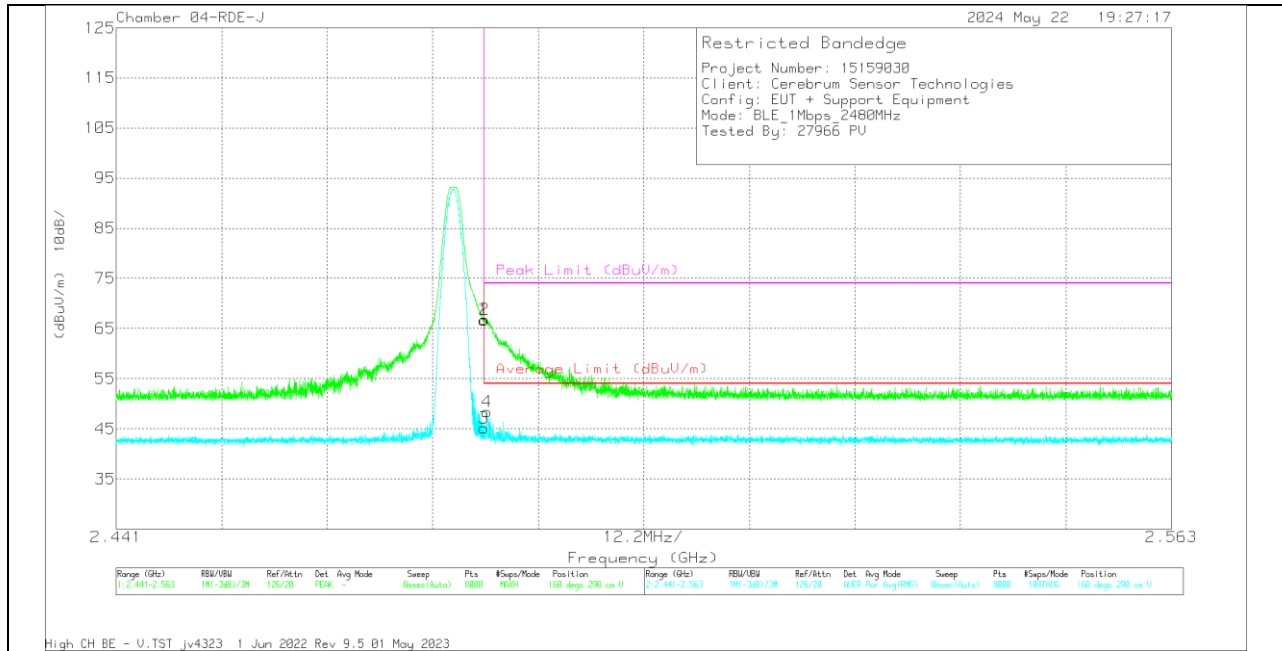
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF 3m (dB/m)	Amp/Cbl/Pad (dB)	DC Corr	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2483.5	67.09	Pk	32.2	-36.6	0	62.69	-	-	74	-11.31	270	149	H
2	* 2483.584	67.57	Pk	32.2	-36.6	0	63.17	-	-	74	-10.83	270	149	H
3	* 2483.5	46.02	RMS	32.2	-36.6	3.33	44.95	54	-9.05	-	-	270	149	H
4	* 2483.934	48.65	RMS	32.3	-36.6	3.33	47.68	54	-6.32	-	-	270	149	H

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

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF 3m (dB/m)	Amp/Cbl/Pad (dB)	DC Corr	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	71.06	Pk	32.2	-36.6	0	66.66	-	-	74	-7.34	160	298	V
2	* 2483.553	71.24	Pk	32.2	-36.6	0	66.84	-	-	74	-7.16	160	298	V
3	* 2483.5	47.42	RMS	32.2	-36.6	3.33	46.35	54	-7.65	-	-	160	298	V
4	* 2483.889	50.63	RMS	32.3	-36.6	3.33	49.66	54	-4.34	-	-	160	298	V

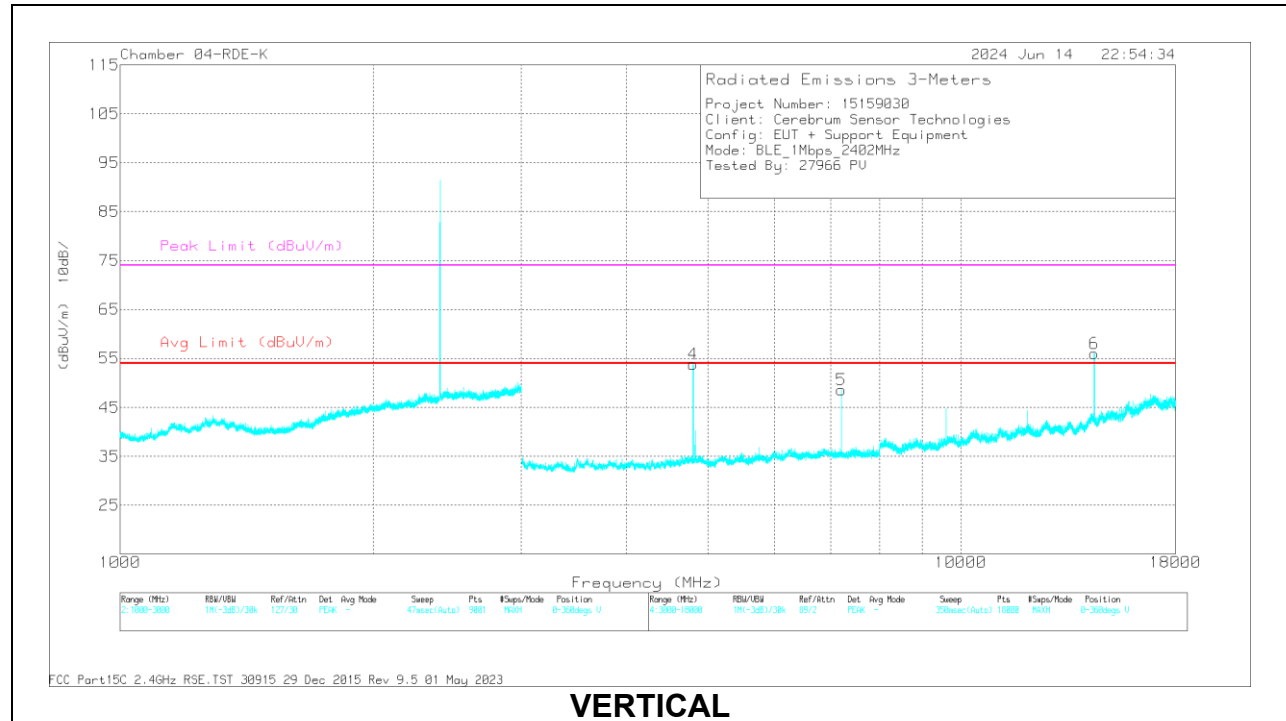
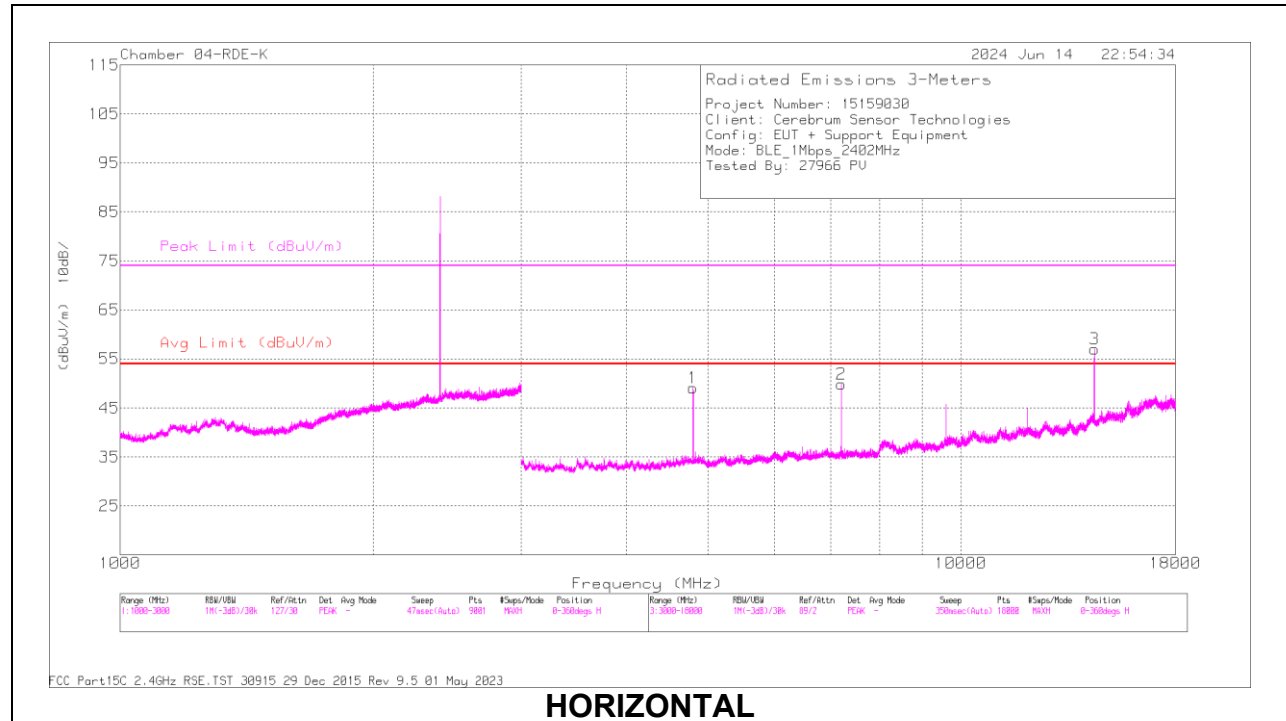
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK - Peak detector

RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



RADIATED EMISSIONS

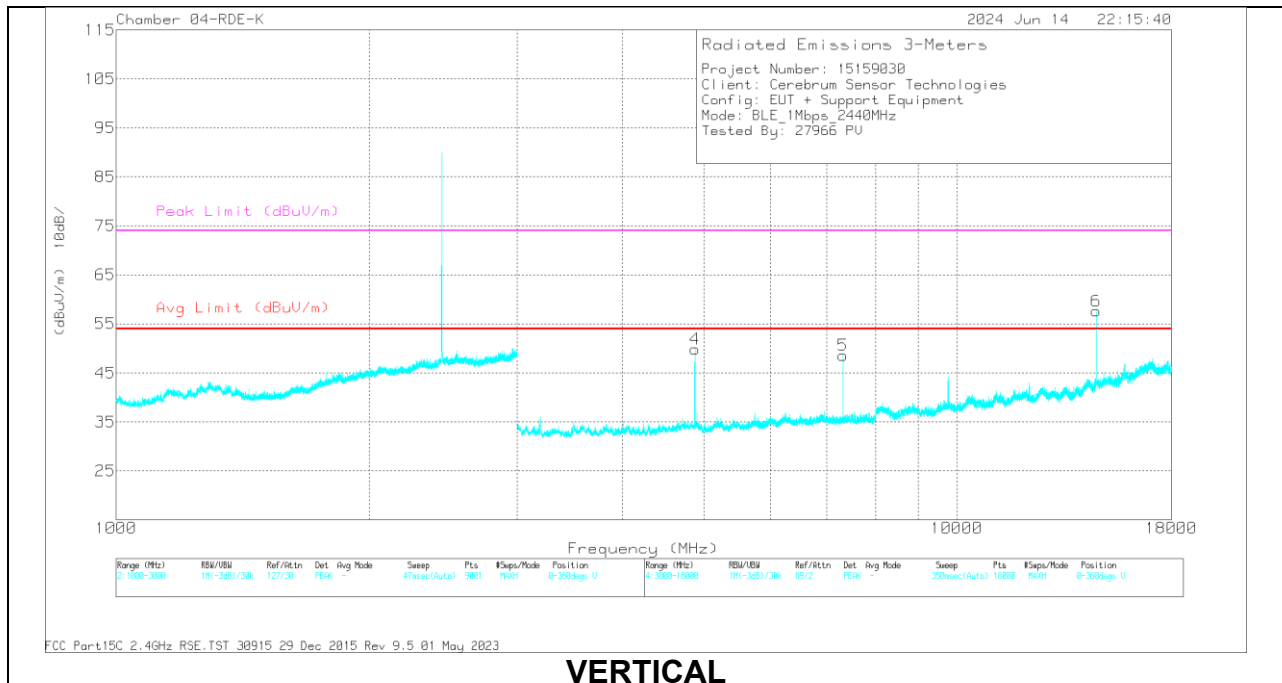
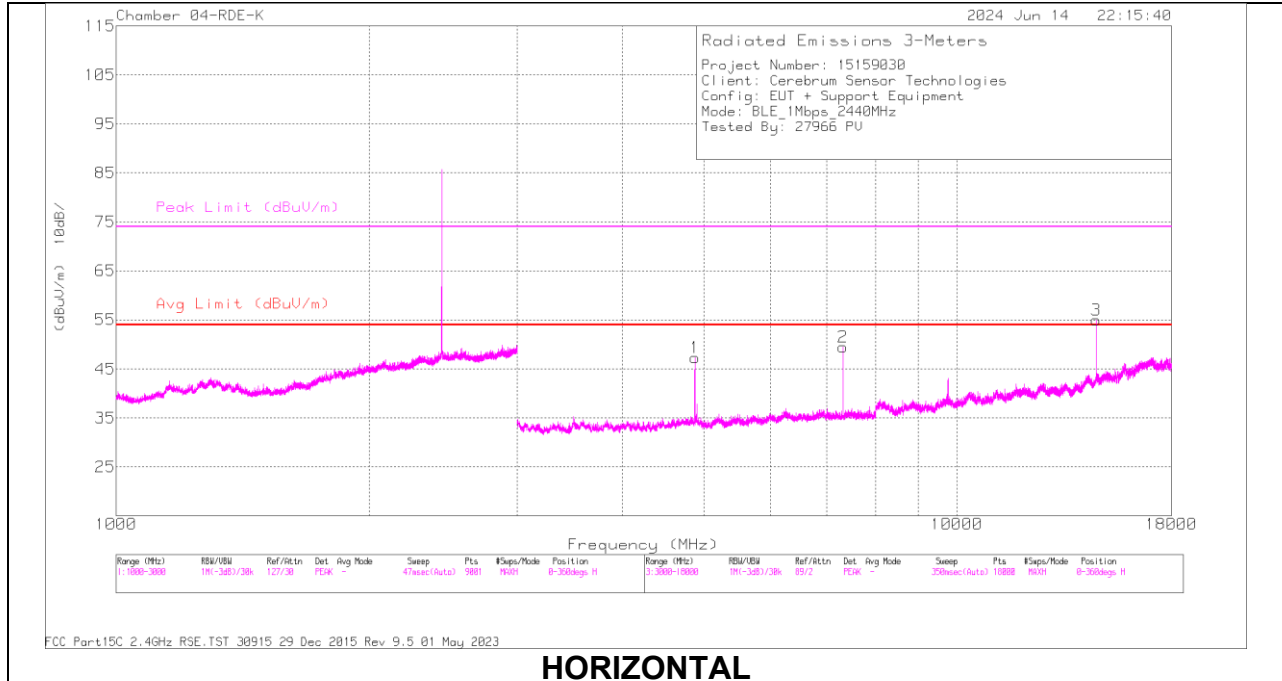
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	80707 ACF (dB/m)	Amp/Cbl/Pad (dB)	DC Corr	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4803.904	62.01	PK2	34	-45.1	0	50.91	-	-	74	-23.09	344	113	H
	* 4803.763	53.05	MAv1	34	-45.1	3.33	45.28	54	-8.72	-	-	344	113	H
4	* 4803.705	62.64	PK2	34.9	-41	0	56.54	-	-	74	-17.46	82	102	V
	* 4803.889	56.52	MAv1	34.9	-41	3.33	53.75	54	-25	-	-	82	102	V
2	7205.235	52.77	Pk	36	-38.9	0	49.87	-	-	-	-	0-360	101	H
5	7206.069	51.53	Pk	36	-38.9	0	48.63	-	-	-	-	0-360	101	V
6	14410.639	51.72	Pk	39.5	-35.2	0	56.02	-	-	-	-	0-360	200	V
3	14413.972	52.8	Pk	39.5	-35.3	0	57	-	-	-	-	0-360	101	H

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Avera

MID CHANNEL RESULTS



RADIATED EMISSIONS

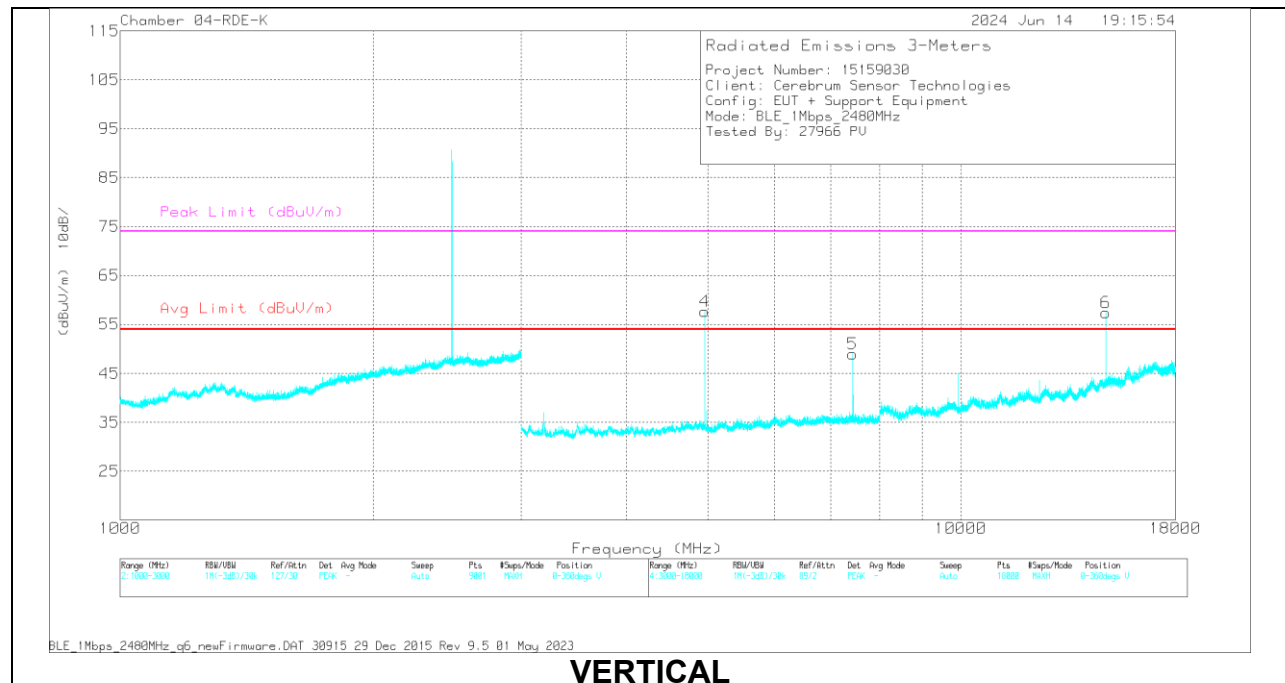
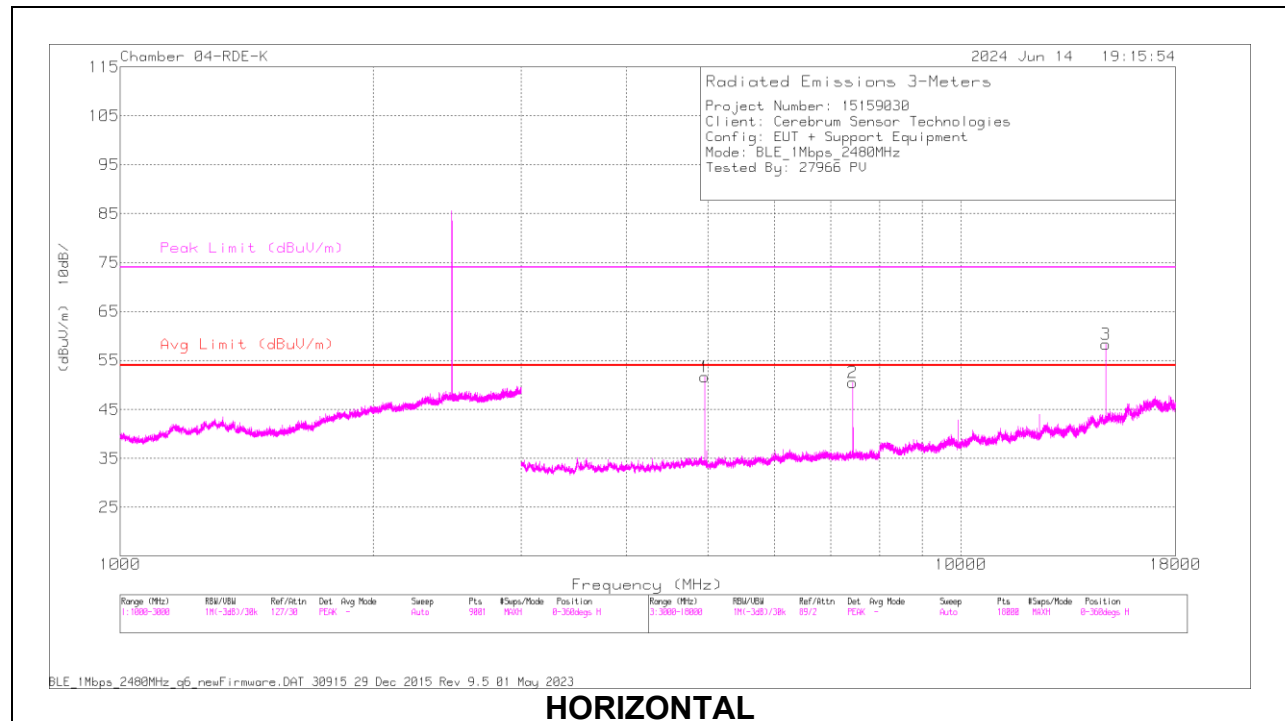
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	80707 ACF (dB/m)	Amp/Cbl/Pad (dB)	DC Corr	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4879.5	59.66	PK2	34	-44.6	0	49.06	-	-	74	-24.94	345	163	H
	* 4879.703	51.89	MAv1	34	-44.6	3.33	44.62	54	-9.38	-	-	345	163	H
2	* 7319.498	55.14	PK2	35.8	-42.2	0	48.74	-	-	74	-25.26	281	107	H
	* 7320.443	44.54	MAv1	35.8	-42.2	3.33	41.47	54	-12.53	-	-	281	107	H
4	* 4880.368	58.24	PK2	34.4	-41	0	51.64	-	-	74	-22.36	71	400	V
	* 4879.78	50.46	MAv1	34.4	-41	3.33	47.19	54	-6.81	-	-	71	400	V
5	* 7320.242	50.97	PK	36.1	-38.5	0	48.57	-	-	74	-25.43	0-360	200	V
3	14638.152	49.28	PK	39.7	-34	0	54.98	-	-	-	-	0-360	101	H
6	14638.985	51.92	PK	39.7	-34	0	57.62	-	-	-	-	0-360	101	V

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

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL RESULTS



RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	80707 ACF (dB/m)	Amp/Cbl/Pad (dB)	DC Corr	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4960.048	56.61	PK2	34.1	-41	0	49.71	-	-	74	-24.29	102	117	H
	* 4959.702	48.08	MAv1	34.1	-41	3.33	44.51	54	-9.49	-	-	102	117	H
	* 7440.712	51.81	PK2	35.8	-38.3	0	49.31	-	-	74	-24.69	232	105	H
2	* 7439.4	41.22	MAv1	35.8	-38.3	3.33	42.05	54	-11.95	-	-	232	105	H
	14881.499	53.28	Pk	39.9	-34.9	0	58.28	-	-	-	-	0-360	101	H
	* 4960.346	60.26	PK2	34.1	-41	0	53.36	-	-	74	-20.64	80	113	V
4	* 4959.926	53.37	MAv1	34.1	-41	3.33	49.8	54	-4.2	-	-	80	113	V
	* 7438.934	51.81	PK2	35.8	-38.3	0	49.31	-	-	74	-24.69	144	103	V
	* 7440.191	40.53	MAv1	35.8	-38.3	3.33	41.36	54	-12.64	-	-	144	103	V

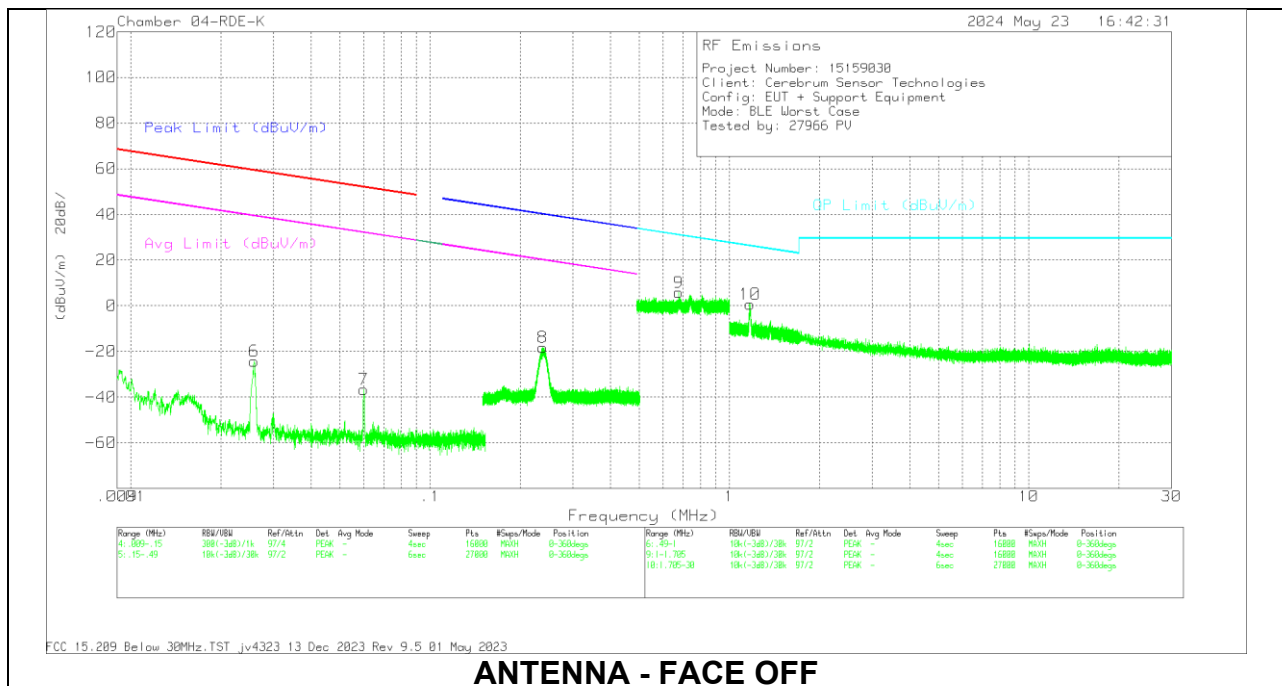
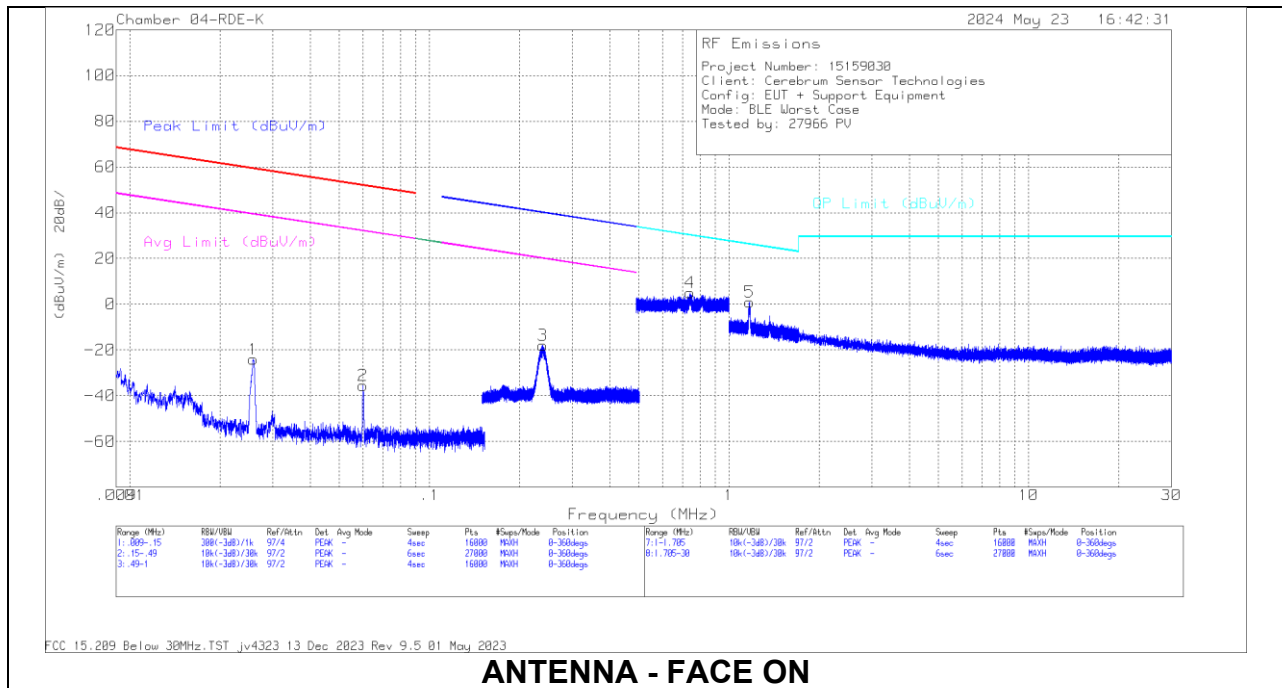
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

10.3. WORST CASE BELOW 30MHz

SPURIOUS EMISSIONS BELOW 30 MHz (WORST-CASE CONFIGURATION)



Below 30MHz Data

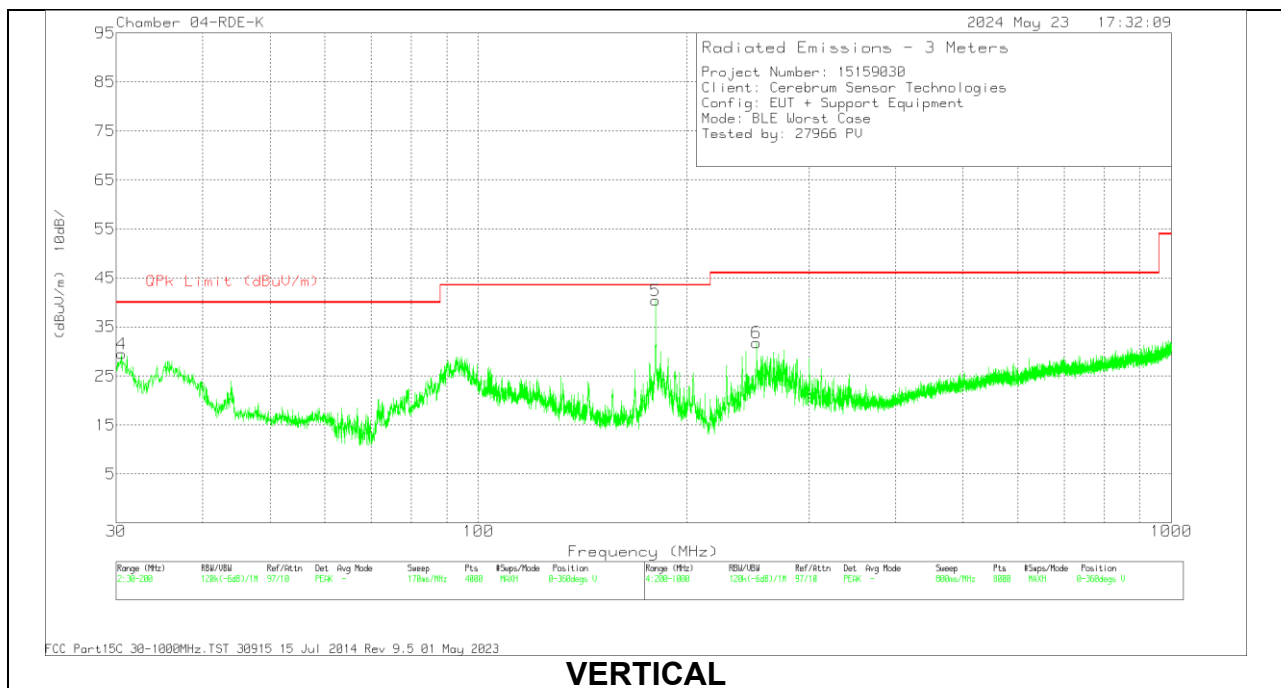
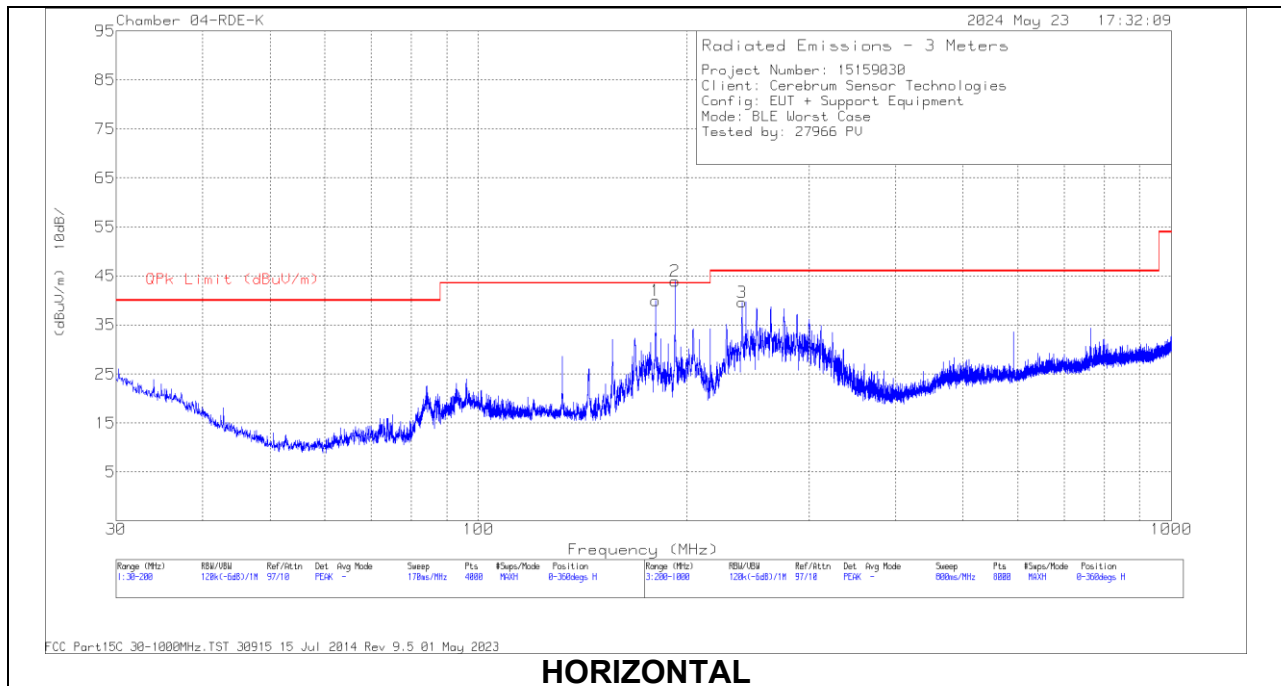
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E (ACF) (dB/m)	Amp/Cbl (dB)	Dist Corr 300m (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity (deg)
1	.0258	29.25	Pk	58.4	-31.8	-80	-24.15	59.35	-83.5	39.35	-63.5	0-360	Face on
2	.0601	20.46	Pk	56.2	-32.2	-80	-35.54	52.01	-87.55	32.01	-67.55	0-360	Face on
3	.239	37.99	Pk	56.2	-32.1	-80	-17.91	40.05	-57.96	20.05	-37.96	0-360	Face on
6	.0258	29.13	Pk	58.4	-31.8	-80	-24.27	59.35	-83.62	39.35	-63.62	0-360	Face off
7	.06	19.45	Pk	56.2	-32.2	-80	-36.55	52.02	-88.57	32.02	-68.57	0-360	Face off
8	.238	37.56	Pk	56.2	-32.1	-80	-18.34	40.09	-58.43	20.09	-38.43	0-360	Face off

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna E(ACF) (dB/m)	CBL/AMP(dB)	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuV/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Polarity (Degs)
4	.7402	21.01	Pk	56.2	-32.1	-40	5.11	30.23	-25.12	0-360	Face on
5	1.1708	27.09	Pk	46	-32.1	-40	.99	26.26	-25.27	0-360	Face on
9	.6783	21.75	Pk	56.2	-32.2	-40	5.75	30.98	-25.23	0-360	Face off
10	1.1702	26.84	Pk	46	-32.1	-40	.74	26.26	-25.52	0-360	Face off

Pk - Peak detector

10.4. WORST CASE BELOW 1 GHz

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



Below 1GHz Data

Radiated Emissions

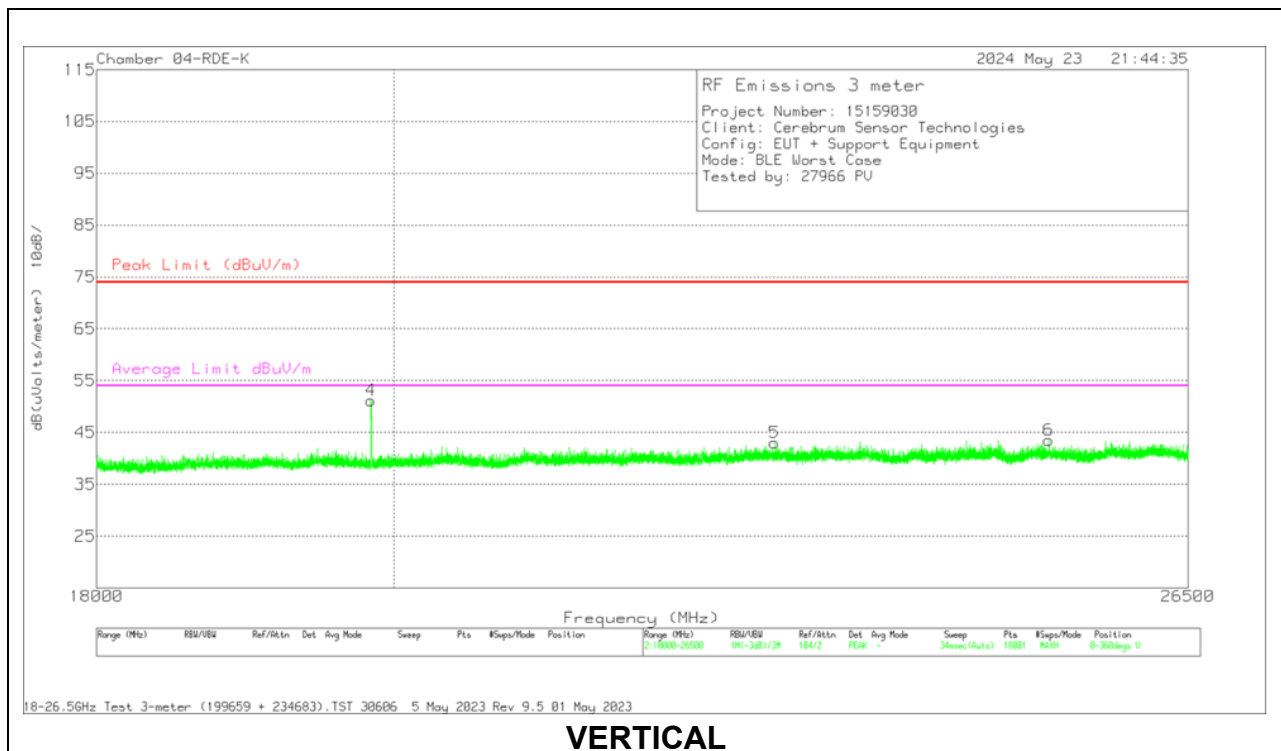
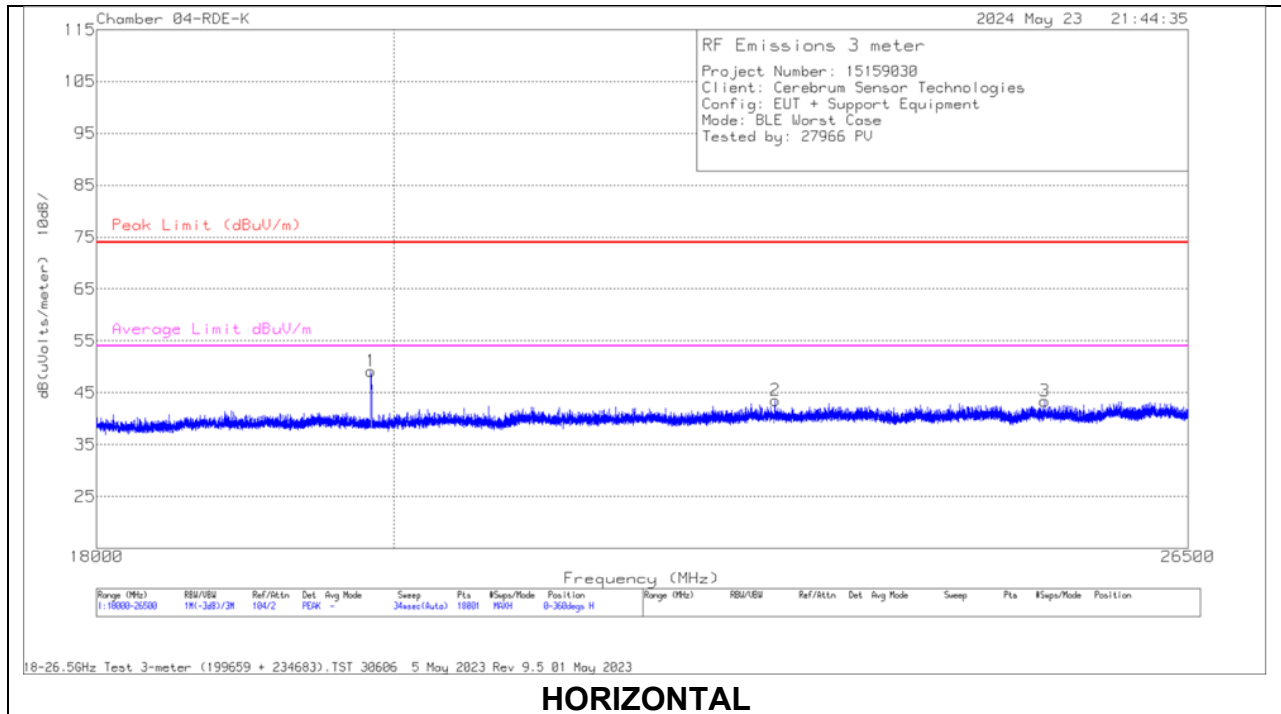
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	203089 ACF (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	180.143	63.28	Pk	17	-29.9	50.38	43.52	6.86	51	134	H
	180.143	46.41	Qp	17	-29.9	33.51	43.52	-10.01	51	134	H
2	192.129	59.68	Pk	17.4	-29.7	47.38	43.52	3.86	162	157	H
	192.129	43.47	Qp	17.4	-29.7	31.17	43.52	-12.35	162	157	H
3	240.005	52.15	Pk	17.3	-29.8	39.65	46.02	-6.37	0-360	100	H
4	30.5526	33.84	Pk	26.7	-31	29.54	40	-10.46	0-360	100	V
5	180.185	60.1	Pk	17	-29.9	47.2	43.52	3.68	15	103	V
	180.185	43.21	Qp	17	-29.9	30.31	43.52	-13.21	15	103	V
6	252.007	43.64	Pk	17.4	-29.3	31.74	46.02	-14.28	0-360	199	V

Pk - Peak detector

Qp - Quasi-Peak detector

10.5. WORST CASE 18-26 GHz

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



18 – 26GHz Data

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Horn ACF (dB/m)	234683 Amp/Cbl (dB)	Cable (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	PK Margin (dB)	Average Limit dBuV/m	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	19837.888	60.04	Pk	32.7	-62.6	19	49.14	74	-24.86	-	-	0-360	101	H
2	22895.053	52.31	Pk	33.4	-62.5	20.3	43.51	74	-30.49	-	-	0-360	101	H
3	25186.747	49.99	Pk	34	-61.9	21.3	43.39	74	-30.61	-	-	0-360	101	H
4	19837.888	62.08	Pk	32.7	-62.6	19	51.18	74	-22.82	-	-	0-360	101	V
5	22889.387	51.78	Pk	33.4	-62.5	20.3	42.98	74	-31.02	-	-	0-360	200	V
6	25222.163	50.08	Pk	34	-61.9	21.3	43.48	74	-30.52	-	-	0-360	101	V

Pk - Peak detector

Radiated Emissions

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Horn ACF (dB/m)	234683 Amp/Cbl (dB)	Cable (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Peak Limit (dBuV/m)	PK Margin (dB)	Average Limit dBuV/m	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 19837.717	61.47	Pk	32.7	-62.6	19	0	50.57	74	-23.43	-	-	310	102	H
	* 19837.717	52.1	RMS	32.7	-62.6	19	3.33	44.53	-	-	54	-9.47	310	102	H
4	* 19837.894	63.53	Pk	32.7	-62.6	19	0	52.63	74	-21.37	-	-	8	101	V
	* 19837.894	55.08	RMS	32.7	-62.6	19	3.33	47.51	-	-	54	-6.49	8	101	V

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

Pk - Peak detector

RMS - RMS detection

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

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.

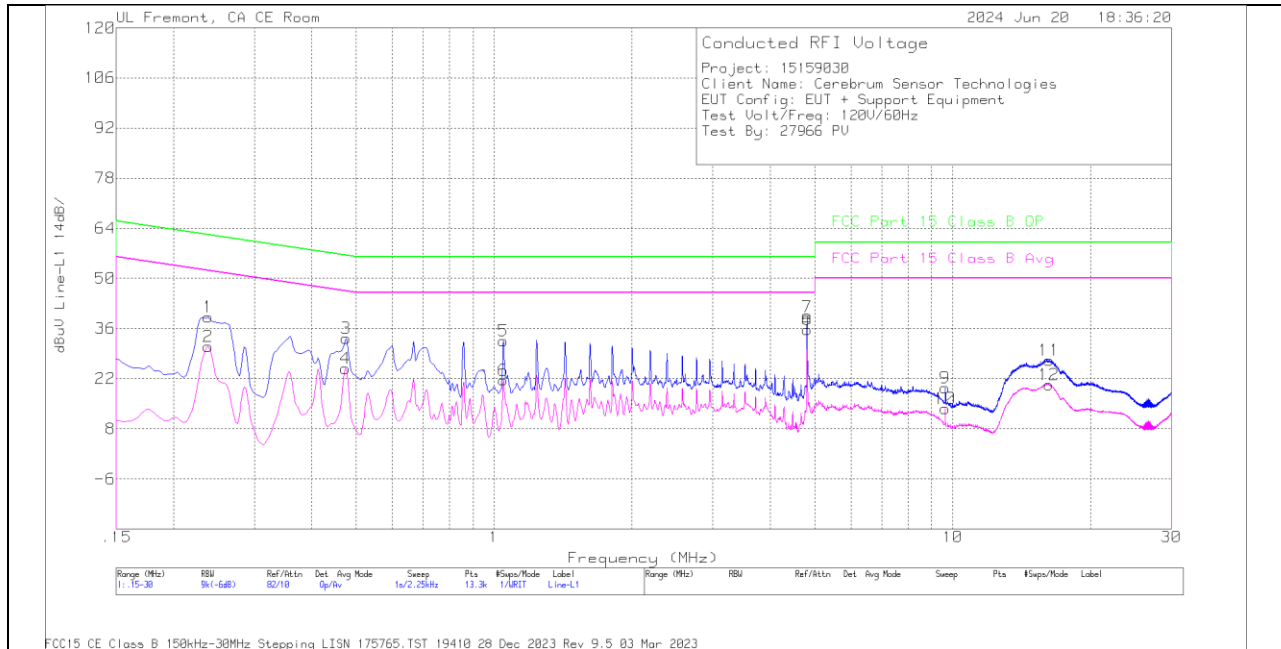
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

RESULTS

AC Power Line Norm

LINE 1 RESULTS



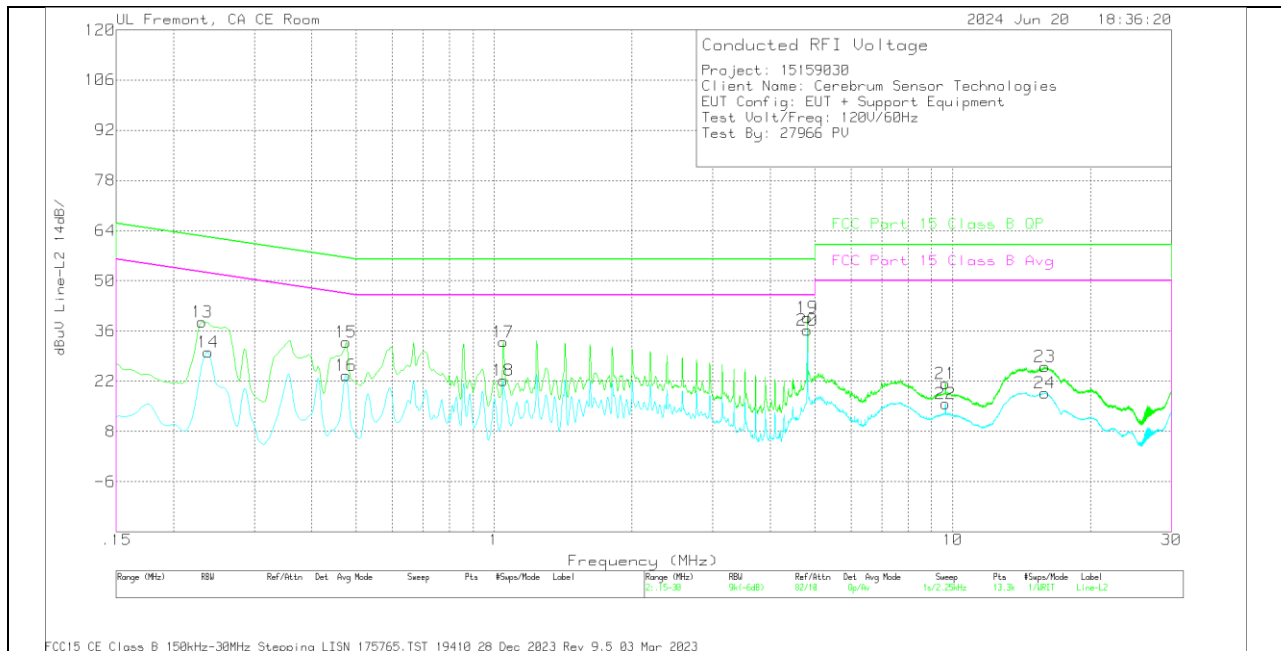
Trace Markers

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN (dB)	Cbl (dB)	Trns Limiter (dB)	Corrected Reading dBuV	FCC Part 15 Class B QP Limit (dBuV)	QP Margin (dB)	FCC Part 15 Class B Avg. Limit (dBuV)	Av Margin (dB)
2	.2378	21.58	Av	0	0	9.4	30.98	-	-	52.17	-21.19
4	.474	15.41	Av	0	.1	9.3	24.81	-	-	46.44	-21.63
6	1.0478	12.2	Av	0	.1	9.3	21.6	-	-	46	-24.4
8	4.8188	26.14	Av	0	.1	9.4	35.64	-	-	46	-10.36
10	9.636	3.99	Av	0	.2	9.4	13.59	-	-	50	-36.41
12	16.2128	10.54	Av	.1	.3	9.4	20.34	-	-	50	-29.66
1	.2378	29.84	Qp	0	0	9.4	39.24	62.17	-22.93	-	-
3	.4763	23.91	Qp	0	0	9.3	33.21	56.4	-23.19	-	-
5	1.0478	23.21	Qp	0	.1	9.3	32.61	56	-23.39	-	-
7	4.8165	29.69	Qp	0	.1	9.4	39.19	56	-16.81	-	-
9	9.6338	9.76	Qp	0	.2	9.4	19.36	60	-40.64	-	-
11	16.2533	17.29	Qp	.1	.2	9.5	27.09	60	-32.91	-	-

Qp - Quasi-Peak detector

Ca - CISPR average detection

LINE 2 RESULTS



Trace Markers

Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN (dB)	Cbl (dB)	Trns Limiter (dB)	Corrected Reading dBuV	FCC Part 15 Class B QP Limit (dBuV)	QP Margin (dB)	FCC Part 15 Class B Avg. Limit (dBuV)	Av Margin (dB)
14	.2378	20.76	Av	0	0	9.4	30.16	-	-	52.17	-22.01
16	.4763	14.37	Av	0	0	9.3	23.67	-	-	46.4	-22.73
18	1.0478	12.87	Av	0	.1	9.3	22.27	-	-	46	-23.73
20	4.8233	26.76	Av	0	.1	9.4	36.26	-	-	46	-9.74
22	9.6473	6.15	Av	0	.2	9.4	15.75	-	-	50	-34.25
24	15.8696	9	Av	.1	.2	9.4	18.7	-	-	50	-31.3
13	.231	29.09	Qp	0	0	9.4	38.49	62.41	-23.92	-	-
15	.4763	23.6	Qp	0	0	9.3	32.9	56.4	-23.5	-	-
17	1.0478	23.59	Qp	0	.1	9.3	32.99	56	-23.01	-	-
19	4.8233	30.2	Qp	0	.1	9.4	39.7	56	-16.3	-	-
21	9.6461	11.75	Qp	0	.2	9.4	21.35	60	-38.65	-	-
23	15.8685	16.37	Qp	.1	.2	9.4	26.07	60	-33.93	-	-
14	.2378	20.76	Av	0	0	9.4	30.16	-	-	52.17	-22.01

Qp - Quasi-Peak detector

Ca - CISPR average detection