CERTIFICATION TEST REPORT

Report Number. : 12520944-E1V1

Applicant	:	End2End Sensors LLC 170 S Green Valley Parkway, Ste 300 Henderson, Nevada 89012 U.S.A
Model	:	E2E-BLE-GL1
FCC ID	:	2ARQY-E2EBLEGL1
EUT Description	:	Bluetooth Low Energy enabled temperature logging device
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART C (15.249)

Date of Issue:
February 21, 2019

Prepared by:
UL Verification Services Inc.
47173 Benicia Street
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NVLAP Lab code: 200065-0

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	2/21/2019	Initial Issue	---

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TABLE OF CONTENTS

REPORT REVISION HISTORY 2

TABLE OF CONTENTS 3

1. ATTESTATION OF TEST RESULTS 4

2. TEST METHODOLOGY 5

3. FACILITIES AND ACCREDITATION 5

4. CALIBRATION AND UNCERTAINTY 6

4.1. MEASURING INSTRUMENT CALIBRATION 6

4.2. SAMPLE CALCULATION 6

4.3. MEASUREMENT UNCERTAINTY 6

5. EQUIPMENT UNDER TEST 7

5.1. DESCRIPTION OF EUT 7

5.2. MAXIMUM OUTPUT E-FIELD STRENGTH 7

5.3. DESCRIPTION OF AVAILABLE ANTENNAS 7

5.4. SOFTWARE AND FIRMWARE 7

5.5. WORST-CASE CONFIGURATION AND MODE 7

5.6. DESCRIPTION OF TEST SETUP 8

6. MEASUREMENT METHOD 10

7. TEST AND MEASUREMENT EQUIPMENT 11

8. TEST RESULTS 12

8.1. ON TIME AND DUTY CYCLE 12

8.2. 99% and 20dB BANDWIDTH 13

8.3. RADIATED EMISSIONS 14

8.3.1. FUNDAMENTAL FREQUENCY RADIATED EMISSION 15
8.3.2. TRANSMITTER RESTRICTED BAND EDGES 16
8.3.3. HARMONICS AND SPURIOUS EMISSIONS ABOVE 1GHz 20
8.3.4. WORST-CASE BELOW 30 MHz 26
8.3.5. WORST-CASE BELOW 1 GHz 27
8.3.6. WORST-CASE ABOVE 18 GHz 29

10. SETUP PHOTOS 31

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: End2End Sensors LLC
170 S Green Valley Parkway, Ste 300
Henderson, Nevada 89012
U.S.A.

EUT DESCRIPTION: Bluetooth Low Energy enabled temperature logging device

MODEL: E2E-BLE-GL1

SERIAL NUMBER: 2050054

DATE TESTED: January 31, 2019 –February 12, 2019

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 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. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, 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
Operations Leader
Consumer Technology Division
UL Verification Services Inc.

Prepared By:

Eric Yu
Test Engineer
Consumer Technology Division
UL Verification Services Inc.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2013, KDB 558074 D01 15.247 Meas Guidance v05.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, and 47658 Kato Road, Fremont, California, USA. Line conducted emissions are measured only at the 47173 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

47173 Benicia Street	47266 Benicia Street	47658 Kato Rd
☐ Chamber A (ISED:2324B-1)	☐ Chamber D (ISED:22541-1)	☒ Chamber I (ISED:2324A-5)
☒ Chamber B (ISED:2324B-2)	☐ Chamber E (ISED:22541-2)	☐ Chamber J (ISED:2324A-6)
☐ Chamber C (ISED:2324B-3)	☐ Chamber F (ISED:22541-3)	☐ Chamber K (ISED:2324A-1)
	☐ Chamber G (ISED:22541-4)	☐ Chamber L (ISED:2324A-3)
	☐ Chamber H (ISED:22541-5)	

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers above are covered under Industry Canada company address and respective code

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0

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4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. 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

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 dBuV + 0 dB +10.1 dB+ 0 dB = 46.6 dBuV

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.84 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.65 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	3.15 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	5.36 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.32 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.45 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.24 dB

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

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5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a Bluetooth Low Energy enabled temperature logging device. Sealed inside plastic enclosure containing two AAA alkaline batteries.

5.2. MAXIMUM OUTPUT E-FIELD STRENGTH

The transmitter has a maximum output peak E-field as follows:

Frequency Range (MHz)	Mode	Output PK E-field Strength (dBuV/m)
2402 - 2480	BLE	92.48

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PCB trace inverted-F antenna, with a maximum gain of 1.4 dBi.

5.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was V0.9

The test utility software used during testing was radio_test_0_1

5.5. WORST-CASE CONFIGURATION AND MODE

Radiated emission below 1 GHz was performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

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

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5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

N/A

I/O CABLES

N/A

TEST SETUP

The EUT is connected to two AAA alkaline batteries.

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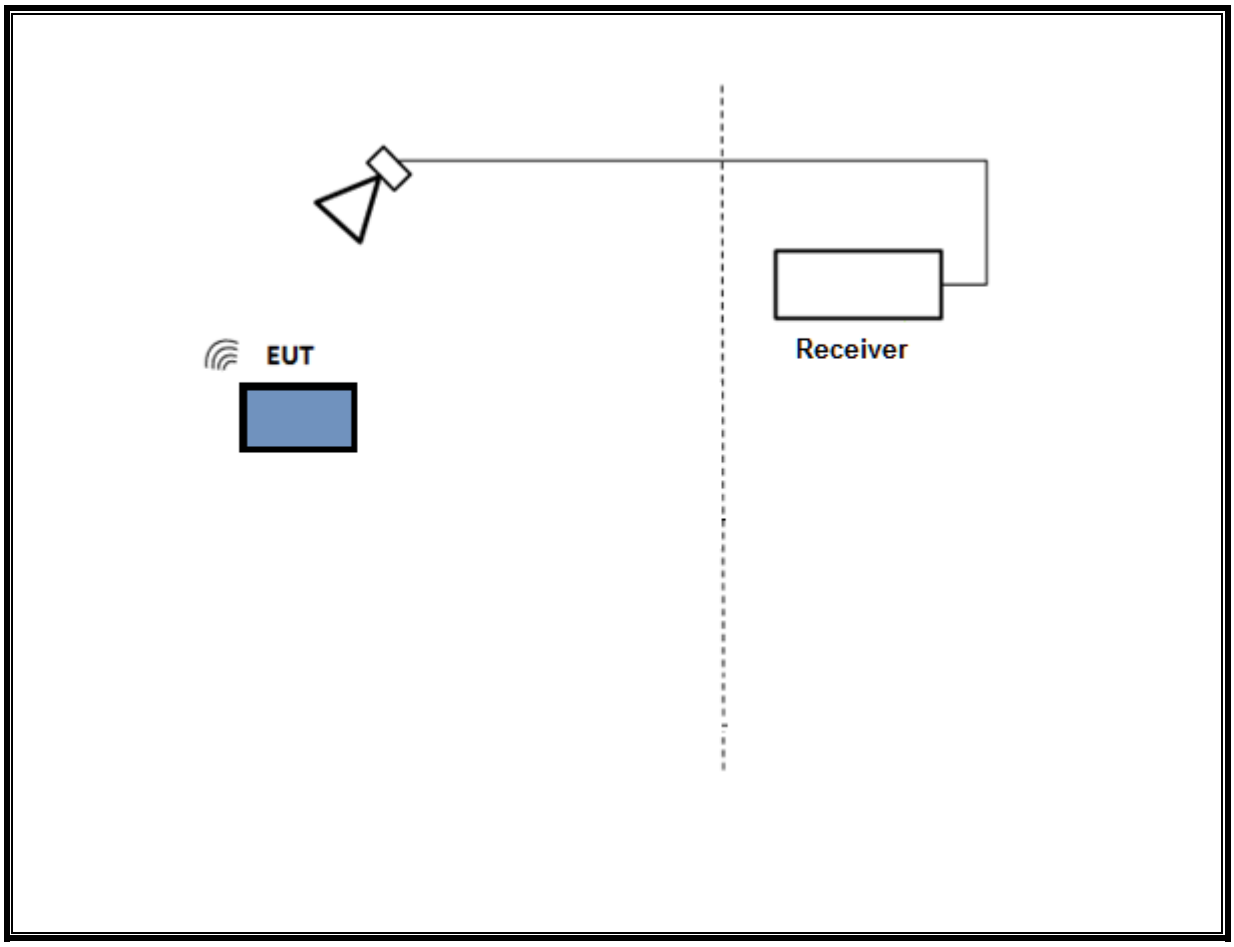
SETUP DIAGRAM FOR TESTS



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6. MEASUREMENT METHOD

20 dB BW: ANSI C63.10 Subclause -11.8.1

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

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

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

Band-edge: ANSI C63.10 Subclause -11.13.3.4 Trace averaging across ON and OFF times of the EUT transmissions followed by duty cycle correction

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7. 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**	**Asset**	**Cal Due**
Antenna, Active Loop 9KHz to 30MHz	ETS-Lindgren	6502	T1683	02/21/2019
Antenna, Broadband Hybrid, 30MHz to 3000MHz	SunAR RF Motion	JB3	PRE0184971	11/13/2019
Amplifier, 10KHz to 1GHz, 32dB	SONOMA INSTRUMENT	310	PRE0180175	07/09/2019
Antenna, Horn 1-18GHz	ETS Lindgren	3117	T862	05/24/2019
Amplifier, 1 to 18GHz	MITEQ	AFS42-00101800-25-S-42	PRE1782151	08/01/2019
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight	E4446A	T146	08/13/2019
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight	E4446A	T1454	01/23/2020
Antenna Horn, 18 to 26.5GHz	ARA	MWH-1826/B	T448	03/13/2019
Pre-Amp 1-26.5 GHz	Agilent	8449B	T404	03/09/2019
EMI Test Receiver	Rohde&Schwarz	ESW44	PRE0179376	05/08/2019
EMI Test Receiver	Rohde&Schwarz	ESW44	PRE0179377	11/02/2019
UL AUTOMATION SOFTWARE				
Radiated Software	UL	UL EMC	Ver 9.5, June 22, 2018	

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8. TEST RESULTS

8.1. ON TIME AND DUTY CYCLE

LIMITS

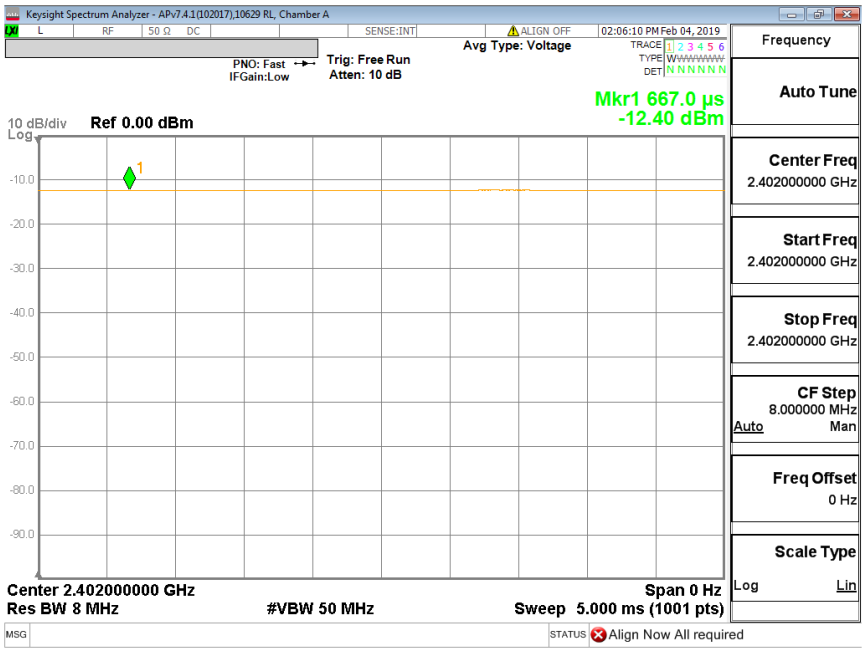
None; for reporting purposes only.

RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
BLE	5.0000	5.0000	1.000	100.00%	0.00

DUTY CYCLE PLOT

DUTY CYCLE BLE MODE



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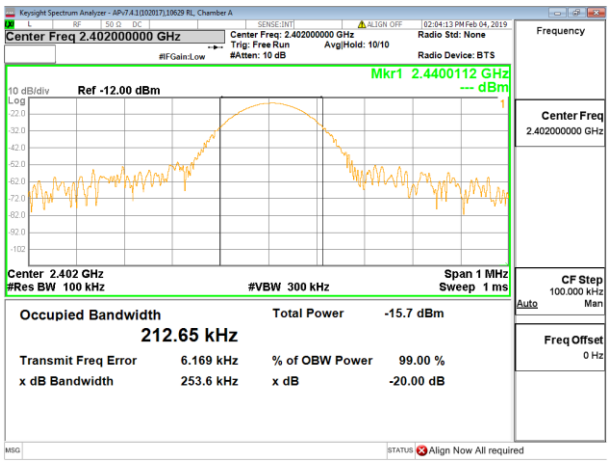
8.2. 99% and 20dB BANDWIDTH

LIMITS

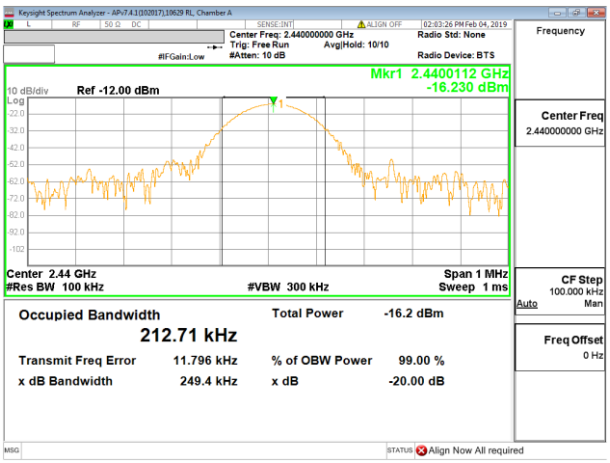
None; for reporting purposes only.

RESULTS

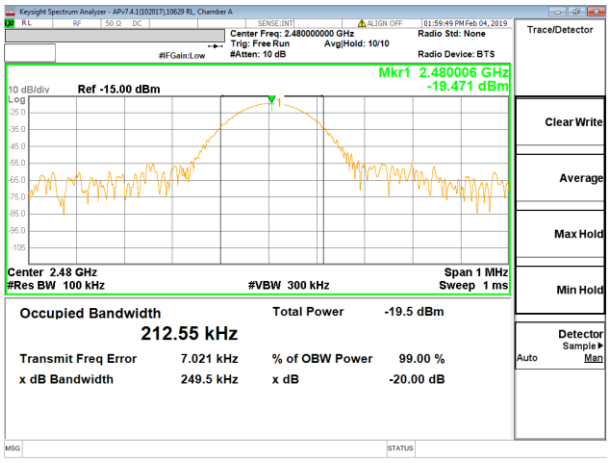
Channel	Frequency (MHz)	99% Bandwidth (KHz)	20dB Bandwidth (KHz)
Low	2402	212.65	253.60
Middle	2440	212.71	249.40
High	2480	212.55	249.50



LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

8.3. RADIATED EMISSIONS

LIMIT

FCC 15.249

Operation within the bands 902–928 MHz, 2400–2483.5 MHz, 5725–5875 MHZ, and 24.0–24.25 GHz.
(a) Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902–928 MHz	50	500
2400–2483.5 MHz	50	500
5725–5875 MHz	50	500
24.0–24.25 GHz	250	2500

(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation.

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009–0.490	2400/F(kHz)	300
0.490–1.705	24000/F(kHz)	30
1.705–30.0	30	30
30–88	100 **	3
88–216	150 **	3
216–960	200 **	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54–72 MHz, 76–88 MHz, 174–216 MHz or 470–806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§15.231 and 15.241.

RESULTS

8.3.1. FUNDAMENTAL FREQUENCY RADIATED EMISSION

Date:	01/31/2019
Test Engineer:	19498 ER
Test Site	Chamber I

XYZ Orientation	Frequency (GHz)	Meter Reading (dBµV)	Det	AF T862 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	Corrected Reading (dBµV/m)	Avg Limit (dBµV/m)	Margin (dB)	Peak Limit (dBµV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
X	2.44	78.76	Pk	32.2	-19.4	91.56	-	-	114	-22.44	33	364	H
X	2.44	78.68	Av	32.2	-19.4	91.48	94	-2.52	-	-	33	364	H
Y	2.44	79.68	Pk	32.2	-19.4	**92.48**	-	-	114	-21.52	57	112	H
Y	2.44	79.59	Av	32.2	-19.4	92.39	94	-1.61	-	-	57	112	H
Z	2.44	68.31	Pk	32.2	-19.4	81.11	-	-	114	-32.89	107	249	H
Z	2.44	68.13	Av	32.2	-19.4	80.93	94	-13.07	-	-	107	249	H
X	2.44	76.31	Pk	32.2	-19.4	89.11	-	-	114	-24.89	331	100	V
X	2.44	76.21	Av	32.2	-19.4	89.01	94	-4.99	-	-	331	100	V
Y	2.44	68.68	Pk	32.2	-19.4	81.48	-	-	114	-32.52	138	375	V
Y	2.44	68.5	Av	32.2	-19.4	81.3	94	-12.7	-	-	138	375	V
Z	2.44	79.21	Pk	32.2	-19.4	92.01	-	-	114	-21.99	332	102	V
Z	2.44	79.11	Av	32.2	-19.4	91.91	94	-2.09	-	-	332	102	V

PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1: Maximum RMS Average

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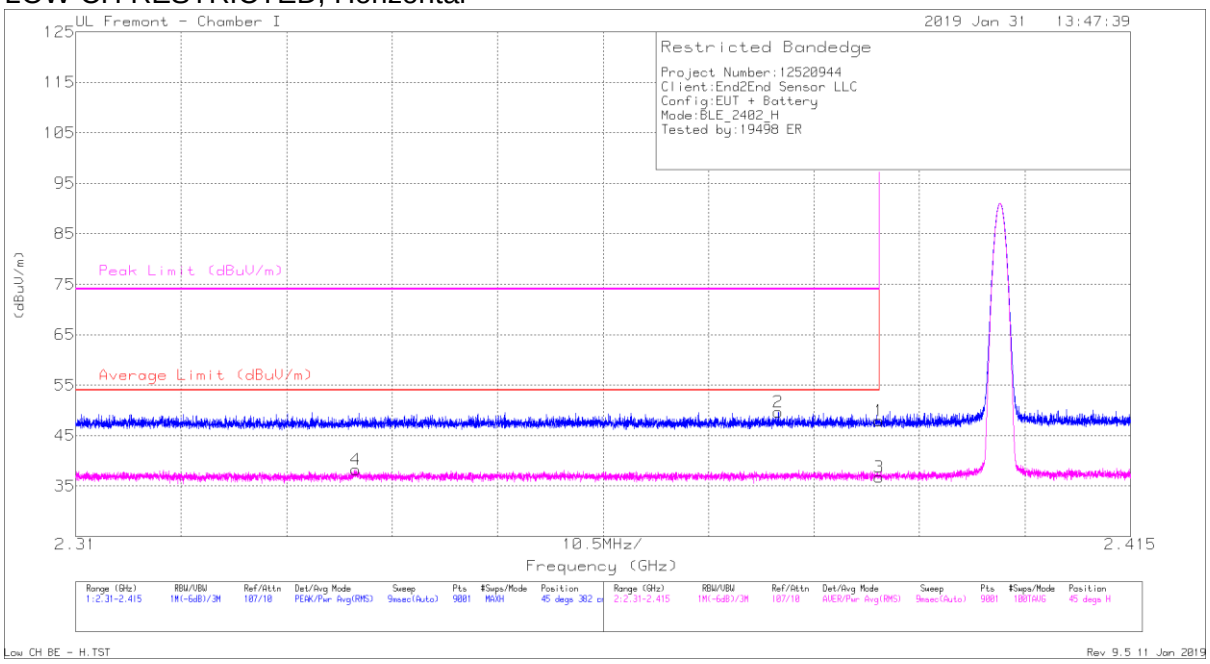
8.3.2. TRANSMITTER RESTRICTED BAND EDGES

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

LOW CH RESTRICTED, Horizontal



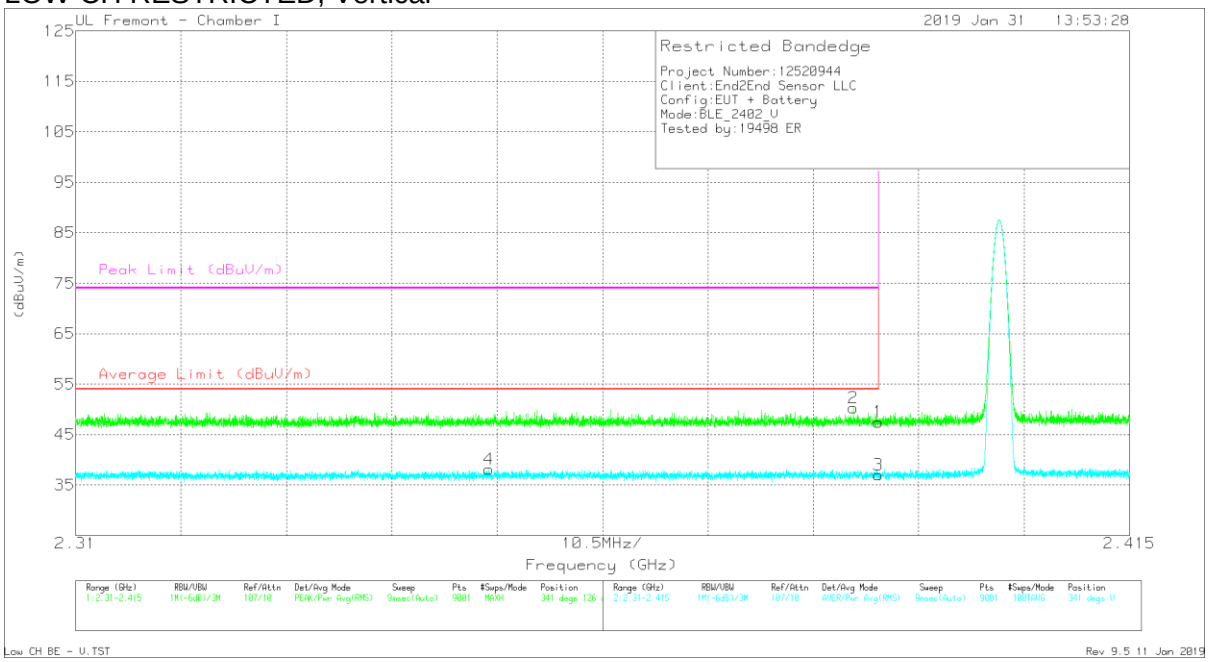
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/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	* 2.39	37.69	Pk	31.8	-21.6	47.89	-	-	74	-26.11	45	382	H
2	* 2.38	39.43	Pk	31.7	-21.5	49.63	-	-	74	-24.37	45	382	H
3	* 2.39	26.61	RMS	31.8	-21.6	36.81	54	-17.19	-	-	45	382	H
4	* 2.338	28.23	RMS	31.5	-21.5	38.23	54	-15.77	-	-	45	382	H

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

RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

LOW CH RESTRICTED, Vertical



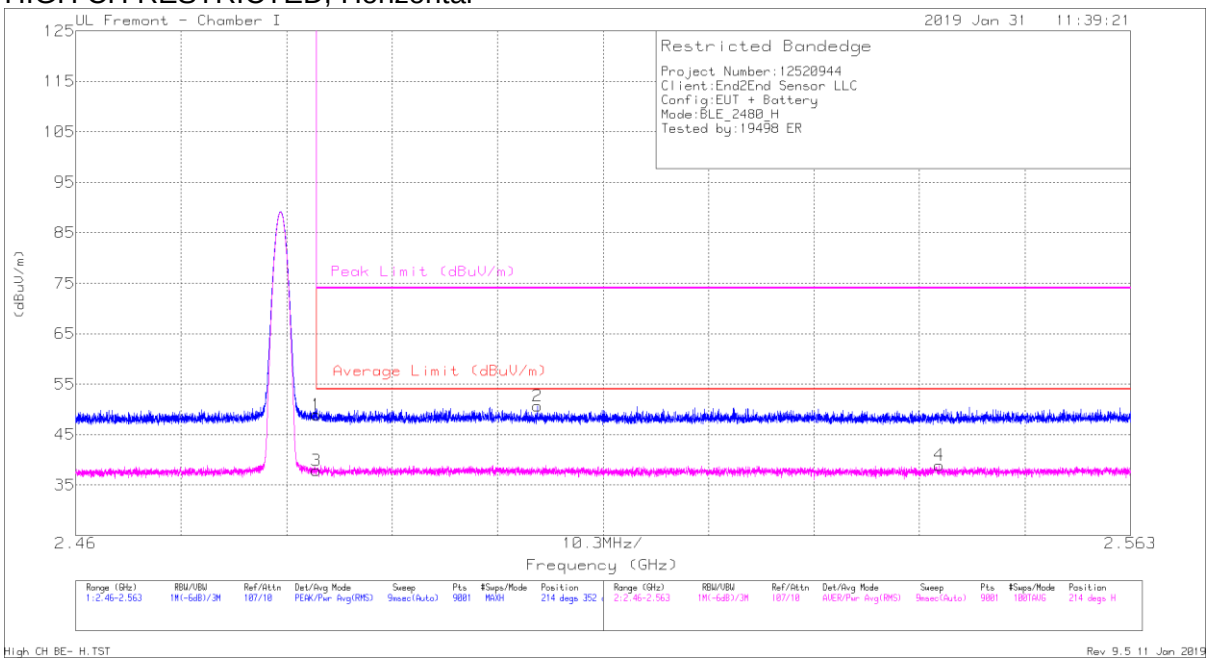
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Filter/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	* 2.39	37.3	Pk	31.8	-21.6	47.5	-	-	74	-26.5	341	126	V
2	* 2.387	40.07	Pk	31.8	-21.6	50.27	-	-	74	-23.73	341	126	V
3	* 2.39	26.86	RMS	31.8	-21.6	37.06	54	-16.94	-	-	341	126	V
4	* 2.351	27.99	RMS	31.6	-21.5	38.09	54	-15.91	-	-	341	126	V

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

RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

HIGH CH RESTRICTED, Horizontal



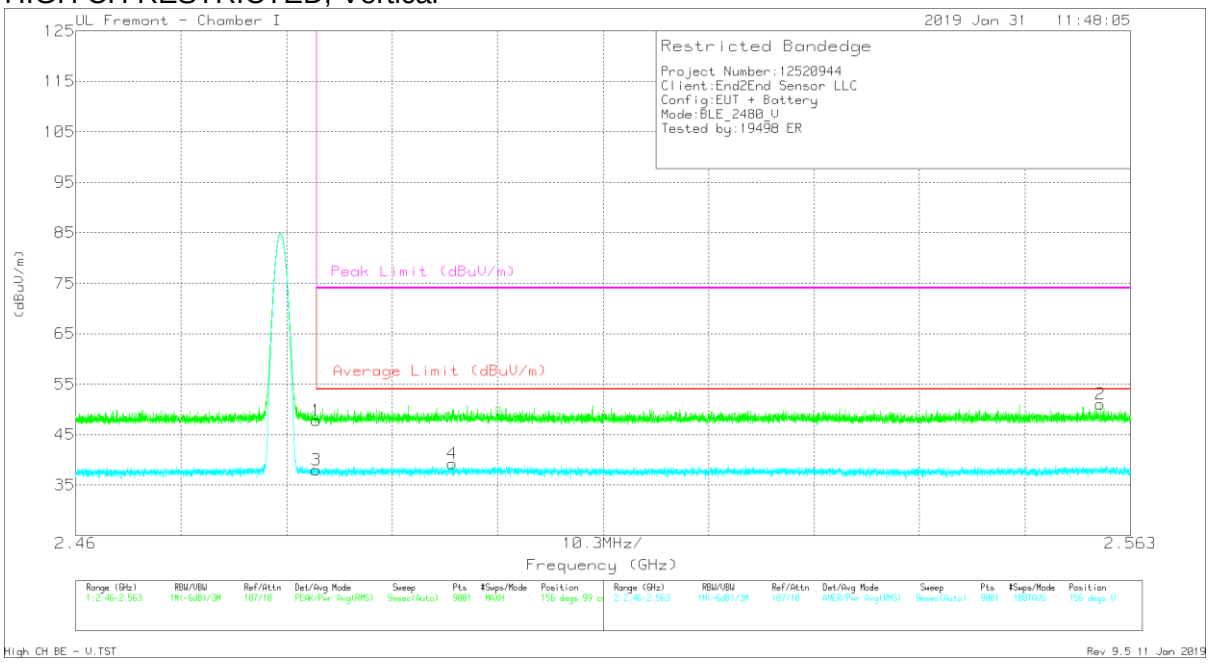
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Flt r/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	* 2.484	38.17	Pk	32.4	-21.7	48.87	-	-	74	-25.13	214	352	H
2	2.505	39.98	Pk	32.5	-21.8	50.68	-	-	74	-23.32	214	352	H
3	* 2.484	27.2	RMS	32.4	-21.7	37.9	54	-16.1	-	-	214	352	H
4	2.544	28.33	RMS	32.4	-21.8	38.93	54	-15.07	-	-	214	352	H

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

RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

HIGH CH RESTRICTED, Vertical



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Filter/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	* 2.484	37.13	Pk	32.4	-21.7	47.83	-	-	74	-26.17	156	99	V
2	2.56	40.22	Pk	32.4	-21.6	51.02	-	-	74	-22.98	156	99	V
3	* 2.484	27.25	RMS	32.4	-21.7	37.95	54	-16.05	-	-	156	99	V
4	* 2.497	28.43	RMS	32.5	-21.7	39.23	54	-14.77	-	-	156	99	V

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

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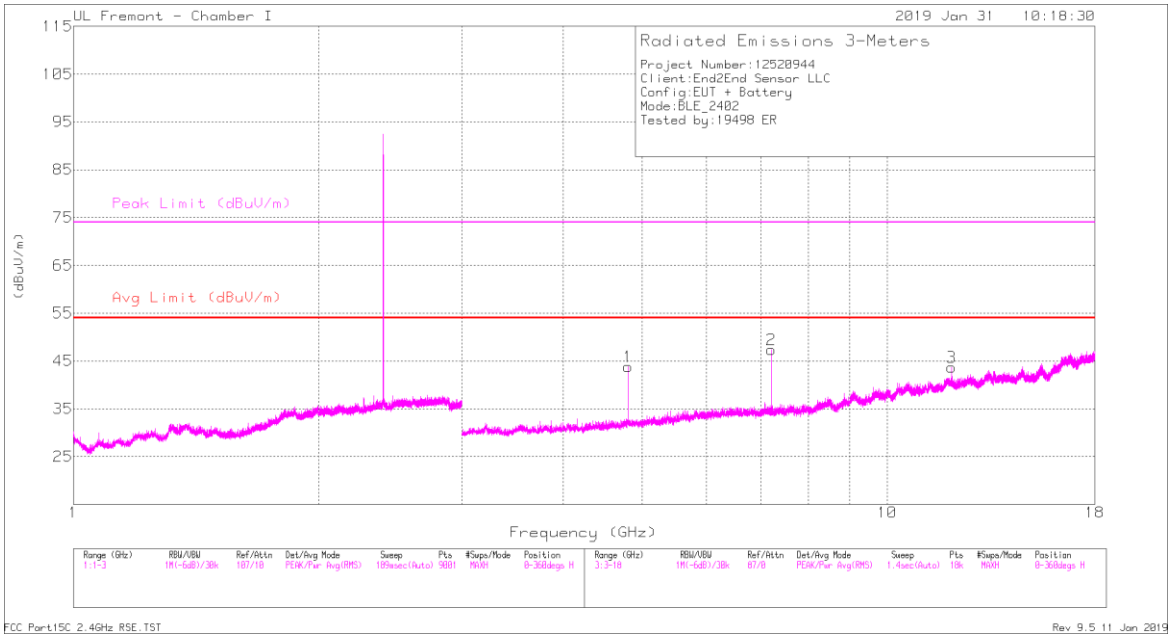
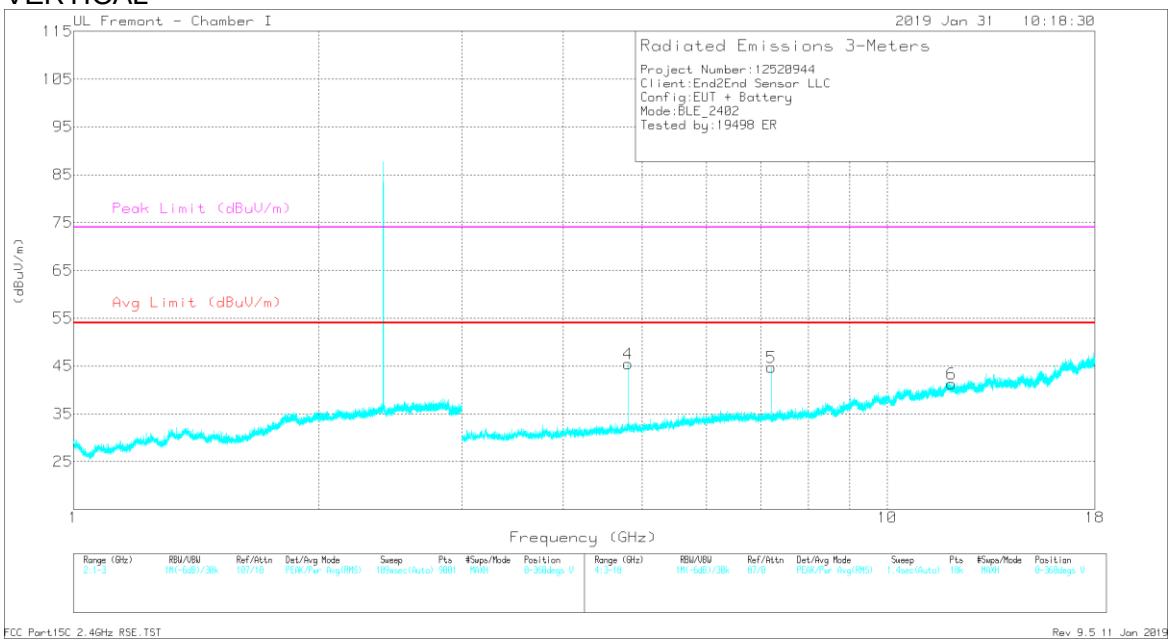
8.3.3. HARMONICS AND SPURIOUS EMISSIONS ABOVE 1GHz

Low Channel Result

HORIZONTAL



VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.803	37.56	Pk	34.3	-28	43.86	-	-	74	-30.14	0-360	102	H
2	7.206	37.79	Pk	35.6	-26	47.39	-	-	-	-	0-360	199	H
3	* 12.011	25.69	Pk	38.9	-20.9	43.69	-	-	74	-30.31	0-360	102	H
4	* 4.803	39.13	Pk	34.3	-28	45.43	-	-	74	-28.57	0-360	102	V
5	7.206	35.1	Pk	35.6	-26	44.7	-	-	-	-	0-360	102	V
6	* 12.01	23.29	Pk	38.9	-20.9	41.29	-	-	74	-32.71	0-360	102	V

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

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
7.206	40.07	Pk	35.6	-26	49.67	-	-	-	-	287	267	H
* 4.804	39.48	Pk	34.3	-28	45.78	-	-	74	-28.22	194	108	H
* 4.804	37.43	Av	34.3	-28	43.73	54	-10.27	-	-	194	108	H
* 12.01	32.59	Pk	38.9	-20.9	50.59	-	-	74	-23.41	223	109	H
* 12.01	24.09	Av	38.9	-20.9	42.09	54	-11.91	-	-	223	109	H
7.206	37.49	Pk	35.6	-26	47.09	-	-	-	-	340	128	V
* 4.804	40.7	Pk	34.3	-28	47	-	-	74	-27	214	112	V
* 4.804	38.65	Av	34.3	-28	44.95	54	-9.05	-	-	214	112	V
* 12.01	30.09	Pk	38.9	-20.9	48.09	-	-	74	-25.91	265	359	V
* 12.01	21.79	Av	38.9	-20.9	39.79	54	-14.21	-	-	265	359	V

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

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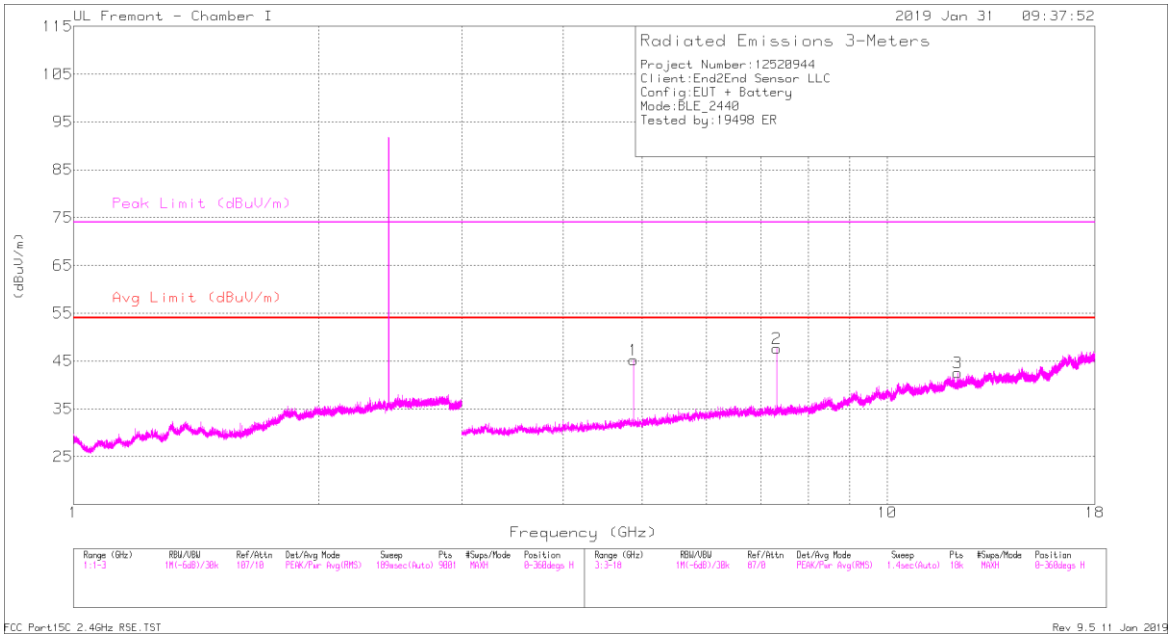
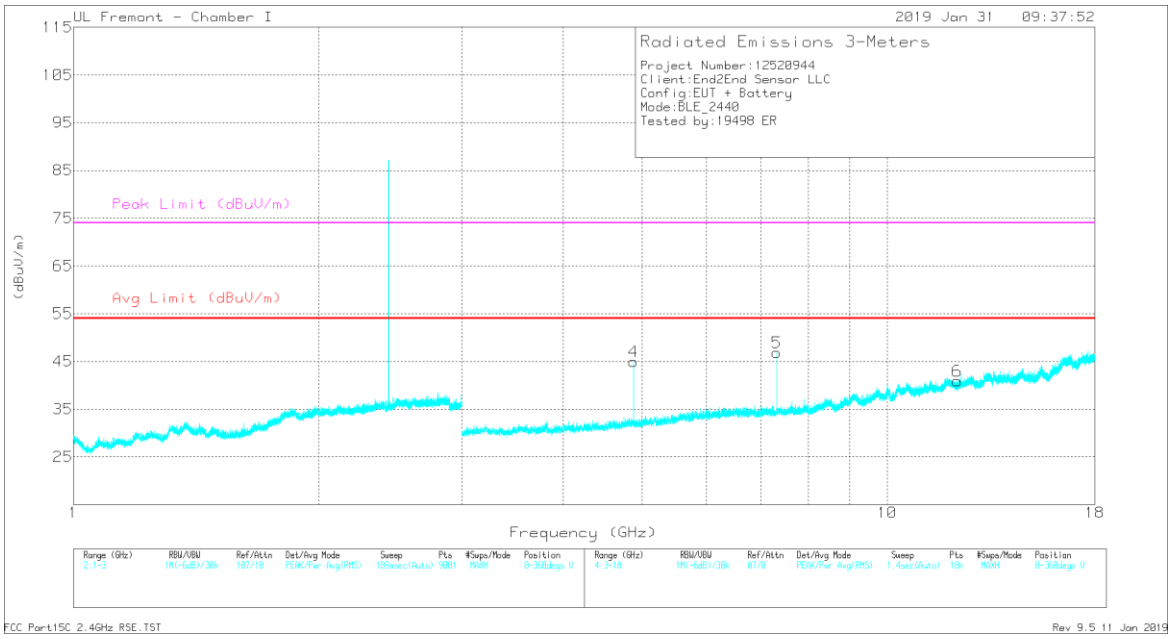
Middle Channel Result

HORIZONTAL



VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.88	39.93	Pk	34.1	-28.8	45.23	-	-	74	-28.77	0-360	102	H
2	* 7.32	38.04	Pk	35.6	-26	47.64	-	-	74	-26.36	0-360	102	H
3	* 12.201	24.49	Pk	39	-20.9	42.59	-	-	74	-31.41	0-360	102	H
4	* 4.88	39.62	Pk	34.1	-28.8	44.92	-	-	74	-29.08	0-360	102	V
5	* 7.319	37.26	Pk	35.6	-26	46.86	-	-	74	-27.14	0-360	102	V
6	* 12.198	22.7	Pk	39	-20.8	40.9	-	-	74	-33.1	0-360	199	V

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

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.88	41.85	Pk	34.1	-28.8	47.15	-	-	74	-26.85	18	103	H
* 4.88	39.76	Av	34.1	-28.8	45.06	54	-8.94	-	-	18	103	H
* 7.32	39.61	Pk	35.6	-26	49.21	-	-	74	-24.79	184	243	H
* 7.318	22.97	Av	35.6	-26	32.57	54	-21.43	-	-	184	243	H
* 12.2	31.08	Pk	39	-20.8	49.28	-	-	74	-24.72	63	107	H
* 12.2	23.67	Av	39	-20.8	41.87	54	-12.13	-	-	63	107	H
* 4.88	41.01	Pk	34.1	-28.8	46.31	-	-	74	-27.69	37	323	V
* 4.88	38.8	Av	34.1	-28.8	44.1	54	-9.9	-	-	37	323	V
* 7.32	38.85	Pk	35.6	-26	48.45	-	-	74	-25.55	116	103	V
* 7.32	36.66	Av	35.6	-26	46.26	54	-7.74	-	-	116	103	V
* 12.197	29.23	Pk	39	-20.8	47.43	-	-	74	-26.57	162	108	V
* 12.199	20.59	Av	39	-20.8	38.79	54	-15.21	-	-	162	108	V

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

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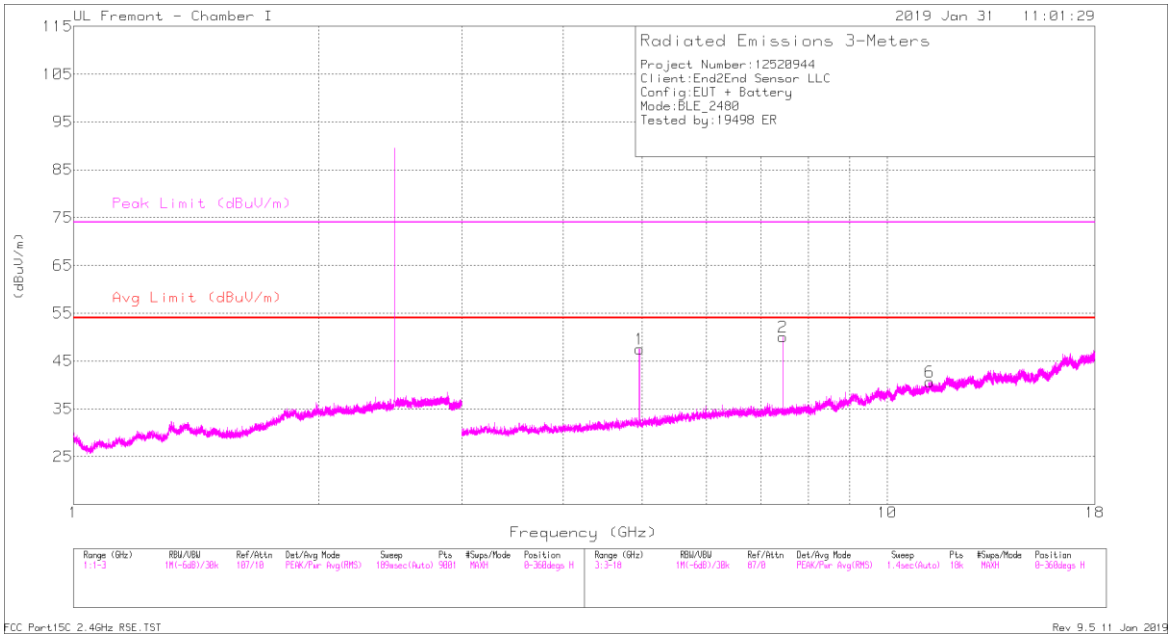
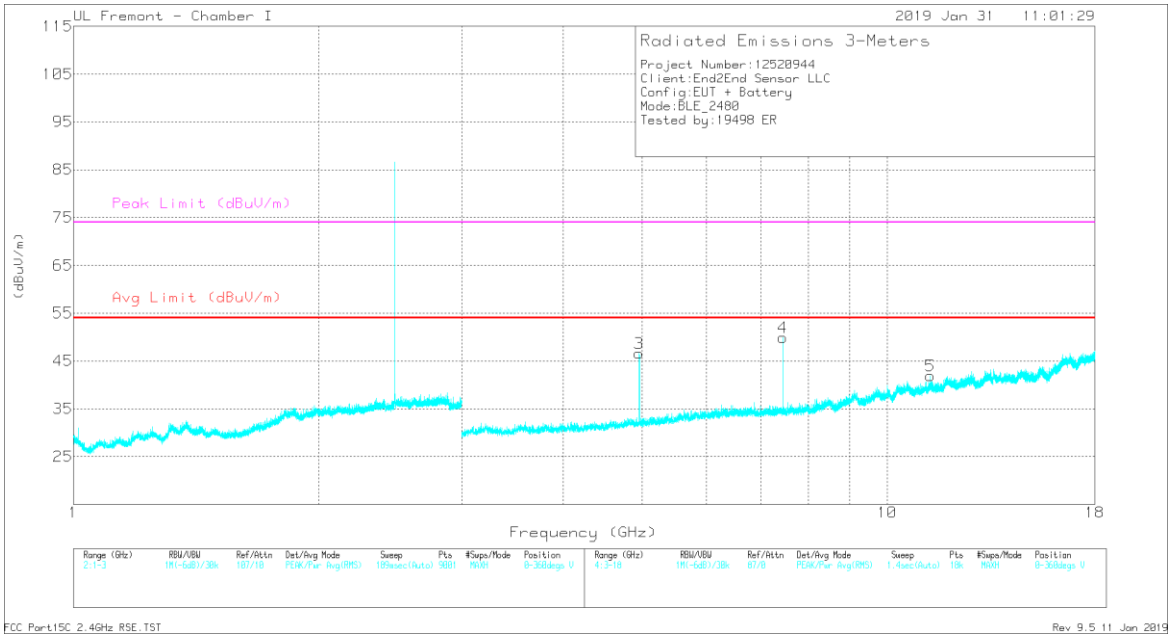
High Channel Result

HORIZONTAL



VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr /Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.96	42.32	Pk	34.2	-29	47.52	-	-	74	-26.48	0-360	102	H
2	* 7.439	39.53	Pk	35.6	-25.1	50.03	-	-	74	-23.97	0-360	102	H
6	* 11.28	23.06	Pk	38	-20.4	40.66	-	-	74	-33.34	0-360	199	H
3	* 4.959	41.36	Pk	34.2	-29	46.56	-	-	74	-27.44	0-360	102	V
4	* 7.44	39.37	Pk	35.6	-25.1	49.87	-	-	74	-24.13	0-360	102	V
5	* 11.302	24.17	Pk	38	-20.3	41.87	-	-	74	-32.13	0-360	199	V

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

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.96	43.77	Pk	34.2	-29	48.97	-	-	74	-25.03	20	103	H
* 4.96	41.78	Av	34.2	-29	46.98	54	-7.02	-	-	20	103	H
* 7.44	41.49	Pk	35.6	-25.1	51.99	-	-	74	-22.01	101	108	H
* 7.44	39.86	Av	35.6	-25.1	50.36	54	-3.64	-	-	101	108	H
* 11.28	29.46	Pk	38	-20.4	47.06	-	-	74	-26.94	75	191	H
* 11.282	19.7	Av	38	-20.4	37.3	54	-16.7	-	-	75	191	H
* 4.96	42.64	Pk	34.2	-29	47.84	-	-	74	-26.16	25	116	V
* 4.96	41.04	Av	34.2	-29	46.24	54	-7.76	-	-	25	116	V
* 7.44	40.88	Pk	35.6	-25.1	51.38	-	-	74	-22.62	115	104	V
* 7.44	39.45	Av	35.6	-25.1	49.95	54	-4.05	-	-	115	104	V
* 11.302	29.04	Pk	38	-20.3	46.74	-	-	74	-27.26	270	156	V
* 11.3	19.74	Av	38	-20.3	37.44	54	-16.56	-	-	270	156	V

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

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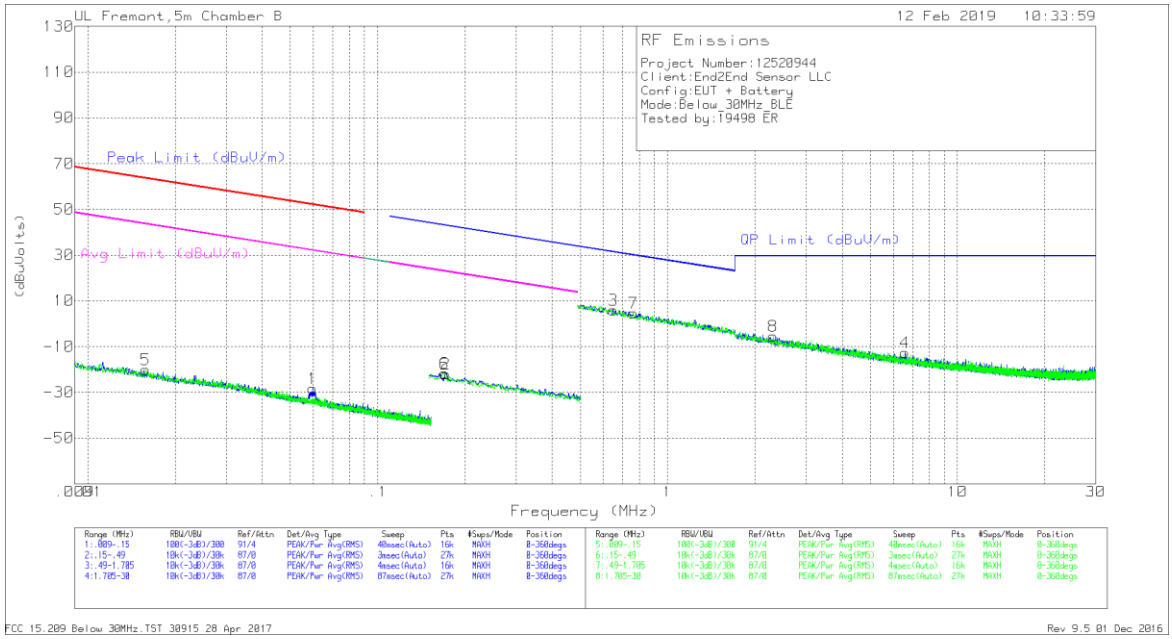
8.3.4. WORST-CASE BELOW 30 MHz

SPURIOUS EMISSIONS BELOW 30 MHz



Note: The anechoic chamber has been properly calibrated so that the measurement results correspond to what would be obtained from an open field sites.

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dBm)	Cables (dB)	Dist Corr 300m	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
5	.01582	42.59	Pk	17.2	.1	-80	-20.11	63.6	-83.71	43.6	-63.71	-	-	-	-	0-360
1	.05959	39.1	Pk	12.6	0	-80	-28.3	52.08	-80.38	32.08	-60.38	-	-	-	-	0-360
6	.16953	46.98	Pk	11.2	.1	-80	-21.72	-	-	-	-	43.04	-64.76	23.04	-44.76	0-360
2	.17192	46.79	Pk	11.2	.1	-80	-21.91	-	-	-	-	42.91	-64.82	22.91	-44.82	0-360

Pk - Peak detector

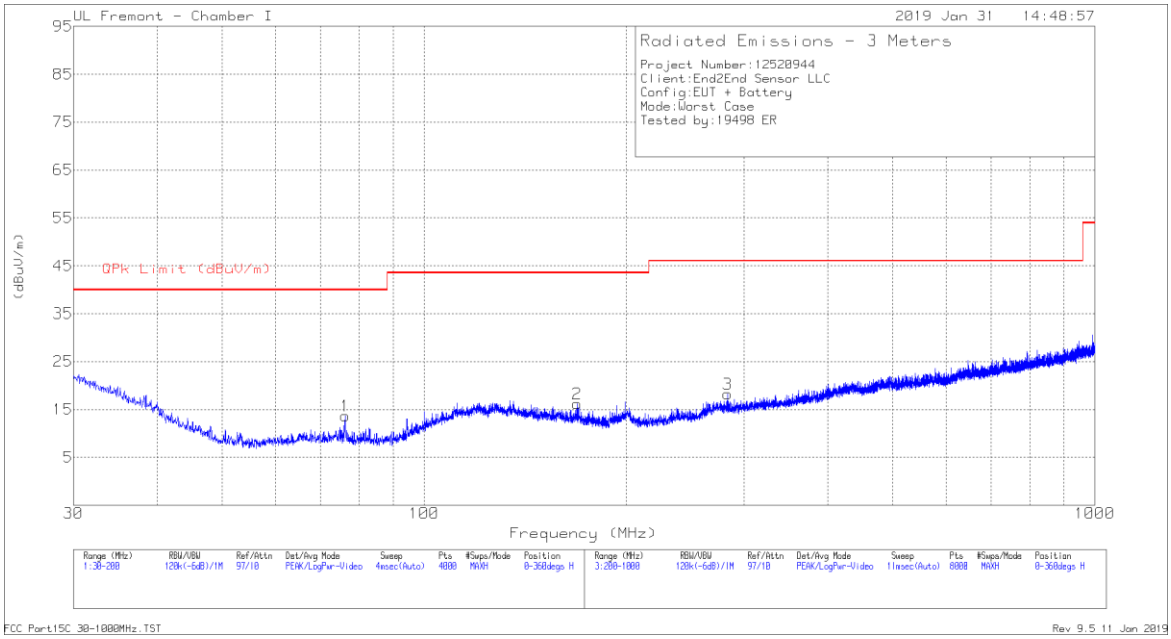
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dBm)	Cables (dB)	Dist Corr (dB) 40Log	Corrected Reading (dBuVolts)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
3	.64968	34.83	Pk	11.1	.1	-40	6.03	31.36	-25.33	0-360
7	.7606	33.42	Pk	11	.1	-40	4.52	29.99	-25.47	0-360
8	2.31389	22.99	Pk	11.3	.2	-40	-5.51	29.5	-35.01	0-360
4	6.59968	15.95	Pk	11	.3	-40	-12.75	29.5	-42.25	0-360

Pk - Peak detector

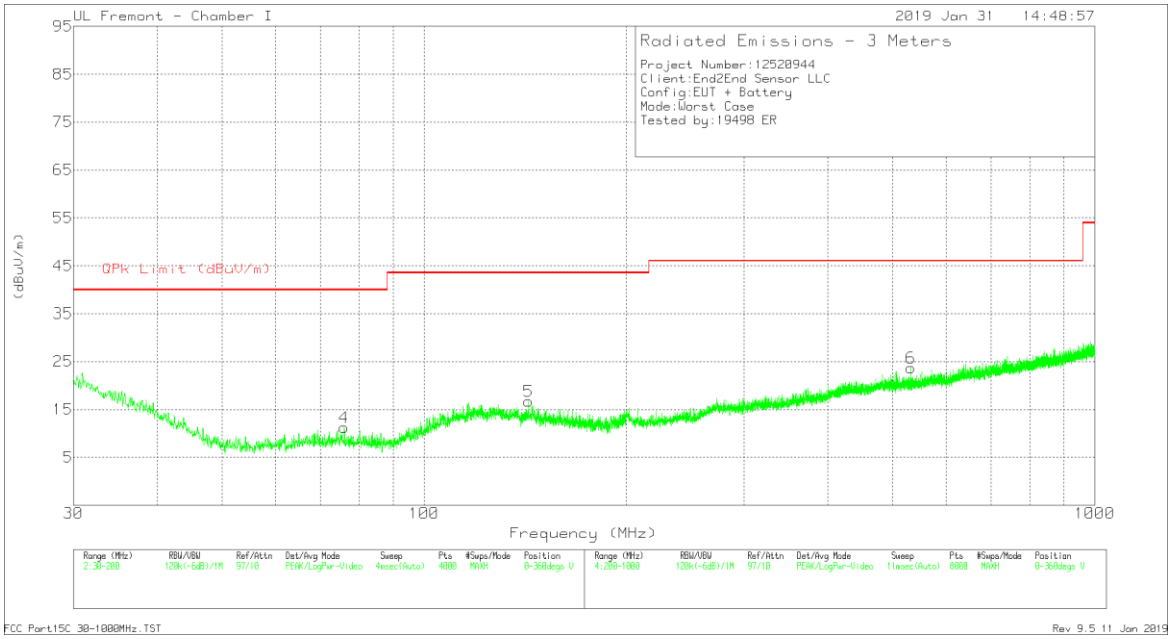
8.3.5. WORST-CASE BELOW 1 GHz

SPURIOUS EMISSIONS 30 TO 1000 MHz

HORIZONTAL



VERTICAL



Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF PRE0184971 (dB/m)	Amp Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	76.252	30.8	Pk	13.8	-30.9	13.7	40	-26.3	0-360	300	H
2	* 169.2235	29.03	Pk	17.5	-30.3	16.23	43.52	-27.29	0-360	399	H
4	76.0394	28.32	Pk	13.8	-30.9	11.22	40	-28.78	0-360	102	V
5	143.1218	28.67	Pk	18.6	-30.5	16.77	43.52	-26.75	0-360	102	V
3	* 283.2108	28.7	Pk	19.3	-29.8	18.2	46.02	-27.82	0-360	199	H
6	532.0432	29.1	Pk	23.9	-29.3	23.7	46.02	-22.32	0-360	299	V

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

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	AF PRE0184971 (dB/m)	Amp Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
504.762	21.34	Qp	23.5	-29.3	15.54	46.02	-30.48	285	204	V

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

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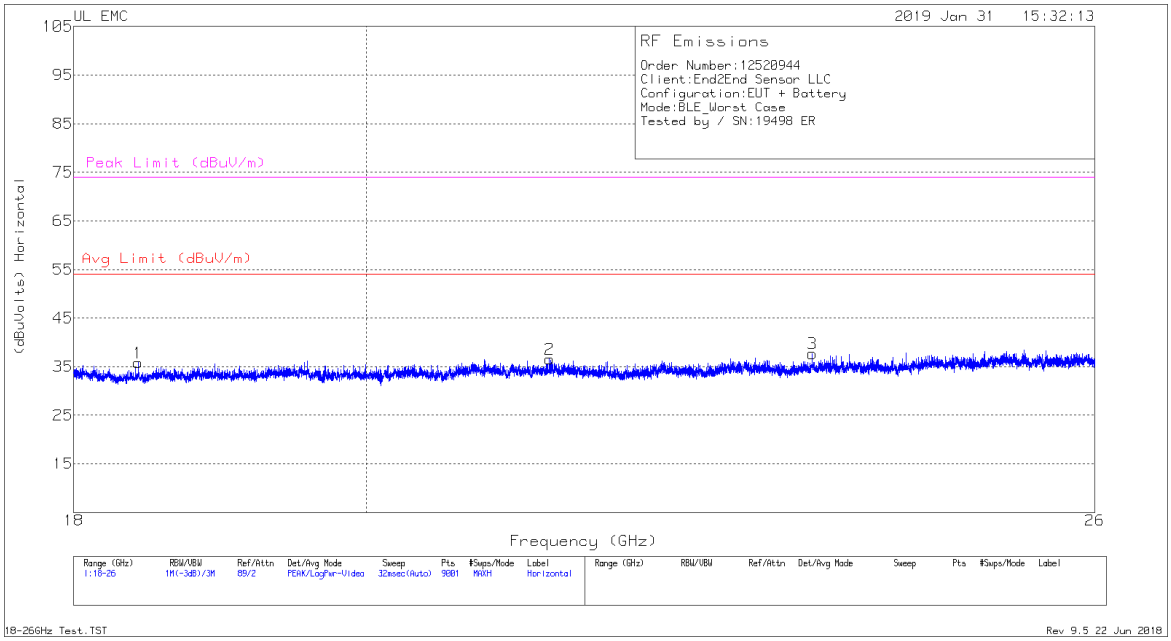
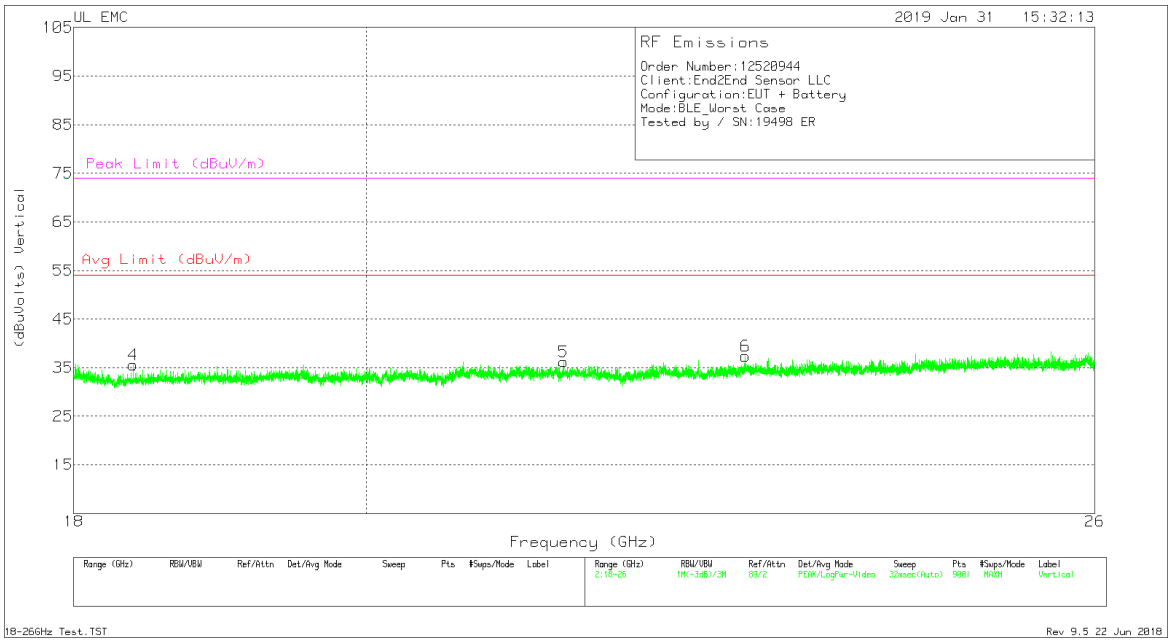
8.3.6. WORST-CASE ABOVE 18 GHz

SPURIOUS EMISSIONS 18 TO 26 GHz

HORIZONTAL



VERTICAL



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Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	T448 AF (dB/m)	Amp/Cbl (dB)	Dist Corr (dB)	Corrected Reading (dBuVolts)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)
1	18.422	72.1	Pk	32.2	-59	-9.5	35.8	54	-18.2	74	-38.2
2	21.363	70.45	Pk	33.1	-57.5	-9.5	36.55	54	-17.45	74	-37.45
3	23.484	70.27	Pk	33.9	-57	-9.5	37.67	54	-16.33	74	-36.33
4	18.389	72.36	Pk	32.2	-59.5	-9.5	35.56	54	-18.44	74	-38.44
5	21.473	69.84	Pk	33.2	-57.3	-9.5	36.24	54	-17.76	74	-37.76
6	22.924	70.49	Pk	33.5	-57.1	-9.5	37.39	54	-16.61	74	-36.61

Pk - Peak detector

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