



TEST REPORT

Report Number. : 13431970-E3V2

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

Model : 65501

FCC ID : C9O-DUBPMB2

IC : 10161A-DUBPMB2

EUT Description : Bicycle Power Meter

Test Standard(s) : FCC 47 CFR PART 15 SUBPART C
ISED RSS-210 ISSUE 10
ISED RSS-GEN ISSUE 5

Date Of Issue:

October 29, 2020

Prepared by:

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REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	10/20/2020	Initial Issue	
V2	10/29/2020	Updated Section 1, 2, and 9.2	Steven Tran

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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: Bicycle Power Meter

MODEL: 65501

SERIAL NUMBER: Conducted: AG047078
Radiated: AG048750

DATE TESTED: SEPTEMBER 28, 2020 – OCTOBER 6, 2020

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Complies
ISED RSS-210 Issue 10	Complies
ISED RSS-GEN Issue 5	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.

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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 414788 D01 Radiated Test Site v01r01, ISED RSS-GEN Issue 5 and ISED RSS-210 Issue 10.

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 were measured at 47658 Kato RD 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
<input type="checkbox"/> Chamber A	<input type="checkbox"/> Chamber D	<input type="checkbox"/> Chamber I
<input type="checkbox"/> Chamber B	<input type="checkbox"/> Chamber E	<input type="checkbox"/> Chamber J
<input type="checkbox"/> Chamber C	<input type="checkbox"/> Chamber F	<input checked="" type="checkbox"/> Chamber K
	<input type="checkbox"/> Chamber G	<input type="checkbox"/> Chamber L
	<input type="checkbox"/> Chamber H	<input type="checkbox"/> Chamber M

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: 2324A.

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

4. DECISION RULES AND MEASUREMENT UNCERTAINTY

4.1. 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.

4.2. 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.)

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	U _{Lab}
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.39 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.07 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	2.52 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	4.88 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.24 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.37 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.17 dB

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

4.4. SAMPLE CALCULATION

RADIATED EMISSIONS

Where relevant, the following sample calculation is provided:

$$\text{Field Strength (dBuV/m)} = \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)} - \text{Preamp Gain (dB)}$$

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

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:

$$\text{Final Voltage (dBuV)} = \text{Measured Voltage (dBuV)} + \text{Cable Loss (dB)} + \text{Limiter Factor (dB)} + \text{LISN Insertion Loss.}$$

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

5. EQUIPMENT UNDER TEST

5.1. EUT DESCRIPTION

The EUT is a Power Meter with BLE, AIREA, and ANT+ Radios.

5.2. MAXIMUM FUNDAMENTAL FIELD STRENGTH

The transmitter has a maximum fundamental field strength as follows:

Frequency Range (MHz)	Mode	Peak E-field Strength (dBuV/m)	Avg E-field Strength (dBuV/m)	Distance (m)
2405 - 2475	ANT+	106.56	92.58	3.00

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a ceramic chip antenna, with a maximum gain of 1.40 dBi.

5.4. 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 3.3.0.

5.5. WORST-CASE CONFIGURATION AND MODE

Radiated emissions below 1GHz and above 18GHz were performed with the EUT set to transmit at the channel with highest output power as 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 two orthogonal orientations Horizontal, and Vertical, it was determined that Horizontal orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Horizontal orientation.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List			
Description	Manufacturer	Model	Serial Number
Laptop	Lenovo	T450s	PC044FTD
AC/DC Adapter	Lenovo	ADLX45NCC2A	N/A
USB Dongle	Segger	E204460	680435024
DC Power Supply	Kenwood Corporation	PA36-3A	7060074

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	Unshielded	1.5	AC Main to DC Supply, to Analyzer
2	DC	1	DC	Unshielded	0.5	Power Supply to EUT
3	Antenna Port	1	SMA	Unshielded	0.5	EUT to Analyzer

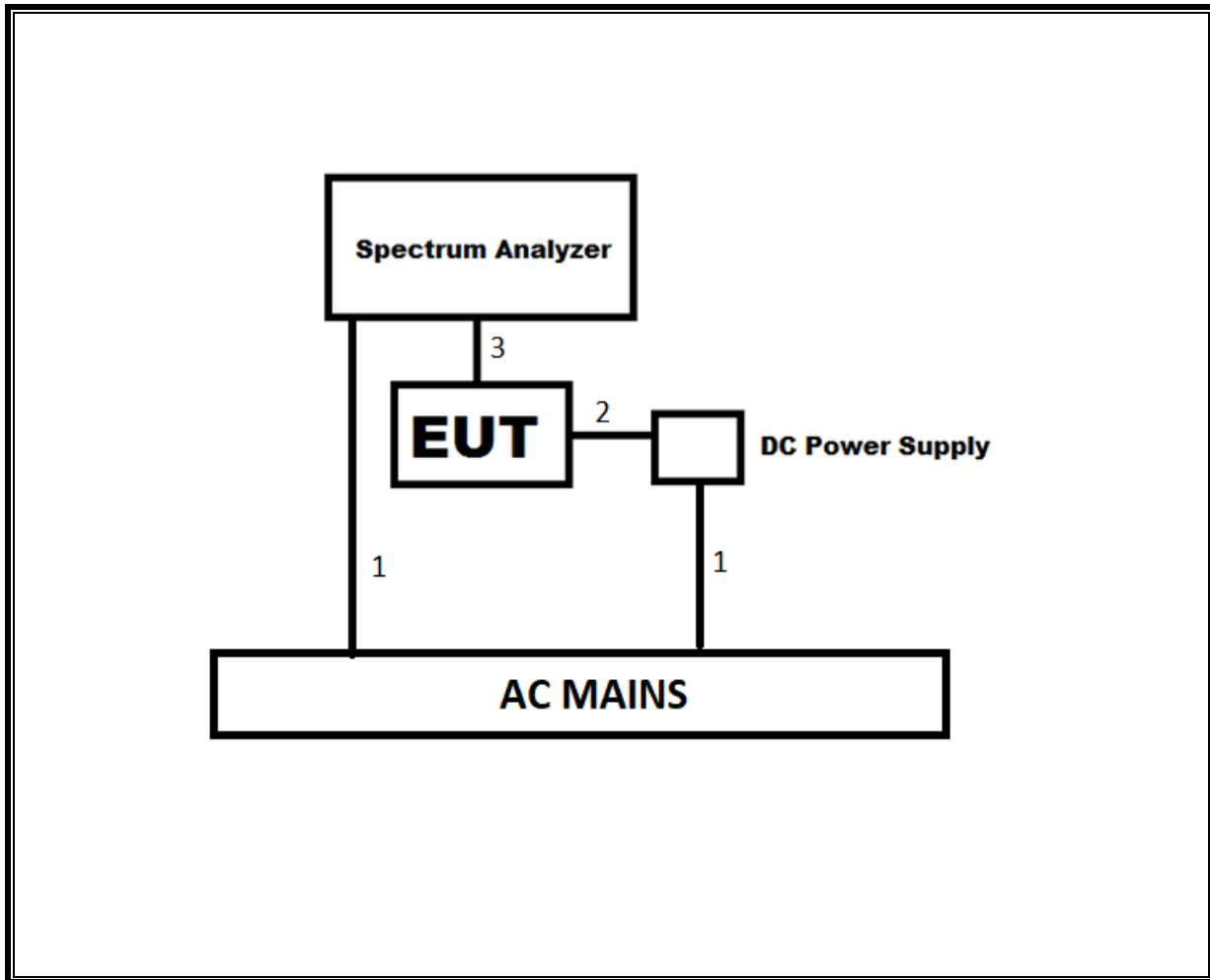
I/O CABLES (RADIATED EMISSIONS)

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	AC	Unshielded	1.5	AC Main to DC Supply
2	DC	1	DC	Unshielded	0.5	Power Supply to EUT

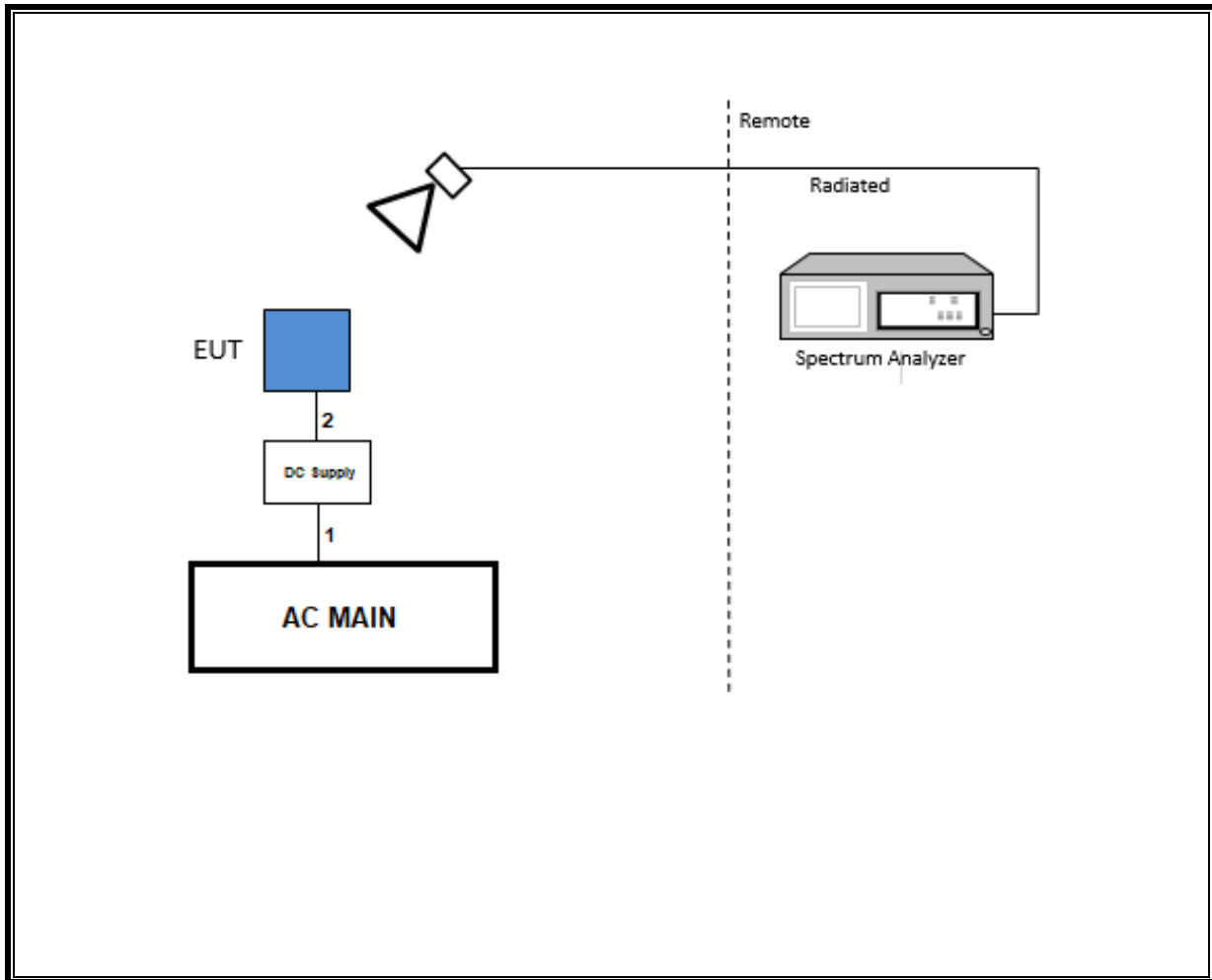
TEST SETUP

For the purposes of testing, the EUT is connected to a 1.5V DC Power supply for radiated emissions above 1GHz. The EUT is normally powered by a AAA lithium battery at 1.5V. For radiated emissions below 1GHz, the EUT is battery powered.

SETUP DIAGRAM FOR CONDUCTED TESTS



SETUP DIAGRAM FOR RADIATED TESTS



6. MEASUREMENT METHOD

On Time and Duty Cycle: ANSI C63.10-2013 Section 11.6

Occupied BW (20dB): ANSI C63.10-2013 Section 6.9.2

Radiated Spurious Emissions 30-1000MHz: ANSI C63.10-2013 Section 6.3 and 6.5

Radiated Spurious Emissions above 1GHz: ANSI C63.10-2013 Section 6.3 and 6.6

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

Radiated Band-edge: ANSI C63.10-2013 Section 6.10.5

7. 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	Asset	Cal Due
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	PRE0179376	4/3/2021
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T863	8/31/2021
Antenna, BroadBand Hybrid, 30MHz to 3GHz	Sunol Sciences Corp.	JB3	PRE0181574	10/14/2020
Amplifier, 100MHz-18GHz	AMPLICAL	AMP0.1G18-47-20	PRE0197319	5/4/2021
Amplifier, 9KHz to 1GHz, 32dB	SONOMA INSTRUMENT	310	175953	1/23/2021
Filter, HPF 3.0GHz	MICRO-TRONICS	HPM17543	175973	5/4/2021
Antenna, Passive Loop 30Hz - 1MHz	ELECTRO METRICS	EM-6871	PRE0179466	5/27/2021
Antenna, Passive Loop 100KHz - 30MHz	ELECTRO METRICS	EM-6872	PRE0179468	5/27/2021
Antenna, Horn 18 to 26.5GHz	ARA	MWH-1826/B	T448	5/20/2021
Rf Amplifier, 18-26.5GHz, 60dB gain	AMPLICAL	AMP18G26.5-60	PRE0181238	6/7/2021
Spectrum Analyzer, PSA, 3Hz to 44GHz	Keysight Technologies Inc	E4446A	T146	1/29/2021
Power Meter, P-series single channel	Keysight Technologies Inc	N1911A	T1268	1/22/2021
Power Sensor, P - series, 50MHz to 18GHz, Wideband	Keysight Technologies Inc	N1921A	T413	2/26/2021
UL AUTOMATION SOFTWARE				
Radiated Software	UL	UL EMC	Ver 9.5, March 30, 2020	
Antenna Port Software	UL	UL RF	Ver 2020.9.18	

8. ANTENNA PORT TEST RESULTS

8.1. 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

Note: DCCF based on manufacturer's declared duty cycle of 20%, $20\log(0.2) = -13.98\text{dB}$.

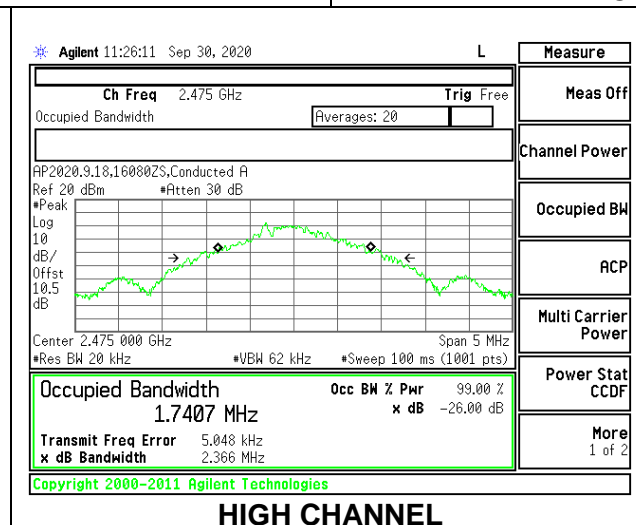
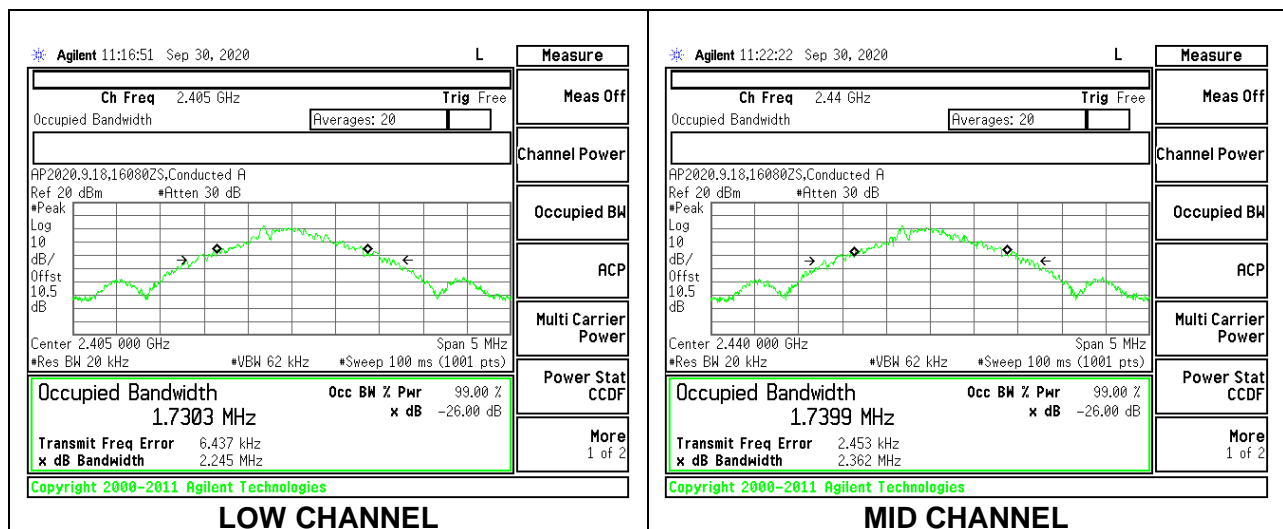
8.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2405	1.7303
Middle	2440	1.7399
High	2475	1.7407



8.3. 20 dB BANDWIDTH

LIMITS

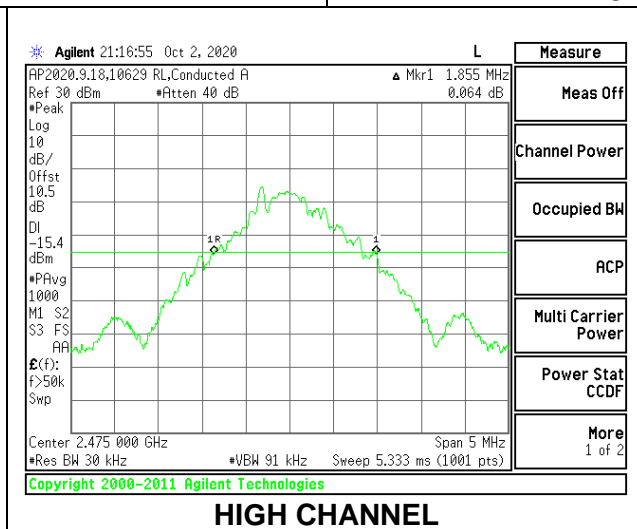
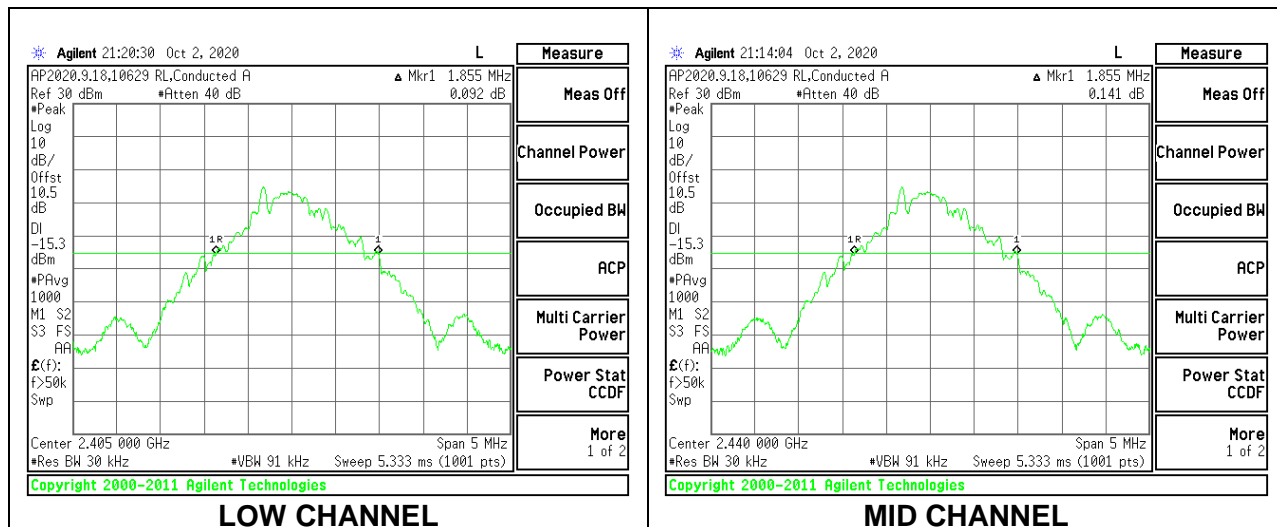
None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 1% to 5% of the 20 dB bandwidth. The VBW is set to approximately three times RBW. The sweep time is coupled

RESULTS

Channel	Frequency (MHz)	20 dB Bandwidth (MHz)	Frequency Edge (MHz)	Limit (MHz)	Margin (MHz)
Low	2405	1.855	2404.073	2400	-4.073
Middle	2440	1.855	N/A	N/A	N/A
High	2475	1.855	2475.928	2483.5	-7.573



9. RADIATED TEST RESULTS

9.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.249

FCC §15.205 and §15.209

ISED RSS-GEN, Section 8.9 and 8.10

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.

(e) As shown in Sec. 15.35(b), for frequencies above 1000 MHz, the field strength limits in paragraphs (a) and (b) of this section are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

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

TEST PROCEDURE

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

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

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

For final measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T (10 kHz) video bandwidth with peak detector 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.

KDB 414788 OFS and Chamber Correlation Justification

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

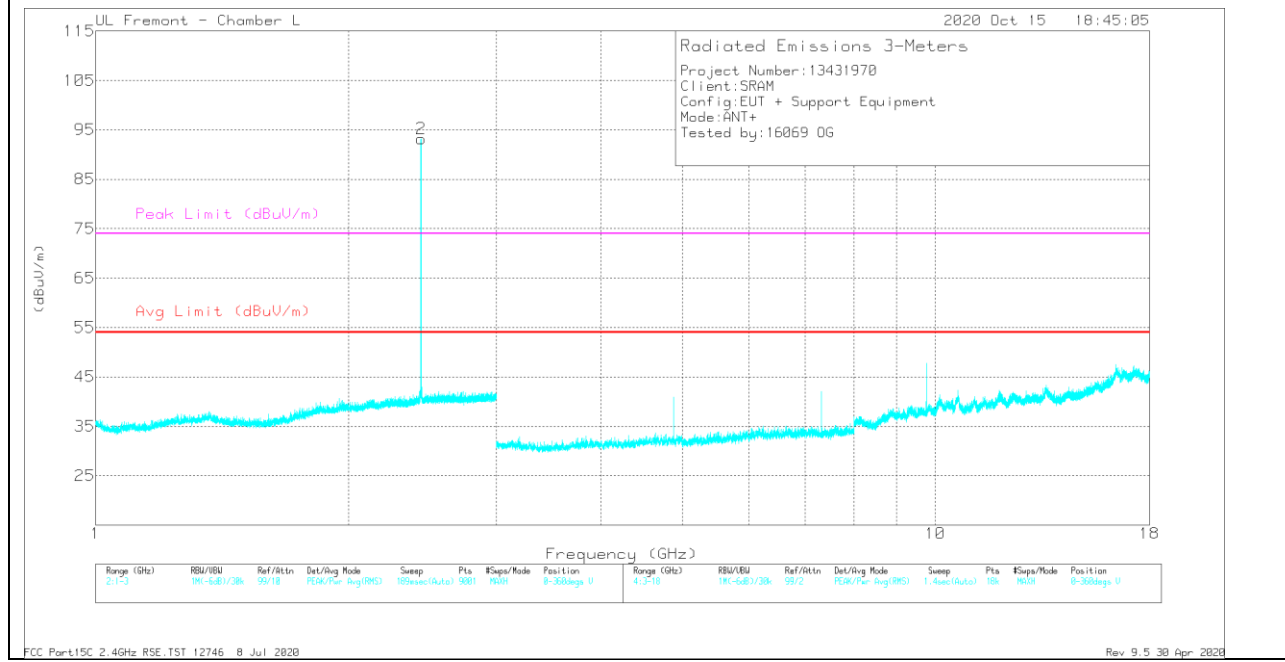
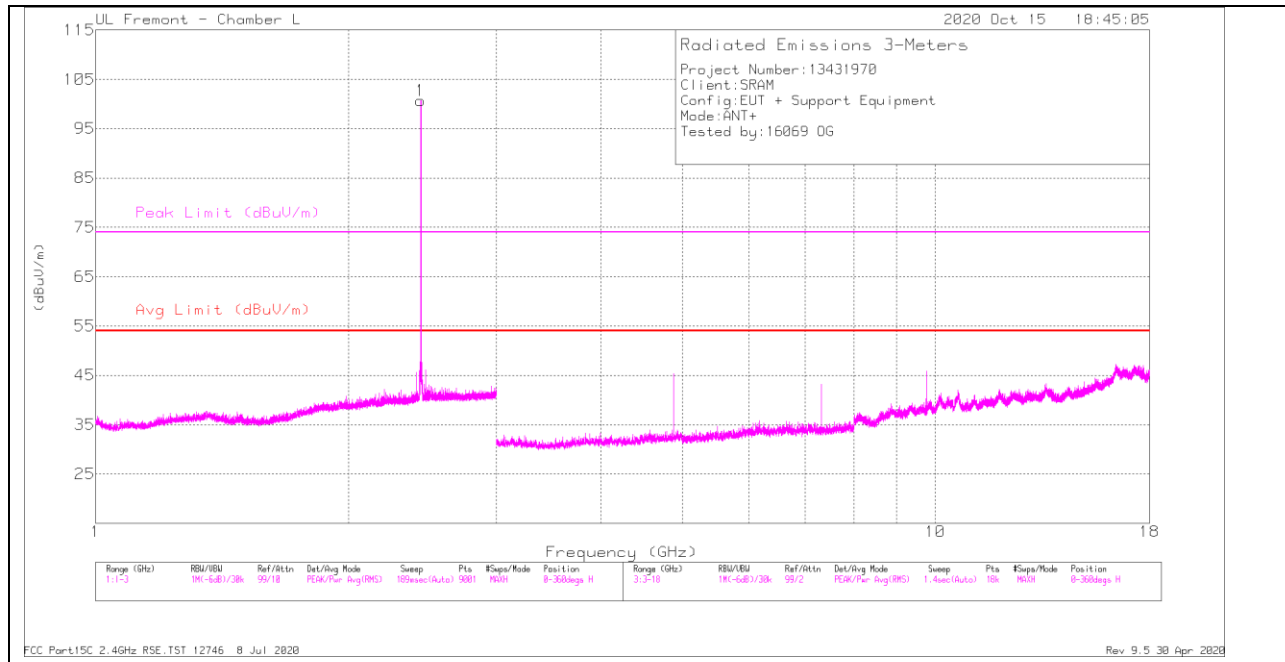
OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

9.2. FUNDAMENTAL FREQUENCY RADIATED EMISSION

Tested By:	16069 OG
Date:	10/01/2020

Frequency (GHz)	Meter Reading (dBuV)	Det	AFT863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2.405	108.57	Pk	32.4	-34.9	0	106.07	-	-	114	-7.93	20	109	H
	108.57	AVG	32.4	-34.9	-13.98	92.09	94	-1.91	-	-	20	109	H
	102.83	Pk	32.4	-34.9	0	100.33	-	-	114	-13.67	242	98	V
	102.83	AVG	32.4	-34.9	-13.98	86.35	94	-7.65	-	-	242	98	V
2.440	108.64	Pk	32.4	-34.8	0	106.24	-	-	114	-7.76	21	109	H
	108.64	AVG	32.4	-34.8	-13.98	92.26	94	-1.74	-	-	21	109	H
	102.42	Pk	32.4	-34.8	0	100.02	-	-	114	-13.98	240	115	V
	102.42	AVG	32.4	-34.8	-13.98	86.04	94	-7.96	-	-	240	115	V
2.475	108.86	Pk	32.4	-34.7	0	106.56	-	-	114	-7.44	155	166	H
	108.86	AVG	32.4	-34.7	-13.98	92.58	94	-1.42	-	-	155	166	H
	100.46	Pk	32.4	-34.7	0	98.16	-	-	114	-15.84	335	166	V
	100.46	AVG	32.4	-34.7	-13.98	84.18	94	-9.82	-	-	335	166	V

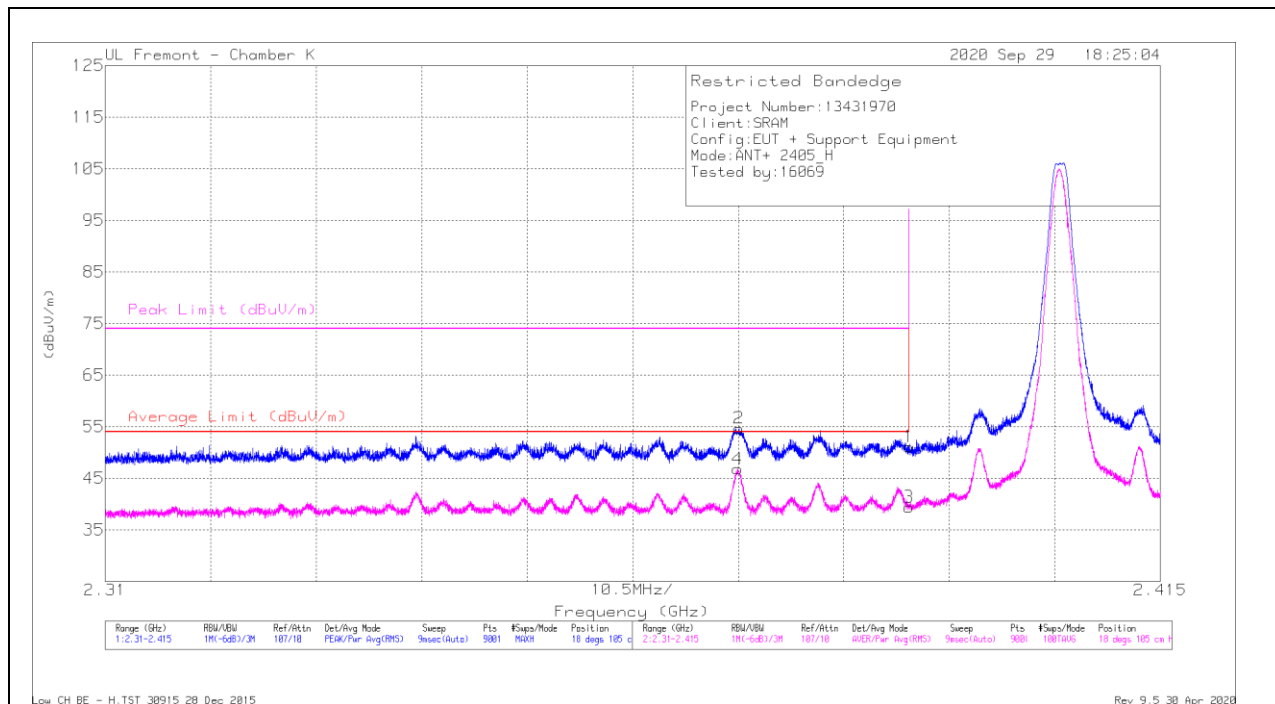
PK - Peak detector
 AVG = Peak Reading + Duty Cycle Correction Factor
 Duty Cycle Correction Factor = -13.98 dB



9.3. TRANSMITTER ABOVE 1 GHz

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



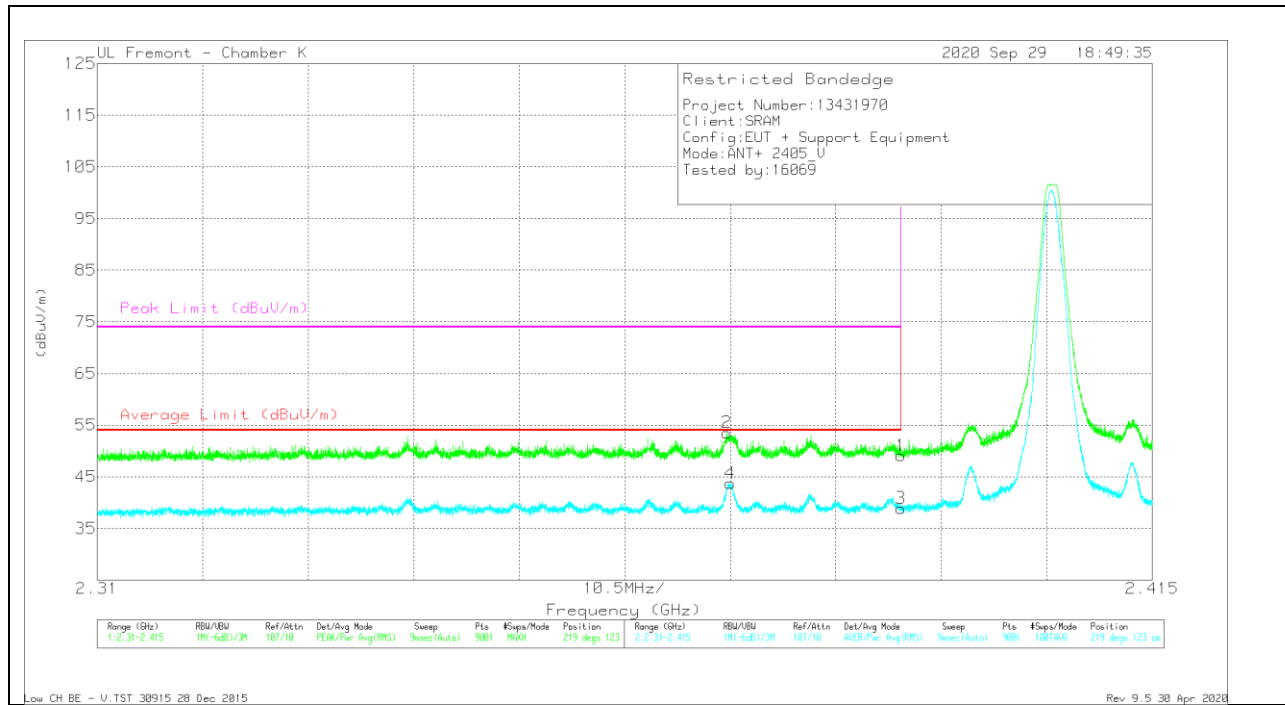
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.38999	53.72	Pk	32.4	-35	0	51.12	-	-	74	-22.88	18	105	H
2	* 2.37306	57.39	Pk	32.4	-35.1	0	54.69	-	-	74	-19.31	18	105	H
3	* 2.38999	53.72	AVG	32.4	-35	-13.98	37.14	54	-16.86	-	-	18	105	H
4	* 2.37306	57.39	AVG	32.4	-35.1	-13.98	40.71	54	-13.29	-	-	18	105	H

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

PK - RB=1MHz VB=3 x RB, Peak
 AVG = Peak Reading + Duty Cycle Correction Factor
 Duty Cycle Correction Factor = -13.98 dB

VERTICAL RESULT



Trace Markers

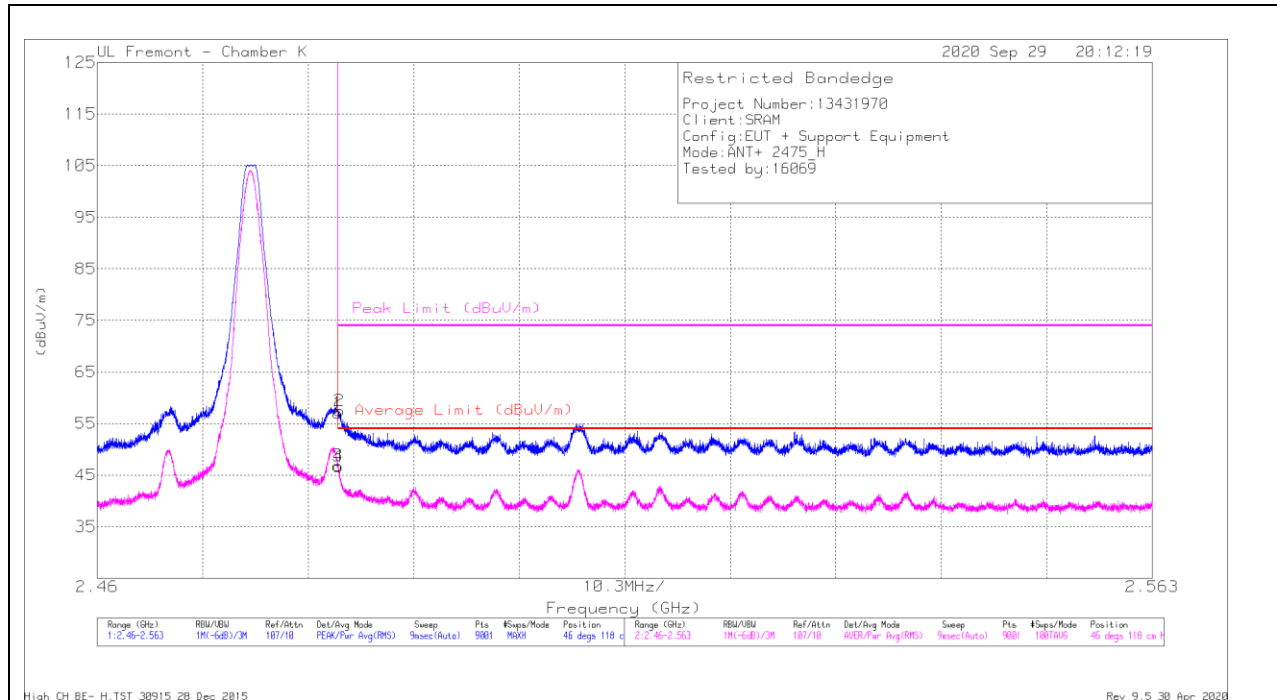
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.38999	51.7	Pk	32.4	-35	0	49.1	-	-	74	-24.9	219	123	V
2	* 2.37268	56.25	Pk	32.4	-35.1	0	53.55	-	-	74	-20.45	219	123	V
3	* 2.38999	51.7	AVG	32.4	-35	-13.98	35.12	54	-18.88	-	-	219	123	V
4	* 2.37268	56.25	AVG	32.4	-35.1	-13.98	39.57	54	-14.43	-	-	219	123	V

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

PK - RB=1MHz VB=3 x RB, Peak
 AVG = Peak Reading + Duty Cycle Correction Factor
 Duty Cycle Correction Factor = -13.98 dB

BANDEGE (HIGH CHANNEL)

HORIZONTAL RESULT



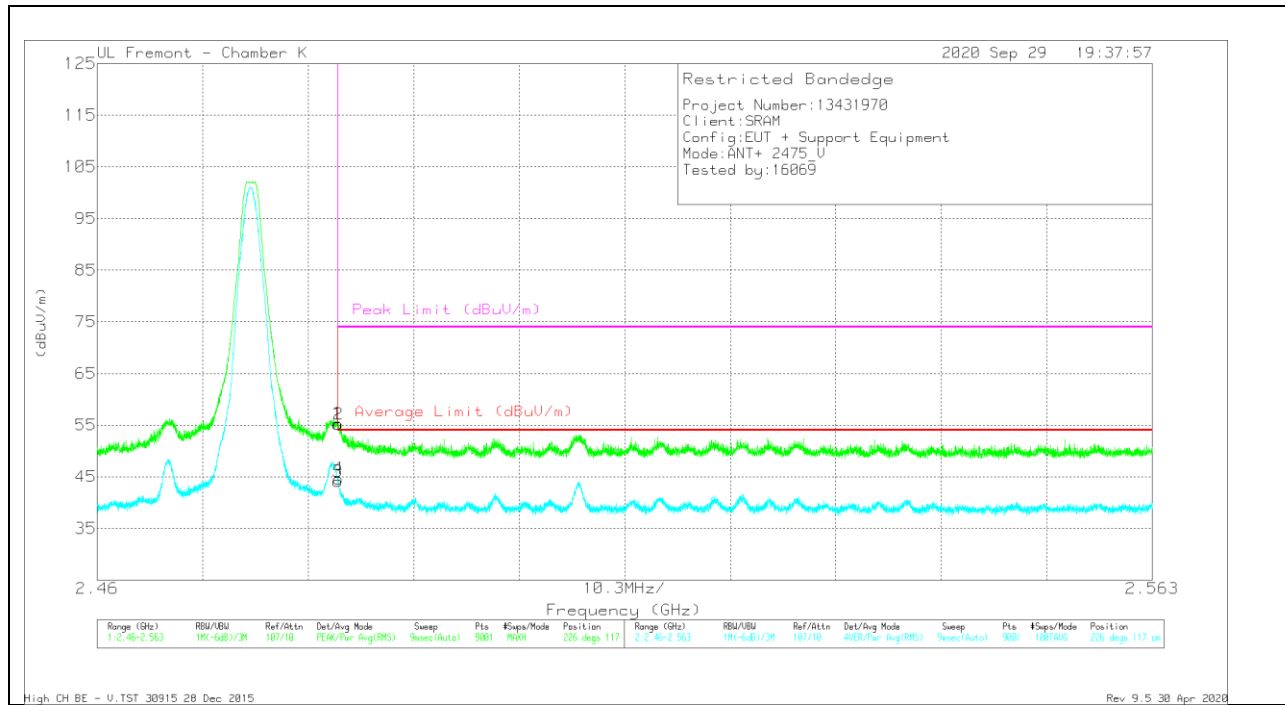
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Fitr/Pard (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	59.13	Pk	32.5	-34.6	0	57.03	-	-	74	-16.97	46	118	H
2	* 2.48363	59.6	Pk	32.5	-34.6	0	57.5	-	-	74	-16.5	46	118	H
3	* 2.48351	59.13	AVG	32.5	-34.6	-13.98	43.05	54	-10.95	-	-	46	118	H
4	* 2.48363	59.6	AVG	32.5	-34.6	-13.98	43.52	54	-10.48	-	-	46	118	H

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

PK - RB=1MHz VB=3 x RB, Peak
 AVG = Peak Reading + Duty Cycle Correction Factor
 Duty Cycle Correction Factor = -13.98 dB

VERTICAL RESULT



Trace Markers

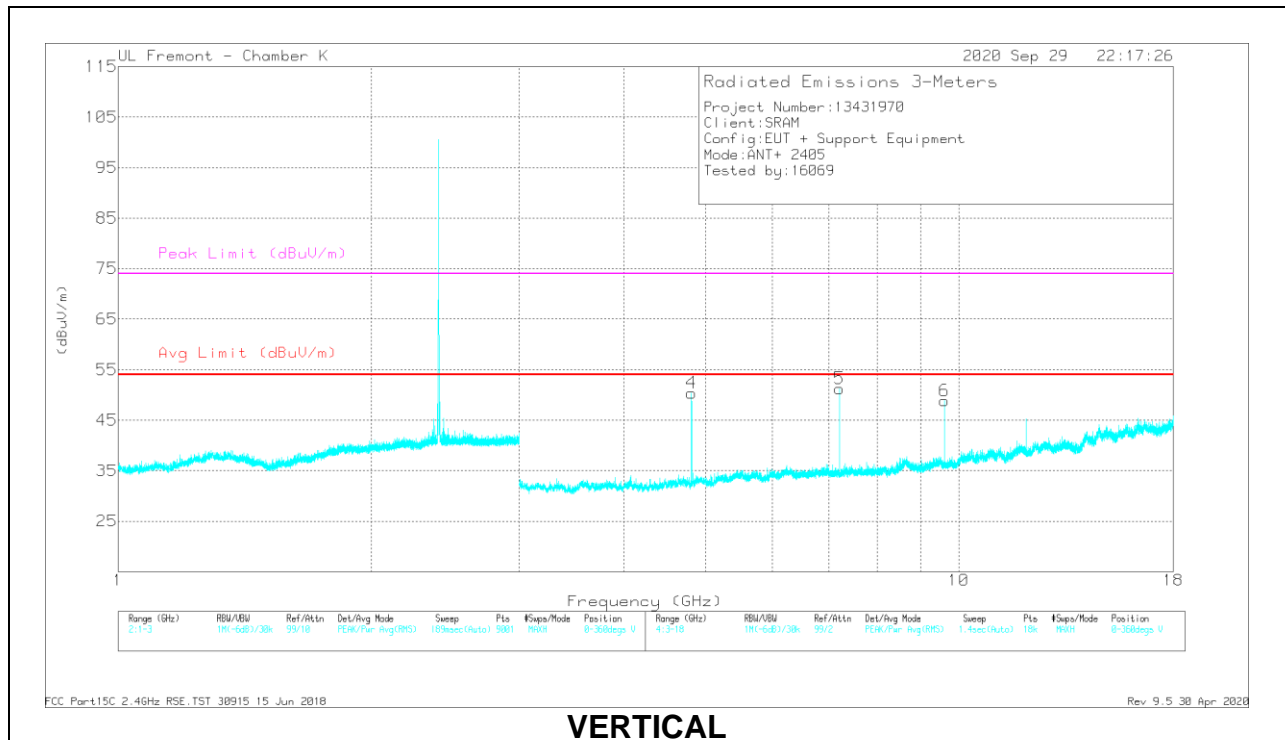
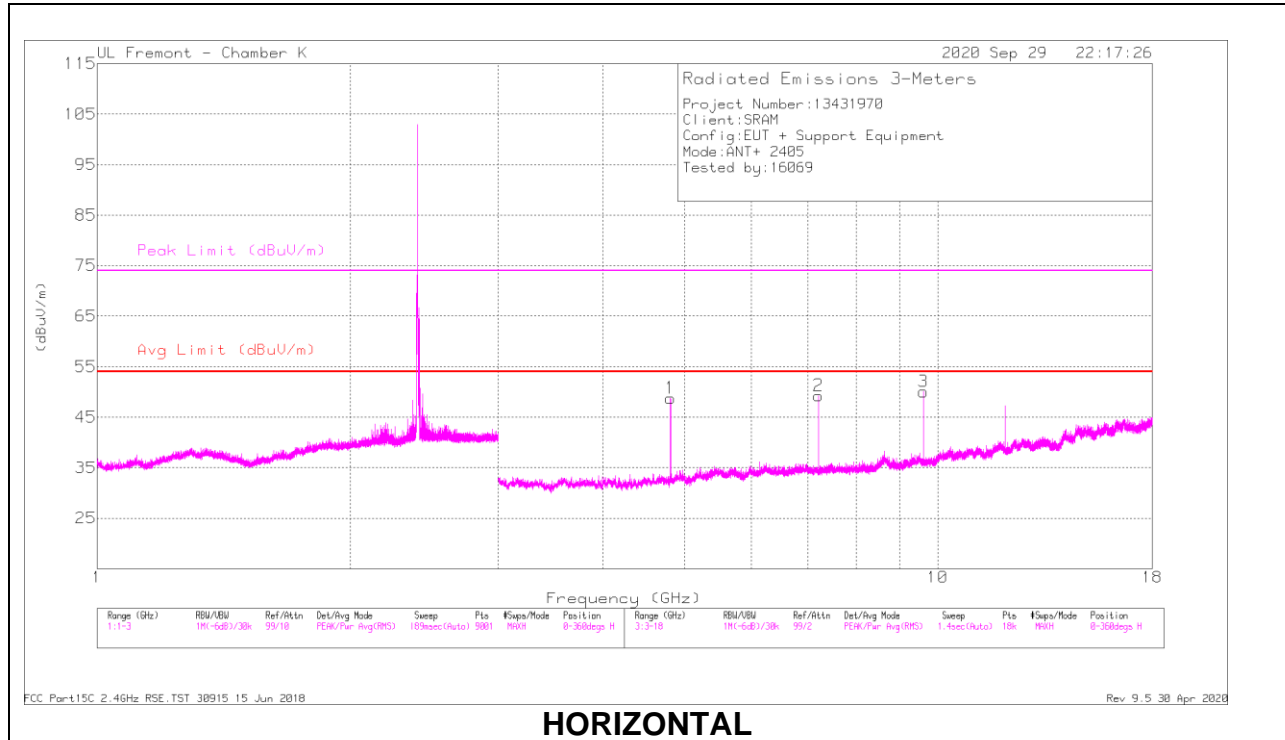
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	57.37	Pk	32.5	-34.6	0	55.27	-	-	74	-18.73	226	117	V
2	* 2.48353	57.28	Pk	32.5	-34.6	0	55.18	-	-	74	-18.82	226	117	V
3	* 2.48351	57.37	AVG	32.5	-34.6	-13.98	41.29	54	-12.71	-	-	226	117	V
4	* 2.48353	57.28	AVG	32.5	-34.6	-13.98	41.2	54	-12.8	-	-	226	117	V

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

PK - RB=1MHz VB=3 x RB, Peak
 AVG = Peak Reading + Duty Cycle Correction Factor
 Duty Cycle Correction Factor = -13.98 dB

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



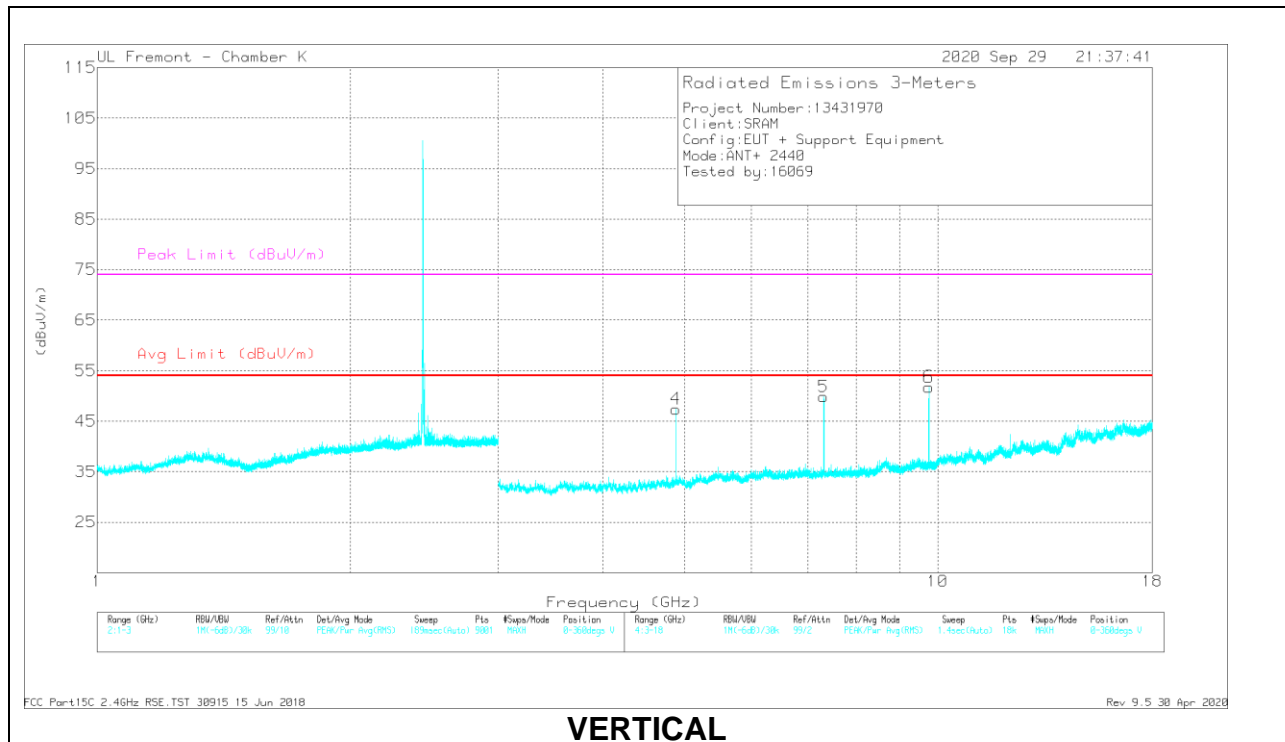
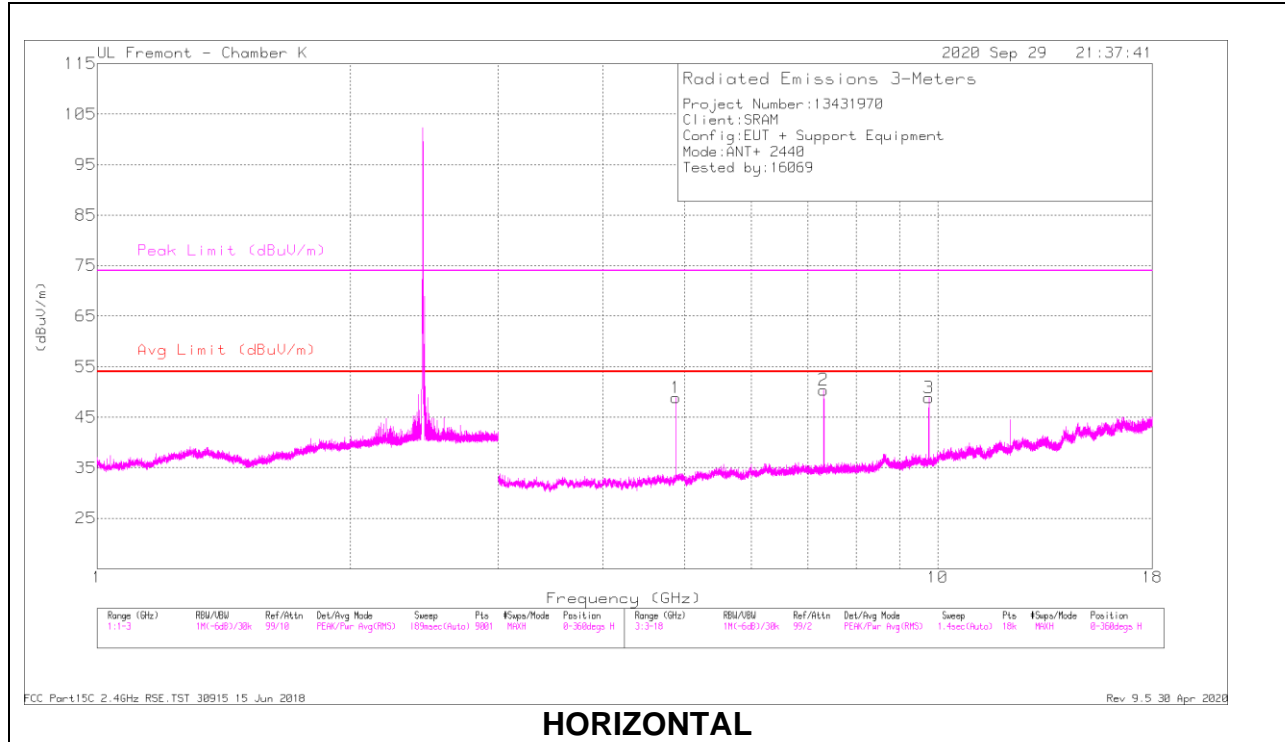
RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.81056	60.04	PKFH	34.3	-40.7	0	53.64	-	-	74	-20.36	135	122	H
	* 4.81056	60.04	AVG	34.3	-40.7	-13.98	39.66	54	-14.34	-	-	135	122	H
2	7.21392	57.48	PKFH	36.1	-38.6	0	54.98	-	-	-	-	33	232	H
3	9.61869	54.73	PKFH	36.8	-36.8	0	54.73	-	-	-	-	83	102	H
4	* 4.80934	60.07	PKFH	34.3	-40.7	0	53.67	-	-	74	-20.33	75	312	V
	* 4.80934	60.07	AVG	34.3	-40.7	-13.98	39.69	54	-14.31	-	-	75	312	V
5	7.21415	56.14	PKFH	36.1	-38.6	0	53.64	-	-	-	-	157	104	V
6	9.6186	57.35	PKFH	36.8	-36.8	0	57.35	-	-	-	-	26	217	V

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

PK - RB=1MHz VB=3 x RB, Peak
 AVG = Peak Reading + Duty Cycle Correction Factor
 Duty Cycle Correction Factor = -13.98 dB

MID CHANNEL RESULTS



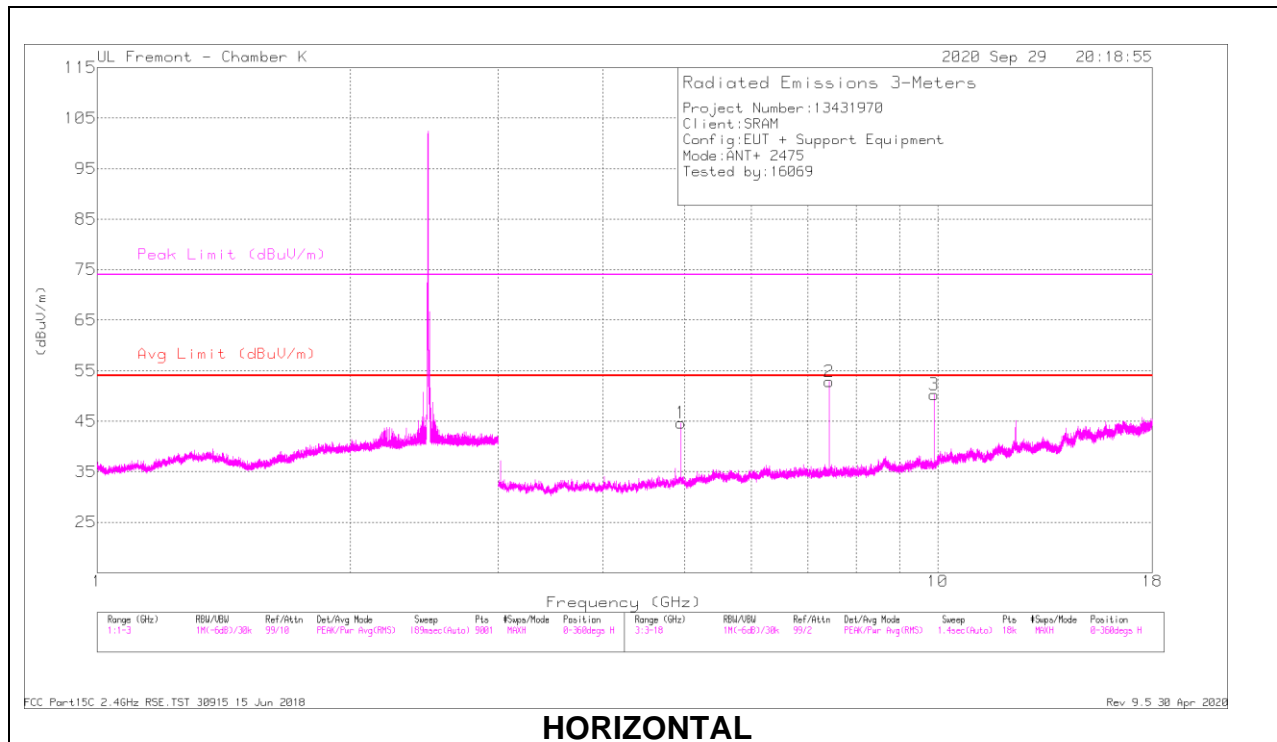
RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.88067	58.92	PKFH	34.4	-40.6	0	52.72	-	-	74	-21.28	137	98	H
	* 4.88067	58.92	AVG	34.4	-40.6	-13.98	38.74	54	-15.26	-	-	137	98	H
2	* 7.319	57.5	PKFH	36	-38.2	0	55.3	-	-	74	-18.7	21	107	H
	* 7.319	57.5	AVG	36	-38.2	-13.98	41.32	54	-12.68	-	-	21	107	H
3	9.7588	55.4	PKFH	37	-36.7	0	55.7	-	-	-	-	89	111	H
4	* 4.88068	59.12	PKFH	34.4	-40.6	0	52.92	-	-	74	-21.08	100	299	V
	* 4.88068	59.12	AVG	34.4	-40.6	-13.98	38.94	54	-15.06	-	-	100	299	V
5	* 7.31897	56.18	PKFH	36	-38.2	0	53.98	-	-	74	-20.02	351	99	V
	* 7.31897	56.18	AVG	36	-38.2	-13.98	40	54	-14	-	-	351	99	V
6	9.7586	55.21	PKFH	37	-36.7	0	55.51	-	-	-	-	222	96	V

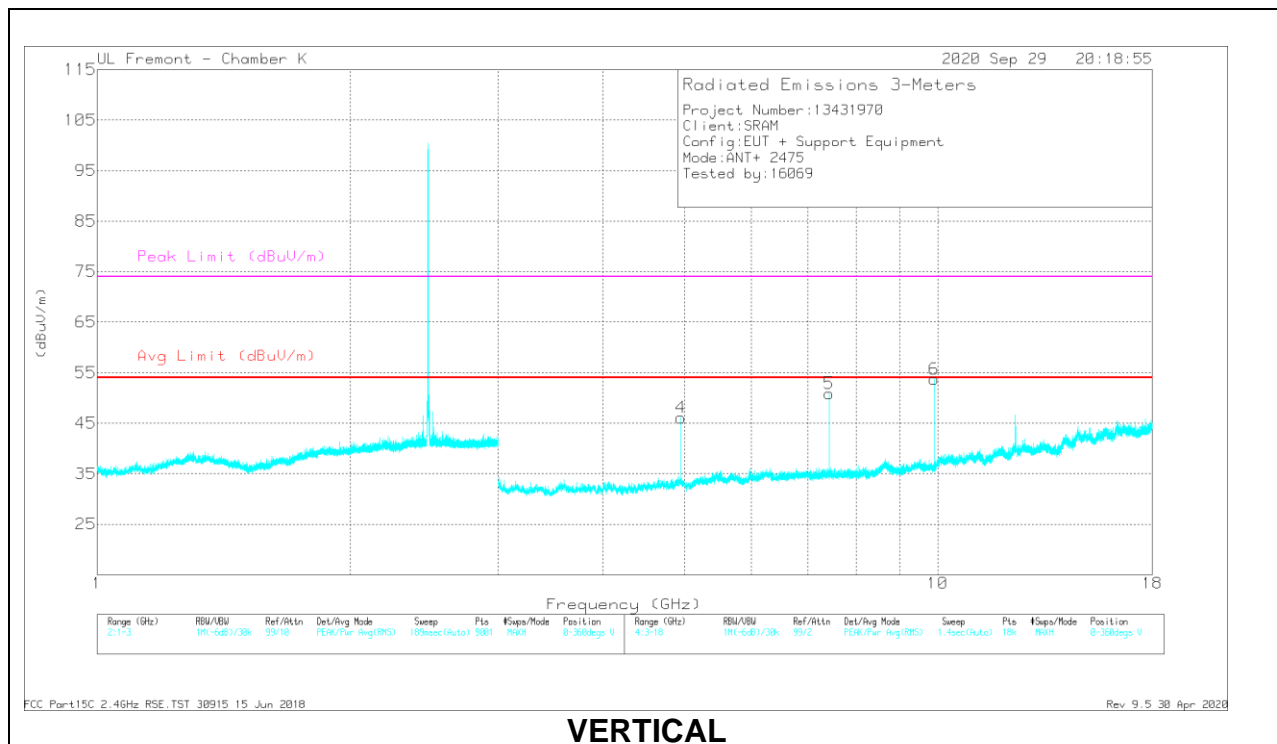
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK - RB=1MHz VB=3 x RB, Peak
 AVG = Peak Reading + Duty Cycle Correction Factor
 Duty Cycle Correction Factor = -13.98 dB

HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

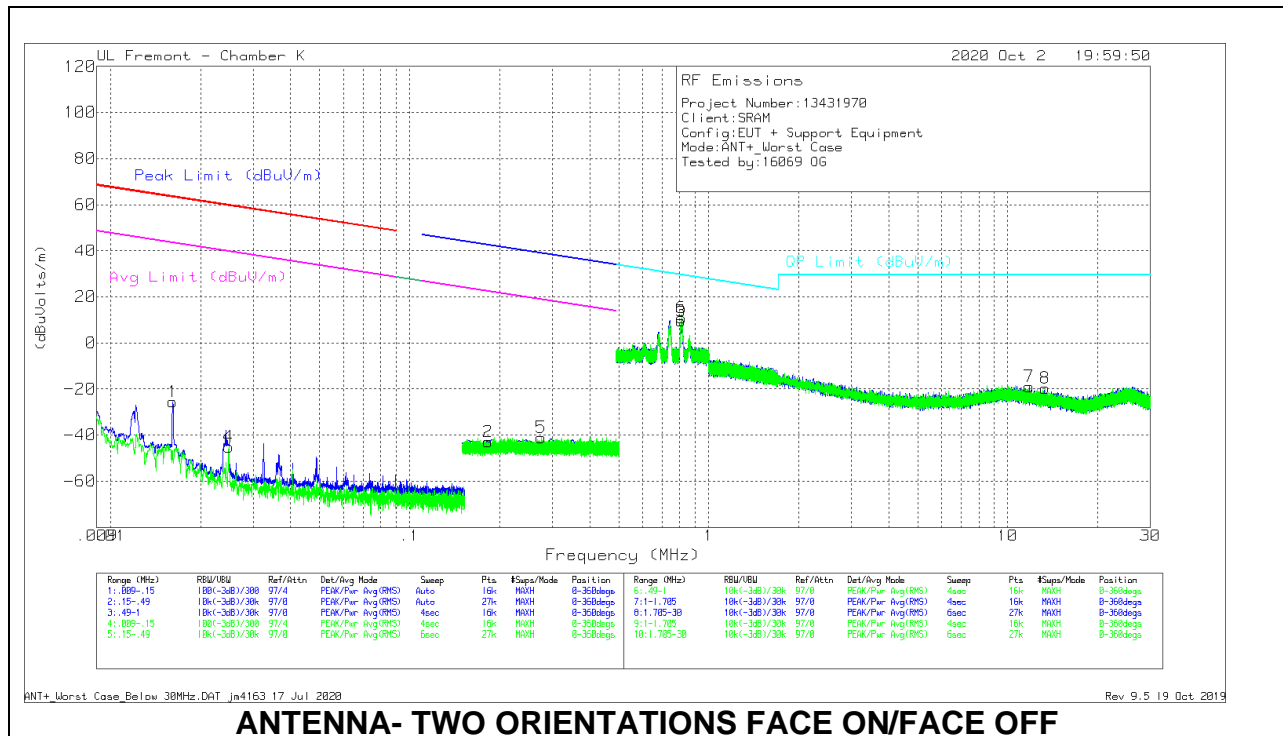
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T863 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.9493	56.14	PKFH	34.3	-40.7	0	49.74	-	-	74	-24.26	138	197	H
	* 4.9493	56.14	AVG	34.3	-40.7	-13.98	35.76	54	-18.24	-	-	138	197	H
2	* 7.42403	57.18	PKFH	36.1	-38.1	0	55.18	-	-	74	-18.82	29	105	H
	* 7.42403	57.18	AVG	36.1	-38.1	-13.98	41.2	54	-12.8	-	-	29	105	H
3	9.90132	54.45	PKFH	37.1	-36.3	0	55.25	-	-	-	-	32	218	H
4	* 4.94936	57.38	PKFH	34.3	-40.7	0	50.98	-	-	74	-23.02	118	271	V
	* 4.94936	57.38	AVG	34.3	-40.7	-13.98	37	54	-17	-	-	118	271	V
5	* 7.42407	56.82	PKFH	36.1	-38.1	0	54.82	-	-	74	-19.18	351	121	V
	* 7.42407	56.82	AVG	36.1	-38.1	-13.98	40.84	54	-13.16	-	-	351	121	V
6	9.89868	57.82	PKFH	37.1	-36.3	0	58.62	-	-	-	-	23	214	V

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

PK - RB=1MHz VB=3 x RB, Peak
 AVG = Peak Reading + Duty Cycle Correction Factor
 Duty Cycle Correction Factor = -13.98 dB

9.4. WORST CASE BELOW 30MHz

SPURIOUS EMISSIONS 9 kHz TO 30 MHz (WORST-CASE CONFIGURATION)



ANTENNA- TWO ORIENTATIONS FACE ON/FACE OFF

Below 30MHz Data

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (E ACF)	Amp/Cbl (dB)	Dist Corr 300m	Corrected Reading (dBuVolts/m)	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)
1	.01615	26.98	Pk	59.3	-31.8	-80	-25.52	63.42	-88.94	43.42	-68.94	-	-	-	-	0-360
2	.183	13.4	Pk	55.9	-32.2	-80	-42.9	-	-	-	-	42.37	-85.27	22.37	-65.27	0-360
4	.02488	8.71	Pk	58.3	-32.1	-80	-45.09	59.67	-104.76	39.67	-84.76	-	-	-	-	0-360
5	.2751	15.19	Pk	55.9	-32.2	-80	-41.11	-	-	-	-	38.82	-79.93	18.82	-59.93	0-360

Pk - Peak detector

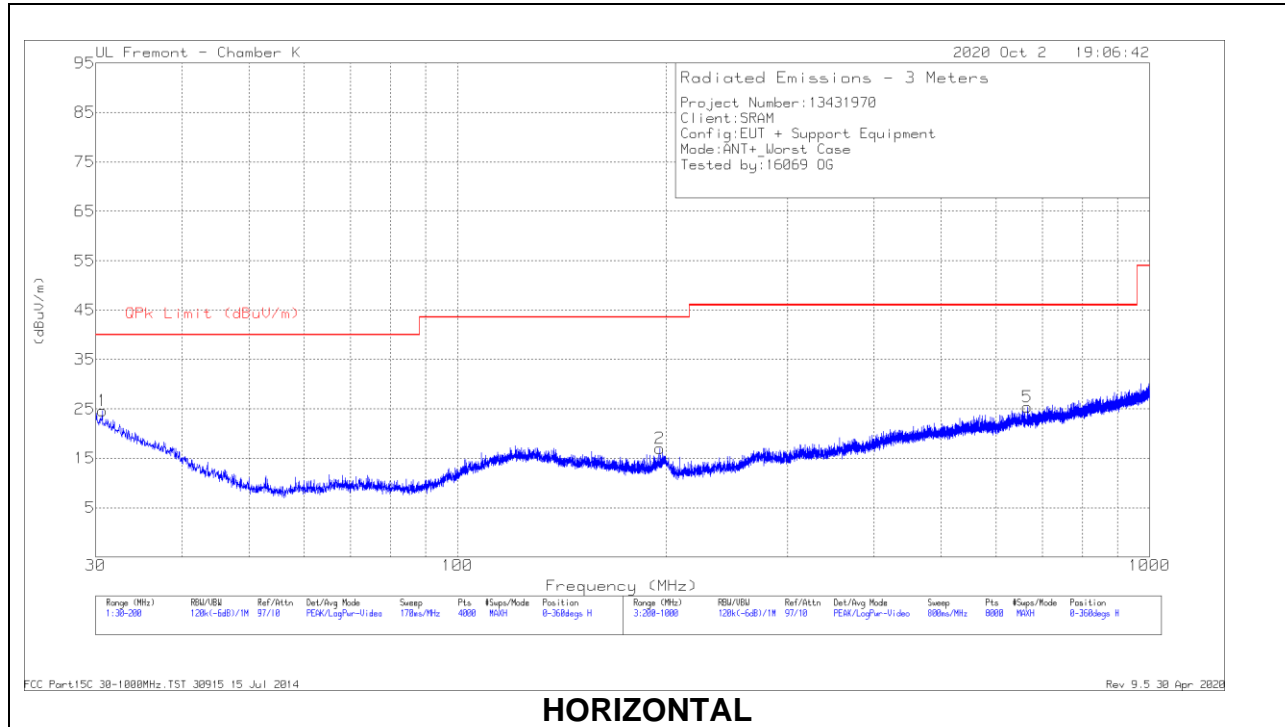
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (E ACF)	Amp/Cbl (dB)	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuVolts/m)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
3	.80926	25.64	Pk	56	-32.2	-40	9.44	29.45	-20.01	0-360
6	.81074	27.01	Pk	56	-32.2	-40	10.81	29.44	-18.63	0-360
7	11.80248	18.3	Pk	34.5	-31.8	-40	-19	29.5	-48.5	0-360
8	13.33675	17.94	Pk	34.2	-31.8	-40	-19.66	29.5	-49.16	0-360

Pk - Peak detector

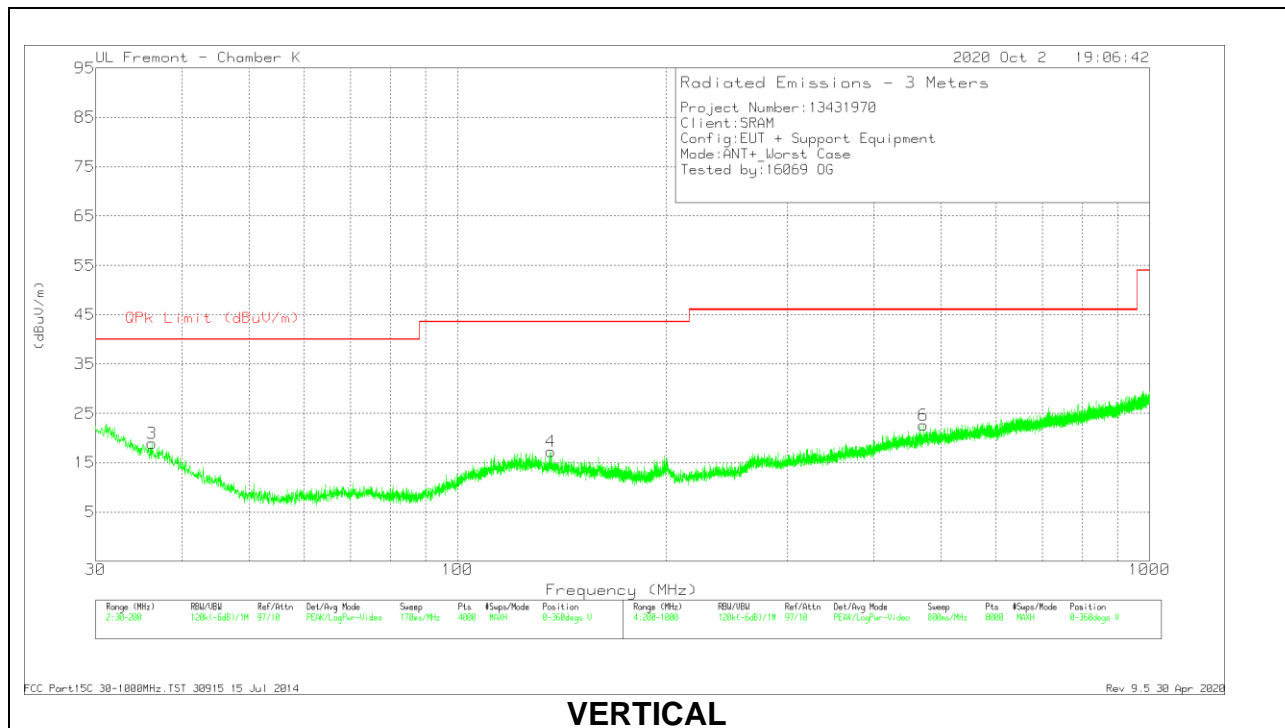
Note: The Limits in CRF 47, Part 15, Subpart C, Paragraph 15.209(a), are identical to those in RSS-Gen section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance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

9.5. WORST CASE BELOW 1 GHz

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



HORIZONTAL



VERTICAL

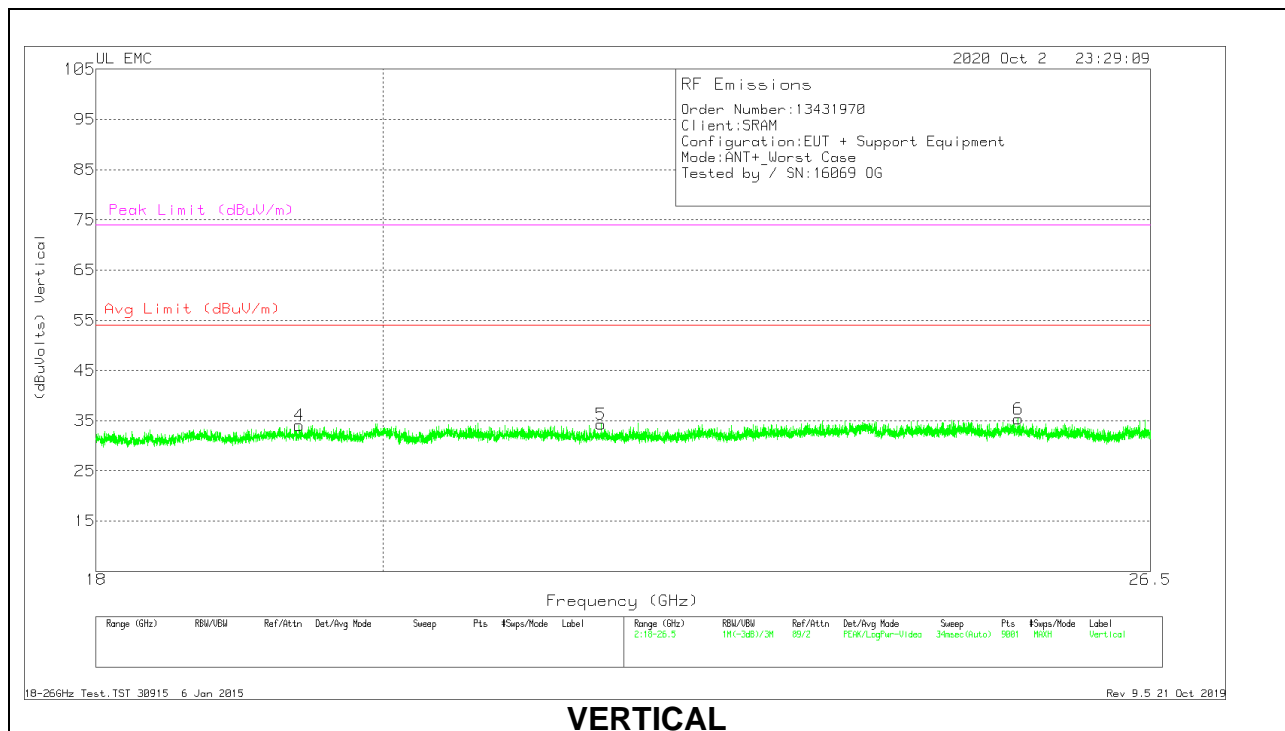
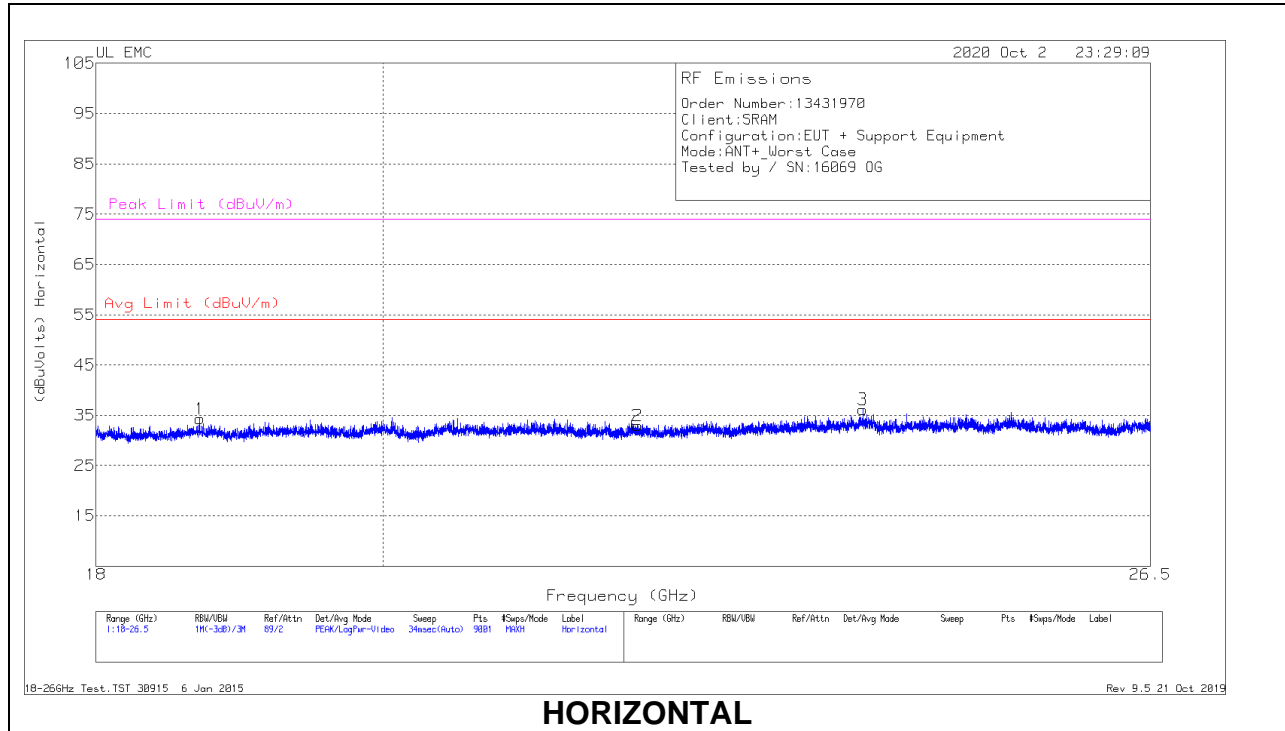
Below 1GHz Data

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF PRE0181574 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	30.5585	28.71	Pk	26.6	-31.6	23.71	40	-16.29	0	100	H
	30.5634	22.22	Qp	26.6	-31.6	17.22	40	-22.78	0	100	H
2	196.048	29.32	Pk	18	-30.3	17.02	43.52	-26.5	0-360	301	H
3	36.1641	27.9	Pk	22.5	-31.5	18.9	40	-21.1	0-360	95	V
4	* 136.4901	28.68	Pk	19.3	-30.7	17.28	43.52	-26.24	0-360	95	V
5	666.1606	28.37	Pk	25.6	-28.6	25.37	46.02	-20.65	0-360	400	H
6	471.2353	28.3	Pk	23.4	-29.1	22.6	46.02	-23.42	0-360	300	V

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

9.6. WORST CASE 18-26 GHz

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



18 – 26GHz DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	T447 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	18.69794	70.12	Pk	32.4	-58.7	-9.5	34.32	54	-19.68	74	-39.68
2	21.95439	66.55	Pk	33.4	-57.5	-9.5	32.95	54	-21.05	74	-41.05
3	23.84705	68.54	Pk	34.3	-57.2	-9.5	36.14	54	-17.86	74	-37.86
4	19.39211	67.77	Pk	32.7	-56.9	-9.5	34.07	54	-19.93	74	-39.93
5	21.66255	68.1	Pk	33.2	-57.5	-9.5	34.3	54	-19.7	74	-39.7
6	25.24577	65.87	Pk	34.6	-55.6	-9.5	35.37	54	-18.63	74	-38.63

Pk - Peak detector