



CERTIFICATION TEST REPORT

Report Number. : 11616858-E4V3

Applicant : VERIFONE, INC.
1400 WEST STANFORD RANCH ROAD SUITE 200
ROCKLIN, CA 95765, U.S.A.

Model : V200t Plus 3G/D/E

FCC ID : B32V200TPLUS

IC : 787C-V240TPLUS

EUT Description : POINT OF SALE TERMINAL

Test Standard(s) : FCC 47 CFR PART 15 SUBPART C
INDUSTRY CANADA RSS - 247 ISSUE 2
INDUSTRY CANADA RSS-GEN ISSUE 4

Date Of Issue:

April 03, 2018

Prepared by:

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NVLAP LAB CODE 200065-0

Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
V1	12/07/17	Initial Issue	--
V2	01/30/18	Revised Description of EUT section. Revised Scope of Testing section. Revised AG	Frank Ibrahim
V3	04/03/18	Revised Scope of Testing section	Glenn Escano

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Verifone, Inc.
1400 West Stanford Ranch Road Suite 200
Rocklin, CA 95765, U.S.A.

EUT DESCRIPTION: Point of Sale Terminal

MODEL: V200t Plus 3G/D/E

SERIAL NUMBER: 401-431-543

DATE TESTED: November 9 to 17, 2017

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-247 Issue 2	Pass
INDUSTRY CANADA RSS-GEN Issue 4	Pass

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. 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 any government.

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TEST ENGINEER
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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, KDB 558074 D01 v04, ANSI C63.10-2013, RSS-GEN Issue 4, and RSS-247 ISSUE 2.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, 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	
<input checked="" type="checkbox"/>	Chamber A (IC:2324B-1)	<input type="checkbox"/>	Chamber D (IC:22541-1)
<input type="checkbox"/>	Chamber B (IC:2324B-2)	<input type="checkbox"/>	Chamber E (IC:22541-2)
<input type="checkbox"/>	Chamber C (IC:2324B-3)	<input type="checkbox"/>	Chamber F (IC:22541-3)
		<input type="checkbox"/>	Chamber G (IC:22541-4)
		<input type="checkbox"/>	Chamber H (IC:22541-5)

The above test sites and facilities are covered under FCC Test Firm Registration # 208313.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://ts.nist.gov/standards/scopes/2000650.htm>.

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

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamp Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

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%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a Mobile Point of Sale Terminal which supports the following technologies WLAN 2.4 GHz and 5 GHz, Bluetooth, GSM 850 / GSM 1900, WCDMA Band II / WCDMA Band V, and NFC.

5.2. SCOPE OF TESTING

This report covers radiated emissions portion. For antenna port data refer to report number 11631998-E3V3 (FCC ID: B32V240MPLUS, IC 787C-V240MPLUS) that covered model V240m Plus 3GBW as the WLAN radio module covered by this report is identical to the WLAN radio module of model V240m Plus 3GBW with same output power values. Output power was confirmed prior to making radiated spurious measurements.

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The WiFi radio has a Chip Multilayer Antenna with the following gains:

Frequency Band (GHz)	Antenna Gain (dBi)
	Chain 0
2412-2462	1.90

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was VOS2 30640XXX.

5.5. WORST-CASE CONFIGURATION AND MODE

Radiated emission below 1GHz and above 18GHz were performed with the EUT was 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 X orientation was worst-case orientation. Therefore, all final radiated testing was performed with the EUT in X orientation.

Worst-case data rates as provided by the client were:

802.11b mode: 1 Mbps
802.11g mode: 6 Mbps
802.11n HT20mode: MCS0

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

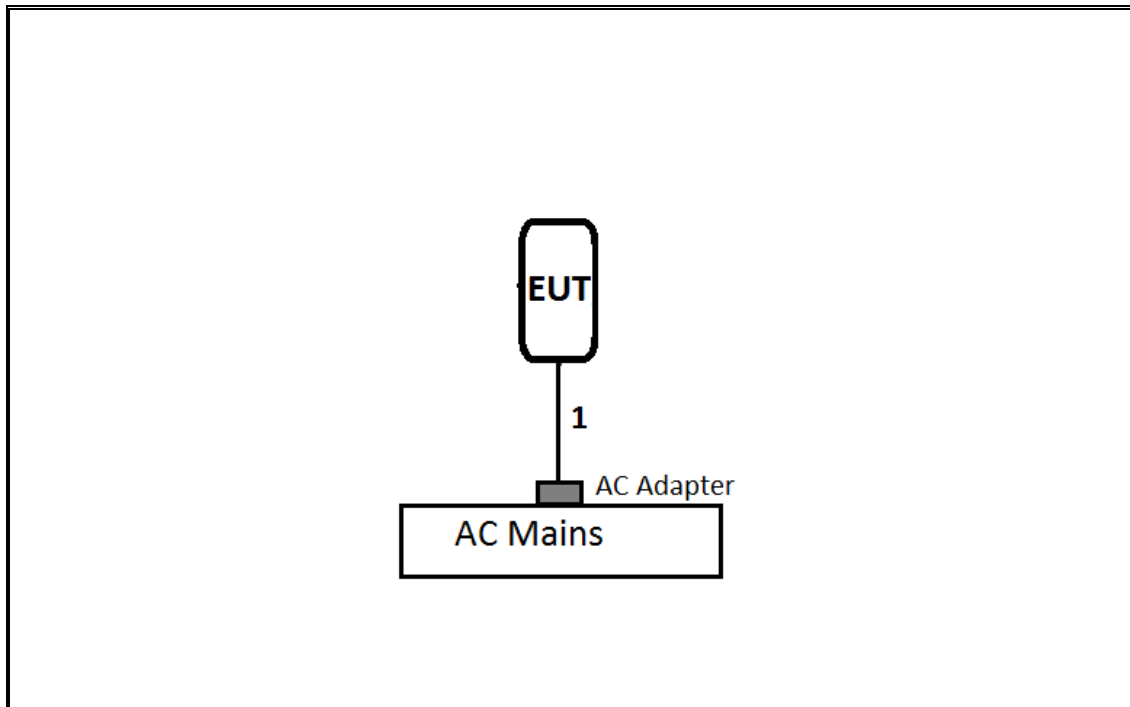
Support Equipment List			
Description	Manufacturer	Model	Serial Number
AC Adapter	Verifone	PSA18A-082A	5A00170801207

I/O CABLES (RADIATED EMISSIONS)

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC	1	AC	Un-shielded	2	N/A

TEST SETUP

RADIATED EMISSIONS SETUP DIAGRAM



6. 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
Antenna, Broadband Hybrid, 30MHz to 2000MHz w/4dB Pad	Sunol Sciences Corp.	JB3	T899	06/09/2018
Antenna, Active Loop 9kHz-30MHz	Com-Power Corp.	AL-130R	T1866	10/10/2018
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T863	01/30/2018
Antenna, Horn 18-26.5GHz	ARA	MWH-1826/B	T449	06/12/2018
Amplifier, 1-26.5GHz	MITEQ	AFS42-00101800-25-S-42	T1165	08/01/2018
Amplifier, 1-26.5GHz	Agilent (Keysight) Technologies	8449B	T404	06/12/2018
Amplifier, 10kHz-1GHz	Agilent (Keysight) Technologies	8447D	T15	08/14/2018
Amplifier, 1-8 GHz	MITEQ	AFS42-00101800-25-S-42	T931	08/26/2018
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T1454	12/15/2017
Spectrum Analyzer, PSA, 3Hz to 26.5GHz	Agilent (Keysight) Technologies	E9030A	T1466	04/11/2018

Test Software List			
Description	Manufacturer	Model	Version
Radiated Software	UL	UL EMC	Ver 9.5, Dec 01, 2016

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

NOTE: *testing is completed before equipment calibration expiration date.

7. MEASUREMENT METHODS

On Time and Duty Cycle: KDB 558074 D01 v04, Section 6.

Out-of-band emissions in non-restricted bands: KDB 558074 D01 v04, Section 11.0 (b).

Out-of-band emissions in restricted bands: KDB 558074 D01 v04, Section 12.1.

Band-edge: KDB 558074 D01 v04, Section 12.1.

8. SUMMARY TABLE

FCC Part Section	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result
15.205, 15.209, 15.247(d)	RSS-GEN 8.9/7	Radiated Spurious Emission	< 54dBuV/m	Radiated	Pass

9. RADIATED TEST RESULTS

ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

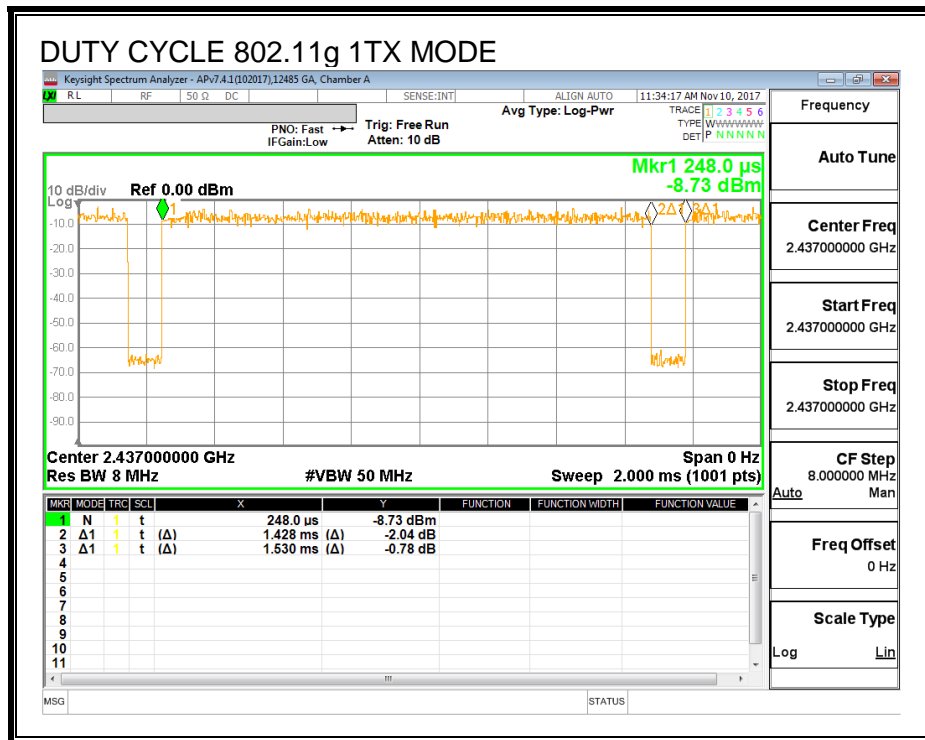
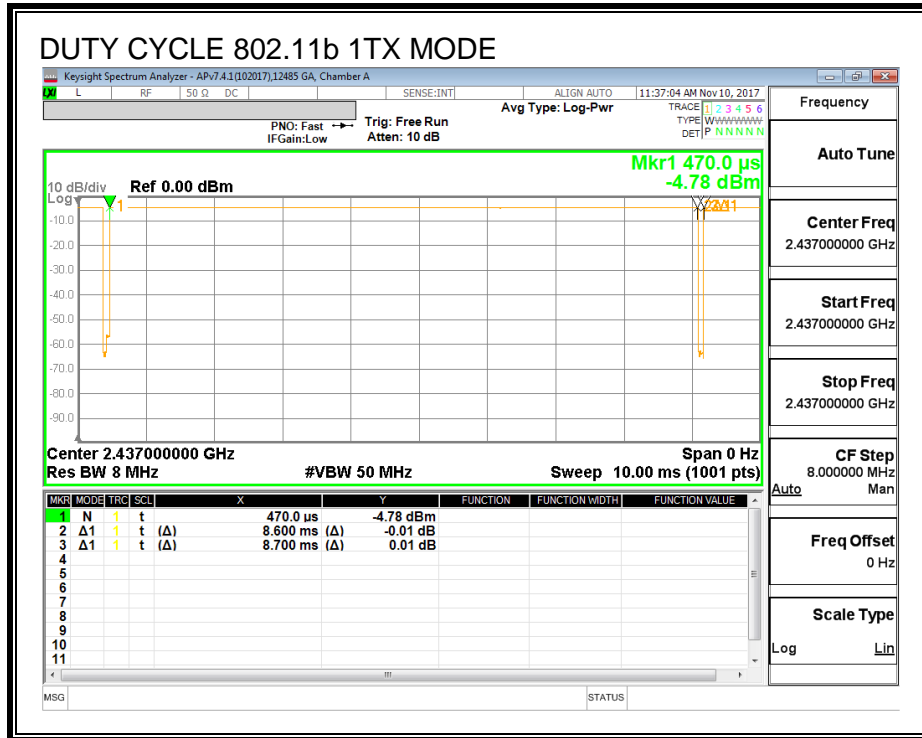
PROCEDURE

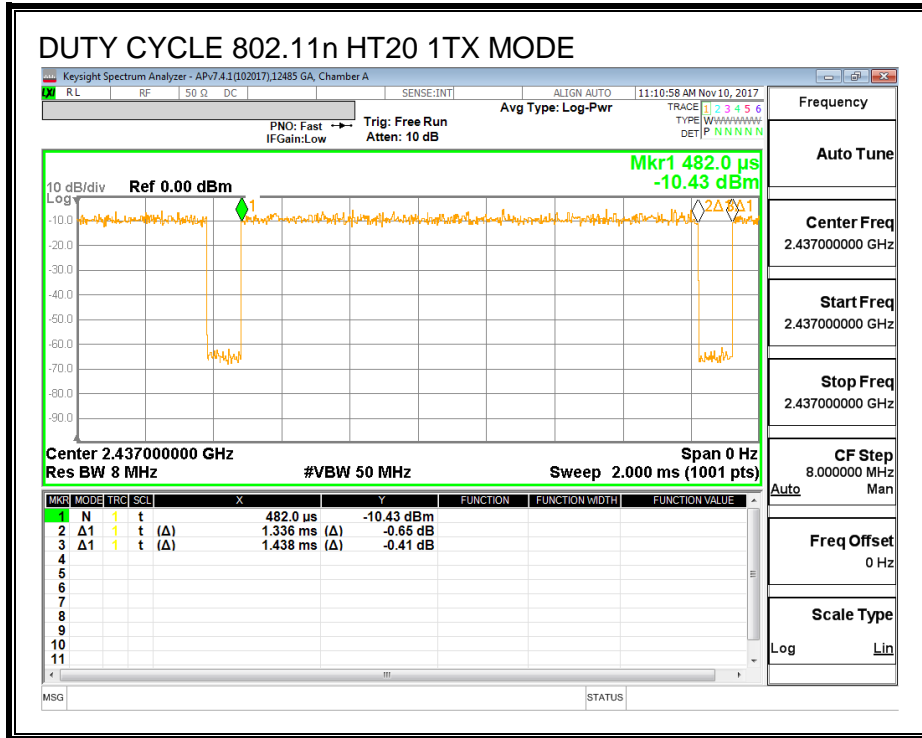
KDB 558074 Zero-Span Spectrum Analyzer Method.

ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)
802.11b	8.600	8.700	0.989	98.9%	0.00	0.010
802.11g	1.428	1.530	0.933	93.3%	0.30	0.700
802.11n HT20	1.336	1.438	0.929	92.9%	0.32	0.749

DUTY CYCLE PLOTS





9.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209
 IC RSS-GEN, Section 8.9 and 8.10.

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

NOTE: KDB 414788 D01 OATS and Chamber Correlation Justification

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

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 120 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements for the 30-1000 MHz range, 9 kHz for peak detection measurements or 9 kHz for quasi-peak detection measurements for the 0.15-30 MHz range and 200 Hz for peak detection measurements or 200 Hz for quasi-peak detection measurements for the 9 to 150 kHz range. Peak detection is used unless otherwise noted as quasi-peak.

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

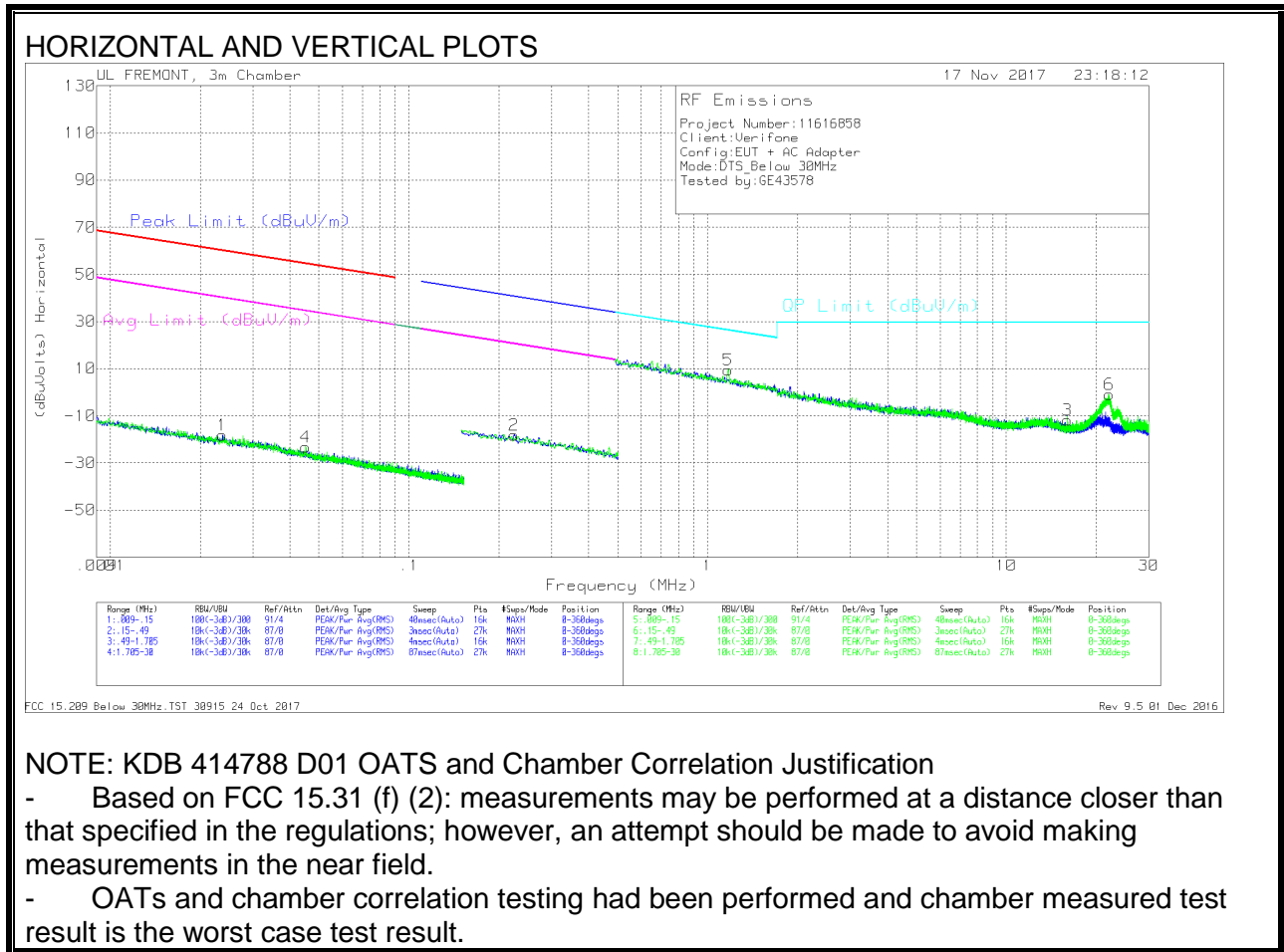
For final measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and as applicable for average measurements.

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

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

9.2. WORST-CASE BELOW 30MHz

SPURIOUS EMISSIONS BELOW 30 MHz (WORST-CASE CONFIGURATION)



Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (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)
1	.02378	45.27	Pk	15	1.4	-80	-18.33	60.06	-78.39	40.06	-58.39	-	-	-	-	0-360
4	.04513	40.83	Pk	14.6	1.4	-80	-23.17	54.5	-77.67	34.5	-57.67	-	-	-	-	0-360
2	.22489	46.48	Pk	13.9	1.5	-80	-18.12	-	-	-	-	40.58	-58.7	20.58	-38.7	0-360

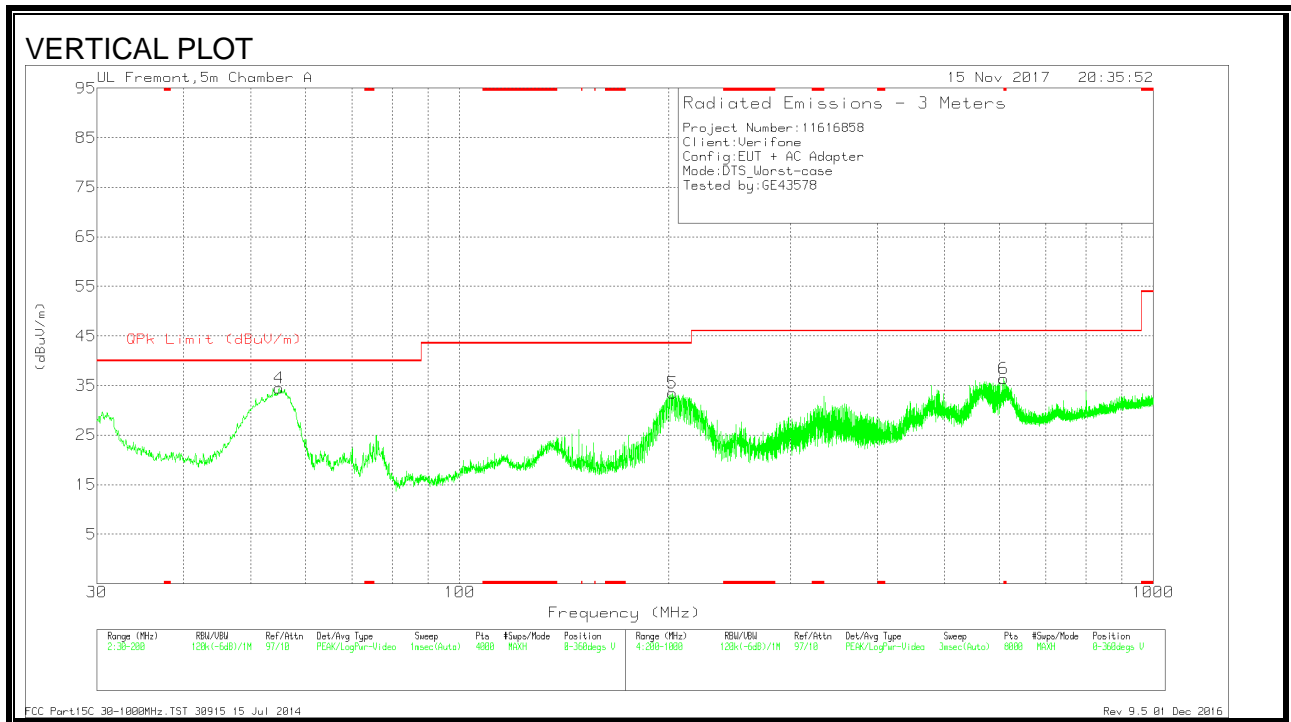
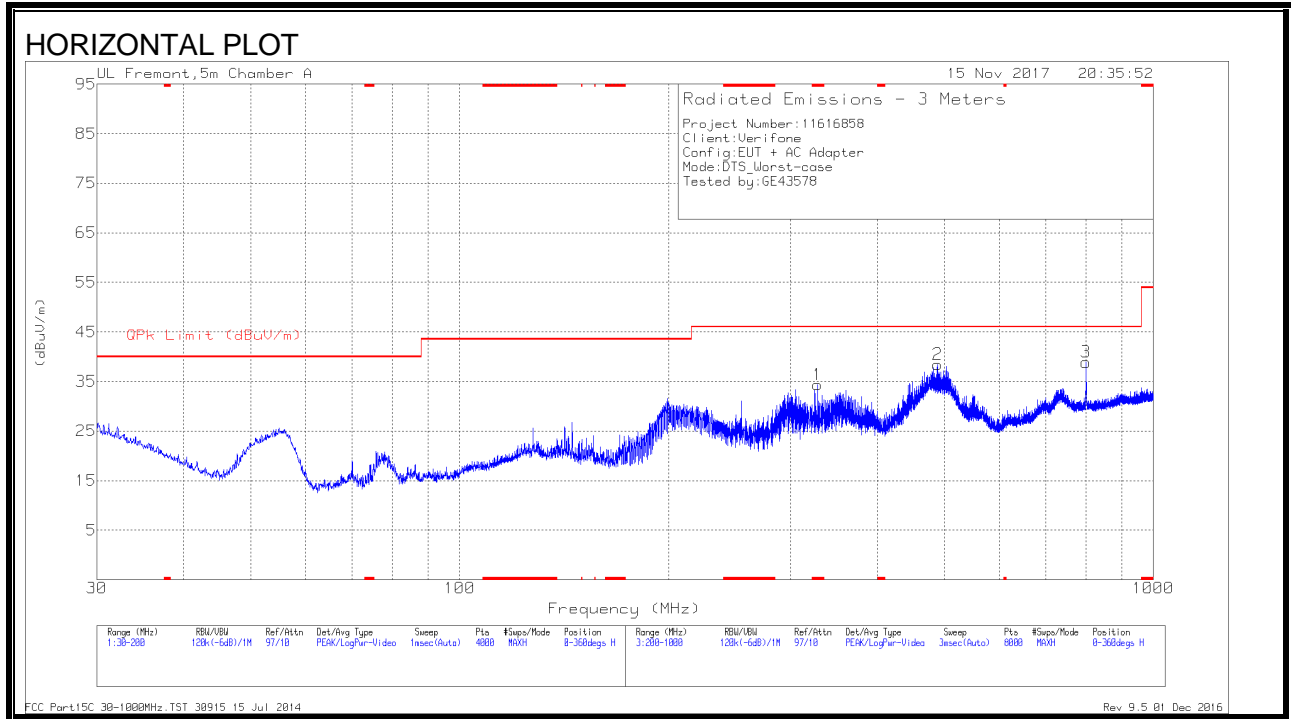
Pk - Peak detector

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr 30m	Corrected Reading (dBuVolts)	QP Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
5	1.16944	33.68	Pk	14.3	1.5	-40	9.48	26.27	-16.79	-	-	-	-	0-360
3	15.99762	12.25	Pk	14.4	1.6	-40	-11.75	29.5	-41.25	-	-	-	-	0-360
6	22.14676	23.34	Pk	14.1	1.7	-40	-8.6	29.5	-30.36	-	-	-	-	0-360

Pk - Peak detector

9.3. WORST-CASE 30-1000 MHz

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



Radiated Emissions

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T130 (dB/m)	Amp/Cbl (dB/m)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 328.3167	41.18	Pk	17.9	-24.7	34.38	46.02	-11.64	0-360	100	H
6	* 609.0532	38.65	Pk	22.7	-25	36.35	46.02	-9.67	0-360	100	V
4	54.9743	47.62	Qp	11.1	-26.9	31.82	40	-8.18	128	108	V
5	202.5003	42.78	Pk	15.9	-25.2	33.48	43.52	-10.04	0-360	100	V
2	488.6375	41.98	Pk	21.7	-25.2	38.48	46.02	-7.54	0-360	200	H
3	799.978	37.27	Pk	25.4	-23.8	38.87	46.02	-7.15	0-360	100	H

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

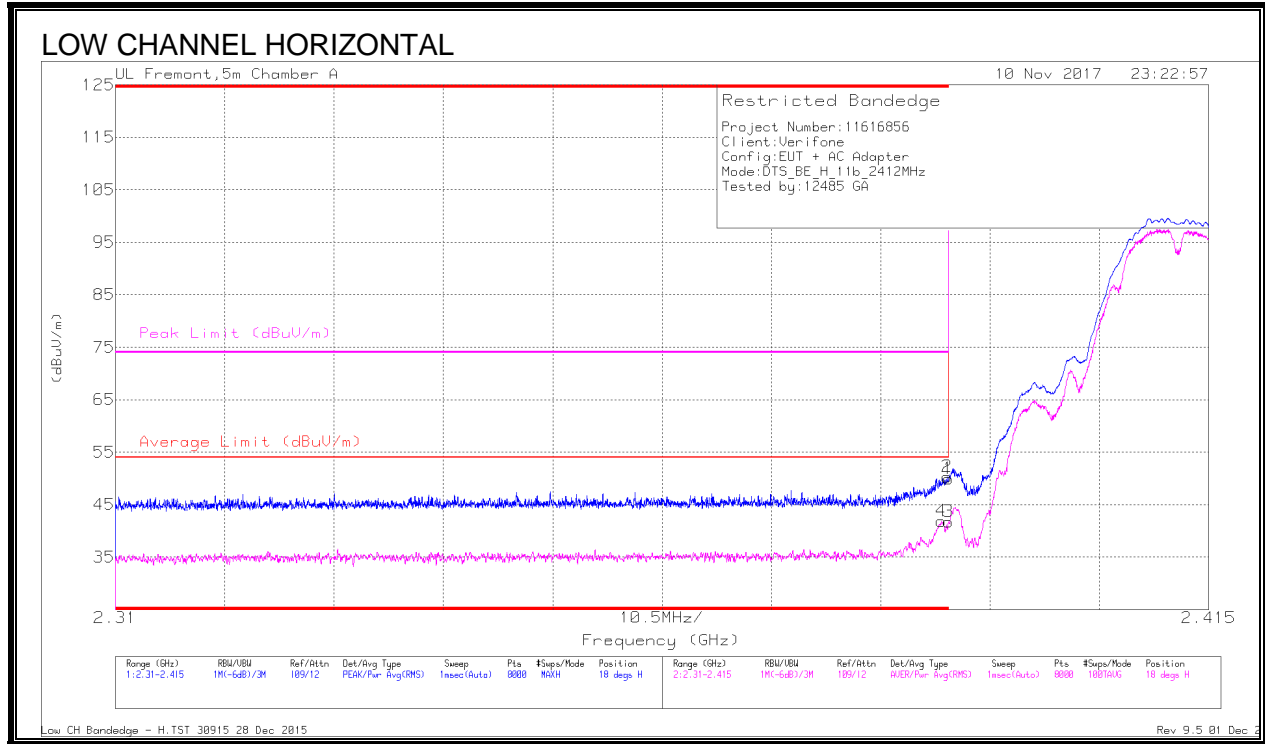
Pk - Peak detector

Qp - Quasi-Peak detector

9.4. TRANSMITTER ABOVE 1 GHz

9.4.1. 11b SISO MODE IN THE 2.4GHz BAND

BANDEDGE (LOW CHANNEL, CH 1)



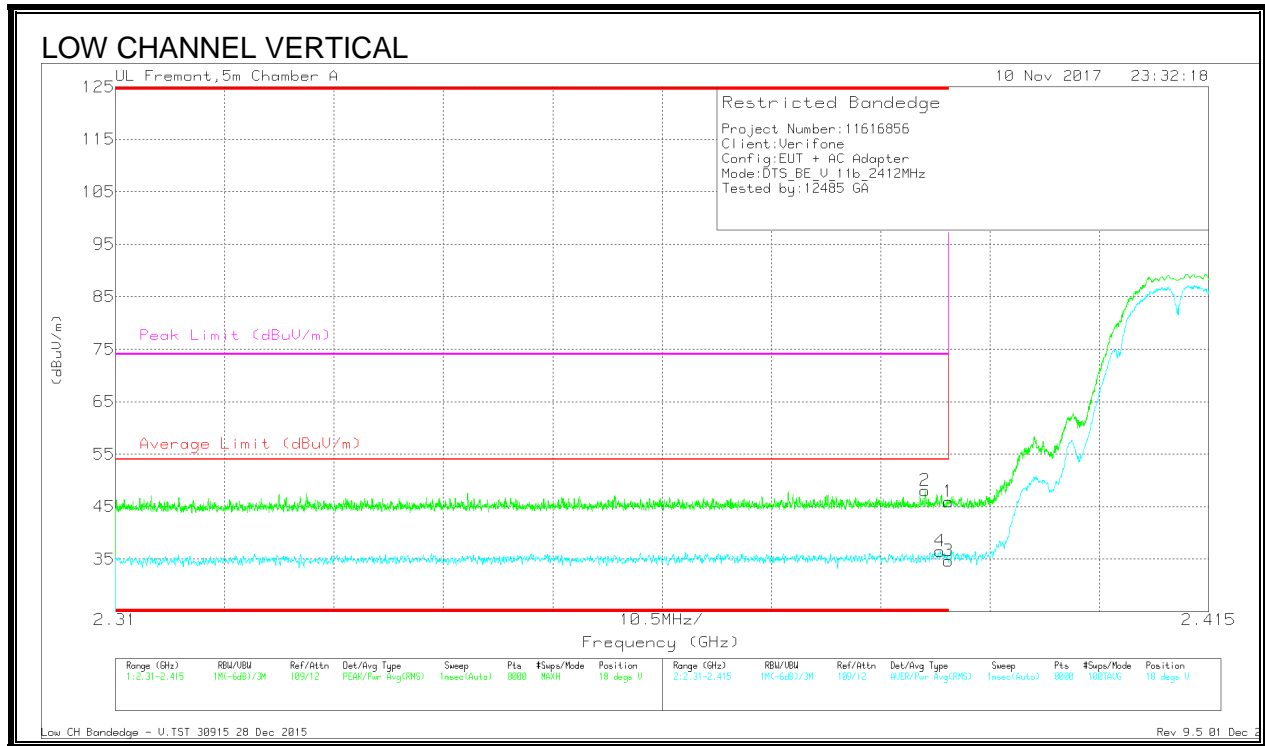
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Ch/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Altitude (Degs)	Height (cm)	Polarity
4	* 2.389	33.24	RMS	31.8	-23.2	0	41.84	54	-12.16	-	-	18	222	H
1	* 2.39	41.32	Pk	31.8	-23.2	0	49.92	-	-	74	-24.08	18	222	H
2	* 2.39	41.74	Pk	31.8	-23.2	0	50.34	-	-	74	-23.66	18	222	H
3	* 2.39	33.08	RMS	31.8	-23.2	0	41.68	54	-12.32	-	-	18	222	H

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

Pk - Peak detector

RMS - RMS detection



Trace Markers

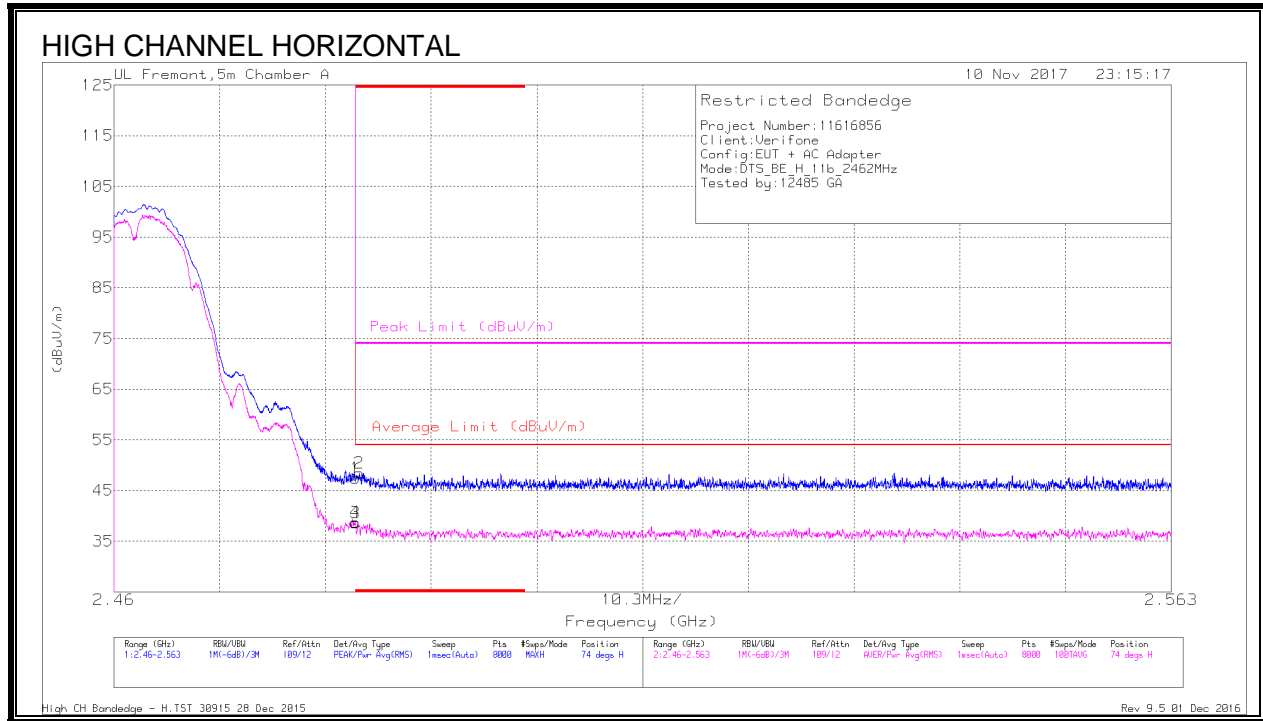
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Ch/Flt/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 2.388	39.46	Pk	31.8	-23.2	0	48.06	-	-	74	-25.94	18	222	V
4	* 2.389	27.87	RMS	31.8	-23.2	0	36.47	54	-17.53	-	-	18	222	V
1	* 2.39	37.31	Pk	31.8	-23.2	0	45.91	-	-	74	-28.09	18	222	V
3	* 2.39	26.01	RMS	31.8	-23.2	0	34.61	54	-19.39	-	-	18	222	V

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

Pk - Peak detector

RMS - RMS detection

BANDEDGE (HIGH CHANNEL, CH 11)



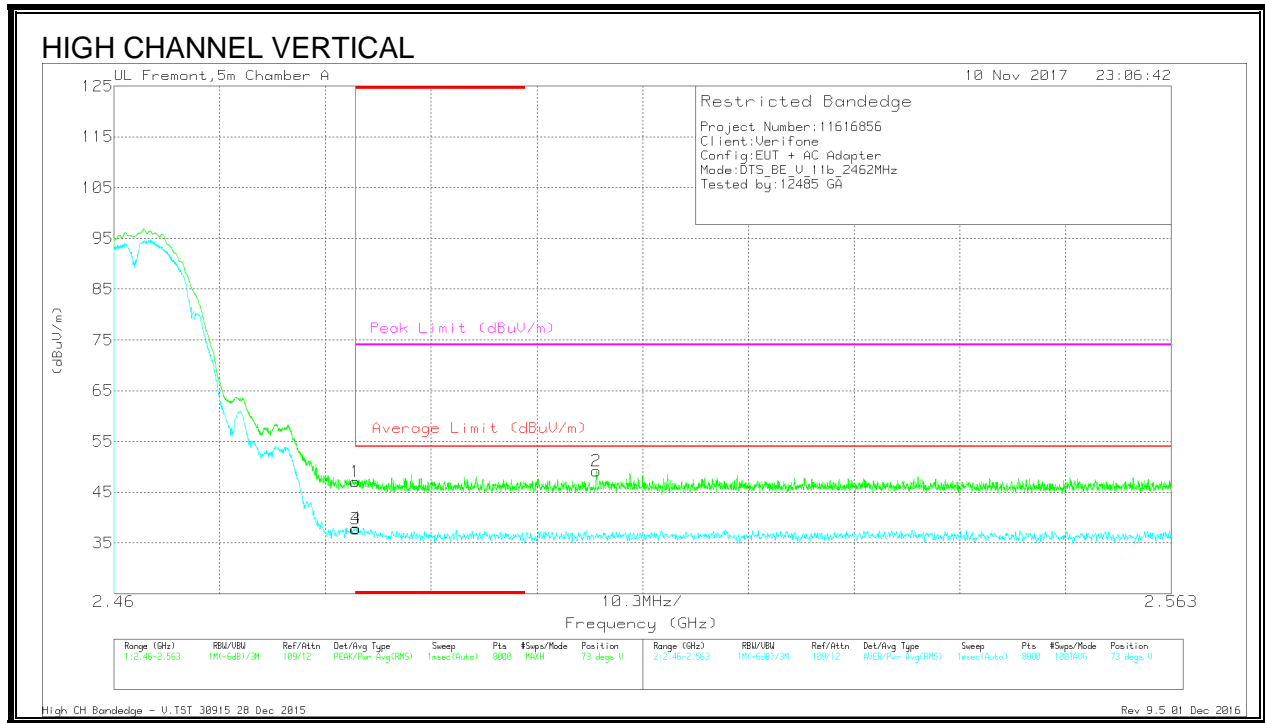
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Ch/Flt/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	* 2.484	38.27	Pk	32.3	-23.1	0	47.47	-	-	74	-26.53	74	142	H
2	* 2.484	39.27	Pk	32.3	-23.1	0	48.47	-	-	74	-25.53	74	142	H
3	* 2.484	29.47	RMS	32.3	-23.1	0	38.67	54	-15.33	-	-	74	142	H
4	* 2.484	29.49	RMS	32.3	-23.1	0	38.69	54	-15.31	-	-	74	142	H

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

Pk - Peak detector

RMS - RMS detection



Trace Markers

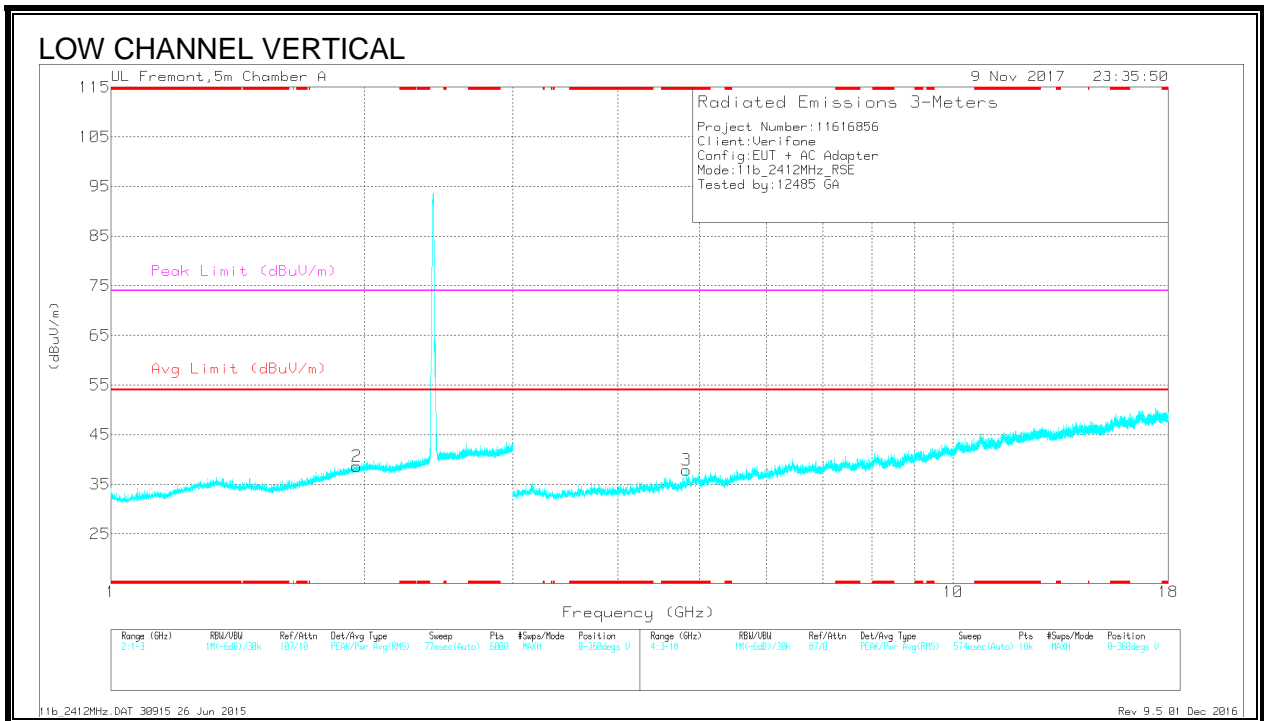
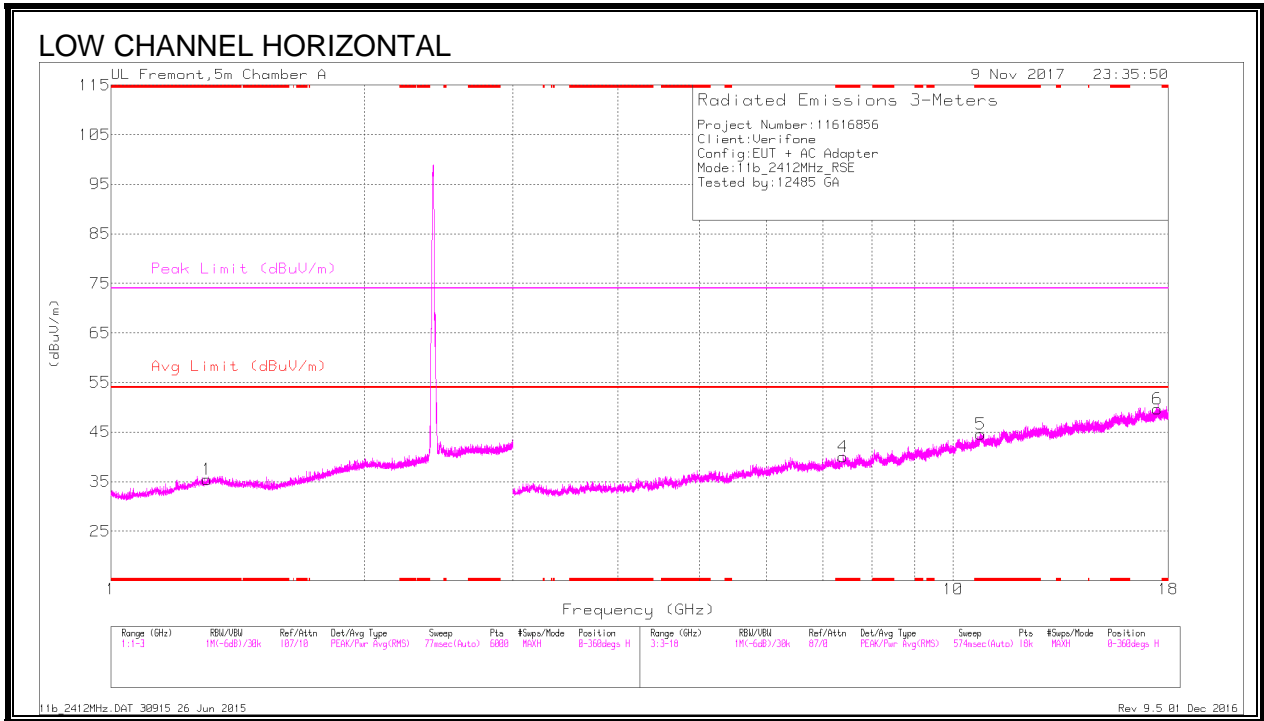
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Ch/Flt/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	37.88	Pk	32.3	-23.1	0	47.08	-	-	74	-26.92	73	396	V
3	* 2.484	28.59	RMS	32.3	-23.1	0	37.79	54	-16.21	-	-	73	396	V
4	* 2.484	28.65	RMS	32.3	-23.1	0	37.85	54	-16.15	-	-	73	396	V
2	2.507	39.83	Pk	32.4	-23.1	0	49.13	-	-	74	-24.87	73	396	V

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

Pk - Peak detector

RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS LOW CHANNEL, CH 1)

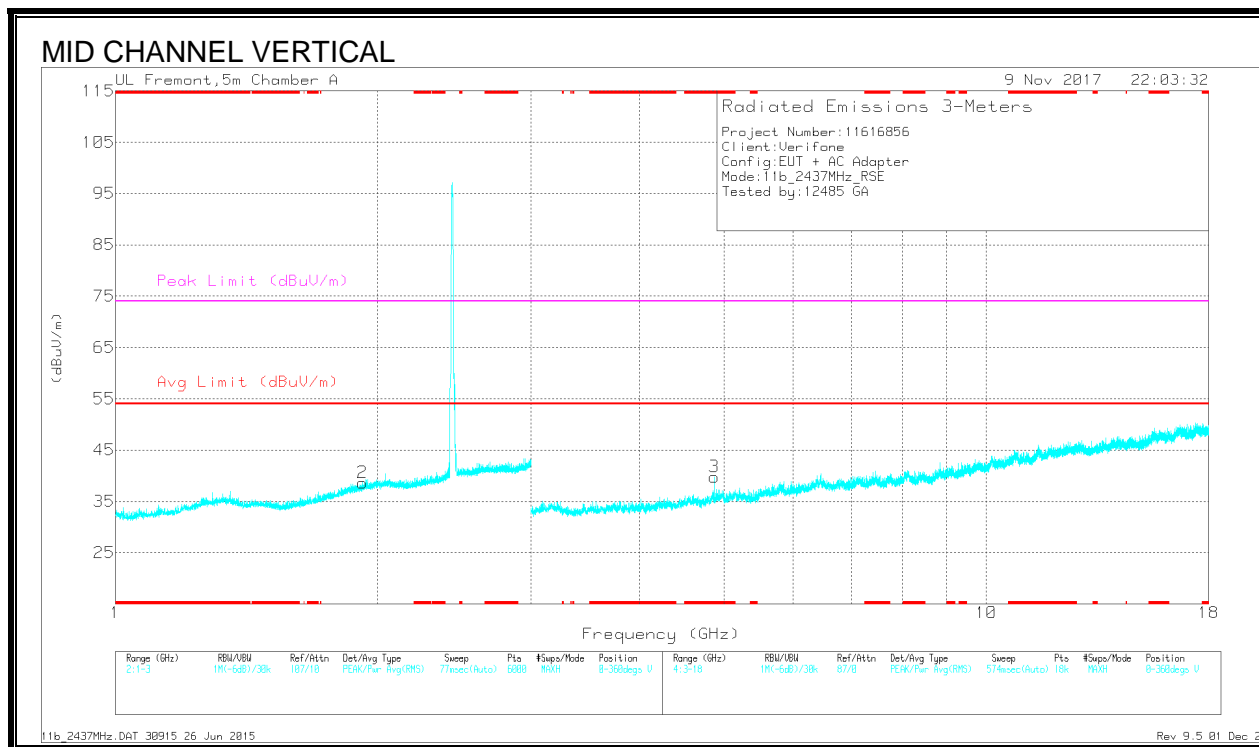
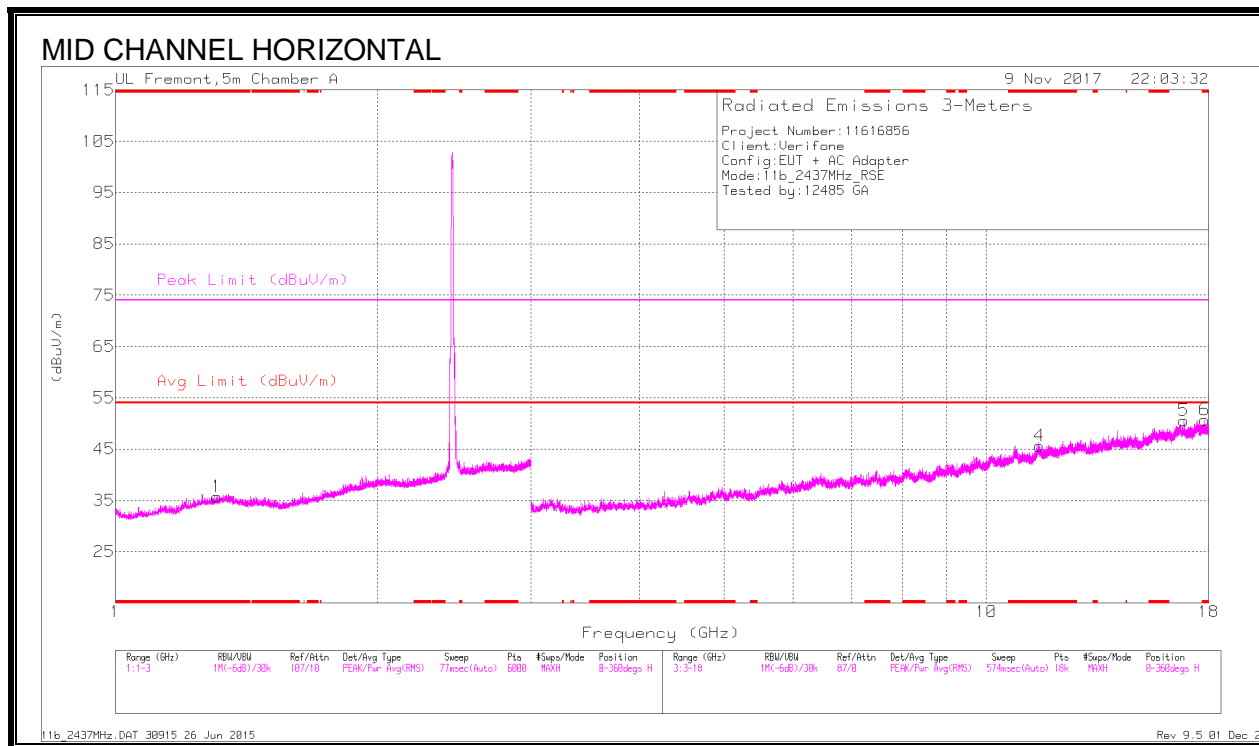


Radiated Emissions

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fitr/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	* 7.399	32.91	PK2	35.6	-22.7	0	45.81	-	-	74	-28.19	193	213	H
	* 7.4	22.1	MAv1	35.6	-22.7	0	35	54	-19	-	-	193	213	H
4	* 7.4	33.12	PK2	35.6	-22.7	0	46.02	-	-	74	-27.98	193	213	H
	* 7.4	22.06	MAv1	35.6	-22.7	0	34.96	54	-19.04	-	-	193	213	H
5	* 4.824	35.73	PK2	34.2	-27.3	0	42.63	-	-	74	-31.37	0	146	V
	* 4.824	25.42	MAv1	34.2	-27.3	0	32.32	54	-21.68	-	-	0	146	V
3	* 4.823	36.61	PK2	34.2	-27.3	0	43.51	-	-	74	-30.49	193	213	V
	* 4.824	24.55	MAv1	34.2	-27.3	0	31.45	54	-22.55	-	-	193	213	V
2	1.956	35.89	PK2	31.4	-23.1	0	44.19	-	-	-	-	193	213	V
6	17.475	33.09	PK2	41.2	-18	0	56.29	-	-	-	-	193	213	H

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

HARMONICS AND SPURIOUS EMISSIONS MID CHANNEL, CH 6)

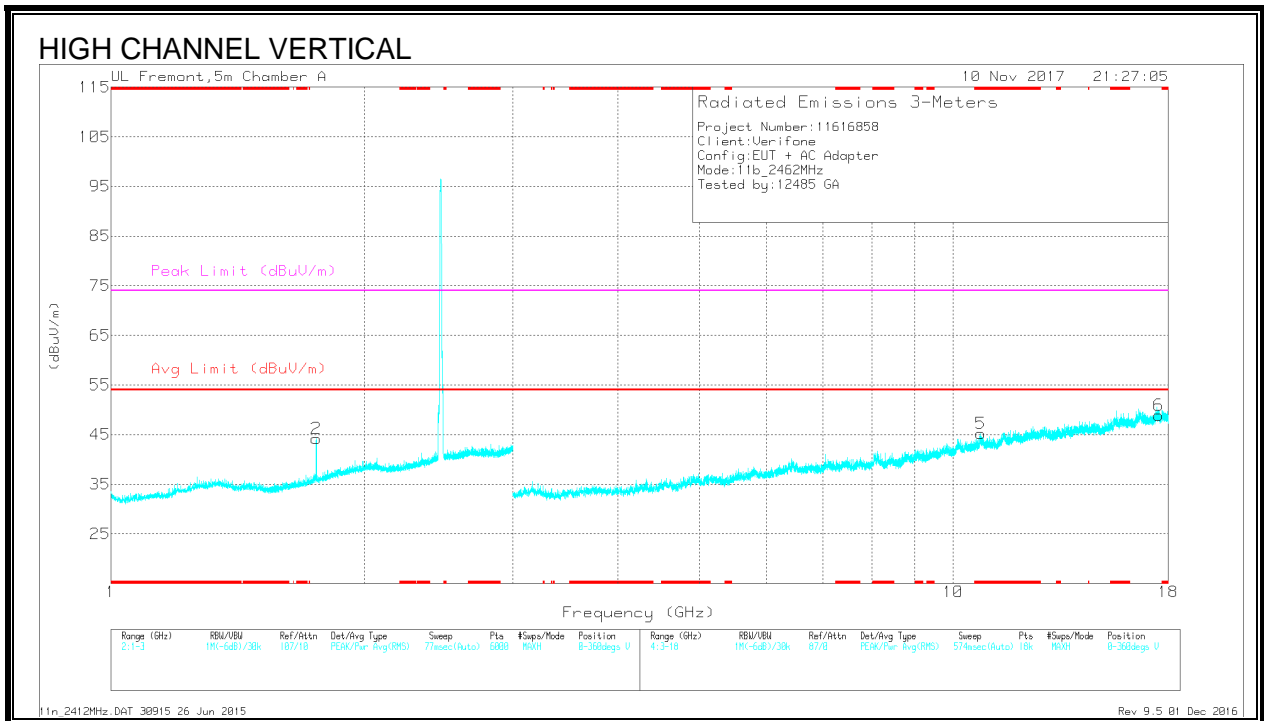
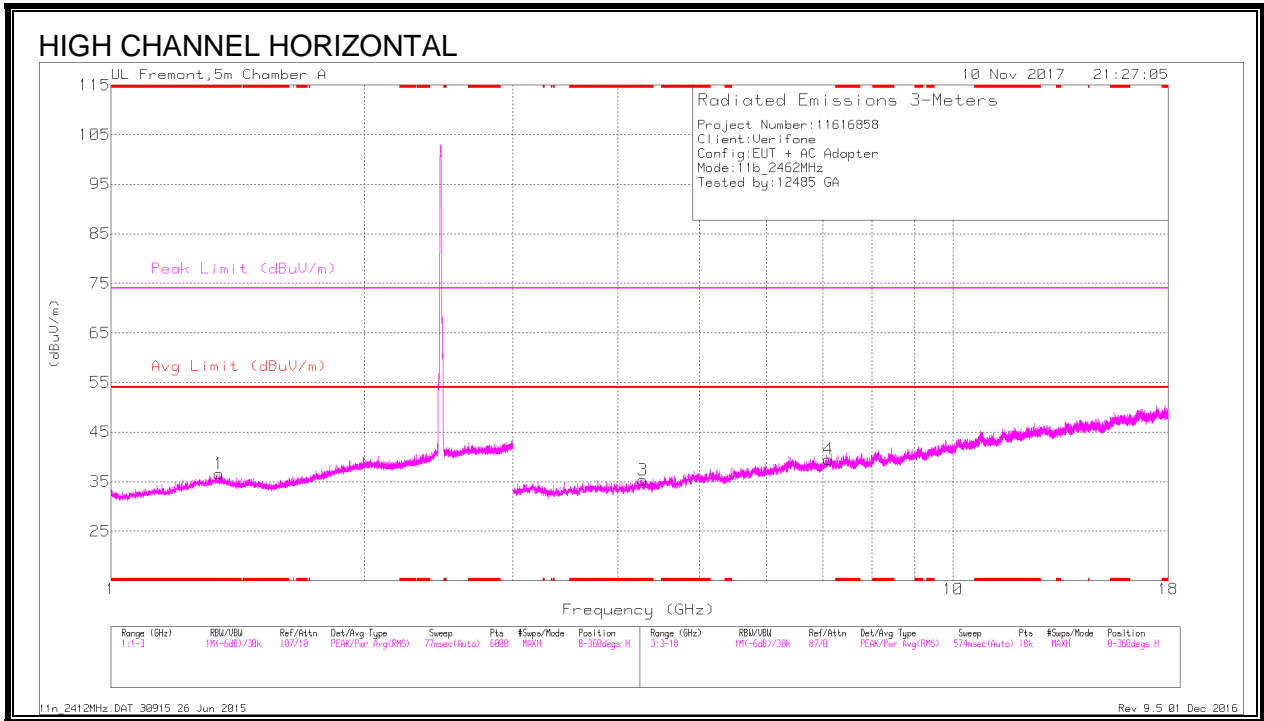


Radiated Emissions

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Ftr/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	* 1.31	36.16	PK2	29.5	-23.6	0	42.06	-	-	74	-31.94	193	213	H
	* 1.308	24.55	MAV1	29.4	-23.6	0	30.35	54	-23.65	-	-	193	213	H
4	* 11.513	31.87	PK2	38.3	-18.8	0	51.37	-	-	74	-22.63	193	213	H
	* 11.514	20.81	MAV1	38.3	-18.8	0	40.31	54	-13.69	-	-	193	213	H
6	* 17.805	32.93	PK2	41.2	-18.2	0	55.93	-	-	74	-18.07	193	213	H
	* 17.807	21.95	MAV1	41.2	-18.2	0	44.95	54	-9.05	-	-	193	213	H
3	* 4.874	39	PK2	34.1	-27.2	0	45.9	-	-	74	-28.1	268	109	V
	* 4.874	31.96	MAV1	34.1	-27.2	0	38.86	54	-15.14	-	-	268	109	V
2	1.92	36.28	PK2	31.2	-23.2	0	44.28	-	-	-	-	193	213	V
5	16.852	32.79	PK2	41.7	-18.8	0	55.69	-	-	-	-	193	213	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 PK2 - KDB558074 Method: Maximum Peak
 MAV1 - KDB558074 Option 1 Maximum RMS Average

HARMONICS AND SPURIOUS EMISSIONS HIGH CHANNEL, CH 11)



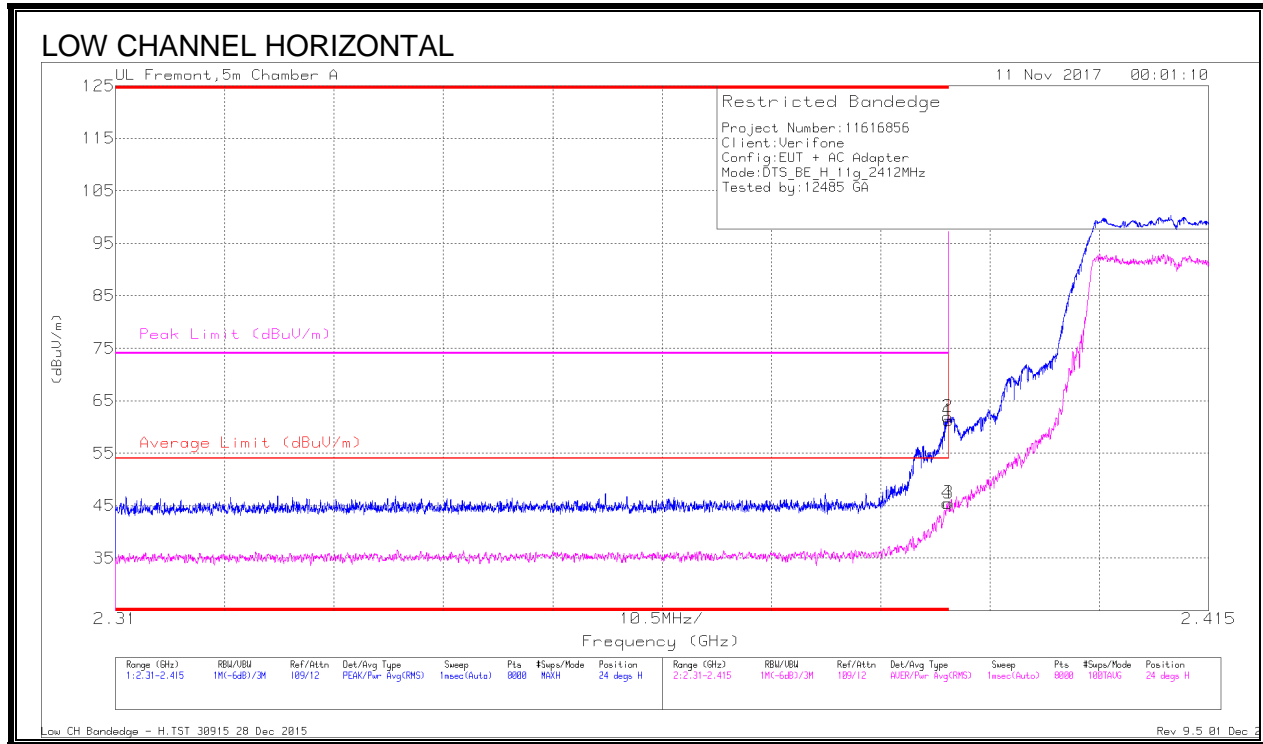
Radiated Emissions

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cb/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	* 1.344	36.24	PK2	29.5	-23.4	0	42.34	-	-	74	-31.66	0	100	H
	* 1.343	24.38	MAv1	29.5	-23.4	0	30.48	54	-23.52	-	-	0	100	H
3	* 4.282	37.09	PK2	33.5	-28.2	0	42.39	-	-	74	-31.61	193	213	H
	* 4.282	25.14	MAv1	33.5	-28.2	0	30.44	54	-23.56	-	-	193	213	H
5	* 10.777	31.59	PK2	37.8	-18.6	0	50.79	-	-	74	-23.21	193	213	V
	* 10.777	21.04	MAv1	37.8	-18.6	0	40.24	54	-13.76	-	-	193	213	V
2	1.754	39.66	PK2	29.8	-23.2	0	46.26	-	-	-	-	193	213	V
4	7.111	33.27	PK2	35.7	-23.3	0	45.67	-	-	-	-	193	213	H
6	17.534	31.96	PK2	41.2	-18.2	0	54.96	-	-	-	-	193	213	V

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

9.4.2. 11g SISO MODE IN THE 2.4GHz BAND

BANDEDGE (LOW CHANNEL, CH 1)



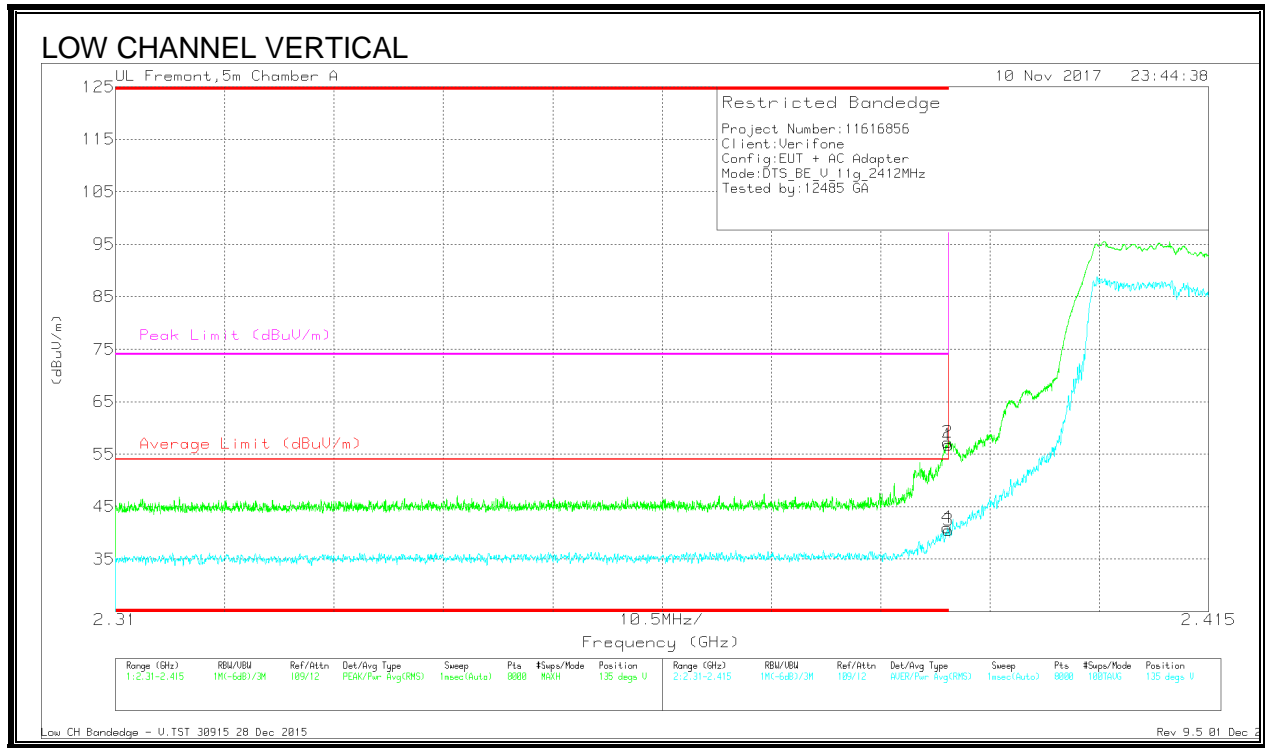
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cb/Ftr/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	* 2.39	52.58	Pk	31.8	-23.2	0	61.18	-	-	74	-12.82	24	145	H
2	* 2.39	53.31	Pk	31.8	-23.2	0	61.91	-	-	74	-12.09	24	145	H
3	* 2.39	36.61	RMS	31.8	-23.2	.3	45.51	54	-8.49	-	-	24	145	H
4	* 2.39	36.51	RMS	31.8	-23.2	.3	45.41	54	-8.59	-	-	24	145	H

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

Pk - Peak detector

RMS - RMS detection



Trace Markers

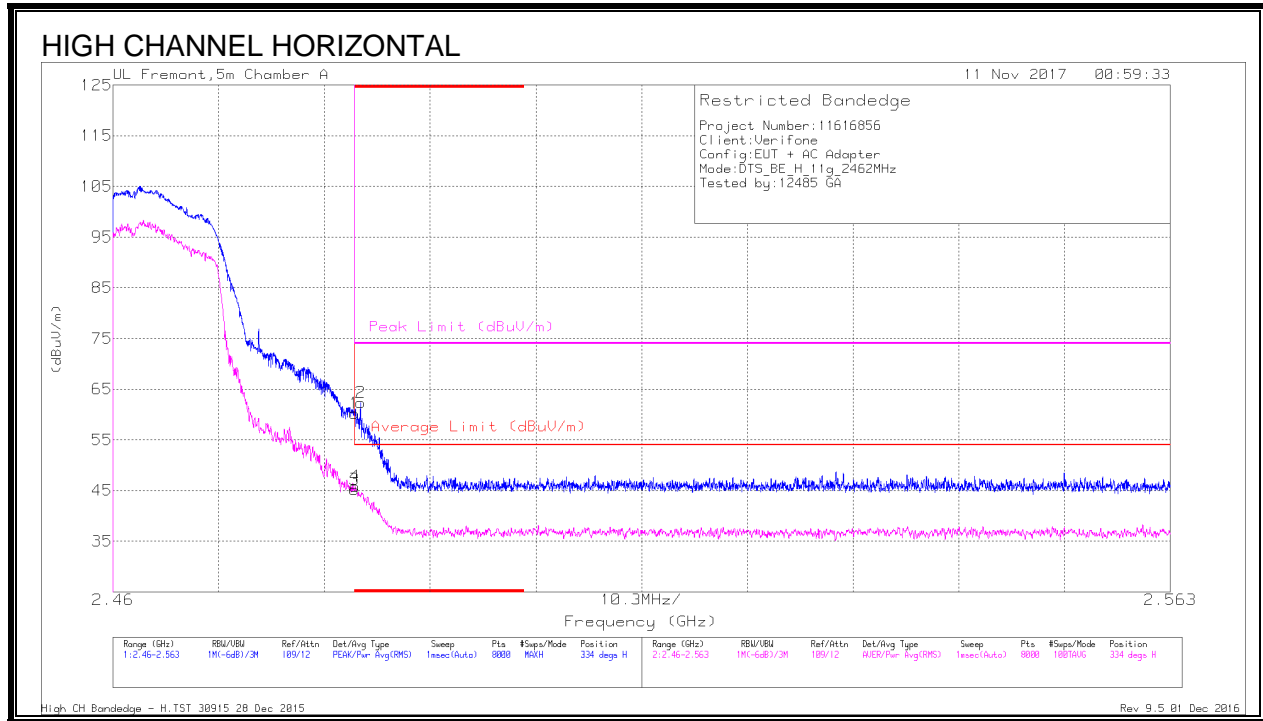
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Ch/Filt/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	48.2	Pk	31.8	-23.2	0	56.8	-	-	74	-17.2	135	282	V
2	* 2.39	48.67	Pk	31.8	-23.2	0	57.27	-	-	74	-16.73	135	282	V
3	* 2.39	31.59	RMS	31.8	-23.2	.3	40.49	54	-13.51	-	-	135	282	V
4	* 2.39	32.04	RMS	31.8	-23.2	.3	40.94	54	-13.06	-	-	135	282	V

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

Pk - Peak detector

RMS - RMS detection

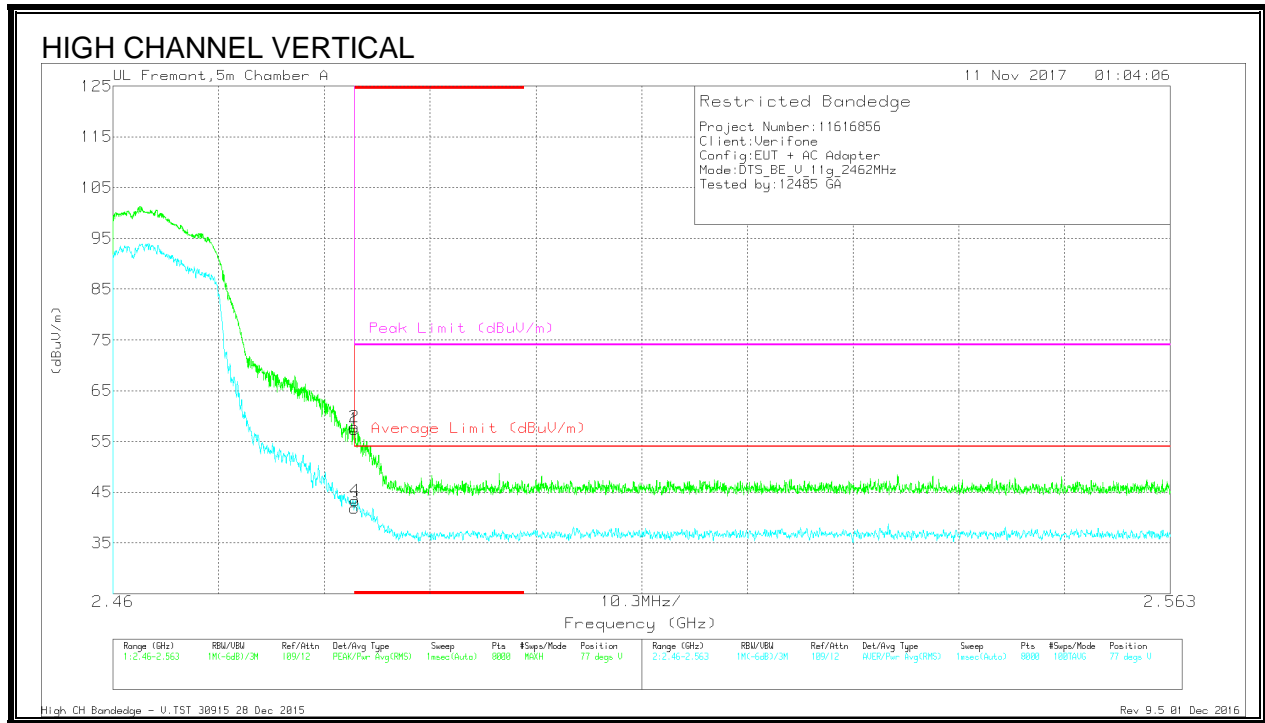
BANDEDGE (HIGH CHANNEL, CH 11)



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Ch/Fit/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	* 2.484	51.06	Pk	32.3	-23.1	0	60.26	-	-	74	-13.74	334	104	H
2	* 2.484	53.12	Pk	32.3	-23.1	0	62.32	-	-	74	-11.68	334	104	H
3	* 2.484	35.72	RMS	32.3	-23.1	.3	45.22	54	-8.78	-	-	334	104	H
4	* 2.484	36.3	RMS	32.3	-23.1	.3	45.8	54	-8.2	-	-	334	104	H

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



Trace Markers

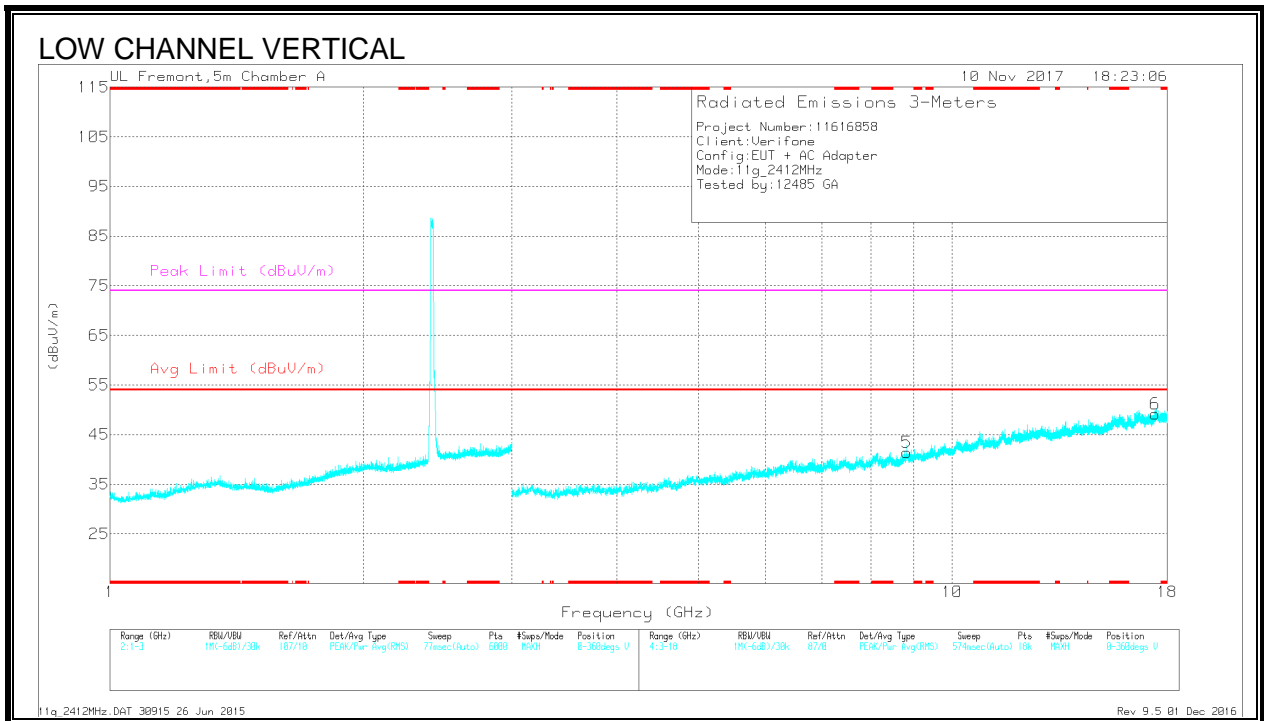
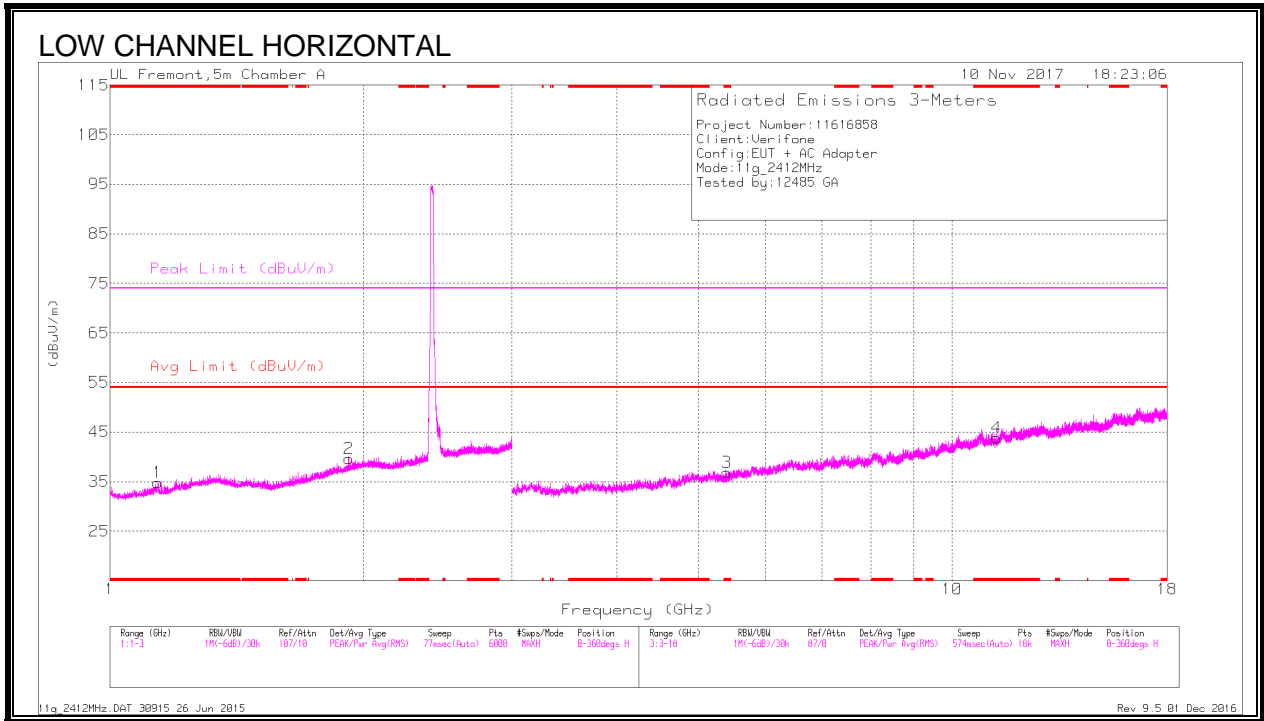
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Ch/Ftr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	48.23	Pk	32.3	-23.1	0	57.43	-	-	74	-16.57	77	396	V
2	* 2.484	48.65	Pk	32.3	-23.1	0	57.85	-	-	74	-16.15	77	396	V
3	* 2.484	32.37	RMS	32.3	-23.1	.3	41.87	54	-12.13	-	-	77	396	V
4	* 2.484	33.88	RMS	32.3	-23.1	.3	43.38	54	-10.62	-	-	77	396	V

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

Pk - Peak detector

RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS LOW CHANNEL, CH 1)



Radiated Emissions

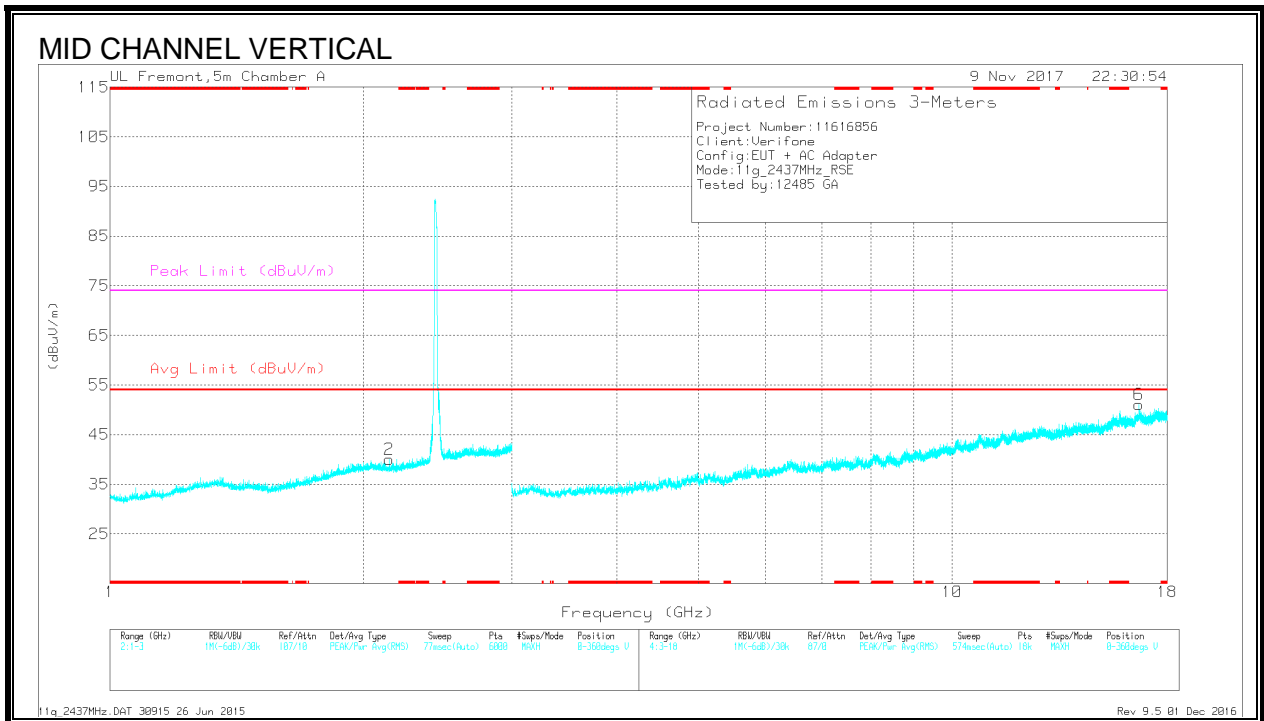
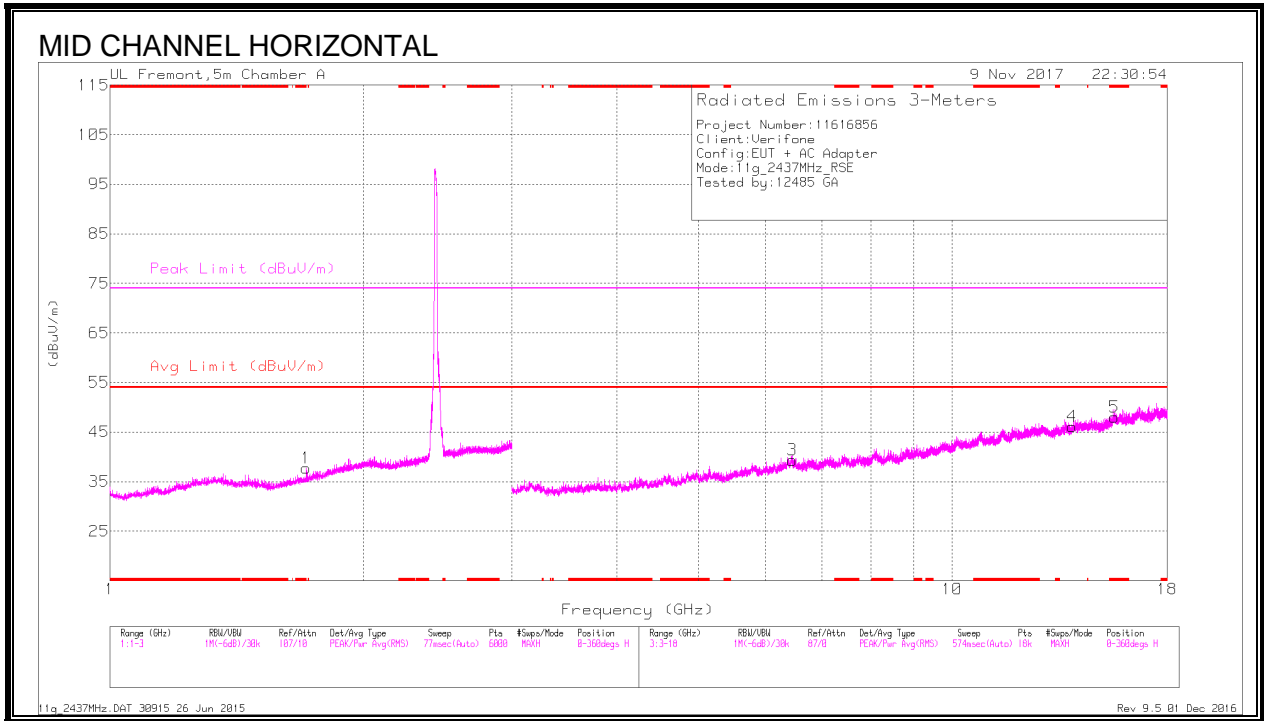
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.138	36.82	PK2	27.7	-23.6	0	40.92	-	-	74	-33.08	193	213	H
	* 1.141	25.55	MAV1	27.7	-23.6	.3	29.95	54	-24.05	-	-	193	213	H
3	* 5.399	35.27	PK2	34.6	-27.2	0	42.67	-	-	74	-31.33	193	213	H
	* 5.4	24.24	MAV1	34.6	-27.3	.3	31.84	54	-22.16	-	-	193	213	H
4	* 11.292	31.6	PK2	38	-19.4	0	50.2	-	-	74	-23.8	193	213	H
	* 11.29	20.57	MAV1	38	-19.5	.3	39.37	54	-14.63	-	-	193	213	H
2	* 17.807	21.95	MAV1	41.2	-18.2	.3	45.25	54	-8.75	-	-	193	213	H
5	1.92	37.02	PK2	31.2	-23.2	0	45.02	-	-	-	-	193	213	H
6	8.831	32.66	PK2	36.1	-21.2	0	47.56	-	-	-	-	193	213	V

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

PK2 - KDB558074 Method: Maximum Peak

MAV1 - KDB558074 Option 1 Maximum RMS Average

HARMONICS AND SPURIOUS EMISSIONS MID CHANNEL, CH 6)



Radiated Emissions

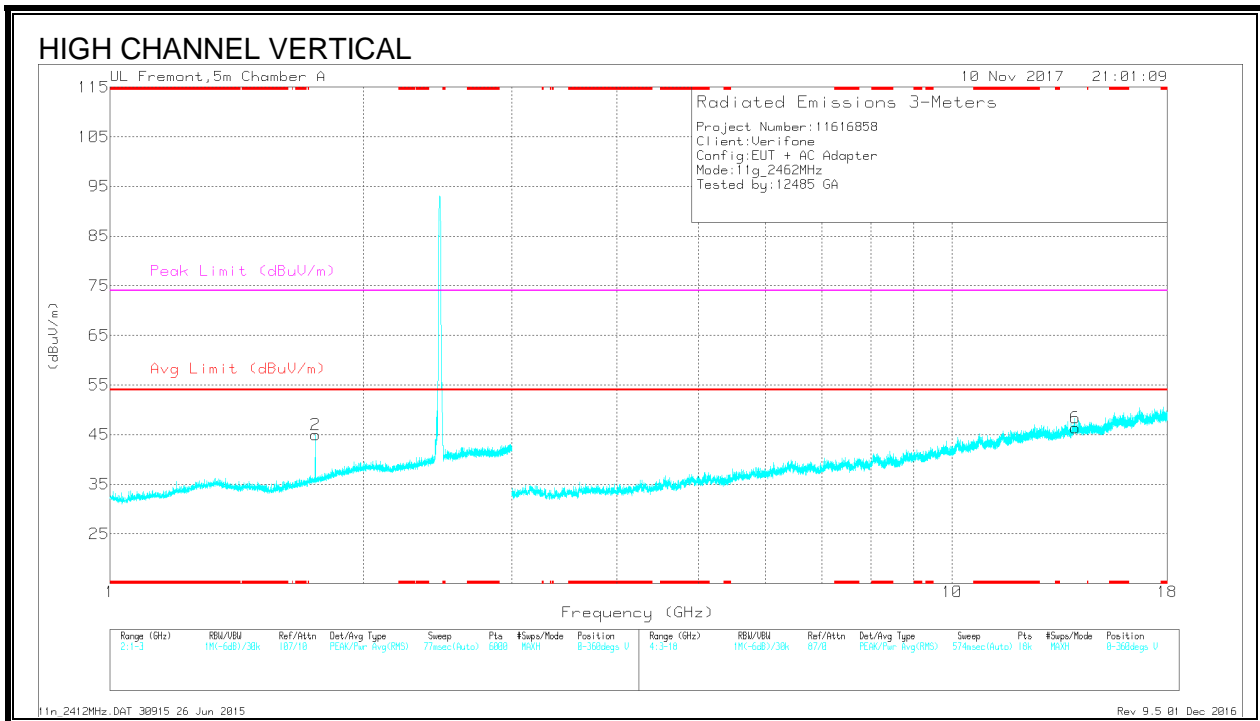
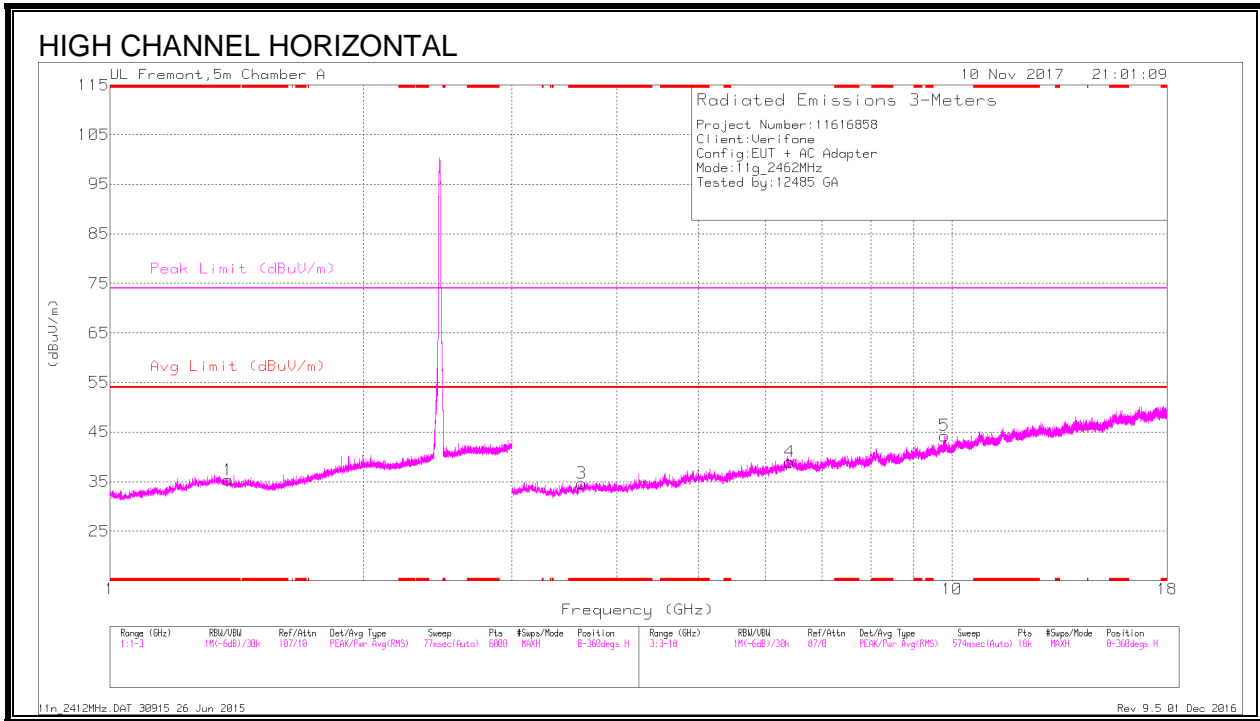
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	* 15.571	31.65	PK2	40	-17.3	0	54.35	-	-	74	-19.65	27	108	H
	* 15.573	20.35	MAV1	40	-17.3	.3	43.35	54	-10.65	-	-	27	108	H
1	1.711	36.36	PK2	29.1	-23.3	0	42.16	-	-	-	-	193	213	H
2	2.142	37.06	PK2	31.1	-23.3	0	44.86	-	-	-	-	193	213	V
3	6.458	34.19	PK2	35.8	-23.7	0	46.29	-	-	-	-	193	213	H
4	13.884	32.42	PK2	39.4	-19.3	0	52.52	-	-	-	-	193	213	H
6	16.656	32.19	PK2	41.5	-18.1	0	55.59	-	-	-	-	193	213	V

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

PK2 - KDB558074 Method: Maximum Peak

MAV1 - KDB558074 Option 1 Maximum RMS Average

HARMONICS AND SPURIOUS EMISSIONS HIGH CHANNEL, CH 11)



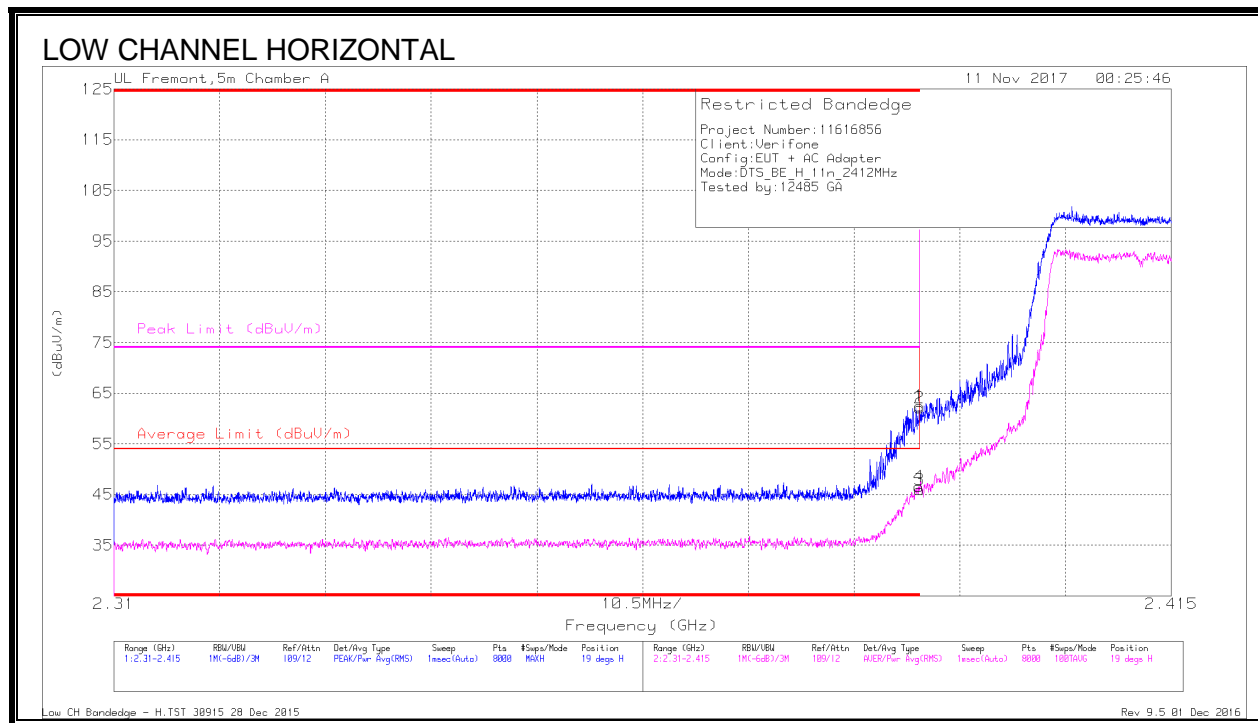
Radiated Emissions

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Ftr/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	* 1.382	36.03	PK2	28.9	-23.4	0	41.53	-	-	74	-32.47	360	101	H
	* 1.379	24.6	MAv1	29	-23.4	.3	30.5	54	-23.5	-	-	360	101	H
3	* 3.632	37.35	PK2	32.9	-29.6	0	40.65	-	-	74	-33.35	154	346	H
	* 3.631	25.98	MAv1	32.9	-29.6	.3	29.58	54	-24.42	-	-	154	346	H
2	1.752	36.85	PK2	29.8	-23.2	0	43.45	-	-	-	-	154	346	V
4	6.408	34.33	PK2	35.8	-24.6	0	45.53	-	-	-	-	154	346	H
5	9.787	32.09	PK2	37	-20.7	0	48.39	-	-	-	-	154	346	H
6	13.999	32.58	PK2	39.5	-18.9	0	53.18	-	-	-	-	154	346	V

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

9.4.3. 11n HT20 SISO MODE IN THE 2.4GHZ BAND

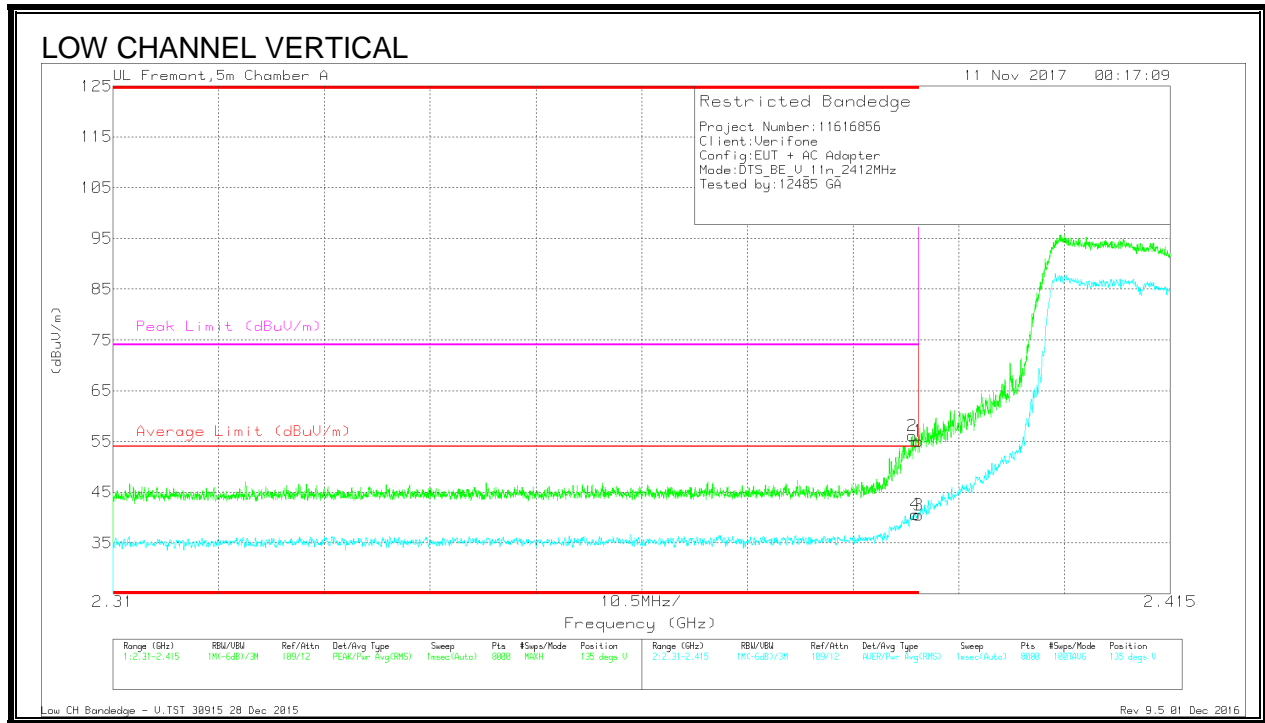
BANDEDGE (LOW CHANNEL, CH 1)



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Af T862 (dB/m)	Amp/Ch/Filt/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Asimuth (Degs)	Height (cm)	Polarity
1	* 2.39	53.85	Pk	31.8	-23.2	0	62.45	-	-	74	-11.55	19	146	H
2	* 2.39	53.54	Pk	31.8	-23.2	0	62.14	-	-	74	-11.86	19	146	H
3	* 2.39	36.98	RMS	31.8	-23.2	.32	45.9	54	-8.1	-	-	19	146	H
4	* 2.39	37.66	RMS	31.8	-23.2	.32	46.58	54	-7.42	-	-	19	146	H

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



Trace Markers

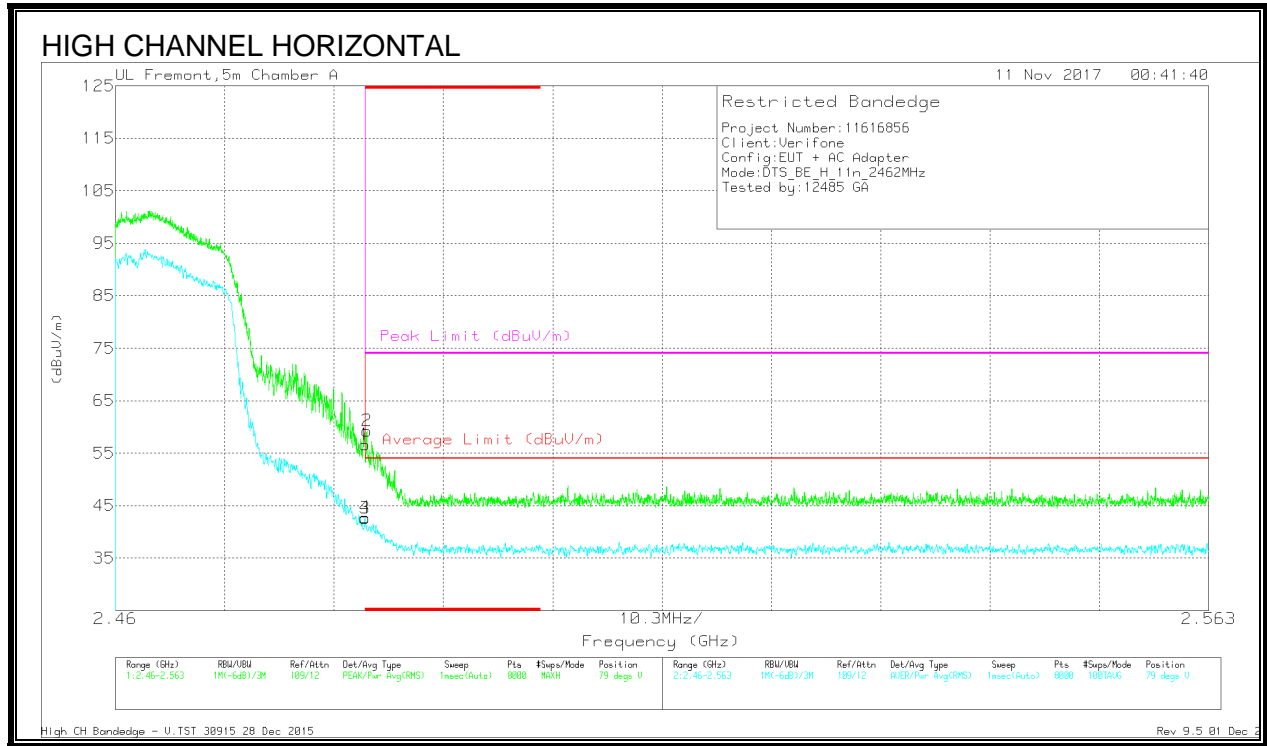
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Ch/Flt/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	46.47	Pk	31.8	-23.2	0	55.07	-	-	74	-18.93	135	286	V
2	* 2.389	47.51	Pk	31.8	-23.2	0	56.11	-	-	74	-17.89	135	286	V
3	* 2.39	31.9	RMS	31.8	-23.2	.32	40.82	54	-13.18	-	-	135	286	V
4	* 2.39	32.05	RMS	31.8	-23.2	.32	40.97	54	-13.03	-	-	135	286	V

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

Pk - Peak detector

RMS - RMS detection

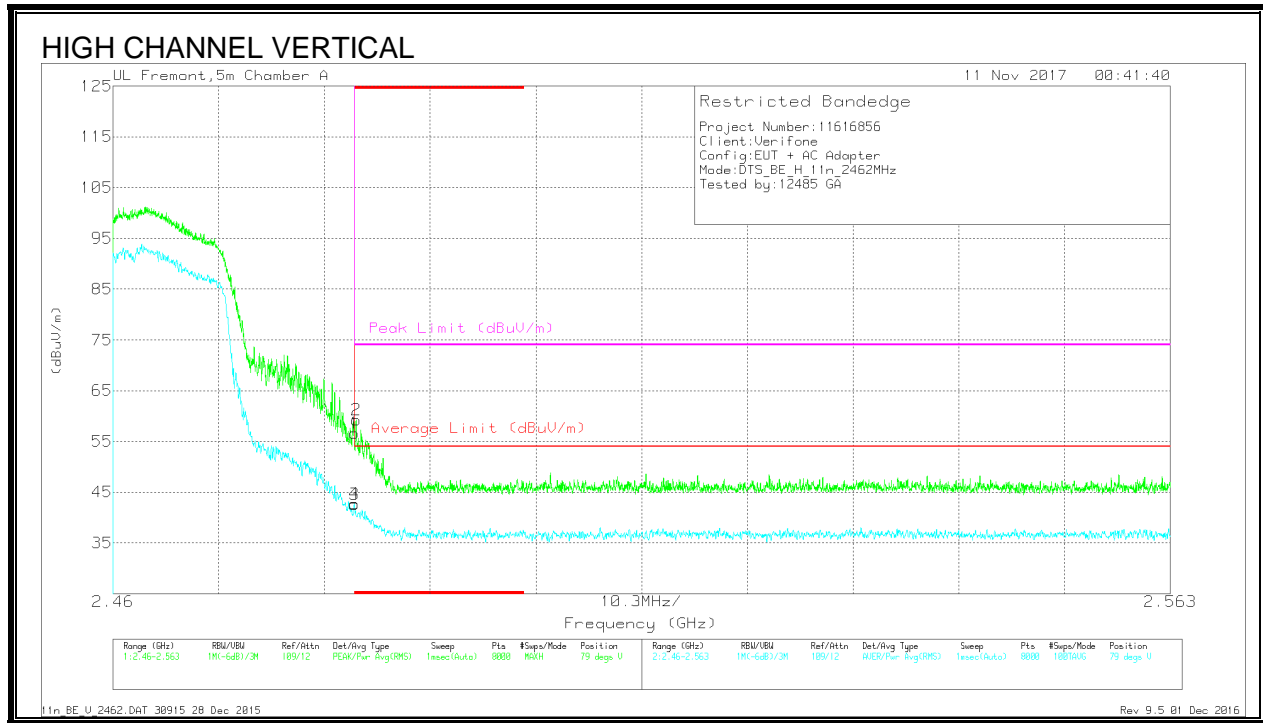
BANDEDGE (HIGH CHANNEL, CH 11)



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cb/Ptr/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	* 2.484	47.47	Pk	32.3	-23.1	0	56.67	-	-	74	-17.33	79	394	V
2	* 2.484	50.01	Pk	32.3	-23.1	0	59.21	-	-	74	-14.79	79	394	V
3	* 2.484	33.1	RMS	32.3	-23.1	.32	42.62	54	-11.38	-	-	79	394	V
4	* 2.484	33.24	RMS	32.3	-23.1	.32	42.76	54	-11.24	-	-	79	394	V

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



Trace Markers

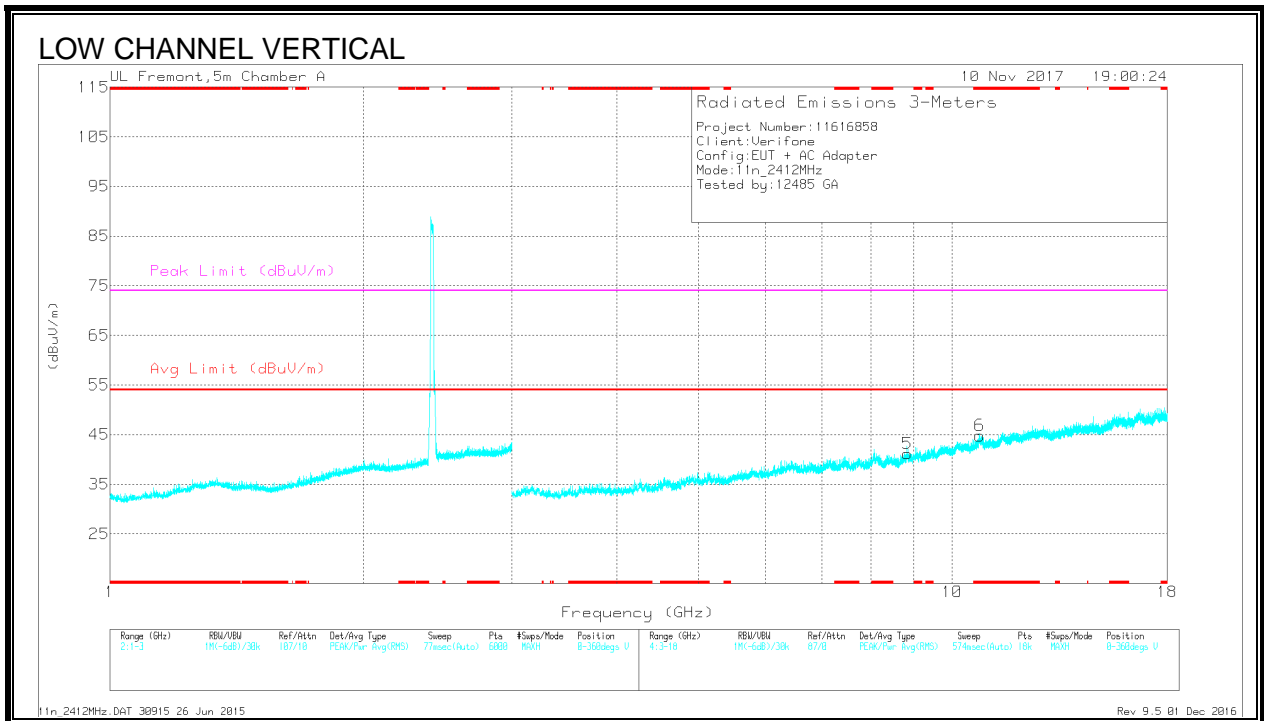
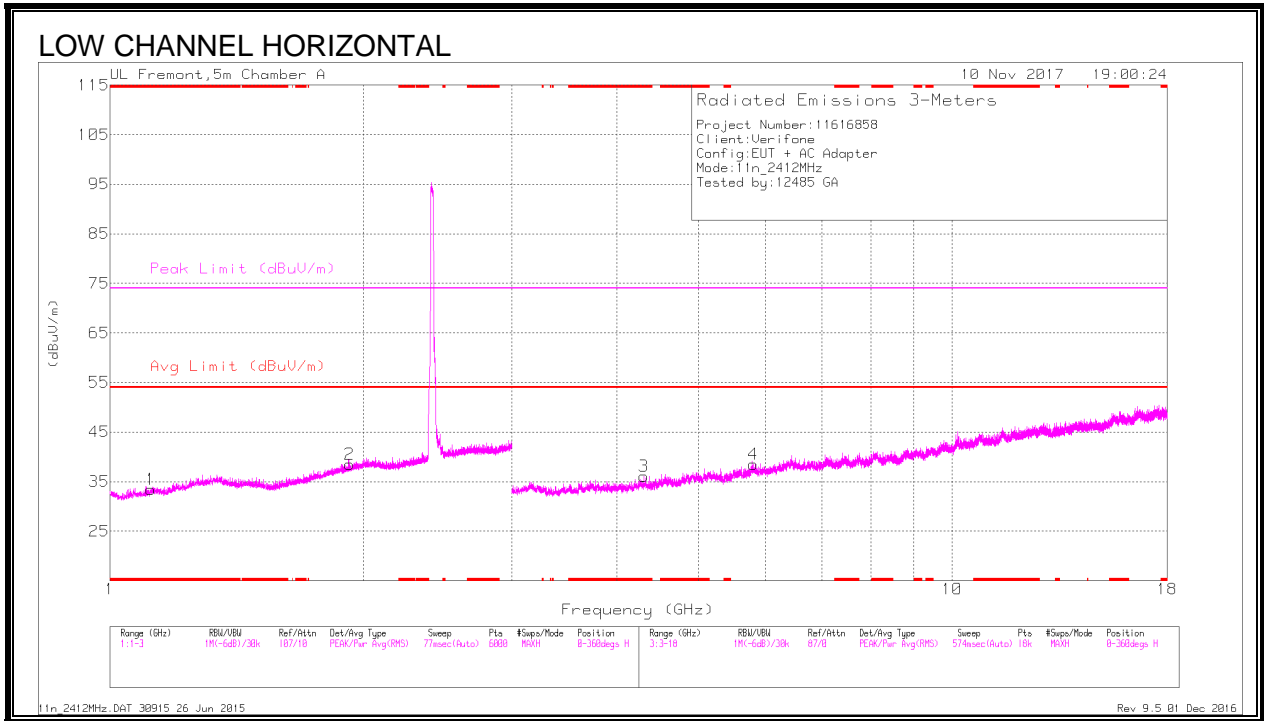
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Ch/Flt/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	47.47	Pk	32.3	-23.1	0	56.67	-	-	74	-17.33	79	394	V
2	* 2.484	50.01	Pk	32.3	-23.1	0	59.21	-	-	74	-14.79	79	394	V
3	* 2.484	33.1	RMS	32.3	-23.1	.32	42.62	54	-11.38	-	-	79	394	V
4	* 2.484	33.24	RMS	32.3	-23.1	.32	42.76	54	-11.24	-	-	79	394	V

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

Pk - Peak detector

RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS LOW CHANNEL, CH 1)



Radiated Emissions

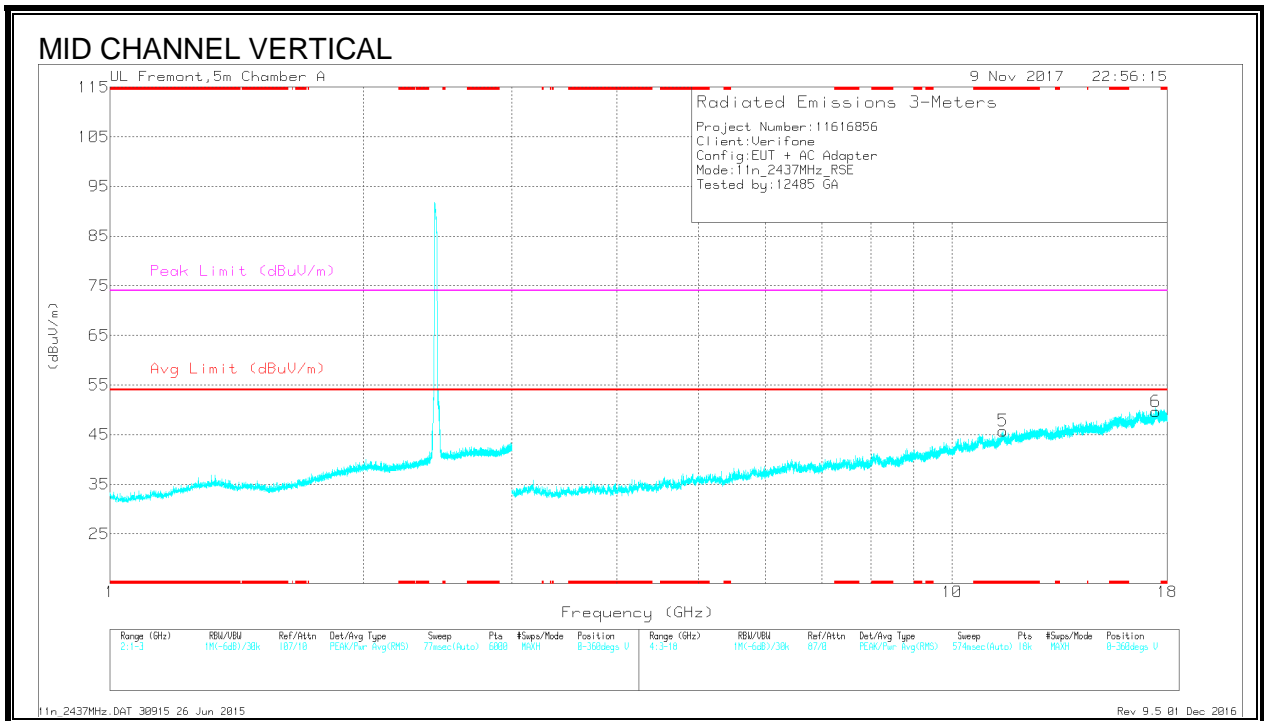
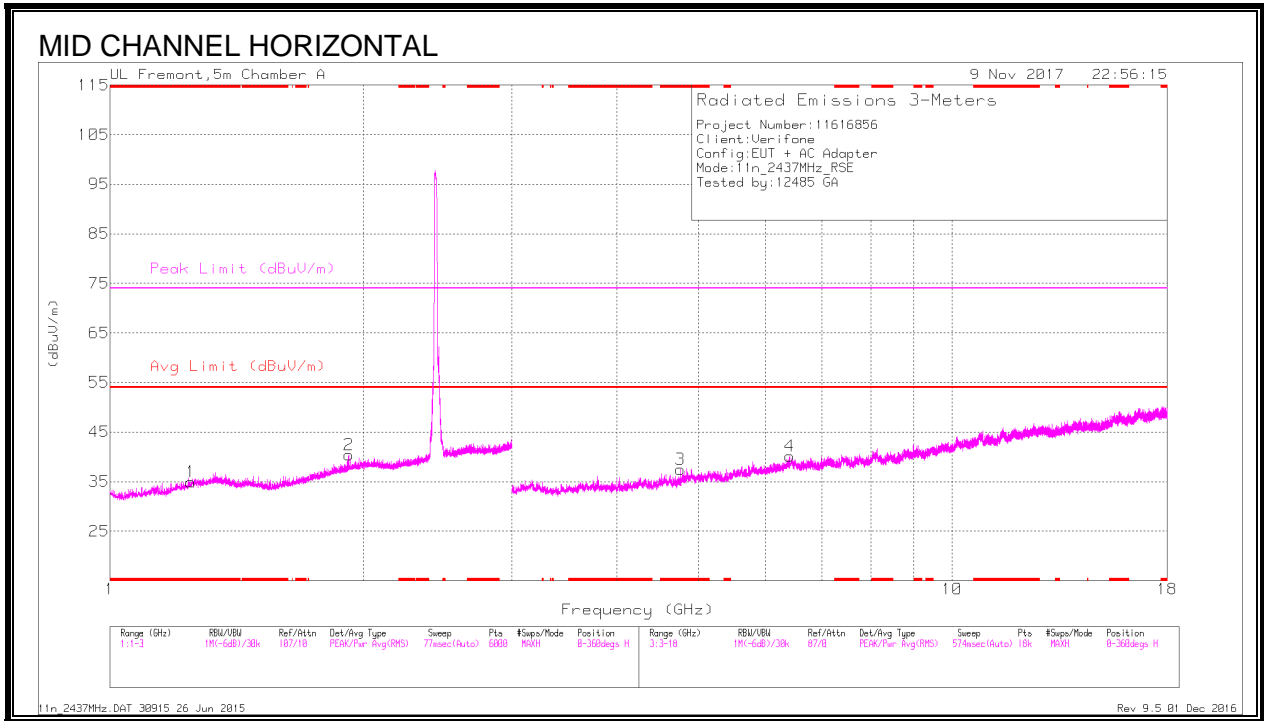
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cb/Fitr/ Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.119	35.99	PK2	27.7	-23.8	0	39.89	-	-	74	-34.11	360	101	H
	* 1.12	24.58	MAv1	27.7	-23.7	.32	28.9	54	-25.1	-	-	360	101	H
3	* 4.305	36.22	PK2	33.6	-28.4	0	41.42	-	-	74	-32.58	360	101	H
	* 4.306	25.35	MAv1	33.6	-28.5	.32	30.77	54	-23.23	-	-	360	101	H
6	* 10.785	31.73	PK2	37.8	-18.7	0	50.83	-	-	74	-23.17	360	101	V
	* 10.783	21.16	MAv1	37.8	-18.7	.32	40.58	54	-13.42	-	-	360	101	V
2	1.927	36.12	PK2	31.2	-23.1	0	44.22	-	-	-	-	360	101	H
4	5.811	35.74	PK2	35.1	-25.6	0	45.24	-	-	-	-	360	101	H
5	8.851	32.85	PK2	36.1	-21.5	0	47.45	-	-	-	-	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

HARMONICS AND SPURIOUS EMISSIONS MID CHANNEL, CH 6)

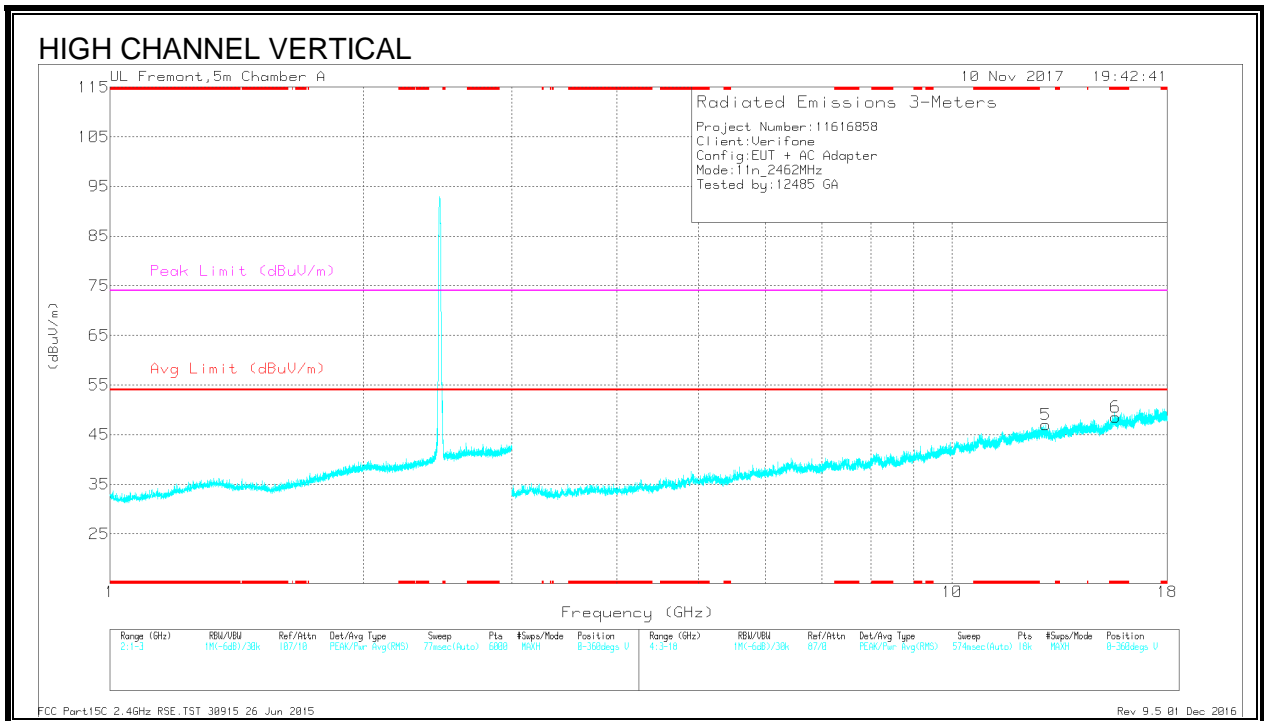
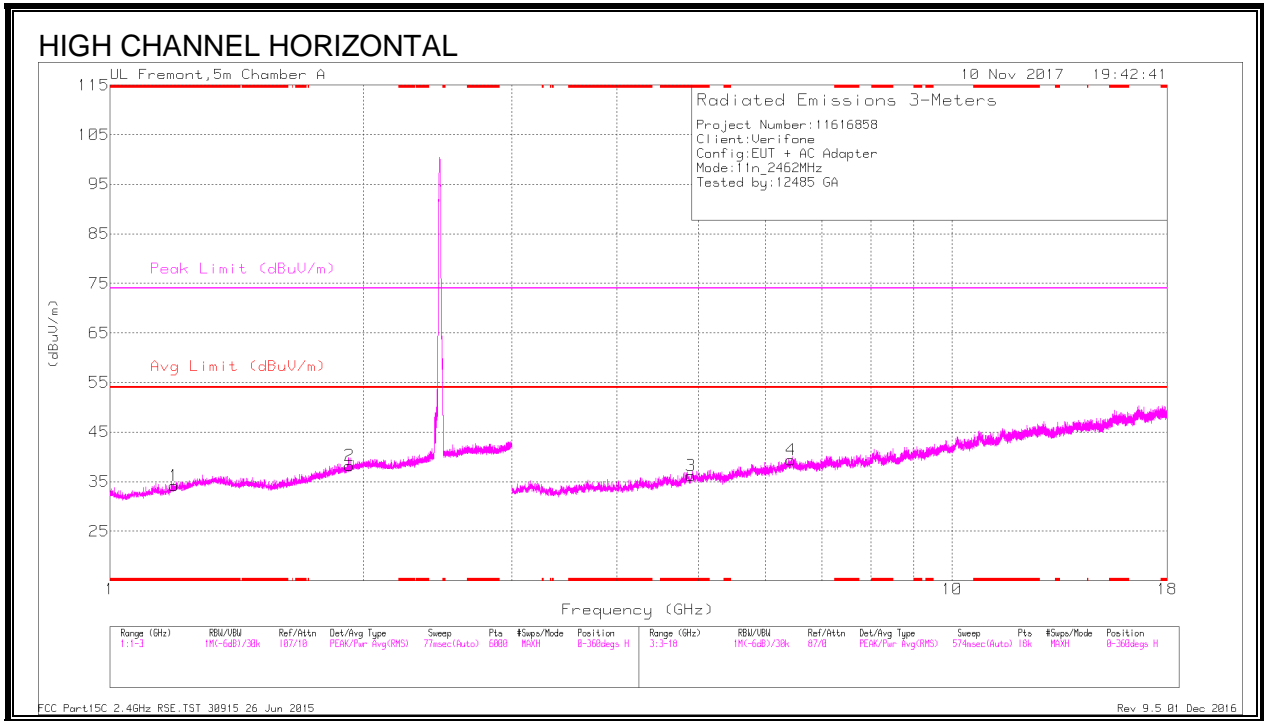


Radiated Emissions

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cb/Fitr/ 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	* 1.247	36	PK2	29.1	-23.7	0	41.4	-	-	74	-32.6	360	101	H
	* 1.246	24.63	MAv1	29	-23.7	.32	30.25	54	-23.75	-	-	360	101	H
3	* 4.749	36.66	PK2	34	-28.4	0	42.26	-	-	74	-31.74	360	101	H
	* 4.749	25.54	MAv1	34	-28.4	.32	31.46	54	-22.54	-	-	360	101	H
5	* 11.492	31.88	PK2	38.3	-18.5	0	51.68	-	-	74	-22.32	360	101	V
	* 11.492	20.89	MAv1	38.3	-18.5	.32	41.01	54	-12.99	-	-	360	101	V
2	1.919	36.82	PK2	31.2	-23.2	0	44.82	-	-	74	-29.18	360	101	H
4	6.41	34.47	PK2	35.8	-24.6	0	45.67	-	-	74	-28.33	360	101	H
6	17.451	33.05	PK2	41.2	-18.1	0	56.15	-	-	74	-17.85	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

HARMONICS AND SPURIOUS EMISSIONS HIGH CHANNEL, CH 11)



Radiated Emissions

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cb/Fitr/ 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	* 1.191	36.71	PK2	28.1	-23.6	0	41.21	-	-	74	-32.79	360	101	H
	* 1.194	24.9	MAv1	28.1	-23.6	.32	29.72	54	-24.28	-	-	360	101	H
3	* 4.901	35.91	PK2	34.1	-26.9	0	43.11	-	-	74	-30.89	360	101	H
	* 4.899	25.17	MAv1	34.1	-27	.32	32.59	54	-21.41	-	-	360	101	H
6	* 15.627	31.98	PK2	40	-17.7	0	54.28	-	-	74	-19.72	360	101	V
	* 15.628	21.36	MAv1	40	-17.8	.32	43.88	54	-10.12	-	-	360	101	V
2	1.926	36.38	PK2	31.2	-23.1	0	44.48	-	-	74	-29.52	360	101	H
4	6.437	34.55	PK2	35.8	-24	0	46.35	-	-	74	-27.65	360	101	H
5	12.916	31.04	PK2	39.3	-18.6	0	51.74	-	-	74	-22.26	360	101	V

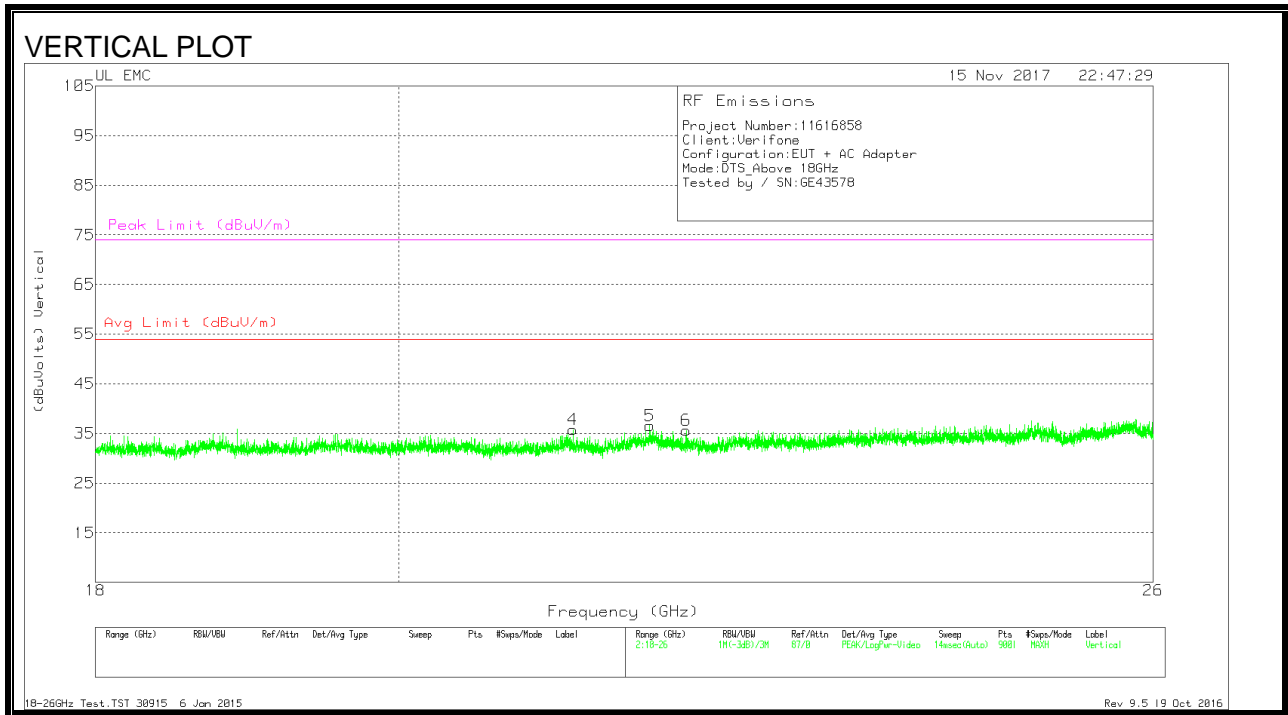
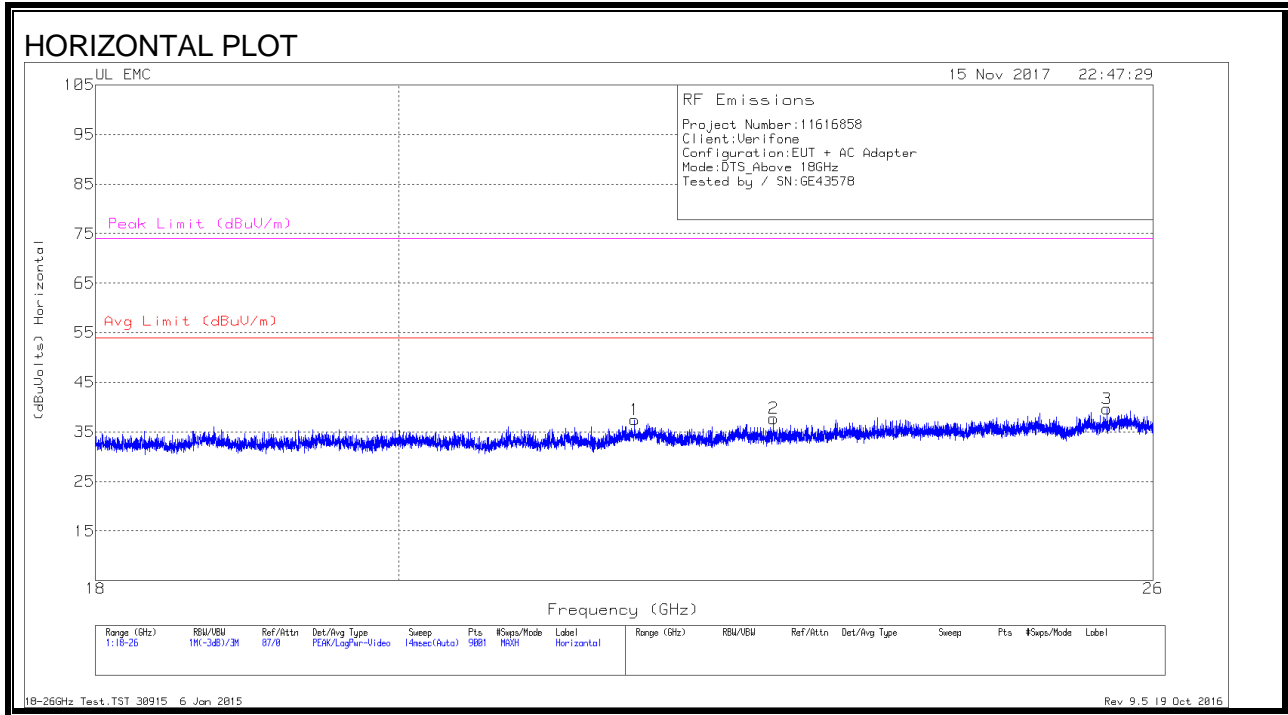
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK2 - KDB558074 Method: Maximum Peak

MAv1 - KDB558074 Option 1 Maximum RMS Average

9.5. WORST-CASE 18 to 26 GHz

SPURIOUS EMISSIONS 18 TO 26 GHz (WORST-CASE CONFIGURATION, HORIZONTAL & VERTICAL)



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	T89 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	21.709	38.35	Pk	33.3	-24.7	-9.5	37.45	54	-16.55	74	-36.55
2	22.784	38.89	Pk	33.2	-24.9	-9.5	37.69	54	-16.31	74	-36.31
3	25.585	40.26	Pk	34	-25.1	-9.5	39.66	54	-14.34	74	-34.34
4	21.251	37.46	Pk	33.2	-25.4	-9.5	35.76	54	-18.24	74	-38.24
5	21.825	37.46	Pk	33.3	-24.7	-9.5	36.56	54	-17.44	74	-37.44
6	22.102	37.02	Pk	33	-24.9	-9.5	35.62	54	-18.38	74	-38.38

Pk - Peak detector