



**FCC 47 CFR PART 15 SUBPART E
INDUSTRY CANADA RSS-210 ISSUE 8**

**CLASS II PERMISSIVE CHANGE
(2.4 & 5.8GHz BAND) TEST REPORT**

FOR

802.11a/b/g/n WLAN + BLUETOOTH PCI-E MINI CARD

MODEL NUMBER: BCM943228HMB

**FCC ID: QDS-BRCM1058
IC: 4324A-BRCM1058**

REPORT NUMBER: 13U16745-2, Revision B

ISSUE DATE: FEBRUARY 25, 2014

Prepared for
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	01/29/14	Initial Issue	F. Ibrahim
A	02/11/14	The full word for "BE" changed to Band Edge (5.2)	A.Kanamatsu
B	02/25/14	Revised AG in section 5.3 by changing 0.85 dBi to 1.58 dBi	F. Ibrahim

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: BROADCOM CORPORATION
190 MATHILDA PLACE
SUNNYVALE, CA 94086, U.S.A.

EUT DESCRIPTION: 802.11a/b/g/n WLAN + Bluetooth PCI-E Mini Card

MODEL: BCM943228HMB

SERIAL NUMBER: 323C3001119D and 323C3001111D

DATE TESTED: JANUARY 6, 2013 - JANUARY 22, 2014

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-210 Issue 8 Annex 8	Pass
INDUSTRY CANADA RSS-GEN Issue 3	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.

Approved & Released For
UL Verification Services Inc. By:



FRANK IBRAHIM
WISE PROGRAM MANAGER
UL Verification Services Inc.

Tested By:



Tom Chen
EMC ENGINEER
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, FCC 06-96, FCC KDB 789033, ANSI C63.10-2009, RSS-GEN Issue 3, and RSS-210 Issue 8.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

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
☒ Chamber A	☐ Chamber D
☐ Chamber B	☐ Chamber E
☐ Chamber C	☐ Chamber F

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:

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

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 1000 MHz	4.94 dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is an 802.11a/b/g/n WLAN + Bluetooth PCI-E Mini card manufactured by Broadcom.

The radio module is manufactured by Broadcom.

5.2. AVERAGE OUTPUT POWER

Average Output power was verified to be within +/- 0.5 dB from original values covered by report number 11U13795-2A. However, power has been reduced on the following specific channels in order to pass radiated Band Edge:

Average output power has been reduced as follows to pass radiated Band Edge:

Frequency Range (MHz)	Channel	Frequency (MHz)	Mode	Power, Chain 0 (dBm)	Power, Chain 1 (dBm)	Output Power (dBm)	Output Power (mW)
2.4GHz band, 1Tx							
2412 - 2462	2	2417	802.11g	-	16.64	16.64	46.132
2412 - 2462	3	2422	802.11g	-	16.80	16.80	47.863
2.4 GHz band, 2TX							
2412-2462	2	2417	802.11n HT20 CDD	15.04	15.07	18.07	64.052
2412-2462	3	2422	802.11n HT20 CDD	16.37	16.46	19.43	87.610
2412 - 2462	3	2422	802.11n HT40 CDD	9.50	10.90	13.27	21.215

5.3. DESCRIPTION OF CLASS II PERMISSIVE CHANGE

Purpose of C2PC is to add the following antenna:

Antenna Type: Dipole Antenna

Antenna Gain (dBi)		
Band	Chain 0 (TX1)	Chain 1 (TX2)
2.4	-0.45	1.26
5.2	-0.36	1.58
5.3	-0.36	1.58
5.6	-0.07	1.01
5.8	0.83	1.09

5.4. SOFTWARE AND FIRMWARE

The EUT driver software installed during testing was Broadcom, rev. 5.100.82.112.
The test utility software used during testing was BCM Internal, rev. 5.100.RC82.112.

5.5. WORST-CASE CONFIGURATION AND MODE

The EUT was tested as an external module installed in a test jig board connected to a host Laptop PC.

Worst-Case data rates were utilized from preliminary testing of the Chipset, worst-case data rates used during the testing are as follows:

802.11b mode: 1 Mbps
802.11g mode: 6 Mbps
802.11a mode: 6 Mbps
802.11n HT20mode: MCS0
802.11n HT40mode: MCS0

Radiated Emissions test in the frequency range of 30-1000 MHz was performed with the EUT set to transmit in the channel and mode with highest output power as worst-case scenario.

All legacy modes were measured at Aux port, connector J2 (chain 1), antenna TX2, as worst-case scenario; this port is connected to the antenna with higher gain.

Radiated BE, radiated harmonics and spurious testing was performed at a power level per chain that is equal or higher than the power per chain from the original project as covered by report number "11U13795-1A FCC IC DTS WLAN Report", except for cases where power was reduced to pass radiated BE. For details on those cases refer to section 5.2.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

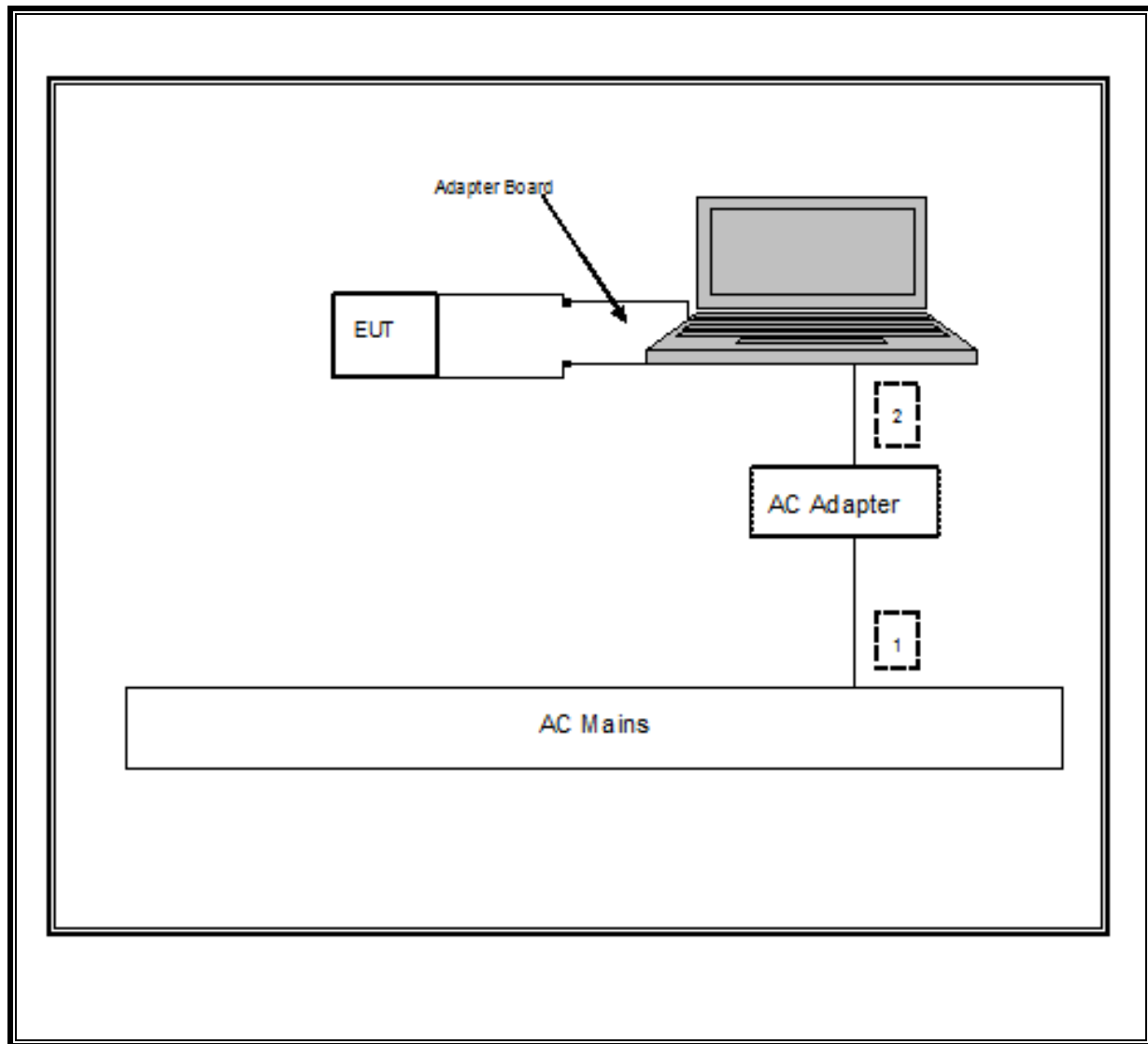
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Lenovo	G560	CBU4473193	DoC
AC Adapter	Lenovo	PA-1650-56LC	11S36001651ZZ40006E2PR	DoC
Adapter Board	Broadcom	BRCM JUAN01	1788087	N/A

I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	US 115V	Shielded	1.5m	NA
2	DC	1	DC	Un-	1.5m	Ferrite at laptop's end

TEST SETUP

The EUT was attached to a jig board which was installed in the PCMCIA slot of a host laptop computer during the tests. Test software exercised the radio card.

SETUP DIAGRAM FOR TESTS

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 Date	Cal Due
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01179	02/16/13	02/16/14
Spectrum Analyzer, 40 GHz	Agilent	E4446A	C01159	10/04/13	10/04/14
EMI Test Receiver, 9kHz-7GHz	R&S	ESCI 7	1000741	07/13/13	07/13/14
PXA Signal Analyzer	Agilent	N9030A-544	US51350187	05/10/13	05/10/14
Horn Antenna, 1GHz-18GHz	ETS Lindgren	3117	T345	02/19/13	02/19/14
Antenna, Horn, 18 GHz	EMCO	3115	C01218/1000614	01/17/14	01/17/15
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	C00980	11/14/13	11/14/14
Antenna, Horn, 40 GHz	ARA	MWH-2640/B	C00981	06/28/13	06/28/14
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	C01171	02/13/13	02/13/14
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C00749	10/19/13	10/19/14
Preamplifier, 40 GHz	Miteq	NSP4000-SP2	C00990	08/20/13	08/20/14
Peak Power Meter	Agilent / HP	N1911A	F00017	04/22/13	04/22/14
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00885	06/26/13	06/26/14
Low Pass Filter	Micro-Tronics	LPS17541	F00219	06/26/13	06/26/14
High Pass Filter	Micro-Tronics	HPS17542	F00222	06/26/13	06/26/14
High Pass Filter	Micro-Tronics	HPM17543	F00224	06/26/13	06/26/14
LISN, 30 MHz	FCC	50/250-25-2	C00626	08/15/13	08/15/14
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	08/13/13	08/13/14
Spectrum Analyzer, 40 GHz	Agilent	8564E	C00951	07/29/13	07/29/14
PreAmplifier, 1-26.5GHz	Agilent	8449B	F00167	03/23/13	03/23/14
Preamplifier, 40 GHz	Miteq	NSP4000-SP2	C00990	08/20/13	08/20/14
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	C00980	11/26/13	11/26/14
Antenna, Horn, 40 GHz	ARA	MWH-2640/B	C00981	06/28/13	06/28/14

7. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method.

7.1. ON TIME AND DUTY CYCLE RESULTS

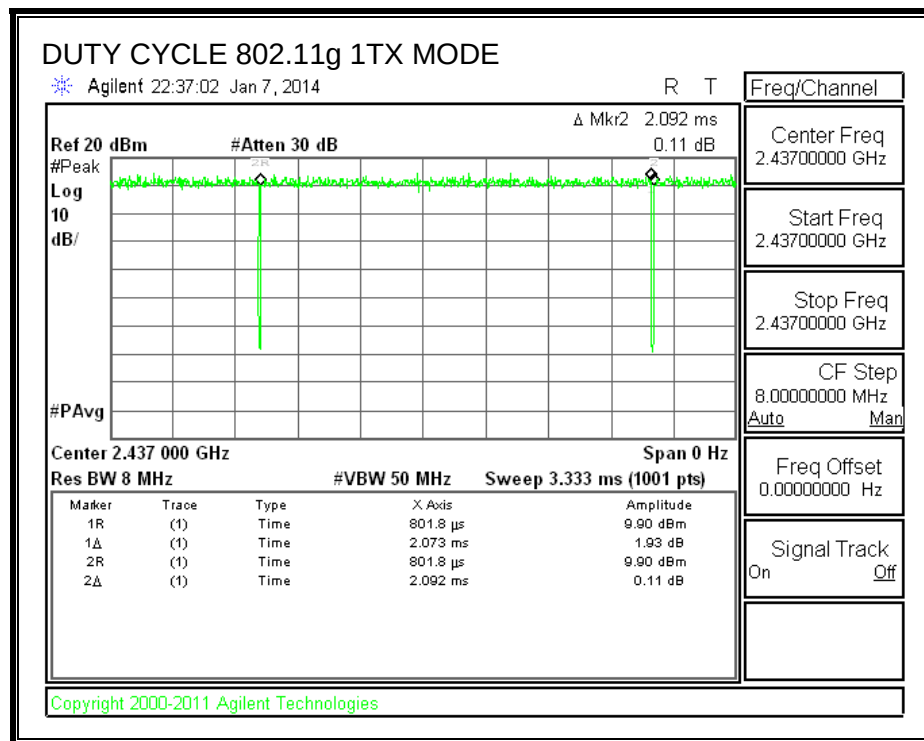
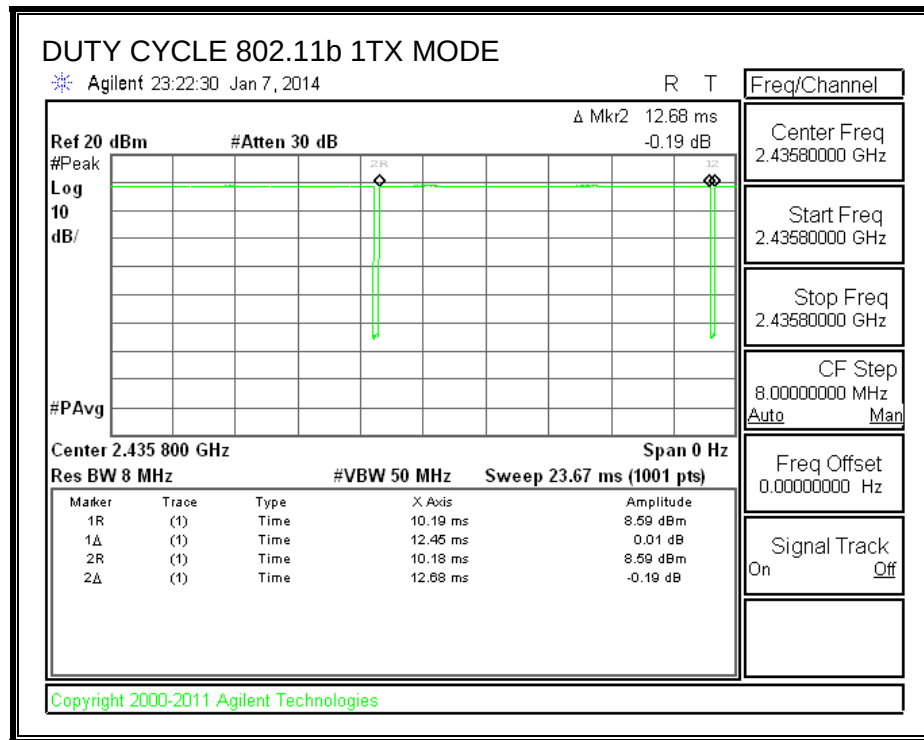
Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
2.4GHz Band						
802.11b 1TX	12.450	12.680	0.982	98.19%	0.00	0.010
802.11g 1TX	2.073	2.092	0.991	99.09%	0.00	0.010
802.11n HT20 CDD 2TX	1.904	1.924	0.990	98.96%	0.00	0.010
802.11n HT40 CDD 2TX	0.9352	0.9526	0.982	98.17%	0.00	0.010
5GHz Band						
802.11a 1TX	2.073	2.089	0.992	99.23%	0.00	0.010
802.11n HT20 CDD 2TX	1.911	1.934	0.988	98.81%	0.00	0.010
802.11n HT40 CDD 2TX	0.9336	0.9512	0.981	98.15%	0.00	0.010

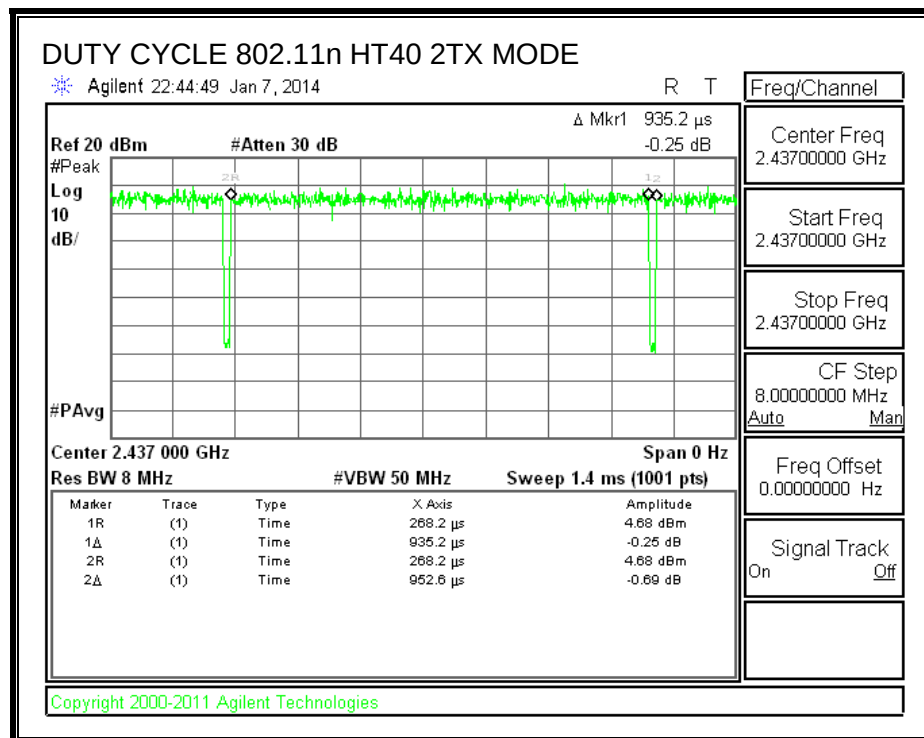
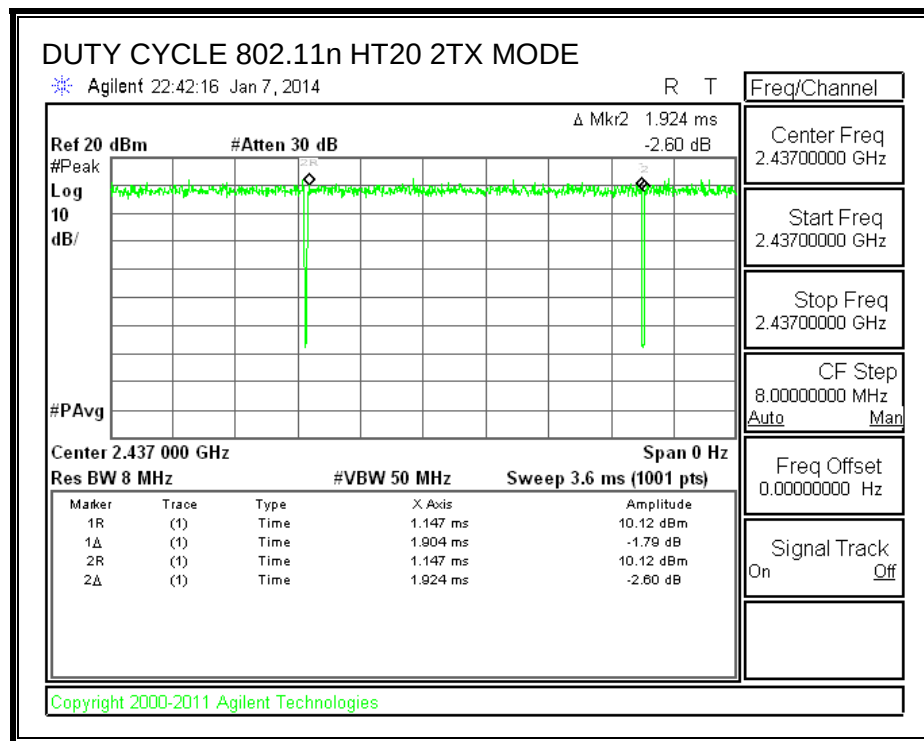
7.2. MEASUREMENT METHODS

Out-of-band emissions in restricted bands: KDB 558074 D01 v03r01, Section 12.1

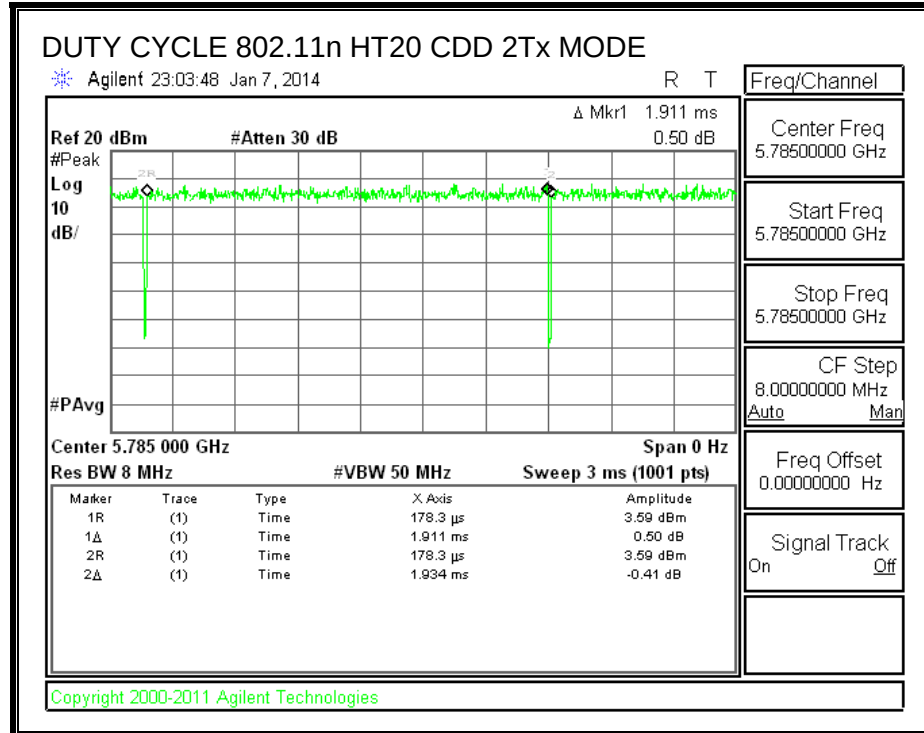
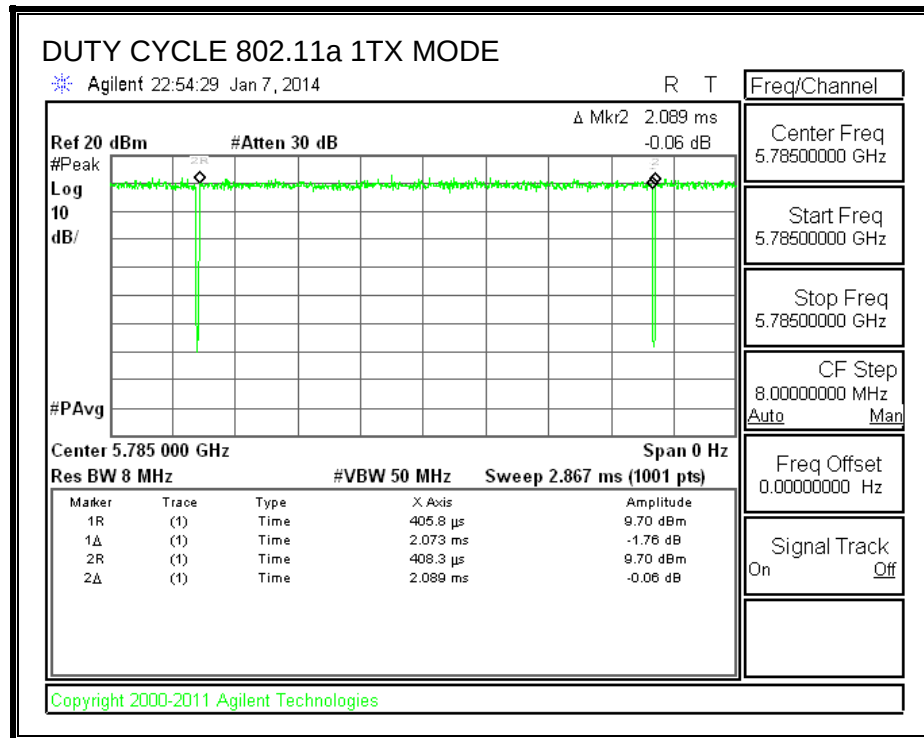
7.3. DUTY CYCLE PLOTS

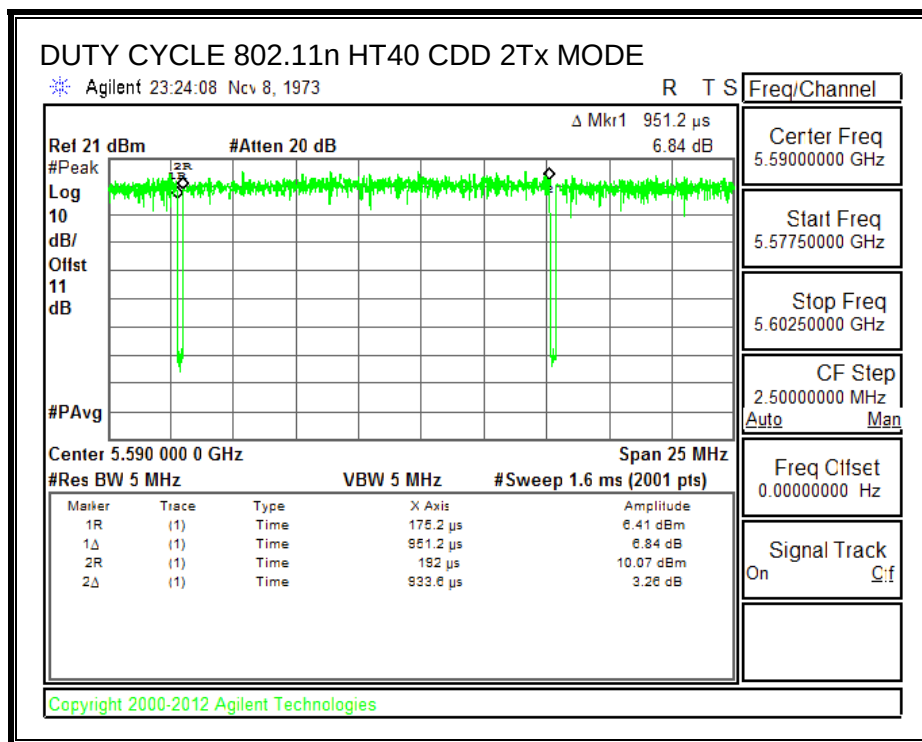
2.4 GHz BAND





5 GHz BANDS





8. RADIATED TEST RESULTS

8.1. TRANSMITTER ABOVE 1 GHz

8.1.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-210 Clause 2.6 (Transmitter)

IC RSS-GEN Clause 6 (Receiver)

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
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. The antenna to EUT distance is 3 meters.

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.

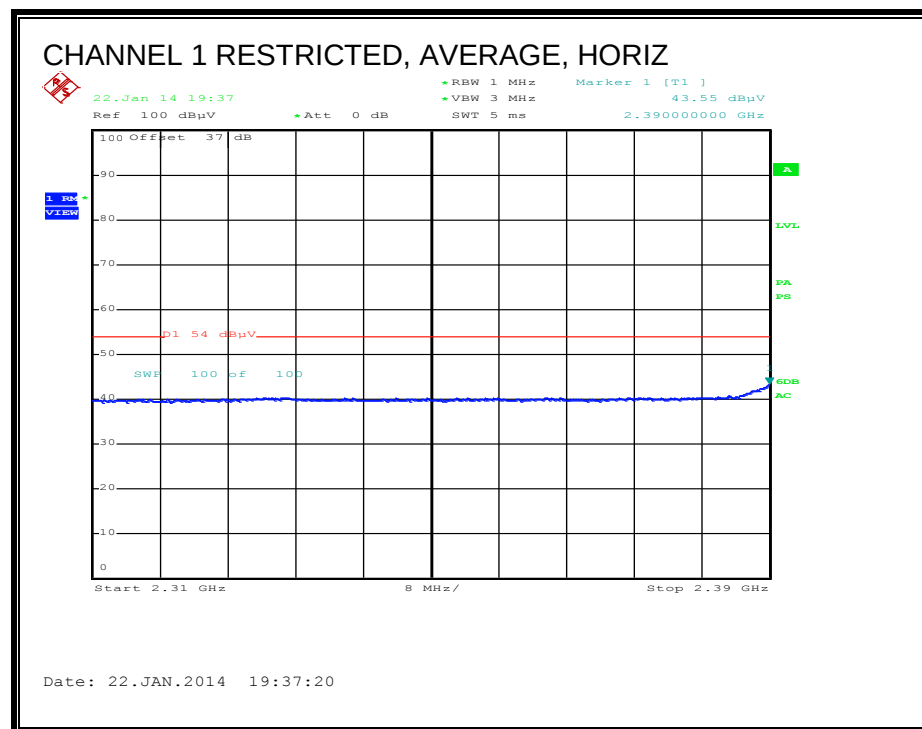
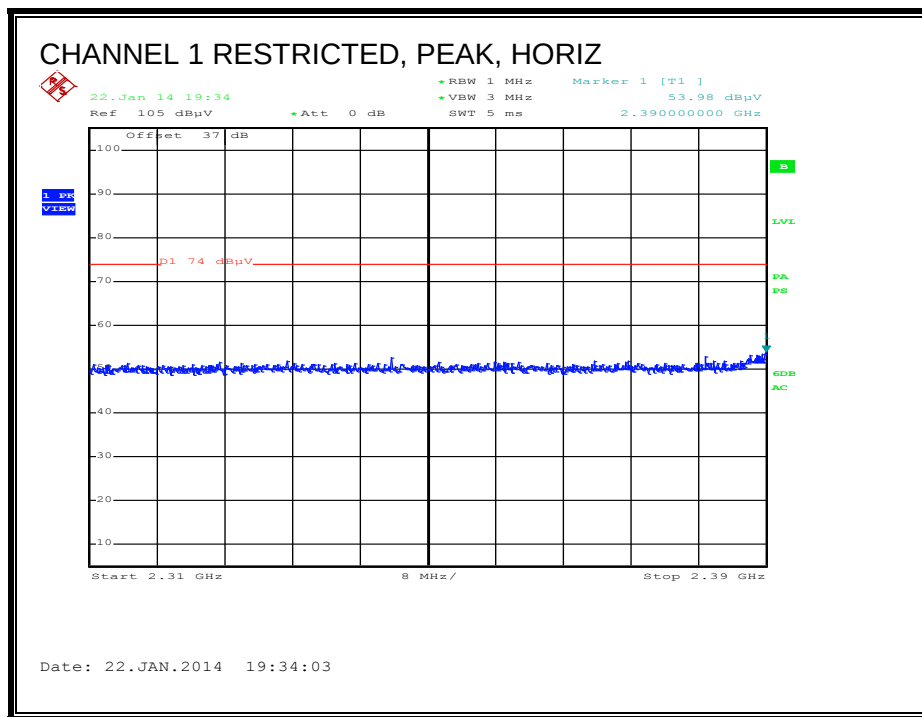
For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 1 MHz for peak measurements and as applicable for average measurements.

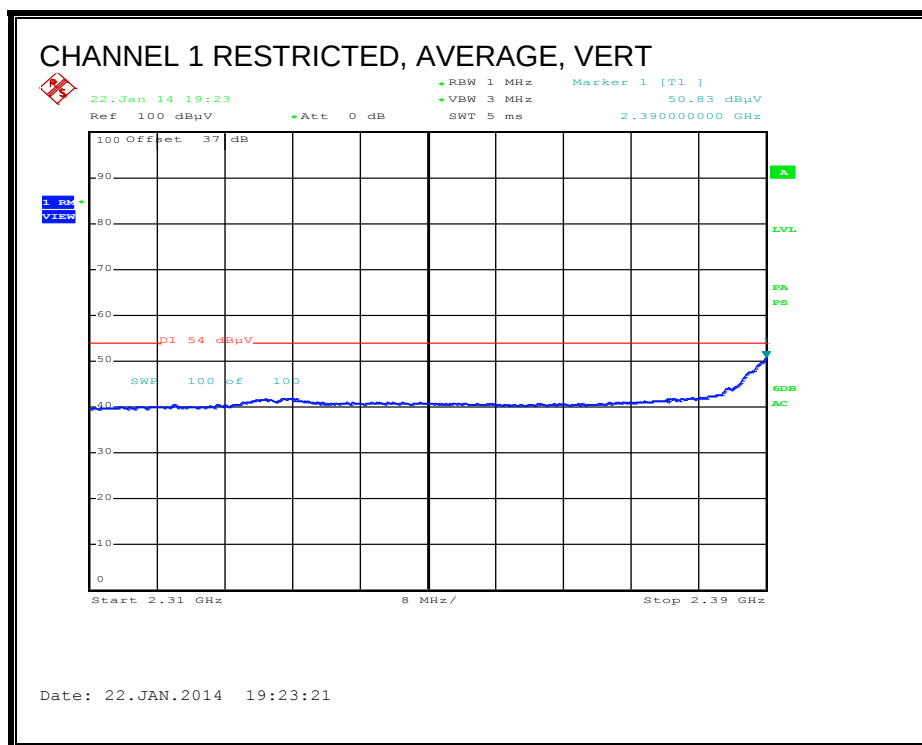
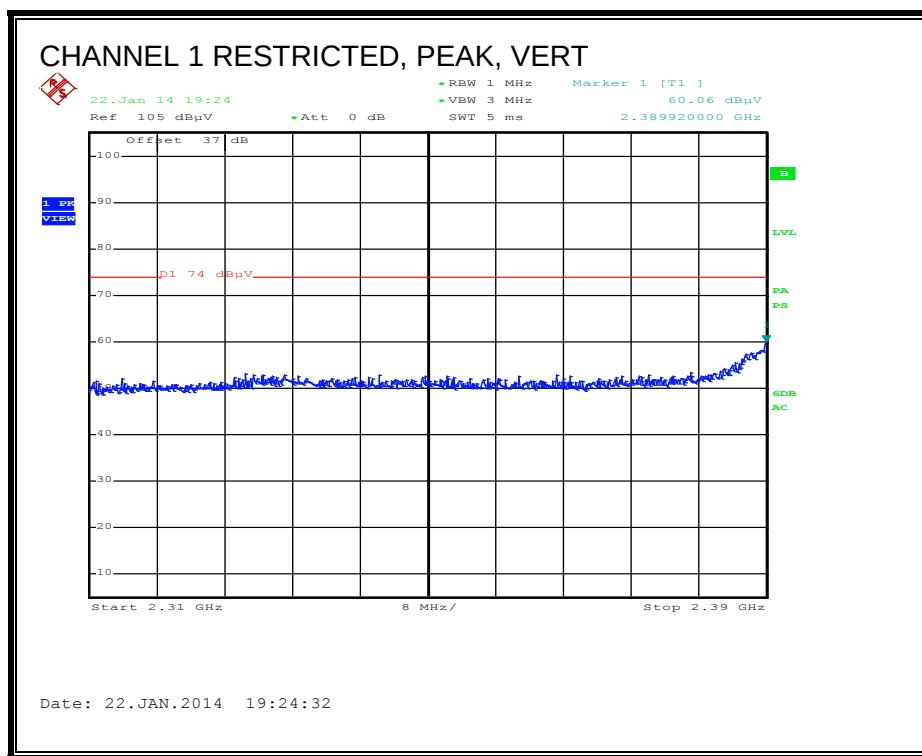
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

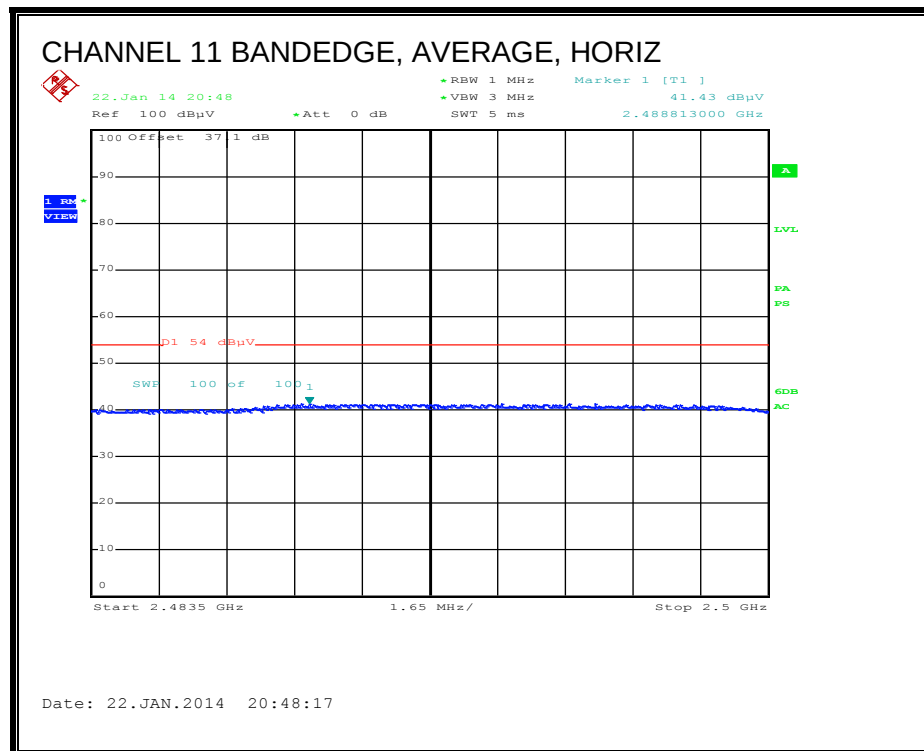
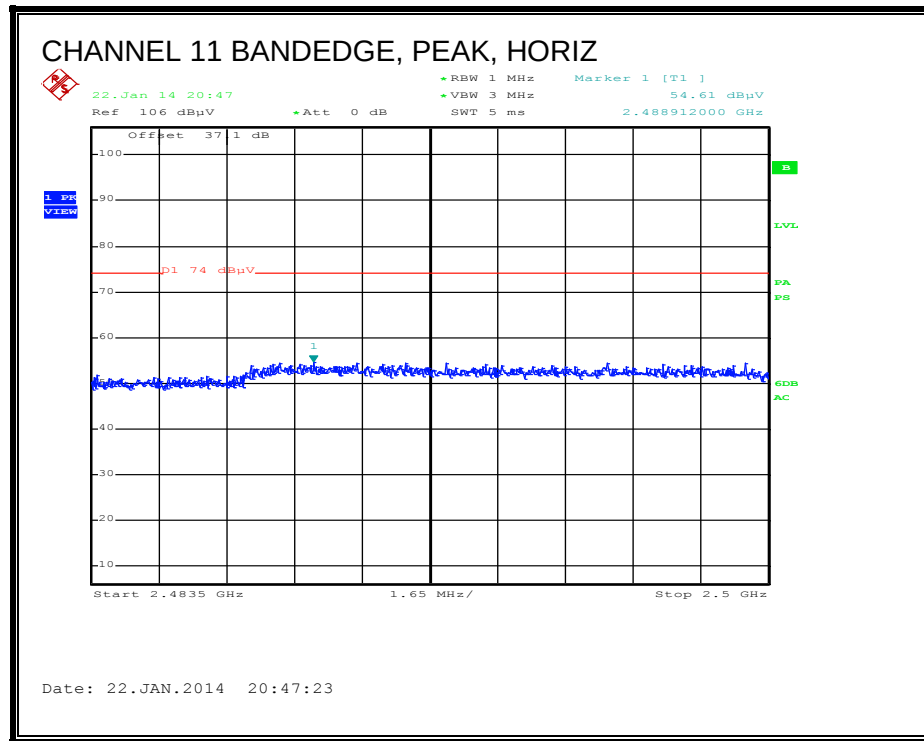
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

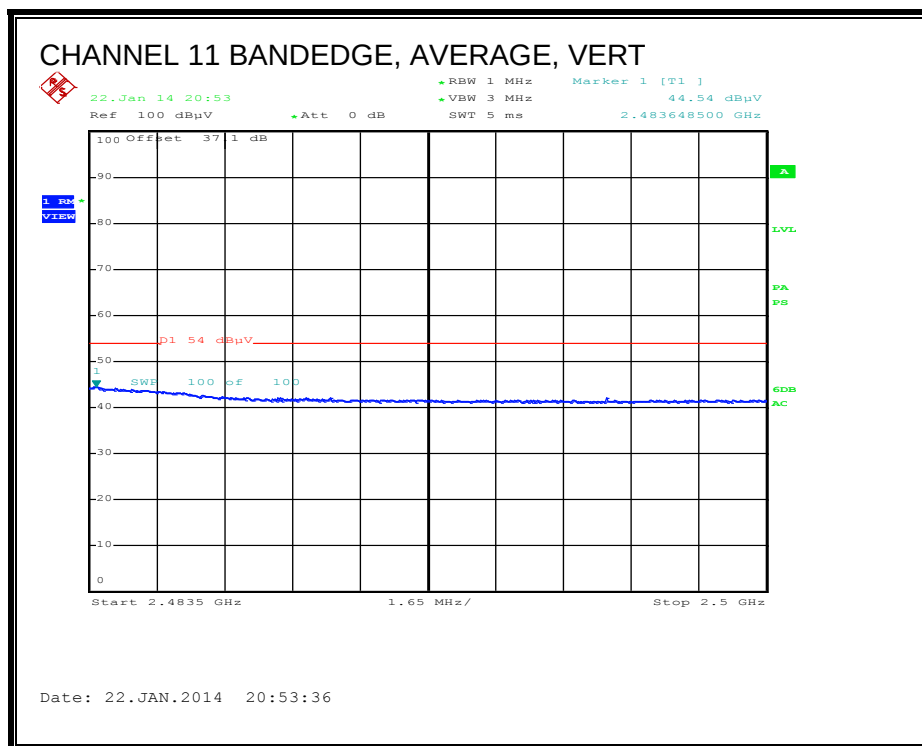
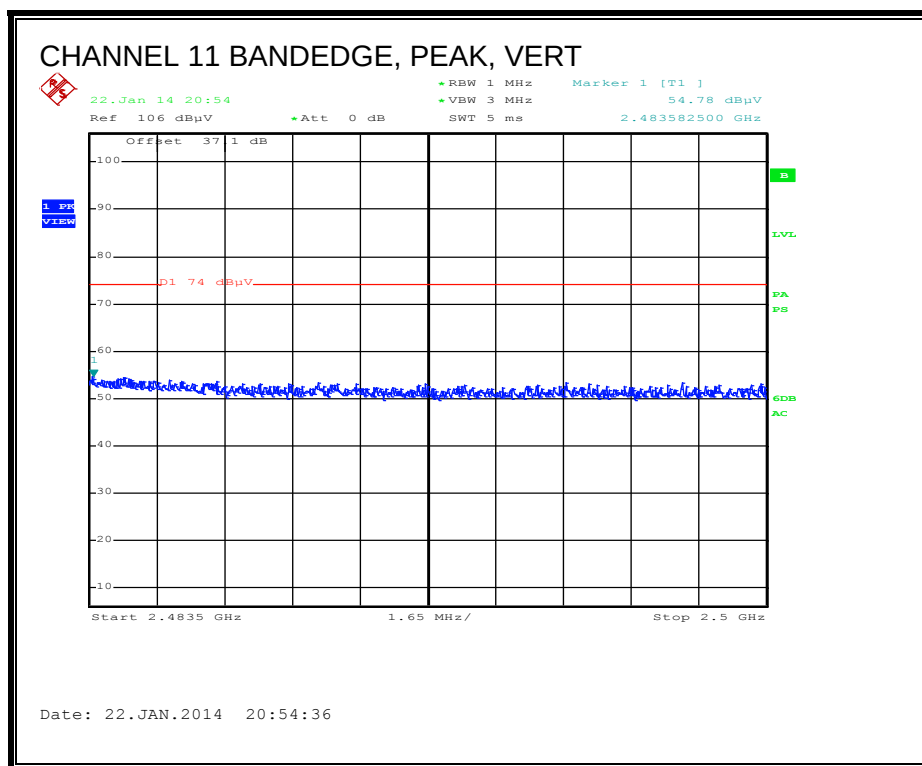
8.1.2. TX ABOVE 1 GHz 802.11b MODE IN THE 2.4 GHz BAND

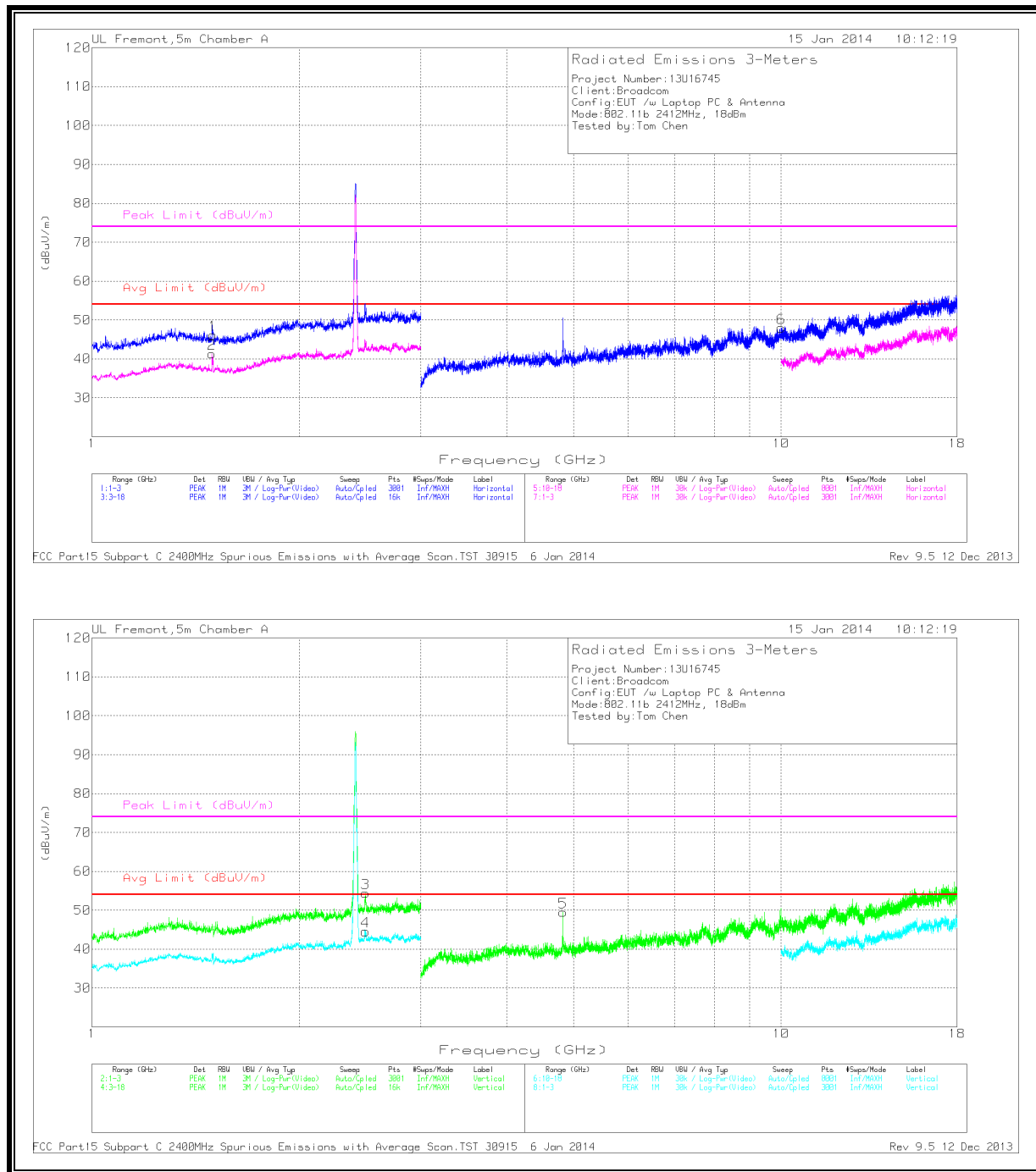
RESTRICTED BANDEDGE (CHANNEL 1)





AUTHORIZED BANDEDGE (CHANNEL 11)



HARMONICS AND SPURIOUS EMISSIONS**LOW CHANNEL-2412 MHZ-SISO**

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.497	44.35	PK	28.9	-27.1	46.15	-	-	74	-27.85	0-360	101	H
3	* 2.494	45.35	PK	32.6	-23.5	54.45	-	-	74	-19.55	0-360	201	V
5	* 4.824	44.99	PK	33.9	-29.4	49.49	54	-4.51	74	-24.51	0-360	101	V
2	* 1.493	39.15	Avg	29	-26.8	41.35	54	-12.65	-	-	0-360	101	H
4	* 2.494	35.46	Avg	32.6	-23.5	44.56	54	-9.44	-	-	0-360	201	V
6	**10.001	34.08	PK	37.2	-23.3	47.98	-	-	-	-	0-360	101	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

** - indicates frequency in non-restricted band. Compliance is shown in conducted Out of Band Emissions testing.

PK - Peak detector

Avg - Video bandwidth < Resolution bandwidth

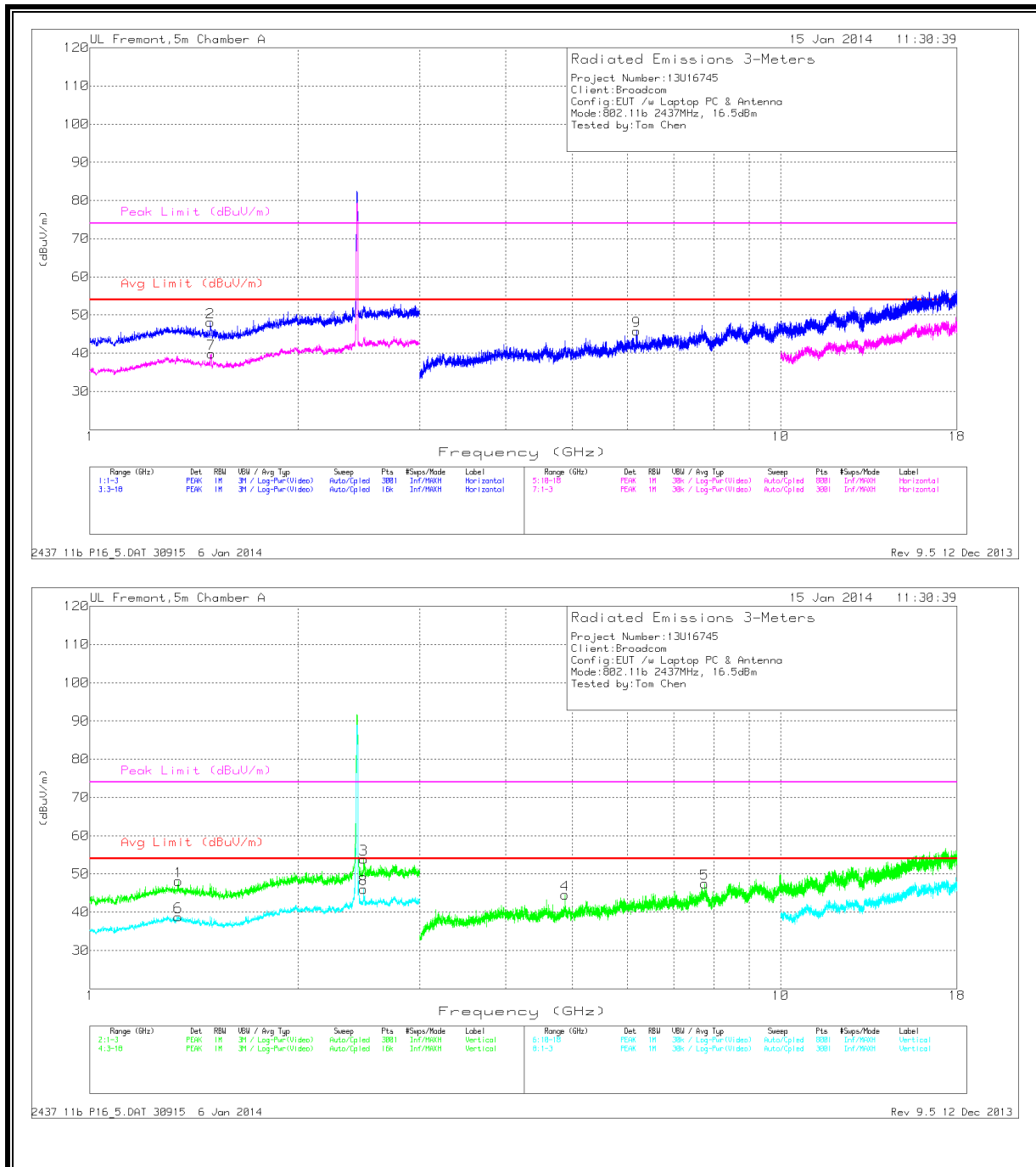
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl /Fitr/Pad (dB)	Correctd Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.824	45.01	MAv 1	33.9	-29.5	49.41	54	-4.59	-	-	283	317	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

MAv1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL-2437MHZ-SISO



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.343	44.32	PK	30.1	-26.3	48.12	-	-	74	-25.88	0-360	200	V
6	* 1.343	34.99	Avg	30.1	-26.3	38.79	54	-15.21	-	-	0-360	200	V
2	* 1.494	45.97	PK	29	-26.9	48.07	-	-	74	-25.93	0-360	100	H
7	* 1.499	38.15	Avg	28.9	-27.2	39.85	54	-14.15	-	-	0-360	100	H
8	* 2.489	36.9	Avg	32.5	-23.4	46	54	-8	-	-	0-360	200	V
3	* 2.49	44.64	PK	32.6	-23.4	53.84	-	-	74	-20.16	0-360	200	V
4	* 4.873	38.84	PK	34	-28.3	44.54	54	-9.46	74	-29.46	0-360	100	V
9	**6.185	38.4	PK	35.4	-28	45.8	-	-	-	-	0-360	200	H
5	**7.76	37.46	PK	35.5	-25.5	47.46	-	-	-	-	0-360	201	V

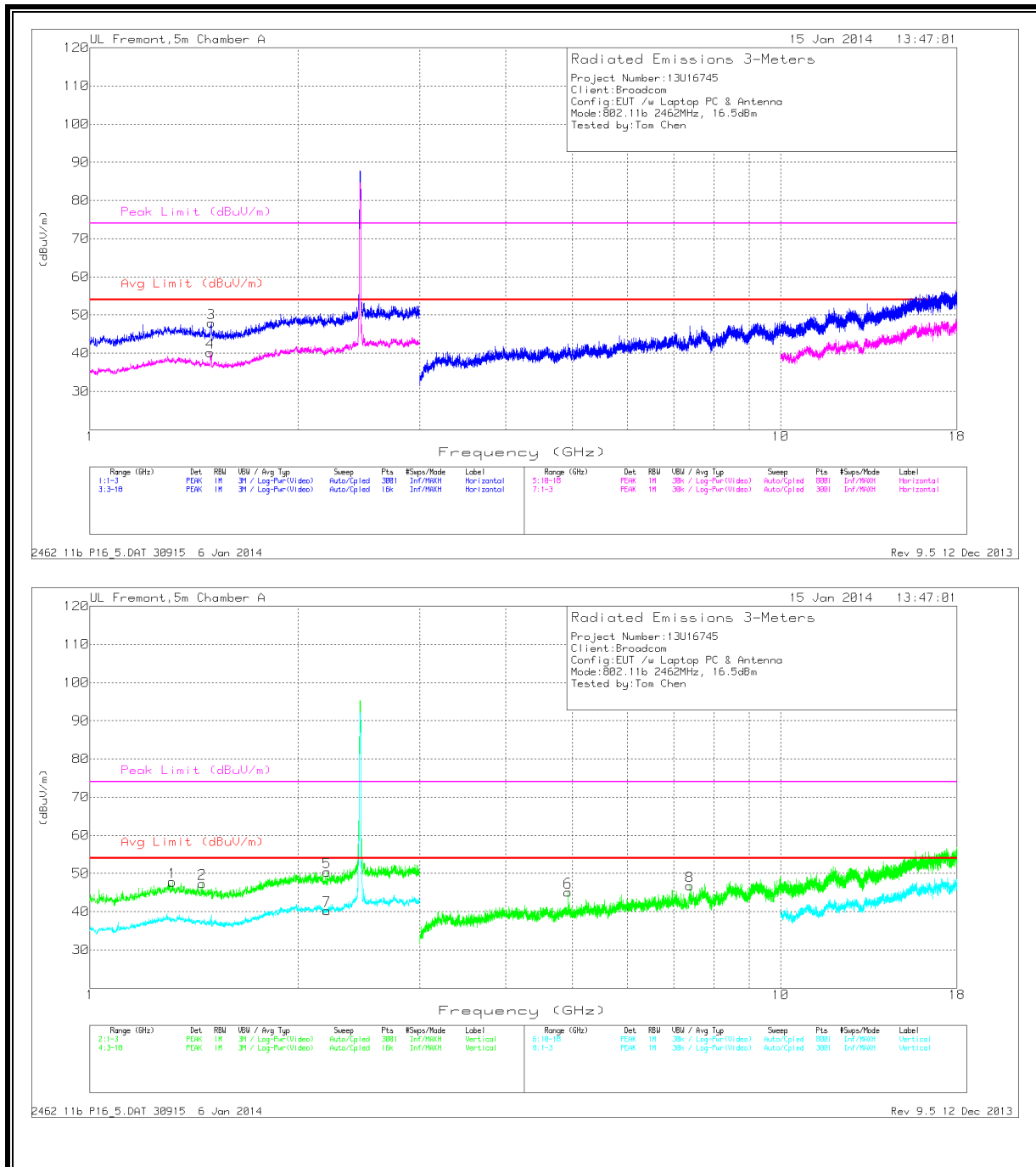
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

** - indicates frequency in non-restricted band. Compliance is shown in conducted Out of Band Emissions testing.

PK - Peak detector

Avg - Video bandwidth < Resolution bandwidth

HIGH CHANNEL-2462 MHZ-SISO



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.316	44.29	PK	30.2	-26.7	47.79	54	-6.21	74	-26.21	0-360	101	V
2	* 1.454	44.26	PK	29.3	-26.2	47.36	-	-	74	-26.64	0-360	201	V
4	* 1.493	37.92	Avg	29	-26.8	40.12	54	-13.88	-	-	0-360	100	H
3	* 1.499	46.2	PK	28.9	-27.2	47.9	54	-6.1	74	-26.1	0-360	101	H
5	* 2.204	43.68	PK	31.5	-24.8	50.38	-	-	74	-23.62	0-360	101	V
7	* 2.204	33.57	Avg	31.5	-24.8	40.27	54	-13.73	-	-	0-360	201	V
6	* 4.924	40.1	PK	34	-29	45.1	54	-8.9	74	-28.9	0-360	101	V
8	* 7.386	35.66	PK	35.4	-24.3	46.76	54	-7.24	74	-27.24	0-360	200	V

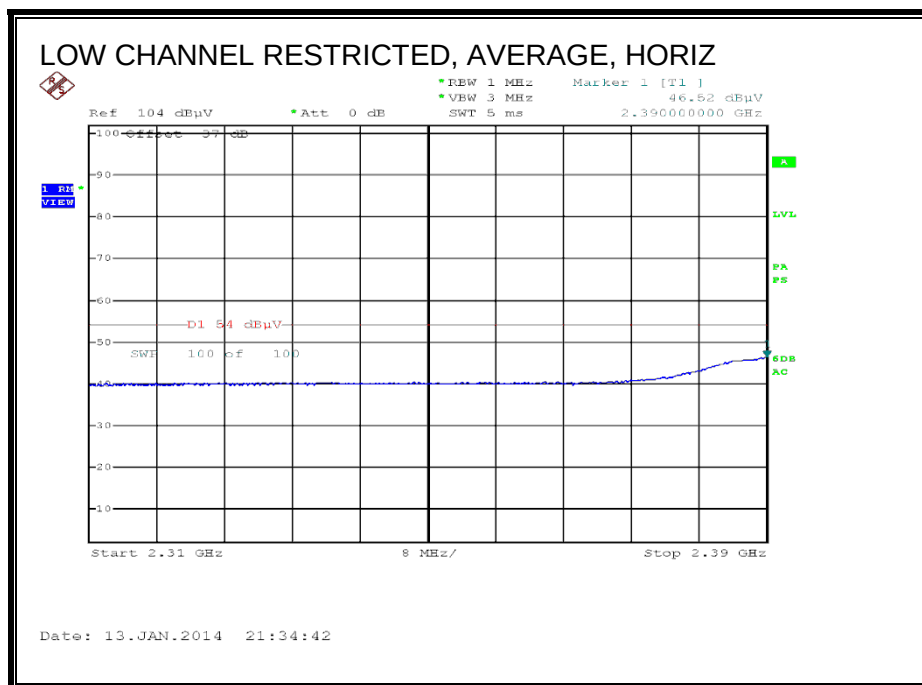
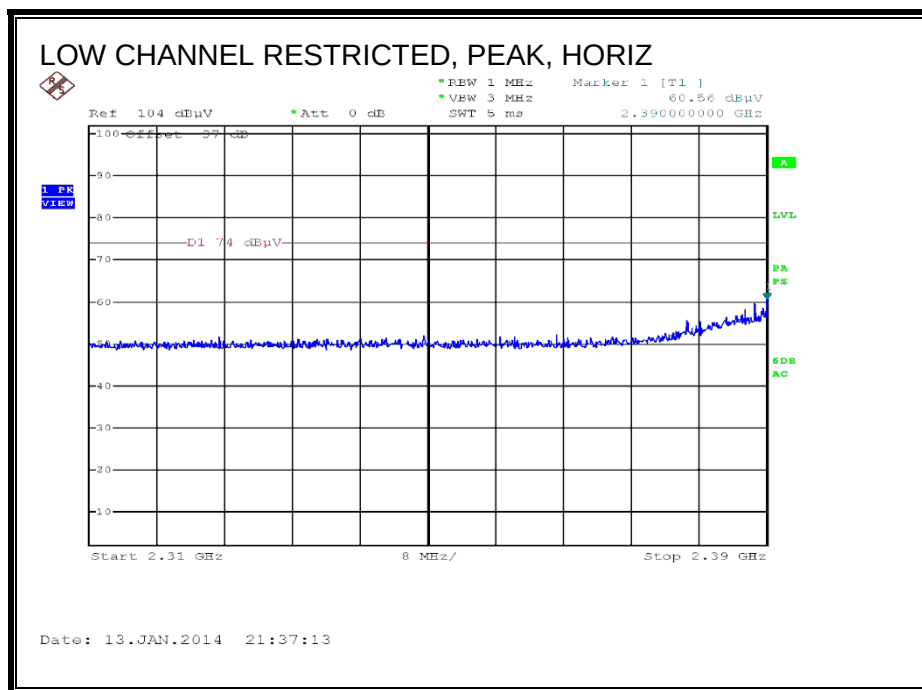
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

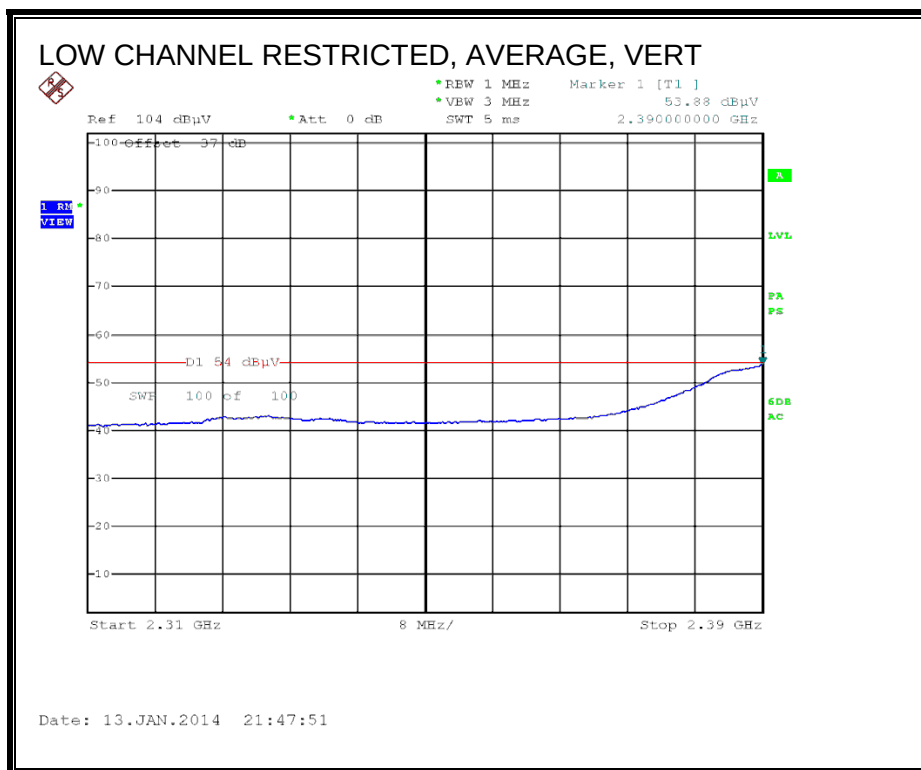
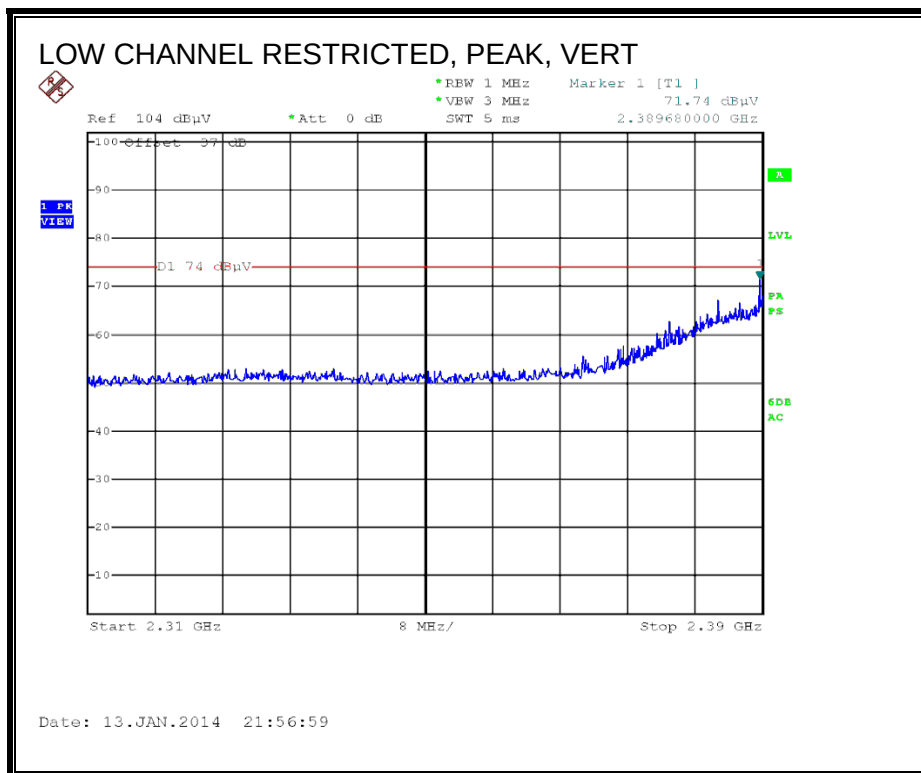
PK - Peak detector

Avg - Video bandwidth < Resolution bandwidth

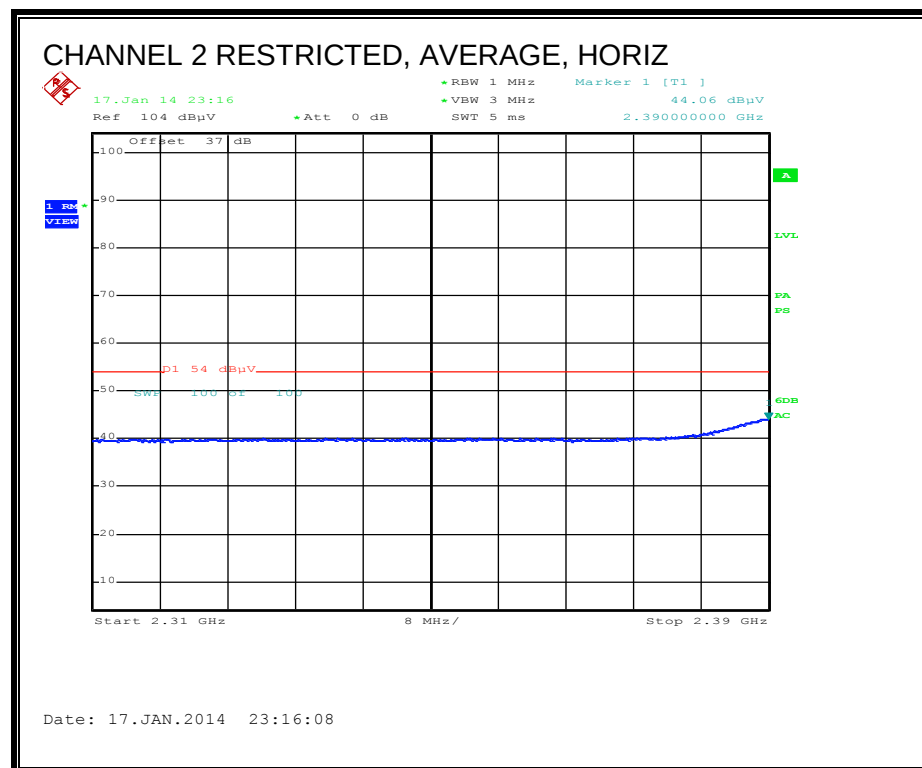
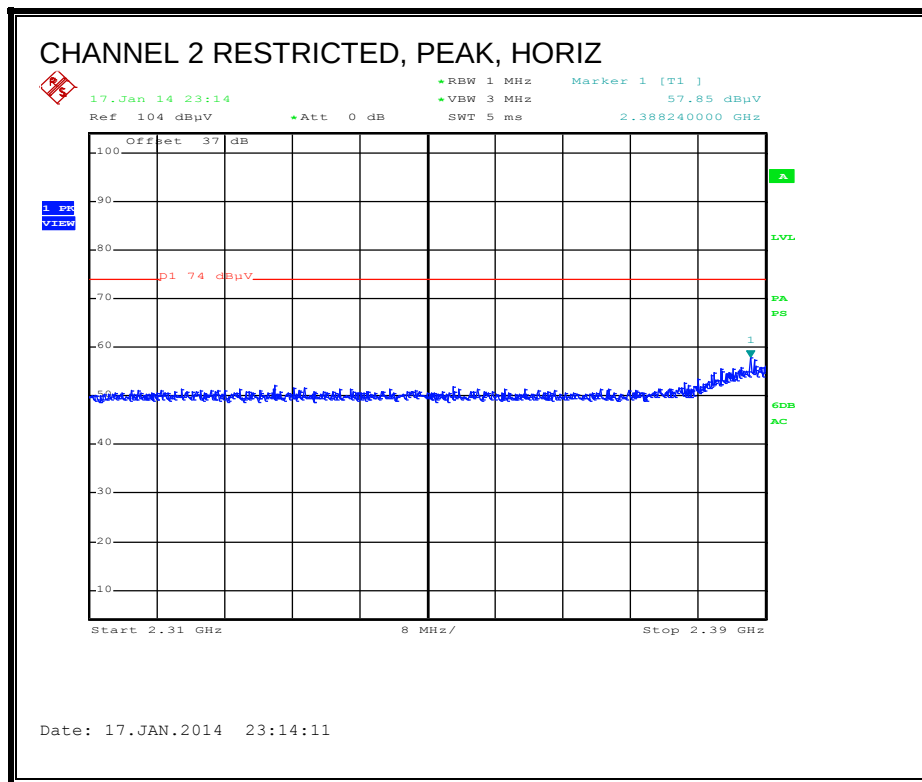
8.1.3. TX ABOVE 1 GHz 802.11g MODE IN THE 2.4 GHz BAND

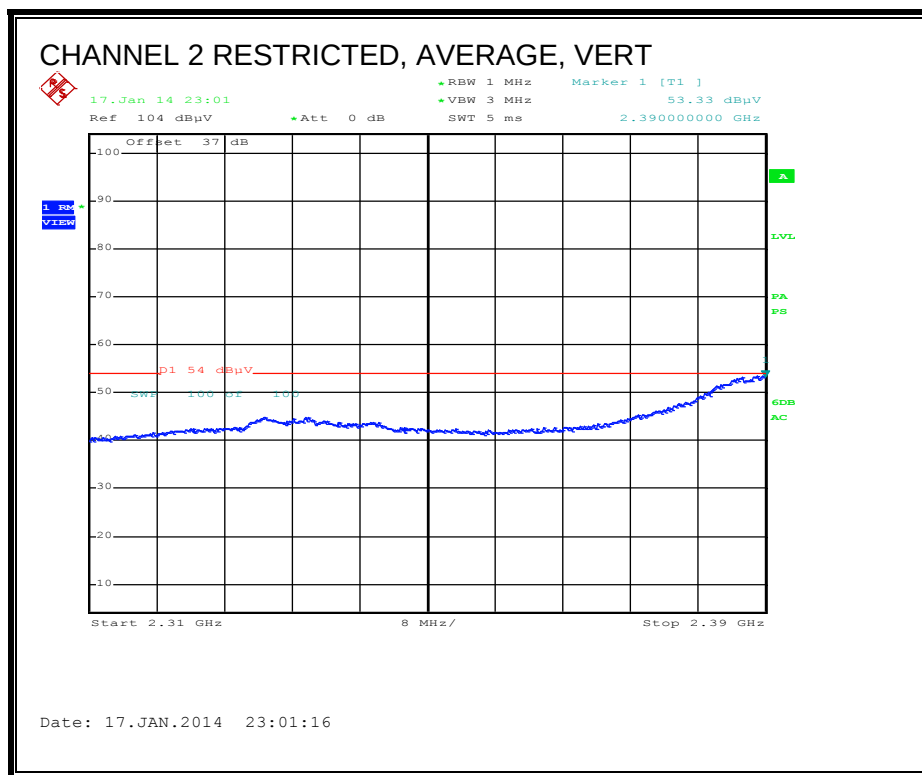
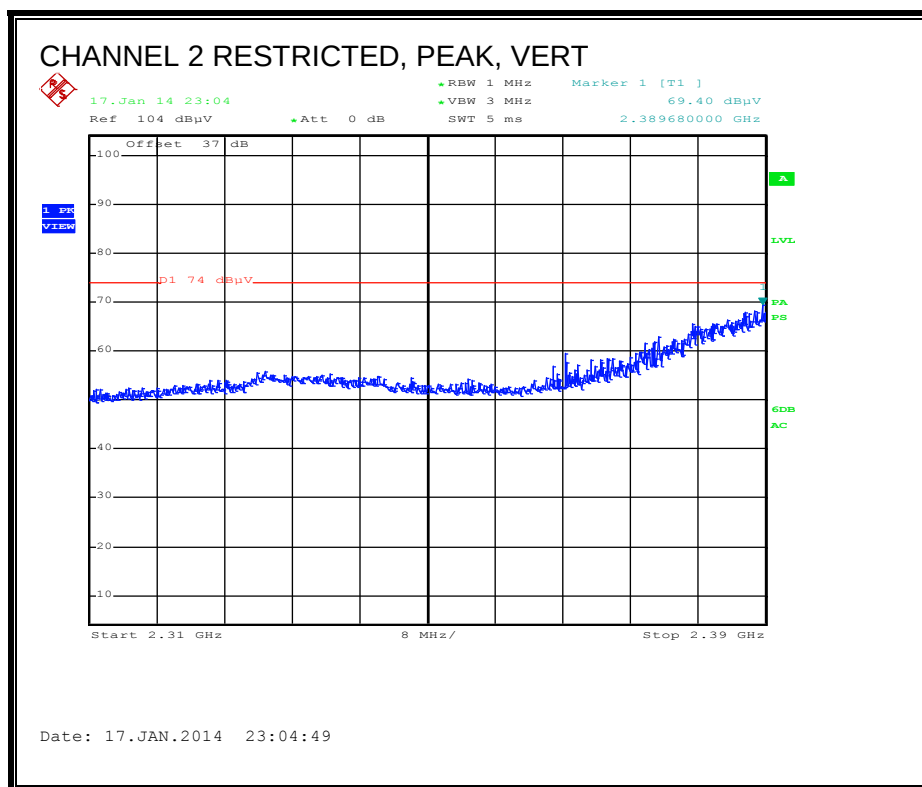
RESTRICTED BANDEDGE (LOW CHANNEL)



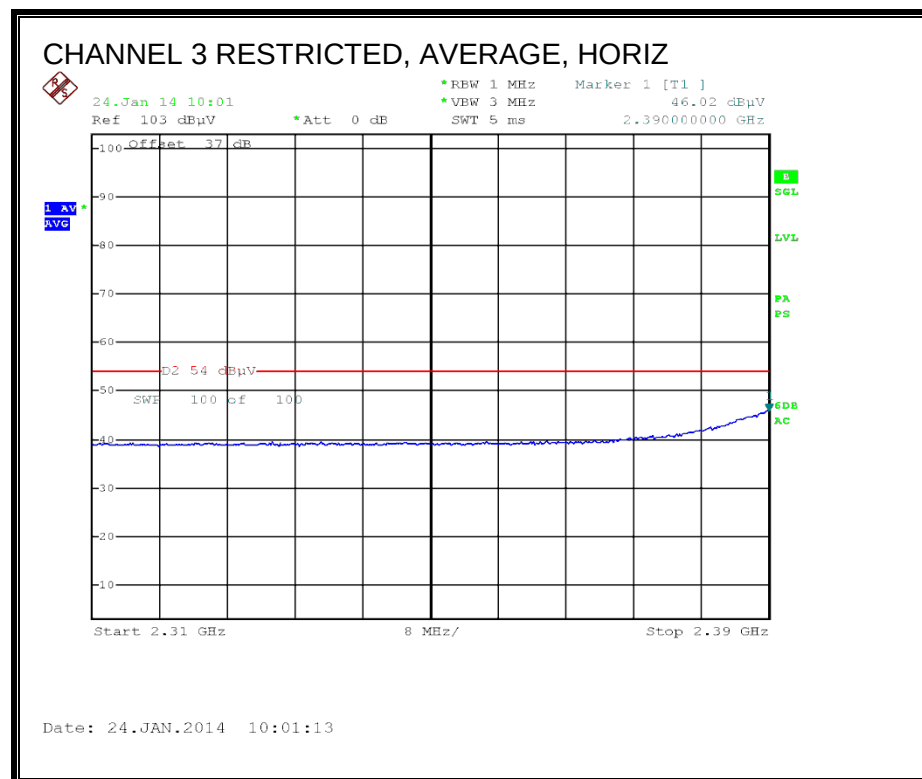
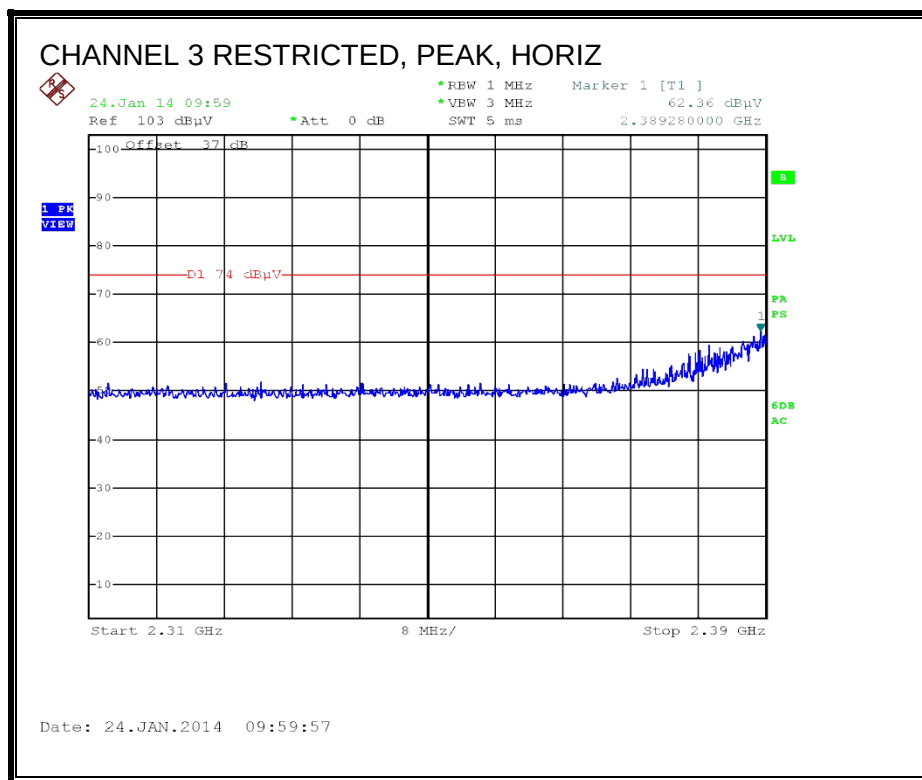


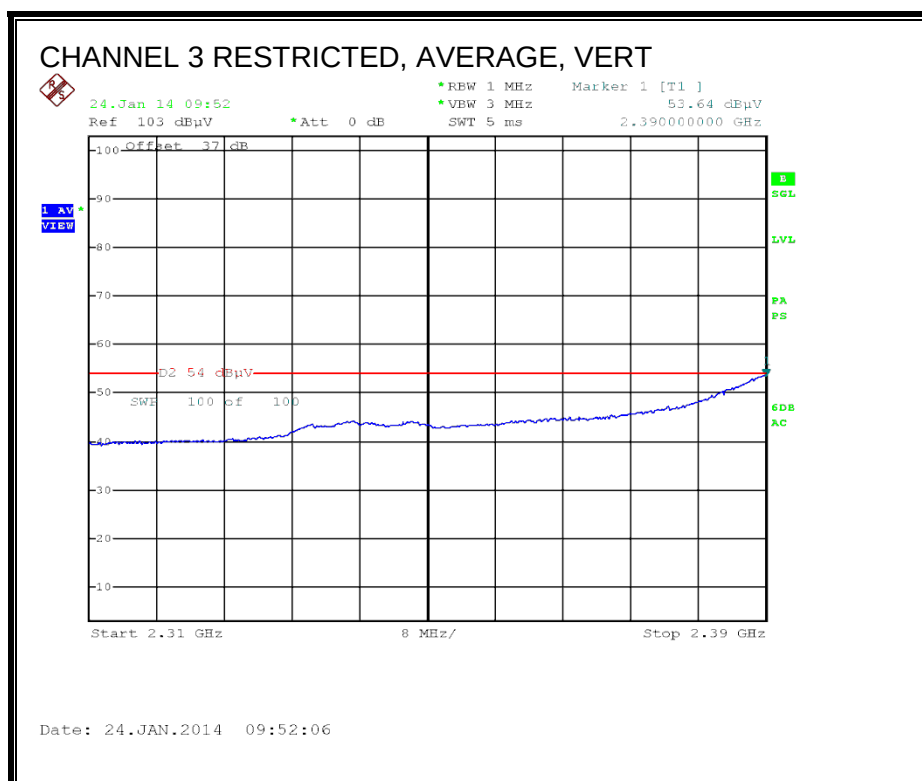
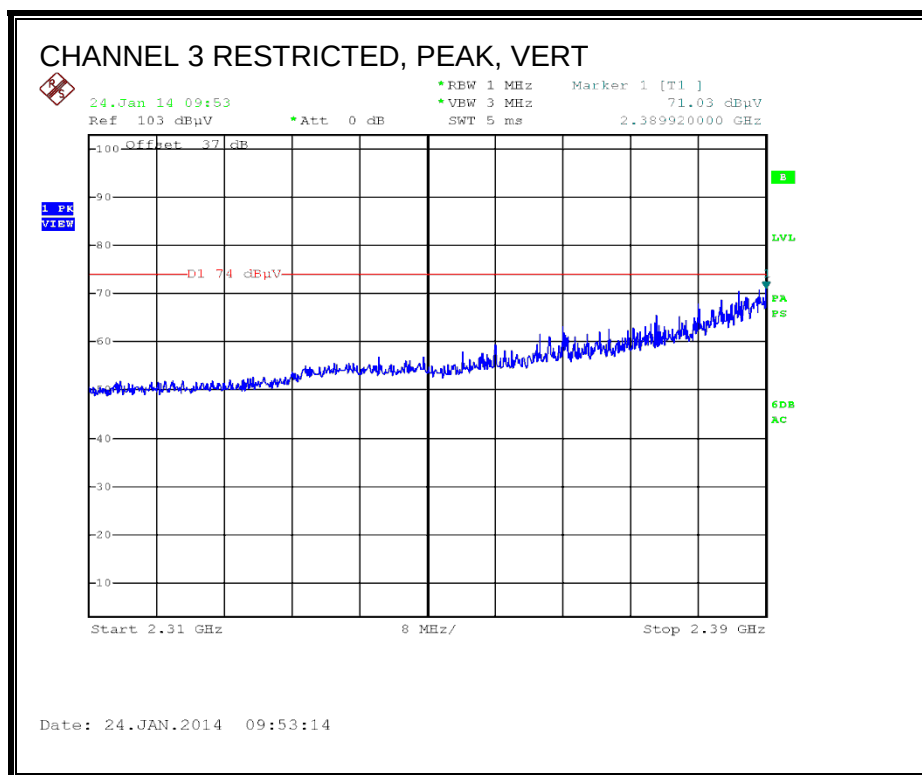
RESTRICTED BANDEDGE (CHANNEL 2)

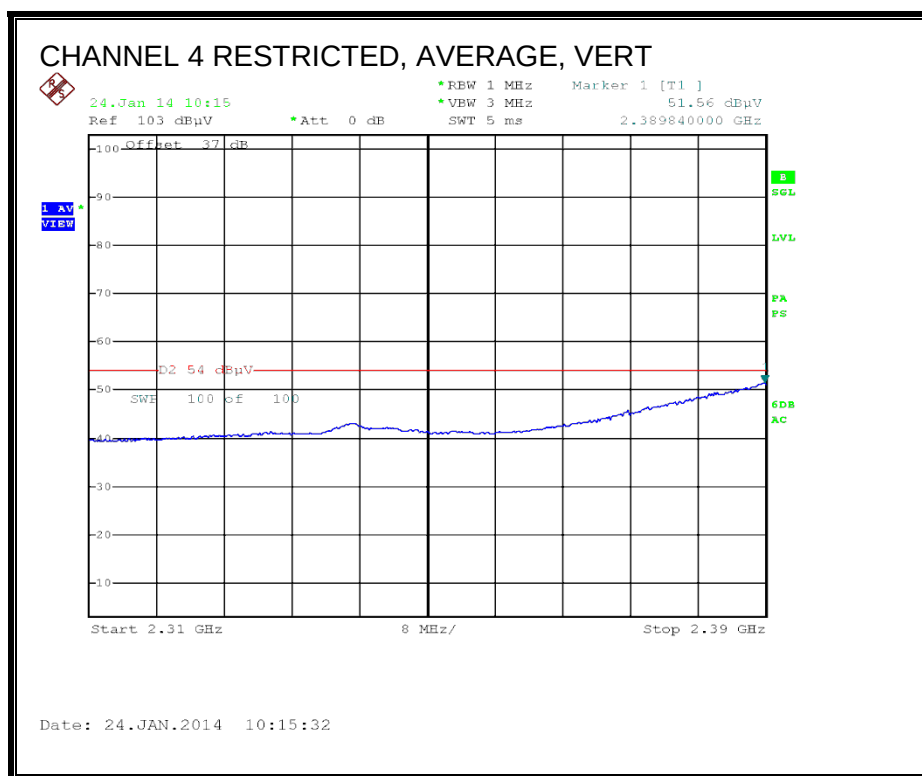
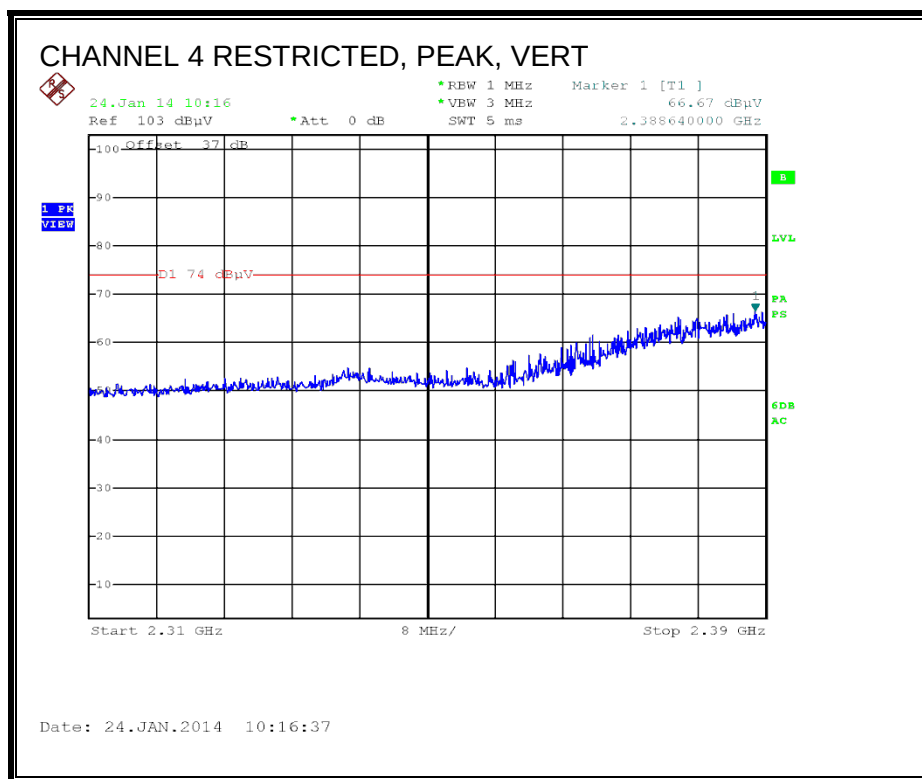




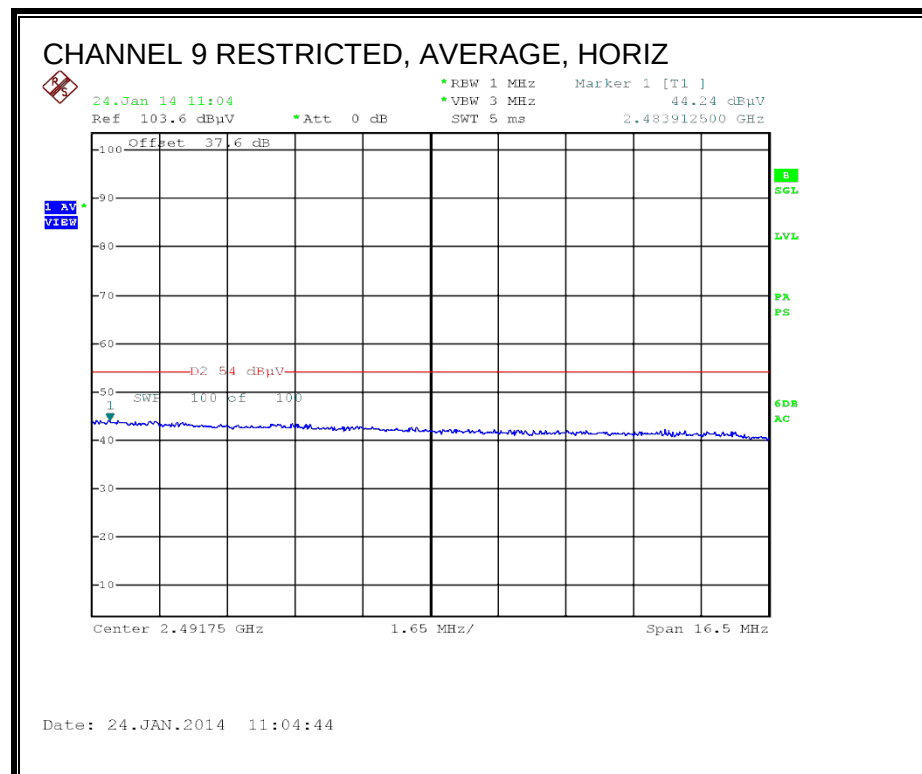
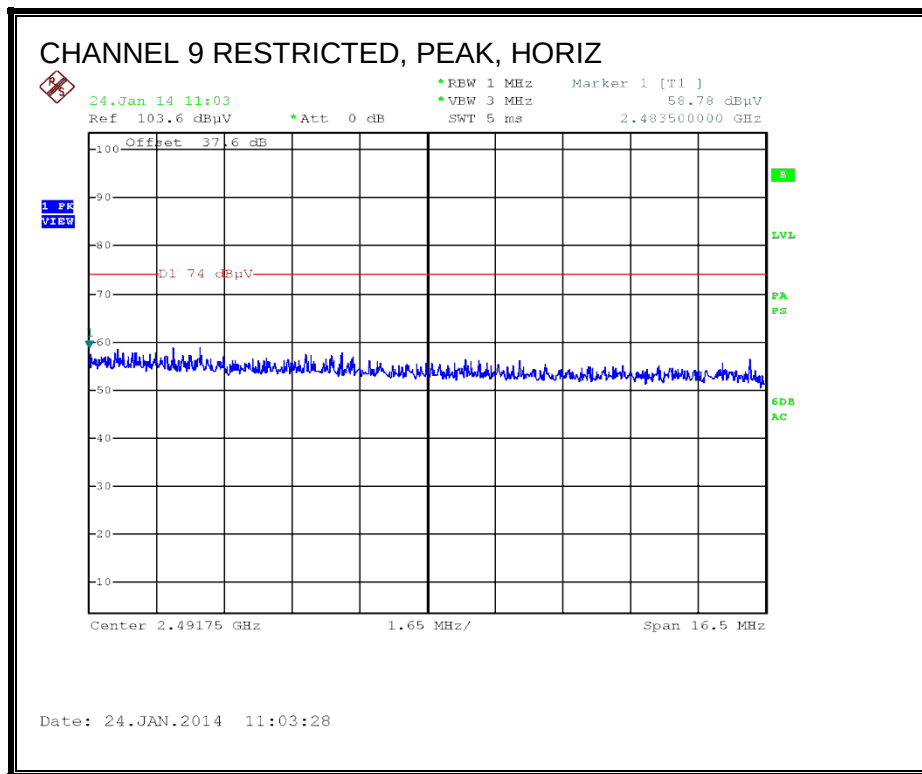
RESTRICTED BANDEDGE (CHANNEL 3)

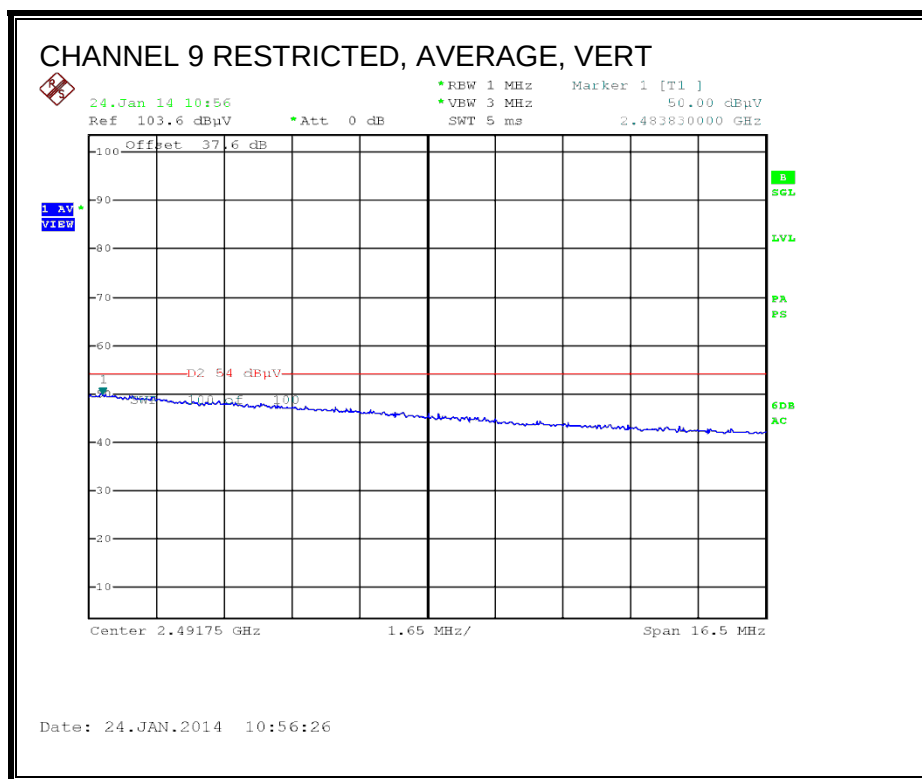
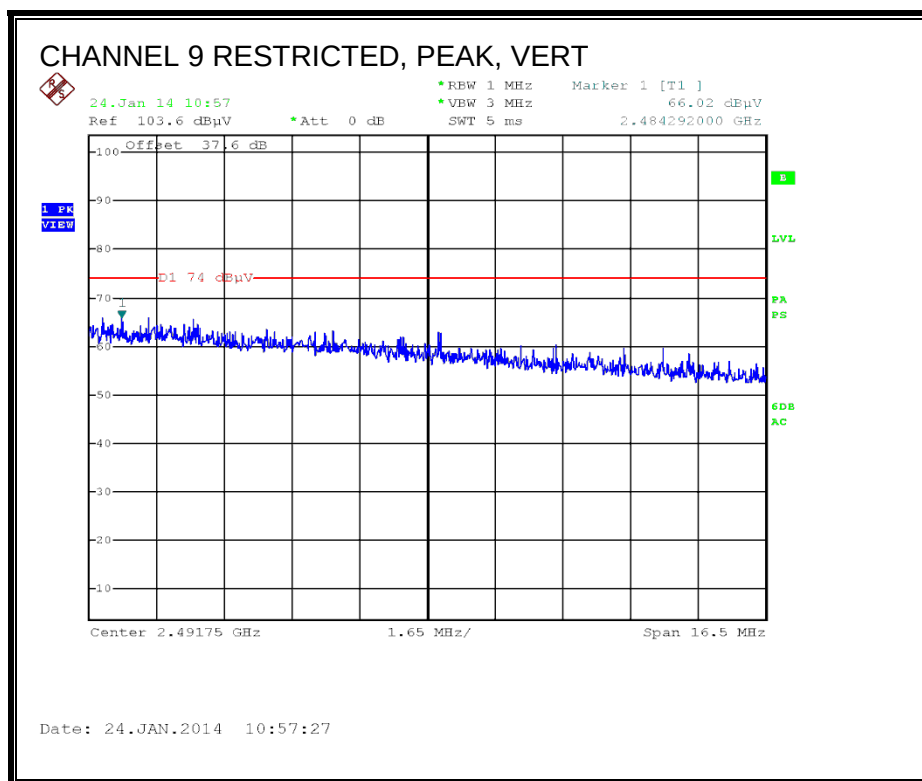




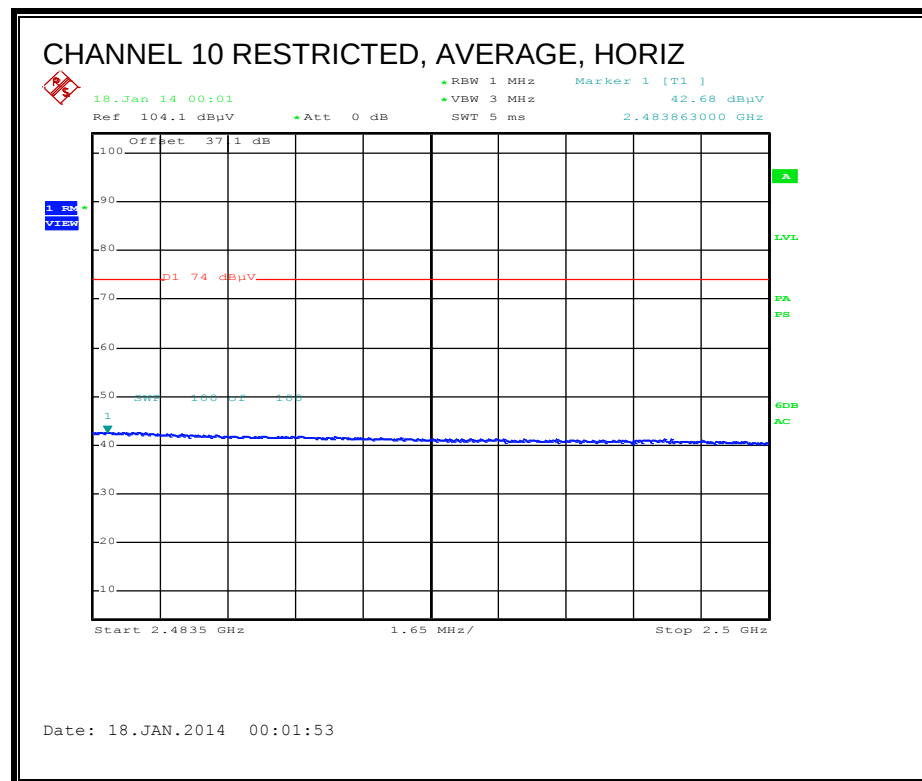
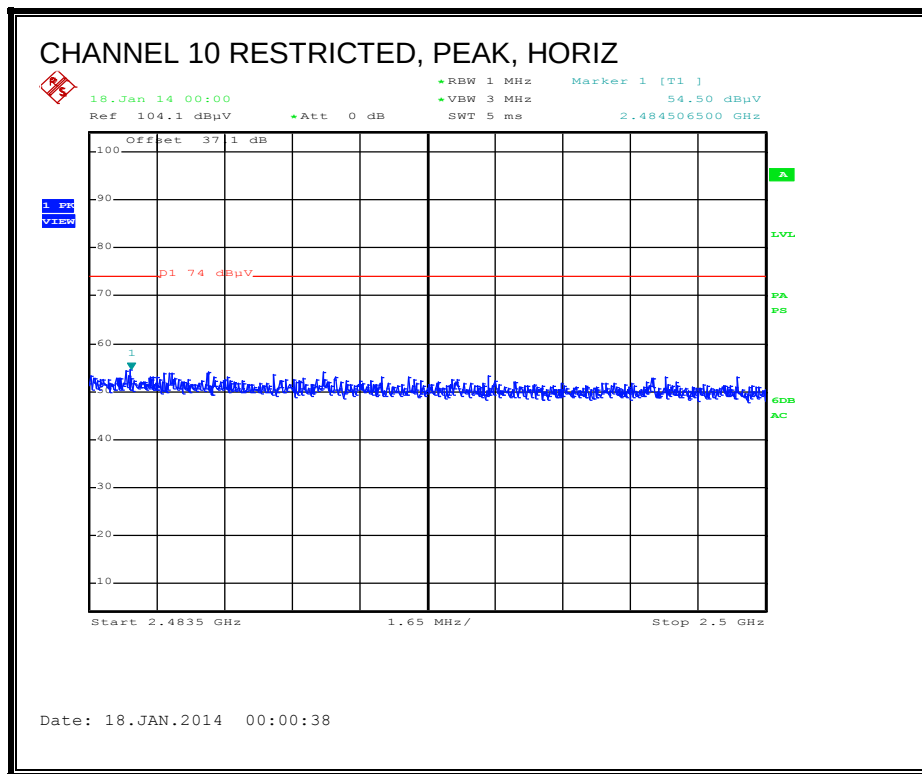


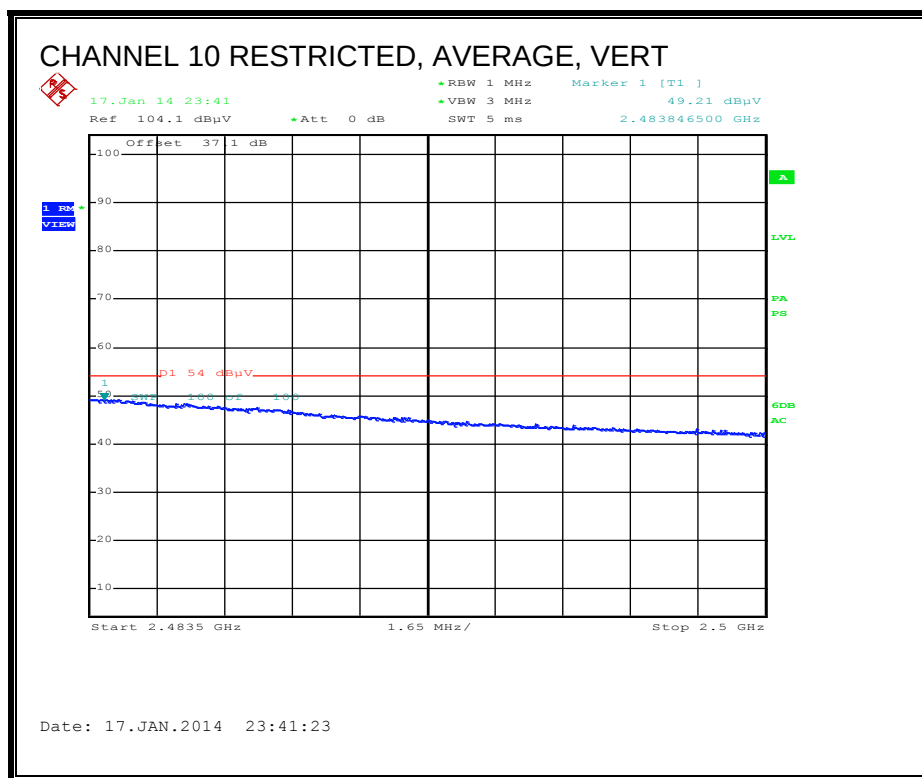
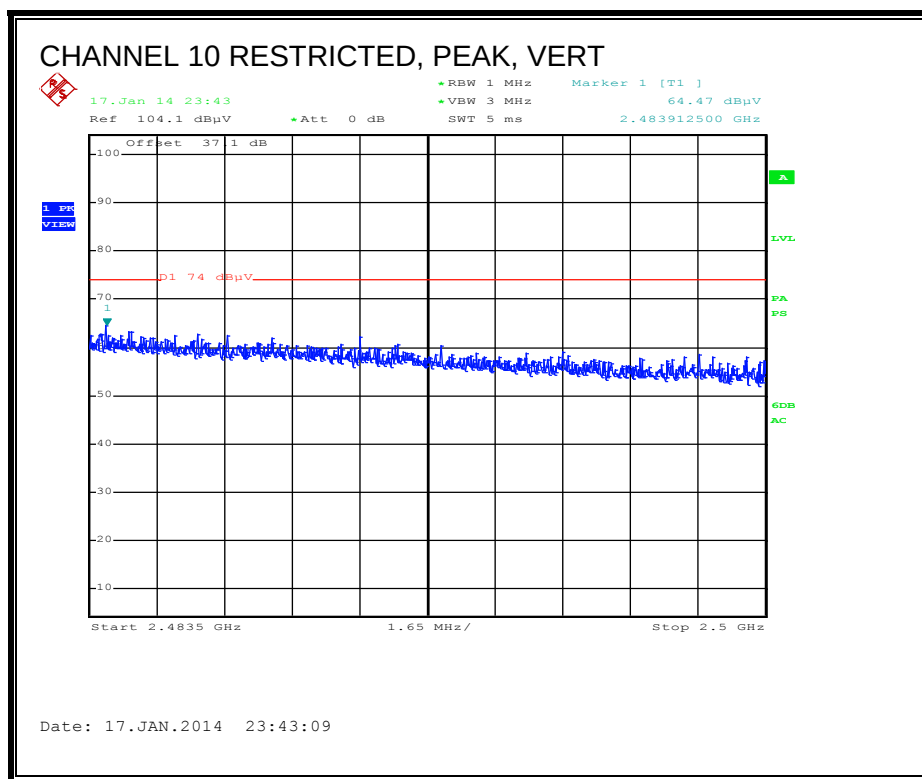
RESTRICTED BANDEDGE (CHANNEL 9)

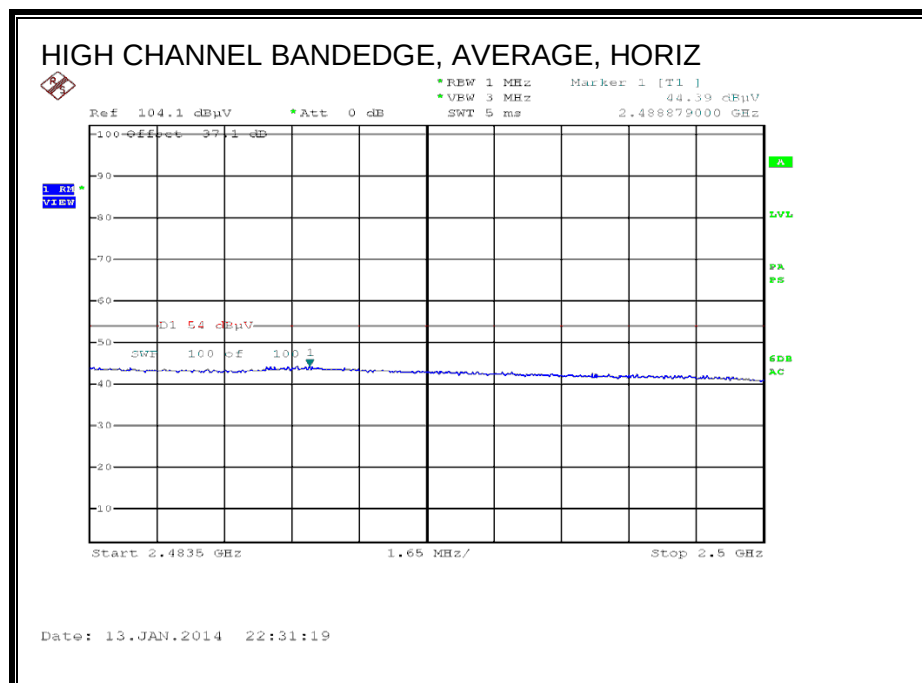
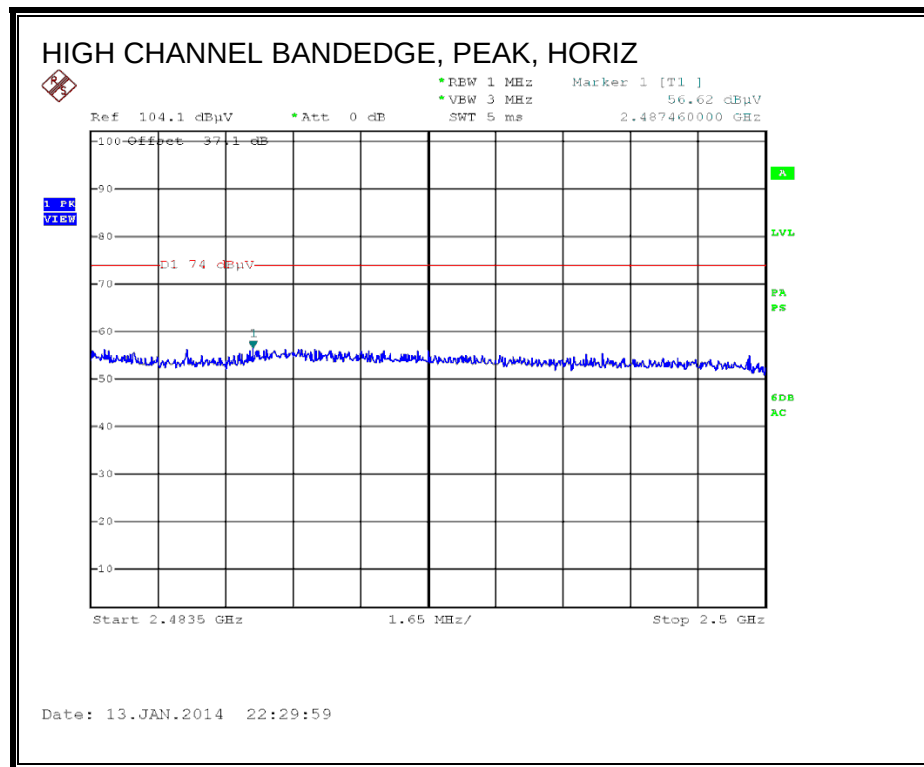


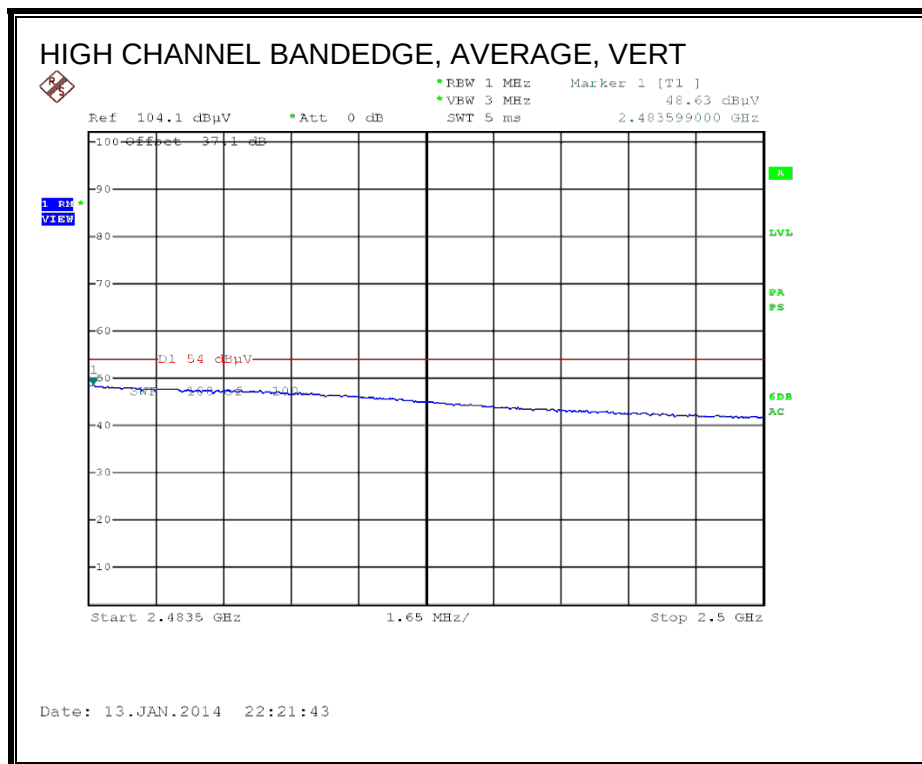
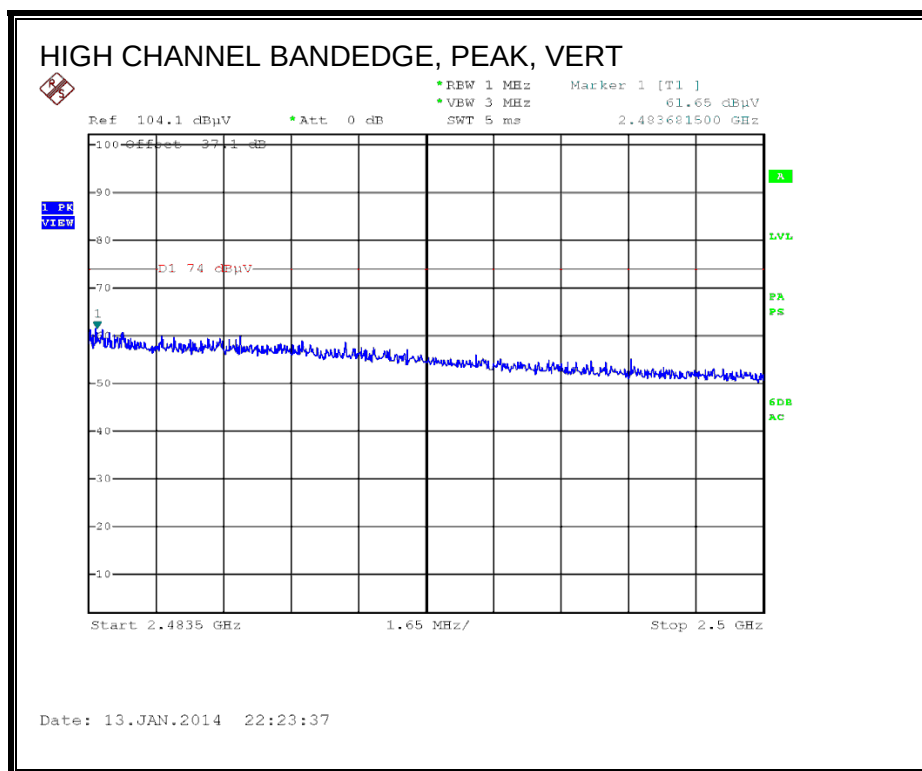


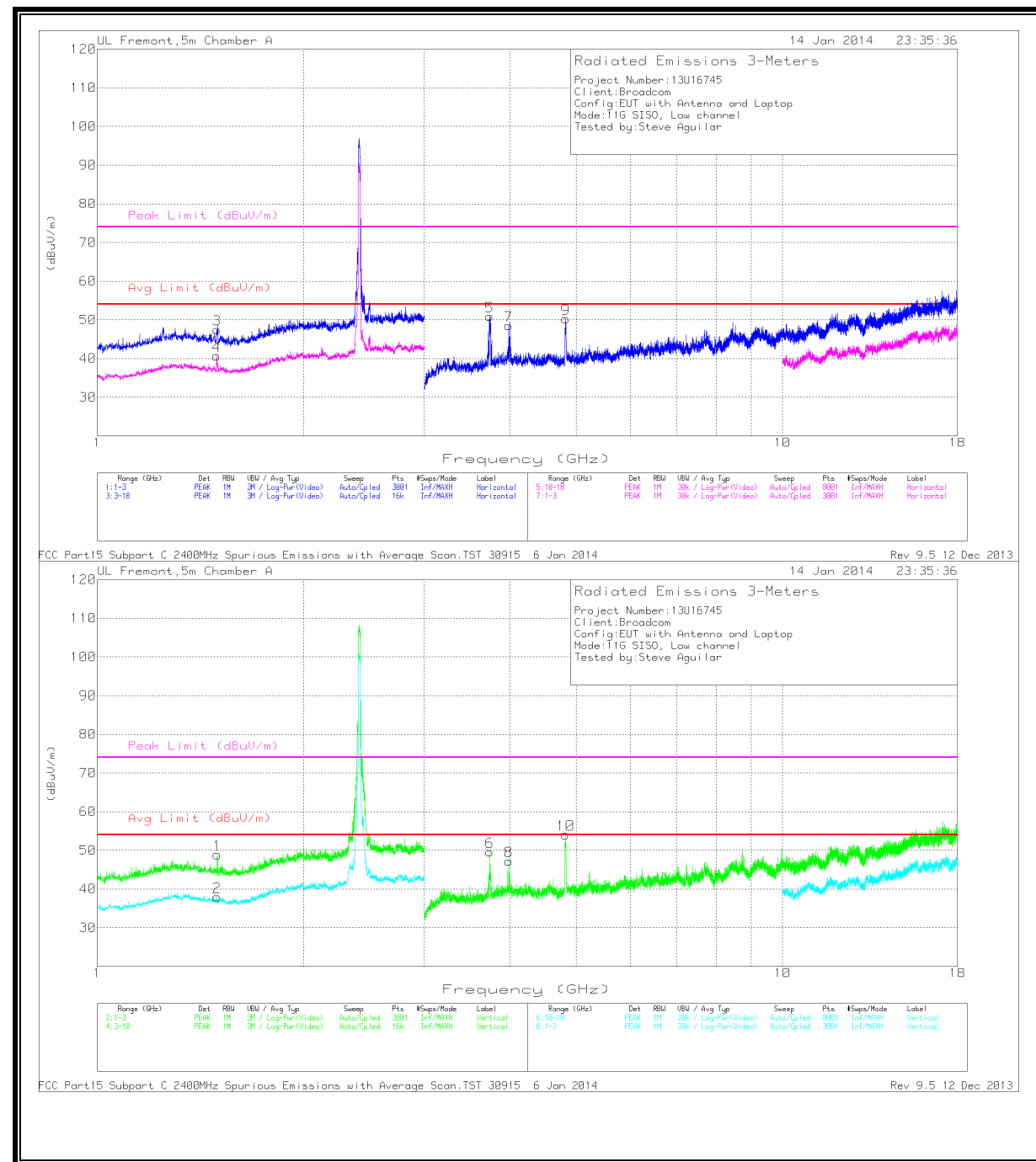
RESTRICTED BANDEDGE (CHANNEL 10)





AUTHORIZED BANDEDGE (HIGH CHANNEL)



HARMONICS AND SPURIOUS EMISSIONS**LOW CHANNEL-2412 MHZ-11G-SISO**

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 1.495	45.67	PK	28.9	-27	47.57	54	-6.43	74	-26.43	0-360	200	H
1	* 1.497	47.13	PK	28.9	-27.1	48.93	54	-5.07	74	-25.07	0-360	200	V
5	* 3.737	48.23	PK	33.4	-30.7	50.93	54	-3.07	74	-23.07	0-360	200	H
7	* 3.983	45.67	PK	33.8	-30.9	48.57	54	-5.43	74	-25.43	0-360	100	H
9	* 4.825	45.77	PK	33.9	-29.4	50.27	54	-3.73	74	-23.73	0-360	100	H
6	* 3.737	46.95	PK	33.4	-30.7	49.65	54	-4.35	74	-24.35	0-360	101	V
8	* 3.985	44.46	PK	33.8	-31	47.26	54	-6.74	74	-26.74	0-360	200	V
10	* 4.823	49.69	PK	33.9	-29.5	54.09	54	0.09	74	-19.91	0-360	200	V
4	* 1.493	38.5	Avg	29	-26.8	40.7	54	-13.3	-	-	0-360	101	H
2	* 1.495	36	Avg	28.9	-26.9	38	54	-16	-	-	0-360	200	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

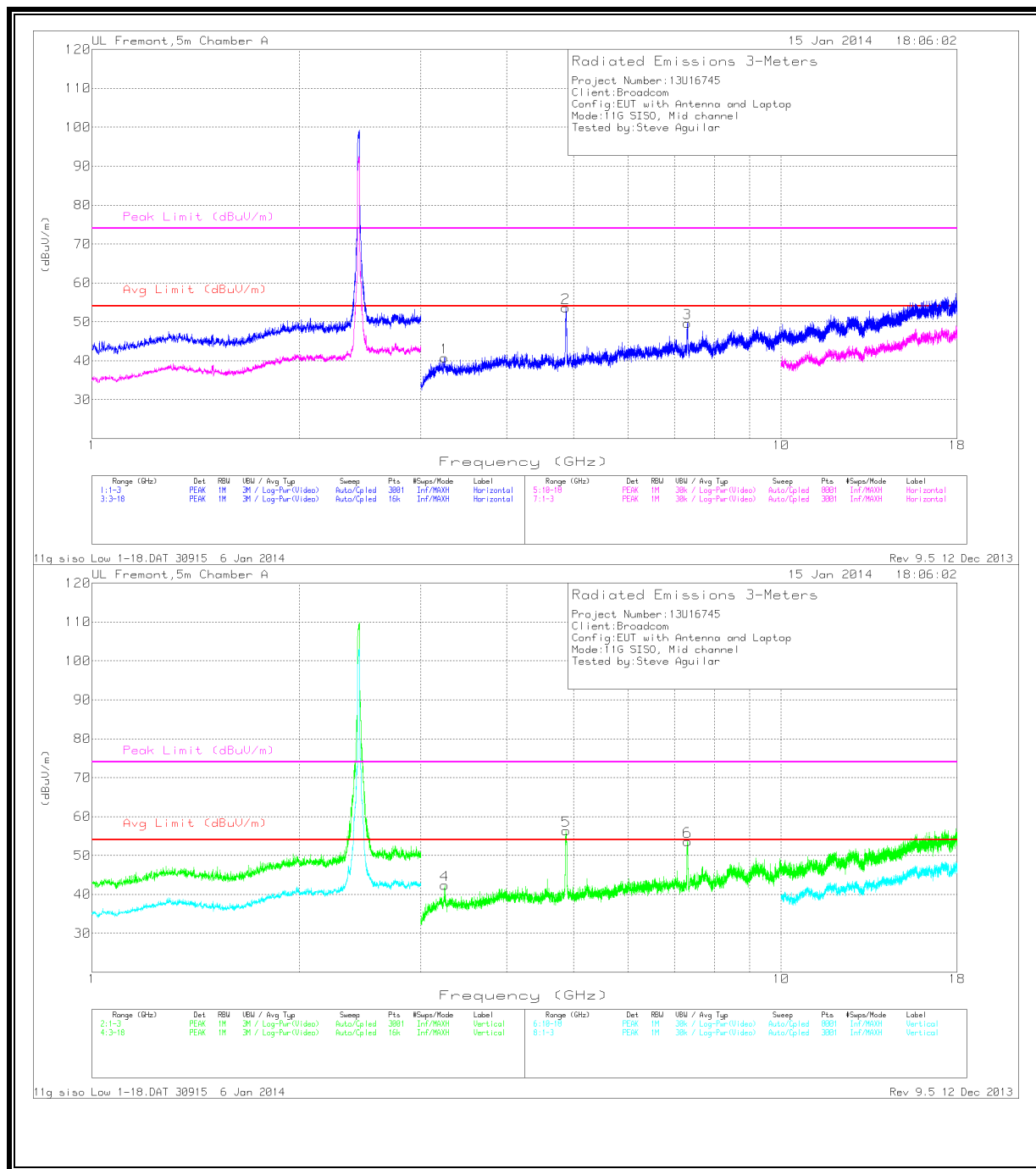
Avg - Video bandwidth < Resolution bandwidth

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/ Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.494	33.29	MAv1	29	-26.9	35.39	54	-18.61	-	-	199	262	V
* 3.739	33.26	MAv1	33.4	-30.6	36.06	54	-17.94	-	-	20	342	H
* 3.98	29.65	MAv1	33.8	-30.7	32.75	54	-21.25	-	-	114	284	H
* 4.823	37.7	MAv1	33.9	-29.5	42.1	54	-11.9	-	-	350	109	H
* 3.739	32.11	MAv1	33.4	-30.6	34.91	54	-19.09	-	-	3	353	V
* 3.987	30.29	MAv1	33.8	-31	33.09	54	-20.91	-	-	349	126	V
* 4.822	42.41	MAv1	33.9	-29.5	46.81	54	-7.19	-	-	199	126	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

MAv1 - KDB558074 Option 1 Maximum RMS Average

HARMONICS AND SPURIOUS EMISSIONS**MID CHANNEL-2437MHZ-11G-SISO**

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 4.869	48.1	PK	34	-28.5	53.6	54	-.4	74	-20.4	0-360	100	H
3	* 7.308	41.56	PK	35.3	-27.2	49.66	54	-4.34	74	-24.34	0-360	200	H
5	* 4.875	50.58	PK	34	-28.2	56.38	54	2.38	74	-17.62	0-360	101	V
6	* 7.314	45.29	PK	35.3	-27	53.59	54	-.41	74	-20.41	0-360	200	V
1	**3.248	39.12	PK	33.3	-31.6	40.82	54	-13.18	74	-33.18	0-360	200	H
4	**3.249	40.69	PK	33.3	-31.6	42.39	54	-11.61	74	-31.61	0-360	101	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

** - indicates frequency in non-restricted band. Compliance is shown in conducted Out of Band Emissions testing.

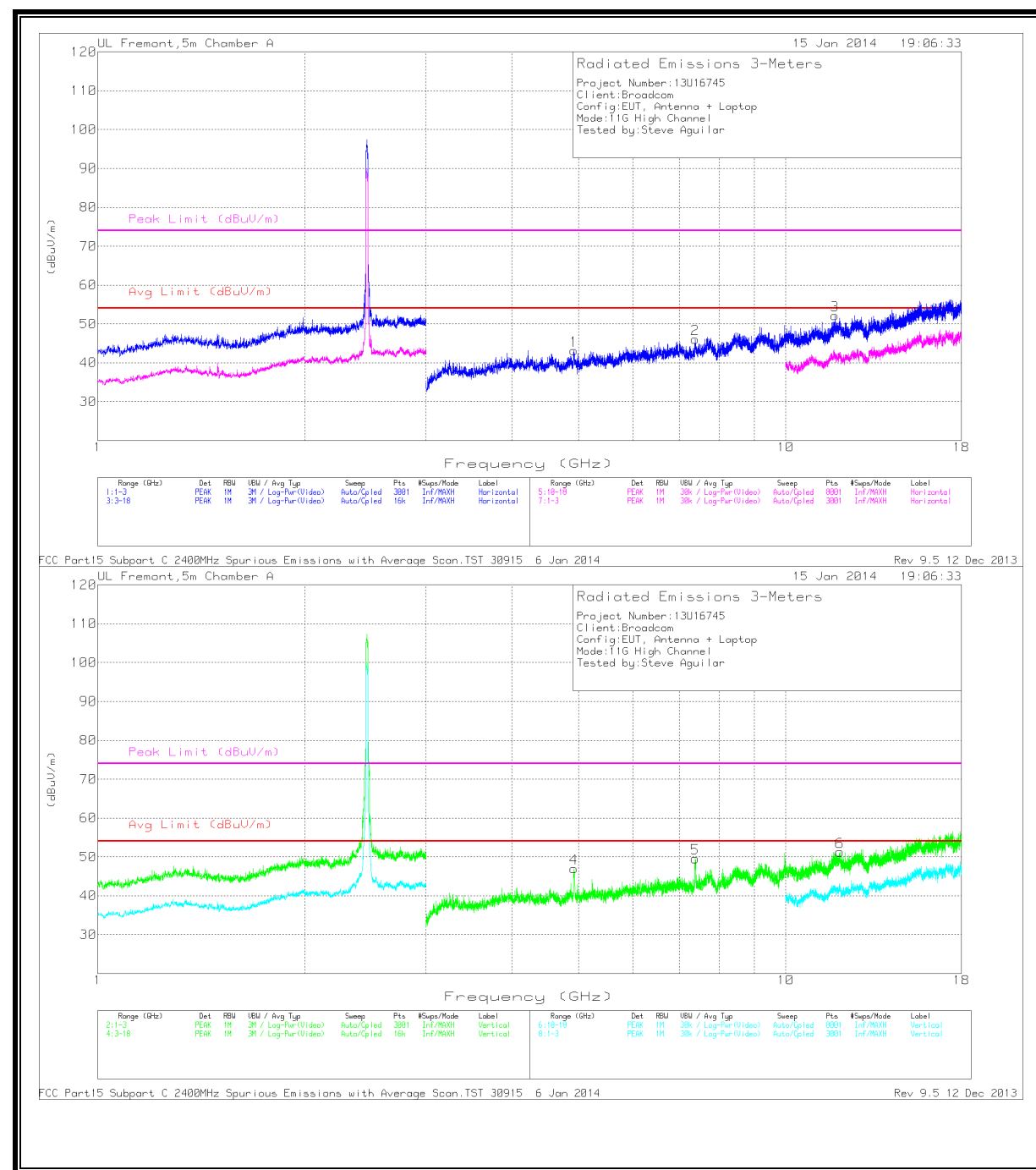
PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl /Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.874	40.01	MAv1	34	-28.3	45.71	54	-8.29	-	-	192	107	H
* 7.307	31.92	MAv1	35.3	-27.1	40.12	54	-13.88	-	-	235	268	H
* 4.875	42.9	MAv1	34	-28.2	48.7	54	-5.3	-	-	8	136	V
* 7.314	39.82	MAv1	35.3	-27	48.12	54	-5.88	-	-	130	396	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

MAv1 - KDB558074 Option 1 Maximum RMS Average

HARMONICS AND SPURIOUS EMISSIONS**HIGH CHANNEL-2462 MHZ-11G-SISO**

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/ Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 11.789	35.6	PK	38.6	-22	52.2	54	-1.8	74	-21.8	0-360	100	H
6	* 11.988	34.79	PK	38.8	-22.3	51.29	54	-2.71	74	-22.71	0-360	101	V
4	* 4.921	42.03	PK	34	-29	47.03	54	-6.97	74	-26.97	0-360	101	V
1	* 4.924	38.14	PK	34	-29	43.14	54	-10.86	74	-30.86	0-360	200	H
2	* 7.383	34.99	PK	35.4	-24.3	46.09	54	-7.91	74	-27.91	0-360	100	H
5	* 7.384	38.49	PK	35.4	-24.3	49.59	54	-4.41	74	-24.41	0-360	200	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

Radiated Emissions

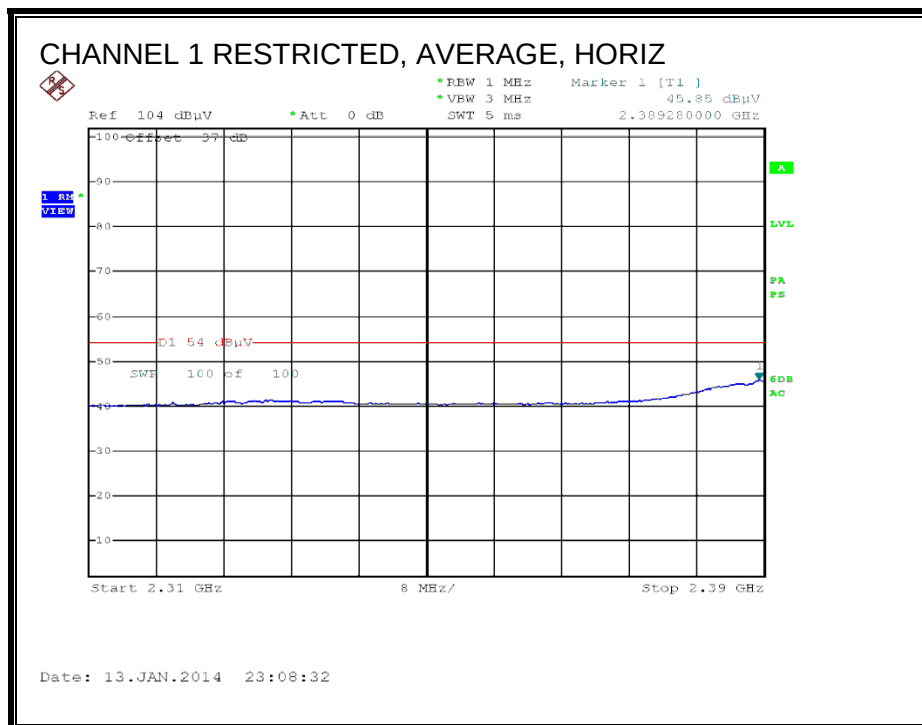
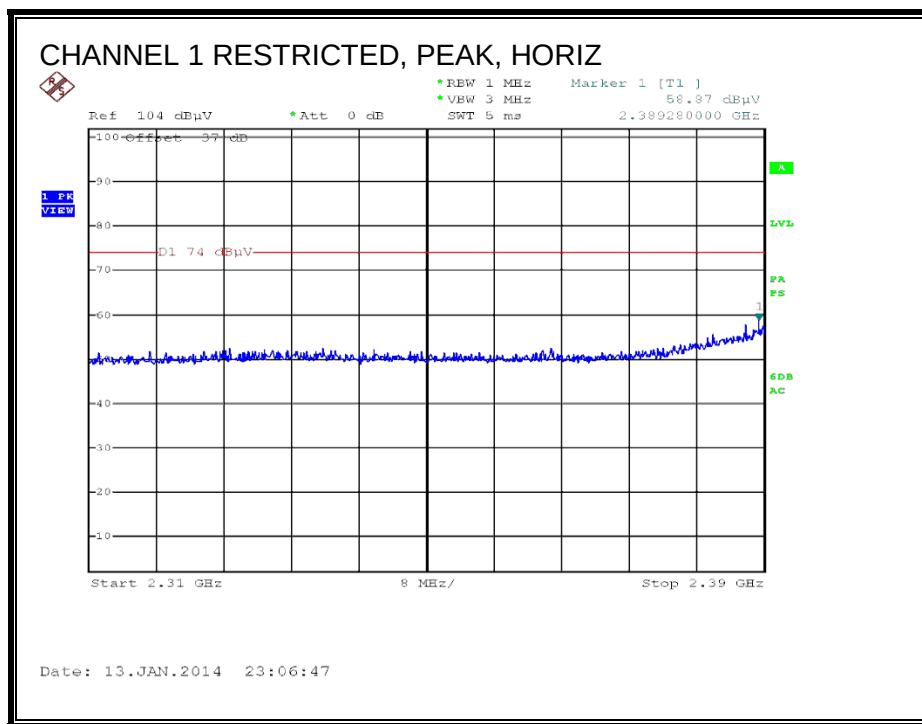
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/ Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 11.785	24.36	MAv1	38.6	-22.3	40.66	54	-13.34	-	-	171	138	H
* 7.384	31.2	MAv1	35.4	-24.3	42.3	54	-11.7	-	-	135	249	V
* 11.991	24.38	MAv1	38.8	-22.1	41.08	54	-12.92	-	-	118	212	V

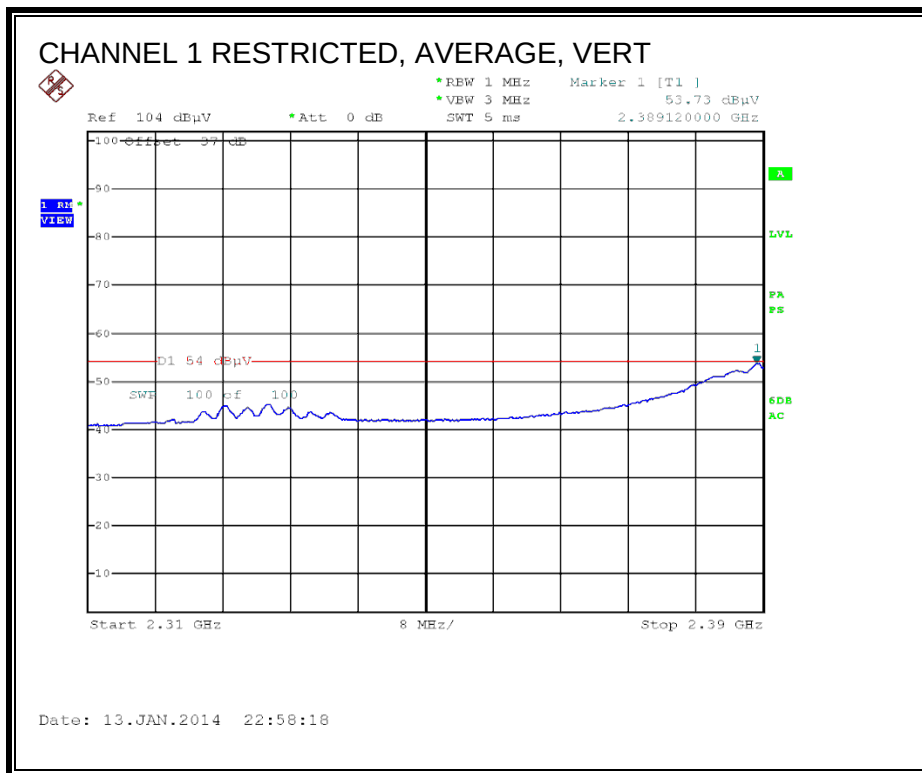
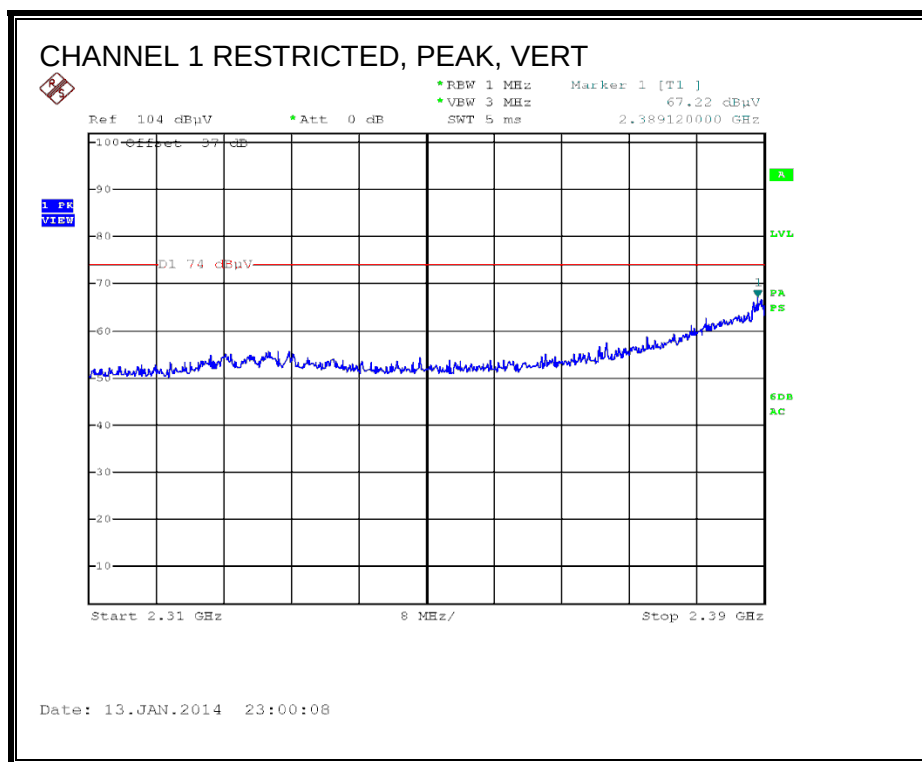
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

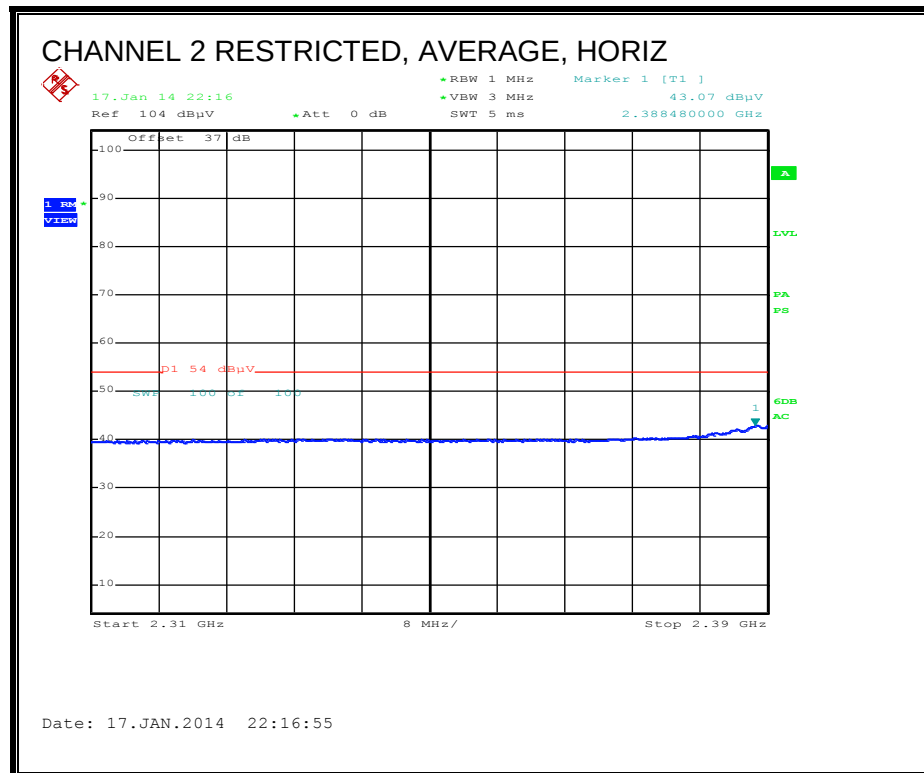
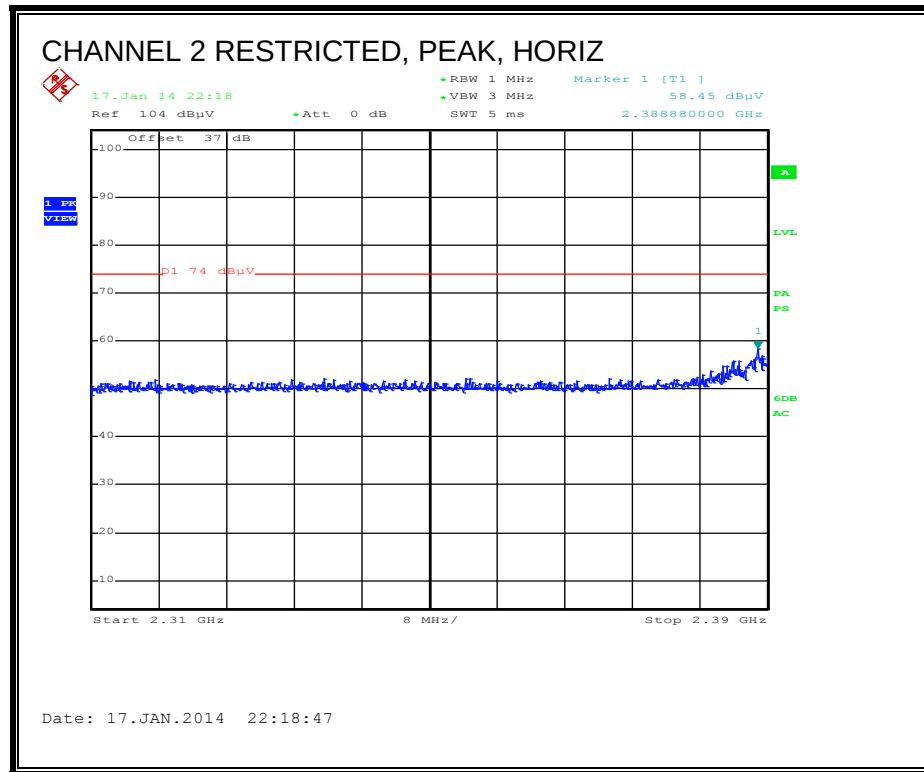
MAv1 - KDB558074 Option 1 Maximum RMS Average

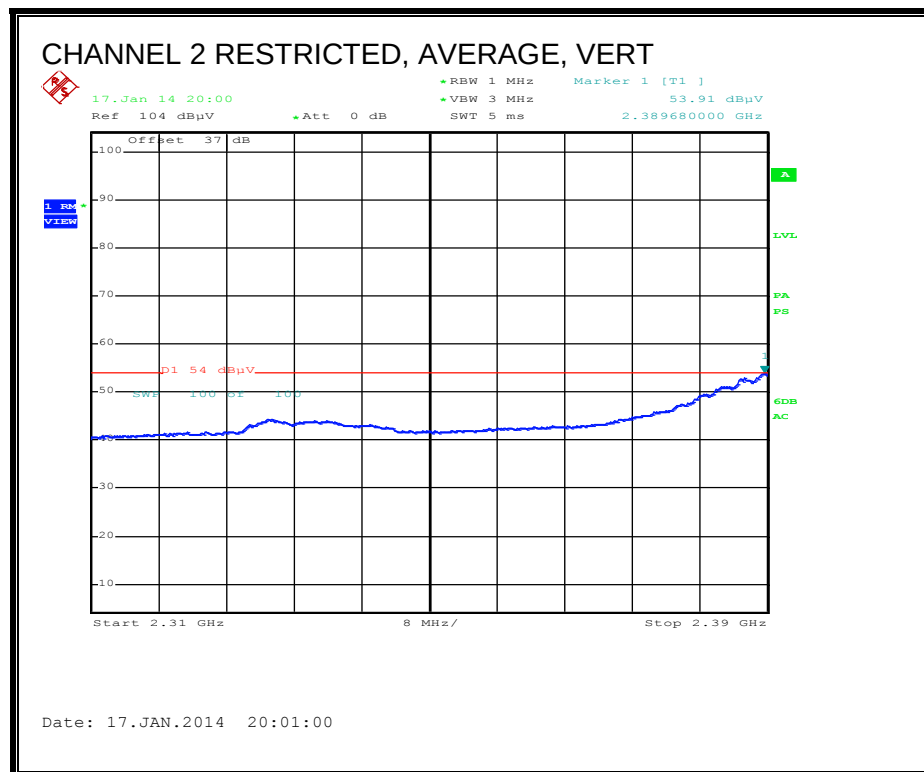
8.1.4. TX ABOVE 1 GHz 802.11n HT20 2Tx MODE IN THE 2.4 GHz BAND

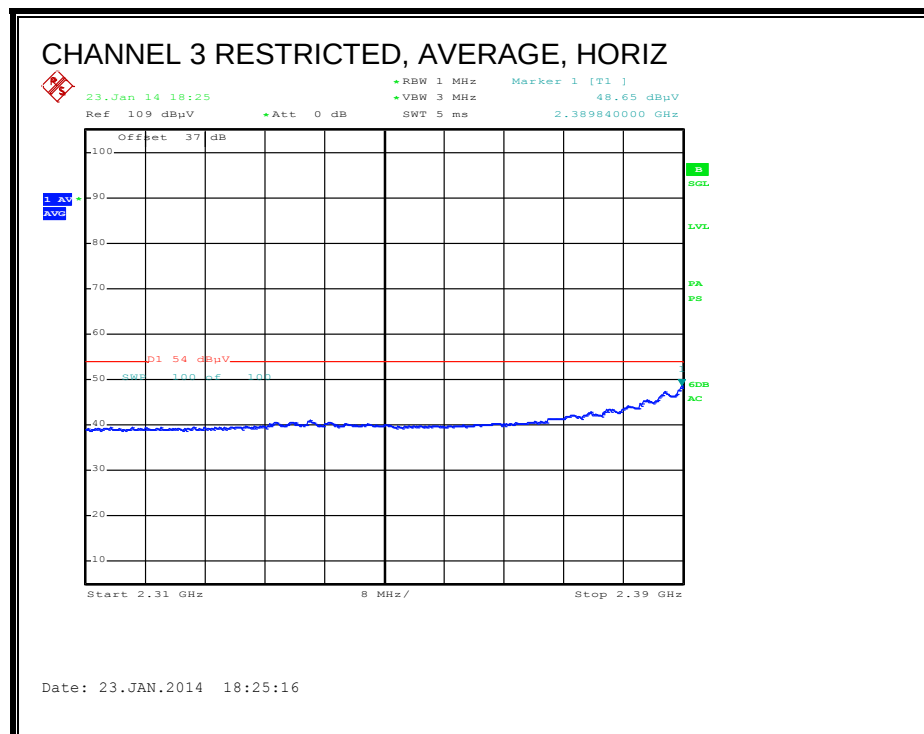
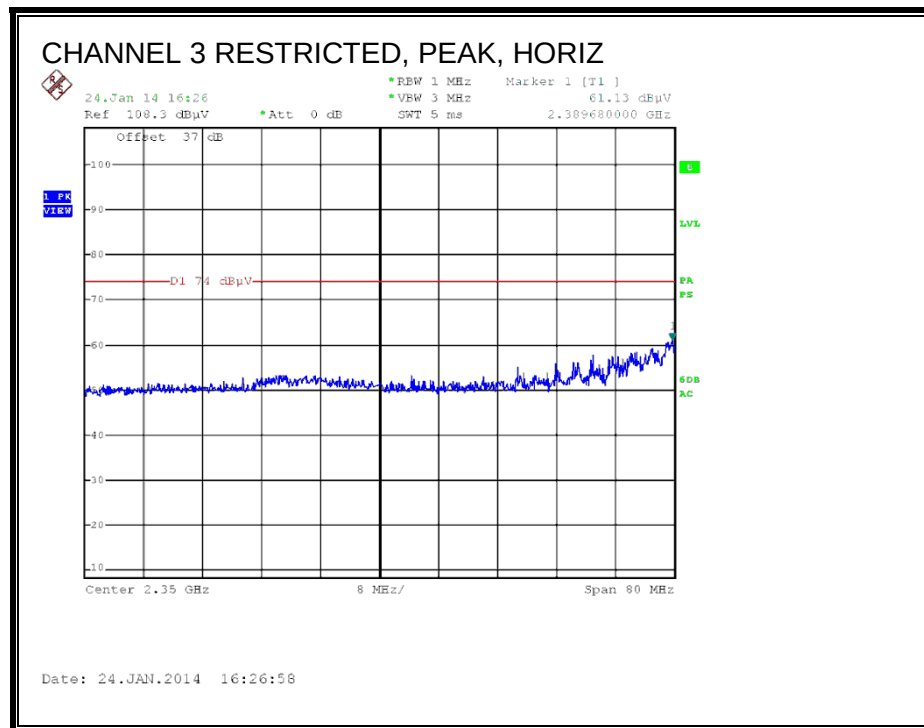
RESTRICTED BANDEDGE (CHANNEL 1)

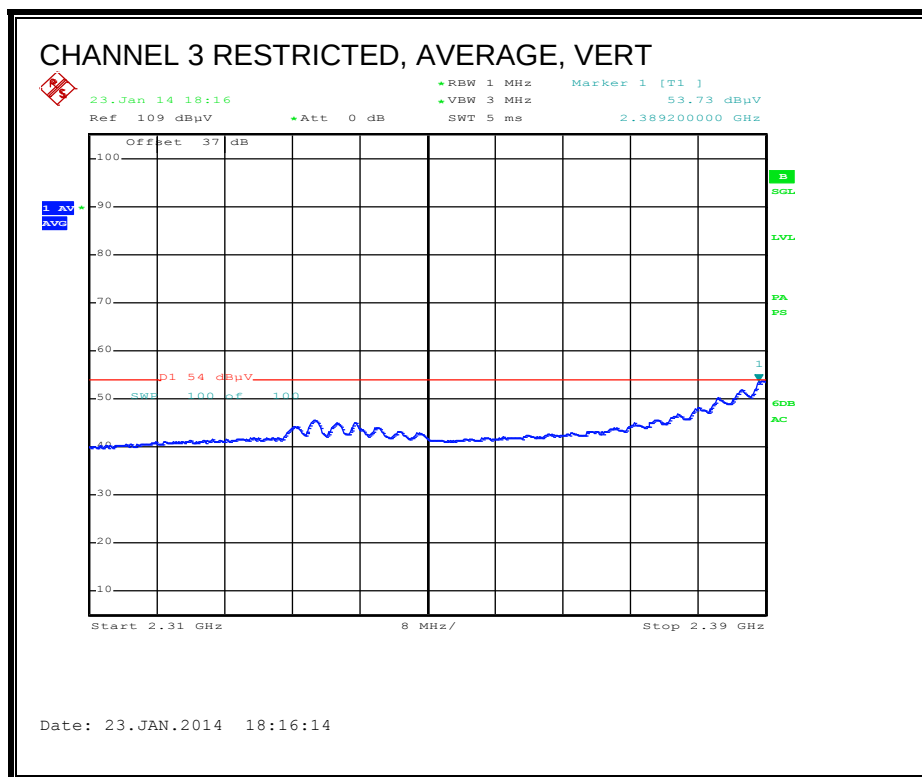
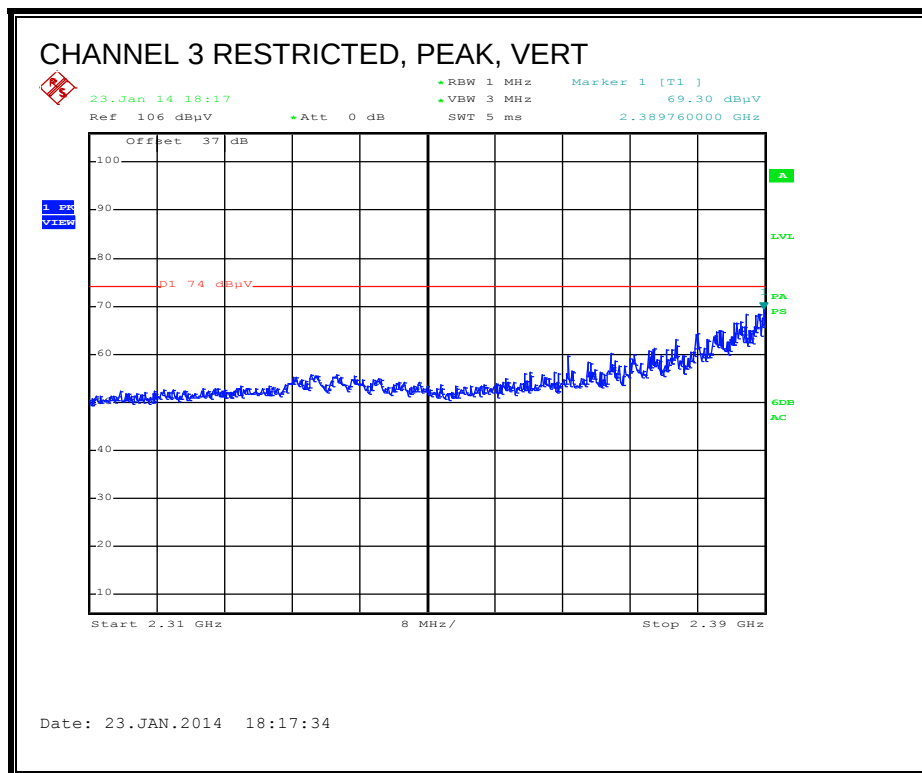




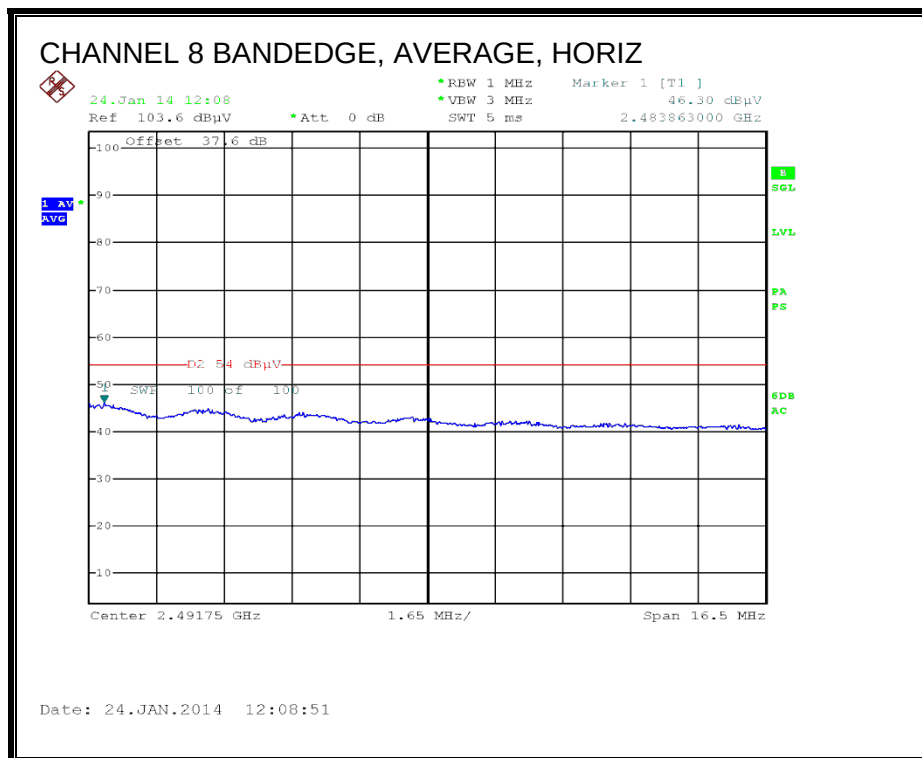
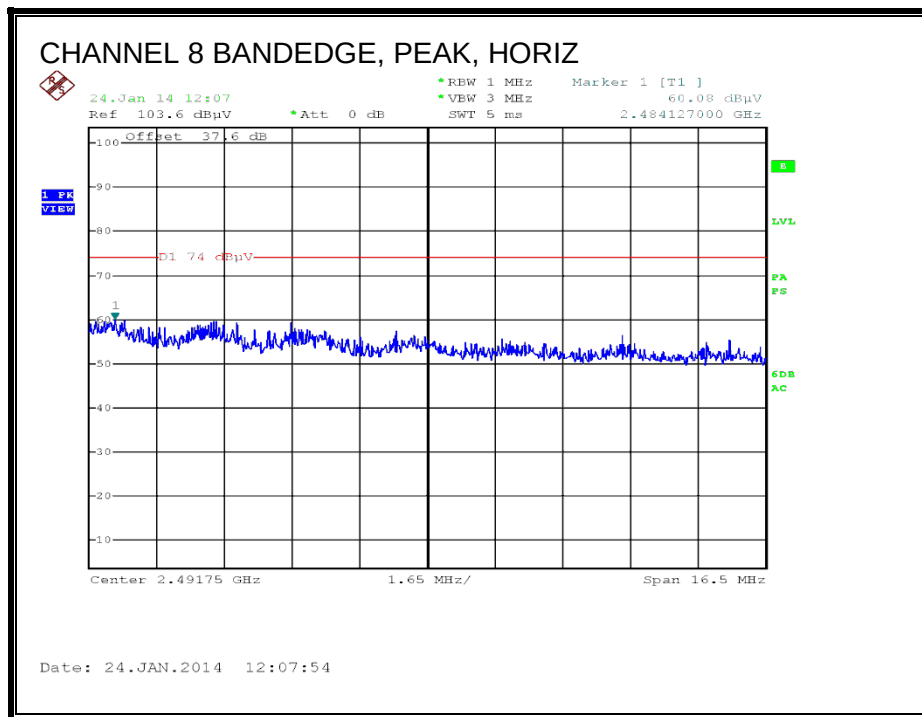
RESTRICTED BANDEDGE (CHANNEL 2)

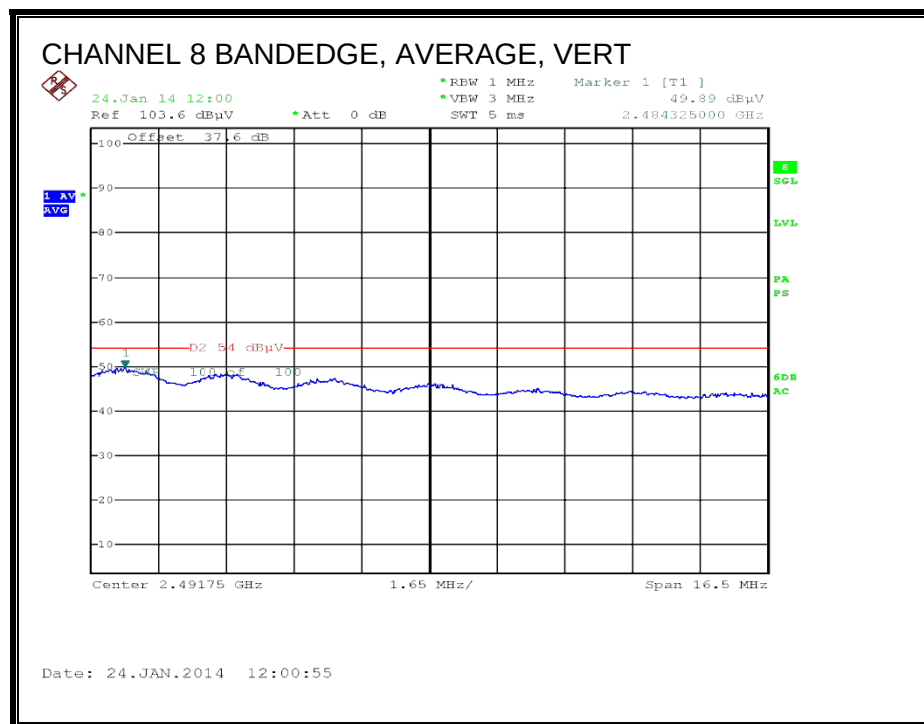


RESTRICTED BANDEDGE (CHANNEL 3)

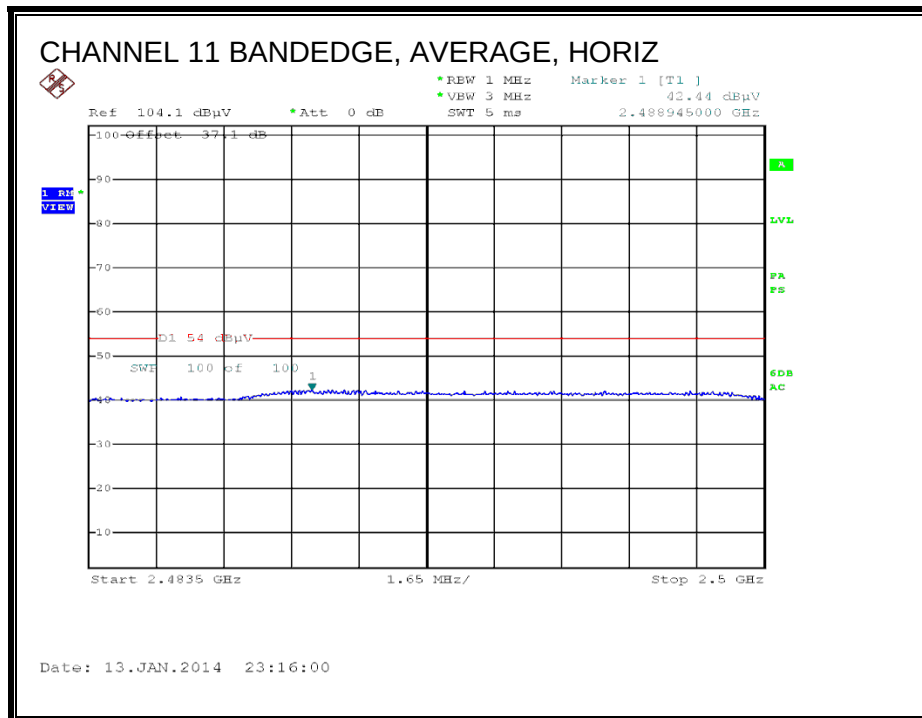
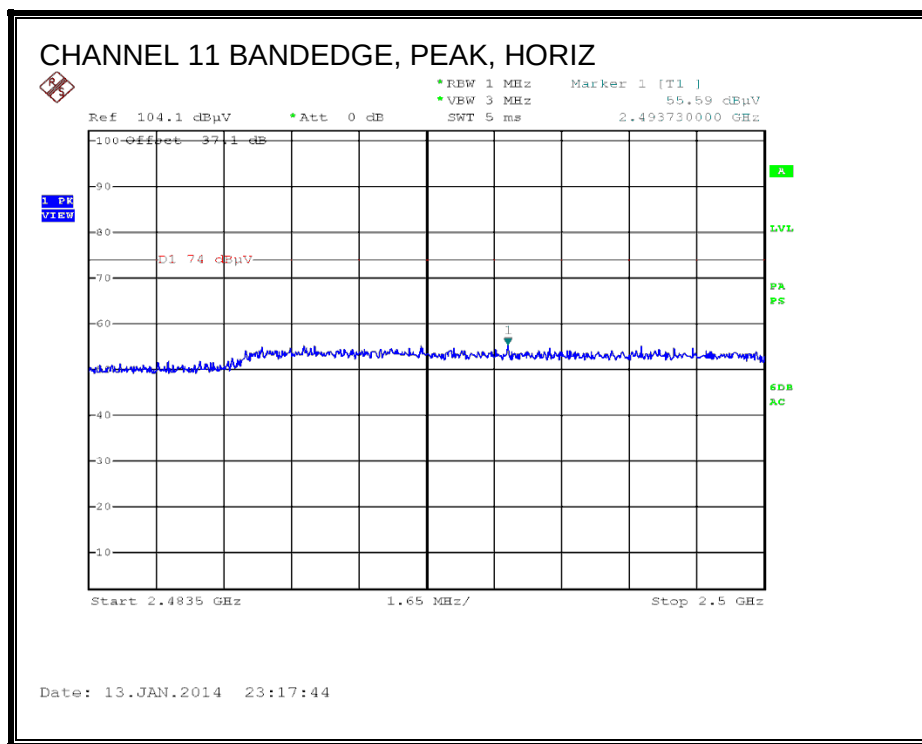


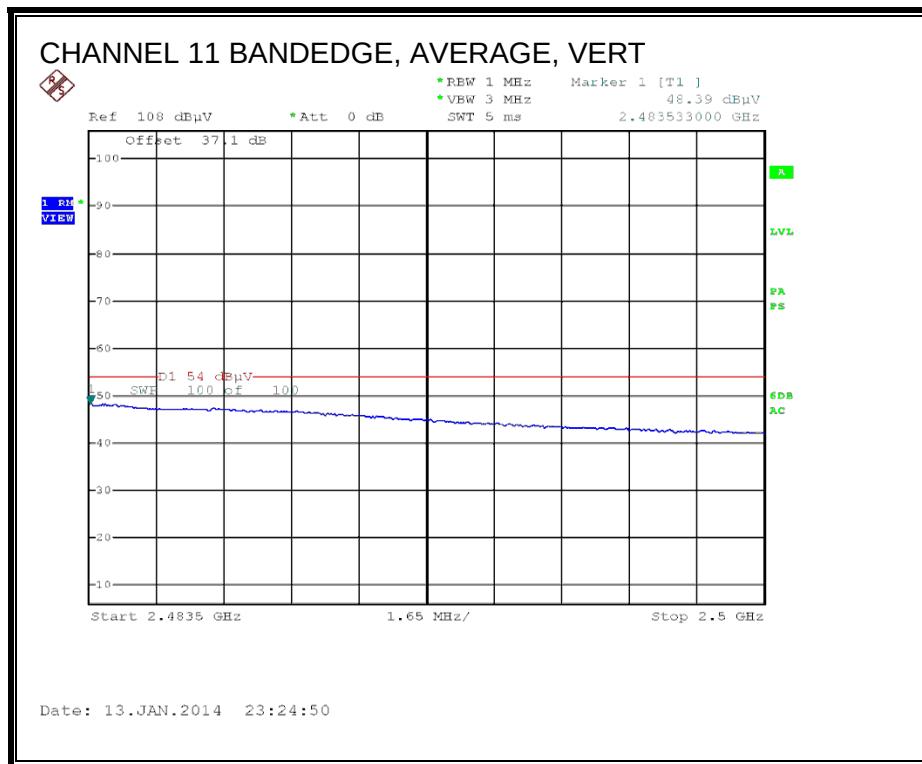
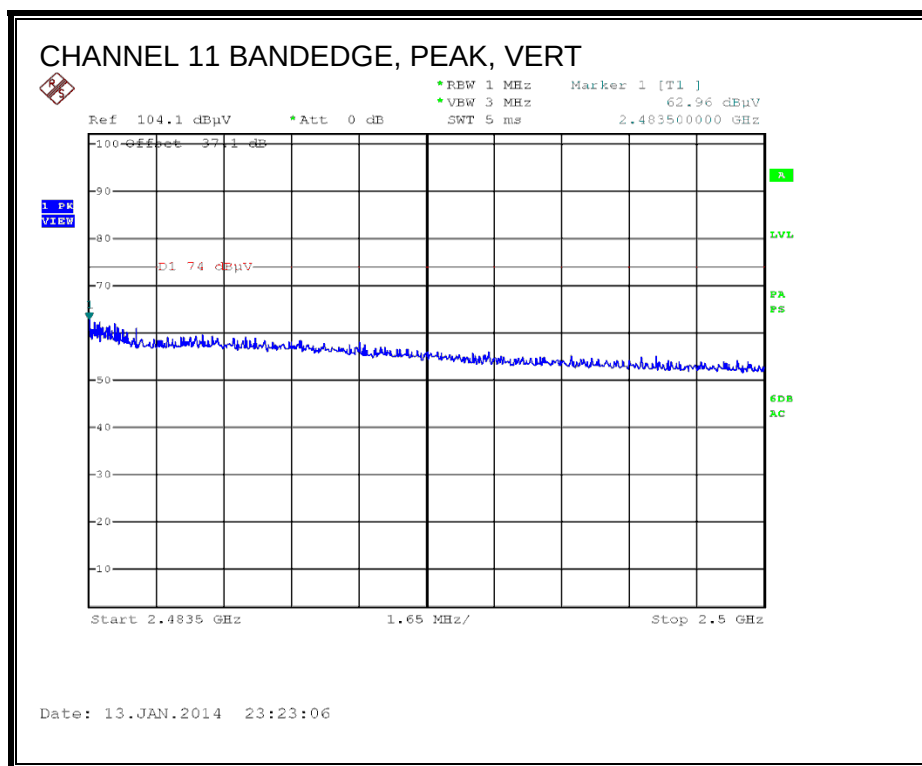
AUTHORIZED BANDEDGE (CHANNEL 8)





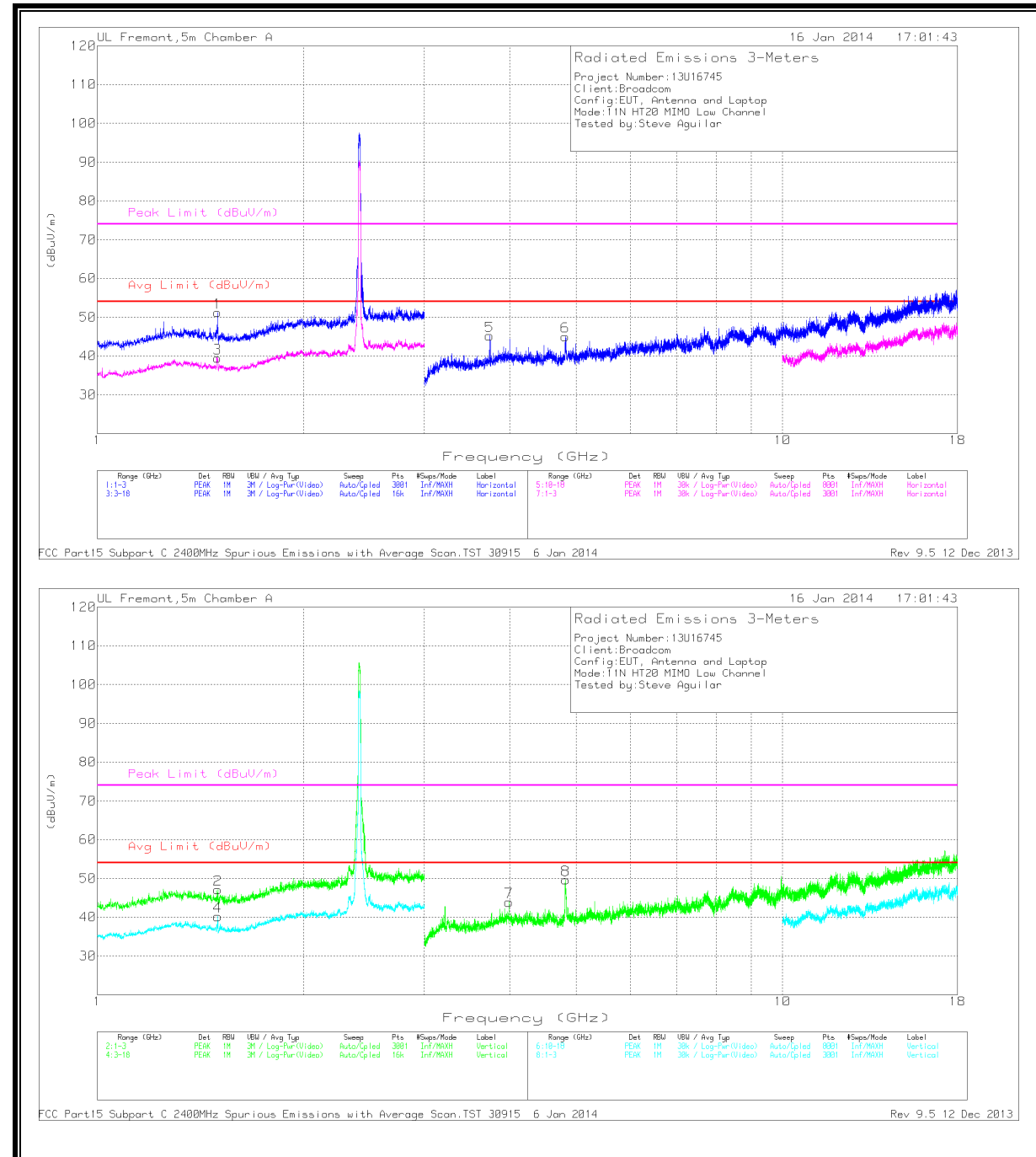
AUTHORIZED BANDEDGE (CHANNEL 11)





HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL-2412 MHZ-HT20-MIMO



HORIZONTAL AND VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.498	49.5	PK	28.9	-27.2	51.2	-	-	74	-22.8	0-360	101	H
2	* 1.499	45.55	PK	28.9	-27.3	47.15	-	-	74	-26.85	0-360	200	V
5	* 3.736	42.6	PK	33.4	-30.8	45.2	54	-8.8	74	-28.8	0-360	200	H
6	* 4.818	40.63	PK	33.9	-29.5	45.03	54	-8.97	74	-28.97	0-360	101	H
7	* 3.988	41.08	PK	33.8	-31	43.88	54	-10.12	74	-30.12	0-360	201	V
8	* 4.824	45.14	PK	33.9	-29.4	49.64	54	-4.36	74	-24.36	0-360	201	V
3	* 1.498	37.72	Avg	28.9	-27.2	39.42	54	-14.58	-	-	0-360	100	H
4	* 1.499	38.49	Avg	28.9	-27.2	40.19	54	-13.81	-	-	0-360	201	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

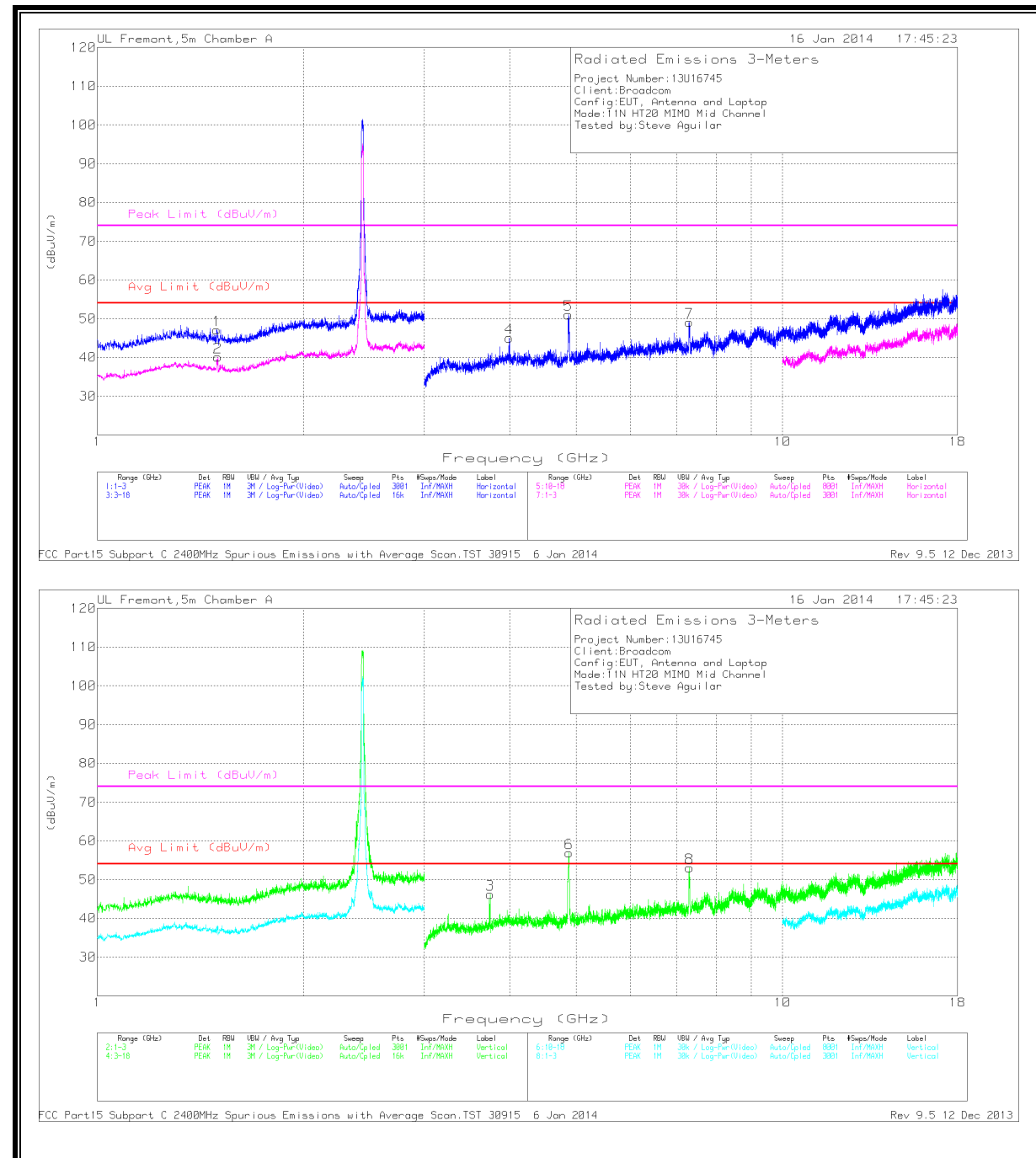
Avg - Video bandwidth < Resolution bandwidth

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl /Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.825	35.45	MAv1	33.9	-29.4	39.95	54	-14.05	74	-34.05	155	102	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

MAv1 - KDB558074 Option 1 Maximum RMS Average

HARMONICS AND SPURIOUS EMISSIONS**MID CHANNEL-2437MHZ-HT20-MIMO**

HORIZONTAL AND VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.494	45.03	PK	29	-26.9	47.13	-	-	74	-26.87	0-360	102	H
4	* 3.993	42.26	PK	33.8	-31	45.06	54	-8.94	74	-28.94	0-360	200	H
5	* 4.869	45.56	PK	34	-28.5	51.06	54	-2.94	74	-22.94	0-360	101	H
7	* 7.309	41.02	PK	35.3	-27.2	49.12	54	-4.88	74	-24.88	0-360	101	H
3	* 3.744	43.41	PK	33.4	-30.6	46.21	54	-7.79	74	-27.79	0-360	201	V
6	* 4.88	51.09	PK	34	-28.2	56.89	54	2.89	74	-17.11	0-360	201	V
8	* 7.314	44.76	PK	35.3	-27	53.06	54	-.94	74	-20.94	0-360	201	V
2	* 1.499	38.52	Avg	28.9	-27.3	40.12	54	-13.88	-	-	0-360	101	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

Avg - Video bandwidth < Resolution bandwidth

Radiated Emissions

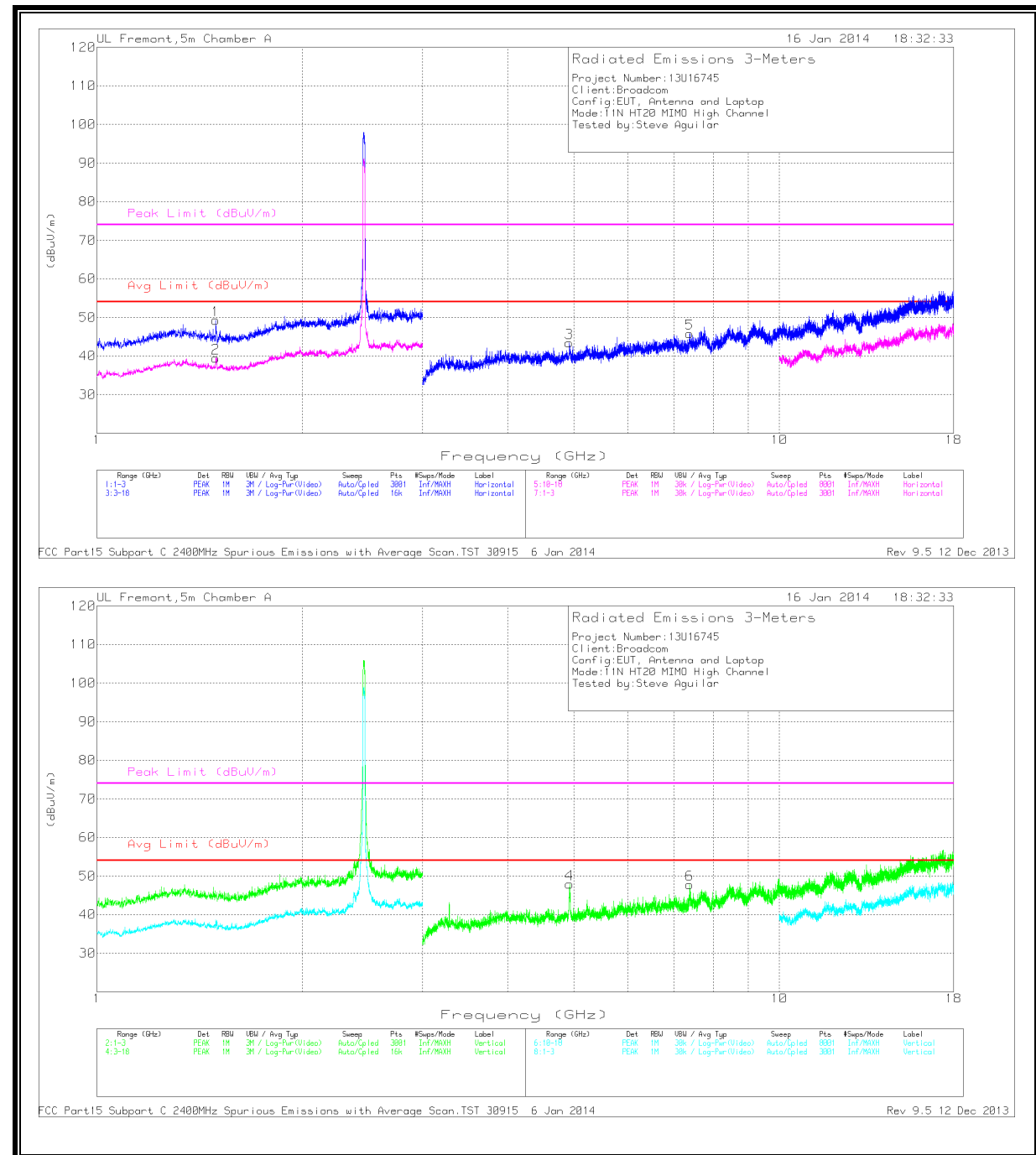
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl /Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.874	38.86	MAv1	34	-28.3	44.56	54	-9.44	-	-	222	104	H
* 4.881	42.38	MAv1	34	-28.3	48.08	54	-5.92	-	-	341	190	V
* 7.313	31.53	MAv1	35.3	-27.1	39.73	54	-14.27	-	-	211	156	V
* 7.3081	32.03	MAv1	35.3	-27.1	40.23	54	-13.77	-	-	58	297	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

MAv1 - KDB558074 Option 1 Maximum RMS Average

HARMONICS AND SPURIOUS EMISSIONS-High Channel

HIGH CHANNEL-2462 MHZ-HT20-MIMO



HORIZONTAL AND VERTICAL DATA-High Channel

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.493	47.1	PK	29	-26.8	49.3	54	-4.7	74	-24.7	0-360	101	H
3	* 4.92	38.53	PK	34	-29.1	43.43	54	-10.57	74	-30.57	0-360	101	H
5	* 7.387	34.75	PK	35.4	-24.3	45.85	54	-8.15	74	-28.15	0-360	101	H
4	* 4.927	42.9	PK	34	-29	47.9	54	-6.1	74	-26.1	0-360	200	V
6	* 7.388	36.82	PK	35.4	-24.4	47.82	54	-6.18	74	-26.18	0-360	200	V
2	* 1.493	37.26	Avg	29	-26.8	39.46	54	-14.54	-	-	0-360	100	H
7	**3.282	41.51	PK	33	-31.4	43.11	-	-	-	-	0-360	101	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

** - indicates frequency in non-restricted band. Compliance is shown in conducted Out of Band Emissions testing.v

PK - Peak detector

Avg - Video bandwidth < Resolution bandwidth

Radiated Emissions

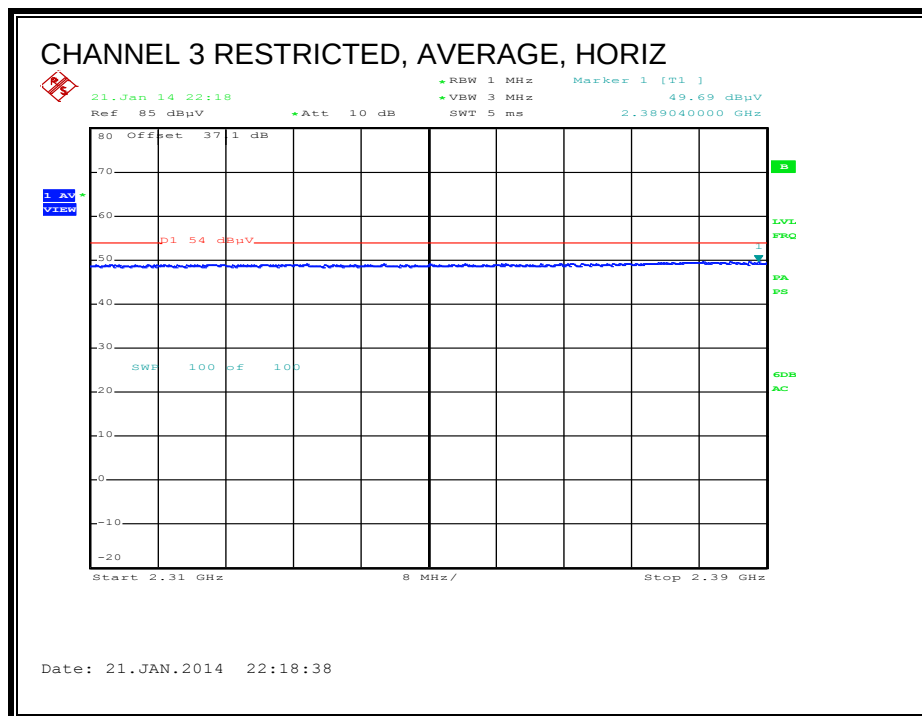
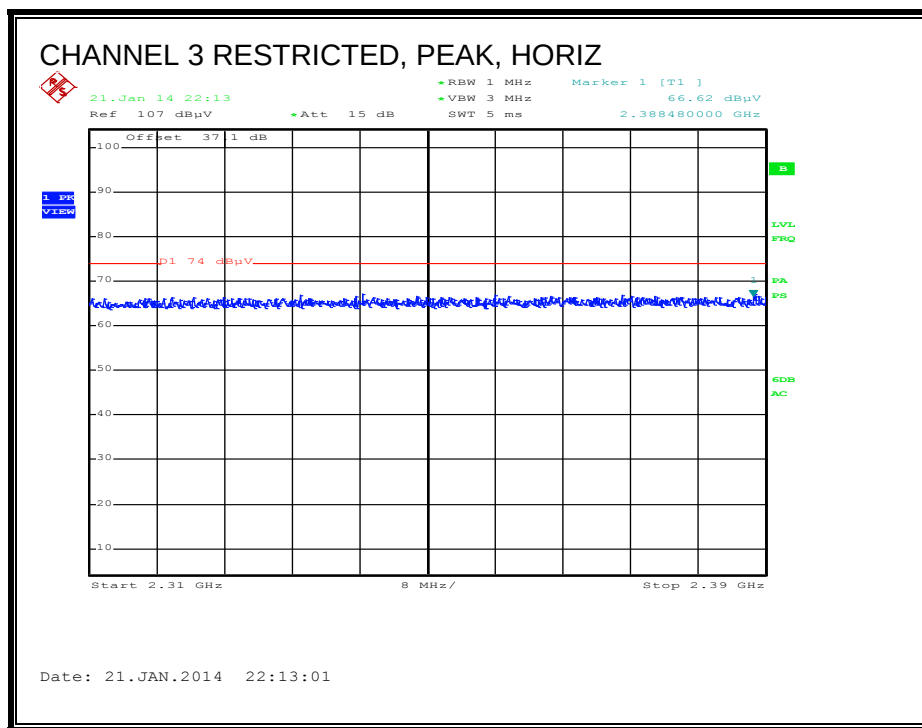
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl /Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.495	36.21	MAv1	28.9	-27	38.11	54	-15.89	-	-	248	240	H

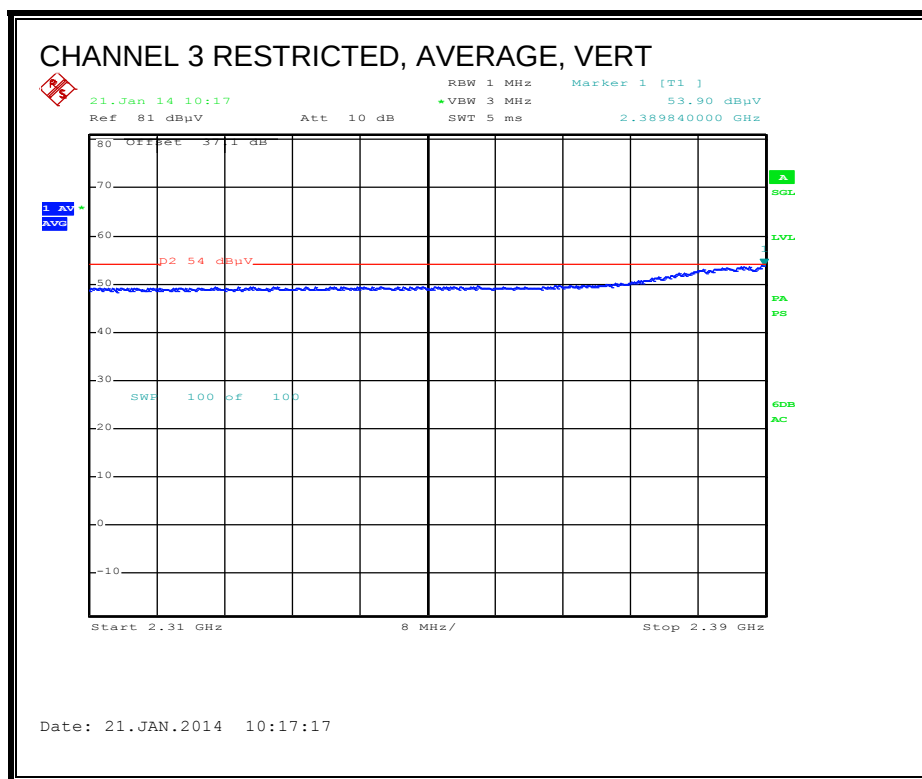
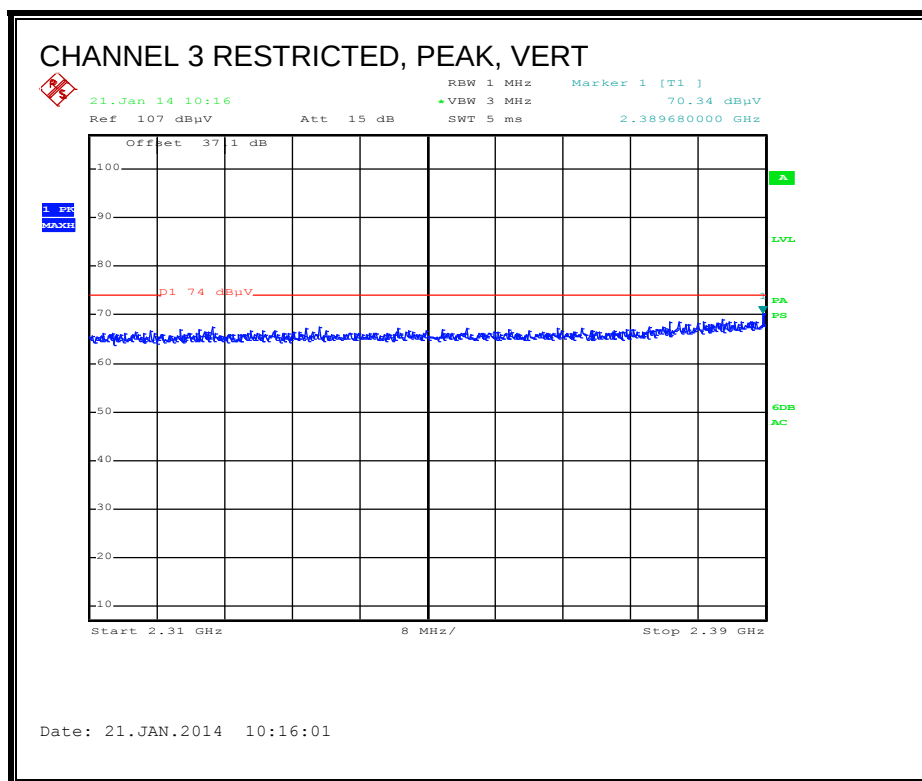
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

MAv1 - KDB558074 Option 1 Maximum RMS Average

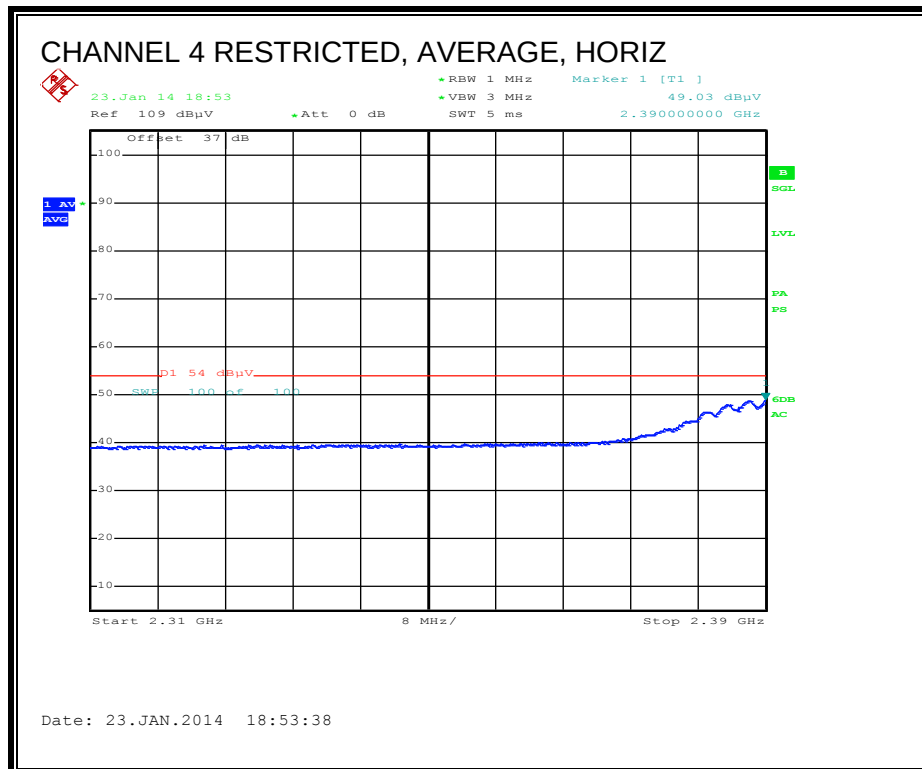
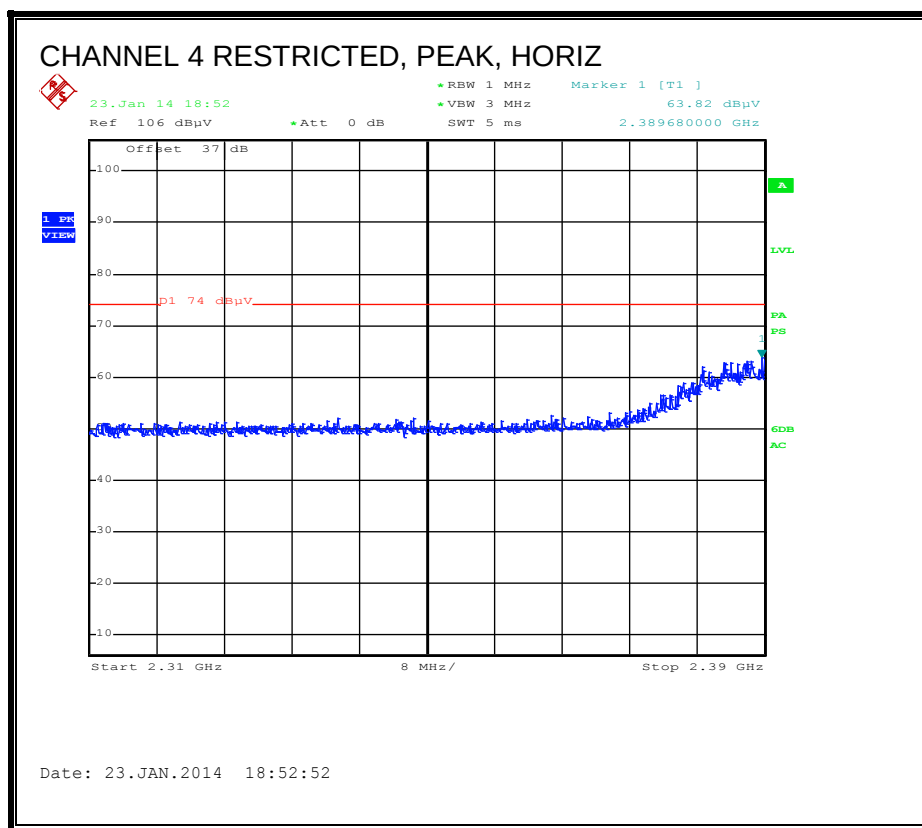
8.1.5. TX ABOVE 1 GHz 802.11n HT40 2Tx MODE IN THE 2.4 GHz BAND

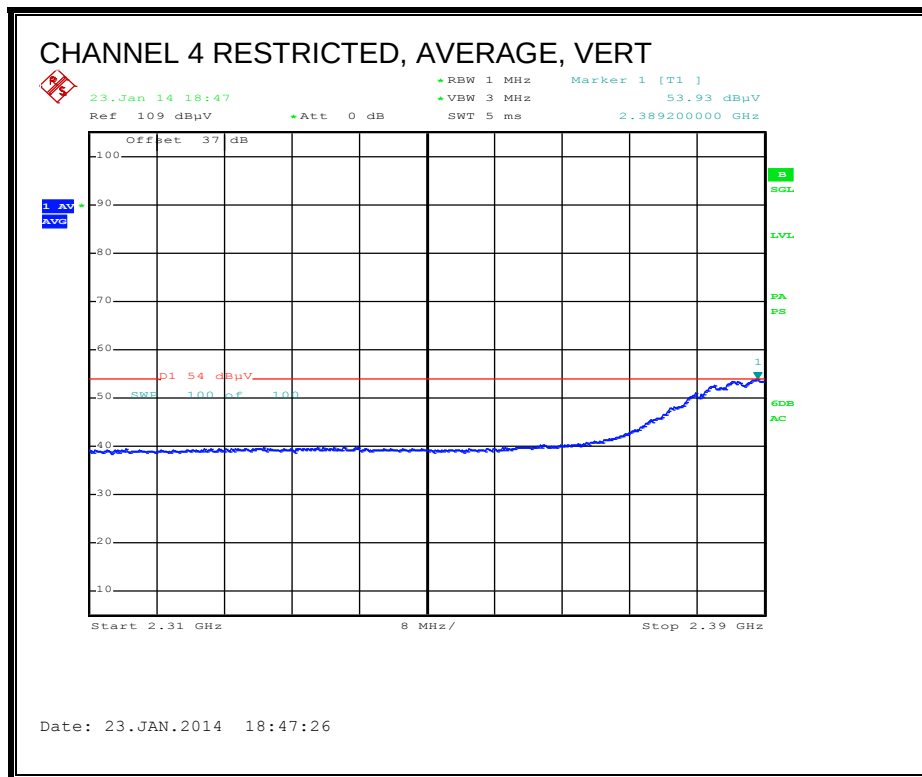
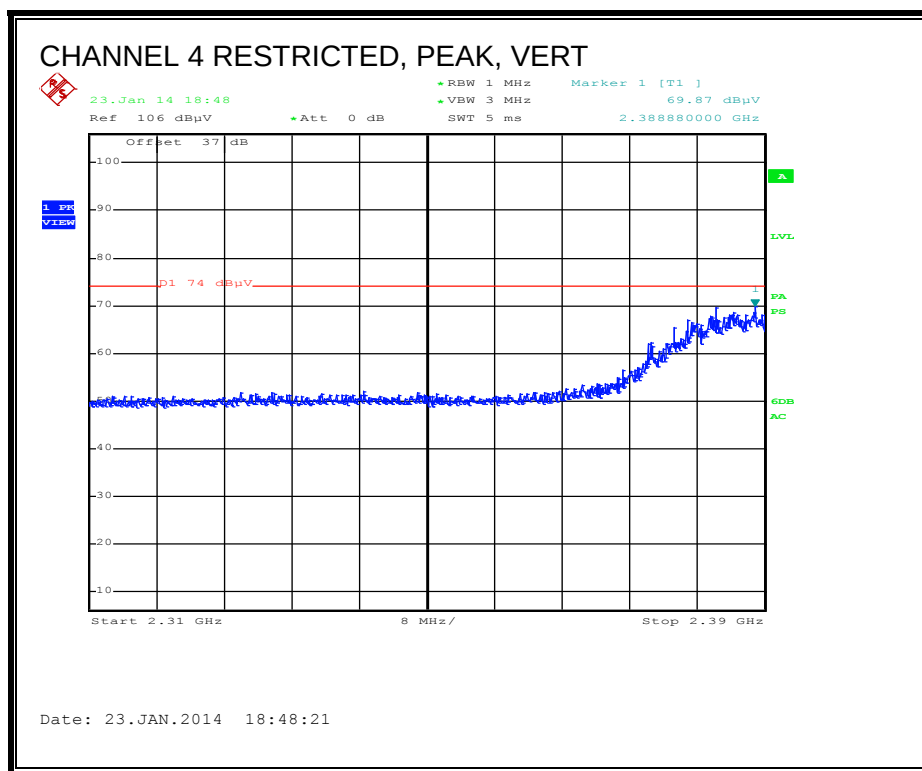
RESTRICTED BANDEDGE (CHANNEL 3)

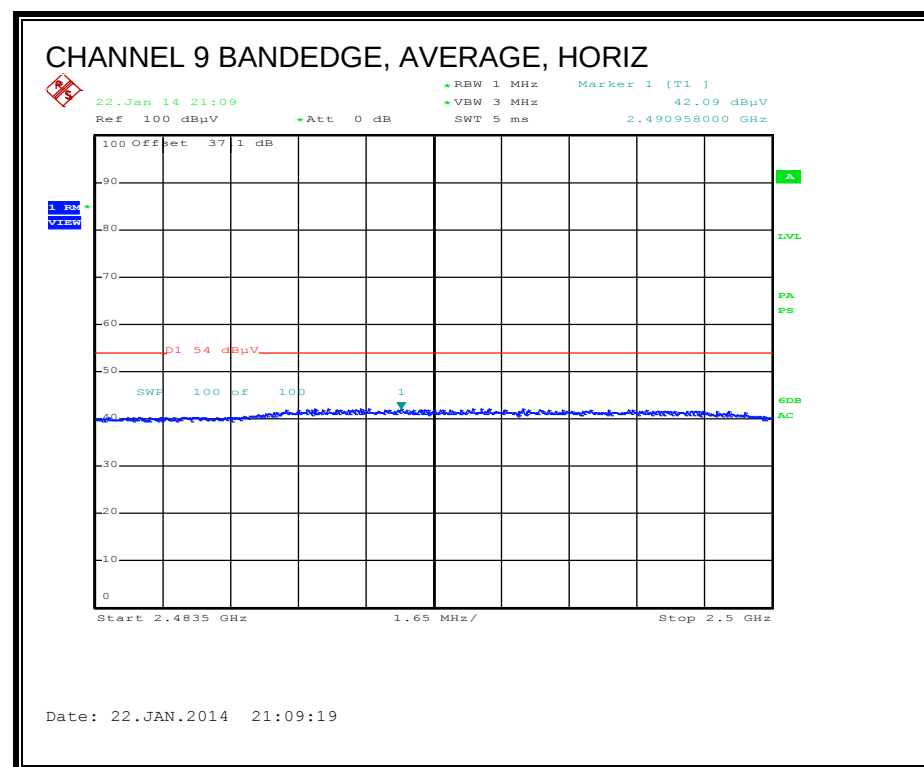
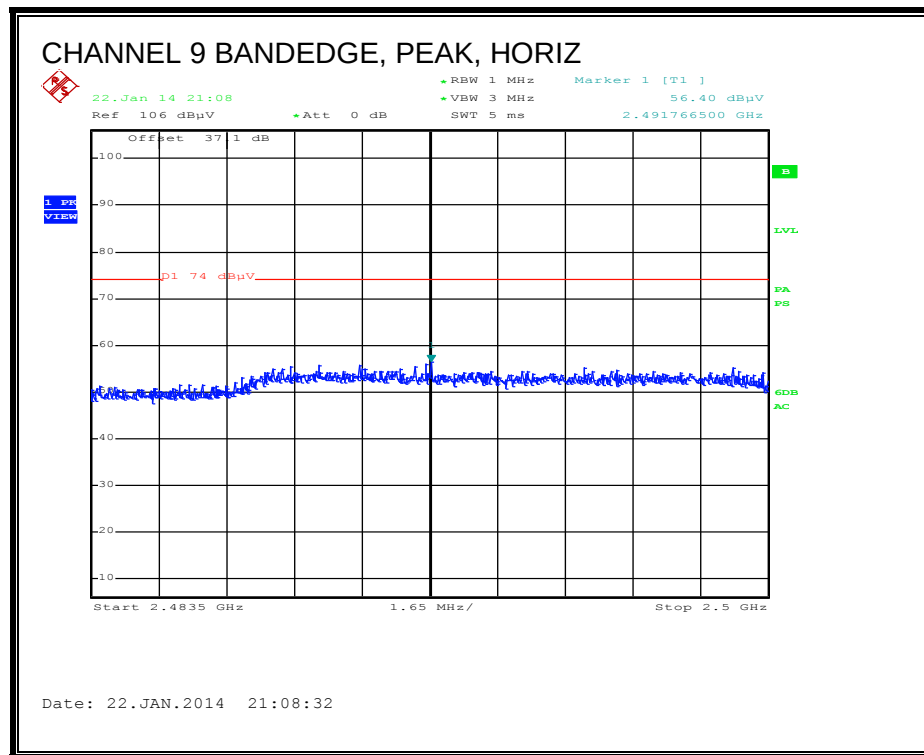


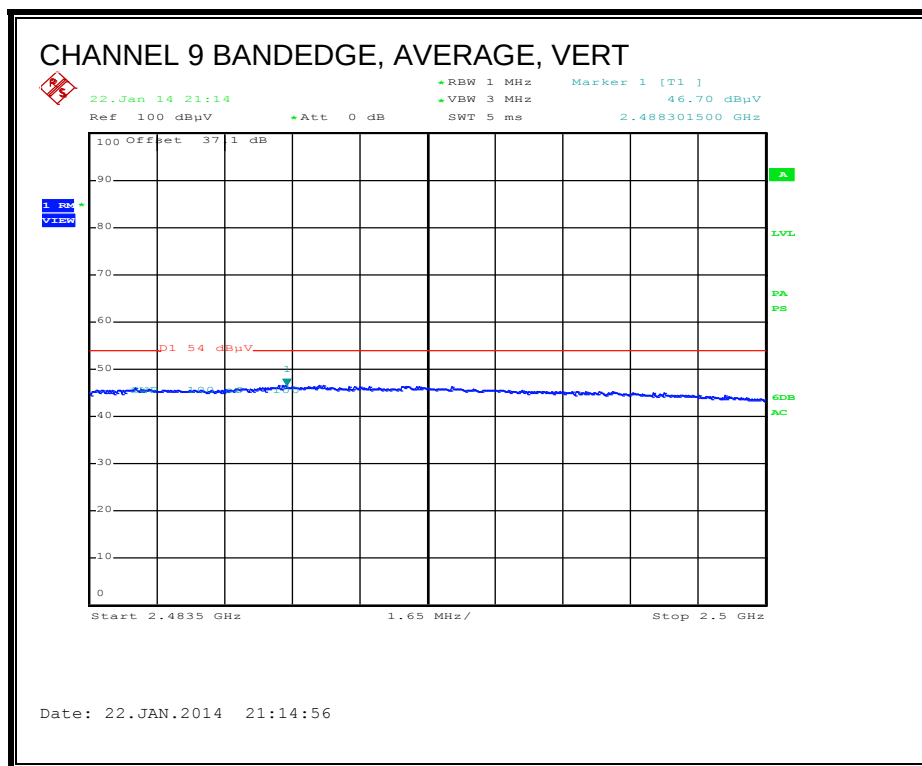
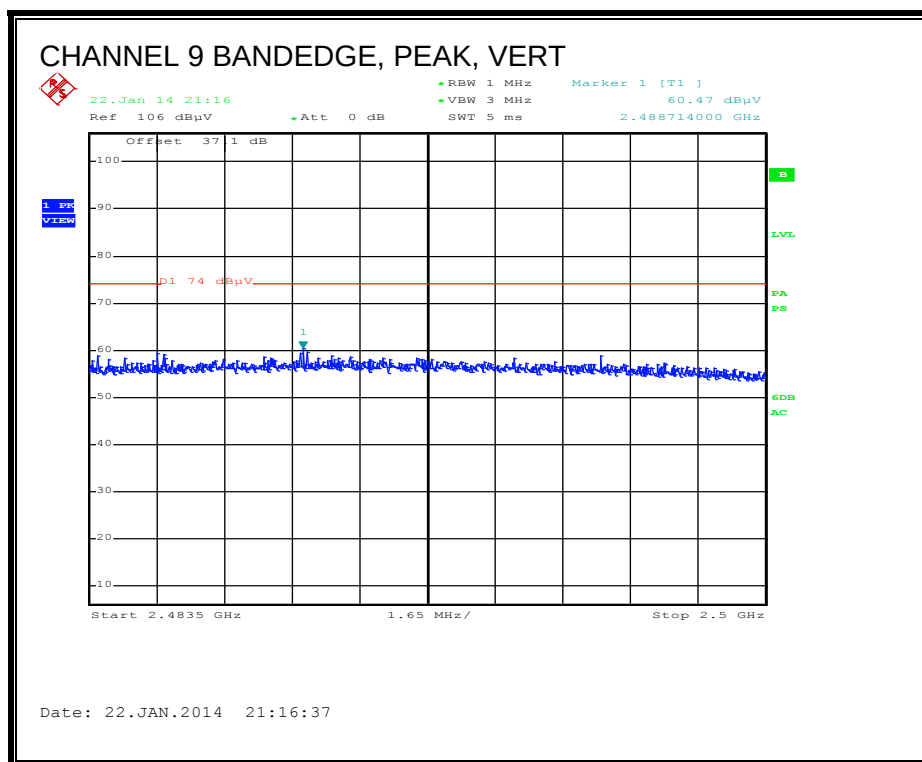


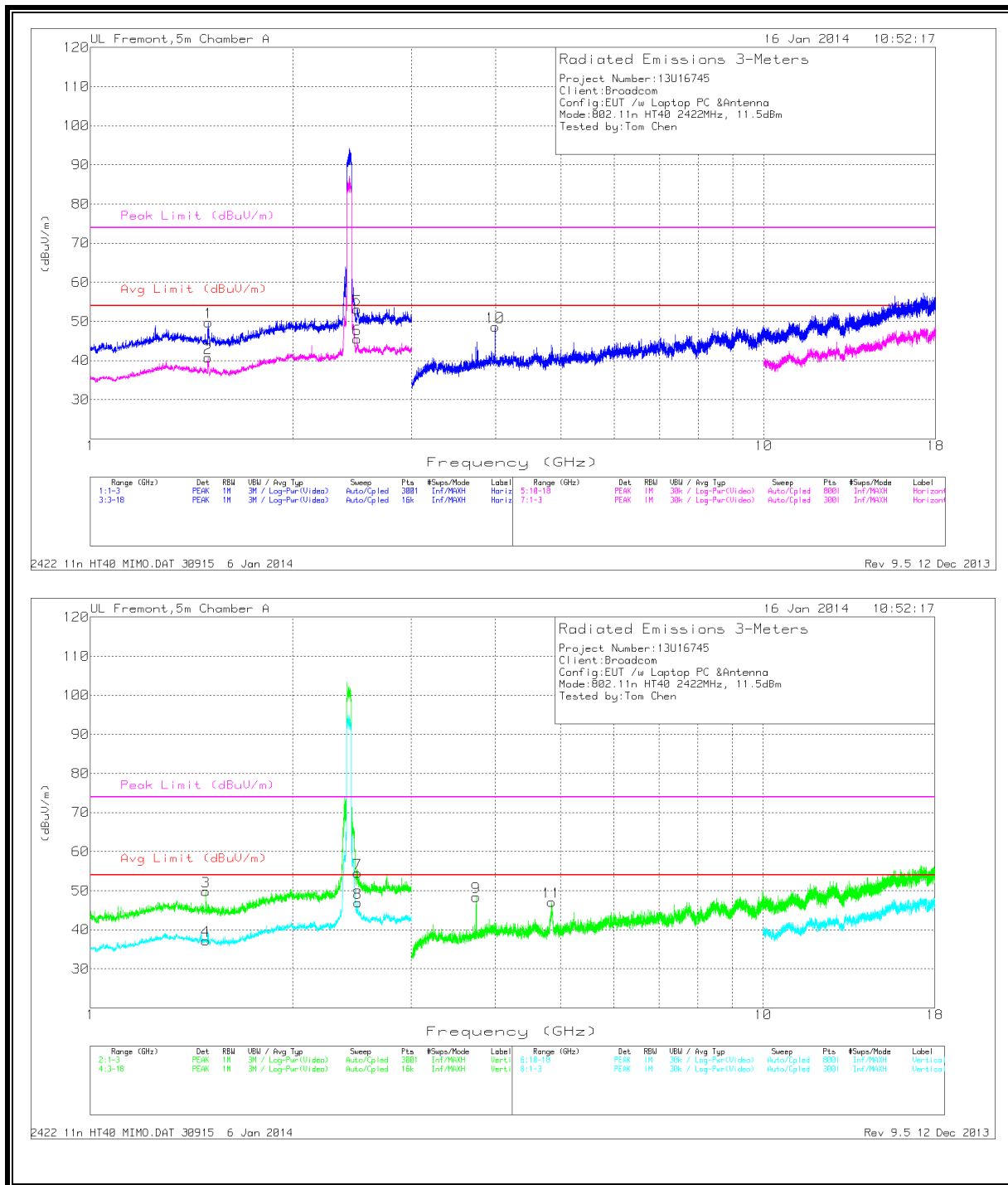
RESTRICTED BANDEDGE (CHANNEL 4)





AUTHORIZED BANDEDGE (CHANNEL 9)



HARMONICS AND SPURIOUS EMISSIONS**LOW CHANNEL-2422MHZ- HT40-MIMO**

HORIZONTAL AND VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.497	47.95	PK	28.9	-27.1	49.75	-	-	74	-24.25	0-360	101	H
5	* 2.489	43.96	PK	32.5	-23.4	53.06	-	-	74	-20.94	0-360	200	H
3	* 1.485	47.21	PK	29	-26.4	49.81	-	-	74	-24.19	0-360	201	V
7	* 2.496	45.47	PK	32.6	-23.6	54.47	-	-	74	-19.53	0-360	201	V
10	* 3.99	45.86	PK	33.8	-31	48.66	54	-5.34	74	-25.34	0-360	200	H
9	* 3.744	45.59	PK	33.4	-30.6	48.39	54	-5.61	74	-25.61	0-360	200	V
11	* 4.847	42.13	PK	33.9	-28.9	47.13	54	-6.87	74	-26.87	0-360	101	V
2	* 1.495	38.74	Avg	28.9	-26.9	40.74	54	-13.26	-	-	0-360	100	H
6	* 2.489	36.38	Avg	32.5	-23.4	45.48	54	-8.52	-	-	0-360	200	H
4	* 1.485	34.61	Avg	29	-26.4	37.21	54	-16.79	-	-	0-360	101	V
8	* 2.498	37.92	Avg	32.6	-23.6	46.92	54	-7.08	-	-	0-360	201	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

Avg - Video bandwidth < Resolution bandwidth

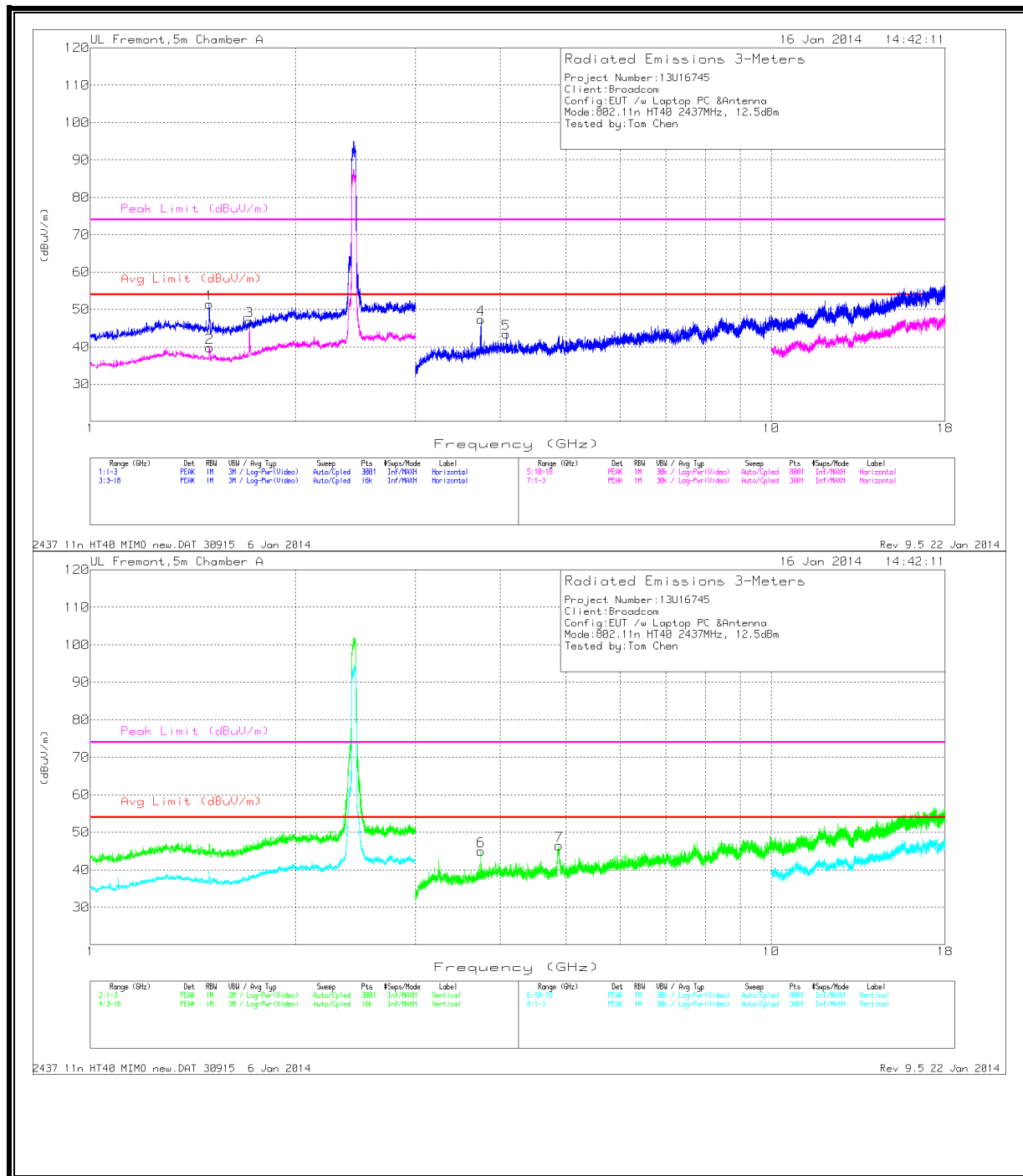
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl /Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 3.744	30.67	MAv1	33.4	-30.6	33.47	54	-20.53	-	-	31	114	V
* 3.9925	30.38	MAv1	33.8	-31	33.18	54	-20.82	-	-	79	157	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

MAv1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL-2437MHZ-HT40-MIMO



HORIZONTAL AND VERTICAL DATA

Trace Markers

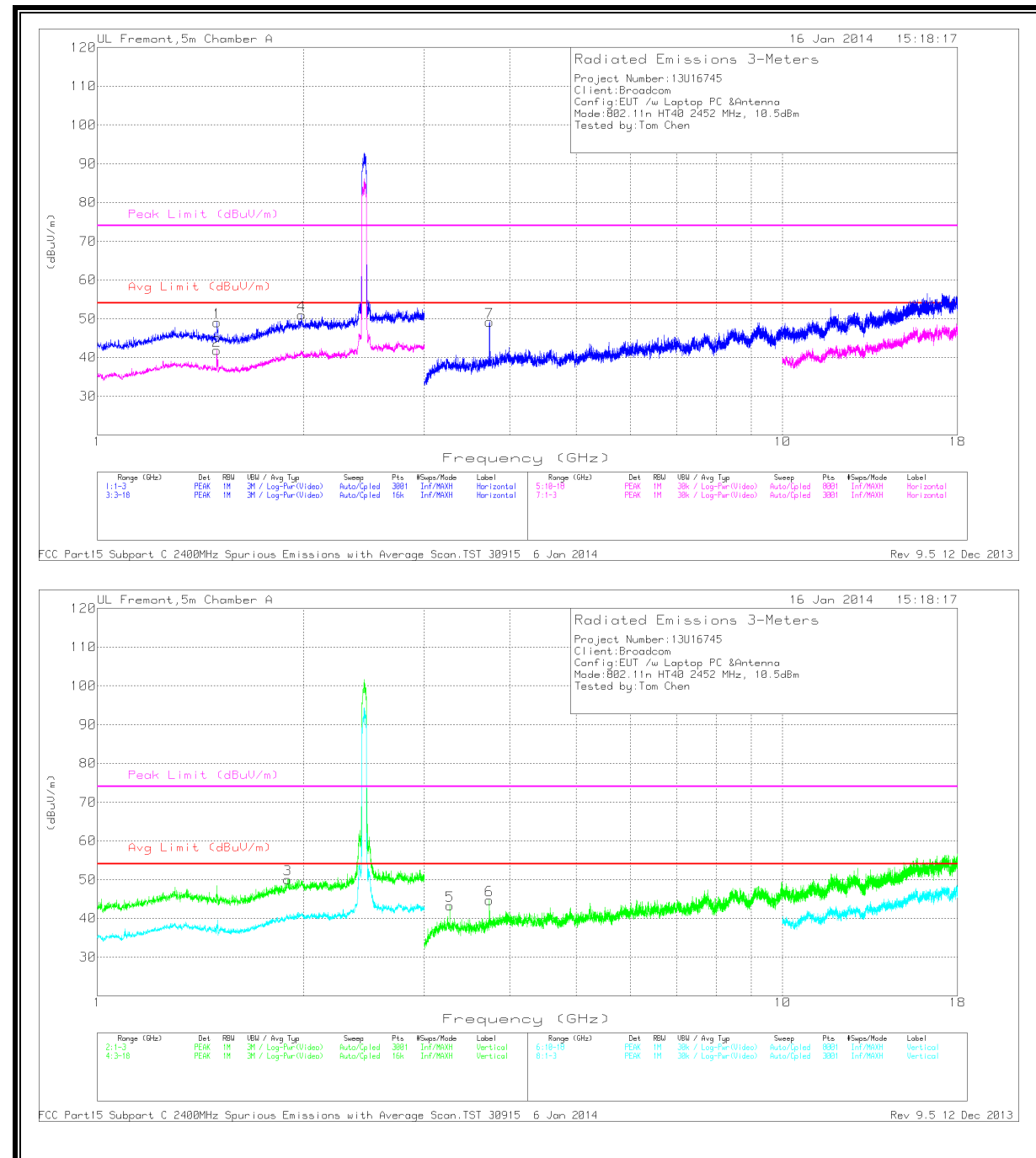
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.495	49.45	PK	28.9	-26.9	51.45	-	-	74	-22.55	0-360	100	H
2	1.497	38	Avg	28.9	-27.1	39.8	54	-14.2	-	-	0-360	101	H
3	1.714	42.88	PK	29.6	-25.6	46.88	54	-7.12	74	-27.12	0-360	100	H
6	3.747	42.4	PK	33.4	-30.8	45	54	-9	74	-29	0-360	200	V
4	3.748	44.73	PK	33.4	-30.8	47.33	54	-6.67	74	-26.67	0-360	200	H
5	4.08	39.76	PK	33.8	-30.1	43.46	54	-10.54	74	-30.54	0-360	101	H
7	4.877	40.65	PK	34	-28.2	46.45	54	-7.55	74	-27.55	0-360	200	V

PK - Peak detector

Avg - Video bandwidth < Resolution bandwidth

HARMONICS AND SPURIOUS EMISSIONS-High Channel

HIGH CHANNEL-2452 MHZ- HT40-MIMO



HORIZONTAL AND VERTICAL DATA-High Channel

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.495	47.05	PK	28.9	-26.9	49.05	-	-	74	-24.95	0-360	100	H
7	* 3.735	46.57	PK	33.4	-30.8	49.17	54	-4.83	74	-24.83	0-360	100	H
6	* 3.733	42.19	PK	33.4	-30.9	44.69	54	-9.31	74	-29.31	0-360	100	V
2	* 1.494	39.7	Avg	29	-26.9	41.8	54	-12.2	-	-	0-360	100	H
3	**1.896	43.38	PK	31.7	-25	50.08	-	-	-	-	0-360	100	V
4	**1.987	43.45	PK	31.9	-24.4	50.95	-	-	-	-	0-360	100	H
5	**3.269	42.28	PK	33.1	-32.1	43.28	-	-	-	-	0-360	200	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

** - indicates frequency in non-restricted band. Compliance is shown in conducted Out of Band Emissions testing.

PK - Peak detector

Avg - Video bandwidth < Resolution bandwidth

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl /Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 3.74	29.46	MAv1	33.4	-30.5	32.36	54	-21.64	-	-	265	353	H

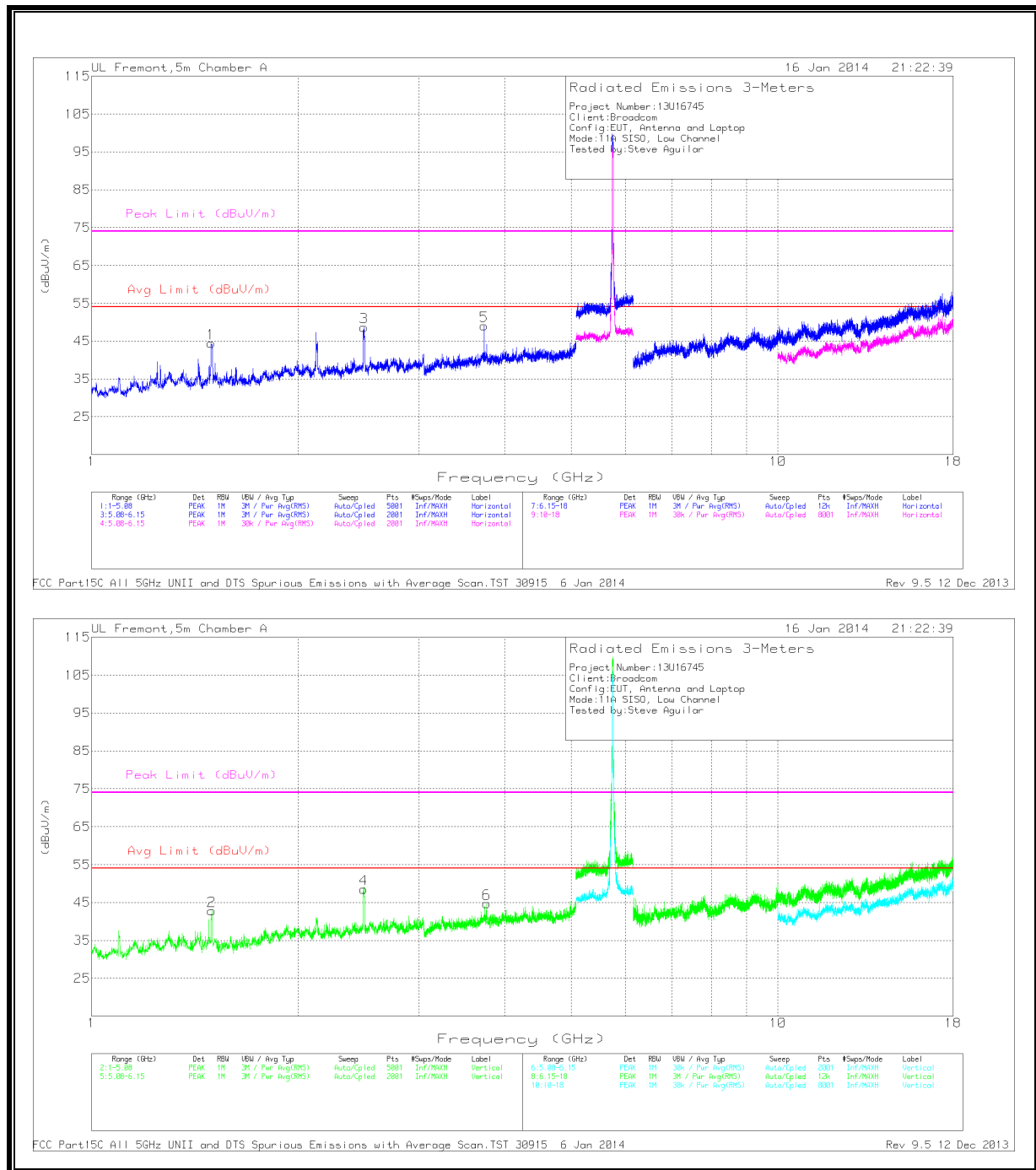
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

MAv1 - KDB558074 Option 1 Maximum RMS Average

8.1.6. TX ABOVE 1 GHz 802.11a MODE IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL – 5745 MHZ- 11a-SISO



HORIZONTAL AND VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.494	51.62	PK	29	-36.2	44.42	54	-9.58	74	-29.58	0-360	101	H
3	* 2.494	49.79	PK	32.6	-33.7	48.69	54	-5.31	74	-25.31	0-360	101	H
5	* 3.734	45.53	PK	33.4	-29.9	49.03	54	-4.97	74	-24.97	0-360	101	H
2	* 1.497	50.43	PK	28.9	-36.5	42.83	54	-11.17	74	-31.17	0-360	200	V
4	* 2.492	49.54	PK	32.6	-33.6	48.54	54	-5.46	74	-25.46	0-360	200	V
6	* 3.764	41.01	PK	33.4	-29.7	44.71	54	-9.29	74	-29.29	0-360	200	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

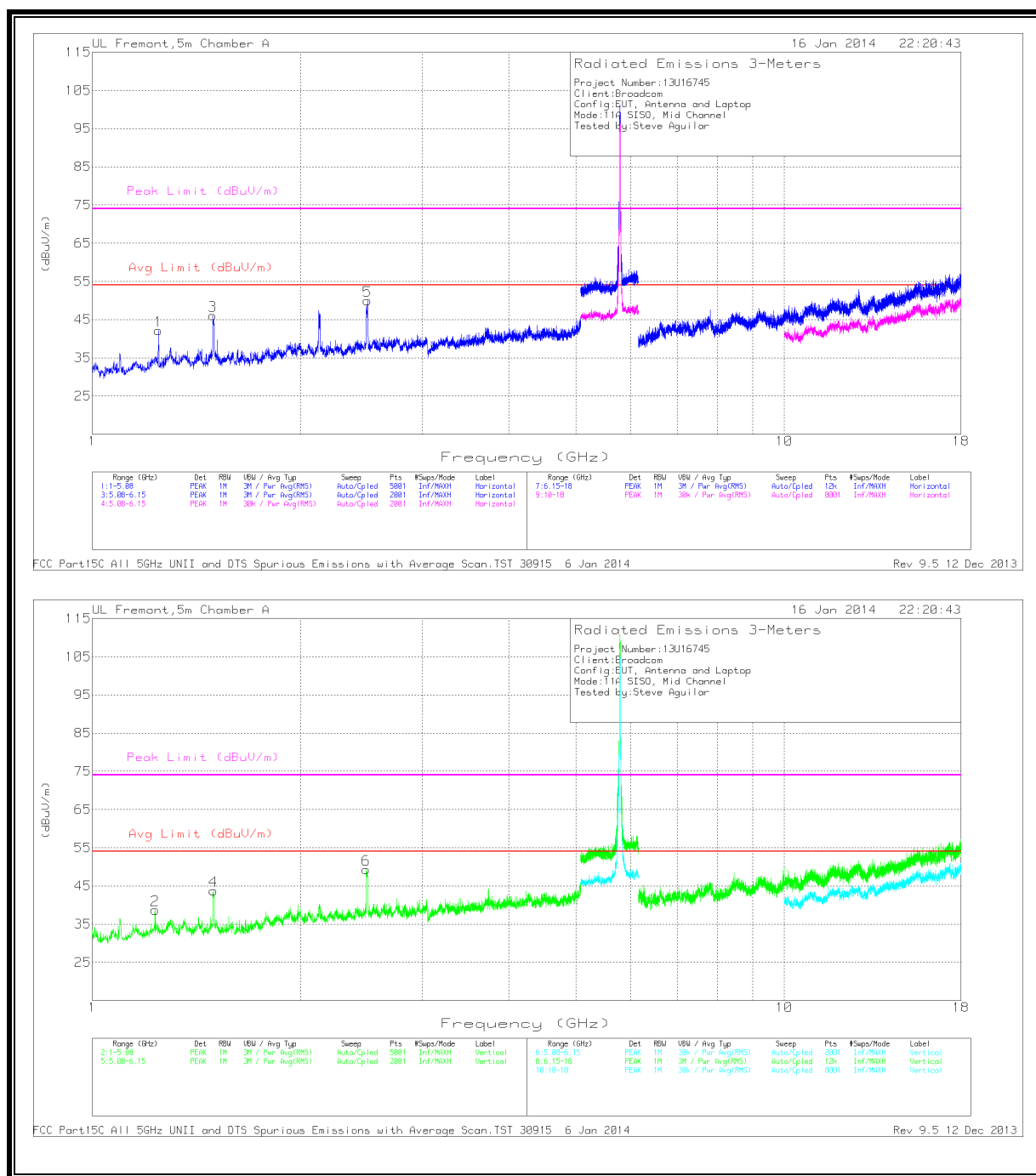
PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl /Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.49	41.7	MAv1	32.5	-33.6	40.6	54	-13.4	-	-	139	104	H
* 3.732	30.36	MAv1	33.4	-30	33.76	54	-20.24	-	-	262	202	H
* 2.49	41.88	MAv1	32.5	-33.6	40.78	54	-13.22	-	-	217	201	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

MAv1 - KDB558074 Option 1 Maximum RMS Average

HARMONICS AND SPURIOUS EMISSIONS**MID CHANNEL – 5785 MHZ- 11a-SISO**

HORIZONTAL AND VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.246	49.32	PK	29.9	-37.1	42.12	54	-11.88	74	-31.88	0-360	200	H
3	* 1.493	53.27	PK	29	-36.2	46.07	54	-7.93	74	-27.93	0-360	101	H
5	* 2.498	51.17	PK	32.6	-33.8	49.97	54	-4.03	74	-24.03	0-360	101	H
2	* 1.233	46.22	PK	29.8	-37.3	38.72	54	-15.28	74	-35.28	0-360	201	V
4	* 1.497	51.38	PK	28.9	-36.5	43.78	54	-10.22	74	-30.22	0-360	201	V
6	* 2.488	50.34	PK	32.5	-33.5	49.34	54	-4.66	74	-24.66	0-360	101	V
7	2.123	49.97	PK	31.6	-34.2	47.37	-	-	-	-	0-360	200	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

** - indicates frequency in non-restricted band. Compliance is shown in conducted Out of Band Emissions testing.

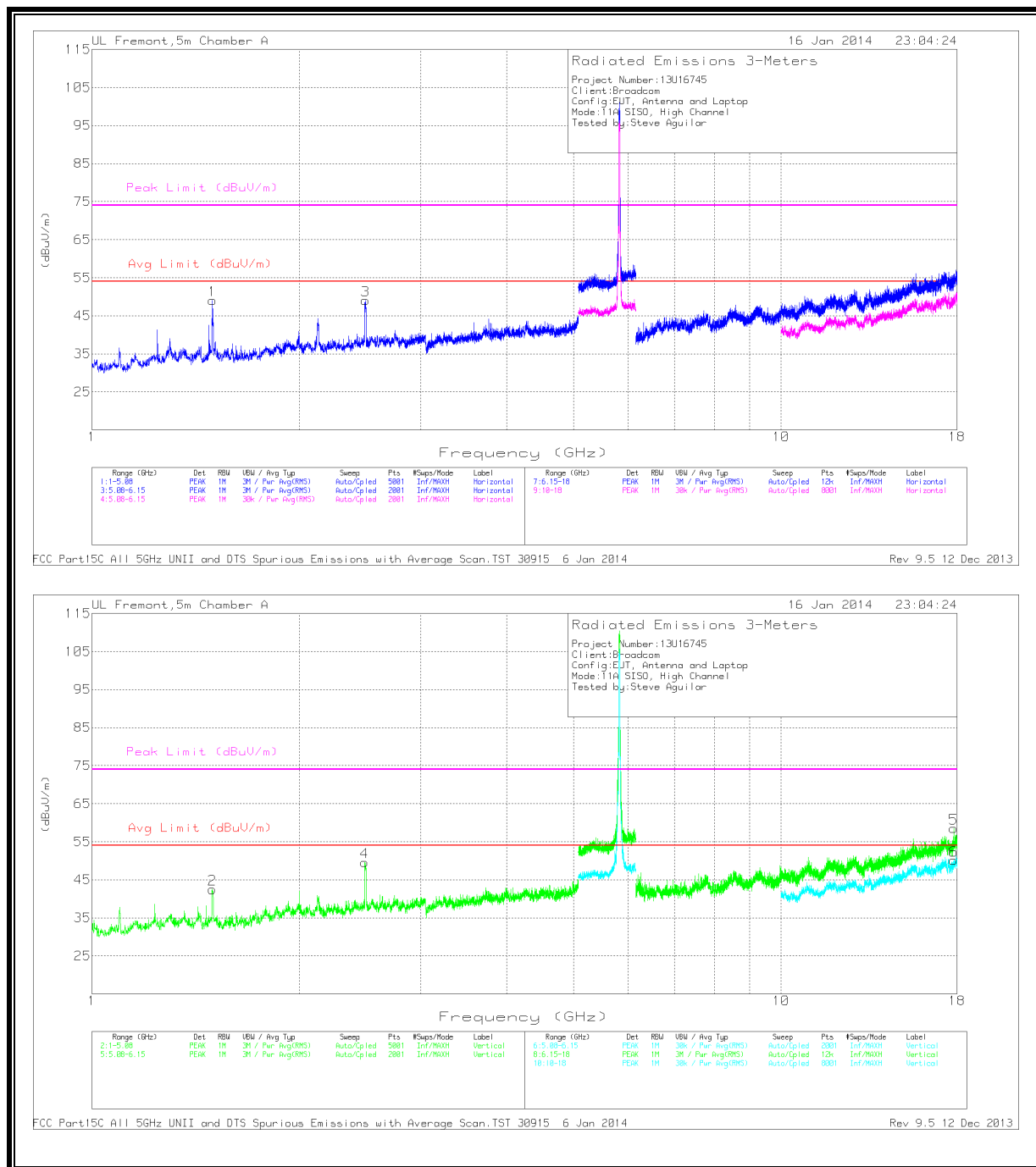
PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl /Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.495	40.49	MAv1	32.6	-33.7	39.39	54	-14.61	-	-	142	100	H
* 2.489	37.6	MAv1	32.5	-33.5	36.6	54	-17.4	-	-	0	368	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

MAv1 - KDB558074 Option 1 Maximum RMS Average

HARMONICS AND SPURIOUS EMISSIONS**HIGH CHANNEL – 5825 MHZ- 11a-SISO**

HORIZONTAL AND VERTICAL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.496	56.59	PK	28.9	-36.4	49.09	54	-4.91	74	-24.91	0-360	101	H
3	* 2.494	50.19	PK	32.6	-33.7	49.09	54	-4.91	74	-24.91	0-360	101	H
2	* 1.494	49.91	PK	28.9	-36.3	42.51	54	-11.49	74	-31.49	0-360	200	V
4	* 2.488	50.64	PK	32.5	-33.5	49.64	54	-4.36	74	-24.36	0-360	200	V
5	* 17.798	35.72	PK	41.4	-18.6	58.52	-	-	74	-15.48	0-360	200	V
6	* 17.8	27.53	Avg	41.4	-18.8	50.13	54	-3.87	-	-	0-360	201	V
7	**2.127	47.06	PK	31.6	-34.3	44.36	-	-	-	-	0-360	200	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

** - indicates frequency in non-restricted band. Compliance is shown in conducted Out of Band Emissions testing.

PK - Peak detector

Avg - Video bandwidth < Resolution bandwidth

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl /Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.496	44.52	MAv1	28.9	-36.4	37.02	54	-16.98	-	-	239	116	H
* 2.49	41.55	MAv1	32.5	-33.6	40.45	54	-13.55	-	-	187	301	H
* 2.488	33.59	MAv1	32.5	-33.5	32.59	54	-21.41	-	-	346	242	V
* 17.792	24.49	MAv1	41.4	-19.4	46.49	54	-7.51	-	-	141	284	V

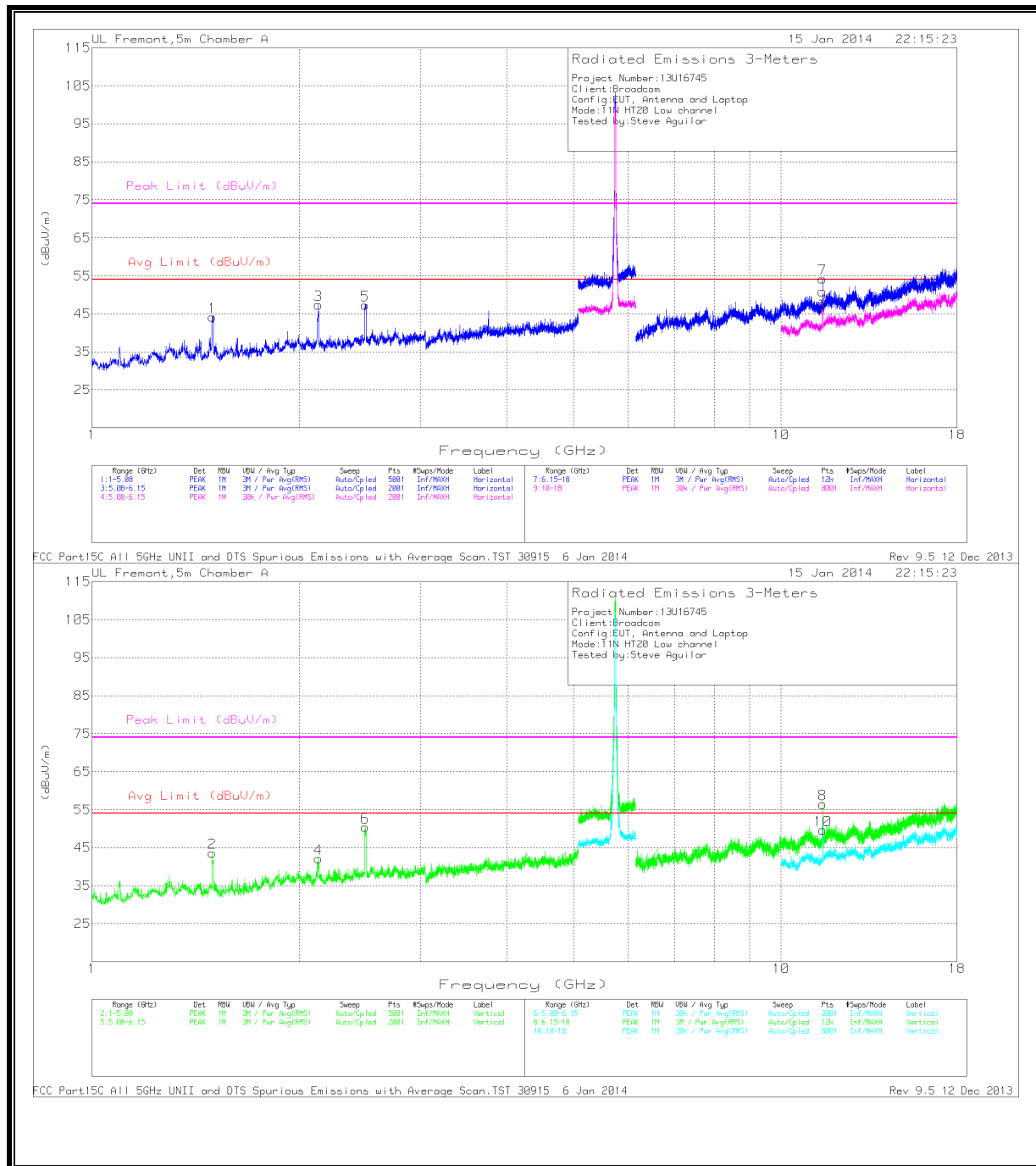
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

MAv1 - KDB558074 Option 1 Maximum RMS Average

8.1.7. TX ABOVE 1 GHz 802.11n HT20 2Tx MODE IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL-5745MHZ-HT20-MIMO



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.494	51.61	PK	28.9	-36.3	44.21	54	-9.79	74	-29.79	0-360	101	H
2	* 1.495	51.18	PK	28.9	-36.4	43.68	54	-10.32	74	-30.32	0-360	200	V
7	* 11.482	38.93	PK	38.3	-23	54.23	-	-	74	-19.77	0-360	200	H
9	* 11.482	32.24	Avg	38.3	-23	47.54	54	-6.46	-	-	0-360	200	H
8	* 11.494	41.07	PK	38.3	-22.9	56.47	-	-	74	-17.53	0-360	201	V
10	* 11.494	34.25	Avg	38.3	-22.9	49.65	54	-4.35	-	-	0-360	200	V
5	* 2.492	48.3	PK	32.6	-33.6	47.3	54	-6.7	74	-26.7	0-360	101	H
6	* 2.492	51.42	PK	32.6	-33.6	50.42	54	-3.58	74	-23.58	0-360	200	V
3	**2.131	49.88	PK	31.6	-34.1	47.38	-	-	-	-	0-360	200	H
4	**2.131	44.62	PK	31.6	-34.1	42.12	-	-	-	-	0-360	101	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

** - indicates frequency in non-restricted band. Compliance is shown in conducted Out of Band Emissions testing.

PK - Peak detector

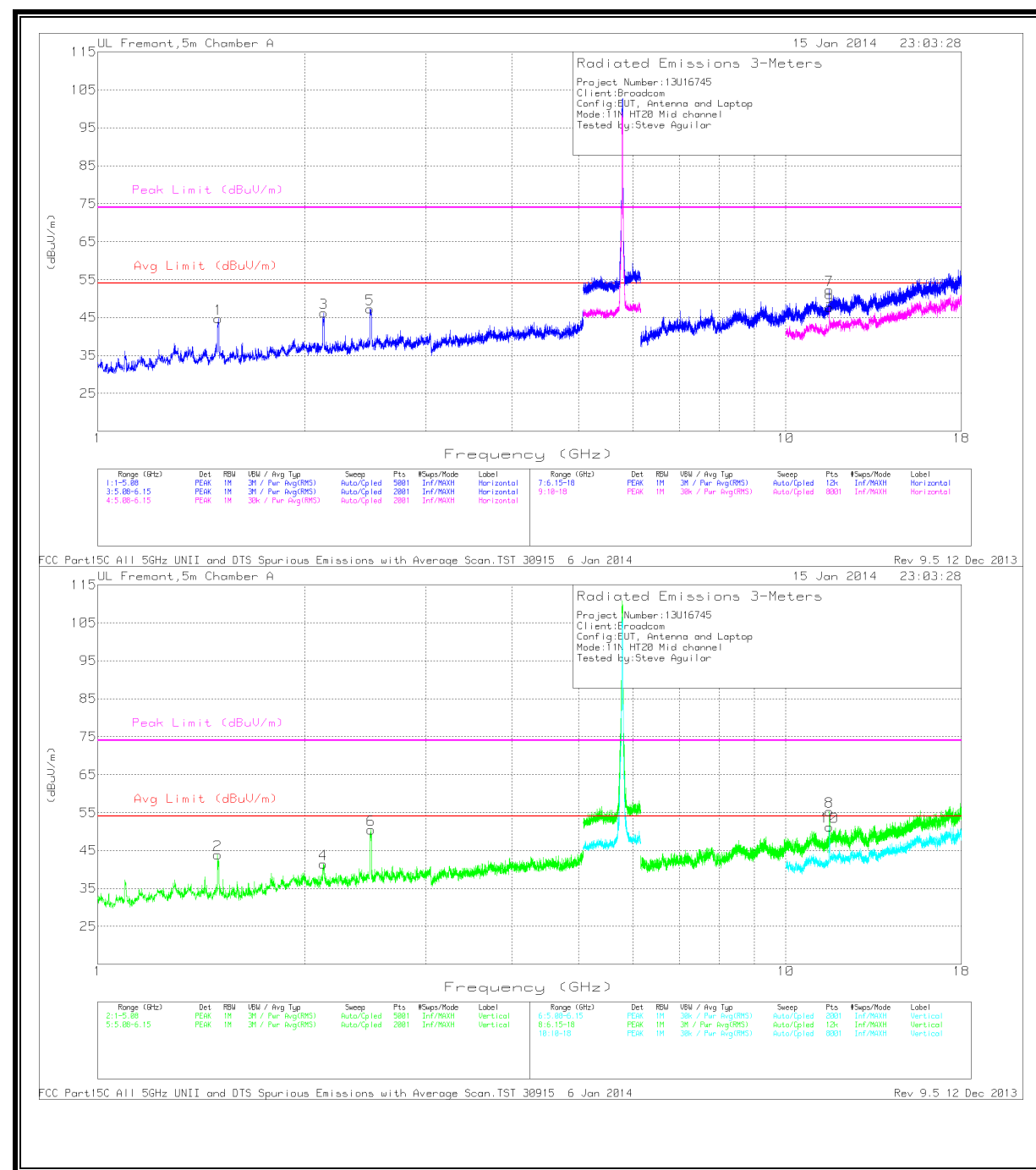
Avg - Video bandwidth < Resolution bandwidth

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl /Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.489	42.24	MAv1	32.5	-33.5	41.24	54	-12.76	-	-	224	114	V
* 11.494	32.16	MAv1	38.3	-23	47.46	54	-6.54	-	-	246	219	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

MAv1 - KDB558074 Option 1 Maximum RMS Average

HARMONICS AND SPURIOUS EMISSIONS**MID CHANNEL-5785MHZ-HT20-MIMO**

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 1.494	51.1	PK	29	-36.2	43.9	54	-10.1	74	-30.1	0-360	201	V
1	* 1.497	52.3	PK	28.9	-36.5	44.7	54	-9.3	74	-29.3	0-360	101	H
9	* 11.567	31.84	Avg	38.4	-22.5	47.74	54	-6.26	-	-	0-360	200	H
8	* 11.57	39.19	PK	38.4	-22.3	55.29	-	-	74	-18.71	0-360	201	V
10	* 11.57	35.16	Avg	38.4	-22.3	51.26	54	-2.74	-	-	0-360	201	V
7	* 11.571	36.16	PK	38.4	-22.3	52.26	54	-1.74	74	-21.74	0-360	200	H
5	* 2.488	48.3	PK	32.5	-33.5	47.3	54	-6.7	74	-26.7	0-360	200	H
6	* 2.495	51.58	PK	32.6	-33.7	50.48	54	-3.52	74	-23.52	0-360	201	V
4	**2.126	44.15	PK	31.6	-34.3	41.45	-	-	-	-	0-360	101	V
3	**2.131	48.74	PK	31.6	-34.1	46.24	-	-	-	-	0-360	200	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

** - indicates frequency in non-restricted band. Compliance is shown in conducted Out of Band Emissions testing.

PK - Peak detector

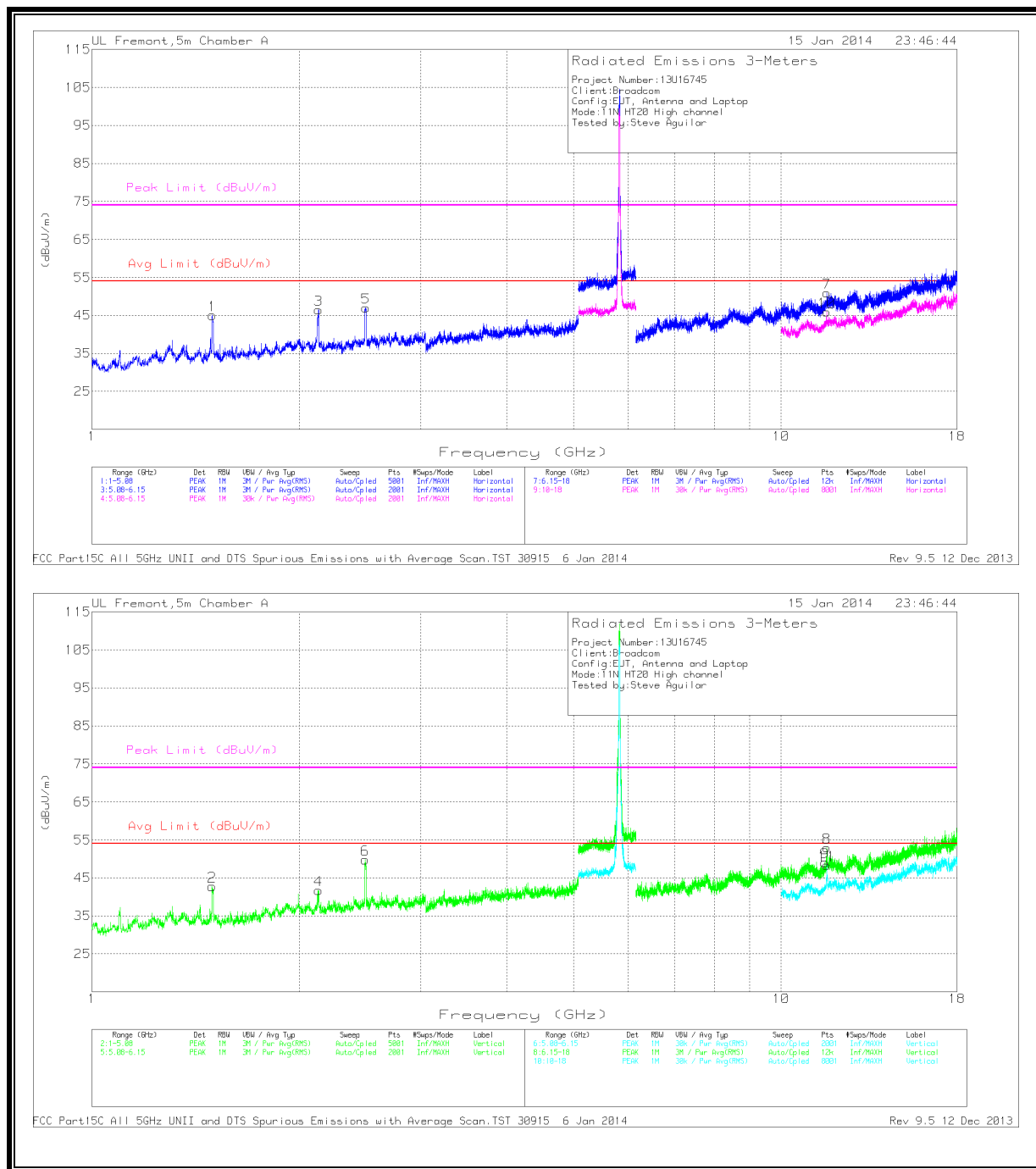
Avg - Video bandwidth < Resolution bandwidth

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl /Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.495	42.33	MAv1	32.6	-33.7	41.23	54	-12.77	-	-	225	115	V
* 11.571	29.29	MAv1	38.4	-22.2	45.49	54	-8.51	-	-	239	241	H
* 11.571	31.96	MAv1	38.4	-22.3	48.06	54	-5.94	-	-	239	177	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

MAv1 - KDB558074 Option 1 Maximum RMS Average

HARMONICS AND SPURIOUS EMISSIONS**HIGH CHANNEL-5825MHZ-HT20-MIMO**

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F lter/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 1.494	49.98	PK	29	-36.2	42.78	54	-11.22	74	-31.22	0-360	201	V
1	* 1.495	52.57	PK	28.9	-36.4	45.07	54	-8.93	74	-28.93	0-360	101	H
9	* 11.575	33.01	PK	38.4	-22.3	49.11	54	-4.89	74	-24.89	0-360	101	V
8	* 11.647	37.47	PK	38.4	-22.9	52.97	-	-	74	-21.03	0-360	200	V
10	* 11.647	30.43	Avg	38.4	-22.9	45.93	54	-8.07	-	-	0-360	200	H
11	* 11.649	32.79	Avg	38.4	-22.8	48.39	54	-5.61	-	-	0-360	200	V
7	* 11.654	35.1	PK	38.5	-22.6	51	-	-	74	-23	0-360	200	H
6	* 2.492	50.83	PK	32.6	-33.6	49.83	54	-4.17	74	-24.17	0-360	101	V
5	* 2.497	48.26	PK	32.6	-33.8	47.06	54	-6.94	74	-26.94	0-360	200	H
3	**2.132	49.03	PK	31.6	-34.1	46.53	-	-	-	-	0-360	200	H
4	**2.132	44.26	PK	31.6	-34.1	41.76	-	-	-	-	0-360	101	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

** - indicates frequency in non-restricted band. Compliance is shown in conducted Out of Band Emissions testing.

PK - Peak detector

Avg - Video bandwidth < Resolution bandwidth

Radiated Emissions

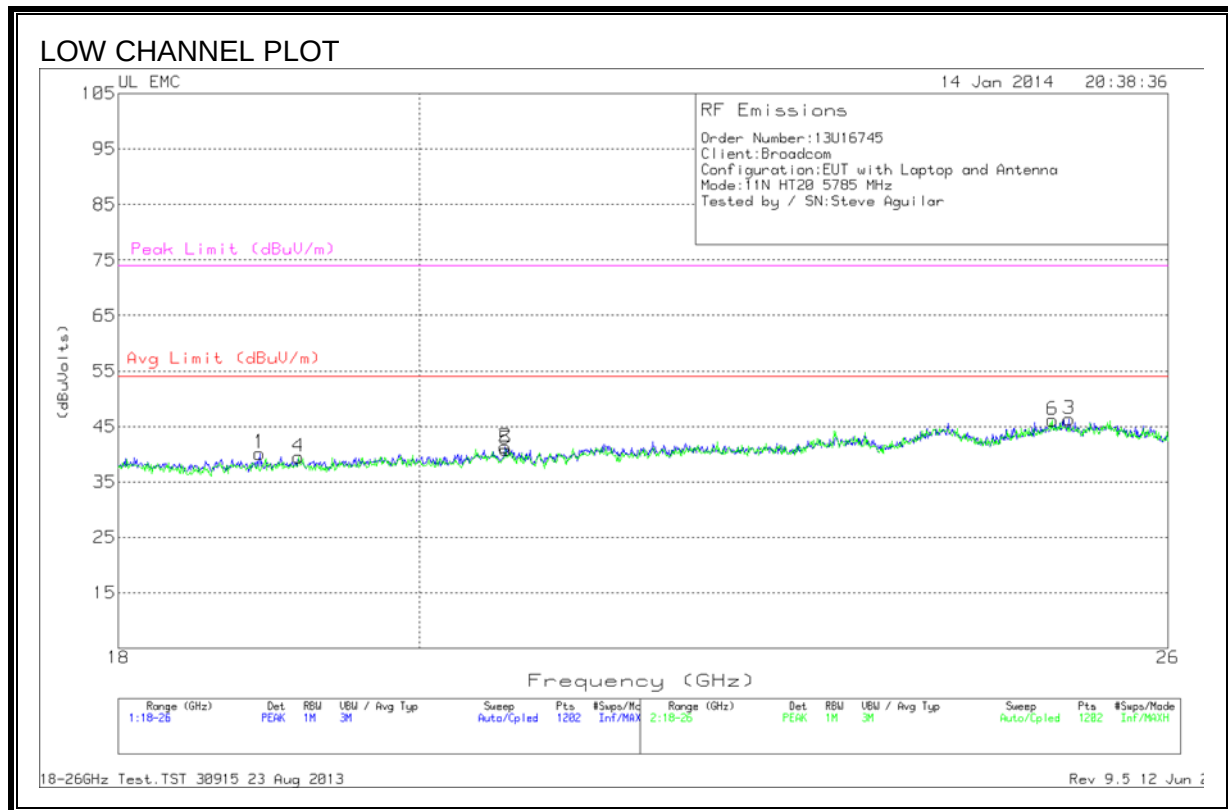
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl /Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.489	41.7	MAv1	32.5	-33.6	40.6	54	-13.4	-	-	219	123	V
* 11.652	25.28	MAv1	38.5	-22.7	41.08	54	-12.92	-	-	296	143	H
* 11.647	29.66	MAv1	38.4	-22.9	45.16	54	-8.84	-	-	230	190	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

MAv1 - KDB558074 Option 1 Maximum RMS Average

5.8 GHz Mid Channel 18-26 GHz

Worst case test mode and channel: HT20, Mid channel.



LOW CHANNEL DATA

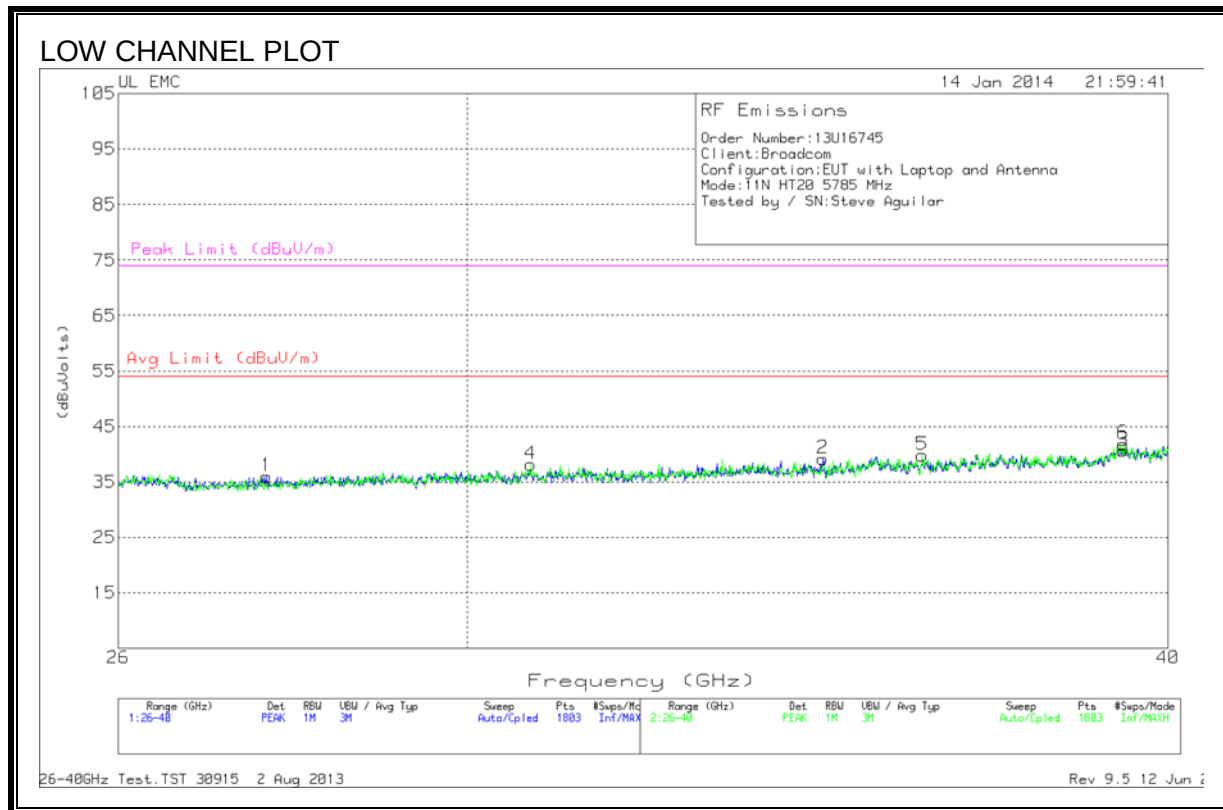
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T89 (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	18.913	41.77	PK	32.5	-24.6	-9.5	40.16	54	-13.83	74	-33.83
2	20.611	41.73	PK	32.9	-23.8	-9.5	41.33	54	-12.66	74	-32.66
3	25.114	45.03	PK	33.9	-23.1	-9.5	46.33	54	-7.66	74	-27.66
4	19.172	40.2	PK	32.5	-23.7	-9.5	39.5	54	-14.5	74	-34.5
5	20.618	41.03	PK	32.9	-23.6	-9.5	40.83	54	-13.16	74	-33.16
6	24.968	44.57	PK	34	-22.9	-9.5	46.16	54	-7.83	74	-27.83

PK - Peak detector

5.8 GHz Mid Channel 26 – 40 GHz

Worst case test mode and channel: HT20, Mid channel.



MID CHANNEL DATA

Trace Markers

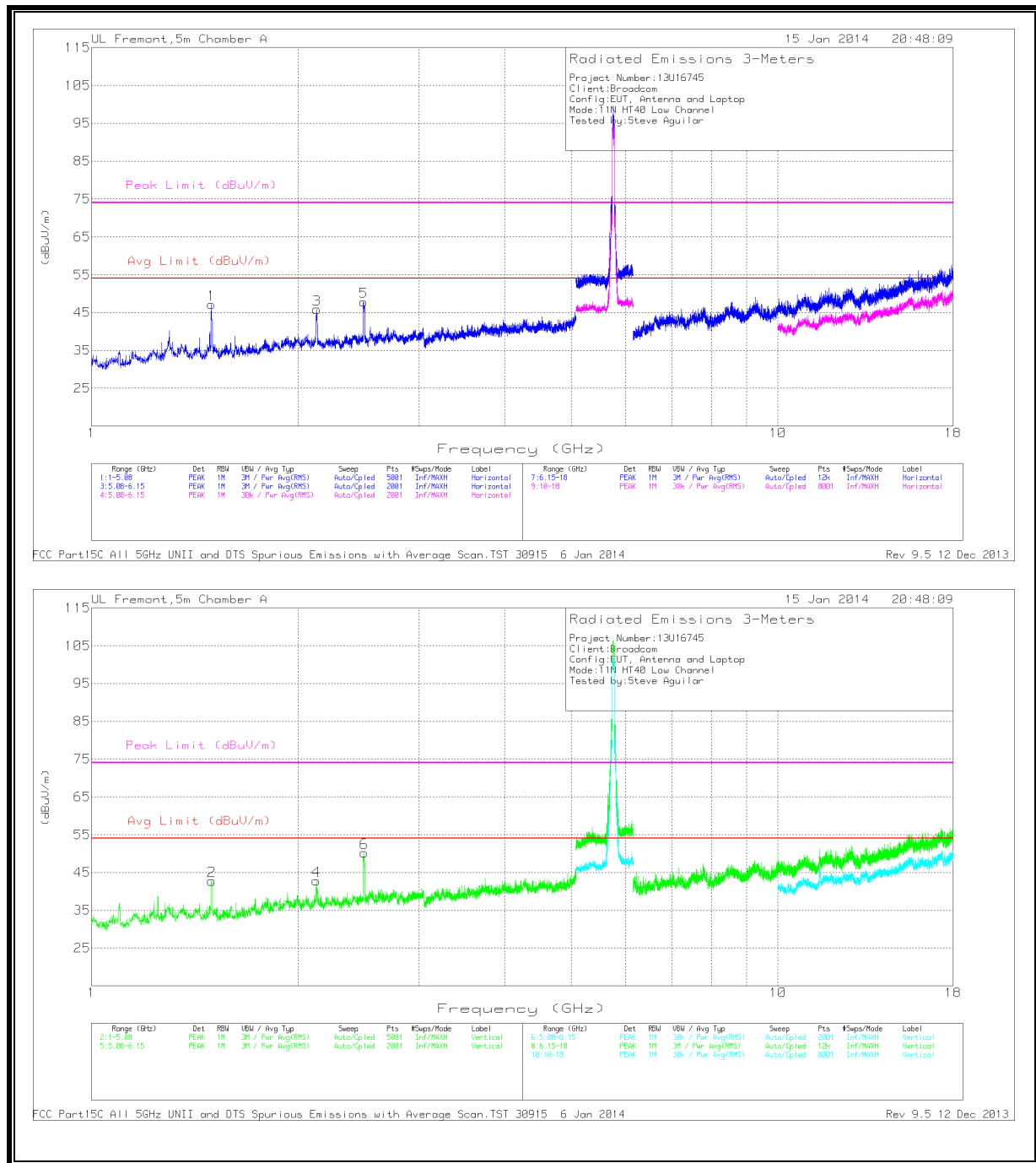
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	T90 AF (dB/m)	Amp/Cbl (dB)	Dist Corr (dB)	Corrected Reading (dBuVolts)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)
1	27.632	44	PK	35.8	-34.3	-9.5	36	54	-18	74	-38
2	34.717	48.37	PK	37.2	-36.9	-9.5	39.16	54	-14.83	74	-34.83
3	39.266	48.07	PK	38.5	-36.4	-9.5	40.66	54	-13.33	74	-33.33
4	30.794	47.27	PK	36.1	-35.7	-9.5	38.16	54	-15.83	74	-35.833
5	36.162	50.03	PK	37.2	-37.9	-9.5	39.83	54	-14.16	74	-34.16
6	39.27	49.13	PK	38.5	-36.3	-9.5	41.83	54	-12.16	74	-32.16

PK - Peak detector

8.1.8. TX ABOVE 1 GHz 802.11n HT40 2Tx MODE IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL-5755MHZ-HT40-MIMO



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.494	54.54	PK	28.9	-36.3	47.14	54	-6.86	74	-26.86	0-360	200	H
2	* 1.496	50.28	PK	28.9	-36.4	42.78	54	-11.22	74	-31.22	0-360	201	V
5	* 2.492	48.86	PK	32.6	-33.6	47.86	54	-6.14	74	-26.14	0-360	200	H
6	* 2.496	51.32	PK	32.6	-33.7	50.22	54	-3.78	74	-23.78	0-360	201	V
4	2.125	45.53	PK	31.6	-34.3	42.83	54	-11.17	74	-31.17	0-360	201	V
3	2.129	48.46	PK	31.6	-34.2	45.86	54	-8.14	74	-28.14	0-360	200	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

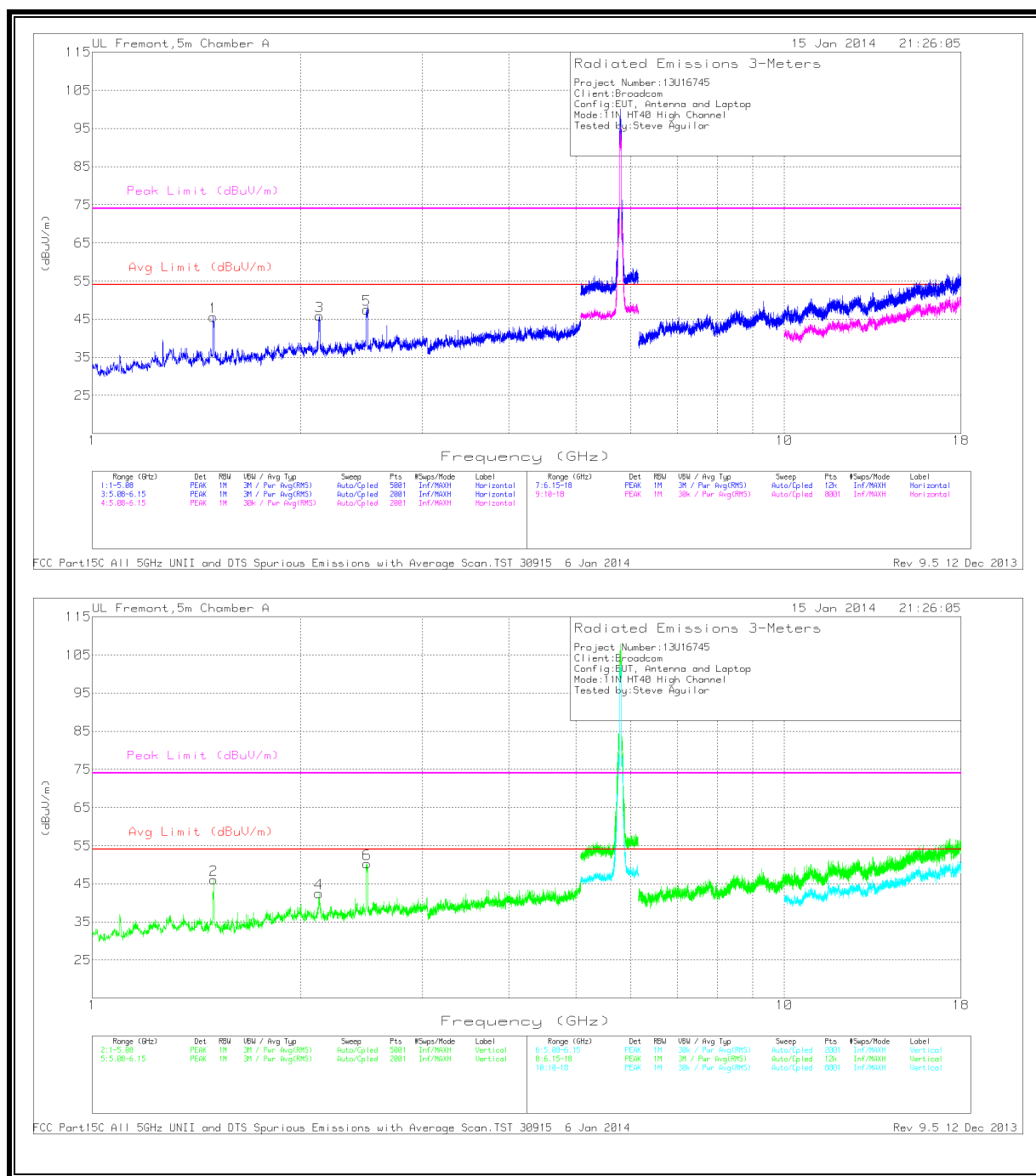
PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl /Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.492	41.84	MAv1	32.6	-33.6	40.84	54	-13.16	-	-	224	160	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

MAv1 - KDB558074 Option 1 Maximum RMS Average

HARMONICS AND SPURIOUS EMISSIONS**HIGH CHANNEL-5795MHZ-HT40-MIMO**

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.495	53.11	PK	28.9	-36.4	45.61	54	-8.39	74	-28.39	0-360	101	H
2	* 1.498	53.78	PK	28.9	-36.6	46.08	54	-7.92	74	-27.92	0-360	201	V
5	* 2.492	48.5	PK	32.6	-33.6	47.5	54	-6.5	74	-26.5	0-360	200	H
6	* 2.494	51.37	PK	32.6	-33.7	50.27	54	-3.73	74	-23.73	0-360	201	V
4	2.125	45.2	PK	31.6	-34.3	42.5	54	-11.5	74	-31.5	0-360	201	V
3	2.129	48.46	PK	31.6	-34.2	45.86	54	-8.14	74	-28.14	0-360	200	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl /Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.489	42.29	MAv1	32.5	-33.6	41.19	54	-12.81	-	-	221	201	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

MAv1 - KDB558074 Option 1 Maximum RMS Average

8.2. WORST-CASE BELOW 1 GHz

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

Trace Markers

Frequency (MHz)	Meter Reading (dBuV)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
54.9475	55.1	PK	7	-27.3	34.8	40	-5.2	0-360	101	H
63.1075	58.48	PK	7.6	-27.2	38.88	40	-1.12	0-360	400	H
71.905	55.9	PK	8.3	-27.1	37.1	40	-2.9	0-360	101	V
181.555	55.49	PK	11.3	-26.2	40.59	43.52	-2.93	0-360	200	H
225.8	57.56	PK	10.7	-25.9	42.36	46.02	-3.66	0-360	101	H
896.2	45.81	PK	21.9	-22.6	45.11	46.02	-.91	0-360	200	V

PK - Peak detector

Radiated Emissions

Frequency (MHz)	Meter Reading (dBuV)	Det	AF T477 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
55.0203	32	QP	7	-27.3	11.7	40	-28.3	161	360	H
64.17	45.25	QP	7.8	-27.3	25.75	40	-14.25	158	364	H
68.4125	40.88	QP	8.1	-27.2	21.78	40	-18.22	158	364	V
74.115	41.61	QP	8.2	-27.1	22.71	40	-17.29	163	101	V
199.9395	32.96	QP	12.3	-26.1	19.16	40	-24.36	124	206	V
895.9885	16.39	QP	21.9	-22.6	15.69	40	-30.33	40	224	H

PK - Peak detector

QP - Quasi-Peak detector