



**FCC CFR47 PART 15 SUBPART C
INDUSTRY CANADA RSS-247 ISSUE 1**

CERTIFICATION TEST REPORT

FOR

Wi-Fi DTS b/g/n PORTABLE TOUCH SCREEN

MODEL NUMBER: C4-TT7

FCC ID: R33C4TT7

IC ID: 7848A-C4TT7

REPORT NUMBER: 15U20793-E1 REVISION A

ISSUE DATE: Jun 12, 2015

Prepared for
**CONTROL4 CORP.
11724 S. ELECTION RD.
SALT LAKE CITY, UT 84020
USA**

Prepared by
**UL VERIFICATION SERVICES INC.
47173 BENICIA STREET
FREMONT, CA 94538, U.S.A.
TEL: (510) 771-1000
FAX: (510) 661-0888**



NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	6/8/15	Initial Issue	P. Zhang
A	6/12/15	Update antenna info; setup block diagram; remove average power verification; updated reference standard in AC line conducted; Update test date	P. Zhang

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: CONTROL4 CORP.

EUT DESCRIPTION: Wi-Fi DTS b/g/n Portable Touch Screen

MODEL: C4-TT7

SERIAL NUMBER: 000fff0b0125 (Conducted), 000fff801f06 (Radiated)

DATE TESTED: MAY 19 – 22, 2015

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-247 Issue 1	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.

Approved & Released
For UL Verification Services Inc. By:

Tested By:



PENG ZHANG
CONSUMER TECHNOLOGY DIVISION
PROJECT LEAD
UL Verification Services Inc.



CHARLES VERGONIO
CONSUMER TECHNOLOGY DIVISION
LAB 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, ANSI C63.10-2009 for FCC and ANSI C63.10-2013 for IC.

Testing for radiated emissions above 1GHz was performed with the EUT elevated at 1.5m instead of 0.8m. 1.5m is the required height in ANSI C63.10:2013 as referenced by RSS GEN issue 4. This test height has been permitted by FCC as discussed in FCC/TCB conference call in December 2014.

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
☒ Chamber A(IC: 2324B-1)	☐ Chamber D(IC: 2324B-4)
☒ Chamber B(IC: 2324B-2)	☐ Chamber E(IC: 2324B-5)
☒ Chamber C(IC: 2324B-3)	☐ Chamber F(IC: 2324B-6)
	☐ Chamber G(IC: 2324B-7)
	☐ Chamber H(IC: 2324B-8)

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
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 18000 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 a Wi-Fi DTS b/g/n Portable Touch Screen.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2412 - 2462	802.11b	14.3	26.92
2412 - 2462	802.11g	12.1	16.22
2412 - 2462	802.11n HT20	11.2	13.18

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an PIFA antenna, with a maximum gain of 5.62 dBi.

5.4. WORST-CASE CONFIGURATION AND MODE

Radiated emission and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

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

Based on the baseline scan, the worst-case data rates were:

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

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	PHIHONG	PSAA20R-050	N/A	N/A
DOCK	CONTROL 4	N/A	N/A	N/A

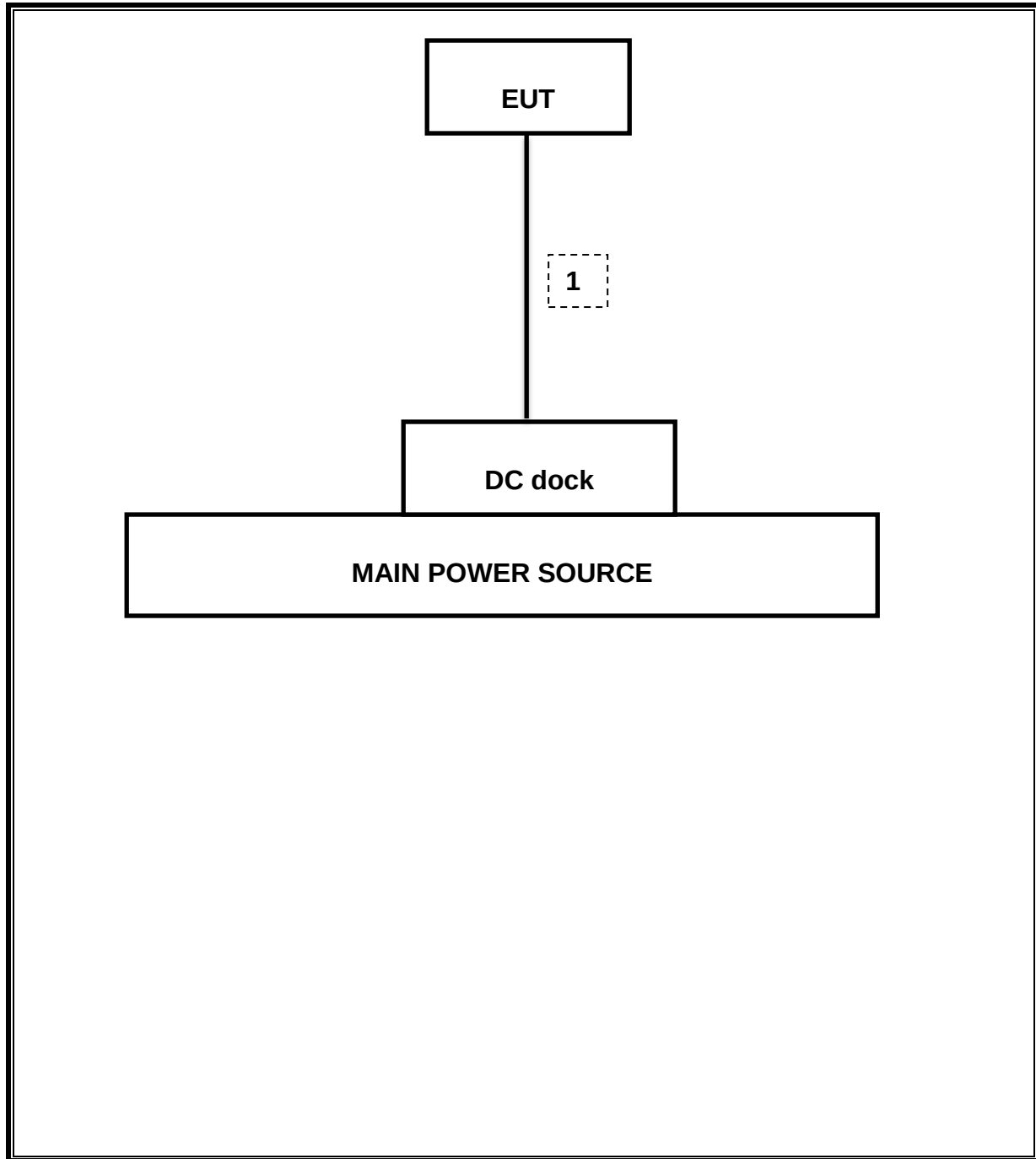
I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC Power	1	Mini-USB	Shielded	1.2m	N/A

TEST SETUP

The EUT is a stand-alone unit 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 Due
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01069	12/20/15
Spectrum Analyzer, 9KHz-40GHz	HP	8564E	C00986	04/01/16
EMI Test Receiver, 9 kHz-7 GHz	R & S	ESCI 7	1000741	08/13/15
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	08/18/15
Peak Power Meter	Agilent / HP	E4416A	C00963	12/13/15
Peak / Average Power Sensor	Agilent / HP	E9327A	C00964	12/13/15
Antenna, Horn, 1-18 GHz	ETS	3117	C01022	02/21/16
Antenna, Horn, 18- 26 GHz	ARA	MWH-1826/B	C00946	11/12/15
Antenna, Horn, 26-40 GHz	ARA	MWH-2640	C00891	06/28/15
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	T243	03/06/16
RF Preamplifier, 100KHz -> 1300MHz	HP	TBD	C00825	06/01/15
RF Preamplifier, 1GHz - 18GHz	Miteq	NSP4000-SP2	924343	03/23/16
RF Preamplifier, 1GHz - 26.5GHz	HP	8449B	F00351	06/27/15
AC Power Supply, 2,500VA 45-500Hz	Elgar-Ametek	CW2501M	F00013	CNR
RF Preamplifier, 1GHz - 40GHz	Miteq	NSP4000-SP2	C00990	08/20/15
Attenuator / Switch driver	HP	11713A	F00204	CNR
Low Pass Filter 3GHz	Micro-Tronics	LPS17541	F00219	05/23/15
High Pass Filter 5GHz	Micro-Tronics	HPS17542	F00222	05/22/15
High Pass Filter 6GHz	Micro-Tronics	HPM17543	F00224	05/22/15

Test Software List			
Description	Manufacturer	Model	Version
Radiated Software	UL	UL EMC	Version 9.5, 07/22/14
Conducted Software	UL	UL EMC	Version 9.5, 05/17/14
CLT Software	UL	UL RF	Version 1.0, 02/02/15
Antenna Port Software	UL	UL RF	Version 2.1.1.1, 1/20/15

7. MEASUREMENT METHODS

KDB 558074 D01 DTS Meas Guidance v03r02: Measurement Procedure AVGPM-G is used for power and AVGPS-3 is used for power spectral density.

Unwanted emissions within Restricted Bands are measured using traditional radiated procedures.

Band edge emissions within Restricted Bands are measured using RMS with duty cycle factor offset method.

8. SUMMARY TABLE

FCC Part Section	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Worst Case
15.247 (a)(2)	RSS-247 5.2.1	Occupied Band width (6dB)	>500KHz	Conducted	Pass	7.03MHz
2.1051, 15.247 (d)	RSS-247 5.5	Band Edge / Conducted Spurious Emission	-20dBc		Pass	-35.88dBm
15.247	RSS-247 5.4.4	TX conducted output power	<30dBm		Pass	14.3dBm
15.247	RSS-247 5.2.2	PSD	<8dBm		Pass	-7.12dBm
15.207 (a)	RSS-GEN 8.8	AC Power Line conducted emissions	Section 10	Radiated	Pass	57.68dBuV(PK)
15.205, 15.209	RSS-GEN 8.9/7	Radiated Spurious Emission	< 54dBuV/m		Pass	51.47dBuV/m

9. ANTENNA PORT TEST RESULTS

9.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

IC RSS-247 5.2.1

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

TEST PROCEDURE

Reference to KDB 558074 D01 DTS Meas Guidance v03r02: The transmitter output is connected to a spectrum analyzer with the RBW set to 100 kHz, the VBW $\geq 3 \times$ RBW, peak detector and max hold.

RESULTS

9.1.1. 802.11b MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	7.03	0.5
Mid	2437	7.06	0.5
High	2462	7.54	0.5
Worst		7.03	

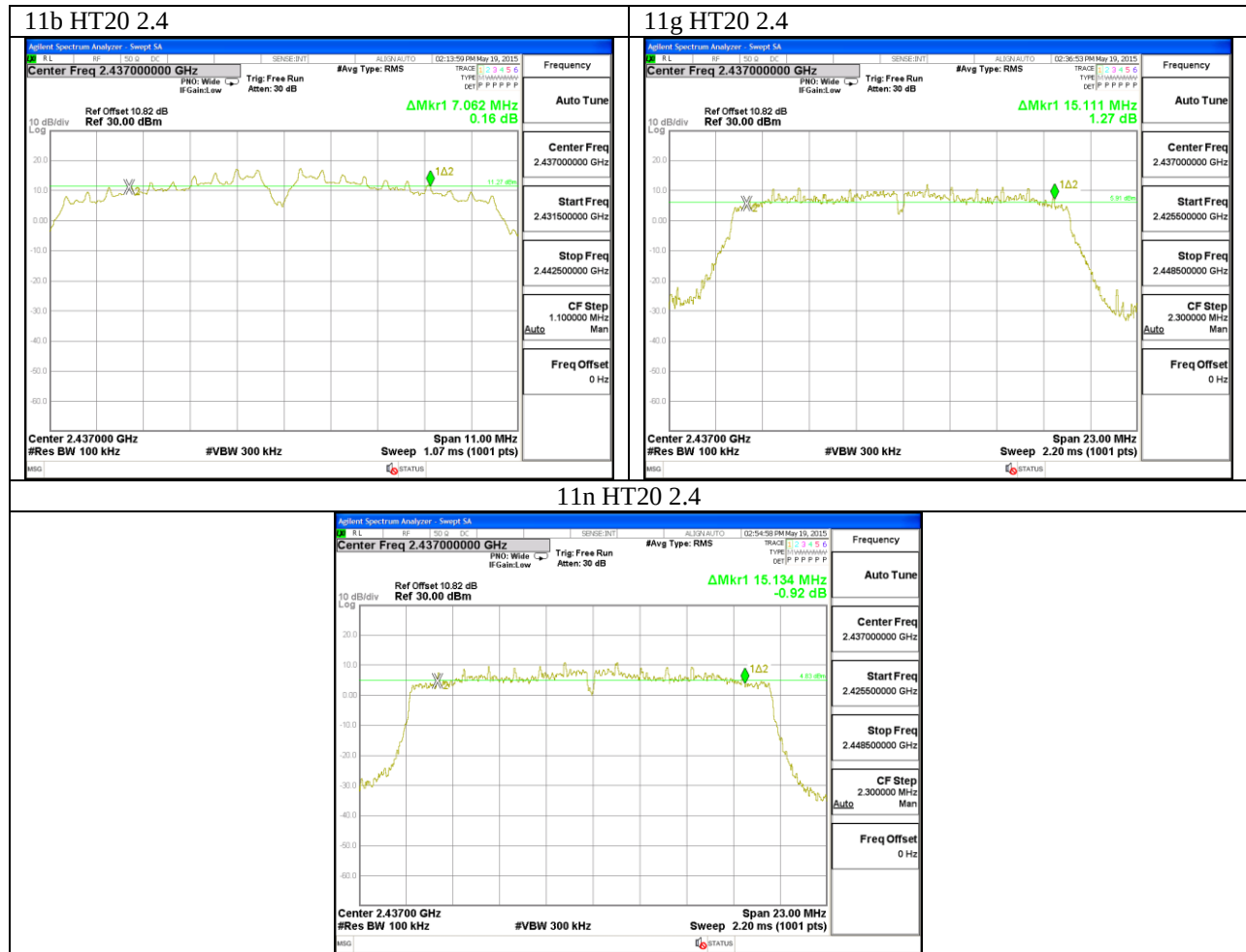
9.1.2. 802.11g MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	15.11	0.5
Mid	2437	15.11	0.5
High	2462	15.16	0.5
Worst		15.11	

9.1.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	15.07	0.5
Mid	2437	15.13	0.5
High	2462	15.09	0.5
Worst		15.07	

9.1.4. 6 dB BANDWIDTH MID CH PLOTS



9.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

9.2.1. 802.11b MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	12.02
Mid	2437	11.94
High	2462	12.14
Worst		12.14

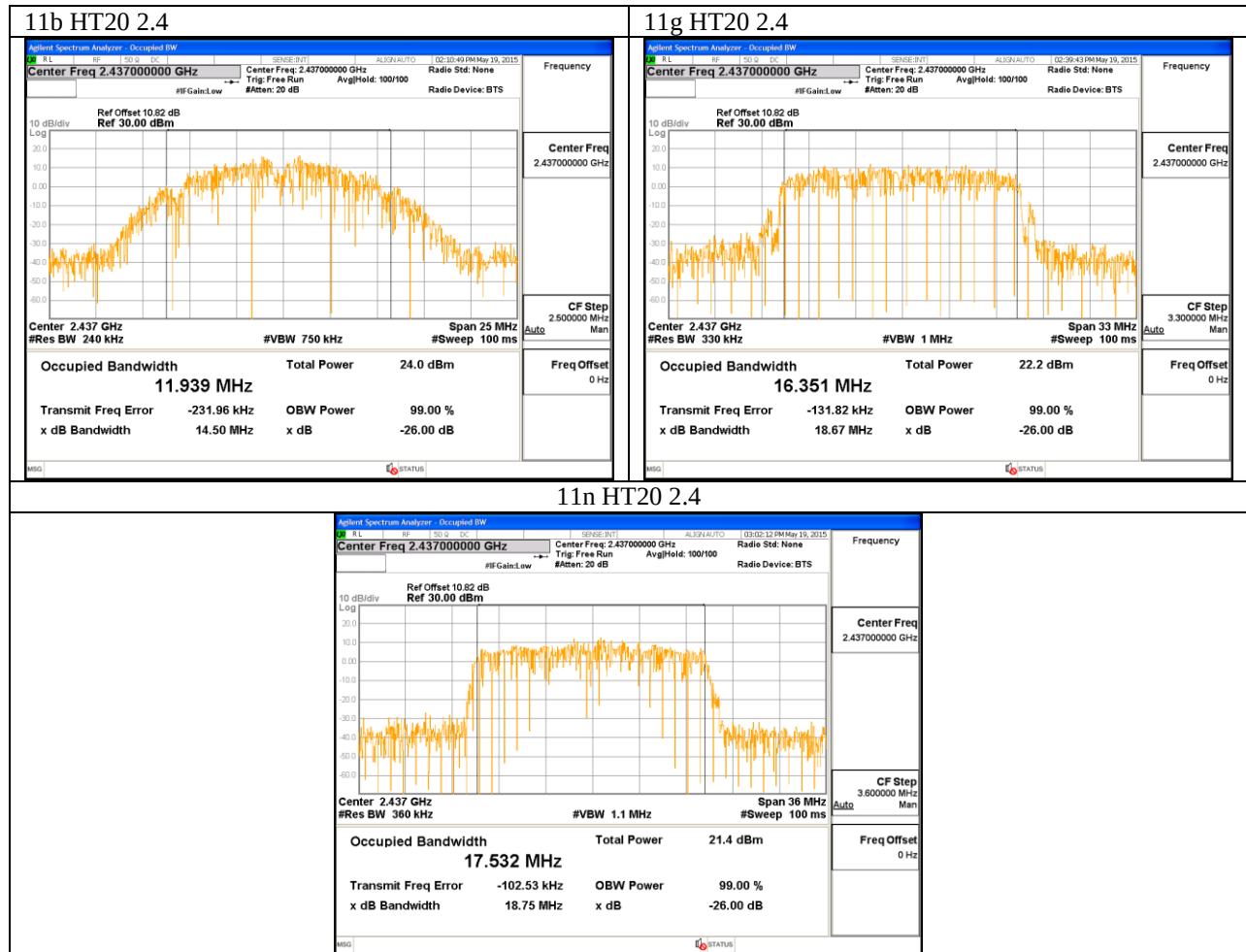
9.2.2. 802.11g MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	16.37
Mid	2437	16.35
High	2462	16.31
Worst		16.37

9.2.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	17.61
Mid	2437	17.53
High	2462	17.57
Worst		17.61

9.2.4. 99% BANDWIDTH MID CH PLOTS



9.3. OUTPUT POWER

LIMITS

FCC §15.247
IC RSS-247 5.4.4

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

RESULTS

9.3.1. 802.11b MODE IN THE 2.4 GHz BAND

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	5.62	30.00	30	36	30.00
Mid	2437	5.62	30.00	30	36	30.00
High	2462	5.62	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	14.30	14.30	30.00	-15.70
Mid	2437	14.20	14.20	30.00	-15.80
High	2462	14.30	14.30	30.00	-15.70
Worst			14.30		

9.3.2. 802.11g MODE IN THE 2.4 GHz BAND

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	5.62	30.00	30	36	30.00
Mid	2437	5.62	30.00	30	36	30.00
High	2462	5.62	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	12.10	12.10	30.00	-17.90
Mid	2437	12.10	12.10	30.00	-17.90
High	2462	12.10	12.10	30.00	-17.90
Worst			12.10		

9.3.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	5.62	30.00	30	36	30.00
Mid	2437	5.62	30.00	30	36	30.00
High	2462	5.62	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	11.20	11.20	30.00	-18.80
Mid	2437	11.20	11.20	30.00	-18.80
High	2462	11.20	11.20	30.00	-18.80
Worst			11.20		

9.4. PSD

LIMITS

FCC §15.247

IC RSS-247 5.2.2

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

RESULTS

9.4.1. 802.11b MODE IN THE 2.4 GHz BAND

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-7.12	8.0	-15.1
Mid	2437	-7.46	8.0	-15.5
High	2462	-7.58	8.0	-15.6

9.4.2. 802.11g MODE IN THE 2.4 GHz BAND

PSD Results

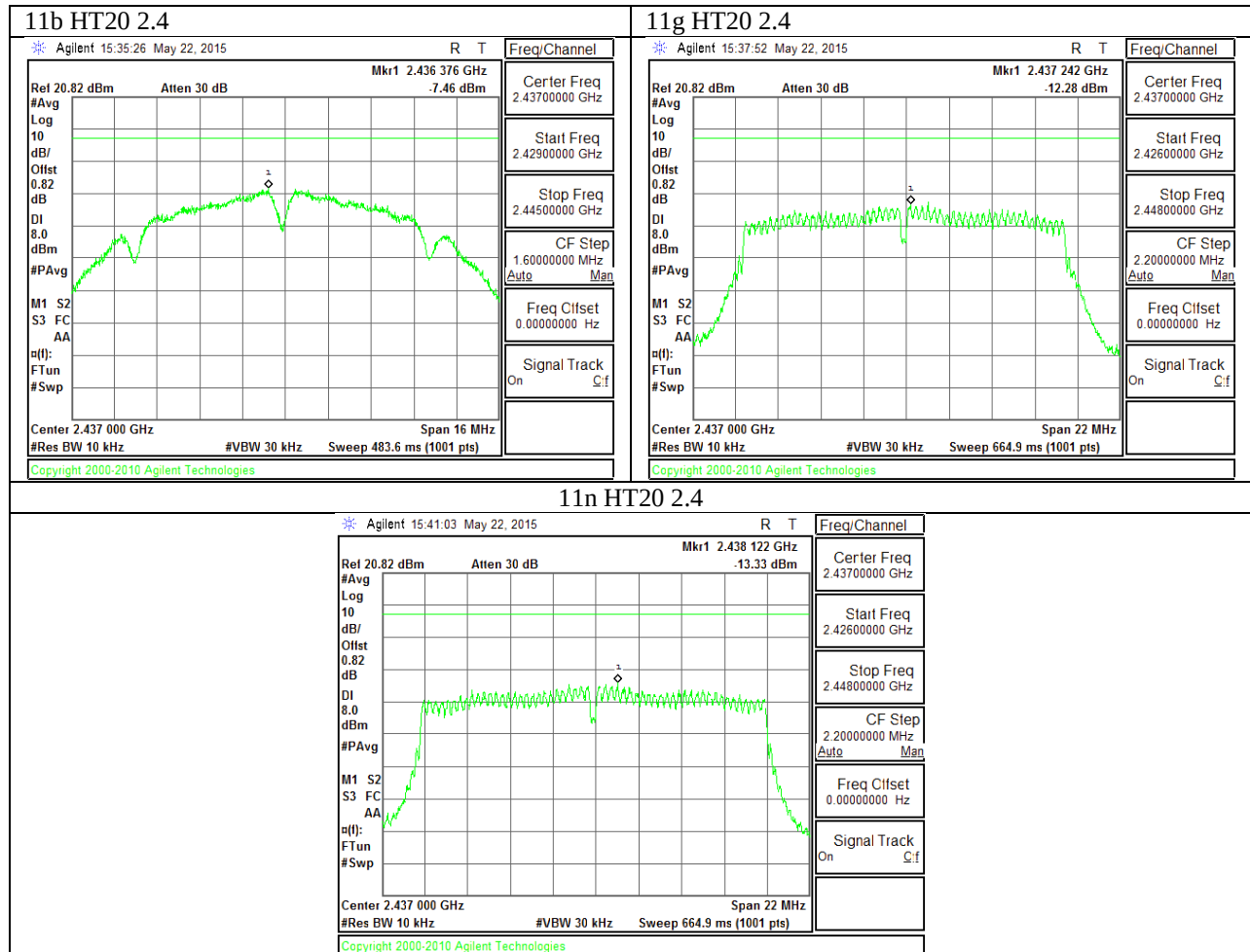
Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-12.35	8.0	-20.4
Mid	2437	-12.28	8.0	-20.3
High	2462	-12.70	8.0	-20.7

9.4.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-13.13	8.0	-21.1
Mid	2437	-13.33	8.0	-21.3
High	2462	-14.02	8.0	-22.0

9.4.4. PSD Chain 0 MID CH PLOTS



9.5. OUT-OF-BAND EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-247 5.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

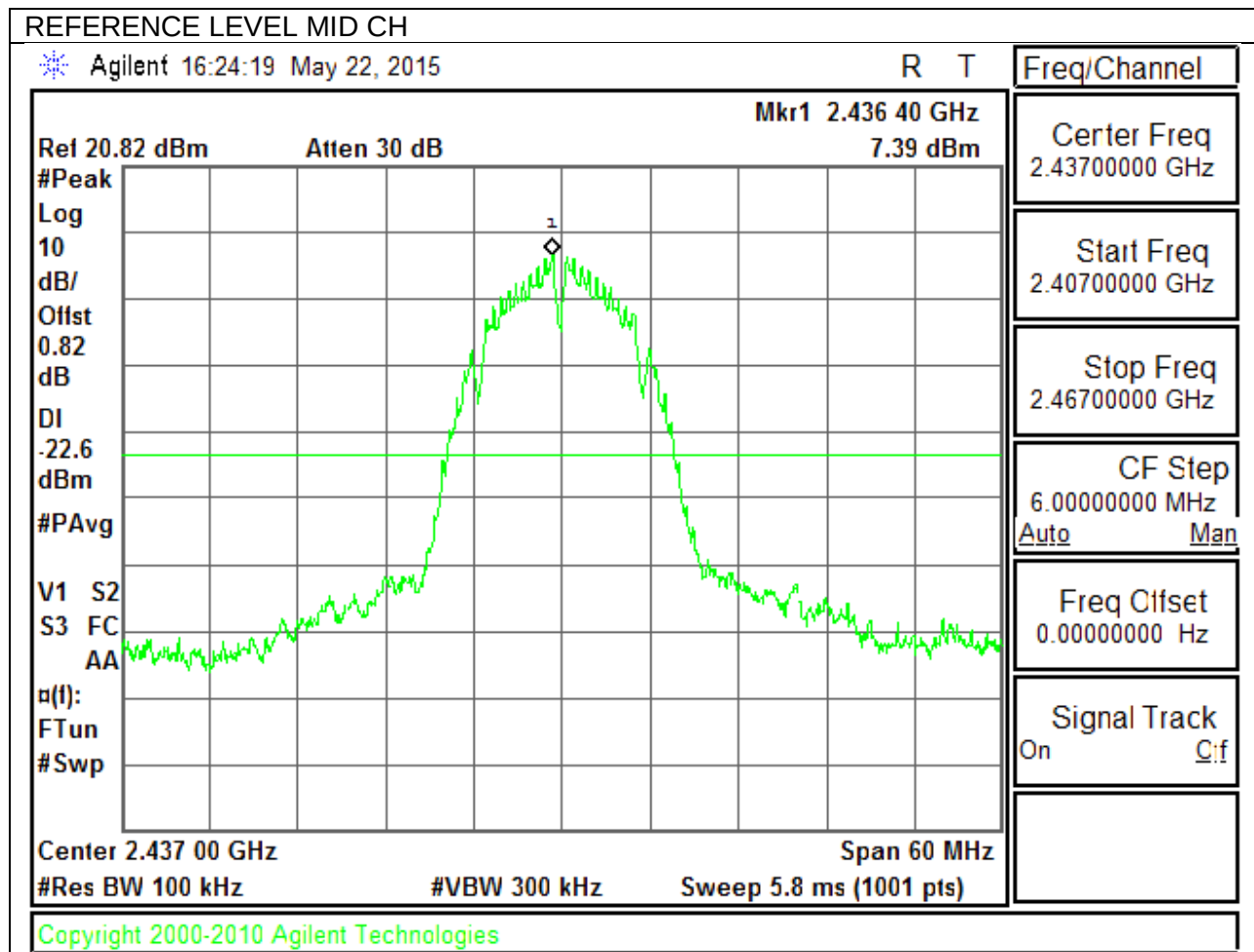
TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer with RBW = 100 kHz, VBW = 300 kHz, peak detector, and max hold. Measurements utilizing these settings are made of the in-band reference level, bandedge (where measurements to the general radiated limits will not be made) and out-of-band emissions.

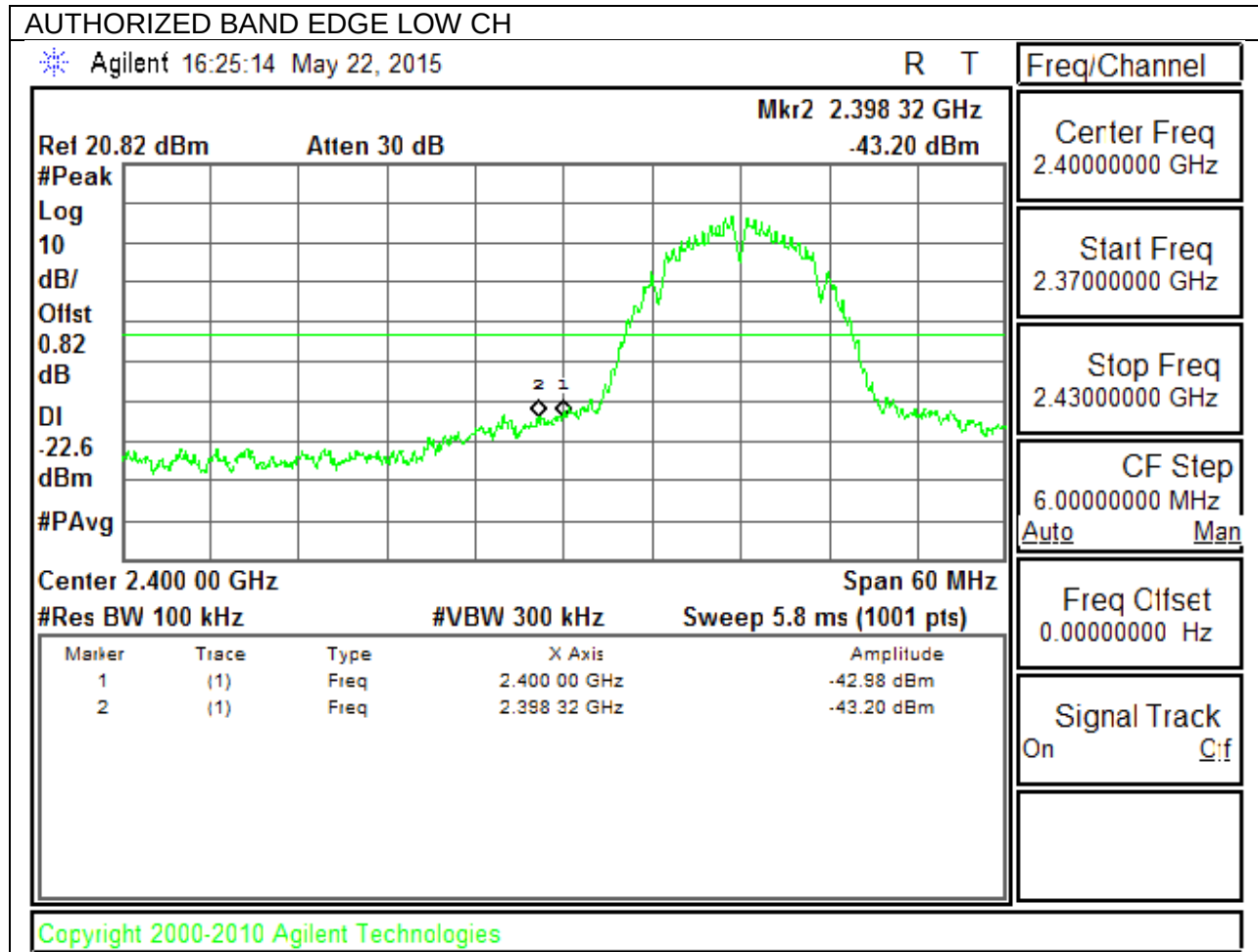
RESULTS

9.5.1. 802.11b MODE IN THE 2.4 GHz BAND

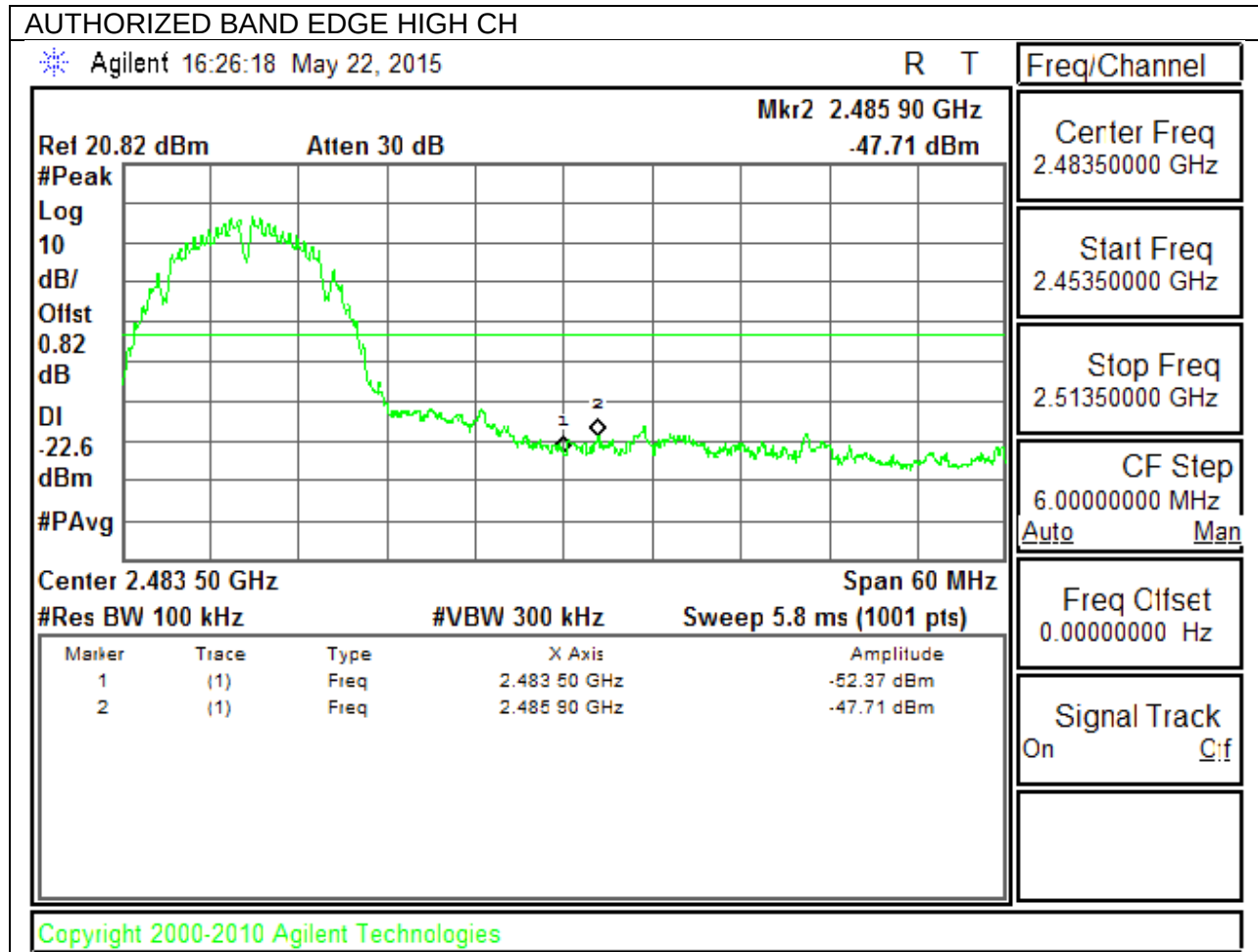
IN-BAND REFERENCE LEVEL



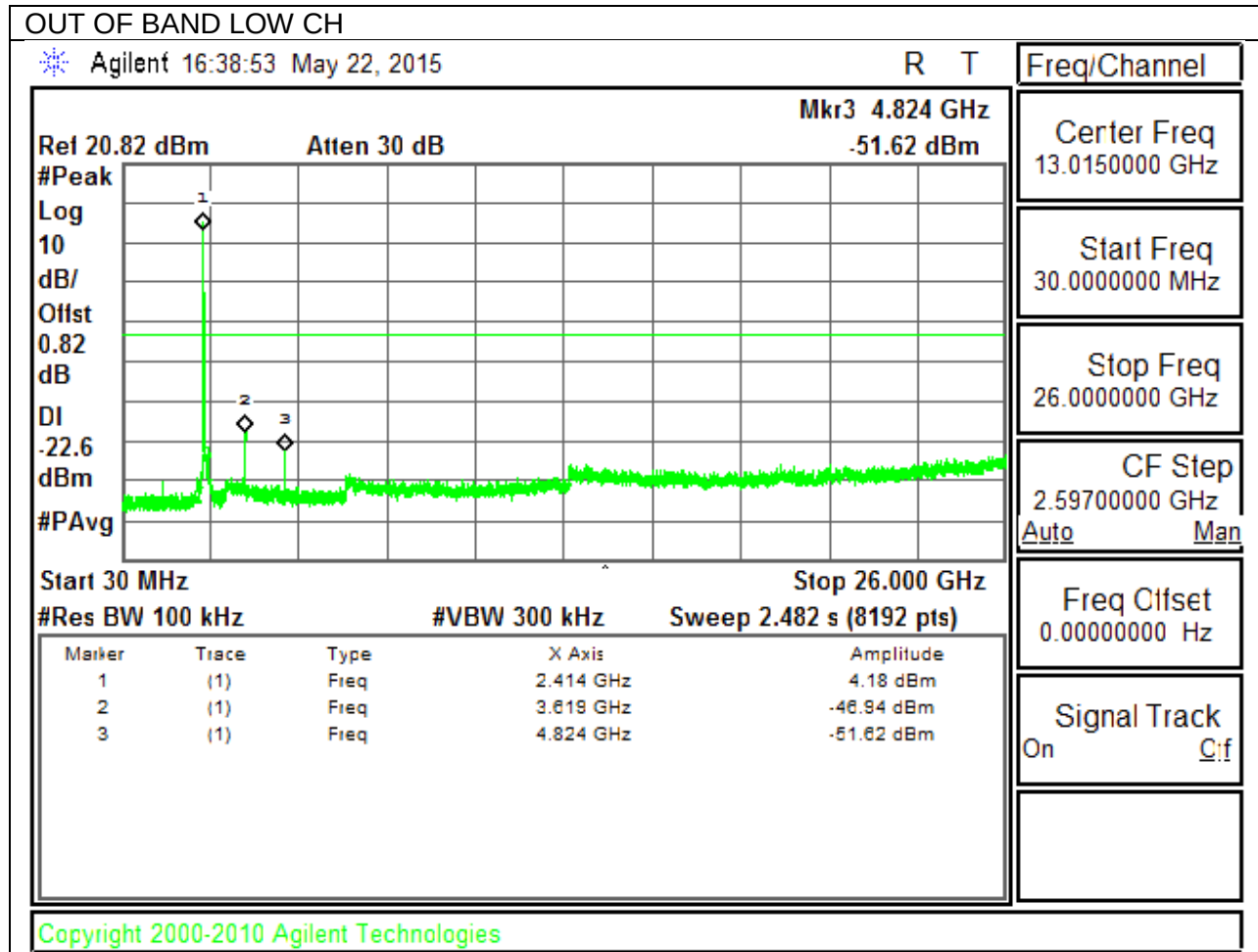
LOW CHANNEL BANDEDGE



HIGH CHANNEL BANDEDGE



OUT-OF-BAND EMISSIONS

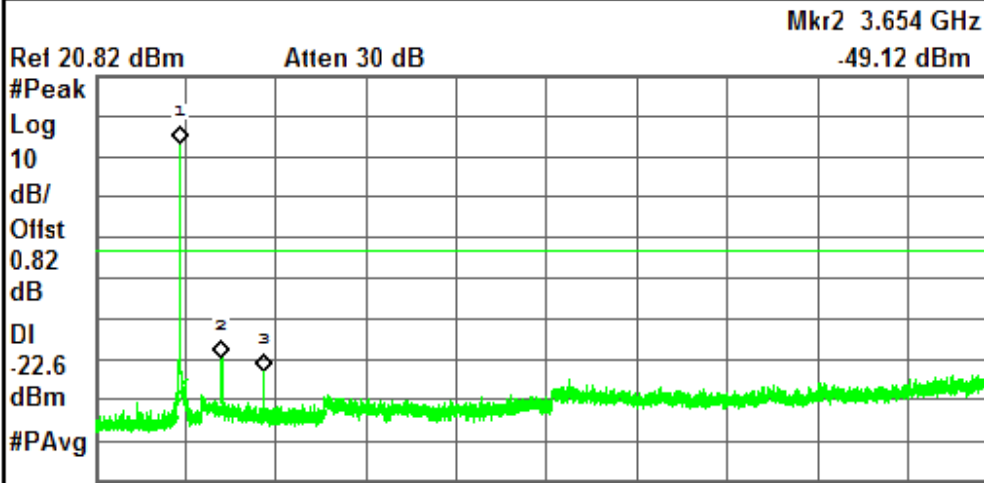


OUT OF BAND MID CH

Agilent 16:39:29 May 22, 2015

R T

Freq/Channel



Center Freq
13.0150000 GHz

Start Freq
30.0000000 MHz

Stop Freq
26.0000000 GHz

CF Step
2.59700000 GHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Cf

Start 30 MHz Stop 26.000 GHz
#Res BW 100 kHz #VBW 300 kHz Sweep 2.482 s (8192 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.436 GHz	4.21 dBm
2	(1)	Freq	3.654 GHz	-49.12 dBm
3	(1)	Freq	4.875 GHz	-52.35 dBm

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OUT OF BAND HIGH CH

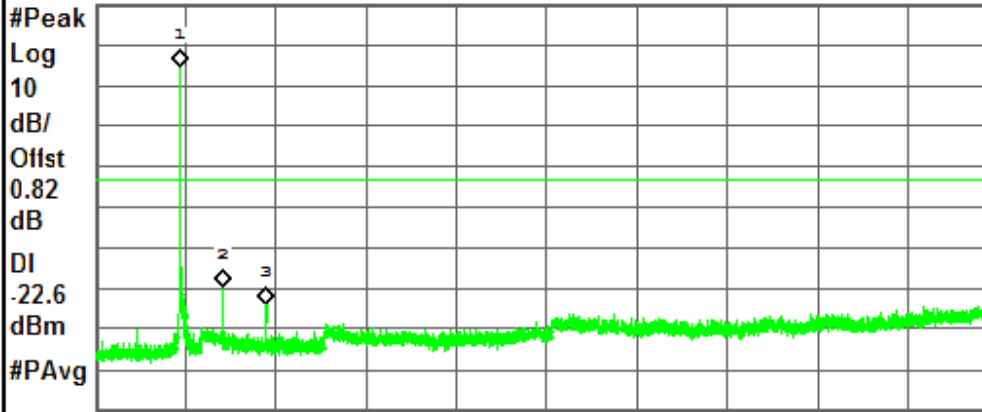
Agilent 16:40:03 May 22, 2015

R T

Freq/Channel

Ref 20.82 dBm Atten 30 dB Mkr1 2.462 GHz 5.24 dBm

Center Freq
13.0150000 GHz



Start Freq
30.0000000 MHz

Stop Freq
26.0000000 GHz

CF Step
2.59700000 GHz
Auto Man

Start 30 MHz Stop 26.000 GHz
#Res BW 100 kHz #VBW 300 kHz Sweep 2.482 s (8192 pts)

Freq Offset
0.0000000 Hz

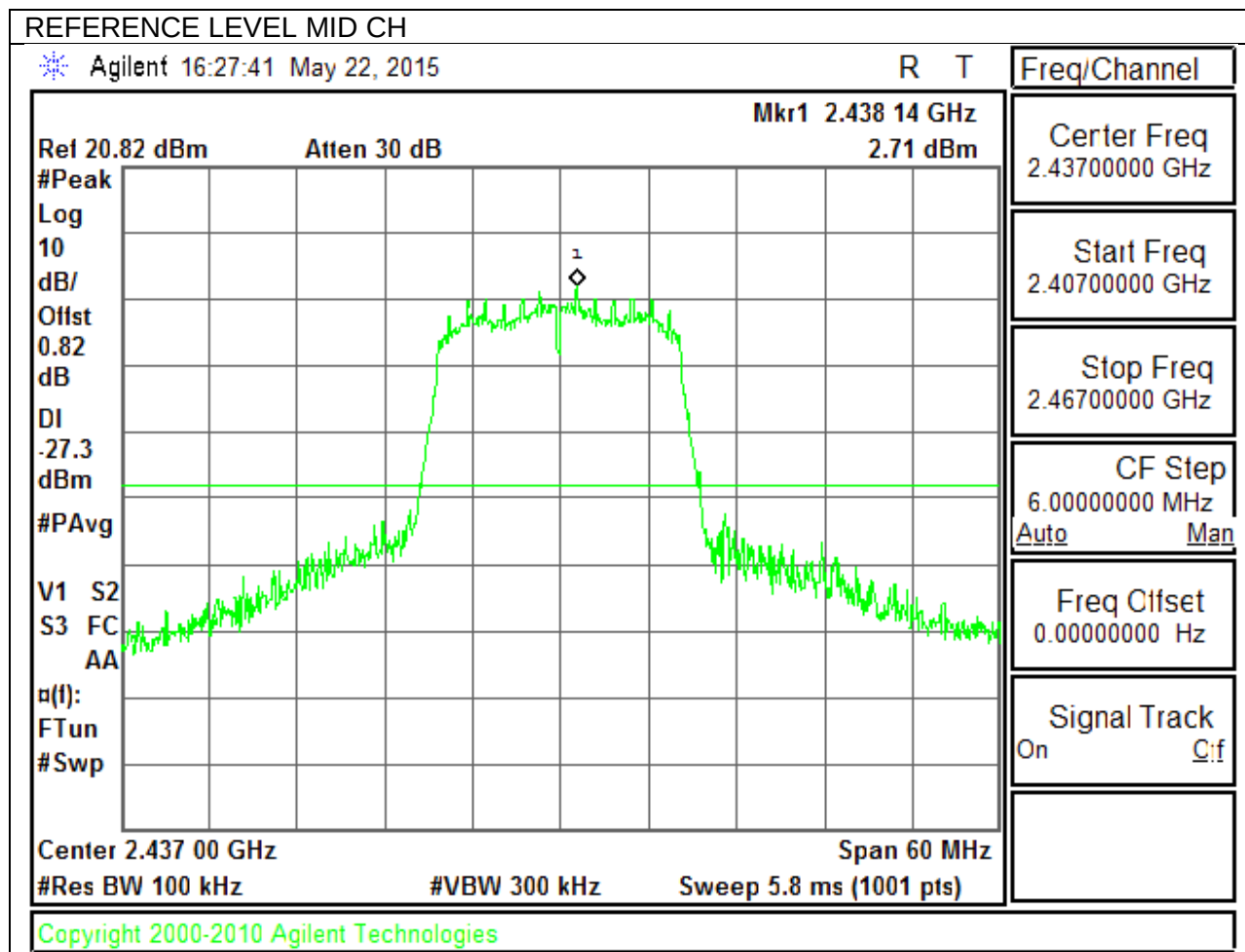
Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.462 GHz	5.24 dBm
2	(1)	Freq	3.692 GHz	-48.85 dBm
3	(1)	Freq	4.922 GHz	-53.13 dBm

Signal Track
On Cf

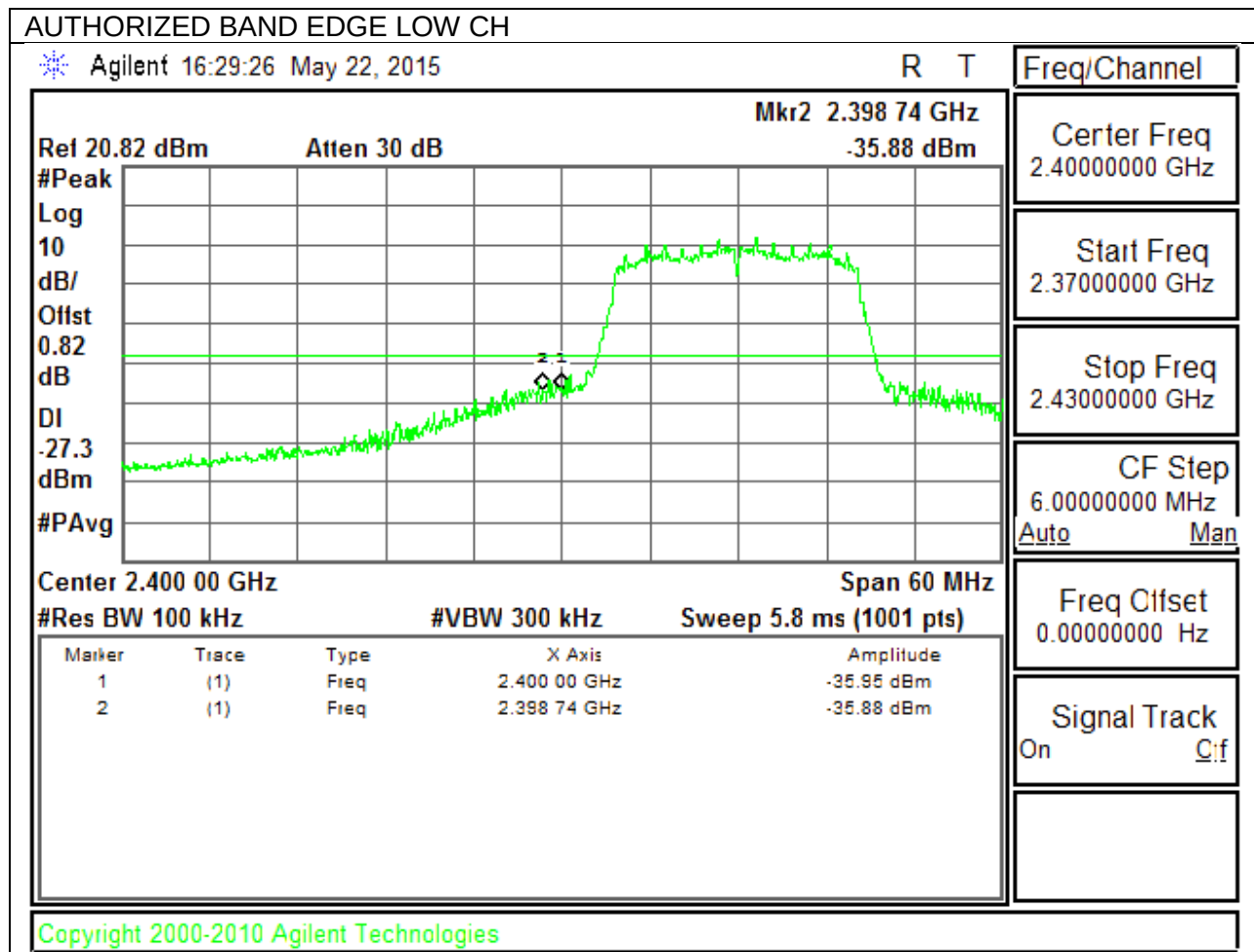
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9.5.2. 802.11g MODE IN THE 2.4 GHz BAND

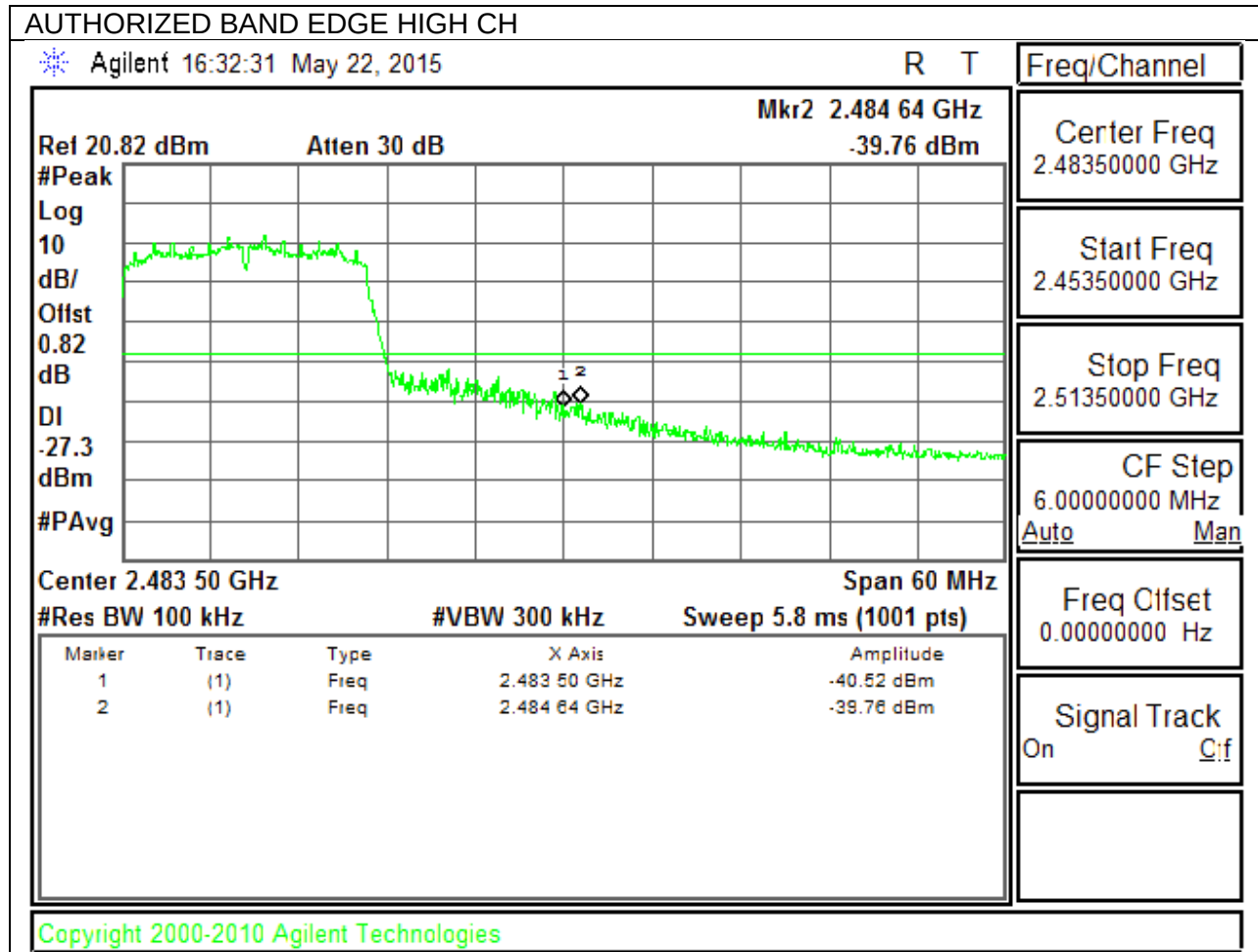
IN-BAND REFERENCE LEVEL



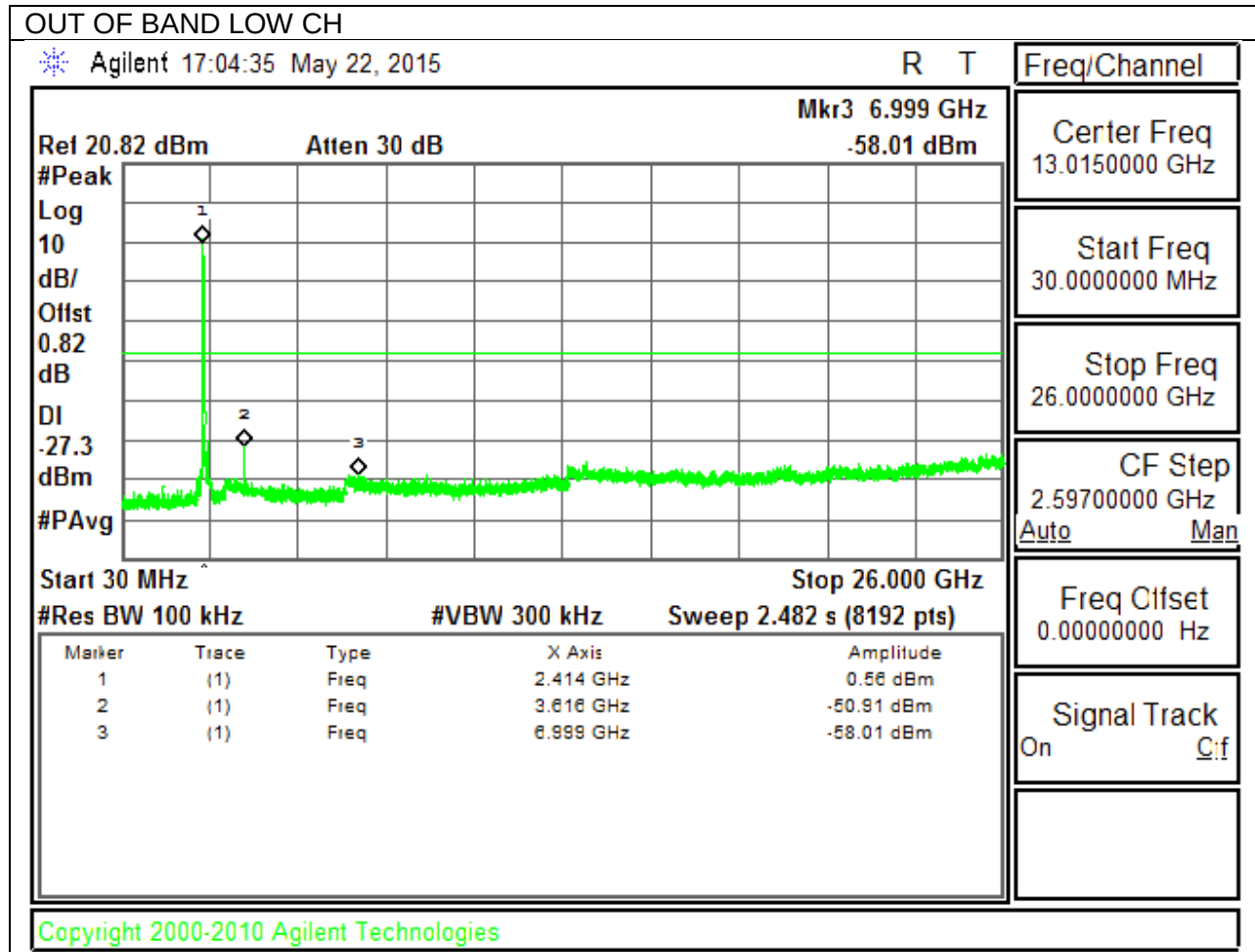
LOW CHANNEL BANDEDGE



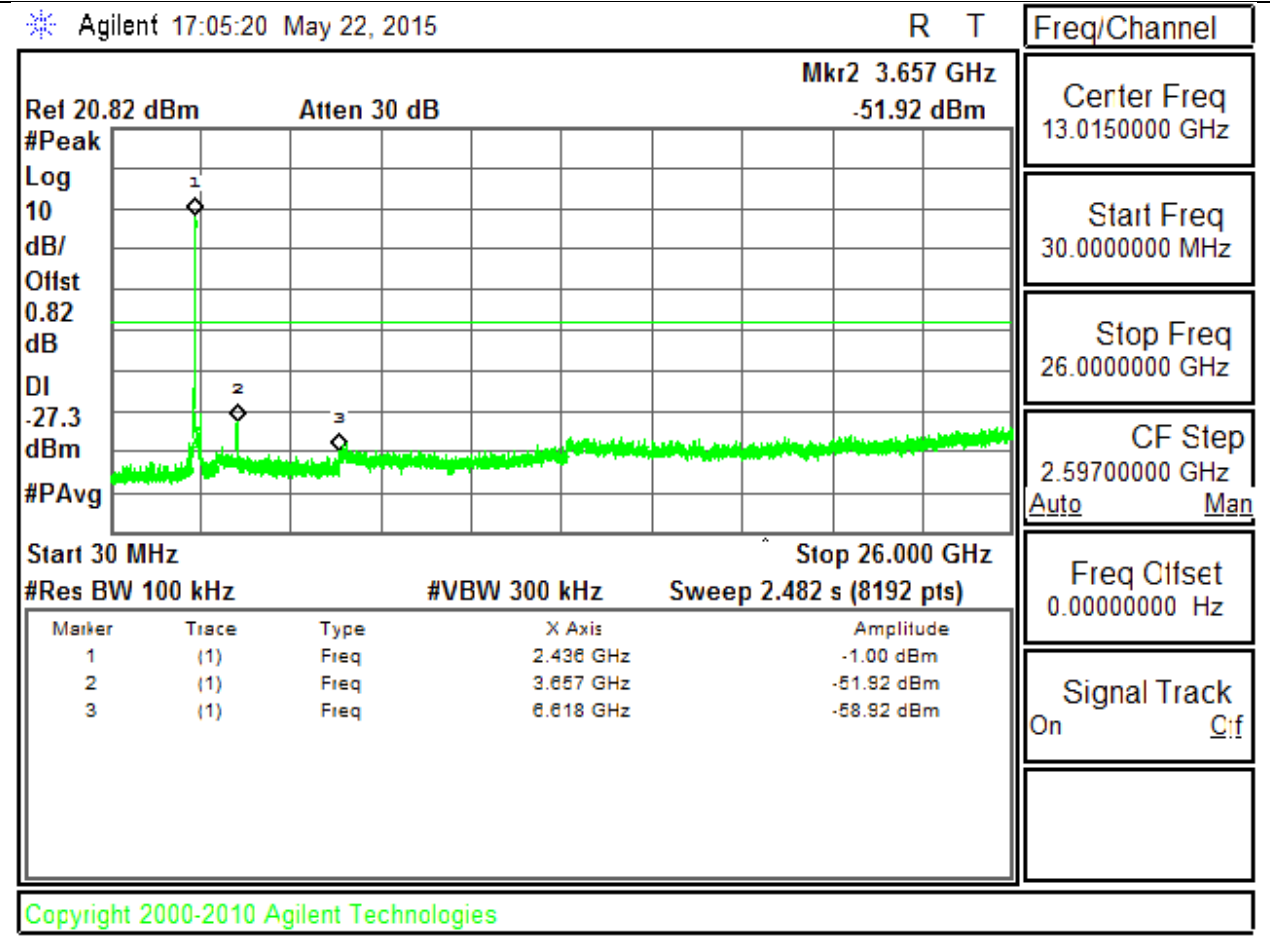
HIGH CHANNEL BANDEDGE



OUT-OF-BAND EMISSIONS



OUT OF BAND MID CH

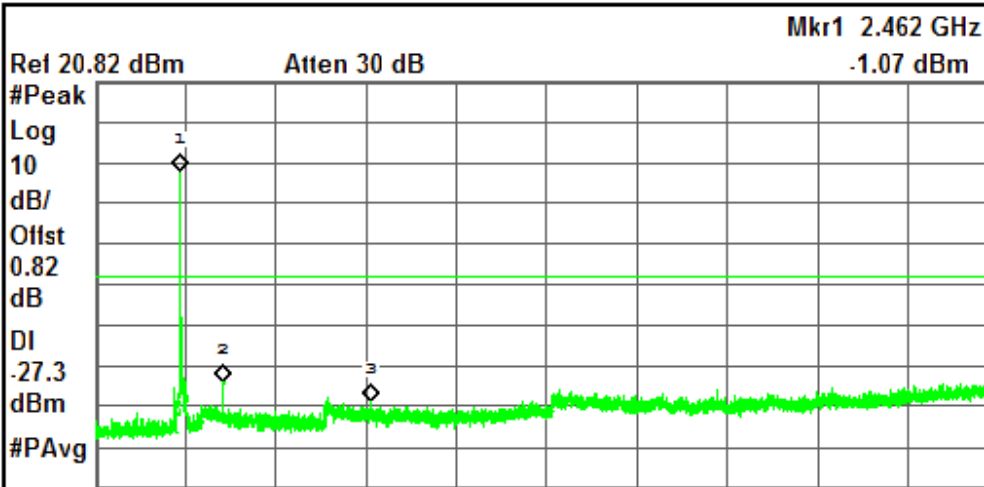


OUT OF BAND HIGH CH

Agilent 17:06:06 May 22, 2015

R T

Freq/Channel



Center Freq
13.0150000 GHz

Start Freq
30.0000000 MHz

Stop Freq
26.0000000 GHz

CF Step
2.59700000 GHz
Auto Man

Start 30 MHz Stop 26.000 GHz
#Res BW 100 kHz #VBW 300 kHz Sweep 2.482 s (8192 pts)

Freq Offset
0.0000000 Hz

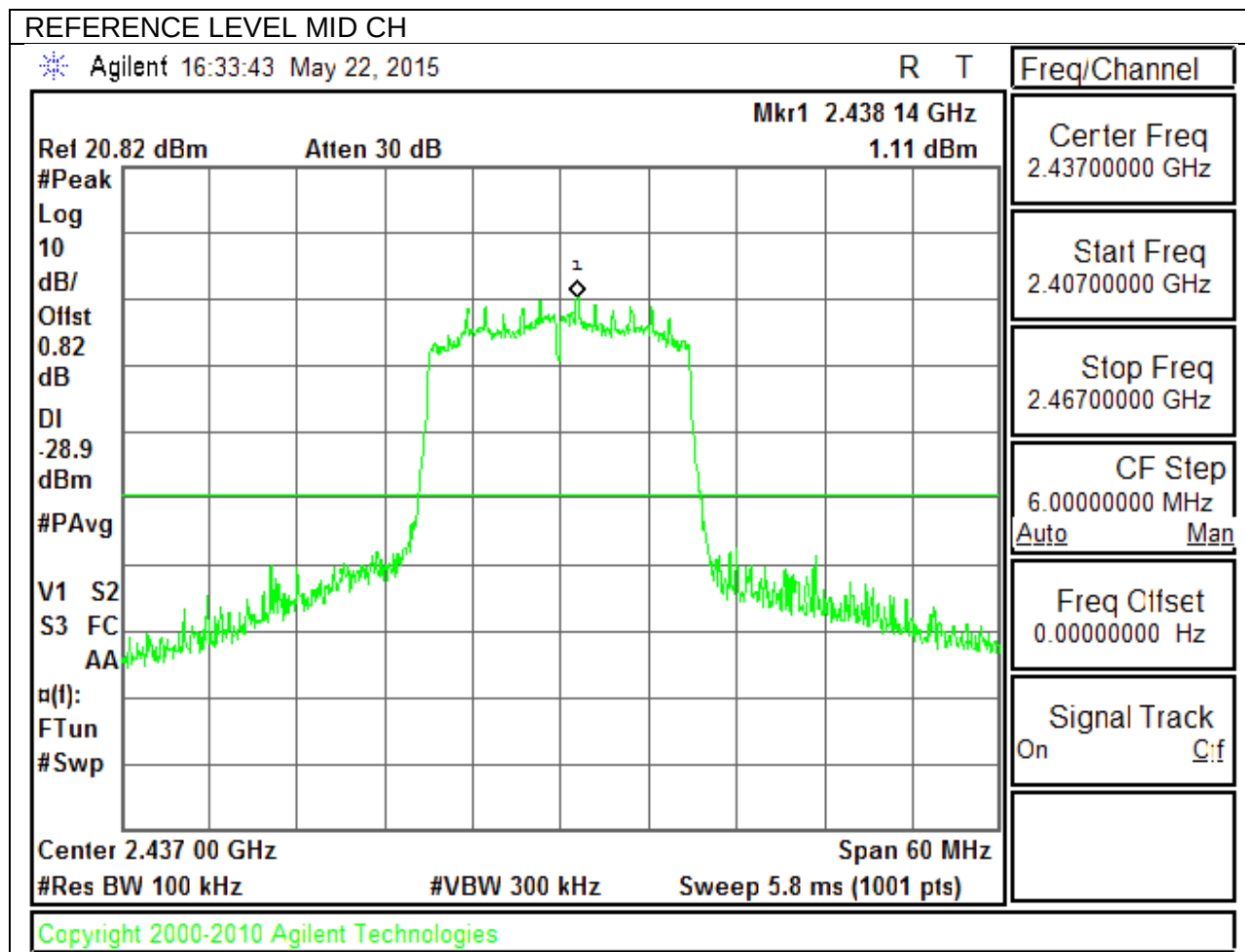
Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.462 GHz	-1.07 dBm
2	(1)	Freq	3.692 GHz	-53.08 dBm
3	(1)	Freq	7.941 GHz	-57.94 dBm

Signal Track
On C:f

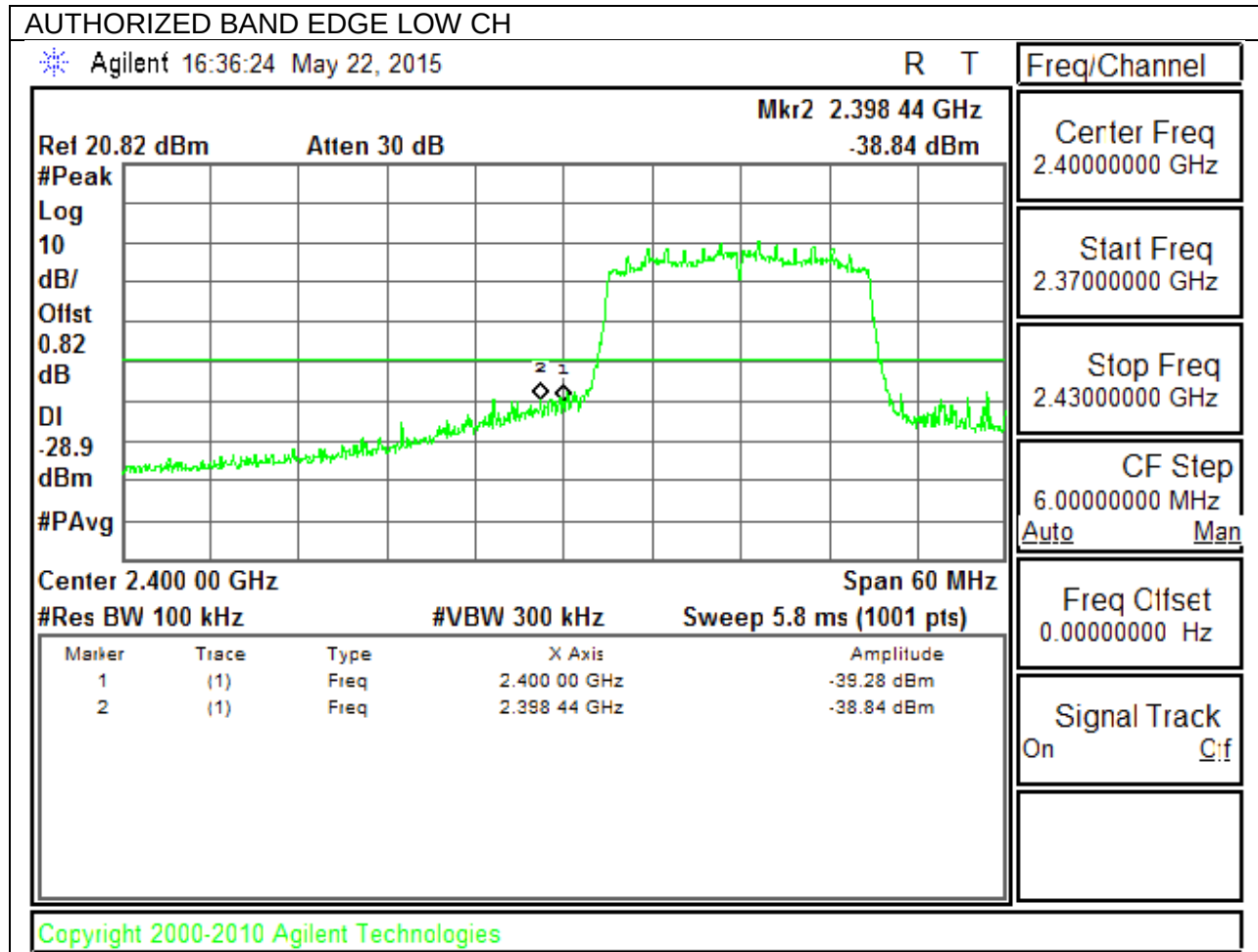
Copyright 2000-2010 Agilent Technologies

9.5.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

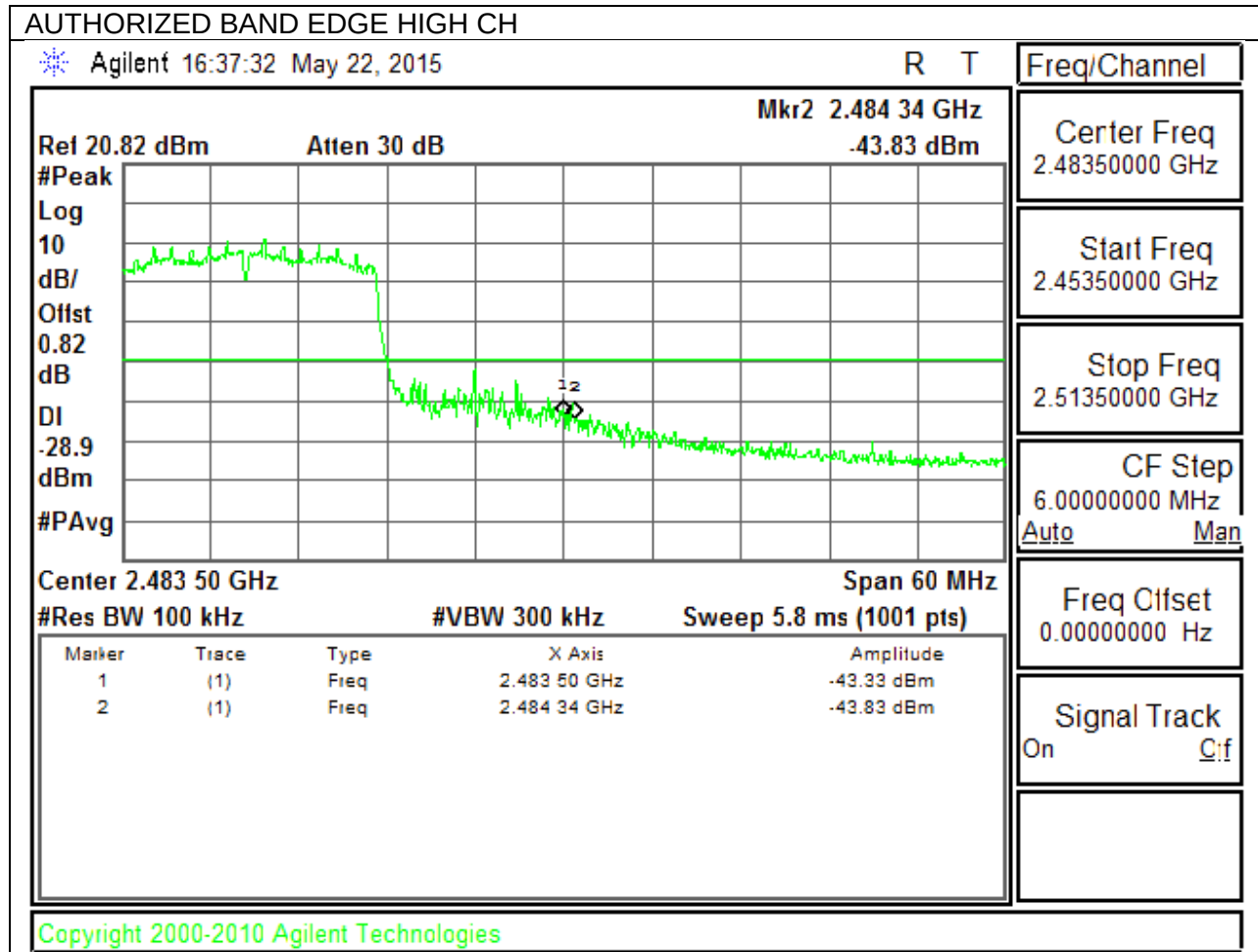
IN-BAND REFERENCE LEVEL



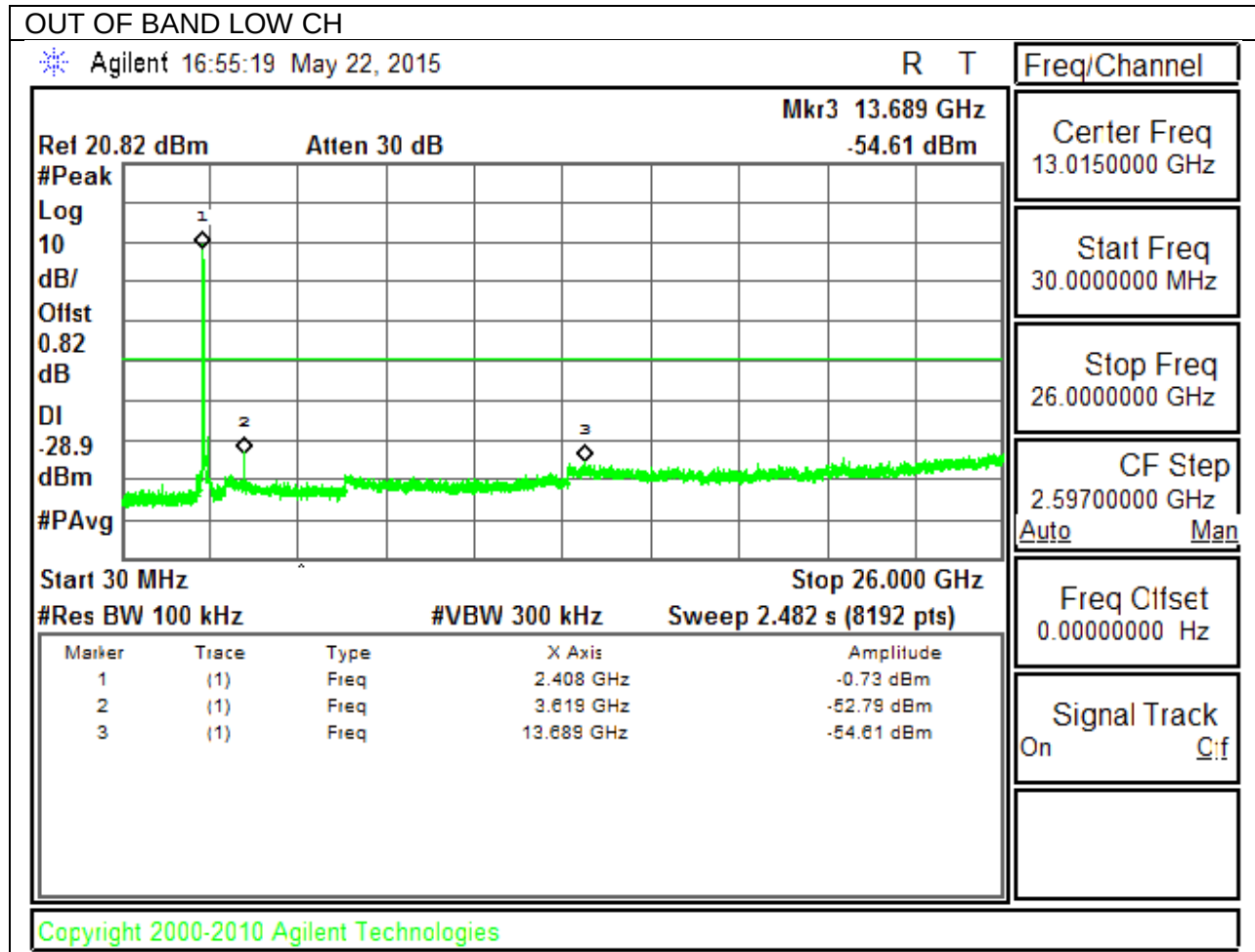
LOW CHANNEL BANDEDGE



HIGH CHANNEL BANDEDGE



OUT-OF-BAND EMISSIONS



OUT OF BAND MID CH

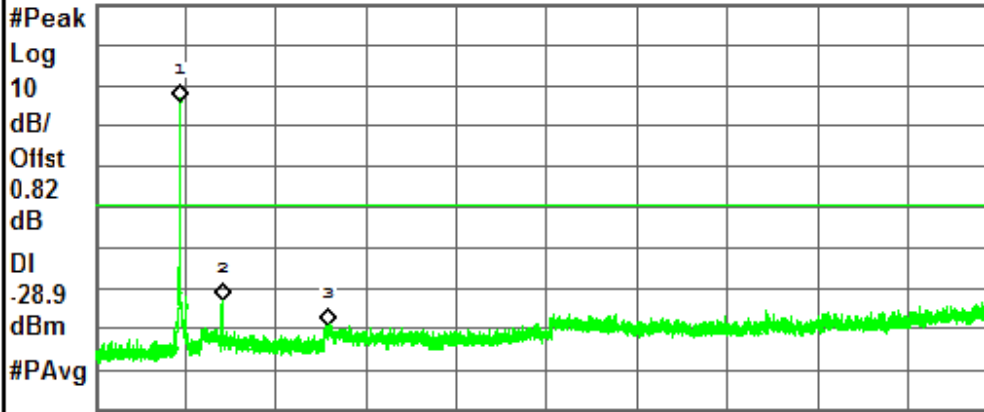
Agilent 16:56:09 May 22, 2015

R T

Freq/Channel

Ref 20.82 dBm Atten 30 dB Mkr2 3.657 GHz
-52.42 dBm

Center Freq
13.0150000 GHz



Start Freq
30.0000000 MHz

Stop Freq
26.0000000 GHz

CF Step
2.59700000 GHz
Auto Man

Start 30 MHz Stop 26.000 GHz
#Res BW 100 kHz #VBW 300 kHz Sweep 2.482 s (8192 pts)

Freq Offset
0.0000000 Hz

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.436 GHz	-3.24 dBm
2	(1)	Freq	3.657 GHz	-52.42 dBm
3	(1)	Freq	6.729 GHz	-58.52 dBm

Signal Track
On Cf

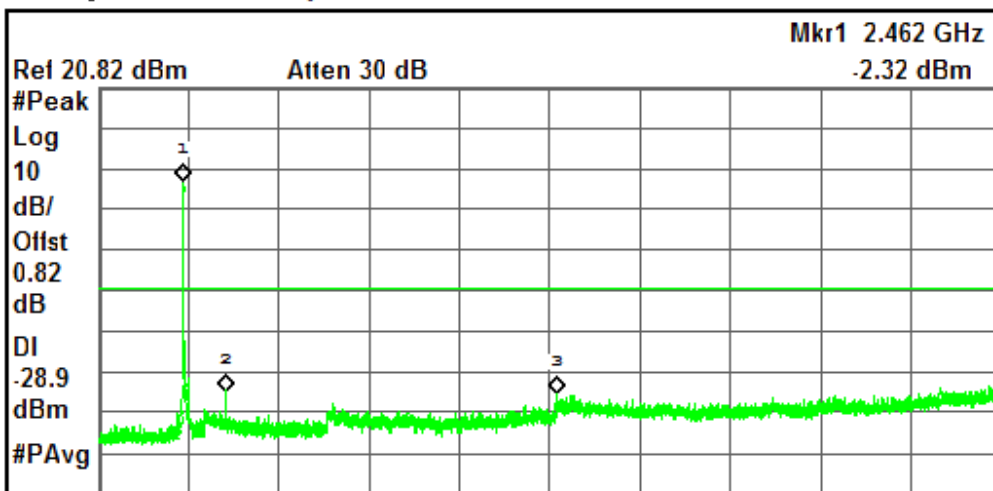
Copyright 2000-2010 Agilent Technologies

OUT OF BAND HIGH CH

Agilent 16:57:00 May 22, 2015

R T

Freq/Channel



Center Freq
13.0150000 GHz

Start Freq
30.0000000 MHz

Stop Freq
26.0000000 GHz

CF Step
2.59700000 GHz
Auto Man

Freq Offset
0.0000000 Hz

Signal Track
On C:f

Start 30 MHz Stop 26.000 GHz
#Res BW 100 kHz #VBW 300 kHz Sweep 2.482 s (8192 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.462 GHz	-2.32 dBm
2	(1)	Freq	3.692 GHz	-54.33 dBm
3	(1)	Freq	13.235 GHz	-54.52 dBm

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10. RADIATED TEST RESULTS

10.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-GEN Clause 8.9 (Transmitter)

IC RSS-GEN Clause 7(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 for below 1GHz and 150cm for above 1GHz. 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 3 MHz for peak measurements and add duty cycle factor for average measurements. Duty cycle factor= $10\log(1/x)$ For this sample B mode = 0dB (duty cycle >98%); G mode = 0.15dB; N mode = 0.13dB.

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.

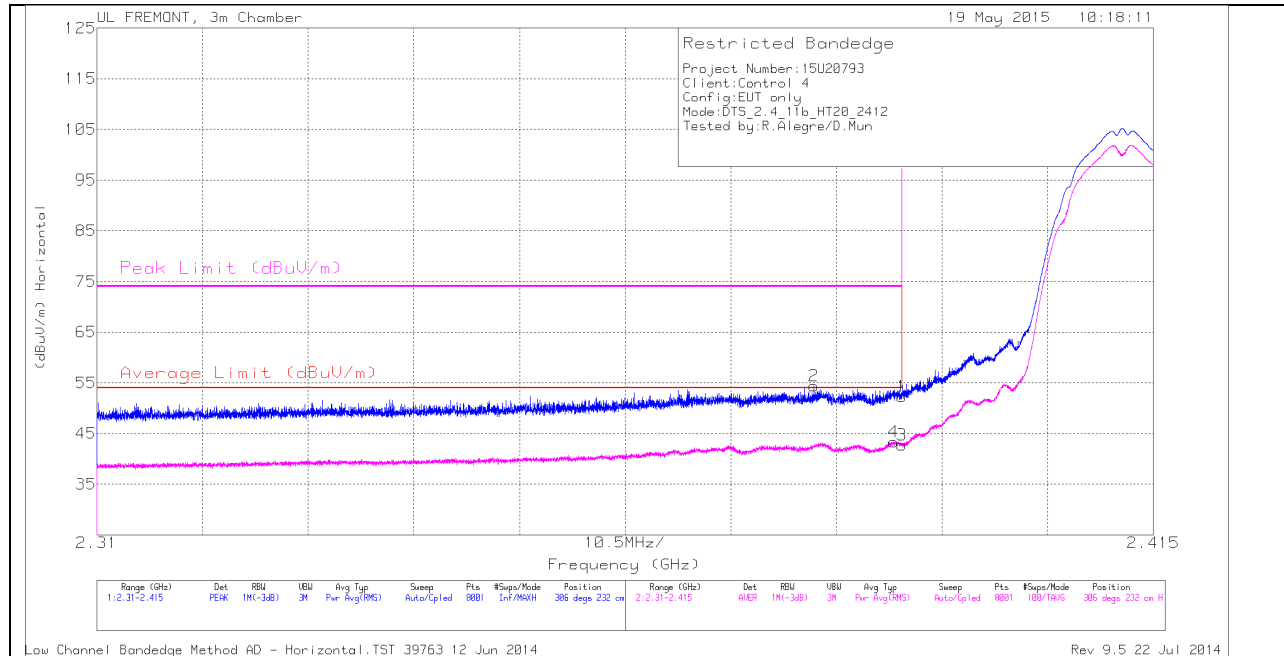
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

10.2. TRANSMITTER ABOVE 1 GHz

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

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

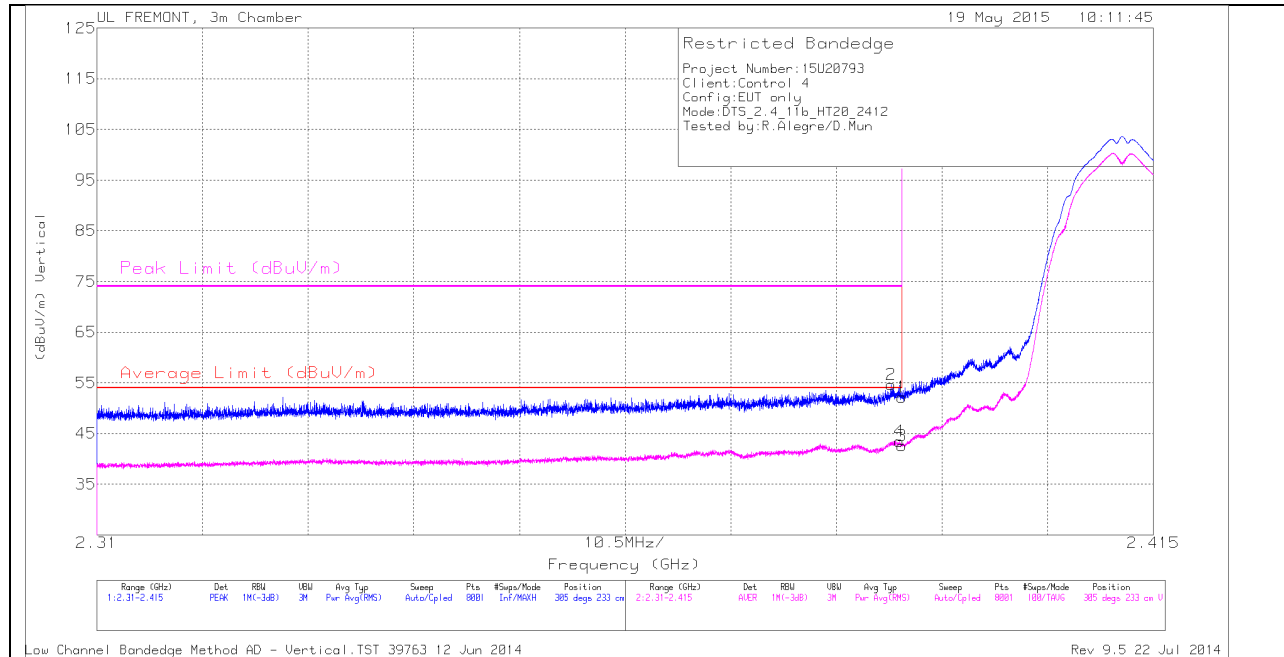
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/ Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	2.381	45.55	PK	31.9	-23.1	54.35	-	-	74	-19.65	306	232	H
4	2.389	34.48	RMS	32	-23.1	43.38	54	-10.62	-	-	306	232	H
1	2.39	43.35	PK	32	-23.1	52.25	-	-	74	-21.75	306	232	H
3	2.39	33.87	RMS	32	-23.1	42.77	54	-11.23	-	-	306	232	H

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	2.389	45.7	PK	32	-23.1	54.6	-	-	74	-19.4	305	233	V
1	2.39	43.29	PK	32	-23.1	52.19	-	-	74	-21.81	305	233	V
3	2.39	33.66	RMS	32	-23.1	42.56	54	-11.44	-	-	305	233	V
4	2.39	34.6	RMS	32	-23.1	43.5	54	-10.5	-	-	305	233	V

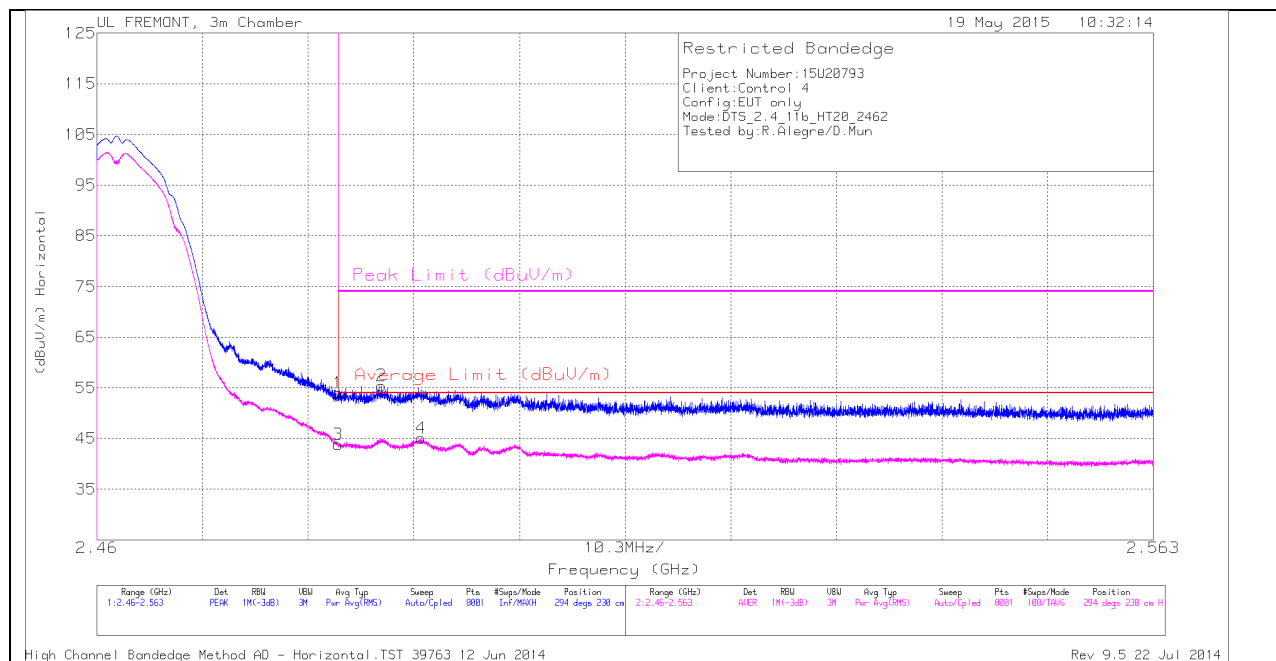
* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

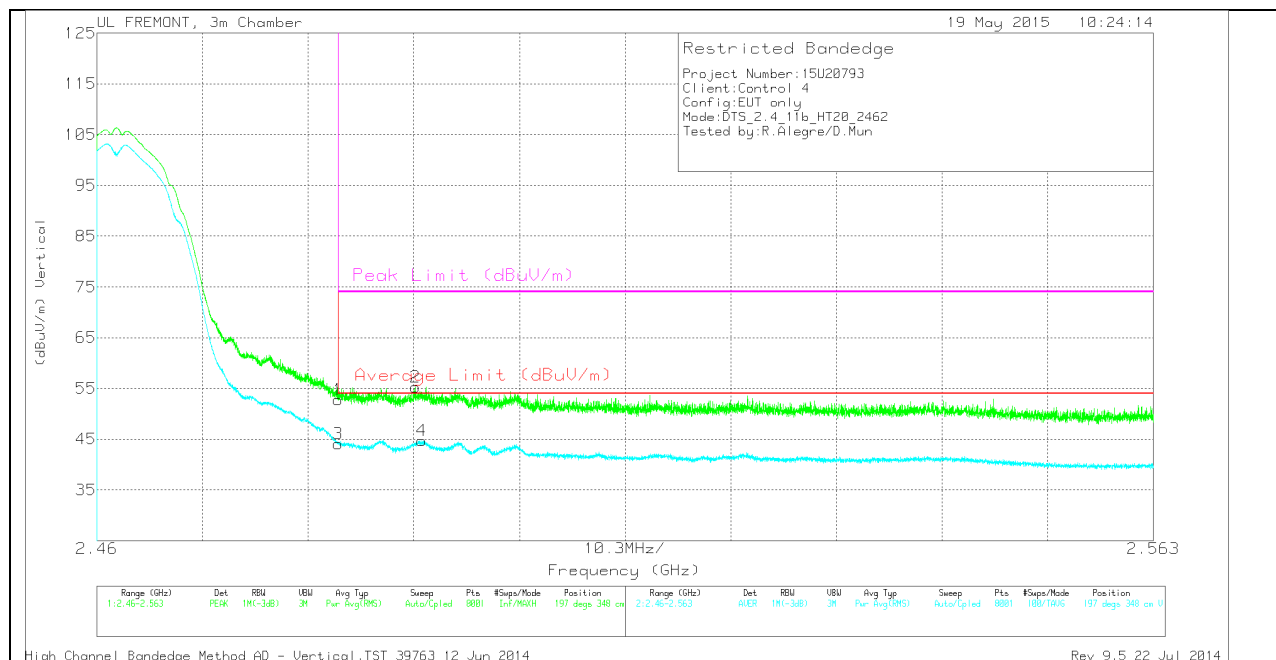
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.484	44.49	PK	32.3	-22.8	53.99	-	-	74	-20.01	294	230	H
3	2.484	34.29	RMS	32.3	-22.8	43.79	54	-10.21	-	-	294	230	H
2	2.488	45.94	PK	32.3	-22.8	55.44	-	-	74	-18.56	294	230	H
4	2.492	35.54	RMS	32.3	-22.8	45.04	54	-8.96	-	-	294	230	H

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

PK - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

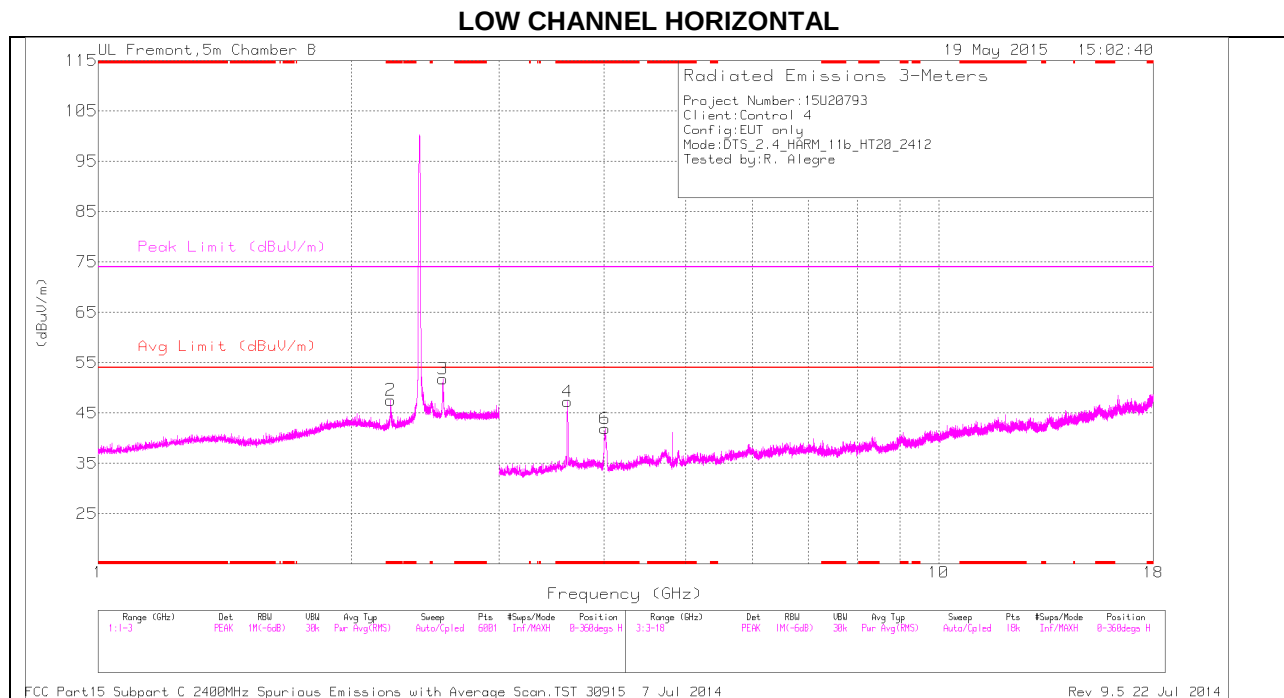
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.484	43.3	PK	32.3	-22.8	52.8	-	-	74	-21.2	197	348	V
3	2.484	34.61	RMS	32.3	-22.8	44.11	54	-9.89	-	-	197	348	V
2	2.491	45.74	PK	32.3	-22.8	55.24	-	-	74	-18.76	197	348	V
4	2.492	35.26	RMS	32.3	-22.8	44.76	54	-9.24	-	-	197	348	V

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

PK - Peak detector

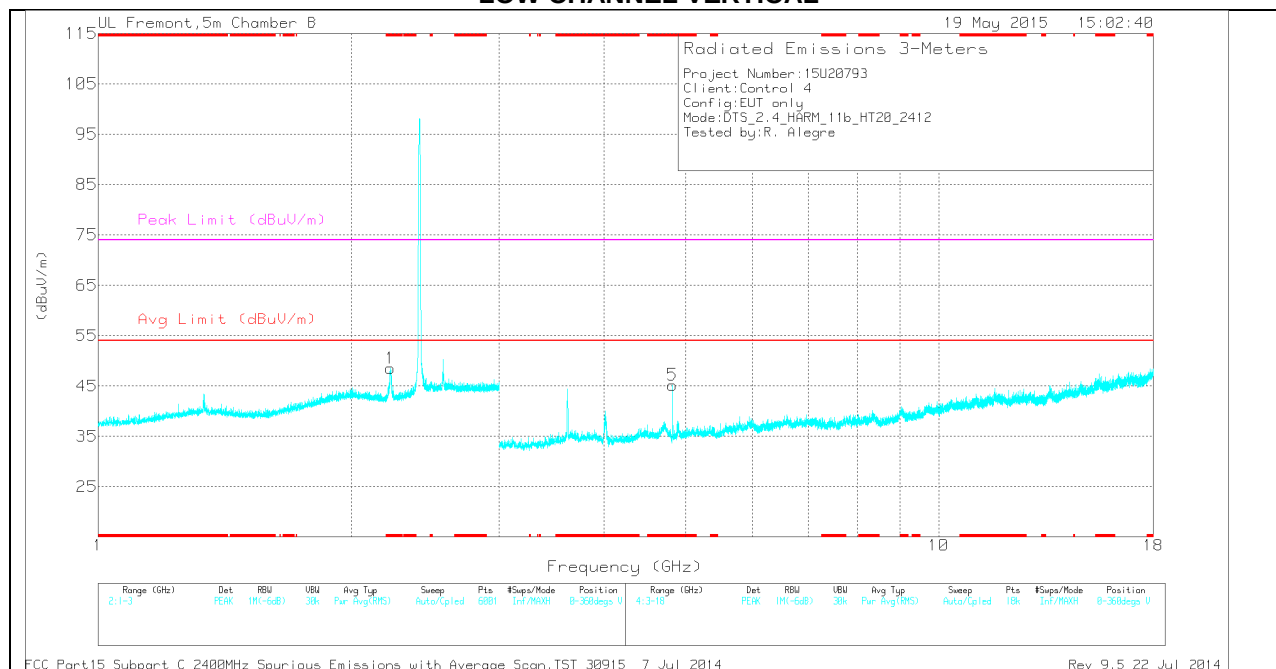
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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
2	* 2.229	39.26	PK	31.2	-22.9	0	47.56	-	-	74	-26.44	0-360	200	H
1	* 2.226	40.2	PK	31.2	-22.9	0	48.5	-	-	74	-25.5	0-360	200	V
4	* 3.617	44.16	PK	33.8	-30.7	0	47.26	-	-	74	-26.74	0-360	101	H
6	* 4.009	39.59	PK	33.3	-31	0	41.89	-	-	74	-32.11	0-360	101	H
5	* 4.823	40.6	PK	34.3	-29.7	0	45.2	-	-	74	-28.8	0-360	199	V
3	2.571	41.46	PK	32.7	-22.4	0	51.76	-	-	-	-	0-360	200	H

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

Radiated Emissions

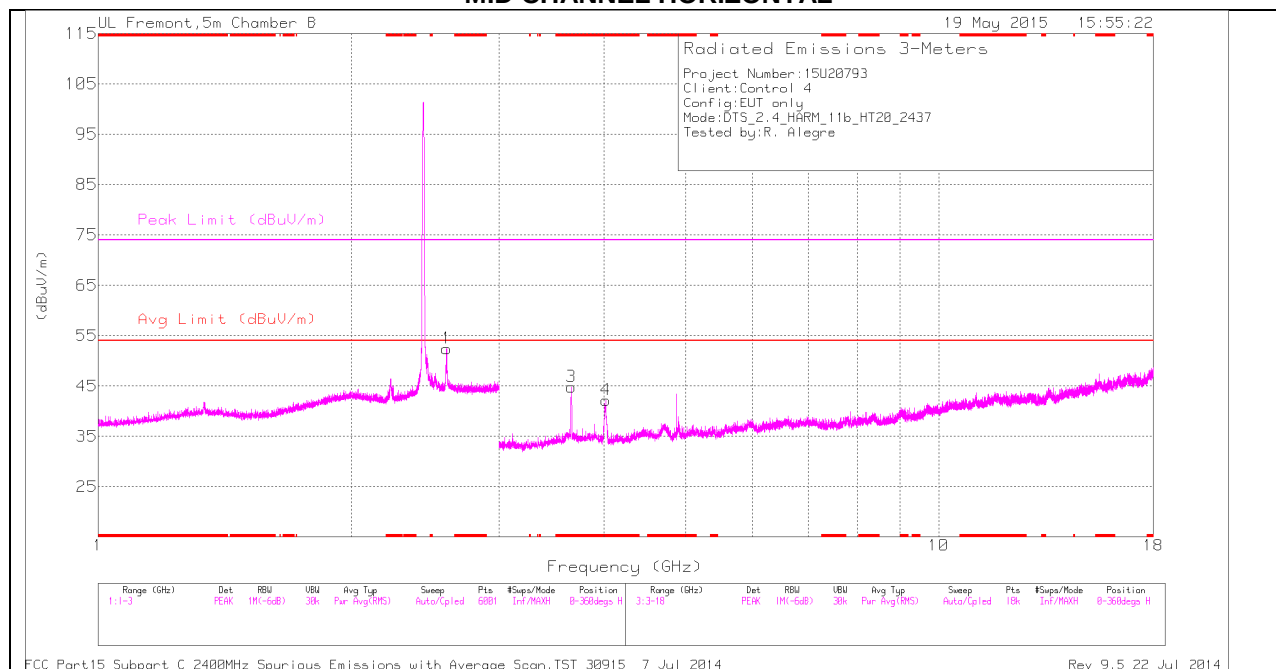
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.227	42.19	PK2	31.2	-22.9	0	50.49	-	-	74	-23.51	264	274	V
* 2.224	30.79	MAV1	31.2	-22.9	0	39.09	54	-14.91	-	-	264	274	V
* 3.619	49.12	PK2	33.8	-30.7	0	52.22	-	-	74	-21.78	246	211	H
* 3.619	43.49	MAV1	33.8	-30.7	0	46.59	54	-7.41	-	-	246	211	H
* 4.824	45.37	PK2	34.3	-29.7	0	49.97	-	-	74	-24.03	301	224	V
* 4.824	40.69	MAV1	34.3	-29.7	0	45.29	54	-8.71	-	-	301	224	V
2.572	50.47	PK2	32.7	-22.4	0	60.77	-	-	-	-	0	179	H
2.573	36.32	MAV1	32.7	-22.4	0	46.62	-	-	-	-	0	179	H

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK2 - KDB558074 Method: Maximum Peak

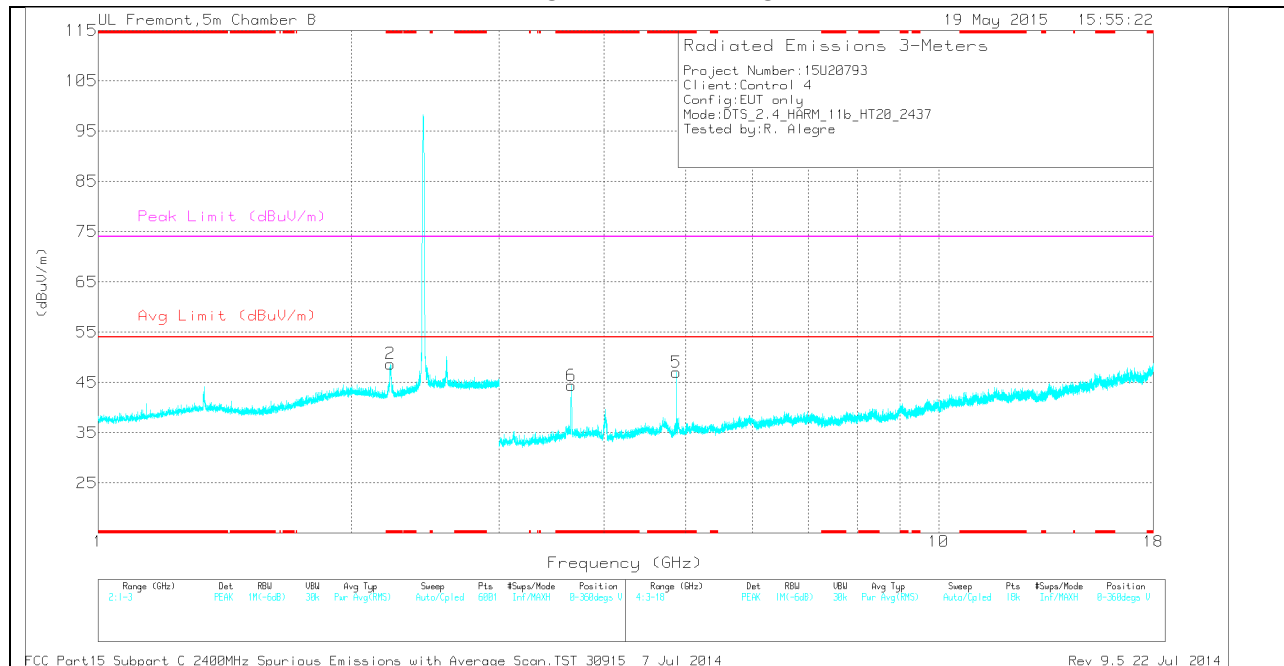
MAV1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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
2	* 2.228	40.41	PK	31.2	-22.9	0	48.71	-	-	74	-25.29	0-360	199	V
3	* 3.655	41.84	PK	33.7	-30.7	0	44.84	-	-	74	-29.16	0-360	199	H
4	* 4.018	39.92	PK	33.3	-31	0	42.22	-	-	74	-31.78	0-360	199	H
5	* 4.873	43.22	PK	34.2	-30.4	0	47.02	-	-	74	-26.98	0-360	199	V
6	* 3.656	41.41	PK	33.7	-30.7	0	44.41	-	-	74	-29.59	0-360	199	V
1	2.598	42.06	PK	32.8	-22.4	0	52.46	-	-	-	-	0-360	101	H

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

Radiated Emissions

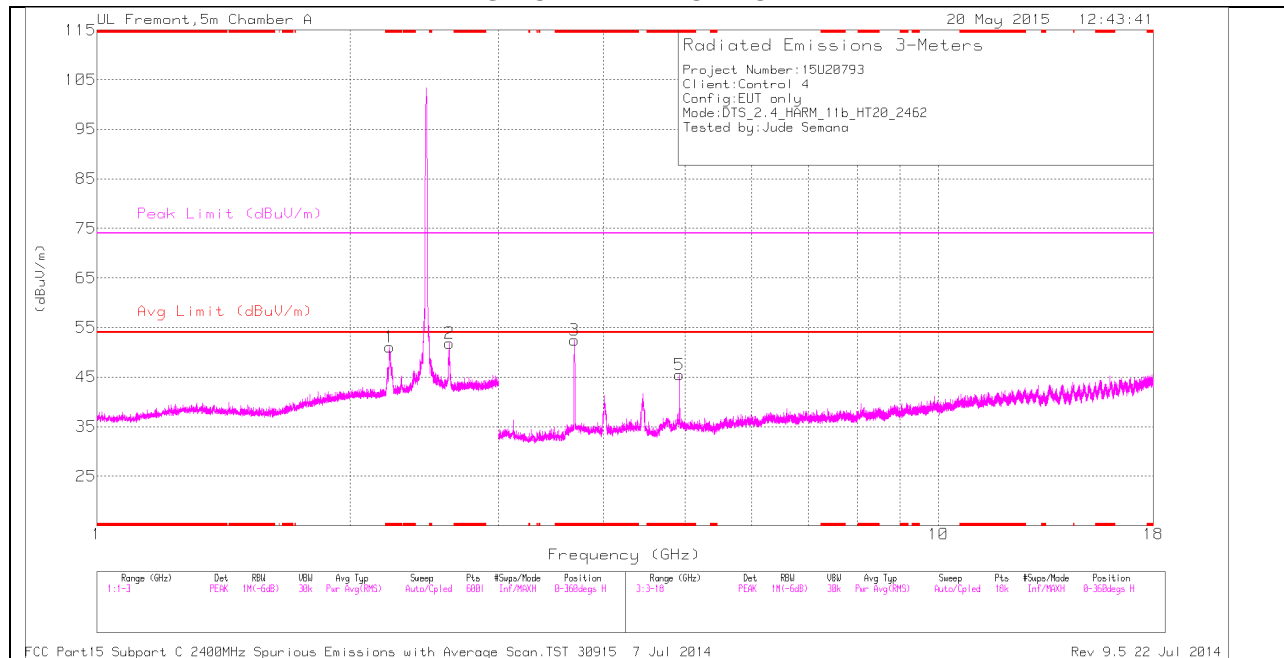
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Fitr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.227	47.55	PK2	31.2	-22.9	0	55.85	-	-	74	-18.15	208	216	V
* 2.227	33	MAV1	31.2	-22.9	0	41.3	54	-12.7	-	-	208	216	V
* 3.655	48.18	PK2	33.7	-30.7	0	51.18	-	-	74	-22.82	251	237	H
* 3.654	41.86	MAV1	33.7	-30.7	0	44.86	54	-9.14	-	-	251	237	H
* 4.017	51.86	PK2	33.3	-31	0	54.16	-	-	74	-19.84	353	233	H
* 4.017	30.62	MAV1	33.3	-31	0	32.92	54	-21.08	-	-	353	233	H
* 4.874	46.94	PK2	34.2	-30.4	0	50.74	-	-	74	-23.26	304	246	V
* 4.874	42.54	MAV1	34.2	-30.4	0	46.34	54	-7.66	-	-	304	246	V
2.598	50.21	PK2	32.8	-22.4	0	60.61	-	-	-	-	242	247	H
2.599	36.24	MAV1	32.8	-22.4	0	46.64	-	-	-	-	242	247	H

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK2 - KDB558074 Method: Maximum Peak

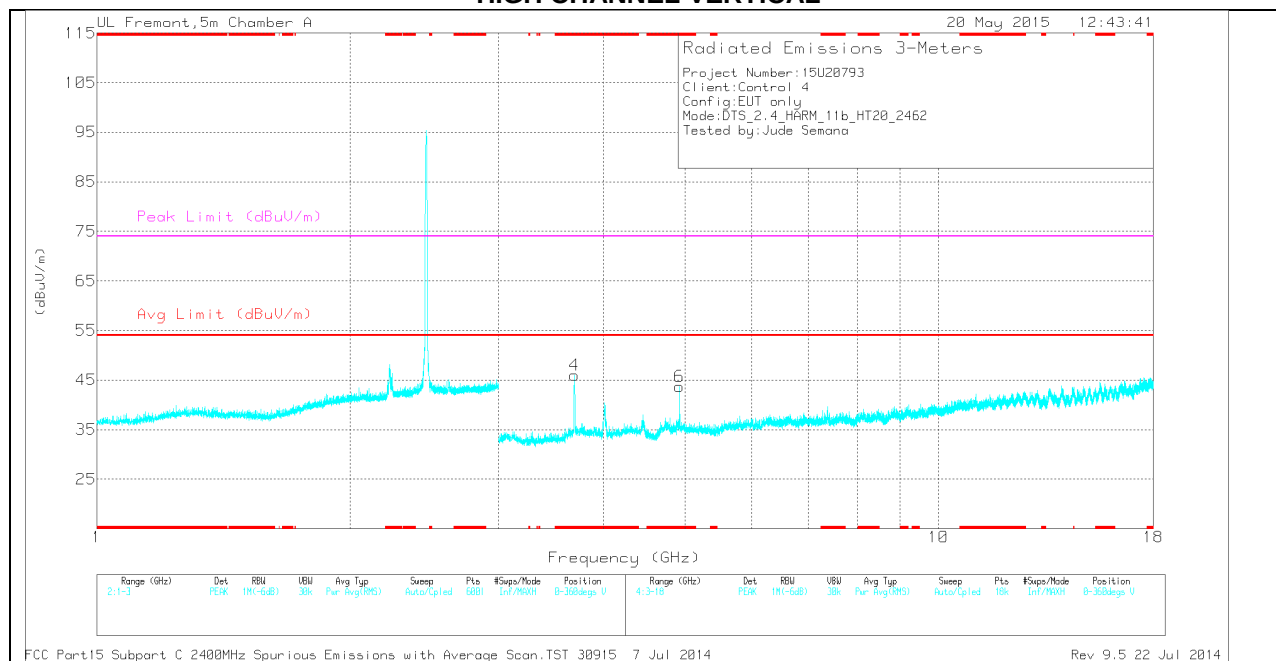
MAV1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL 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)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.227	44.7	PK	31.5	-25.1	51.1	-	-	74	-22.9	0-360	100	H
3	* 3.692	51.76	PK	33.2	-32.5	52.46	-	-	74	-21.54	0-360	100	H
5	* 4.924	41.23	PK	33.9	-29.6	45.53	-	-	74	-28.47	0-360	100	H
4	* 3.692	45.3	PK	33.2	-32.5	46	-	-	74	-28	0-360	100	V
6	* 4.924	39.36	PK	33.9	-29.6	43.66	-	-	74	-30.34	0-360	100	V
2	2.622	44.35	PK	32.2	-24.7	51.85	-	-	-	-	0-360	100	H

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

Radiated Emissions

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)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.229	38.85	PK2	31.5	-25	45.35	-	-	74	-28.65	22	273	H
* 2.228	25.57	MAV1	31.5	-25.1	31.97	54	-22.03	-	-	22	273	H
* 3.693	41.18	PK2	33.2	-32.5	41.88	-	-	74	-32.12	143	194	H
* 3.694	35.38	MAV1	33.2	-32.5	36.08	54	-17.92	-	-	143	194	H
* 4.924	34.15	PK2	33.9	-29.6	38.45	-	-	74	-35.55	208	211	H
* 4.924	26.93	MAV1	33.9	-29.6	31.23	54	-22.77	-	-	208	211	H
2.62	26.63	MAV1	32.2	-24.7	34.13	-	-	-	-	68	209	H
2.621	38.59	PK2	32.2	-24.7	46.09	-	-	-	-	68	209	H

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

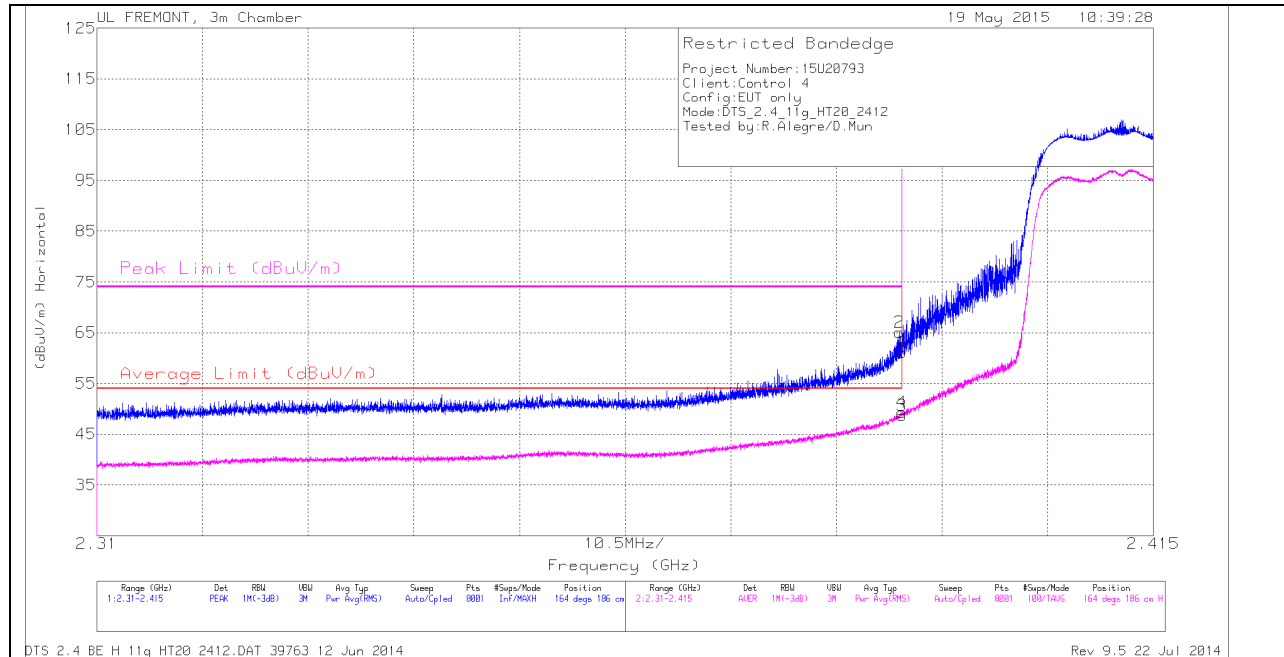
PK2 - KDB558074 Method: Maximum Peak

MAV1 - KDB558074 Option 1 Maximum RMS Average

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

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

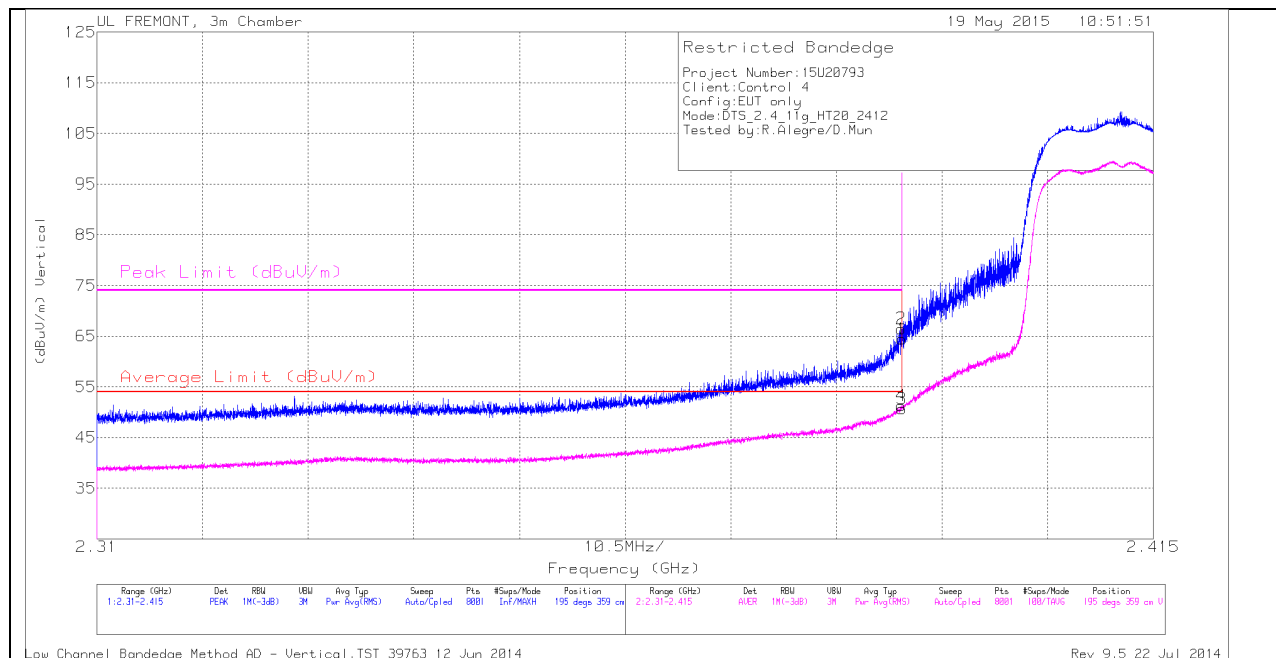
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Ftr/Pad (dB)		Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.39	52.21	PK	32	-23.1	0	61.11	-	-	74	-12.89	164	186	H
2	2.39	56.2	PK	32	-23.1	0	65.1	-	-	74	-8.9	164	186	H
3	2.39	39.74	RMS	32	-23.1	.15	48.94	54	-5.06	-	-	164	186	H
4	2.39	40.42	RMS	32	-23.1	.15	49.47	54	-4.53	-	-	164	186	H

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/ Ftr/Pad (dB)		Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.39	55.58	PK	32	-23.1	0	64.48	-	-	74	-9.52	195	359	V
2	2.39	57.59	PK	32	-23.1	0	66.49	-	-	74	-7.51	195	359	V
3	2.39	41.79	RMS	32	-23.1	.15	50.84	54	-3.16	-	-	195	359	V
4	2.39	42.42	RMS	32	-23.1	.15	51.47	54	-2.53	-	-	195	359	V

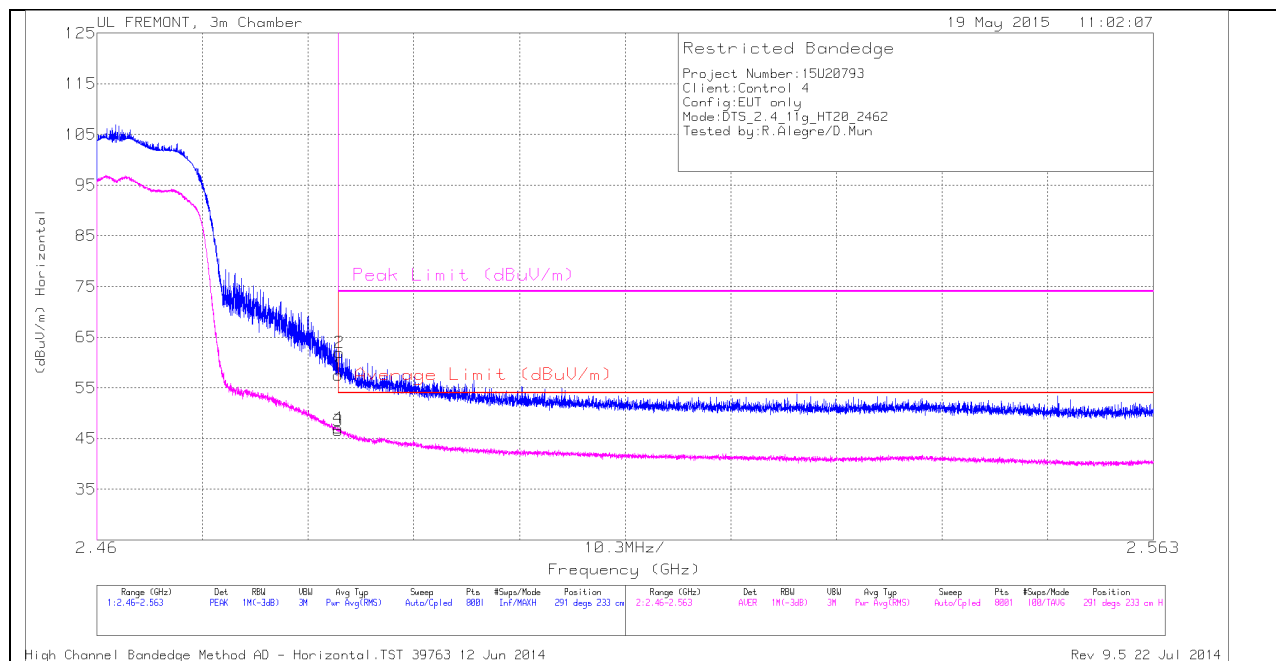
* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

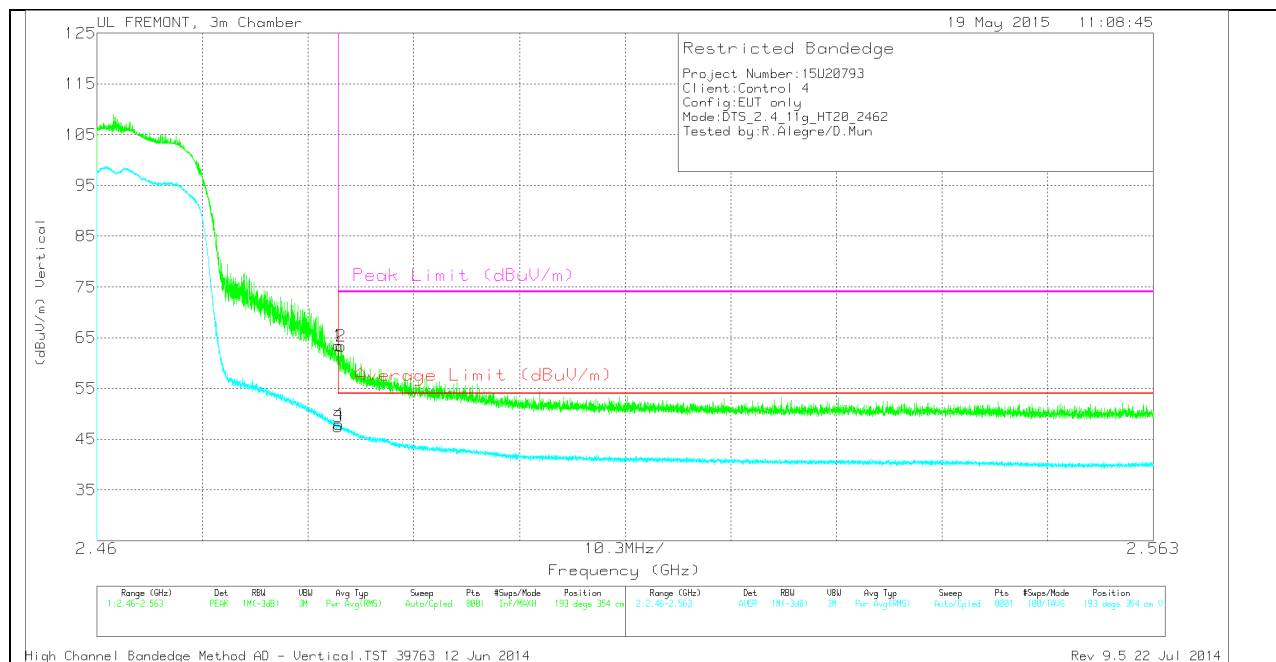
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Filtr/Pad (dB)		Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.484	48	PK	32.3	-22.8	0	57.5	-	-	74	-16.5	291	233	H
2	2.484	52.44	PK	32.3	-22.8	0	61.94	-	-	74	-12.06	291	233	H
3	2.484	37.01	RMS	32.3	-22.8	.15	46.66	54	-7.34	-	-	291	233	H
4	2.484	37.59	RMS	32.3	-22.8	.15	47.24	54	-6.76	-	-	291	233	H

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

PK - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

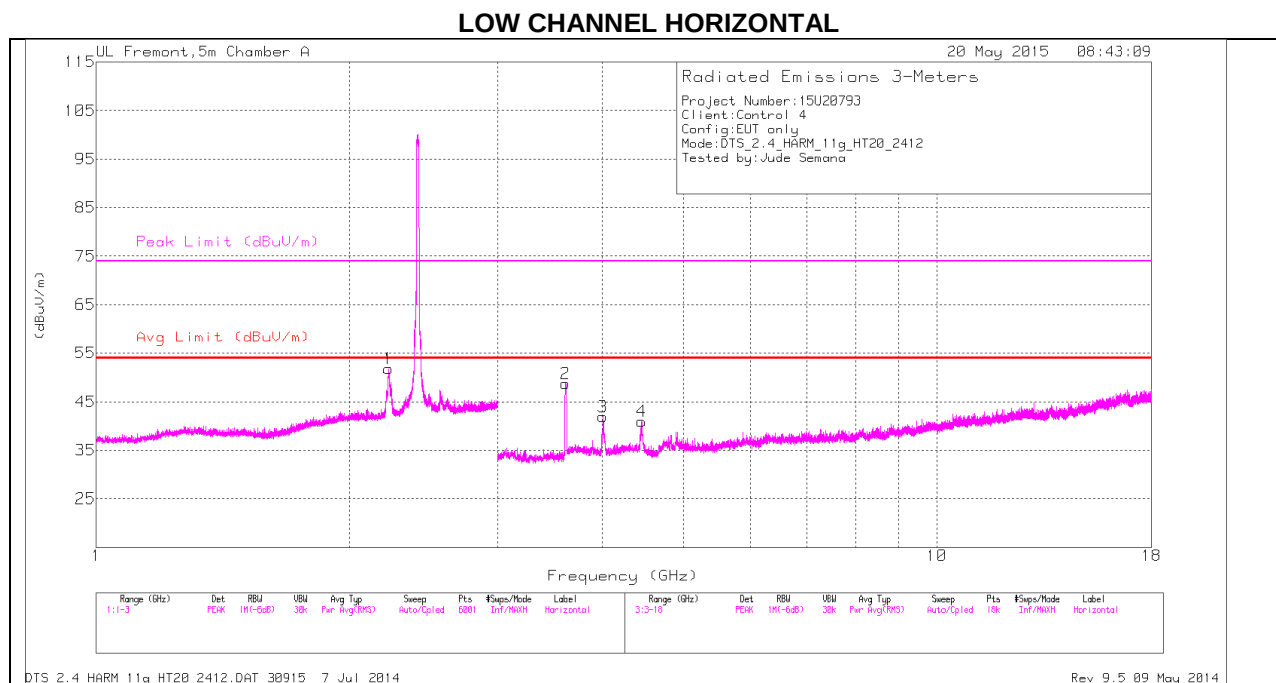
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Filtr/Pad (dB)		Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.484	53.9	PK	32.3	-22.8	0	63.4	-	-	74	-10.6	193	354	V
2	2.484	53.85	PK	32.3	-22.8	0	63.35	-	-	74	-10.65	193	354	V
3	2.484	37.99	RMS	32.3	-22.8	.15	47.64	54	-6.36	-	-	193	354	V
4	2.484	38.44	RMS	32.3	-22.8	.15	48.09	54	-5.91	-	-	193	354	V

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

PK - Peak detector

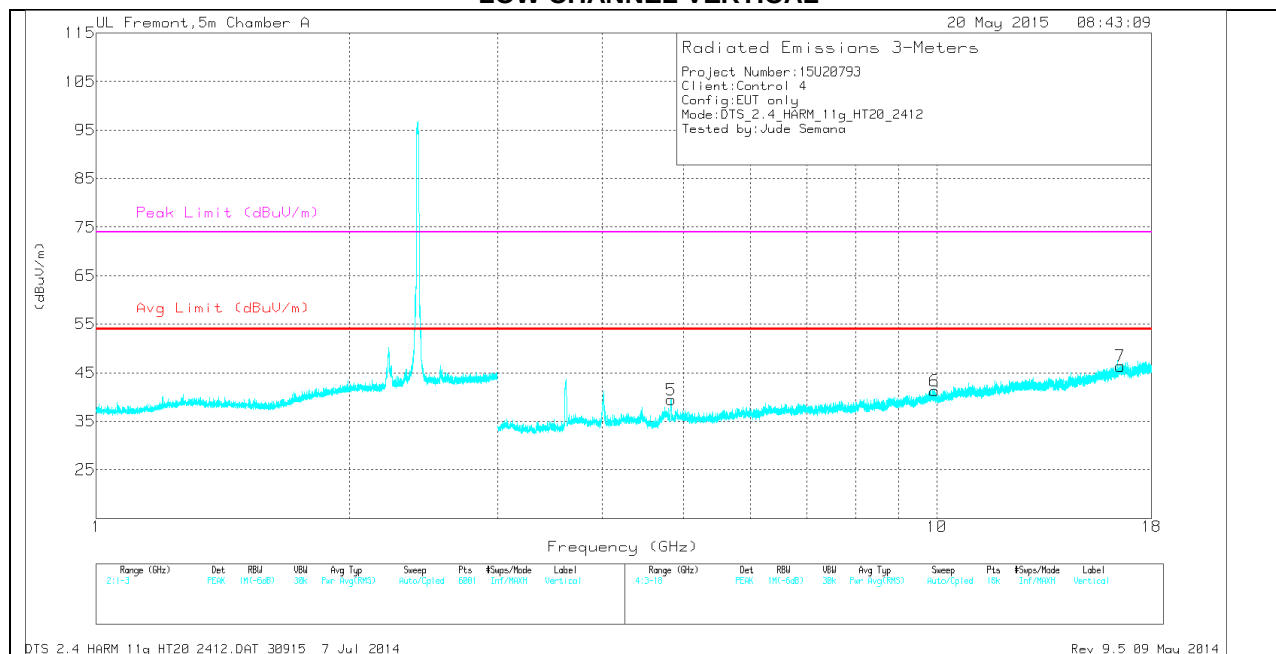
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (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	2.227	45.39	PK	31.5	-25.1	0	51.79	-	-	74	-22.21	0-360	201	H
2	3.616	48.26	PK	33.1	-32.6	0	48.76	-	-	74	-25.24	0-360	201	H
3	4.007	41.11	PK	33.3	-32.5	0	41.91	-	-	74	-32.09	0-360	201	H
4	4.453	38.93	PK	33.8	-31.8	0	40.93	-	-	-	-	0-360	201	H
5	4.828	36.22	PK	33.9	-30.7	0	39.42	-	-	74	-34.58	0-360	201	V
6	9.942	27.63	PK	37	-23.4	0	41.23	-	-	-	-	0-360	201	V
7	16.538	27.64	PK	41.6	-22.9	0	46.34	-	-	-	-	0-360	100	V

PK - Peak detector

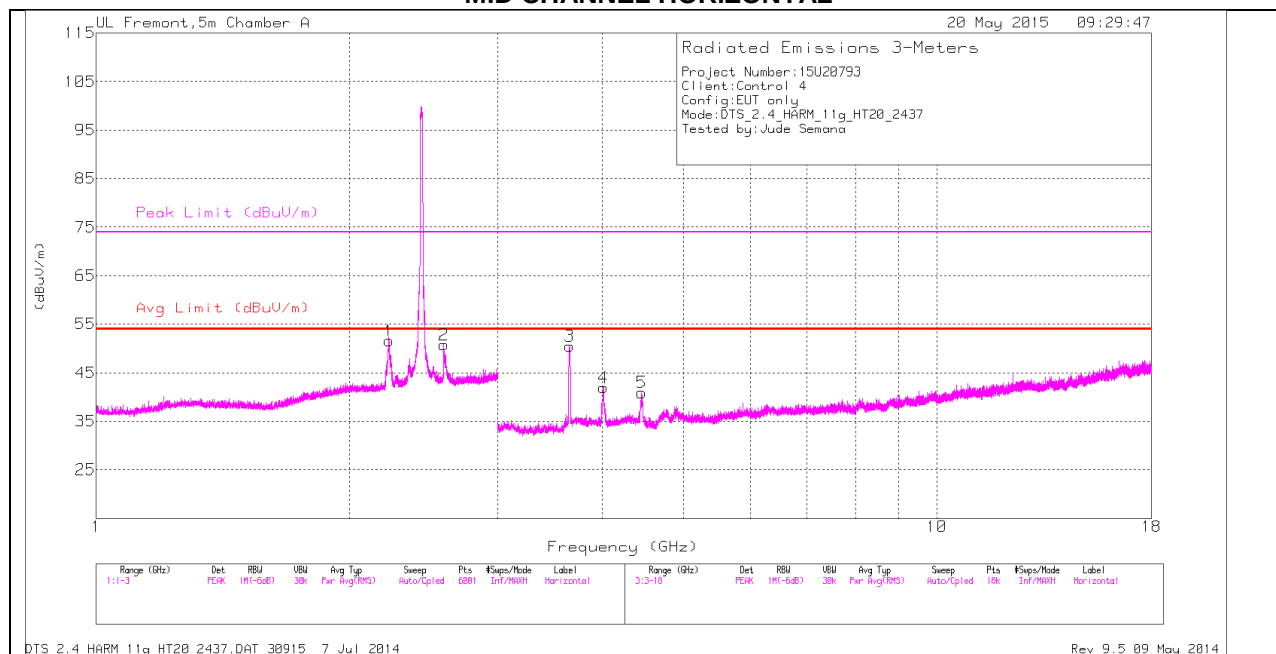
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (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
2.229	51.21	PK2	31.5	-25	0	57.71	-	-	74	-16.29	0	166	H
2.228	41	MAV1	31.5	-25.1	.15	47.55	54	-6.45	-	-	0	166	H
3.618	58.31	PK2	33.1	-32.6	0	58.81	-	-	74	-15.19	145	309	H
3.617	48.54	MAV1	33.1	-32.6	.15	49.19	54	-4.81	-	-	145	309	H
4.007	41.64	PK2	33.3	-32.5	0	42.44	-	-	74	-31.56	347	389	H
4.009	30.2	MAV1	33.3	-32.5	.15	31.15	54	-22.85	-	-	347	389	H
4.009	41.81	PK2	33.3	-32.5	0	42.61	-	-	74	-31.39	347	389	H
4.009	30.24	MAV1	33.3	-32.5	.15	31.19	54	-22.81	-	-	347	389	H
4.455	40.94	PK2	33.8	-31.8	0	42.94	-	-	-	-	220	169	H
4.453	29.98	MAV1	33.8	-31.8	.15	32.18	-	-	-	-	220	169	H

PK2 - KDB558074 Method: Maximum Peak

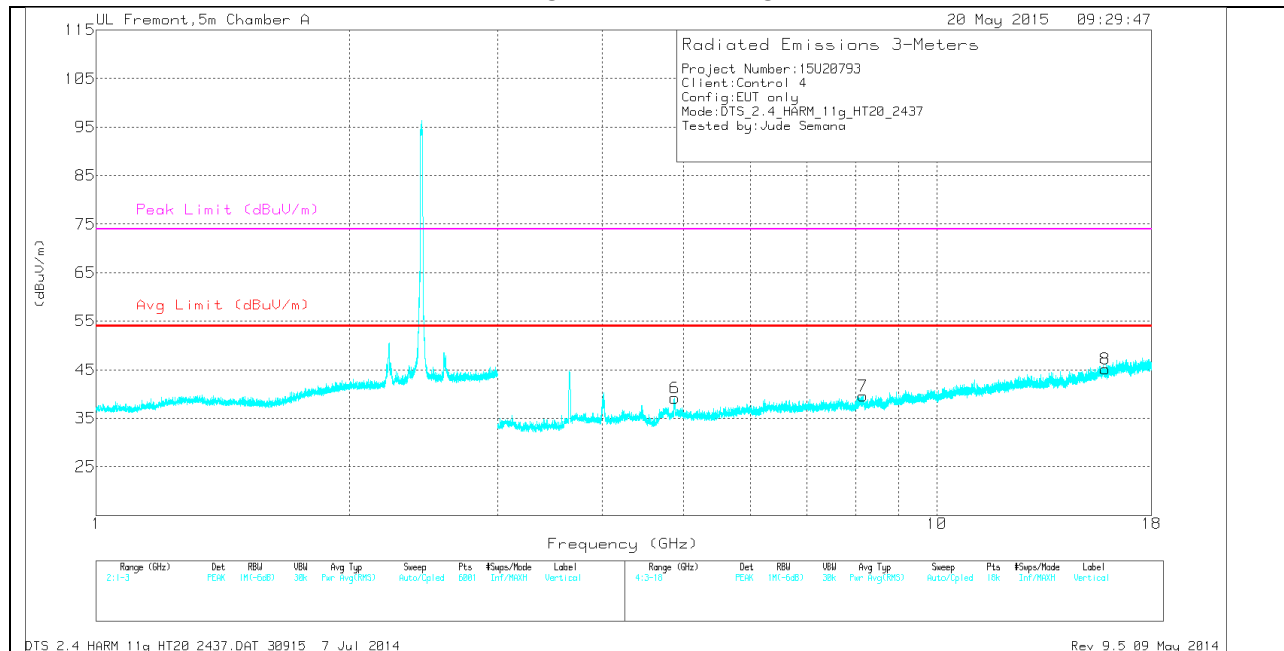
MAV1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Filtr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.23	45.09	PK	31.5	-25	0	51.59	-	-	74	-22.41	0-360	100	H
2	2.59	43.26	PK	32.2	-24.7	0	50.76	-	-	-	-	0-360	201	H
3	3.657	49.69	PK	33.2	-32.4	0	50.49	-	-	74	-23.51	0-360	201	H
4	4.012	41.04	PK	33.3	-32.4	0	41.94	-	-	74	-32.06	0-360	201	H
5	4.455	38.89	PK	33.8	-31.8	0	40.89	-	-	-	-	0-360	100	H
6	4.875	35.37	PK	33.9	-30.1	0	39.17	-	-	74	-34.83	0-360	201	V
7	8.167	28.48	PK	35.7	-24.6	0	39.58	-	-	74	-34.42	0-360	100	V
8	15.863	27.73	PK	40.6	-23.2	0	45.13	-	-	74	-28.87	0-360	100	V

PK - Peak detector

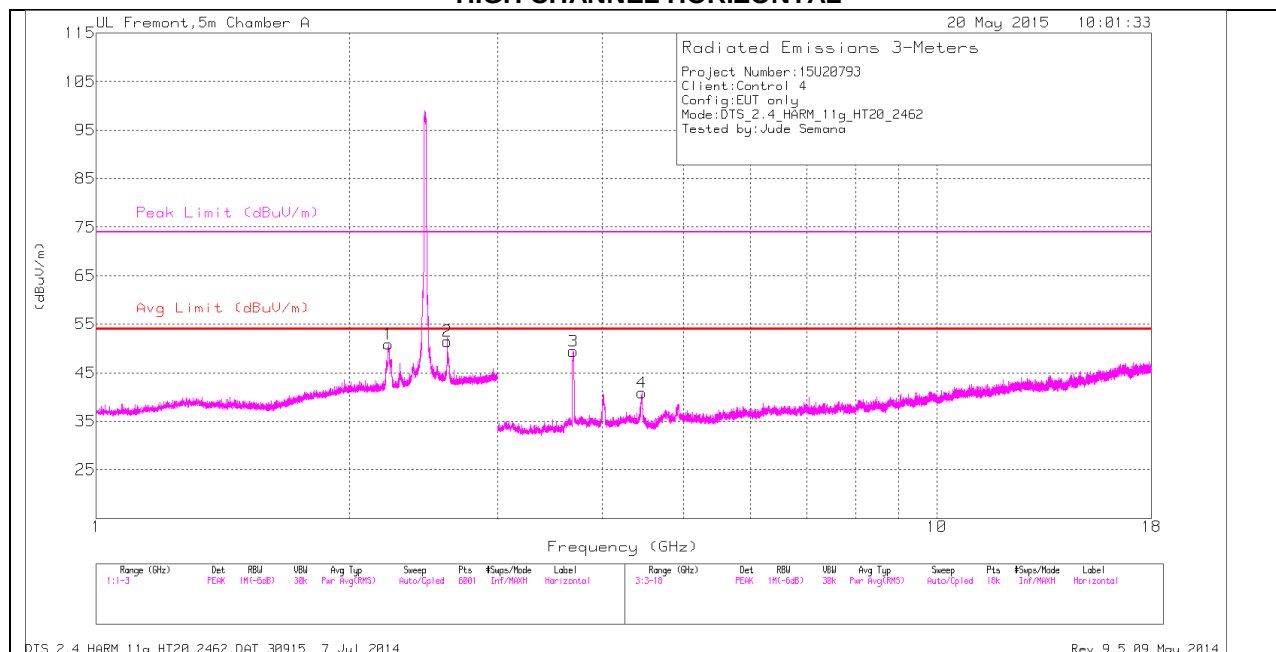
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Filtr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2.228	58.89	PK2	31.5	-25.1	0	65.29	-	-	74	-8.71	239	218	H
2.228	41.1	MAV1	31.5	-25.1	.15	47.65	54	-6.35	-	-	239	218	H
2.592	51.52	PK2	32.2	-24.7	0	59.02	-	-	-	-	94	125	H
2.591	40.95	MAV1	32.2	-24.7	.15	48.60	-	-	-	-	94	125	H
3.657	57.65	PK2	33.2	-32.4	0	58.45	-	-	74	-15.55	144	353	H
3.656	48.21	MAV1	33.2	-32.4	.15	49.16	54	-4.84	-	-	144	353	H
4.01	51.49	PK2	33.3	-32.4	0	52.39	-	-	74	-21.61	251	259	H
4.01	32.15	MAV1	33.3	-32.4	.15	33.20	54	-20.80	-	-	251	259	H
4.456	42.12	PK2	33.8	-31.8	0	44.12	-	-	-	-	62	199	H
4.455	29.92	MAV1	33.8	-31.8	.15	32.07	-	-	-	-	62	199	H

PK2 - KDB558074 Method: Maximum Peak

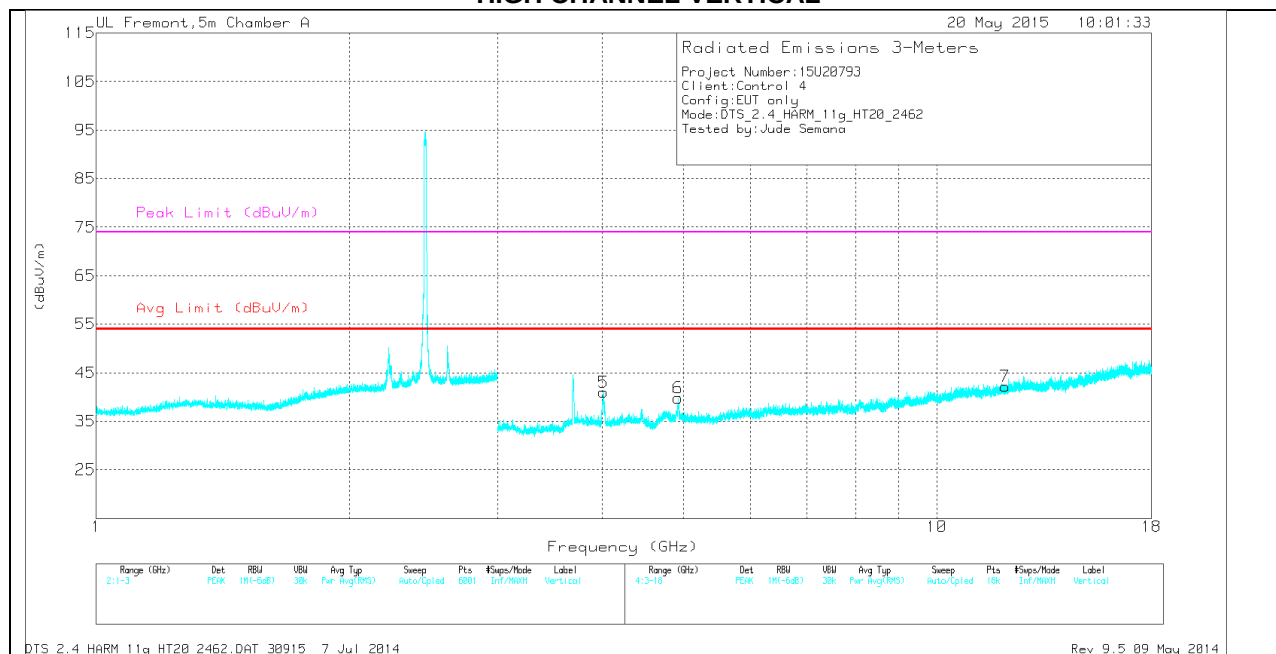
MAV1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Filtr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.226	44.48	PK	31.5	-25.1	0	50.88	-	-	74	-23.12	0-360	201	H
2	2.616	43.85	PK	32.3	-24.7	0	51.45	-	-	-	-	0-360	201	H
3	3.692	48.72	PK	33.2	-32.5	0	49.42	-	-	74	-24.58	0-360	201	H
4	4.456	38.88	PK	33.8	-31.8	0	40.88	-	-	-	-	0-360	201	H
5	4.013	40.07	PK	33.3	-32.4	0	40.97	-	-	74	-33.03	0-360	201	V
6	4.922	35.5	PK	33.9	-29.6	0	39.8	-	-	74	-34.2	0-360	201	V
7	12.059	26.79	PK	38.7	-23.3	0	42.19	-	-	74	-31.81	0-360	201	V

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Filtr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2.228	57.17	PK2	31.5	-25.1	0	63.57	-	-	74	-10.43	69	212	H
2.228	39.92	MAV1	31.5	-25.1	.15	46.47	54	-7.53	-	-	69	212	H
2.616	53	PK2	32.3	-24.7	0	60.6	-	-	-	-	288	202	H
2.615	42.94	MAV1	32.3	-24.7	.15	50.69	-	-	-	-	288	202	H
3.692	58.28	PK2	33.2	-32.5	0	58.98	-	-	74	-15.02	133	301	H
3.694	48.55	MAV1	33.2	-32.5	.15	49.40	54	-4.60	-	-	133	301	H
4.455	49.27	PK2	33.8	-31.8	0	51.27	-	-	-	-	50	190	H
4.456	33.36	MAV1	33.8	-31.8	.15	35.51	-	-	-	-	50	190	H
4.455	40.94	PK2	33.8	-31.8	0	42.94	-	-	-	-	220	169	H
4.453	29.98	MAV1	33.8	-31.8	.15	32.13	-	-	-	-	220	169	H

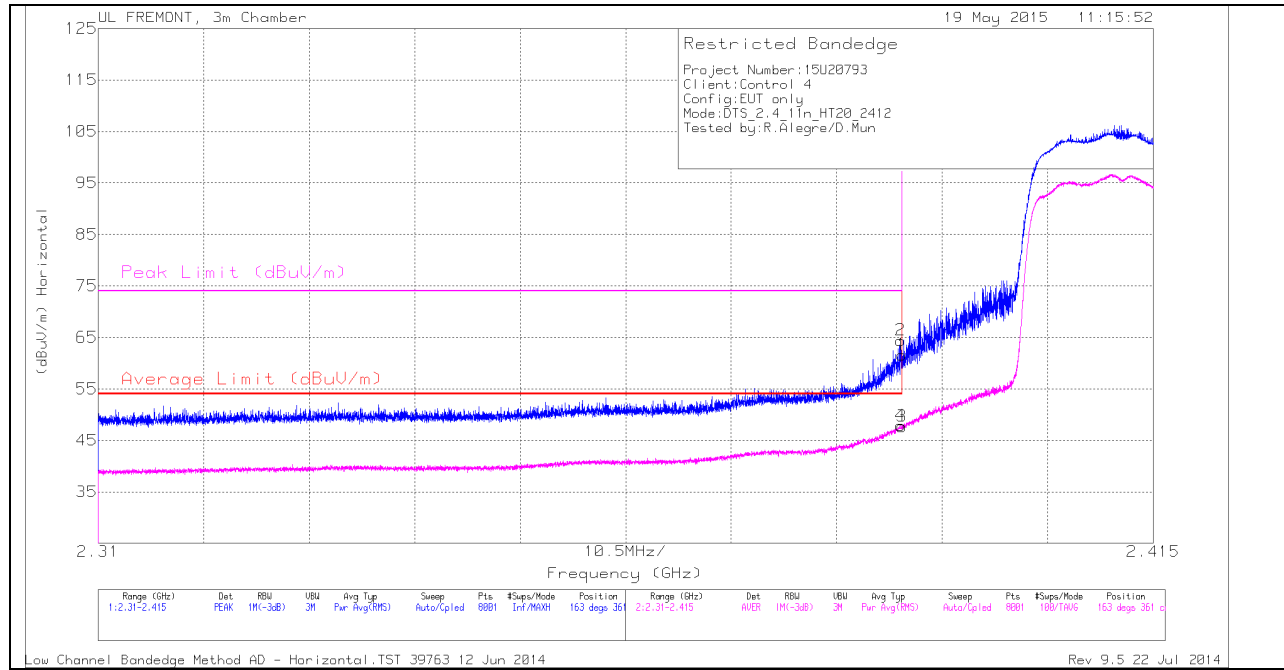
PK2 - KDB558074 Method: Maximum Peak

MAV1 - KDB558074 Option 1 Maximum RMS Average

10.2.3. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

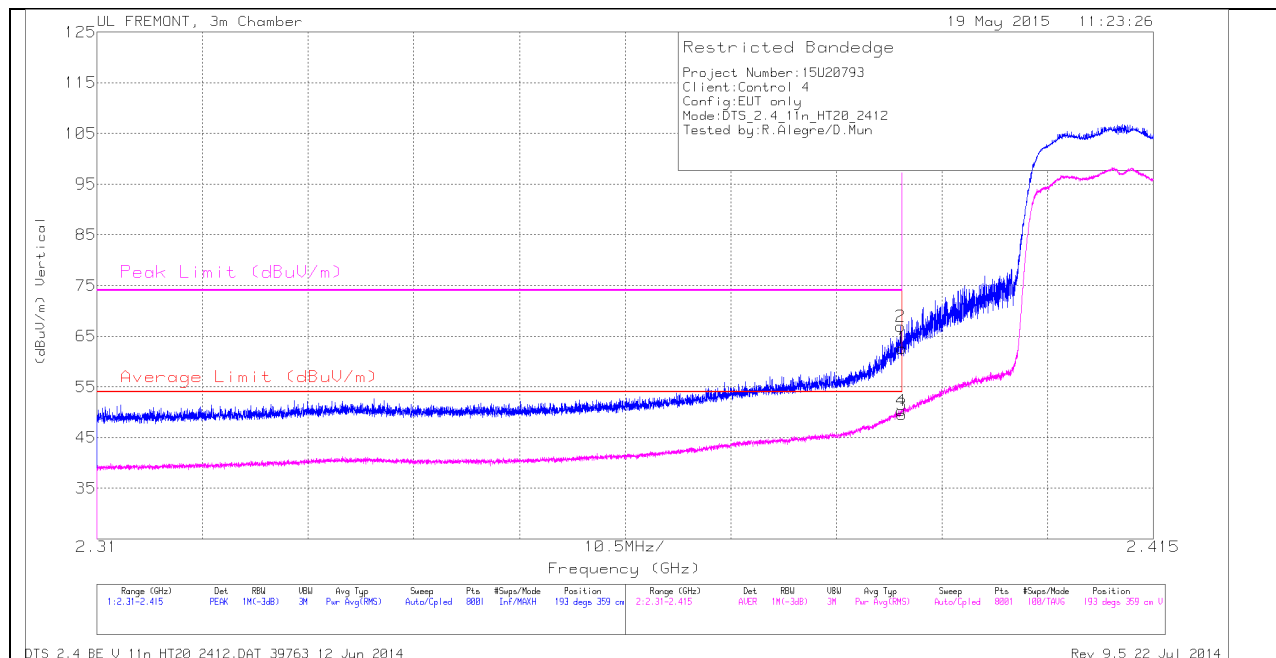
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Filtr/Pad (dB)		Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.39	52.7	PK	32	-23.1	0	61.6	-	-	74	-12.4	163	361	H
2	2.39	55.53	PK	32	-23.1	0	64.43	-	-	74	-9.57	163	361	H
3	2.39	38.82	RMS	32	-23.1	.13	47.85	54	-6.15	-	-	163	361	H
4	2.39	38.98	RMS	32	-23.1	.13	48.01	54	-5.99	-	-	163	361	H

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Filt r/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	53.74	PK	32	-23.1	0	62.64	-	-	74	-11.36	193	359	V
2	2.39	58.07	PK	32	-23.1	0	66.97	-	-	74	-7.03	193	359	V
3	2.39	40.66	RMS	32	-23.1	.13	49.69	54	-4.31	-	-	193	359	V
4	2.39	41.34	RMS	32	-23.1	.13	50.37	54	-3.63	-	-	193	359	V

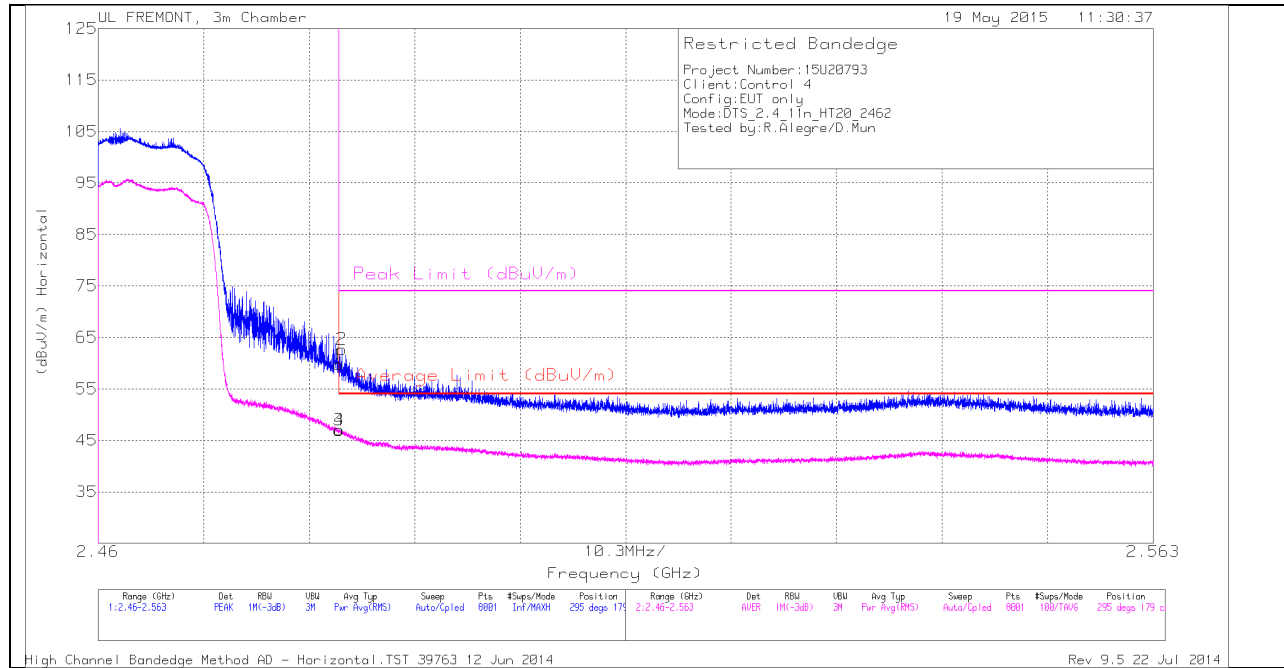
* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

RMS - RMS detection

AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK AND AVERAGE PLOT



HORIZONTAL DATA

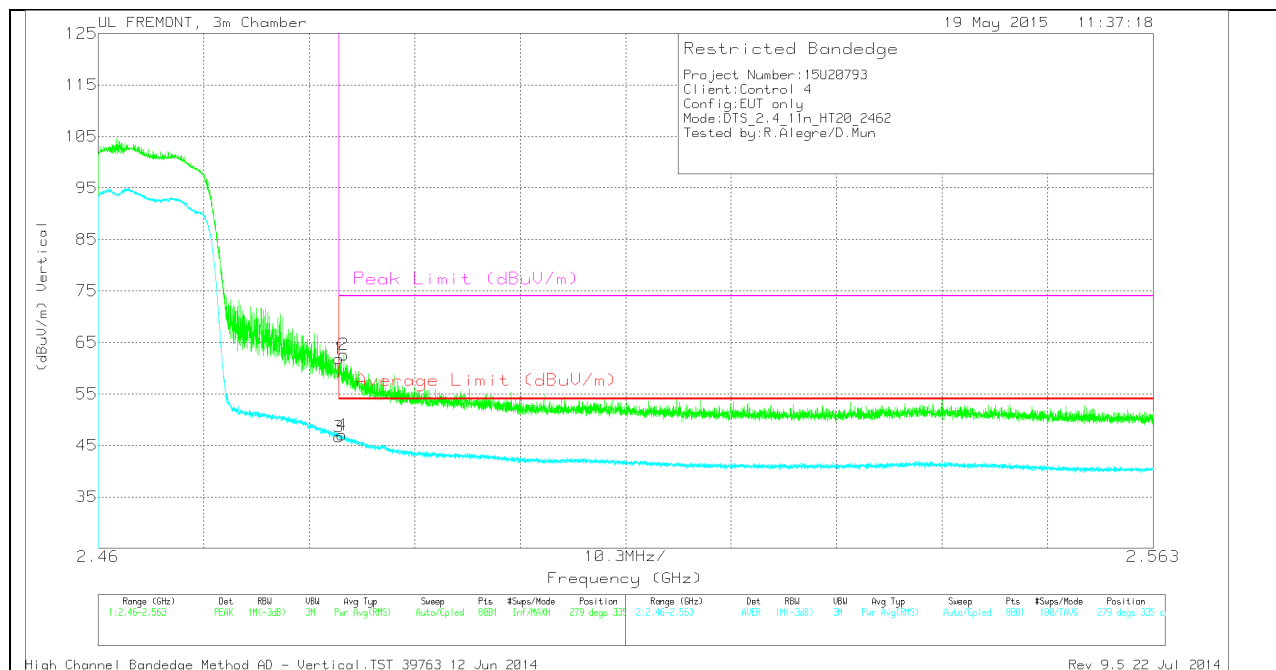
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Filtr/Pad (dB)		Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.484	50.23	PK	32.3	-22.8	0	59.73	-	-	74	-14.27	295	179	H
2	2.484	53.2	PK	32.3	-22.8	0	62.7	-	-	74	-11.3	295	179	H
3	2.484	37.49	RMS	32.3	-22.8	.13	47.12	54	-6.88	-	-	295	179	H
4	2.484	37.54	RMS	32.3	-22.8	.13	47.17	54	-6.83	-	-	295	179	H

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

PK - Peak detector

RMS - RMS detection

VERTICAL PEAK AND AVERAGE PLOT



VERTICAL DATA

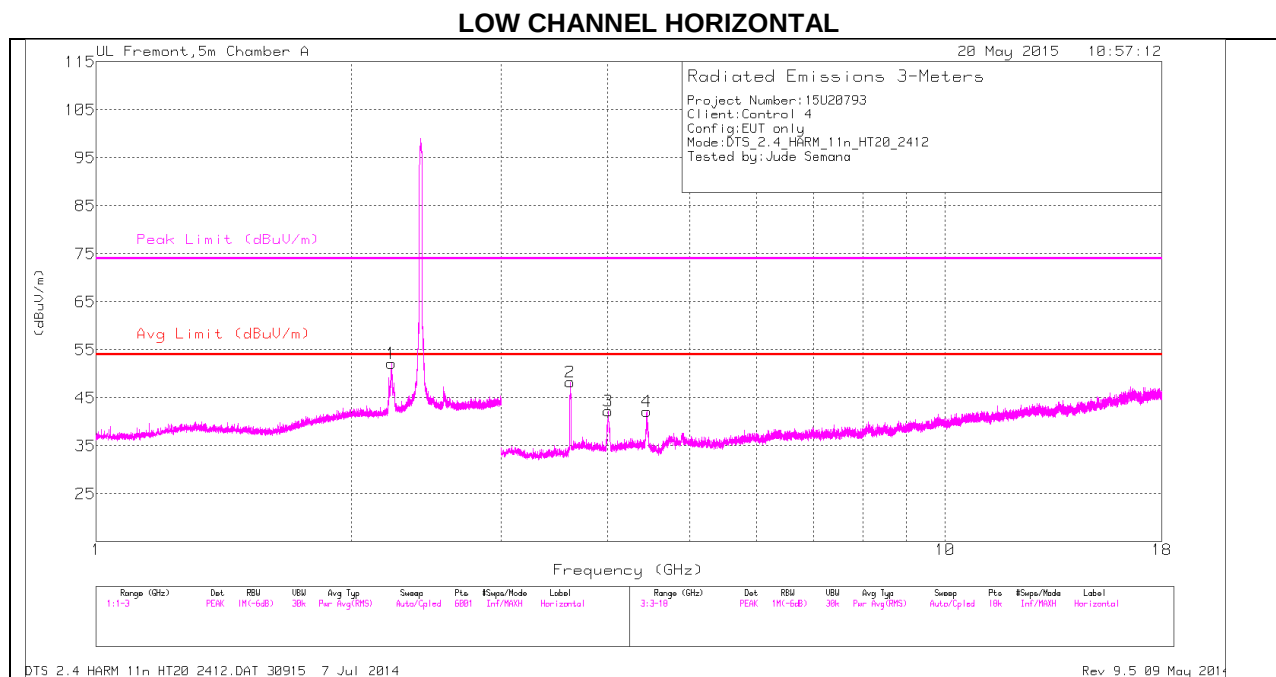
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Filtr/Pad (dB)		Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.484	52.36	PK	32.3	-22.8	0	61.86	-	-	74	-12.14	279	335	V
2	2.484	53.11	PK	32.3	-22.8	0	62.61	-	-	74	-11.39	279	335	V
3	2.484	37.13	RMS	32.3	-22.8	.13	46.76	54	-7.37	-	-	279	335	V
4	2.484	37.5	RMS	32.3	-22.8	.13	47.13	54	-6.87	-	-	279	335	V

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

PK - Peak detector

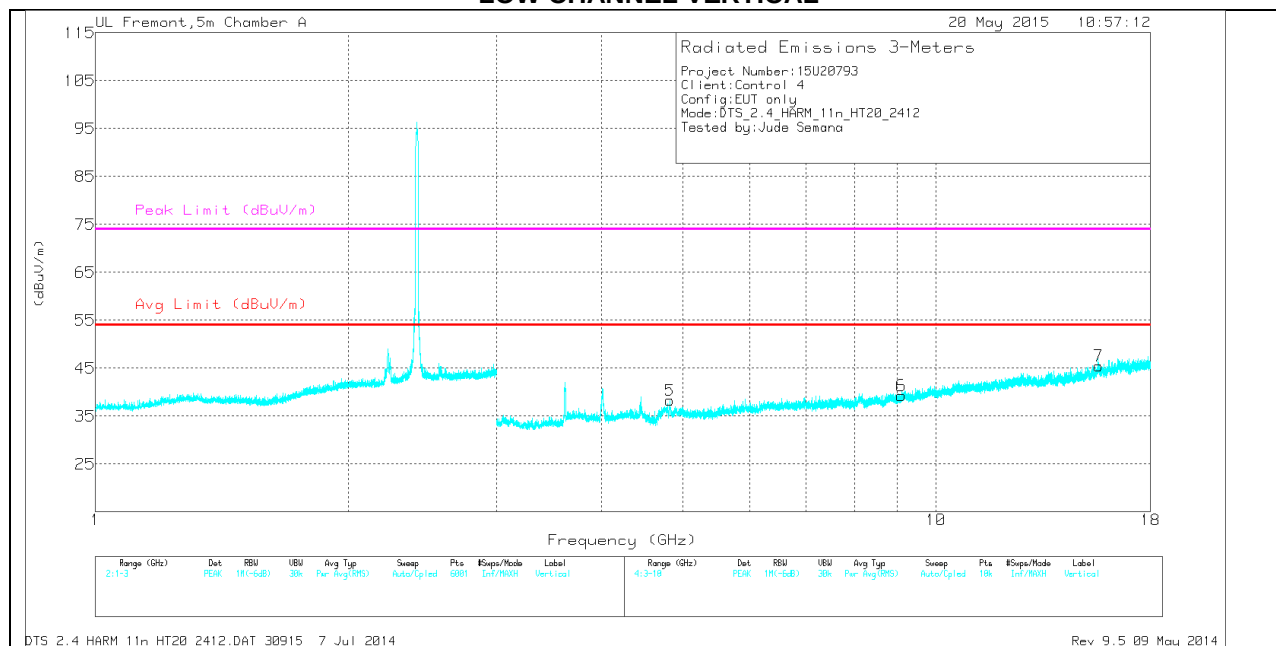
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (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	2.227	45.75	PK	31.5	-25.1	0	52.15	-	-	74	-21.85	0-360	201	H
2	3.618	47.8	PK	33.1	-32.6	0	48.3	-	-	74	-25.7	0-360	201	H
3	4.012	41.37	PK	33.3	-32.4	0	42.27	-	-	74	-31.73	0-360	201	H
4	4.452	40.19	PK	33.8	-31.8	0	42.19	-	-	-	-	0-360	100	H
5	4.824	35.21	PK	33.9	-30.8	0	38.31	-	-	74	-35.69	0-360	201	V
6	9.091	28.13	PK	36.2	-25	0	39.33	-	-	74	-34.67	0-360	100	V
7	15.618	27.66	PK	40.4	-22.6	0	45.46	-	-	74	-28.54	0-360	100	V

PK - Peak detector

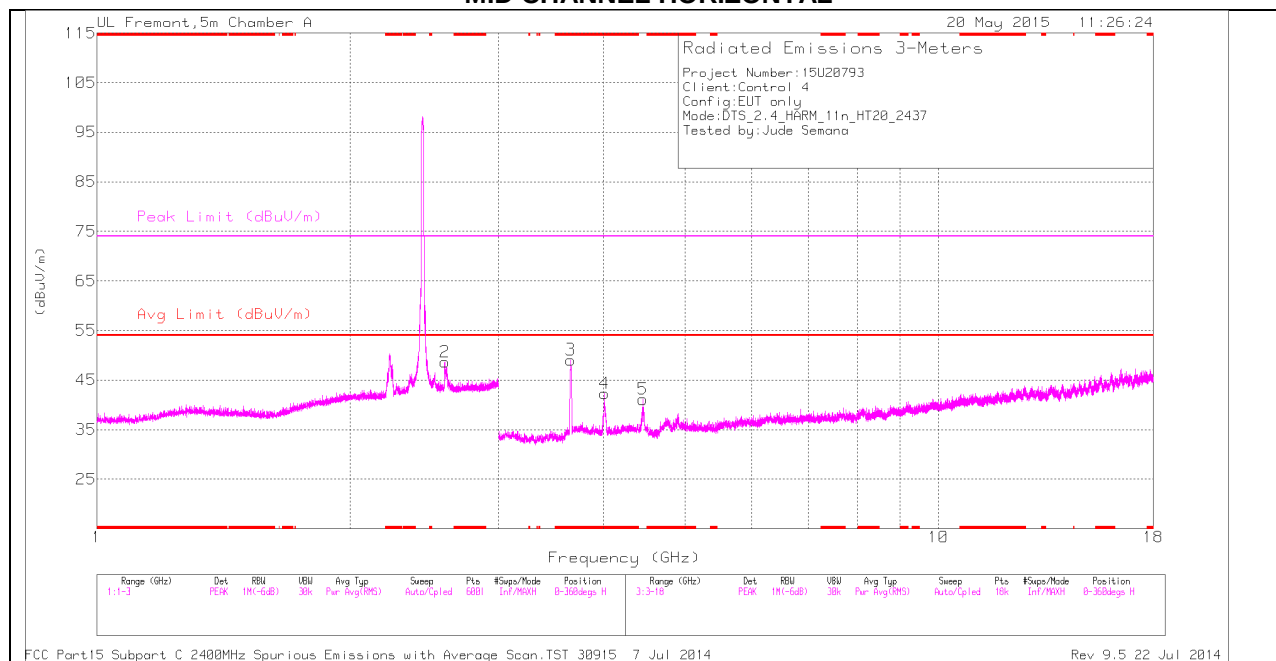
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (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
2.229	56.63	PK2	31.5	-25	0	63.13	-	-	74	-10.87	91	169	H
2.227	39.86	MAV1	31.5	-25.1	.13	46.39	54	-7.61	-	-	91	169	H
3.618	55.33	PK2	33.1	-32.6	0	55.83	-	-	74	-18.17	146	199	H
3.617	45.21	MAV1	33.1	-32.6	.13	45.84	54	-8.16	-	-	146	199	H
4.012	52.04	PK2	33.3	-32.4	0	52.94	-	-	74	-21.06	358	232	H
4.011	35.58	MAV1	33.3	-32.4	.13	36.61	54	-17.39	-	-	358	232	H
4.453	51.12	PK2	33.8	-31.8	0	53.12	-	-	-	-	61	313	H
4.454	34.68	MAV1	33.8	-31.8	.13	36.78	-	-	-	-	61	313	H
4.455	40.94	PK2	33.8	-31.8	0	42.97	-	-	-	-	220	169	H
4.453	29.98	MAV1	33.8	-31.8	.13	32.11	-	-	-	-	220	169	H

PK2 - KDB558074 Method: Maximum Peak

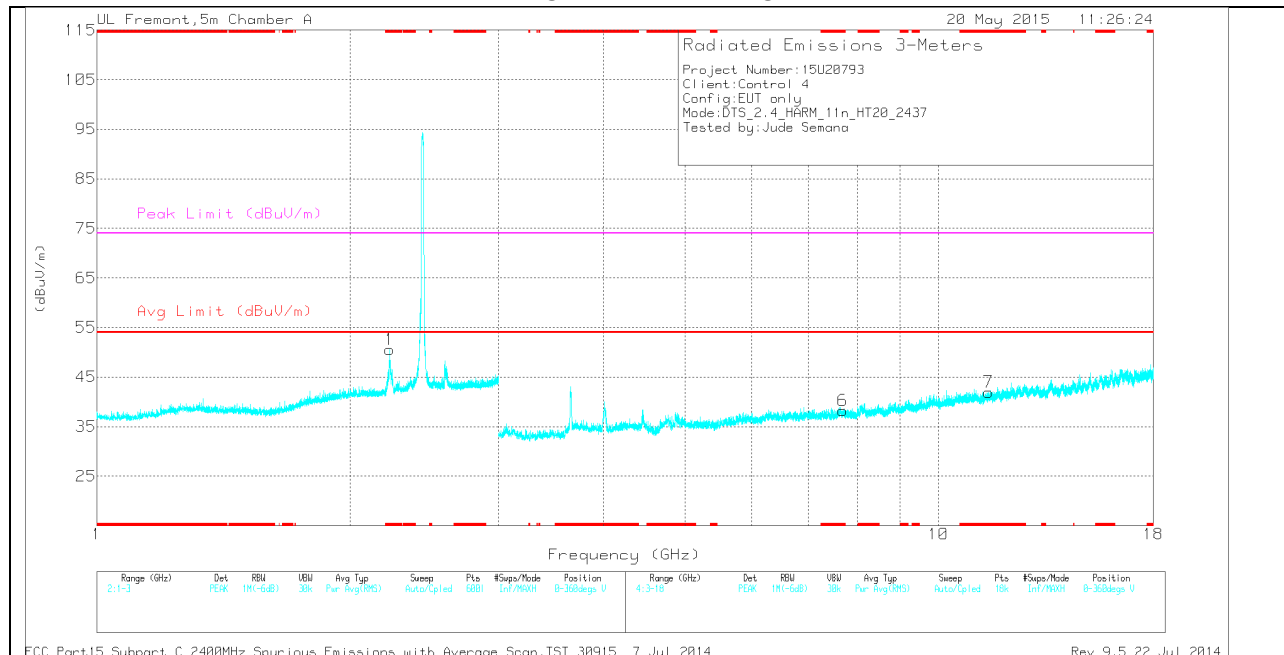
MAV1 - KDB558074 Option 1 Maximum RMS Average

MID CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Filtr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.229	44.05	PK	31.5	-25	0	50.55	-	-	74	-23.45	0-360	201	V
3	* 3.656	48.29	PK	33.2	-32.4	0	49.09	-	-	74	-24.91	0-360	201	H
4	* 4.009	41.36	PK	33.3	-32.4	0	42.26	-	-	74	-31.74	0-360	201	H
6	* 7.692	28.49	PK	35.7	-26	0	38.19	-	-	74	-35.81	0-360	201	V
7	* 11.478	26.88	PK	38	-22.9	0	41.98	-	-	74	-32.02	0-360	201	V
2	2.591	41.12	PK	32.2	-24.7	0	48.62	-	-	-	-	0-360	100	H
5	4.454	39.1	PK	33.8	-31.8	0	41.1	-	-	-	-	0-360	100	H

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

Radiated Emissions

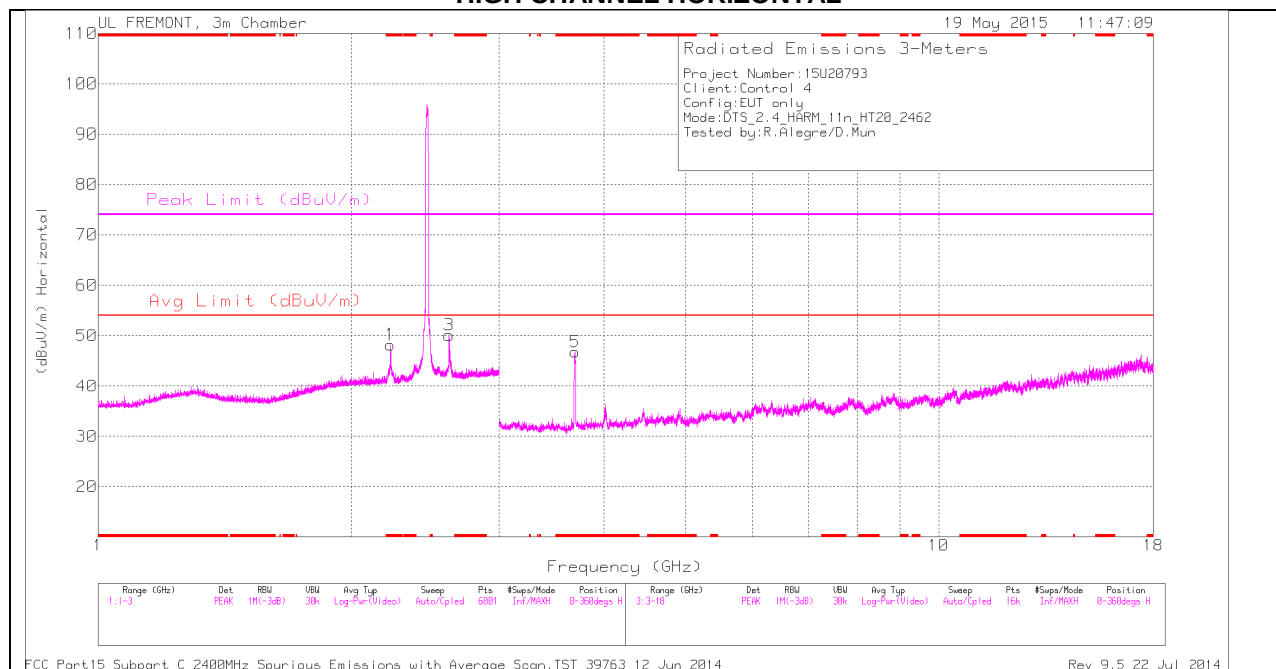
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Filtr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.228	55.94	PK2	31.5	-25.1	0	62.34	-	-	74	-11.66	41	279	V
* 2.228	38.6	MAV1	31.5	-25.1	.13	45.13	54	-8.87	-	-	41	279	V
* 3.654	43.73	PK2	33.2	-32.4	0	44.53	-	-	74	-29.47	147	264	H
* 3.656	33.85	MAV1	33.2	-32.4	.13	34.78	54	-19.22	-	-	147	264	H
* 4.01	52.26	PK2	33.3	-32.4	0	53.16	-	-	74	-20.84	356	204	H
* 4.01	36.03	MAV1	33.3	-32.4	.13	37.06	54	-16.94	-	-	356	204	H
2.589	39.62	MAV1	32.2	-24.7	.13	47.25	-	-	-	-	306	134	H
2.592	50.13	PK2	32.2	-24.7	0	57.63	-	-	-	-	306	134	H
4.453	22.38	MAV1	33.8	-31.8	.13	24.51	-	-	-	-	59	216	H
4.454	37.2	PK2	33.8	-31.8	0	39.2	-	-	-	-	59	216	H

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK2 - KDB558074 Method: Maximum Peak

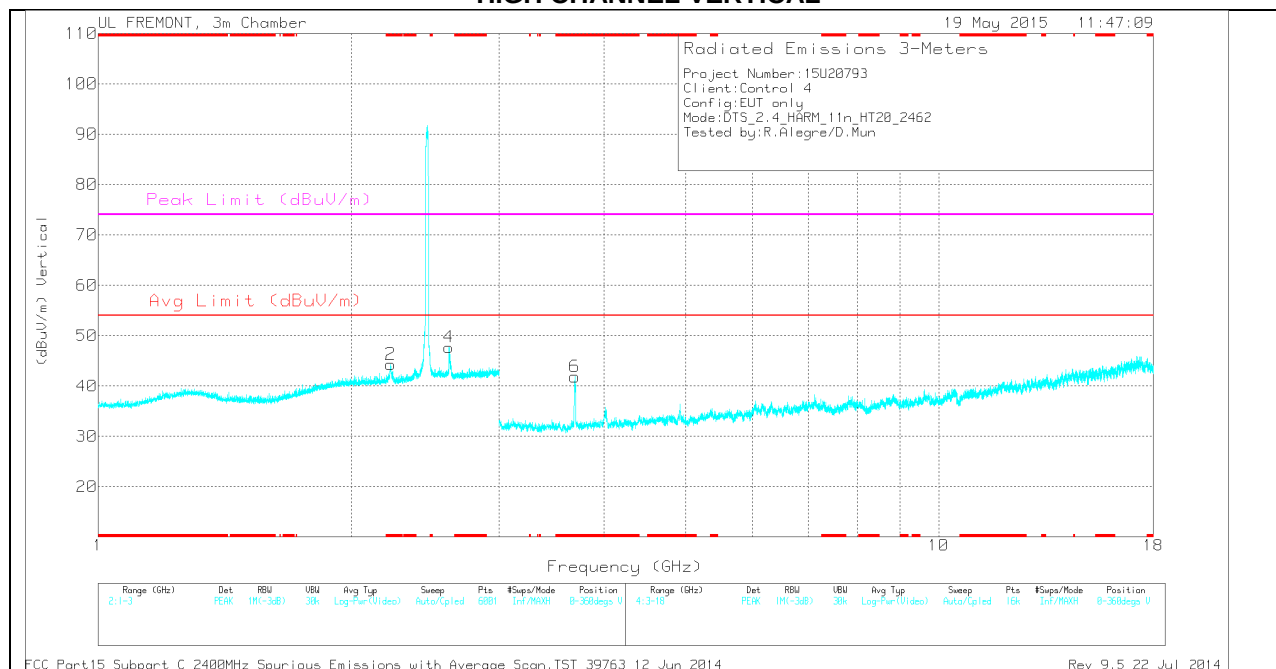
MAV1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL DATA

TRACE MARKERS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Filtr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.227	39.57	PK	31.5	-22.9	0	48.17	-	-	74	-25.83	0-360	200	H
2	* 2.229	35.82	PK	31.5	-23	0	44.32	-	-	74	-29.68	0-360	200	V
5	* 3.692	44.54	PK	33	-30.8	0	46.74	-	-	74	-27.26	0-360	200	H
6	* 3.691	39.65	PK	33	-30.8	0	41.85	-	-	74	-32.15	0-360	200	V
4	2.614	38.01	PK	32.4	-22.7	0	47.71	-	-	-	-	0-360	200	V
3	2.615	40.4	PK	32.4	-22.7	0	50.1	-	-	-	-	0-360	200	H

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T119 (dB/m)	Amp/Cbl/Filtr /Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.227	54.21	PK2	31.5	-22.9	0	62.81	-	-	74	-11.19	318	264	H
* 2.228	35.63	MAV1	31.5	-22.9	.13	44.36	54	-9.77	-9.64	-	318	264	H
* 3.692	55.63	PK2	33	-30.8	0	57.83	-	-	74	-16.17	18	394	H
* 3.692	45.61	MAV1	33	-30.8	.13	47.94	54	-6.19	-6.06	-	18	394	H
2.614	49.4	PK2	32.4	-22.7	0	59.1	-	-	-	-	330	198	H
2.614	38.9	MAV1	32.4	-22.7	.13	48.73	-	-	-	-	330	198	H

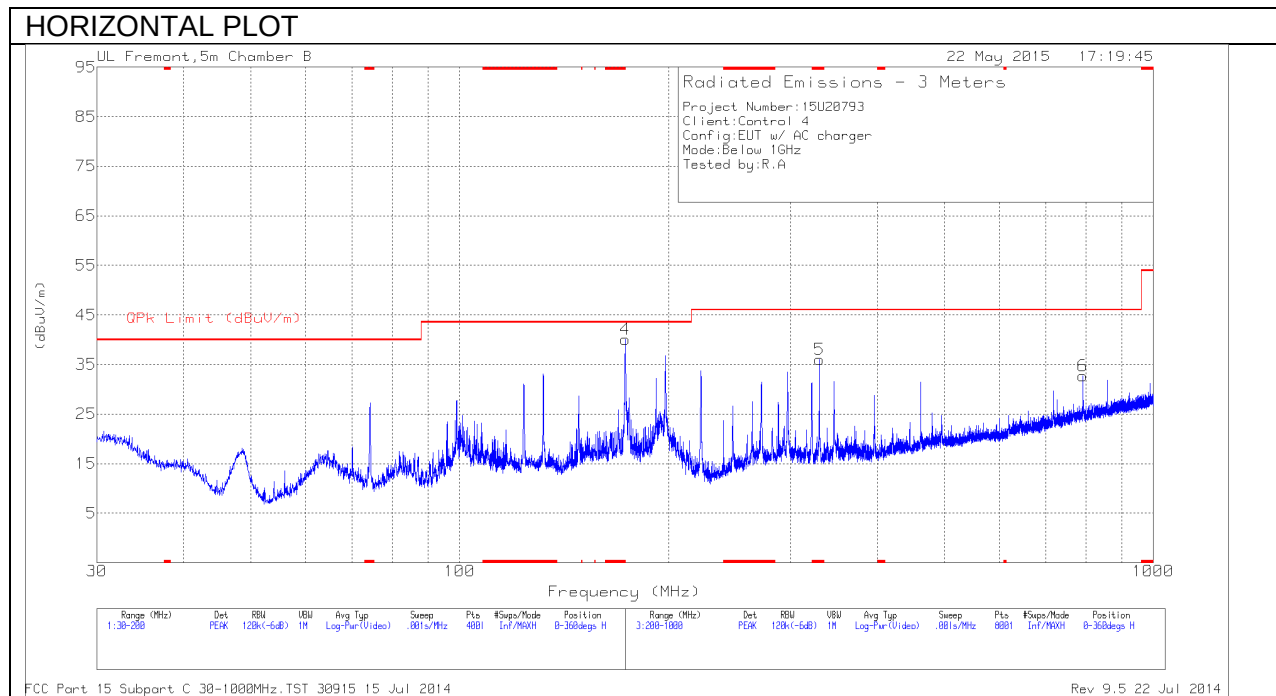
* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK2 - KDB558074 Method: Maximum Peak

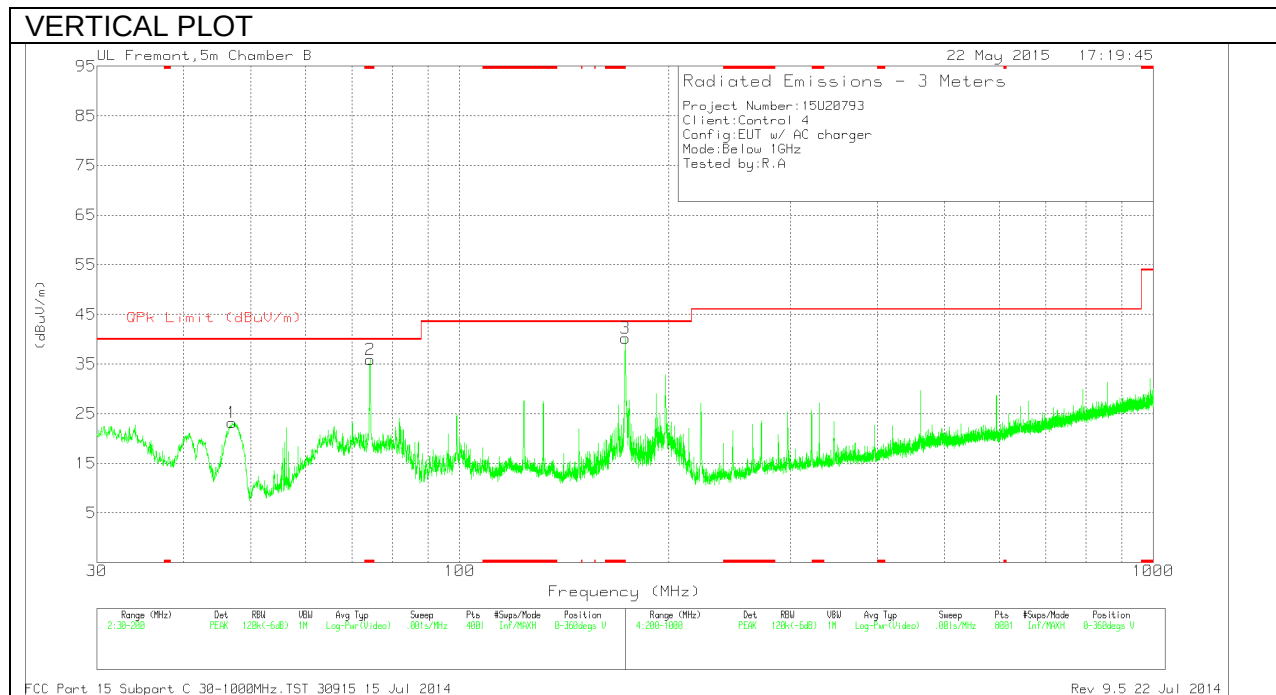
MAV1 - KDB558074 Option 1 Maximum RMS Average

10.3. WORST-CASE BELOW 1 GHz

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



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



Below 1G Data

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T243 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 74.2425	56.29	PK	8	-28.4	35.89	40	-4.11	0-360	101	V
5	* 330	47.76	PK	14.1	-25.8	36.06	46.02	-9.96	0-360	101	H
1	46.9575	42.31	PK	9.5	-28.6	23.21	40	-16.79	0-360	101	V
4	173.2675	55.76	PK	11.5	-27.2	40.06	43.52	-3.46	0-360	200	H
3	173.2675	55.88	PK	11.5	-27.2	40.18	43.52	-3.34	0-360	101	V
6	792.1	35.18	PK	21.3	-23.8	32.68	46.02	-13.34	0-360	101	H

* - indicates frequency in CFR 47, Part 15 and Industry Canada RSS-Restricted Band.

PK - Peak detector

11. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)
RSS-Gen 8.8

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

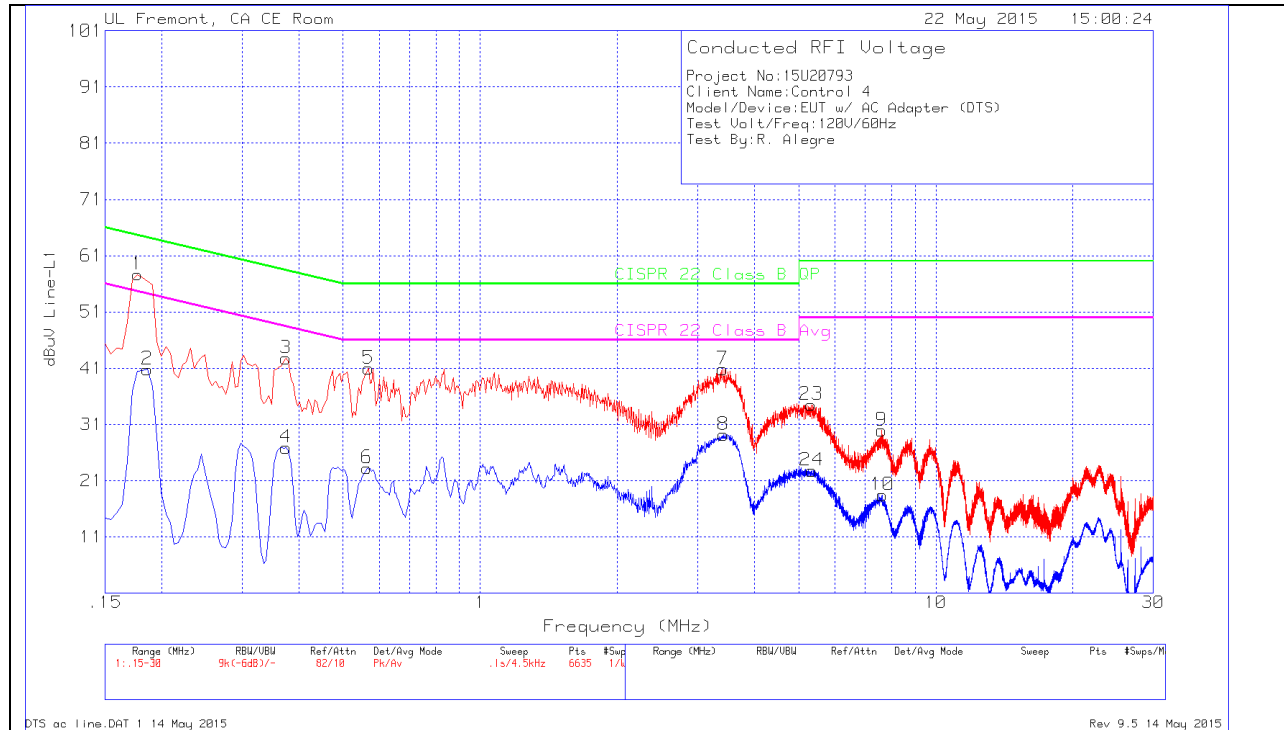
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

RESULTS

6 WORST EMISSIONS

LINE 1 PLOT

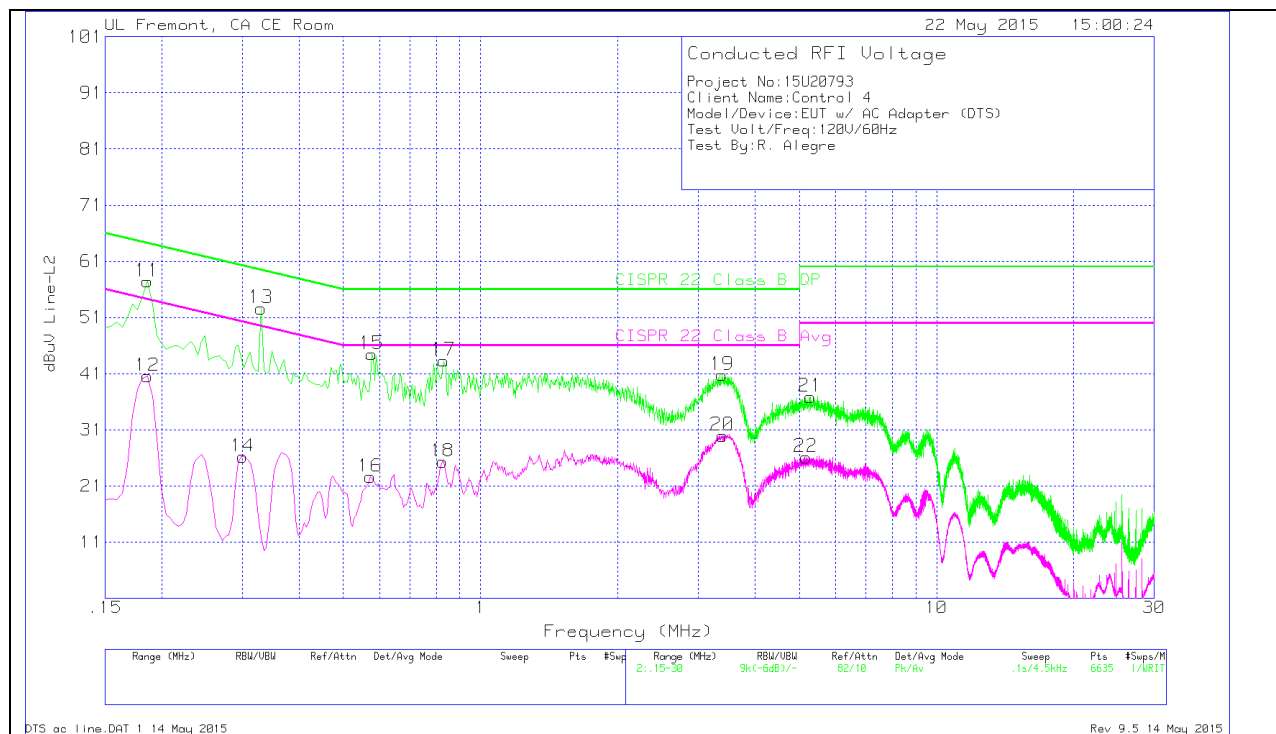


LINE 1 RESULTS

Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
1	.177	56.58	Pk	1.1	0	57.68	64.63	-6.95		
2	.186	39.78	Av	1	0	40.78	-	-	54.21	-13.43
3	.375	42.35	Pk	.4	0	42.75	58.39	-15.64		
4	.375	26.5	Av	.4	0	26.9	-	-	48.39	-21.49
5	.5685	40.63	Pk	.3	0	40.93	56	-15.07		
6	.564	22.92	Av	.3	0	23.22	-	-	46	-22.78
7	3.408	40.5	Pk	.2	.1	40.8	56	-15.2		
8	3.4215	28.85	Av	.2	.1	29.15	-	-	46	-16.85
9	7.611	29.61	Pk	.2	.1	29.91	60	-30.09		
10	7.638	18.14	Av	.2	.1	18.44	-	-	50	-31.56
23	5.3295	34.2	Pk	.2	.1	34.5	60	-25.5		
24	5.343	22.49	Av	.2	.1	22.79	-	-	50	-27.21

LINE 2 PLOT



LINE 2 RESULTS

Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2	LC Cables 2&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
11	.186	56.33	Pk	1.1	0	57.43	64.21	-6.78		
12	.186	39.46	Av	1.1	0	40.56	-	-	54.21	-13.65
13	.33	52.16	Pk	.5	0	52.66	59.45	-6.79		
14	.30075	25.62	Av	.6	0	26.22	-	-	50.22	-24
15	.5775	44.17	Pk	.3	0	44.47	56	-11.53		
16	.573	22.35	Av	.3	0	22.65	-	-	46	-23.35
17	.8295	43.02	Pk	.3	0	43.32	56	-12.68		
18	.825	25.06	Av	.3	0	25.36	-	-	46	-20.64
19	3.3855	40.48	Pk	.2	.1	40.78	56	-15.22		
20	3.39	29.69	Av	.2	.1	29.99	-	-	46	-16.01
21	5.289	36.6	Pk	.2	.1	36.9	60	-23.1		
22	5.1675	25.85	Av	.2	.1	26.15	-	-	50	-23.85