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

CLASS II PERMISSIVE CHANGE
(5725-5850 MHz BAND)

TEST REPORT*

FOR

802.11a/b/g/n/ac WLAN + Bluetooth PCI-E Mini Card

MODEL NUMBER: BCM94352HMB

FCC ID: QDS-BRCM1068
IC: 4324A-BRCM1068

REPORT NUMBER: 13U15041-2

ISSUE DATE: JUNE 11, 2013

Prepared for

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

Prepared by

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*This report covers only 5.8 GHz DTS band per client's request

NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	06/11/13	Initial Issue	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/ac WLAN + Bluetooth PCI-E Mini Card

MODEL: BCM94352HMB

SERIAL NUMBER: 001018A973CE

DATE TESTED: MAY 02, 2013 – JUNE 5, 2013

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

*This report covers only 5.8 GHz DTS band per client's request

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 For UL Verification Services Inc. By:

FRANK IBRAHIM
WiSE PROGRAM MANAGER
UL Verification Services Inc.

Tested By:

KRISTOPHER NGUYEN
WiSE LABORATORY 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, RSS-GEN Issue 3, and RSS-210 Issue 8.*

*This report covers only 5.8 GHz DTS band per client's request

3. FACILITIES AND ACCREDITATION

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

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://www.ccsemc.com.

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:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

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/ac WLAN + Bluetooth PCI-E Mini Card.

The radio module is manufactured by Broadcom.

5.2. MAXIMUM OUTPUT POWER

Output power was verified to be within +/- 0.5 dB from original values covered by report number 12U14473-1A.

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

Adding the following new type of antenna:

No.	Antenna Manufacturer	Antenna Type	Model	Peak gain @ 2400-2483.5MHz	Peak gain @5150-5250	Peak gain 5150-5350MHz	Peak gain @5470-5725	Peak gain @5725 -5850
1	INPNQ Technology	Monopole/Dipole	DAMF1HM28001400	1.21dBi	2.15dBi	2.06dBi	1.62dBi	1.56dBi
2	INPNQ Technology	Monopole/Dipole	DAM-I6-H-DB-800-10-17	1.29dBi	-0.58dBi	0.87dBi	1.94dBi	-0.74dBi

5.4. SOFTWARE AND FIRMWARE

The EUT driver software installed during testing was Broadcom, rev. 6.30.0.0.
The test utility software used during testing was BCM Internal, rev. 6.30.RC307.1166.

5.5. WORST-CASE CONFIGURATION AND MODE

Refer to original report number 12U14473-1A for this info.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Laptop	Lenovo	G560	CB06427441	DoC
AC/DC Adapter	Lenovo	PA-1650-56LC	11S36001651ZZ40008KCMA	DoC
Jig Board	Catalyst	MINI2EXP	384-0153-002	N/A

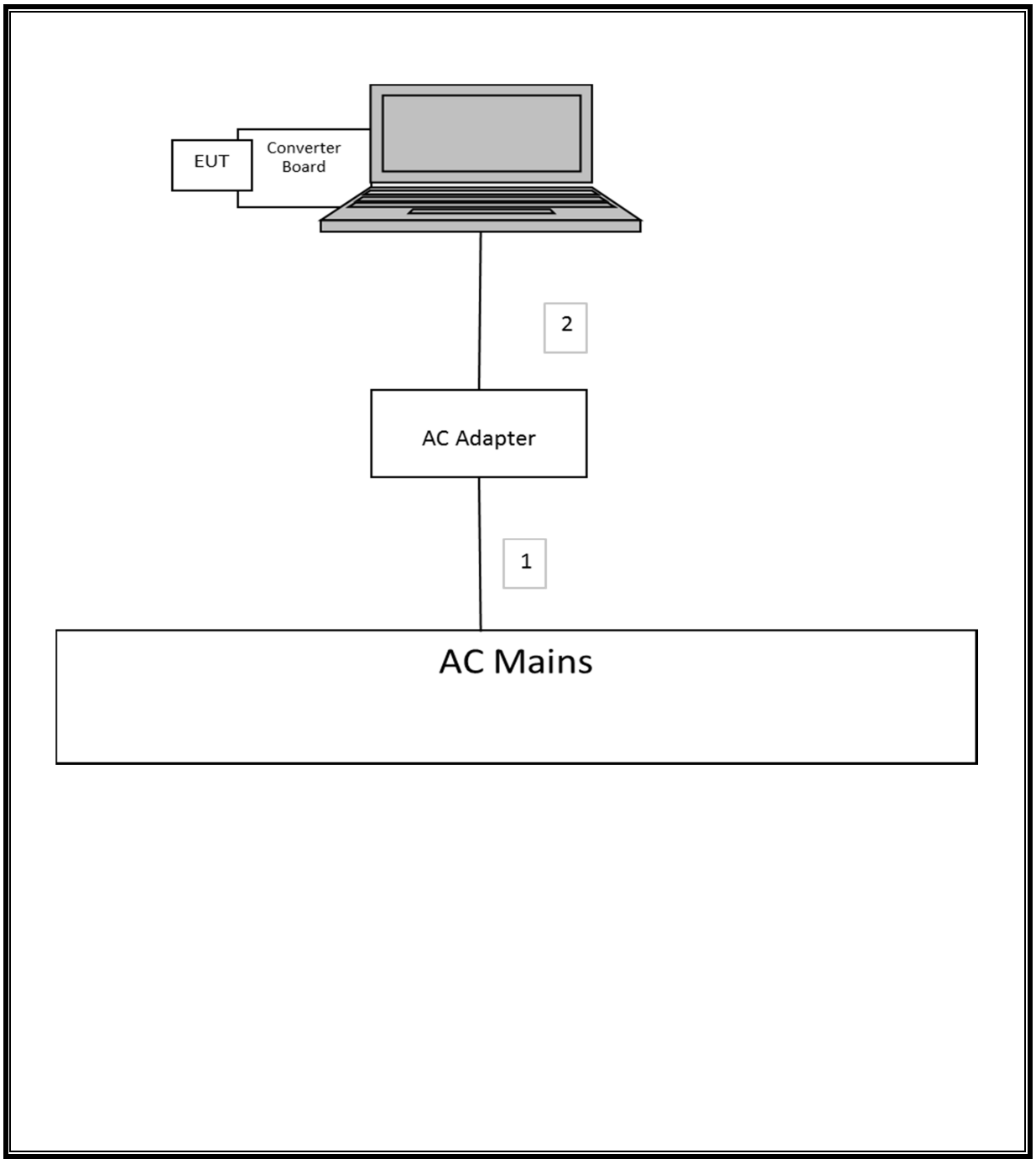
I/O CABLES

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-shielded	1.5m	Ferrite at laptop's end

TEST SETUP

The EUT is attached to a jig board which is installed in the PCMCI 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**
Peak / Average Power Sensor	Agilent / HP	E9323A	0	07/26/12	07/26/13
P-Series single channel Power Meter	Agilent / HP	N1911A	0	07/27/12	07/27/13
PSA	Agilent / HP	E4446A	C00986	04/01/13	04/01/14
EMI Test Receiver, 9 kHz-7 GHz	R & S	ESCI 7	0	08/21/12	08/21/13
Antenna, Horn, 18 GHz	ETS	3117	C01022	02/21/13	02/21/14
Antenna, Biconolog, 30MHz-1 GHz	Sunol Sciences	JB1	C01016	08/14/12	08/14/13
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00885	01/16/13	01/16/14
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01052	10/22/12	10/22/13
Preamplifier, 40 GHz	Miteq	NSP4000-SP2	C00990	08/02/11	08/02/13
Antenna, Horn, 40 GHz	ARA	MWH-2640/B	C00981	06/14/11	06/14/13

7. ANTENNA PORT TEST RESULTS

7.1. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

LIMITS

None; for reporting purposes only.

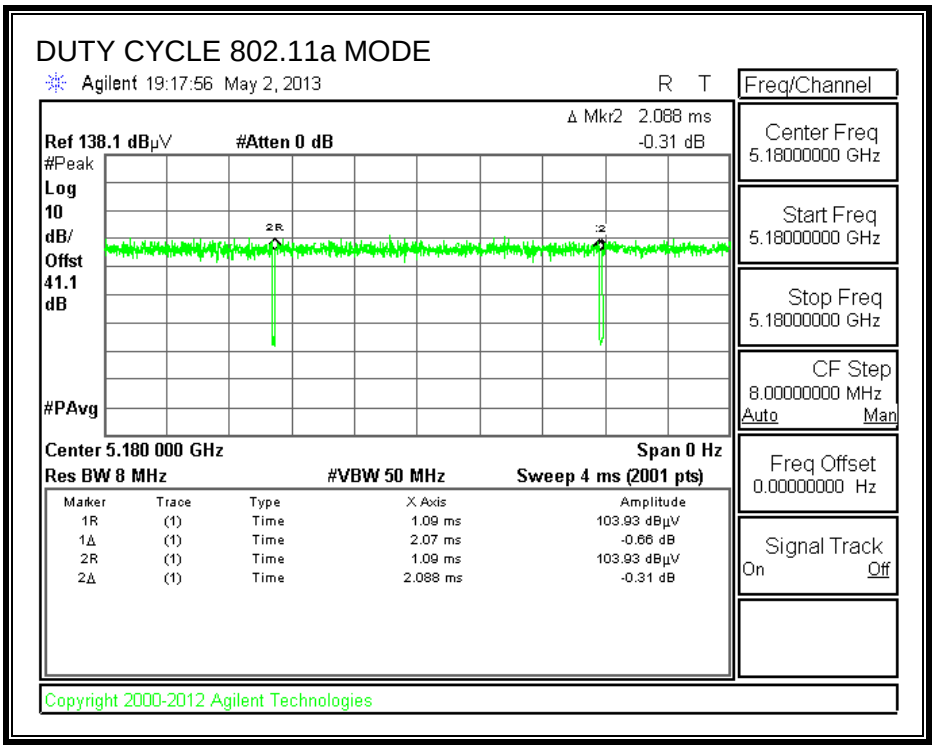
PROCEDURE

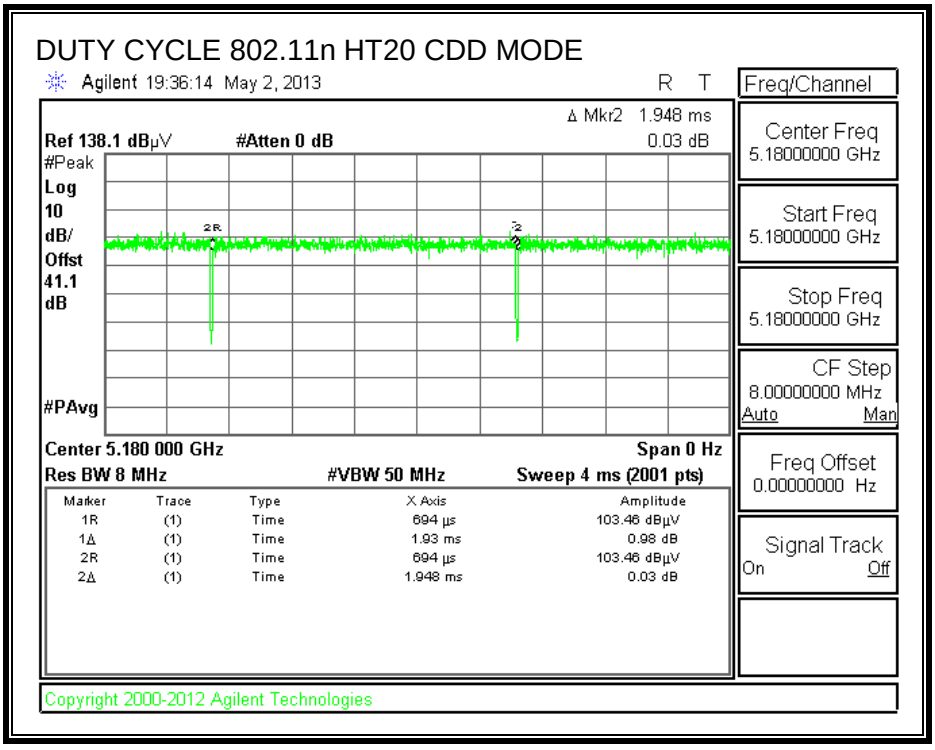
KDB 558074 Zero-Span Spectrum Analyzer Method.

7.2. ON TIME AND DUTY CYCLE RESULTS

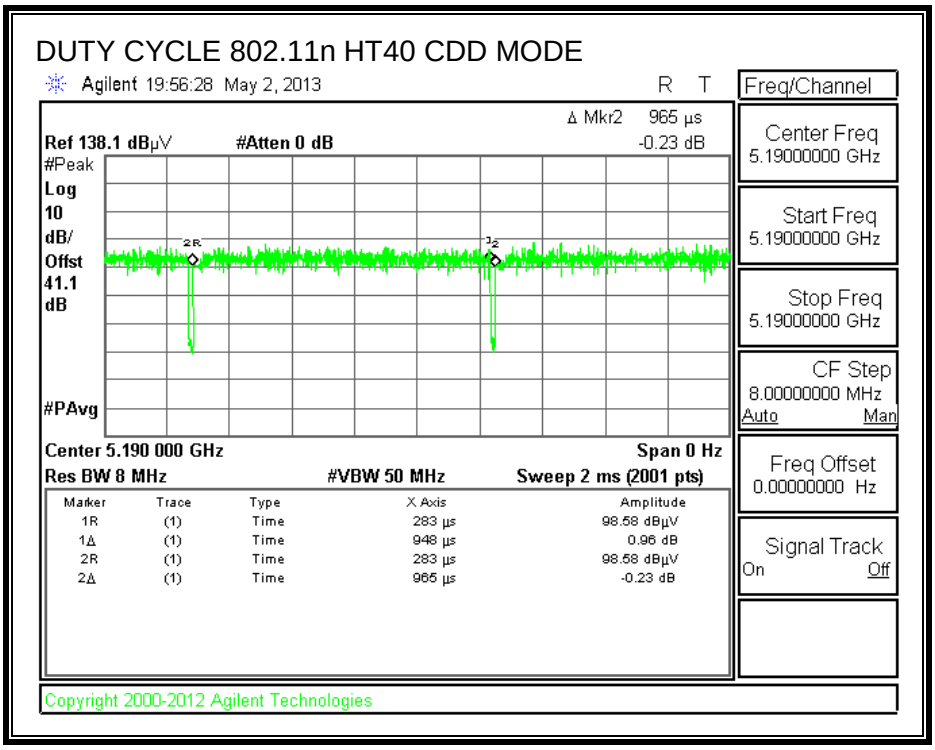
Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)
802.11a 20 MHz	2.07	2.088	0.991	99.1%	0.00	0.010
802.11n HT20 CDD	1.93	1.948	0.991	99.1%	0.00	0.010
802.11n HT40 CDD	0.948	0.965	0.982	98.2%	0.00	0.010
802.11n HT40 STBC	0.951	0.968	0.982	98.2%	0.00	0.010
802.11n HT80 CDD	0.4635	0.4805	0.965	96.5%	0.16	2.157

7.3. DUTY CYCLE PLOTS

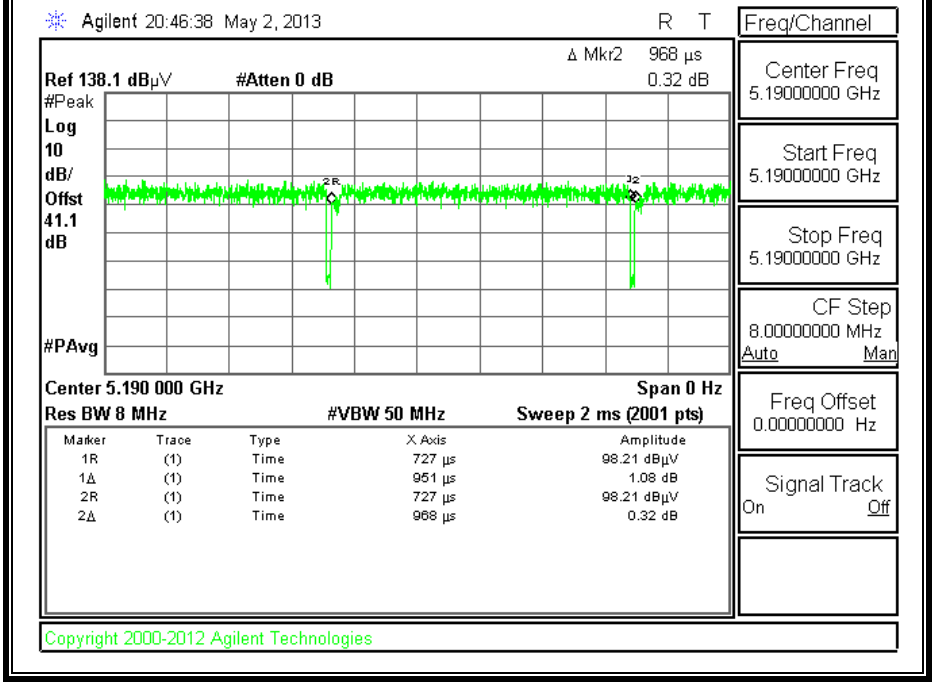




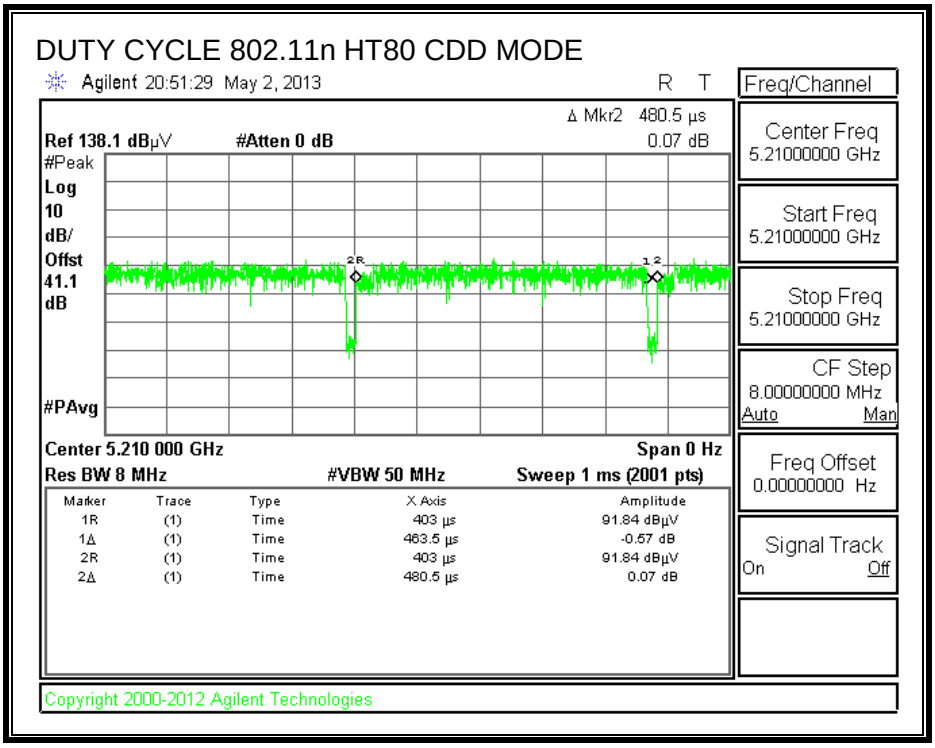
DUTY CYCLE 802.11n HT40 CDD MODE



DUTY CYCLE 802.11n HT40 STBC MODE



DUTY CYCLE 802.11n HT80 CDD MODE



7.4. MEASUREMENT METHODS

- Emissions in restricted frequency bands: KDB 558074 D01 v03r01, section 12.1

8. RADIATED TEST RESULTS

8.1. 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.

8.2. TRANSMITTER ABOVE 1 GHz

8.2.1. 802.11a 1TX MODE IN THE 5.8 GHz BAND

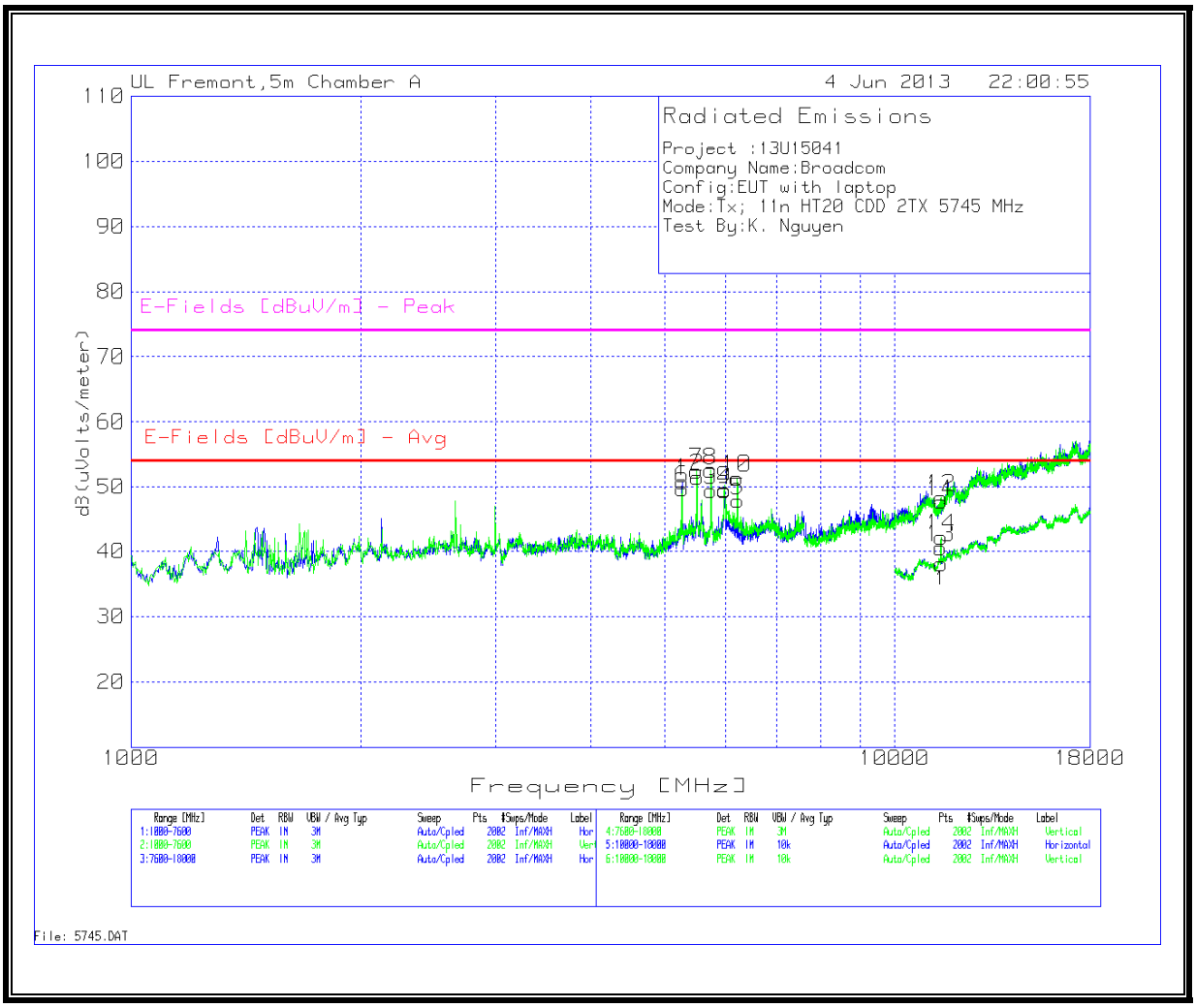
Covered by testing to HT20 CDD MCS0 2TX

8.2.2. 802.11n HT20 CDD MCS0 2TX MODE, 5.8 GHz BAND

Note: tested with highest output powers at 19dBm to cover 1TX

HARMONICS AND SPURIOUS EMISSIONS

Low Channel



Trace Markers

Horizontal 1000 - 7600MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
1	5264.768	44.69	PK	34.3	-35.5	7.1	0.2	50.79	-	-	68.2	-17.41	100	Horz
2	5512.144	44.76	PK	34.4	-35.5	7.3	0.6	51.56	-	-	68.2	-16.64	100	Horz
3	5746.327	41.89	PK	34.7	-35.5	7.5	0.9	49.49	-	-	68.2	-18.71	100	Horz
4	5993.703	41.22	PK	35.2	-35.6	7.7	0.9	49.42	-	-	68.2	-18.78	100	Horz
5	6227.886	39.83	PK	35.4	-35.6	7.9	0.3	47.83	-	-	68.2	-20.37	100	Horz

Vertical 1000 - 7600MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
6	5268.066	43.68	PK	34.3	-35.5	7.1	0.2	49.78	-	-	68.2	-18.42	100	Vert
7	5505.547	45.73	PK	34.4	-35.5	7.3	0.5	52.43	-	-	68.2	-15.77	100	Vert
8	5739.73	44.93	PK	34.7	-35.5	7.5	0.9	52.53	-	-	68.2	-15.67	200	Vert
9	5993.703	41.44	PK	35.2	-35.6	7.7	0.9	49.64	-	-	68.2	-18.56	100	Vert
10	6221.289	43.36	PK	35.4	-35.6	7.9	0.3	51.36	-	-	68.2	-16.84	200	Vert

Horizontal 7600 - 18000MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
11	11498.051	33.36	PK	38.3	-35.6	11.2	0.4	47.66	53.97	-6.31	74	-26.34	100	Horz

Vertical 7600 - 18000MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
12	11492.854	34.08	PK	38.3	-35.6	11.2	0.4	48.38	53.97	-5.59	74	-25.62	200	Vert

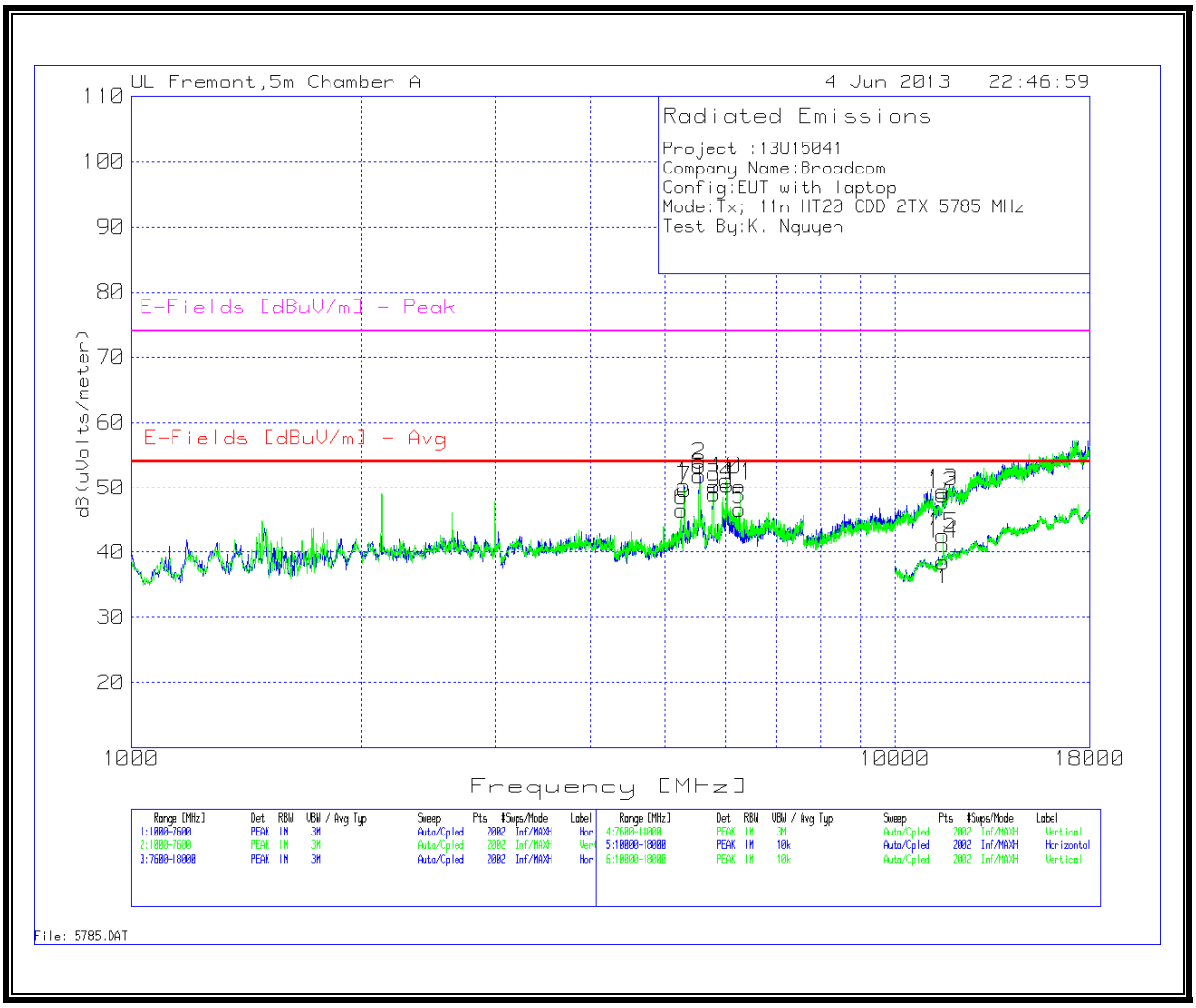
Horizontal 10000 - 18000MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
13	11487.256	26.21	PK	38.3	-35.6	11.2	0.4	40.51	53.97	-13.46	74	-33.49	100	Horz

Vertical 10000 - 18000MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
14	11491.254	27.85	PK	38.3	-35.6	11.2	0.4	42.15	53.97	-11.82	74	-31.85	100	Vert

Mid Channel



Trace Markers

Horizontal 1000 - 7600MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
1	5301.049	44.38	PK	34.3	-35.5	7.1	0.2	50.48	-	-	68.2	-17.72	100	Horz
2	5541.829	46.54	PK	34.4	-35.5	7.3	0.7	53.44	-	-	69.2	-15.76	100	Horz
3	5792.504	42.53	PK	34.8	-35.5	7.5	0.9	50.23	-	-	70.2	-19.97	200	Horz
4	6033.283	42.32	PK	35.2	-35.6	7.7	0.8	50.42	-	-	71.2	-20.78	100	Horz
5	6267.466	38.5	PK	35.5	-35.6	7.9	0.3	46.6	-	-	72.2	-25.6	100	Horz

Vertical 1000 - 7600MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
6	5251.574	40.45	PK	34.3	-35.5	7.1	0.2	46.55	-	-	68.2	-21.65	100	Vert
7	5310.945	43.61	PK	34.3	-35.5	7.1	0.2	49.71	-	-	69.2	-19.49	100	Vert
8	5548.426	44.96	PK	34.4	-35.5	7.3	0.7	51.86	-	-	70.2	-18.34	100	Vert
9	5792.504	41.41	PK	34.8	-35.5	7.5	0.9	49.11	-	-	71.2	-22.09	200	Vert
10	6023.388	43.11	PK	35.2	-35.6	7.7	0.8	51.21	-	-	72.2	-20.99	200	Vert
11	6267.466	42.2	PK	35.5	-35.6	7.9	0.3	50.3	-	-	73.2	-22.9	100	Vert

Horizontal 7600 - 18000MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
12	11560.42	34.53	PK	38.4	-35.6	11.2	0.4	48.93	53.97	-5.04	74	-25.07	100	Horz

Vertical 7600 - 18000MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
13	11570.815	35.02	PK	38.4	-35.6	11.2	0.4	49.42	53.97	-4.55	74	-24.58	100	Vert

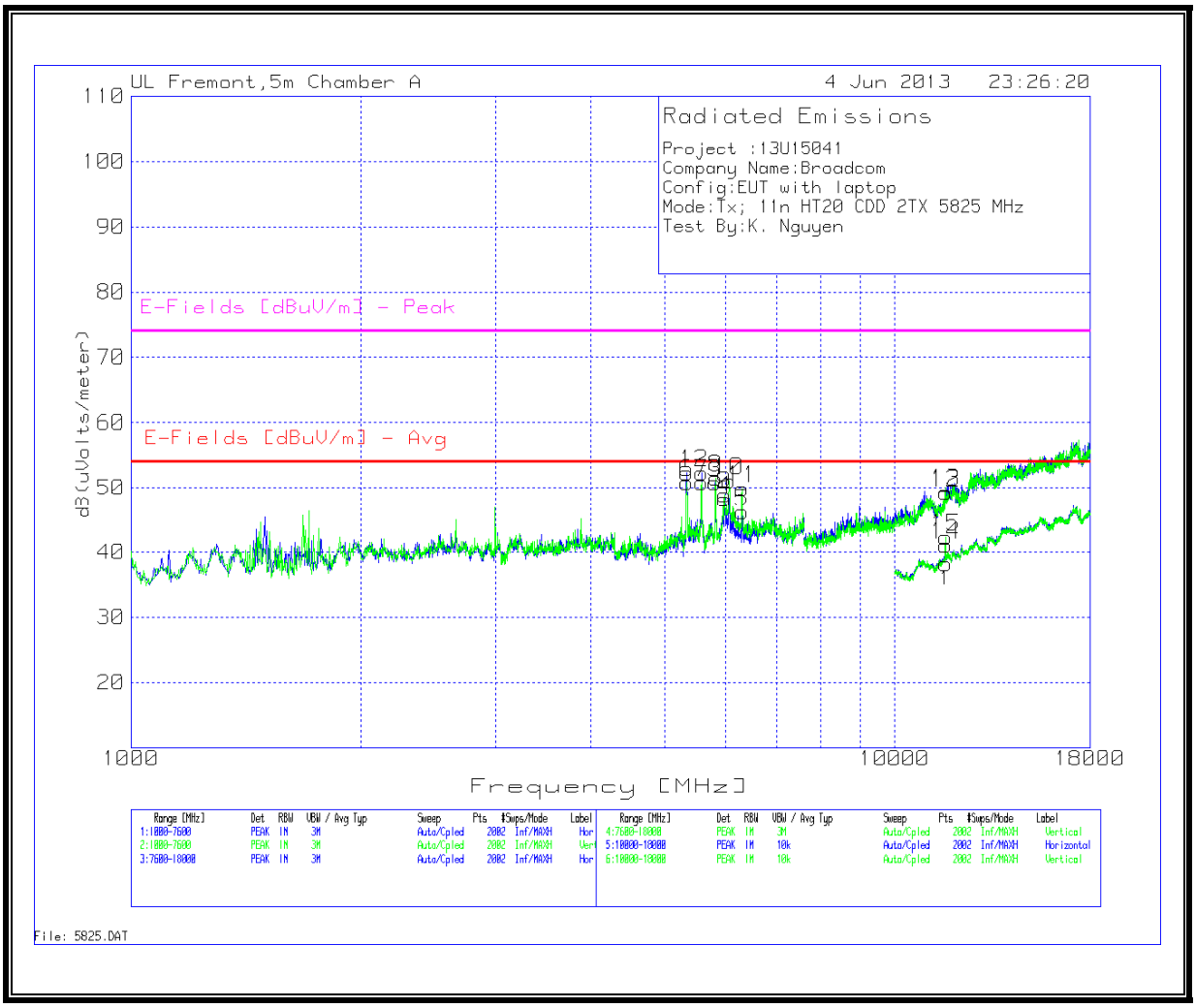
Horizontal 10000 - 18000MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
14	11567.216	26.86	PK	38.4	-35.6	11.2	0.4	41.26	53.97	-12.71	74	-32.74	100	Horz

Vertical 10000 - 18000MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
15	11571.214	28.15	PK	38.4	-35.6	11.2	0.4	42.55	53.97	-11.42	74	-31.45	100	Vert

High Channel



Trace Markers

Horizontal 1000 - 7600MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
1	5337.331	46.11	PK	34.3	-35.5	7.2	0.2	52.31	-	-	68.2	-15.89	100	Horz
2	5584.708	45.12	PK	34.4	-35.5	7.4	0.9	52.32	-	-	69.2	-16.88	100	Horz
3	5822.189	42.98	PK	34.9	-35.5	7.6	0.9	50.88	-	-	70.2	-19.32	100	Horz
4	5980.51	40.08	PK	35.2	-35.6	7.7	0.9	48.28	-	-	71.2	-22.92	100	Horz
5	6316.942	38.06	PK	35.5	-35.6	8	0.3	46.26	-	-	72.2	-25.94	100	Horz
									-	-	73.2	-73.2		

Vertical 1000 - 7600MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
6	5340.63	44.7	PK	34.3	-35.5	7.2	0.2	50.9	-	-	68.2	-17.3	100	Vert
7	5581.409	43.59	PK	34.4	-35.5	7.4	0.9	50.79	-	-	69.2	-18.41	100	Vert
8	5825.487	43.63	PK	34.9	-35.5	7.6	0.9	51.53	-	-	70.2	-18.67	100	Vert
9	5980.51	40.8	PK	35.2	-35.6	7.7	0.9	49	-	-	71.2	-22.2	100	Vert
10	6072.864	43	PK	35.3	-35.6	7.8	0.6	51.1	-	-	72.2	-21.1	200	Vert
11	6313.643	41.75	PK	35.5	-35.6	7.9	0.3	49.85	-	-	73.2	-23.35	100	Vert

Horizontal 7600 - 18000MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
12	11664.368	34.68	PK	38.5	-35.6	11.3	0.4	49.28	53.97	-4.69	74	-24.72	200	Horz

Vertical 7600 - 18000MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
13	11648.776	34.83	PK	38.4	-35.6	11.3	0.4	49.33	53.97	-4.64	74	-24.67	100	Vert

Horizontal 10000 - 18000MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
14	11647.176	26.61	PK	38.4	-35.6	11.3	0.4	41.11	53.97	-12.86	74	-32.89	100	Horz

Vertical 10000 - 18000MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
15	11647.176	27.86	PK	38.4	-35.6	11.3	0.4	42.36	53.97	-11.61	74	-31.64	200	Vert

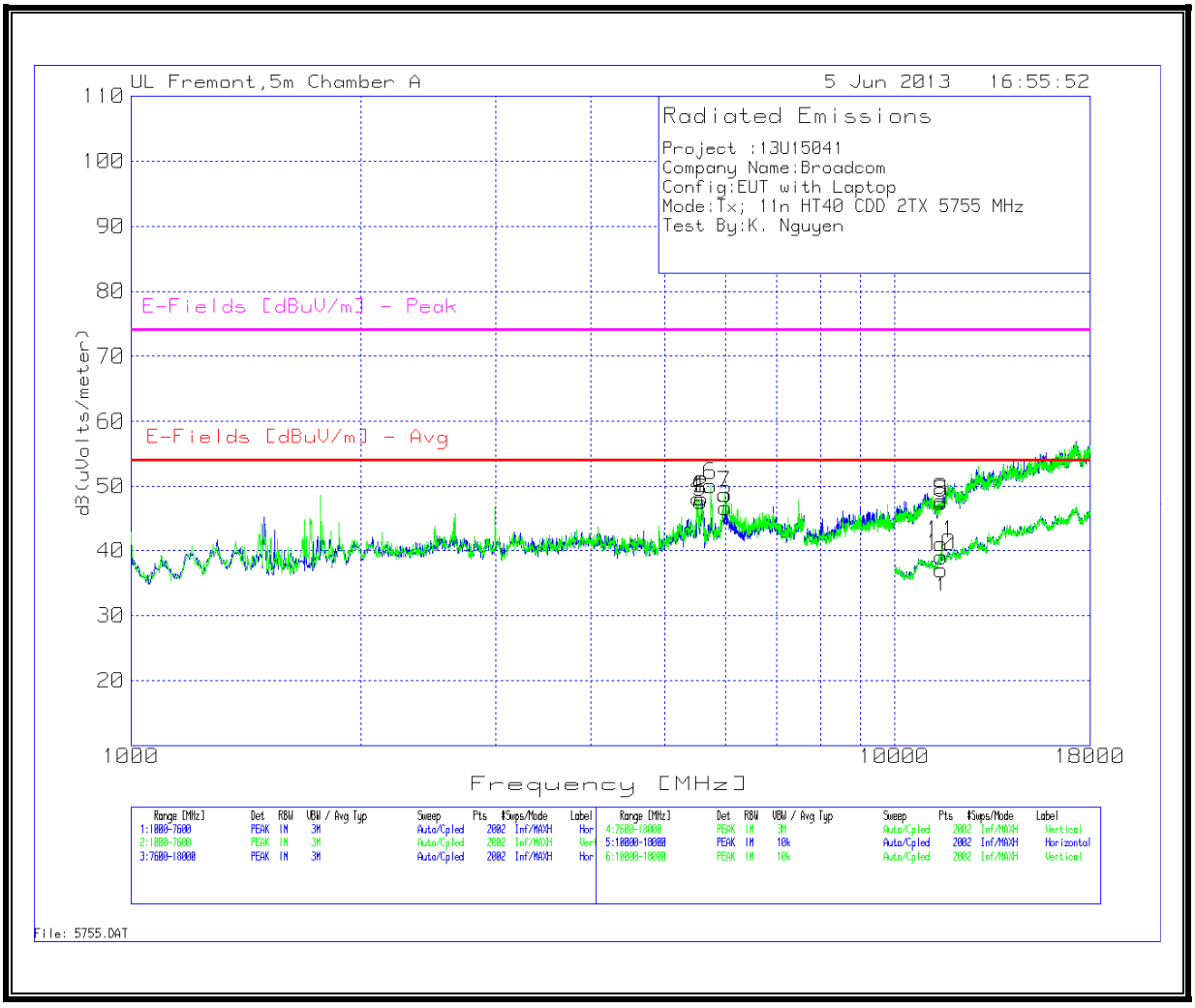
8.2.3. 802.11n HT40 1TX MODE, 5.8 GHz BAND

Covered by testing HT40 CCD MCS0 2TX

8.2.4. 802.11n HT40 CDD 2TX MODE, 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

Low Channel



Trace Markers

Horizontal 1000 - 7600MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
1	5528.636	41.19	PK	34.4	-35.5	7.3	0.8	48.19	-	-	68.2	-20.01	100	Horz
2	5584.708	40.98	PK	34.4	-35.5	7.4	0.9	48.18	-	-	68.2	-20.02	100	Horz
3	6000.3	38.42	PK	35.2	-35.6	7.7	0.9	46.62	-	-	68.2	-21.58	100	Horz

Vertical 1000 - 7600MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
4	5531.934	41.07	PK	34.4	-35.5	7.3	0.8	48.07	-	-	68.2	-20.13	100	Vert
5	5578.111	40.34	PK	34.4	-35.5	7.4	0.9	47.54	-	-	68.2	-20.66	100	Vert
6	5739.73	42.61	PK	34.7	-35.5	7.5	0.9	50.21	-	-	68.2	-17.99	200	Vert
7	5990.405	40.6	PK	35.2	-35.6	7.7	0.9	48.8	-	-	68.2	-19.4	100	Vert

Horizontal 7600 - 18000MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
8	11492.854	33.39	PK	38.3	-35.6	11.2	0.2	47.49	53.97	-6.48	74	-26.51	100	Horz

Vertical 7600 - 18000MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
9	11492.854	33.7	PK	38.3	-35.6	11.2	0.2	47.8	53.97	-6.17	74	-26.2	100	Vert

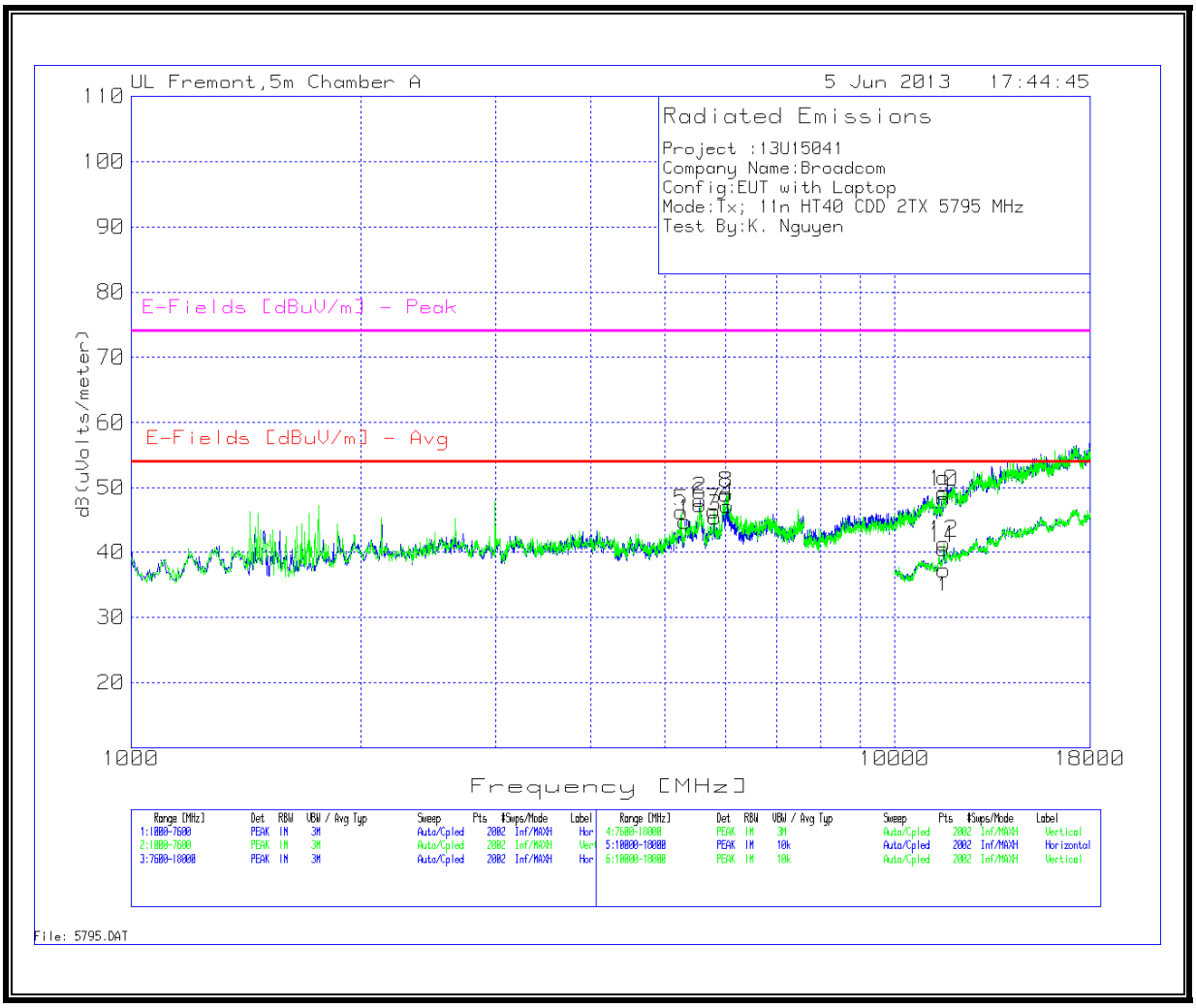
Horizontal 10000 - 18000MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
10	11507.246	25	PK	38.3	-35.6	11.2	0.2	39.1	53.97	-14.87	74	-34.9	100	Horz

Vertical 10000 - 18000MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
11	11511.244	26.95	PK	38.3	-35.6	11.2	0.2	41.05	53.97	-12.92	74	-32.95	200	Vert

High Channel



Trace Markers

Horizontal 1000 - 7600MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
1	5314.243	38.51	PK	34.3	-35.5	7.1	0.3	44.71	-	-	68.2	-23.49	100	Horz
2	5561.619	41.03	PK	34.4	-35.5	7.3	0.9	48.13	-	-	69.2	-21.07	100	Horz
3	5808.996	37.72	PK	34.8	-35.5	7.5	0.9	45.42	-	-	70.2	-24.78	100	Horz
4	6036.582	38.96	PK	35.2	-35.6	7.7	0.9	47.16	-	-	71.2	-24.04	100	Horz

Vertical 1000 - 7600MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
5	5251.574	39.98	PK	34.3	-35.5	7.1	0.3	46.18	-	-	68.2	-22.02	100	Vert
6	5551.724	40.07	PK	34.4	-35.5	7.3	1	47.27	-	-	69.2	-21.93	100	Vert
7	5802.399	38.63	PK	34.8	-35.5	7.5	0.9	46.33	-	-	70.2	-23.87	200	Vert
8	6026.687	40.82	PK	35.2	-35.6	7.7	0.9	49.02	-	-	71.2	-22.18	200	Vert

Horizontal 7600 - 18000MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
9	11581.209	34.06	PK	38.4	-35.6	11.2	0.4	48.46	53.97	-5.51	74	-25.54	200	Horz

Vertical 7600 - 18000MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
10	11591.604	34.79	PK	38.4	-35.6	11.2	0.5	49.29	53.97	-4.68	74	-24.71	100	Vert

Horizontal 10000 - 18000MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
11	11579.21	26.1	PK	38.4	-35.6	11.2	0.4	40.5	53.97	-13.47	74	-33.5	200	Horz

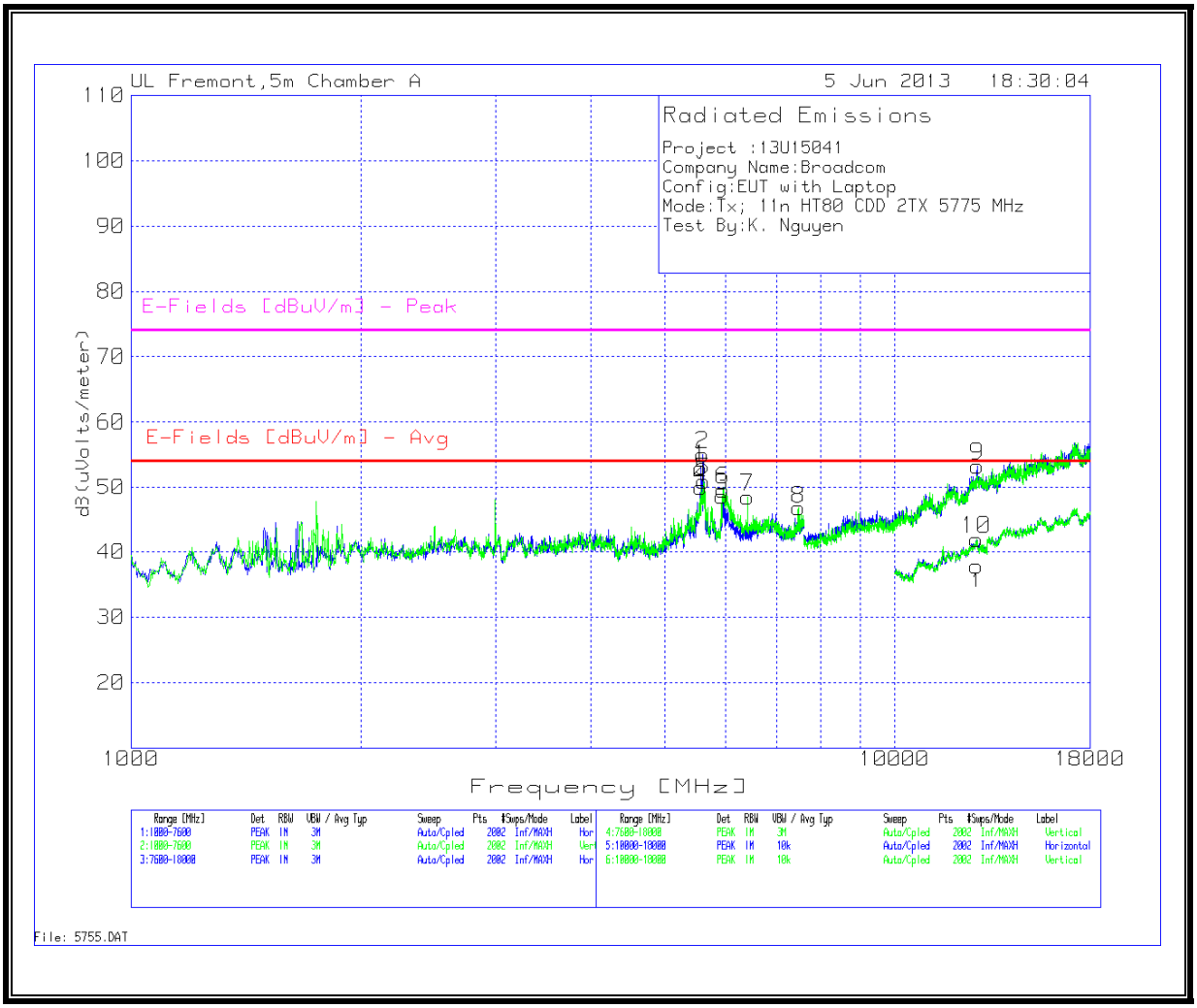
Vertical 10000 - 18000MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
12	11587.206	26.84	PK	38.4	-35.6	11.2	0.5	41.34	53.97	-12.63	74	-32.66	100	Vert

8.2.5. 802.11ac VHT80 2TX MODE, 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

Mid Channel



Trace Markers

Horizontal 1000 - 7600MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
1	5578.111	45.84	PK	34.4	-35.5	7.4	0.9	53.04	-	-	68.2	-15.16	100	Horz
2	5607.796	47.82	PK	34.4	-35.5	7.4	0.9	55.02	-	-	68.2	-13.18	100	Horz
3	5947.526	40.58	PK	35.1	-35.6	7.7	0.9	48.68	-	-	68.2	-19.52	200	Horz

Vertical 1000 - 7600MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
4	5578.111	42.76	PK	34.4	-35.5	7.4	0.9	49.96	-	-	68.2	-18.24	100	Vert
5	5620.99	43.77	PK	34.4	-35.5	7.4	0.9	50.97	-	-	68.2	-17.23	100	Vert
6	5954.123	41.4	PK	35.2	-35.6	7.7	0.9	49.6	-	-	68.2	-18.6	100	Vert
7	6415.892	40.31	PK	35.5	-35.6	8	0.3	48.51	-	-	68.2	-19.69	200	Vert
8	7481.259	38.11	PK	35.4	-35.8	8.8	0.2	46.71	53.97	-7.26	74	-27.29	100	Vert

Horizontal 7600 - 18000MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
9	12812.994	36.02	PK	39.1	-34.4	11.9	0.6	53.22	53.97	-0.75	74	-20.78	100	Horz

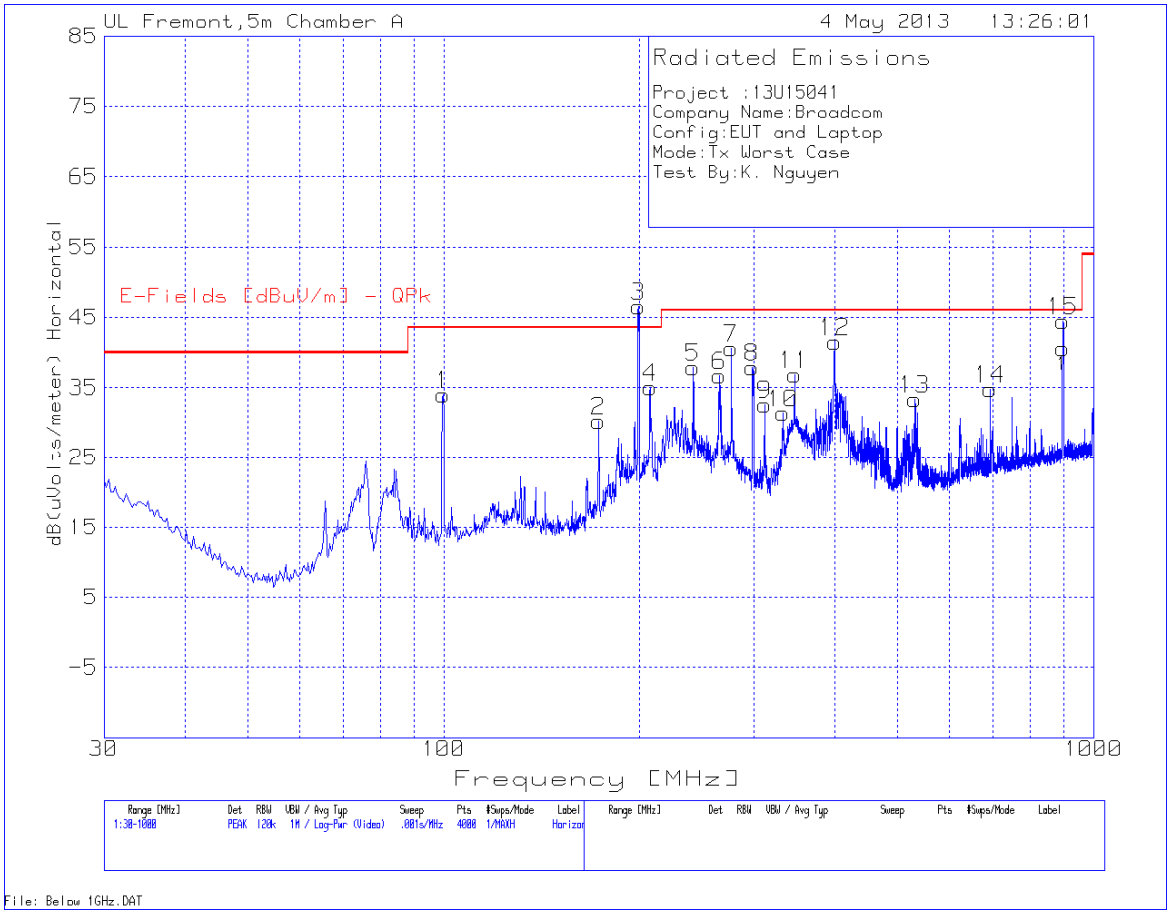
Horizontal 10000 - 18000MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T136 Ant Factor [dB/m]	T144 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	dB(uVolts/meter)	E-Fields Limit [dBuV/m] - Avg	Average Margin (dB)	E-Fields Limit [dBuV/m] - Peak	Peak Margin (dB)	Height (cm)	Polarity
10	12802.599	24.87	PK	39.1	-34.4	11.8	0.5	41.87	53.97	-12.1	74	-32.13	200	Horz

8.3. WORST-CASE BELOW 1 GHz

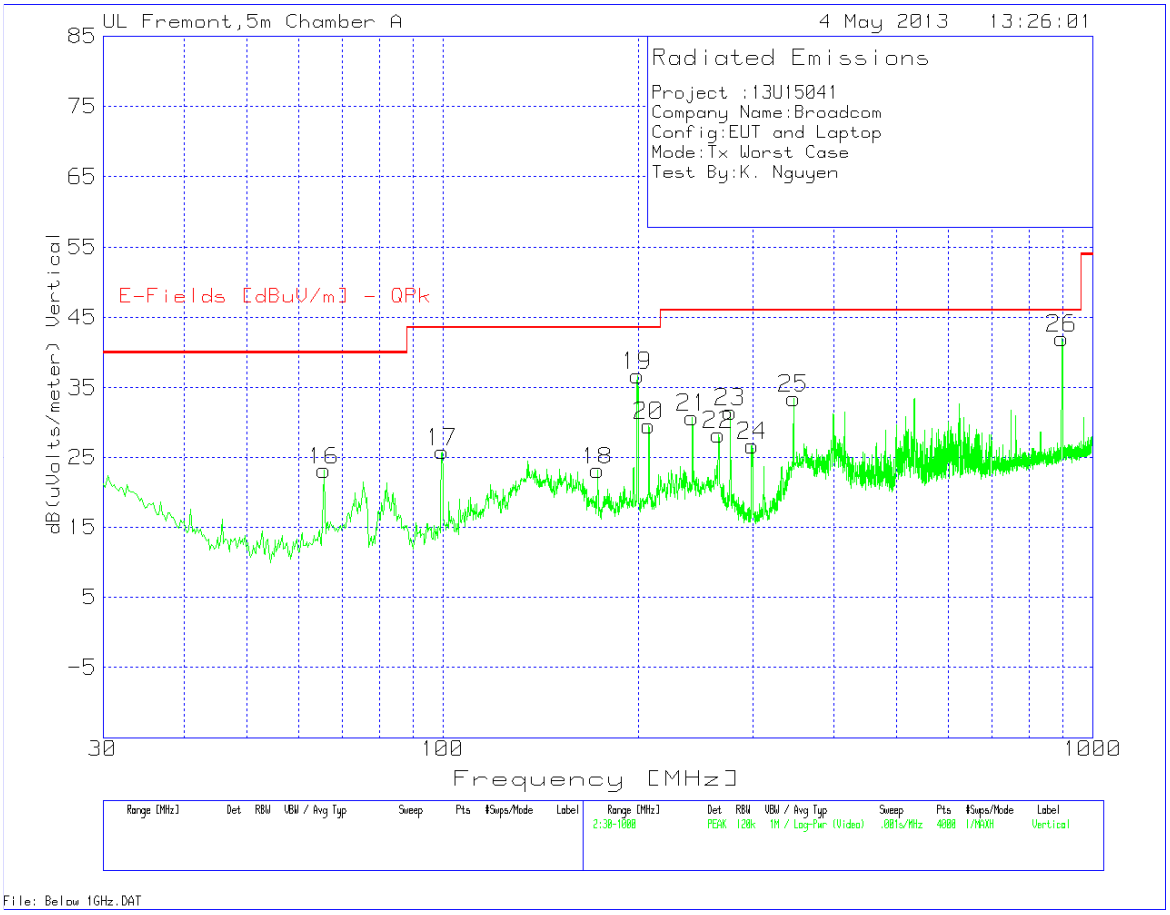
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



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

VERTICAL PLOT



HORIZONTAL & VERTICAL DATA

Project :13U15041
Company Name:Broadcom
Config:EUT and Laptop
Mode:Tx Worst Case
Test By:K. Nguyen

Horizontal 30 - 1000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T185 Antenna Factor dB/m	T64 preamp/ cable loss [dB]	dB(uVolts/ meter)	E-Fields Limit [dBuV/m] - QPk	Margin (dB)	Polarity
1	99.7877	51.03	PK	10	-27	34.03	43.52	-9.49	Horz
2	173.2101	45.45	PK	11.3	-26.5	30.25	43.52	-13.27	Horz
3	199.1381	34.2	QP	12.1	-26.2	20.3	43.52	-23.22	Horz
4	207.8616	50.61	PK	10.7	-26.3	35.01	43.52	-8.51	Horz
5	242.2708	52.24	PK	11.6	-26	37.84	46.02	-8.18	Horz
6	265.5334	50.02	PK	12.8	-26.1	36.72	46.02	-9.3	Horz
7	277.1646	53.26	PK	13.3	-26	40.56	46.02	-5.46	Horz
8	298.731	50.39	PK	13.3	-25.8	37.89	46.02	-8.13	Horz
9	311.8161	44.67	PK	13.6	-25.7	32.57	46.02	-13.45	Horz
10	333.1401	43.05	PK	13.9	-25.6	31.35	46.02	-14.67	Horz
11	346.4676	48.13	PK	14.2	-25.5	36.83	46.02	-9.19	Horz
12	399.7777	51.17	PK	15.5	-25.2	41.47	46.02	-4.55	Horz
13	531.1142	39.62	PK	18	-24.3	33.32	46.02	-12.7	Horz
14	692.9828	37.83	PK	20.1	-23.1	34.83	46.02	-11.19	Horz
15	896.0455	26.45	QP	22	-22.6	25.85	46.02	-20.17	Horz

Vertical 30 - 1000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T185 Antenna Factor dB/m	T64 preamp/ cable loss [dB]	dB(uVolts/ meter)	E-Fields Limit [dBuV/m] - QPk	Margin (dB)	Polarity
16	65.6208	42.72	PK	7.8	-27.4	23.12	40	-16.88	Vert
17	99.7877	42.84	PK	10	-27	25.84	43.52	-17.68	Vert
18	173.2101	38.32	PK	11.3	-26.5	23.12	43.52	-20.4	Vert
19	199.1381	50.79	PK	12.1	-26.2	36.69	43.52	-6.83	Vert
20	207.6193	45.12	PK	10.8	-26.3	29.62	43.52	-13.9	Vert
21	242.2708	45.18	PK	11.6	-26	30.78	46.02	-15.24	Vert
22	265.291	41.56	PK	12.8	-26.1	28.26	46.02	-17.76	Vert
23	277.1646	44.2	PK	13.3	-26	31.5	46.02	-14.52	Vert
24	299.7002	39.28	PK	13.3	-25.8	26.78	46.02	-19.24	Vert
25	346.4676	44.75	PK	14.2	-25.5	33.45	46.02	-12.57	Vert
26	896.2878	26.39	QP	22	-22.7	25.79	46.02	-20.23	Vert

PK - Peak detector
QP - Quasi-Peak detector
LnAv - Linear Average detector
LgAv - Log Average detector
Av - Average detector
CAV - CISPR Average detector
RMS - RMS detection
CRMS - CISPR RMS detection
PK1 - KDB 789033 v01r02 G)5) Method: Peak
AD1 - KDB 789033 v01r02 G)6) Method: AD Primary Power Average
VB1 - KDB 789033 v01r02 G)6) Method: VB Alternative Reduced Video
PK2 - KDB558074 v02 10.2.3.2/8.1.1 Method: Maximum Peak
MAv1 - KDB558074 v02 10.2.3.2/8.2.1 Option 1 Maximum RMS Average
MAv2 - KDB558074 v02 10.2.3.3/8.2.2 Option 2 Slow Sweep RMS Average