



**FCC 47 CFR PART 15 SUBPART C
INDUSTRY CANADA RSS-210 ISSUE 8
CLASS II PERMISSIVE CHANGE**

CERTIFICATION TEST REPORT

FOR

WiFi 11A/N MODULE

MODEL NUMBER: MIC-B2

**FCC ID: MCLMICB2
IC: 2878D-MICB2**

REPORT NUMBER: 13J15402-2, Revision B

ISSUE DATE: AUGUST 27, 2013

Prepared for
**HON HAI PRECISION IND. CO., LTD.
5F-1, HSIN-AN RD.
HSINCHU SCIENCE-BASED INDUSTRIAL PARK
TAIWAN, R.O.C**

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
--	07/16/2013	Initial Issue	G. Quizon
A	08/22/2013	Added average power measurement, Section 5.2	G. Quizon
B	08/27/2013	Corrections from TCB review. Cover Page, Attestation Page, Header – Revise EUT description. 5.3 – Correct band channel 6 – Revise Equipment List 7.2 – Data clarification 8 – Correct standard reference	G. Quizon

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	4
2. TEST METHODOLOGY	5
3. FACILITIES AND ACCREDITATION	5
4. CALIBRATION AND UNCERTAINTY	5
4.1. MEASURING INSTRUMENT CALIBRATION	5
4.2. SAMPLE CALCULATION	5
4.3. MEASUREMENT UNCERTAINTY	5
5. EQUIPMENT UNDER TEST	6
5.1. DESCRIPTION OF EUT	6
5.2. DESCRIPTION OF CLASS II PERMISSIVE CHANGE	6
5.3. MAXIMUM OUTPUT POWER.....	6
5.4. DESCRIPTION OF AVAILABLE ANTENNAS	7
5.5. SOFTWARE AND FIRMWARE.....	7
5.1. WORST-CASE CONFIGURATION AND MODE.....	8
5.2. DESCRIPTION OF TEST SETUP.....	8
6. TEST AND MEASUREMENT EQUIPMENT	10
7. RADIATED TEST RESULTS.....	11
7.1. LIMITS AND PROCEDURE	11
7.2. TRANS TX ABOVE 1 GHz 802.11n HT20 SISO MODE IN THE 5.8 GHz BAND	12
7.3. TX ABOVE 1 GHz 802.11n HT20 MIMO MODE IN THE 5.8 GHz BAND	21
7.4. RECEIVER ABOVE 1 GHz	30
7.6. WORST-CASE BELOW 1 GHz.....	33
8. AC POWER LINE CONDUCTED EMISSIONS.....	36
9. SETUP PHOTOS.....	40

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: HON HAI PRECISION IND. CO., LTD.
5F-1, 5 HSIN-AN ROAD
HSINCHU SCIENCE-BASED INDUSTRIAL PARK
TAIWAN, R.O.C.

EUT DESCRIPTION: WiFi 11 a/n Module

MODEL: MIC-B2

SERIAL NUMBER: 100-120047-0000

DATE TESTED: JUNE 19, 2013 – JULY 27, 2013

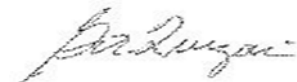
APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	(Radiated and LC) Pass
INDUSTRY CANADA RSS-210 Issue 8 Annex 8	(Radiated and LC) Pass
INDUSTRY CANADA RSS-GEN Issue 3	(Radiated and LC) Pass

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:



George Quizon
EMC SUPERVISOR
UL Verification Services Inc.



Lieu Nguyen
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, 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.

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:

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

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 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 a WiFi Module with 802.11 a/HT20/HT40

The radio module is manufactured by Hon Hai Precision.

5.2. DESCRIPTION OF CLASS II PERMISSIVE CHANGE

The major change filed under this application is change in the crystal manufacturer. The design, specification, and performance of this crystal are identical to the previous tested crystal. It has been noted that only modes 802.11n SISO HT20 and 802.11n MIMO HT20 are affected by this change.

5.3. MAXIMUM OUTPUT POWER

The measured average power values were verified to be within the ± 0.5 dB of the original values. Refer to the original document no.11J13872-6B for the original measurements and for all antenna port results.

802.11n SISO HT20

Channel	Frequency (MHz)	Power (dBm)	Power (11J13872-6B) (dBm)	Margin (dB)
Low	5745	12.8	13.27	-0.4
Mid	5785	12.9	12.78	0.1
High	5825	12.8	12.61	0.2

802.11n MIMO HT20

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Power (dBm)	Total Power (11J13872-1B) (dBm)	Margin (dB)
Low	5745	13.55	13.05	16.32	15.84	0.48
Mid	5785	13.20	12.75	15.99	15.55	0.44
High	5825	12.92	12.36	15.66	15.8	-0.14

Output power was set using the test utility to be within 0.5dB of the original application for the purposes of evaluating compliance of this device with the proposed changes installed. The proposed changes will not modify the output power from that reported in the original filing.

5.4. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PIFA antenna. The antenna gain for the SISO mode is 1.23 dBi. The antenna gain for MIMO mode is 4.23 dBi.

5.5. SOFTWARE AND FIRMWARE

The EUT driver software installed during testing was Broadcom, rev. 5.91.100.31. The test utility software used during testing was BCM Internal, rev. 5.91.RC100.31.

5.1. 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 EUT was tested as an external module installed in a test jig board connected to a host Laptop PC. The EUT was oriented in a flat orientation, similar to the orientation it would have in real installations; see setup photos for details.

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

802.11a mode: N/A. Testing of 802.11n HT20 SISO mode was considered representative.
802.11n HT20 SISO mode: MCS0
802.11n HT20 MIMO mode: MCS8

5.2. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Dell	PP09S	N/A	QDS-BRCM1022
Testjig 1	Broadcom	LA65NS0-00	--	--
Testjig 2	Broadcom	BCM9SDIO2 CONAD	--	--
AC Adapter	Dell	LA90PS0-00	--	--
DC Power Supply	HP	E3610A	C01219/1000617	

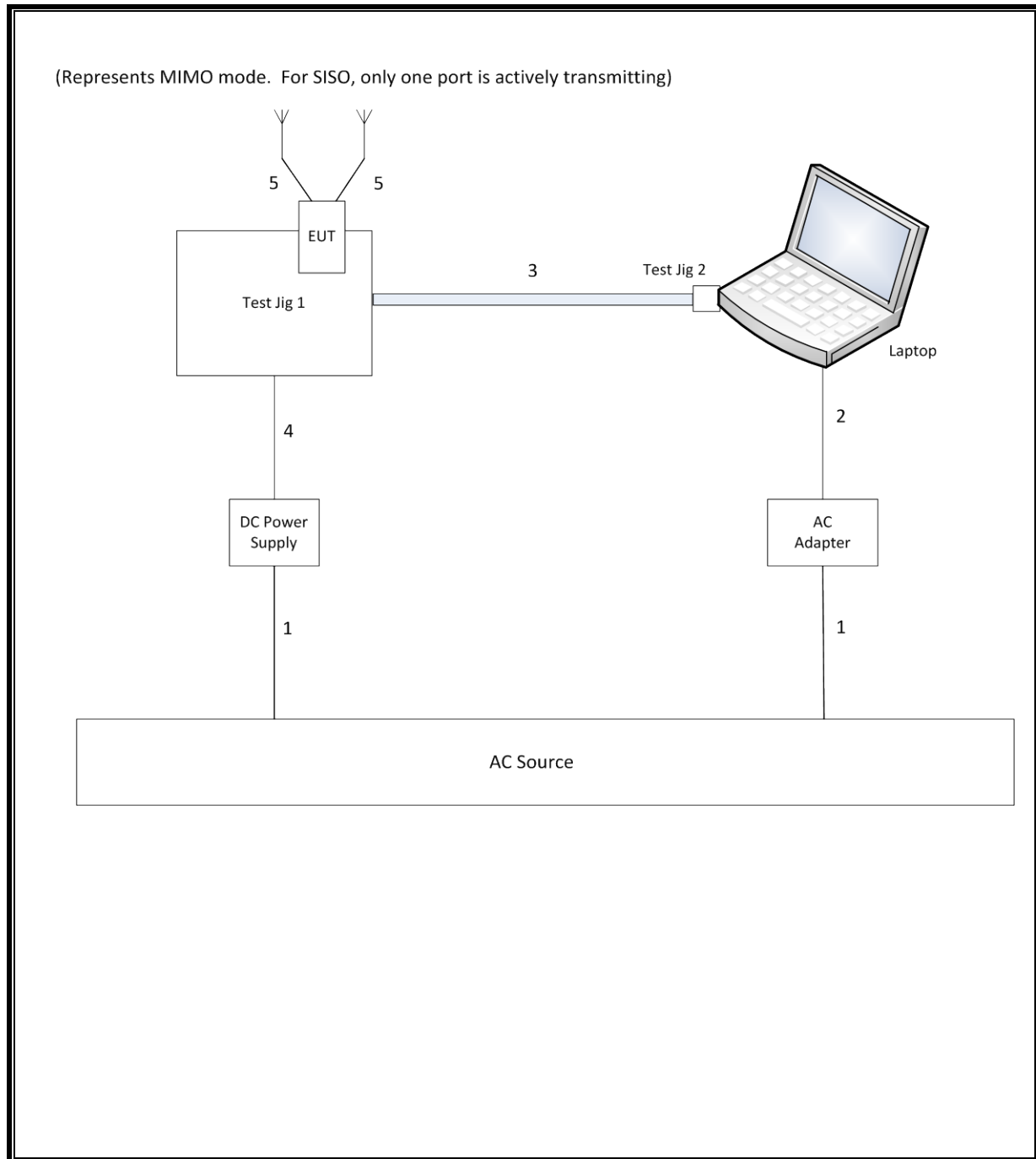
I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	2	3-Prong	Unshielded	1	
2	DC	1	Barrel	Shielded	1.5	
3	I/O	1	Ribbon	Unshielded	0.5	
4	DC	1	Clips	Unshielded	1.5	
5	Antenna	Max. 2	RF	Shielded	1	

TEST SETUP

The EUT was attached to a support jig. The support jig interfaced with the laptop via a SDIO board/ribbon cable assembly. 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
Power Meter	Agilent / HP	N1911A	MY45100242	07/27/12	07/27/13
Peak / Average Power Sensor	Agilent / HP	E9323A	US40411556	07/26/12	07/26/13
PXA Signal Analyzer	Agilent / HP	N9030A	T313	01/22/13	01/22/14
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C00996	05/11/12	05/11/13
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	C01011	03/23/13	03/23/14
Antenna, Horn, 18 GHz	EMCO	3115	C00945	11/12/12	11/12/13
Antenna, Horn, 18 GHz	ETS	3117	C01005	04/23/12	02/21/14
Antenna, Horn, 26.5-40 GHz	ARA	MWH-2640/B	209341	05/14/13	05/14/14
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00580	01/14/13	01/14/14
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01052	10/22/12	10/22/13
Temperature / Humidity Chamber	Thermotron	SE 600-10-10	C00930	11/01/12	11/01/13
EMI Test Receiver	R&S	ESHS 20	N02396	8/8/2012	8/8/2013

7. RADIATED TEST RESULTS

7.1. 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.

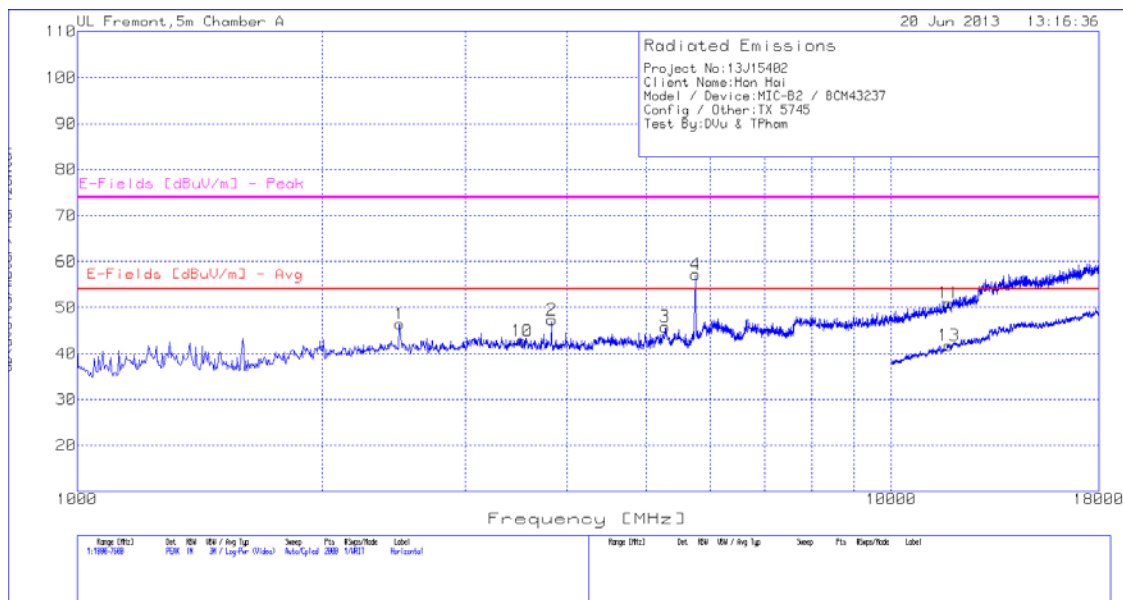
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

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.

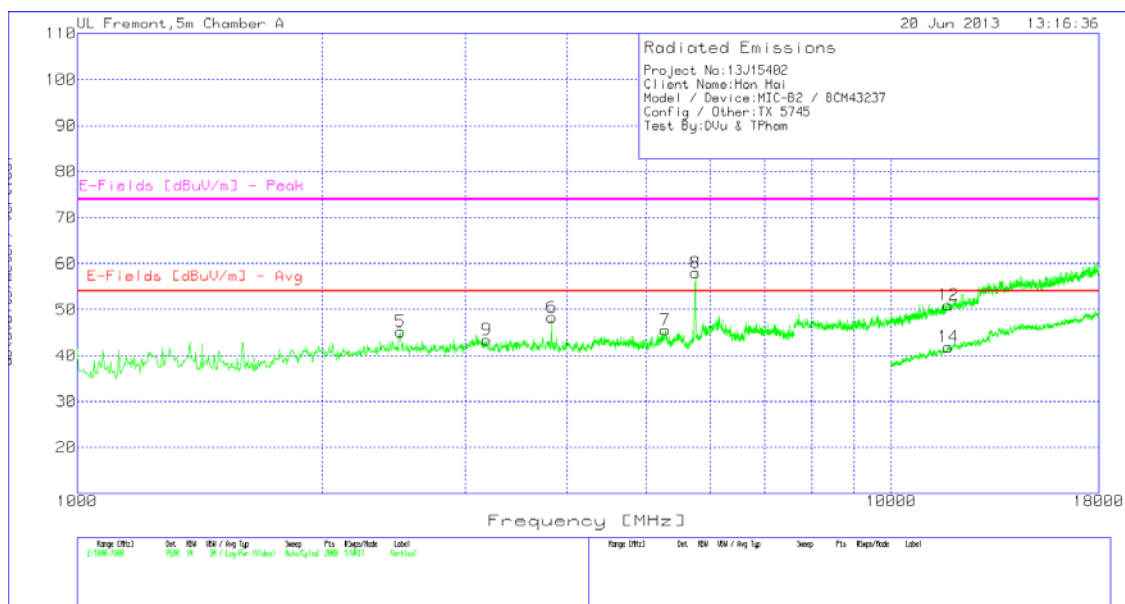
7.2. TRANS TX ABOVE 1 GHz 802.11n HT20 SISO MODE IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS

Low Channel – Horizontal



Low Channel – Vertical

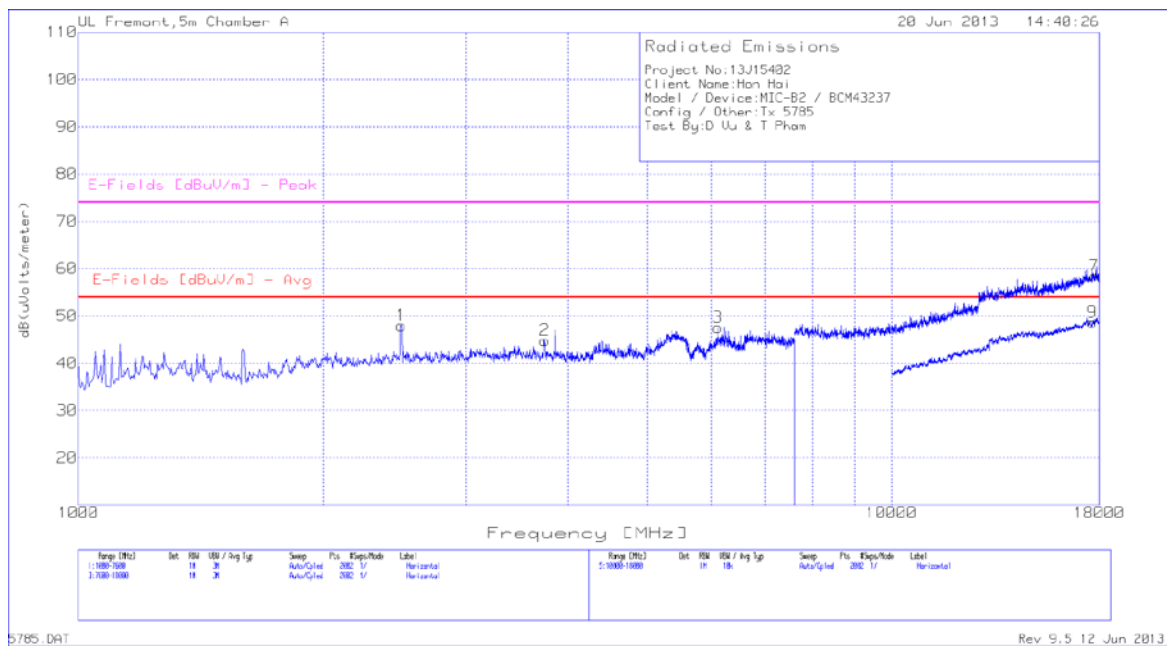


Trace Markers

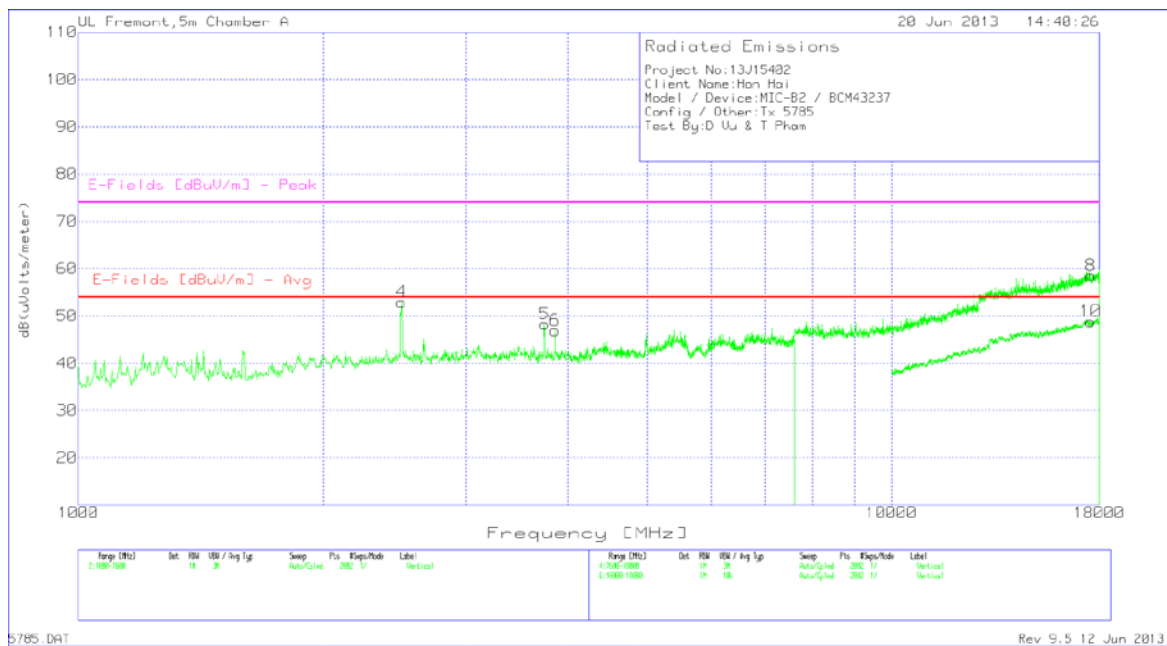
Horizontal 1000 - 7600MHz												
Marker No.	Test Frequency [MHz]	Meter Reading	Detector	T119 Ant Factor [dB/m]	T34 Preamp/ Cable Loss [dB]	T162 BR F [dB]	DC Corr [dB]	dB(uVols/meter)	E-Fields [dBuV/m] - Avg	Margin	E-Fields [dBuV/m] - Peak	Margin
1	2490.855	43.31	PK	32.3	-29.6	0.2	0.2	46.41	54	-7.59	74	-27.59
2	3829.985	40.12	PK	33.2	-26.5	0.3	0.2	47.32	54	-6.68	74	-26.68
3	5274.663	35.56	PK	34.4	-24.6	0.3	0.2	45.86	54	-8.14	74	-28.14
4 (F)	5752.924	45.62	PK	34.8	-24.3	0.9	0.2	57.22	54	3.22	74	-16.78
10	3519.94	36.54	PK	33	-27.2	0.2	0.2	42.74	54	-11.26	74	-31.26
Vertical 1000 - 7600MHz												
5	2497.451	42.11	PK	32.3	-29.6	0.2	0.2	45.21	54	-8.79	74	-28.79
6	3829.985	41.14	PK	33.2	-26.5	0.3	0.2	48.34	54	-5.66	74	-25.66
7	5277.961	35.28	PK	34.4	-24.6	0.3	0.2	45.58	54	-8.42	74	-28.42
8 (F)	5752.924	46.38	PK	34.8	-24.3	0.9	0.2	57.98	54	3.98	74	-16.02
9	3186.807	38.26	PK	32.9	-28.1	0.2	0.2	43.46	54	-10.54	74	-30.54
Horizontal 7600 - 18000MHz												
11	11773.513	30.77	PK	38.8	-19.1	0.3	0.2	50.97	54	-3.03	74	-23.03
Vertical 7600 - 18000MHz												
12	11763.118	30.86	PK	38.8	-19.1	0.2	0.2	50.96	54	-3.04	74	-23.04
Horizontal 10000 - 18000MHz												
13	11779.11	21.51	VB1	38.8	-19.1	0.3	0.2	41.71	54	-12.29	74	-32.29
Vertical 10000 - 18000MHz												
14	11763.118	21.77	VB1	38.8	-19.1	0.2	0.2	41.87	54	-12.13	74	-32.13
PK - Peak detector												
VB1 - KDB 789033 v01r02 G)6) Method: VB Alternative Reduced Video												

(F) Fundamental

Mid Channel – Horizontal



Mid Channel – Vertical

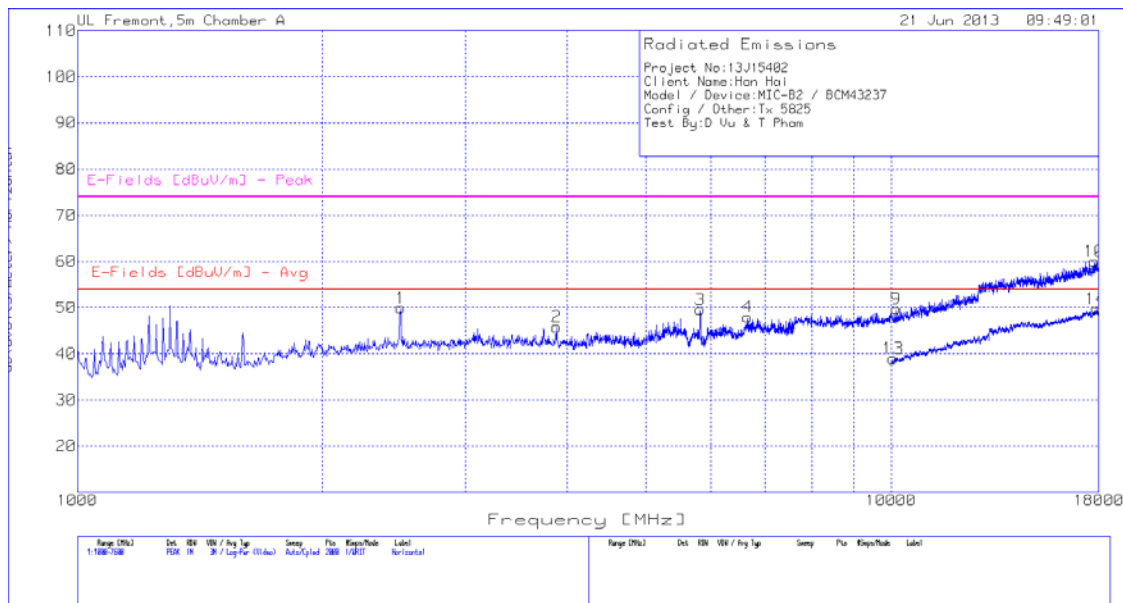


Trace Markers

Project No:13J15402														
Client Name:Hon Hai														
Model / Device:MIC-B2 / BCM43237														
Config / Other:Tx 5785														
Test By:D Vu & T Pham														
Horizontal 1000 - 7600MHz														
Marker No.	Test Frequency [MHz]	Meter Reading	Detector	T119 Ant Factor [dB/m]	T34 Preamp/ Cable Loss [dB]	T159 BRF [dB]	DC Corr [dB]	dB(uVolts /meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
1	2494.153	45.17	PK	32.3	-29.6	0.1	0	47.97	53.97	-6	74	-26.03	201	Horz
2	3744.228	38.23	PK	33.2	-26.6	0	0	44.83	53.97	-9.14	74	-29.17	201	Horz
3	6115.742	36.15	PK	35.3	-24	0.1	0	47.55	53.97	-6.42	74	-26.45	123	Horz
Vertical 1000 - 7600MHz														
4	2497.451	50.13	PK	32.3	-29.6	0.1	0	52.93	53.97	-1.04	74	-21.07	201	Vert
5	3744.228	41.68	PK	33.2	-26.6	0	0	48.28	53.97	-5.69	74	-25.72	99	Vert
6	3856.372	40.14	PK	33.2	-26.5	0.1	0	46.94	53.97	-7.03	74	-27.06	201	Vert
Horizontal 7600 - 18000MHz														
7	17755.722	30.83	PK	41.5	-14.1	0.2	0	58.43	53.97	4.46	74	-15.57	201	Horz
Vertical 7600 - 18000MHz														
8	17584.208	31.2	PK	41.4	-14.3	0.2	0	58.5	53.97	4.53	74	-15.5	99	Vert
Horizontal 10000 - 18000MHz														
9	17664.168	21.13	PK	41.5	-14.2	0.2	0	48.63	53.97	-5.34	74	-25.37	201	Horz
Vertical 10000 - 18000MHz														
10	17572.214	21.31	PK	41.4	-14.3	0.4	0	48.81	53.97	-5.16	74	-25.19	100	Vert
Test Frequency [MHz]	Meter Reading	Detector	T119 Ant Factor [dB/m]	T34 Preamp/ Cable Loss [dB]	T159 BRF [dB]	DC Corr [dB]	dB(uVolts /meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
Horizontal 1000 - 7600MHz														
3734.46	28.3	VB1	33.2	-26.6	0	0.2	35.1	53.97	-18.87	74	-38.9	122	100	Horz
Vertical 1000 - 7600MHz														
2491.88	38.2	VB1	32.3	-29.6	0.1	0.2	41.2	53.97	-12.77	74	-32.8	65	149	Vert
PK - Peak detector														
VB1 - KDB 789033 v01r02 G)6) Method: VB Alternative Reduced Video														

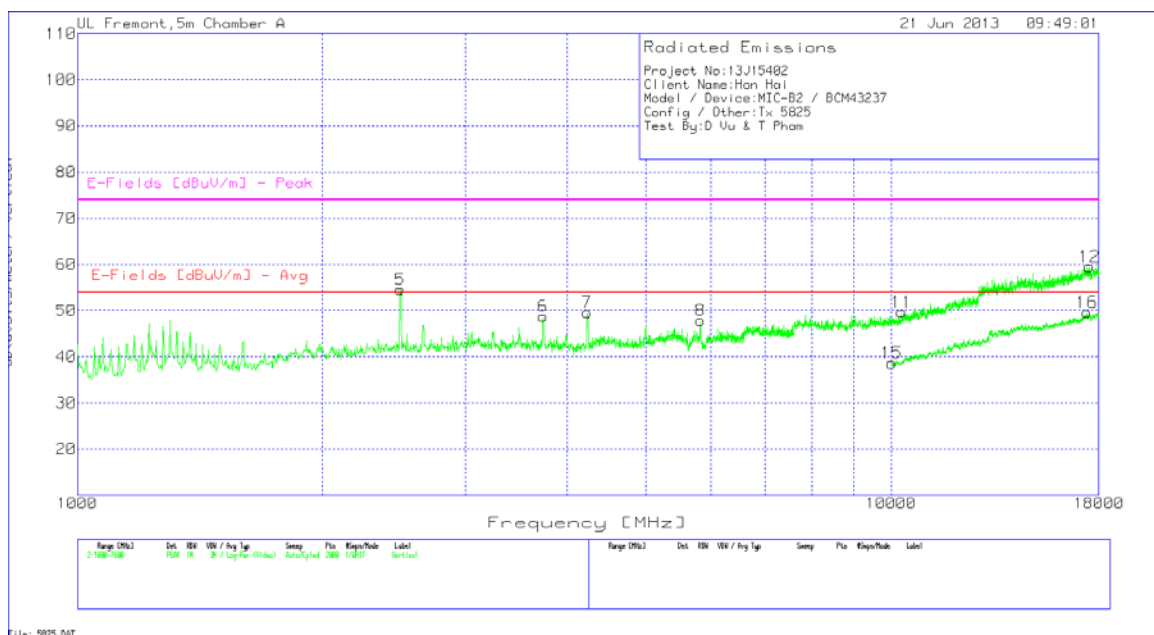
Markers 7 and 8 correspond to markers 9 and 10 respectively using reduced VBW.

High Channel – Horizontal



File: 5825.DAT

High Channel – Vertical



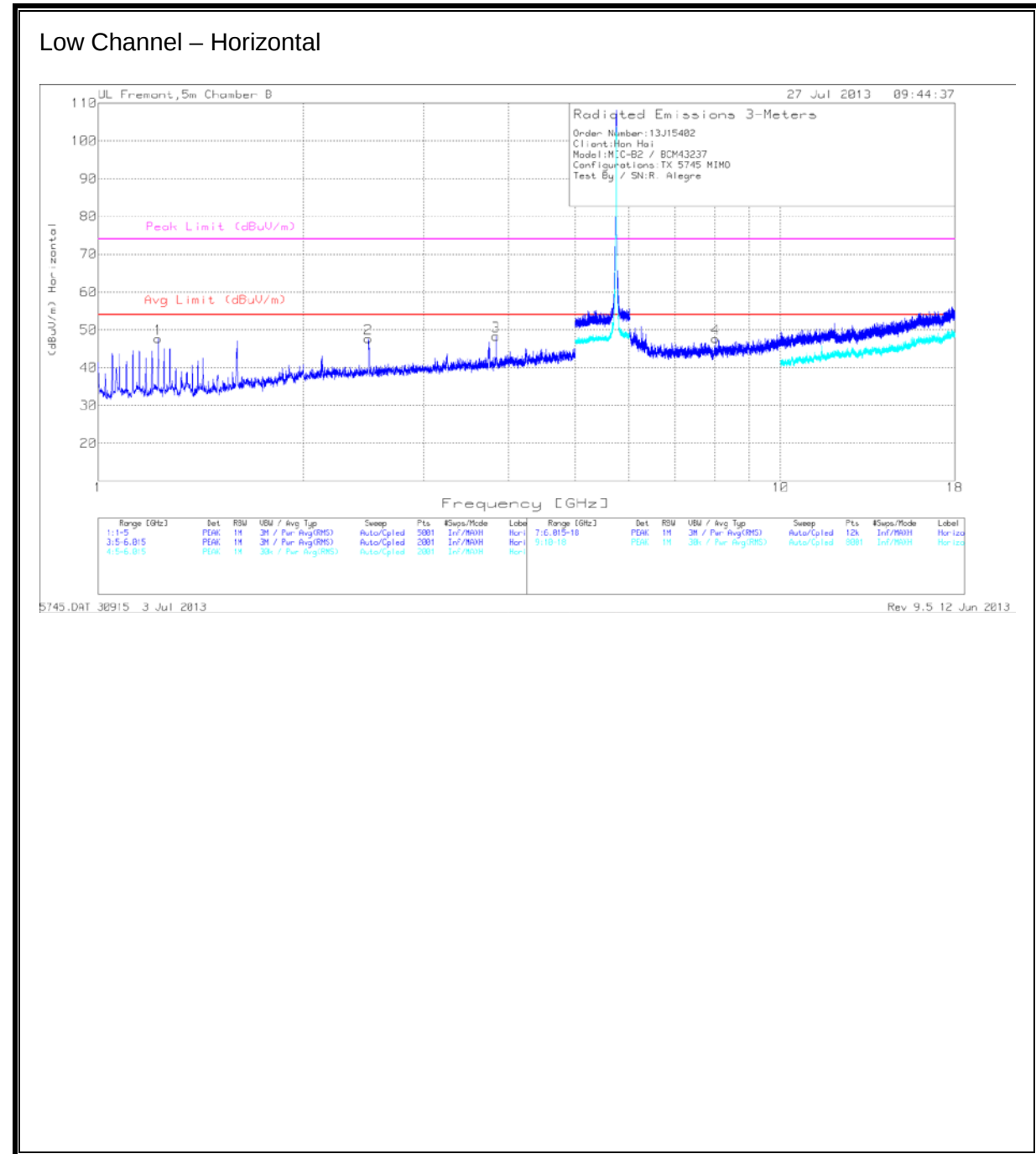
Trace Markers

Project No:13J15402														
Client Name:Hon Hai														
Model / Device:MIC-B2 / BCM43237														
Config / Other:Tx 5825														
Test By:D Vu & T Pham														
Marker No.	Test Frequency [MHz]	Meter Reading	Detector	T119 Ant Factor [dB/m]	T34 Preamp/ Cable Loss [dB]	T159 BRF [dB]	DC Corr [dB]	dB(uVolts /meter)	E-Fields [dBuV/m] - Avg	Margin	E-Fields [dBuV/m] - Peak	Margin	Height [cm]	Polarity
Horizontal 1000 - 7600MHz														
1	2497.451	46.92	PK	32.3	-29.6	0.1	0.2	49.92	54	-4.08	74	-24.08	201	Horz
2	3882.759	38.86	PK	33.2	-26.5	0.1	0.2	45.86	54	-8.14	74	-28.14	100	Horz
3 (F)	5828.786	38.68	PK	34.9	-24.3	0.1	0.2	49.58	54	-4.42	74	-24.42	201	Horz
4	6663.268	35.49	PK	35.6	-23.4	0.1	0.2	47.99	54	-6.01	74	-26.01	100	Horz
Vertical 1000 - 7600MHz														
5	2494.153	51.58	PK	32.3	-29.6	0.1	0.2	54.58	54	0.58	74	-19.42	201	Vert
6	3734.333	41.98	PK	33.2	-26.6	0	0.2	48.78	54	-5.22	74	-25.22	99	Vert
7	4232.384	41.63	PK	33.5	-25.9	0.2	0.2	49.63	54	-4.37	74	-24.37	99	Vert
8	5832.084	36.86	PK	35	-24.3	0.1	0.2	47.86	54	-6.14	74	-26.14	201	Vert
Horizontal 7600 - 18000MHz														
9	10151.924	33.52	PK	37	-21.2	0.2	0.2	49.72	54	-4.28	74	-24.28	100	Horz
10	17776.512	32.33	PK	41.5	-14.1	0.1	0.2	60.03	54	6.03	74	-13.97	100	Horz
Vertical 7600 - 18000MHz														
11	10302.649	33.29	PK	37.1	-21.1	0.2	0.2	49.69	54	-4.31	74	-24.31	201	Vert
12	17532.234	31.62	PK	41.4	-14.2	0.5	0.2	59.52	54	5.52	74	-14.48	201	Vert
Horizontal 10000 - 18000MHz														
13	10055.972	22.95	VB1	37	-21.4	0.2	0.2	38.95	54	-15.05	74	-35.05	99	Horz
14	17860.07	21.51	VB1	41.5	-14	0.5	0.2	49.71	54	-4.29	74	-24.29	99	Horz
Vertical 10000 - 18000MHz														
15	10019.99	22.68	VB1	37	-21.4	0.2	0.2	38.68	54	-15.32	74	-35.32	201	Vert
16	17408.296	21.95	VB1	41.3	-14.3	0.5	0.2	49.65	54	-4.35	74	-24.35	201	Vert
Test Frequency [MHz]	Meter Reading	Detector	T119 Ant Factor [dB/m]	T34 Preamp/ Cable Loss [dB]	T159 BRF [dB]	DC Corr [dB]	dB(uVolt s/meter)	E-Fields [dBuV/m] - Avg	Margin	E-Fields [dBuV/m] - Peak	Margin	Azimuth [Degs]	Height [cm]	Polarity
Horizontal 1000 - 7600MHz														
2489.89	33.66	VB1	32.3	-29.6	0.1	0.2	36.66	54	-17.34	74	-37.34	107	157	Horz
Vertical 1000 - 7600MHz														
2490.07	42.46	VB1	32.3	-29.6	0.1	0.2	45.46	54	-8.54	74	-28.54	12	251	Vert
4235.68	28.4	VB1	33.5	-25.9	0.2	0.2	36.4	54	-17.6	74	-37.6	0	251	Vert
PK - Peak detector														
VB1 - KDB 789033 v01r02 G)6) Method: VB Alternative Reduced Video														
(F) Fundamental														

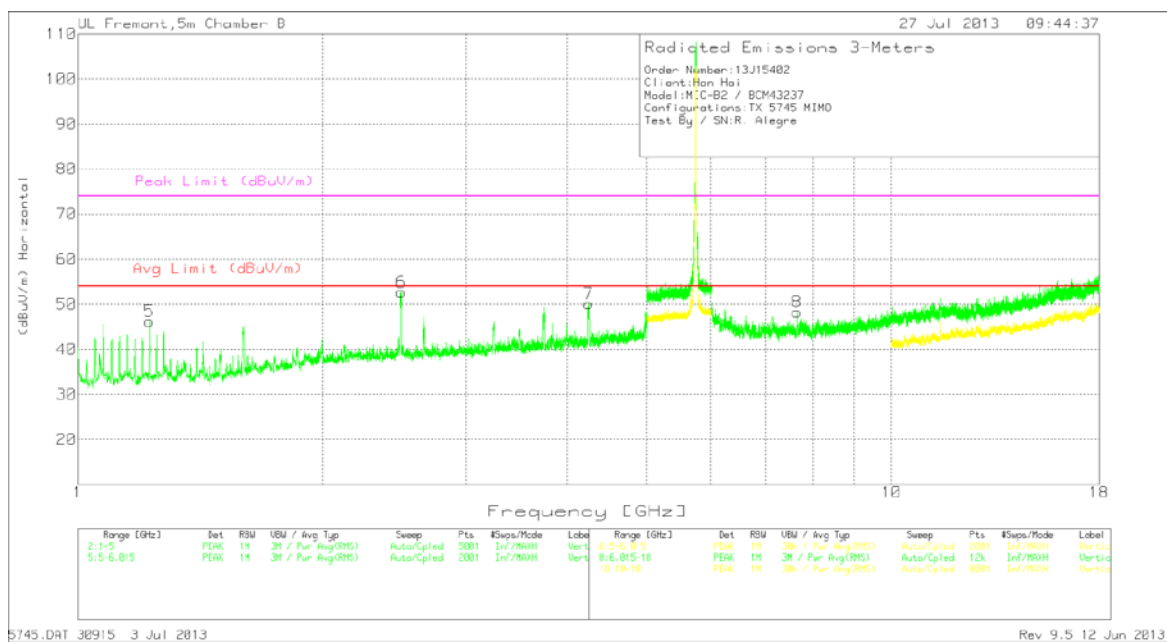
Markers 10 and 12 correspond to markers 14 and 16 respectively using reduced VBW.

7.3. TX ABOVE 1 GHz 802.11n HT20 MIMO MODE IN THE 5.8 GHz BAND

HARMONICS AND SPURIOUS EMISSIONS



Low Channel – Vertical



Trace Markers

Freq (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Filt/Pad (dB)	Corrected Reading (dBuV/m)*	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1.225	54.62	PK	28.5	-35.4	47.72	53.97	-6.25	74	-26.28	0-360	200	H
2.489	48.03	PK	32.5	-32.8	47.73	53.97	-6.24	74	-26.27	0-360	200	H
3.83	46.13	PK	33.8	-31.6	48.33	53.97	-5.64	74	-25.67	0-360	100	H
1.225	53.08	PK	28.5	-35.4	46.18	53.97	-7.79	74	-27.82	0-360	200	V
2.498	53.01	PK	32.5	-32.8	52.71	53.97	-1.26	74	-21.29	0-360	100	V
4.245	46.2	PK	34.1	-30.2	50.1	53.97	-3.87	74	-23.9	0-360	100	V
8.037	38.59	PK	36.1	-27	47.69	53.97	-6.28	74	-26.31	0-360	200	H
7.658	40.18	PK	36.1	-28	48.28	53.97	-5.69	74	-25.72	0-360	100	V

PK - Peak detector

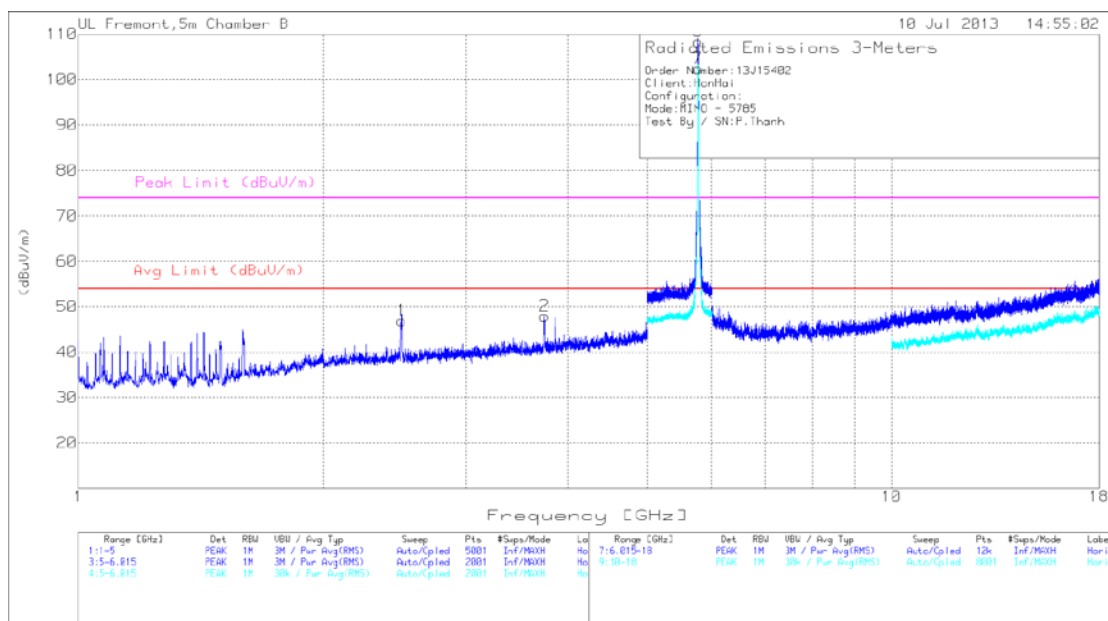
Radiated Emissions

Freq (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Filt/Pad (dB)	D.C. Factor (dBuV/m)*	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3.83	42.84	MAv1	33.8	-31.6	0.22	45.26	53.97	-8.71	74	-28.74	249	109	H
2.497	45.4	MAv1	32.5	-32.8	0.22	45.32	53.97	-8.65	74	-28.68	246	124	V
4.234	34.72	MAv1	34.1	-30.5	0.22	38.54	53.97	-15.43	74	-35.46	247	125	V
7.66	31.77	MAv1	36.1	-27.9	0.22	40.19	53.97	-13.78	74	-33.81	272	131	V

MAv1 - KDB558074 v02 10.2.3.2/8.2.1 Option 1 Maximum RMS Average

*10log(1/duty cycle) = 0.22 dBuV/m

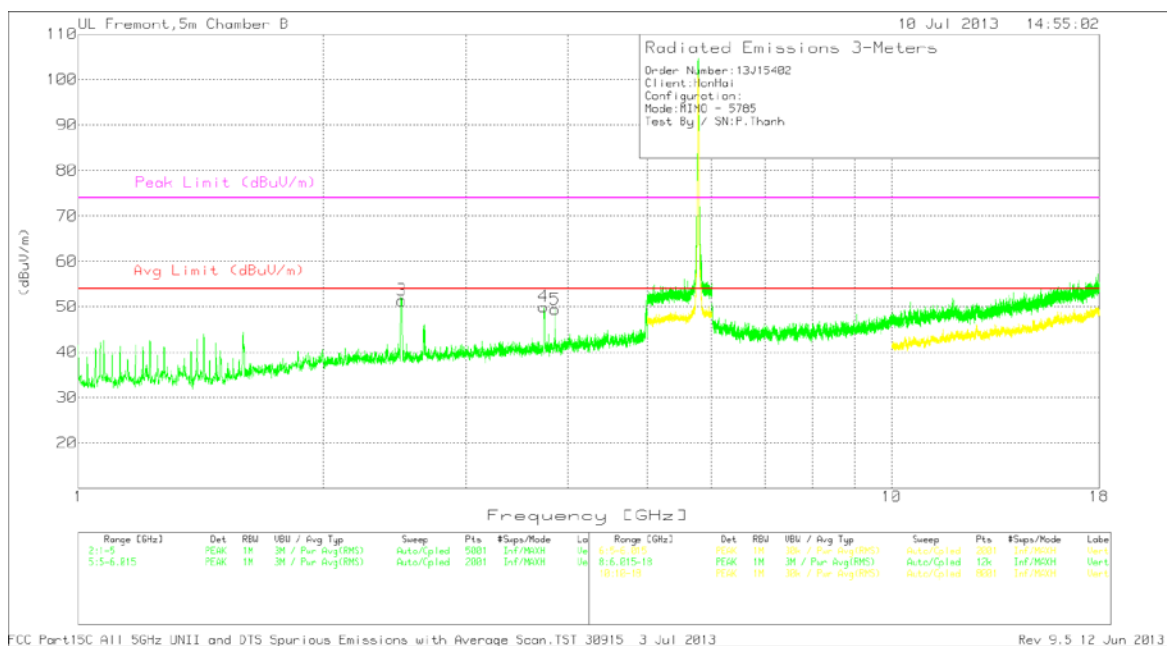
Mid Channel – Horizontal



FCC Part15C All 5GHz UNII and DTS Spurious Emissions with Average Scan.TST 30915_3 Jul 2013

Rev 9.5 12 Jun 2013

Mid Channel – Vertical



Trace Markers

Frequenc y (GHz)	Meter Reading (dBuV)	Det	AF T345 (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
2.499	47.25	PK	32.5	-32.8	46.95	53.97	-7.02	74	-27.05	0-360	200	H
3.744	45.84	PK	33.8	-31.7	47.94	53.97	-6.03	74	-26.06	0-360	100	H
2.498	51.67	PK	32.5	-32.8	51.37	53.97	-2.6	74	-22.63	0-360	200	V
3.733	47.92	PK	33.8	-31.7	50.02	53.97	-3.95	74	-23.98	0-360	200	V
3.857	47.45	PK	33.8	-31.8	49.45	53.97	-4.52	74	-24.55	0-360	200	V
5.779 (F)	93.37	PK	35.3	-20.3	108.37	53.97	54.4	74	34.37	0-360	100	H
5.779 (F)	87.44	PK	35.3	-20.3	102.44	53.97	48.47	74	28.44	0-360	100	H

PK - Peak detector

Frequenc y (GHz)	Meter Reading (dBuV)	Det	AF T345 (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
2.491	41.11	VB1	32.5	-32.8	40.81	53.97	-13.16	74	-33.19	136	104	V
3.735	34.65	VB1	33.8	-31.7	36.75	53.97	-17.22	74	-37.25	12	104	V
3.857	31.92	VB1	33.8	-31.8	33.92	53.97	-20.05	74	-40.08	26	104	V

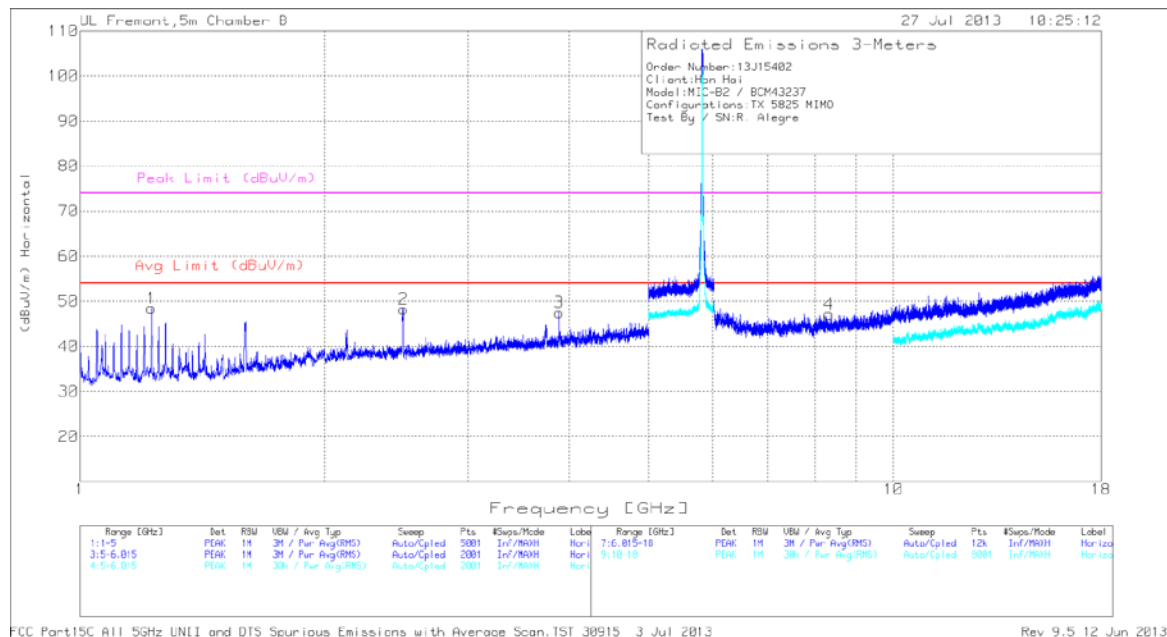
RMS - RMS detection

VB1 - KDB 789033 v01r02 Method: VB Alternative Reduced Video

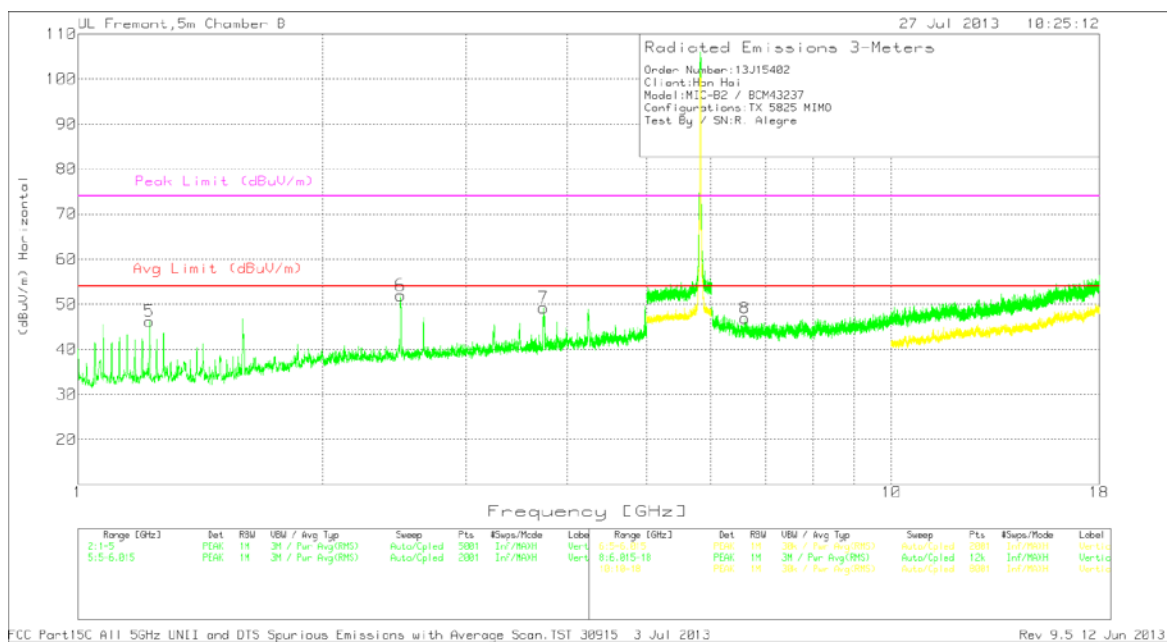
(F) Fundamental

FCC Part15C All 5GHz UNII and DTS Spurious Emissions with Average Scan.TST 30915 3 Jul 2013 Rev 9.5 12 Jun 2013

High Channel – Horizontal



High Channel – Vertical



Trace Markers

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (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
1.225	55.34	PK	28.5	-35.4	48.44	53.97	-5.53	74	-25.56	0-360	200	H
2.499	48.56	PK	32.5	-32.8	48.26	53.97	-5.71	74	-25.74	0-360	200	H
3.883	45.6	PK	33.9	-32	47.5	53.97	-6.47	74	-26.5	0-360	200	H
1.225	53.09	PK	28.5	-35.4	46.19	53.97	-7.78	74	-27.81	0-360	200	V
2.493	52.28	PK	32.5	-32.8	51.98	53.97	-1.99	74	-22.02	0-360	100	V
3.736	47.14	PK	33.8	-31.7	49.24	53.97	-4.73	74	-24.76	0-360	200	V
8.339	37.81	PK	36.1	-26.8	47.11	53.97	-6.86	74	-26.89	0-360	100	H
6.603	38.75	PK	35.9	-27.7	46.95	53.97	-7.02	74	-27.05	0-360	100	V

PK - Peak detector

Radiated Emissions

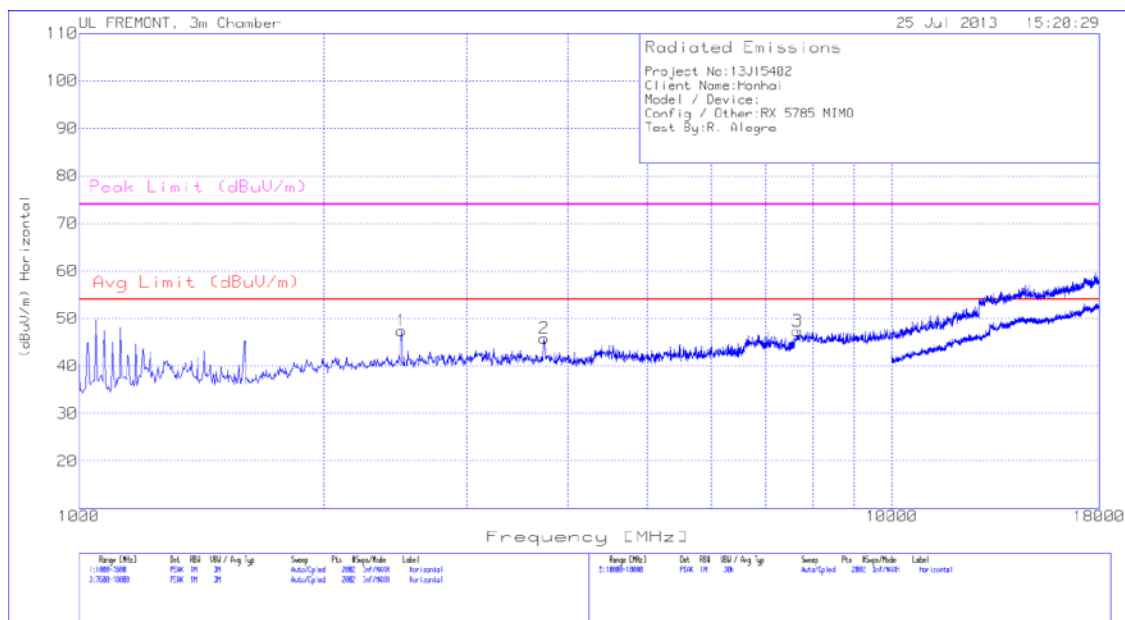
Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	D.C. Factor (dBuV/m)*	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2.493	36.83	MAv1	32.5	-32.8	0.22	36.75	53.97	-17.22	74	-37.25	306	111	H
1.225	53.62	MAv1	28.5	-35.4	0.22	46.94	53.97	-7.03	74	-27.06	124	115	H
2.491	44.11	MAv1	32.5	-32.8	0.22	44.03	53.97	-9.94	74	-29.97	245	136	V
3.743	34.13	MAv1	33.8	-31.7	0.22	36.45	53.97	-17.52	74	-37.55	334	106	V

MAv1 - KDB558074 v02 10.2.3.2/8.2.1 Option 1 Maximum RMS Average

*10log(1/duty cycle) = 0.22 dBuV/m

7.4. RECEIVER ABOVE 1 GHz

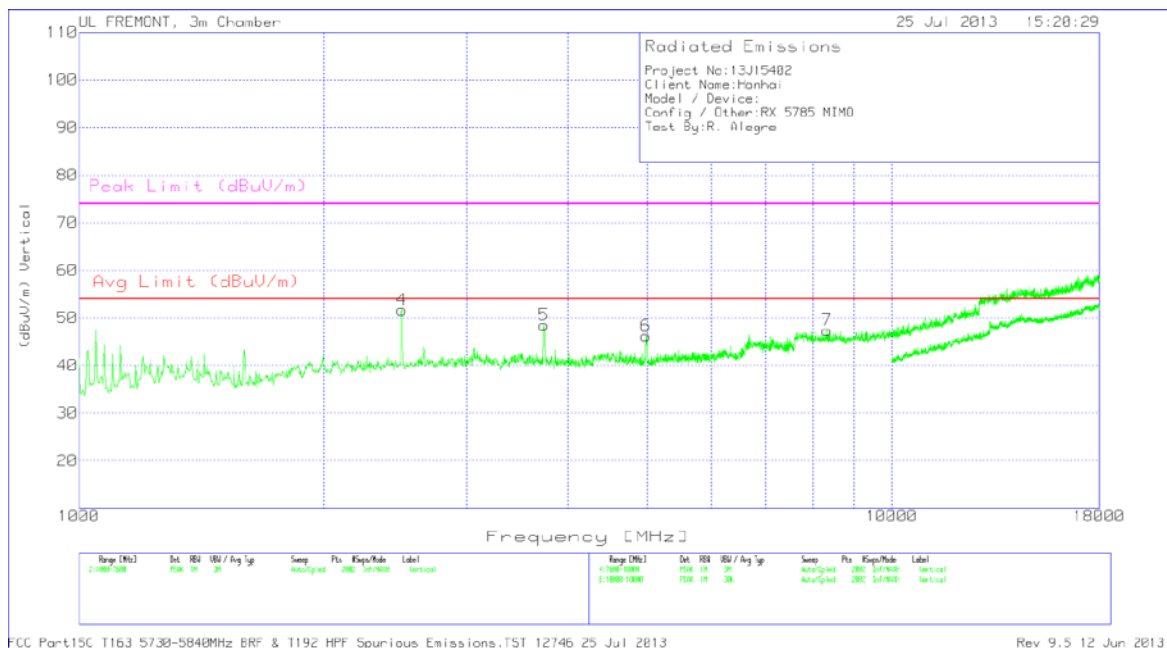
Mid Channel – Horizontal



FCC Part15C T163 5730-5840MHz BRF & T192 HPF Spurious Emissions.TST 12746 25 Jul 2013

Rev 9.5 12 Jun 2013

Mid Channel – Vertical



Trace Markers

Marker	Frequen cy (GHz)	Meter Reading (dBuV)	Det	T119 AF (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
1	2.494	44.73	PK	32.3	-29.6	47.43	54	-6.57	74	-26.57	201	Horz
2	3.738	39.19	PK	33.2	-26.6	45.79	54	-8.21	74	-28.21	201	Horz
4	2.497	49	PK	32.3	-29.6	51.7	54	-2.3	74	-22.3	201	Vert
5	3.734	41.87	PK	33.2	-26.6	48.47	54	-5.53	74	-25.53	201	Vert
6	4.984	37.23	PK	34	-25	46.23	54	-7.77	74	-27.77	100	Vert
3	7.657	34.28	PK	35.8	-22.7	47.38	54	-6.62	74	-26.62	201	Horz
7	8.333	33.82	PK	35.8	-22.2	47.42	54	-6.58	74	-26.58	99	Vert

PK - Peak detector

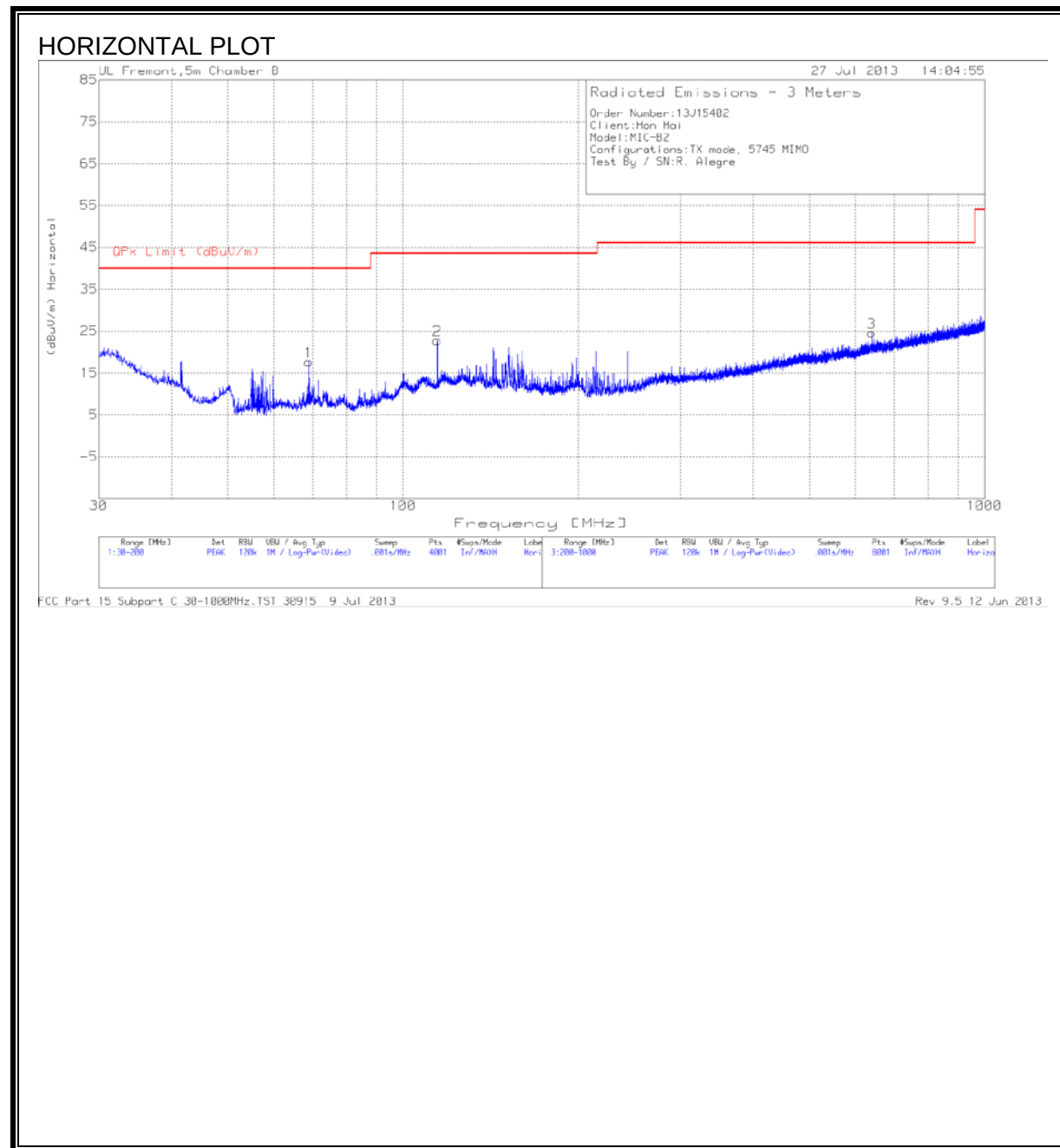
Radiated Emissions

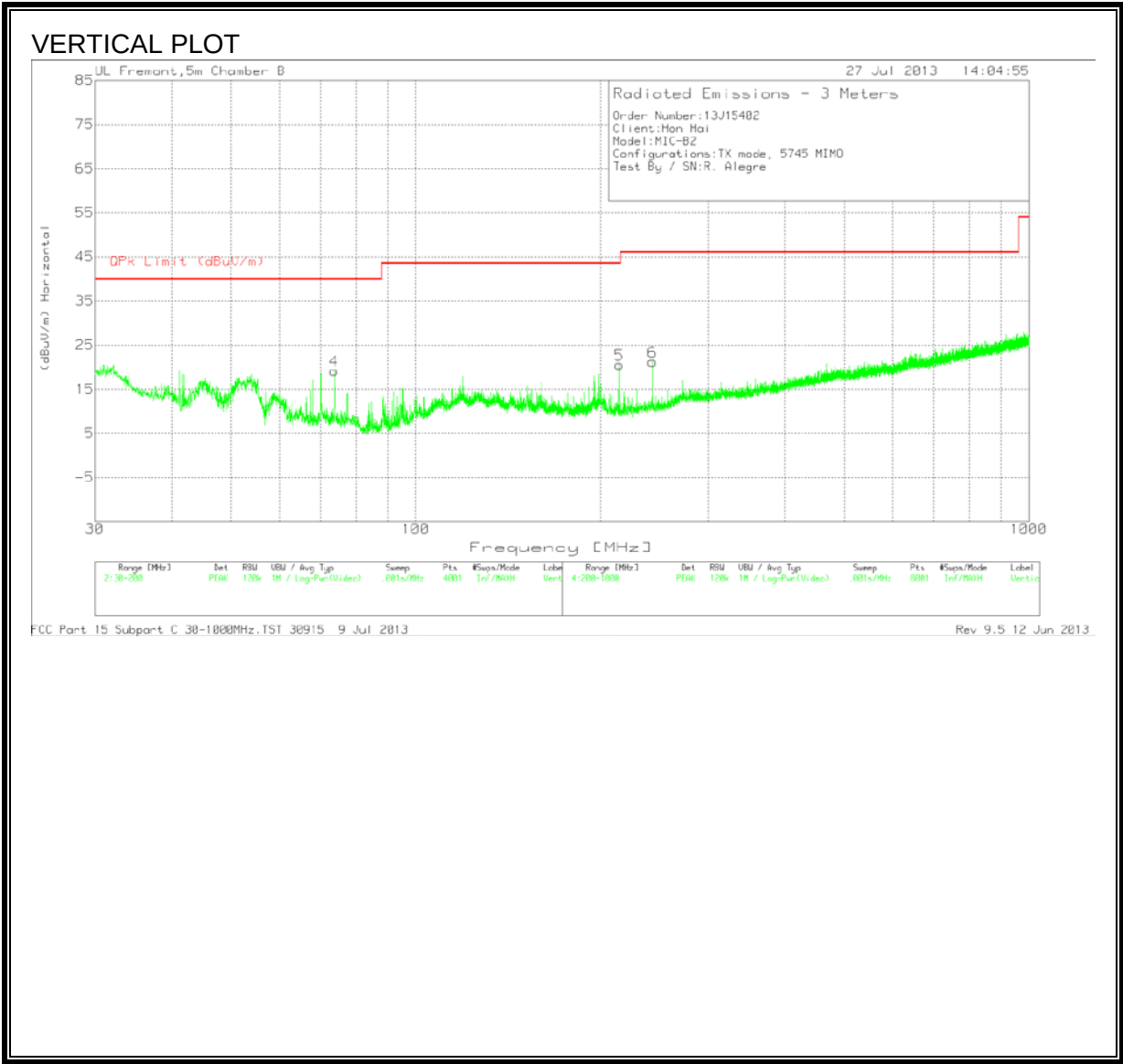
Frequen cy (GHz)	Meter Reading (dBuV)	Det	T119 AF (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3.734	28.23	MAv1	33.2	-26.6	34.83	54	-19.17	74	-39.17	347	104	Vert
2.495	37.28	MAv1	32.3	-29.6	39.98	54	-14.02	74	-34.02	273	100	Vert

MAv1 - KDB558074 v02 10.2.3.2/8.2.1 Option 1 Maximum RMS Average

7.6. WORST-CASE BELOW 1 GHz

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





Trace Markers

Frequency (MHz)	Meter Reading (dBuV)	Det	AF T243 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
68.8875	38.29	PK	7.8	-28.4	17.69	40	-22.31	0-360	300	H
114.5325	37.38	PK	13.3	-27.9	22.78	43.52	-20.74	0-360	200	H
73.7325	39.71	PK	7.9	-28.4	19.21	40	-20.79	0-360	100	V
640	30.12	PK	19.7	-25.2	24.62	46.02	-21.4	0-360	300	H
214.8	36.83	PK	10.5	-26.8	20.53	43.52	-22.99	0-360	400	V
243.4	36.14	PK	11.6	-26.5	21.24	46.02	-24.78	0-360	300	V

PK - Peak detector

8. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 7.2.2

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.

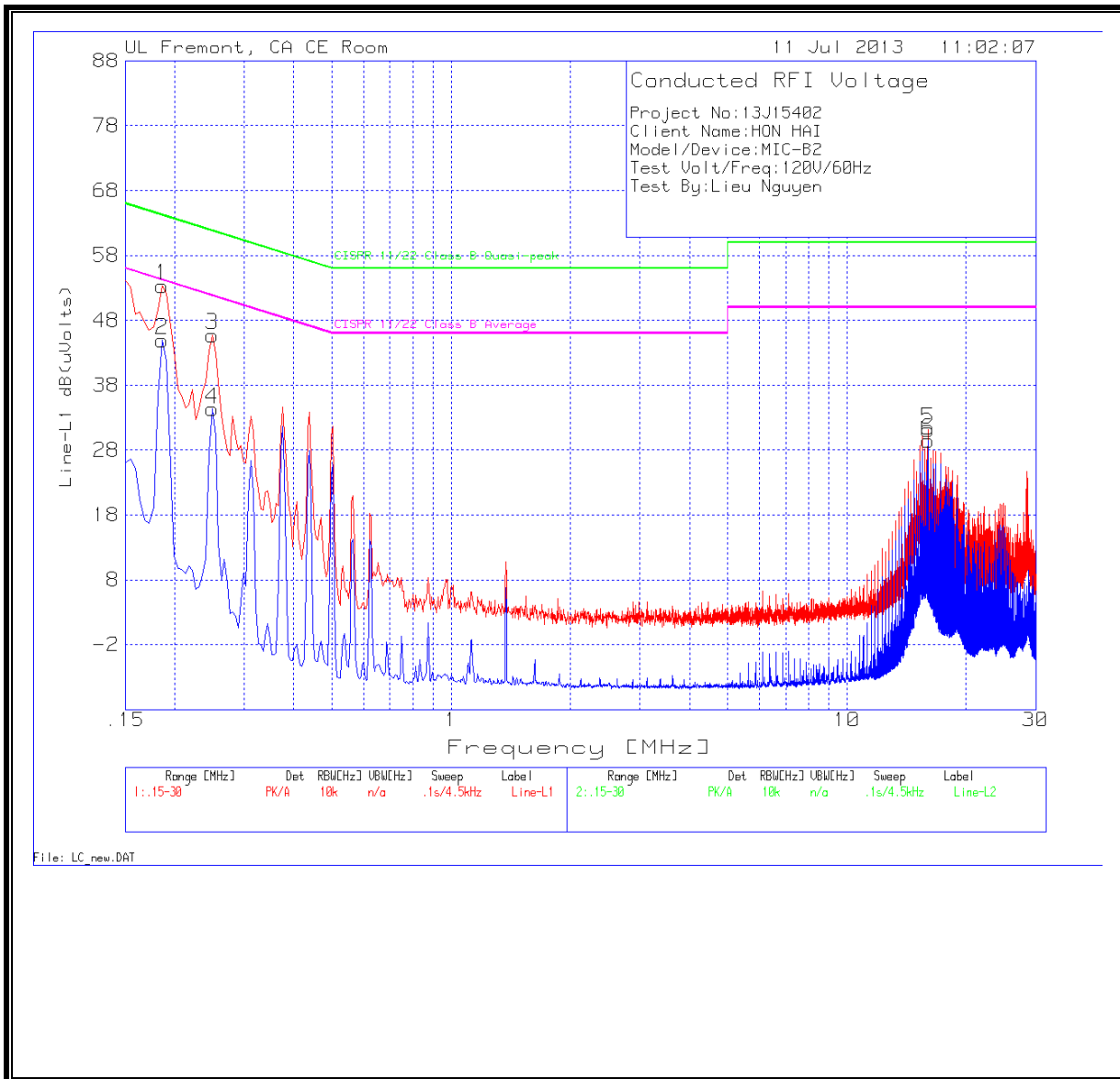
Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

6 WORST EMISSIONS

Project No: 13J15402									
Client Name: HON HAI									
Model/Device: MIC-B2									
Test Volt/Freq: 120V/60Hz									
Test By: Lieu Nguyen									
Line-L1 .15 - 30MHz									
Test Frequency MHz	Meter Reading	Detector	T24 IL L1.TXT (dB)	LC Cables 1&3.TXT (dB)	dB(uVolts)	CISPR 11/22 Class B Quasi-peak	Margin	CISPR 11/22 Class B Average	Margin
0.186	53.21	PK	0.1	0	53.31	64.2	-10.89	-	-
0.186	44.82	Av	0.1	0	44.92	-	-	54.2	-9.28
0.249	45.58	PK	0.1	0	45.68	61.8	-16.12	-	-
0.249	34.2	Av	0.1	0	34.3	-	-	51.8	-17.5
16.0035	30.78	PK	0.2	0.2	31.18	60	-28.82	-	-
16.0035	29.04	Av	0.2	0.2	29.44	-	-	50	-20.56
Line-L2 .15 - 30MHz									
Test Frequency MHz	Meter Reading	Detector	T24 IL L2.TXT (dB)	LC Cables 2&3.TXT (dB)	dB(uVolts)	CISPR 11/22 Class B Quasi-peak	Margin	CISPR 11/22 Class B Average	Margin
0.186	52.22	PK	0.1	0	52.32	64.2	-11.88	-	-
0.186	47.14	Av	0.1	0	47.24	-	-	54.2	-6.96
0.249	44.54	PK	0.1	0	44.64	61.8	-17.16	-	-
0.249	31.08	Av	0.1	0	31.18	-	-	51.8	-20.62
29.1885	29.67	PK	0.5	0.3	30.47	60	-29.53	-	-
29.1885	-0.19	Av	0.5	0.3	0.61	-	-	50	-49.39
PK - Peak detector									
QP - Quasi-Peak detector									

LINE 1 RESULTS



LINE 2 RESULTS

