FCC CFR47 PART 15 SUBPART E
INDUSTRY CANADA RSS-210 ISSUE 7
CLASS II PERMISSIVE CHANGE

CERTIFICATION TEST REPORT

FOR

Intel Wi-Fi Link 5100 Series

MODEL NUMBER: PA3655U-1MPC

FCC ID: CJ6UPA3655WL
IC: 248H-DPA3655W

REPORT NUMBER: 08U12001-2

ISSUE DATE: AUGUST 25, 2008

Prepared for
TOSHIBA CORPORATION
DIGITAL MEDIA NETWORK COMPANY
OME COMPLEX, 2-9, SUEHIRO-CHO
TOKYO, 198-8710, JAPAN

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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	08/25/08	Initial Issue	T. Chan

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: TOSHIBA CORPORATION
DIGITAL MEDIA NETWORK COMPANY
OME COMPLEX, 2-9, SUEHIRO-CHO
TOKYO, 198-8710, JAPAN

EUT DESCRIPTION: Intel Wi-Fi Link 5100 Series

MODEL: PA3655U-1MPC

SERIAL NUMBER: 3C4823509040

DATE TESTED: AUGUST 6 – 25, 2008

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart E	Pass
INDUSTRY CANADA RSS-210 Issue 7 Annex 9	Pass
INDUSTRY CANADA RSS-GEN Issue 2	Pass

Compliance Certification Services, Inc. (CCS) 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 CCS based on interpretations and/or observations of test results. 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 CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by CCS will constitute fraud and shall nullify the document. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Approved & Released For CCS By:

THU CHAN
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

Tested By:

DEVIN CHANG
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 2, and RSS-210 Issue 7.

3. FACILITIES AND ACCREDITATION

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

CCS 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. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Power Line Conducted Emission	+/- 2.3 dB
Radiated Emission	+/- 3.4 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 transceiver Intel Wi-Fi Link 5100 Series

The radio module is manufactured by Intel.

5.2. DESCRIPTION OF CLASS II PERMISSIVE CHANGE

The major changes filed under this application are:

Change #1: Adding Portege M750 Tablet.
Change #2: Adding co-location with BT module FCC ID: RYYEYTFXCS.

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an PFA antenna, with maximum gain of -0.55 dBi from 2400 - 2483.5 MHz, -1.06 dBi from 5150 - 5350 MHz, 2.11 dBi from 5470 - 5725 MHz, and 2.11 dBi from 5725 - 5850 MHz.

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was Intel® WiFi Link 5100-xVT

The test utility software used during testing was CRTU, rev. 5.0.69.0.

5.5. WORST-CASE CONFIGURATION AND MODE

The worst-case channel is determined as the channel with the highest output power.

The worst-position was the EUT with highest emissions. To determine the worst-case, the EUT was investigated for X, Y, Z, and mobile Positions, after the investigations, the worst-position were turned out to be a mobile position for all bands.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	TOSHIBA	PORTEGE M750	78033440H	DoC
AC Adaptor	TOSHIBA	PA3282U-5ACA	G71C0006Q310	DoC

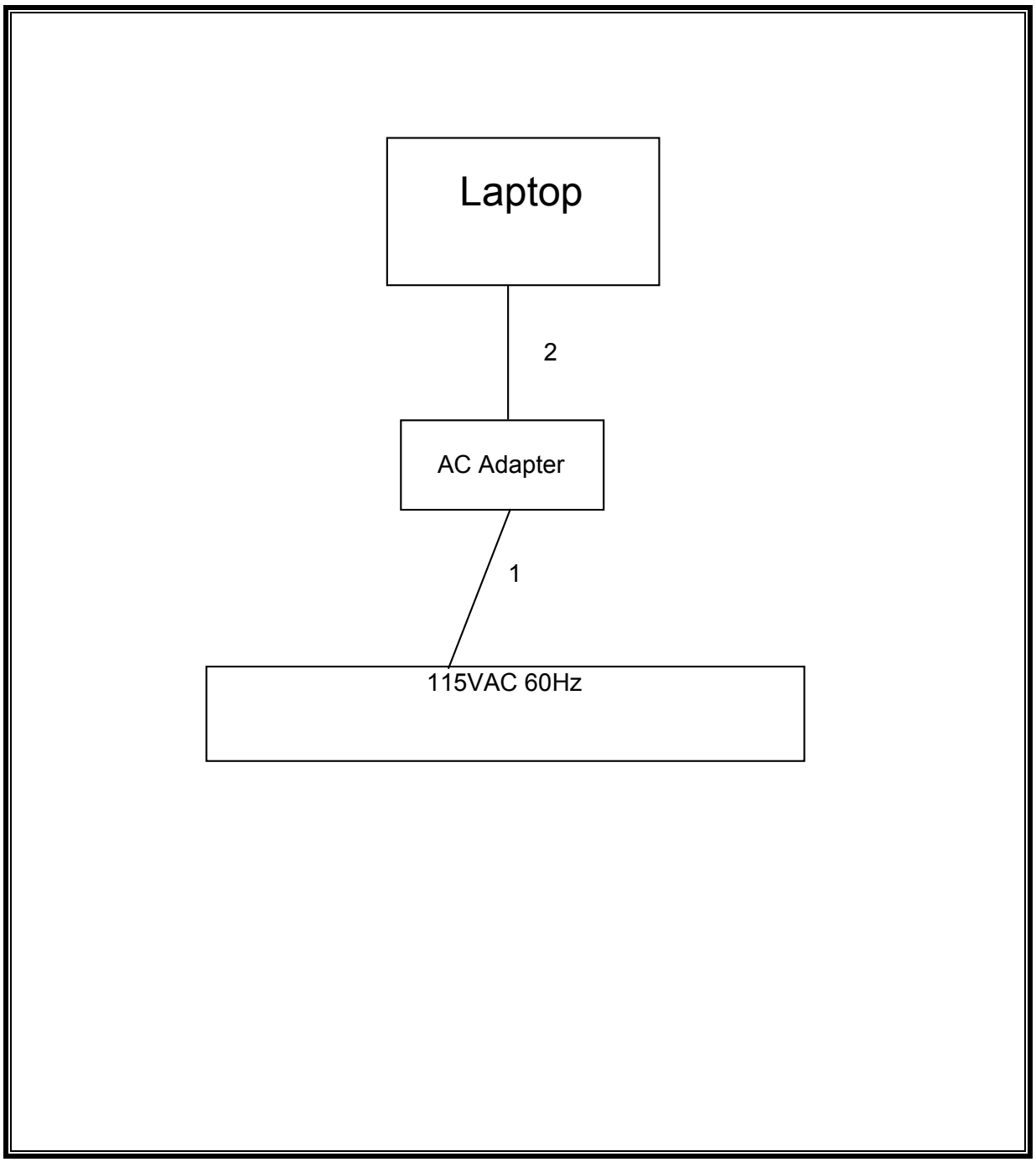
I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identica Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	US 115V	Un-shielded	1.7m	NA
2	DC	1	DC	Un-shielded	1.7m	NA

TEST SETUP

The EUT is installed in 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 Due**
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01069	10/08/09
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01052	08/03/09
Antenna, Horn, 18 GHz	ETS	3117	C01005	04/22/09
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00885	03/31/09
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01016	09/28/08
RF Filter Section, 2.9 GHz	Agilent / HP	85420E	C00958	09/19/09
EMI Receiver, 2.9 GHz	Agilent / HP	8542E	C00957	09/19/09
2.4 GHz High Pass Filter	Micro Tronics	BRC13192	N02683	N/A
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	C00980	09/29/08
Antenna, Horn, 18 GHz	EMCO	3115	C00872	04/22/09
Preamplifier, 40 GHz	Miteq	NSP4000-SP2	C00990	10/11/08
High Pass Filter 7.6GHz	Micro Tronics	HPM13195	N02681	CNR
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	08/06/09
LISN, 30 MHz	FCC	LISN-50/250-25-	N02625	10/25/08

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. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

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, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

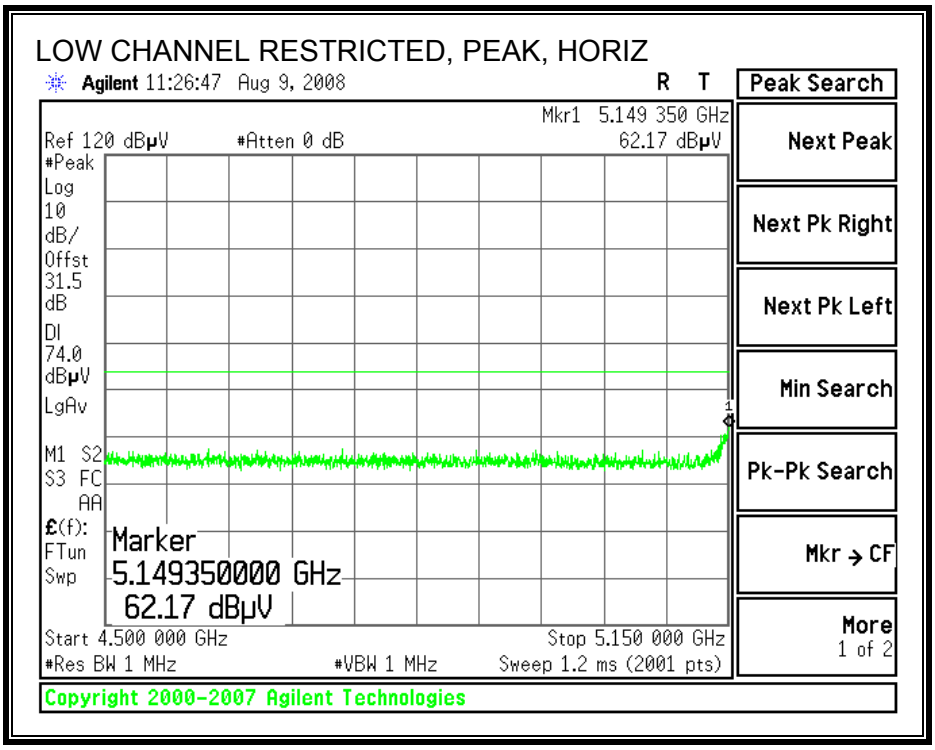
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each appplicable band.

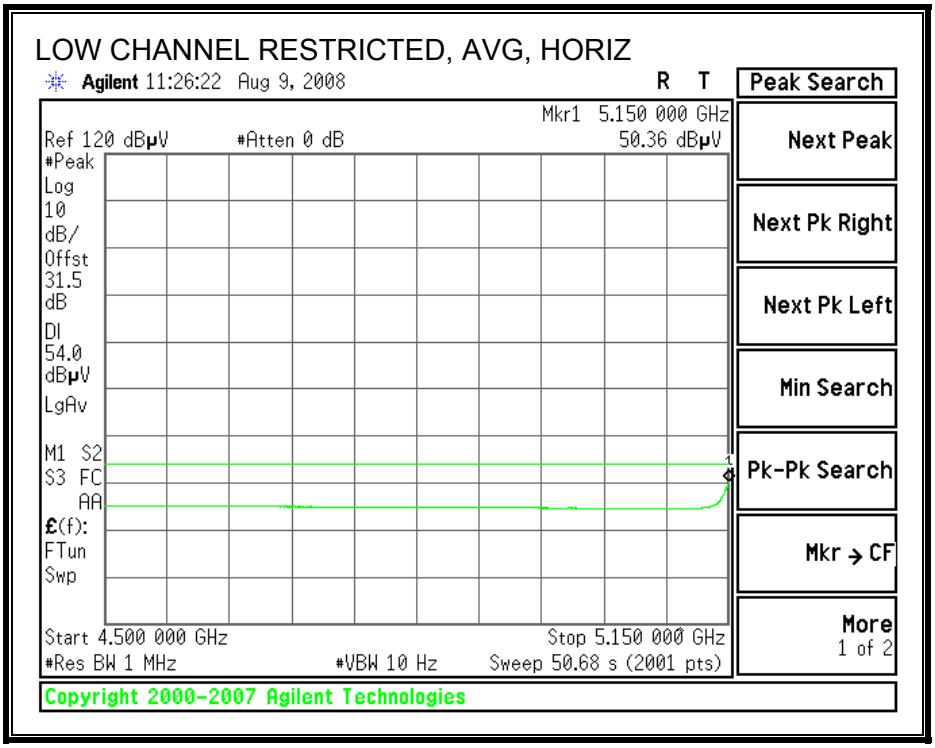
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

7.2. TRANSMITTER ABOVE 1 GHz IN THE 5.2 GHz BAND

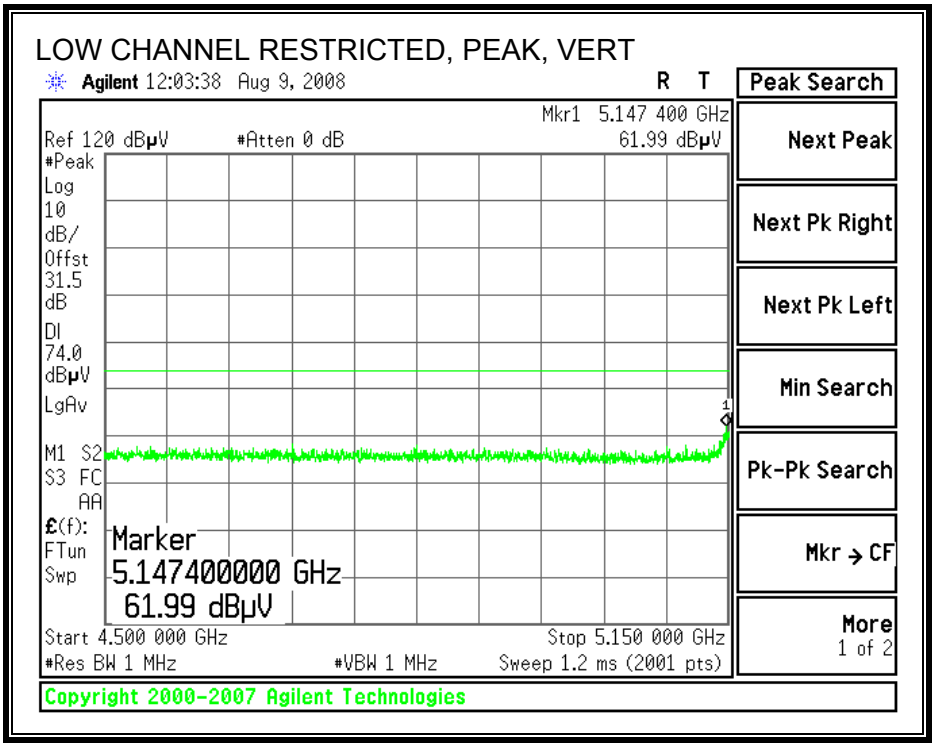
7.2.1. TRANSMITTER ABOVE 1 GHz FOR 802.11a LEGACY MODE

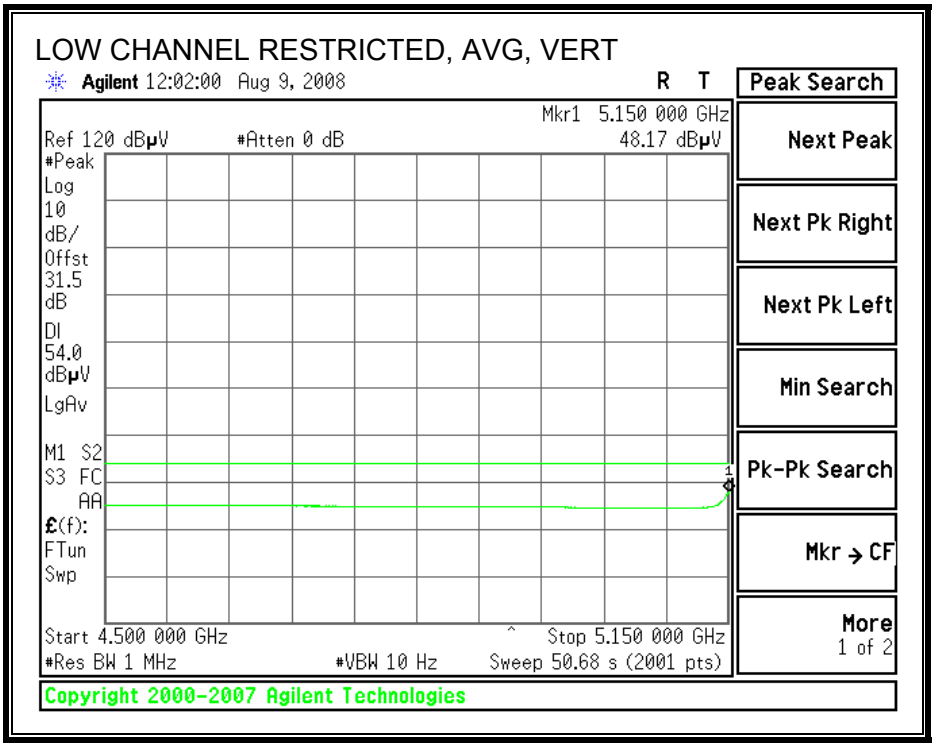
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Company:	**INTEL**
Project #:	**08U12001**
Date:	**8/10/2008**
Test Engineer:	**Devin Chang**
Configuration:	**EUT only**
Mode:	**Tx, 5.2GHz a mode**

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz
T60; S/N: 2238 @3m	T144 Miteq 3008A00931		T125; ARA 18-26GHz; S/N:1007

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
		B-5m Chamber		R_001

Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch. 5180MHz															
15.540	3.0	34.2	23.5	38.0	12.9	-34.8	0.0	0.0	50.2	39.5	74	54	-23.8	-14.5	V
15.540	3.0	35.5	23.3	38.0	12.9	-34.8	0.0	0.0	51.5	39.4	74	54	-22.5	-14.6	H
Mid Ch. 5200MHz															
15.600	3.0	35.1	23.5	38.0	12.9	-34.8	0.0	0.0	51.2	39.6	74	54	-22.8	-14.4	V
15.600	3.0	34.7	23.6	38.0	12.9	-34.8	0.0	0.0	50.8	39.7	74	54	-23.2	-14.3	H
High Ch. 5240MHz															
15.720	3.0	34.7	23.7	37.9	13.0	-34.7	0.0	0.0	50.9	39.9	74	54	-23.1	-14.1	V
15.720	3.0	34.4	23.7	37.9	13.0	-34.7	0.0	0.0	50.6	39.9	74	54	-23.4	-14.1	H
No more signal found															

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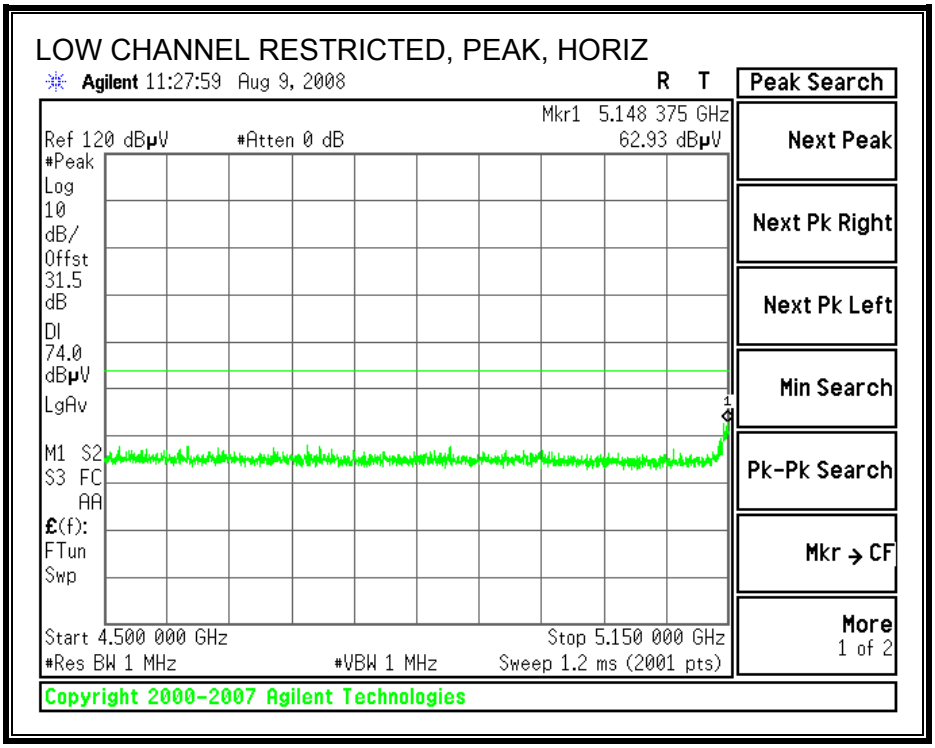
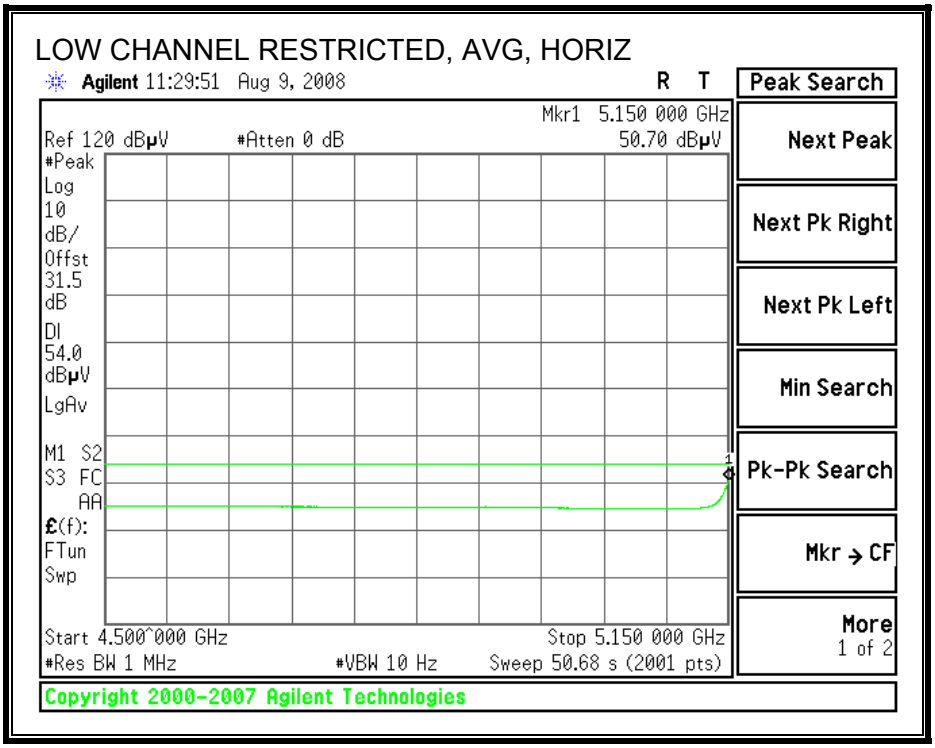
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

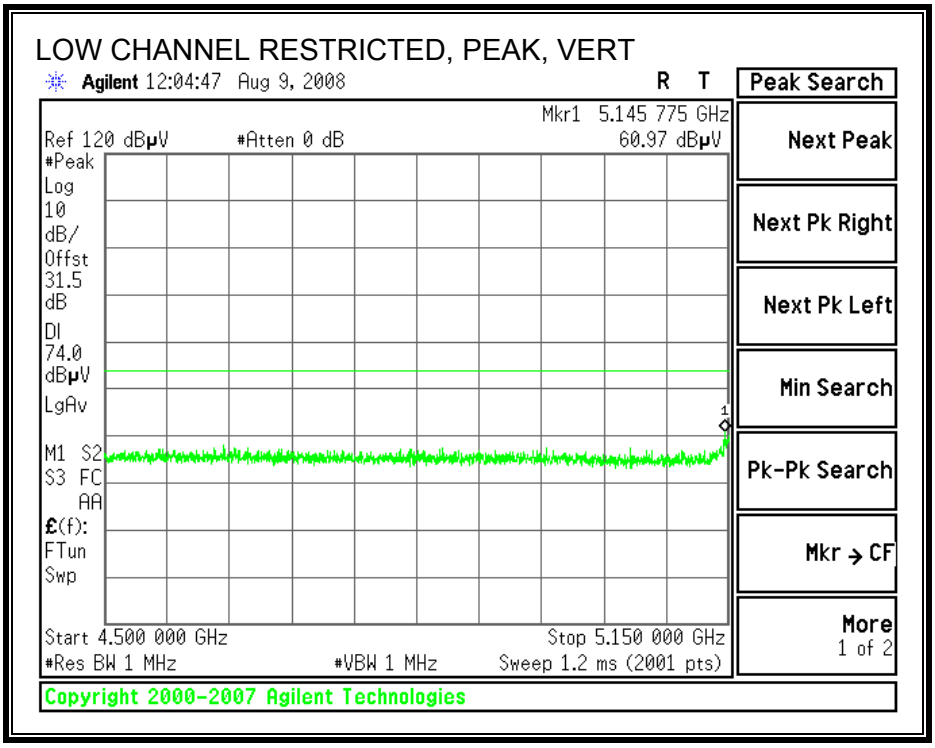
7.2.2. TRANSMITTER ABOVE 1 GHz FOR 802.11n HT20 MODE

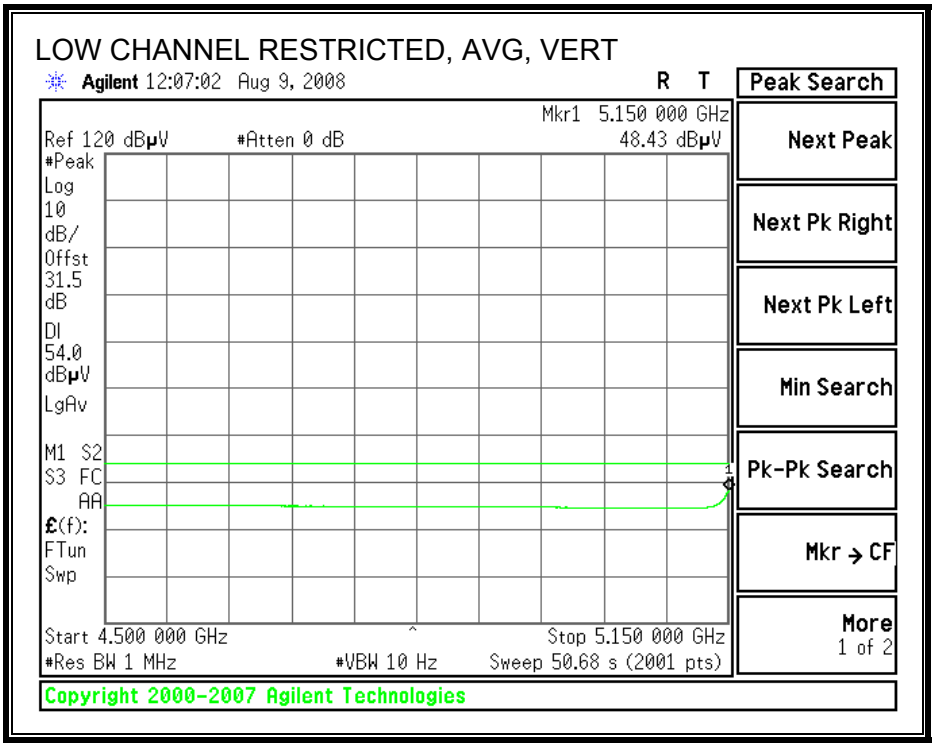
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Company:	**INTEL**
Project #:	**08U12001**
Date:	**8/10/2008**
Test Engineer:	**Devin Chang**
Configuration:	**EUT only**
Mode:	**Tx, 5.3GHz HT20**

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz
T60; S/N: 2238 @3m	T144 Miteq 3008A00931		T125; ARA 18-26GHz; S/N:1007

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
		B-5m Chamber		R_001

Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

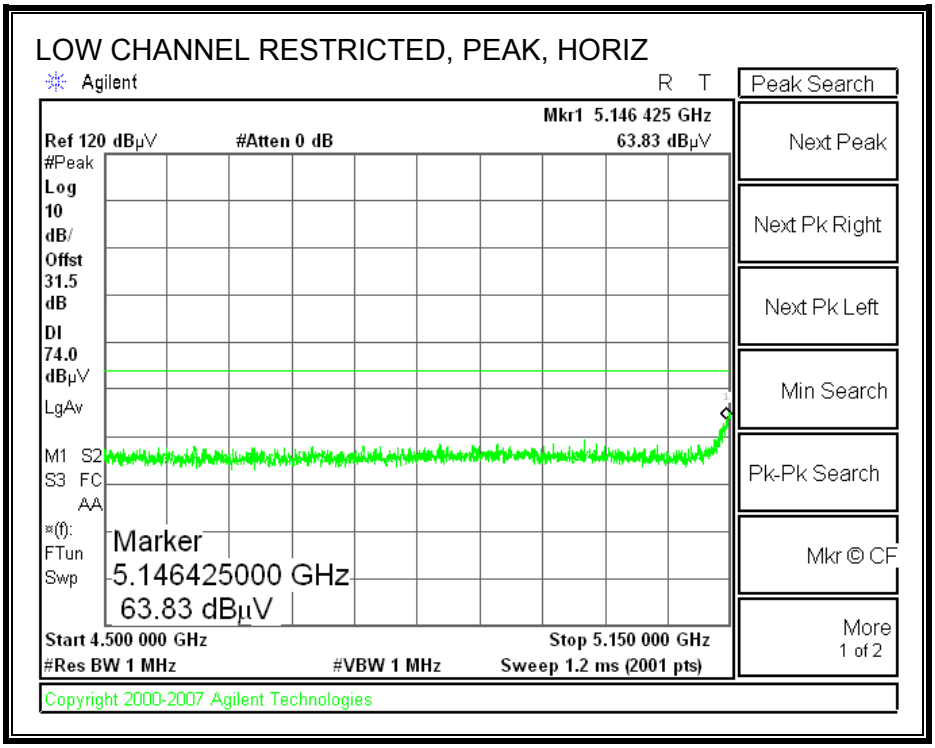
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch. 5260MHz															
15.780	3.0	35.4	23.9	37.9	13.0	-34.6	0.0	0.0	51.6	40.1	74	54	-22.4	-13.9	V
15.780	3.0	35.5	23.9	37.9	13.0	-34.6	0.0	0.0	51.8	40.1	74	54	-22.2	-13.9	H
Mid Ch. 5280MHz															
15.840	3.0	35.2	23.3	37.9	13.0	-34.6	0.0	0.0	51.5	39.6	74	54	-22.5	-14.4	V
15.840	3.0	35.5	23.7	37.9	13.0	-34.6	0.0	0.0	51.8	40.0	74	54	-22.2	-14.0	H
High Ch. 5320MHz															
10.640	3.0	46.6	34.5	37.3	11.0	-36.6	0.0	0.0	58.3	46.3	74	54	-15.7	-7.7	V
15.960	3.0	35.1	23.4	37.8	13.1	-34.5	0.0	0.0	51.5	39.8	74	54	-22.5	-14.2	V
10.640	3.0	44.2	31.3	37.3	11.0	-36.6	0.0	0.0	55.9	43.0	74	54	-18.1	-11.0	H
15.960	3.0	35.6	23.5	37.8	13.1	-34.5	0.0	0.0	52.0	39.9	74	54	-22.0	-14.1	H
No more signal found															

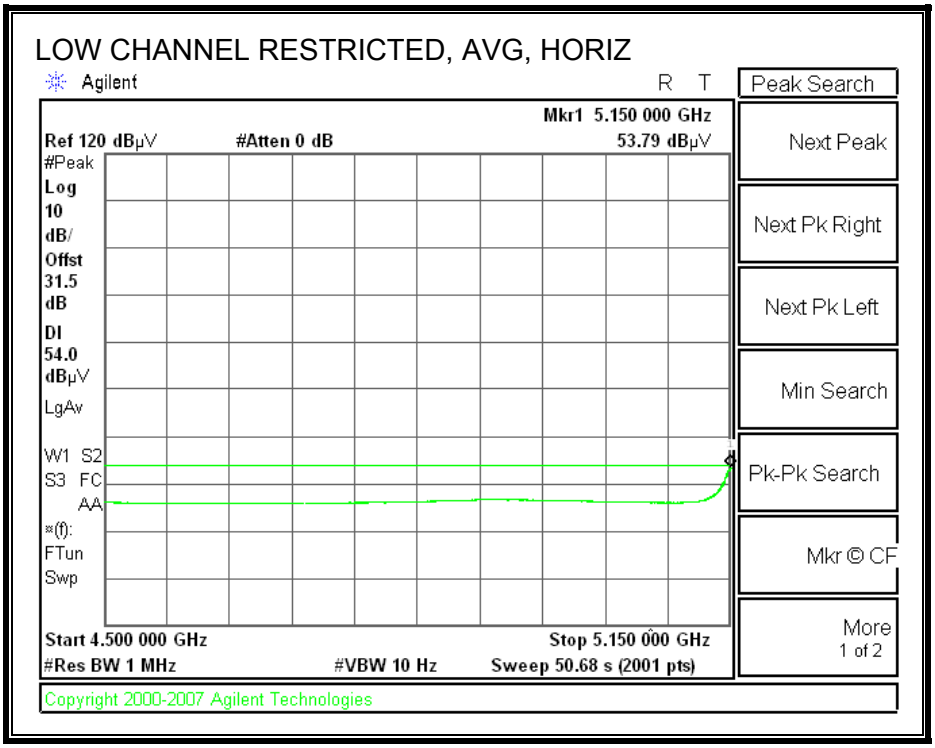
Rev. 4.12.7

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

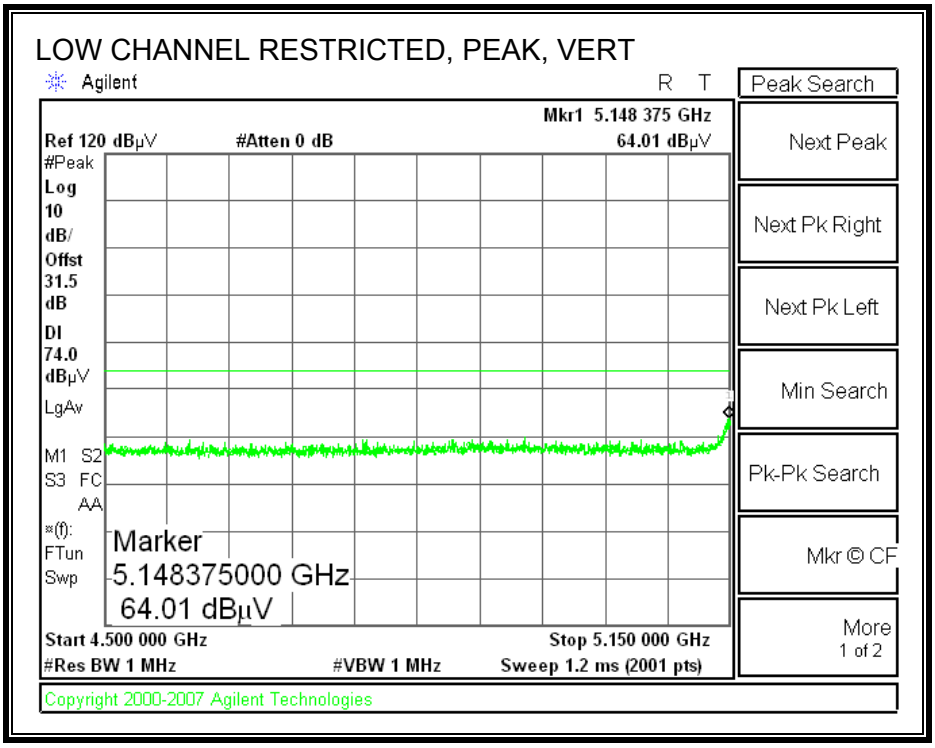
7.2.3. TRANSMITTER ABOVE 1 GHz FOR 802.11n HT40 MODE

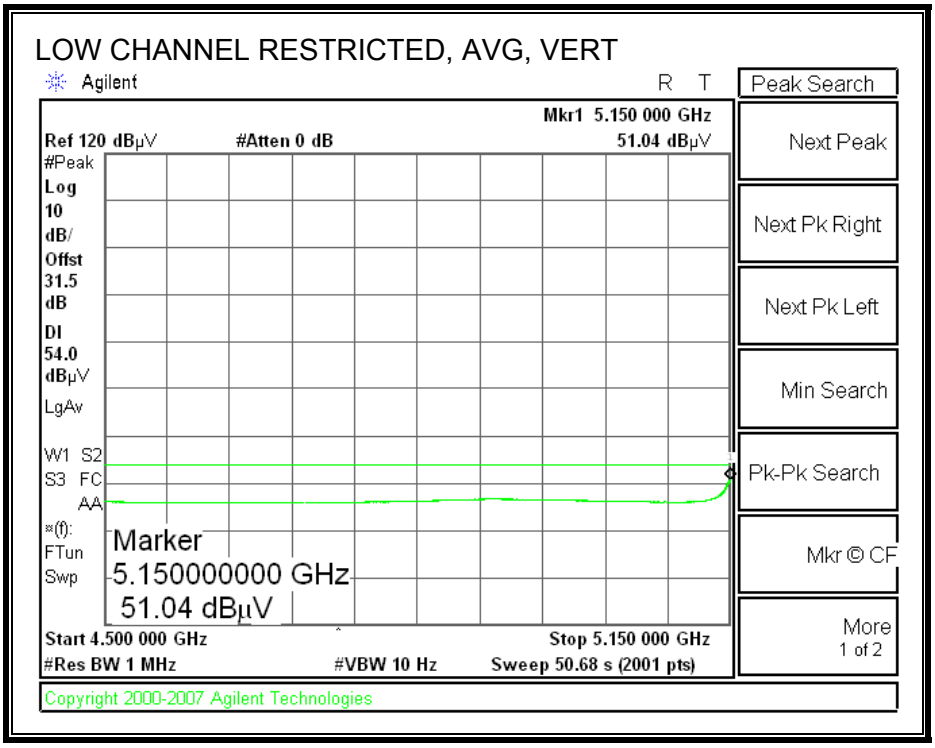
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

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Project #:	**08U12001**
Date:	**8/10/2008**
Test Engineer:	**Devin Chang**
Configuration:	**EUT only**
Mode:	**Tx, 5.2GHz HT40**

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz
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Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
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Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch. 5190MHz															
15.570	3.0	36.0	23.0	38.0	12.9	-34.8	0.0	0.0	52.0	39.1	74	54	-22.0	-14.9	V
15.570	3.0	35.3	24.1	38.0	12.9	-34.8	0.0	0.0	51.4	40.1	74	54	-22.6	-13.9	H
High Ch. 5230MHz															
15.690	3.0	35.9	24.5	37.9	13.0	-34.7	0.0	0.0	52.1	40.7	74	54	-21.9	-13.3	V
15.690	3.0	35.5	24.5	37.9	13.0	-34.7	0.0	0.0	51.7	40.7	74	54	-22.3	-13.3	H
No more signal found															

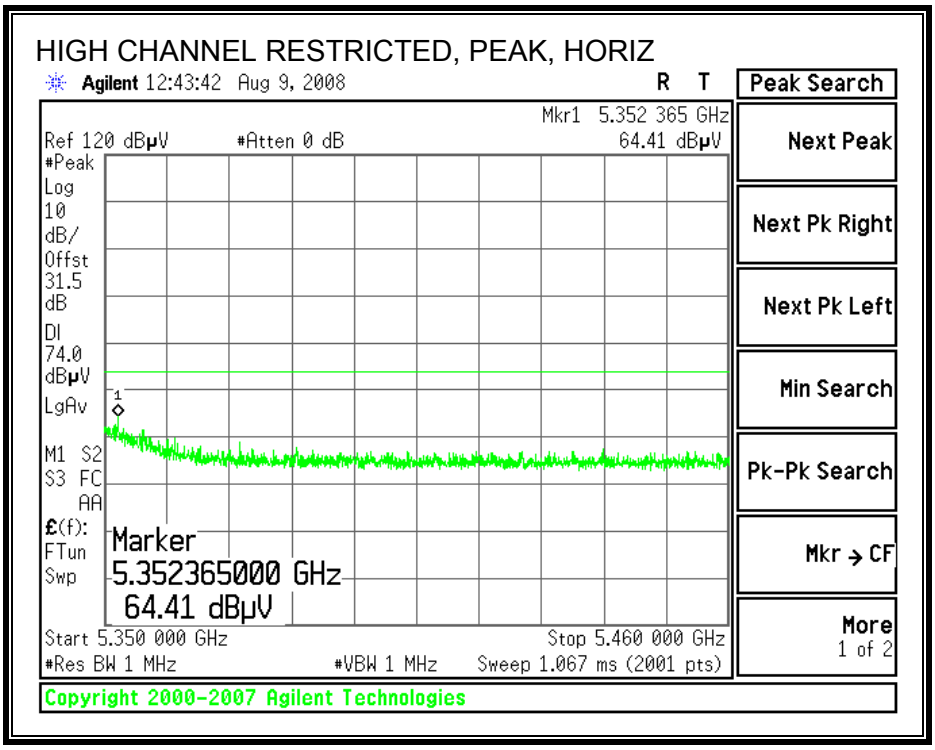
Rev. 4.12.7

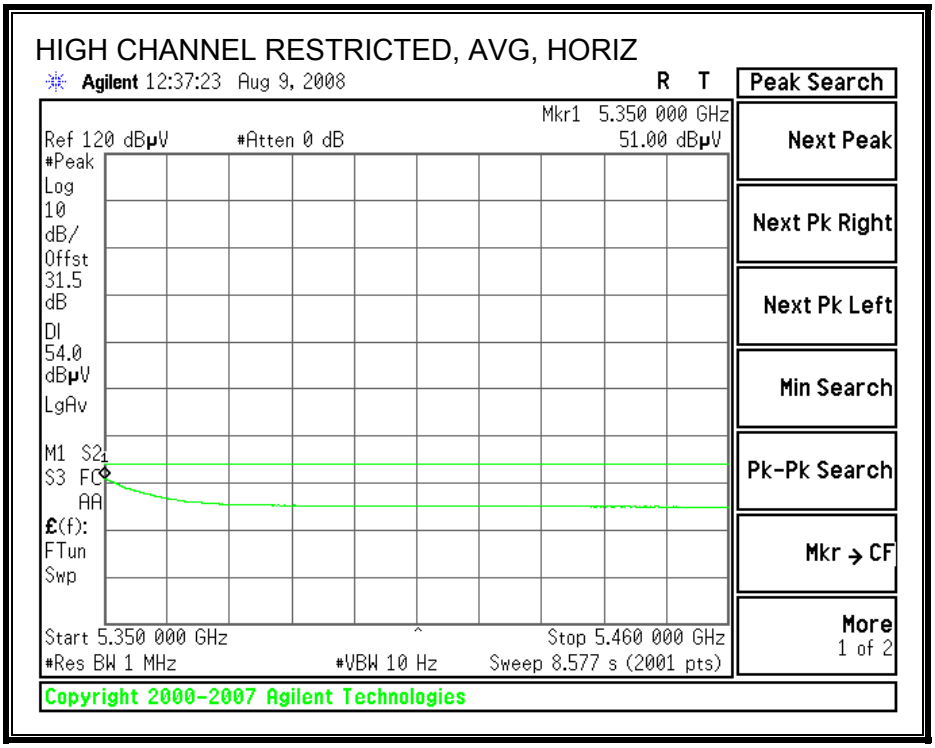
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

7.3. TRANSMITTER ABOVE 1 GHz IN THE 5.3 GHz BAND

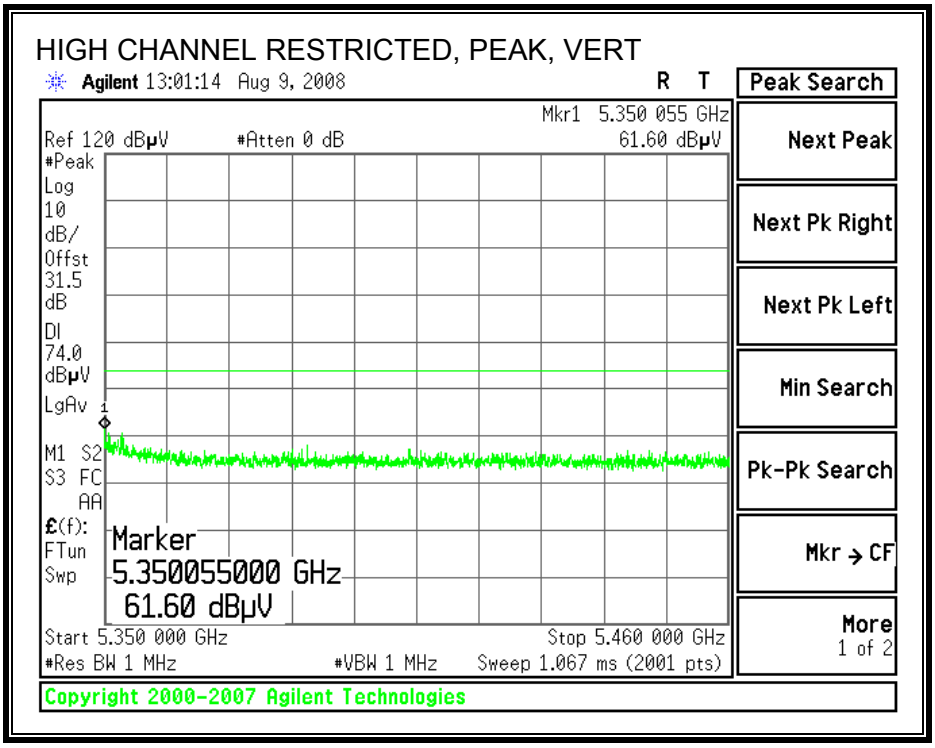
7.3.1. TRANSMITTER ABOVE 1 GHz FOR 802.11a LEGACY MODE

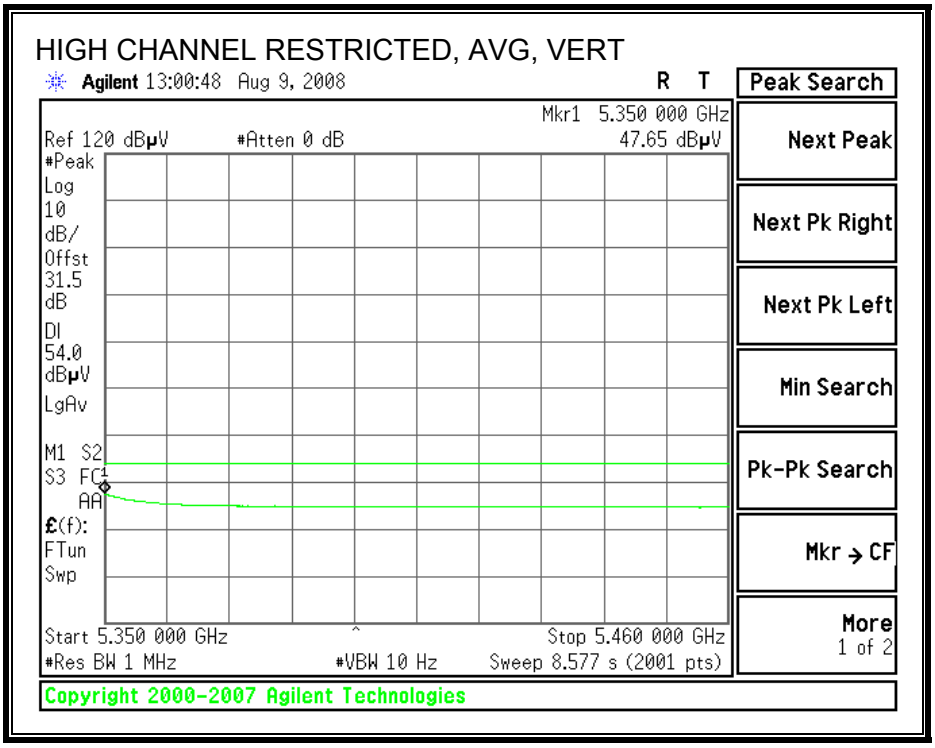
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Company:	**INTEL**
Project #:	**08U12001**
Date:	**8/10/2008**
Test Engineer:	**Devin Chang**
Configuration:	**EUT only**
Mode:	**Tx, 5.3GHz a mode**

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz
T60; S/N: 2238 @3m	T144 Miteq 3008A00931		T125; ARA 18-26GHz; S/N:1007

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
		B-5m Chamber		R_001

Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

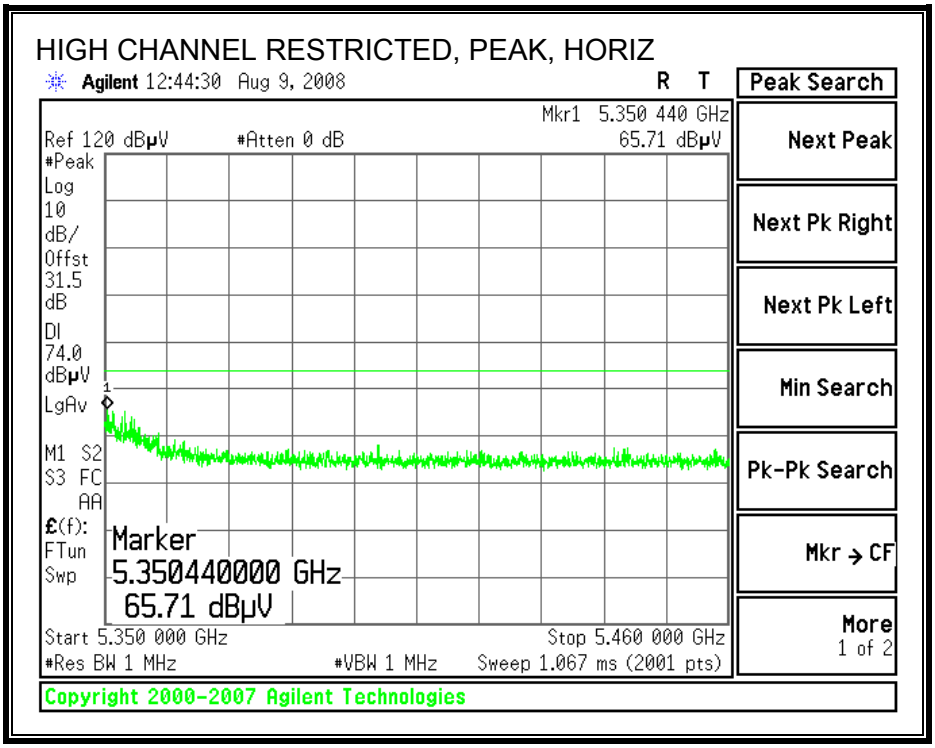
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch. 5260MHz															
15.780	3.0	36.0	24.0	37.9	13.0	-34.6	0.0	0.0	52.3	40.2	74	54	-21.7	-13.8	V
15.780	3.0	36.3	23.5	37.9	13.0	-34.6	0.0	0.0	52.5	39.7	74	54	-21.5	-14.3	H
Mid Ch. 5280MHz															
15.840	3.0	35.8	23.8	37.9	13.0	-34.6	0.0	0.0	52.1	40.1	74	54	-21.9	-13.9	V
15.840	3.0	35.1	23.8	37.9	13.0	-34.6	0.0	0.0	51.4	40.1	74	54	-22.6	-13.9	H
High Ch. 5320MHz															
10.640	3.0	47.9	35.8	37.3	11.0	-36.6	0.0	0.0	59.6	47.5	74	54	-14.4	-6.5	V
15.960	3.0	35.2	23.5	37.8	13.1	-34.5	0.0	0.0	51.6	39.9	74	54	-22.4	-14.1	V
10.640	3.0	43.9	32.2	37.3	11.0	-36.6	0.0	0.0	55.6	43.9	74	54	-18.4	-10.1	H
15.960	3.0	35.7	22.8	37.8	13.1	-34.5	0.0	0.0	52.1	39.2	74	54	-21.9	-14.8	H
No more signal found															

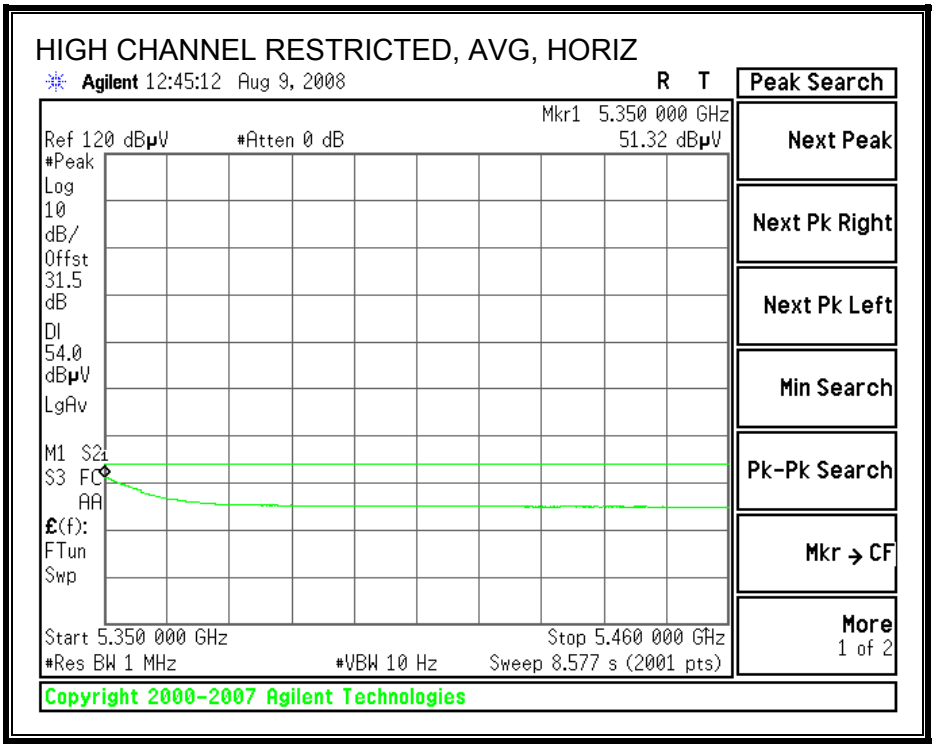
Rev. 4.12.7

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

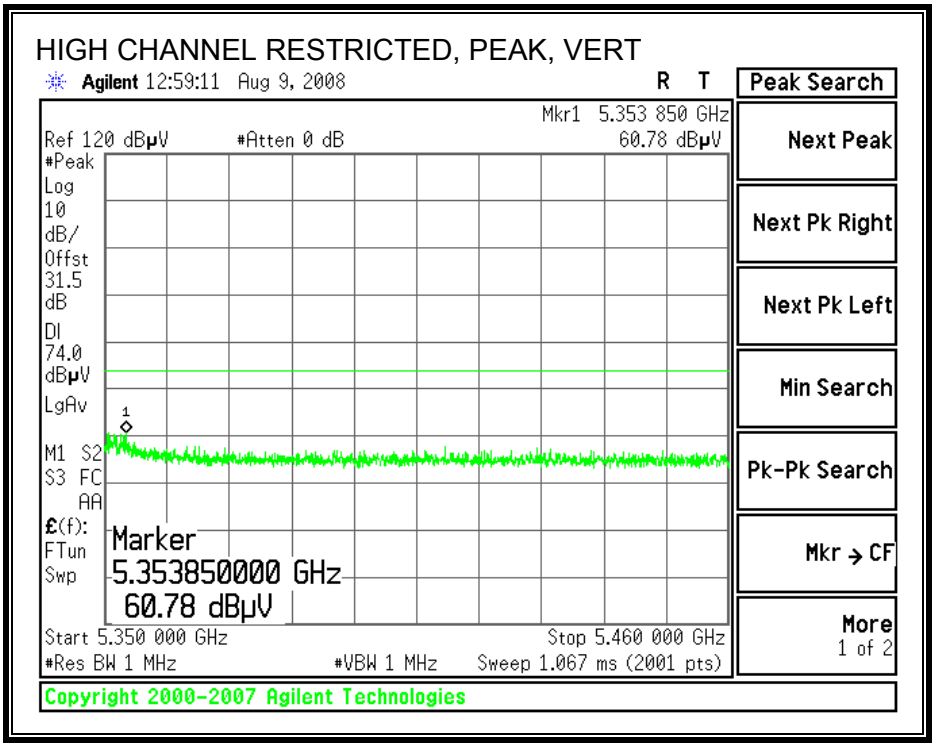
7.3.2. TRANSMITTER ABOVE 1 GHz FOR 802.11n HT20 MODE

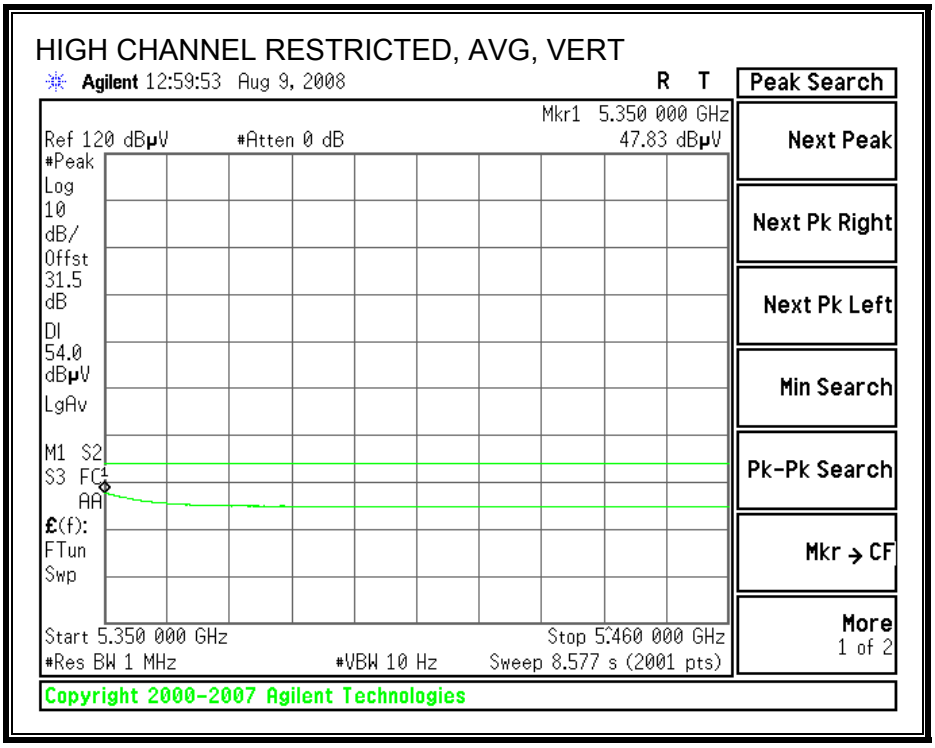
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Company:	**INTEL**
Project #:	**08U12001**
Date:	**8/10/2008**
Test Engineer:	**Devin Chang**
Configuration:	**EUT only**
Mode:	**Tx, 5.3GHz HT20**

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz
T60; S/N: 2238 @3m	T144 Miteq 3008A00931		T125; ARA 18-26GHz; S/N:1007

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
		B-5m Chamber		R_001

Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch. 5260MHz															
15.780	3.0	35.4	23.9	37.9	13.0	-34.6	0.0	0.0	51.6	40.1	74	54	-22.4	-13.9	V
15.780	3.0	35.5	23.9	37.9	13.0	-34.6	0.0	0.0	51.8	40.1	74	54	-22.2	-13.9	H
Mid Ch. 5280MHz															
15.840	3.0	35.2	23.3	37.9	13.0	-34.6	0.0	0.0	51.5	39.6	74	54	-22.5	-14.4	V
15.840	3.0	35.5	23.7	37.9	13.0	-34.6	0.0	0.0	51.8	40.0	74	54	-22.2	-14.0	H
High Ch. 5320MHz															
10.640	3.0	46.6	34.5	37.3	11.0	-36.6	0.0	0.0	58.3	46.3	74	54	-15.7	-7.7	V
15.960	3.0	35.1	23.4	37.8	13.1	-34.5	0.0	0.0	51.5	39.8	74	54	-22.5	-14.2	V
10.640	3.0	44.2	31.3	37.3	11.0	-36.6	0.0	0.0	55.9	43.0	74	54	-18.1	-11.0	H
15.960	3.0	35.6	23.5	37.8	13.1	-34.5	0.0	0.0	52.0	39.9	74	54	-22.0	-14.1	H
No more signal found															

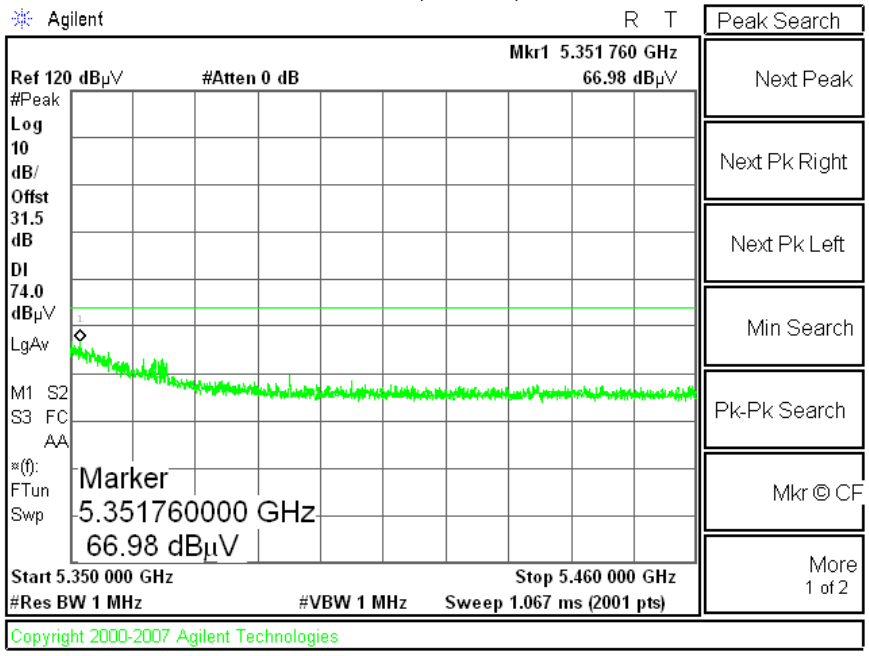
Rev. 4.12.7

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

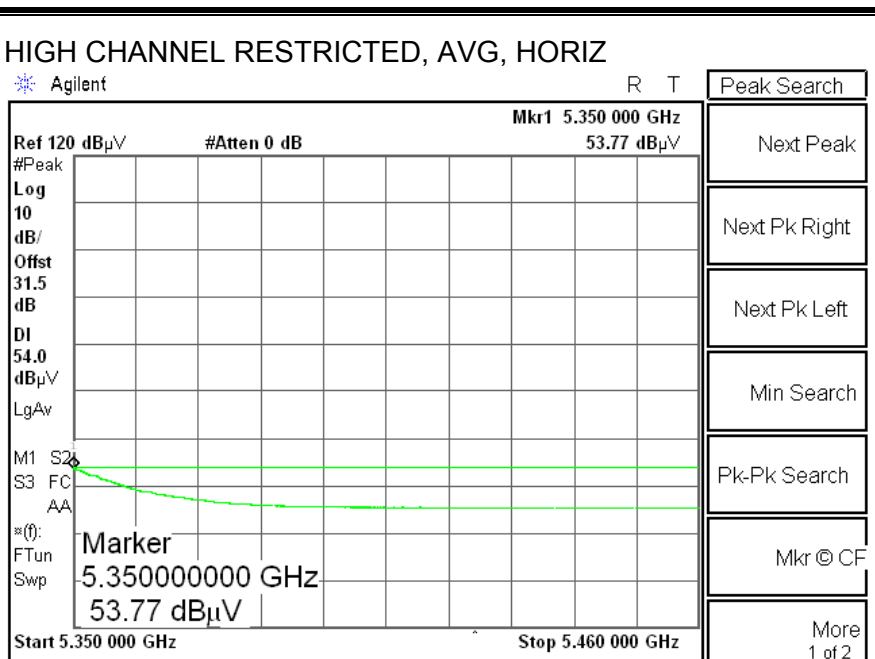
7.3.3. TRANSMITTER ABOVE 1 GHz FOR 802.11n HT40 MODE

RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

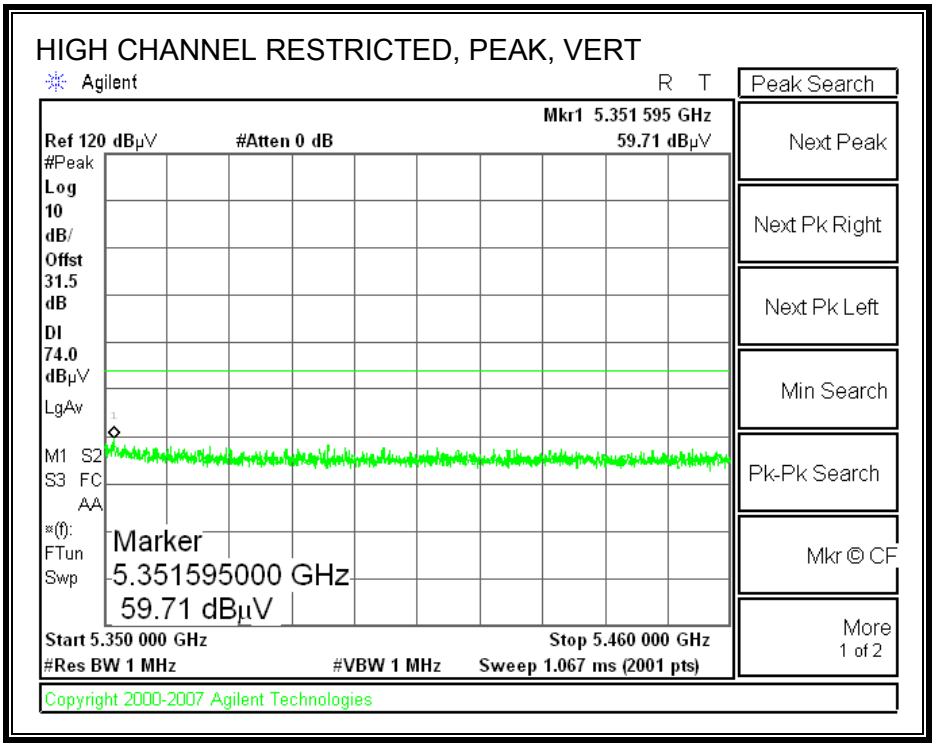
HIGH CHANNEL RESTRICTED, PEAK, HORIZ

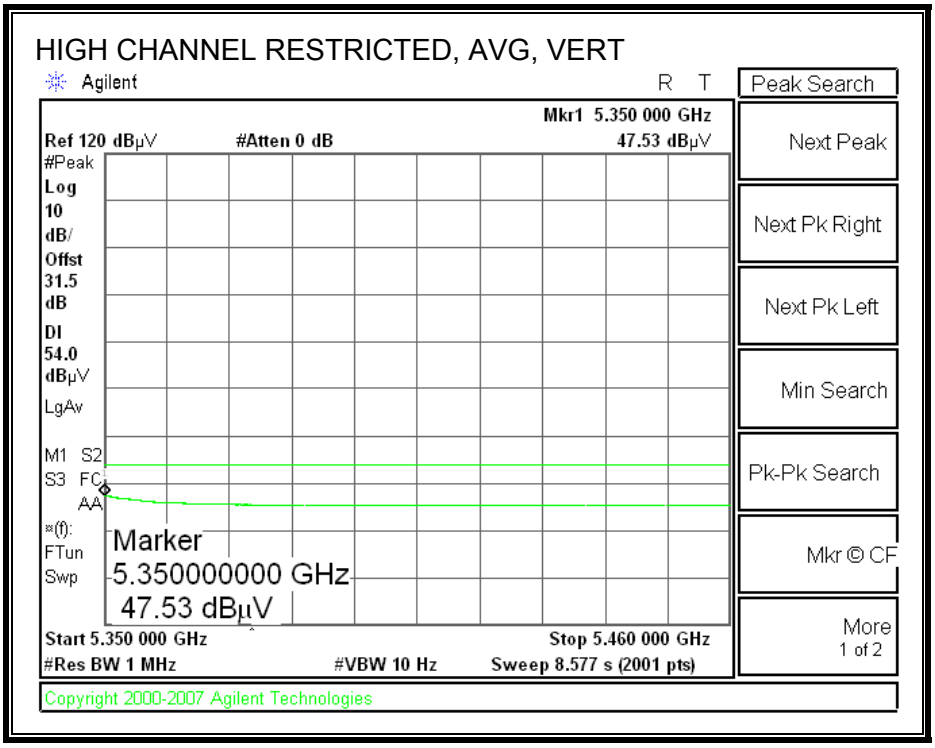


HIGH CHANNEL RESTRICTED, AVG, HORIZ



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Company:	**INTEL**
Project #:	**08U12001**
Date:	**8/10/2008**
Test Engineer:	**Devin Chang**
Configuration:	**EUT only**
Mode:	**Tx, 5.3GHz HT40**

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz
T60; S/N: 2238 @3m	T144 Miteq 3008A00931		T125; ARA 18-26GHz; S/N:1007

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
		B-5m Chamber		R_001

Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch. 5270MHz															
15.810	3.0	35.5	23.9	37.9	13.0	-34.6	0.0	0.0	51.8	40.2	74	54	-22.2	-13.8	V
15.810	3.0	35.4	24.0	37.9	13.0	-34.6	0.0	0.0	51.6	40.3	74	54	-22.4	-13.7	H
High Ch. 5310MHz															
10.620	3.0	43.0	31.4	37.4	10.9	-36.6	0.0	0.0	54.7	43.1	74	54	-19.3	-10.9	V
15.930	3.0	35.9	23.6	37.8	13.1	-34.5	0.0	0.0	52.3	40.0	74	54	-21.7	-14.0	V
10.620	3.0	40.8	29.3	37.4	10.9	-36.6	0.0	0.0	52.5	41.0	74	54	-21.5	-13.0	H
15.930	3.0	35.5	23.6	37.8	13.1	-34.5	0.0	0.0	51.9	39.9	74	54	-22.1	-14.1	H
No more signal found															

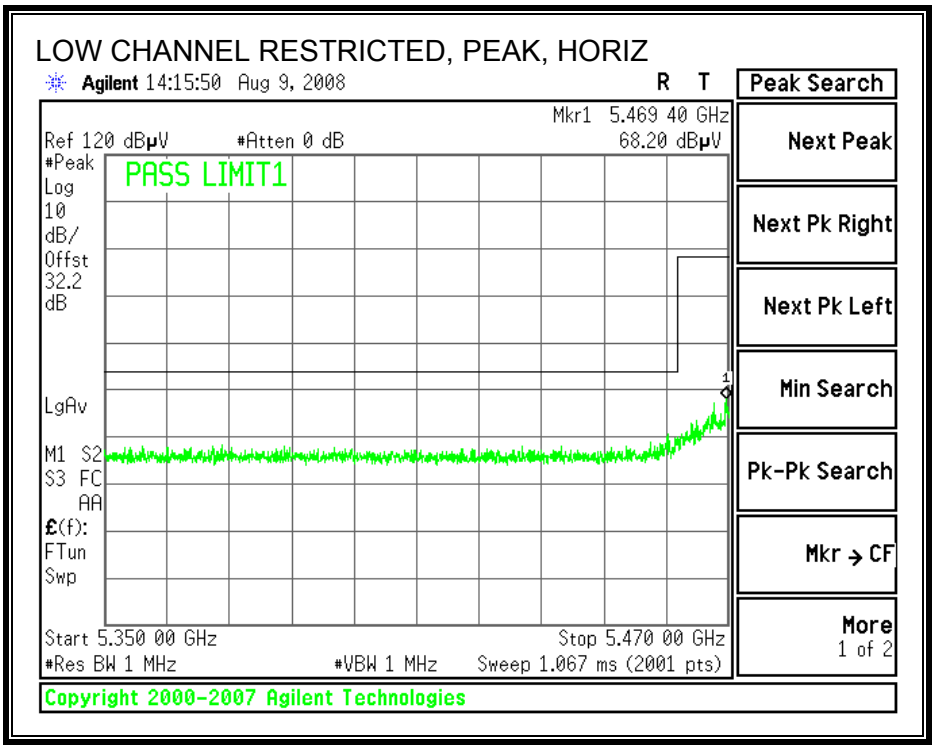
Rev. 4.12.7

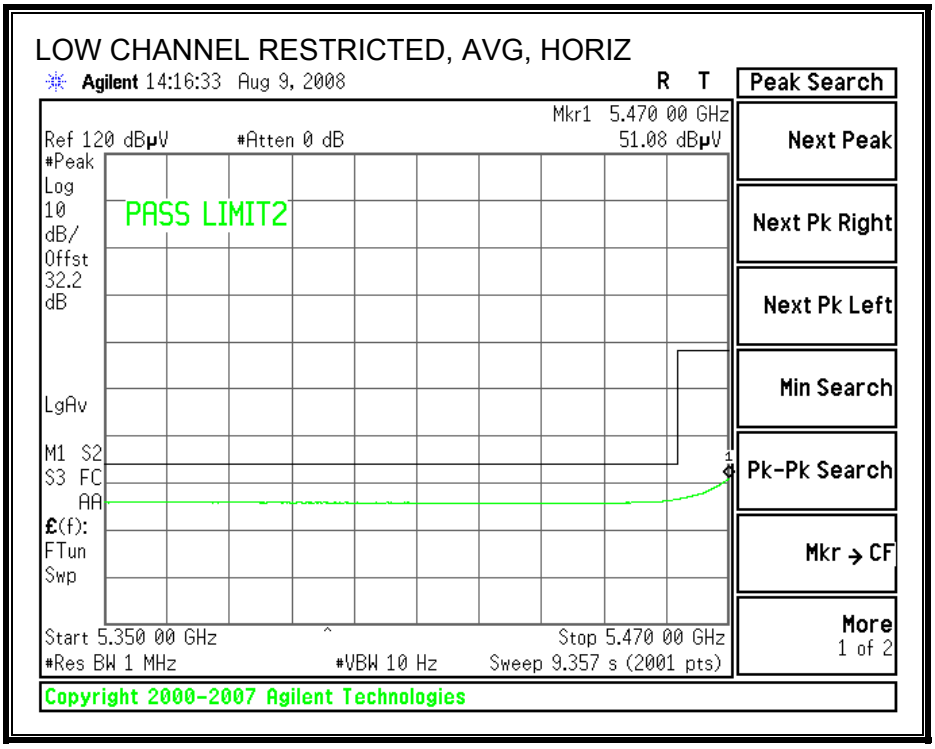
f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

7.4. TRANSMITTER ABOVE 1 GHz IN THE 5.6 GHz BAND

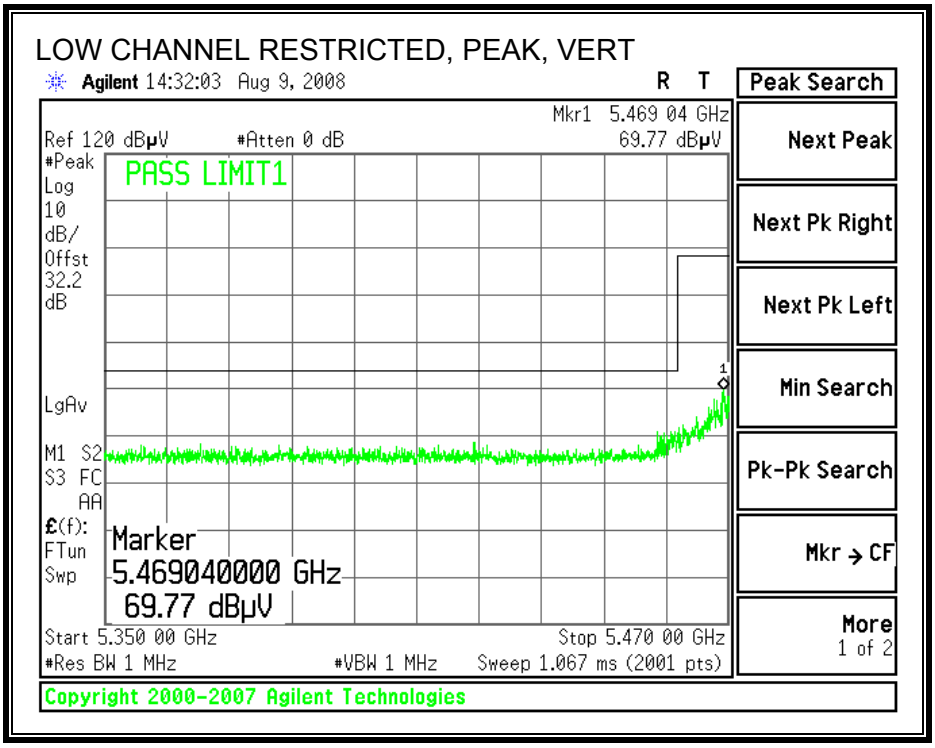
7.4.1. TRANSMITTER ABOVE 1 GHz FOR 802.11a LEGACY MODE

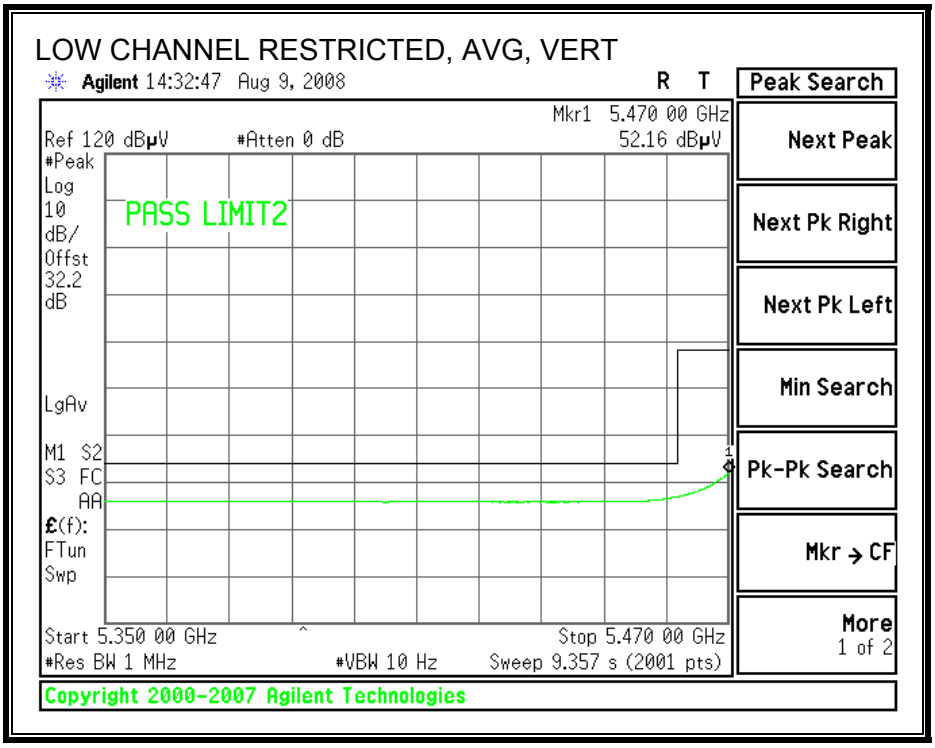
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



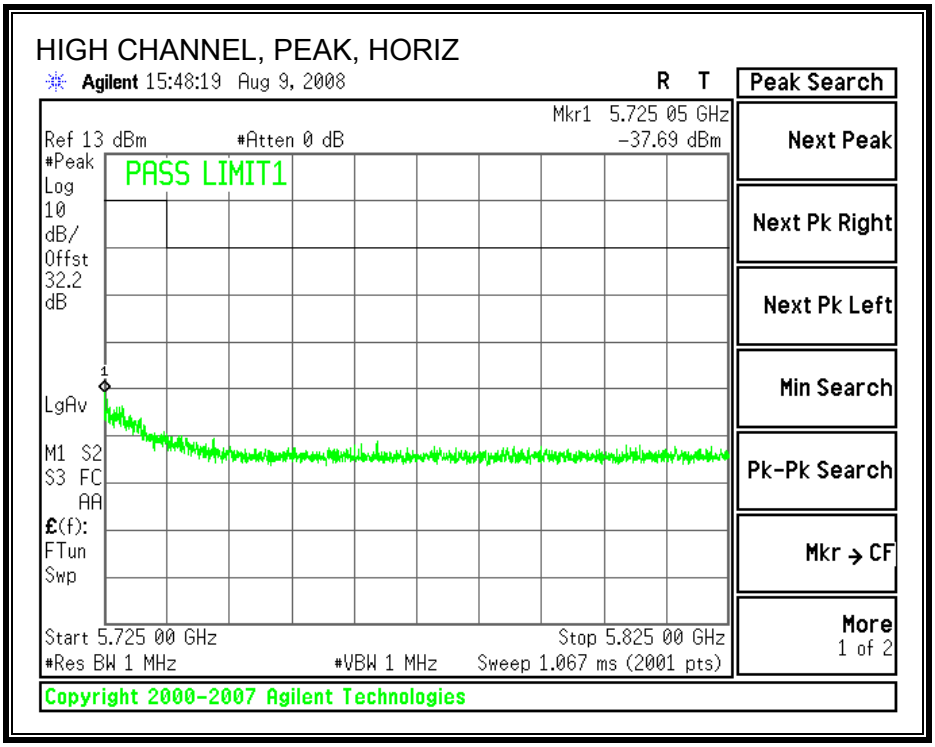


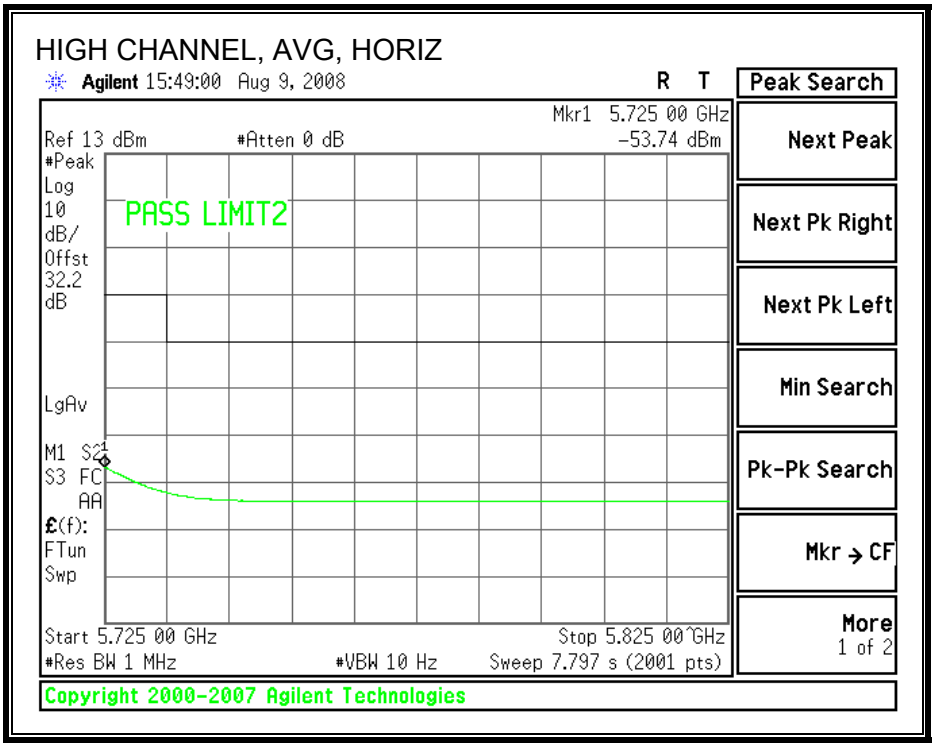
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



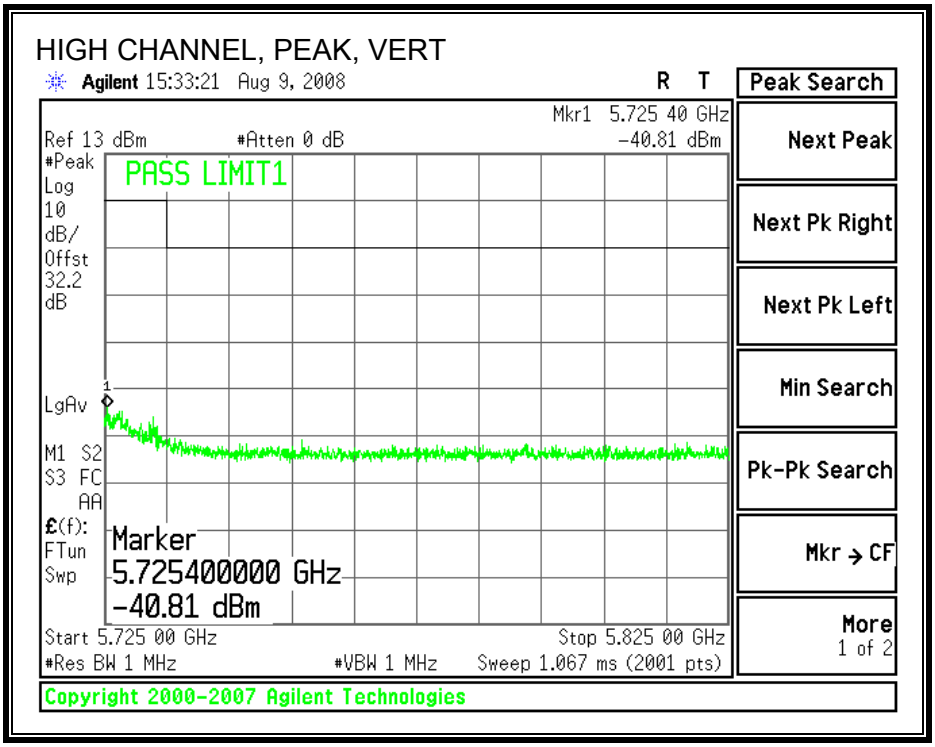


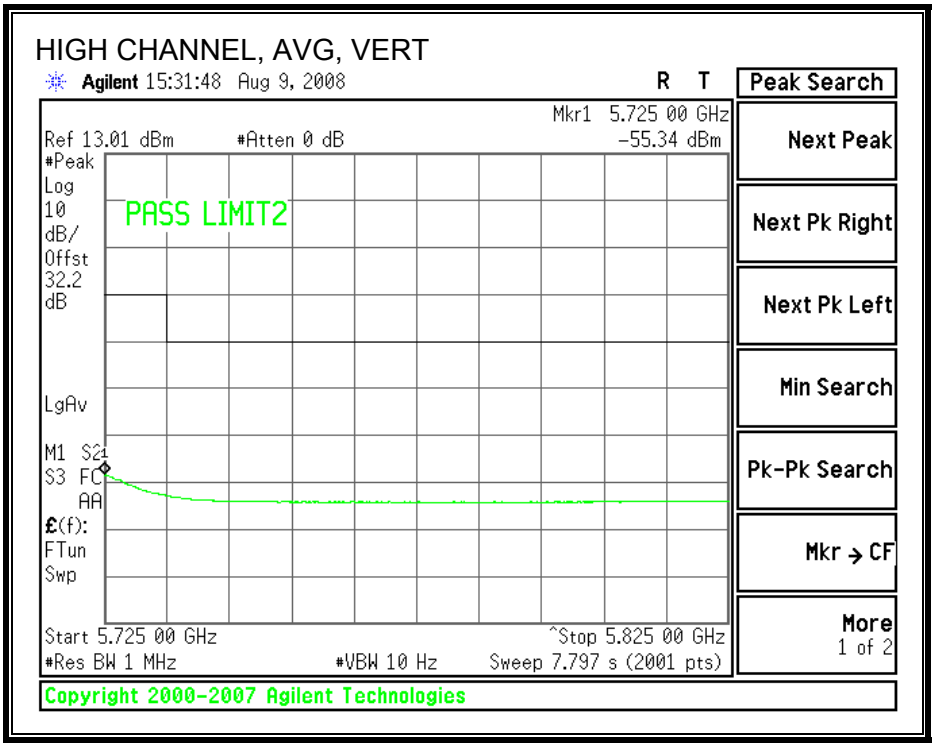
AUTHORIZED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





AUTHORIZED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Company:	**INTEL**
Project #:	**08U12001**
Date:	**8/10/2008**
Test Engineer:	**Devin Chang**
Configuration:	**EUT only**
Mode:	**Tx, 5.5GHz a mode**

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz
T60; S/N: 2238 @3m	T144 Miteq 3008A00931		T125; ARA 18-26GHz; S/N:1007

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
		B-5m Chamber		R_001

Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

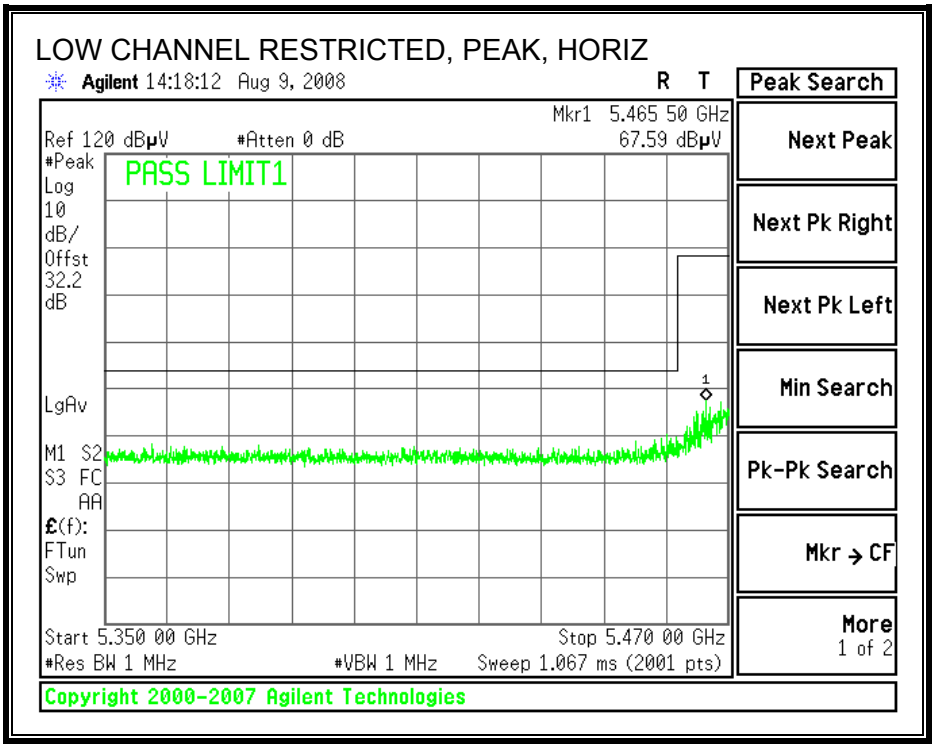
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch. 5500MHz															
11.000	3.0	47.6	35.3	37.3	11.3	-36.3	0.0	0.0	60.0	47.7	74	54	-14.0	-6.3	V
11.000	3.0	40.2	28.1	37.3	11.3	-36.3	0.0	0.0	52.6	40.5	74	54	-21.4	-13.5	H
Mid Ch. 5600MHz															
11.200	3.0	44.7	32.0	37.3	11.5	-36.1	0.0	0.0	57.5	44.8	74	54	-16.5	-9.2	V
11.200	3.0	37.2	26.0	37.3	11.5	-36.1	0.0	0.0	50.0	38.7	74	54	-24.0	-15.3	H
High Ch. 5700MHz															
11.400	3.0	42.2	30.3	37.4	11.8	-35.9	0.0	0.0	55.4	43.5	74	54	-18.6	-10.5	V
11.400	3.0	38.2	26.4	37.4	11.8	-35.9	0.0	0.0	51.4	39.6	74	54	-22.6	-14.4	H
No more signal found															

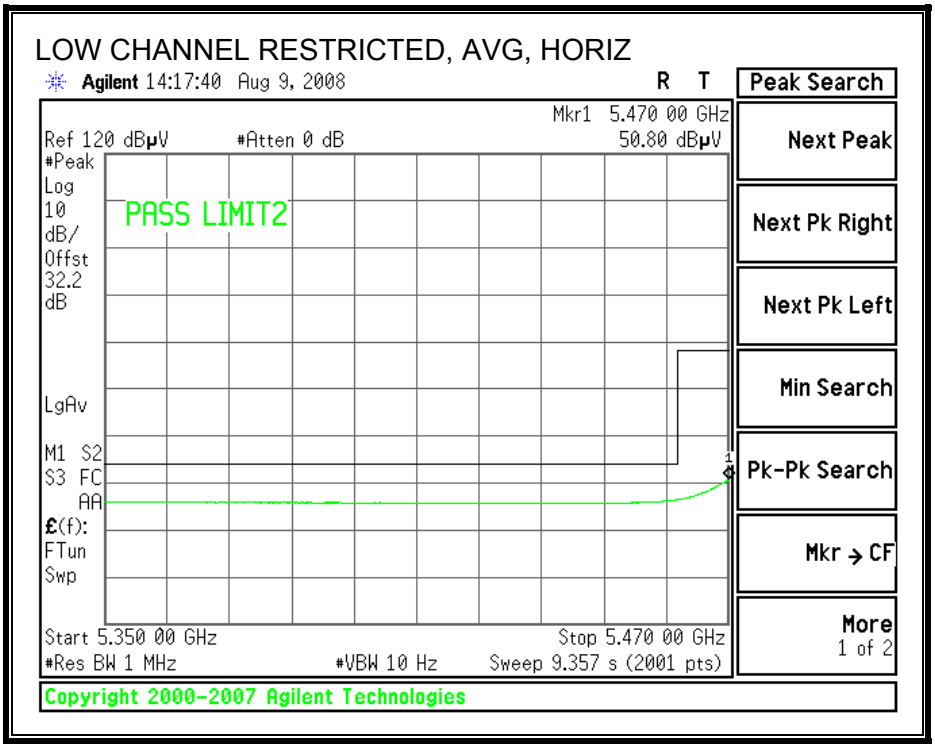
Rev. 4.12.7

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

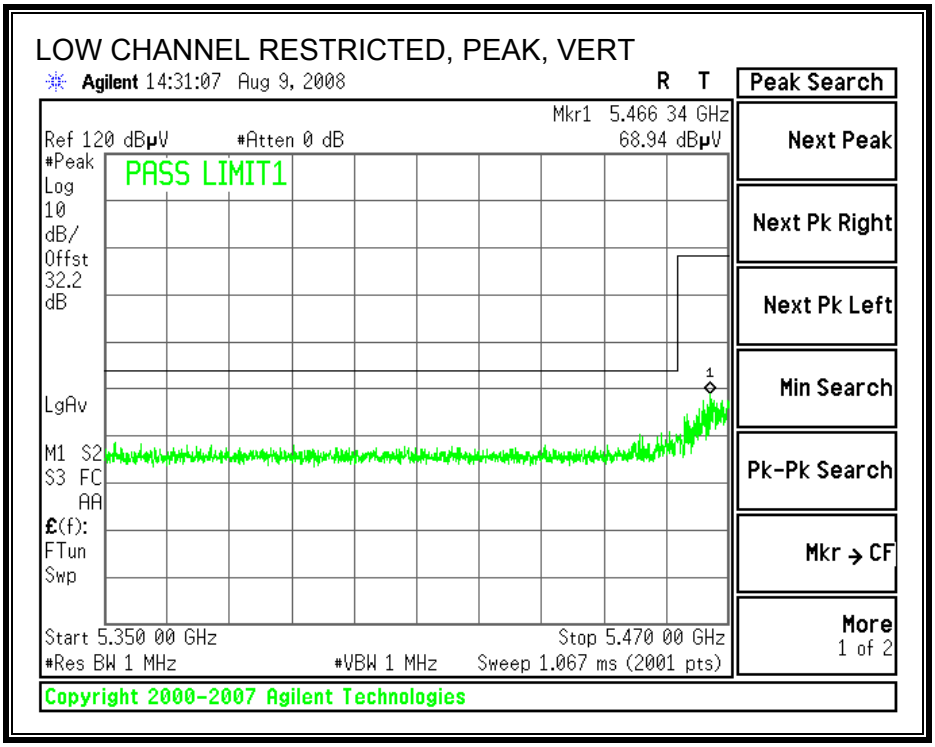
7.4.2. TRANSMITTER ABOVE 1 GHz FOR 802.11n HT20 MODE

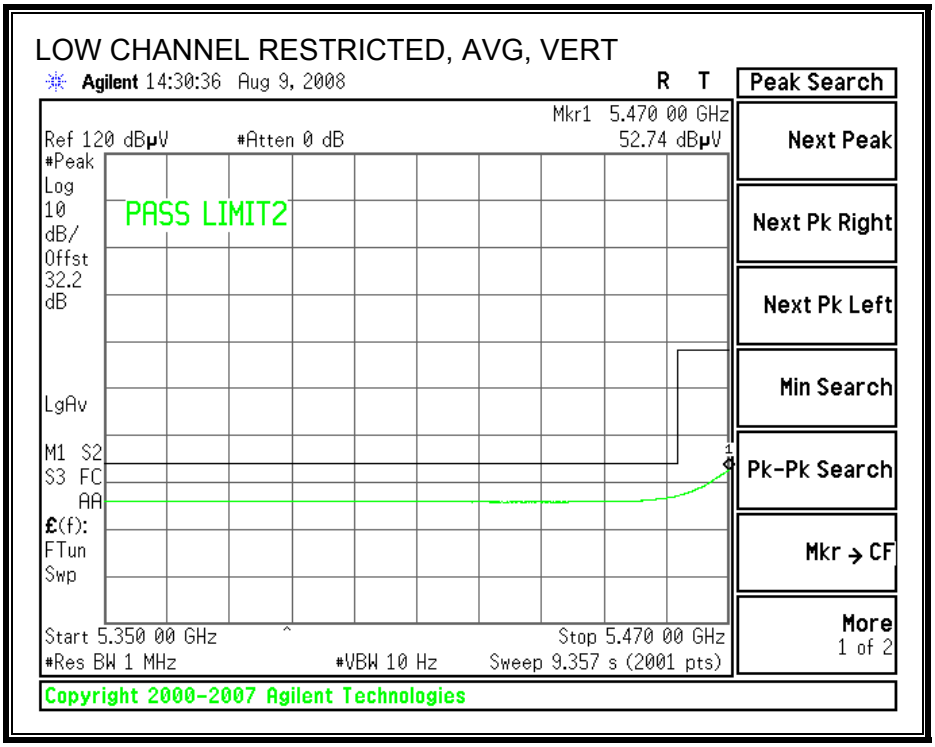
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



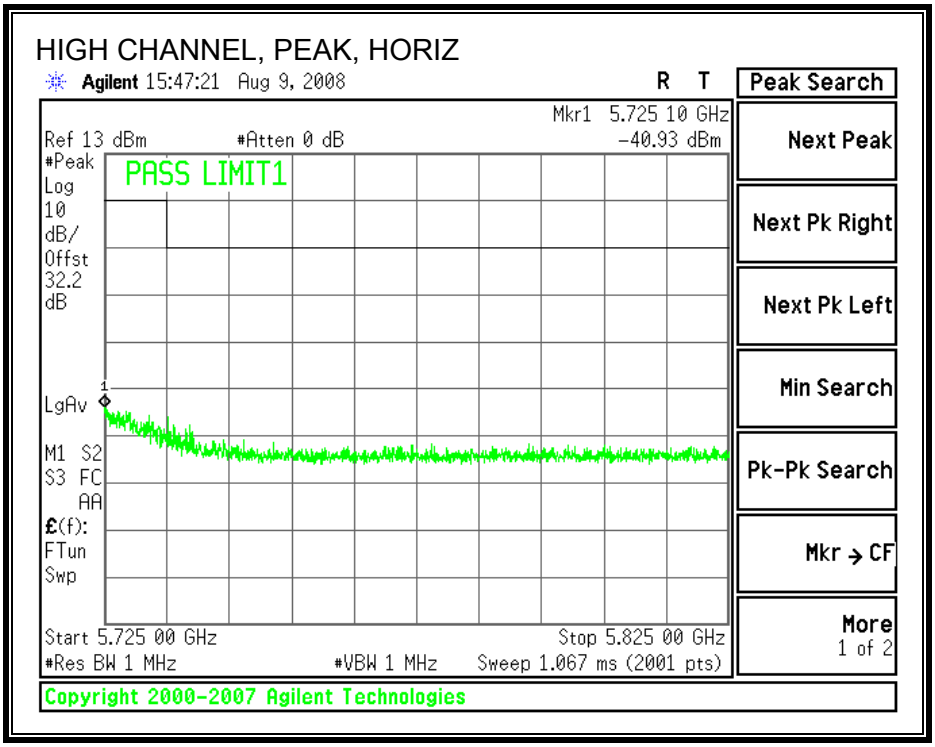


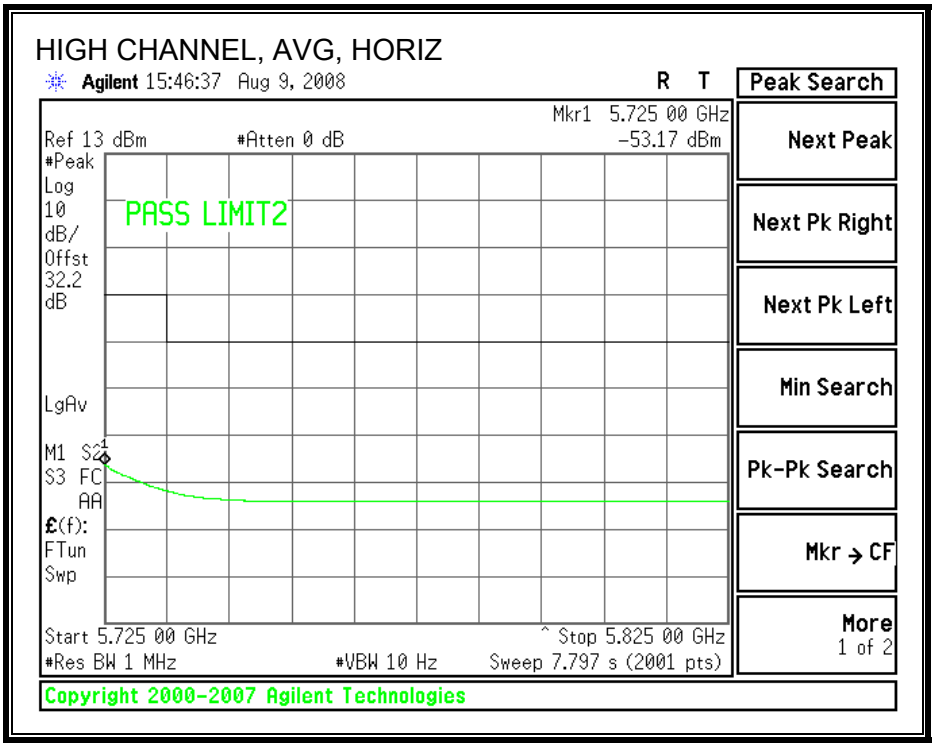
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



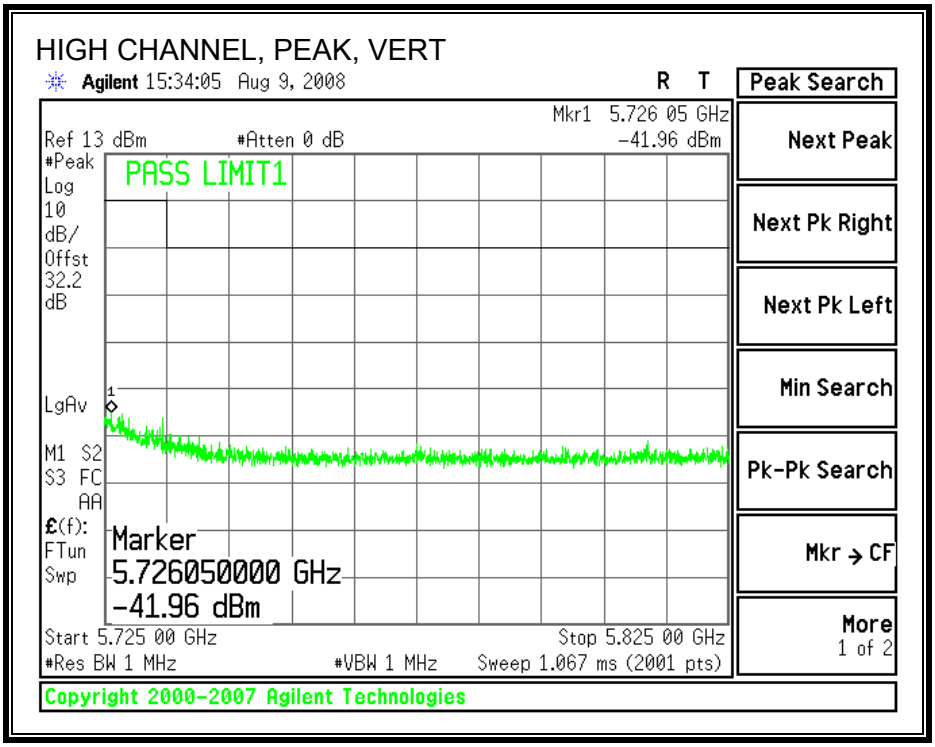


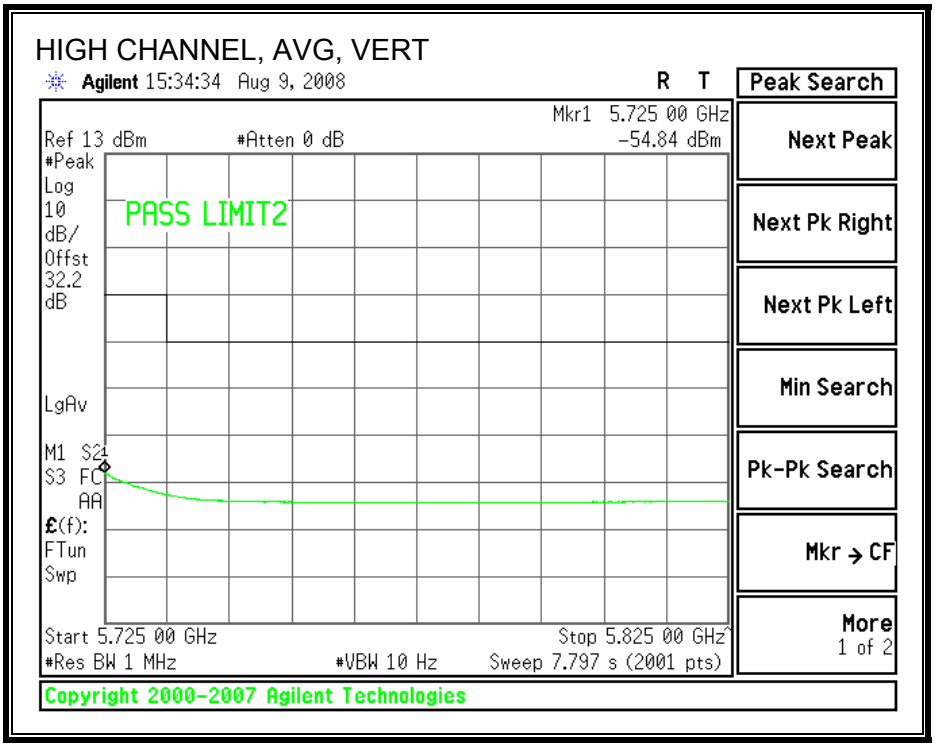
AUTHORIZED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





AUTHORIZED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Company:	**INTEL**
Project #:	**08U12001**
Date:	**8/10/2008**
Test Engineer:	**Devin Chang**
Configuration:	**EUT only**
Mode:	**Tx, 5.5GHz HT20**

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz
T60; S/N: 2238 @3m	T144 Miteq 3008A00931		T125; ARA 18-26GHz; S/N:1007

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
		B-5m Chamber		R_001

Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

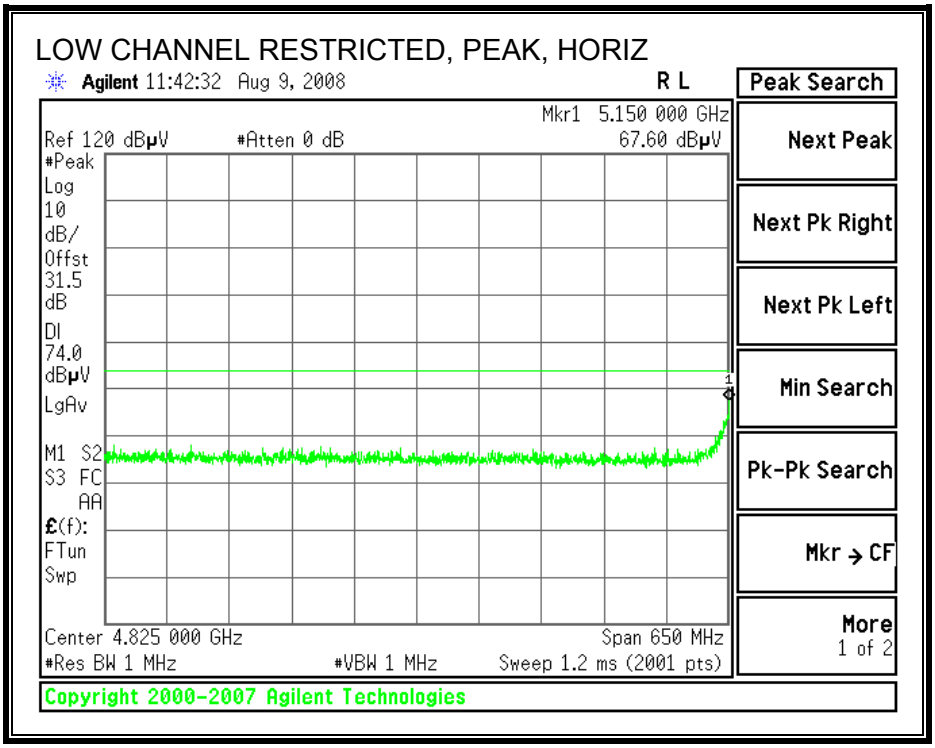
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch. 5500MHz															
11.000	3.0	48.0	34.3	37.3	11.3	-36.3	0.0	0.0	60.4	46.7	74	54	-13.6	-7.3	V
11.000	3.0	39.8	27.9	37.3	11.3	-36.3	0.0	0.0	52.2	40.3	74	54	-21.8	-13.7	H
Mid Ch. 5600MHz															
11.200	3.0	44.9	31.6	37.3	11.5	-36.1	0.0	0.0	57.7	44.4	74	54	-16.3	-9.6	V
11.200	3.0	38.7	26.4	37.3	11.5	-36.1	0.0	0.0	51.5	39.2	74	54	-22.5	-14.8	H
High Ch. 5700MHz															
11.400	3.0	43.2	29.5	37.4	11.8	-35.9	0.0	0.0	56.3	42.7	74	54	-17.7	-11.3	V
11.400	3.0	37.8	26.2	37.4	11.8	-35.9	0.0	0.0	51.0	39.4	74	54	-23.0	-14.6	H
No more signal found															

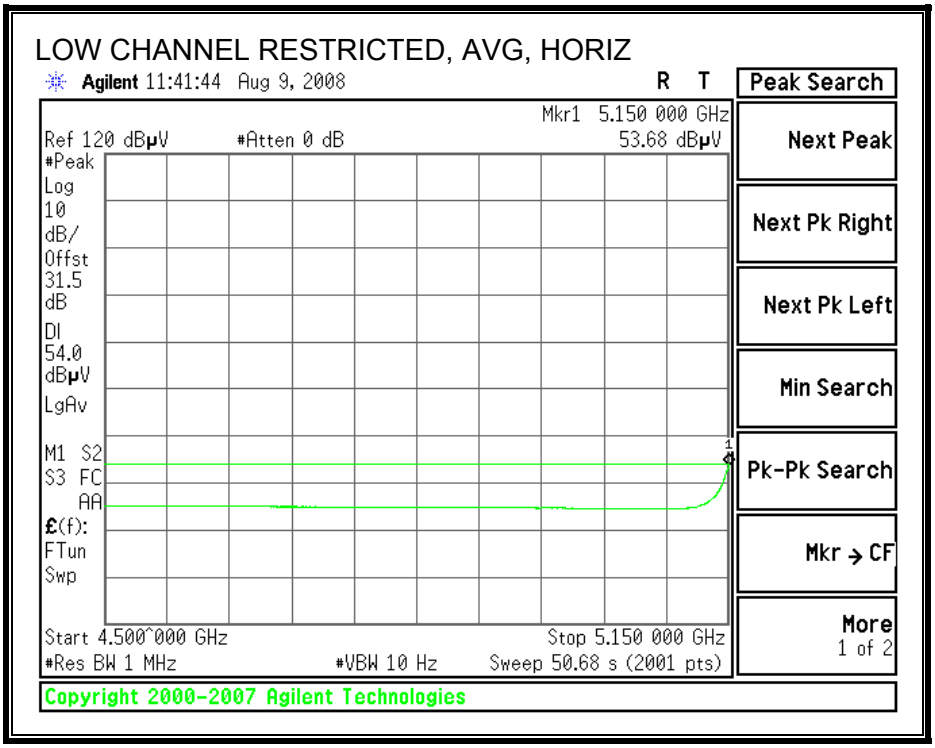
Rev. 4.12.7

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

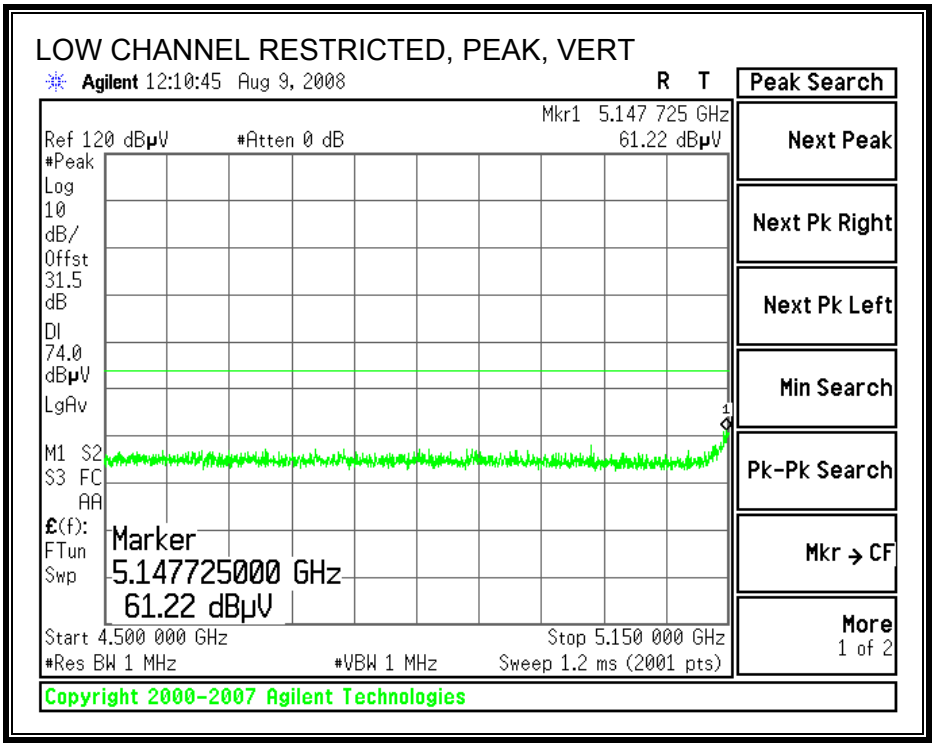
7.4.3. TRANSMITTER ABOVE 1 GHz FOR 802.11n HT40 MODE

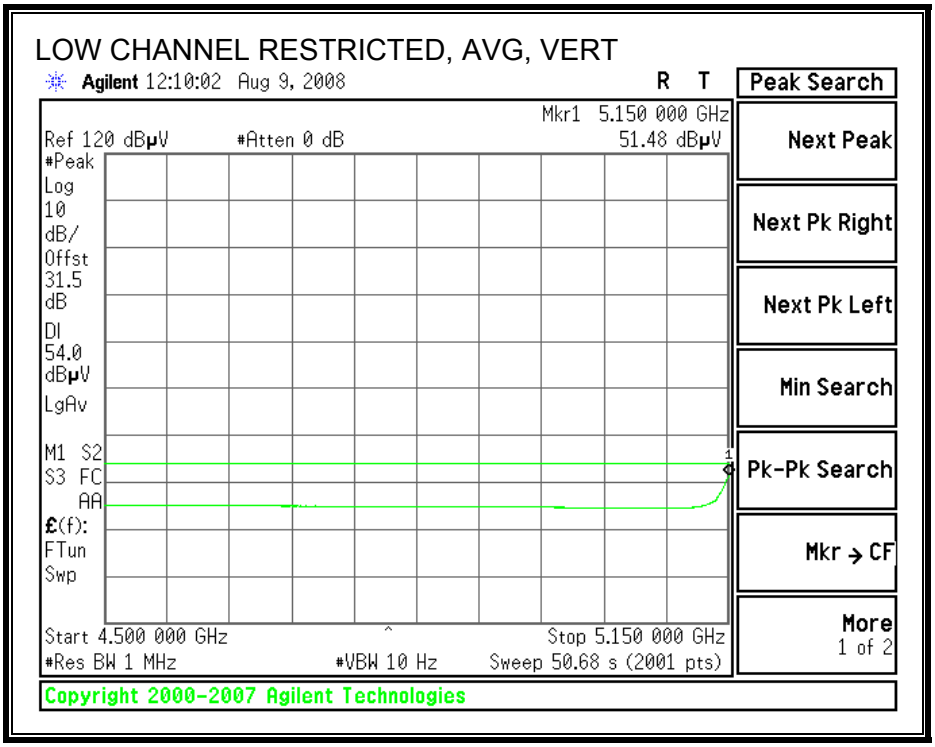
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



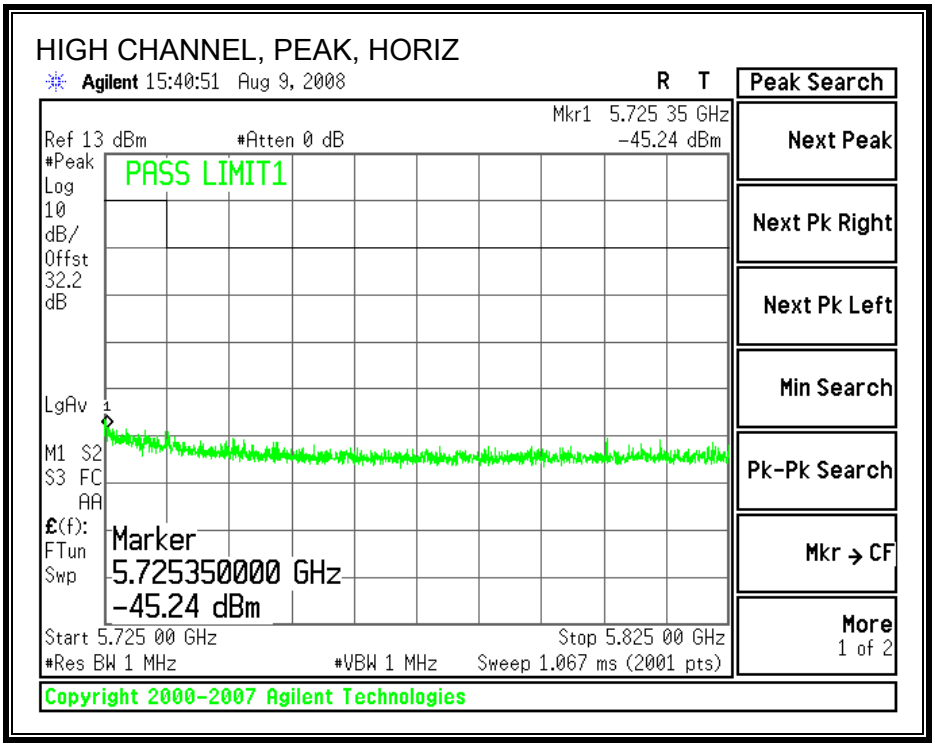


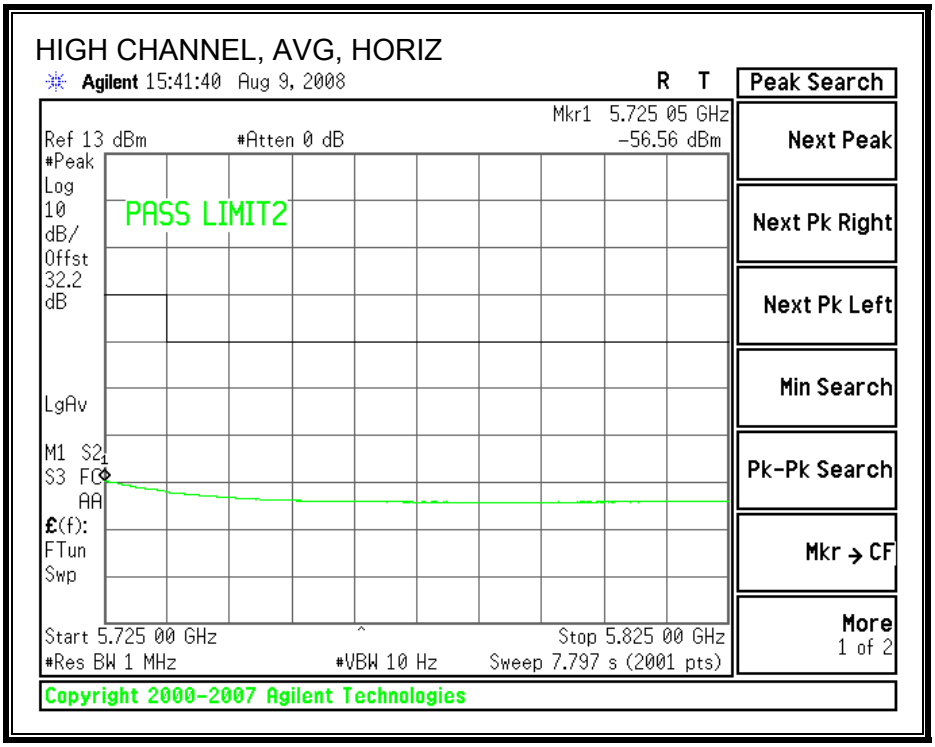
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



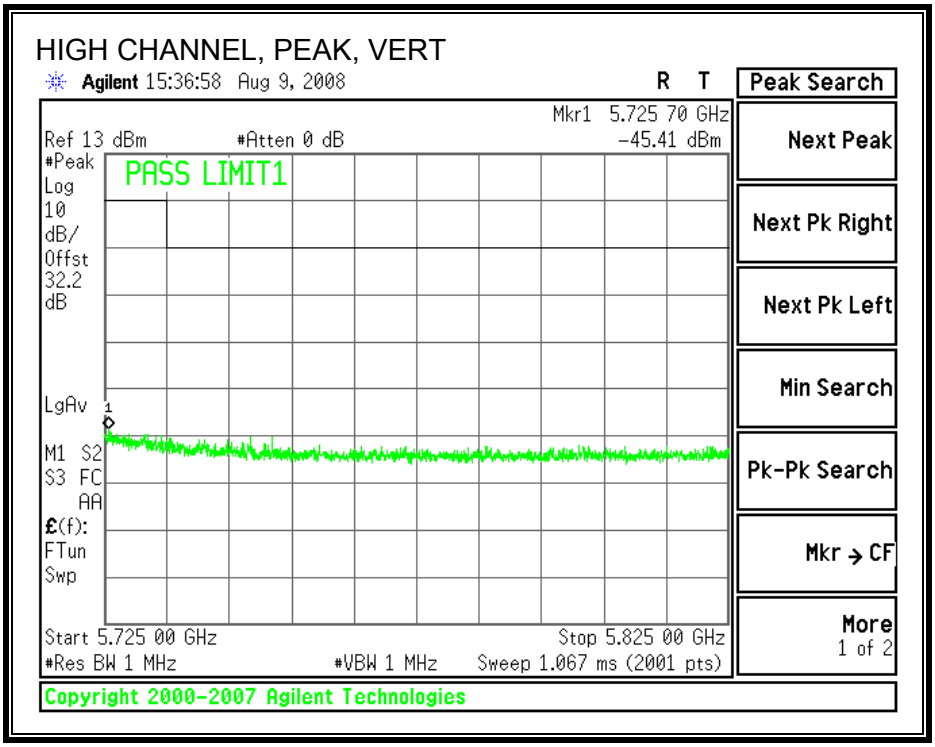


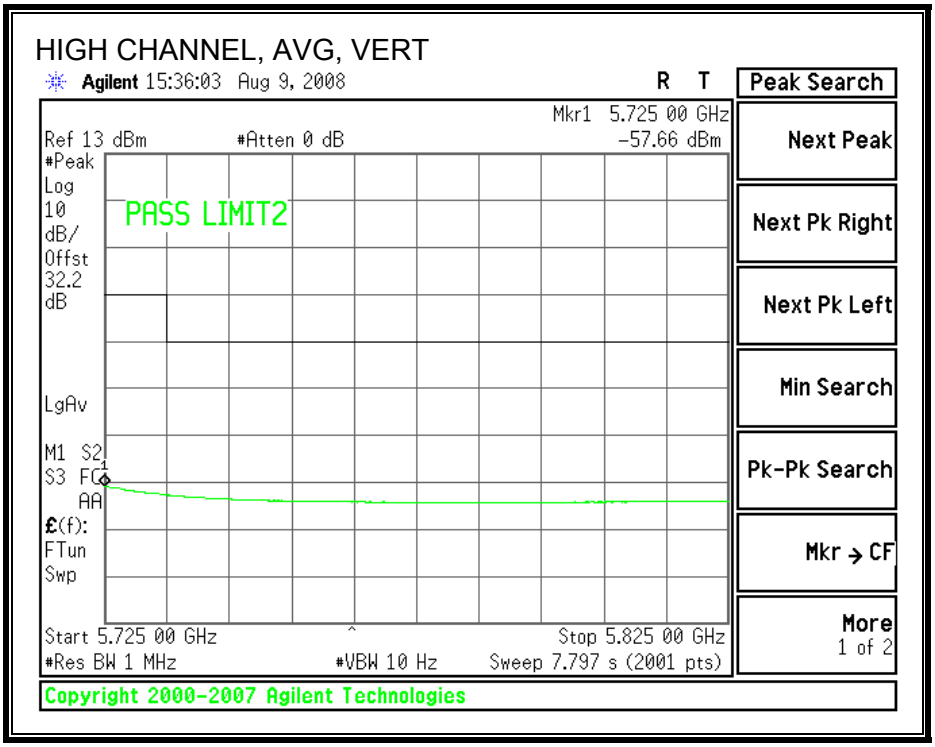
AUTHORIZED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





AUTHORIZED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Company:	**INTEL**
Project #:	**08U12001**
Date:	**8/10/2008**
Test Engineer:	**Devin Chang**
Configuration:	**EUT only**
Mode:	**Tx, 5.5GHz HT40**

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz
T60; S/N: 2238 @3m	T144 Miteq 3008A00931		T125; ARA 18-26GHz; S/N:1007

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
		B-5m Chamber		R_001

Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low Ch. 5510MHz															
11.020	3.0	43.7	32.5	37.3	11.4	-36.3	0.0	0.0	56.1	44.9	74	54	-17.9	-9.1	V
11.020	3.0	37.2	25.2	37.3	11.4	-36.3	0.0	0.0	49.6	37.7	74	54	-24.4	-16.3	H
Mid Ch. 5590MHz															
11.180	3.0	40.2	28.7	37.3	11.5	-36.1	0.0	0.0	52.9	41.4	74	54	-21.1	-12.6	V
11.180	3.0	36.6	25.0	37.3	11.5	-36.1	0.0	0.0	49.4	37.7	74	54	-24.6	-16.3	H
High Ch. 5670MHz															
11.340	3.0	41.9	30.3	37.4	11.7	-36.0	0.0	0.0	55.0	43.4	74	54	-19.0	-10.6	V
11.340	3.0	35.5	24.4	37.4	11.7	-36.0	0.0	0.0	48.5	37.5	74	54	-25.5	-16.5	H
No more signal found															

Rev. 4.12.7

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

7.5. RECEIVER ABOVE 1 GHz

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Company:	**INTEL**
Project #:	**08U12001**
Date:	**8/23/2008**
Test Engineer:	**Devin Chang**
Configuration:	**EUT only**
Mode:	**Rx, a mode**

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz
T120; S/N: 29310 @3m	T144 Miteq 3008A00931		

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
		B-5m Chamber		

Peak Measurements
RBW=VBW=1MHz
Average Measurements
RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
1.195	3.0	53.3	38.8	28.6	3.5	-39.2	0.0	0.0	46.1	31.6	74	54	-27.9	-22.4	V
1.597	3.0	52.5	32.4	30.1	4.0	-38.6	0.0	0.0	47.9	27.9	74	54	-26.1	-26.1	V
1.993	3.0	47.5	32.8	31.6	4.5	-38.1	0.0	0.0	45.5	30.8	74	54	-28.5	-23.2	V
3.001	3.0	51.8	51.5	32.8	5.6	-37.4	0.0	0.0	52.9	52.5	74	54	-21.1	-1.5	V
1.195	3.0	63.6	40.2	28.6	3.5	-39.2	0.0	0.0	56.4	33.0	74	54	-17.6	-21.0	H
1.594	3.0	53.2	33.5	30.1	4.0	-38.6	0.0	0.0	48.7	28.9	74	54	-25.3	-25.1	H
1.993	3.0	51.6	31.0	31.6	4.5	-38.1	0.0	0.0	49.6	29.0	74	54	-24.4	-25.0	H
3.001	3.0	48.1	46.6	32.8	5.6	-37.4	0.0	0.0	49.1	47.7	74	54	-24.9	-6.3	H
No more signal found															

Rev. 4.12.7

f	Measurement Frequency	Amp	Preamp Gain	Avg Lim	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Pk Lim	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Avg Mar	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Pk Mar	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter		

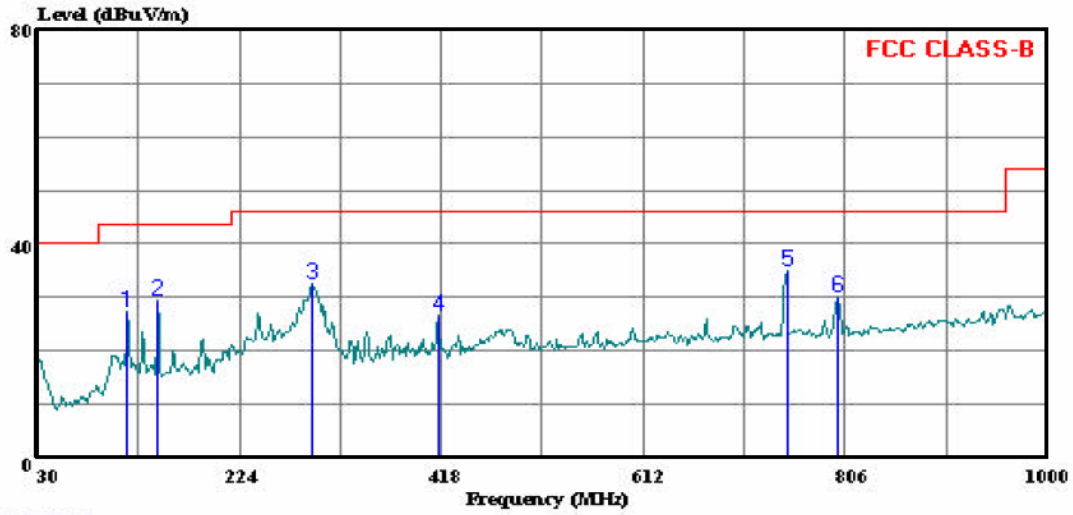
7.6. WORST-CASE BELOW 1 GHz

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

HORIZONTAL PLOT

Compliance Certification Services
47173 Benicia Street
Fremont, CA 94538
Tel: (510) 771-1000
Fax: (510) 661-0888

Data#: 2 File#: 08U12001.EMI Date: 08-06-2008 Time: 15:00:44



Trace: 1 Ref Trace:

Condition: FCC CLASS-B HORIZONTAL
Test Operator:: Devin Chang
Project #: : 08u12001
Company: : INTEL
Configuration:: EUT with NB
Mode : : PA3655U-1MPC
Target: : FCC Class B

HORIZONTAL DATA

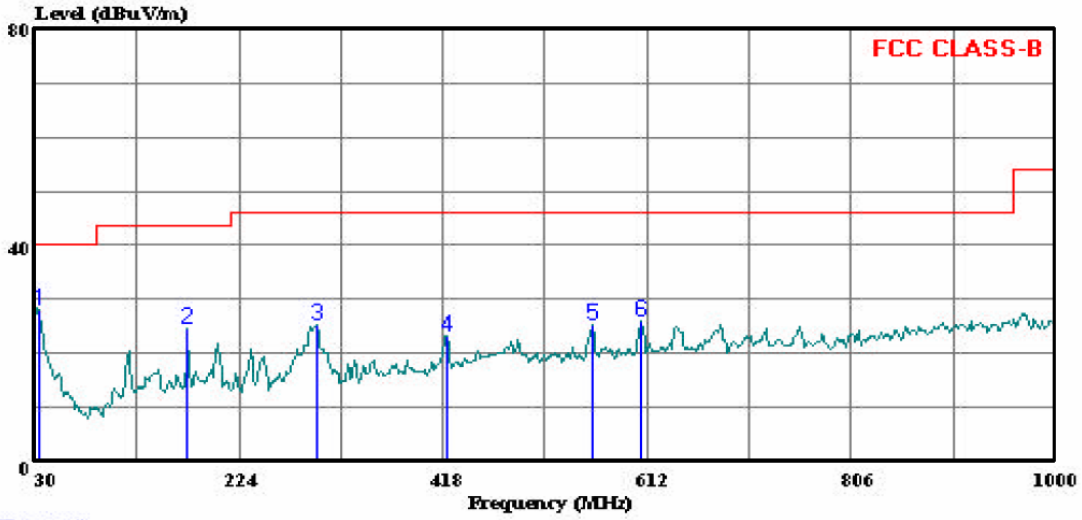
	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	116.330	40.50	-13.20	27.30	43.50	-16.20	Peak
2	145.430	43.09	-13.61	29.48	43.50	-14.02	Peak
3	293.840	43.75	-11.34	32.41	46.00	-13.59	Peak
4	415.090	34.31	-7.68	26.63	46.00	-19.37	Peak
5	749.740	34.75	0.13	34.88	46.00	-11.12	Peak
6	798.240	29.23	0.76	29.99	46.00	-16.01	Peak

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

VERTICAL PLOT

Compliance Certification Services
47173 Benicia Street
Fremont, CA 94538
Tel: (510) 771-1000
Fax: (510) 661-0888

Data#: 4 File#: 08U12001.EMI Date: 08-06-2008 Time: 15:12:50



Trace: 3 Ref Trace:

Condition: FCC CLASS-B VERTICAL
Test Operator:: Devin Chang
Project #: : 08u12001
Company: : INTEL
Configuration:: EUT with NB
Mode : : PA3655U-1MPC
Target: : FCC Class B

VERTICAL DATA

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	33.880	38.53	-10.62	27.91	40.00	-12.09	Peak
2	174.530	39.18	-14.51	24.67	43.50	-18.83	Peak
3	298.690	36.36	-11.14	25.22	46.00	-20.78	Peak
4	421.880	30.70	-7.47	23.23	46.00	-22.77	Peak
5	560.590	28.77	-3.62	25.15	46.00	-20.85	Peak
6	606.180	28.52	-2.67	25.85	46.00	-20.15	Peak

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 C63.4.

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

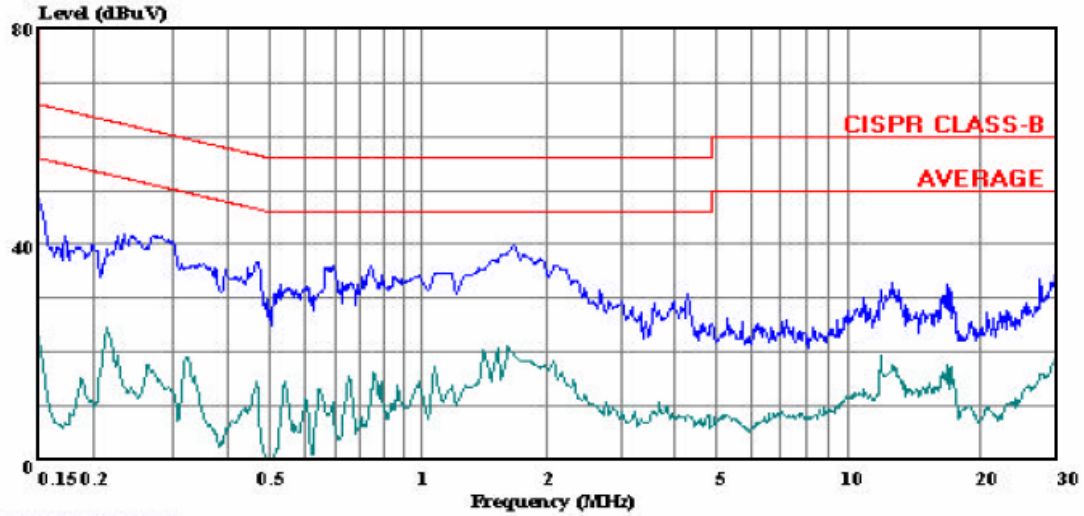
6 WORST EMISSIONS

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	FCC_B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.21	41.83	--	24.56	0.00	63.05	53.05	-21.22	-28.49	L1
0.33	36.86	--	19.06	0.00	59.58	49.58	-22.72	-30.52	L1
1.73	39.98	--	21.12	0.00	56.00	46.00	-16.02	-24.88	L1
0.21	41.33	--	23.45	0.00	63.05	53.05	-21.72	-29.60	L2
0.33	35.76	--	19.35	0.00	59.45	49.45	-23.69	-30.10	L2
1.78	37.85	--	19.35	0.00	56.00	46.00	-18.15	-26.65	L2
6 Worst Data									

LINE 1 RESULTS

Compliance Certification Services
47173 Benicia Street
Fremont, CA 94538
Tel: (510) 771-1000
Fax: (510) 661-0888

Data#: 21 File#: 08U12001.EMI Date: 08-06-2008 Time: 16:47:44



(Line Conduction)

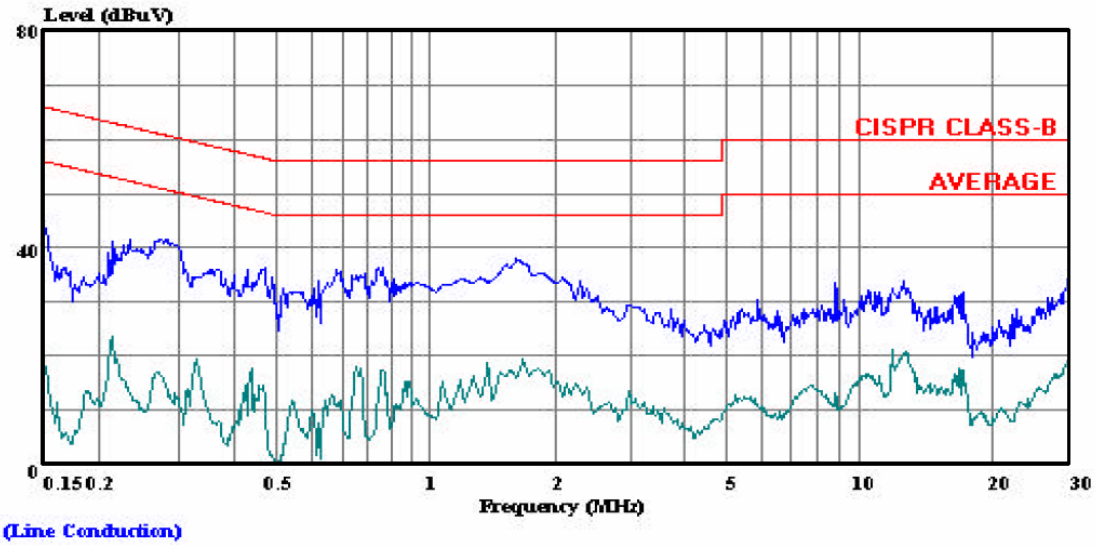
Trace: 19 Ref Trace:

Condition: CISPR CLASS-B
Test Operator:: Devin Chang
Project #: : 08U12001
Company: : INTEL
Configuration:: EUT with NB
Mode: : PA3655U-1MPC
Target: : CISPR Class B
Voltage: : 115 VAC / 60 Hz
: L1: Peak (Peak), Average (Green)

LINE 2 RESULTS

Compliance Certification Services
47173 Benicia Street
Fremont, CA 94538
Tel: (510) 771-1000
Fax: (510) 661-0888

Data#: 14 File#: 08U12001.EMI Date: 08-06-2008 Time: 16:05:19



(Line Conduction)

Trace: 12 Ref Trace:

Condition: CISPR CLASS-B
Test Operator:: Devin Chang
Project #: : 08U12001
Company: : INTEL
Configuration:: EUT with NB
Mode: : PA3655U-1MPC
Target: : CISPR Class B
Voltage: : 115 VAC / 60 Hz
: L2: Peak (Peak), Average (Green)