FCC CFR47 PART 15 SUBPART C
INDUSTRY CANADA RSS-210 ISSUE 8

CERTIFICATION TEST REPORT

FOR

802.11 a/b/g/n + BT2.1

MODEL NUMBER: A1395

FCC ID: BCGA1395
IC: 579C-A1395

REPORT NUMBER: 10U13548-2, Revision A

ISSUE DATE: MARCH 1, 2011

Prepared for
APPLE, INC.
1 INFINITE LOOP
CUPERTINO, CA 95014, U.S.A.

Prepared by
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	01/18/11	Initial Issue	F. Ibrahim
A	03/01/11	Revised description of EUT setup section, removed MPE section, removed AV power section, revised PK output power sections, and added co-location radiated data for 11a/5.3GHz band.	F. Ibrahim

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: APPLE, INC.
1 INFINITE LOOP
CUPERTINO, CA, 95014, U.S.A.

EUT DESCRIPTION: 802.11a/b/g/n + BT 2.1

MODEL: A1395

SERIAL NUMBER: PT523312

DATE TESTED: DECEMBER 15, 2010 – FEBRUARY 28, 2011

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

Compliance Certification Services (UL 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 UL CCS 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 CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL CCS 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 CCS By:

FRANK IBRAHIM
EMC SUPERVISOR
UL CCS

Tested By:

TOM CHEN
EMC ENGINEER
UL CCS

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2009, FCC CFR 47 Part 2, FCC CFR 47 Part 15, 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 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. 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

802.11 a/b/g/n + BT2.1

The radio module is manufactured by Apple, Inc.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5180 - 5240	802.11a	14.60	28.84
5180 - 5240	802.11n HT20	15.29	33.81
5260 - 5320	802.11a	15.52	35.65
5260 - 5320	802.11n HT20	15.13	32.58
5500 - 5700	802.11a	15.45	35.08
5500 - 5700	802.11n HT20	15.54	35.81

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes the following antenna:

Antenna Name	Description	Manufacturer	Cable Length
631-1482 WiFi / Bluetooth	PIFA	Amphenol / Tyco	81.6 mm

	631-1482 WiFi / Bluetooth
	Peak Gain (includes Cable)
Freq [GHz]	dBi
2.4-2.484	0.59
5.15 - 5.25	4.07
5.25 - 5.35	4.2
5.47-5.725	4.21
5.725-5.85	3.57

5.4. SOFTWARE AND FIRMWARE

The firmware installed on the EUT was version 4.221.50.2 (BCM MFGTEST)

The EUT driver rev: 0x4dd3202

The test utility software: wl.exe version: 4.218 RC175.1

5.5. WORST-CASE CONFIGURATION AND MODE

The worst-case data rate for each mode is determined to be as follows, based on preliminary tests of the chipset utilized in this radio.

All final tests in the 802.11b mode were made at 1 Mb/s.
All final tests in the 802.11g mode were made at 6 Mb/s.
All final tests in the 802.11a mode were made at 6 Mb/s.
All final tests in the 802.11n HT20 SISO mode were made at MCS0.

For radiated emissions below 1 GHz and Power Line Conducted Emissions, the worst-case configuration is determined to be the mode and channel with the highest output power

To determine the worst-position of highest emissions, the EUT's antenna was investigated for X, Y, Z positions, and the worst position was turned out to be a Y-position.

5.6. DESCRIPTION OF TEST SETUP

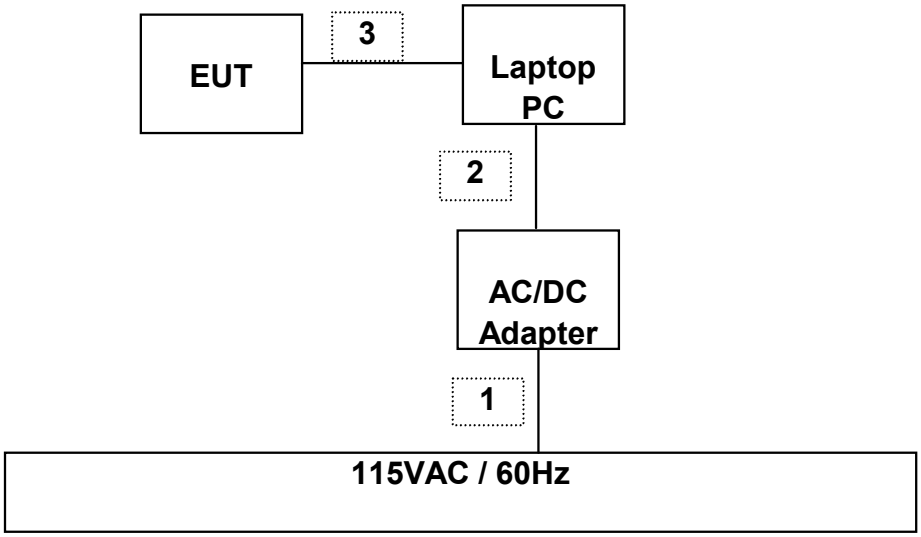
SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Laptop	Apple	A1286	W8917005998	DoC
Laptop AC Adapter	Apple	A1290	N/A	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	2m	N/A
2	DC	1	DC	Un-shielded	2m	N/A
3	USB	1	USB	Un-shielded	1m	Connect to Laptop

SETUP DIAGRAM FOR TESTS



Note: Laptop PC was used to control the operation of the EUT.

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**
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01052	07/14/11
Antenna, Horn, 18 GHz	EMCO	3115	C00945	06/29/11
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00885	01/06/11
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01016	07/12/11
LISN, 30 MHz	FCC	LISN-50/250-25-2	N02625	11/06/11
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	05/06/11
High Pass Filter, 7.6 GHz	Micro-Tronics	HPM13195	N02682	CNR
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01178	08/30/11
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01159	05/08/11
Peak Power Meter	Boonton	4541	C01186	03/01/11
Peak Power Sensor	Boonton	57318	C01202	02/23/11

7. ANTENNA PORT TEST RESULTS

7.1. 802.11a MODE IN THE 5.2 GHz BAND

7.1.1. 26 dB and 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

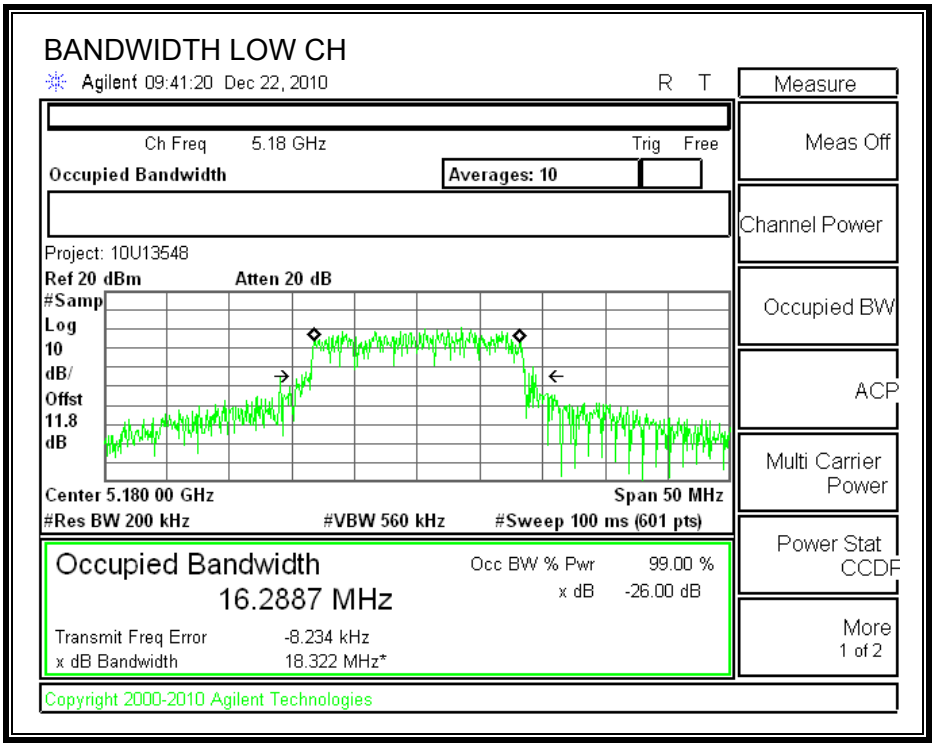
TEST PROCEDURE

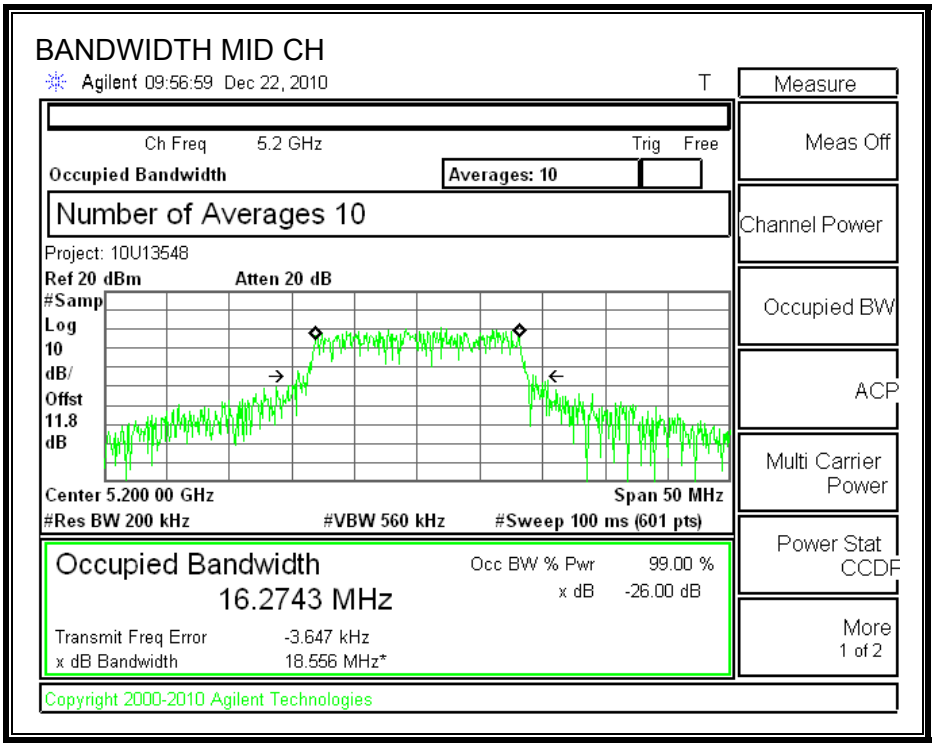
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the measured bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal bandwidth function is utilized.

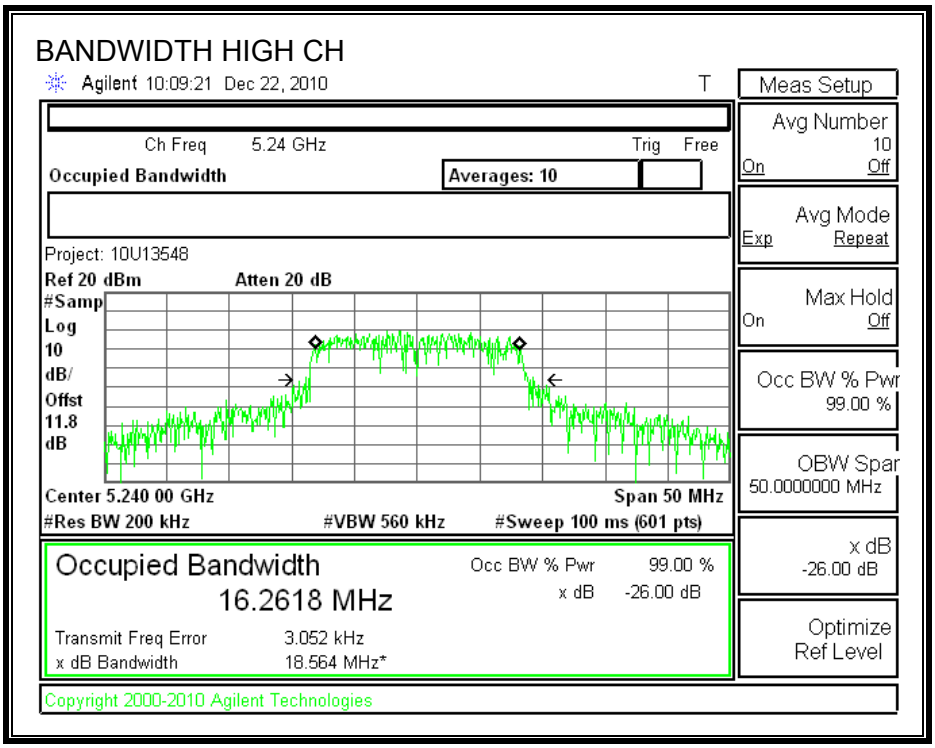
RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	18.322	16.2887
Middle	5200	18.556	16.2743
High	5240	18.564	16.2618

26 dB and 99% BANDWIDTH







7.1.2. OUTPUT POWER

LIMITS

FCC §15.407 (a) (1)

IC RSS-210 A9.2 (1)

For the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10 log B, where B is the 26-dB emission bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

The transmitter output operates continuously therefore Method # 1 is used.

RESULTS

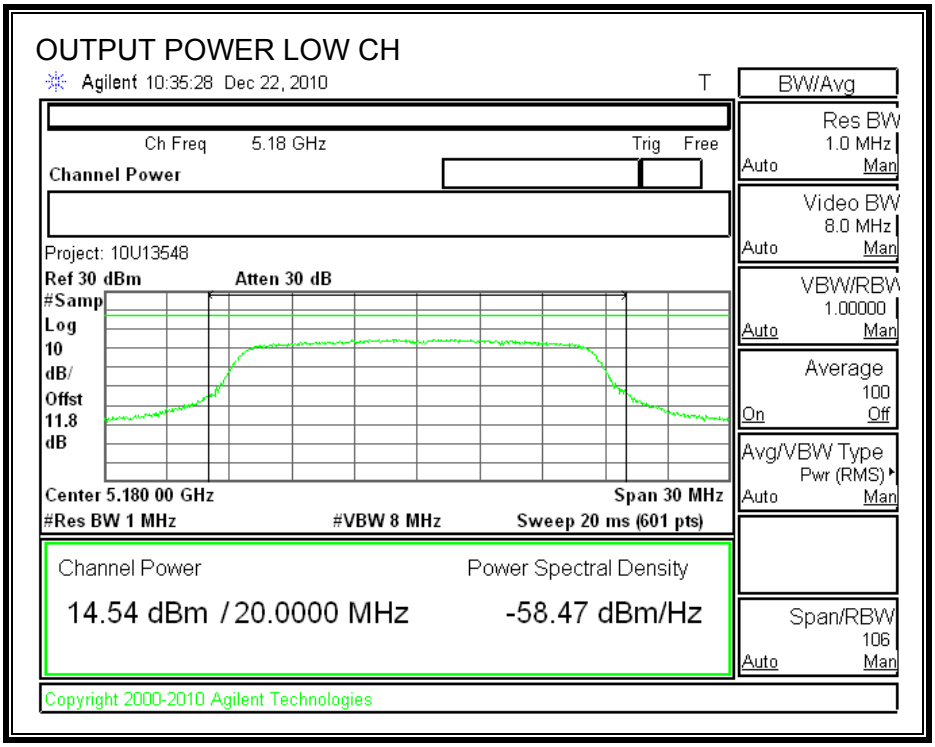
Limit

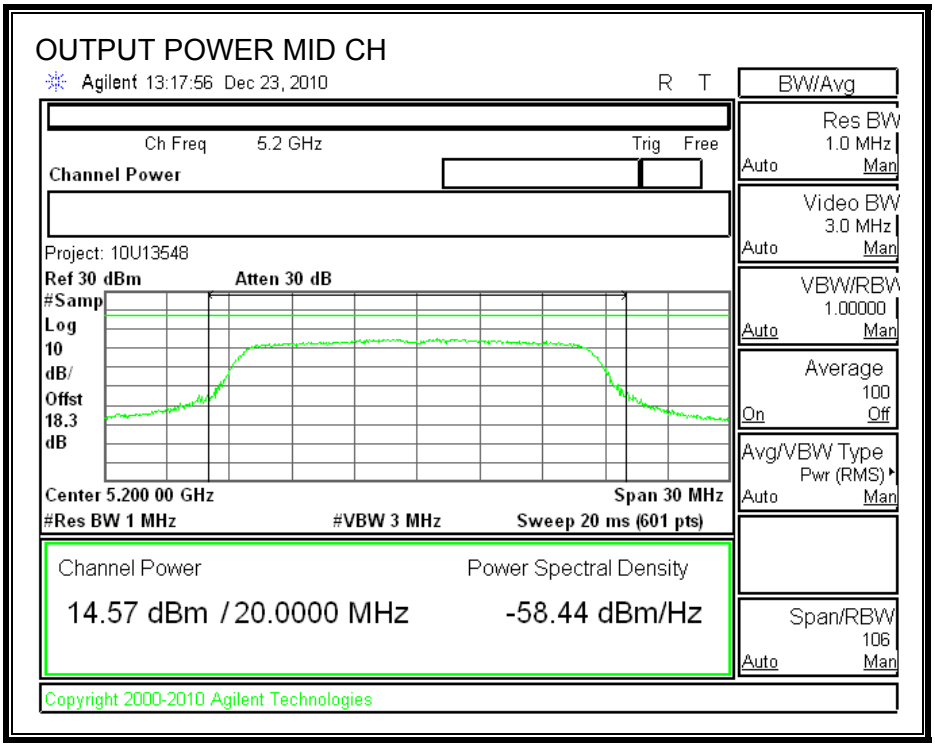
Channel	Frequency (MHz)	Fixed Limit (dBm)	B (MHz)	4 + 10 Log B Limit (dBm)	Antenna Gain (dBi)	Limit (dBm)
Low	5180	17	18.322	16.63	4.07	16.63
Mid	5200	17	18.556	16.68	4.07	16.68
High	5240	17	18.564	16.69	4.07	16.69

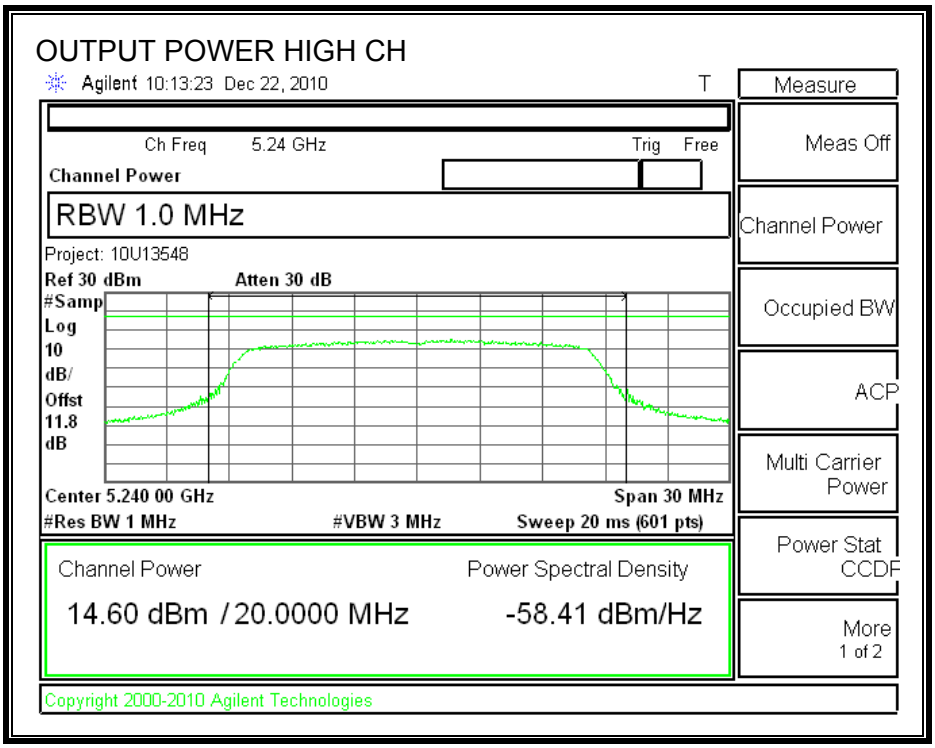
Results

Channel	Frequency (MHz)	Power (dBm)	Limit (dBm)	Margin (dB)
Low	5180	14.54	16.63	-2.09
Mid	5200	14.57	16.68	-2.11
High	5240	14.60	16.69	-2.09

OUTPUT POWER







7.1.3. PEAK POWER SPECTRAL DENSITY

LIMITS

FCC §15.407 (a) (1)

IC RSS-210 A9.2 (1)

For the 5.15-5.25 GHz band, the peak power spectral density shall not exceed 4 dBm in any 1 MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 4 dBm.

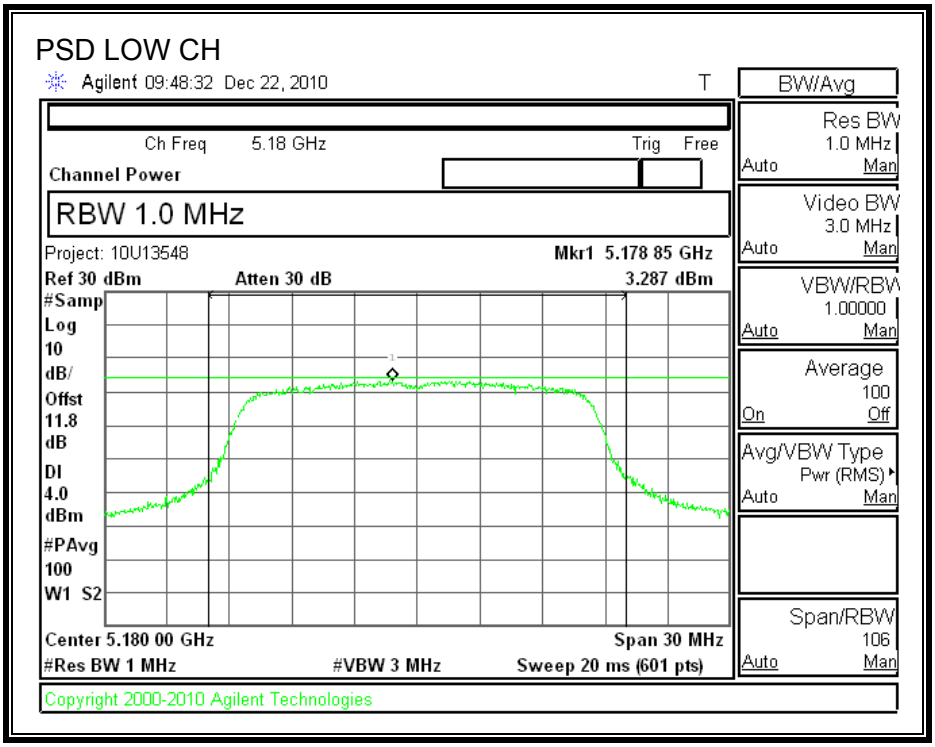
TEST PROCEDURE

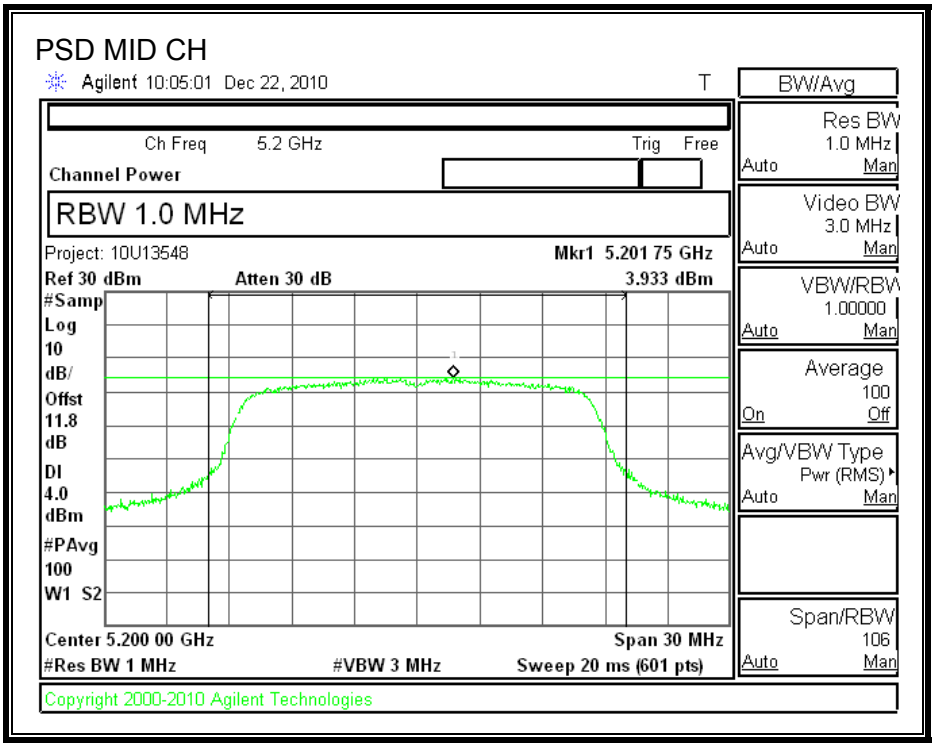
The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002. PPSD method #2 was used.

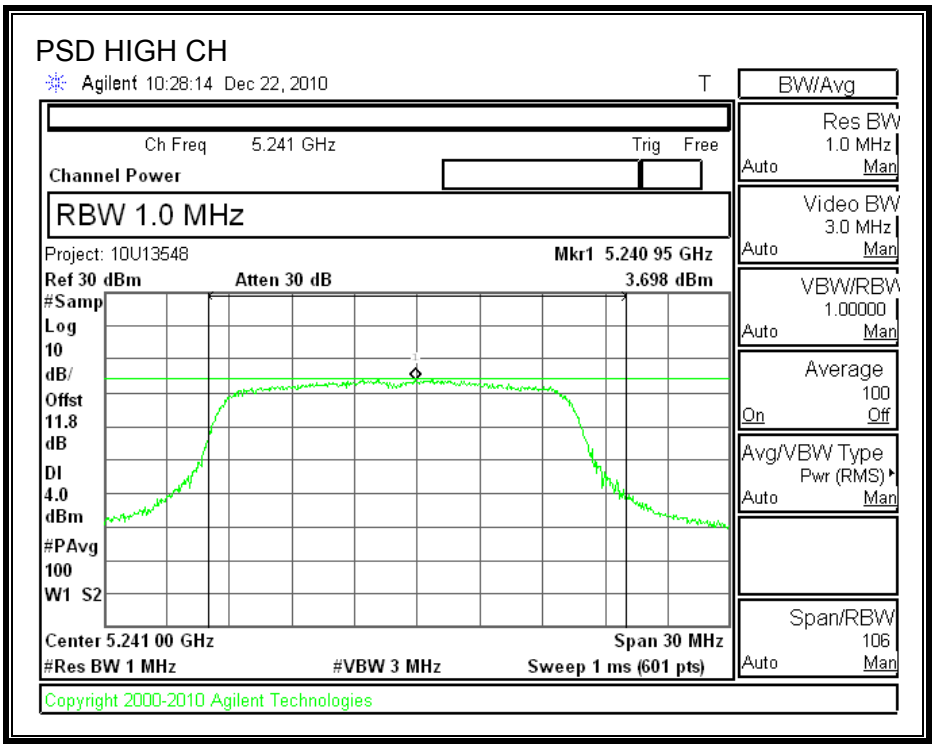
RESULTS

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	5180	3.287	4	-0.713
Middle	5200	3.933	4	-0.067
High	5240	3.698	4	-0.302

POWER SPECTRAL DENSITY







7.1.4. PEAK EXCURSION

LIMITS

FCC §15.407 (a) (6)

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

TEST PROCEDURE

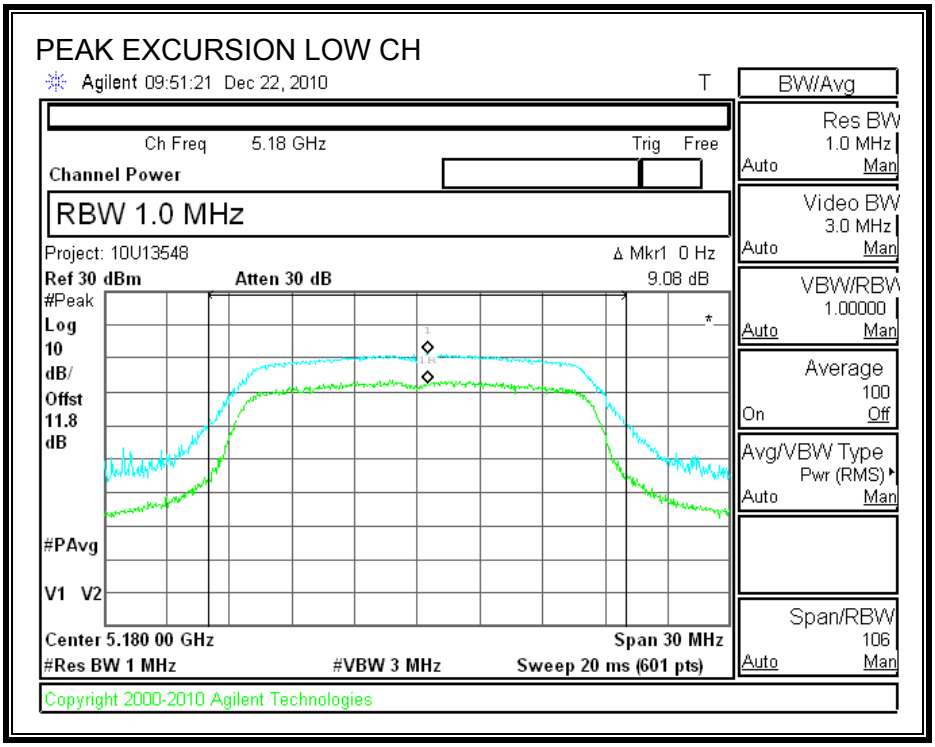
The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

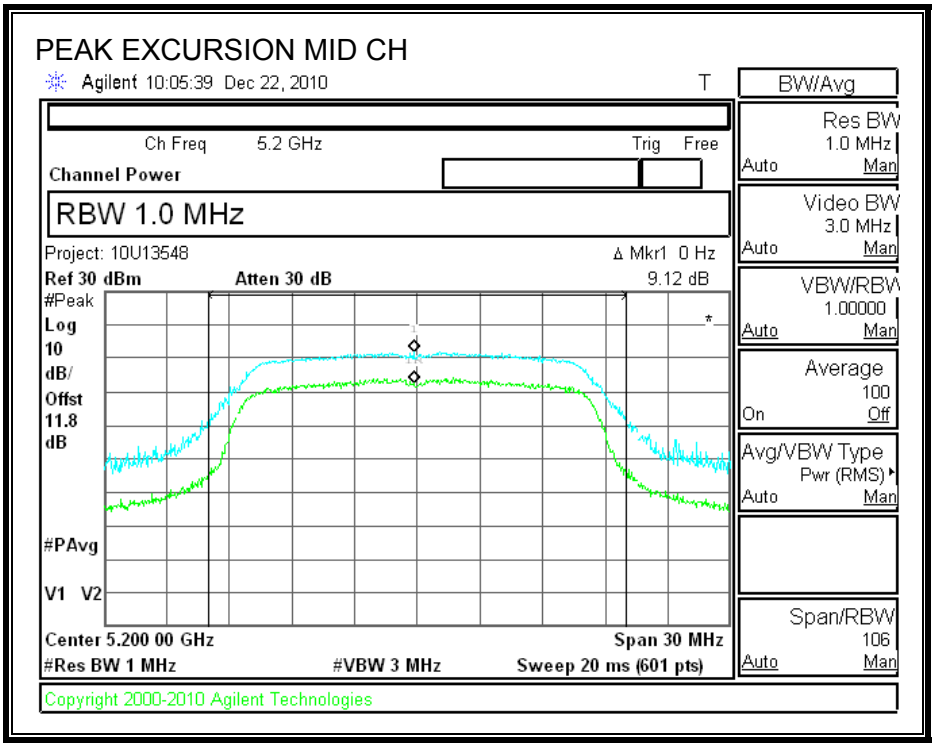
Since Method # 1 was used for peak power measurements, Method # 1 settings are used for the second PPSD trace.

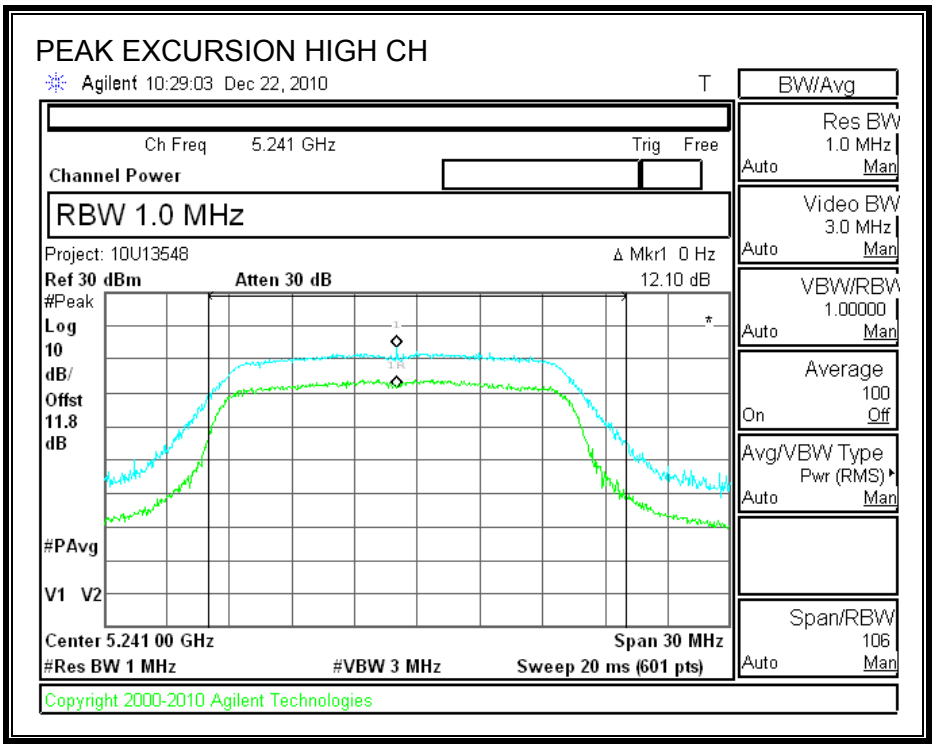
RESULTS

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Low	5180	9.08	13	-3.92
Middle	5200	9.12	13	-3.88
High	5240	12.10	13	-0.90

PEAK EXCURSION







7.1.5. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.407 (b) (1)

IC RSS-210 A9.3 (1)

For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm / MHz.

TEST PROCEDURE

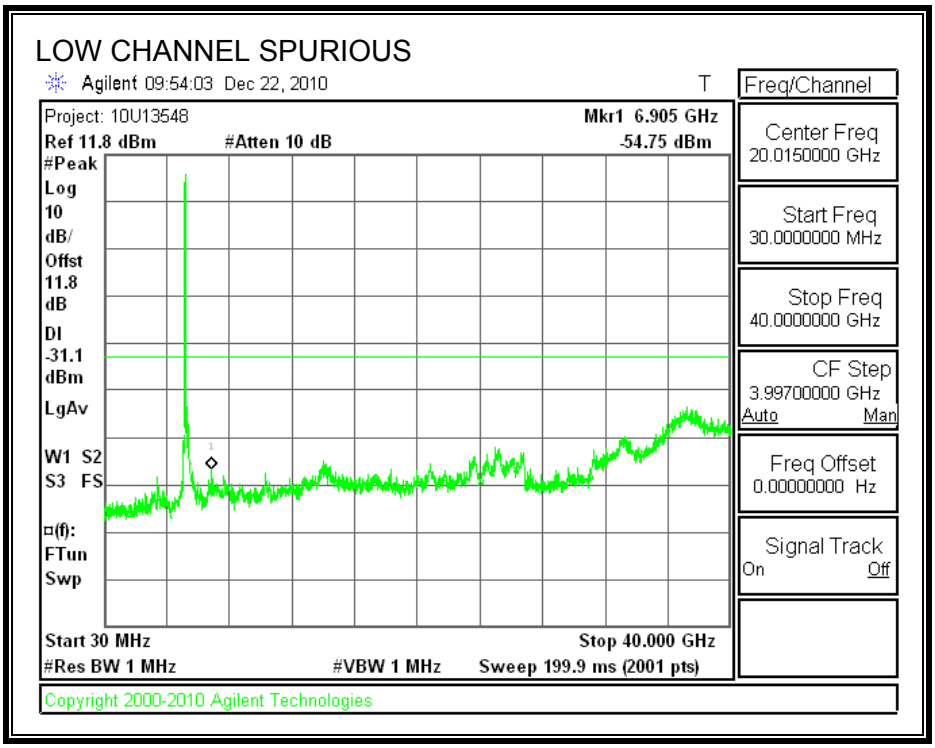
Conducted RF measurements of the transmitter output are made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

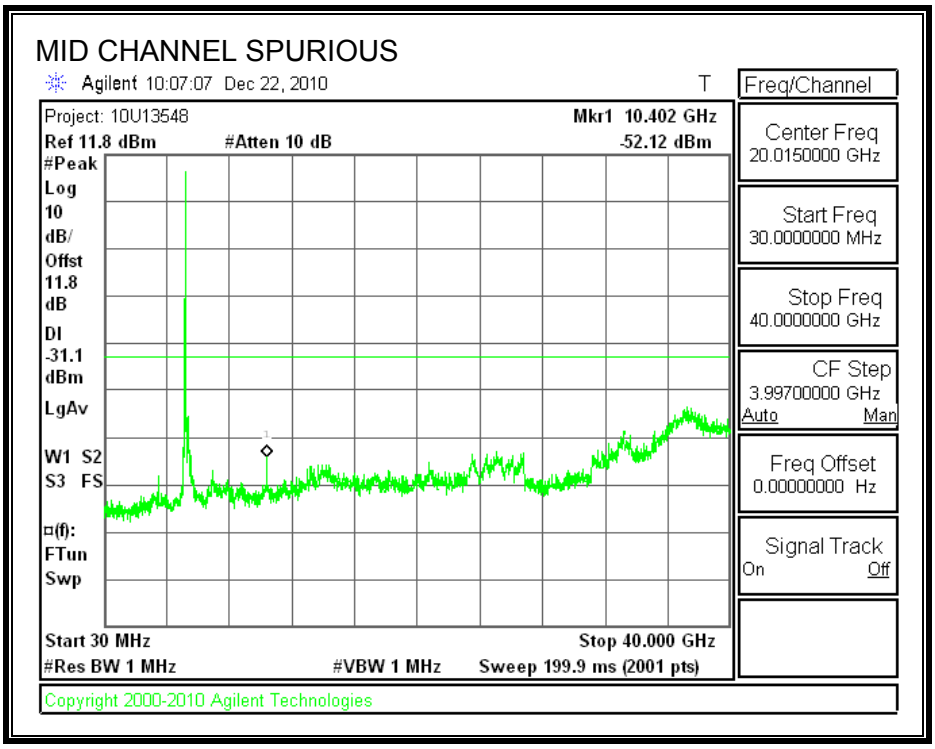
The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 1 MHz. The video bandwidth is set to 1 MHz. Peak detection measurements are compared to EIRP limit, adjusted for the maximum antenna gain.

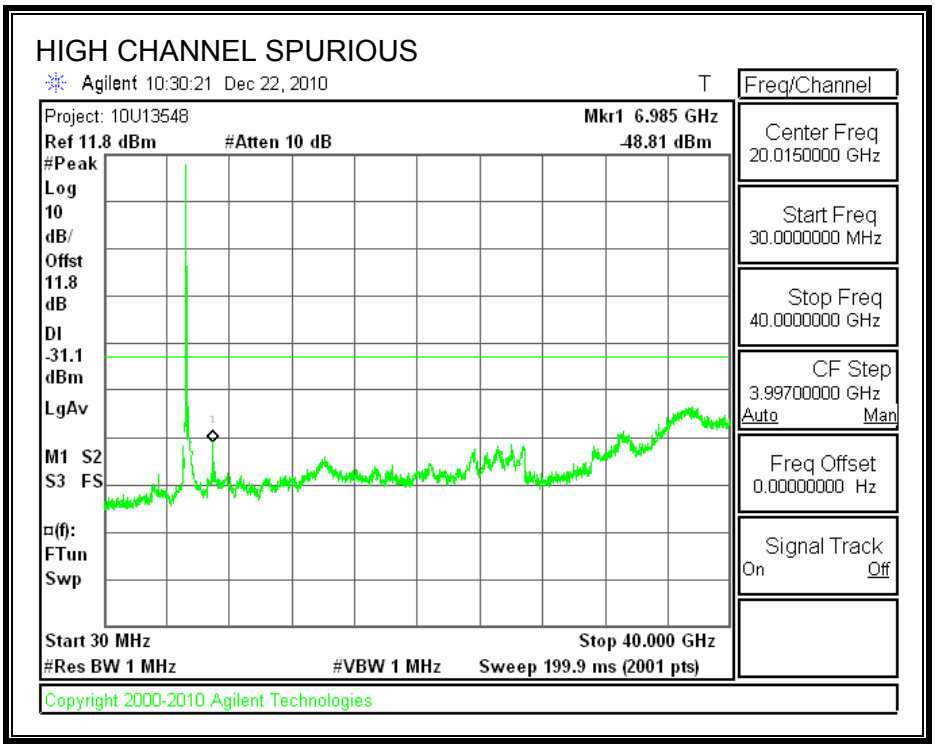
Measurements are made over the 30 MHz to 40 GHz range with the transmitter set to the lowest, middle, and highest channels.

RESULTS

SPURIOUS EMISSIONS







7.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

7.2.1. 26 dB and 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

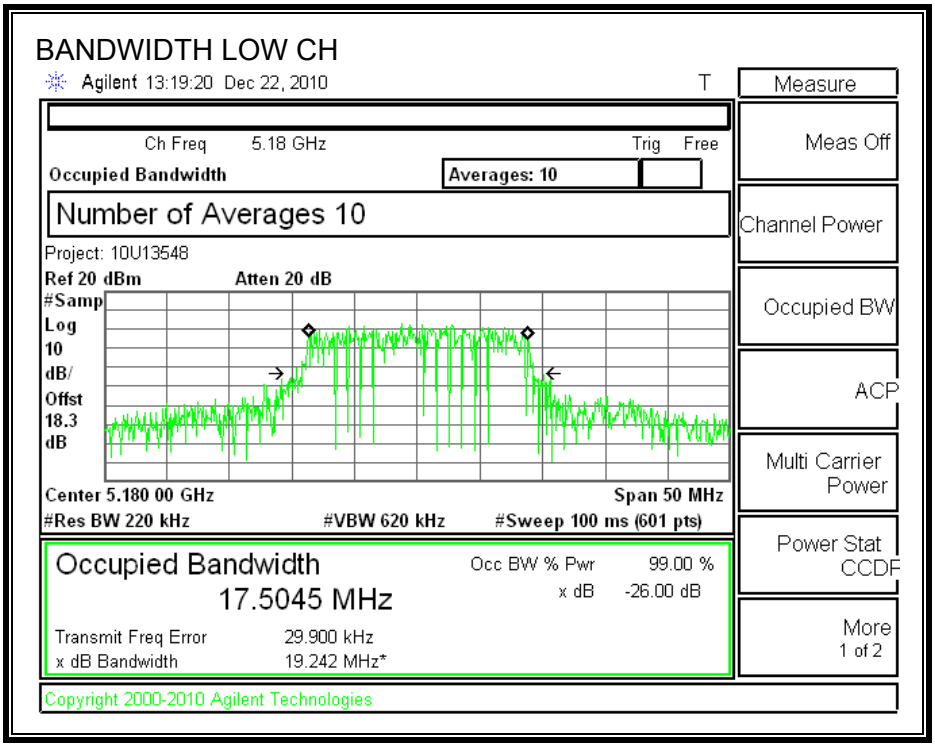
TEST PROCEDURE

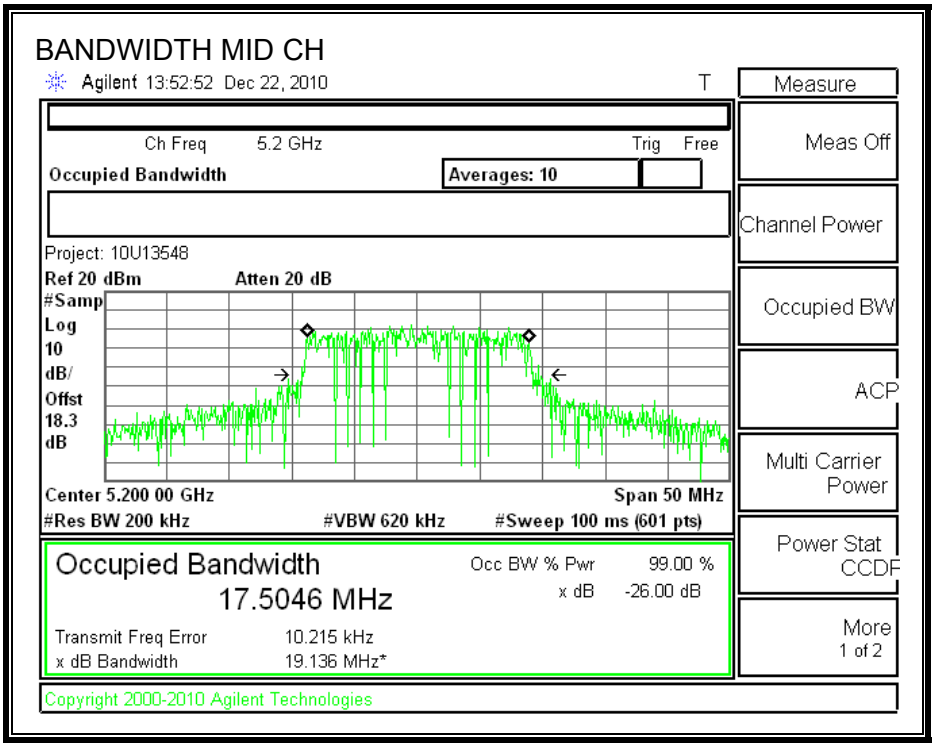
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the measured bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal bandwidth function is utilized.

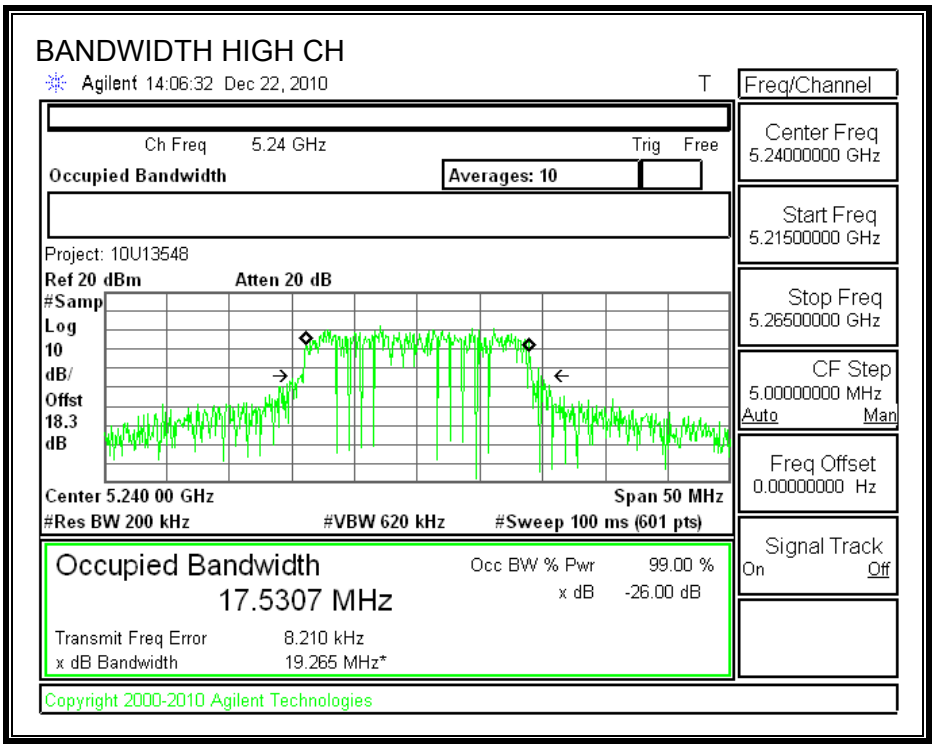
RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5180	19.242	17.5045
Middle	5200	19.136	17.5046
High	5240	19.265	17.5307

26 dB and 99% BANDWIDTH







7.2.2. OUTPUT POWER

LIMITS

FCC §15.407 (a) (1)

IC RSS-210 A9.2 (1)

For the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10 log B, where B is the 26-dB emission bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

The transmitter output operates continuously therefore Method # 1 is used.

RESULTS

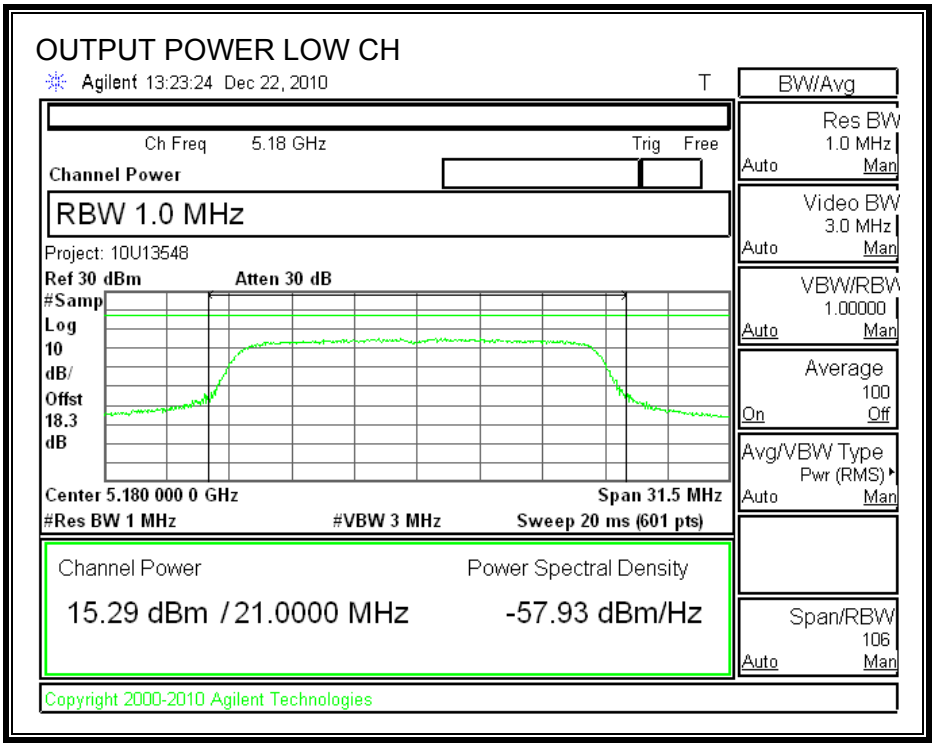
Limit

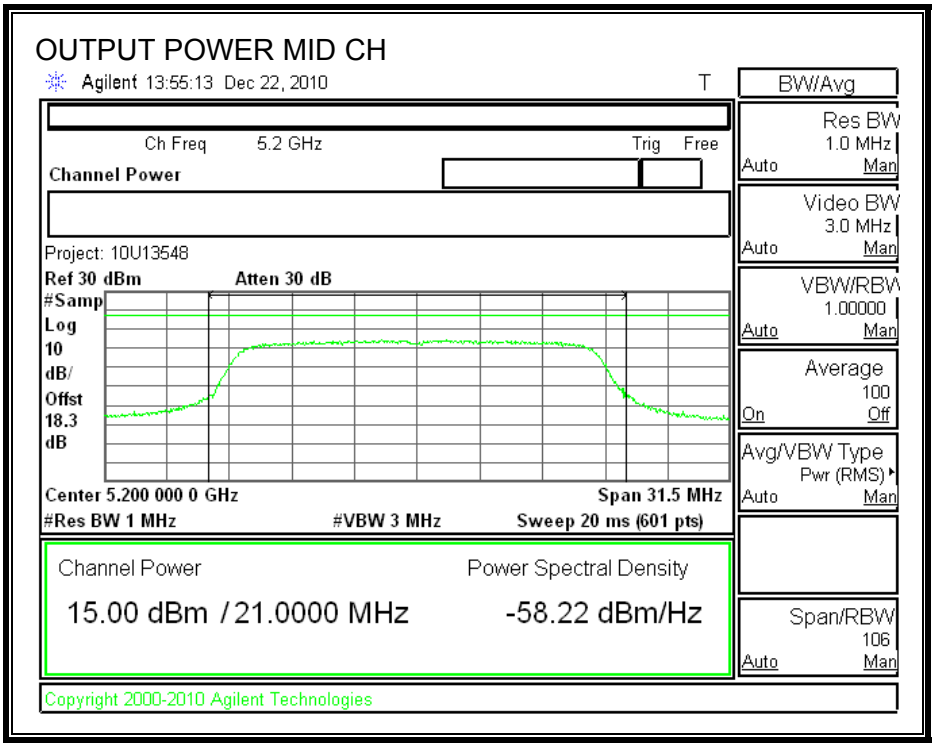
Channel	Frequency (MHz)	Fixed Limit (dBm)	B (MHz)	4 + 10 Log B Limit (dBm)	Antenna Gain (dBi)	Limit (dBm)
Low	5180	17	19.242	16.84	4.07	16.84
Mid	5200	17	19.136	16.82	4.07	16.82
High	5240	17	19.265	16.85	4.07	16.85

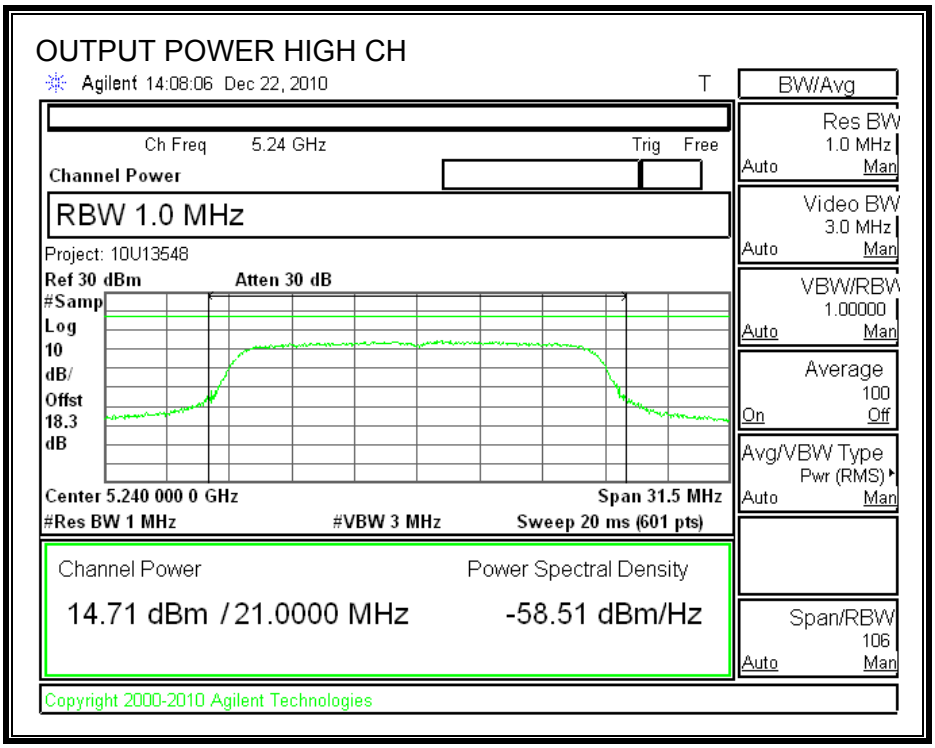
Results

Channel	Frequency (MHz)	Power (dBm)	Limit (dBm)	Margin (dB)
Low	5180	15.29	16.84	-1.55
Mid	5200	15.00	16.82	-1.82
High	5240	14.71	16.85	-2.14

OUTPUT POWER







7.2.3. PEAK POWER SPECTRAL DENSITY

LIMITS

FCC §15.407 (a) (1)

IC RSS-210 A9.2 (1)

For the 5.15-5.25 GHz band, the peak power spectral density shall not exceed 4 dBm in any 1 MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 4 dBm.

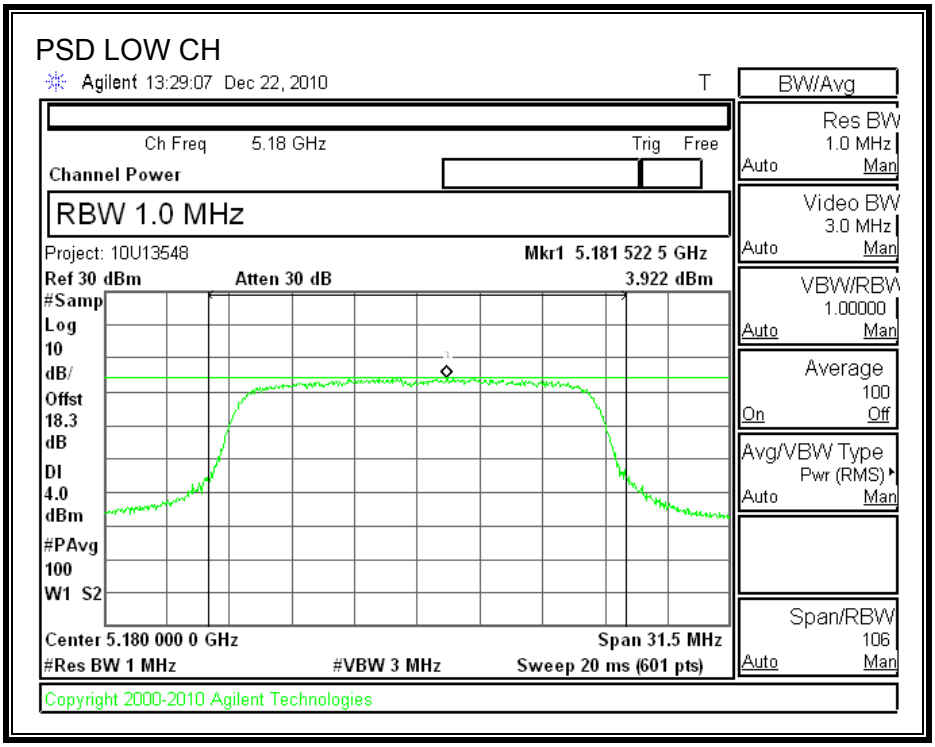
TEST PROCEDURE

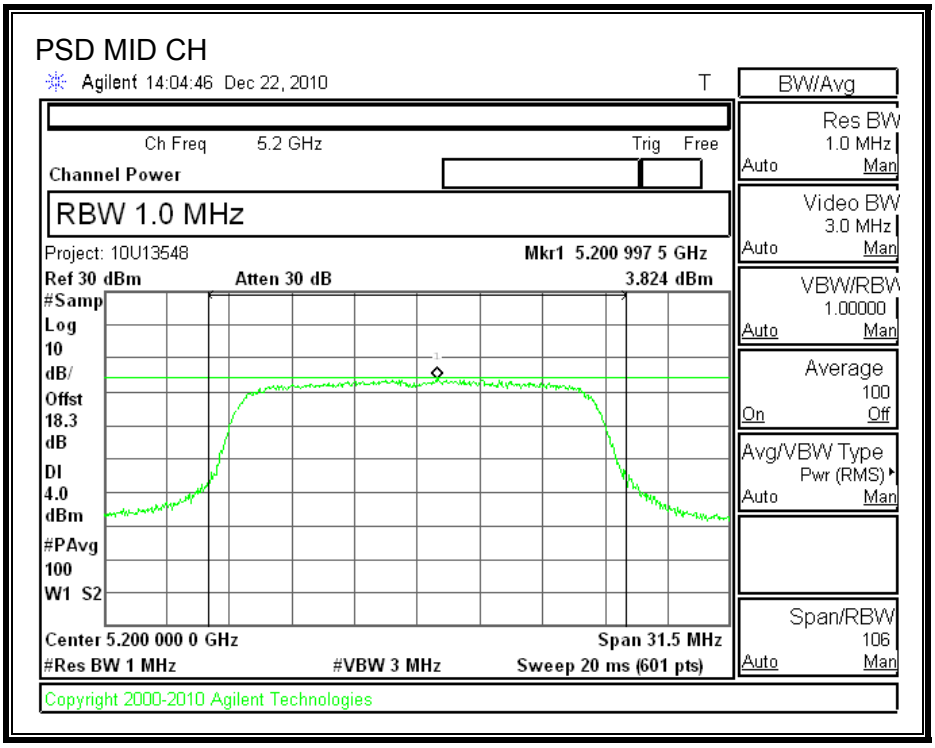
The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002. PPSD method #2 was used.

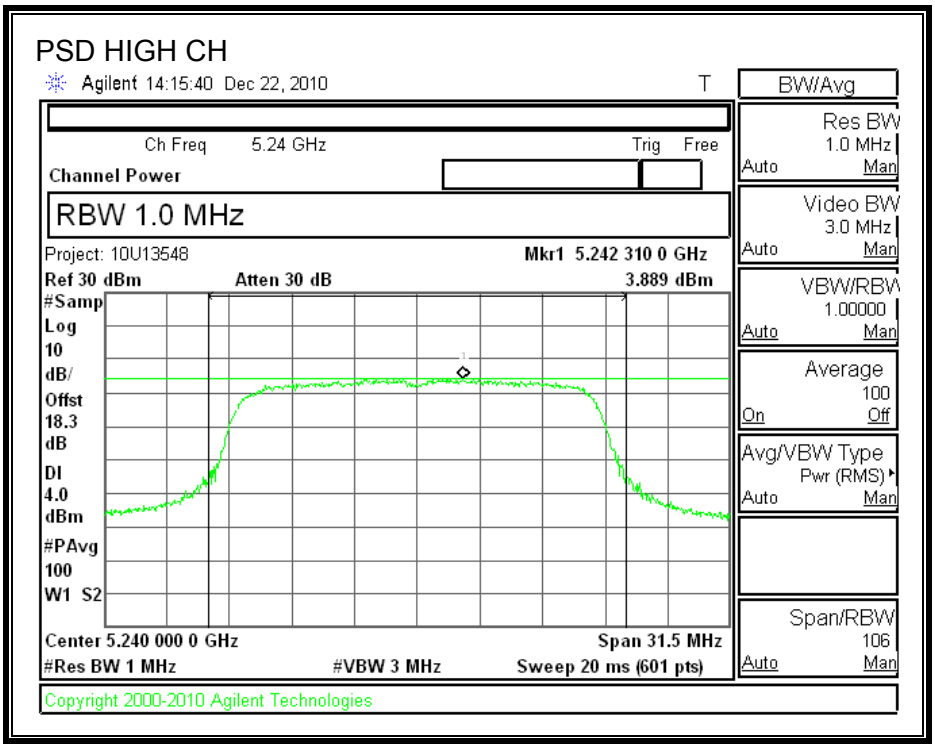
RESULTS

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	5180	3.922	4	-0.078
Middle	5200	3.824	4	-0.176
High	5240	3.889	4	-0.111

POWER SPECTRAL DENSITY







7.2.4. PEAK EXCURSION

LIMITS

FCC §15.407 (a) (6)

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

TEST PROCEDURE

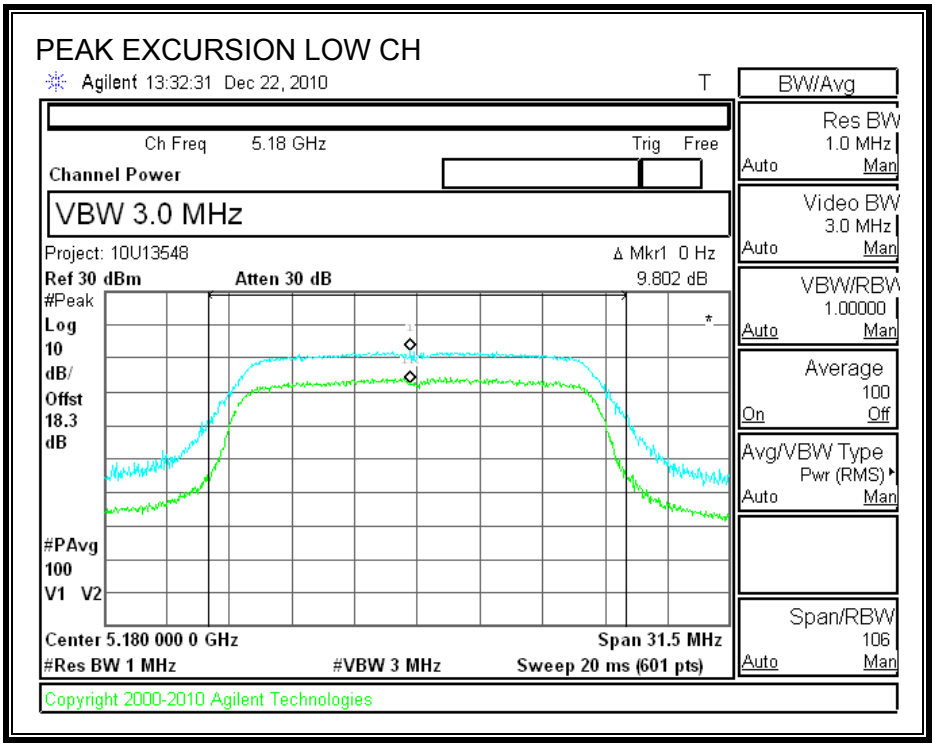
The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

Since Method # 1 was used for peak power measurements, Method # 1 settings are used for the second PPSD trace.

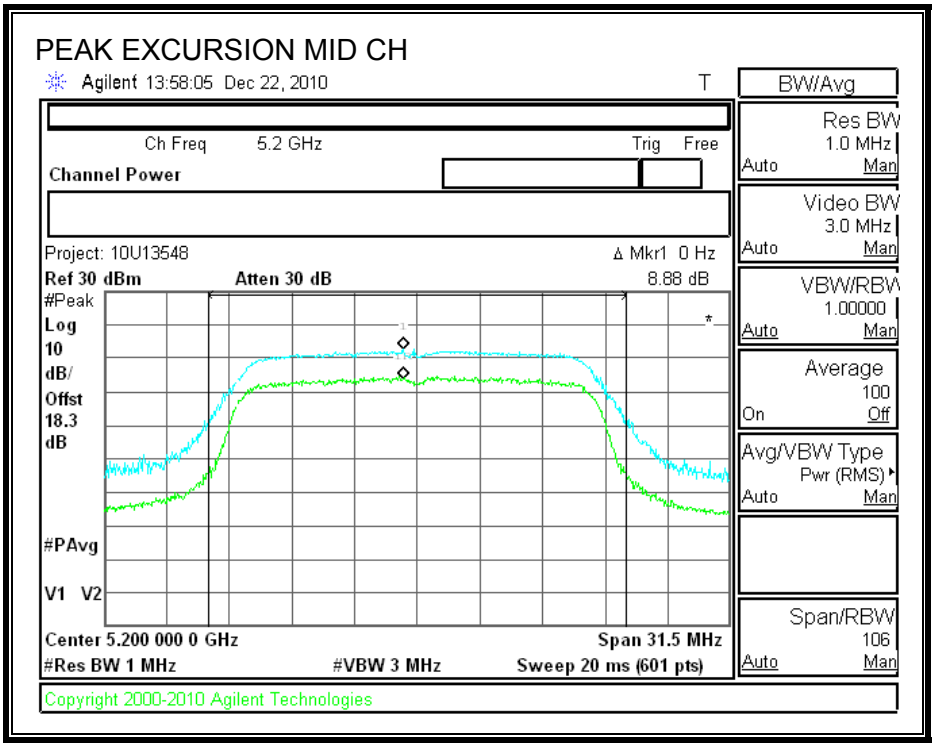
RESULTS

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Low	5180	9.802	13	-3.198
Middle	5200	8.880	13	-4.120
High	5240	9.690	13	-3.310

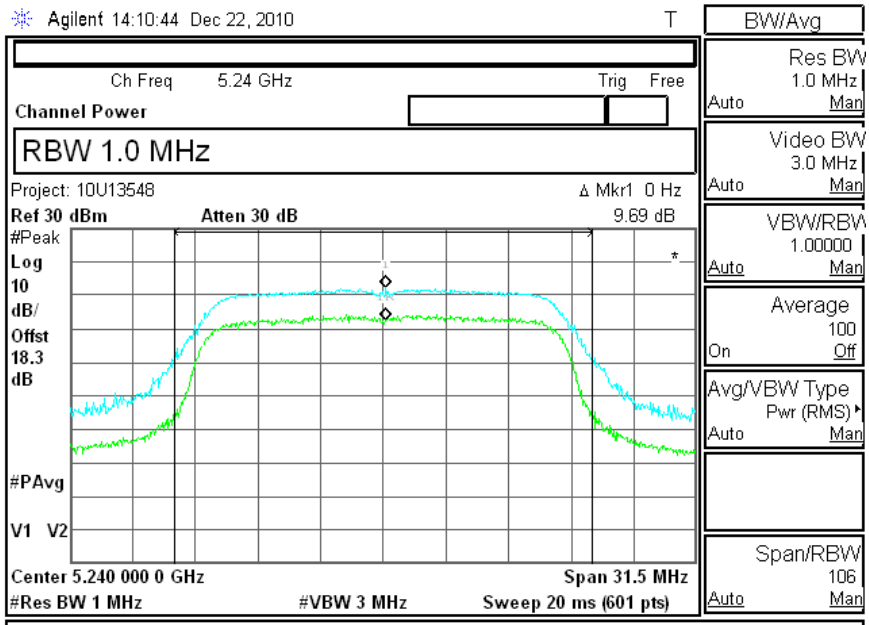
PEAK EXCURSION



PEAK EXCURSION MID CH



PEAK EXCURSION HIGH CH



7.2.5. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.407 (b) (1)

IC RSS-210 A9.3 (1)

For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm / MHz.

TEST PROCEDURE

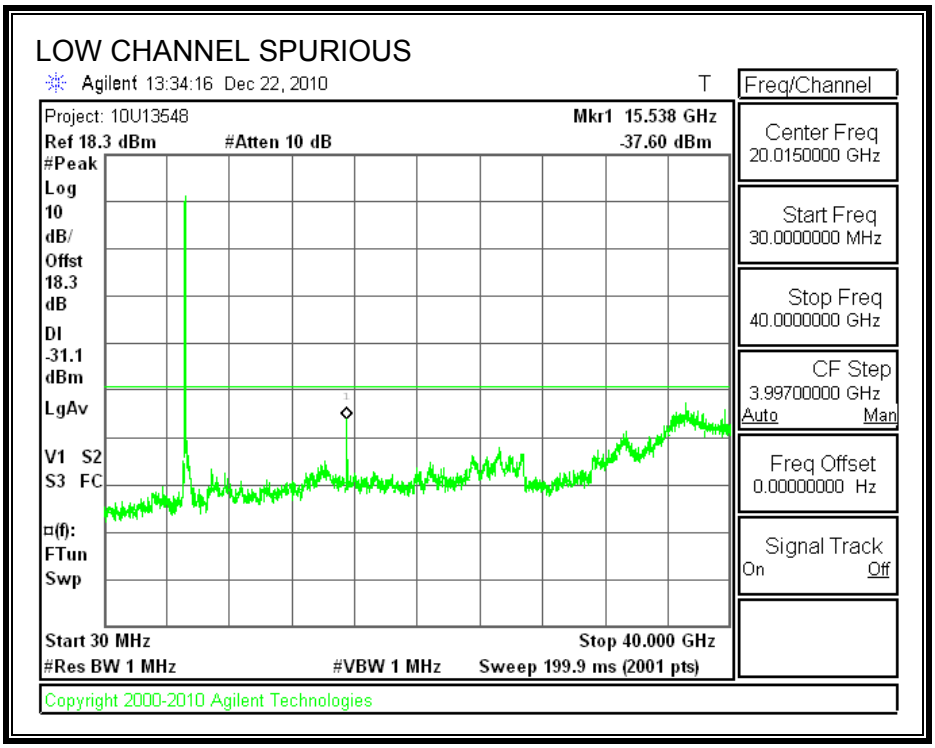
Conducted RF measurements of the transmitter output are made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

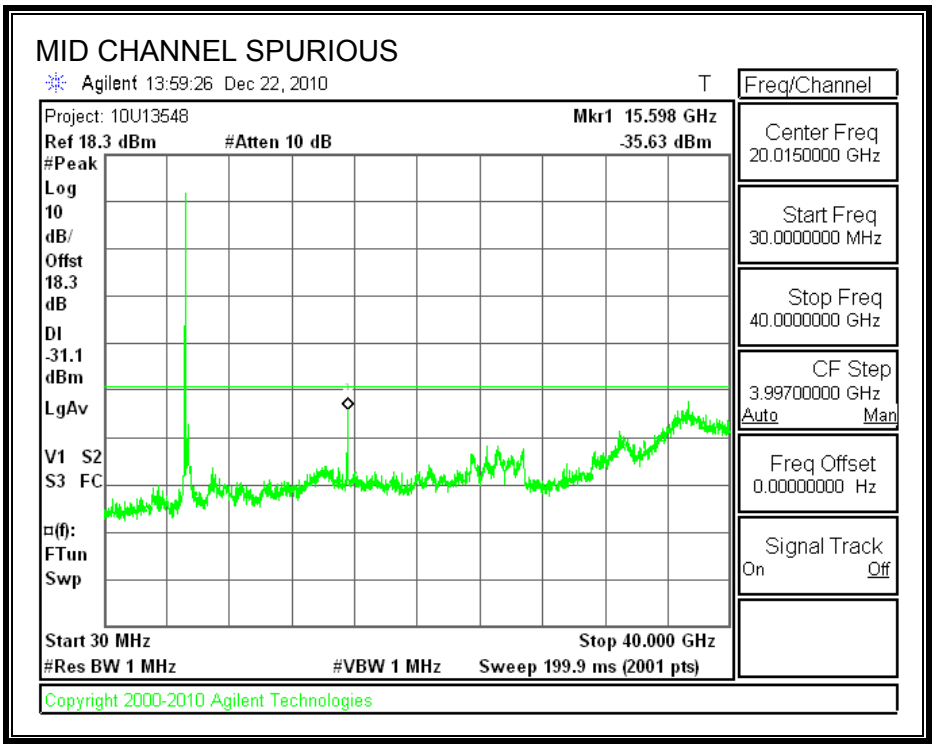
The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 1 MHz. The video bandwidth is set to 1 MHz. Peak detection measurements are compared to EIRP limit, adjusted for the maximum antenna gain.

Measurements are made over the 30 MHz to 40 GHz range with the transmitter set to the lowest, middle, and highest channels.

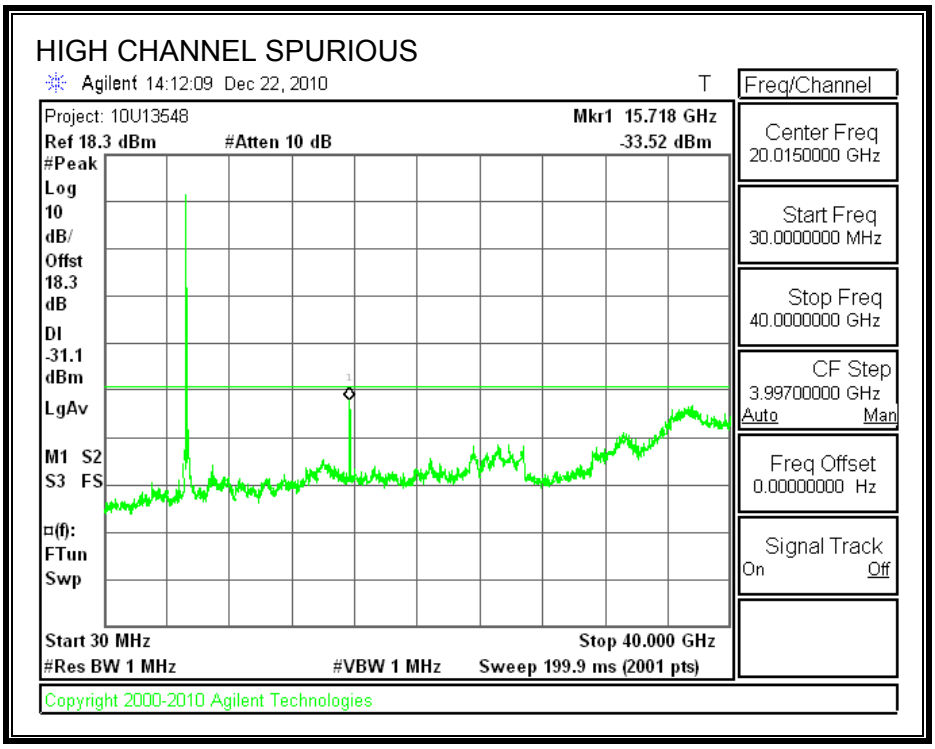
RESULTS

SPURIOUS EMISSIONS





HIGH CHANNEL SPURIOUS



7.3. 802.11a MODE IN THE 5.3 GHz BAND

7.3.1. 26 dB and 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

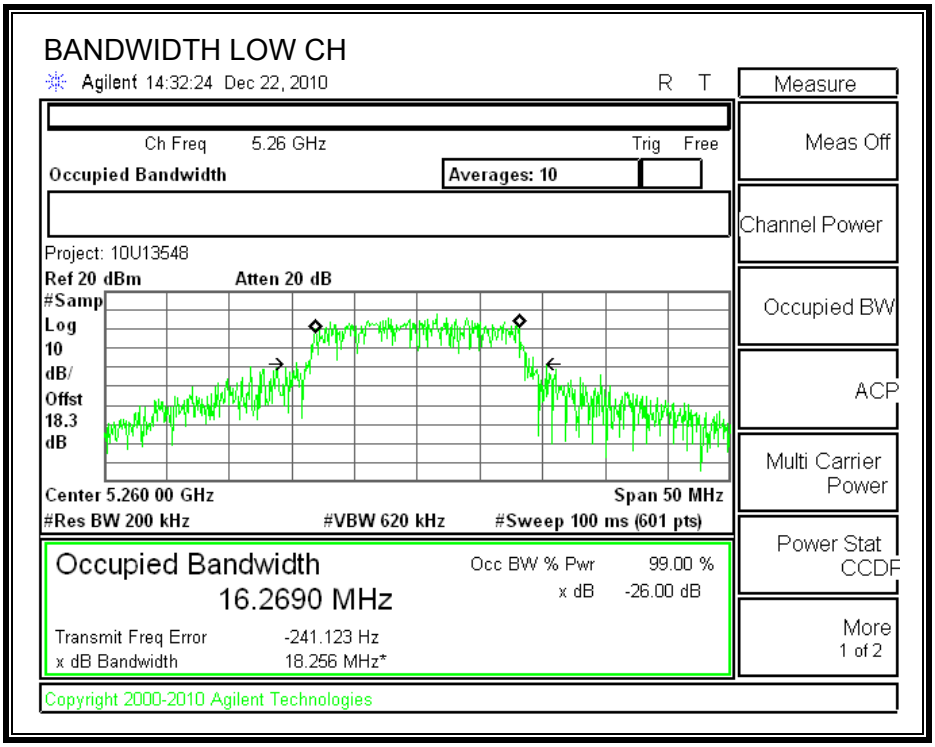
TEST PROCEDURE

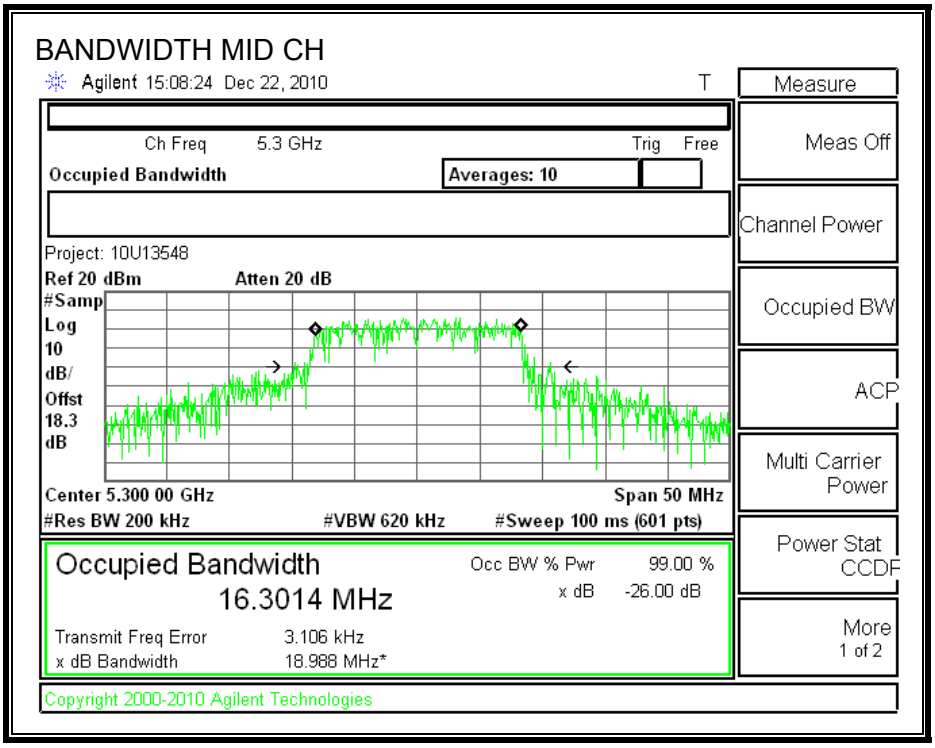
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the measured bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal bandwidth function is utilized.

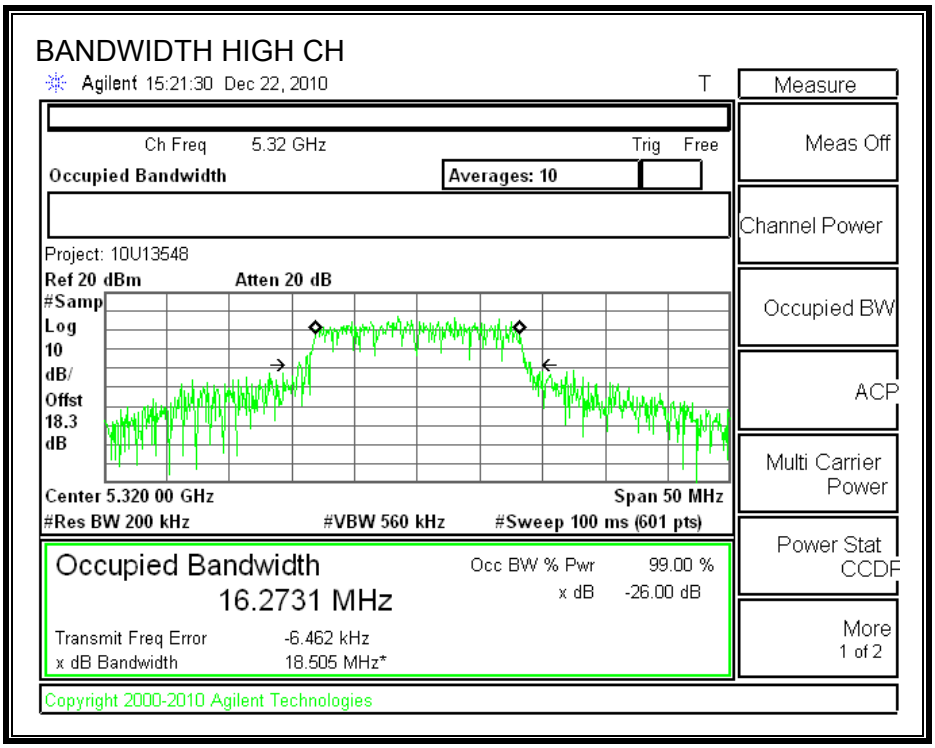
RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5260	18.256	16.269
Middle	5300	18.988	16.3014
High	5320	18.505	16.2731

26 dB and 99% BANDWIDTH







7.3.2. OUTPUT POWER

LIMITS

FCC §15.407 (a) (2)

IC RSS-210 A9.2 (2)

For the 5.25-5.35 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26-dB emission bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

The transmitter output operates continuously therefore Method # 1 is used.

RESULTS

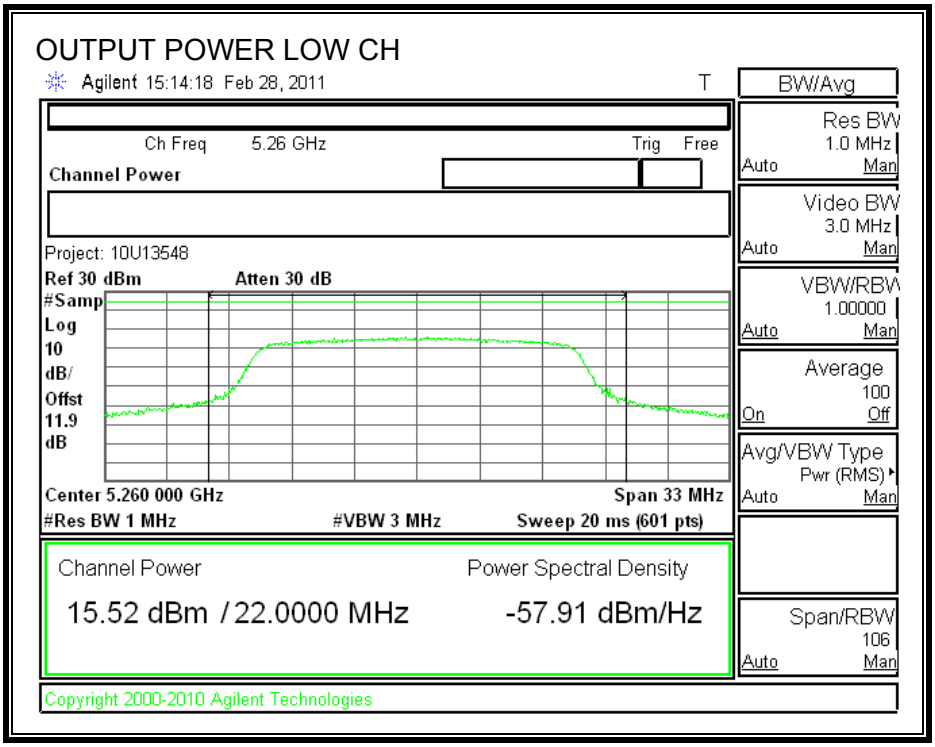
Limit

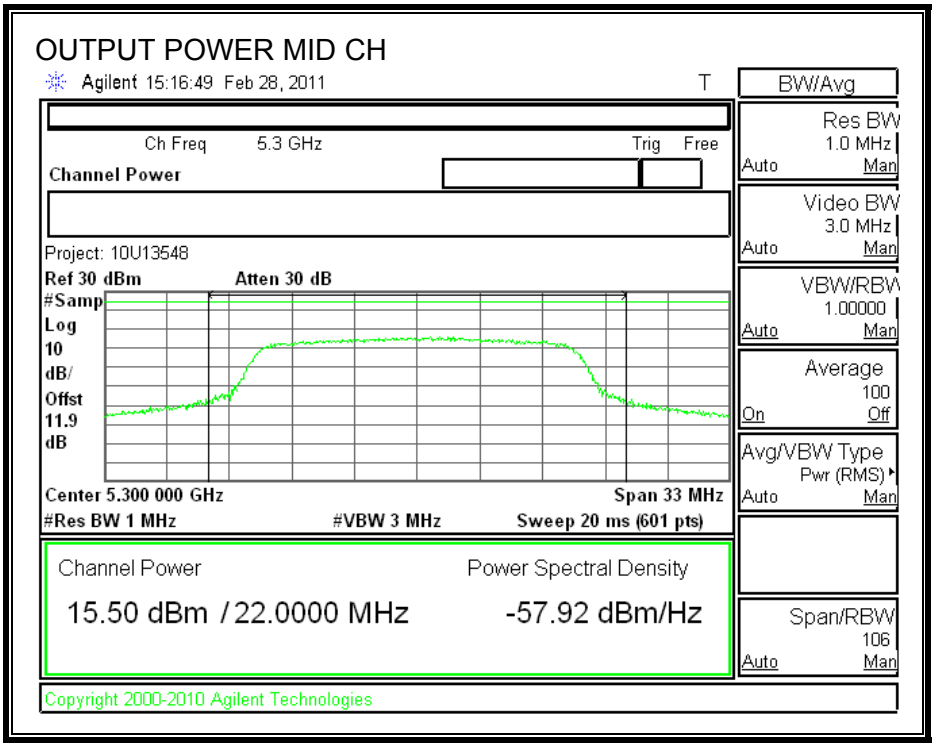
Channel	Frequency (MHz)	Fixed Limit (dBm)	B (MHz)	11 + 10 Log B Limit (dBm)	Antenna Gain (dBi)	Limit (dBm)
Low	5260	24	18.256	23.61	4.20	23.61
Mid	5300	24	18.988	23.78	4.20	23.78
High	5320	24	18.505	23.67	4.20	23.67

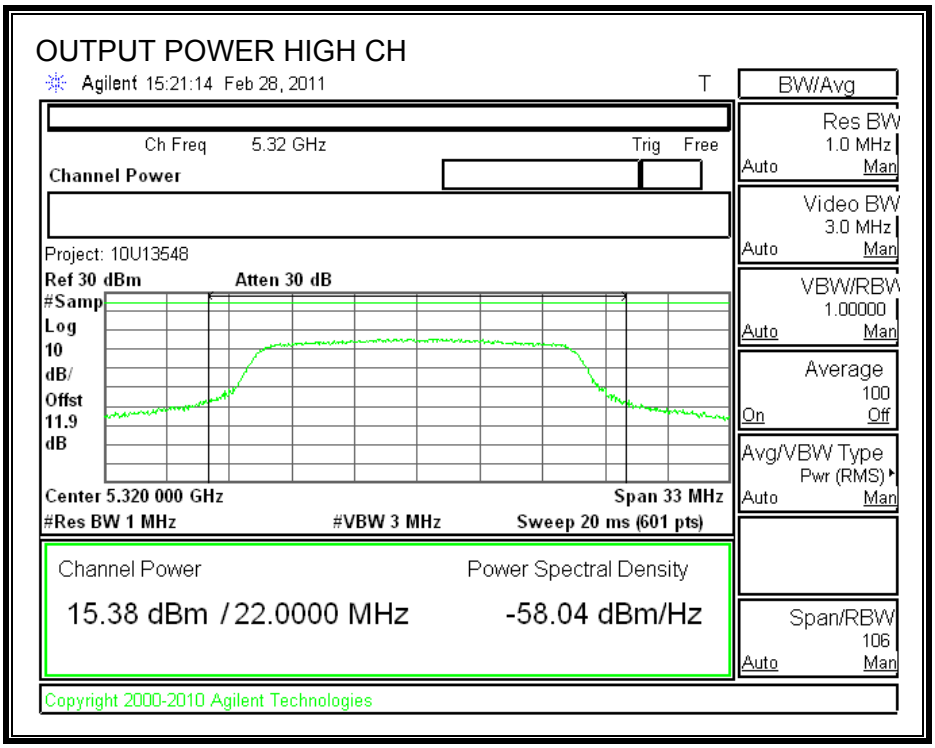
Results

Channel	Frequency (MHz)	Power (dBm)	Limit (dBm)	Margin (dB)
Low	5260	15.52	23.61	-8.09
Mid	5300	15.50	23.78	-8.28
High	5320	15.38	23.67	-8.29

OUTPUT POWER







7.3.3. PEAK POWER SPECTRAL DENSITY

LIMITS

FCC §15.407 (a) (2)

IC RSS-210 A9.2 (2)

For the 5.25–5.35 GHz band, the peak power spectral density shall not exceed 11 dBm in any 1 MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 11 dBm.

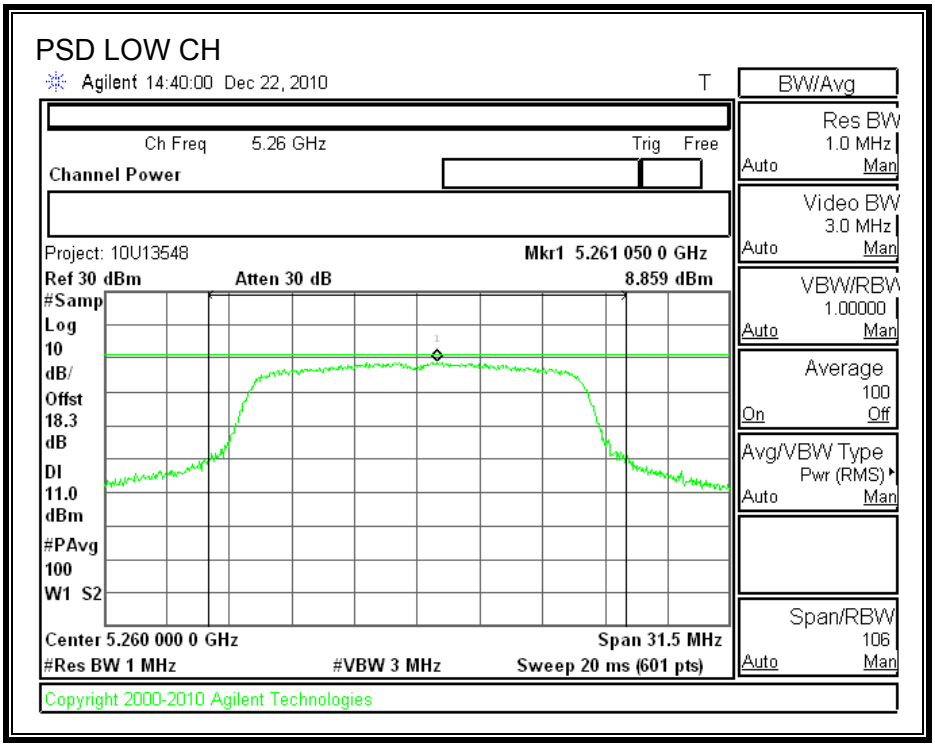
TEST PROCEDURE

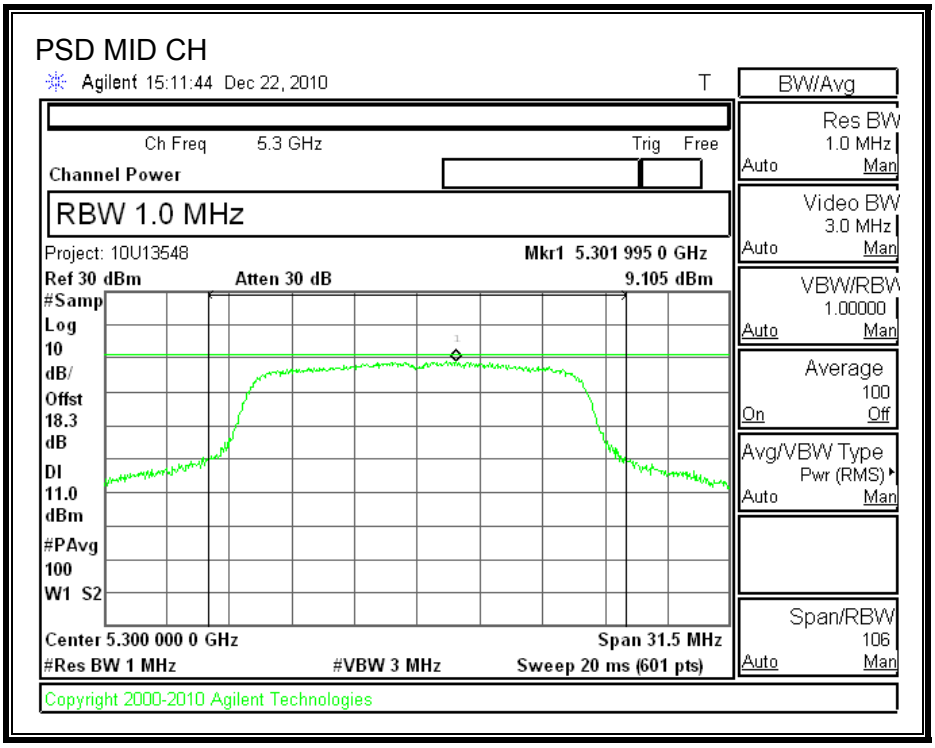
The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002. PPSD method #2 was used.

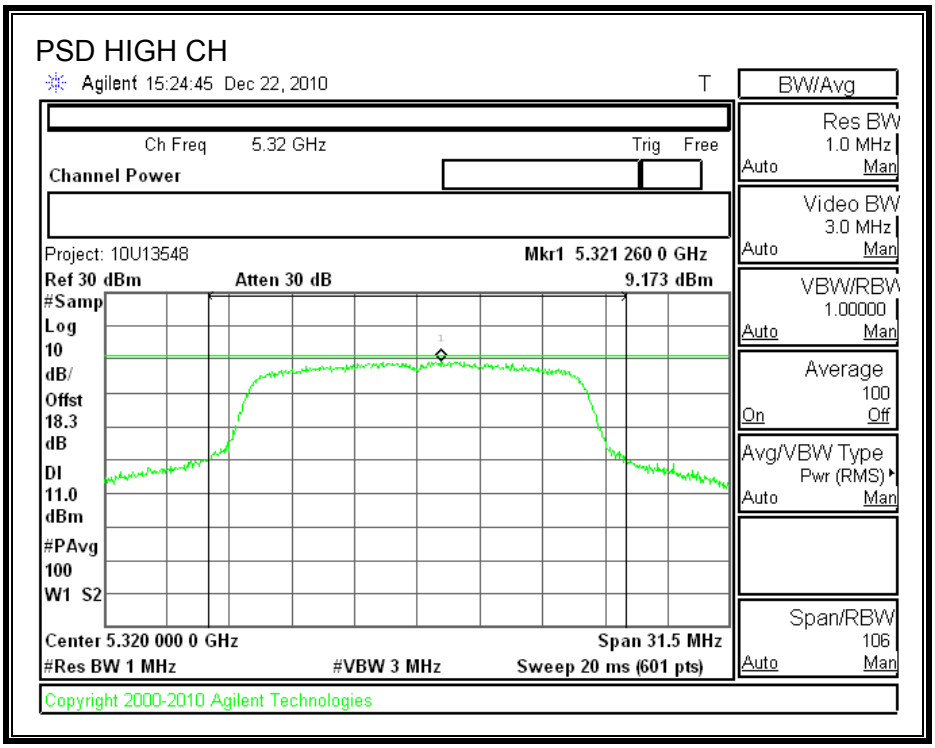
RESULTS

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	5260	8.859	11	-2.141
Middle	5300	9.105	11	-1.895
High	5320	9.173	11	-1.827

POWER SPECTRAL DENSITY







7.3.4. PEAK EXCURSION

LIMITS

FCC §15.407 (a) (6)

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

TEST PROCEDURE

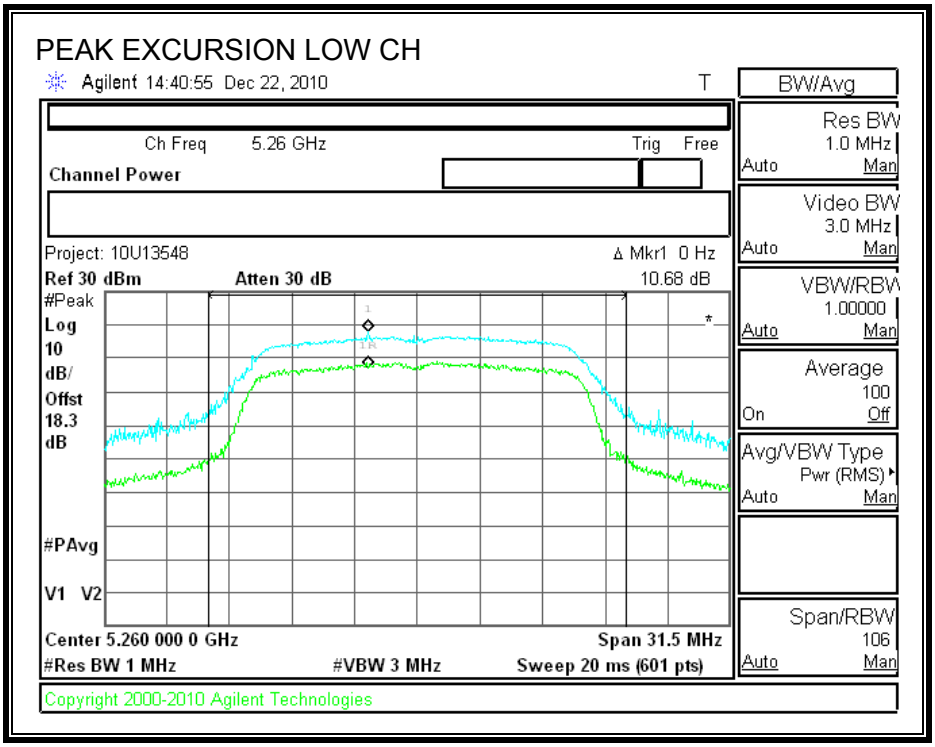
The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

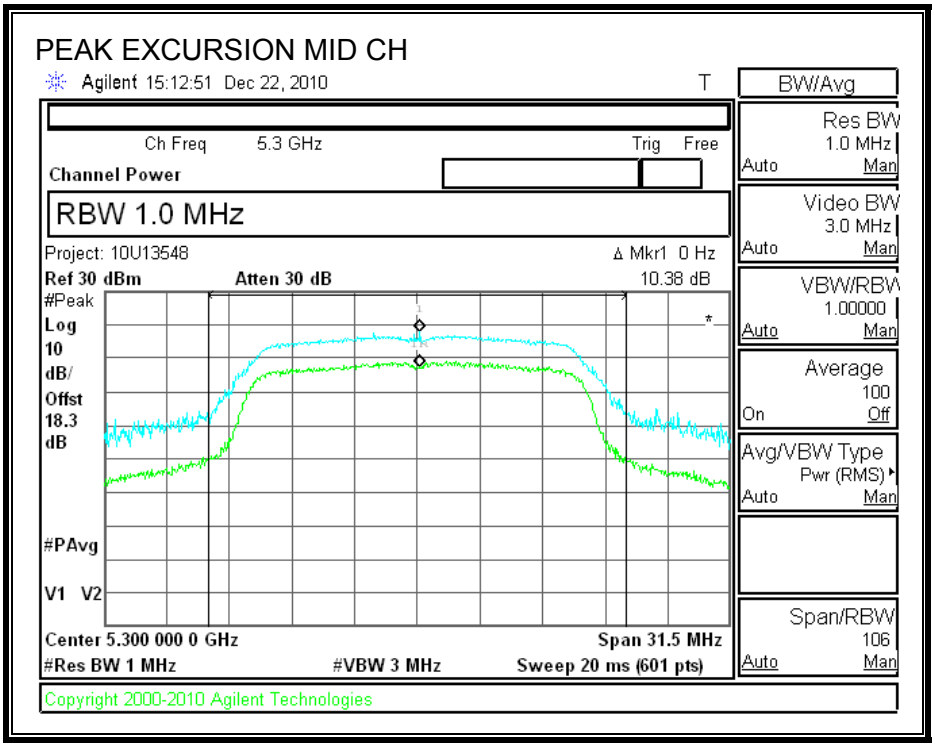
Since Method # 1 was used for peak power measurements, Method # 1 settings are used for the second PPSD trace.

RESULTS

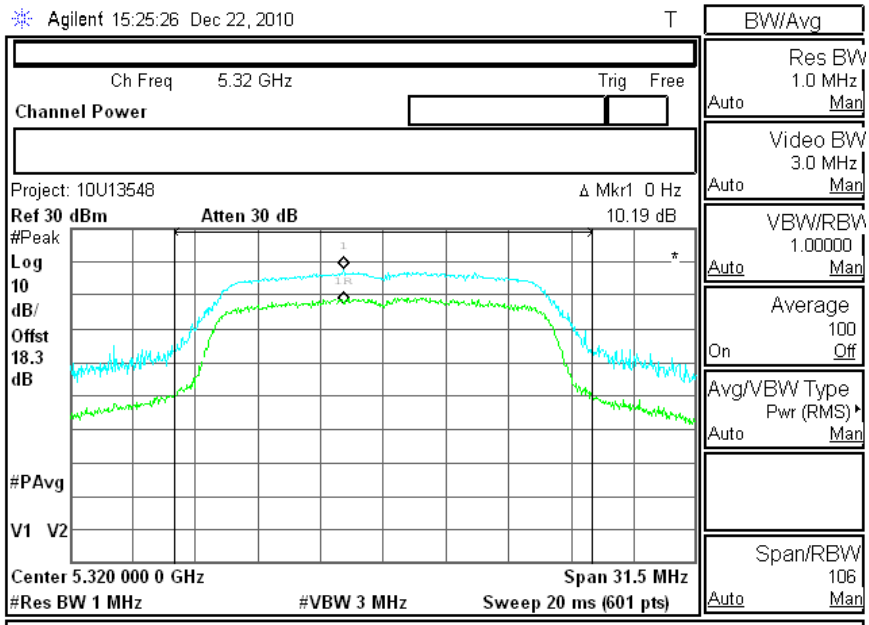
Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Low	5260	10.680	13	-2.320
Middle	5300	10.380	13	-2.620
High	5320	10.190	13	-2.810

PEAK EXCURSION





PEAK EXCURSION HIGH CH



7.3.5. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.407 (b) (2)

IC RSS-210 A9.3 (2)

For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.25-5.35 GHz band shall not exceed an EIRP of -27 dBm / MHz.

Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5.15-5.25 GHz band.

TEST PROCEDURE

Conducted RF measurements of the transmitter output are made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

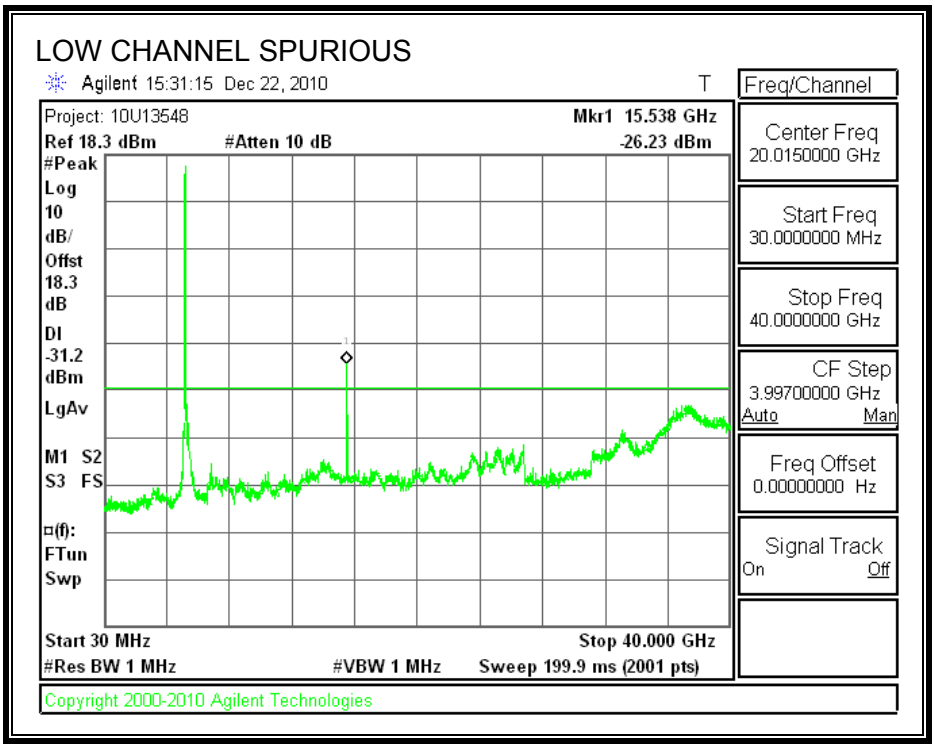
The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 1 MHz. The video bandwidth is set to 1 MHz. Peak detection measurements are compared to EIRP limit, adjusted for the maximum antenna gain.

Measurements are made over the 30 MHz to 40 GHz range with the transmitter set to the lowest, middle, and highest channels.

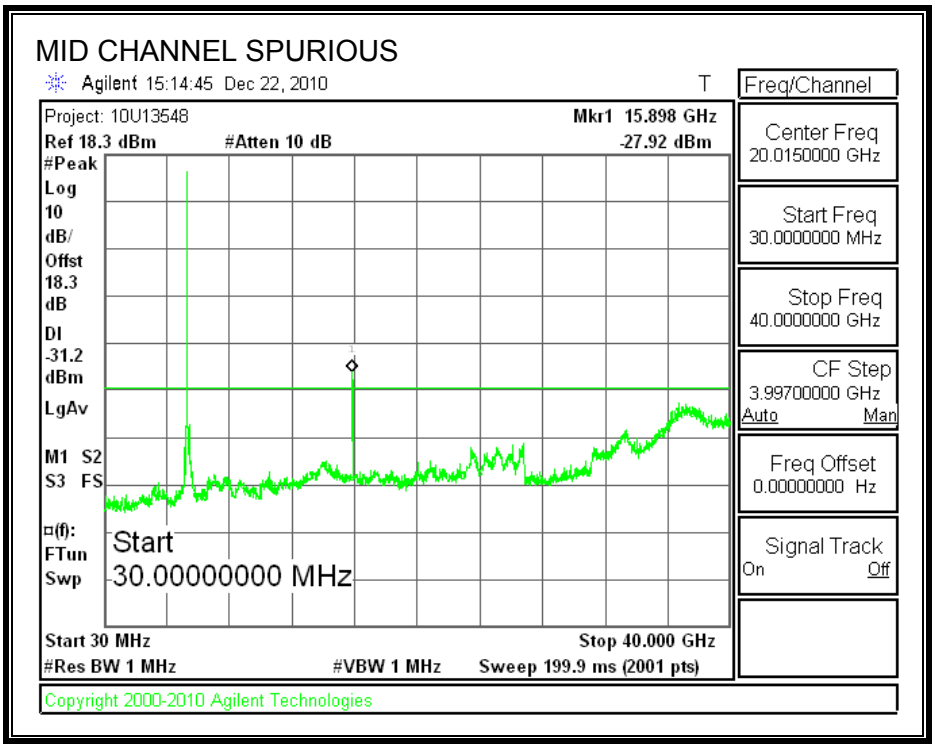
RESULTS

SPURIOUS EMISSIONS

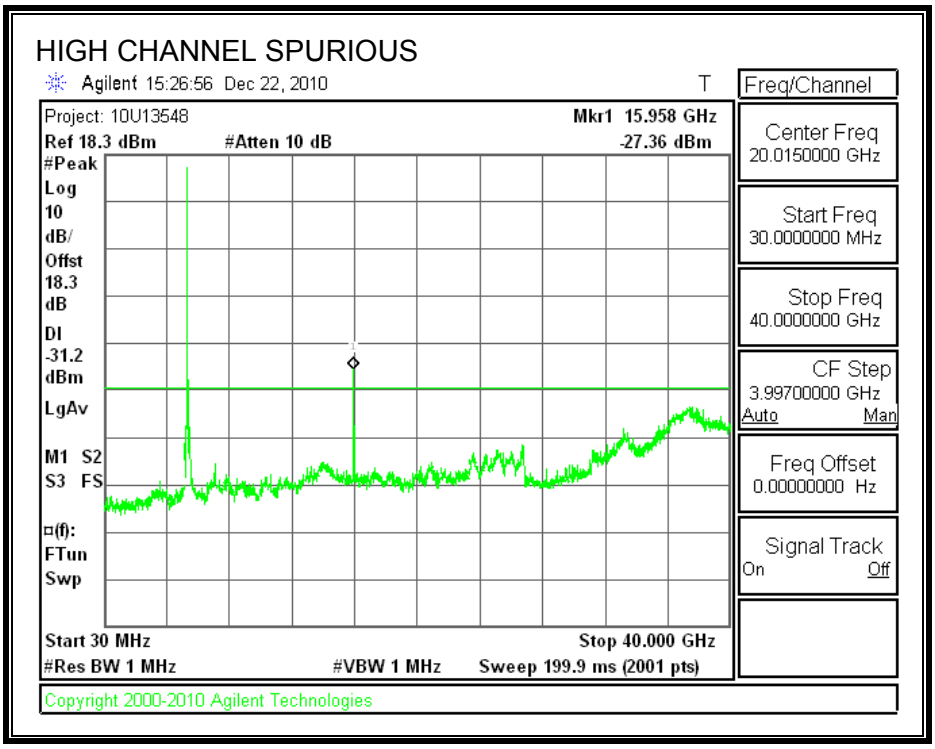
See radiated EIRP in this section for the conducted spurious point that exceeds the limit line.



See radiated EIRP in this section for the conducted spurious point that exceeds the limit line.



See radiated EIRP in this section for the conducted spurious point that exceeds the limit line.



RESULTS

SPURIOUS EMISSIONS

For the failing conducted spurious a radiated measurement was performed for EIRP and it passed as shown in the data below.

LOW CHANNEL SPURIOUS

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Project #: 10U13548
Date: 12/23/10
Test Engineer: Tom chen
Configuration: EUT only
Mode: TX mode, 11a 5260MHz

f GHz	SA reading (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Ant. Pol. (H/V)	Notes
15.54	-37.5	5.7	15.0	-28.2	-27.0	-1.2	H	
15.54	-38.7	5.7	15.0	-29.4	-27.0	-2.4	V	

Rev. 1.24.7

MID CHANNEL SPURIOUS

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Project #: 10U13548
Date: 12/23/10
Test Engineer: Tom chen
Configuration: EUT only
Mode: TX mode, 11a 5300MHz

f GHz	SA reading (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Ant. Pol. (H/V)	Notes
15.90	-39.1	5.7	15.0	-29.8	-27.0	-2.8	H	
15.90	-40.3	5.7	15.0	-31.0	-27.0	-4.0	V	

Rev. 1.24.7

HIGH CHANNEL SPURIOUS

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Project #: 10U13548
Date: 12/23/10
Test Engineer: Tom chen
Configuration: EUT only
Mode: TX mode, 11a 5320MHz

f GHz	SA reading (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Ant. Pol. (H/V)	Notes
15.96	-38.5	5.7	15.0	-29.2	-27.0	-2.2	H	
15.96	-39.7	5.7	15.0	-30.4	-27.0	-3.4	V	

Rev. 1.24.7

7.4. 802.11n HT20 MODE IN THE 5.3 GHz BAND

7.4.1. 26 dB and 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

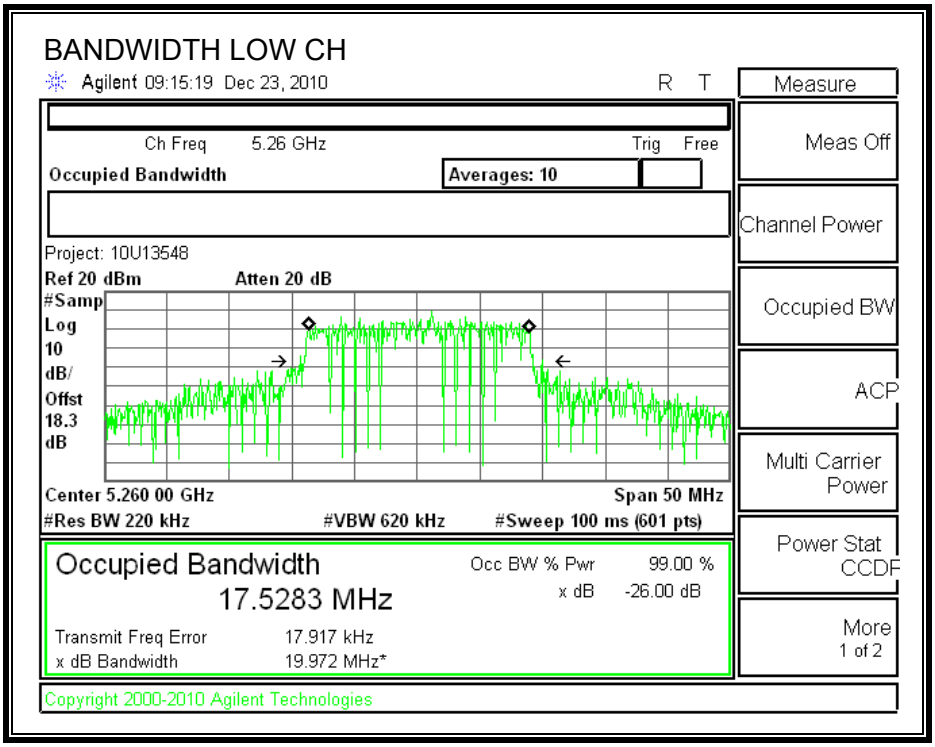
TEST PROCEDURE

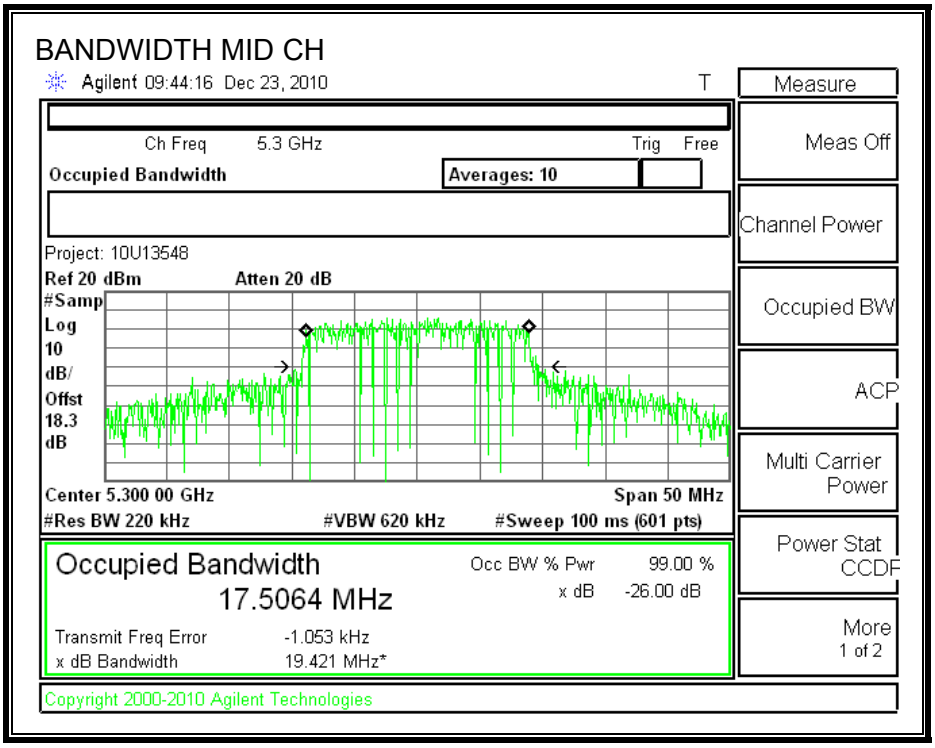
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the measured bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal bandwidth function is utilized.

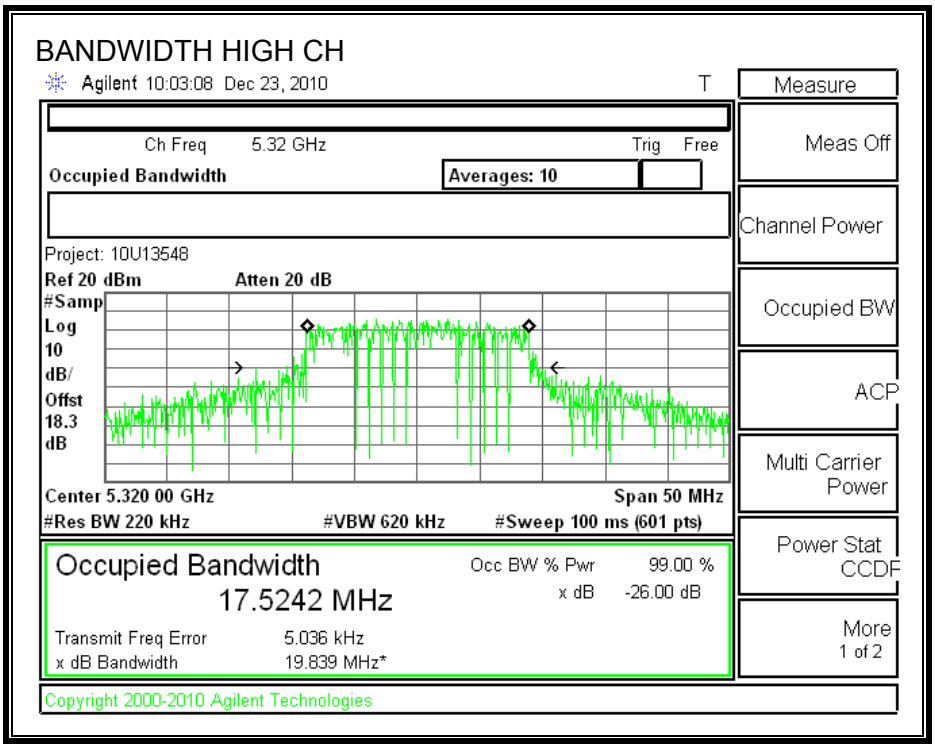
RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5260	19.972	17.5283
Middle	5300	19.421	17.5064
High	5320	19.839	17.5242

26 dB and 99% BANDWIDTH







7.4.2. OUTPUT POWER

LIMITS

FCC §15.407 (a) (2)

IC RSS-210 A9.2 (2)

For the 5.25-5.35 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26-dB emission bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

The transmitter output operates continuously therefore Method # 1 is used.

RESULTS

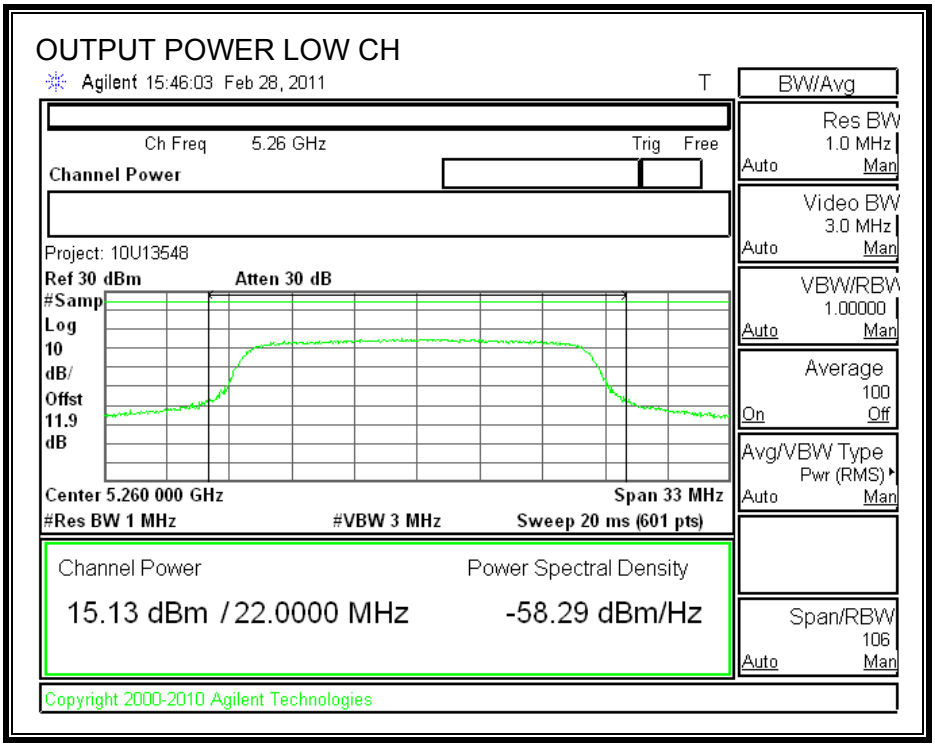
Limit

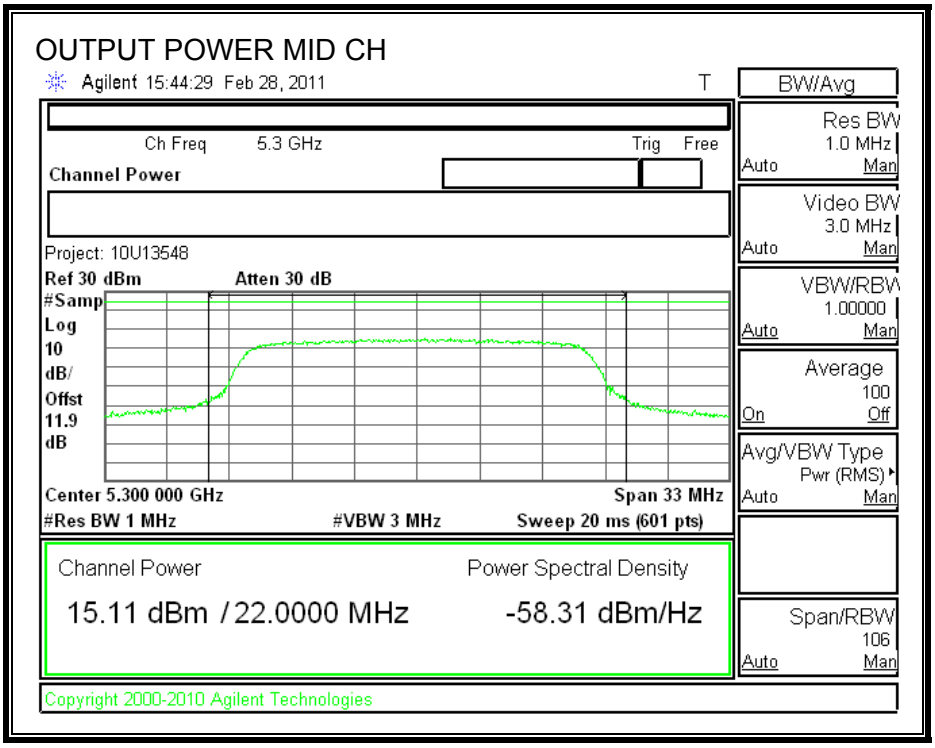
Channel	Frequency (MHz)	Fixed Limit (dBm)	B (MHz)	11 + 10 Log B Limit (dBm)	Antenna Gain (dBi)	Limit (dBm)
Low	5260	24	19.972	24.00	4.20	24.00
Mid	5300	24	19.421	23.88	4.20	23.88
High	5320	24	19.839	23.98	4.20	23.98

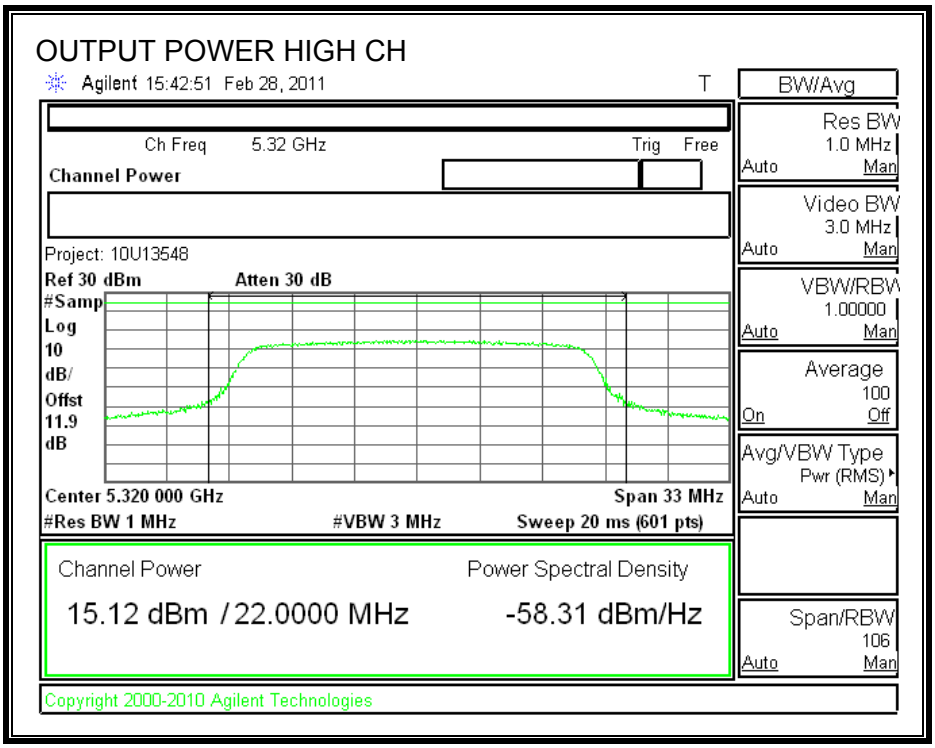
Results

Channel	Frequency (MHz)	Power (dBm)	Limit (dBm)	Margin (dB)
Low	5260	15.13	24.00	-8.87
Mid	5300	15.11	23.88	-8.77
High	5320	15.12	23.98	-8.86

OUTPUT POWER







7.4.3. PEAK POWER SPECTRAL DENSITY

LIMITS

FCC §15.407 (a) (2)

IC RSS-210 A9.2 (2)

For the 5.25–5.35 GHz band, the peak power spectral density shall not exceed 11 dBm in any 1 MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 11 dBm.

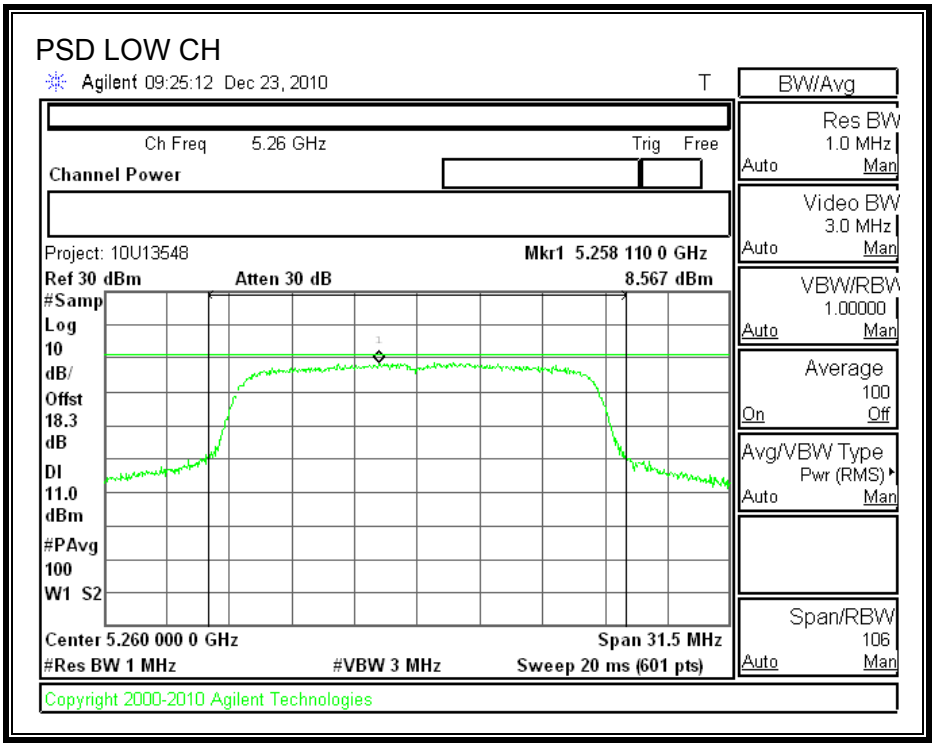
TEST PROCEDURE

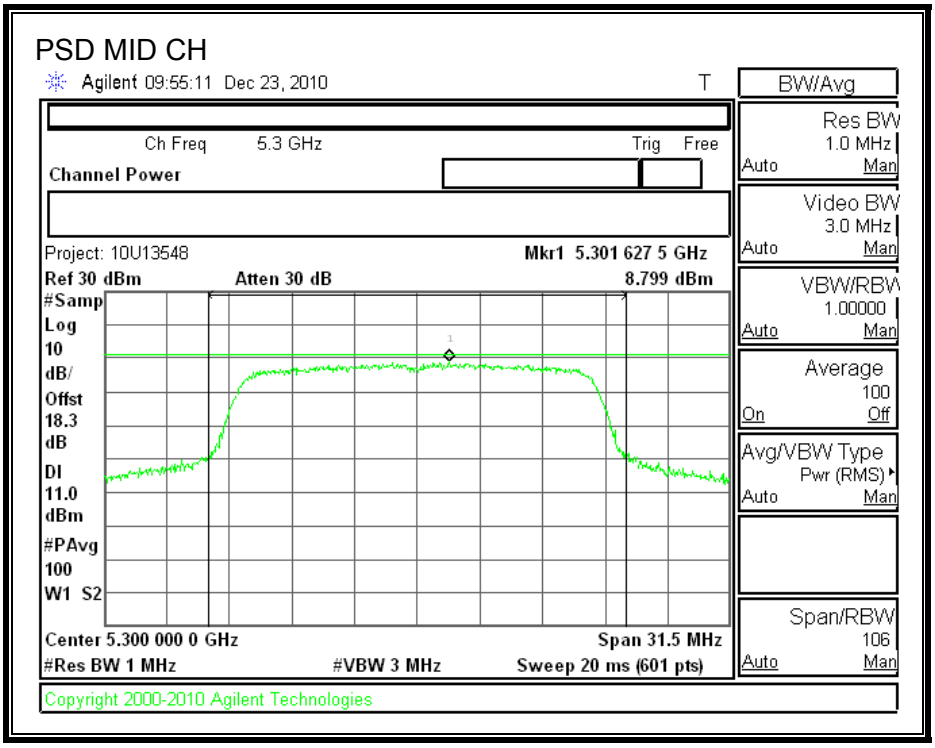
The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002. PPSD method #2 was used.

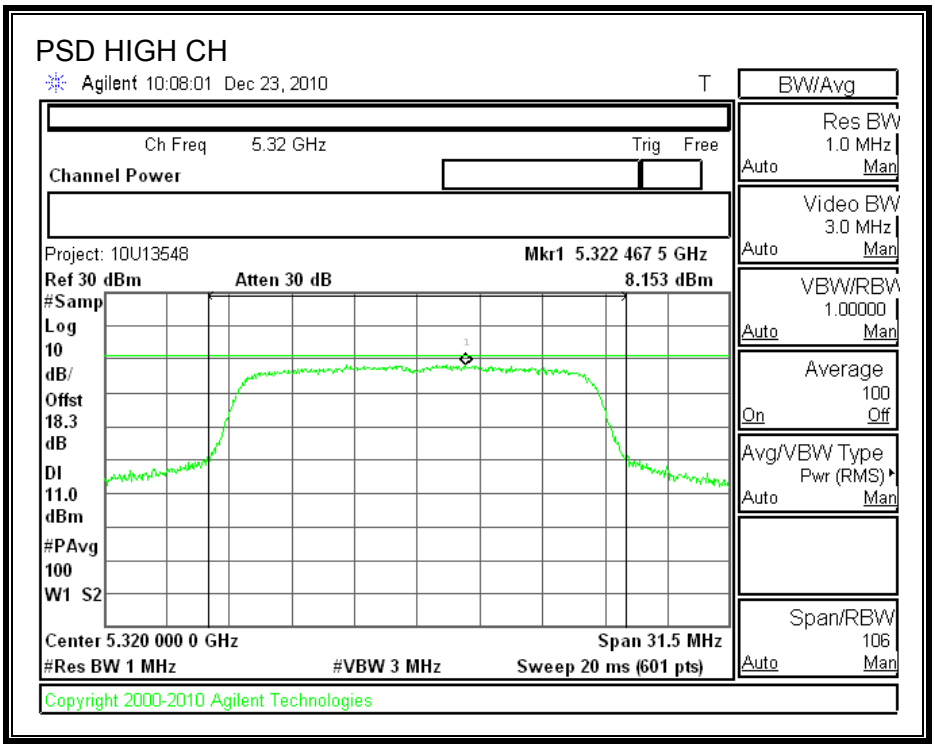
RESULTS

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	5260	8.567	11	-2.433
Middle	5300	8.799	11	-2.201
High	5320	8.153	11	-2.847

POWER SPECTRAL DENSITY







7.4.4. EAK EXCURSION

LIMITS

FCC §15.407 (a) (6)

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

TEST PROCEDURE

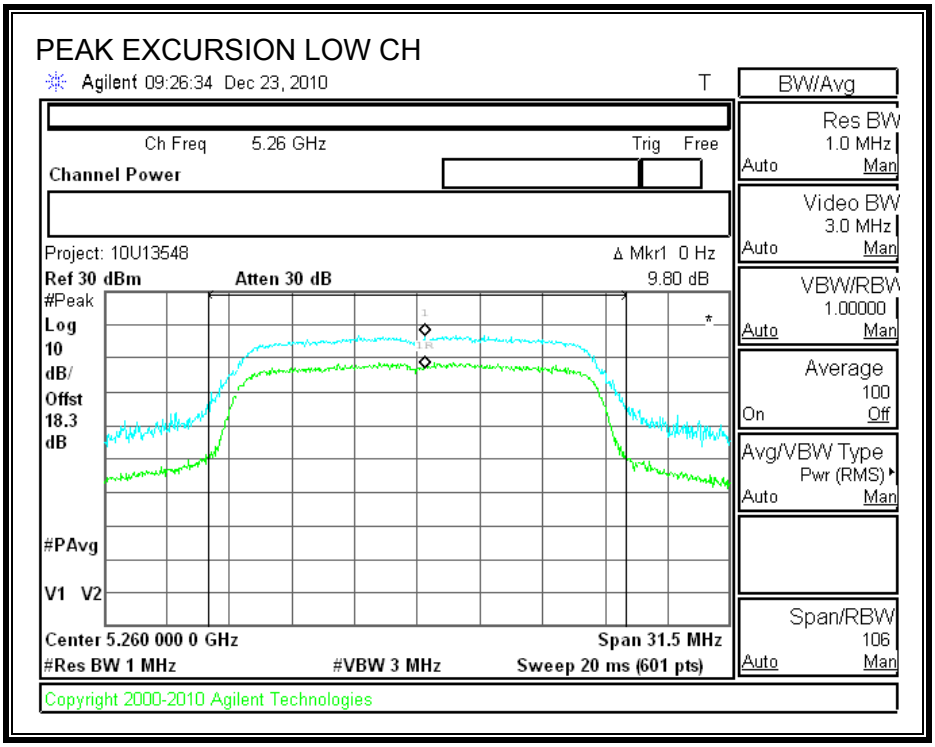
The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

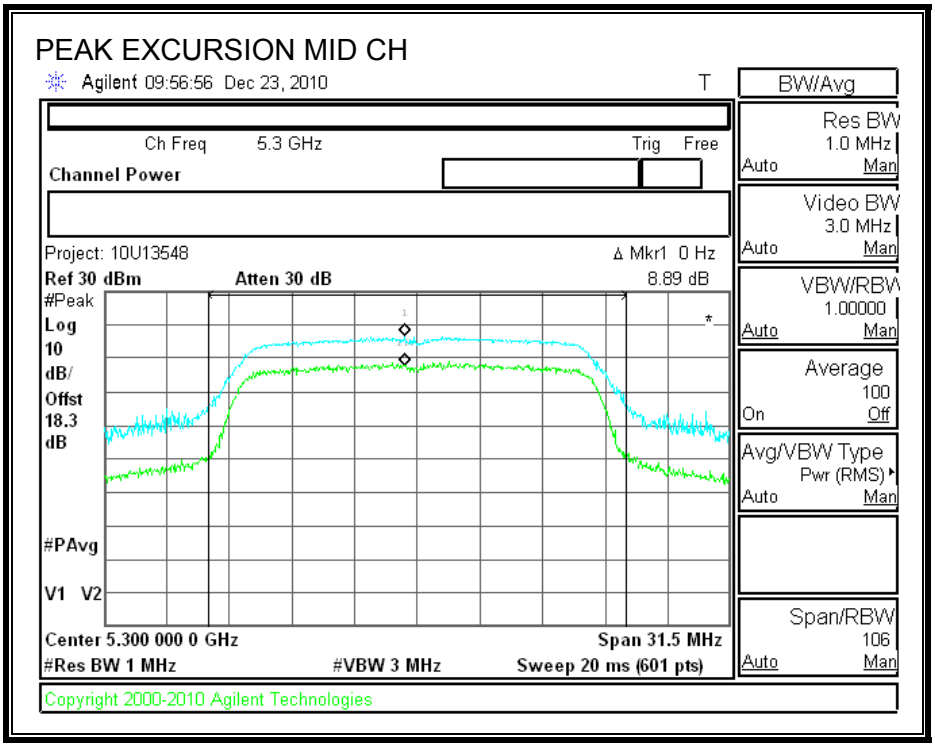
Since Method # 1 was used for peak power measurements, Method # 1 settings are used for the second PPSD trace.

RESULTS

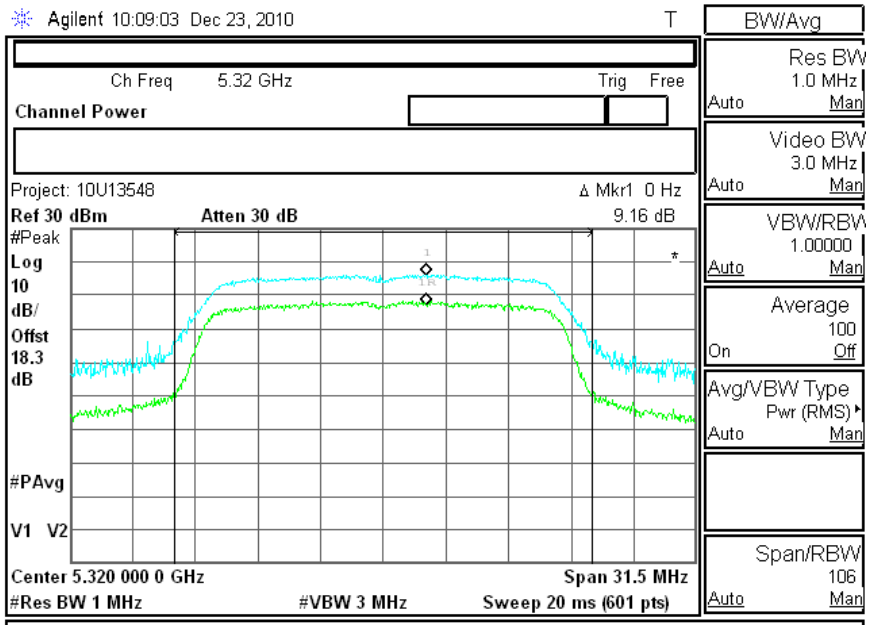
Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Low	5260	9.80	13	-3.20
Middle	5300	8.89	13	-4.11
High	5320	9.16	13	-3.84

PEAK EXCURSION





PEAK EXCURSION HIGH CH



7.4.5. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.407 (b) (2)

IC RSS-210 A9.3 (2)

For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.25-5.35 GHz band shall not exceed an EIRP of -27 dBm / MHz.

Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5.15-5.25 GHz band.

TEST PROCEDURE

Conducted RF measurements of the transmitter output are made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

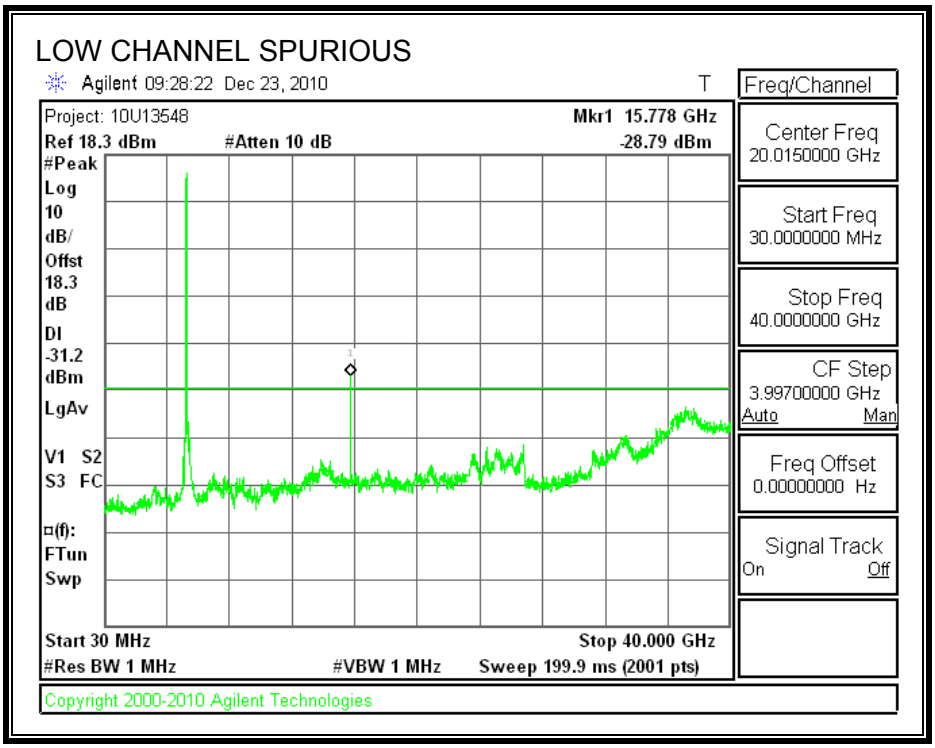
The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 1 MHz. The video bandwidth is set to 1 MHz. Peak detection measurements are compared to EIRP limit, adjusted for the maximum antenna gain.

Measurements are made over the 30 MHz to 40 GHz range with the transmitter set to the lowest, middle, and highest channels.

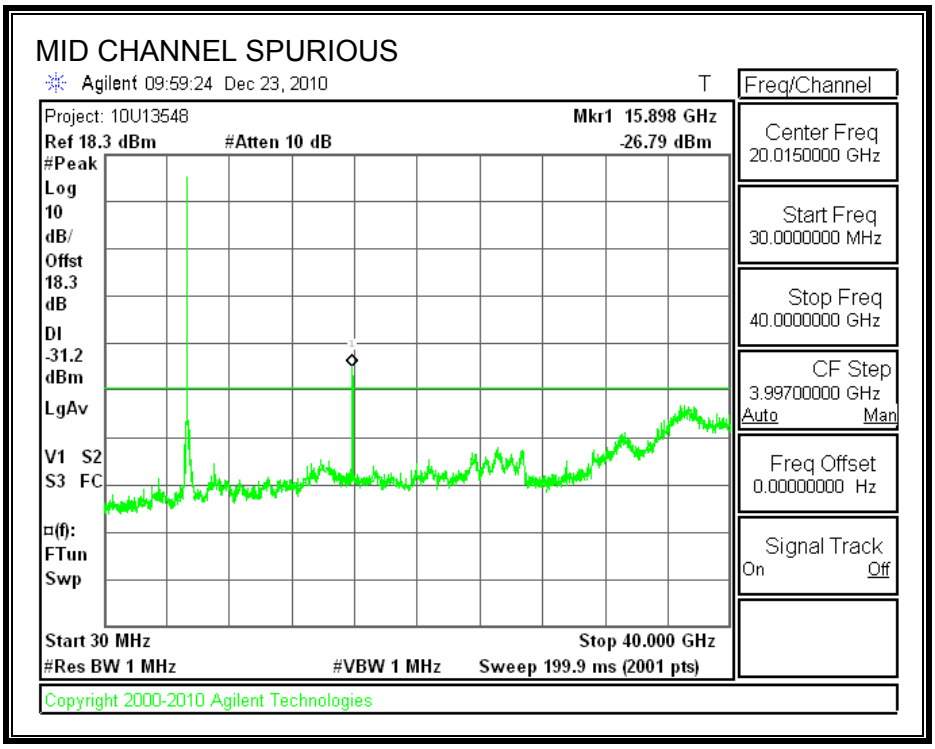
RESULTS

SPURIOUS EMISSIONS

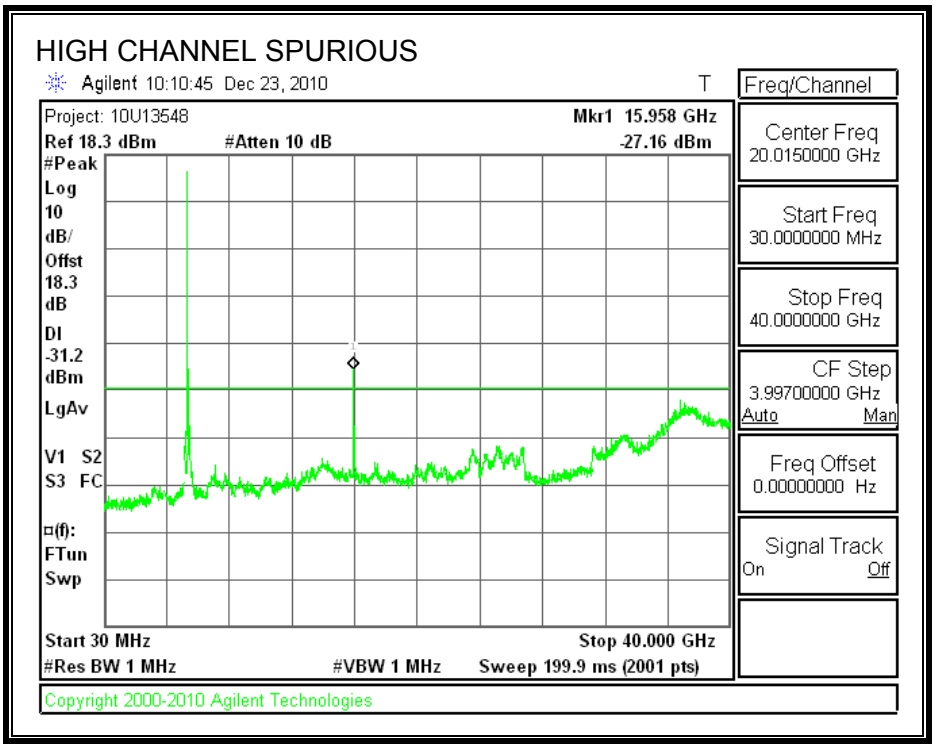
See radiated EIRP in this section for the conducted spurious point that exceeds the limit line.



See radiated EIRP in this section for the conducted spurious point that exceeds the limit line.



See radiated EIRP in this section for the conducted spurious point that exceeds the limit line.



RESULTS

SPURIOUS EMISSIONS

For the failing conducted spurious a radiated measurement was performed for EIRP and it passed as shown in the data below.

LOW CHANNEL SPURIOUS

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Project #: 10U13548
Date: 12/23/10
Test Engineer: Tom chen
Configuration: EUT only
Mode: TX mode, HT20 5260MHz

f GHz	SA reading (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Ant. Pol. (H/V)	Notes
15.78	-39.5	5.7	15.0	-30.2	-27.0	-3.2	H	
15.78	-40.7	5.7	15.0	-31.4	-27.0	-4.4	V	

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MID CHANNEL SPURIOUS

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Project #: 10U13548
Date: 12/23/10
Test Engineer: Tom chen
Configuration: EUT only
Mode: TX mode, HT20 5300MHz

f GHz	SA reading (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Ant. Pol. (H/V)	Notes
15.90	-38.1	5.7	15.0	-28.8	-27.0	-1.8	H	
15.90	-39.3	5.7	15.0	-30.0	-27.0	-3.0	V	

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HIGH CHANNEL SPURIOUS

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Project #: 10U13548
Date: 12/23/10
Test Engineer: Tom chen
Configuration: EUT only
Mode: TX mode, HT20 5320MHz

f GHz	SA reading (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Ant. Pol. (H/V)	Notes
15.96	-38.3	5.7	15.0	-29.0	-27.0	-2.0	H	
15.96	-39.5	5.7	15.0	-30.2	-27.0	-3.2	V	

Rev. 1.24.7

7.5. 802.11a MODE IN THE 5.6 GHz BAND

7.5.1. 26 dB and 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

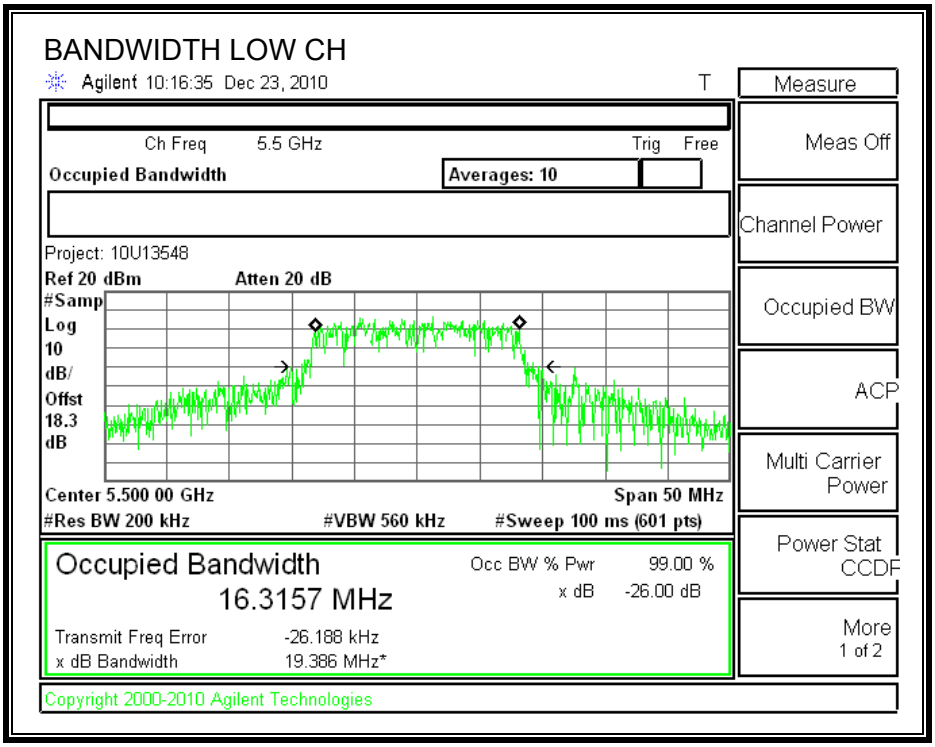
TEST PROCEDURE

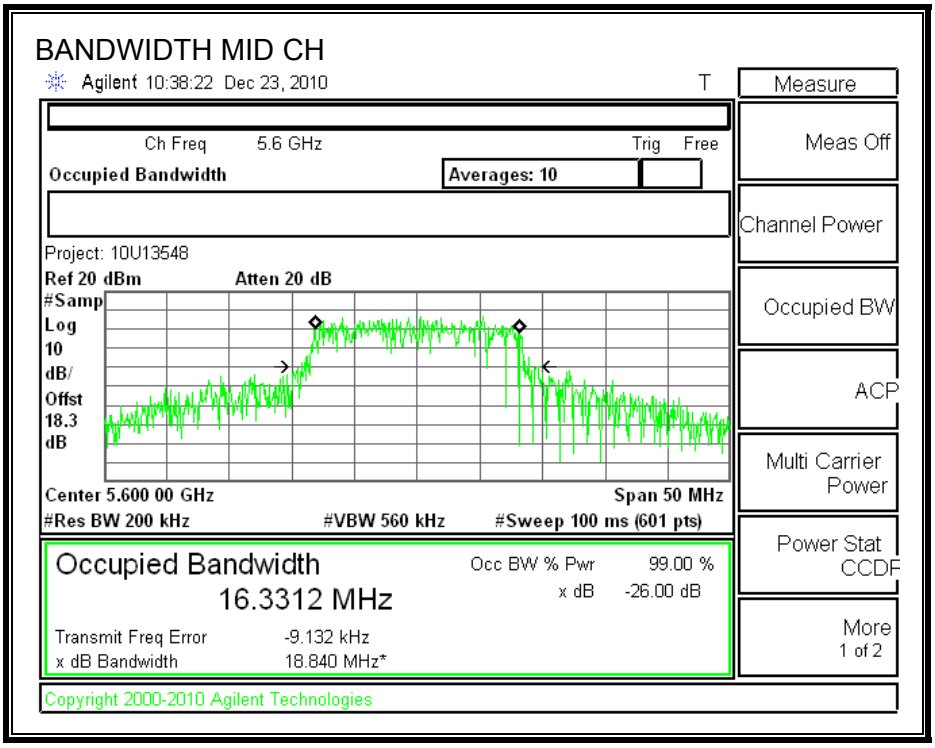
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the measured bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal bandwidth function is utilized.

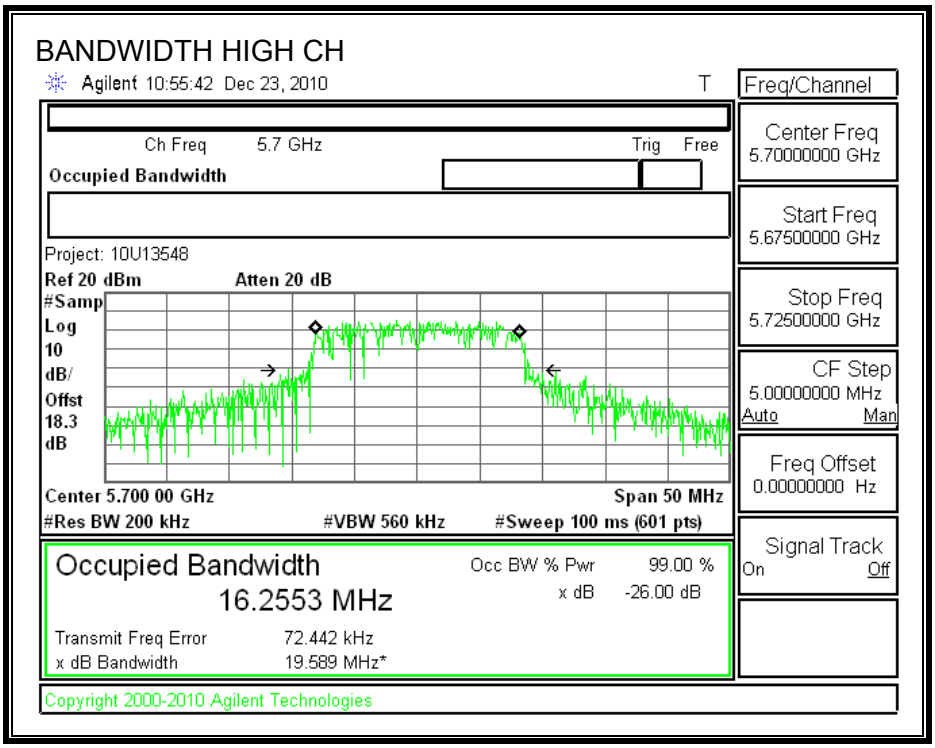
RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5500	19.386	16.3157
Middle	5600	18.84	16.3312
High	5700	19.589	16.2553

26 dB and 99% BANDWIDTH







7.5.2. OUTPUT POWER

LIMITS

FCC §15.407 (a) (2)

IC RSS-210 A9.2 (2)

For the 5.47-5.725 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26-dB emission bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

The transmitter output operates continuously therefore Method # 1 is used.

RESULTS

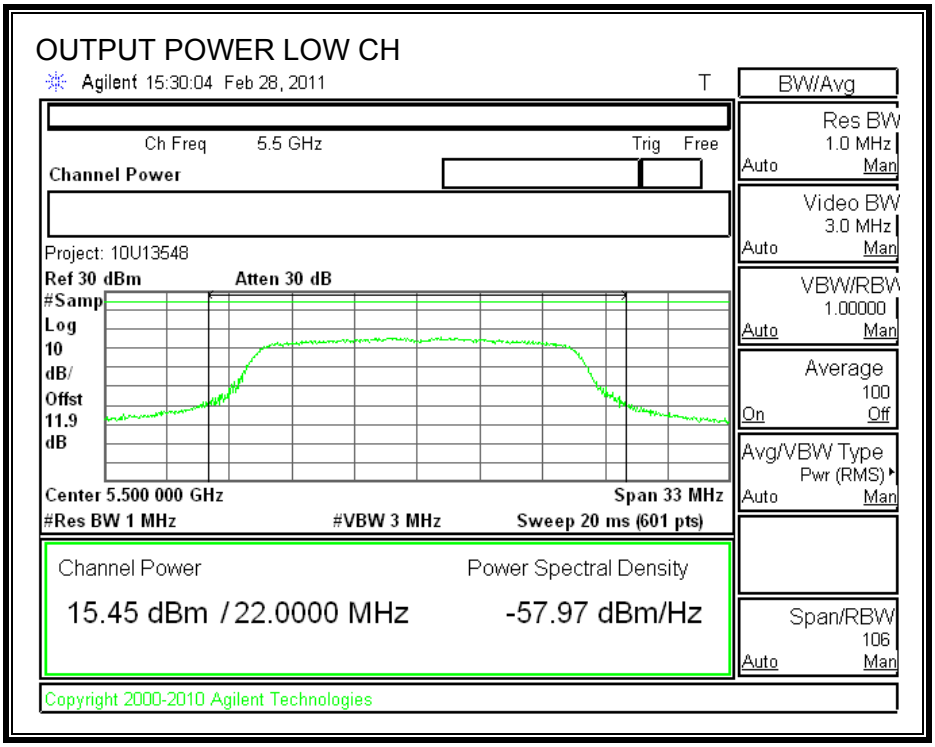
Limit

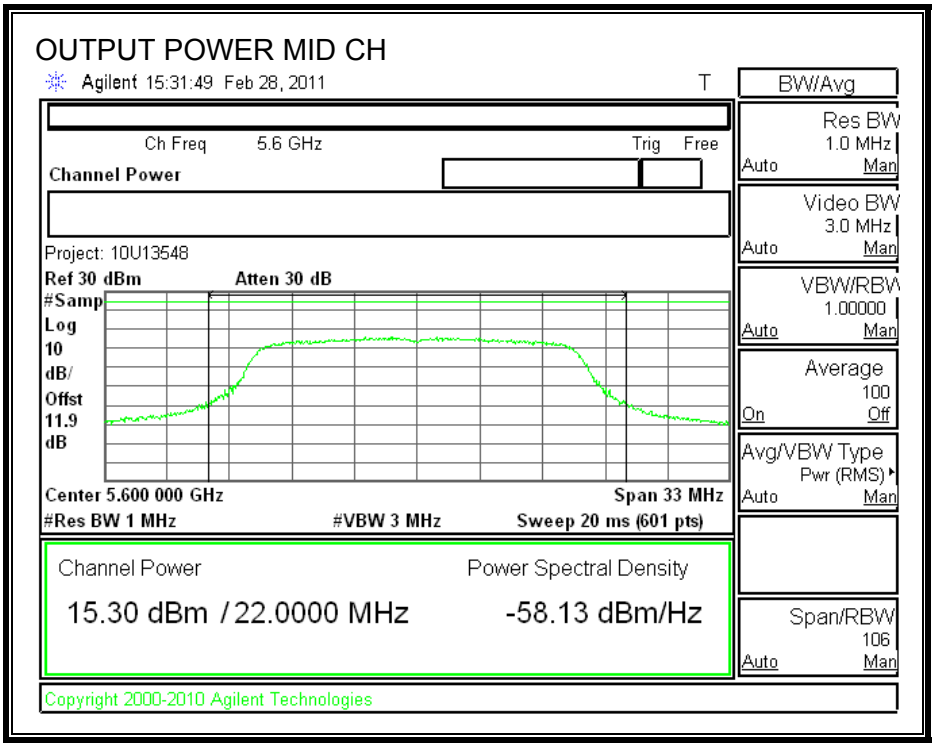
Channel	Frequency (MHz)	Fixed Limit (dBm)	B (MHz)	11 + 10 Log B Limit (dBm)	Antenna Gain (dBi)	Limit (dBm)
Low	5500	24	19.386	23.87	4.21	23.87
Mid	5600	24	18.84	23.75	4.21	23.75
High	5700	24	19.589	23.92	4.21	23.92

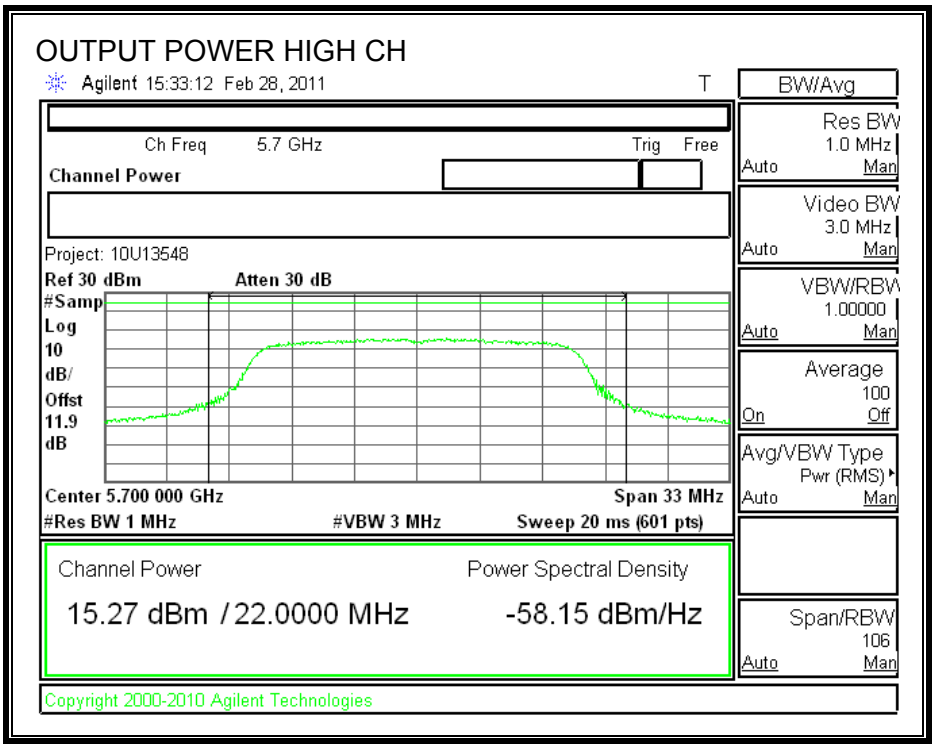
Results

Channel	Frequency (MHz)	Power (dBm)	Limit (dBm)	Margin (dB)
Low	5500	15.45	23.87	-8.42
Mid	5600	15.30	23.75	-8.45
High	5700	15.27	23.92	-8.65

OUTPUT POWER







7.5.3. PEAK POWER SPECTRAL DENSITY

LIMITS

FCC §15.407 (a) (2)

IC RSS-210 A9.2 (2)

For the 5.47-5.725 GHz band, the peak power spectral density shall not exceed 11 dBm in any 1 MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 11 dBm.

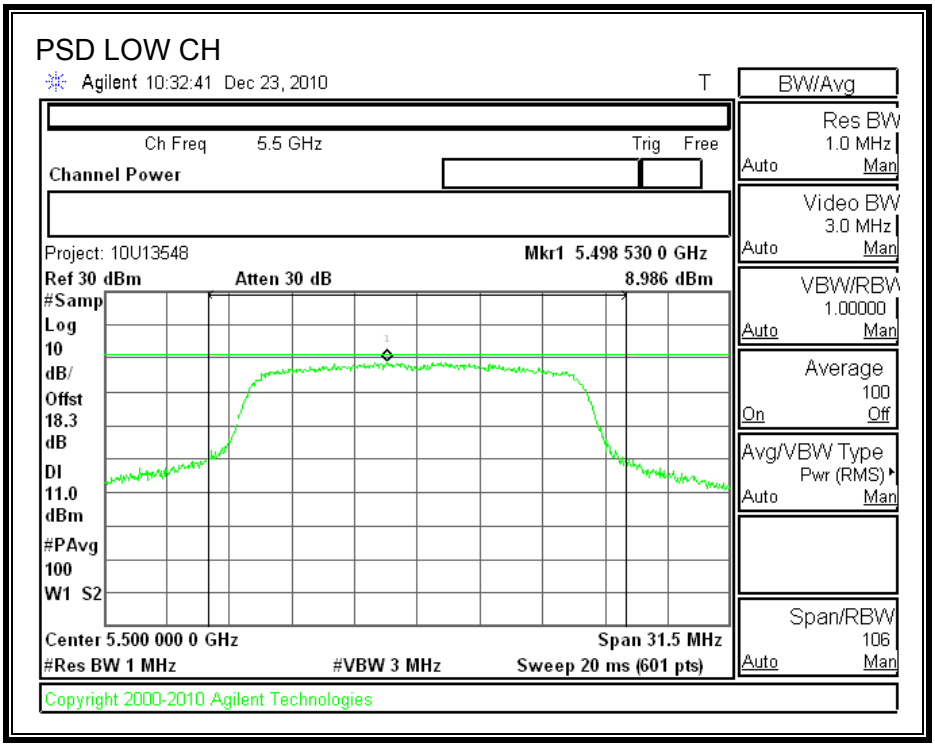
TEST PROCEDURE

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002. PPSD method #2 was used.

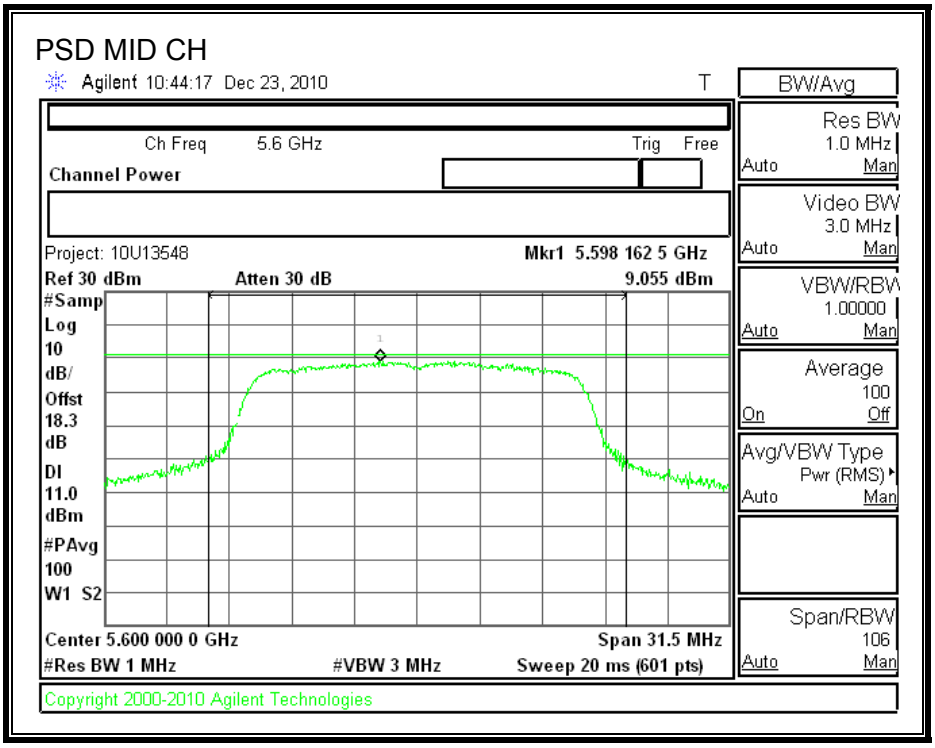
RESULTS

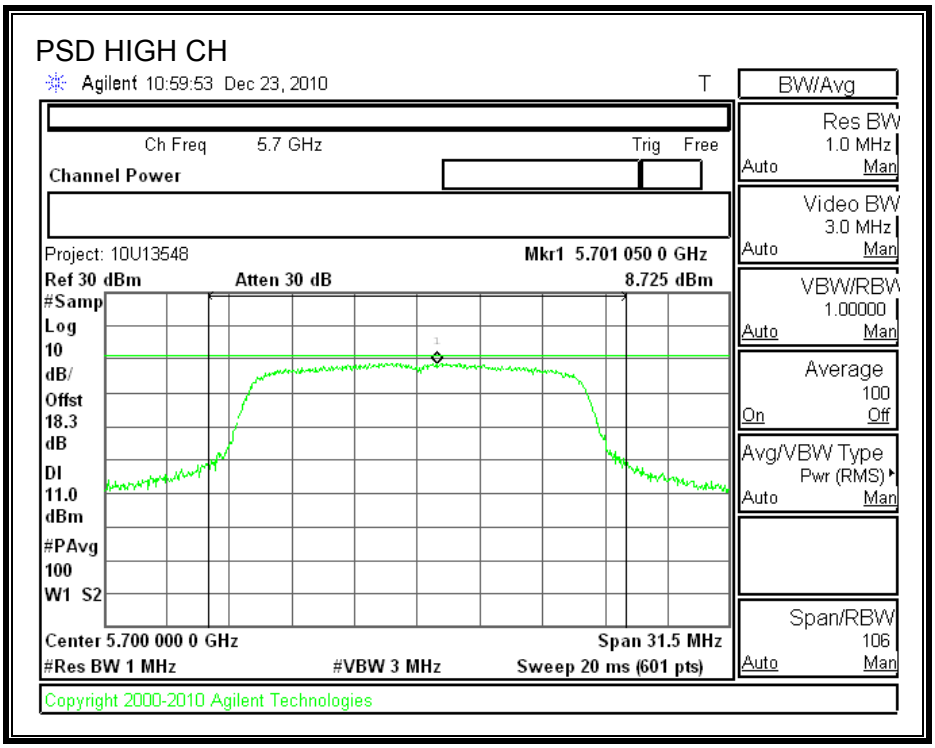
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	5500	8.986	11	-2.014
Middle	5600	9.055	11	-1.945
High	5700	8.725	11	-2.275

POWER SPECTRAL DENSITY



PSD MID CH





7.5.4. PEAK EXCURSION

LIMITS

FCC §15.407 (a) (6)

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

TEST PROCEDURE

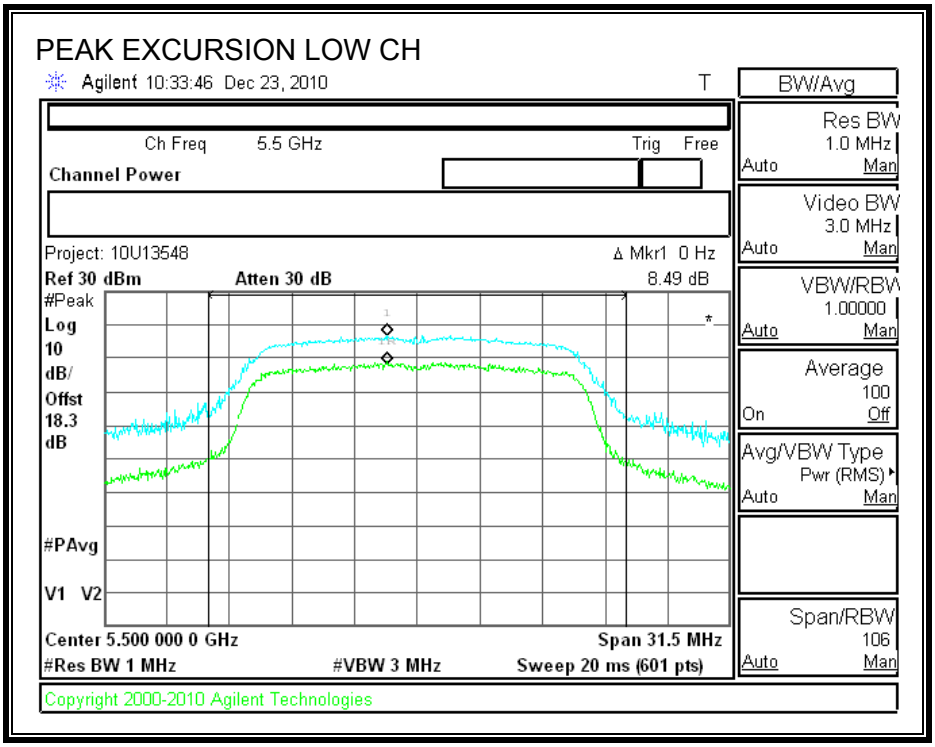
The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

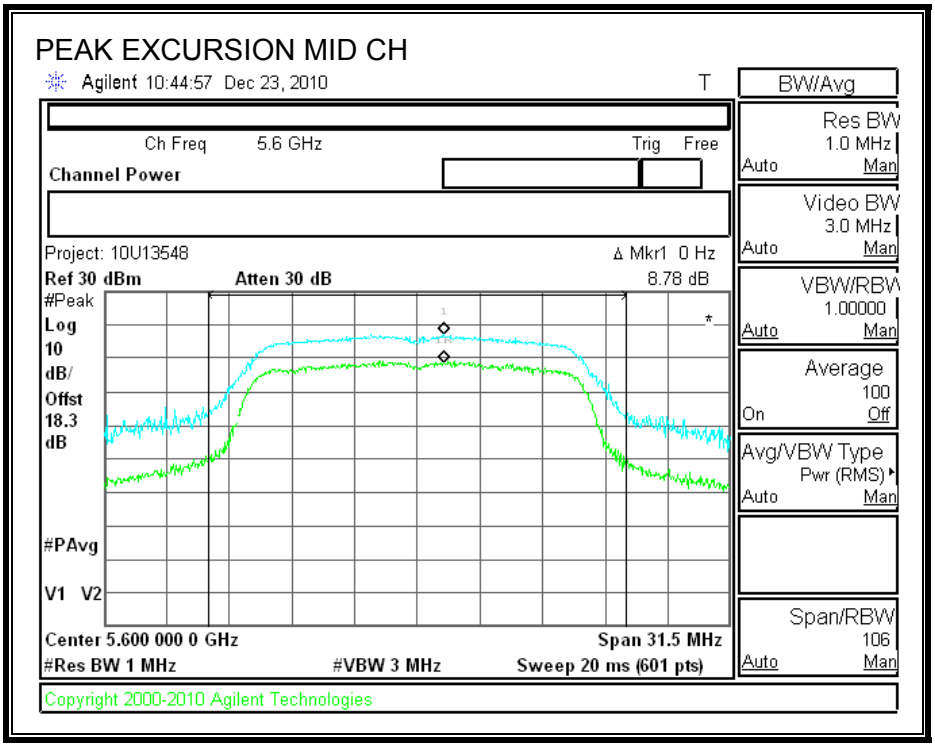
Since Method # 1 was used for peak power measurements, Method # 1 settings are used for the second PPSD trace.

RESULTS

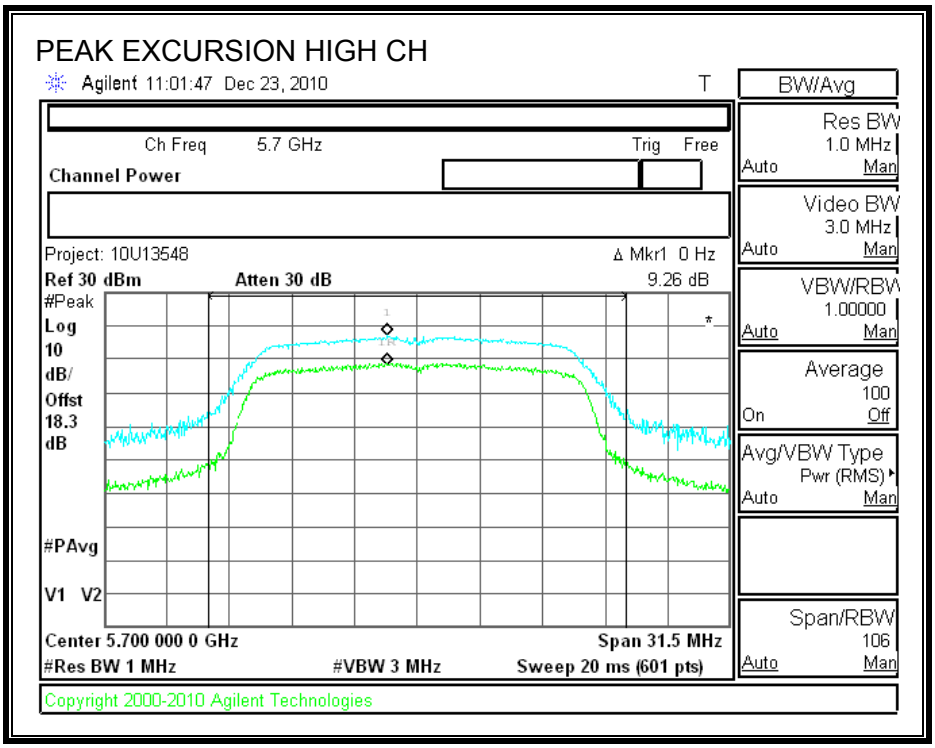
Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Low	5500	8.49	13	-4.51
Middle	5600	8.78	13	-4.22
High	5700	9.26	13	-3.74

PEAK EXCURSION





PEAK EXCURSION HIGH CH



7.5.5. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.407 (b) (3)

IC RSS-210 A9.3 (3)

For transmitters operating in the 5.47-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of -27 dBm / MHz.

TEST PROCEDURE

Conducted RF measurements of the transmitter output are made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

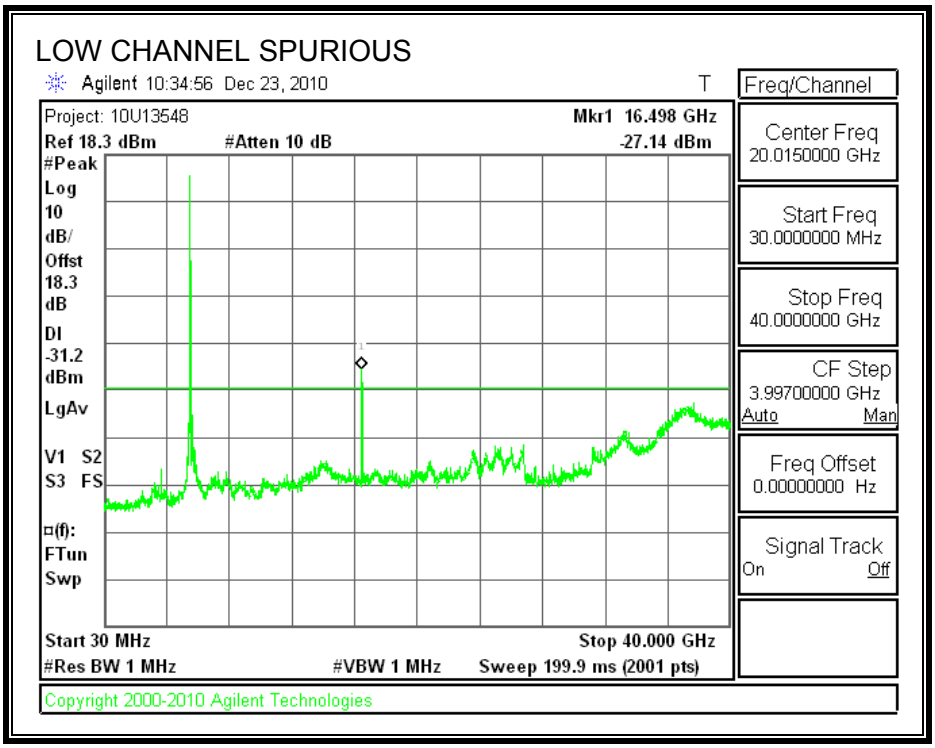
The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 1 MHz. The video bandwidth is set to 1 MHz. Peak detection measurements are compared to EIRP limit, adjusted for the maximum antenna gain.

Measurements are made over the 30 MHz to 40 GHz range with the transmitter set to the lowest, middle, and highest channels.

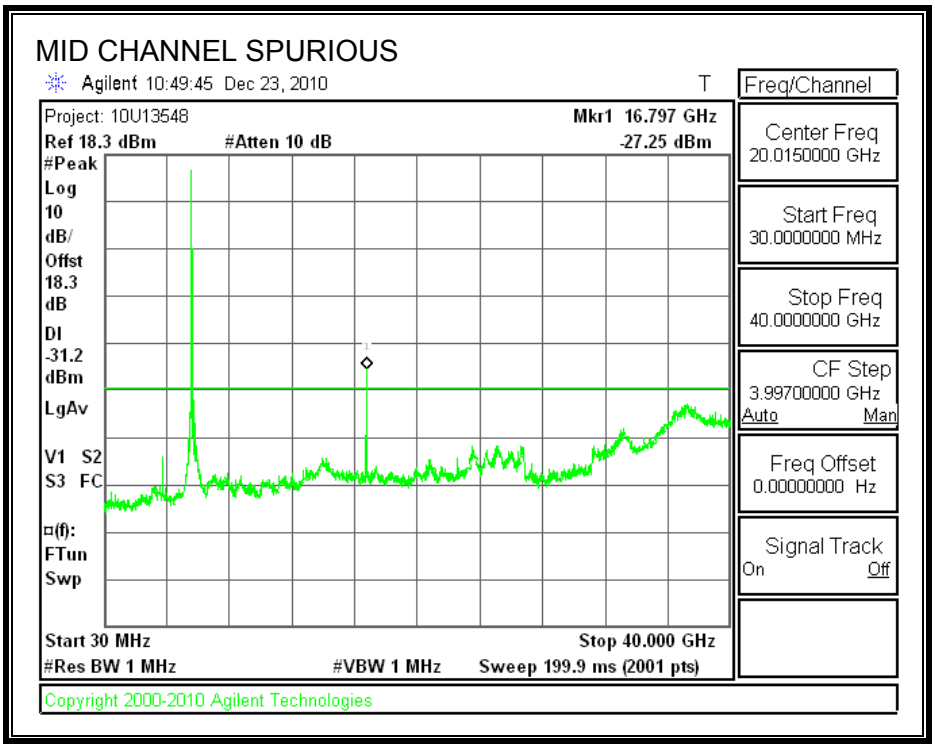
RESULTS

SPURIOUS EMISSIONS

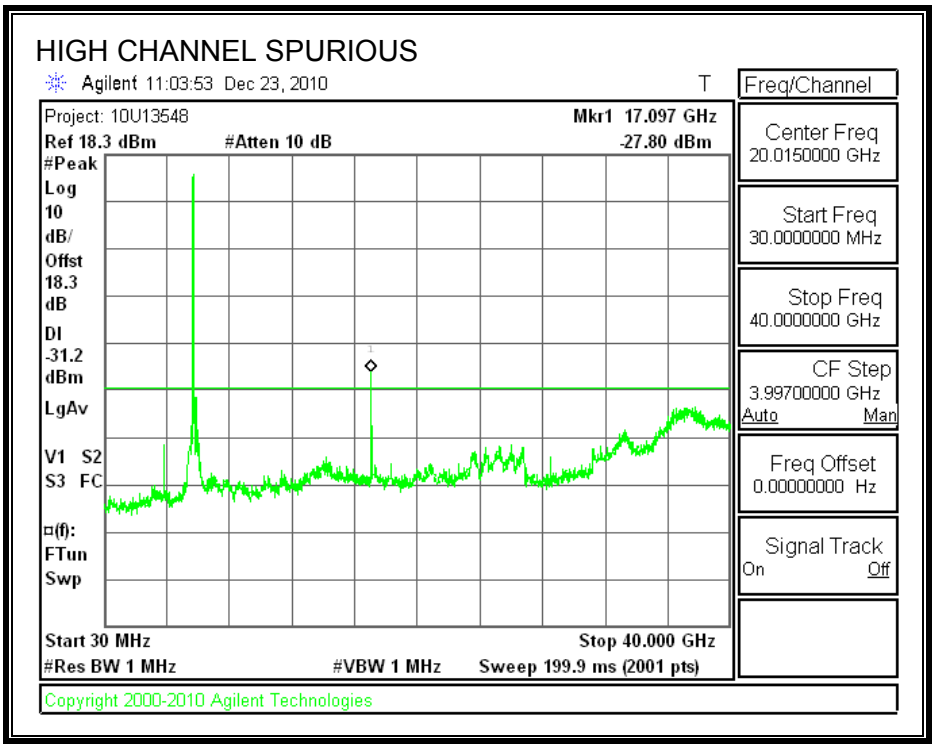
See radiated EIRP in this section for the conducted spurious point that exceeds the limit line.



See radiated EIRP in this section for the conducted spurious point that exceeds the limit line.



See radiated EIRP in this section for the conducted spurious point that exceeds the limit line.



SPURIOUS EMISSIONS

For the failing conducted spurious a radiated measurement was performed for EIRP and it passed as shown in the data below.

LOW CHANNEL SPURIOUS

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Project #: 10U13548
Date: 12/23/10
Test Engineer: Tom chen
Configuration: EUT only
Mode: TX mode, 11a 5500MHz

f GHz	SA reading (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Ant. Pol. (H/V)	Notes
16.50	-38.5	5.7	15.0	-29.2	-27.0	-2.2	H	
16.50	-39.7	5.7	15.0	-30.4	-27.0	-3.4	V	

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MID CHANNEL SPURIOUS

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Project #: 10U13548
Date: 12/23/10
Test Engineer: Tom chen
Configuration: EUT only
Mode: TX mode, 11a 5600MHz

f GHz	SA reading (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Ant. Pol. (H/V)	Notes
16.80	-38.1	5.7	15.0	-28.8	-27.0	-1.8	H	
16.80	-39.3	5.7	15.0	-30.0	-27.0	-3.0	V	

Rev. 1.24.7

HIGH CHANNEL SPURIOUS

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Project #: 10U13548
Date: 12/23/10
Test Engineer: Tom chen
Configuration: EUT only
Mode: TX mode, 11a 5700MHz

f GHz	SA reading (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Ant. Pol. (H/V)	Notes
17.10	-38.5	5.7	15.0	-29.2	-27.0	-2.2	H	
17.10	-39.7	5.7	15.0	-30.4	-27.0	-3.4	V	

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7.6. 802.11n HT20 MODE IN THE 5.6 GHz BAND

7.6.1. 26 dB and 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

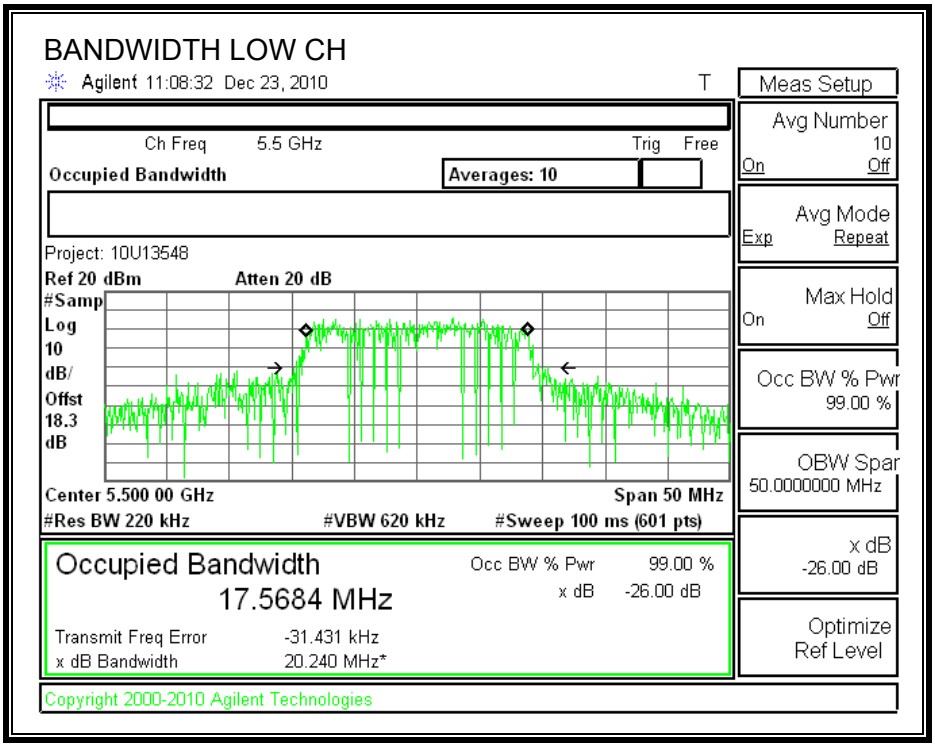
TEST PROCEDURE

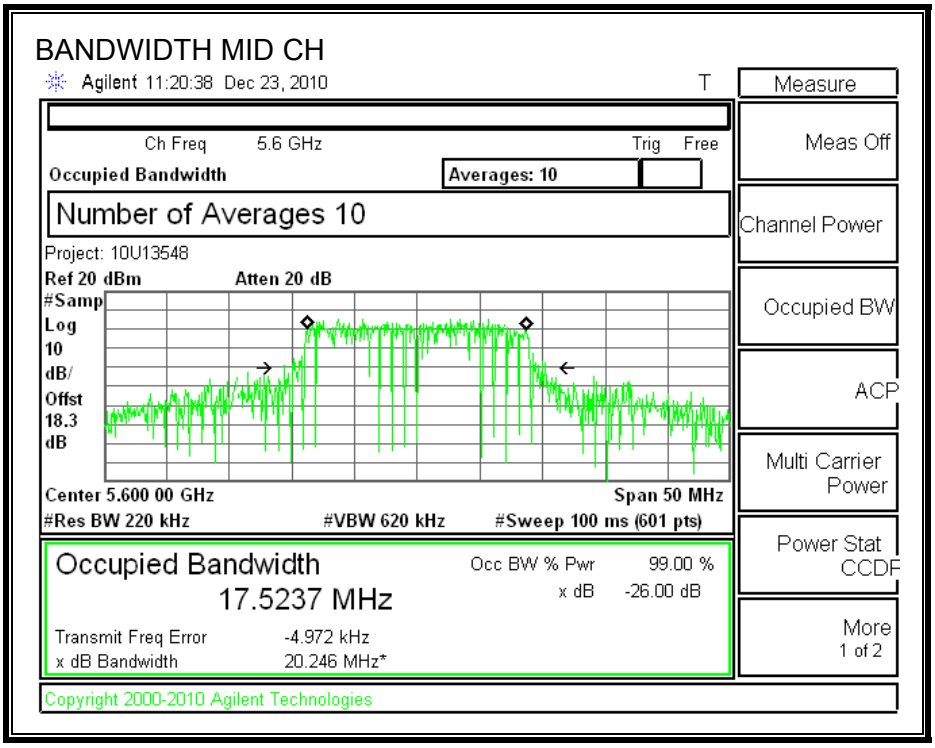
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the measured bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal bandwidth function is utilized.

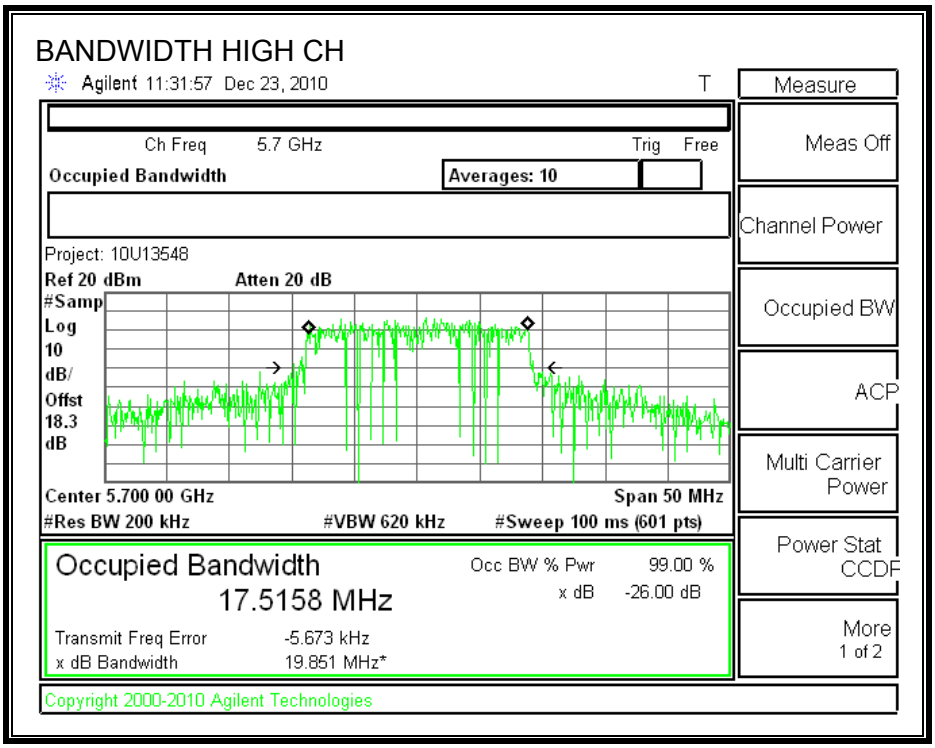
RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	5500	20.24	17.5684
Middle	5600	20.246	17.5237
High	5700	19.851	17.5158

26 dB and 99% BANDWIDTH







7.6.2. OUTPUT POWER

LIMITS

FCC §15.407 (a) (2)

IC RSS-210 A9.2 (2)

For the 5.47-5.725 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26-dB emission bandwidth in MHz. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

The transmitter output operates continuously therefore Method # 1 is used.

RESULTS

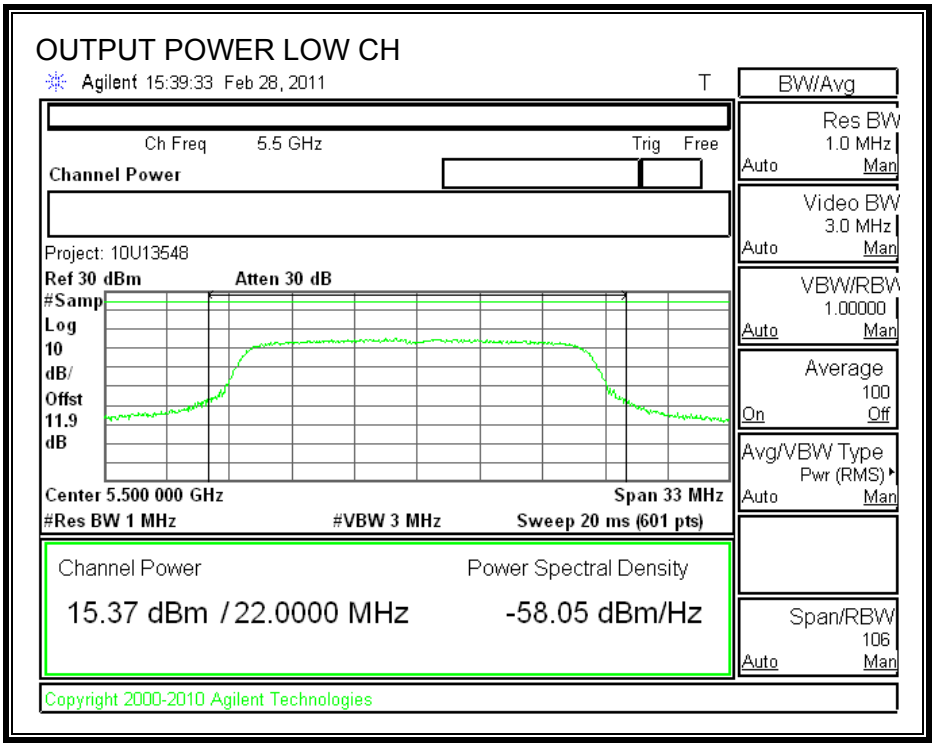
Limit

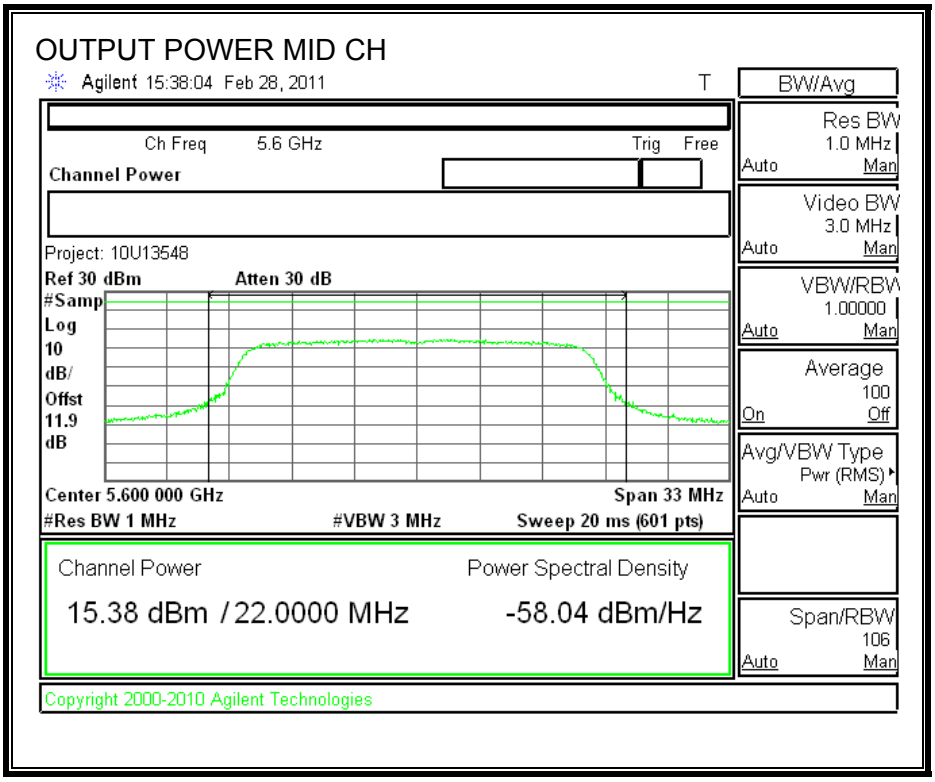
Channel	Frequency (MHz)	Fixed Limit (dBm)	B (MHz)	11 + 10 Log B Limit (dBm)	Antenna Gain (dBi)	Limit (dBm)
Low	5500	24	20.24	24.06	4.21	24.00
Mid	5580	24	20.246	24.06	4.21	24.00
High	5700	24	19.851	23.98	4.21	23.98

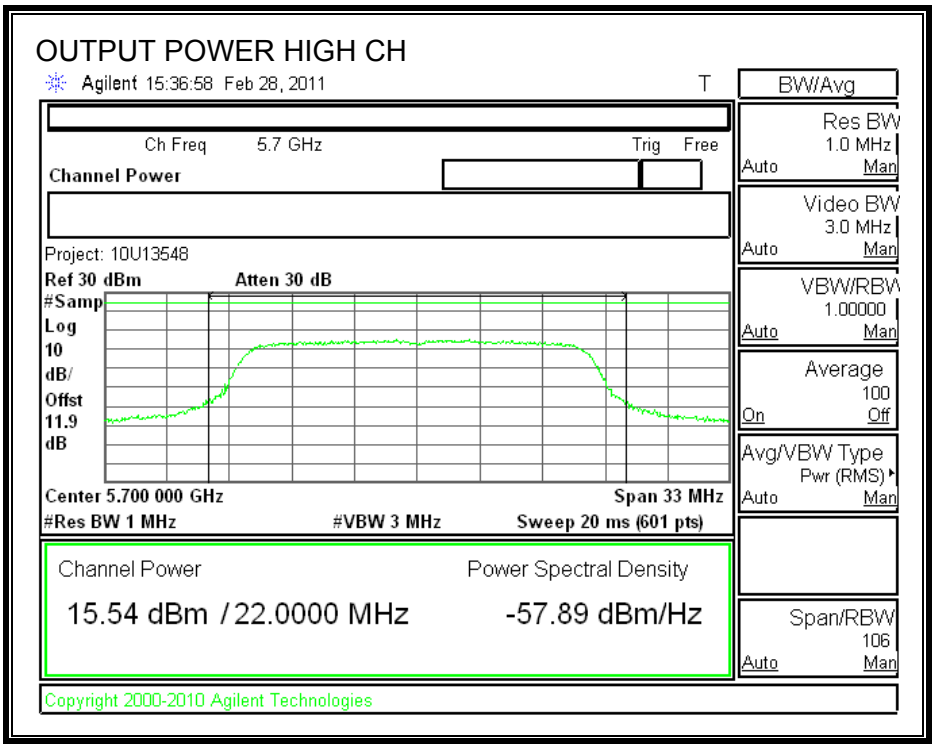
Results

Channel	Frequency (MHz)	Power (dBm)	Limit (dBm)	Margin (dB)
Low	5500	15.37	24.00	-8.63
Mid	5580	15.38	24.00	-8.62
High	5700	15.54	23.98	-8.44

OUTPUT POWER







7.6.3. PEAK POWER SPECTRAL DENSITY

LIMITS

FCC §15.407 (a) (2)

IC RSS-210 A9.2 (2)

For the 5.47-5.725 GHz band, the peak power spectral density shall not exceed 11 dBm in any 1 MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 11 dBm.

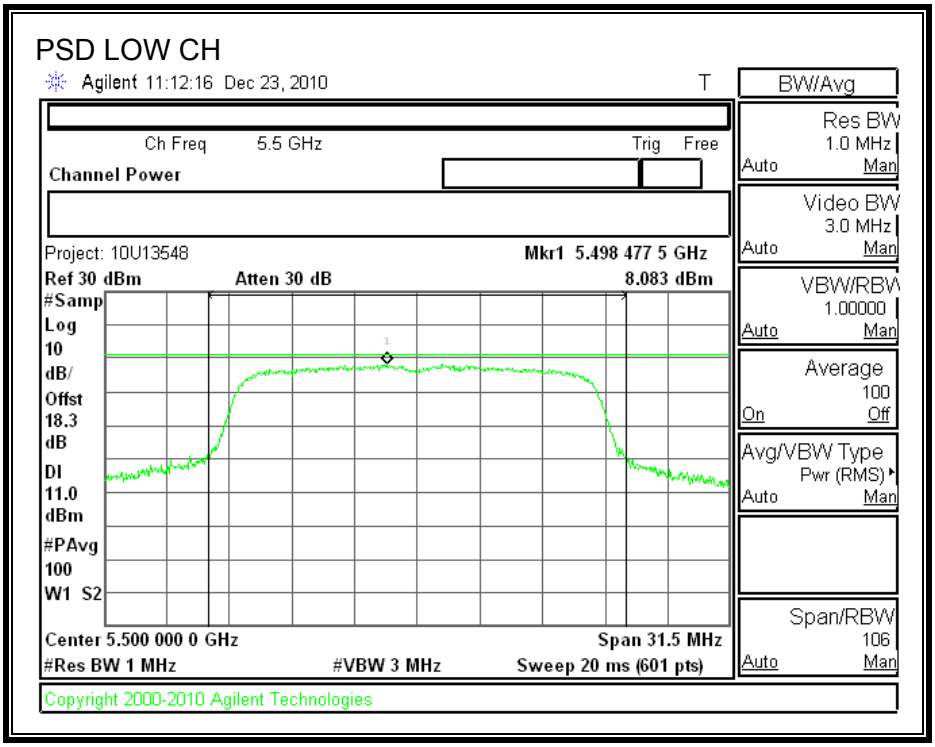
TEST PROCEDURE

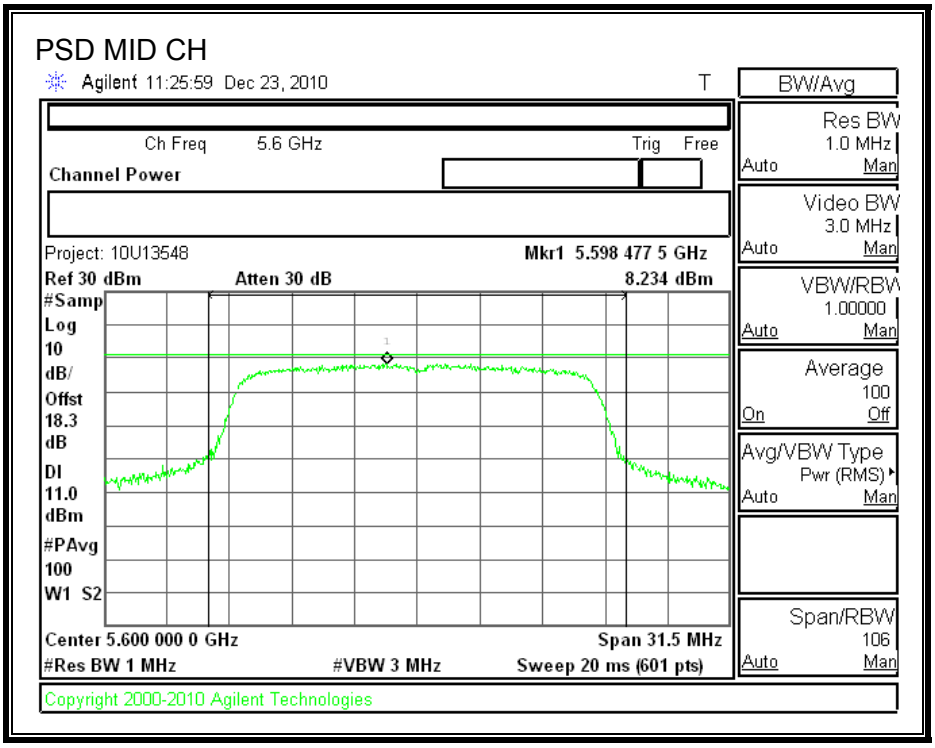
The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002. PPSD method #2 was used.

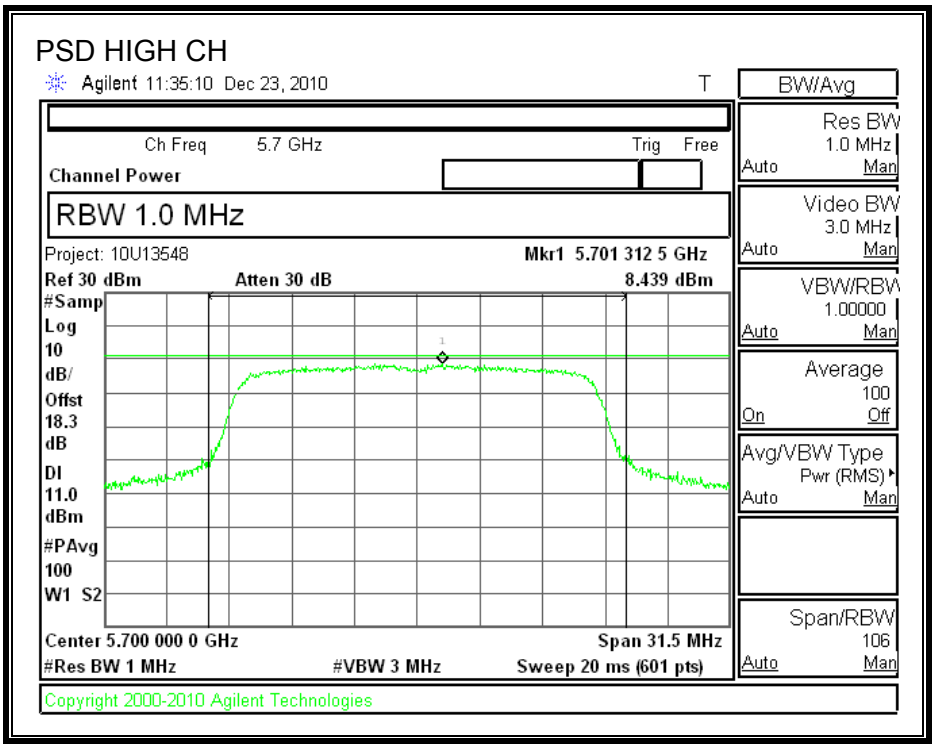
RESULTS

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	5500	8.083	11	-2.917
Middle	5600	8.234	11	-2.766
High	5700	8.439	11	-2.561

POWER SPECTRAL DENSITY







7.6.4. PEAK EXCURSION

LIMITS

FCC §15.407 (a) (6)

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

TEST PROCEDURE

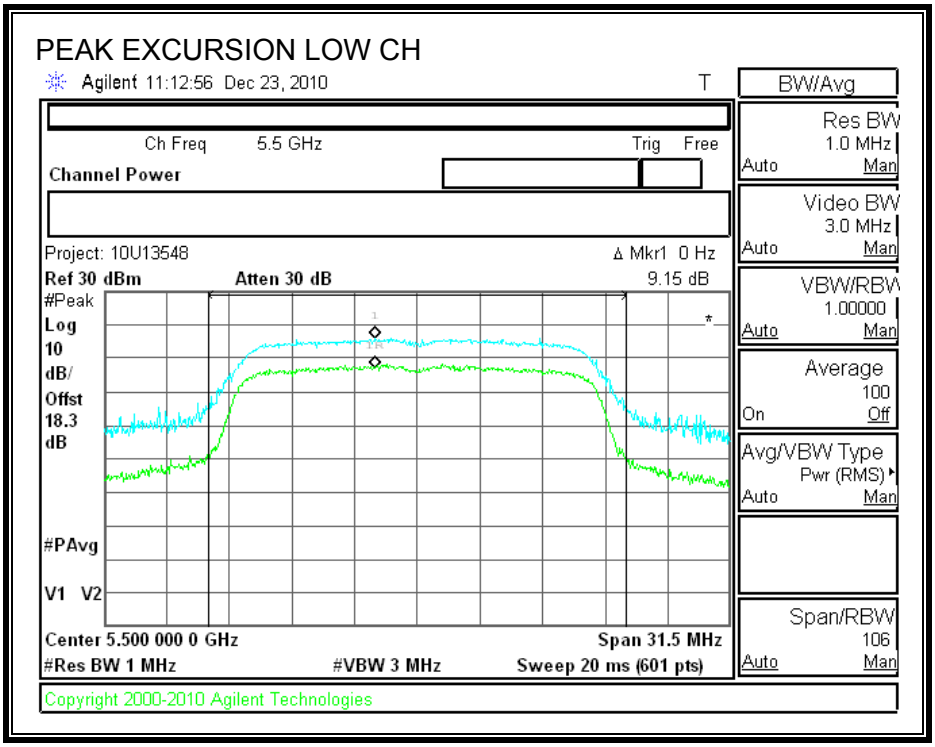
The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

Since Method # 1 was used for peak power measurements, Method # 1 settings are used for the second PPSD trace.

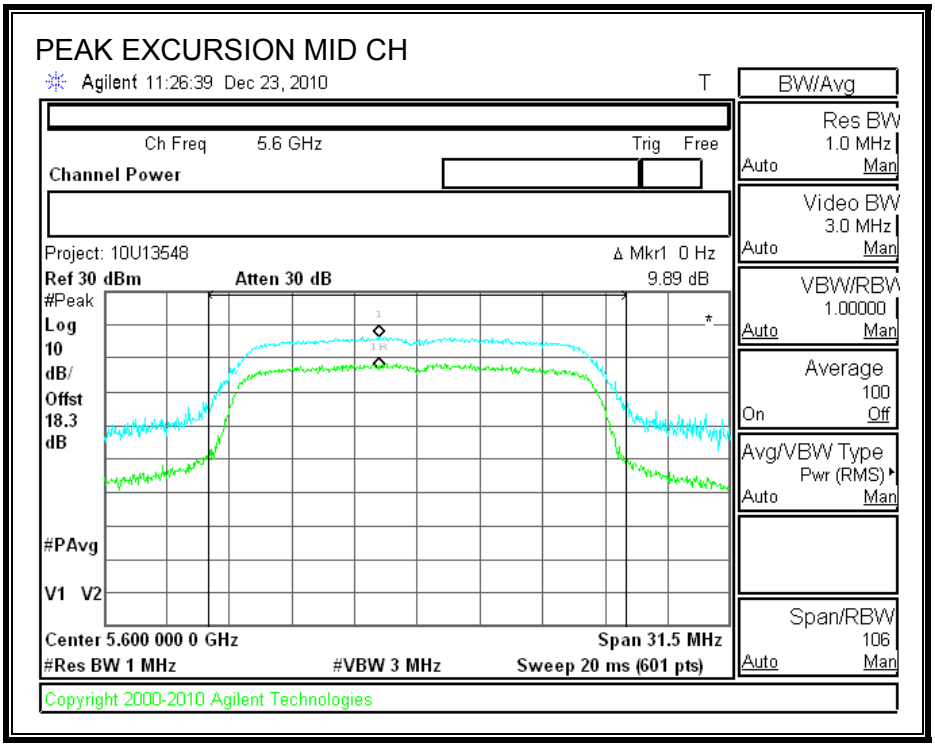
RESULTS

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Low	5500	9.15	13	-3.85
Middle	5600	9.89	13	-3.11
High	5700	9.77	13	-3.23

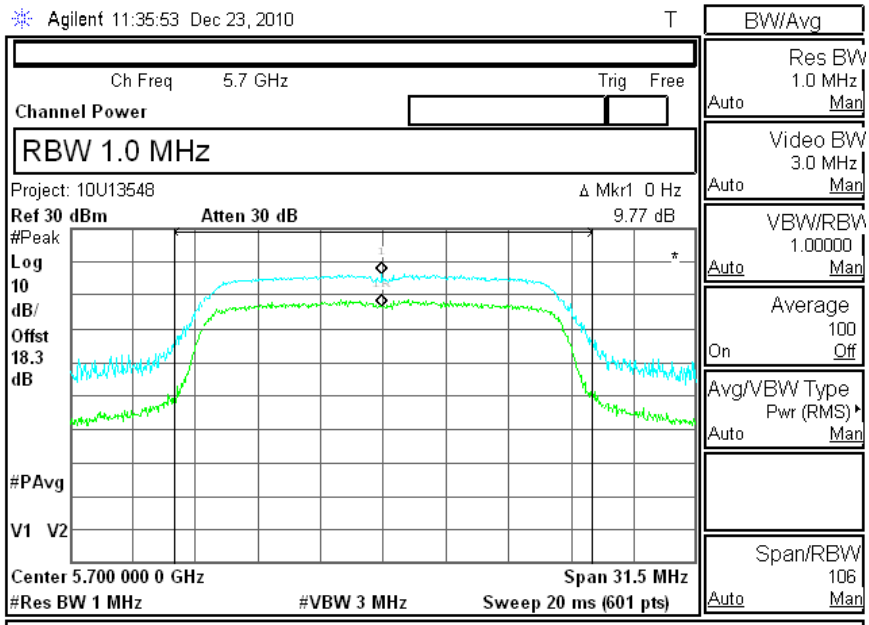
PEAK EXCURSION



PEAK EXCURSION MID CH



PEAK EXCURSION HIGH CH



7.6.5. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.407 (b) (3)

IC RSS-210 A9.3 (3)

For transmitters operating in the 5.47-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of -27 dBm / MHz.

TEST PROCEDURE

Conducted RF measurements of the transmitter output are made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

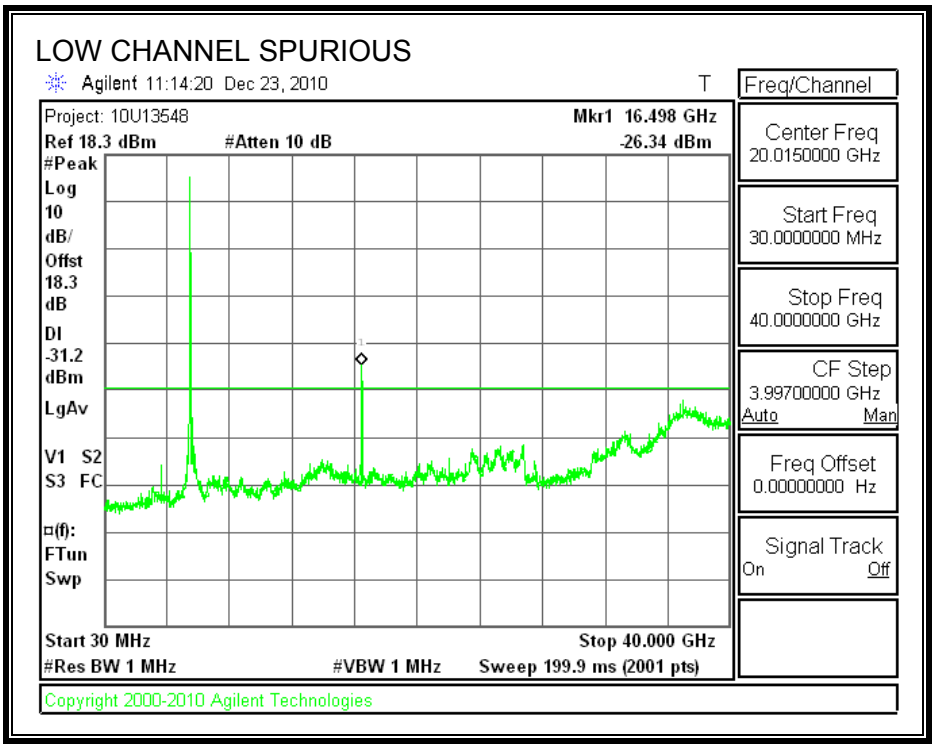
The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 1 MHz. The video bandwidth is set to 1 MHz. Peak detection measurements are compared to EIRP limit, adjusted for the maximum antenna gain.

Measurements are made over the 30 MHz to 40 GHz range with the transmitter set to the lowest, middle, and highest channels.

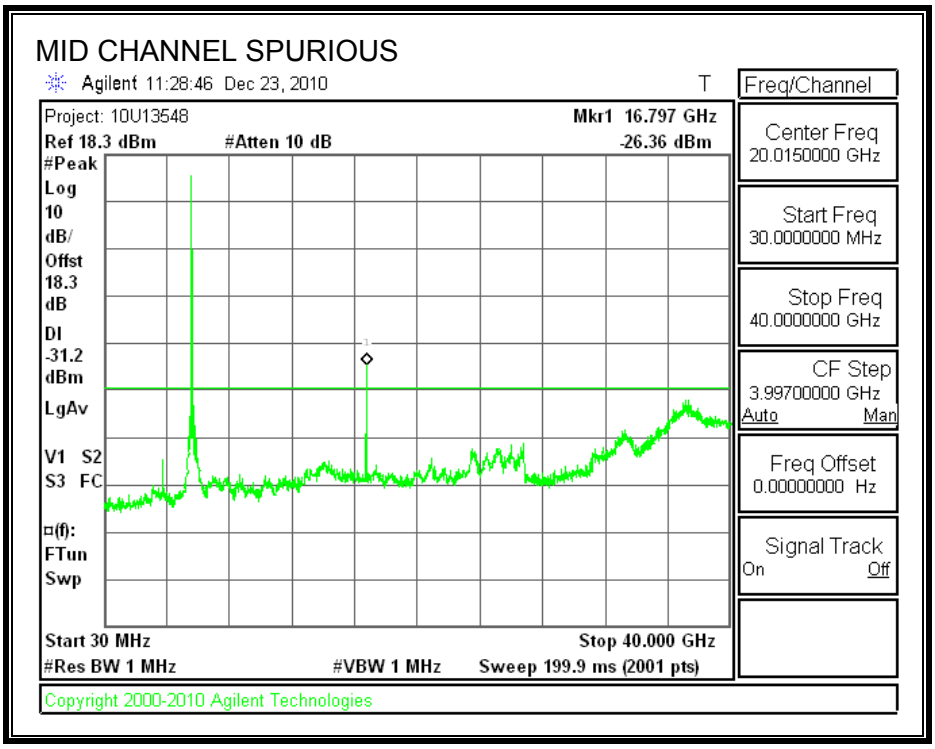
RESULTS

SPURIOUS EMISSIONS

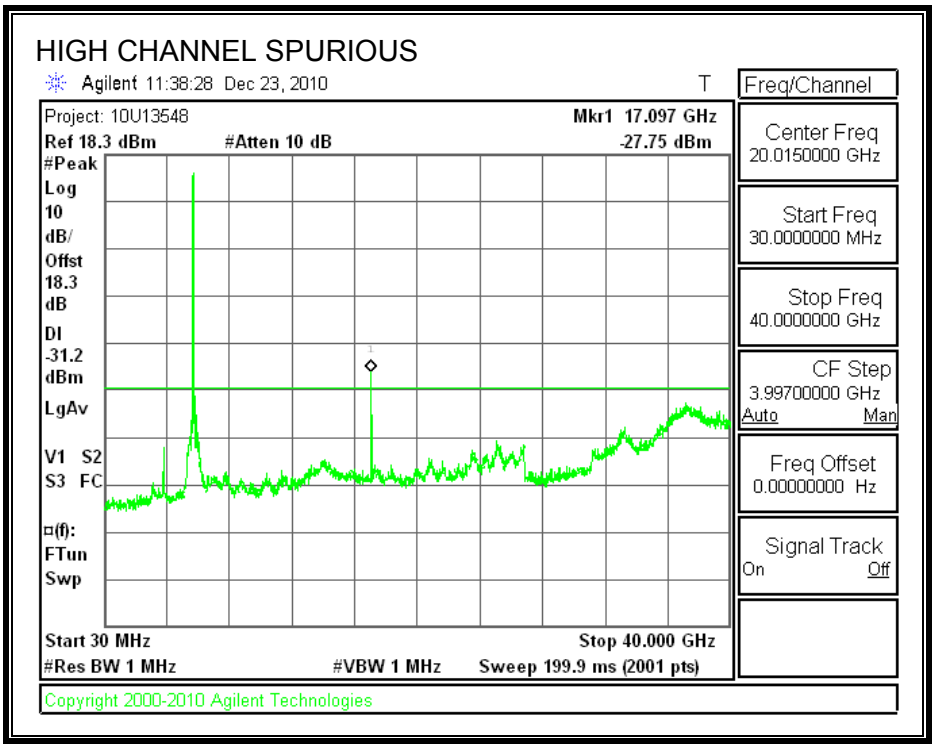
See radiated EIRP in this section for the conducted spurious point that exceeds the limit line.



See radiated EIRP in this section for the conducted spurious point that exceeds the limit line.



See radiated EIRP in this section for the conducted spurious point that exceeds the limit line.



SPURIOUS EMISSIONS

For the failing conducted spurious a radiated measurement was performed for EIRP and it passed as shown in the data below.

LOW CHANNEL SPURIOUS

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Project #: 10U13548
Date: 12/23/10
Test Engineer: Tom chen
Configuration: EUT only
Mode: TX mode, HT20 5500MHz

f GHz	SA reading (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Ant. Pol. (H/V)	Notes
16.50	-38.5	5.7	15.0	-29.2	-27.0	-2.2	H	
16.50	-39.7	5.7	15.0	-30.4	-27.0	-3.4	V	

Rev. 1.24.7

MID CHANNEL SPURIOUS

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Project #: 10U13548
Date: 12/23/10
Test Engineer: Tom chen
Configuration: EUT only
Mode: TX mode, HT20 5600MHz

f GHz	SA reading (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Ant. Pol. (H/V)	Notes
16.80	-38.1	5.7	15.0	-28.8	-27.0	-1.8	H	
16.80	-39.3	5.7	15.0	-30.0	-27.0	-3.0	V	

Rev. 1.24.7

HIGH CHANNEL SPURIOUS

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Project #: 10U13548
Date: 12/23/10
Test Engineer: Tom chen
Configuration: EUT only
Mode: TX mode, HT20 5700MHz

f GHz	SA reading (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Ant. Pol. (H/V)	Notes
17.10	-38.8	5.7	15.0	-29.5	-27.0	-2.5	H	
17.10	-40.0	5.7	15.0	-30.7	-27.0	-3.7	V	

Rev. 1.24.7

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. 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.

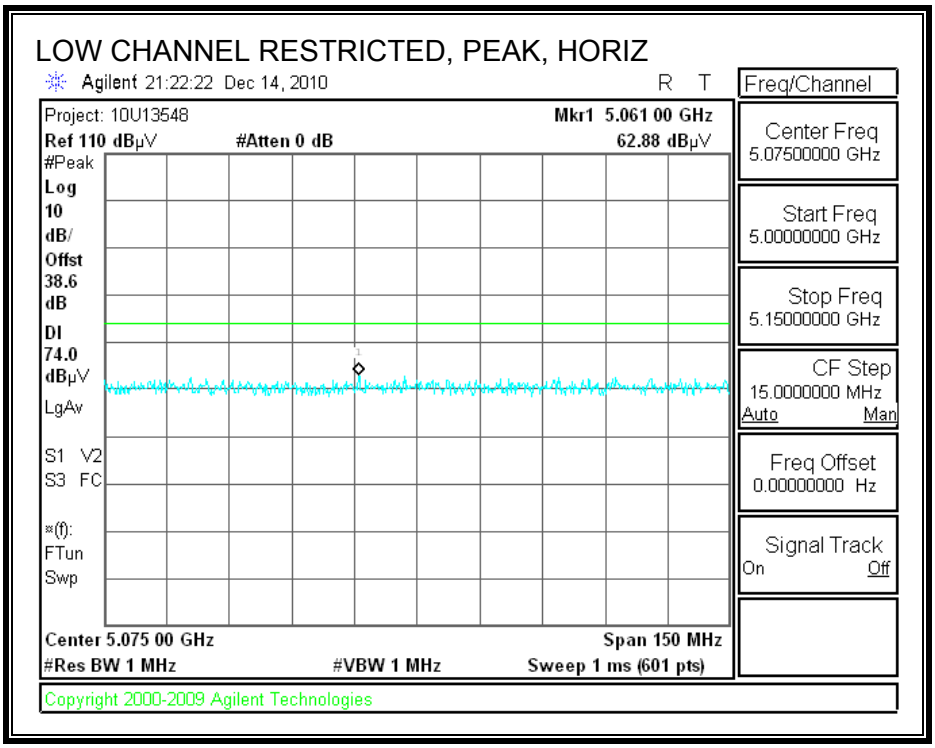
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

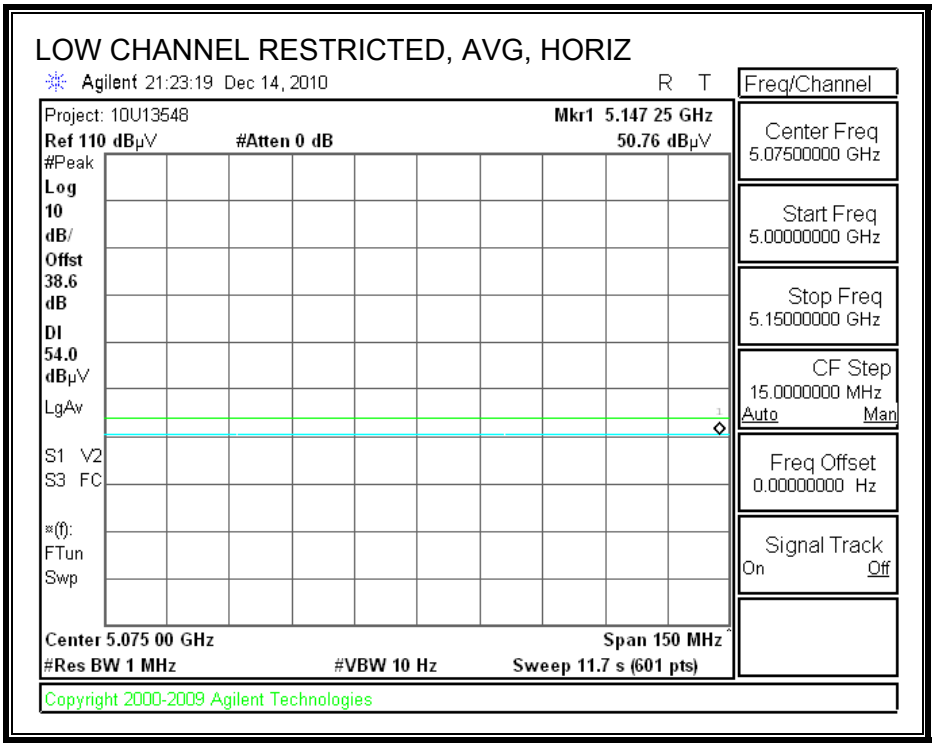
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

8.2. TRANSMITTER ABOVE 1 GHz

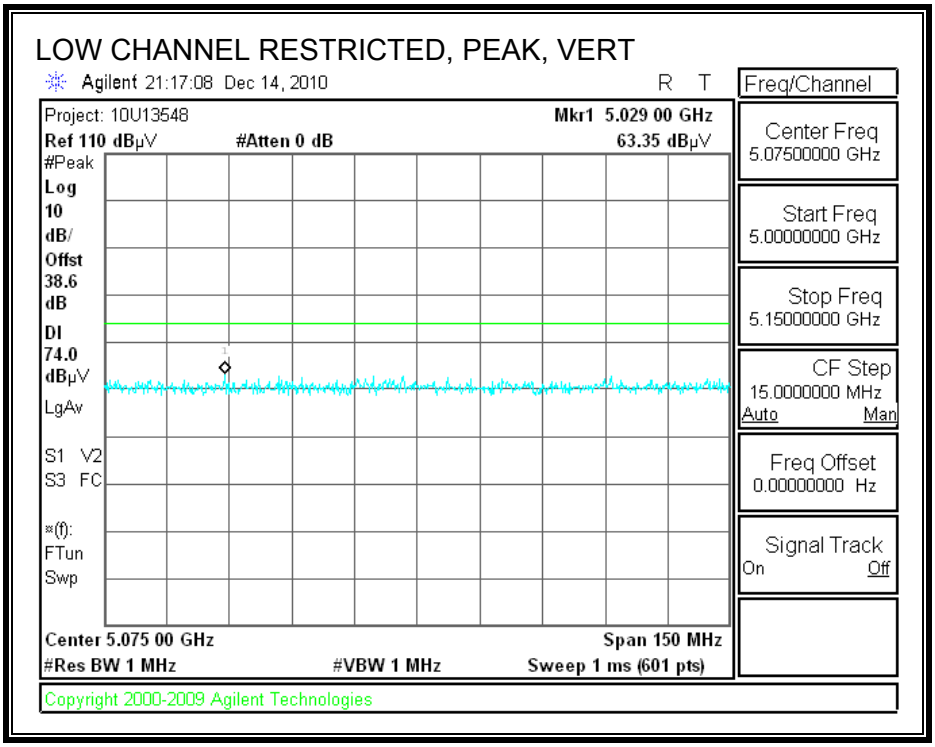
8.2.1. TX ABOVE 1 GHz (802.11a MODE IN THE 5.2 GHz BAND)

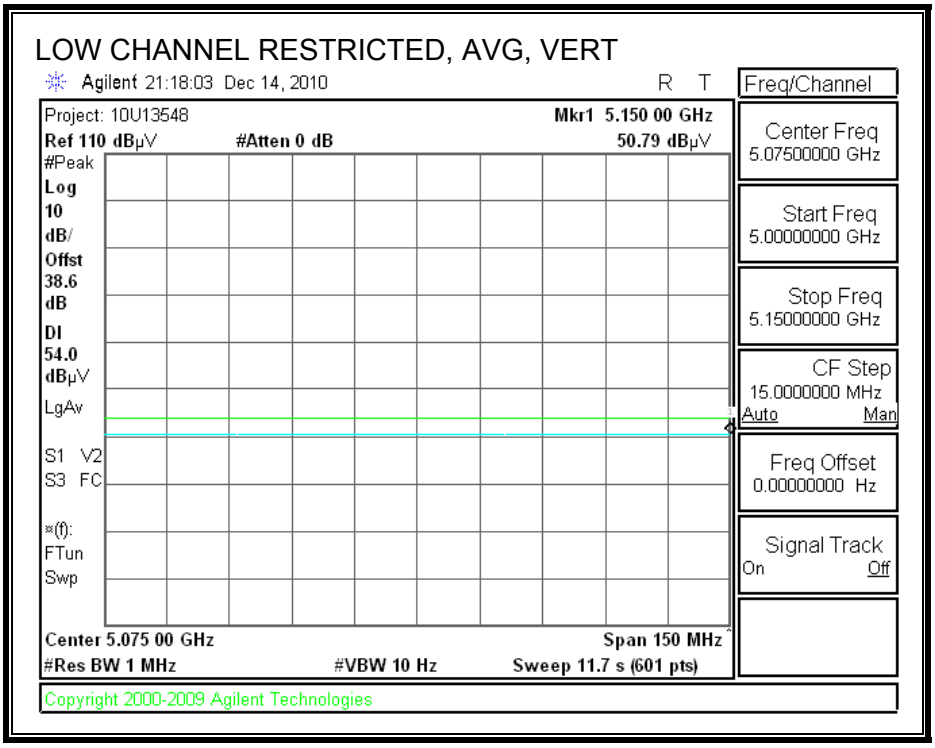
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom chen
Date: 12/16/10
Project #: 10U13548
Test Target: FCC Class B
Mode Oper: TX mode, 802.11a

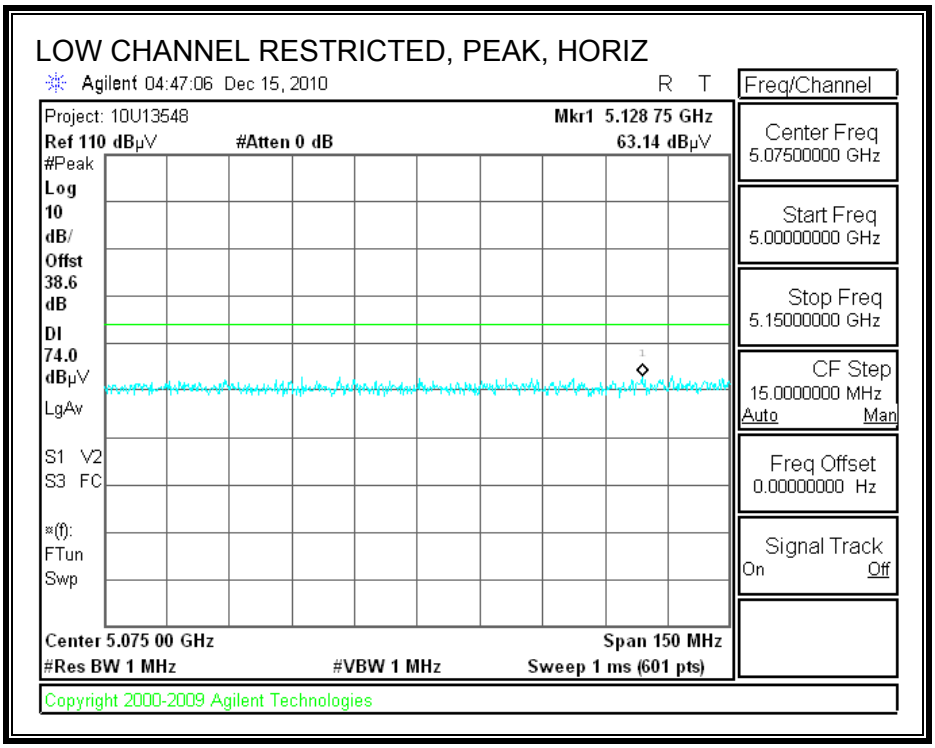
f	Measurement Frequency	Amp	Preamp Gain		Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters		Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m		Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength		Margin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

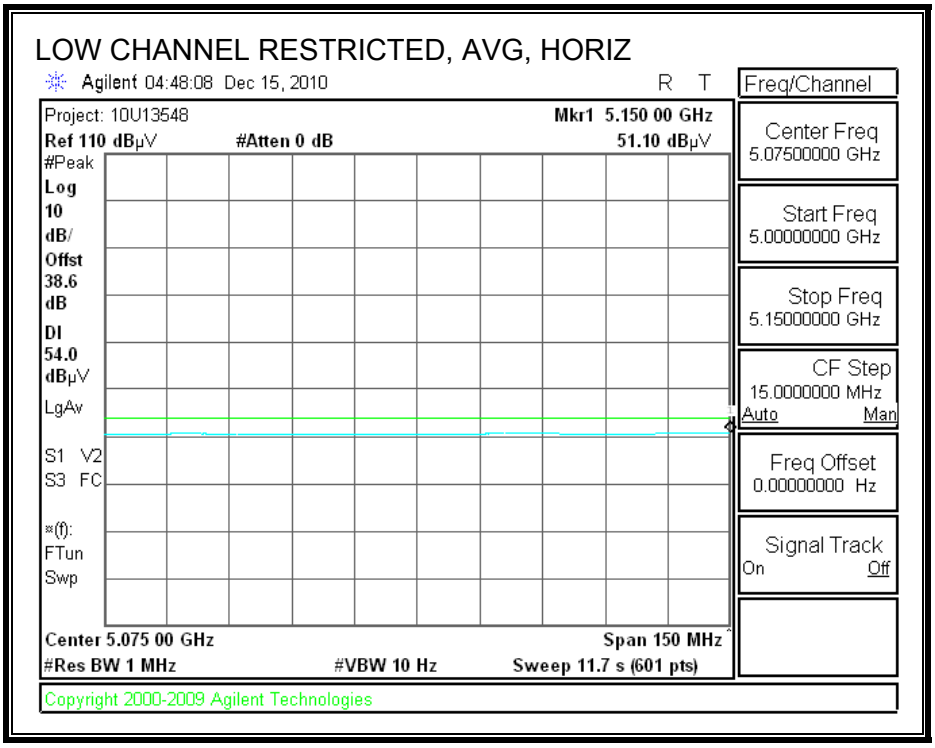
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
5180 MHz Low CH, 11a													
10.360	3.0	36.7	37.4	8.9	-34.6	0.0	0.8	49.2	74.0	-24.8	H	P	
10.360	3.0	24.5	37.4	8.9	-34.6	0.0	0.8	37.0	54.0	-17.0	H	A	
15.540	3.0	35.0	38.9	11.3	-32.3	0.0	0.7	53.7	74.0	-20.3	H	P	
15.540	3.0	22.6	38.9	11.3	-32.3	0.0	0.7	41.2	54.0	-12.8	H	A	
5180 MHz Low CH, 11a													
10.360	3.0	35.8	37.4	8.9	-34.6	0.0	0.8	48.4	74.0	-25.6	V	P	
10.360	3.0	23.7	37.4	8.9	-34.6	0.0	0.8	36.3	54.0	-17.7	V	A	
15.540	3.0	35.0	38.9	11.3	-32.3	0.0	0.7	53.7	74.0	-20.3	V	P	
15.540	3.0	22.6	38.9	11.3	-32.3	0.0	0.7	41.3	54.0	-12.7	V	A	
5200 MHz Mid CH													
10.400	3.0	36.7	37.5	8.9	-34.6	0.0	0.8	49.3	74.0	-24.7	V	P	
10.400	3.0	24.4	37.5	8.9	-34.6	0.0	0.8	37.0	54.0	-17.0	V	A	
15.600	3.0	34.9	38.7	11.4	-32.3	0.0	0.7	53.4	74.0	-20.6	V	P	
15.600	3.0	22.3	38.7	11.4	-32.3	0.0	0.7	40.8	54.0	-13.2	V	A	
5200 MHz Mid CH													
10.400	3.0	37.8	37.5	8.9	-34.6	0.0	0.8	50.4	74.0	-23.6	H	P	
10.400	3.0	25.6	37.5	8.9	-34.6	0.0	0.8	38.2	54.0	-15.8	H	A	
15.600	3.0	34.1	38.7	11.4	-32.3	0.0	0.7	52.7	74.0	-21.3	H	P	
15.600	3.0	22.3	38.7	11.4	-32.3	0.0	0.7	40.8	54.0	-13.2	H	A	
5240 MHz High CH													
15.720	3.0	34.3	38.4	11.4	-32.3	0.0	0.7	52.6	74.0	-21.4	H	P	
15.720	3.0	22.3	38.4	11.4	-32.3	0.0	0.7	40.6	54.0	-13.4	H	A	
15.720	3.0	34.4	38.4	11.4	-32.3	0.0	0.7	52.7	74.0	-21.3	V	P	
15.720	3.0	22.3	38.4	11.4	-32.3	0.0	0.7	40.6	54.0	-13.4	V	A	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

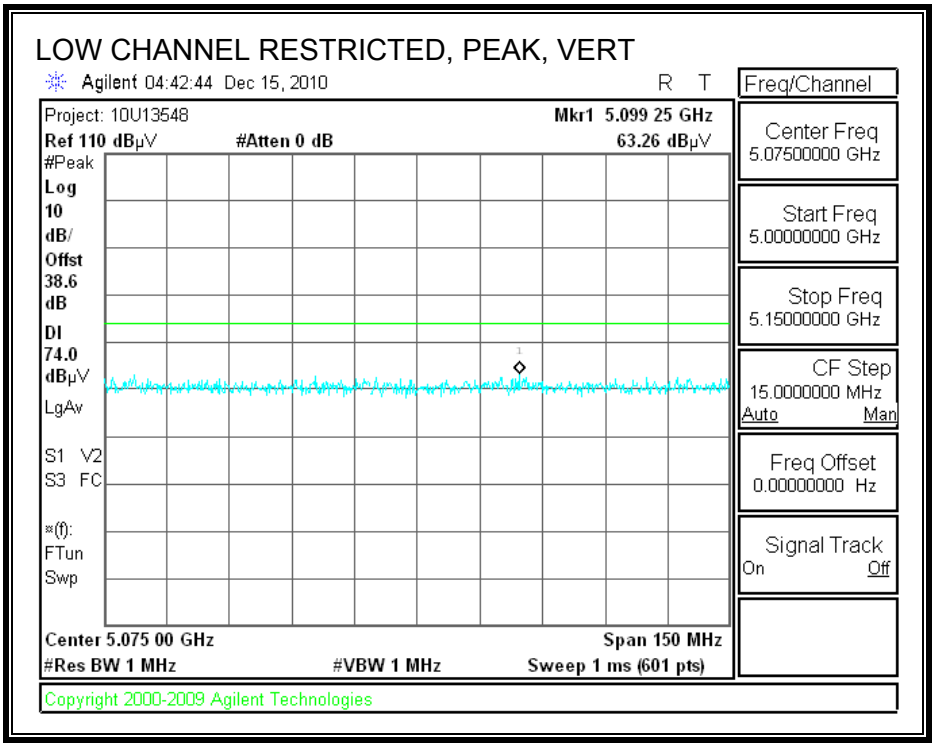
8.2.2. TX ABOVE 1 GHz (802.11n HT20 MODE IN THE 5.2 GHz BAND)

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

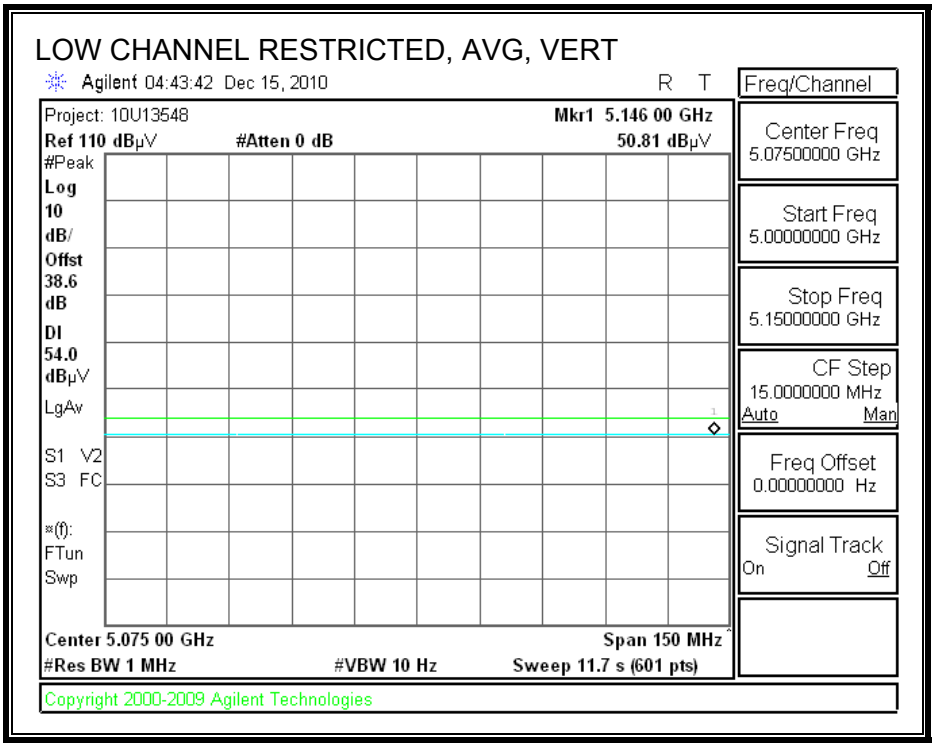




RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



LOW CHANNEL RESTRICTED, AVG, VERT



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom chen
Date: 12/16/10
Project #: 10U13548
Test Target: FCC Class B
Mode Oper: TX mode, 802.11n HT20

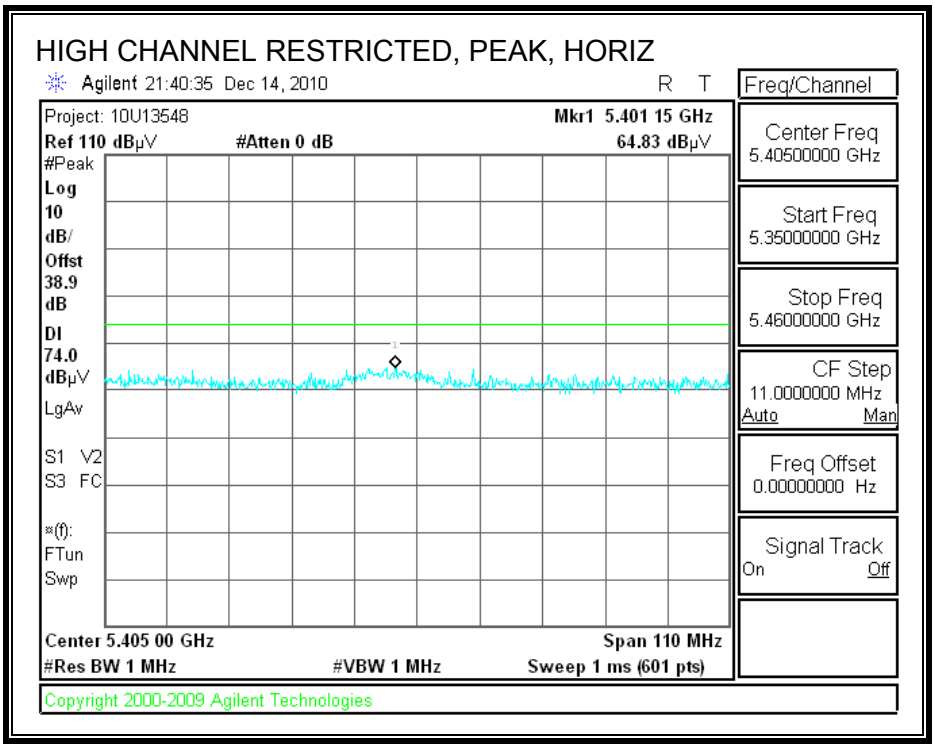
f	Measurement Frequency	Amp	Preamp Gain	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Margin vs.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

f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
5180 MHz Low CH													
15.540	3.0	35.3	38.9	11.3	-32.3	0.0	0.7	54.0	74.0	-20.0	H	P	
15.540	3.0	22.3	38.9	11.3	-32.3	0.0	0.7	41.0	54.0	-13.0	H	A	
15.540	3.0	35.2	38.9	11.3	-32.3	0.0	0.7	53.8	74.0	-20.2	V	P	
15.540	3.0	22.4	38.9	11.3	-32.3	0.0	0.7	41.1	54.0	-12.9	V	A	
5200 MHz Mid CH													
15.600	3.0	34.2	38.7	11.4	-32.3	0.0	0.7	52.7	74.0	-21.3	V	P	
15.600	3.0	22.3	38.7	11.4	-32.3	0.0	0.7	40.8	54.0	-13.2	V	A	
15.600	3.0	34.5	38.7	11.4	-32.3	0.0	0.7	53.0	74.0	-21.0	H	P	
15.600	3.0	22.4	38.7	11.4	-32.3	0.0	0.7	40.9	54.0	-13.1	H	A	
5240 MHz High CH													
15.720	3.0	34.4	38.4	11.4	-32.3	0.0	0.7	52.7	74.0	-21.3	H	P	
15.720	3.0	22.2	38.4	11.4	-32.3	0.0	0.7	40.5	54.0	-13.5	H	A	
15.720	3.0	34.7	38.4	11.4	-32.3	0.0	0.7	53.0	74.0	-21.0	V	P	
15.720	3.0	22.2	38.4	11.4	-32.3	0.0	0.7	40.5	54.0	-13.5	V	A	

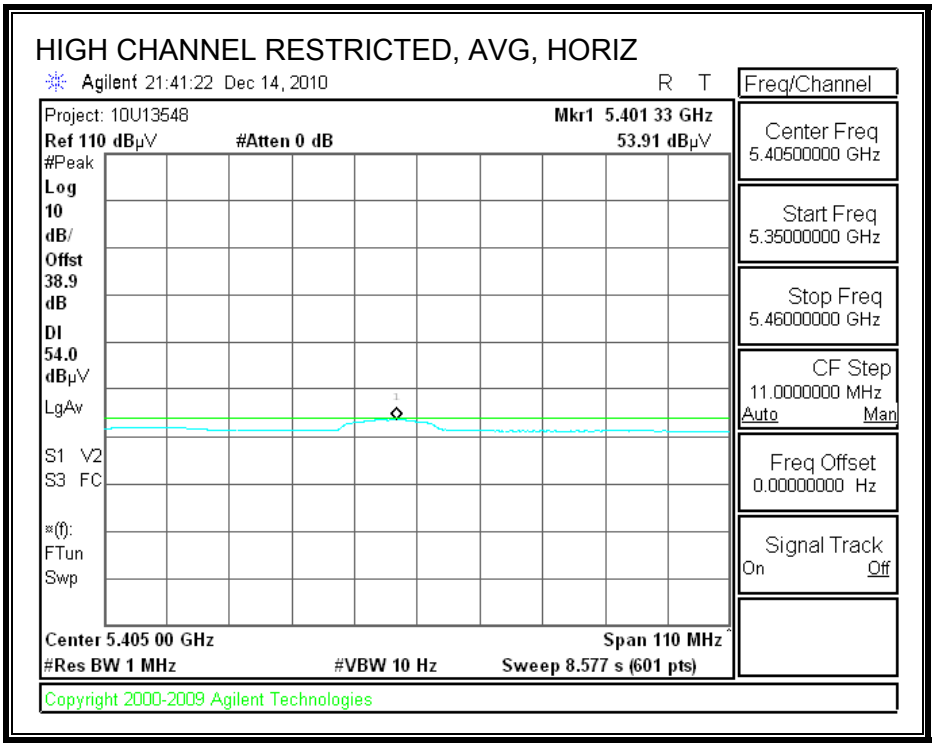
Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

8.2.3. TX ABOVE 1 GHz (802.11a MODE IN THE 5.3 GHz BAND)

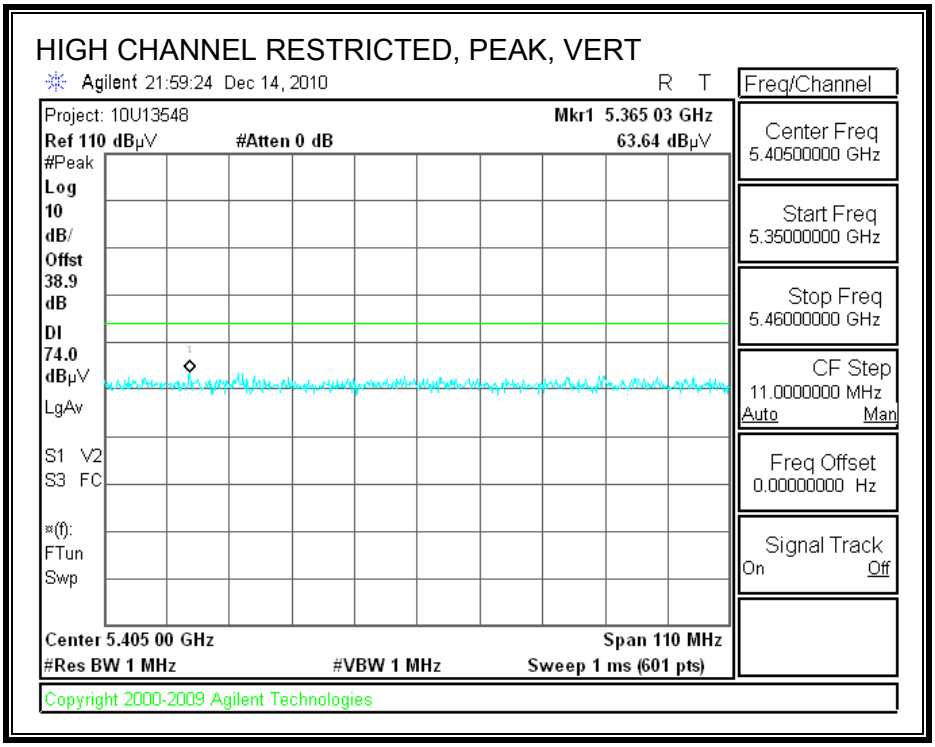
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

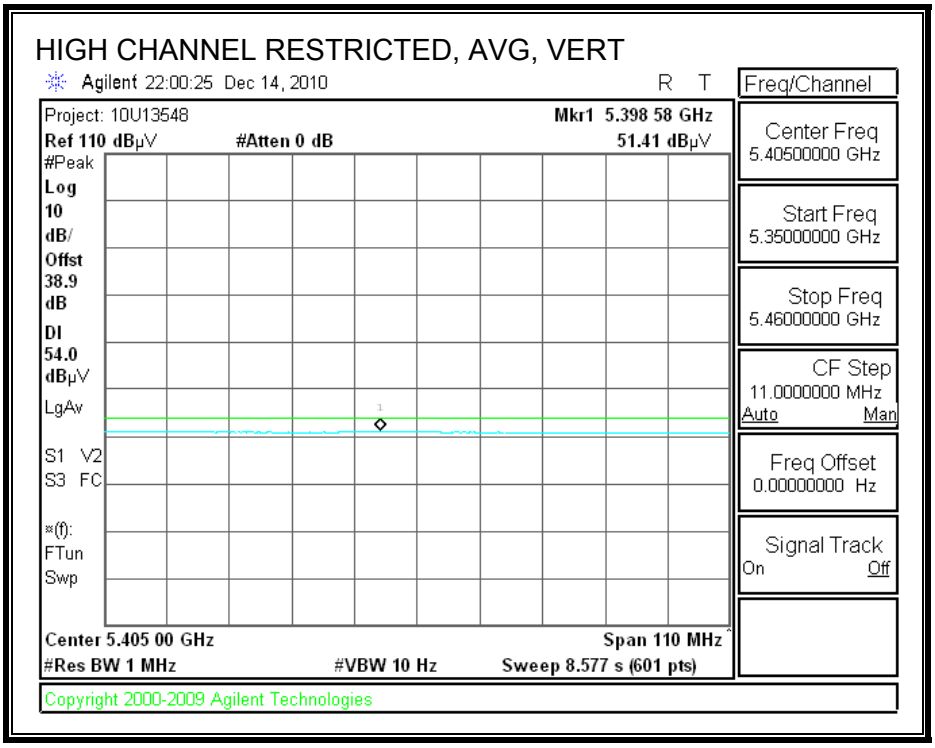


HIGH CHANNEL RESTRICTED, AVG, HORIZ



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 12/16/10
Project #: 10U13548
Test Target: FCC Class B
Mode Oper: TX mode, 802.11a

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

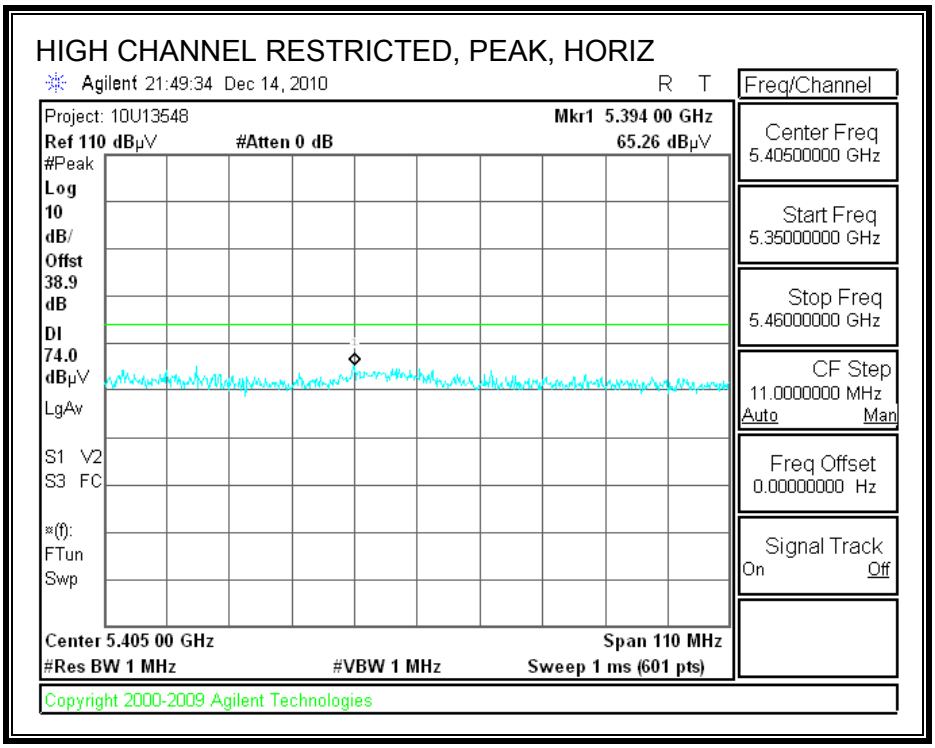
Average Field Strength Limit
Peak Field Strength Limit
Margin vs. Average Limit
Margin vs. Peak Limit

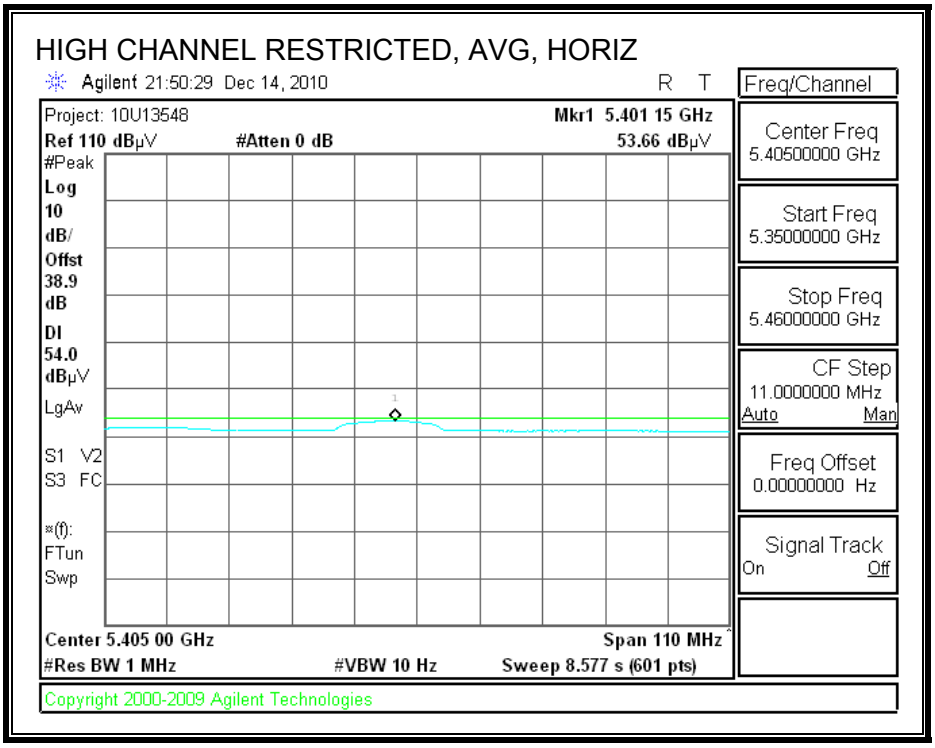
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
5260 MHz Low CH													
15.780	3.0	34.0	38.2	11.5	-32.2	0.0	0.7	52.2	74.0	-21.8	V	P	
15.780	3.0	22.2	38.2	11.5	-32.2	0.0	0.7	40.4	54.0	-13.6	V	A	
15.780	3.0	35.2	38.2	11.5	-32.2	0.0	0.7	53.3	74.0	-20.7	H	P	
15.780	3.0	22.6	38.2	11.5	-32.2	0.0	0.7	40.8	54.0	-13.2	H	A	
5300 MHz Mid CH													
10.600	3.0	38.4	37.5	9.0	-34.3	0.0	0.8	51.4	74.0	-22.6	H	P	
10.600	3.0	25.6	37.5	9.0	-34.3	0.0	0.8	38.7	54.0	-15.3	H	A	
15.900	3.0	34.9	37.9	11.5	-32.2	0.0	0.7	52.8	74.0	-21.2	H	P	
15.900	3.0	22.2	37.9	11.5	-32.2	0.0	0.7	40.2	54.0	-13.8	H	A	
5300 MHz Mid CH													
10.600	3.0	36.0	37.5	9.0	-34.3	0.0	0.8	49.0	74.0	-25.0	V	P	
10.600	3.0	23.9	37.5	9.0	-34.3	0.0	0.8	37.0	54.0	-17.0	V	A	
15.900	3.0	34.1	37.9	11.5	-32.2	0.0	0.7	52.0	74.0	-22.0	V	P	
15.900	3.0	22.1	37.9	11.5	-32.2	0.0	0.7	40.0	54.0	-14.0	V	A	
5320 MHz High CH													
10.640	3.0	35.8	37.6	9.1	-34.2	0.0	0.8	48.9	74.0	-25.1	V	P	
10.640	3.0	23.3	37.6	9.1	-34.2	0.0	0.8	36.4	54.0	-17.6	V	A	
15.960	3.0	34.1	37.7	11.5	-32.2	0.0	0.7	51.9	74.0	-22.1	V	P	
15.960	3.0	22.0	37.7	11.5	-32.2	0.0	0.7	39.8	54.0	-14.2	V	A	
5320 MHz High CH													
15.960	3.0	34.3	37.7	11.5	-32.2	0.0	0.7	52.1	74.0	-21.9	H	P	
15.960	3.0	22.0	37.7	11.5	-32.2	0.0	0.7	39.8	54.0	-14.2	H	A	
10.640	3.0	35.2	37.6	9.1	-34.2	0.0	0.8	48.3	74.0	-25.7	H	P	
10.640	3.0	23.0	37.6	9.1	-34.2	0.0	0.8	36.1	54.0	-17.9	H	A	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

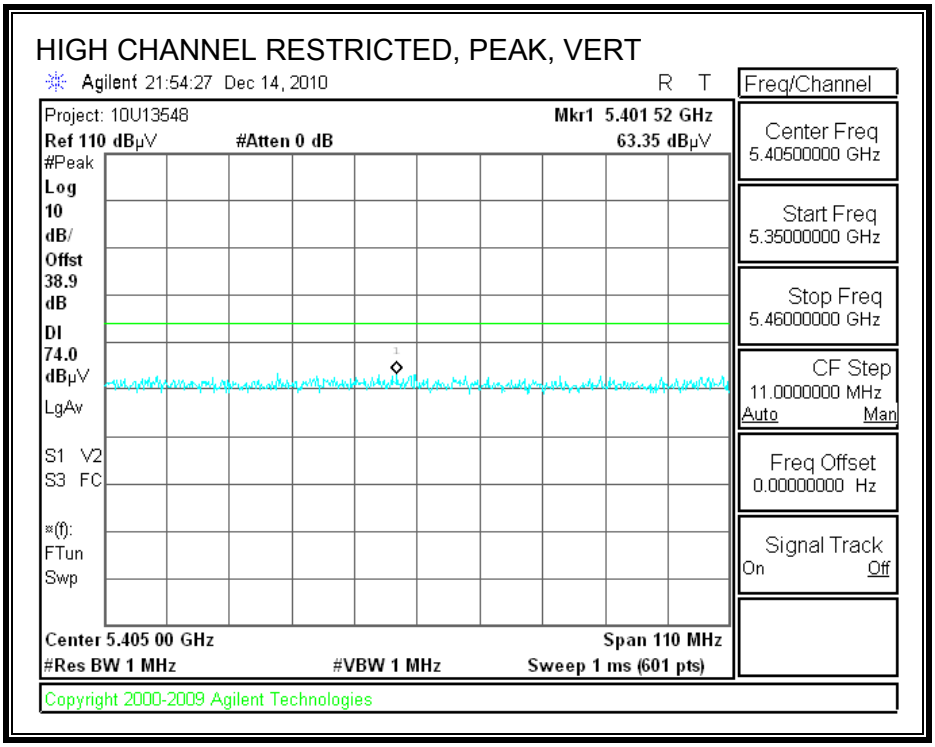
8.2.4. TX ABOVE 1 GHz (802.11n HT20 MODE IN THE 5.3 GHz BAND)

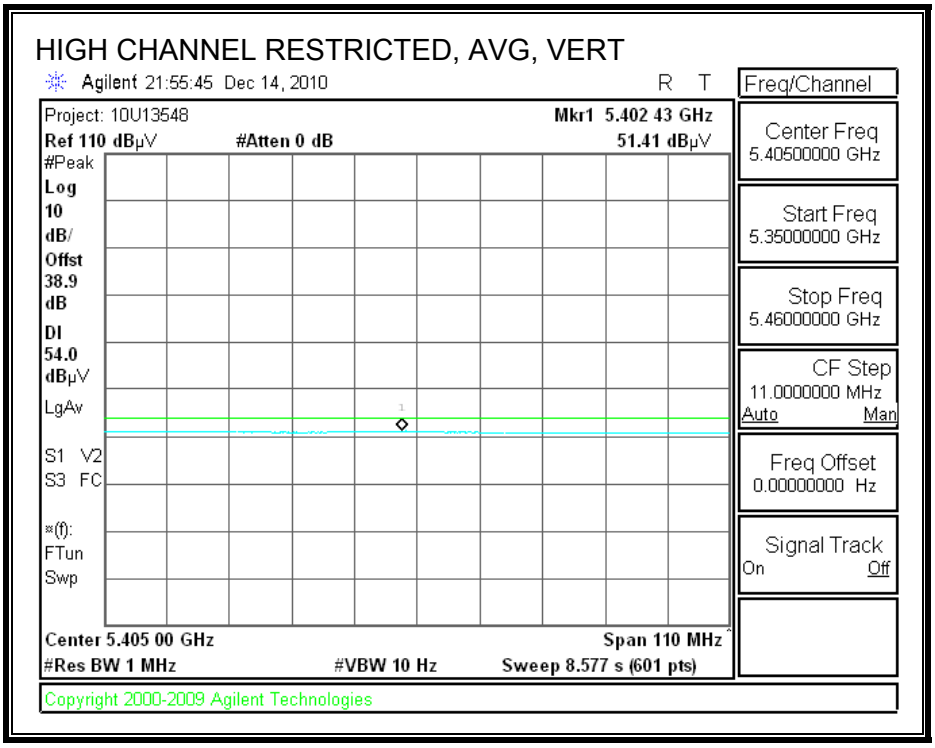
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 12/16/10
Project #: 10U13548
Test Target: FCC Class B
Mode Oper: TX mode, 802.11n HT20

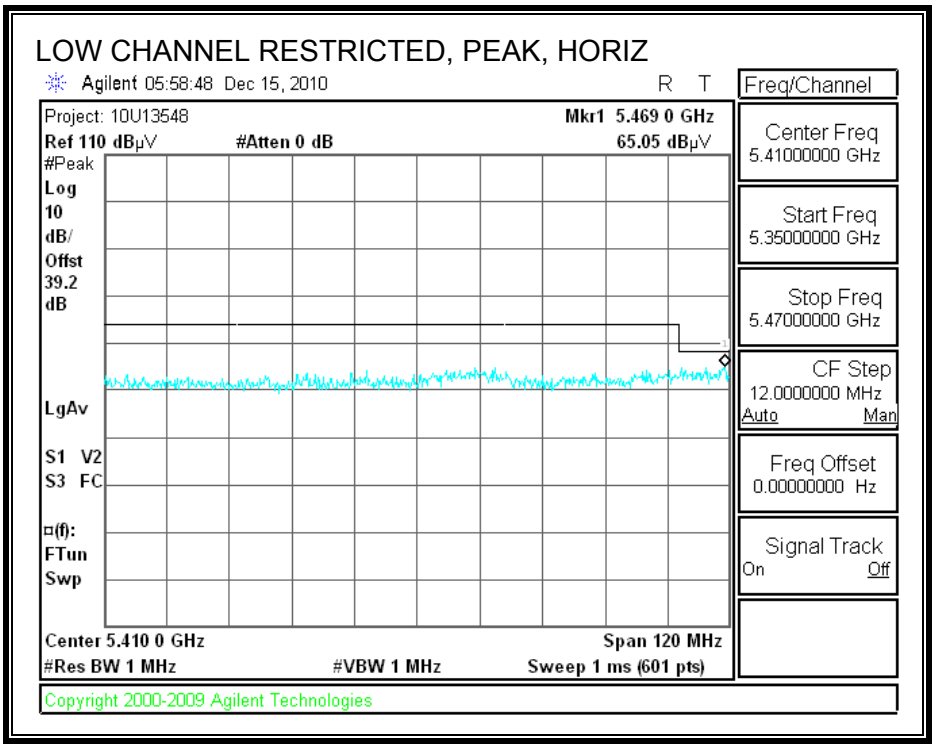
f	Measurement Frequency	Amp	Preamp Gain		Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters		Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m		Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength		Margin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

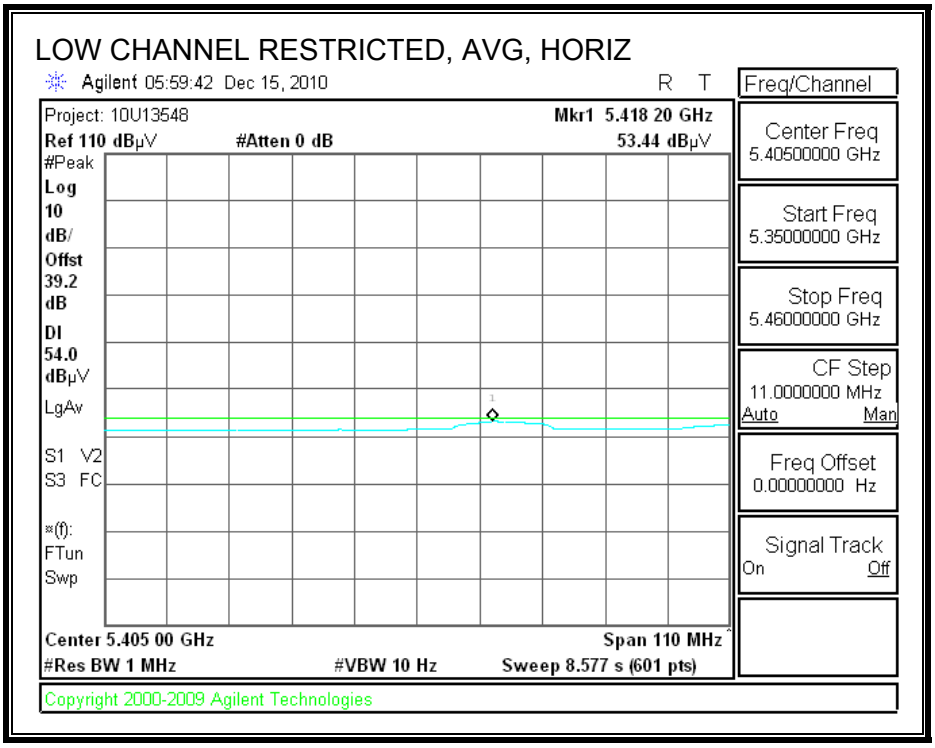
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
5260 MHz Low CH													
15.780	3.0	33.9	38.2	11.5	-32.2	0.0	0.7	52.1	74.0	-21.9	V	P	
15.780	3.0	22.2	38.2	11.5	-32.2	0.0	0.7	40.3	54.0	-13.7	V	A	
15.780	3.0	35.0	38.2	11.5	-32.2	0.0	0.7	53.2	74.0	-20.8	H	P	
15.780	3.0	22.1	38.2	11.5	-32.2	0.0	0.7	40.3	54.0	-13.7	H	A	
5300 MHz Mid CH													
10.600	3.0	38.8	37.5	9.0	-34.3	0.0	0.8	51.8	74.0	-22.2	H	P	
10.600	3.0	26.5	37.5	9.0	-34.3	0.0	0.8	39.5	54.0	-14.5	H	A	
15.900	3.0	34.9	37.9	11.5	-32.2	0.0	0.7	52.8	74.0	-21.2	H	P	
15.900	3.0	22.2	37.9	11.5	-32.2	0.0	0.7	40.1	54.0	-13.9	H	A	
5300 MHz Mid CH													
10.600	3.0	35.6	37.5	9.0	-34.3	0.0	0.8	48.6	74.0	-25.4	V	P	
10.600	3.0	23.5	37.5	9.0	-34.3	0.0	0.8	36.6	54.0	-17.4	V	A	
15.900	3.0	34.7	37.9	11.5	-32.2	0.0	0.7	52.6	74.0	-21.4	V	P	
15.900	3.0	22.0	37.9	11.5	-32.2	0.0	0.7	40.0	54.0	-14.0	V	A	
5320 MHz High CH													
10.640	3.0	35.5	37.6	9.1	-34.2	0.0	0.8	48.6	74.0	-25.4	V	P	
10.640	3.0	23.0	37.6	9.1	-34.2	0.0	0.8	36.2	54.0	-17.8	V	A	
15.960	3.0	34.6	37.7	11.5	-32.2	0.0	0.7	52.4	74.0	-21.6	V	P	
15.960	3.0	22.0	37.7	11.5	-32.2	0.0	0.7	39.8	54.0	-14.2	V	A	
5320 MHz High CH													
10.640	3.0	39.4	37.6	9.1	-34.2	0.0	0.8	52.5	74.0	-21.5	H	P	
10.640	3.0	26.6	37.6	9.1	-34.2	0.0	0.8	39.8	54.0	-14.2	H	A	
15.960	3.0	34.8	37.7	11.5	-32.2	0.0	0.7	52.6	74.0	-21.5	H	P	
15.960	3.0	22.0	37.7	11.5	-32.2	0.0	0.7	39.8	54.0	-14.2	H	A	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

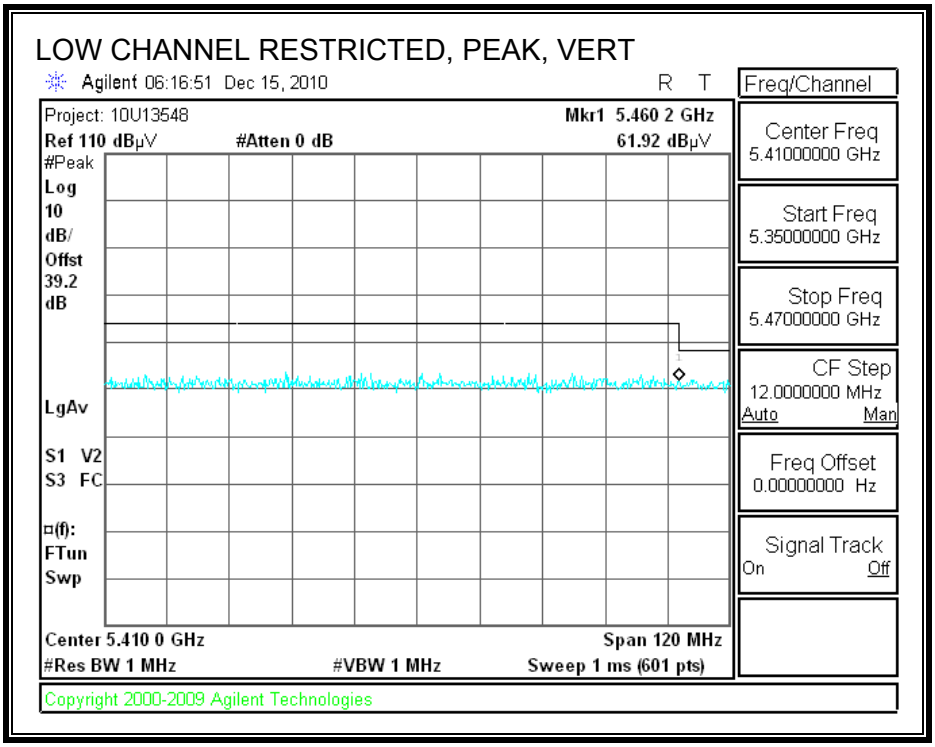
8.2.5. TX ABOVE 1 GHz (802.11a MODE IN THE 5.6 GHz BAND)

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

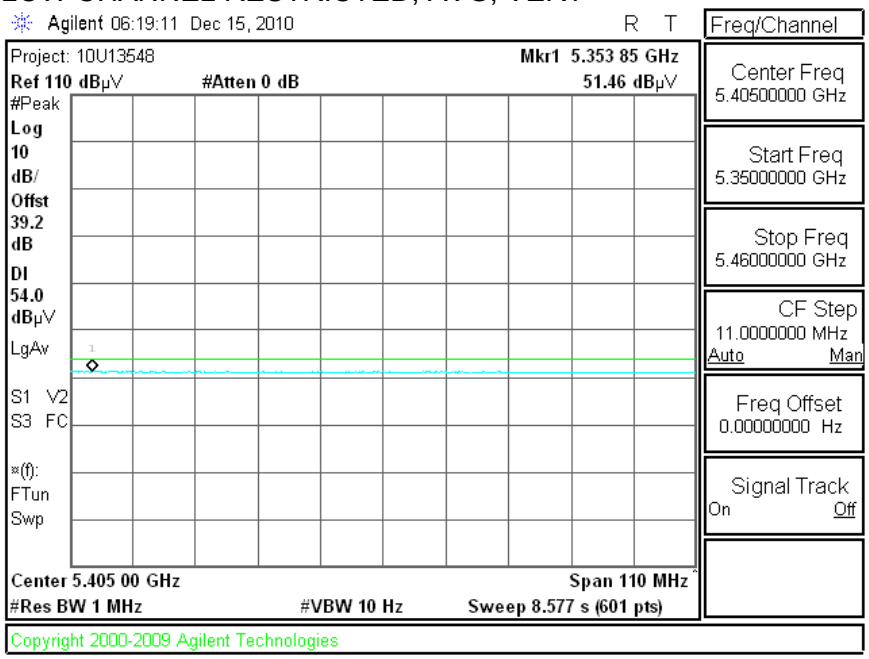




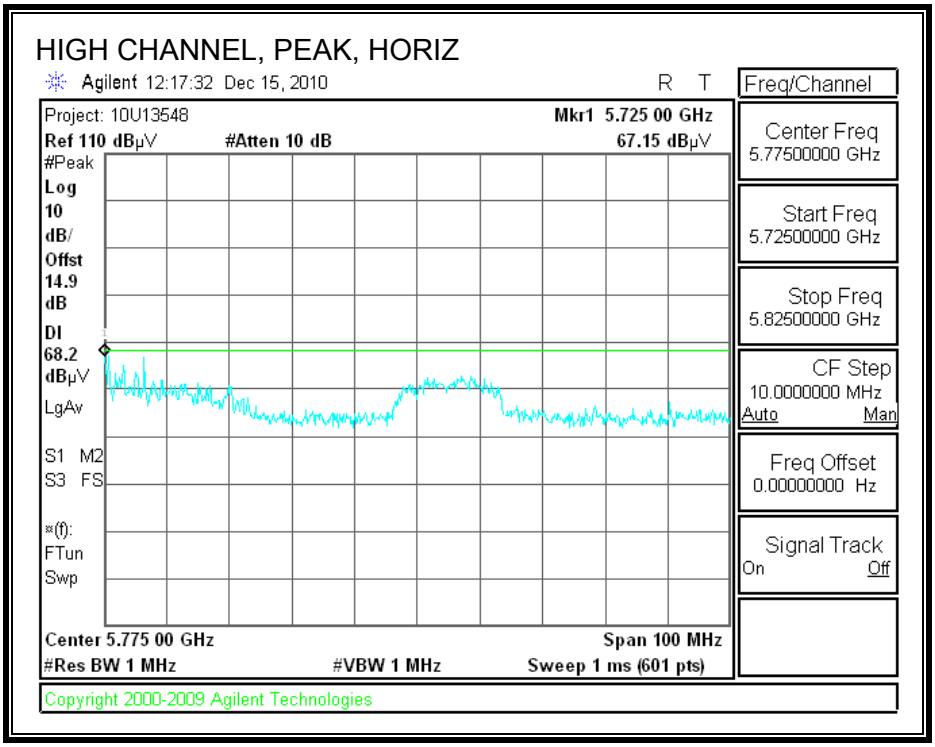
RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



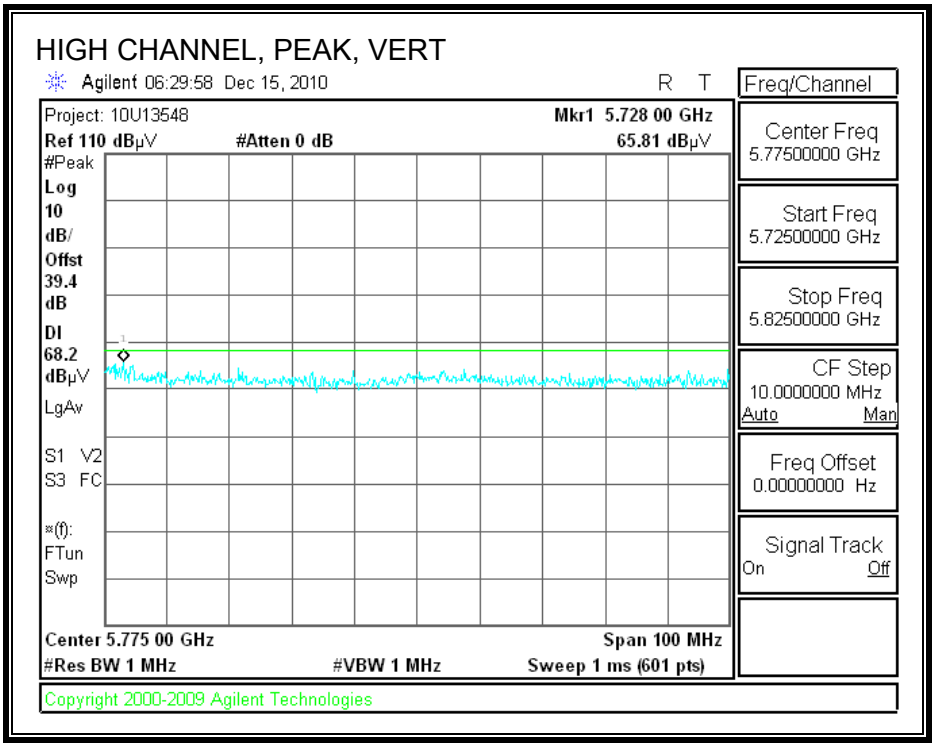
LOW CHANNEL RESTRICTED, AVG, VERT



AUTHORIZED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



AUTHORIZED BANDEDGE (HIGH CHANNEL, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 12/16/10
Project #: 10U13548
Test Target: FCC Class B
Mode Oper: TX mode, 802.11a

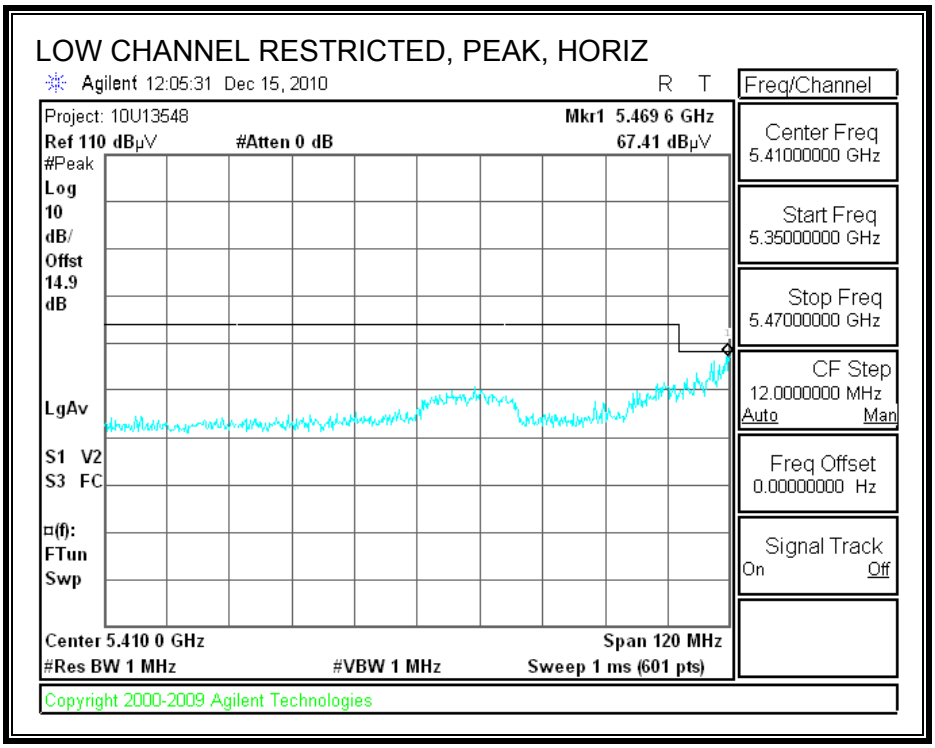
f	Measurement Frequency	Amp	Preamp Gain		Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters		Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m		Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength		Margin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

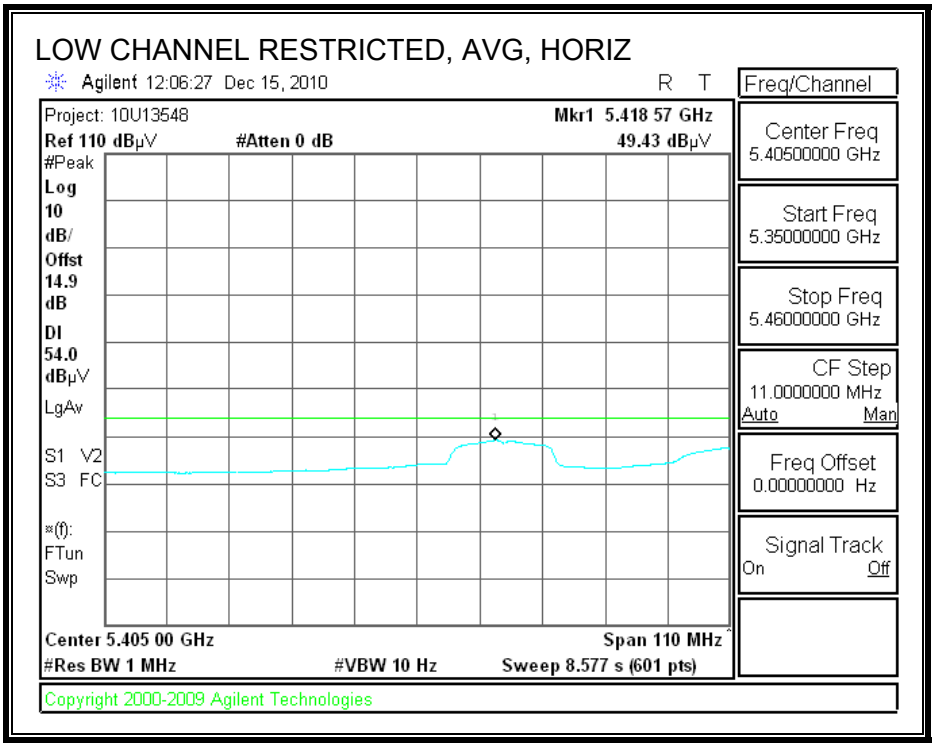
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
5500 MHz Low CH													
11.000	3.0	36.5	37.7	9.2	-33.8	0.0	0.7	50.4	74.0	-23.6	H	P	
11.000	3.0	24.2	37.7	9.2	-33.8	0.0	0.7	38.1	54.0	-15.9	H	A	
11.000	3.0	35.3	37.7	9.2	-33.8	0.0	0.7	49.2	74.0	-24.8	V	P	
11.000	3.0	22.3	37.7	9.2	-33.8	0.0	0.7	36.2	54.0	-17.8	V	A	
5600 MHz Mid CH													
11.200	3.0	34.9	37.9	9.3	-33.5	0.0	0.7	49.3	74.0	-24.7	V	P	
11.200	3.0	22.6	37.9	9.3	-33.5	0.0	0.7	37.0	54.0	-17.0	V	A	
11.200	3.0	37.7	37.9	9.3	-33.5	0.0	0.7	52.1	74.0	-21.9	H	P	
11.200	3.0	25.4	37.9	9.3	-33.5	0.0	0.7	39.8	54.0	-14.2	H	A	
5700 MHz High CH													
11.400	3.0	36.0	38.0	9.4	-33.2	0.0	0.7	51.0	74.0	-23.0	H	P	
11.400	3.0	23.7	38.0	9.4	-33.2	0.0	0.7	38.6	54.0	-15.4	H	A	
11.400	3.0	34.8	38.0	9.4	-33.2	0.0	0.7	49.7	74.0	-24.3	V	P	
11.400	3.0	22.5	38.0	9.4	-33.2	0.0	0.7	37.4	54.0	-16.6	V	A	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

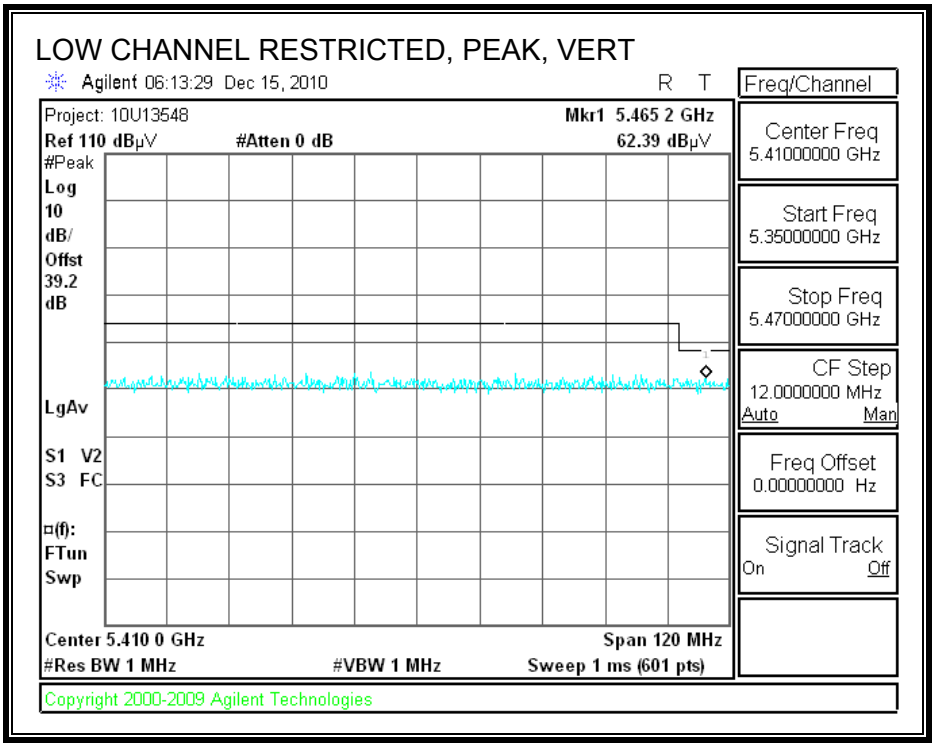
8.2.6. TX ABOVE 1 GHz (802.11n HT20 MODE IN THE 5.6 GHz BAND)

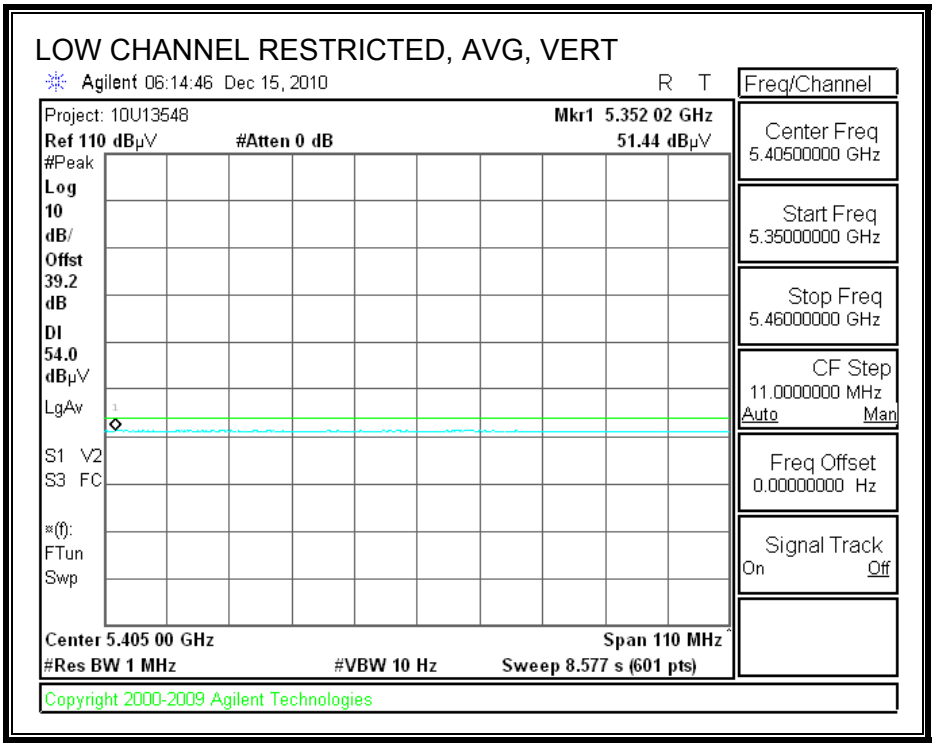
RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



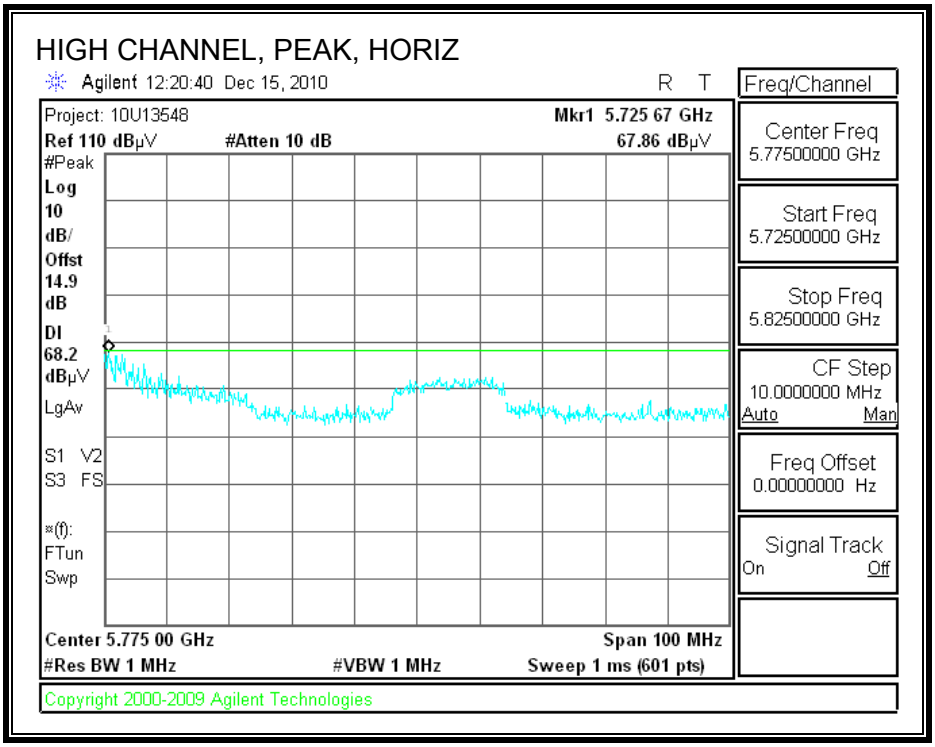


RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

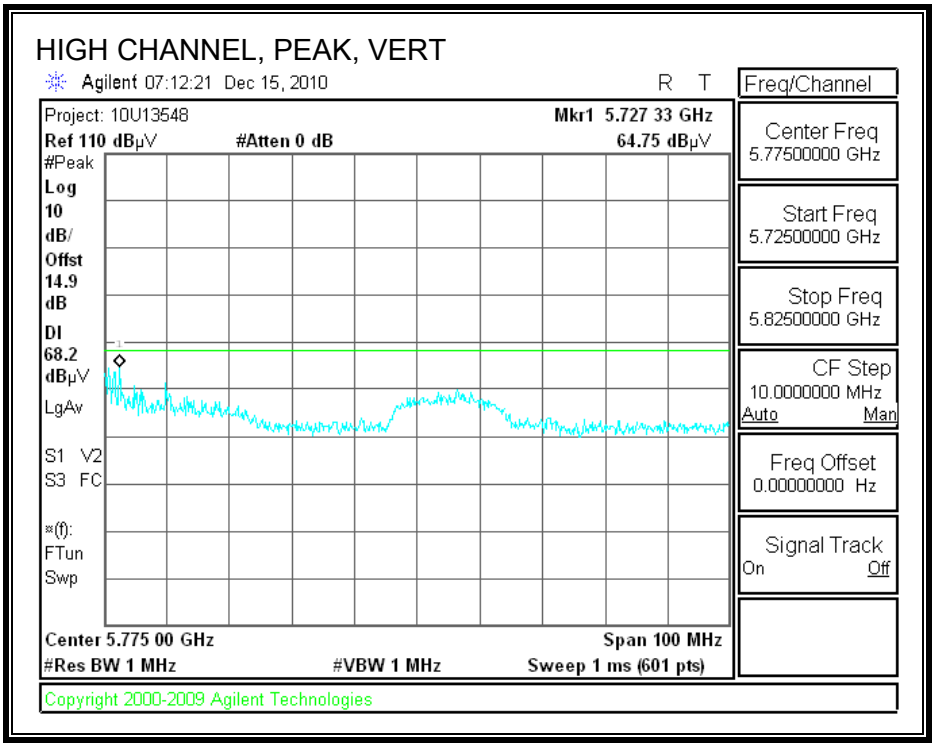




AUTHORIZED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



AUTHORIZED BANDEDGE (HIGH CHANNEL, VERTICAL)



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 12/16/10
Project #: 10U13548
Test Target: FCC Class B
Mode Oper: TX mode, 802.11n HT20

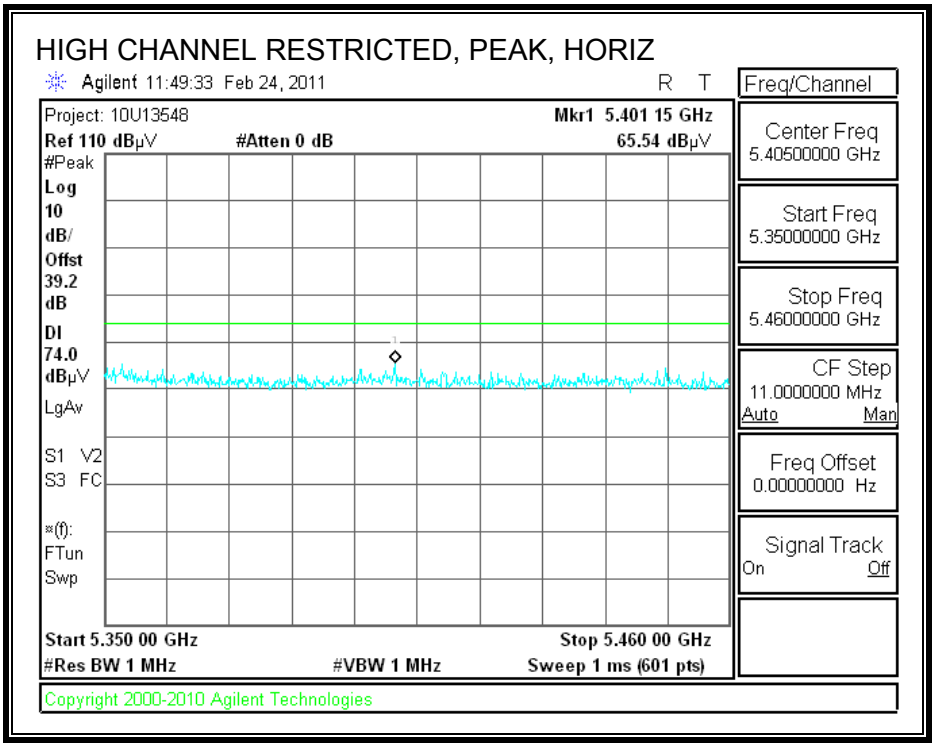
f	Measurement Frequency	Amp	Preamp Gain		Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters		Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m		Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength		Margin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

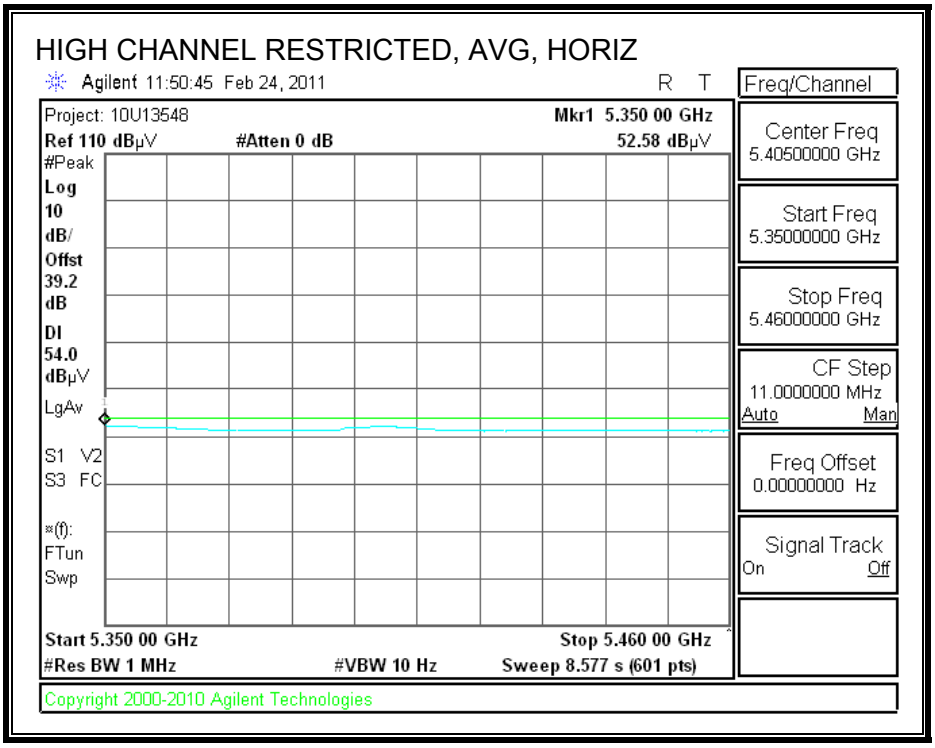
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
5500 MHz Low CH													
11.000	3.0	34.6	37.7	9.2	-33.8	0.0	0.7	48.5	74.0	-25.5	V	P	
11.000	3.0	22.3	37.7	9.2	-33.8	0.0	0.7	36.3	54.0	-17.7	V	A	
11.000	3.0	35.4	37.7	9.2	-33.8	0.0	0.7	49.3	74.0	-24.7	H	P	
11.000	3.0	23.0	37.7	9.2	-33.8	0.0	0.7	36.9	54.0	-17.1	H	A	
5600 MHz Mid CH													
11.200	3.0	37.5	37.9	9.3	-33.5	0.0	0.7	51.9	74.0	-22.1	H	P	
11.200	3.0	25.3	37.9	9.3	-33.5	0.0	0.7	39.7	54.0	-14.3	H	A	
11.200	3.0	34.9	37.9	9.3	-33.5	0.0	0.7	49.3	74.0	-24.7	V	P	
11.200	3.0	22.7	37.9	9.3	-33.5	0.0	0.7	37.1	54.0	-16.9	V	A	
5700 MHz High CH													
11.400	3.0	35.0	38.0	9.4	-33.2	0.0	0.7	50.0	74.0	-24.0	V	P	
11.400	3.0	22.4	38.0	9.4	-33.2	0.0	0.7	37.3	54.0	-16.7	V	A	
11.400	3.0	35.2	38.0	9.4	-33.2	0.0	0.7	50.1	74.0	-23.9	H	P	
11.400	3.0	23.0	38.0	9.4	-33.2	0.0	0.7	38.0	54.0	-16.0	H	A	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

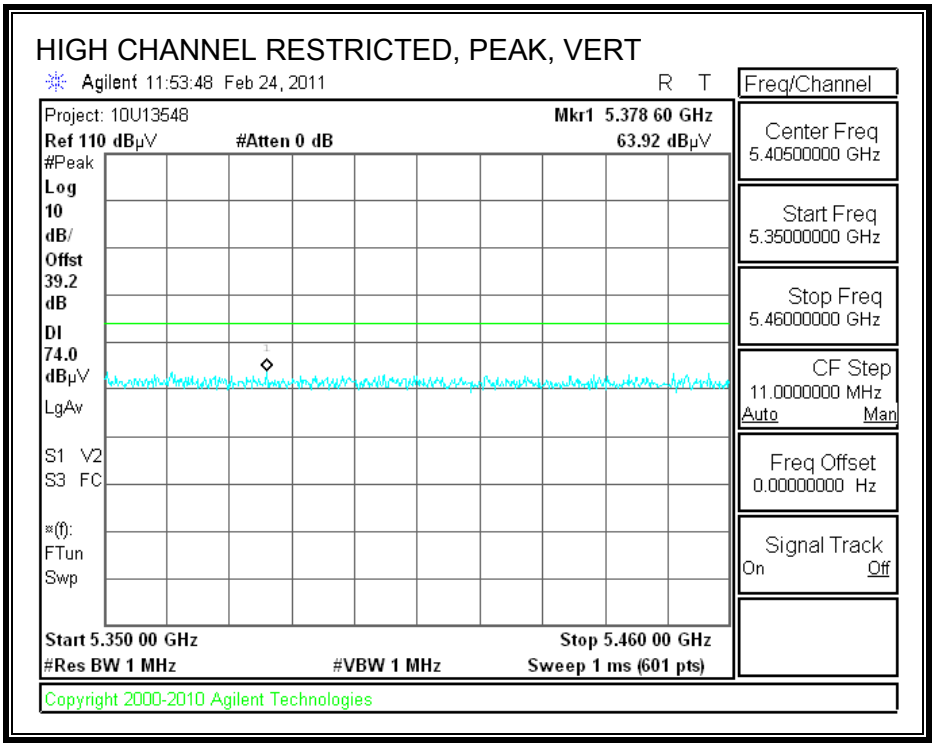
8.3. CO-LOCATION WORST CASE TX ABOVE 1 GHz (802.11a/ 5.3 GHz BAND)

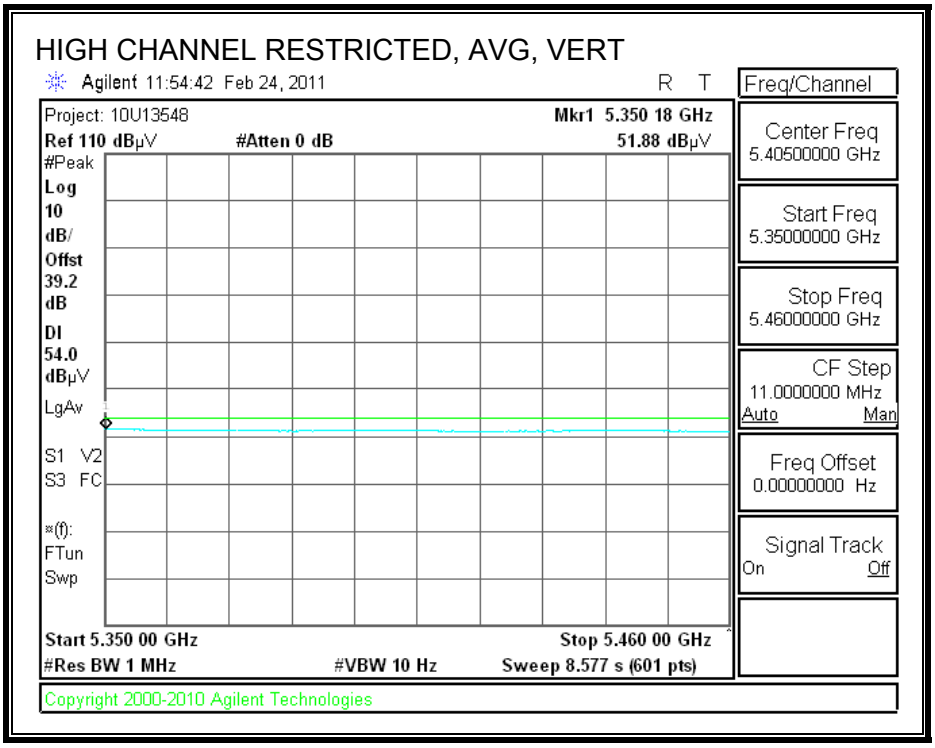
RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)





RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)





HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 02/24/11
Project #: 10U13548
Test Target: FCC Class B
Mode Oper: TX mode, 802.11a and BT CH78

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

Average Field Strength Limit
Peak Field Strength Limit
Margin vs. Average Limit
Margin vs. Peak Limit

f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
5260 MHz Low CH													
15.780	3.0	32.7	38.2	11.5	-32.2	0.0	0.7	50.9	74.0	-21.8	V	P	
15.780	3.0	20.9	38.2	11.5	-32.2	0.0	0.7	39.1	54.0	-13.6	V	A	
15.780	3.0	33.9	38.2	11.5	-32.2	0.0	0.7	52.0	74.0	-20.7	H	P	
15.780	3.0	21.3	38.2	11.5	-32.2	0.0	0.7	39.5	54.0	-13.2	H	A	
5300 MHz Mid CH													
10.600	3.0	37.1	37.5	9.0	-34.3	0.0	0.8	50.1	74.0	-22.6	H	P	
10.600	3.0	24.3	37.5	9.0	-34.3	0.0	0.8	37.4	54.0	-15.3	H	A	
15.900	3.0	33.6	37.9	11.5	-32.2	0.0	0.7	51.5	74.0	-21.2	H	P	
15.900	3.0	20.9	37.9	11.5	-32.2	0.0	0.7	38.9	54.0	-13.8	H	A	
5300 MHz Mid CH													
10.600	3.0	34.7	37.5	9.0	-34.3	0.0	0.8	47.7	74.0	-25.0	V	P	
10.600	3.0	22.6	37.5	9.0	-34.3	0.0	0.8	35.7	54.0	-17.0	V	A	
15.900	3.0	32.8	37.9	11.5	-32.2	0.0	0.7	50.7	74.0	-22.0	V	P	
15.900	3.0	20.8	37.9	11.5	-32.2	0.0	0.7	38.7	54.0	-14.0	V	A	
5320 MHz High CH													
10.640	3.0	34.5	37.6	9.1	-34.2	0.0	0.8	47.6	74.0	-25.1	V	P	
10.640	3.0	22.0	37.6	9.1	-34.2	0.0	0.8	35.1	54.0	-17.6	V	A	
15.960	3.0	32.8	37.7	11.5	-32.2	0.0	0.7	50.6	74.0	-22.1	V	P	
15.960	3.0	20.7	37.7	11.5	-32.2	0.0	0.7	38.5	54.0	-14.2	V	A	
5320 MHz High CH													
15.960	3.0	33.0	37.7	11.5	-32.2	0.0	0.7	50.8	74.0	-21.9	H	P	
15.960	3.0	20.7	37.7	11.5	-32.2	0.0	0.7	38.5	54.0	-14.2	H	A	
10.640	3.0	33.9	37.6	9.1	-34.2	0.0	0.8	47.0	74.0	-25.7	H	P	
10.640	3.0	21.7	37.6	9.1	-34.2	0.0	0.8	34.8	54.0	-17.9	H	A	

Rev. 4.1.2.7
Note: No other emissions were detected above the system noise floor.

8.4. RECEIVER ABOVE 1 GHz

8.4.1. RX ABOVE 1 GHz FOR 20 MHz BANDWIDTH IN THE 5.3 GHz BAND

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Project #: 10U13548
Date: 1/6/2011
Test Engineer: Tom Chen
Configuration: EUT alone
Mode: RX mode, 5.3Ghz

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T59; S/N: 3245 @3m	T145 Agilent 3008A005(			RX RSS 210

Hi Frequency Cables

3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF	Reject Filter
3' cable 22807700	12' cable 22807600	20' cable 22807500		

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)
1.058	3.0	45.2	31.7	24.1	2.4	-36.1	0.0	0.0	35.7	22.1	74	54	-38.3	-31.9	V
1.342	3.0	47.8	31.1	25.2	2.8	-35.9	0.0	0.0	39.9	23.1	74	54	-34.1	-30.9	V
3.175	3.0	44.6	29.9	30.4	4.5	-35.1	0.0	0.0	44.4	29.6	74	54	-29.6	-24.4	V
1.042	3.0	45.1	31.3	24.1	2.4	-36.1	0.0	0.0	35.5	21.7	74	54	-38.5	-32.3	H
1.842	3.0	46.4	33.2	27.0	3.3	-35.5	0.0	0.0	41.2	28.0	74	54	-32.8	-26.0	H
3.267	3.0	43.3	30.0	30.6	4.6	-35.1	0.0	0.0	43.4	30.0	74	54	-30.6	-24.0	H

Rev. 07.22.09

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		

8.4.2. RX ABOVE 1 GHz FOR 20 MHz BANDWIDTH IN THE 5.6 GHz BAND

High Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Project #: 10U13548
Date: 12/17/2010
Test Engineer: Tom Chen
Configuration: EUT alone
Mode: RX mode, 5.6Ghz

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T59; S/N: 3245 @3m	T145 Agilent 3008A005(			RX RSS 210

Hi Frequency Cables

3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF	Reject Filter
3' cable 22807700	12' cable 22807600	20' cable 22807500		

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)
1.127	3.0	46.6	30.3	24.4	2.5	-36.1	0.0	0.0	37.4	21.2	74	54	-36.6	-32.8	V
1.293	3.0	46.0	29.7	25.0	2.7	-35.9	0.0	0.0	37.8	21.5	74	54	-36.2	-32.5	V
2.680	3.0	43.4	28.5	29.1	4.1	-35.2	0.0	0.0	41.4	26.5	74	54	-32.6	-27.5	V
1.153	3.0	44.6	29.6	24.5	2.5	-36.0	0.0	0.0	35.6	20.6	74	54	-38.4	-33.4	H
1.540	3.0	45.1	31.5	25.9	3.0	-35.7	0.0	0.0	38.3	24.7	74	54	-35.7	-29.3	H
2.767	3.0	43.3	28.3	29.3	4.1	-35.2	0.0	0.0	41.6	26.6	74	54	-32.4	-27.4	H

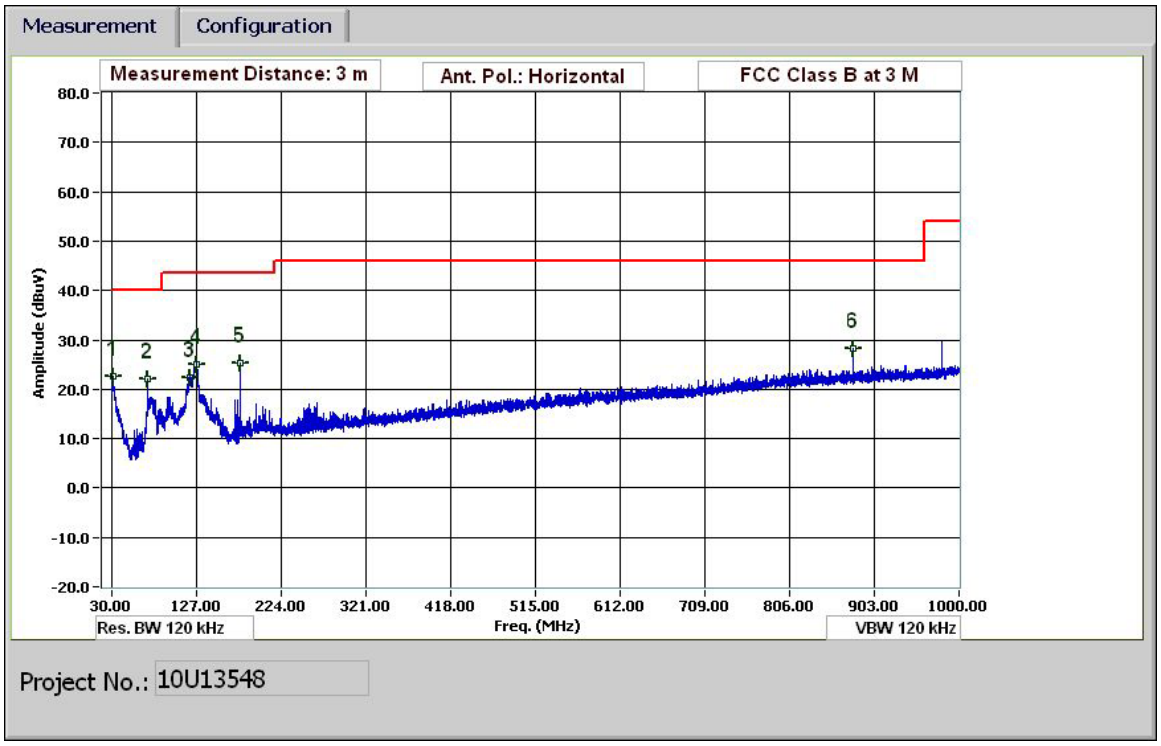
Rev. 07.22.09

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		

8.5. WORST-CASE BELOW 1 GHz

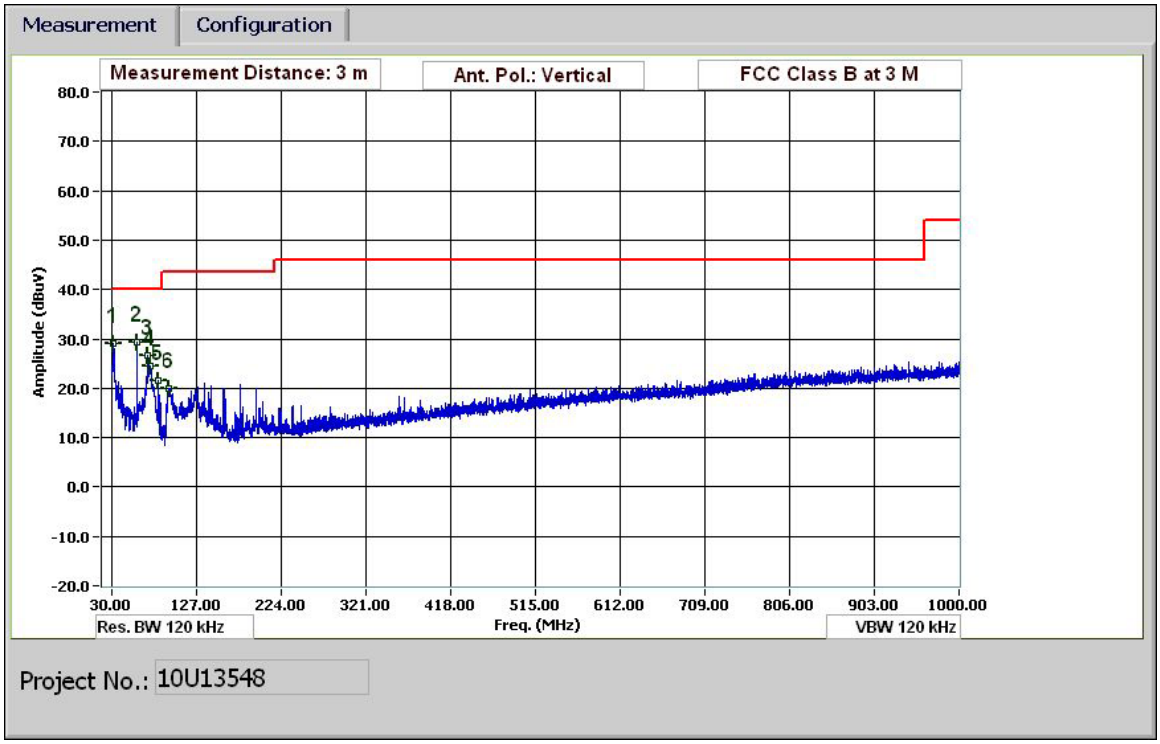
SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



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

VERTICAL PLOT



HORIZONTAL AND VERTICAL DATA

30-1000MHz Frequency Measurement
Compliance Certification Services, Fremont 5m Chamber

Test Engr: Tom Chen
Date: 12/17/10
Project #: 10U13548
Test Target: FCC Class B
Mode Oper: TX mode Worst case

f	Measurement Frequency	Amp	Preamp Gain	Margin	Margin vs. Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters		
Read	Analyzer Reading	Filter	Filter Insert Loss		
AF	Antenna Factor	Corr.	Calculated Field Strength		
CL	Cable Loss	Limit	Field Strength Limit		

f MHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Pad dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
Horizontal													
32.04	3.0	32.3	19.4	0.5	29.7	0.0	0.0	22.5	40.0	-17.5	H	P	
71.402	3.0	42.9	8.2	0.7	29.6	0.0	0.0	22.2	40.0	-17.8	H	P	
119.644	3.0	37.2	13.7	1.0	29.5	0.0	0.0	22.3	43.5	-21.2	H	P	
126.844	3.0	39.7	13.8	1.0	29.4	0.0	0.0	25.1	43.5	-18.4	H	P	
177.366	3.0	42.9	10.4	1.2	29.1	0.0	0.0	25.3	43.5	-18.2	H	P	
879.155	3.0	32.5	21.4	3.0	28.7	0.0	0.0	28.2	46.0	-17.8	H	P	
Vertical													
32.04	3.0	38.8	19.4	0.5	29.7	0.0	0.0	29.0	40.0	-11.0	V	P	
59.041	3.0	50.5	7.9	0.7	29.6	0.0	0.0	29.5	40.0	-10.5	V	P	
70.802	3.0	47.3	8.2	0.7	29.6	0.0	0.0	26.6	40.0	-13.4	V	P	
74.162	3.0	45.3	8.0	0.8	29.6	0.0	0.0	24.4	40.0	-15.6	V	P	
83.642	3.0	42.7	7.6	0.8	29.6	0.0	0.0	21.5	40.0	-18.5	V	P	
94.923	3.0	39.7	8.8	0.9	29.5	0.0	0.0	19.8	43.5	-23.7	V	P	

Rev. 1.27.09
Note: No other emissions were detected above the system noise floor.

9. 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

ANSI C63.4

RESULTS

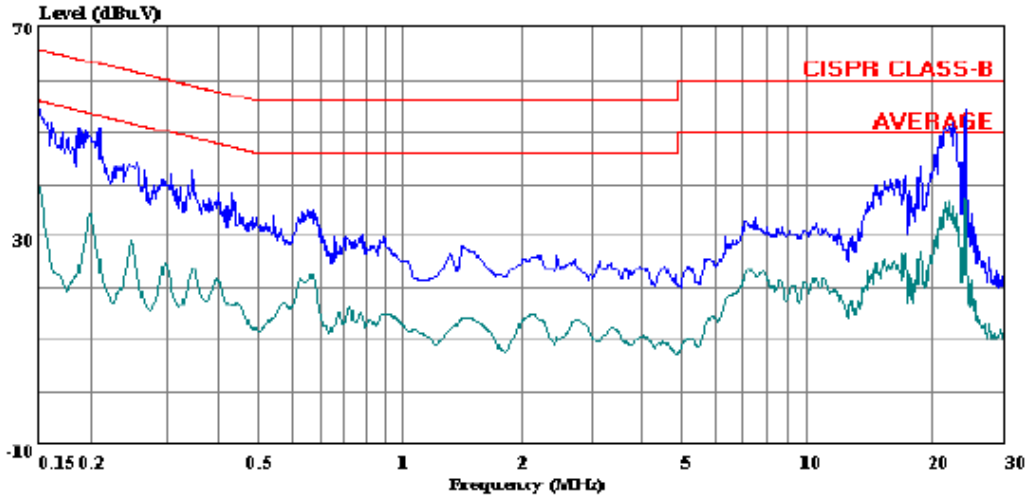
6 WORST EMISSIONS

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	EN_B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.15	52.60	--	34.66	0.00	65.84	55.84	-13.24	-21.18	L1
0.21	51.08	--	25.61	0.00	63.28	53.28	-12.20	-27.67	L1
24.01	54.58	--	45.07	0.00	60.00	50.00	-5.42	-4.93	L1
0.15	53.47	--	33.40	0.00	65.84	55.84	-12.37	-22.44	L2
0.20	51.52	--	31.87	0.00	63.82	53.82	-12.30	-21.95	L2
22.90	50.47	--	32.17	0.00	60.00	50.00	-9.53	-17.83	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#: 7 File#: 10U13548-LC.EMI Date: 12-17-2010 Time: 13:49:54



Trace: 5 Ref Trace:

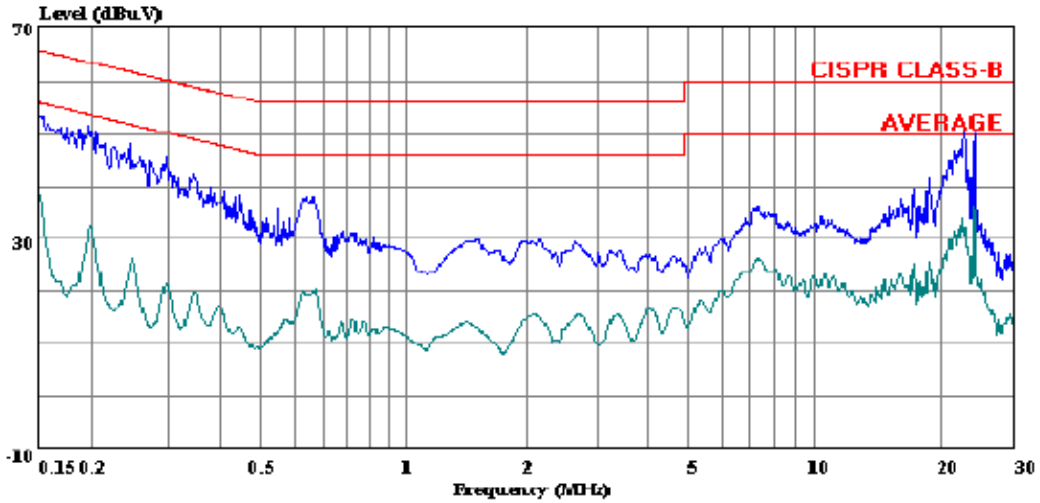
Condition: CISPR CLASS-B
Test Operator: Tom Chen
Project # : 10U13548

Configuration: EUT with AC adapter only
Mode : TX mode worst case
Target : FCC Class B
Voltage : 115 VAC / 60 Hz
: L1: (Peak: Blue, 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#: 10U13548-LC.EMI Date: 12-17-2010 Time: 14:00:53



Trace: 12 Ref Trace:

Condition: CISPR CLASS-B
Test Operator: Tom Chen
Project # : 10U13548

Configuration: EUT with AC adapter only
Mode : TX mode worst case
Target : FCC Class B
Voltage : 115 VAC / 60 Hz
: L2: (Peak: Blue, Average: Green)

10. DYNAMIC FREQUENCY SELECTION

10.1. OVERVIEW

10.1.1. LIMITS

INDUSTRY CANADA

IC RSS-210 is closely harmonized with FCC Part 15 DFS rules. The deviations are as follows:

RSS-210 Issue 7 A9.4 (b) (ii) **Channel Availability Check Time:** …

Additional requirements for the band 5600-5650 MHz: Until further notice, devices subject to this Section shall not be capable of transmitting in the band 5600-5650 MHz, so that Environment Canada weather radars operating in this band are protected.

RSS-210 Issue 7 A9.4 (b) (iv) **Channel closing time:** the maximum channel closing time is 260 ms.

FCC

§15.407 (h) and FCC 06-96 APPENDIX “COMPLIANCE MEASUREMENT PROCEDURES FOR UNLICENSED-NATIONAL INFORMATION INFRASTRUCTURE DEVCIES OPERATING IN THE 5250-5350 MHz AND 5470-5725 MHz BANDS INCORPORATING DYNAMIC FREQUENCY SELECTION”.

Table 1: Applicability of DFS requirements prior to use of a channel

Requirement	Operational Mode		
	Master	Client (without radar detection)	Client (with radar detection)
Non-Occupancy Period	Yes	Not required	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
Uniform Spreading	Yes	Not required	Not required

Table 2: Applicability of DFS requirements during normal operation

Requirement	Operational Mode		
	Master	Client **(without DFS)**	Client **(with DFS)**
DFS Detection Threshold	Yes	Not required	Yes
Channel Closing Transmission Time	Yes	Yes	Yes
Channel Move Time	Yes	Yes	Yes

Table 3: Interference Threshold values, Master or Client incorporating In-Service Monitoring

Maximum Transmit Power	Value (see note)
≥ 200 milliwatt	-64 dBm
< 200 milliwatt	-62 dBm
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.		

Table 4: DFS Response requirement values

Parameter	Value
Non-occupancy period	30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds
Channel Closing Transmission Time	200 milliseconds + approx. 60 milliseconds over remaining 10 second period

The instant that the *Channel Move Time* and the *Channel Closing Transmission Time* begins is as follows:
For the Short pulse radar Test Signals this instant is the end of the *Burst*.
For the Frequency Hopping radar Test Signal, this instant is the end of the last radar burst generated.
For the Long Pulse radar Test Signal this instant is the end of the 12 second period defining the radar transmission.
The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate channel changes (an aggregate of approximately 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

Table 5 – Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (Microseconds)	PRI (Microseconds)	Pulses	Minimum Percentage of Successful Detection	Minimum Trials
1	1	1428	18	60%	30
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120

Table 6 – Long Pulse Radar Test Signal

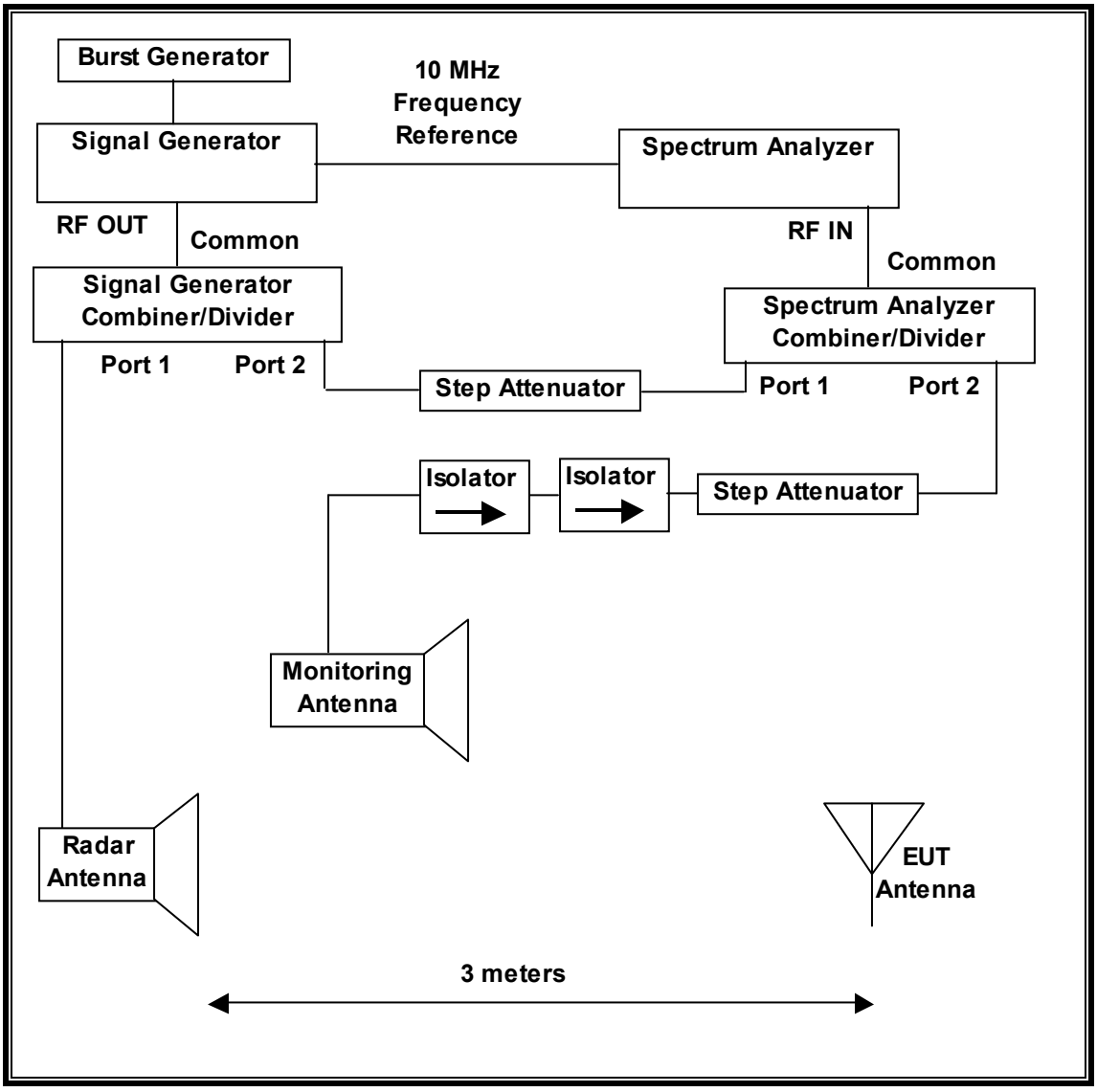
Radar Waveform	Bursts	Pulses per Burst	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Minimum Percentage of Successful Detection	Minimum Trials
5	8-20	1-3	50-100	5-20	1000-2000	80%	30

Table 7 – Frequency Hopping Radar Test Signal

Radar Waveform	Pulse Width (µsec)	PRI (µsec)	Burst Length (ms)	Pulses per Hop	Hopping Rate (kHz)	Minimum Percentage of Successful Detection	Minimum Trials
6	1	333	300	9	.333	70%	30

10.1.2. TEST AND MEASUREMENT SYSTEM

RADIATED METHOD SYSTEM BLOCK DIAGRAM



SYSTEM OVERVIEW

The short pulse and long pulse signal generating system utilizes the NTIA software. The Vector Signal Generator has been validated by the NTIA. The hopping signal generating system utilizes the CCS simulated hopping method and system, which has been validated by the DoD, FCC and NTIA. The software selects waveform parameters from within the bounds of the signal type on a random basis using uniform distribution.

The short pulse types 2, 3 and 4, and the long pulse type 5 parameters are randomized at run-time.

The hopping type 6 pulse parameters are fixed while the hopping sequence is based on the August 2005 NTIA Hopping Frequency List. The initial starting point randomized at run-time and each subsequent starting point is incremented by 475. Each frequency in the 100-length segment is compared to the boundaries of the EUT Detection Bandwidth and the software creates a hopping burst pattern in accordance with Section 7.4.1.3 Method #2 Simulated Freqeuncy Hopping Radar Waveform Generating Subsystem of FCC 06-96 APPENDIX. The frequency of the signal generator is incremented in 1 MHz steps from F_L to F_H for each successive trial. This incremental sequence is repeated as required to generate a minimum of 30 total trials and to maintain a uniform frequency distribution over the entire Detection Bandwidth.

The signal monitoring equipment consists of a spectrum analyzer. The aggregate ON time is calculated by multiplying the number of bins above a threshold during a particular observation period by the dwell time per bin, with the analyzer set to peak detection and max hold.

SYSTEM CALIBRATION

A 50-ohm load is connected in place of the spectrum analyzer, and the spectrum analyzer is connected to a horn antenna via a coaxial cable, with the reference level offset set to (horn antenna gain – coaxial cable loss). The signal generator is set to CW mode. The amplitude of the signal generator is adjusted to yield a level of –64 dBm as measured on the spectrum analyzer.

Without changing any of the instrument settings, the spectrum analyzer is reconnected to the Common port of the Spectrum Analyzer Combiner/Divider. The Reference Level Offset of the spectrum analyzer is adjusted so that the displayed amplitude of the signal is –64 dBm.

The spectrum analyzer displays the level of the signal generator as received at the antenna ports of the Master Device. The interference detection threshold may be varied from the calibrated value of –64 dBm and the spectrum analyzer will still indicate the level as received by the Master Device.

ADJUSTMENT OF DISPLAYED TRAFFIC LEVEL

A link is established between the Master and Slave and the distance between the units is adjusted as needed to provide a suitable received level at the Master and Slave devices. The video test file is streamed to generate WLAN traffic. The monitoring antenna is adjusted so that the WLAN traffic level, as displayed on the spectrum analyzer, is at lower amplitude than the radar detection threshold.

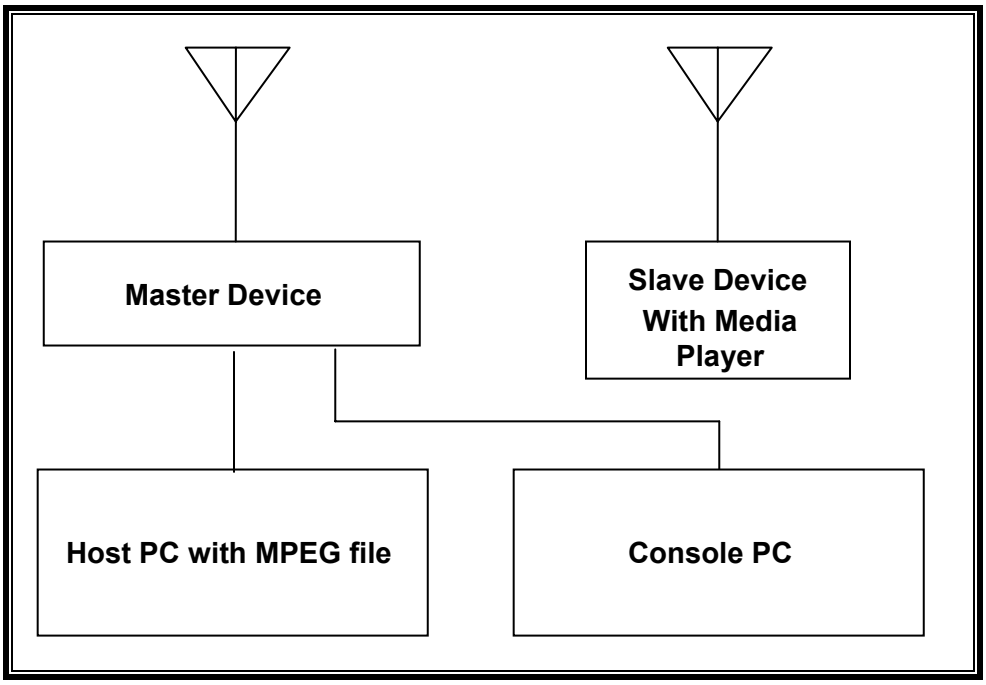
TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the DFS tests documented in this report:

TEST EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**Cal Due**
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C00169	04/05/11
Vector Signal Generator, 20GHz	Agilent / HP	E8267C	C01066	02/12/12

10.1.3. SETUP OF EUT

RADIATED METHOD EUT TEST SETUP



SUPPORT EQUIPMENT

The following test and measurement equipment was utilized for the DFS tests documented in this report:

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
N600 Wireless Dual Band Router	Netgear	WNDR3400	2BK311730FF6B	PY309300116
AC Adapter (AP)	Netgear	FA-1201500SJA / FA-1201500SUA	4F105116T10209045B	DoC
Notebook PC (Console)	HP	Pavilion zv6000	CND5290401	DoC
AC Adapter (Console PC)	HP	PA-1121-12HD	58B240ALLRK0HU	DoC
Notebook PC (Host)	Apple	Mac Book Pro 17"	SW8630002WHS	DoC
AC Adapter (Host PC)	Apple	A1172	MV628LSGWDA	DoC

10.1.4. DESCRIPTION OF EUT

The EUT operates over the 5250-5350 MHz and 5470-5725 MHz ranges.

The EUT is a Slave Device with without Radar Detection.

The highest power level within these bands is 20.81 dBm EIRP in the 5250-5350 MHz band and 20.21 dBm EIRP in the 5470-5725 MHz band.

The only antenna assembly utilized with the EUT has a gain of 4.2 dBi.

The rated output power of the Master unit is > 23dBm (EIRP). Therefore the required interference threshold level is –64 dBm. After correction for procedural adjustments, the required radiated threshold at the antenna port is –64 + 1 = -63 dBm.

The calibrated radiated DFS Detection Threshold level is set to –64 dBm. The tested level is lower than the required level hence it provides margin to the limit.

The EUT uses one transmitter/receiver chain connected to an antenna to perform radiated tests.

WLAN traffic is generated by streaming the video file TestFile.mp2 “6 ½ Magic Hours” from the Master to the Slave in full motion video mode using the media player with the V2.61 Codec package.

TPC is not required since the maximum EIRP is less than 500 mW (27 dBm), however TPC is implemented.

The EUT utilizes the 802.11a/n architecture. One nominal channel bandwidth, 20 MHz, is implemented.

MANUFACTURER’S STATEMENT REGARDING UNIFORM CHANNEL SPREADING

This is not applicable to slave devices.

OVERVIEW OF MASTER DEVICE WITH RESPECT TO §15.407 (h) REQUIREMENTS

The Master Device is a Netgear N600 Dual Band Router, FCC ID: PY309300116. The DFS software installed in the Master Device is Linux revision 5.22.84.0. The minimum antenna gain for the Master Device is 2.73 dBi.

The calibrated radiated DFS Detection Threshold level is set to –64 dBm.

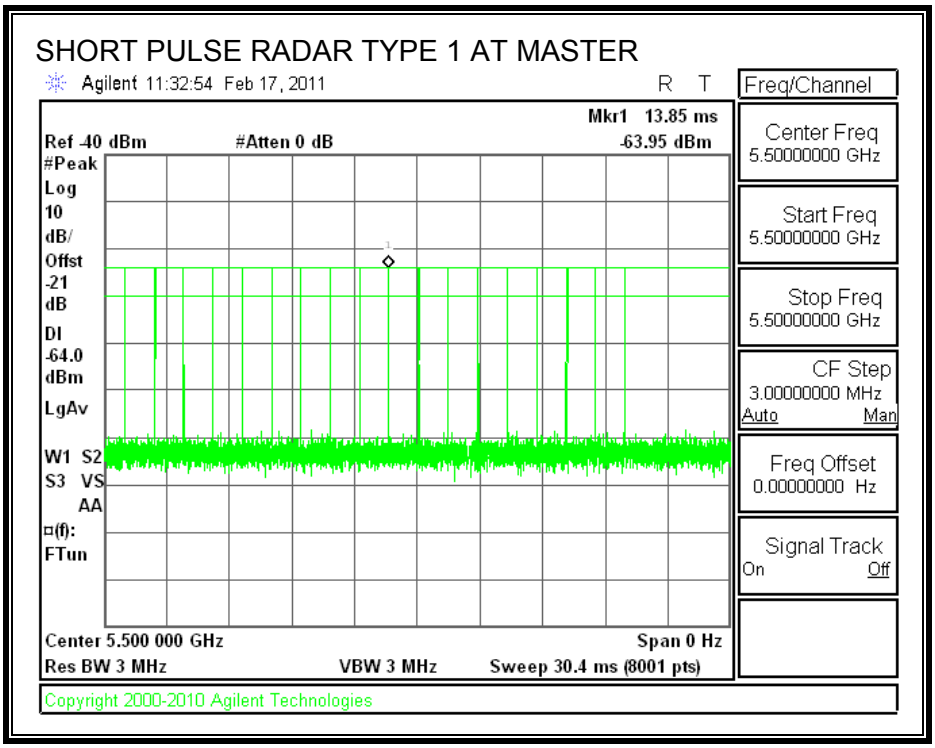
10.2. RESULTS FOR 20 MHz BANDWIDTH

10.2.1. TEST CHANNEL

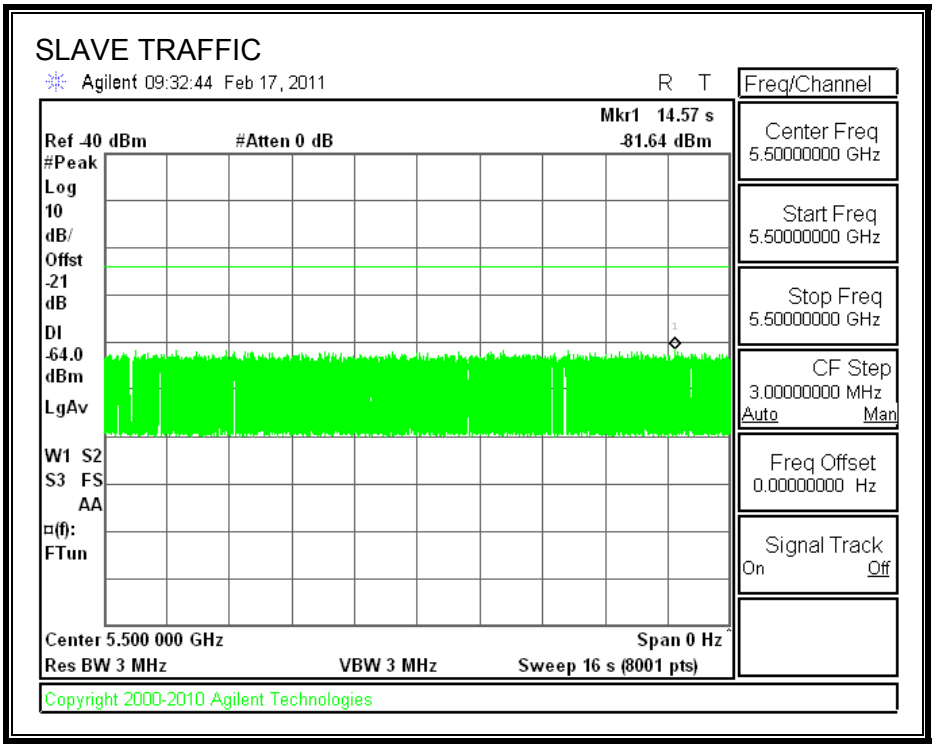
All tests were performed at a channel center frequency of 5500 MHz.

10.2.2. RADAR WAVEFORM AND TRAFFIC

RADAR WAVEFORM



TRAFFIC



10.2.3. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable.

10.2.4. MOVE AND CLOSING TIME

REPORTING NOTES

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time =
(Number of analyzer bins showing transmission) * (dwell time per bin)

The observation period over which the FCC aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

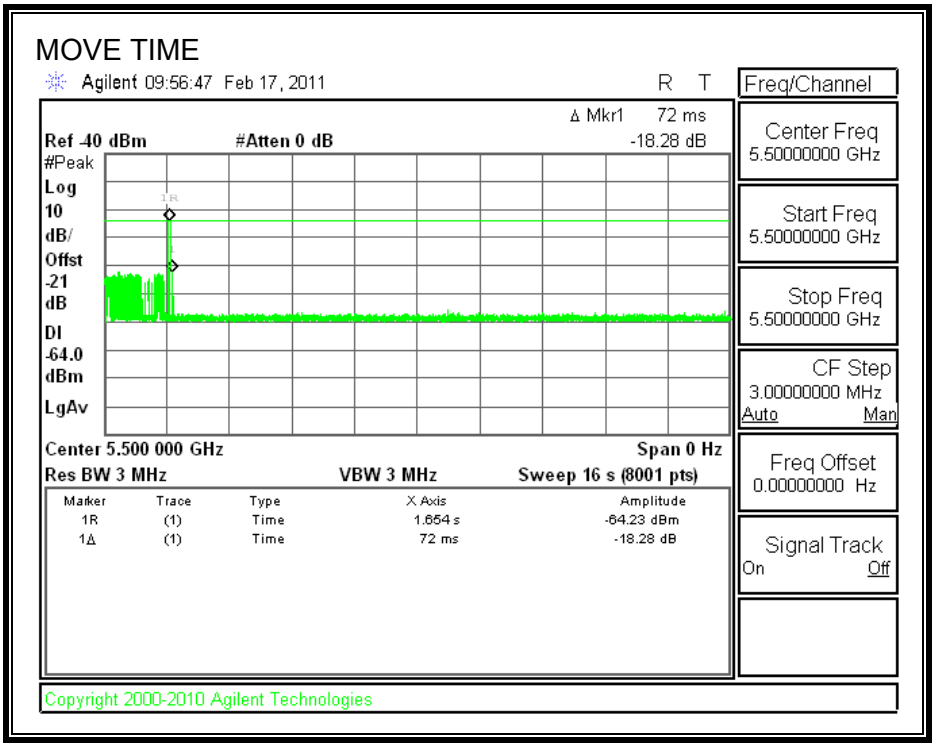
The observation period over which the IC aggregate time is calculated begins at (Reference Marker) and ends no earlier than (Reference Marker + 10 sec).

RESULTS

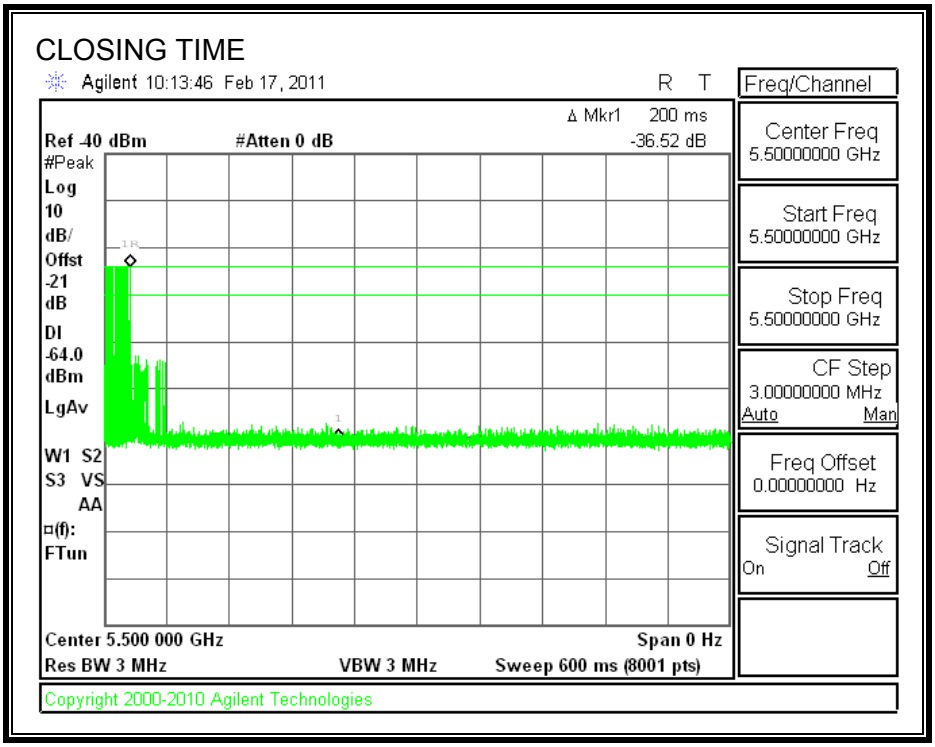
Agency	Channel Move Time (sec)	Limit (sec)
FCC / IC	0.072	10

Agency	Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
FCC	0.0	60
IC	2.0	260

MOVE TIME

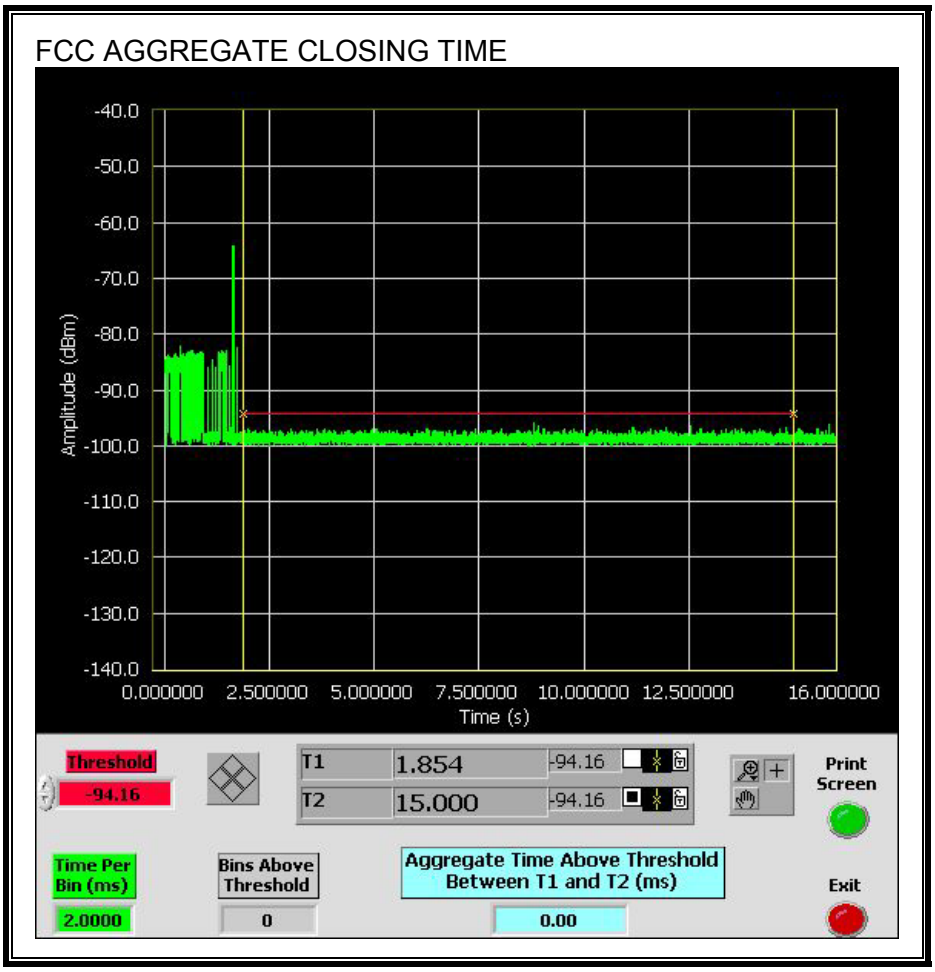


CHANNEL CLOSING TIME



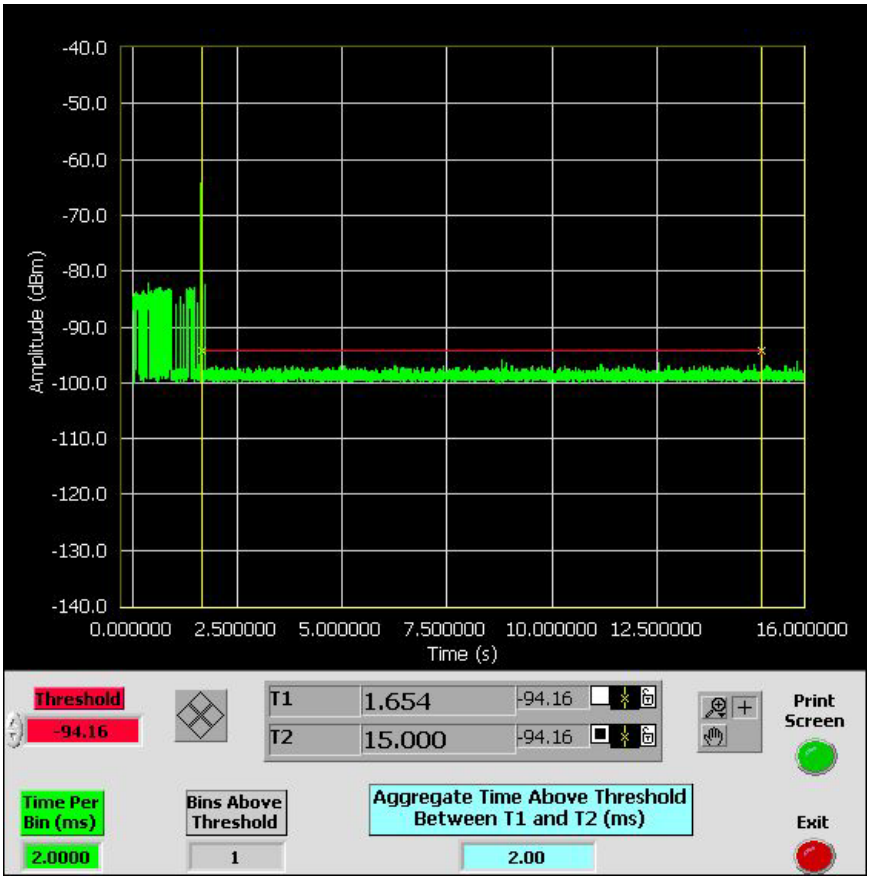
AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the FCC aggregate monitoring period.



Only intermittent transmissions are observed during the IC aggregate monitoring period.

IC AGGREGATE CLOSING TIME



10.2.5. NON-OCCUPANCY PERIOD

RESULTS

No EUT transmissions were observed on the test channel during the 30-minute observation time.