



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

CERTIFICATION TEST REPORT

FOR

GSM/WCDMA BAND PHONE WITH BT, WLAN, AND NFC

MODEL NUMBER: LG-P880g, LGP880g, P880g, LG-P880G, LGP880G, P880G

FCC ID: ZNFP880G

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Prepared for
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--	08/31/12	Initial Issue	T. LEE
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TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	6
2. TEST METHODOLOGY	7
3. FACILITIES AND ACCREDITATION	7
4. CALIBRATION AND UNCERTAINTY	7
4.1. <i>MEASURING INSTRUMENT CALIBRATION</i>	7
4.2. <i>SAMPLE CALCULATION</i>	7
4.3. <i>MEASUREMENT UNCERTAINTY</i>	7
5. EQUIPMENT UNDER TEST	8
5.1. <i>DESCRIPTION OF EUT</i>	8
5.2. <i>MODEL DIFFERENCES</i>	8
5.3. <i>MAXIMUM OUTPUT POWER</i>	8
5.4. <i>DESCRIPTION OF AVAILABLE ANTENNAS</i>	8
5.5. <i>SOFTWARE AND FIRMWARE</i>	8
5.6. <i>WORST-CASE CONFIGURATION AND MODE</i>	9
5.7. <i>DESCRIPTION OF TEST SETUP</i>	10
6. TEST AND MEASUREMENT EQUIPMENT	12
7. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS	13
7.1.1. <i>ON TIME AND DUTY CYCLE RESULTS</i>	13
7.1.2. <i>MEASUREMENT METHOD FOR POWER AND PPSD</i>	13
7.1.3. <i>MEASUREMENT METHOD FOR AVERAGE SPURIOUS EMISSIONS ABOVE 1 GHz</i>	13
7.1.4. <i>DUTY CYCLE PLOTS</i>	14
8. ANTENNA PORT TEST RESULTS	15
8.1. <i>802.11a MODE IN THE 5.2 GHz BAND</i>	15
8.1.1. <i>26 dB BANDWIDTH</i>	15
8.1.2. <i>99% BANDWIDTH</i>	18
8.1.3. <i>AVERAGE POWER</i>	21
8.1.4. <i>OUTPUT POWER AND PPSD</i>	22
8.1.5. <i>PEAK EXCURSION</i>	27
8.2. <i>802.11n HT20 MODE IN THE 5.2 GHz BAND</i>	30
8.2.1. <i>26 dB BANDWIDTH</i>	30
8.2.2. <i>99% BANDWIDTH</i>	33
8.2.3. <i>AVERAGE POWER</i>	36
8.2.4. <i>OUTPUT POWER AND PPSD</i>	37
8.2.5. <i>PEAK EXCURSION</i>	42
8.3. <i>802.11a MODE IN THE 5.3 GHz BAND</i>	45
8.3.1. <i>26 dB BANDWIDTH</i>	45

8.3.2. 99% BANDWIDTH48
8.3.3. AVERAGE POWER51
8.3.4. OUTPUT POWER AND PPSD52
8.3.5. PEAK EXCURSION56
8.4. 802.11n HT20 MODE IN THE 5.3 GHz BAND59
8.4.1. 26 dB BANDWIDTH59
8.4.2. 99% BANDWIDTH62
8.4.3. AVERAGE POWER65
8.4.4. OUTPUT POWER AND PPSD66
8.4.5. PEAK EXCURSION70
8.5. 802.11a MODE IN THE 5.6 GHz BAND73
8.5.1. 26 dB BANDWIDTH73
8.5.2. 99% BANDWIDTH76
8.5.3. AVERAGE POWER79
8.5.4. OUTPUT POWER AND PPSD80
8.5.5. PEAK EXCURSION84
8.6. 802.11n HT20 MODE IN THE 5.6 GHz BAND87
8.6.1. 26 dB BANDWIDTH87
8.6.2. 99% BANDWIDTH90
8.6.3. AVERAGE POWER93
8.6.4. OUTPUT POWER AND PPSD94
8.6.5. PEAK EXCURSION98
9. RADIATED TEST RESULTS 101
9.1. LIMITS AND PROCEDURE 101
9.2. TX ABOVE 1 GHz 802.11a MODE IN THE 5.2 GHz BAND 102
9.3. TX ABOVE 1 GHz 802.11a MODE IN THE 5.3 GHz BAND 105
9.4. TX ABOVE 1 GHz 802.11a MODE IN THE 5.6 GHz BAND 108
9.5. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.2 GHz BAND 112
9.6. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.3 GHz BAND 115
9.1. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.6 GHz BAND 118
9.2. WORST-CASE BELOW 1 GHz 122
10. AC POWER LINE CONDUCTED EMISSIONS 125
11. DYNAMIC FREQUENCY SELECTION 129
11.1. OVERVIEW 129
11.1.1. LIMITS 129
11.1.2. TEST AND MEASUREMENT SYSTEM 132
11.1.3. SETUP OF EUT 135
11.1.4. DESCRIPTION OF EUT 136
11.2. RESULTS FOR 20 MHz BANDWIDTH 138
11.2.1. TEST CHANNEL 138
11.2.2. RADAR WAVEFORM AND TRAFFIC 138
11.2.3. OVERLAPPING CHANNEL TESTS 140
11.2.4. MOVE AND CLOSING TIME 140

11.2.5. NON-OCCUPANCY PERIOD..... 145

12. SETUP PHOTOS..... 146

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: LG ELECTRONICS MOBILECOMM U.S.A., INC.
1000 SYLVAN AVE.
ENGLEWOOD CLIFFS, NJ
UNITED STATES 07632

EUT DESCRIPTION: CELL PHONE WITH GSM/CDMA/WCDMA/LTE+BT
LE+802.11ABGN (HT20) W/ WIRELESS BACK COVER

MODEL: LG-P880g, LGP880g, P880g, LG-P880G, LGP880G, P880G

SERIAL NUMBER: 207KPLC217104 for Conducted, 207KPED217106 for Emissions

DATE TESTED: August 10- 31, 2012

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart E	Pass
INDUSTRY CANADA RSS-210 Issue 8 Annex 9	Pass
INDUSTRY CANADA RSS-GEN Issue 3	Pass

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:

Tested By:



TIM LEE
STAFF ENGINEER
UL CCS

DAVID GARCIA
EMC ENGINEER
UL CCS

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, FCC 06-96, FCC KDB 789033, ANSI C63.10-2009, RSS-GEN Issue 3, and RSS-210 Issue 8.

3. FACILITIES AND ACCREDITATION

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

UL 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:

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

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 1000 MHz	4.94 dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a GSM/WCDMA Tri-Band Phone that also supports BLUETOOTH, WLAN and NFC operating at 13.56MHz.

The EUT is manufactured by LG Electronics.

5.2. MODEL DIFFERENCES

Model P880G is identical to Models LGP880G and LG-P880G except for model designation.

5.3. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5180 - 5240	802.11a	8.46	7.01
5180 - 5240	802.11n HT20	7.20	5.25
5260 - 5320	802.11a	8.53	7.13
5260 - 5320	802.11n HT20	7.24	5.30
5500 - 5700	802.11a	8.1	6.46
5500 - 5700	802.11n HT20	7.00	5.01

5.4. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an PIFA antenna, with a maximum gain of -2.30 dBi at 5.2 GHz band, -1.34 dBi at 5.3 GHz band, and -0.17 dBi at 5.6 GHz band.

5.5. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was Kernel, Version 2.6.39.4

The test utility software used during testing was LG-P880g-V09a July 3, 2012.

The driver installed was Android Version 2.6.39.4.

5.6. WORST-CASE CONFIGURATION AND MODE

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

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

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

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

5.7. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	LG	MCS-01WD	DA260003271	DoC
Earphone	LG	N/A	N/A	N/A

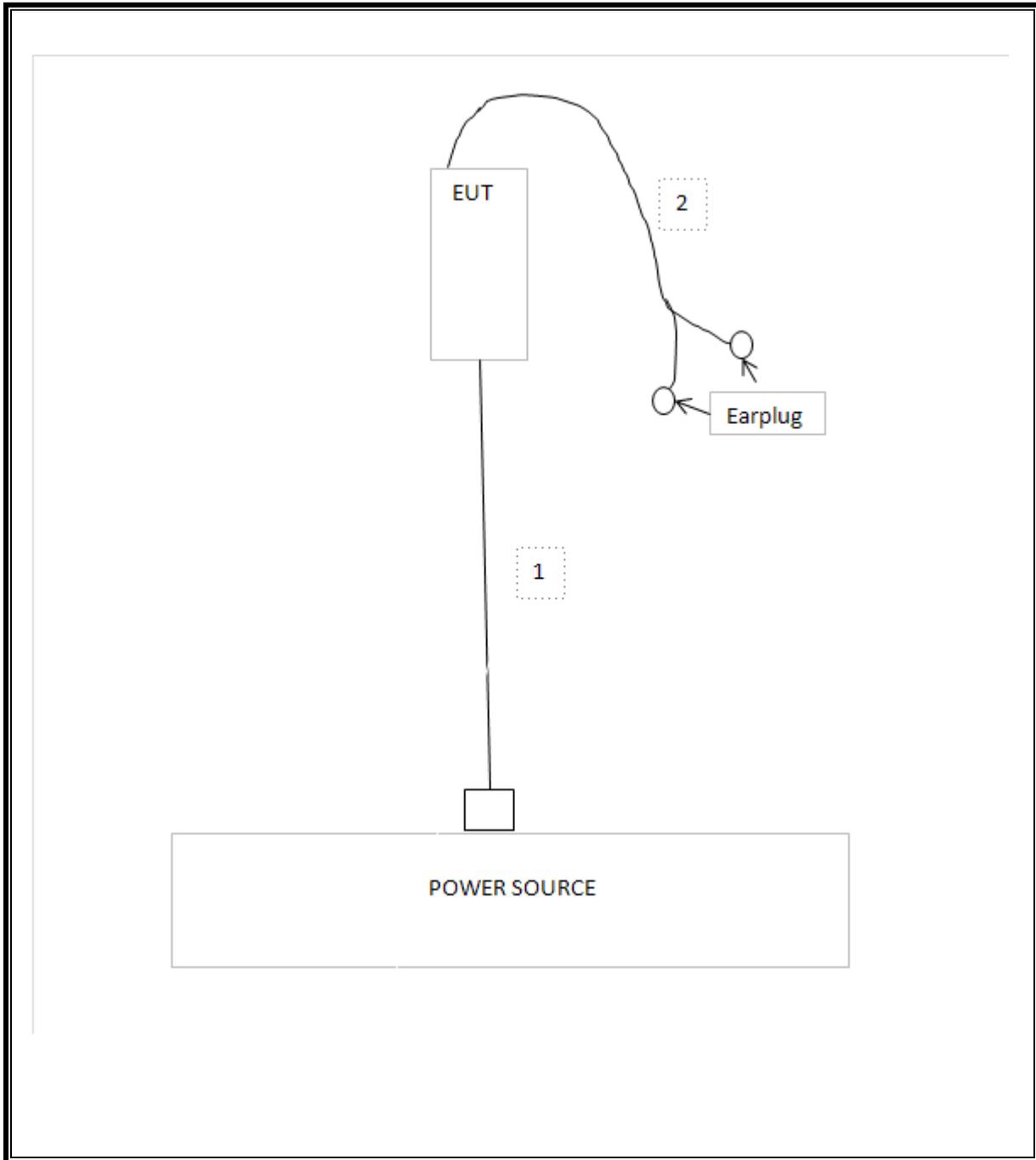
I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC Power	1	Mini-USB	Shielded	1.2 m	NA
2	Audio	1	Mini-Jack	Un-Shielded	1.5 m	NA

TEST SETUP

The EUT is setup to transmit continuously.

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

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

Test Equipment List					
Description	Manufacturer	Model	Asset	Cal Date	Cal Due
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01011	01/00/00	10/13/12
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00580	11/11/11	11/11/12
1-18GHz Horn Ant	EMCO	3115	C00783	04/15/12	04/15/13
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C00749	09/27/11	09/27/12
Antenna, Horn, 26.5 GHz	ARA	SWH-28	C01015	10/06/11	10/06/12
PSA	Agilent / HP	E4446A	C01012	09/02/11	12/02/12
Power Meter	HP	437B	T226	07/25/12	07/25/13
Power Sensor	HP	HP8481A	T269	07/26/12	07/26/13
LISN, 30 MHz	FCC	LISN-50/250-25	N02625	11/15/11	11/15/12
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-B	N02481	11/16/11	11/16/12
EMI Test Receiver	R&S	ESHS 20	N02396	08/06/12	08/06/13

7. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 789033 Zero-Span Spectrum Analyzer Method.

7.1.1. ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
802.11a 20 MHz	2.055	2.17	0.947	94.7%	0.24	0.487
802.11n HT20	1.91	2.03	0.941	94.1%	0.26	0.524

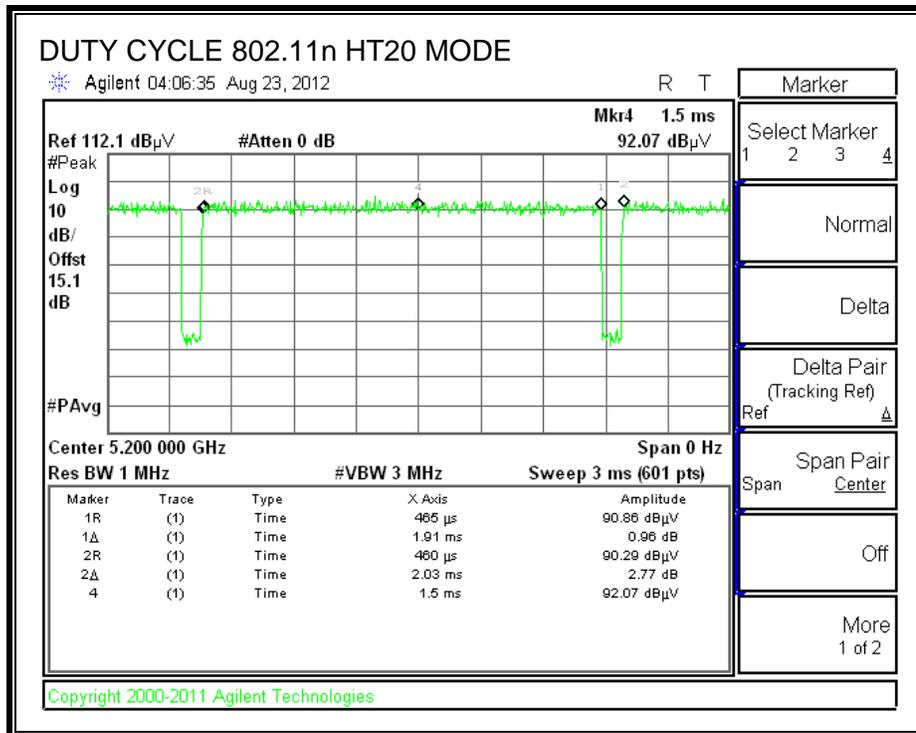
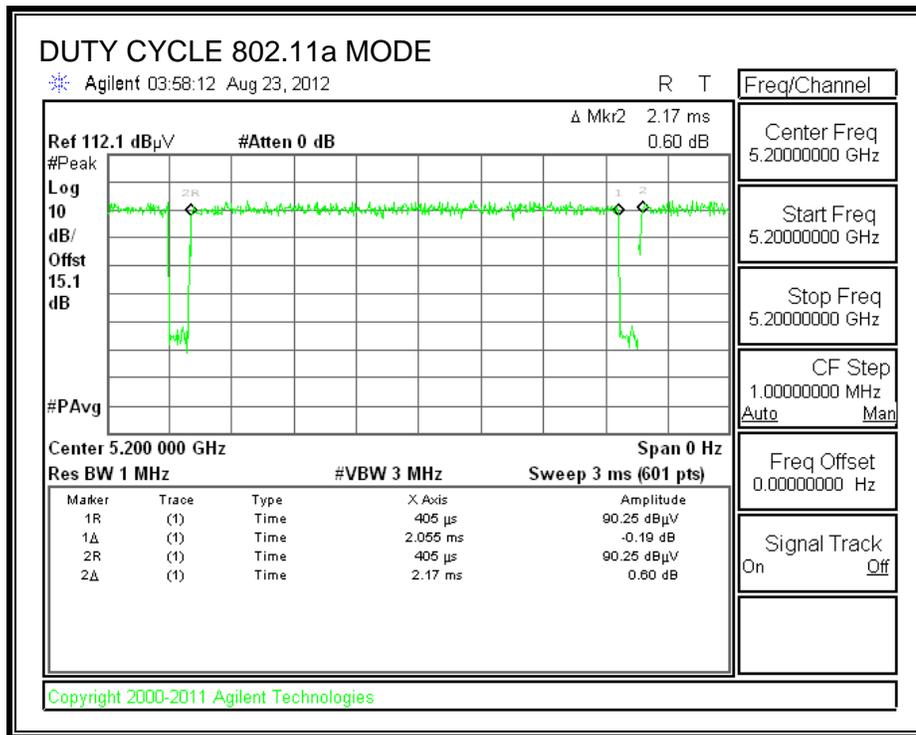
7.1.2. MEASUREMENT METHOD FOR POWER AND PPSD

The Duty Cycle is less than 98% and consistent therefore KDB 789033 Method SA-2 is used.

7.1.3. MEASUREMENT METHOD FOR AVERAGE SPURIOUS EMISSIONS ABOVE 1 GHz

The Duty Cycle is less than 98% and consistent, KDB 789033 Method VB with Power RMS Averaging is used.

7.1.4. DUTY CYCLE PLOTS



8. ANTENNA PORT TEST RESULTS

8.1. 802.11a MODE IN THE 5.2 GHz BAND

8.1.1. 26 dB BANDWIDTH

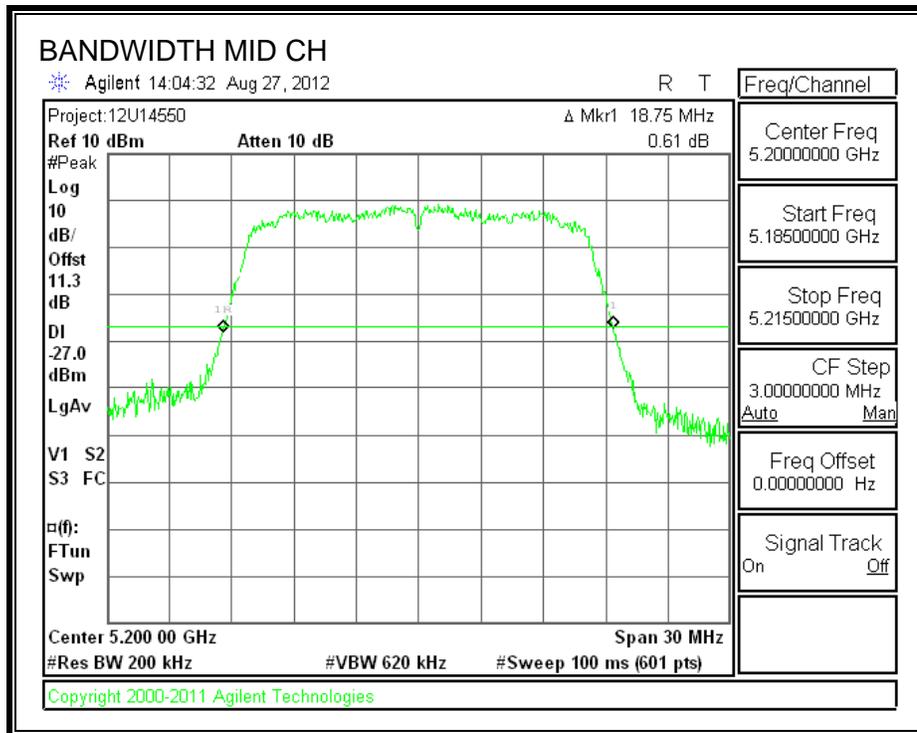
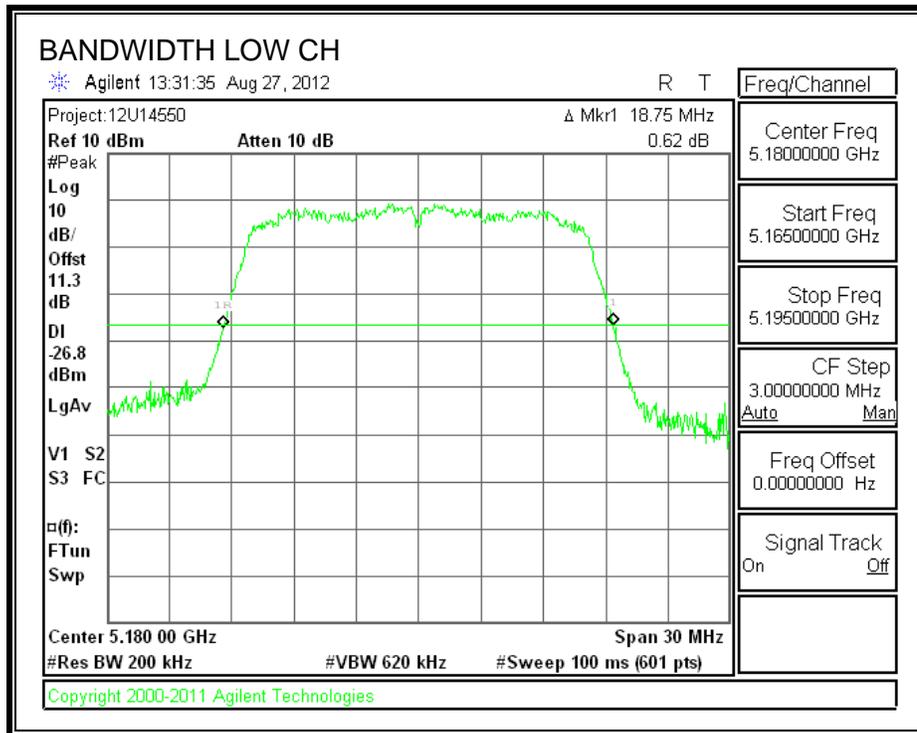
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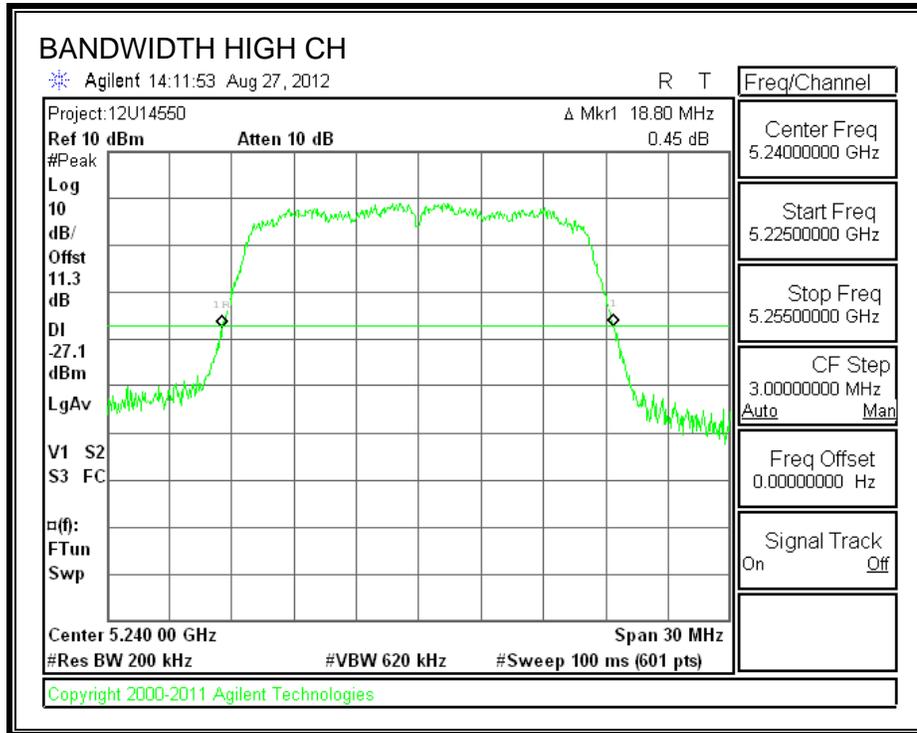
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5180	18.75
Mid	5200	18.75
High	5240	18.80

26 dB BANDWIDTH





8.1.2. 99% BANDWIDTH

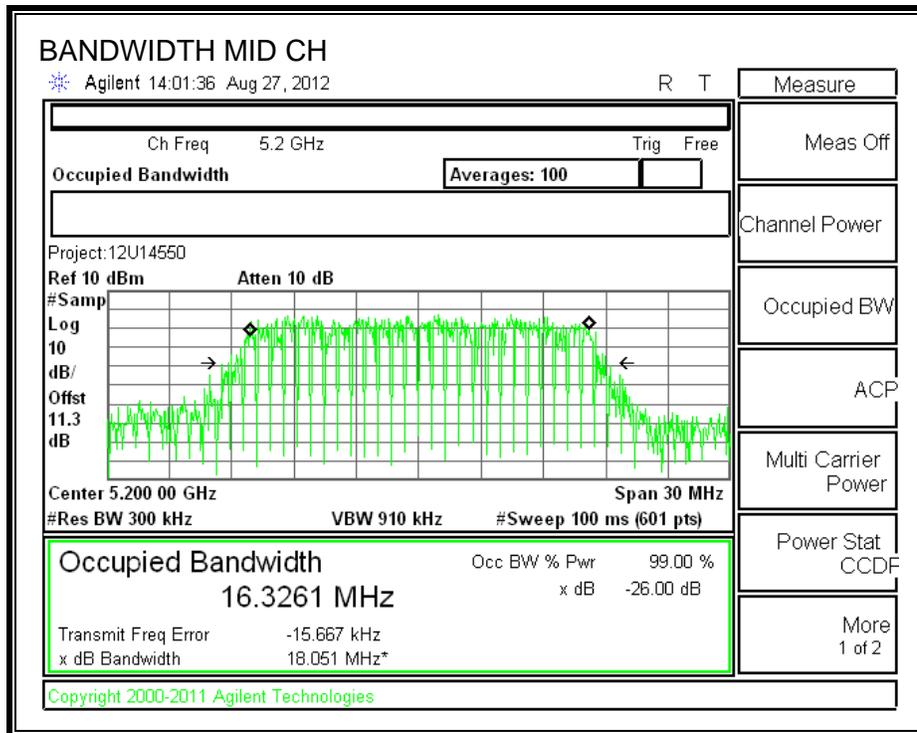
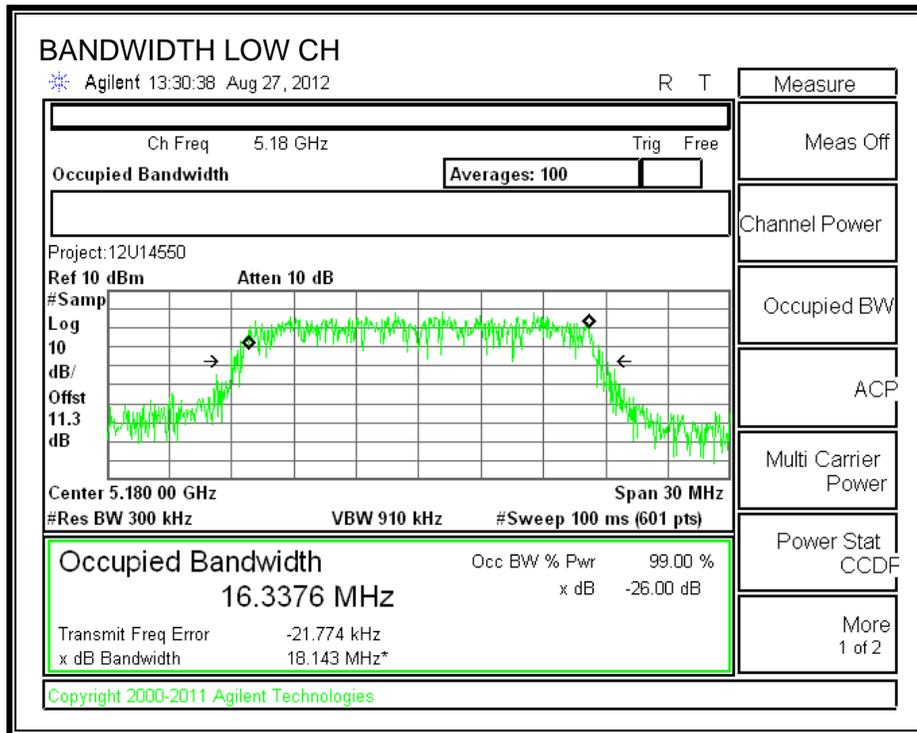
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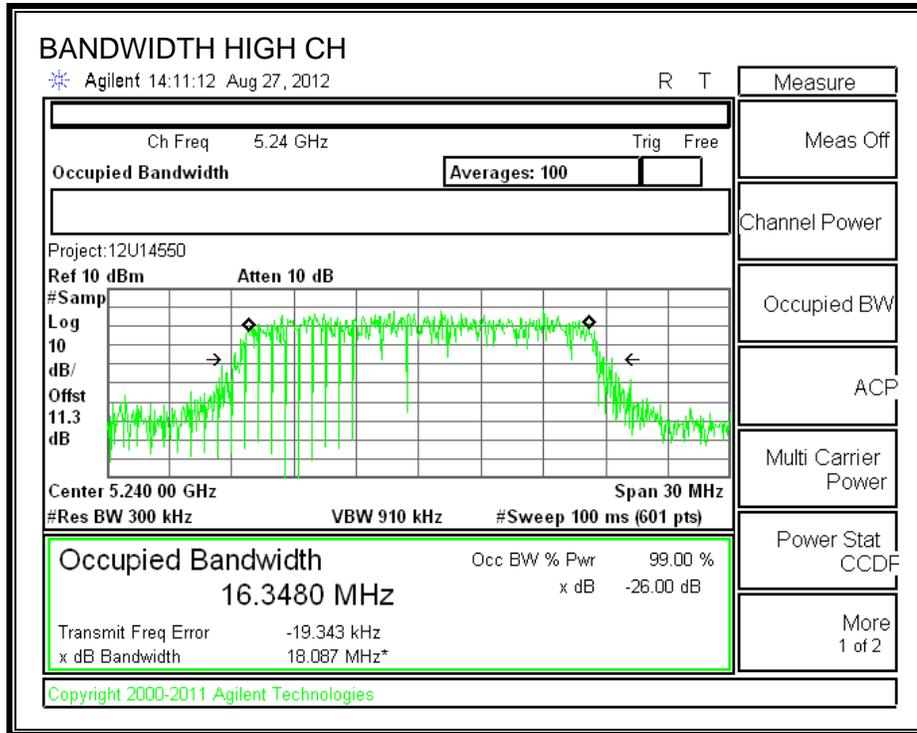
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5180	16.3376
Mid	5200	16.3261
High	5240	16.3480

99% BANDWIDTH





8.1.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.26 dB (including 10 dB pad and 1.26 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Channel	Frequency (MHz)	Power (dBm)
Low	5180	8,56
Mid	5200	8.65
High	5240	8.76

8.1.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (1)

IC RSS-210 A9.2 (1)

FCC §15.407 (a) (1):

For the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or $4 \text{ dBm} + 10 \log B$, where B is the 26–dB emission bandwidth in MHz. In addition, 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 maximum conducted output 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.

IC RSS-210 A9.2 (1):

For the 5.15 – 5.25 GHz band, The maximum e.i.r.p. shall not exceed 200 mW or $10 + 10 \log_{10} B$, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

DIRECTIONAL ANTENNA GAIN

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

FCC RESULTS

Limits

Channel	Frequency (MHz)	Fixed Limit (dBm)	B (MHz)	4 + 10 Log B (dBm)	Directional Gain (dBi)	Power Limit (dBm)	PPSD Limit (dBm)
Low	5180	17	18.8	16.73	-6.80	16.73	4.00
Mid	5200	17	18.8	16.73	-6.80	16.73	4.00
High	5240	17	18.8	16.74	-6.80	16.74	4.00

Duty Cycle CF (dB)	0.24	Included in Calculations of Corr'd Power & PPSD
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Output Power Results

Channel	Frequency (MHz)	Meas Power (dBm)	Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	8.22	8.46	16.73	-8.27
Mid	5200	8.12	8.36	16.73	-8.37
High	5240	8.11	8.35	16.74	-8.39

PPSD Results

Channel	Frequency (MHz)	Meas PPSD (dBm)	Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5180	-2.18	-1.94	4.00	-5.94
Mid	5200	-2.27	-2.03	4.00	-6.03
High	5240	-2.26	-2.02	4.00	-6.02

IC RESULTS

Limits

Channel	Frequency (MHz)	Fixed Limit (dBm)	B (MHz)	4 + 10 Log B (dBm)	Directional Gain (dBi)	Power Limit (dBm)	PPSD Limit (dBm)
Low	5180	17	16.3	16.13	-6.80	16.13	4.00
Mid	5200	17	16.3	16.13	-6.80	16.13	4.00
High	5240	17	16.3	16.13	-6.80	16.13	4.00

Duty Cycle CF (dB)	0.24	Included in Calculations of Corr'd Power & PPSD
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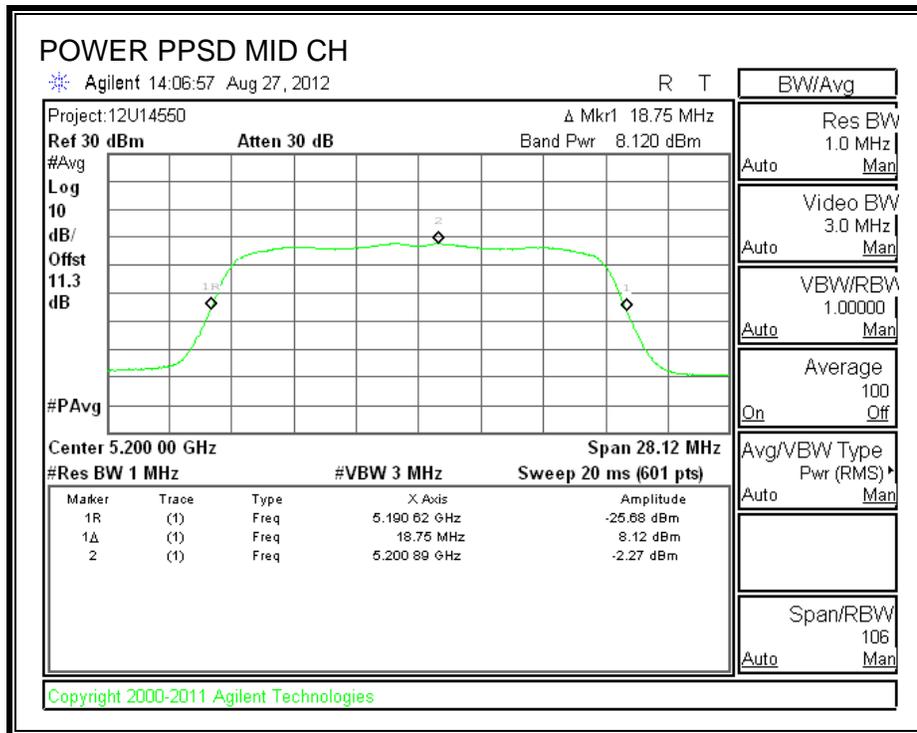
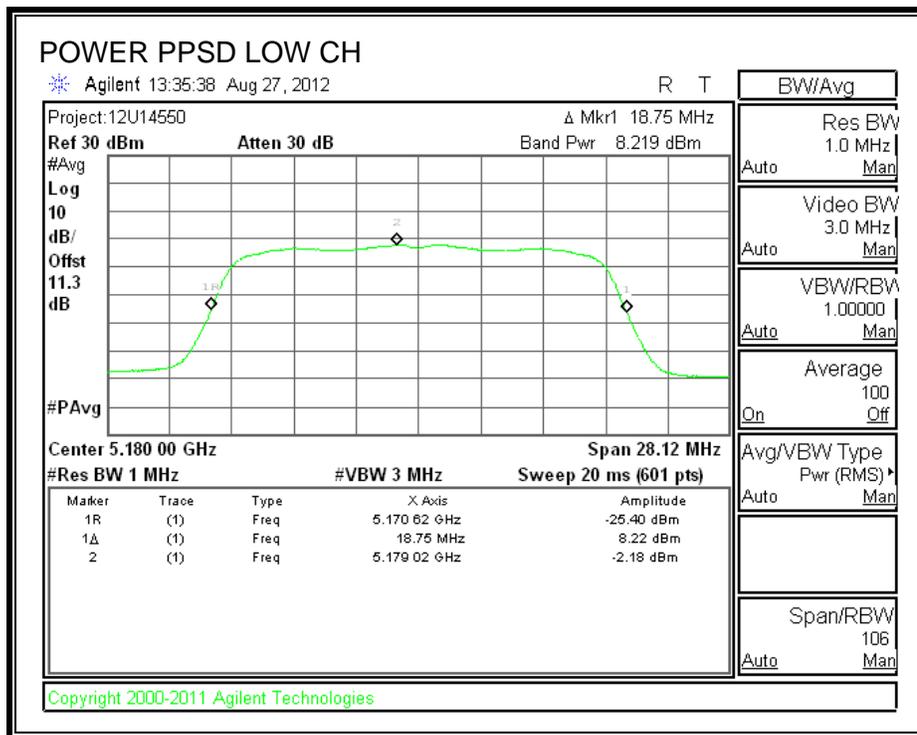
Output Power Results

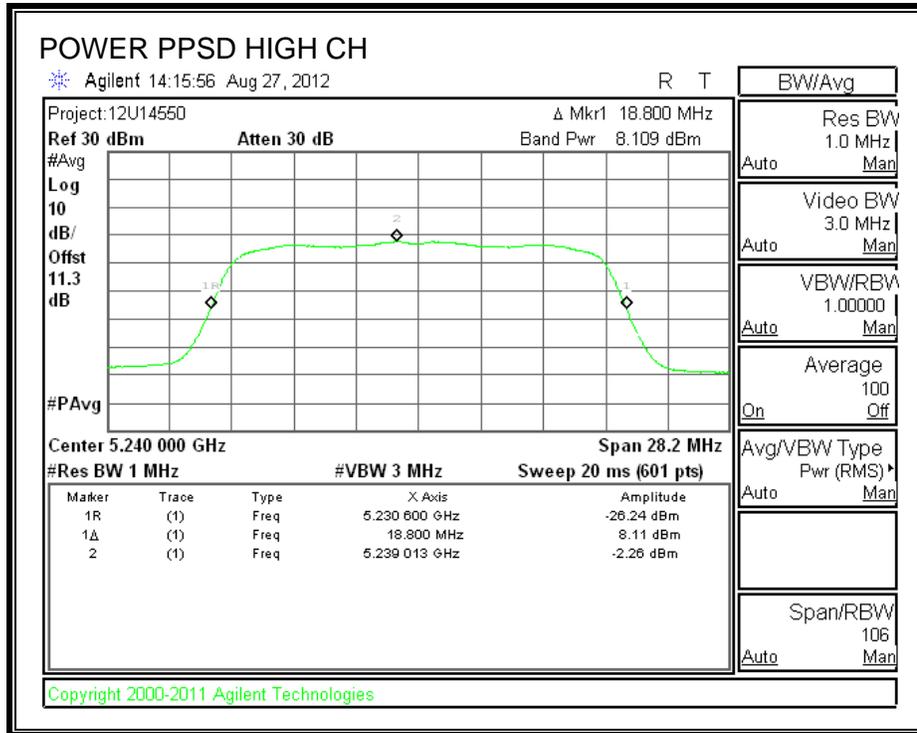
Channel	Frequency (MHz)	Meas Power (dBm)	Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	8.22	8.46	16.13	-7.67
Mid	5200	8.12	8.36	16.13	-7.77
High	5240	8.11	8.35	16.13	-7.79

PPSD Results

Channel	Frequency (MHz)	Meas PPSD (dBm)	Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5180	-2.18	-1.94	4.00	-5.94
Mid	5200	-2.27	-2.03	4.00	-6.03
High	5240	-2.26	-2.02	4.00	-6.02

OUTPUT POWER AND PPSD





8.1.5. PEAK EXCURSION

LIMITS

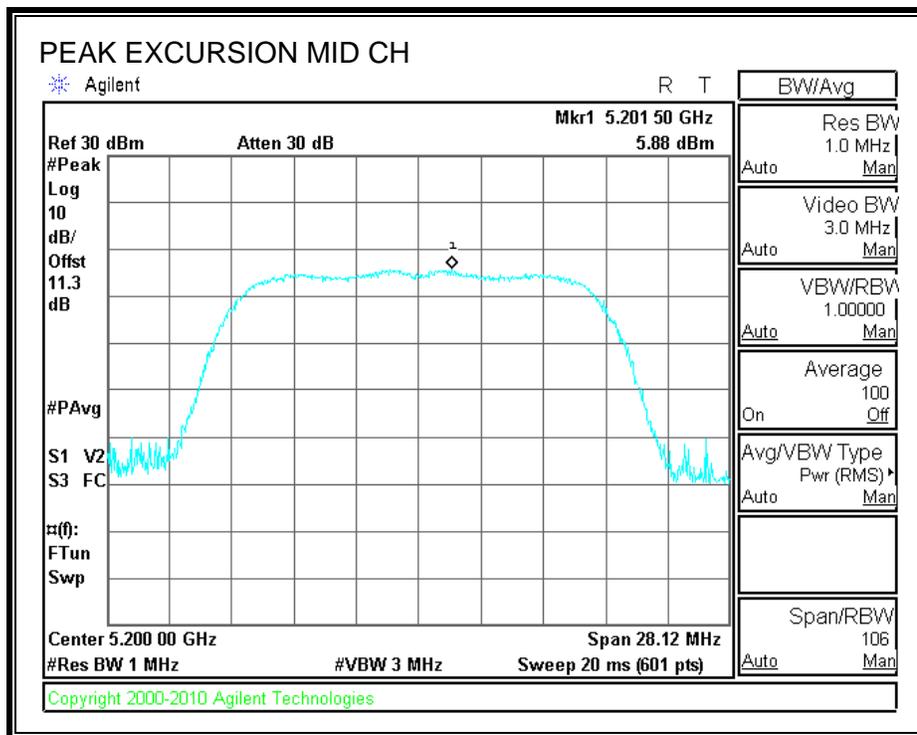
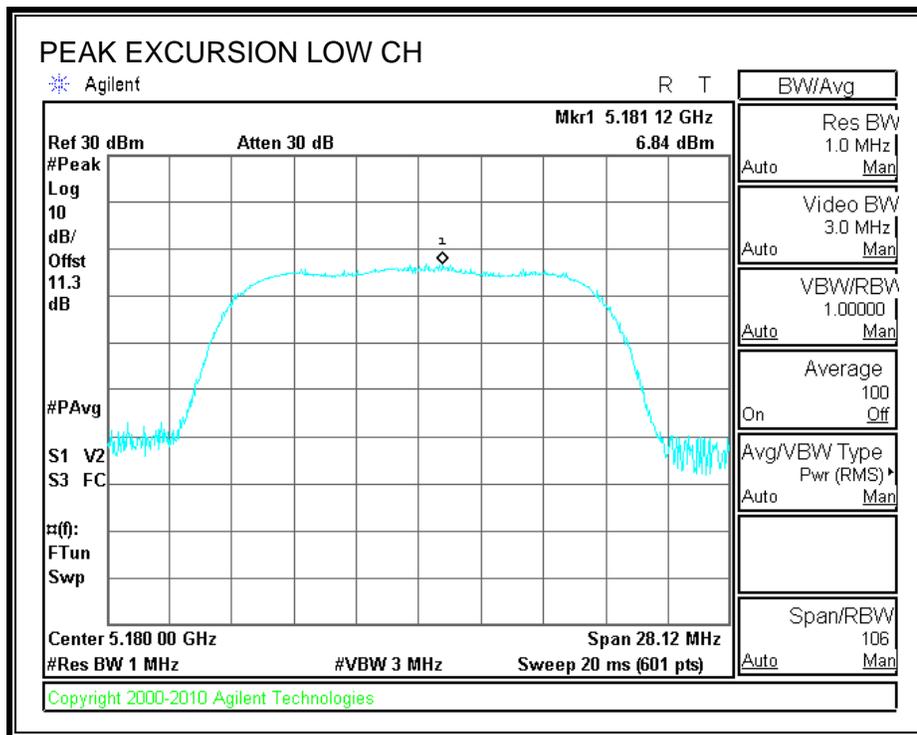
FCC §15.407 (a) (6)

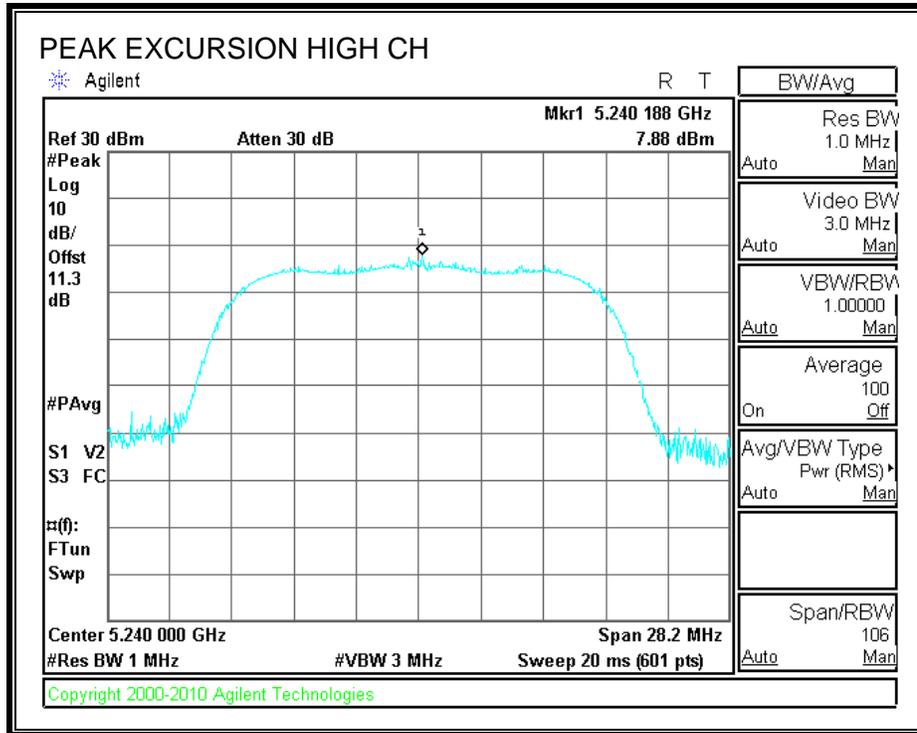
The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

RESULTS

Channel	Frequency (MHz)	PK Level (dBm)	PSD (dBm)	DCCF (dB)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Low	5180	6.84	-2.18	0.24	8.78	13	-4.22
Mid	5200	5.88	-2.27	0.24	7.91	13	-5.09
High	5240	7.88	-2.26	0.24	9.90	13	-3.10

PEAK EXCURSION





8.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

8.2.1. 26 dB BANDWIDTH

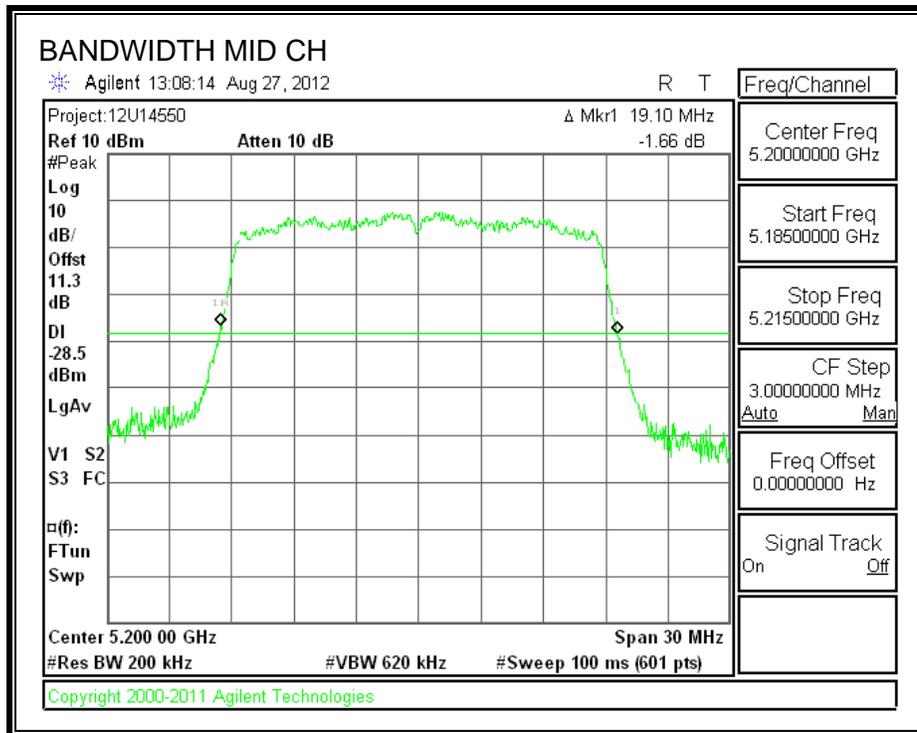
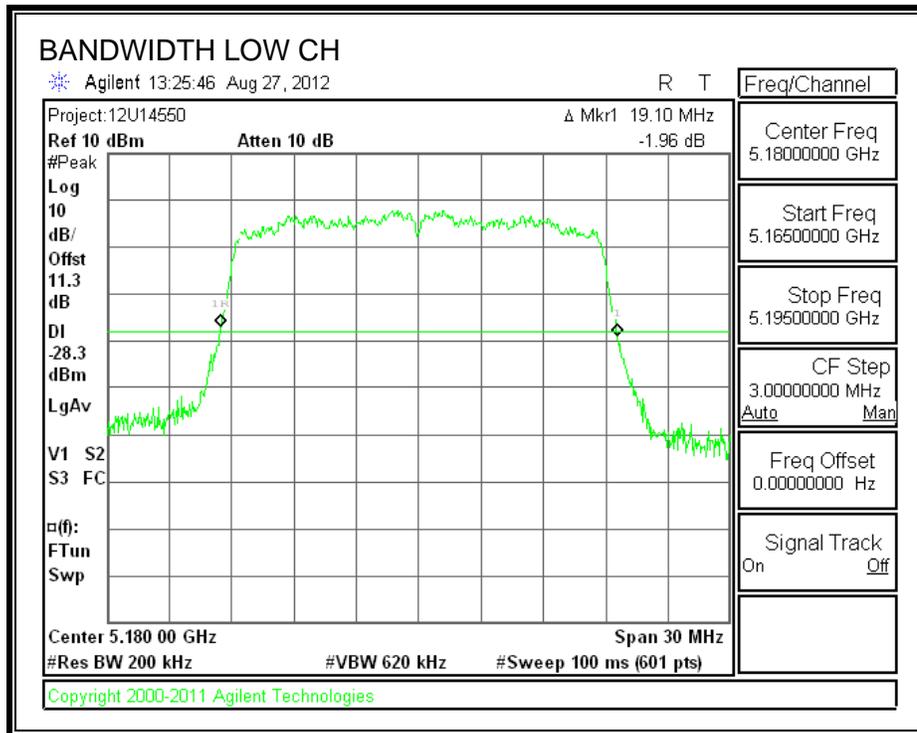
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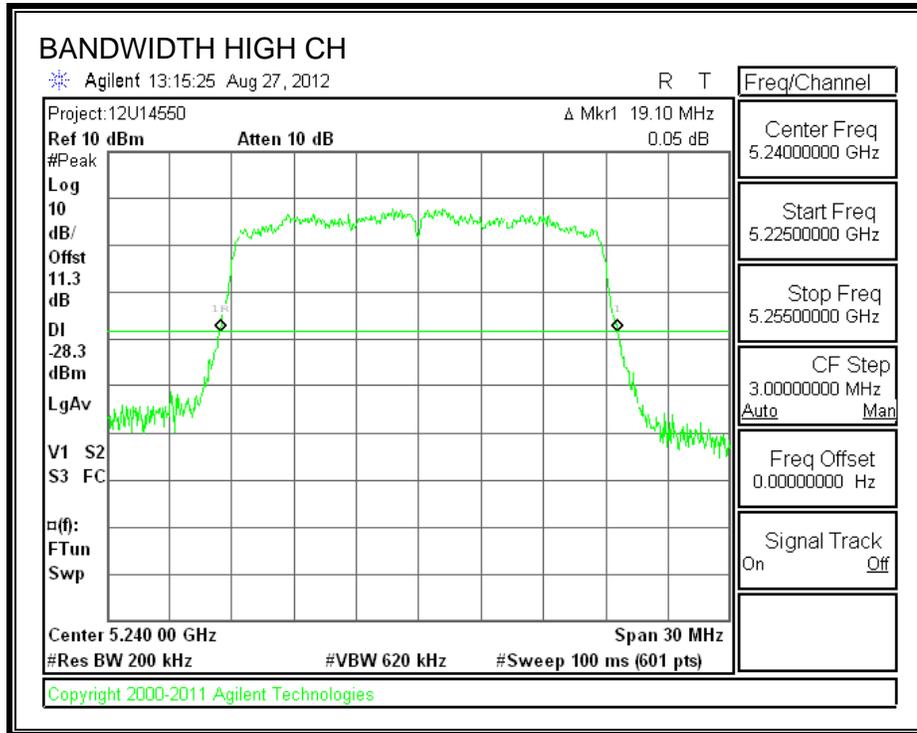
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5180	19.10
Mid	5200	19.10
High	5240	19.10

26 dB BANDWIDTH





8.2.2. 99% BANDWIDTH

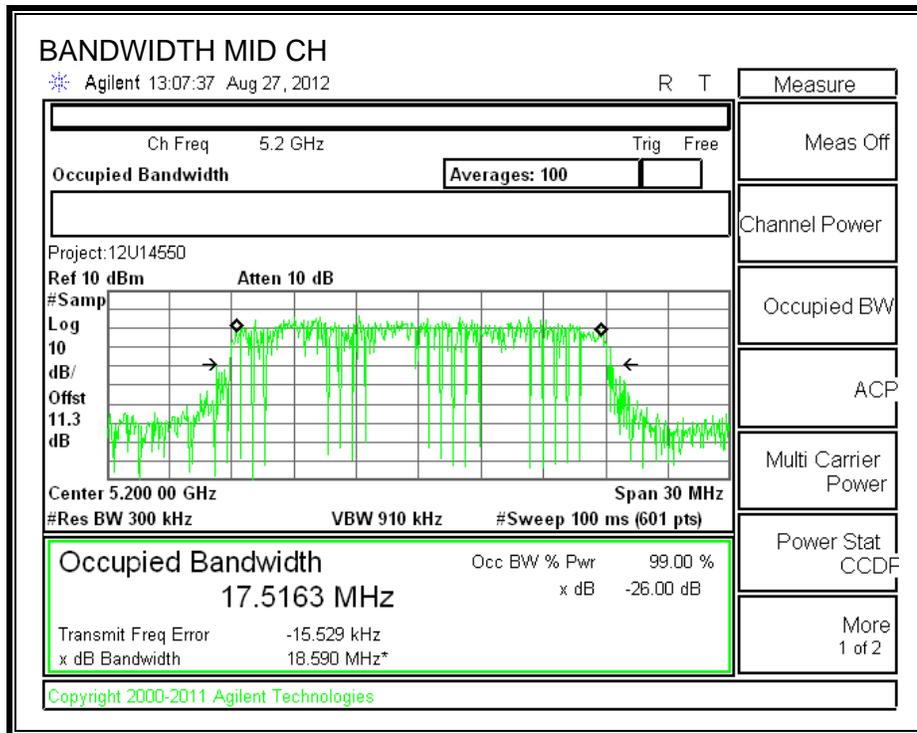
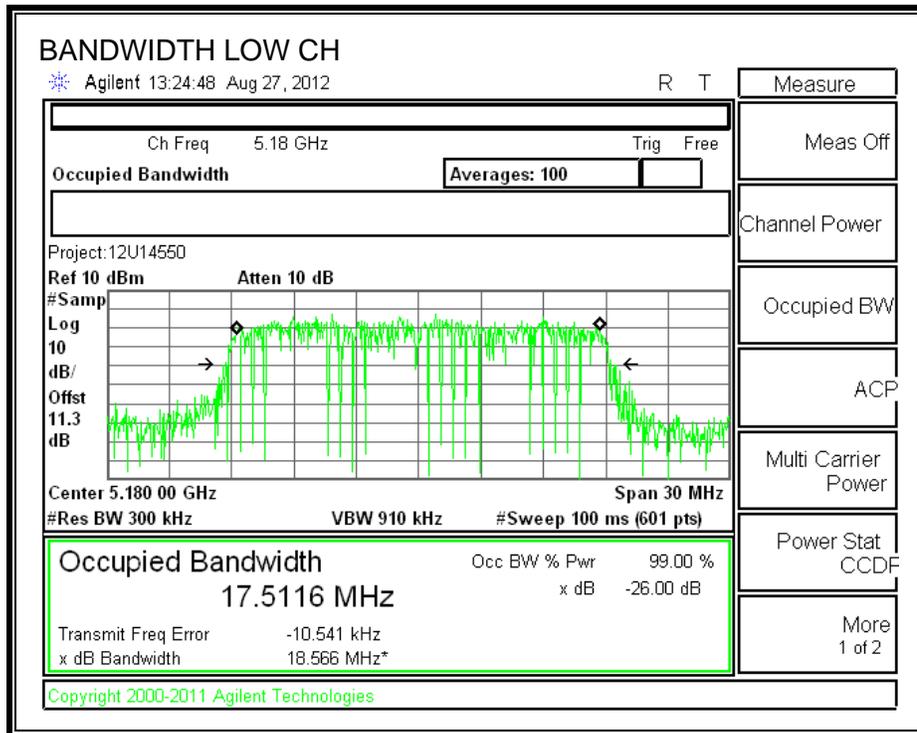
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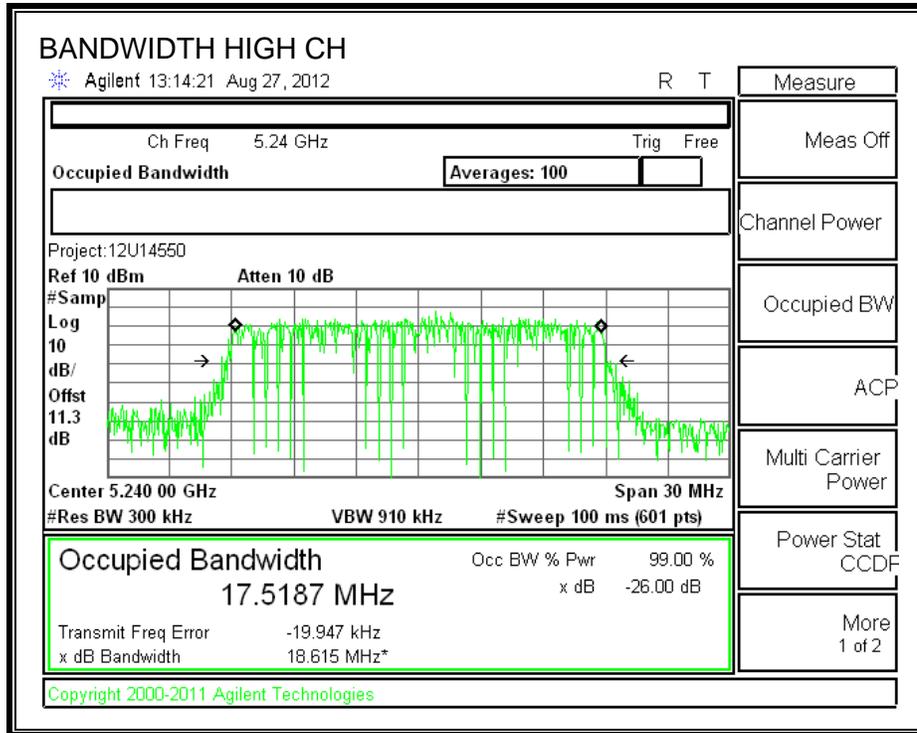
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5180	17.5116
Mid	5200	17.5163
High	5240	17.5187

99% BANDWIDTH





8.2.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.26 dB (including 10 dB pad and 1.26 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Channel	Frequency (MHz)	Power (dBm)
Low	5180	7.58
Mid	5200	7.40
High	5240	7.42

8.2.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (1)

IC RSS-210 A9.2 (1)

FCC §15.407 (a) (1):

For the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or $4 \text{ dBm} + 10 \log B$, where B is the 26-dB emission bandwidth in MHz. In addition, 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 maximum conducted output 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.

IC RSS-210 A9.2 (1):

For the 5.15 – 5.25 GHz band, The maximum e.i.r.p. shall not exceed 200 mW or $10 + 10 \log_{10} B$, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

DIRECTIONAL ANTENNA GAIN

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

FCC RESULTS

Limits

Channel	Frequency (MHz)	Fixed Limit (dBm)	B (MHz)	4 + 10 Log B (dBm)	Directional Gain (dBi)	Power Limit (dBm)	PPSD Limit (dBm)
Low	5180	17	19.1	16.81	-6.80	16.81	4.00
Mid	5200	17	19.1	16.81	-6.80	16.81	4.00
High	5240	17	19.1	16.81	-6.80	16.81	4.00

Duty Cycle CF (dB)	0.26	Included in Calculations of Corr'd Power & PPSD
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Output Power Results

Channel	Frequency (MHz)	Meas Power (dBm)	Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	6.93	7.19	16.81	-9.62
Mid	5200	6.91	7.17	16.81	-9.64
High	5240	6.94	7.20	16.81	-9.61

PPSD Results

Channel	Frequency (MHz)	Meas PPSD (dBm)	Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5180	-3.65	-3.39	4.00	-7.39
Mid	5200	-3.88	-3.62	4.00	-7.62
High	5240	-3.69	-3.43	4.00	-7.43

IC RESULTS

Limits

Channel	Frequency (MHz)	Fixed Limit (dBm)	B (MHz)	4 + 10 Log B (dBm)	Directional Gain (dBi)	Power Limit (dBm)	PPSD Limit (dBm)
Low	5180	17	17.5	16.43	-6.80	16.43	4.00
Mid	5200	17	17.5	16.43	-6.80	16.43	4.00
High	5240	17	17.5	16.44	-6.80	16.44	4.00

Duty Cycle CF (dB)	0.26	Included in Calculations of Corr'd Power & PPSD
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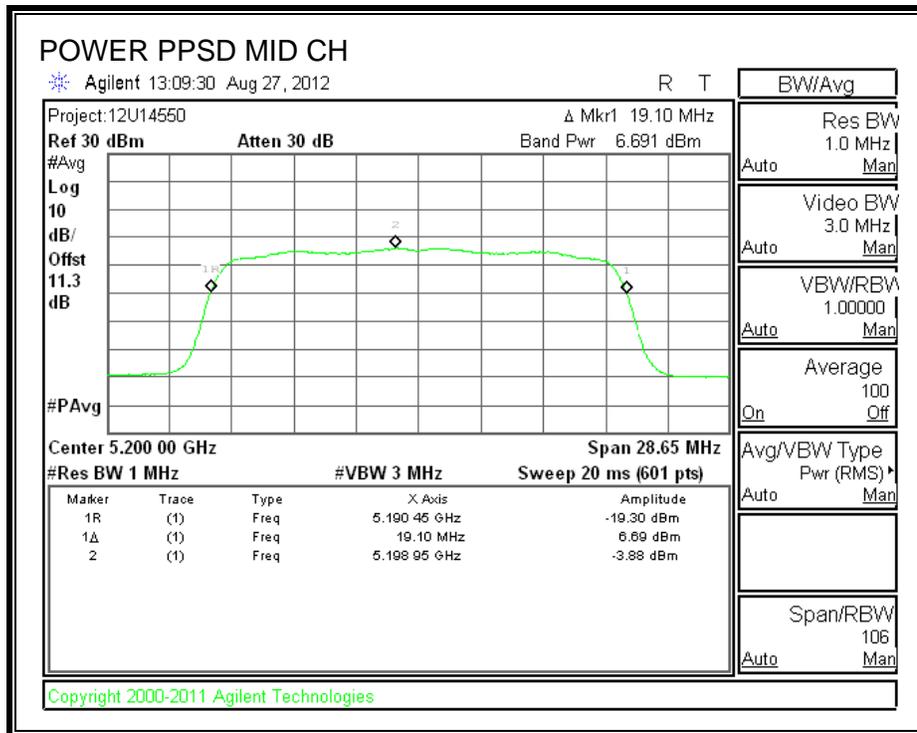
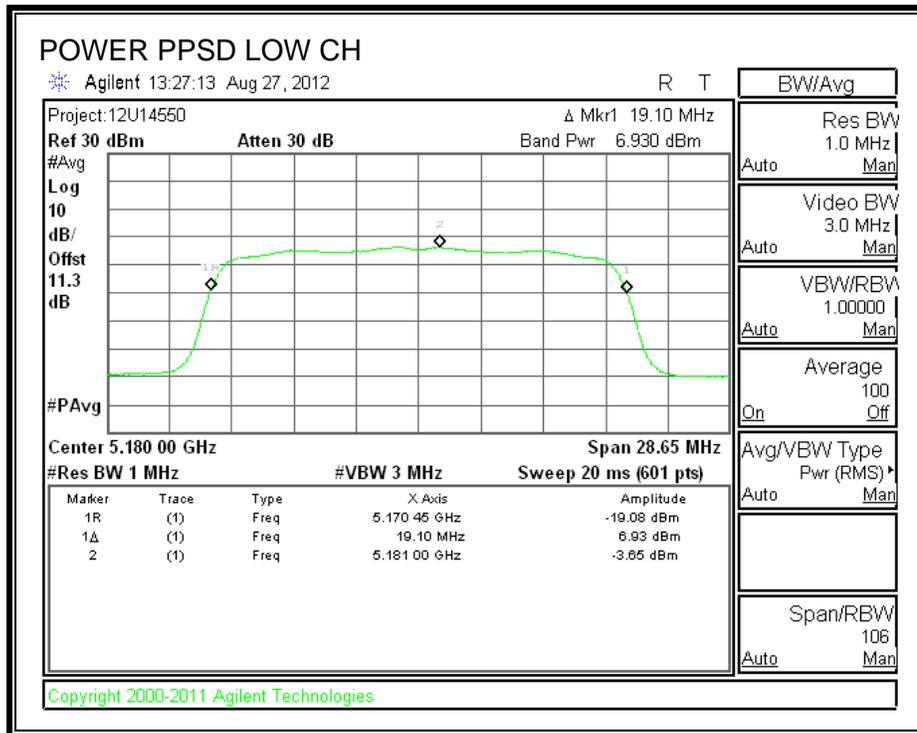
Output Power Results

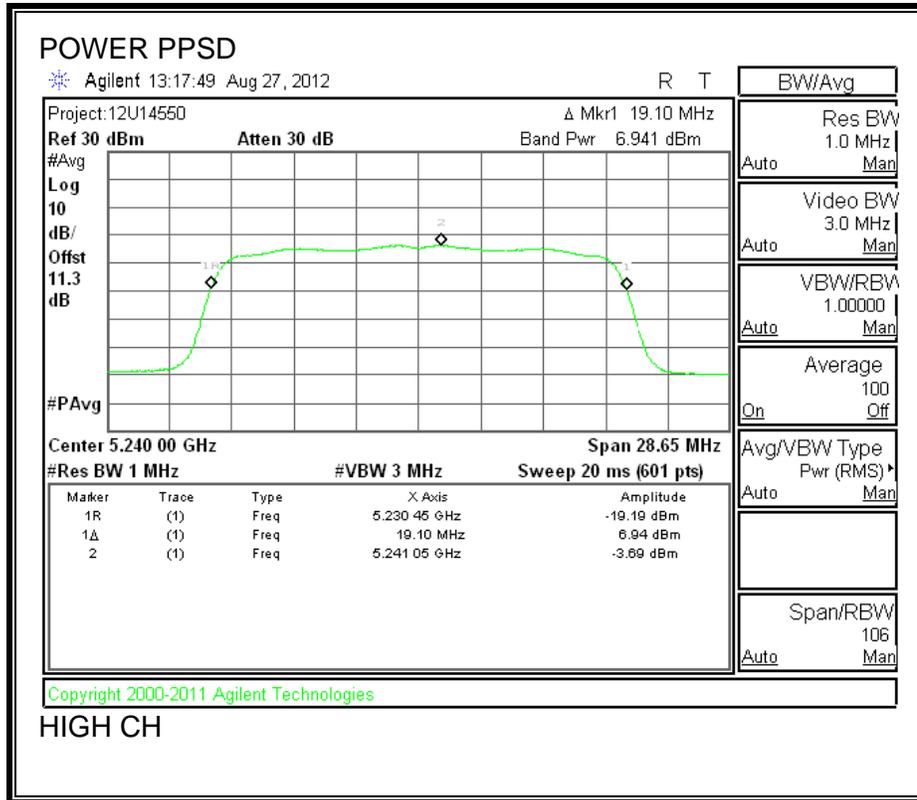
Channel	Frequency (MHz)	Meas Power (dBm)	Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	6.93	7.19	16.43	-9.24
Mid	5200	6.91	7.17	16.43	-9.26
High	5240	6.94	7.20	16.44	-9.23

PPSD Results

Channel	Frequency (MHz)	Meas PPSD (dBm)	Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5180	-3.65	-3.39	4.00	-7.39
Mid	5200	-3.88	-3.62	4.00	-7.62
High	5240	-3.69	-3.43	4.00	-7.43

OUTPUT POWER AND PPSD





8.2.5. PEAK EXCURSION

LIMITS

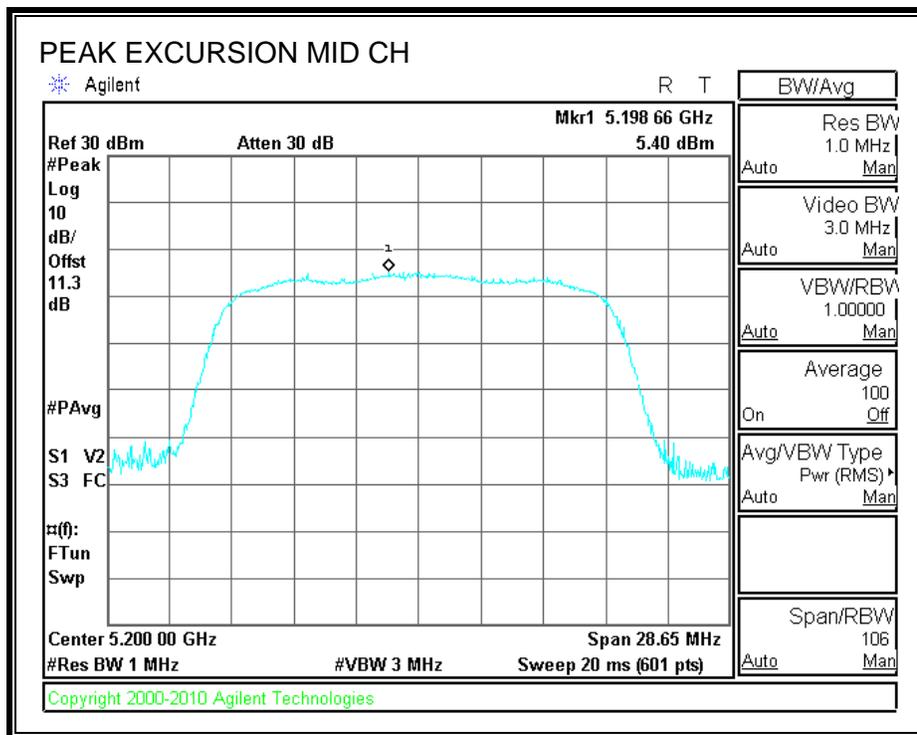
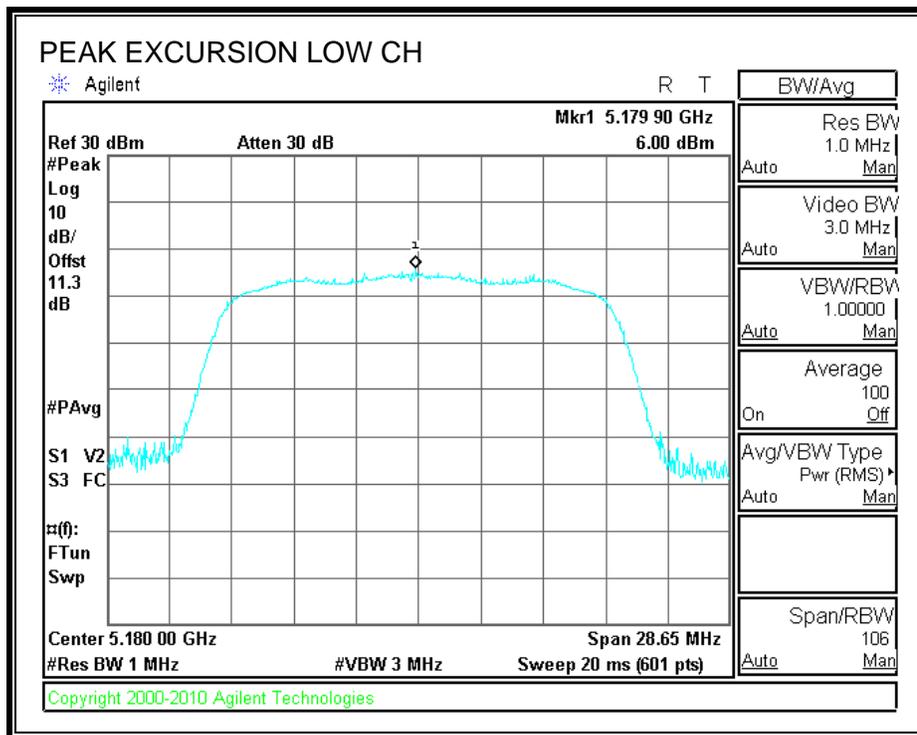
FCC §15.407 (a) (6)

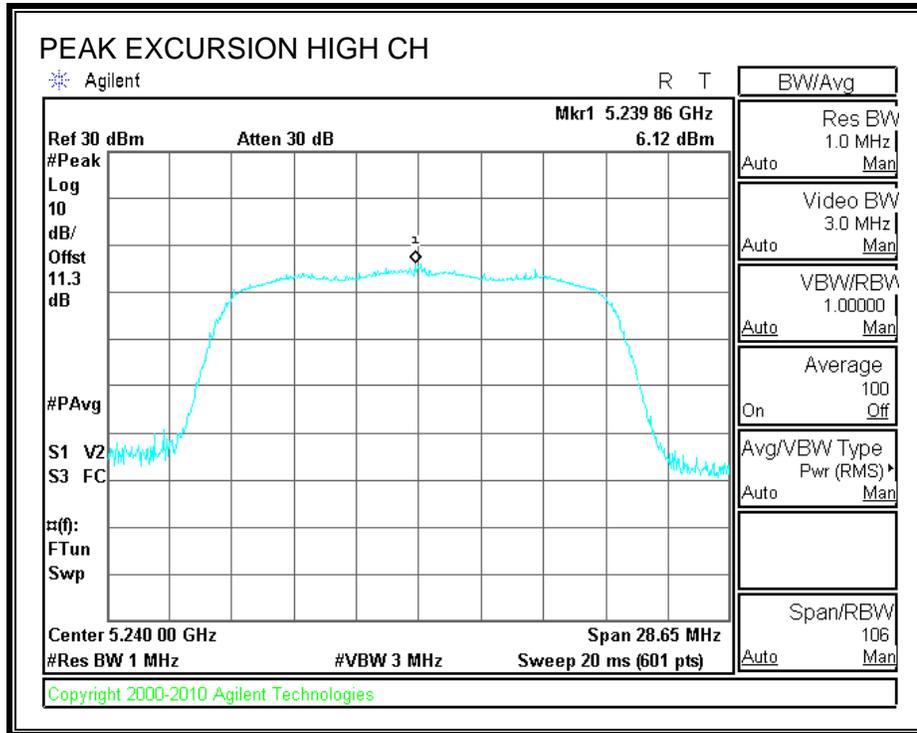
The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

RESULTS

Channel	Frequency (MHz)	PK Level (dBm)	PSD (dBm)	DCCF (dB)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Low	5180	6.00	-3.65	0.26	9.39	13	-3.61
Mid	5200	5.40	-3.88	0.26	9.02	13	-3.98
High	5240	6.12	-3.69	0.26	9.55	13	-3.45

PEAK EXCURSION





8.3. 802.11a MODE IN THE 5.3 GHZ BAND

8.3.1. 26 dB BANDWIDTH

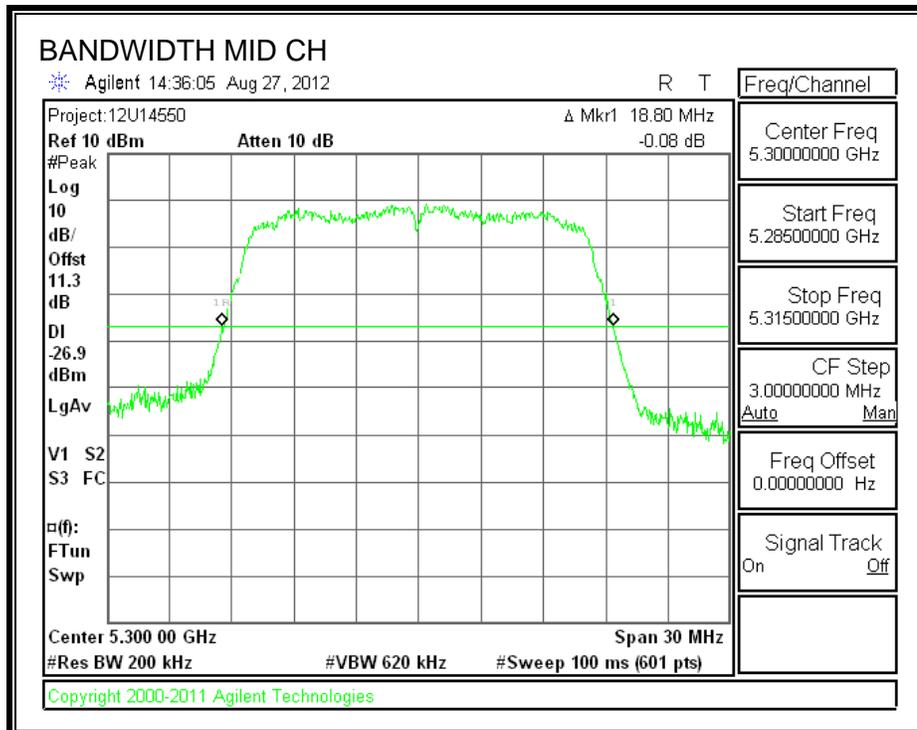
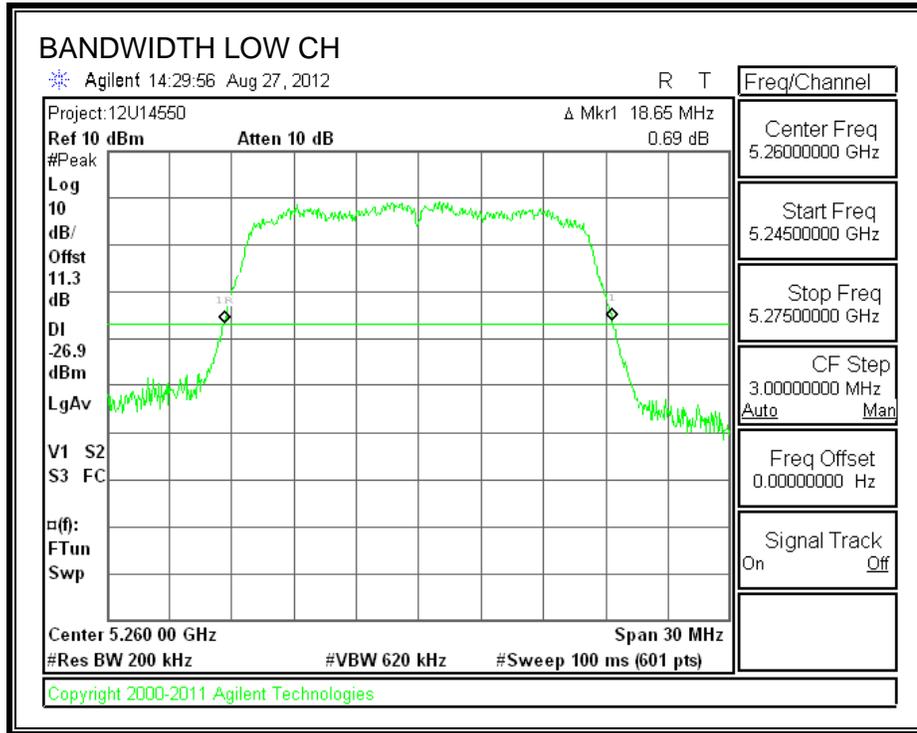
LIMITS

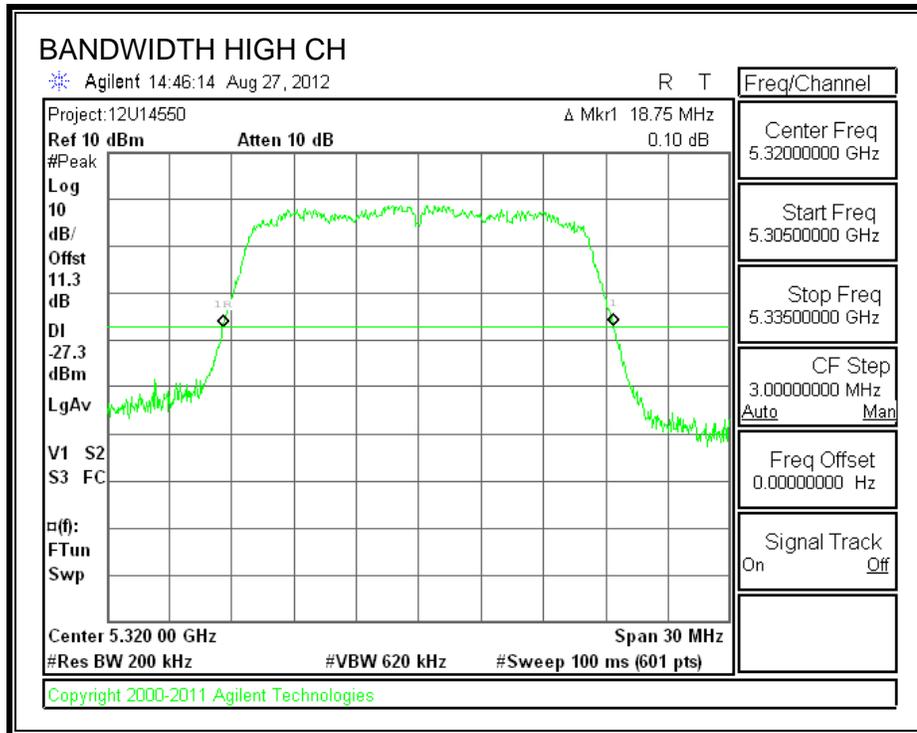
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5260	18.65
Mid	5300	18.80
High	5320	18.75

26 dB BANDWIDTH





8.3.2. 99% BANDWIDTH

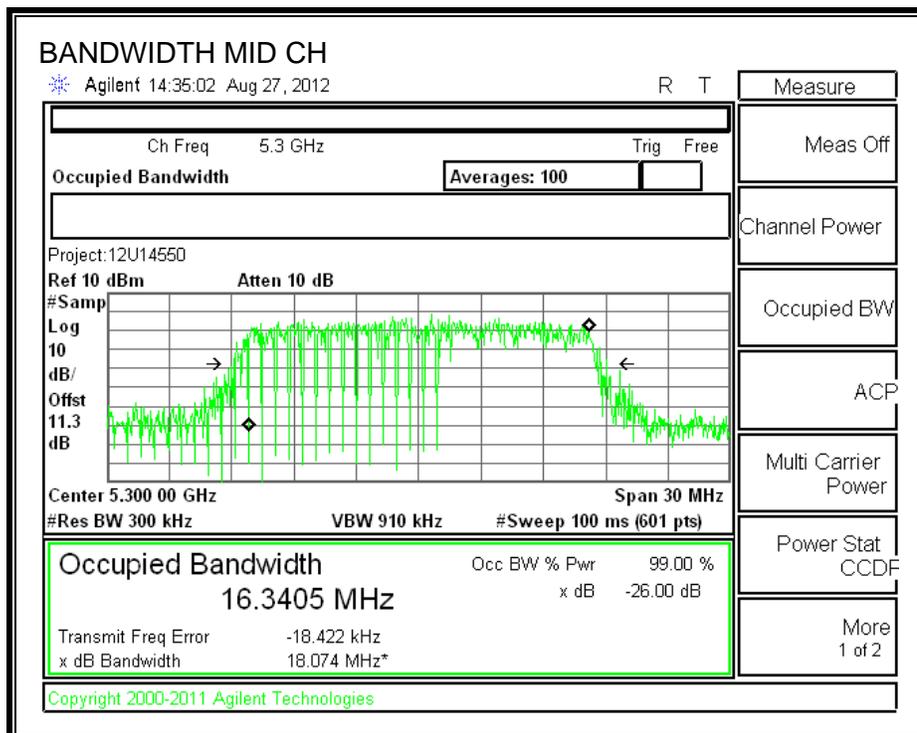
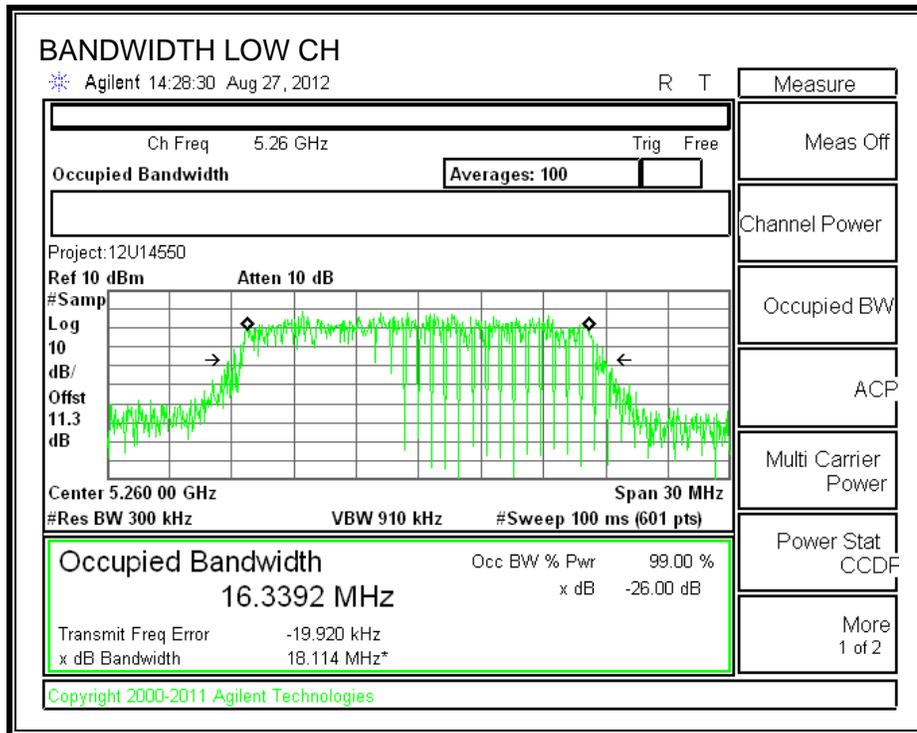
LIMITS

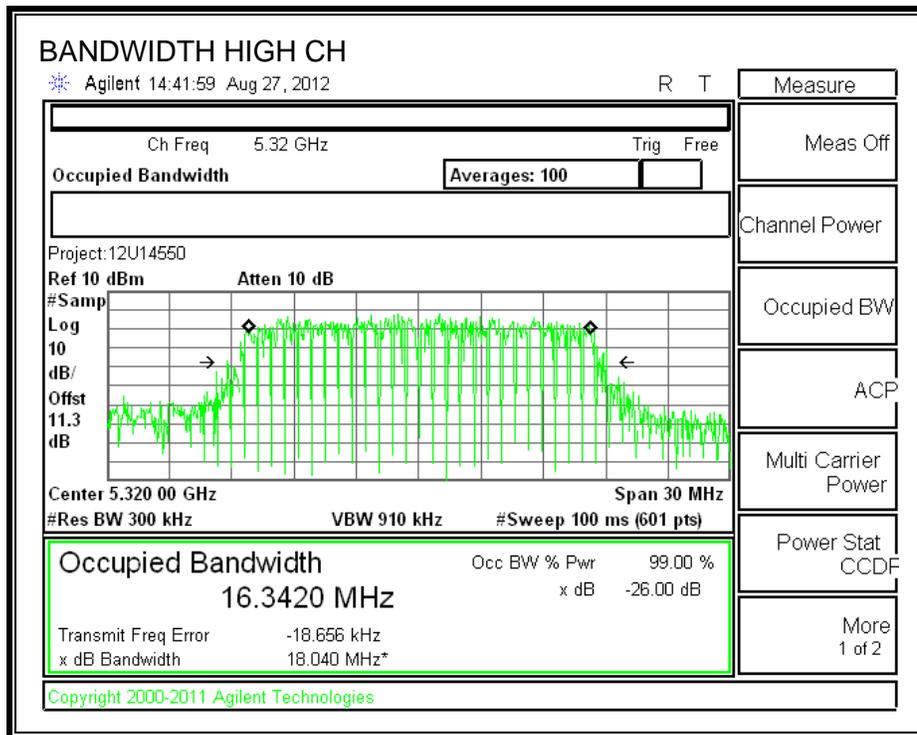
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5260	16.3392
Mid	5300	16.3405
High	5320	16.3420

99% BANDWIDTH





8.3.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.26 dB (including 10 dB pad and 1.26 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Channel	Frequency (MHz)	Power (dBm)
Low	5260	8.63
Mid	5300	8.56
High	5320	8.76

8.3.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (2)

IC RSS-210 A9.2 (2)

For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output 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.

99% bandwidth was used to calculate the power limit which was considered the worst case.

DIRECTIONAL ANTENNA GAIN

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

RESULTS

Limits

Channel	Frequency (MHz)	Fixed Limit (dBm)	B (MHz)	11 + 10 Log B (dBm)	Directional Gain (dBi)	Power Limit (dBm)	PPSD Limit (dBm)
Low	5260	24	16.3	23.13	-6.80	23.13	11.00
Mid	5300	24	16.3	23.13	-6.80	23.13	11.00
High	5320	24	16.3	23.13	-6.80	23.13	11.00

Duty Cycle CF (dB)	0.24	Included in Calculations of Corr'd Power & PPSD
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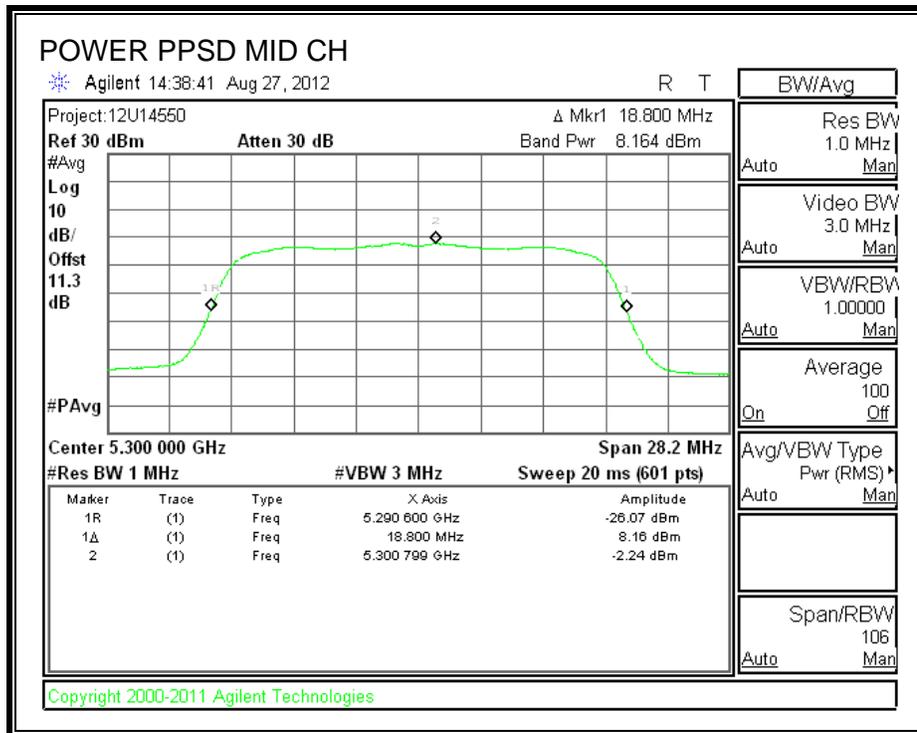
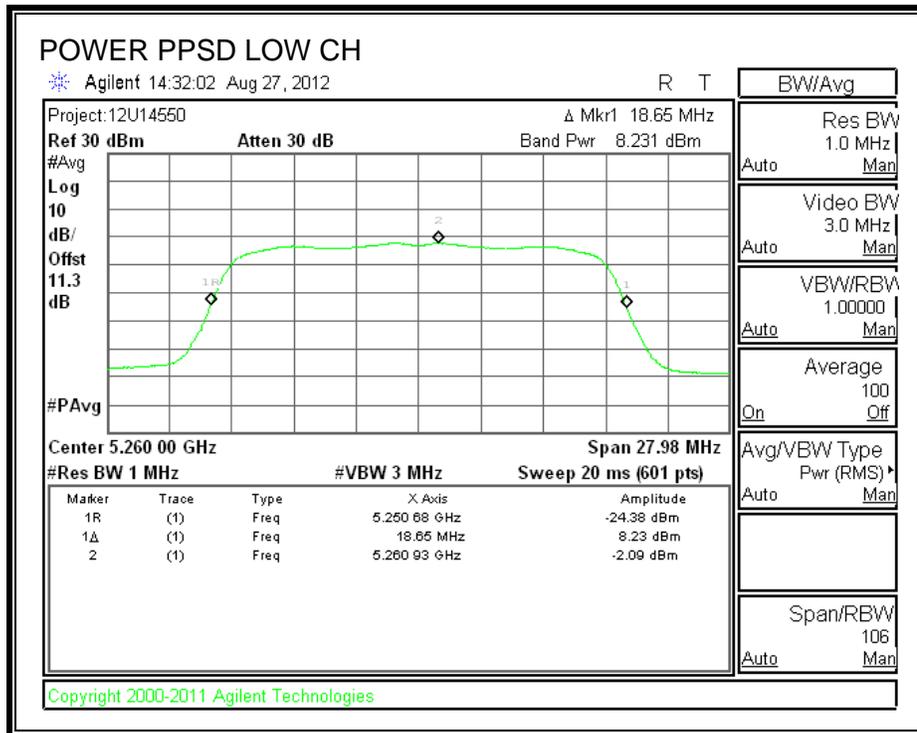
Output Power Results

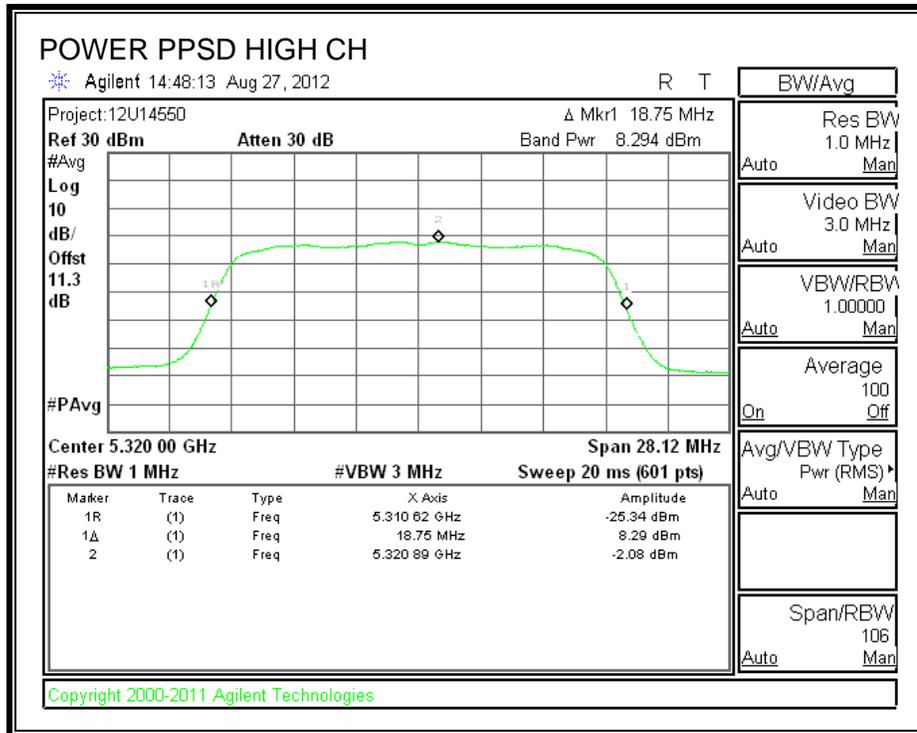
Channel	Frequency (MHz)	Meas Power (dBm)	Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	8.23	8.47	23.13	-14.66
Mid	5300	8.16	8.40	23.13	-14.73
High	5320	8.29	8.53	23.13	-14.60

PPSD Results

Channel	Frequency (MHz)	Meas PPSD (dBm)	Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5260	-2.09	-1.85	11.00	-12.85
Mid	5300	-2.24	-2.00	11.00	-13.00
High	5320	-2.08	-1.84	11.00	-12.84

OUTPUT POWER AND PPSD





8.3.5. PEAK EXCURSION

LIMITS

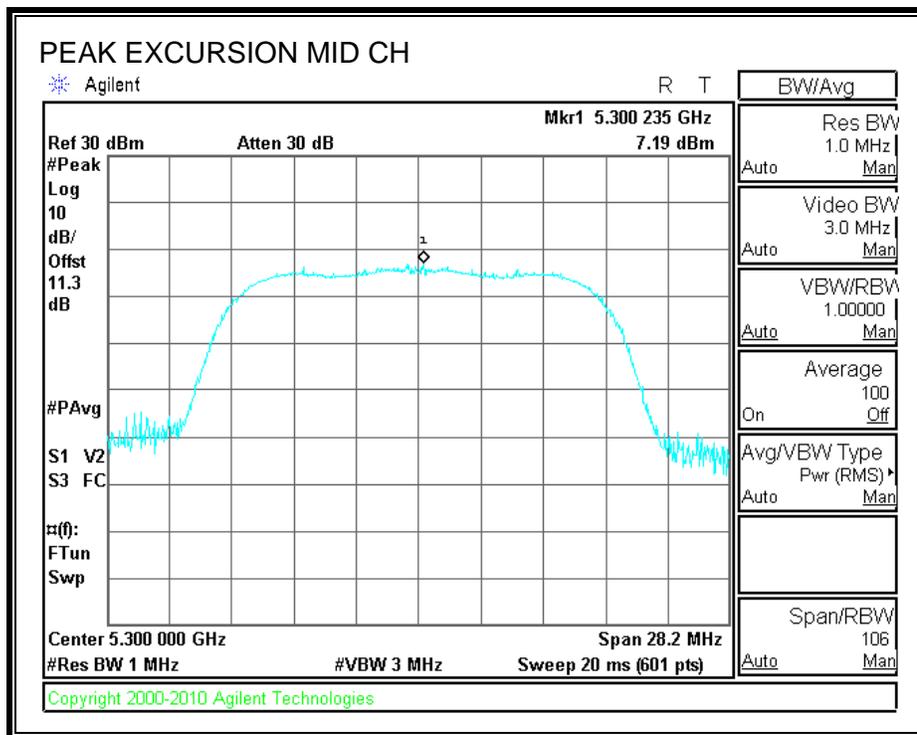
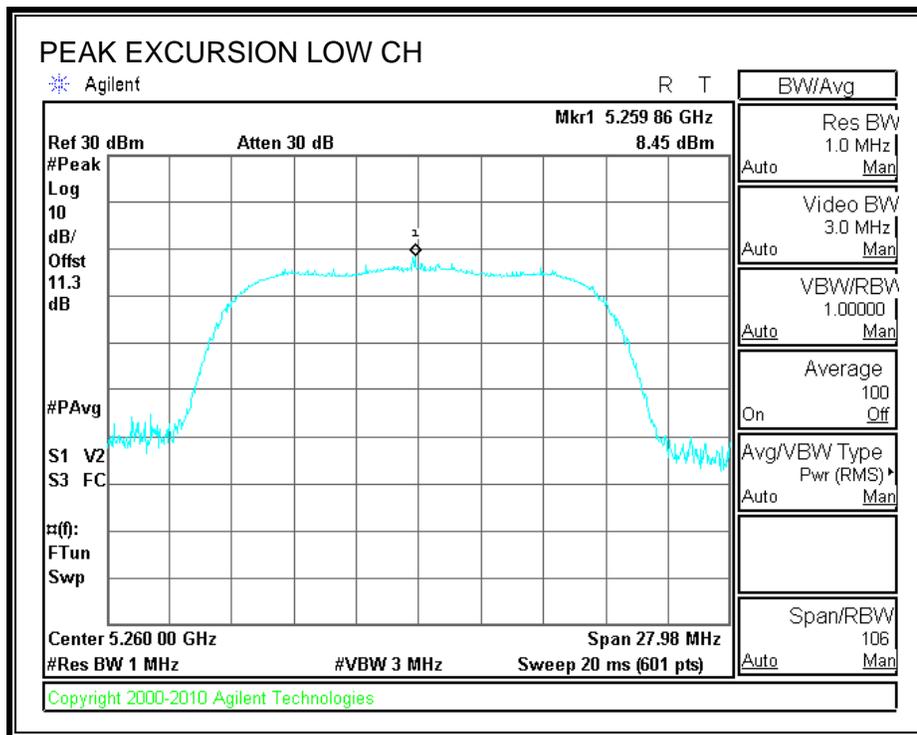
FCC §15.407 (a) (6)

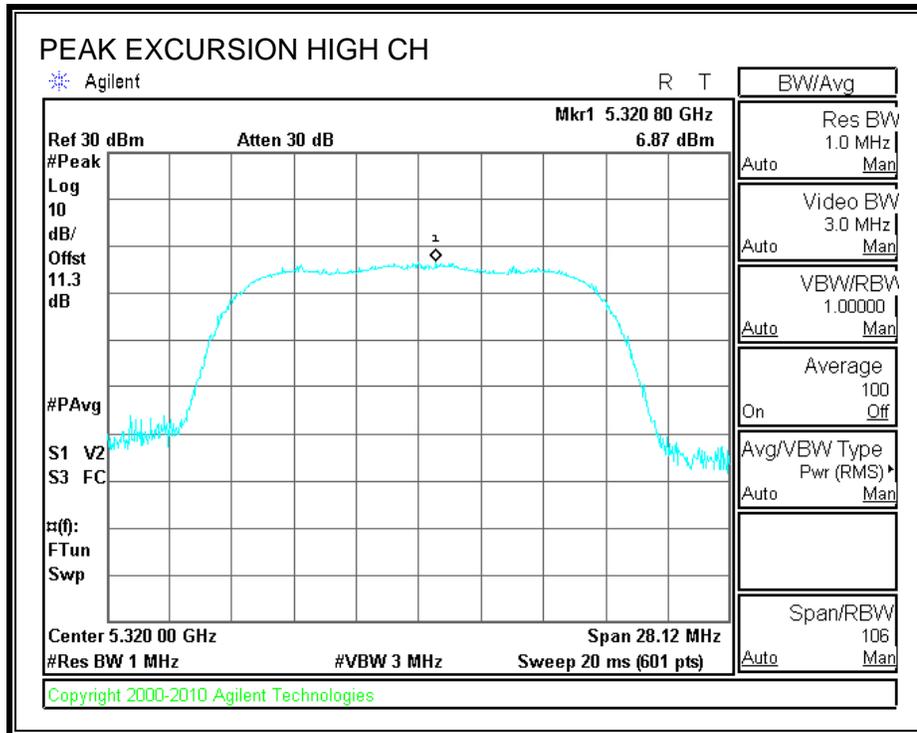
The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

RESULTS

Channel	Frequency (MHz)	PK Level (dBm)	PSD (dBm)	DCCF (dB)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Low	5260	8.45	-2.09	0.24	10.30	13	-2.70
Mid	5300	7.19	-2.24	0.24	9.19	13	-3.81
High	5320	6.87	-2.08	0.24	8.71	13	-4.29

PEAK EXCURSION





8.4. 802.11n HT20 MODE IN THE 5.3 GHz BAND

8.4.1. 26 dB BANDWIDTH

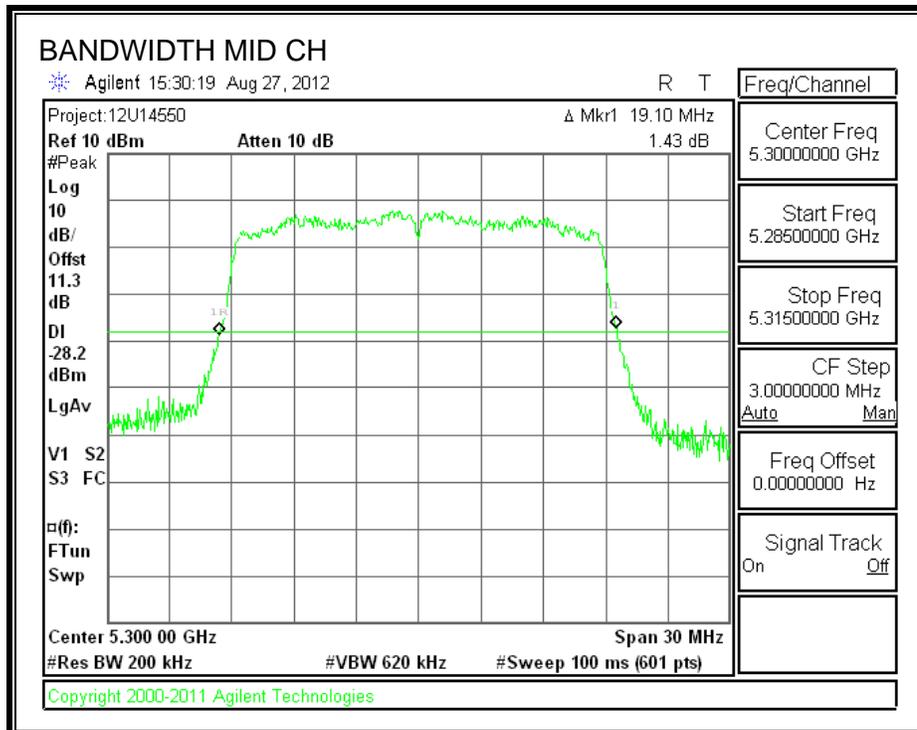
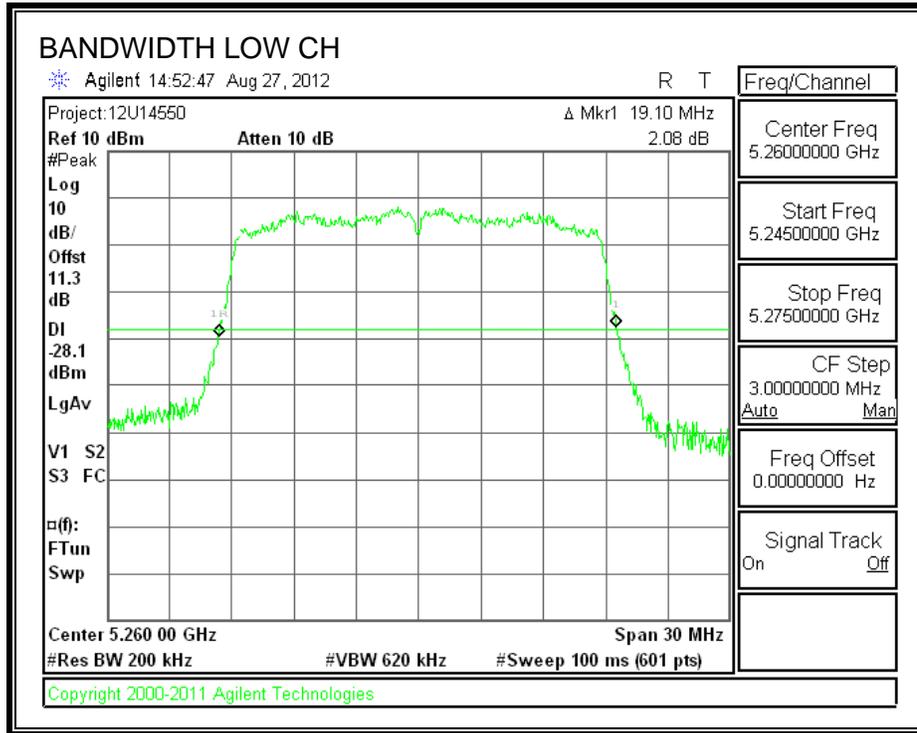
LIMITS

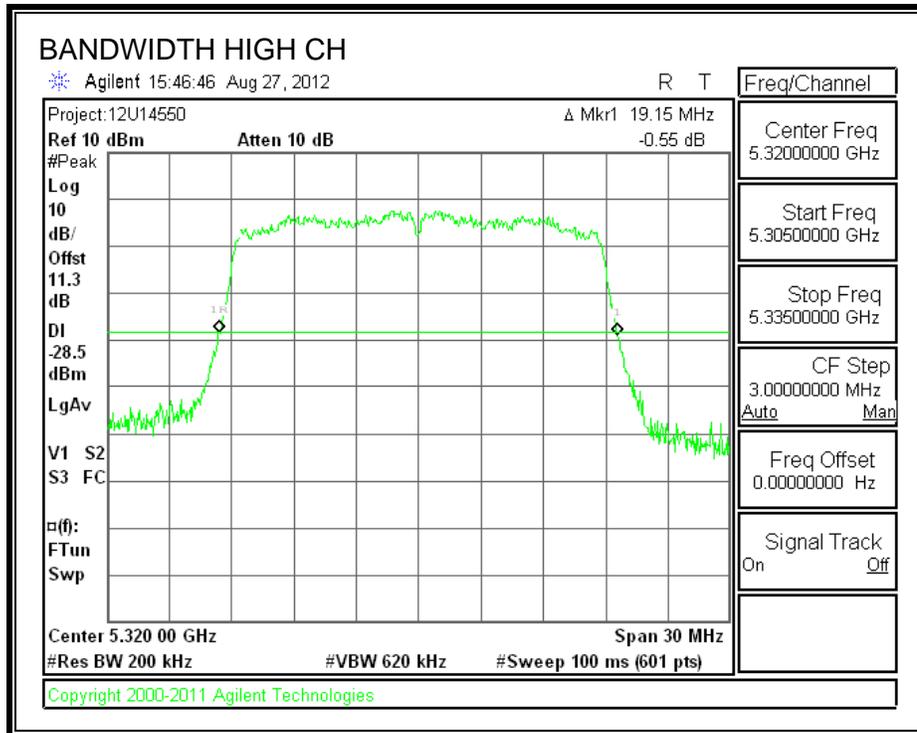
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5260	19.10
Mid	5300	19.10
High	5320	19.15

26 dB BANDWIDTH





8.4.2. 99% BANDWIDTH

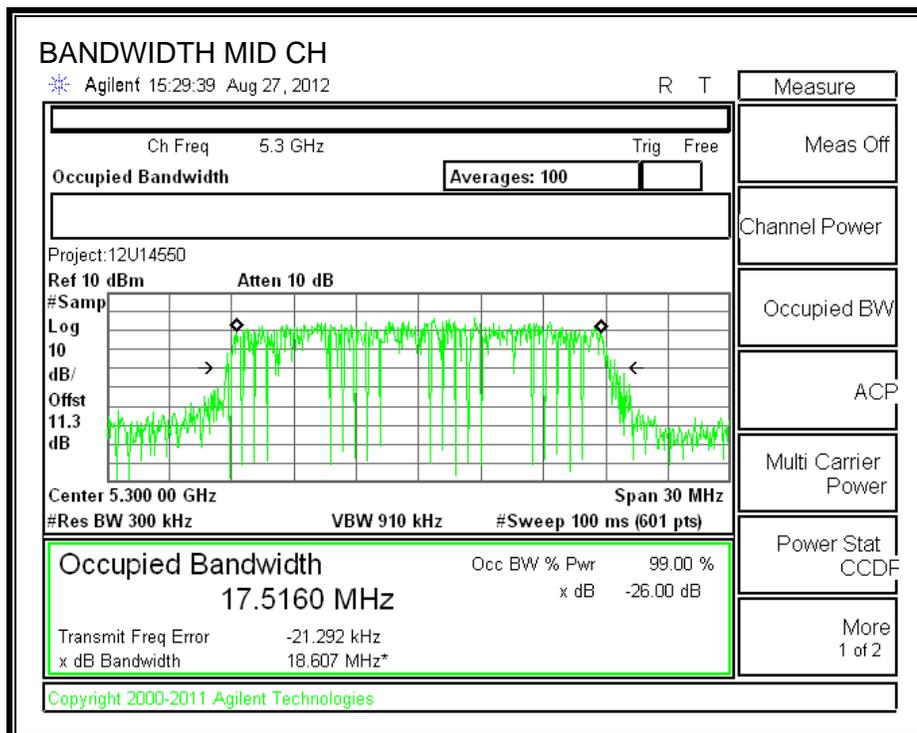
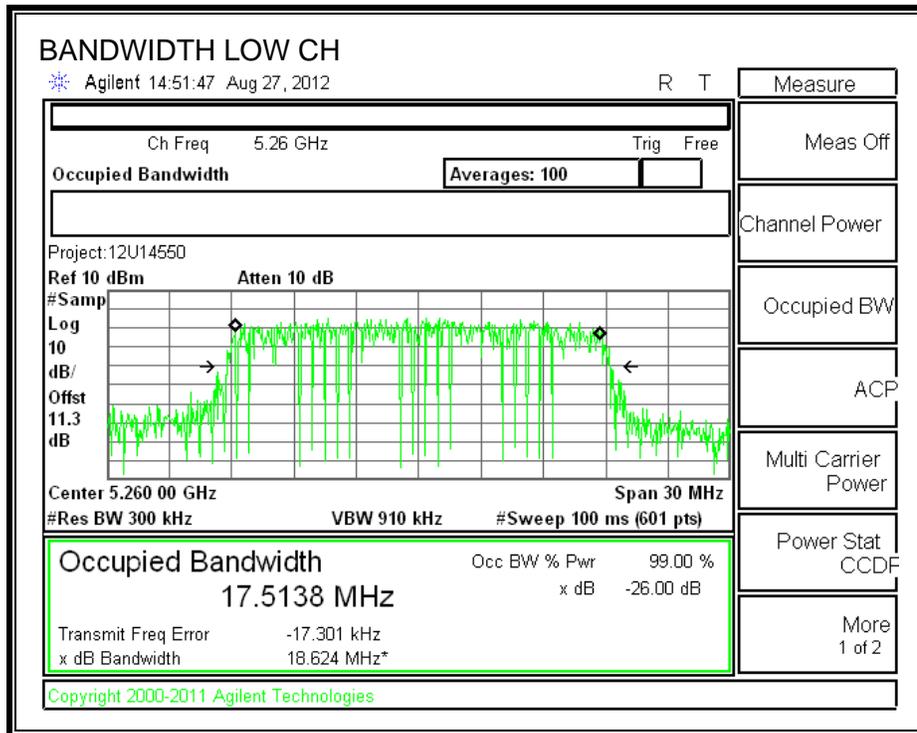
LIMITS

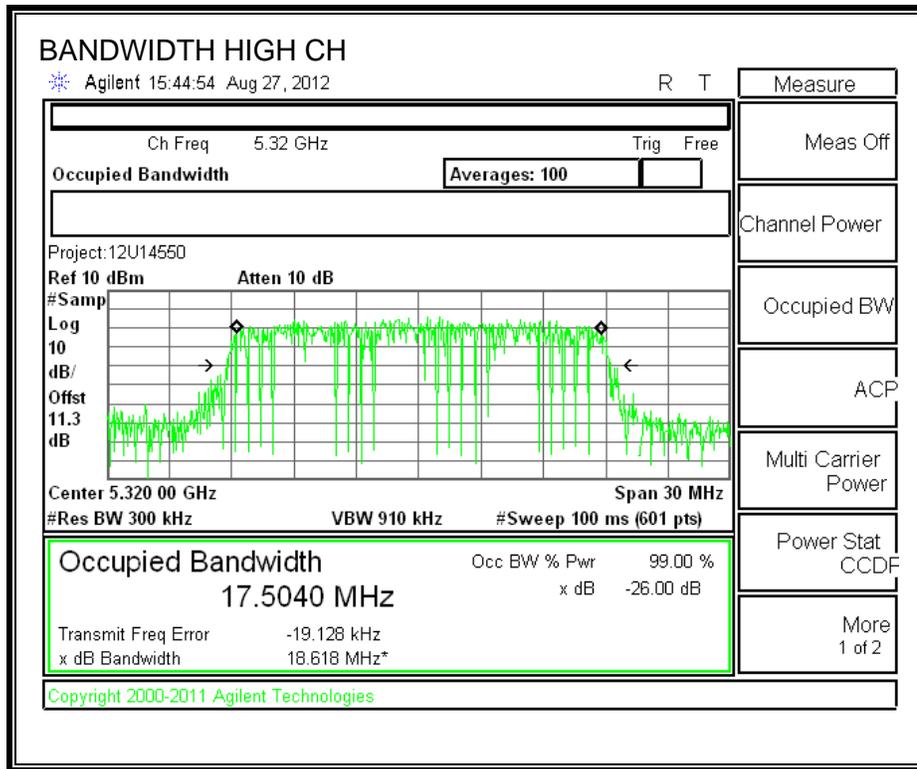
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5260	17.5138
Mid	5300	17.5160
High	5320	17.5040

99% BANDWIDTH





8.4.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.26 dB (including 10 dB pad and 1.26 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Channel	Frequency (MHz)	Power (dBm)
Low	5260	7.25
Mid	5300	7.32
High	5320	7.40

8.4.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (2)

IC RSS-210 A9.2 (2)

For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output 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.

99% bandwidth was used to calculate the power limit which was considered the worst case.

DIRECTIONAL ANTENNA GAIN

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

RESULTS

Limits

Channel	Frequency (MHz)	Fixed Limit (dBm)	B (MHz)	11 + 10 Log B (dBm)	Directional Gain (dBi)	Power Limit (dBm)	PPSD Limit (dBm)
Low	5260	24	17.5	23.43	-6.80	23.43	11.00
Mid	5300	24	17.5	23.43	-6.80	23.43	11.00
High	5320	24	17.5	23.43	-6.80	23.43	11.00

Duty Cycle CF (dB)	0.24	Included in Calculations of Corr'd Power & PPSD
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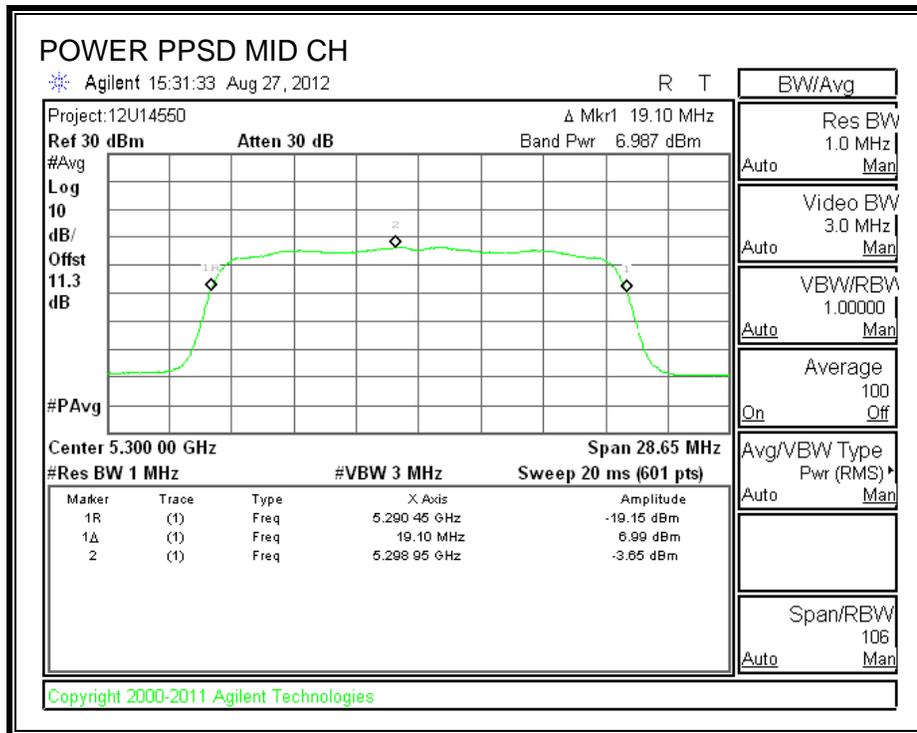
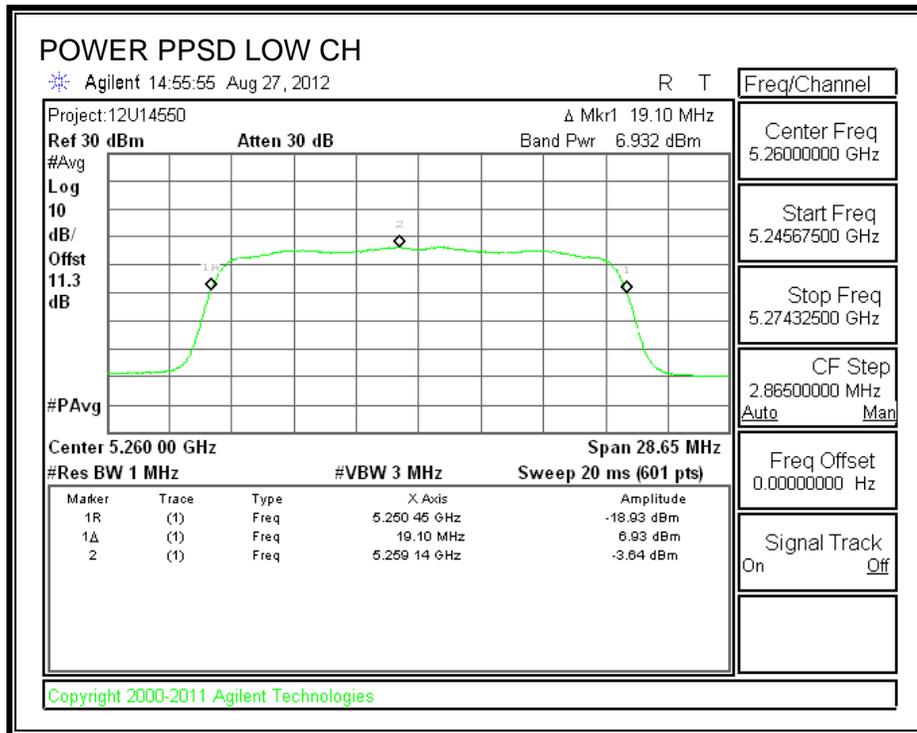
Output Power Results

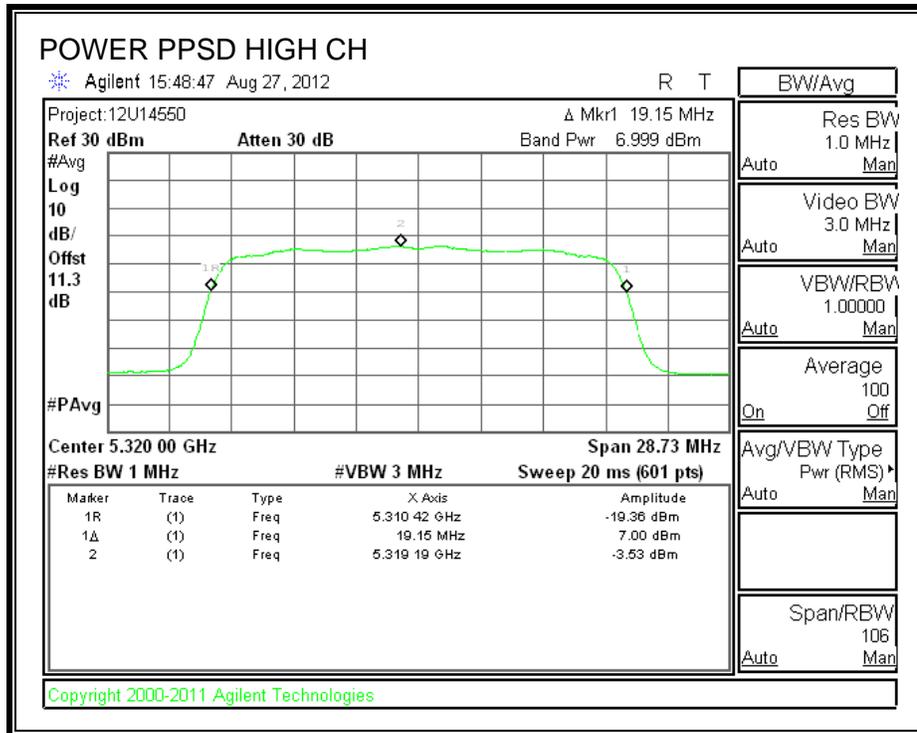
Channel	Frequency (MHz)	Meas Power (dBm)	Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	6.93	7.17	23.43	-16.26
Mid	5300	6.99	7.23	23.43	-16.21
High	5320	7.00	7.24	23.43	-16.19

PPSD Results

Channel	Frequency (MHz)	Meas PPSD (dBm)	Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5260	-3.64	-3.40	11.00	-14.40
Mid	5300	-3.65	-3.41	11.00	-14.41
High	5320	-3.53	-3.29	11.00	-14.29

OUTPUT POWER AND PPSD





8.4.5. PEAK EXCURSION

LIMITS

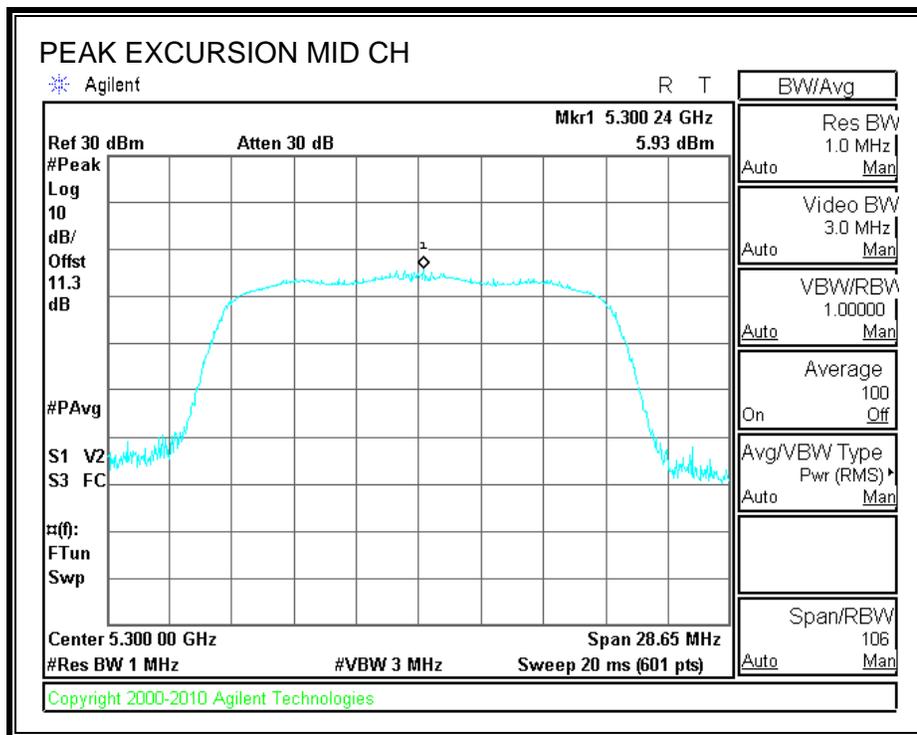
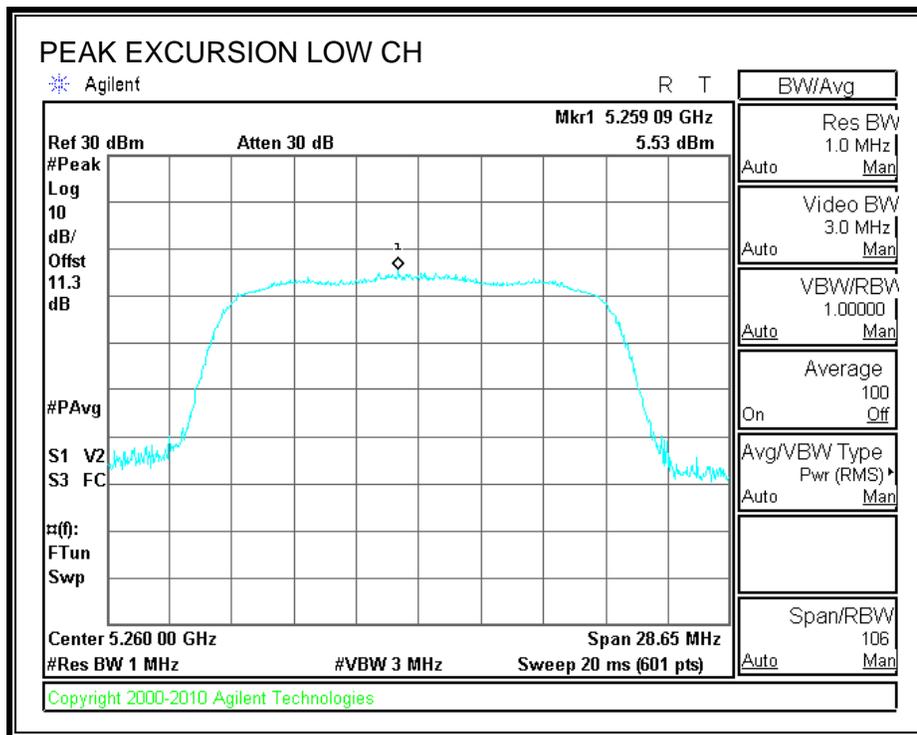
FCC §15.407 (a) (6)

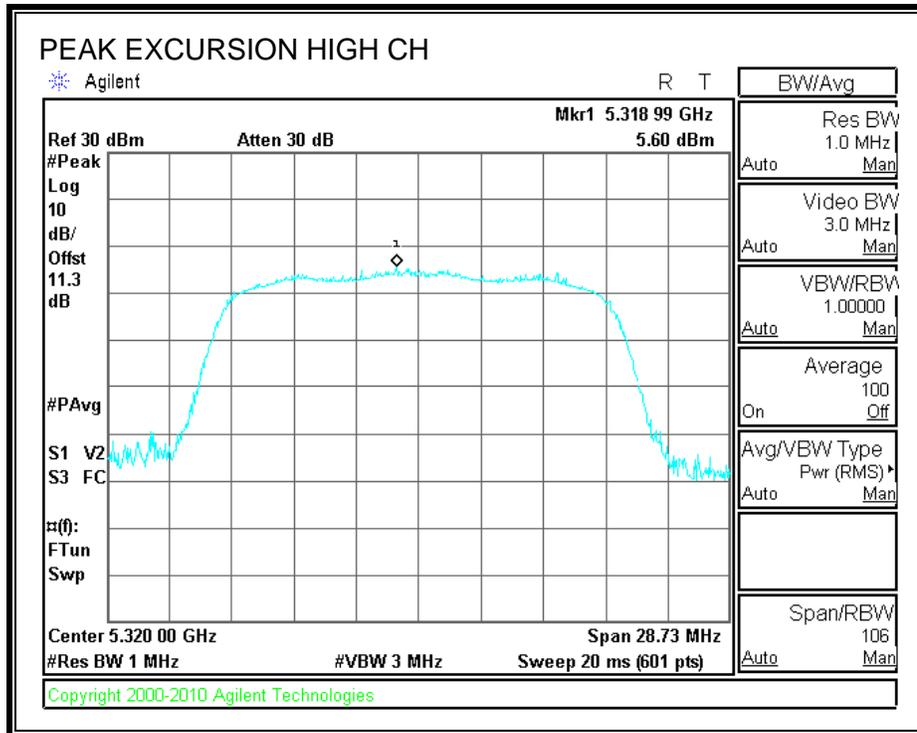
The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

RESULTS

Channel	Frequency (MHz)	PK Level (dBm)	PSD (dBm)	DCCF (dB)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Low	5260	5.53	-3.64	0.26	8.91	13	-4.09
Mid	5300	5.93	-3.65	0.26	9.32	13	-3.68
High	5320	5.60	-3.53	0.26	8.87	13	-4.13

PEAK EXCURSION





8.5. 802.11a MODE IN THE 5.6 GHZ BAND

8.5.1. 26 dB BANDWIDTH

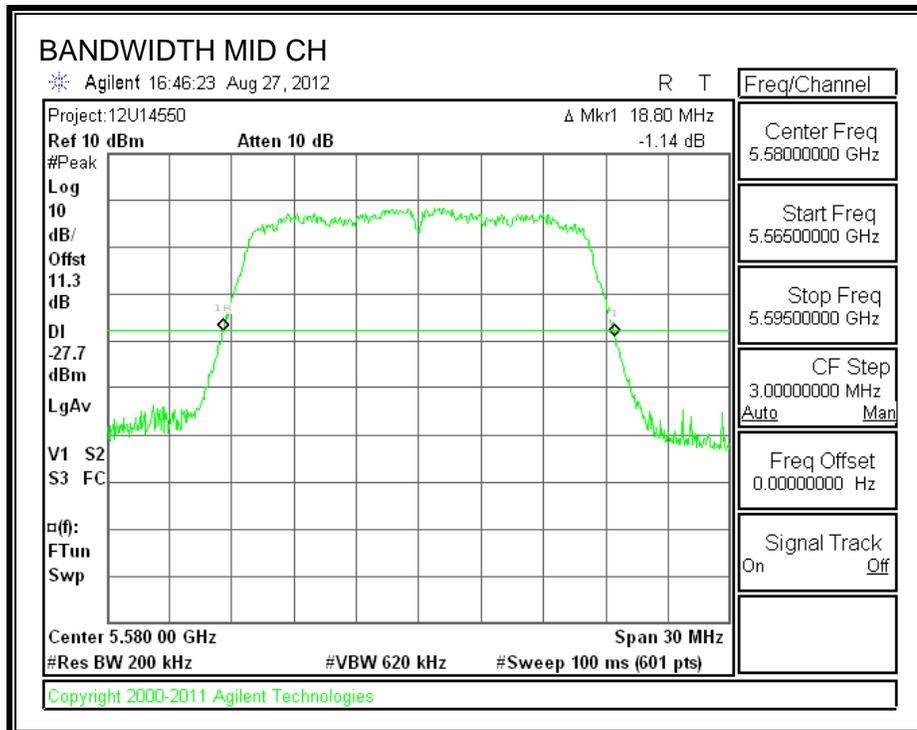
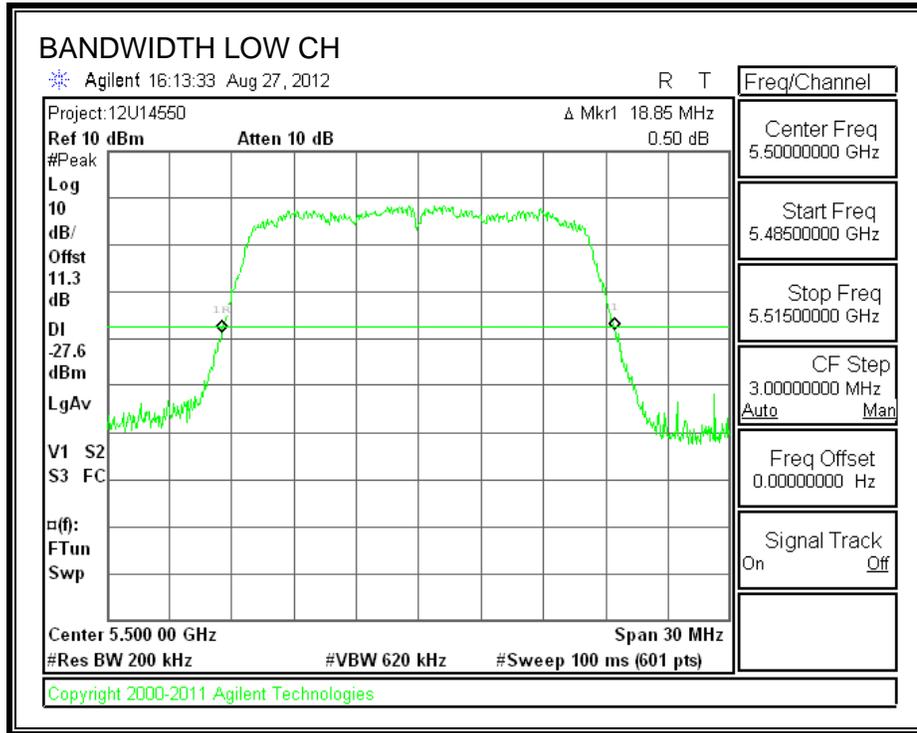
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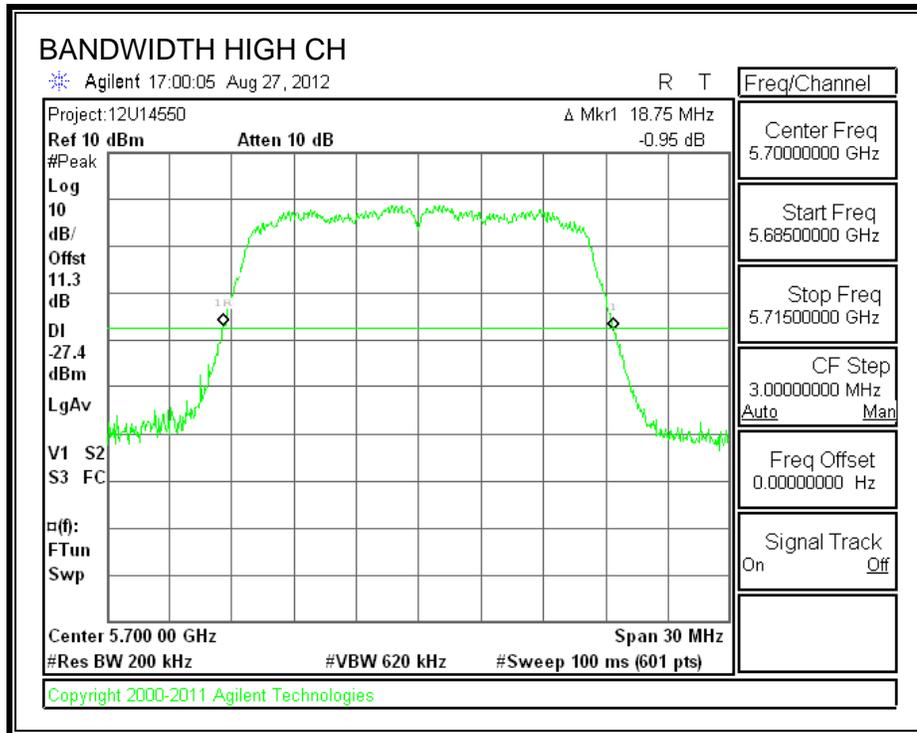
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5500	18.85
Mid	5580	18.80
High	5700	18.75

26 dB BANDWIDTH





8.5.2. 99% BANDWIDTH

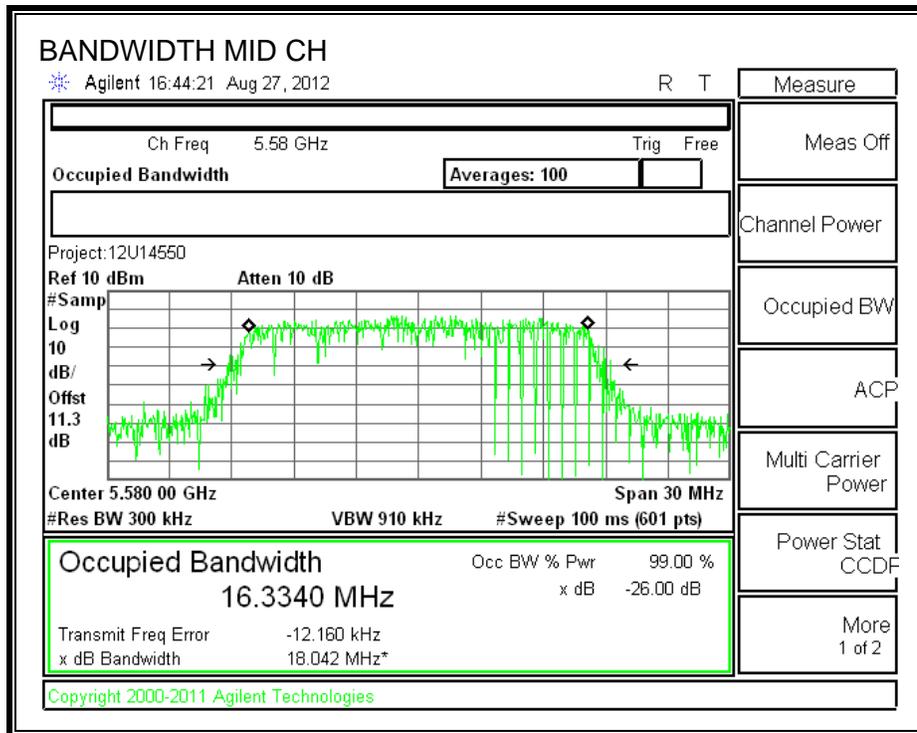
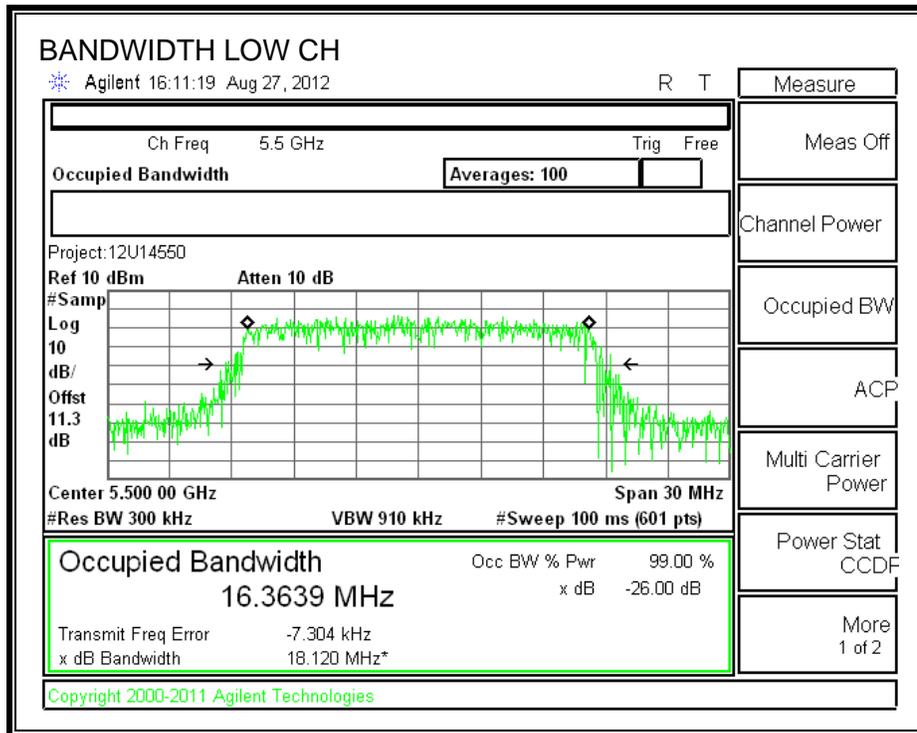
LIMITS

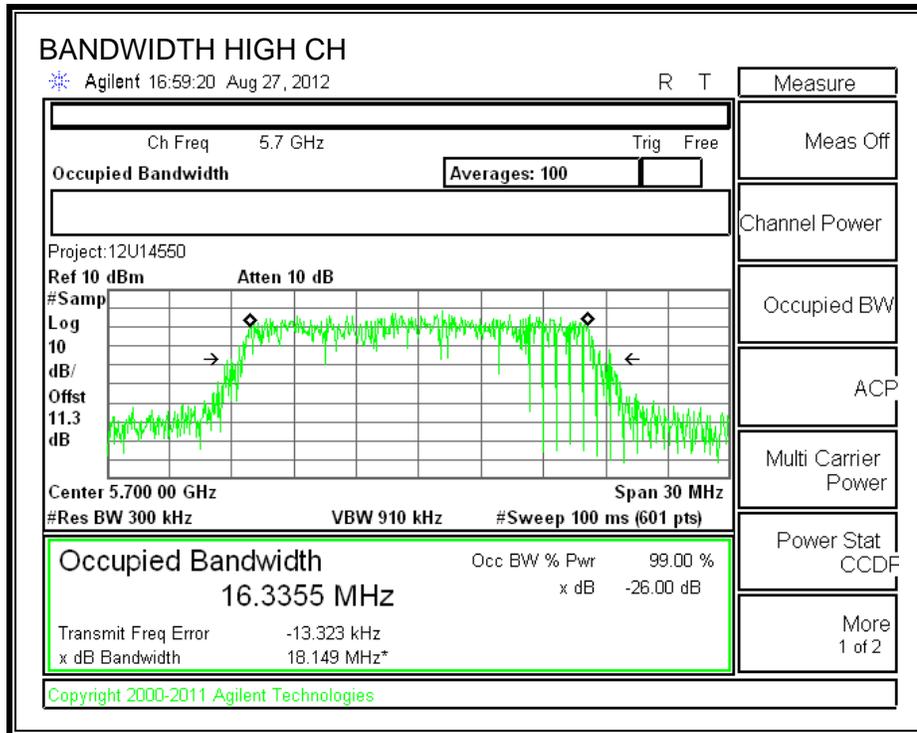
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5500	16.3639
Mid	5580	16.3340
High	5700	16.3355

99% BANDWIDTH





8.5.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.26 dB (including 10 dB pad and 1.26 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Channel	Frequency (MHz)	Power (dBm)
Low	5500	8.22
Mid	5580	8.14
High	5700	8.12

8.5.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (2)

IC RSS-210 A9.2 (3)

For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output 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.

99% bandwidth was used to calculate the power limit which was considered the worst case.

DIRECTIONAL ANTENNA GAIN

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

RESULTS

Limits

Channel	Frequency (MHz)	Fixed Limit (dBm)	B (MHz)	11 + 10 Log B Limit (dBm)	Directional Gain (dBi)	Power Limit (dBm)	PPSD Limit (dBm)
Low	5500	24	16.4	23.14	-6.80	23.14	11.00
Mid	5580	24	16.3	23.13	-6.80	23.13	11.00
High	5700	24	16.3	23.13	-6.80	23.13	11.00

Duty Cycle CF (dB)	0.21	Included in Calculations of Corr'd Power & PPSD
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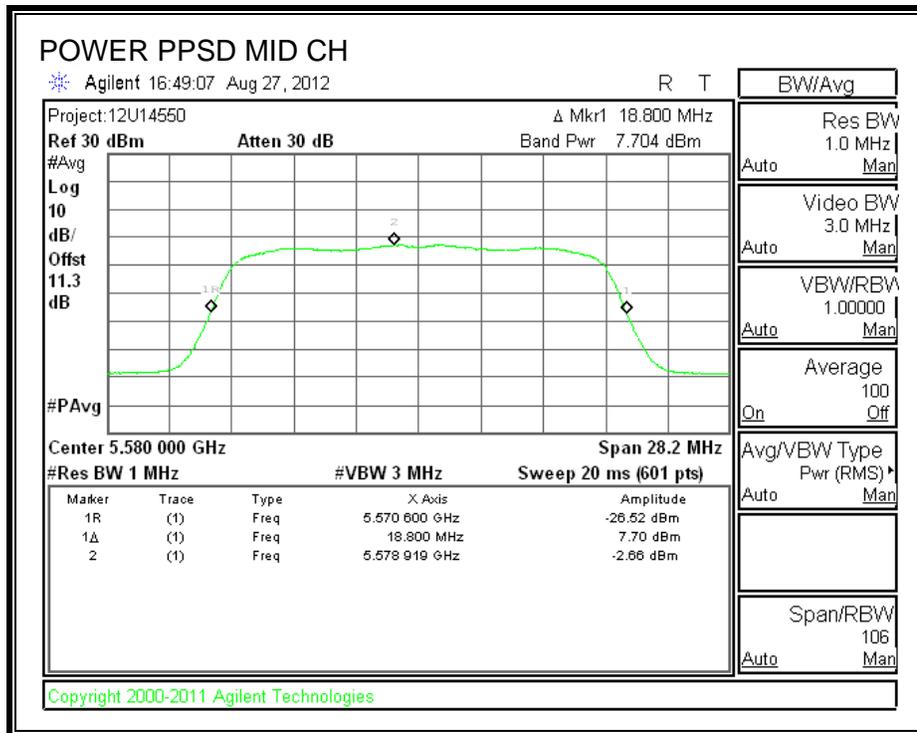
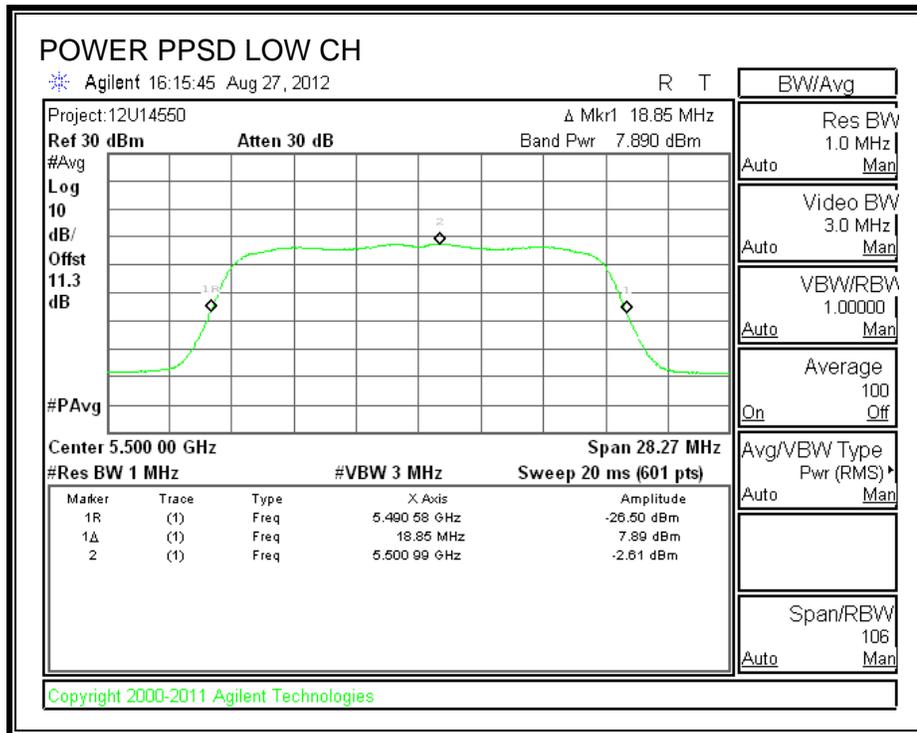
Output Power Results

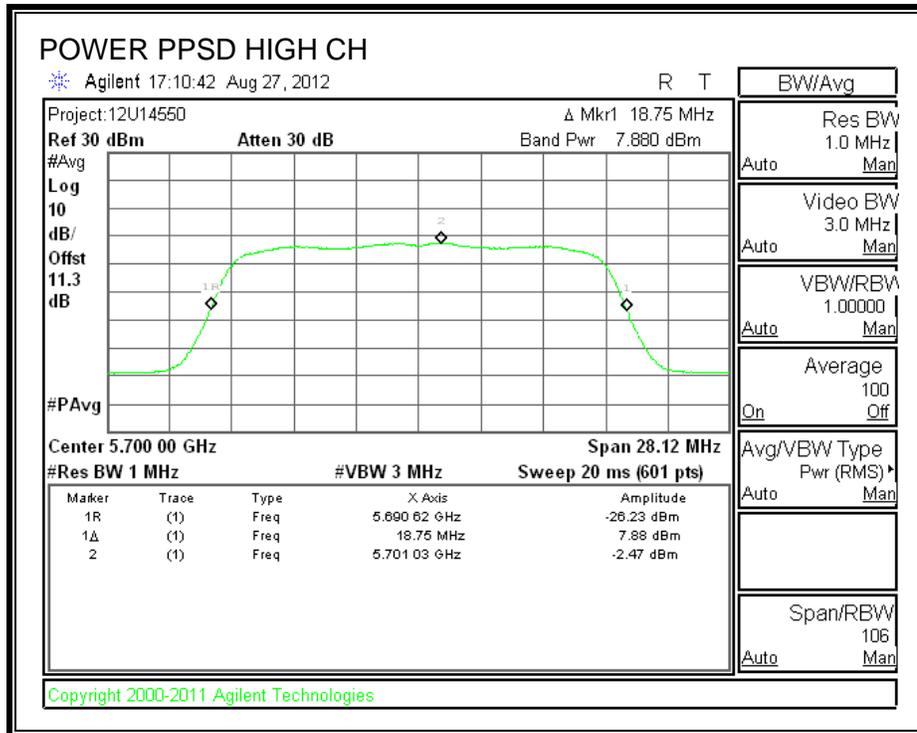
Channel	Frequency (MHz)	Meas Power (dBm)	Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5500	7.89	8.10	23.14	-15.04
Mid	5580	7.70	7.91	23.13	-15.22
High	5700	7.88	8.09	23.13	-15.04

PPSD Results

Channel	Frequency (MHz)	Meas PPSD (dBm)	Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5500	-2.61	-2.40	11.00	-13.40
Mid	5580	-2.66	-2.45	11.00	-13.45
High	5700	-2.47	-2.26	11.00	-13.26

OUTPUT POWER AND PPSD





8.5.5. PEAK EXCURSION

LIMITS

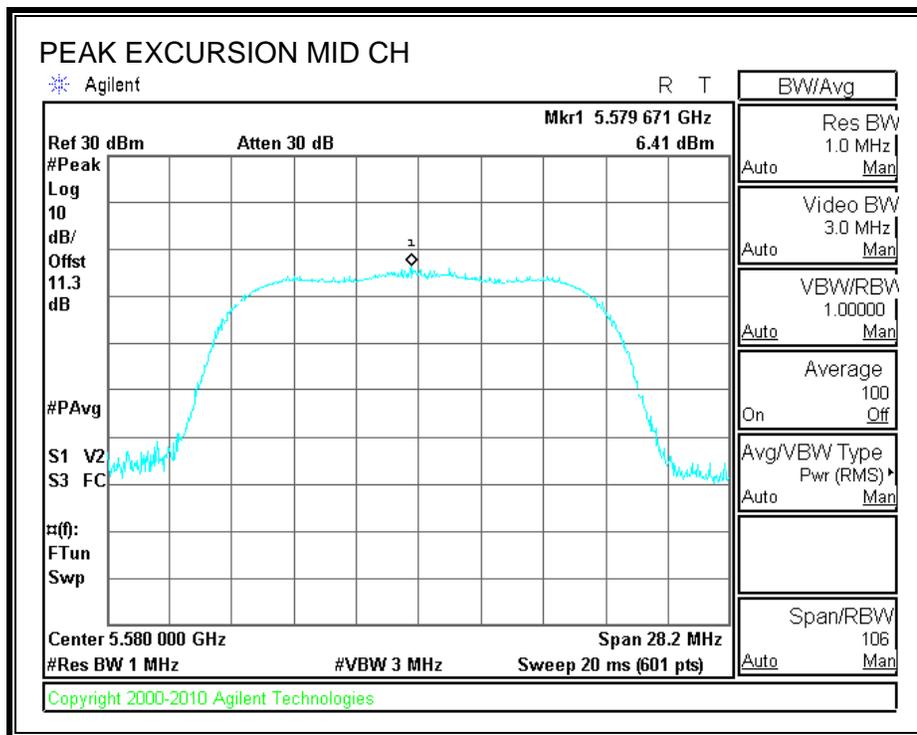
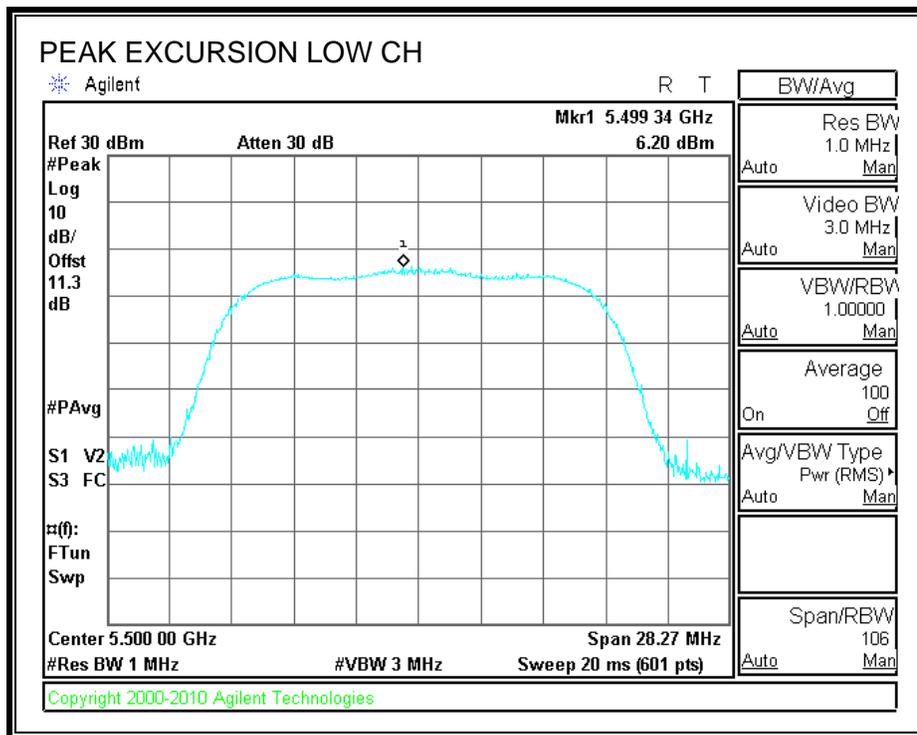
FCC §15.407 (a) (6)

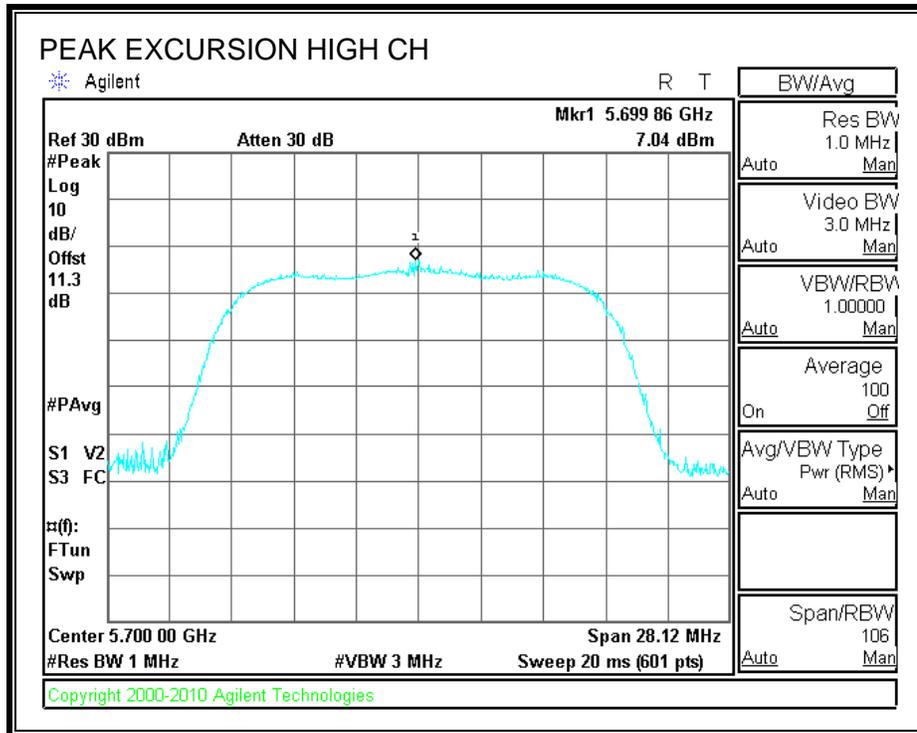
The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

RESULTS

Channel	Frequency (MHz)	PK Level (dBm)	PSD (dBm)	DCCF (dB)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Low	5500	6.20	-2.61	0.24	8.57	13	-4.43
Mid	5580	6.41	-2.66	0.24	8.83	13	-4.17
High	5700	7.04	-2.47	0.24	9.27	13	-3.73

PEAK EXCURSION





8.6. 802.11n HT20 MODE IN THE 5.6 GHz BAND

8.6.1. 26 dB BANDWIDTH

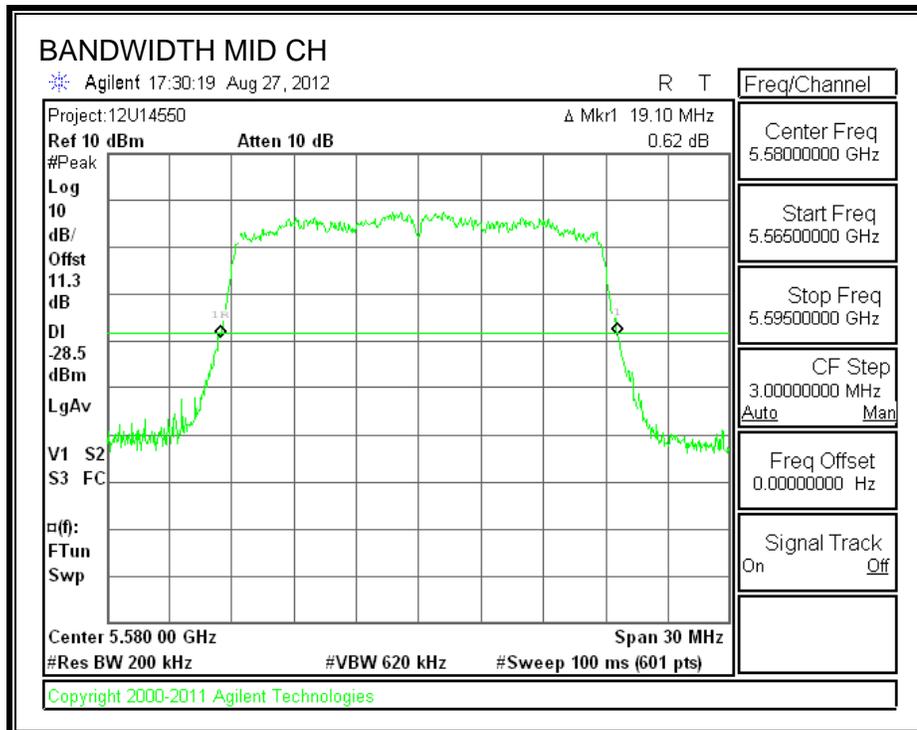
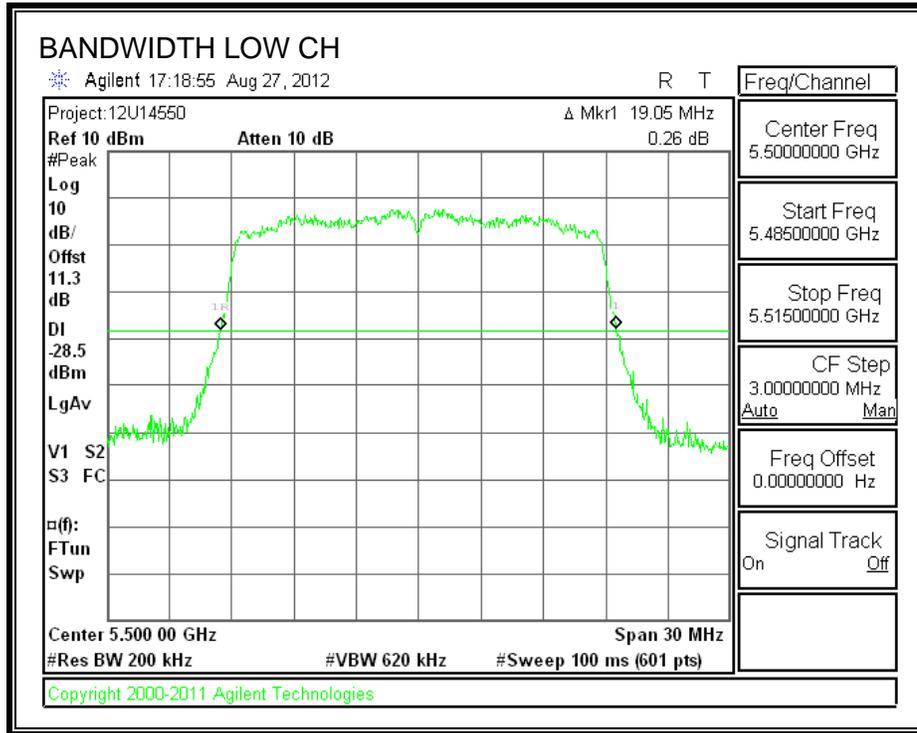
LIMITS

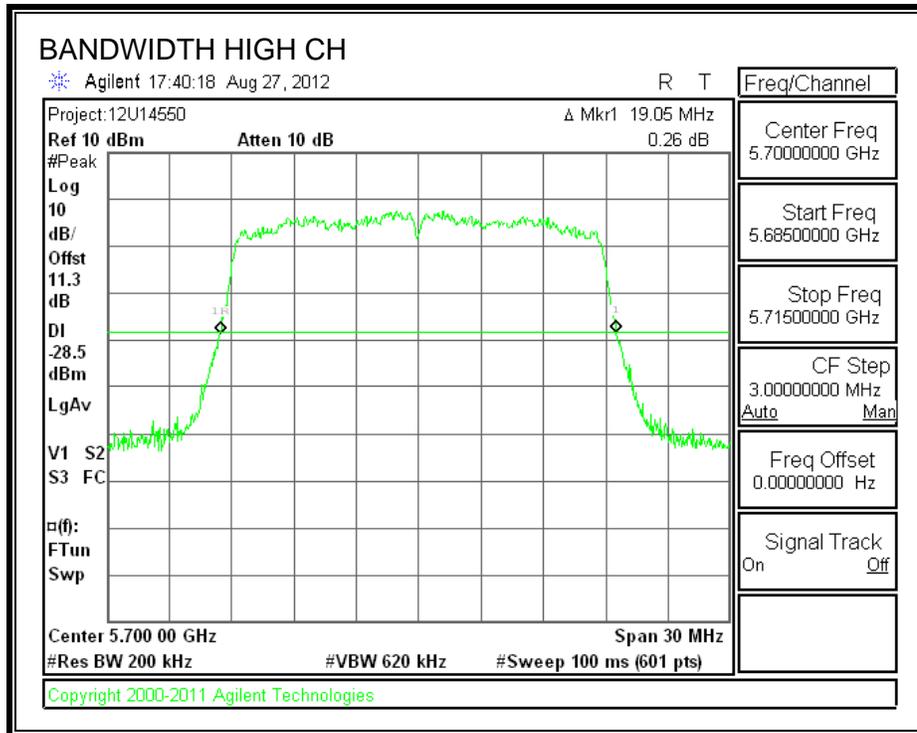
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5500	19.05
Mid	5580	19.10
High	5700	19.05

26 dB BANDWIDTH





8.6.2. 99% BANDWIDTH

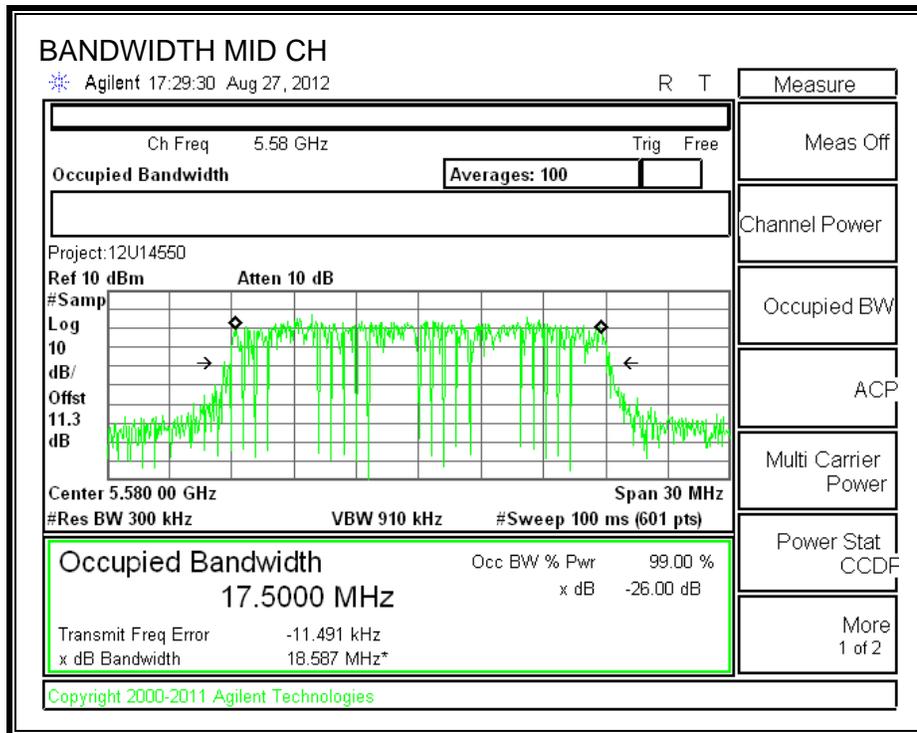
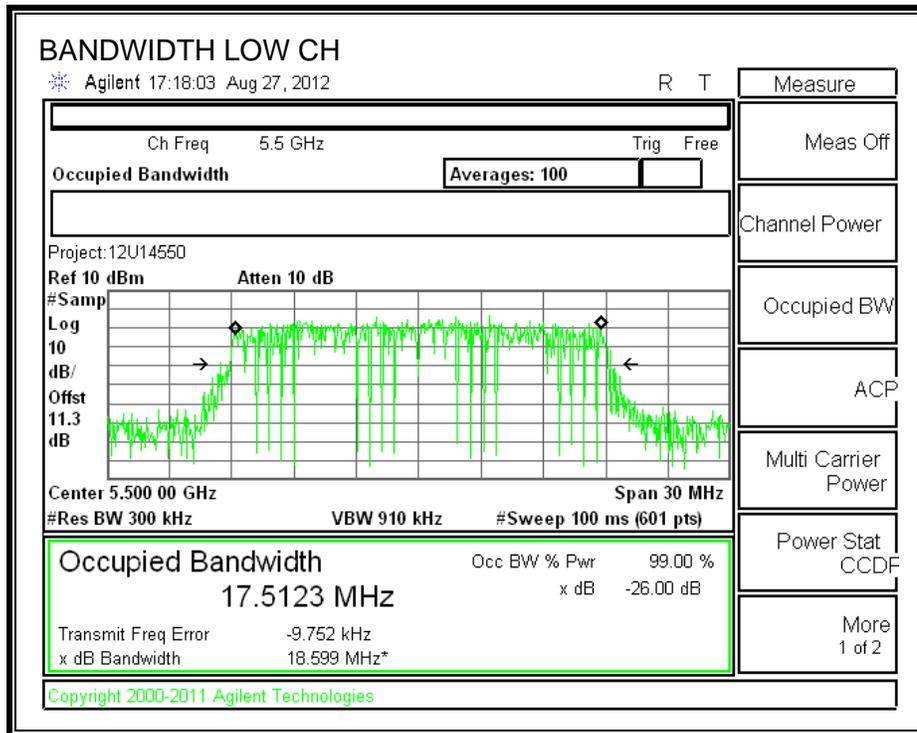
LIMITS

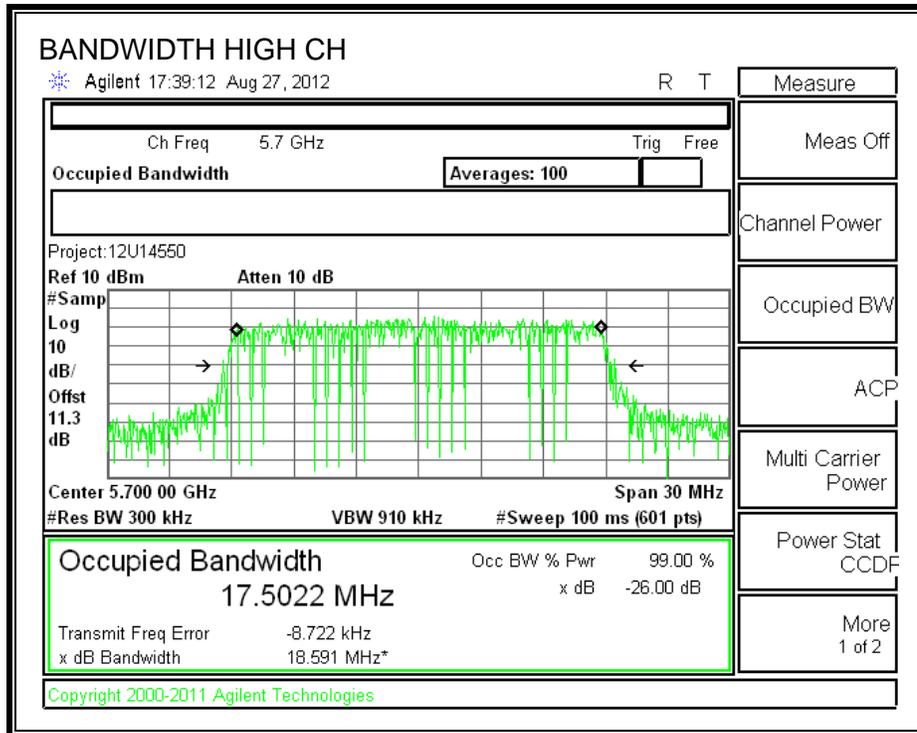
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5500	17.5123
Mid	5580	17.5000
High	5700	17.5022

99% BANDWIDTH





8.6.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.26 dB (including 10 dB pad and 1.26 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Channel	Frequency (MHz)	Power (dBm)
Low	5500	7.22
Mid	5580	7.26
High	5700	7.19

8.6.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (2)

IC RSS-210 A9.2 (3)

For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output 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.

99% bandwidth was used to calculate the power limit which was considered the worst case.

DIRECTIONAL ANTENNA GAIN

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

RESULTS

Limits

Channel	Frequency (MHz)	Fixed Limit (dBm)	B (MHz)	11 + 10 Log B (dBm)	Directional Gain (dBi)	Power Limit (dBm)	PPSD Limit (dBm)
Low	5500	24	17.5	23.43	-6.80	23.43	11.00
Mid	5580	24	17.5	23.43	-6.80	23.43	11.00
High	5700	24	17.5	23.43	-6.80	23.43	11.00

Duty Cycle CF (dB)	0.26	Included in Calculations of Corr'd Power & PPSD
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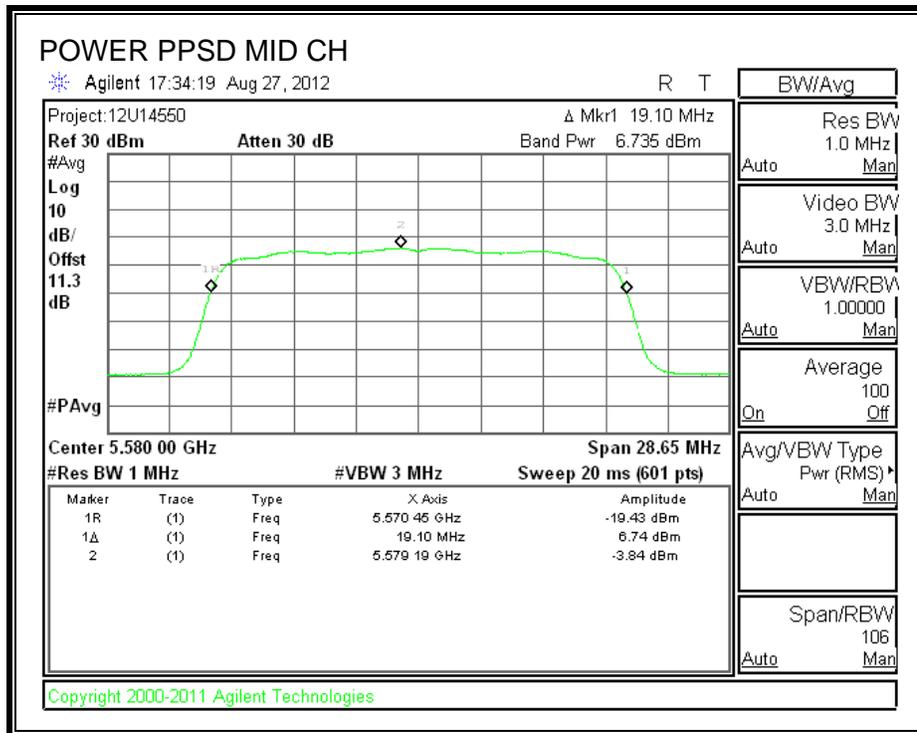
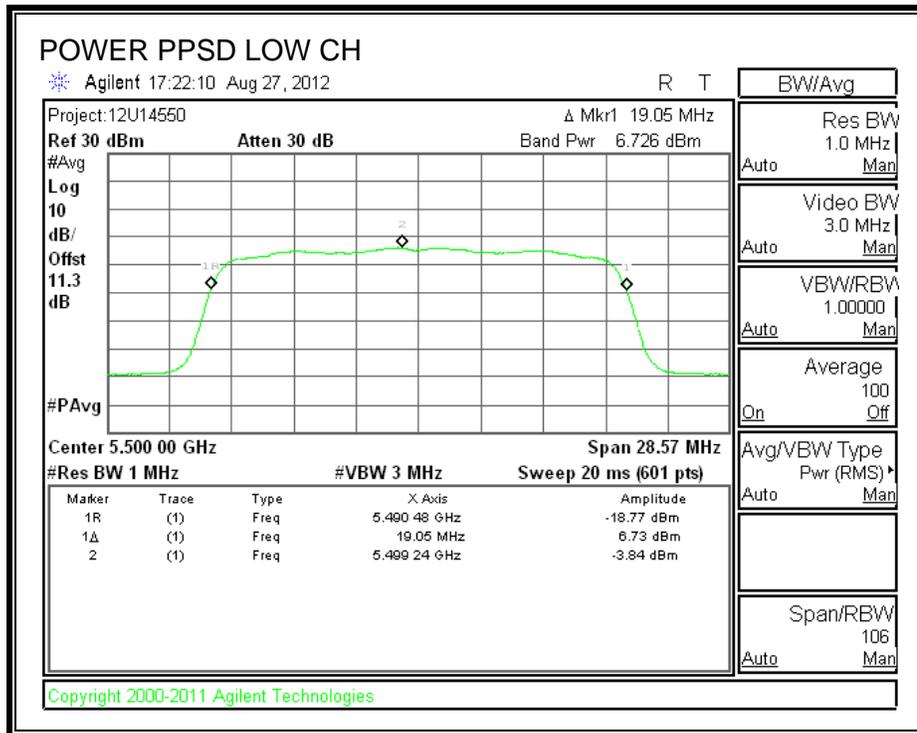
Output Power Results

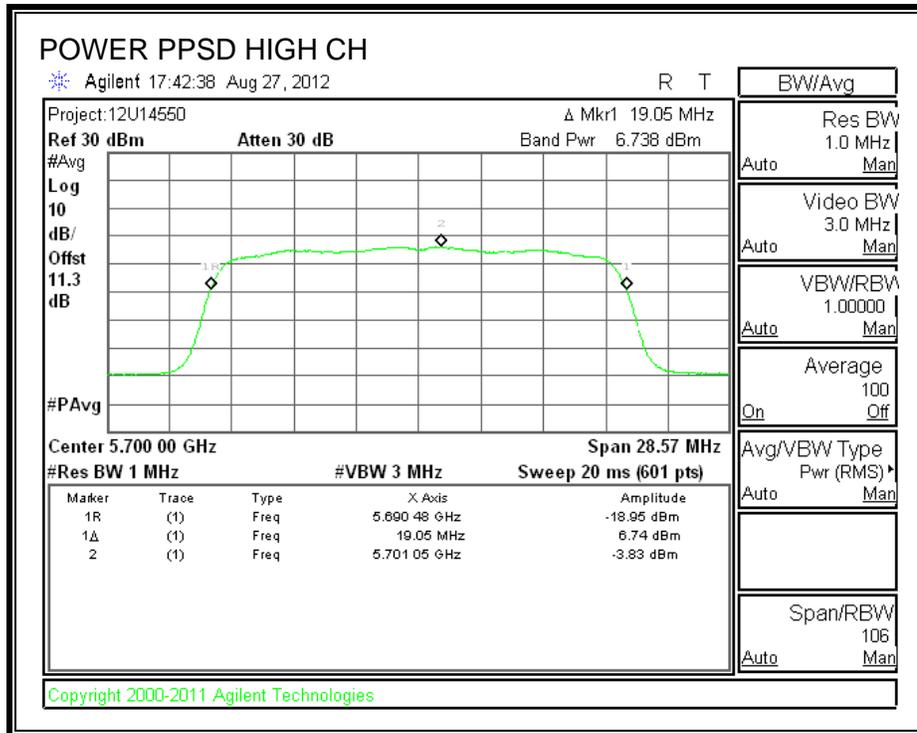
Channel	Frequency (MHz)	Meas Power (dBm)	Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5500	6.73	6.99	23.43	-16.45
Mid	5580	6.74	7.00	23.43	-16.44
High	5700	6.74	7.00	23.43	-16.43

PPSD Results

Channel	Frequency (MHz)	Meas PPSD (dBm)	Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5500	-3.84	-3.58	11.00	-14.58
Mid	5580	-3.84	-3.58	11.00	-14.58
High	5700	-3.83	-3.57	11.00	-14.57

OUTPUT POWER AND PPSD





8.6.5. PEAK EXCURSION

LIMITS

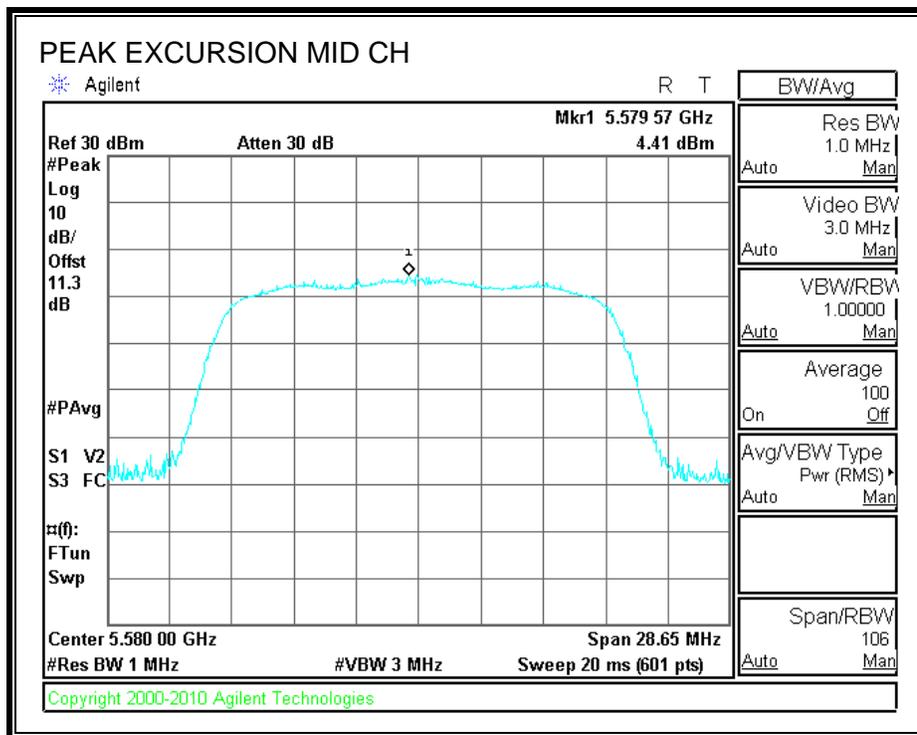
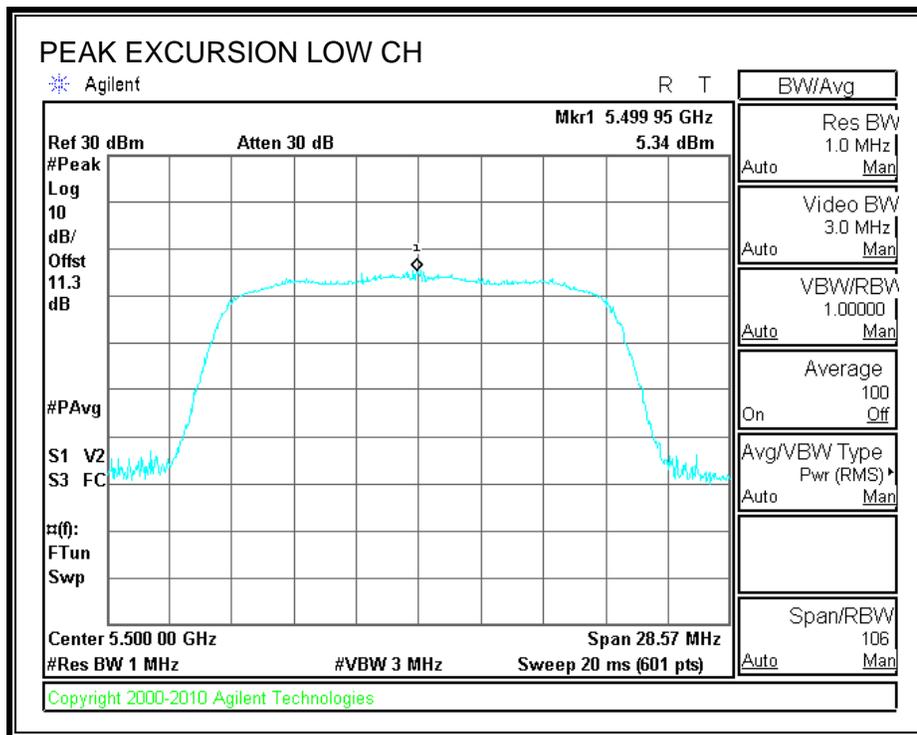
FCC §15.407 (a) (6)

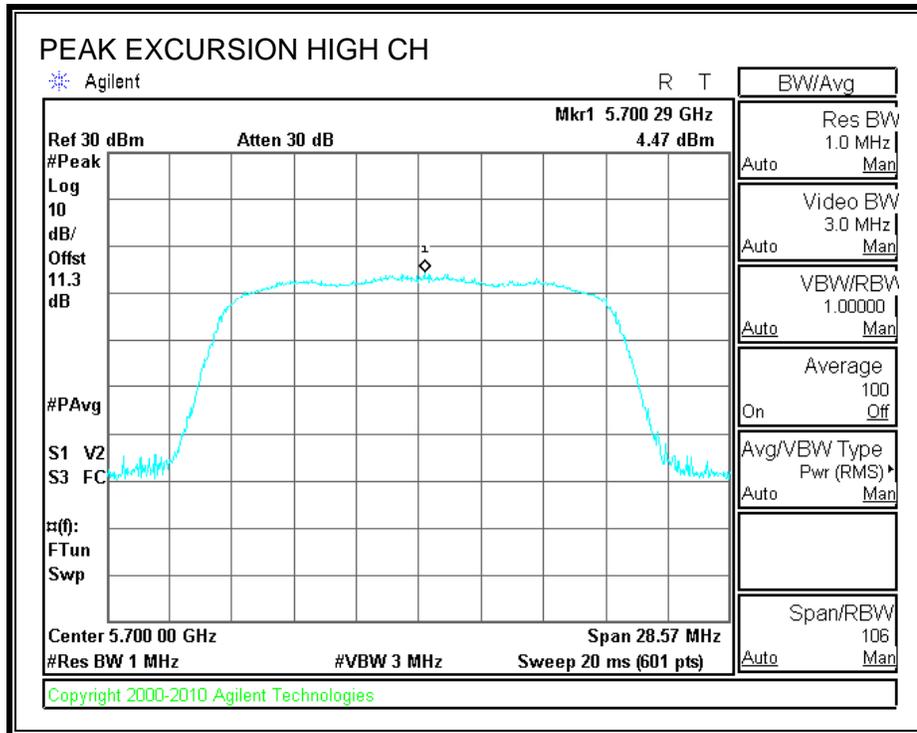
The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

RESULTS

Channel	Frequency (MHz)	PK Level (dBm)	PSD (dBm)	DCCF (dB)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Low	5500	5.34	-3.84	0.26	8.92	13	-4.08
Mid	5580	4.41	-3.84	0.26	7.99	13	-5.01
High	5700	4.47	-3.83	0.26	8.04	13	-4.96

PEAK EXCURSION





9. RADIATED TEST RESULTS

9.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-210 Clause 2.6 (Transmitter)

IC RSS-GEN Clause 6 (Receiver)

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

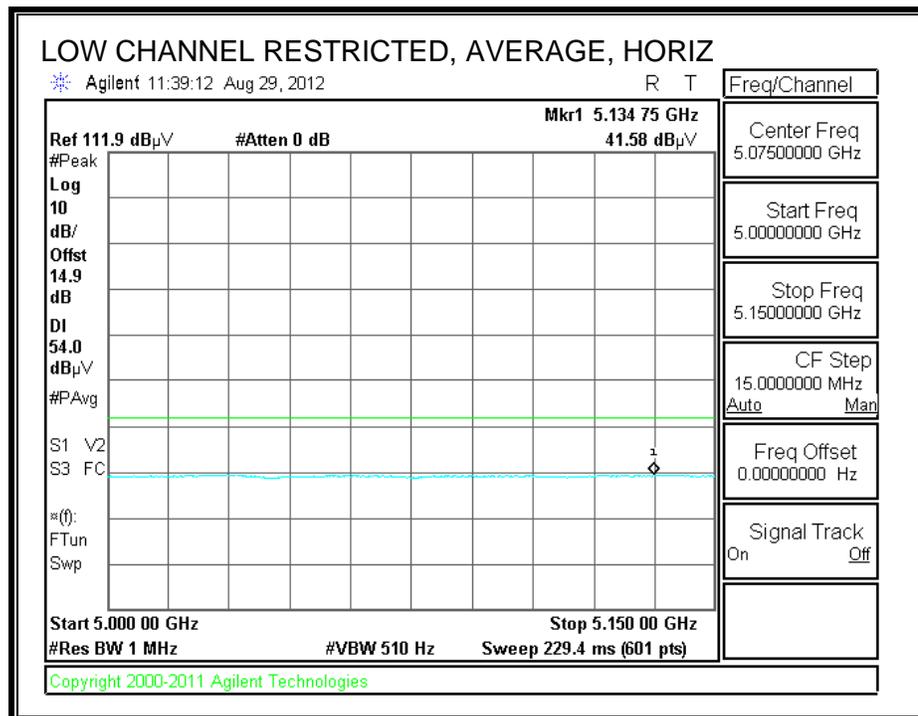
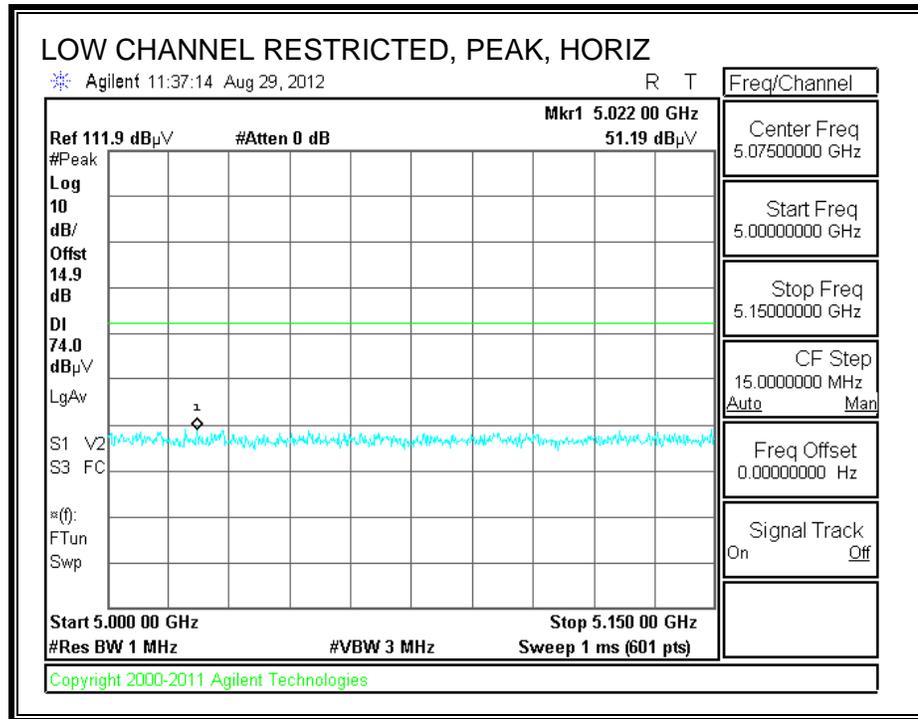
For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 1 MHz for peak measurements and as applicable for average measurements.

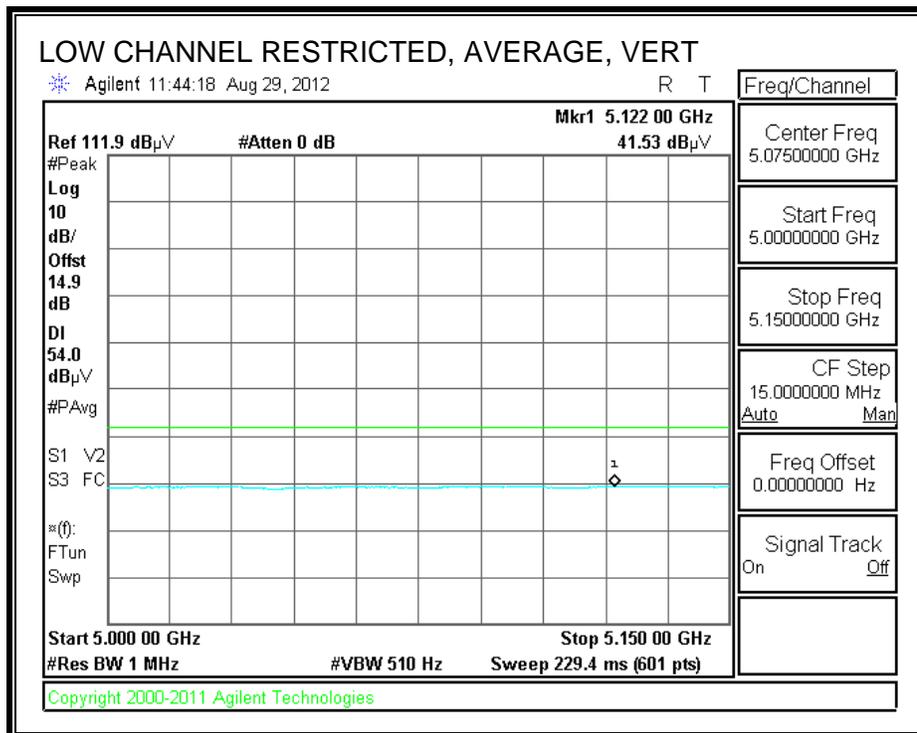
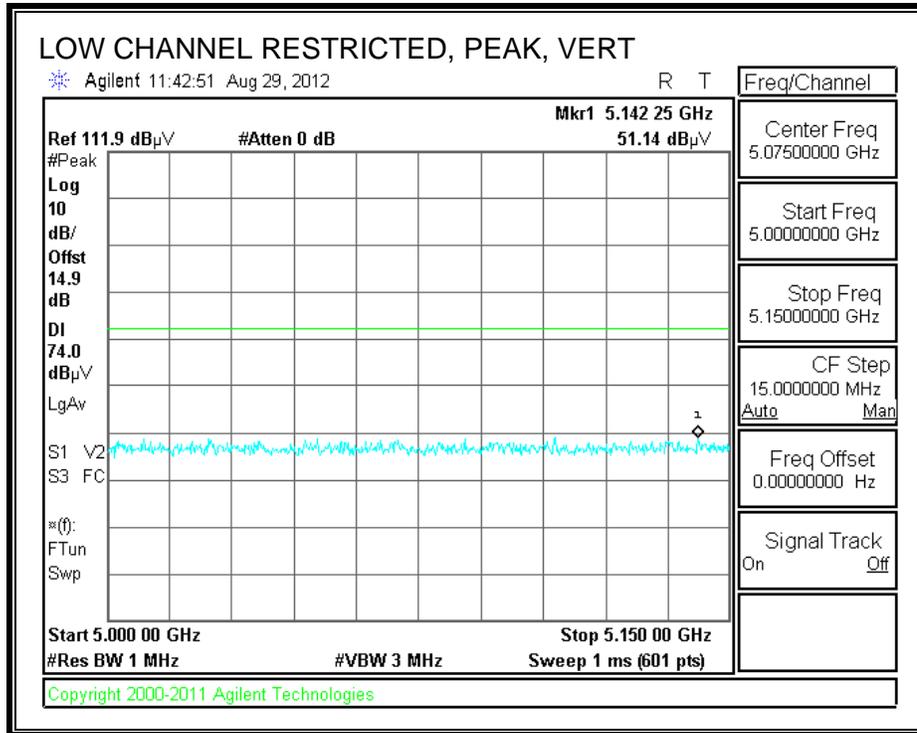
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

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

9.2. TX ABOVE 1 GHz 802.11a MODE IN THE 5.2 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)



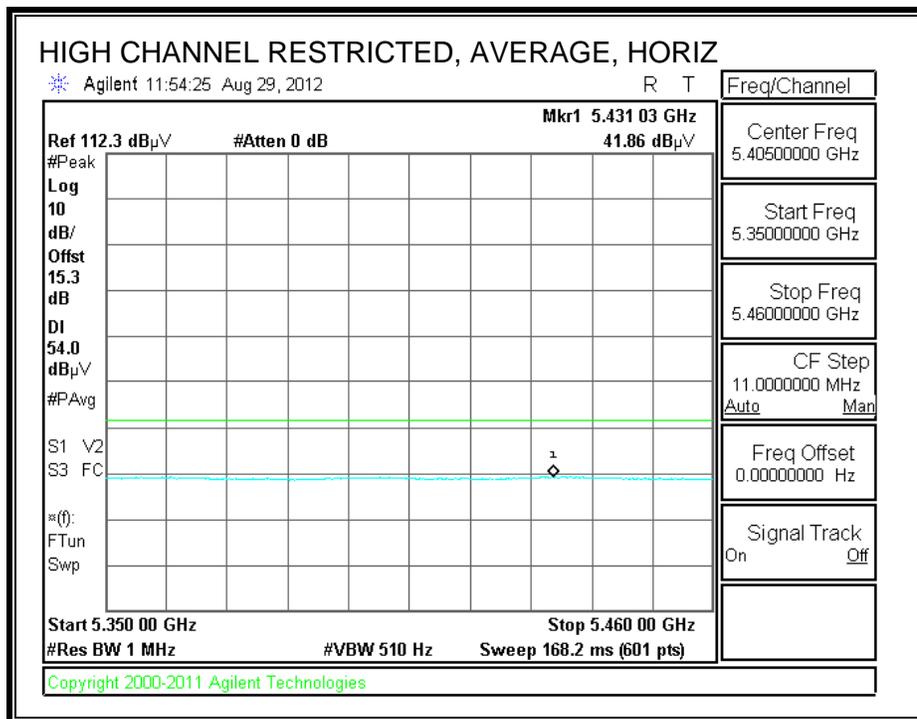
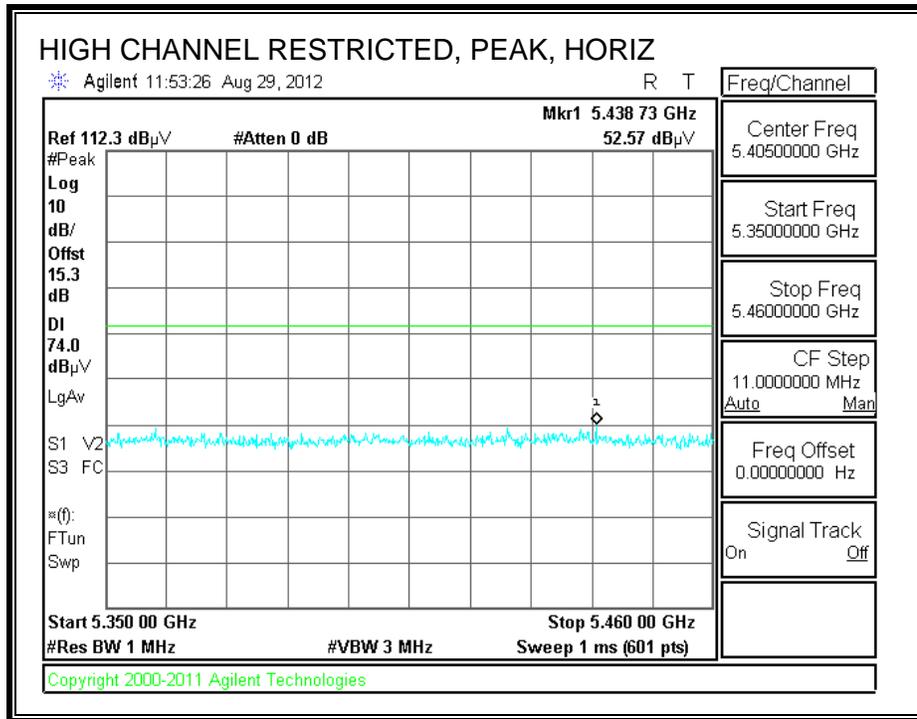


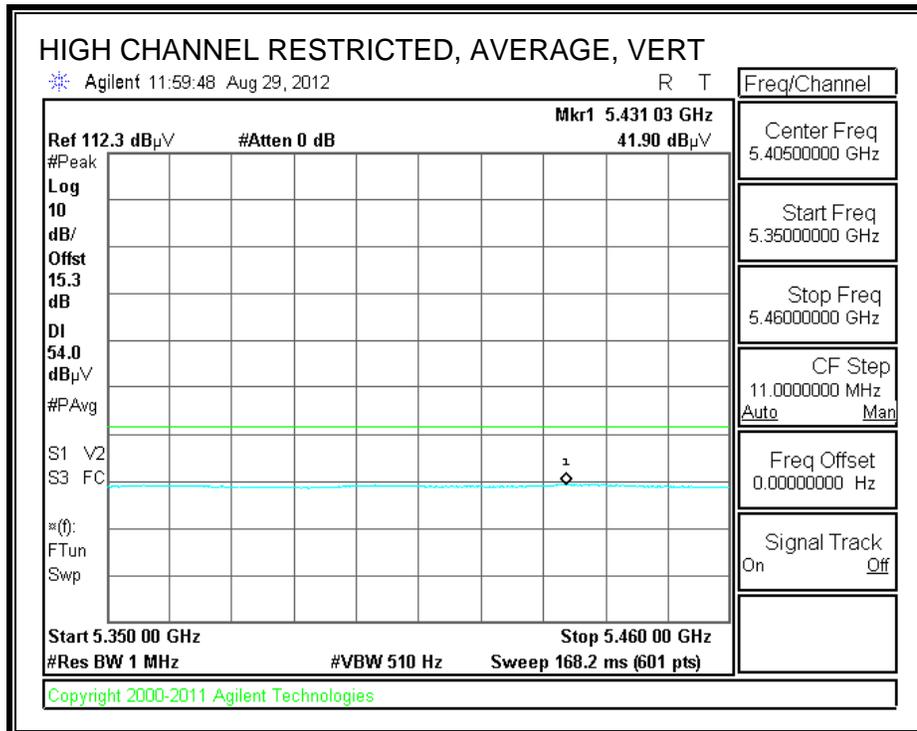
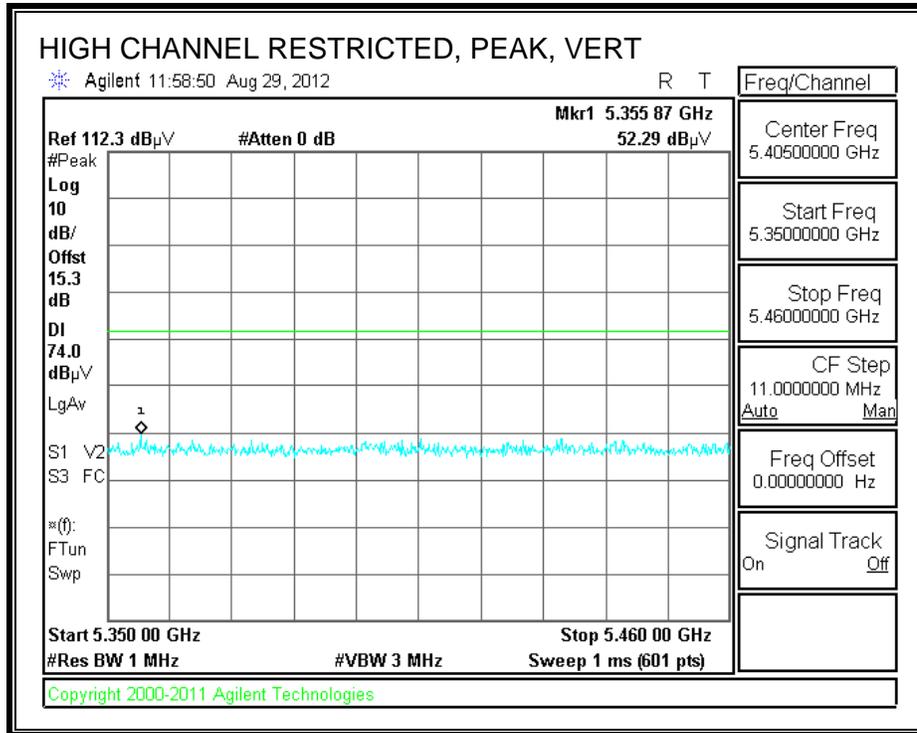
HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement													
Compliance Certification Services, Fremont 5m Chamber													
Test Engr:		Tony Wagoner											
Date:		08/29/12											
Project #:		12U14550											
Company:		LG											
Test Target:		FCC 15.205											
Mode Oper:		11a Tx Continuously											
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. dB	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
Low Ch 5180MHz													
15.540	3.0	34.8	39.0	12.5	-34.0	0.0	0.0	52.3	74.0	-21.7	H	P	
15.540	3.0	25.1	39.0	12.5	-34.0	0.0	0.0	42.6	54.0	-11.4	H	A	
20.720	3.0	33.7	41.1	14.6	-34.2	0.0	0.0	55.2	74.0	-18.8	H	P	
20.720	3.0	23.9	41.1	14.6	-34.2	0.0	0.0	45.4	54.0	-8.6	H	A	
15.540	3.0	34.8	39.0	12.5	-34.0	0.0	0.0	52.3	74.0	-21.7	V	P	
15.540	3.0	25.3	39.0	12.5	-34.0	0.0	0.0	42.8	54.0	-11.2	V	A	
20.720	3.0	33.4	41.1	14.6	-34.2	0.0	0.0	54.8	74.0	-19.2	V	P	
20.720	3.0	23.8	41.1	14.6	-34.2	0.0	0.0	45.3	54.0	-8.7	V	A	
Mid Ch 5200 MHz													
15.600	3.0	35.3	38.8	12.5	-34.0	0.0	0.0	52.6	74.0	-21.4	H	P	
15.600	3.0	24.8	38.8	12.5	-34.0	0.0	0.0	42.2	54.0	-11.8	H	A	
20.800	3.0	33.4	40.9	14.6	-34.2	0.0	0.0	54.7	74.0	-19.3	H	P	
20.800	3.0	23.9	40.9	14.6	-34.2	0.0	0.0	45.2	54.0	-8.8	H	A	
15.600	3.0	34.3	38.8	12.5	-34.0	0.0	0.0	51.7	74.0	-22.3	V	P	
15.600	3.0	24.8	38.8	12.5	-34.0	0.0	0.0	42.2	54.0	-11.8	V	A	
20.800	3.0	34.2	40.9	14.6	-34.2	0.0	0.0	55.5	74.0	-18.5	V	P	
20.800	3.0	23.8	40.9	14.6	-34.2	0.0	0.0	45.1	54.0	-8.9	V	A	
Hi Ch 5240 MHz													
15.720	3.0	35.7	38.4	12.6	-34.0	0.0	0.0	52.7	74.0	-21.3	H	P	
15.720	3.0	25.1	38.4	12.6	-34.0	0.0	0.0	42.2	54.0	-11.8	H	A	
20.960	3.0	33.1	40.5	14.6	-34.2	0.0	0.0	54.1	74.0	-19.9	H	P	
20.960	3.0	23.4	40.5	14.6	-34.2	0.0	0.0	44.4	54.0	-9.6	H	A	
15.720	3.0	34.3	38.4	12.6	-34.0	0.0	0.0	51.3	74.0	-22.7	V	P	
15.720	3.0	25.0	38.4	12.6	-34.0	0.0	0.0	42.1	54.0	-11.9	V	A	
20.960	3.0	33.4	40.5	14.6	-34.2	0.0	0.0	54.4	74.0	-19.6	V	P	
20.960	3.0	23.4	40.5	14.6	-34.2	0.0	0.0	44.4	54.0	-9.6	V	A	
Rev. 4.1.2.7													
Note: No other emissions were detected above the system noise floor.													

9.3. TX ABOVE 1 GHz 802.11a MODE IN THE 5.3 GHz BAND

RESTRICTED BANDEDGE (HIGH CHANNEL)



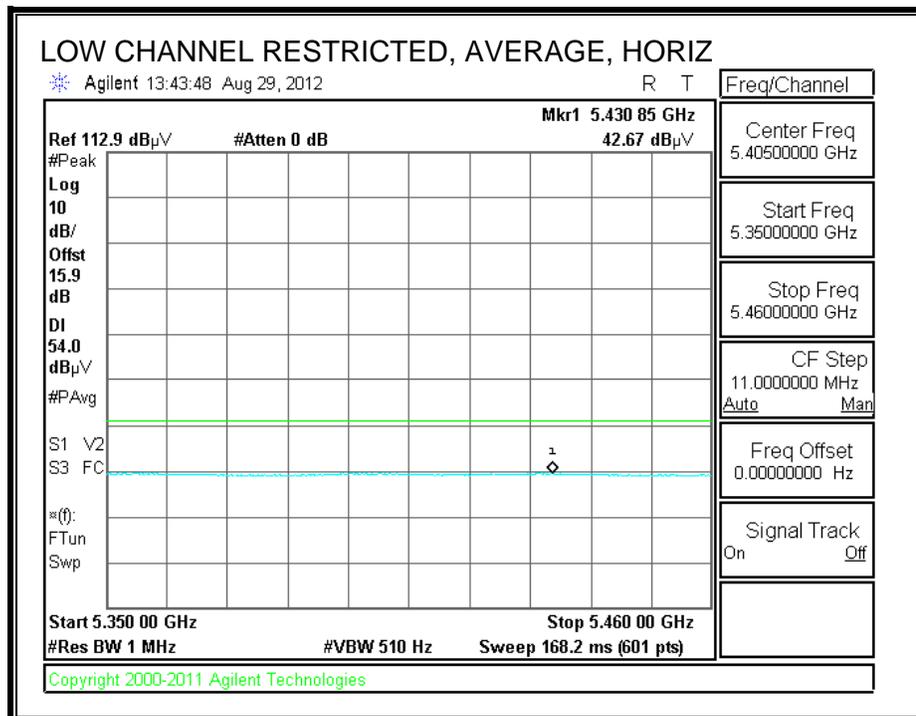
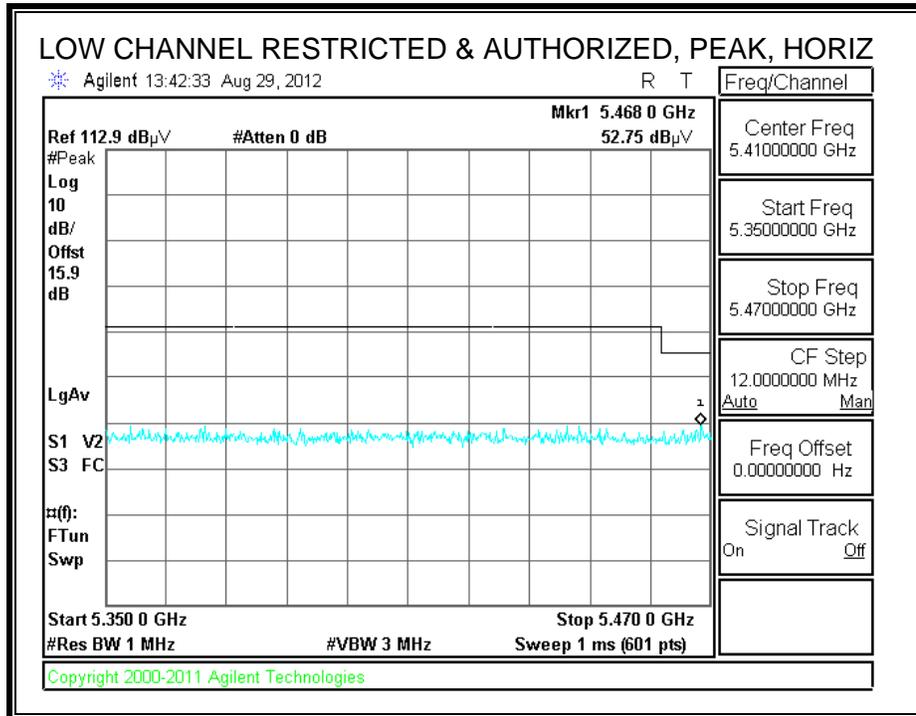


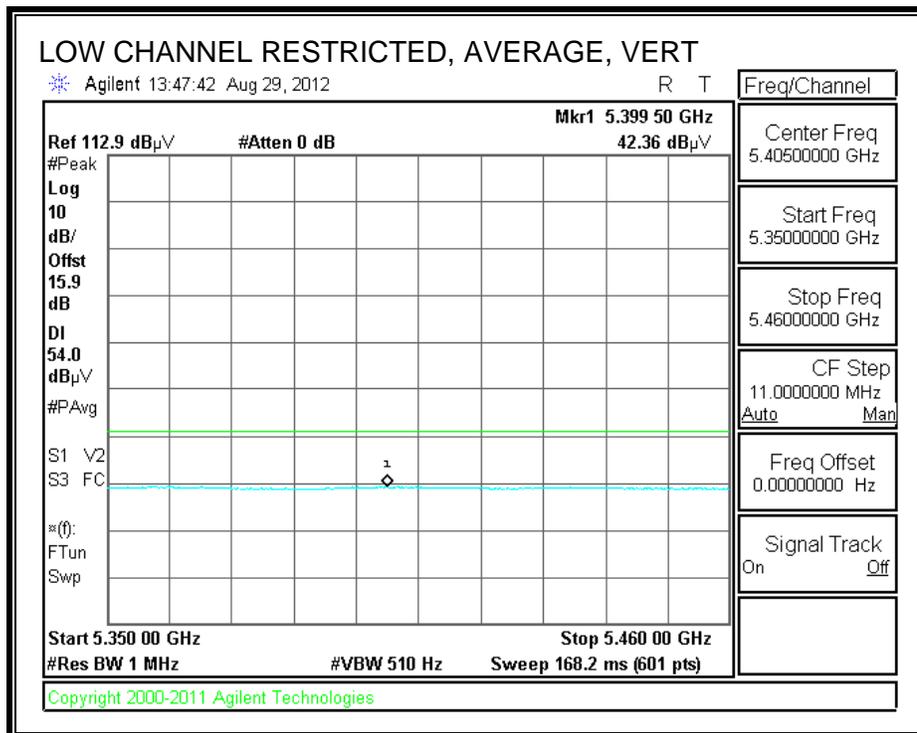
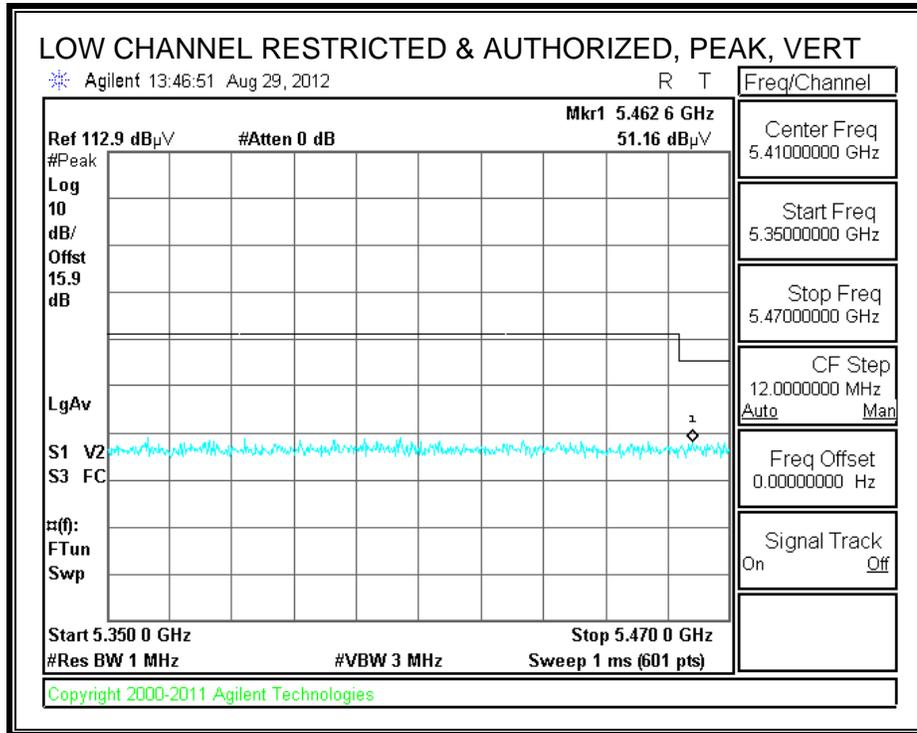
HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement													
Compliance Certification Services, Fremont 5m Chamber													
Test Engr:		Roy Zheng											
Date:		08/29/12											
Project #:		12U14550											
Company:		LG											
Test Target:		FCC 15.205											
Mode Oper:		11a Continuously											
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	Dist	Read	AF	CL	Amp	D Corr	Fltr	Corr.	Limit	Margin	Ant. Pol.	Det.	Notes
GHz	(m)	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	dB	V/H	P/A/QP	
Low Ch. 5260 MHz													
15.780	3.0	35.1	38.2	12.6	-33.9	0.0	0.0	51.9	74.0	-22.1	H	P	
15.780	3.0	25.4	38.2	12.6	-33.9	0.0	0.0	42.3	54.0	-11.7	H	A	
21.040	3.0	33.8	40.4	14.7	-34.2	0.0	0.0	54.7	74.0	-19.3	H	P	
21.040	3.0	23.7	40.4	14.7	-34.2	0.0	0.0	44.5	54.0	-9.5	H	A	
15.780	3.0	35.6	38.2	12.6	-33.9	0.0	0.0	52.5	74.0	-21.5	V	P	
15.780	3.0	25.4	38.2	12.6	-33.9	0.0	0.0	42.2	54.0	-11.8	V	A	
21.040	3.0	34.7	40.4	14.7	-34.2	0.0	0.0	55.5	74.0	-18.5	V	P	
21.040	3.0	23.7	40.4	14.7	-34.2	0.0	0.0	44.6	54.0	-9.4	V	A	
Mid Ch. 5300 MHz													
10.600	3.0	35.9	38.3	9.7	-35.7	0.0	0.0	48.1	74.0	-25.9	H	P	
10.600	3.0	26.3	38.3	9.7	-35.7	0.0	0.0	38.5	54.0	-15.5	H	A	
15.900	3.0	35.1	37.8	12.7	-33.9	0.0	0.0	51.6	74.0	-22.4	H	P	
15.900	3.0	25.1	37.8	12.7	-33.9	0.0	0.0	41.6	54.0	-12.4	H	A	
21.200	3.0	34.3	40.0	14.7	-34.2	0.0	0.0	54.8	74.0	-19.2	H	P	
21.200	3.0	23.9	40.0	14.7	-34.2	0.0	0.0	44.5	54.0	-9.5	H	A	
10.600	3.0	35.8	38.3	9.7	-35.7	0.0	0.0	48.0	74.0	-26.0	V	P	
10.600	3.0	25.4	38.3	9.7	-35.7	0.0	0.0	37.6	54.0	-16.4	V	A	
15.900	3.0	35.6	37.8	12.7	-33.9	0.0	0.0	52.1	74.0	-21.9	V	P	
15.900	3.0	25.1	37.8	12.7	-33.9	0.0	0.0	41.7	54.0	-12.3	V	A	
21.200	3.0	34.2	40.0	14.7	-34.2	0.0	0.0	54.8	74.0	-19.2	V	P	
21.200	3.0	24.0	40.0	14.7	-34.2	0.0	0.0	44.5	54.0	-9.5	V	A	
Hi Ch. 5320 MHz													
10.640	3.0	34.6	38.3	9.7	-35.7	0.0	0.0	46.8	74.0	-27.2	H	P	
10.640	3.0	24.5	38.3	9.7	-35.7	0.0	0.0	36.8	54.0	-17.2	H	A	
15.960	3.0	35.1	37.6	12.7	-33.9	0.0	0.0	51.5	74.0	-22.5	H	P	
15.960	3.0	25.3	37.6	12.7	-33.9	0.0	0.0	41.7	54.0	-12.3	H	A	
21.280	3.0	33.0	39.9	14.7	-34.2	0.0	0.0	53.4	74.0	-20.6	H	P	
21.280	3.0	23.5	39.9	14.7	-34.2	0.0	0.0	43.9	54.0	-10.1	H	A	
10.640	3.0	34.6	38.3	9.7	-35.7	0.0	0.0	46.8	74.0	-27.2	V	P	
10.640	3.0	24.7	38.3	9.7	-35.7	0.0	0.0	36.9	54.0	-17.1	V	A	
15.960	3.0	35.1	37.6	12.7	-33.9	0.0	0.0	51.5	74.0	-22.5	V	P	
15.960	3.0	25.1	37.6	12.7	-33.9	0.0	0.0	41.5	54.0	-12.5	V	A	
21.280	3.0	34.0	39.9	14.7	-34.2	0.0	0.0	54.4	74.0	-19.6	V	P	
21.280	3.0	23.4	39.9	14.7	-34.2	0.0	0.0	43.8	54.0	-10.2	V	A	
Rev. 4.1.2.7													
Note: No other emissions were detected above the system noise floor.													

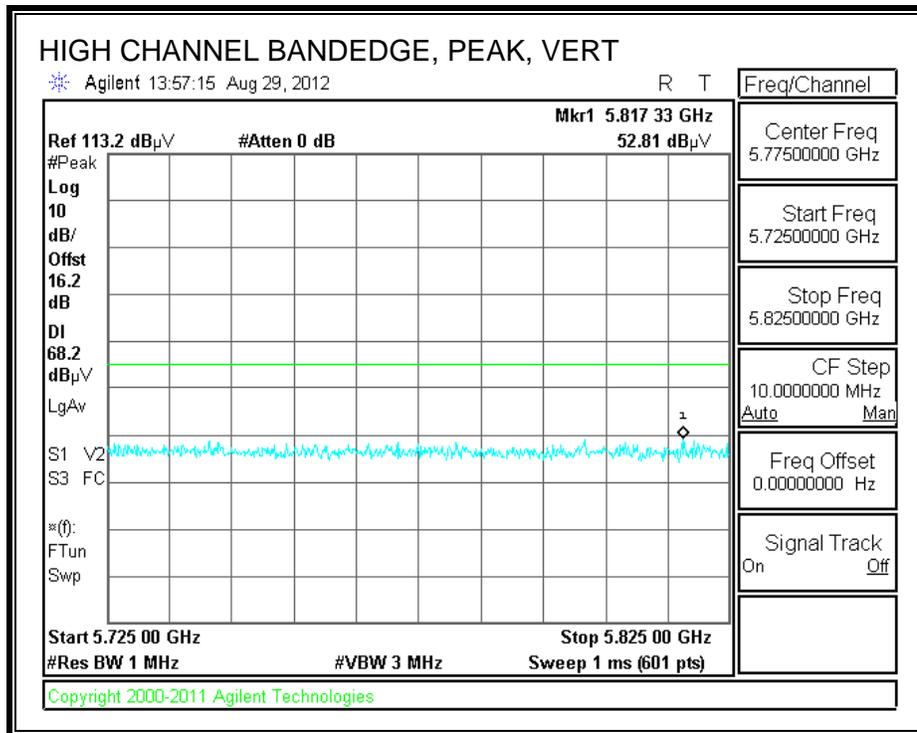
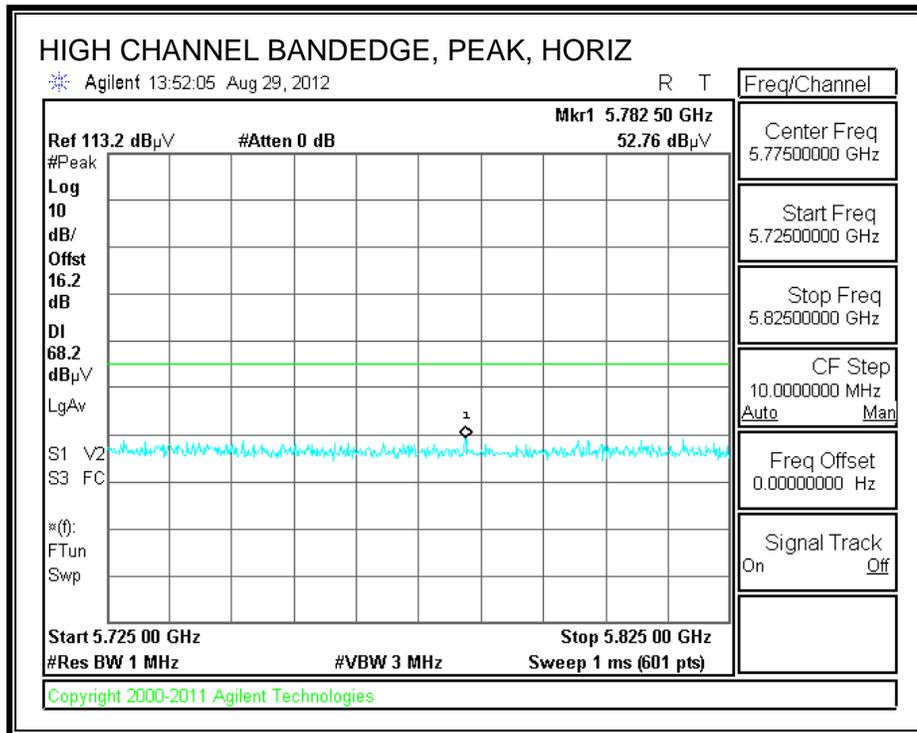
9.4. TX ABOVE 1 GHz 802.11a MODE IN THE 5.6 GHz BAND

RESTRICTED & AUTHORIZED BANDEDGE (LOW CHANNEL)





AUTHORIZED BANDEDGE (HIGH CHANNEL)

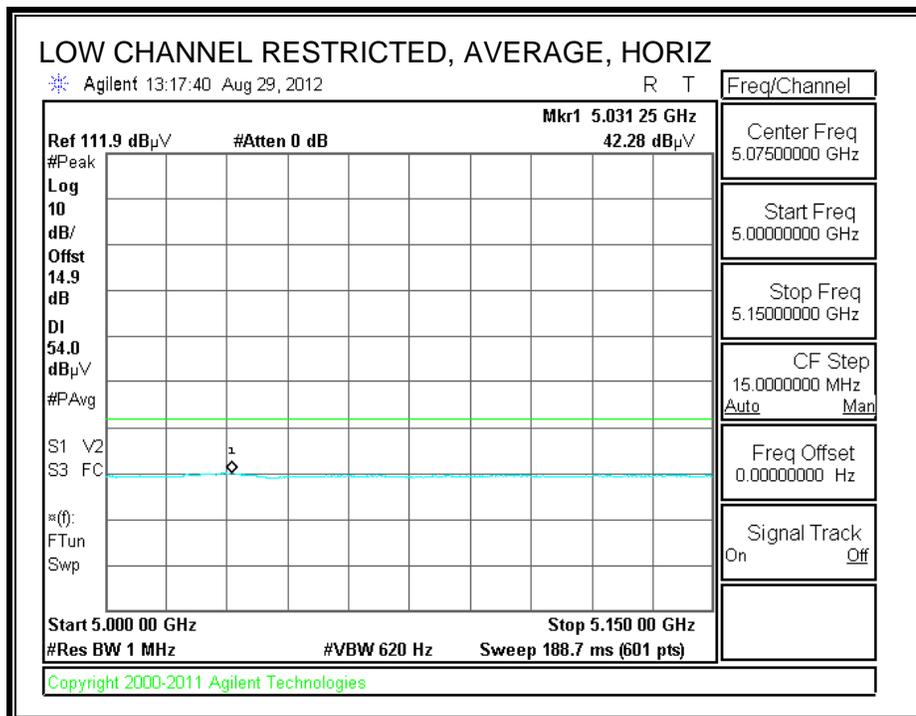
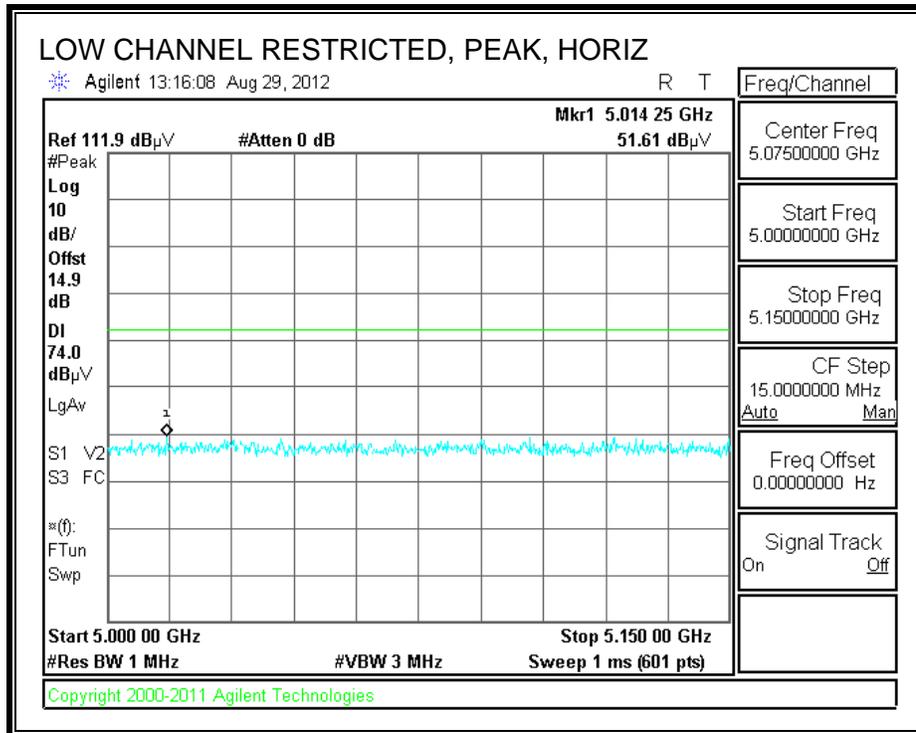


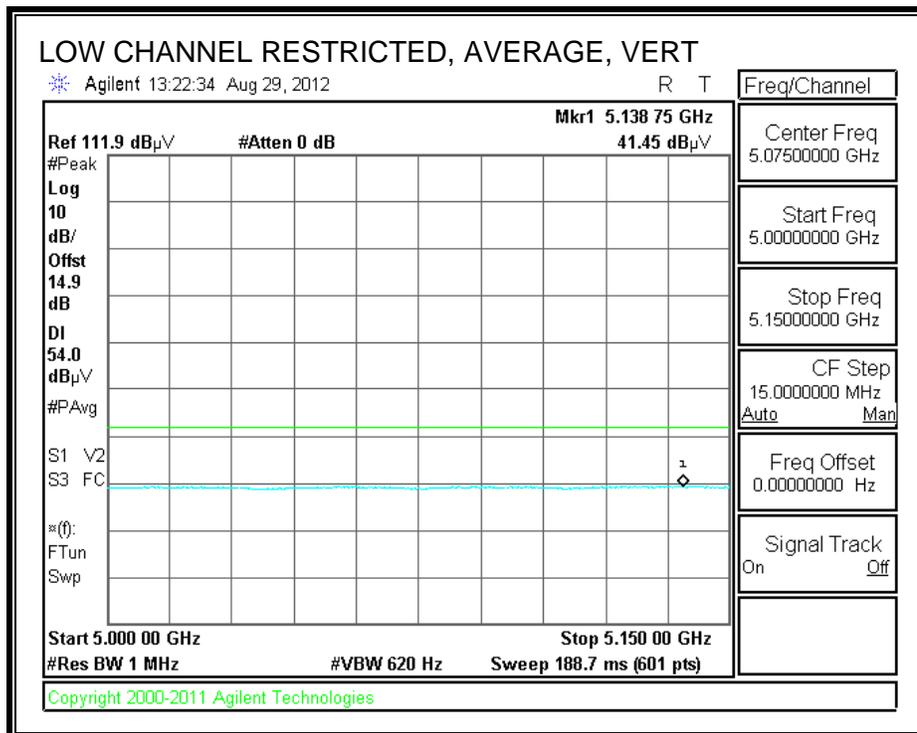
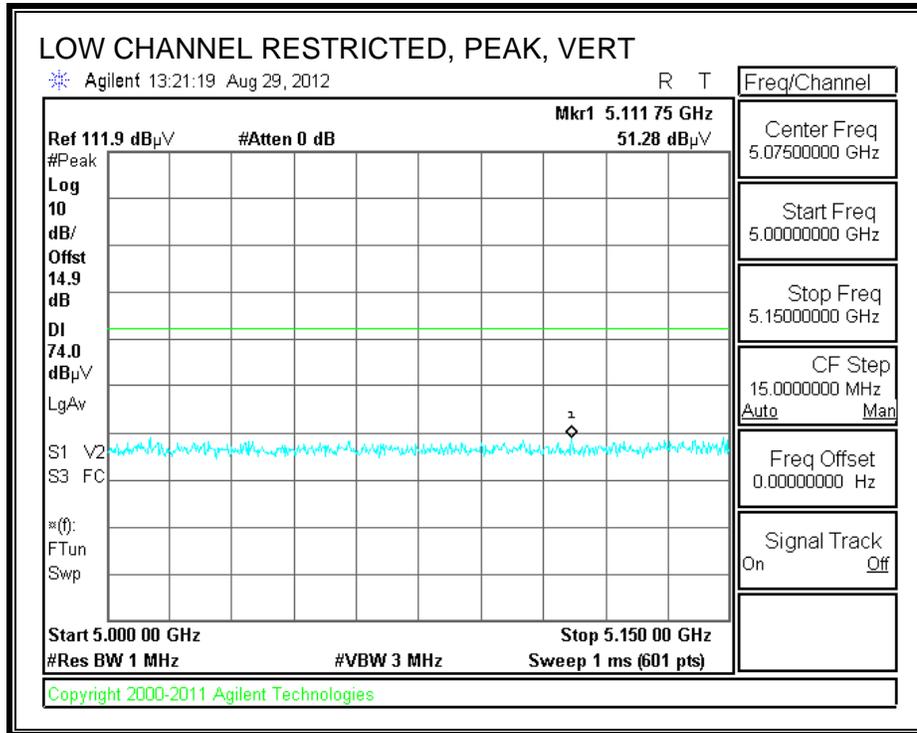
HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement													
Compliance Certification Services, Fremont 5m Chamber													
Test Engr:		David Garcia											
Date:		08/29/12											
Project #:		12U14550											
Company:		LG											
Test Target:		FCC 15.205											
Mode Oper:		11a Tx Continuously											
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
Low Ch. 5500 MHz													
11.000	3.0	40.5	38.4	10.1	-35.6	0.0	0.0	53.3	74.0	-20.7	H	P	
11.000	3.0	28.4	38.4	10.1	-35.6	0.0	0.0	41.1	54.0	-12.9	H	A	
11.000	3.0	36.5	38.4	10.1	-35.6	0.0	0.0	49.2	74.0	-24.8	V	P	
11.000	3.0	26.7	38.4	10.1	-35.6	0.0	0.0	39.5	54.0	-14.5	V	A	
Mid Ch. 5580 MHz													
11.160	3.0	44.0	38.5	10.2	-35.6	0.0	0.0	57.1	74.0	-16.9	H	P	
11.160	3.0	32.6	38.5	10.2	-35.6	0.0	0.0	45.8	54.0	-8.2	H	A	
22.320	3.0	33.1	37.6	15.1	-34.3	0.0	0.0	51.5	74.0	-22.5	H	P	
22.320	3.0	23.4	37.6	15.1	-34.3	0.0	0.0	41.8	54.0	-12.2	H	A	
11.160	3.0	39.5	38.5	10.2	-33.4	0.0	0.0	54.8	74.0	-19.2	V	P	
11.160	3.0	24.7	38.5	10.2	-33.4	0.0	0.0	40.1	54.0	-13.9	V	A	
22.320	3.0	33.1	36.9	15.1	-32.4	0.0	0.0	52.6	74.0	-21.4	V	P	
22.320	3.0	23.3	36.9	15.1	-32.4	0.0	0.0	42.8	54.0	-11.2	V	A	
Hi Ch. 5700 mMHz													
11.400	3.0	35.4	38.8	10.4	-33.2	0.0	0.0	51.5	74.0	-22.5	H	P	
11.400	3.0	23.9	38.8	10.4	-33.2	0.0	0.0	40.0	54.0	-14.0	H	A	
22.800	3.0	34.1	35.9	15.2	-32.4	0.0	0.0	52.9	74.0	-21.1	H	P	
22.800	3.0	23.7	35.9	15.2	-32.4	0.0	0.0	42.4	54.0	-11.6	H	A	
11.400	3.0	34.5	38.8	10.4	-33.2	0.0	0.0	50.6	74.0	-23.4	V	P	
11.400	3.0	23.9	38.8	10.4	-33.2	0.0	0.0	40.0	54.0	-14.0	V	A	
22.800	3.0	34.5	35.9	15.2	-32.4	0.0	0.0	53.3	74.0	-20.7	V	P	
22.800	3.0	23.7	35.9	15.2	-32.4	0.0	0.0	42.5	54.0	-11.5	V	A	
Rev. 4.1.2.7													
Note: No other emissions were detected above the system noise floor.													

9.5. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.2 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)



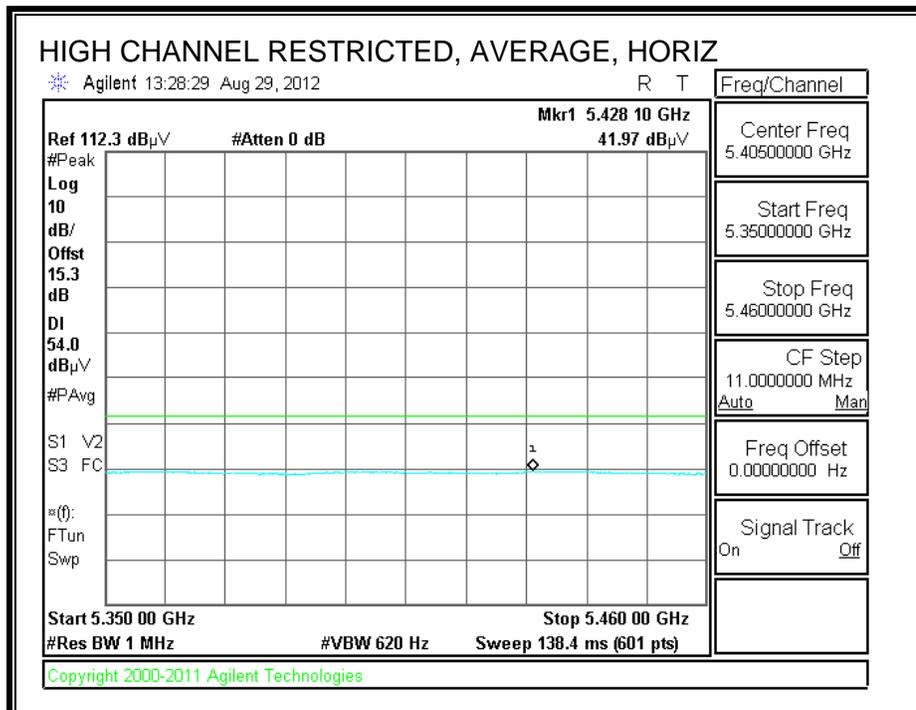
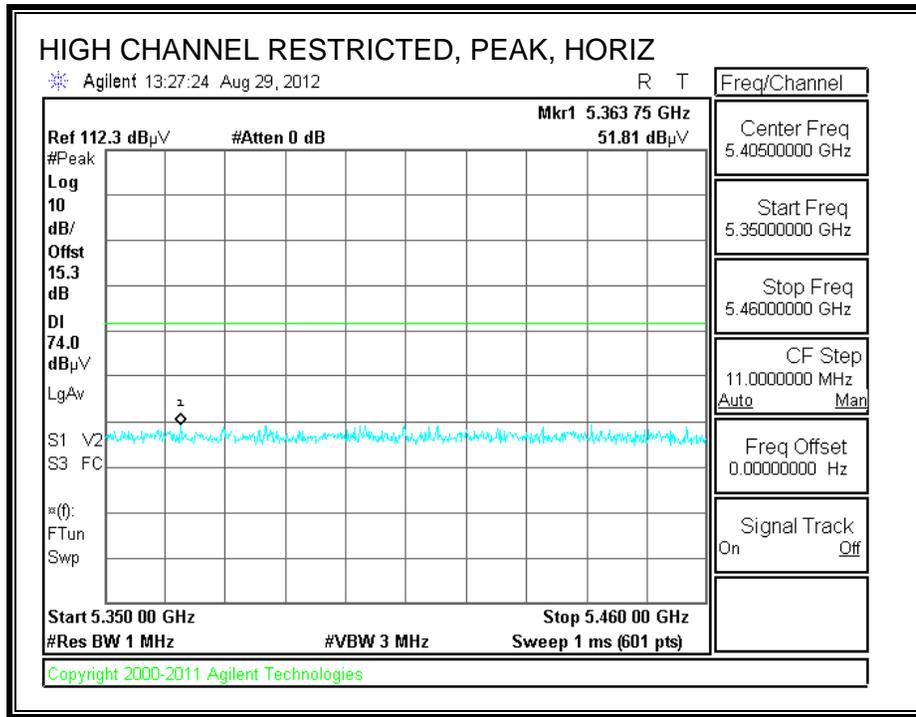


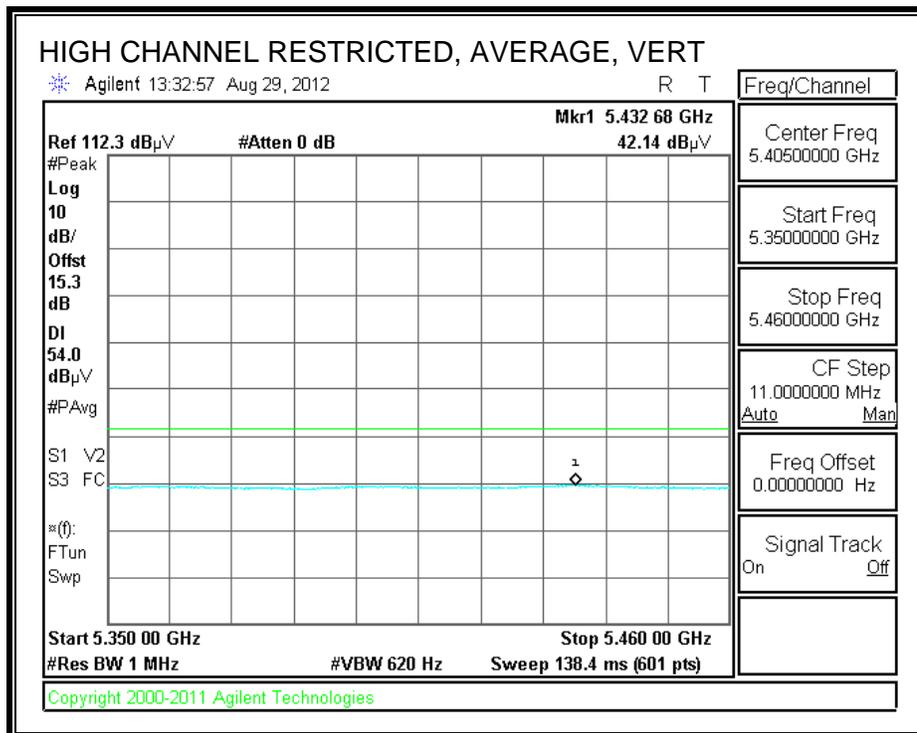
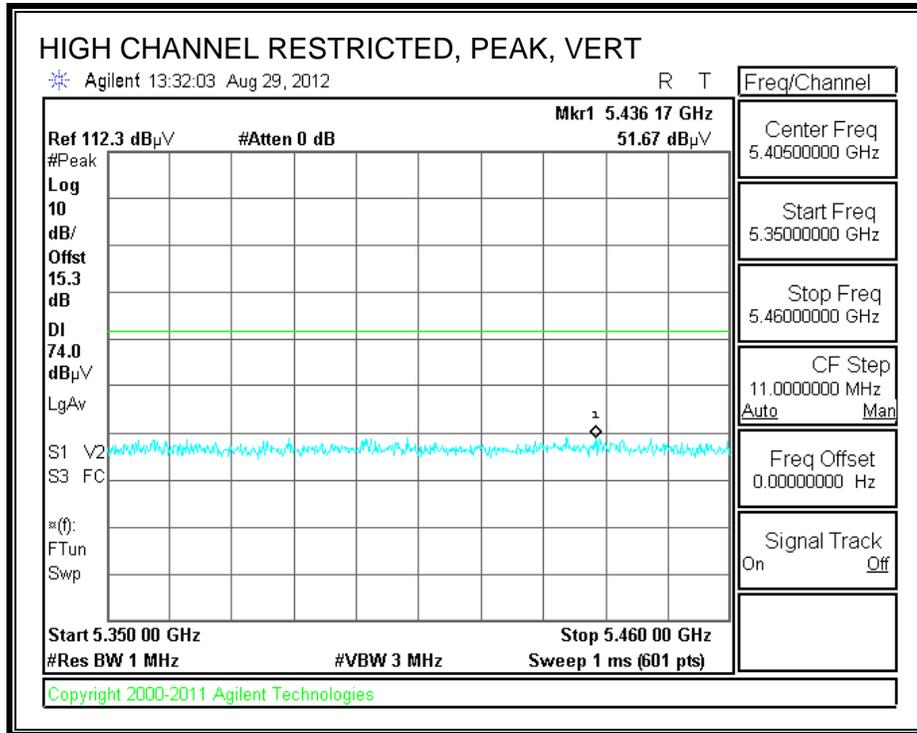
HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement													
Compliance Certification Services, Fremont 5m Chamber													
Test Engr:		David Garcia											
Date:		08/30/12											
Project #:		12U14550											
Company:		LG											
Test Target:		FCC 15.205											
Mode Oper:		11n Tx Continuously											
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
Low Ch. 5180 MHz													
15.540	3.0	35.4	39.1	12.5	-31.9	0.0	0.0	55.0	74.0	-19.0	H	P	
15.540	3.0	24.7	39.1	12.5	-31.9	0.0	0.0	44.4	54.0	-9.6	H	A	
20.720	3.0	33.9	40.2	14.6	-32.5	0.0	0.0	56.2	74.0	-17.8	H	P	
20.720	3.0	23.5	40.2	14.6	-32.5	0.0	0.0	45.9	54.0	-8.1	H	A	
15.540	3.0	35.2	39.1	12.5	-31.9	0.0	0.0	54.9	74.0	-19.1	V	P	
15.540	3.0	24.0	39.1	12.5	-31.9	0.0	0.0	43.6	54.0	-10.4	V	A	
20.720	3.0	34.4	40.2	14.6	-32.5	0.0	0.0	56.7	74.0	-17.3	V	P	
20.720	3.0	23.5	40.2	14.6	-32.5	0.0	0.0	45.9	54.0	-8.1	V	A	
Mid Ch. 5200 MHz													
15.600	3.0	35.3	38.8	12.5	-31.9	0.0	0.0	54.7	74.0	-19.3	H	P	
15.600	3.0	24.5	38.8	12.5	-31.9	0.0	0.0	43.9	54.0	-10.1	H	A	
20.800	3.0	33.5	40.1	14.6	-32.5	0.0	0.0	55.7	74.0	-18.3	H	P	
20.800	3.0	23.4	40.1	14.6	-32.5	0.0	0.0	45.6	54.0	-8.4	H	A	
15.600	3.0	34.7	38.8	12.5	-31.9	0.0	0.0	54.2	74.0	-19.8	V	P	
15.600	3.0	24.5	38.8	12.5	-31.9	0.0	0.0	43.9	54.0	-10.1	V	A	
20.800	3.0	34.0	40.1	14.6	-32.5	0.0	0.0	56.2	74.0	-17.8	V	P	
20.800	3.0	23.4	40.1	14.6	-32.5	0.0	0.0	45.6	54.0	-8.4	V	A	
Hi Ch. 5240 MHz													
15.720	3.0	35.0	38.4	12.6	-31.9	0.0	0.0	54.1	74.0	-19.9	H	P	
15.720	3.0	25.1	38.4	12.6	-31.9	0.0	0.0	44.2	54.0	-9.8	H	A	
20.960	3.0	33.1	39.7	14.6	-32.5	0.0	0.0	55.0	74.0	-19.0	H	P	
20.960	3.0	23.0	39.7	14.6	-32.5	0.0	0.0	44.9	54.0	-9.1	H	A	
15.720	3.0	35.2	38.4	12.6	-31.9	0.0	0.0	54.3	74.0	-19.7	V	P	
15.720	3.0	24.7	38.4	12.6	-31.9	0.0	0.0	43.8	54.0	-10.2	V	A	
20.960	3.0	33.8	39.7	14.6	-32.5	0.0	0.0	55.6	74.0	-18.4	V	P	
20.960	3.0	23.1	39.7	14.6	-32.5	0.0	0.0	44.9	54.0	-9.1	V	A	
Rev. 4.1.2.7													
Note: No other emissions were detected above the system noise floor.													

9.6. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.3 GHz BAND

RESTRICTED BANDEDGE (HIGH CHANNEL)



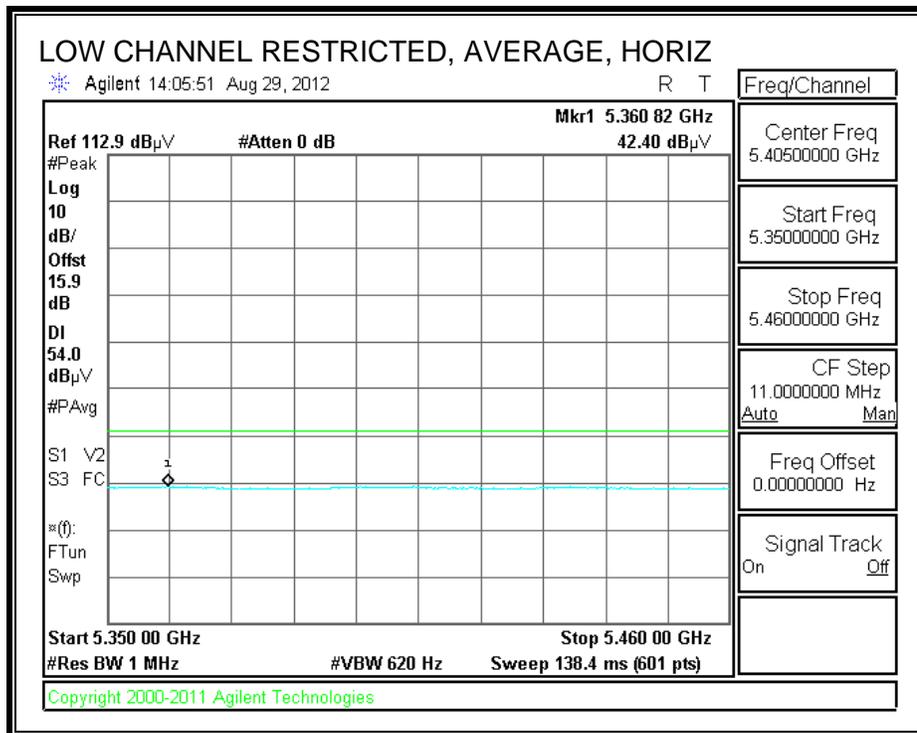
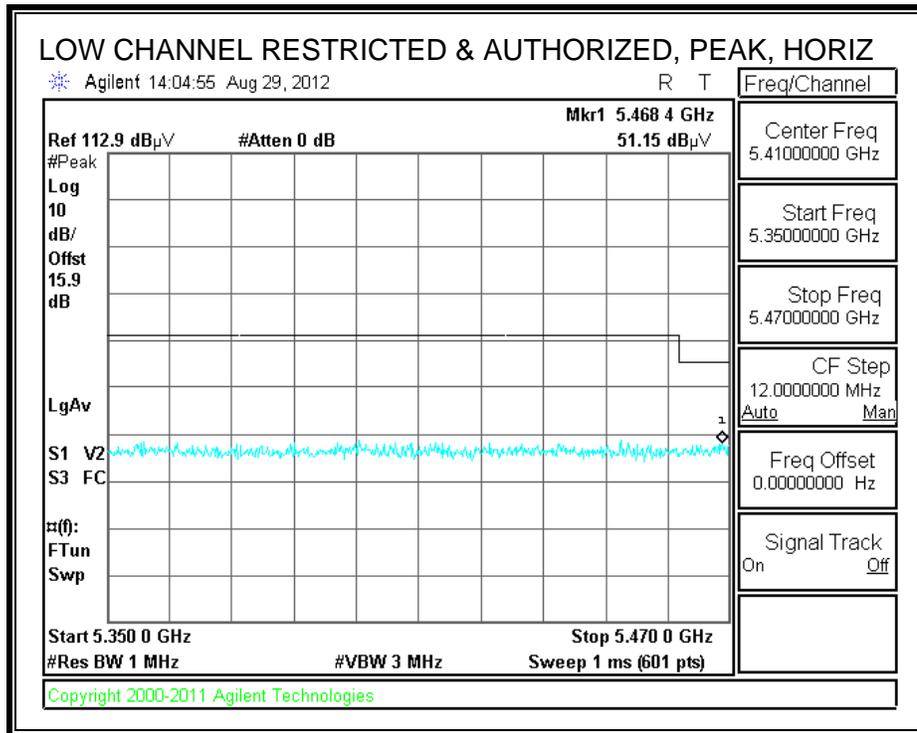


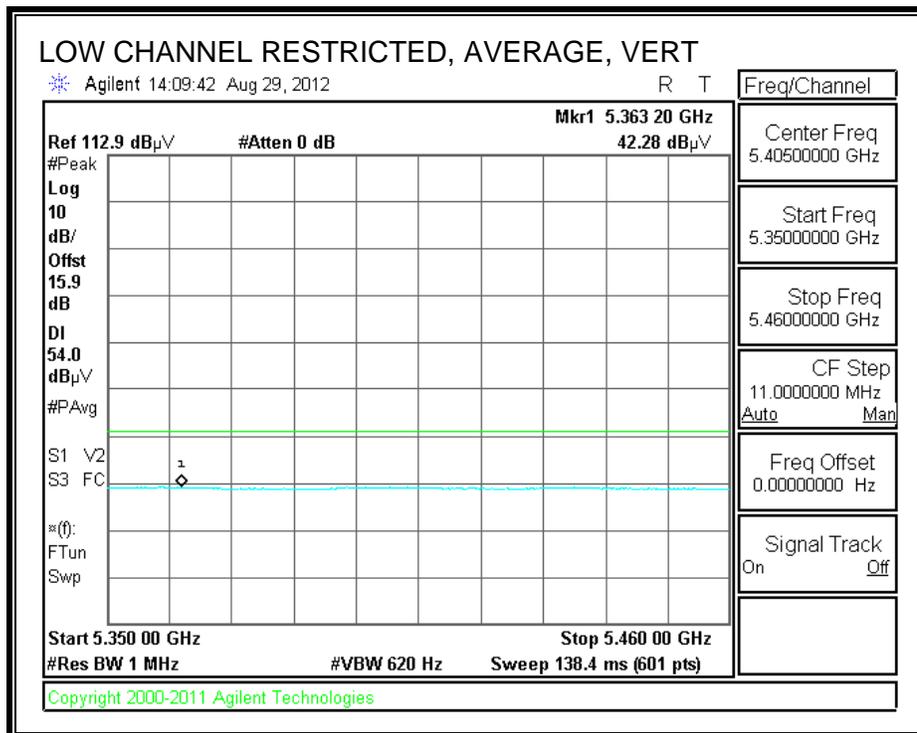
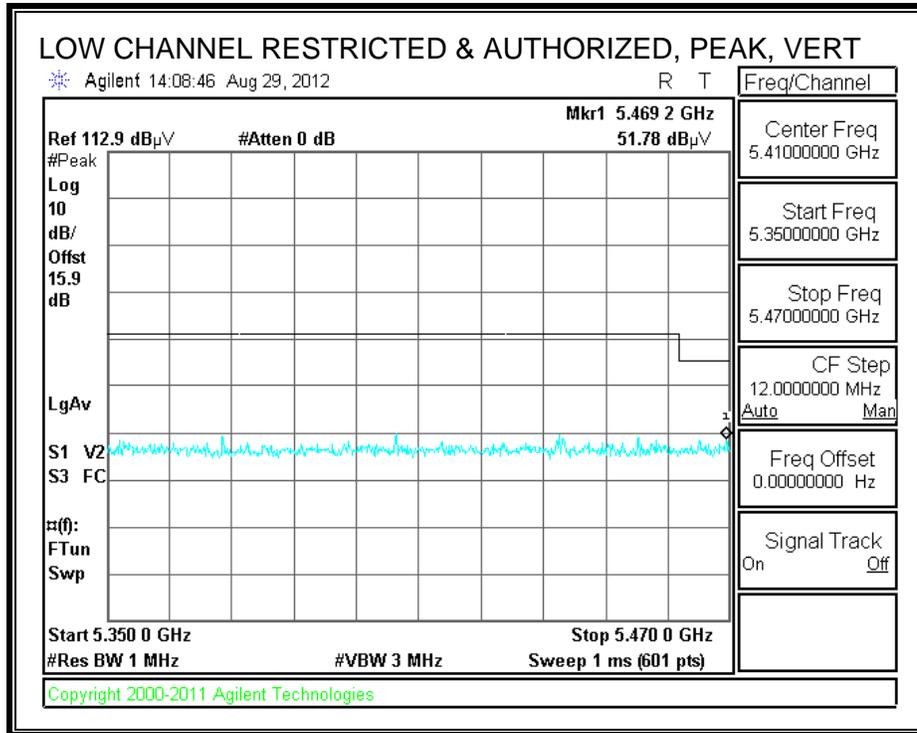
HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement													
Compliance Certification Services, Fremont 5m Chamber													
Test Engr:		David Garcia											
Date:		08/30/12											
Project #:		12U14550											
Company:		LG											
Test Target:		FCC 15. 205											
Mode Oper:		11n Tx Continuously											
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
Low Ch. 5260 MHz													
15.780	3.0	36.3	38.2	12.6	-31.9	0.0	0.0	55.3	74.0	-18.7	H	P	
15.780	3.0	25.1	38.2	12.6	-31.9	0.0	0.0	44.0	54.0	-10.0	H	A	
21.040	3.0	33.5	39.6	14.7	-32.5	0.0	0.0	55.3	74.0	-18.7	H	P	
21.040	3.0	23.4	39.6	14.7	-32.5	0.0	0.0	45.1	54.0	-8.9	H	A	
15.780	3.0	36.0	38.2	12.6	-31.9	0.0	0.0	55.0	74.0	-19.0	V	P	
15.780	3.0	25.1	38.2	12.6	-31.9	0.0	0.0	44.0	54.0	-10.0	V	A	
21.040	3.0	33.6	39.6	14.7	-32.5	0.0	0.0	55.3	74.0	-18.7	V	P	
21.040	3.0	23.4	39.6	14.7	-32.5	0.0	0.0	45.1	54.0	-8.9	V	A	
Mid Ch. 5300 MHz													
15.900	3.0	34.9	37.8	12.7	-31.8	0.0	0.0	53.5	74.0	-20.5	H	P	
15.900	3.0	24.7	37.8	12.7	-31.8	0.0	0.0	43.3	54.0	-10.7	H	A	
21.200	3.0	34.2	39.2	14.7	-32.5	0.0	0.0	55.6	74.0	-18.4	H	P	
21.200	3.0	23.6	39.2	14.7	-32.5	0.0	0.0	45.0	54.0	-9.0	H	A	
15.900	3.0	35.1	37.8	12.7	-31.8	0.0	0.0	53.7	74.0	-20.3	V	P	
15.900	3.0	24.8	37.8	12.7	-31.8	0.0	0.0	43.4	54.0	-10.6	V	A	
21.200	3.0	33.9	39.2	14.7	-32.5	0.0	0.0	55.4	74.0	-18.6	V	P	
21.200	3.0	23.6	39.2	14.7	-32.5	0.0	0.0	45.0	54.0	-9.0	V	A	
Hi Ch. 5320 MHz													
15.960	3.0	35.0	37.6	12.7	-31.8	0.0	0.0	53.4	74.0	-20.6	H	P	
15.960	3.0	24.8	37.6	12.7	-31.8	0.0	0.0	43.3	54.0	-10.7	H	A	
21.280	3.0	33.2	39.1	14.7	-32.5	0.0	0.0	54.5	74.0	-19.5	H	P	
21.280	3.0	23.0	39.1	14.7	-32.5	0.0	0.0	44.3	54.0	-9.7	H	A	
15.960	3.0	35.4	37.6	12.7	-31.8	0.0	0.0	53.8	74.0	-20.2	V	P	
15.960	3.0	24.9	37.6	12.7	-31.8	0.0	0.0	43.3	54.0	-10.7	V	A	
21.280	3.0	34.4	39.1	14.7	-32.5	0.0	0.0	55.7	74.0	-18.3	V	P	
21.280	3.0	23.0	39.1	14.7	-32.5	0.0	0.0	44.3	54.0	-9.7	V	A	
Rev. 4.1.2.7													
Note: No other emissions were detected above the system noise floor.													

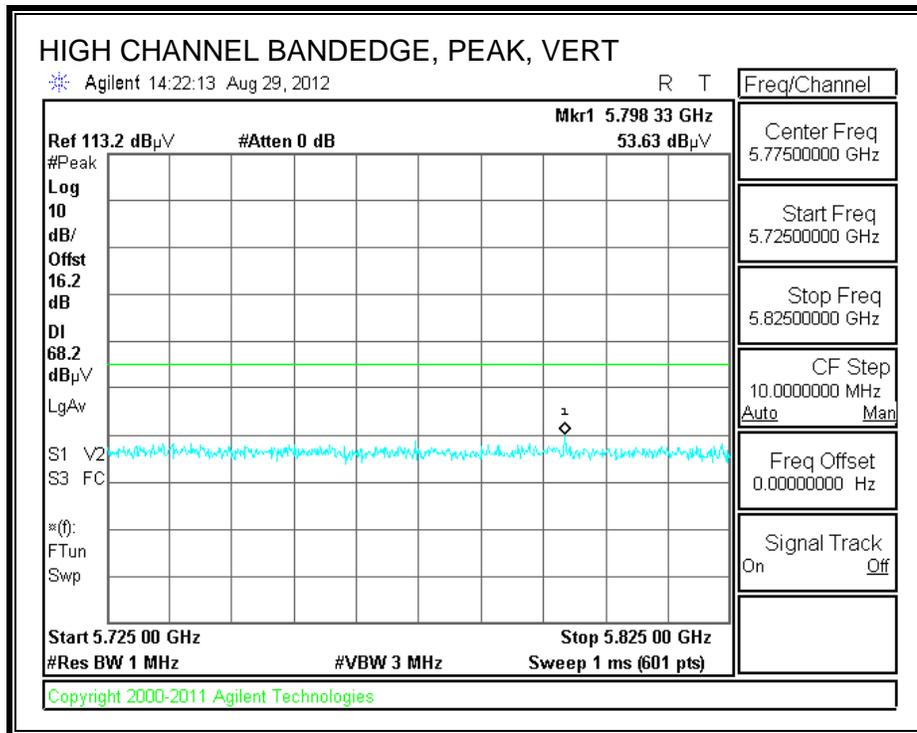
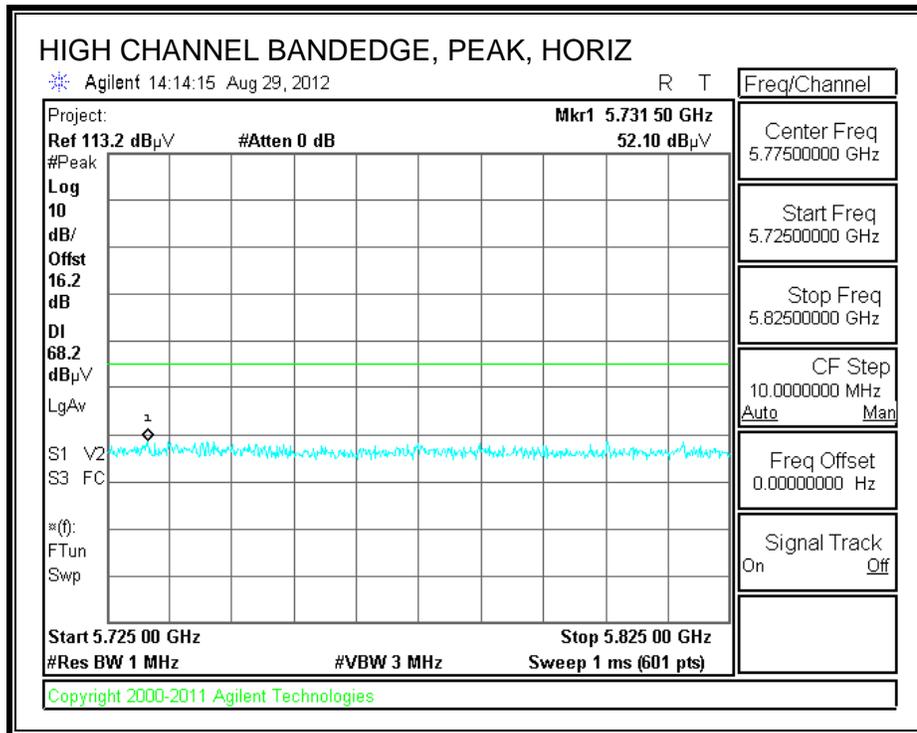
9.1. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.6 GHz BAND

RESTRICTED & AUTHORIZED BANDEDGE (LOW CHANNEL)





AUTHORIZED BANDEDGE (HIGH CHANNEL)

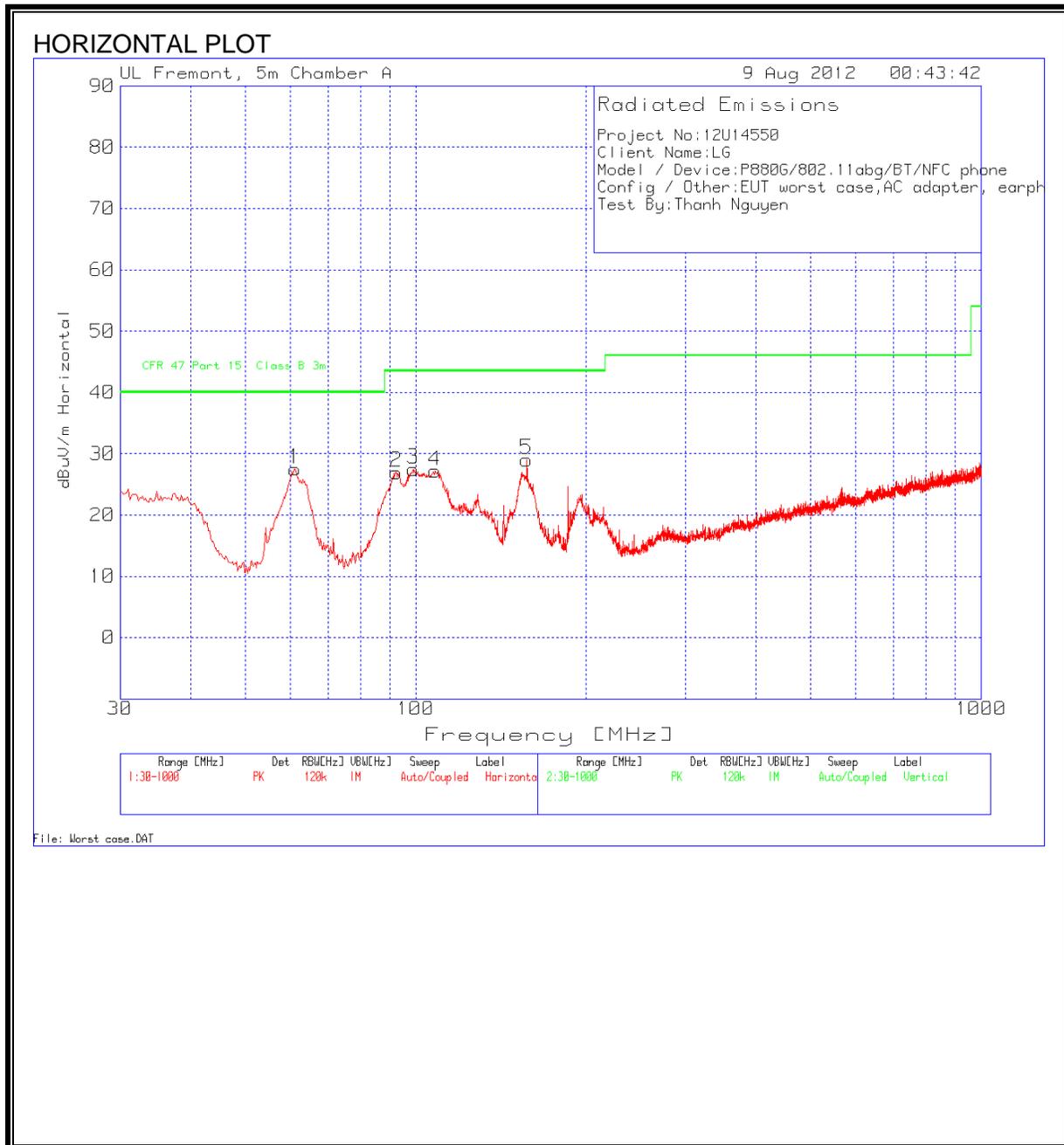


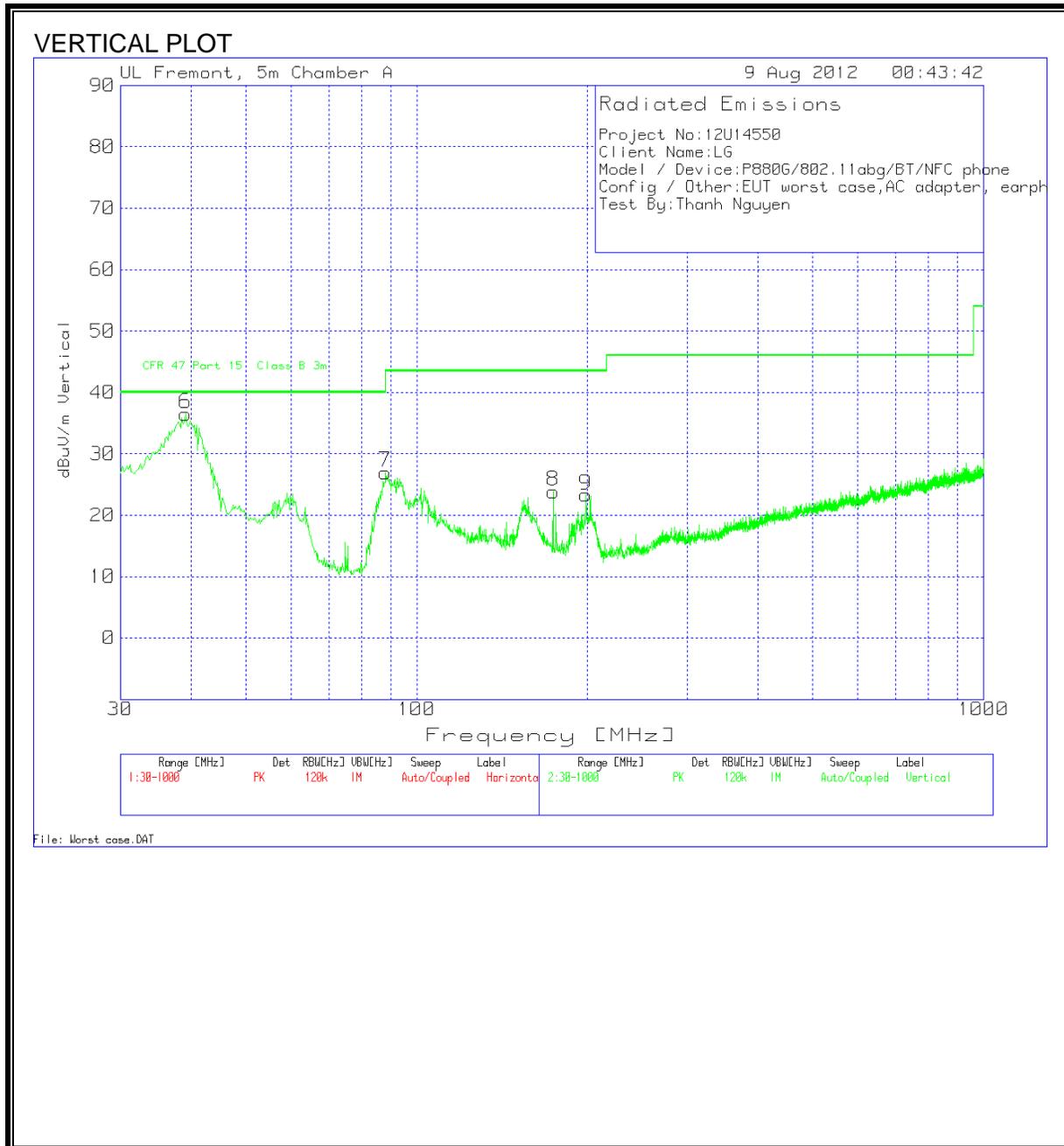
HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement													
Compliance Certification Services, Fremont 5m Chamber													
Test Engr:		David Garcia											
Date:		08/30/12											
Project #:		12U14550											
Company:		LG											
Test Target:		FCC 15.205											
Mode Oper:		11n Tx Continuously											
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
Low Ch. 5500 MHz													
11.000	3.0	40.8	38.4	10.1	-33.6	0.0	0.0	55.7	74.0	-18.3	H	P	
11.000	3.0	28.9	38.4	10.1	-33.6	0.0	0.0	43.7	54.0	-10.3	H	A	
11.000	3.0	33.9	38.4	10.1	-33.6	0.0	0.0	48.7	74.0	-25.3	V	P	
11.000	3.0	24.0	38.4	10.1	-33.6	0.0	0.0	38.8	54.0	-15.2	V	A	
Mid Ch. 5580 MHz													
11.160	3.0	39.7	38.5	10.2	-33.4	0.0	0.0	55.0	74.0	-19.0	H	P	
11.160	3.0	27.8	38.5	10.2	-33.4	0.0	0.0	43.1	54.0	-10.9	H	A	
22.320	3.0	33.2	36.9	15.1	-32.4	0.0	0.0	52.7	74.0	-21.3	H	P	
22.320	3.0	23.3	36.9	15.1	-32.4	0.0	0.0	42.8	54.0	-11.2	H	A	
11.160	3.0	35.2	38.5	10.2	-33.4	0.0	0.0	50.5	74.0	-23.5	V	P	
11.160	3.0	25.0	38.5	10.2	-33.4	0.0	0.0	40.4	54.0	-13.6	V	A	
22.320	3.0	34.1	36.9	15.1	-32.4	0.0	0.0	53.7	74.0	-20.3	V	P	
22.320	3.0	23.3	36.9	15.1	-32.4	0.0	0.0	42.8	54.0	-11.2	V	A	
Hi Ch. 5700 MHz													
11.400	3.0	34.5	38.8	10.4	-33.2	0.0	0.0	50.6	74.0	-23.4	H	P	
11.400	3.0	24.0	38.8	10.4	-33.2	0.0	0.0	40.1	54.0	-13.9	H	A	
22.800	3.0	35.0	35.9	15.2	-32.4	0.0	0.0	53.7	74.0	-20.3	H	P	
22.800	3.0	23.7	35.9	15.2	-32.4	0.0	0.0	42.4	54.0	-11.6	H	A	
11.400	3.0	34.1	38.8	10.4	-33.2	0.0	0.0	50.1	74.0	-23.9	V	P	
11.400	3.0	23.9	38.8	10.4	-33.2	0.0	0.0	40.0	54.0	-14.0	V	A	
22.800	3.0	34.5	35.9	15.2	-32.4	0.0	0.0	53.2	74.0	-20.8	V	P	
22.800	3.0	23.6	35.9	15.2	-32.4	0.0	0.0	42.4	54.0	-11.6	V	A	
Rev. 4.1.2.7													
Note: No other emissions were detected above the system noise floor.													

9.2. WORST-CASE BELOW 1 GHz

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





DATA

Project No:	12U14550								
Client Name:	LG								
Model / Device:	P880G/802.11abg/BT/NFC phone								
Config / Other:	EUT worst case,AC adapter, earph								
Test By:	Thanh Nguyen								

30 - 1000MHz

Test Frequency	Meter Reading	Detector	25MHz-1GHz ChmbrA Amplified .TX (dB)	T243 Sunol Bilog.TXT (dB)	dBuV/m	CFR 47 Part 15 Class B 3m	Margin	Height [cm]	Polarity
61.209	47.33	PK	-27.2	7.4	27.53	40	-12.47	300	Horz
92.4181	45.89	PK	-27	8.1	26.99	43.5	-16.51	200	Horz
99.0088	44.42	PK	-26.9	9.9	27.42	43.5	-16.08	300	Horz
108.3133	41.65	PK	-26.8	12.3	27.15	43.5	-16.35	300	Horz
157.3561	43.49	PK	-26.5	12	28.99	43.5	-14.51	200	Horz
39.1107	49.24	PK	-27.4	14.6	36.44	40	-3.56	100	Vert
88.1535	46.52	PK	-27	7.4	26.92	43.5	-16.58	100	Vert
174.2206	38.85	PK	-26.4	11.4	23.85	43.5	-19.65	100	Vert
199.0328	37.28	PK	-26.2	12.2	23.28	43.5	-20.22	100	Vert

PK - Peak detector
 QP - Quasi-Peak detector
 Av - Average detector

10. 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

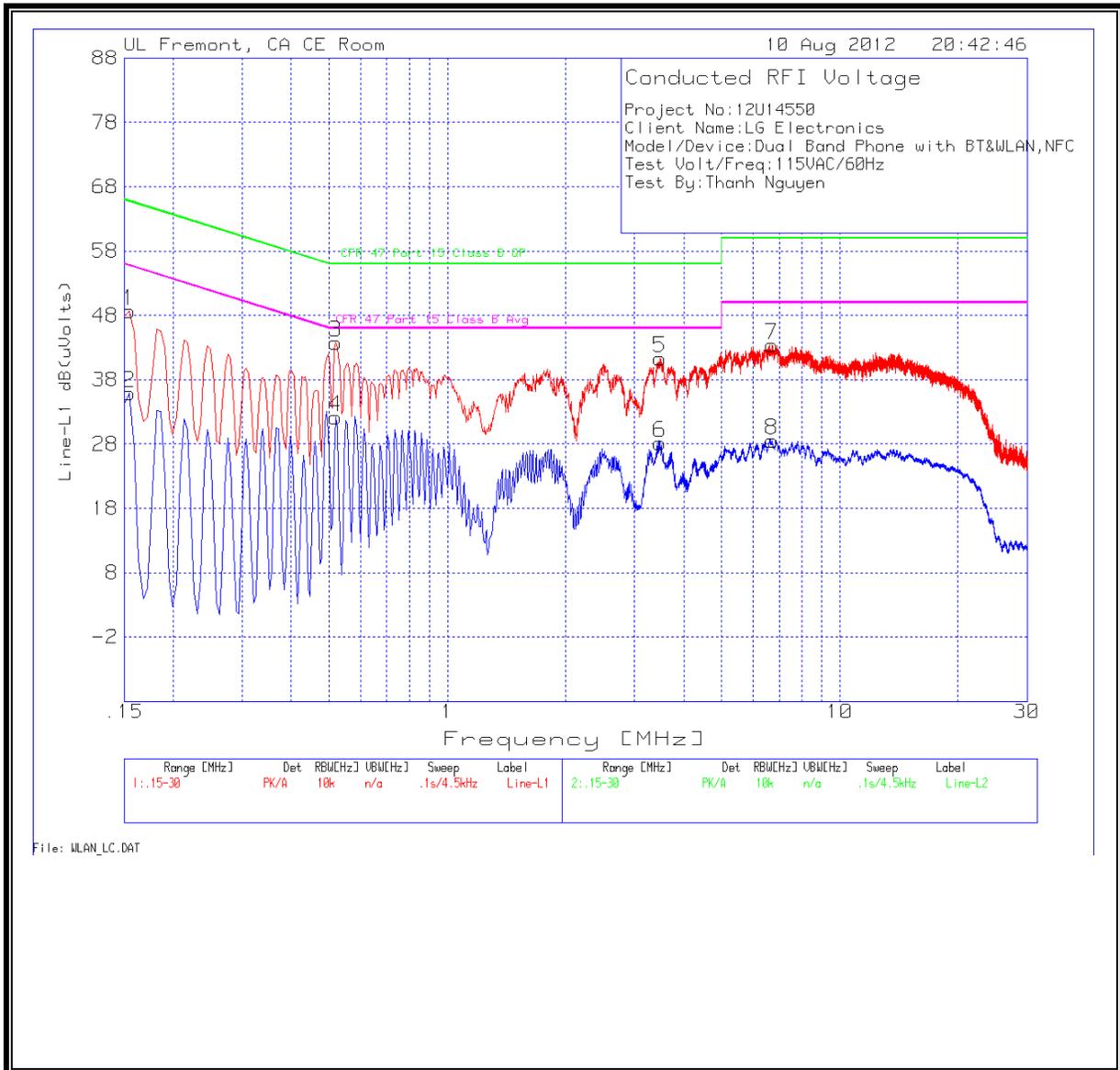
ANSI C63.4

RESULTS

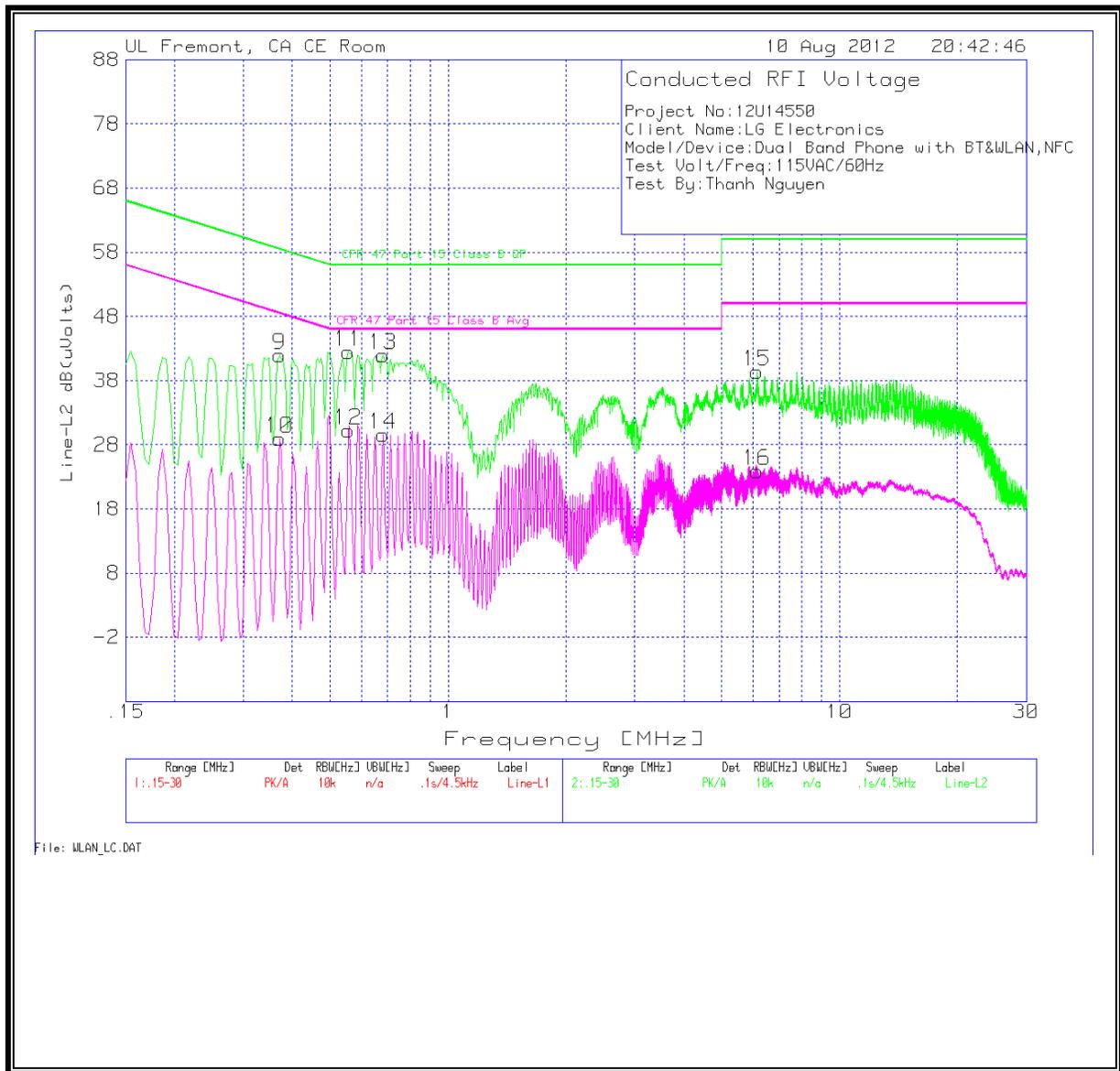
6 WORST EMISSIONS

Project No:12U14550									
Client Name:LG Electronics									
Model/Device:Dual Band Phone with BT&WLAN,NFC									
Test Volt/Freq:115VAC/60Hz									
Test By:Thanh Nguyen									
Line-L1 .15 - 30MHz									
Test Frequency	Meter Reading	Detector	T24 IL L1.TXT (dB)	LC Cables 1&3.TXT (dB)	dB(uVolts)	CFR 47 Part 15 Class B QP	Margin	CFR 47 Part 15 Class B Avg	Margin
0.1545	48.52	PK	0.1	0	48.62	65.8	-17.18	-	-
0.1545	35.78	Av	0.1	0	35.88	-	-	55.8	-19.92
0.519	43.72	PK	0.1	0	43.82	56	-12.18	-	-
0.519	32.03	Av	0.1	0	32.13	-	-	46	-13.87
3.489	41.11	PK	0.1	0.1	41.31	56	-14.69	-	-
3.489	27.99	Av	0.1	0.1	28.19	-	-	46	-17.81
6.7155	43.15	PK	0.1	0.1	43.35	60	-16.65	-	-
6.7155	28.33	Av	0.1	0.1	28.53	-	-	50	-21.47
Line-L2 .15 - 30MHz									
Test Frequency	Meter Reading	Detector	T24 IL L1.TXT (dB)	LC Cables 1&3.TXT (dB)	dB(uVolts)	CFR 47 Part 15 Class B QP	Margin	CFR 47 Part 15 Class B Avg	Margin
0.3705	41.86	PK	0.1	0	41.96	58.5	-16.54	-	-
0.3705	28.8	Av	0.1	0	28.9	-	-	48.5	-19.6
0.555	42.36	PK	0.1	0	42.46	56	-13.54	-	-
0.555	30.17	Av	0.1	0	30.27	-	-	46	-15.73
0.681	41.83	PK	0.1	0	41.93	56	-14.07	-	-
0.681	29.44	Av	0.1	0	29.54	-	-	46	-16.46
6.153	39.25	PK	0.1	0.1	39.45	60	-20.55	-	-
6.153	23.77	Av	0.1	0.1	23.97	-	-	50	-26.03

LINE 1 RESULTS



LINE 2 RESULTS



11. DYNAMIC FREQUENCY SELECTION

11.1. OVERVIEW

11.1.1. 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
<i>Non-occupancy period</i>	30 minutes
<i>Channel Availability Check Time</i>	60 seconds
<i>Channel Move Time</i>	10 seconds
<i>Channel Closing Transmission Time</i>	200 milliseconds + approx. 60 milliseconds over remaining 10 second period
<p>The instant that the <i>Channel Move Time</i> and the <i>Channel Closing Transmission Time</i> begins is as follows: For the Short pulse radar Test Signals this instant is the end of the <i>Burst</i>. 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.</p>	

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

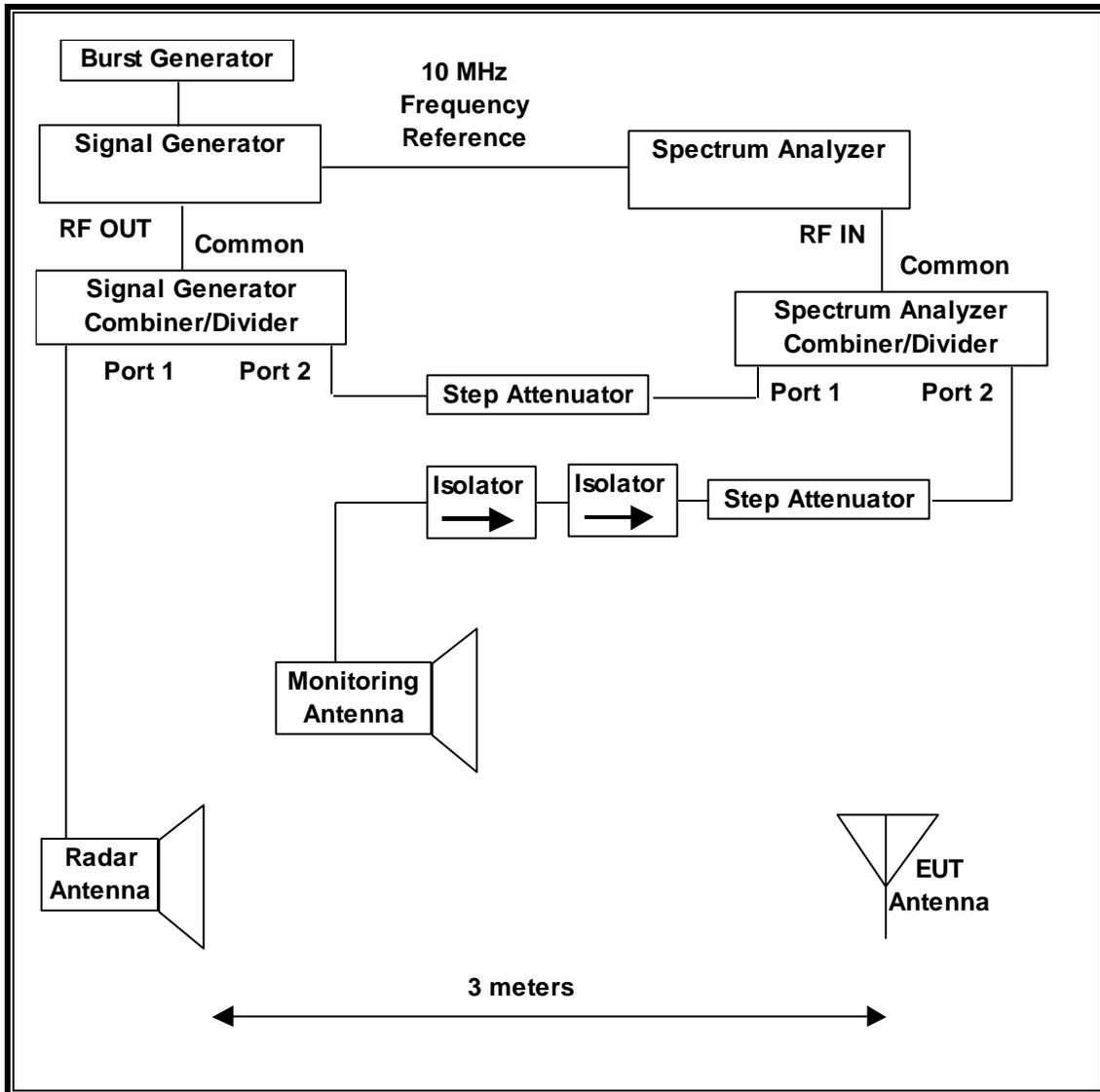
Radar Waveform	Bursts	Pulses per Burst	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Minimum Percentage of Successful Detection	Minimum Trials
5	8-20	1-3	50-100	5-20	1000-2000	80%	30

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

11.1.2. 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 Frequency 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.

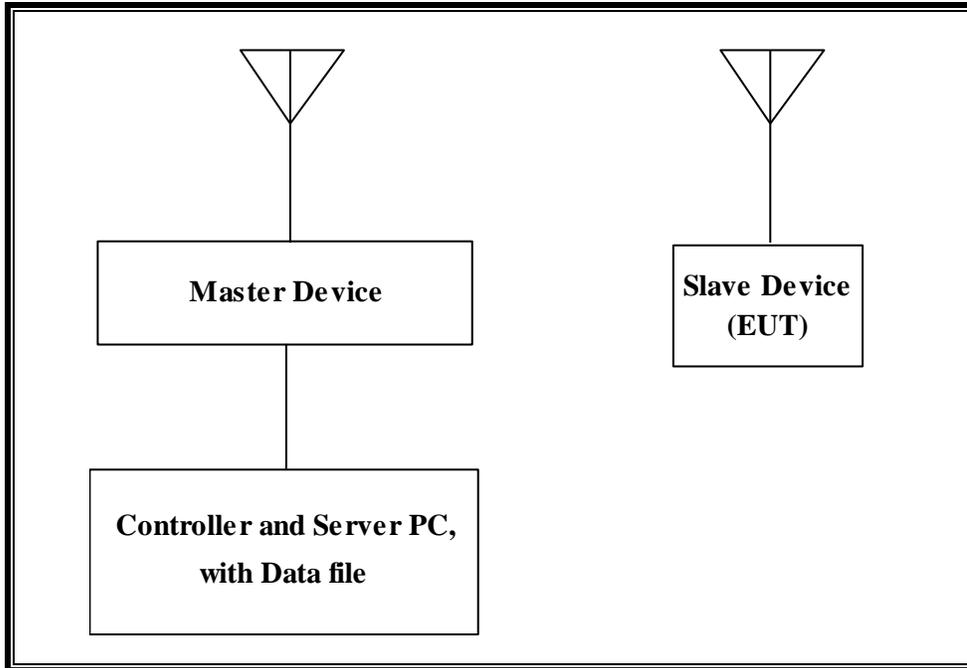
TEST AND MEASUREMENT EQUIPMENT

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	C00996	05/11/13
Vector Signal Generator, 20GHz	Agilent / HP	E8267C	C01066	11/17/12

11.1.3. SETUP OF EUT

RADIATED METHOD EUT TEST SETUP



SUPPORT EQUIPMENT

The following support equipment was utilized for the DFS tests documented in this report:

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
Wireless Access Point	Cisco	AIR-AP1252AG-A-K9	FTX120690N2	LDK102061
AC Adapter (AP)	Delta Electronics	EADP-45BB B	DTH112490BD	DoC
Notebook PC (Server/Controller)	Dell	PP18L	10657517725	DoC
AC Adapter (Server PC)	Dell	LA65SN0-00	CN-ODF263-71615 6AU-1019	DoC

11.1.4. DESCRIPTION OF EUT

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

The EUT is a Slave Device without Radar Detection.

The highest power level within these bands is 1.73 dBm EIRP in the 5250-5350 MHz band and 1.3 dBm EIRP in the 5470-5725 MHz band.

The only antenna assembly utilized with the EUT has a gain of -6.8 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 chains each connected to an antenna to perform radiated tests.

WLAN Traffic that meets or exceeds the minimum required loading is generated by transferring a 4.1Gbyte file from the controller/server PC to the EUT using FTP software package FileZilla version 3.5.0.

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

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

-6.80
-6.80
-6.80

The firmware installed in the EUT during testing was Kernel, Version 2.6.39.4. The test utility software used during testing was LG-P880g-V09a July 3, 2012. The driver installed was Android Version 2.6.39.4.

The software installed in the access point is revision 12.4(25d)JA1.

UNIFORM CHANNEL SPREADING

This requirement is not applicable to Slave radio devices.

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

The Master Device is a Cisco Access Point, FCC ID: LDK102061. The minimum antenna gain for the Master Device is 3.5 dBi.

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

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.

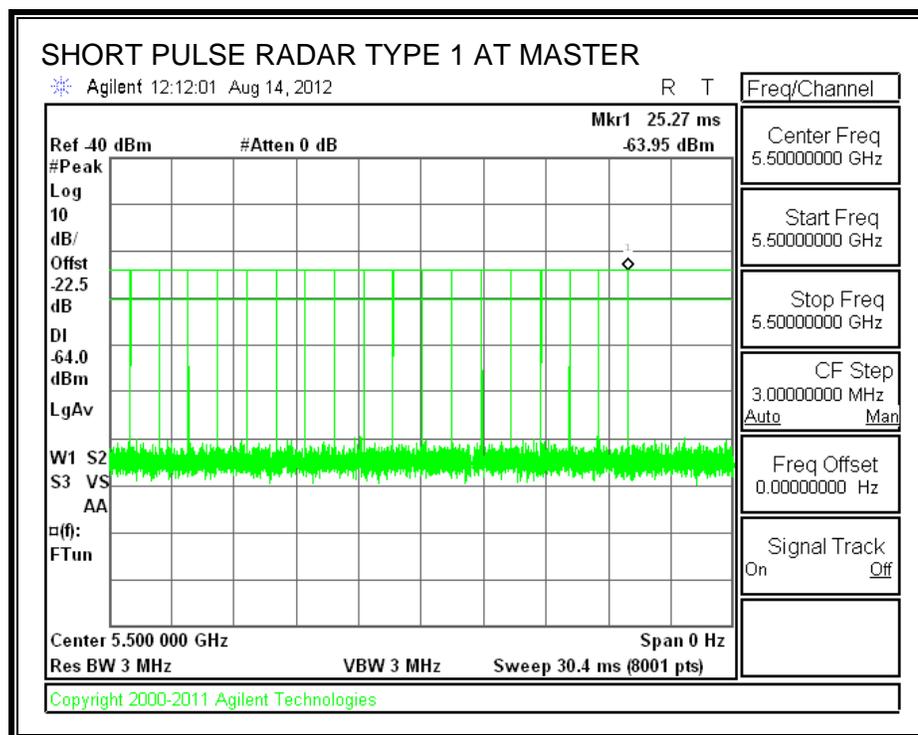
11.2. RESULTS FOR 20 MHz BANDWIDTH

11.2.1. TEST CHANNEL

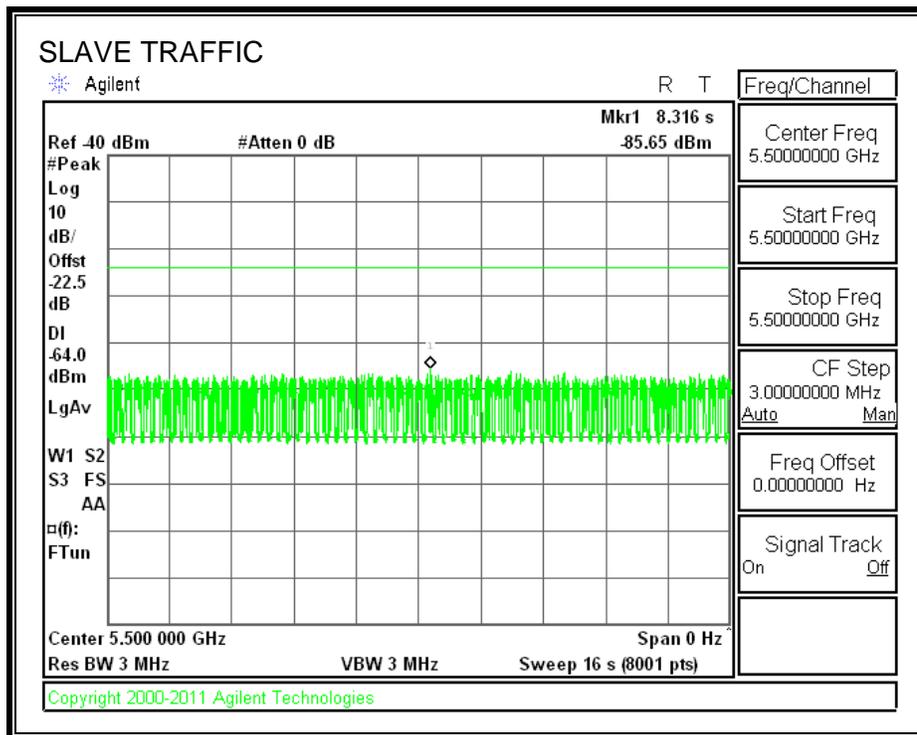
All tests were performed at a channel center frequency of 5500 MHz.

11.2.2. RADAR WAVEFORM AND TRAFFIC

RADAR WAVEFORM



TRAFFIC



11.2.3. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable.

11.2.4. 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).

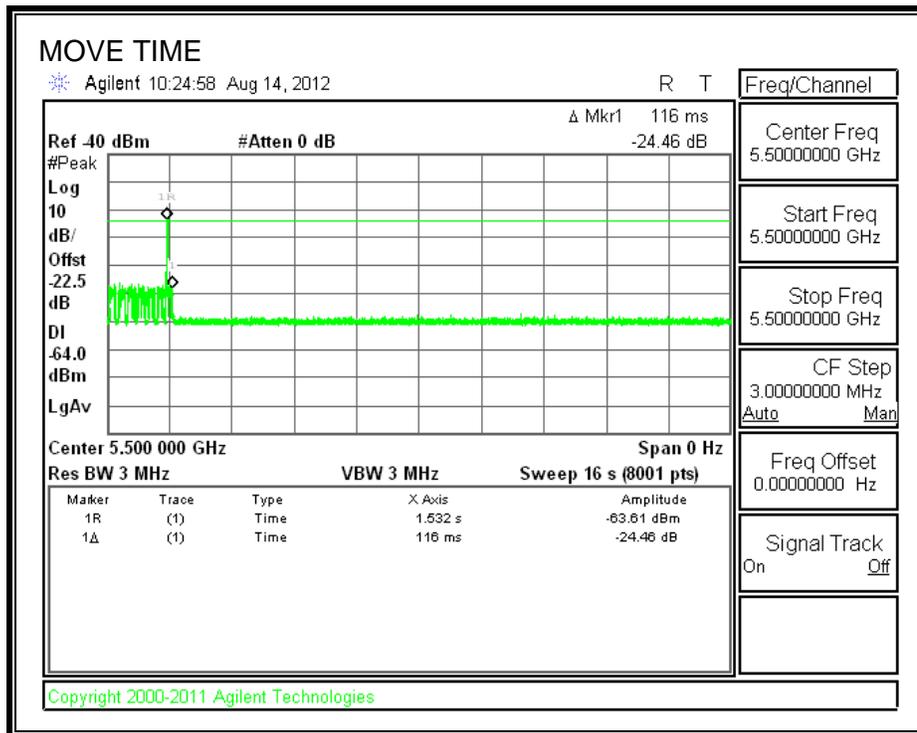
The observation period over which the IC aggregate time is calculated begins at (Reference Marker) and ends no earlier than (Reference Marker + 10 sec).

RESULTS

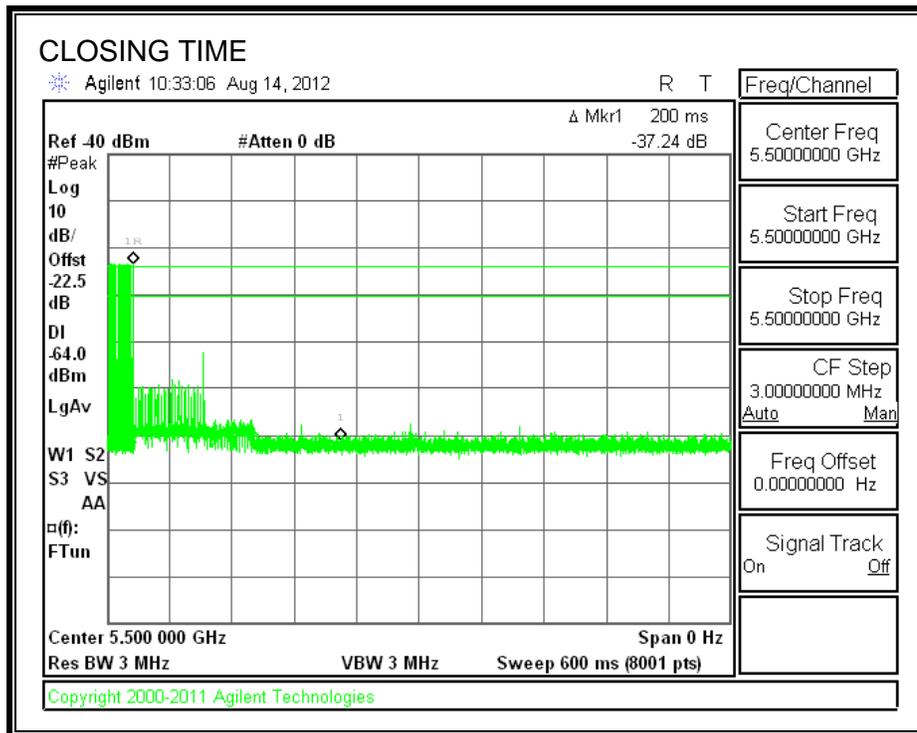
Agency	Channel Move Time (sec)	Limit (sec)
FCC / IC	0.116	10

Agency	Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
FCC	0.0	60
IC	116.0	260

MOVE TIME

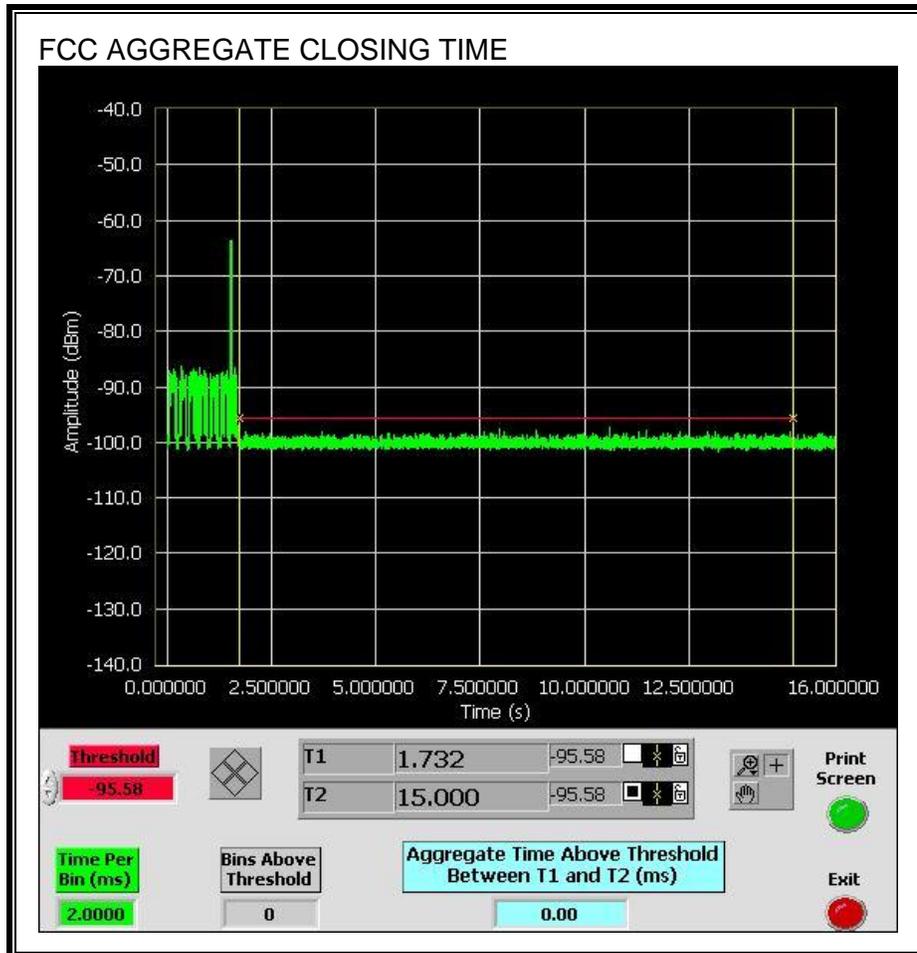


CHANNEL CLOSING TIME

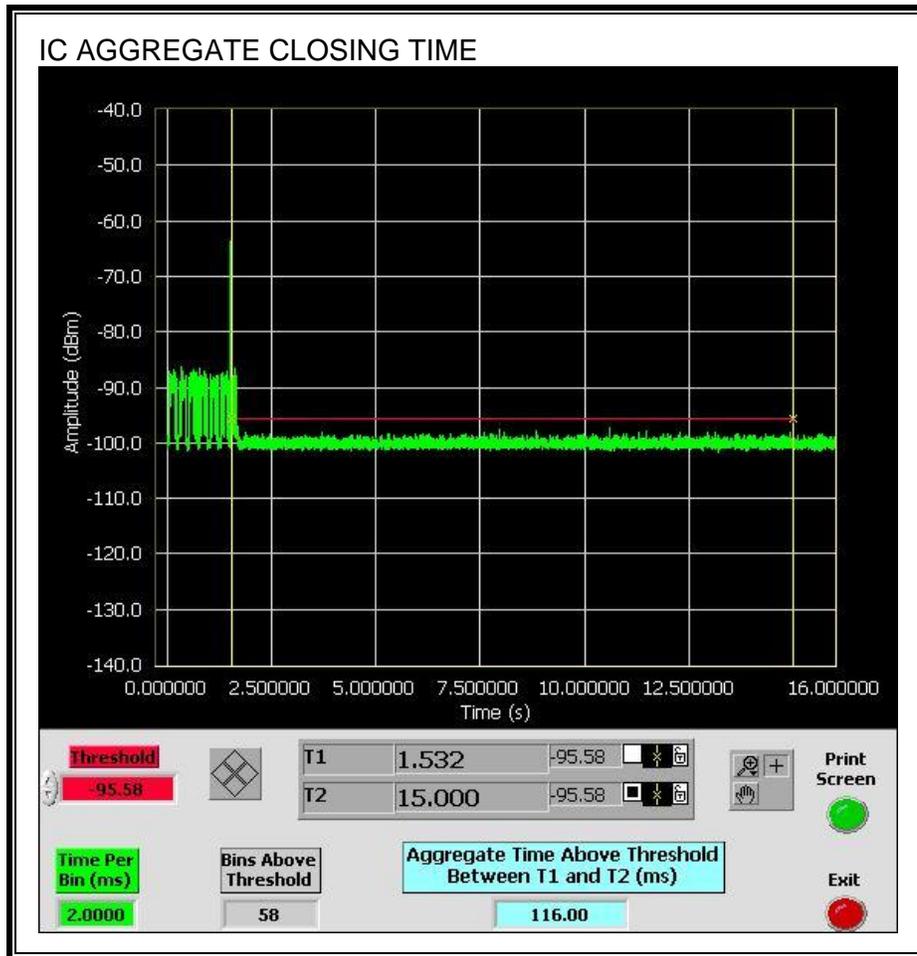


AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the FCC aggregate monitoring period.



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



11.2.5. NON-OCCUPANCY PERIOD

RESULTS

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

