



FCC CFR47 PART 15 SUBPART E

CERTIFICATION TEST REPORT

FOR

TRI-BAND PHONE WITH WLAN, BLUETOOTH, BLE, AND NFC

MODEL NUMBER: LG870, LG-LG870, LGLG870

FCC ID: ZNFLG870

REPORT NUMBER: 13U14917-5

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Prepared for

LG ELECTRONICS MOBILECOMM U.S.A., INC.

1000 SYLVAN AVENUE

ENGLEWOOD CLIFFS, NJ 07632

Prepared by

UL CCS

47173 BENICIA STREET

FREMONT, CA 94538, U.S.A.

TEL: (510) 771-1000

FAX: (510) 661-0888



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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. MEASURING INSTRUMENT CALIBRATION	7
4.2. SAMPLE CALCULATION	7
4.3. MEASUREMENT UNCERTAINTY.....	7
5. EQUIPMENT UNDER TEST	8
5.1. DESCRIPTION OF EUT	8
5.2. MAXIMUM OUTPUT POWER.....	8
5.3. DESCRIPTION OF AVAILABLE ANTENNAS	8
5.4. SOFTWARE AND FIRMWARE.....	8
5.5. WORST-CASE CONFIGURATION AND MODE.....	9
5.6. DESCRIPTION OF TEST SETUP.....	10
6. TEST AND MEASUREMENT EQUIPMENT	12
7. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS	13
7.1. ON TIME AND DUTY CYCLE RESULTS.....	13
7.2. DUTY CYCLE PLOTS	13
8. MEASUREMENT METHOD.....	15
9. ANTENNA PORT TEST RESULTS	16
9.1. 802.11a MODE IN THE 5.2 GHz BAND.....	16
9.1.1. 26 dB BANDWIDTH.....	16
9.1.2. 99% BANDWIDTH.....	19
9.1.3. AVERAGE POWER	22
9.1.4. OUTPUT POWER AND PPSD	23
9.1.5. PEAK EXCURSION.....	27
9.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND	28
9.2.1. 26 dB BANDWIDTH.....	28
9.2.2. 99% BANDWIDTH.....	31
9.2.3. AVERAGE POWER.....	34
9.2.4. OUTPUT POWER AND PPSD	35
9.2.5. PEAK EXCURSION.....	39
9.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND	40
9.3.1. 26 dB BANDWIDTH.....	40
9.3.2. 99% BANDWIDTH.....	42
9.3.3. AVERAGE POWER	44

9.3.4.	OUTPUT POWER AND PPSD	45
9.3.5.	PEAK EXCURSION	48
9.4.	<i>802.11a MODE IN THE 5.3 GHz BAND</i>	49
9.4.1.	26 dB BANDWIDTH	49
9.4.2.	99% BANDWIDTH	52
9.4.3.	AVERAGE POWER	55
9.4.4.	OUTPUT POWER AND PPSD	56
9.4.5.	PEAK EXCURSION	60
9.5.	<i>802.11n HT20 MODE IN THE 5.3 GHz BAND</i>	61
9.5.1.	26 dB BANDWIDTH	61
9.5.2.	99% BANDWIDTH	64
9.5.3.	AVERAGE POWER	67
9.5.4.	OUTPUT POWER AND PPSD	68
9.5.1.	PEAK EXCURSION	72
9.6.	<i>802.11n HT40 MODE IN THE 5.3 GHz BAND</i>	73
9.6.1.	26 dB BANDWIDTH	73
9.6.2.	99% BANDWIDTH	75
9.6.3.	AVERAGE POWER	77
9.6.4.	OUTPUT POWER AND PPSD	78
9.6.5.	PEAK EXCURSION	81
9.7.	<i>802.11a MODE IN THE 5.6 GHz BAND</i>	82
9.7.1.	26 dB BANDWIDTH	82
9.7.2.	99% BANDWIDTH	85
9.7.3.	AVERAGE POWER	88
9.7.4.	OUTPUT POWER AND PPSD	89
9.7.5.	PEAK EXCURSION	93
9.8.	<i>802.11n HT20 MODE IN THE 5.6 GHz BAND</i>	94
9.8.1.	26 dB BANDWIDTH	94
9.8.2.	99% BANDWIDTH	97
9.8.3.	AVERAGE POWER	100
9.8.4.	OUTPUT POWER AND PPSD	101
9.8.5.	PEAK EXCURSION	105
9.9.	<i>802.11n HT40 MODE IN THE 5.6 GHz BAND</i>	106
9.9.1.	26 dB BANDWIDTH	106
9.9.2.	99% BANDWIDTH	109
9.9.3.	AVERAGE POWER	112
9.9.4.	OUTPUT POWER AND PPSD	113
9.9.5.	PEAK EXCURSION	117
10.	RADIATED TEST RESULTS	118
10.1.	<i>LIMITS AND PROCEDURE</i>	118
10.2.	<i>TRANSMITTER ABOVE 1 GHz</i>	119
10.2.1.	TX ABOVE 1 GHz 802.11a MODE IN THE 5.2 GHz BAND	119
10.2.2.	TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.2 GHz BAND	124
10.2.3.	TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 5.2 GHz BAND	129
10.2.4.	TX ABOVE 1 GHz 802.11a MODE IN THE 5.3 GHz BAND	134
10.2.5.	TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.3 GHz BAND	139
10.2.6.	TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 5.3 GHz BAND	144
10.2.7.	TX ABOVE 1 GHz 802.11a MODE IN THE 5.6 GHz BAND	149

10.2.8.	TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.6 GHz BAND	155
10.2.9.	TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 5.5 GHz BAND	161
10.3.	WORST-CASE BELOW 1 GHz	167
11.	AC POWER LINE CONDUCTED EMISSIONS	170
12.	DYNAMIC FREQUENCY SELECTION	174
12.1.	OVERVIEW.....	174
12.1.1.	LIMITS	174
12.1.2.	TEST AND MEASUREMENT SYSTEM	177
12.1.3.	SETUP OF EUT	180
12.1.4.	DESCRIPTION OF EUT.....	181
12.2.	RESULTS FOR 20 MHz BANDWIDTH.....	181
12.2.1.	TEST CHANNEL	182
12.2.2.	RADAR WAVEFORM AND TRAFFIC	182
12.2.3.	OVERLAPPING CHANNEL TESTS	184
12.2.4.	MOVE AND CLOSING TIME.....	184
12.3.	RESULTS FOR 40 MHz BANDWIDTH.....	189
12.3.1.	TEST CHANNEL.....	189
12.3.2.	RADAR WAVEFORM AND TRAFFIC	189
12.3.3.	OVERLAPPING CHANNEL TESTS	191
12.3.4.	MOVE AND CLOSING TIME.....	191
12.3.5.	NON-OCCUPANCY PERIOD.....	196
13.	SETUP PHOTOS	197

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: LG ELECTRONICS MOBLILECOMM USA,INC.
1000 SYLVAN AVENUE
ENGLEWOOD, NJ 07632, USA

EUT DESCRIPTION: Tri-Band Phone with WLAN, Bluetooth, BLE, and NFC

MODEL: LG870, LG-LG870, LGLG870

SERIAL NUMBER: 99000250000211(CONDUCTED) AND
256691464000002160 (RADIATED)

DATE TESTED: JANUARY 7 TO 25 AND MARCH 14 TO 25, 2013

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart E	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:



Tim Lee
WiSE PROGRAM MANAGER
UL CCS

Tested By:



Tony Wagoner
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 Dual Band phone that also supports BLUETOOTH, WLAN and NFC.

5.2. 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	12.45	17.58
5180 - 5240	802.11n HT20	11.18	13.12
5190 - 5230	802.11n HT40	11.03	12.68
5260 - 5320	802.11a	12.08	16.14
5260 - 5320	802.11n HT20	11.11	12.91
5270 - 5310	802.11n HT40	10.58	11.43
5500 - 5700	802.11a	15.98	39.63
5500 - 5700	802.11n HT20	15.12	32.51
5510 - 5670	802.11n HT40	15.24	33.42

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an PIFA antenna, with a maximum gain of -2.1 dBi.

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was Kernel, Version 3.4.0

The EUT driver software installed during testing was Android Version 4.1.2

The test utility software used during testing was LG870_LAP8960JR121210A

5.5. 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 the X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in the X orientation.

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

802.11a mode: 6 Mbps
802.11n HT20mode: MCS0
802.11n HT40mode: MCS0

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	LG	MCS-01WR	EAY62768913	N/A
Earphone	I-SOUND CO. LTD	HC-MYD-LG113	N/A	N/A

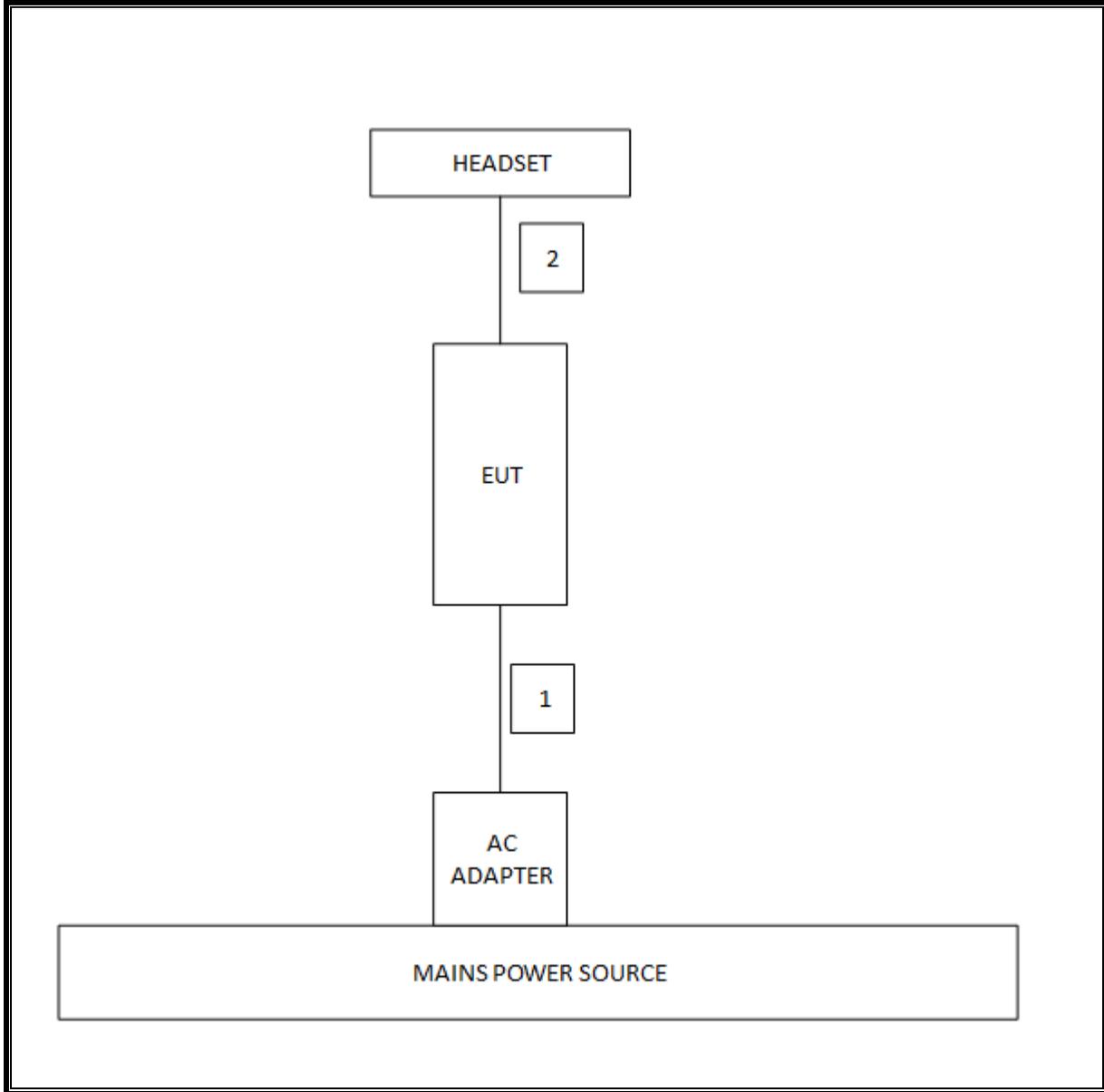
I/O CABLES

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	1.2m	N/A
2	Audio	1	Mini-Jack	Unshielded	1.0m	N/A

TEST SETUP

The EUT is setup as a stand-alone device.

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

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

Test Equipment List				
Description	Manufacturer	Model	Asset	Cal Due
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C00986	4/22/2013
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01179	2/26/2014
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	8/8/2013
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00580	1/28/2014
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	10/22/2013
Preamplifier, 40 GHz	Miteq	NSP4000-SP2	C00990	8/2/2013
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	N/A	3/6/2014
Antenna, Horn, 18 GHz	ETS	3117	C01022	2/21/2014
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	C00589	12/17/2013
Peak Power Meter	Agilent / HP	E4416A	C00963	5/13/2013
Peak / Average Power Sensor	Agilent / HP	E9327A	C00964	5/13/2013
LISN, 30 MHz	FCC	50/250-25-2	C00626	01/14/14
Reject Filter, 5.725-5.825 GHz	Micro-Tronics	BRC13192	N02676	CNR

7. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

LIMITS

None; for reporting purposes only.

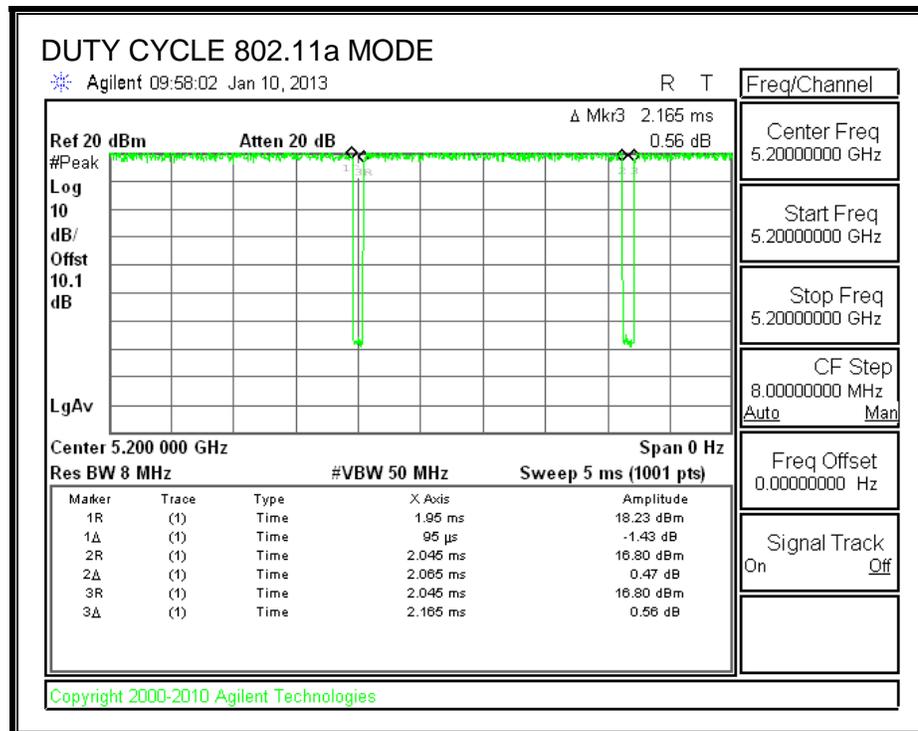
PROCEDURE

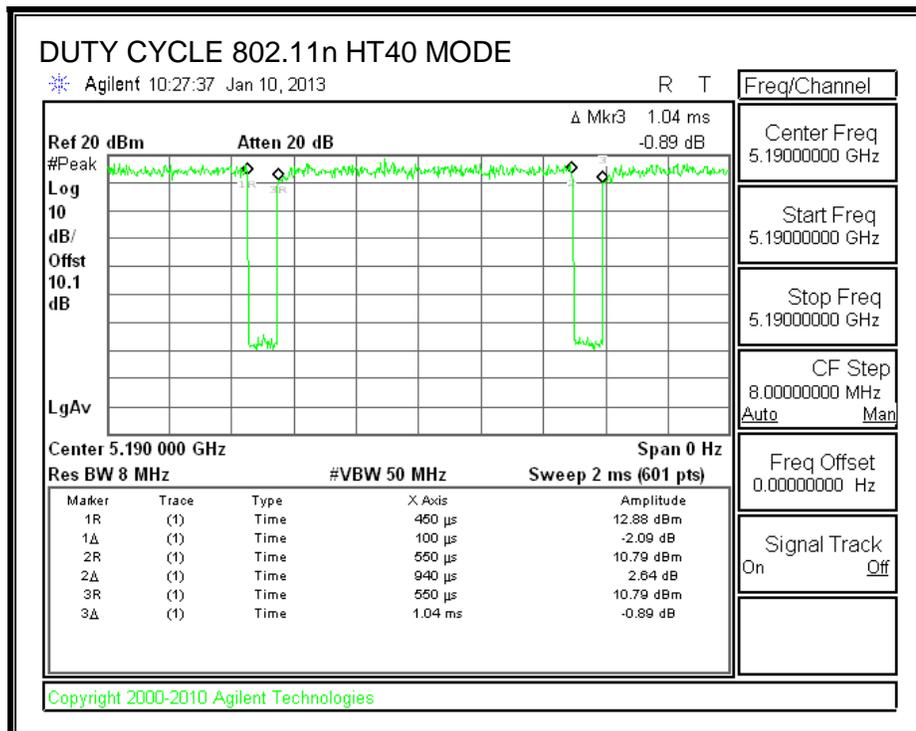
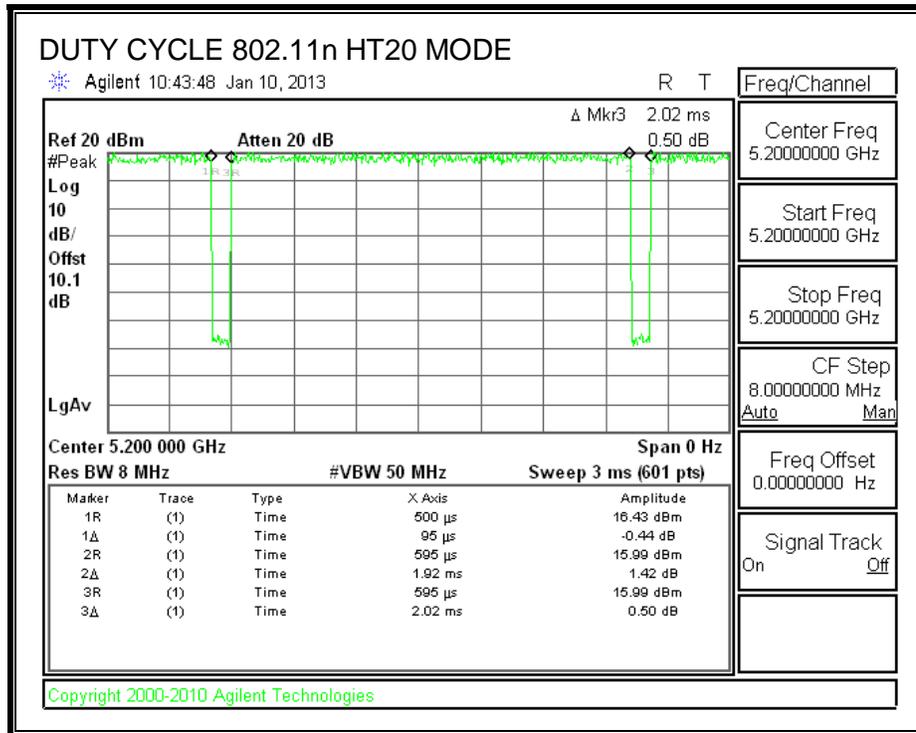
KDB 789033 Zero-Span Spectrum Analyzer Method.

7.1. 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	2.07	2	0.956	95.6%	0.20	0.484
802.11n HT20	1.92	2	0.950	95.0%	0.22	0.521
802.11n HT40	0.94	1	0.904	90.4%	0.44	1.064

7.2. DUTY CYCLE PLOTS





8. MEASUREMENT METHOD

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

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

9. ANTENNA PORT TEST RESULTS

9.1. 802.11a MODE IN THE 5.2 GHZ BAND

9.1.1. 26 dB BANDWIDTH

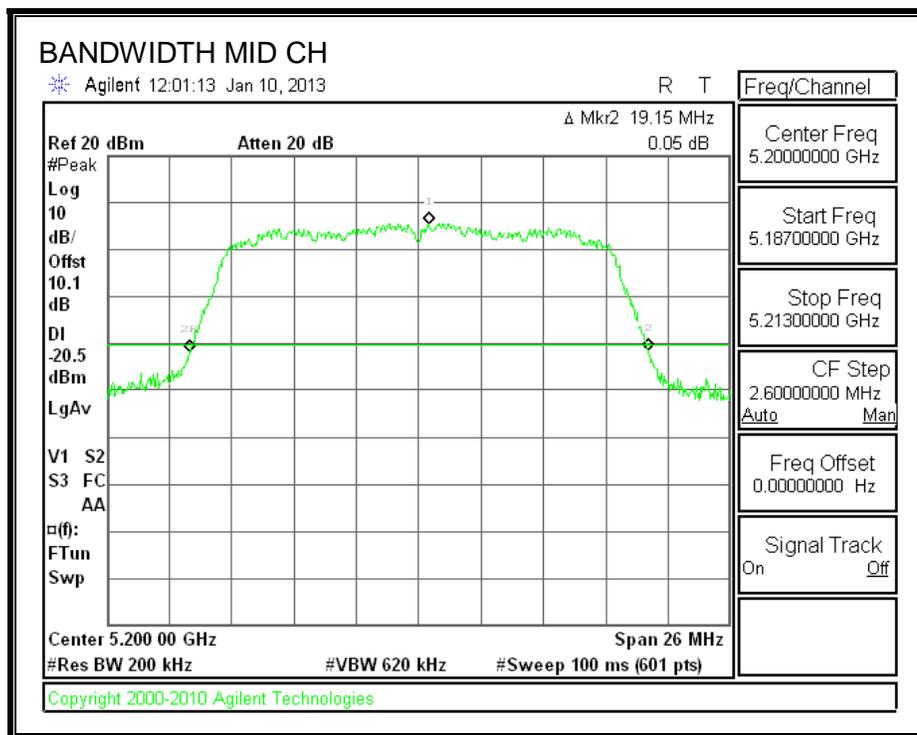
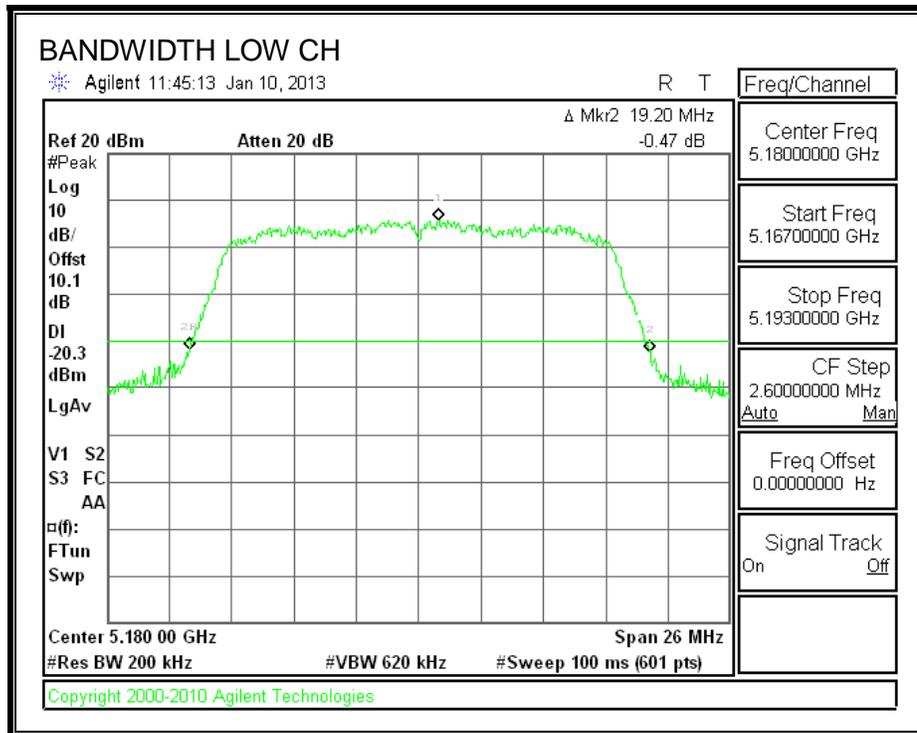
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5180	19.2
Mid	5200	19.2
High	5240	19.2

26 dB BANDWIDTH



9.1.2. 99% BANDWIDTH

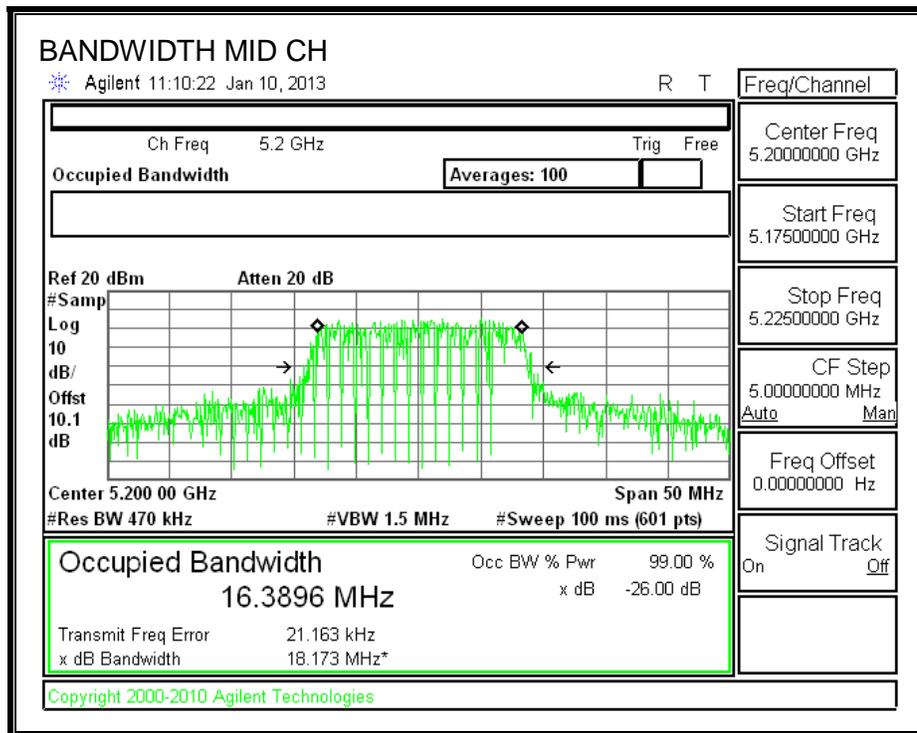
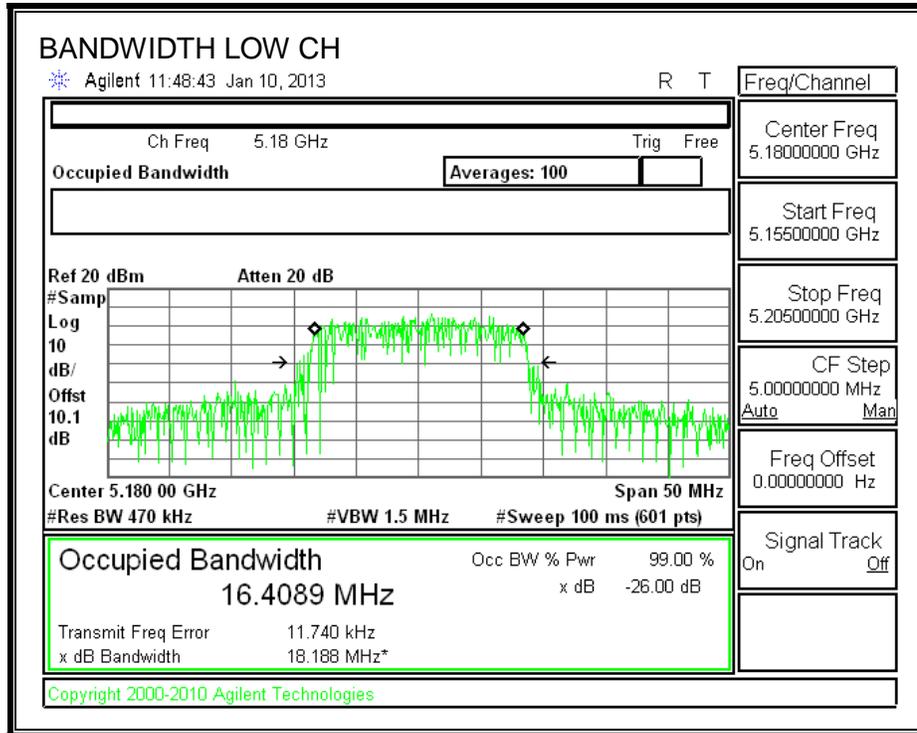
LIMITS

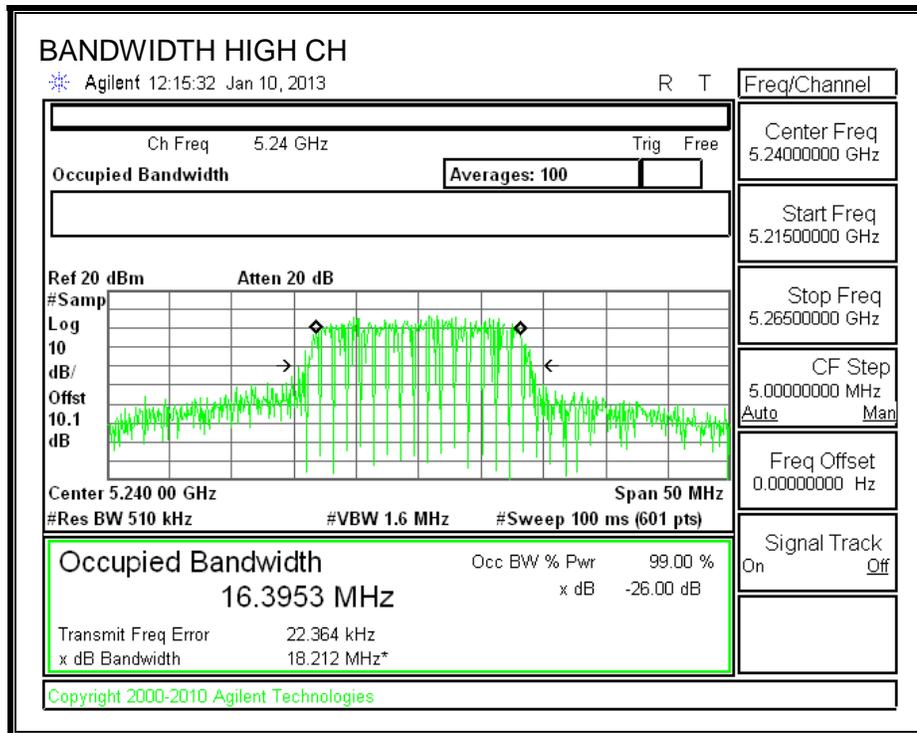
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5180	16.4
Mid	5200	16.4
High	5240	16.4

99% BANDWIDTH





9.1.3. 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 dB (including 10 dB pad and 1 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	11.8
Mid	5200	11.7
High	5240	11.8

9.1.4. OUTPUT POWER AND PPSD

LIMITS

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)

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.

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
Low	5180	19.2	16.4	-6.40
Mid	5200	19.2	16.4	-6.40
High	5240	19.2	16.4	-6.40

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC EIRP Limit (dBm)	Max IC Power (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC eirp PSD Limit (dBm)	PPSD Limit (dBm)
Low	5180	16.83	22.15	28.55	16.83	4.00	10.00	4.00
Mid	5200	16.82	22.15	28.55	16.82	4.00	10.00	4.00
High	5240	16.83	22.15	28.55	16.83	4.00	10.00	4.00

Duty Cycle CF (dB)	0.20	Included in Calculations of Corr'd Power & PPSD
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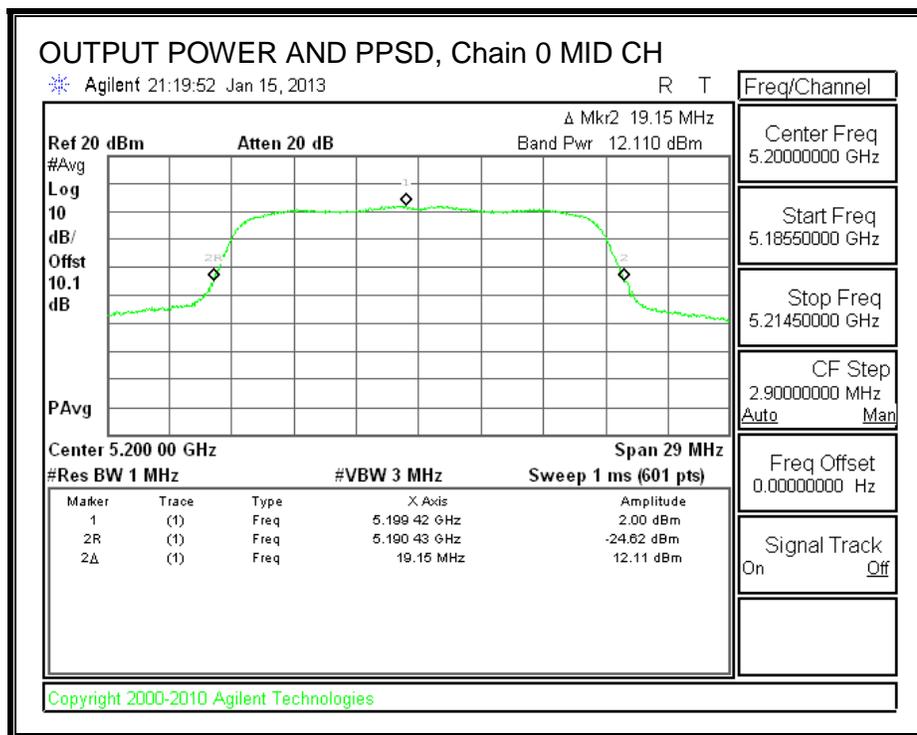
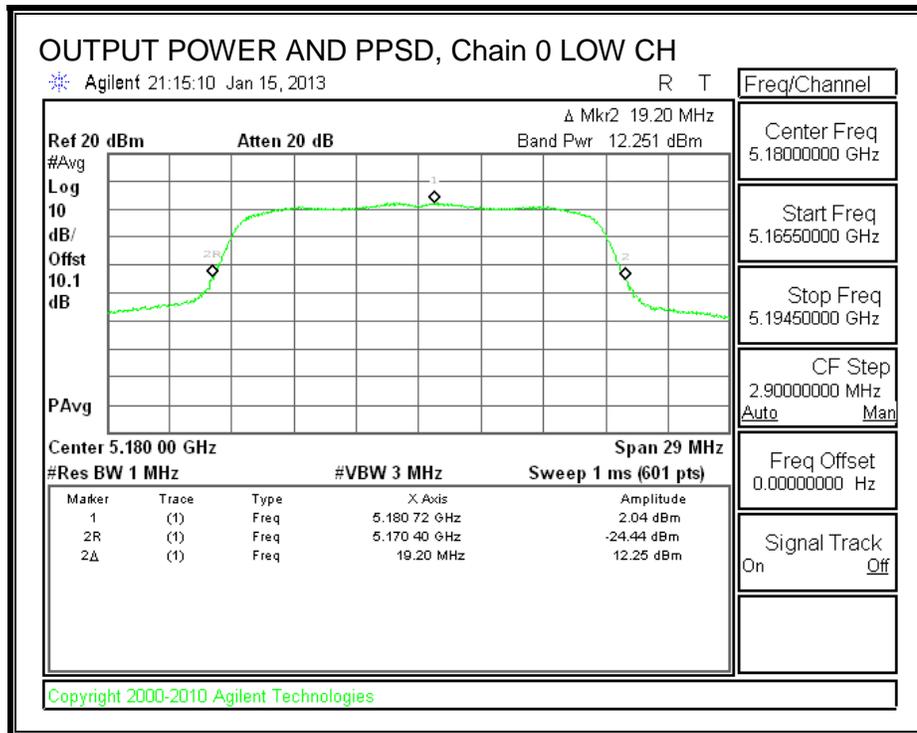
Output Power Results

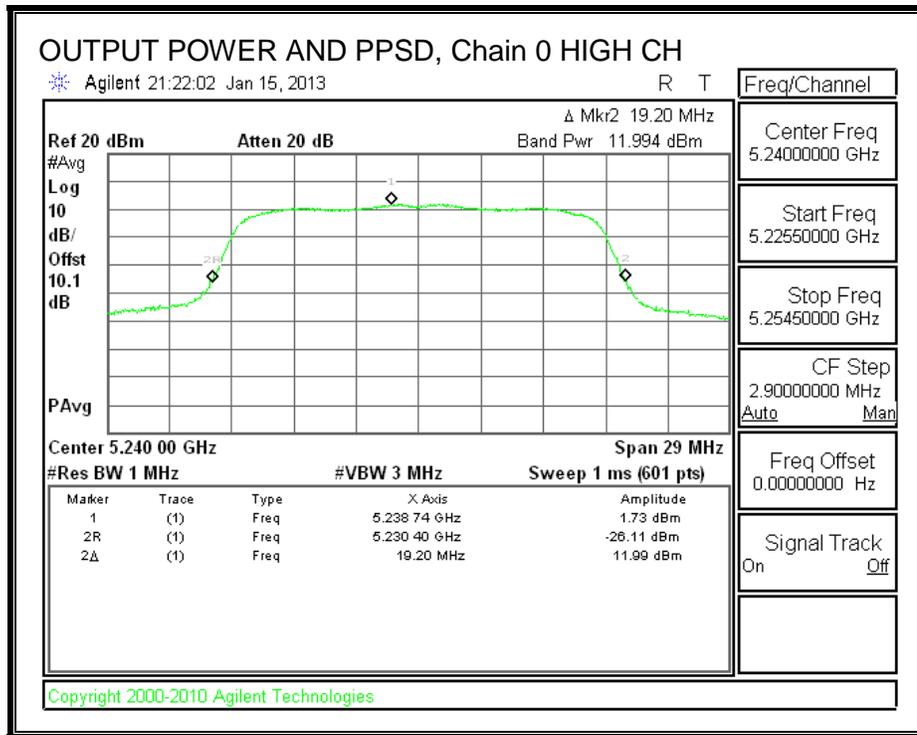
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	12.25	12.45	16.83	-4.38
Mid	5200	12.11	12.31	16.82	-4.51
High	5240	11.99	12.19	16.83	-4.64

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5180	2.04	2.24	4.00	-1.76
Mid	5200	2.00	2.20	4.00	-1.80
High	5240	1.73	1.93	4.00	-2.07

OUTPUT POWER AND PPSD, Chain 0





9.1.5. PEAK EXCURSION

LIMITS

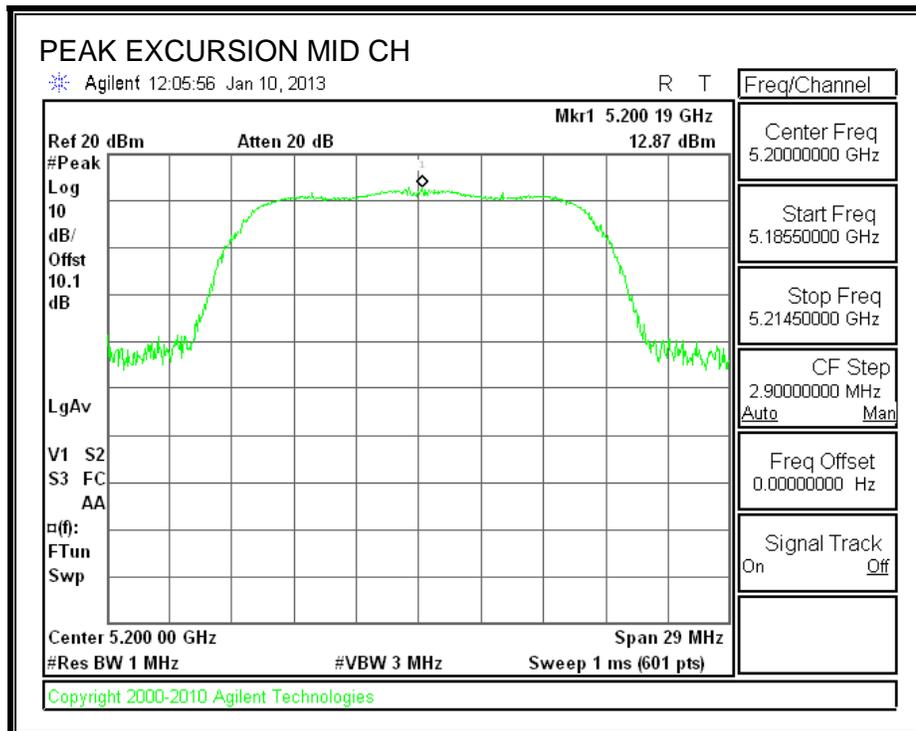
FCC §15.407 (a) (6)

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)
Mid	5200	12.87	2.00	0.20	10.67	13	-2.33

PEAK EXCURSION



9.2. 802.11n HT20 MODE IN THE 5.2 GHz BAND

9.2.1. 26 dB BANDWIDTH

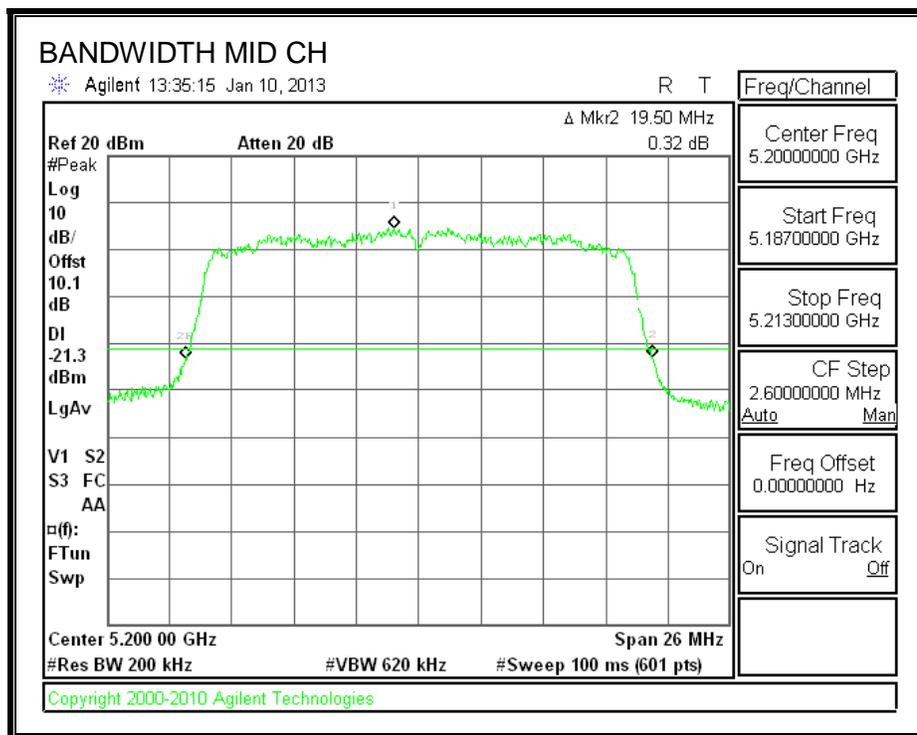
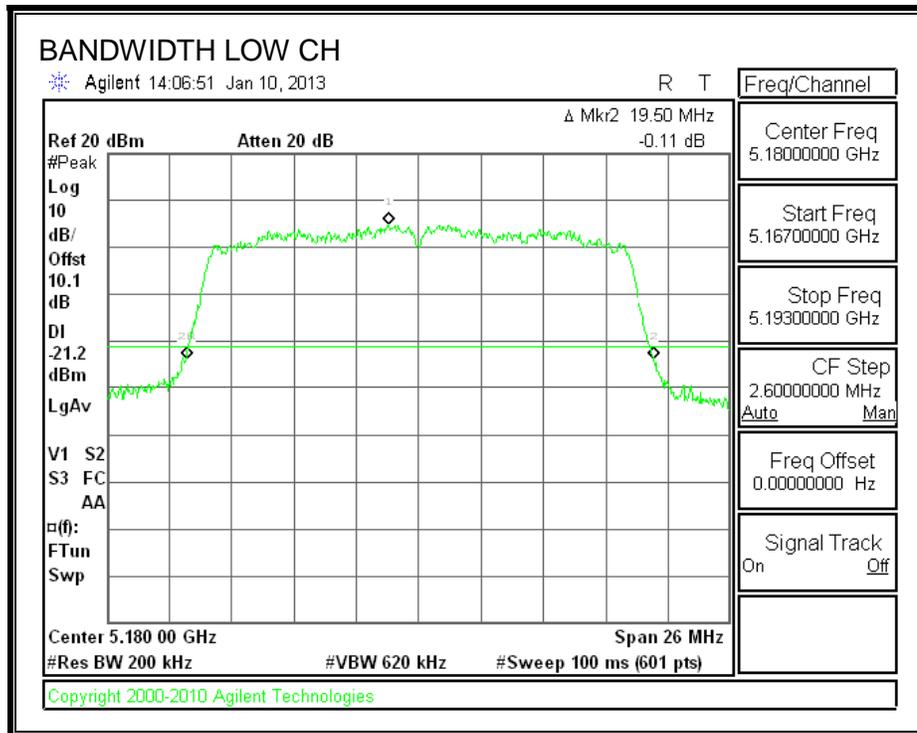
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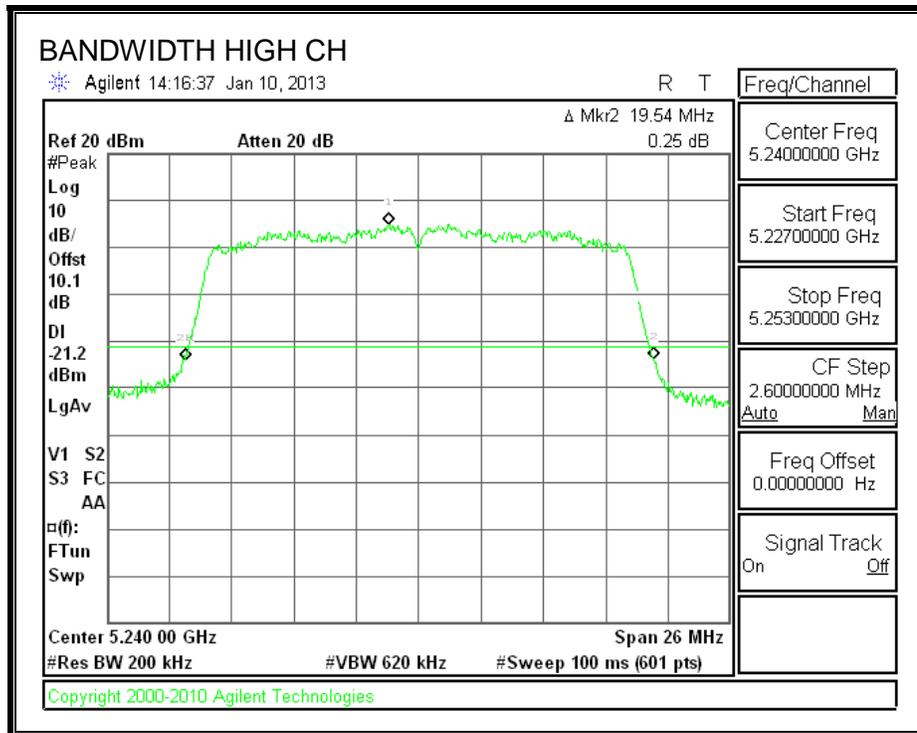
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5180	19.5
Mid	5200	19.5
High	5240	19.5

26 dB BANDWIDTH





9.2.2. 99% BANDWIDTH

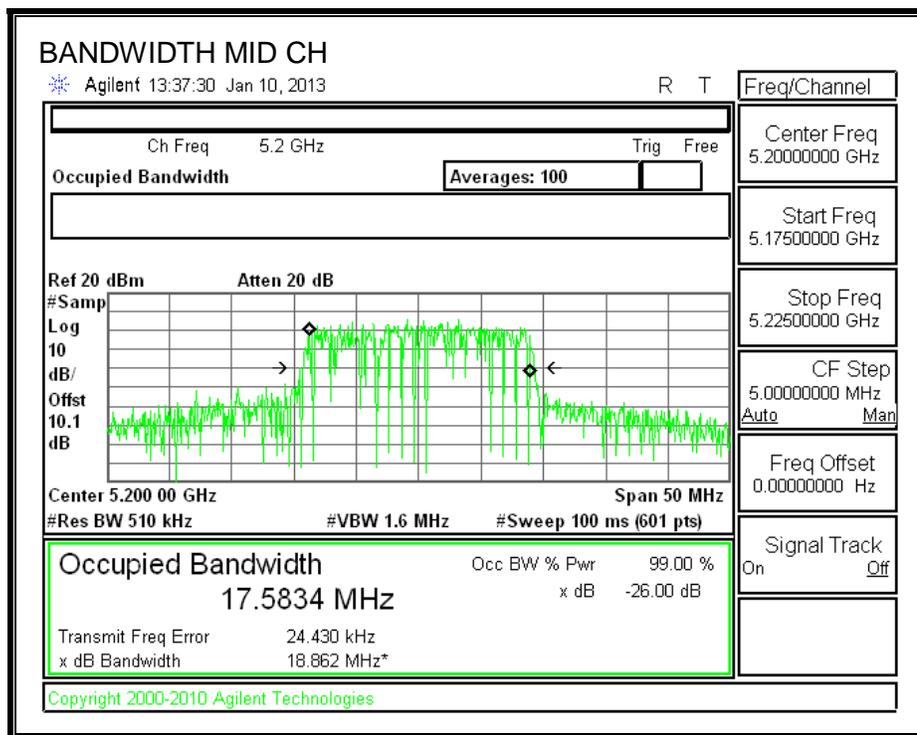
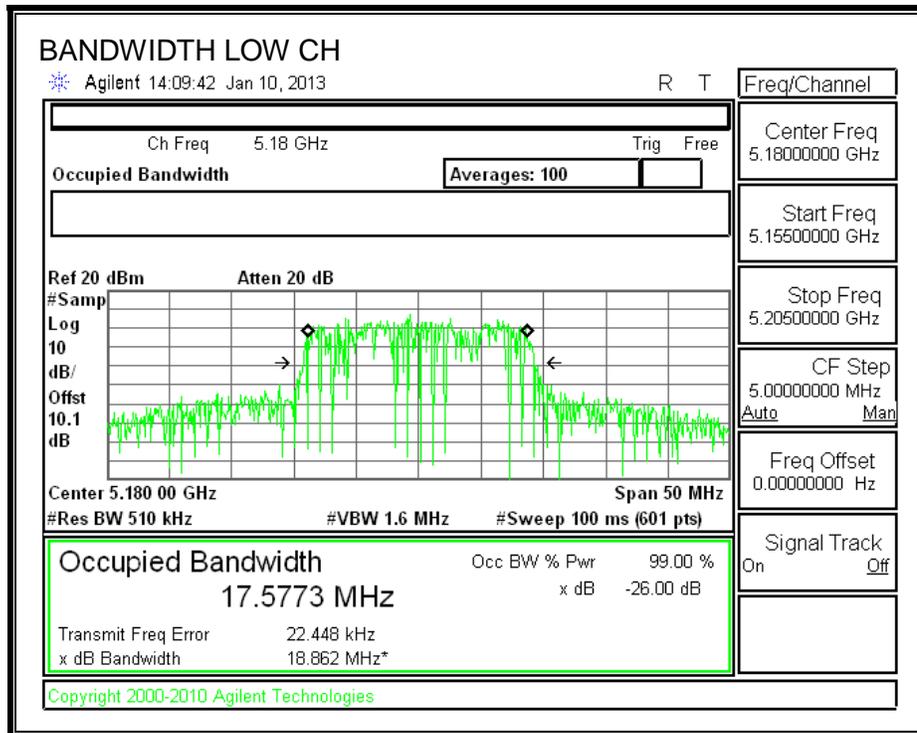
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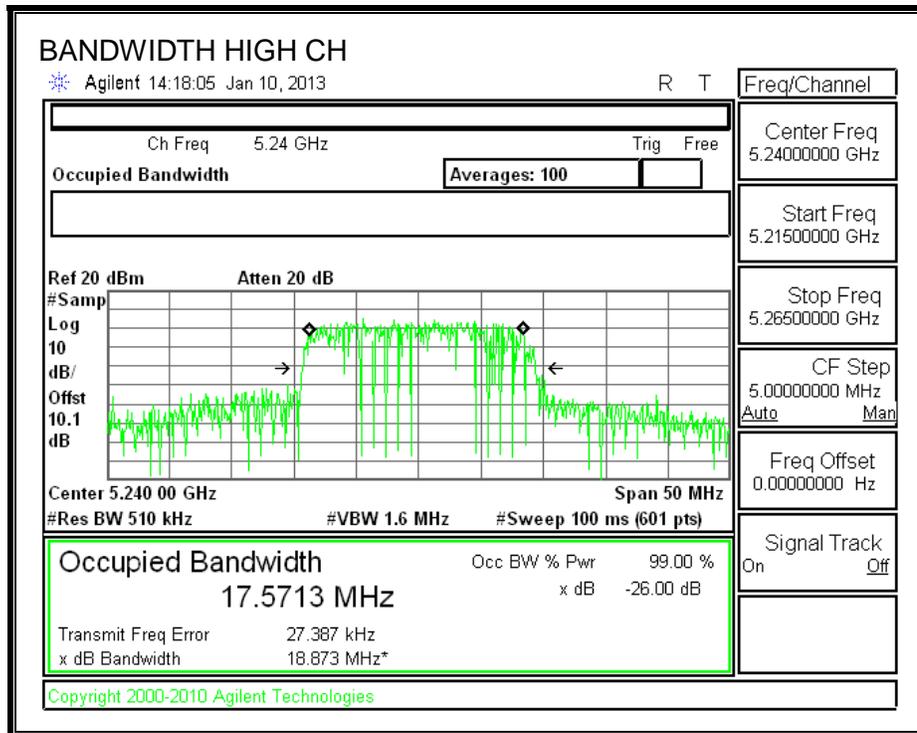
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5180	17.6
Mid	5200	17.6
High	5240	17.6

99% BANDWIDTH





9.2.3. 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 dB (including 10 dB pad and 1 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	10.7
Mid	5200	10.7
High	5240	10.7

9.2.4. OUTPUT POWER AND PPSD

LIMITS

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)

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.

RESULTS

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC EIRP Limit (dBm)	Max IC Power (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC eirp PSD Limit (dBm)	PPSD Limit (dBm)
Low	5180	16.90	22.45	28.85	16.90	4.00	10.00	4.00
Mid	5200	16.90	22.45	28.85	16.90	4.00	10.00	4.00
High	5240	16.91	22.45	28.85	16.91	4.00	10.00	4.00

Duty Cycle CF (dB)	0.22	Included in Calculations of Corr'd Power & PPSD
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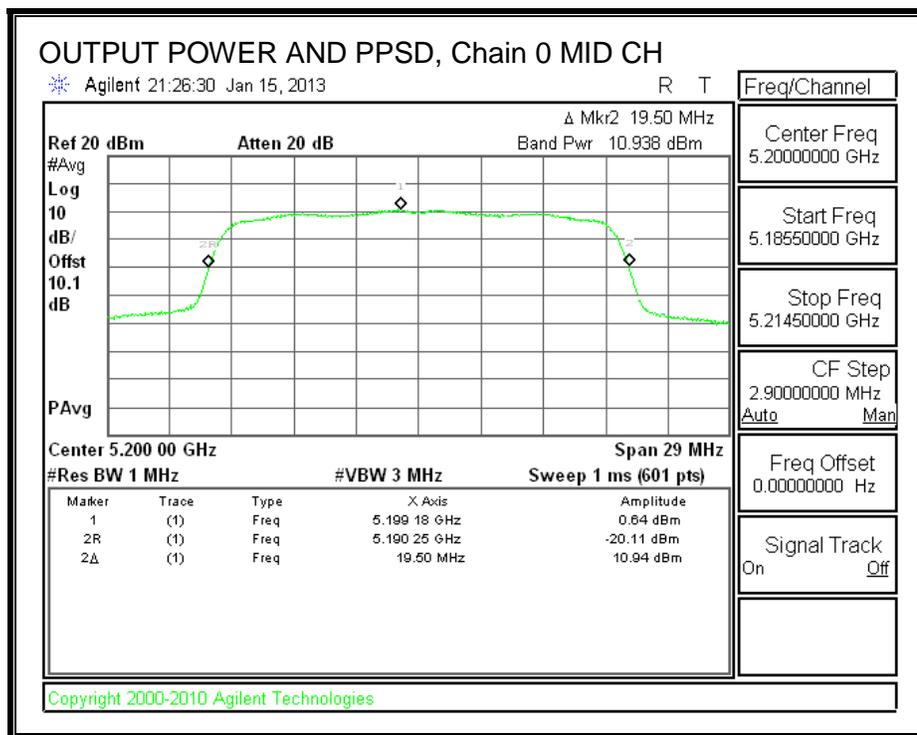
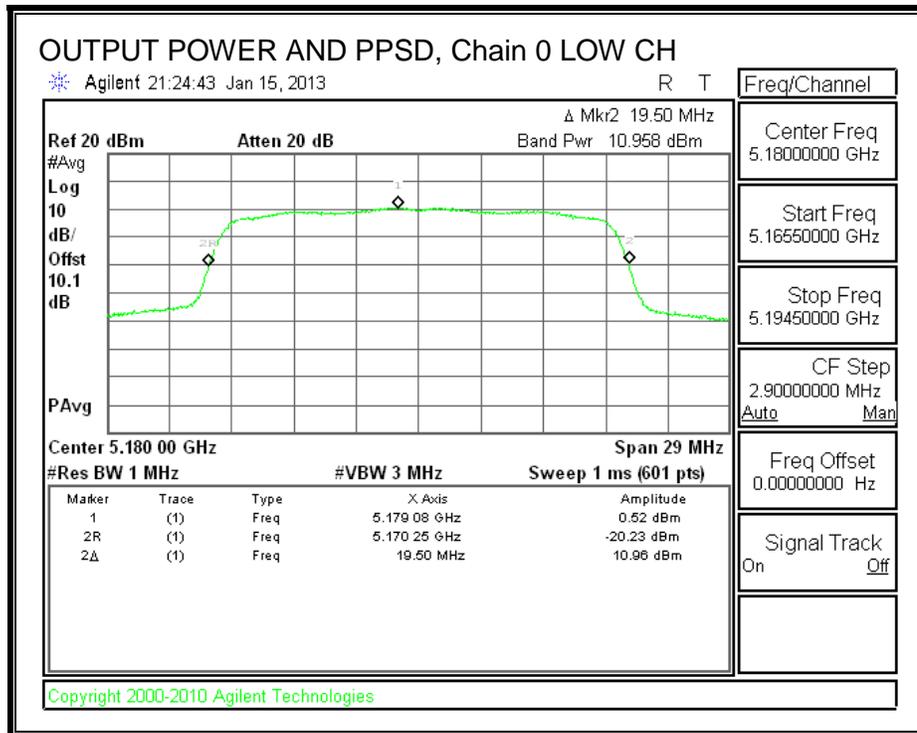
Output Power Results

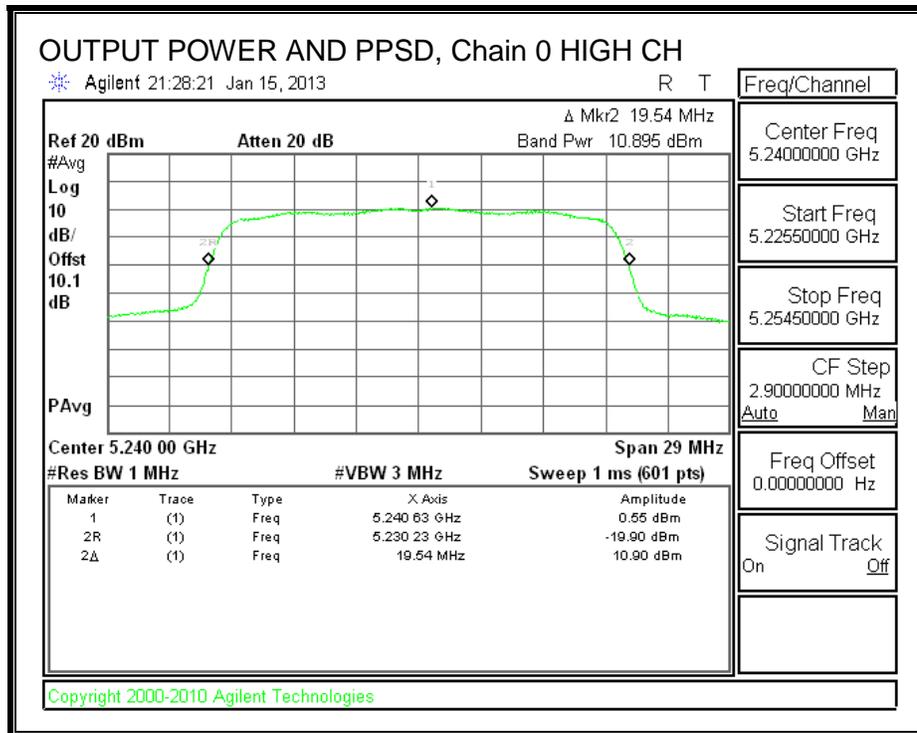
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	10.96	11.18	16.90	-5.72
Mid	5200	10.94	11.16	16.90	-5.74
High	5240	10.90	11.12	16.91	-5.79

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5180	0.52	0.74	4.00	-3.26
Mid	5200	0.64	0.86	4.00	-3.14
High	5240	0.55	0.77	4.00	-3.23

OUTPUT POWER AND PPSD, Chain 0





9.2.5. PEAK EXCURSION

LIMITS

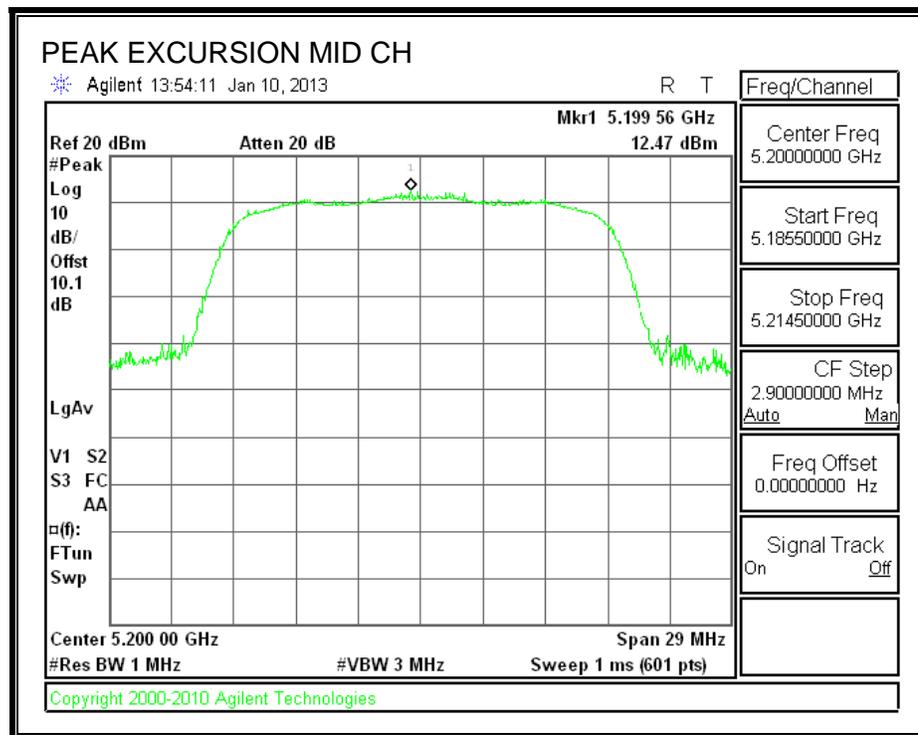
FCC §15.407 (a) (6)

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)
Mid	5200	12.47	0.64	0.22	11.61	13	-1.39

PEAK EXCURSION



9.3. 802.11n HT40 MODE IN THE 5.2 GHz BAND

9.3.1. 26 dB BANDWIDTH

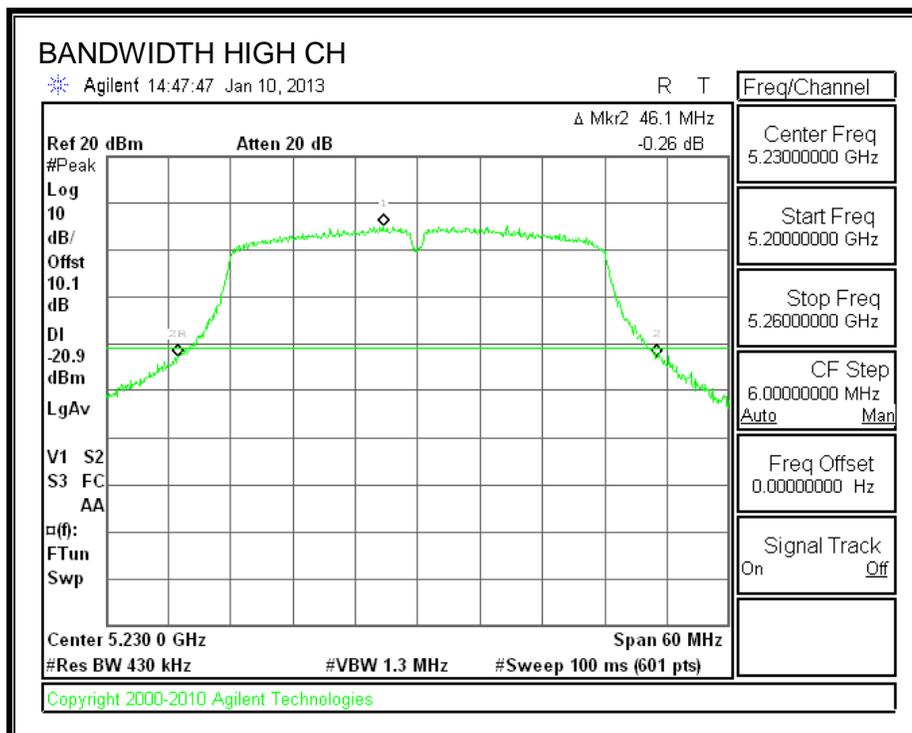
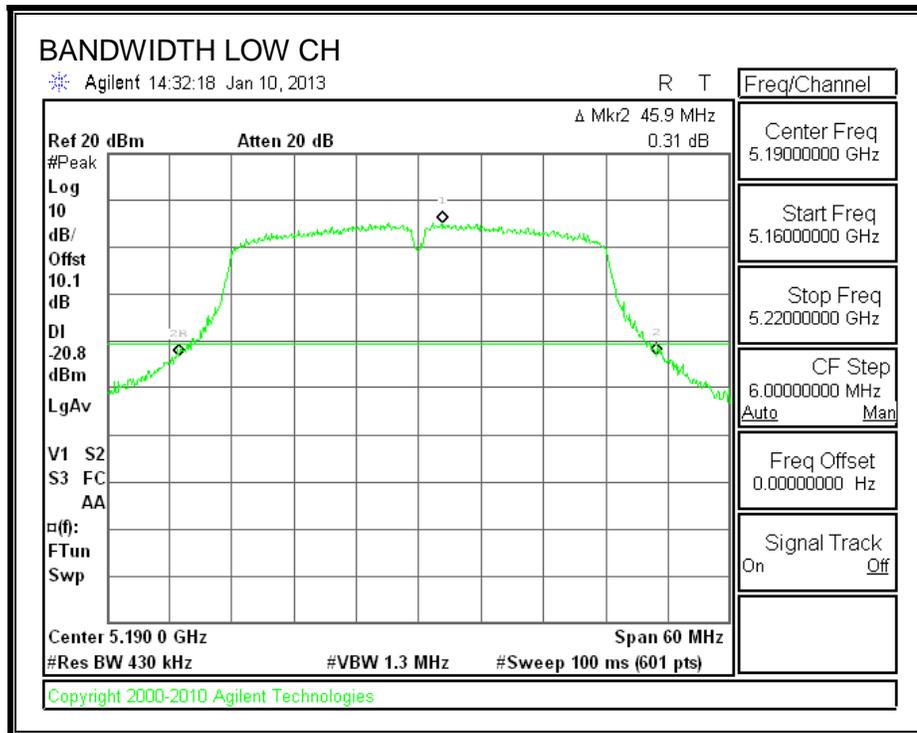
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5190	45.9
High	5230	46.1

26 dB BANDWIDTH



9.3.2. 99% BANDWIDTH

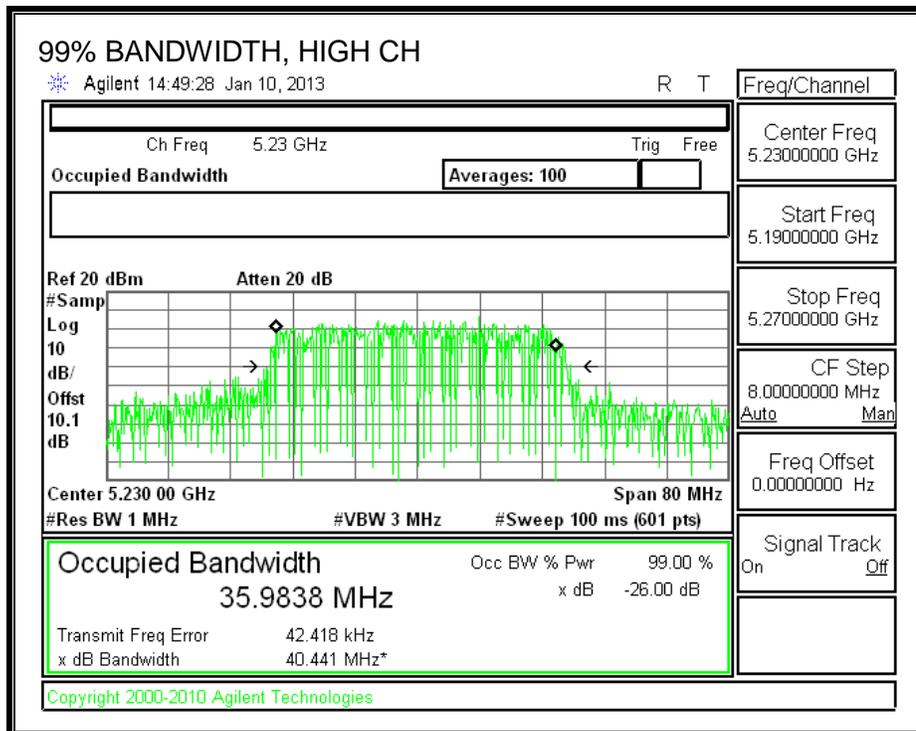
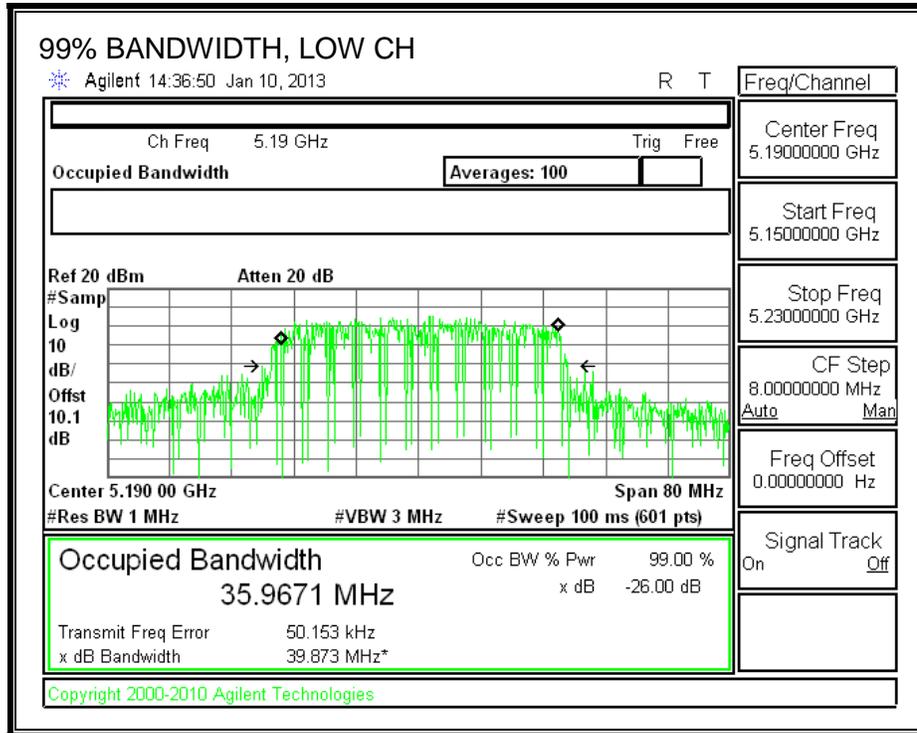
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5190	36.0
High	5230	36.0

99% BANDWIDTH



9.3.3. 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 dB (including 10 dB pad and 1 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	5190	10.3
High	5230	10.4

9.3.4. OUTPUT POWER AND PPSD

LIMITS

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)

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.

RESULTS

	(MHz)	Power Limit (dBm)	EIRP Limit (dBm)	IC Power (dBm)	Limit (dBm)	PPSD Limit (dBm)	eirp PSD Limit (dBm)	Limit (dBm)
Low	5190	17.00	23.00	29.40	17.00	4.00	10.00	4.00
High	5230	17.00	23.00	29.40	17.00	4.00	10.00	4.00

Duty Cycle CF (dB)	0.44	Included in Calculations of Corr'd Power & PPSD
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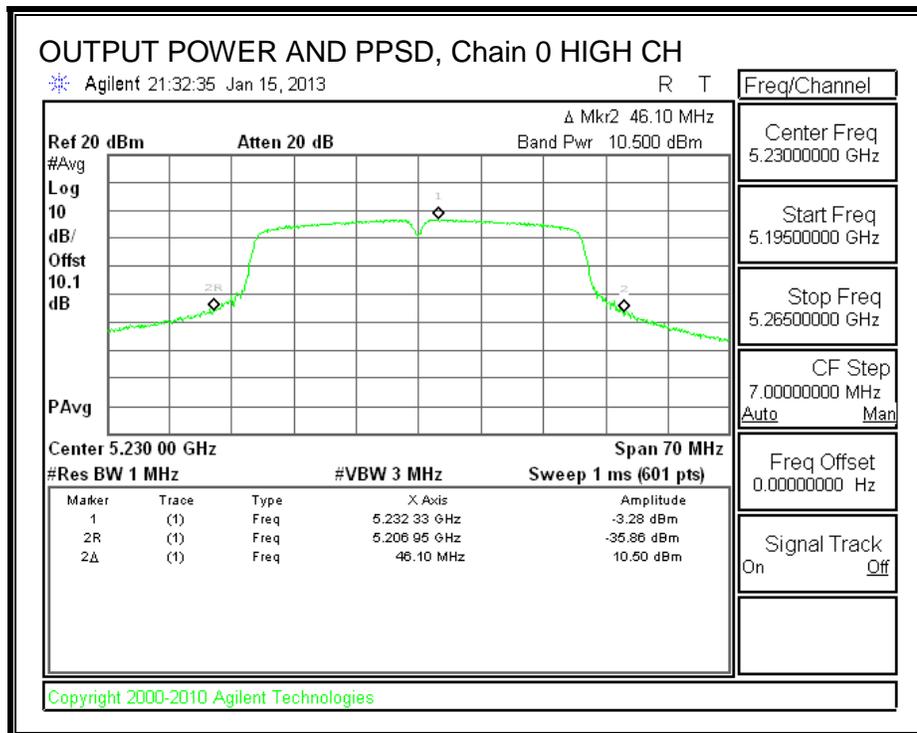
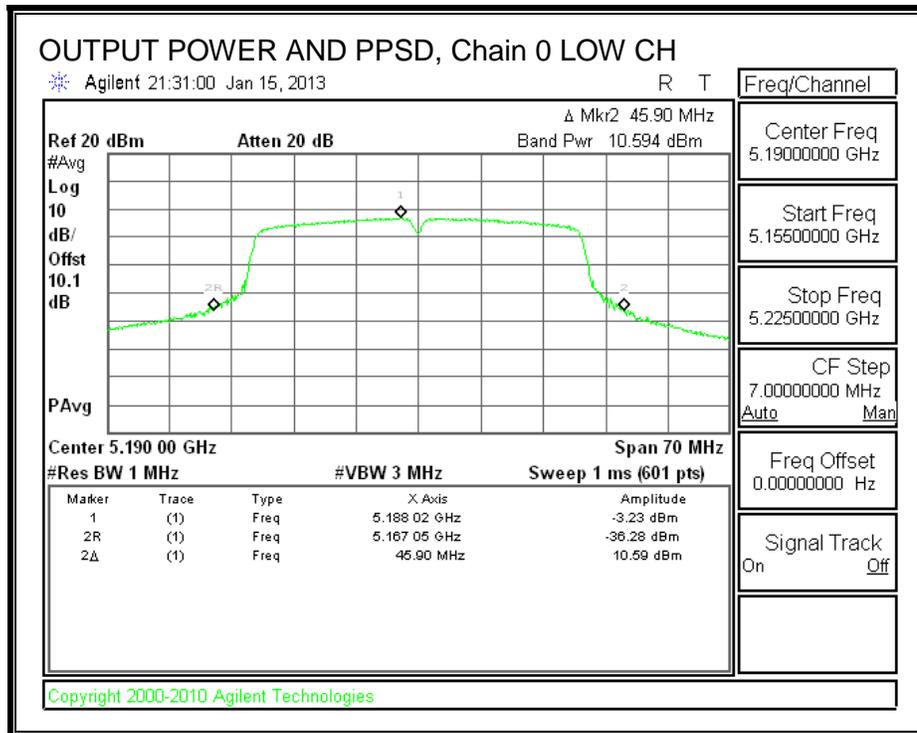
Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5190	10.59	11.03	17.00	-5.97
High	5230	10.50	10.94	17.00	-6.06

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5190	-3.23	-2.79	4.00	-6.79
High	5230	-3.28	-2.84	4.00	-6.84

OUTPUT POWER AND PPSD, Chain 0



9.3.5. 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

Refer to the results of 802.11n HT20 mode in the 5.2 GHz band.

9.4. 802.11a MODE IN THE 5.3 GHz BAND

9.4.1. 26 dB BANDWIDTH

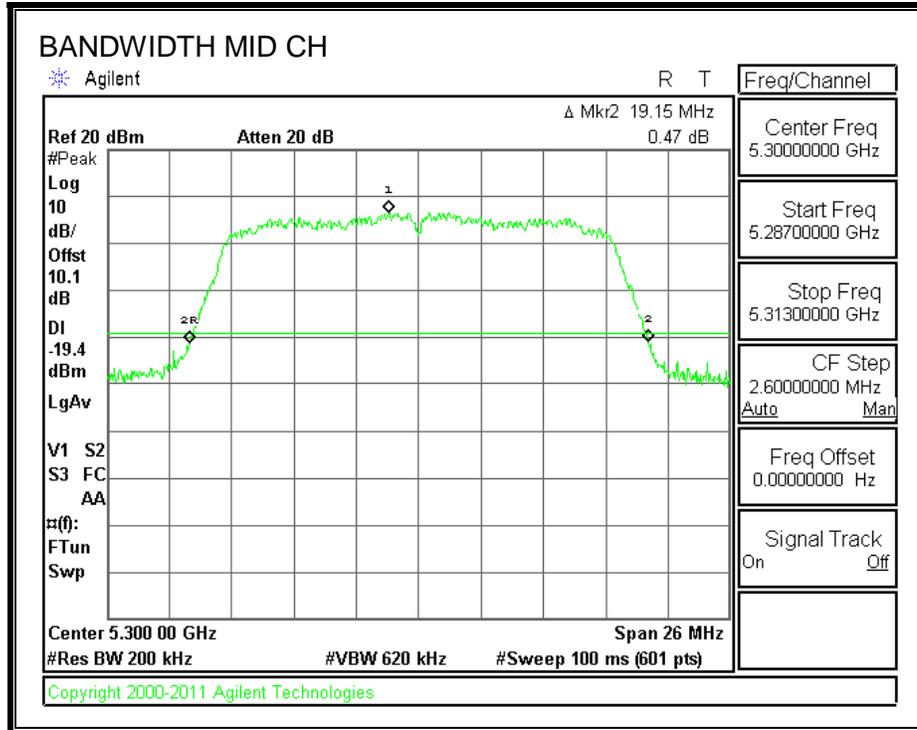
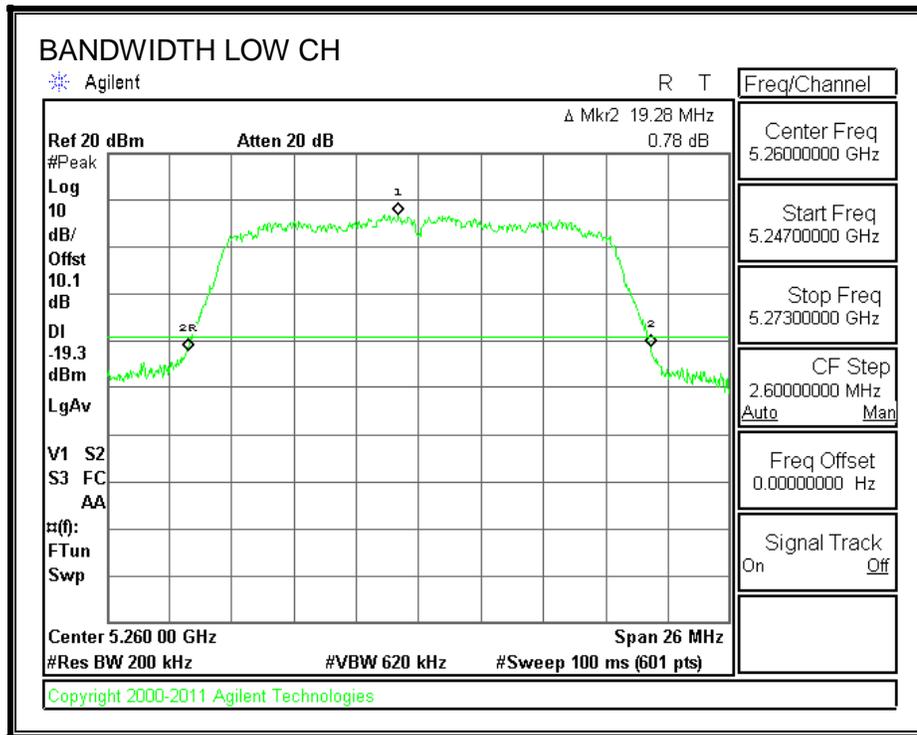
LIMITS

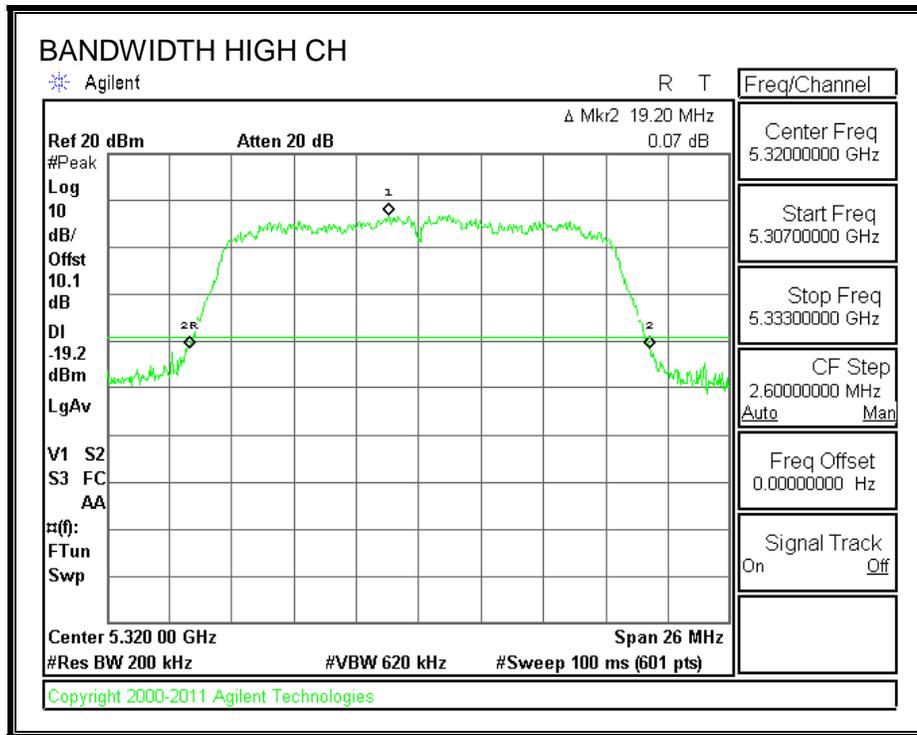
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5260	19.3
Mid	5300	19.2
High	5320	19.2

26 dB BANDWIDTH





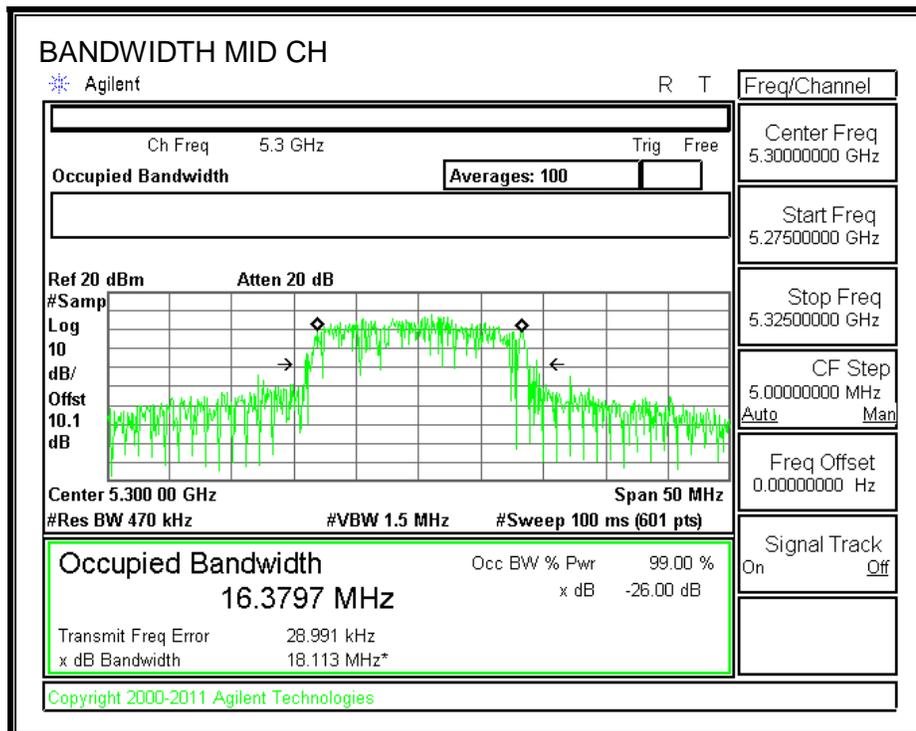
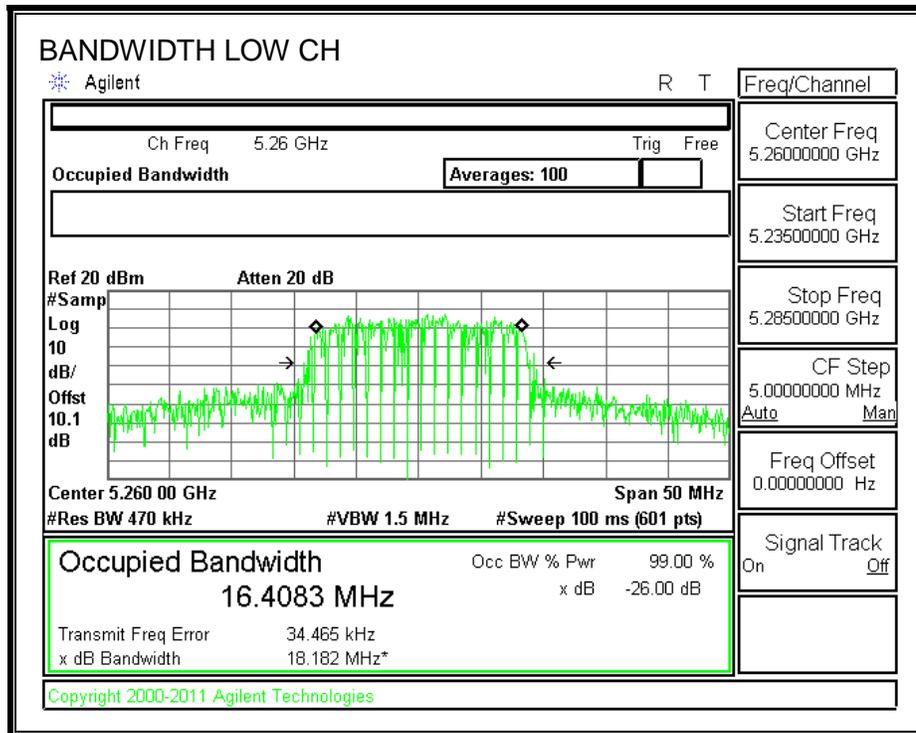
9.4.2. 99% BANDWIDTH

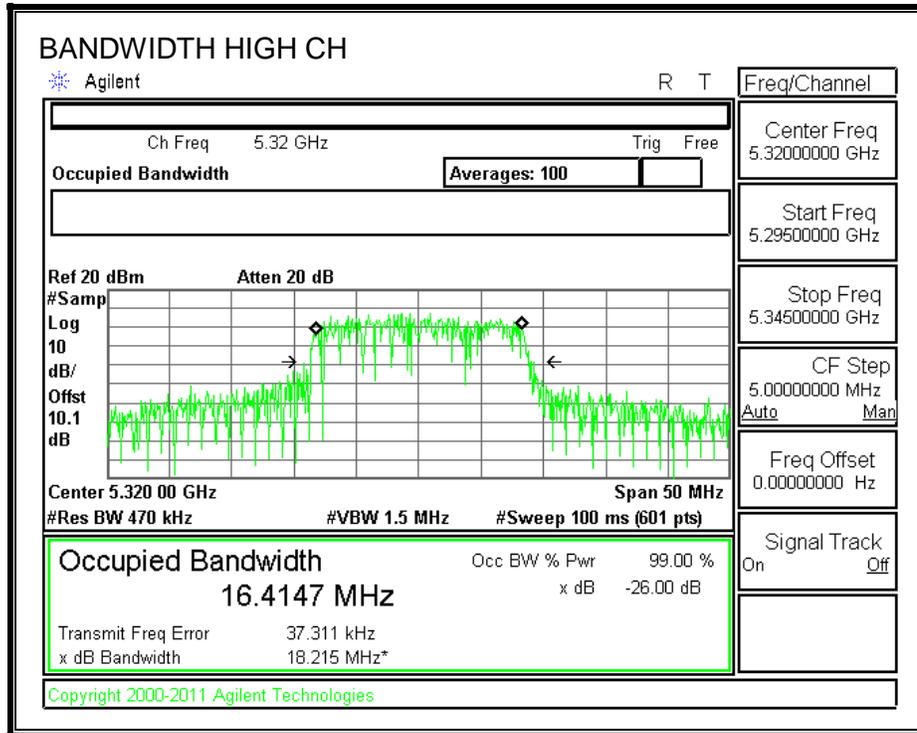
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5260	16.4
Mid	5300	16.4
High	5320	16.4





9.4.3. 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 dB (including 10 dB pad and 1 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	11.9
Mid	5300	12.0
High	5320	12.0

9.4.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (1)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band 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 MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the 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)

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.

RESULTS

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC PSD Limit (dBm)	PPSD Limit (dBm)
Low	5260	23.85	23.15	29.15	23.15	11.00	11.00	11.00
Mid	5300	23.82	23.14	29.14	23.14	11.00	11.00	11.00
High	5320	23.83	23.15	29.15	23.15	11.00	11.00	11.00

Duty Cycle CF (dB)	0.20	Included in Calculations of Corr'd Power & PPSD
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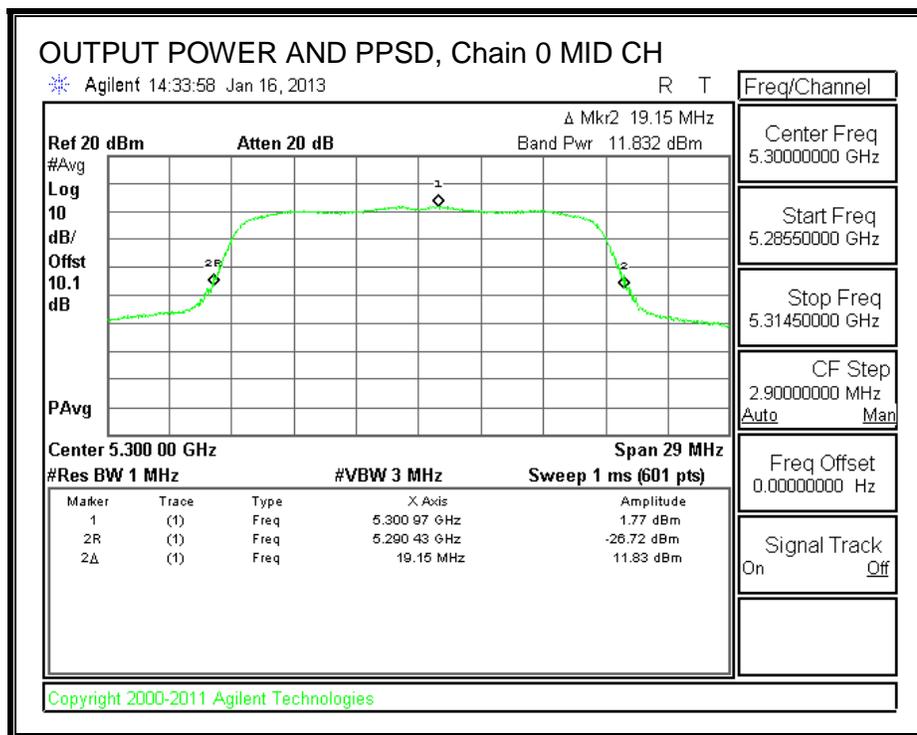
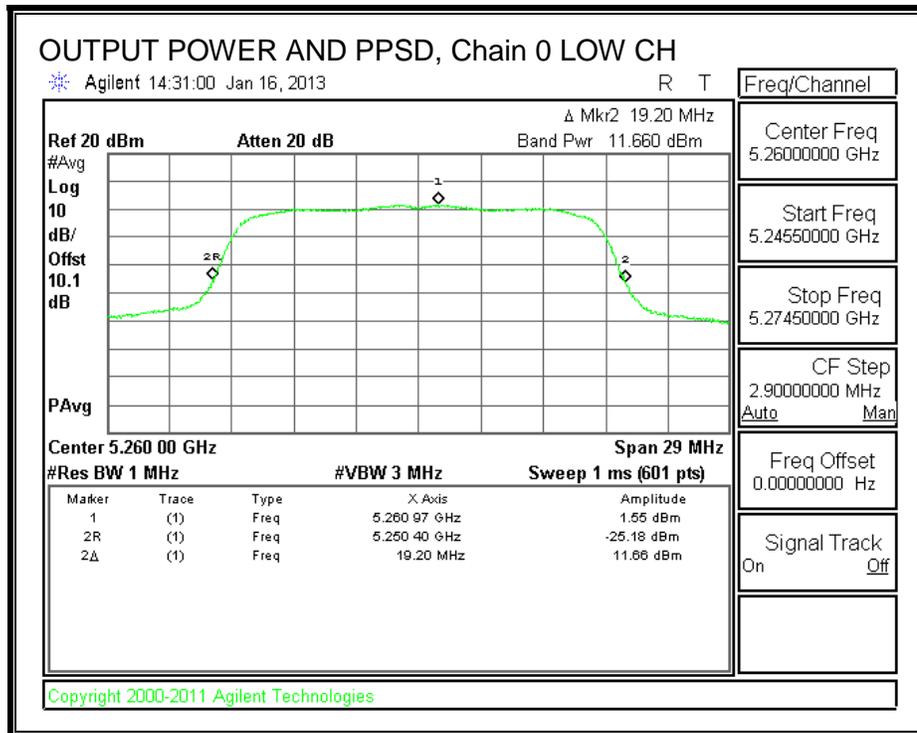
Output Power Results

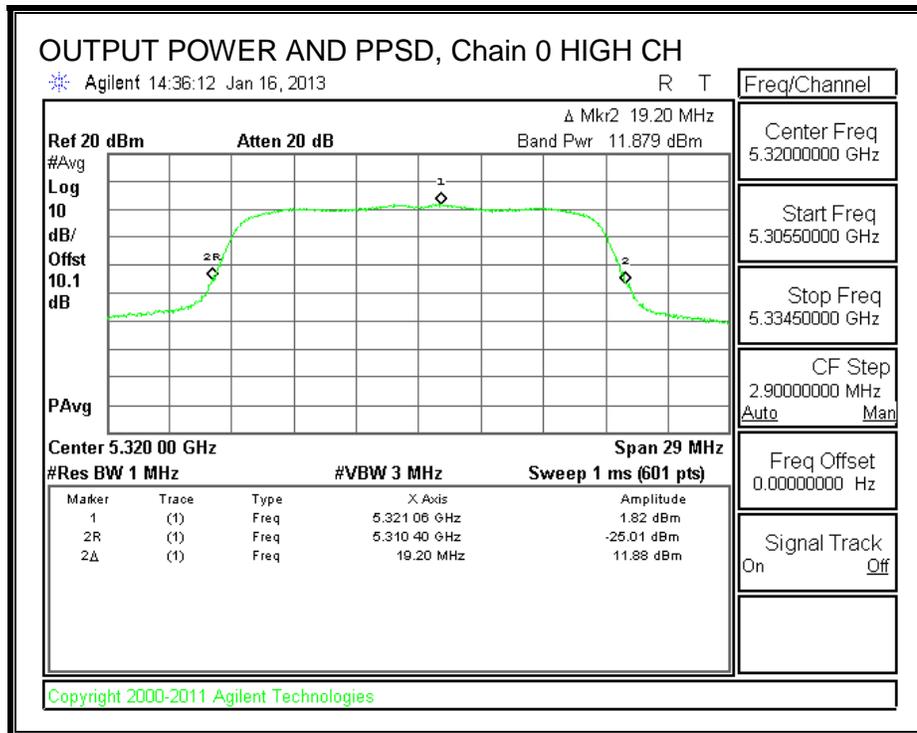
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	11.66	11.86	23.15	-11.29
Mid	5300	11.83	12.03	23.14	-11.11
High	5320	11.88	12.08	23.15	-11.07

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5260	1.55	1.75	11.00	-9.25
Mid	5300	1.77	1.97	11.00	-9.03
High	5320	1.82	2.02	11.00	-8.98

OUTPUT POWER AND PPSD, Chain 0





9.4.5. 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

Refer to the results of 802.11n HT20 mode in the 5.2 GHz band.

9.5. 802.11n HT20 MODE IN THE 5.3 GHz BAND

9.5.1. 26 dB BANDWIDTH

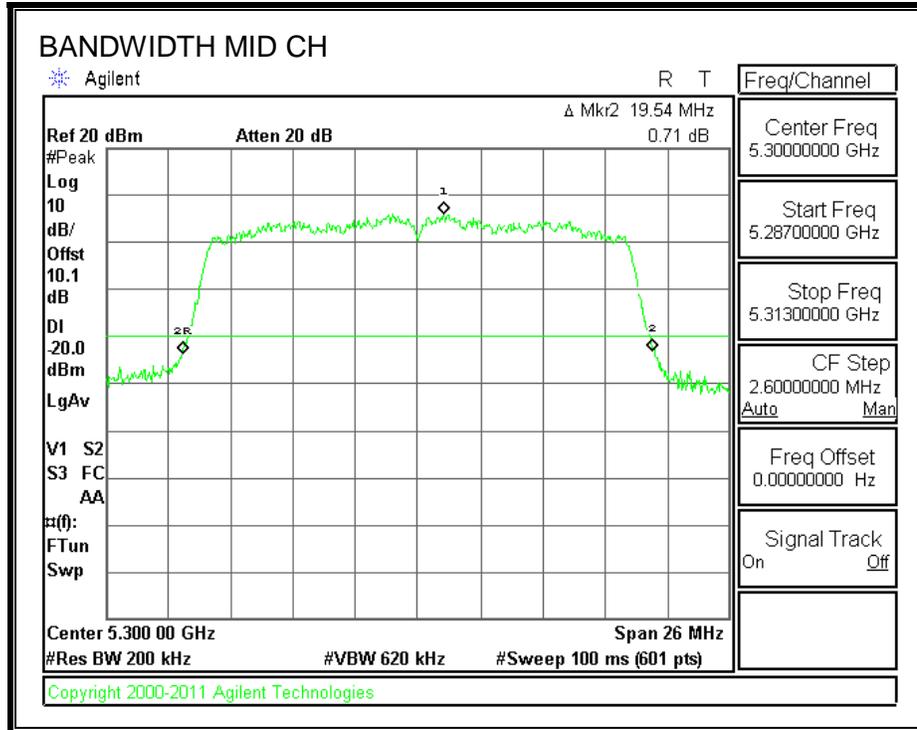
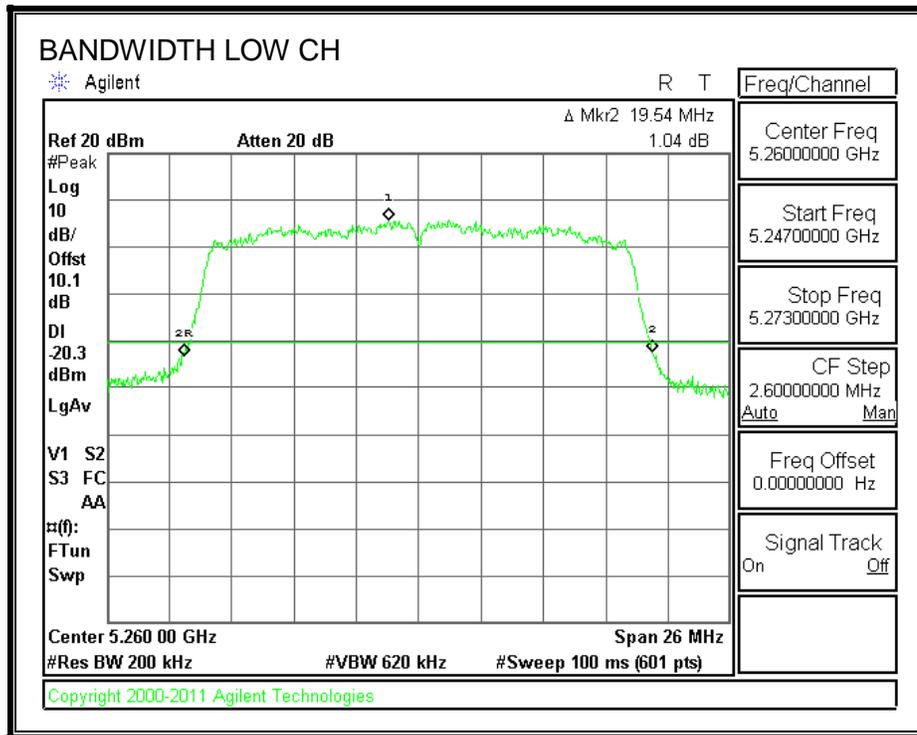
LIMITS

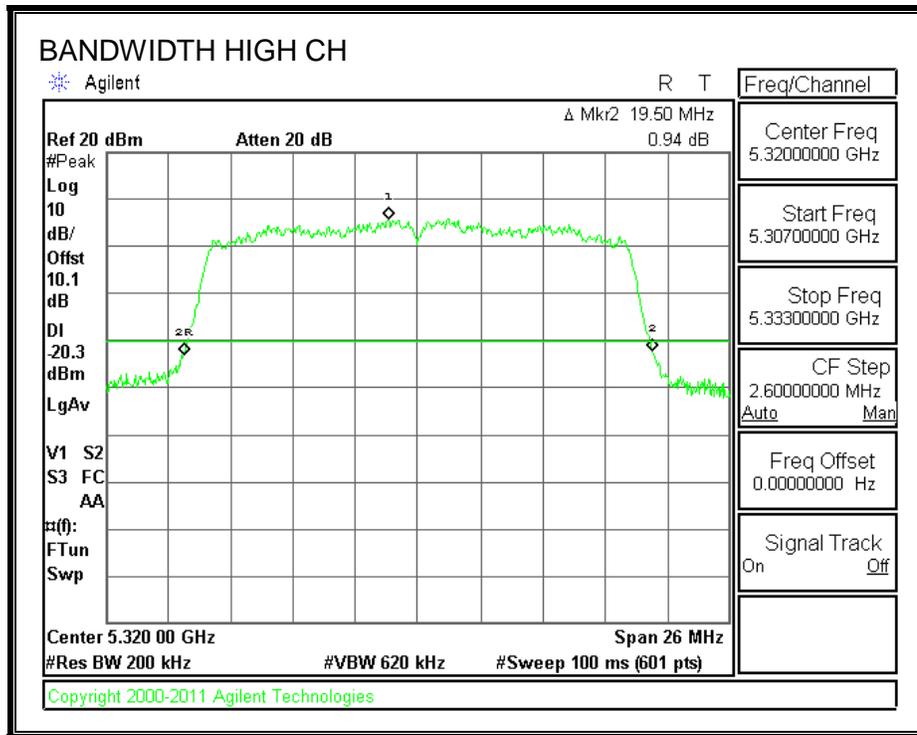
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5260	19.5
Mid	5300	19.5
High	5320	19.5

26 dB BANDWIDTH





9.5.2. 99% BANDWIDTH

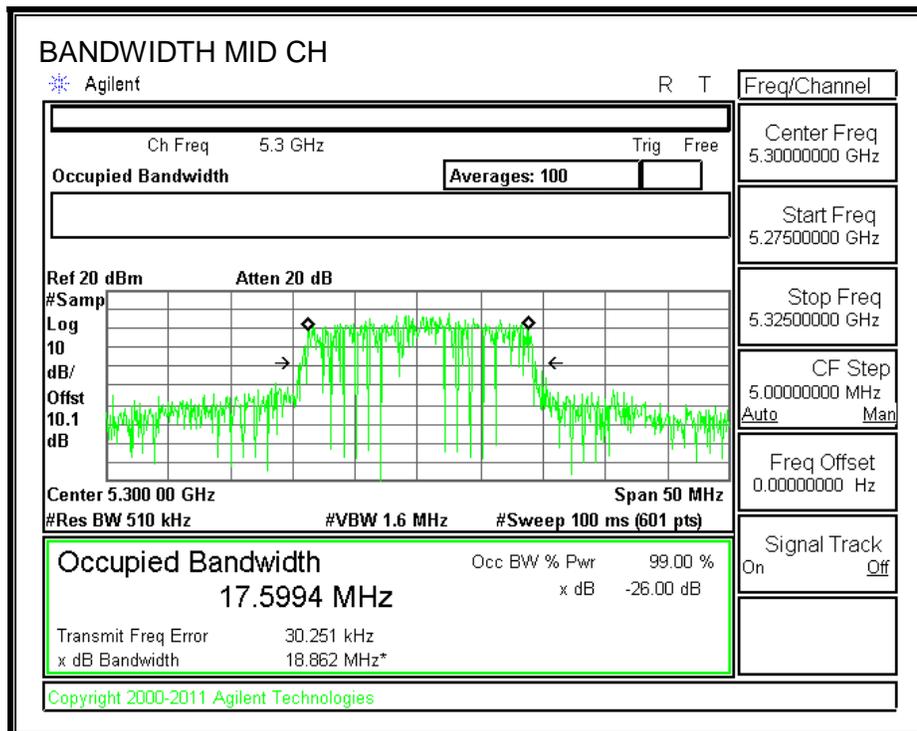
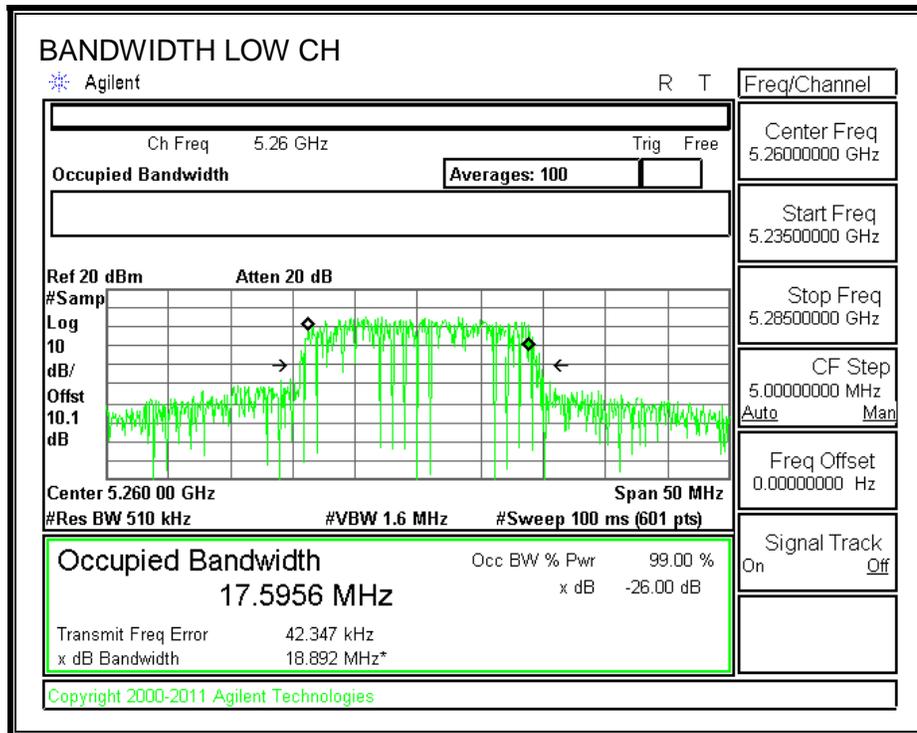
LIMITS

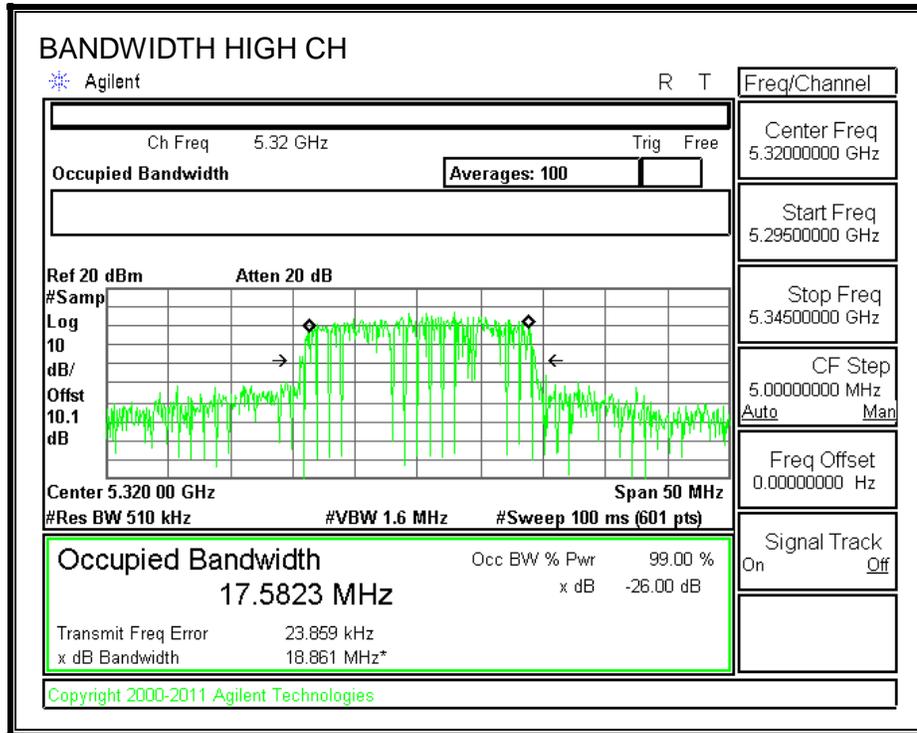
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5260	17.6
Mid	5300	17.6
High	5320	17.6

99% BANDWIDTH





9.5.3. 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 dB (including 10 dB pad and 1 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	10.8
Mid	5300	10.9
High	5320	10.9

9.5.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (1)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band 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 MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the 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)

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.

RESULTS

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC PSD Limit (dBm)	PPSD Limit (dBm)
Low	5260	23.91	23.45	29.45	23.45	11.00	11.00	11.00
Mid	5300	23.91	23.45	29.45	23.45	11.00	11.00	11.00
High	5320	23.90	23.45	29.45	23.45	11.00	11.00	11.00

Duty Cycle CF (dB)	0.22	Included in Calculations of Corr'd Power & PPSD
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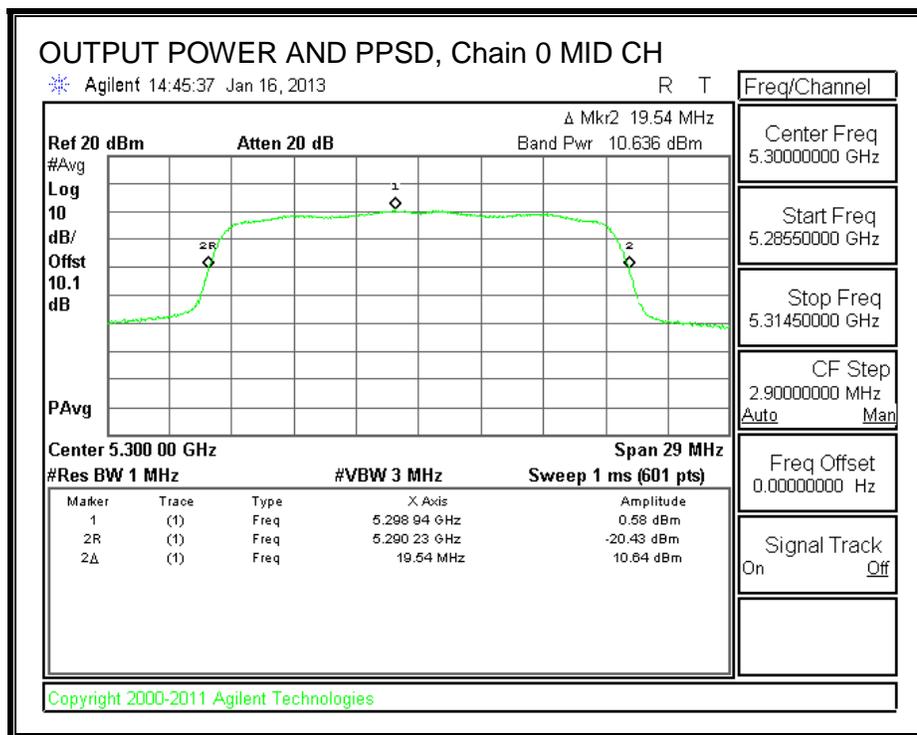
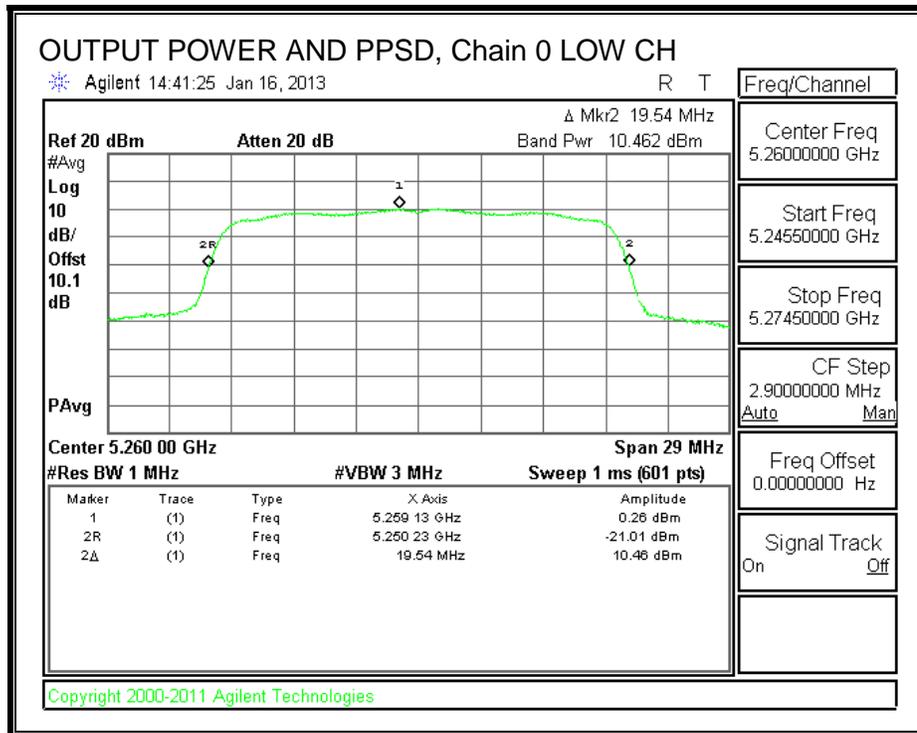
Output Power Results

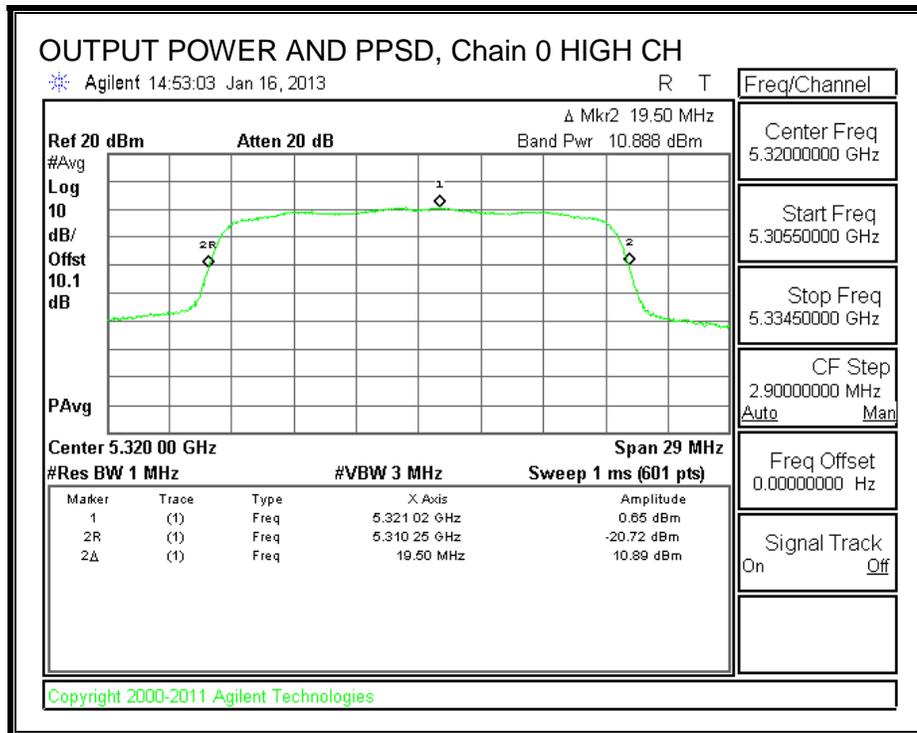
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	10.46	10.68	23.45	-12.77
Mid	5300	10.64	10.86	23.45	-12.60
High	5320	10.89	11.11	23.45	-12.34

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5260	0.26	0.48	11.00	-10.52
Mid	5300	0.58	0.80	11.00	-10.20
High	5320	0.65	0.87	11.00	-10.13

OUTPUT POWER AND PPSD, Chain 0





9.5.1. 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

Refer to the results of 802.11n HT20 mode in the 5.2 GHz band.

9.6. 802.11n HT40 MODE IN THE 5.3 GHz BAND

9.6.1. 26 dB BANDWIDTH

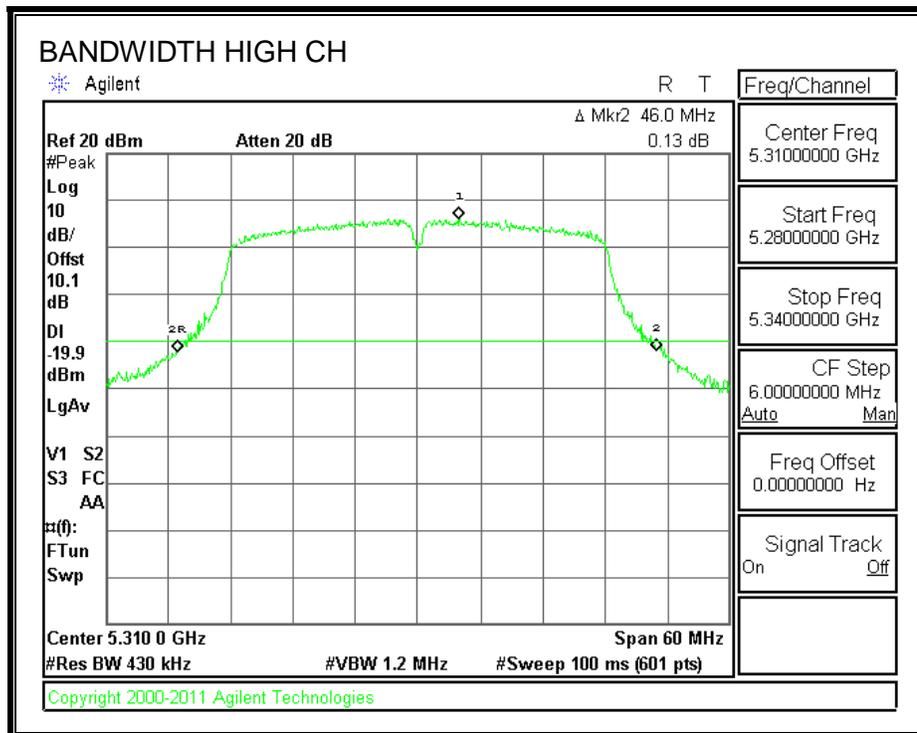
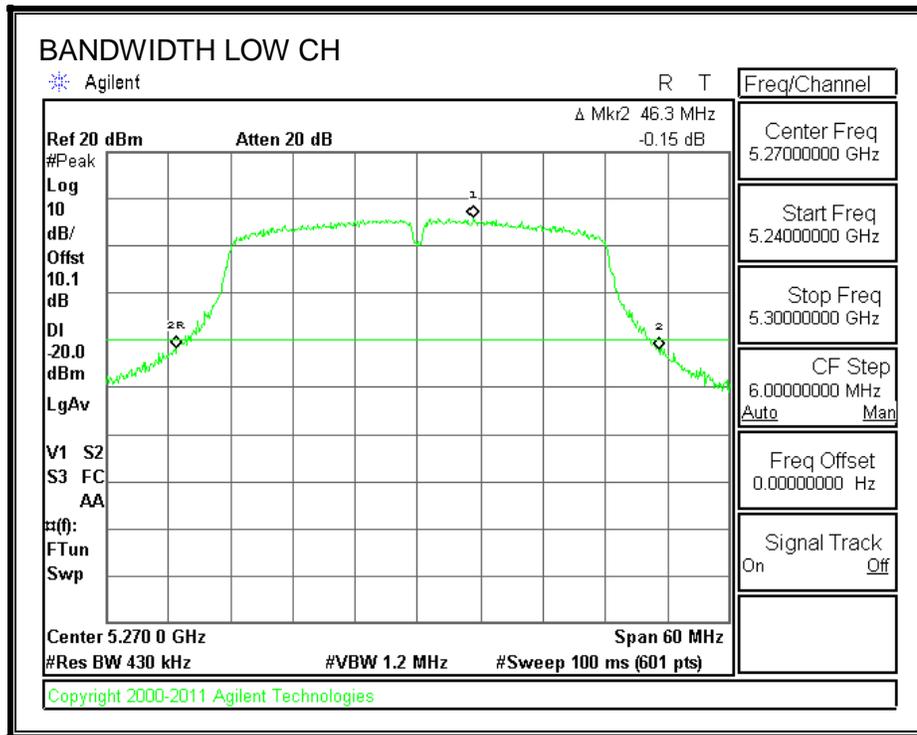
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5270	46.3
High	5310	46.0

26 dB BANDWIDTH



9.6.2. 99% BANDWIDTH

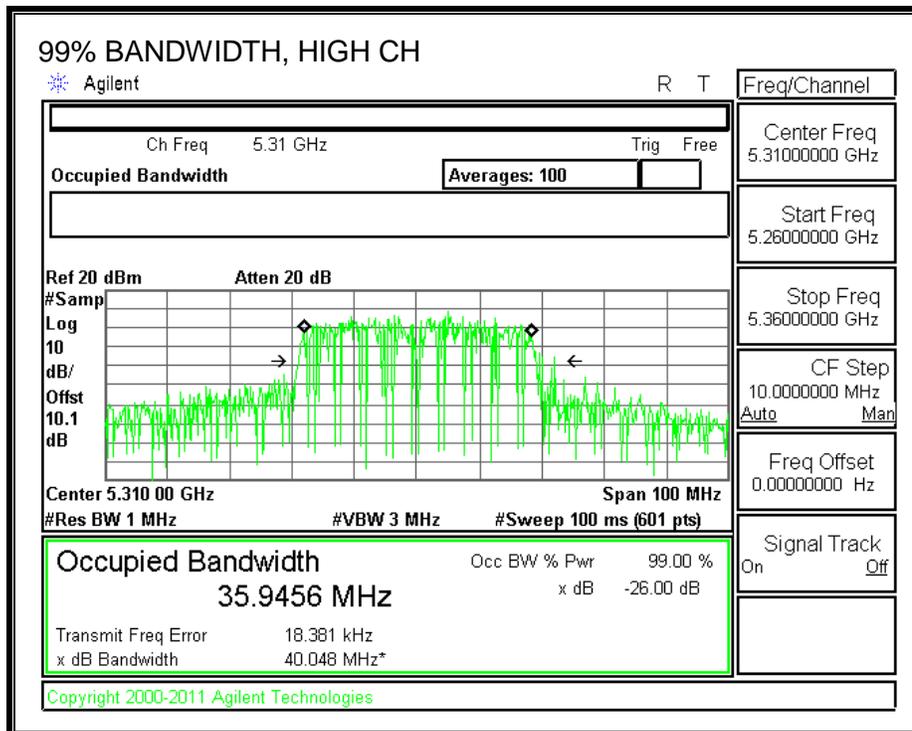
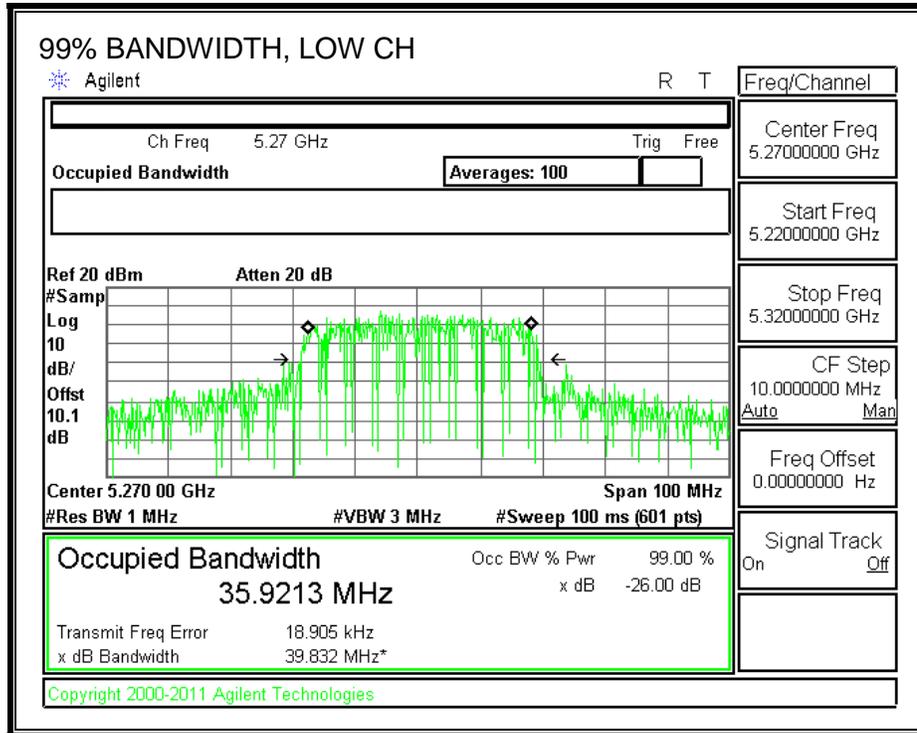
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5270	35.9
High	5310	35.9

99% BANDWIDTH



9.6.3. 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 dB (including 10 dB pad and 1 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	5270	10.4
High	5310	10.5

9.6.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (1)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band 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 MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the 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)

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.

RESULTS

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC PSD Limit (dBm)	PPSD Limit (dBm)
Low	5270	24.00	24.00	30.00	24.00	11.00	11.00	11.00
High	5310	24.00	24.00	30.00	24.00	11.00	11.00	11.00

Duty Cycle CF (dB)	0.44	Included in Calculations of Corr'd Power & PPSD
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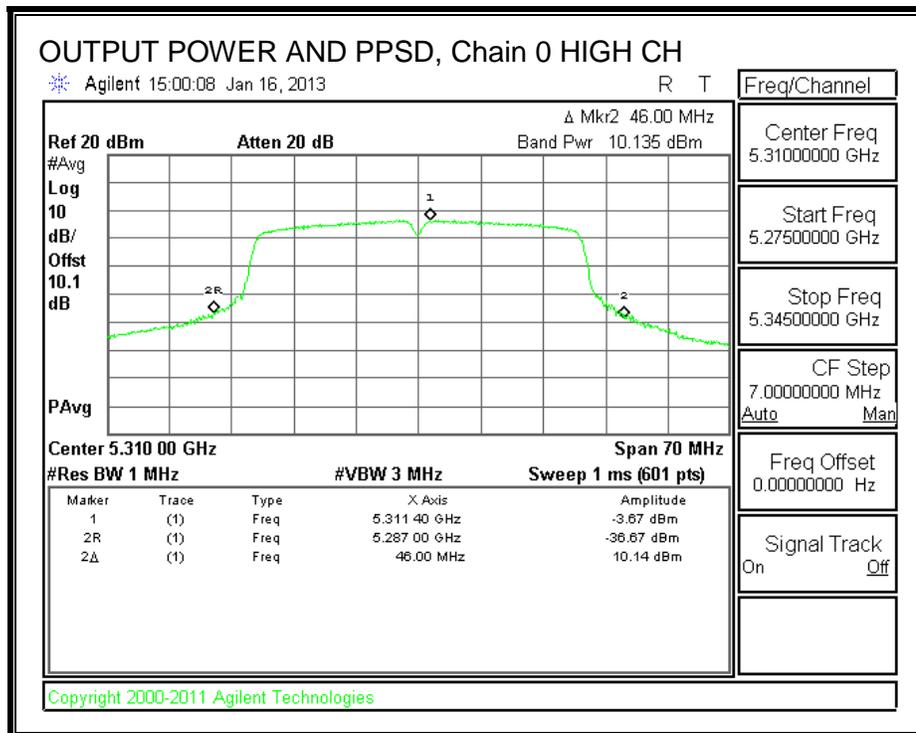
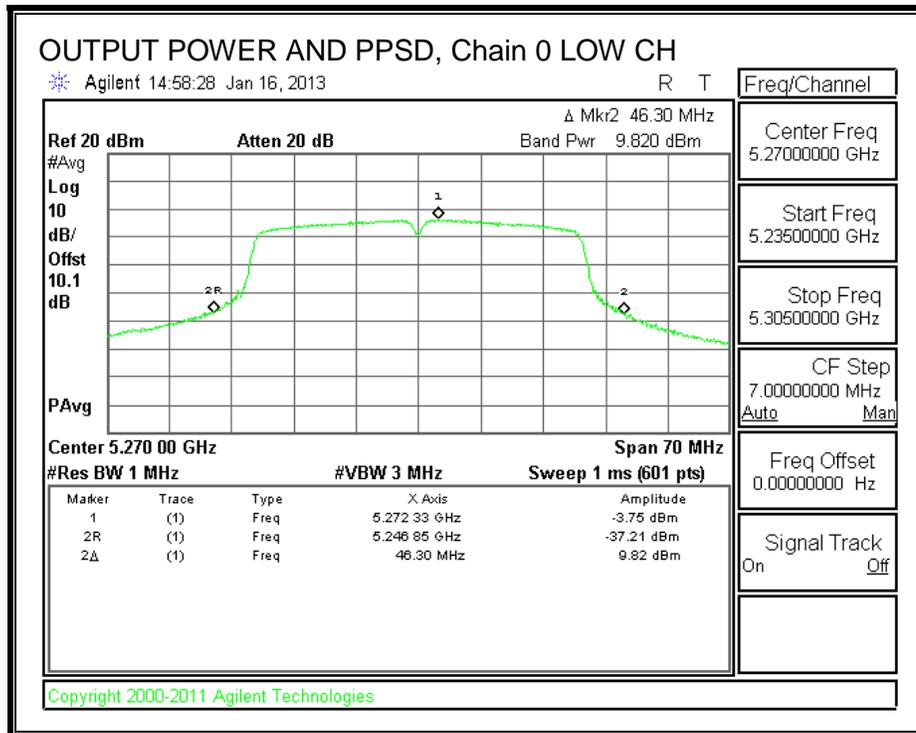
Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5270	9.82	10.26	24.00	-13.74
High	5310	10.14	10.58	24.00	-13.43

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5270	-3.75	-3.31	11.00	-14.31
High	5310	-3.67	-3.23	11.00	-14.23

OUTPUT POWER AND PPSD, Chain 0



9.6.5. 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

Refer to the results of 802.11n HT20 mode in the 5.2 GHz band.

9.7. 802.11a MODE IN THE 5.6 GHz BAND

9.7.1. 26 dB BANDWIDTH

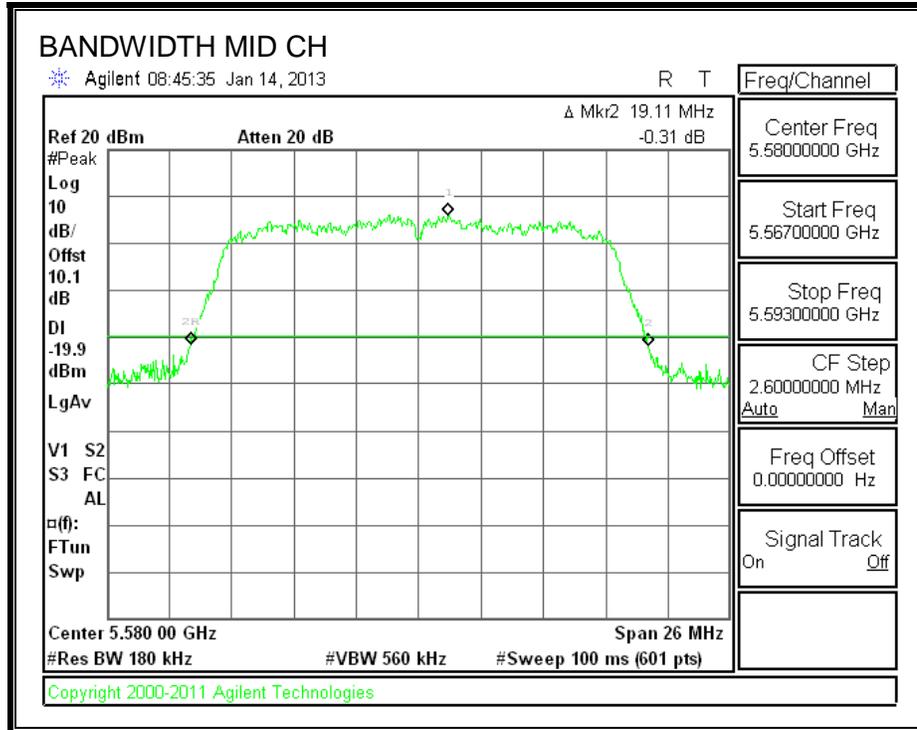
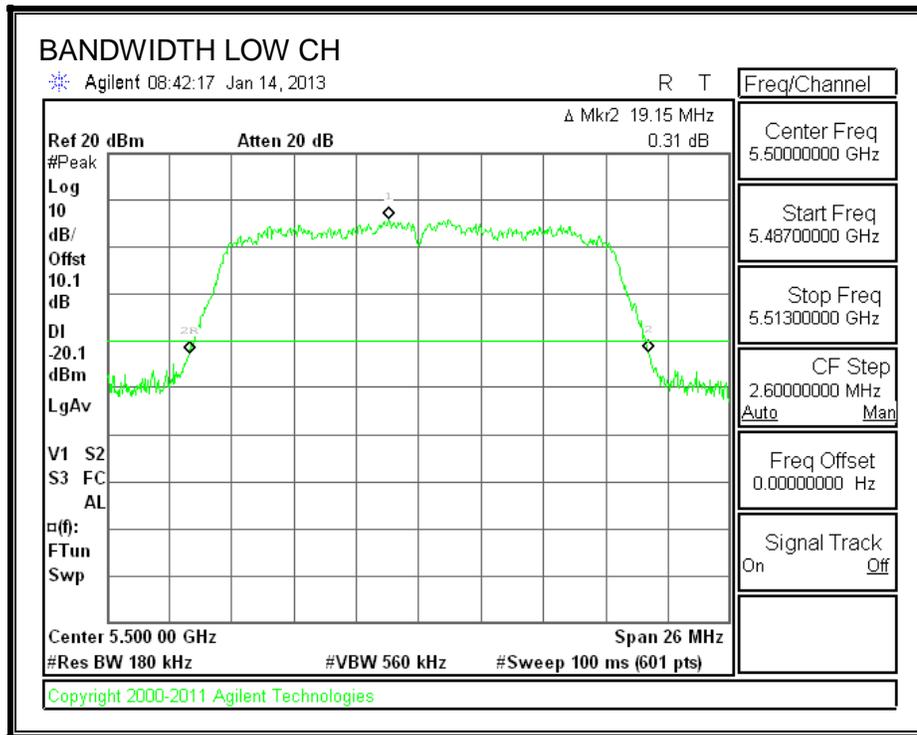
LIMITS

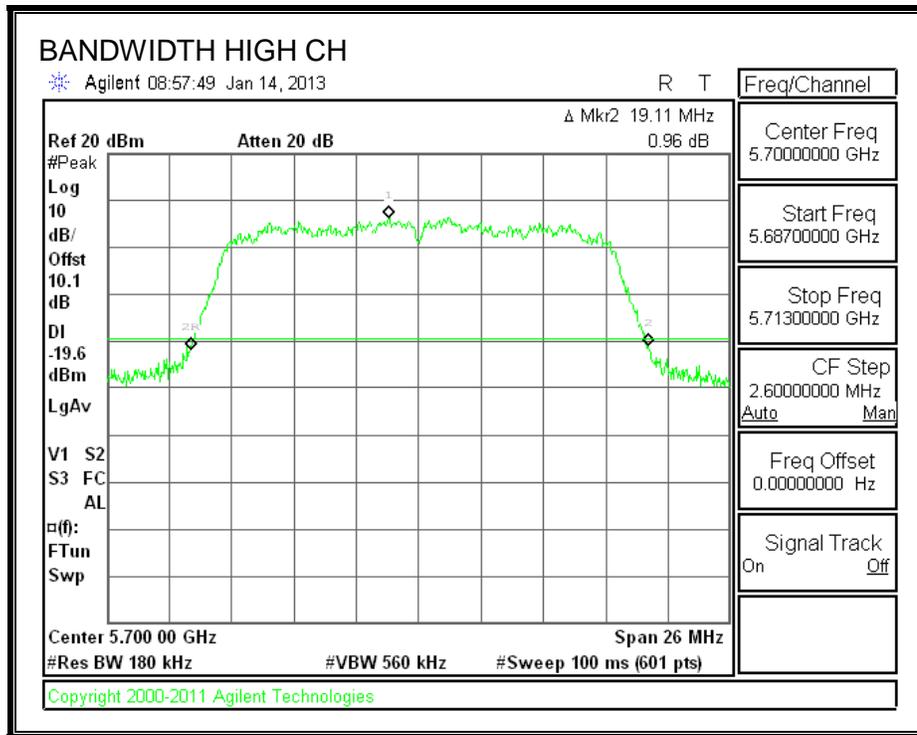
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5500	19.2
Mid	5580	19.1
High	5700	19.1

26 dB BANDWIDTH





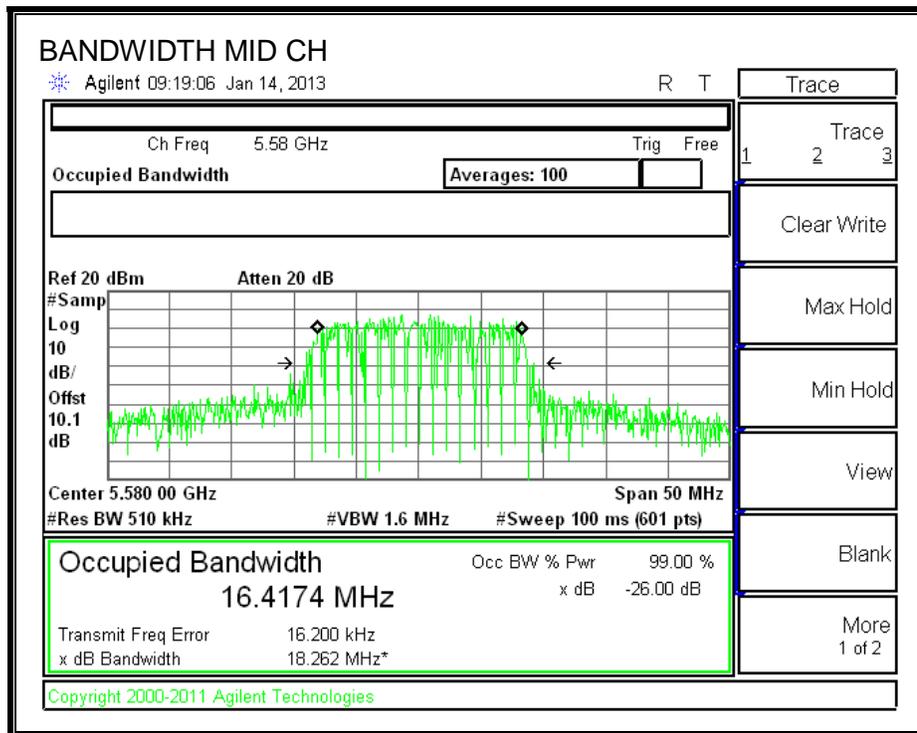
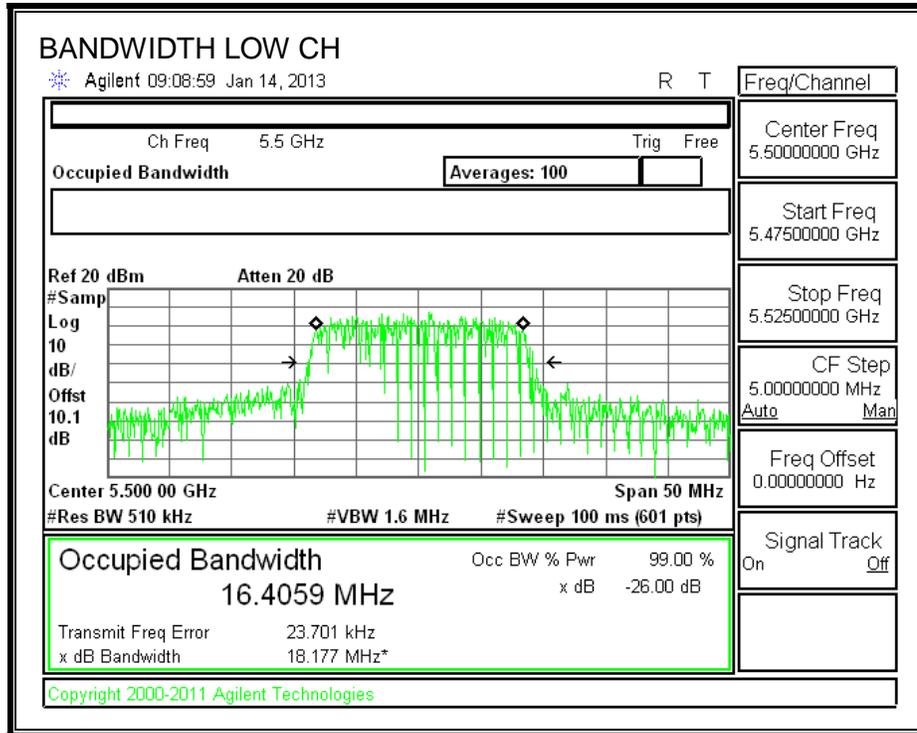
9.7.2. 99% BANDWIDTH

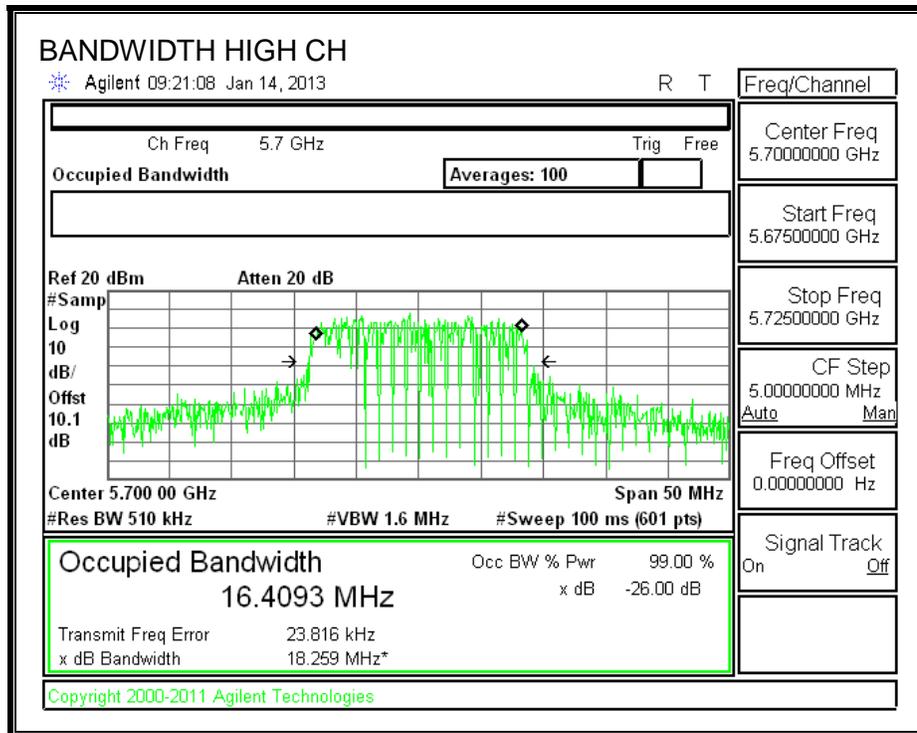
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5500	16.4
Mid	5580	16.4
High	5700	16.4





9.7.3. 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 dB (including 10 dB pad and 1 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	11.4
Mid	5580	11.7
High	5700	11.8

9.7.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (1)

For the band 5.5–5.7 GHz, the maximum conducted output power over the frequency band 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 MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the 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)

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.

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
Low	5500	19.2	16.4	-6.40
Mid	5580	19.1	16.4	-6.40
High	5700	19.1	16.4	-6.40

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC PSD Limit (dBm)	PPSD Limit (dBm)
Low	5500	23.82	23.15	29.15	23.15	11.00	11.00	11.00
Mid	5580	23.81	23.15	29.15	23.15	11.00	11.00	11.00
High	5700	23.81	23.15	29.15	23.15	11.00	11.00	11.00

Duty Cycle CF (dB)	0.20	Included in Calculations of Corr'd Power & PPSD
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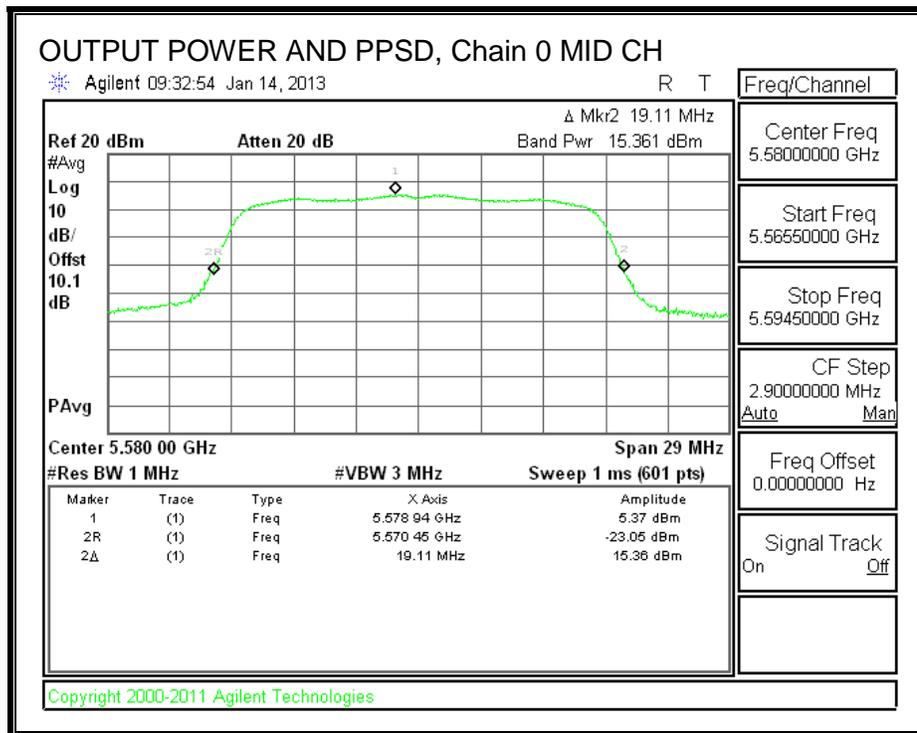
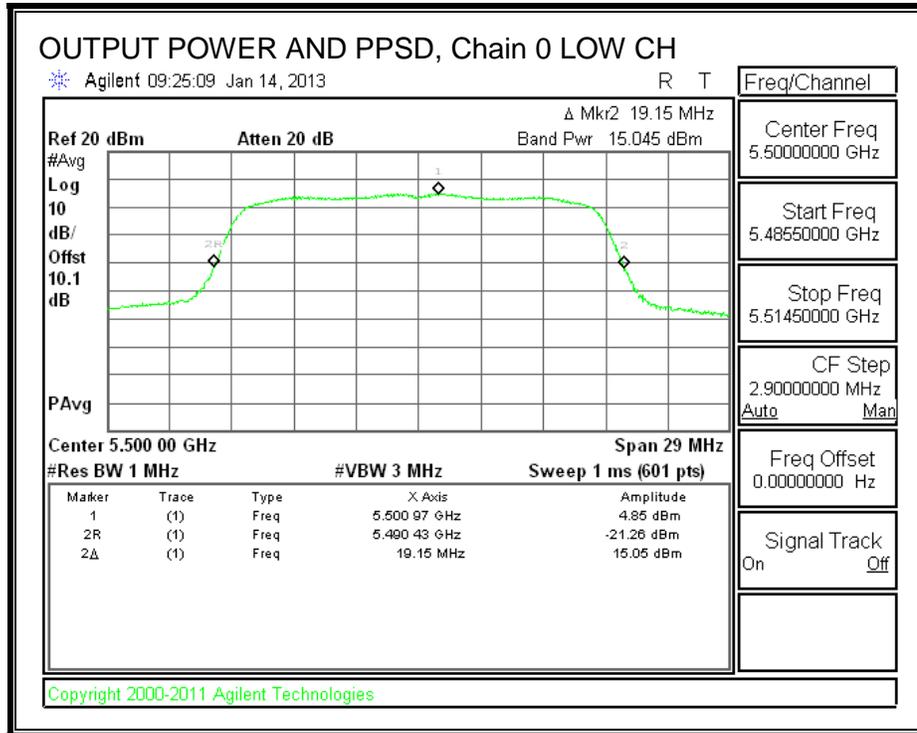
Output Power Results

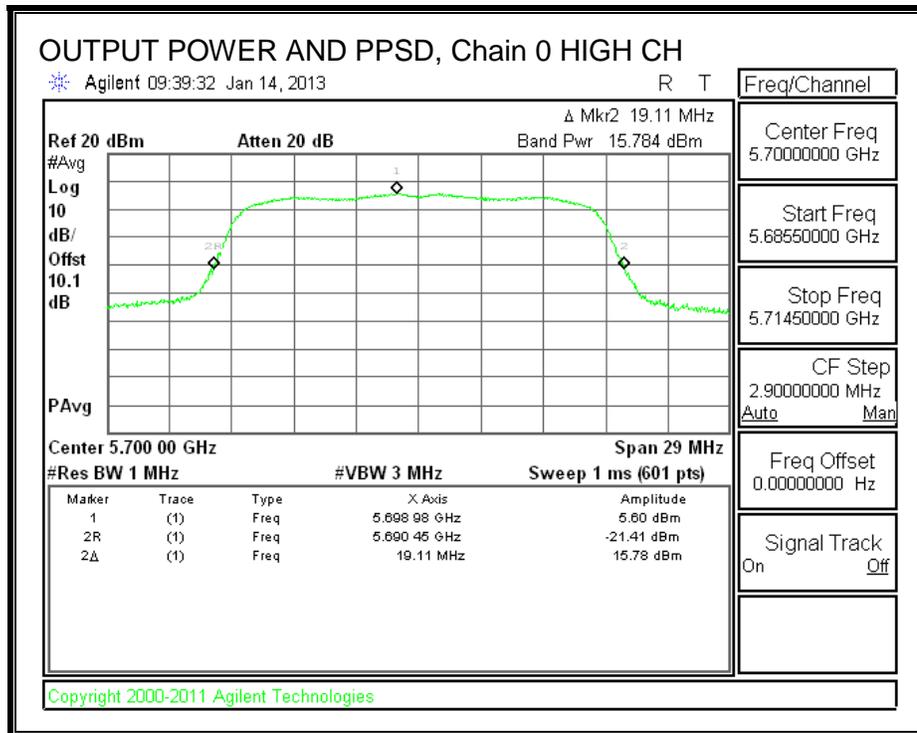
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5500	15.05	15.25	23.15	-7.91
Mid	5580	15.36	15.56	23.15	-7.59
High	5700	15.78	15.98	23.15	-7.17

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5500	4.85	5.05	11.00	-5.95
Mid	5580	5.37	5.57	11.00	-5.43
High	5700	5.60	5.80	11.00	-5.20

OUTPUT POWER AND PPSD, Chain 0





9.7.5. 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

Refer to the results of 802.11n HT20 mode in the 5.2 GHz band.

9.8. 802.11n HT20 MODE IN THE 5.6 GHz BAND

9.8.1. 26 dB BANDWIDTH

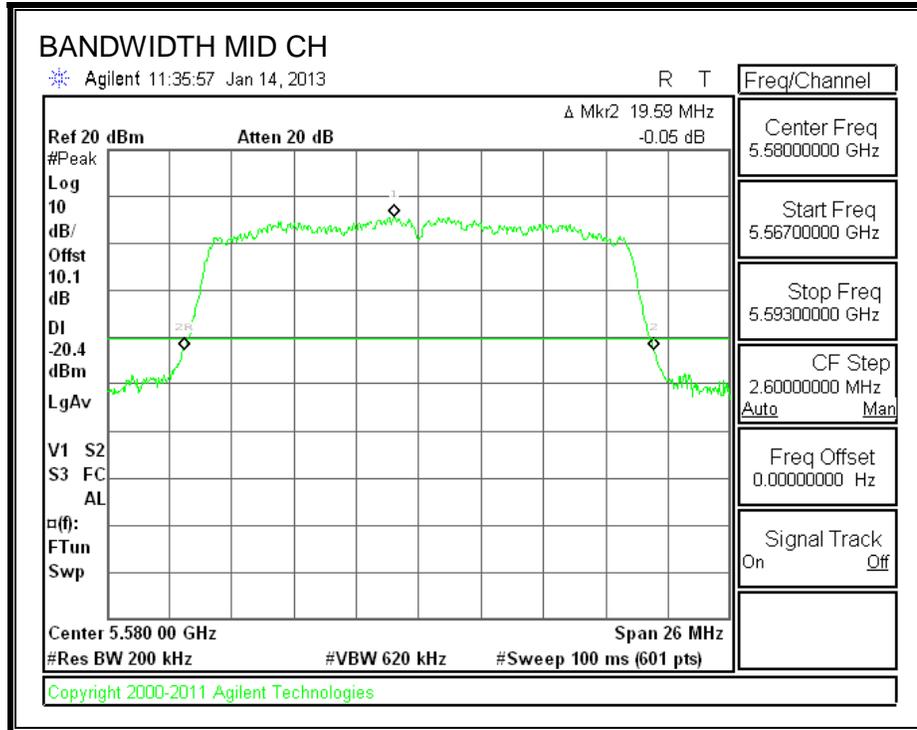
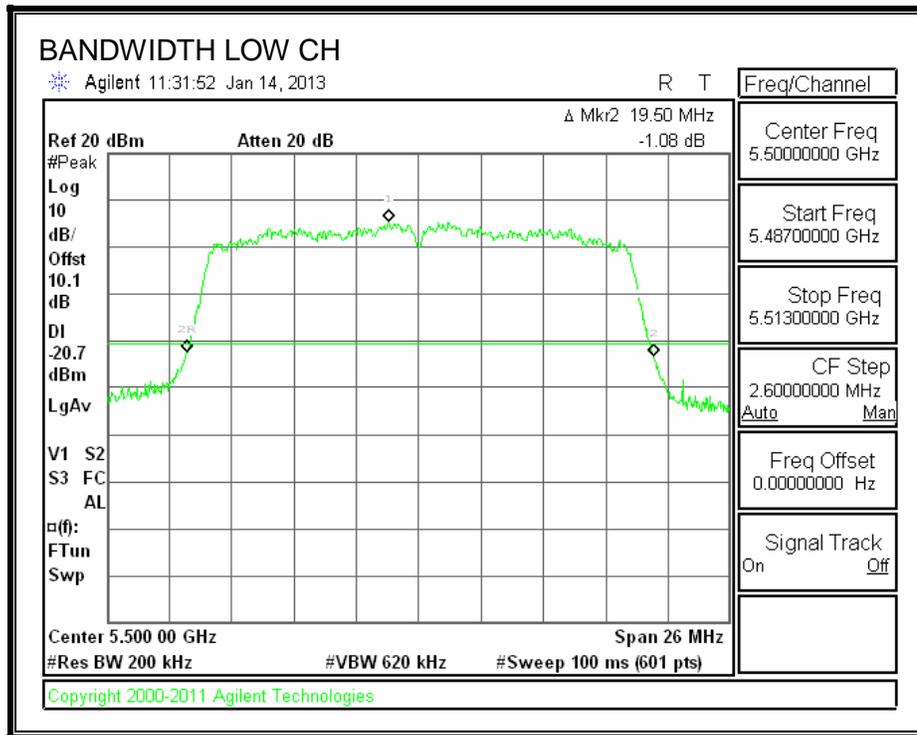
LIMITS

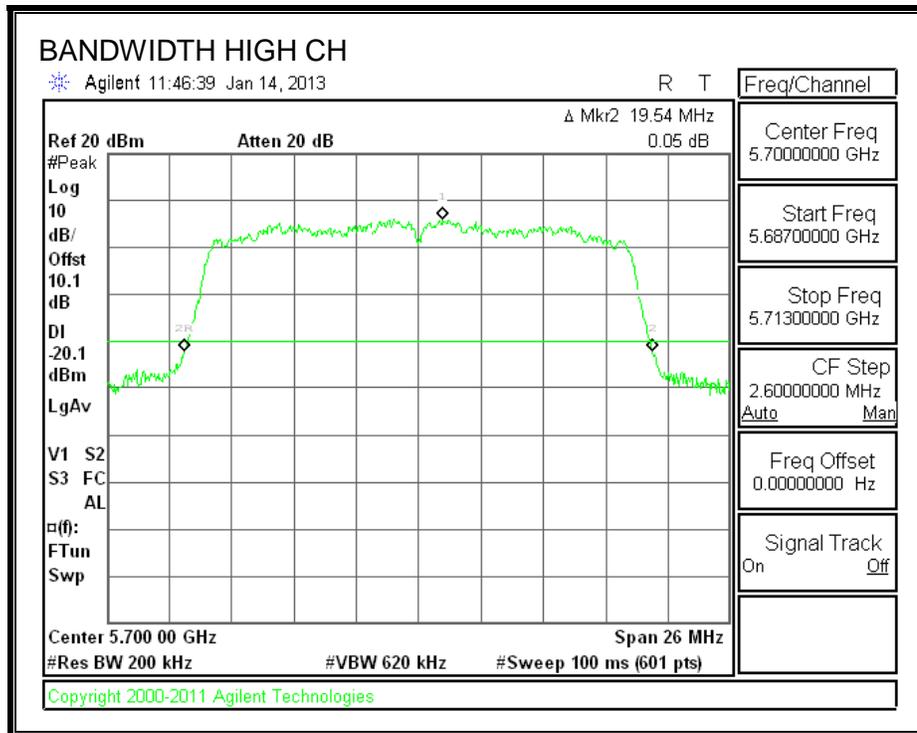
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5500	19.5
Mid	5580	19.6
High	5700	19.5

26 dB BANDWIDTH





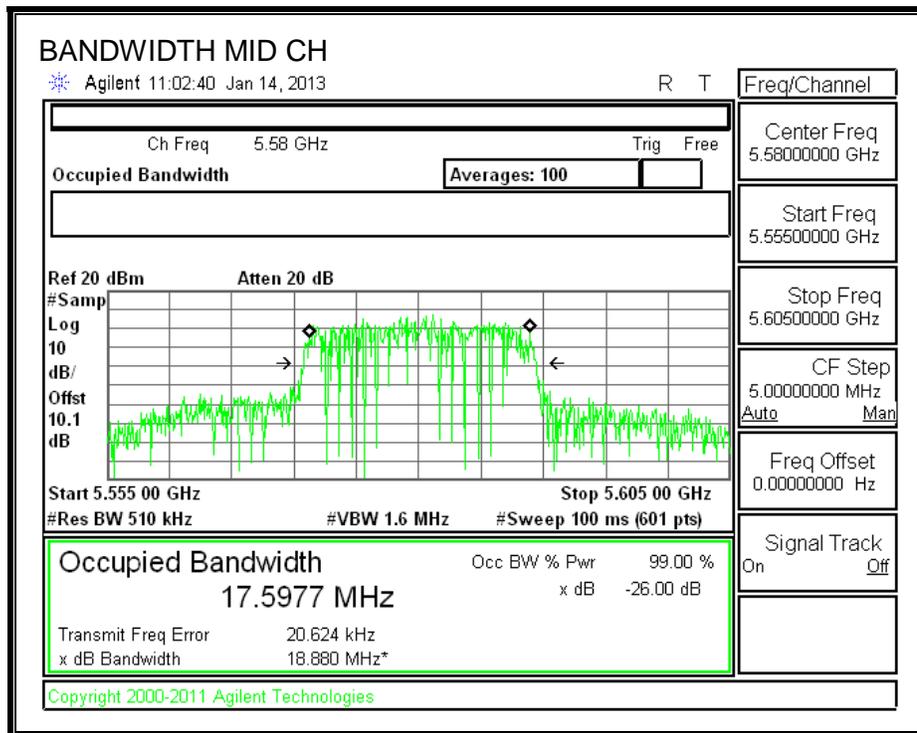
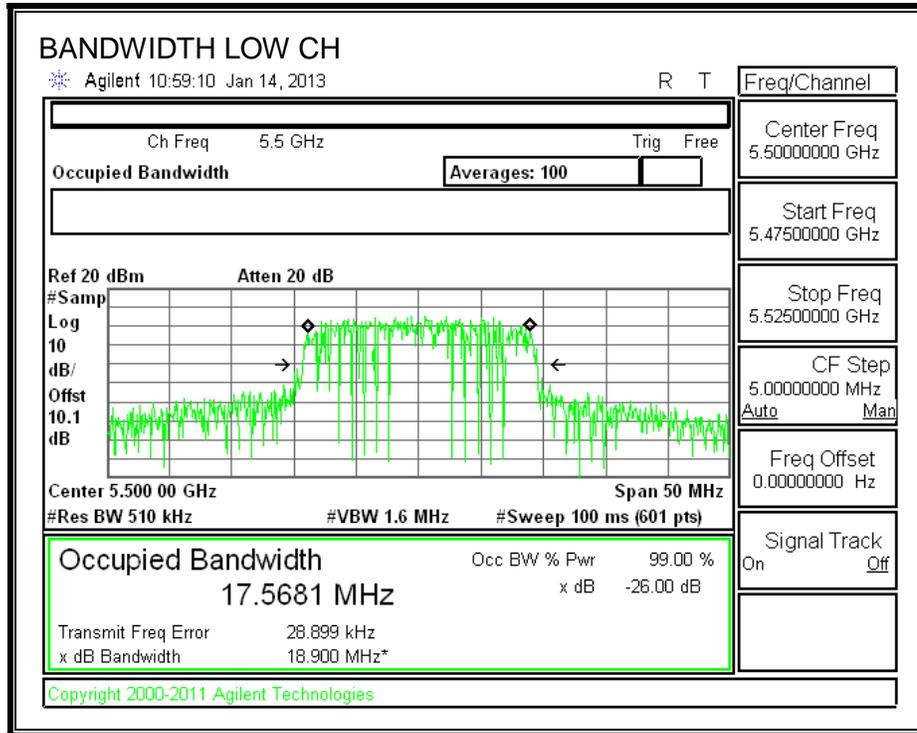
9.8.2. 99% BANDWIDTH

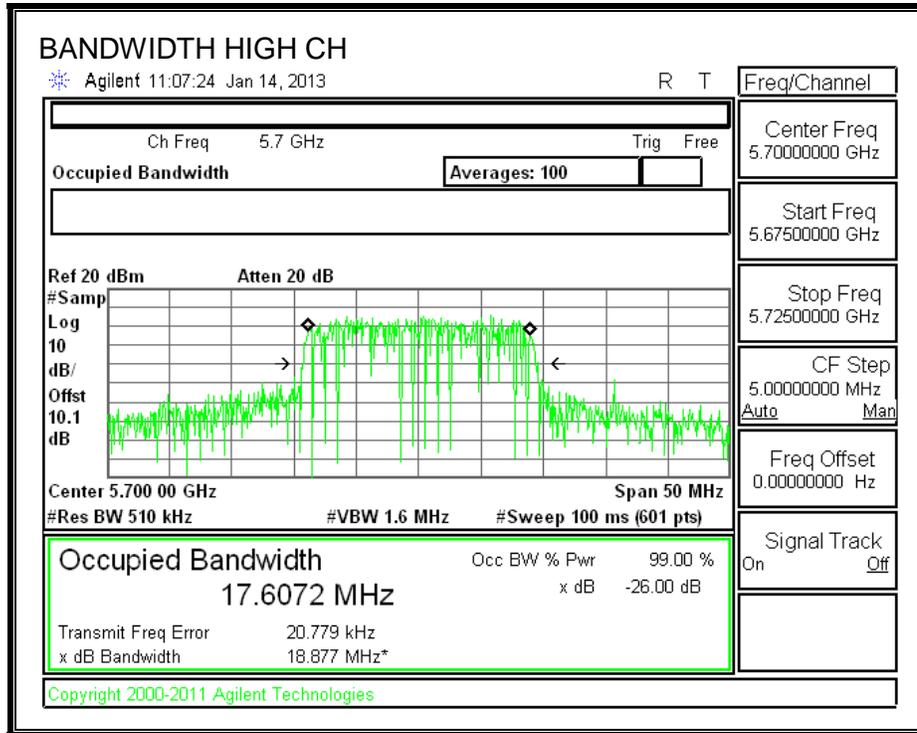
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5500	17.6
Mid	5580	17.6
High	5700	17.6





9.8.3. 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 dB (including 10 dB pad and 1 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	10.3
Mid	5580	10.5
High	5700	10.9

9.8.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (1)

For the band 5.5–5.7 GHz, the maximum conducted output power over the frequency band 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 MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the 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)

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.

RESULTS

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC PSD Limit (dBm)	PPSD Limit (dBm)
Low	5500	23.90	23.45	29.45	23.45	11.00	11.00	11.00
Mid	5580	23.92	23.45	29.45	23.45	11.00	11.00	11.00
High	5700	23.91	23.46	29.46	23.46	11.00	11.00	11.00

Duty Cycle CF (dB)	0.22	Included in Calculations of Corr'd Power & PPSD
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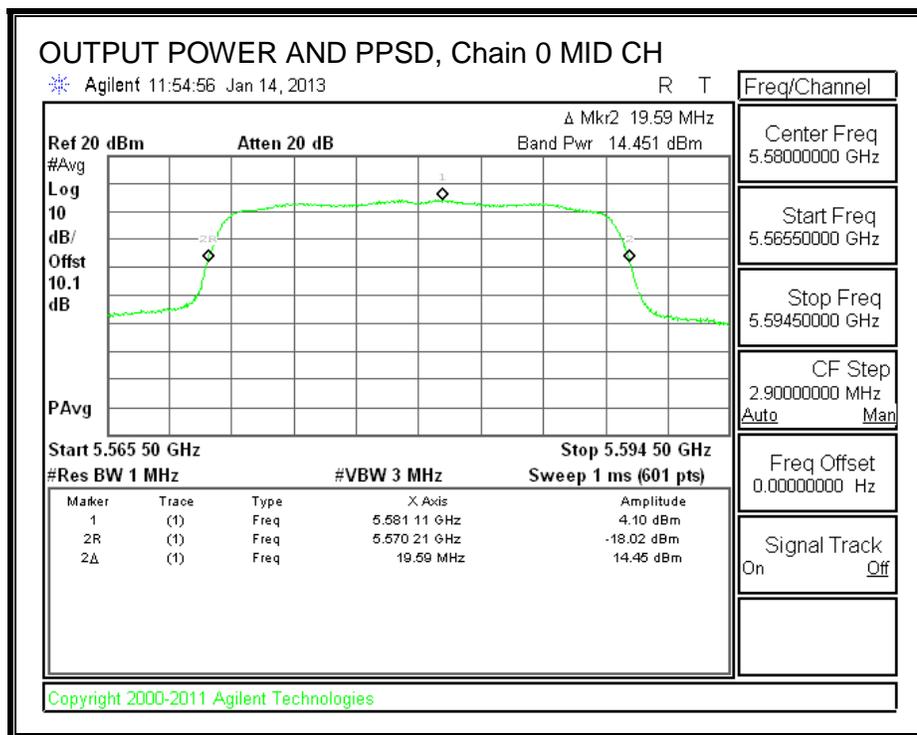
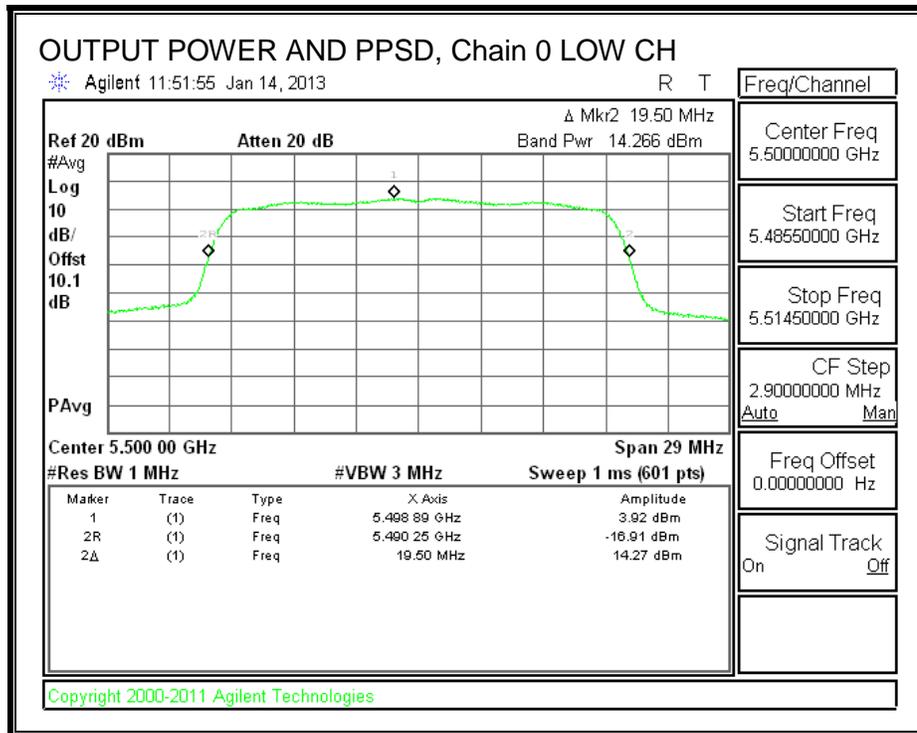
Output Power Results

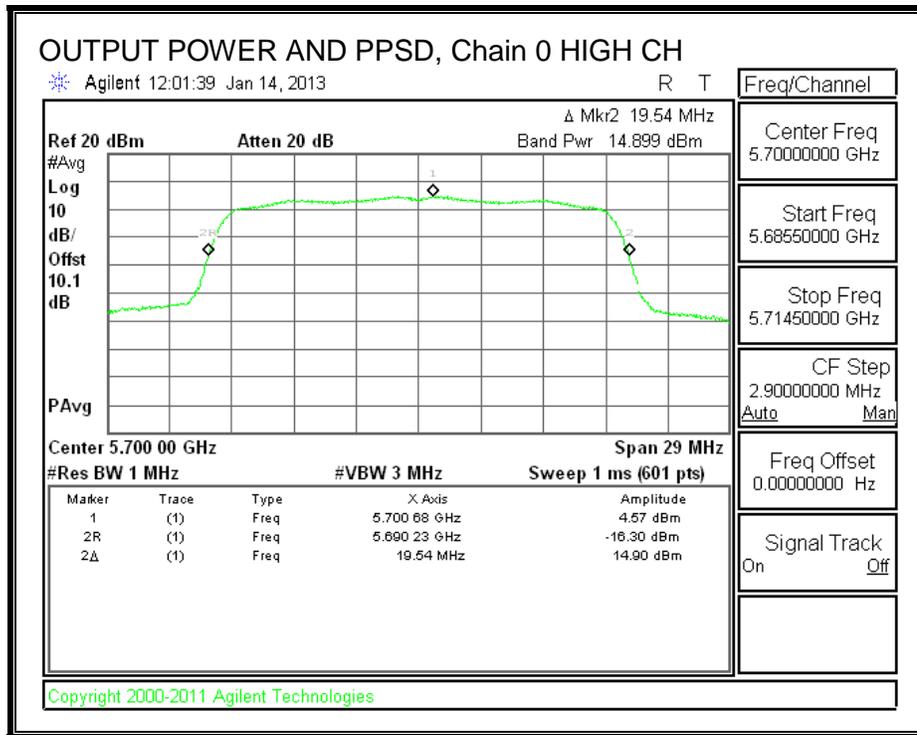
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5500	14.27	14.49	23.45	-8.96
Mid	5580	14.45	14.67	23.45	-8.78
High	5700	14.90	15.12	23.46	-8.34

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5500	3.92	4.14	11.00	-6.86
Mid	5580	4.10	4.32	11.00	-6.68
High	5700	4.57	4.79	11.00	-6.21

OUTPUT POWER AND PPSD, Chain 0





9.8.5. 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

Refer to the results of 802.11n HT20 mode in the 5.2 GHz band.

9.9. 802.11n HT40 MODE IN THE 5.6 GHz BAND

9.9.1. 26 dB BANDWIDTH

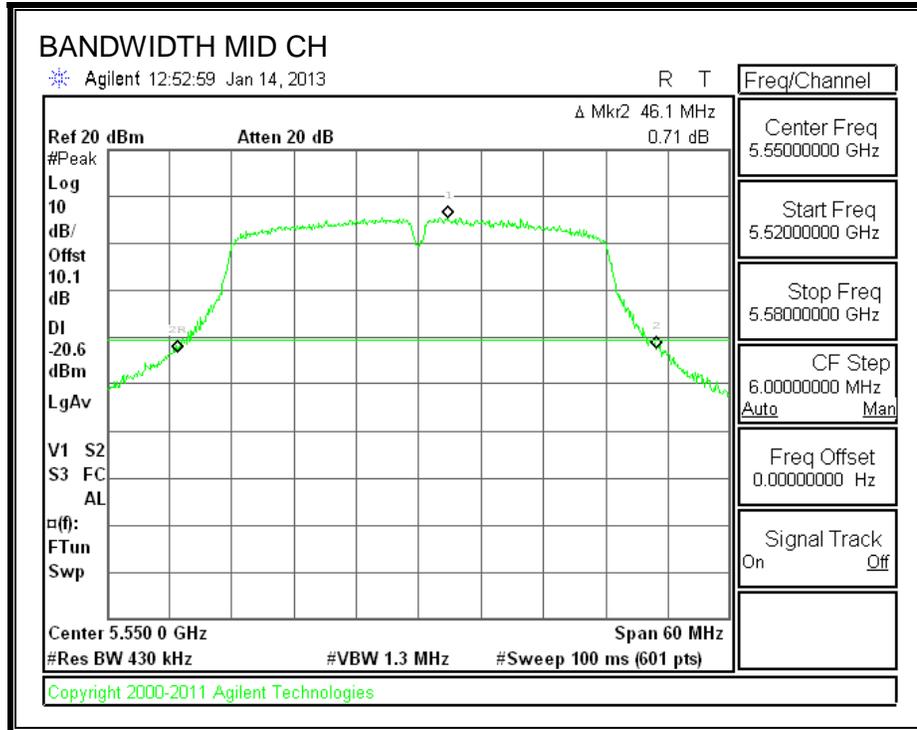
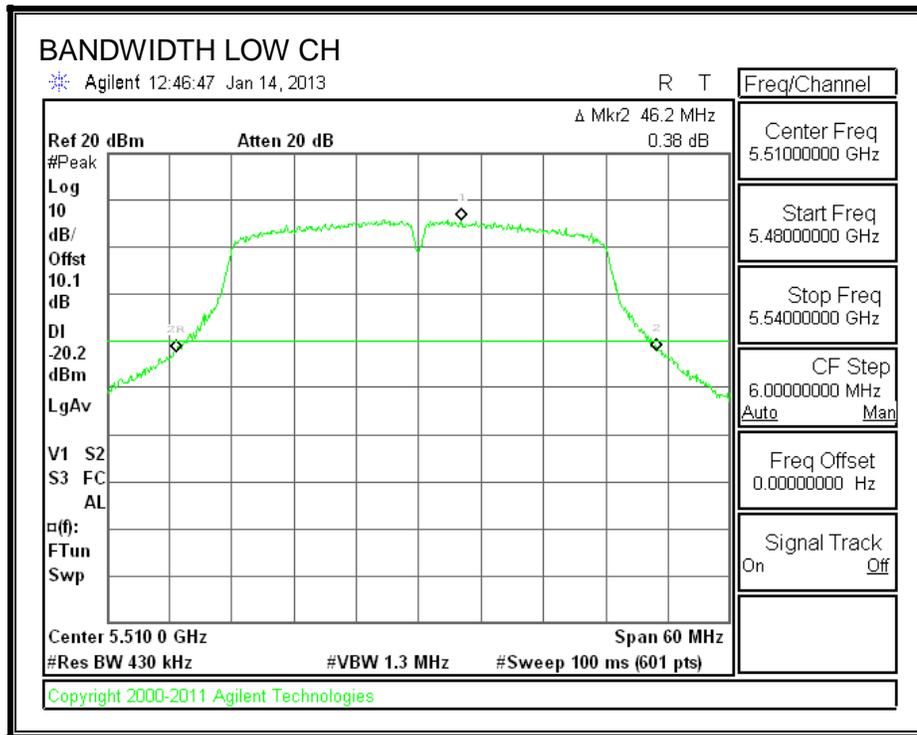
LIMITS

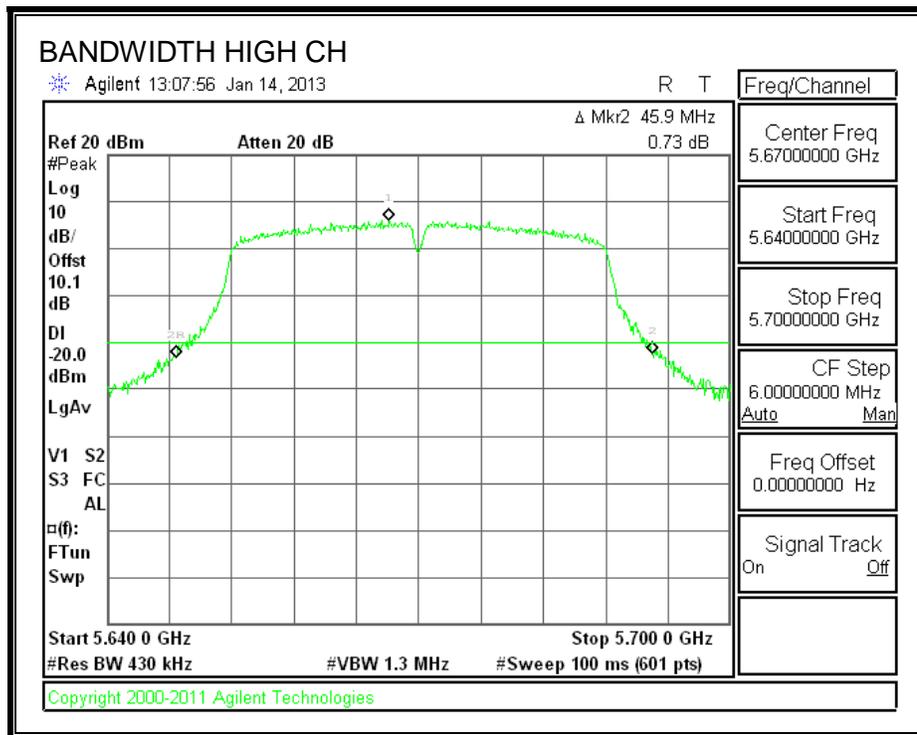
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5510	46.2
Mid	5550	46.1
High	5670	45.9

26 dB BANDWIDTH





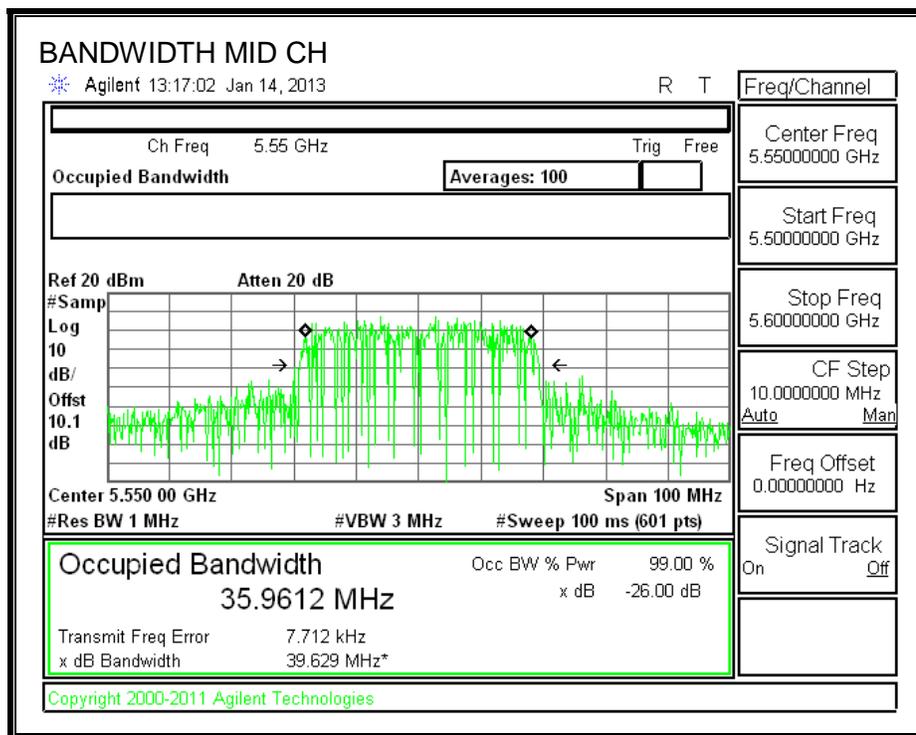
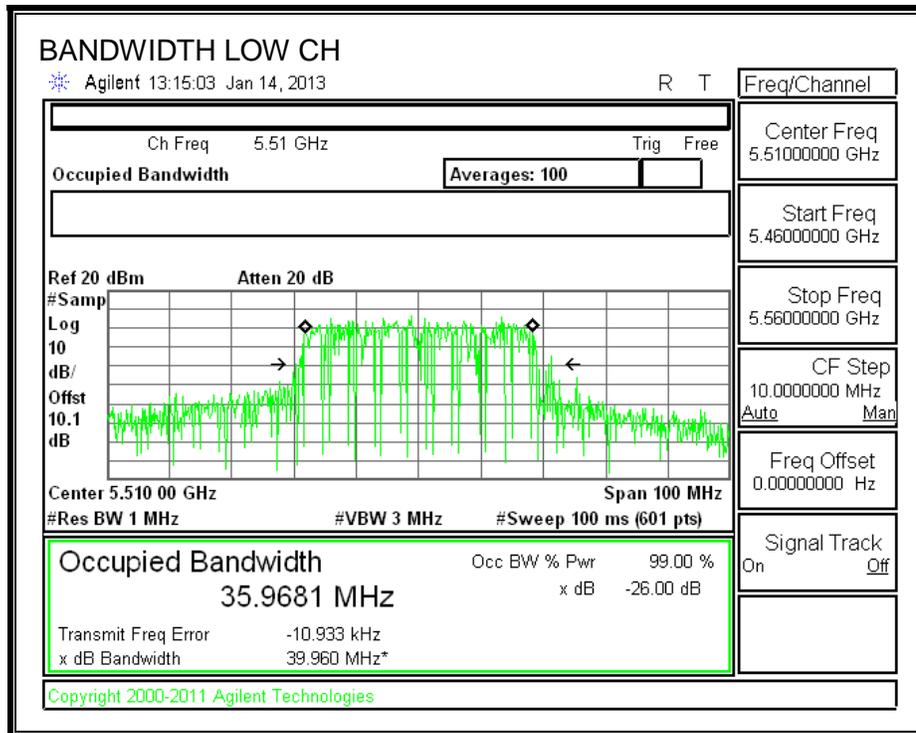
9.9.2. 99% BANDWIDTH

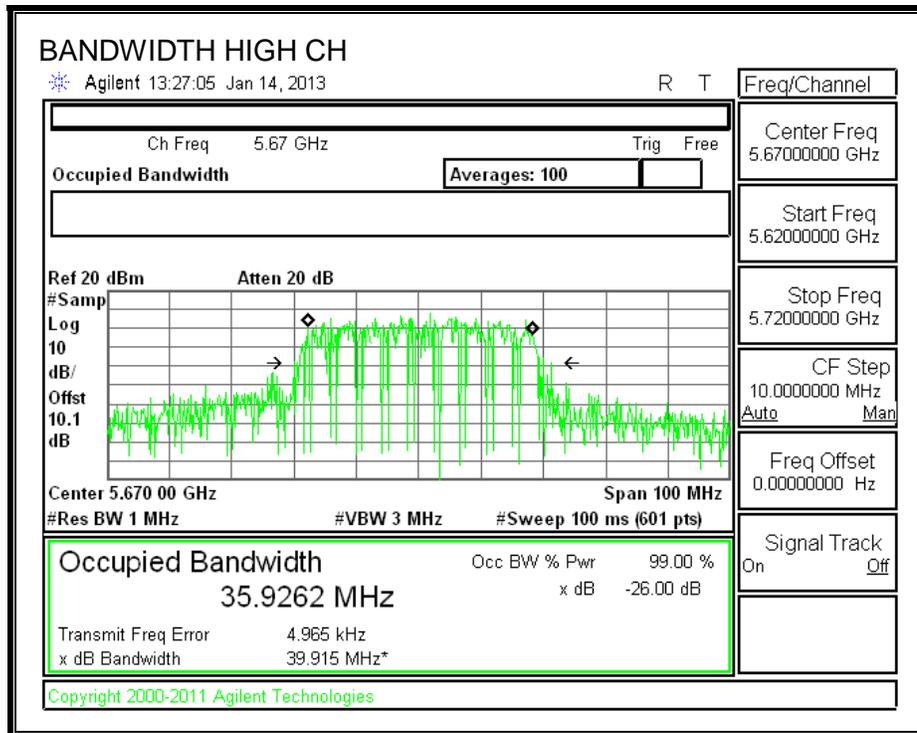
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5510	36.0
Mid	5550	36.0
High	5670	35.9





9.9.3. 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 dB (including 10 dB pad and 1 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	5510	9.9
High	5670	10.3

9.9.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (1)

For the band 5.5–5.7 GHz, the maximum conducted output power over the frequency band 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 MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the 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)

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.

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
Low	5510	46.2	36.0	-6.40
Mid	5550	46.1	36.0	-6.40
High	5670	45.9	35.9	-6.40

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC PSD Limit (dBm)	PPSD Limit (dBm)
Low	5510	24.00	24.00	30.00	24.00	11.00	11.00	11.00
Mid	5550	24.00	24.00	30.00	24.00	11.00	11.00	11.00
High	5670	24.00	24.00	30.00	24.00	11.00	11.00	11.00

Duty Cycle CF (dB)	0.44	Included in Calculations of Corr'd Power & PPSD
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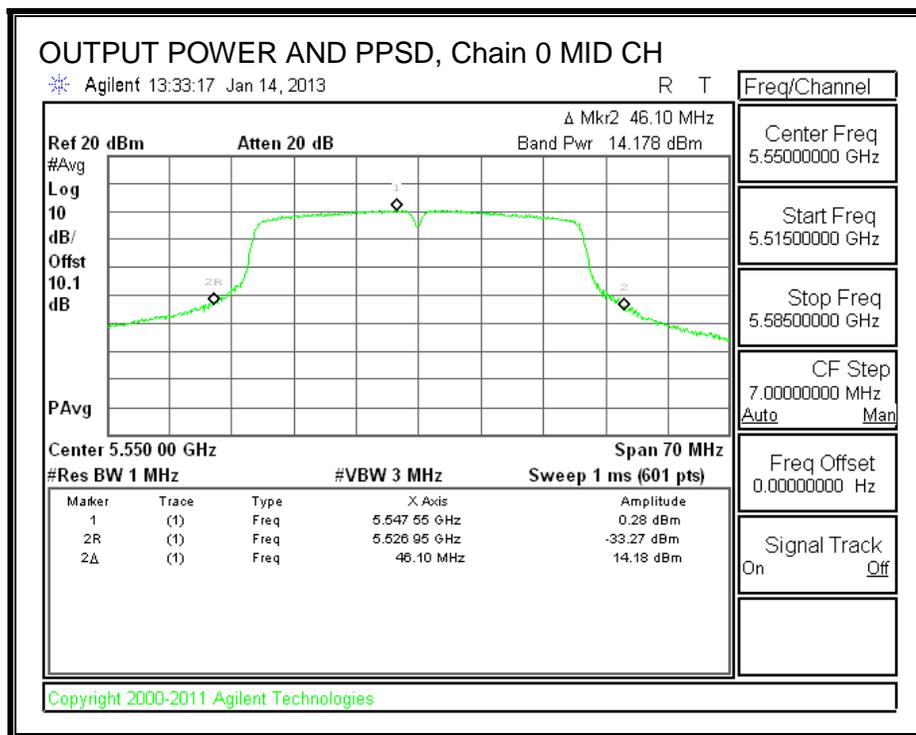
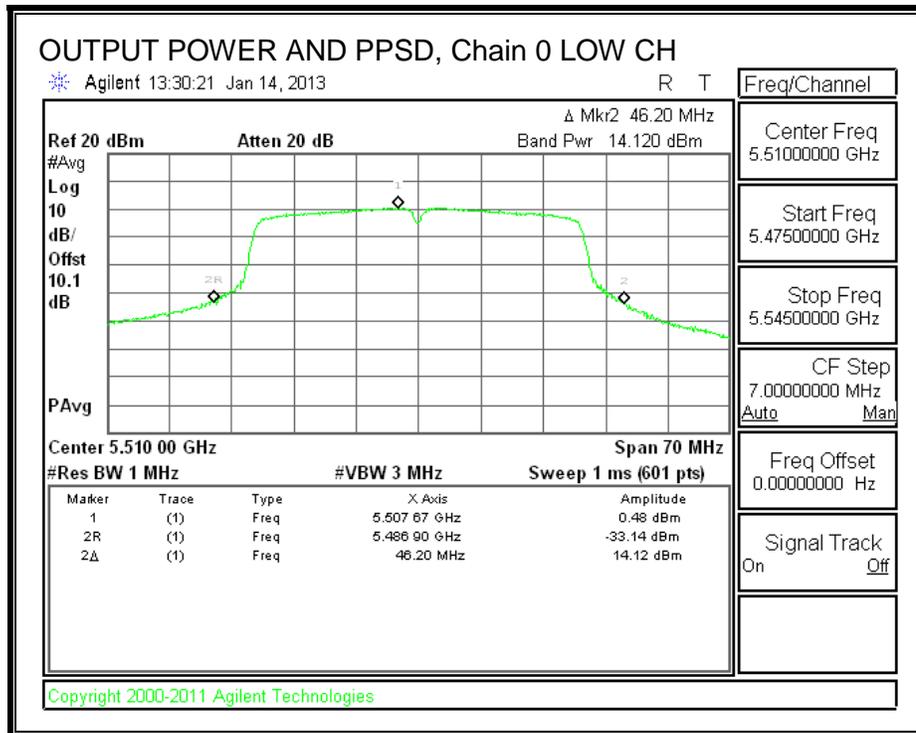
Output Power Results

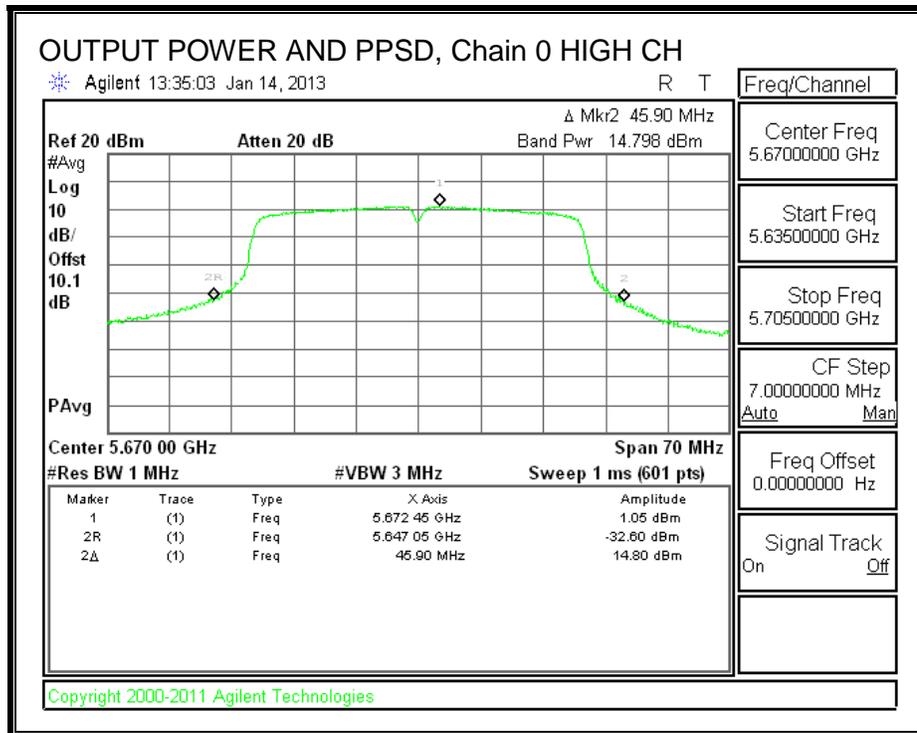
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5510	14.12	14.56	24.00	-9.44
Mid	5550	14.18	14.62	24.00	-9.38
High	5670	14.80	15.24	24.00	-8.76

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5510	0.48	0.92	11.00	-10.08
Mid	5550	0.28	0.72	11.00	-10.28
High	5670	1.05	1.49	11.00	-9.51

OUTPUT POWER AND PPSD, Chain 0





9.9.5. 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

Refer to the results of 802.11n HT20 mode in the 5.2 GHz band.

10. RADIATED TEST RESULTS

10.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-210 Clause 2.6 (Transmitter)

IC RSS-GEN Clause 6 (Receiver)

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

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

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

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

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

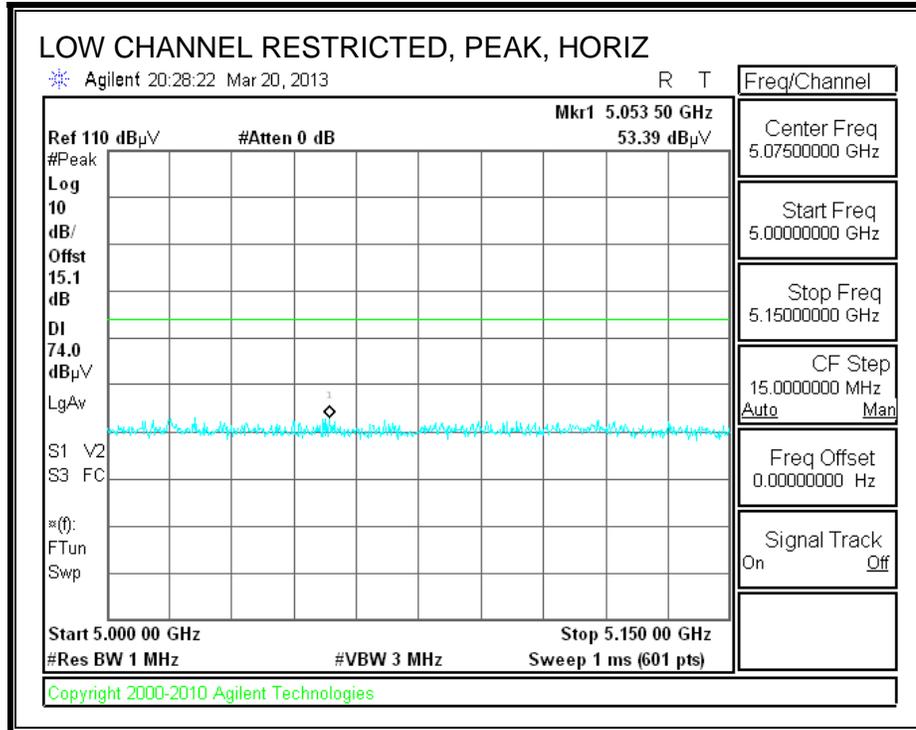
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

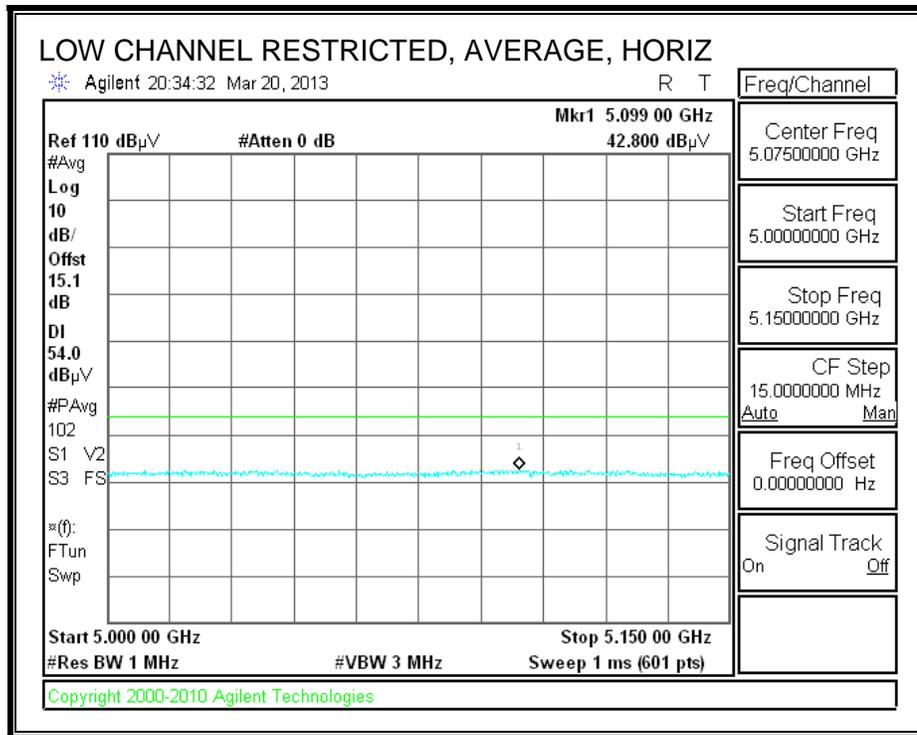
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

10.2. TRANSMITTER ABOVE 1 GHz

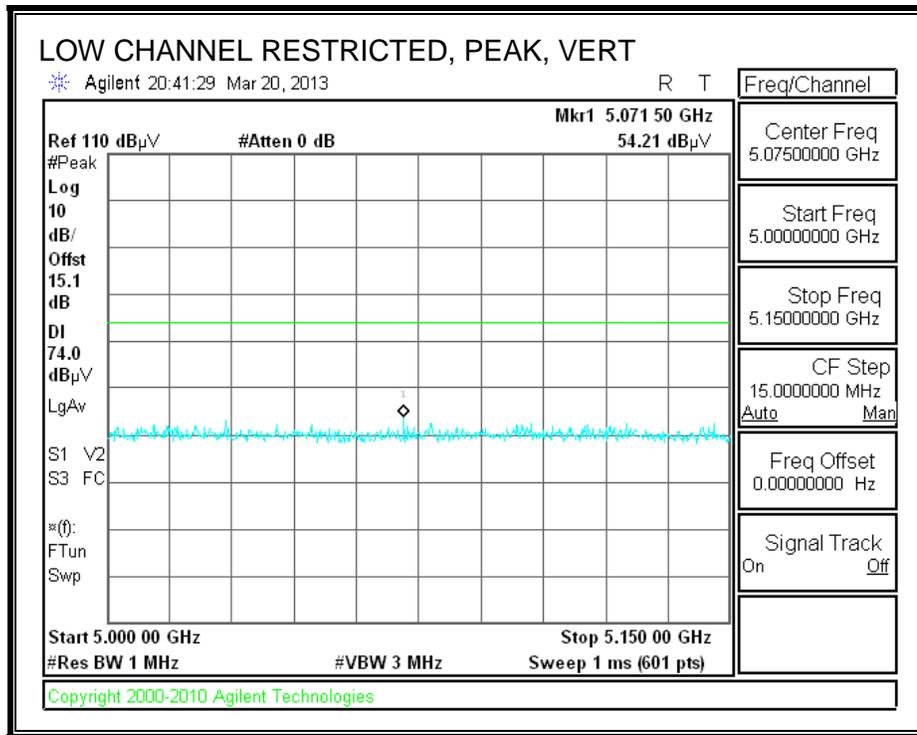
10.2.1. TX ABOVE 1 GHz 802.11a MODE IN THE 5.2 GHz BAND

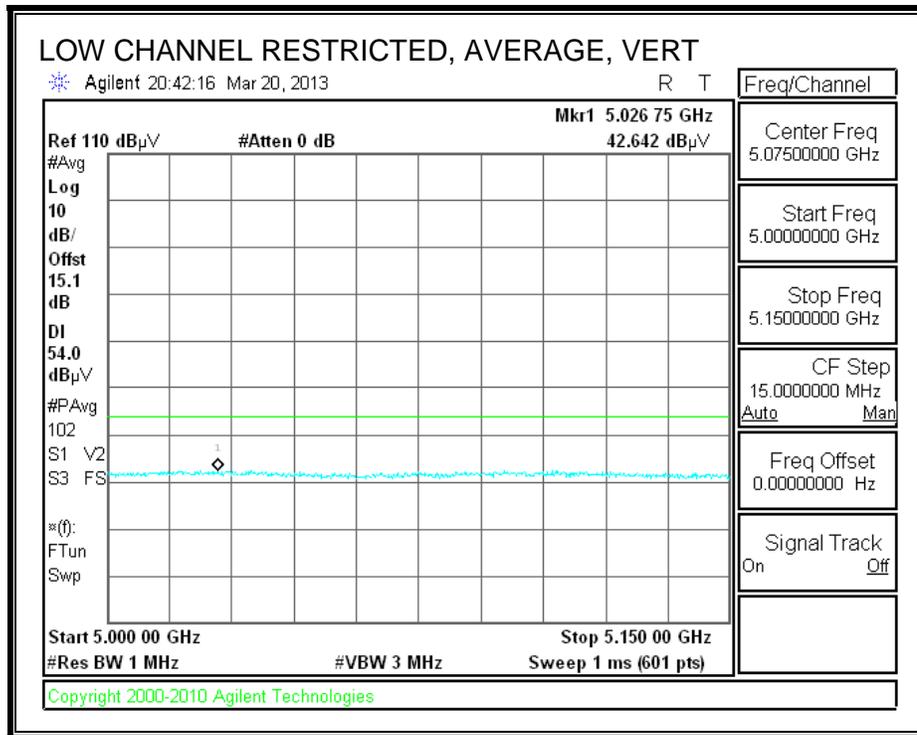
RESTRICTED BANDEDGE (LOW CHANNEL)





Actual Average = Measured Average + Correction Factor
 = 42.8 dBuV + 0.2
 = 43.0 dBuV





Actual Average = Measured Average + Correction Factor
 = 42.642 dBuV + 0.2
 = 42.842 dBuV

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
 Compliance Certification Services, Fremont 5m Chamber-B

Company: LG
 Project #: 13U14917
 Date: 3/21/2013
 Test Engineer: Tony wang
 Configuration: LG870 with Headset & AC Adapter
 Mode: Tx 11a 5.2GHz mode bar

Test Equipment:

Horn 1-18GHz	Pre-amplifier 1-26GHz	Pre-amplifier 26-40GHz	Horn > 18GHz	Limit
T136; M/N: 3117 @3m	T145 Agilent 3008A0056	T88 Miteq 26-40GHz	T39; ARA 18-26GHz; S/N:1013	FCC 15.205

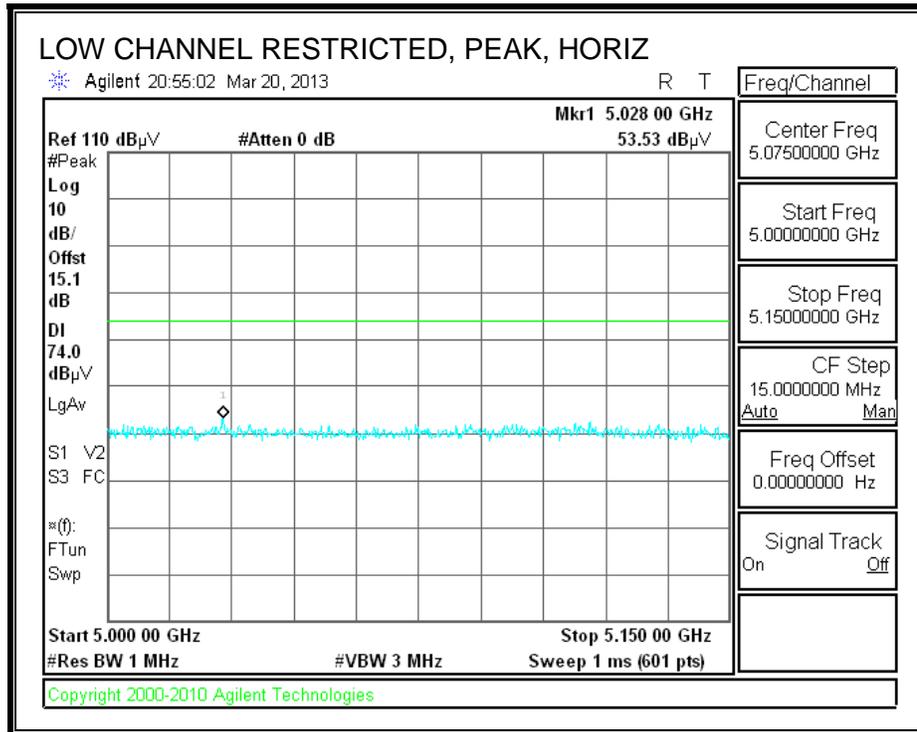
Hi Frequency Cables

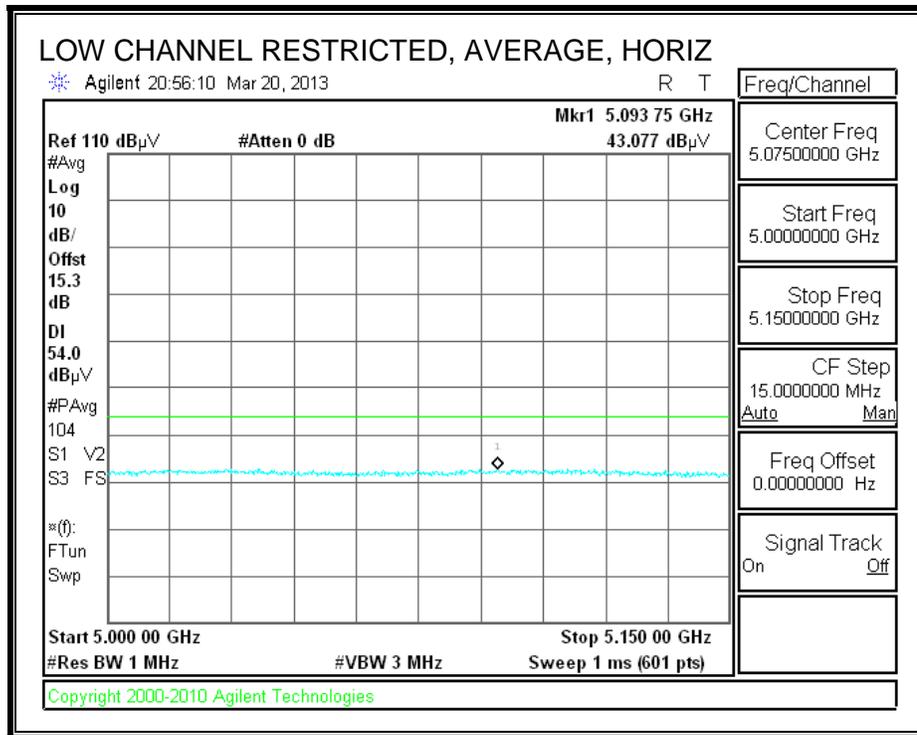
3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF	Reject Filter	Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz ; VBW=10Hz
3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF_7.6GHz		

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low ch. 5180MHz															
18.540	3.0	35.7	24.9	40.1	13.5	-32.6	0.0	0.7	57.4	46.6	74	54	-16.6	-7.4	H
18.540	3.0	35.5	24.7	40.1	13.5	-32.6	0.0	0.7	57.2	46.4	74	54	-16.8	-7.6	V
Mid ch. 5200MHz															
15.600	3.0	35.6	25.0	40.1	13.5	-32.6	0.0	0.7	57.3	46.7	74	54	-16.7	-7.3	H
15.600	3.0	35.4	25.0	40.1	13.5	-32.6	0.0	0.7	57.1	46.7	74	54	-16.9	-7.3	V
High ch. 5240MHz															
15.720	3.0	35.3	24.9	40.1	13.6	-32.5	0.0	0.7	57.2	46.8	74	54	-16.8	-7.2	H
15.720	3.0	35.2	25.0	40.1	13.6	-32.5	0.0	0.7	57.1	46.9	74	54	-16.9	-7.1	V

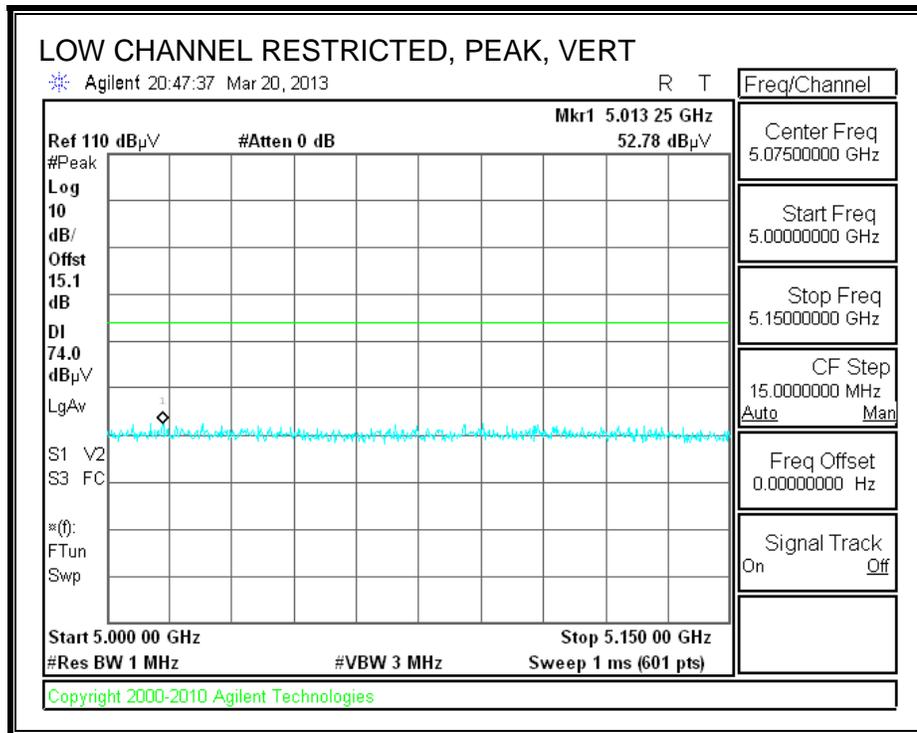
10.2.2. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.2 GHz BAND

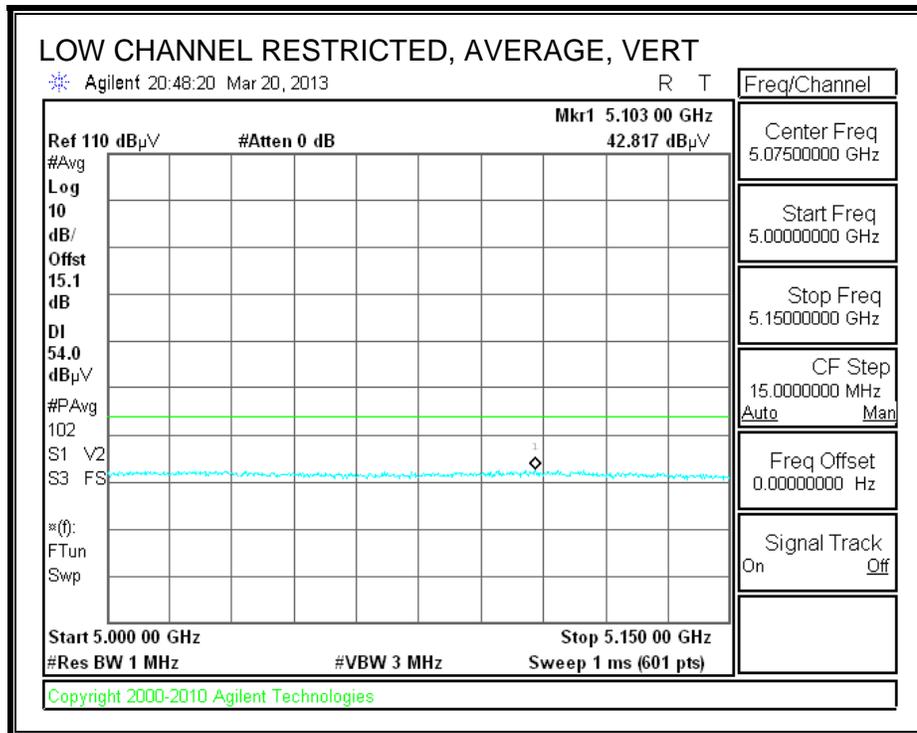
RESTRICTED BANDEDGE (LOW CHANNEL)





Actual Average = Measured Average + Correction Factor
 = 43.077 dBuV + 0.22
 = 43.297 dBuV





Actual Average = Measured Average + Correction Factor
 = 42.817 dBuV + 0.22
 = 43.037 dBuV

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
 Compliance Certification Services, Fremont 5m Chamber-B

Company: LG
 Project #: 13U14917
 Date: 3/21/2013
 Test Engineer: Tony wang
 Configuration: LG870 with Headset & AC Adapter
 Mode: Tx 11m HT20 5.2GHz mode bar

Test Equipment:

Horn 1-18GHz	Pre-amplifier 1-26GHz	Pre-amplifier 26-40GHz	Horn > 18GHz	Limit
T136; M/N: 3117 @3m	T145 Agilent 3008A0056	T88 Miteq 26-40GHz	T39; ARA 18-26GHz; S/N:1013	FCC 15.205

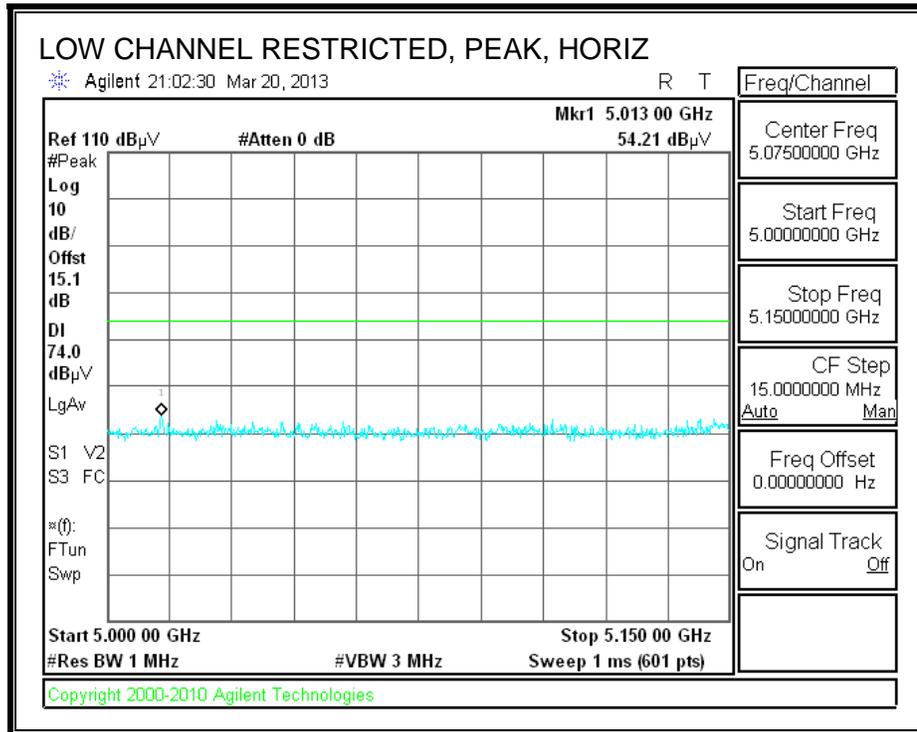
Hi-Frequency Cables

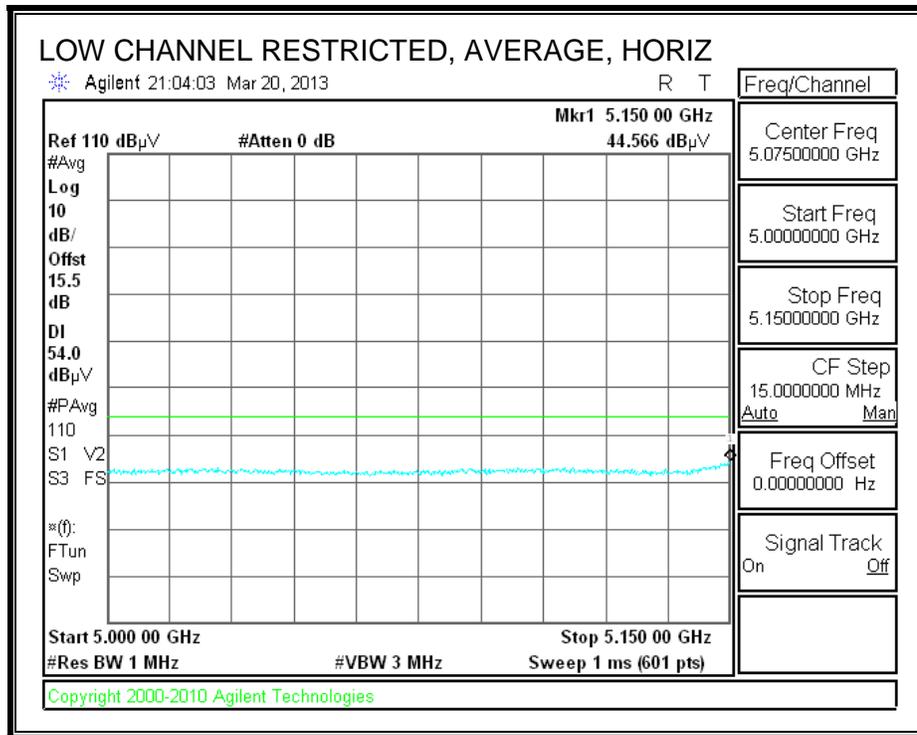
3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF	Reject Filter	Peak Measurements RBW=VBW=1MHz
3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF_7.6GHz		Average Measurements RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fitr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low ch. 5180MHz															
15.540	3.0	35.5	25.0	40.1	13.5	-32.6	0.0	0.7	57.2	46.7	74	54	-16.8	-7.3	H
15.540	3.0	35.4	24.9	40.1	13.5	-32.6	0.0	0.7	57.1	46.6	74	54	-16.9	-7.4	V
Mid ch. 5200MHz															
15.600	3.0	35.6	24.9	40.1	13.5	-32.6	0.0	0.7	57.3	46.6	74	54	-16.7	-7.4	H
15.600	3.0	35.3	25.0	40.1	13.5	-32.6	0.0	0.7	57.0	46.7	74	54	-17.0	-7.3	V
High ch. 5240MHz															
15.720	3.0	35.2	25.0	40.1	13.6	-32.5	0.0	0.7	57.1	46.9	74	54	-16.9	-7.1	H
15.720	3.0	35.4	25.0	40.1	13.6	-32.5	0.0	0.7	57.3	46.9	74	54	-16.7	-7.1	V

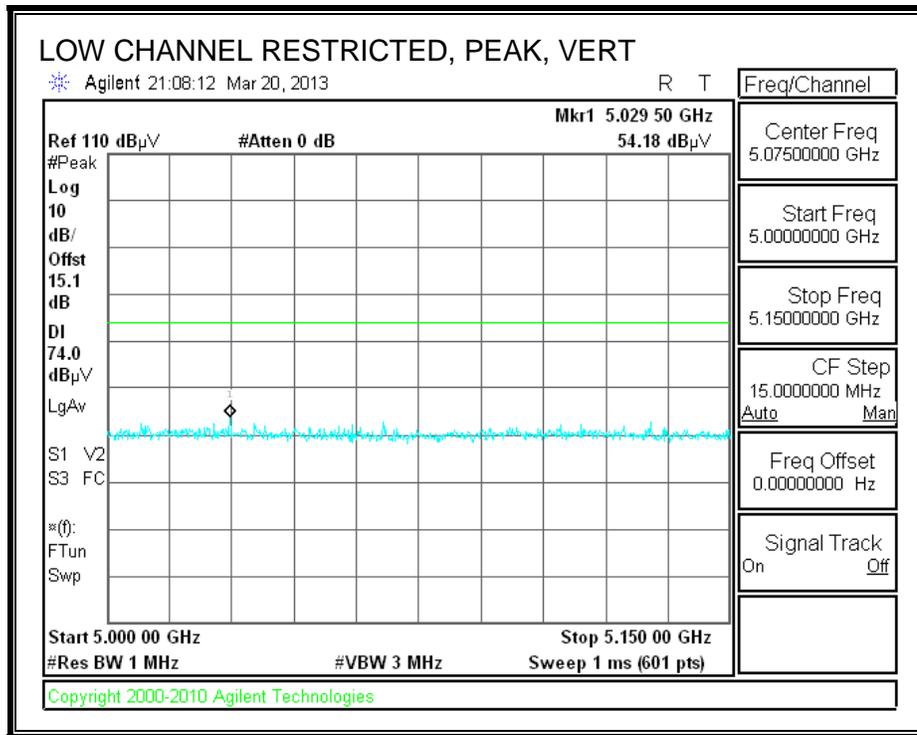
10.2.3. TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 5.2 GHz BAND

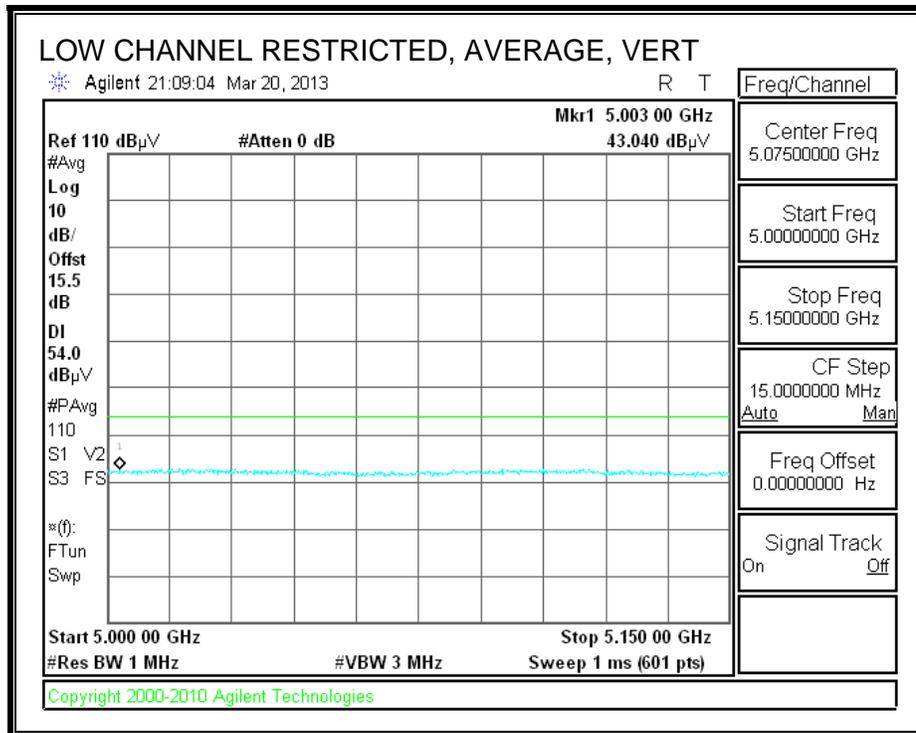
RESTRICTED BANDEDGE (LOW CHANNEL)





Actual Average = Measured Average + Correction Factor
 = 44.566 dBuV + 0.44
 = 45.006 dBuV





Actual Average = Measured Average + Correction Factor
 = 43.040 dB μ V + 0.44
 = 43.440 dB μ V

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
 Compliance Certification Services, Fremont 5m Chamber-B

Company: LG
 Project #: 13U14917
 Date: 3/21/2013
 Test Engineer: Tony wang
 Configuration: LG870 with Headset & AC Adapter
 Mode: Tx 1in HT40 5.2GHz mode bar

Test Equipment:

Horn 1-18GHz	Pre-amplifier 1-26GHz	Pre-amplifier 26-40GHz	Horn > 18GHz	Limit
T136; M/N: 3117 @3m	T145 Agilent 3008A0056	T88 Miteq 26-40GHz	T39; ARA 18-26GHz; S/N:1013	FCC 15.205

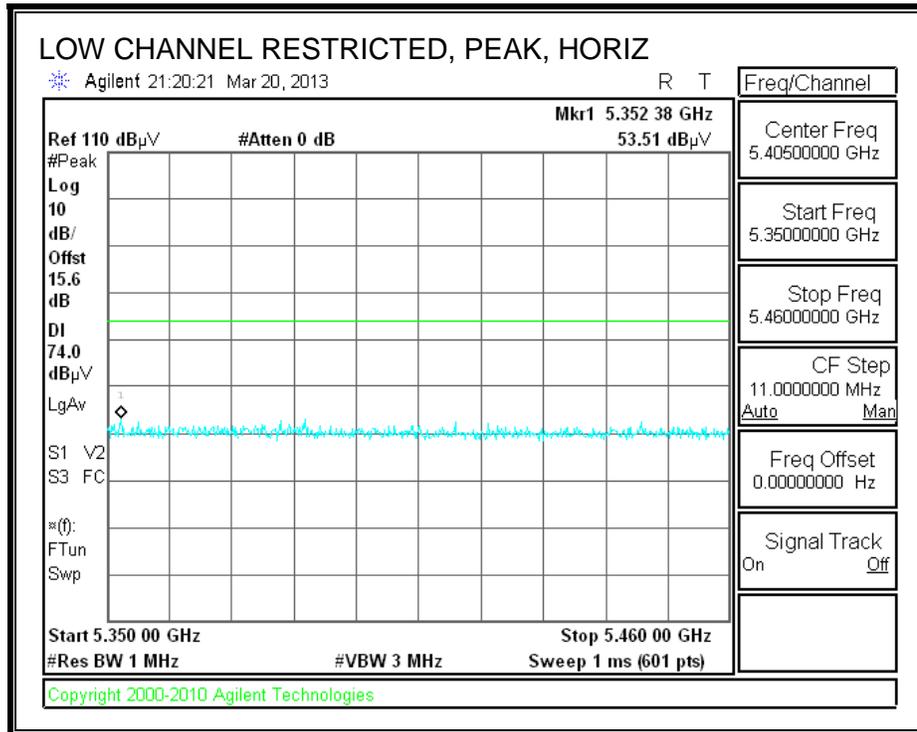
Hi Frequency Cables

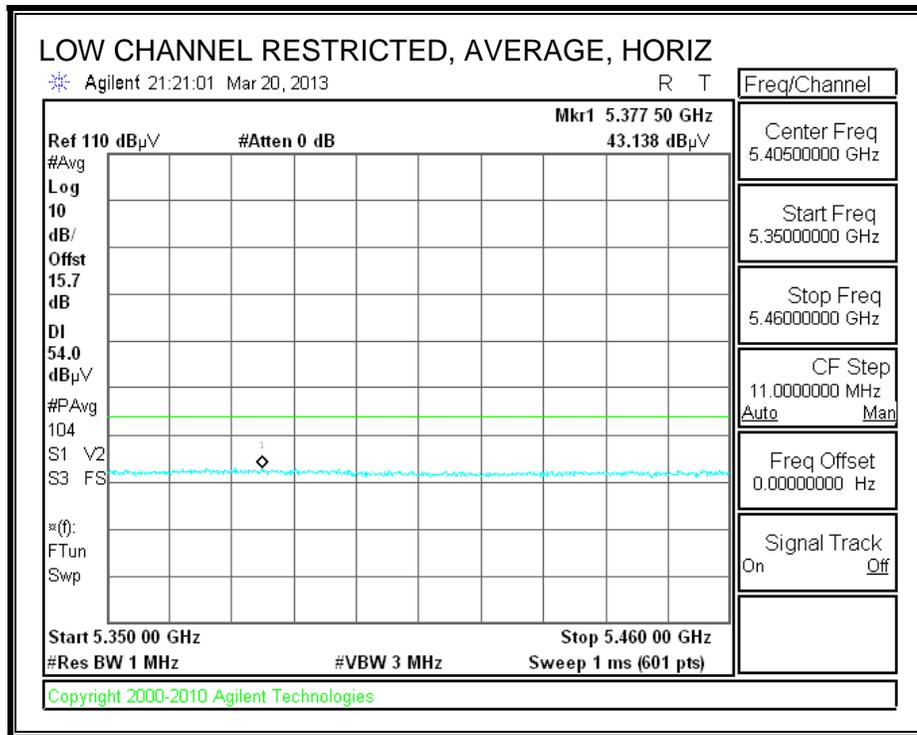
3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF	Reject Filter	Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz ; VBW=10Hz
3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF_7.6GHz		

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low ch. 5190MHz															
15.575	3.0	35.5	25.0	40.1	13.5	-32.6	0.0	0.7	57.2	46.7	74	54	-16.8	-7.3	H
15.575	3.0	35.2	24.9	40.1	13.5	-32.6	0.0	0.7	56.9	46.6	74	54	-17.3	-7.4	V
High ch. 5230MHz															
15.690	3.0	35.5	25.1	40.1	13.6	-32.6	0.0	0.7	57.4	47.0	74	54	-16.6	-7.0	H
15.690	3.0	35.2	25.2	40.1	13.6	-32.6	0.0	0.7	57.1	47.1	74	54	-16.9	-6.9	V

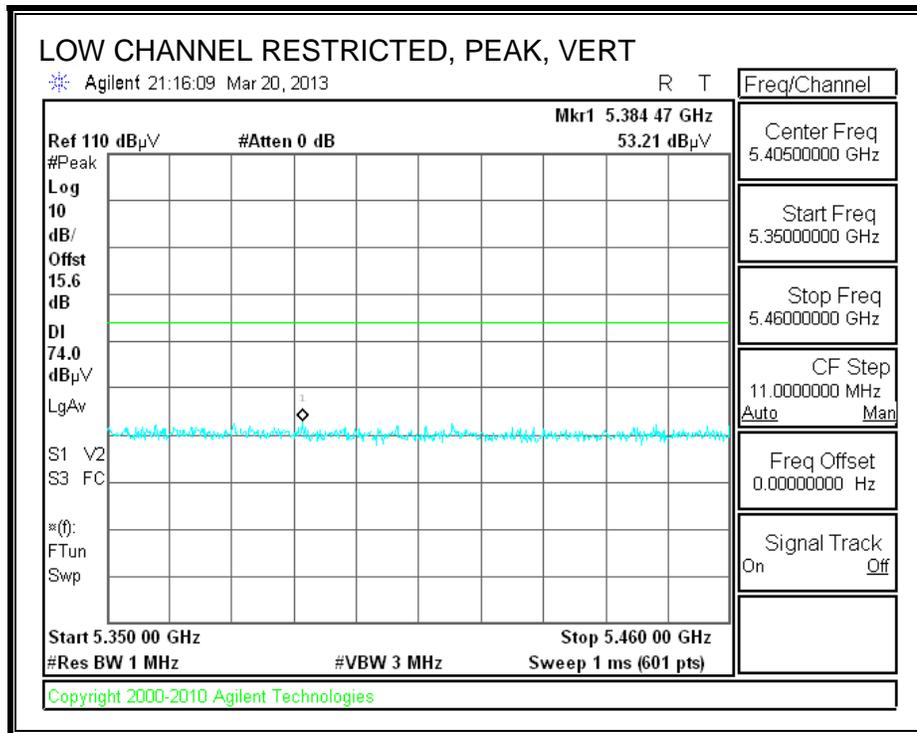
10.2.4. TX ABOVE 1 GHz 802.11a MODE IN THE 5.3 GHz BAND

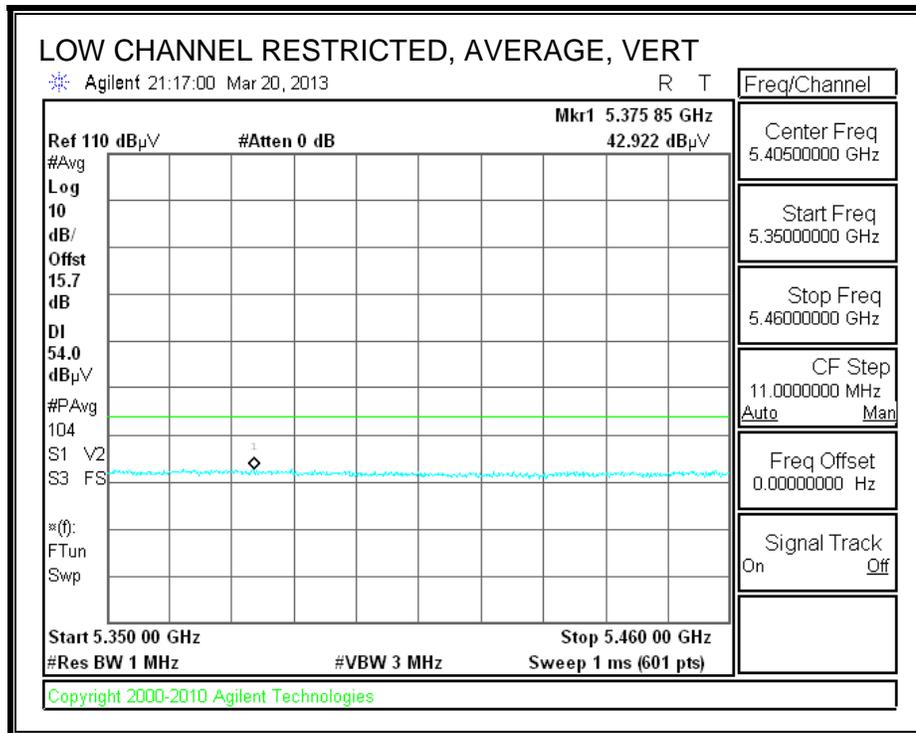
RESTRICTED BANDEDGE (LOW CHANNEL)





Actual Average = Measured Average + Correction Factor
 = 43.138 dBuV + 0.2
 = 43.338 dBuV





Actual Average = Measured Average + Correction Factor
 = 42.922 dBuV + 0.2
 = 43.122 dBuV

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
 Compliance Certification Services, Fremont 5m Chamber-B

Company: LG
Project #: 13U14917
Date: 3/23/2013
Test Engineer: Tony wang
Configuration: LG870 with Headset & AC Adaptor
Mode: Tx 11a 5.3GHz mode har

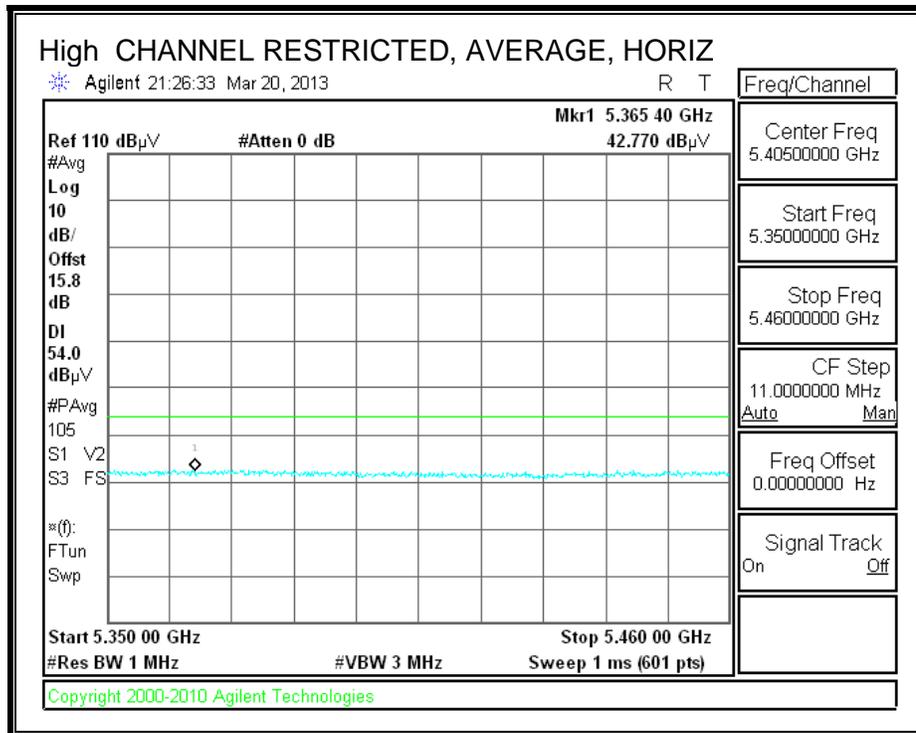
Test Equipment:

Horn 1-18GHz	Pre-amplifier 1-26GHz	Pre-amplifier 26-40GHz	Horn > 18GHz	Limit
T136; M/N: 3117 @3m	T145 Agilent 3008A0056	T88 Miteq 26-40GHz	T39; ARA 18-26GHz; S/N:1013	FCC 15.205

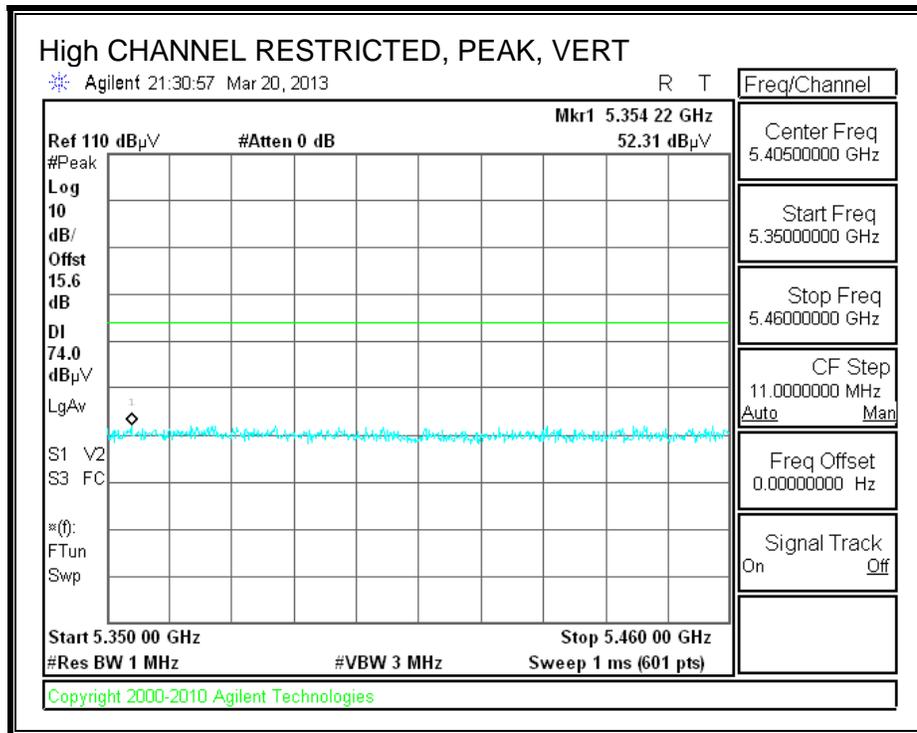
Hi Frequency Cables

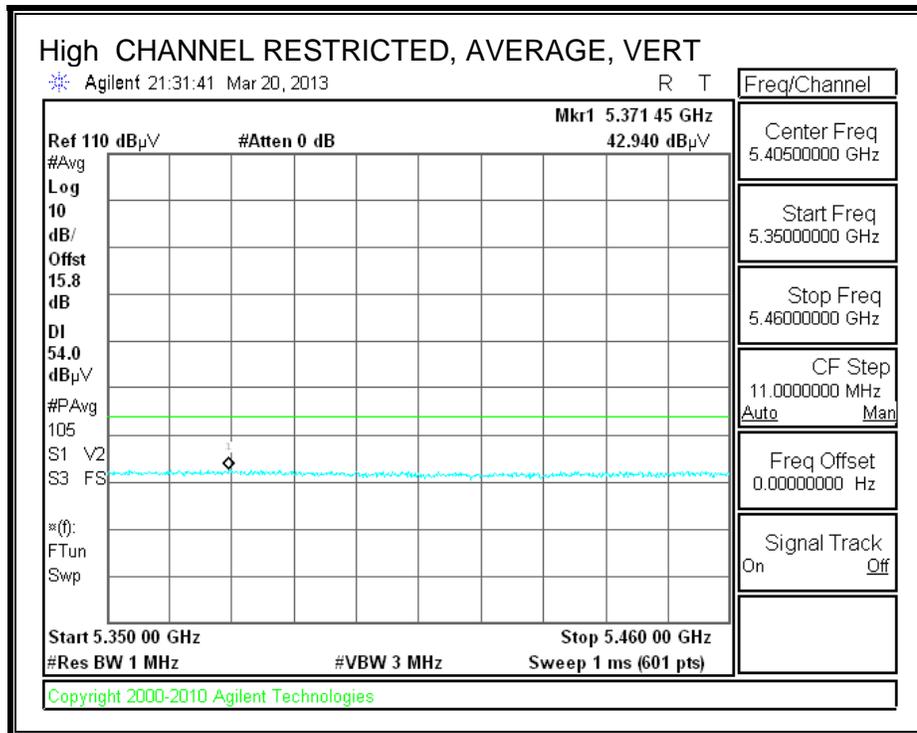
3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF	Reject Filter	Peak Measurements RBW=VBW=1MHz
3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF_7.6GHz		Average Measurements RBW=1MHz; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low ch. 5260MHz															
15.780	3.0	35.7	24.7	40.2	13.6	-32.5	0.0	0.7	57.7	46.7	74	54	-16.3	-7.3	H
15.780	3.0	35.3	24.9	40.2	13.6	-32.5	0.0	0.7	57.3	46.9	74	54	-16.7	-7.1	V
Mid ch. 5300MHz															
10.600	3.0	35.2	24.9	37.3	10.8	-34.4	0.0	0.8	49.6	39.3	74	54	-24.4	-14.7	H
10.600	3.0	35.5	25.1	37.3	10.8	-34.4	0.0	0.8	49.9	39.5	74	54	-24.1	-14.5	V
15.900	3.0	35.1	24.8	40.2	13.7	-32.4	0.0	0.7	57.3	47.0	74	54	-16.7	-7.0	H
15.900	3.0	35.2	24.9	40.2	13.7	-32.4	0.0	0.7	57.4	47.1	74	54	-16.6	-6.9	V
High ch. 5320MHz															
10.640	3.0	36.2	25.1	37.3	10.8	-34.4	0.0	0.8	50.7	39.6	74	54	-23.3	-14.4	H
10.640	3.0	36.1	25.0	37.3	10.8	-34.4	0.0	0.8	50.6	39.5	74	54	-23.4	-14.5	V
15.960	3.0	35.2	25.1	40.2	13.7	-32.4	0.0	0.7	57.4	47.3	74	54	-16.6	-6.7	H
15.960	3.0	35.3	24.9	40.2	13.7	-32.4	0.0	0.7	57.5	47.1	74	54	-16.5	-6.9	V



Actual Average = Measured Average + Correction Factor
 = 42.770 dB μ V + 0.22
 = 42.990 dB μ V





$$\begin{aligned}
 \text{Actual Average} &= \text{Measured Average} + \text{Correction Factor} \\
 &= 42.940 \text{ dB}\mu\text{V} + 0.22 \\
 &= 42.160 \text{ dB}\mu\text{V}
 \end{aligned}$$

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
 Compliance Certification Services, Fremont 5m Chamber-B

Company: LG
 Project #: 13U14917
 Date: 3/21/2013
 Test Engineer: Tony wang
 Configuration: LG870 with Headset & AC Adapter
 Mode: Tx 11m HT20 5.5GHz mode har

Test Equipment:

Horn 1-18GHz T136: M/N: 3117 @3m	Pre-amplifier 1-26GHz T145 Agilent 3008A0056	Pre-amplifier 26-40GHz T88 Miteq 26-40GHz	Horn > 18GHz T39: ARA 18-26GHz; S/N:1013	Limit FCC 15.205
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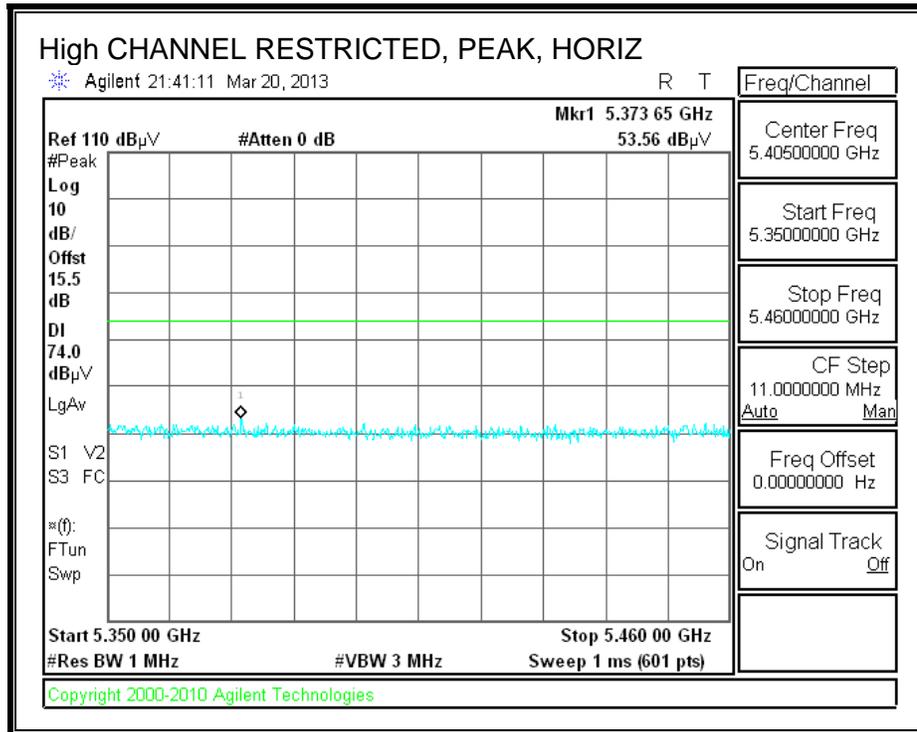
Hi Frequency Cables

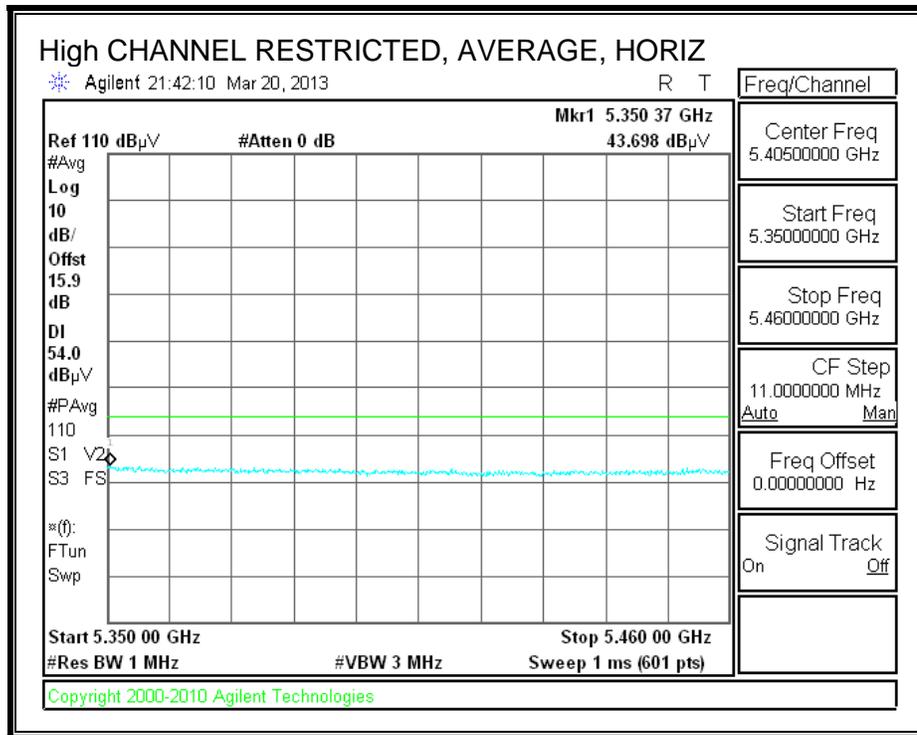
3' cable 22807700 3' cable 22807700	12' cable 22807600 12' cable 22807600	20' cable 22807500 20' cable 22807500	HPF HPF_7.6GHz	Reject Filter	Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz ; VBW=10Hz
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f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low ch. 5260MHz															
15.780	3.0	35.4	24.6	40.2	13.6	-32.5	0.0	0.7	57.4	46.6	74	54	-16.6	-7.4	H
15.780	3.0	35.3	24.8	40.2	13.6	-32.5	0.0	0.7	57.3	46.8	74	54	-16.7	-7.2	V
Mid ch. 5300MHz															
10.600	3.0	35.4	25.0	37.3	10.8	-34.4	0.0	0.8	49.8	39.4	74	54	-24.2	-14.6	H
10.600	3.0	35.3	25.2	37.3	10.8	-34.4	0.0	0.8	49.7	39.6	74	54	-24.3	-14.4	V
15.900	3.0	35.2	24.8	40.2	13.7	-32.4	0.0	0.7	57.4	47.0	74	54	-16.6	-7.0	H
15.900	3.0	35.4	24.8	40.2	13.7	-32.4	0.0	0.7	57.6	47.0	74	54	-16.4	-7.0	V
High ch. 5320MHz															
10.640	3.0	35.4	25.2	37.3	10.8	-34.4	0.0	0.8	49.9	39.7	74	54	-24.1	-14.3	H
10.640	3.0	35.6	25.1	37.3	10.8	-34.4	0.0	0.8	50.1	39.6	74	54	-23.9	-14.4	V
15.960	3.0	35.1	24.9	40.2	13.7	-32.4	0.0	0.7	57.3	47.1	74	54	-16.7	-6.9	H
15.960	3.0	35.4	25.1	40.2	13.7	-32.4	0.0	0.7	57.6	47.3	74	54	-16.4	-6.7	V

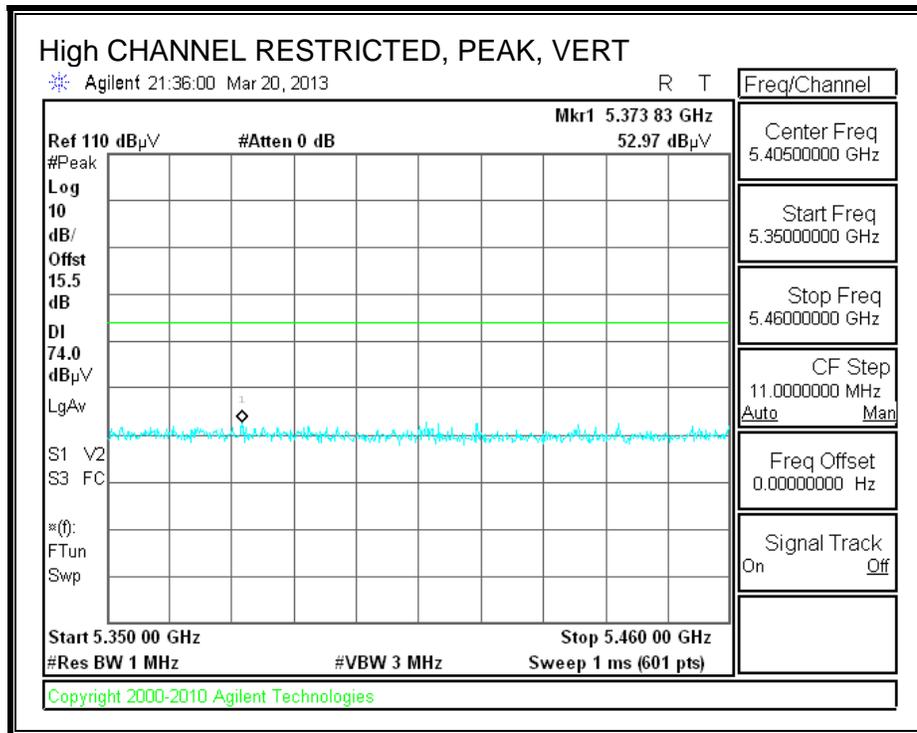
10.2.6. TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 5.3 GHz BAND

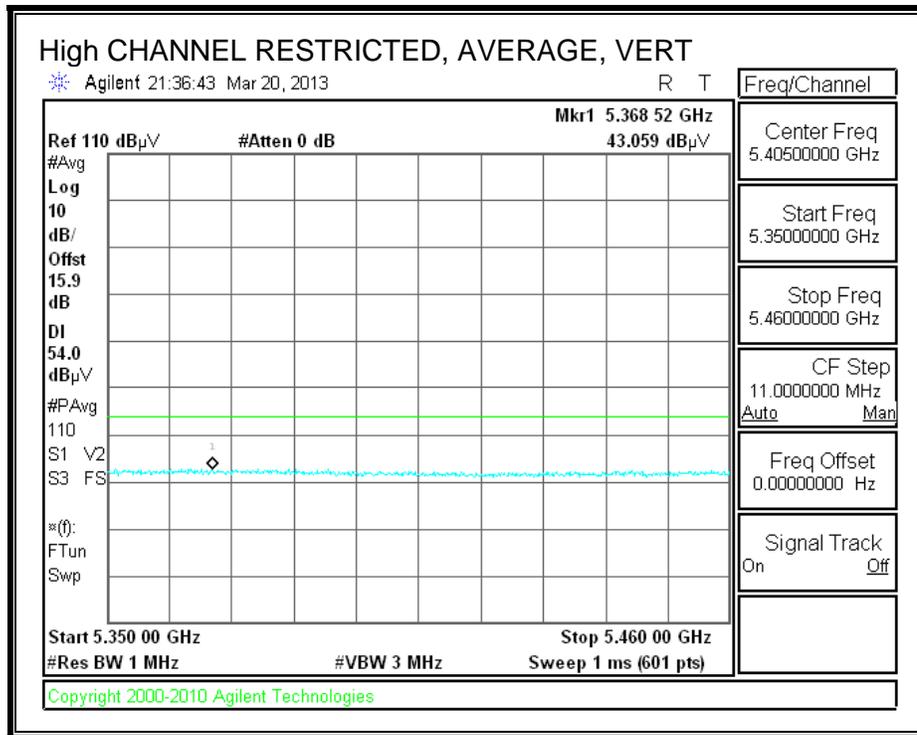
RESTRICTED BANDEDGE (High CHANNEL)





Actual Average = Measured Average + Correction Factor
 = 43.698 dBuV + 0.44
 = 44.138 dBuV





Actual Average = Measured Average + Correction Factor
 = 43.059 dBuV + 0.44
 = 43.499 dBuV

HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
 Compliance Certification Services, Fremont 5m Chamber-B

Company: LG
 Project #: 13U14917
 Date: 3/21/2013
 Test Engineer: Tony wang
 Configuration: LOS70 with Headset & AC Adaptor
 Mode: Tx 1In HT40 5.3GHz mode bar

Test Equipment:

Horn 1-18GHz T136; M/N: 3117 @3m	Pre-amplifier 1-26GHz T145 Agilent 3008A0056	Pre-amplifier 26-40GHz T88 Miteq 26-40GHz	Horn > 18GHz T39; ARA 18-26GHz; S/N:1013	Limit FCC 15.205
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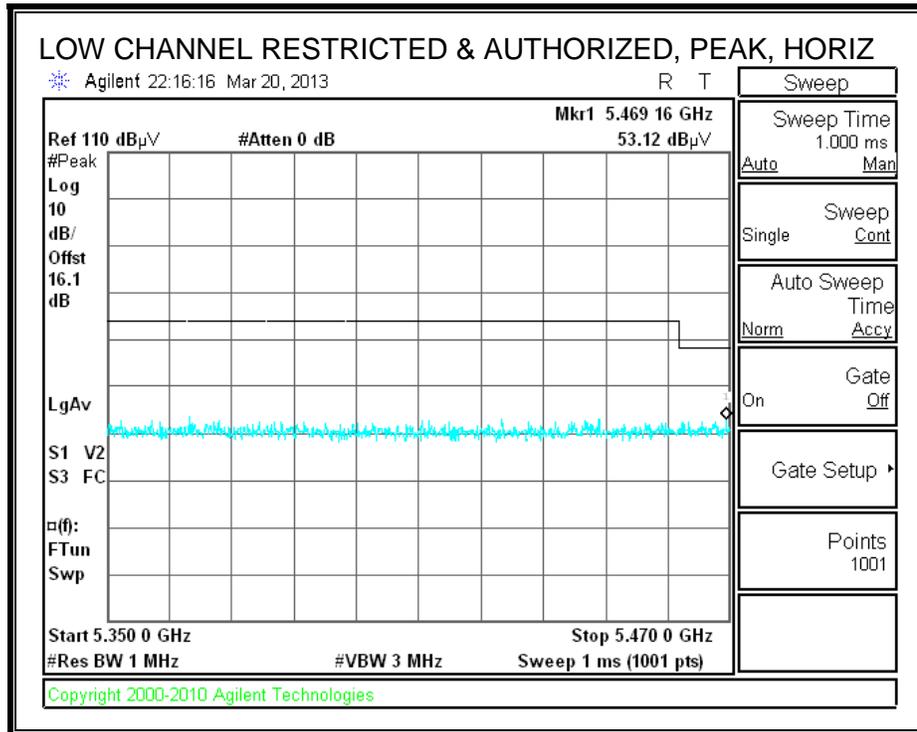
Hi Frequency Cables

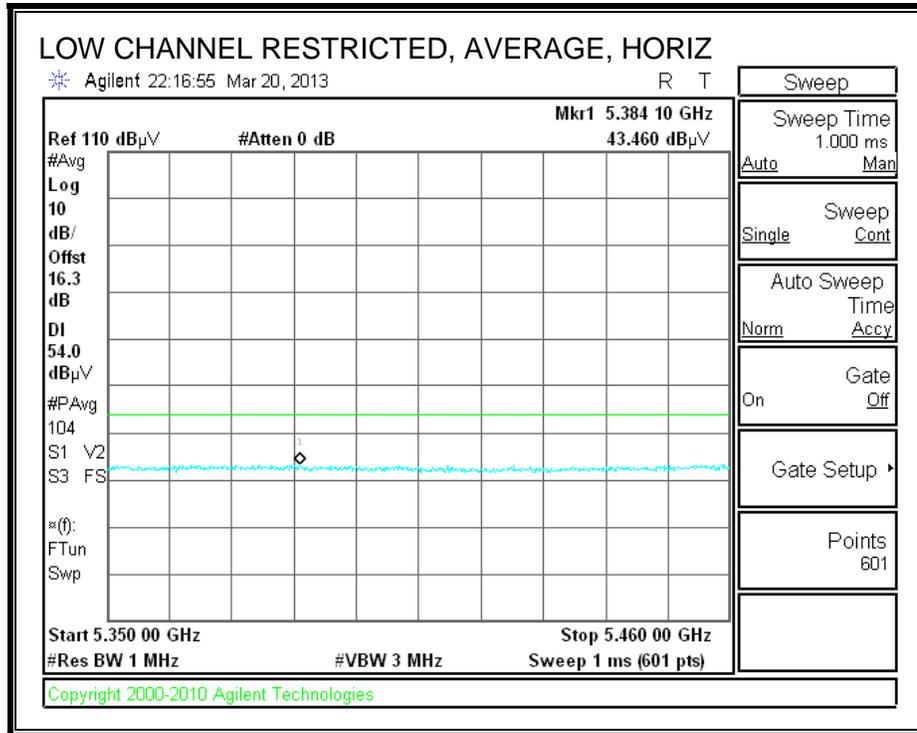
3' cable 22807700 3' cable 22807700	12' cable 22807600 12' cable 22807600	20' cable 22807500 20' cable 22807500	HPF HPF_7.6GHz	Reject Filter	Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz; VBW=10Hz
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f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low ch. 5270MHz															
15.810	3.0	35.5	25.1	40.2	13.6	-32.5	0.0	0.7	57.5	47.1	74	54	-16.5	-6.9	H
15.810	3.0	35.4	24.7	40.2	13.6	-32.5	0.0	0.7	57.4	46.7	74	54	-16.6	-7.3	V
High ch. 5310MHz															
10.620	3.0	35.5	25.1	37.3	10.8	-34.4	0.0	0.8	50.0	39.6	74	54	-24.0	-14.4	H
10.620	3.0	35.2	25.2	37.3	10.8	-34.4	0.0	0.8	49.7	39.7	74	54	-24.3	-14.3	V
15.930	3.0	35.0	24.8	40.2	13.7	-32.4	0.0	0.7	57.2	47.0	74	54	-16.8	-7.0	H
15.930	3.0	35.2	24.7	40.2	13.7	-32.4	0.0	0.7	57.4	46.9	74	54	-16.6	-7.1	V

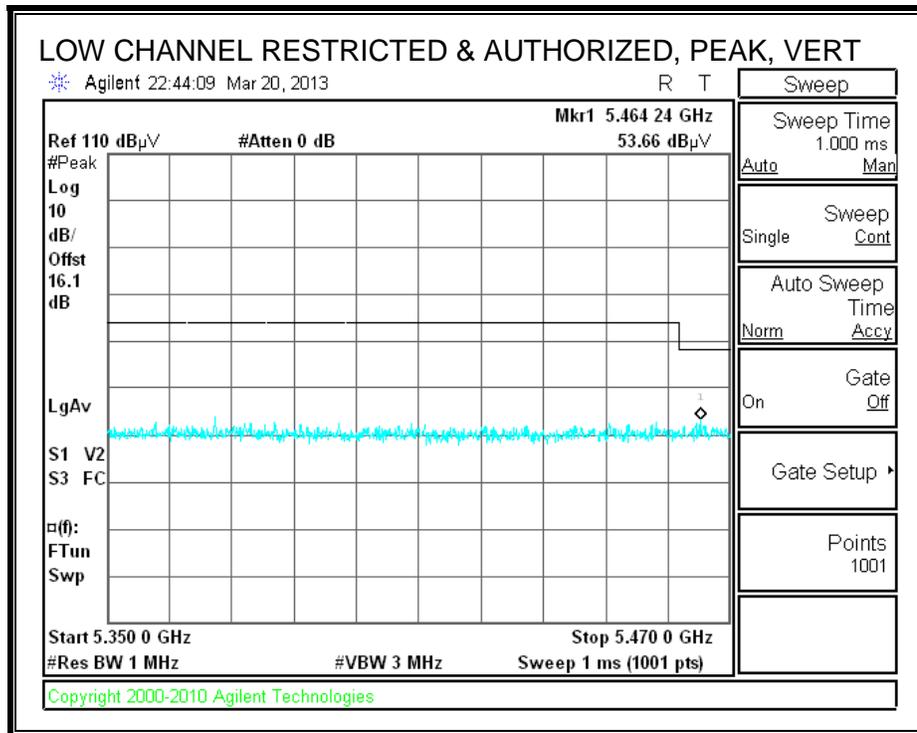
10.2.7. TX ABOVE 1 GHz 802.11a MODE IN THE 5.6 GHz BAND

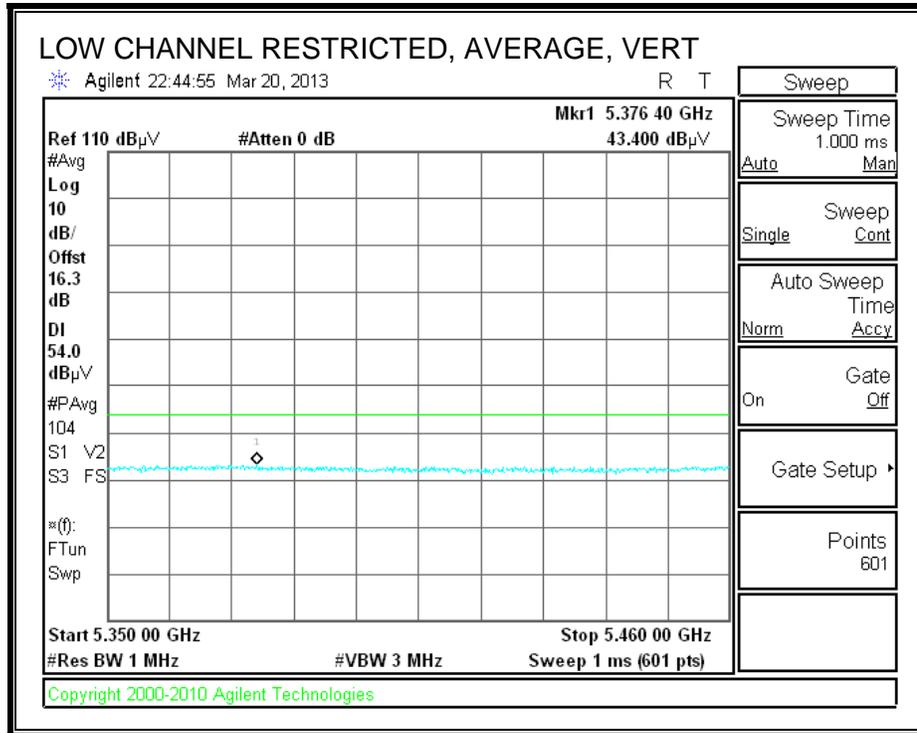
RESTRICTED & AUTHORIZED BANDEDGE (LOW CHANNEL)





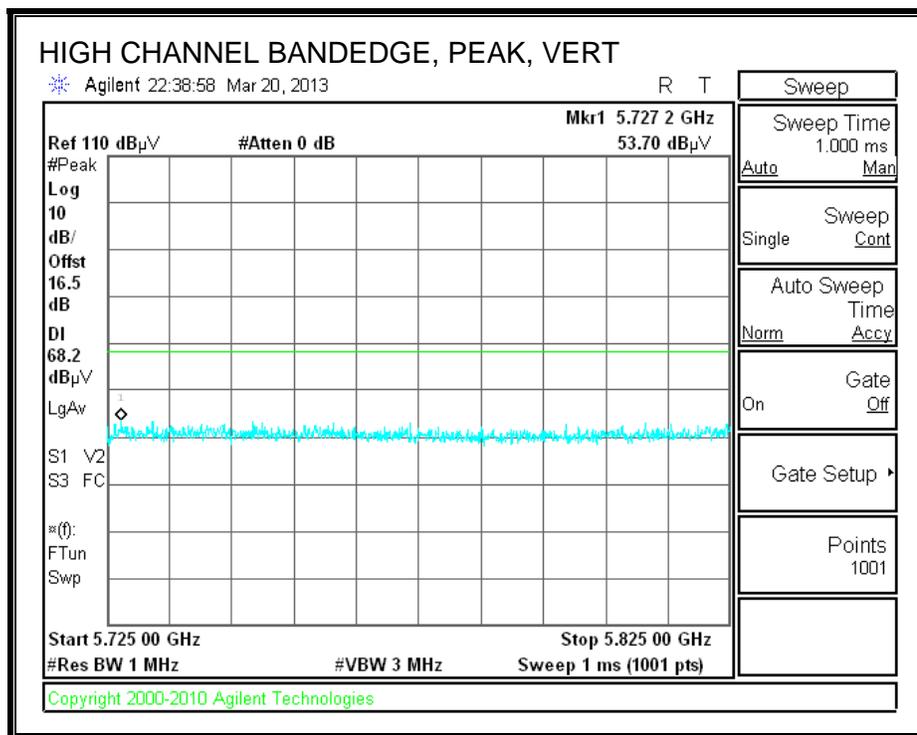
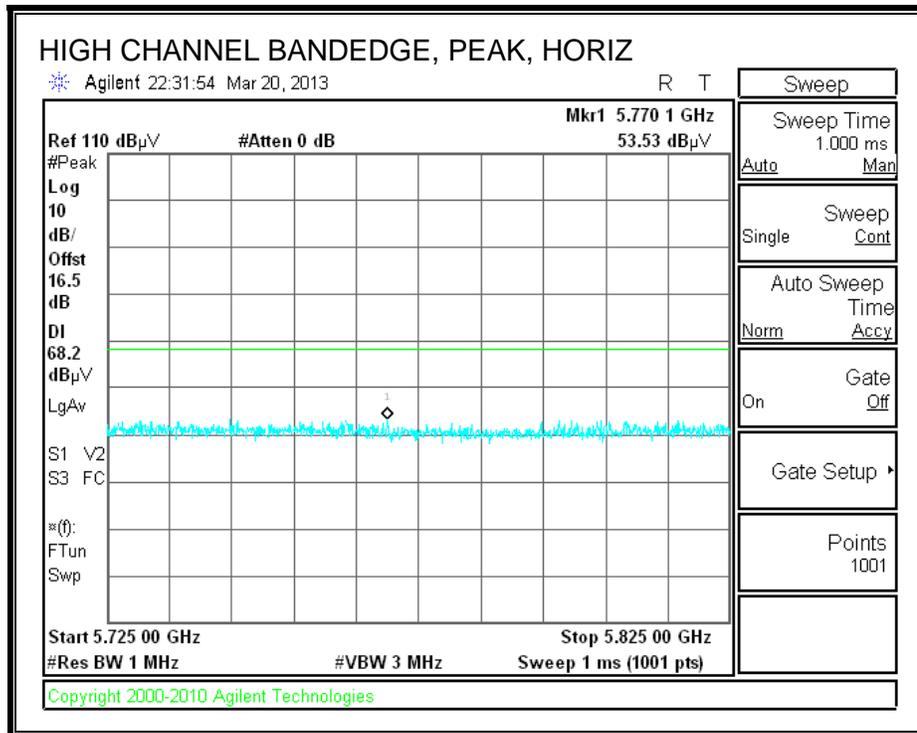
Actual Average = Measured Average + Correction Factor
 = 43.460 dBuV + 0.2
 = 43.660 dBuV





Actual Average = Measured Average + Correction Factor
 = 43.400 dBuV + 0.2
 = 43.600 dBuV

AUTHORIZED BANDEDGE (HIGH CHANNEL)



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
 Compliance Certification Services, Fremont 5m Chamber-B

Company: LG
 Project #: 13U14917
 Date: 3/21/2013
 Test Engineer: Tony wang
 Configuration: LG870 with Headset & AC Adapter
 Mode: Tx 11a 5.5GHz mode har

Test Equipment:

Horn 1-18GHz	Pre-amplifier 1-26GHz	Pre-amplifier 26-40GHz	Horn > 18GHz	Limit
T136; M/N: 3117 @3m	T145 Agilent 3008A0056	T88 Miteq 26-40GHz	T39; ARA 18-26GHz; S/N:1013	FCC 45.205

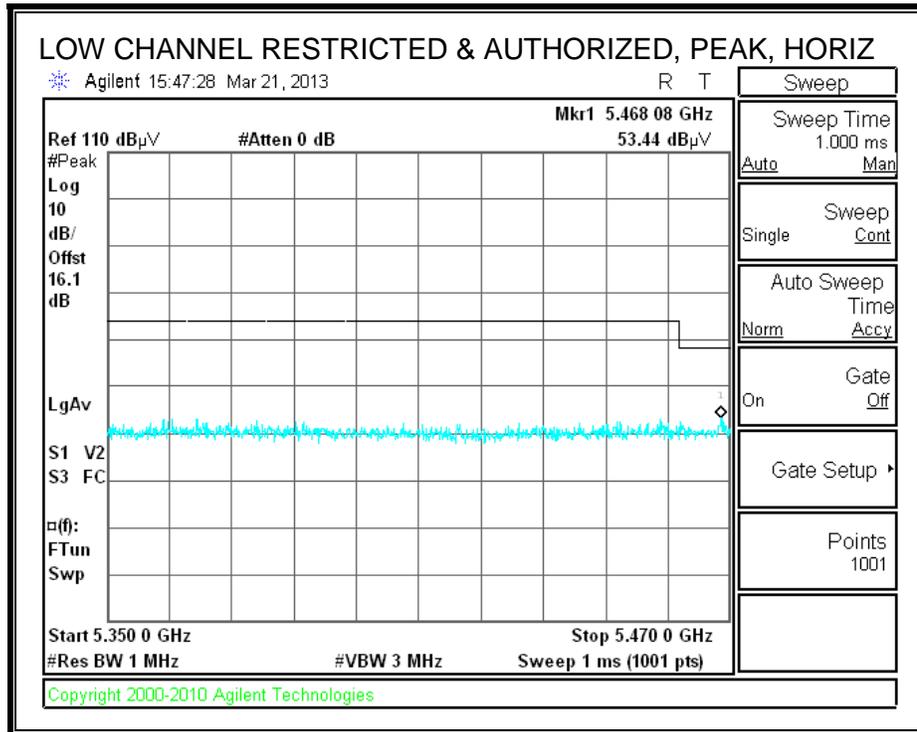
Hi Frequency Cables

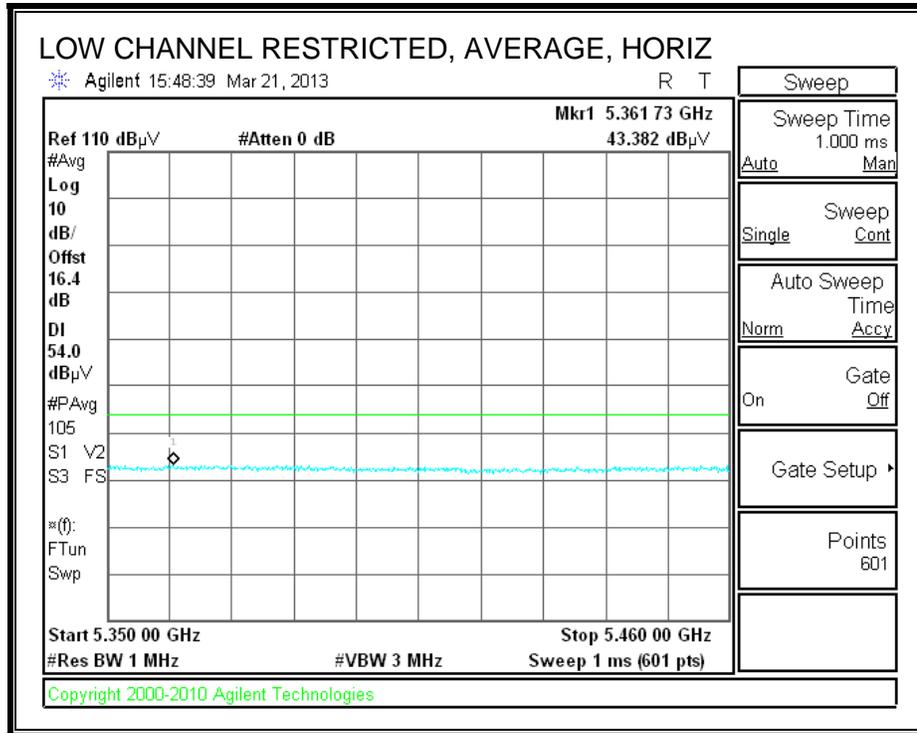
3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF	Reject Filter	Peak Measurements RBW=VBW=1MHz
3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF_7.6GHz		Average Measurements RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low ch. 5500MHz															
11.000	3.0	36.1	25.3	37.5	11.0	-34.1	0.0	0.7	51.3	40.5	74	54	-22.7	-13.5	H
11.000	3.0	35.8	25.4	37.5	11.0	-34.1	0.0	0.7	51.0	40.6	74	54	-23.0	-13.4	V
Mid ch. 5580MHz															
11.160	3.0	35.1	24.9	37.7	11.1	-34.0	0.0	0.7	50.6	40.4	74	54	-23.4	-13.6	H
11.160	3.0	35.2	24.8	37.7	11.1	-34.0	0.0	0.7	50.7	40.3	74	54	-23.3	-13.7	V
High ch. 5700MHz															
11.400	3.0	35.5	24.3	38.0	11.2	-33.8	0.0	0.7	51.6	40.4	74	54	-22.4	-13.6	H
11.400	3.0	35.2	24.4	38.0	11.2	-33.8	0.0	0.7	51.3	40.5	74	54	-22.7	-13.5	V

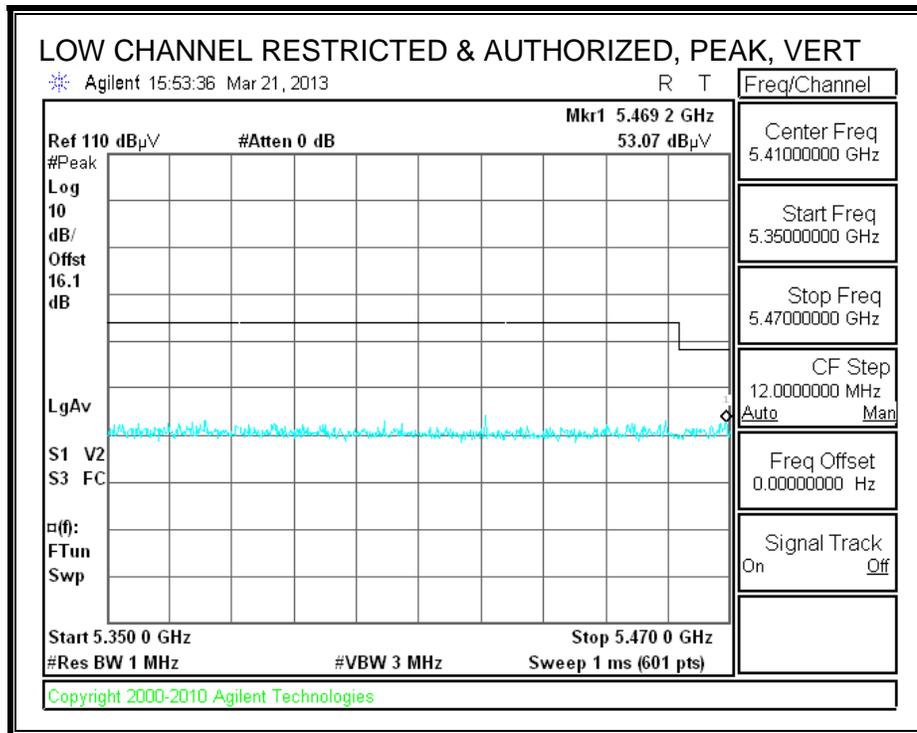
10.2.8. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.6 GHz BAND

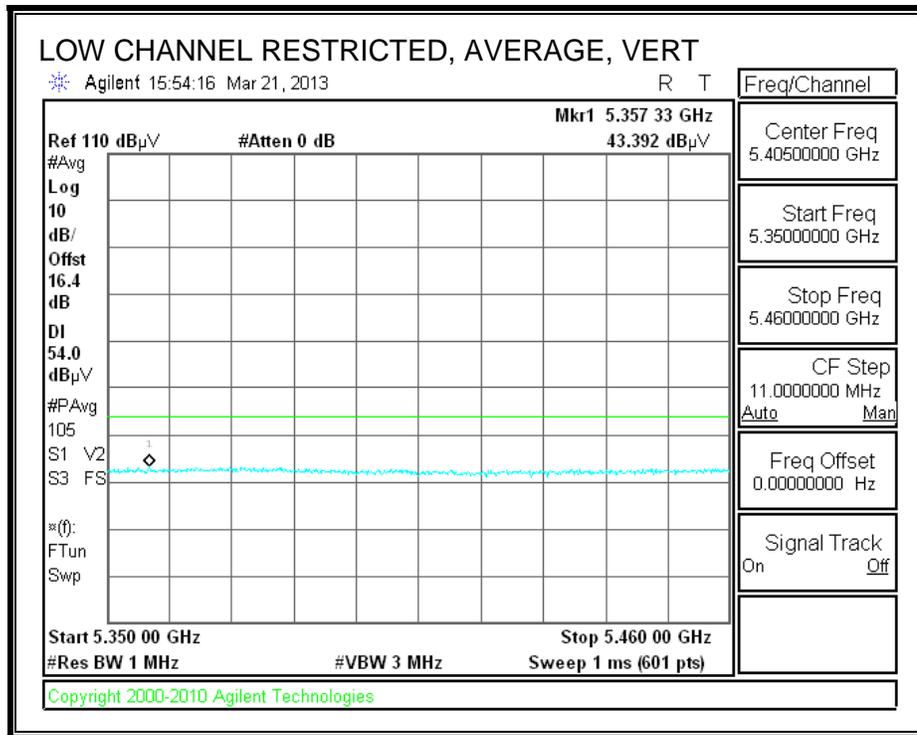
RESTRICTED & AUTHORIZED BANDEDGE (LOW CHANNEL)





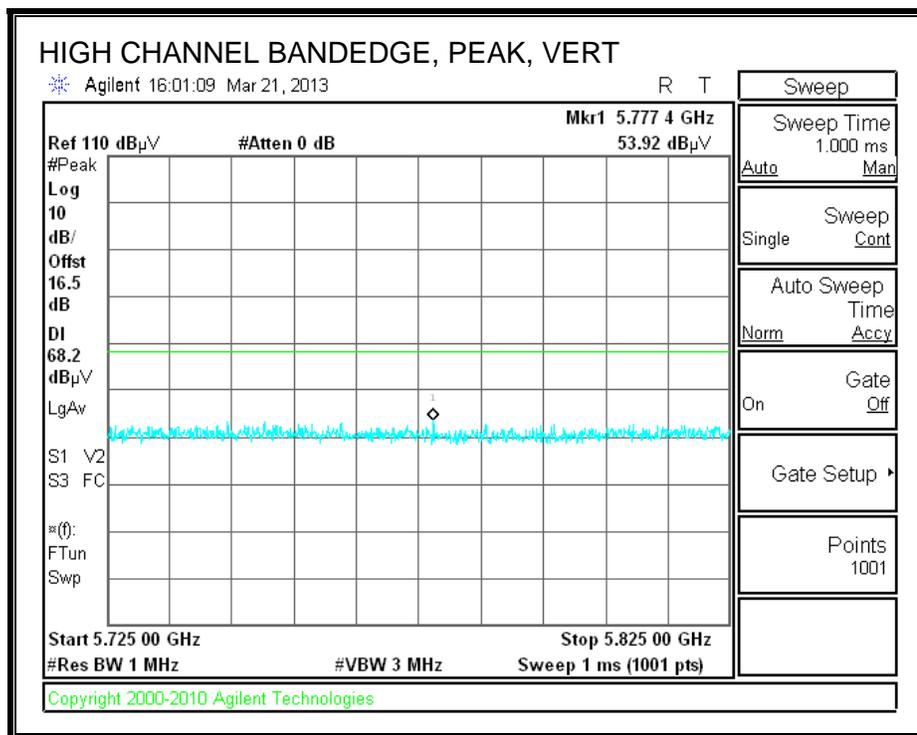
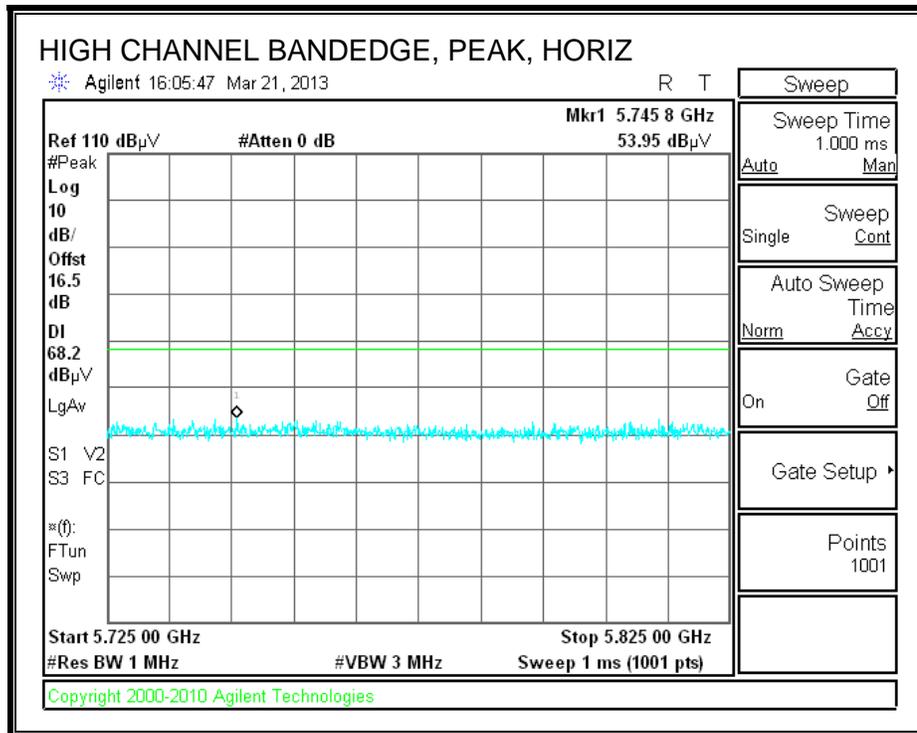
Actual Average = Measured Average + Correction Factor
 = 43.382 dBuV + 0.22
 = 43.602 dBuV





$$\begin{aligned}
 \text{Actual Average} &= \text{Measured Average} + \text{Correction Factor} \\
 &= 43.392 \text{ dB}\mu\text{V} + 0.22 \\
 &= 43.612 \text{ dB}\mu\text{V}
 \end{aligned}$$

AUTHORIZED BANDEDGE (HIGH CHANNEL)



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
 Compliance Certification Services, Fremont 5m Chamber-B

Company: LG
 Project #: 13U14917
 Date: 3/21/2013
 Test Engineer: Tony wang
 Configuration: LG870 with Headset & AC Adapter
 Mode: Tx 11m HT20 5.5GHz mode huc

Test Equipment:

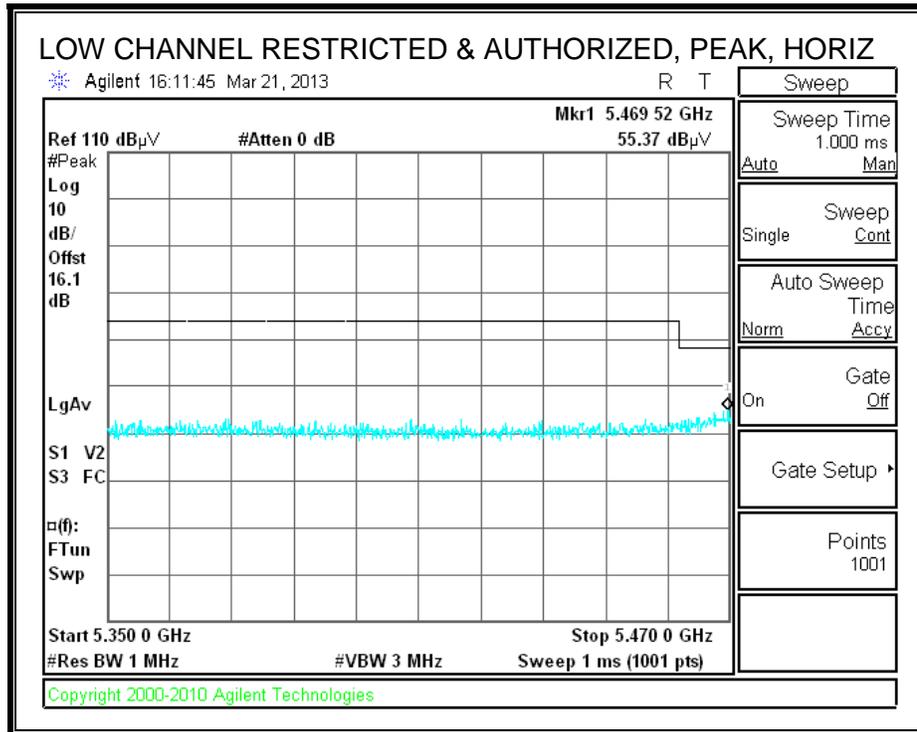
Horn 1-18GHz T136; M/N: 3117 @3m	Pre-amplifier 1-26GHz T145 Agilent 3008A0056	Pre-amplifier 26-40GHz T88 Miteq 26-40GHz	Horn > 18GHz T39; ARA 18-26GHz; S/N:1013	Limit FCC 15.205
Hi Frequency Cables				
3' cable 22807700 3' cable 22807700	12' cable 22807600 12' cable 22807600	20' cable 22807500 20' cable 22807500	HPF HPF_7.6GHz	Reject Filter

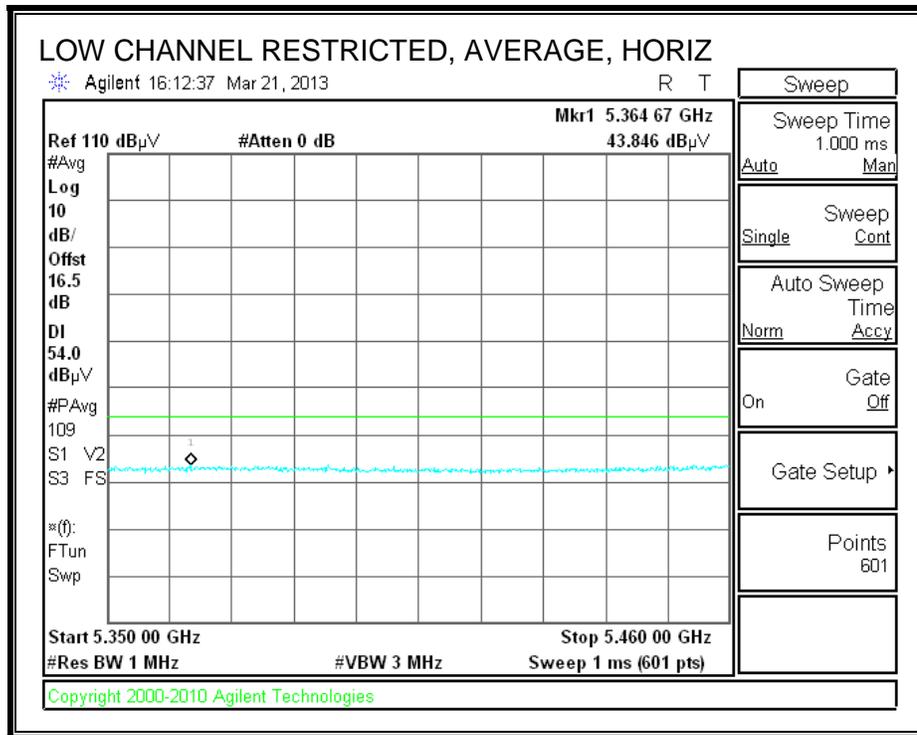
Peak Measurements
 RBW=VBW=1MHz
 Average Measurements
 RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low ch. 5500MHz															
11.000	3.0	36.0	28.5	37.5	11.0	-34.1	0.0	0.7	51.2	40.7	74	54	-22.8	-13.3	H
11.000	3.0	36.1	25.4	37.5	11.0	-34.1	0.0	0.7	51.3	40.6	74	54	-22.7	-13.4	V
Mid ch. 5580MHz															
11.160	3.0	35.1	24.9	37.7	11.1	-34.0	0.0	0.7	50.6	40.4	74	54	-23.4	-13.6	H
11.160	3.0	35.2	24.7	37.7	11.1	-34.0	0.0	0.7	50.7	40.2	74	54	-23.3	-13.8	V
High ch. 5700MHz															
11.400	3.0	35.0	24.4	38.0	11.2	-33.8	0.0	0.7	51.1	40.5	74	54	-22.9	-13.5	H
11.400	3.0	35.2	24.4	38.0	11.2	-33.8	0.0	0.7	51.3	40.5	74	54	-22.7	-13.5	V

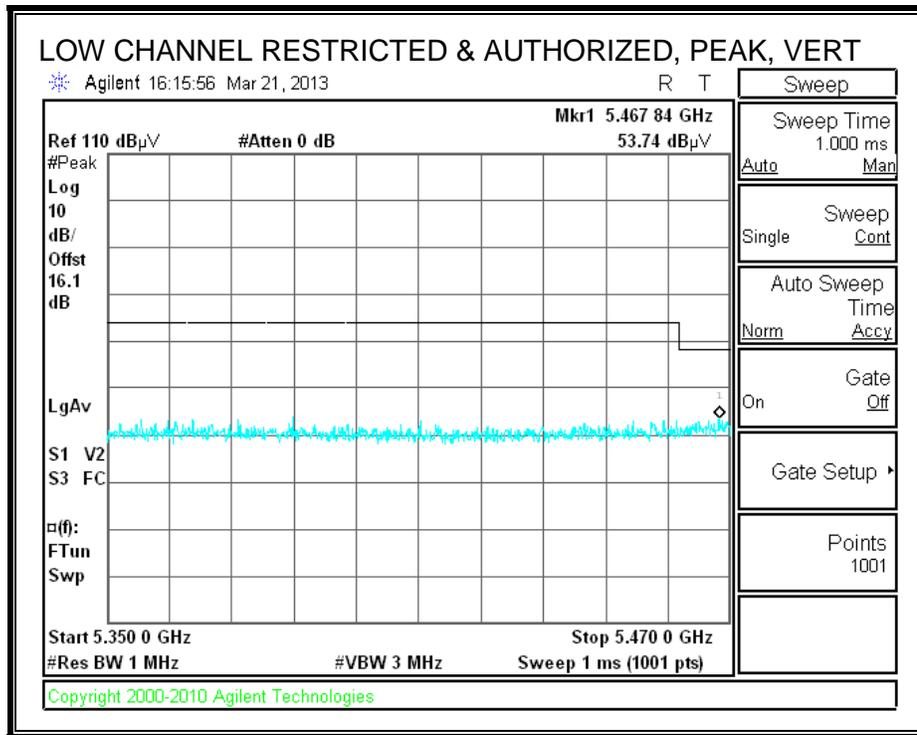
10.2.9. TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 5.5 GHz BAND

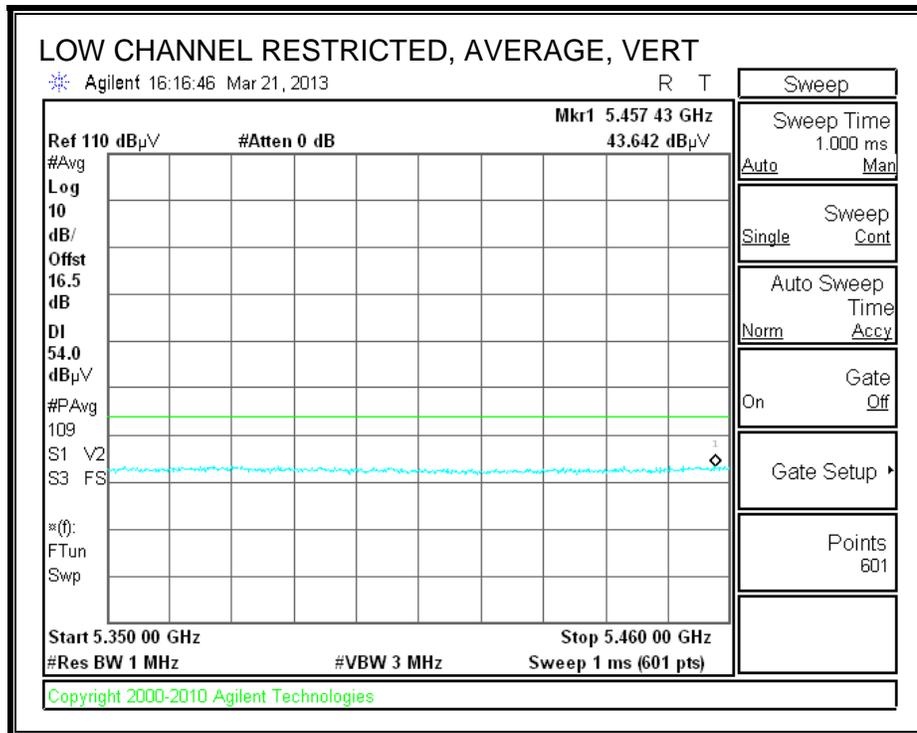
RESTRICTED & AUTHORIZED BANDEDGE (LOW CHANNEL)





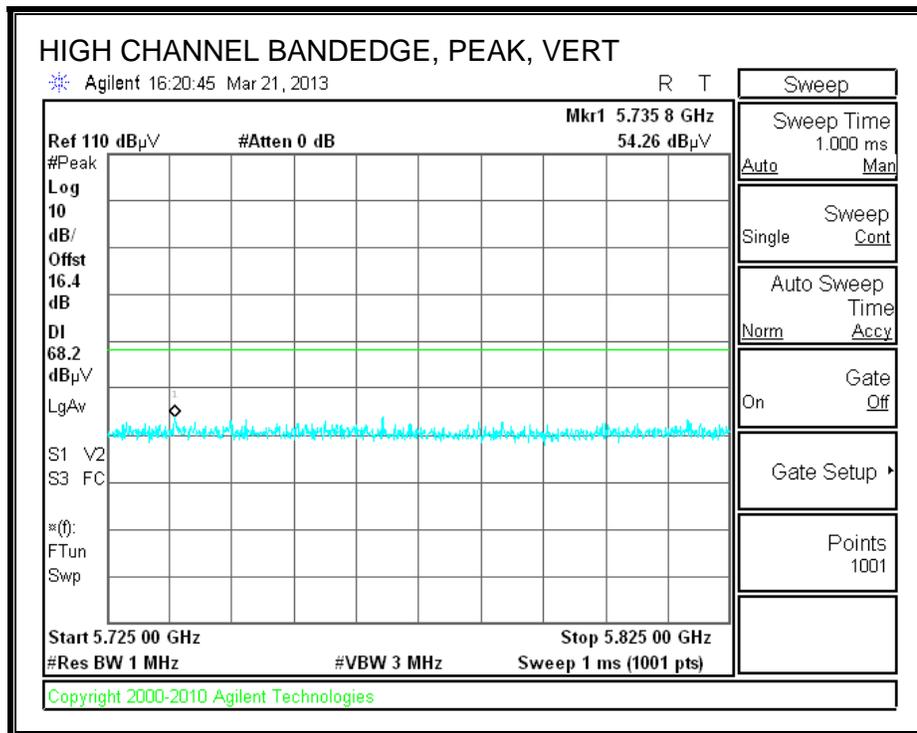
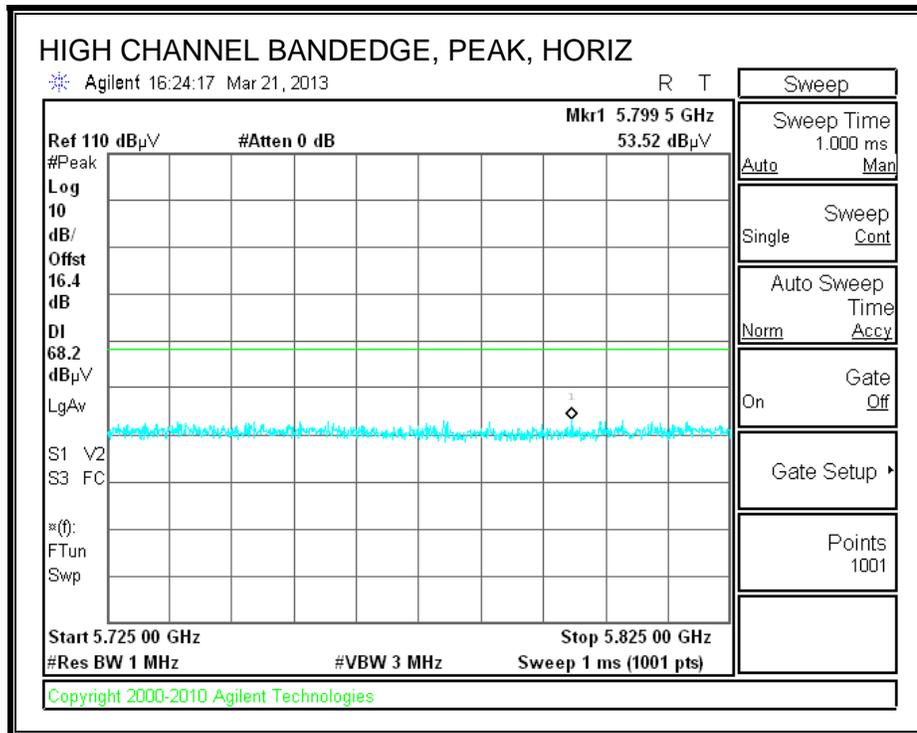
Actual Average = Measured Average + Correction Factor
 = 43.546 dBuV + 0.44
 = 43.986 dBuV





Actual Average = Measured Average + Correction Factor
 = 43.642 dBuV + 0.44
 = 44.082 dBuV

AUTHORIZED BANDEGE (HIGH CHANNEL)



HARMONICS AND SPURIOUS EMISSIONS

High Frequency Measurement
 Compliance Certification Services, Fremont 5m Chamber-B

Company: LG
Project #: 13U14917
Date: 5/21/2013
Test Engineer: Tony wang
Configuration: LG870 with Headset & AC Adapter
Mode: Tx 11m HT40 5.5GHz mode bar

Test Equipment:

Horn 1-18GHz	Pre-amplifier 1-26GHz	Pre-amplifier 26-40GHz	Horn > 18GHz	Limit
T136; M/N: 3117 @3m	T145 Agilent 3008A0056	T88 Miteq 26-40GHz	T39; ARA 18-26GHz; S/N:1013	FCC 15.205

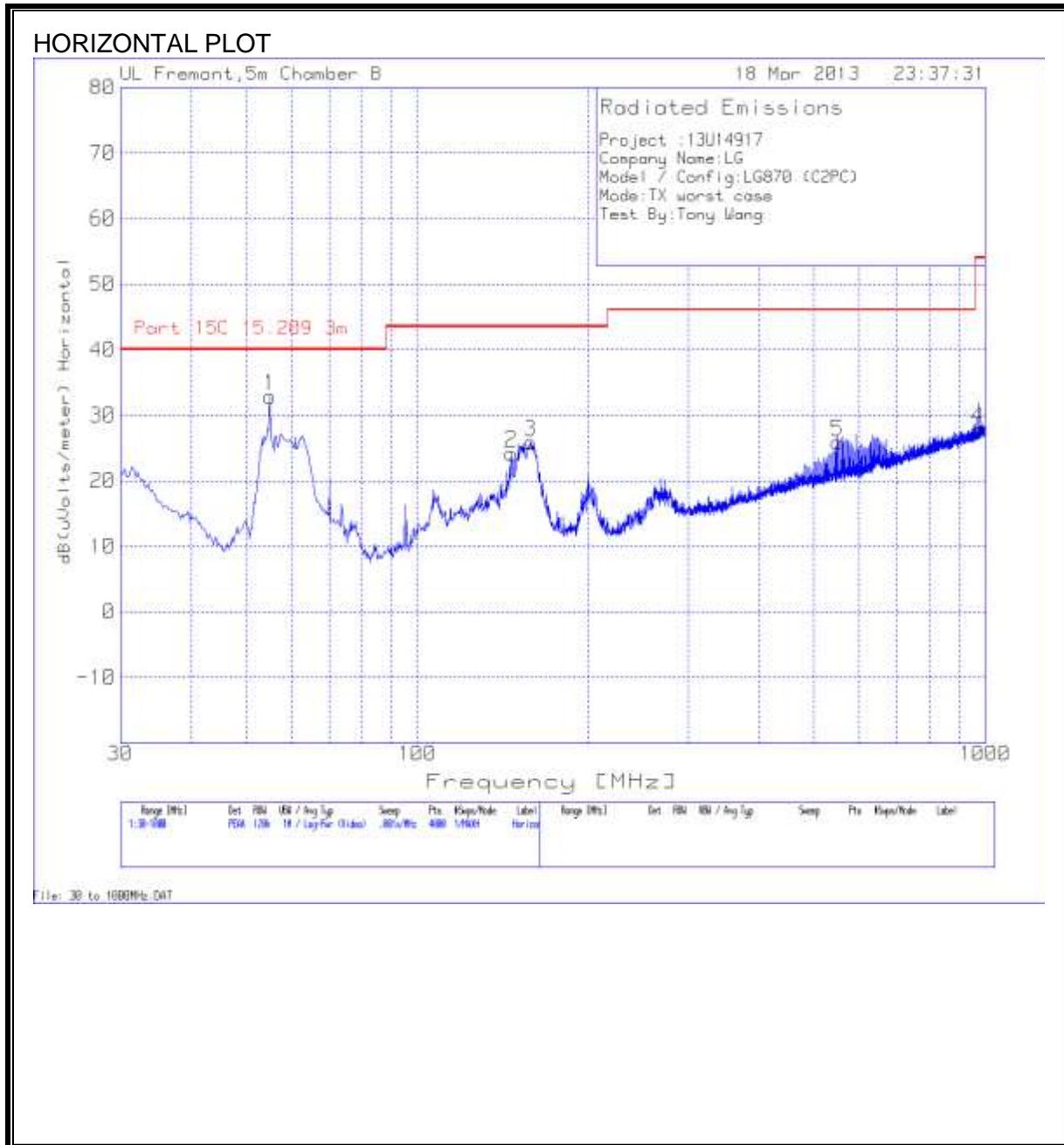
Hi Frequency Cables

3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF	Reject Filter	Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz; VBW=10Hz
3' cable 22807700	12' cable 22807600	20' cable 22807500	HPF_7.6GHz		

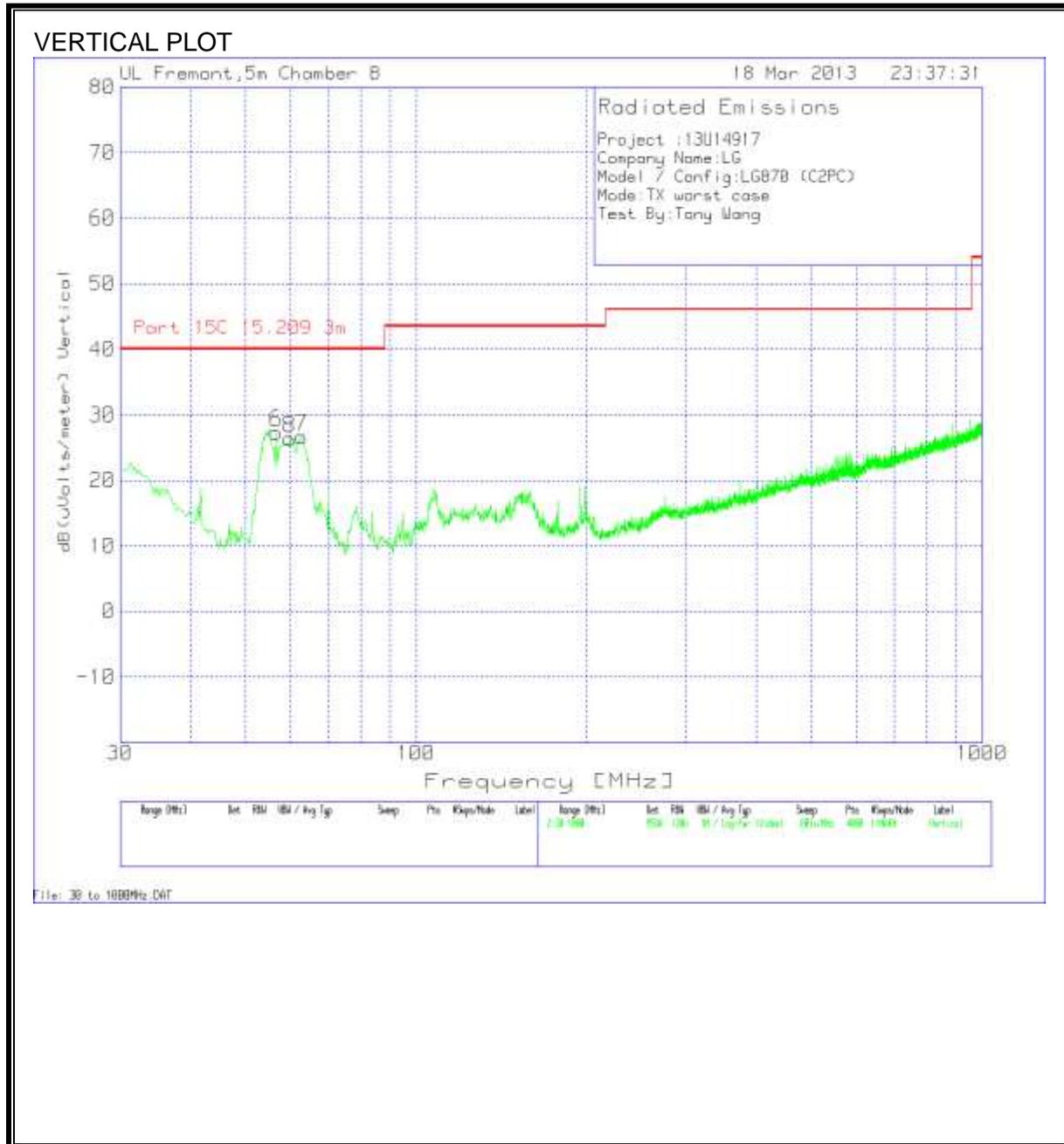
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fitr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low ch. 5510MHz															
11.020	3.0	35.7	25.2	37.6	11.0	-34.1	0.0	0.7	50.9	40.4	74	54	-23.1	-13.6	H
11.020	3.0	36.0	25.2	37.6	11.0	-34.1	0.0	0.7	51.2	40.4	74	54	-22.8	-13.6	V
Mid ch. 5550MHz															
11.100	3.0	35.4	25.3	37.6	11.1	-34.0	0.0	0.7	50.8	40.7	74	54	-23.2	-13.3	H
11.100	3.0	35.6	25.3	37.6	11.1	-34.0	0.0	0.7	51.0	40.7	74	54	-23.0	-13.3	V
High ch. 5670MHz															
11.340	3.0	34.9	24.7	37.9	11.2	-33.8	0.0	0.7	50.9	40.7	74	54	-23.1	-13.3	H
11.340	3.0	34.6	24.8	37.9	11.2	-33.8	0.0	0.7	50.6	40.8	74	54	-23.4	-13.2	V

10.3. WORST-CASE BELOW 1 GHz

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



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



HORIZONTAL AND VERTICAL DATA

Project :13U14917
 Company Name:LG
 Model / Config:LG870 (C2PC)
 Mode:TX worst case
 Test By:Tony Wang

Horizontal 30 - 1000MHz

Marker No.	Test Frequency	Meter Reading	Detector	T243 Hybrid	T10 preamp/ Cable loss loop	dB(uV/s/meter)	Part 15C 15.209 3m	Margin	Height [cm]	Polarity
1	54.9588	54.9	PK	6.8	-28.8	32.9	40	-7.1	400	Horz
2	146.3128	39.54	PK	12.5	-27.8	24.24	43.5	-19.26	100	Horz
3	158.4287	41.41	PK	12.1	-27.6	25.91	43.5	-17.59	200	Horz
4	973.8296	28.39	PK	22.9	-23.4	27.89	54	-26.11	300	Horz
5	550.4996	33.9	PK	18.3	-26.3	25.9	46	-20.1	200	Horz

Vertical 30 - 1000MHz

Marker No.	Test Frequency	Meter Reading	Detector	T243 Hybrid	T10 preamp/ Cable loss loop	dB(uV/s/meter)	Part 15C 15.209 3m	Margin	Height [cm]	Polarity
6	56.655	49.21	PK	6.9	-28.8	27.31	40	-12.69	200	Vert
7	62.713	48.11	PK	7.4	-28.8	26.71	40	-13.29	300	Vert
8	59.8051	48.17	PK	7.1	-28.8	26.47	40	-13.53	300	Vert

11. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 7.2.2

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

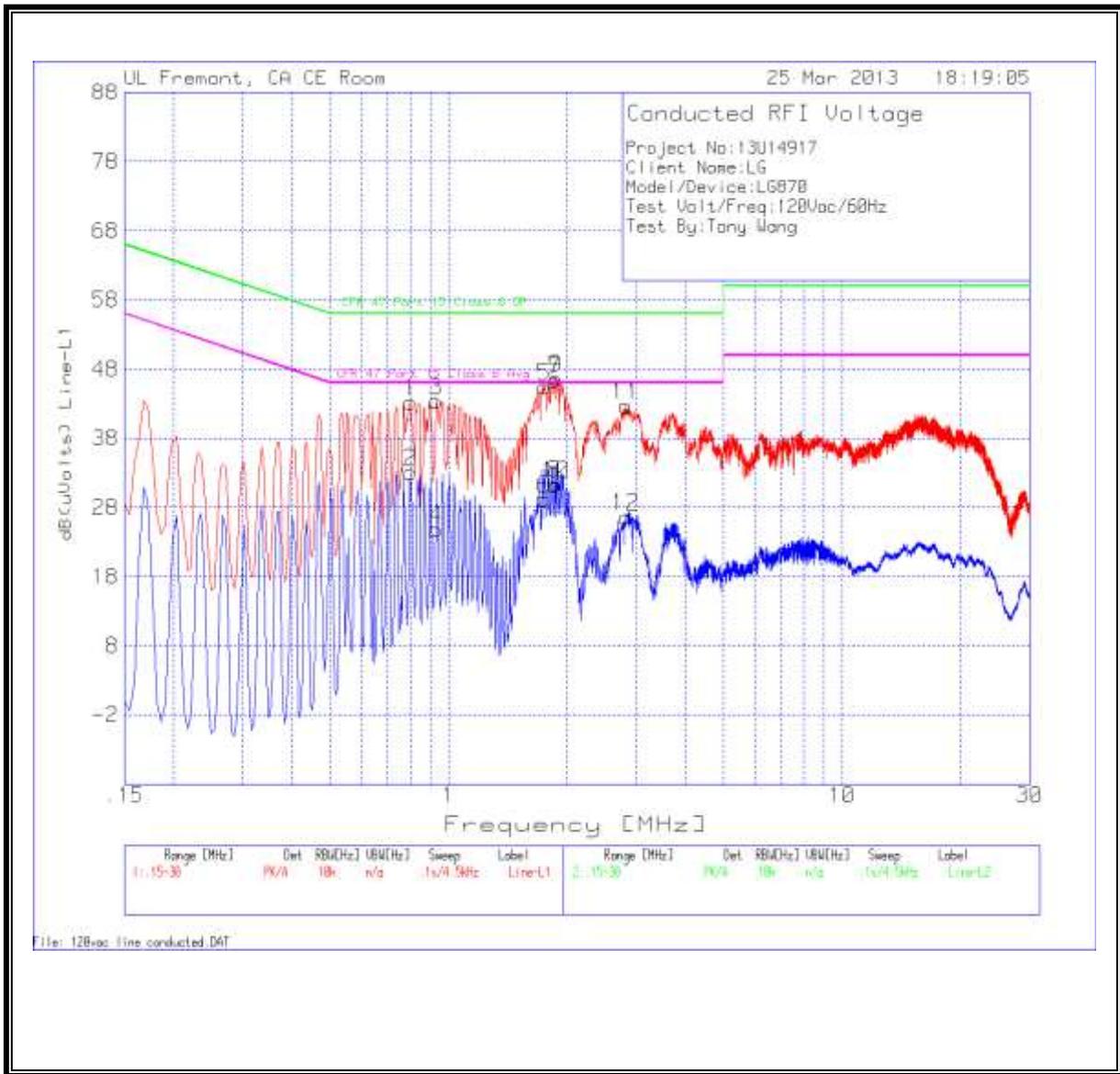
Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

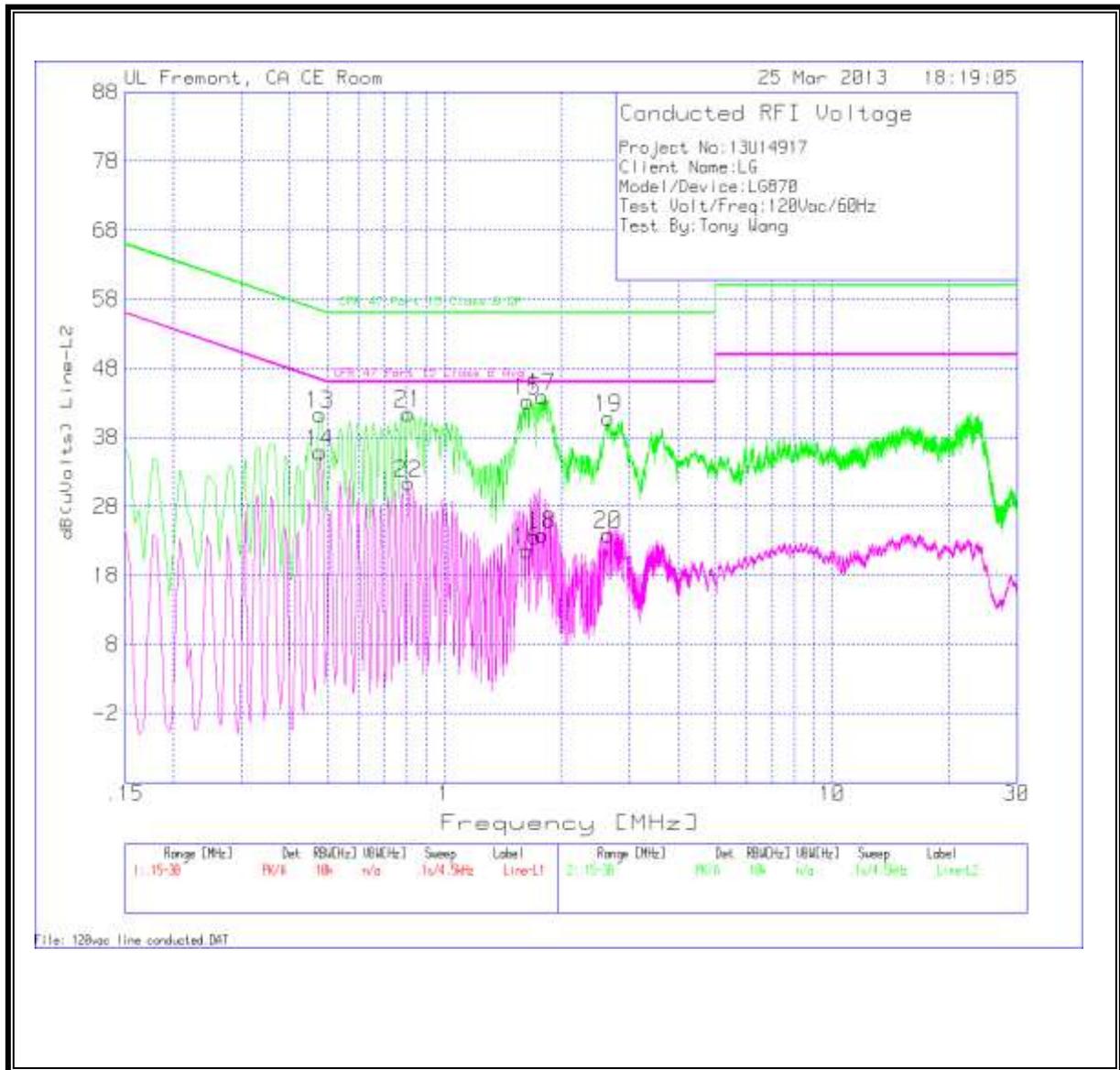
6 WORST EMISSIONS

Project No:13U14917									
Client Name:LG									
Model/Device:LG870									
Test Volt/Freq:120Vac/60Hz									
Test By:Tony Wang									
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
0.8025	43.2	PK	0.1	0	43.3	56	-12.7	-	-
0.8025	32.95	Av	0.1	0	33.05	-	-	46	-12.95
1.8555	46.17	PK	0.1	0.1	46.37	56	-9.63	-	-
1.8555	31.2	Av	0.1	0.1	31.4	-	-	46	-14.6
1.8735	46.47	PK	0.1	0.1	46.67	56	-9.33	-	-
1.8735	31.08	Av	0.1	0.1	31.28	-	-	46	-14.72
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
0.4785	41.23	PK	0.1	0	41.33	56.4	-15.07	-	-
0.4785	35.75	Av	0.1	0	35.85	-	-	46.4	-10.55
1.7835	43.76	PK	0.1	0.1	43.96	56	-12.04	-	-
1.7835	23.78	Av	0.1	0.1	23.98	-	-	46	-22.02
0.807	41.4	PK	0.1	0	41.5	56	-14.5	-	-
0.807	31.24	Av	0.1	0	31.34	-	-	46	-14.66

LINE 1 RESULTS



LINE 2 RESULTS



12. DYNAMIC FREQUENCY SELECTION

12.1. OVERVIEW

12.1.1. 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

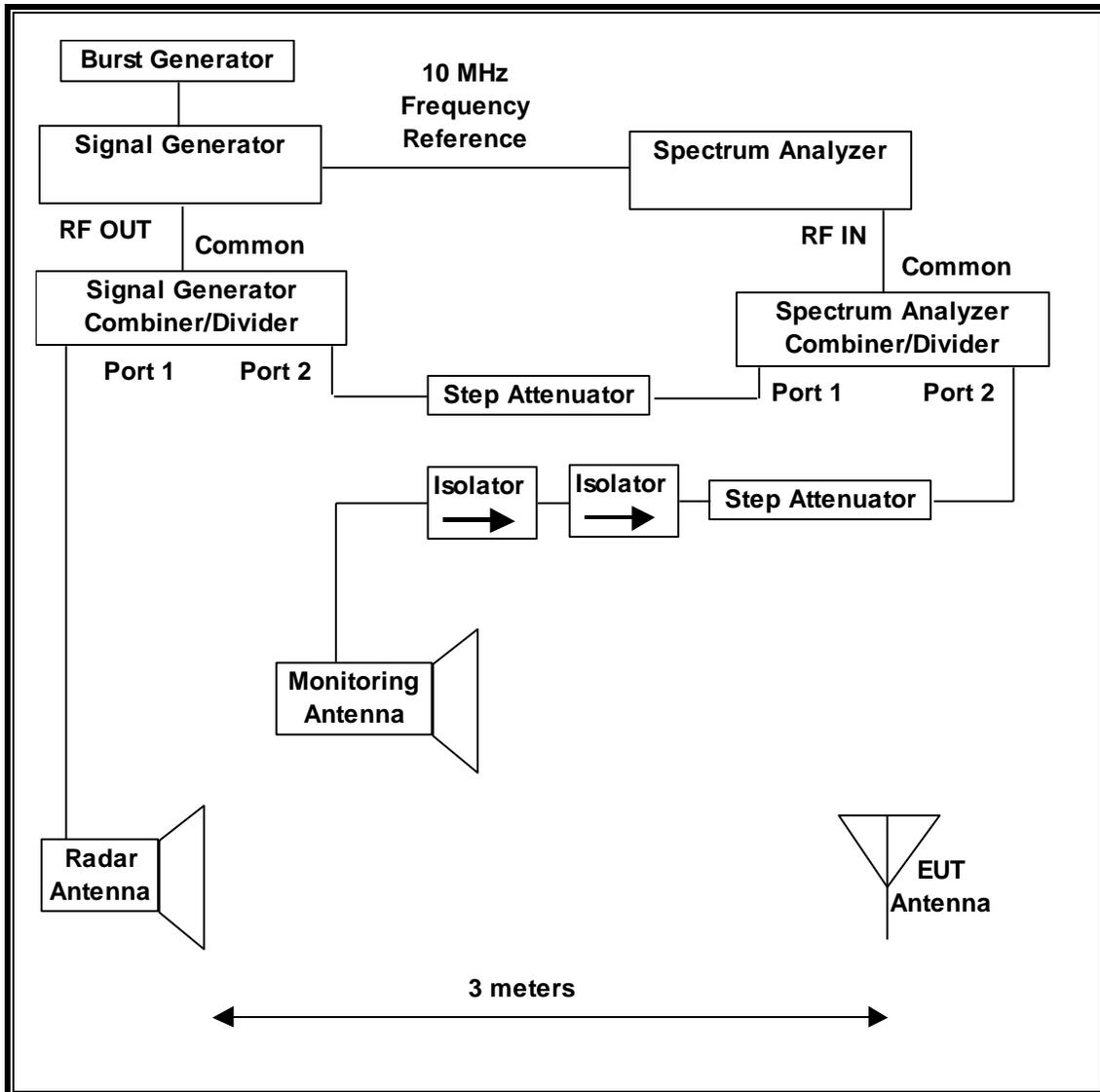
Radar Waveform	Bursts	Pulses per Burst	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Minimum Percentage of Successful Detection	Minimum Trials
5	8-20	1-3	50-100	5-20	1000-2000	80%	30

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

12.1.2. 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.

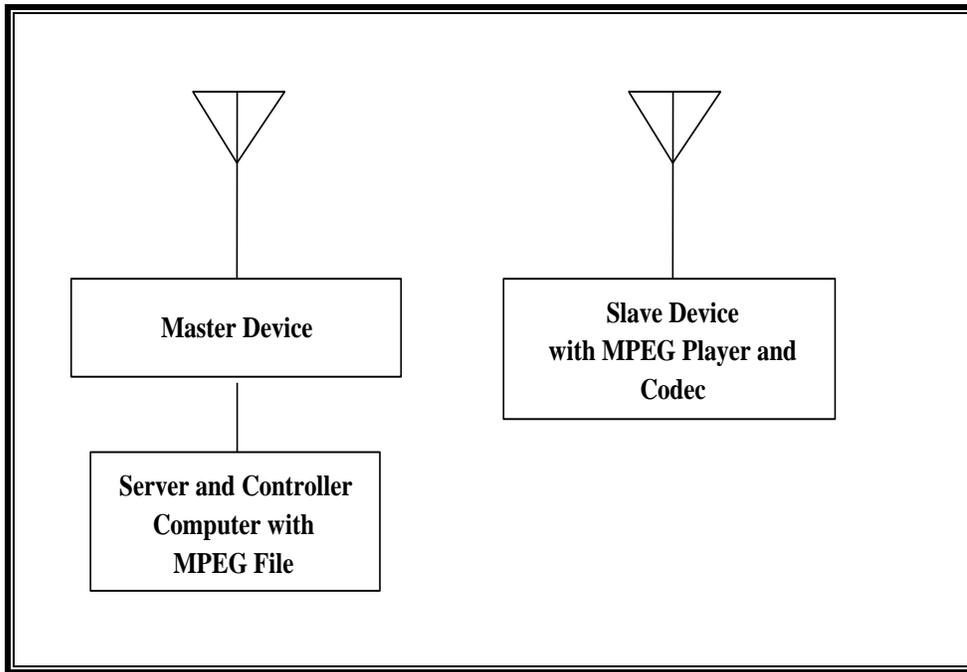
TEST AND MEASUREMENT EQUIPMENT

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, 26.5 GHz	Agilent / HP	E4440A	C01178	08/18/13
Vector Signal Generator, 20GHz	Agilent / HP	E8267C	C01066	11/20/13

12.1.3. 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
Notebook PC (Server/Controller)	Dell	PP18L	10657517725	DoC
AC Adapter (Server/Controller PC)	Dell	LA65SN0-00	CN-ODF263-71615-6AU-1019	DoC
Wireless Access Point	Cisco	AIR-AP1252AG-A-K9	FTX120690N2	LDK102061
AC Adapter (AP)	Delta Electronics	EADP-45BB B	DTH112490BD	DoC

12.1.4. 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 5.68 dBm EIRP in the 5250-5350 MHz band and 9.58 dBm EIRP in the 5470-5725 MHz band.

The only antenna assembly utilized with the EUT has a gain of -6.4 dBi.

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

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

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

WLAN traffic is generated by streaming the video file TestFile.mp2 "6 ½ Magic Hours" from the Master to the Slave in full motion video mode using BS Player version 1.8 build 148 media player.

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

The EUT utilizes the 802.11a/n architecture. Two nominal channel bandwidths are implemented: 20 MHz and 40 MHz.

The software installed in the access point is LG870FC.

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 > 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.

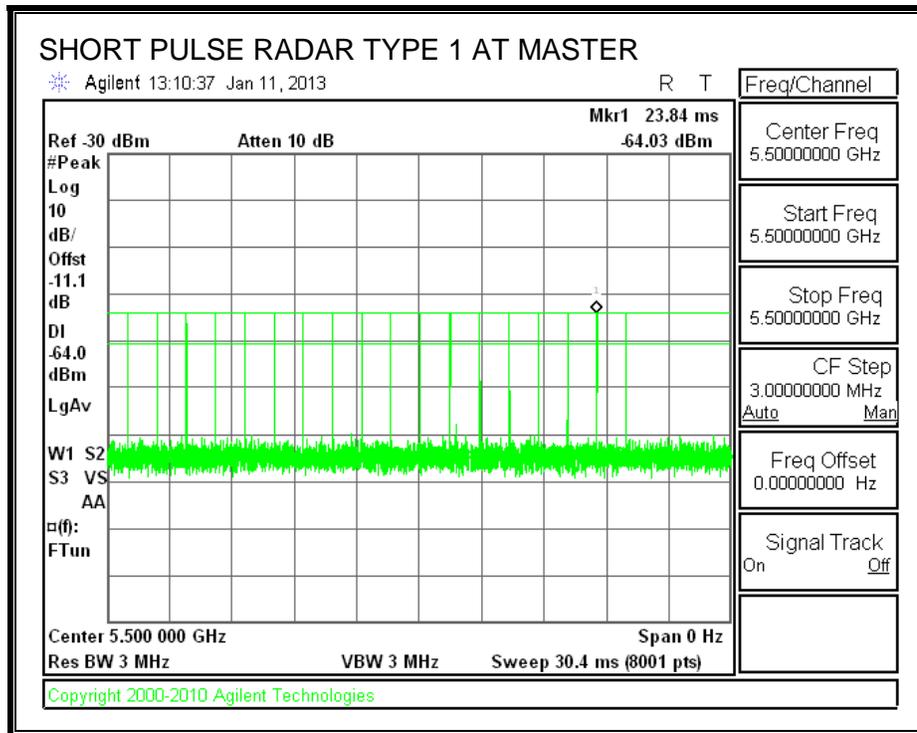
12.2. RESULTS FOR 20 MHz BANDWIDTH

12.2.1. TEST CHANNEL

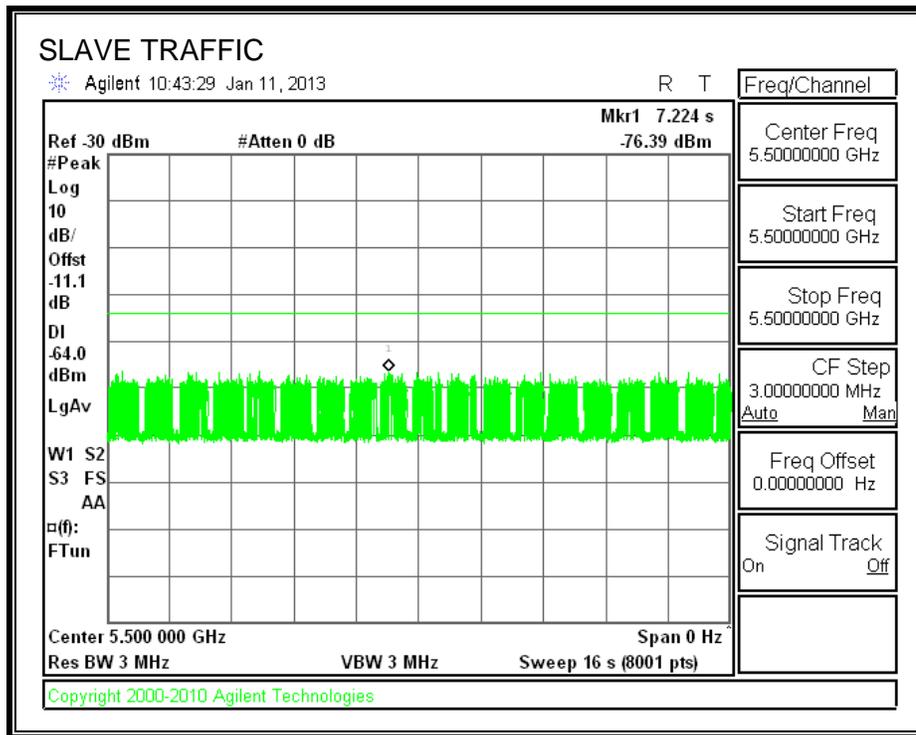
All tests were performed at a channel center frequency of 5500 MHz.

12.2.2. RADAR WAVEFORM AND TRAFFIC

RADAR WAVEFORM



TRAFFIC



12.2.3. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable.

12.2.4. 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).

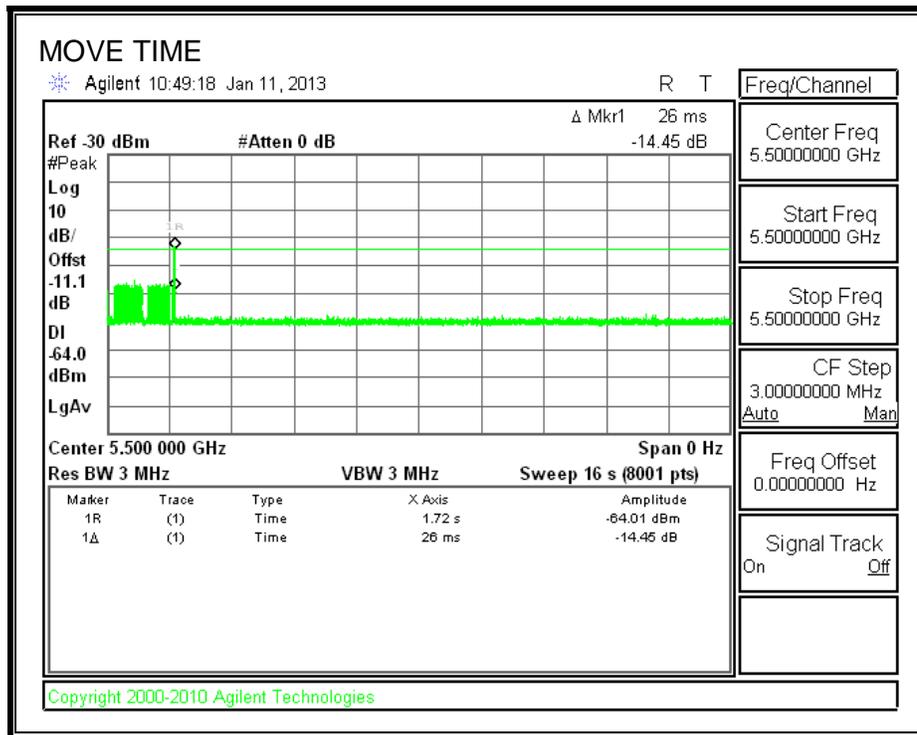
The observation period over which the IC aggregate time is calculated begins at (Reference Marker) and ends no earlier than (Reference Marker + 10 sec).

RESULTS

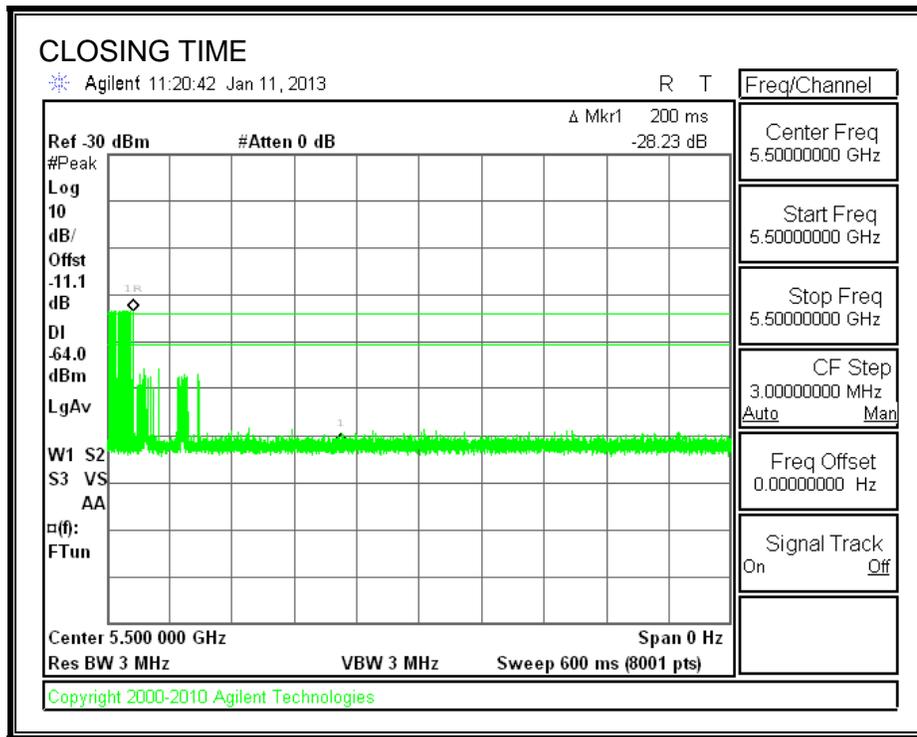
Agency	Channel Move Time (sec)	Limit (sec)
FCC / IC	0.026	10

Agency	Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
FCC	0.0	60
IC	22.0	260

MOVE TIME

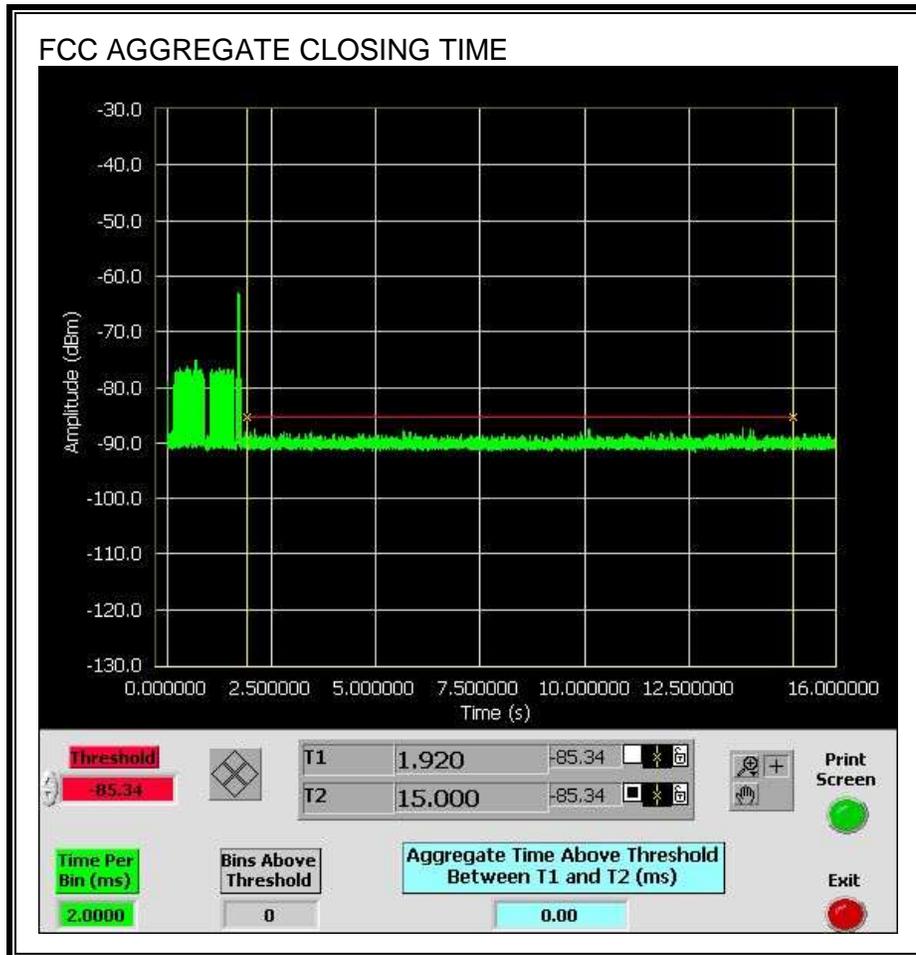


CHANNEL CLOSING TIME

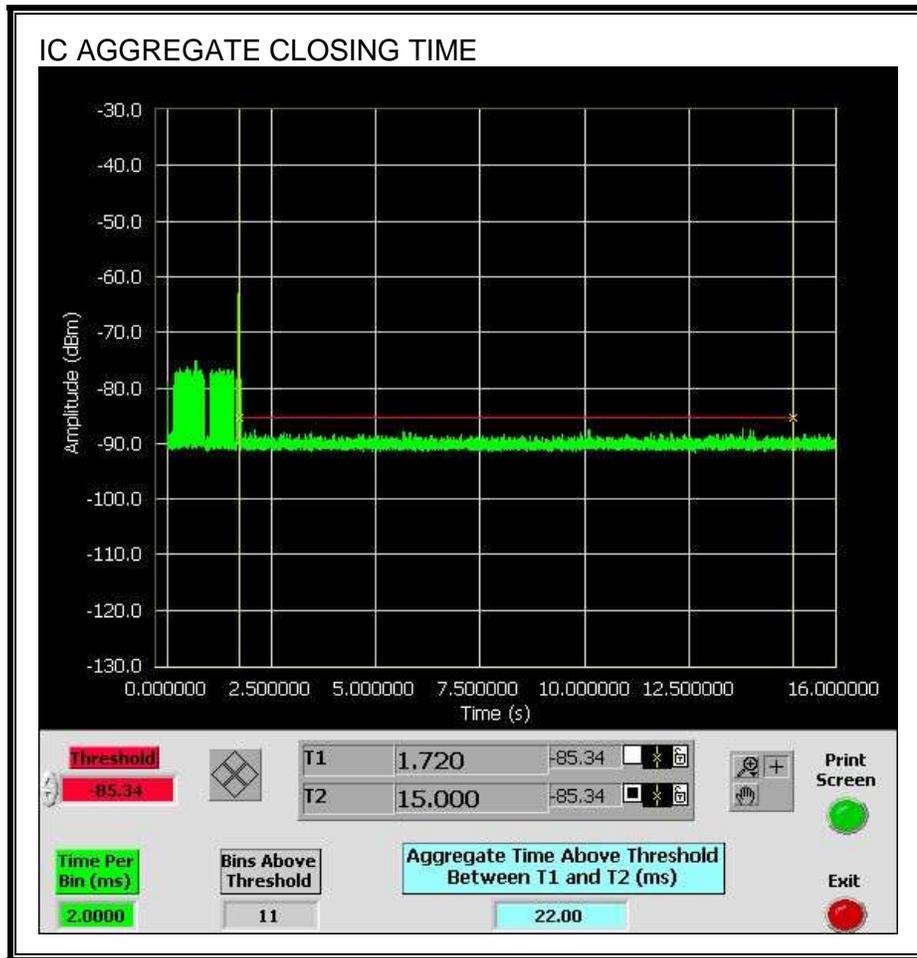


AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the FCC aggregate monitoring period.



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



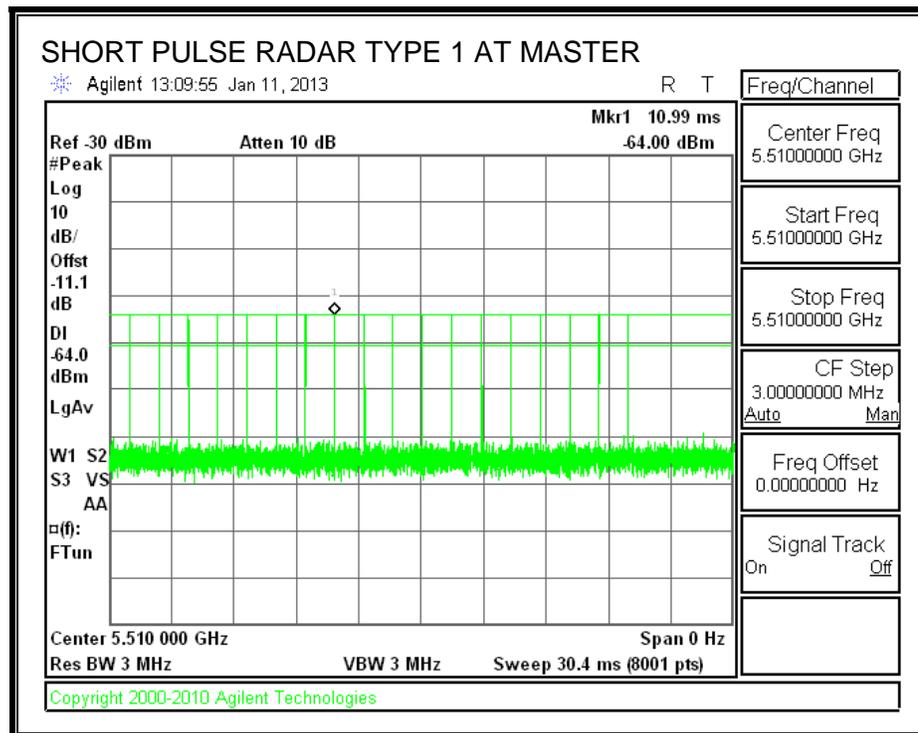
12.3. RESULTS FOR 40 MHz BANDWIDTH

12.3.1. TEST CHANNEL

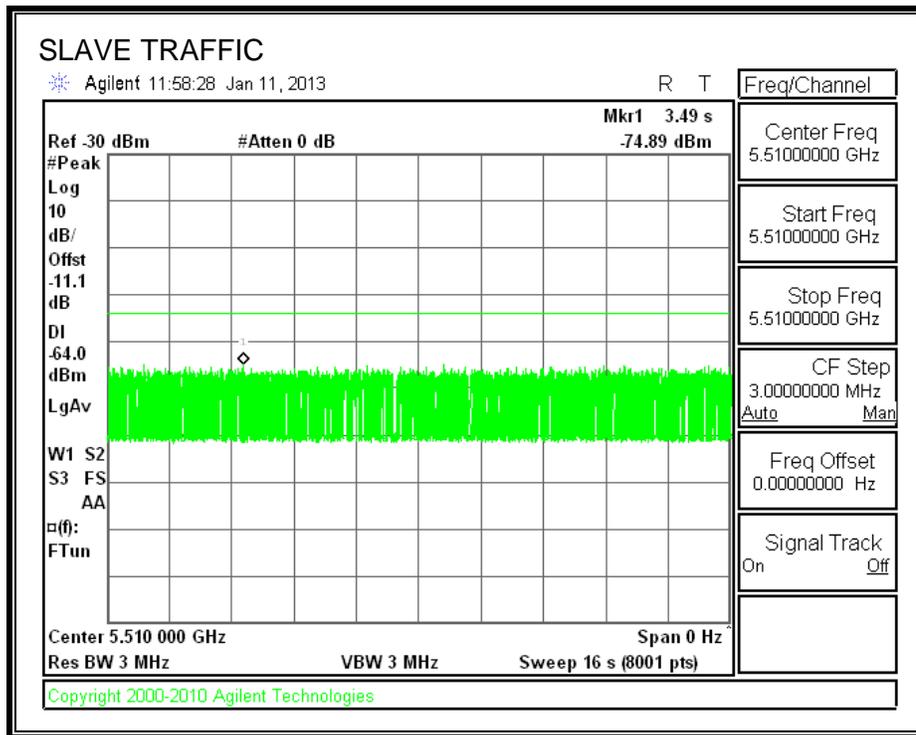
All tests were performed at a channel center frequency of 5510 MHz.

12.3.2. RADAR WAVEFORM AND TRAFFIC

RADAR WAVEFORM



TRAFFIC



12.3.3. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable.

12.3.4. 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).

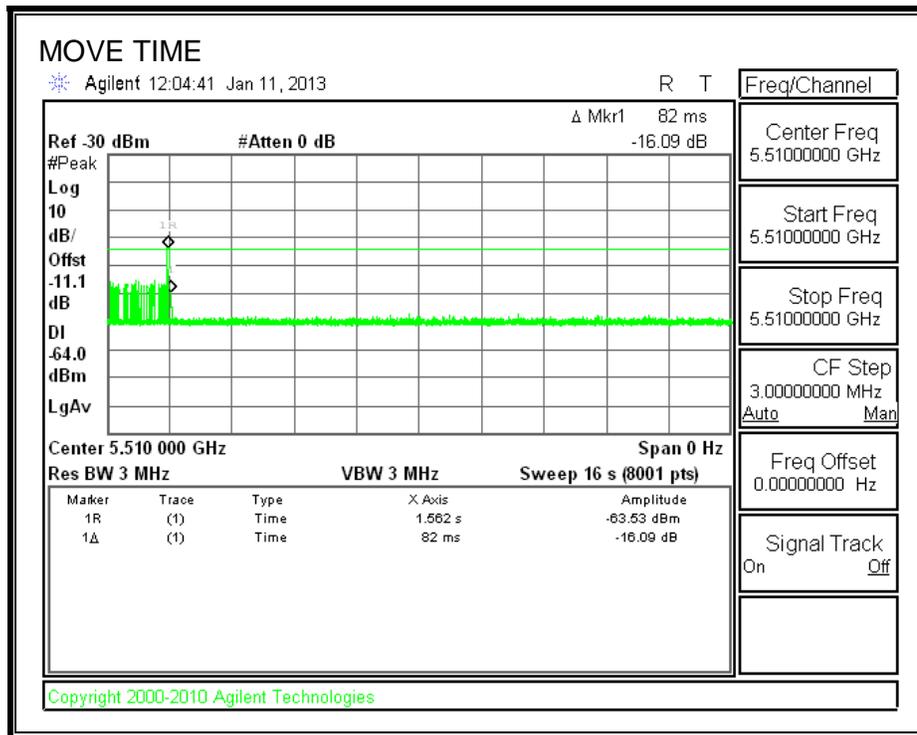
The observation period over which the IC aggregate time is calculated begins at (Reference Marker) and ends no earlier than (Reference Marker + 10 sec).

RESULTS

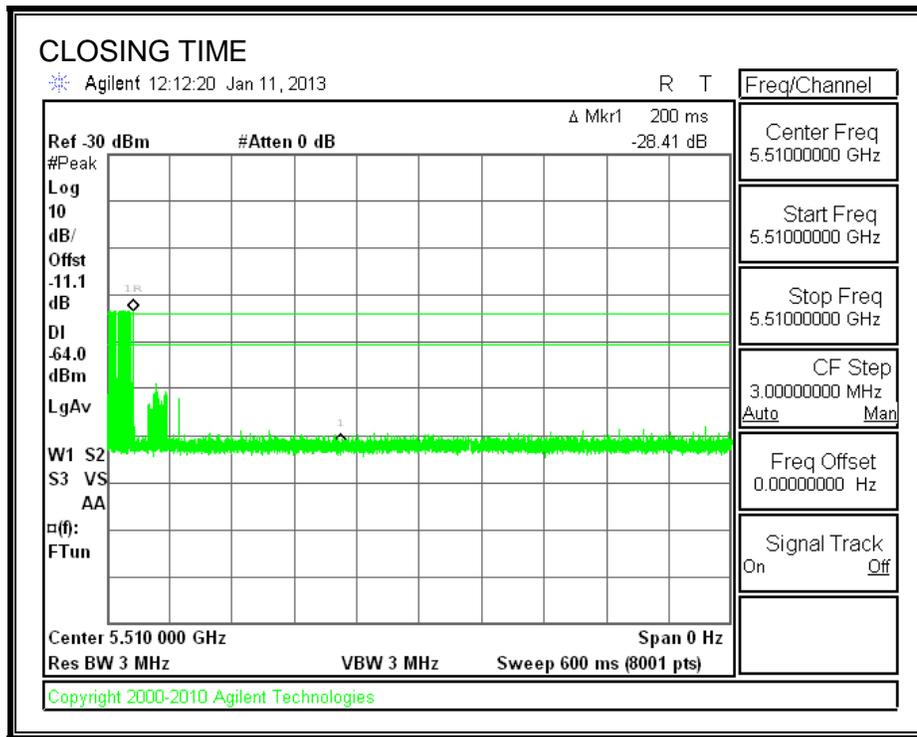
Agency	Channel Move Time (sec)	Limit (sec)
FCC / IC	0.082	10

Agency	Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
FCC	0.0	60
IC	4.0	260

MOVE TIME

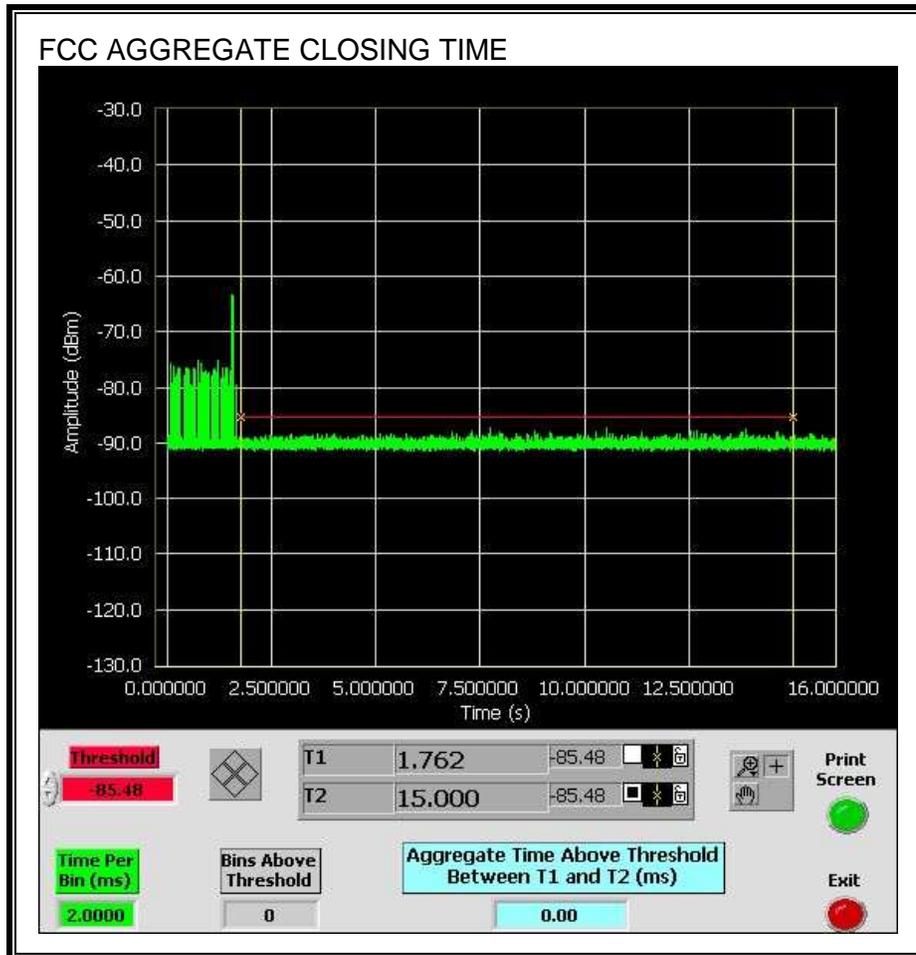


CHANNEL CLOSING TIME

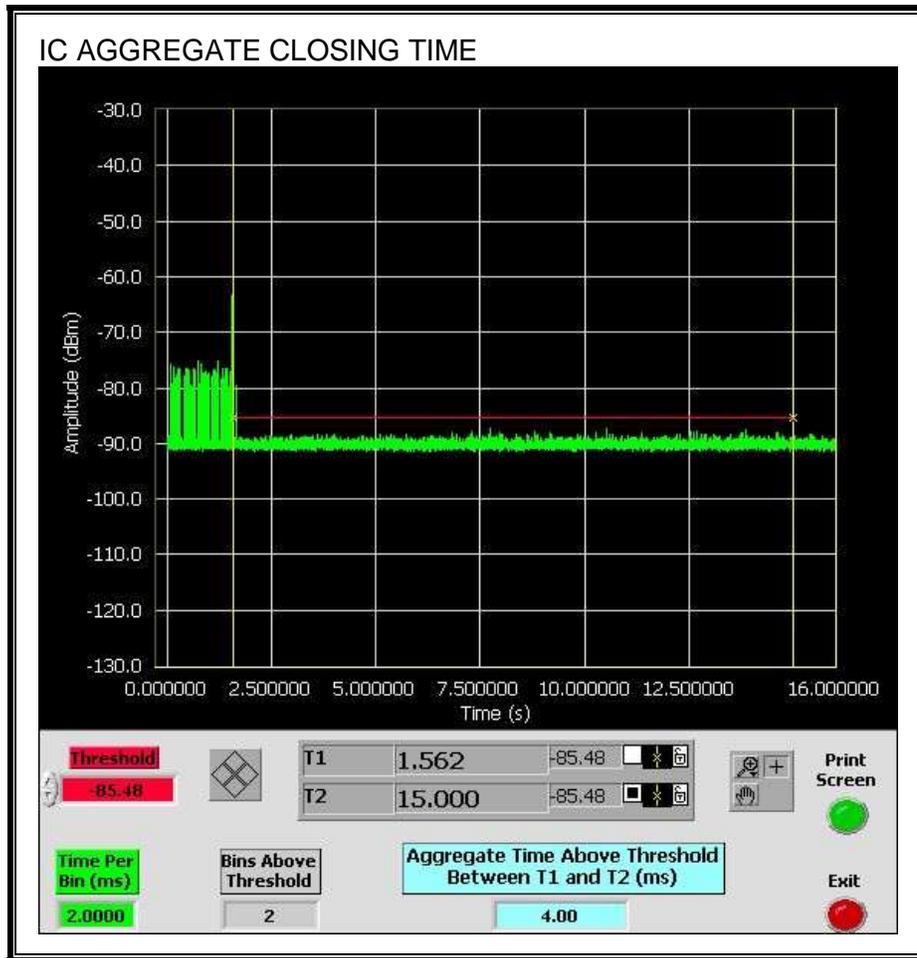


AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

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



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



12.3.5. NON-OCCUPANCY PERIOD

RESULTS

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

