FCC CFR47 PART 15 SUBPART E

CERTIFICATION TEST REPORT
CLASS II PERMISSIVE CHANGE

FOR

3x3 MIMO BASE STATION

MODEL NUMBER: A1521

FCC ID: BCGA1521

REPORT NUMBER: 15U21850-E32V1

ISSUE DATE: NOVEMBER 16, 2015

Prepared for
APPLE INC.
1 INIFINITE LOOP
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	11/16/15	Initial issue. Upgrade 12U14745-7, Revision A report to 5.2/5.3/5.6GHz band to new rule per KDB 789033 D02 v01.	T. Chu

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1. ATTESTATION OF TEST RESULTS

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

EUT DESCRIPTION: 3x3 MIMO BASE STATION

MODEL: A1521

SERIAL NUMBER: C86K500PFGCP and C86K5029FGCP (RF);
C86K5013FGCP and C86K501CFGCQ (DFS)

DATE TESTED: DECEMBER 10, 2012 to MARCH 22, 2013 and
APRIL 04 to 25, 2013

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart E	Pass

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For
UL Verification Services Inc. By:

FRANK IBRAHIM
WiSE PROGRAM MANAGER
UL Verification Services Inc.

Tested By:

TOM CHEN
EMC ENGINEER
UL Verification Services Inc.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, FCC 14-30, FCC KDB 662911 D01 v02r01, FCC KDB 905462 D02 v01r02/D03 v01r01/D06 v01, FCC KDB 789033 D02 v01, FCC KDB 644545 D03 v01 ANSI C63.10-2009.

3. FACILITIES AND ACCREDITATION

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

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://ts.nist.gov/standards/scopes/2000650.htm.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

4.3. MEASUREMENT UNCERTAINTY

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

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

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a 3x3 802.11a/g/n/ac MIMO base station. The EUT also supports Transmit beam forming on 11n and 11ac modes.

5.2. DESCRIPTION OF CLASS II PERMISSIVE CHANGE

Upgrade 5.2/5.3/5.6GHz band to new rule per KDB 789033 D02 v01.

We have reviewed the original test report for UNII-1, UNII-2A and UNII-2C bands and are hereby attesting that all current technical requirements are still met and all applicable test procedures remain the same. Therefore, the original report is still applicable and no additional testing is done.

We updated the following on this report:

- Updated report to latest KDB 789033 D02 v01.
- 5.2G output power table limit/PPSD limit.
- Removed IC related information.
- Removed Peak Excursion.

5.3. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

5150-5250 MHz Authorized Frequency Band						
Frequency Range (MHz)	Mode	Avg Power, Chain 0 (dBm)	Avg Power, Chain 1 (dBm)	Avg Power, Chain 2 (dBm)	Total Avg power (dBm)	Total Avg power (mW)
5180-5240	802.11a Legacy 1TX	N/A	14.1	N/A	14.10	25.70
5180-5240	802.11n HT20 CDD 2TX	10.26	10.00	N/A	13.14	20.61
5180-5240	802.11n HT20 BF 2TX	10.26	10.00	N/A	13.14	20.61
5180-5240	802.11n HT20 STBC 2TX	11.20	11.10	N/A	14.16	26.06
5180-5240	802.11n HT20 CDD 3TX	7.15	7.31	7.66	12.15	16.41
5180-5240	802.11n HT20 BF 3TX	7.15	7.31	7.66	12.15	16.41
5180-5240	802.11n HT20 STBC 3TX	9.40	9.10	8.96	13.93	24.72
5190-5230	802.11n HT40 1TX	N/A	16.5	N/A	16.50	44.67
5190-5230	802.11n HT40 CDD 2TX	12.70	12.80	N/A	15.76	37.67
5190-5230	802.11n HT40 BF 2TX	12.70	12.80	N/A	15.76	37.67
5190-5230	802.11n HT40 STBC 2TX	13.70	13.80	N/A	16.76	47.42
5190-5230	802.11n HT40 CDD 3TX	9.80	9.50	9.60	14.41	27.61
5190-5230	802.11n HT40 BF 3TX	9.80	9.50	9.60	14.41	27.61
5190-5230	802.11n HT40 STBC 3TX	11.73	11.55	11.50	16.37	43.35
5210	802.11ac VHT80 1TX	N/A	13.00	N/A	13.00	19.95
5210	802.11ac VHT80 CDD 2TX	12.50	12.60	N/A	15.56	35.97
5210	802.11ac VHT80 BF 2TX	12.50	12.60	N/A	15.56	35.97
5210	802.11ac VHT80 STBC 2TX	12.70	12.40	N/A	15.56	35.97
5210	802.11ac VHT80 CDD 3TX	11.90	12.10	11.95	16.76	47.42
5210	802.11ac VHT80 BF 3TX	10.00	10.30	10.10	14.91	30.97
5210	802.11ac VHT80 STBC 3TX	11.90	11.98	12.10	16.77	47.53

Note:

802.11n HT20 BF 3TX was tested for BE and Harmonics, and this covers 802.11n HT20 BF 2TX, 802.11n AC20 BF 2TX, and 802.11n AC20 BF 3TX.

802.11ac VHT20 SISO is leveraged from HT20 SISO.
802.11ac VHT20 2TX CDD is leveraged from HT20 2TX CDD.
802.11ac VHT20 2TX STBC is leveraged from HT20 2TX STBC.
802.11ac VHT20 3TX CDD is leveraged from HT20 3TX CDD.
802.11ac VHT20 3TX STBC is leveraged from HT20 3TX STBC.

802.11ac VHT40 SISO is leveraged from HT40 SISO.
802.11ac VHT40 2TX CDD is leveraged from HT40 2TX CDD.
802.11ac VHT40 2TX STBC is leveraged from HT40 2TX STBC.
802.11ac VHT40 3TX CDD is leveraged from HT40 3TX CDD.
802.11ac VHT40 3TX STBC is leveraged from HT40 3TX STBC.

5250-5325 MHz Authorized Frequency Band						
Frequency Range (MHz)	Mode	Avg Power, Chain 0 (dBm)	Avg Power, Chain 1 (dBm)	Avg Power, Chain 2 (dBm)	Total Avg power (dBm)	Total Avg power (mW)
5260-5320	802.11a Legacy 1TX	N/A	20.5	N/A	20.50	112.20
5260-5320	802.11n HT20 CDD 2TX	16.50	16.60	N/A	19.56	90.36
5260-5320	802.11n HT20 BF 2TX	16.50	16.60	N/A	19.56	90.36
5260-5320	802.11n HT20 STBC 2TX	18.10	18.00	N/A	21.06	127.64
5260-5320	802.11n HT20 CDD 3TX	13.60	13.80	13.50	18.41	69.34
5260-5320	802.11n HT20 BF 3TX	13.60	13.80	13.50	18.41	69.34
5260-5320	802.11n HT20 STBC 3TX	16.10	16.30	16.20	20.97	125.03
5270-5310	802.11n HT40 1TX	N/A	17.5	N/A	17.50	56.23
5270-5310	802.11n HT40 CDD 2TX	17.30	17.30	N/A	20.31	107.40
5270-5310	802.11n HT40 BF 2TX	17.30	17.30	N/A	20.31	107.40
5270-5310	802.11n HT40 STBC 2TX	17.30	17.20	N/A	20.26	106.17
5270-5310	802.11n HT40 CDD 3TX	16.00	16.30	16.10	20.91	123.31
5270-5310	802.11n HT40 BF 3TX	16.00	16.30	16.10	20.91	123.31
5270-5310	802.11n HT40 STBC 3TX	16.00	16.30	16.10	20.91	123.31
5290	802.11ac VHT80 1TX	N/A	13.50	N/A	13.50	22.39
5290	802.11ac VHT80 CDD 2TX	13.10	13.00	N/A	16.06	40.36
5290	802.11ac VHT80 BF 2TX	13.10	13.00	N/A	16.06	40.36
5290	802.11ac VHT80 STBC 2TX	13.10	13.00	N/A	16.06	40.36
5290	802.11ac VHT80 CDD 3TX	12.12	12.00	12.00	16.81	47.97
5290	802.11ac VHT80 BF 3TX	12.12	12.00	12.00	16.81	47.97
5290	802.11ac VHT80 STBC 3TX	12.12	12.00	12.00	16.81	47.97

Note:

802.11n HT20 BF 3TX was tested for BE and Harmonics, and this covers 802.11n HT20 BF 2TX, 802.11n AC20 BF 2TX, and 802.11n AC20 BF 3TX

802.11ac VHT20 SISO is leveraged from HT20 SISO.
802.11ac VHT20 2TX CDD is leveraged from HT20 2TX CDD.
802.11ac VHT20 2TX STBC is leveraged from HT20 2TX STBC.
802.11ac VHT20 3TX CDD is leveraged from HT20 3TX CDD.
802.11ac VHT20 3TX STBC is leveraged from HT20 3TX STBC.

802.11ac VHT40 SISO is leveraged from HT40 SISO.
802.11ac VHT40 2TX CDD is leveraged from HT40 2TX CDD.
802.11ac VHT40 2TX STBC is leveraged from HT40 2TX STBC.
802.11ac VHT40 3TX CDD is leveraged from HT40 3TX CDD.
802.11ac VHT40 3TX STBC is leveraged from HT40 3TX STBC.

5500-5700 MHz Authorized Frequency Band						
Frequency Range (MHz)	Mode	Avg Power, Chain 0 (dBm)	Avg Power, Chain 1 (dBm)	Avg Power, Chain 2 (dBm)	Total Avg power (dBm)	Total Avg power (mW)
5500-5700	802.11a Legacy 1TX	N/A	20.50	N/A	20.50	112.20
5500-5700	802.11n HT20 CDD 2TX	16.70	16.60	N/A	19.66	92.47
5500-5700	802.11n HT20 BF 2TX	16.70	16.60	N/A	19.66	92.47
5500-5700	802.11n HT20 STBC 2TX	18.20	18.10	N/A	21.16	130.62
5500-5700	802.11n HT20 CDD 3TX	13.50	13.75	13.60	18.39	69.02
5500-5700	802.11n HT20 BF 3TX	13.50	13.75	13.60	18.39	69.02
5500-5700	802.11n HT20 STBC 3TX	16.00	16.30	16.20	20.94	124.17
5510-5670	802.11n HT40 1TX	N/A	19.50	N/A	19.50	89.13
5510-5670	802.11n HT40 CDD 2TX	18.20	18.10	N/A	21.16	130.62
5510-5670	802.11n HT40 BF 2TX	18.20	18.10	N/A	21.16	130.62
5510-5670	802.11n HT40 STBC 2TX	18.10	18.00	N/A	21.06	127.64
5510-5670	802.11n HT40 CDD 3TX	16.00	16.25	16.10	20.89	122.74
5510-5670	802.11n HT40 BF 3TX	16.00	16.25	16.10	20.89	122.74
5510-5670	802.11n HT40 STBC 3TX	16.00	16.30	16.10	20.91	123.31
5530	802.11ac VHT80 1TX	N/A	13.00	N/A	13.00	19.95
5530	802.11ac VHT80 CDD 2TX	12.59	12.79	N/A	15.61	36.39
5530	802.11ac VHT80 BF 2TX	12.59	12.79	N/A	15.61	36.39
5530	802.11ac VHT80 STBC 2TX	12.59	12.79	N/A	15.61	36.39
5530	802.11ac VHT80 STBC 3TX	12.09	12.29	12.19	16.87	48.64
5530	802.11ac VHT80 CDD 3TX	12.09	12.29	12.19	16.87	48.64
5530	802.11ac VHT80BF 3TX	12.09	12.29	12.19	16.87	48.64

Note:

"802.11n HT20 BF 3TX was tested for Harmonics, and this covers 802.11n HT20 BF 2TX, 802.11n AC20 BF 2TX, and 802.11n AC20 BF 3TX".

"802.11n HT20 BF 3TX was tested for BE, and this covers 802.11n AC20 BF 3TX".

"802.11n HT20 BF 3TX was tested for BE, and this covers 802.11n AC20 BF 2TX".

802.11ac VHT20 SISO is leveraged from HT20 SISO.
802.11ac VHT20 2TX CDD is leveraged from HT20 2TX CDD.
802.11ac VHT20 2TX STBC is leveraged from HT20 2TX STBC.
802.11ac VHT20 3TX CDD is leveraged from HT20 3TX CDD.
802.11ac VHT20 3TX STBC is leveraged from HT20 3TX STBC.

802.11ac VHT40 SISO is leveraged from HT40 SISO.
802.11ac VHT40 2TX CDD is leveraged from HT40 2TX CDD.
802.11ac VHT40 2TX STBC is leveraged from HT40 2TX STBC.
802.11ac VHT40 3TX CDD is leveraged from HT40 3TX CDD.
802.11ac VHT40 3TX STBC is leveraged from HT40 3TX STBC.

Frequency Range (MHz)	Mode	Avg Power, Chain 0 (dBm)	Avg Power, Chain 1 (dBm)	Avg Power, Chain 2 (dBm)	Total Avg power (dBm)	Total Avg power (mW)
5.6 GHz band, 1TX (Channels overlapping UNII and DTS bands)						
5720 (UNII portion)	802.11a 1TX	N/A	20.29	N/A	20.29	106.91
5720 (DTS portion)	802.11a 1TX	N/A	14.58	N/A	14.58	28.71
5720 (Whole signal)	802.11a 1TX	N/A	21.32	N/A	21.32	135.61
5710 (UNII portion)	802.11n HT40 1TX	N/A	23.12	N/A	23.12	205.12
5710 (DTS portion)	802.11n HT40 1TX	N/A	12.56	N/A	12.56	18.03
5710 (Whole signal)	802.11n HT40 1TX	N/A	23.49	N/A	23.49	223.15
5690 (UNII portion)	802.11ac VHT80 1TX	N/A	23.87	N/A	23.87	243.78
5690 (DTS portion)	802.11ac VHT80 1TX	N/A	8.48	N/A	8.48	7.05
5690 (Whole signal)	802.11ac VHT80 1TX	N/A	23.99	N/A	23.99	250.83
5.6 GHz band, 2TX (Channels overlapping UNII and DTS bands)						
5720 (UNII portion)	802.11n HT20 CDD 2TX	16.15	16.23	N/A	19.20	83.19
5720 (DTS portion)	802.11n HT20 CDD 2TX	10.26	10.30	N/A	13.29	21.33
5720 (Whole signal)	802.11n HT20 CDD 2TX	17.15	17.22	N/A	20.19	104.52
5720 (UNII portion)	802.11n HT20 STBC 2TX	18.09	18.27	N/A	21.19	131.56
5720 (DTS portion)	802.11n HT20 STBC 2TX	10.96	11.12	N/A	14.05	25.42
5720 (Whole signal)	802.11n HT20 STBC 2TX	18.86	19.04	N/A	21.96	156.98
5710 (UNII portion)	802.11n HT40 CDD 2TX	19.35	19.15	N/A	22.26	168.32
5710 (DTS portion)	802.11n HT40 CDD 2TX	8.46	9.40	N/A	11.97	15.72
5710 (Whole signal)	802.11n HT40 CDD 2TX	19.69	19.59	N/A	22.65	184.05
5710 (UNII portion)	802.11n HT40 BF 2TX	19.35	19.15	N/A	22.26	168.32
5710 (DTS portion)	802.11n HT40 BF 2TX	8.46	9.40	N/A	11.97	15.72
5710 (Whole signal)	802.11n HT40 BF 2TX	19.69	19.59	N/A	22.65	184.05
5710 (UNII portion)	802.11n HT40 STBC 2TX	20.36	20.68	N/A	23.53	225.59
5710 (DTS portion)	802.11n HT40 STBC 2TX	9.64	10.41	N/A	13.05	20.19
5710 (Whole signal)	802.11n HT40 STBC 2TX	20.71	21.07	N/A	23.91	245.79
5690 (UNII portion)	802.11ac VHT80 CDD 2TX	20.91	20.60	N/A	23.77	238.13
5690 (DTS portion)	802.11ac VHT80 CDD 2TX	3.79	6.02	N/A	8.06	6.39
5690 (Whole signal)	802.11ac VHT80 CDD 2TX	20.99	20.75	N/A	23.88	244.52
5690 (UNII portion)	802.11ac VHT80 BF 2TX	19.44	19.47	N/A	22.47	176.41
5690 (DTS portion)	802.11ac VHT80 BF 2TX	5.91	6.00	N/A	8.97	7.88
5690 (Whole signal)	802.11ac VHT80 BF 2TX	19.63	19.66	N/A	22.66	184.29
5690 (UNII portion)	802.11ac VHT80 STBC 2TX	20.91	20.60	N/A	23.77	238.13
5690 (DTS portion)	802.11ac VHT80 STBC 2TX	3.79	6.02	N/A	8.06	6.39
5690 (Whole signal)	802.11ac VHT80 STBC 2TX	20.99	20.75	N/A	23.88	244.52
5.6 GHz band, 3TX (Channels overlapping UNII and DTS bands)						
5720 (UNII portion)	802.11n HT20 CDD 3TX	13.86	13.74	13.54	18.49	70.58
5720 (DTS portion)	802.11n HT20 CDD 3TX	7.86	7.71	7.95	12.61	18.25
5720 (Whole signal)	802.11n HT20 CDD 3TX	14.83	14.71	14.60	19.49	88.82
5720 (UNII portion)	802.11n HT20 STBC 3TX	16.57	15.95	16.30	21.05	127.41
5720 (DTS portion)	802.11n HT20 STBC 3TX	9.45	8.85	9.14	13.92	24.69
5720 (Whole signal)	802.11n HT20 STBC 3TX	17.34	16.72	17.06	21.82	152.09
5710 (UNII portion)	802.11n HT40 CDD 3TX	15.82	16.63	15.92	20.91	123.30
5710 (DTS portion)	802.11n HT40 CDD 3TX	5.86	5.89	6.25	10.77	11.95
5710 (Whole signal)	802.11n HT40 CDD 3TX	16.24	16.98	16.36	21.31	135.26
5710 (UNII portion)	802.11n HT40 BF 3TX	15.82	16.63	15.92	20.91	123.30
5710 (DTS portion)	802.11n HT40 BF 3TX	5.86	5.89	6.25	10.77	11.95
5710 (Whole signal)	802.11n HT40 BF 3TX	16.24	16.98	16.36	21.31	135.26
5710 (UNII portion)	802.11n HT40 STBC 3TX	18.66	18.66	18.56	23.40	218.68
5710 (DTS portion)	802.11n HT40 STBC 3TX	8.50	7.94	8.33	13.03	20.11
5710 (Whole signal)	802.11n HT40 STBC 3TX	19.06	19.01	18.95	23.78	238.79
5690 (UNII portion)	802.11ac VHT80 CDD 3TX	18.58	18.72	18.73	23.45	221.23
5690 (DTS portion)	802.11ac VHT80 CDD 3TX	4.85	4.04	4.31	9.18	8.29
5690 (Whole signal)	802.11ac VHT80 CDD 3TX	18.76	18.87	18.88	23.61	229.52
5690 (UNII portion)	802.11ac VHT80 BF 3TX	16.47	16.30	16.22	21.10	128.90
5690 (DTS portion)	802.11ac VHT80 BF 3TX	4.85	4.04	4.31	9.18	8.29
5690 (Whole signal)	802.11ac VHT80 BF 3TX	16.76	16.55	16.49	21.37	137.19
5690 (UNII portion)	802.11ac VHT80 STBC 3TX	18.58	18.72	18.73	23.45	221.23
5690 (DTS portion)	802.11ac VHT80 STBC 3TX	4.85	4.04	4.31	9.18	8.29
5690 (Whole signal)	802.11ac VHT80 STBC 3TX	18.76	18.87	18.88	23.61	229.52

5.4. DESCRIPTION OF AVAILABLE ANTENNAS

Band (GHz)	Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
2.4	3.00	3.00	3.10	3.03
5.2	3.20	1.40	2.20	2.33
5.3	3.40	1.60	2.30	2.50
5.6	3.00	1.70	3.80	2.92
5.8	2.70	1.90	4.40	3.13

Band (GHz)	Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
2.4	3.00	3.00	3.10	7.80
5.2	3.20	1.40	2.20	7.07
5.3	3.40	1.60	2.30	7.24
5.6	3.00	1.70	3.80	7.65
5.8	2.70	1.90	4.40	7.83

5.5. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was 6.10.56.166.

5.6. WORST-CASE CONFIGURATION AND MODE

The fundamental emission of the EUT was investigated in three orthogonal orientations; X,Y and Z. It was determined that Y orientation is worst-case; therefore, all final radiated emissions testing was performed with the EUT in Y orientation
The EUT was a 3x3 MIMO Base Station connected to a host Laptop PC.

Worst-Case data rates, as provided by the client, were as follows:

For 5 GHz Bands:
802.11a: 6 Mb/s.
802.11n 20MHz, CDD and STBC: MCS0.
802.11n 40MHz, CDD and STBC: MCS0.
802.11n 80MHz, CDD and STBC: MCS0.

Worst-case mode and channel used for 30-1000 MHz radiated and power line conducted emissions was the mode and channel with the highest output power.

For the modes where a second LOW channel and a second HIGH channel were tested for output power, all other test items at the second LOW and second HIGH channels were performed with the higher power level between LOW and second LOW channels, and between HIGH and second HIGH channels, as worst-case scenario.

For all modes with single chain, chain 1 was selected per the software provided by the client. Based on the client a preliminary investigation was performed on the three chains and chain 1 was found to be worst-case.

Peak Excursion testing was performed for each modulation in the 5.2 GHz band to show compliance with the applicable limits.

Nss (number of spatial streams) used for all the testing on 2Tx & 3Tx modes was 1 as worst-case scenario.

5.7. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Laptop PC	Apple	MacBook M42A	PT358811	DoC
Direct Plug-In AC-DC Adapter	Apple	PA-1850	N/A	N/A
Mouse	HP	MOE2UO	CNP10300BB	DoC

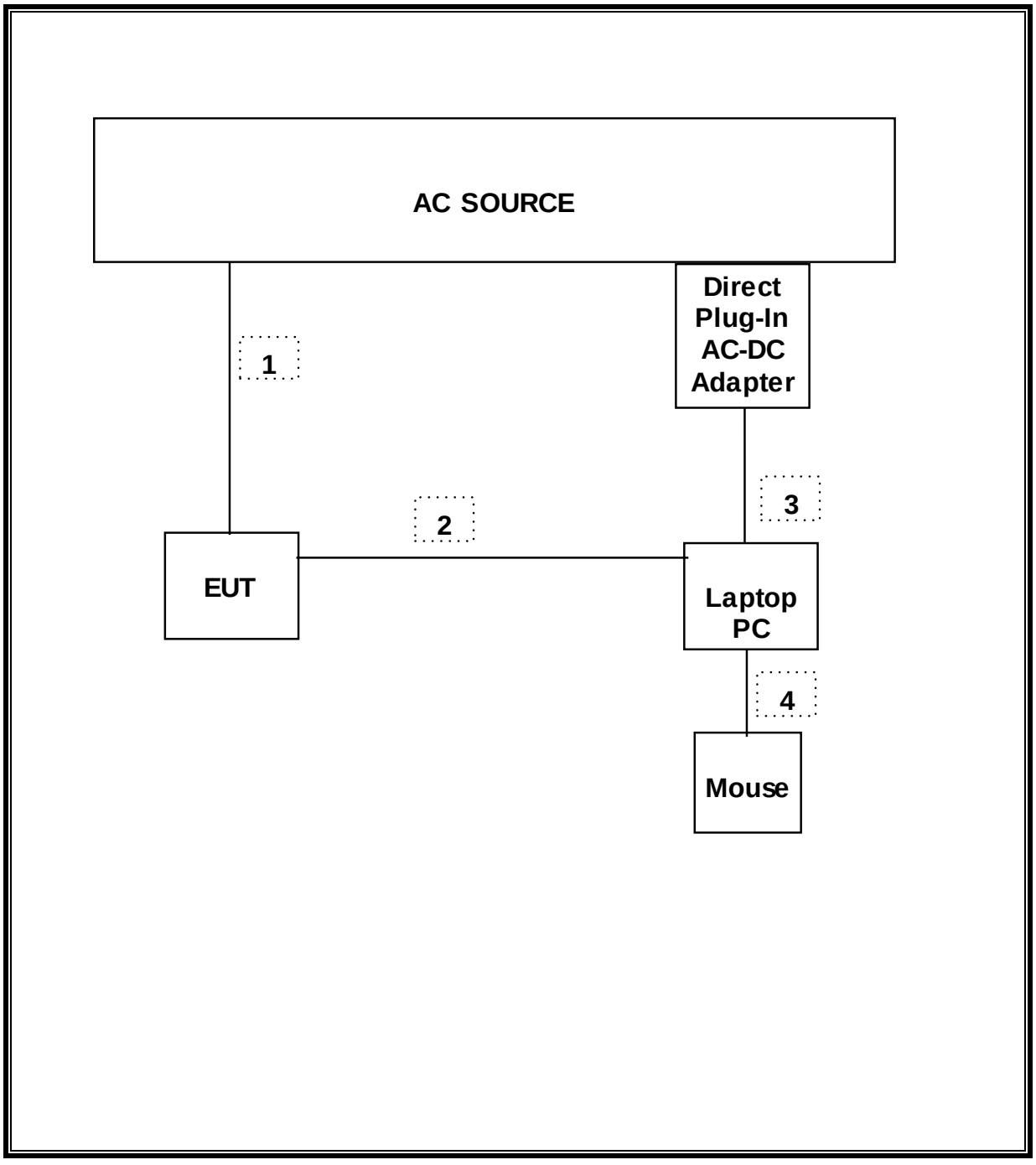
I/O CABLES

I/O Cable List						
Cable No	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	AC	1	2P	Non-shielded	1.8	
2	Ethernet	1	Ethernet	Non-shielded	3	
3	DC	1	DC	Non-shielded	1.75	
4	USB	1	USB	Non-shielded	0.6	

TEST SETUP

The EUT is powered by AC source only during test. Test software exercised the radio card.

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

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

Test Equipment List					
Description	**Manufacturer**	**Model**	**Asset**	**Cal Date**	**Cal Due**
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01179	02/16/12	02/26/14
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01012	10/21/12	10/21/13
EMI Test Receiver, 9 kHz-7 GHz	R & S	ESCI 7	1000741	08/08/12	08/08/13
EMI Test Receiver, 9 kHz-7 GHz	R & S	ESCI 7	N/A	08/21/12	08/21/13
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	08/08/12	08/08/13
Antenna, Horn, 18 GHz	EMCO	3115	C00945	11/12/12	11/12/13
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	C00980	11/14/12	11/14/13
Antenna, Horn, 40 GHz	ARA	MWH-2640/B	C00981	06/14/11	06/14/13
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	N/A	02/07/12	03/06/14
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C00749	10/19/12	10/19/13
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01052	10/22/12	10/22/13
Preamplifier, 40 GHz	Miteq	NSP4000-SP2	C00990	08/02/11	08/02/13
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00885	12/20/11	12/30/13
P-Series single channel Power Meter	Agilent / HP	N1911A	N/A	07/27/12	07/27/13
Peak / Average Power Sensor	Agilent / HP	E9323A	N/A	07/26/12	07/26/13
LISN, 30 MHz	FCC	50/250-25-2	C00626	12/13/11	01/13/14

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	2.055	2.090	0.983	98.3%	0.00	0.010
802.11n HT20 CDD	1.915	1.940	0.987	98.7%	0.00	0.010
802.11n HT20 STBC	1.925	1.945	0.990	99.0%	0.00	0.010
802.11n HT40 SISO	0.9424	0.9601	0.982	98.2%	0.00	0.010
802.11n HT40 CDD	0.9449	0.9627	0.982	98.2%	0.00	0.010
802.11n HT40 STBC	0.9520	0.9707	0.981	98.1%	0.00	0.010
802.11ac VHT80 SISO	0.6000	0.6133	0.978	97.8%	0.10	1.667
802.11ac VHT80 CDD	0.5953	0.6080	0.979	97.9%	0.09	1.680
802.11ac VHT80 STBC	0.5979	0.6105	0.979	97.9%	0.09	1.673

7.2. MEASUREMENT METHOD FOR POWER AND PPSD

For output power measurement, KDB 789033 Method PM as described in section C) f) was used.

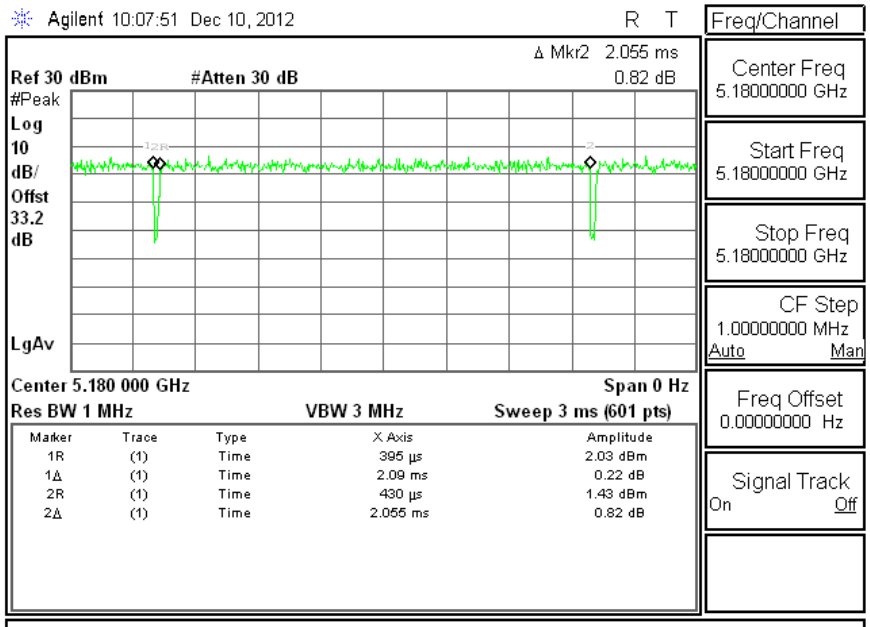
For PSD measurement, KDB 789033 Method SA-1 was used when Duty Cycle is greater than or equal to 98%.
For PSD measurement, KDB 789033 Method SA-2 was used when Duty Cycle is less than 98%.

7.3. MEASUREMENT METHOD FOR AVG SPURIOUS EMISSION ABOVE 1 GHz

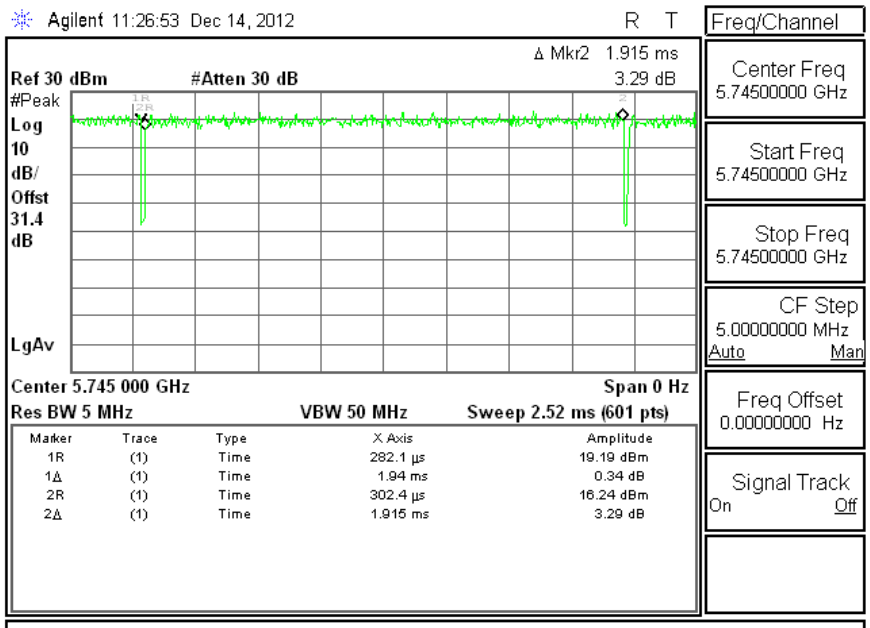
KDB 789033 Method VB with Power RMS Averaging is used.

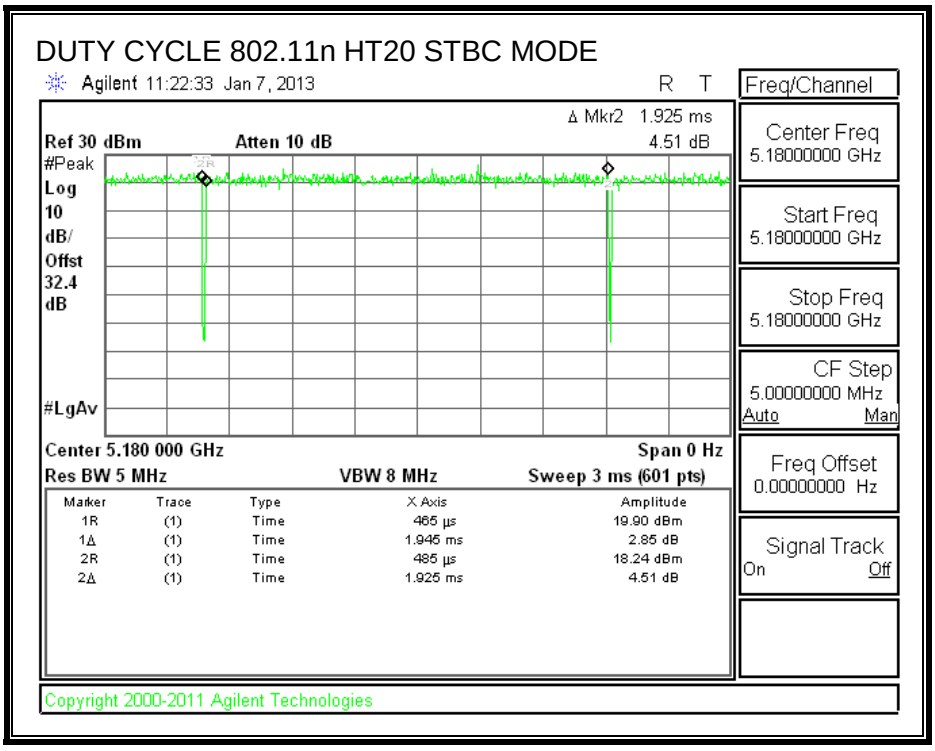
7.4. DUTY CYCLE PLOTS

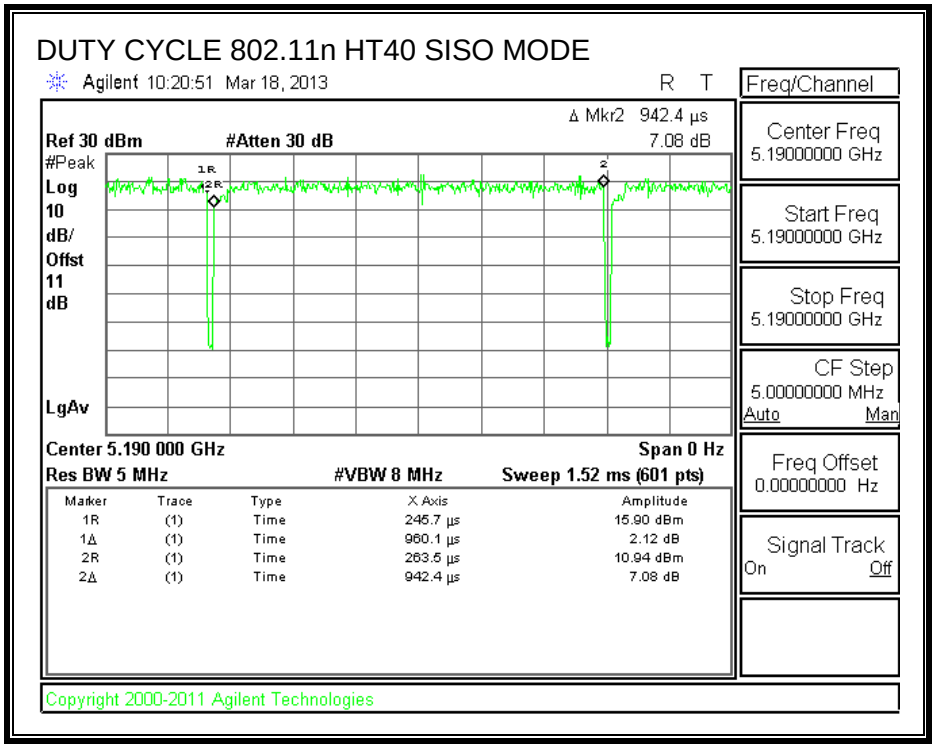
DUTY CYCLE 802.11a MODE

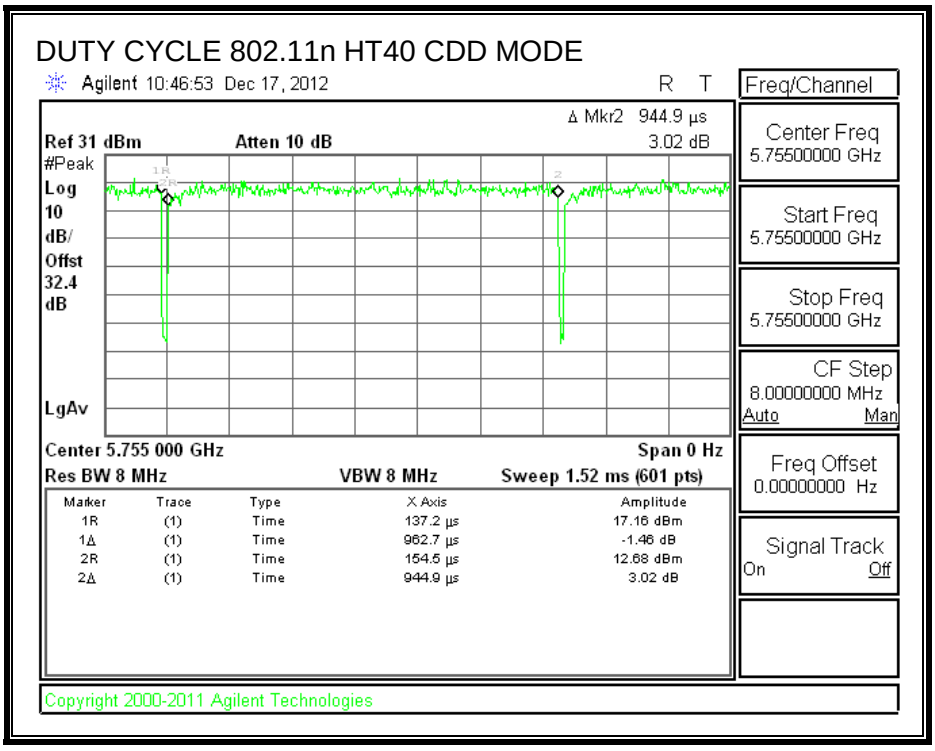


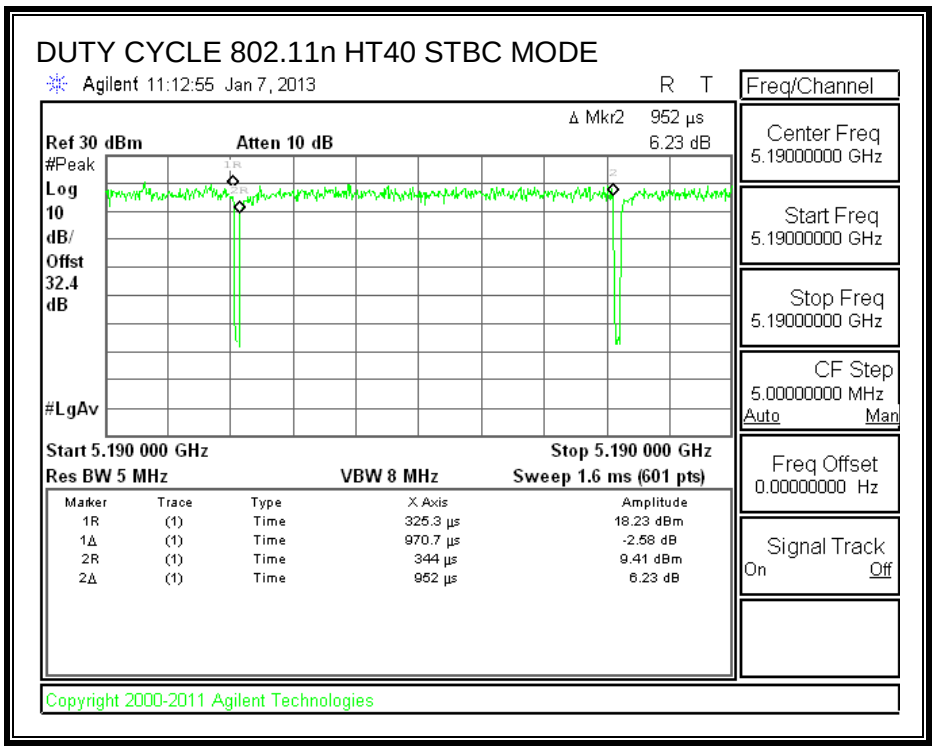
DUTY CYCLE 802.11n HT20 CDD MODE



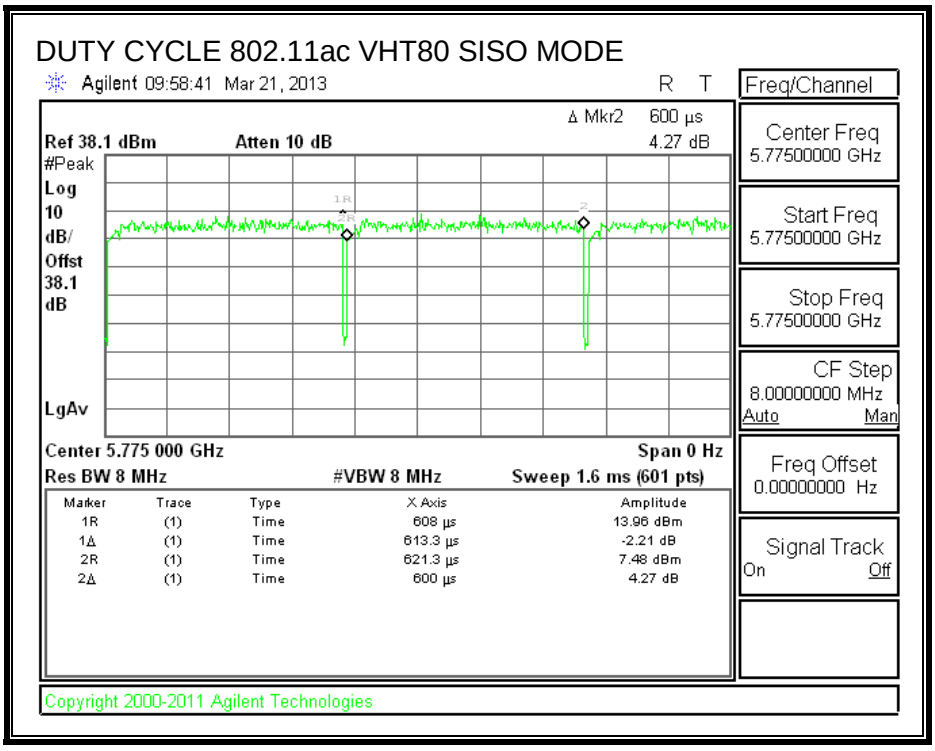




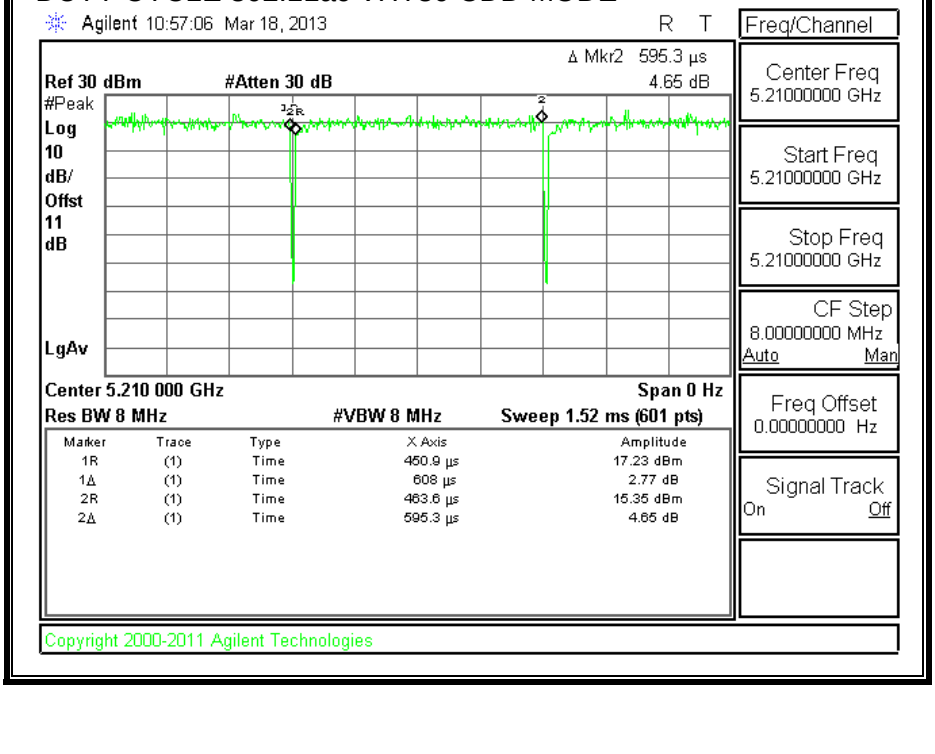




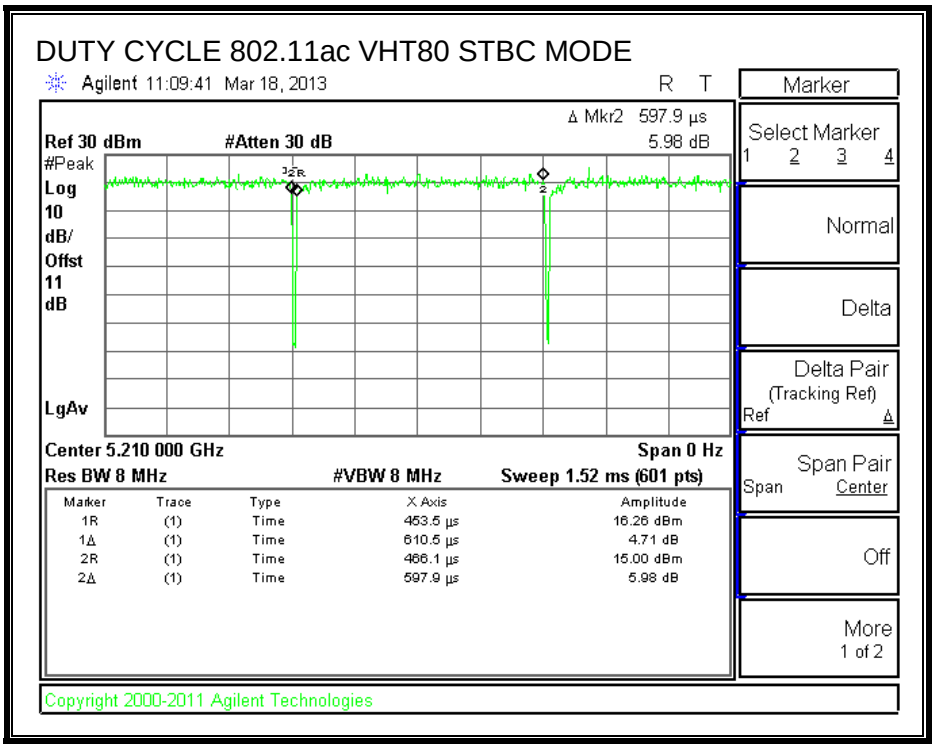
DUTY CYCLE 802.11ac VHT80 SISO MODE



DUTY CYCLE 802.11ac VHT80 CDD MODE



DUTY CYCLE 802.11ac VHT80 STBC MODE



8. ANTENNA PORT TEST RESULTS

8.1. 802.11a Legacy 1TX MODE IN THE 5.2 GHz BAND

8.1.1. 26 dB BANDWIDTH

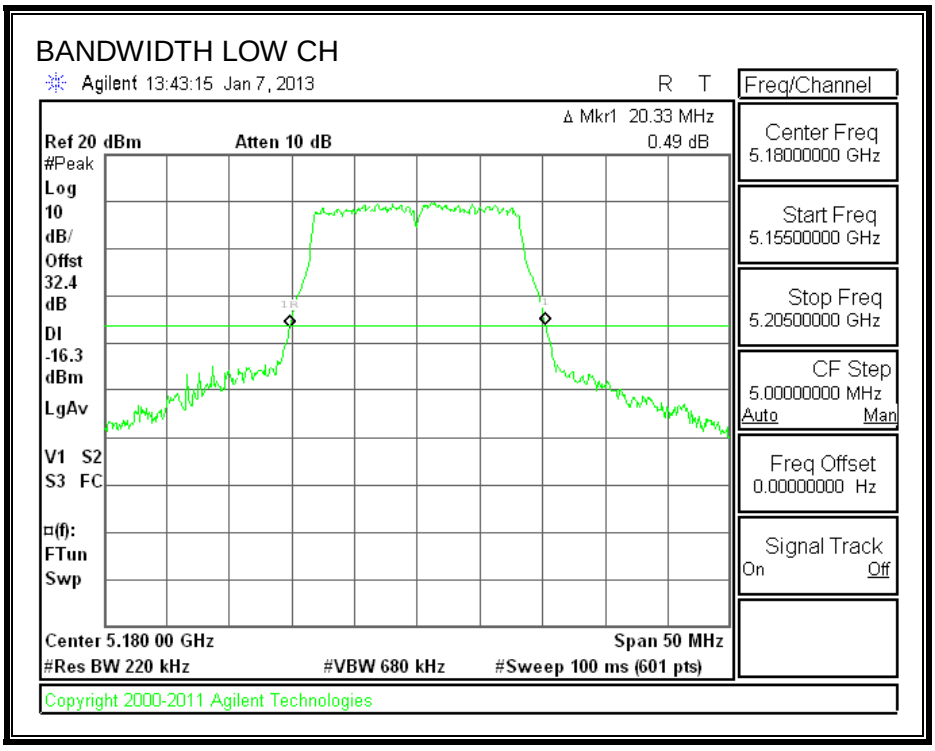
LIMITS

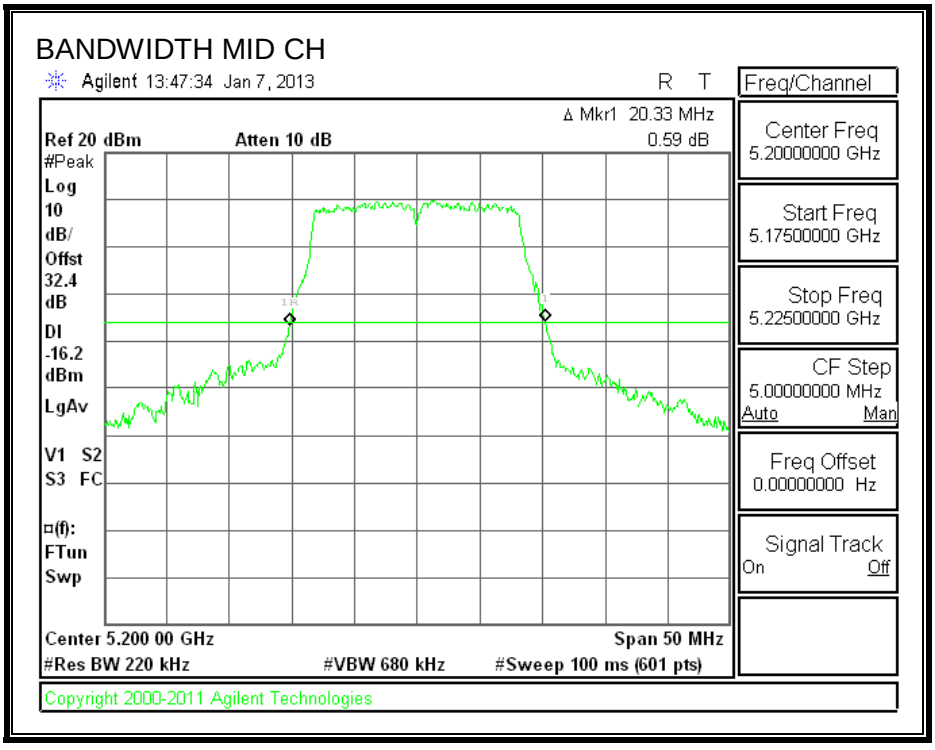
None; for reporting purposes only.

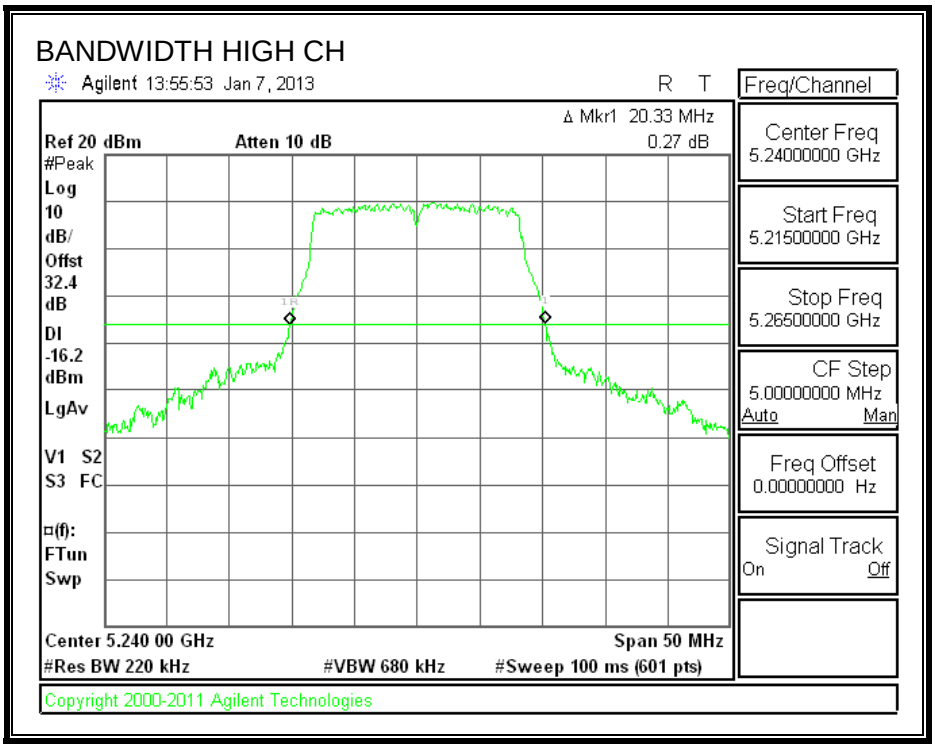
RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5180	20.33
Mid	5200	20.33
High	5240	20.33

26 dB BANDWIDTH







8.1.2. 99% BANDWIDTH

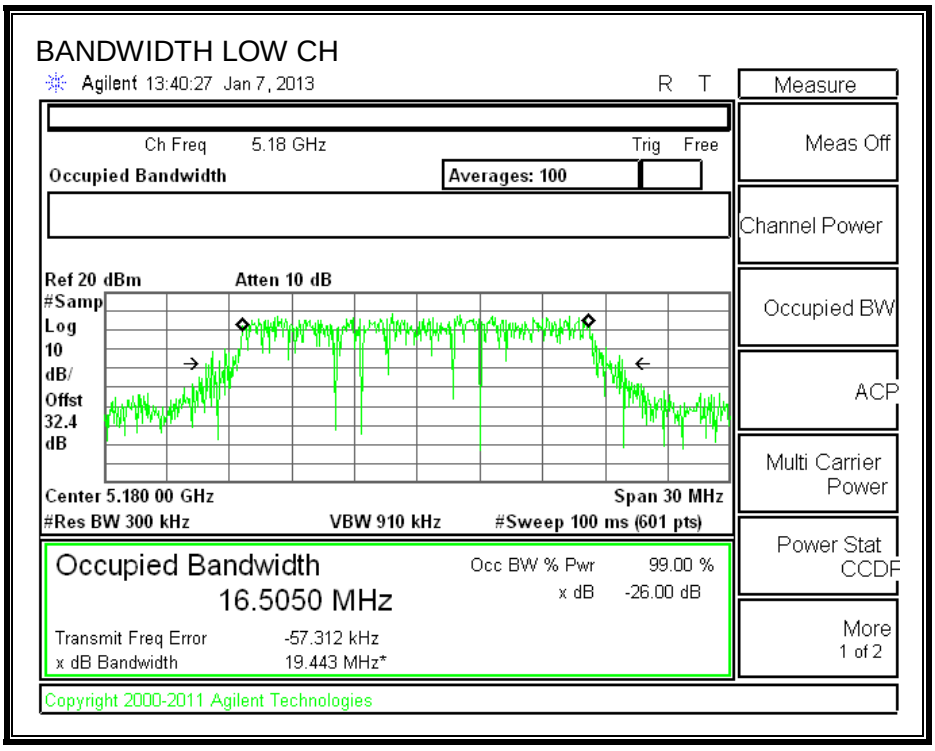
LIMITS

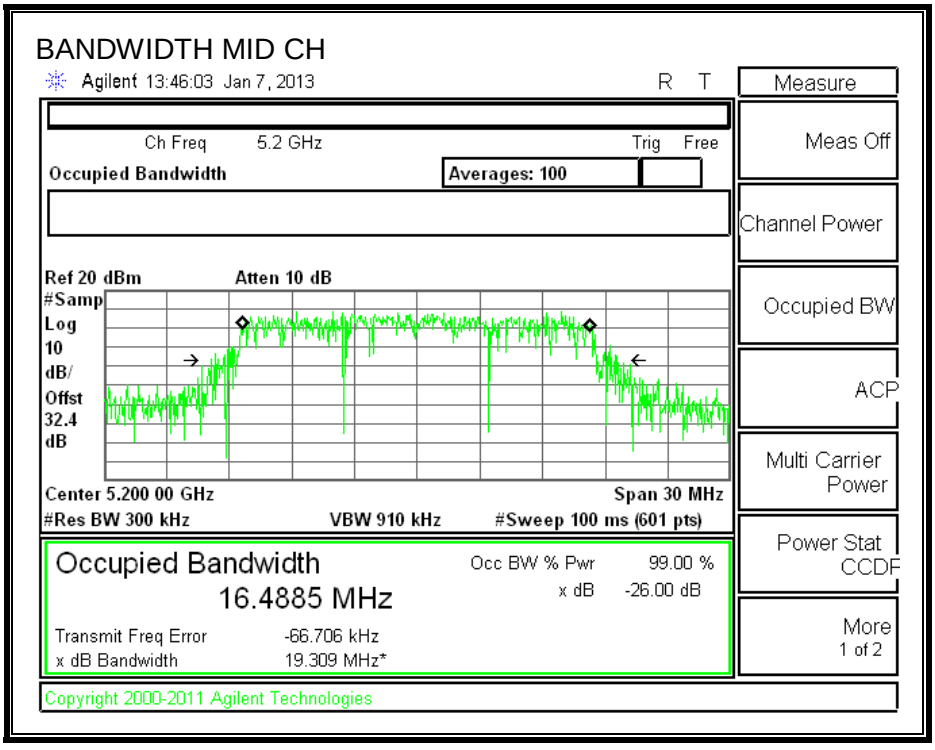
None; for reporting purposes only.

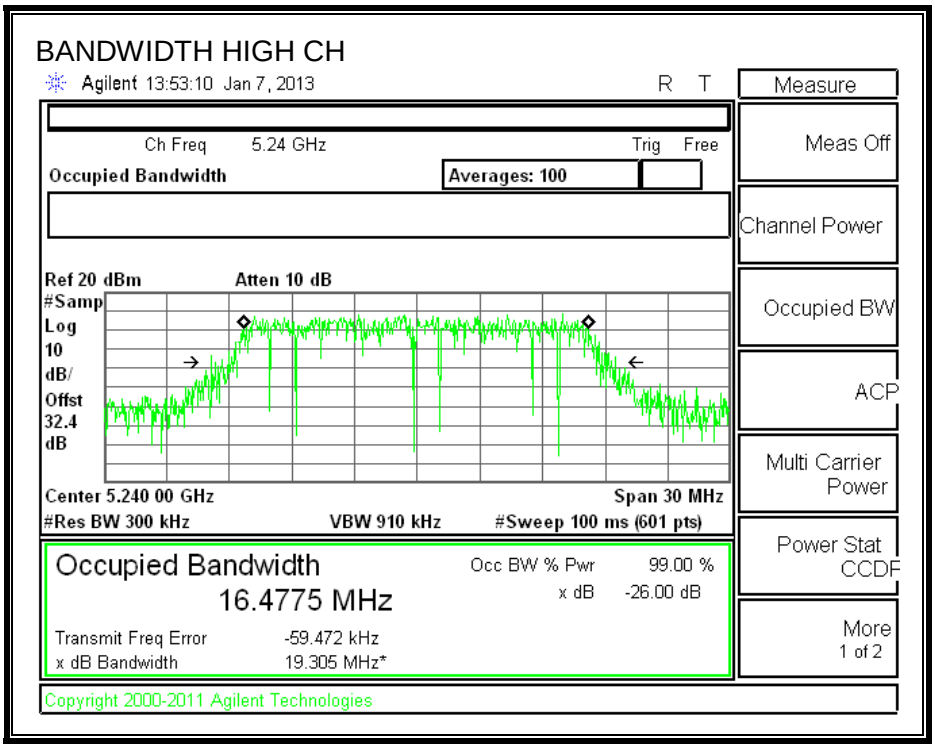
RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5180	16.5050
Mid	5200	16.4885
High	5240	16.4770

99% BANDWIDTH







8.1.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

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

RESULTS

Antenna Gain

Channel	Frequency (MHz)	Directio Gain (dBi)
Low	5180	3.20
Mid	5200	3.20
High	5240	3.20

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	FCC PSD Limit (dBm)
Low	5180	30.00	17.00
Mid	5200	30.00	17.00
High	5240	30.00	17.00

Duty Cycle CF (dB)	0.00	

Output Power Results

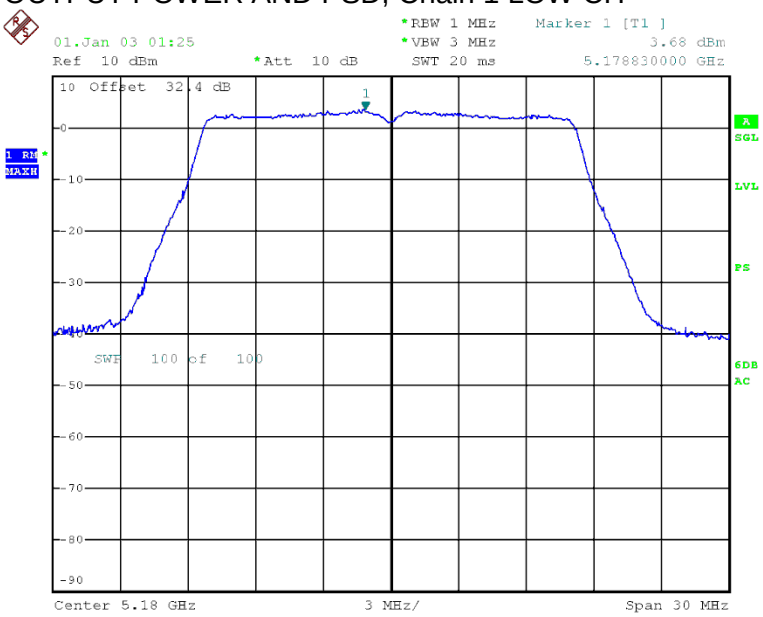
Channel	Frequency (MHz)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	14.00	14.00	30.00	-16.00
Mid	5200	14.10	14.10	30.00	-15.90
High	5240	14.00	14.00	30.00	-16.00

PSD Results

Channel	Frequency (MHz)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5180	3.68	3.68	17.00	-13.32
Mid	5200	3.58	3.58	17.00	-13.42
High	5240	3.57	3.57	17.00	-13.43

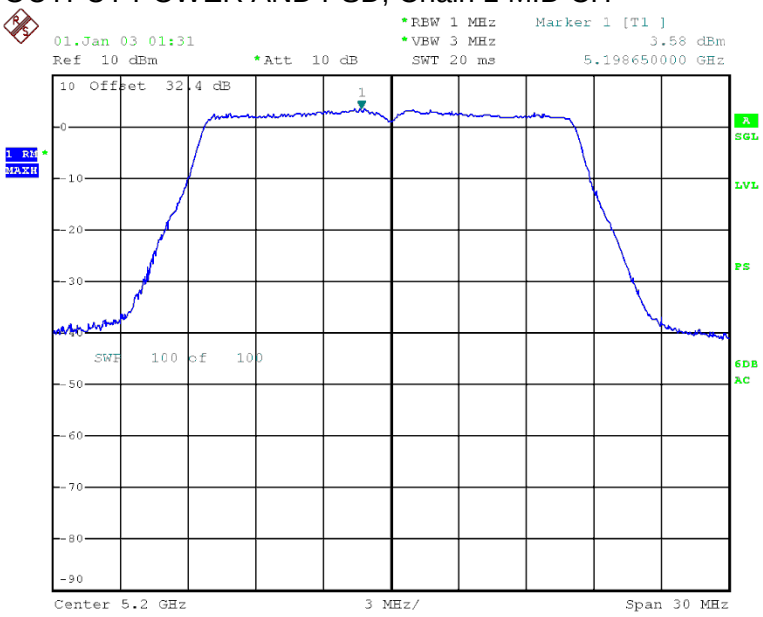
OUTPUT POWER AND PSD, Chain 1

OUTPUT POWER AND PSD, Chain 1 LOW CH



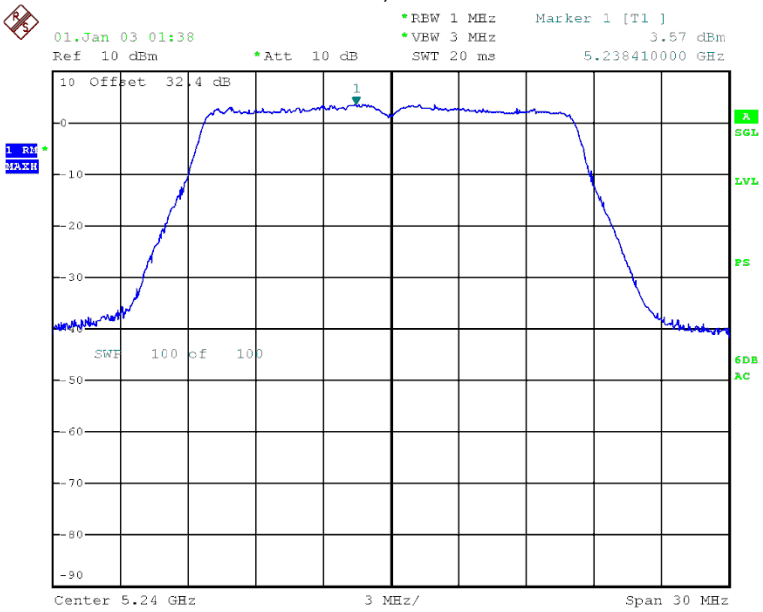
Date: 1.JAN.2003 01:25:17

OUTPUT POWER AND PSD, Chain 1 MID CH



Date: 1.JAN.2003 01:31:23

OUTPUT POWER AND PSD, Chain 1 HIGH CH



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8.2. 802.11n HT20 CDD 2TX MODE IN THE 5.2 GHz BAND

8.2.1. 26 dB BANDWIDTH

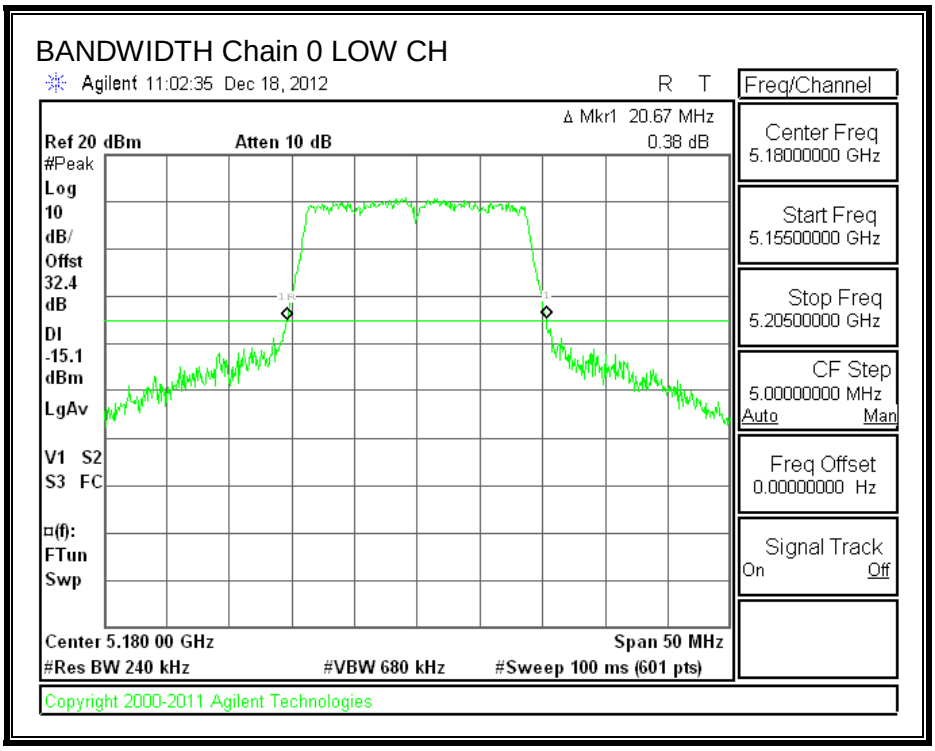
LIMITS

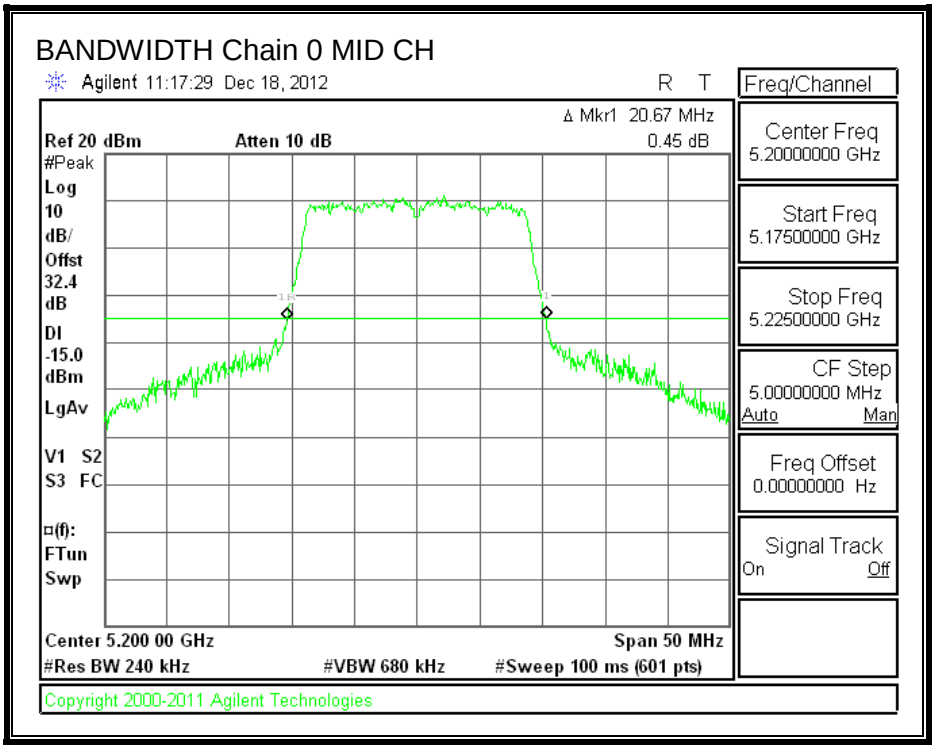
None; for reporting purposes only.

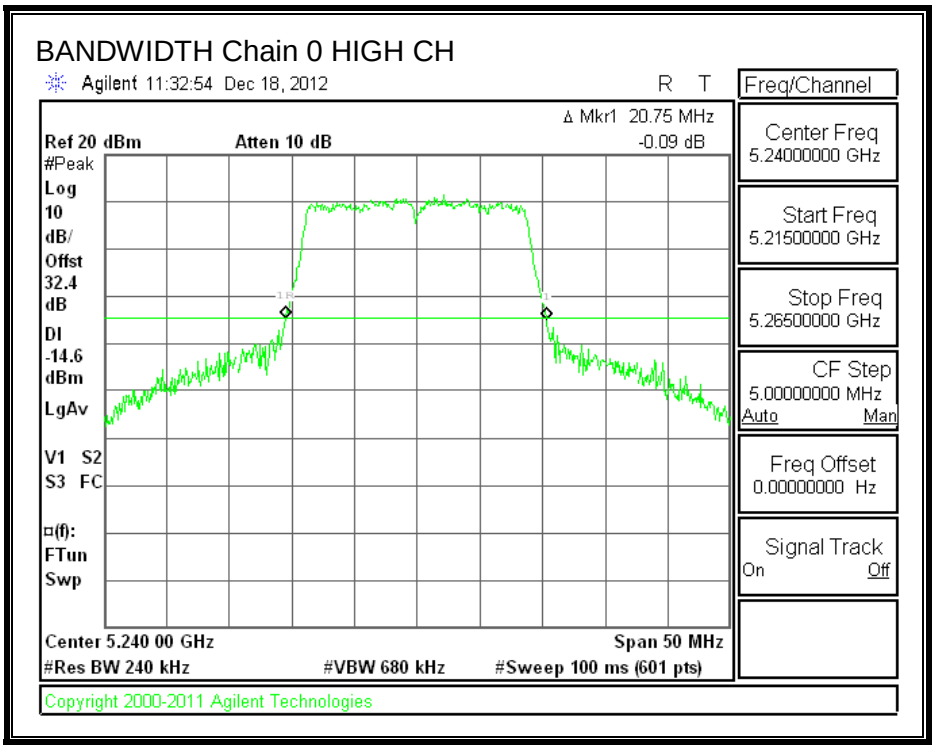
RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Low	5180	20.67	20.50
Mid	5200	20.67	20.42
High	5240	20.75	20.42

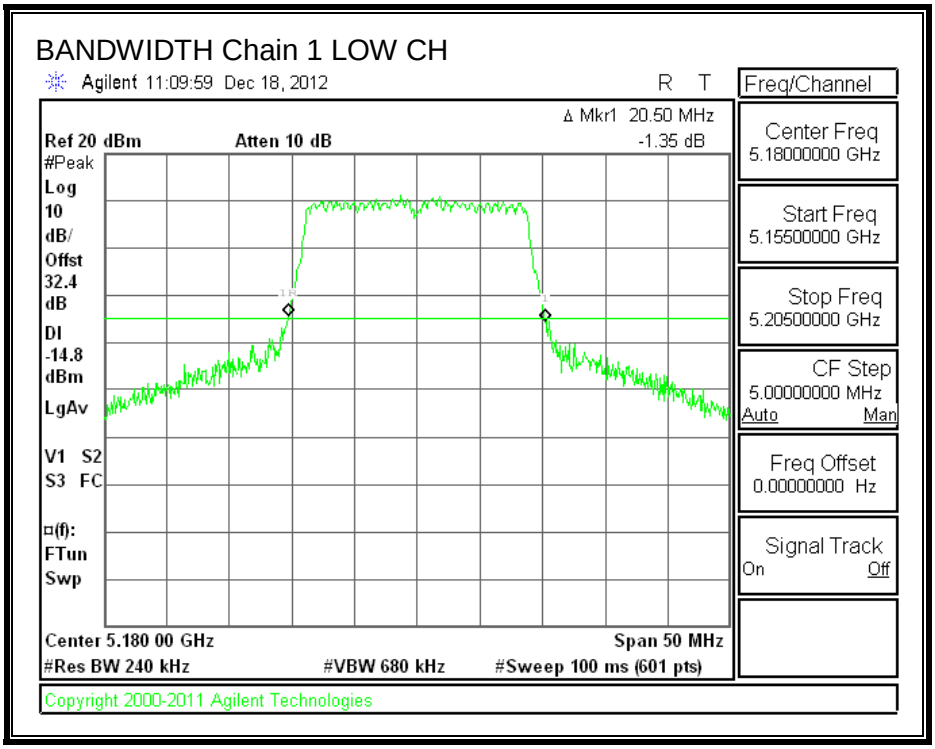
26 dB BANDWIDTH, Chain 0

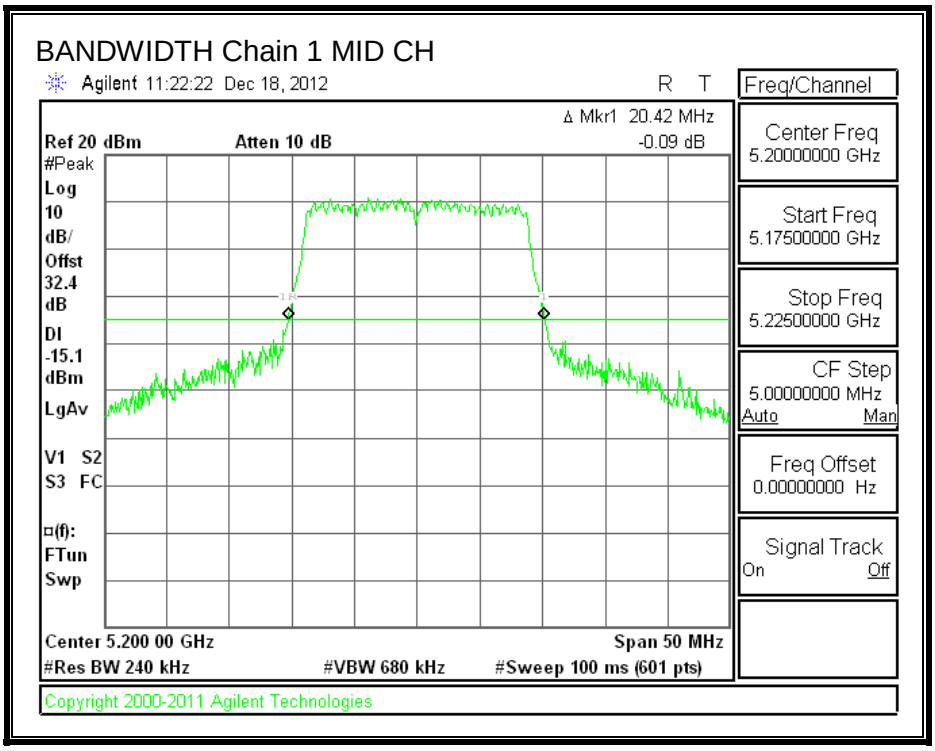


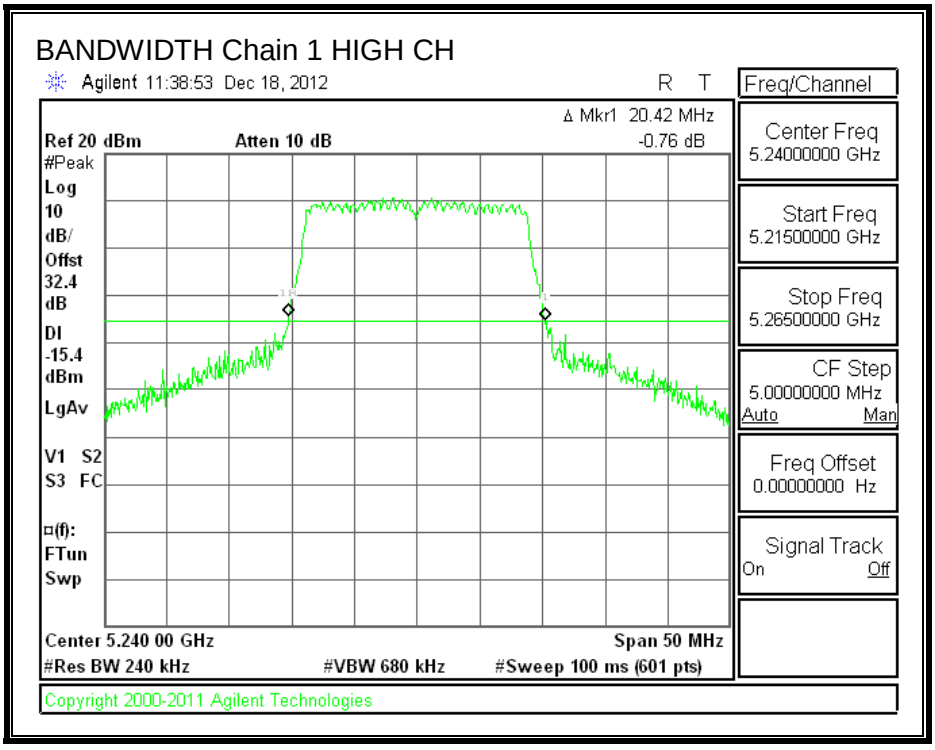




26 dB BANDWIDTH, Chain 1







8.2.2. 99% BANDWIDTH

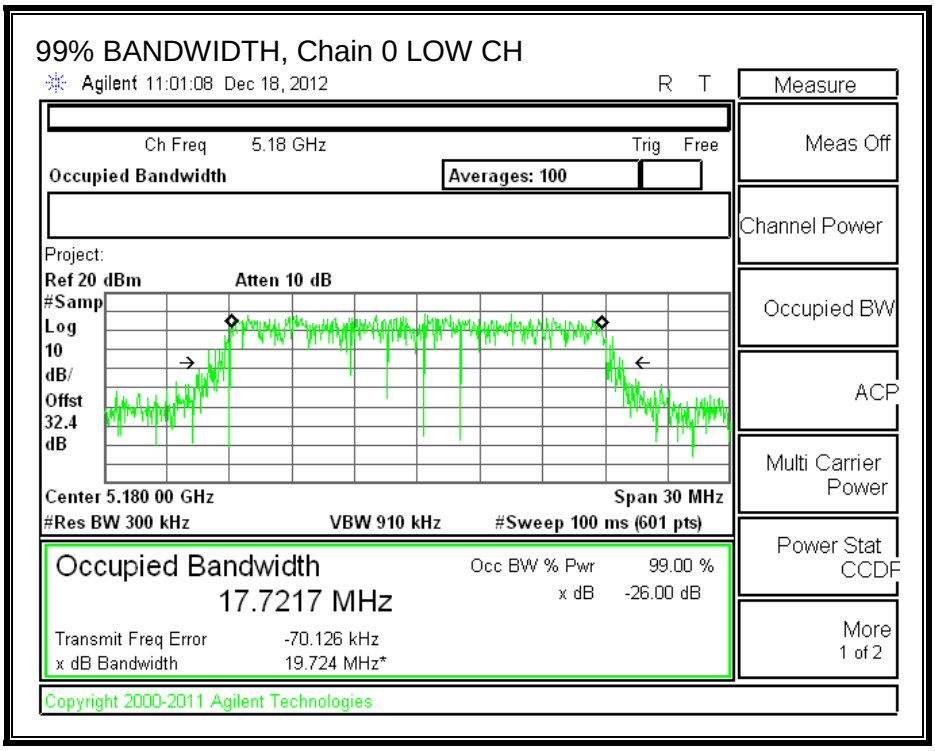
LIMITS

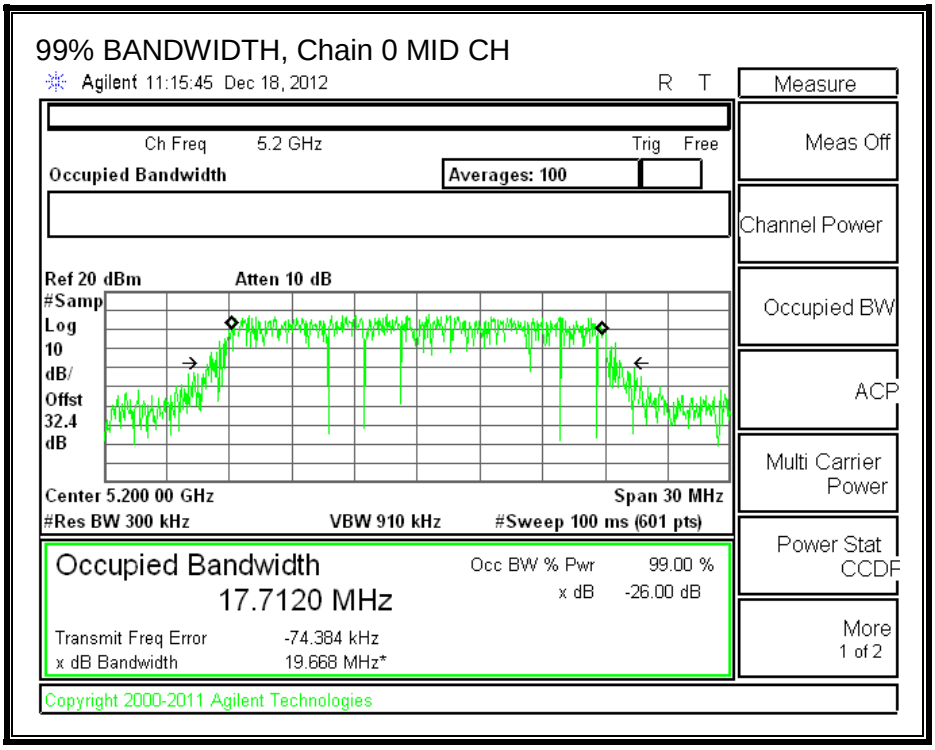
None; for reporting purposes only.

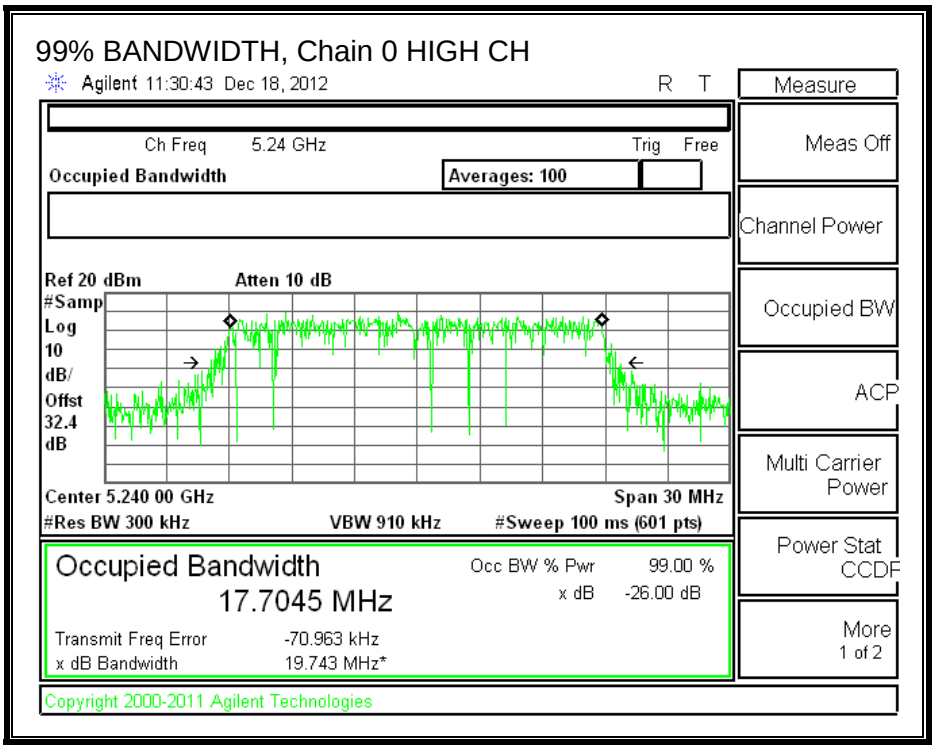
RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	5180	17.7217	17.7031
Mid	5200	17.7120	17.7066
High	5240	17.7045	17.6986

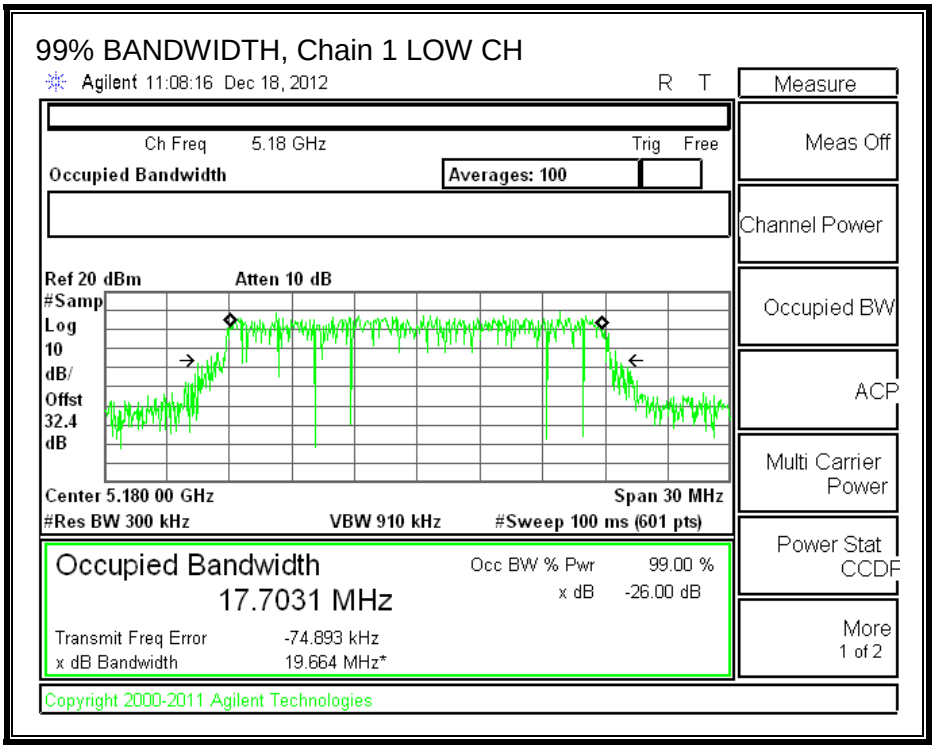
99% BANDWIDTH, Chain 0

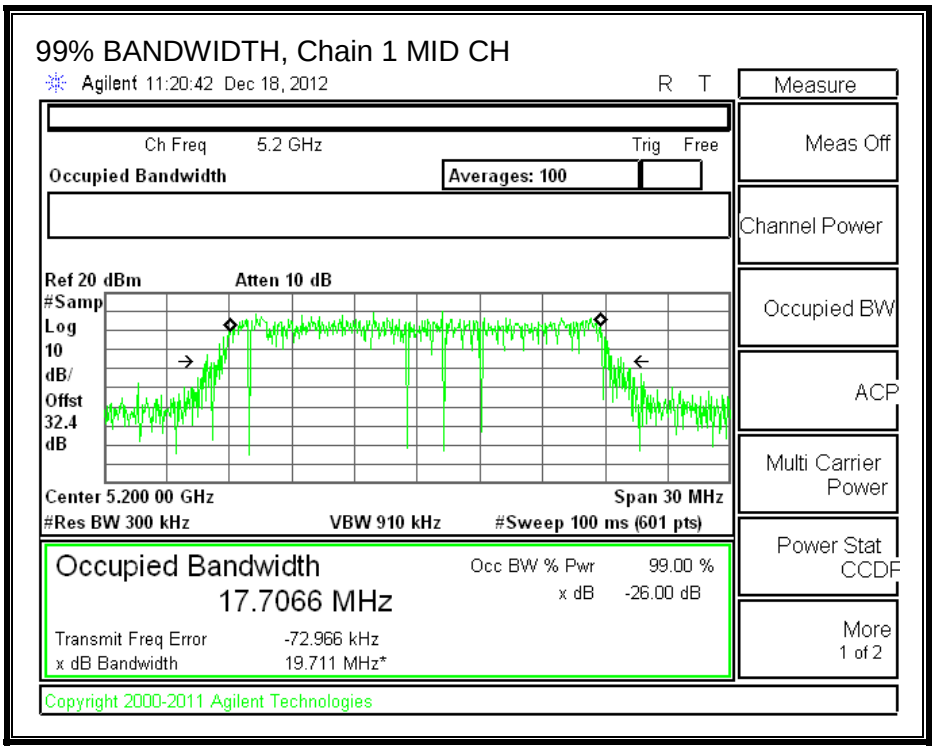


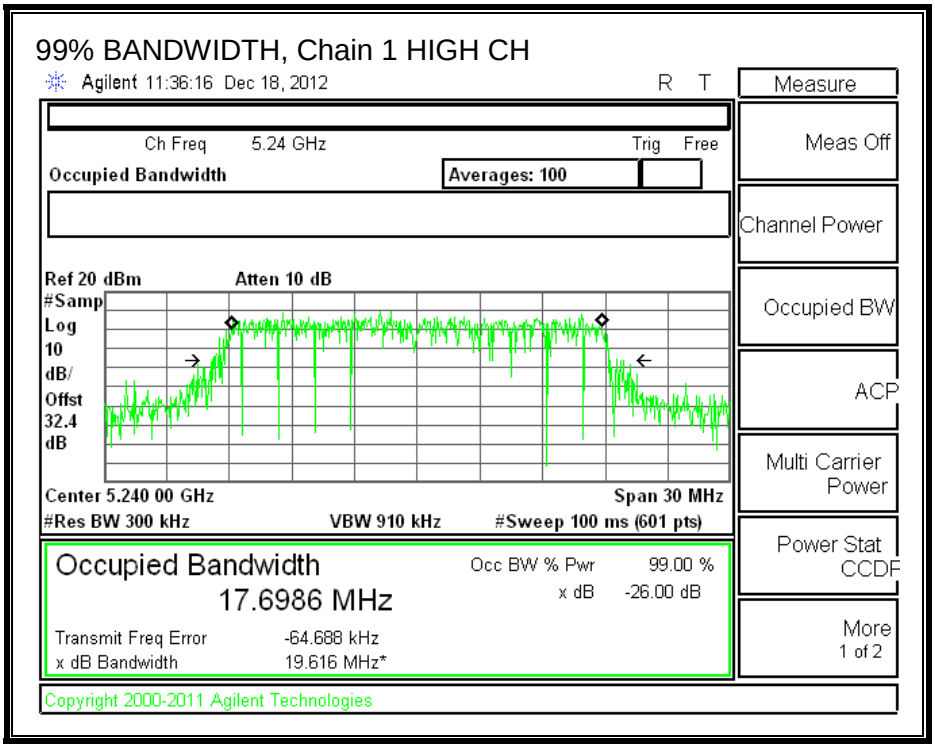




99% BANDWIDTH, Chain 1







8.2.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

For output power, the two chains are considered uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.20	2.20	2.73

For PSD, the two chains are considered correlated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.20	2.20	5.72

RESULTS

Antenna Gain

Channel	Frequency (MHz)	Correlat Directio Gain (dBi)	Uncorre Directio Gain (dBi)
Low	5180	5.72	2.73
Mid	5200	5.72	2.73
High	5240	5.72	2.73

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	FCC PSD Limit (dBm)
Low	5180	30.00	17.00
Mid	5200	30.00	17.00
High	5240	30.00	17.00

Duty Cycle CF (dB)	0.00	

Output Power Results

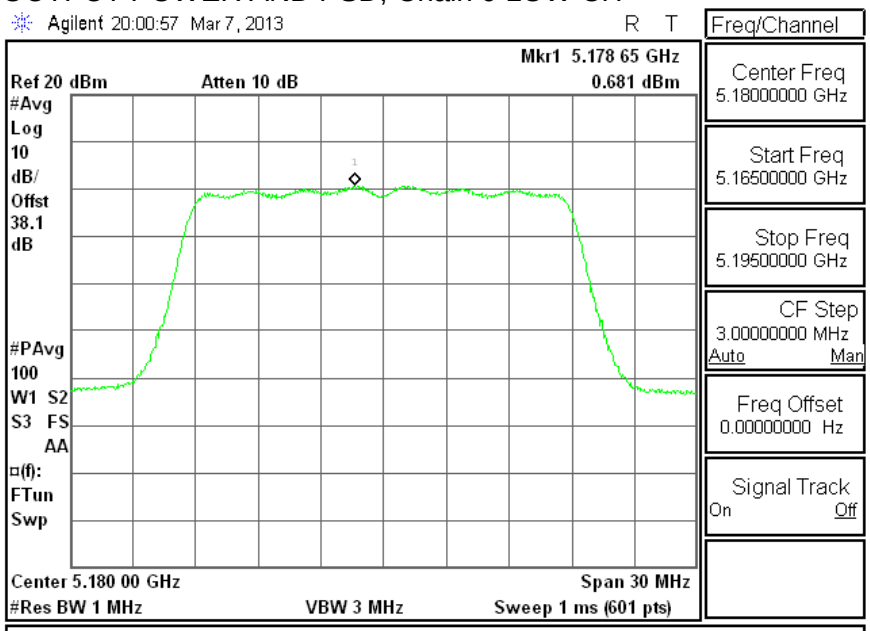
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	10.10	10.00	13.06	30.00	-16.94
Mid	5200	10.10	9.90	13.01	30.00	-16.99
High	5240	10.26	10.00	13.14	30.00	-16.86

PSD Results

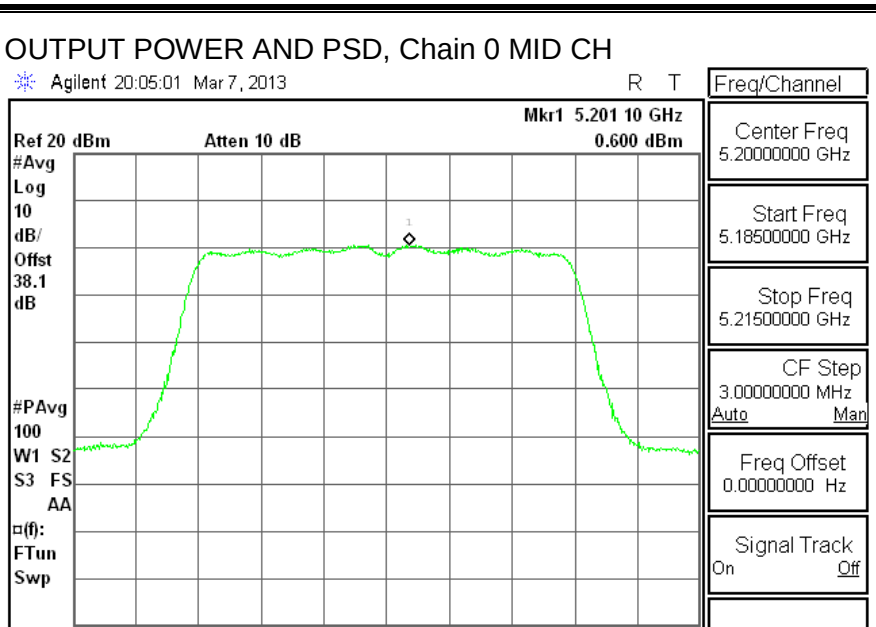
Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5180	0.681	0.242	3.48	17.00	-13.52
Mid	5200	0.600	0.191	3.41	17.00	-13.59
High	5240	0.595	0.255	3.44	17.00	-13.56

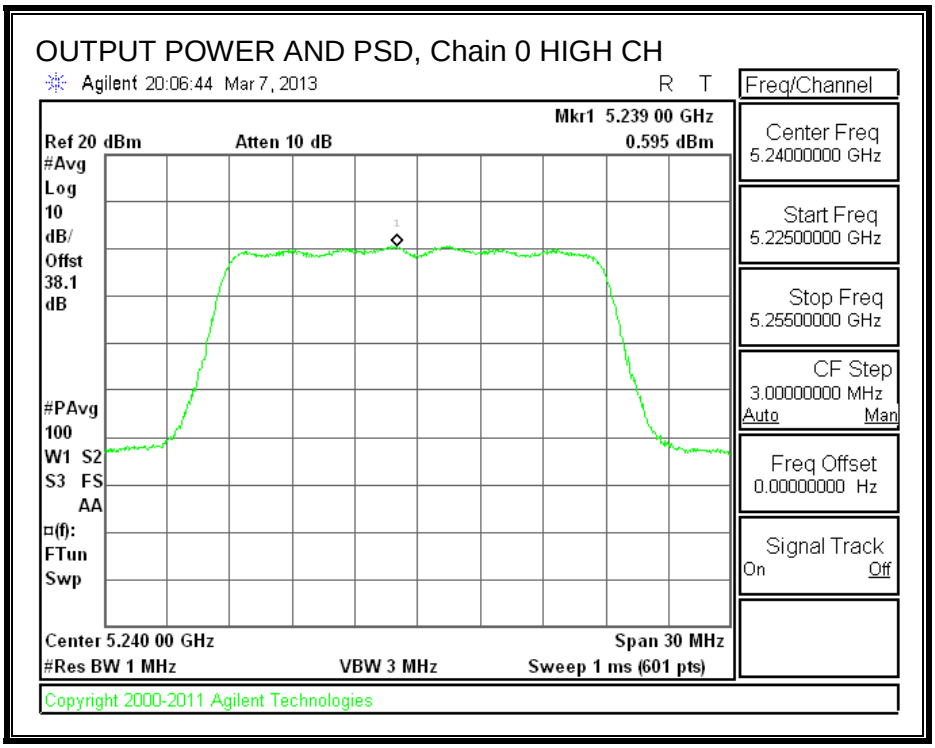
OUTPUT POWER AND PSD, Chain 0

OUTPUT POWER AND PSD, Chain 0 LOW CH

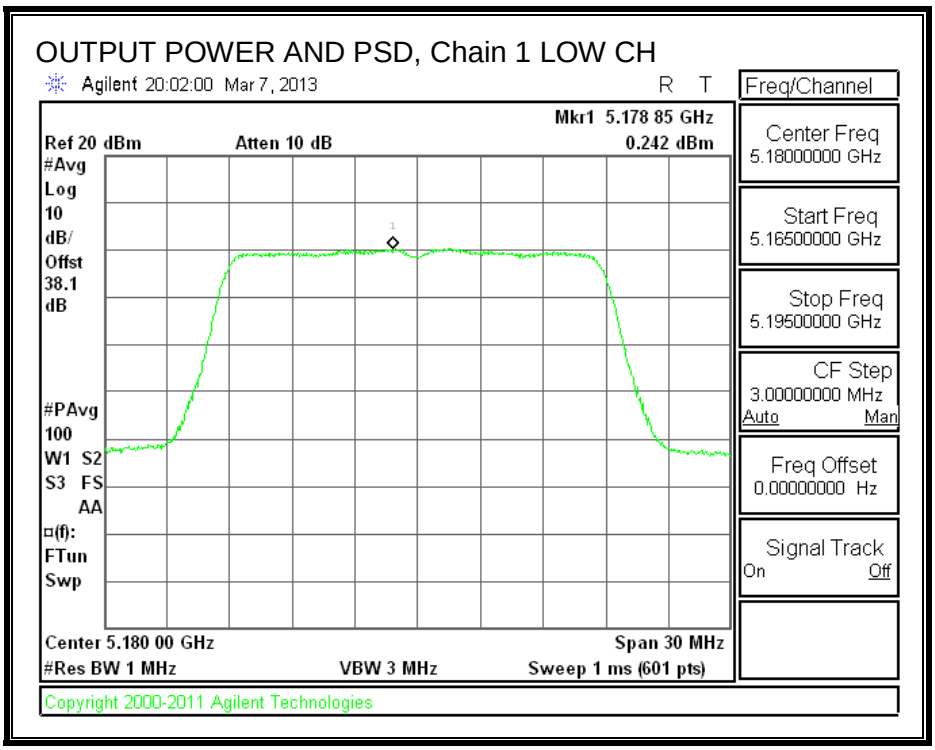


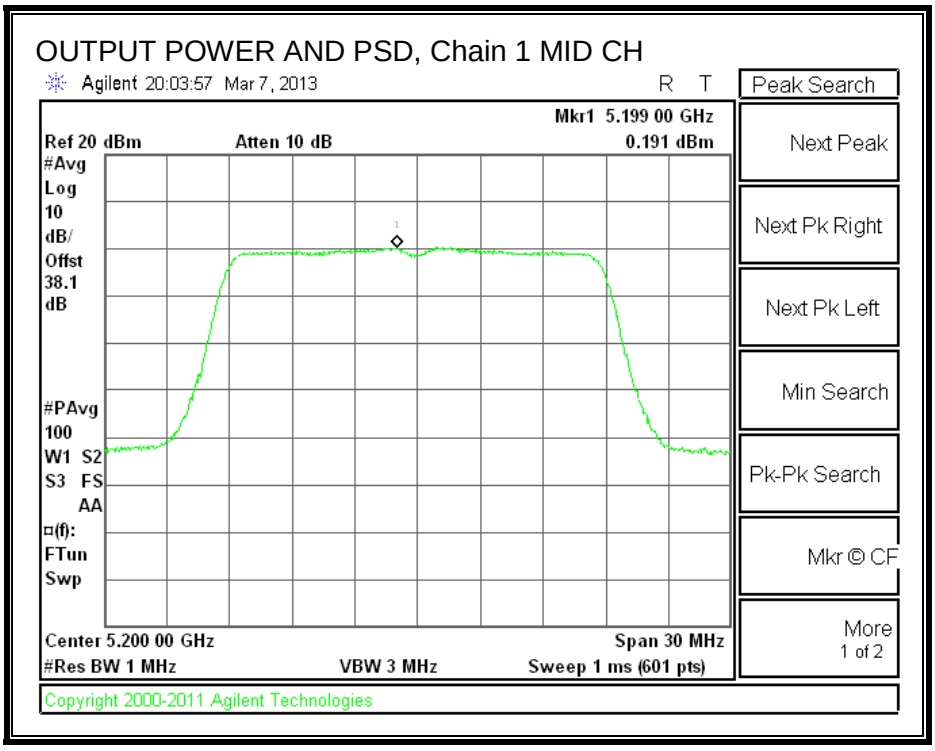
OUTPUT POWER AND PSD, Chain 0 MID CH

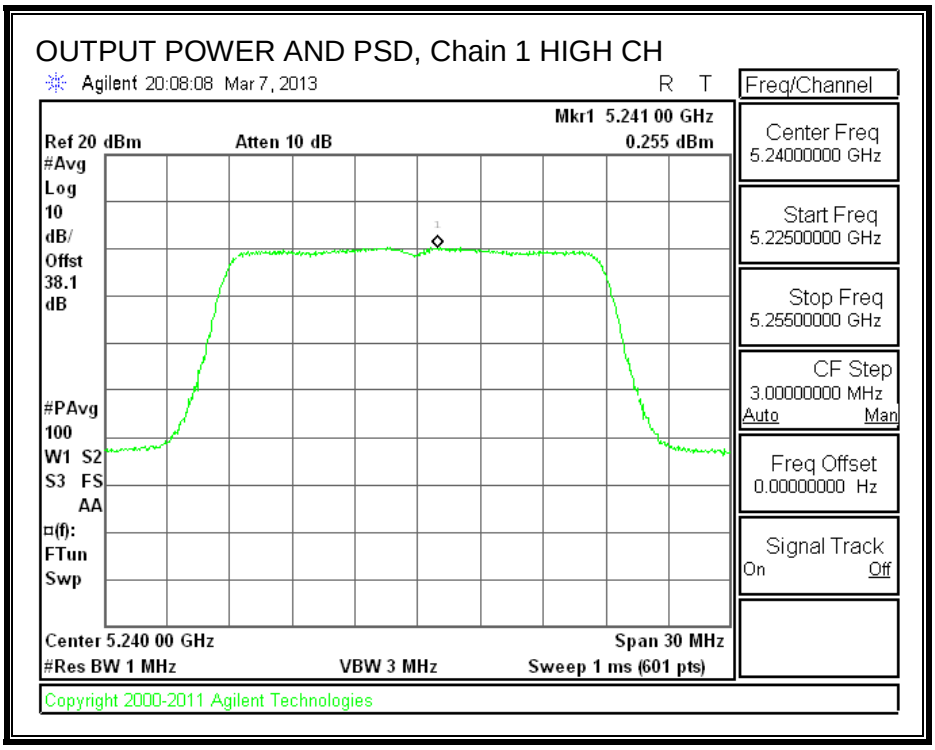




OUTPUT POWER AND PSD, Chain 1







8.3. 802.11n HT20 BF 2TX MODE IN THE 5.2 GHz BAND

Covered by testing HT20 CDD 2TX mode, the power per chain used for HT20 CDD 2TX mode is the same power per chain that will be used for HT20 BF 2TX mode. However, since BF is correlated and CDD is uncorrelated for output power, the section below for output power using correlated AG for this BF mode shows it is still compliant.

8.3.1. OUTPUT AVERAGE POWER

LIMITS

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

For output power, the two chains are considered correlated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.20	2.20	5.72

RESULTS

Antenna Gain

Channel	Frequency (MHz)	Correlat Directio Gain (dBi)
Low	5180	5.72
Mid	5200	5.72
High	5240	5.72

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)
Low	5180	30.00
Mid	5200	30.00
High	5240	30.00

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	10.10	10.00	13.06	30.00	-16.94
Mid	5200	10.10	9.90	13.01	30.00	-16.99
High	5240	10.26	10.00	13.14	30.00	-16.86

8.4. 802.11n HT20 STBC 2TX MODE IN THE 5.2 GHz BAND

8.4.1. 26 dB BANDWIDTH

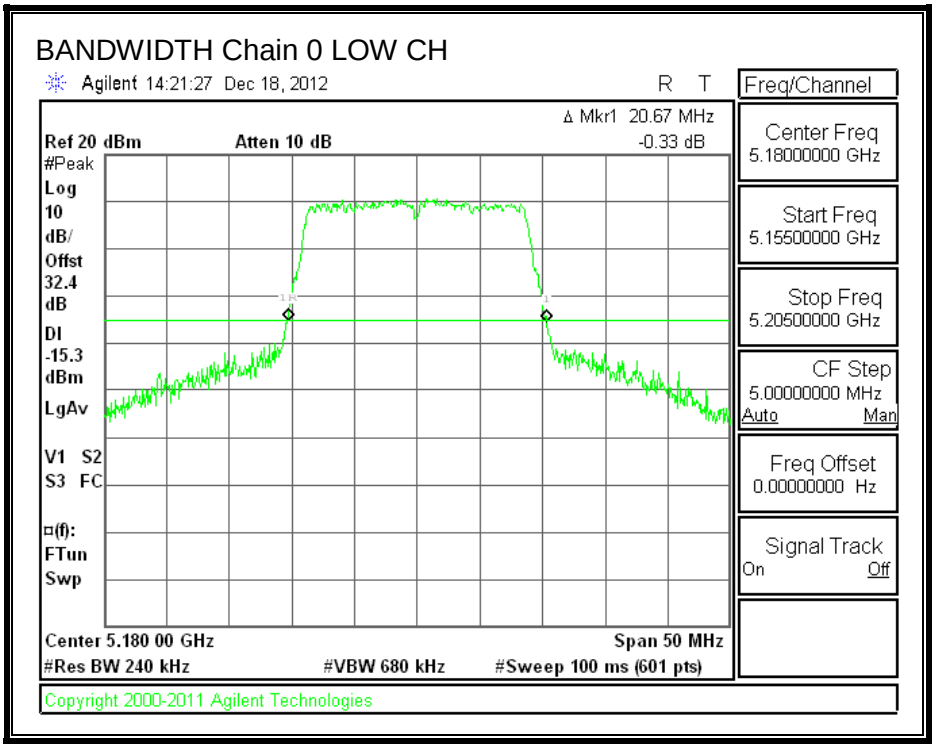
LIMITS

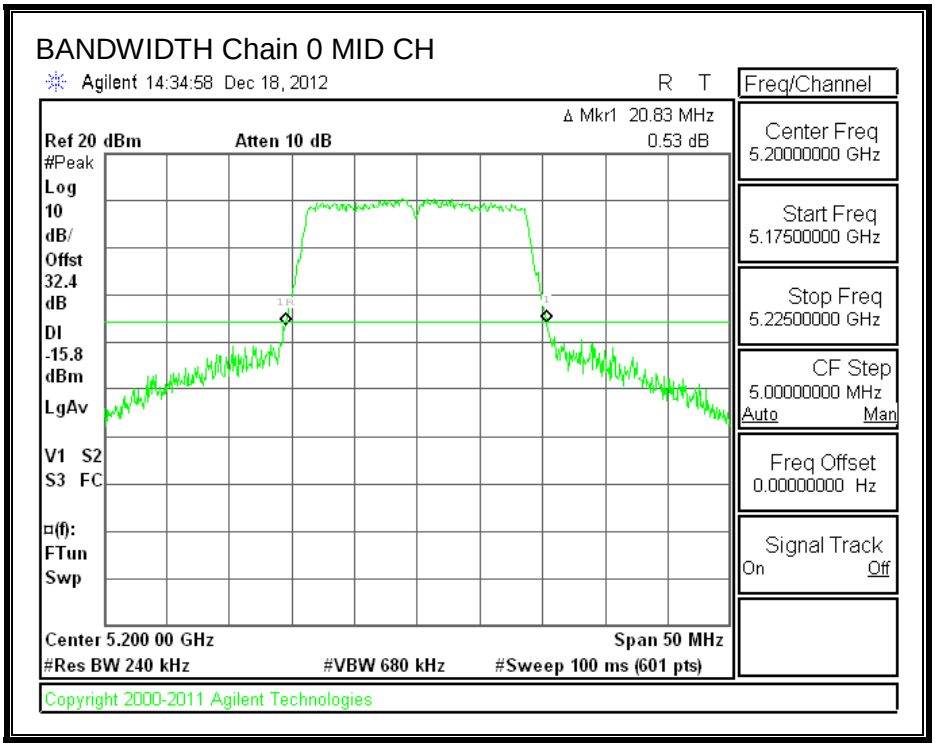
None; for reporting purposes only.

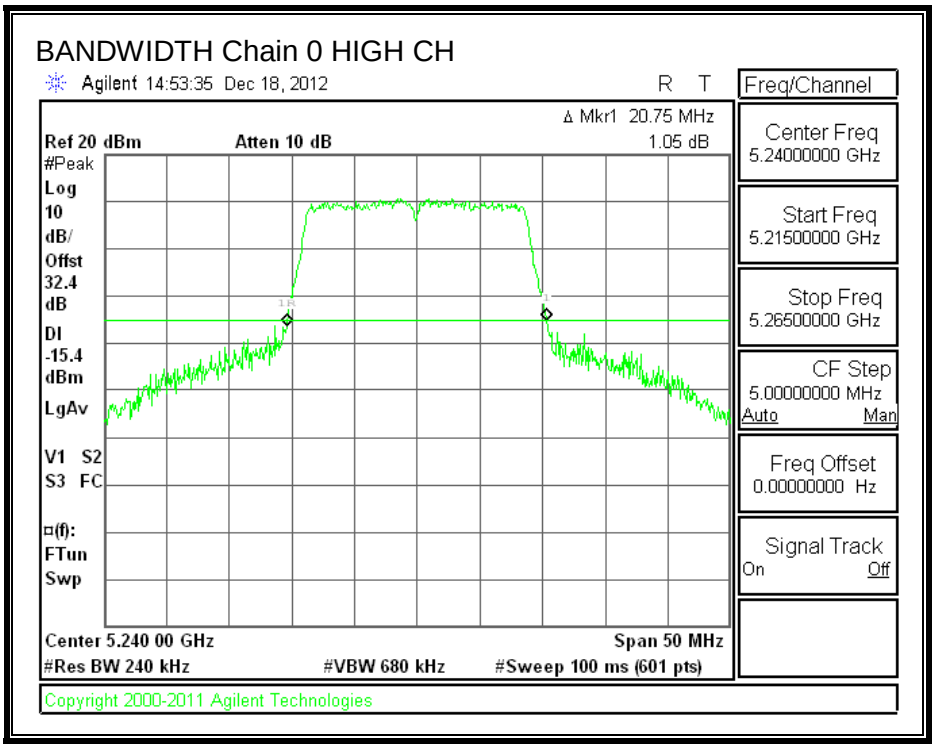
RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Low	5180	20.67	20.58
Mid	5200	20.83	20.58
High	5240	20.75	20.50

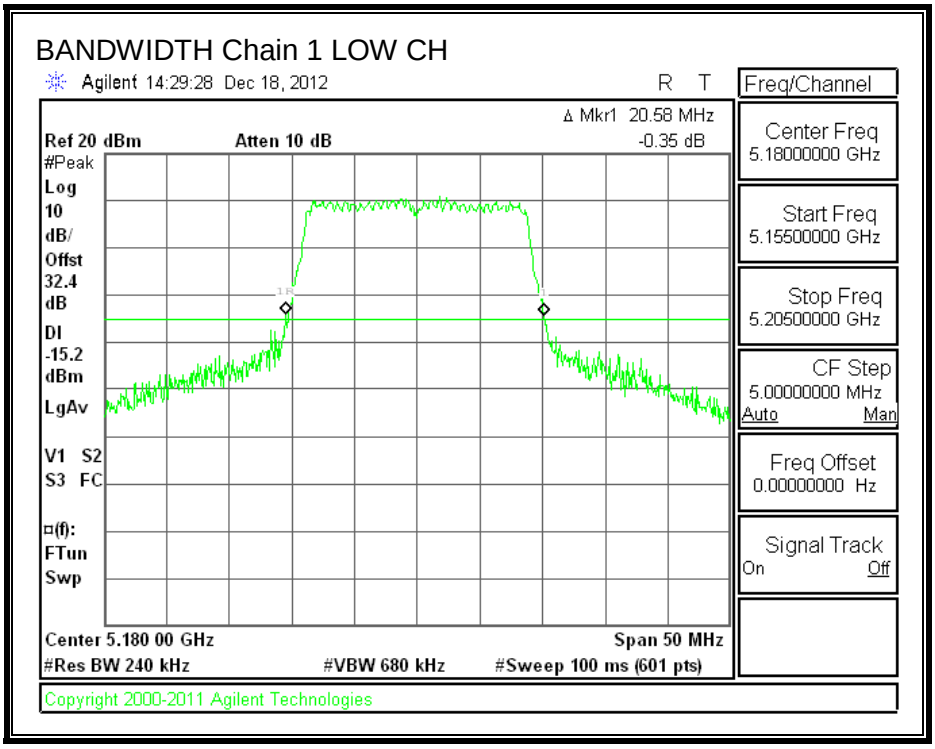
26 dB BANDWIDTH, Chain 0

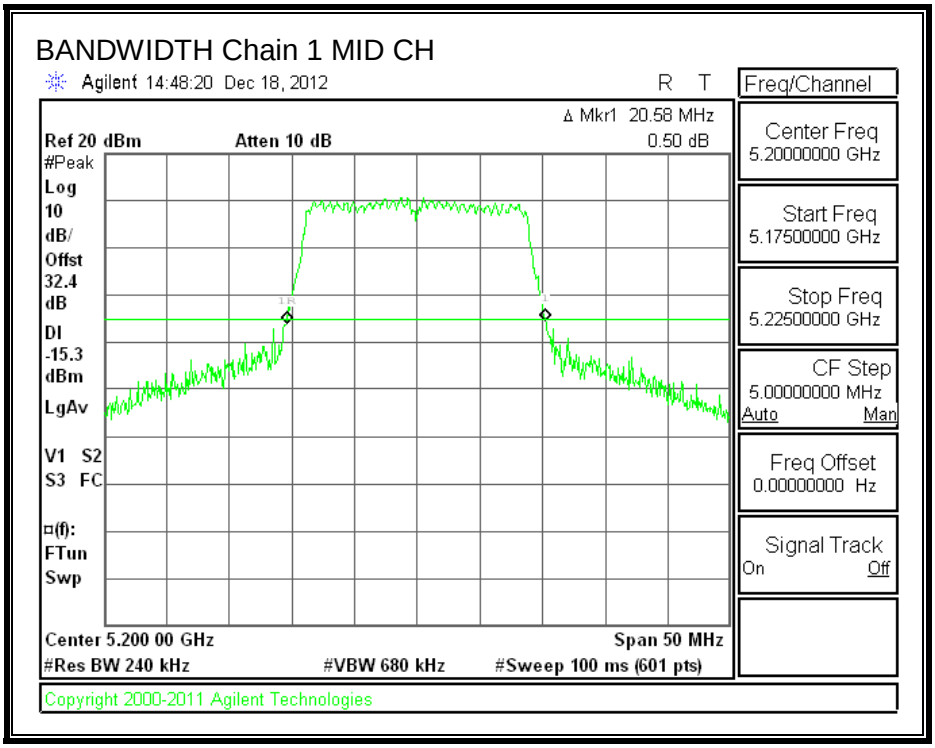


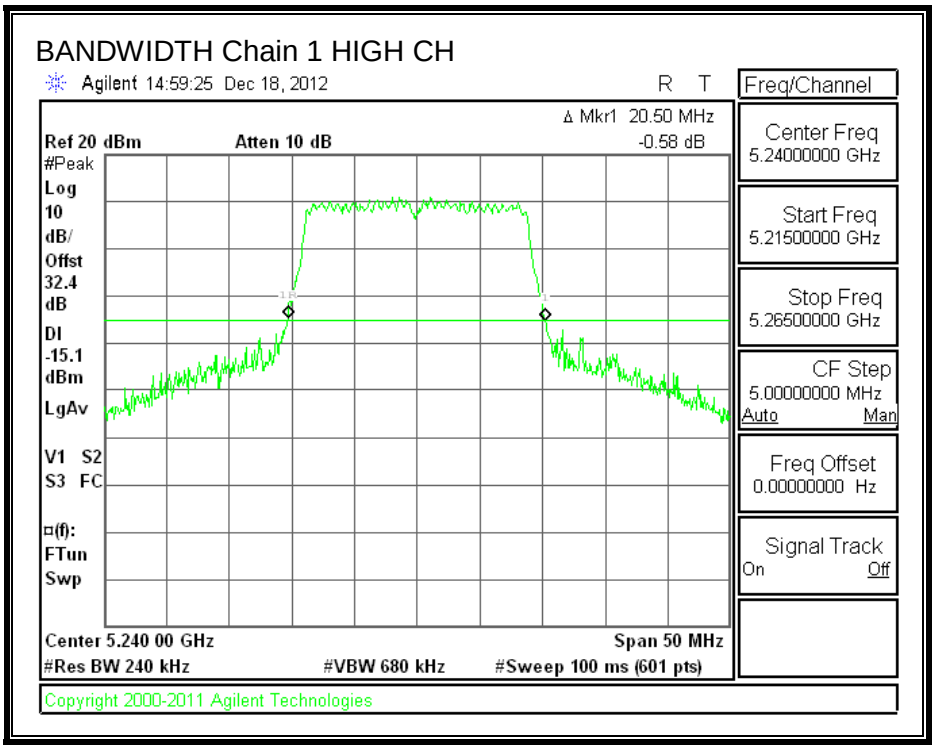




26 dB BANDWIDTH, Chain 1







8.4.2. 99% BANDWIDTH

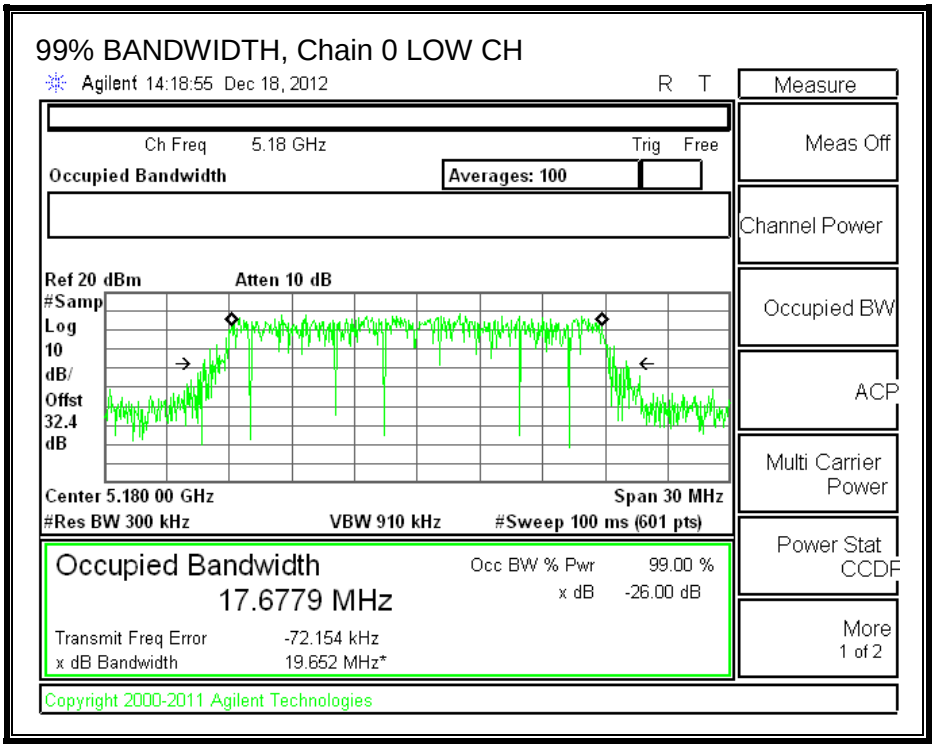
LIMITS

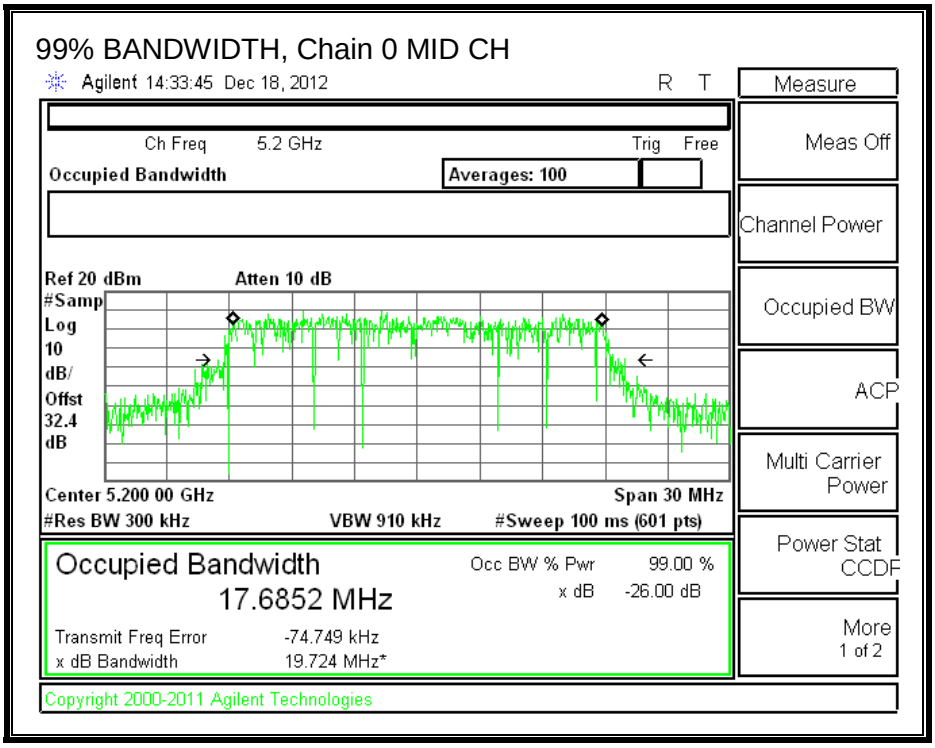
None; for reporting purposes only.

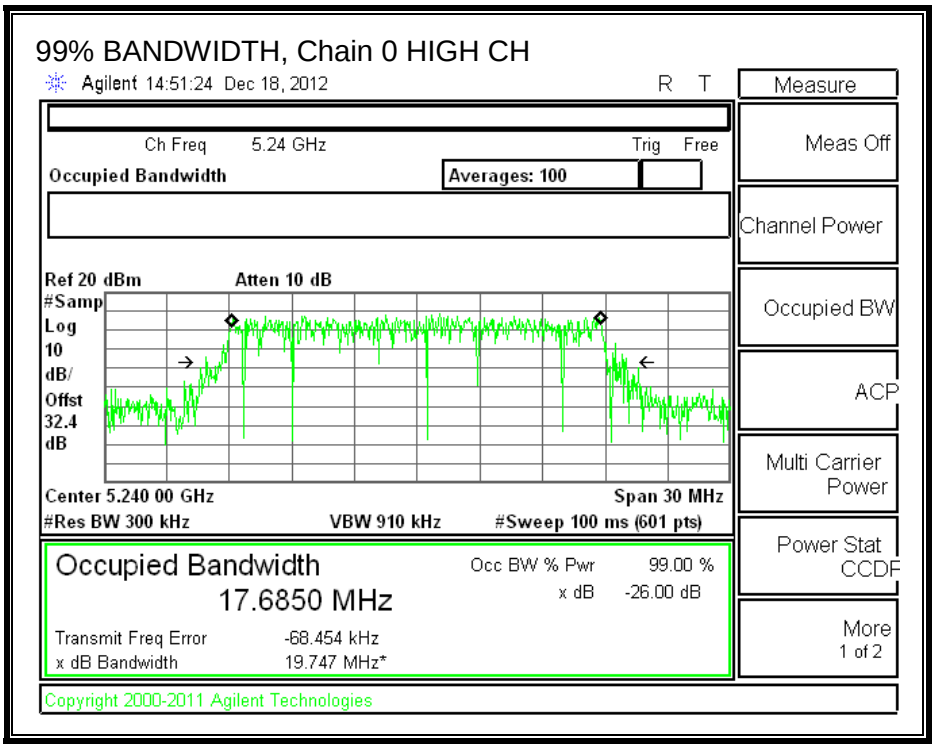
RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	5180	17.6779	17.6947
Mid	5200	17.6852	17.6885
High	5240	17.6850	17.6906

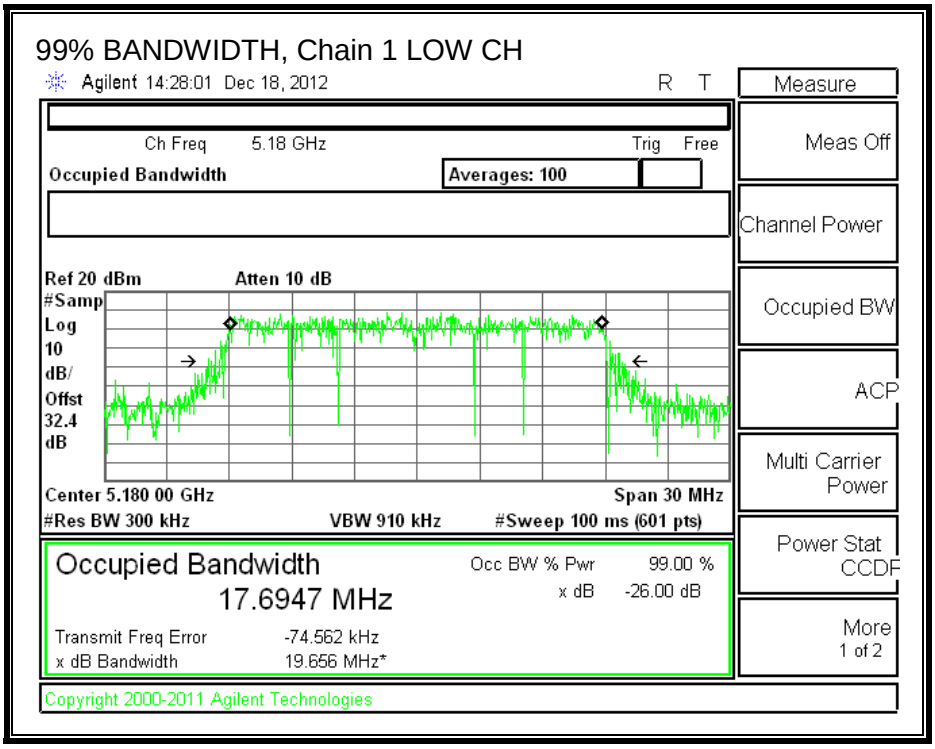
99% BANDWIDTH, Chain 0

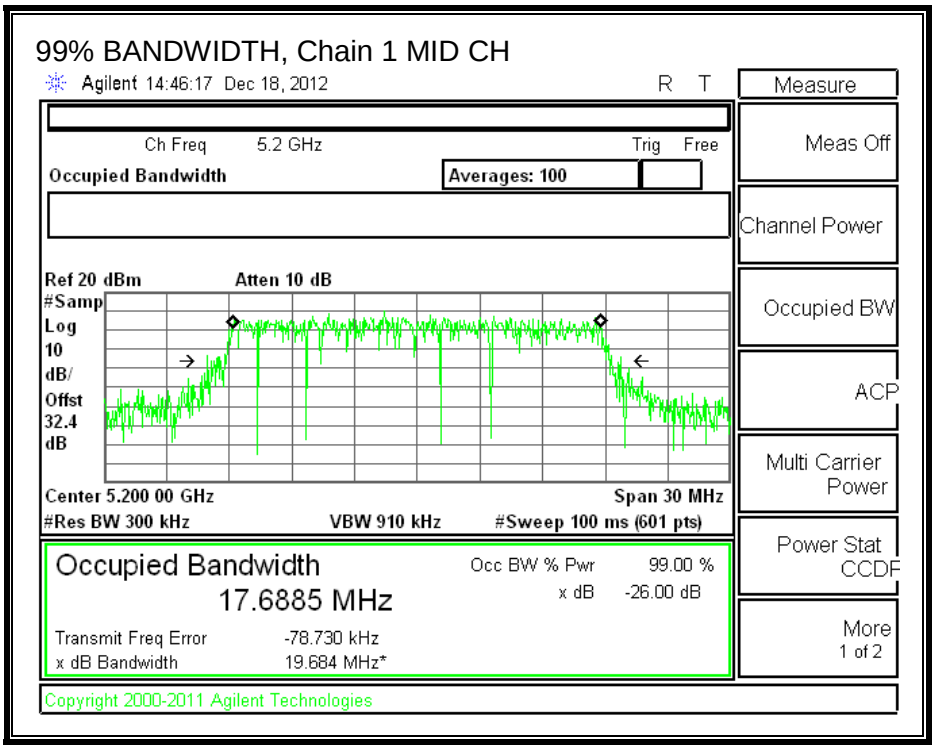


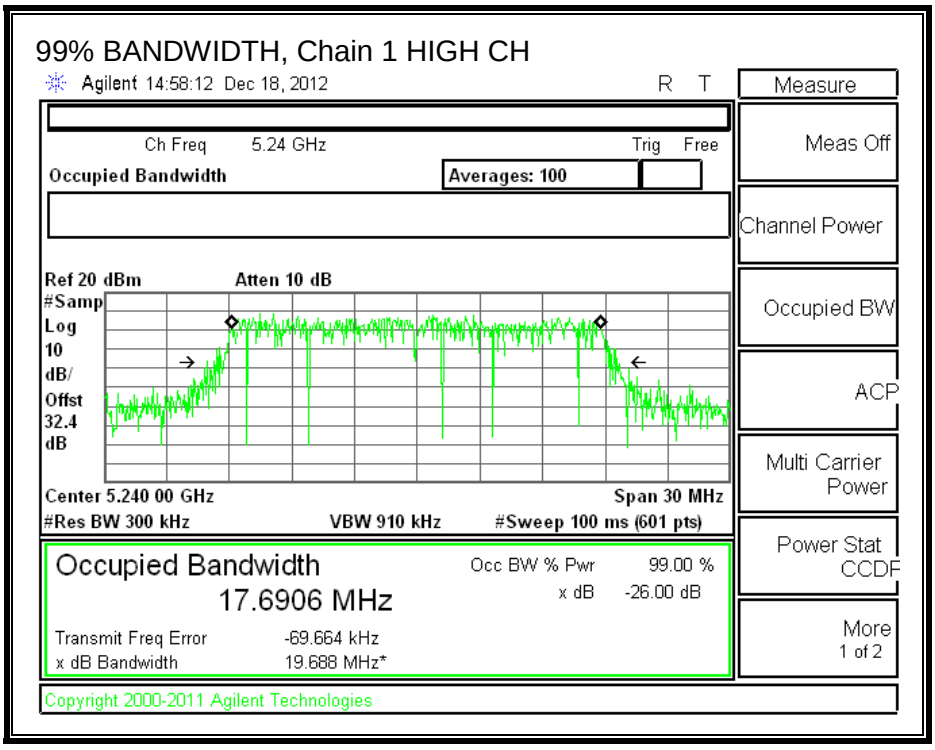




99% BANDWIDTH, Chain 1







8.4.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.20	2.20	2.73

RESULTS

Antenna Gain

Channel	Frequency (MHz)	Directio Gain (dBi)
Low	5180	2.73
Mid	5200	2.73
High	5240	2.73

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	FCC PSD Limit (dBm)
Low	5180	30.00	17.00
Mid	5200	30.00	17.00
High	5240	30.00	17.00

Duty Cycle CF (dB)	0.00	

Output Power Results

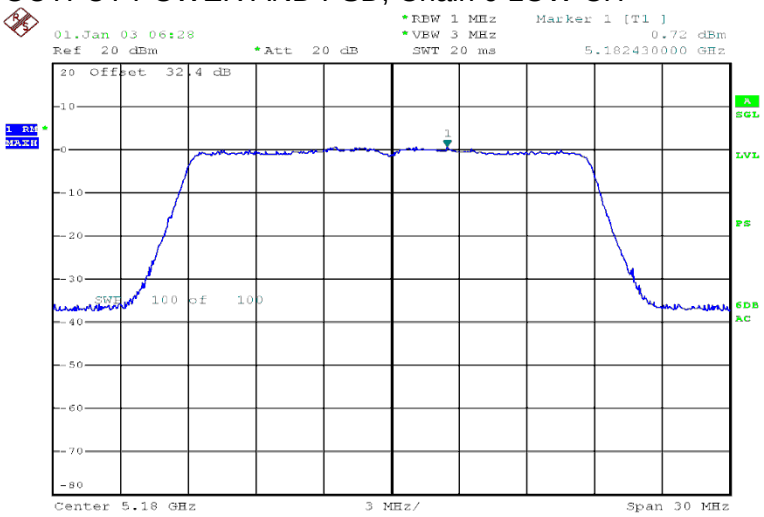
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	11.10	11.20	14.16	30.00	-15.84
Mid	5200	11.21	10.98	14.11	30.00	-15.89
High	5240	11.20	11.10	14.16	30.00	-15.84

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5180	0.72	1.16	3.96	17.00	-13.04
Mid	5200	0.70	1.12	3.93	17.00	-13.07
High	5240	0.77	0.67	3.73	17.00	-13.27

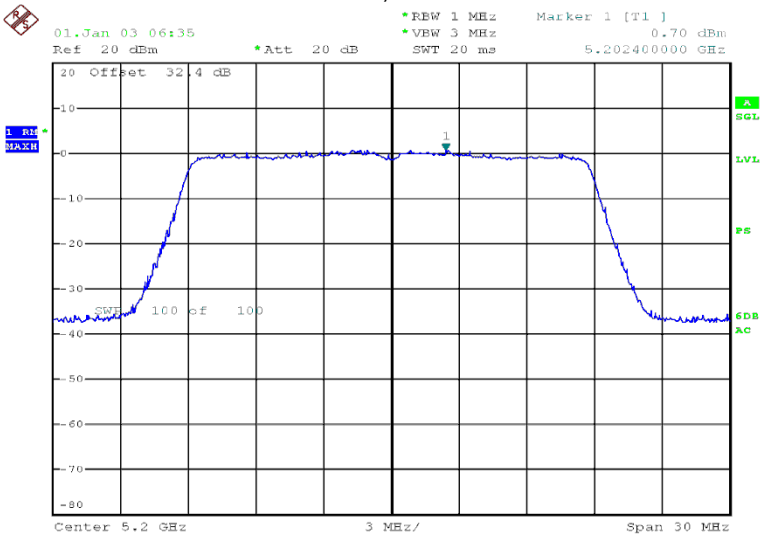
OUTPUT POWER AND PSD, Chain 0

OUTPUT POWER AND PSD, Chain 0 LOW CH



Date: 1.JAN.2003 06:28:26

OUTPUT POWER AND PSD, Chain 0 MID CH



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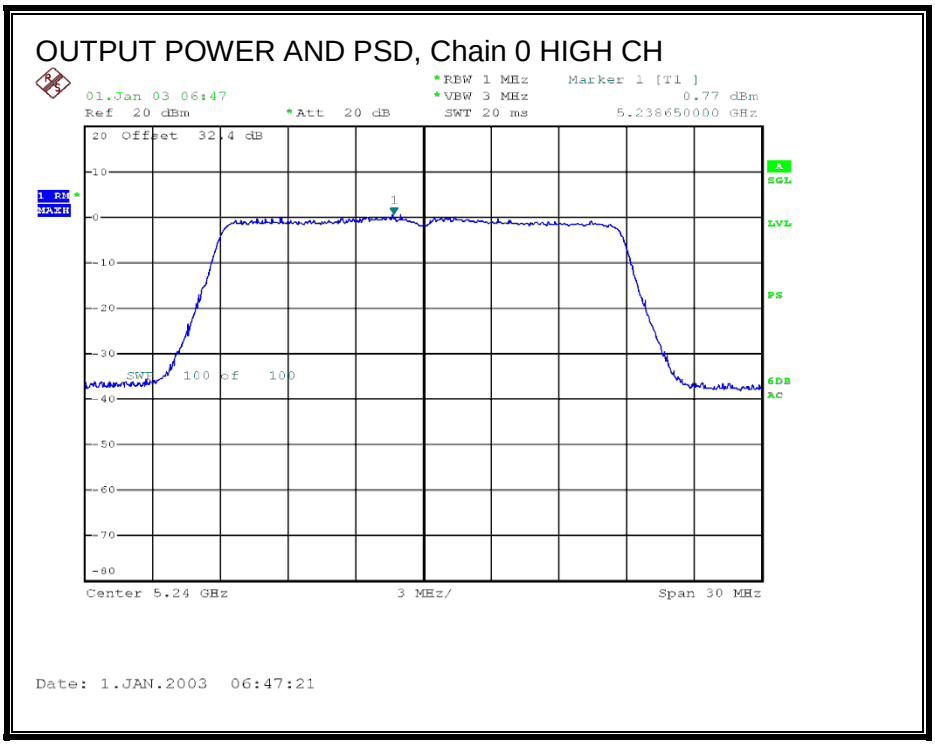
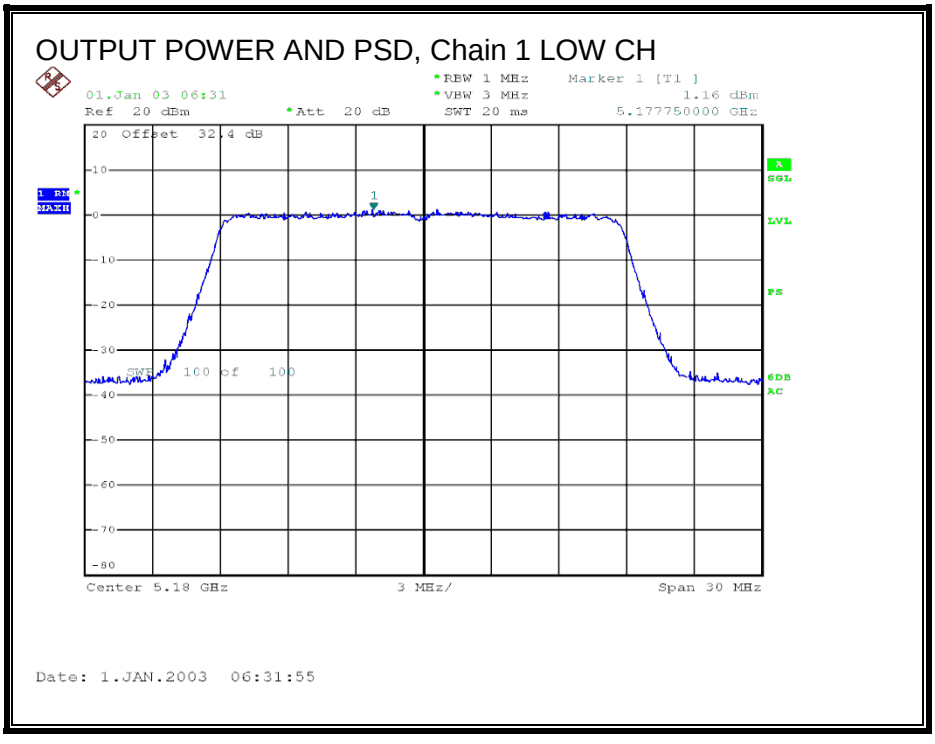
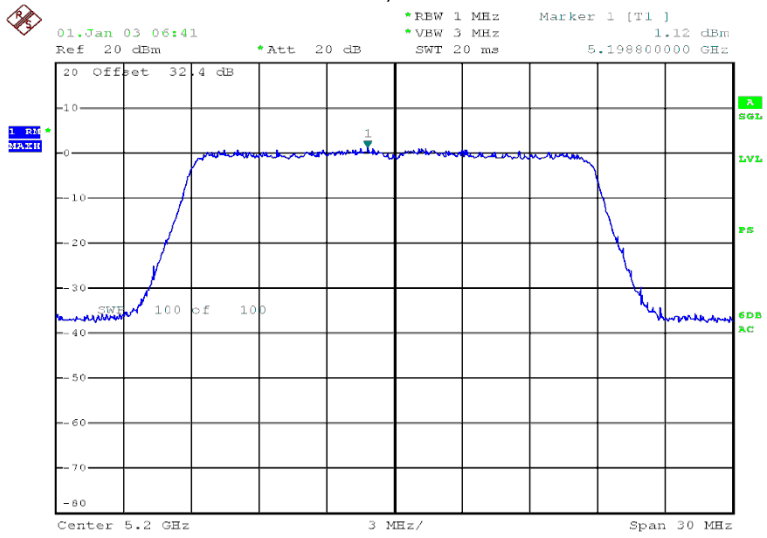


OUTPUT POWER AND PSD, Chain 1



OUTPUT POWER AND PSD, Chain 1 MID CH



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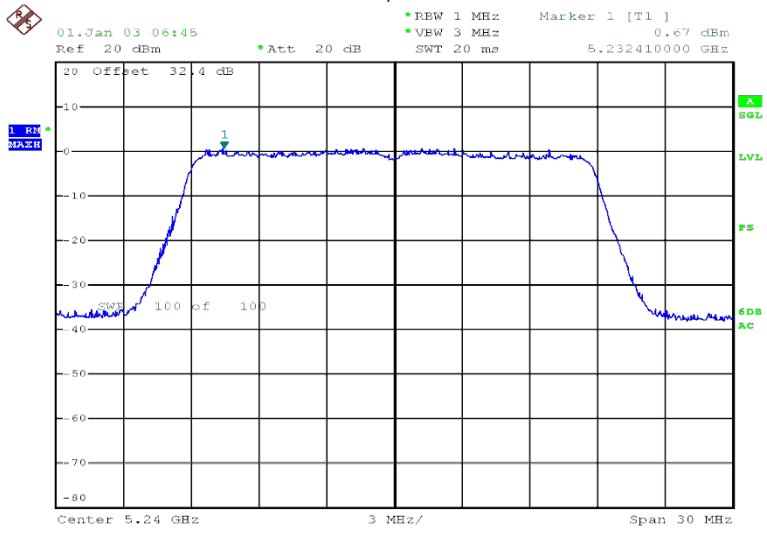
OUTPUT POWER AND PSD, Chain 1 HIGH CH



Date: 1.JAN.2003 06:45:10

8.5. 802.11n HT20 CDD 3TX MODE IN THE 5.2 GHz BAND

8.5.1. 26 dB BANDWIDTH

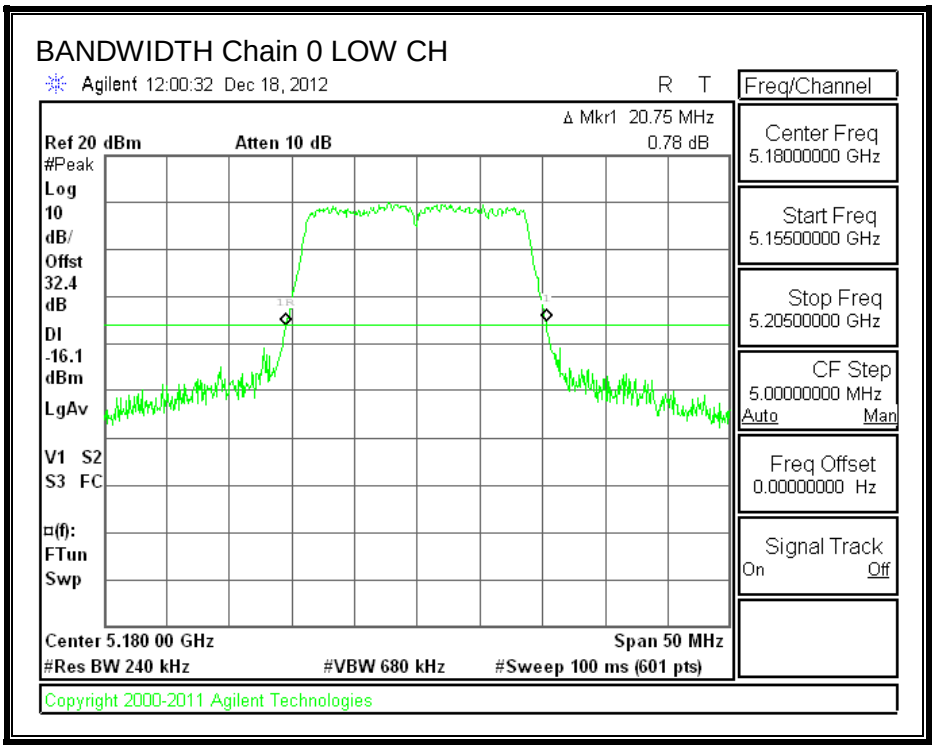
LIMITS

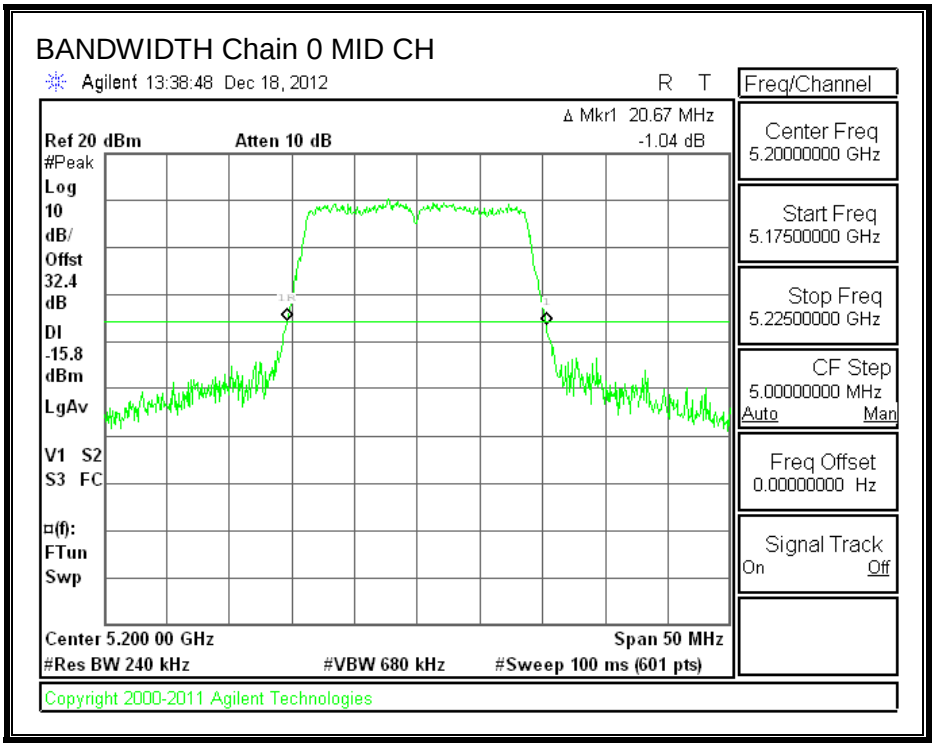
None; for reporting purposes only.

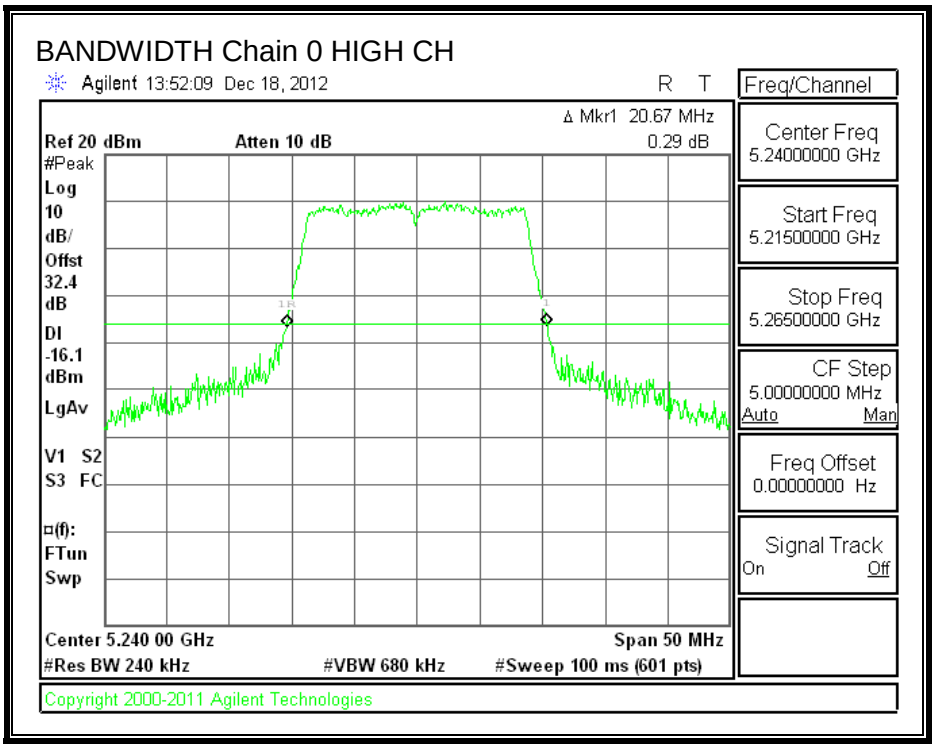
RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
Low	5180	20.75	20.42	20.67
Mid	5200	20.67	20.50	20.67
High	5240	20.67	20.50	20.92

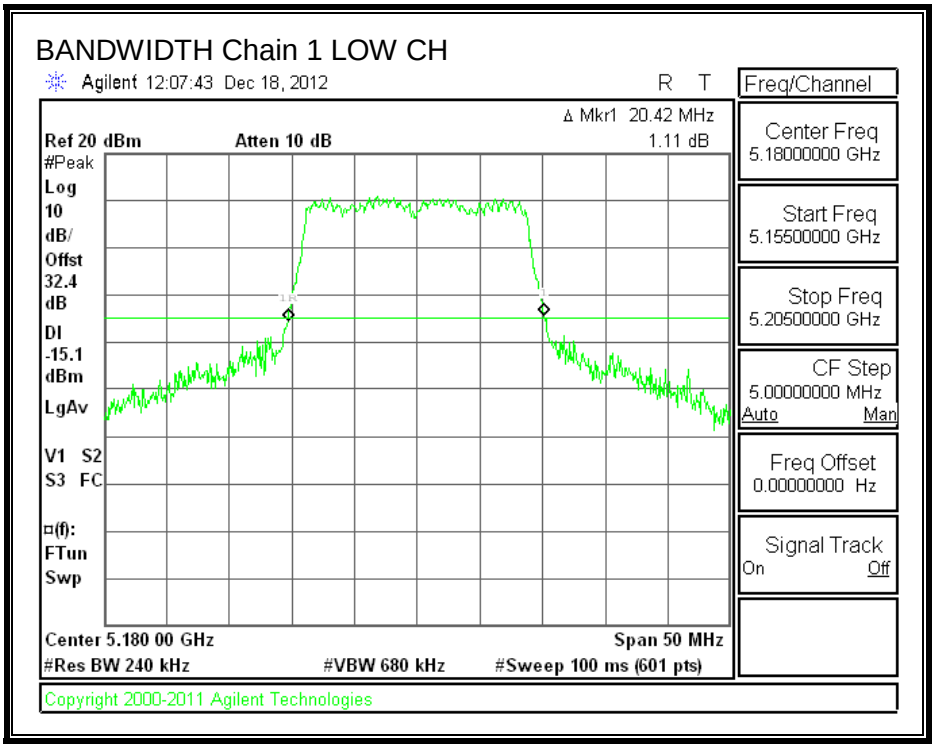
26 dB BANDWIDTH, Chain 0



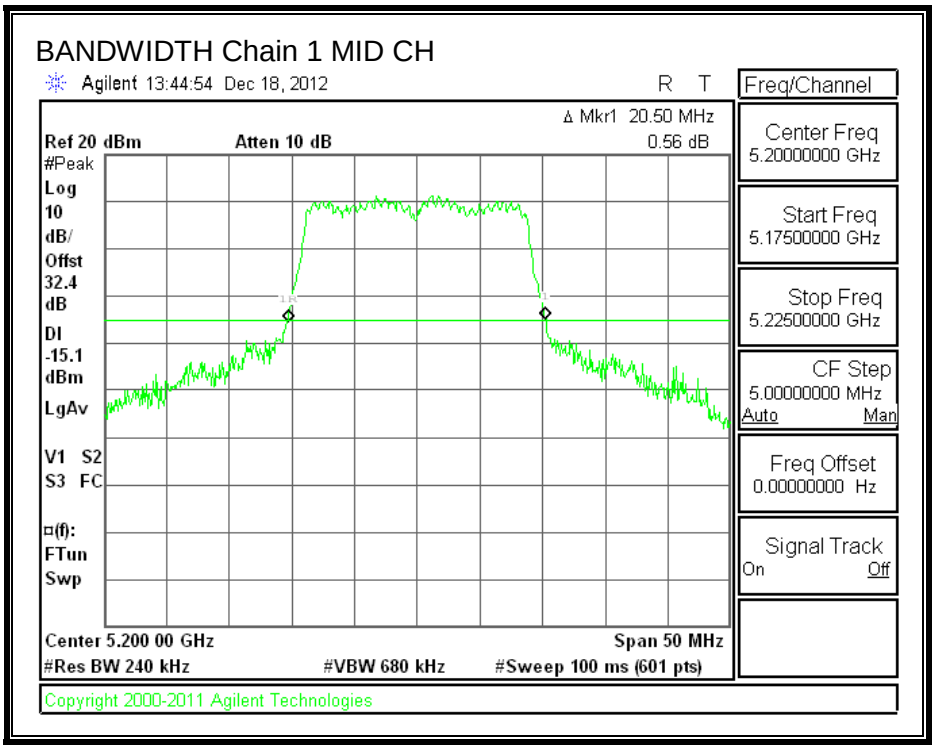




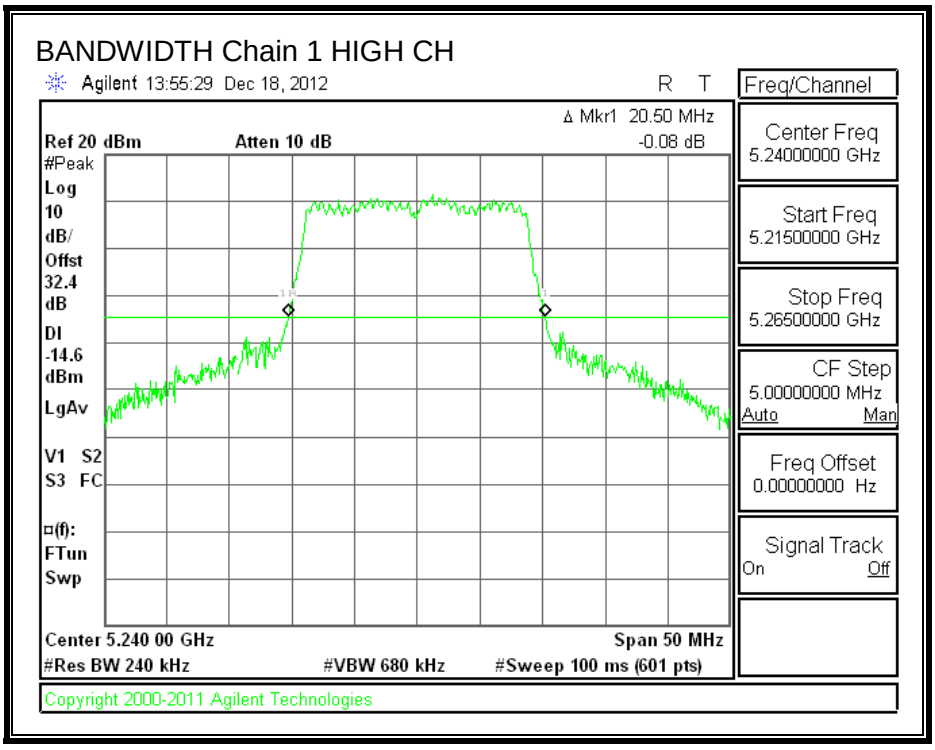
26 dB BANDWIDTH, Chain 1



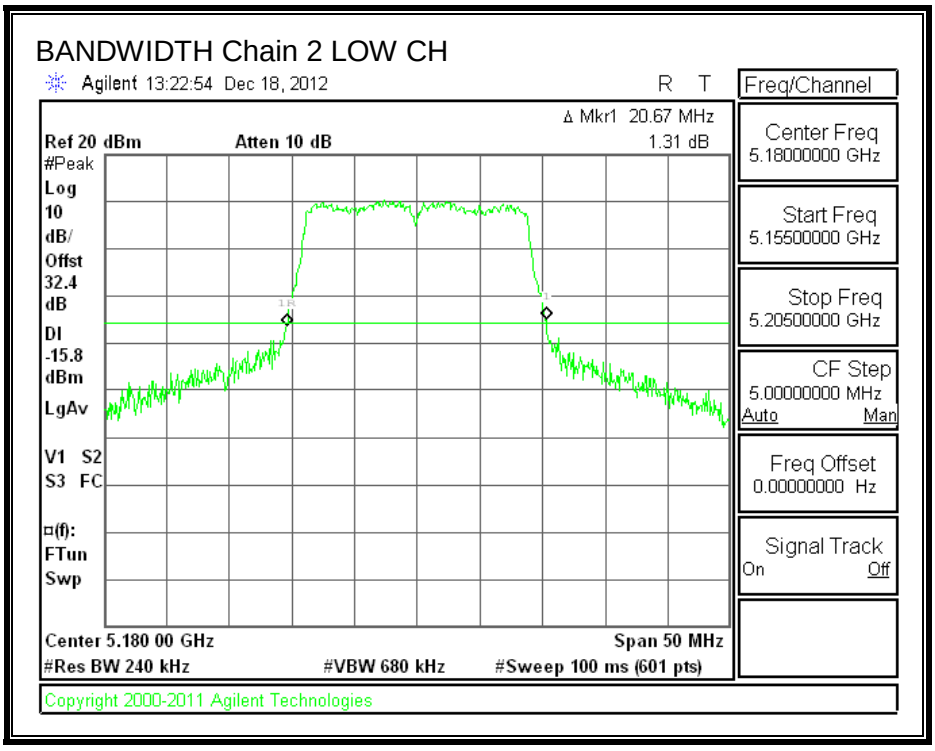
BANDWIDTH Chain 1 MID CH

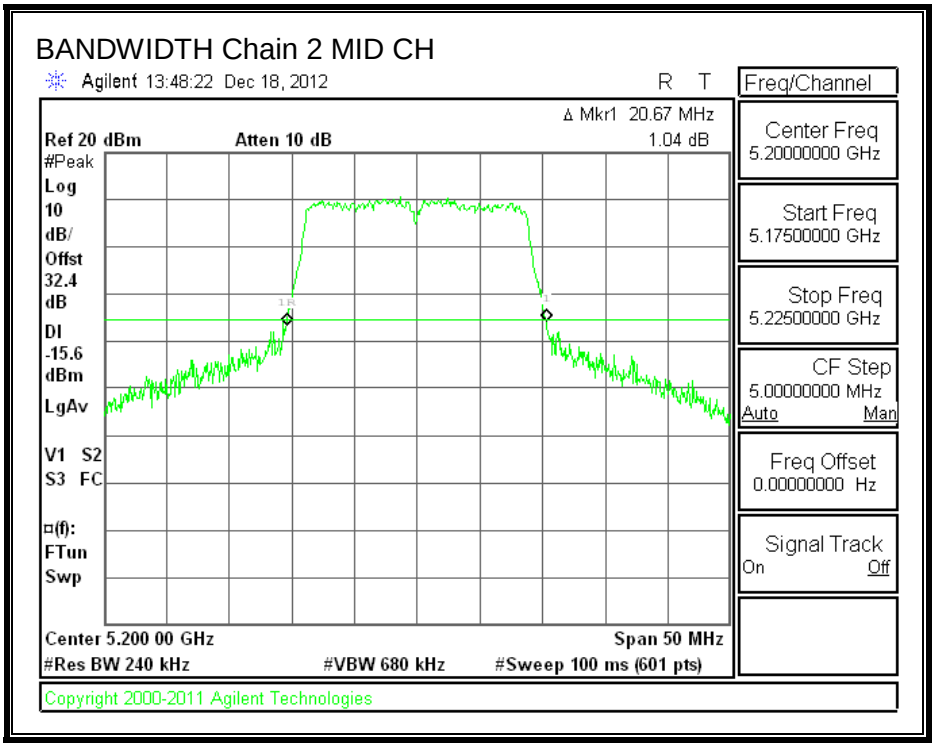


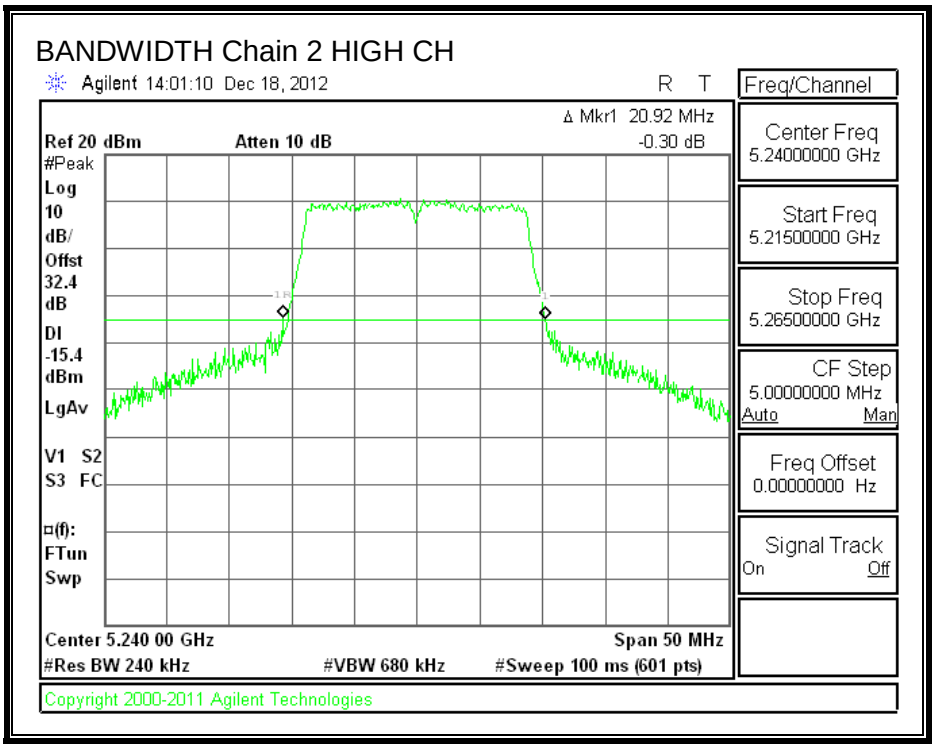
BANDWIDTH Chain 1 HIGH CH



26 dB BANDWIDTH, Chain 2







8.5.2. 99% BANDWIDTH

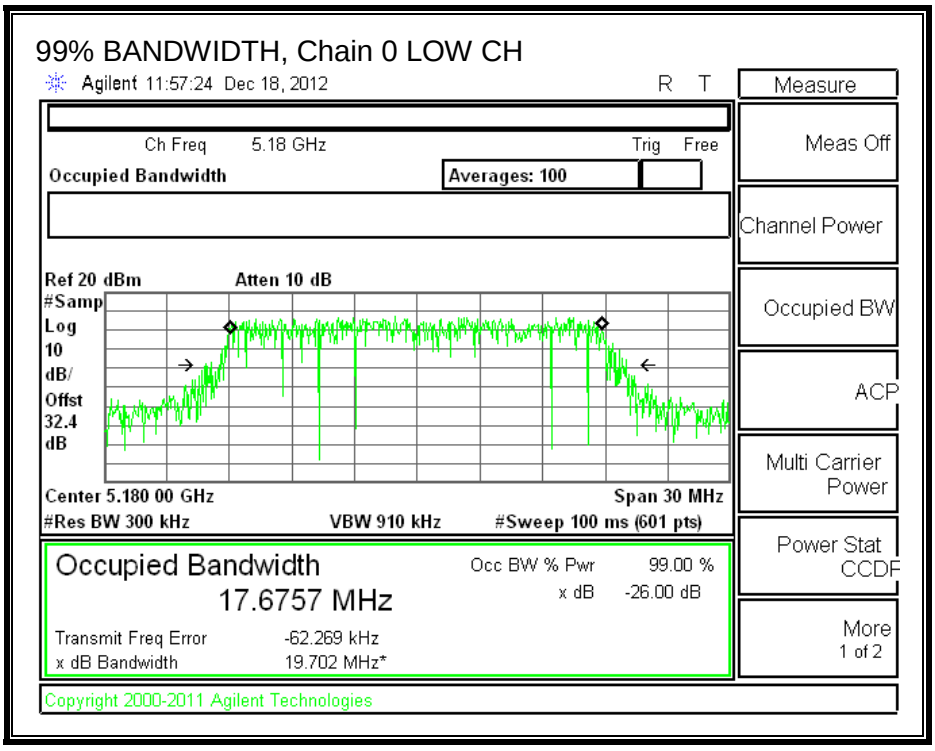
LIMITS

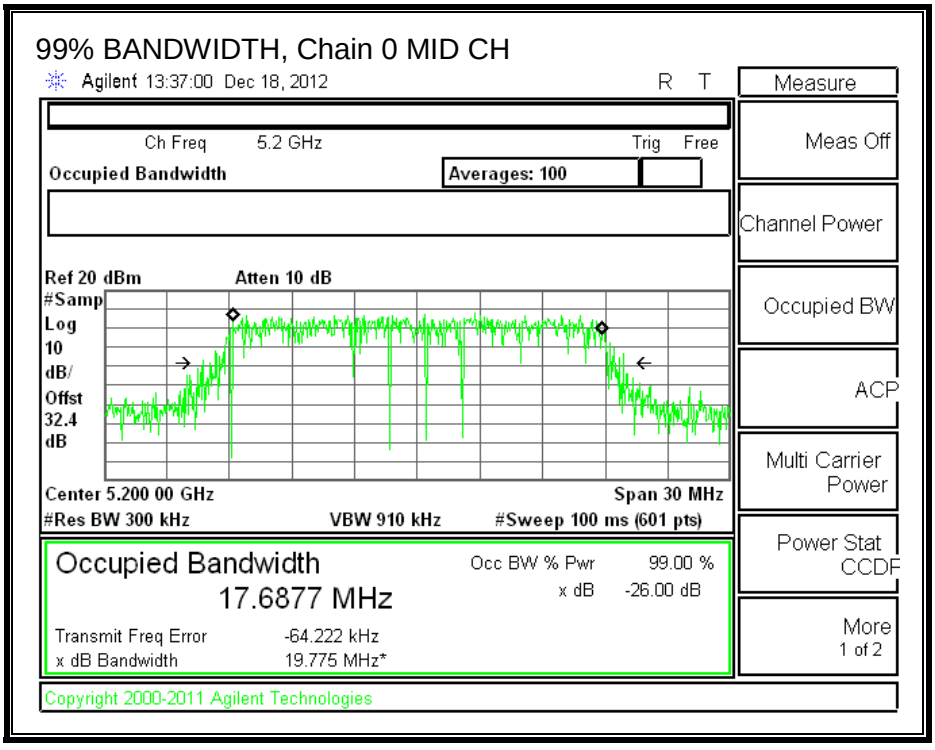
None; for reporting purposes only.

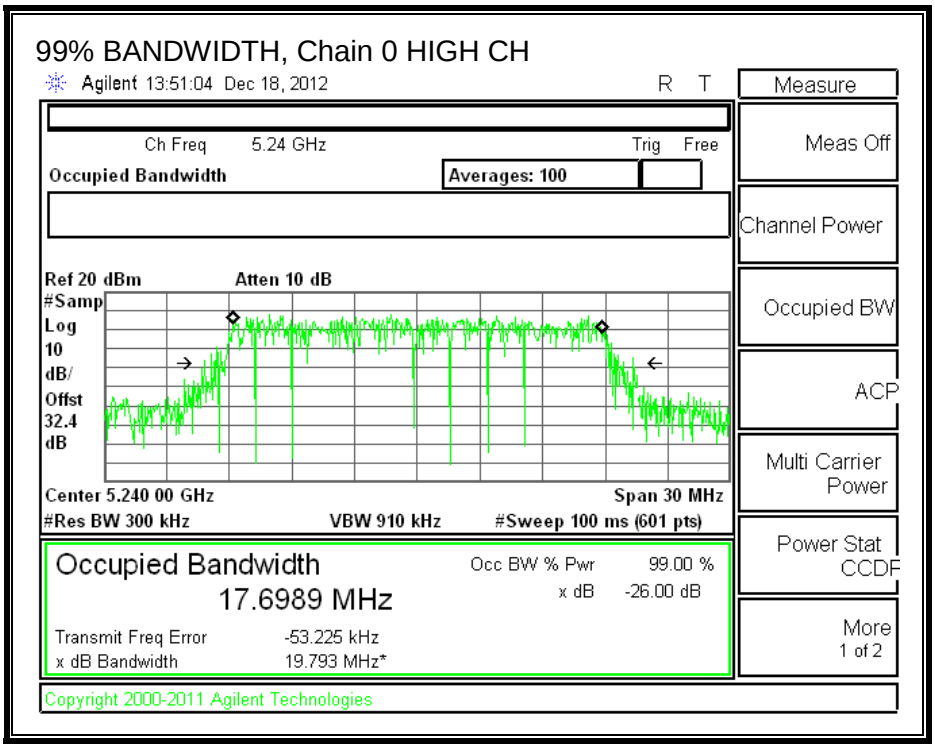
RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
Low	5180	17.6757	17.6767	17.6812
Mid	5200	17.6877	17.6801	17.6888
High	5240	17.6989	17.6850	17.6956

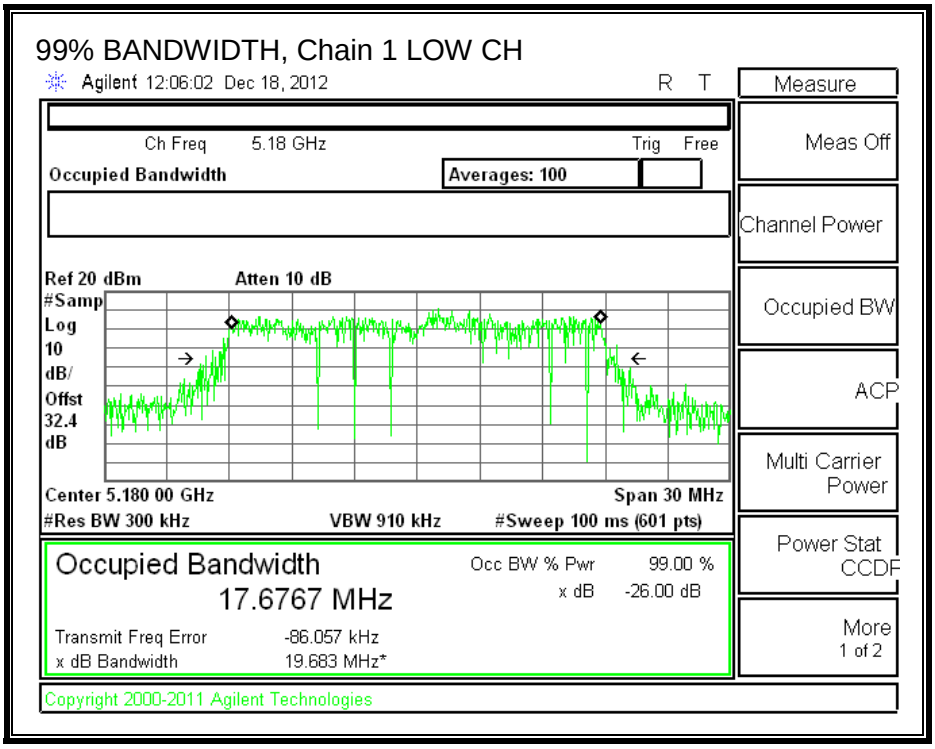
99% BANDWIDTH, Chain 0

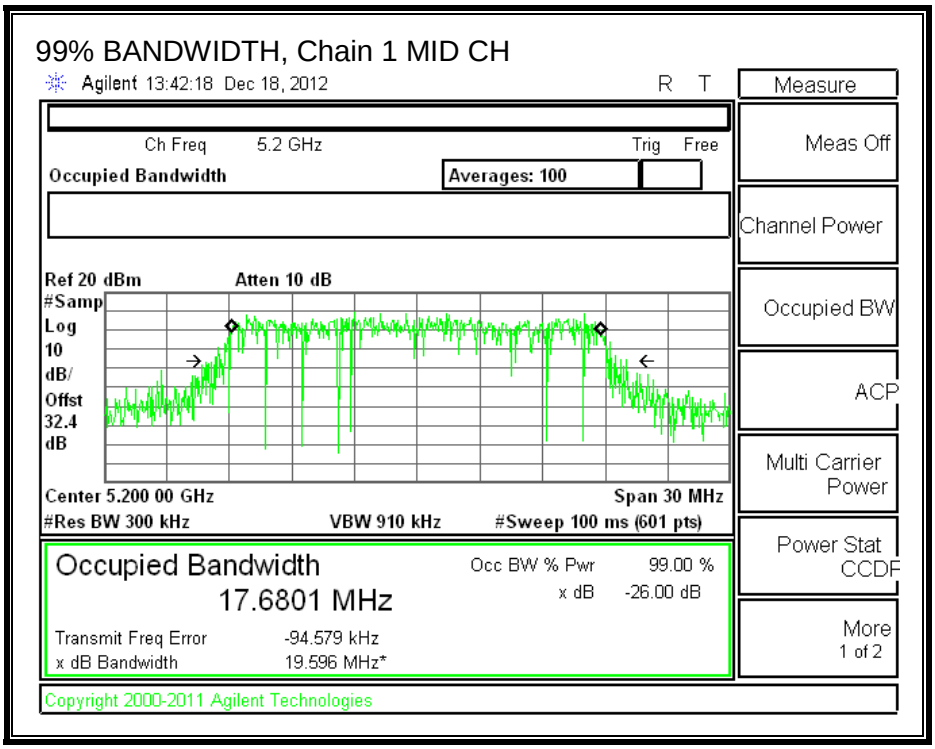


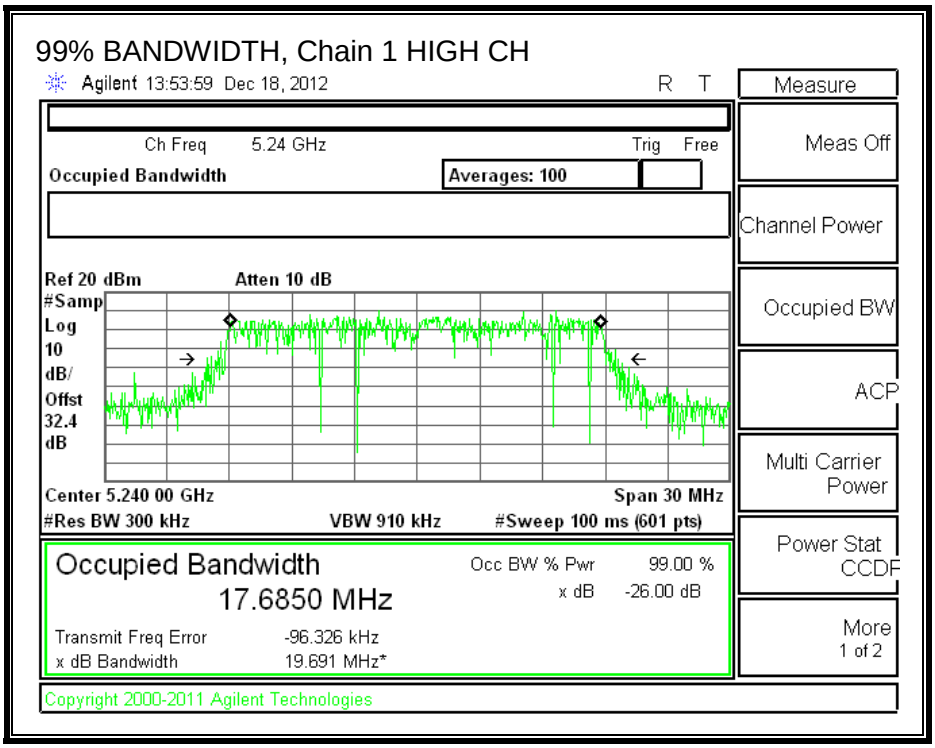




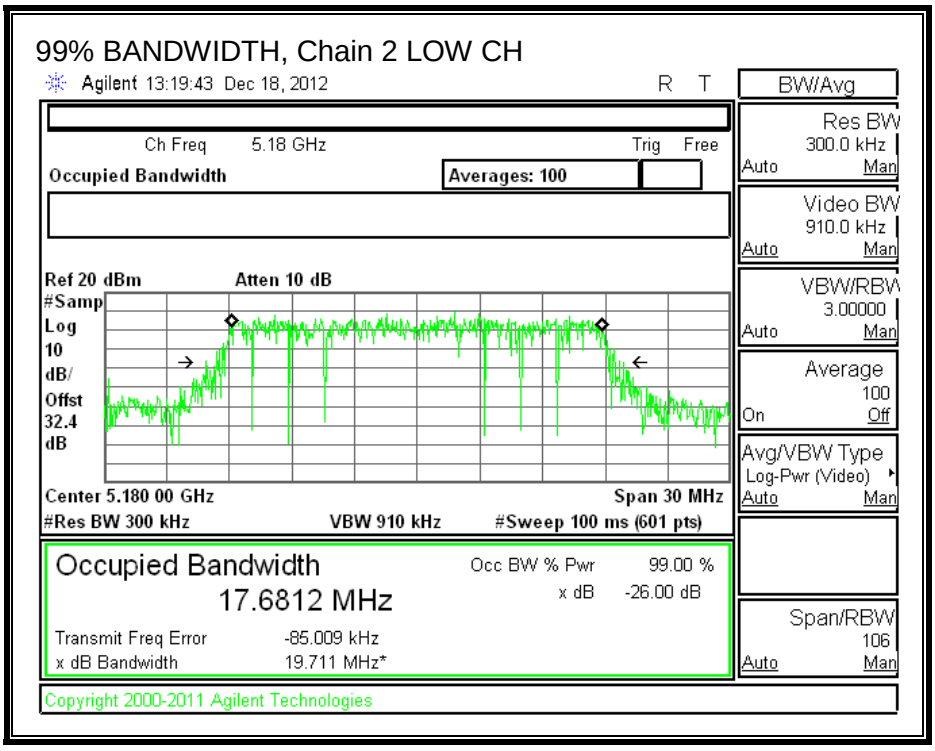
99% BANDWIDTH, Chain 1

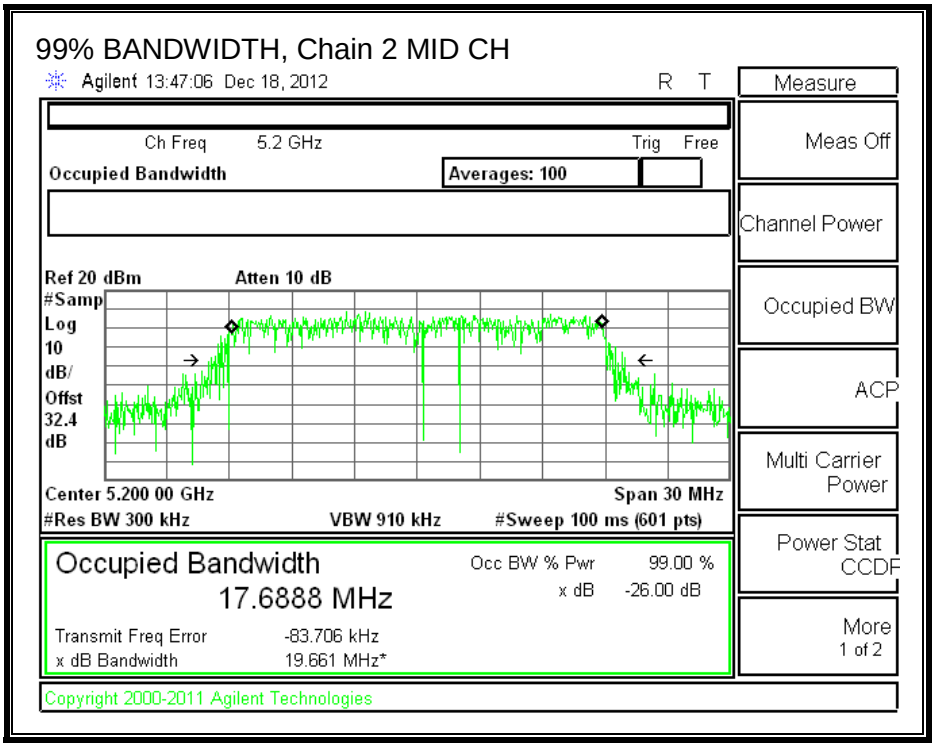


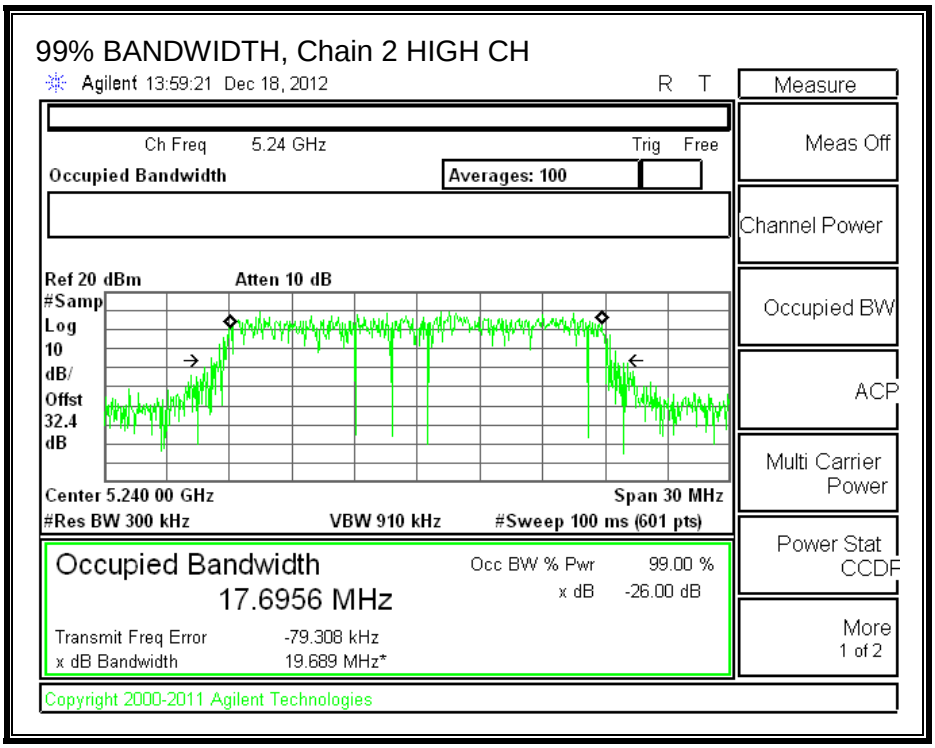




99% BANDWIDTH, Chain 2







8.5.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated for output power and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.20	1.40	2.20	2.33

The TX chains are correlated for PSD and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.20	1.40	2.20	7.07

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Correlat Directional Gain (dBi)	Uncorre Directional Gain (dBi)
Low	5180	7.07	2.33
Mid	5200	7.07	2.33
High	5240	7.07	2.33

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	FCC PSD Limit (dBm)
Low	5180	30.00	15.93
Mid	5200	30.00	15.93
High	5240	30.00	15.93

Duty Cycle CF (dB)	0.00	

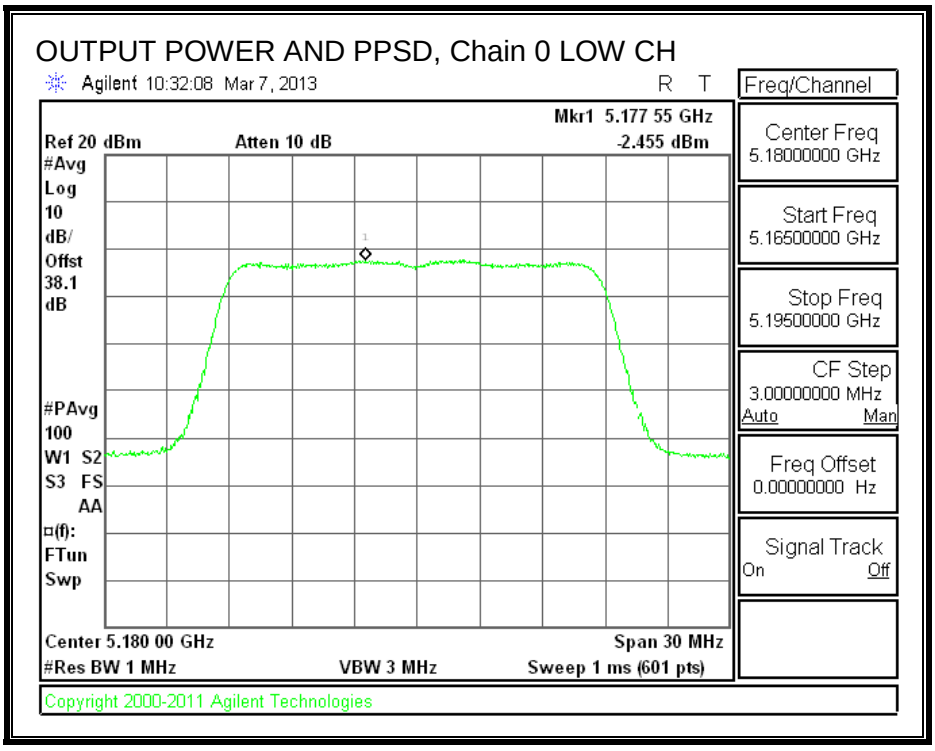
Output Power Results

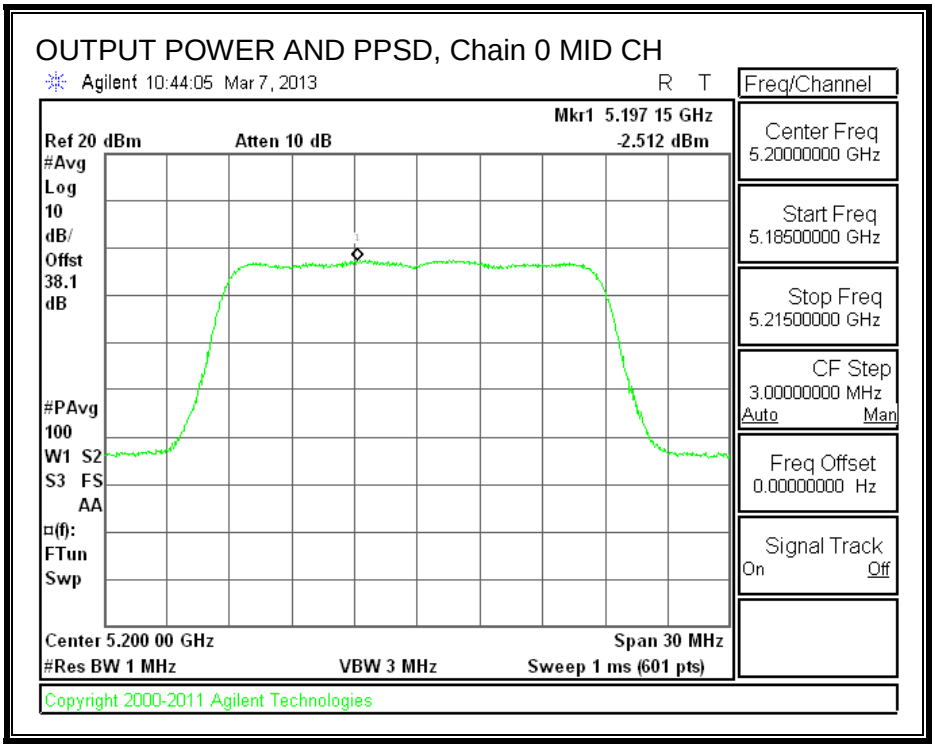
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	7.10	7.10	7.40	11.97	30.00	-18.03
Mid	5200	7.06	7.30	7.42	12.03	30.00	-17.97
High	5240	7.15	7.31	7.66	12.15	30.00	-17.85

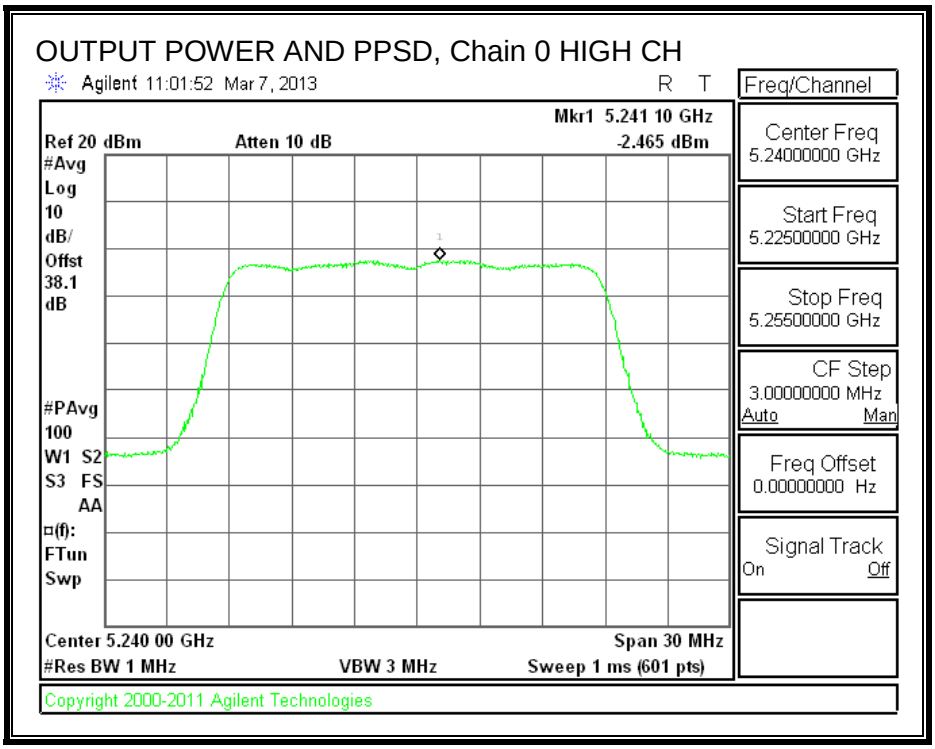
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Chain 2 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5180	-2.455	-2.215	-1.661	2.67	15.93	-13.26
Mid	5200	-2.512	-2.098	-2.077	2.55	15.93	-13.38
High	5240	-2.465	-1.885	-1.989	2.67	15.93	-13.26

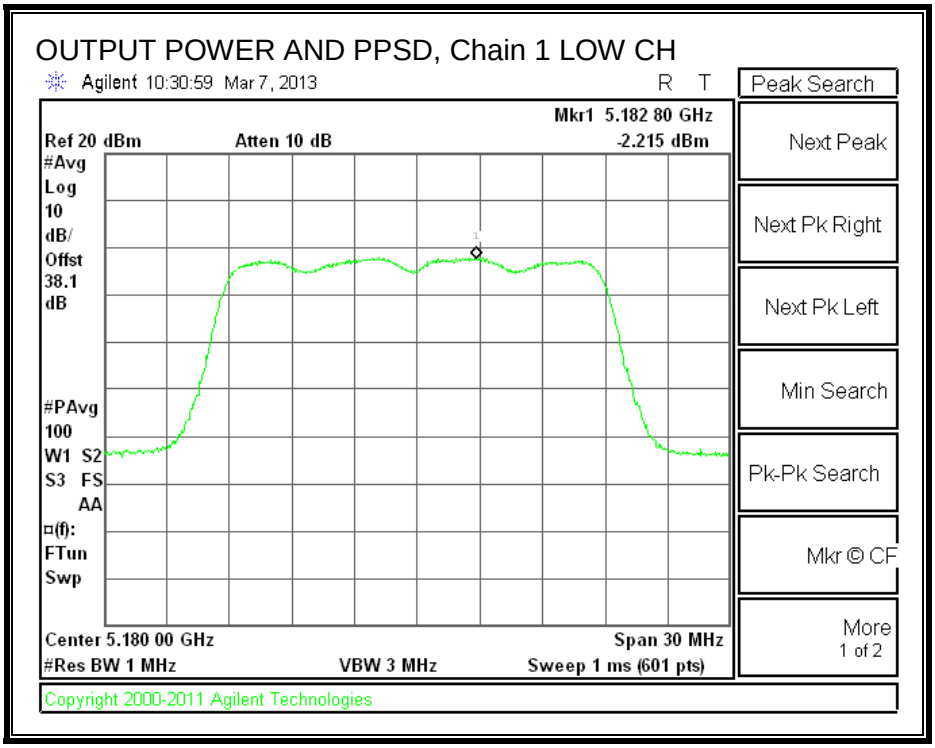
OUTPUT POWER AND PPSD, Chain 0

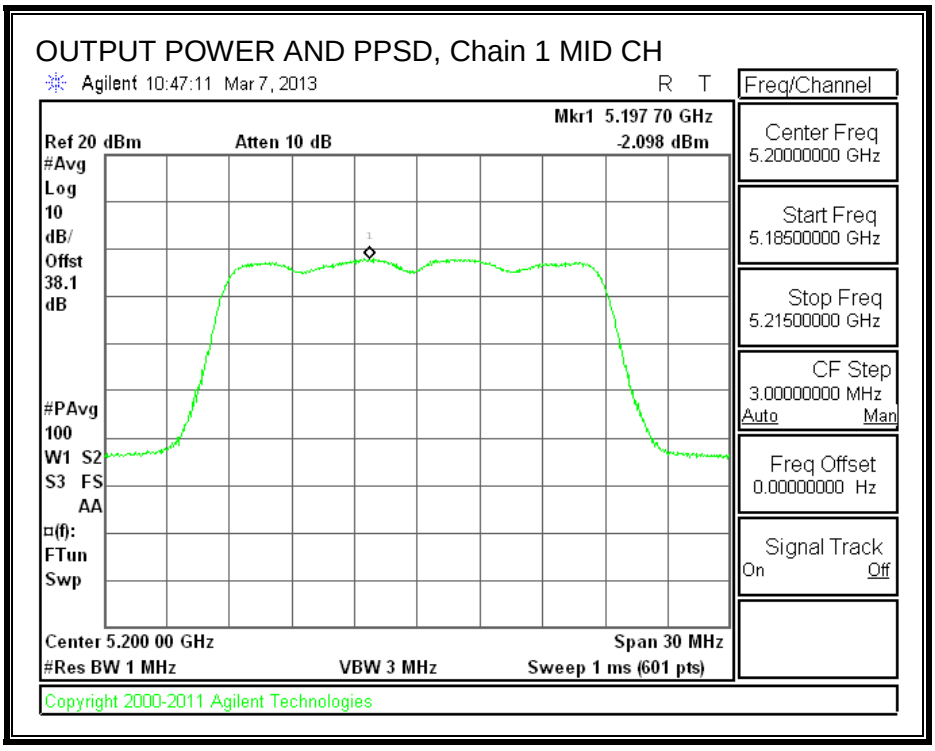


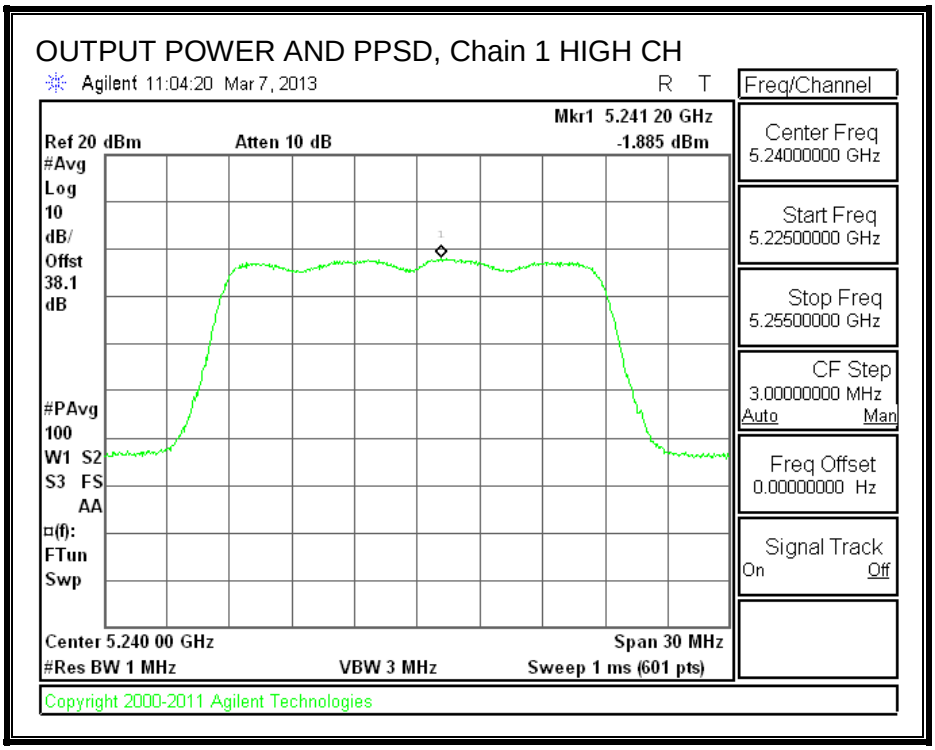




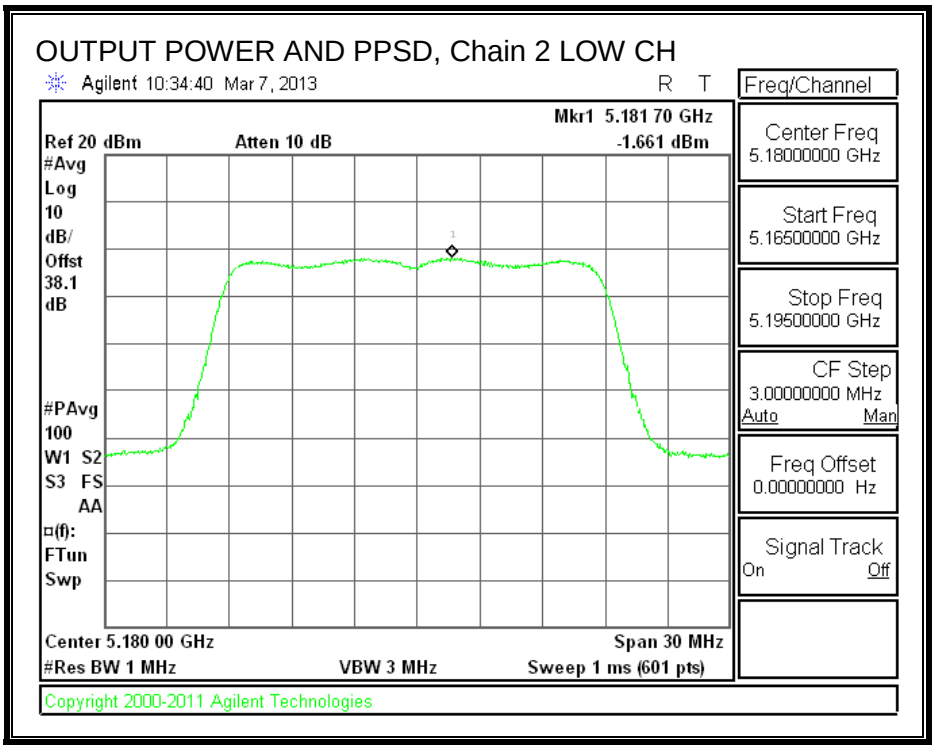
OUTPUT POWER AND PPSD, Chain 1

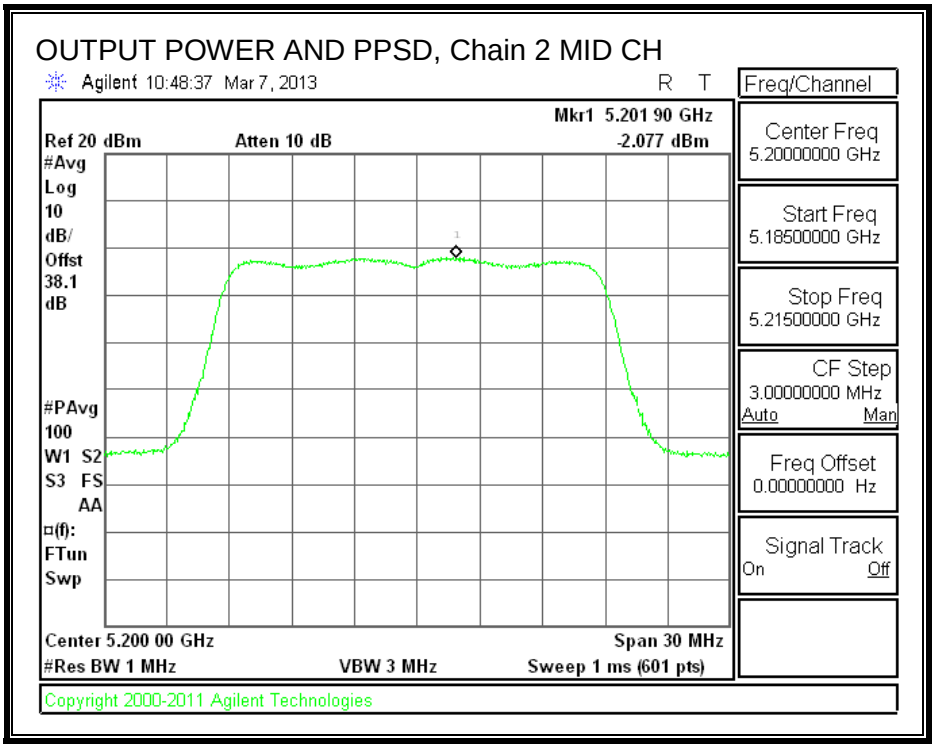




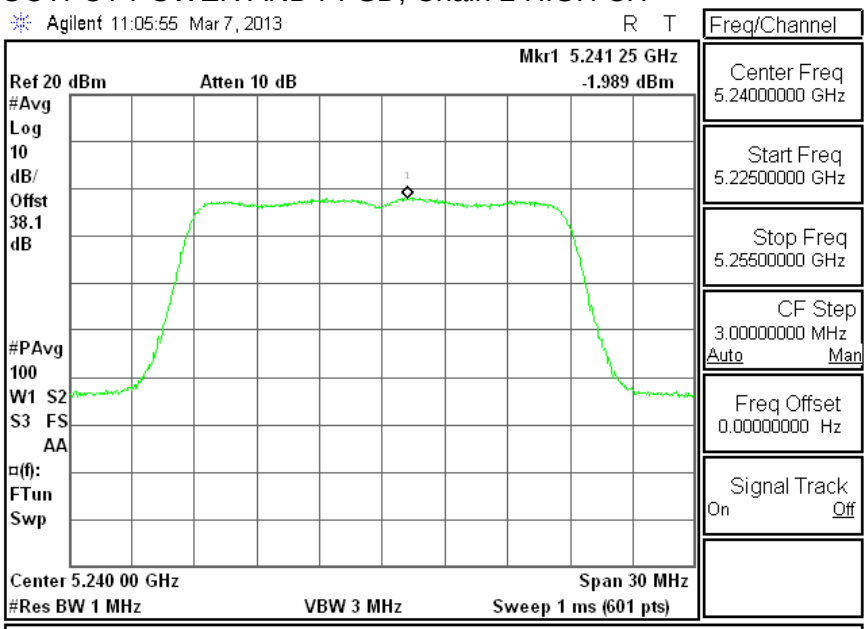


OUTPUT POWER AND PPSD, Chain 2





OUTPUT POWER AND PPSD, Chain 2 HIGH CH



8.6. 802.11n HT20 BF 3TX MODE IN THE 5.2 GHz BAND

Covered by testing HT20 CDD 3TX mode, the power per chain used for HT20 CDD 3TX mode is the same power per chain that will be used for HT20 BF 3TX mode. However, since BF is correlated and CDD is uncorrelated for output power, the section below for output power using correlated AG for this BF mode shows it is still compliant.

8.6.1. OUTPUT AVERAGE POWER

LIMITS

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are correlated for output power and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.20	1.40	2.20	7.07

RESULTS

Antenna Gain

Channel	Frequency (MHz)	Correlat Directional Gain (dBi)
Low	5180	7.07
Mid	5200	7.07
High	5240	7.07

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)
Low	5180	28.93
Mid	5200	28.93
High	5240	28.93

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	7.10	7.10	7.40	11.97	28.93	-16.96
Mid	5200	7.06	7.30	7.42	12.03	28.93	-16.90
High	5240	7.15	7.31	7.66	12.15	28.93	-16.78

8.7. 802.11n HT20 STBC 3TX MODE IN THE 5.2 GHz BAND

8.7.1. 26 dB BANDWIDTH

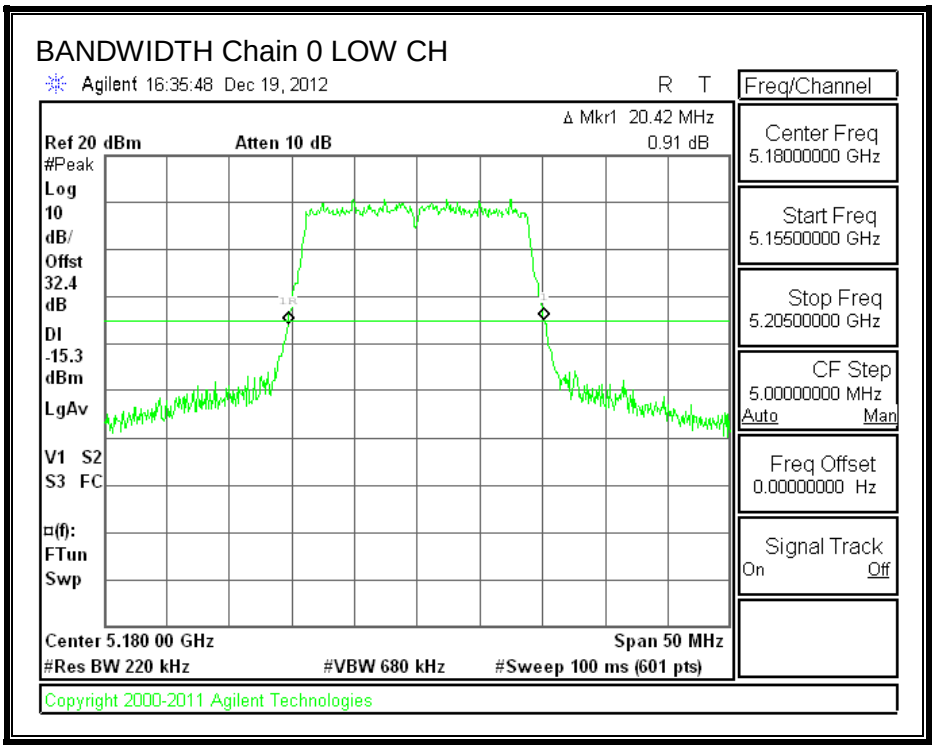
LIMITS

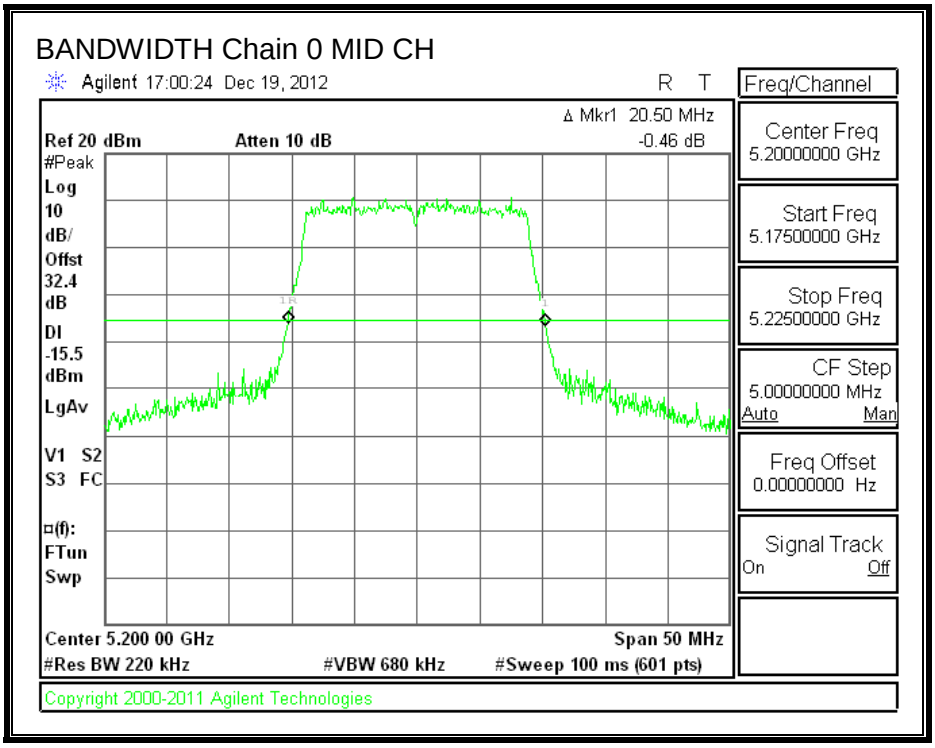
None; for reporting purposes only.

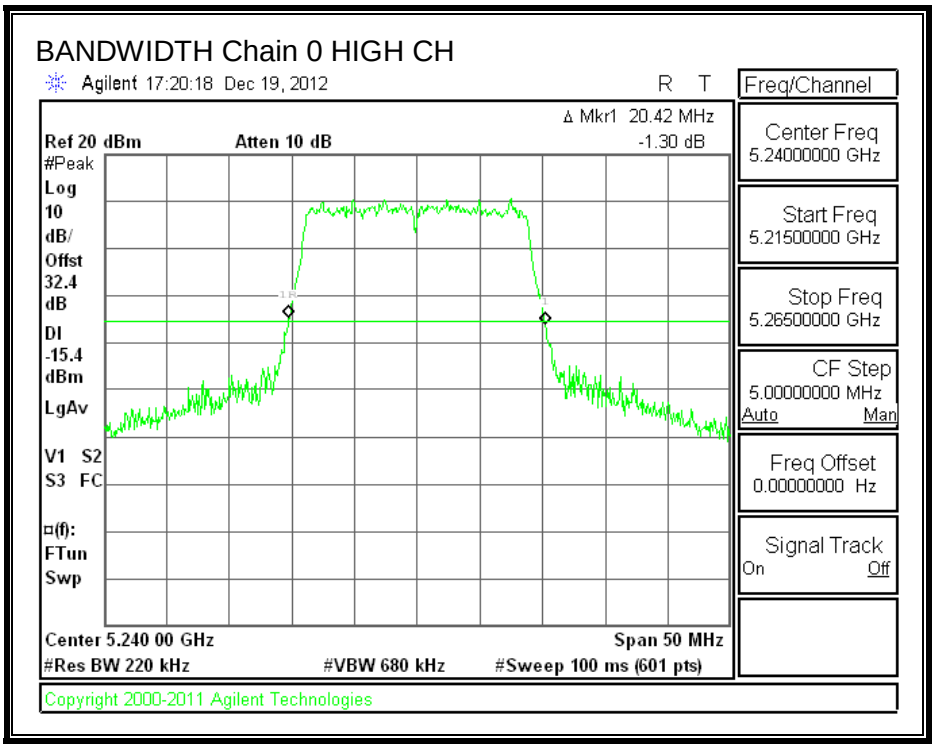
RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
Low	5180	20.42	20.58	20.33
Mid	5200	20.50	20.67	20.42
High	5240	20.42	21.00	20.42

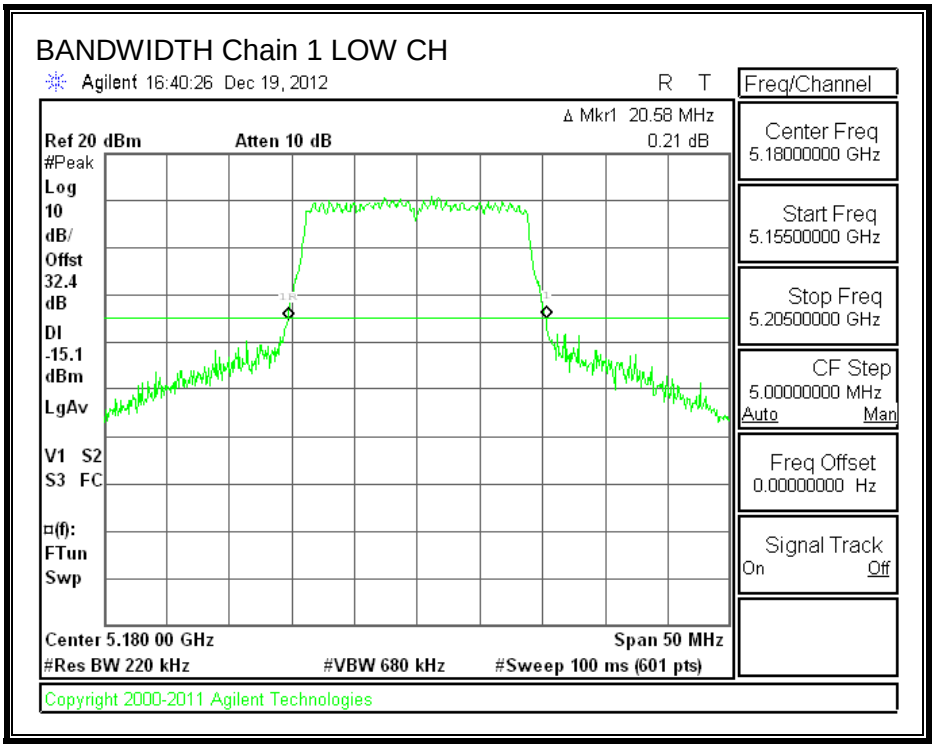
26 dB BANDWIDTH, Chain 0



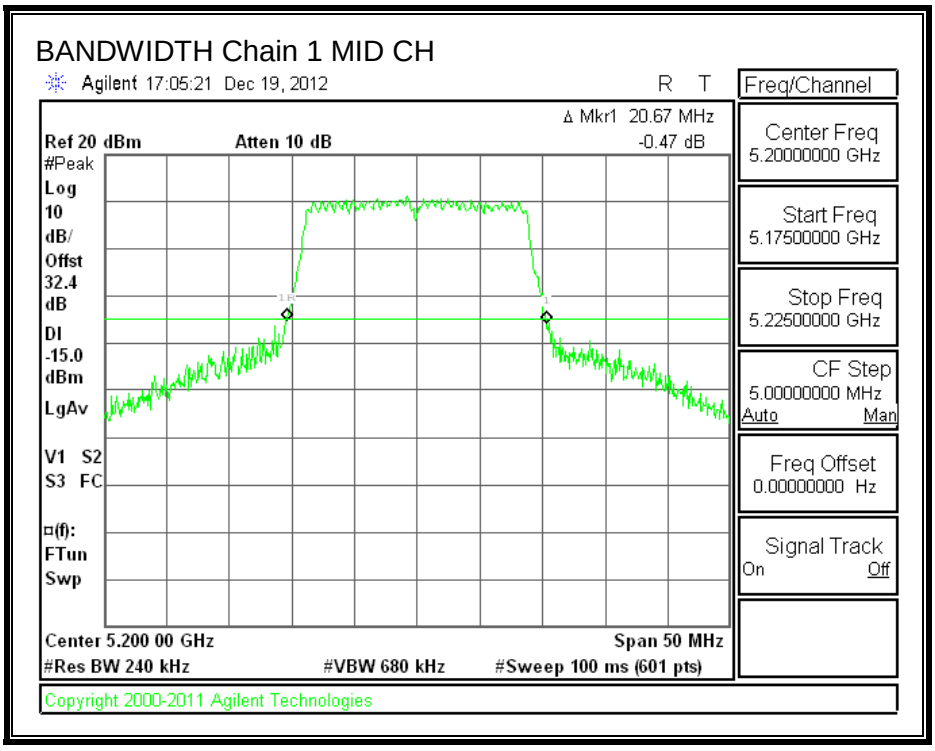




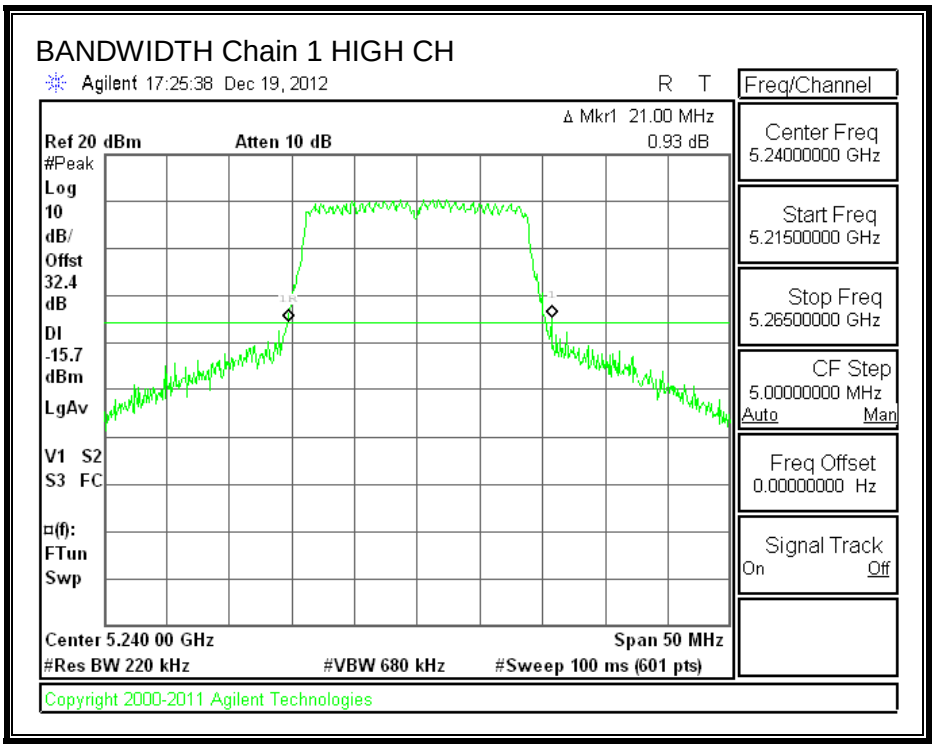
26 dB BANDWIDTH, Chain 1



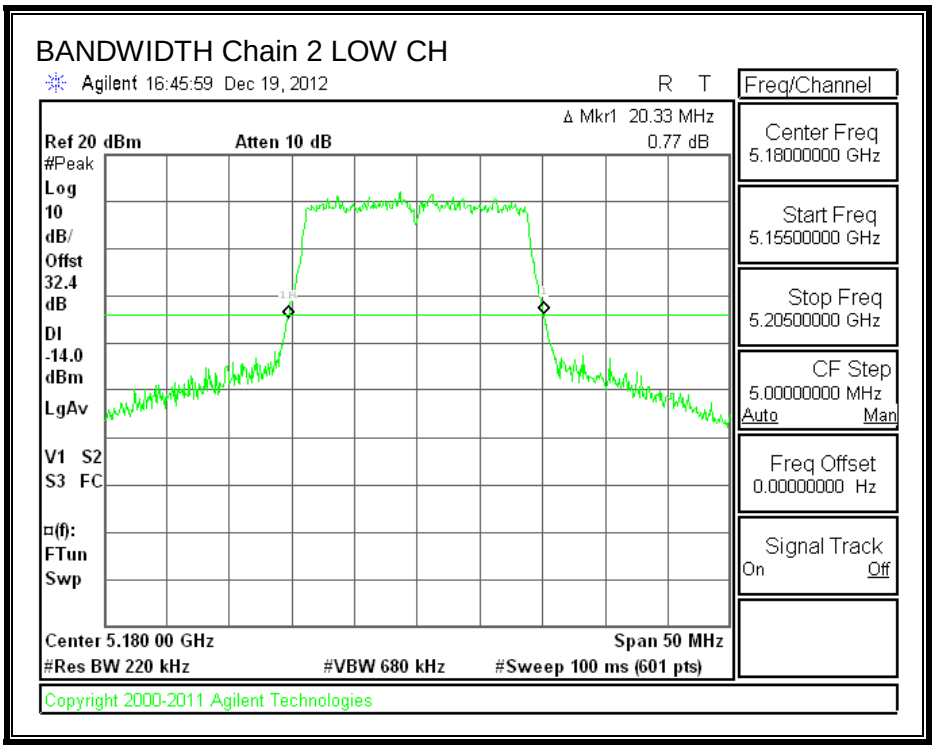
BANDWIDTH Chain 1 MID CH

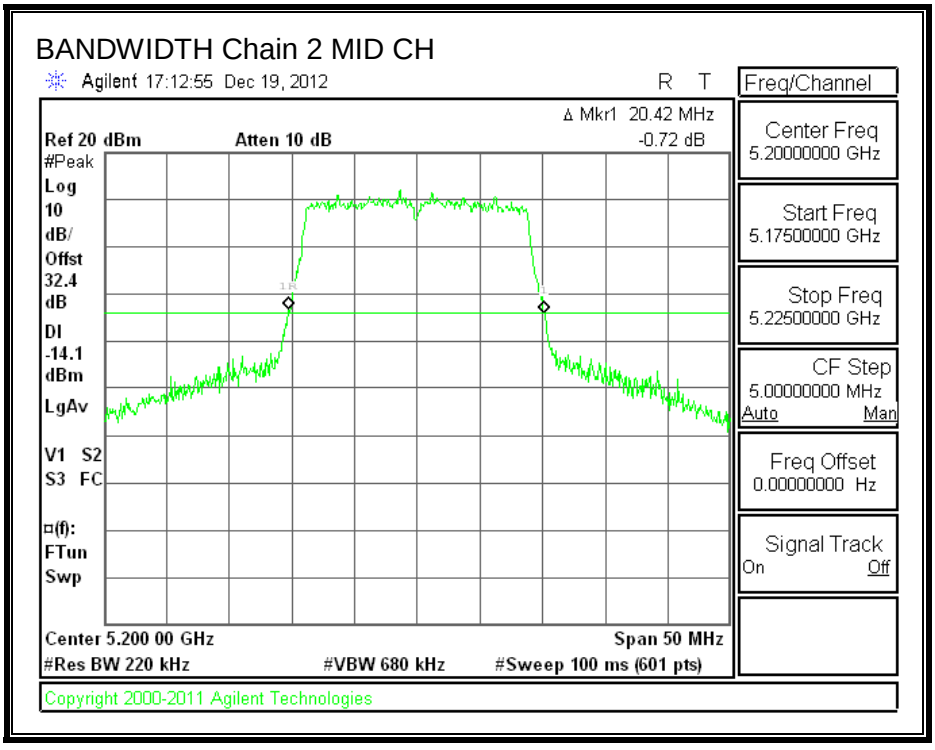


BANDWIDTH Chain 1 HIGH CH

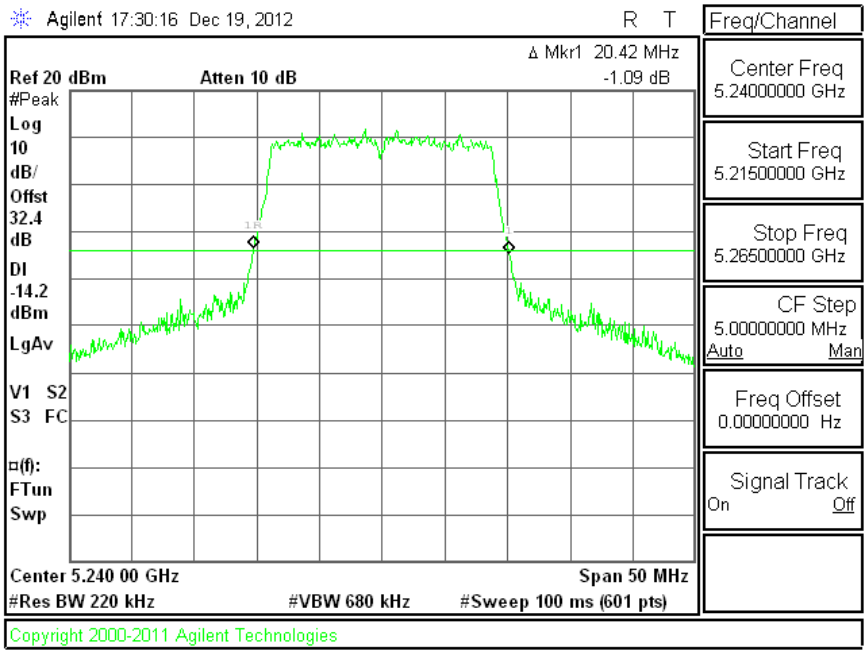


26 dB BANDWIDTH, Chain 2





BANDWIDTH Chain 2 HIGH CH



8.7.2. 99% BANDWIDTH

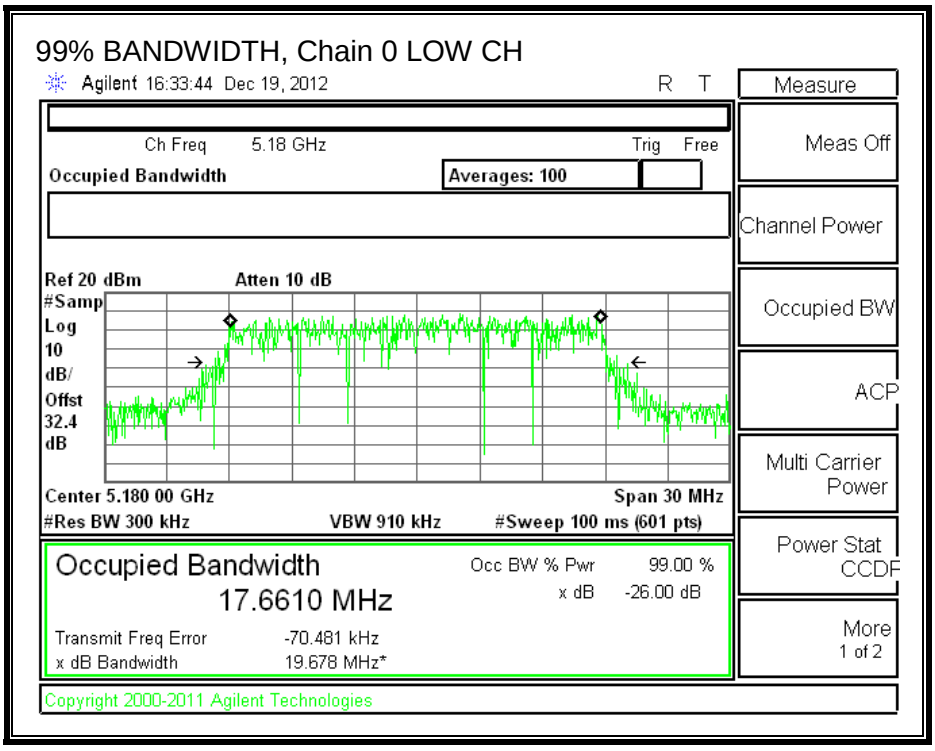
LIMITS

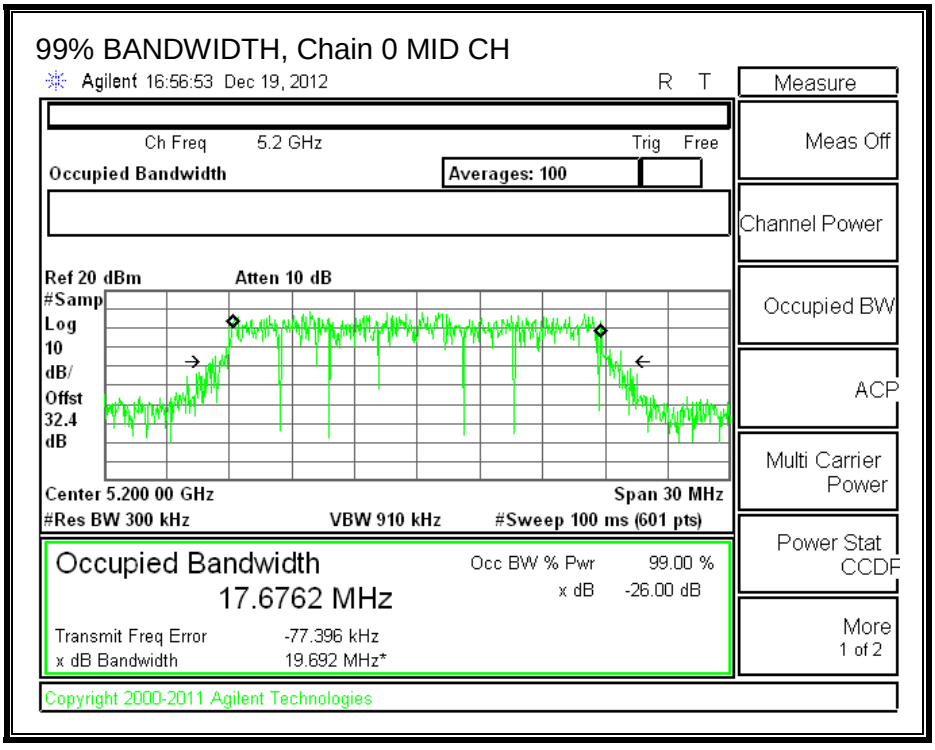
None; for reporting purposes only.

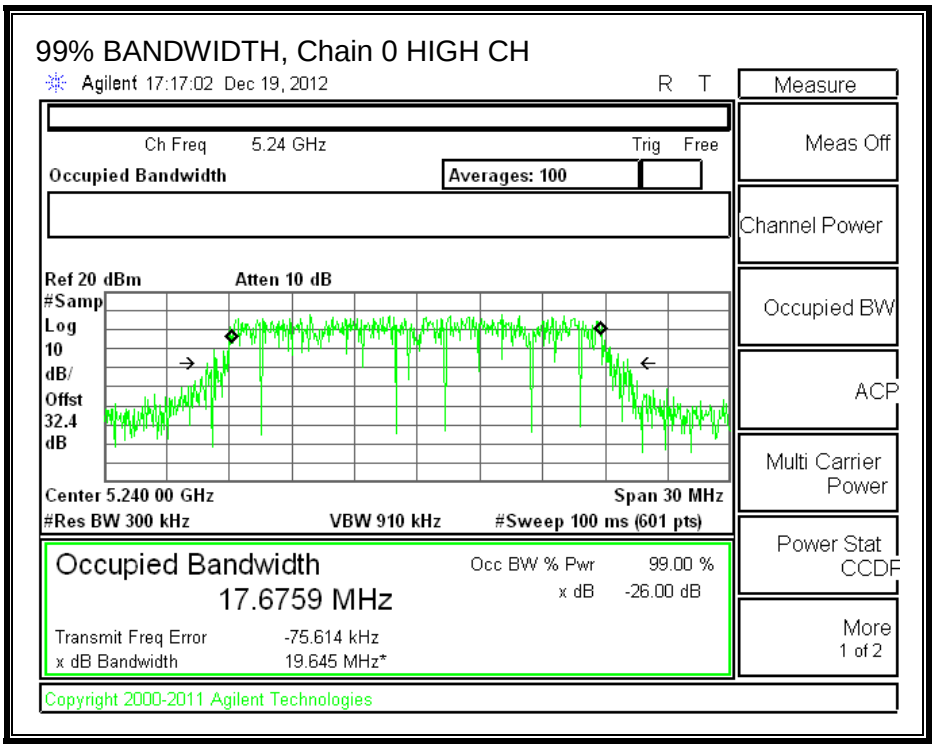
RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
Low	5180	17.6610	17.6940	17.6556
Mid	5200	17.6762	17.6872	17.6725
High	5240	17.6759	17.6865	17.6673

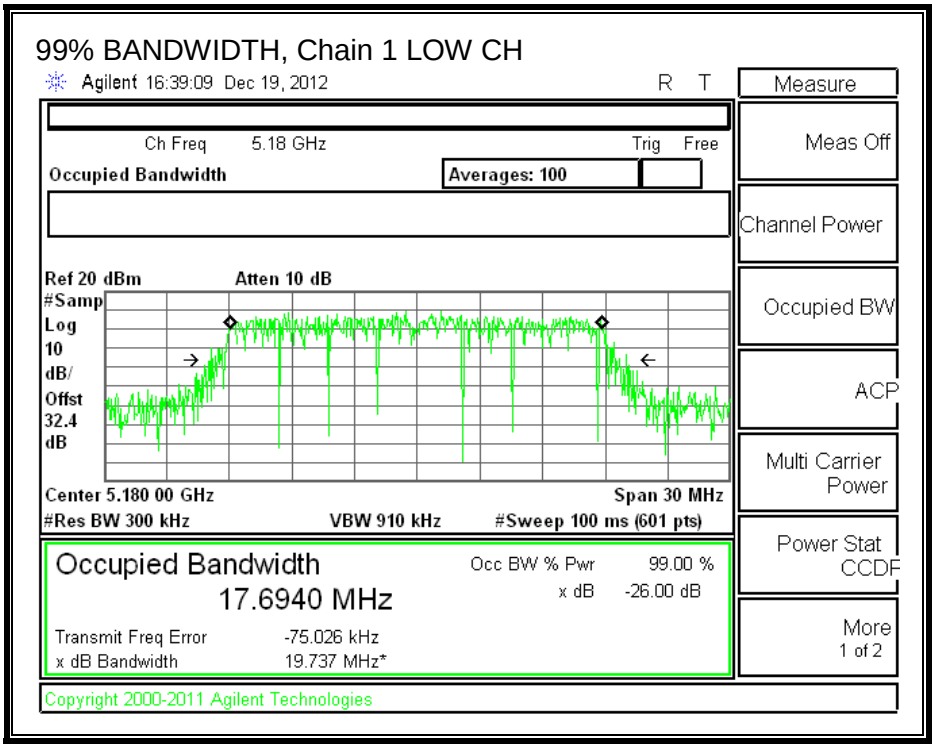
99% BANDWIDTH, Chain 0

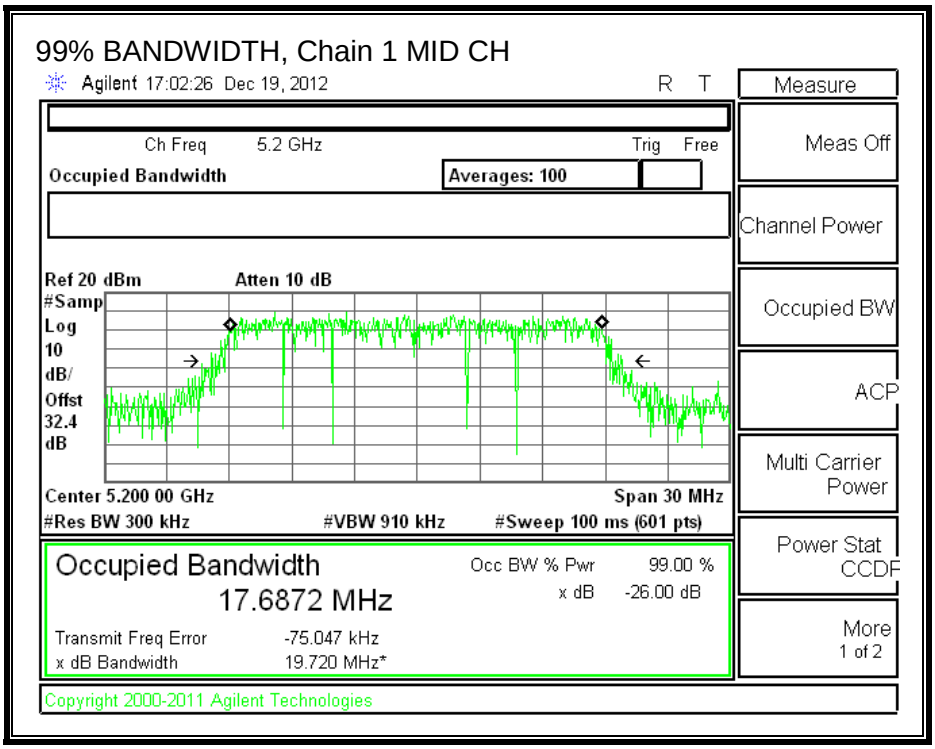


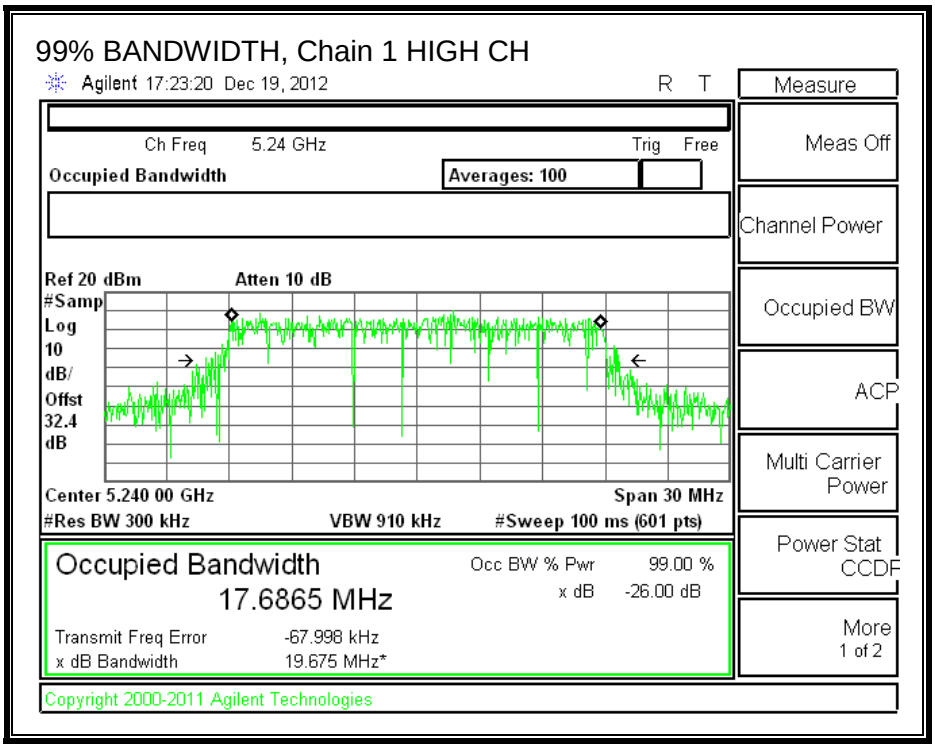




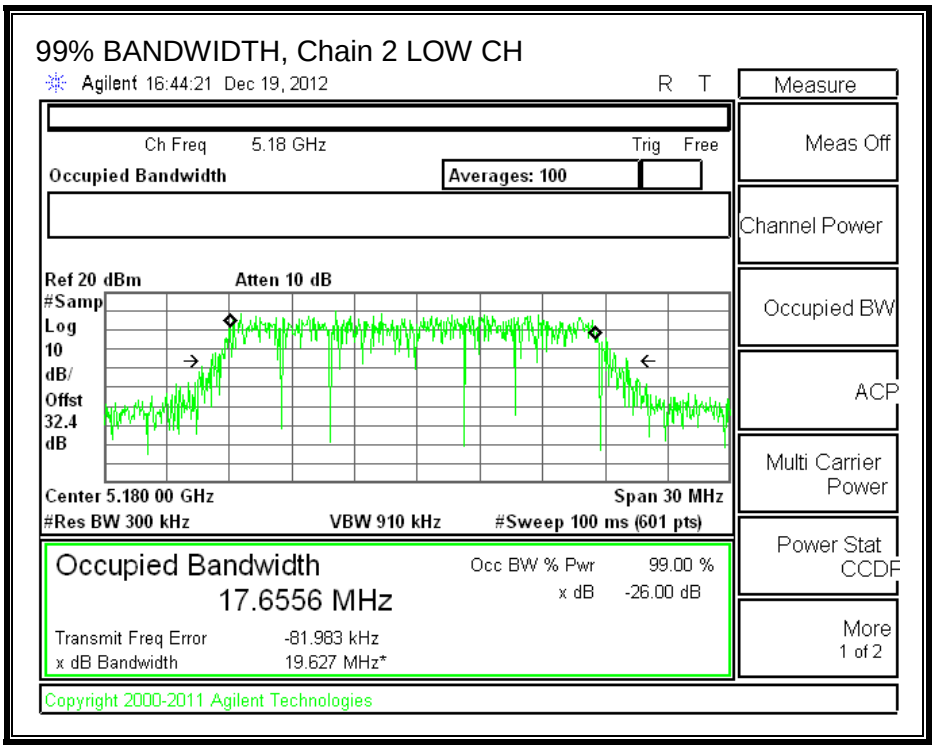
99% BANDWIDTH, Chain 1

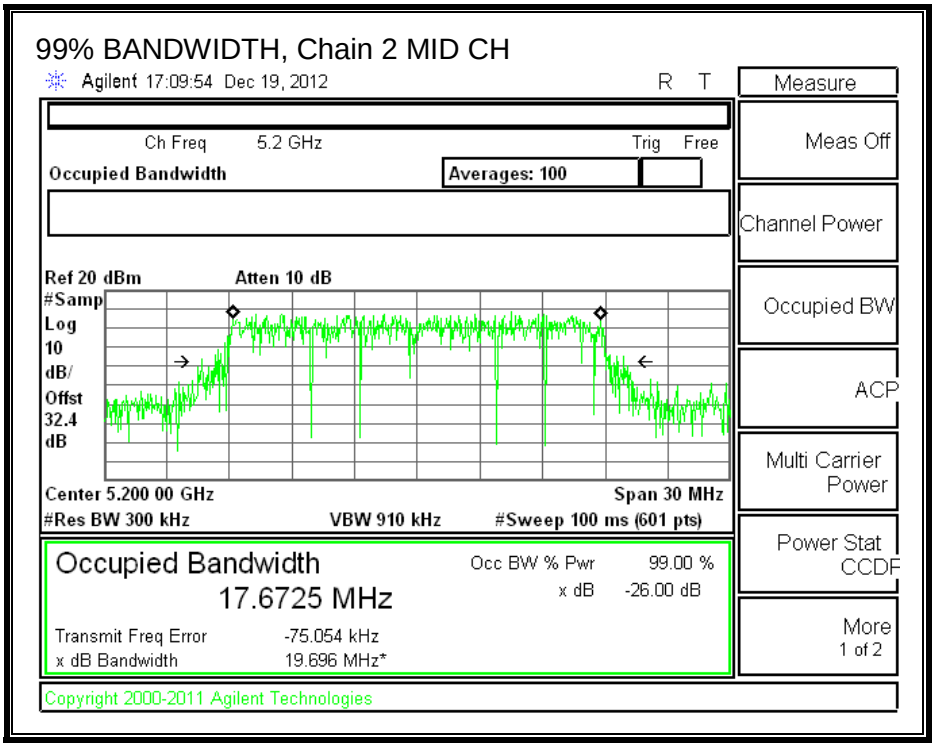


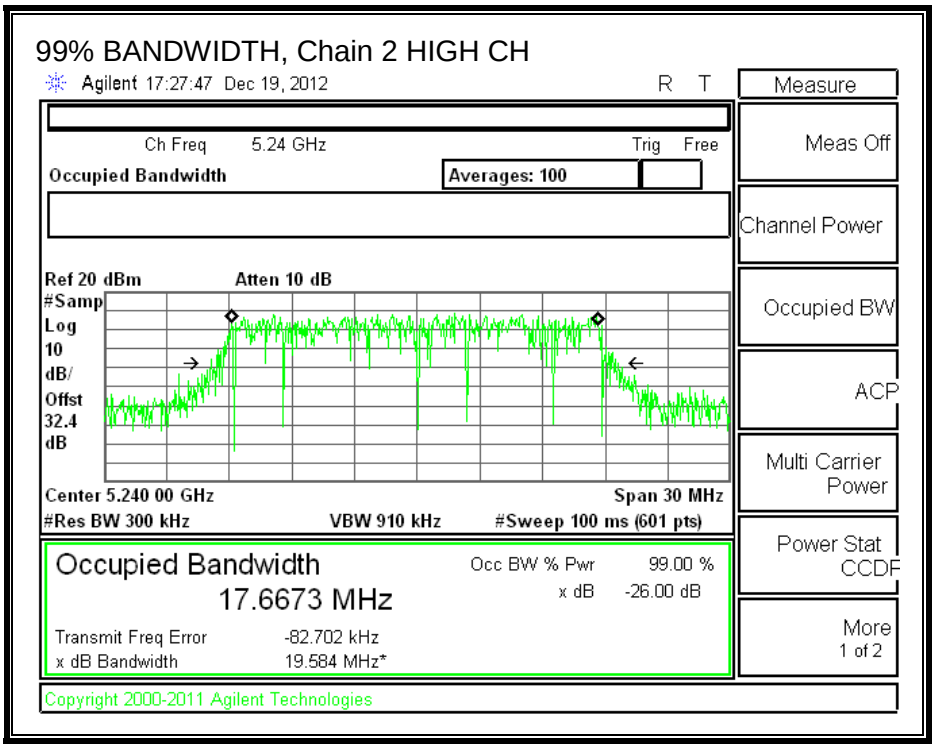




99% BANDWIDTH, Chain 2







8.7.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

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(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.20	1.40	2.20	2.33

RESULTS

Antenna Gain

Channel	Frequency (MHz)	Directio Gain (dBi)
Low	5180	2.33
Mid	5200	2.33
High	5240	2.33

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	FCC PSD Limit (dBm)
Low	5180	30.00	17.00
Mid	5200	30.00	17.00
High	5240	30.00	17.00

Duty Cycle CF (dB)	0.00	

Output Power Results

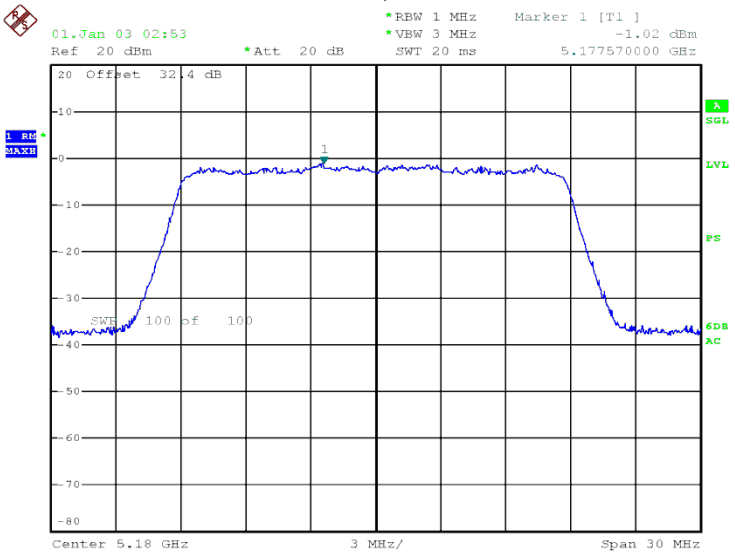
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	9.00	8.95	8.96	13.74	30.00	-16.26
Mid	5200	8.90	8.95	8.86	13.67	30.00	-16.33
High	5240	9.40	9.10	8.96	13.93	30.00	-16.07

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Chain 2 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5180	-1.02	-0.95	-0.92	3.81	17.00	-13.19
Mid	5200	-1.05	-0.93	-0.95	3.79	17.00	-13.21
High	5240	-0.68	-1.24	-1.35	3.69	17.00	-13.31

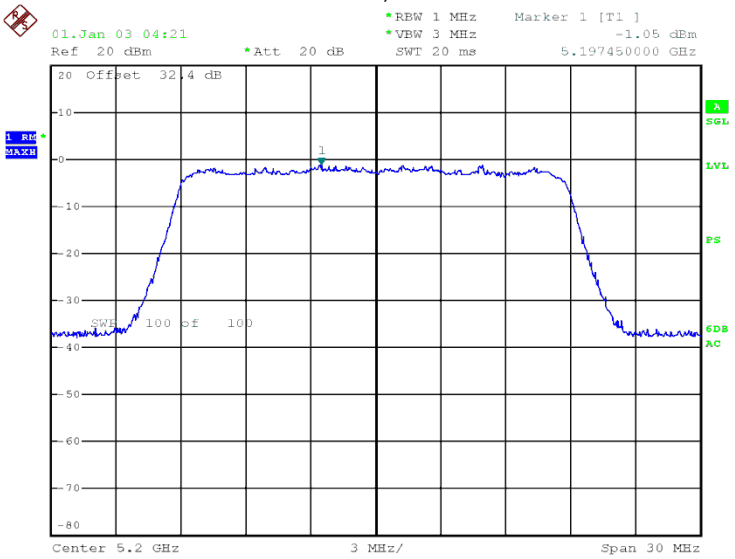
OUTPUT POWER AND PSD, Chain 0

OUTPUT POWER AND PSD, Chain 0 LOW CH

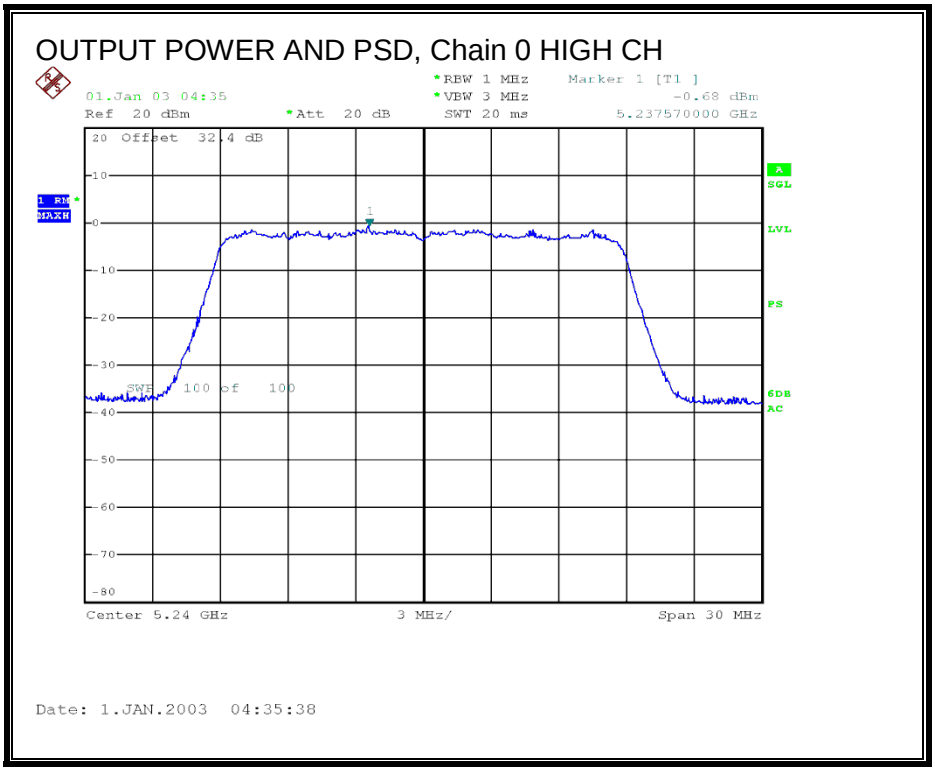


Date: 1.JAN.2003 02:53:07

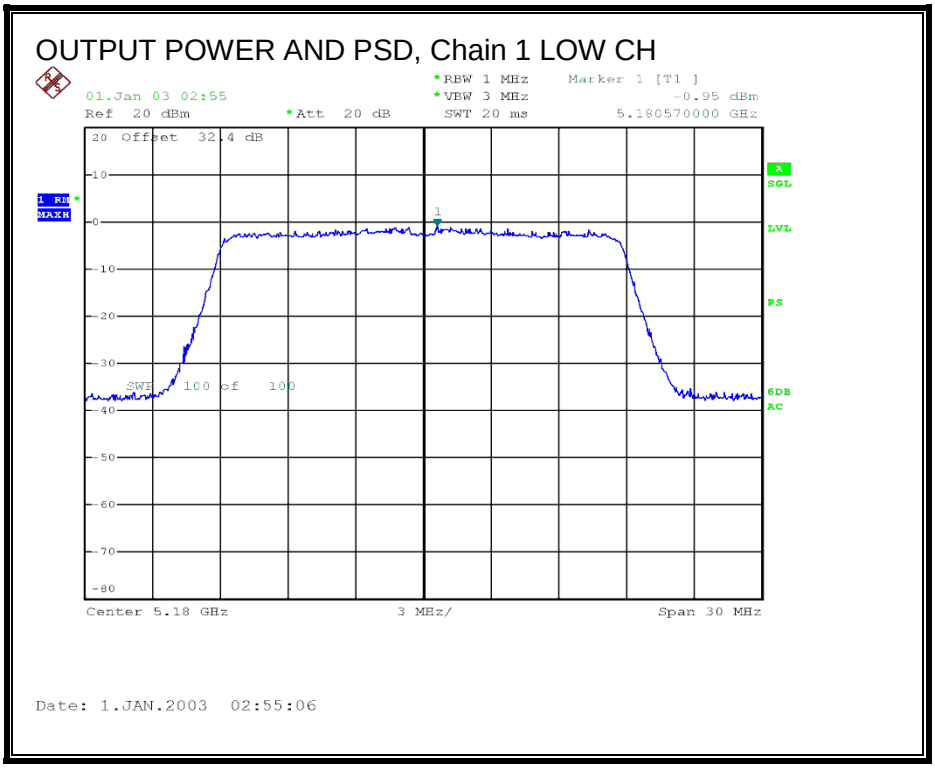
OUTPUT POWER AND PSD, Chain 0 MID CH



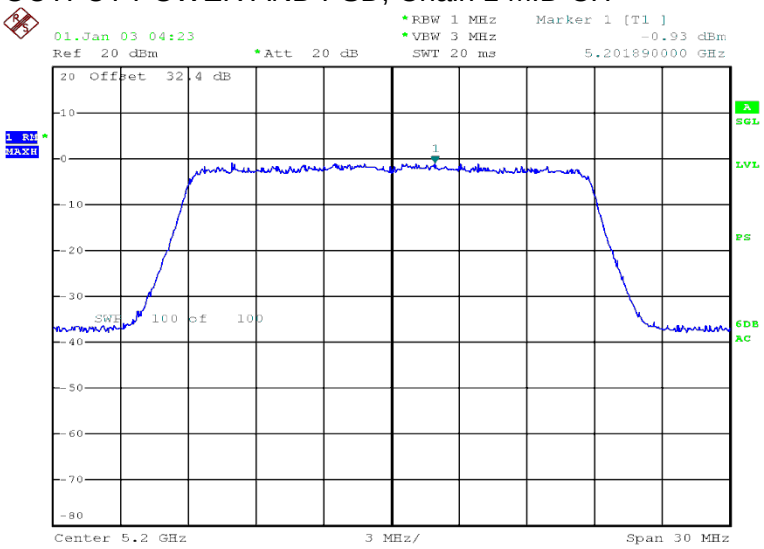
Date: 1.JAN.2003 04:21:12



OUTPUT POWER AND PSD, Chain 1

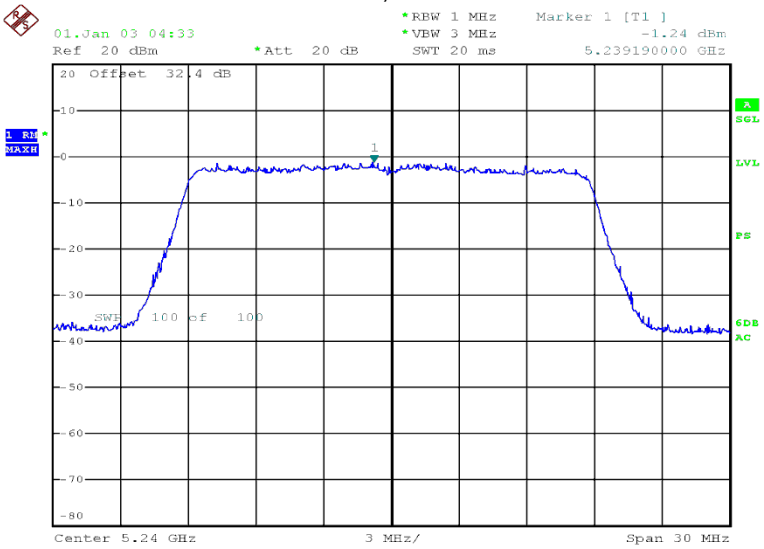


OUTPUT POWER AND PSD, Chain 1 MID CH



Date: 1.JAN.2003 04:23:40

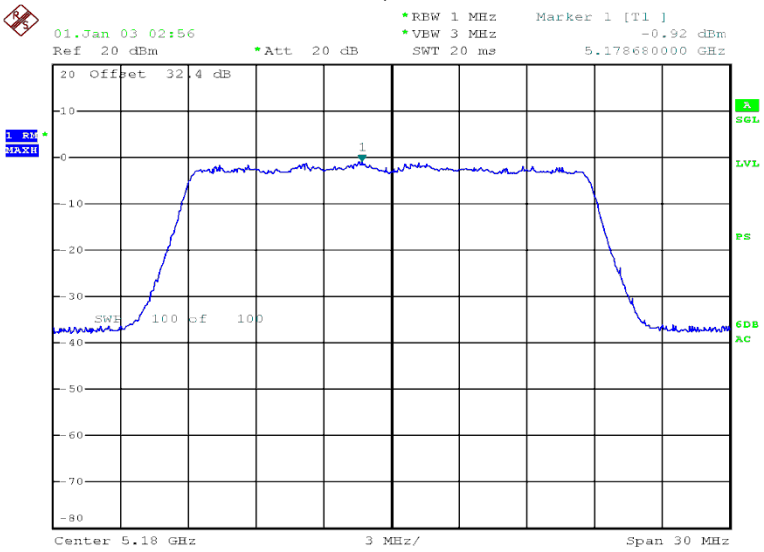
OUTPUT POWER AND PSD, Chain 1 HIGH CH



Date: 1.JAN.2003 04:33:58

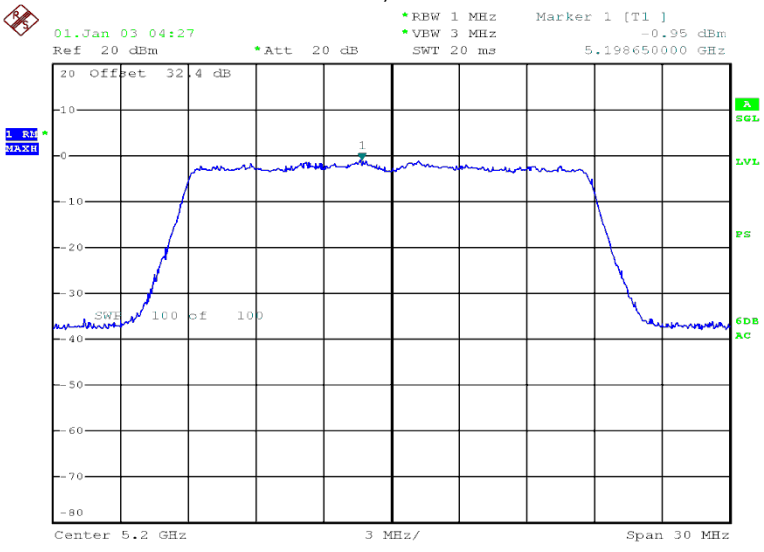
OUTPUT POWER AND PSD, Chain 2

OUTPUT POWER AND PSD, Chain 2 LOW CH



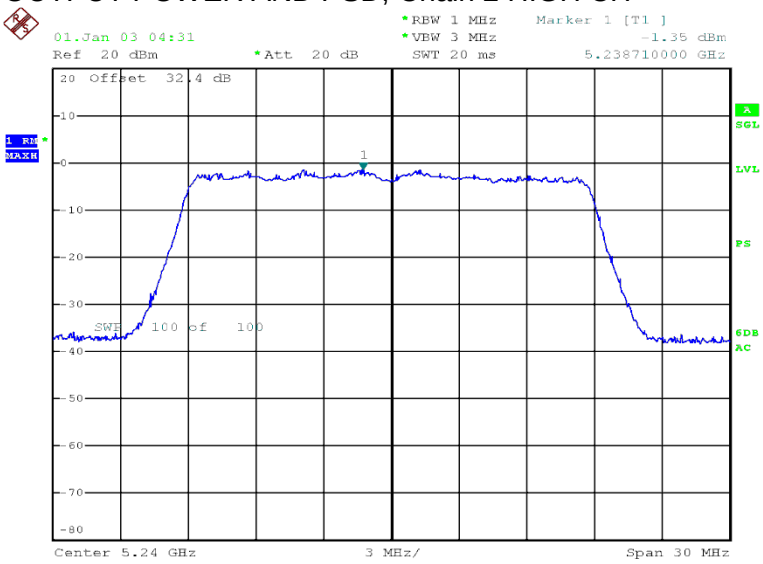
Date: 1.JAN.2003 02:56:50

OUTPUT POWER AND PSD, Chain 2 MID CH



Date: 1.JAN.2003 04:27:06

OUTPUT POWER AND PSD, Chain 2 HIGH CH



Date: 1.JAN.2003 04:31:45

8.8. 802.11n HT40 1TX MODE IN THE 5.2 GHz BAND

8.8.1. 26 dB BANDWIDTH

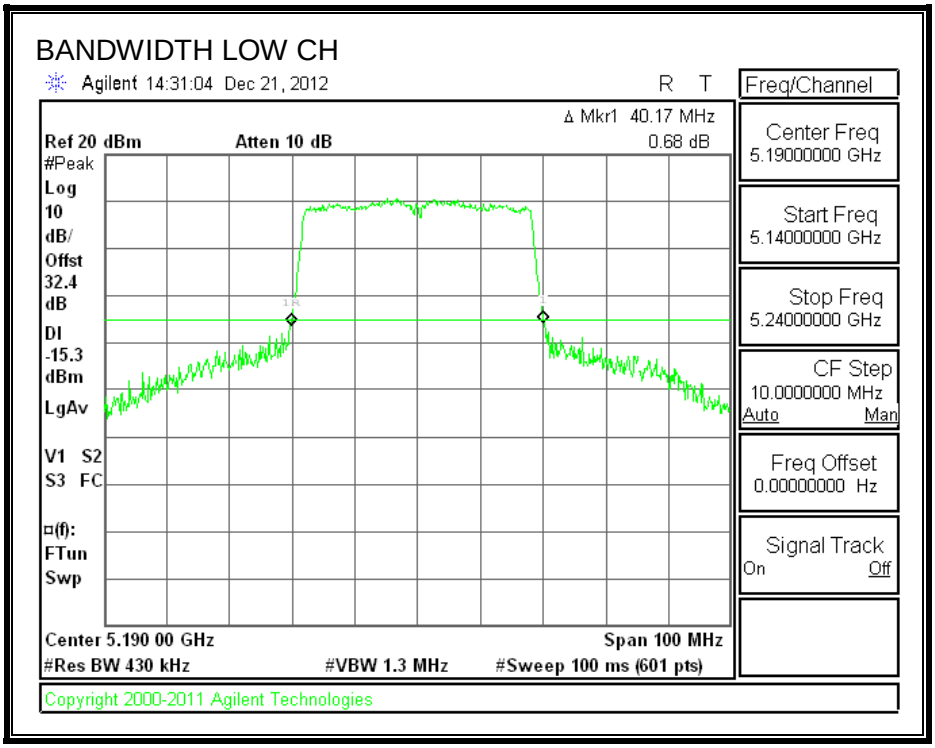
LIMITS

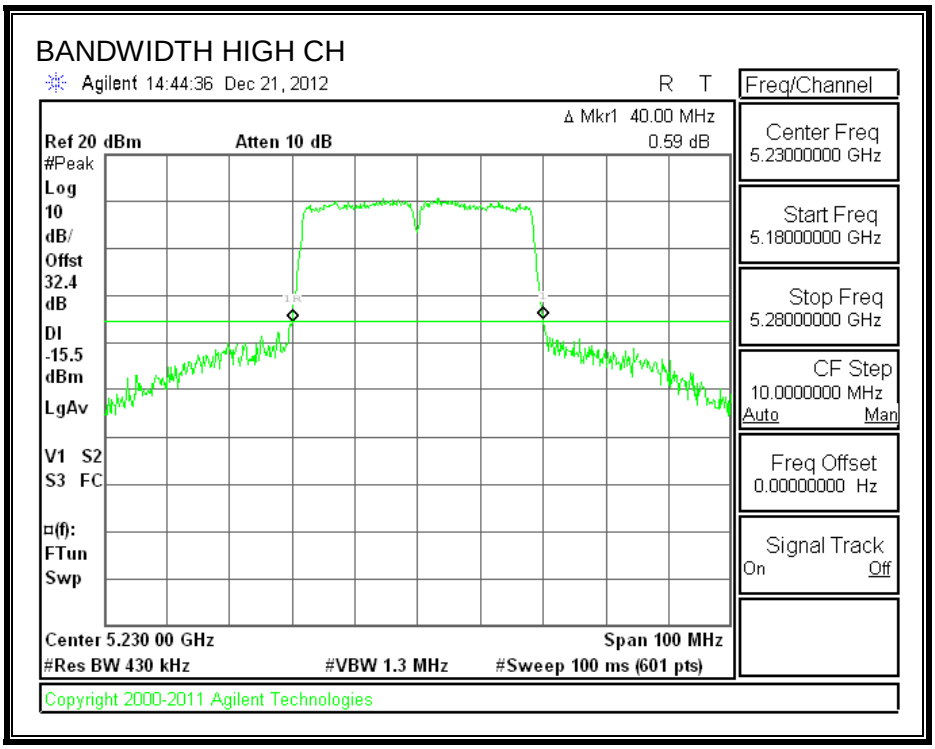
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5190	40.17
High	5230	40.00

26 dB BANDWIDTH





8.8.2. 99% BANDWIDTH

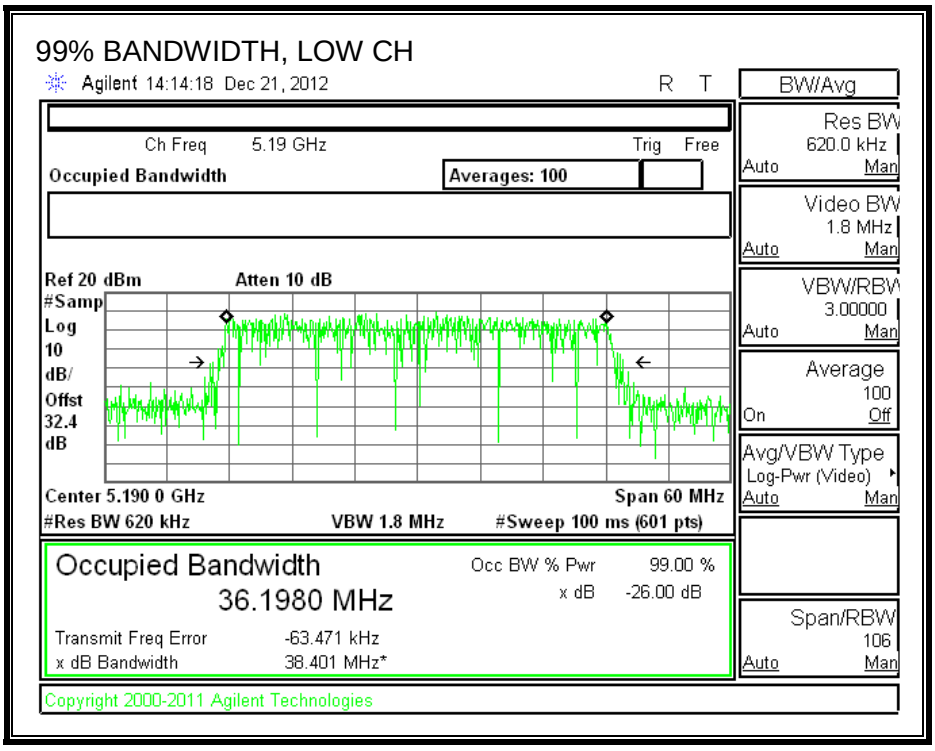
LIMITS

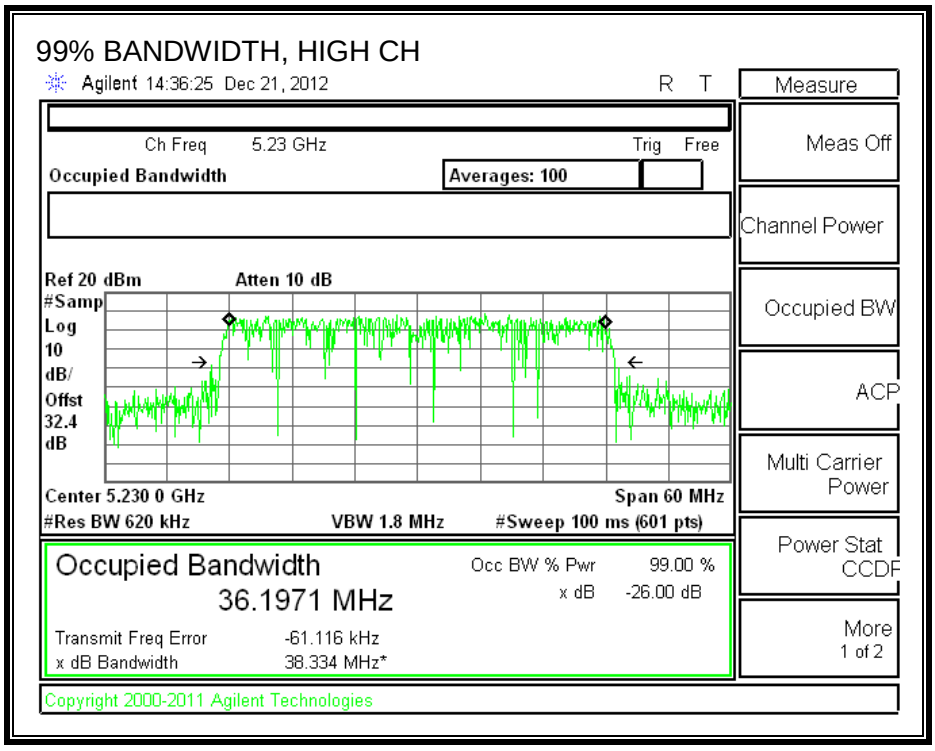
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5190	36.1980
High	5230	36.1971

99% BANDWIDTH





8.8.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

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

RESULTS

Antenna Gain

Channel	Frequency (MHz)	Directio Gain (dBi)
Low	5190	3.20
High	5230	3.20

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	FCC PSD Limit (dBm)
Low	5190	30.00	17.00
High	5230	30.00	17.00

Duty Cycle CF (dB)	0.00	

Output Power Results

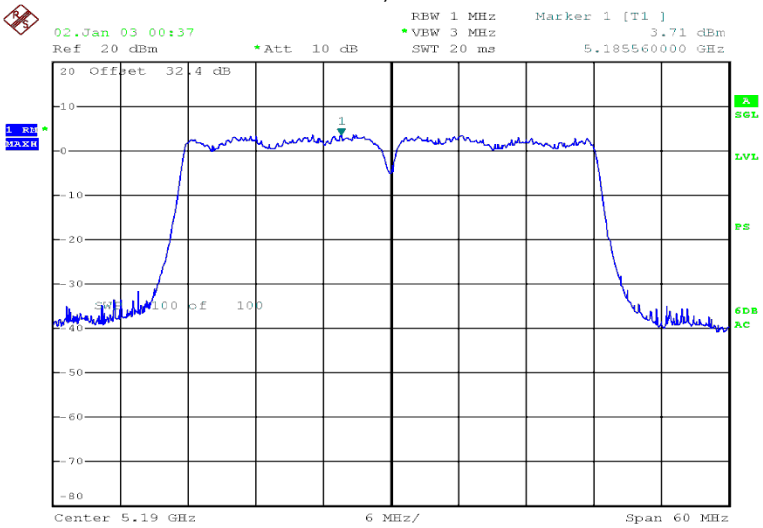
Channel	Frequency (MHz)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5190	15.00	15.00	30.00	-15.00
High	5230	16.50	16.50	30.00	-13.50

PSD Results

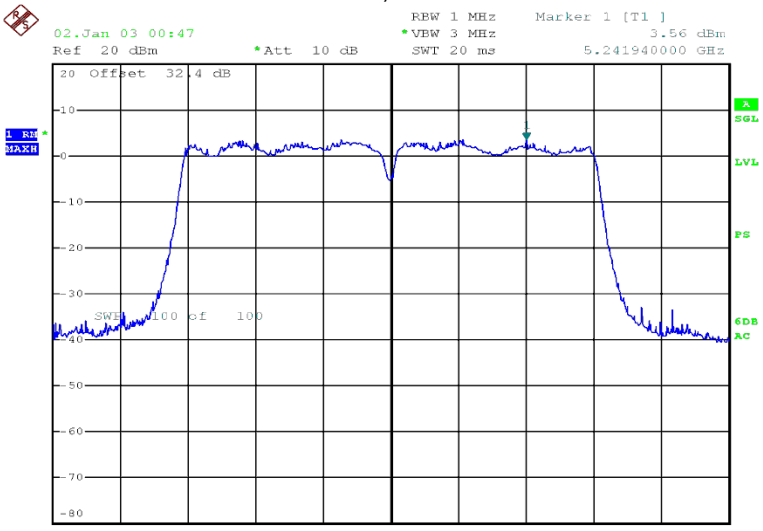
Channel	Frequency (MHz)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5190	3.71	3.71	17.00	-13.29
High	5230	3.56	3.56	17.00	-13.44

OUTPUT POWER AND PSD, Chain 1

OUTPUT POWER AND PSD, Chain 0 LOW CH



OUTPUT POWER AND PSD, Chain 0 HIGH CH



8.9. 802.11n HT40 CDD 2TX MODE IN THE 5.2 GHz BAND

8.9.1. 26 dB BANDWIDTH

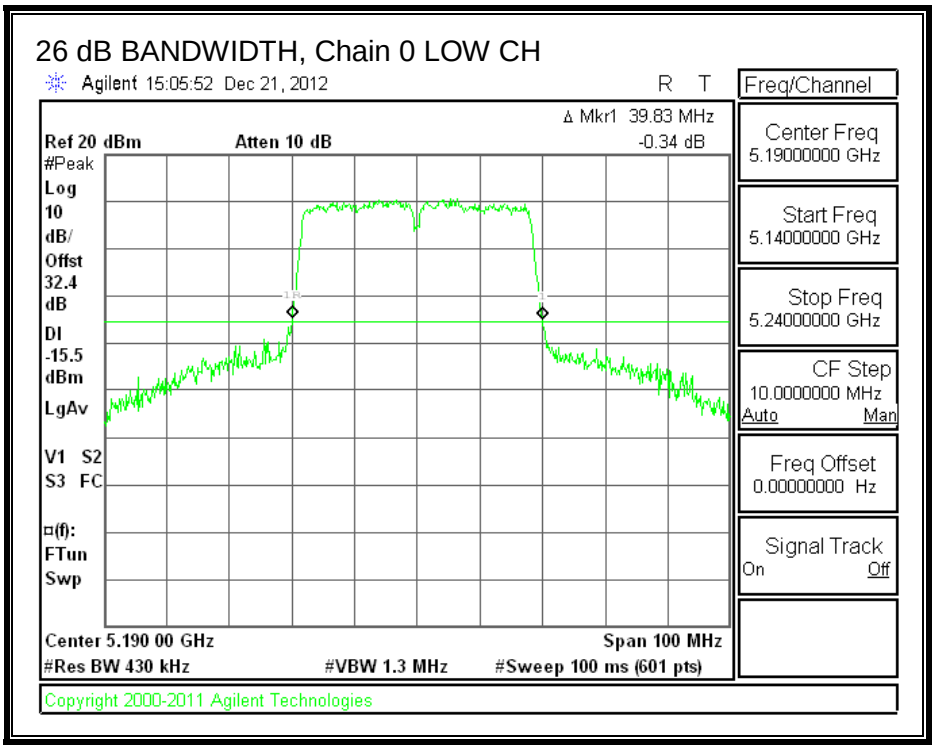
LIMITS

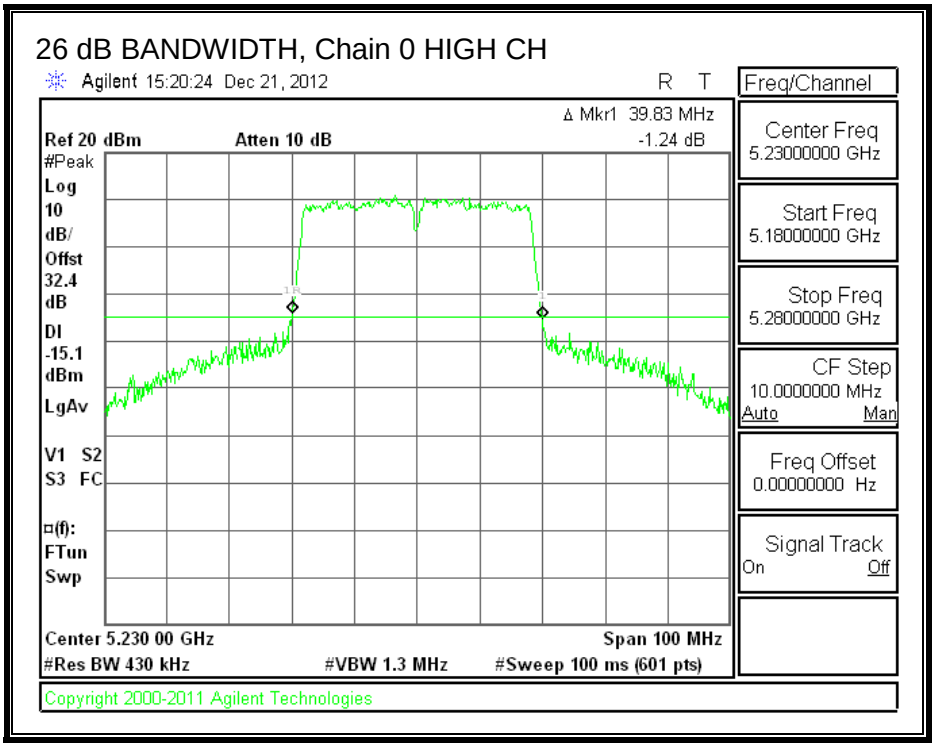
None; for reporting purposes only.

RESULTS

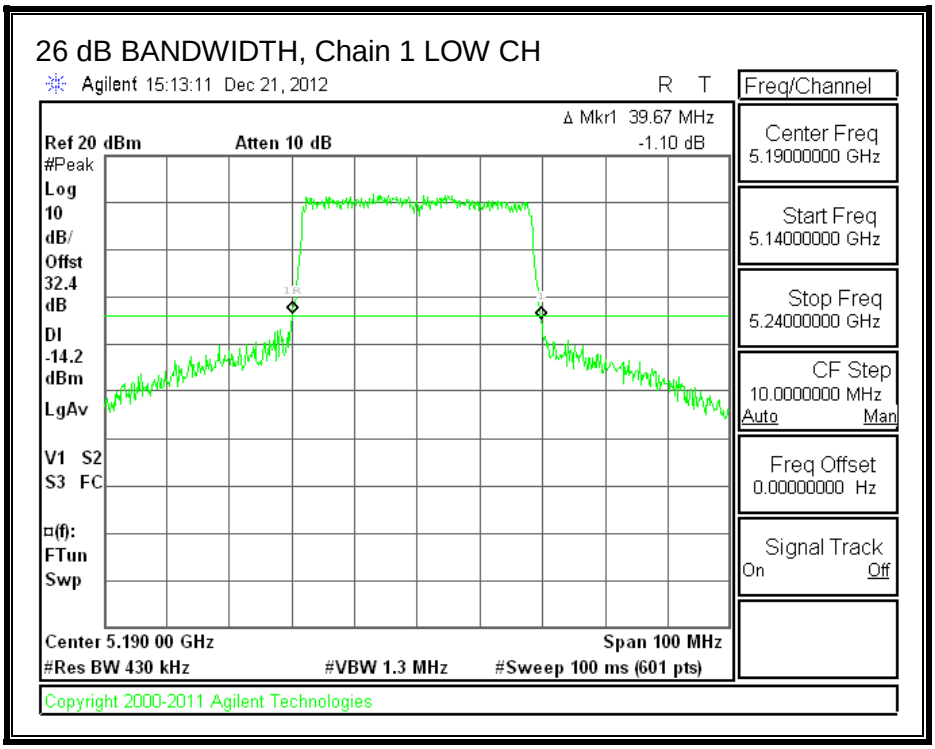
Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Low	5190	39.83	39.67
High	5230	39.83	39.50

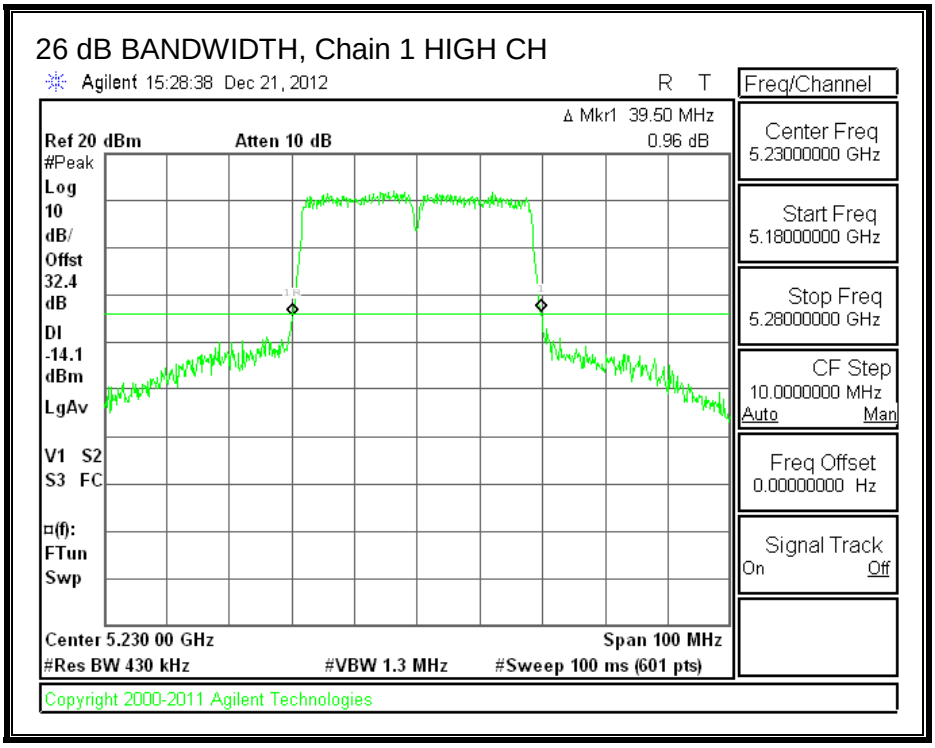
26 dB BANDWIDTH, Chain 0





26 dB BANDWIDTH, Chain 1





8.9.2. 99% BANDWIDTH

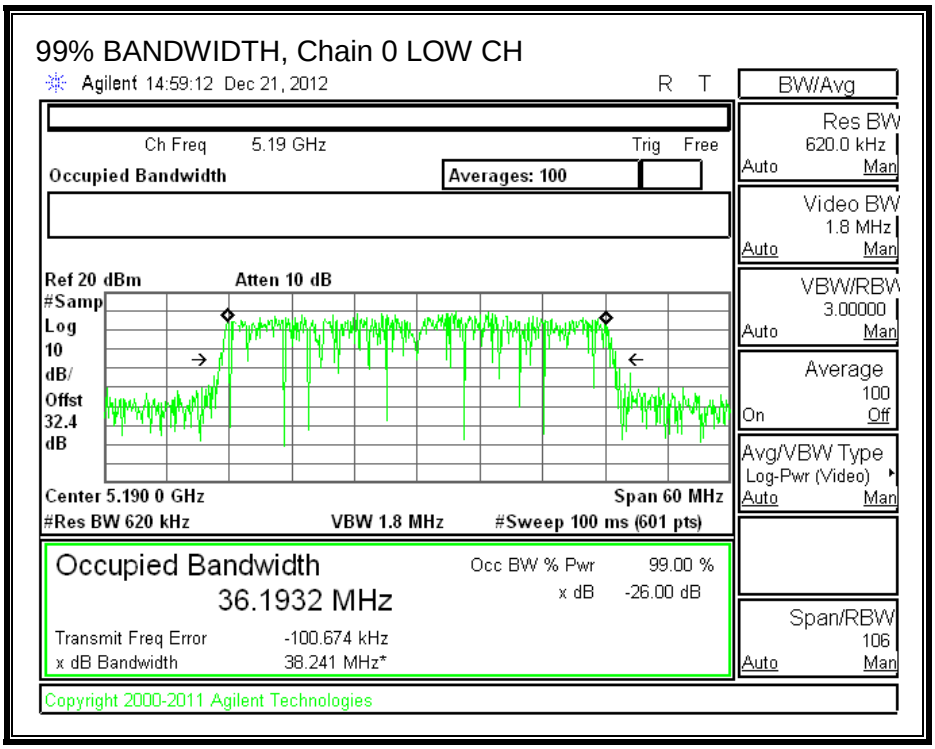
LIMITS

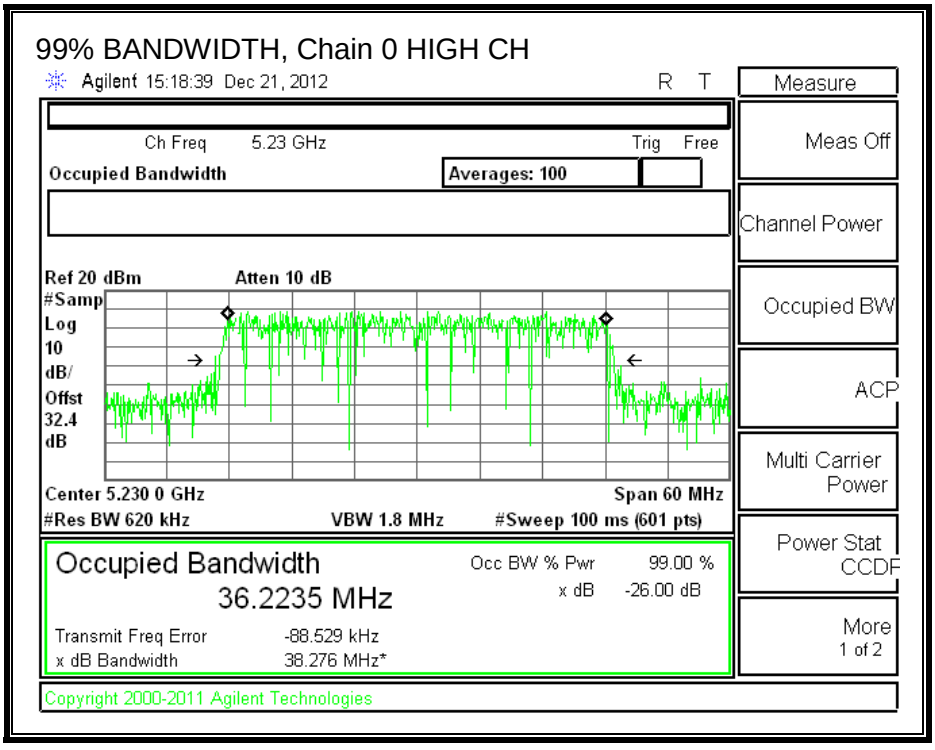
None; for reporting purposes only.

RESULTS

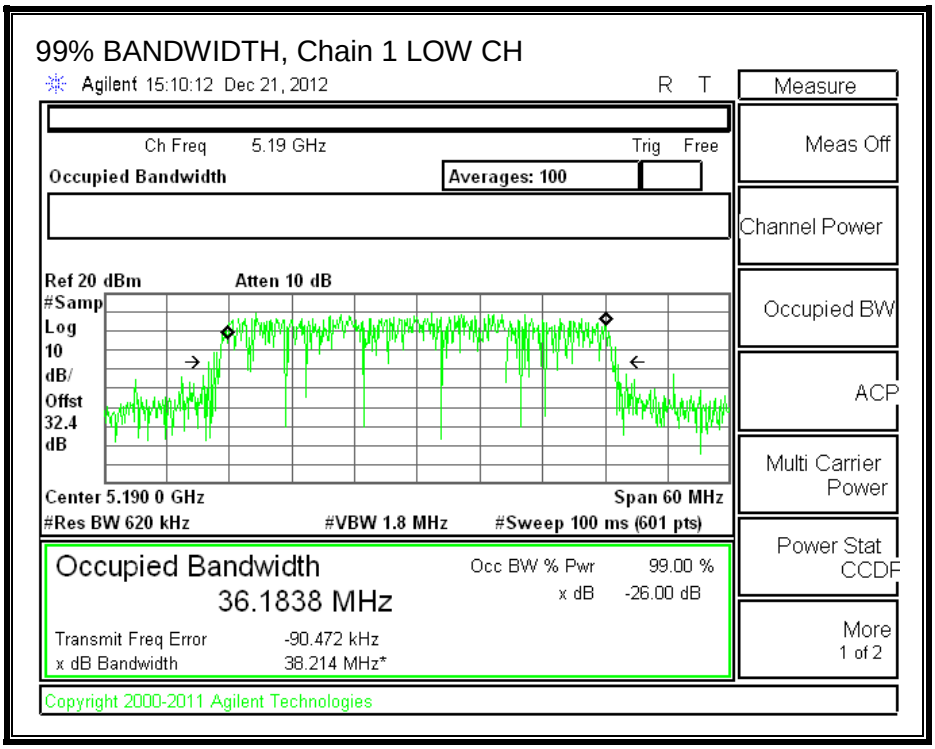
Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	5190	36.1932	36.1838
High	5230	36.2235	36.2197

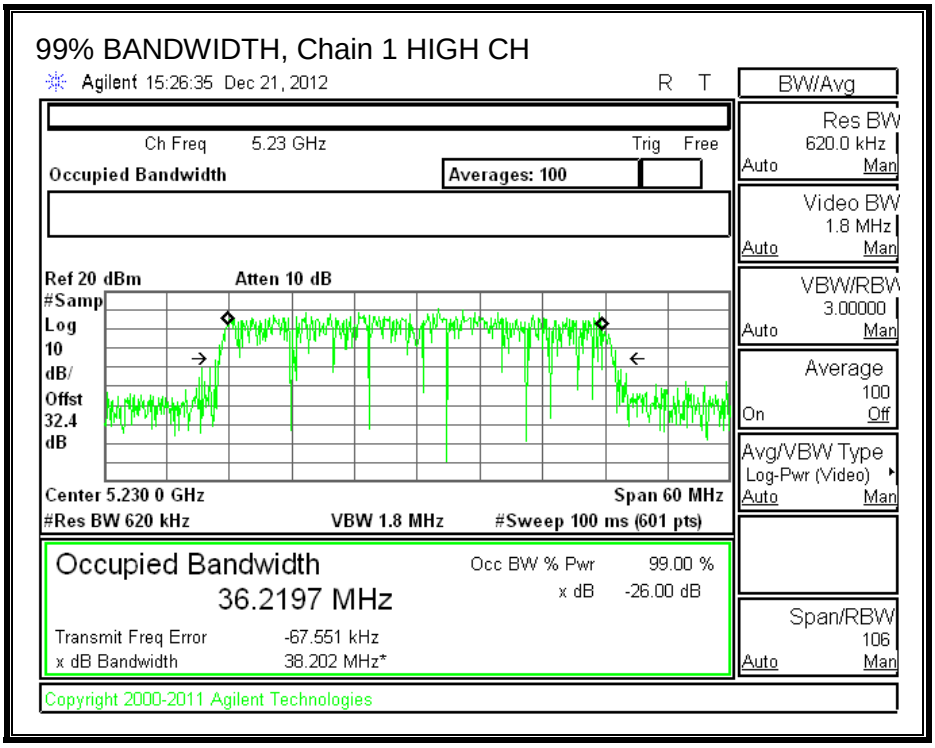
99% BANDWIDTH, Chain 0





99% BANDWIDTH, Chain 1





8.9.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

For output power, the two chains are considered uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.20	2.20	2.73

For PSD, the two chains are considered correlated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.20	2.20	5.72

RESULTS

Antenna Gain

Channel	Frequency (MHz)	Correlat Directio Gain (dBi)	Correlat Directio Gain (dBi)
Low	5190	5.72	2.73
High	5230	5.72	2.73

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	FCC PSD Limit (dBm)
Low	5190	30.00	17.00
High	5230	30.00	17.00

Duty Cycle CF (dB)	0.00	

Output Power Results

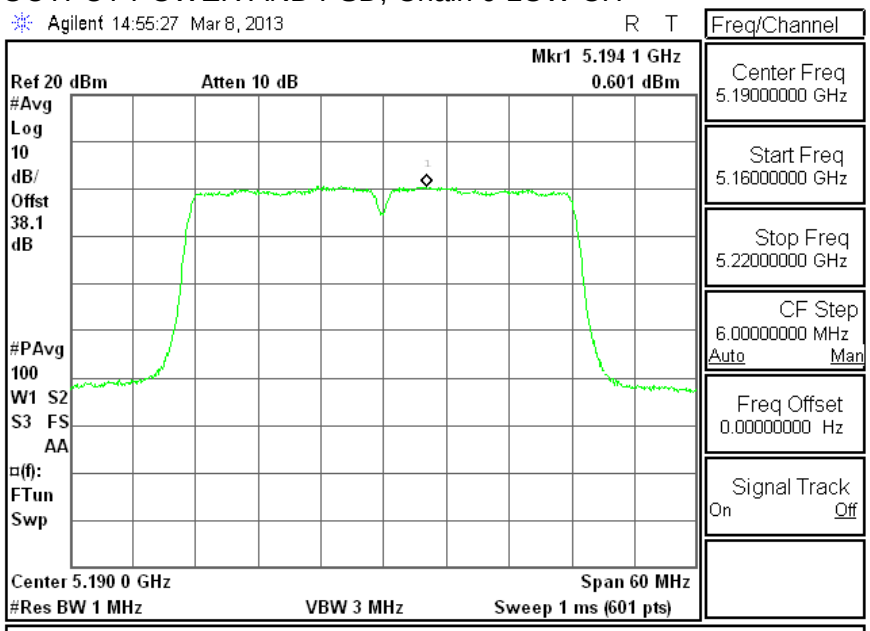
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5190	12.80	12.50	15.66	30.00	-14.34
High	5230	12.70	12.80	15.76	30.00	-14.24

PSD Results

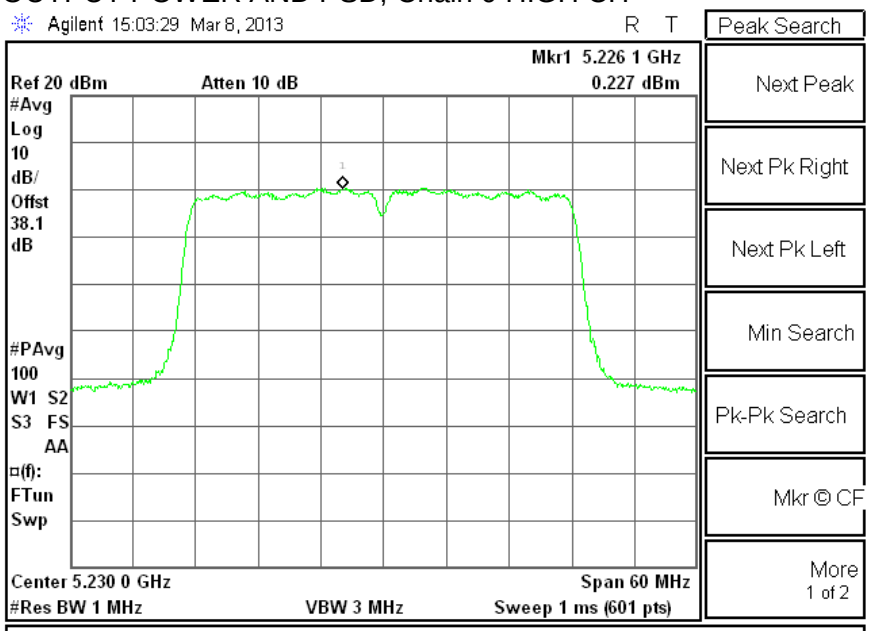
Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5190	0.601	0.682	3.65	17.00	-13.35
High	5230	0.227	0.019	3.13	17.00	-13.87

OUTPUT POWER AND PSD, Chain 0

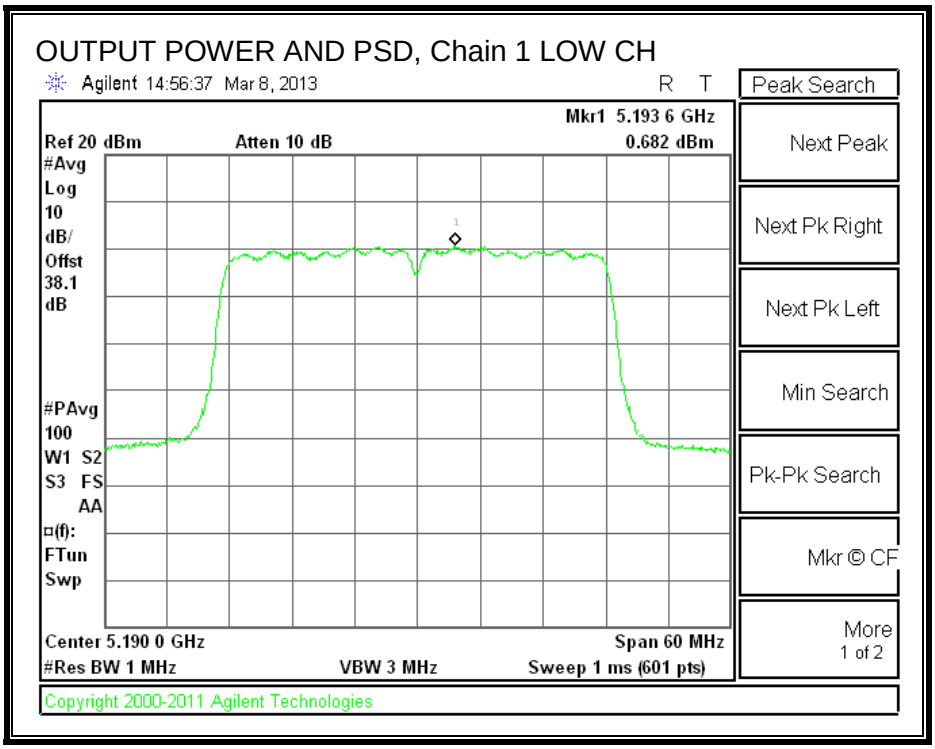
OUTPUT POWER AND PSD, Chain 0 LOW CH

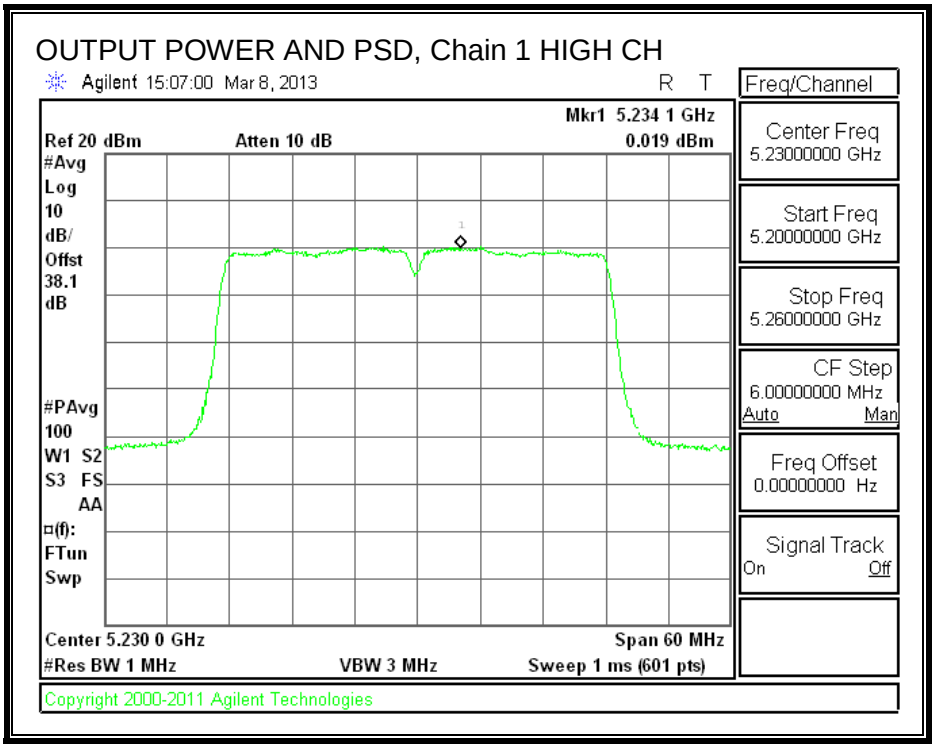


OUTPUT POWER AND PSD, Chain 0 HIGH CH



OUTPUT POWER AND PSD, Chain 1





8.10. 802.11n HT40 BF 2TX MODE IN THE 5.2 GHz BAND

Covered by testing HT40 CDD 2TX mode, the power per chain used for HT40 CDD 2TX mode is the same power per chain that will be used for HT40 BF 2TX mode. However, since BF is correlated and CDD is uncorrelated for output power, the section below for output power using correlated AG for this BF mode shows it is still compliant.

8.10.1. OUTPUT AVERAGE POWER

LIMITS

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

For output power, the two chains are considered correlated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.20	2.20	5.72

RESULTS

Antenna Gain

Channel	Frequency (MHz)	Correlat Directio Gain (dBi)
Low	5190	5.72
High	5230	5.72

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)
Low	5190	30.00
High	5230	30.00

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5190	12.80	12.50	15.66	30.00	-14.34
High	5230	12.70	12.80	15.76	30.00	-14.24

8.11. 802.11n HT40 STBC 2TX MODE IN THE 5.2 GHz BAND

8.11.1. 26 dB BANDWIDTH

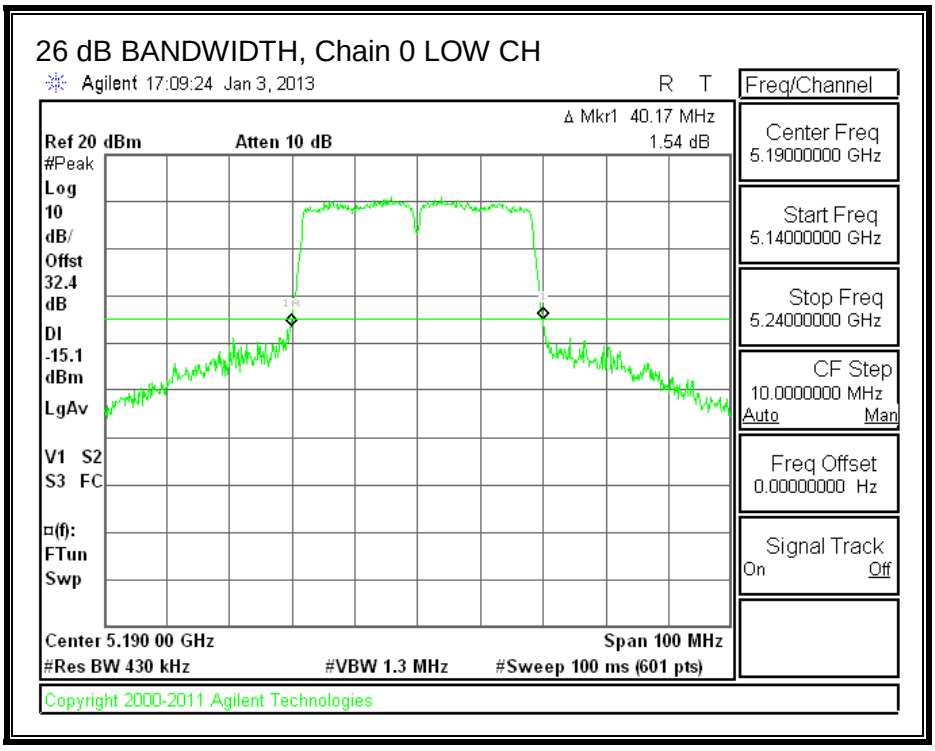
LIMITS

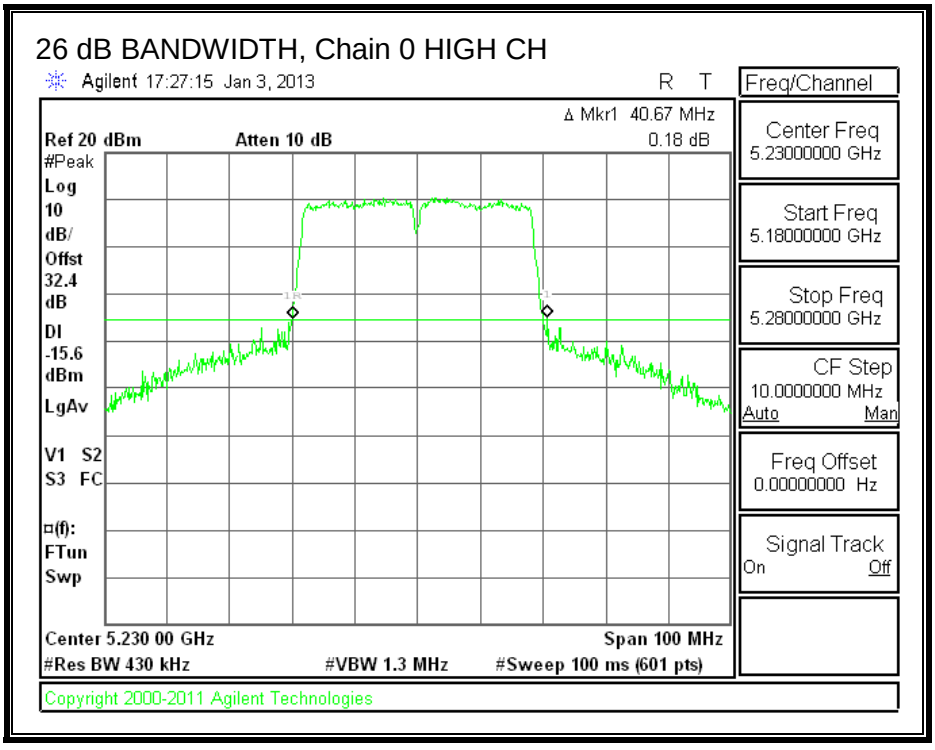
None; for reporting purposes only.

RESULTS

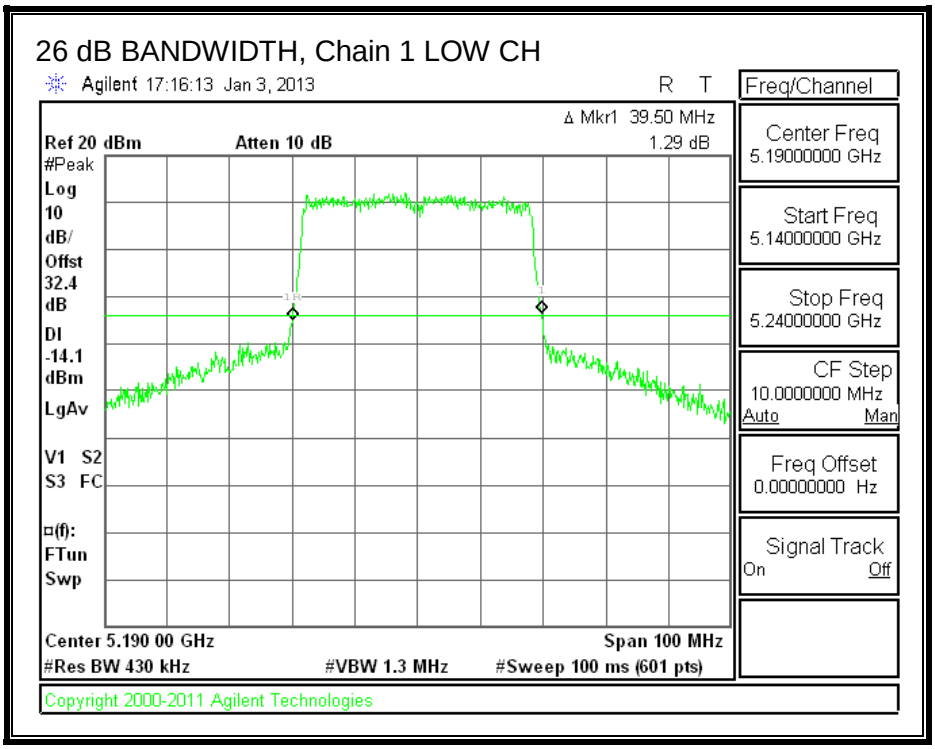
Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Low	5190	40.17	39.50
High	5230	40.67	39.50

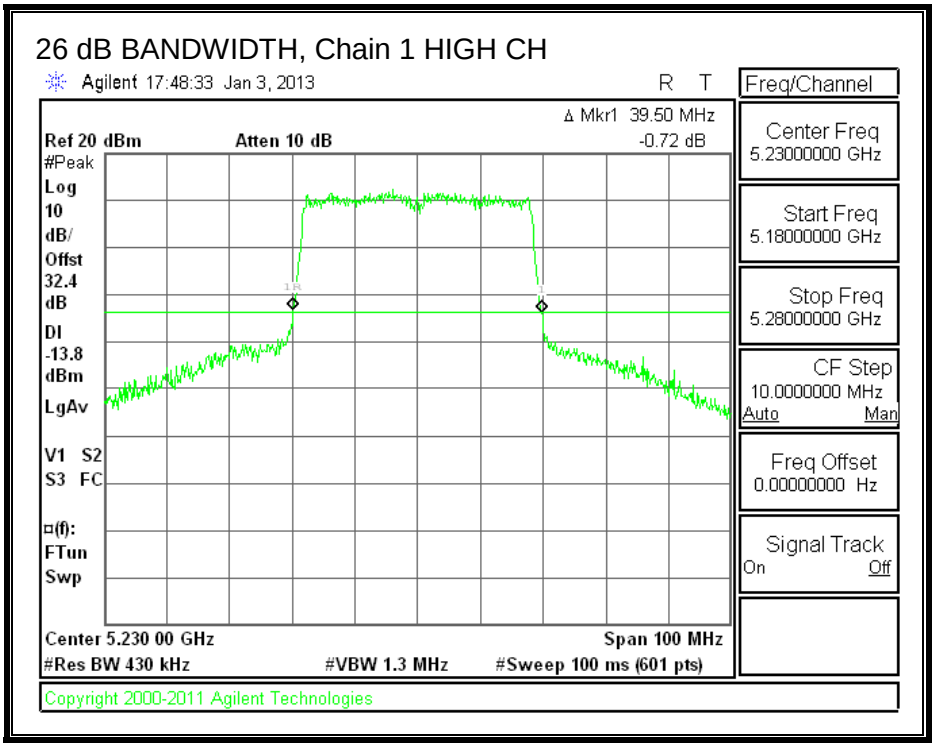
26 dB BANDWIDTH, Chain 0





26 dB BANDWIDTH, Chain 1





8.11.2. 99% BANDWIDTH

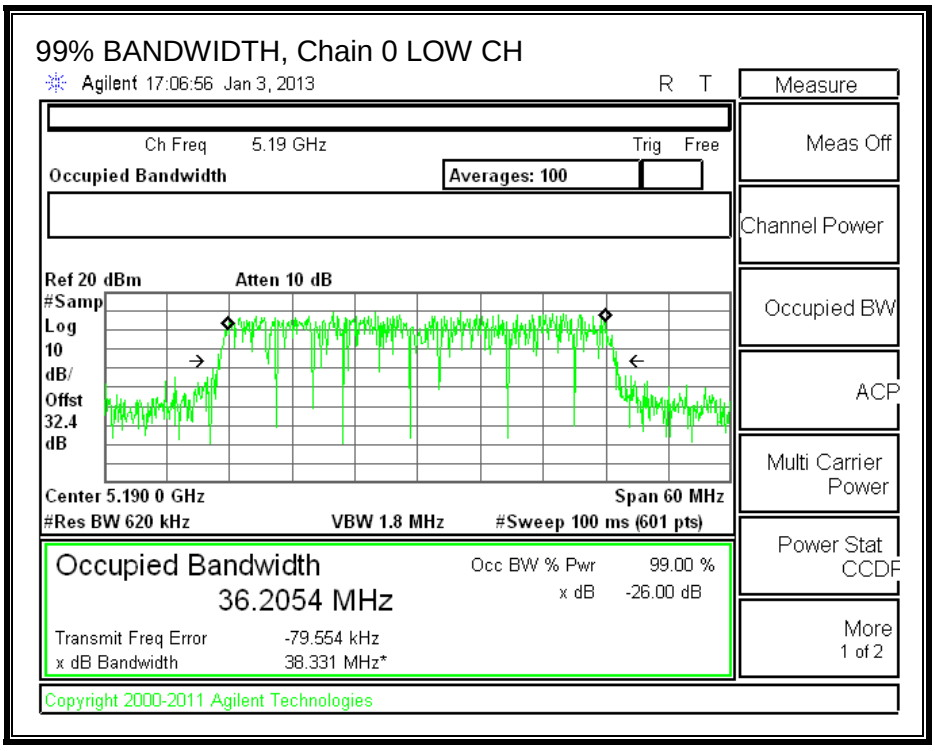
LIMITS

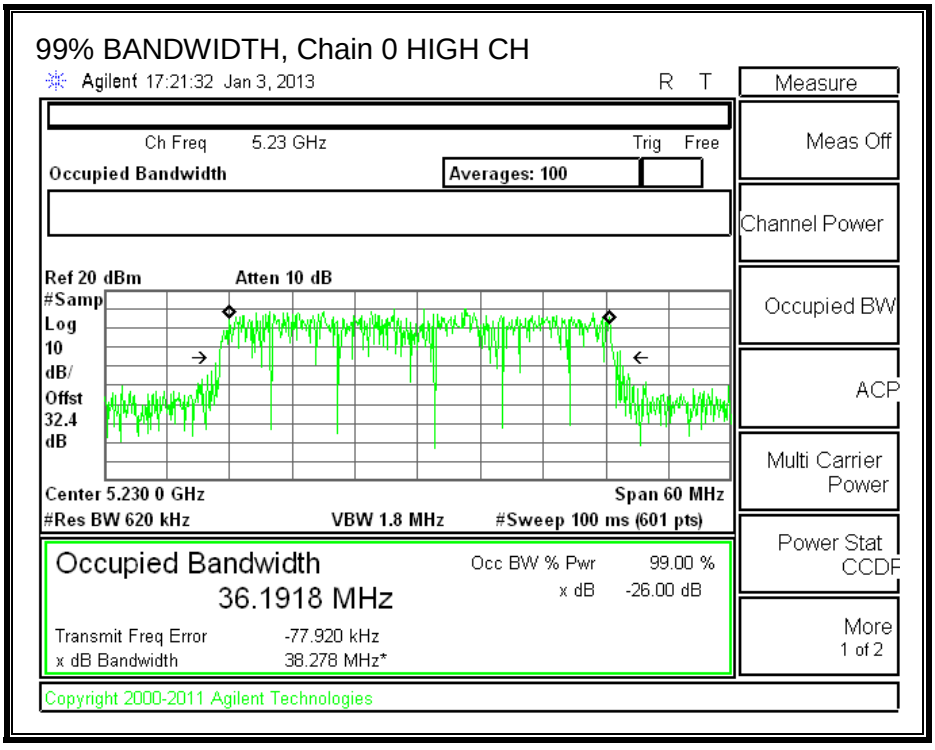
None; for reporting purposes only.

RESULTS

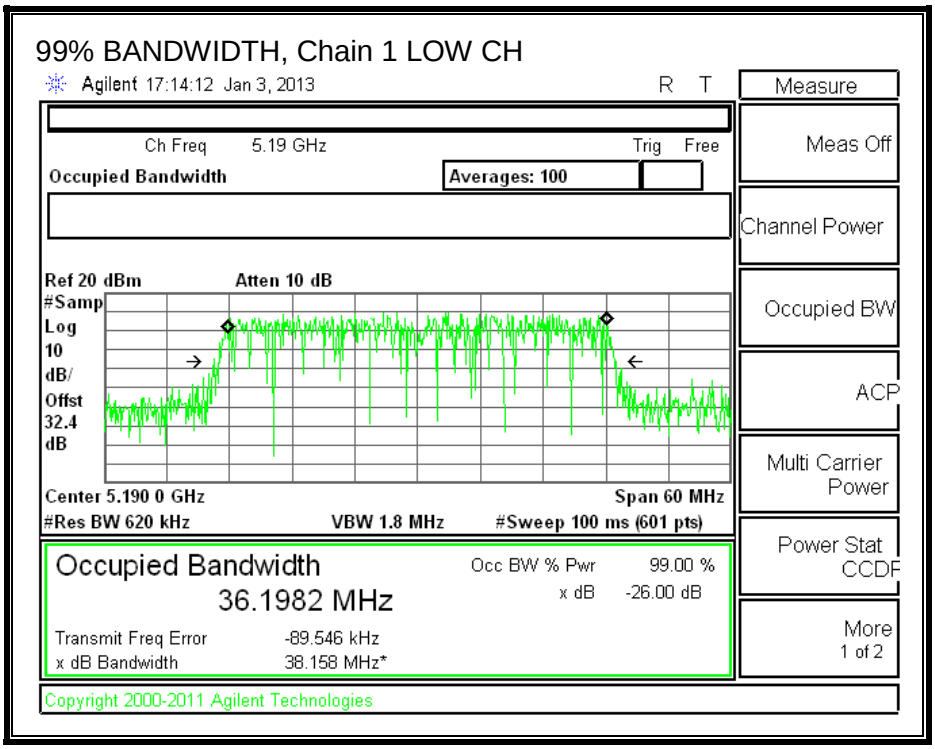
Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	5190	36.2054	36.1982
High	5230	36.1918	36.2227

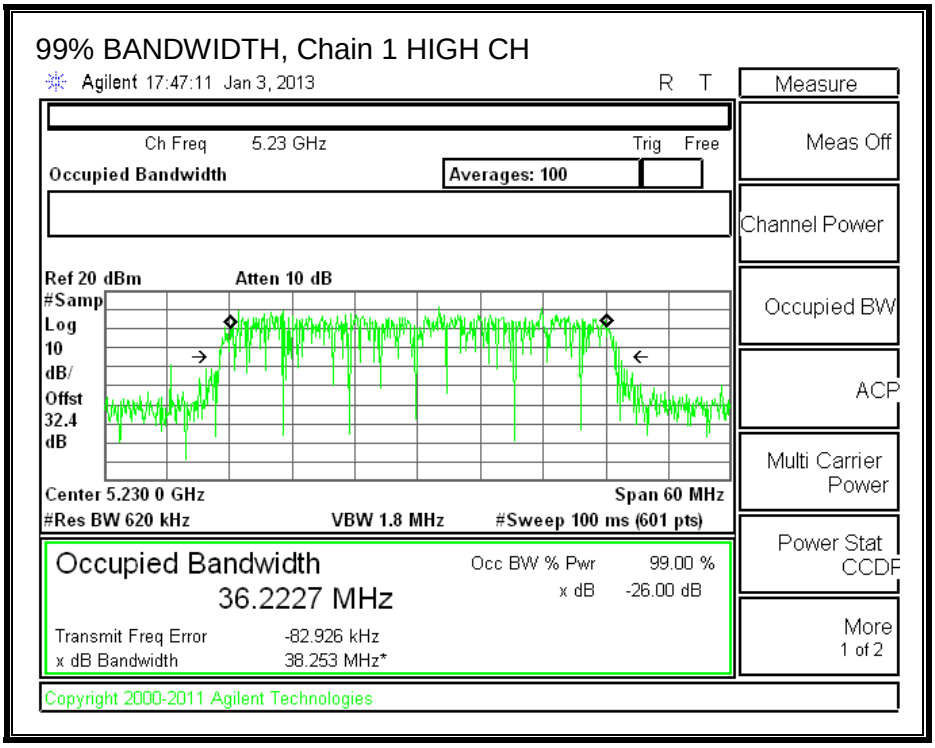
99% BANDWIDTH, Chain 0





99% BANDWIDTH, Chain 1





8.11.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.20	2.20	2.73

RESULTS

Antenna Gain

Channel	Frequency (MHz)	Directio Gain (dBi)
Low	5190	2.73
High	5230	2.73

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	FCC PSD Limit (dBm)
Low	5190	30.00	17.00
High	5230	30.00	17.00

Duty Cycle CF (dB)	0.00	

Output Power Results

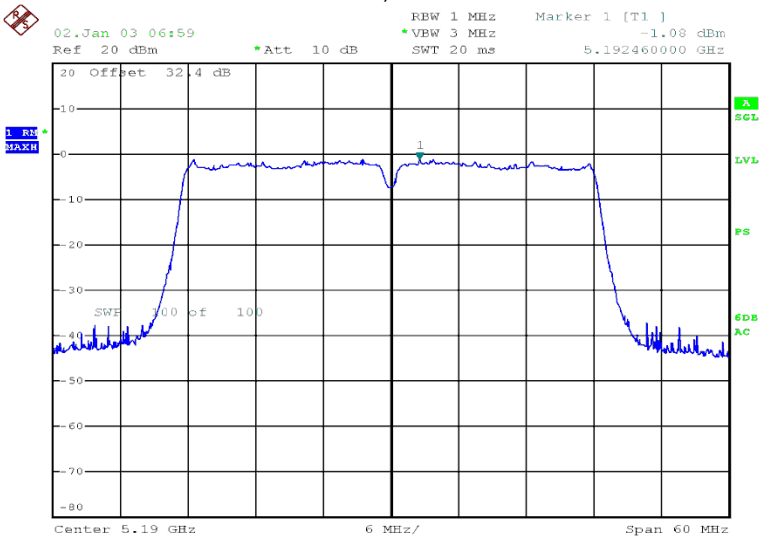
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5190	13.70	13.80	16.76	30.00	-13.24
High	5230	13.60	13.70	16.66	30.00	-13.34

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5190	-1.08	-0.21	2.39	17.00	-14.61
High	5230	-0.97	-0.07	2.51	17.00	-14.49

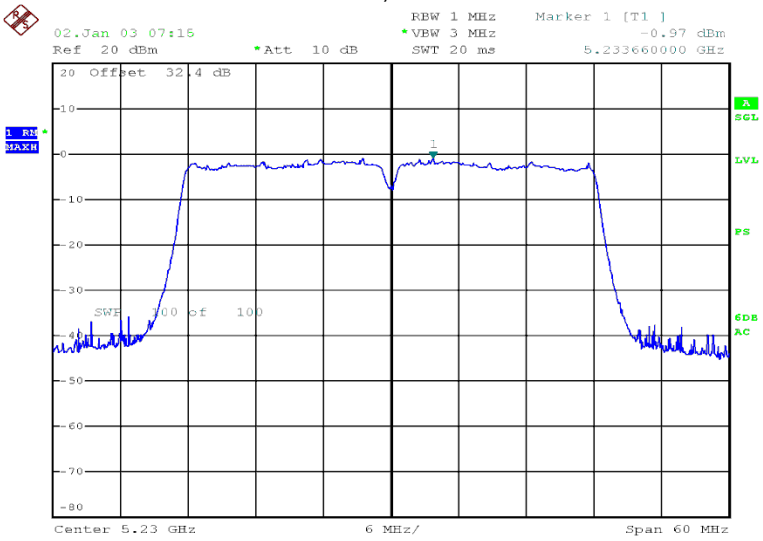
OUTPUT POWER AND PSD, Chain 0

OUTPUT POWER AND PSD, Chain 0 LOW CH



Date: 2.JAN.2003 06:59:55

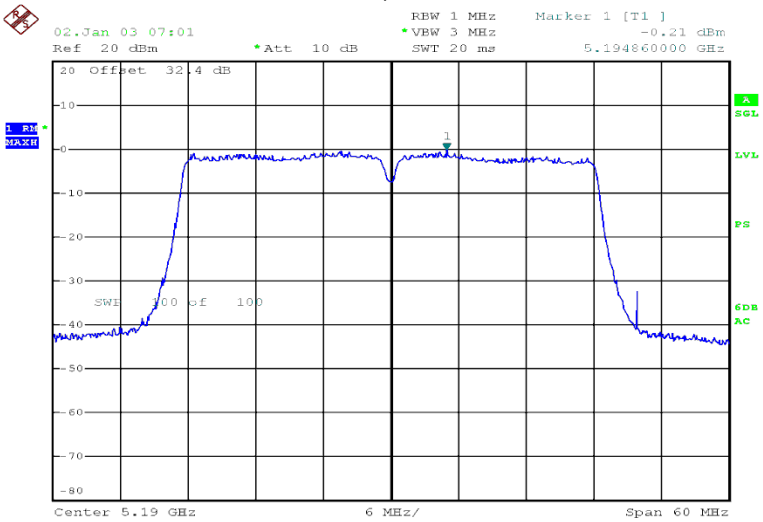
OUTPUT POWER AND PSD, Chain 0 HIGH CH



Date: 2.JAN.2003 07:15:14

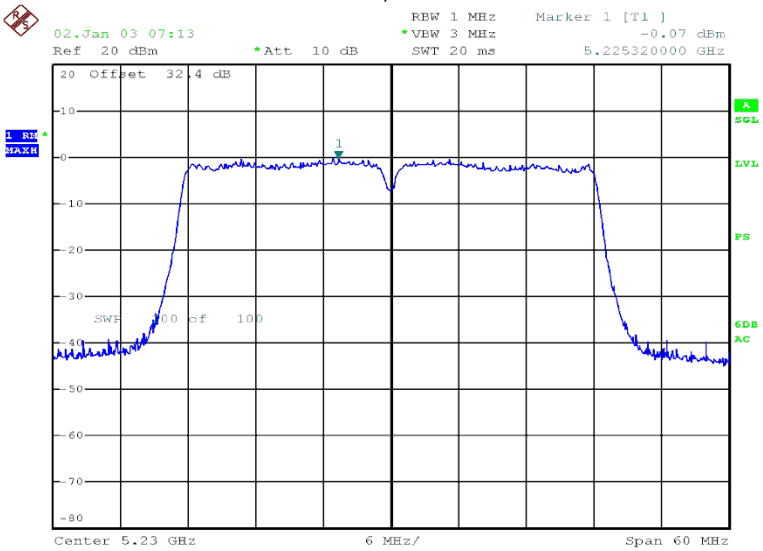
OUTPUT POWER AND PSD, Chain 1

OUTPUT POWER AND PSD, Chain 1 LOW CH



Date: 2.JAN.2003 07:01:20

OUTPUT POWER AND PSD, Chain 1 HIGH CH



Date: 2.JAN.2003 07:13:59

8.12. 802.11n HT40 CDD 3TX MODE IN THE 5.2 GHz BAND

8.12.1. 26 dB BANDWIDTH

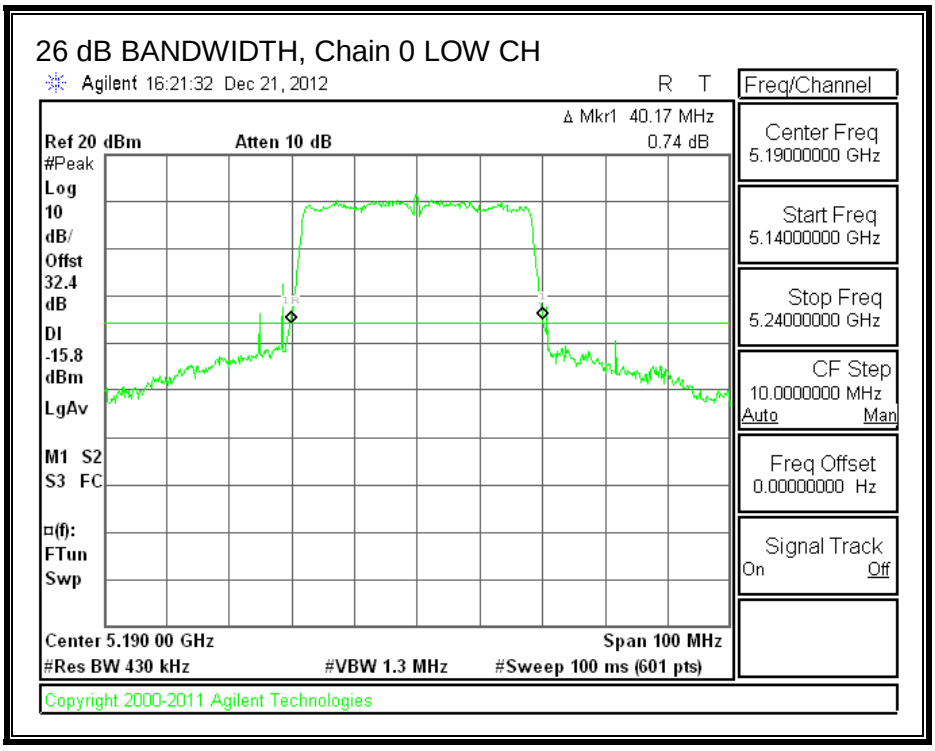
LIMITS

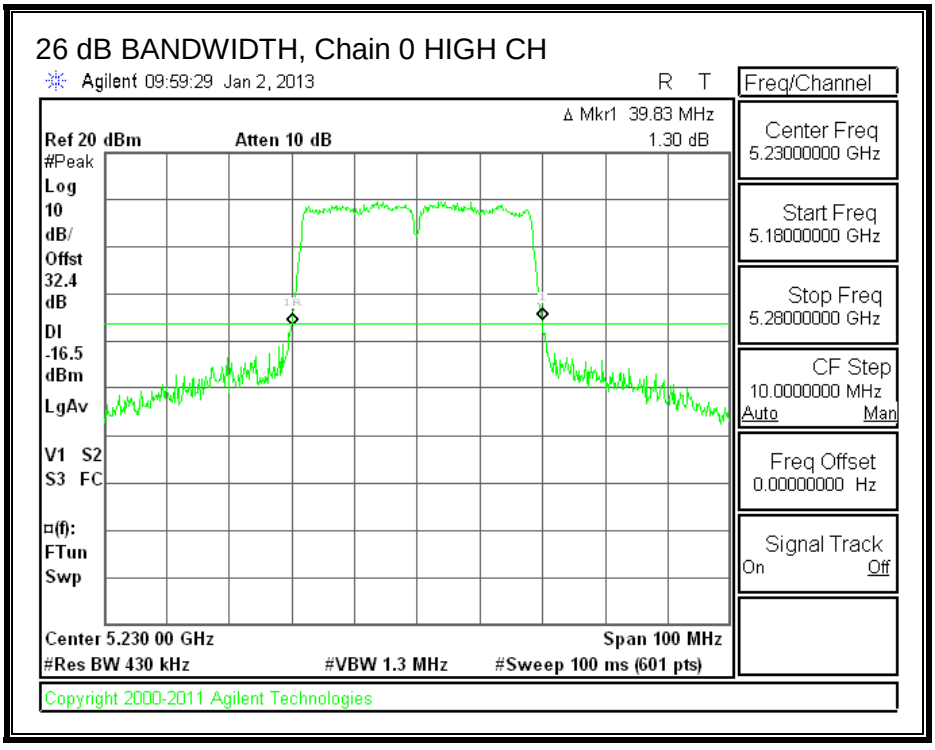
None; for reporting purposes only.

RESULTS

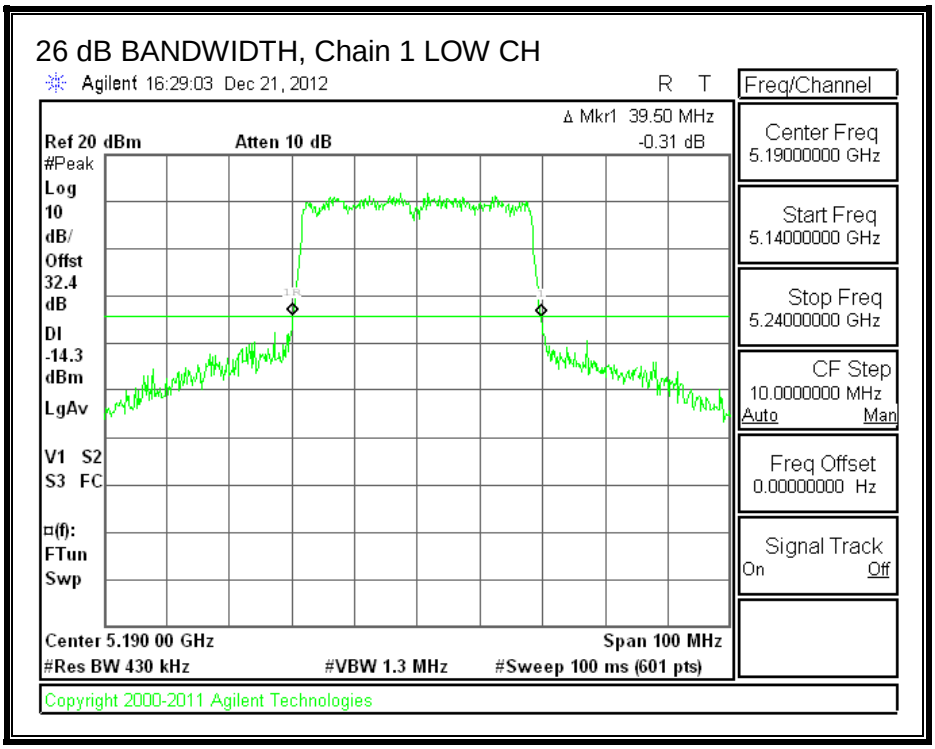
Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
Low	5190	40.17	39.50	39.50
High	5230	39.83	39.50	39.50

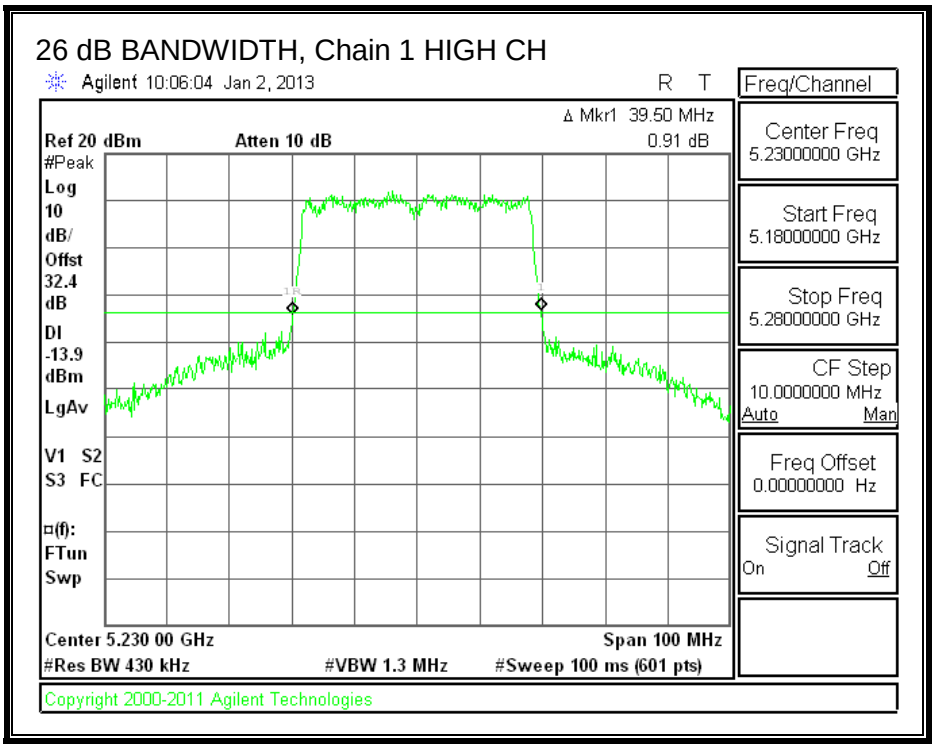
26 dB BANDWIDTH, Chain 0



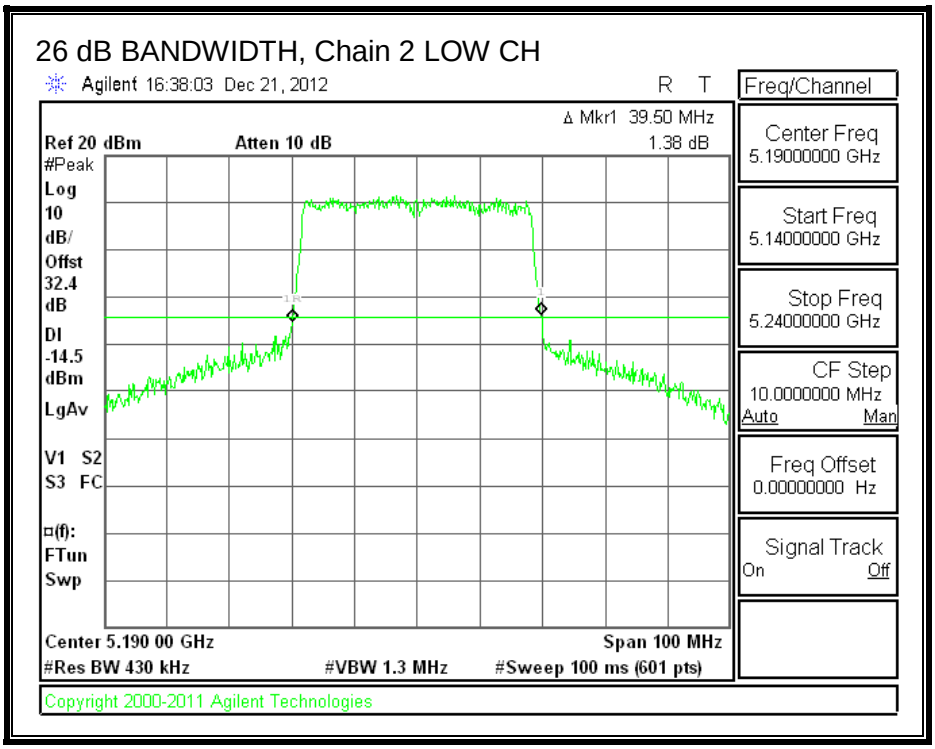


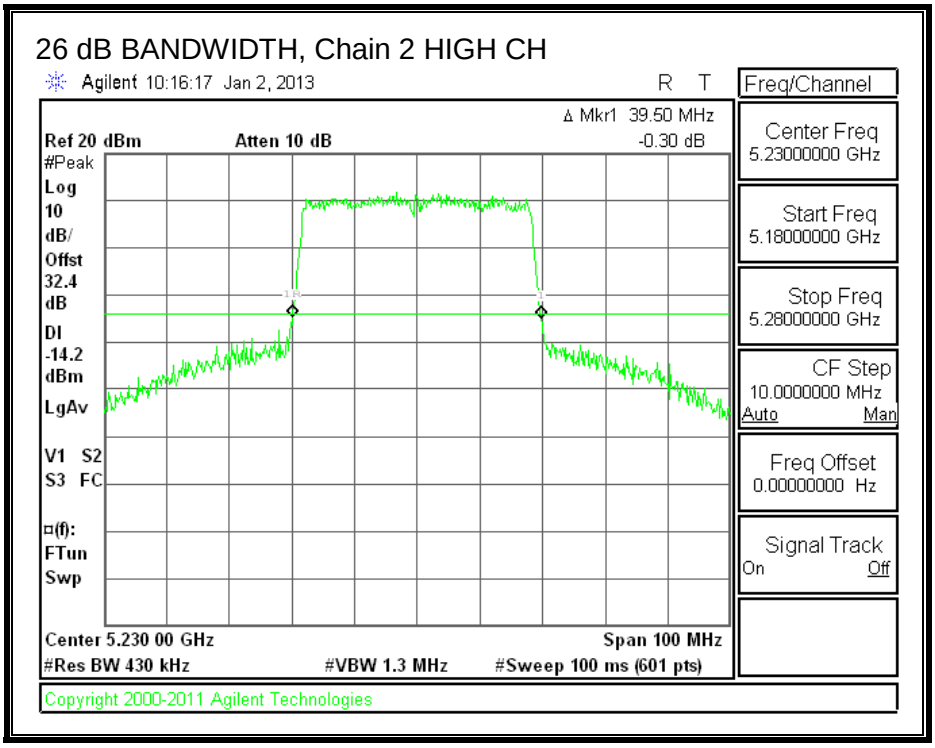
26 dB BANDWIDTH, Chain 1





26 dB BANDWIDTH, Chain 2





8.12.2. 99% BANDWIDTH

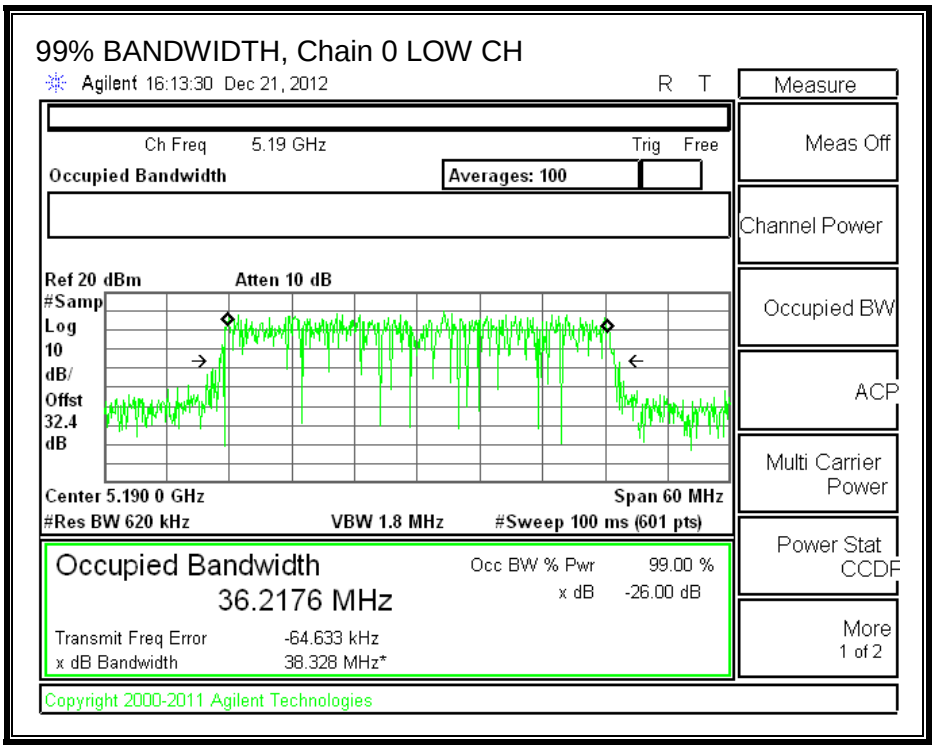
LIMITS

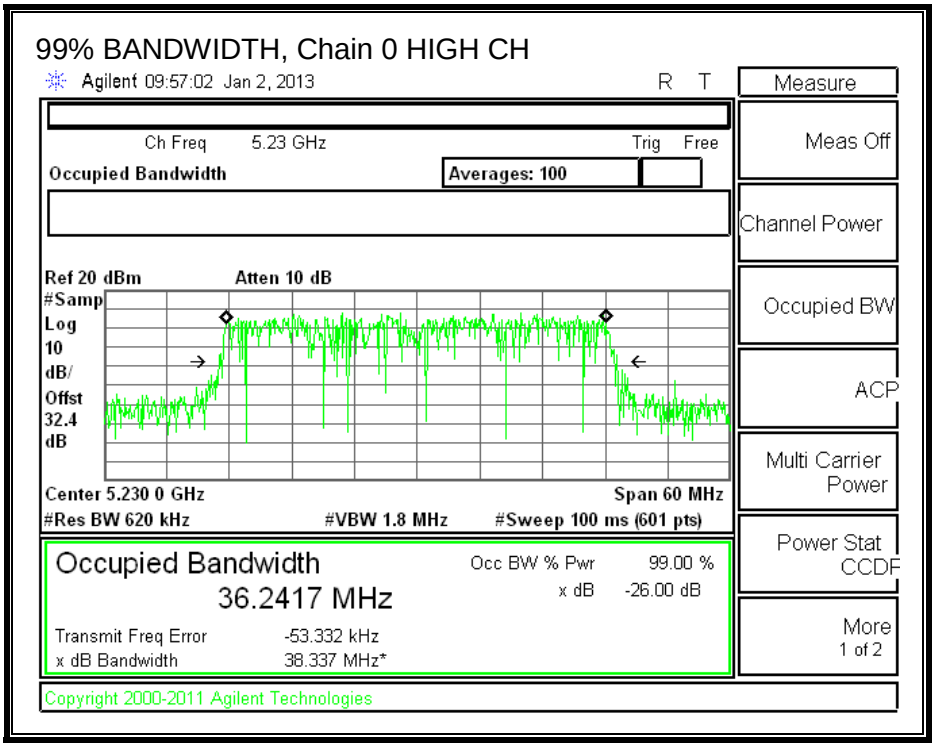
None; for reporting purposes only.

RESULTS

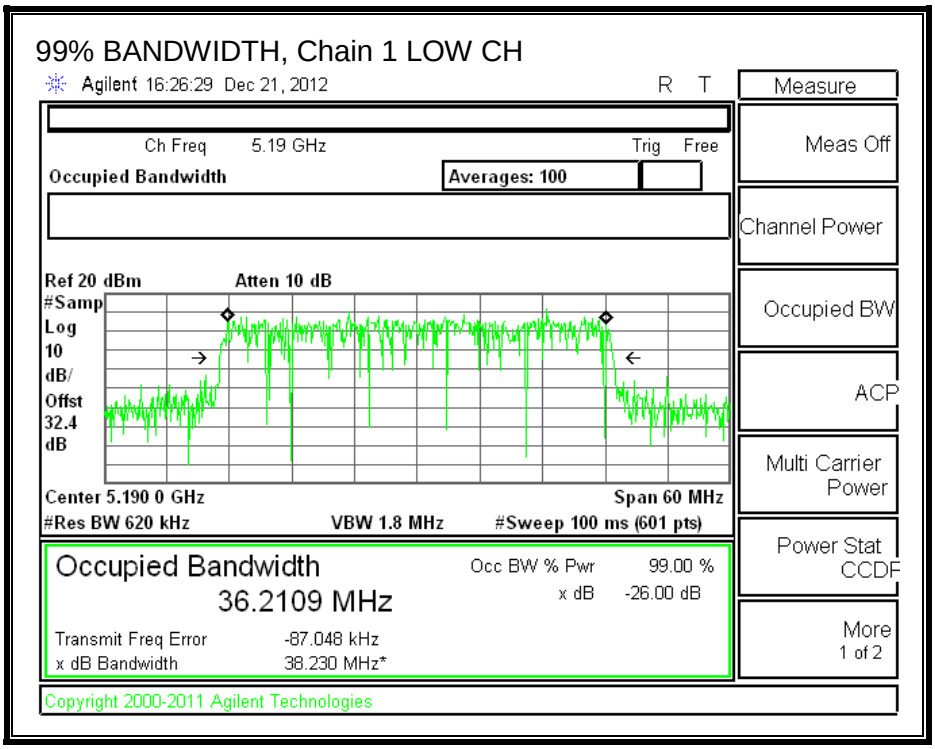
Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
Low	5190	36.2176	36.2109	36.2162
High	5230	36.2417	36.2393	36.2273

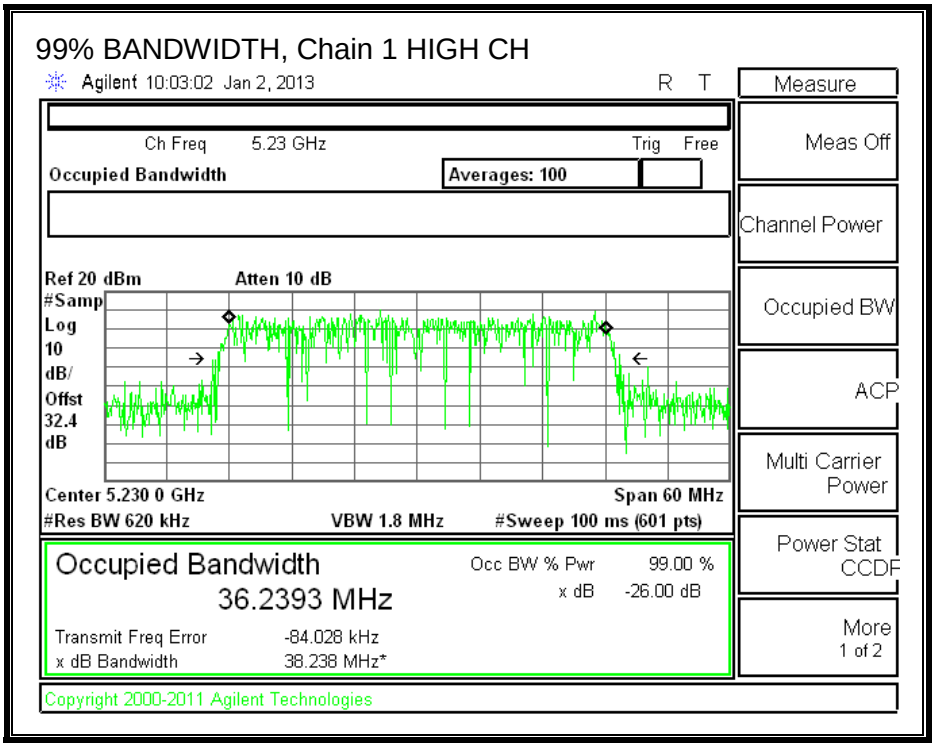
99% BANDWIDTH, Chain 0



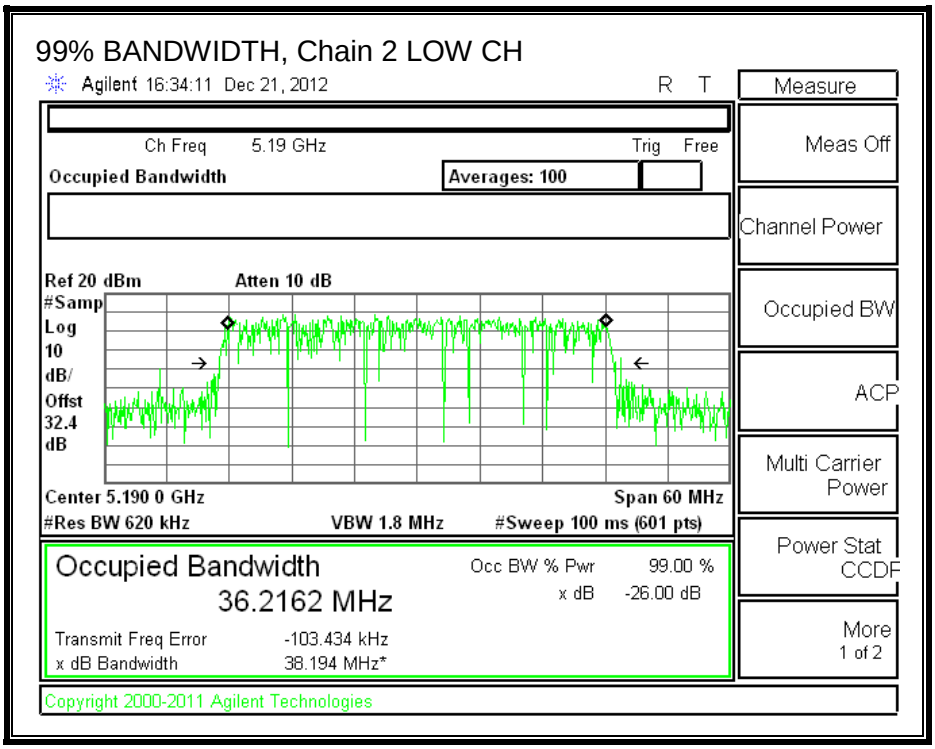


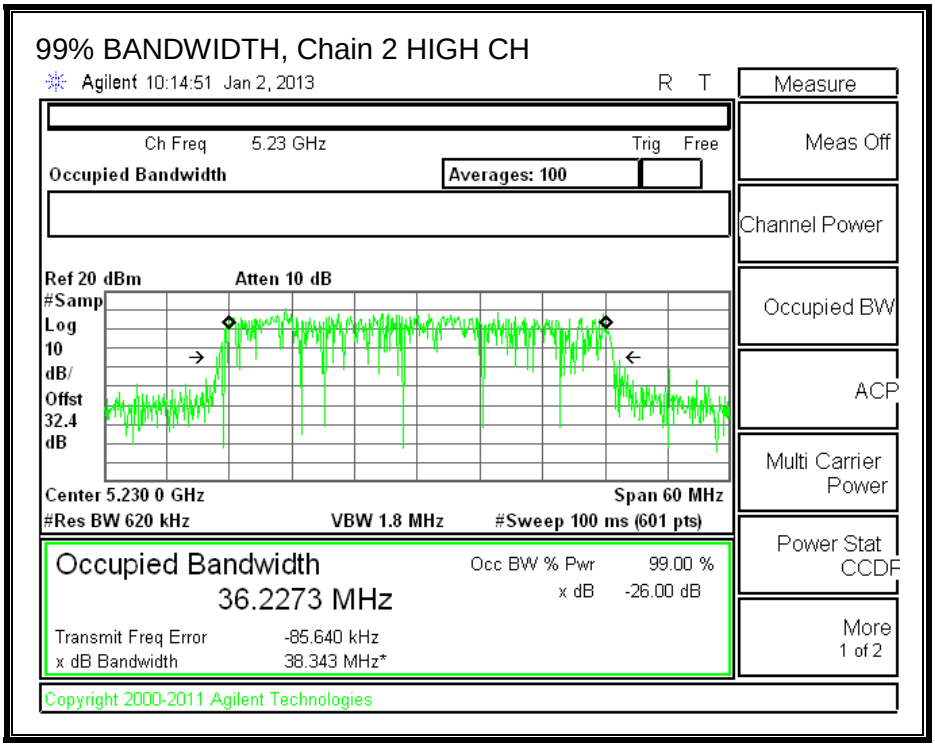
99% BANDWIDTH, Chain 1





99% BANDWIDTH, Chain 2





8.12.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated for output power and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.20	1.40	2.20	2.33

The TX chains are correlated for PSD and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.20	1.40	2.20	7.07

RESULTS

Antenna Gain

Channel	Frequency (MHz)	Correlated Directional Gain (dBi)	Uncorrelated Directional Gain (dBi)
Low	5190	7.07	2.33
High	5230	7.07	2.33

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	FCC PSD Limit (dBm)
Low	5190	30.00	15.93
High	5230	30.00	15.93

Duty Cycle CF (dB)	0.00	

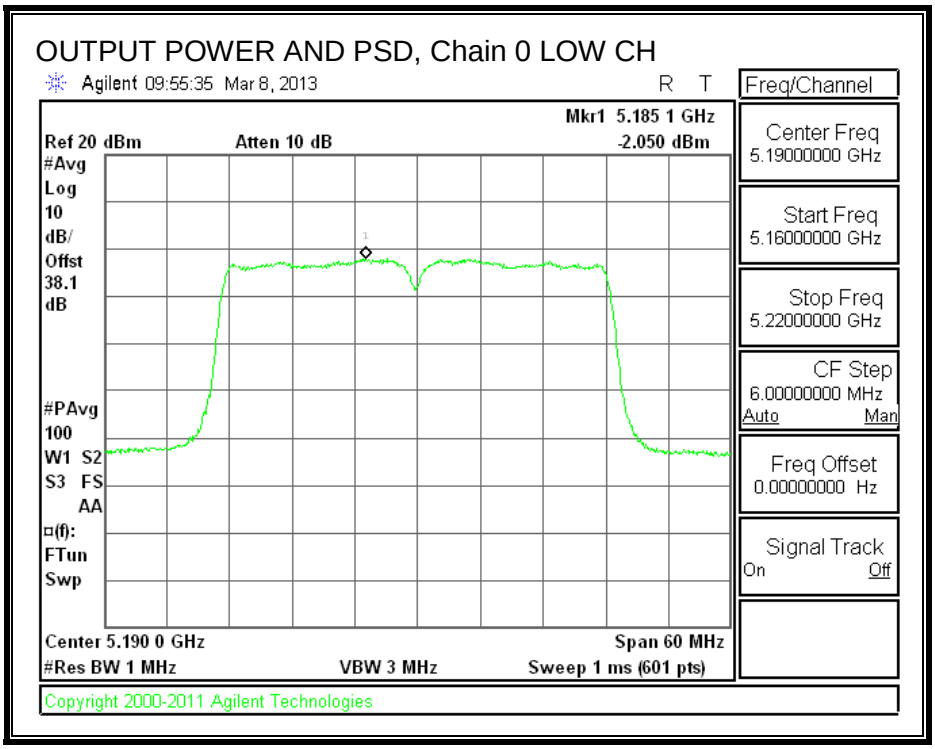
Output Power Results

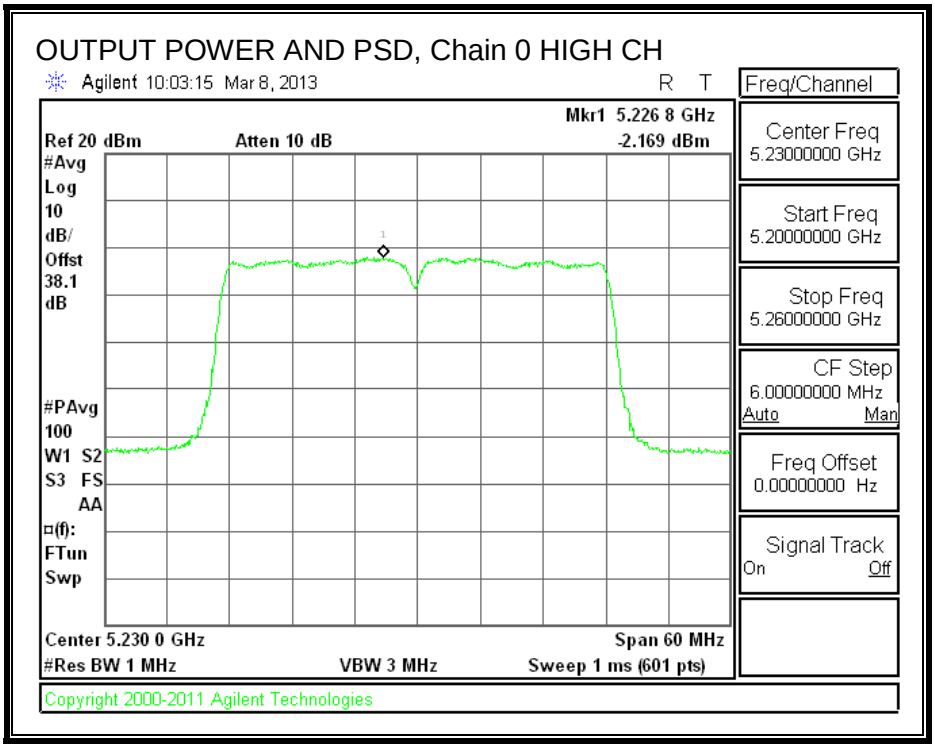
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5190	9.80	9.50	9.60	14.41	30.00	-15.59
High	5230	9.70	9.50	9.60	14.37	30.00	-15.63

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Chain 2 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5190	-2.050	-2.860	-2.097	2.45	15.93	-13.48
High	5230	-2.169	-2.243	-2.284	2.54	15.93	-13.39

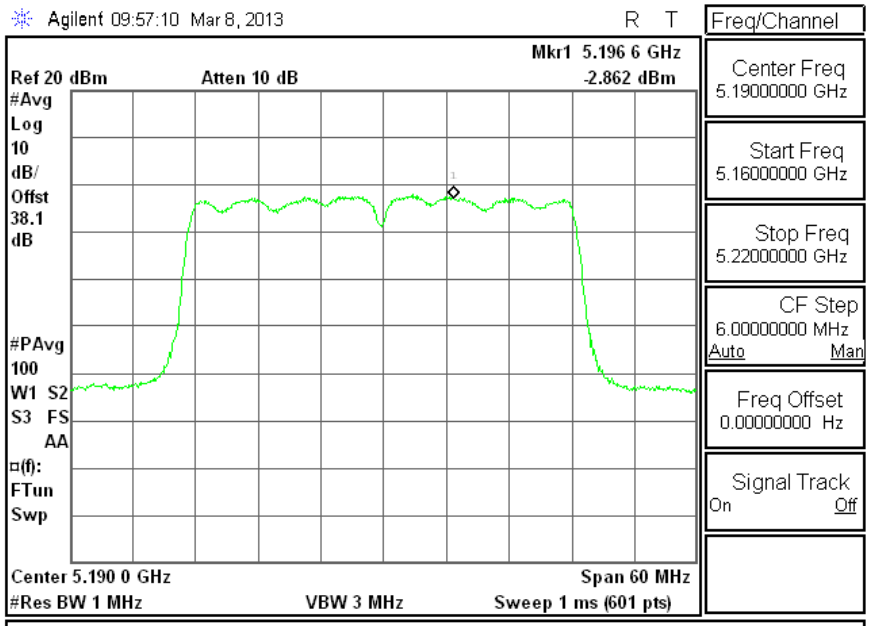
OUTPUT POWER AND PSD, Chain 0



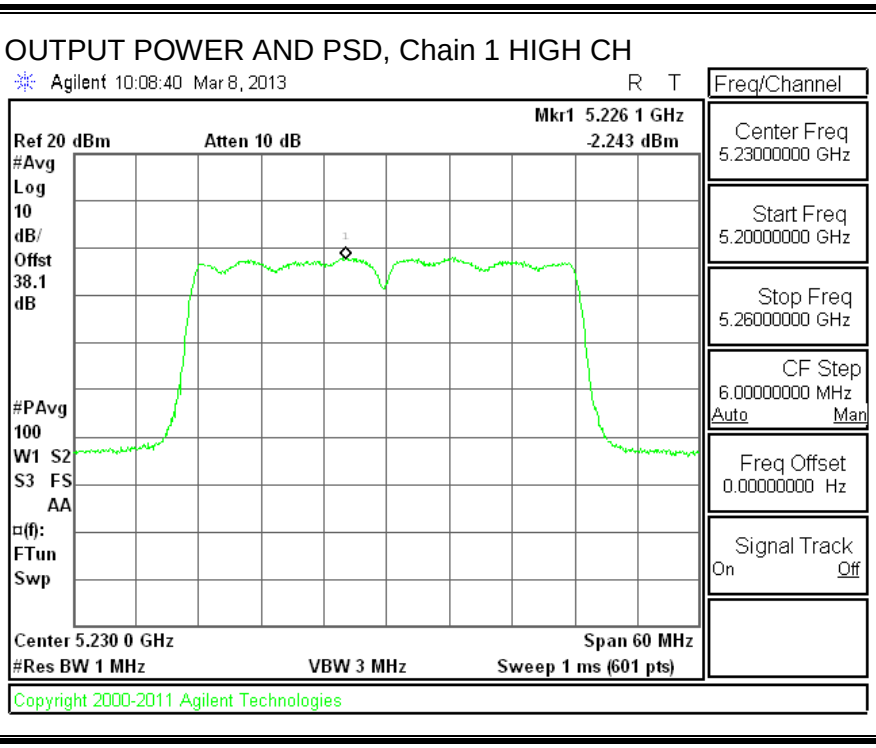


OUTPUT POWER AND PSD, Chain 1

OUTPUT POWER AND PSD, Chain 1 LOW CH

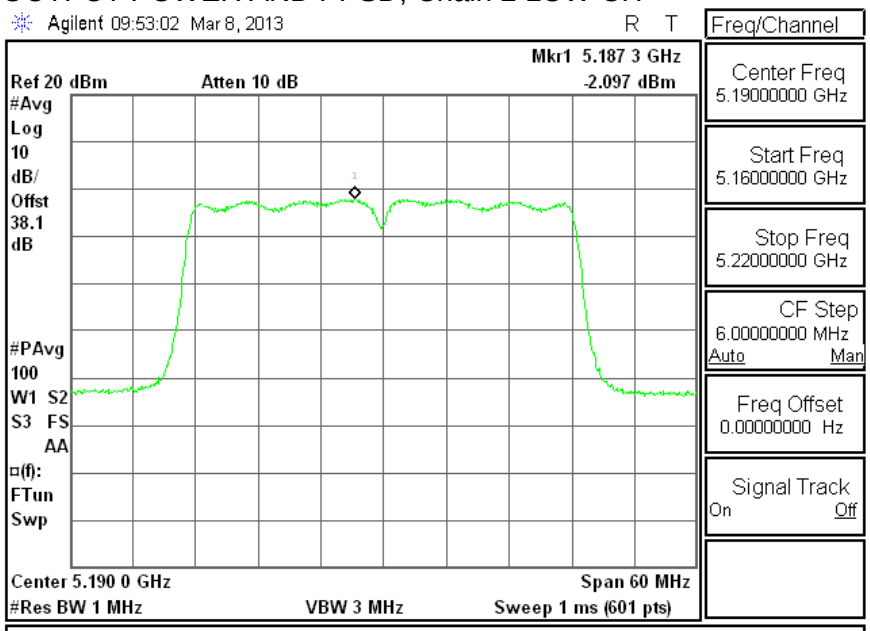


OUTPUT POWER AND PSD, Chain 1 HIGH CH

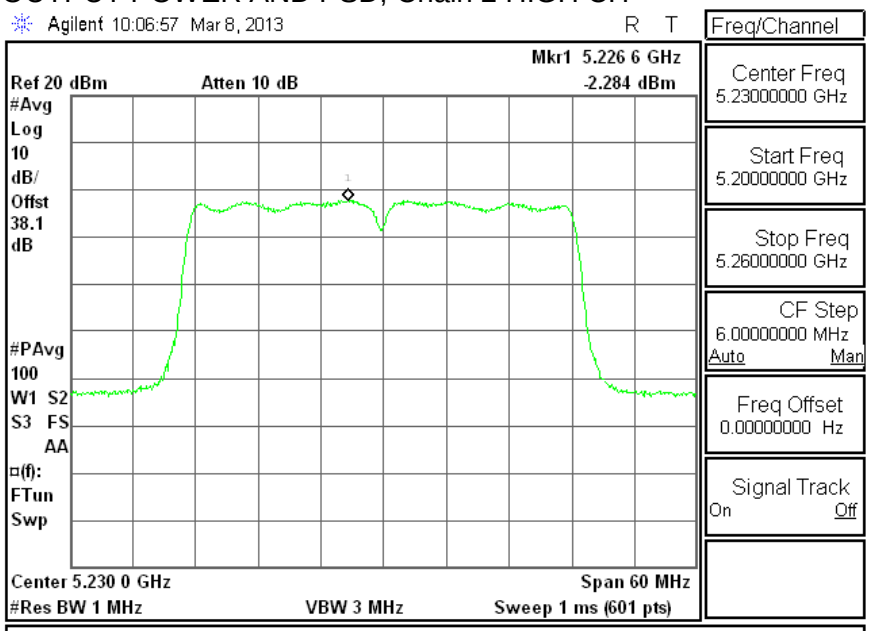


OUTPUT POWER AND PSD, Chain 2

OUTPUT POWER AND PPSD, Chain 2 LOW CH



OUTPUT POWER AND PSD, Chain 2 HIGH CH



8.13. 802.11n HT40 BF 3TX MODE IN THE 5.2 GHz BAND

Covered by testing HT40 CDD 3TX mode, the power per chain used for HT40 CDD 3TX mode is the same power per chain that will be used for HT40 BF 3TX mode. However, since BF is correlated and CDD is uncorrelated for output power, the section below for output power using correlated AG for this BF mode shows it is still compliant.

8.13.1. OUTPUT AVERAGE POWER

LIMITS

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are correlated for output power and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.20	1.40	2.20	7.07

RESULTS

Antenna Gain

Channel	Frequency (MHz)	Correlat Directional Gain (dBi)
Low	5190	7.07
High	5230	7.07

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)
Low	5190	28.93
High	5230	28.93

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5190	9.80	9.50	9.60	14.41	28.93	-14.52
High	5230	9.70	9.50	9.60	14.37	28.93	-14.56

8.14. 802.11n HT40 STBC 3TX MODE IN THE 5.2 GHz BAND

8.14.1. 26 dB BANDWIDTH

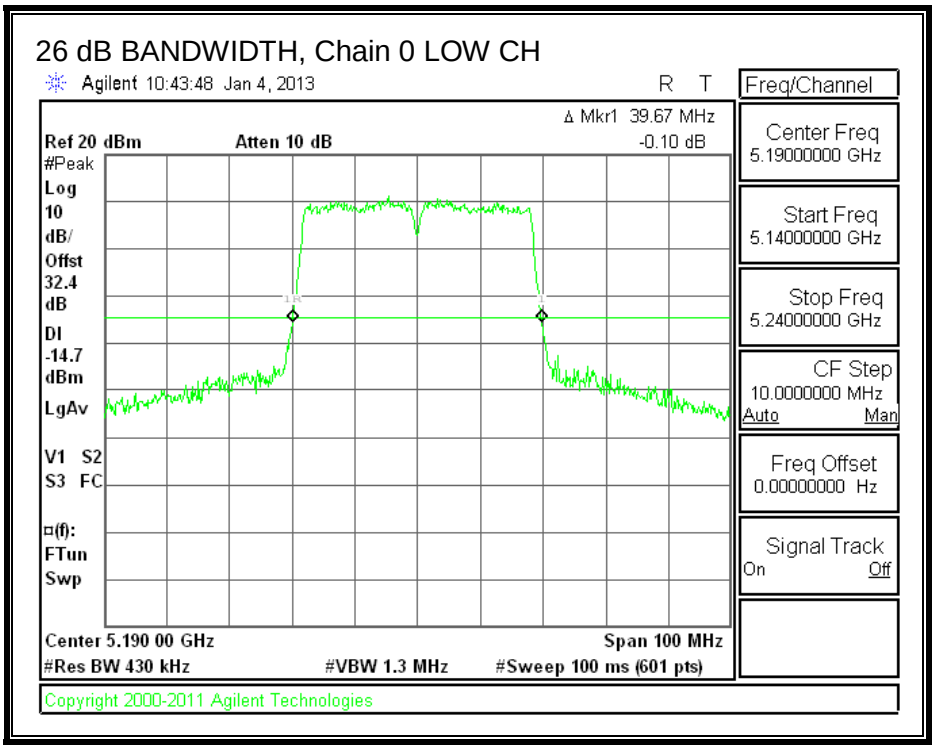
LIMITS

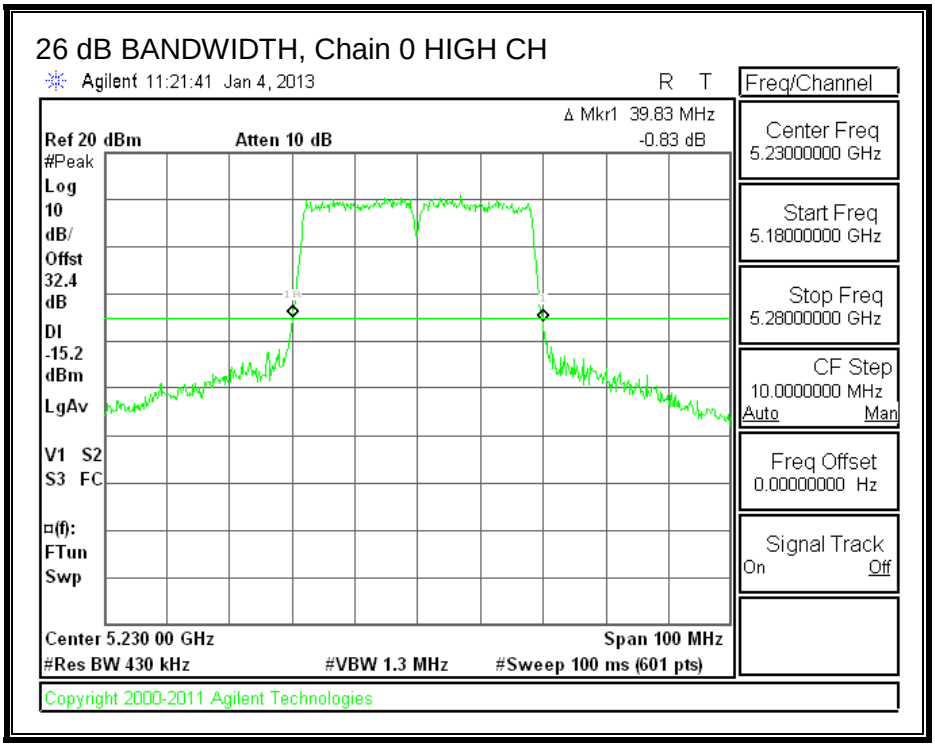
None; for reporting purposes only.

RESULTS

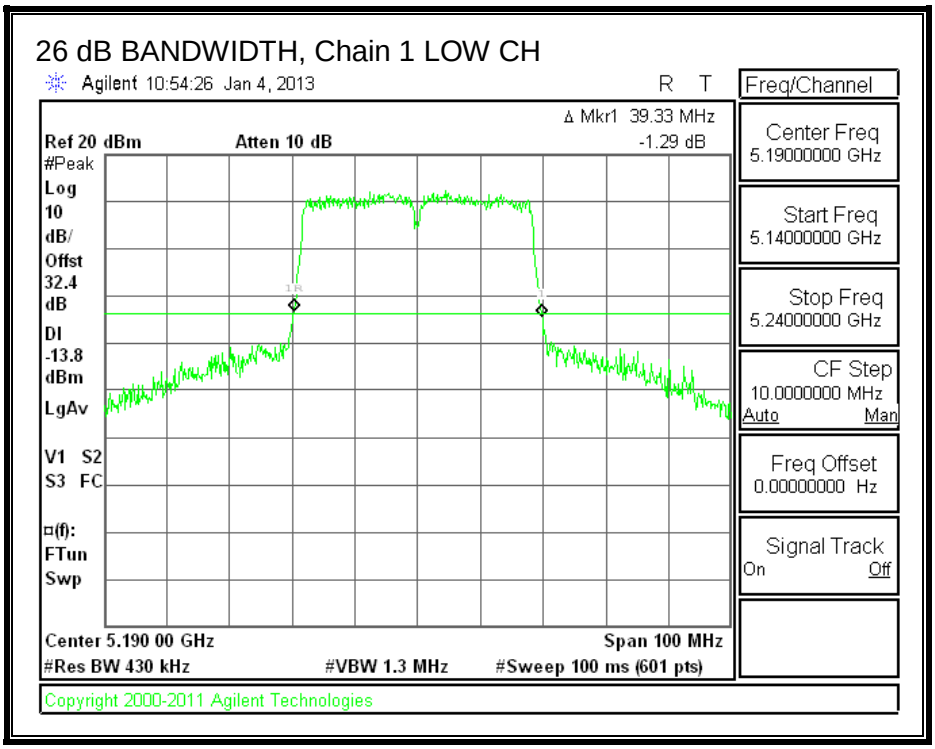
Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
Low	5190	39.67	39.33	39.67
High	5230	39.83	39.33	39.50

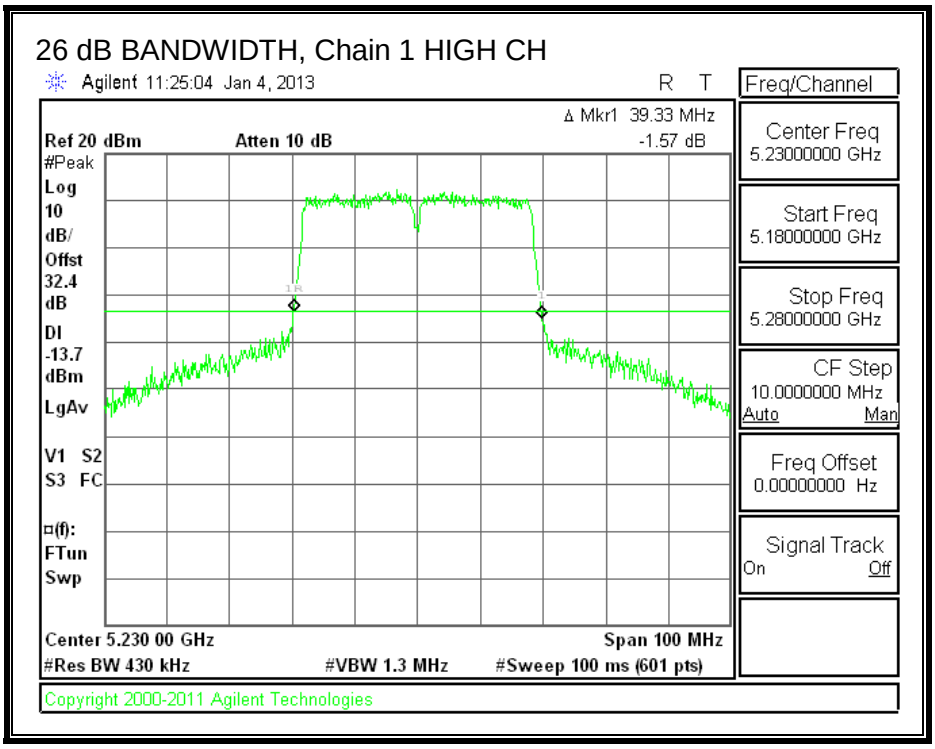
26 dB BANDWIDTH, Chain 0



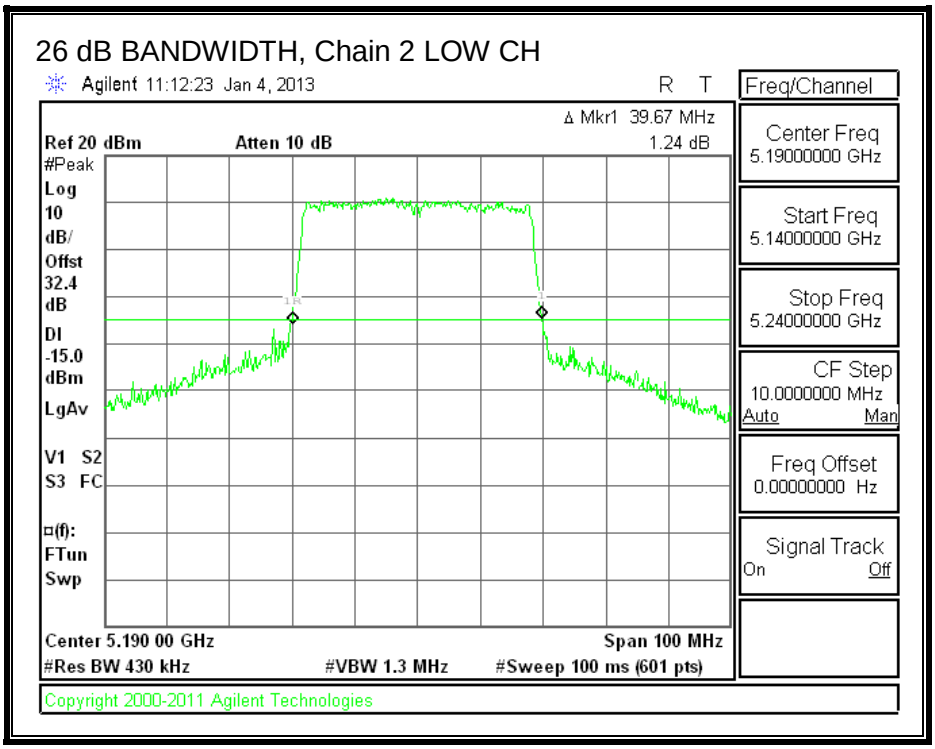


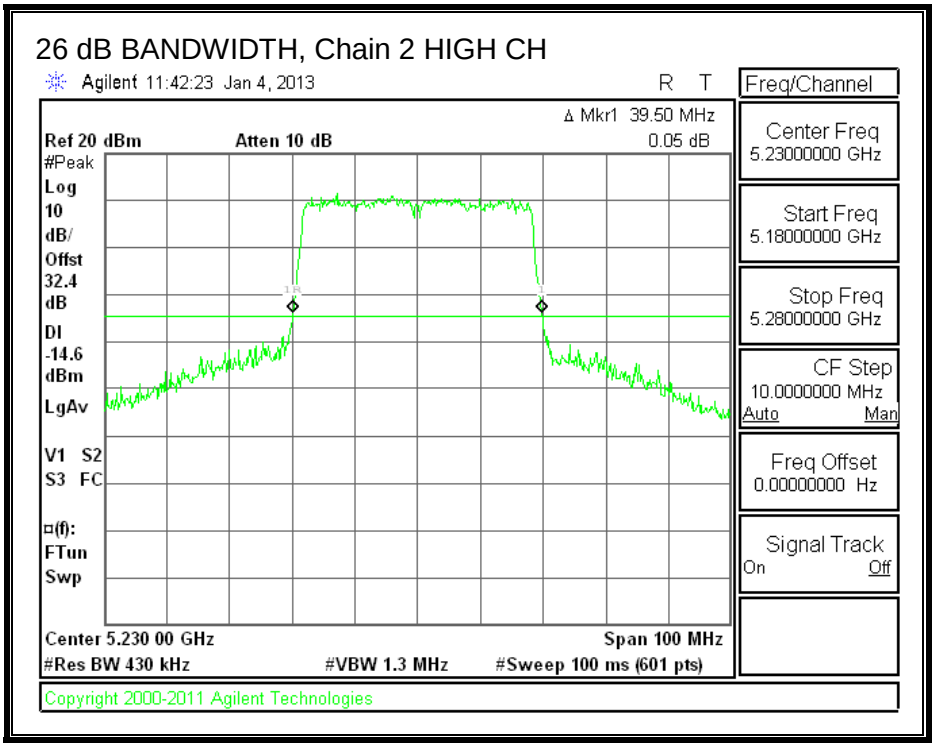
26 dB BANDWIDTH, Chain 1





26 dB BANDWIDTH, Chain 2





8.14.2. 99% BANDWIDTH

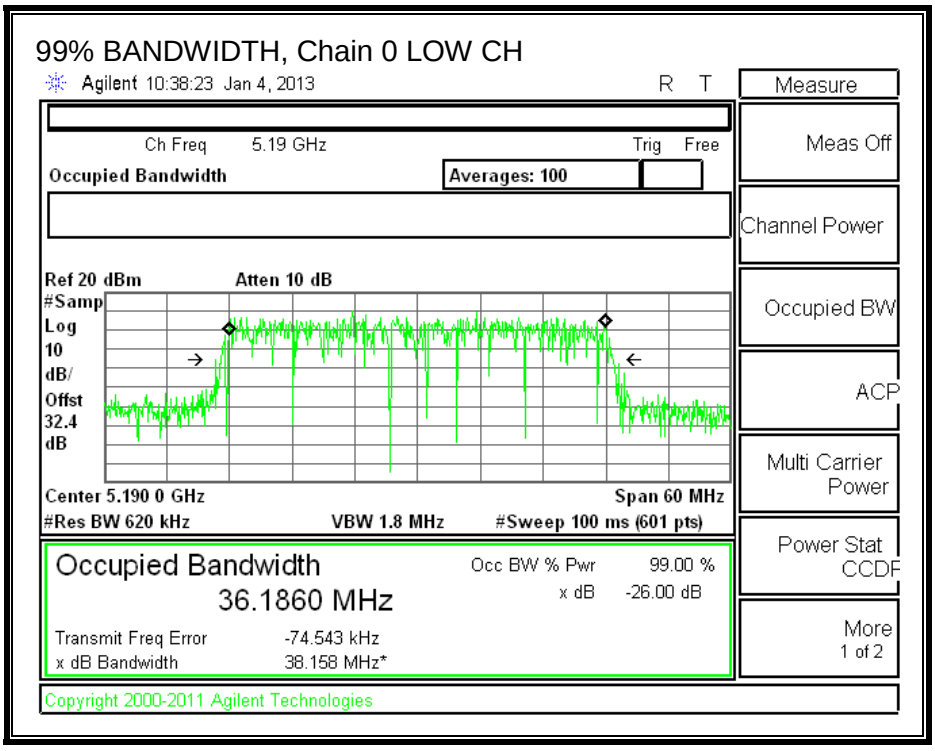
LIMITS

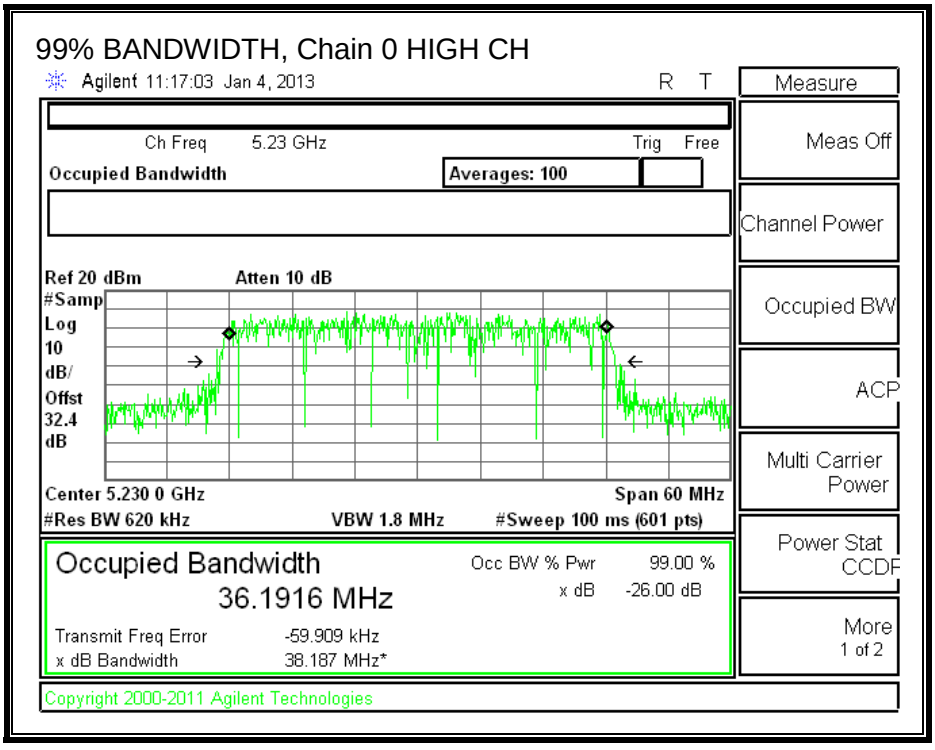
None; for reporting purposes only.

RESULTS

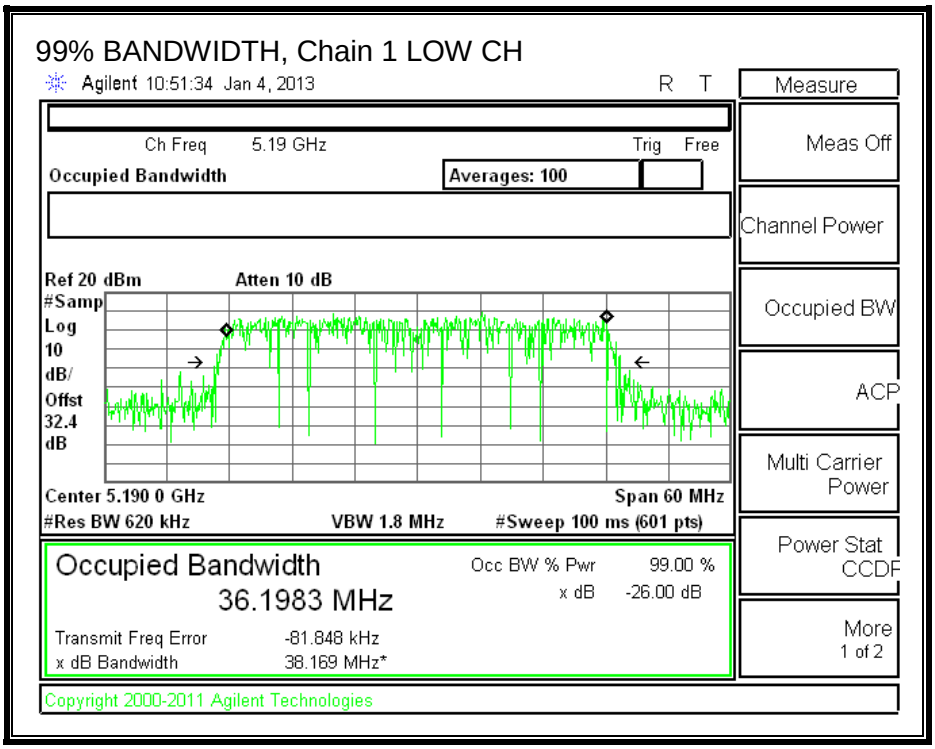
Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
Low	5190	36.1860	36.1983	36.2039
High	5230	36.1916	36.1918	36.1916

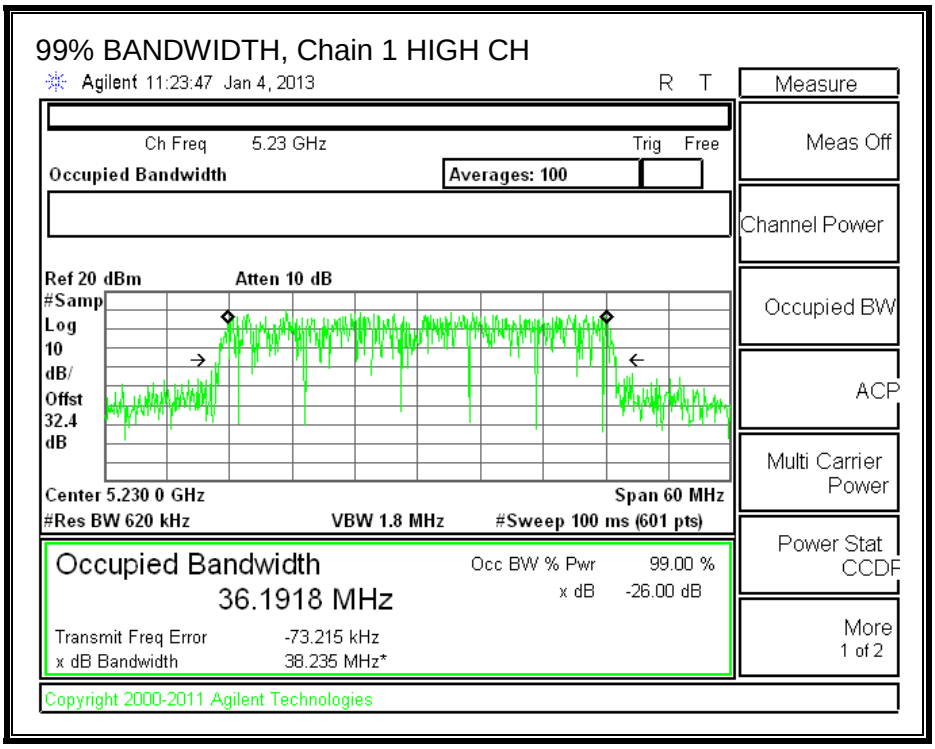
99% BANDWIDTH, Chain 0



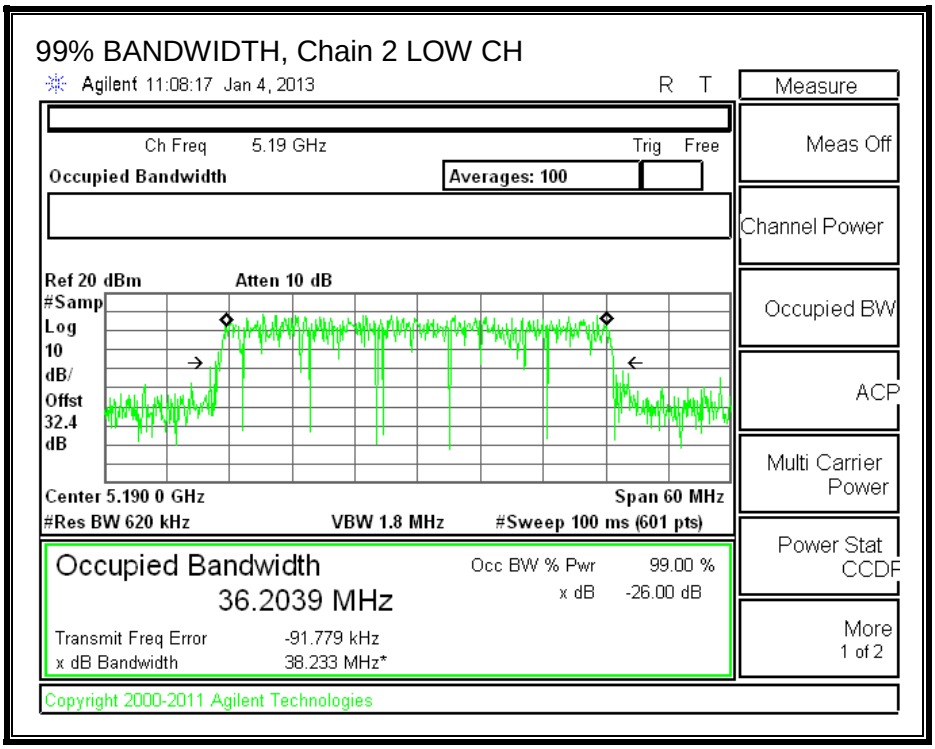


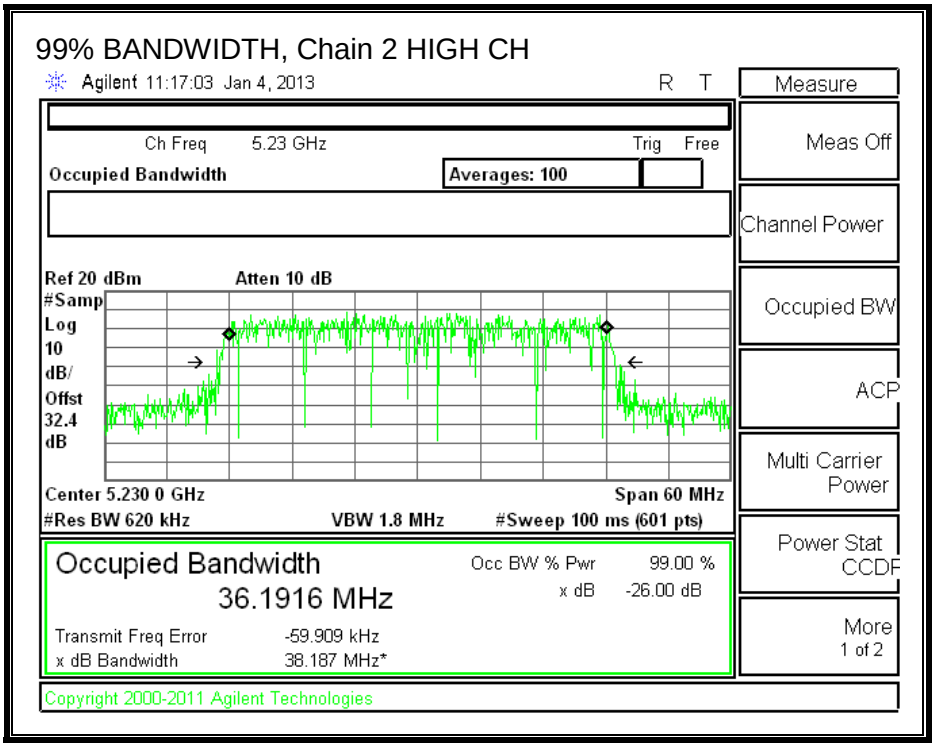
99% BANDWIDTH, Chain 1





99% BANDWIDTH, Chain 2





8.14.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.20	1.40	2.20	2.33

RESULTS

Antenna Gain

Channel	Frequency (MHz)	Directio Gain (dBi)
Low	5190	2.33
High	5230	2.33

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	FCC PSD Limit (dBm)
Low	5190	30.00	17.00
High	5230	30.00	17.00

Duty Cycle CF (dB)	0.00	

Output Power Results

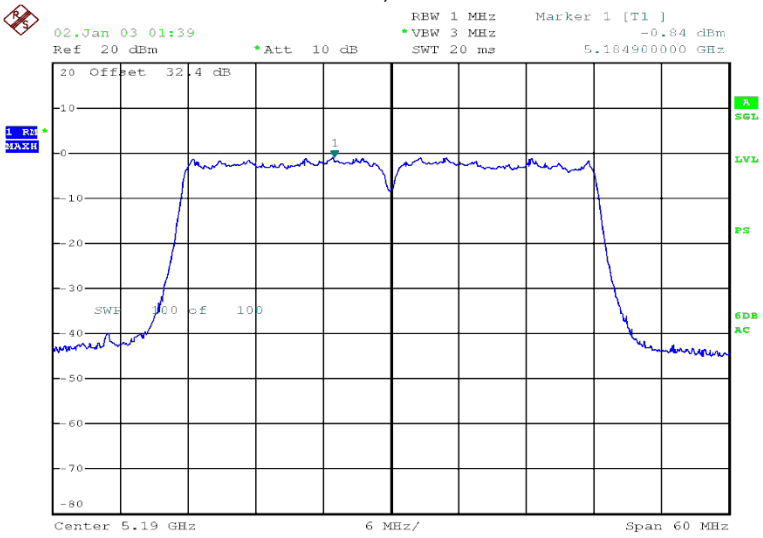
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5190	11.73	11.55	11.50	16.37	30.00	-13.63
High	5230	11.60	11.50	11.45	16.29	30.00	-13.71

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Chain 2 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5190	-0.84	-0.84	-0.99	3.88	17.00	-13.12
High	5230	-0.81	-0.98	-1.07	3.82	17.00	-13.18

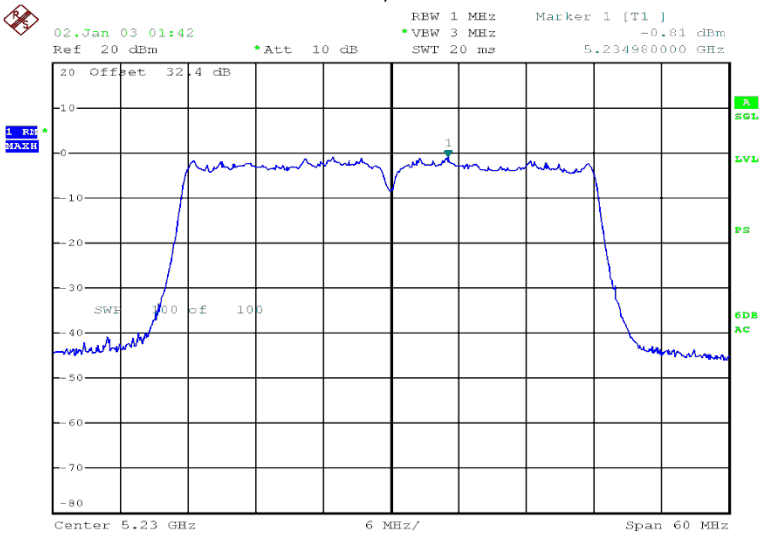
OUTPUT POWER AND PSD, Chain 0

OUTPUT POWER AND PSD, Chain 0 LOW CH



Date: 2.JAN.2003 01:39:36

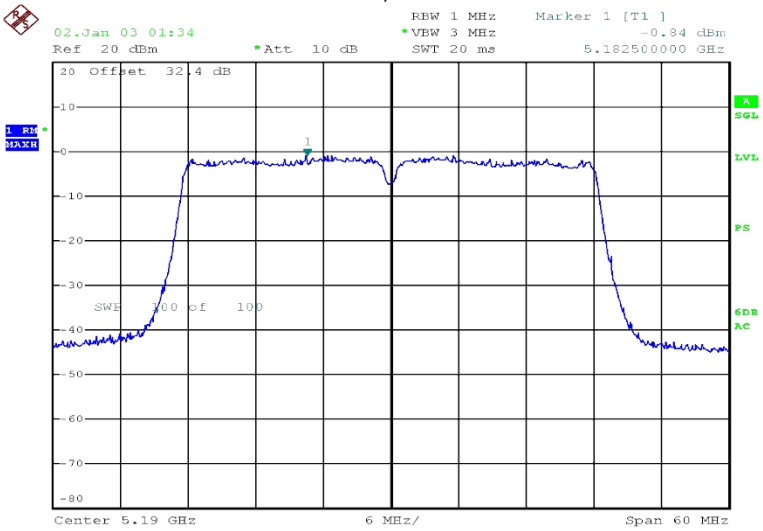
OUTPUT POWER AND PSD, Chain 0 HIGH CH



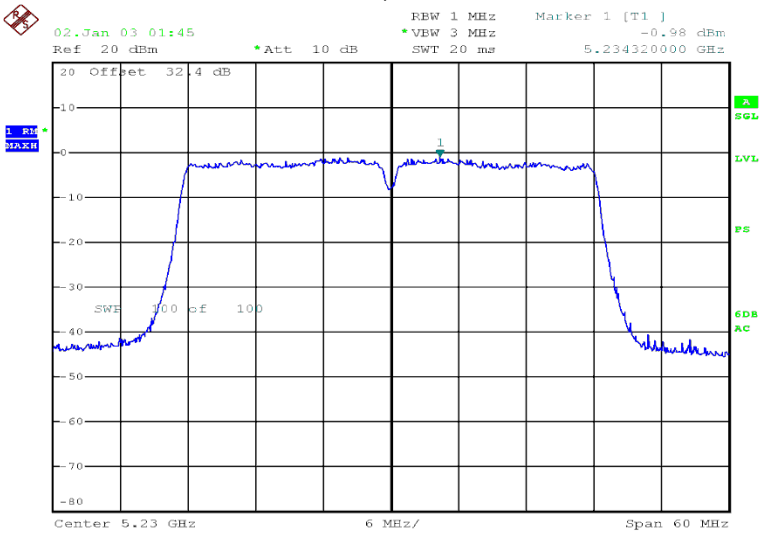
Date: 2.JAN.2003 01:42:35

OUTPUT POWER AND PSD, Chain 1

OUTPUT POWER AND PSD, Chain 1 LOW CH

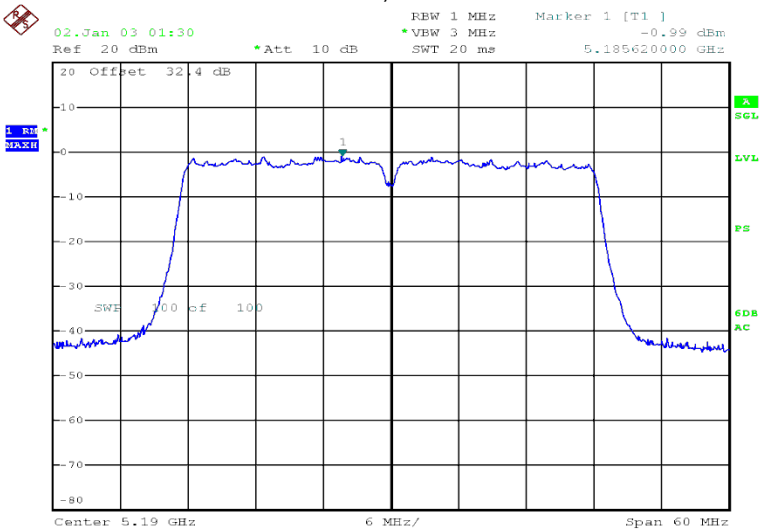


OUTPUT POWER AND PSD, Chain 1 HIGH CH



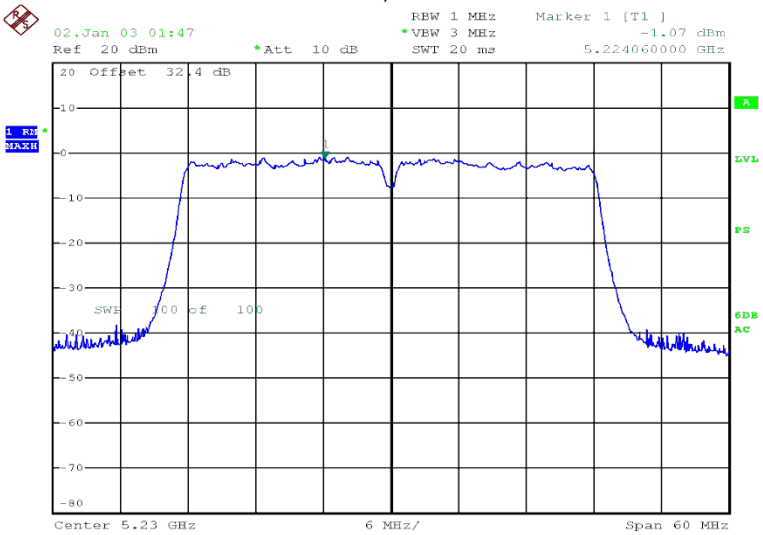
OUTPUT POWER AND PSD, Chain 2

OUTPUT POWER AND PSD, Chain 2 LOW CH



Date: 2.JAN.2003 01:30:31

OUTPUT POWER AND PSD, Chain 2 HIGH CH



Date: 2.JAN.2003 01:47:32

8.15. 802.11ac VHT80 1TX MODE IN THE 5.2 GHz BAND

8.15.1. 26 dB BANDWIDTH

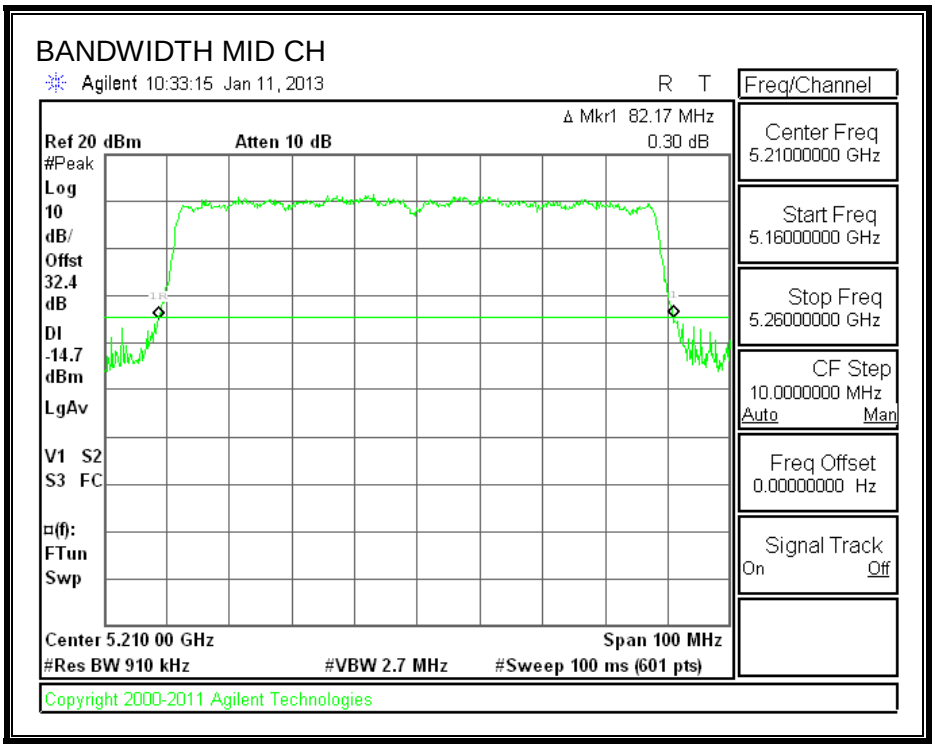
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Mid	5210	82.17

26 dB BANDWIDTH



8.15.2. 99% BANDWIDTH

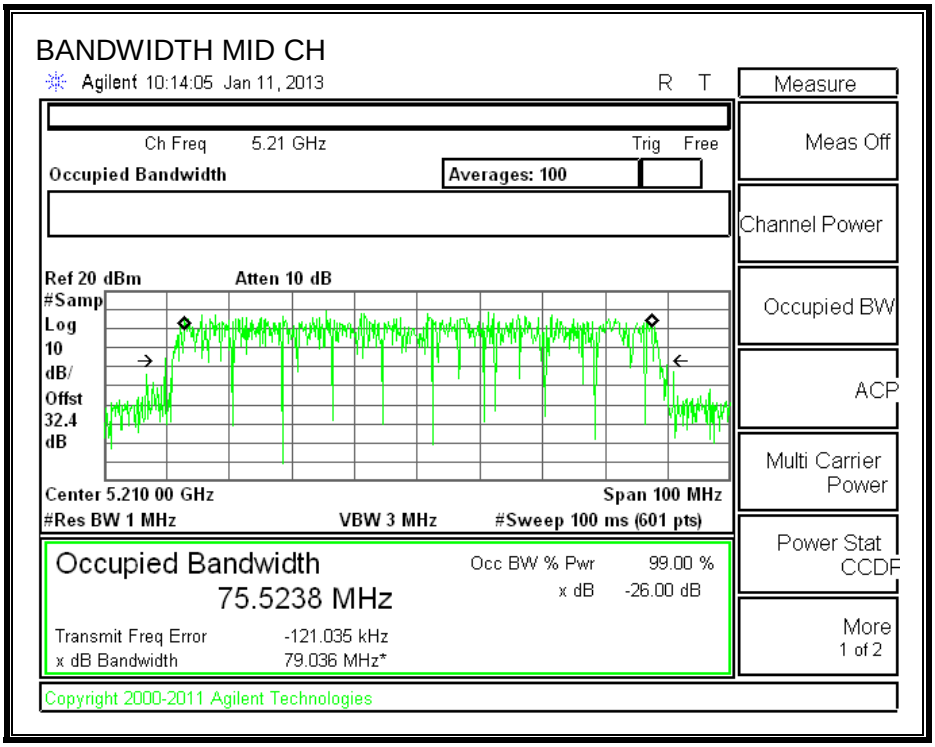
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Mid	5210	75.5238

99% BANDWIDTH



8.15.3. OUTPUT POWER AND PSD

LIMITS

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

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

RESULTS

Antenna Gain

Channel	Frequency (MHz)	Directio Gain (dBi)
Mid	5210	3.20

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	FCC PSD Limit (dBm)
Mid	5210	30.00	17.00

Duty Cycle CF (dB)	0.10	

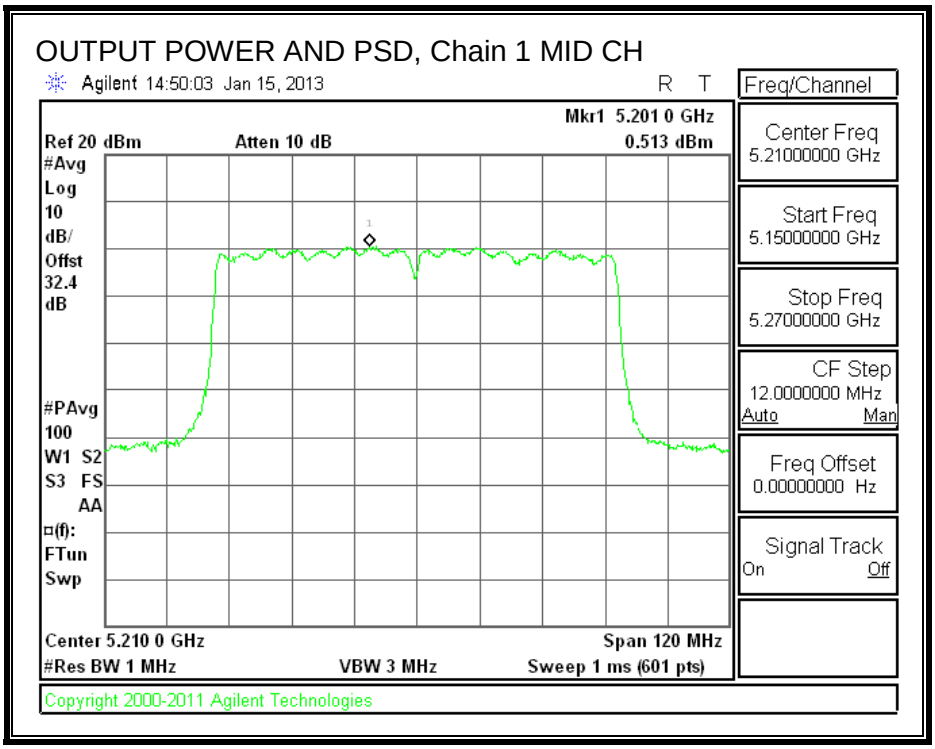
Output Power Results

Channel	Frequency (MHz)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5210	13.00	13.00	30.00	-17.00

PSD Results

Channel	Frequency (MHz)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5210	0.513	0.613	17.00	-16.39

OUTPUT POWER AND PSD, Chain 1



8.16. 802.11ac VHT80 CDD 2TX MODE IN THE 5.2 GHz BAND

8.16.1. 26 dB BANDWIDTH

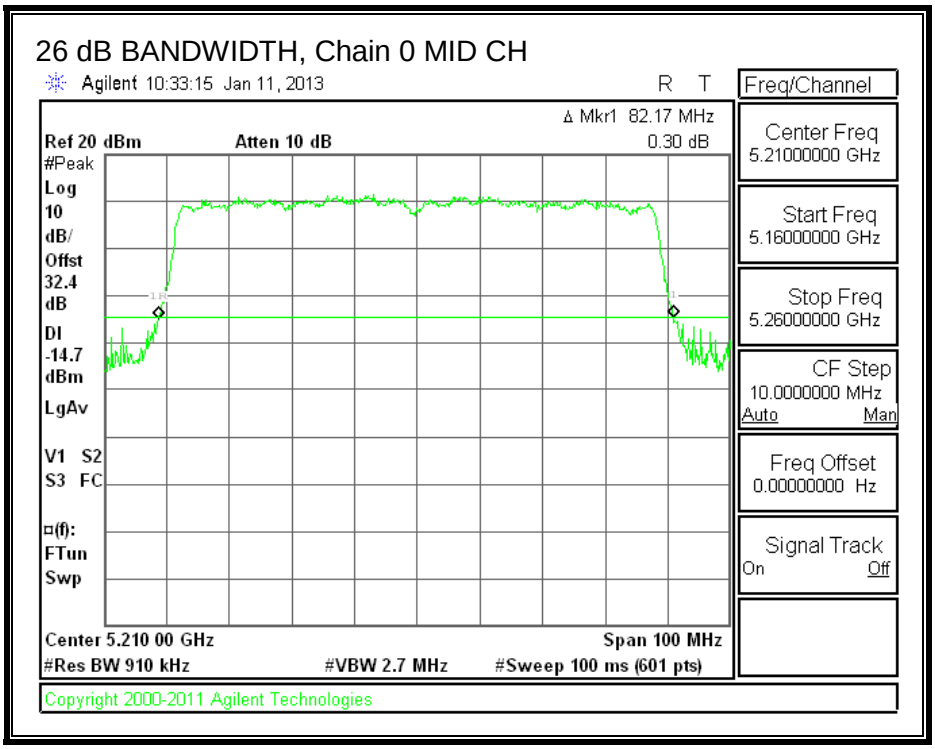
LIMITS

None; for reporting purposes only.

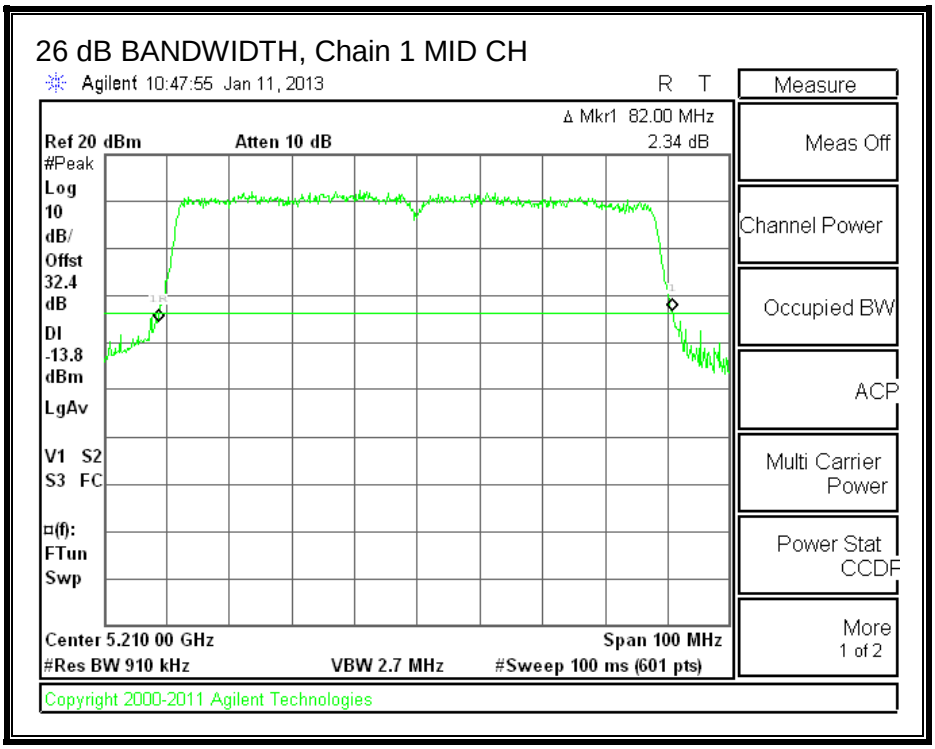
RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Mid	5210	82.17	82.00

26 dB BANDWIDTH, Chain 0



26 dB BANDWIDTH, Chain 1



8.16.2. 99% BANDWIDTH

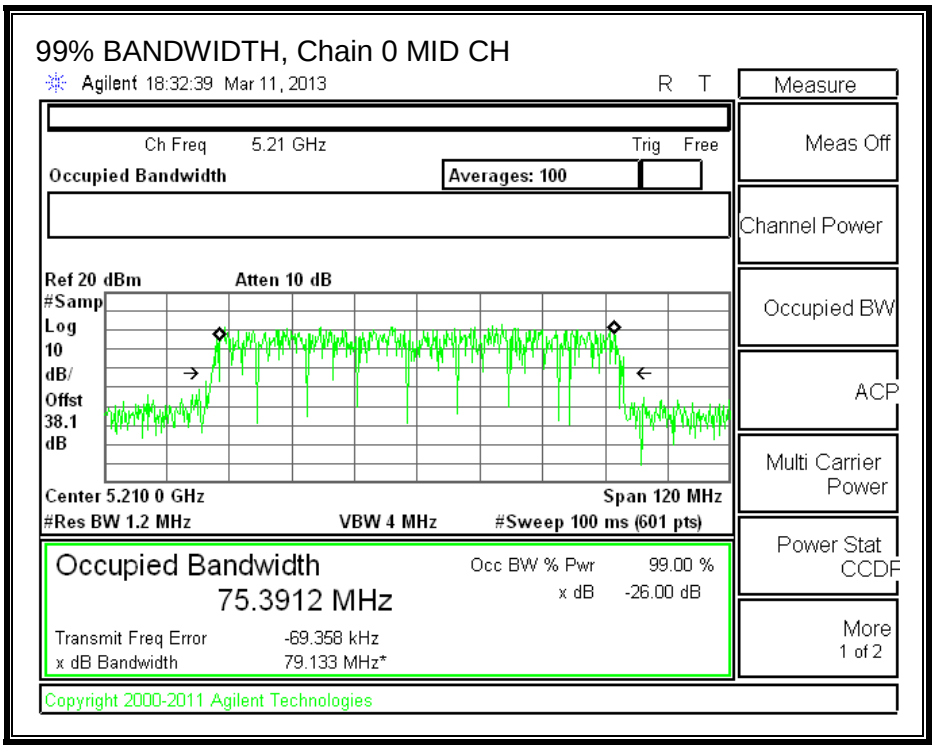
LIMITS

None; for reporting purposes only.

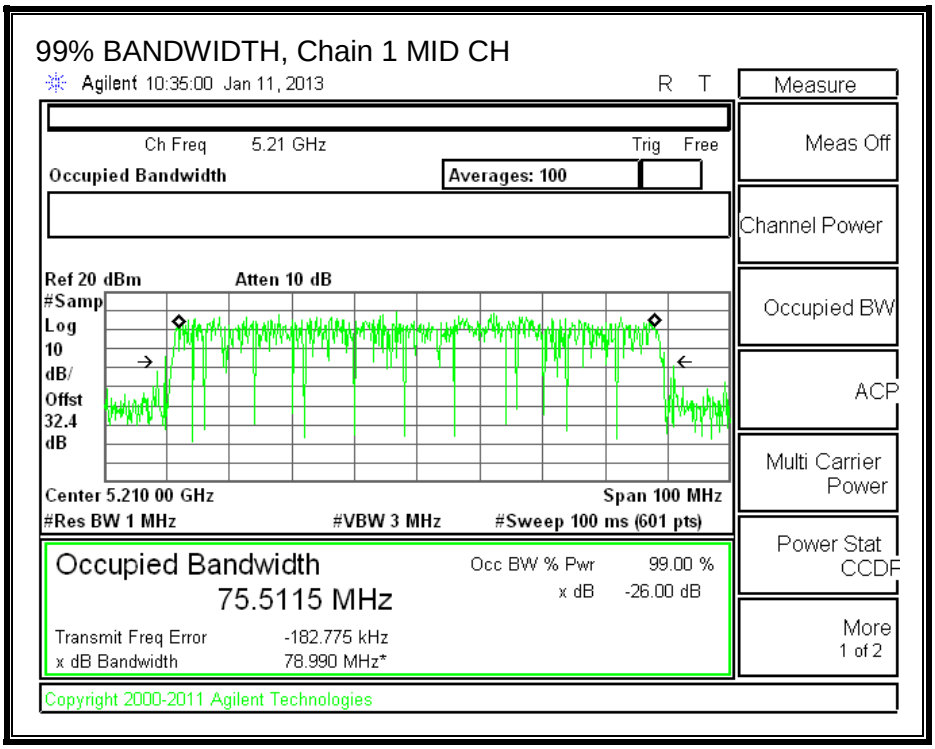
RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Mid	5210	75.3912	75.5115

99% BANDWIDTH, Chain 0



99% BANDWIDTH, Chain 1



8.16.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

For output power, the two chains are considered uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.20	2.20	2.73

For PSD, the two chains are considered correlated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.20	2.20	5.72

RESULTS

Antenna Gain

Channel	Frequency (MHz)	Correlat Directio Gain (dBi)	Unorrel Directio Gain (dBi)
Mid	5210	5.72	2.73

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	FCC PSD Limit (dBm)
Mid	5210	30.00	17.00

Duty Cycle CF (dB)	0.09	

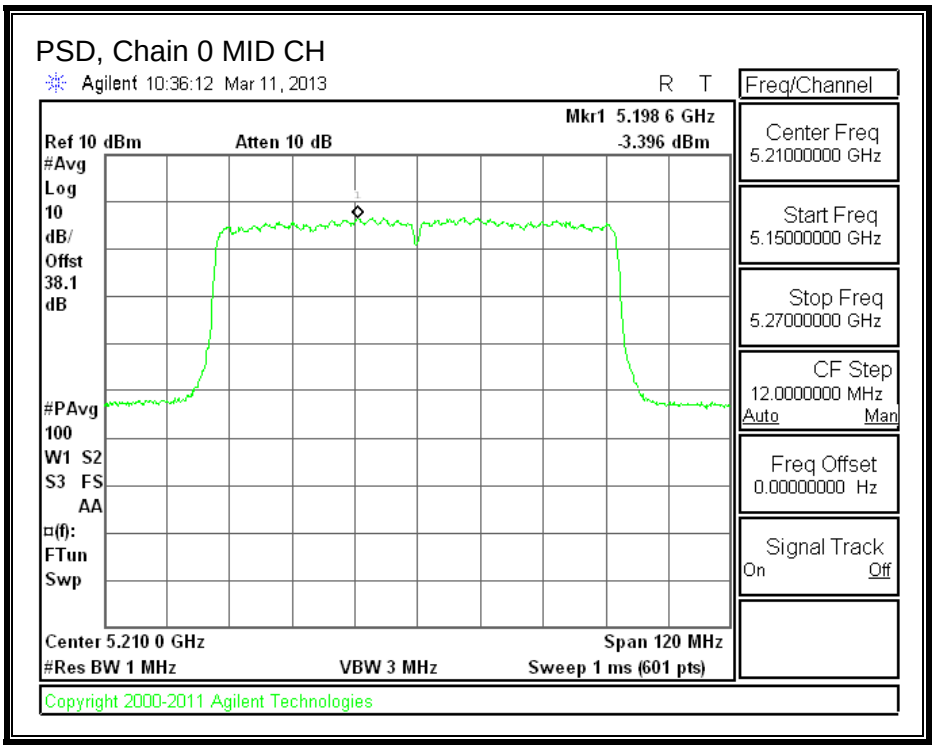
Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5210	12.50	12.60	15.56	30.00	-14.44

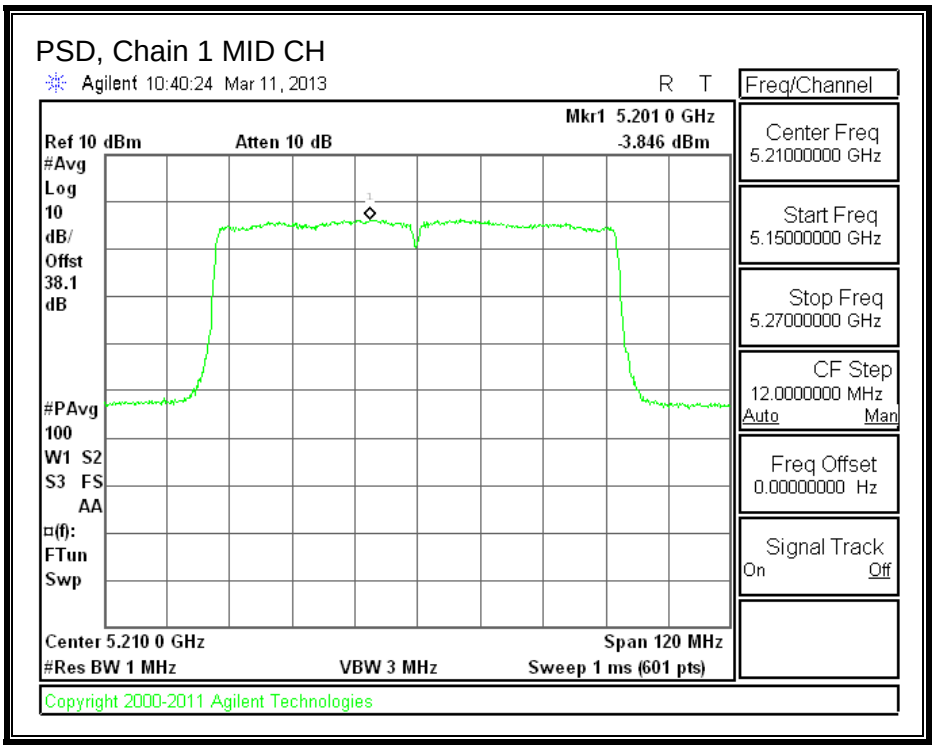
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5210	-3.396	-3.846	-0.51	17.00	-17.51

PSD, Chain 0



PSD, Chain 1



8.17. 802.11ac VHT80 BF 2TX MODE IN THE 5.2 GHz BAND

Covered by testing 11ac VHT80 CDD 2TX mode, the power per chain used for 11ac VHT80 CDD 2TX mode is the same power per chain that will be used for 11ac VHT80 BF 2TX mode. However, since BF is correlated and CDD is uncorrelated for output power, the section below for output power using correlated AG for this BF mode shows it is still compliant.

8.17.1. OUTPUT AVERAGE POWER

LIMITS

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

For output power, the two chains are considered correlated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.20	2.20	5.72

RESULTS

Antenna Gain

Channel	Frequency (MHz)	Correlat Directio Gain (dBi)
Mid	5220	5.72

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)
Mid	5220	30.00

Duty Cycle CF (dB)	0.09	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5220	12.50	12.60	15.56	30.00	-14.44

8.18. 802.11ac VHT80 STBC 2TX MODE IN THE 5.2 GHz BAND

8.18.1. 26 dB BANDWIDTH

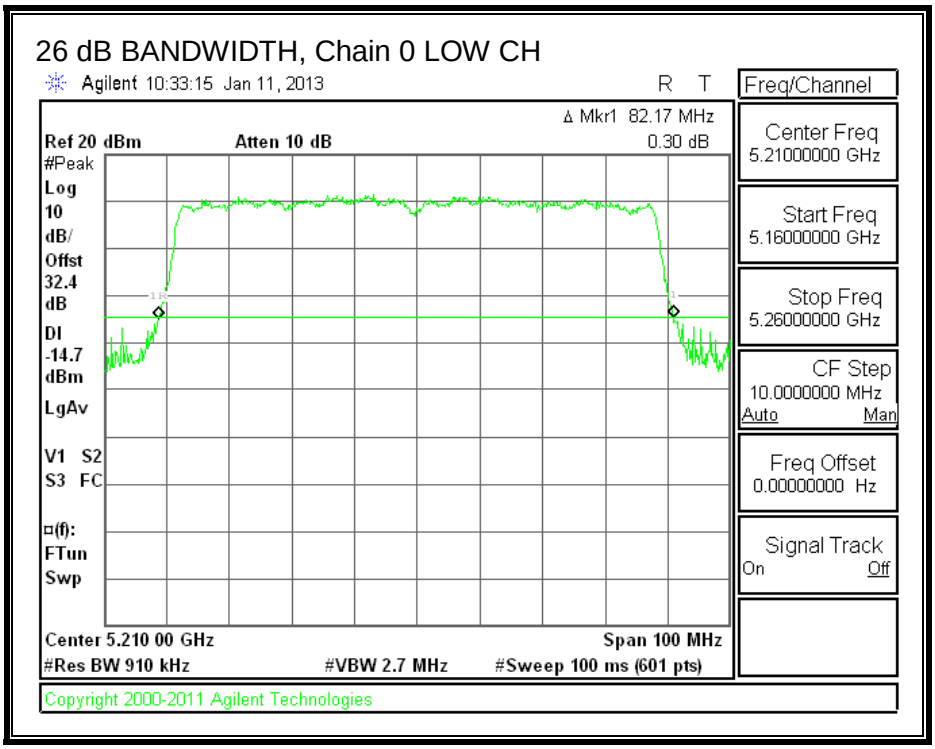
LIMITS

None; for reporting purposes only.

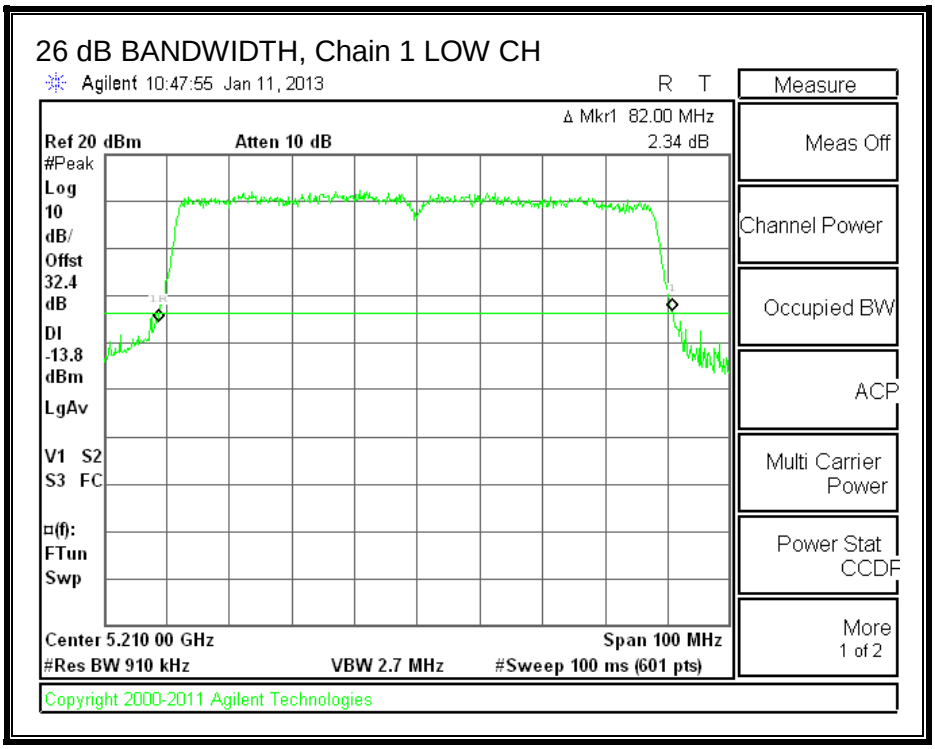
RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Low	5210	82.17	82.00

26 dB BANDWIDTH, Chain 0



26 dB BANDWIDTH, Chain 1



8.18.2. 99% BANDWIDTH

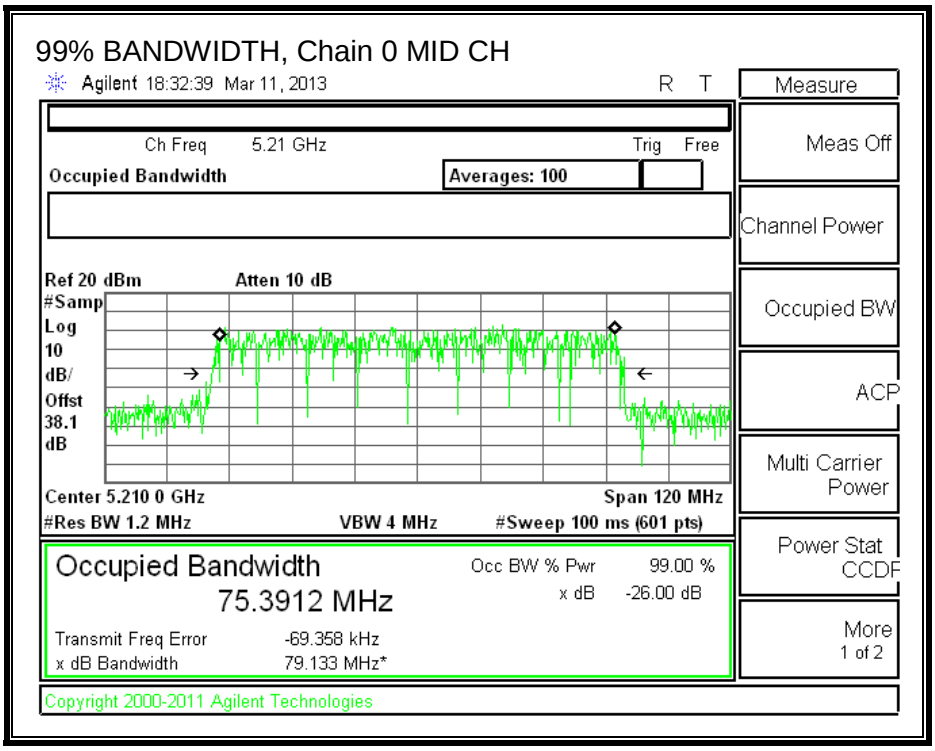
LIMITS

None; for reporting purposes only.

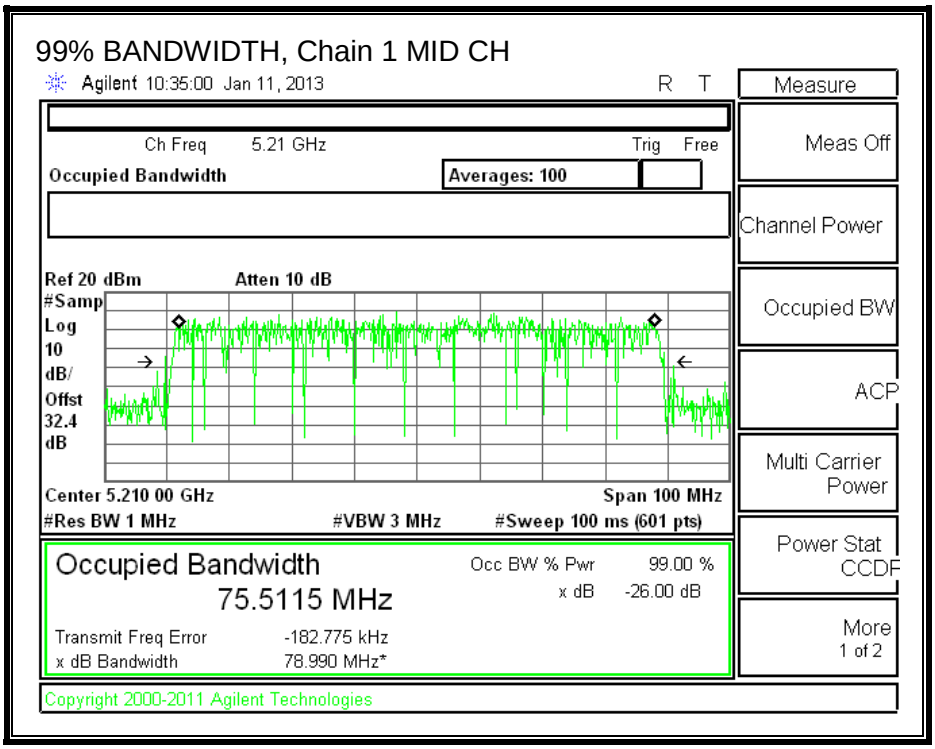
RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Mid	5210	75.3912	75.5115

99% BANDWIDTH, Chain 0



99% BANDWIDTH, Chain 1



8.18.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.20	2.20	2.73

RESULTS

Antenna Gain

Channel	Frequency (MHz)	Directio Gain (dBi)
Low	5210	2.73

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)
Low	5210	30.00

Gated Output Power Measurement

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5210	12.70	12.40	15.56	30.00	-14.44

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
Low	5210	82.00	75.3912	2.73

Limits

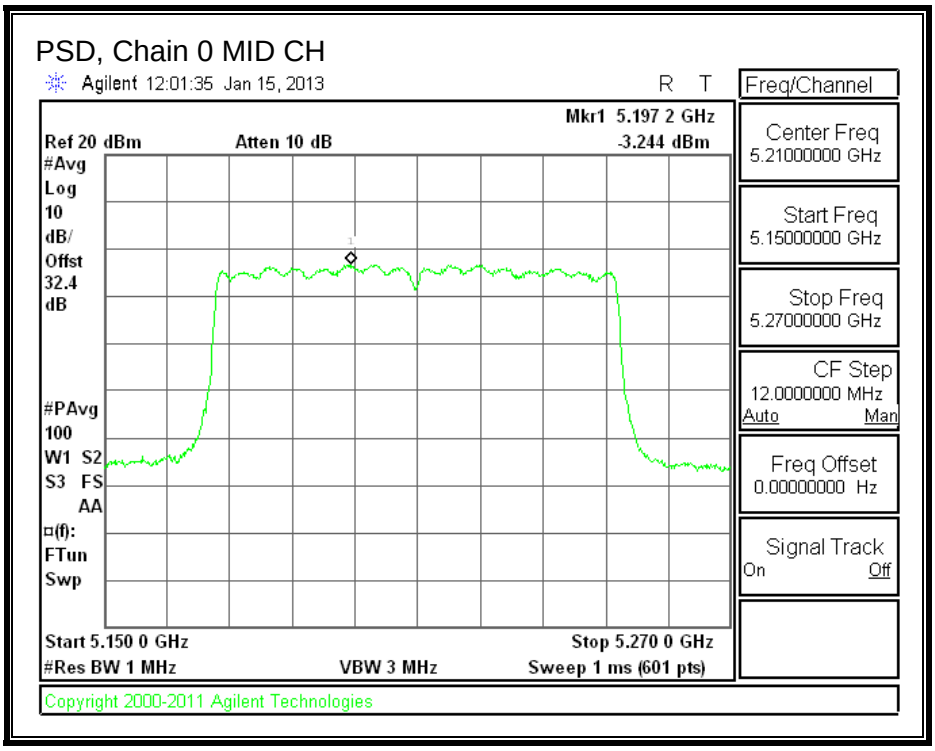
Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC EIRP Limit (dBm)	Max IC Power (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC eirp PSD Limit (dBm)	PSD Limit (dBm)
Low	5210	17.00	23.00	20.27	17.00	4.00	10.00	4.00

Duty Cycle CF (dB)	0.09	

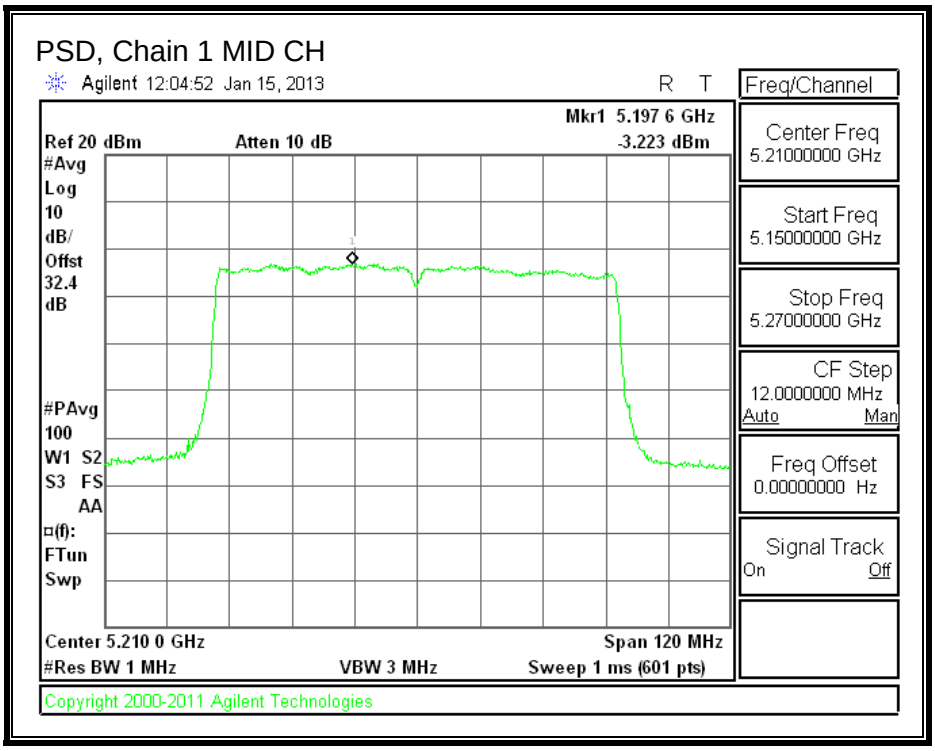
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5210	-3.244	-3.223	-0.133	4.00	-4.13

PSD, Chain 0



PSD, Chain 1



8.19. 802.11ac VHT80 CDD 3TX MODE IN THE 5.2 GHz BAND

8.19.1. 26 dB BANDWIDTH

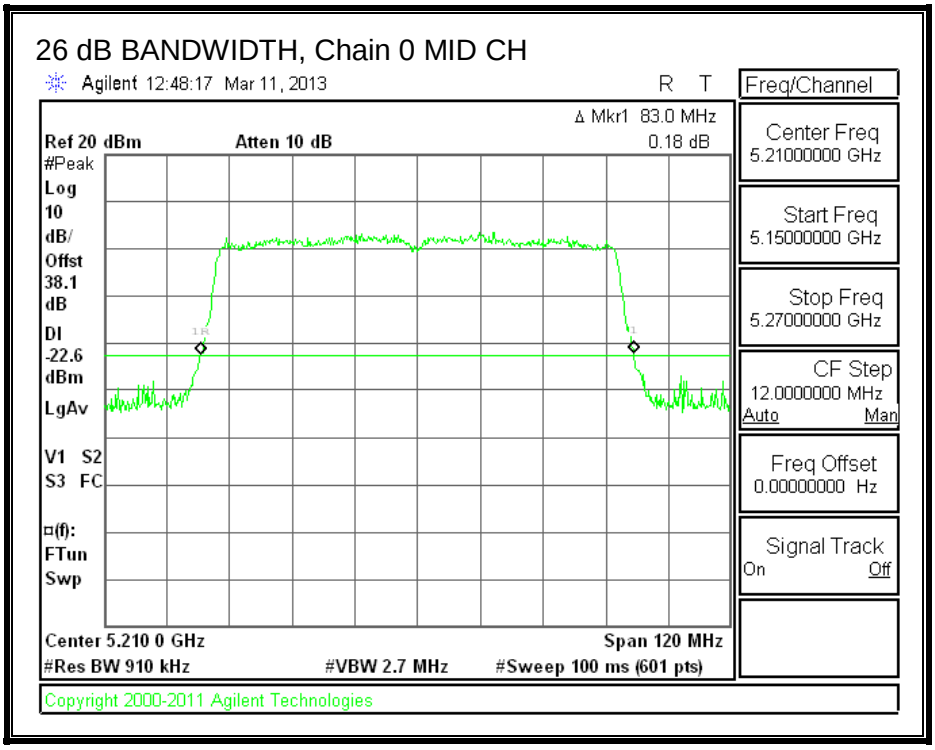
LIMITS

None; for reporting purposes only.

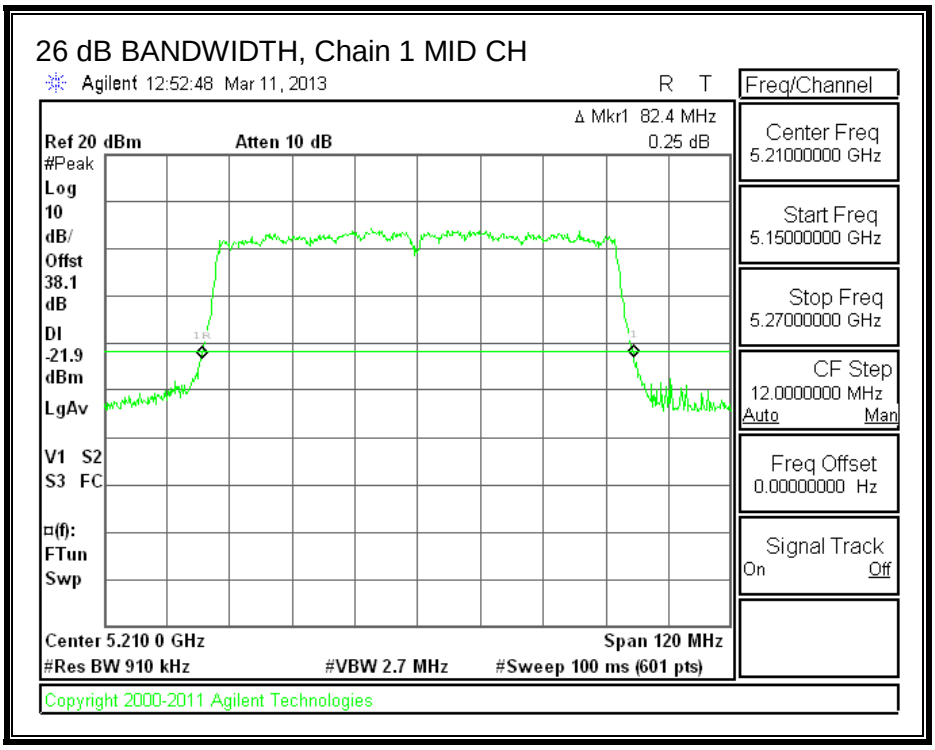
RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
Mid	5210	83.00	82.40	81.40

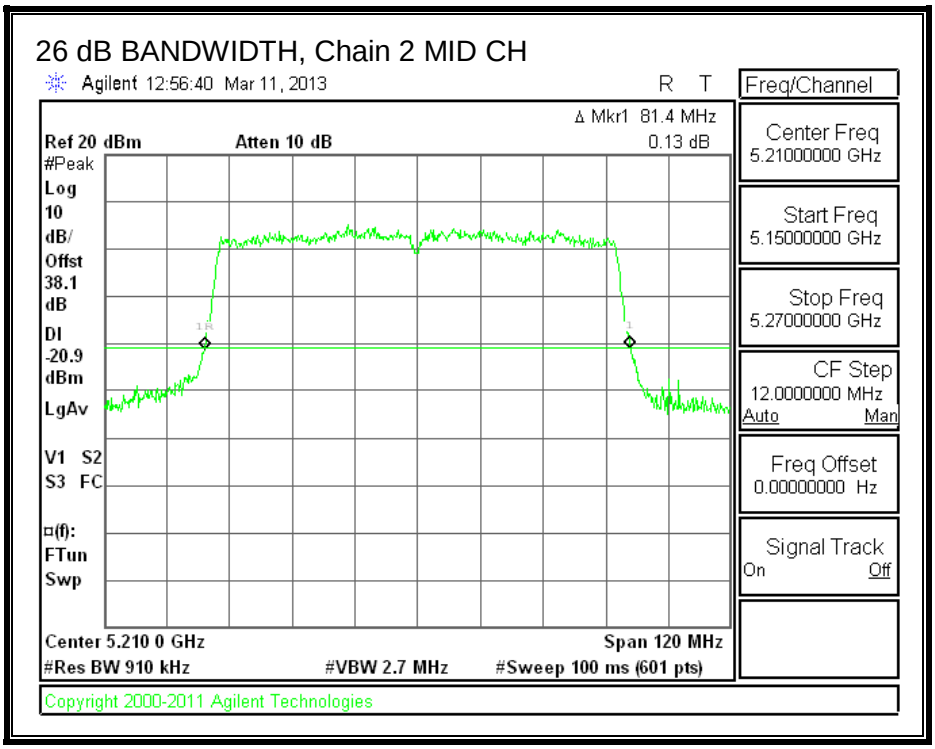
26 dB BANDWIDTH, Chain 0



26 dB BANDWIDTH, Chain 1



26 dB BANDWIDTH, Chain 2



8.19.2. 99% BANDWIDTH

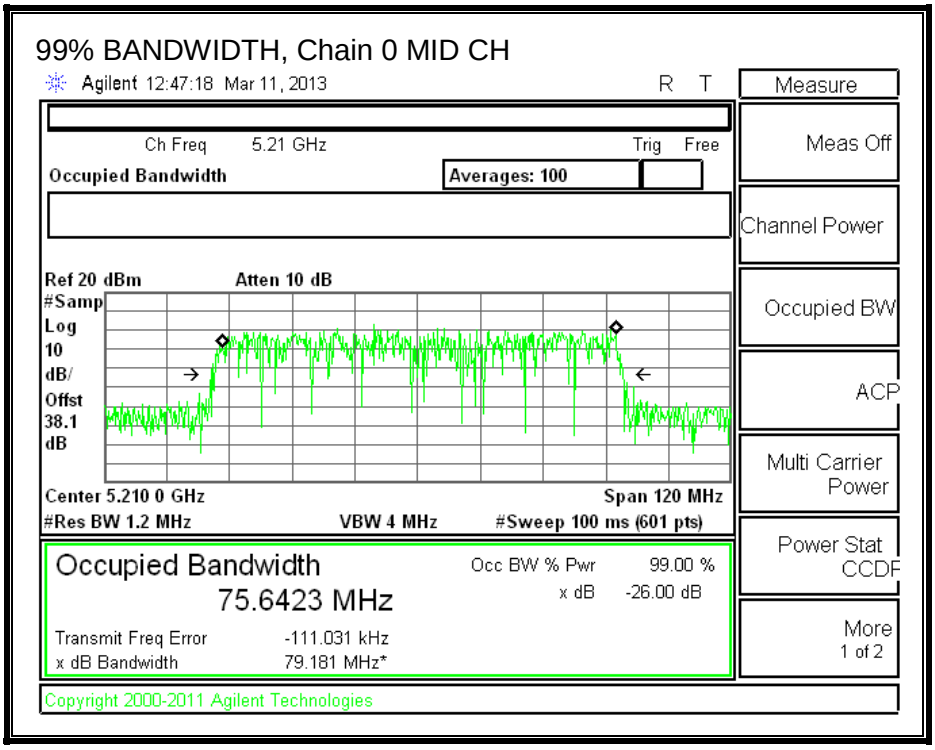
LIMITS

None; for reporting purposes only.

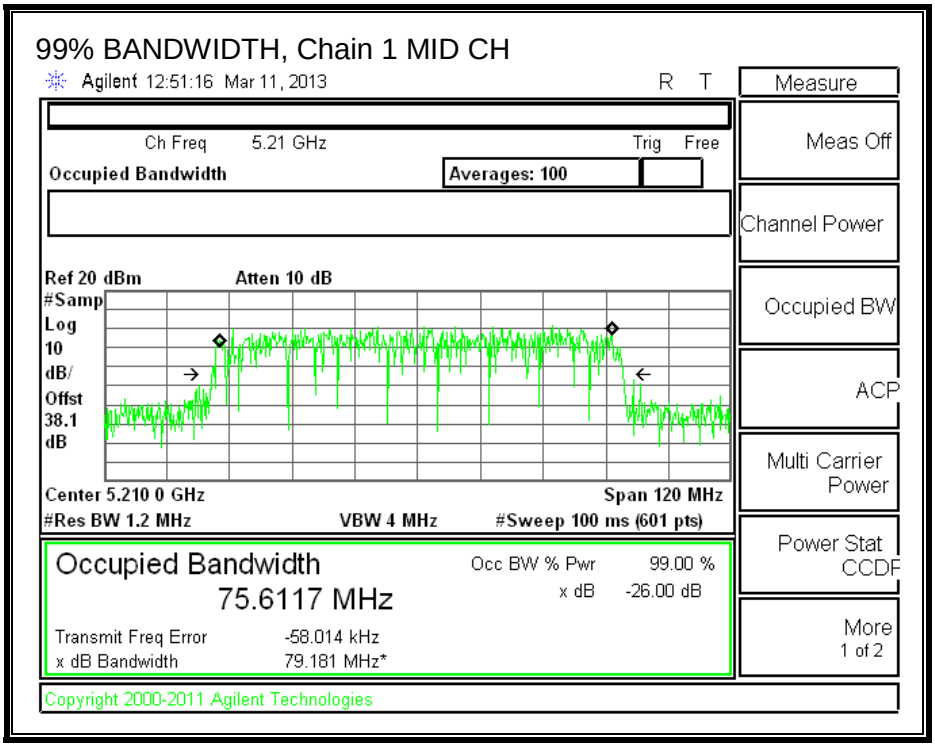
RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
Mid	5210	75.6423	75.6117	75.5864

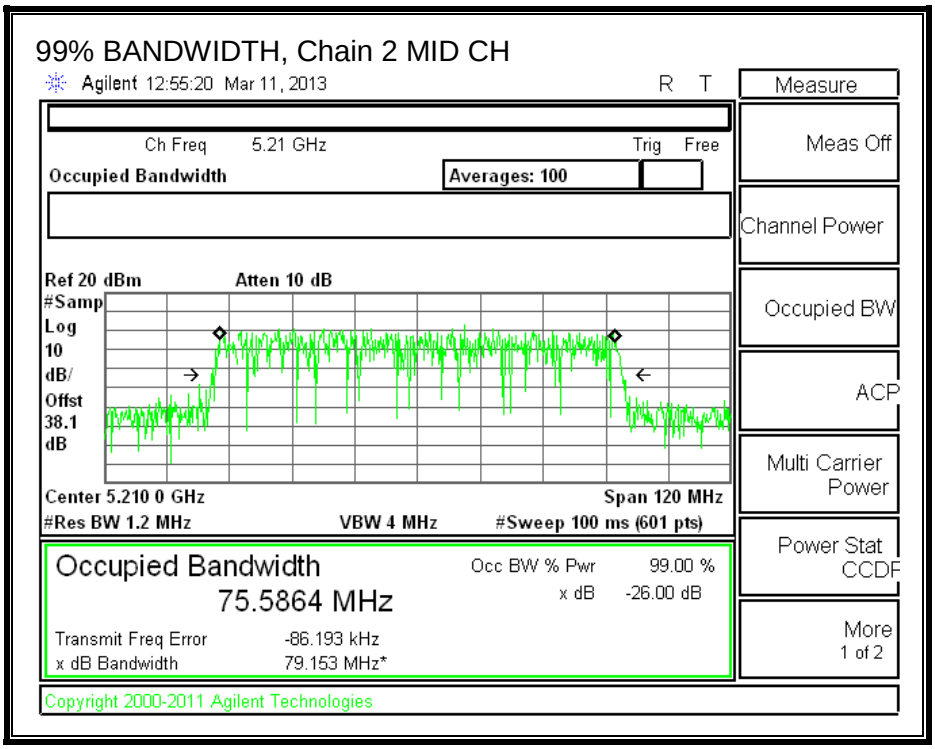
99% BANDWIDTH, Chain 0



99% BANDWIDTH, Chain 1



99% BANDWIDTH, Chain 2



8.19.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated for output power and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.20	1.40	2.20	2.33

The TX chains are correlated for PSD and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.20	1.40	2.20	7.07

RESULTS

Antenna Gain

Channel	Frequency (MHz)	Correlated Directional Gain (dBi)	Uncorrelated Directional Gain (dBi)
Mid	5210	7.07	2.33

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	FCC PSD Limit (dBm)
Mid	5210	30.00	15.93

Duty Cycle CF (dB)	0.09	

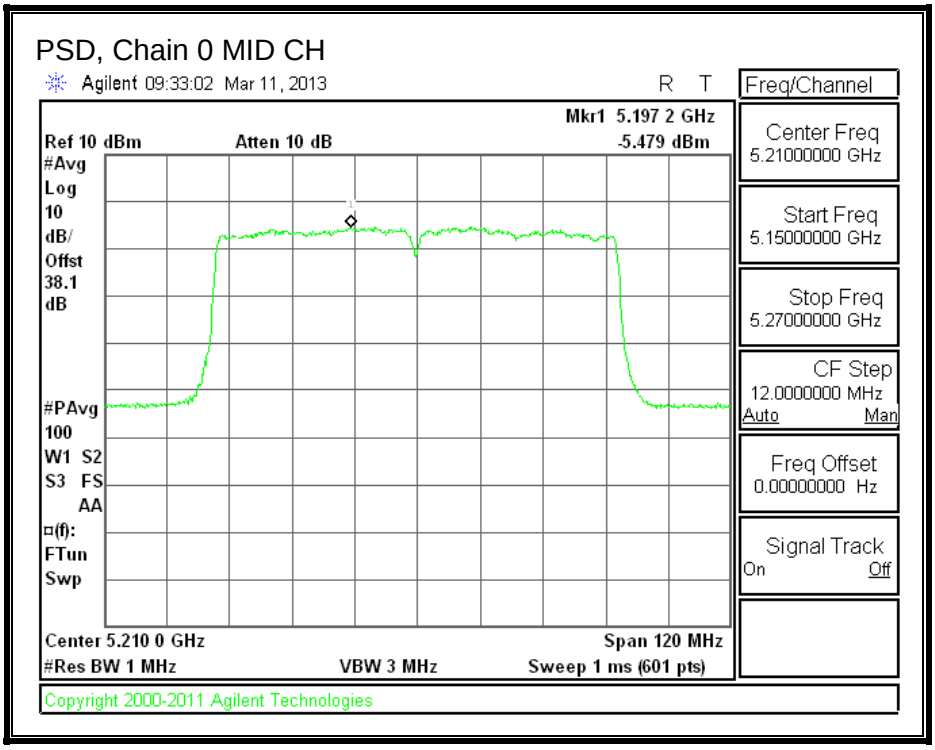
Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5210	11.90	12.10	11.95	16.76	30.00	-13.24

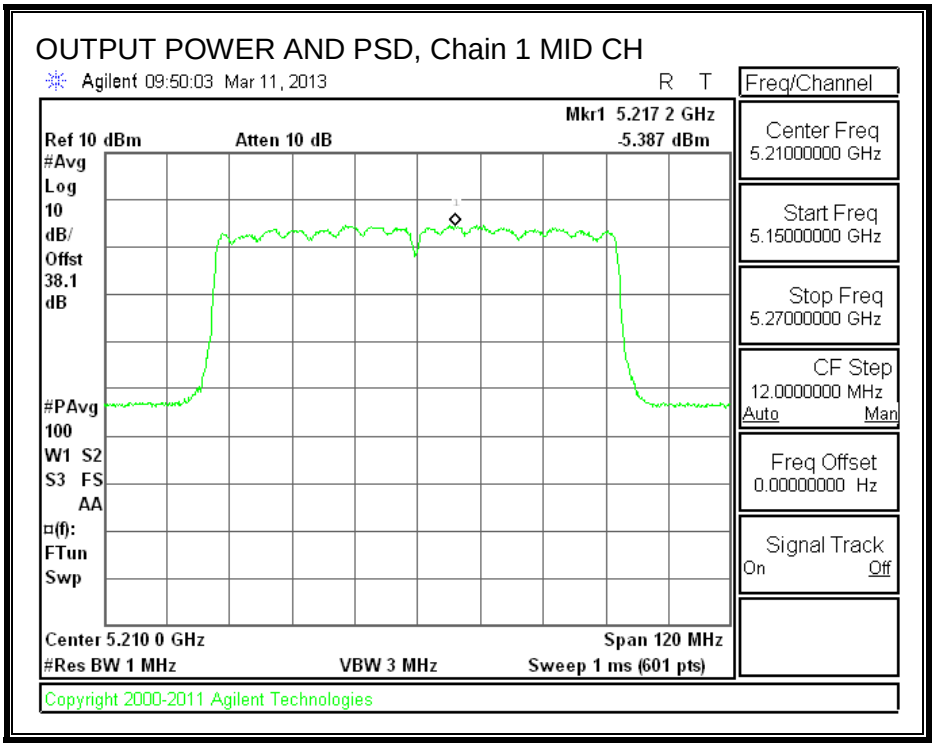
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Chain 2 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5210	-5.479	-5.387	-5.062	-0.44	15.93	-16.37

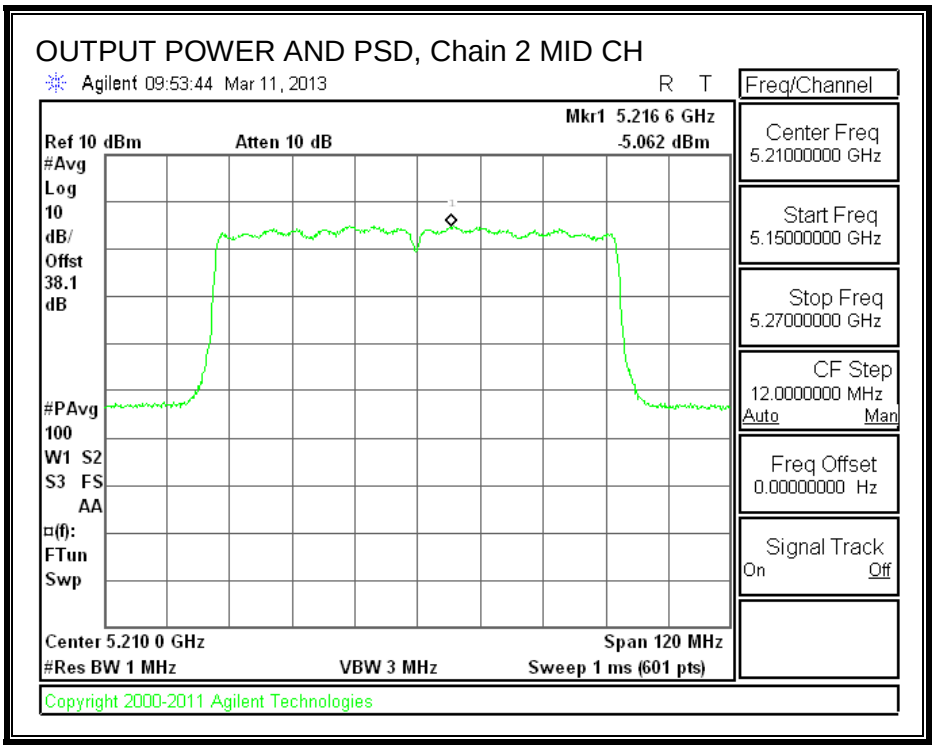
PSD, Chain 0



PSD, Chain 1



PSD, Chain 2



8.20. 802.11ac VHT80 BF 3TX MODE IN THE 5.2 GHz BAND

Covered by testing 11ac VHT80 CDD 3TX mode, the power per chain used for 11ac VHT80 CDD 3TX mode is the same power per chain that will be used for 11ac VHT80 BF 3TX mode. However, since BF is correlated and CDD is uncorrelated for output power, the section below for output power using correlated AG for this BF mode shows it is still compliant.

8.20.1. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are correlated for output power and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.20	1.40	2.20	7.07

RESULTS

Antenna Gain

Channel	Frequency (MHz)	Correlat Directional Gain (dBi)
Mid	5210	7.07

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)
Mid	5210	28.93

Duty Cycle CF (dB)	0.09	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5210	10.00	10.30	10.10	14.91	28.93	-14.02

8.21. 802.11ac VHT80 STBC 3TX MODE IN THE 5.2 GHz BAND

8.21.1. 26 dB BANDWIDTH

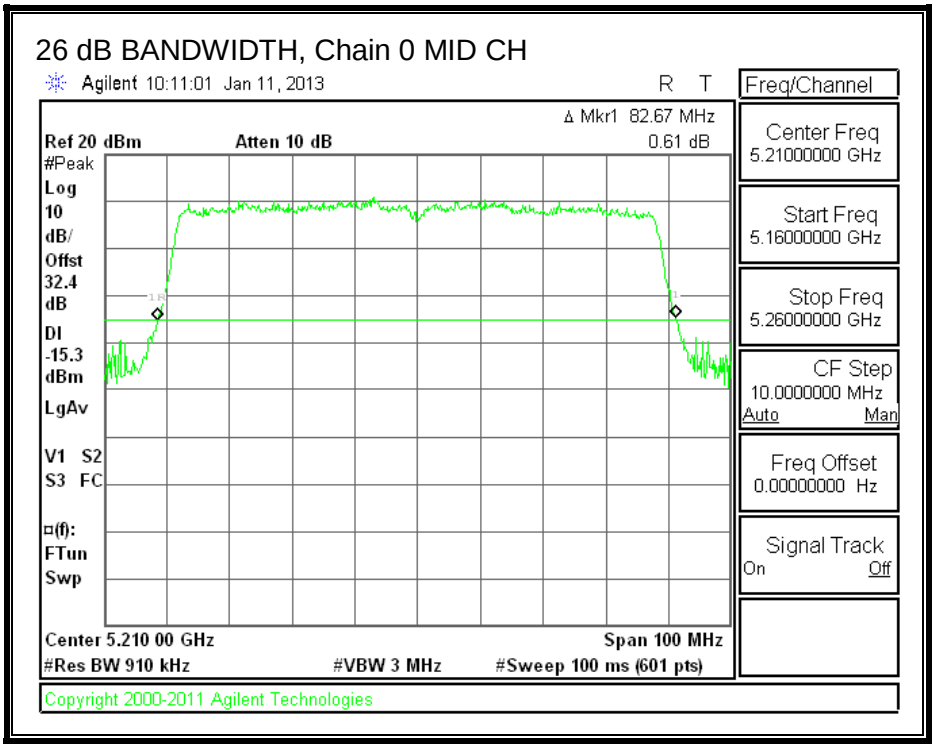
LIMITS

None; for reporting purposes only.

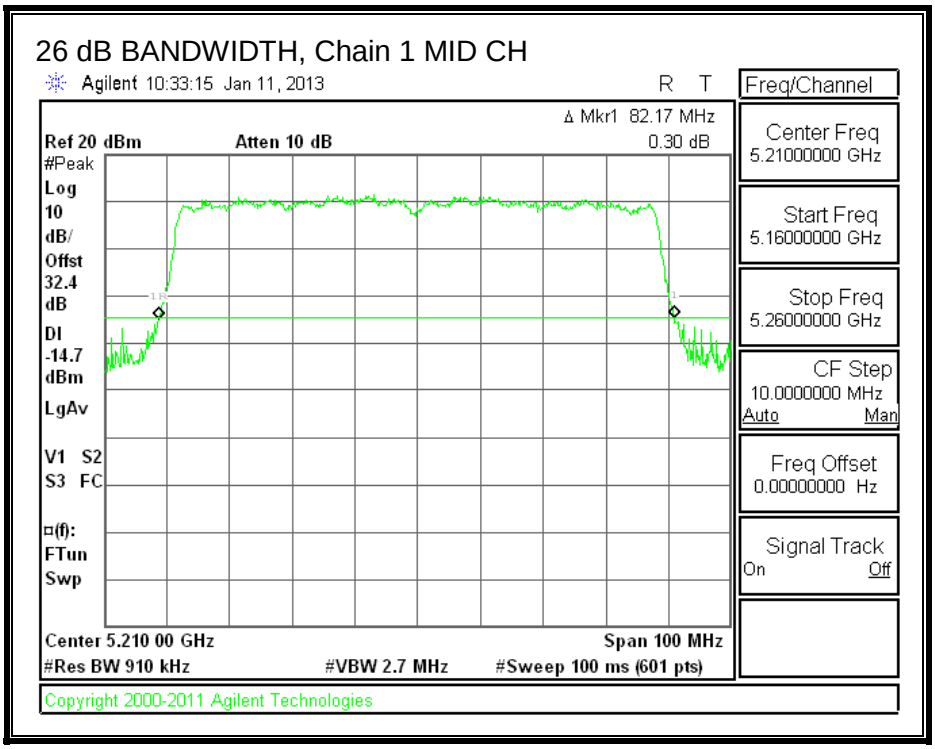
RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
Mid	5210	82.67	82.17	82.00

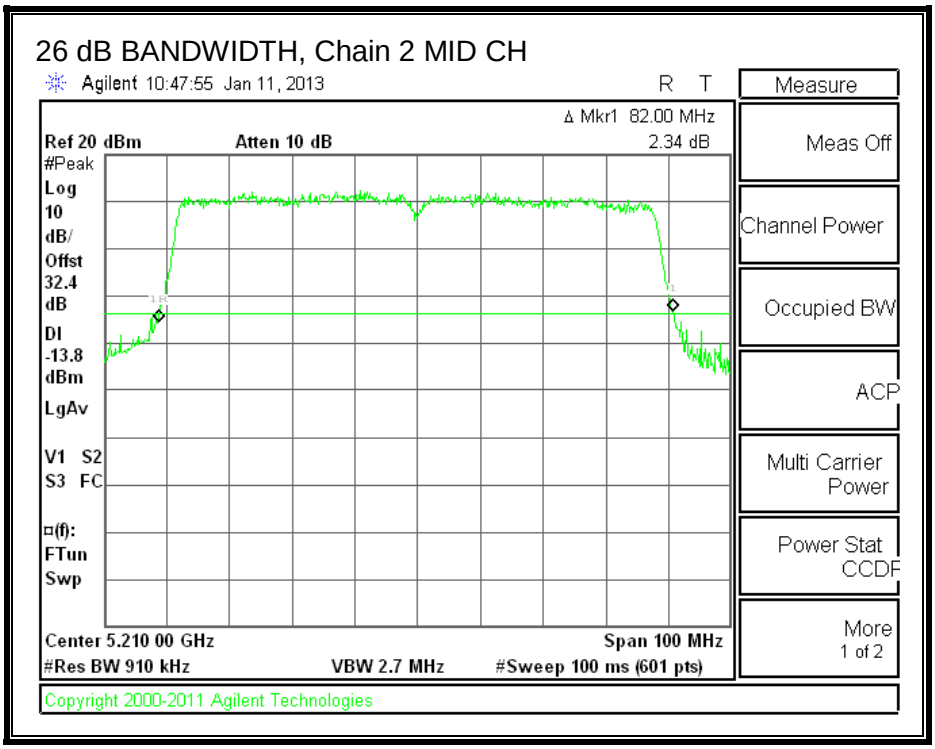
26 dB BANDWIDTH, Chain 0



26 dB BANDWIDTH, Chain 1



26 dB BANDWIDTH, Chain 2



8.21.2. 99% BANDWIDTH

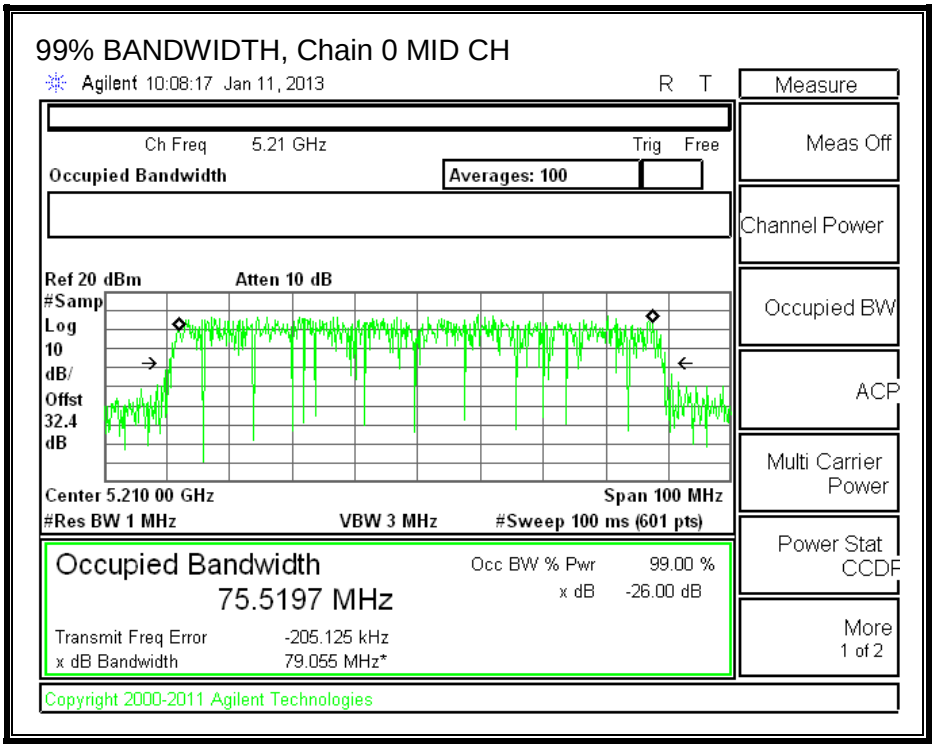
LIMITS

None; for reporting purposes only.

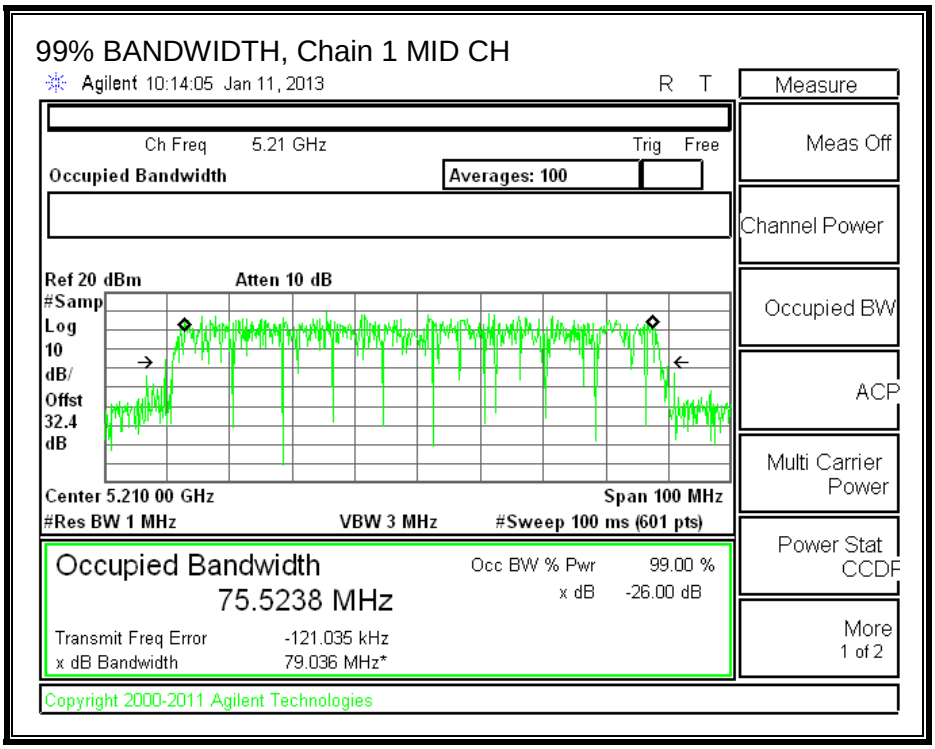
RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
Mid	5210	75.5197	75.5238	75.5115

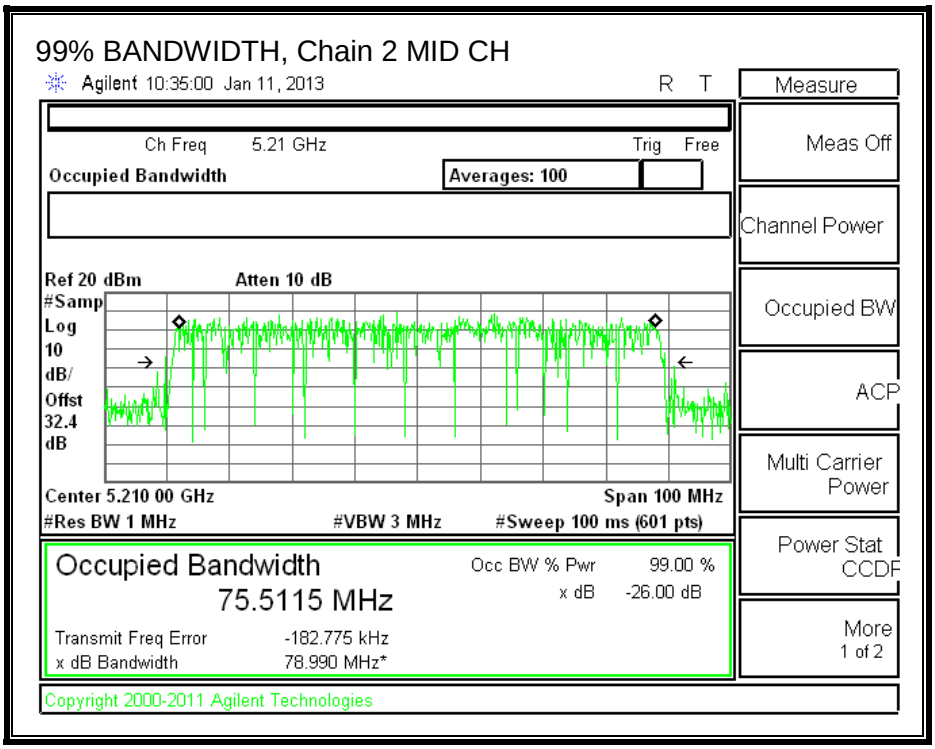
99% BANDWIDTH, Chain 0



99% BANDWIDTH, Chain 1



99% BANDWIDTH, Chain 2



8.21.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.20	1.40	2.20	2.33

RESULTS

Antenna Gain

Channel	Frequency (MHz)	Directio Gain (dBi)
Mid	5210	2.33

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)
Mid	5210	30.00

Duty Cycle CF (dB)	0.09	

Gated Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5210	11.90	11.98	12.10	16.77	30.00	-13.23

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Directio Gain (dBi)
Mid	5210	2.33

Limits

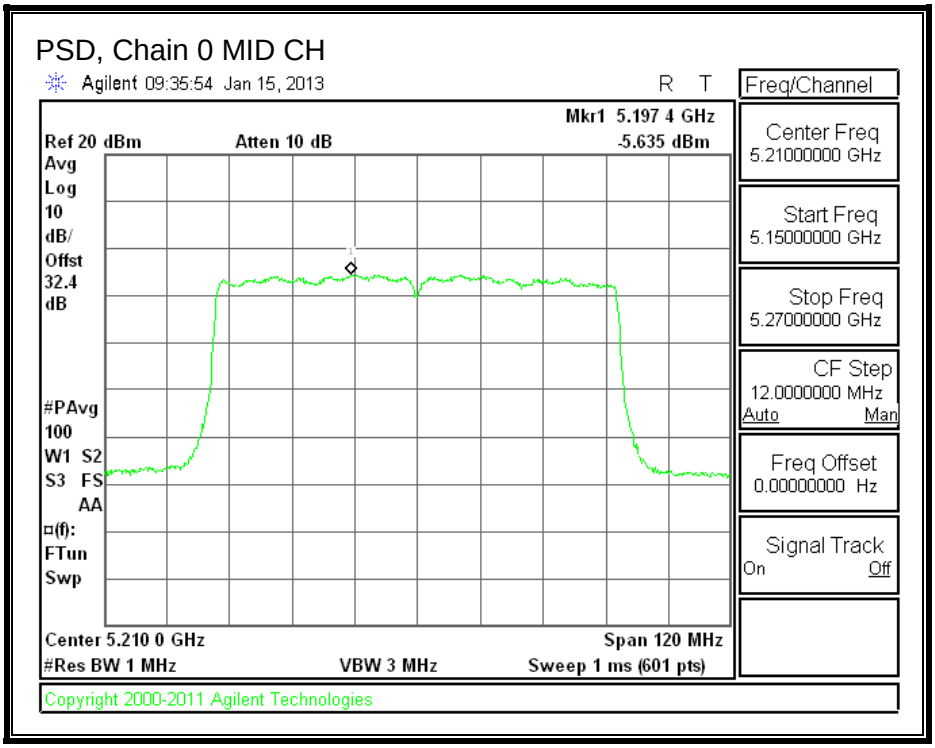
Channel	Frequency (MHz)	FCC Power Limit (dBm)	FCC PPSD Limit (dBm)
Mid	5210	30.00	17.00

Duty Cycle CF (dB)	0.09	

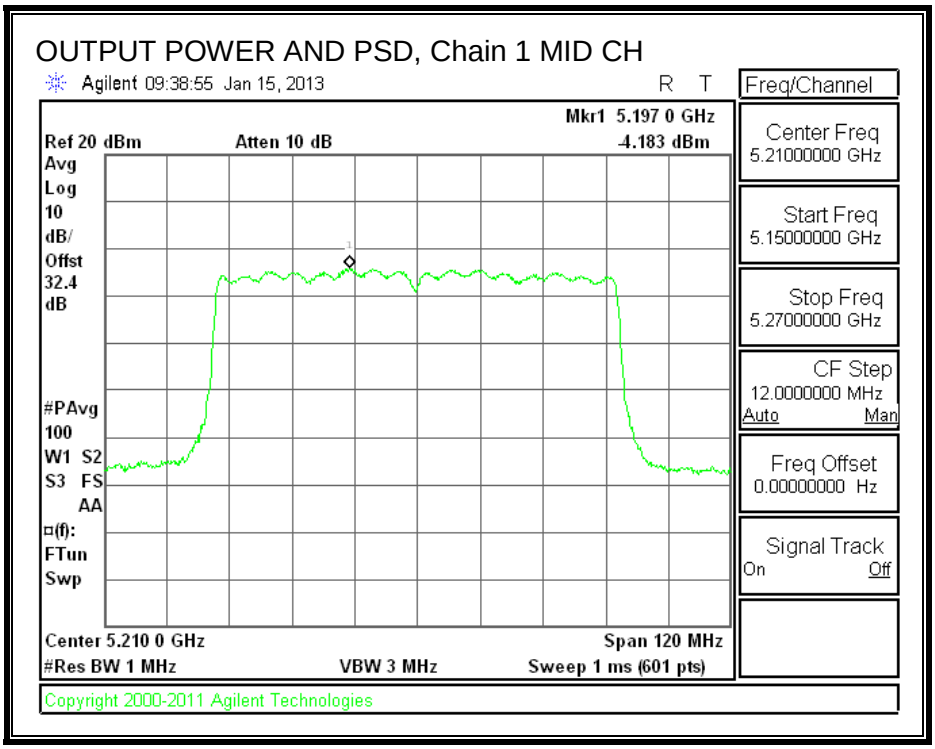
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Chain 2 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5210	-5.635	-4.183	-3.917	0.35	17.00	-16.65

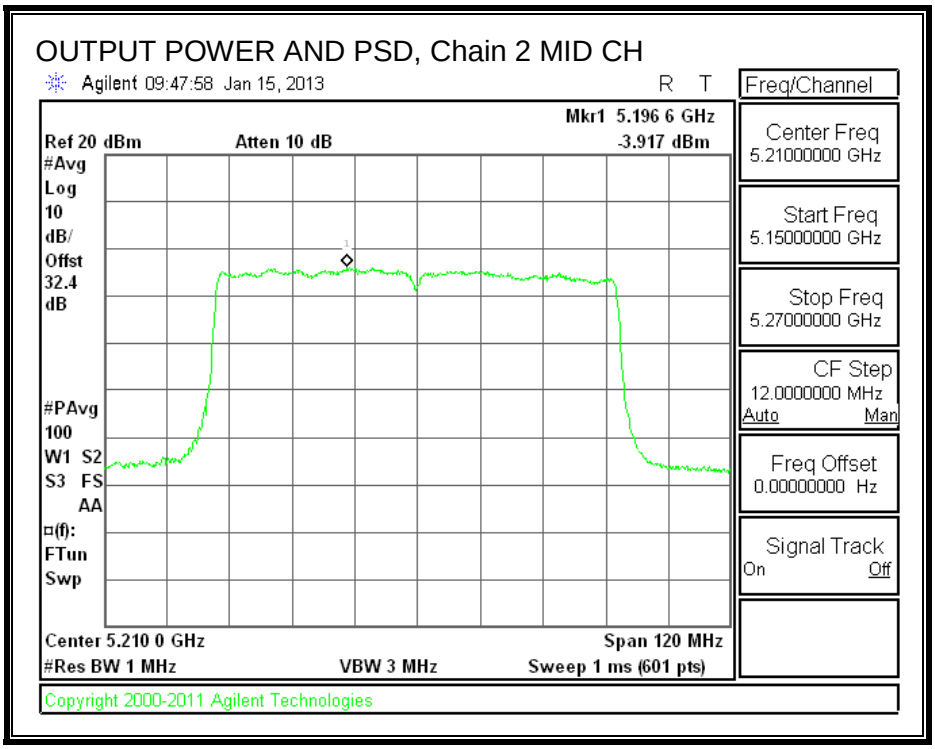
PSD, Chain 0



PSD, Chain 1



PSD, Chain 2



8.22. 802.11a Legacy 1TX MODE IN THE 5.3 GHz BAND

8.22.1. 26 dB BANDWIDTH

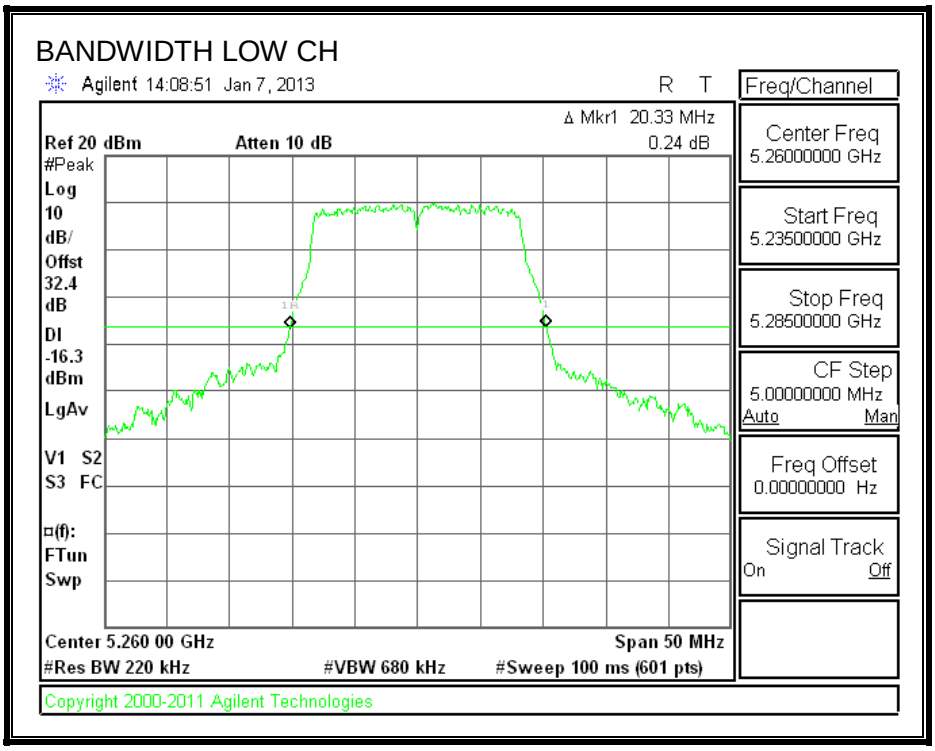
LIMITS

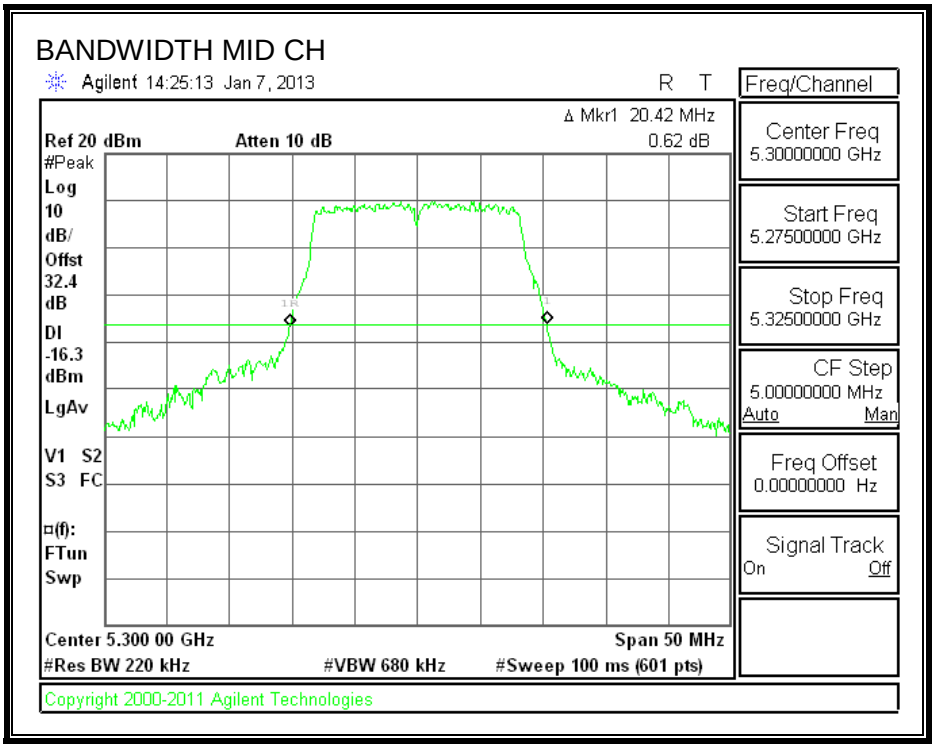
None; for reporting purposes only.

RESULTS

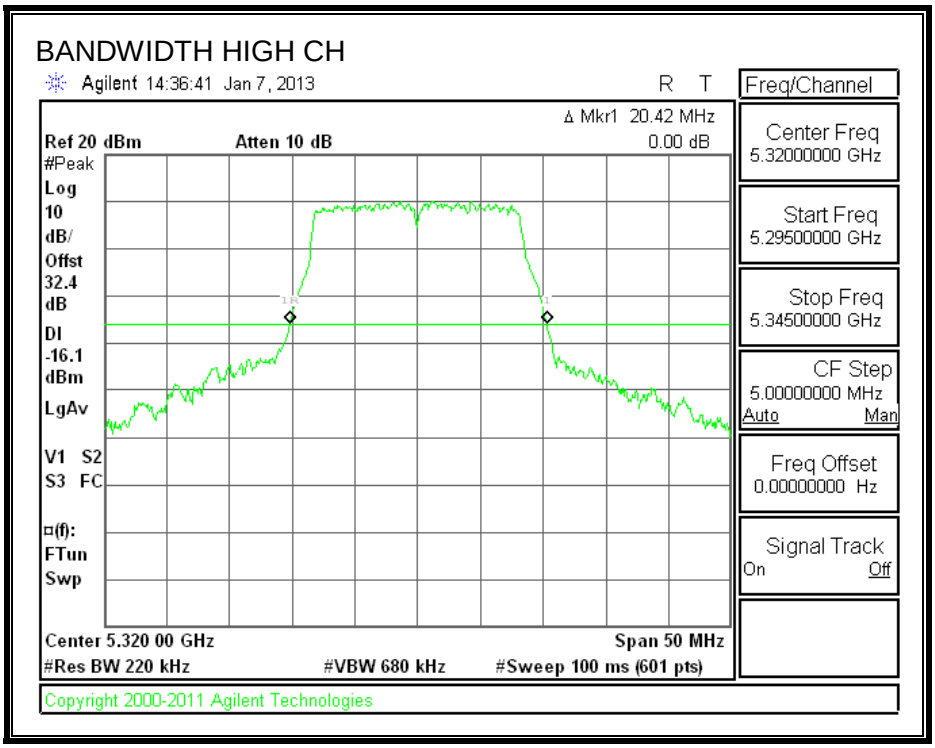
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5260	20.33
Mid	5300	20.42
High	5320	20.42

26 dB BANDWIDTH





BANDWIDTH HIGH CH



8.22.2. 99% BANDWIDTH

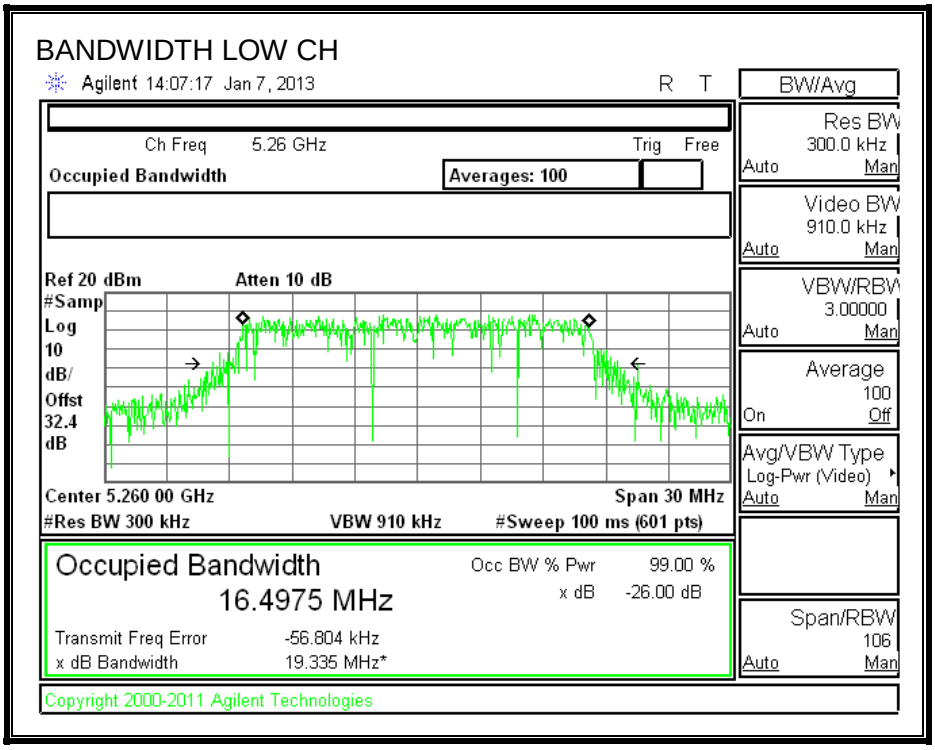
LIMITS

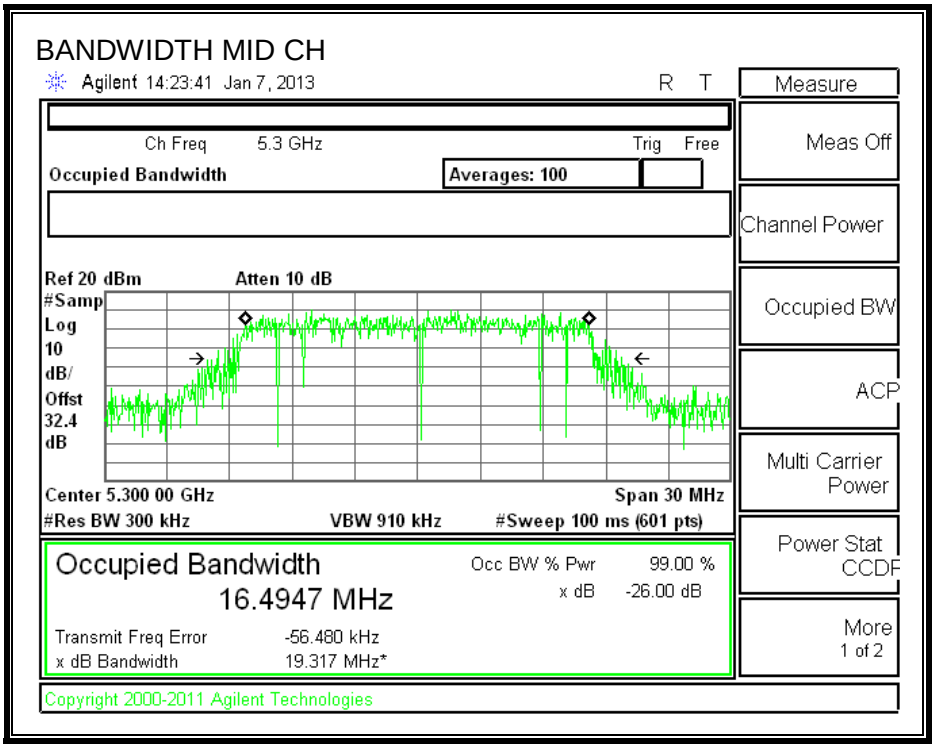
None; for reporting purposes only.

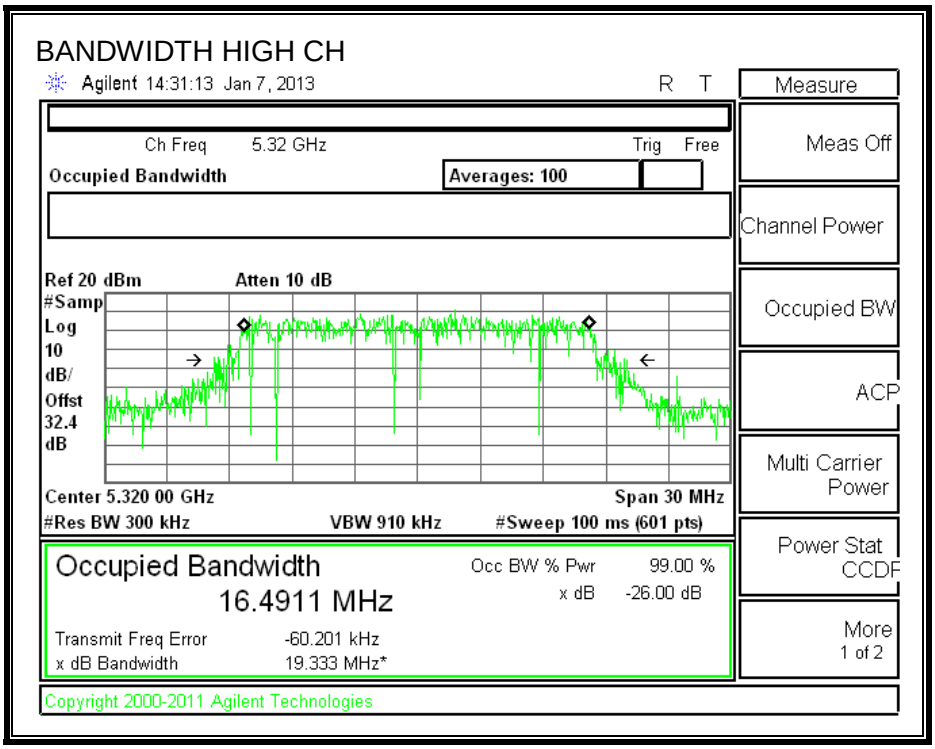
RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5260	16.4975
Mid	5300	16.4947
High	5320	16.4911

99% BANDWIDTH







8.22.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

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 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum 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.

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	5260	20.33	16.4975	3.40
Mid	5300	20.42	16.4947	3.40
High	5320	20.42	16.4911	3.40

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Low	5260	24.00	23.17	29.17	23.17	11.00	11.00	11.00
Mid	5300	24.00	23.17	29.17	23.17	11.00	11.00	11.00
High	5320	24.00	23.17	29.17	23.17	11.00	11.00	11.00

Duty Cycle CF (dB)	0.00	

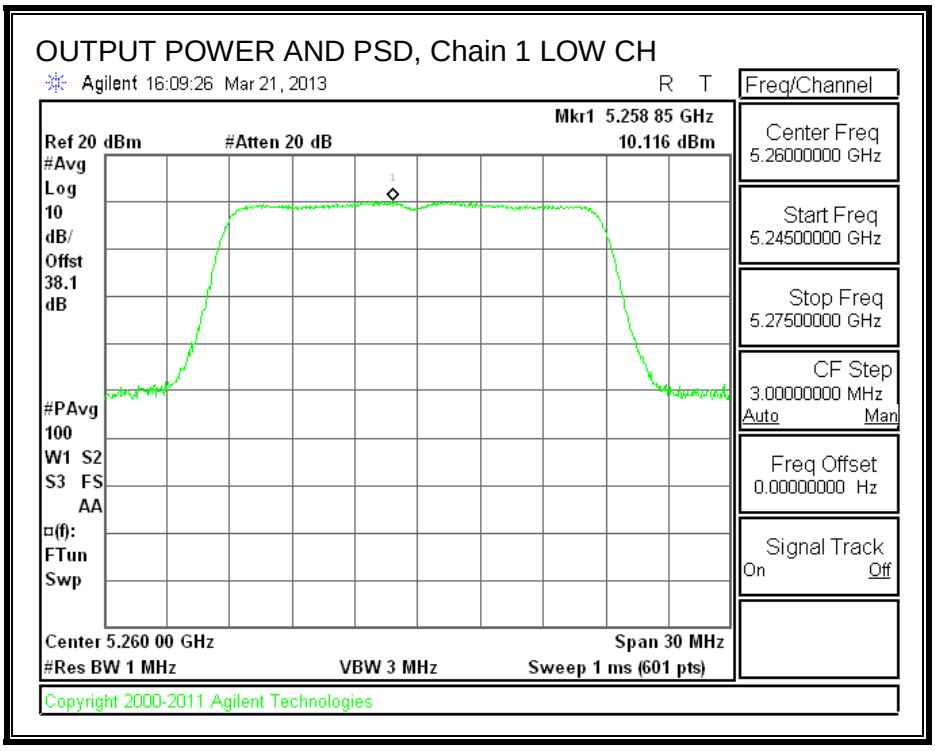
Output Power Results

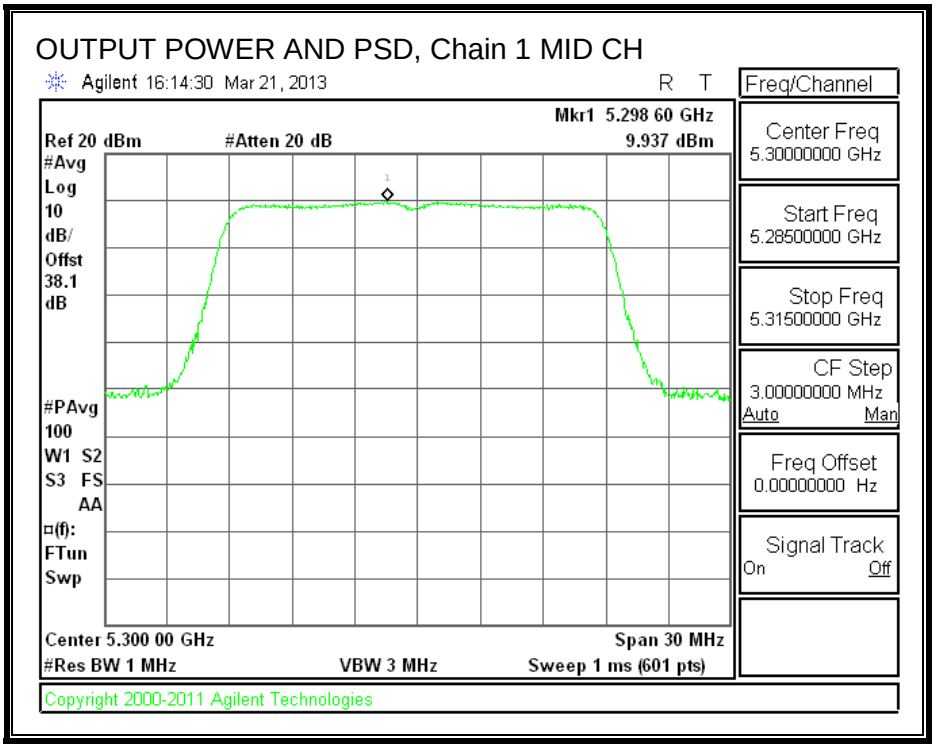
Channel	Frequency (MHz)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	20.50	20.50	23.17	-2.67
Mid	5300	16.00	16.00	23.17	-7.17
High	5320	15.50	15.50	23.17	-7.67

PSD Results

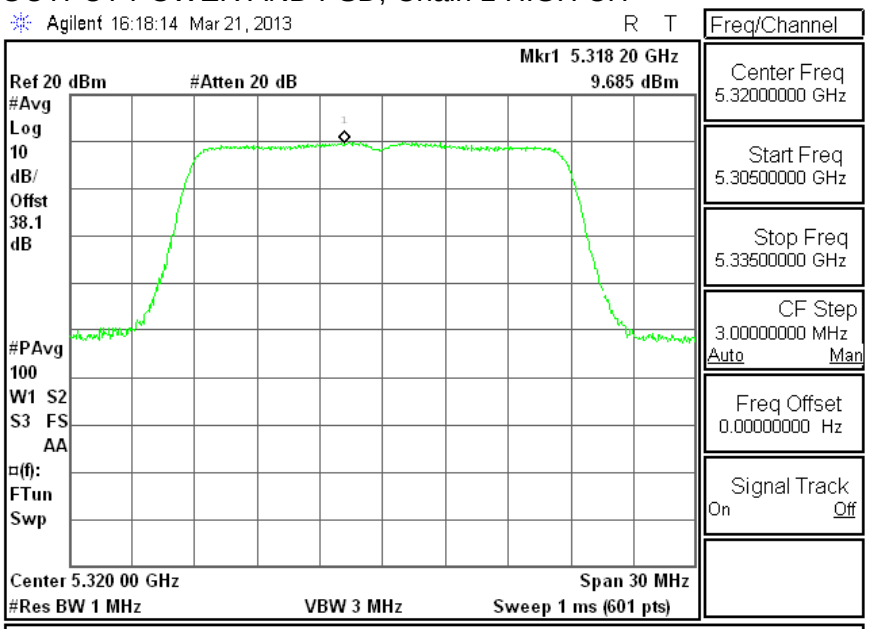
Channel	Frequency (MHz)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5260	10.116	10.116	11.00	-0.88
Mid	5300	9.937	9.937	11.00	-1.06
High	5320	9.685	9.685	11.00	-1.32

OUTPUT POWER AND PSD, Chain 1





OUTPUT POWER AND PSD, Chain 1 HIGH CH



8.22.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

8.23. 802.11n HT20 CDD 2TX MODE IN THE 5.3 GHz BAND

8.23.1. 26 dB BANDWIDTH

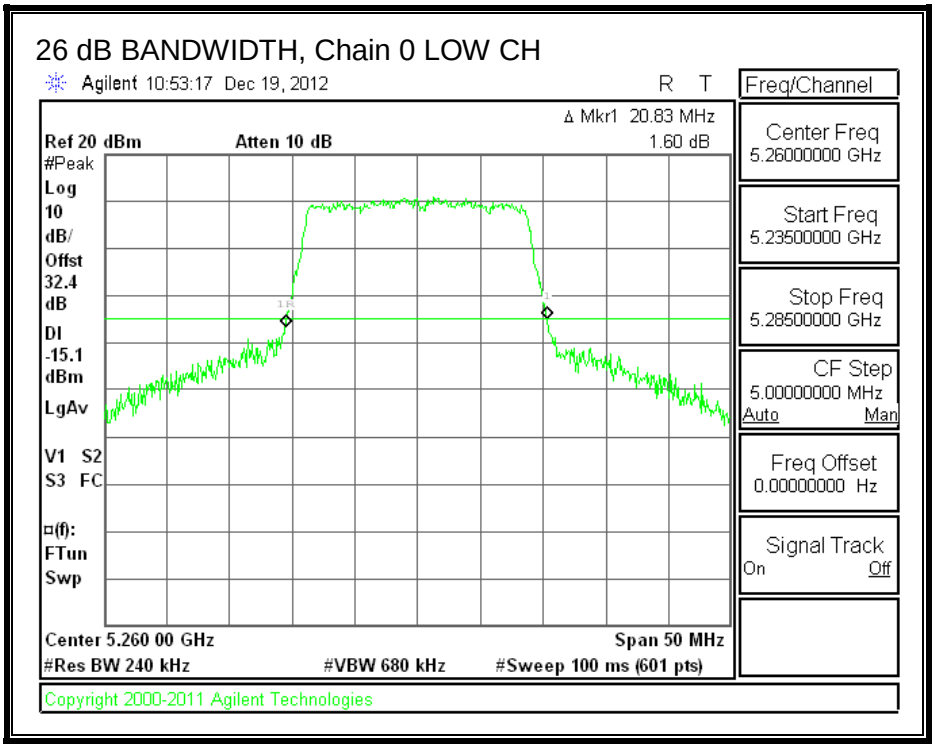
LIMITS

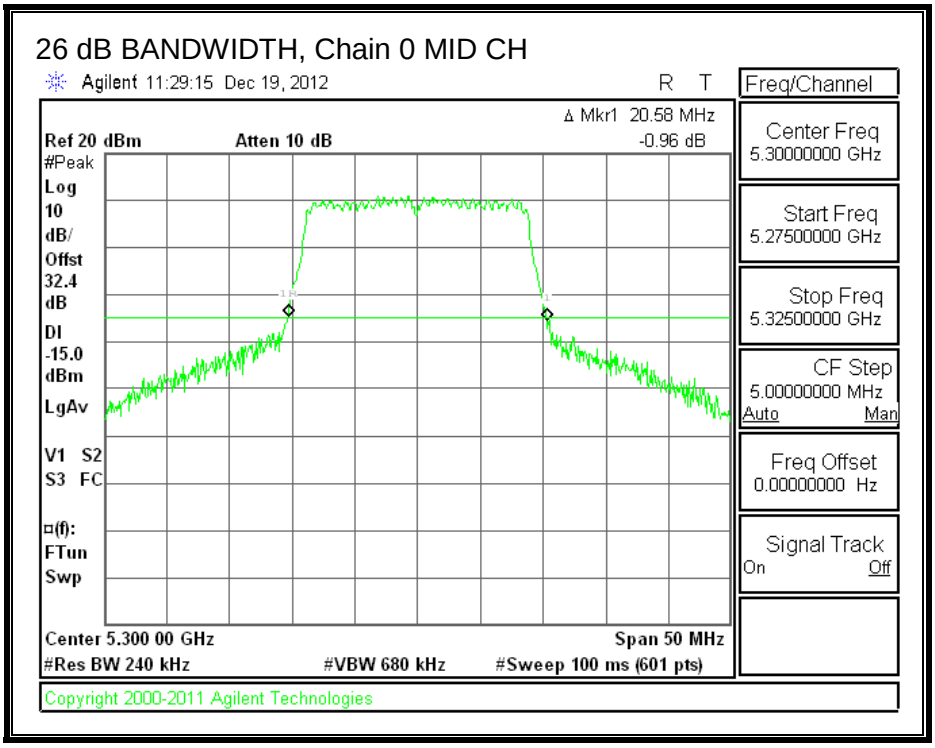
None; for reporting purposes only.

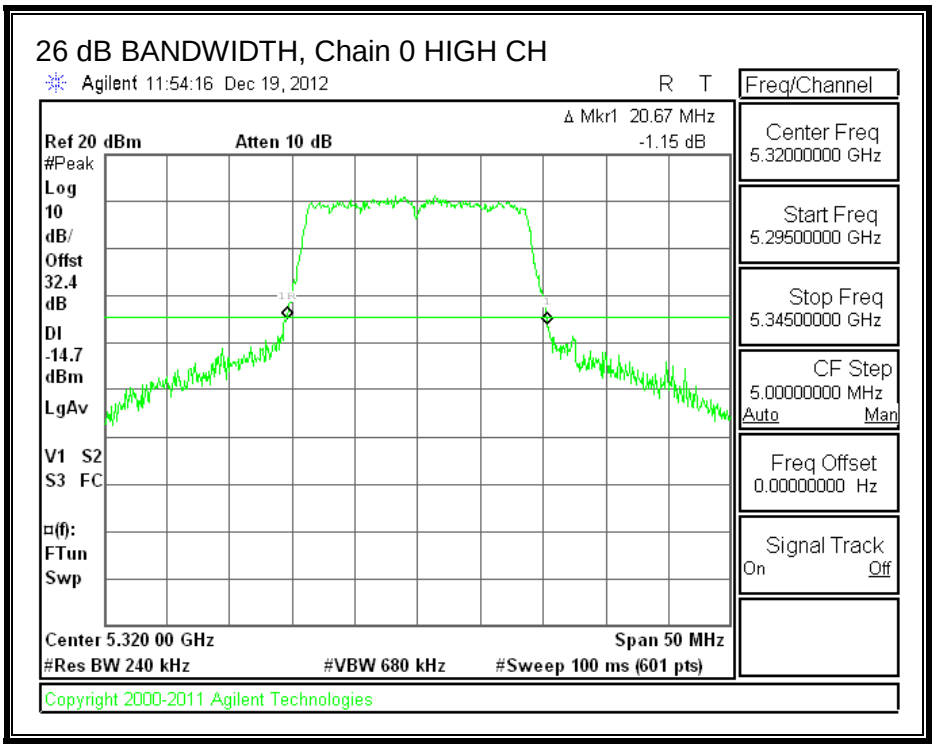
RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Low	5260	20.83	20.58
Mid	5300	20.58	20.58
High	5320	20.67	20.67

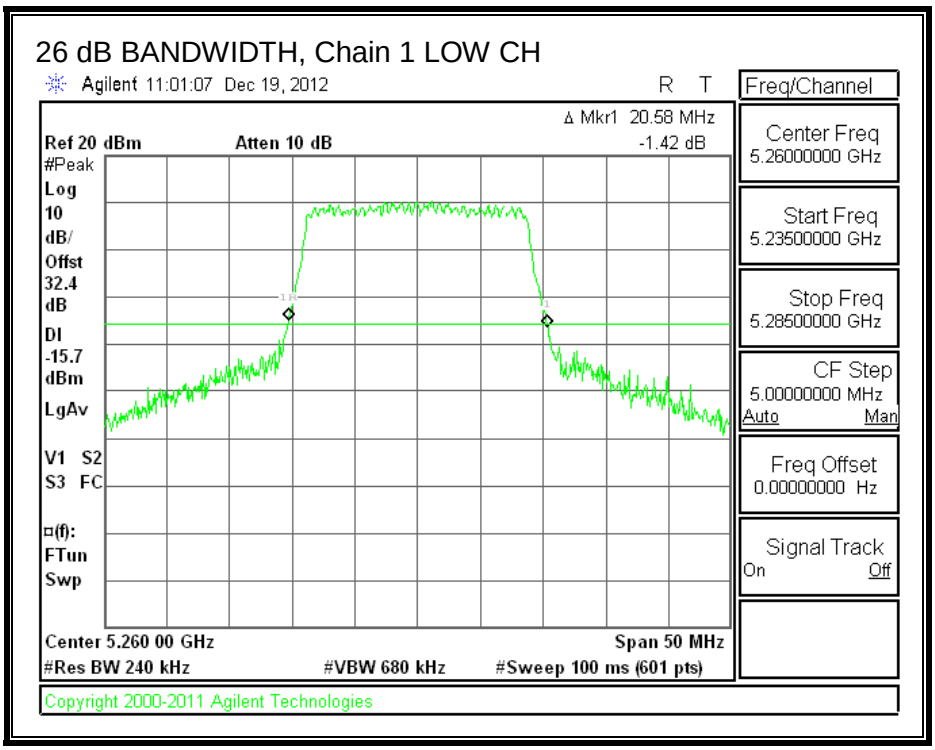
26 dB BANDWIDTH, Chain 0



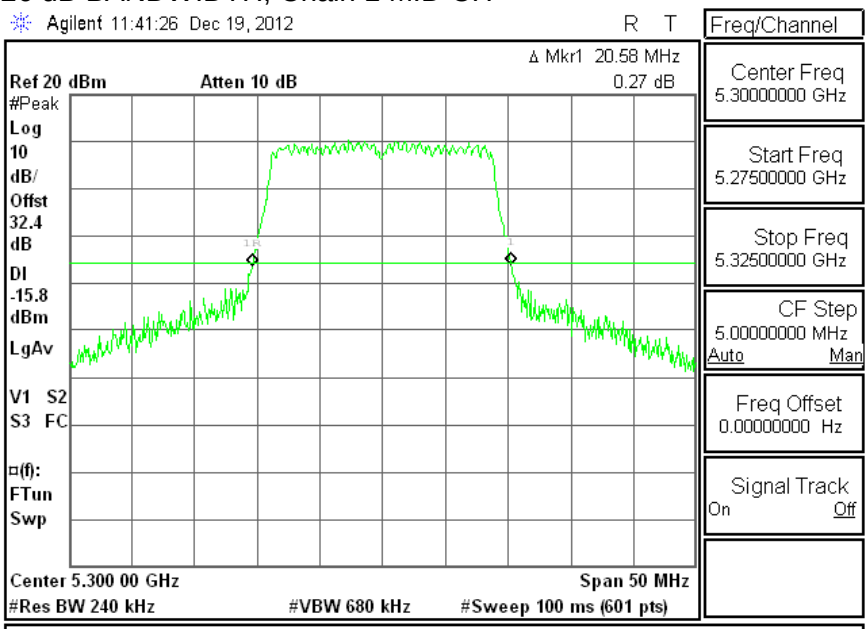




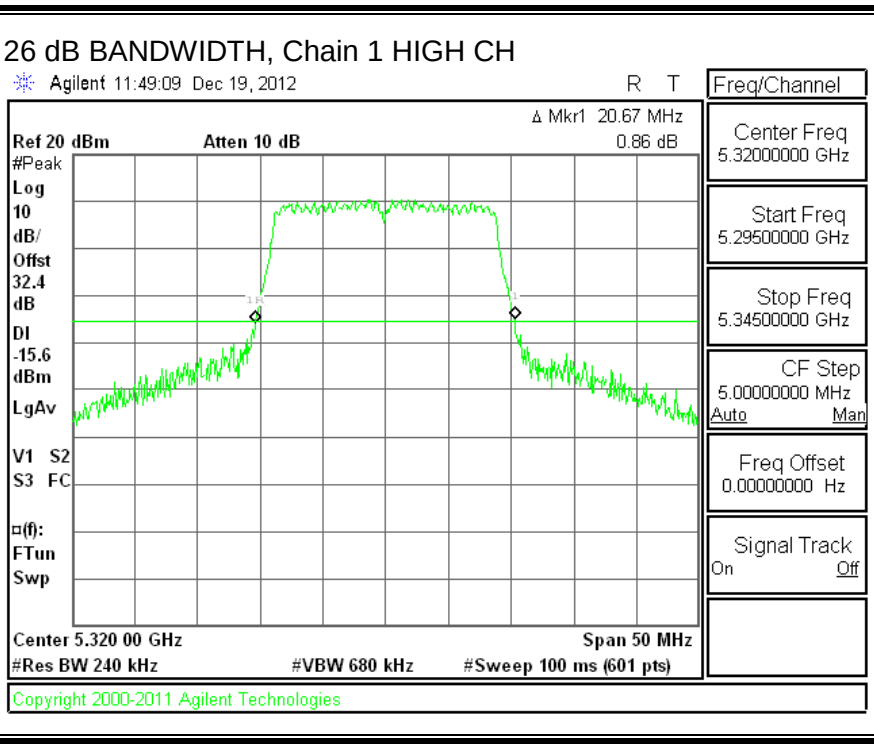
26 dB BANDWIDTH, Chain 1



26 dB BANDWIDTH, Chain 1 MID CH



26 dB BANDWIDTH, Chain 1 HIGH CH



8.23.2. 99% BANDWIDTH

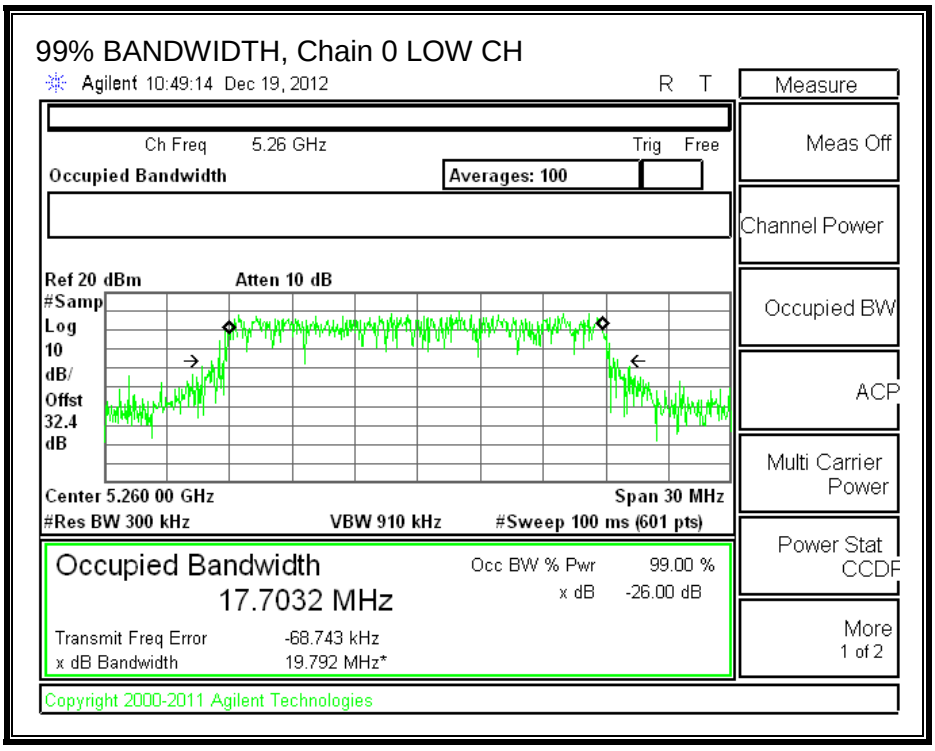
LIMITS

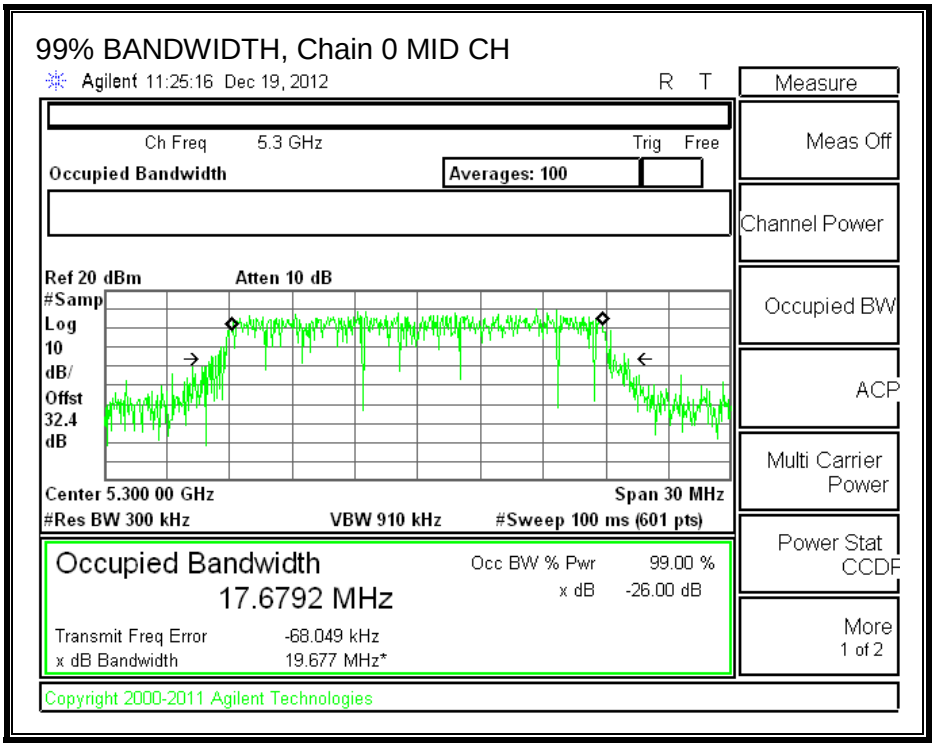
None; for reporting purposes only.

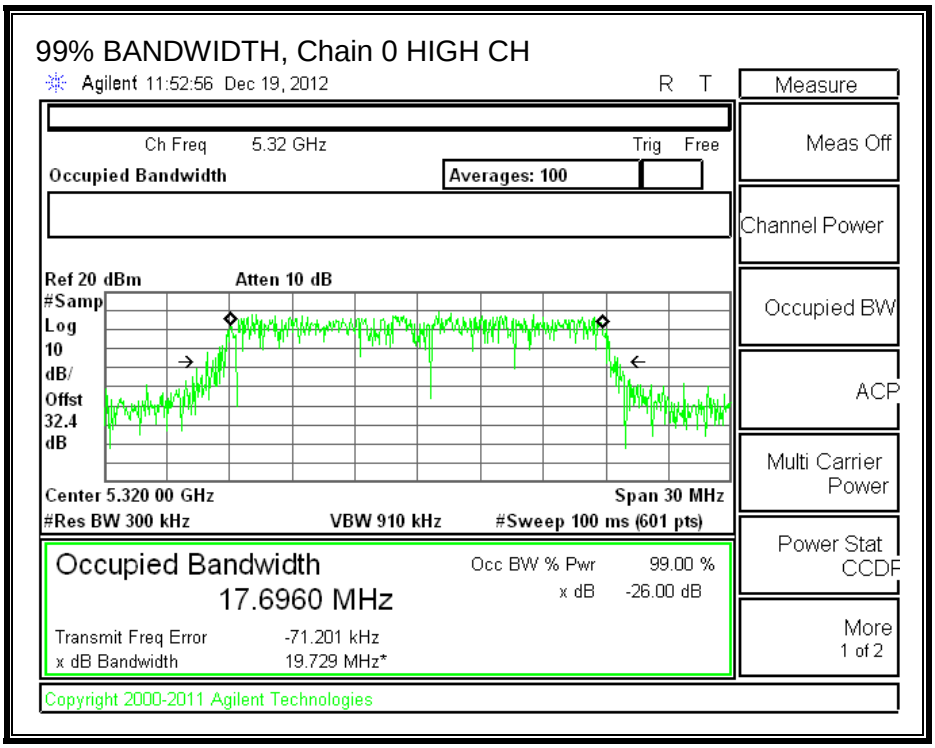
RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	5260	17.7032	17.6849
Mid	5300	17.6792	17.6898
High	5320	17.6960	17.6968

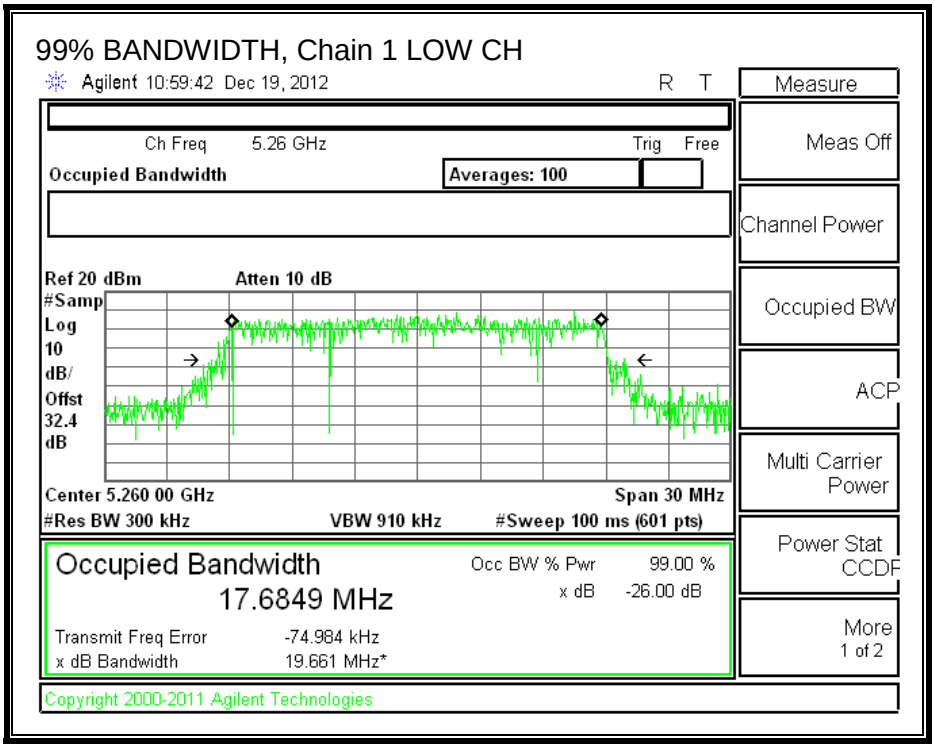
99% BANDWIDTH, Chain 0



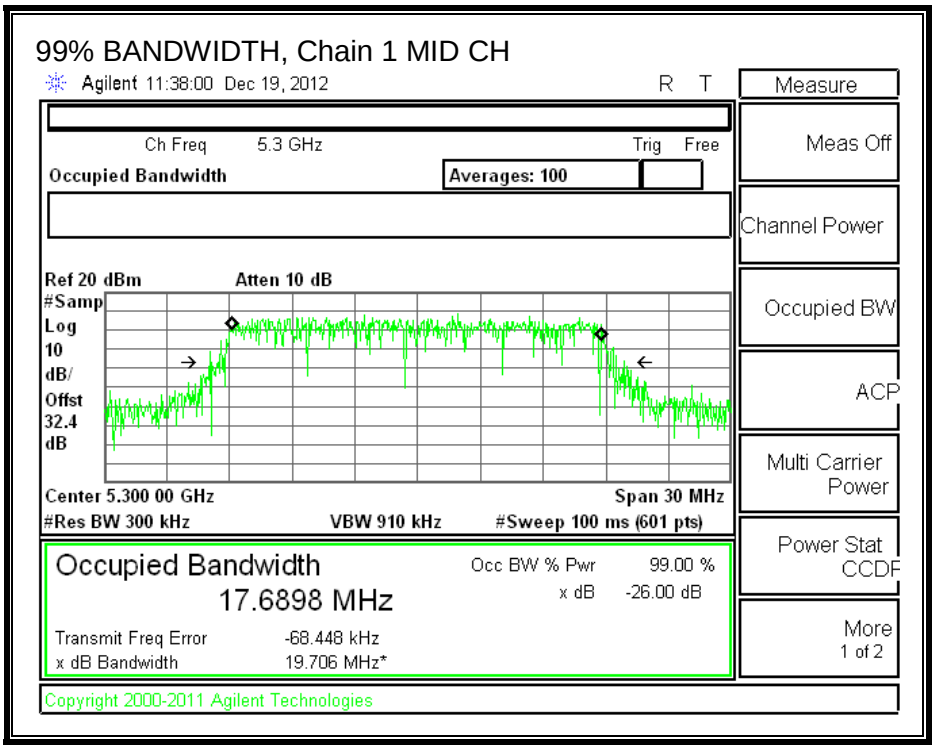




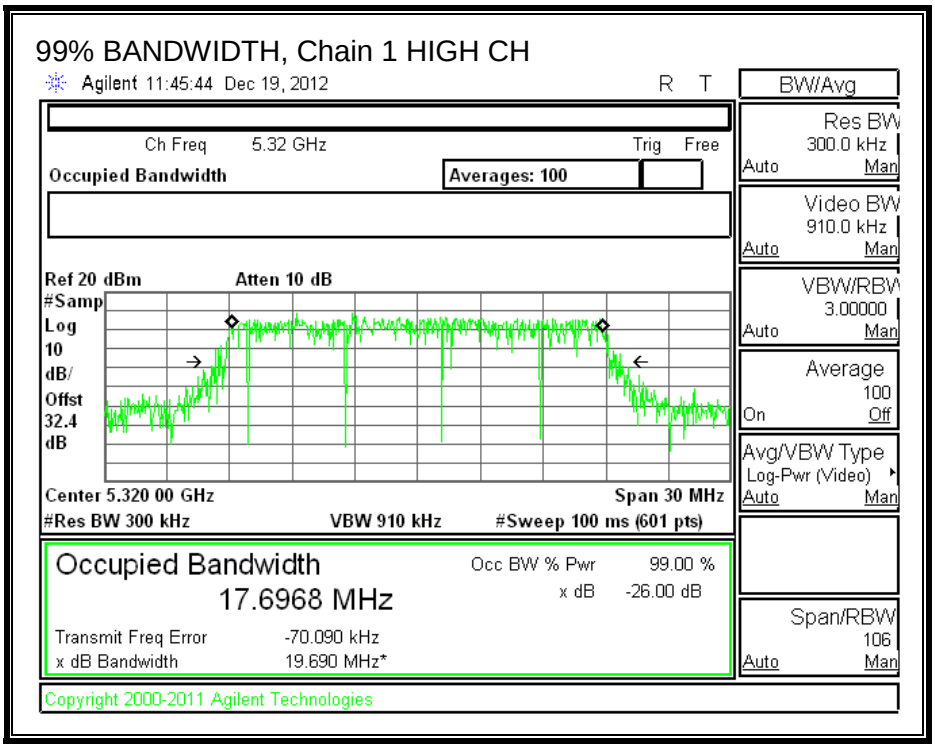
99% BANDWIDTH, Chain 1



99% BANDWIDTH, Chain 1 MID CH



99% BANDWIDTH, Chain 1 HIGH CH



8.23.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

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 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum 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.

DIRECTIONAL ANTENNA GAIN

For output power, the two chains are considered uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.40	2.30	2.88

For PSD, the two chains are considered correlated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.40	2.30	5.88

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Directional Gain (dBi)	Uncorrelated Directional Gain (dBi)
Low	5260	20.58	17.6849	5.88	2.88
Mid	5300	20.58	17.6792	5.88	2.88
High	5320	20.67	17.6960	5.88	2.88

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Low	5260	24.00	23.48	29.48	23.48	11.00	11.00	11.00
Mid	5300	24.00	23.47	29.47	23.47	11.00	11.00	11.00
High	5320	24.00	23.48	29.48	23.48	11.00	11.00	11.00

Duty Cycle CF (dB)	0.00	

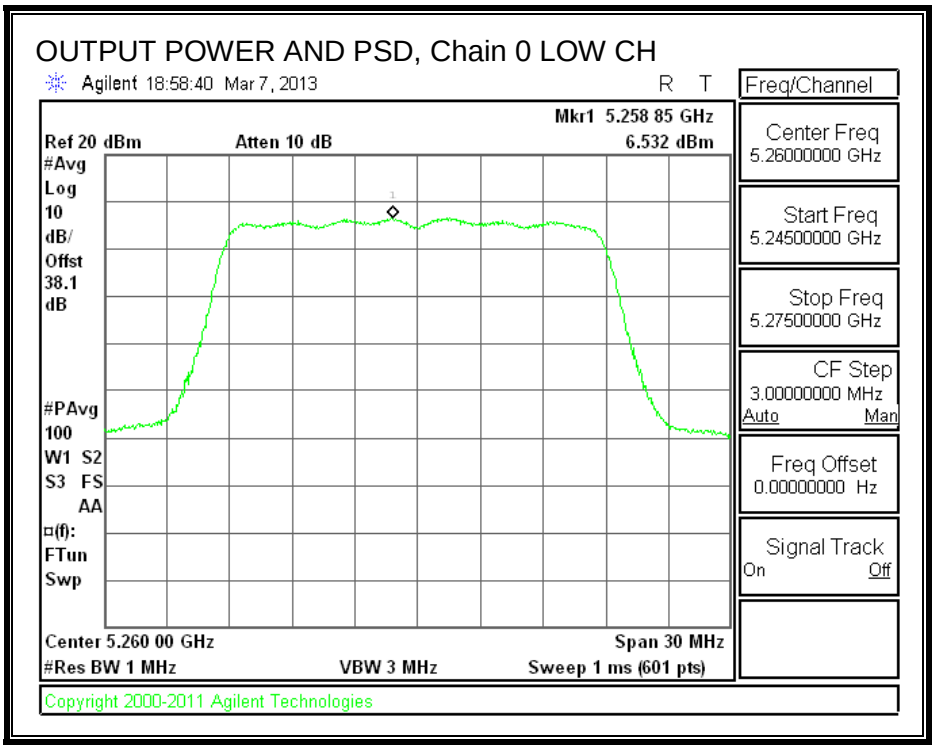
Output Power Results

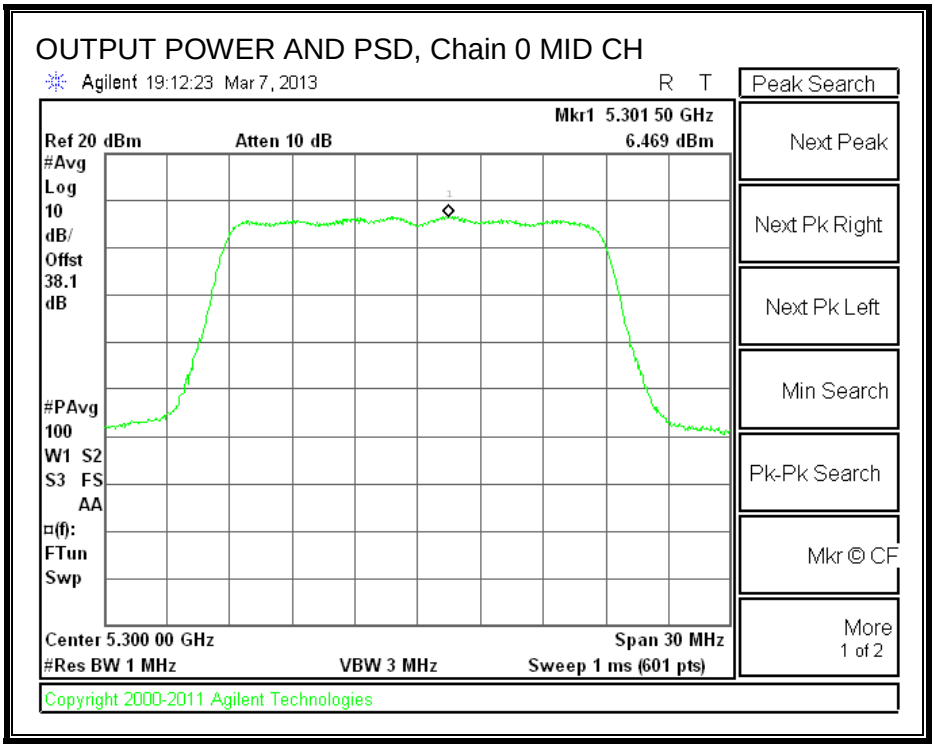
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	16.50	16.60	19.56	23.48	-3.92
Mid	5300	15.20	15.00	18.11	23.47	-5.36
High	5320	14.70	14.40	17.56	23.48	-5.92

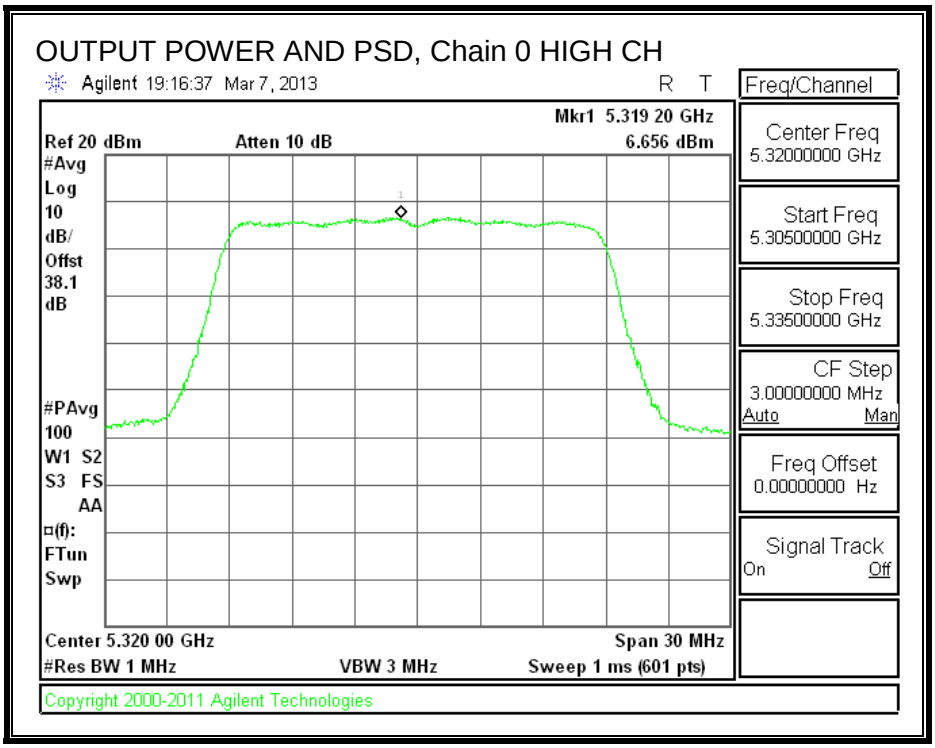
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5260	6.532	6.541	9.55	11.00	-1.45
Mid	5300	6.469	6.640	9.57	11.00	-1.43
High	5320	6.656	6.696	9.69	11.00	-1.31

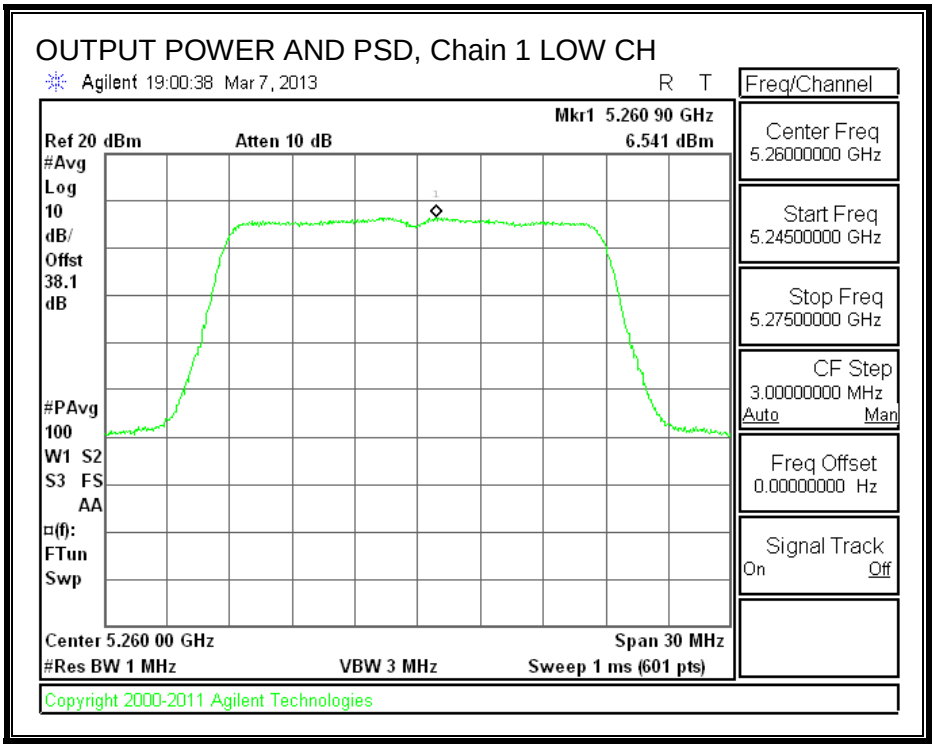
OUTPUT POWER AND PSD, Chain 0



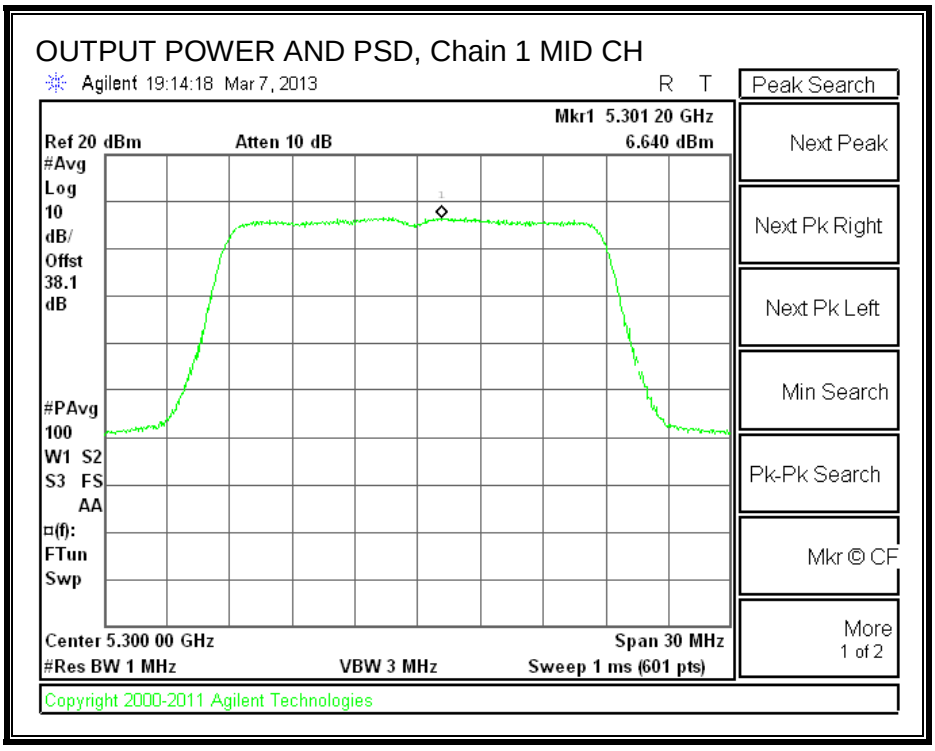




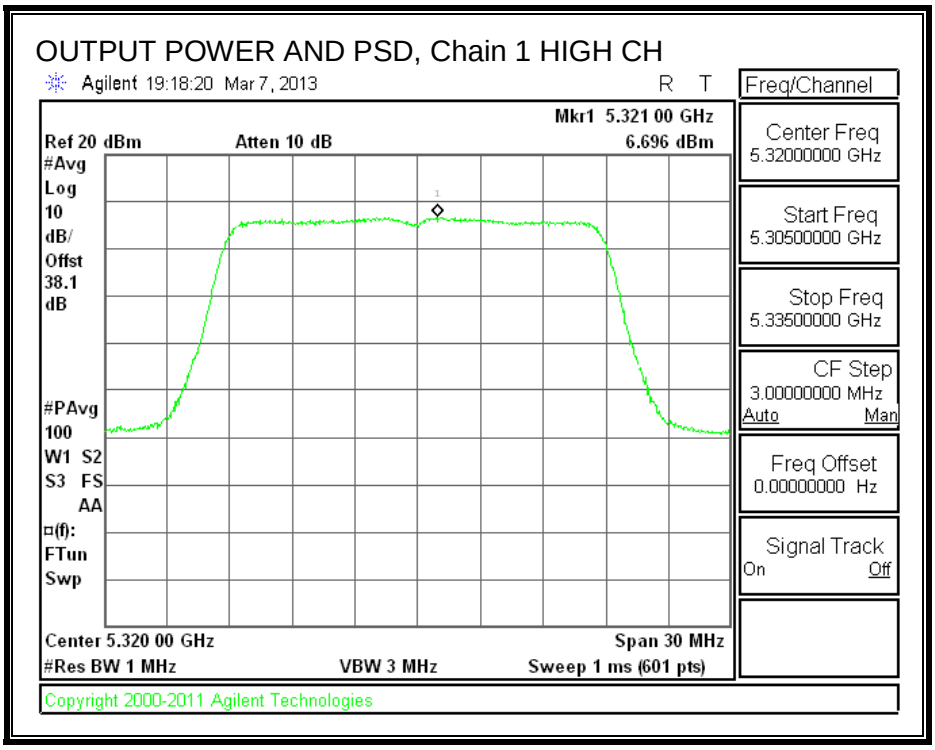
OUTPUT POWER AND PSD, Chain 1



OUTPUT POWER AND PSD, Chain 1 MID CH



OUTPUT POWER AND PSD, Chain 1 HIGH CH



8.23.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

8.24. 802.11n HT20 BF 2TX MODE IN THE 5.3 GHz BAND

Covered by testing HT20 CDD 2TX mode, the power per chain used for HT20 CDD 2TX mode is the same power per chain that will be used for HT20 BF 2TX mode. However, since BF is correlated and CDD is uncorrelated for output power, the section below for output power using correlated AG for this BF mode shows it is still compliant.

8.24.1. OUTPUT AVERAGE POWER

LIMITS

FCC §15.407 (a) (2)

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 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum 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.

DIRECTIONAL ANTENNA GAIN

For output power, the two chains are considered correlated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.40	2.30	5.88

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Directional Gain (dBi)
Low	5260	20.58	17.6849	5.88
Mid	5300	20.58	17.6792	5.88
High	5320	20.67	17.6960	5.88

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)
Low	5260	24.00	23.48	29.48	23.48
Mid	5300	24.00	23.47	29.47	23.47
High	5320	24.00	23.48	29.48	23.48

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	16.50	16.60	19.56	23.48	-3.92
Mid	5300	15.20	15.00	18.11	23.47	-5.36
High	5320	14.70	14.40	17.56	23.48	-5.92

8.25. 802.11n HT20 STBC 2TX MODE IN THE 5.3 GHz BAND

8.25.1. 26 dB BANDWIDTH

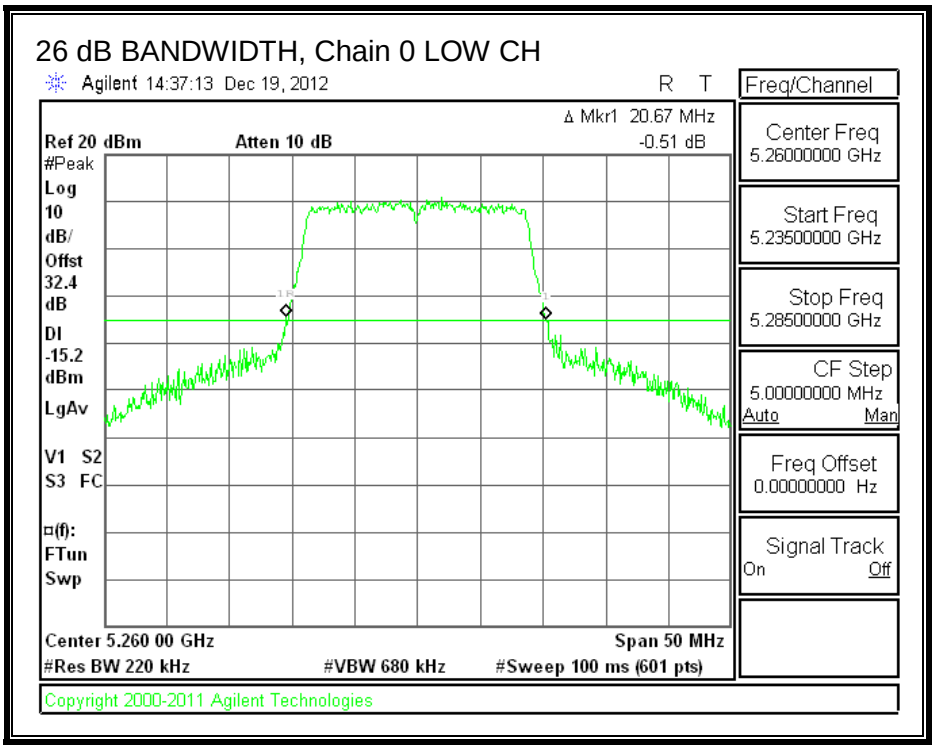
LIMITS

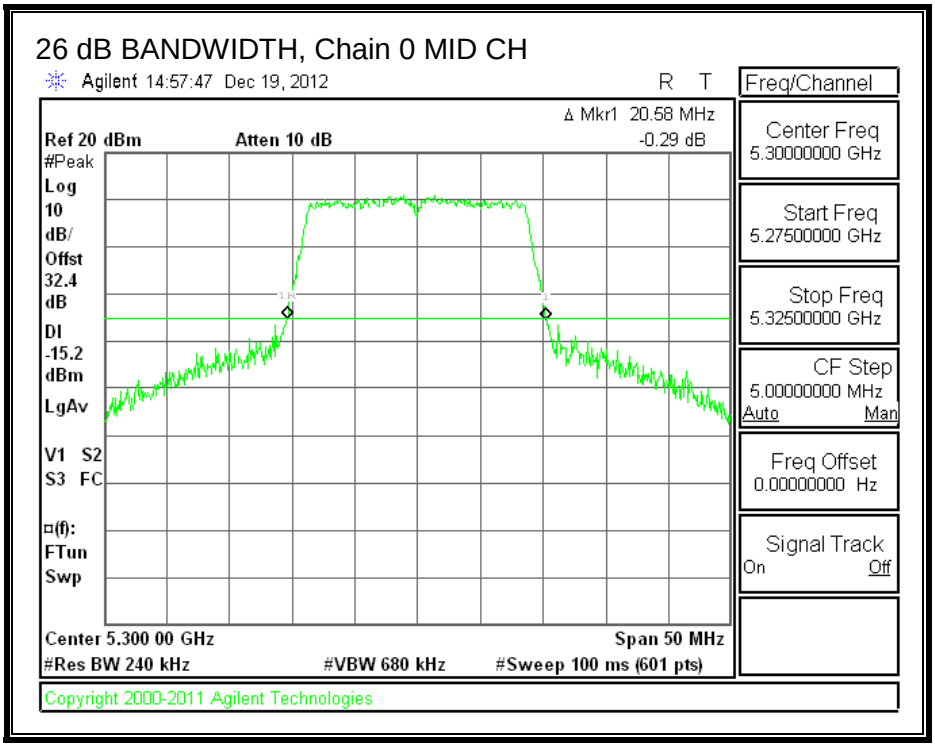
None; for reporting purposes only.

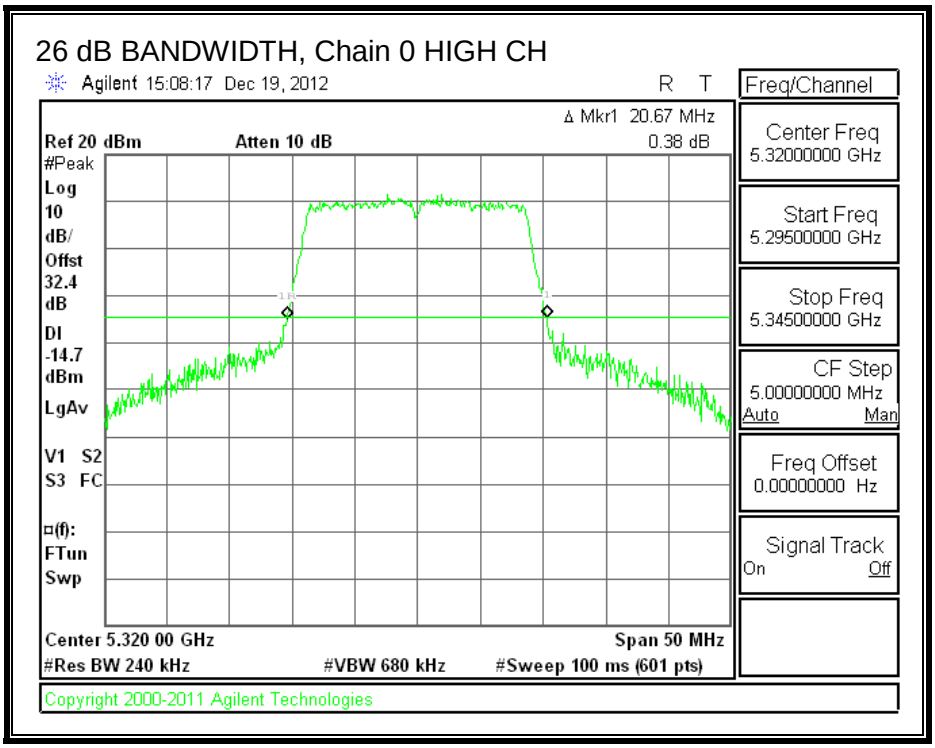
RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Low	5260	20.67	20.58
Mid	5300	20.58	20.50
High	5320	20.67	20.75

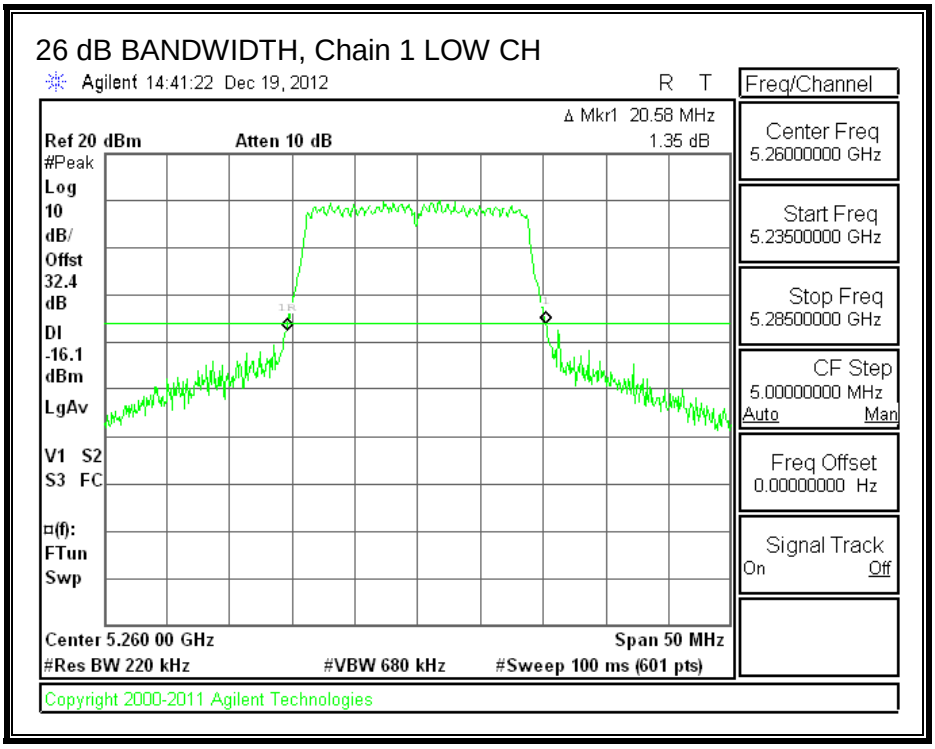
26 dB BANDWIDTH, Chain 0



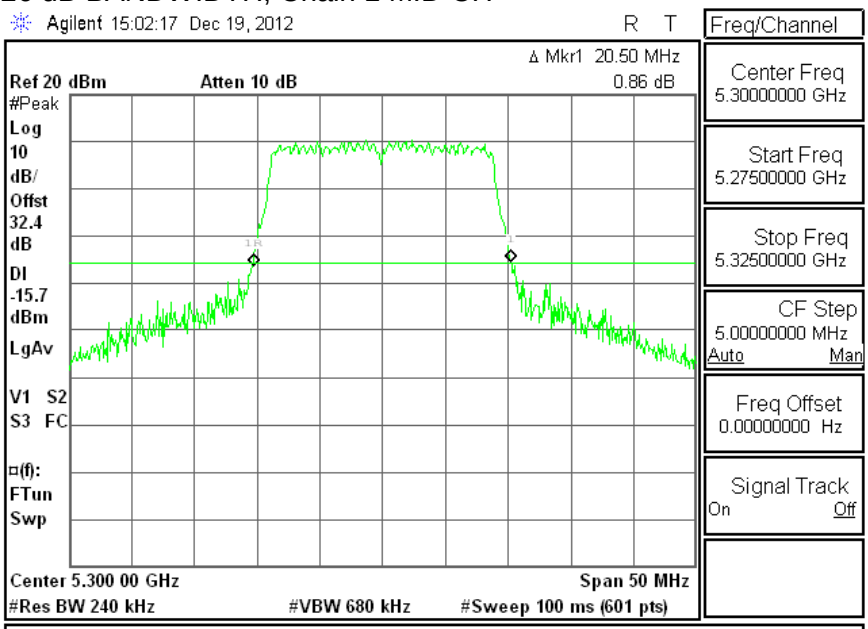




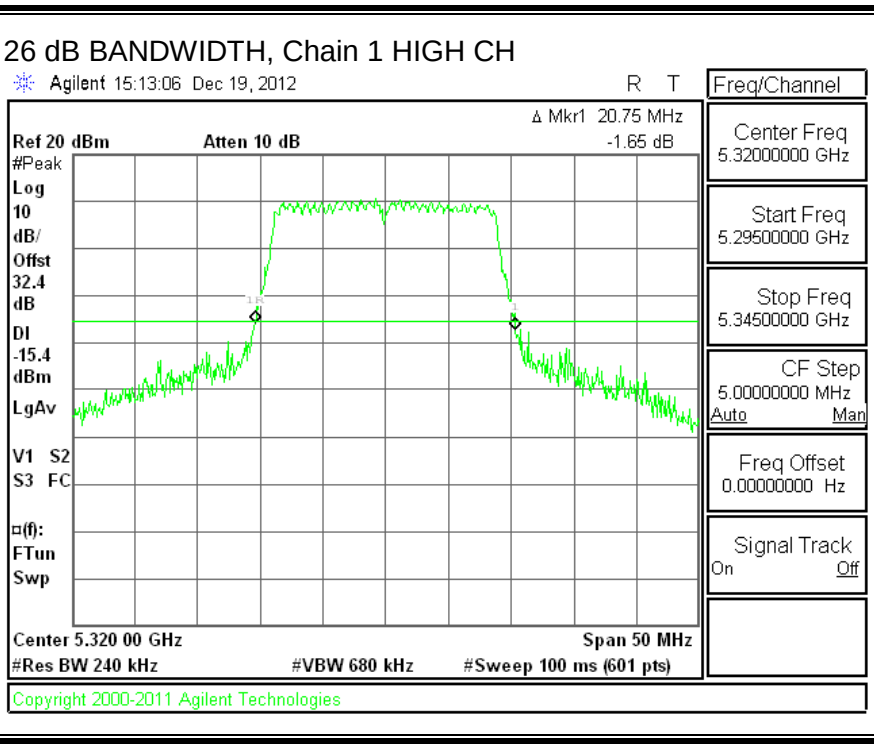
26 dB BANDWIDTH, Chain 1



26 dB BANDWIDTH, Chain 1 MID CH



26 dB BANDWIDTH, Chain 1 HIGH CH



8.25.2. 99% BANDWIDTH

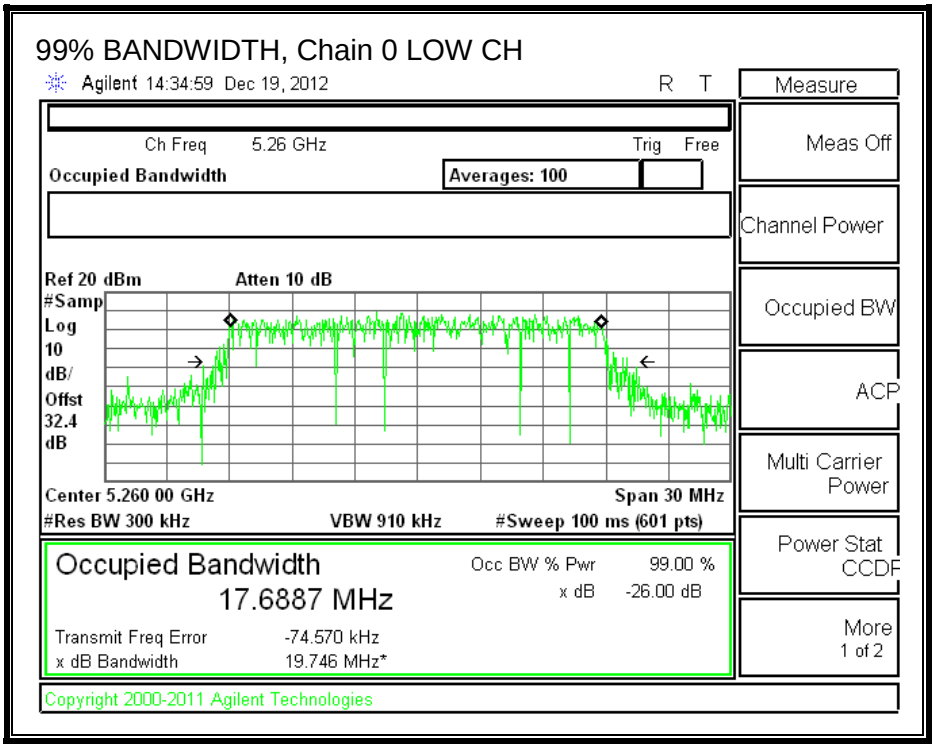
LIMITS

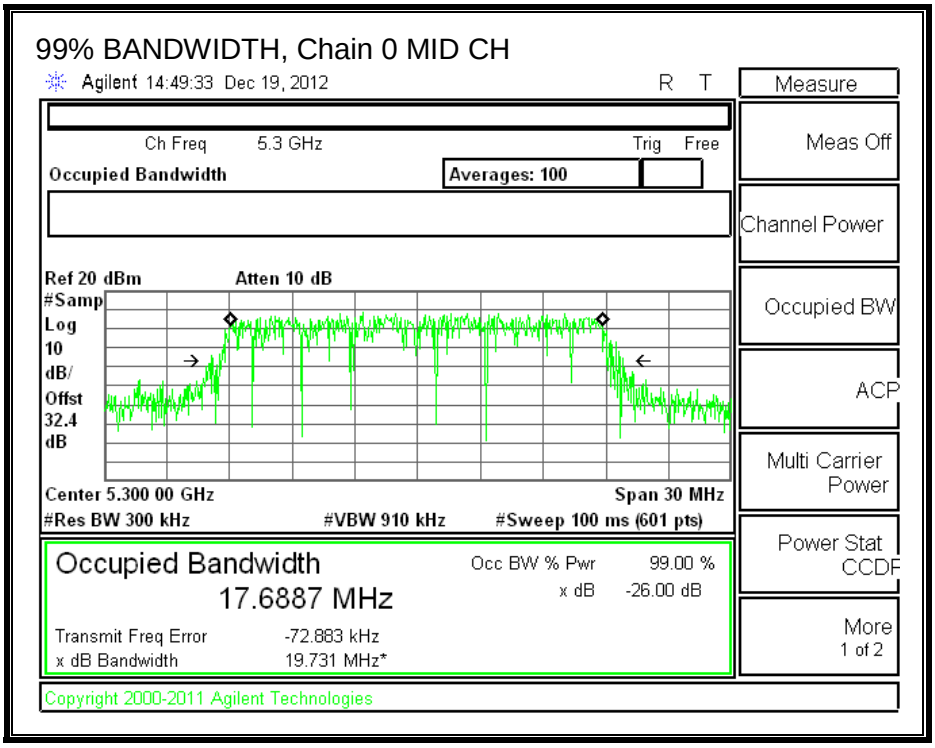
None; for reporting purposes only.

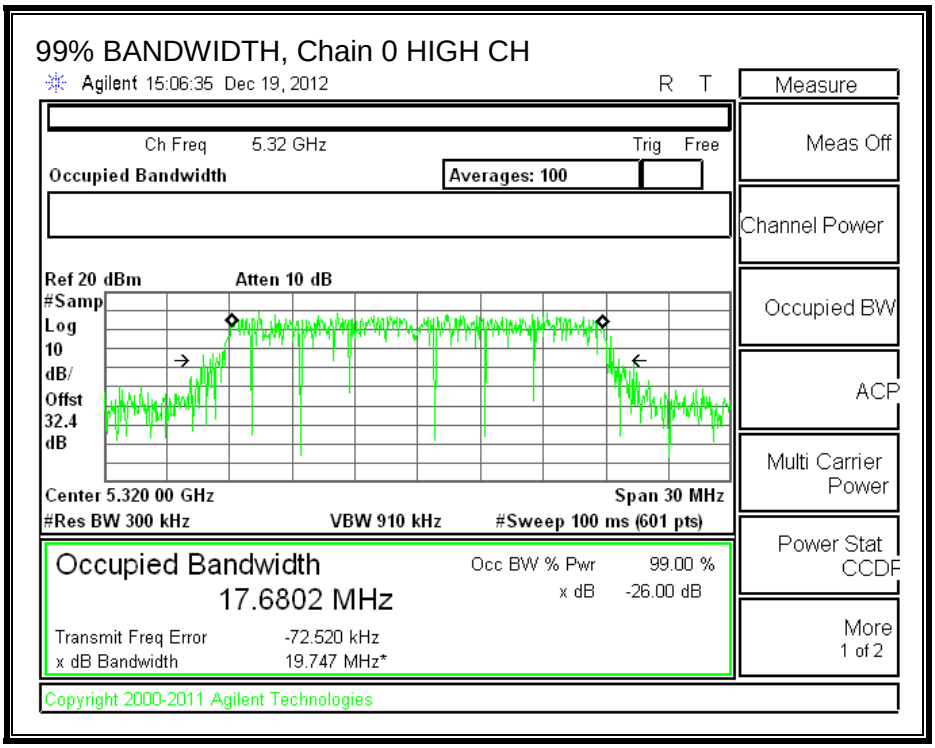
RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	5260	17.6887	17.6836
Mid	5300	17.6887	17.6843
High	5320	17.6802	17.6734

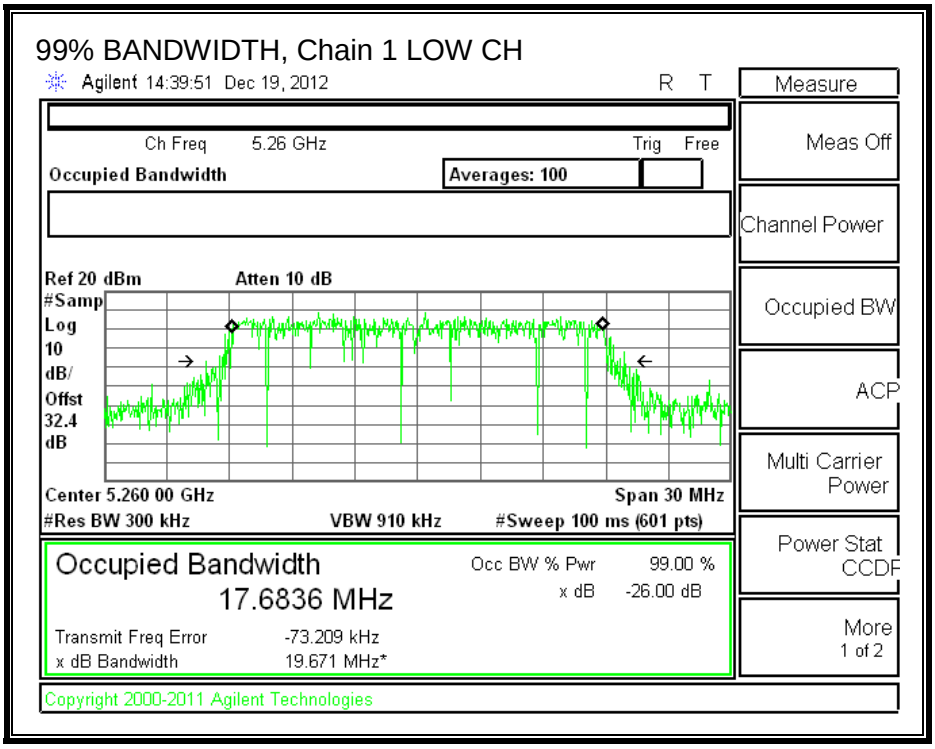
99% BANDWIDTH, Chain 0

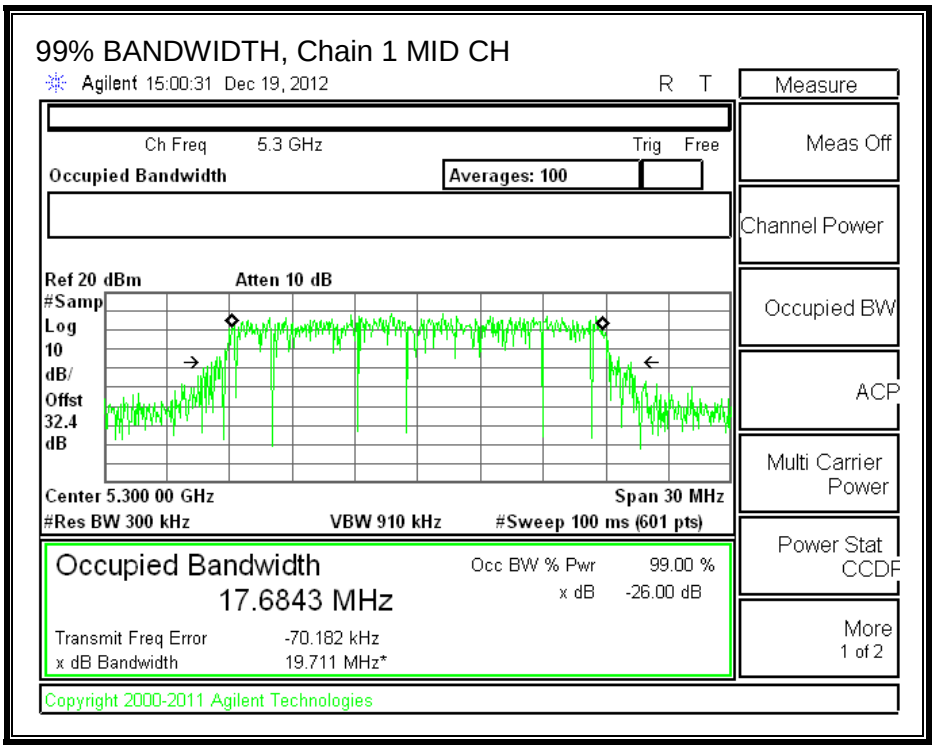


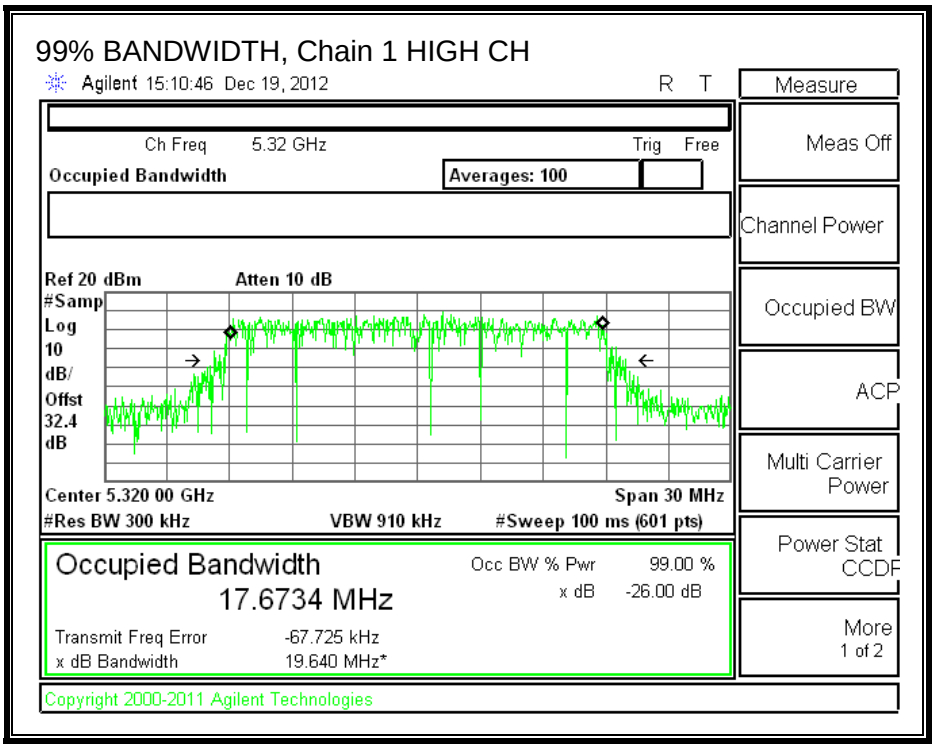




99% BANDWIDTH, Chain 1







8.25.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

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 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum 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.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.40	2.30	2.88

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
Low	5260	20.6	17.7	2.88
Mid	5300	20.5	17.7	2.88
High	5320	20.7	17.7	2.88

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	Limit (dBm)
Low	5260	24.00	23.48	29.48	23.48	11.00	11.00	11.00
Mid	5300	24.00	23.48	29.48	23.48	11.00	11.00	11.00
High	5320	24.00	23.47	29.47	23.47	11.00	11.00	11.00

Duty Cycle CF (dB)	0.00	

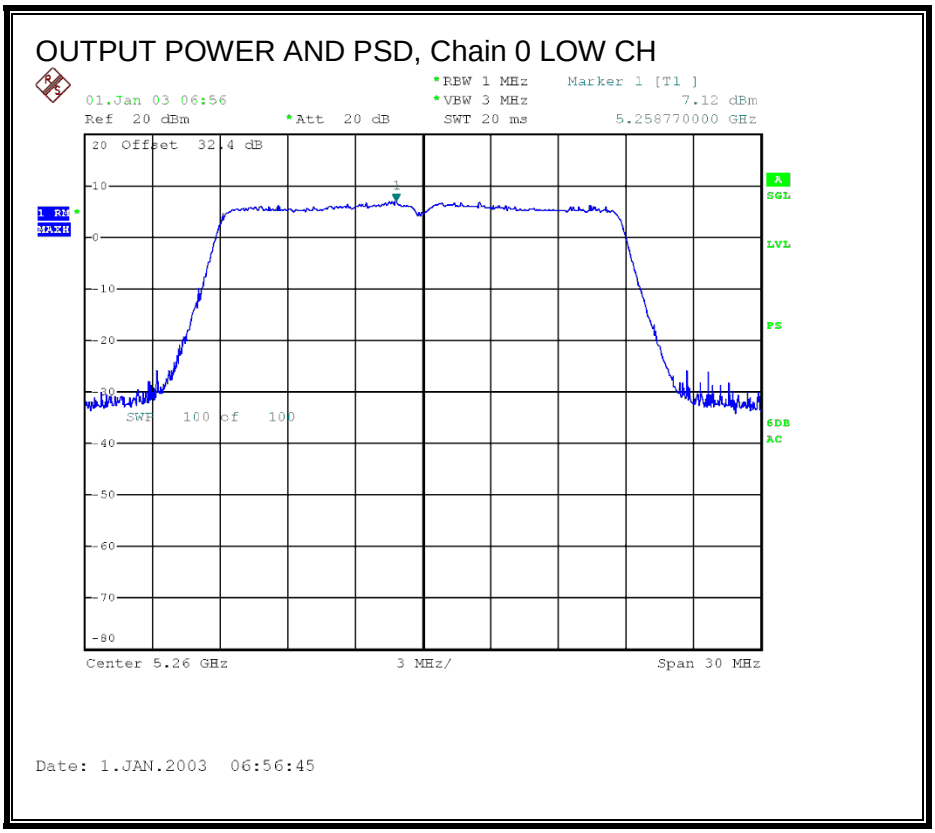
Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	18.10	18.00	21.06	23.48	-2.42
Mid	5300	15.20	15.00	18.11	23.48	-5.37
High	5320	14.70	14.40	17.56	23.47	-5.91

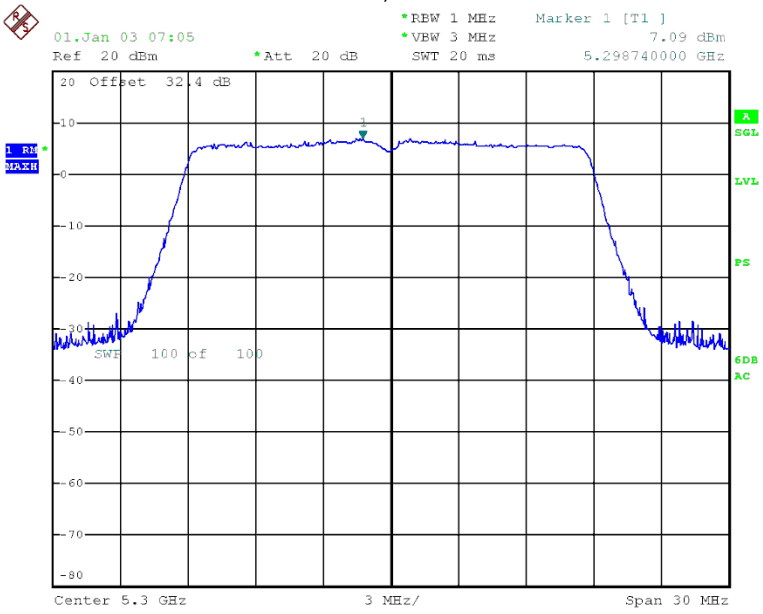
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5260	7.12	7.50	10.32	11.00	-0.68
Mid	5300	7.09	7.64	10.38	11.00	-0.62
High	5320	7.21	7.83	10.54	11.00	-0.46

OUTPUT POWER AND PSD, Chain 0

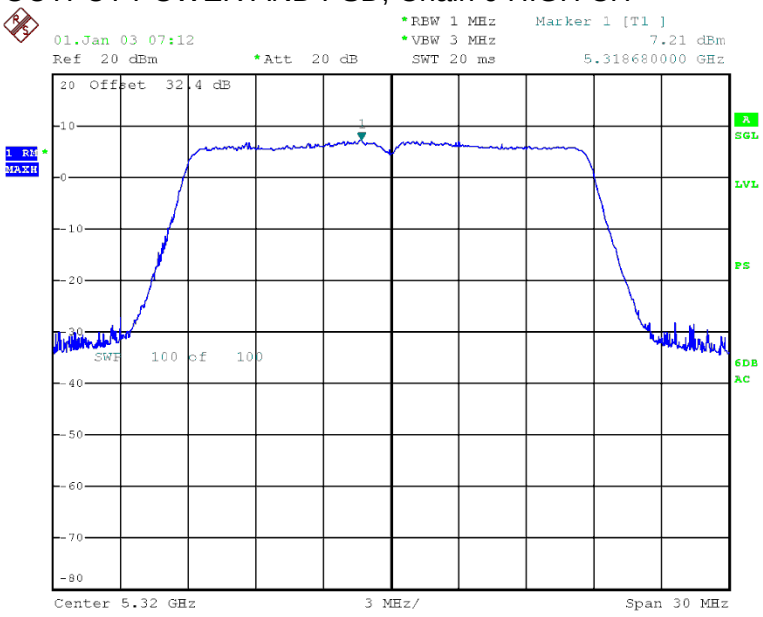


OUTPUT POWER AND PSD, Chain 0 MID CH

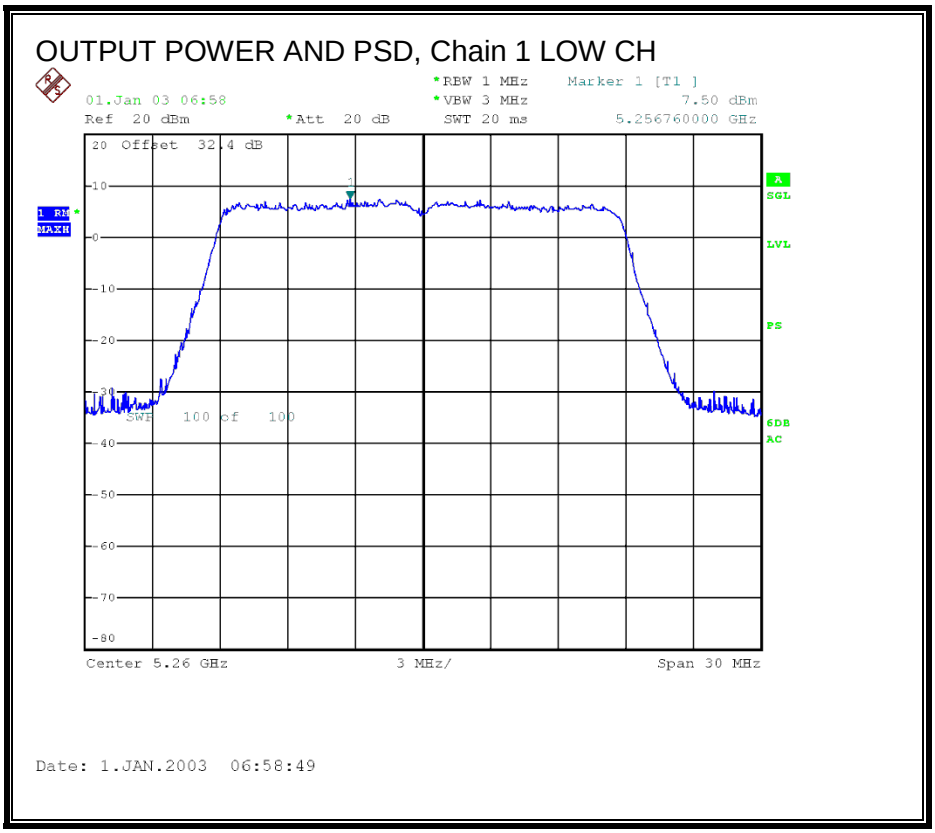


Date: 1.JAN.2003 07:05:18

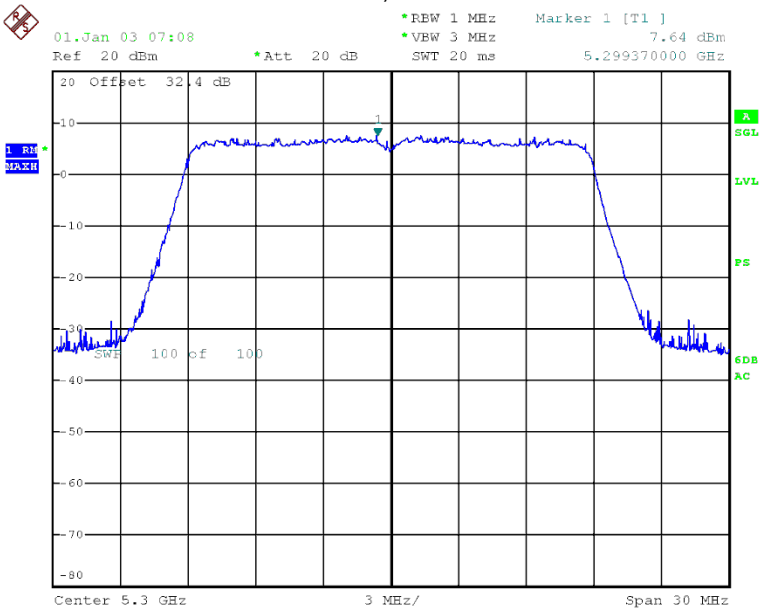
OUTPUT POWER AND PSD, Chain 0 HIGH CH



OUTPUT POWER AND PSD, Chain 1

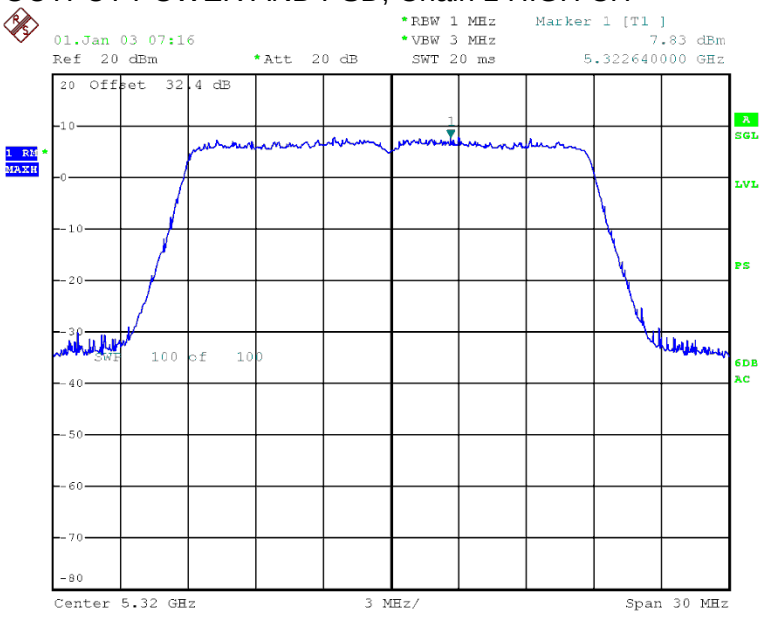


OUTPUT POWER AND PSD, Chain 1 MID CH



Date: 1.JAN.2003 07:08:47

OUTPUT POWER AND PSD, Chain 1 HIGH CH



8.25.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

8.26. 802.11n HT20 CDD 3TX MODE IN THE 5.3 GHz BAND

8.26.1. 26 dB BANDWIDTH

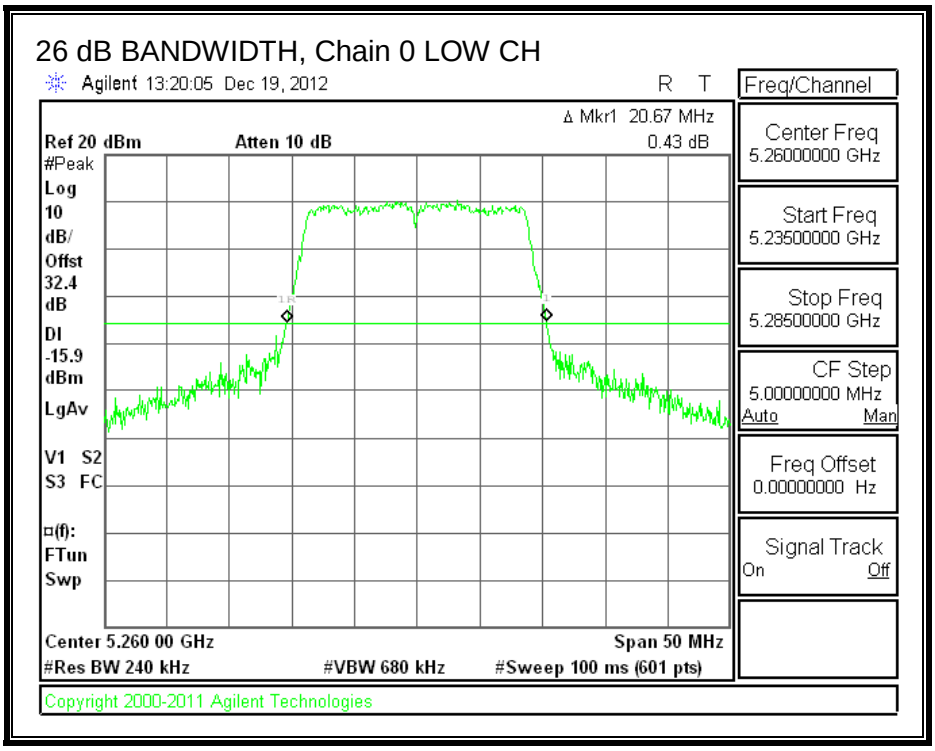
LIMITS

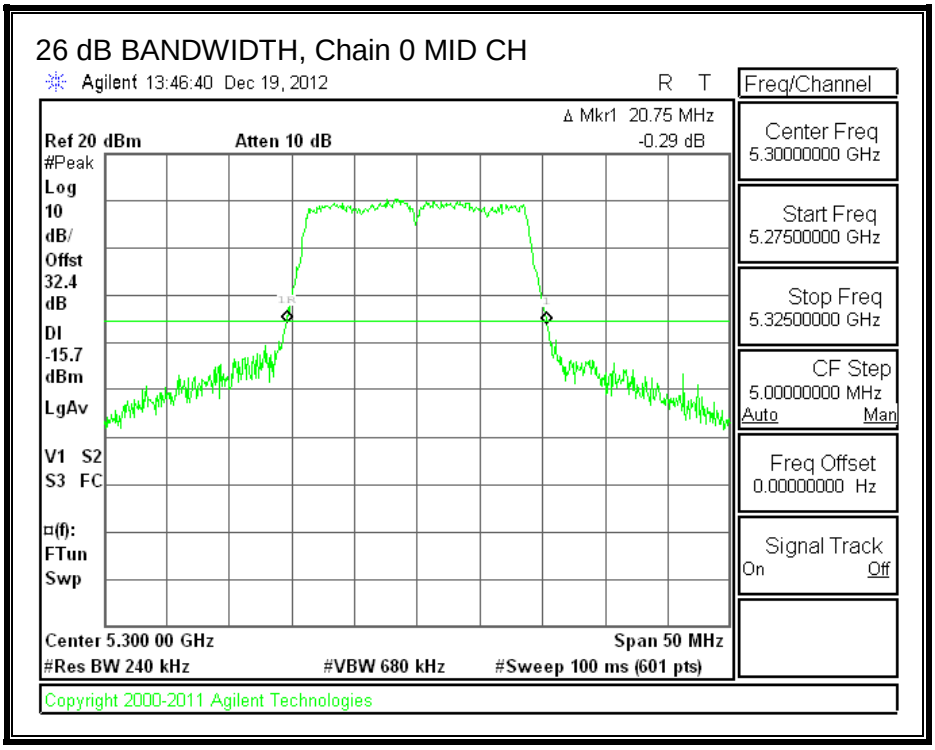
None; for reporting purposes only.

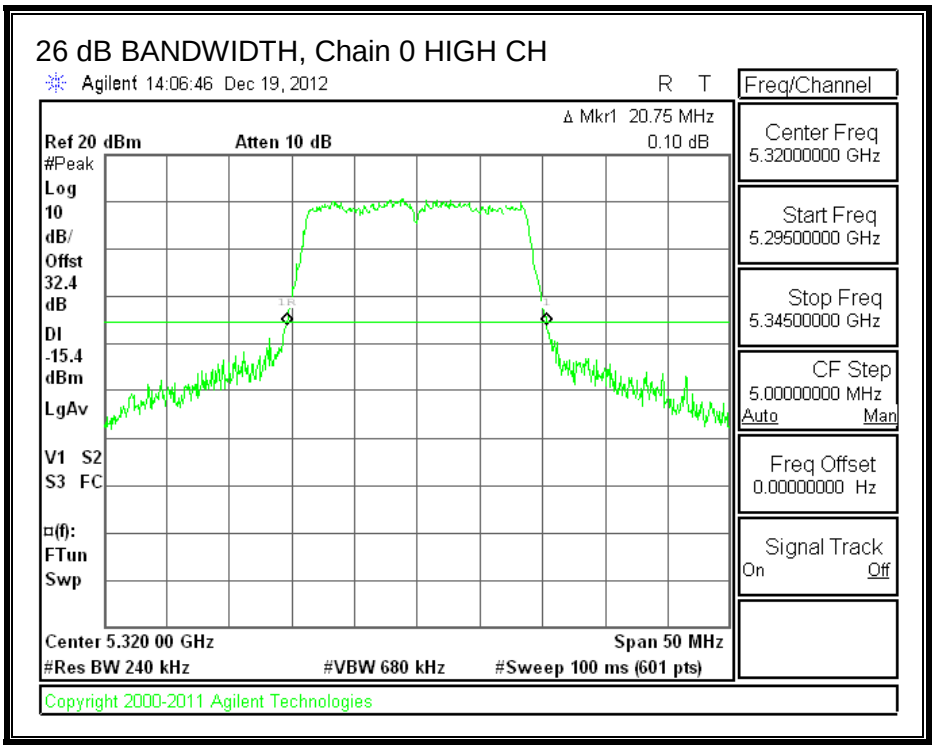
RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
Low	5260	20.67	20.67	20.58
Mid	5300	20.75	20.58	20.58
High	5320	20.75	20.75	20.50

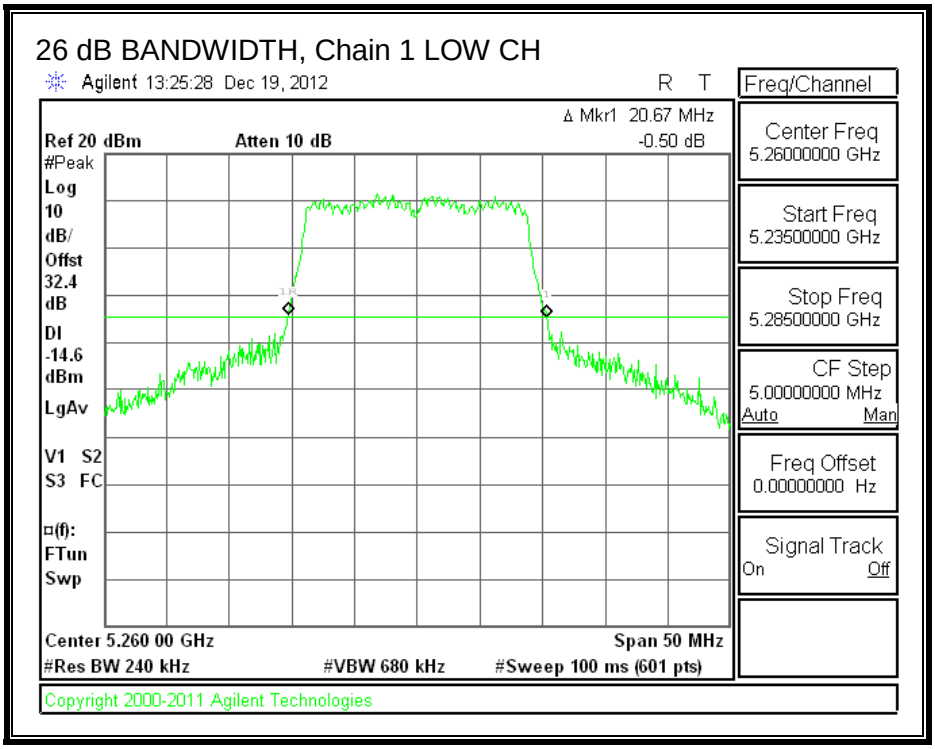
26 dB BANDWIDTH, Chain 0



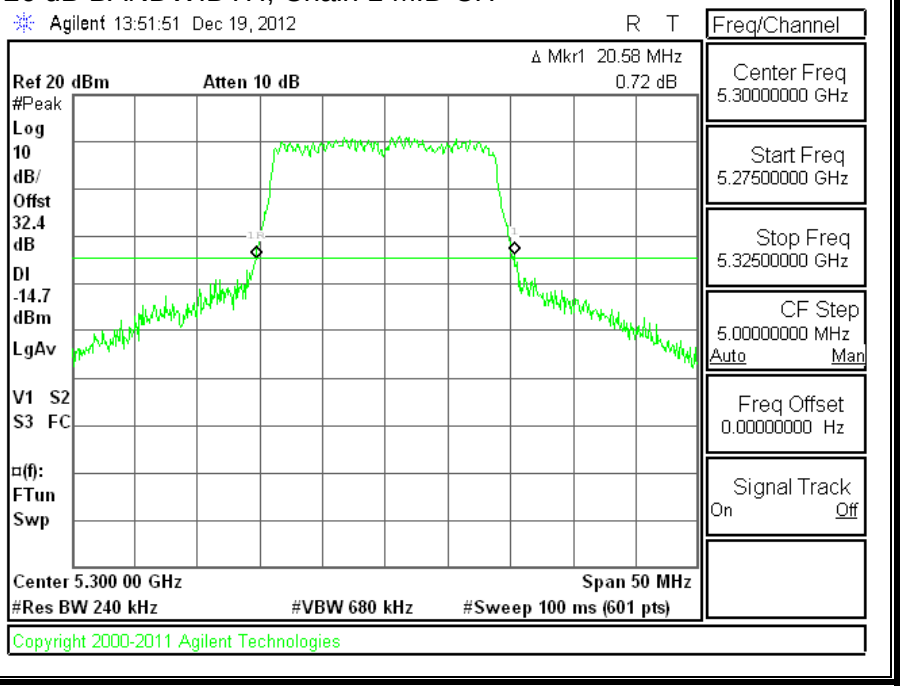




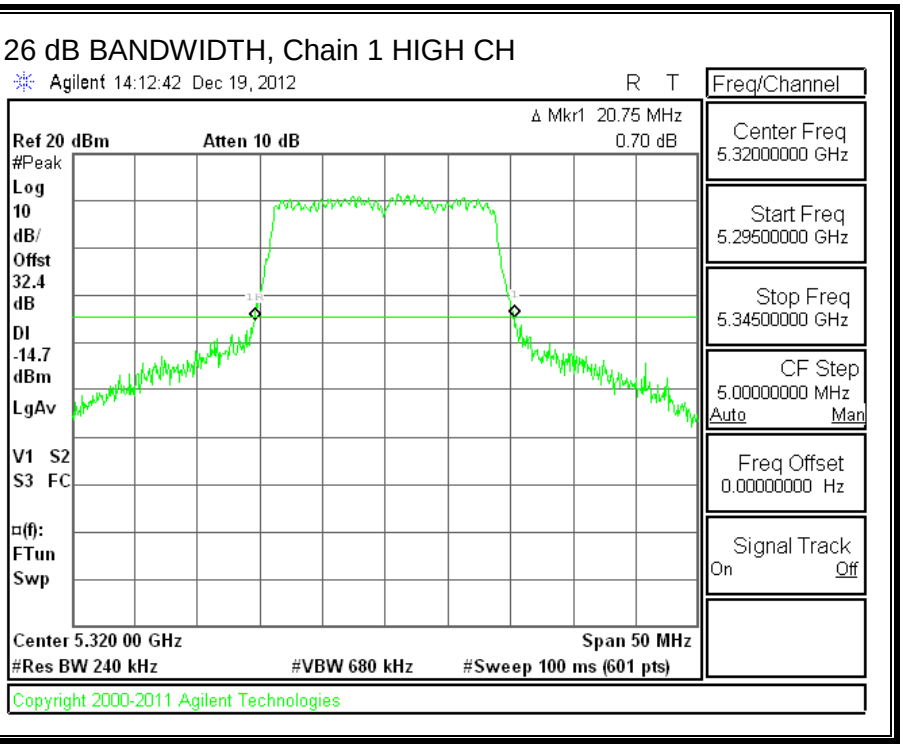
26 dB BANDWIDTH, Chain 1



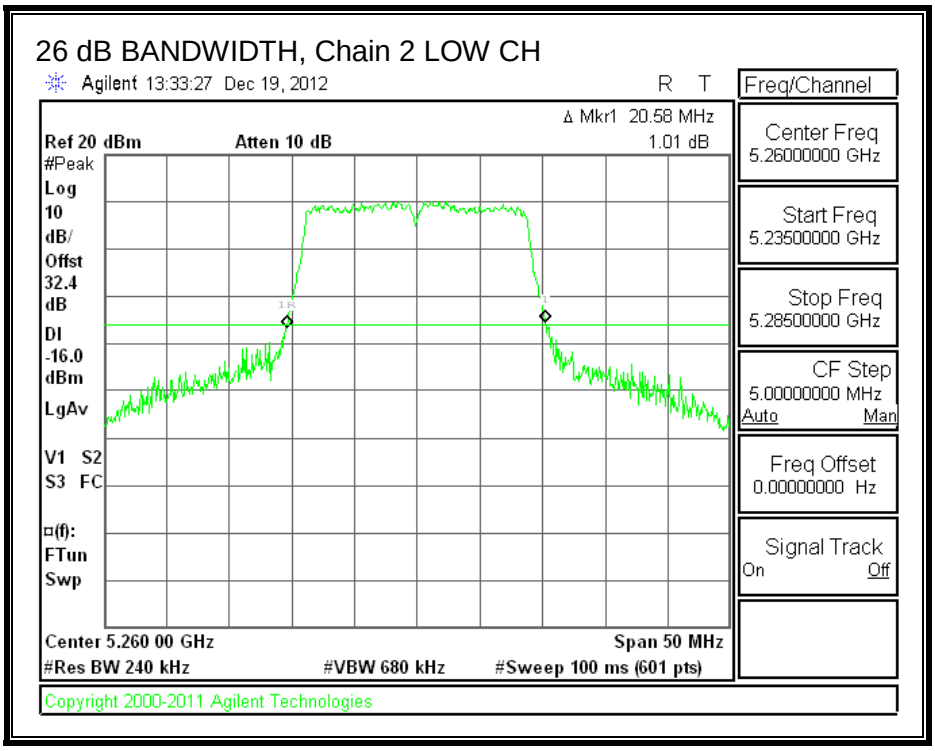
26 dB BANDWIDTH, Chain 1 MID CH

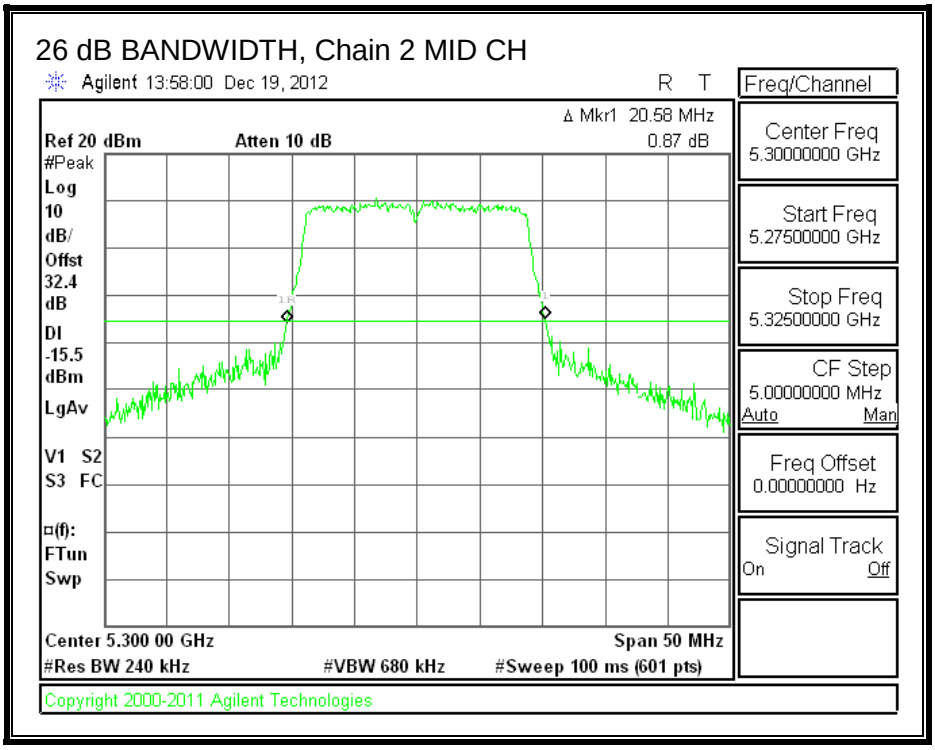


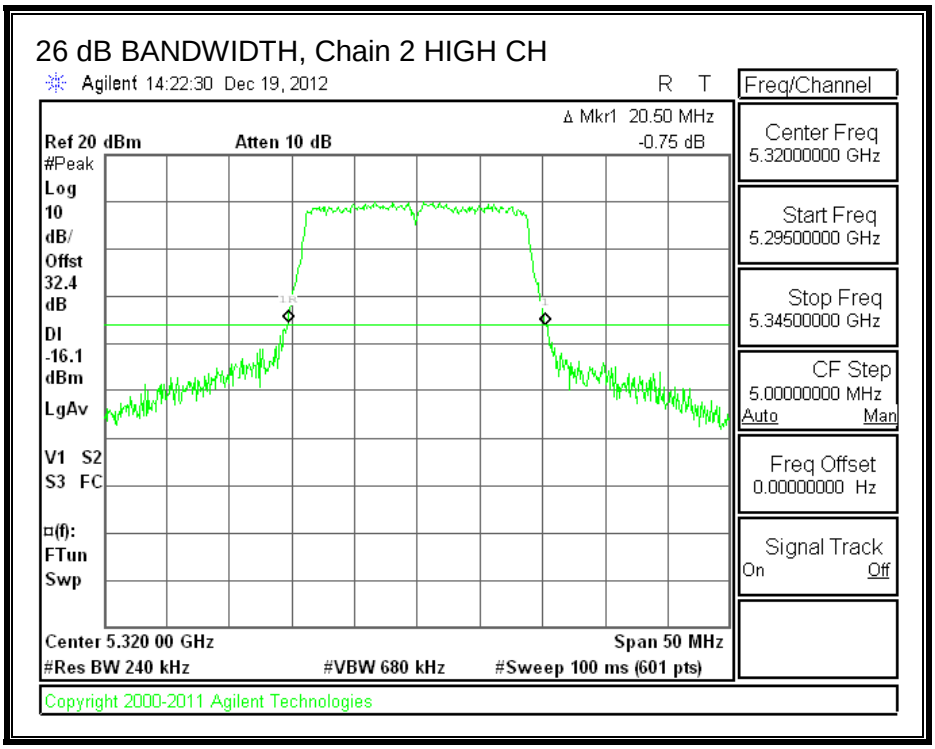
26 dB BANDWIDTH, Chain 1 HIGH CH



26 dB BANDWIDTH, Chain 2







8.26.2. 99% BANDWIDTH

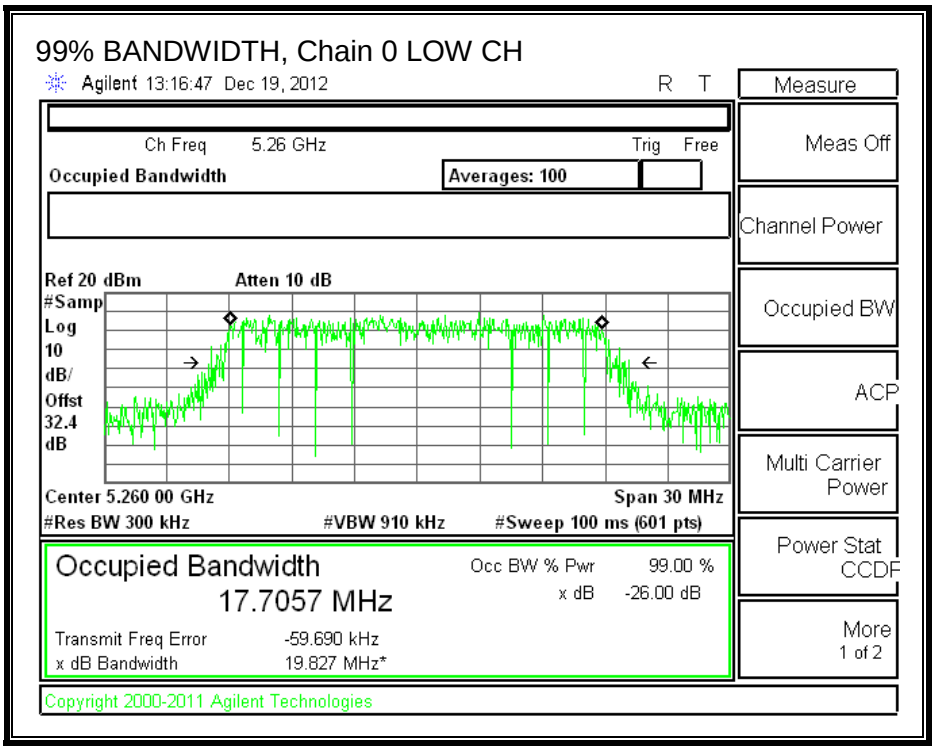
LIMITS

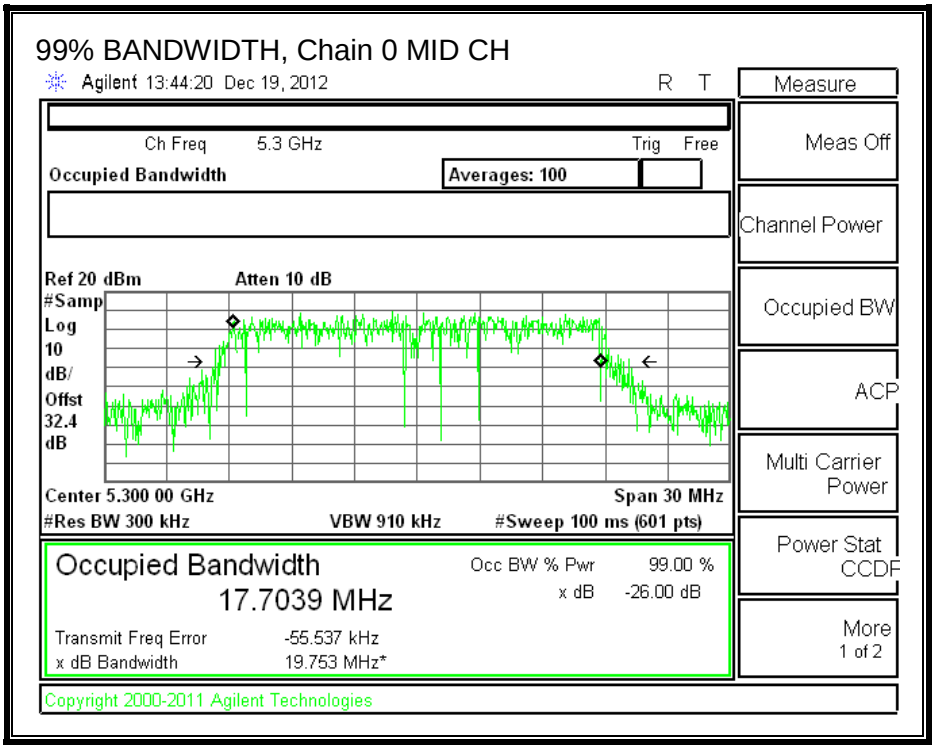
None; for reporting purposes only.

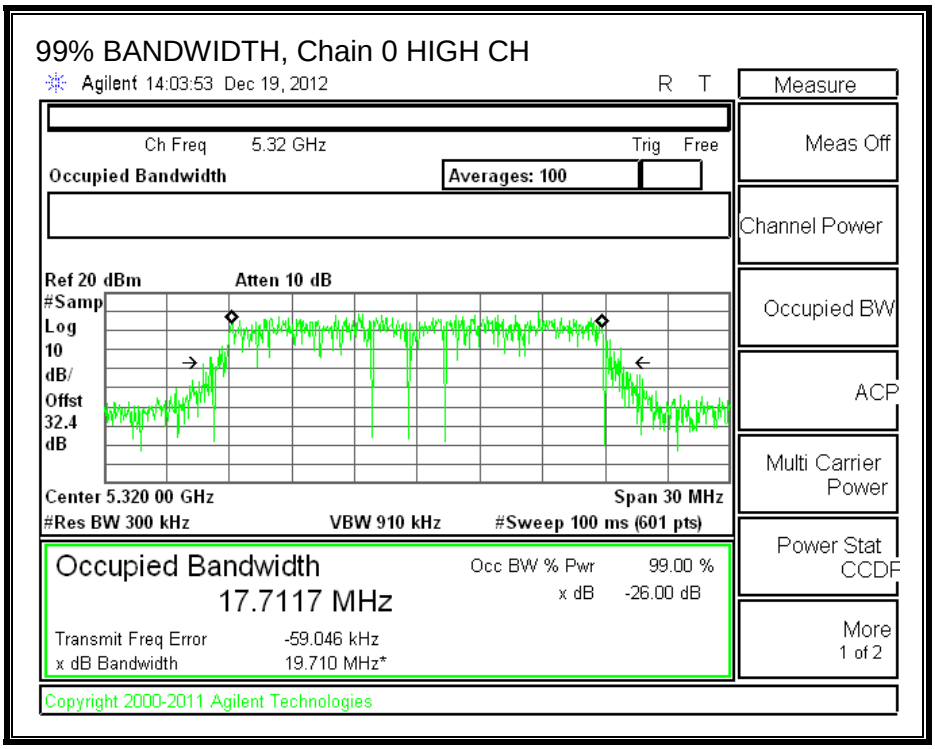
RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
Low	5260	17.7057	17.6853	17.6937
Mid	5300	17.7039	17.6751	17.6908
High	5320	17.7117	17.6826	17.6386

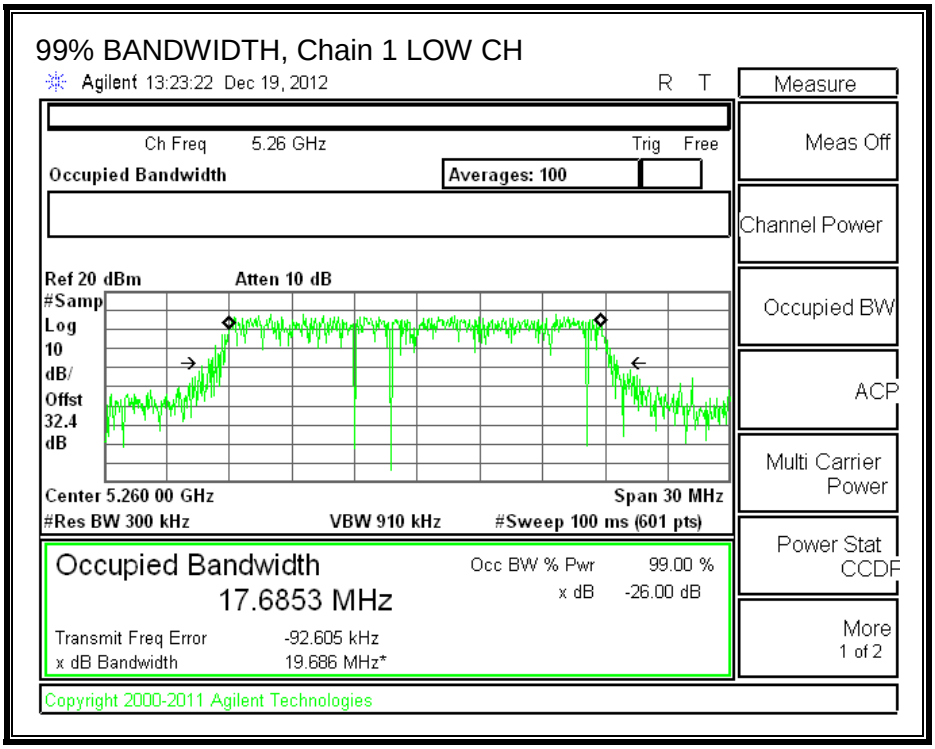
99% BANDWIDTH, Chain 0

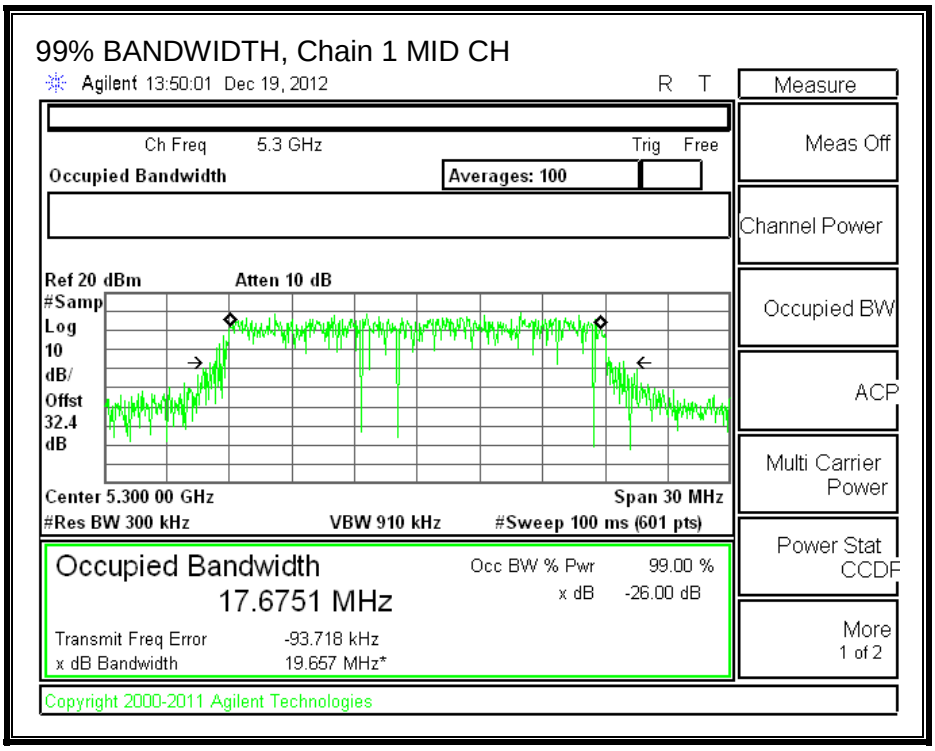


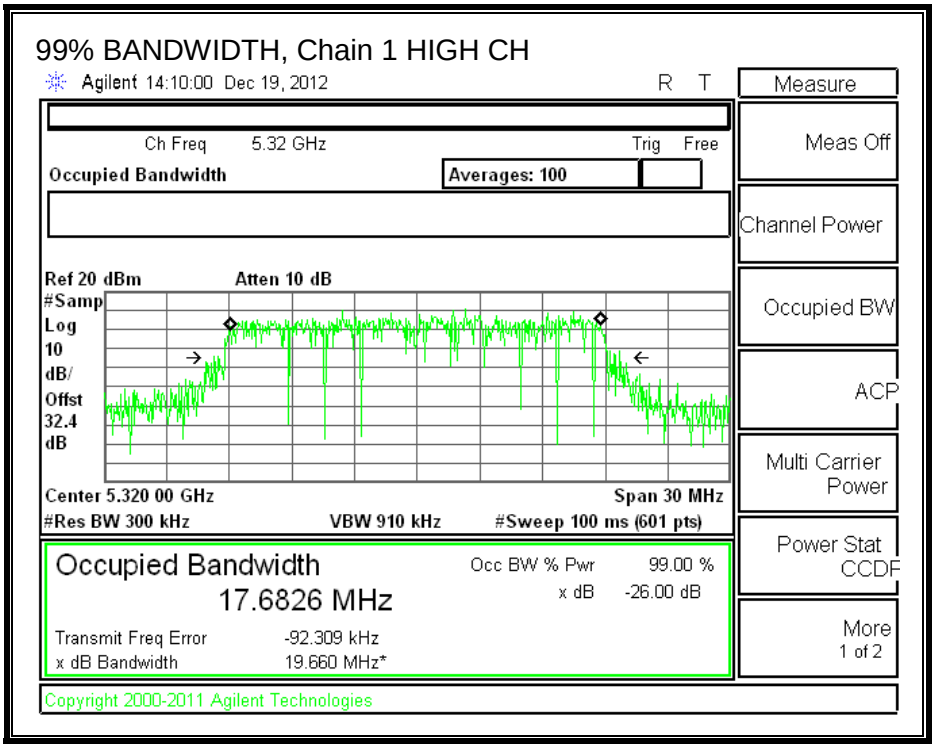




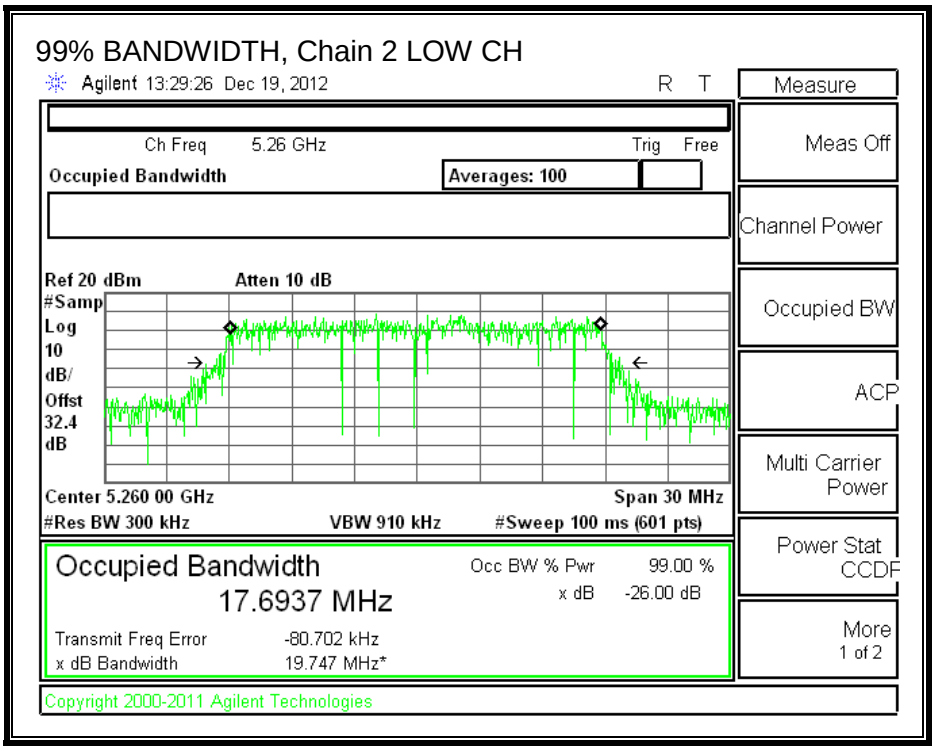
99% BANDWIDTH, Chain 1

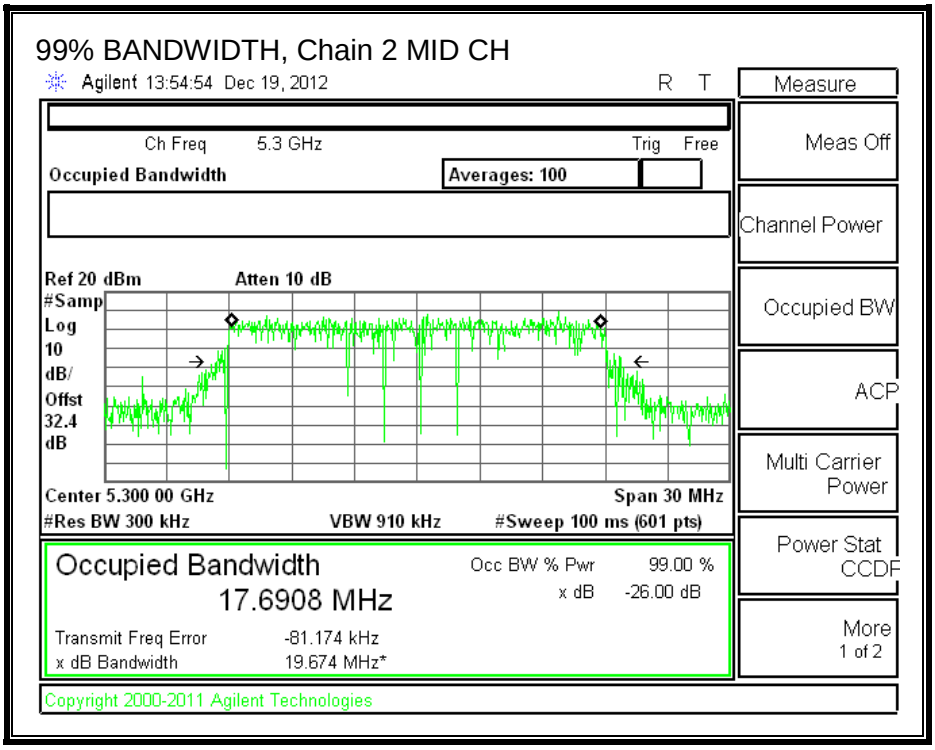


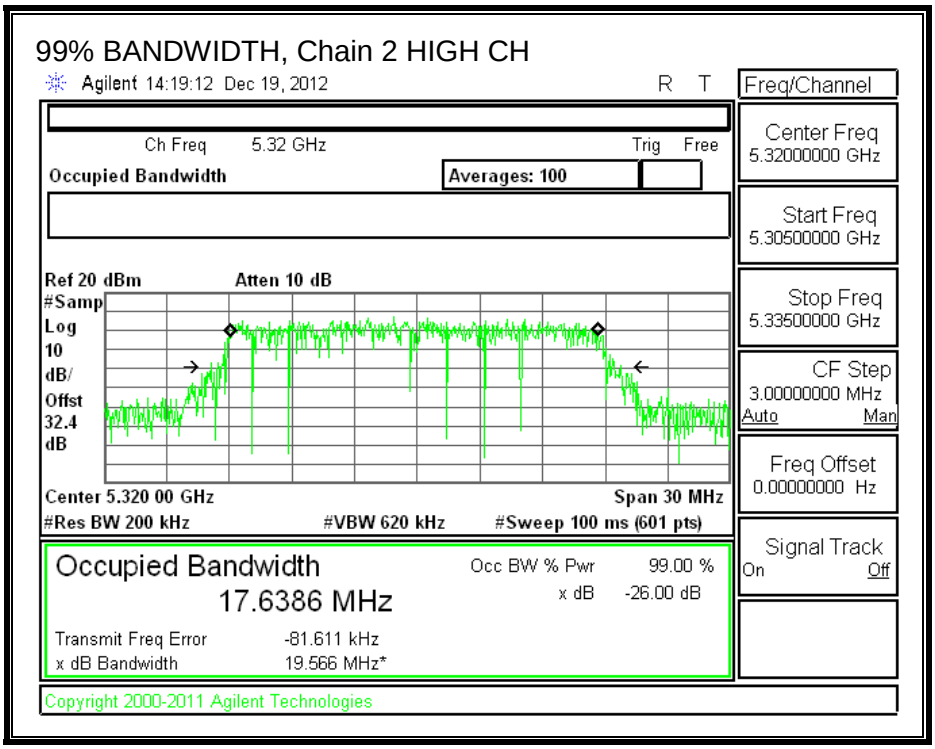




99% BANDWIDTH, Chain 2







8.26.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

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 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum 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.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated for output power and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.40	1.60	2.30	2.50

The TX chains are correlated for PSD and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.40	1.60	2.30	7.24

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Directional Gain (dBi)	Uncorrelated Directional Gain (dBi)
Low	5260	20.58	17.6853	7.24	2.50
Mid	5300	20.58	17.6751	7.24	2.50
High	5320	20.50	17.6386	7.24	2.50

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Low	5260	24.00	23.48	29.48	23.48	9.76	11.00	9.76
Mid	5300	24.00	23.47	29.47	23.47	9.76	11.00	9.76
High	5320	24.00	23.46	29.46	23.46	9.76	11.00	9.76

Duty Cycle CF (dB)	0.00	

Output Power Results

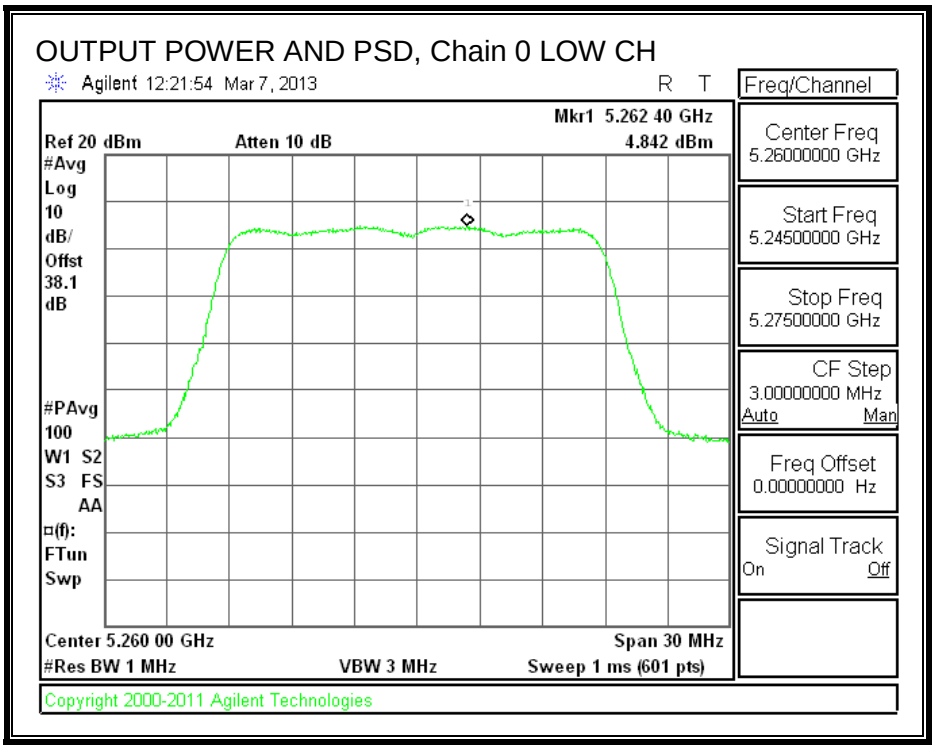
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	13.50	13.59	13.70	18.37	23.48	-5.11
Mid	5300	13.60	13.80	13.50	18.41	23.47	-5.07
High	5320	13.55	13.70	13.60	18.39	23.46	-5.08

PSD Results

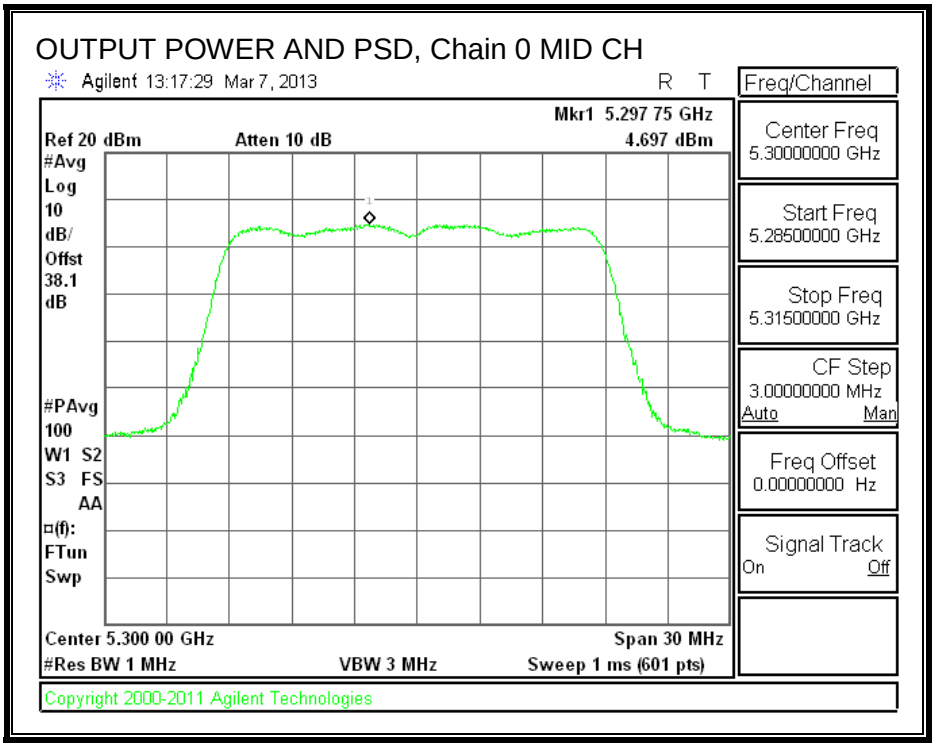
Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Chain 2 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5260	4.842	4.507	4.754	9.47	9.76	-0.29
Mid	5300	4.697	4.860	4.968	9.61	9.76	-0.15
High	5320	4.577	4.526	4.598	9.34	9.76	-0.42

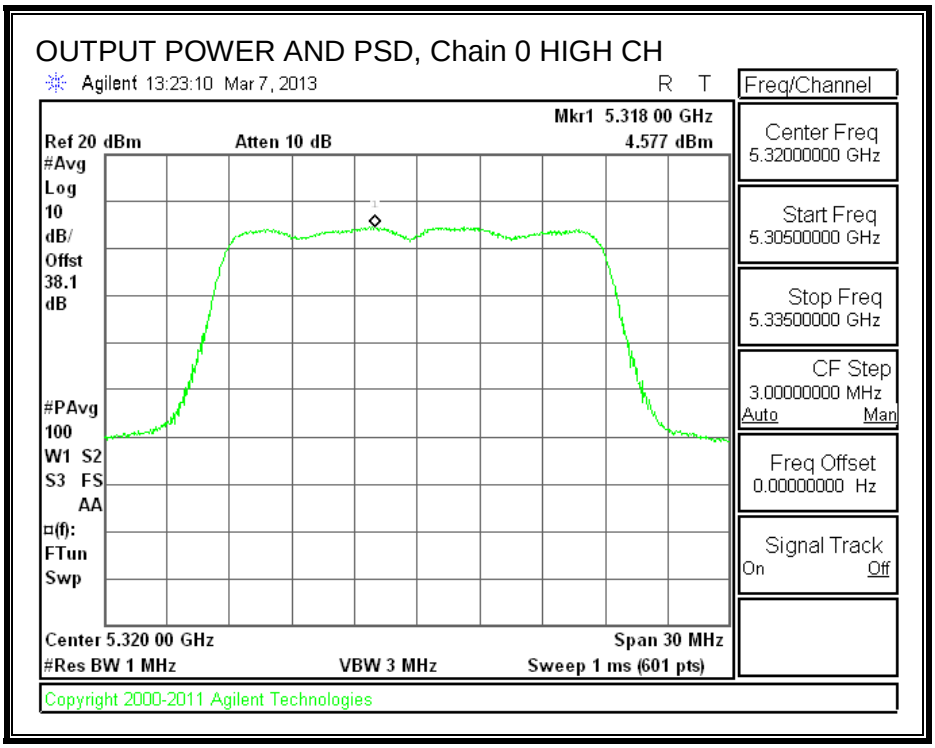
OUTPUT POWER AND PSD, Chain 0

OUTPUT POWER AND PSD, Chain 0 LOW CH

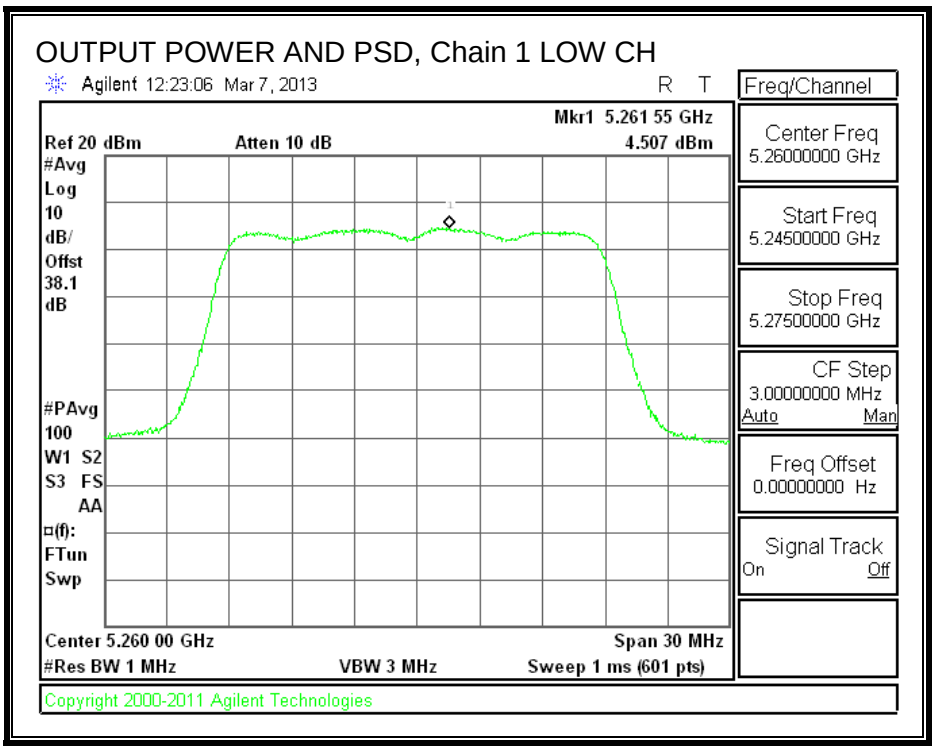


OUTPUT POWER AND PSD, Chain 0 MID CH

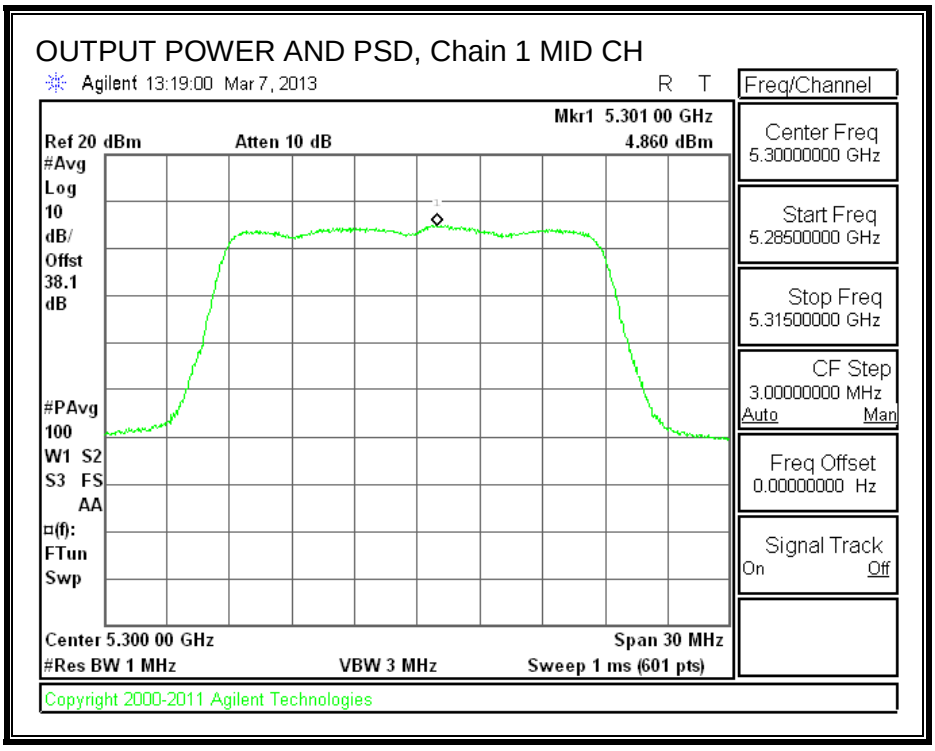




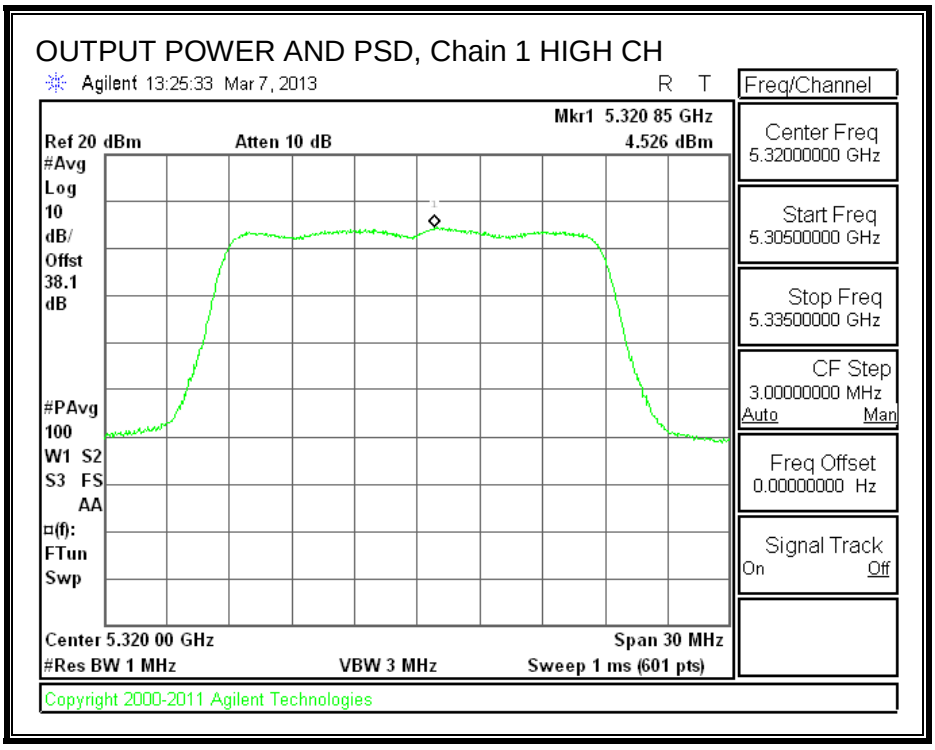
OUTPUT POWER AND PSD, Chain 1



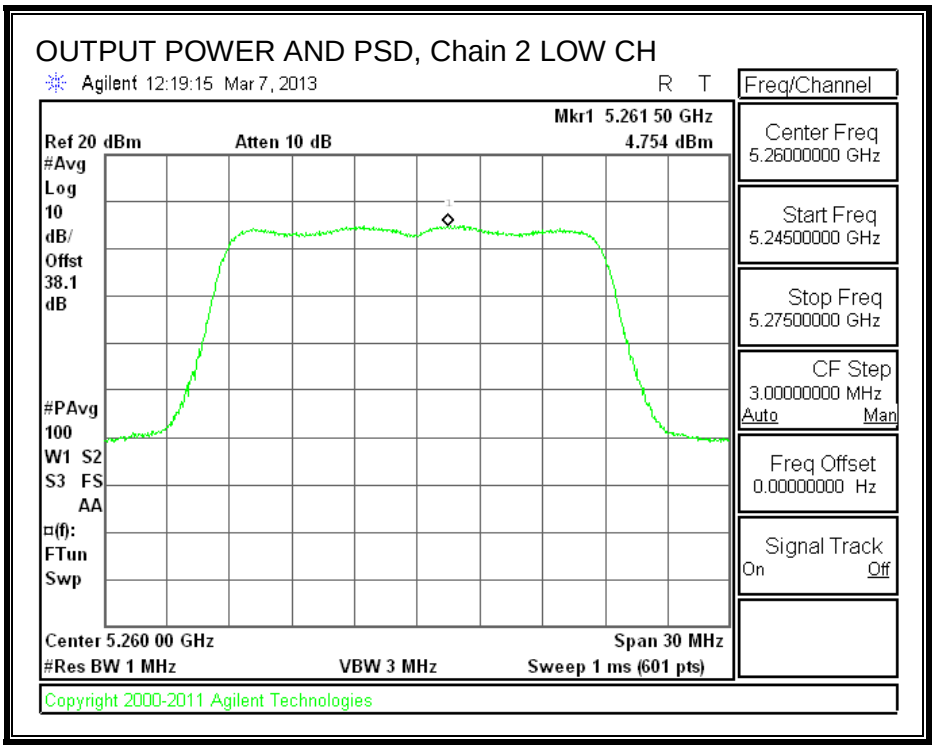
OUTPUT POWER AND PSD, Chain 1 MID CH

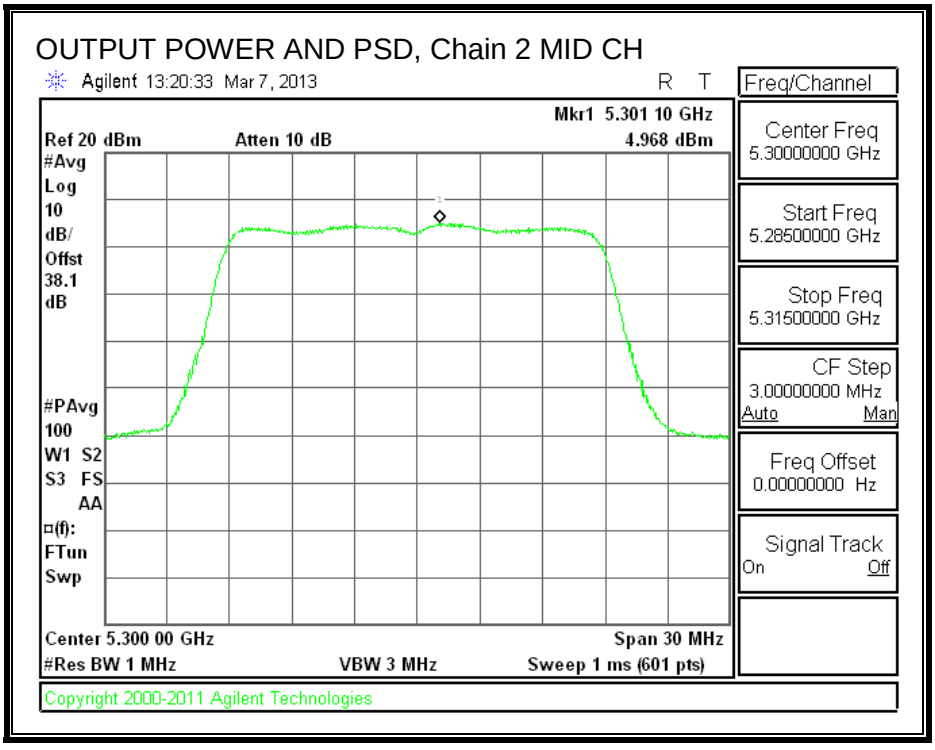


OUTPUT POWER AND PSD, Chain 1 HIGH CH

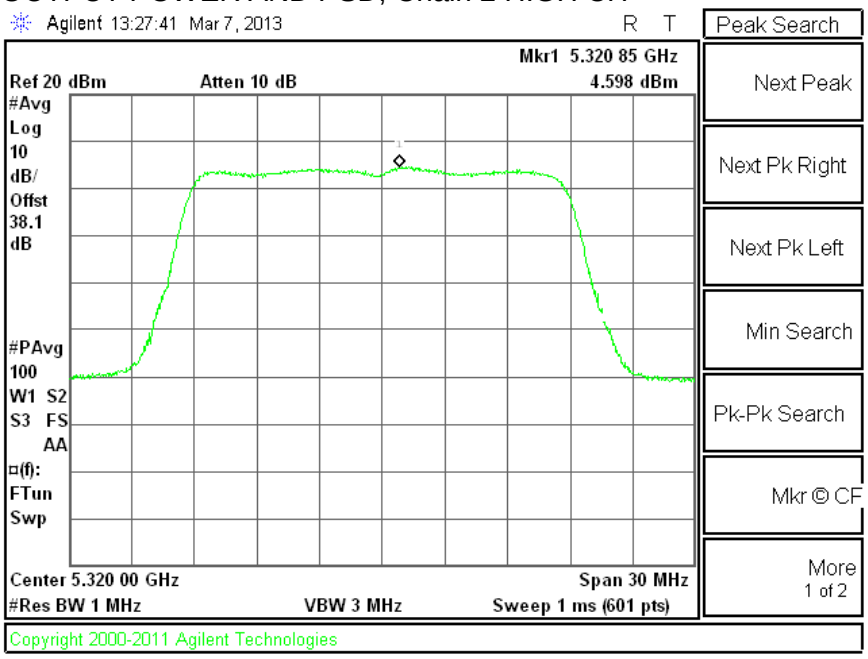


OUTPUT POWER AND PSD, Chain 2





OUTPUT POWER AND PSD, Chain 2 HIGH CH



8.26.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

8.27. 802.11n HT20 BF 3TX MODE IN THE 5.3 GHz BAND

Covered by testing HT20 CDD 3TX mode, the power per chain used for HT20 CDD 3TX mode is the same power per chain that will be used for HT20 BF 3TX mode. However, since BF is correlated and CDD is uncorrelated for output power, the section below for output power using correlated AG for this BF mode shows it is still compliant.

8.27.1. OUTPUT AVERAGE POWER

LIMITS

FCC §15.407 (a) (2)

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 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum 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.

DIRECTIONAL ANTENNA GAIN

The TX chains are correlated for output power and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.40	1.60	2.30	7.24

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Directional Gain (dBi)
Low	5260	20.58	17.6853	7.24
Mid	5300	20.58	17.6751	7.24
High	5320	20.50	17.6386	7.24

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)
Low	5260	22.76	23.48	29.48	22.76
Mid	5300	22.76	23.47	29.47	22.76
High	5320	22.76	23.46	29.46	22.76

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	13.50	13.59	13.70	18.37	22.76	-4.39
Mid	5300	13.60	13.80	13.50	18.41	22.76	-4.35
High	5320	13.55	13.70	13.60	18.39	22.76	-4.37

8.28. 802.11n HT20 STBC 3TX MODE IN THE 5.3 GHz BAND

8.28.1. 26 dB BANDWIDTH

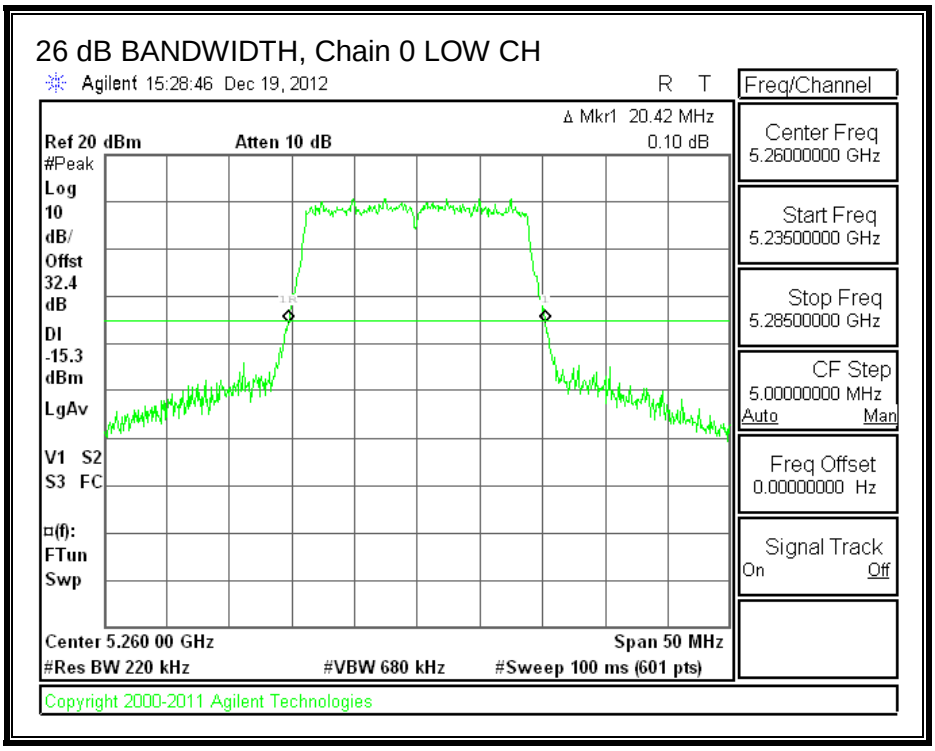
LIMITS

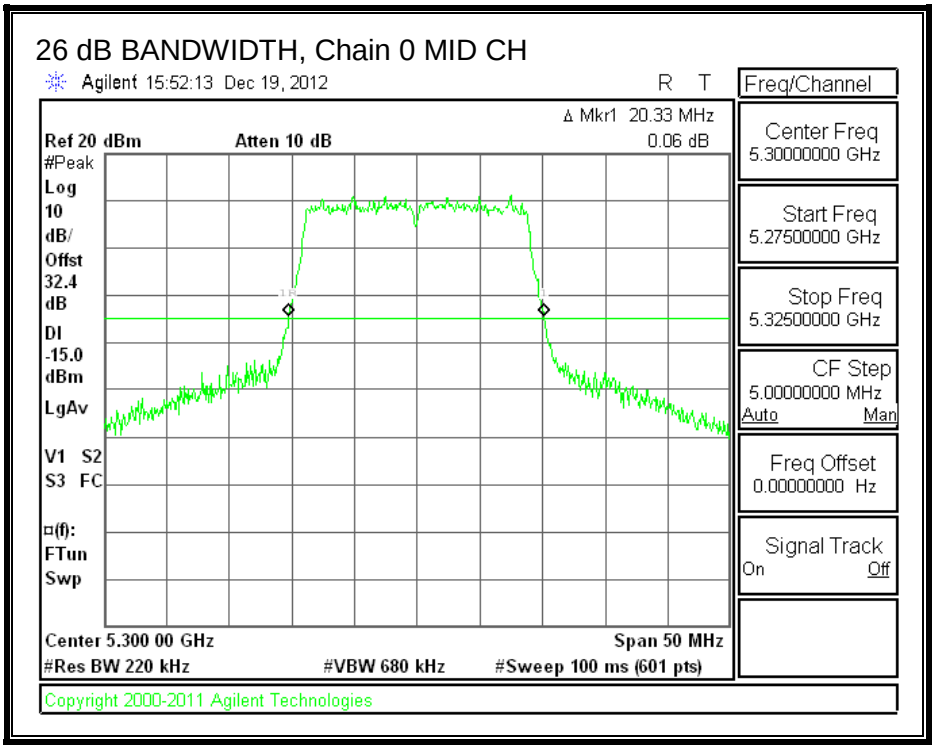
None; for reporting purposes only.

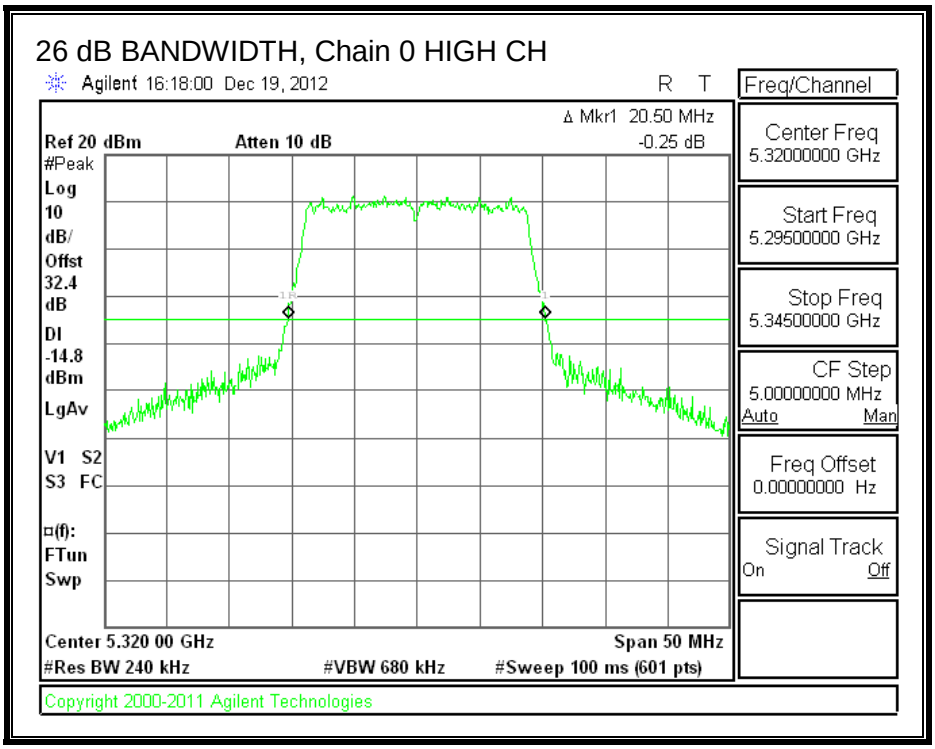
RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
Low	5260	20.42	20.75	20.42
Mid	5300	20.33	20.67	20.42
High	5320	20.50	20.58	20.42

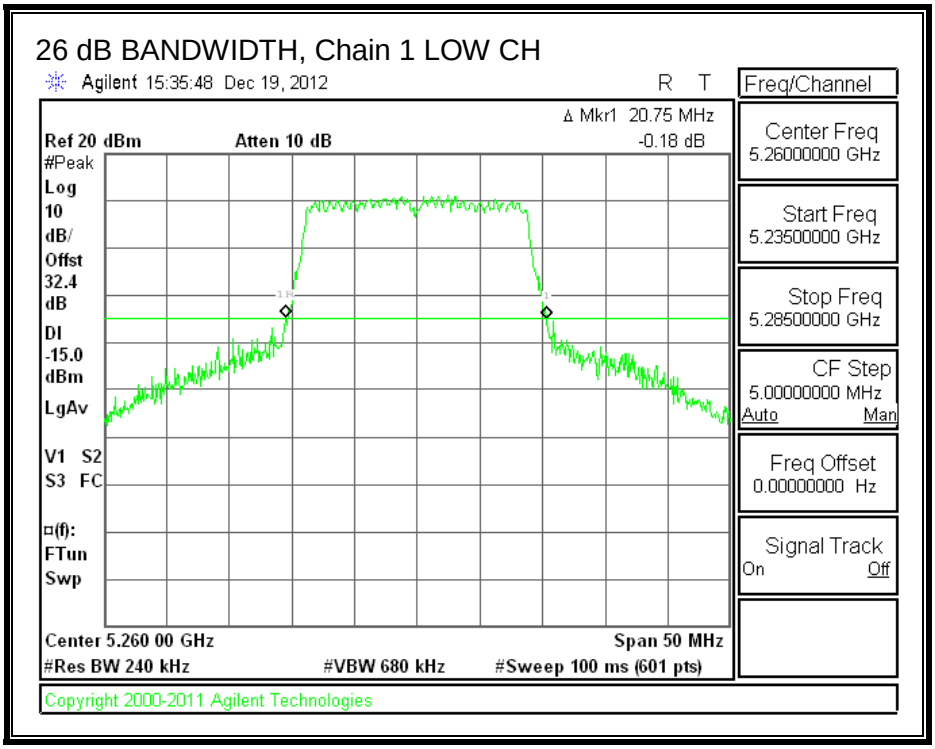
26 dB BANDWIDTH, Chain 0



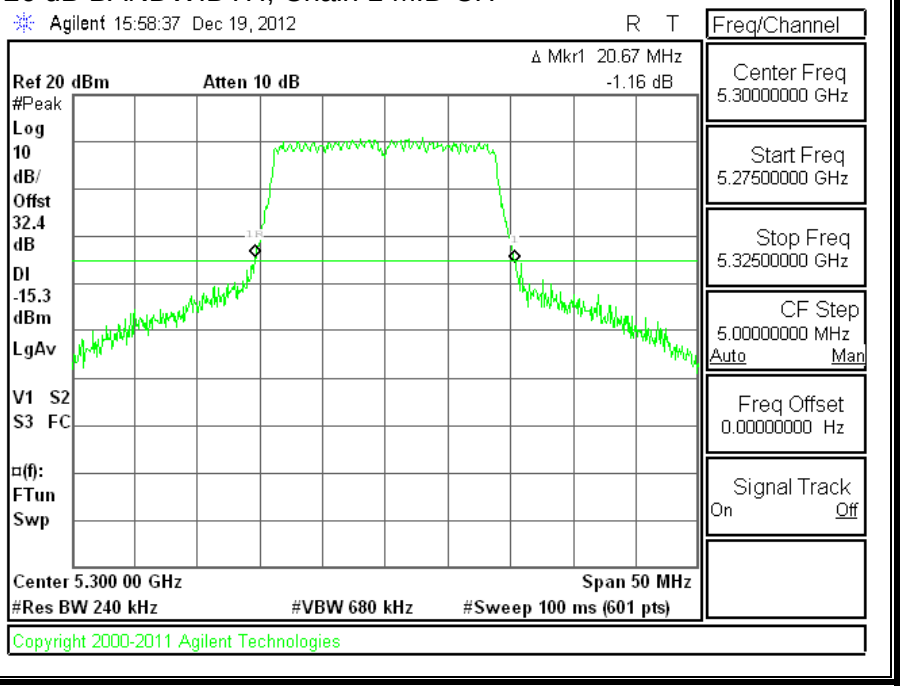




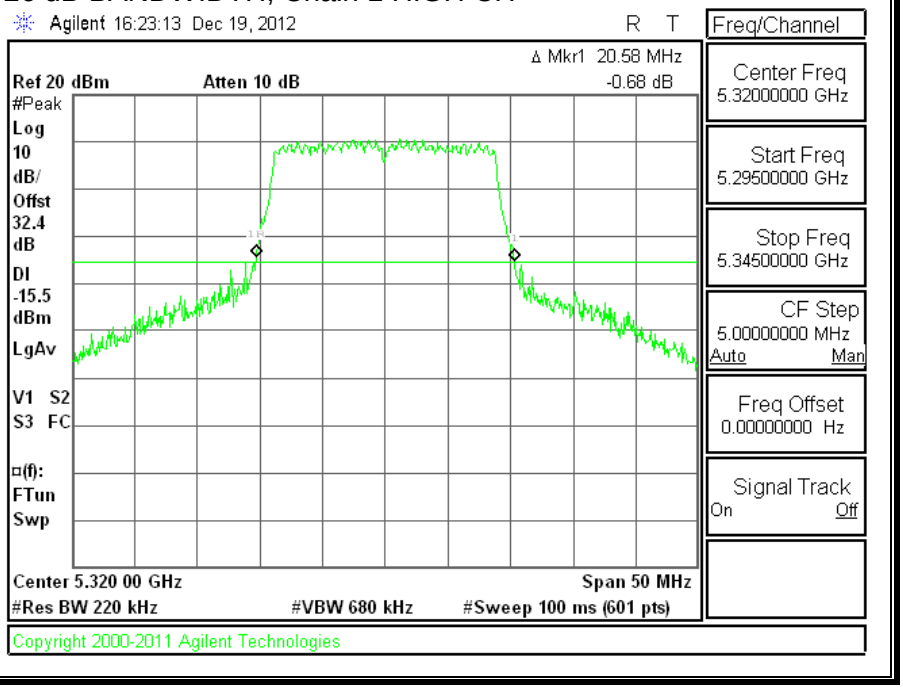
26 dB BANDWIDTH, Chain 1



26 dB BANDWIDTH, Chain 1 MID CH

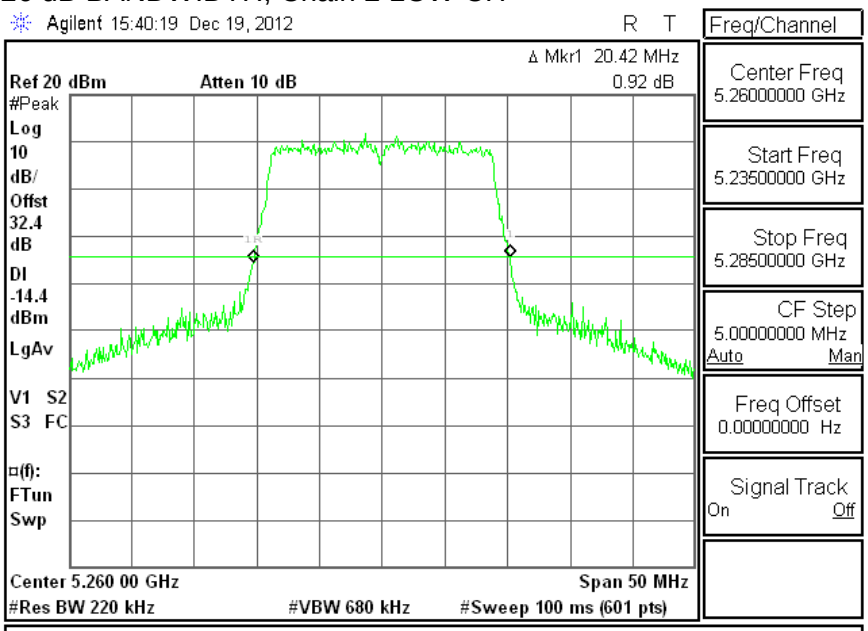


26 dB BANDWIDTH, Chain 1 HIGH CH

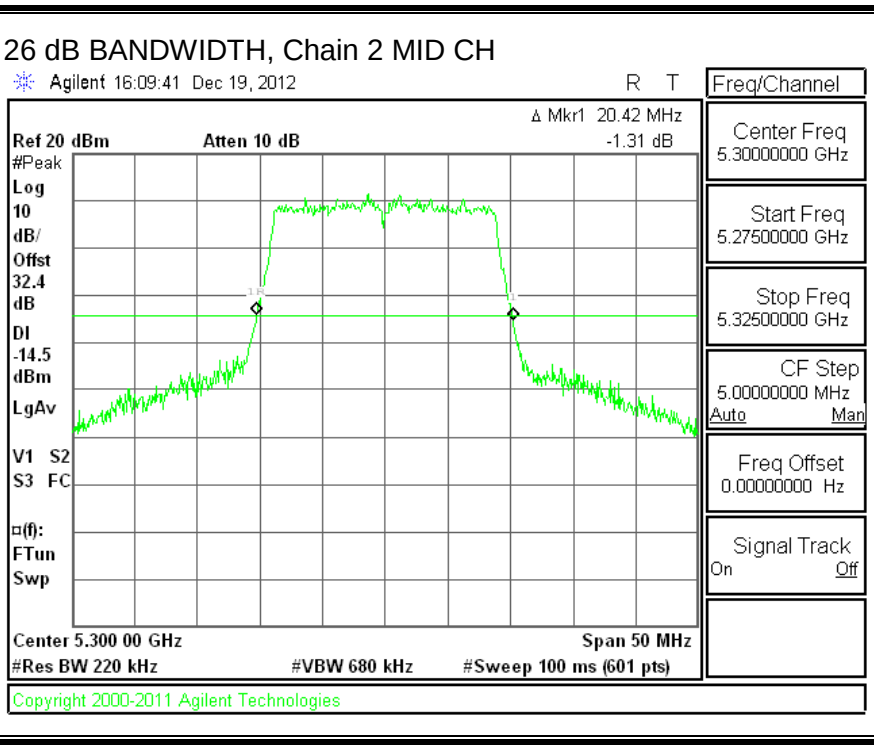


26 dB BANDWIDTH, Chain 2

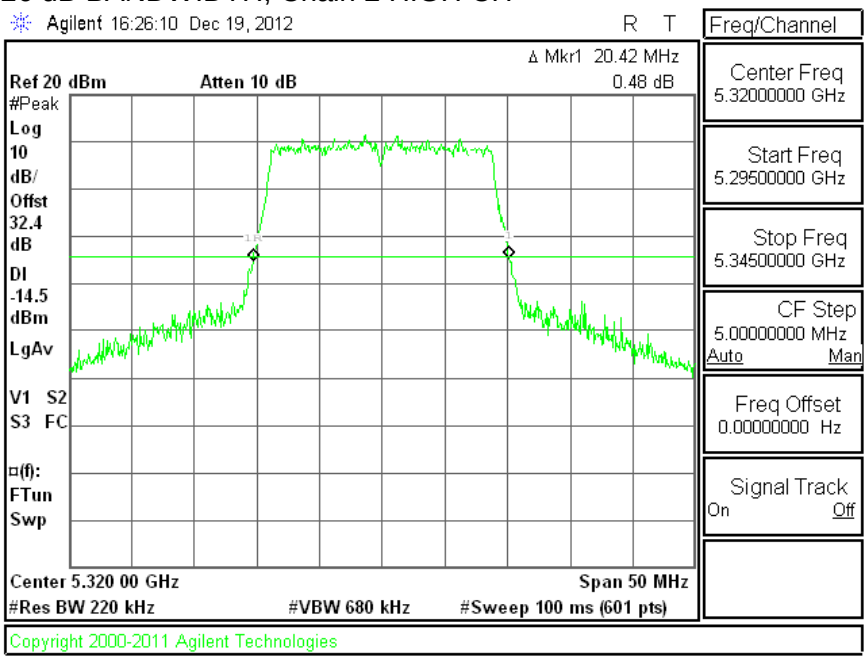
26 dB BANDWIDTH, Chain 2 LOW CH



26 dB BANDWIDTH, Chain 2 MID CH



26 dB BANDWIDTH, Chain 2 HIGH CH



8.28.2. 99% BANDWIDTH

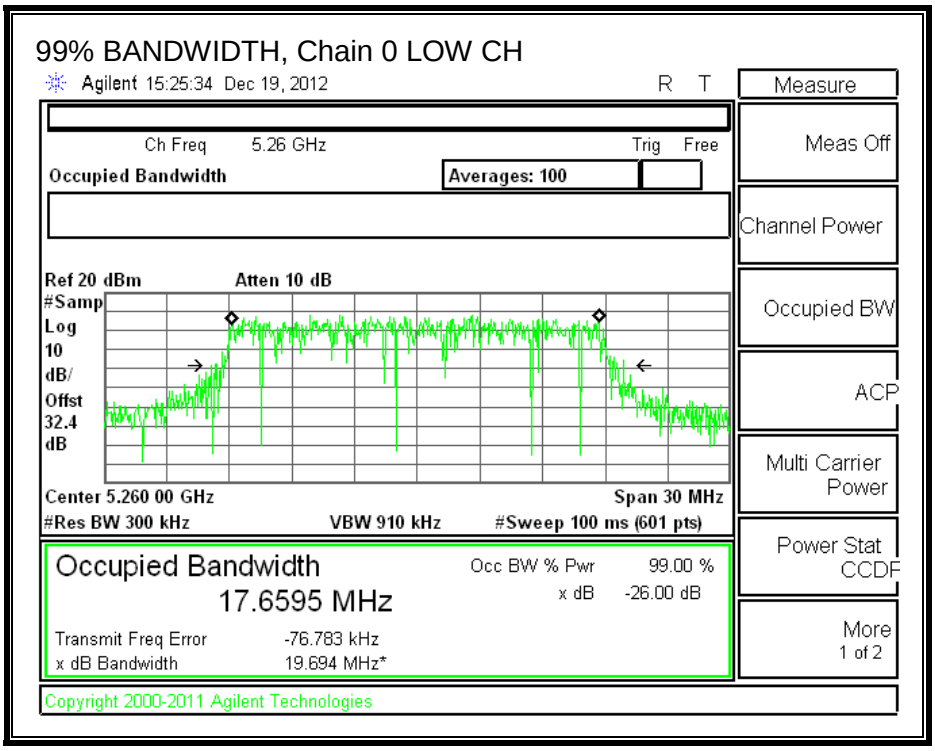
LIMITS

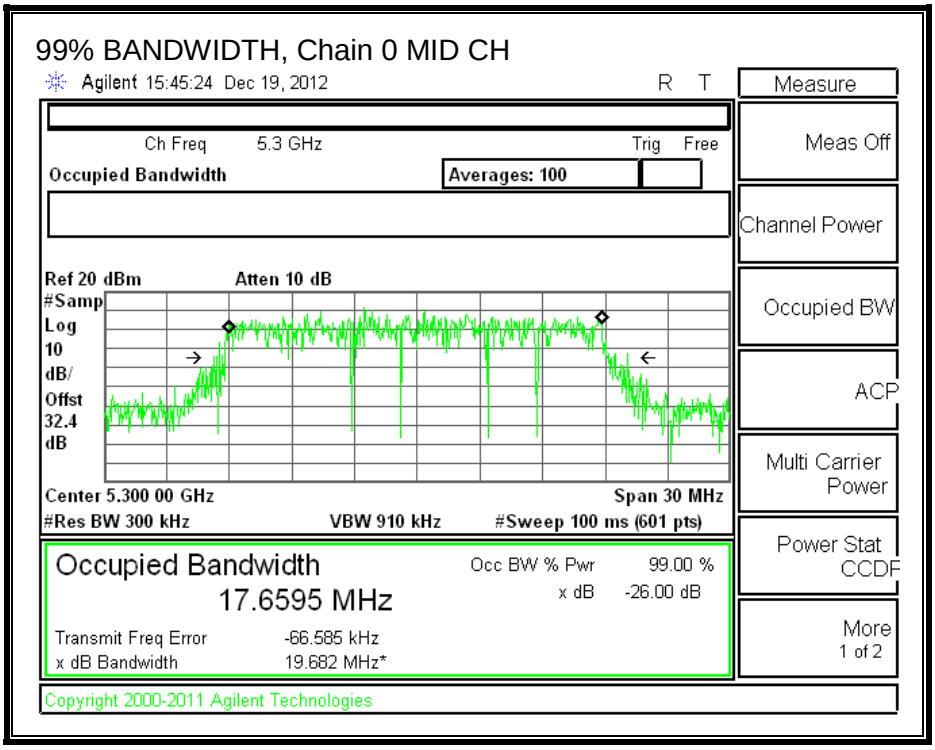
None; for reporting purposes only.

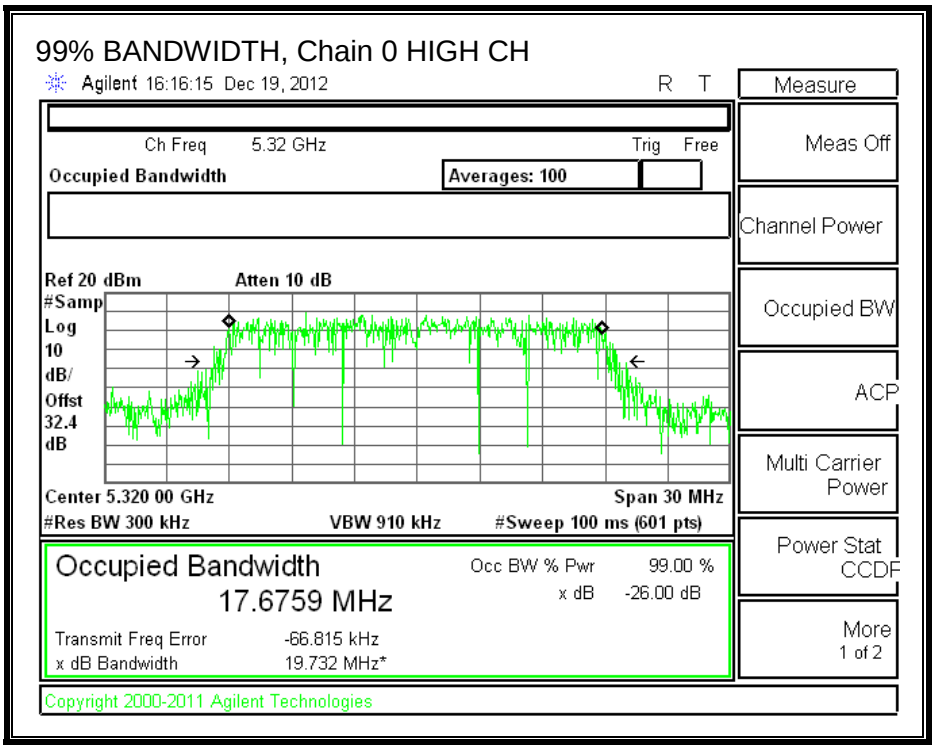
RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
Low	5260	17.6595	17.6882	17.6534
Mid	5300	17.6595	17.6871	17.6422
High	5320	17.6759	17.6868	17.6698

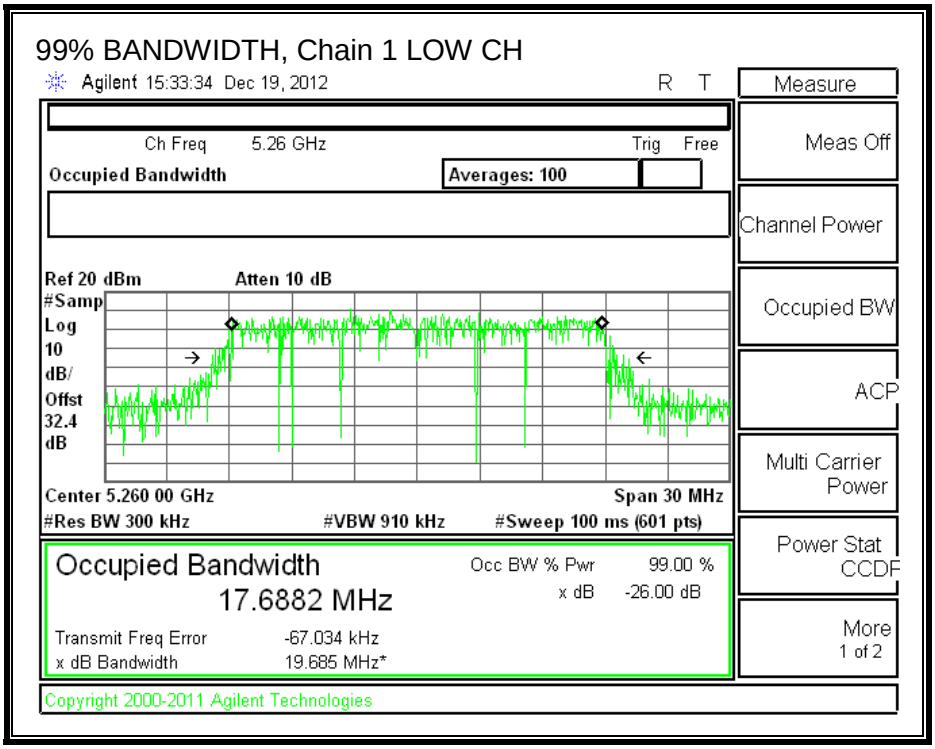
99% BANDWIDTH, Chain 0

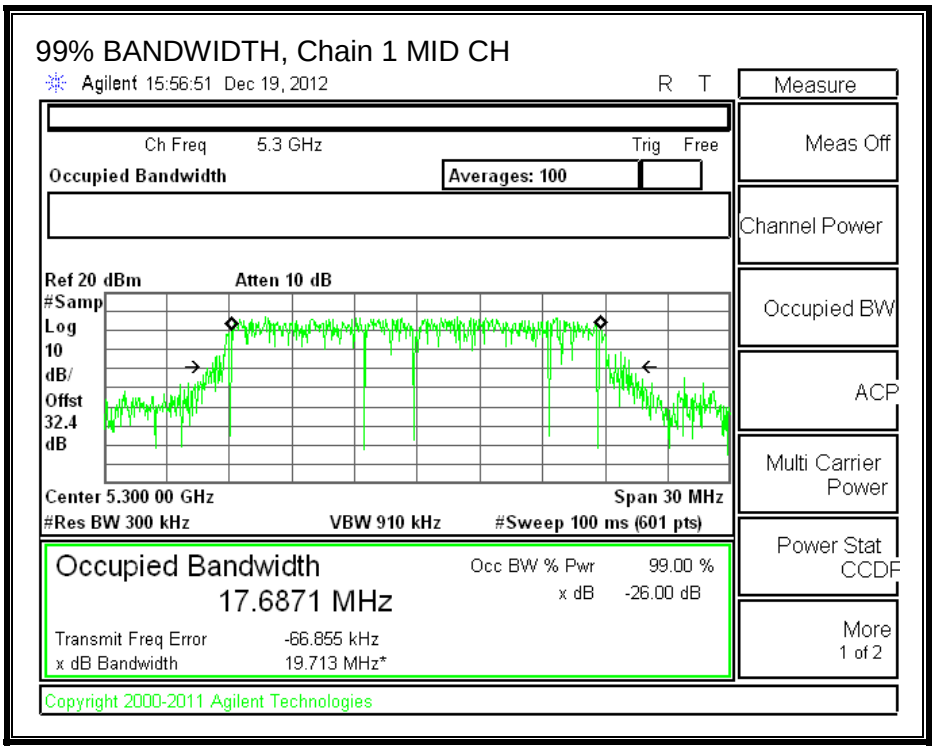


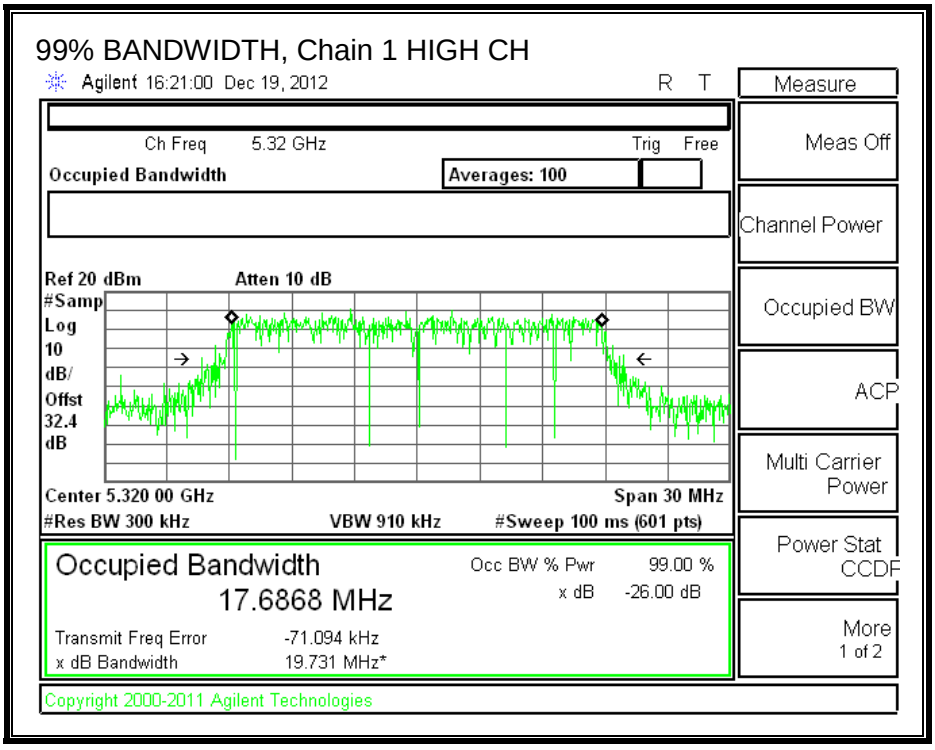




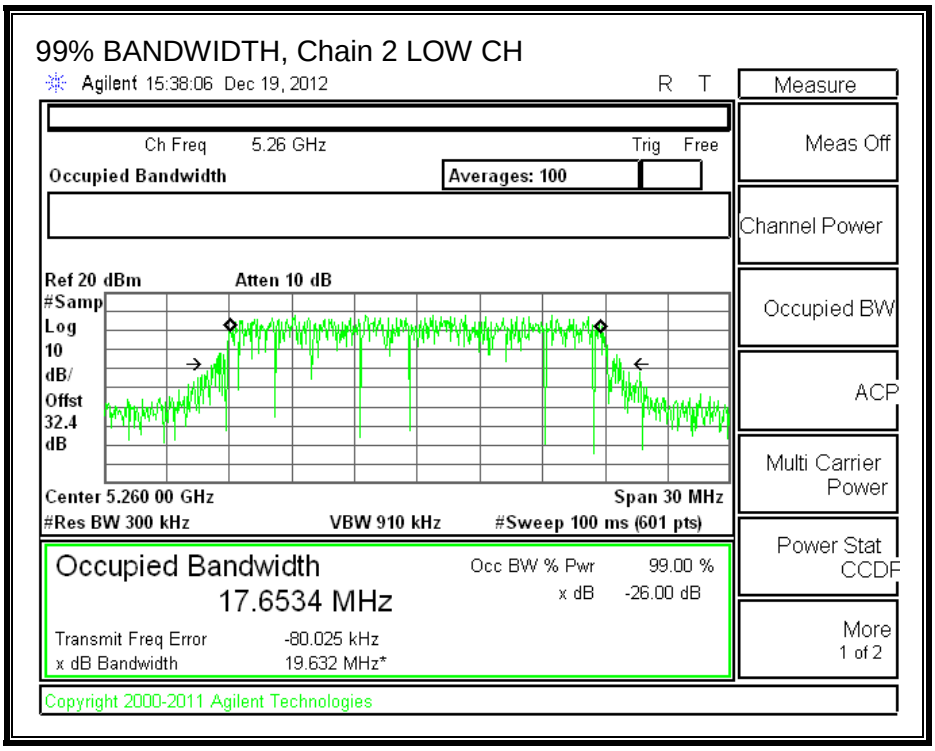
99% BANDWIDTH, Chain 1

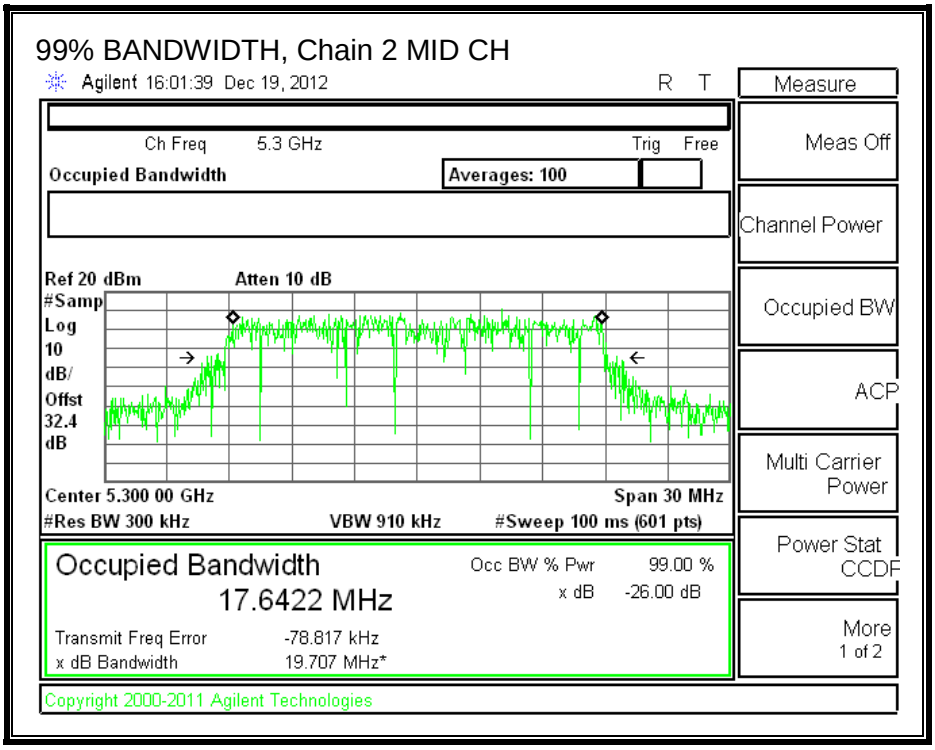


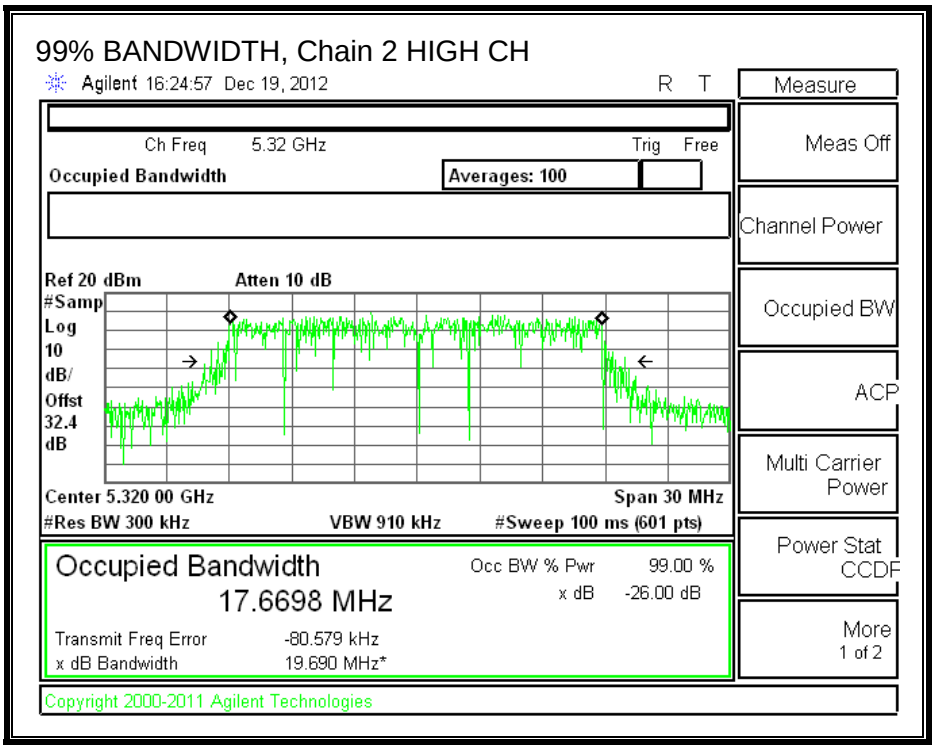




99% BANDWIDTH, Chain 2







8.28.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

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 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum 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.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.40	1.60	2.30	2.50

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
Low	5260	20.42	17.6534	2.50
Mid	5300	20.33	17.6422	2.50
High	5320	20.42	17.6689	2.50

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)	PSD Limit (dBm)
Low	5260	24.00	23.47	29.47	23.47	11.00	11.00	11.00
Mid	5300	24.00	23.47	29.47	23.47	11.00	11.00	11.00
High	5320	24.00	23.47	29.47	23.47	11.00	11.00	11.00

Duty Cycle CF (dB)	0.00	

Output Power Results

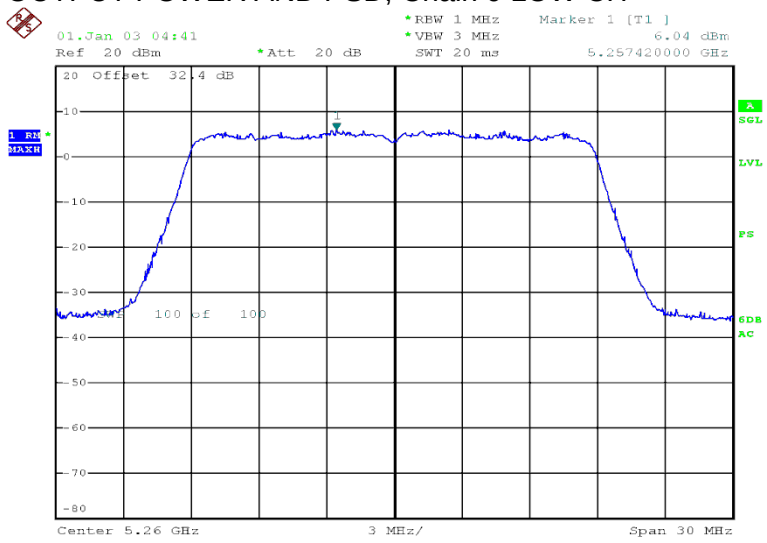
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	16.10	16.30	16.20	20.97	23.47	-2.50
Mid	5300	14.50	14.80	14.60	19.41	23.47	-4.06
High	5320	14.00	14.25	14.10	18.89	23.47	-4.58

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Chain 2 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5260	6.04	6.25	5.76	10.79	11.00	-0.21
Mid	5300	5.73	6.36	6.03	10.82	11.00	-0.18
High	5320	6.05	6.50	5.78	10.89	11.00	-0.11

OUTPUT POWER AND PSD, Chain 0

OUTPUT POWER AND PSD, Chain 0 LOW CH



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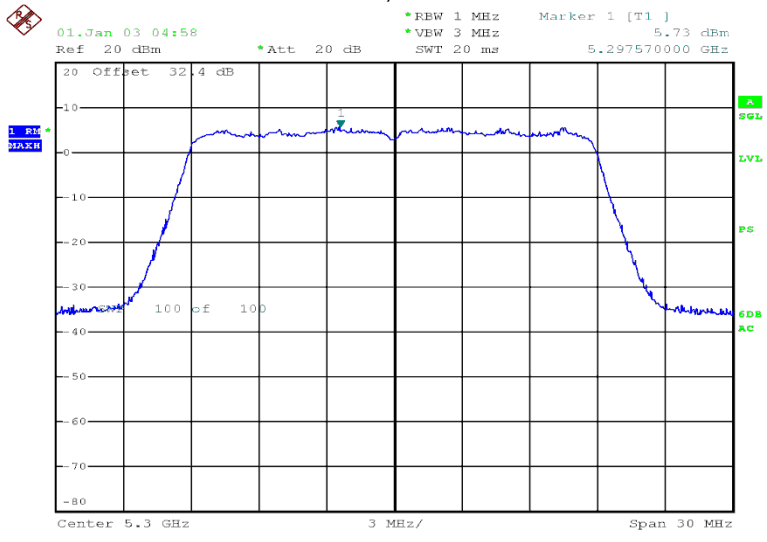
OUTPUT POWER AND PSD, Chain 0 MID CH



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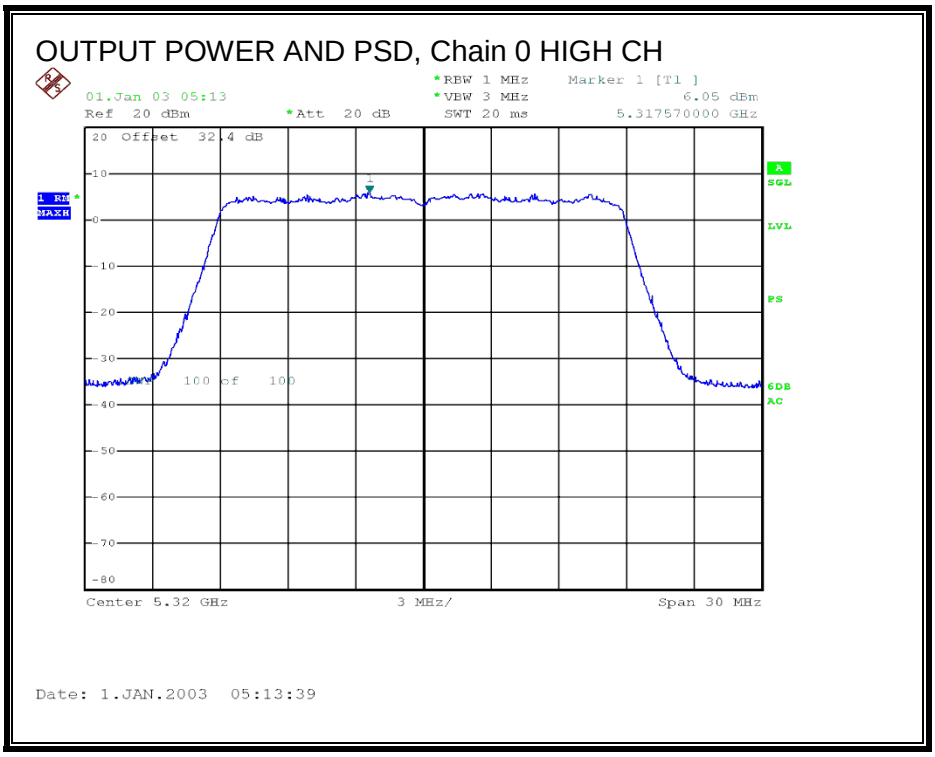
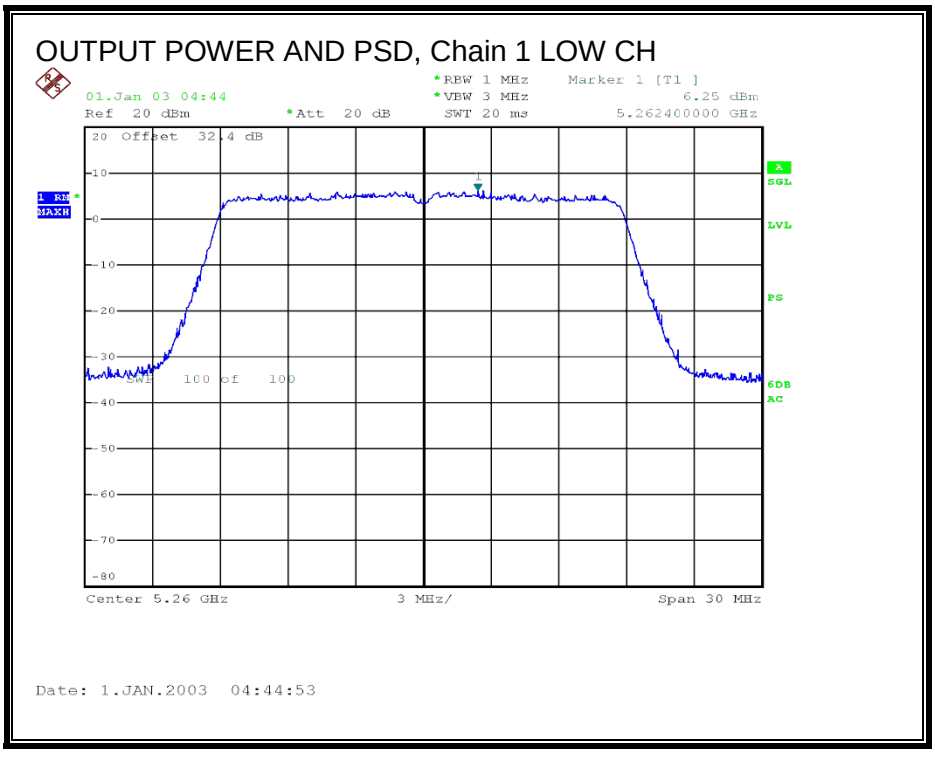
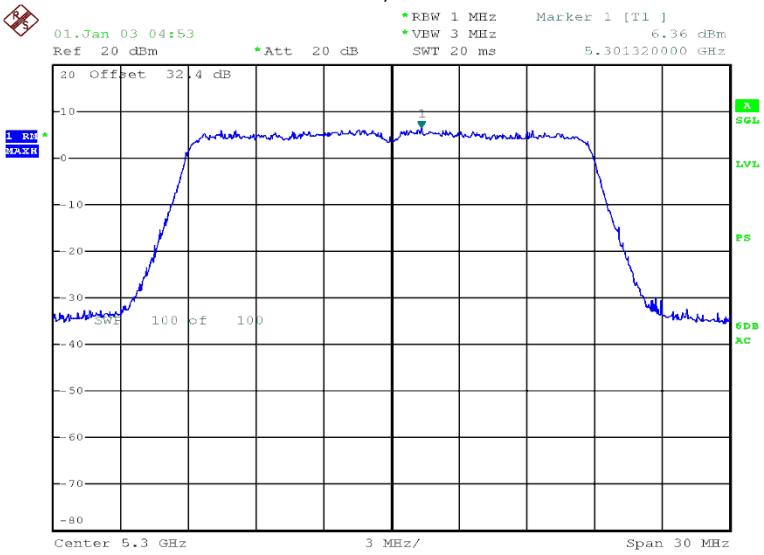


OUTPUT POWER AND PSD, Chain 1

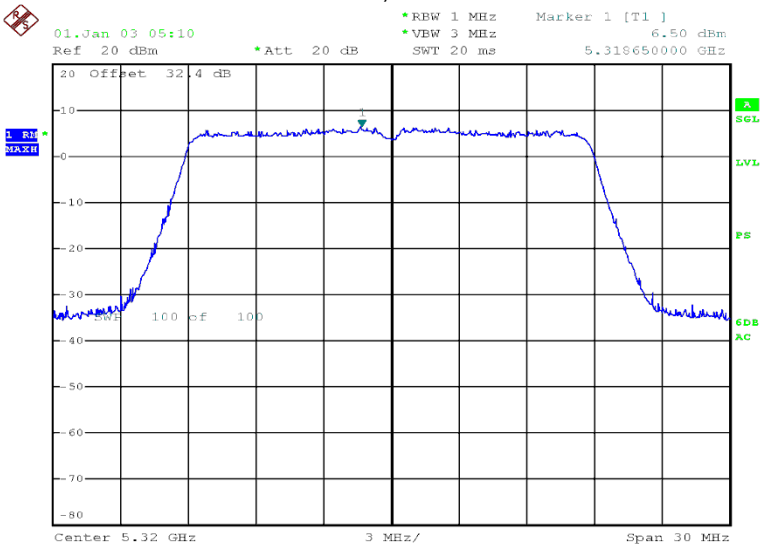


OUTPUT POWER AND PSD, Chain 1 MID CH



Date: 1.JAN.2003 04:53:56

OUTPUT POWER AND PSD, Chain 1 HIGH CH



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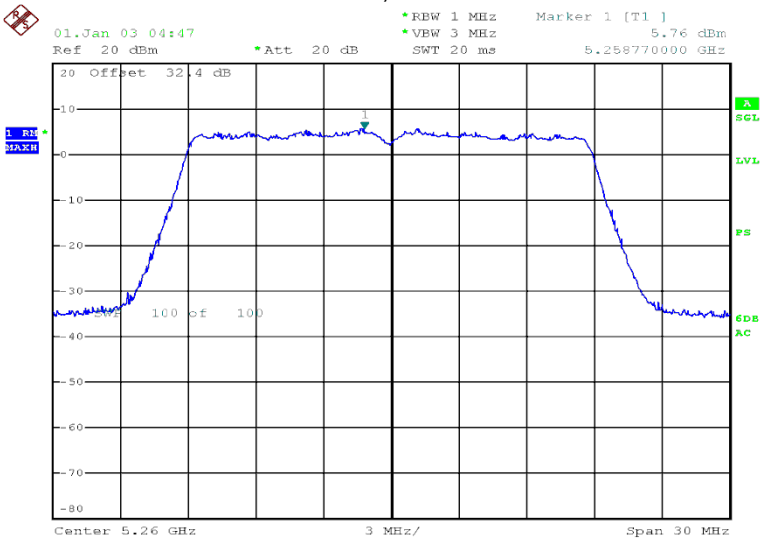
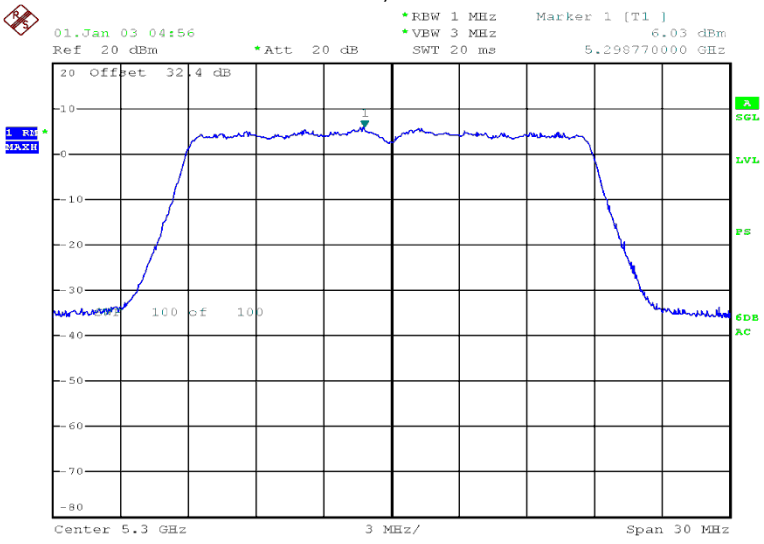
OUTPUT POWER AND PSD, Chain 2

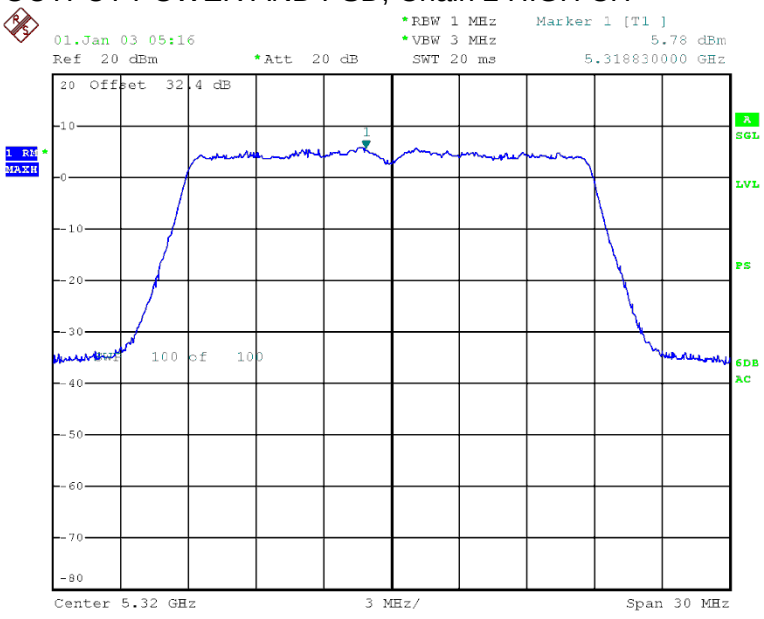
OUTPUT POWER AND PSD, Chain 2 LOW CH



OUTPUT POWER AND PSD, Chain 2 MID CH



OUTPUT POWER AND PSD, Chain 2 HIGH CH



8.28.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

8.29. 802.11n HT40 1TX MODE IN THE 5.3 GHz BAND

8.29.1. 26 dB BANDWIDTH

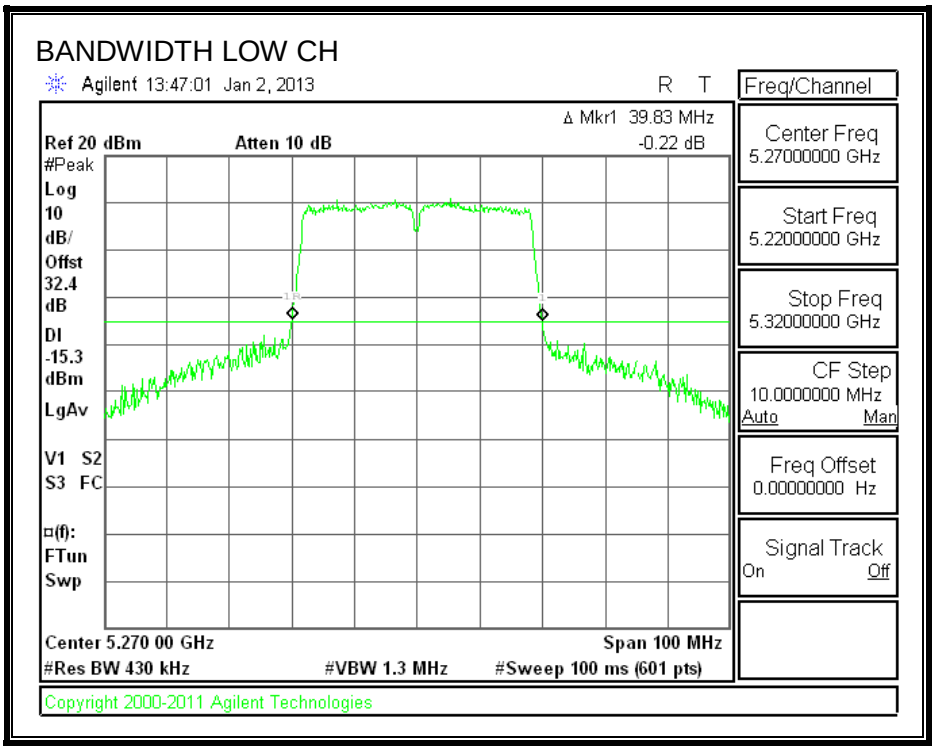
LIMITS

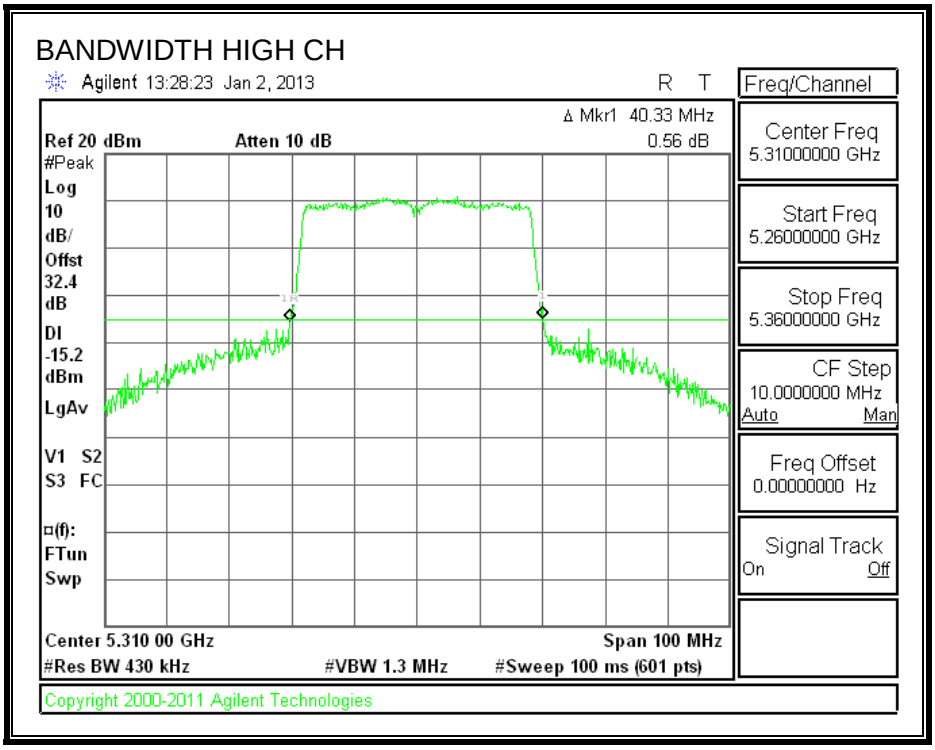
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5270	39.83
High	5310	40.33

26 dB BANDWIDTH





8.29.2. 99% BANDWIDTH

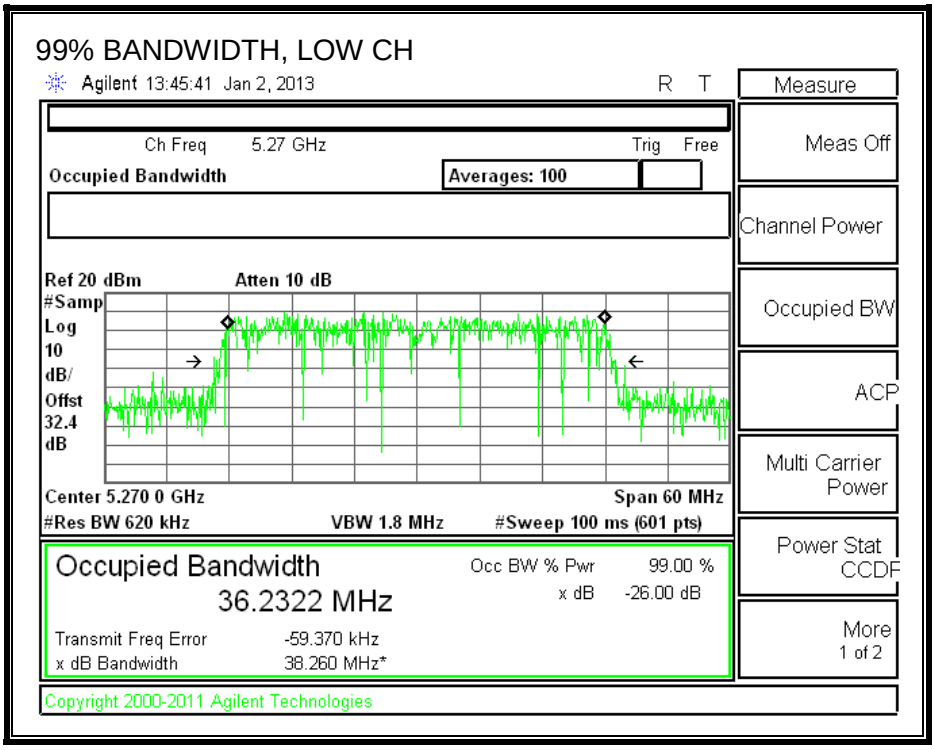
LIMITS

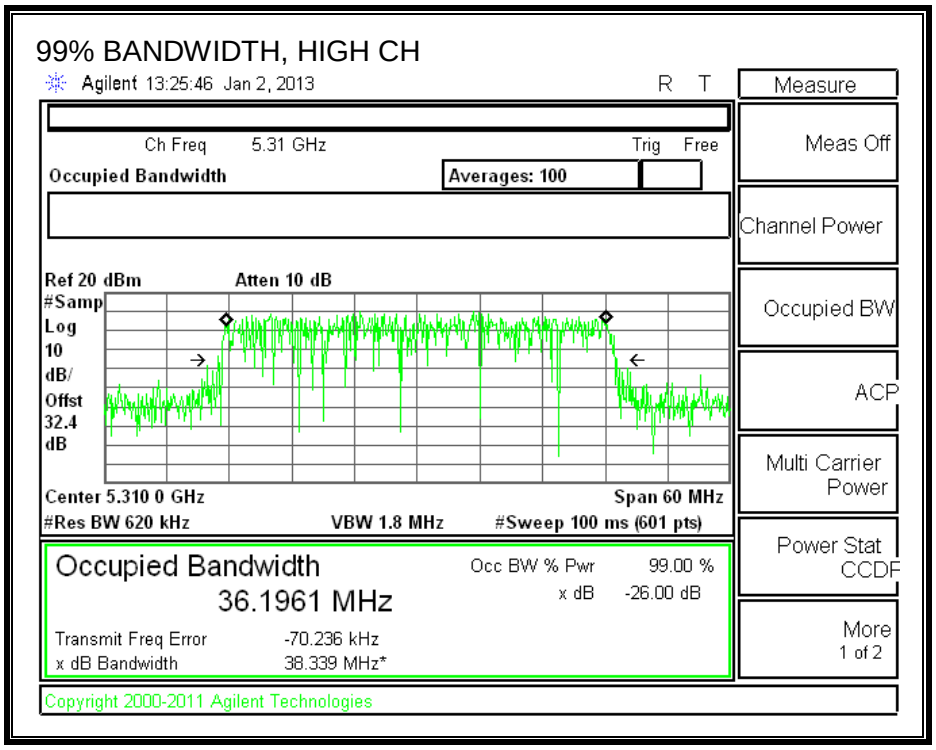
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5270	36.2322
High	5310	36.1961

99% BANDWIDTH





8.29.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

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 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum 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.

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	5270	39.83	36.2322	3.40
High	5310	40.33	36.1961	3.40

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD 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)	0.00	

Output Power Results

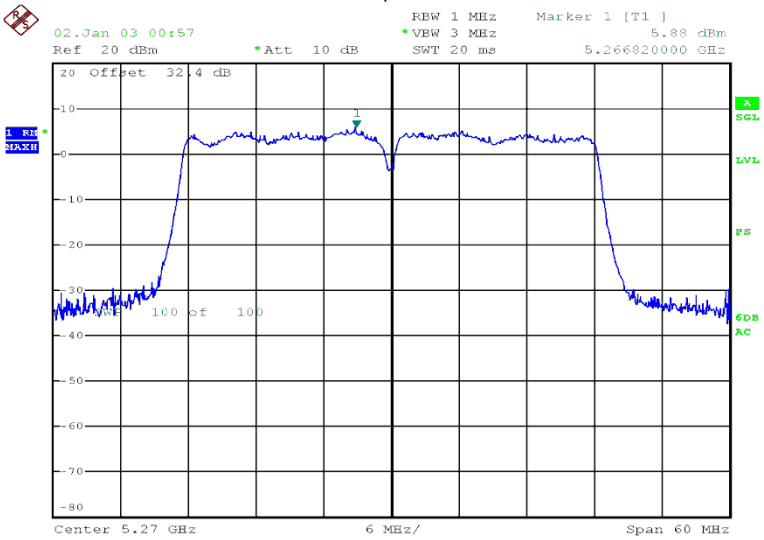
Channel	Frequency (MHz)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5270	17.50	17.50	24.00	-6.50
High	5310	16.00	16.00	24.00	-8.00

PSD Results

Channel	Frequency (MHz)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5270	5.88	5.88	11.00	-5.12
High	5310	5.69	5.69	11.00	-5.31

OUTPUT POWER AND PSD, Chain 1

OUTPUT POWER AND PSD, Chain 1 LOW CH



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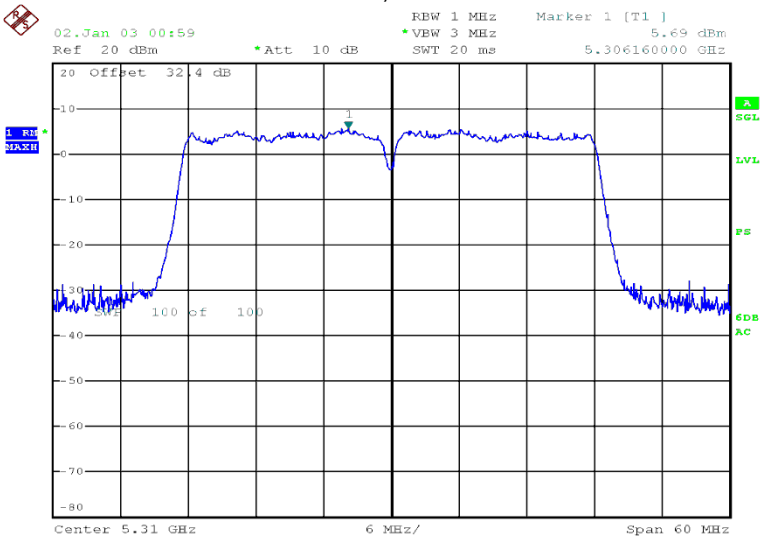
OUTPUT POWER AND PSD, Chain 1 HIGH CH



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8.29.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

8.30. 802.11n HT40 CDD 2TX MODE IN THE 5.3 GHz BAND

8.30.1. 26 dB BANDWIDTH

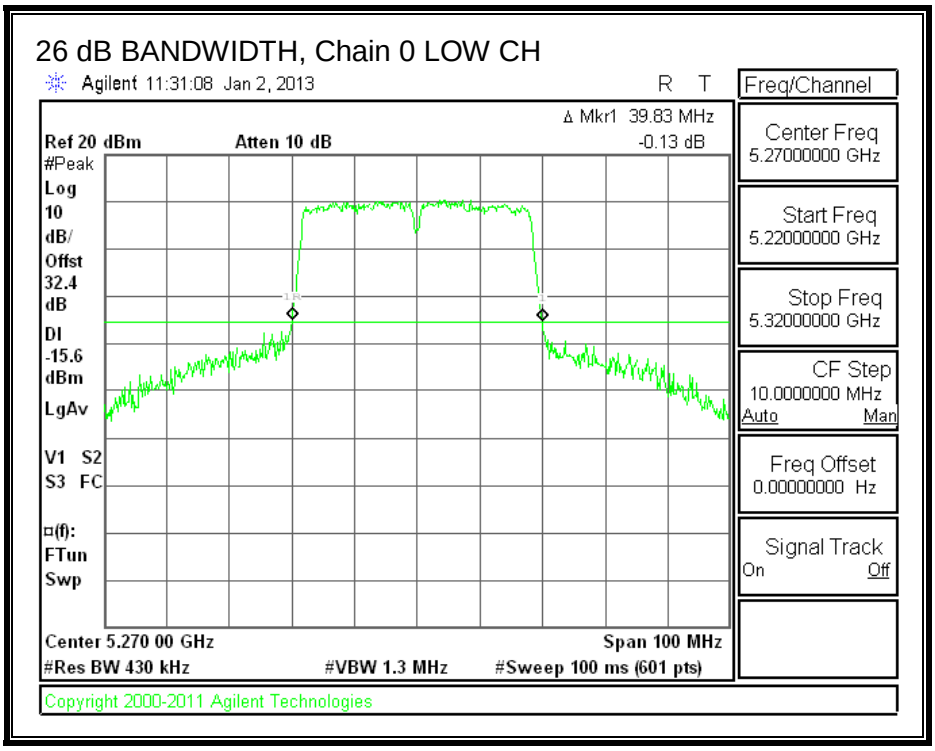
LIMITS

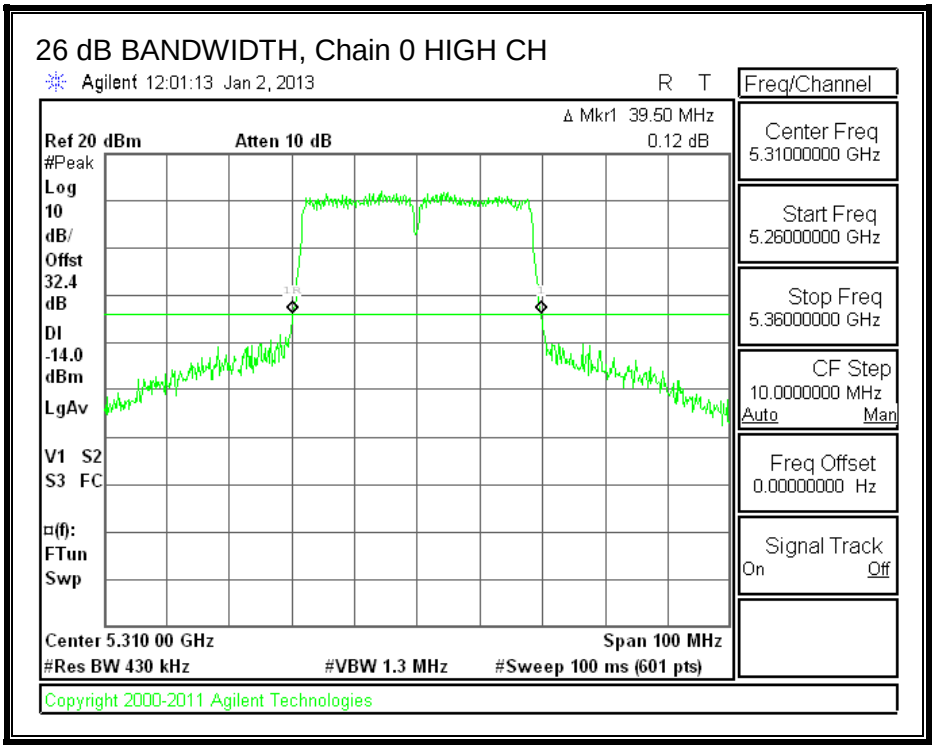
None; for reporting purposes only.

RESULTS

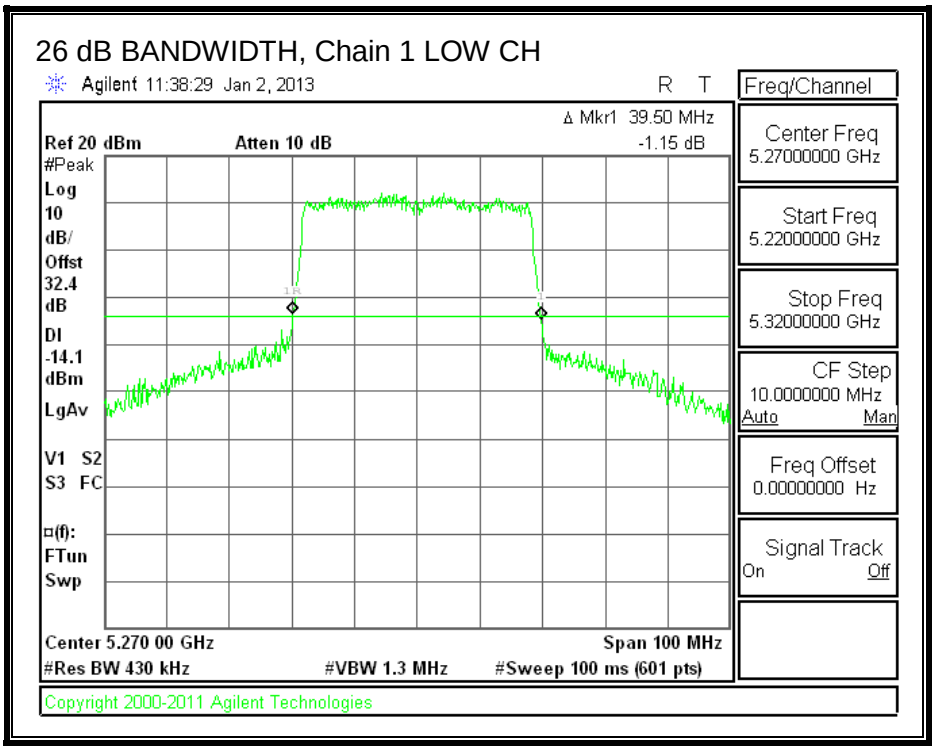
Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Low	5270	39.83	39.50
High	5310	39.50	39.50

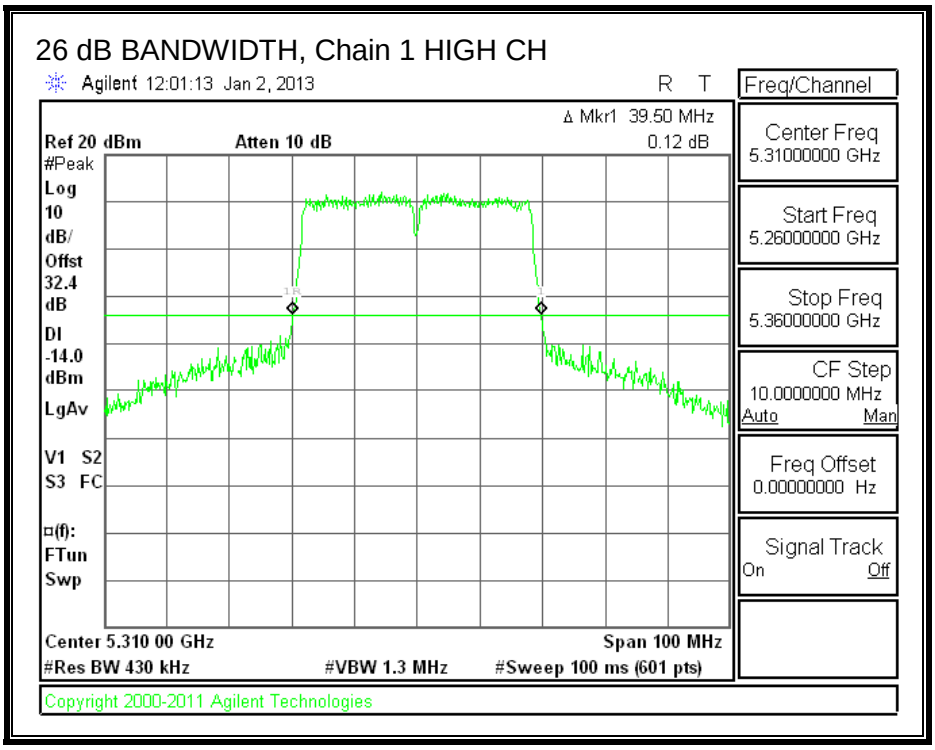
26 dB BANDWIDTH, Chain 0





26 dB BANDWIDTH, Chain 1





8.30.2. 99% BANDWIDTH

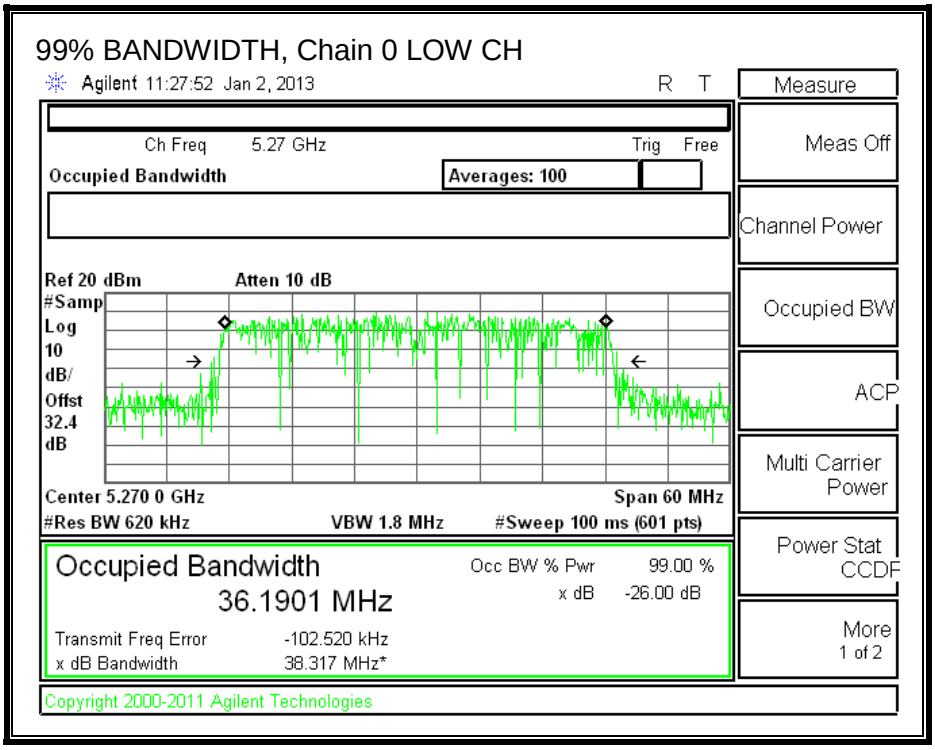
LIMITS

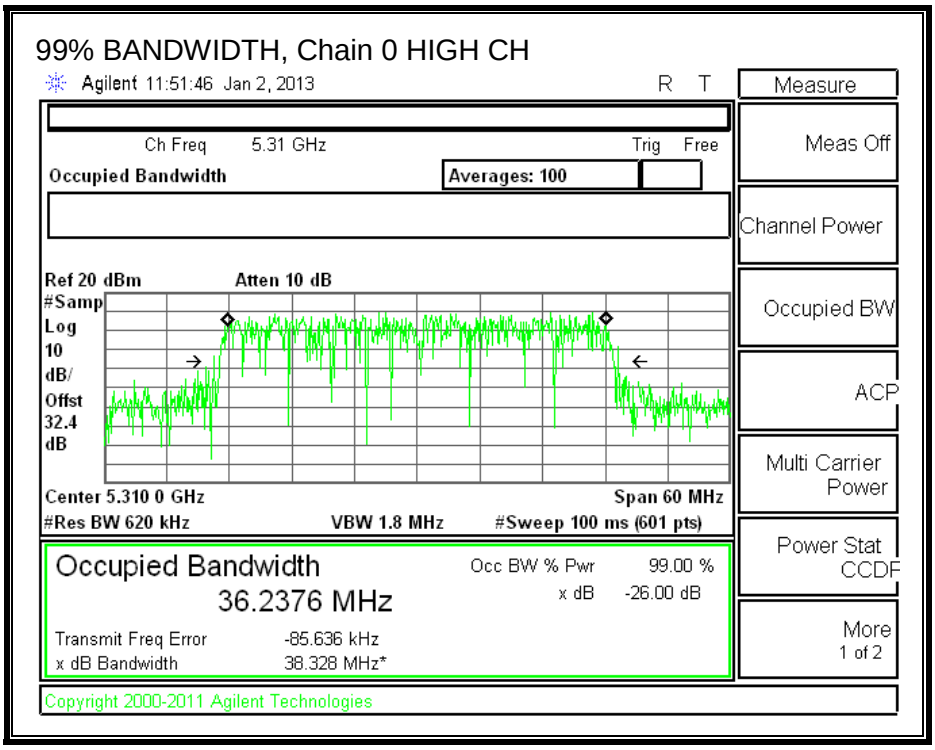
None; for reporting purposes only.

RESULTS

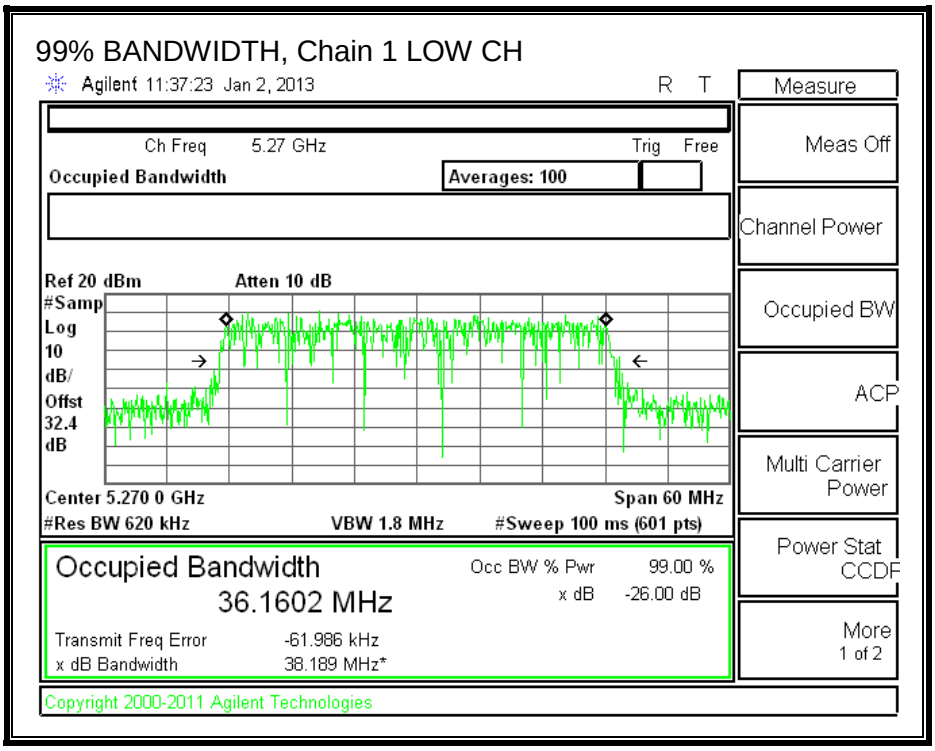
Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	5270	36.1901	36.1602
High	5310	36.2376	36.2241

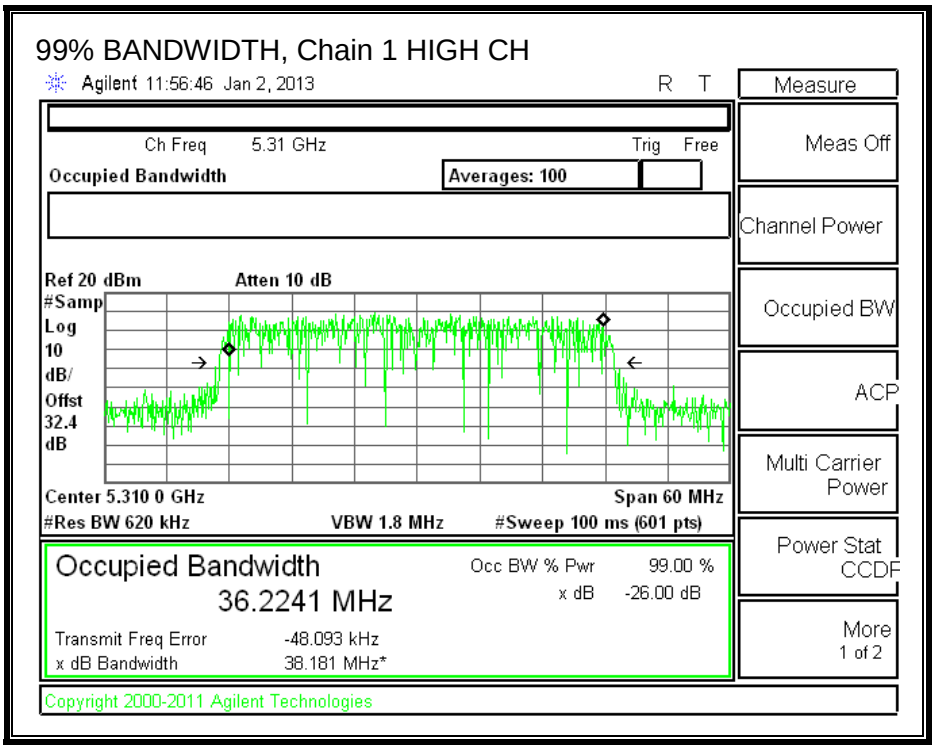
99% BANDWIDTH, Chain 0





99% BANDWIDTH, Chain 1





8.30.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

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 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum 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.

DIRECTIONAL ANTENNA GAIN

For output power, the two chains are considered uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.40	2.30	2.88

For PSD, the two chains are considered correlated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.40	2.30	5.88

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Directional Gain (dBi)	Uncorrelated Directional Gain (dBi)
Low	5270	39.50	36.1602	5.88	2.88
High	5310	39.50	36.2241	5.88	2.88

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD 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)	0.00	

Output Power Results

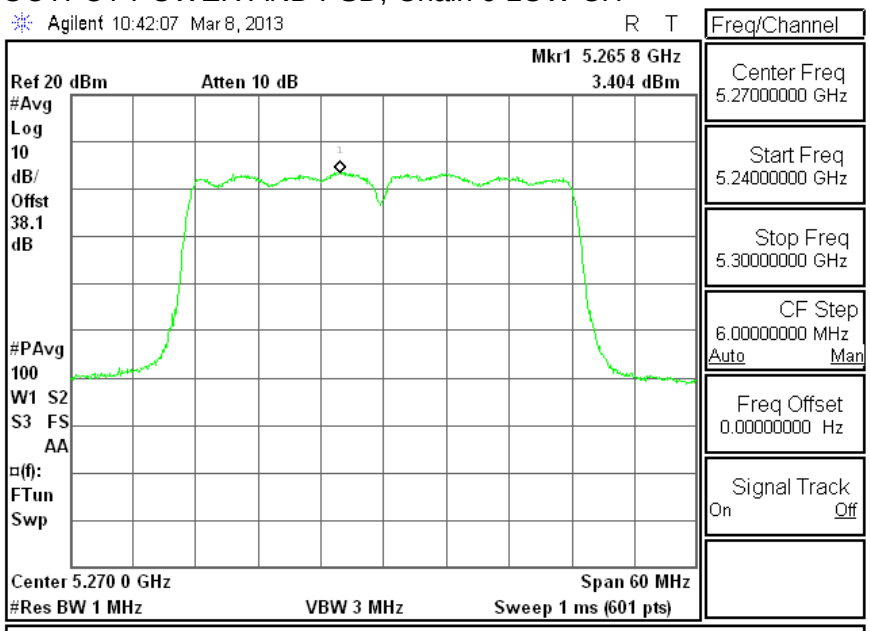
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5270	17.30	17.30	20.31	24.00	-3.69
High	5310	15.65	15.50	18.59	24.00	-5.41

PSD Results

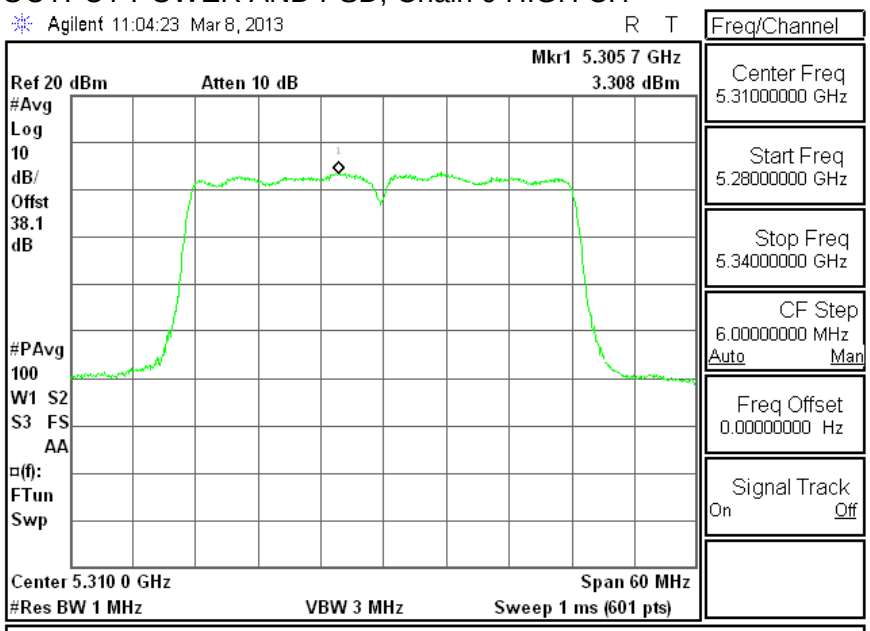
Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5270	3.404	3.488	6.46	11.00	-4.54
High	5310	3.308	3.561	6.45	11.00	-4.55

OUTPUT POWER AND PSD, Chain 0

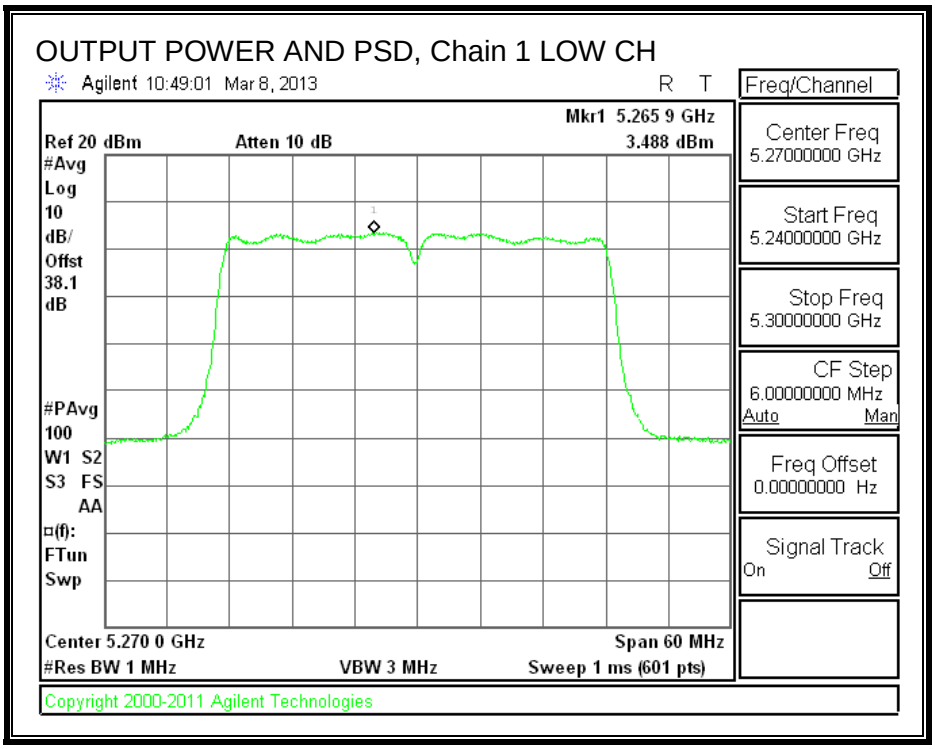
OUTPUT POWER AND PSD, Chain 0 LOW CH

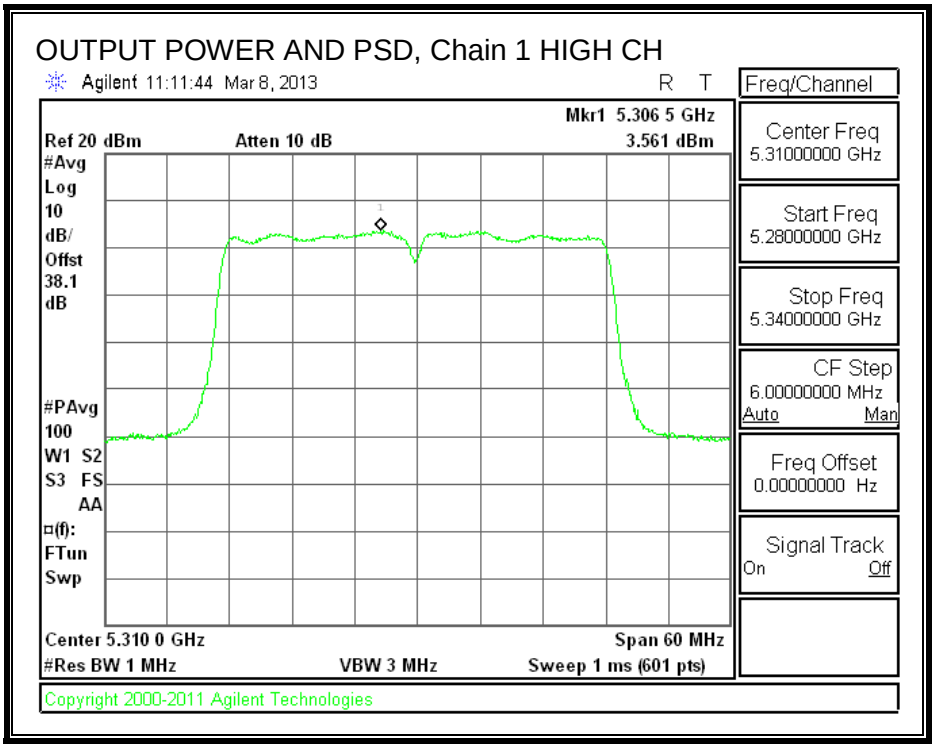


OUTPUT POWER AND PSD, Chain 0 HIGH CH



OUTPUT POWER AND PSD, Chain 1





8.30.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

8.31. 802.11n HT40 BF 2TX MODE IN THE 5.3 GHz BAND

Covered by testing HT40 CDD 2TX mode, the power per chain used for HT40 CDD 2TX mode is the same power per chain that will be used for HT40 BF 2TX mode. However, since BF is correlated and CDD is uncorrelated for output power, the section below for output power using correlated AG for this BF mode shows it is still compliant.

8.31.1. OUTPUT AVERAGE POWER

LIMITS

FCC §15.407 (a) (2)

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 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum 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.

DIRECTIONAL ANTENNA GAIN

For output power, the two chains are considered correlated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.40	2.30	5.88

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Directional Gain (dBi)
Low	5270	39.50	36.1602	5.88
High	5310	39.50	36.2241	5.88

Limits

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

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5270	17.30	17.30	20.31	24.00	-3.69
High	5310	15.65	15.50	18.59	24.00	-5.41

8.32. 802.11n HT40 STBC 2TX MODE IN THE 5.3 GHz BAND

8.32.1. 26 dB BANDWIDTH

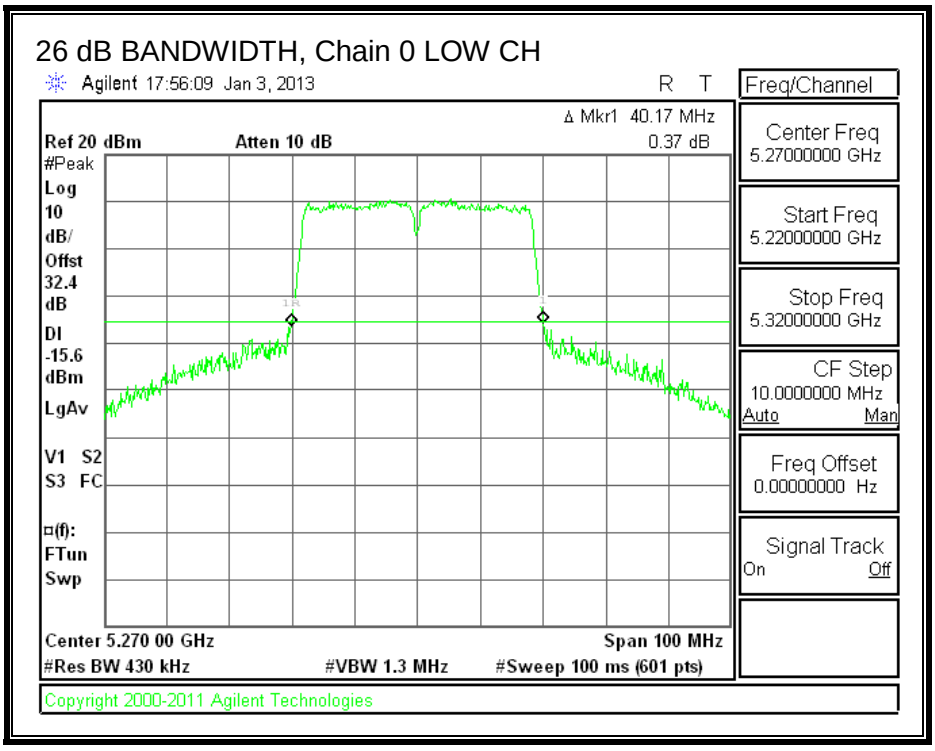
LIMITS

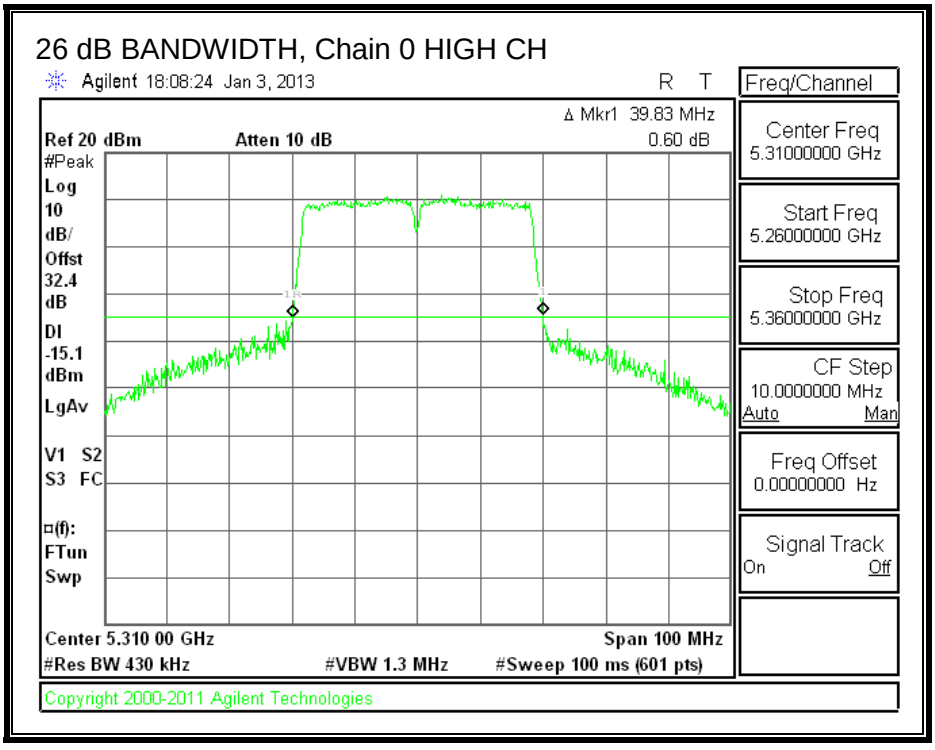
None; for reporting purposes only.

RESULTS

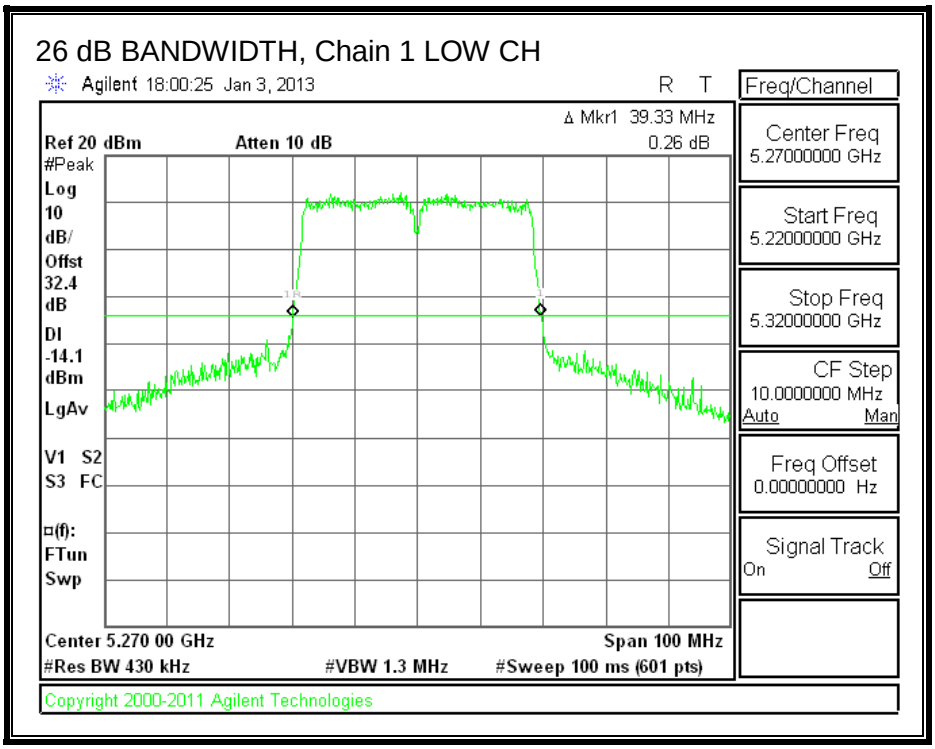
Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Low	5270	40.17	39.33
High	5310	39.83	39.50

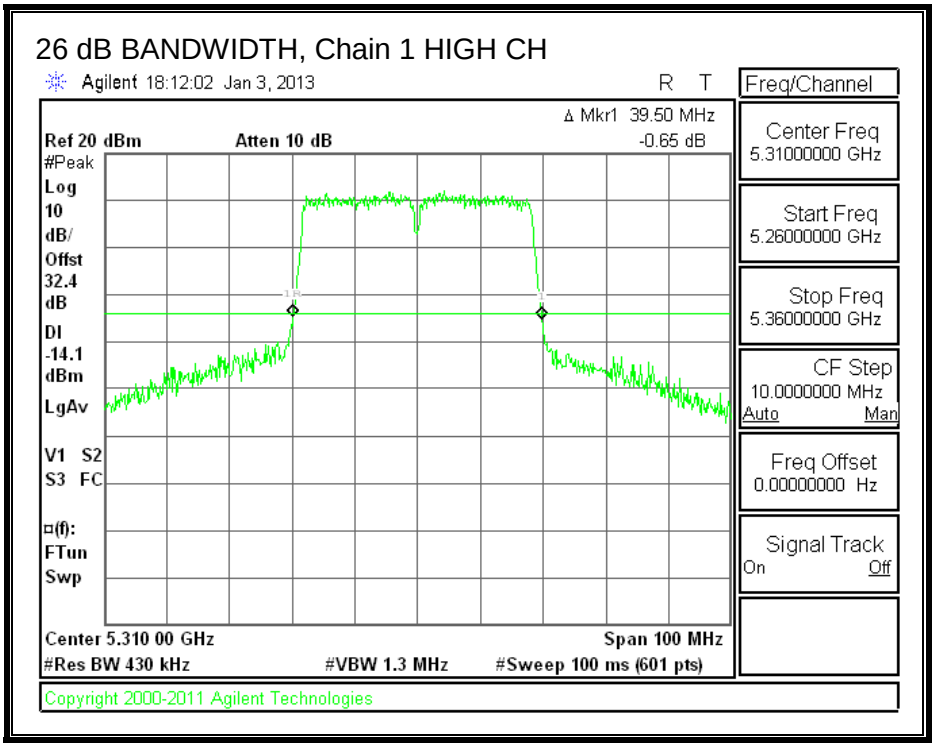
26 dB BANDWIDTH, Chain 0





26 dB BANDWIDTH, Chain 1





8.32.2. 99% BANDWIDTH

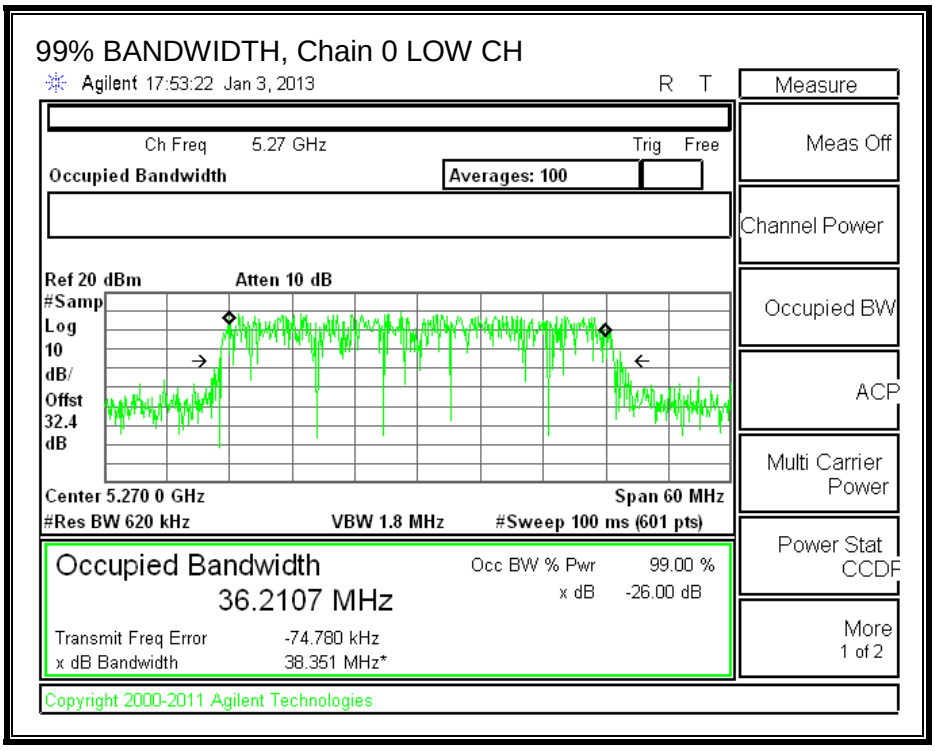
LIMITS

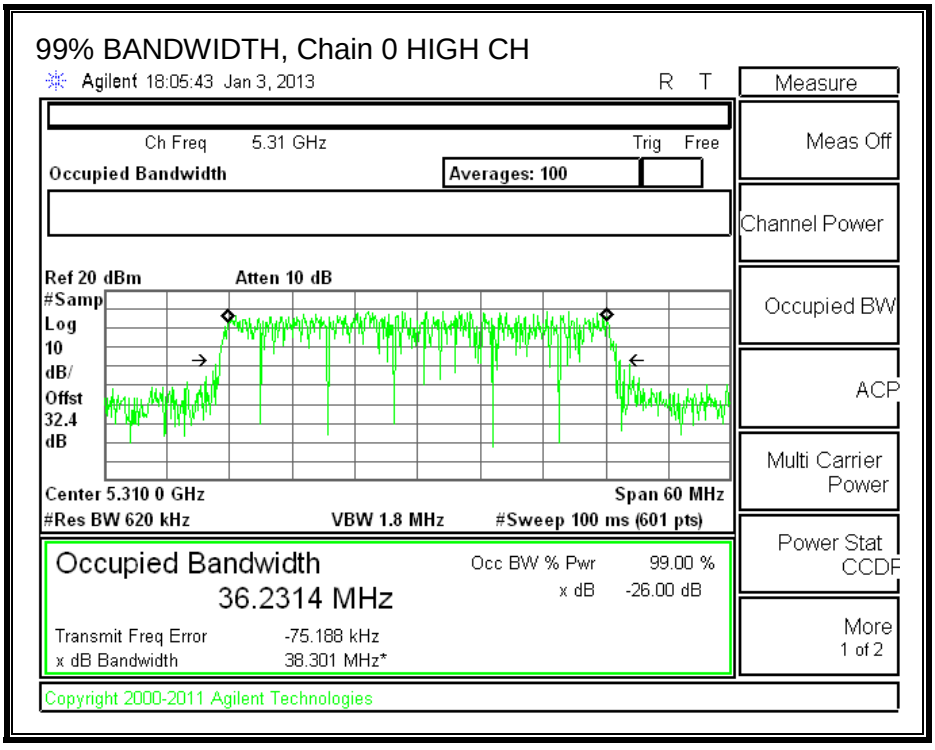
None; for reporting purposes only.

RESULTS

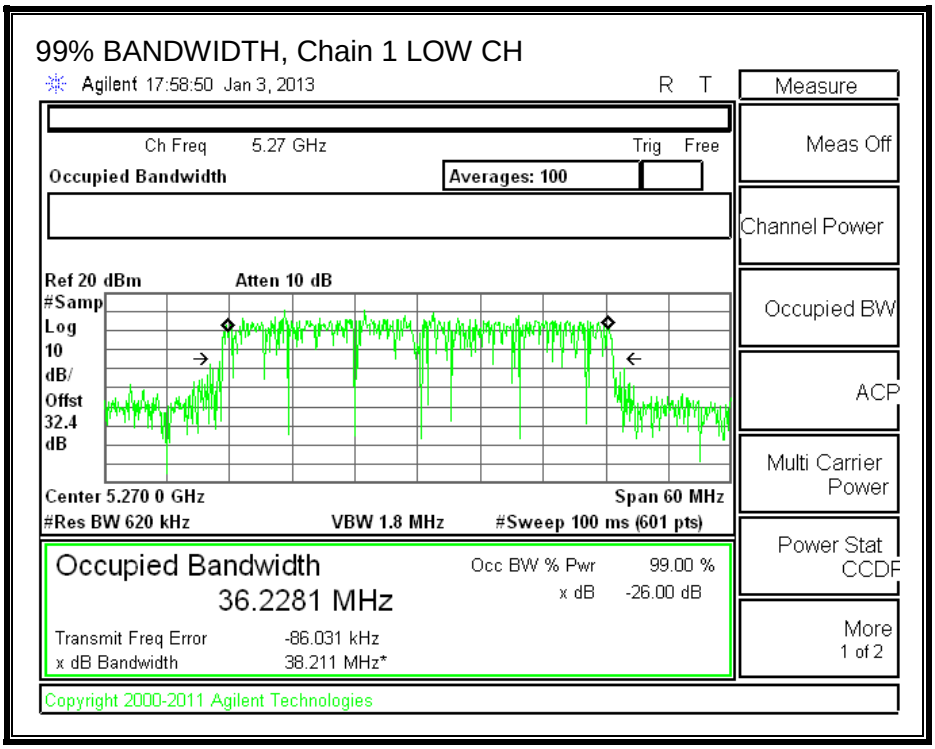
Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	5270	36.2107	36.2281
High	5310	36.2314	36.1758

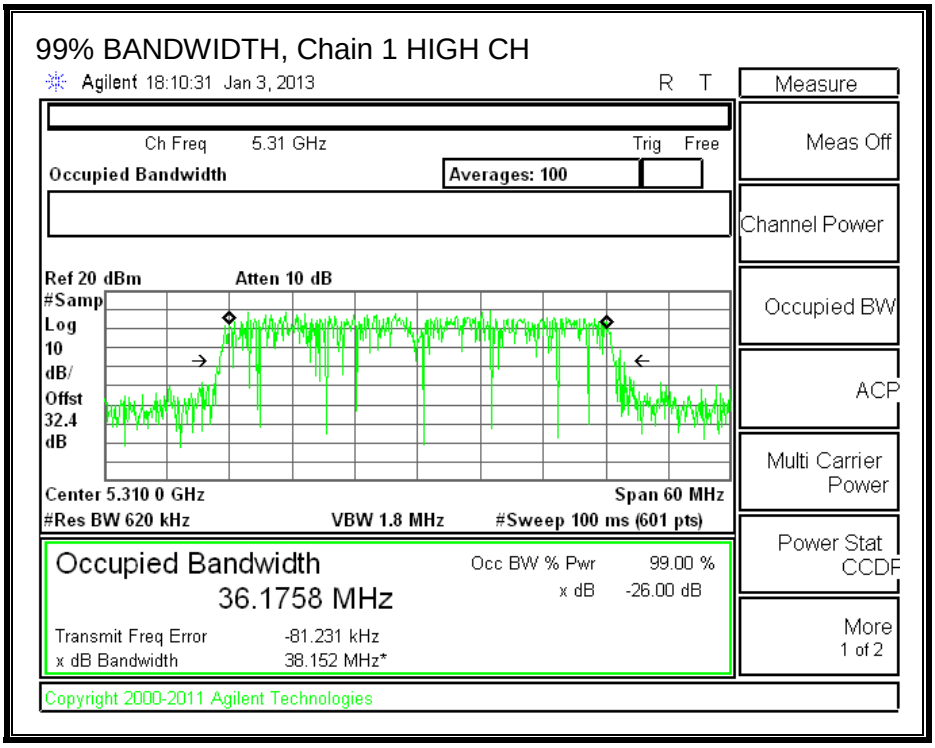
99% BANDWIDTH, Chain 0





99% BANDWIDTH, Chain 1





8.32.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

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 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum 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.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.40	2.30	2.88

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
Low	5270	39.33	36.2107	2.88
High	5310	39.50	36.1758	2.88

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD 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)	0.00	

Output Power Results

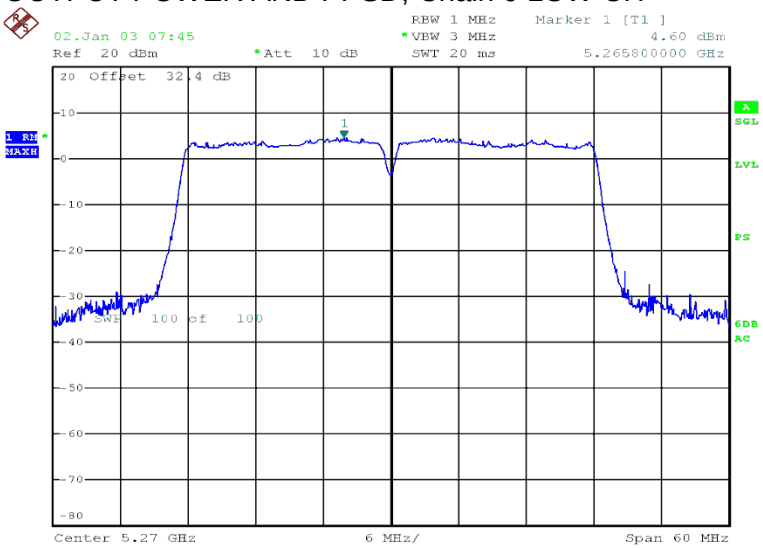
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5270	17.30	17.20	20.26	24.00	-3.74
High	5310	15.65	15.50	18.59	24.00	-5.41

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5270	4.60	5.28	7.96	11.00	-3.04
High	5310	5.28	5.28	8.29	11.00	-2.71

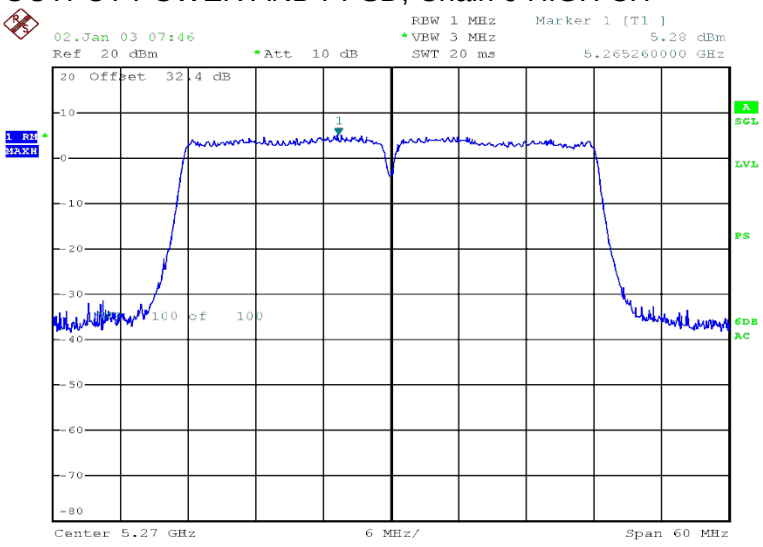
OUTPUT POWER AND PPSD, Chain 0

OUTPUT POWER AND PPSD, Chain 0 LOW CH



Date: 2.JAN.2003 07:45:14

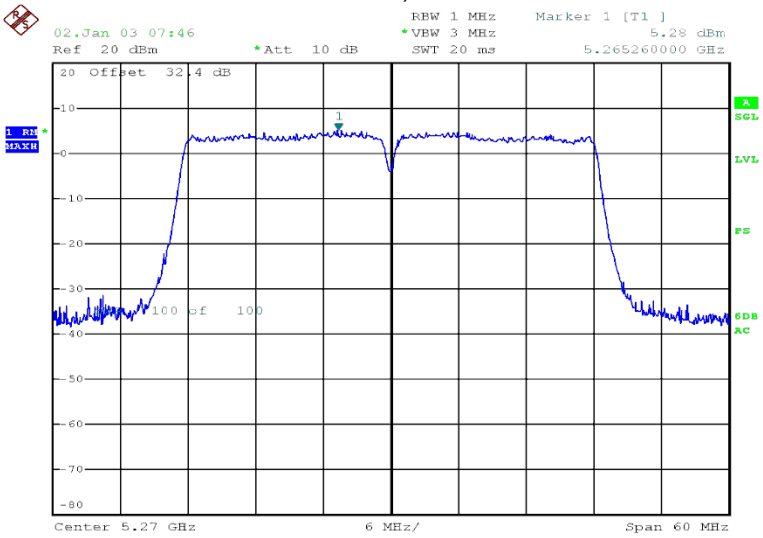
OUTPUT POWER AND PPSD, Chain 0 HIGH CH



Date: 2.JAN.2003 07:46:19

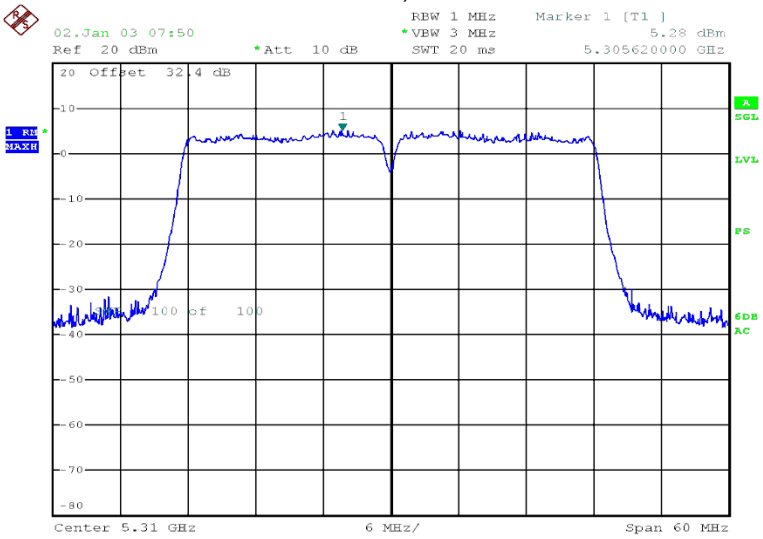
OUTPUT POWER AND PPSD, Chain 1

OUTPUT POWER AND PPSD, Chain 1 LOW CH



Date: 2.JAN.2003 07:46:19

OUTPUT POWER AND PPSD, Chain 1 HIGH CH



Date: 2.JAN.2003 07:50:40

8.32.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

8.33. 802.11n HT40 CDD 3TX MODE IN THE 5.3 GHz BAND

8.33.1. 26 dB BANDWIDTH

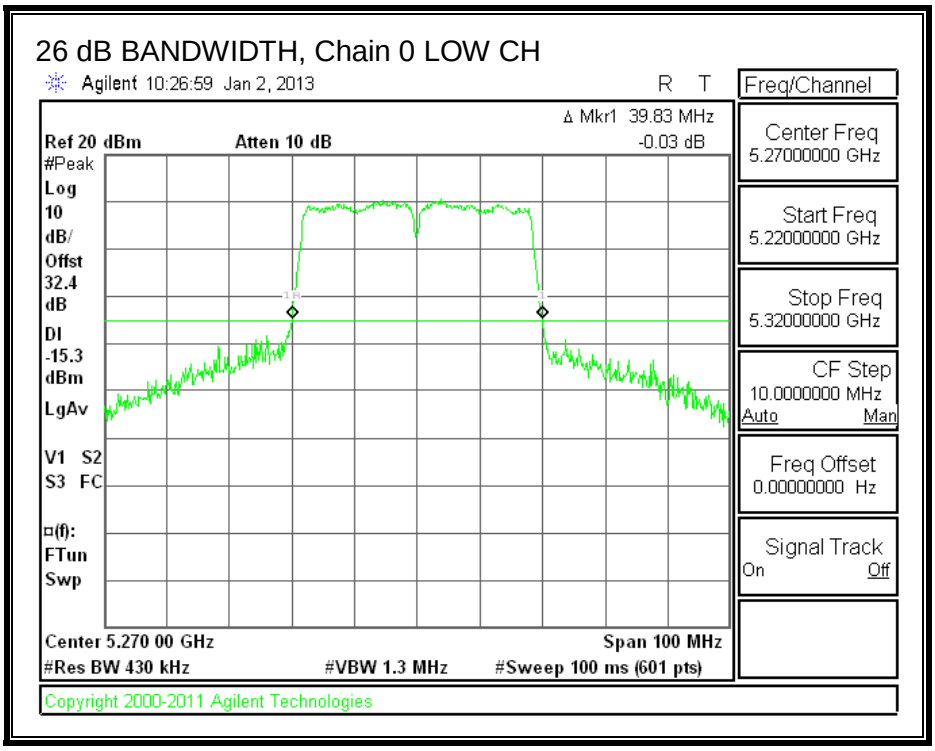
LIMITS

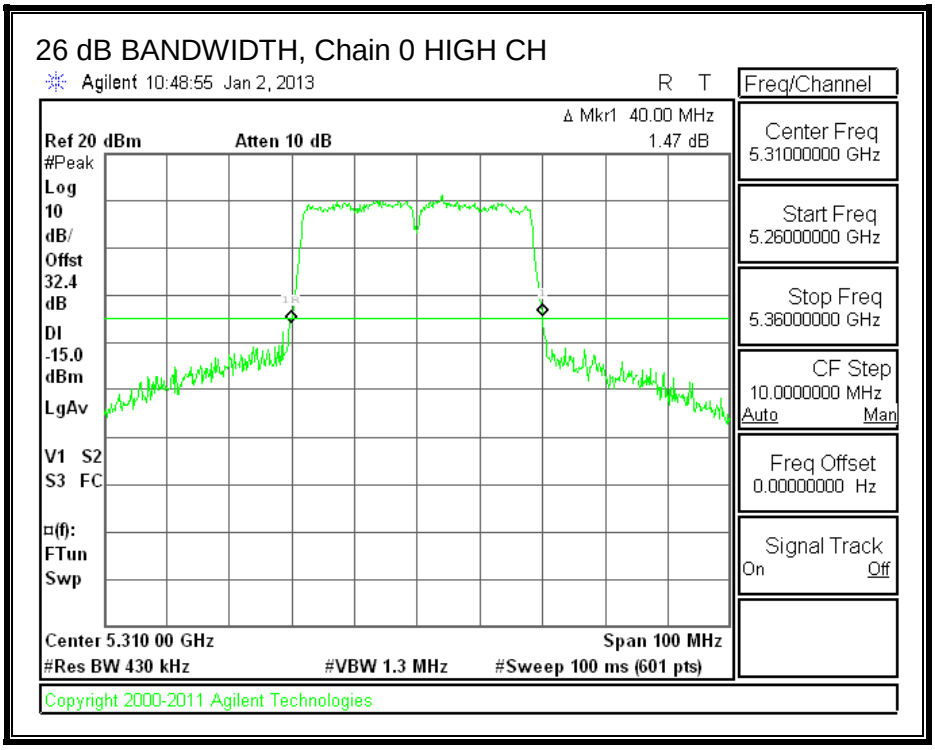
None; for reporting purposes only.

RESULTS

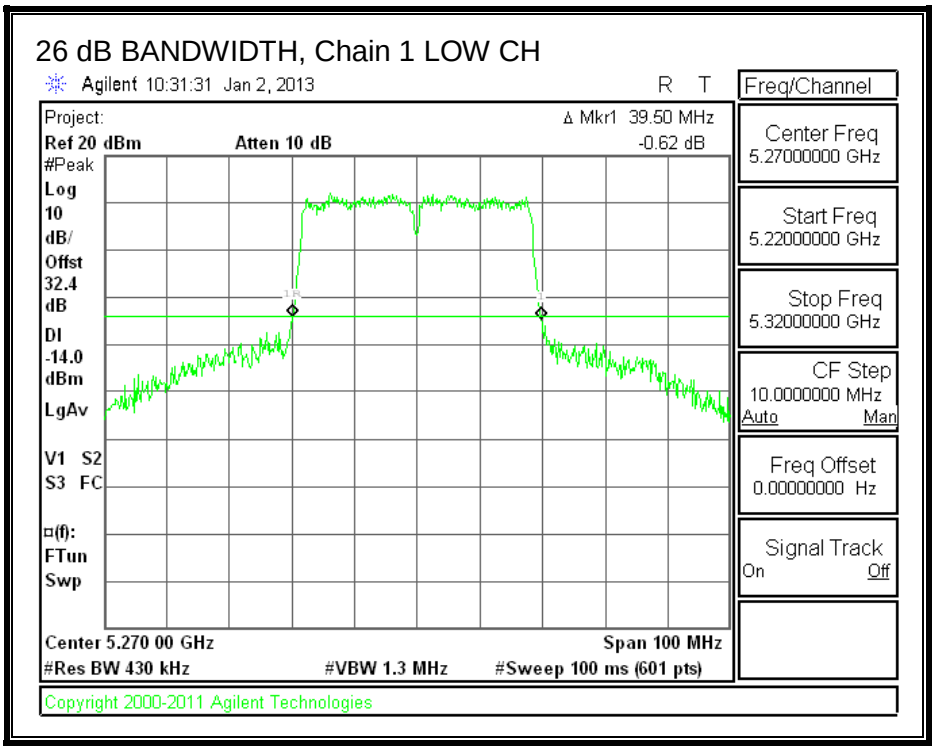
Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
Low	5270	39.83	39.50	39.50
High	5310	40.00	39.50	39.50

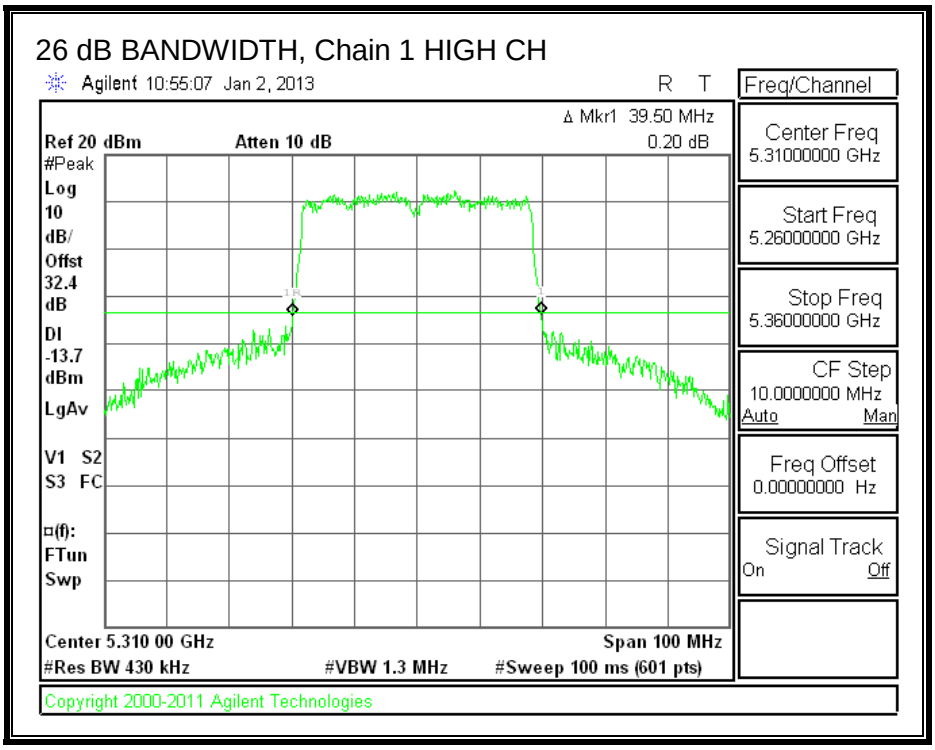
26 dB BANDWIDTH, Chain 0



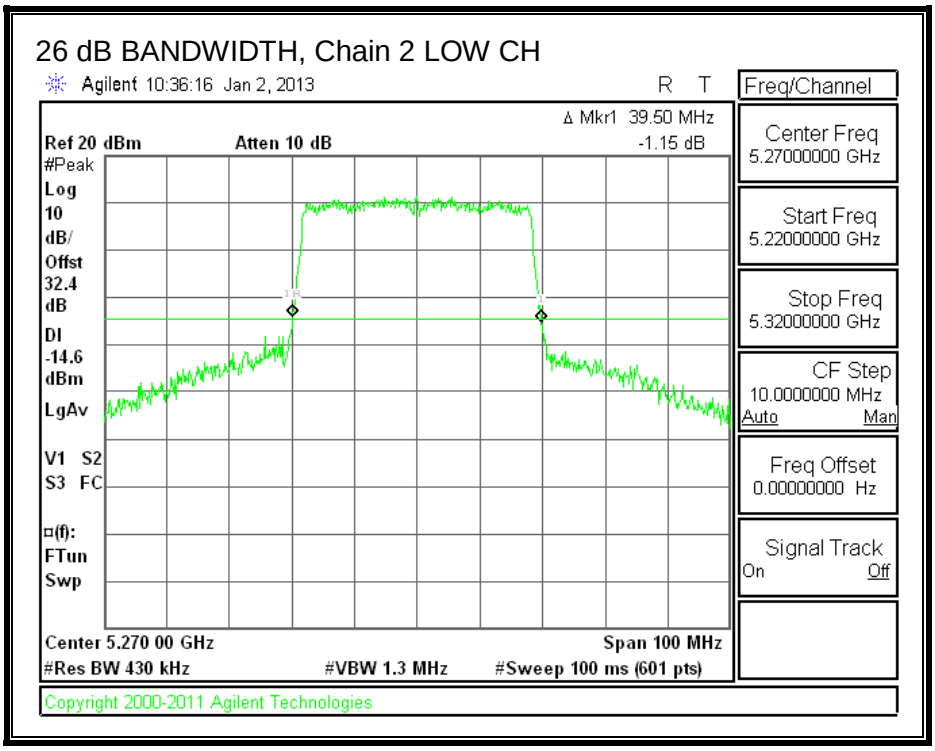


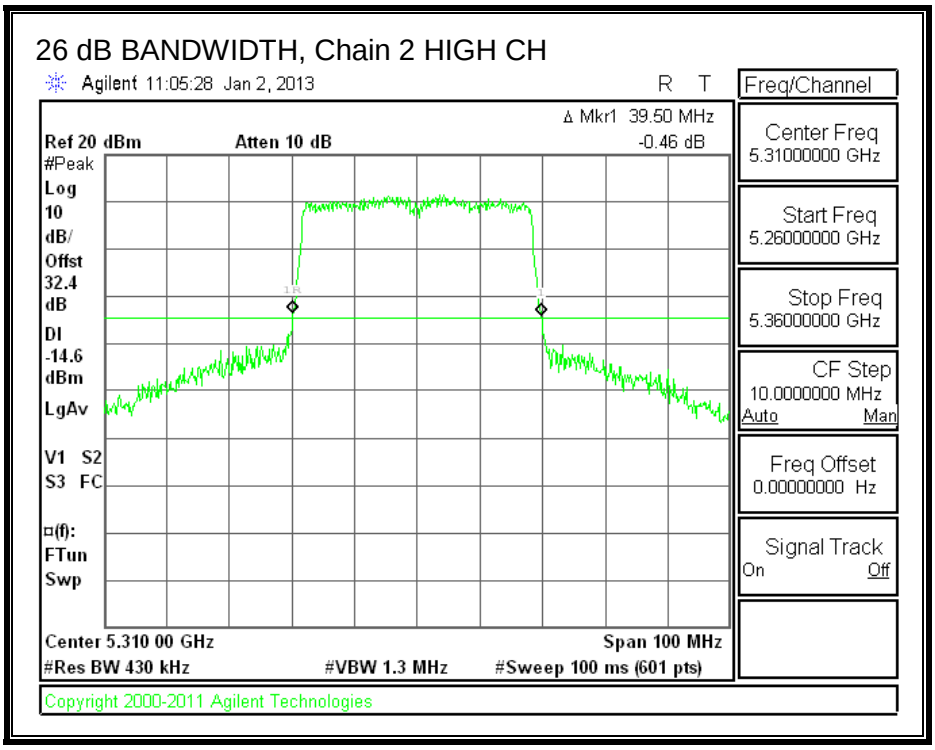
26 dB BANDWIDTH, Chain 1





26 dB BANDWIDTH, Chain 2





8.33.2. 99% BANDWIDTH

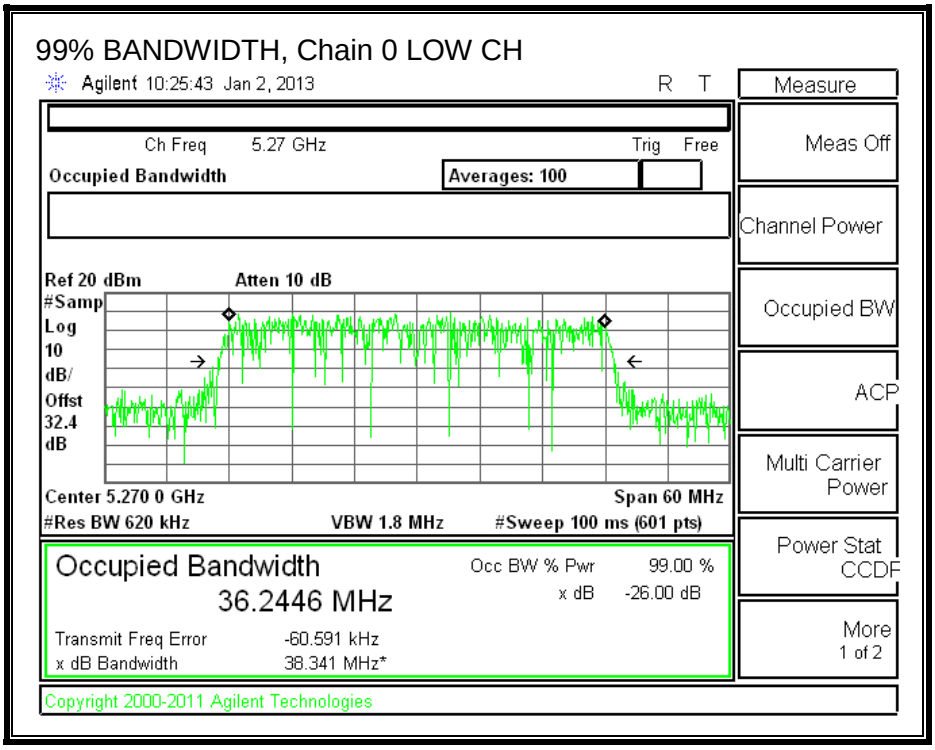
LIMITS

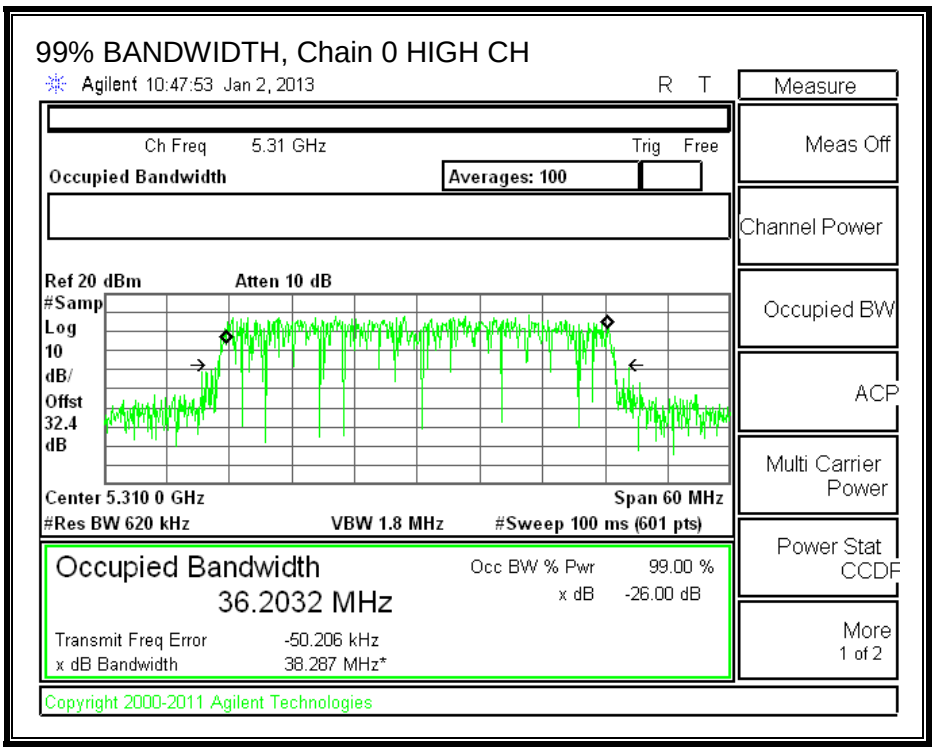
None; for reporting purposes only.

RESULTS

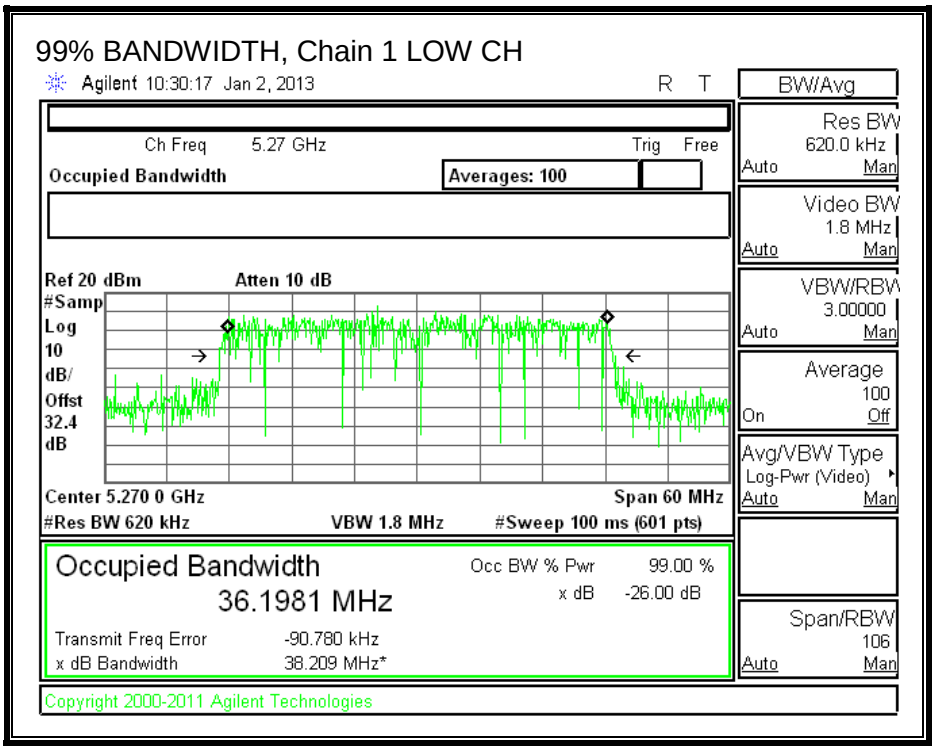
Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
Low	5270	36.2446	36.1981	36.2265
High	5310	36.2032	36.2128	36.2170

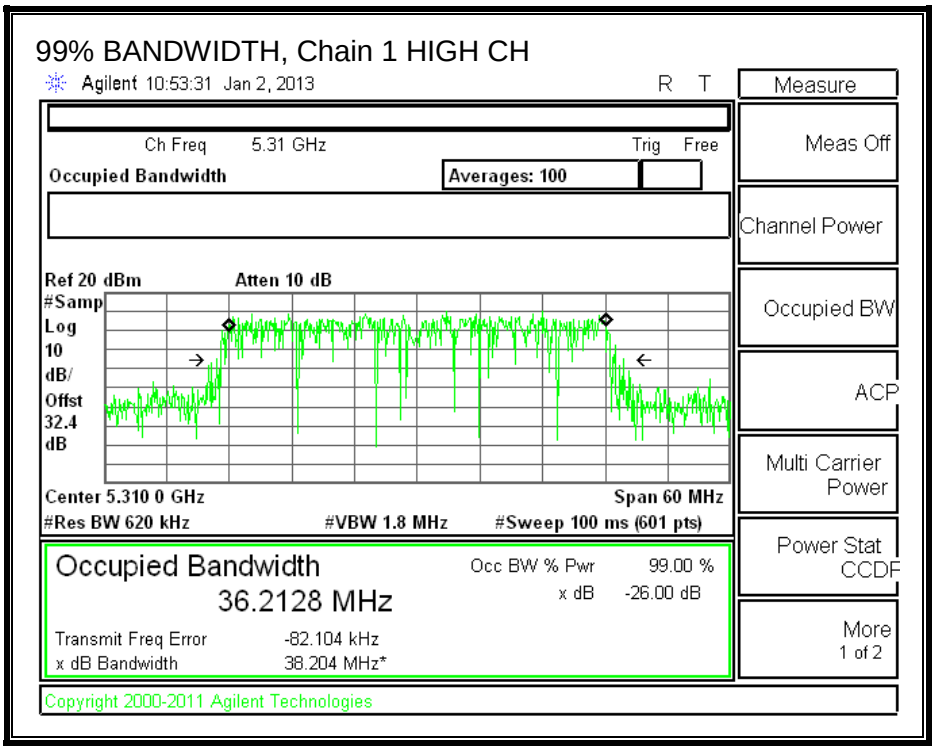
99% BANDWIDTH, Chain 0



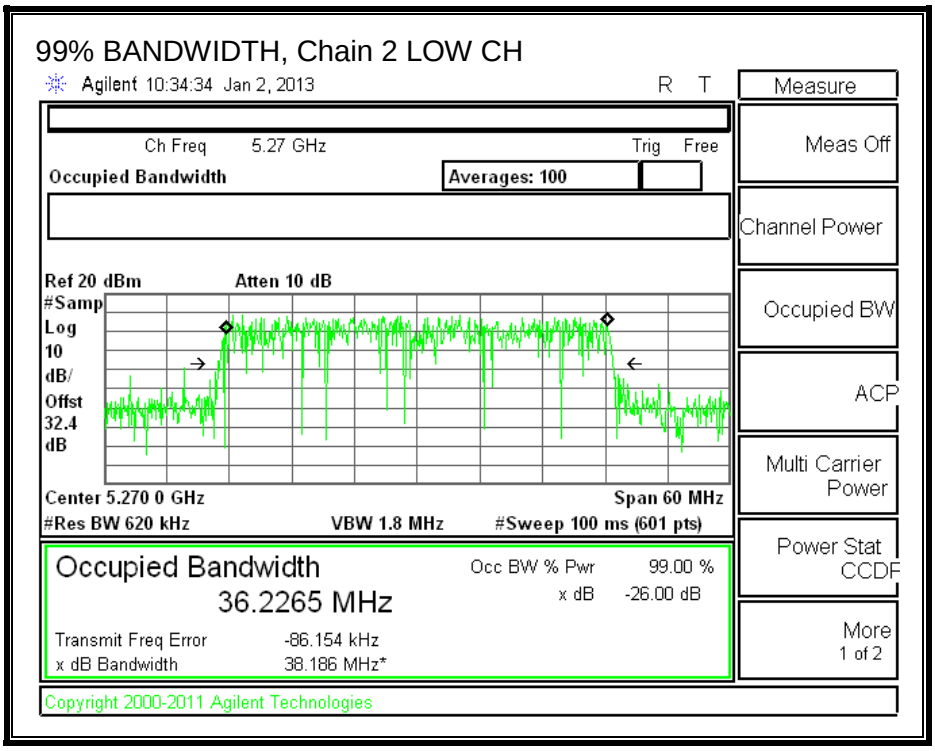


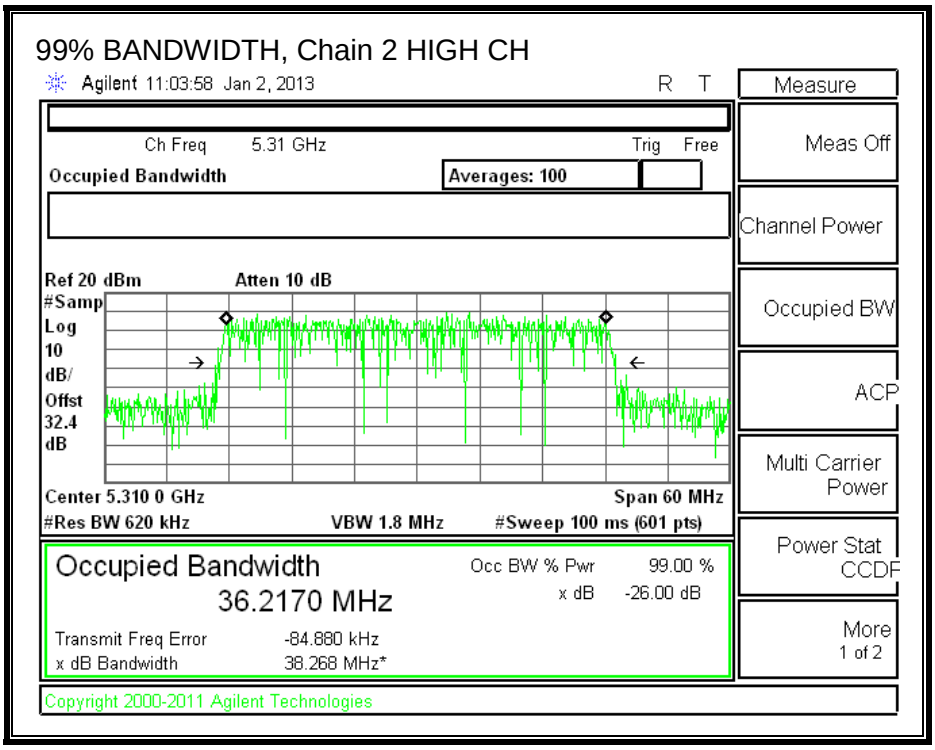
99% BANDWIDTH, Chain 1





99% BANDWIDTH, Chain 2





8.33.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

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 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum 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.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated for output power and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.40	1.60	2.30	2.50

The TX chains are correlated for PSD and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.40	1.60	2.30	7.24

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Directional Gain (dBi)	Uncorrelated Directional Gain (dBi)
Low	5270	39.50	36.1981	7.24	2.50
High	5310	39.50	36.2032	7.24	2.50

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Low	5270	24.00	24.00	30.00	24.00	9.76	11.00	9.76
High	5310	24.00	24.00	30.00	24.00	9.76	11.00	9.76

Duty Cycle CF (dB)	0.00	

Output Power Results

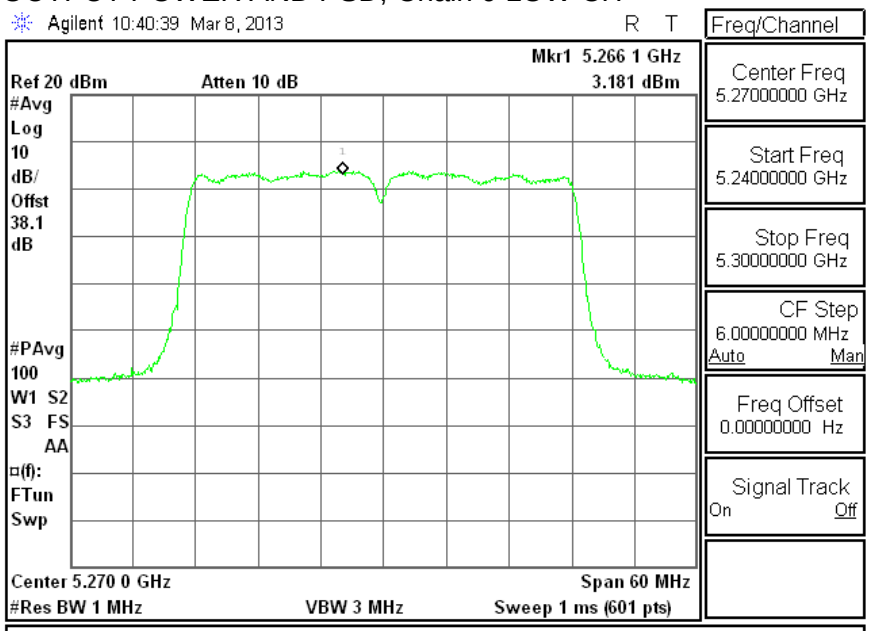
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5270	16.00	16.30	16.10	20.91	24.00	-3.09
High	5310	14.50	14.65	14.60	19.35	24.00	-4.65

PSD Results

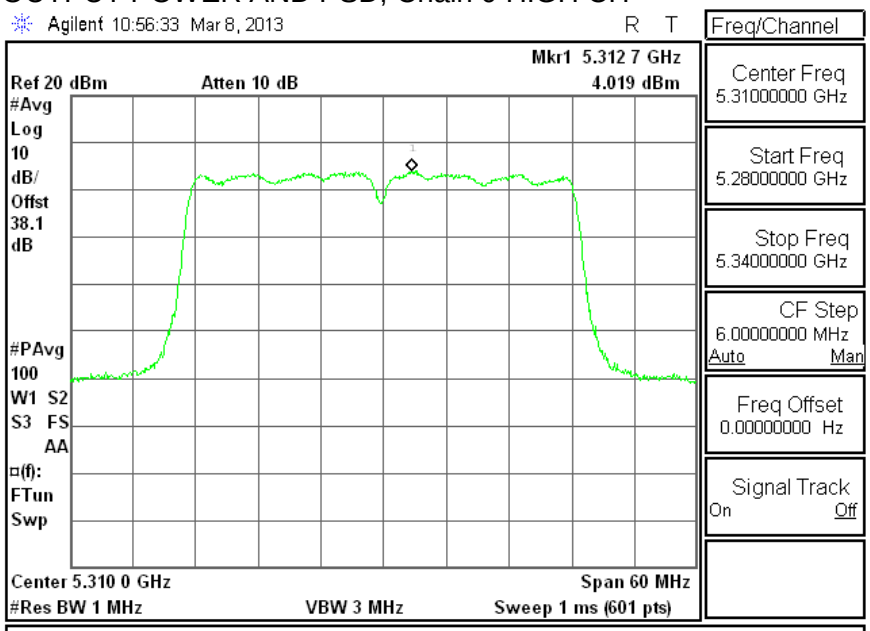
Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Chain 2 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5270	3.181	3.404	3.488	8.13	9.76	-1.63
High	5310	4.019	3.308	3.561	8.41	9.76	-1.35

OUTPUT POWER AND PSD, Chain 0

OUTPUT POWER AND PSD, Chain 0 LOW CH

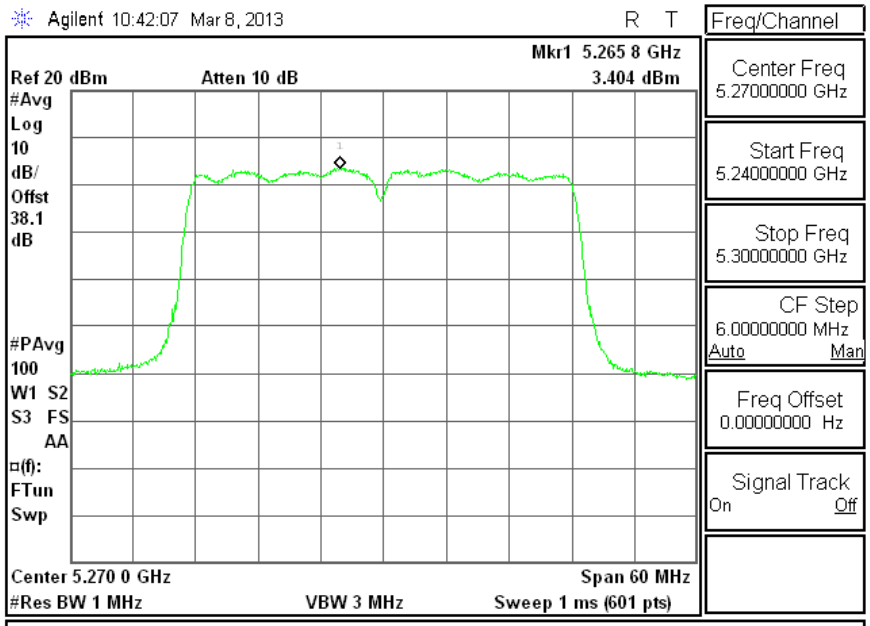


OUTPUT POWER AND PSD, Chain 0 HIGH CH

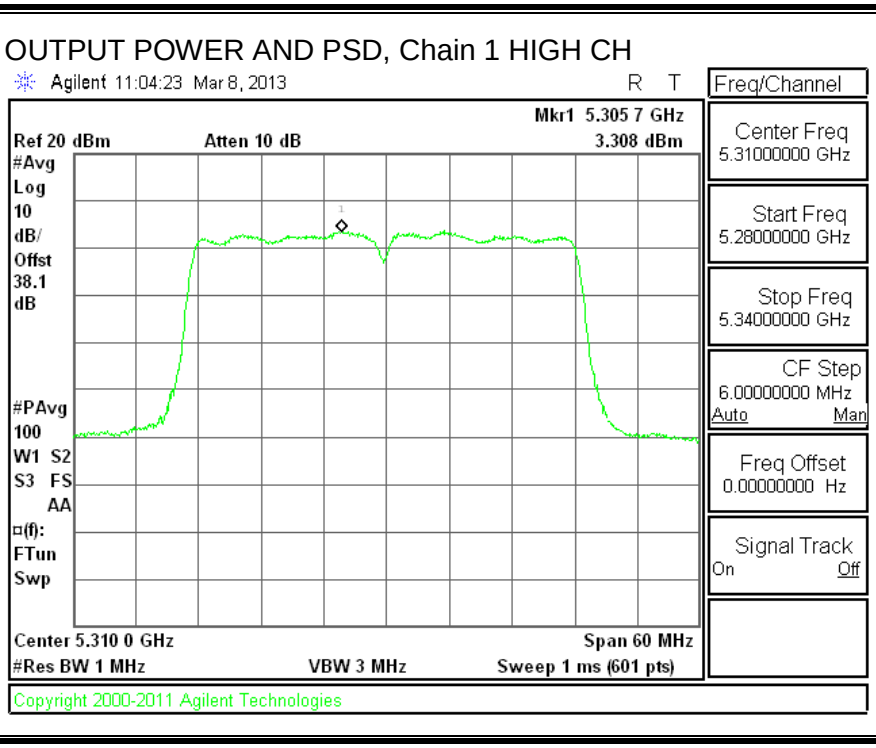


OUTPUT POWER AND PSD, Chain 1

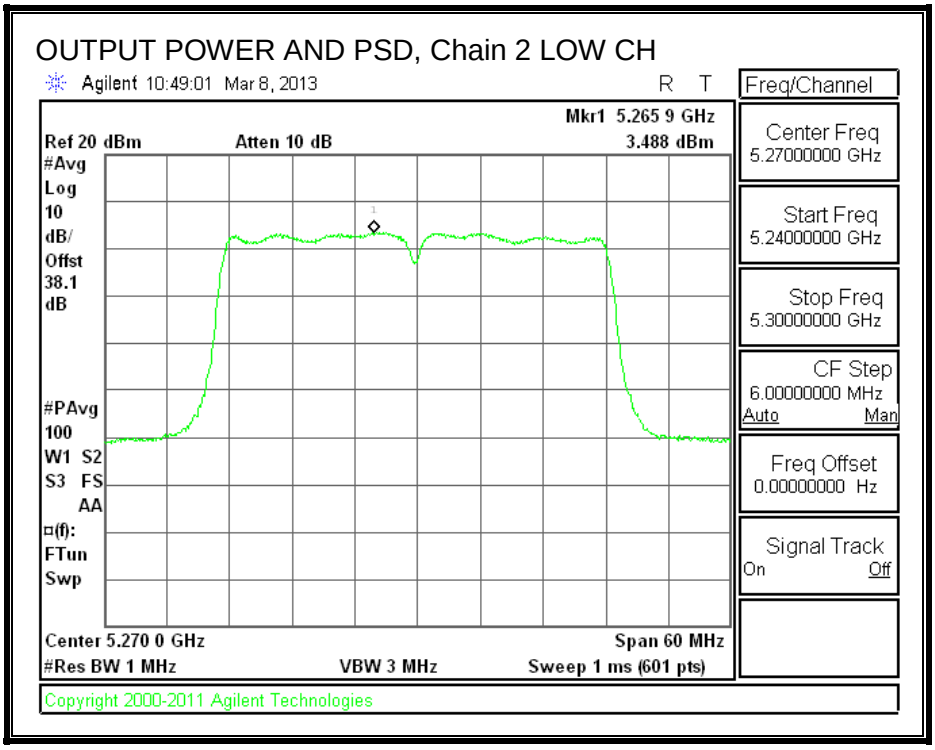
OUTPUT POWER AND PSD, Chain 1 LOW CH

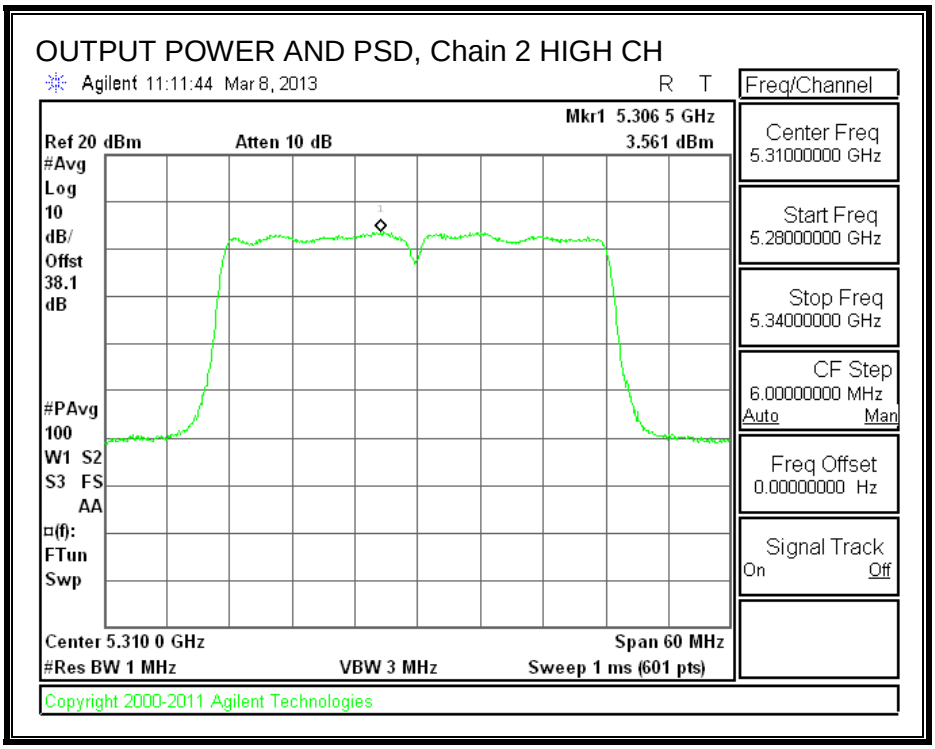


OUTPUT POWER AND PSD, Chain 1 HIGH CH



OUTPUT POWER AND PSD, Chain 2





8.33.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

8.34. 802.11n HT40 BF 3TX MODE IN THE 5.3 GHz BAND

Covered by testing HT40 CDD 3TX mode, the power per chain used for HT40 CDD 3TX mode is the same power per chain that will be used for HT40 BF 3TX mode. However, since BF is correlated and CDD is uncorrelated for output power, the section below for output power using correlated AG for this BF mode shows it is still compliant.

8.34.1. OUTPUT AVERAGE POWER

LIMITS

FCC §15.407 (a) (2)

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 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum 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.

DIRECTIONAL ANTENNA GAIN

The TX chains are correlated for output power and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.40	1.60	2.30	7.24

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Directional Gain (dBi)
Low	5270	39.50	36.1981	7.24
High	5310	39.50	36.2032	7.24

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)
Low	5270	22.76	24.00	30.00	22.76
High	5310	22.76	24.00	30.00	22.76

Duty Cycle CF (dB)	0.00	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5270	16.00	16.30	16.10	20.91	22.76	-1.85
High	5310	14.50	14.80	14.60	19.41	22.76	-3.35

8.35. 802.11n HT40 STBC 3TX MODE IN THE 5.3 GHz BAND

8.35.1. 26 dB BANDWIDTH

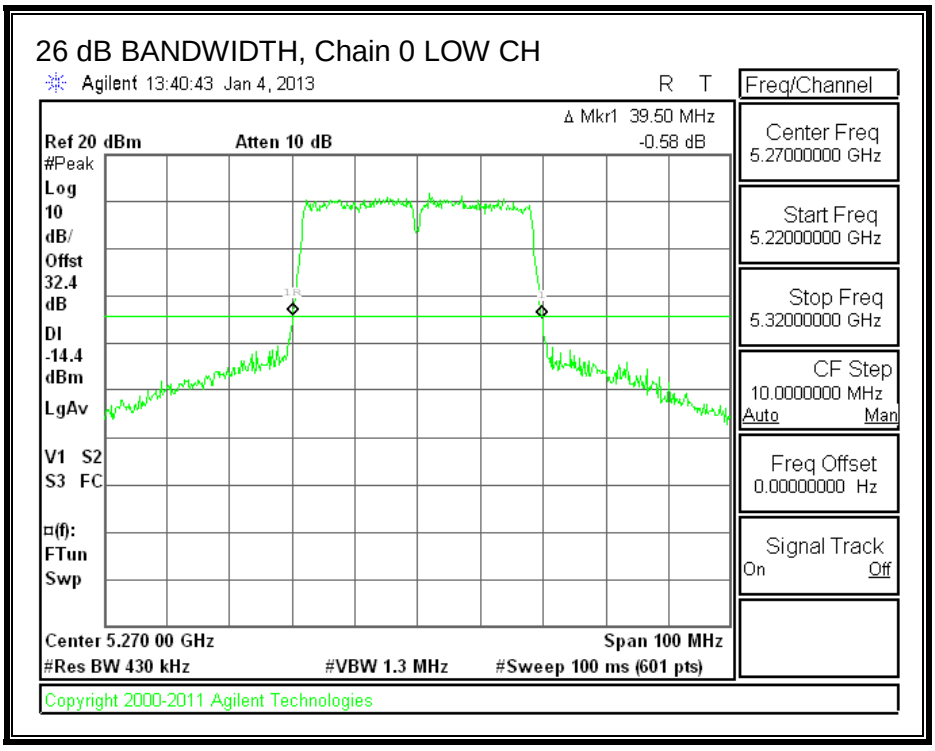
LIMITS

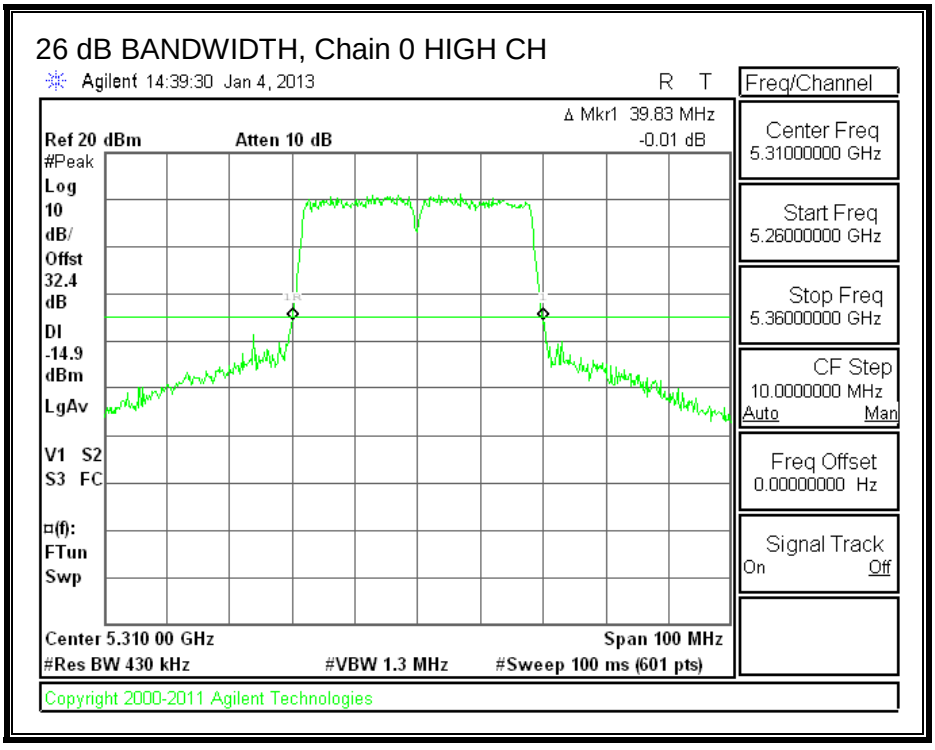
None; for reporting purposes only.

RESULTS

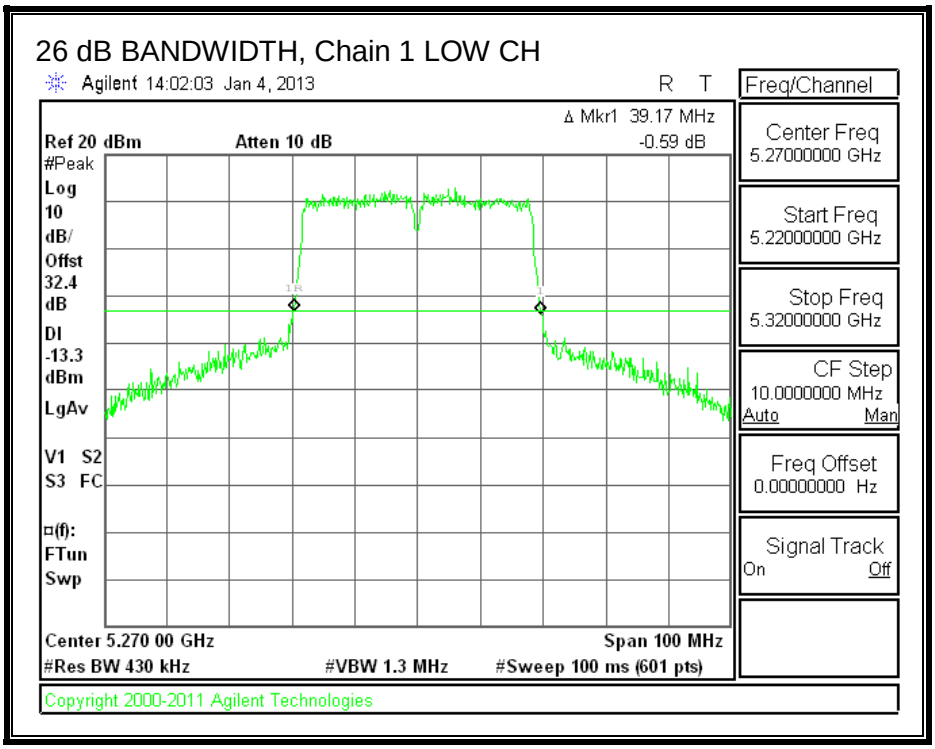
Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
Low	5270	39.50	39.17	39.67
High	5310	39.83	39.33	39.67

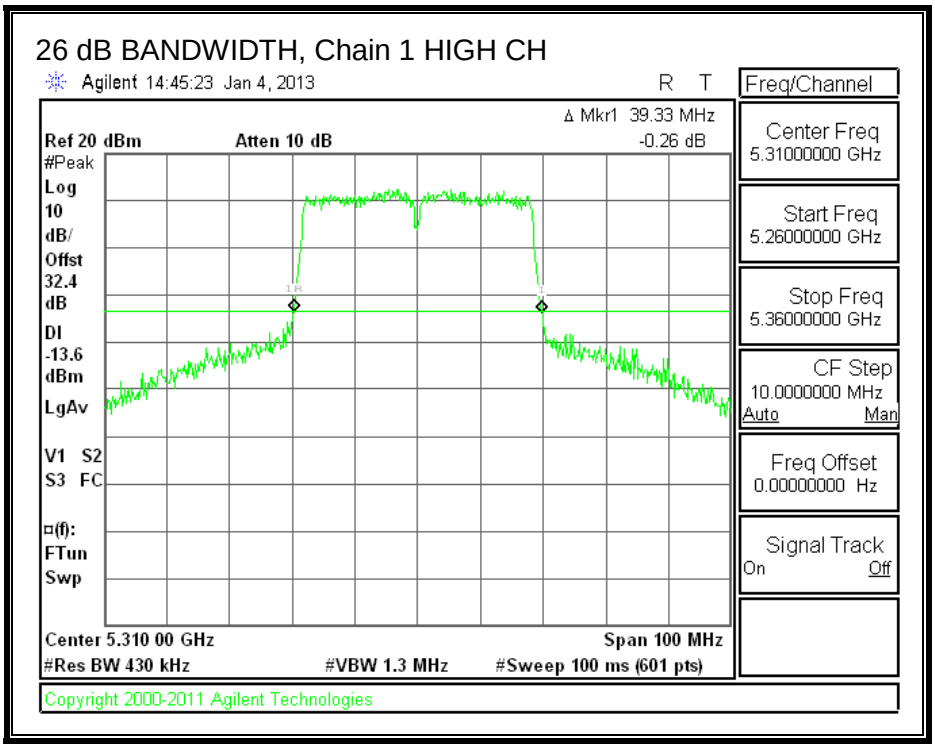
26 dB BANDWIDTH, Chain 0



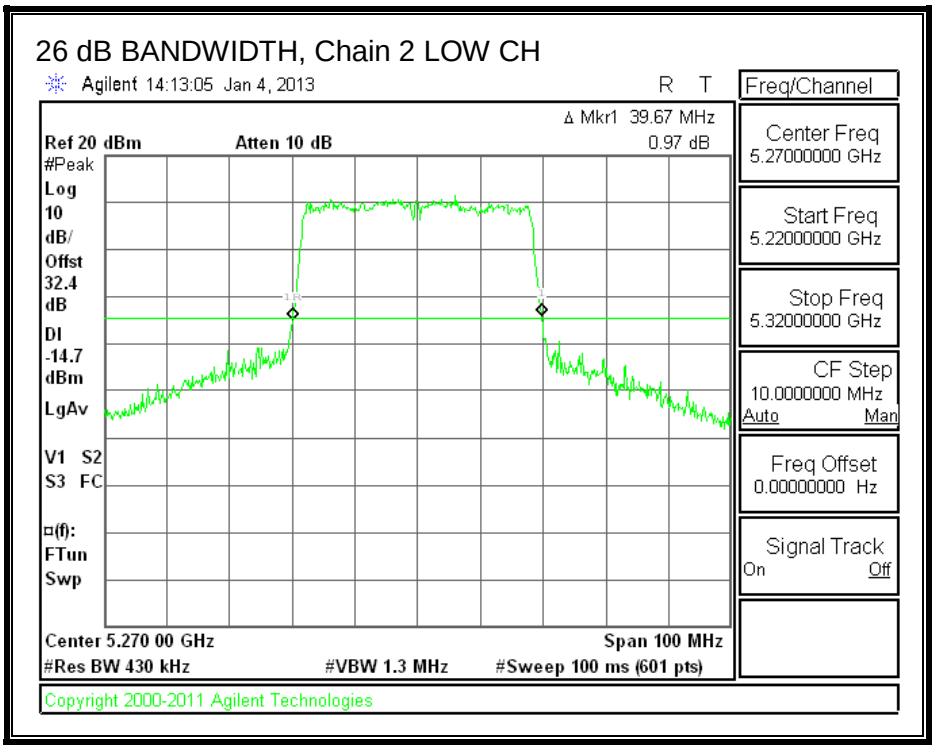


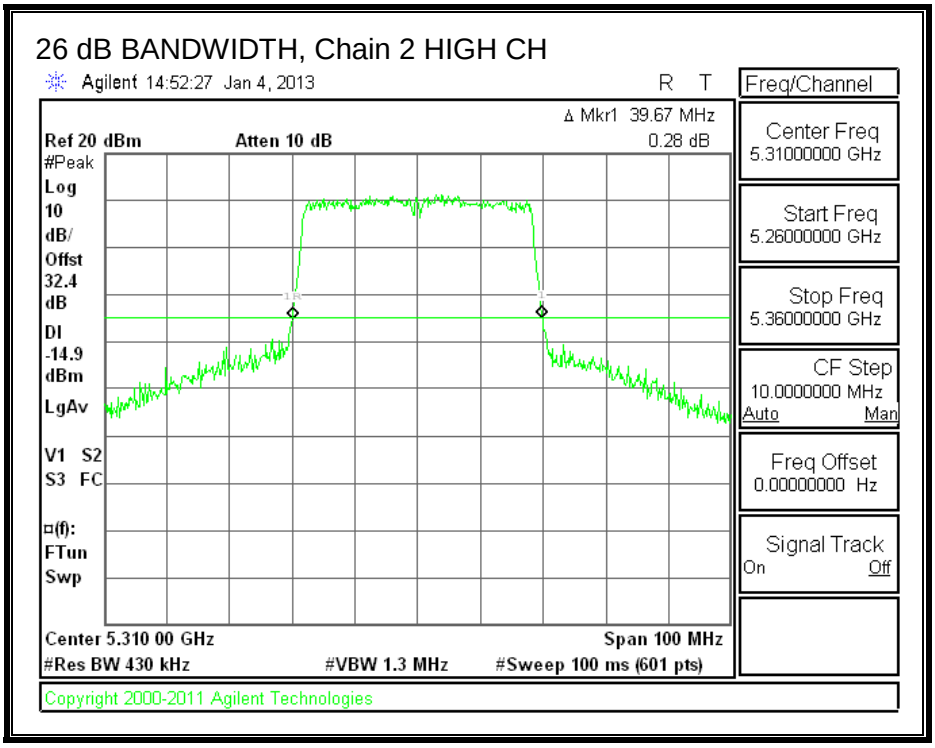
26 dB BANDWIDTH, Chain 1





26 dB BANDWIDTH, Chain 2





8.35.2. 99% BANDWIDTH

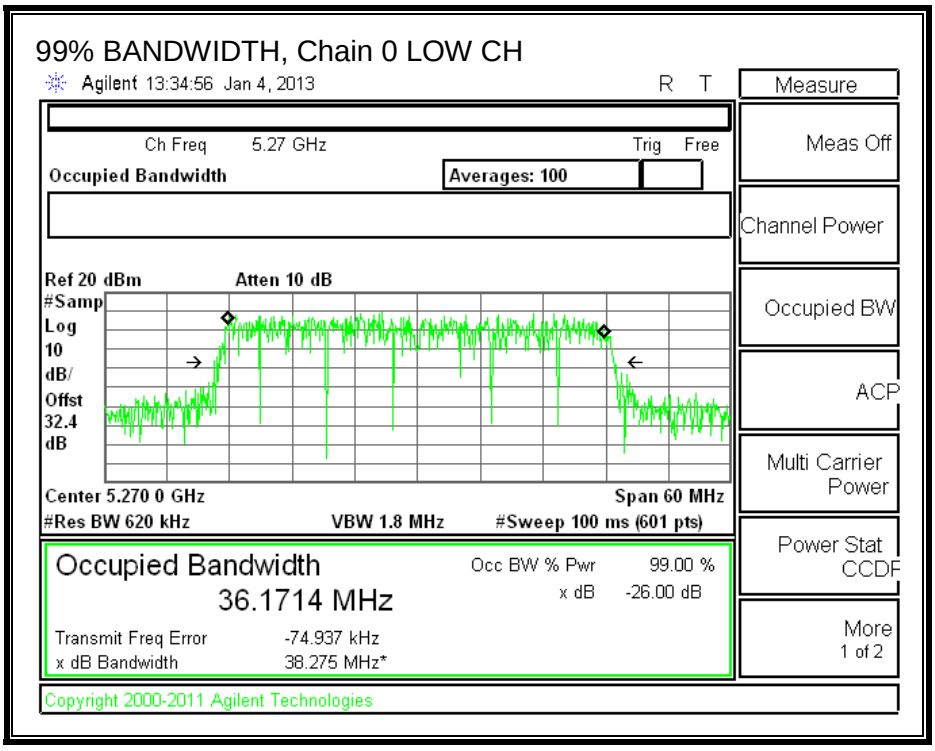
LIMITS

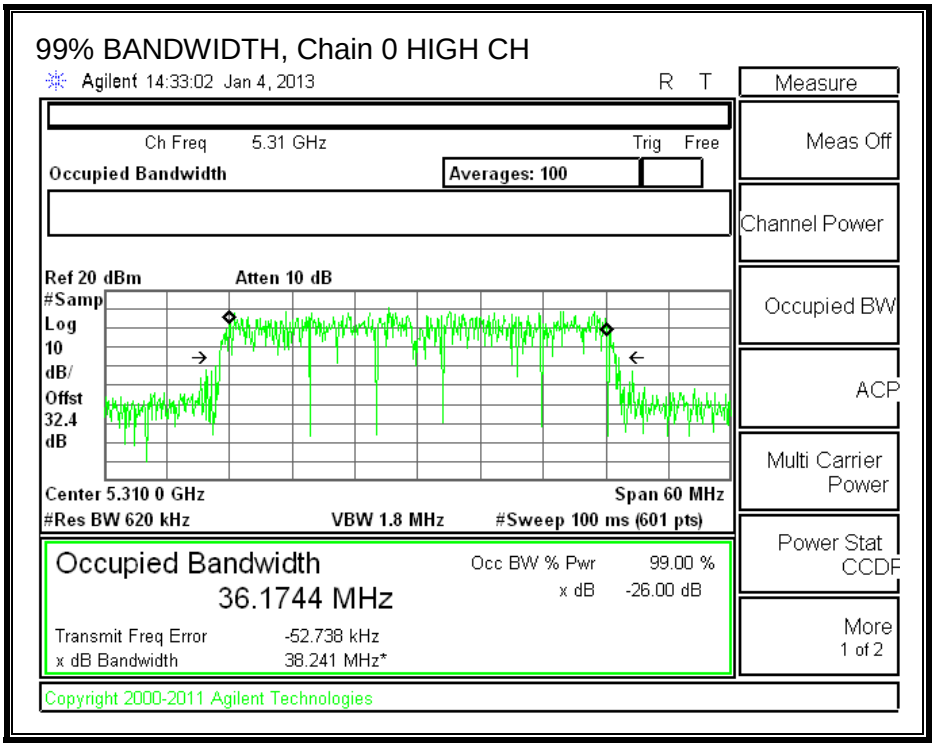
None; for reporting purposes only.

RESULTS

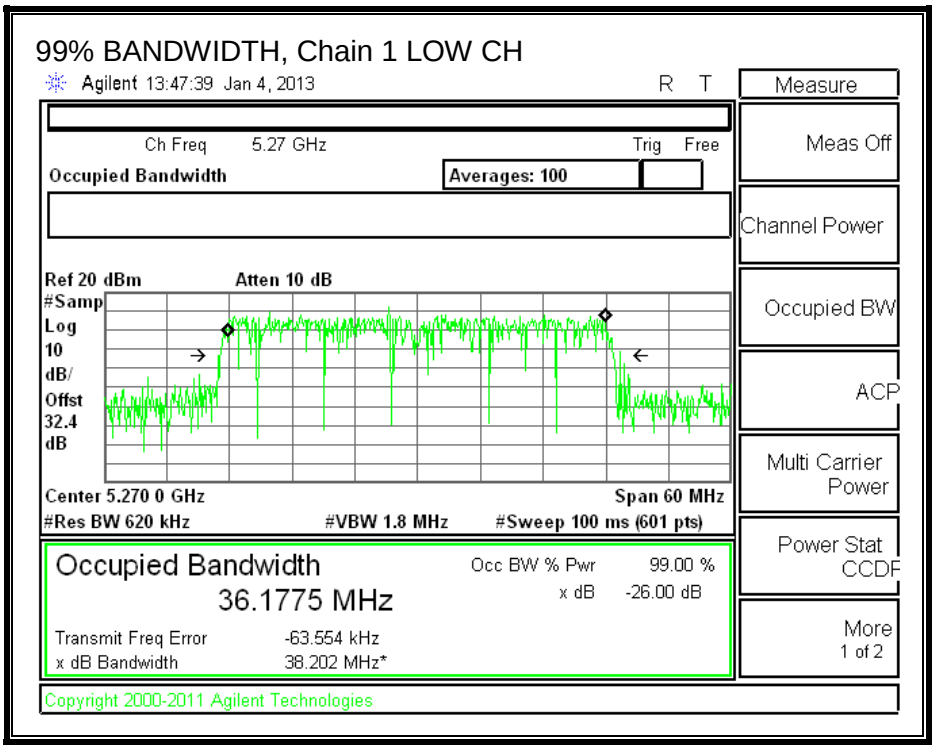
Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
Low	5270	36.1714	36.1775	36.1869
High	5310	36.1744	36.2118	36.1699

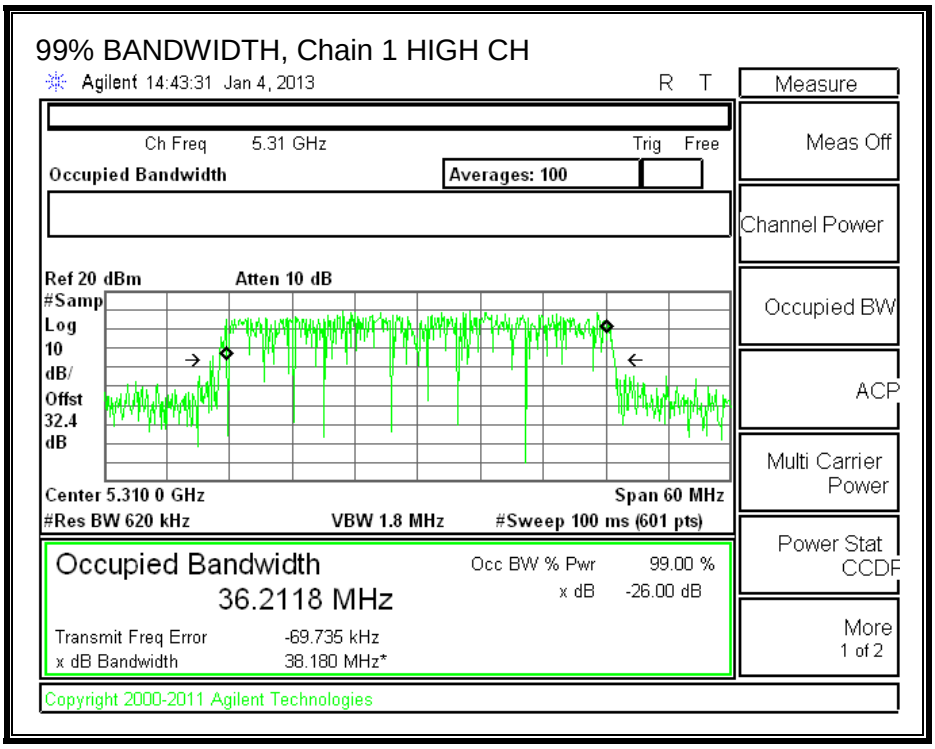
99% BANDWIDTH, Chain 0



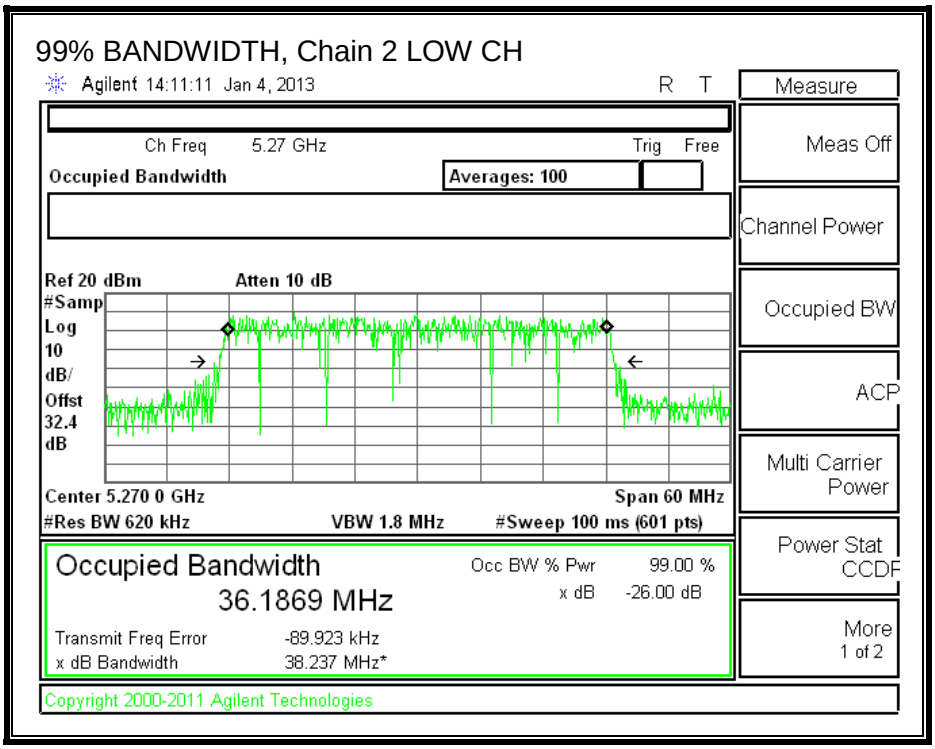


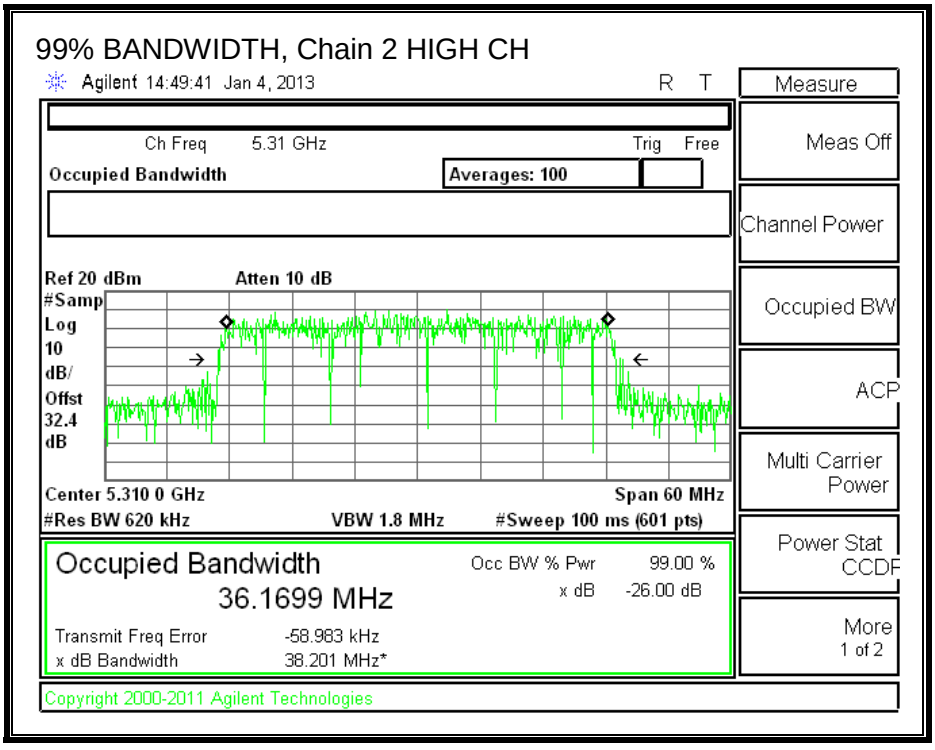
99% BANDWIDTH, Chain 1





99% BANDWIDTH, Chain 2





8.35.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

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 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum 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.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Chain 2 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.40	1.60	2.30	2.50

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
Low	5270	39.17	36.1714	2.50
High	5310	39.33	36.1699	2.50

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD 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)	0.00	

Output Power Results

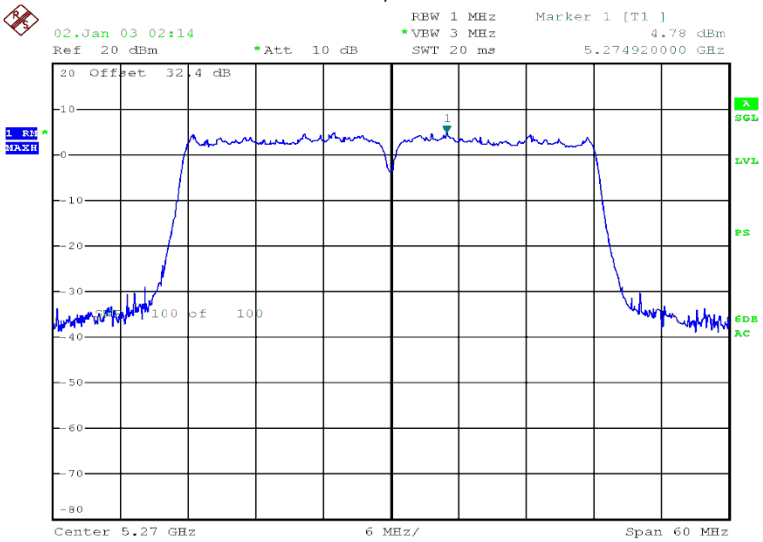
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5270	16.00	16.30	16.10	20.91	24.00	-3.09
High	5310	14.50	14.80	14.65	19.42	24.00	-4.58

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Chain 2 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5270	4.78	4.75	4.65	9.50	11.00	-1.50
High	5310	4.99	4.66	4.16	9.39	11.00	-1.61

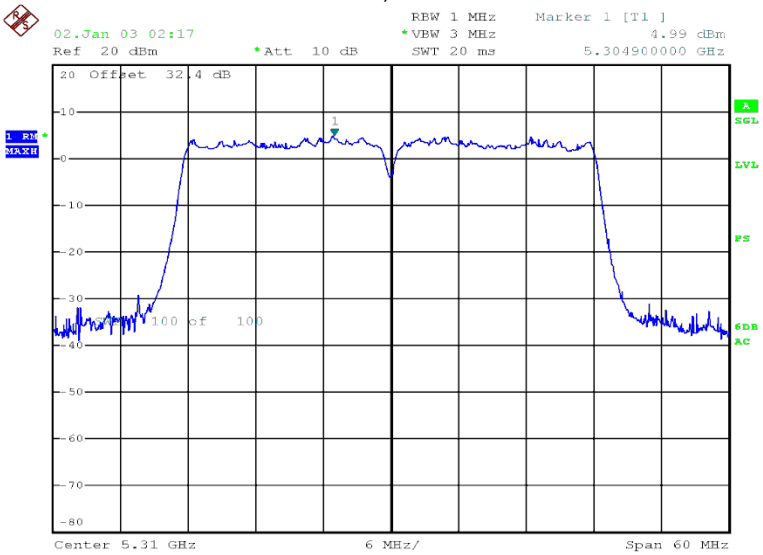
OUTPUT POWER AND PSD, Chain 0

OUTPUT POWER AND PSD, Chain 0 LOW CH



Date: 2.JAN.2003 02:14:27

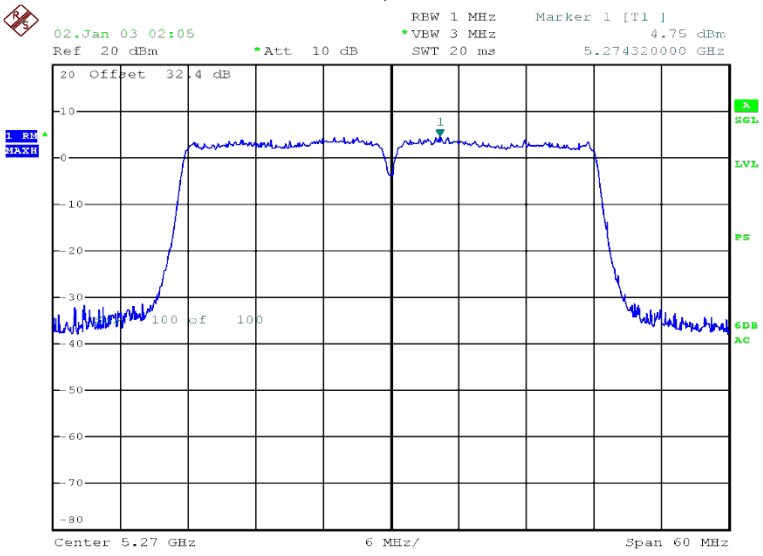
OUTPUT POWER AND PSD, Chain 0 HIGH CH



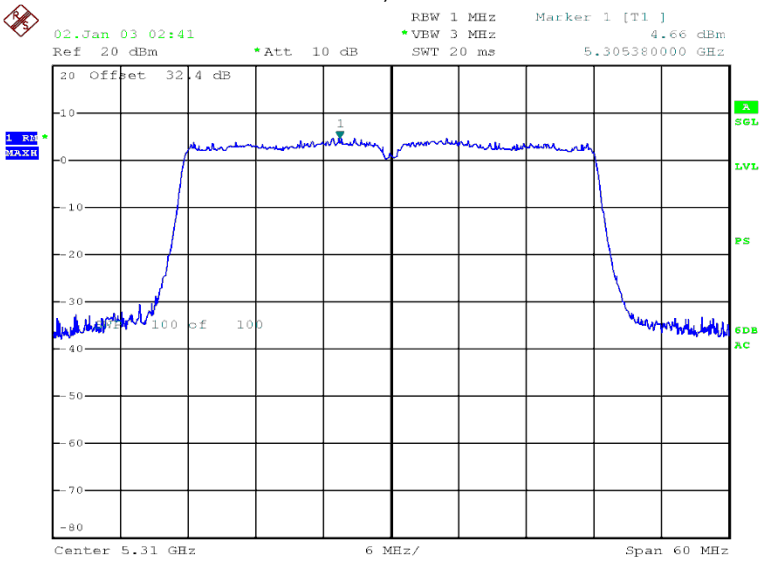
Date: 2.JAN.2003 02:17:26

OUTPUT POWER AND PSD, Chain 1

OUTPUT POWER AND PSD, Chain 1 LOW CH

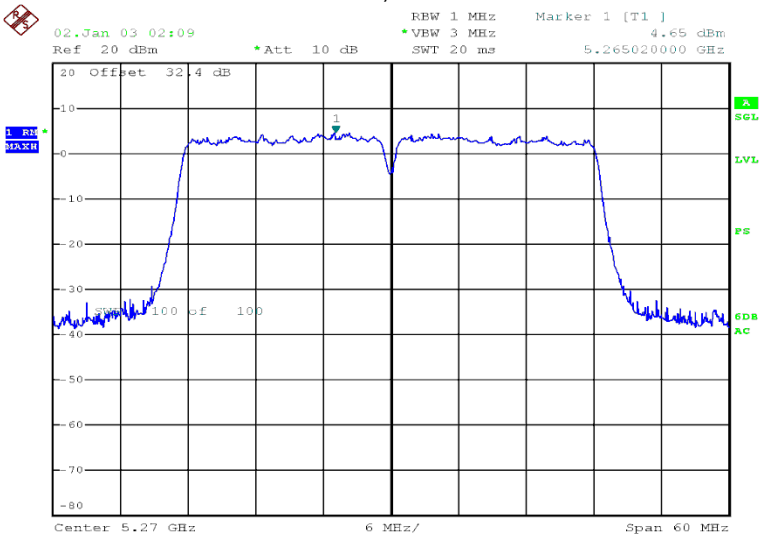


OUTPUT POWER AND PSD, Chain 1 HIGH CH



OUTPUT POWER AND PSD, Chain 2

OUTPUT POWER AND PSD, Chain 2 LOW CH



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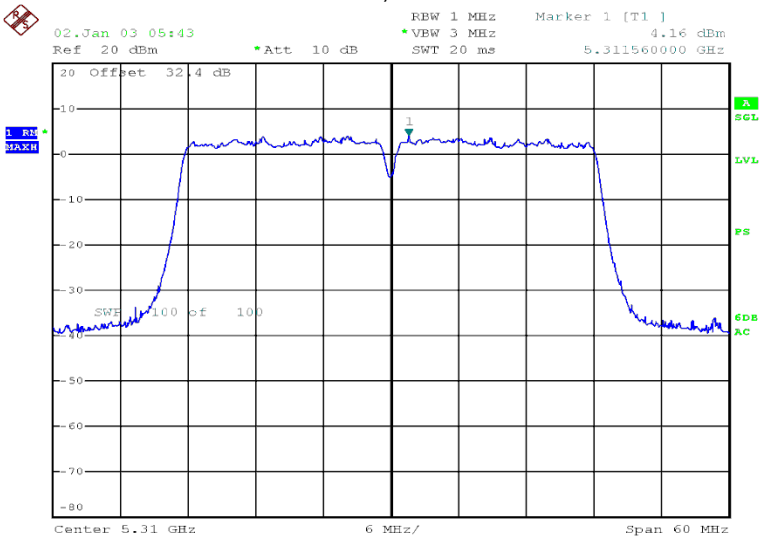
OUTPUT POWER AND PSD, Chain 2 HIGH CH



Date: 2.JAN.2003 05:43:59

8.35.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

8.36. 802.11ac VHT80 1X MODE IN THE 5.3 GHz BAND

8.36.1. 26 dB BANDWIDTH

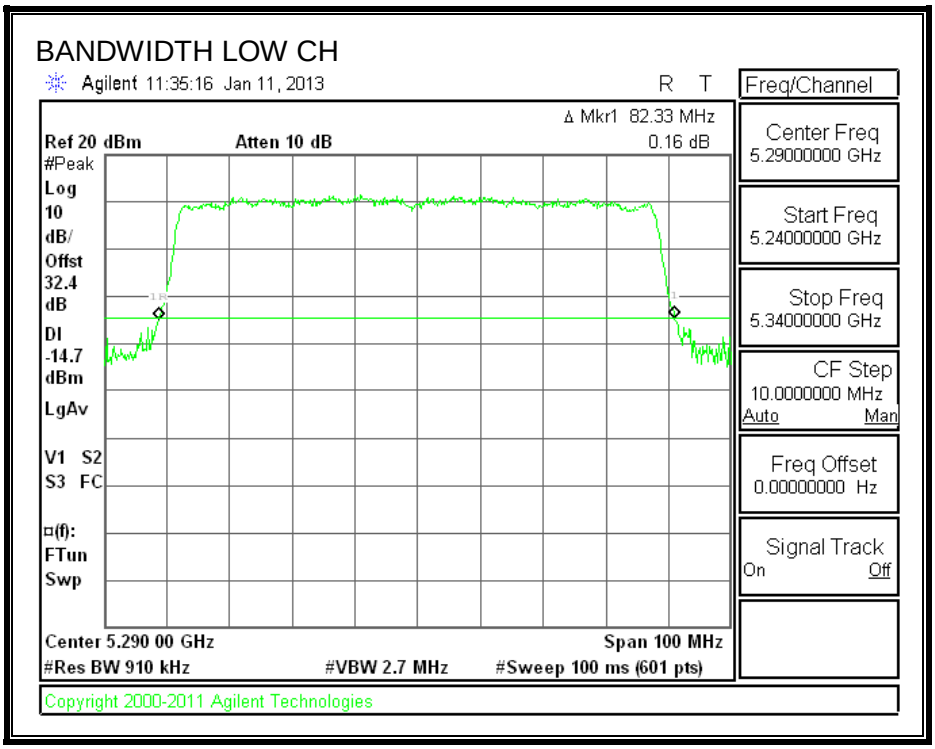
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Mid	5290	82.33

26 dB BANDWIDTH



8.36.2. 99% BANDWIDTH

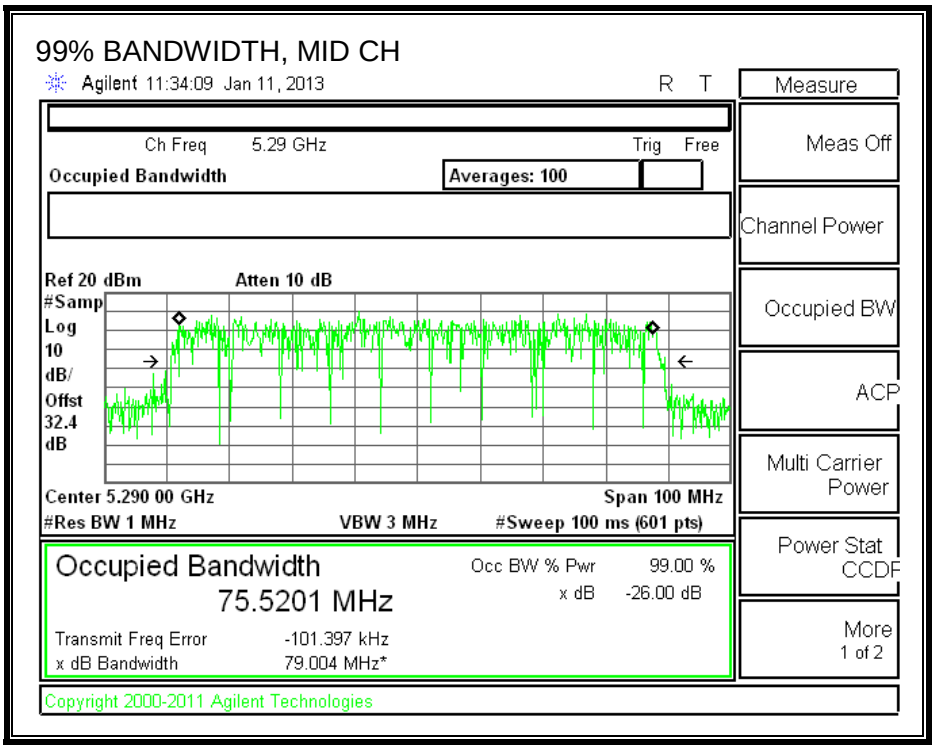
LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Mid	5290	75.5201

99% BANDWIDTH



8.36.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

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 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum 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.

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)
Mid	5290	82.33	75.5201	3.40

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Mid	5290	24.00	24.00	30.00	24.00	11.00	11.00	11.00

Duty Cycle CF (dB)	0.10	

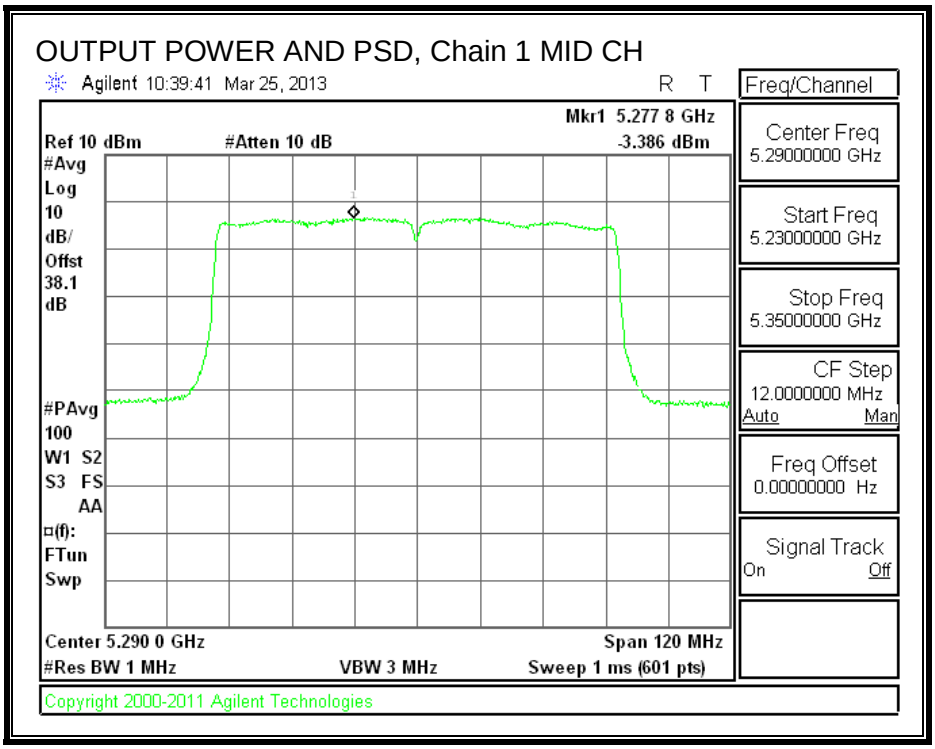
Output Power Results

Channel	Frequency (MHz)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5290	13.50	13.50	24.00	-10.50

PSD Results

Channel	Frequency (MHz)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5290	-3.386	-3.286	11.00	-14.29

OUTPUT POWER AND PSD, Chain 1



8.36.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

8.37. 802.11ac VHT80 CDD 2TX MODE IN THE 5.3 GHz BAND

8.37.1. 26 dB BANDWIDTH

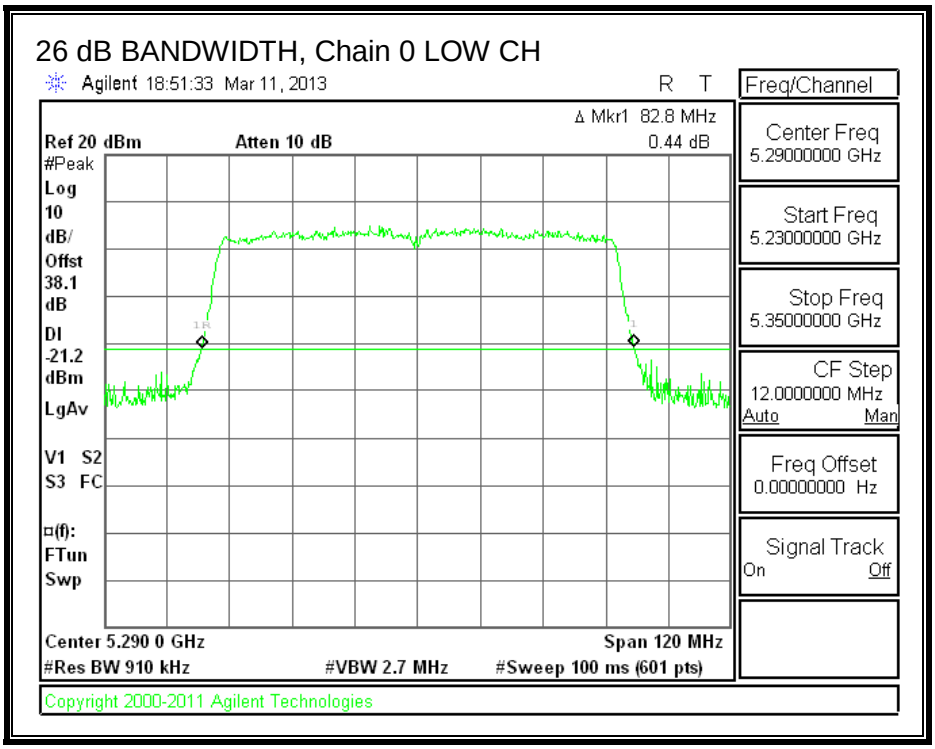
LIMITS

None; for reporting purposes only.

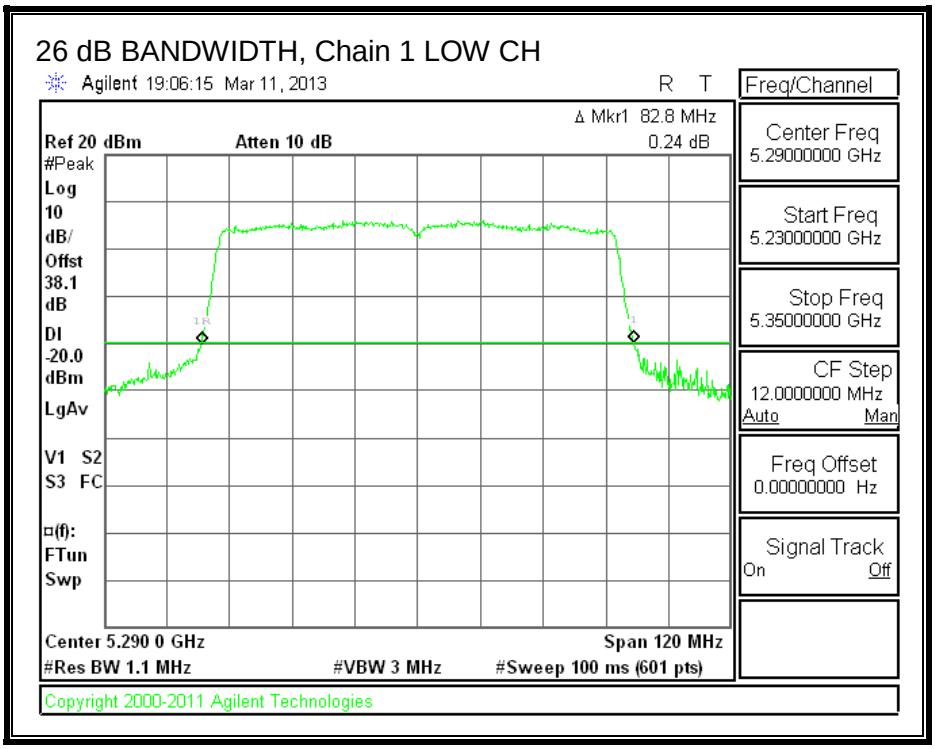
RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Mid	5290	82.80	82.80

26 dB BANDWIDTH, Chain 0



26 dB BANDWIDTH, Chain 1



8.37.2. 99% BANDWIDTH

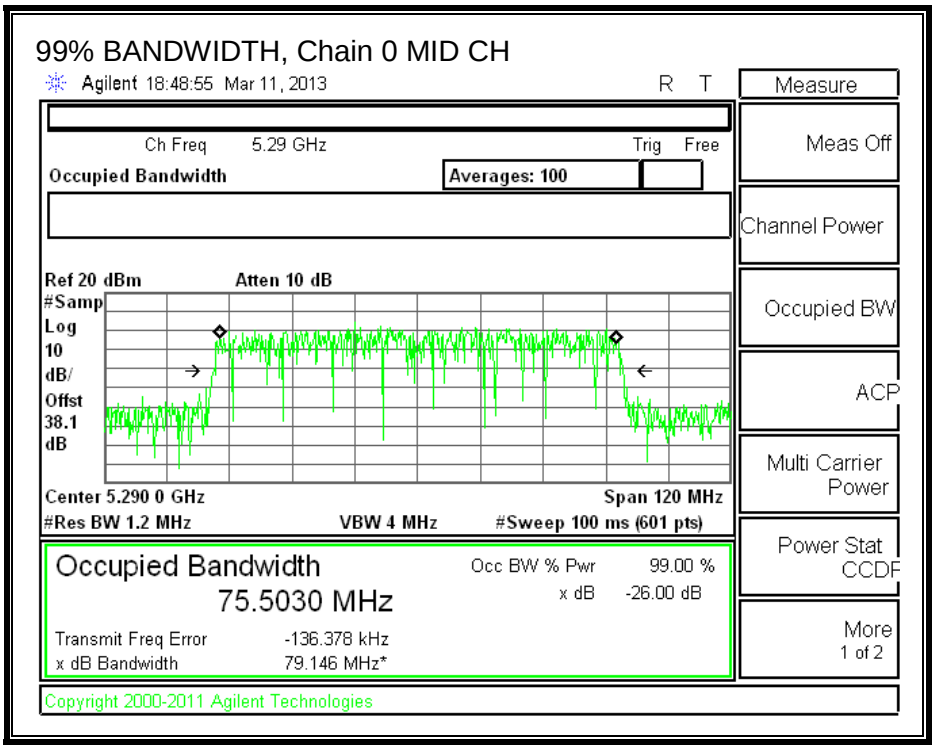
LIMITS

None; for reporting purposes only.

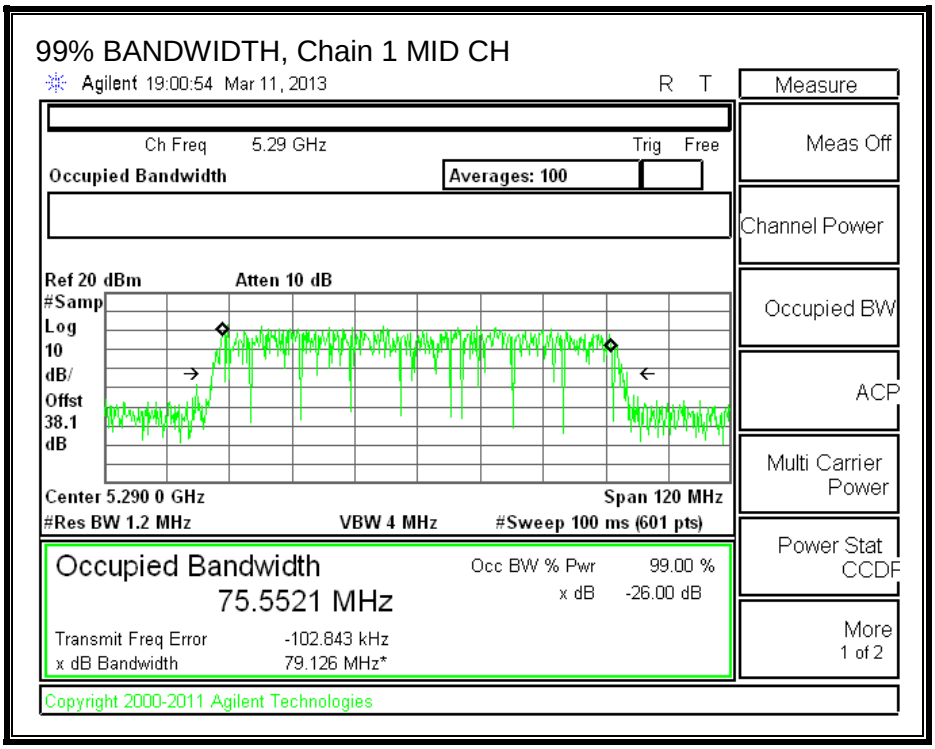
RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Mid	5290	70.5030	75.5521

99% BANDWIDTH, Chain 0



99% BANDWIDTH, Chain 1



8.37.3. OUTPUT AVERAGE POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

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 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum 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.

DIRECTIONAL ANTENNA GAIN

For output power, the two chains are considered uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
3.40	2.30	2.88

For PSD, the two chains are considered correlated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.40	2.30	5.88

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Directional Gain (dBi)	Uncorrelated Directional Gain (dBi)
Mid	5290	82.80	70.5030	5.88	2.88

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PSD Limit (dBm)	IC PSD Limit (dBm)	PSD Limit (dBm)
Mid	5290	24.00	24.00	30.00	24.00	11.00	11.00	11.00

Duty Cycle CF (dB)	0.09	

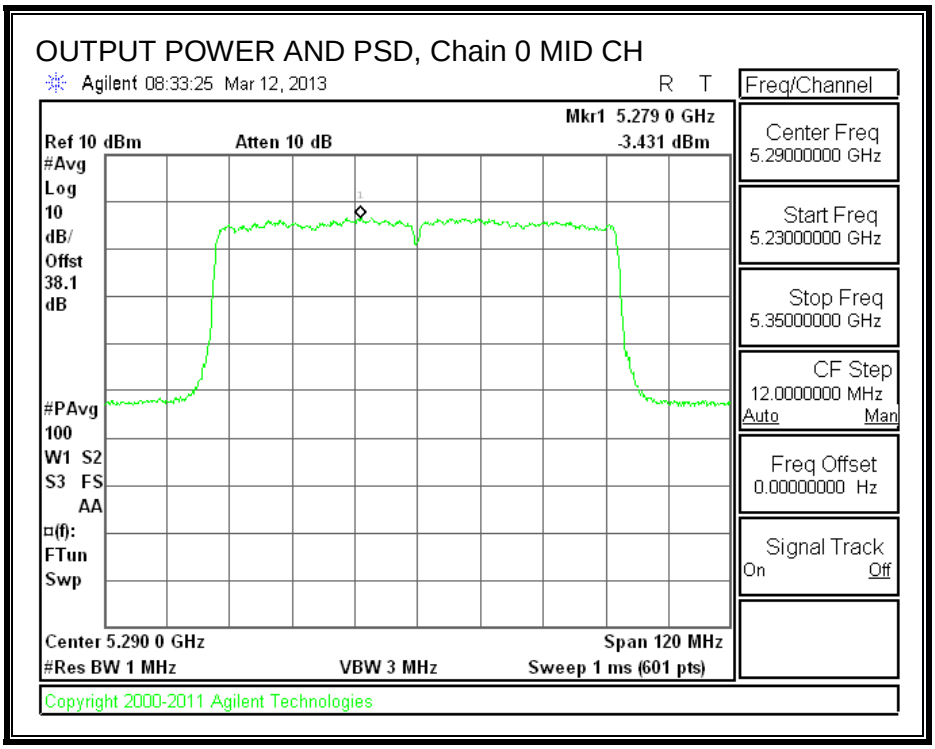
Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5290	13.10	13.00	16.06	24.00	-7.94

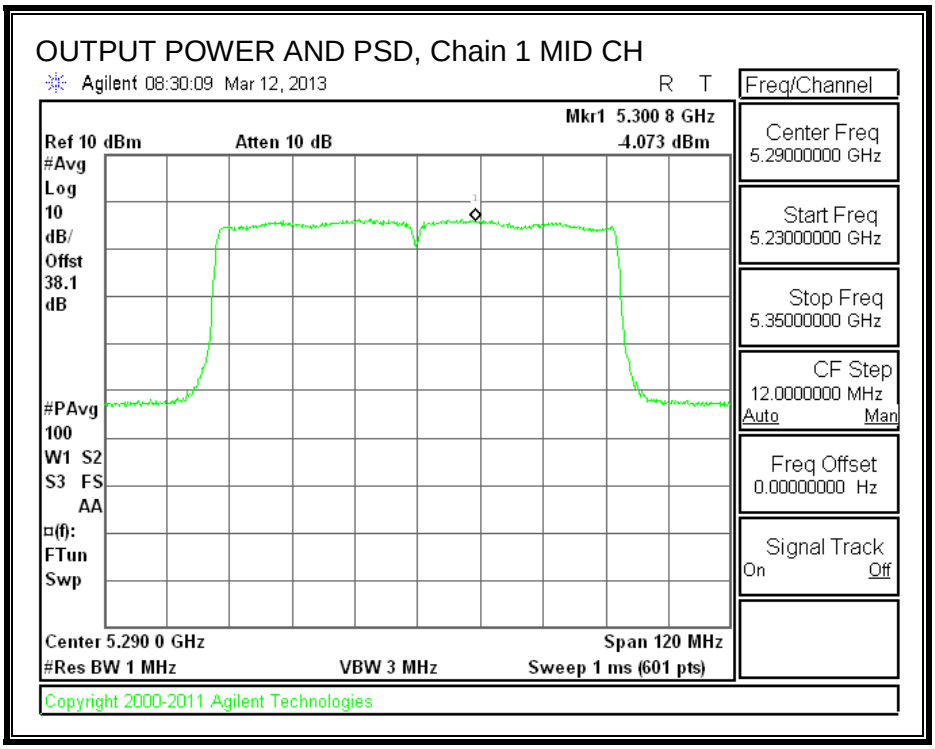
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5290	-3.431	-4.073	-0.64	11.00	-11.64

OUTPUT POWER AND PSD, Chain 0



OUTPUT POWER AND PSD, Chain 1



8.37.4. TPC POWER

LIMITS

FCC §15.407 (h) (1)

Transmit power control (TPC). U-NII devices operating in the 5.25–5.35 GHz band and the 5.47–5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

RESULTS

The maximum EIRP is less than 500 mW; therefore, TPC is not required.

8.38. 802.11ac VHT80 BF 2TX MODE IN THE 5.3 GHz BAND

Covered by testing 11ac VHT80 CDD 2TX mode, the power per chain used for 11ac VHT80 CDD 2TX mode is the same power per chain that will be used for 11ac VHT80 BF 2TX mode. However, since BF is correlated and CDD is uncorrelated for output power, the section below for output power using correlated AG for this BF mode shows it is still compliant.

8.38.1. OUTPUT AVERAGE POWER

LIMITS

FCC §15.407 (a) (2)

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 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum 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.

DIRECTIONAL ANTENNA GAIN

For output power, the two chains are considered correlated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
3.40	2.30	5.88

RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Correlated Directional Gain (dBi)
Mid	5290	82.80	70.5030	5.88

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)
Mid	5290	24.00	24.00	30.00	24.00

Duty Cycle CF (dB)	0.09	

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5290	13.10	13.00	16.06	24.00	-7.94

8.39. 802.11ac VHT80 2TX STBC MODE IN THE 5.3 GHz BAND

Covered by testing 11ac VHT80 CDD 2TX mode, the power per chain used for 11ac VHT80 CDD 2TX mode is the same power per chain that will be used for 11ac VHT80 STBC 2TX mode.

8.40. 802.11n HT80 CDD 3TX MODE IN THE 5.3 GHz BAND

8.40.1. 26 dB BANDWIDTH

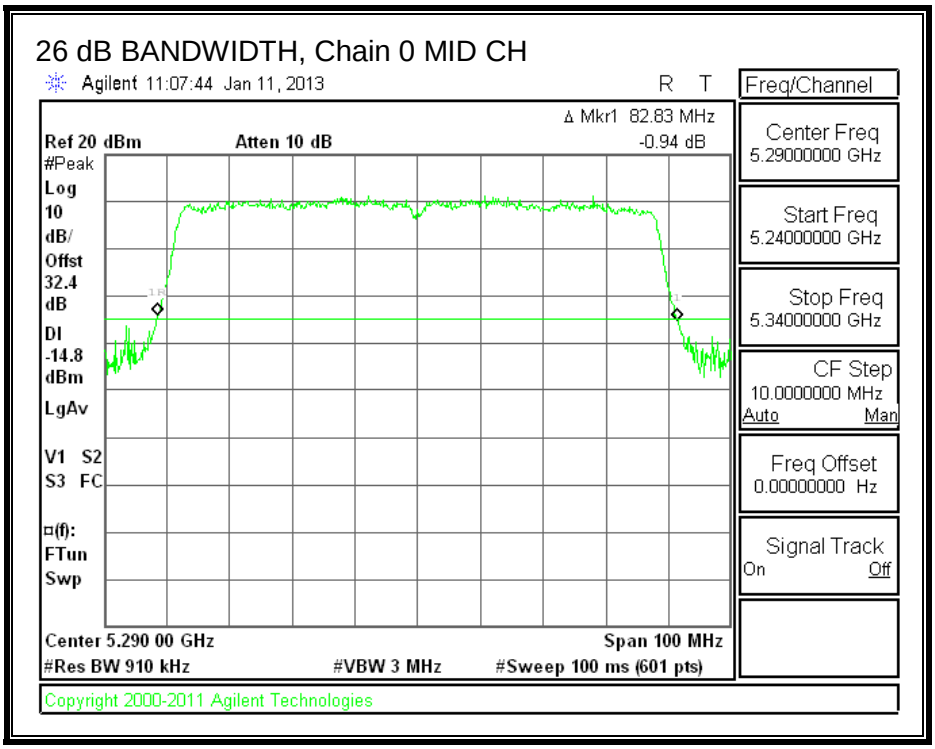
LIMITS

None; for reporting purposes only.

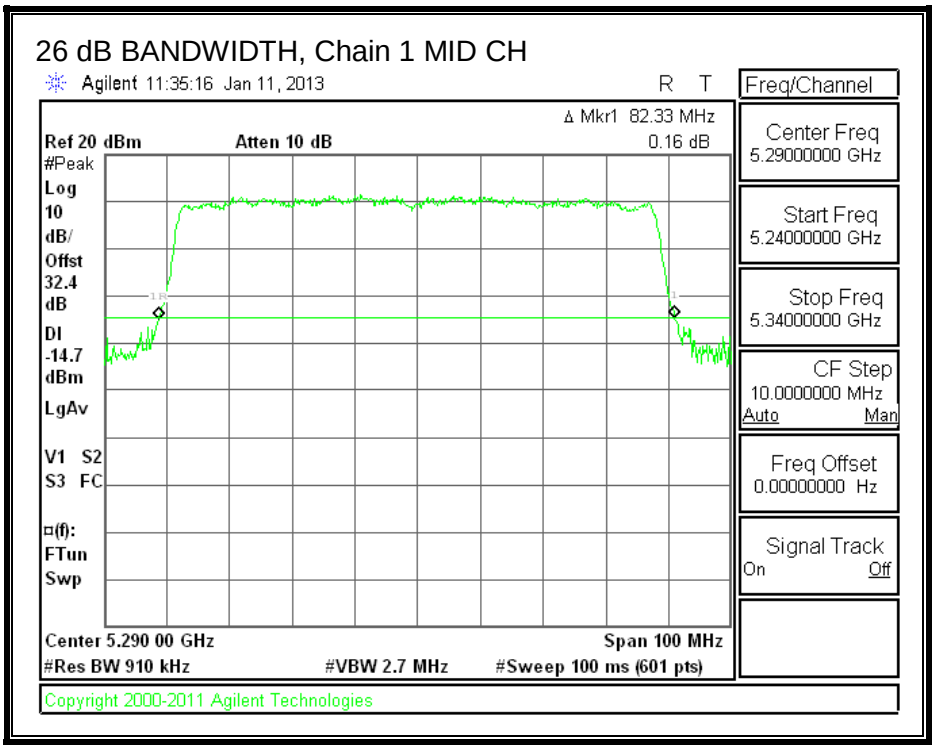
RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
Mid	5290	82.83	82.33	82.00

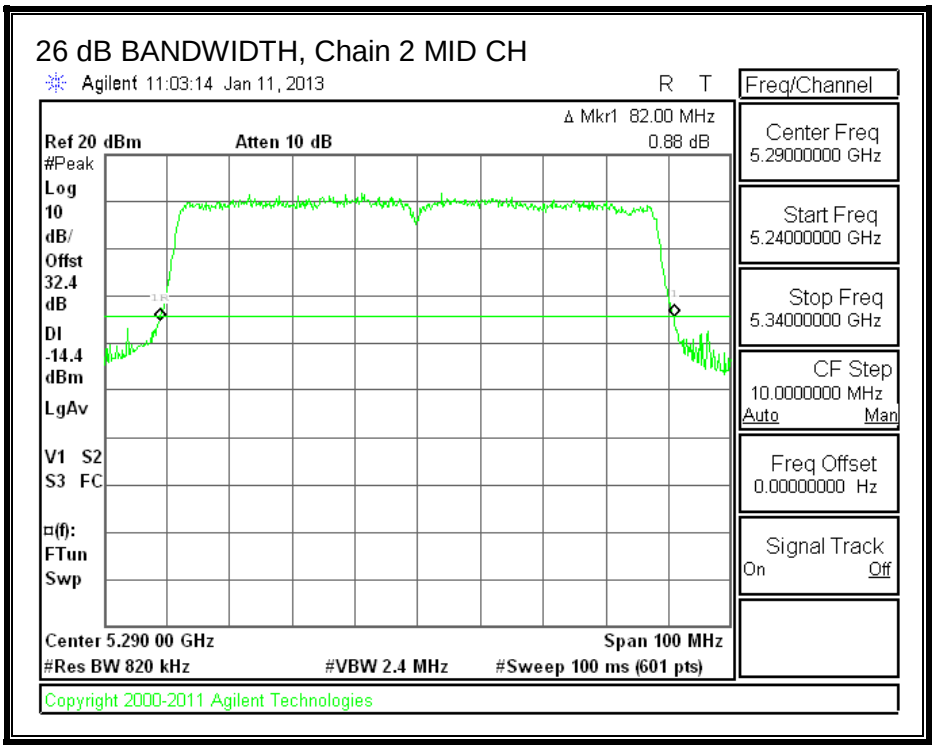
26 dB BANDWIDTH, Chain 0



26 dB BANDWIDTH, Chain 1



26 dB BANDWIDTH, Chain 2



8.40.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
Mid	5290	75.5456	75.5201	75.5049