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

CERTIFICATION TEST REPORT

FOR

802.11abgn 2X2 MIMO + BT/BLE RADIO MODULE

MODEL NUMBER: DWM-W095A

FCC ID: EW4DWMW095A
IC: 4250A-DWMW095A

REPORT NUMBER: 13J14910-6

ISSUE DATE: JULY 09, 2013

Prepared for
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	07/09/13	Initial Issue	

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: MITSUMI ELECTRIC CO., LTD.
1601, SAKAI, ATSUGI-SHI,
KANAGAWA- KEN, 243-8533 JAPAN

EUT DESCRIPTION: 802.11abgn 2X2 MIMO + BT/BLE RADIO MODULE

MODEL: DWM-W095A

SERIAL NUMBER: B4-06

DATE TESTED: MARCH 16 – JUNE 08, 2013

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

UL 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.

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2. TEST METHODOLOGY

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

3. FACILITIES AND ACCREDITATION

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

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://www.ccsemc.com.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

4.3. MEASUREMENT UNCERTAINTY

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

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

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

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5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is an 802.11abgn 2X2 MIMO + BT/BLE Radio Module

The radio module is manufactured by Mitsumi.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5180 – 5240	802.11a CDD 2TX	15.75	37.58
5180 – 5240	802.11n HT20 CDD 2TX	15.29	33.81
5180 – 5240	802.11n HT20 SDM 2TX	15.89	38.82
5190 – 5230	802.11n HT40 CDD 2TX	15.98	39.63
5190 – 5230	802.11n HT40 SDM 2TX	15.76	37.67
5260 – 5320	802.11a CDD 2TX	16.79	47.75
5260 – 5320	802.11n HT20 CDD 2TX	16.36	43.25
5260 – 5320	802.11n HT20 SDM 2TX	16.89	48.87
5270 – 5310	802.11n HT40 CDD 2TX	16.57	45.39
5270 – 5310	802.11n HT40 SDM 2TX	15.83	38.28
5500 – 5700	802.11a CDD 2TX	15.95	39.36
5500 – 5700	802.11n HT20 CDD 2TX	15.97	39.54
5500 – 5700	802.11n HT20 SDM 2TX	15.95	39.36
5510 – 5670	802.11n HT40 CDD 2TX	15.88	38.73
5510 – 5670	802.11n HT40 SDM 2TX	15.92	39.08

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes 2 PIFA (need information) antennas, with a maximum gain of 3dBi.for 2.4GHz band and 4 dBi for 5GHz band.

5.4. SOFTWARE AND FIRMWARE

The EUT driver software installed in the host support equipment during was testing BCM4324B3_002.004.006.0012.0017.hcd; version 6.10.197.6

The test utility software used during testing was Window NT Command Script batch files.

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5.5. WORST-CASE CONFIGURATION AND MODE

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

Worst-case data rates as provided by the client were based on the baseline scan, the worst-case data rates were:

802.11a mode: 6 Mbps
802.11n HT20mode: MCS0 and MCS8
802.11n HT40mode: MCS0 and MCS8

Radiated emissions for EUT with antenna was performed and passed; therefore, antenna port spurious was not performed.

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5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Fujitsu	Q2010	R6609927	DoC
AC Adaptor	Fujitsu	SEC80N2-16	N/A	DoC
Adapter Board	Broadcom	BCM94331CSAD	1583414	N/A
DC Power Supply	Lamda	LA-300	LA3-AA30-103 2676	N/A

I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	2	US 115V	Shielded	1.5m	NA
2	DC	2	DC	Un-shielded	1.5m	NA

TEST SETUP

The EUT is installed in a PCB test board connected to the host laptop computer by flat cable and the PCI adapter during the executed command then removed the laptop outside the chamber.

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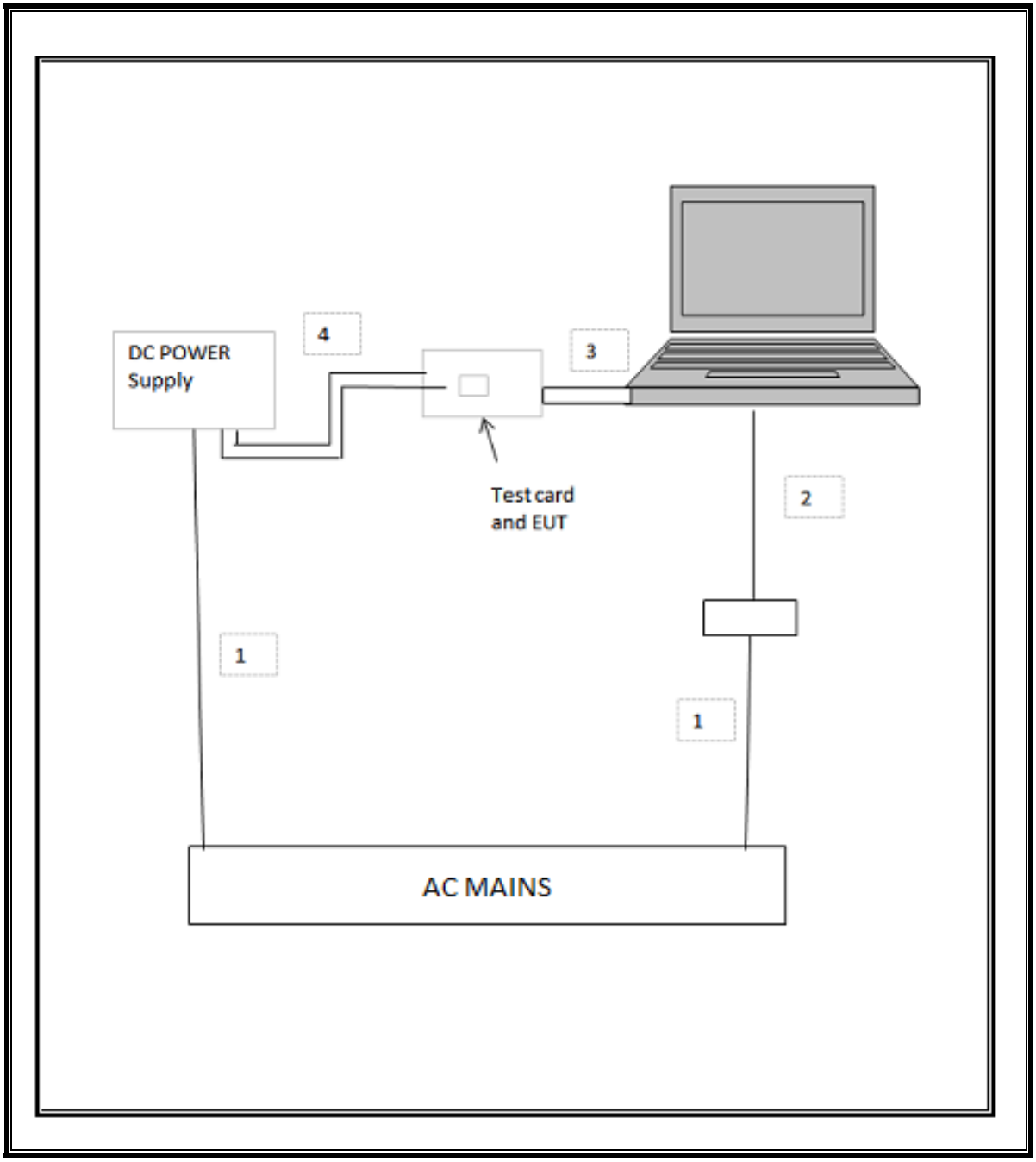
SETUP DIAGRAM FOR TESTS



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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**
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C00986	04/01/13
EMI Test Receiver, 9 kHz-7 GHz	R & S	ESCI 7	1000741	07/13/12
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	08/08/12
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	C01016	08/14/12
Antenna, Horn, 18 GHz	ETS	3117	C01006	12/11/12
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	C00946	11/12/12
Antenna, Horn, 40 GHz	ARA	MWH-2640/B	C00981	06/14/12
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00558	03/23/13
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C00749	10/19/12
Preamplifier, 40 GHz	Miteq	NSP4000-SP2	C00990	08/02/11
Peak Power Meter	Agilent / HP	E4416A	C00963	12/13/11
Peak Power Sensor	HP	E9327A	C00964	12/13/12
Reject Filter, 5.15-5.35 GHz	Micro-Tronics	BRC13190	N02680	CNR
Reject Filter, 5.47-5.725 GHz	Micro-Tronics	BRC13191	N02678	CNR
Reject Filter, 5.725-5.825 GHz	Micro-Tronics	BRC13192	N02676	CNR
LISN, 30 MHz	FCC	50/250-25-2	N02396	08/08/12

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7. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 789033 Zero-Span Spectrum Analyzer Method.

7.1.1. ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)
5 GHz						
802.11a CDD 6MBps	3.13	3	0.994	99.4%	0.00	0.010
802.11n HT20 SDM MCS8	1.46	1	0.986	98.6%	0.00	0.010
802.11n HT20 CDD MCS0	2.89	3	0.991	99.1%	0.00	0.010
802.11n HT40 CDD MCS0	1.41	1	0.987	98.7%	0.00	0.010
802.11n HT40 SDM MCS8	0.72	1	0.976	97.6%	0.11	1.389

7.1.2. MEASUREMENT METHOD FOR POWER AND PPSD

For modes with Duty Cycle greater than or equal to 98% , KDB 789033 Method SA-1 is used.

For modes with Duty Cycle less than 98% and consistent, KDB 789033 Method SA-2 is used.

7.1.3. MEASUREMENT METHOD FOR AVERAGE SPURIOUS EMISSIONS ABOVE 1 GHz

The Duty Cycle is greater than or equal to 98%, KDB 789033 Method VB with Power RMS Averaging is used.

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

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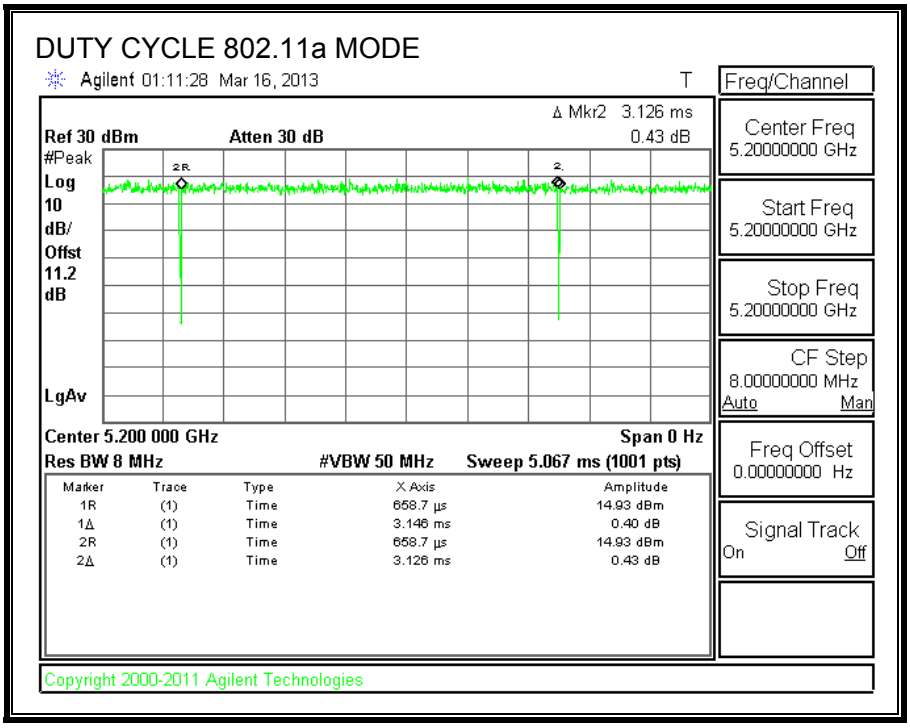
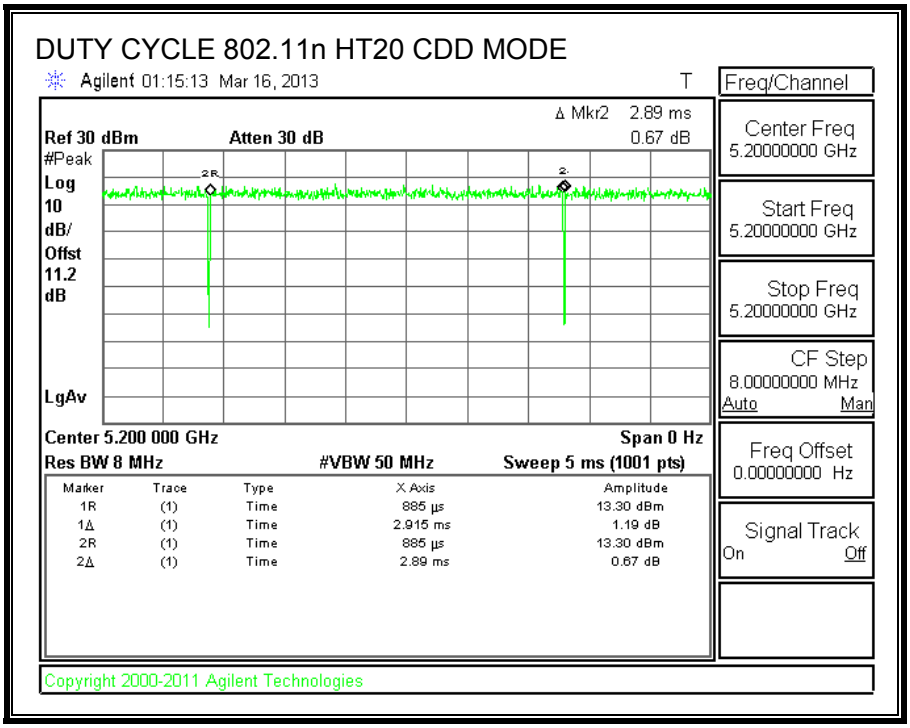
7.1.4. DUTY CYCLE PLOTS





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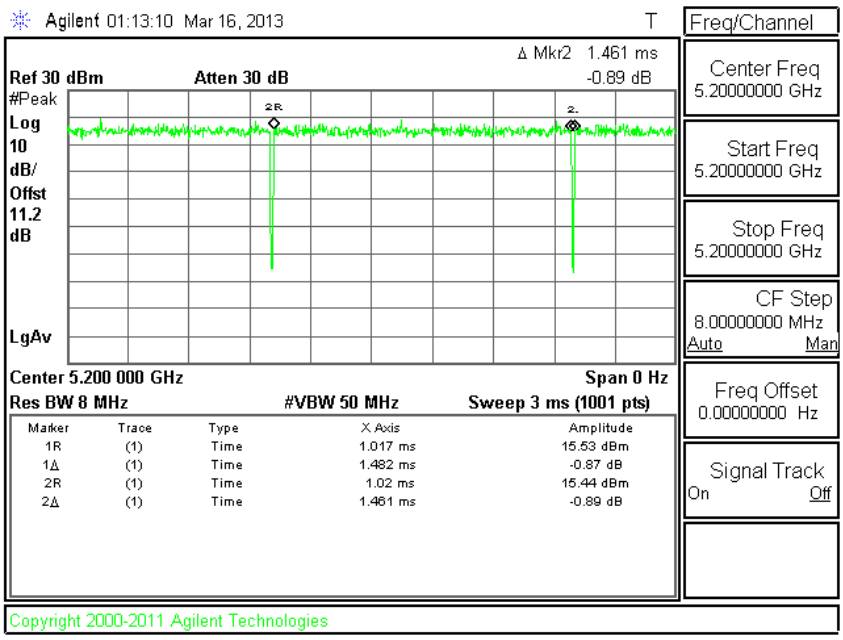
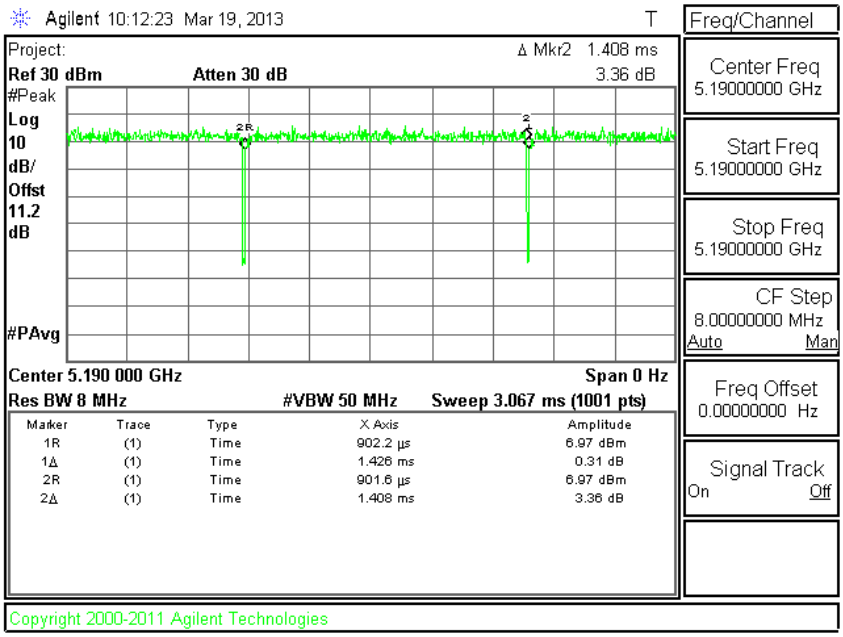
DUTY CYCLE 802.11n HT20 SDM MODE



DUTY CYCLE 802.11n HT40 CDD MODE



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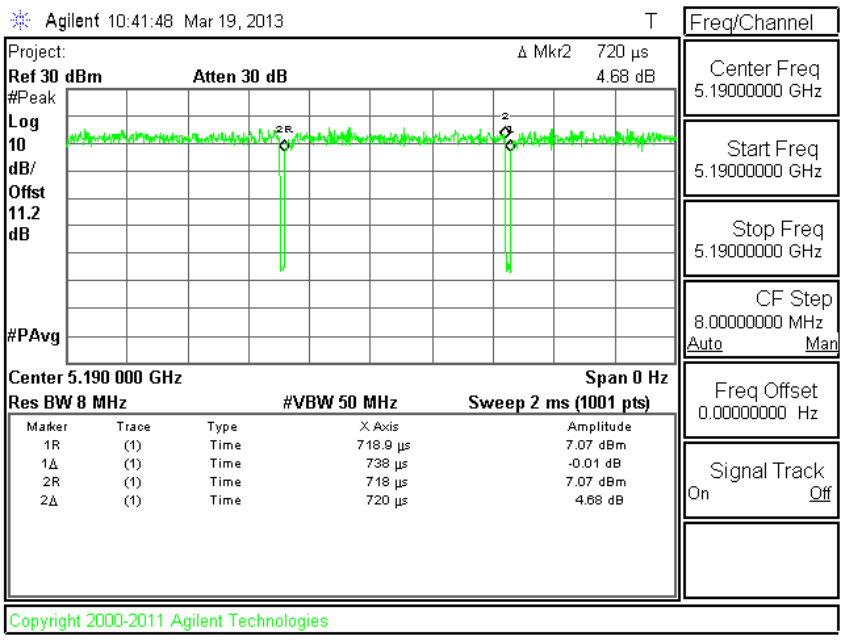
DUTY CYCLE 802.11n HT40 SDM MODE



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8. ANTENNA PORT TEST RESULTS

8.1. 802.11a CDD 2TX 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 BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)
Low	5180	35.50	28.25
Mid	5200	22.42	37.67
High	5240	23.92	36.42

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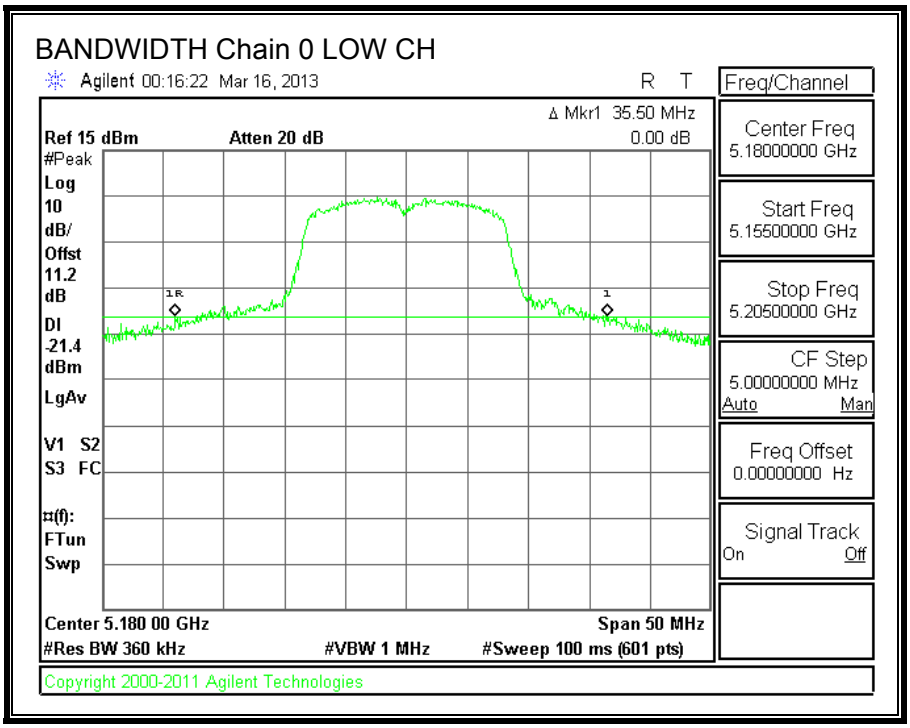
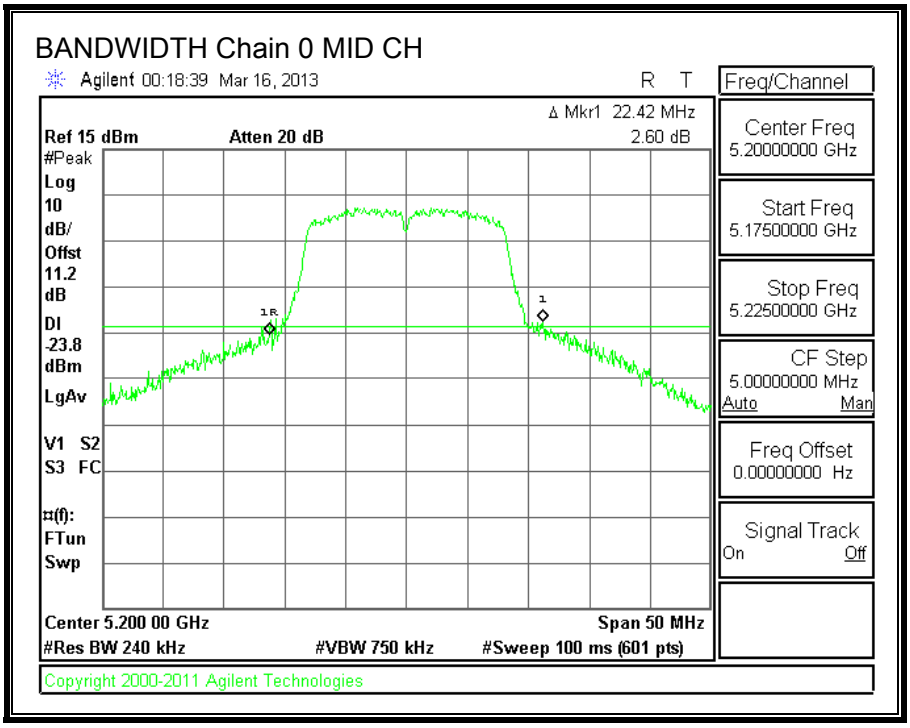
26 dB BANDWIDTH, Chain 0





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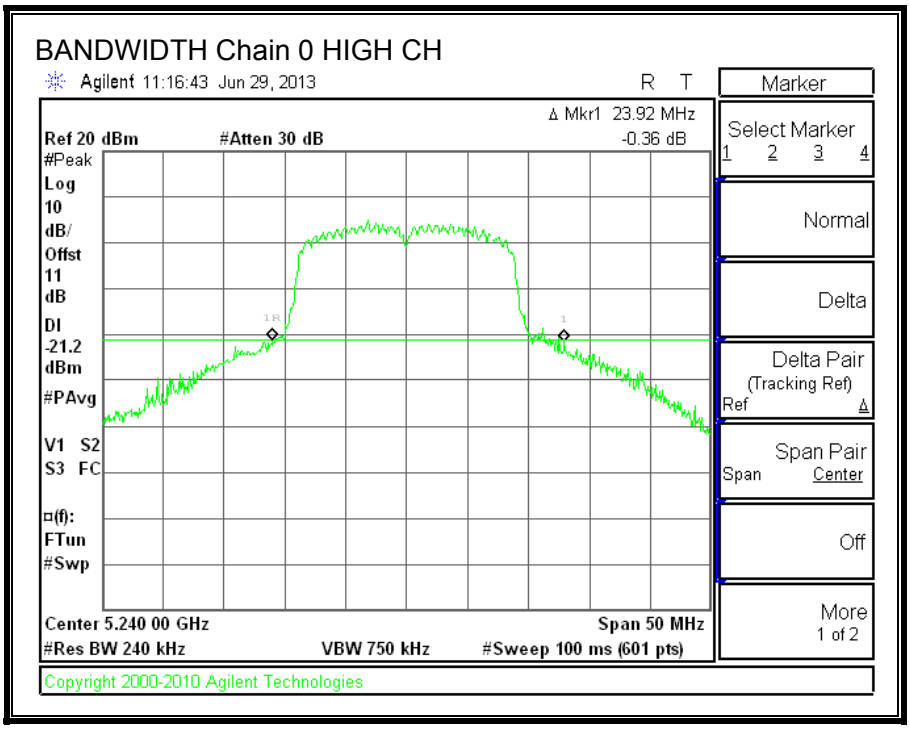
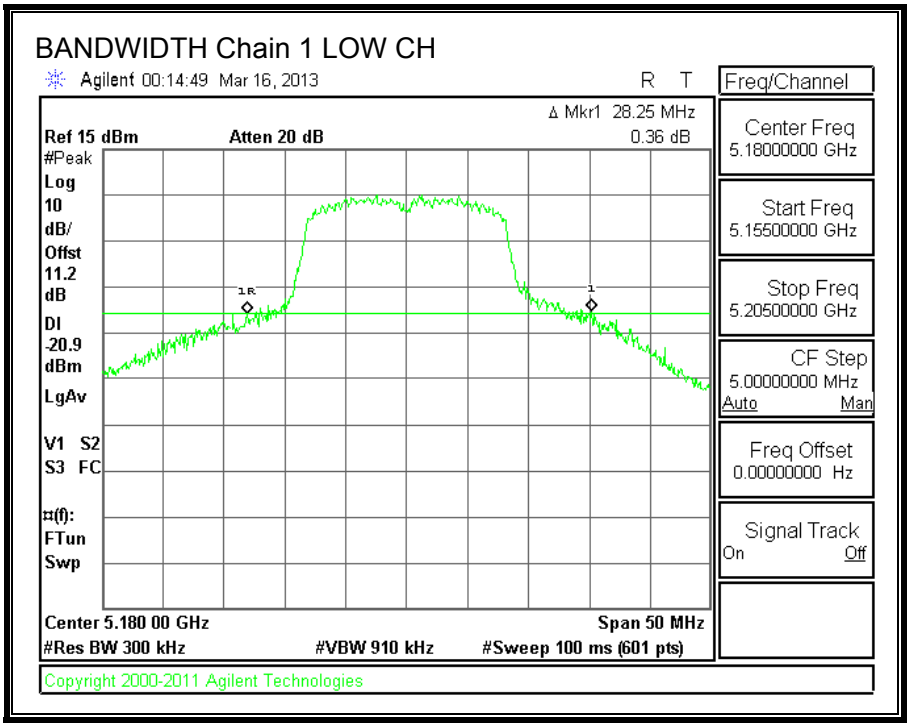


26 dB BANDWIDTH, Chain 1



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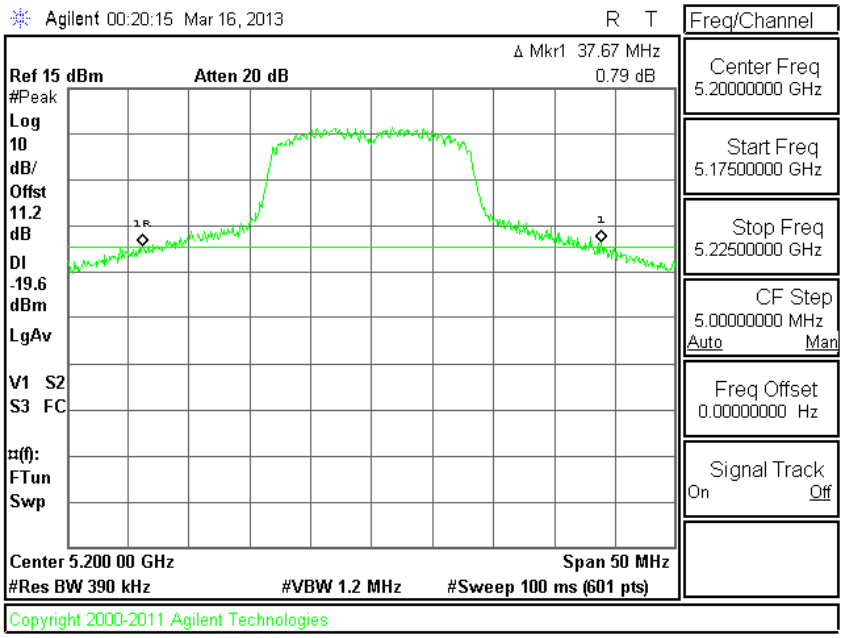
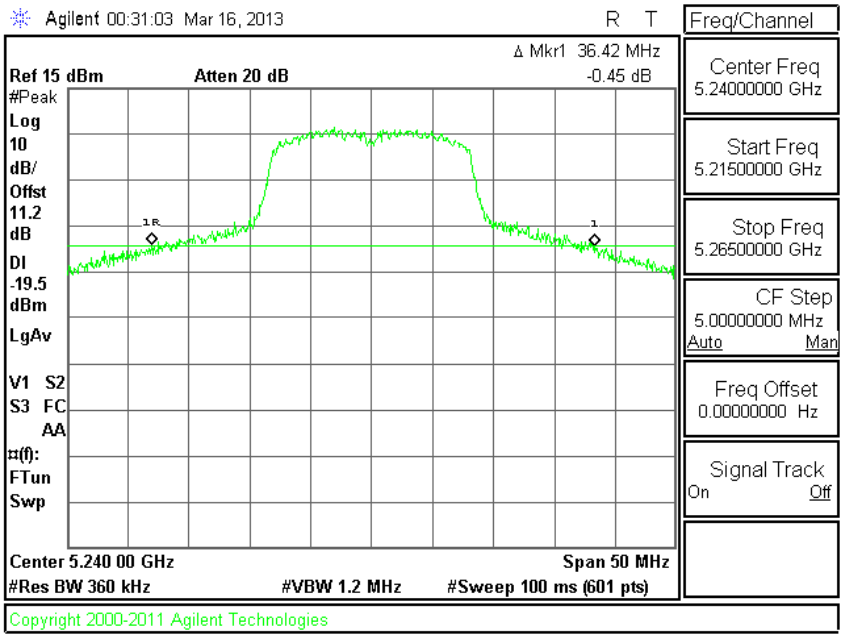
BANDWIDTH Chain 1 MID CH



BANDWIDTH Chain 1 HIGH CH



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8.1.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	5180	16.3408	16.2990
Mid	5200	16.2890	16.4014
High	5240	16.3014	16.3975

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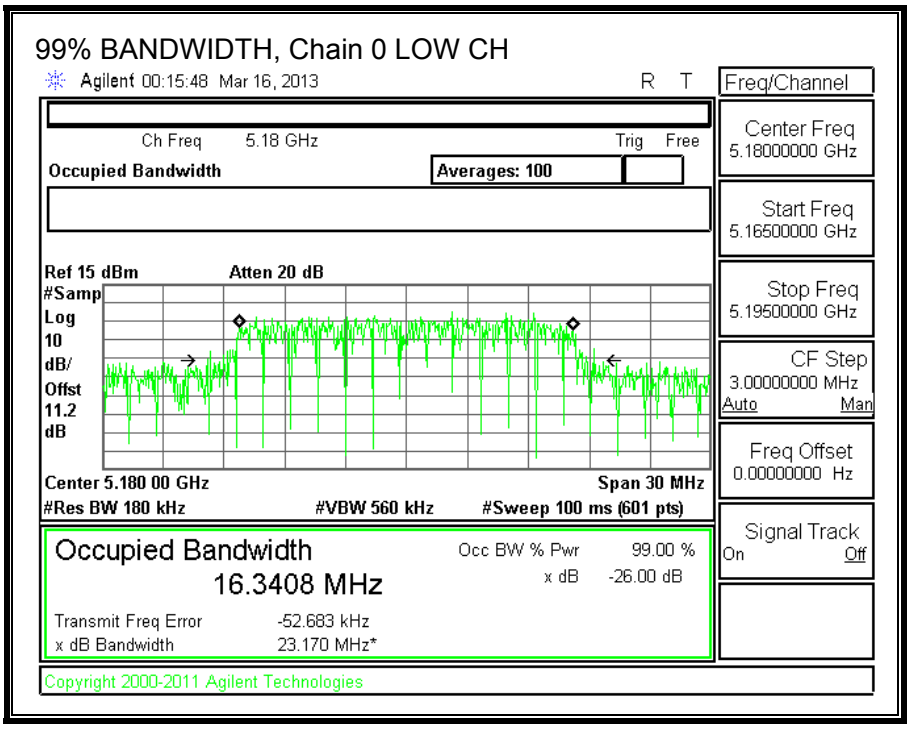
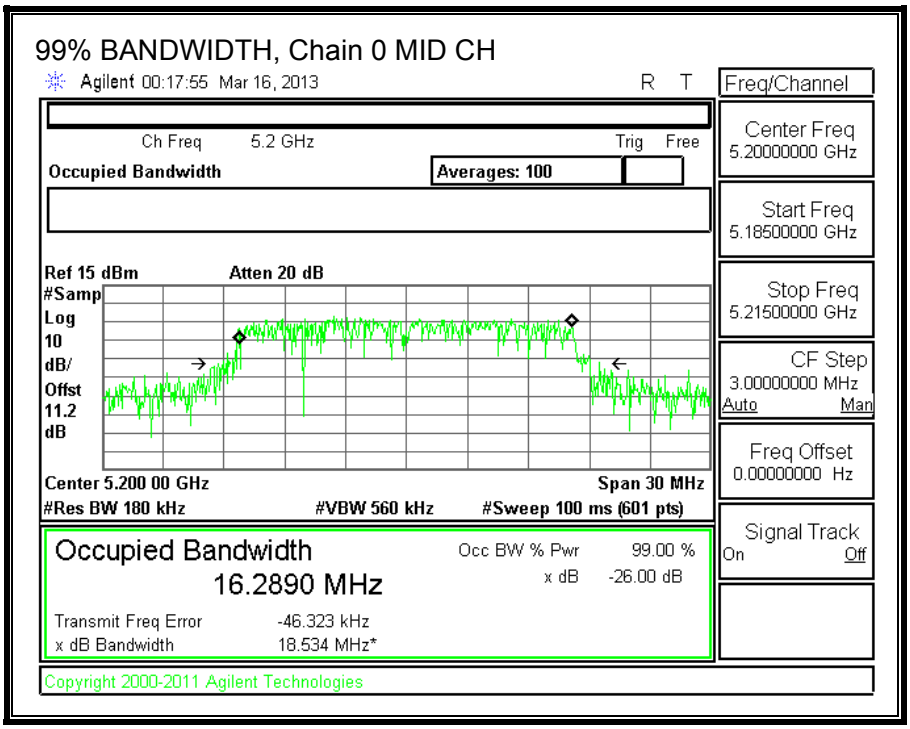
99% BANDWIDTH, Chain 0





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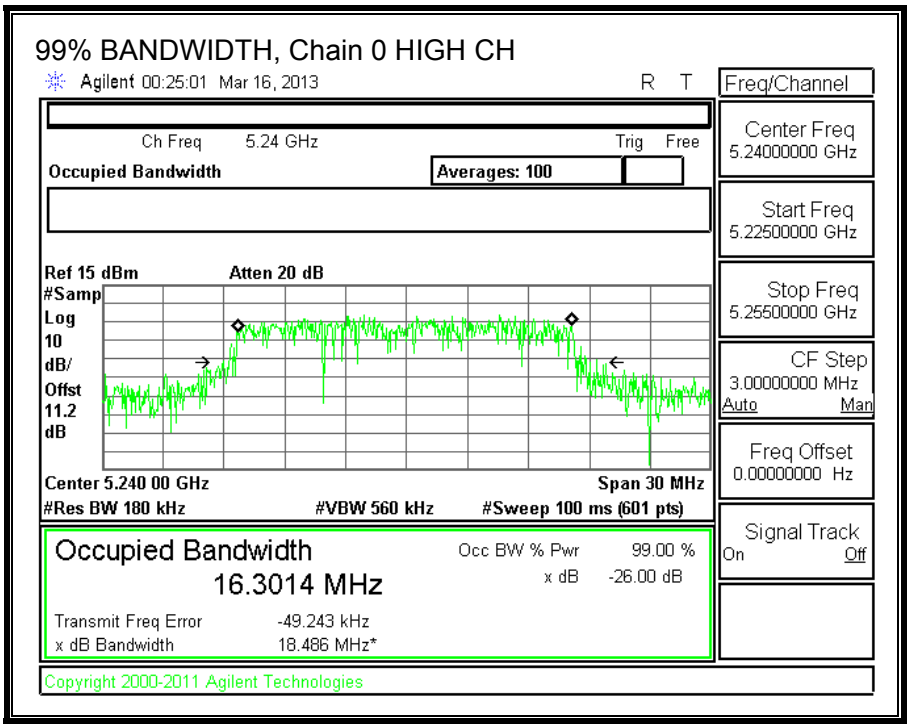
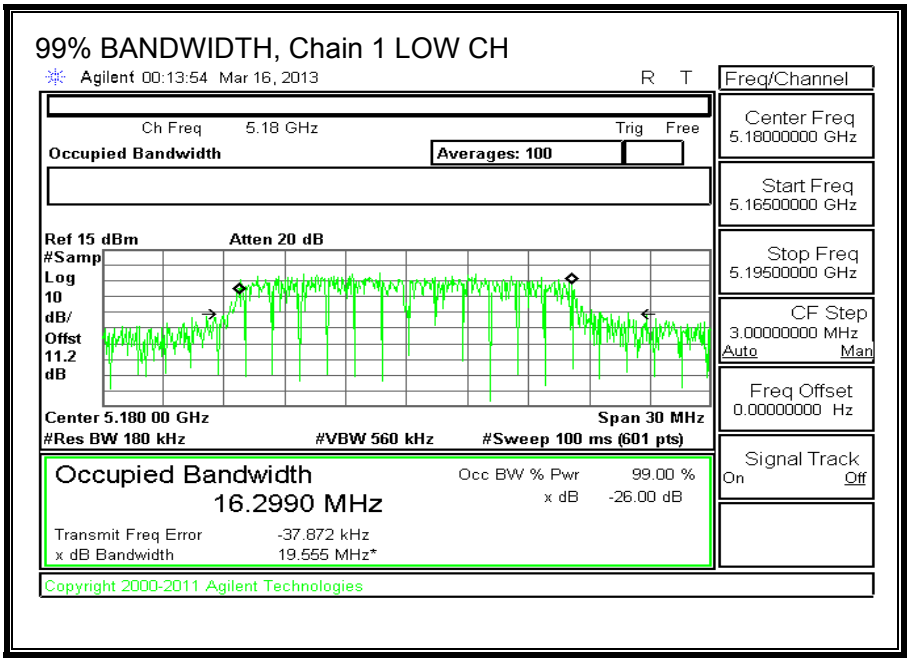


99% BANDWIDTH, Chain 1



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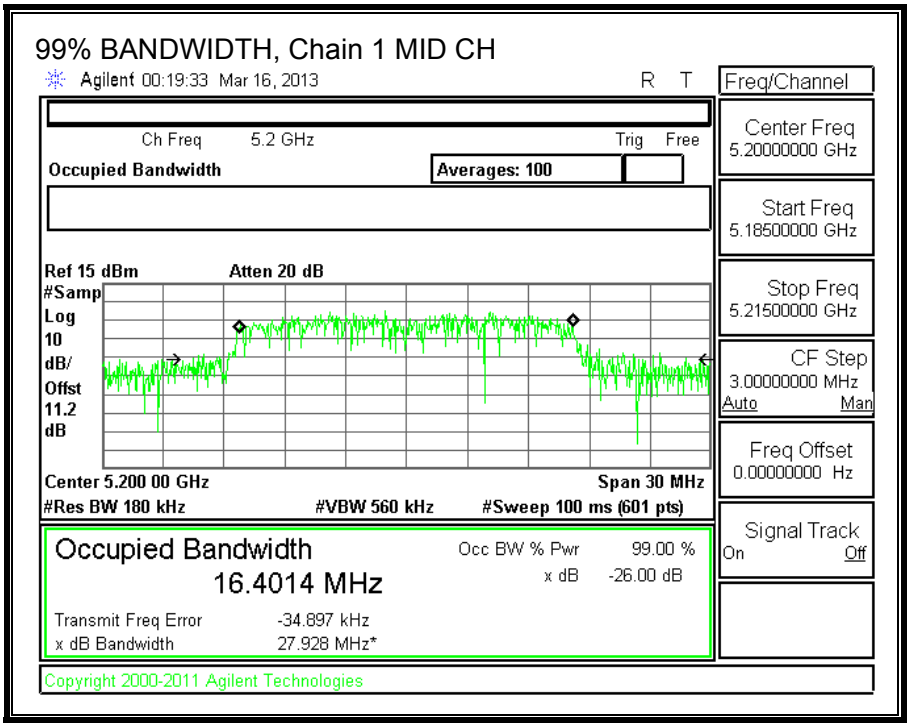

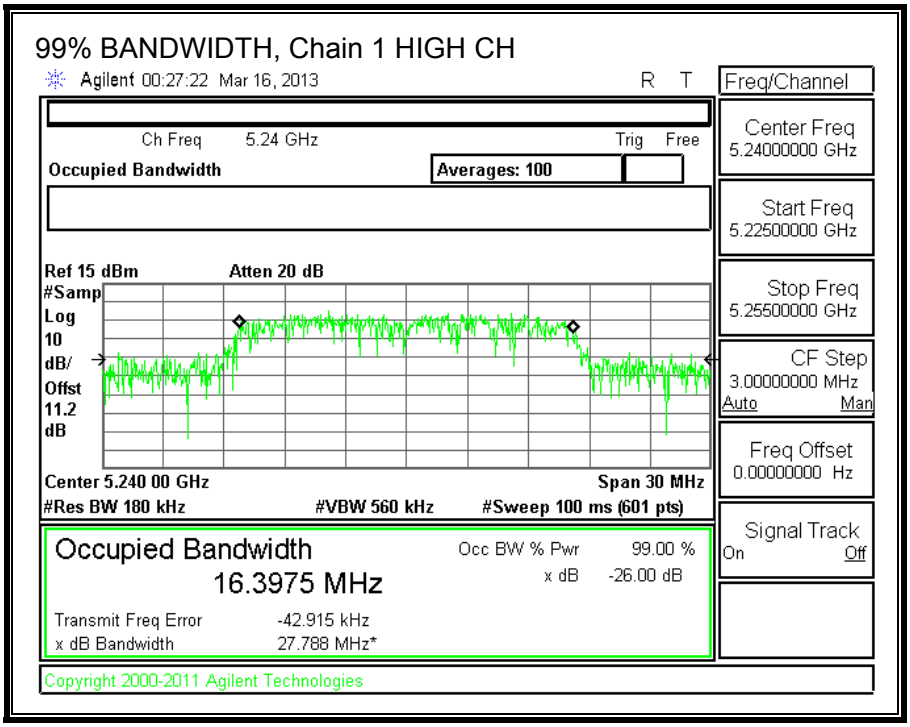

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8.1.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Average Power Results

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Total Power (dBm)
Low	5180	12.08	13.16	15.66
Mid	5200	11.55	12.86	15.26
High	5240	12.42	13.02	15.74

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8.1.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (1)

For the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 4 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

The maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

DIRECTIONAL ANTENNA GAIN

For output power, the TX chains are uncorrelated and the antenna gain is equal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
4.00	4.00	4.00

For PPSD, the TX chains are correlated and the antenna gain is equal among the chains .The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
4.00	4.00	7.01

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Uncorrelated Directional Gain (dBi)	Correlated Directional Gain (dBi)
Low	5180	28.25	16.2990	4.00	7.01
Mid	5200	22.42	16.2890	4.00	7.01
High	5240	36.42	16.3014	4.00	7.01

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC EIRP Limit (dBm)	Max IC Power (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC eirp PSD Limit (dBm)	PPSD Limit (dBm)
Low	5180	17.00	22.12	18.12	17.00	2.99	10.00	2.99
Mid	5200	17.00	22.12	18.12	17.00	2.99	10.00	2.99
High	5240	17.00	22.12	18.12	17.00	2.99	10.00	2.99

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power & PPSD

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	12.560	11.473	15.06	17.00	-1.94
Mid	5200	12.651	12.832	15.75	17.00	-1.25
High	5240	12.230	12.707	15.49	17.00	-1.51

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5180	-0.75	0.26	2.79	2.99	-0.20
Mid	5200	-0.62	0.37	2.91	2.99	-0.08
High	5240	-0.59	0.15	2.81	2.99	-0.18

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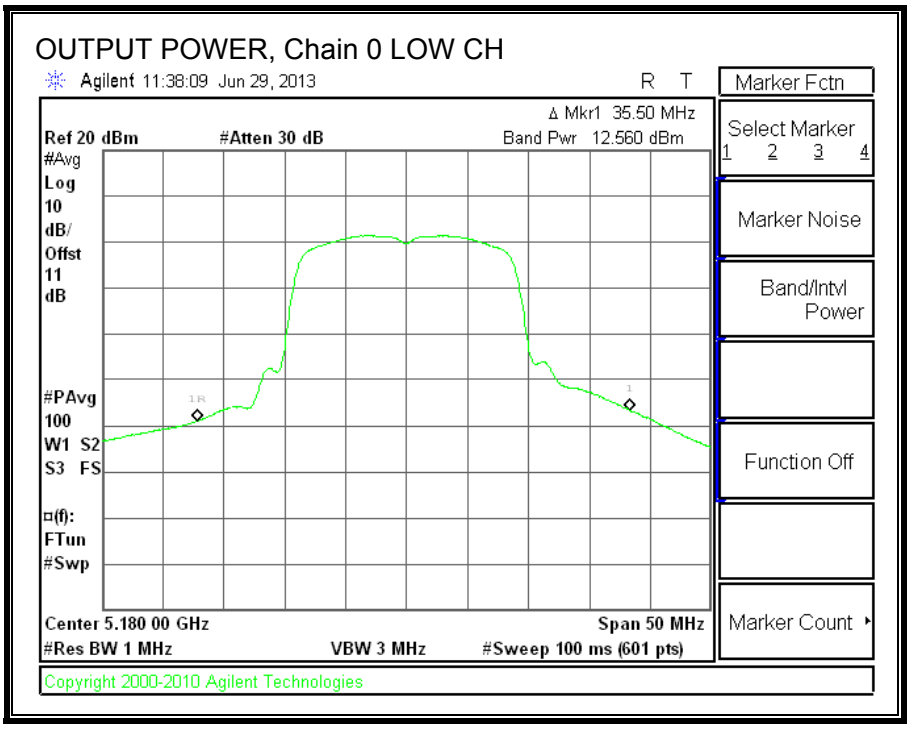
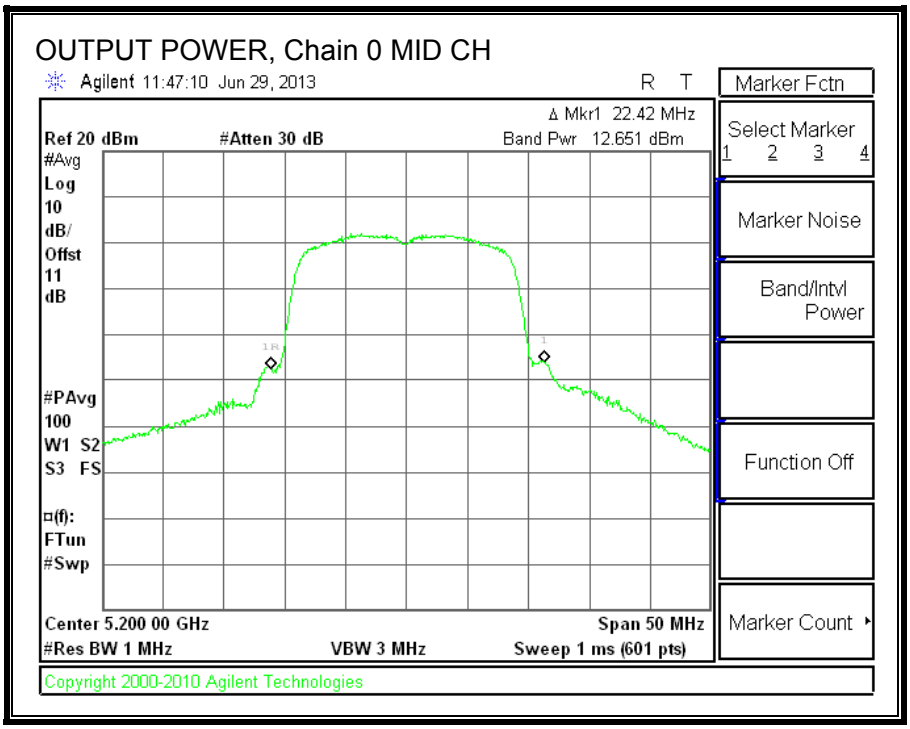
OUTPUT POWER, Chain 0





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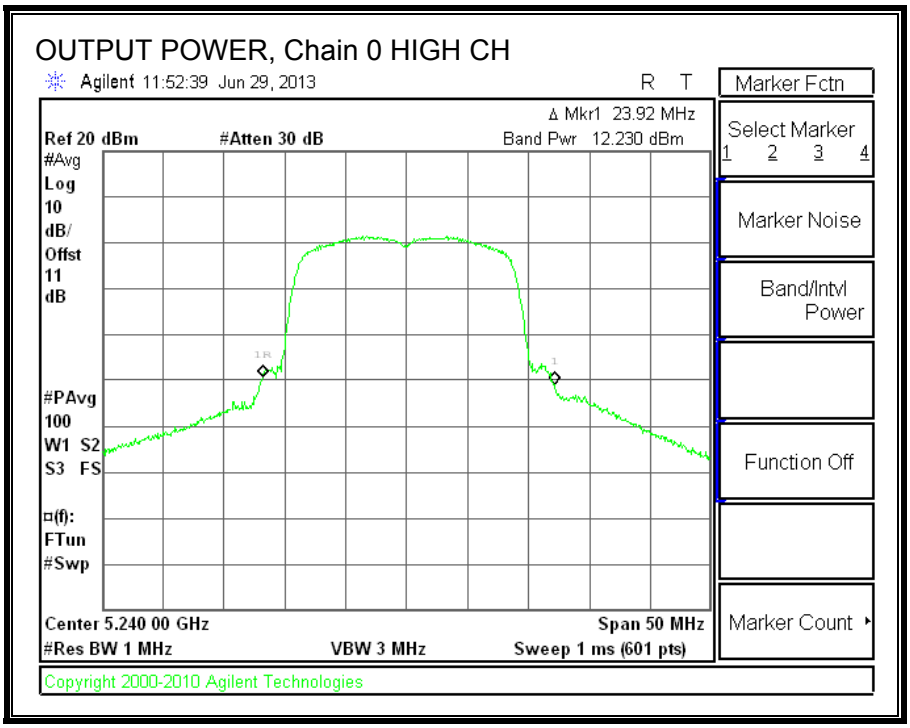
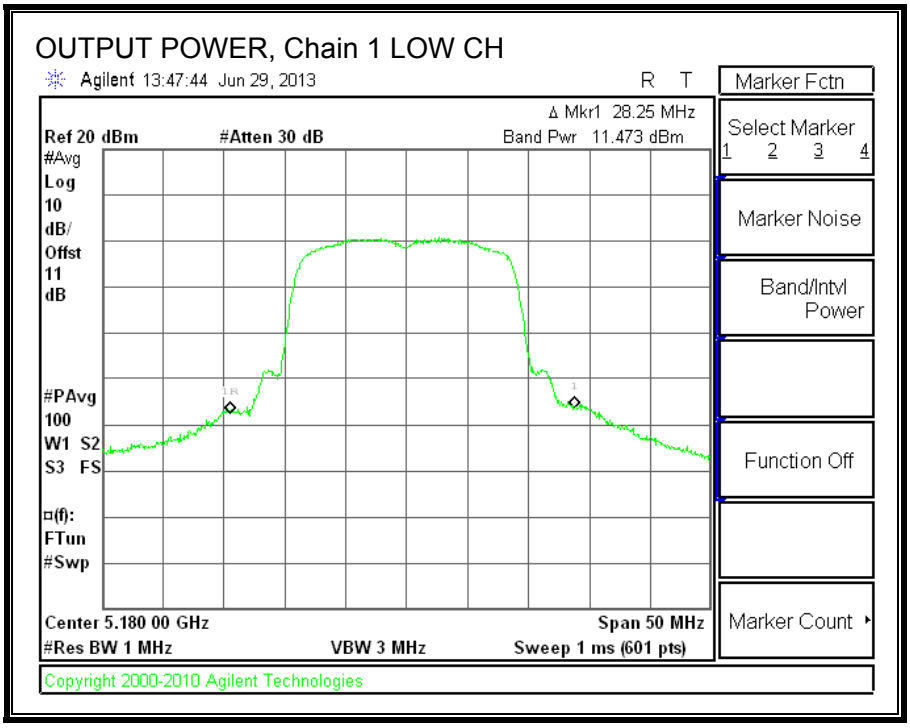


OUTPUT POWER AND PPSD, Chain 1



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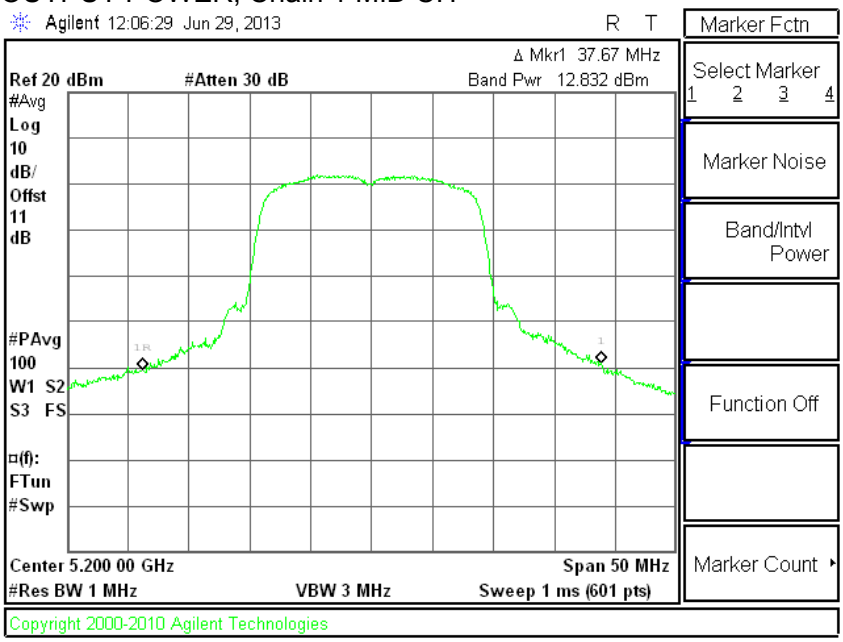
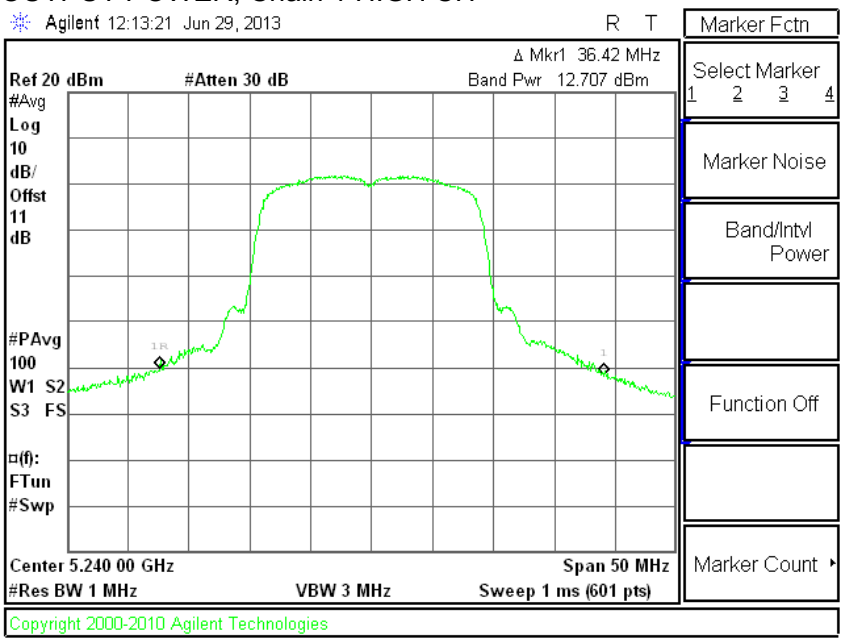
OUTPUT POWER, Chain 1 MID CH



OUTPUT POWER, Chain 1 HIGH CH



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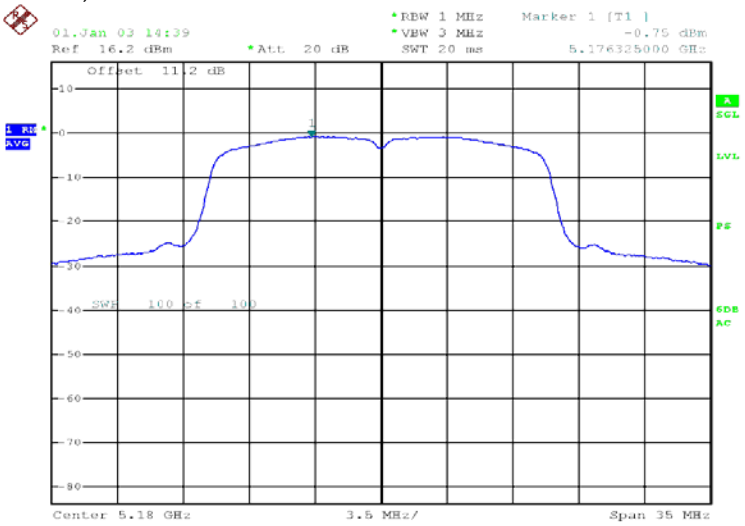
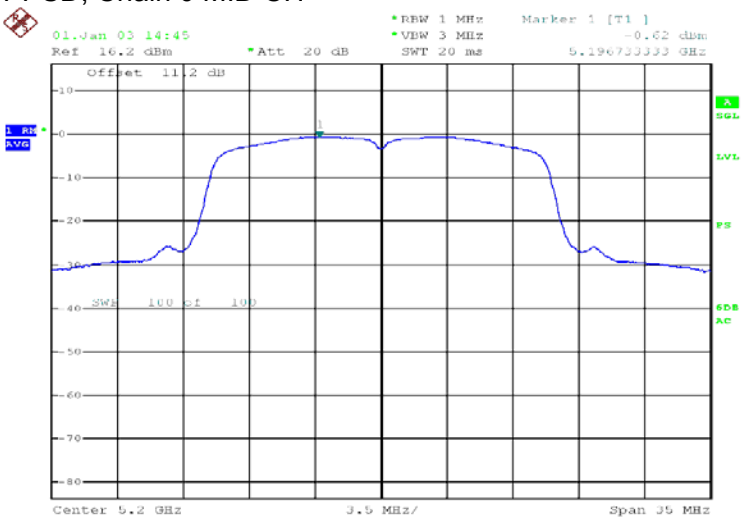
PPSD, Chain 0

PPSD, Chain 0 LOW CH



PPSD, Chain 0 MID CH



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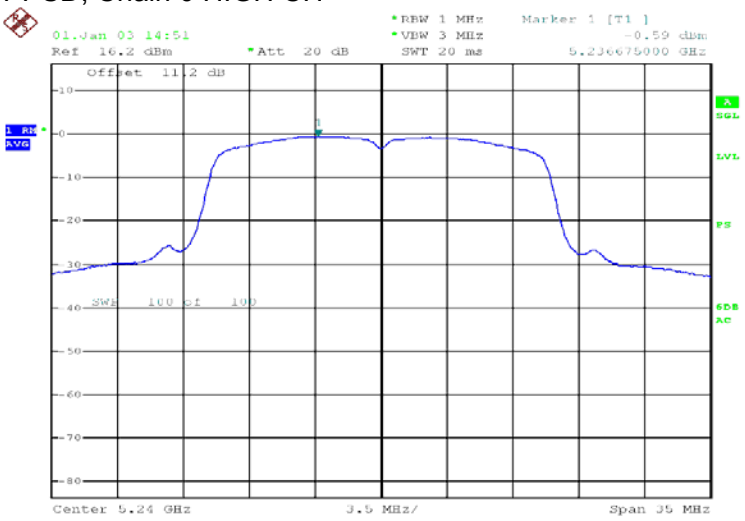
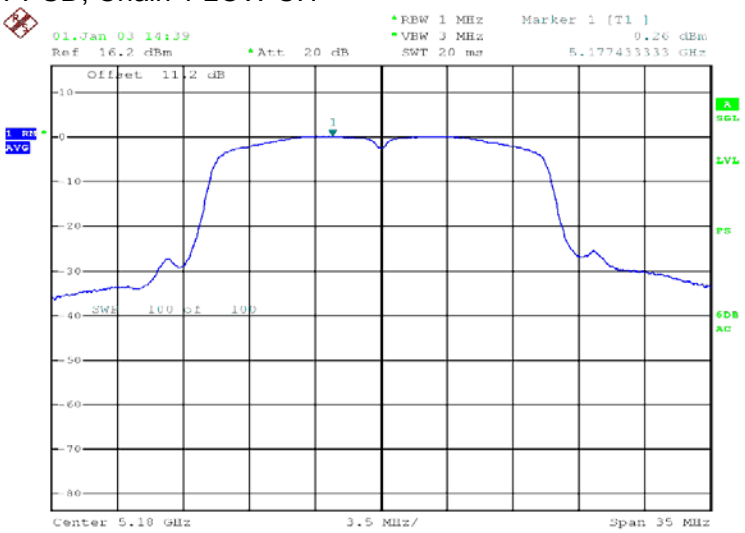
PPSD, Chain 0 HIGH CH



Date: 1.JAN.2003 14:51:48

OUTPUT POWER AND PPSD, Chain 1

PPSD, Chain 1 LOW CH



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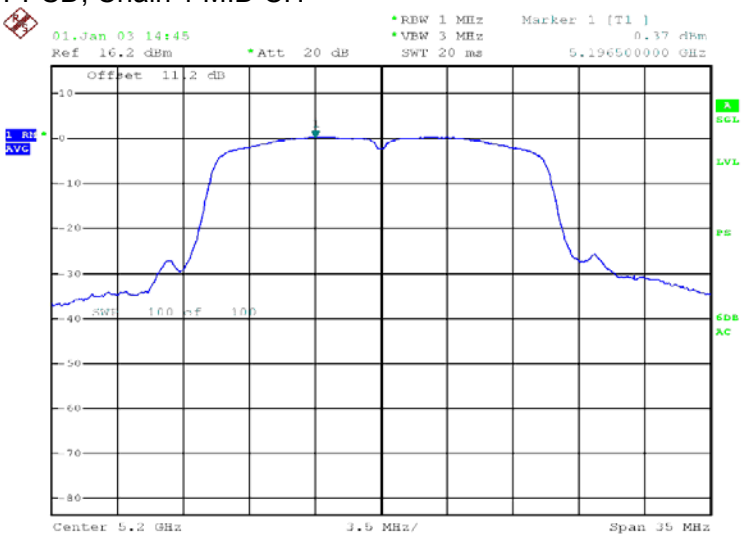
PPSD, Chain 1 MID CH



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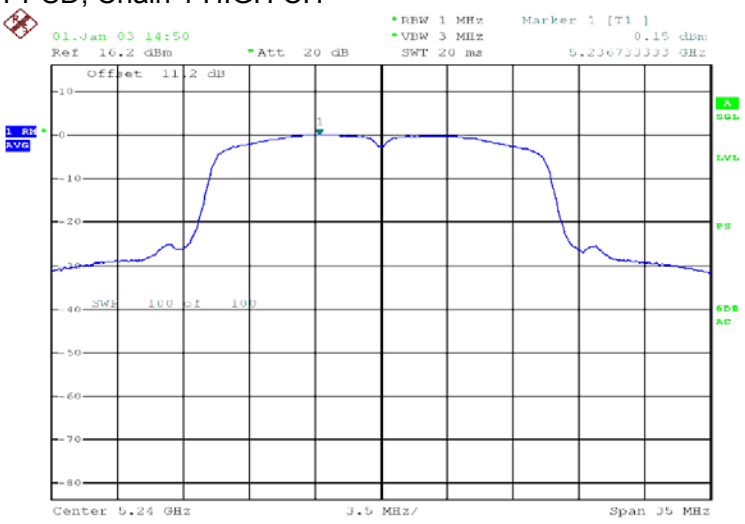
PPSD, Chain 1 HIGH CH



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8.1.5. PEAK EXCURSION

LIMITS

FCC §15.407 (a) (6)

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

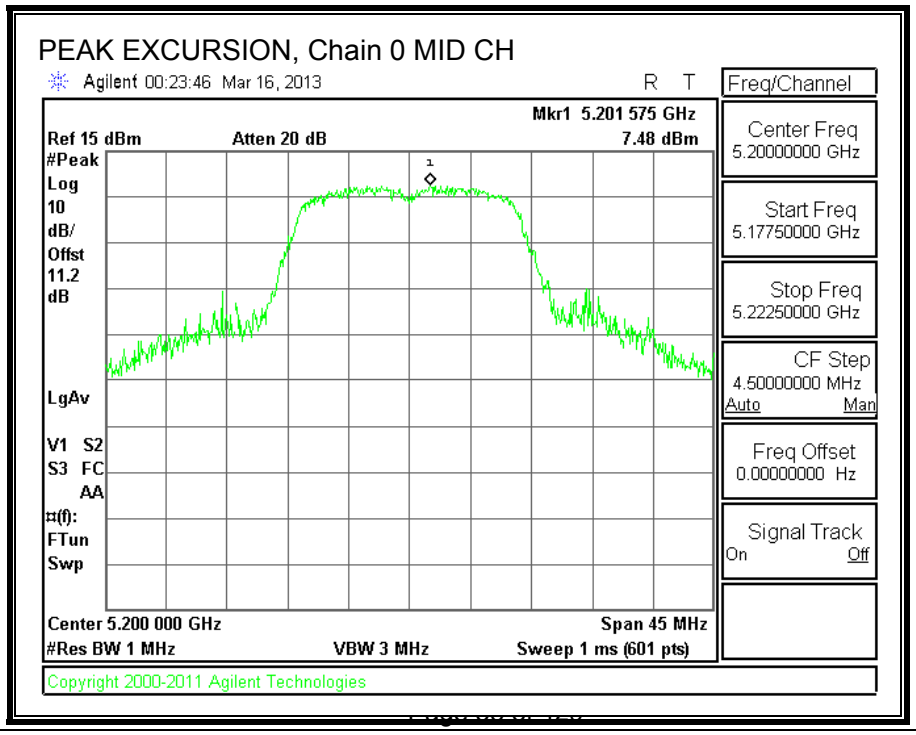
RESULTS

Channel	Frequency (MHz)	PK Level (dBm)	PSD (dBm)	DCCF (dB)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Mid	5200	7.48	-0.62	0.00	8.10	13	-4.90

Chain 1

Channel	Frequency (MHz)	PK Level (dBm)	PSD (dBm)	DCCF (dB)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Mid	5200	9.42	0.37	0.00	9.05	13	-3.95

PEAK EXCURSION, Chain 0



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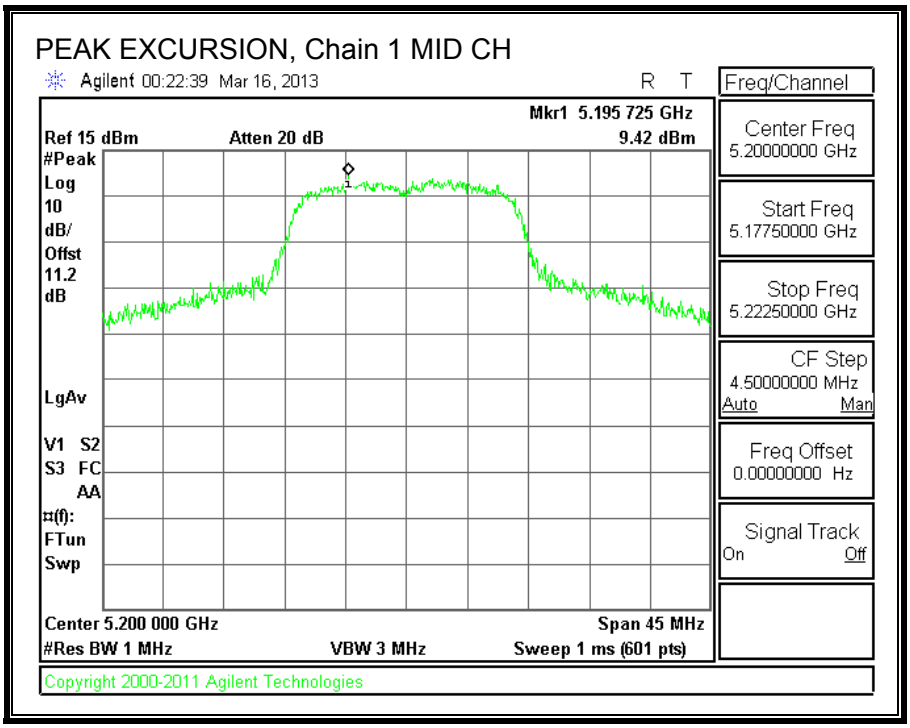
PEAK EXCURSION, Chain 1



8.2. 802.11n HT20 CDD MCS0 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	35.42	25.75
Mid	5200	20.42	35.67
High	5240	29.42	26.50

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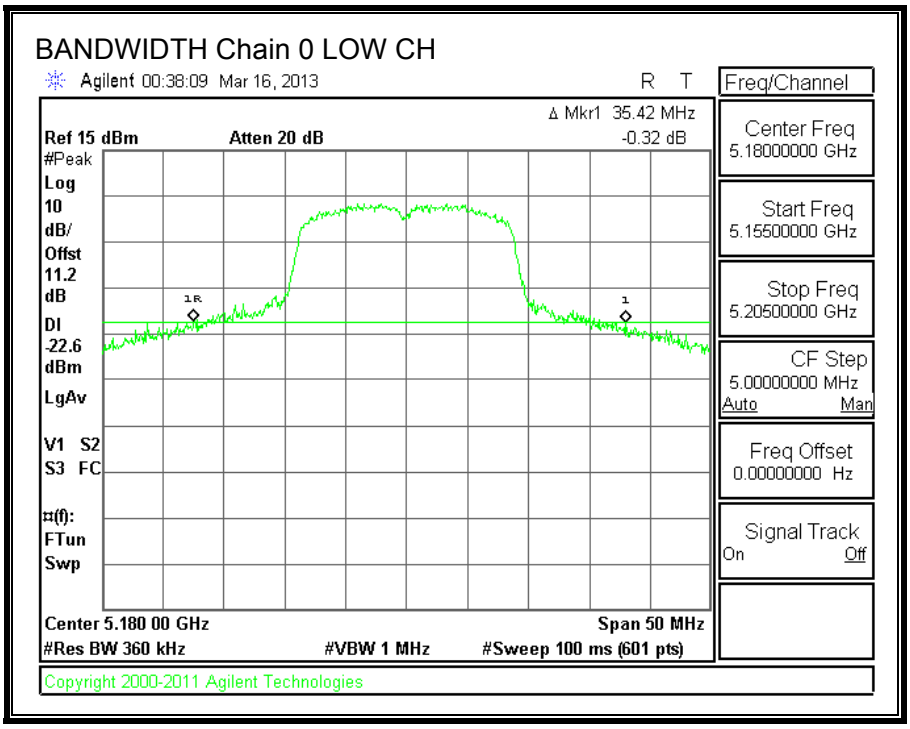
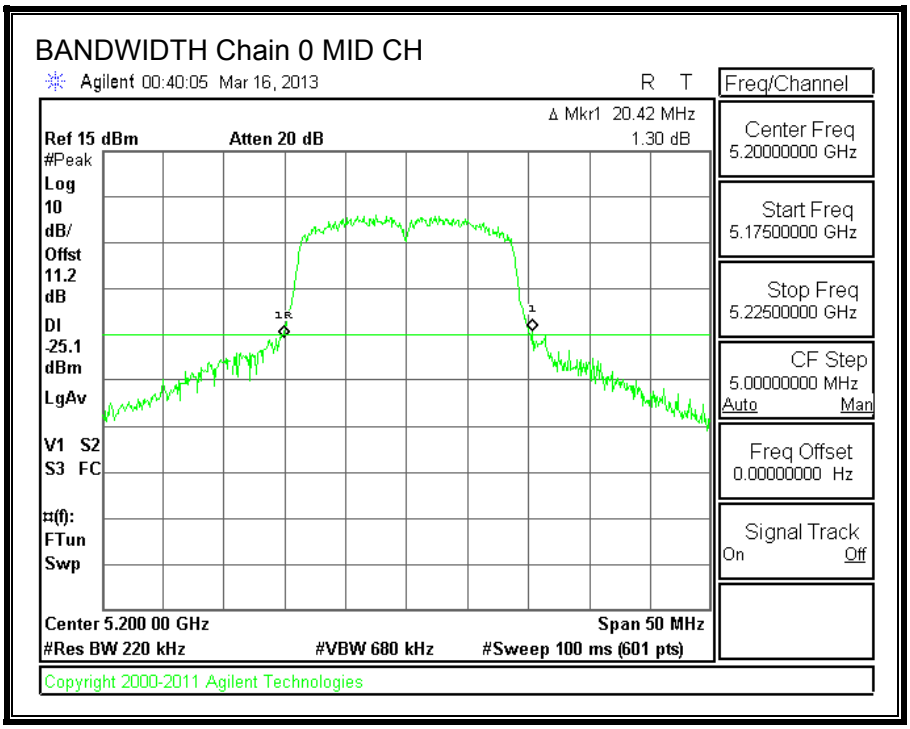
26 dB BANDWIDTH, Chain 0





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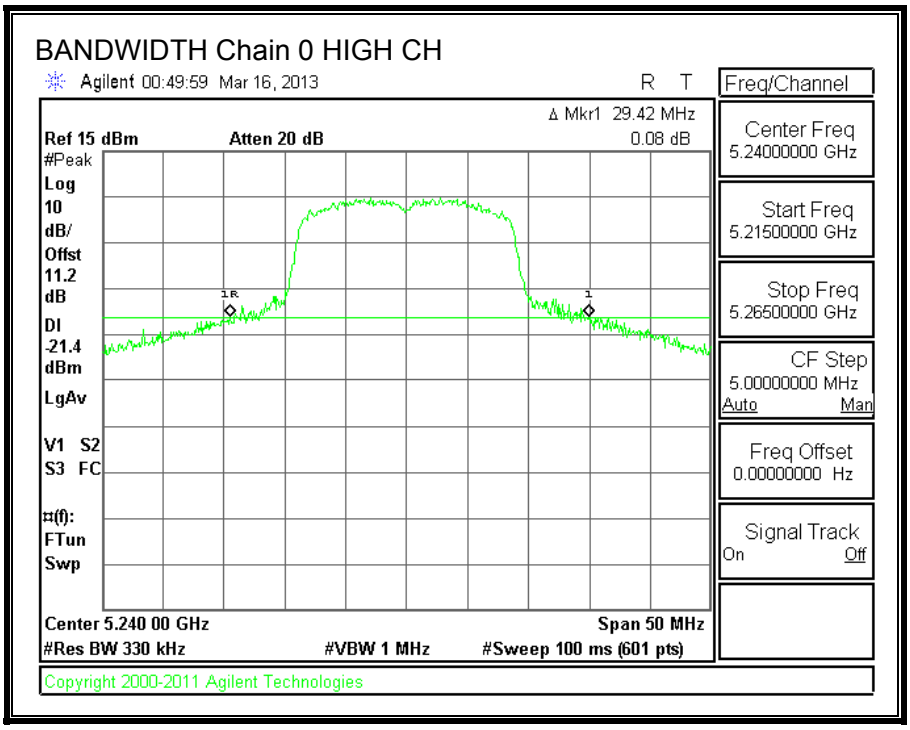
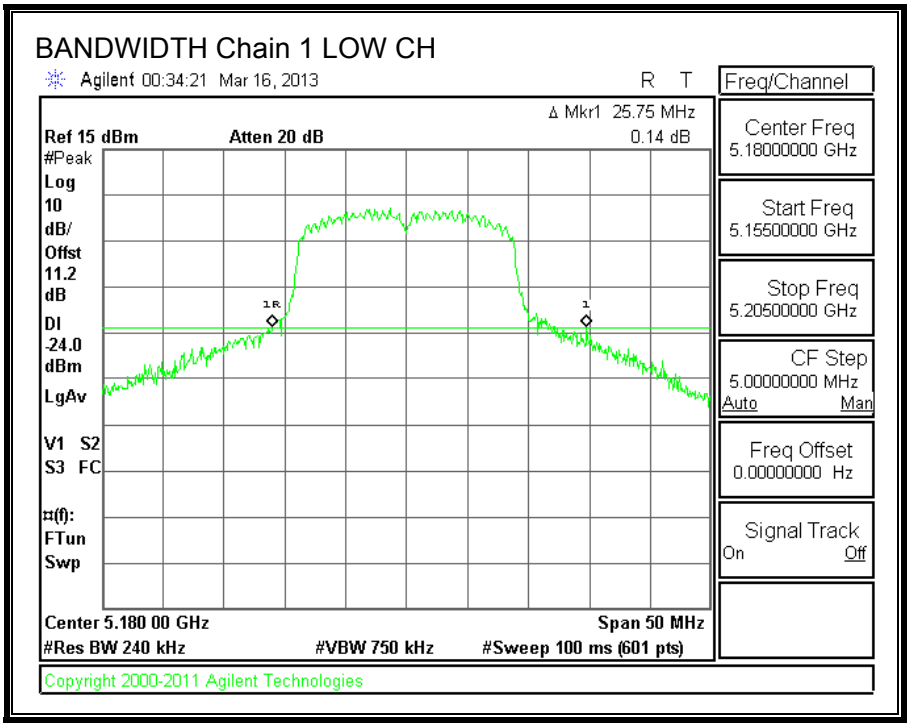


26 dB BANDWIDTH, Chain 1



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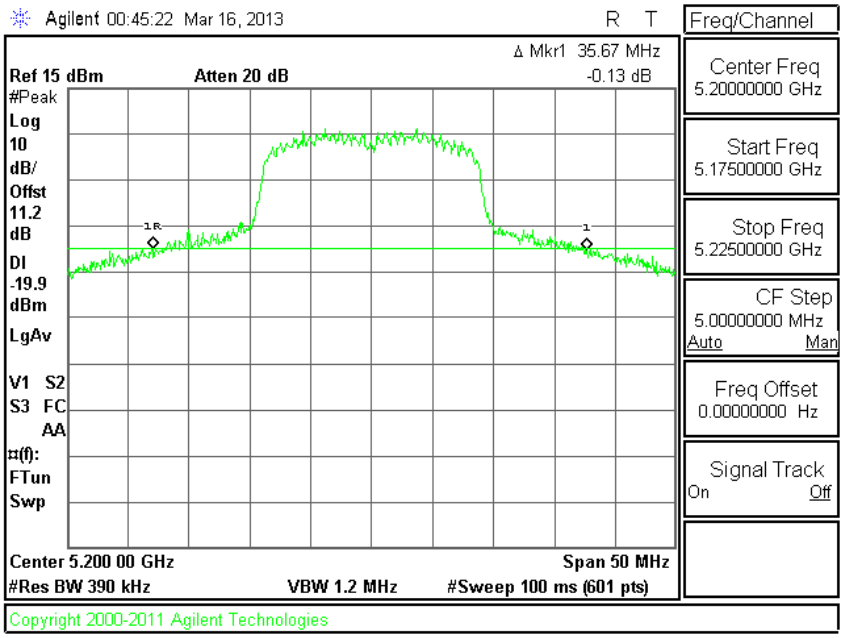
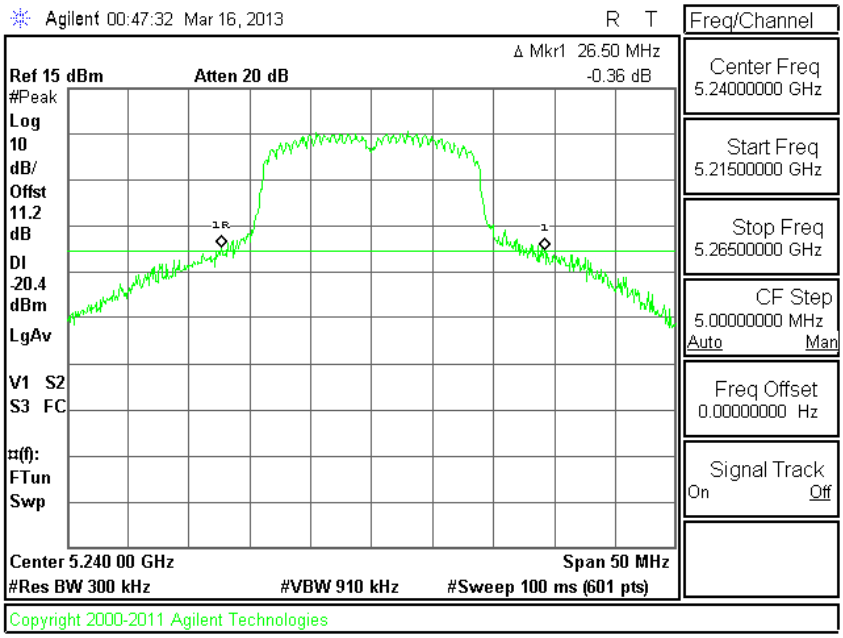
BANDWIDTH Chain 1 MID CH



BANDWIDTH Chain 1 HIGH CH



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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	17.4839	17.4083
Mid	5200	17.4069	17.5460
High	5240	17.4564	17.4285

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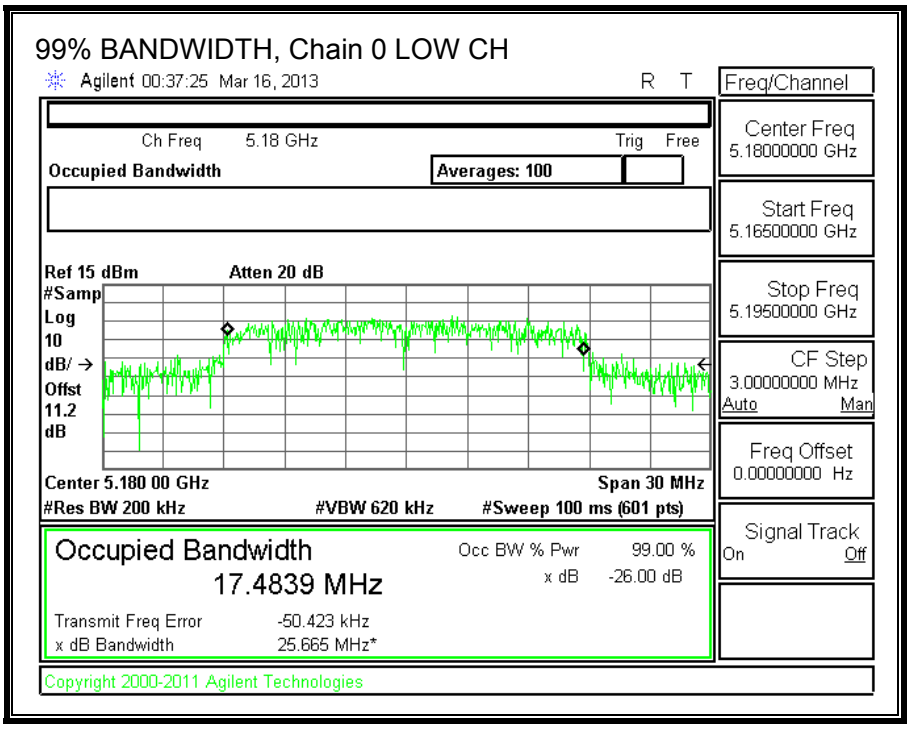
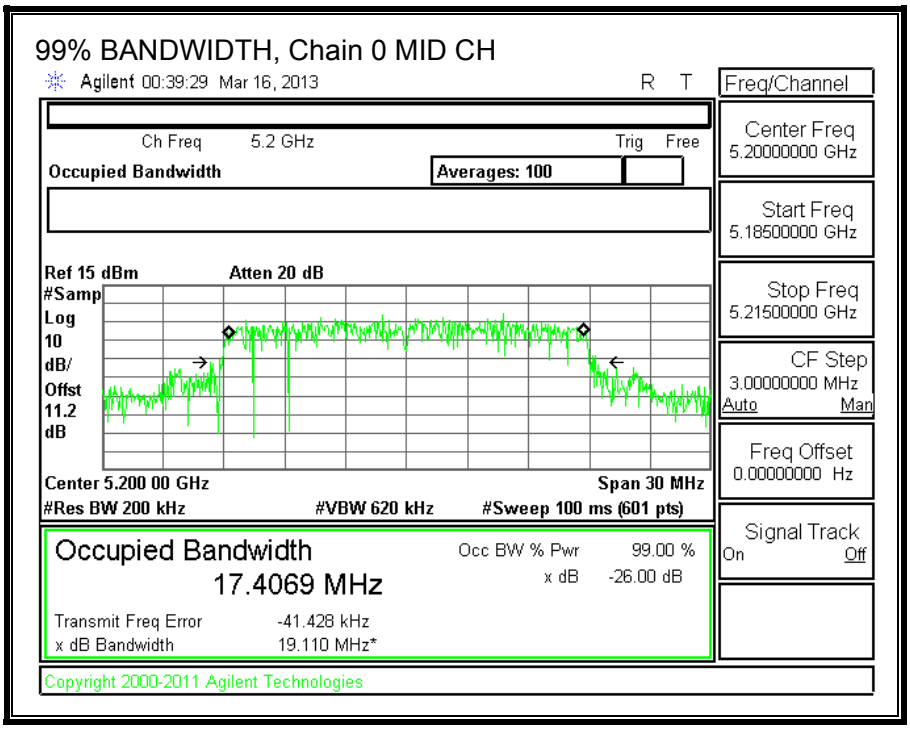
99% BANDWIDTH, Chain 0





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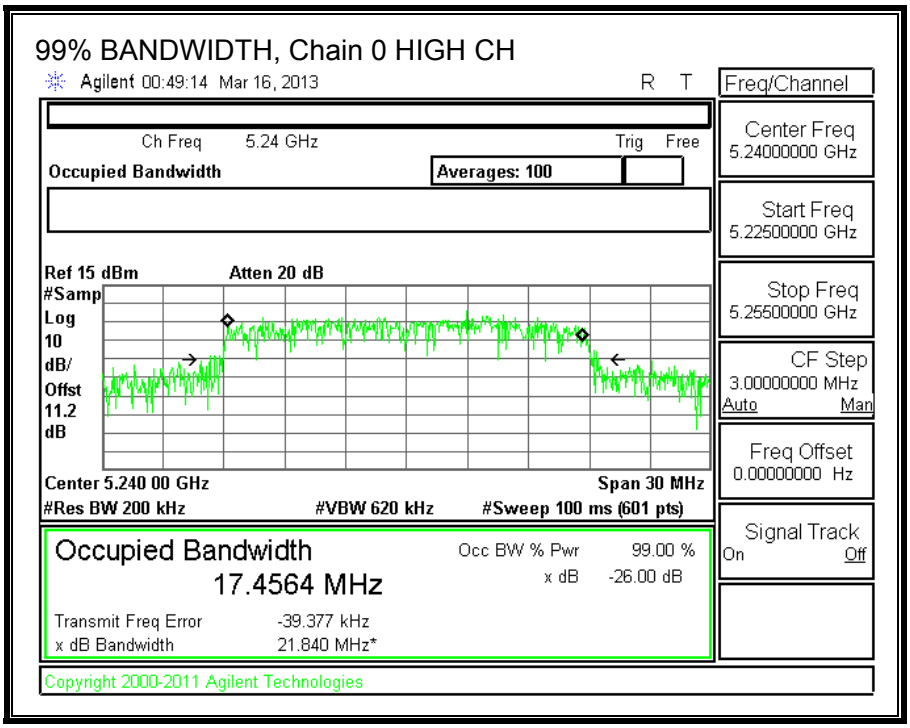
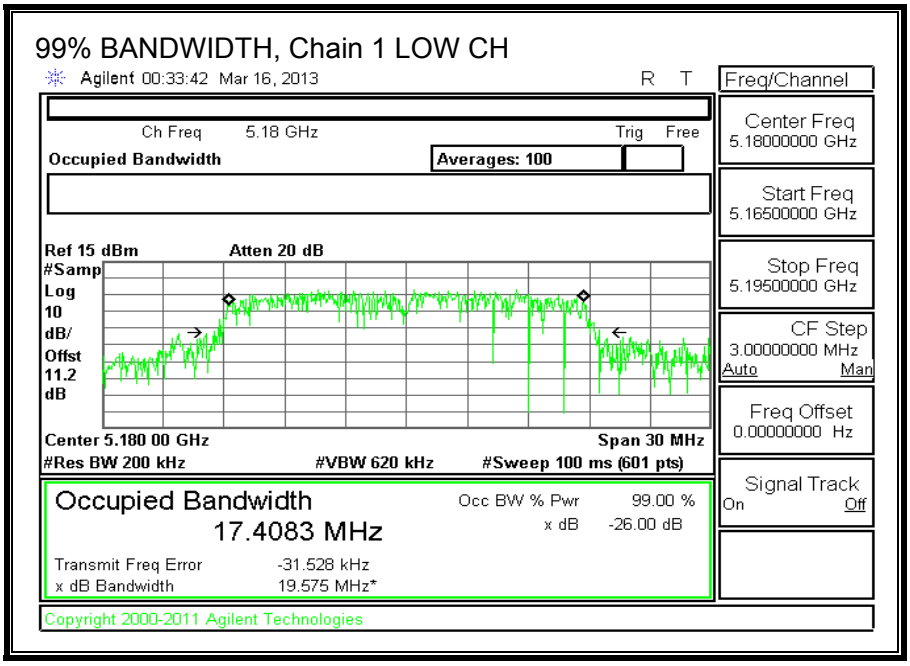


99% BANDWIDTH, Chain 1



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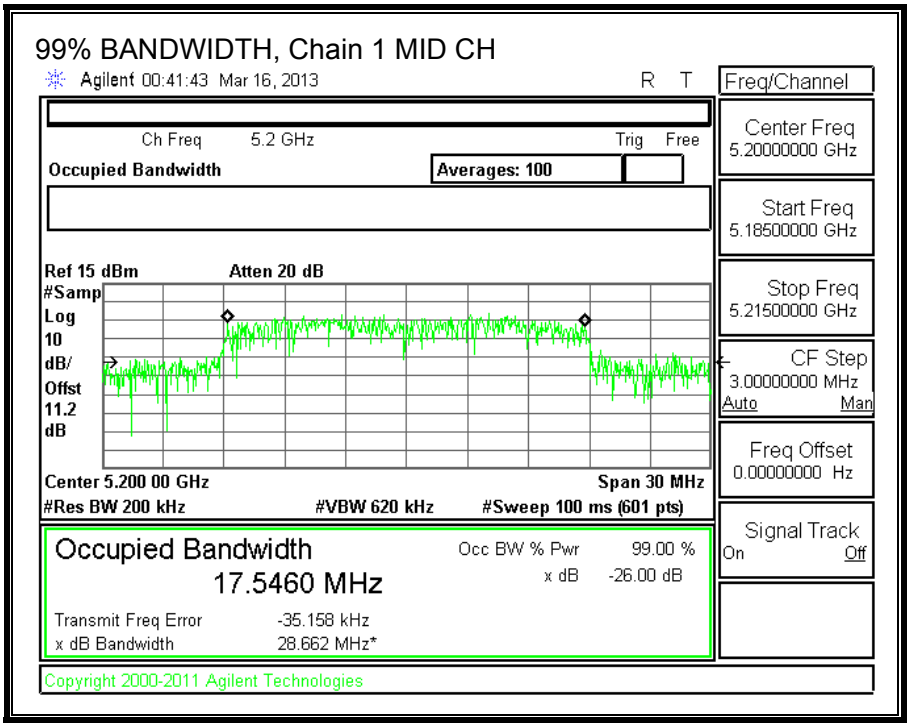

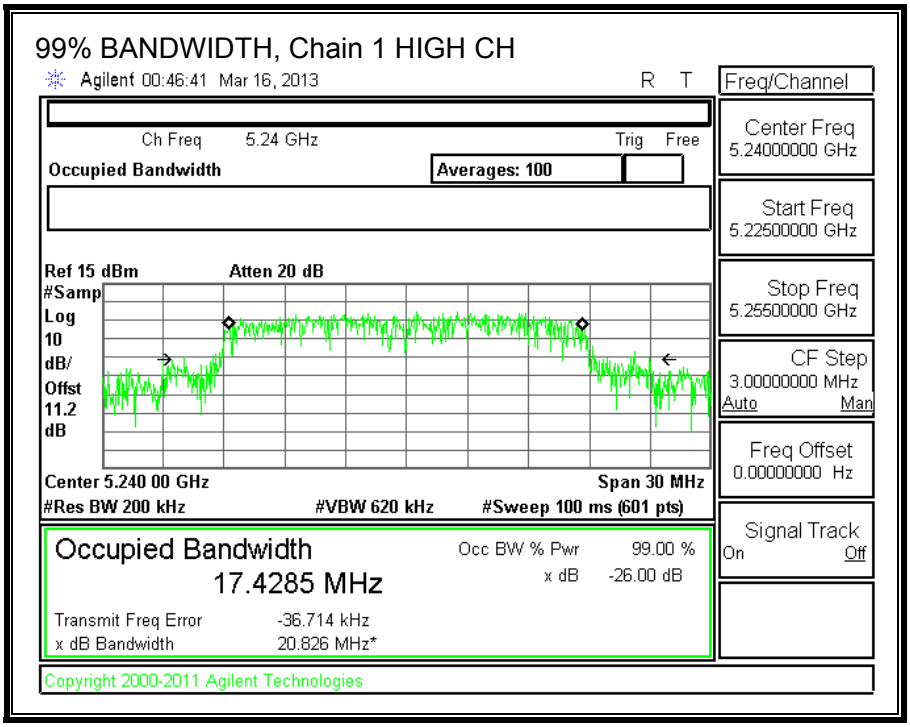

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8.2.1. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Average Power Results

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Total Power (dBm)
Low	5180	12.01	12.81	15.44
Mid	5200	12.03	12.89	15.49
High	5240	12.16	12.89	15.55

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8.2.2. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (1)

For the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 4 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

The maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

DIRECTIONAL ANTENNA GAIN

For output power, the TX chains are uncorrelated and the antenna gain is equal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
4.00	4.00	4.00

For PPSD, the TX chains are correlated and the antenna gain is equal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
4.00	4.00	7.01

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Uncorrelated Directional Gain (dBi)	Correlated Directional Gain (dBi)
Low	5180	25.75	17.4083	4.00	7.01
Mid	5200	20.42	17.4069	4.00	7.01
High	5240	26.50	17.4285	4.00	7.01

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC EIRP Limit (dBm)	Max IC Power (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC eirp PSD Limit (dBm)	PPSD Limit (dBm)
Low	5180	17.00	22.41	18.41	17.00	2.99	10.00	2.99
Mid	5200	17.00	22.41	18.41	17.00	2.99	10.00	2.99
High	5240	17.00	22.41	18.41	17.00	2.99	10.00	2.99

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power & PPSD

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	11.572	11.796	14.70	17.00	-2.30
Mid	5200	10.684	12.271	14.56	17.00	-2.44
High	5240	11.354	13.044	15.29	17.00	-1.71

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5180	-1.29	-0.06	2.38	2.99	-0.61
Mid	5200	-1.11	0.00	2.49	2.99	-0.50
High	5240	-1.15	0.06	2.51	2.99	-0.48

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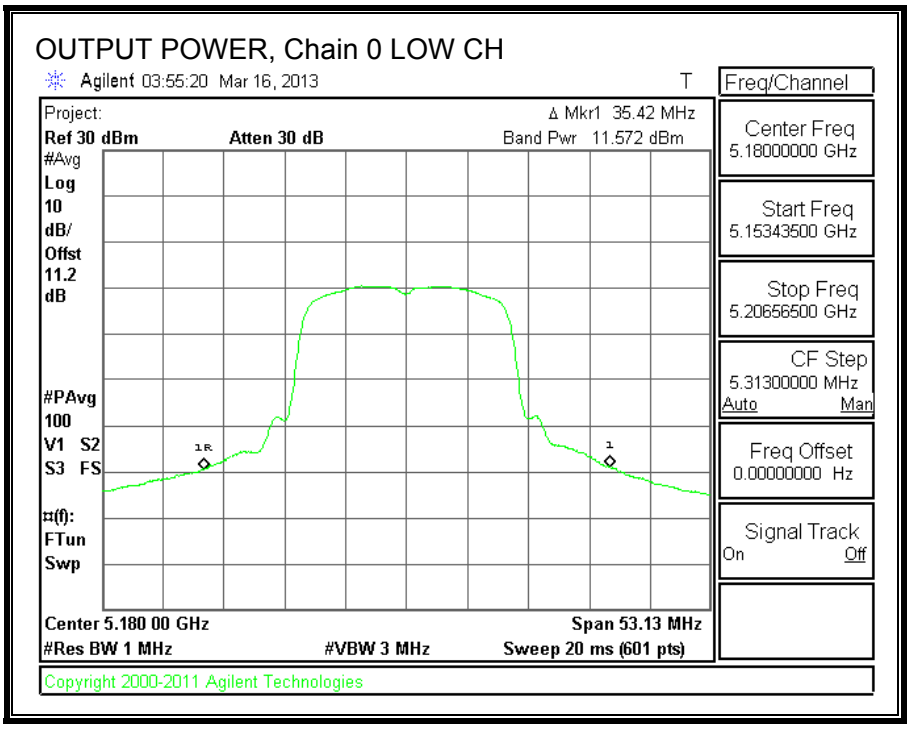
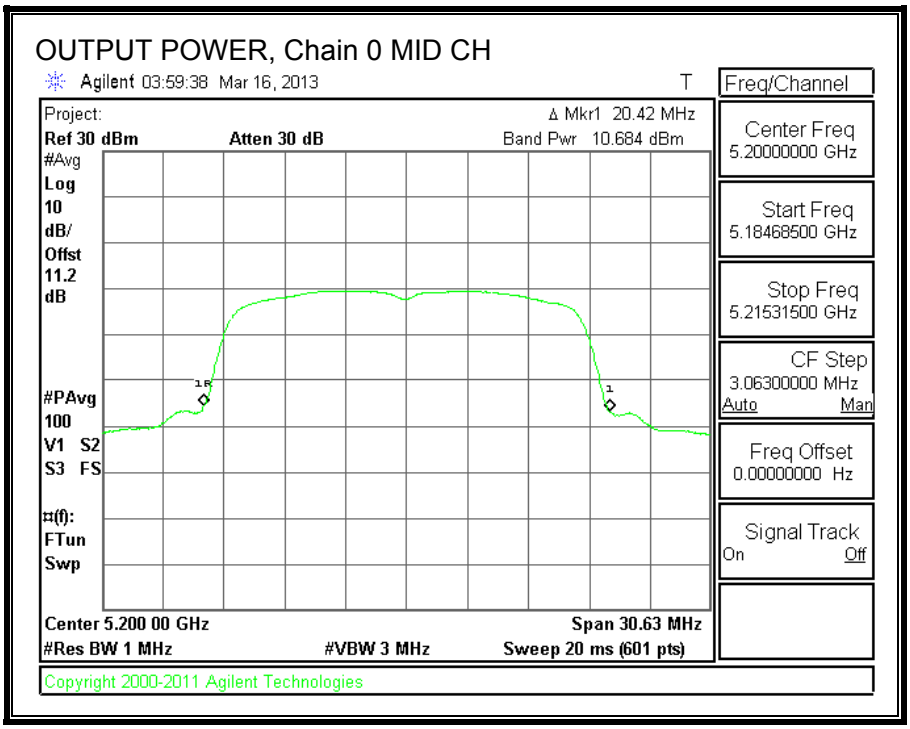
OUTPUT POWER, Chain 0





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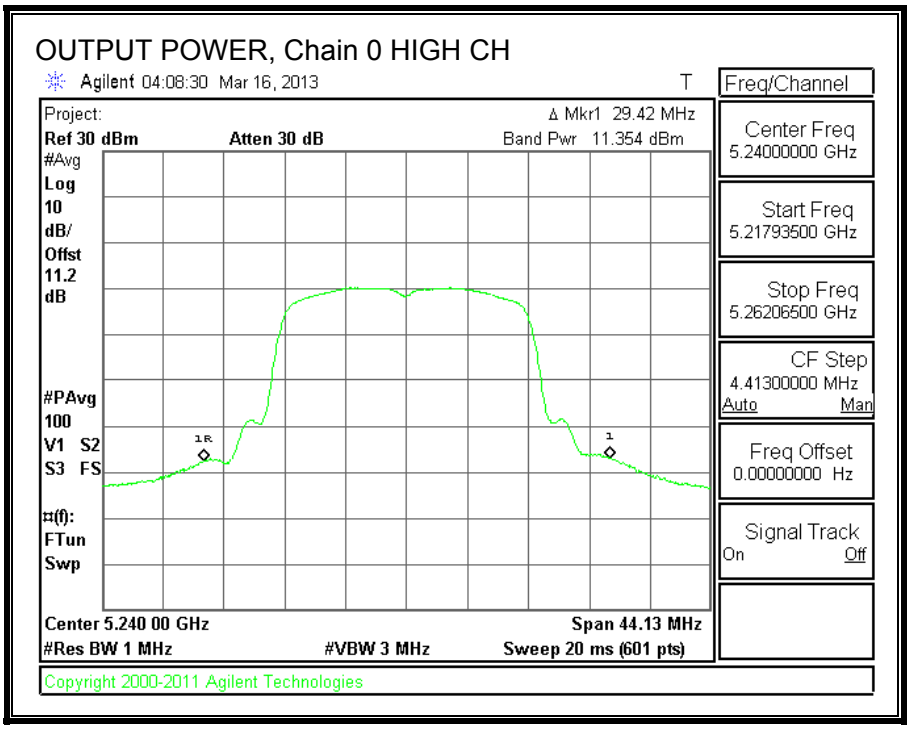
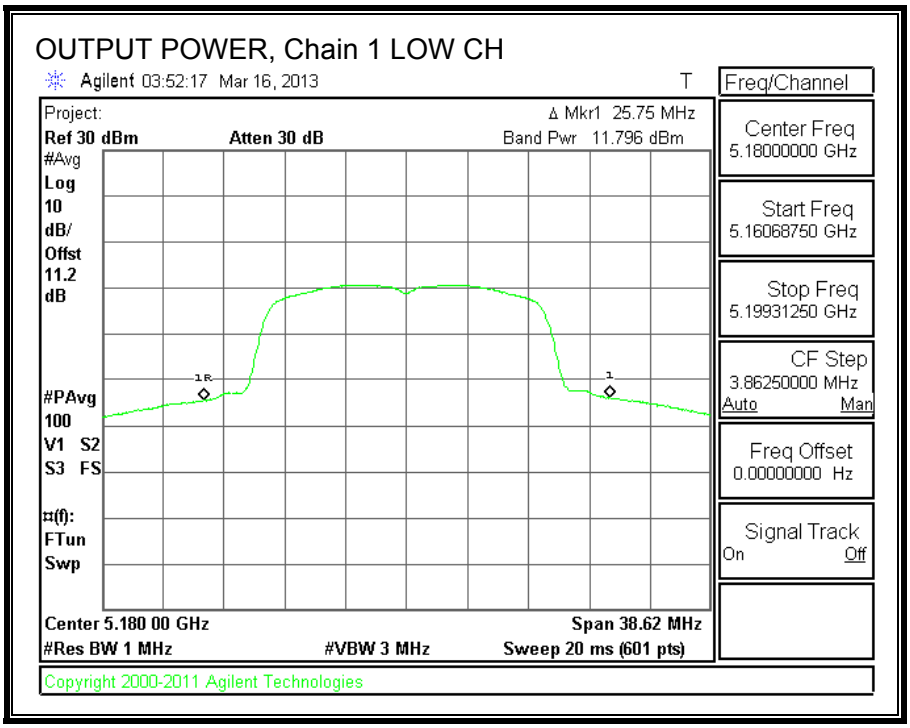


OUTPUT POWER AND PPSD, Chain 1



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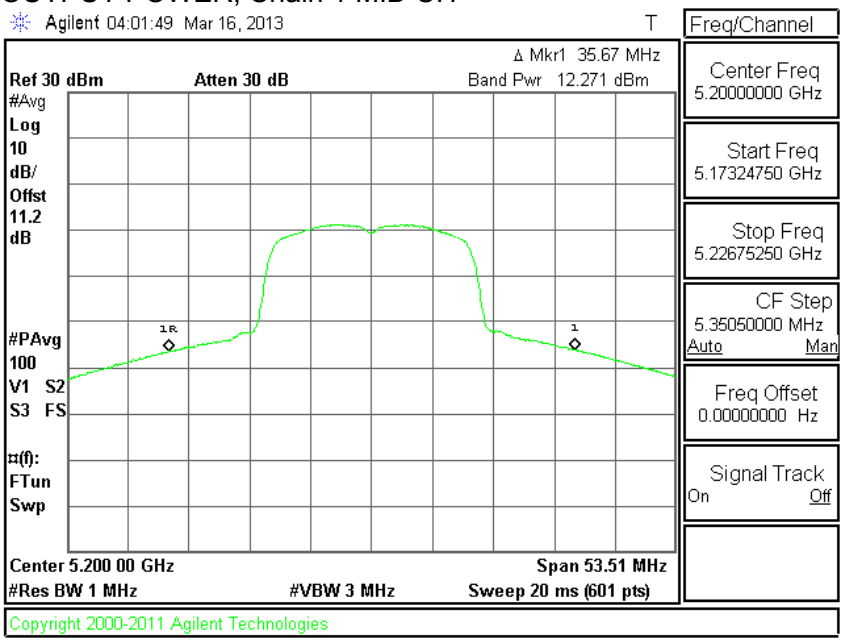
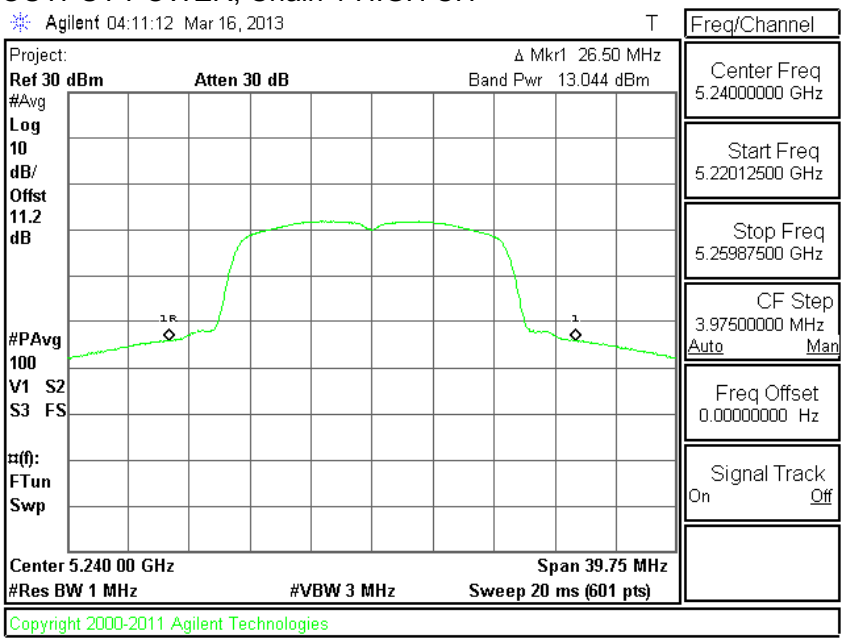
OUTPUT POWER, Chain 1 MID CH



OUTPUT POWER, Chain 1 HIGH CH



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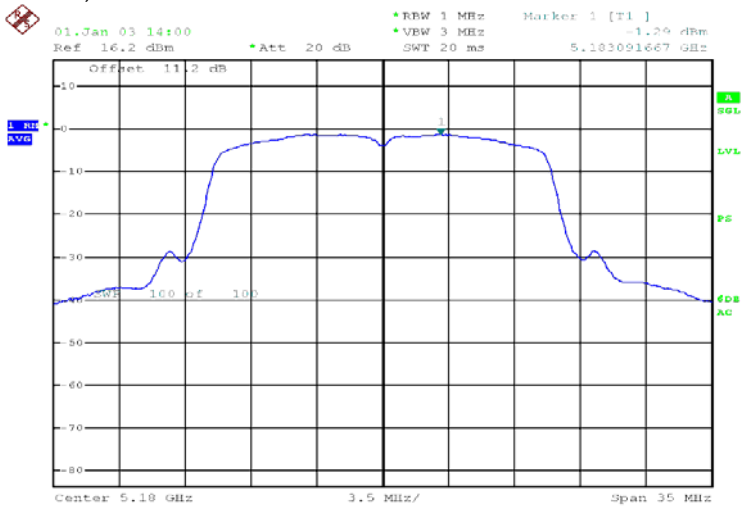
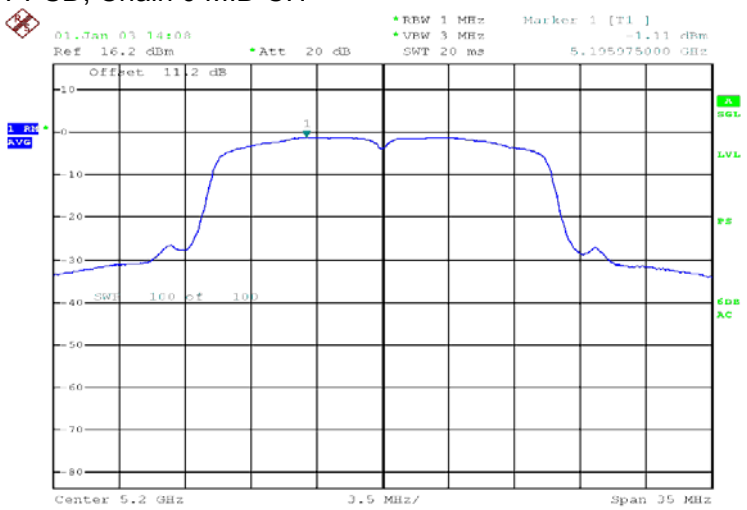
PPSD, Chain 0

PPSD, Chain 0 LOW CH



Date: 1.JAN.2003 14:00:57

PPSD, Chain 0 MID CH



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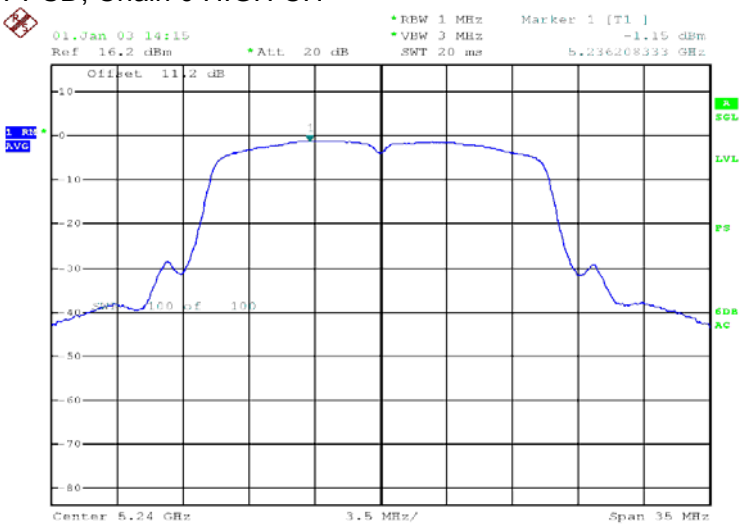
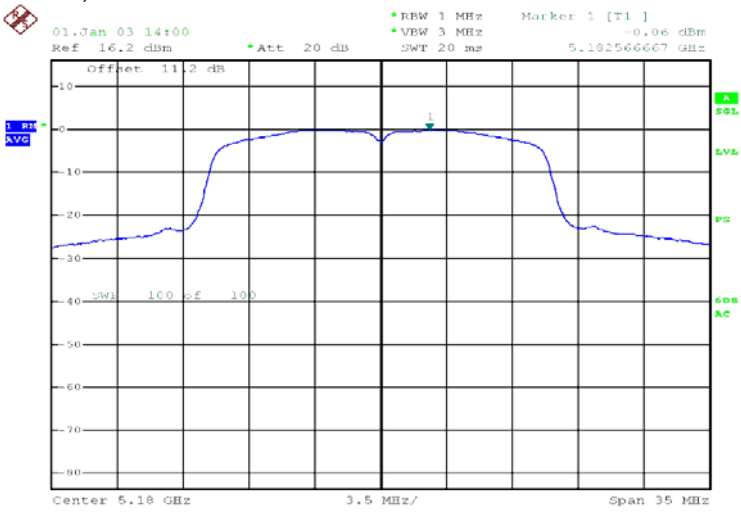
PPSD, Chain 0 HIGH CH



Date: 1.JAN.2003 14:15:40

OUTPUT POWER AND PPSD, Chain 1

PPSD, Chain 1 LOW CH



Date: 1.JAN.2003 14:00:32

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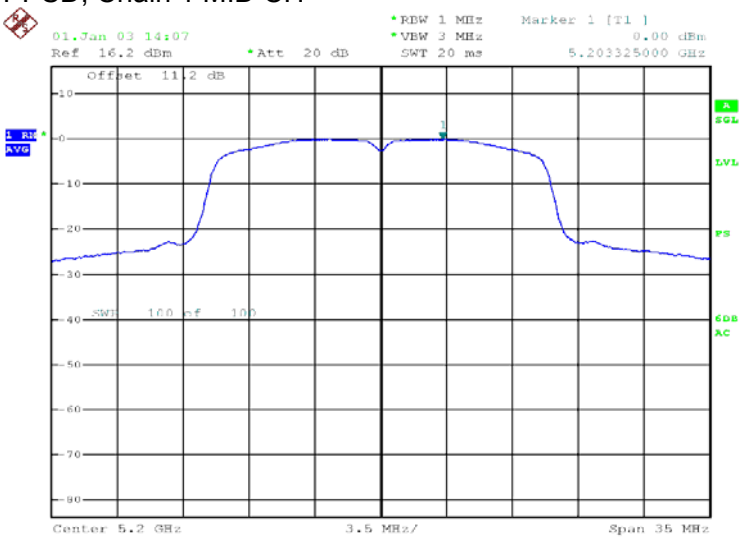
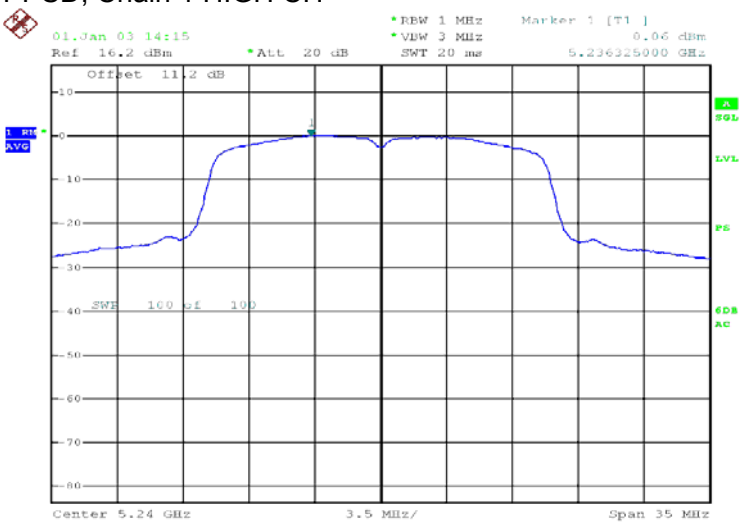
PPSD, Chain 1 MID CH



Date: 1.JAN.2003 14:07:36

PPSD, Chain 1 HIGH CH



Date: 1.JAN.2003 14:15:12

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8.2.1. PEAK EXCURSION

LIMITS

FCC §15.407 (a) (6)

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

RESULTS

Chain 0

Channel	Frequency (MHz)	PK Level (dBm)	PSD (dBm)	DCCF (dB)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Mid	5200	8.85	-1.11	0.00	9.96	13	-3.04

Chain 1

Channel	Frequency (MHz)	PK Level (dBm)	PSD (dBm)	DCCF (dB)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Mid	5200	10.91	0.00	0.00	10.91	13	-2.09

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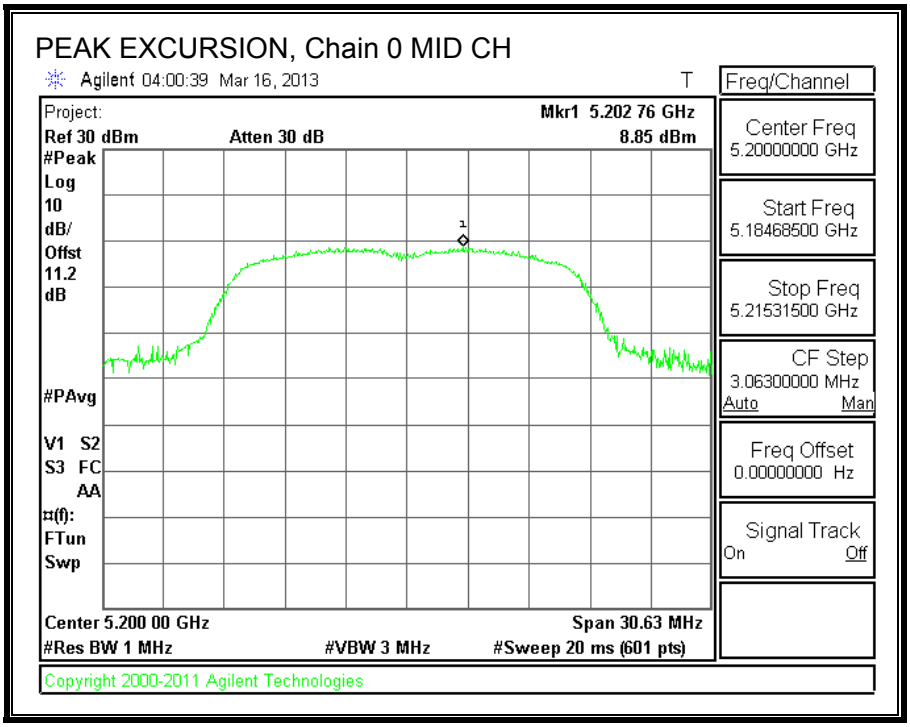
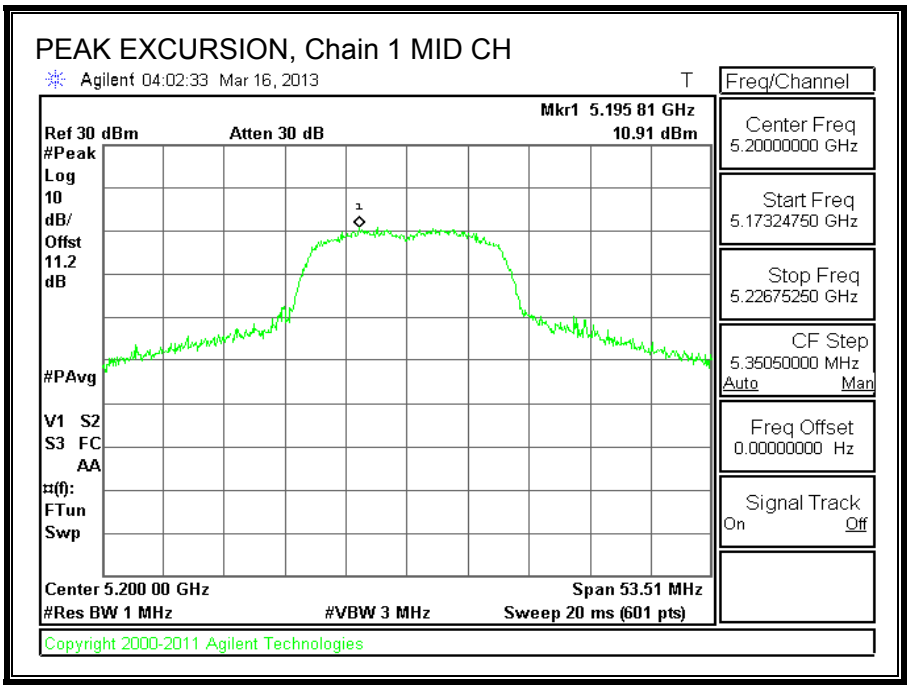
PEAK EXCURSION, Chain 0



PEAK EXCURSION, Chain 1



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8.3. 802.11n HT20 SDM MCS8 2TX MODE IN THE 5.2 GHz BAND

8.3.1. 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	35.25	28.92
Mid	5200	36.67	22.58
High	5240	31.17	24.08

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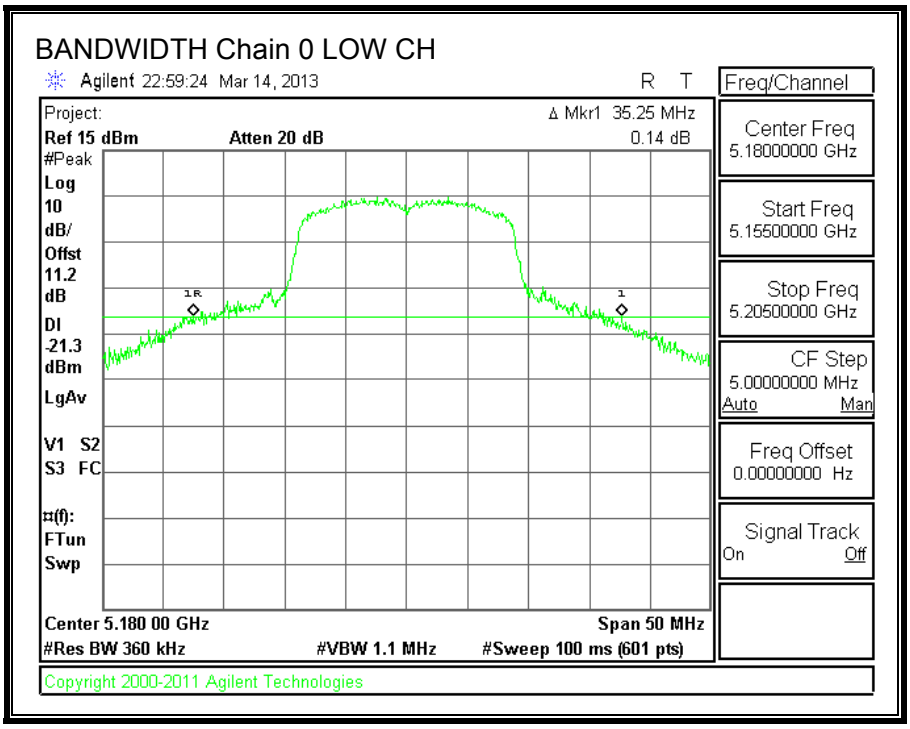
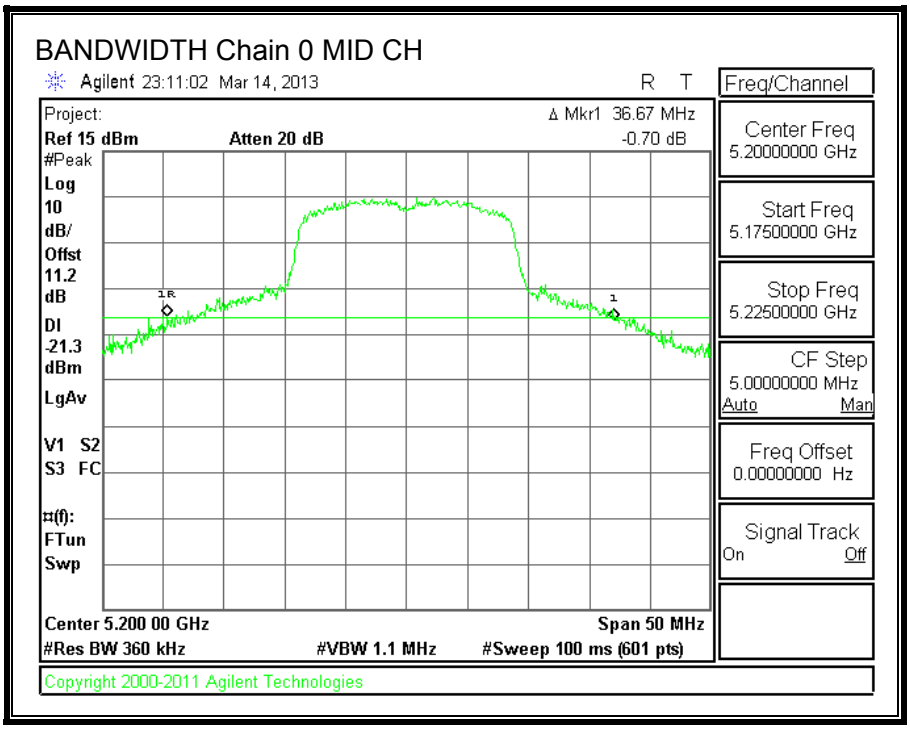
26 dB BANDWIDTH, Chain 0





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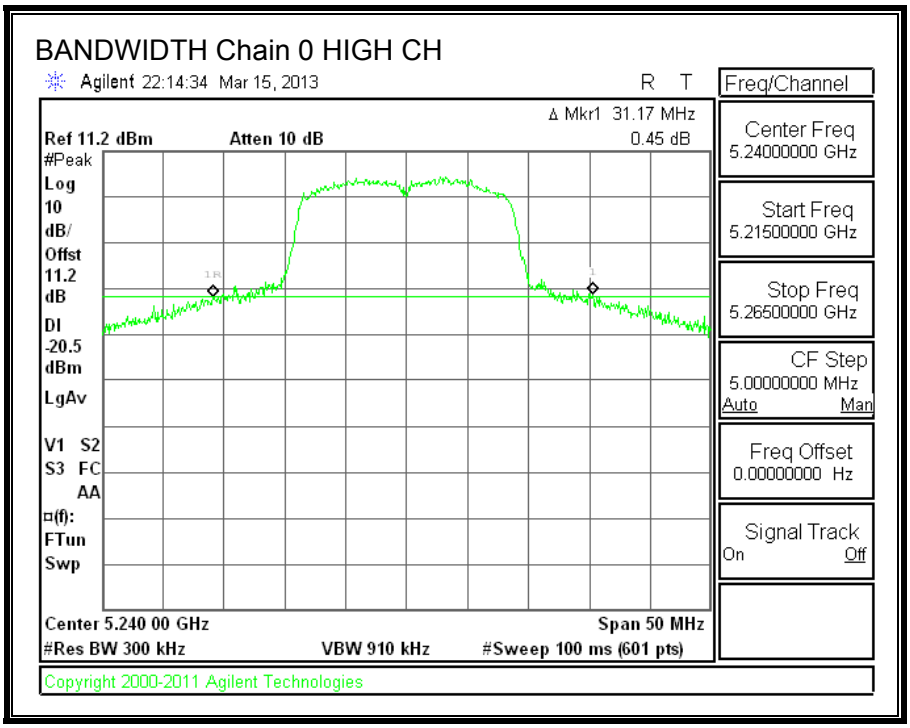
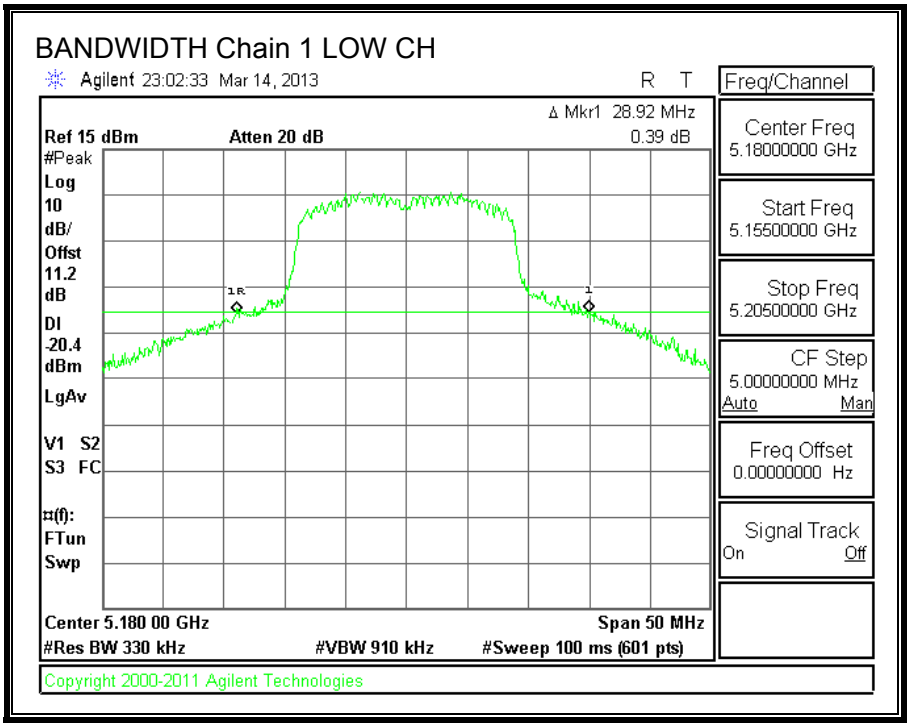


26 dB BANDWIDTH, Chain 1



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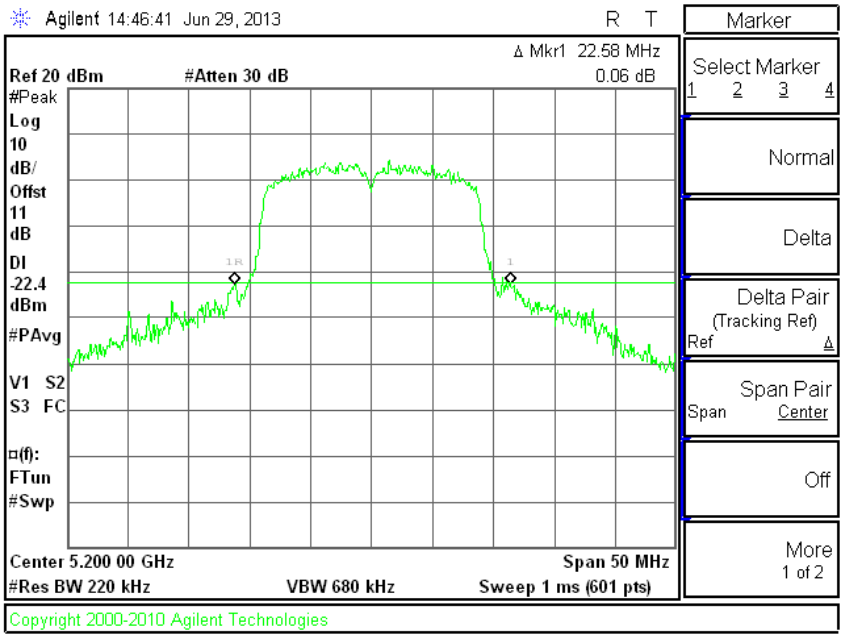
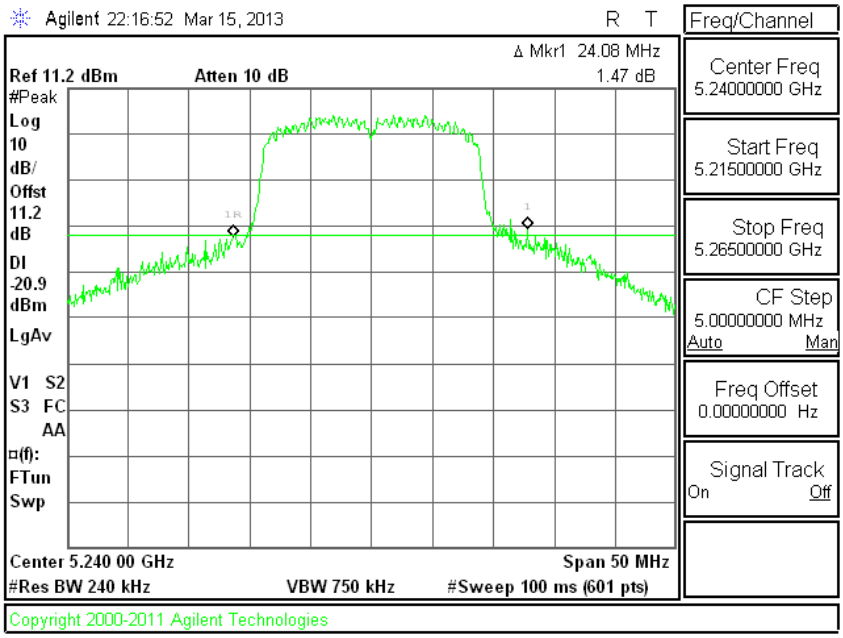
BANDWIDTH Chain 1 MID CH



BANDWIDTH Chain 1 HIGH CH



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8.3.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	5180	17.5000	17.4836
Mid	5200	17.5928	17.4025
High	5240	17.4004	17.4057

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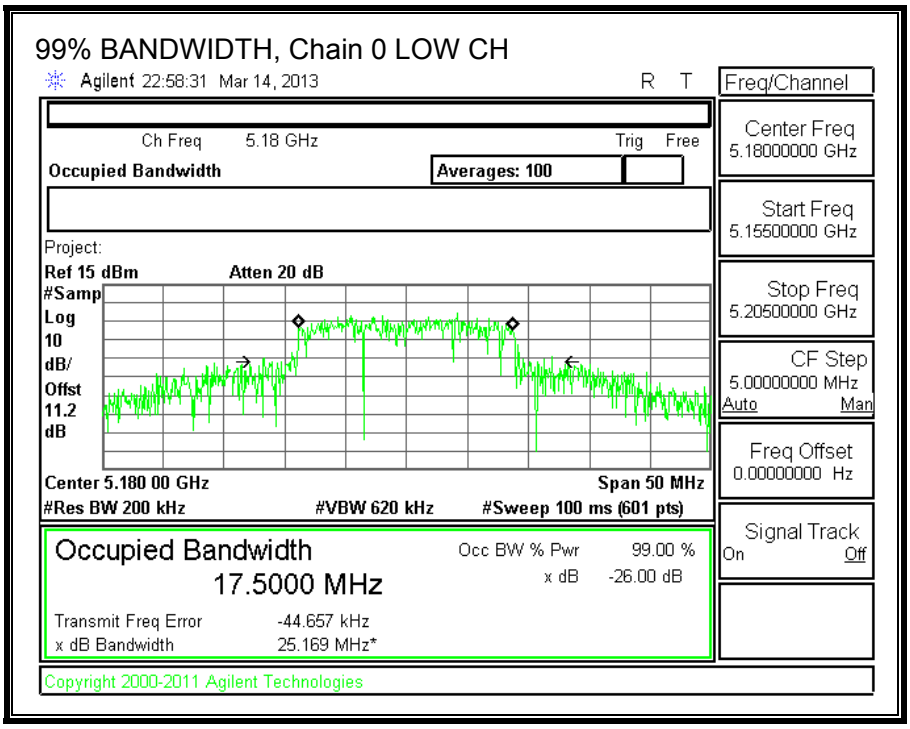
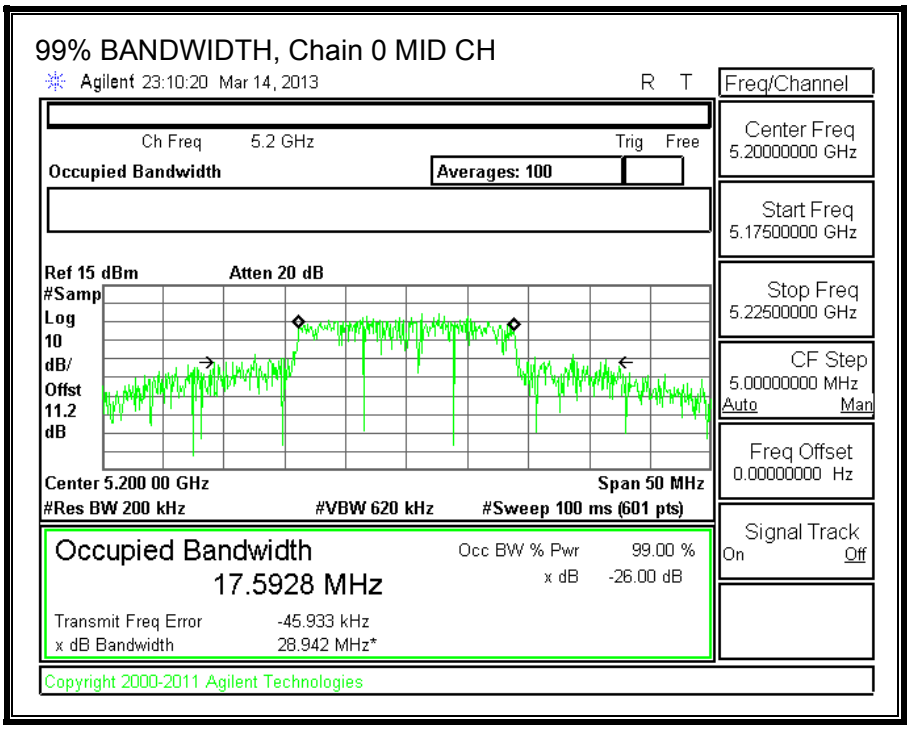
99% BANDWIDTH, Chain 0





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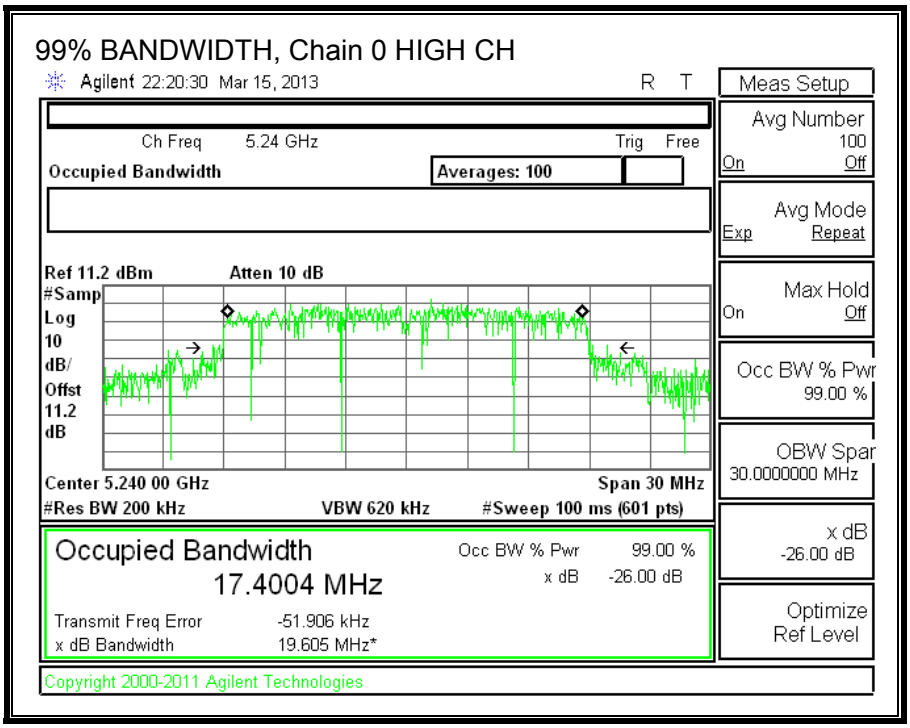
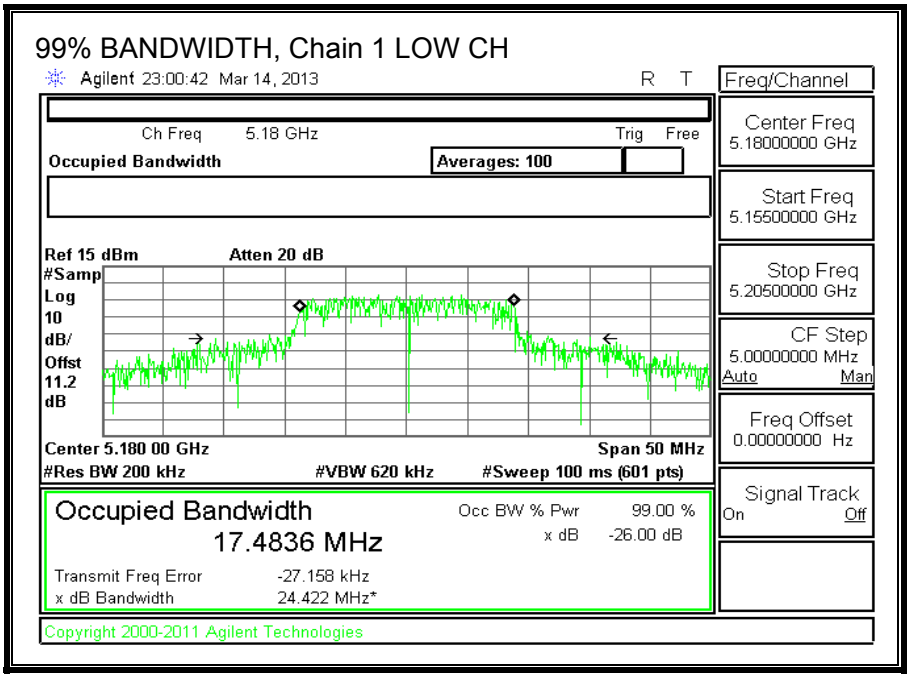


99% BANDWIDTH, Chain 1



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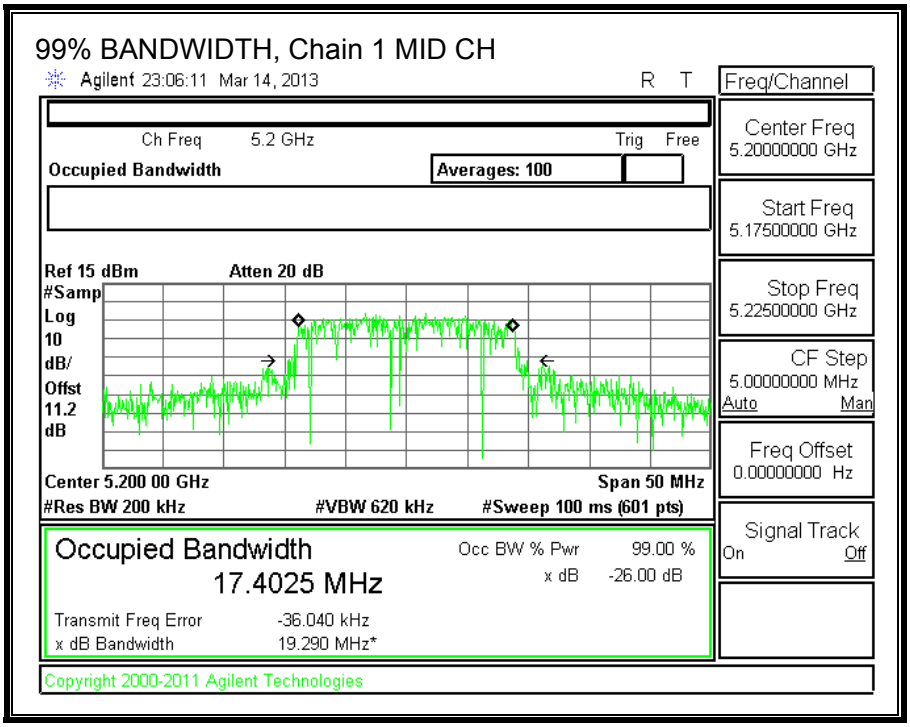

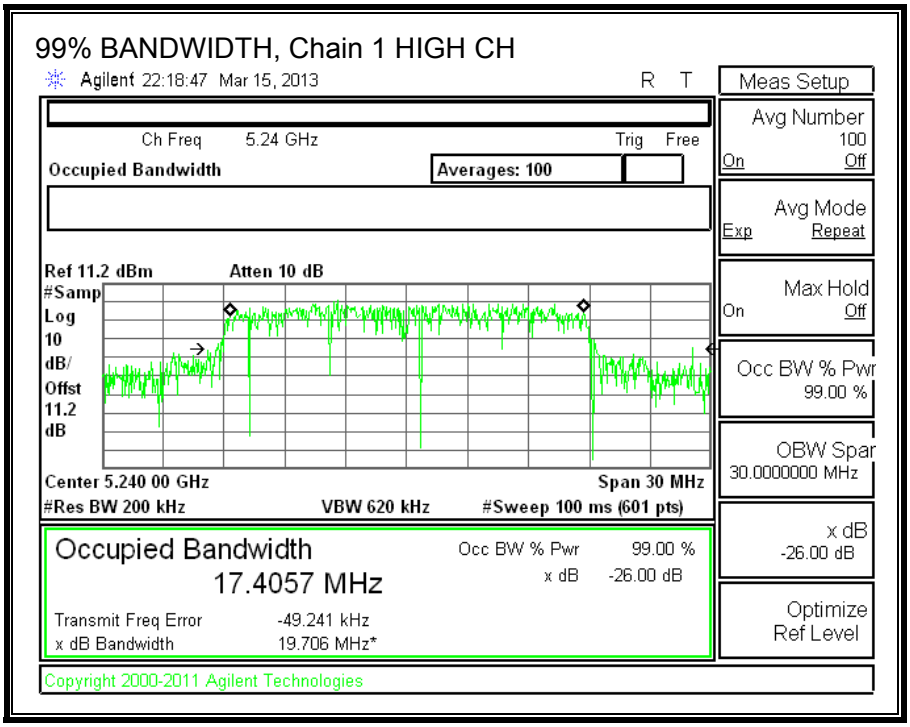

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8.3.1. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Average Power Results

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Total Power (dBm)
Low	5180	12.00	12.60	15.32
Mid	5200	12.10	12.70	15.42
High	5240	12.00	12.70	15.37

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8.3.2. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (1)

For the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 4 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

The maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
Low	5180	28.92	17.4826	4.00
Mid	5200	25.83	17.4025	4.00
High	5240	24.08	17.4004	4.00

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC EIRP Limit (dBm)	Max IC Power (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC eirp PSD Limit (dBm)	PPSD Limit (dBm)
Low	5180	17.00	22.43	18.43	17.00	4.00	10.00	4.00
Mid	5200	17.00	22.41	18.41	17.00	4.00	10.00	4.00
High	5240	17.00	22.41	18.41	17.00	4.00	10.00	4.00

Duty Cycle CF (dB)	0.00	**Included in Calculations of Corr'd Power & PPSD**

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	11.97	13.38	15.74	17.00	-1.26
Mid	5200	12.11	13.54	15.89	17.00	-1.11
High	5240	11.93	12.85	15.43	17.00	-1.57

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5180	-0.75	0.26	2.79	4.00	-1.21
Mid	5200	-0.62	0.37	2.91	4.00	-1.09
High	5240	-0.59	0.15	2.81	4.00	-1.19

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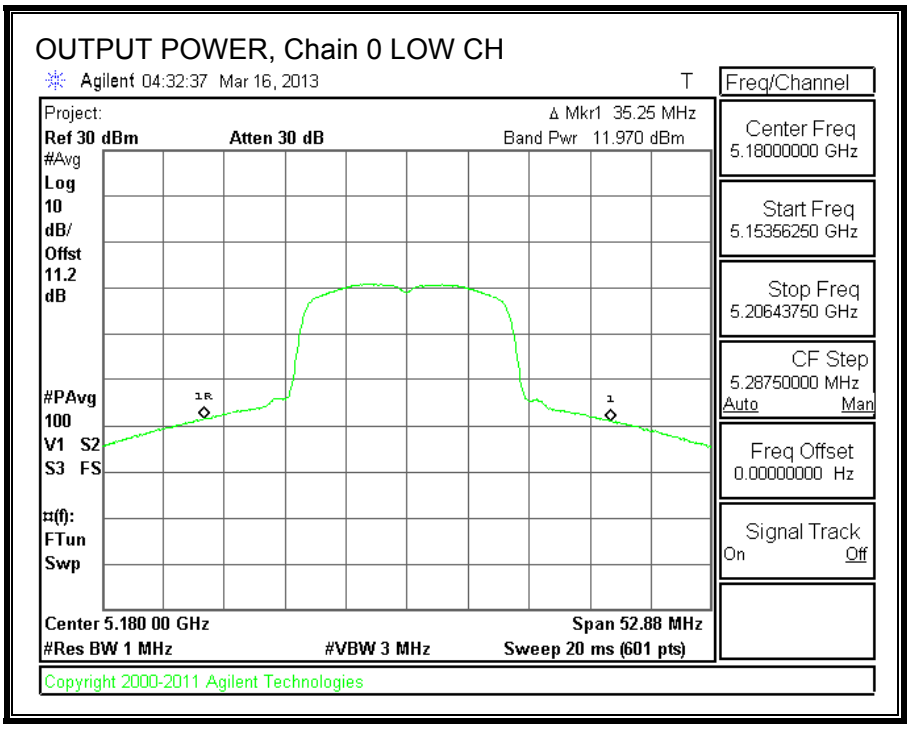
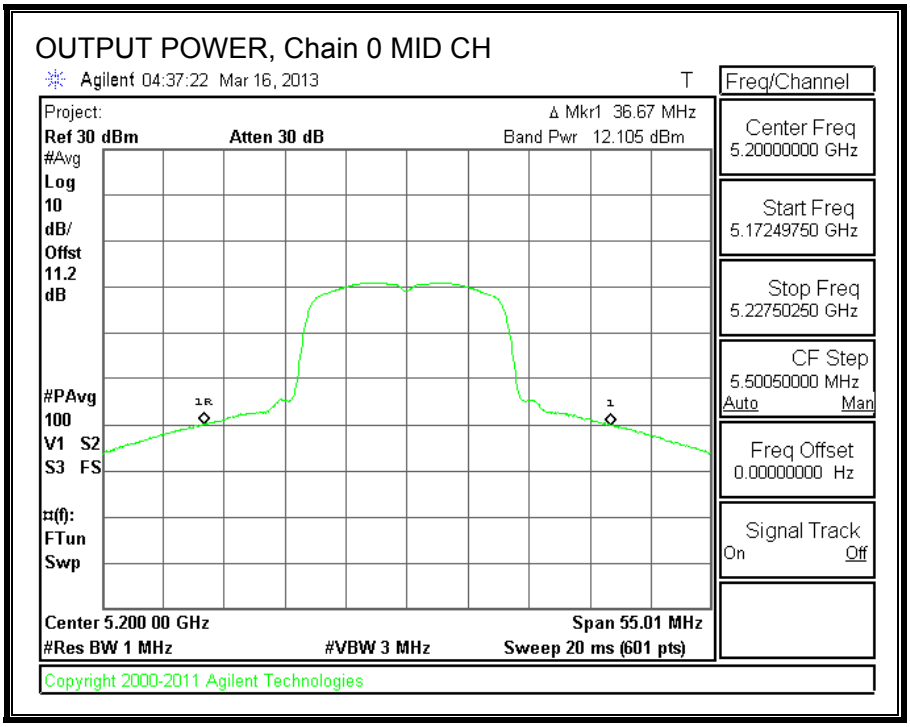
OUTPUT POWER, Chain 0





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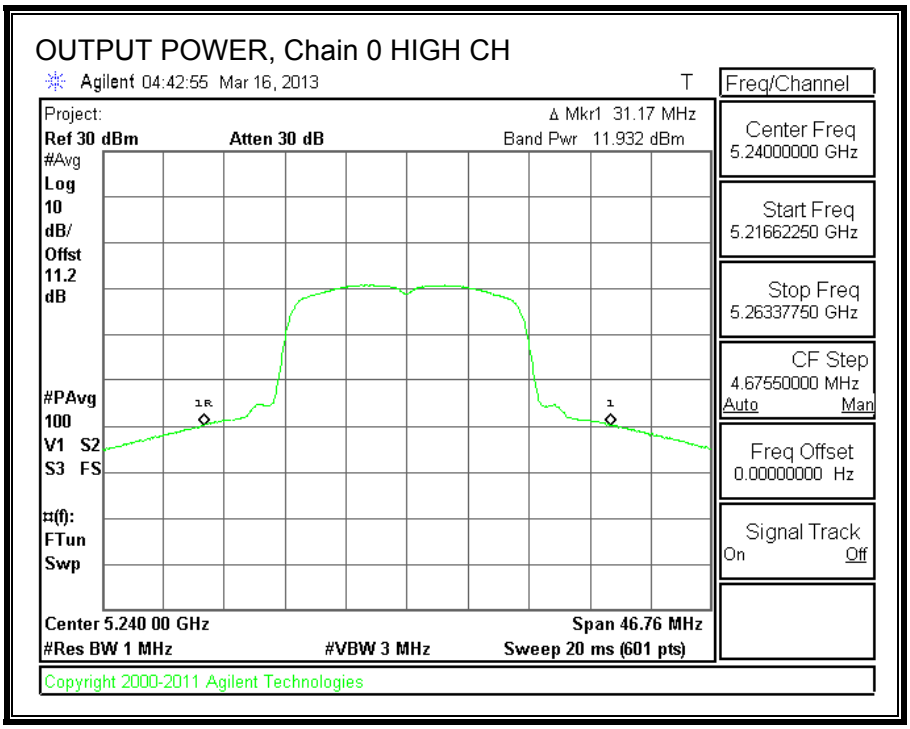
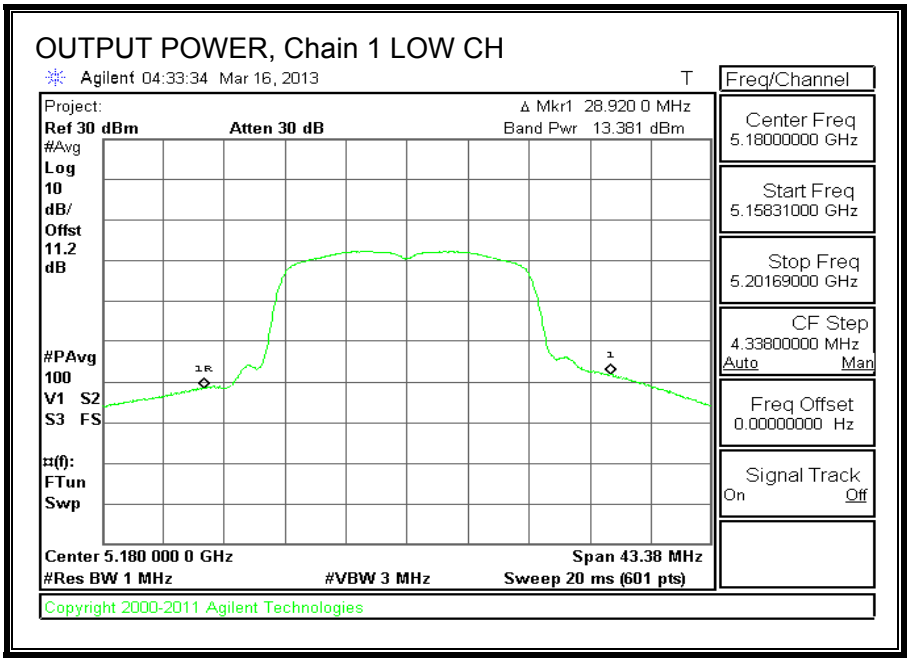


OUTPUT POWER AND PPSD, Chain 1



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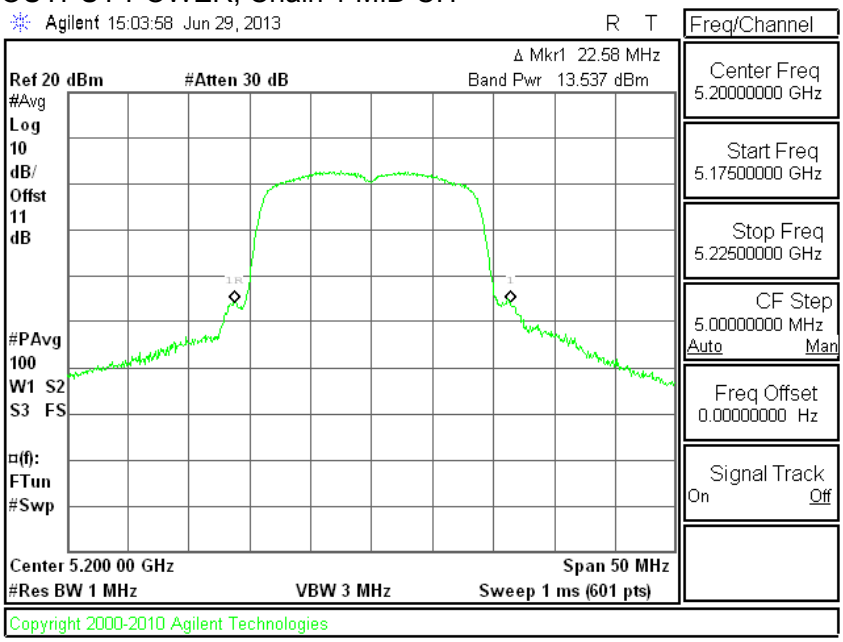
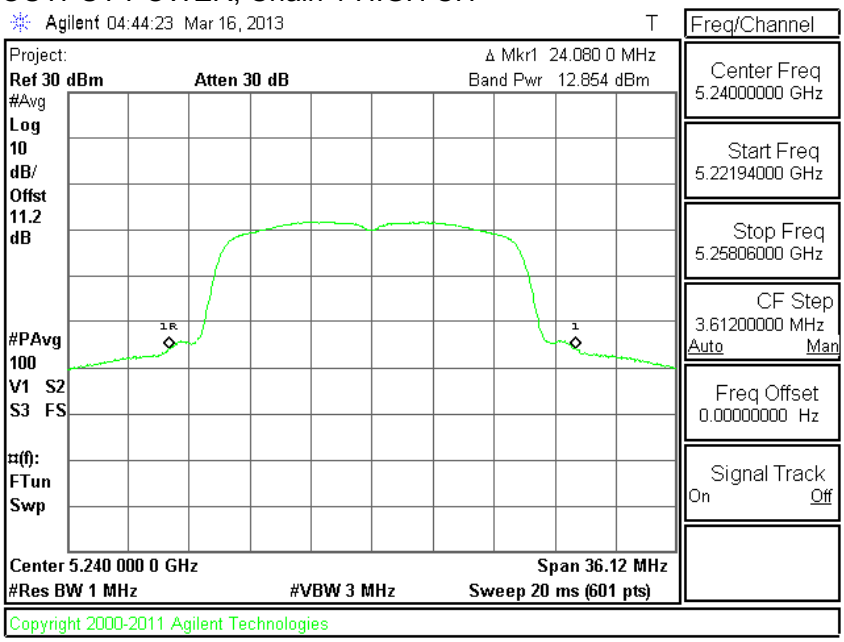
OUTPUT POWER, Chain 1 MID CH



OUTPUT POWER, Chain 1 HIGH CH



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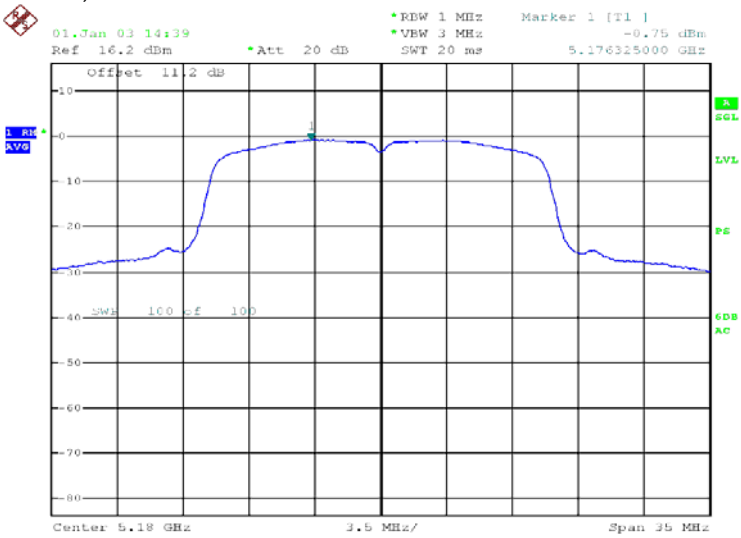
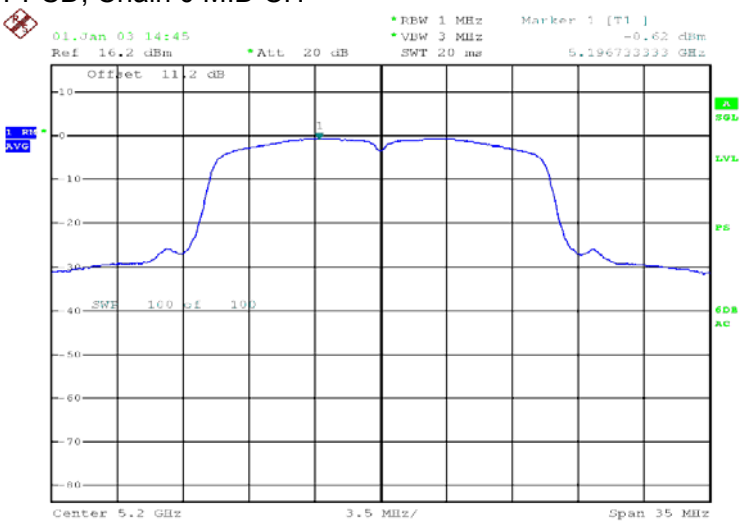
PPSD, Chain 0

PPSD, Chain 0 LOW CH



Date: 1.JAN.2003 14:39:38

PPSD, Chain 0 MID CH



Date: 1.JAN.2003 14:45:55

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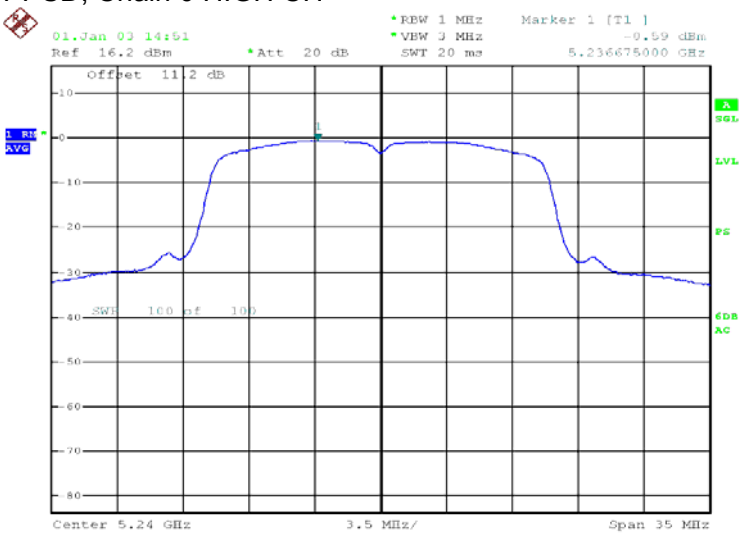
PPSD, Chain 0 HIGH CH



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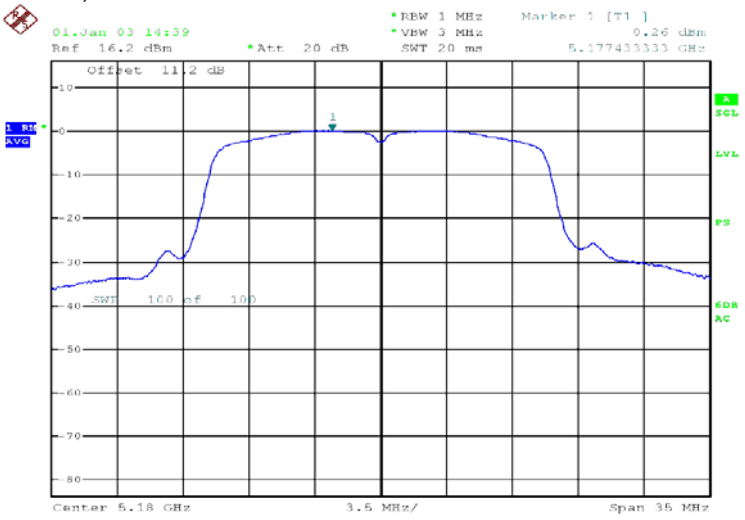
OUTPUT POWER AND PPSD, Chain 1

PPSD, Chain 1 LOW CH



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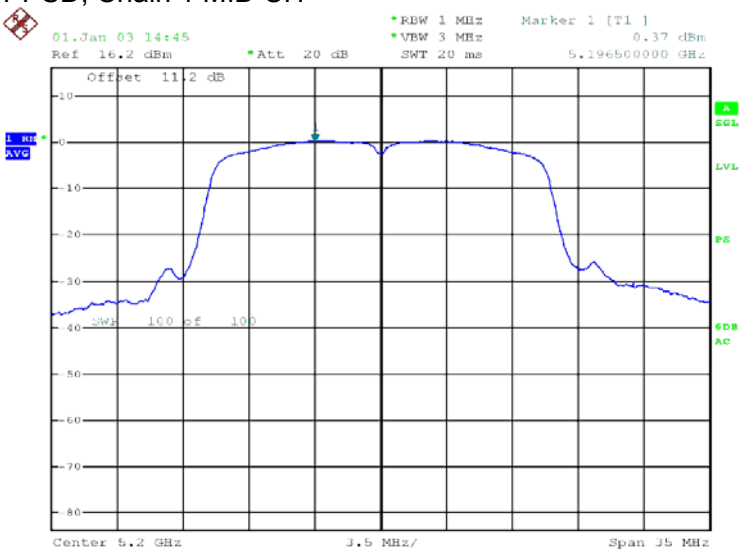
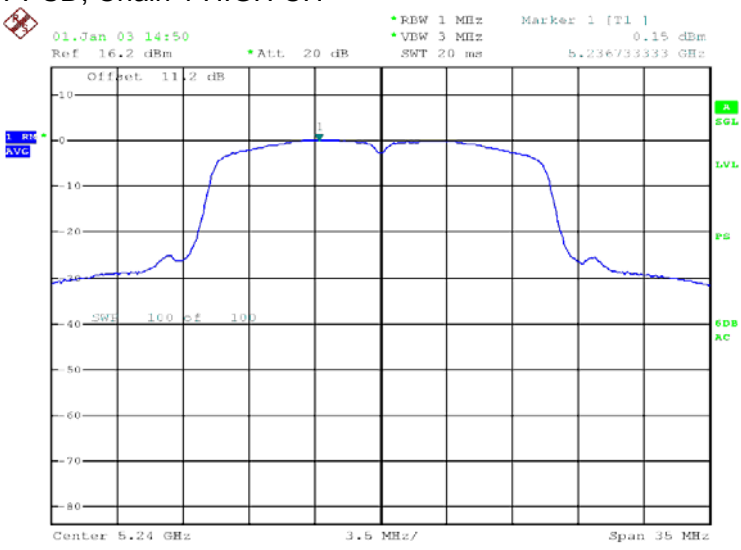
PPSD, Chain 1 MID CH



PPSD, Chain 1 HIGH CH



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8.3.1. PEAK EXCURSION

LIMITS

FCC §15.407 (a) (6)

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

RESULTS

Chain 0

Channel	Frequency (MHz)	PK Level (dBm)	PSD (dBm)	DCCF (dB)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Mid	5200	7.99	-0.62	0.00	8.61	13	-4.39

Chain 1

Channel	Frequency (MHz)	PK Level (dBm)	PSD (dBm)	DCCF (dB)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Mid	5200	9.50	0.37	0.00	9.13	13	-3.87

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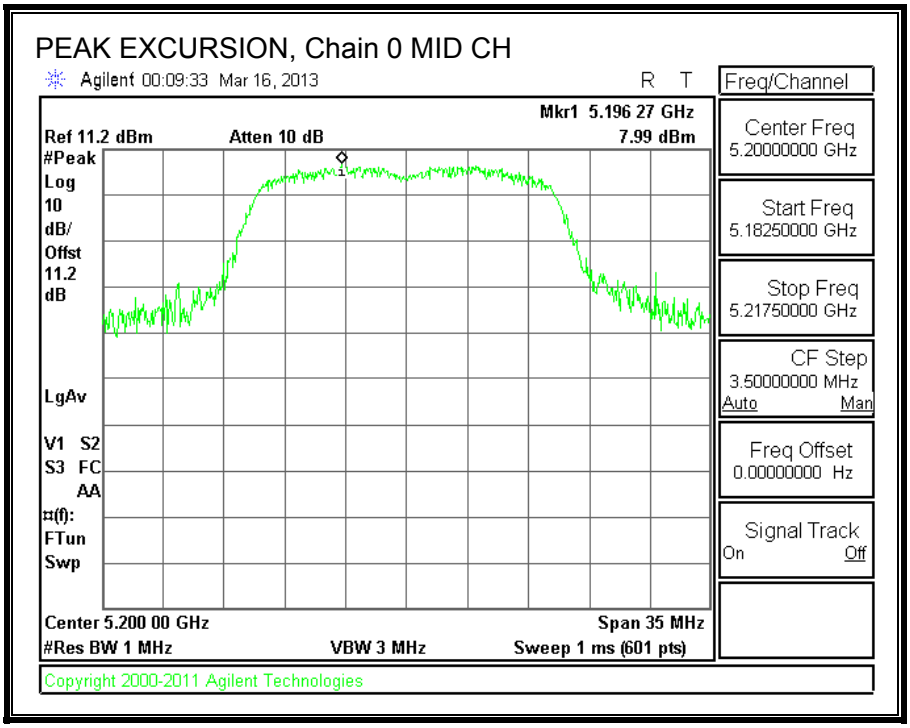
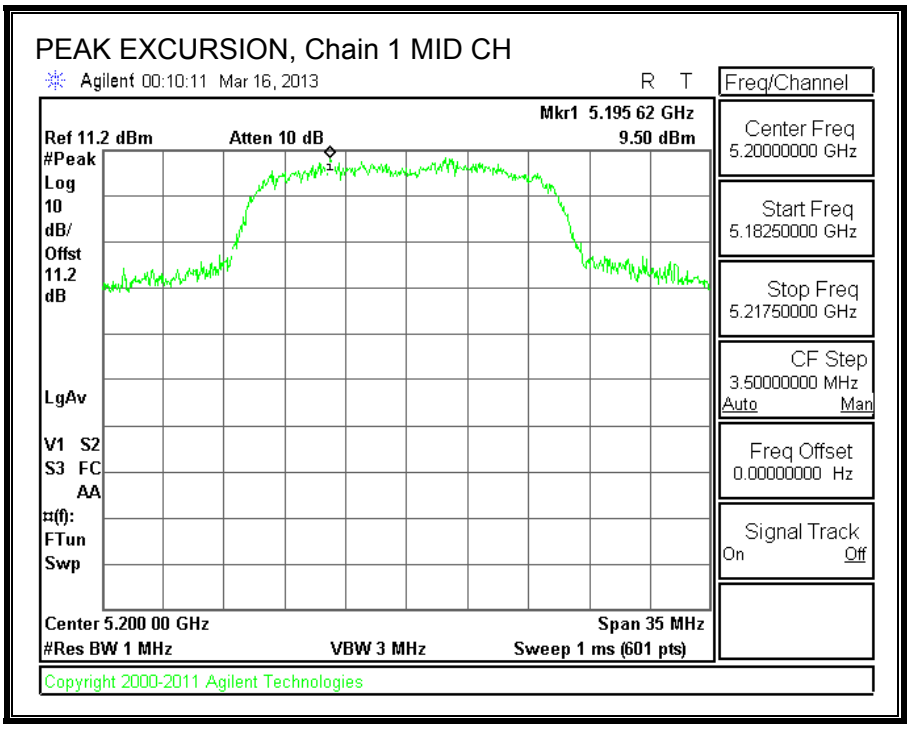
PEAK EXCURSION, Chain 0



PEAK EXCURSION, Chain 1



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8.4. 802.11n HT40 CDD MCS0 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	5190	82.98	82.55
High	5230	67.17	59.15

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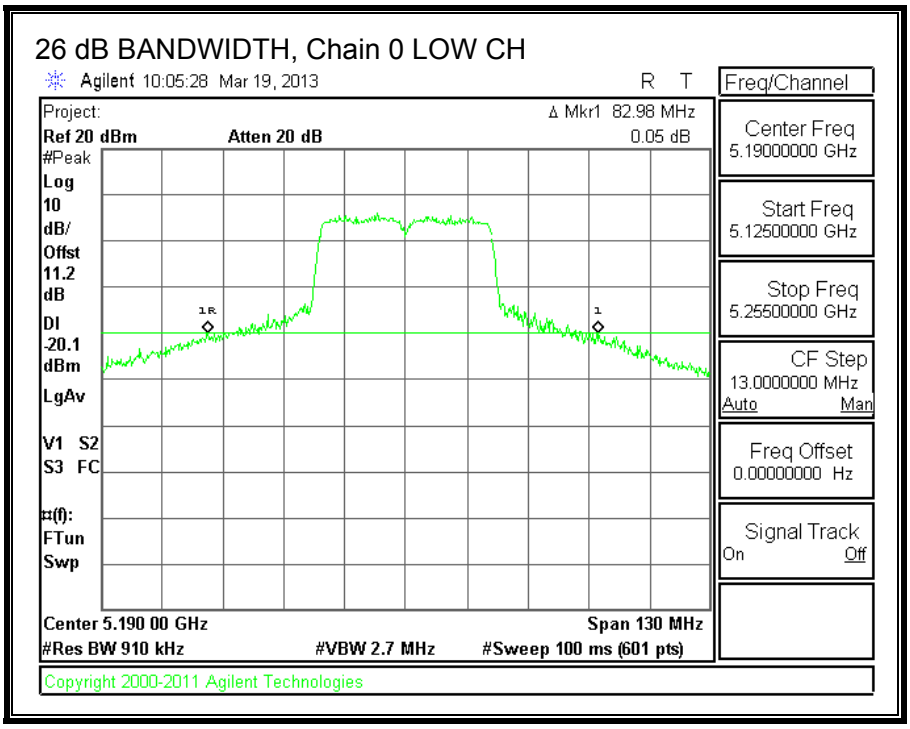
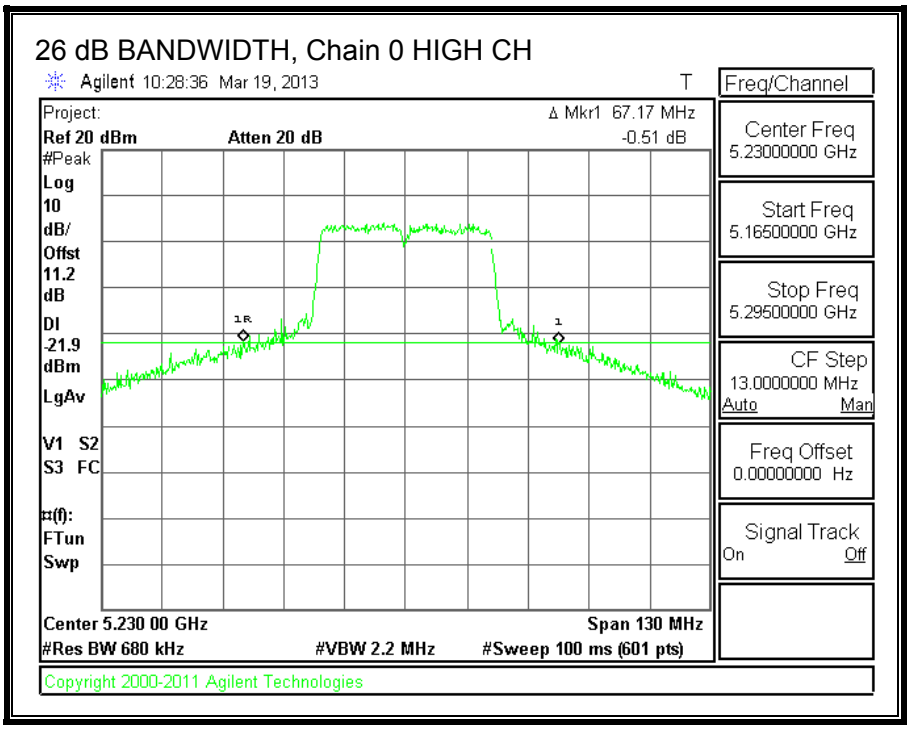
26 dB BANDWIDTH, Chain 0





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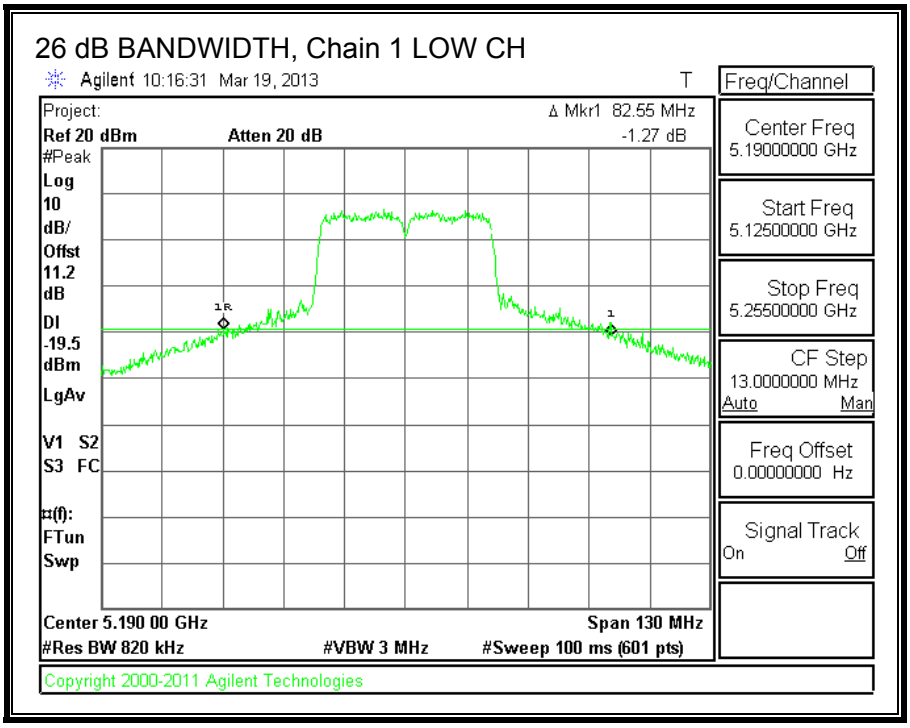
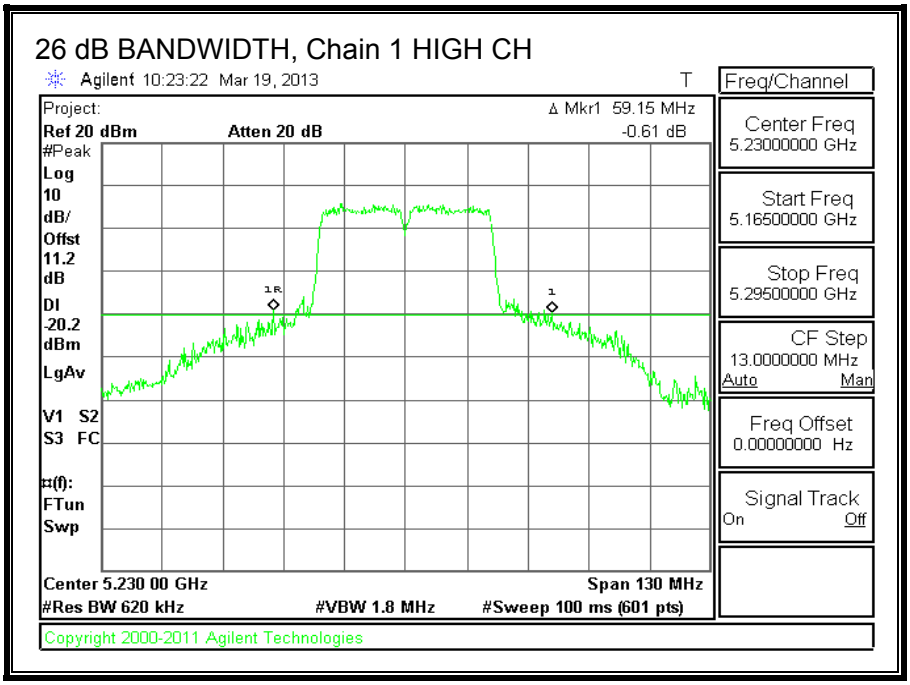
26 dB BANDWIDTH, Chain 1





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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	5190	36.2764	36.4047
High	5230	36.2402	36.1612

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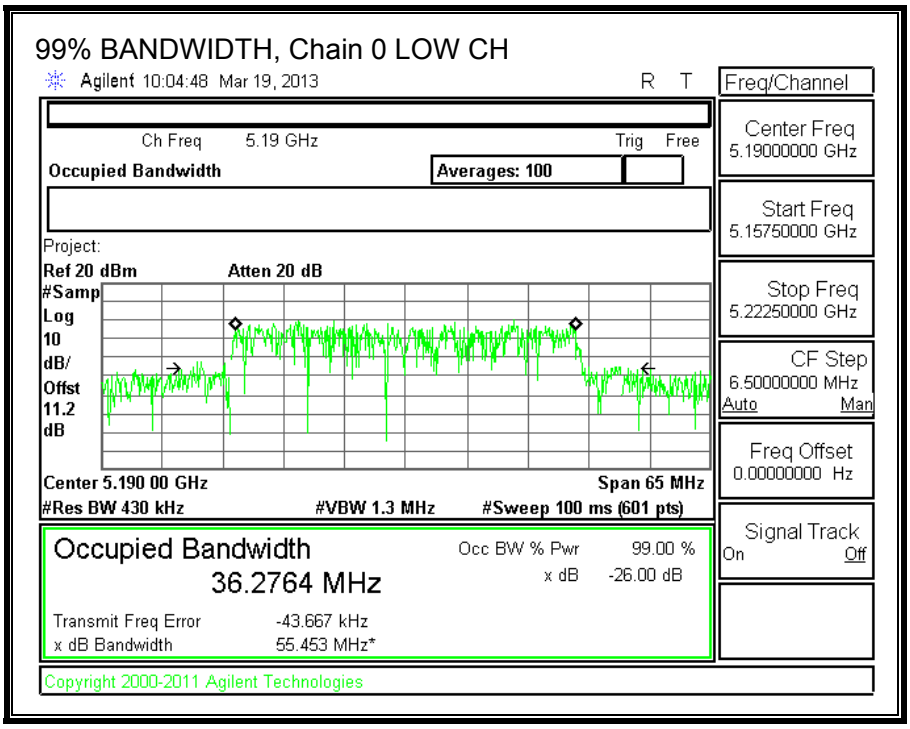
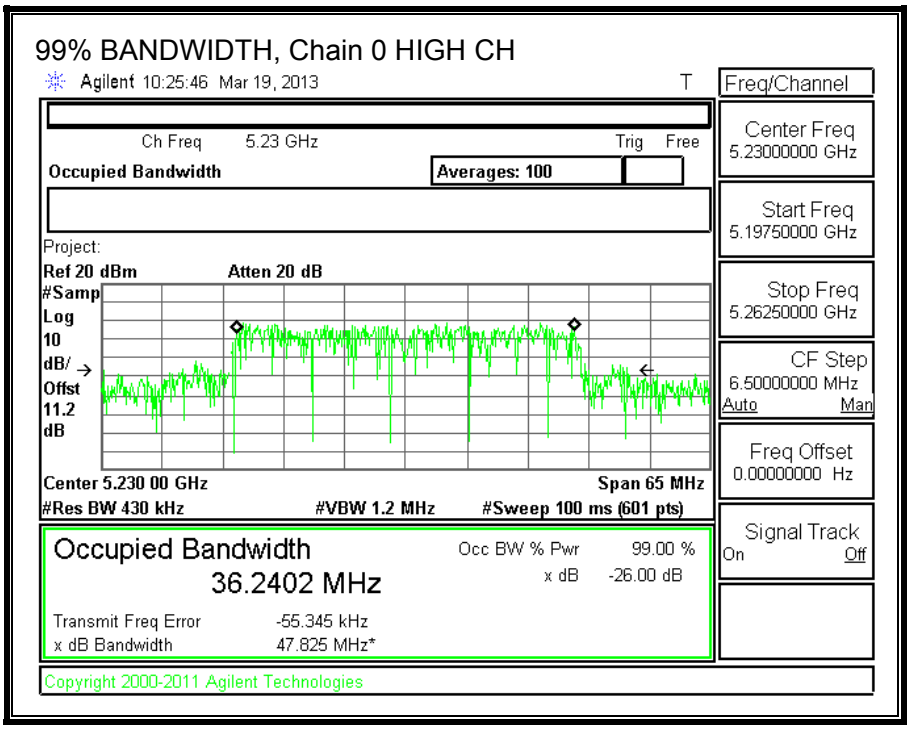
99% BANDWIDTH, Chain 0





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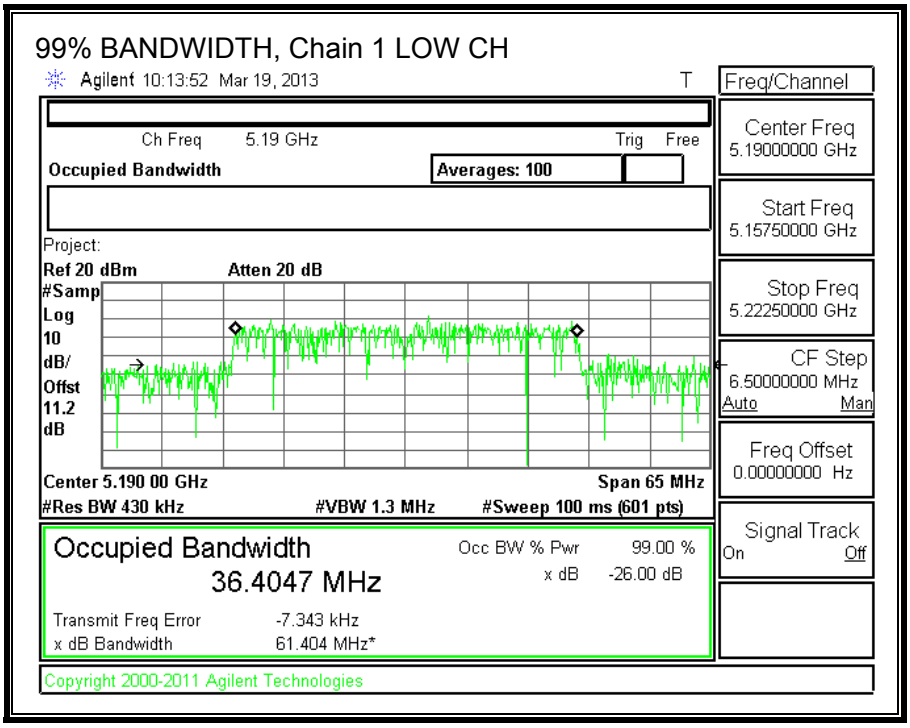
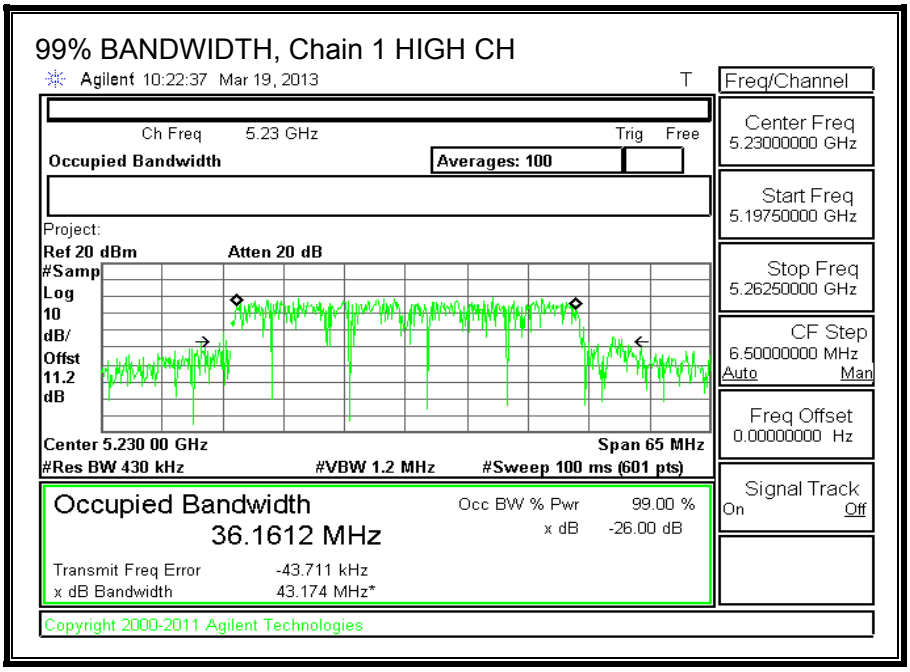
99% BANDWIDTH, Chain 1





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8.4.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Average Power Results

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Total Power (dBm)
Low	5190	12.67	13.24	15.97
High	5230	12.69	13.12	15.92

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8.4.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (1)

For the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 4 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

The maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

DIRECTIONAL ANTENNA GAIN

For output power, the TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

For PPSD, the TX chains are correlated and the antenna gain is the same for each chain. The directional gain is:

Antenna Gain (dBi)	10 * Log (2 chains) (dB)	Correlated Chains Directional Gain (dBi)
4.00	3.01	7.01

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Uncorrelated Directional Gain (dBi)	Correlated Directional Gain (dBi)
Low	5190	82.55	36.2764	4.00	7.01
High	5230	59.15	36.1612	4.00	7.01

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC EIRP Limit (dBm)	Max IC Power (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC eirp PSD Limit (dBm)
Low	5190	17.00	23.00	19.00	17.00	2.99	10.00
High	5230	17.00	23.00	19.00	17.00	2.99	10.00

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power & PPSD

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	12.628	13.032	15.84	17.00	-1.16
High	5230	12.832	13.095	15.98	17.00	-1.02

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5190	-4.11	-3.64	-0.86	2.99	-3.85
High	5230	-3.76	-3.54	-0.64	2.99	-3.63

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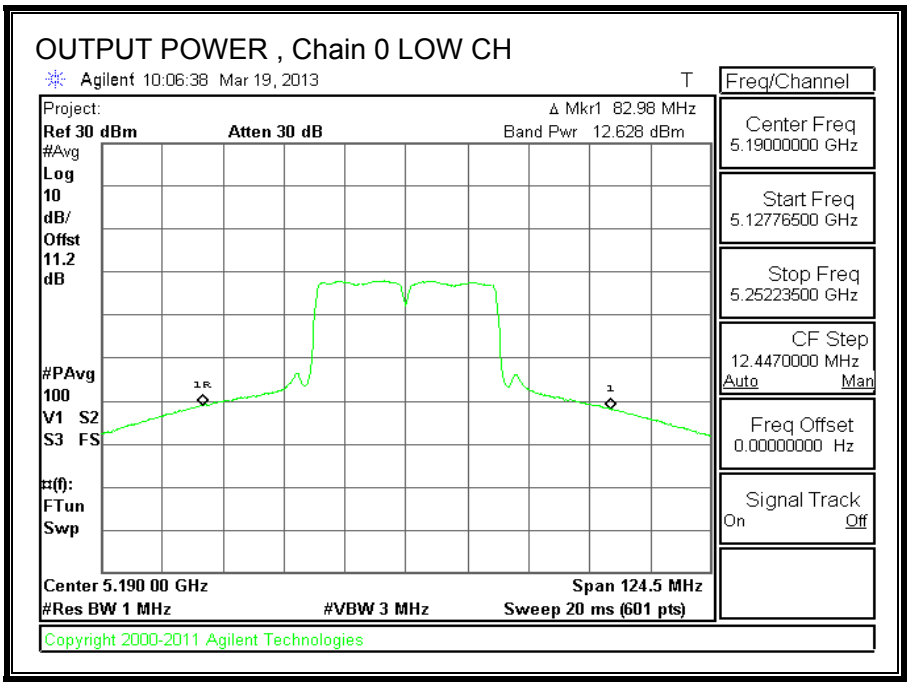
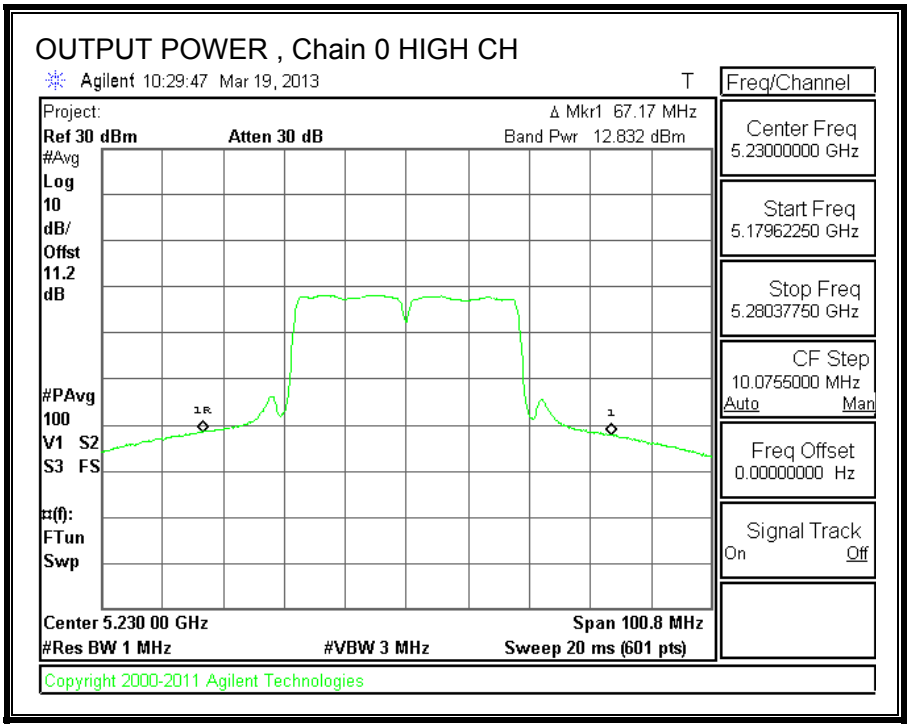
OUTPUT POWER, Chain 0





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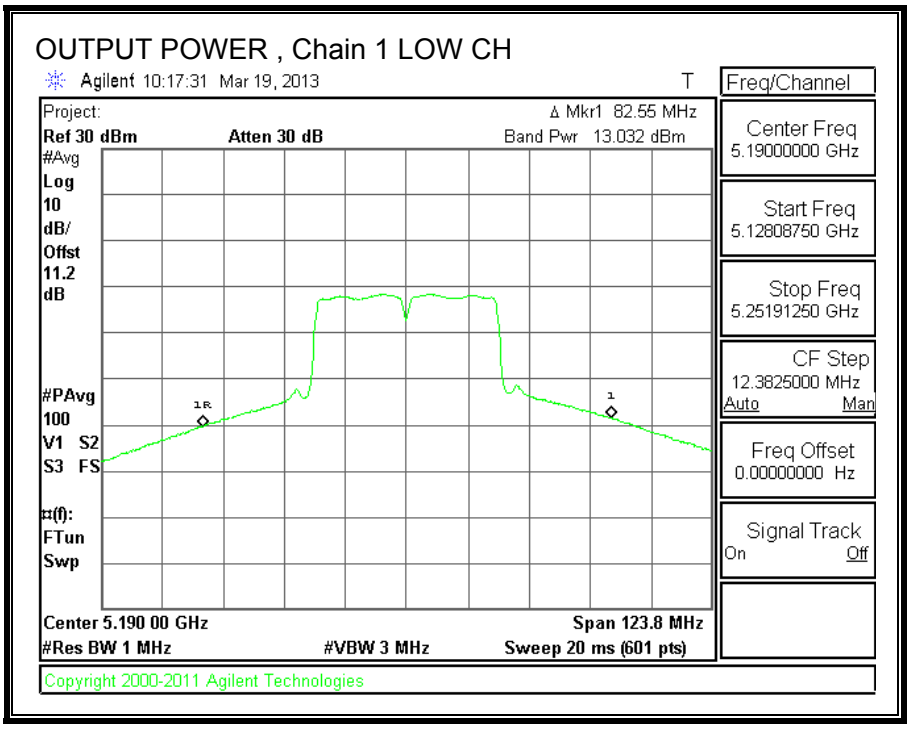
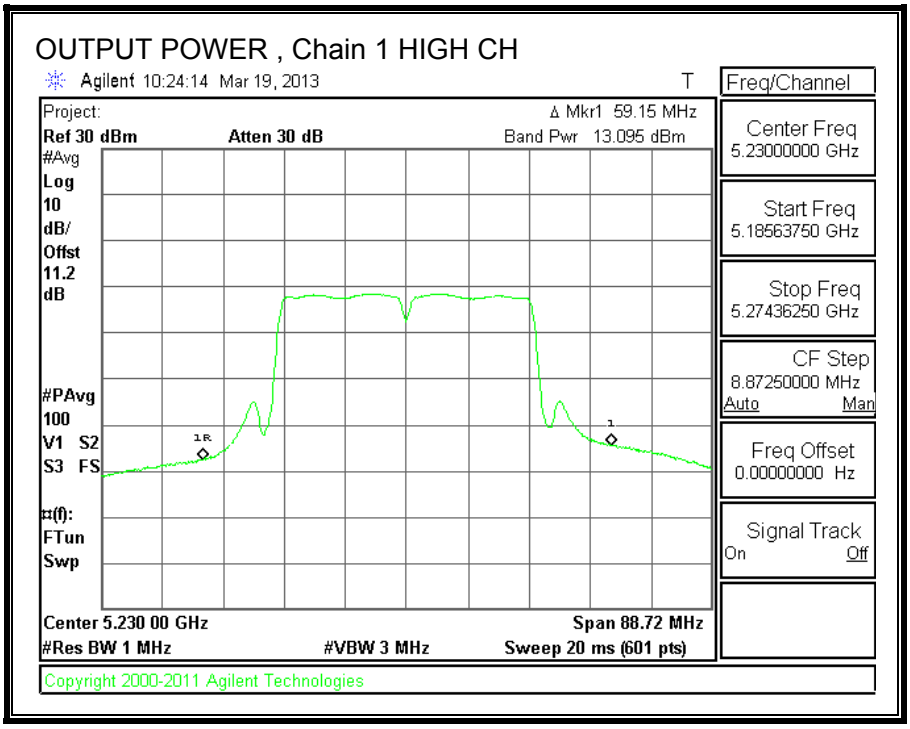
OUTPUT POWER, Chain 1





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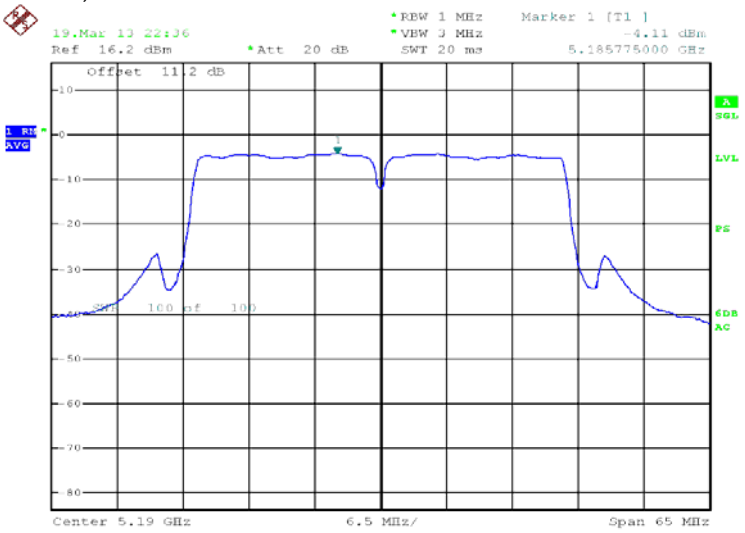
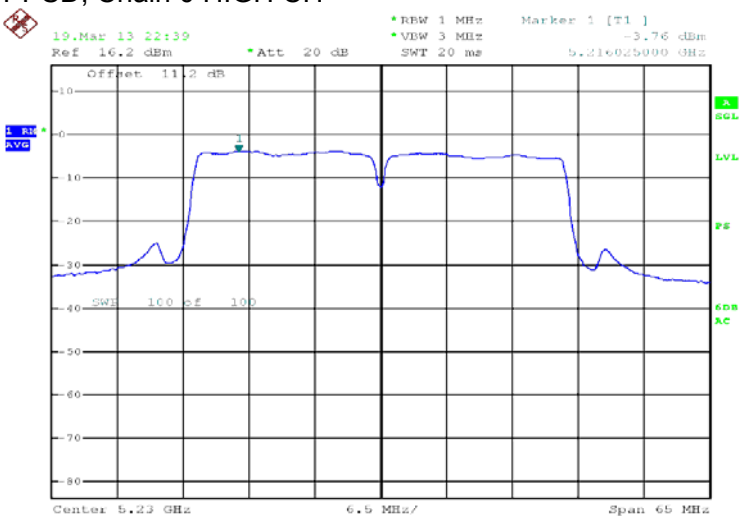
PPSD, Chain 0

PPSD, Chain 0 LOW CH



Date: 19.MAR.2013 22:36:30

PPSD, Chain 0 HIGH CH



Date: 19.MAR.2013 22:39:29

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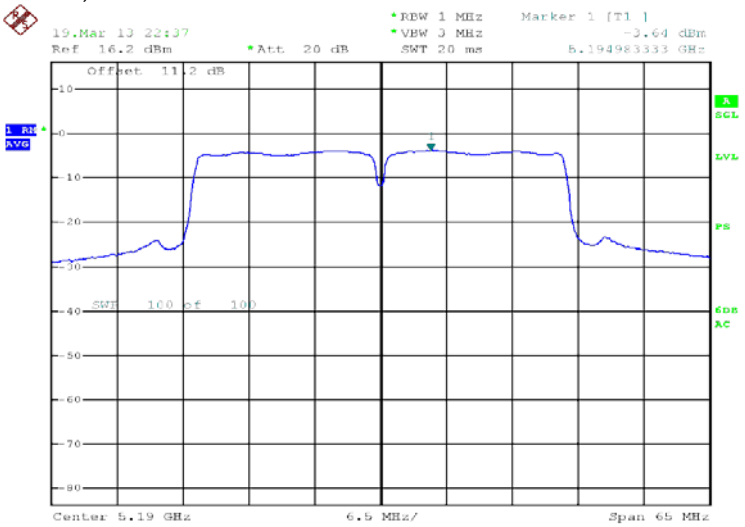
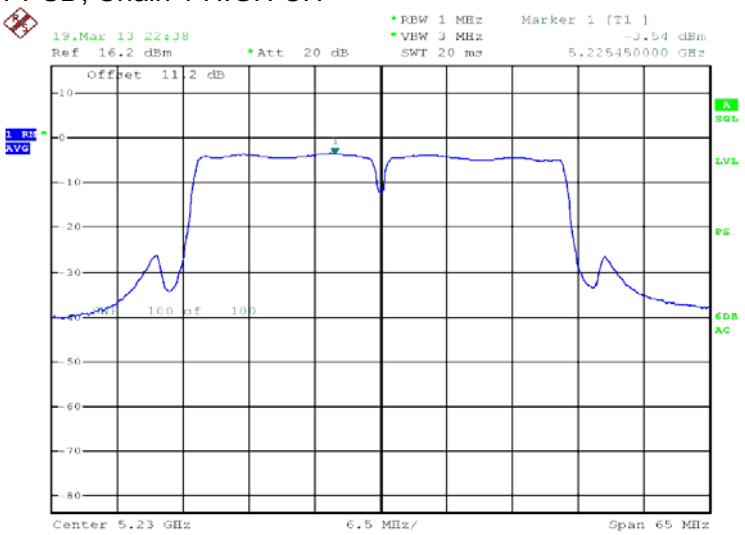
PPSD, Chain 1

PPSD, Chain 1 LOW CH



PPSD, Chain 1 HIGH CH



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8.4.5. PEAK EXCURSION

LIMITS

FCC §15.407 (a) (6)

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

RESULTS

Chain 0

Channel	Frequency (MHz)	PK Level (dBm)	PSD (dBm)	DCCF (dB)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Low	5190	7.62	-4.11	0.00	11.73	13	-1.27

Chain 1

Channel	Frequency (MHz)	PK Level (dBm)	PSD (dBm)	DCCF (dB)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Low	5190	7.82	-3.64	0.00	11.46	13	-1.54

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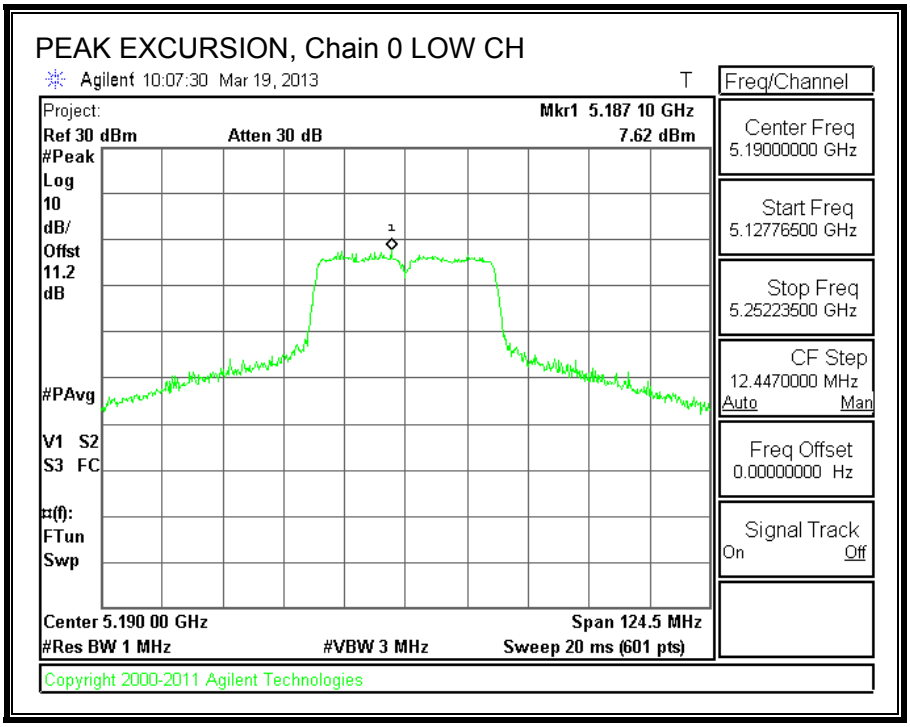
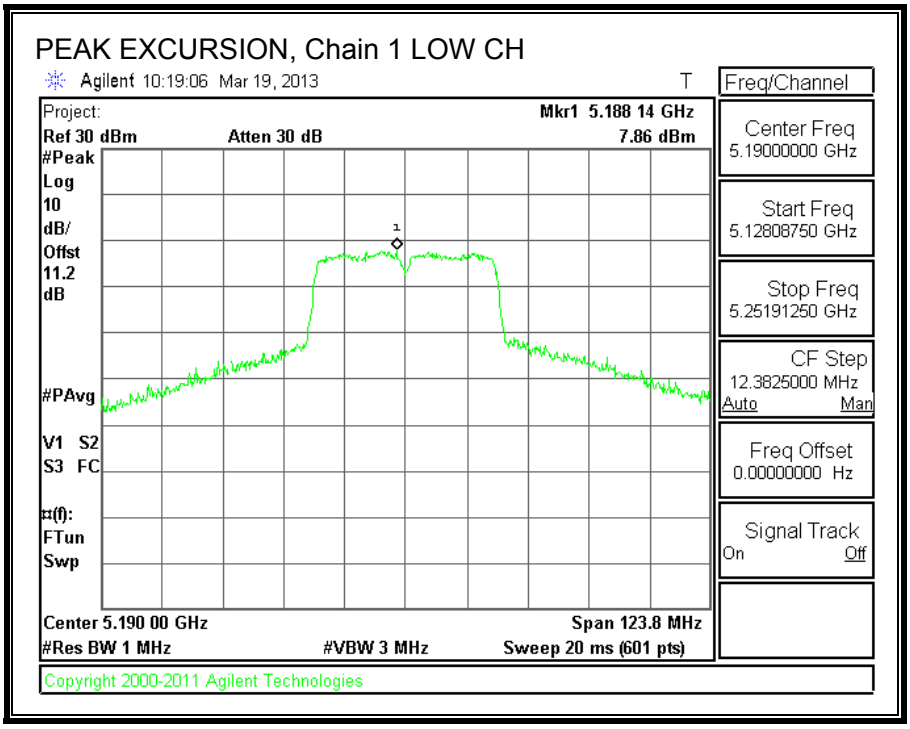
PEAK EXCURSION, Chain 0



PEAK EXCURSION, Chain 1



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8.5. 802.11n HT40 SDM MCS8 2TX 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)
Low	5190	48.97	51.17
High	5230	74.53	46.15

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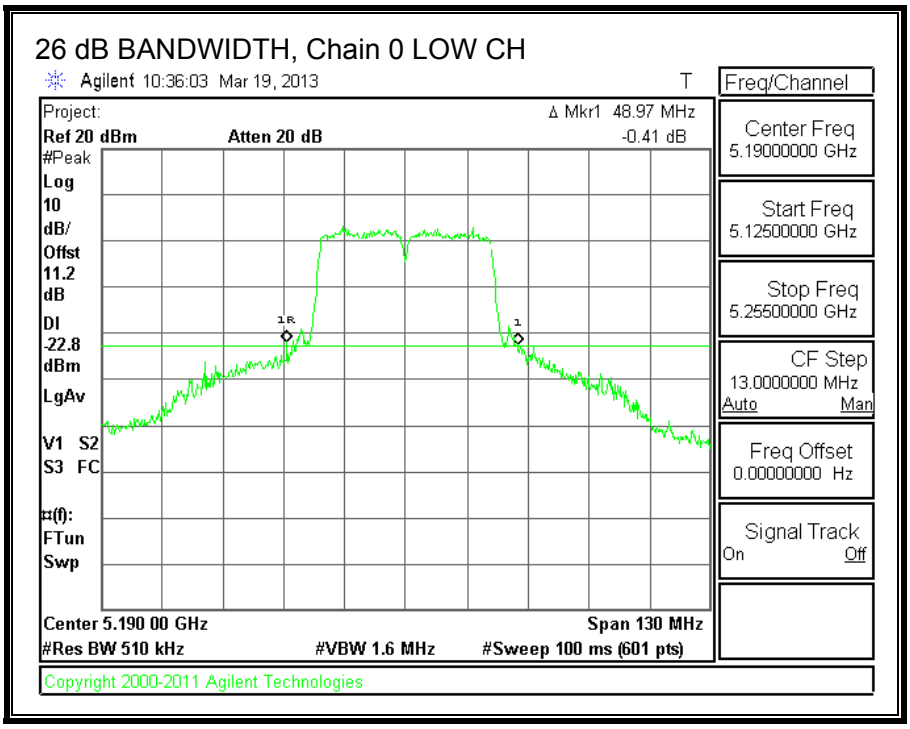
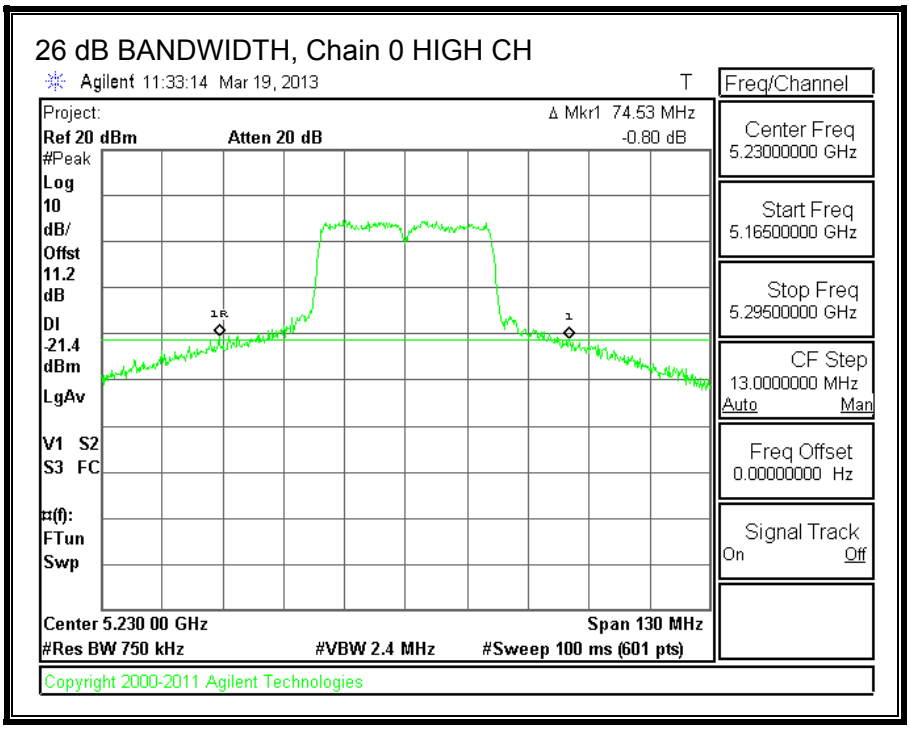
26 dB BANDWIDTH, Chain 0





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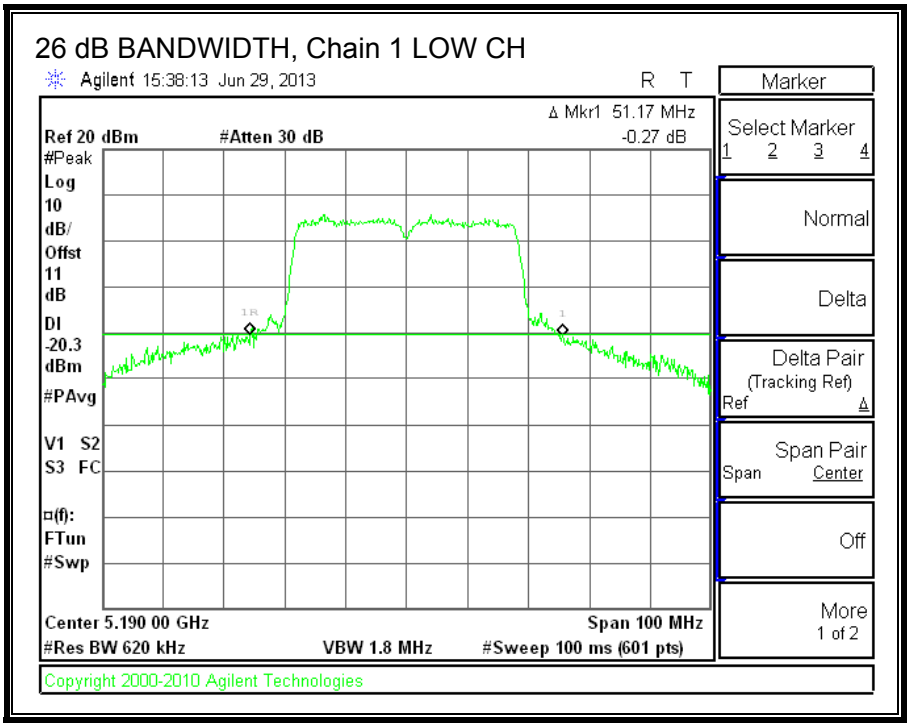
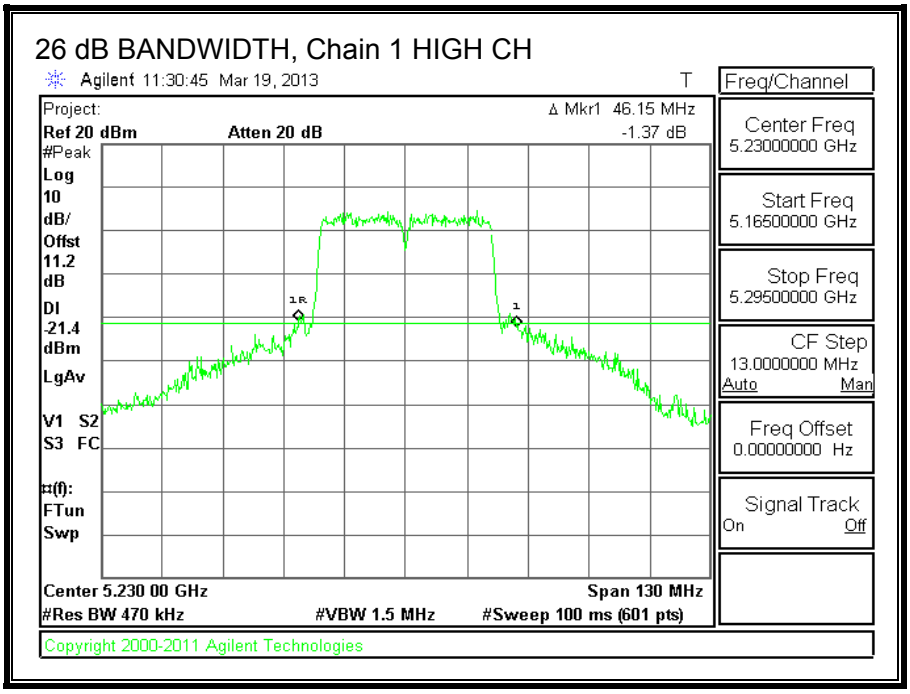
26 dB BANDWIDTH, Chain 1





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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)
Low	5190	36.1932	36.4017
High	5230	36.2528	36.1496

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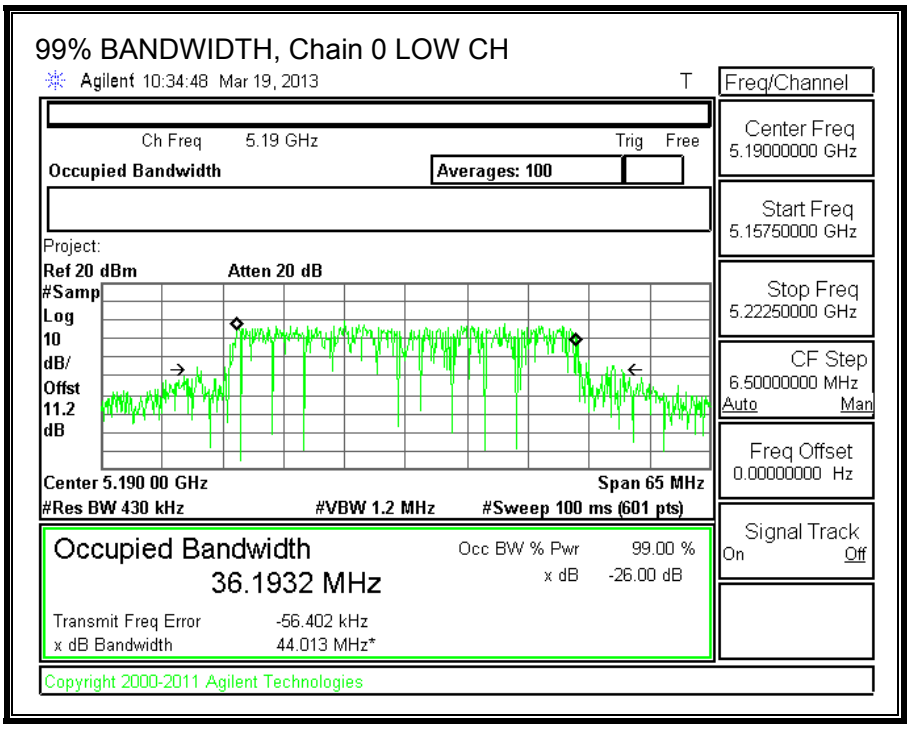
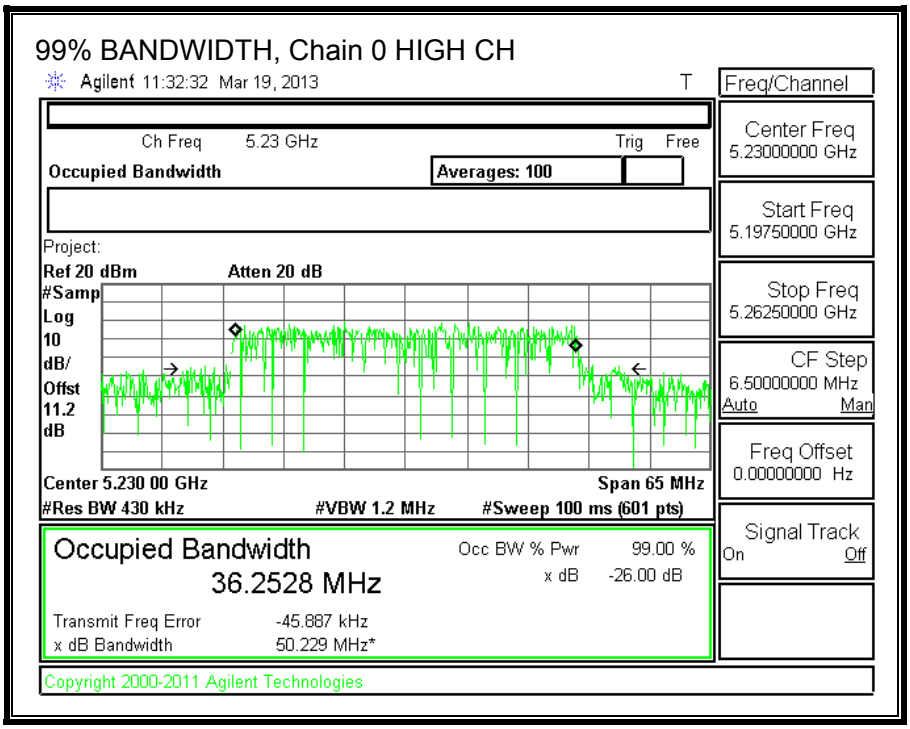
99% BANDWIDTH, Chain 0





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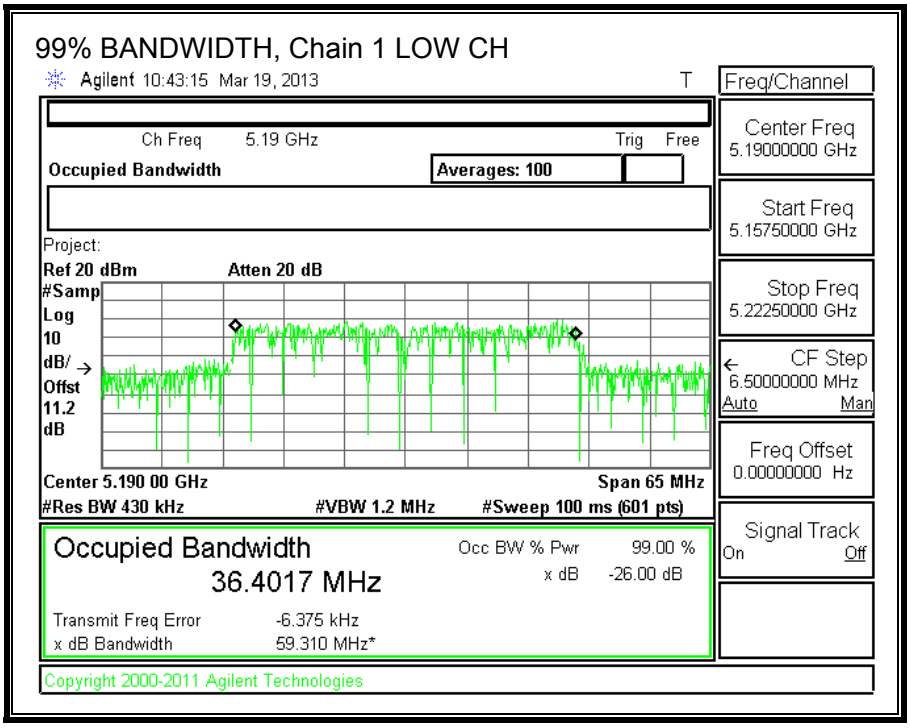
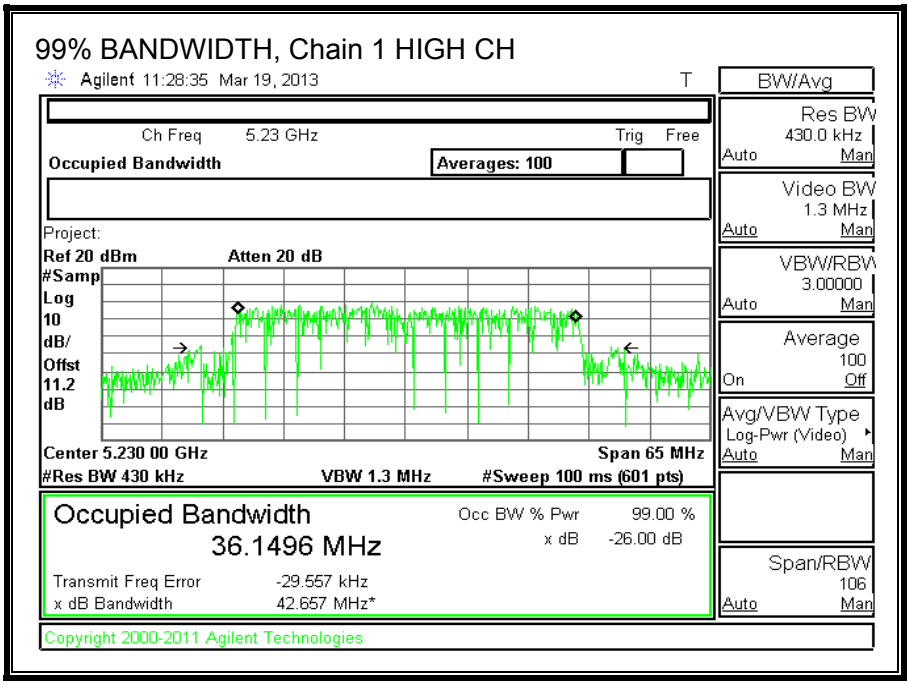
99% BANDWIDTH, Chain 1





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8.5.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Average Power Results

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Total Power (dBm)
Low	5190	12.86	13.03	15.96
High	5230	12.80	13.21	16.02

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8.5.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (1)

For the band 5.15–5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 4 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

The maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
Low	5190	48.97	36.1932	4.00
High	5230	46.15	36.1496	4.00

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC EIRP Limit (dBm)	Max IC Power (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC eirp PSD Limit (dBm)	PPSD Limit (dBm)
Low	5190	17.00	23.00	19.00	17.00	4.00	10.00	4.00
High	5230	17.00	23.00	19.00	17.00	4.00	10.00	4.00

Duty Cycle CF (dB)	0.11	**Included in Calculations of Corr'd Power & PPSD**

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	12.295	12.958	15.76	17.00	-1.24
High	5230	12.333	12.875	15.73	17.00	-1.27

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5190	-4.17	-3.57	-0.74	4.00	-4.74
High	5230	-4.19	-3.71	-0.82	4.00	-4.82

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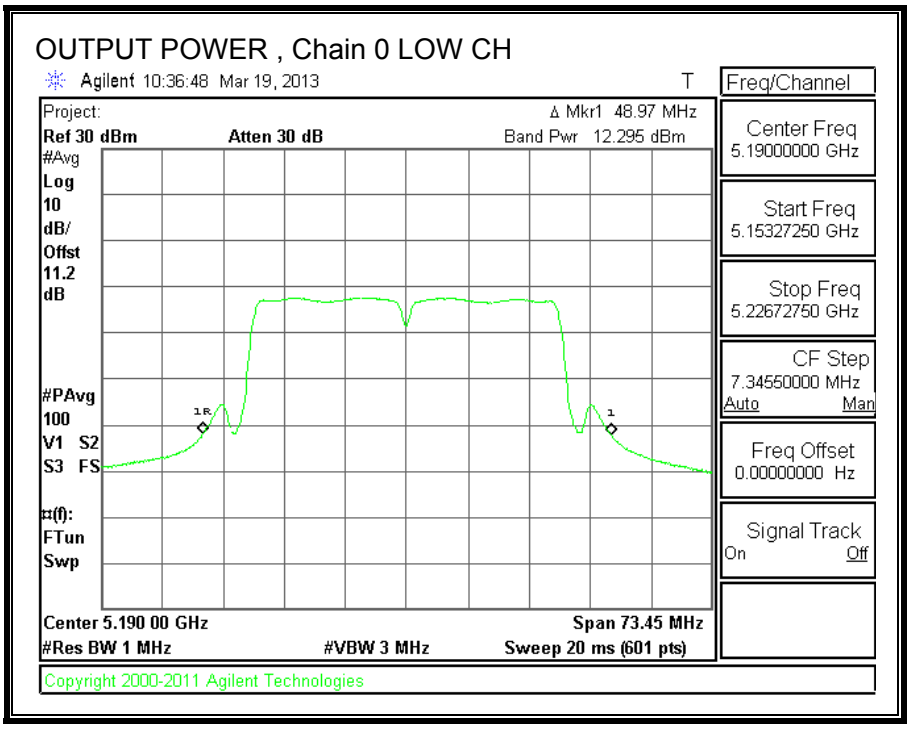
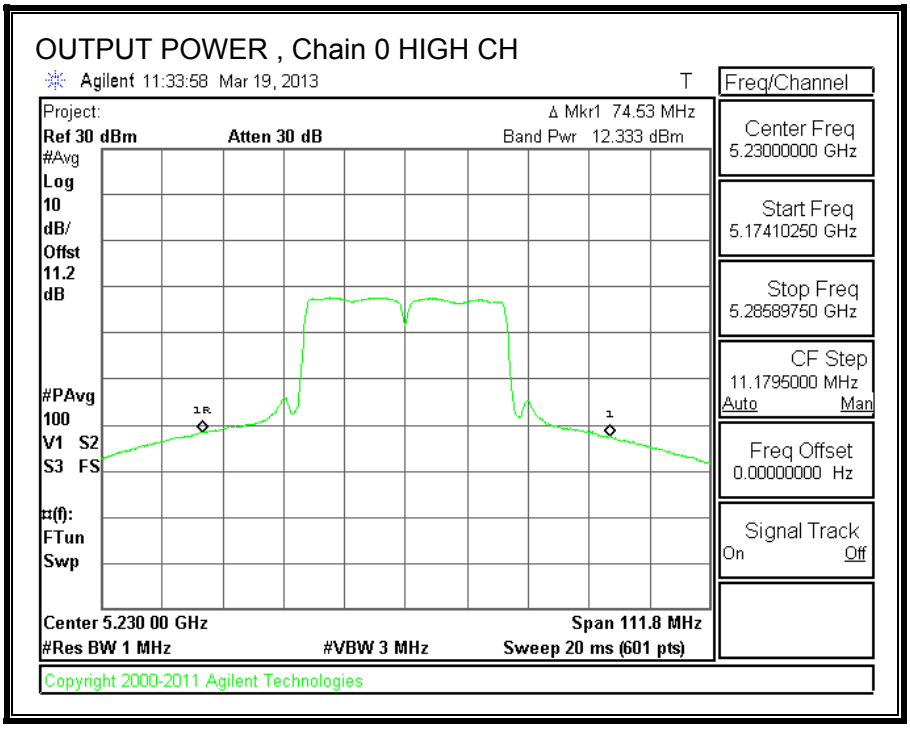
OUTPUT POWER, Chain 0





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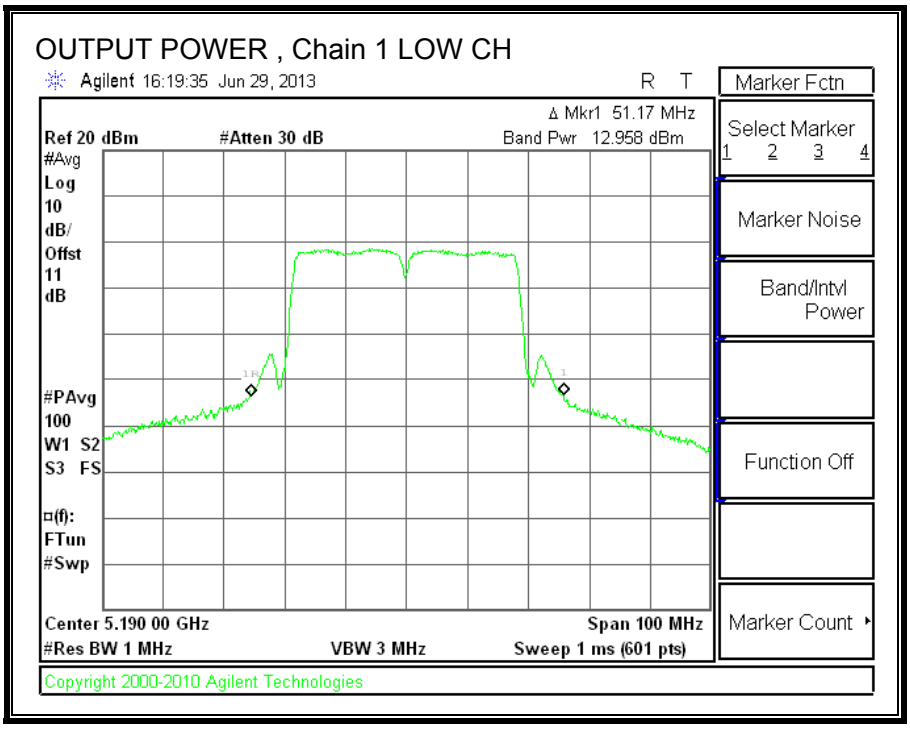
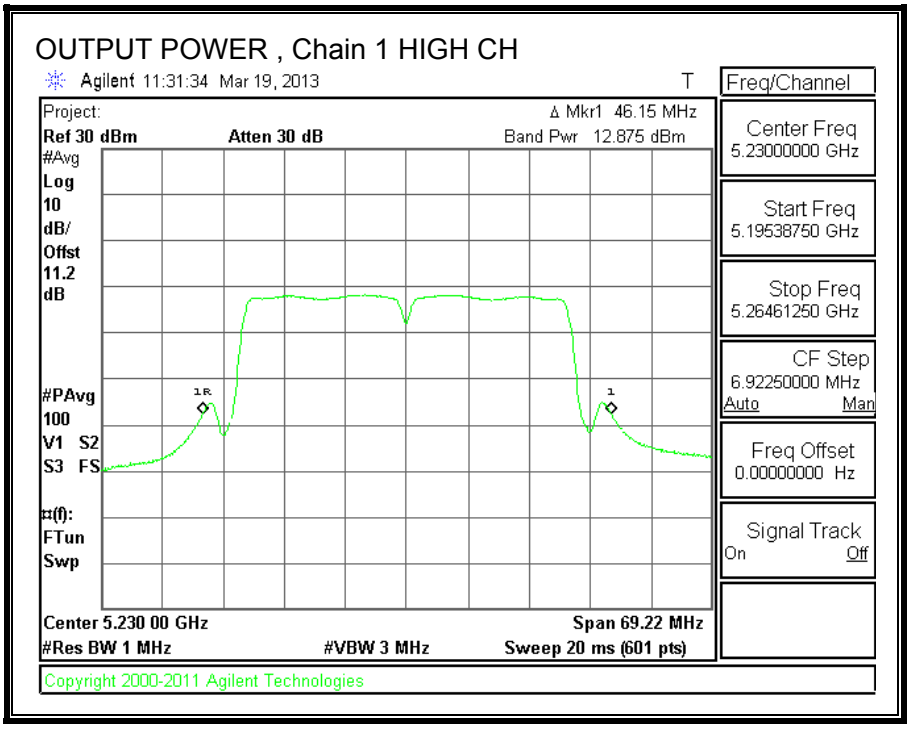
OUTPUT POWER, Chain 1





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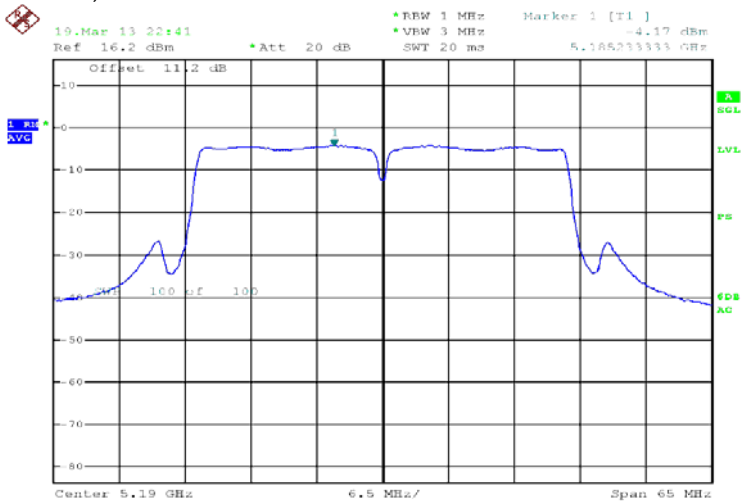
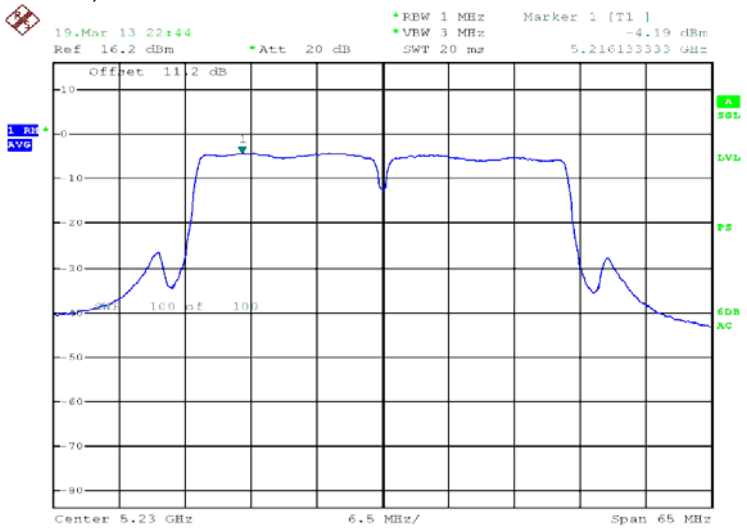
PPSD, Chain 0

PPSD , Chain 0 LOW CH



Date: 19.MAR.2013 22:41:30

PPSD , Chain 0 HIGH CH



Date: 19.MAR.2013 22:44:11

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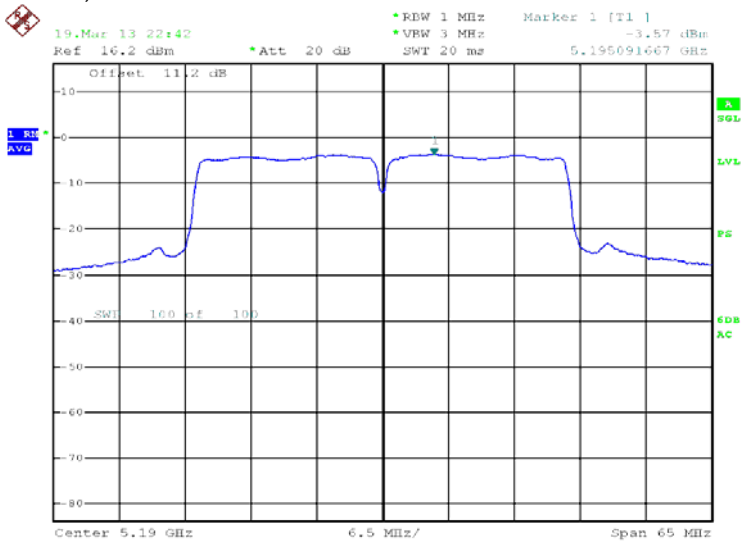
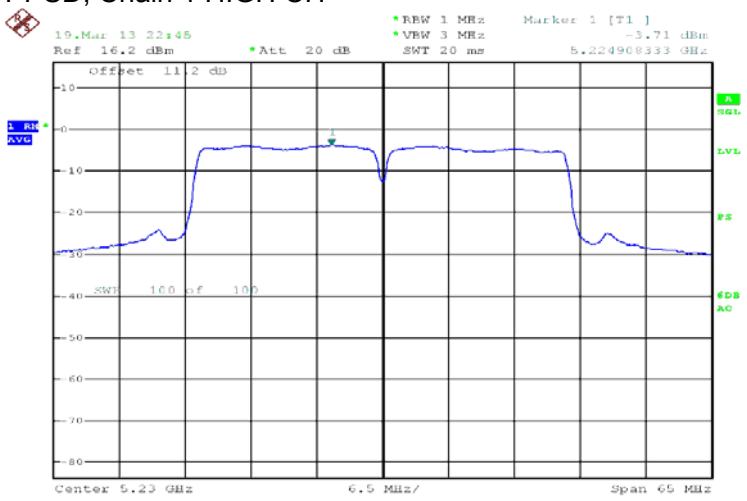
PPSD, Chain 1

PPSD, Chain 1 LOW CH



Date: 19.MAR.2013 22:42:03

PPSD, Chain 1 HIGH CH



Date: 19.MAR.2013 22:45:42

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8.5.5. PEAK EXCURSION

LIMITS

FCC §15.407 (a) (6)

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

RESULTS

Chain 0

Channel	Frequency (MHz)	PK Level (dBm)	PSD (dBm)	DCCF (dB)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Low	5190	6.97	-4.17	0.11	11.03	13	-1.97

Chain 1

Channel	Frequency (MHz)	PK Level (dBm)	PSD (dBm)	DCCF (dB)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Low	5190	7.96	-3.57	0.11	11.42	13	-1.58

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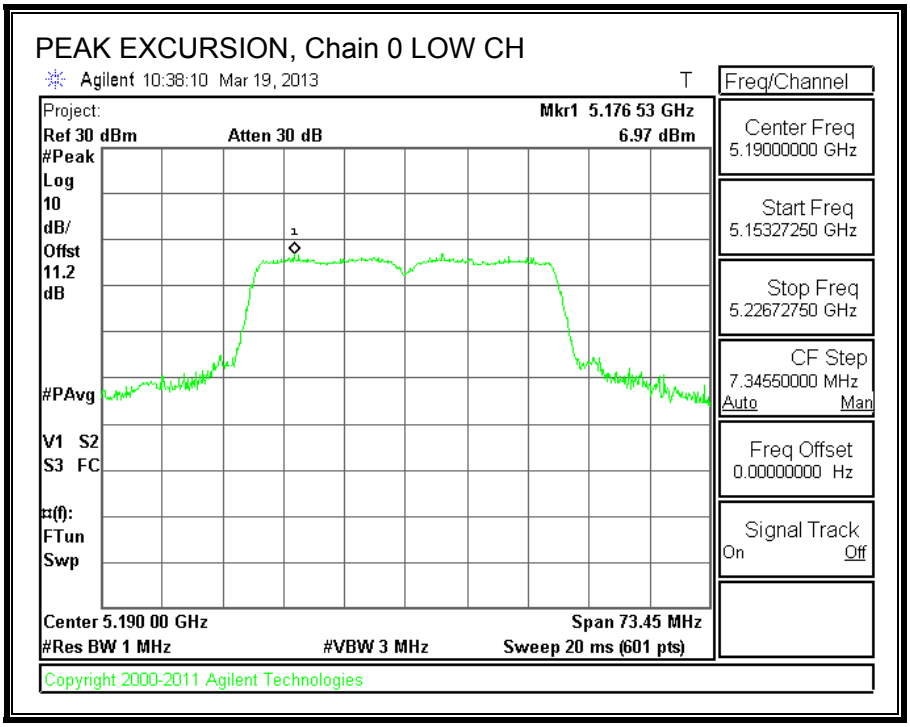
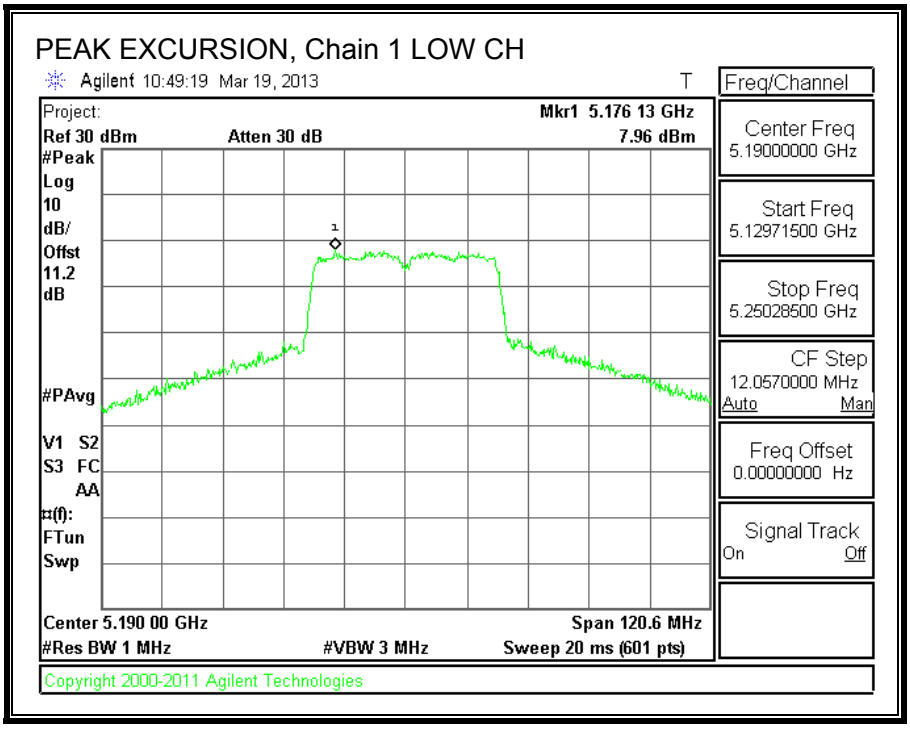
PEAK EXCURSION, Chain 0



PEAK EXCURSION, Chain 1



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8.6. 802.11a CDD 2TX MODE IN THE 5.3 GHz BAND

8.6.1. 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	21.78	36.62
Mid	5300	20.37	31.63
High	5320	20.58	21.67

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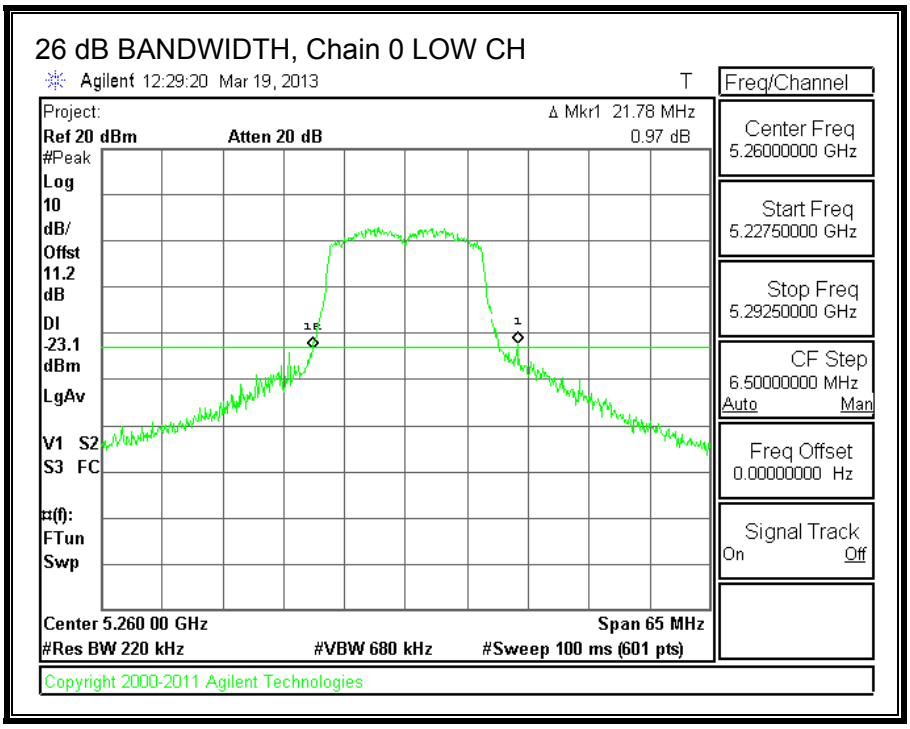
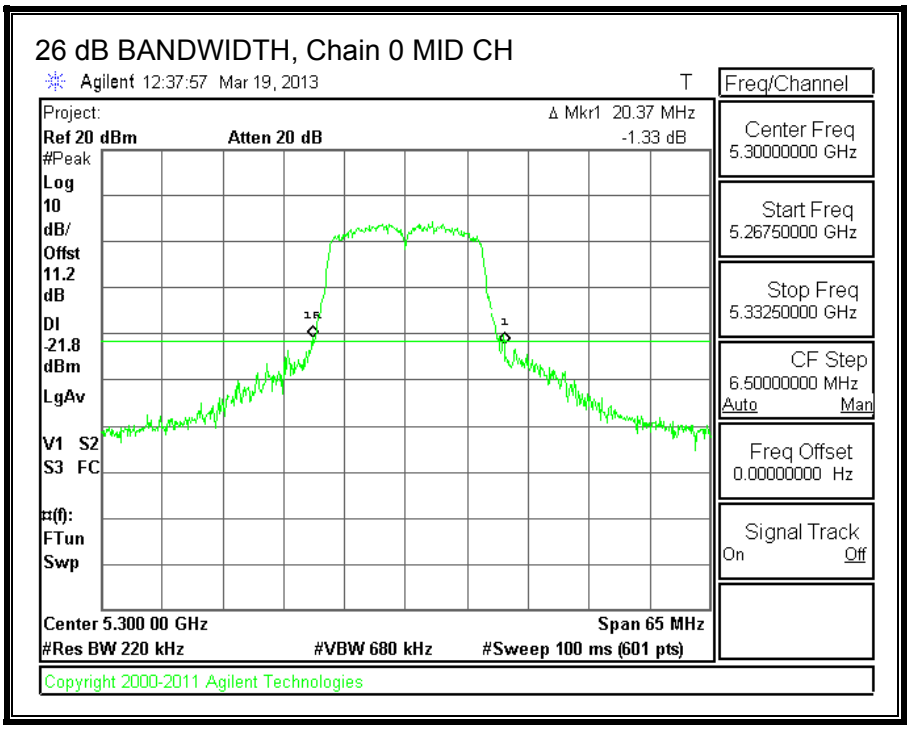
26 dB BANDWIDTH, Chain 0





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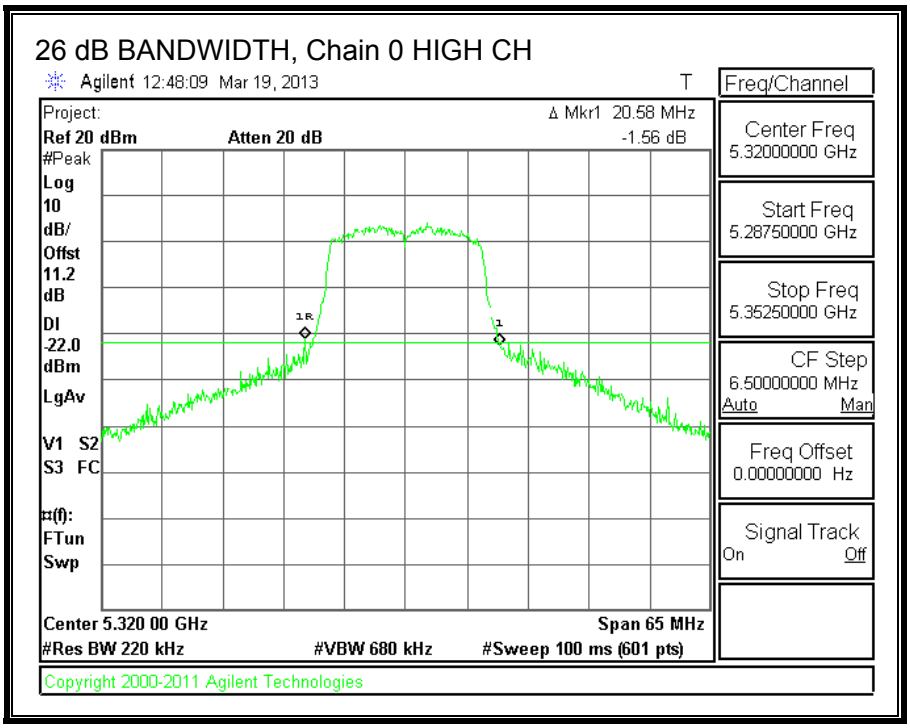
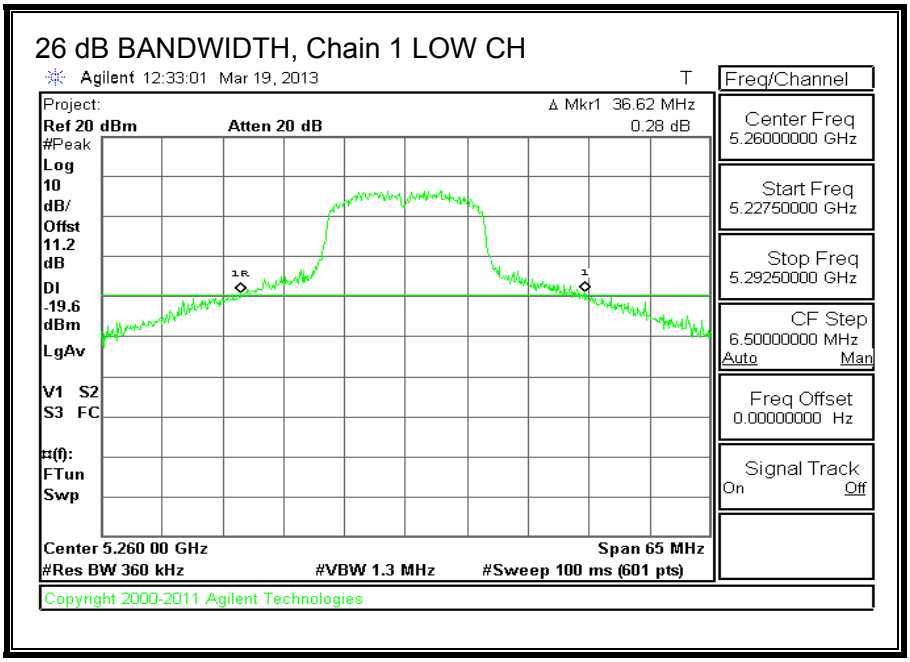


26 dB BANDWIDTH, Chain 1



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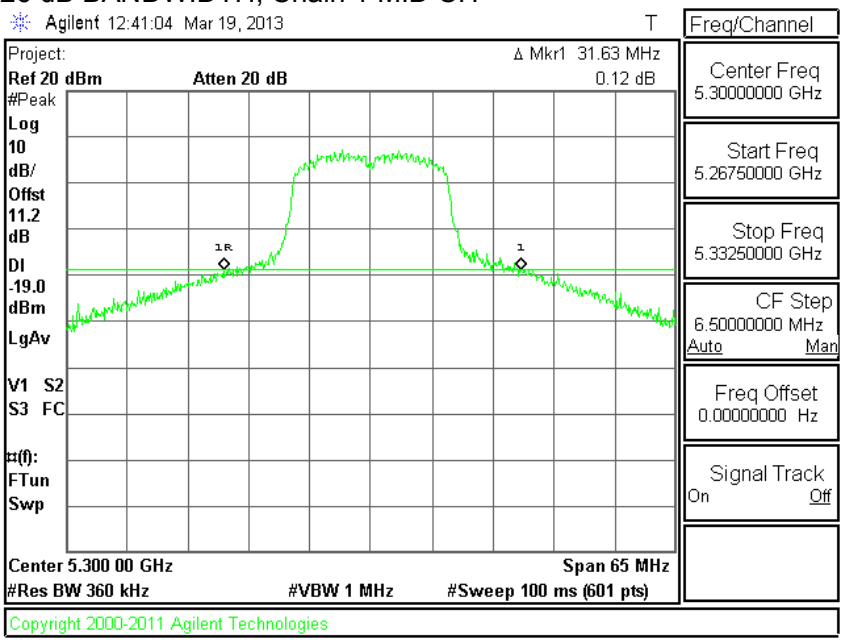
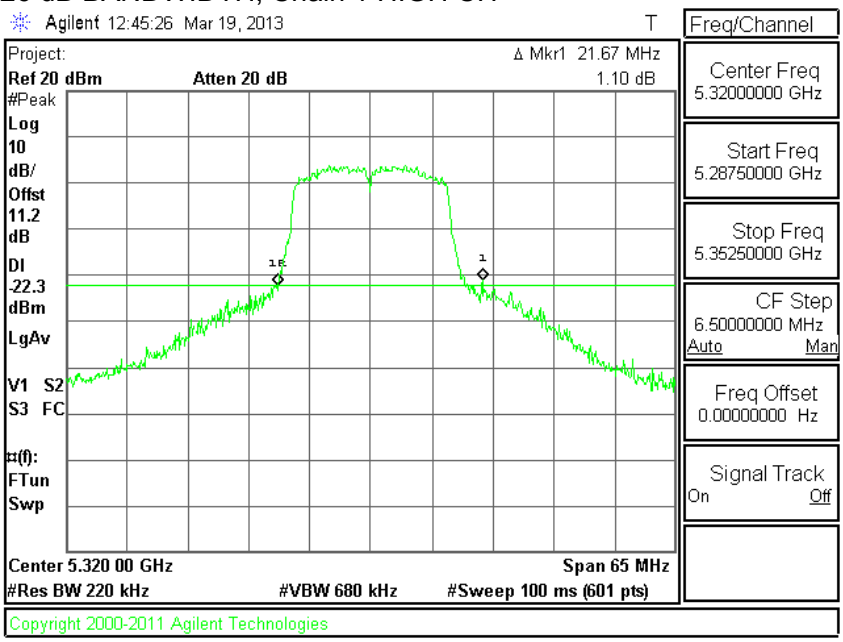
26 dB BANDWIDTH, Chain 1 MID CH



26 dB BANDWIDTH, Chain 1 HIGH CH



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8.6.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	5260	16.2954	16.4615
Mid	5300	16.2922	16.3701
High	5320	16.2986	16.2859

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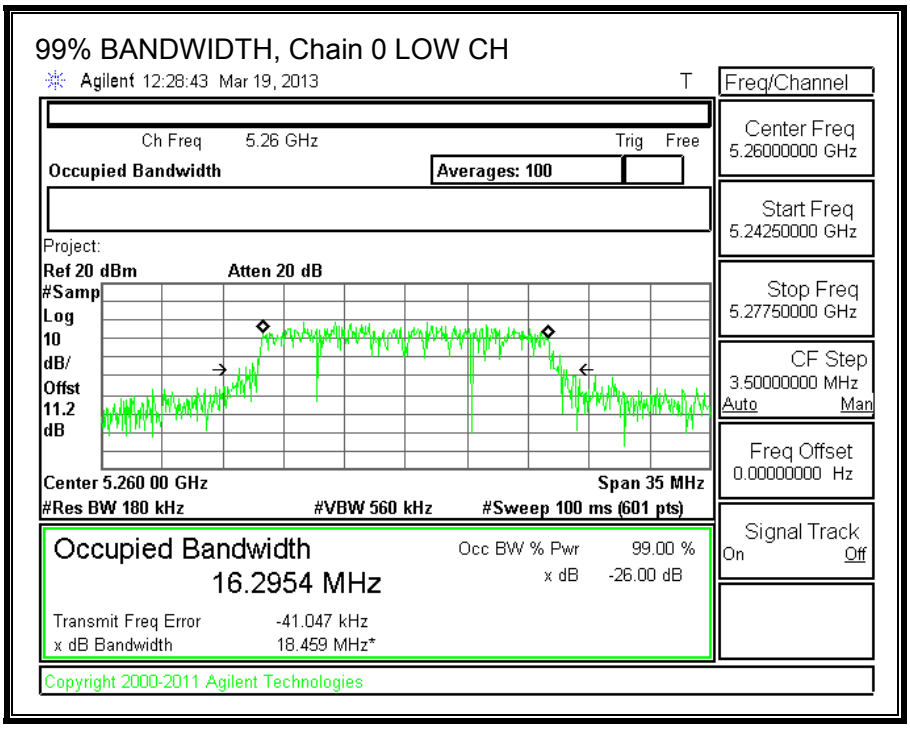
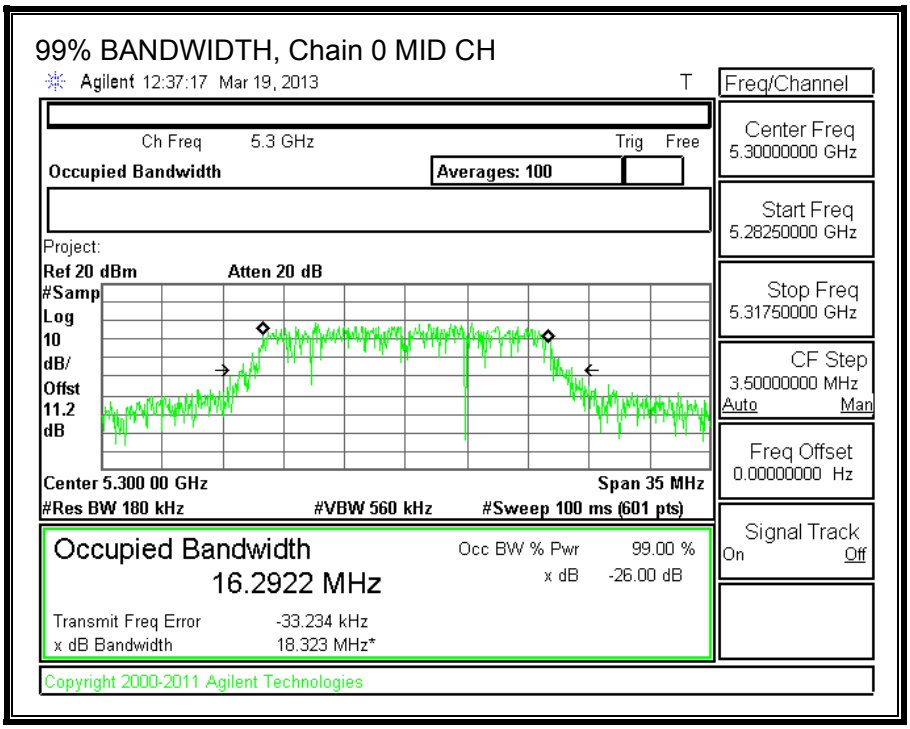
99% BANDWIDTH, Chain 0





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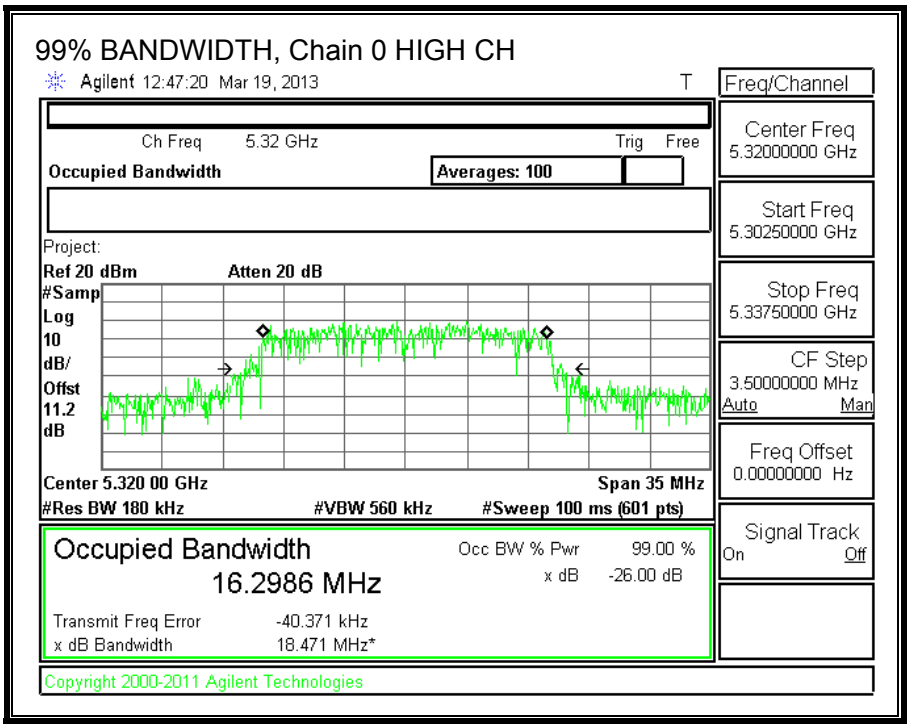
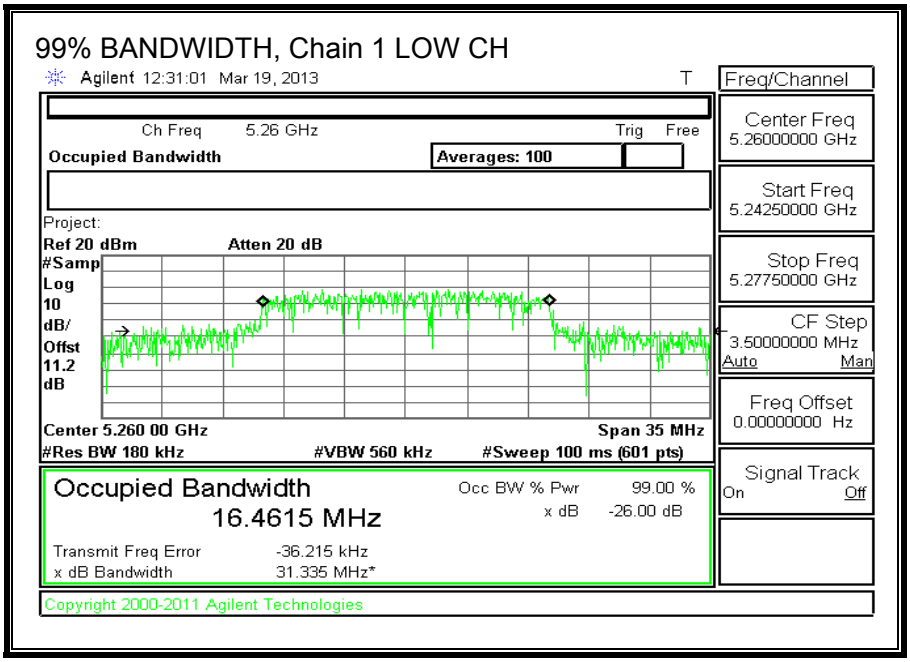


99% BANDWIDTH, Chain 1



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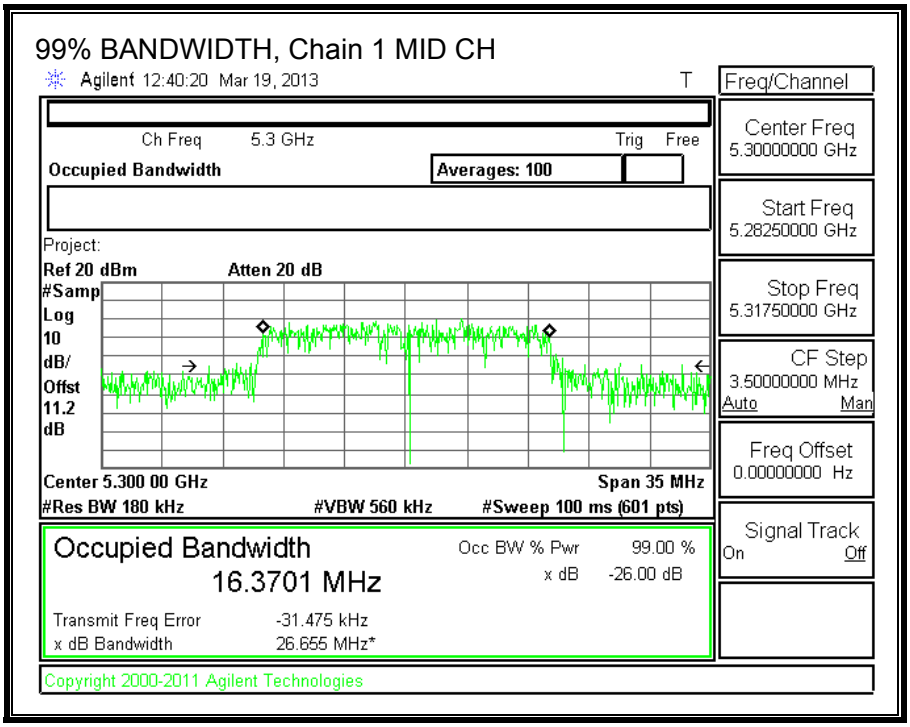

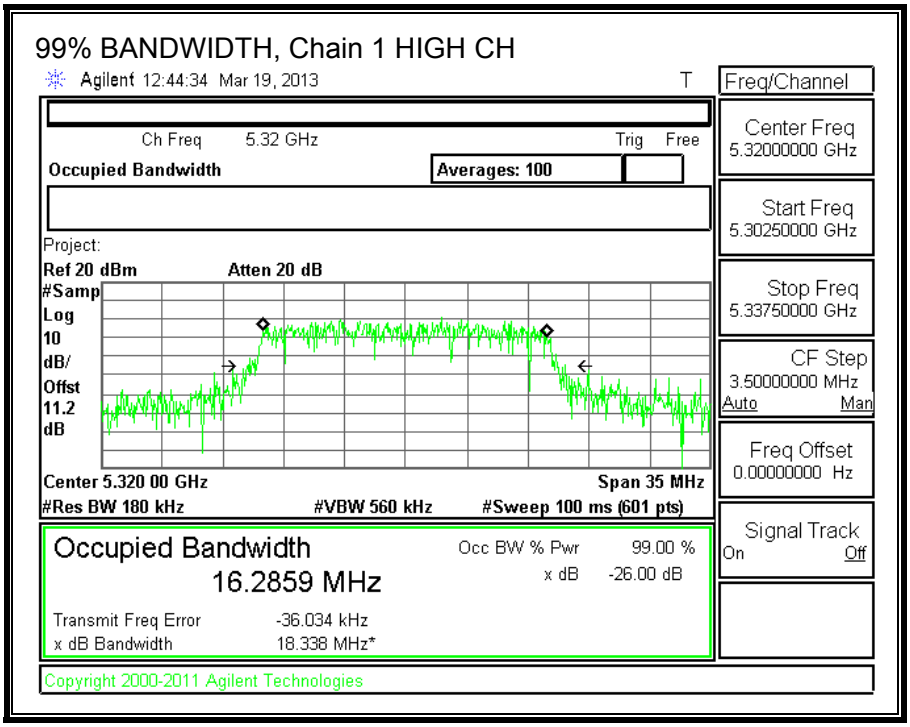

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8.6.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Average Power Results

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Total Power (dBm)
Low	5260	12.99	13.68	16.36
Mid	5300	12.06	13.11	15.63
High	5320	12.31	13.12	15.74

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8.6.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (1)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

The maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

DIRECTIONAL ANTENNA GAIN

For output power, the TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

For PPSD, the TX chains are correlated and the antenna gain is the same for each chain. The directional gain is:

Antenna Gain (dBi)	10 * Log (2 chains) (dB)	Correlated Chains Directional Gain (dBi)
4.00	3.01	7.01

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Uncorrelated Directional Gain (dBi)	Correlated Directional Gain (dBi)
Low	5260	21.78	16.30	4.00	7.01
Mid	5300	20.37	16.29	4.00	7.01
High	5320	20.58	16.30	4.00	7.01

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)
Low	5260	24.00	23.12	29.12	23.12	9.99
Mid	5300	24.00	23.12	29.12	23.12	9.99
High	5320	24.00	23.12	29.12	23.12	9.99

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power & PPSD

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	12.657	13.516	16.12	23.12	-7.00
Mid	5300	13.419	14.121	16.79	23.12	-6.33
High	5320	13.538	13.988	16.78	23.12	-6.34

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5260	-0.83	-0.37	2.42	9.99	-7.57
Mid	5300	-0.36	0.11	2.89	9.99	-7.10
High	5320	0.37	0.64	3.52	9.99	-6.47

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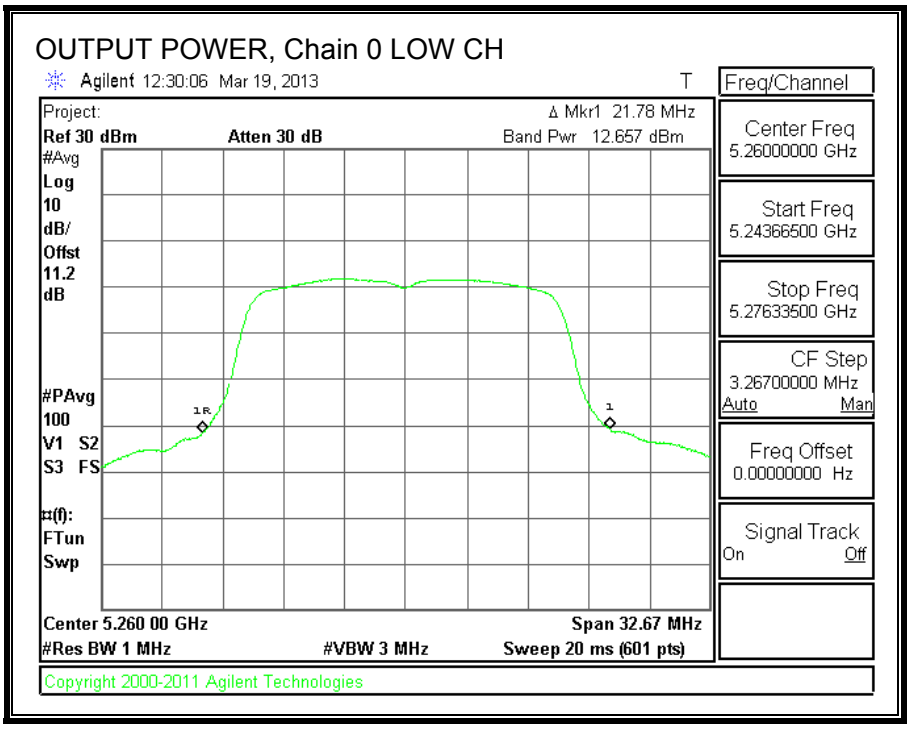
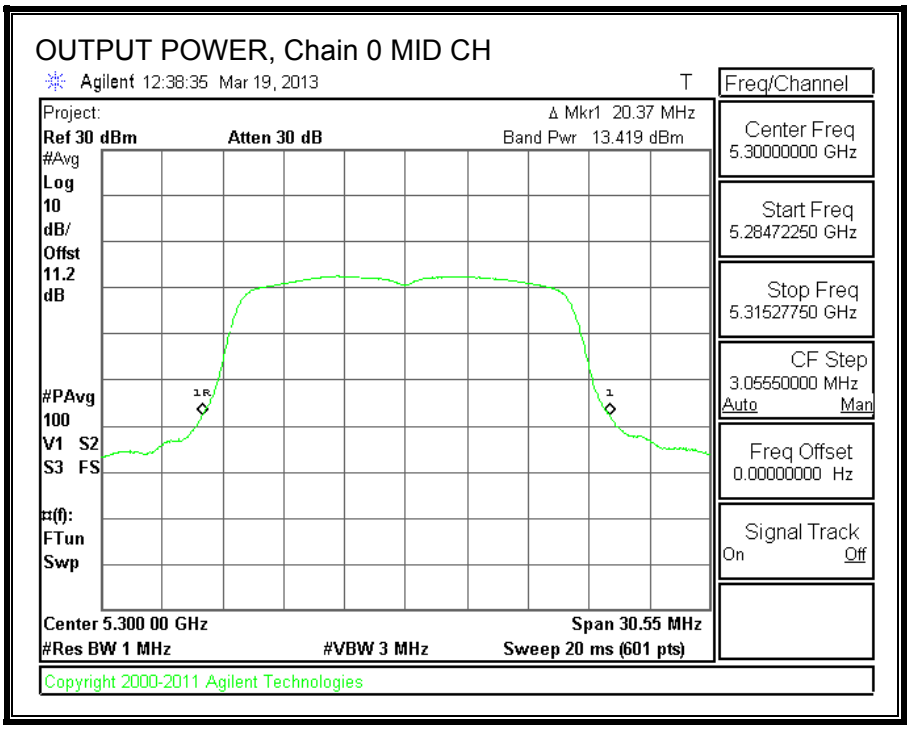
OUTPUT POWER, Chain 0





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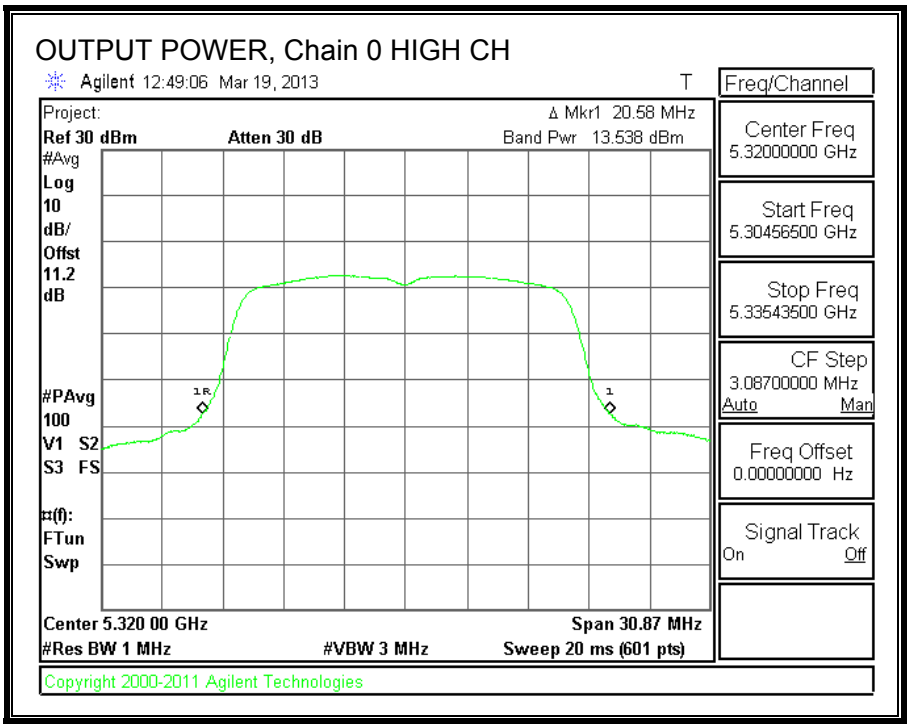
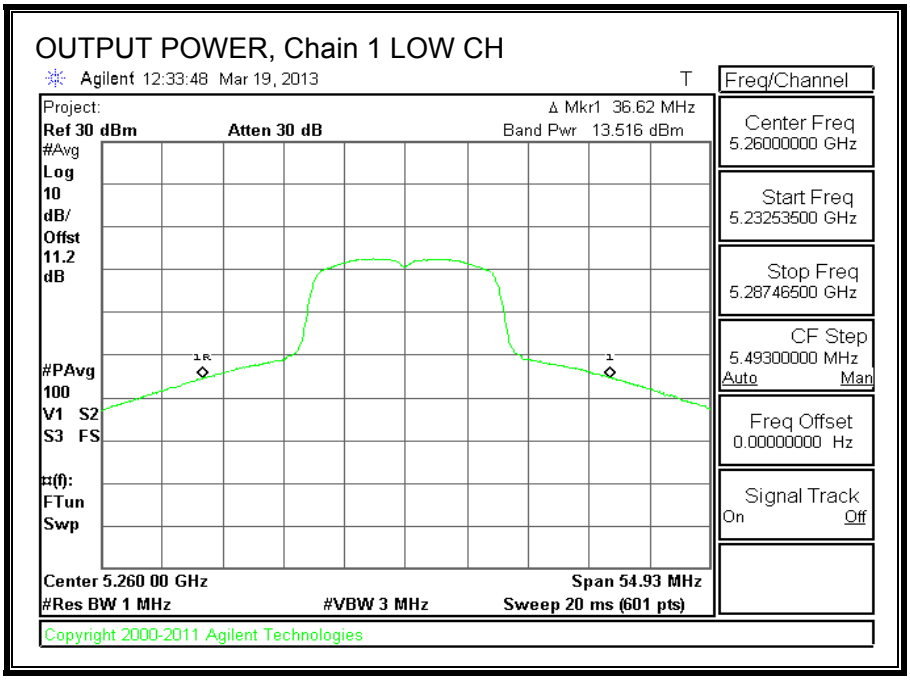


OUTPUT POWER AND PPSD, Chain 1



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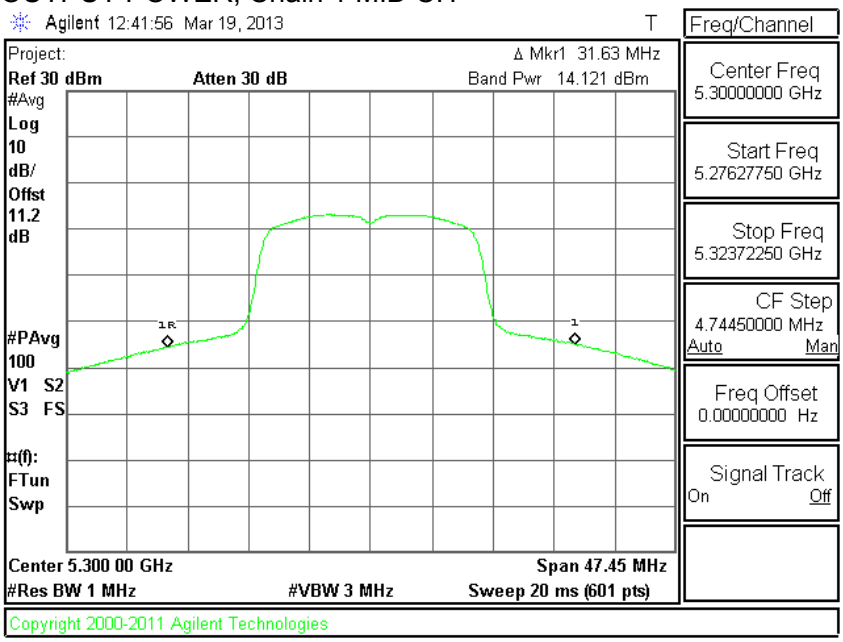
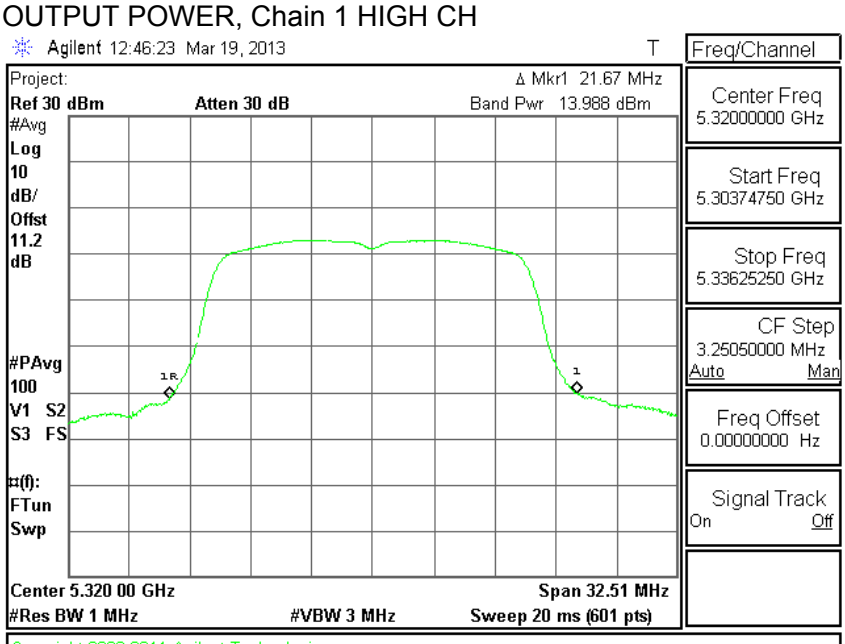
OUTPUT POWER, Chain 1 MID CH



OUTPUT POWER, Chain 1 HIGH CH



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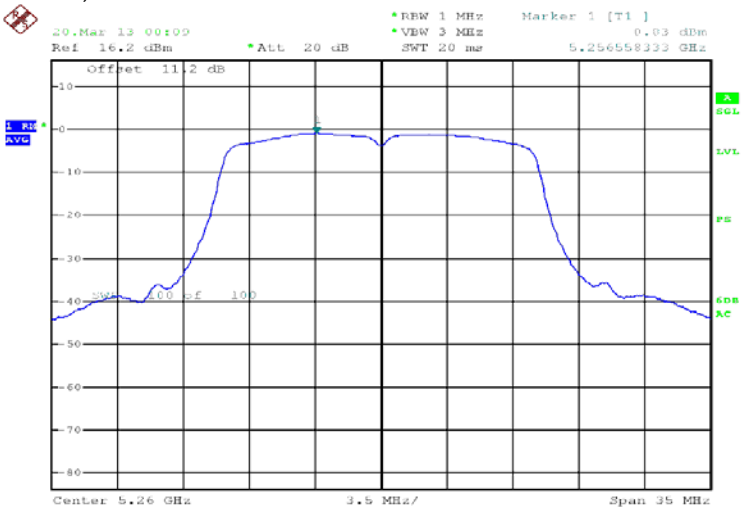
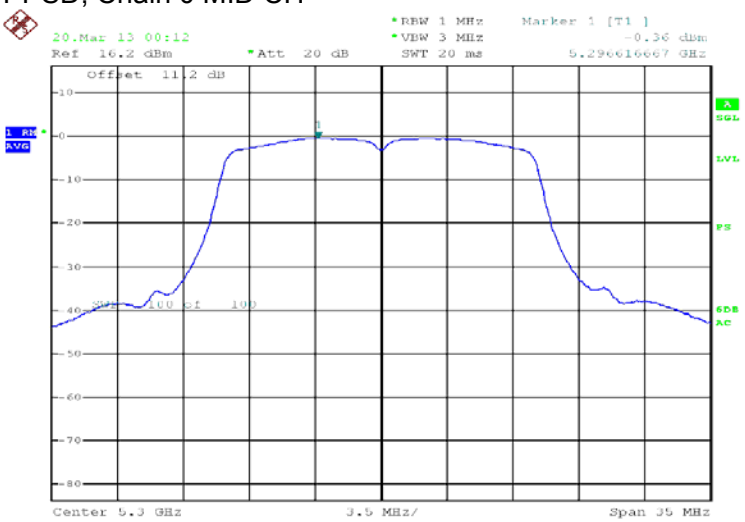
PPSD, Chain 0

PPSD, Chain 0 LOW CH



Date: 20.MAR.2013 00:09:35

PPSD, Chain 0 MID CH



Date: 20.MAR.2013 00:12:40

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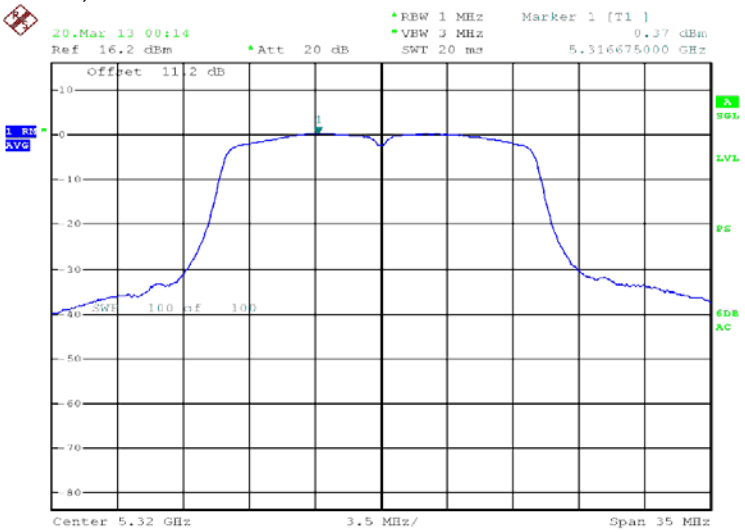
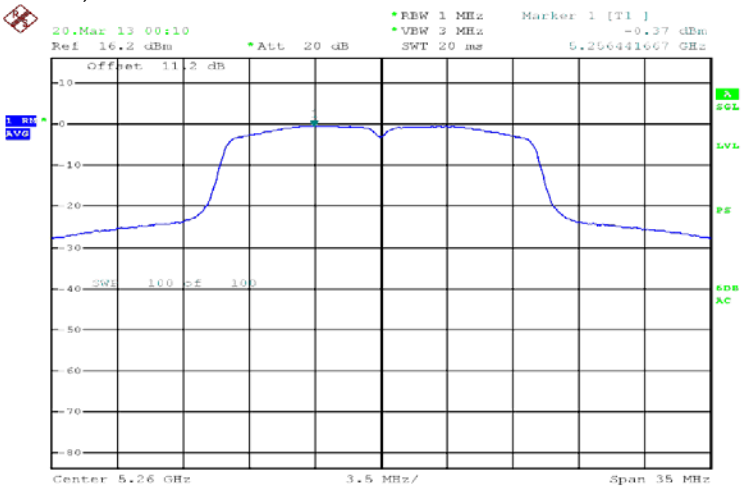
PPSD, Chain 0 HIGH CH



Date: 20.MAR.2013 00:14:31

OUTPUT POWER AND PPSD, Chain 1

PPSD, Chain 1 LOW CH



Date: 20.MAR.2013 00:10:28

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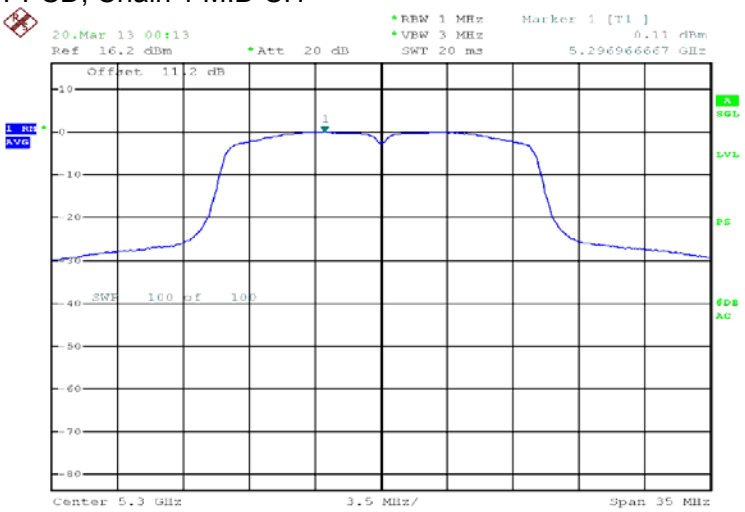
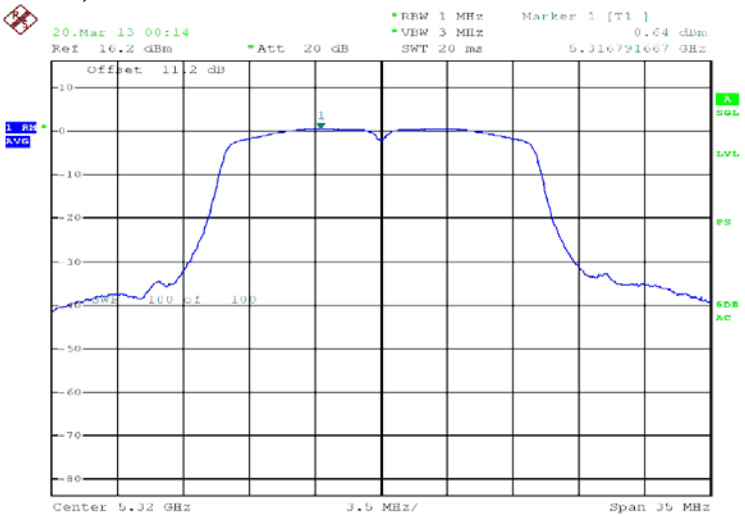
PPSD, Chain 1 MID CH



Date: 20.MAR.2013 00:13:09

PPSD, Chain 1 HIGH CH



Date: 20.MAR.2013 00:14:06

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8.7. 802.11n HT20 CDD MCS0 2TX MODE IN THE 5.3 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)
Low	5260	20.69	38.35
Mid	5300	23.08	22.42
High	5320	20.26	28.82

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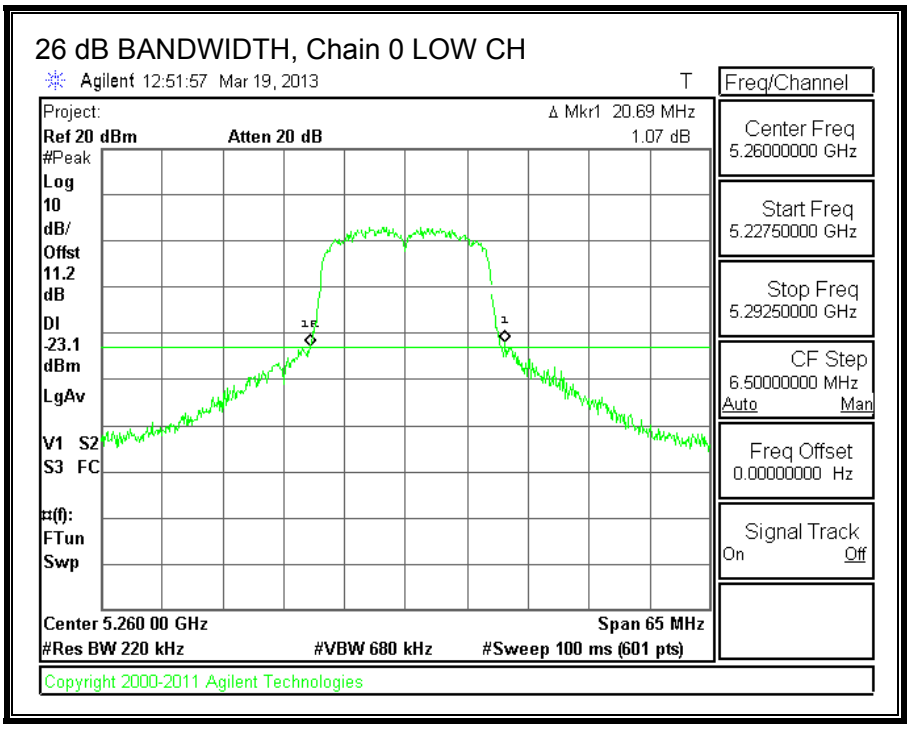
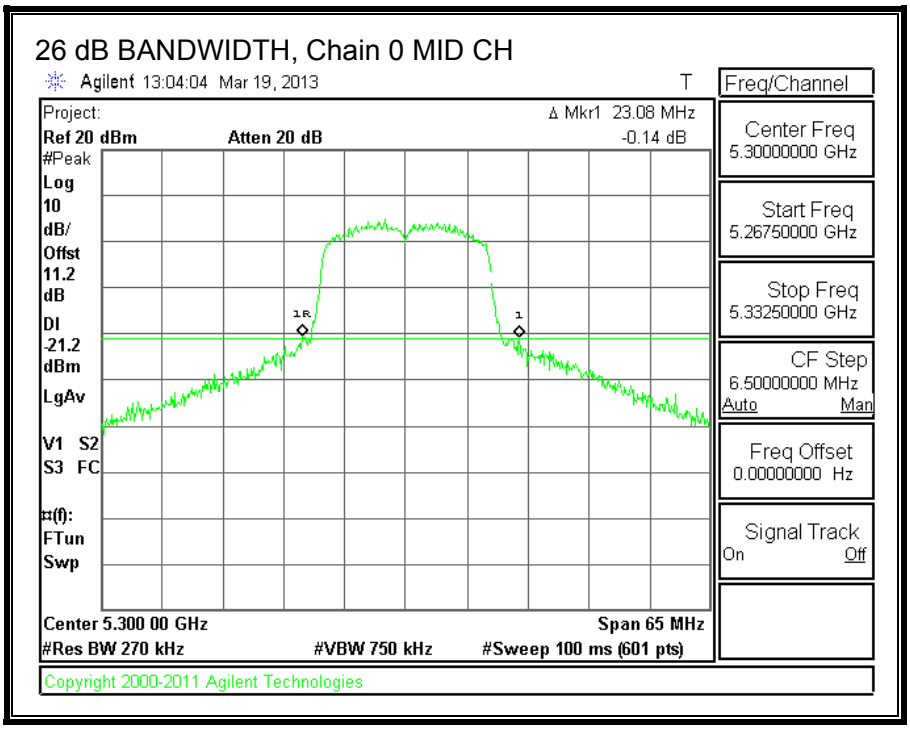
26 dB BANDWIDTH, Chain 0





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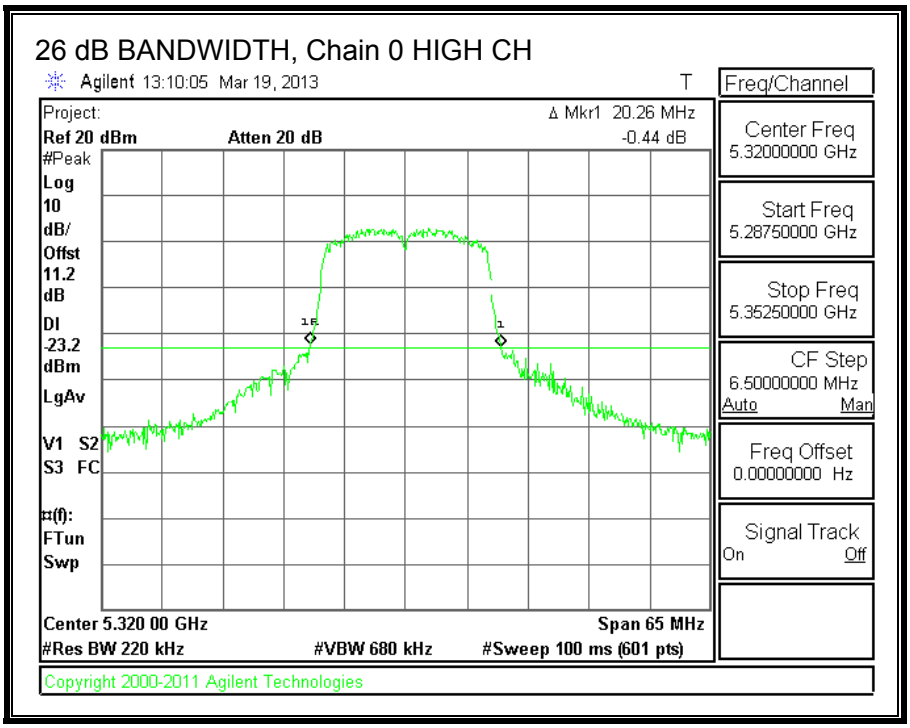
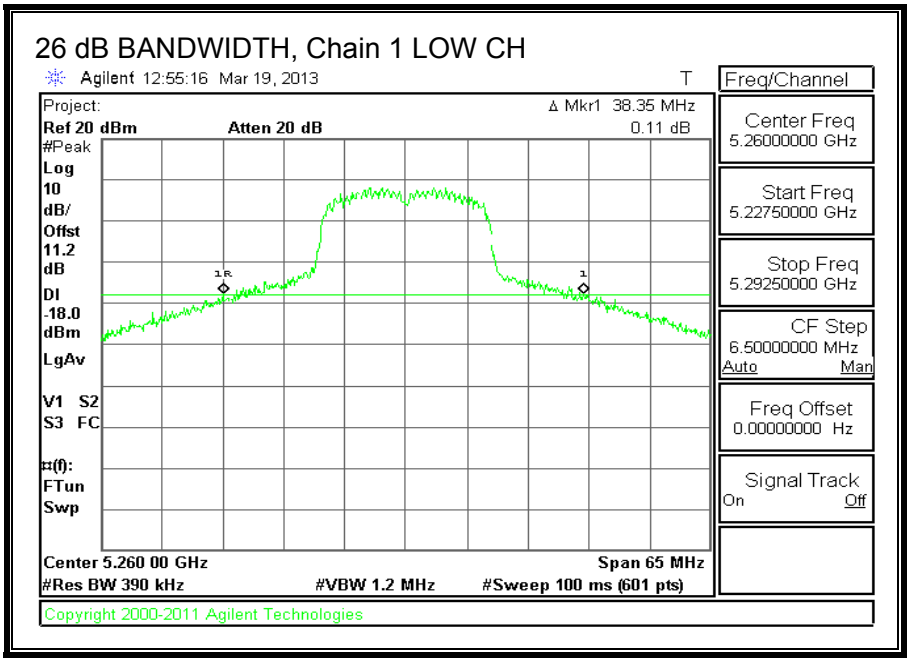


26 dB BANDWIDTH, Chain 1



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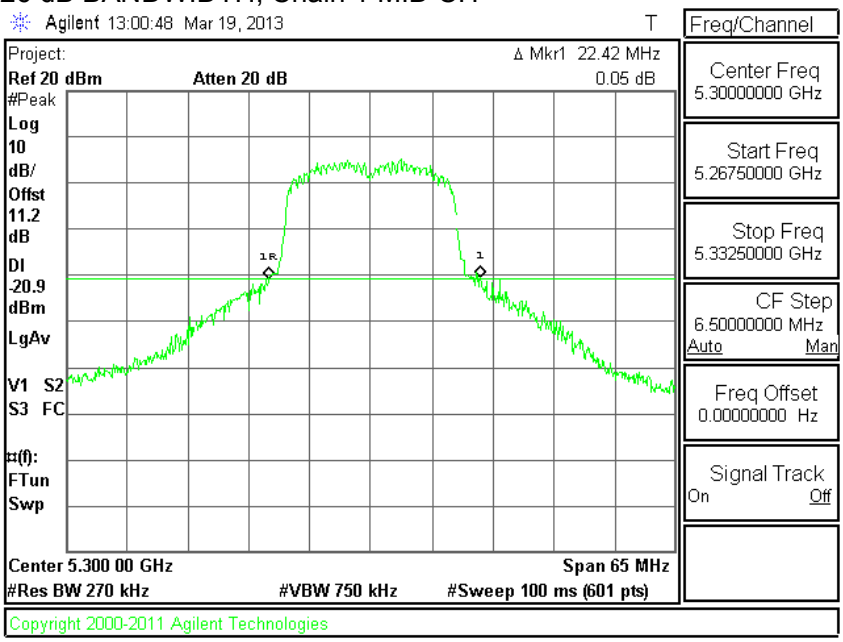
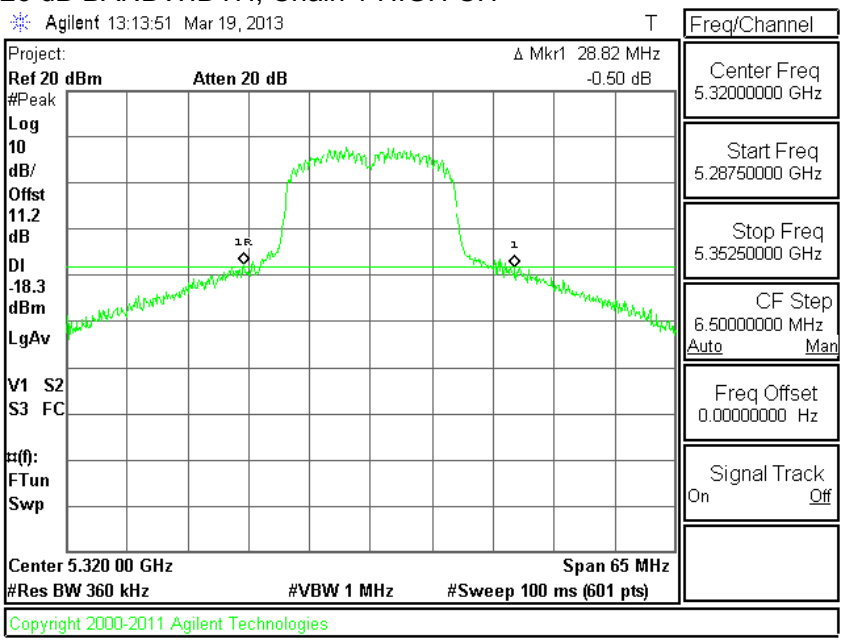
26 dB BANDWIDTH, Chain 1 MID CH



26 dB BANDWIDTH, Chain 1 HIGH CH



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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)
Low	5260	17.4192	17.5865
Mid	5300	17.4289	17.3907
High	5320	17.4068	17.4765

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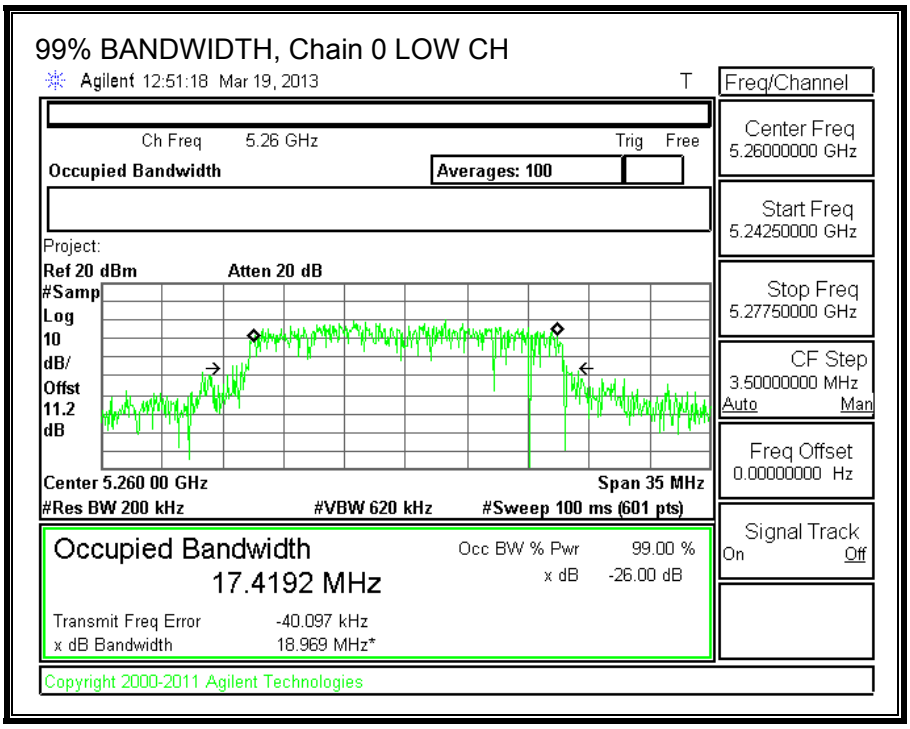
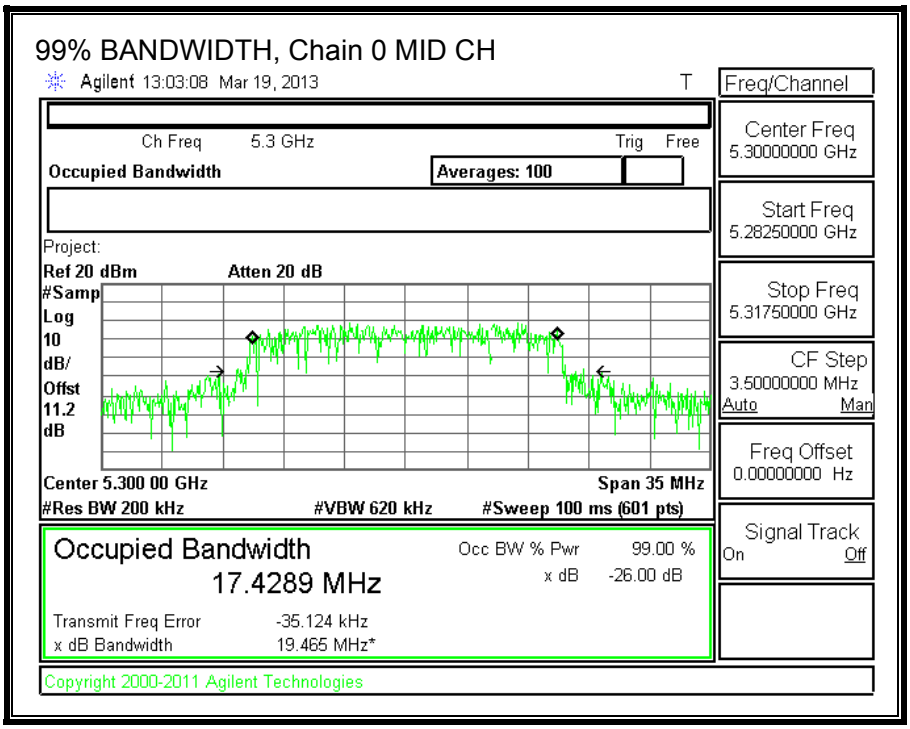
99% BANDWIDTH, Chain 0





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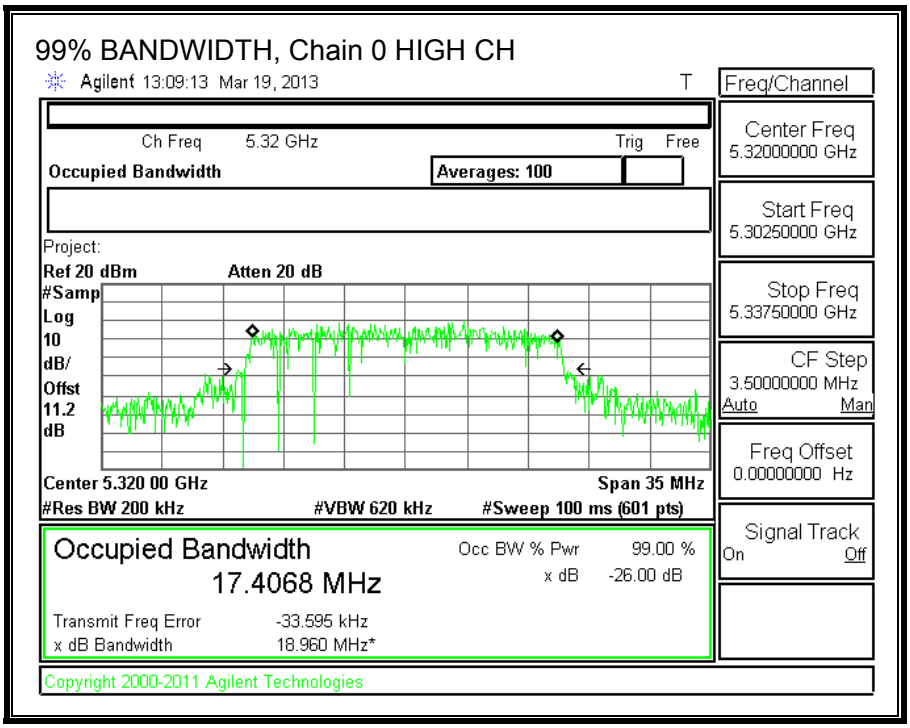
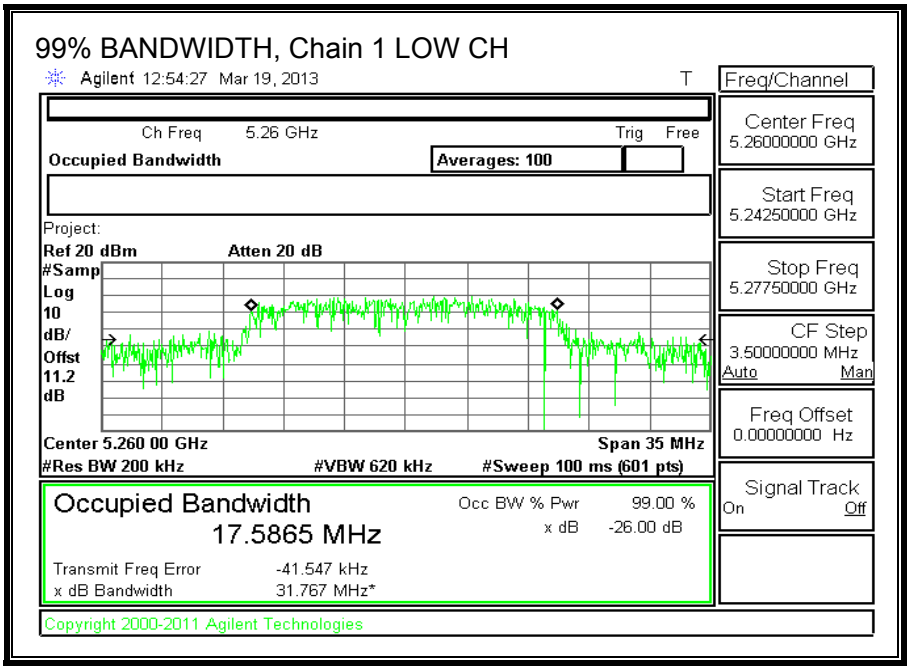


99% BANDWIDTH, Chain 1



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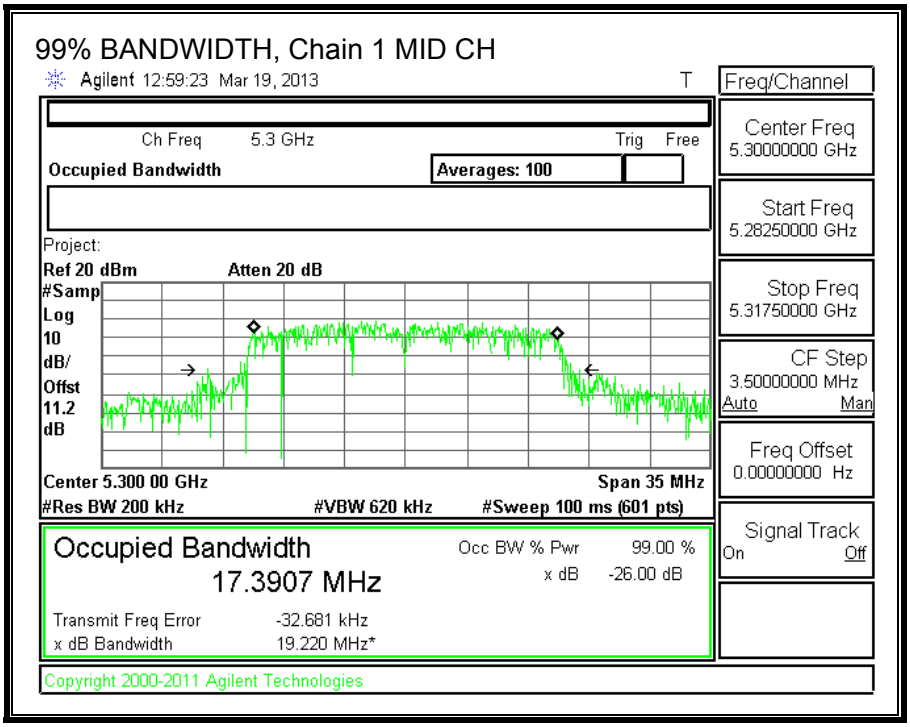

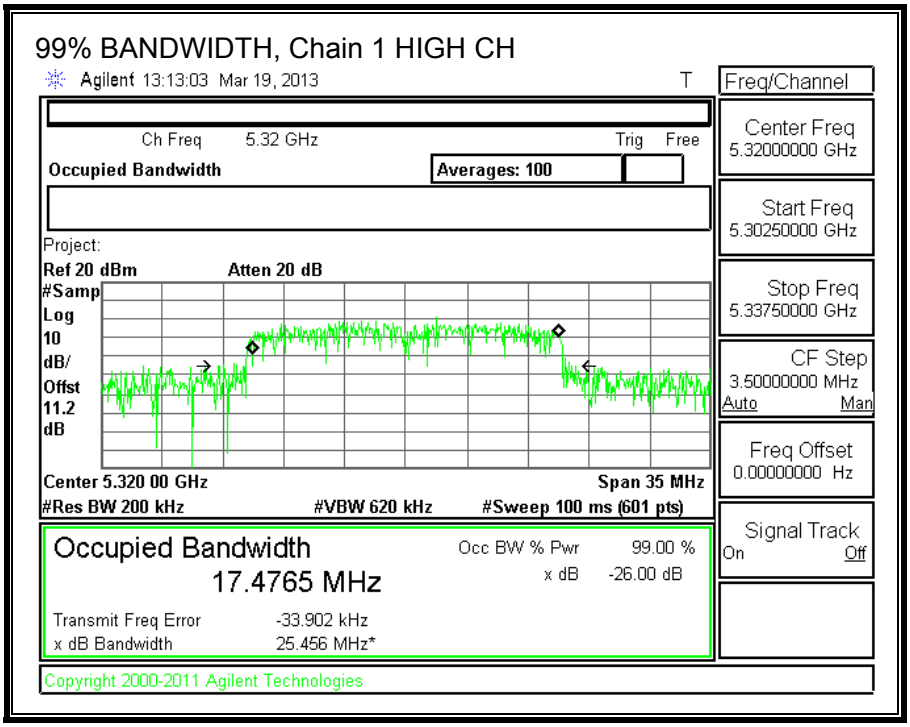

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8.7.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Average Power Results

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Total Power (dBm)
Low	5260	12.07	12.75	15.43
Mid	5300	12.01	13.13	15.62
High	5320	12.14	12.98	15.59

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8.7.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (1)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

The maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

DIRECTIONAL ANTENNA GAIN

For output power, the TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

For PPSD, the TX chains are 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)
4.00	4.00	7.01

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Uncorrelated Directional Gain (dBi)	Correlated Directional Gain (dBi)
Low	5260	20.69	17.4192	4.00	7.01
Mid	5300	22.42	17.3907	4.00	7.01
High	5320	20.26	17.4068	4.00	7.01

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)
Low	5260	24.00	23.41	29.41	23.41	9.99
Mid	5300	24.00	23.40	29.40	23.40	9.99
High	5320	24.00	23.41	29.41	23.41	9.99

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power & PPSD

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	12.996	12.677	15.85	23.41	-7.56
Mid	5300	13.253	13.393	16.33	23.40	-7.07
High	5320	13.004	13.669	16.36	23.41	-7.05

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5260	-0.66	-0.43	2.47	9.99	-7.52
Mid	5300	-0.58	0.02	2.74	9.99	-7.25
High	5320	-0.31	0.46	3.10	9.99	-6.89

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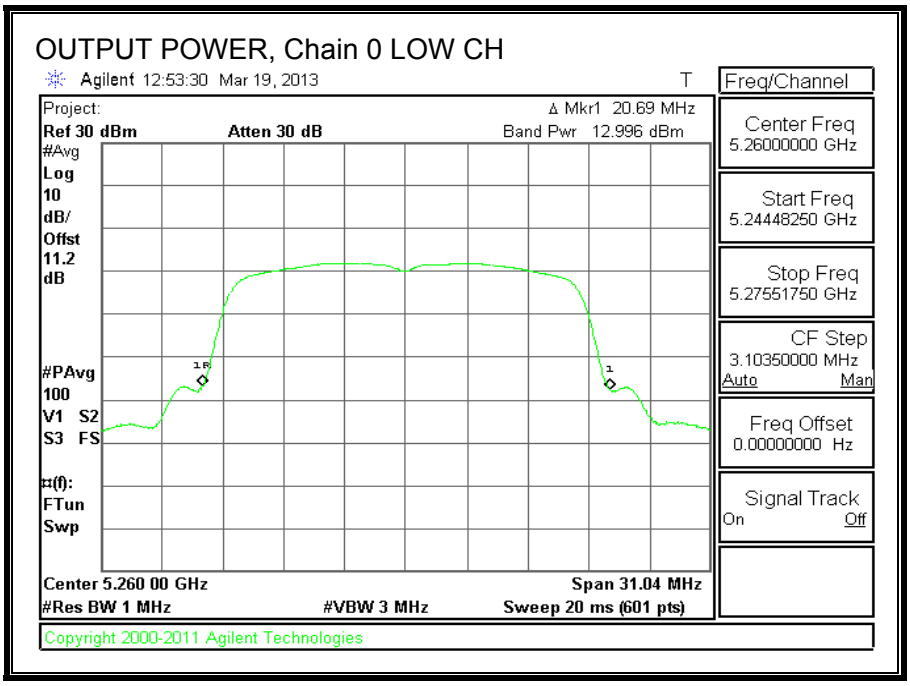
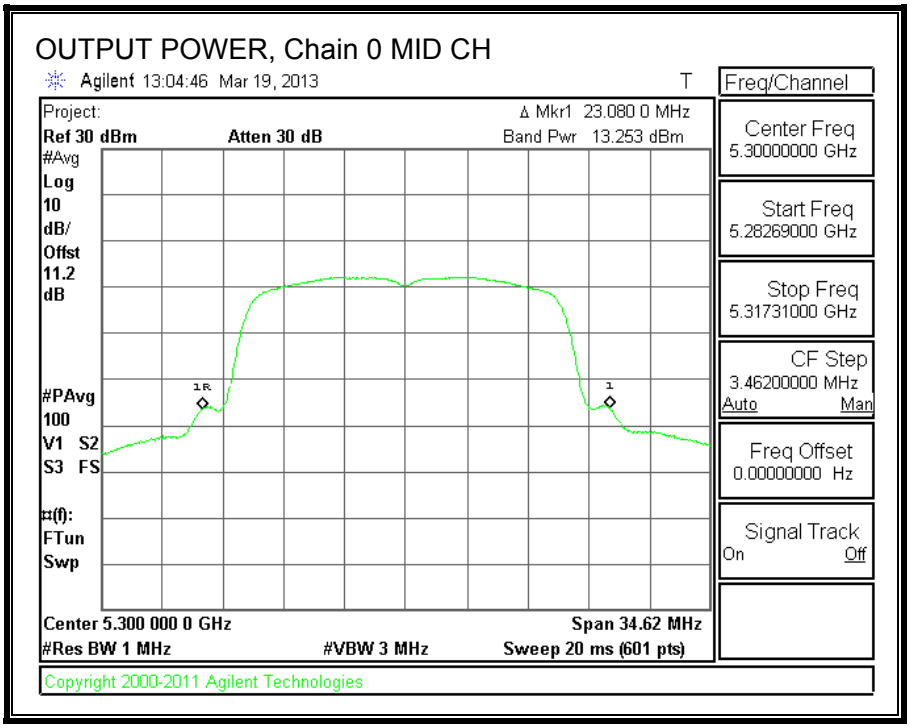
OUTPUT POWER, Chain 0





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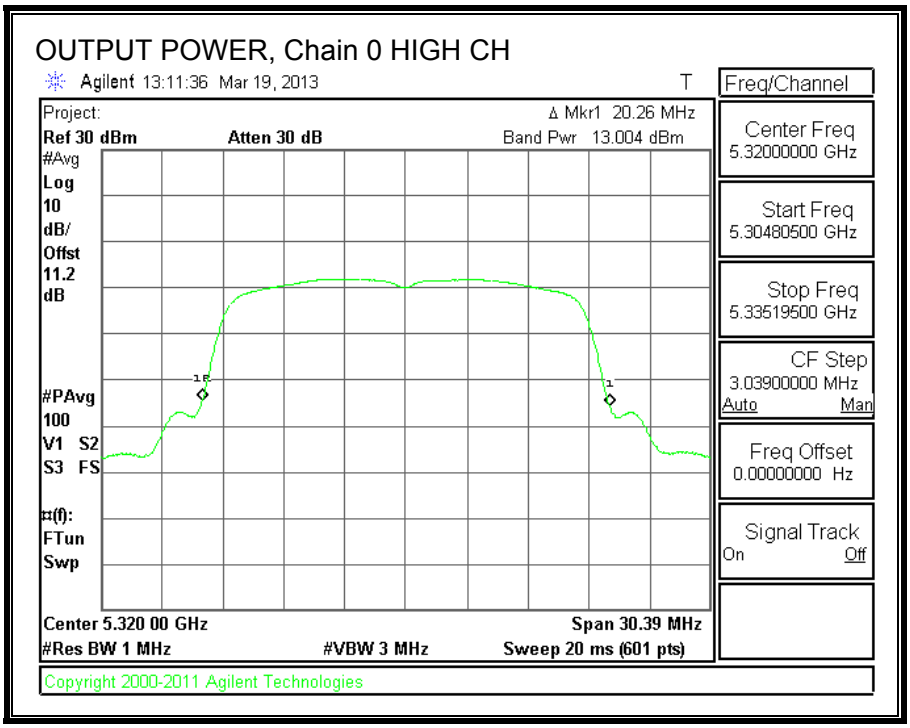
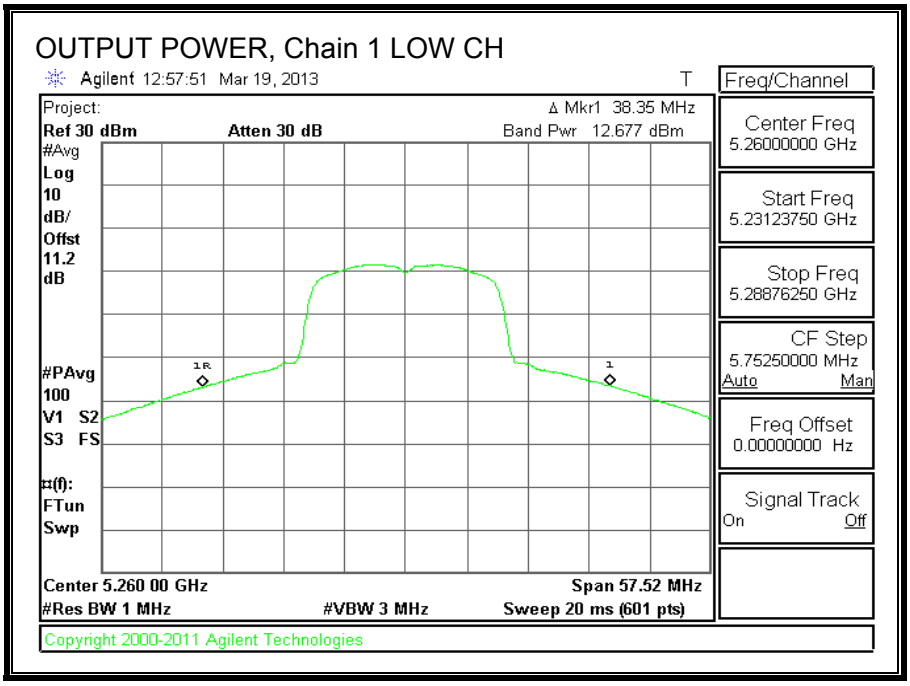


OUTPUT POWER AND PPSD, Chain 1



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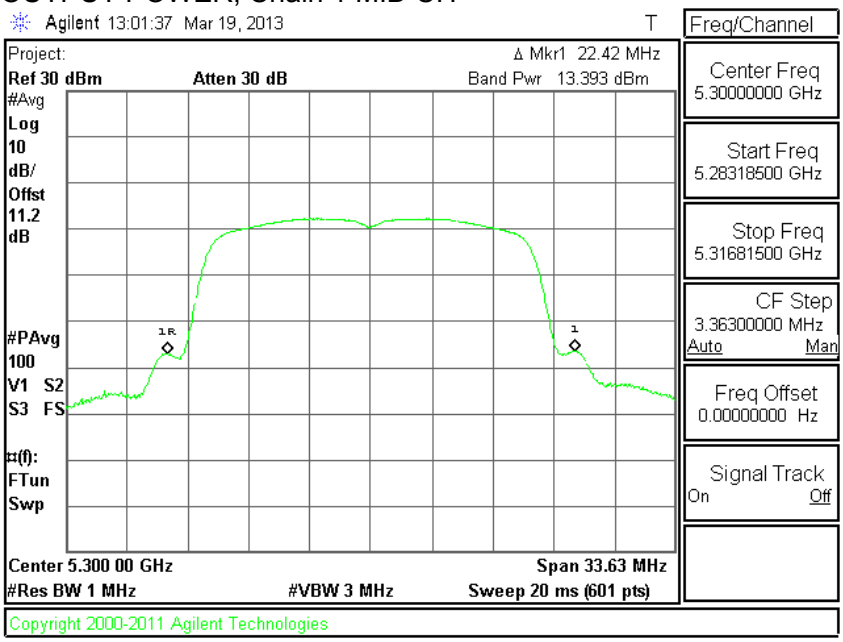
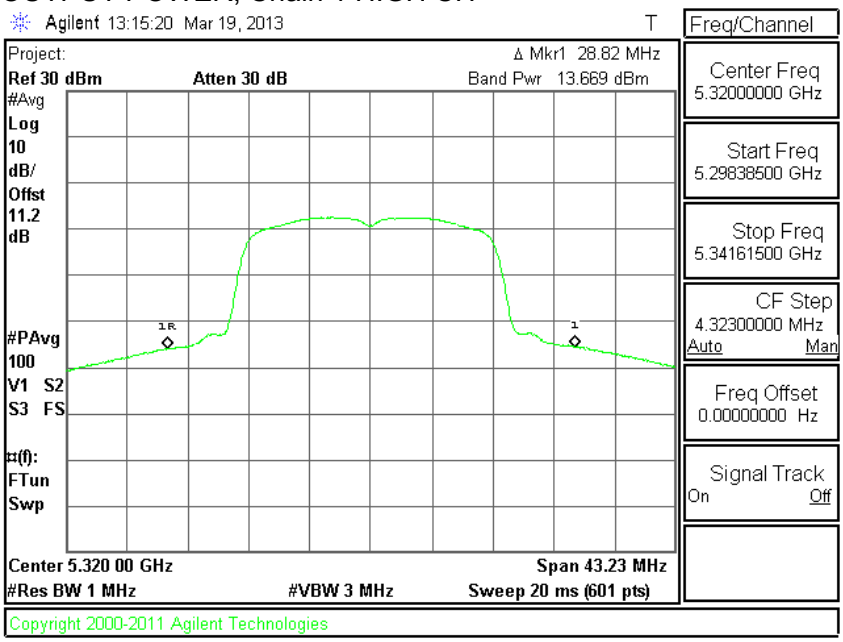
OUTPUT POWER, Chain 1 MID CH



OUTPUT POWER, Chain 1 HIGH CH



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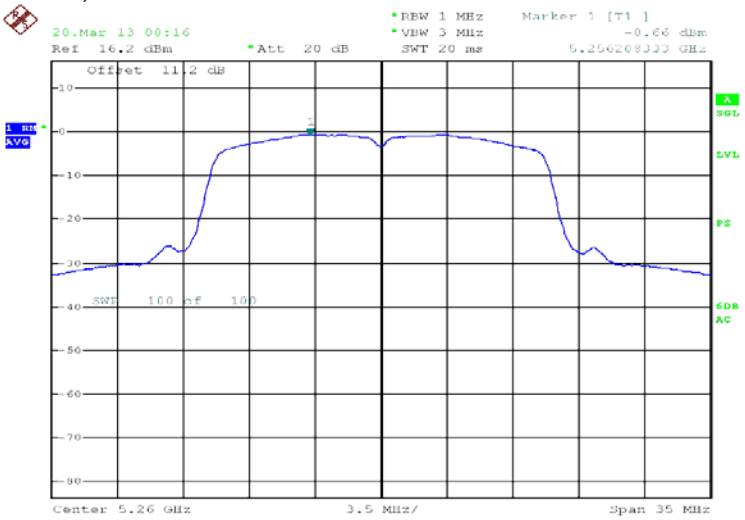
PPSD, Chain 0

PPSD, Chain 0 LOW CH



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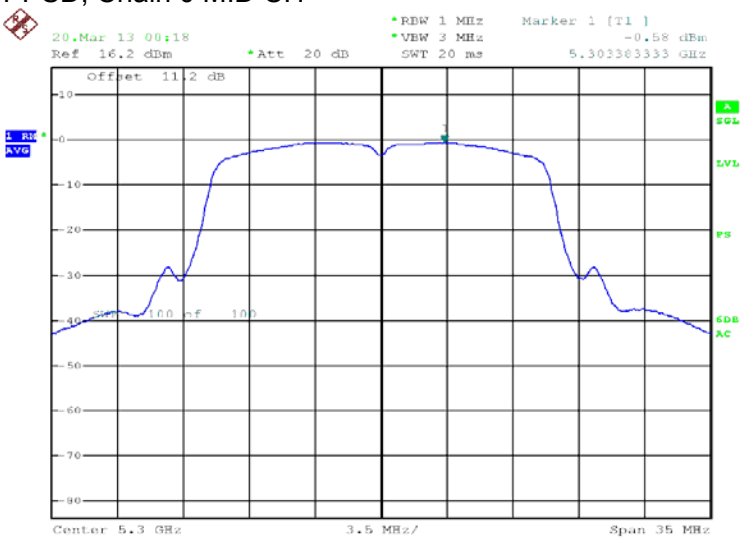
PPSD, Chain 0 MID CH



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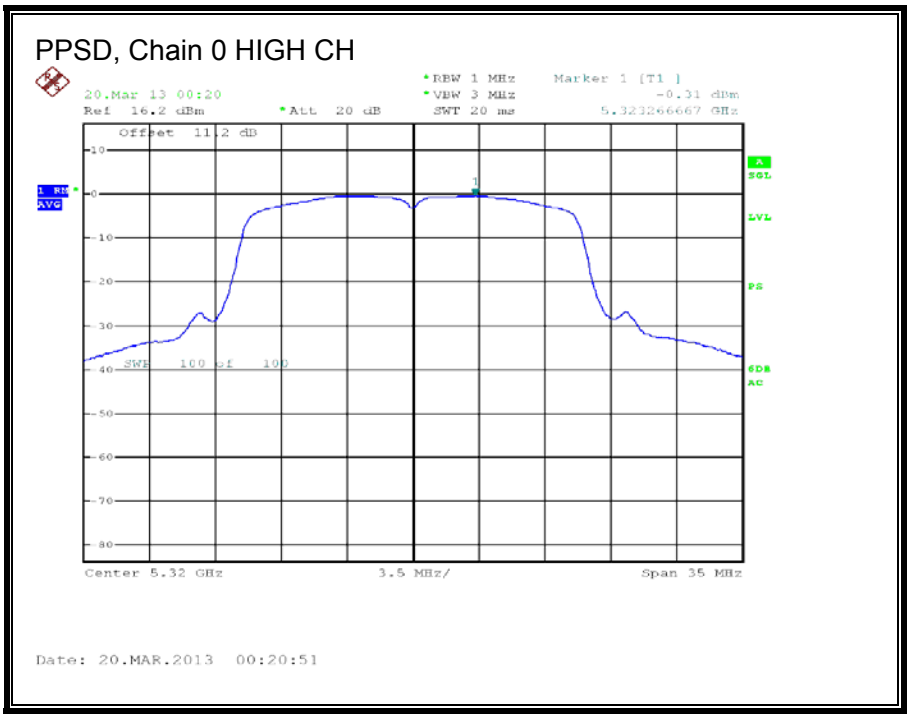
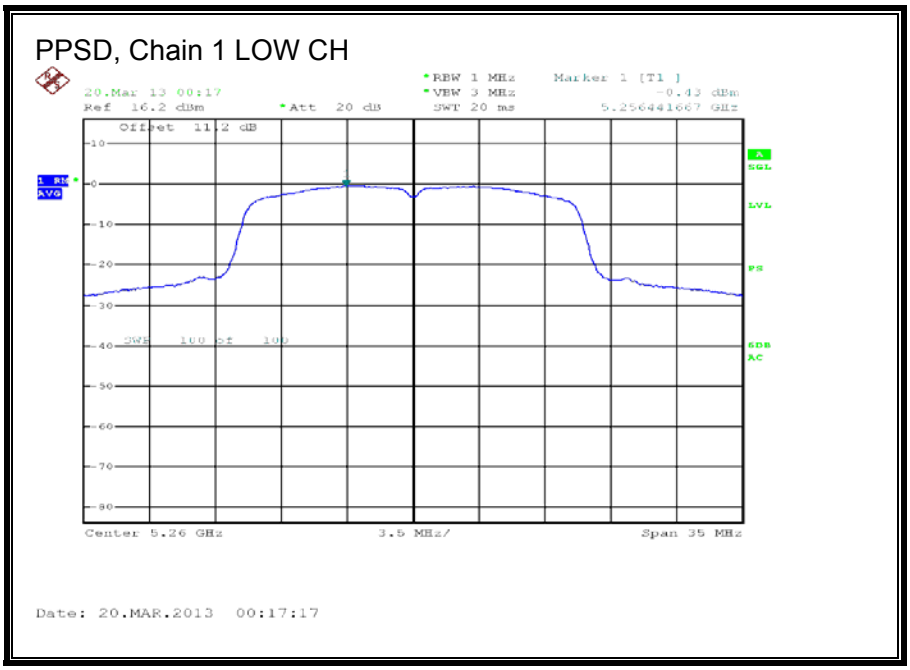


OUTPUT POWER AND PPSD, Chain 1



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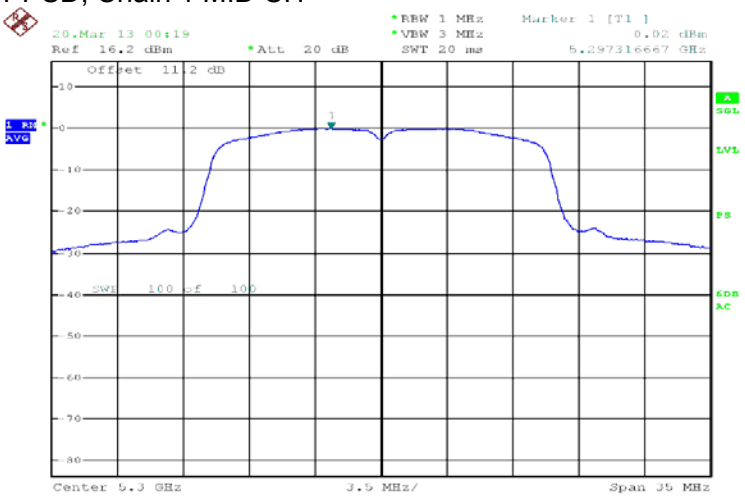
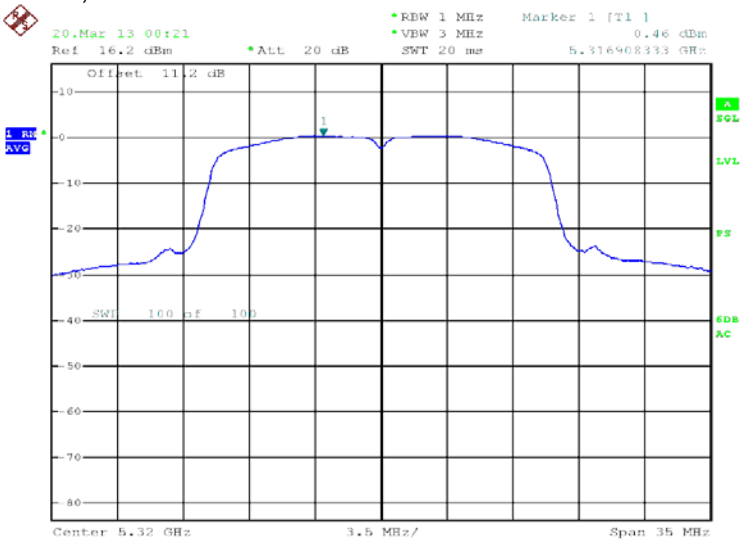
PPSD, Chain 1 MID CH



Date: 20.MAR.2013 00:19:13

PPSD, Chain 1 HIGH CH



Date: 20.MAR.2013 00:21:18

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8.8. 802.11n HT20 SDM MCS8 2TX MODE IN THE 5.3 GHz BAND

8.8.1. 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	32.08	23.42
Mid	5300	23.83	20.25
High	5320	20.00	32.25

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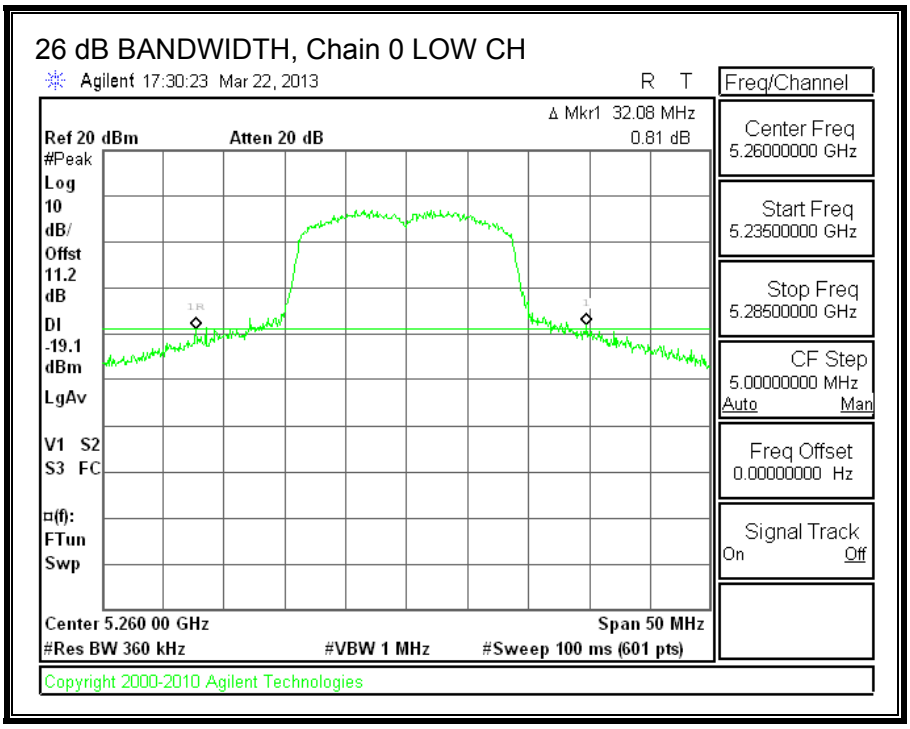
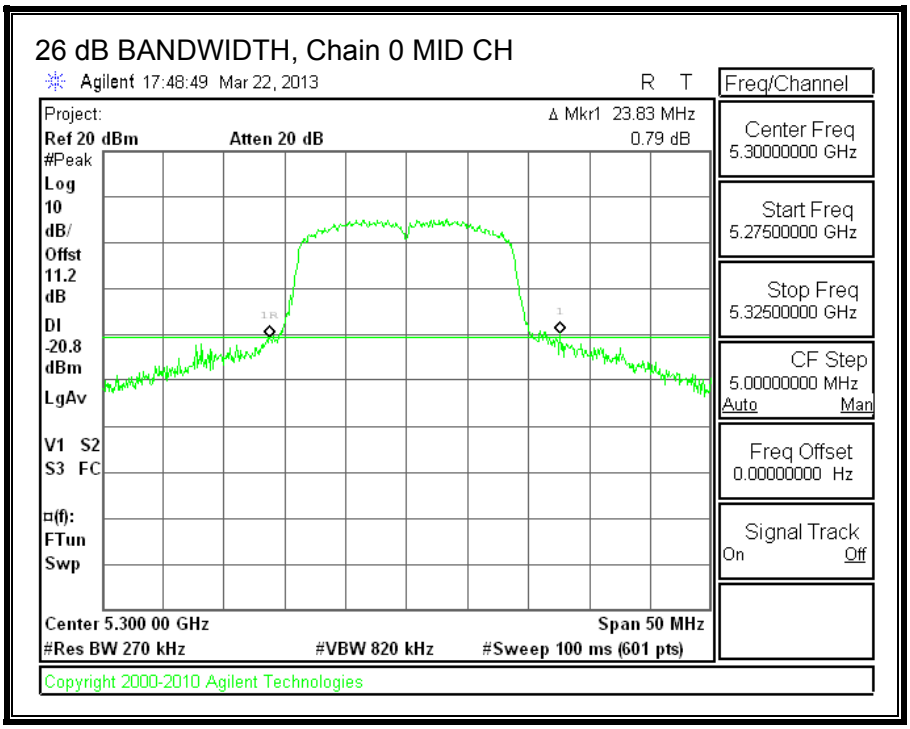
26 dB BANDWIDTH, Chain 0





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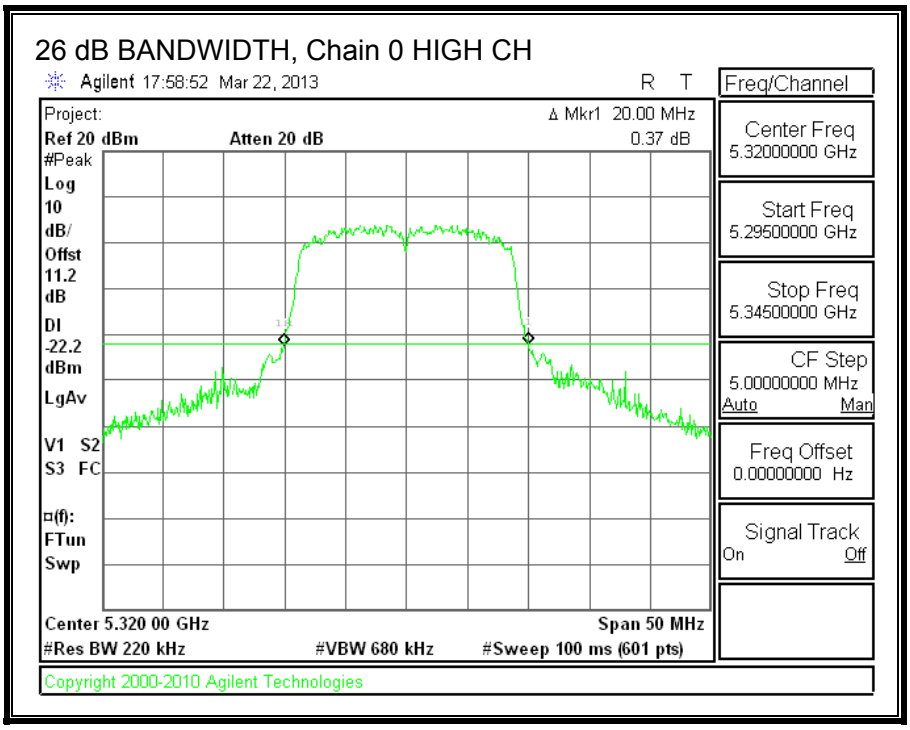
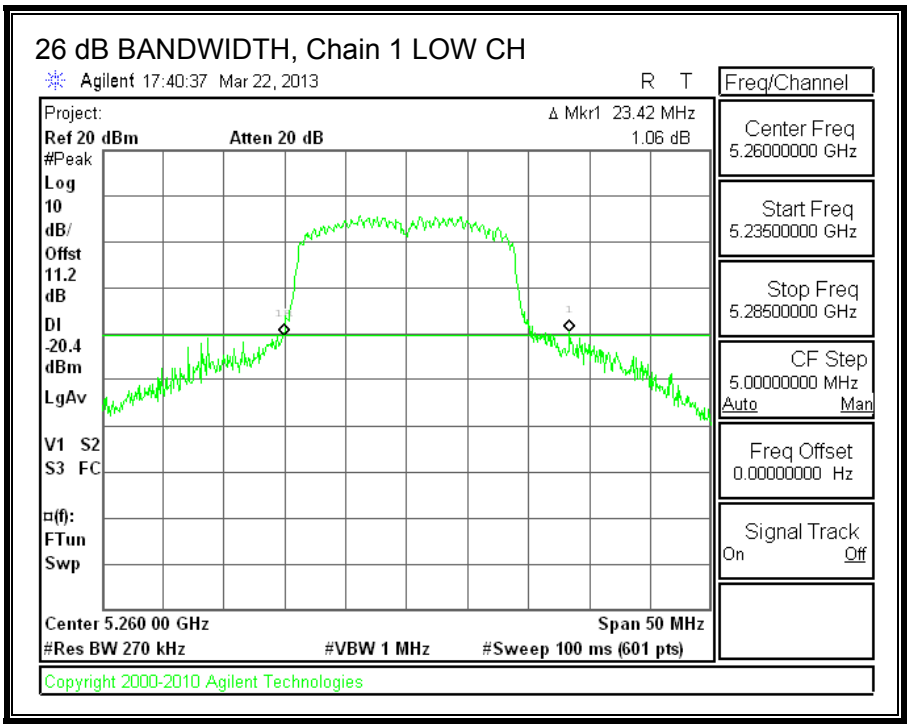


26 dB BANDWIDTH, Chain 1



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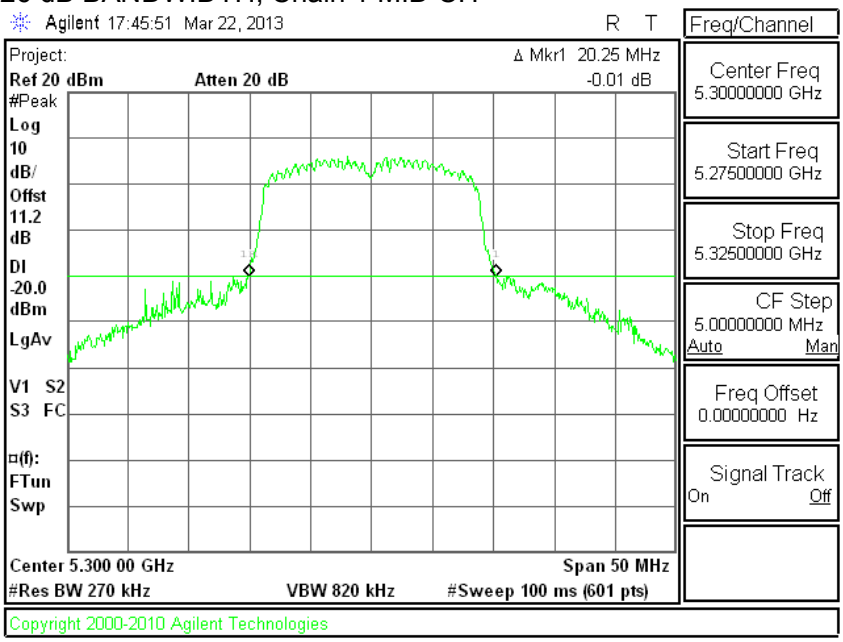
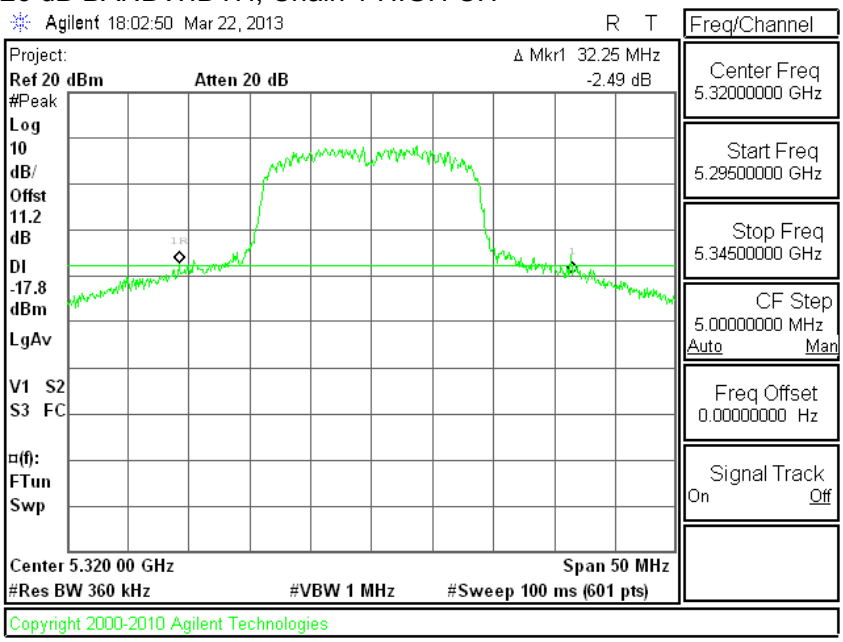
26 dB BANDWIDTH, Chain 1 MID CH



26 dB BANDWIDTH, Chain 1 HIGH CH



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8.8.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	5260	17.4639	17.3897
Mid	5300	17.4291	17.3915
High	5320	17.3934	17.4981

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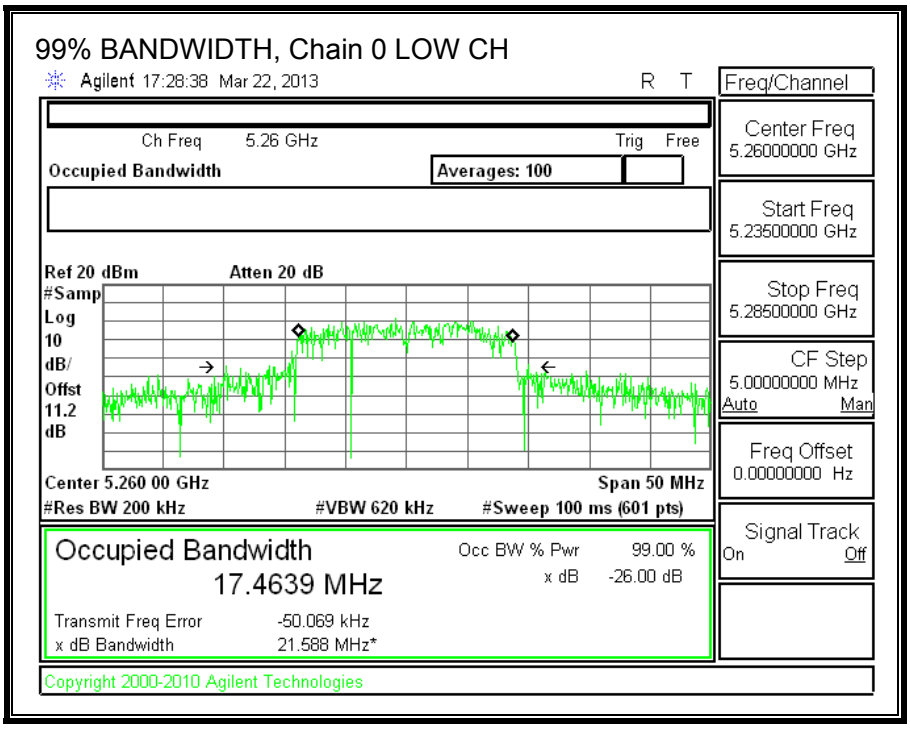
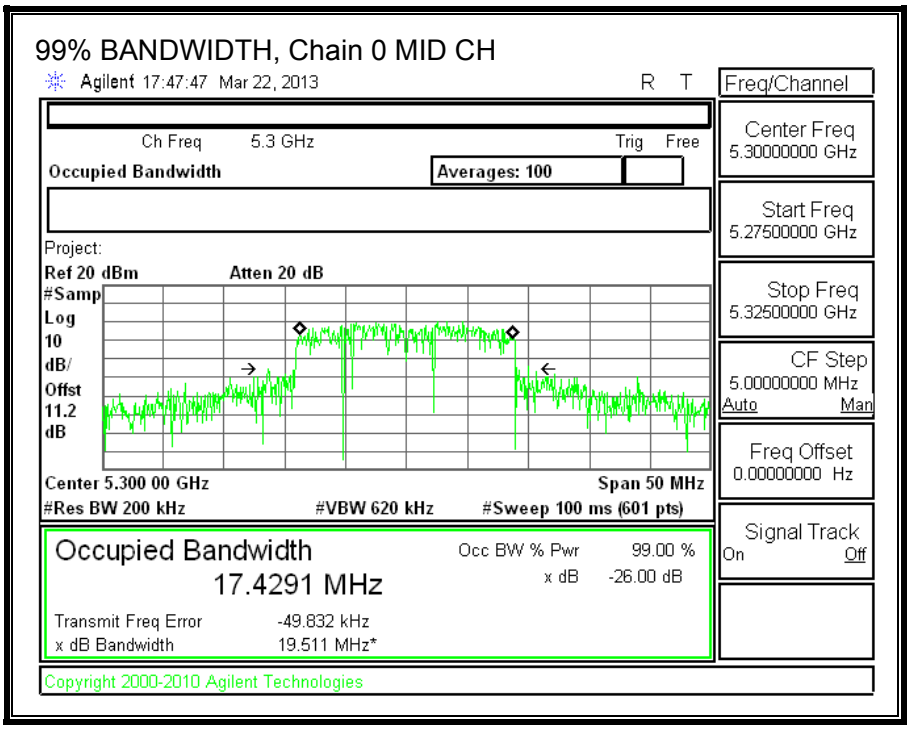
99% BANDWIDTH, Chain 0





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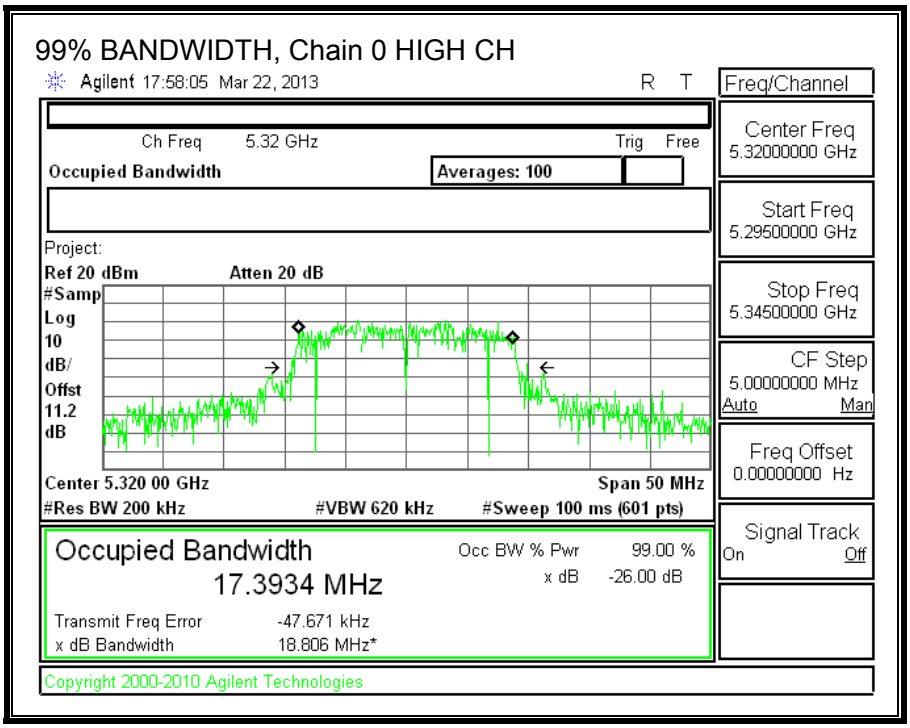
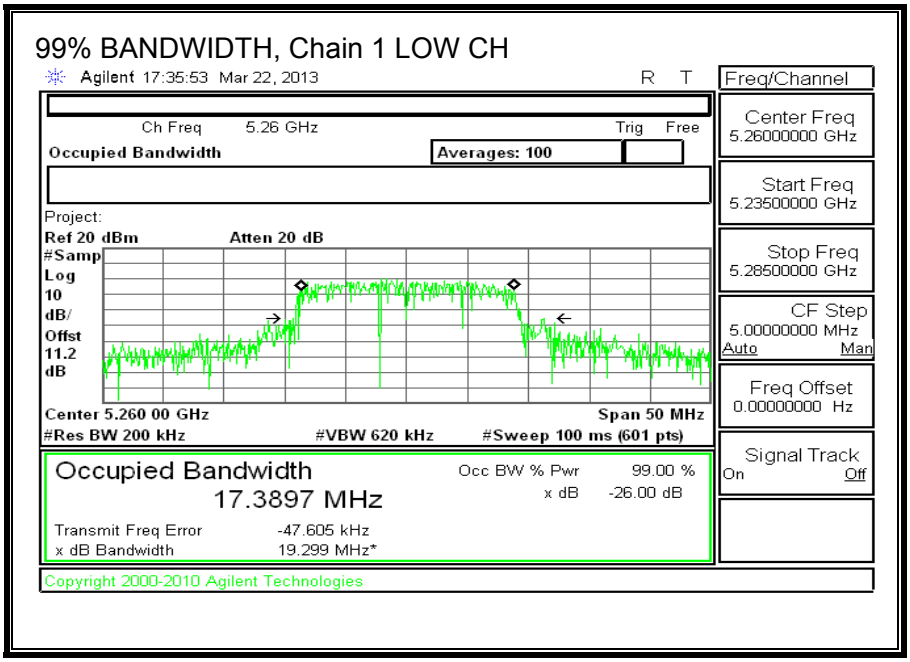


99% BANDWIDTH, Chain 1



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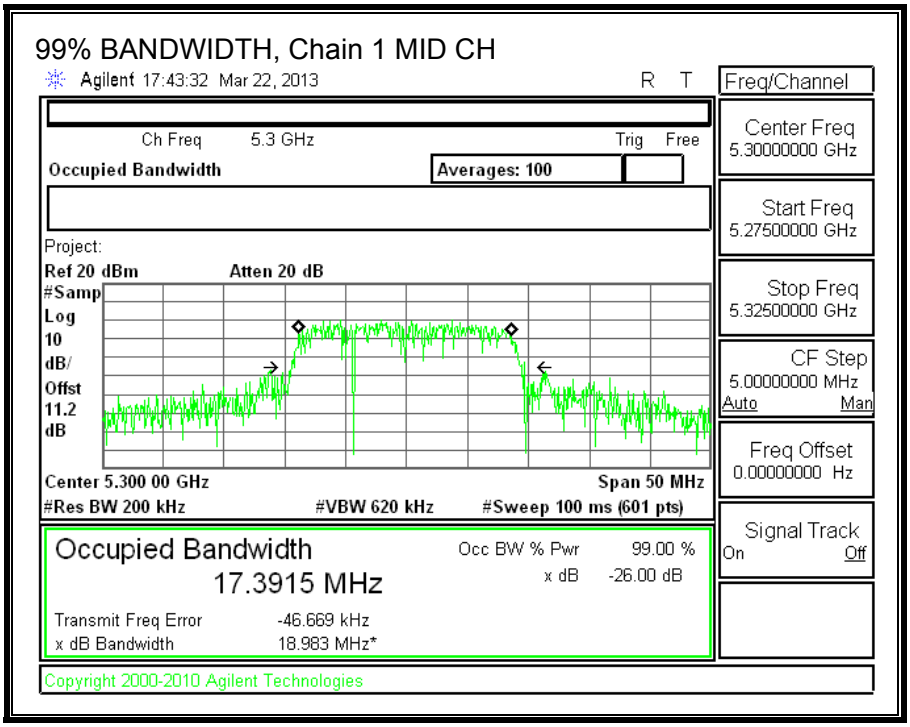

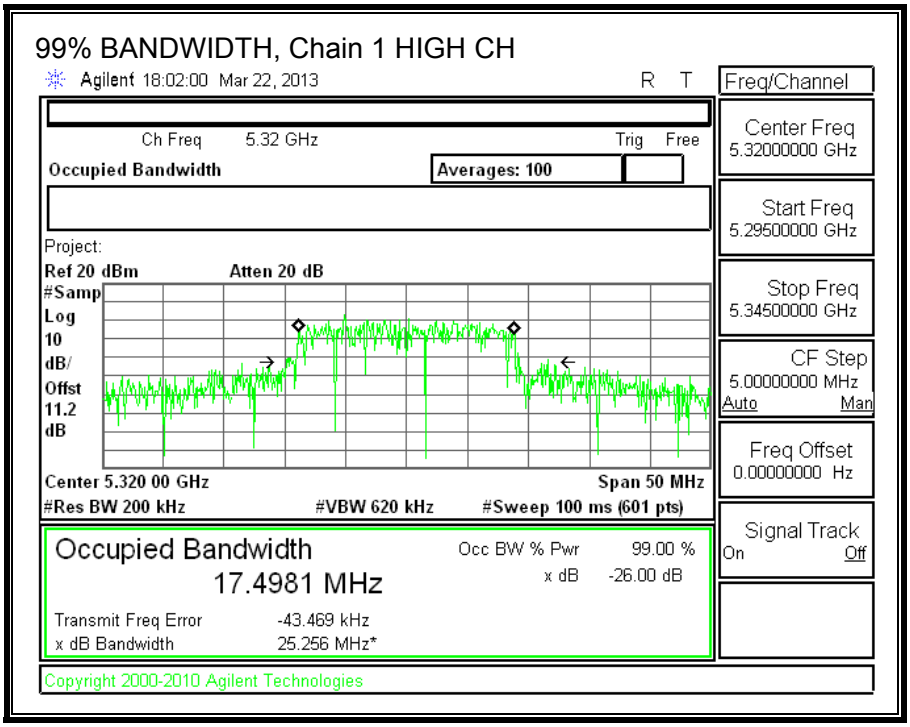

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8.8.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Average Power Results

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Total Power (dBm)
Low	5260	12.10	12.90	15.53
Mid	5300	12.20	13.10	15.68
High	5320	12.00	13.30	15.71

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8.8.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (1)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

The maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
Low	5260	23.42	17.3897	4.00
Mid	5300	20.25	17.3915	4.00
High	5320	20.00	17.3934	4.00

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC PSD Limit (dBm)	PPSD Limit (dBm)
Low	5260	24.00	23.40	29.40	23.40	11.00	11.00	11.00
Mid	5300	24.00	23.40	29.40	23.40	11.00	11.00	11.00
High	5320	24.00	23.40	29.40	23.40	11.00	11.00	11.00

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power & PPSD

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	13.912	13.845	16.89	23.40	-6.51
Mid	5300	13.766	13.887	16.84	23.40	-6.57
High	5320	13.466	14.183	16.85	23.40	-6.55

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5260	-1.51	-2.04	1.24	11.00	-9.76
Mid	5300	-3.03	-1.49	0.82	11.00	-10.18
High	5320	0.22	-0.43	2.92	11.00	-8.08

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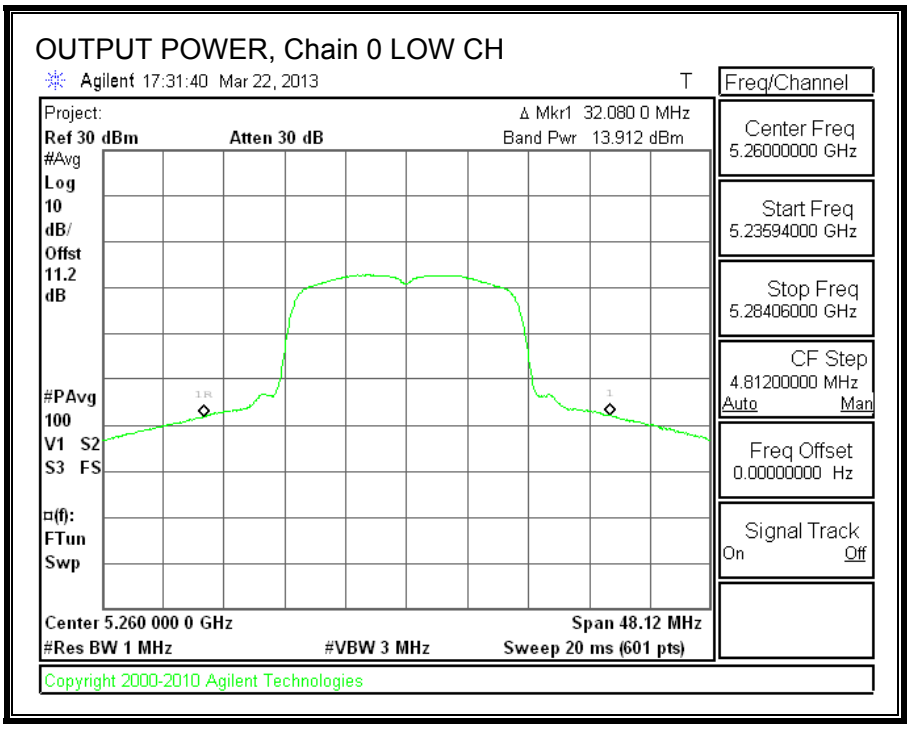
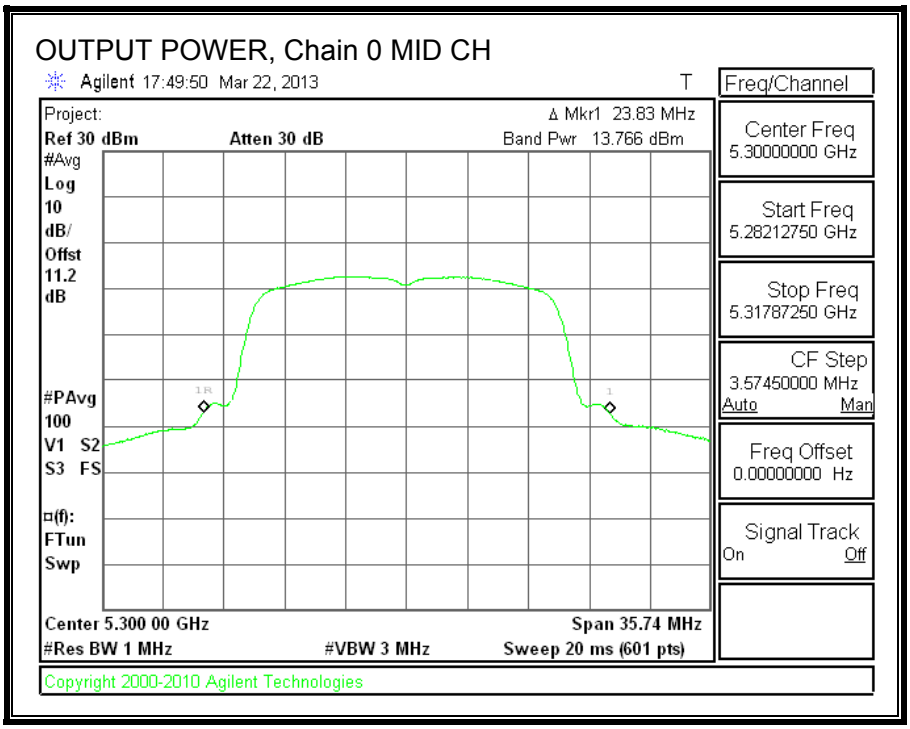
OUTPUT POWER, Chain 0





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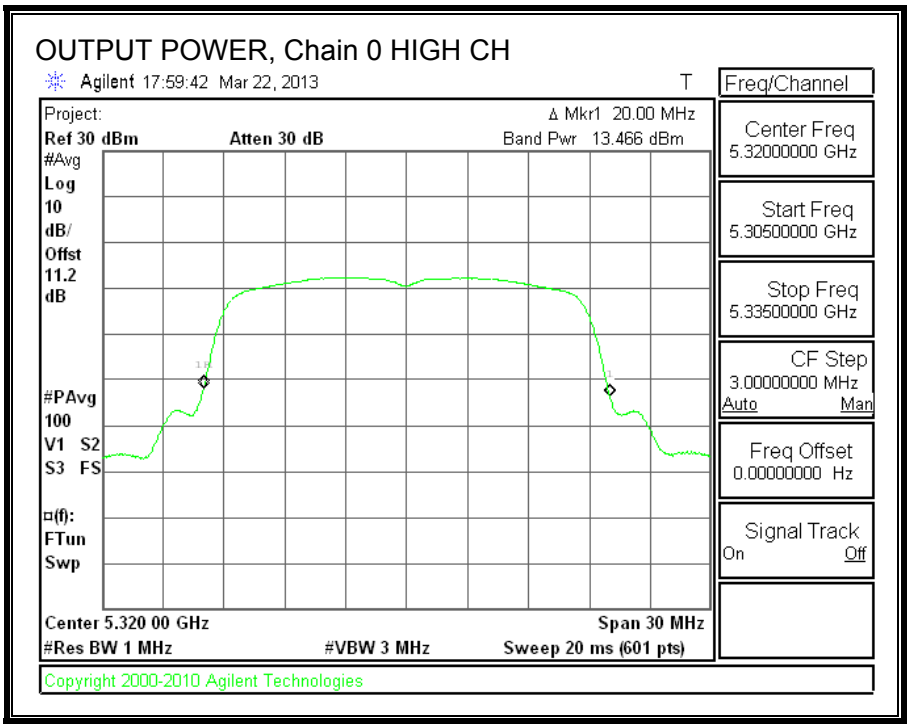
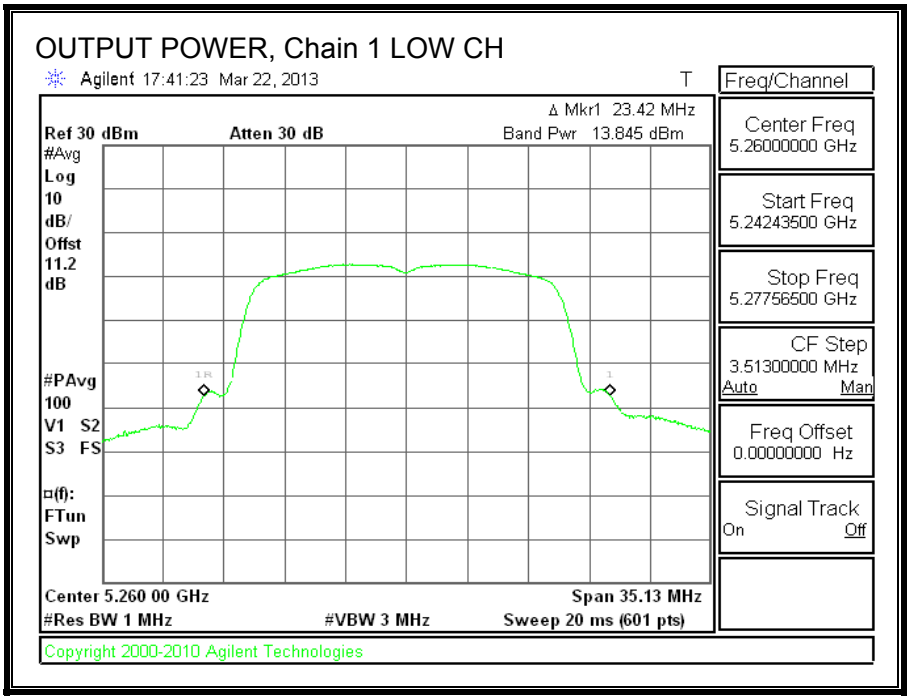


OUTPUT POWER, Chain 1



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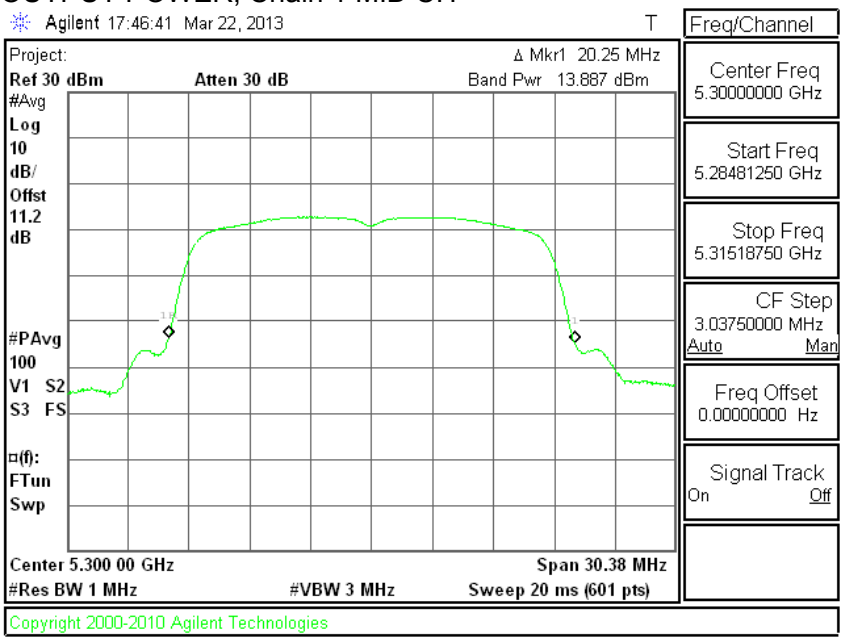
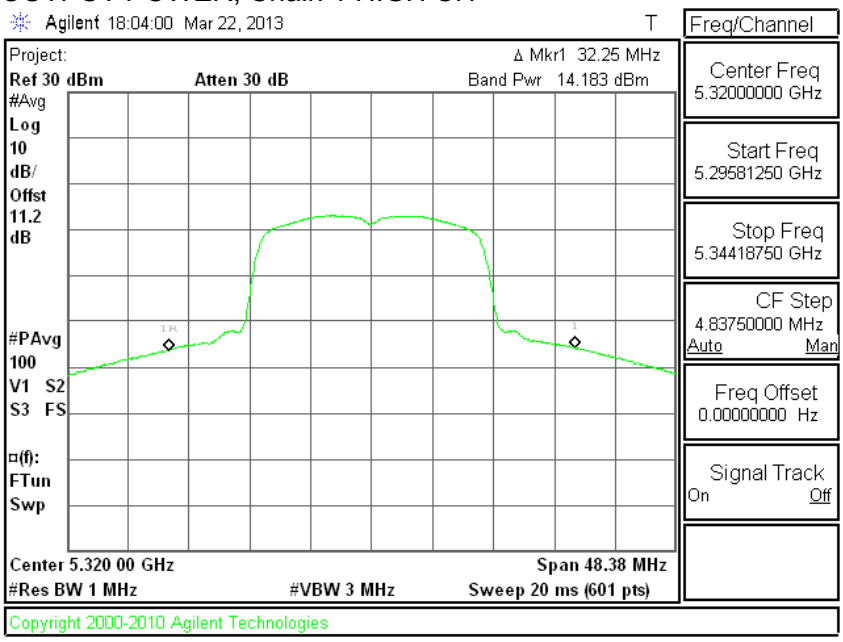
OUTPUT POWER, Chain 1 MID CH



OUTPUT POWER, Chain 1 HIGH CH



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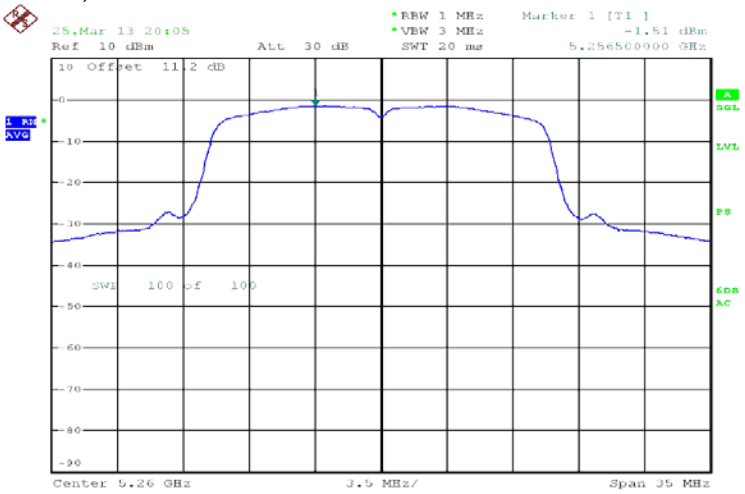
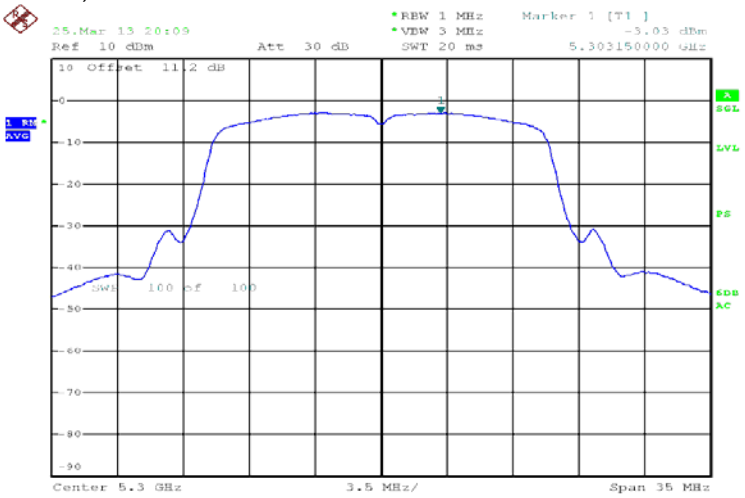
PPSD, Chain 0

PPSD, Chain 0 LOW CH



Date: 25.MAR.2013 20:05:39

PPSD, Chain 0 MID CH



Date: 25.MAR.2013 20:09:31

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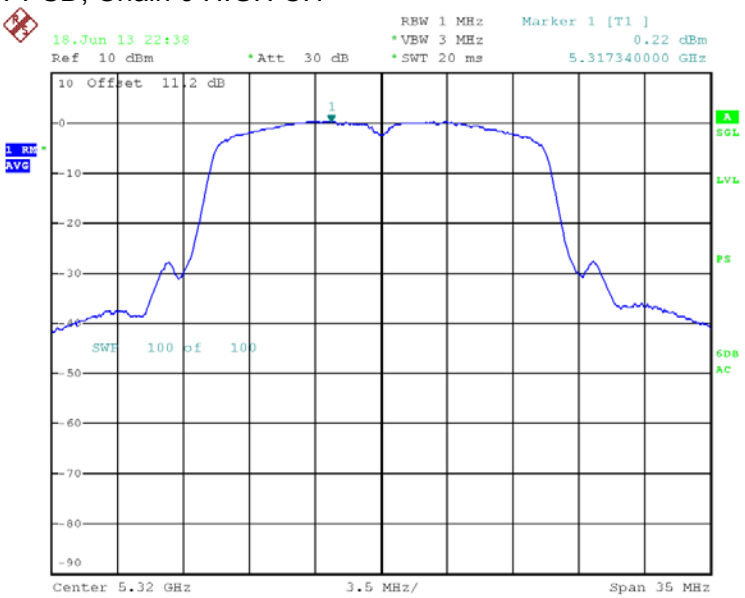
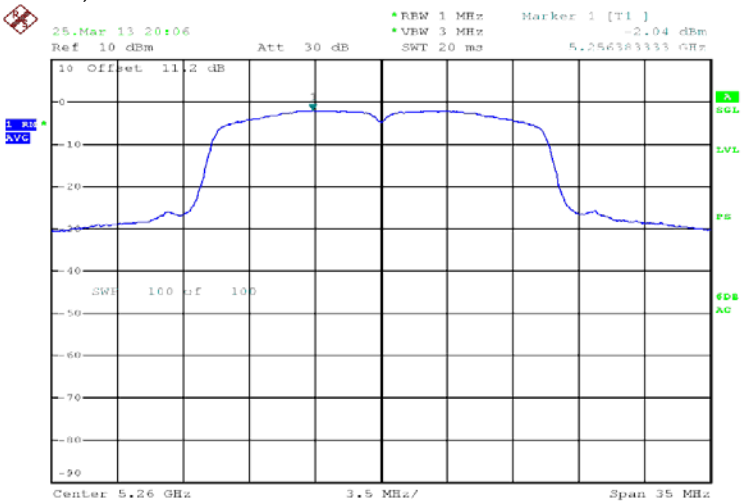
PPSD, Chain 0 HIGH CH



Date: 18.JUN.2013 22:38:50

PPSD, Chain 1

PPSD, Chain 1 LOW CH



Date: 25.MAR.2013 20:06:10

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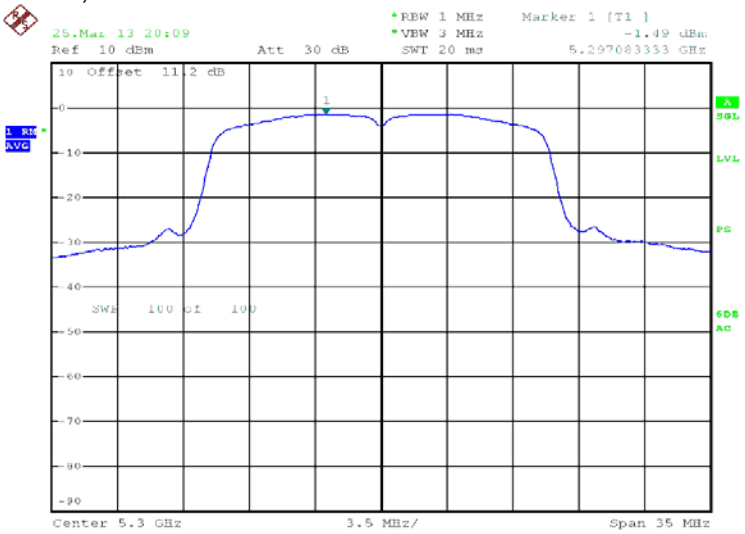
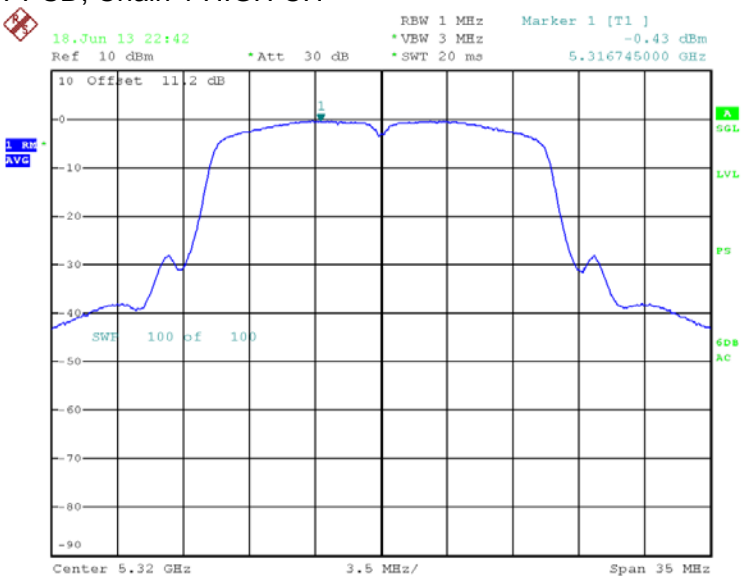
PPSD, Chain 1 MID CH



Date: 25.MAR.2013 20:09:53

PPSD, Chain 1 HIGH CH



Date: 18.JUN.2013 22:42:20

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8.9. 802.11n HT40 CDD MCS0 2TX MODE IN THE 5.3 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	5270	64.12	47.20
High	5310	46.50	70.95

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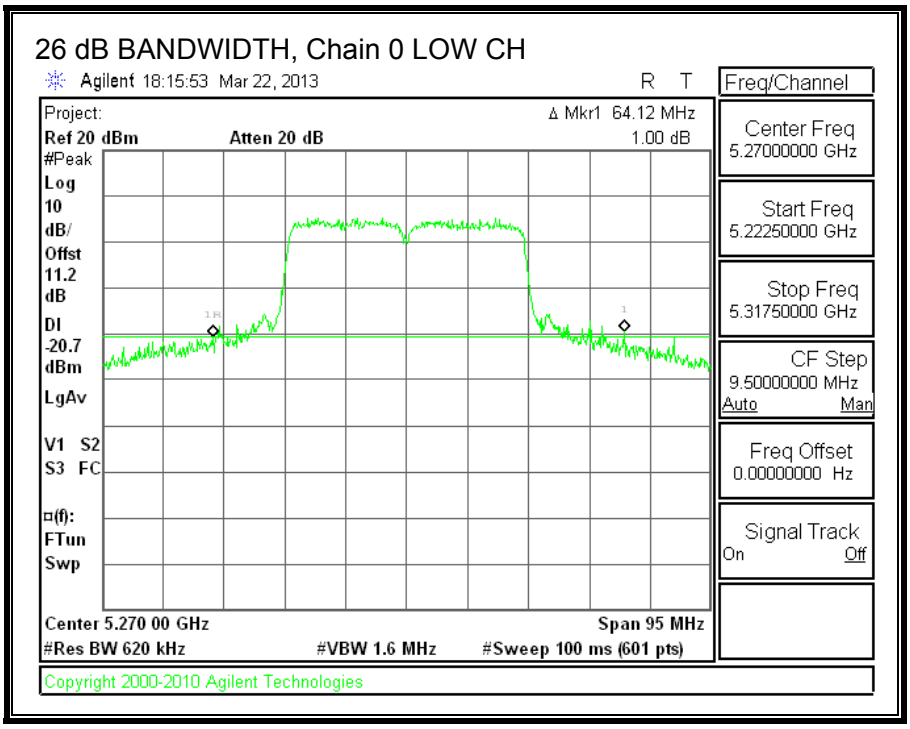
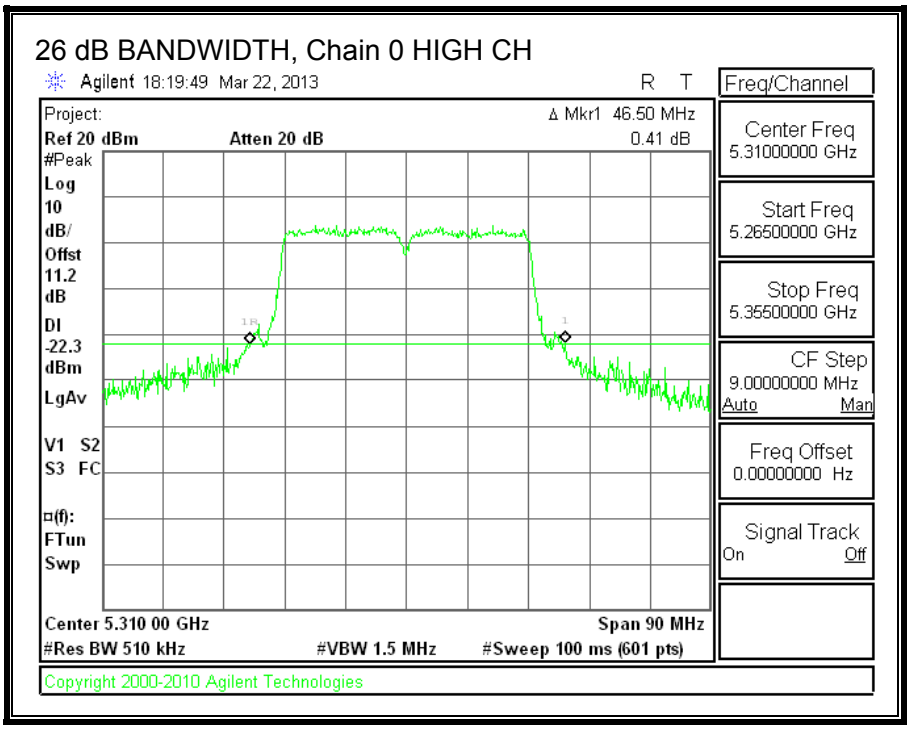
26 dB BANDWIDTH, Chain 0





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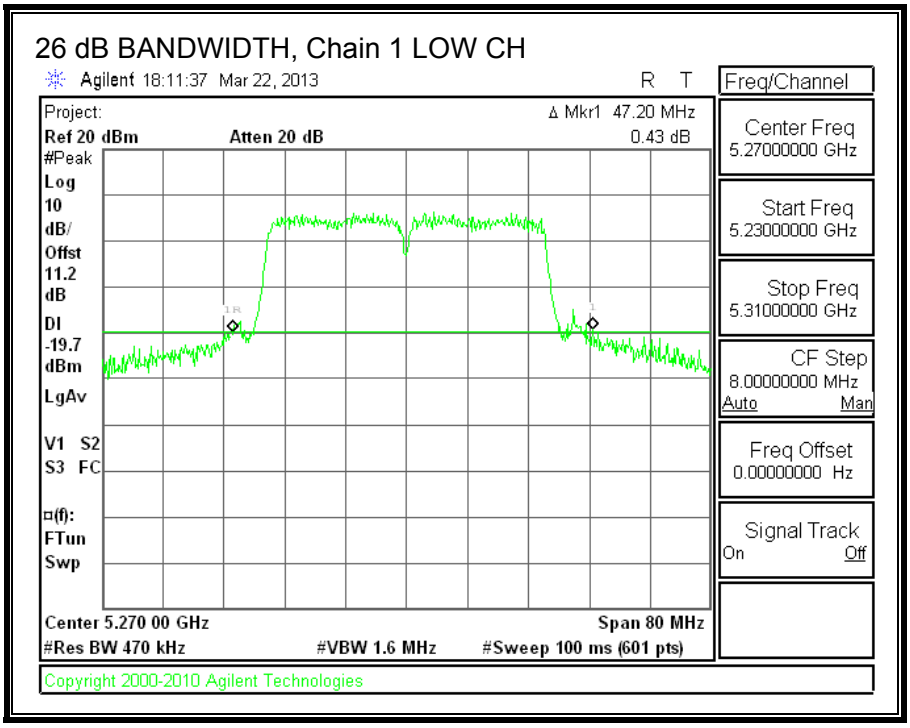
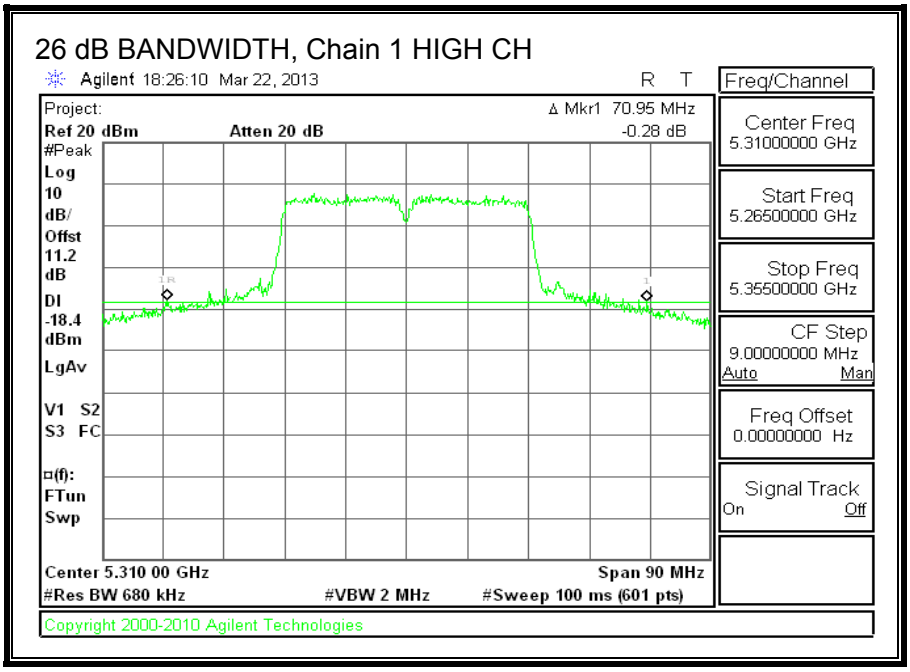
26 dB BANDWIDTH, Chain 1





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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	5270	36.1711	36.1418
High	5310	36.1571	36.2044

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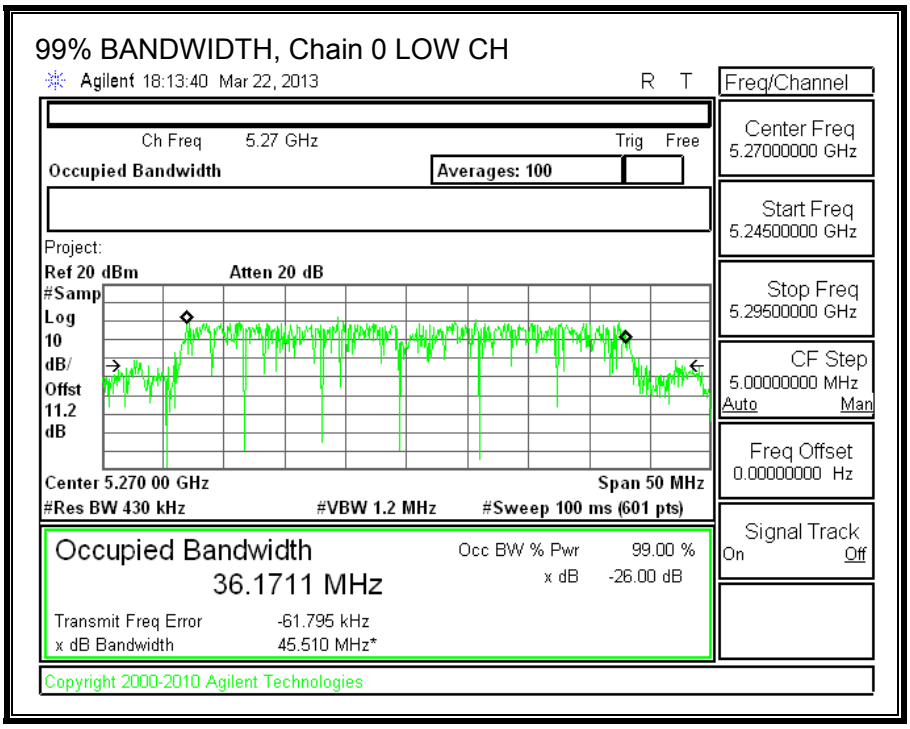
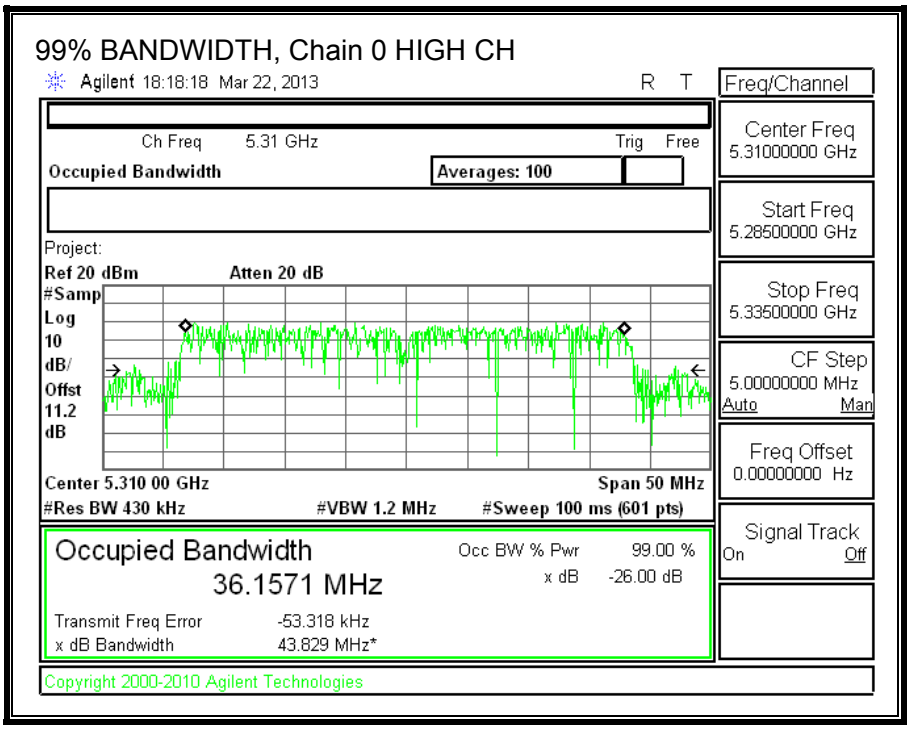
99% BANDWIDTH, Chain 0





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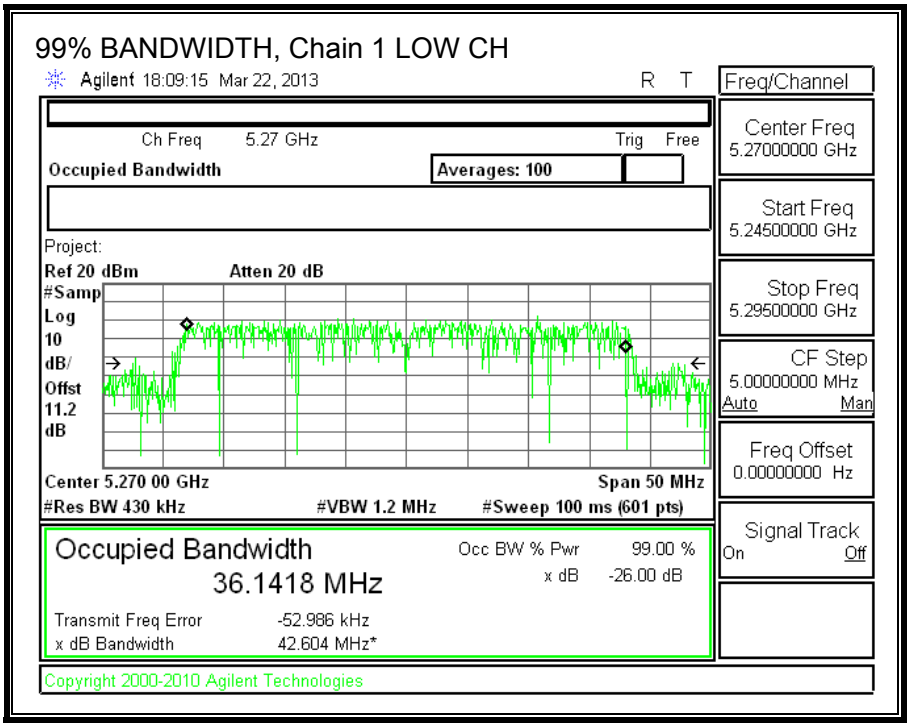
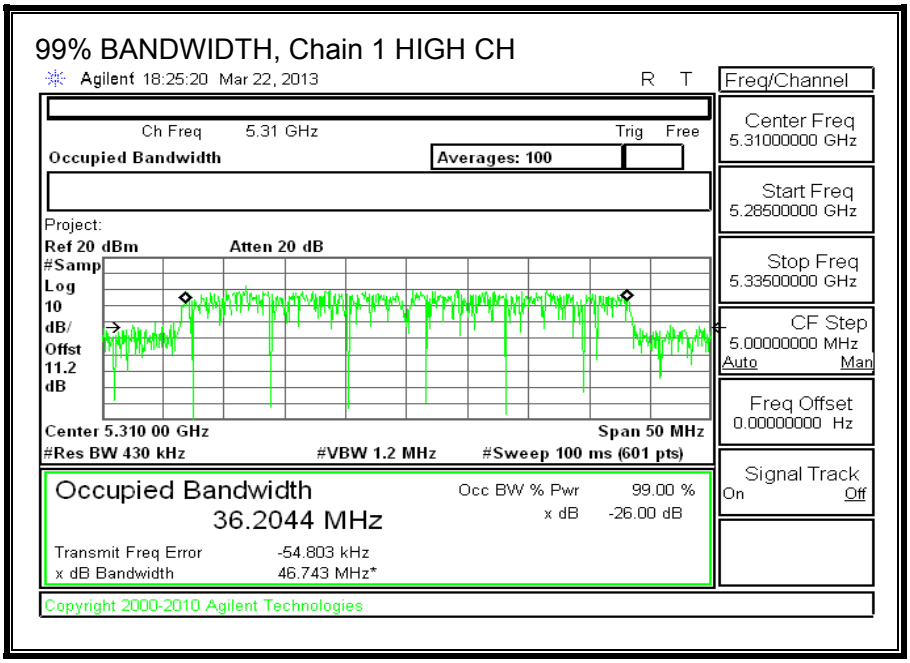
99% BANDWIDTH, Chain 1





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8.9.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Average Power Results

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Total Power (dBm)
Low	5270	12.07	12.92	15.53
High	5310	12.02	13.36	15.75

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8.9.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (1)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

The maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

DIRECTIONAL ANTENNA GAIN

For output power, the TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

For PPSD, the TX chains are correlated and the antenna gain is the same for each chain. The directional gain is:

Antenna Gain (dBi)	10 * Log (2 chains) (dB)	Correlated Chains Directional Gain (dBi)
4.00	3.01	7.01

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Uncorrelated Directional Gain (dBi)	Correlated Directional Gain (dBi)
Low	5270	47.20	36.1418	4.00	7.01
High	5310	46.50	36.1571	4.00	7.01

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC PSD Limit (dBm)	PPSD Limit (dBm)
Low	5270	24.00	24.00	30.00	24.00	9.99	11.00	9.99
High	5310	24.00	24.00	30.00	24.00	9.99	11.00	9.99

Duty Cycle CF (dB)	0.00	**Included in Calculations of Corr'd Power & PPSD**

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	13.593	13.535	16.57	24.00	-7.43
High	5310	12.818	13.641	16.26	24.00	-7.74

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5270	-6.13	-4.85	-2.43	9.99	-12.42
High	5310	-6.43	-4.85	-2.56	9.99	-12.55

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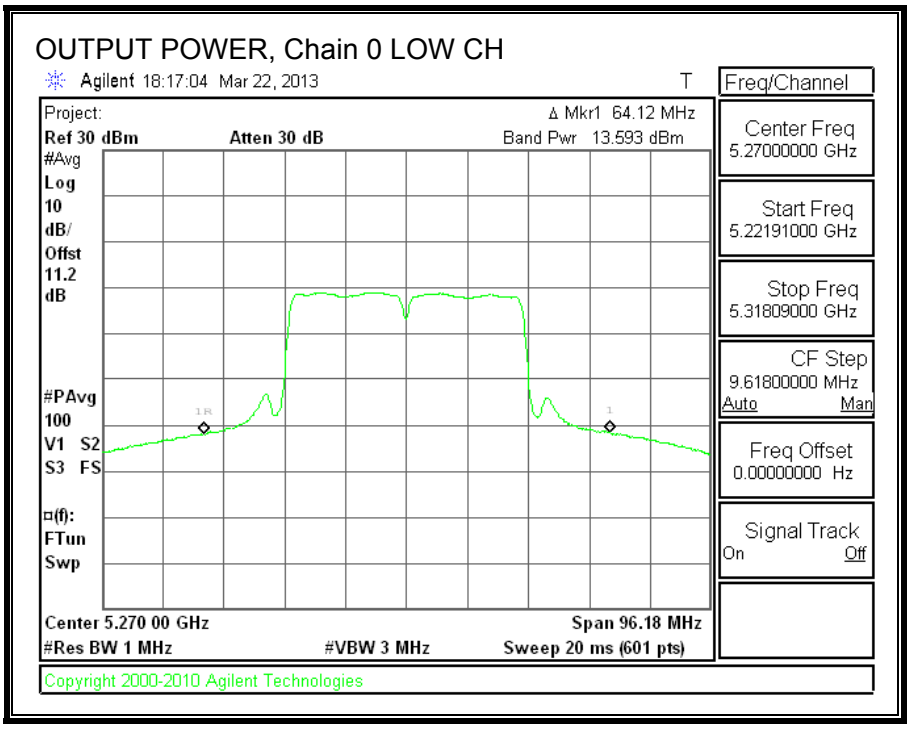
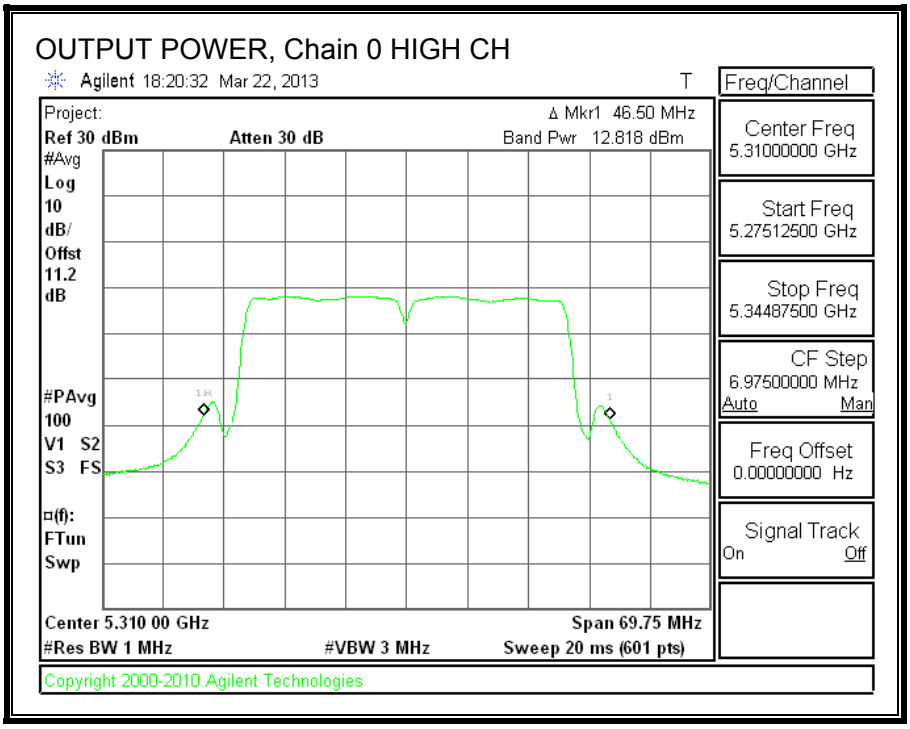
OUTPUT POWER, Chain 0





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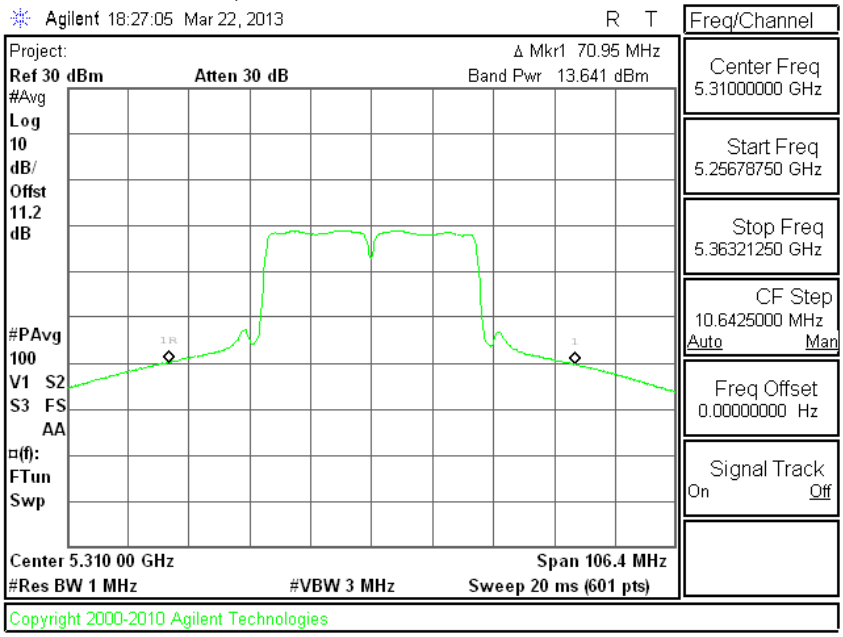
OUTPUT POWER, Chain 1

OUTPUT POWER, Chain 1 LOW CH

OUTPUT POWER, Chain 1 HIGH CH



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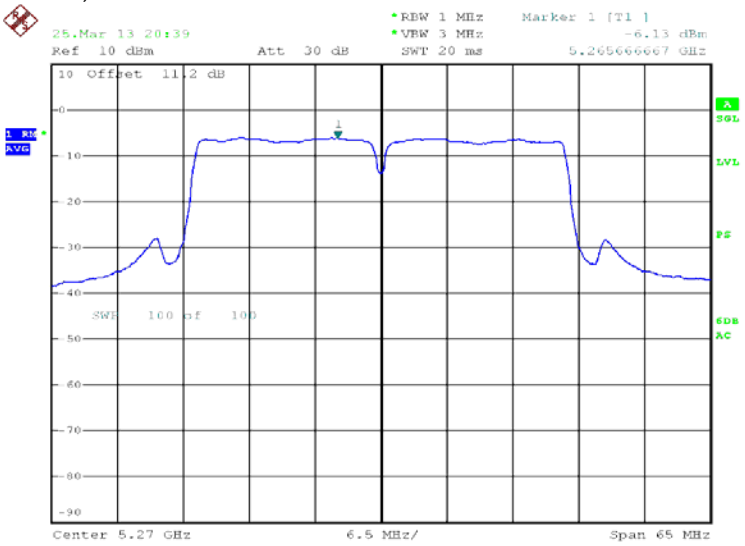
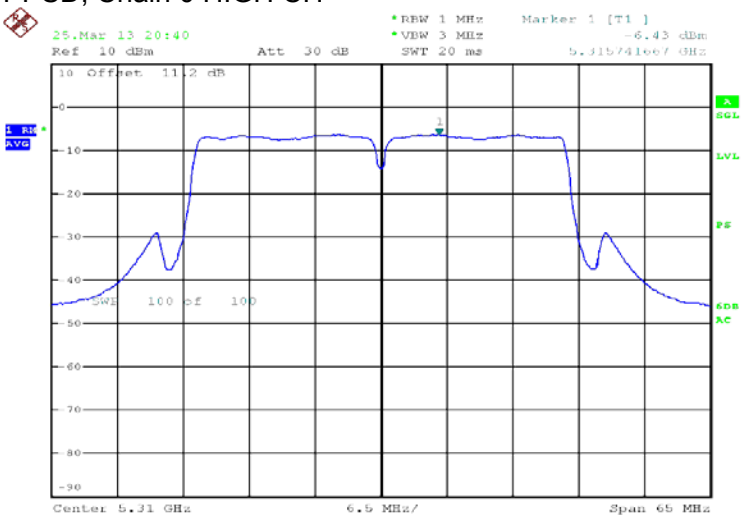
PPSD, Chain 0

PPSD, Chain 0 LOW CH



Date: 25.MAR.2013 20:39:07

PPSD, Chain 0 HIGH CH



Date: 25.MAR.2013 20:40:29

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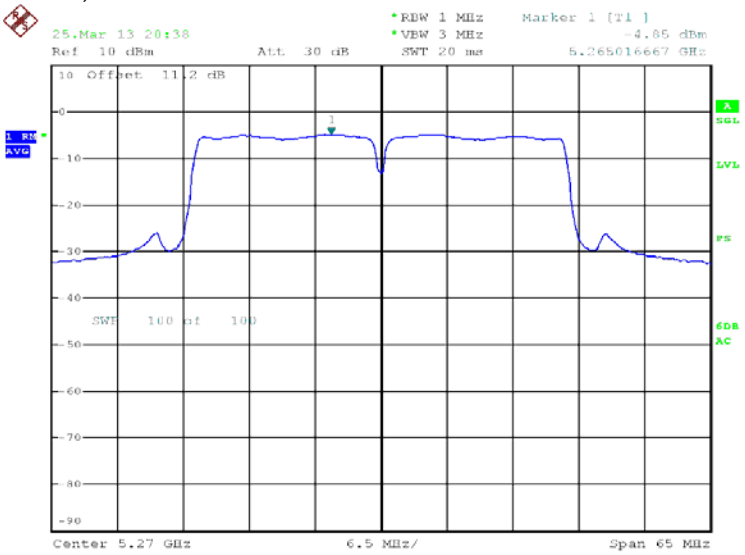
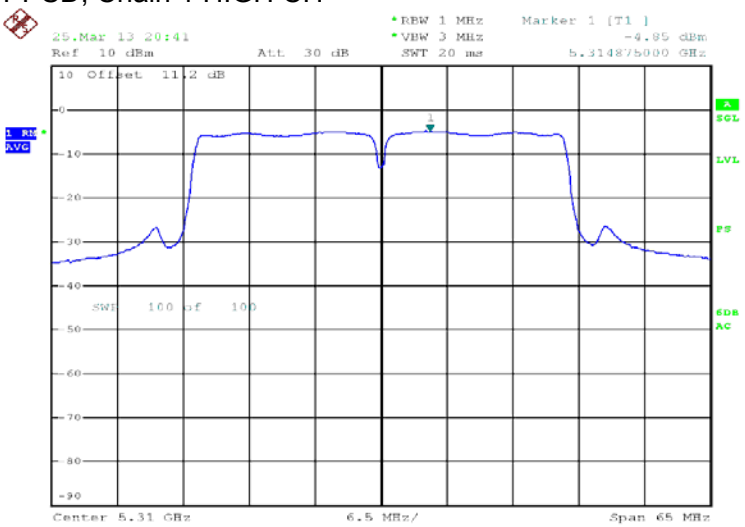
PPSD, Chain 1

PPSD, Chain 1 LOW CH



PPSD, Chain 1 HIGH CH



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8.10. 802.11n HT40 SDM MCS8 2TX MODE IN THE 5.3 GHz BAND

8.10.1. 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	54.75	49.20
High	5310	45.75	61.95

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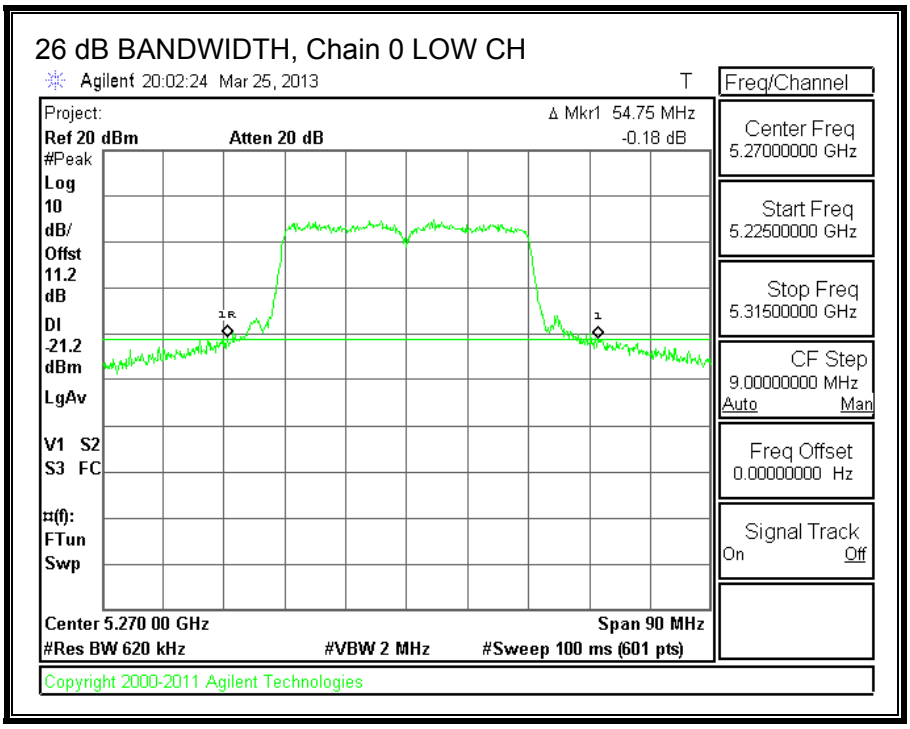
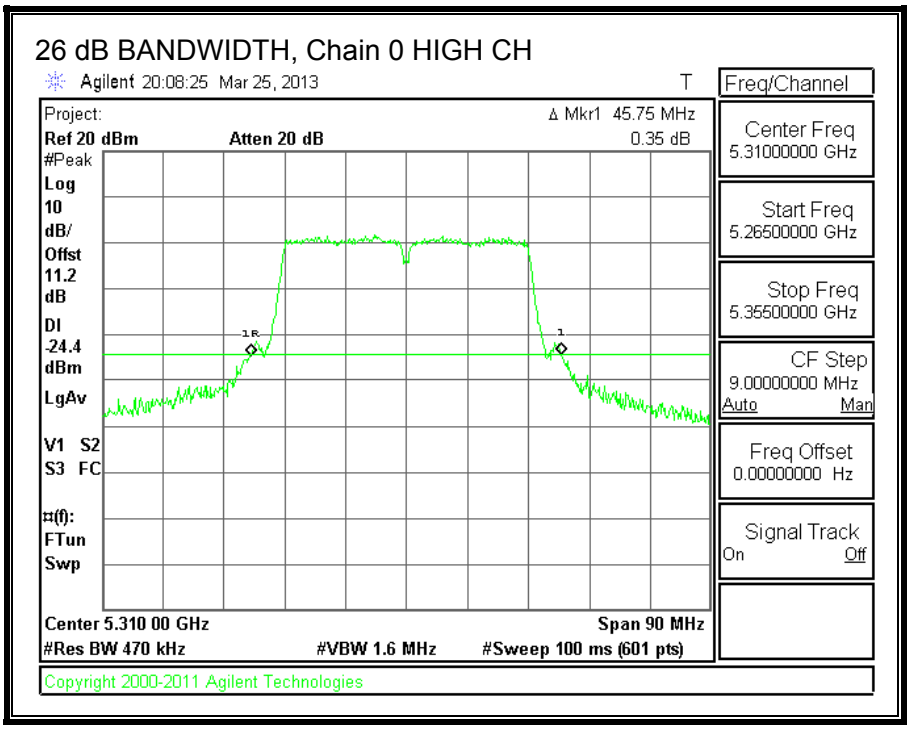
26 dB BANDWIDTH, Chain 0





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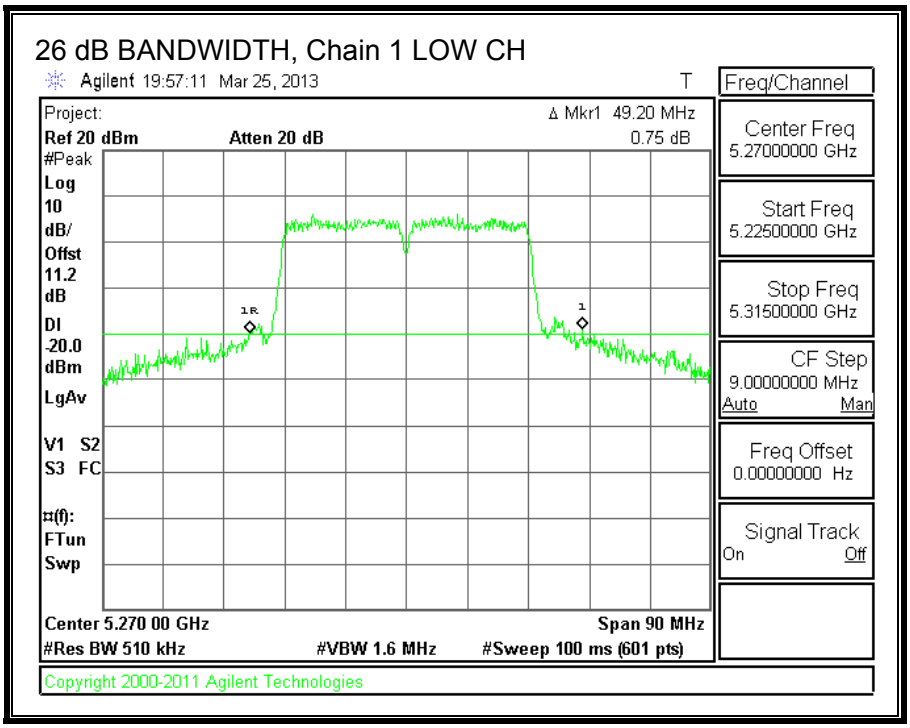
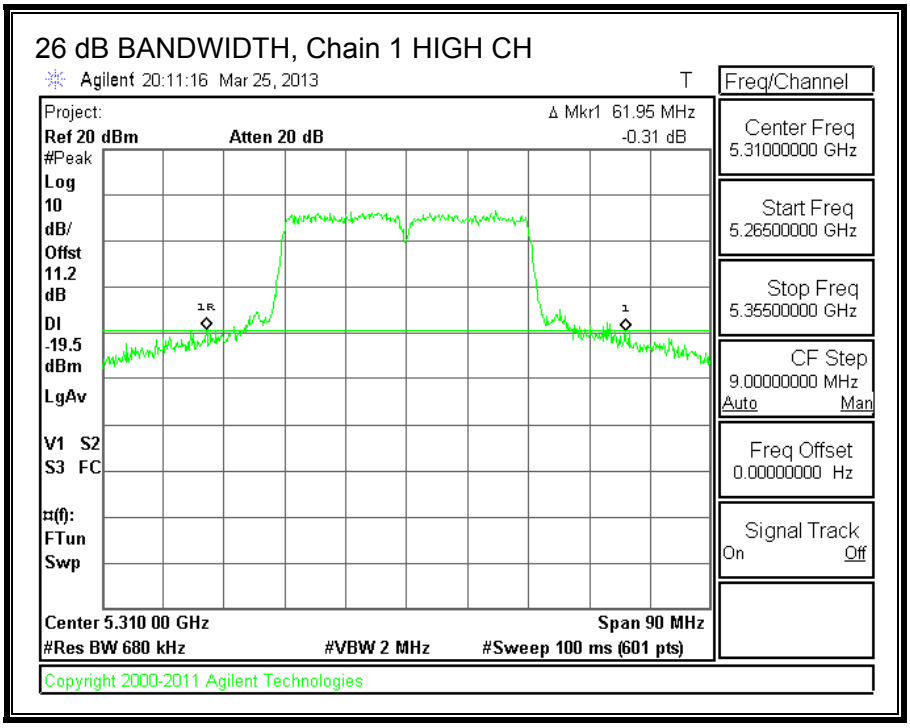
26 dB BANDWIDTH, Chain 1





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8.10.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	5270	36.2271	36.1683
High	5310	36.1739	36.2234

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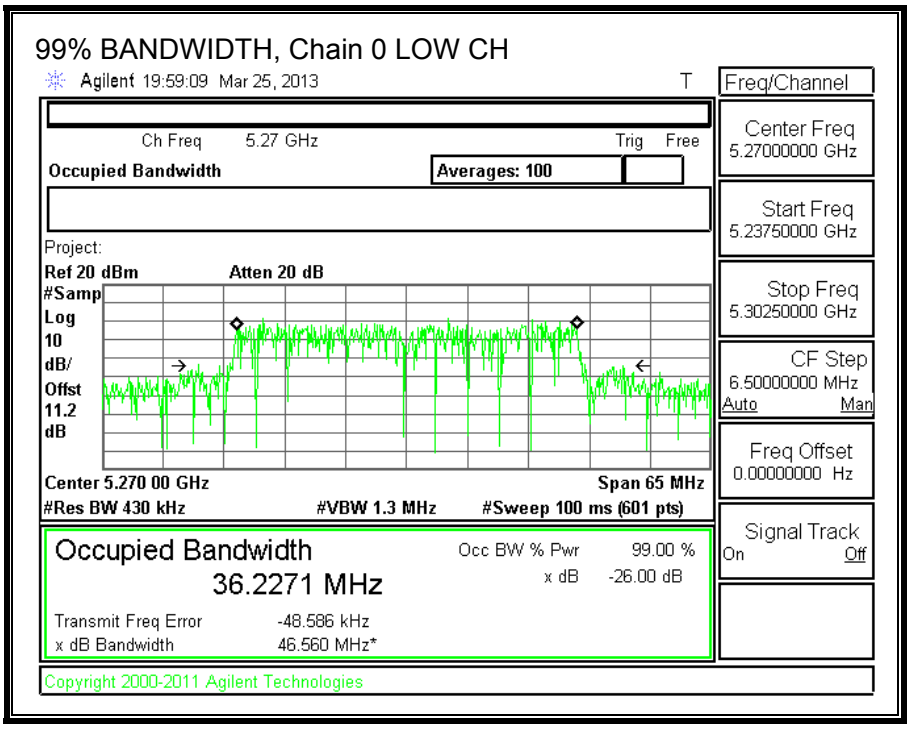
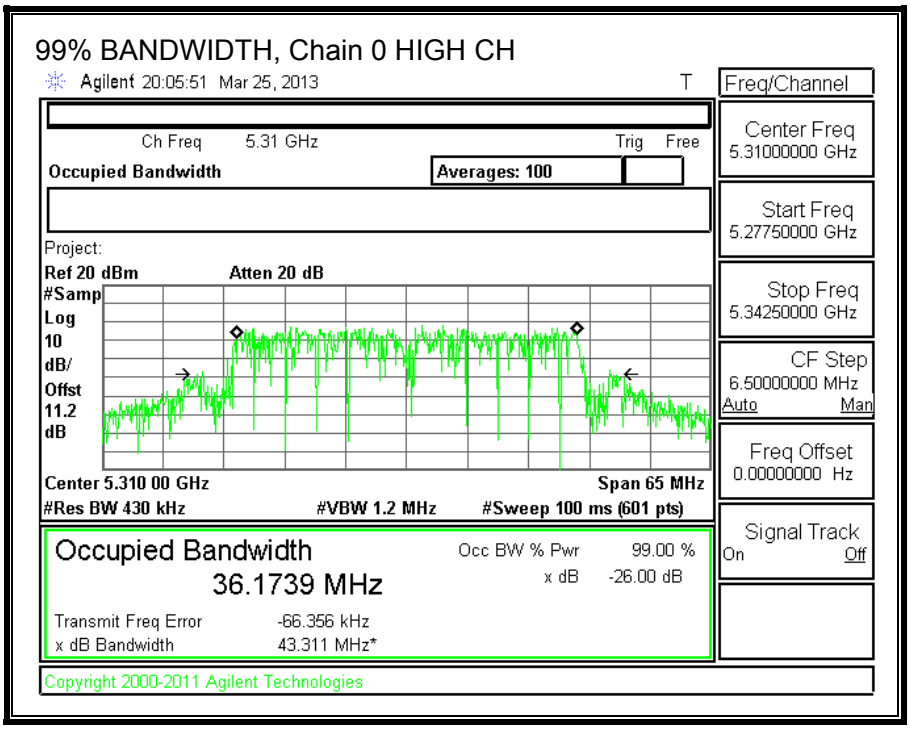
99% BANDWIDTH, Chain 0





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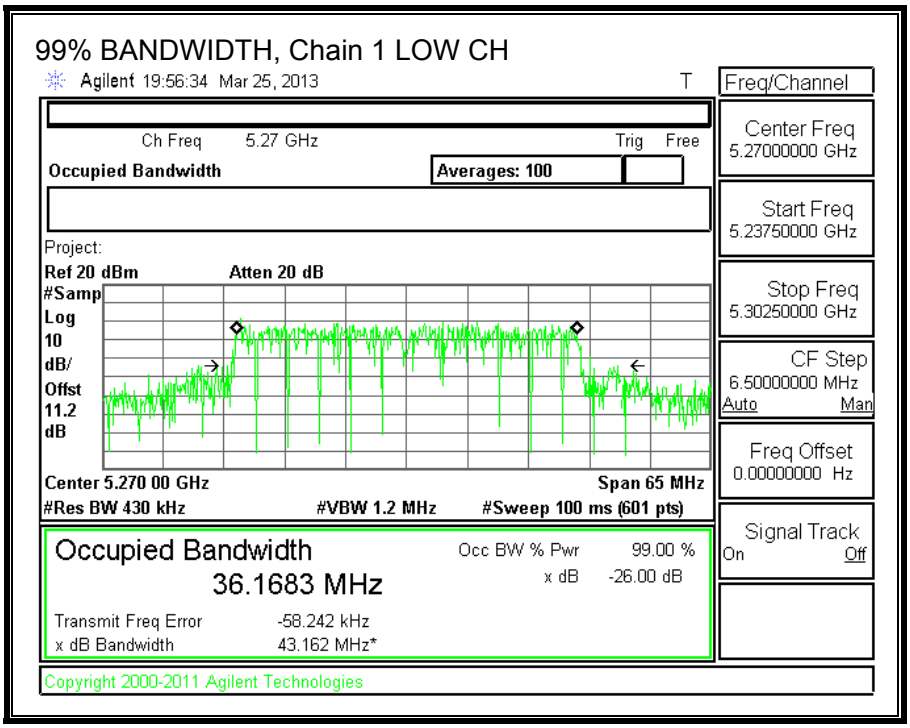
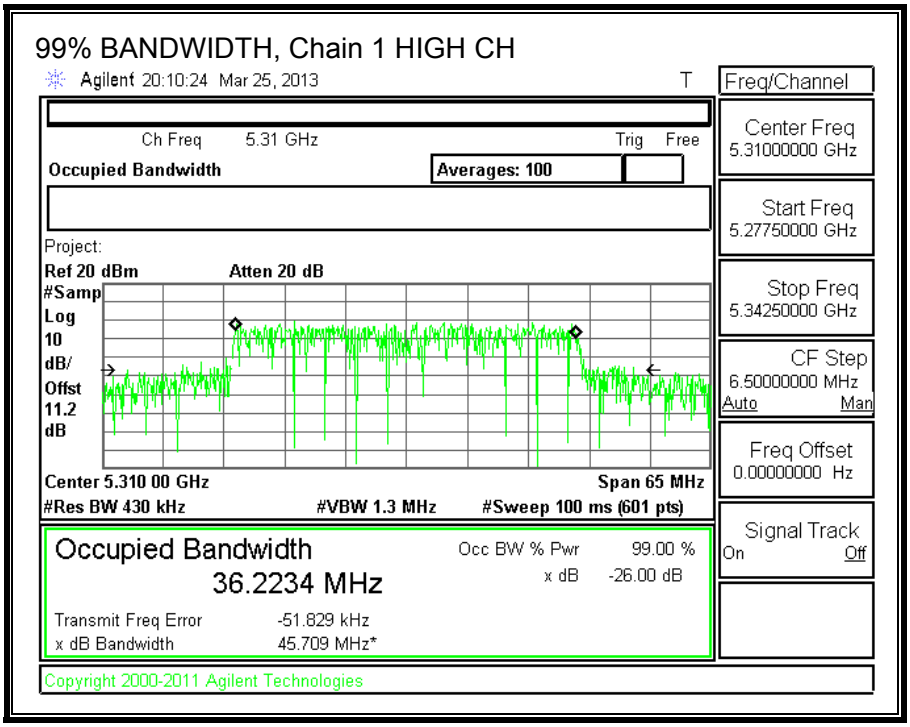
99% BANDWIDTH, Chain 1





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8.10.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Average Power Results

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Total Power (dBm)
Low	5270	12.20	13.10	15.68
High	5310	12.10	13.30	15.75

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8.10.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (1)

For the band 5.25–5.35 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

The maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
Low	5270	49.20	36.1683	4.00
High	5310	45.75	36.1739	4.00

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC PSD Limit (dBm)	PPSD Limit (dBm)
Low	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)	0.11	Included in Calculations of Corr'd Power & PPSD

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	12.521	12.892	15.83	24.00	-8.17
High	5310	10.857	12.652	14.97	24.00	-9.03

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5270	-2.27	-1.82	1.08	11.00	-9.92
High	5310	-3.87	-2.05	0.25	11.00	-10.75

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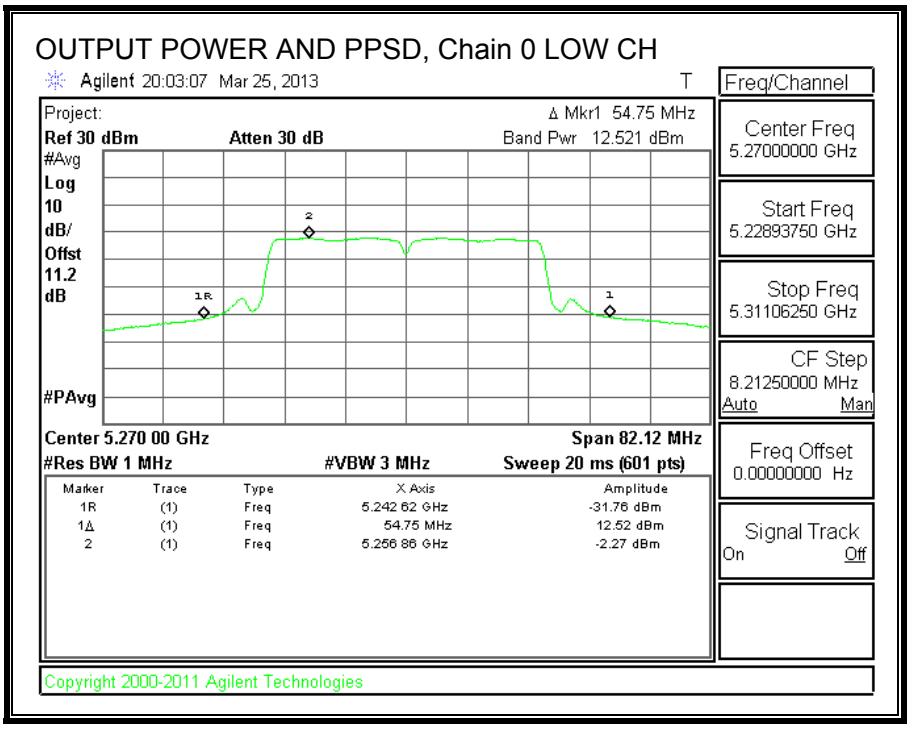
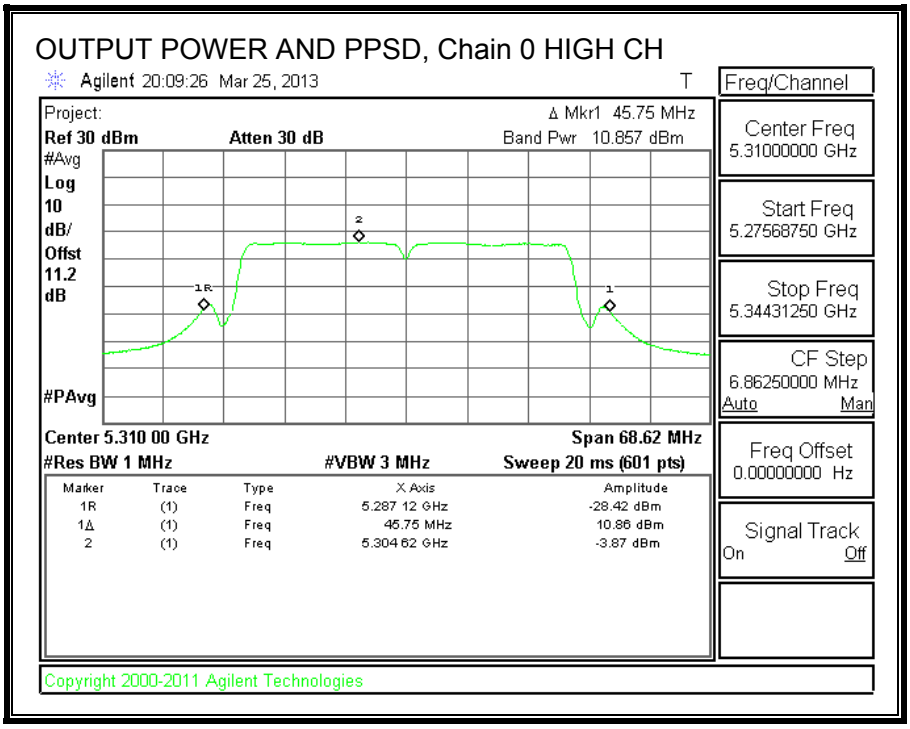
OUTPUT POWER AND PPSD, Chain 0





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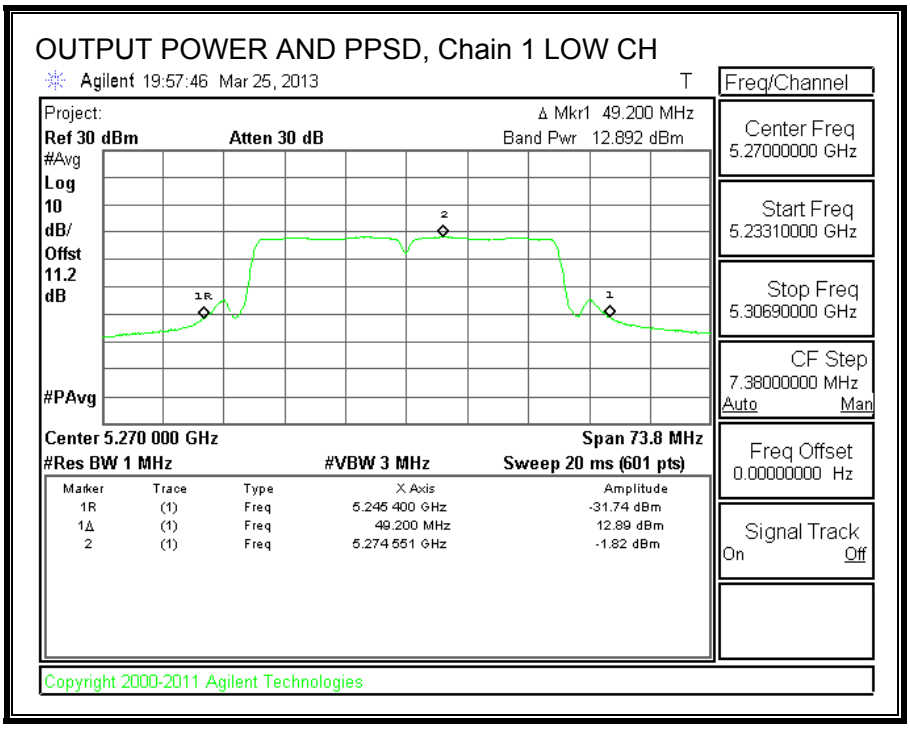
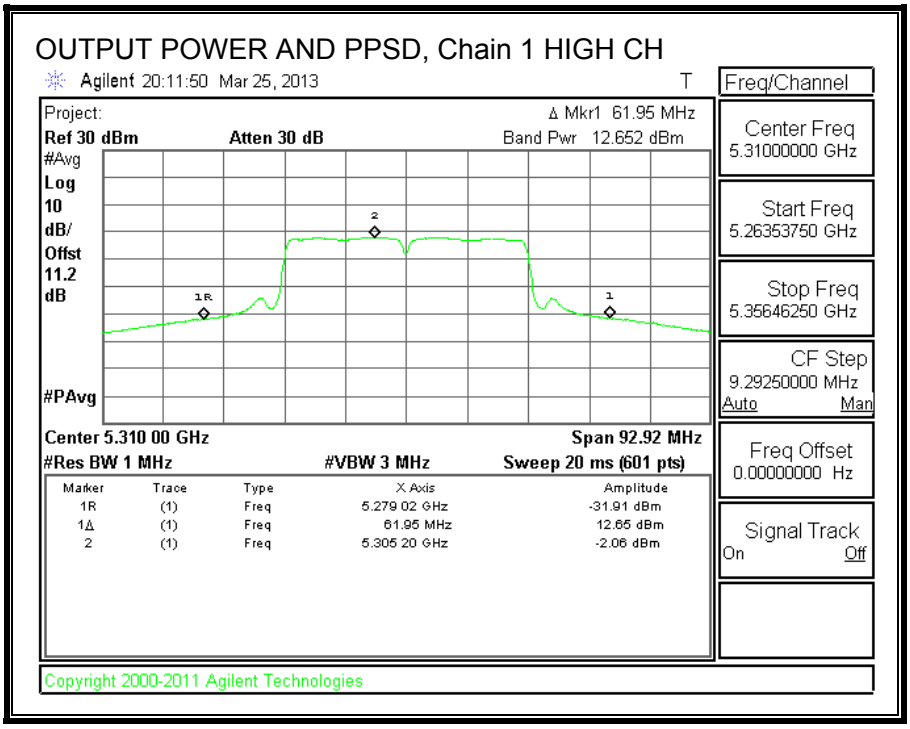
OUTPUT POWER AND PPSD, Chain 1





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8.11. 802.11a CDD 2TX MODE IN THE 5.6 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	5500	19.80	20.07
Mid	5580	19.93	21.53
High	5700	19.67	19.80

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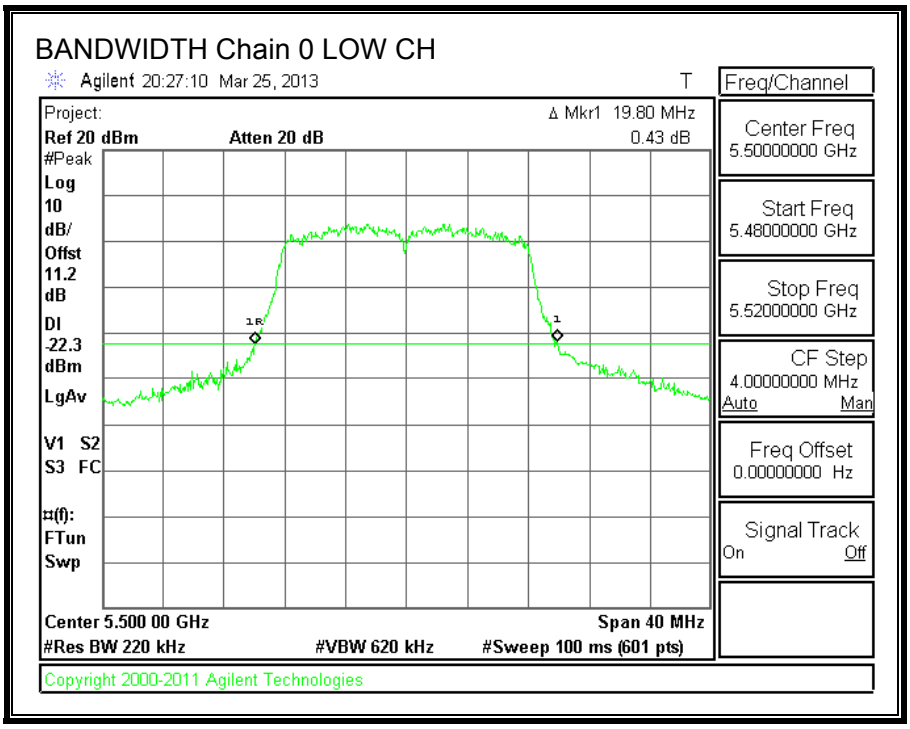
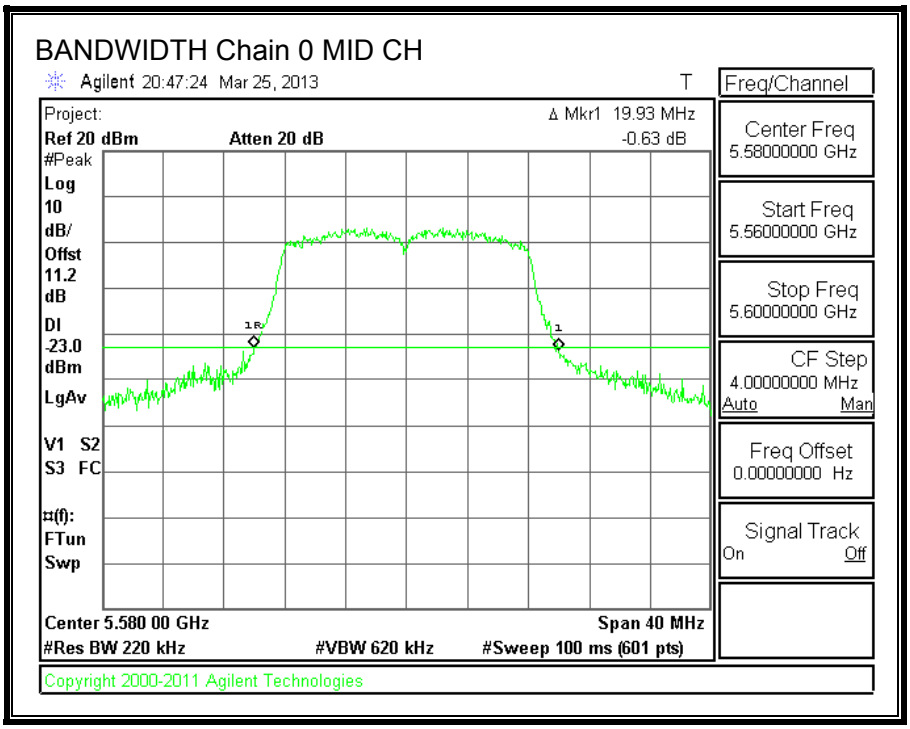
26 dB BANDWIDTH, Chain 0





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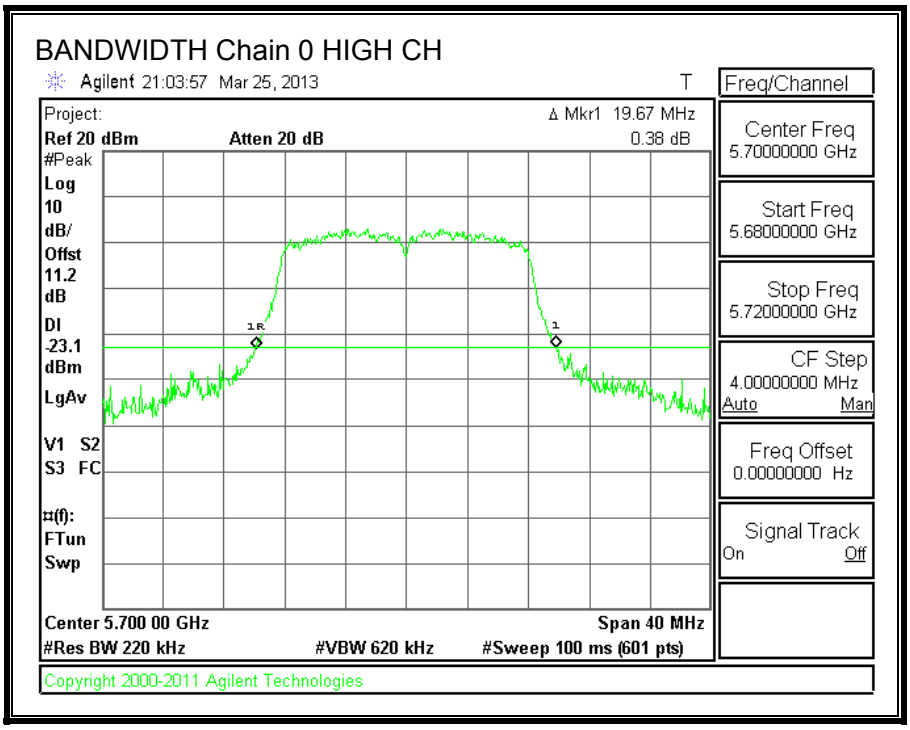
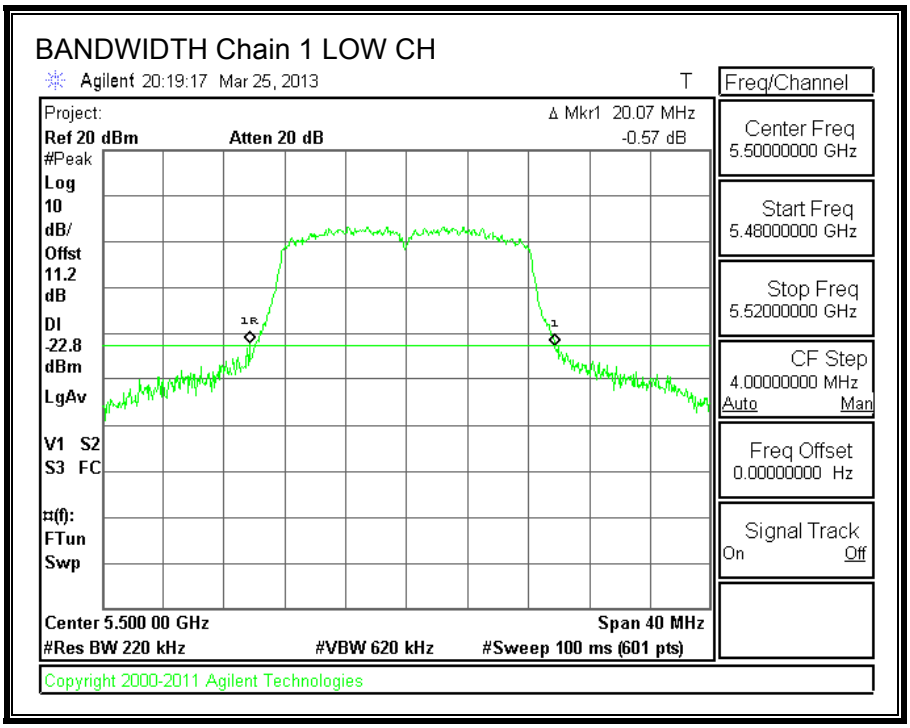


26 dB BANDWIDTH, Chain 1



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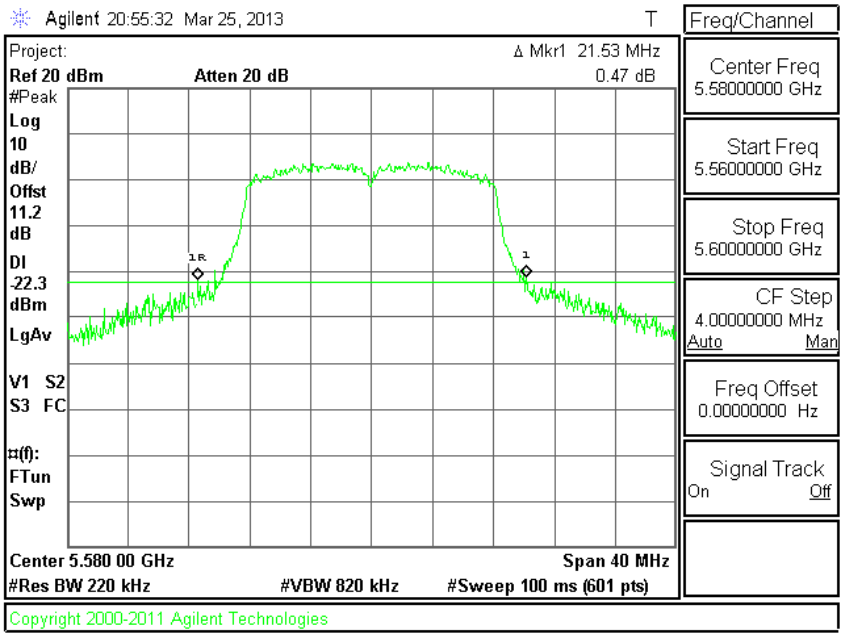
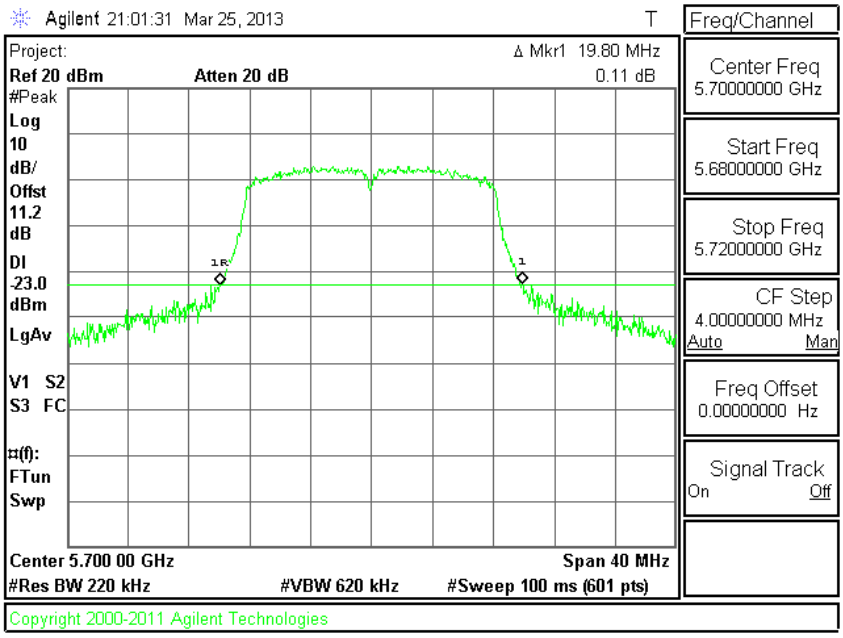
BANDWIDTH Chain 1 MID CH



BANDWIDTH Chain 1 HIGH CH



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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	5500	16.2811	16.2641
Mid	5580	16.3017	16.2745
High	5700	16.2915	16.2873

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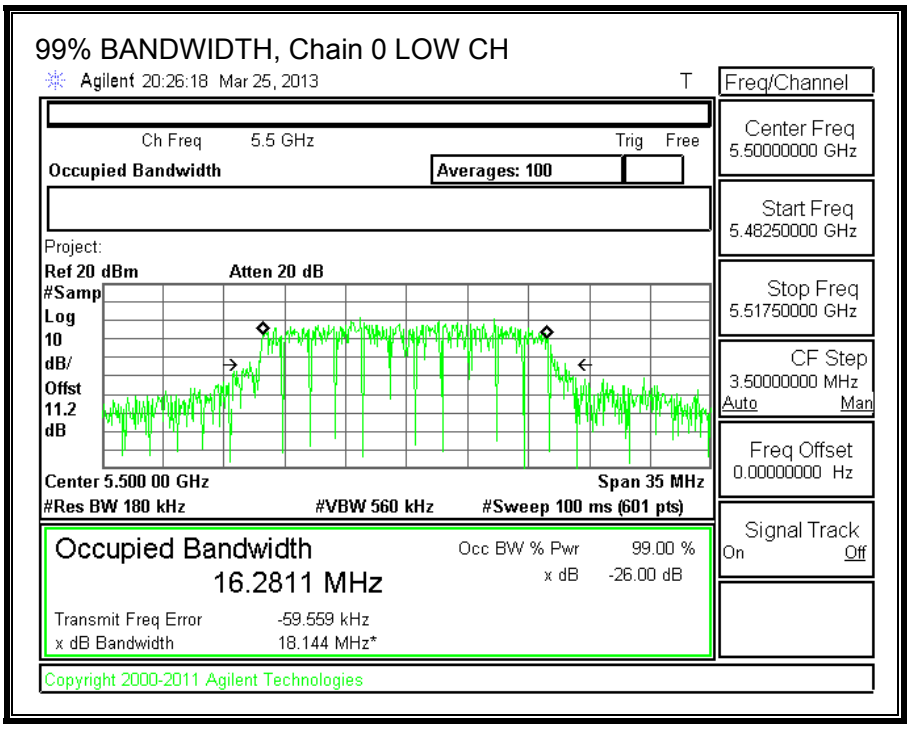
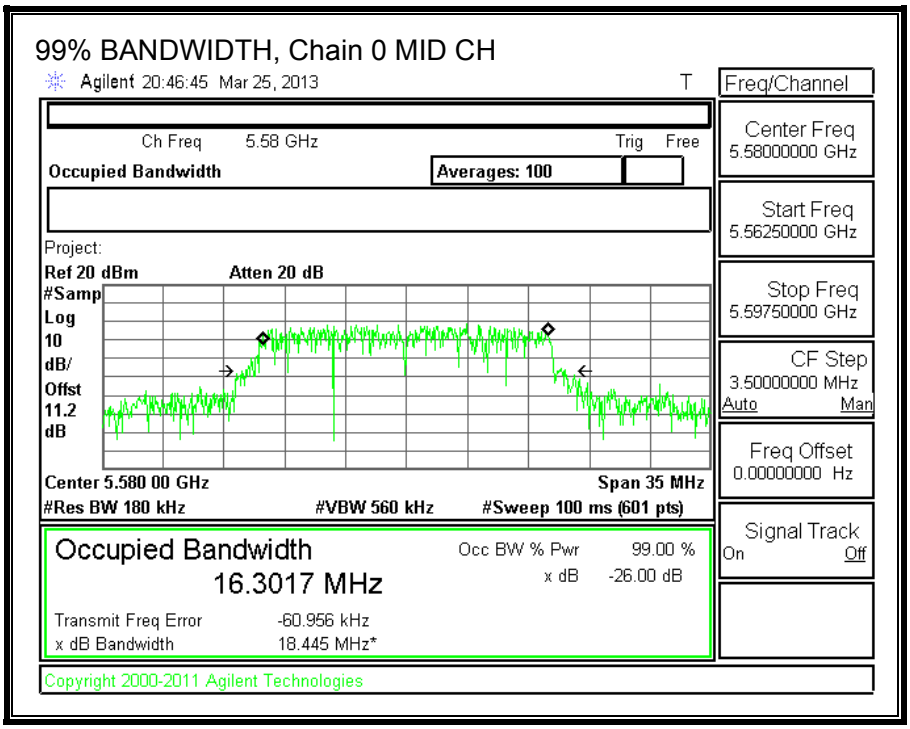
99% BANDWIDTH, Chain 0





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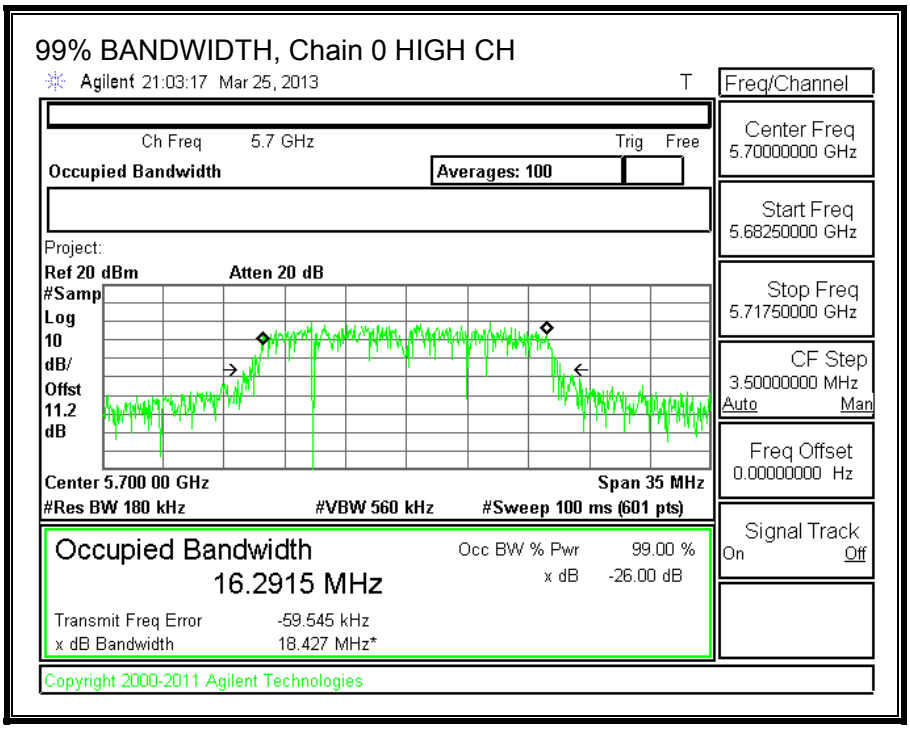
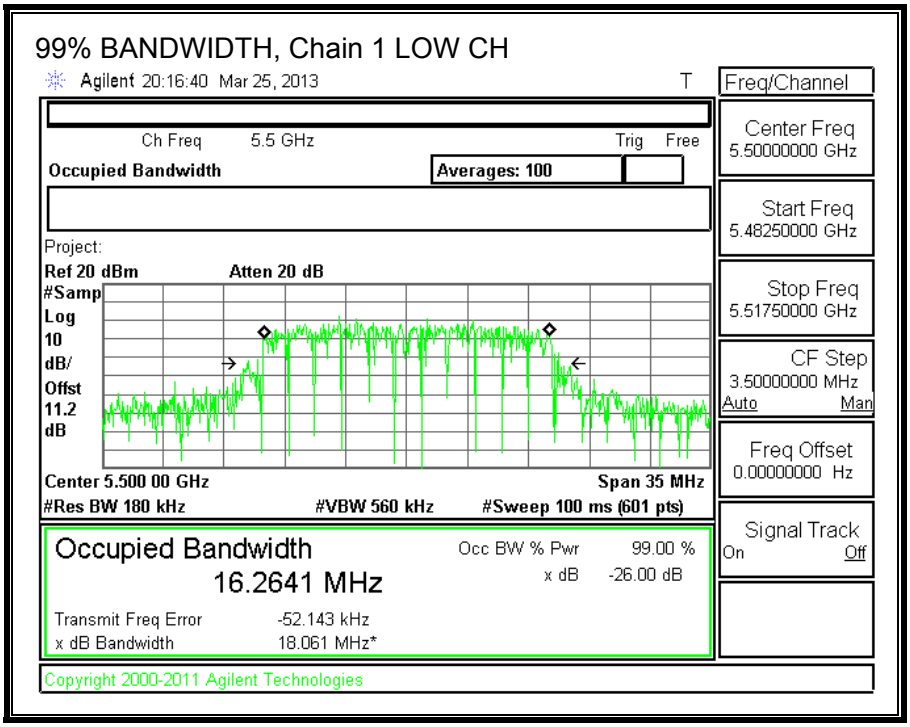


99% BANDWIDTH, Chain 1



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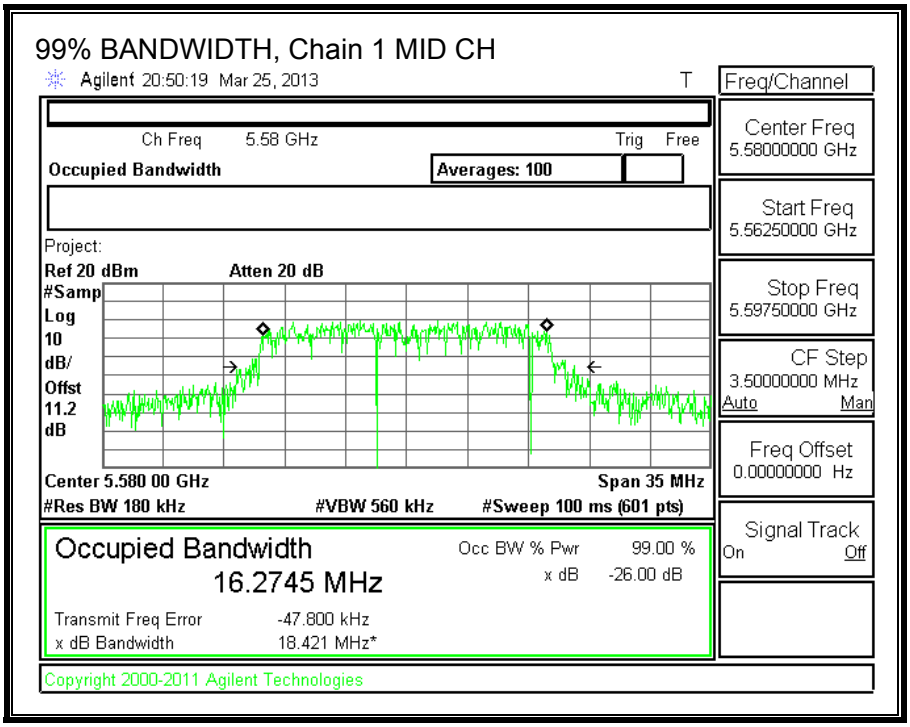

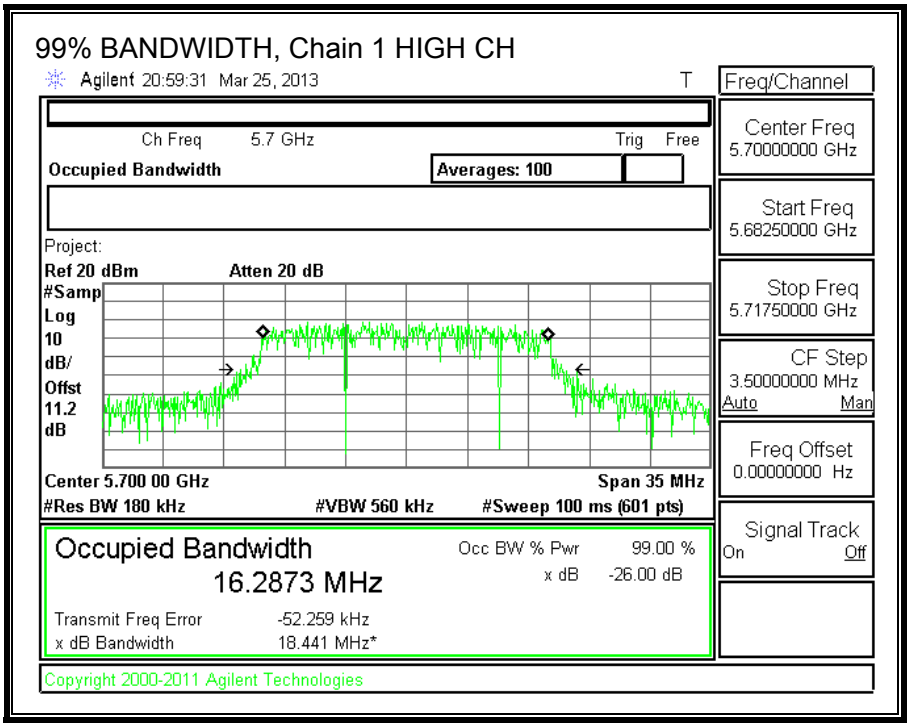

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8.11.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Average Power Results

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Total Power (dBm)
Low	5500	12.42	12.64	15.54
Mid	5580	12.17	13.12	15.68
High	5700	11.79	12.82	15.35

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8.11.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (1)

For the band 5.5–5.7 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

The maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

DIRECTIONAL ANTENNA GAIN

For output power, the TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

The TX chains are correlated and the antenna gain is the same for each chain. The directional gain is:

Antenna Gain (dBi)	10 * Log (2 chains) (dB)	Correlated Chains Directional Gain (dBi)
4.00	3.01	7.01

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Uncorrelated Directional Gain (dBi)	Correlated Directional Gain (dBi)
Low	5500	19.80	16.2641	4.00	7.01
Mid	5580	19.93	16.2745	4.00	7.01
High	5700	19.67	16.2873	4.00	7.01

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC PSD Limit (dBm)	PPSD Limit (dBm)
Low	5500	23.97	23.11	29.11	23.11	9.99	11.00	9.99
Mid	5580	24.00	23.12	29.12	23.12	9.99	11.00	9.99
High	5700	23.94	23.12	29.12	23.12	9.99	11.00	9.99

Duty Cycle CF (dB)	0.00	**Included in Calculations of Corr'd Power & PPSD**

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	5500	12.783	12.826	15.81	23.11	-7.30
Mid	5580	12.461	13.374	15.95	23.12	-7.16
High	5700	12.059	12.727	15.42	23.12	-7.70

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5500	1.95	1.84	4.91	9.99	-5.08
Mid	5580	1.59	2.35	5.00	9.99	-4.99
High	5700	1.24	1.72	4.50	9.99	-5.49

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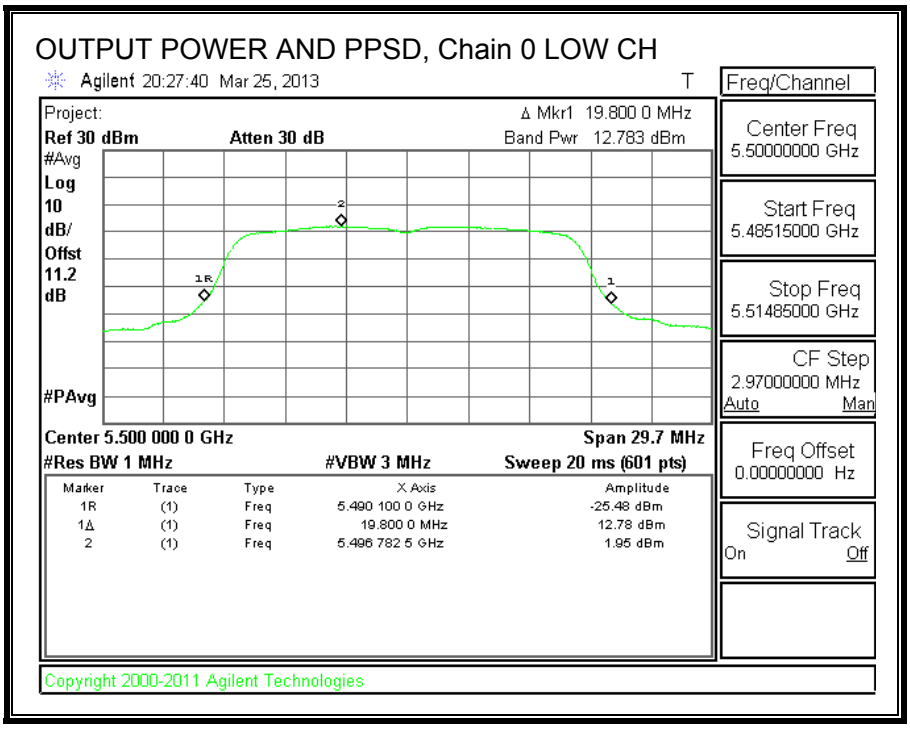
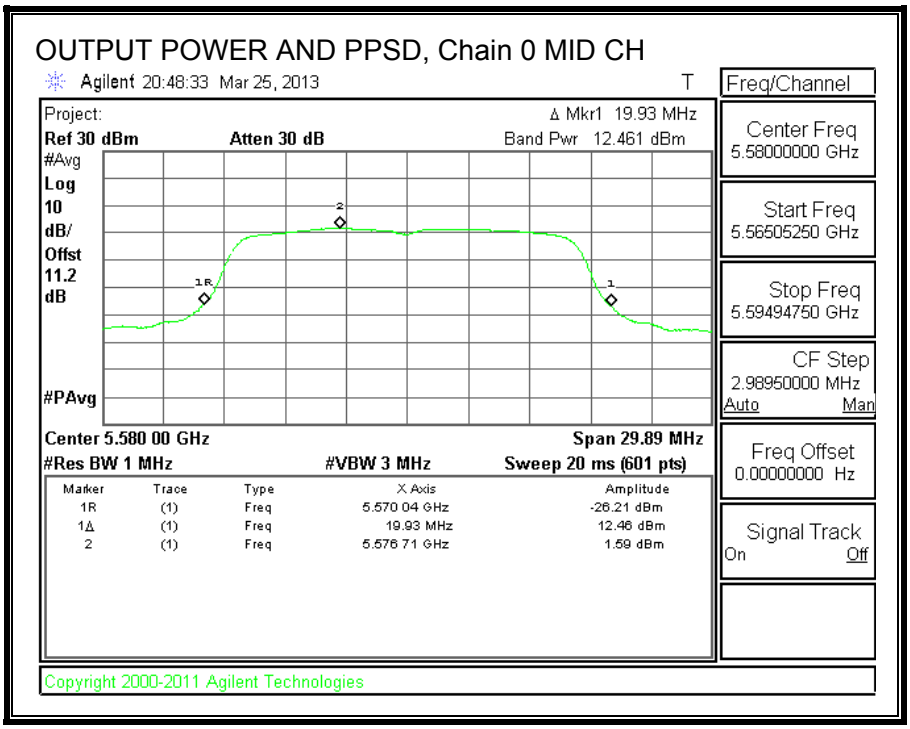
OUTPUT POWER AND PPSD, Chain 0





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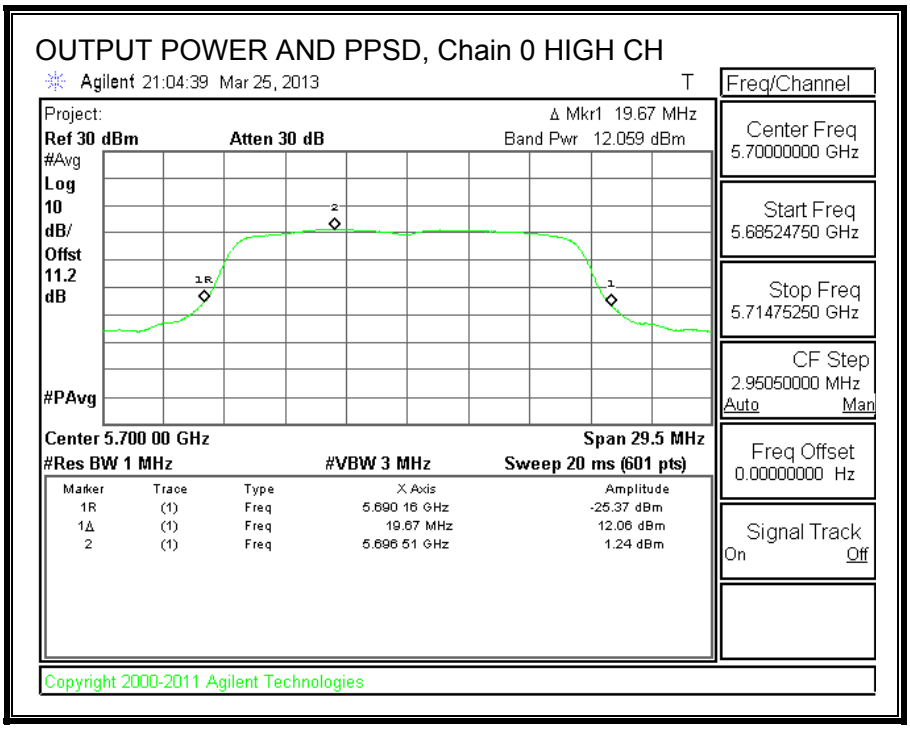
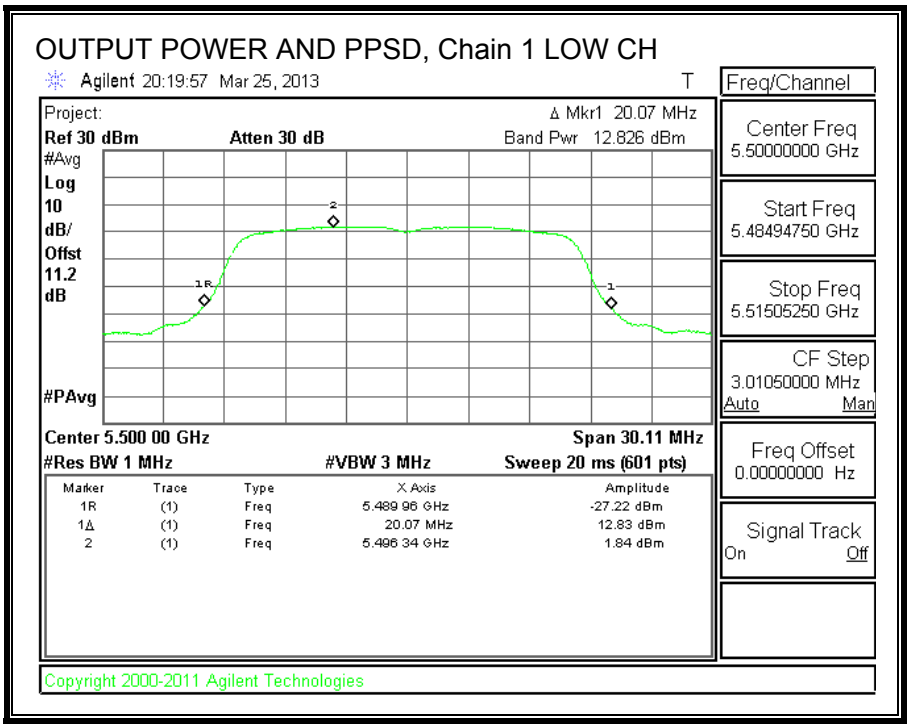


OUTPUT POWER AND PPSD, Chain 1



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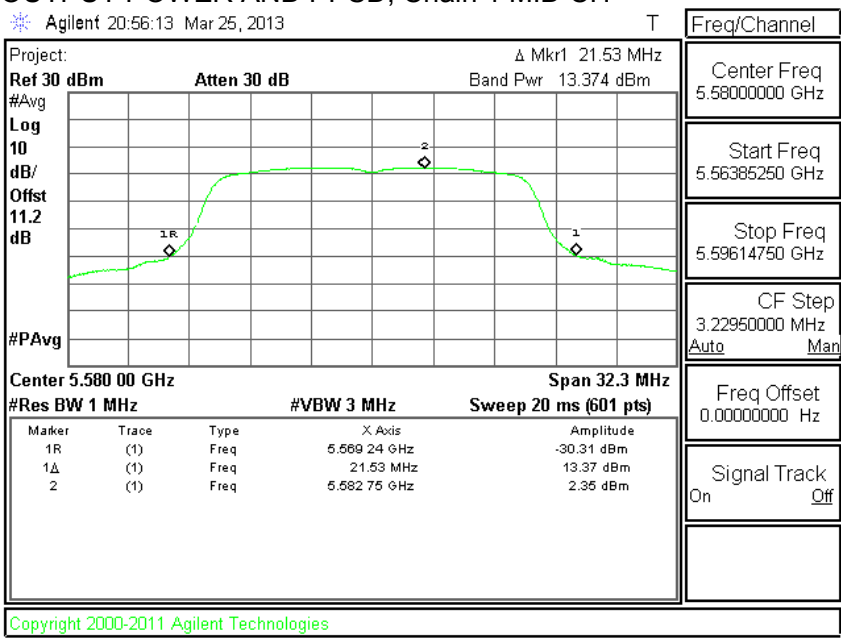
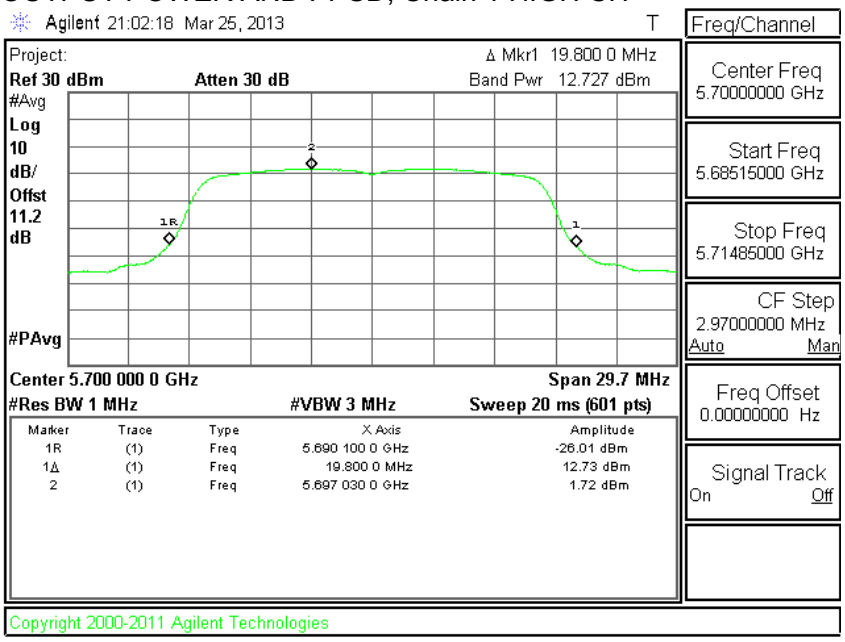
OUTPUT POWER AND PPSD, Chain 1 MID CH



OUTPUT POWER AND PPSD, Chain 1 HIGH CH



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8.12. 802.11n HT20 CDD MCS0 2TX MODE IN THE 5.6 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)
Low	5500	20.27	21.20
Mid	5580	21.07	22.53
High	5700	20.47	22.53

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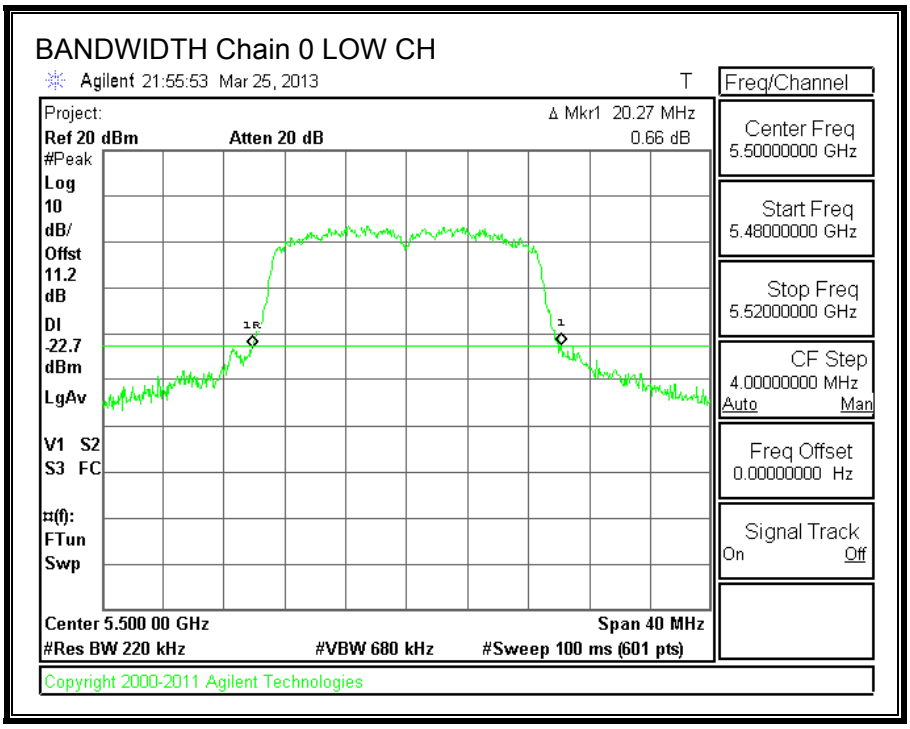
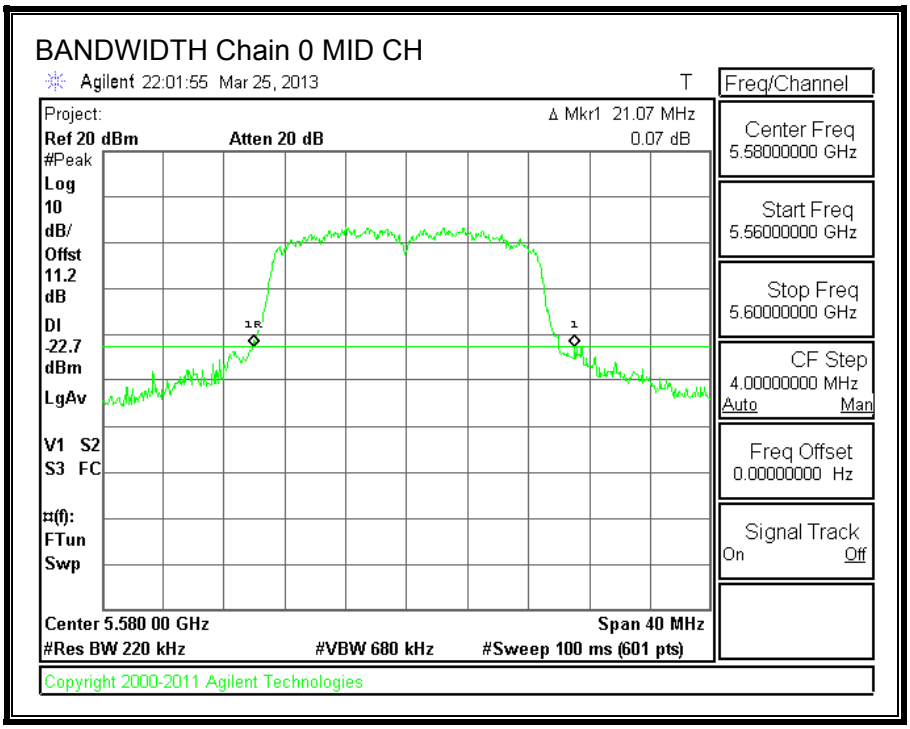
26 dB BANDWIDTH, Chain 0





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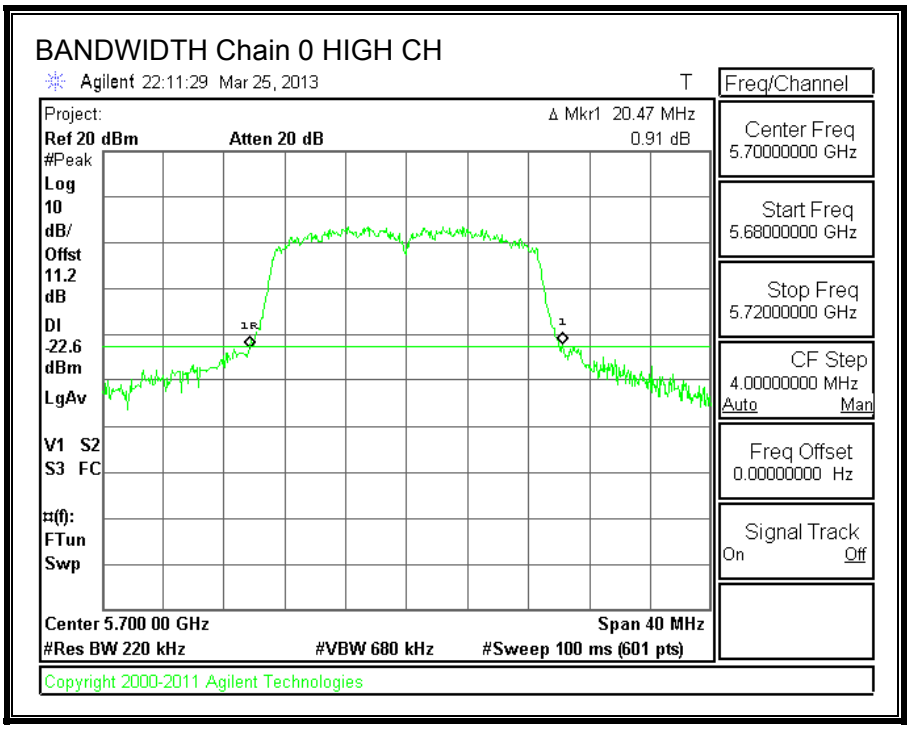
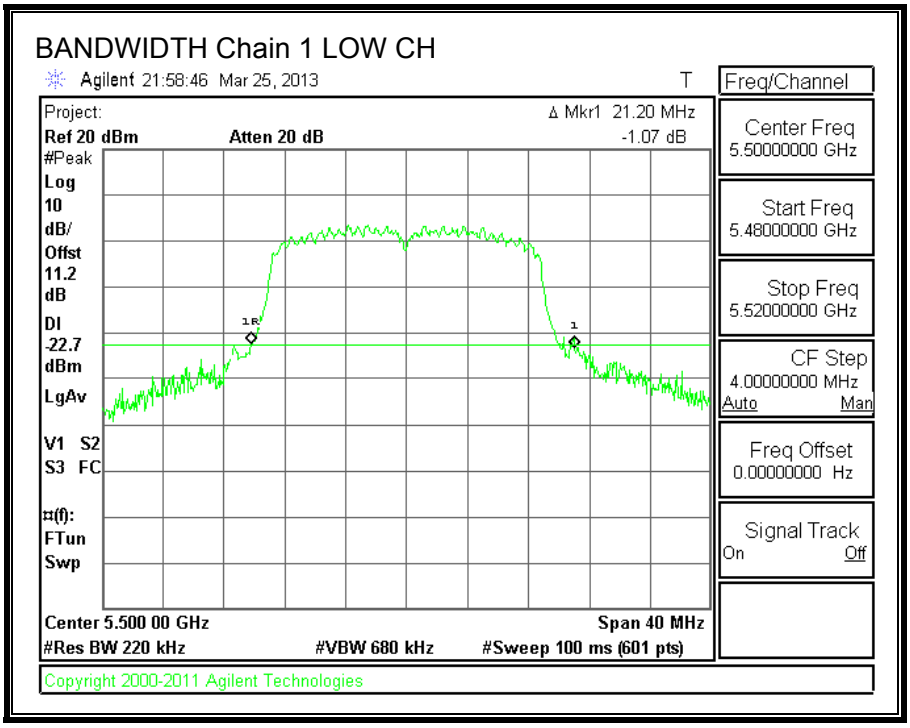


26 dB BANDWIDTH, Chain 1



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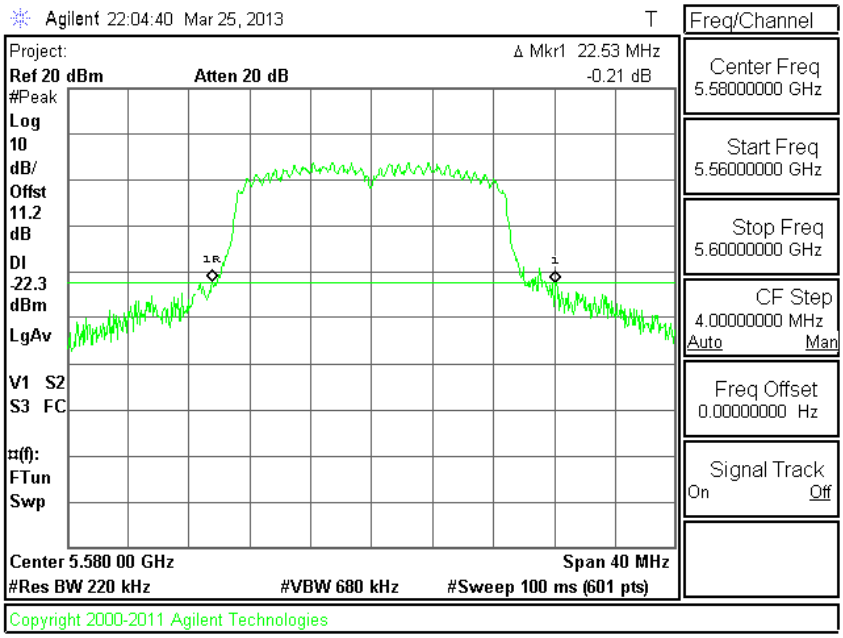
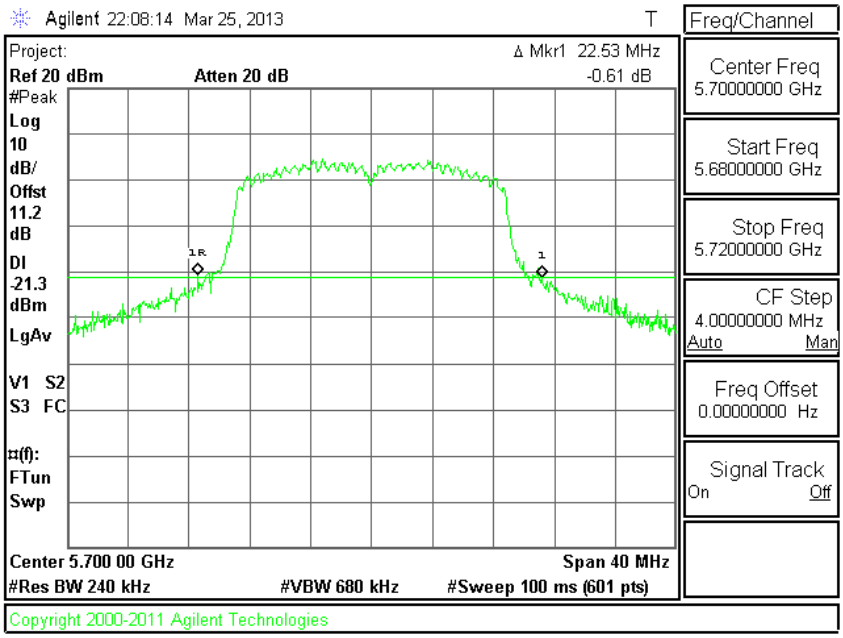
BANDWIDTH Chain 1 MID CH



BANDWIDTH Chain 1 HIGH CH



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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)
Low	5500	17.3862	17.3687
Mid	5580	17.3772	17.3614
High	5700	17.4119	17.4078

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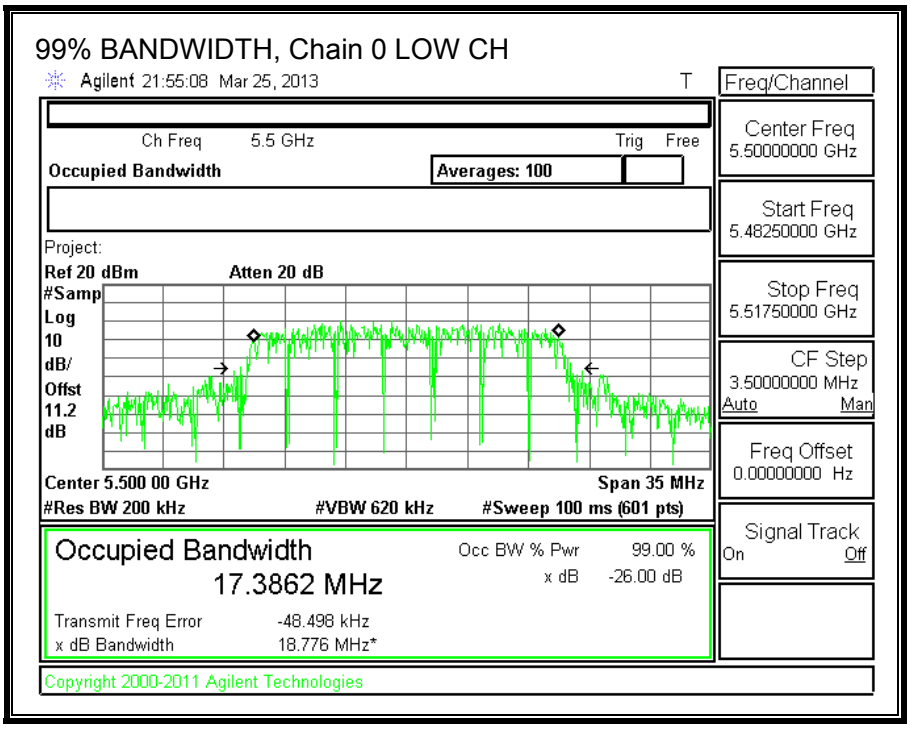
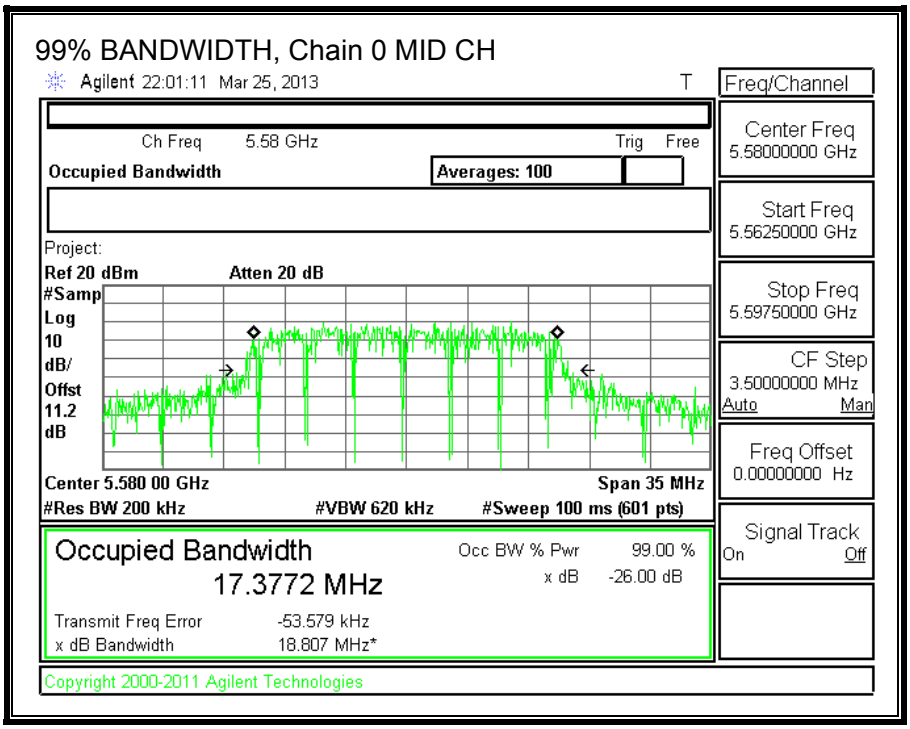
99% BANDWIDTH, Chain 0





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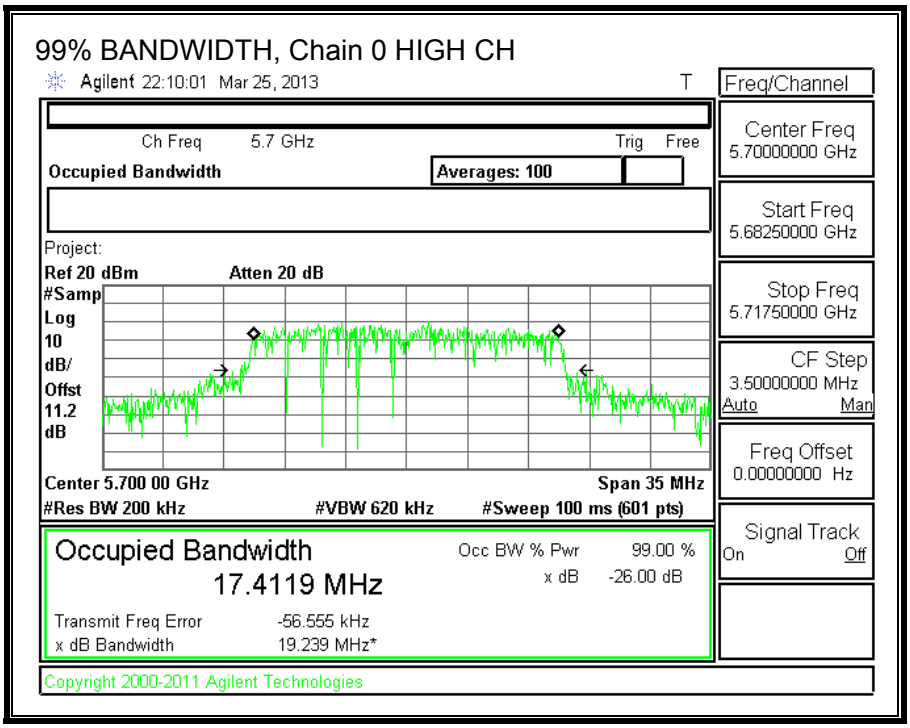
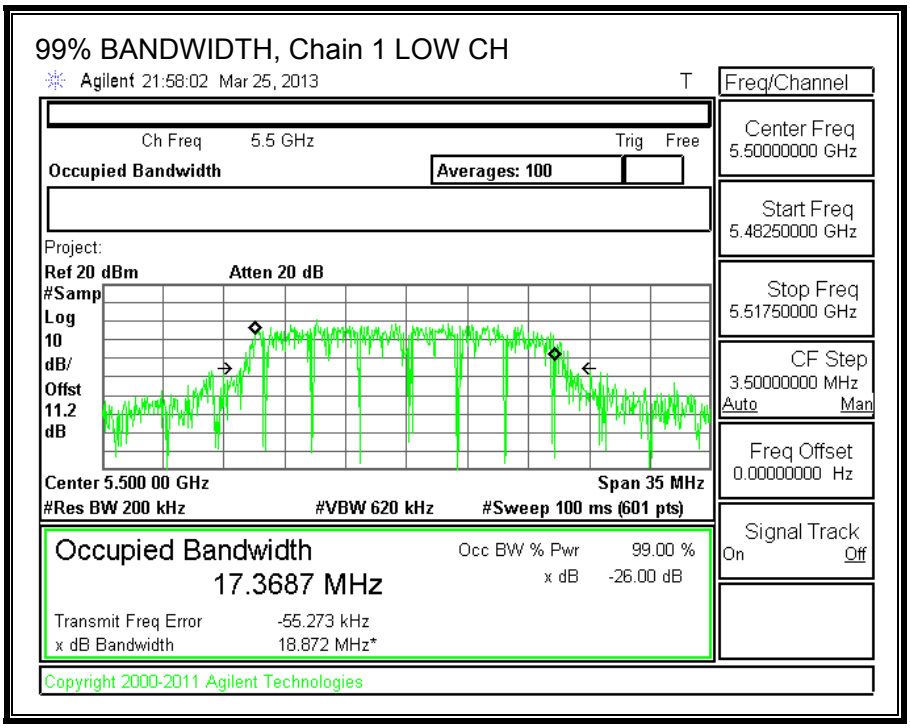


99% BANDWIDTH, Chain 1



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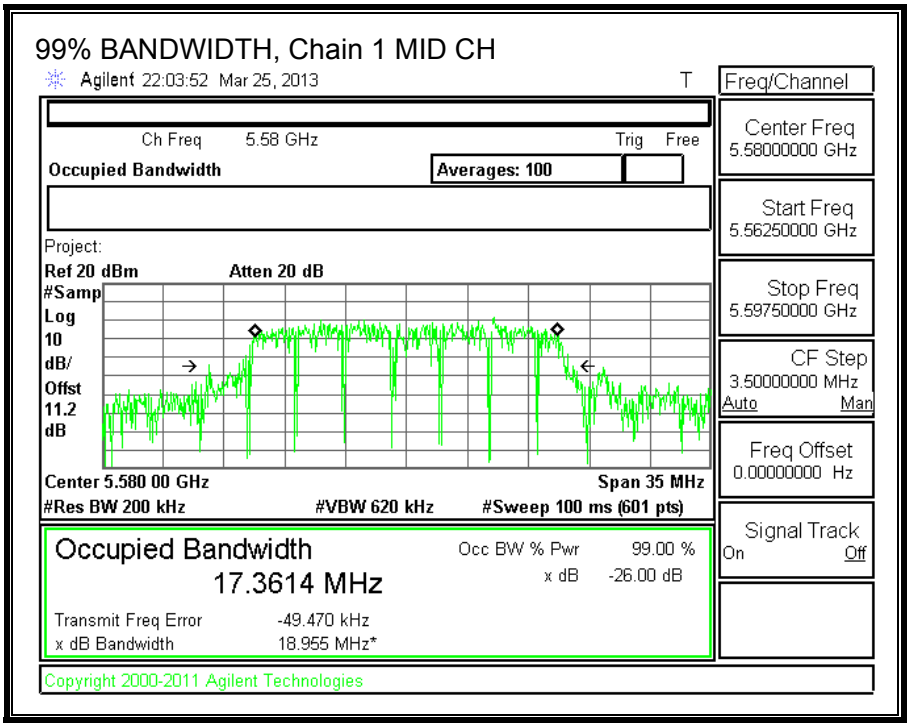

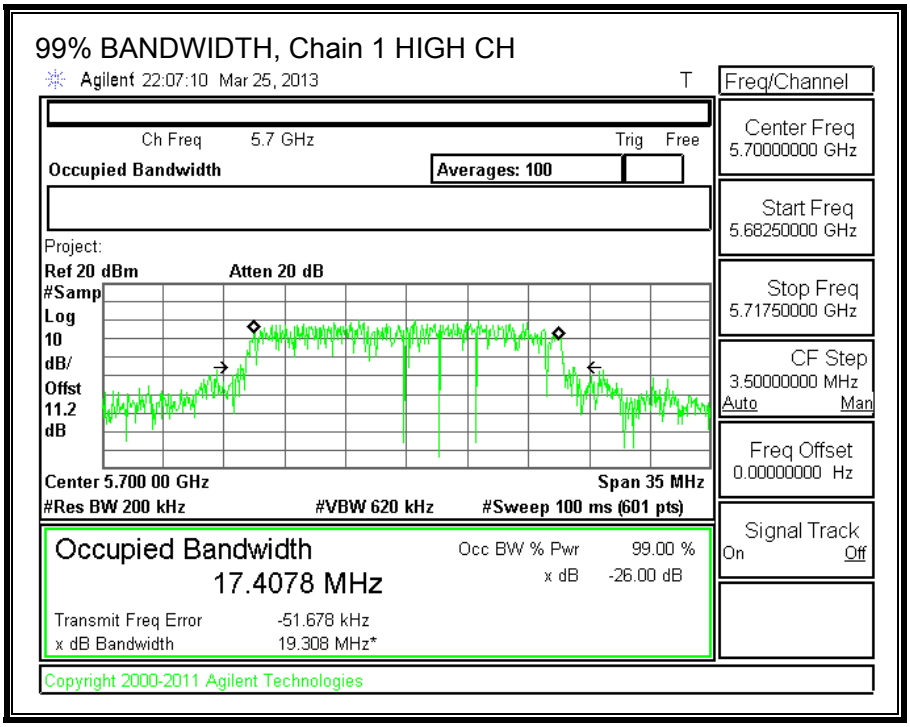

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8.12.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Average Power Results

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Total Power (dBm)
Low	5500	12.37	12.96	15.69
Mid	5580	12.54	12.72	15.64
High	5700	12.04	12.43	15.25

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8.12.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (1)

For the band 5.5–5.7 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

The maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

DIRECTIONAL ANTENNA GAIN

For output power, the TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

For PPSD, the TX chains are correlated and the antenna gain is the same for each chain. The directional gain is:

Antenna Gain (dBi)	10 * Log (2 chains) (dB)	Correlated Chains Directional Gain (dBi)
4.00	3.01	7.01

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Uncorrelated Directional Gain (dBi)	Correlated Directional Gain (dBi)
Low	5500	20.27	17.3862	4.00	7.01
Mid	5580	21.07	17.3614	4.00	7.01
High	5700	20.47	17.4078	4.00	7.01

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC PSD Limit (dBm)	PPSD Limit (dBm)
Low	5500	24.00	23.40	29.40	23.40	9.99	11.00	9.99
Mid	5580	24.00	23.40	29.40	23.40	9.99	11.00	9.99
High	5700	24.00	23.41	29.41	23.41	9.99	11.00	9.99

Duty Cycle CF (dB)	0.00	**Included in Calculations of Corr'd Power & PPSD**

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	5500	12.522	12.684	15.61	23.40	-7.79
Mid	5580	12.368	12.992	15.70	23.40	-7.69
High	5700	12.797	13.107	15.97	23.41	-7.44

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5500	1.44	1.57	4.52	9.99	-5.47
Mid	5580	1.26	1.86	4.58	9.99	-5.41
High	5700	1.59	1.87	4.74	9.99	-5.25

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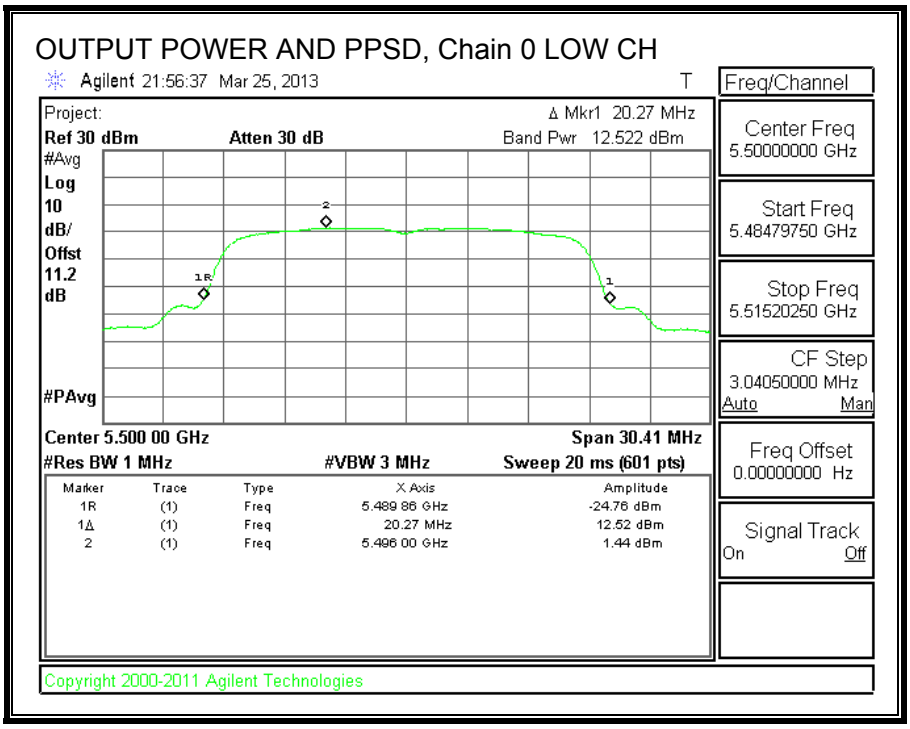
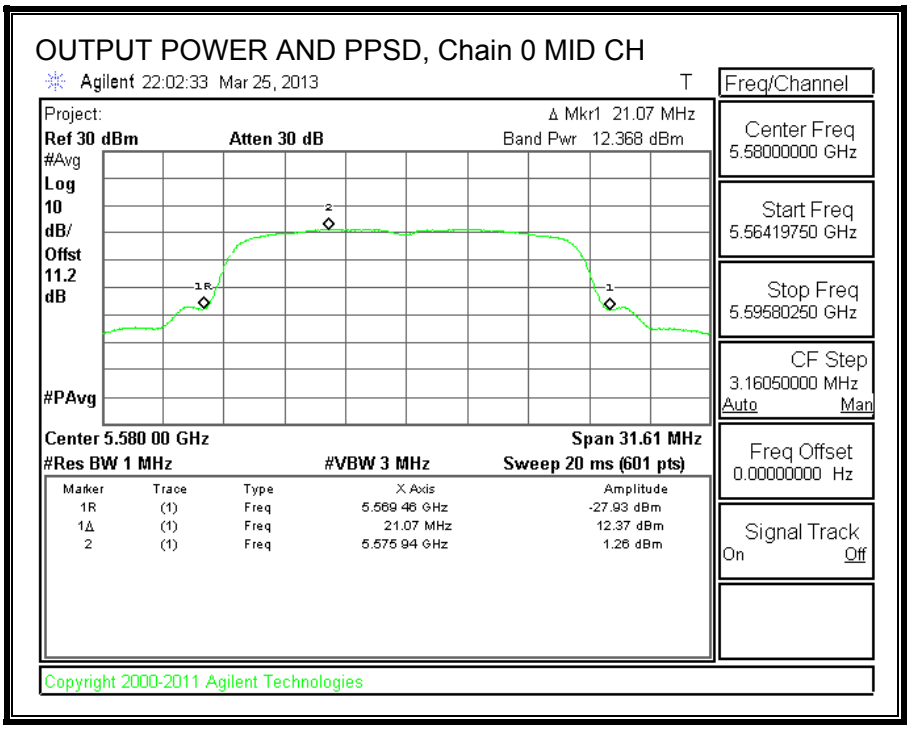
OUTPUT POWER AND PPSD, Chain 0





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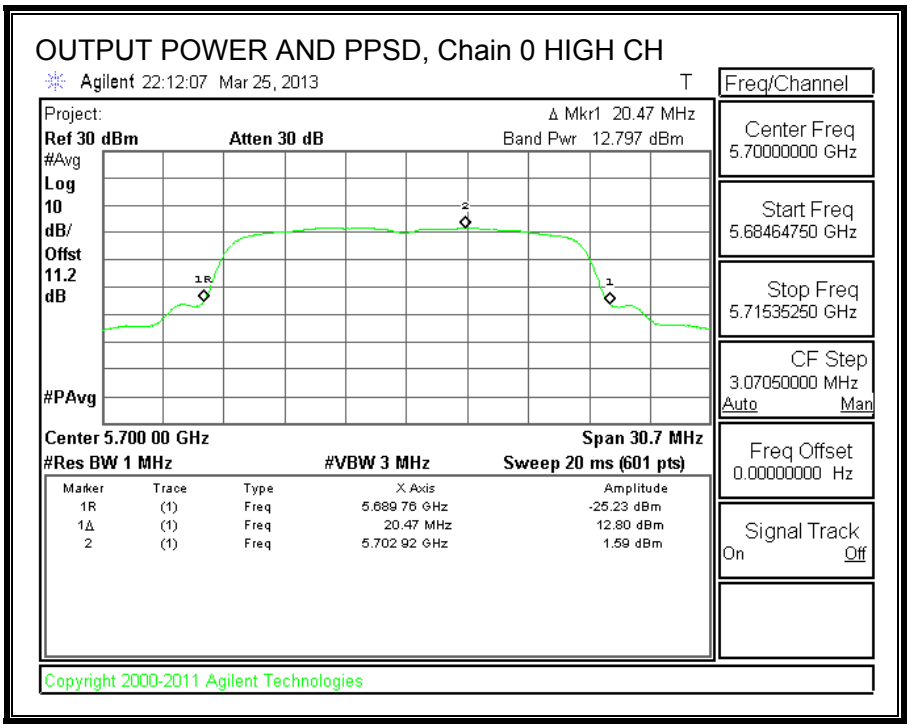
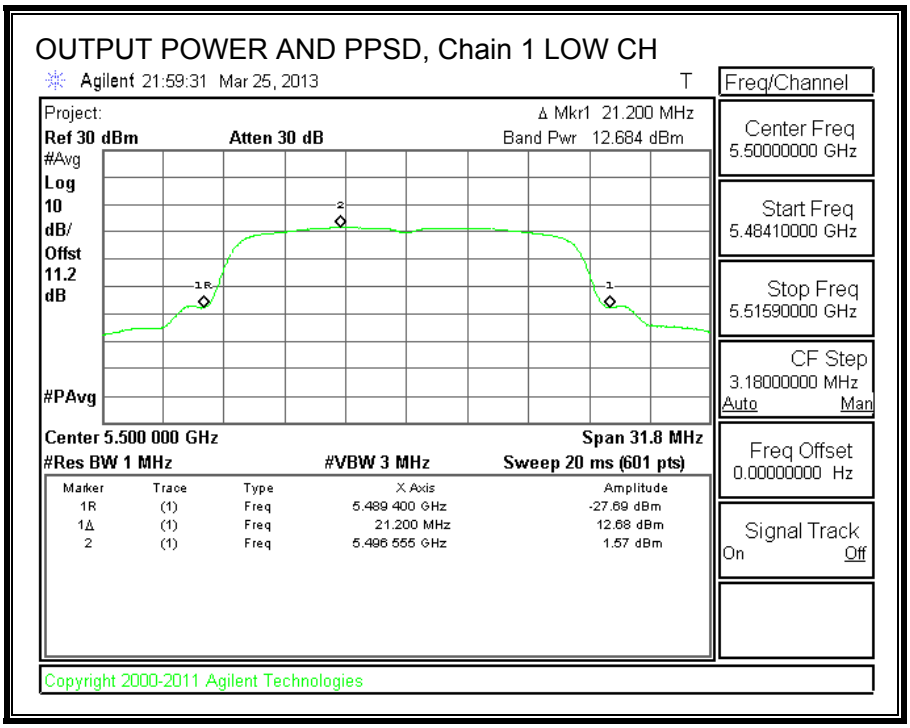


OUTPUT POWER AND PPSD, Chain 1



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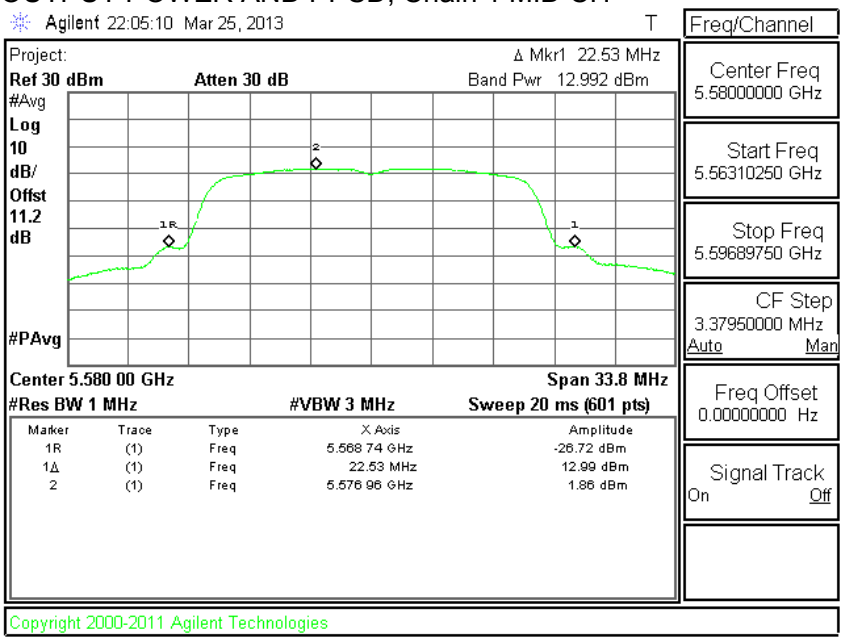
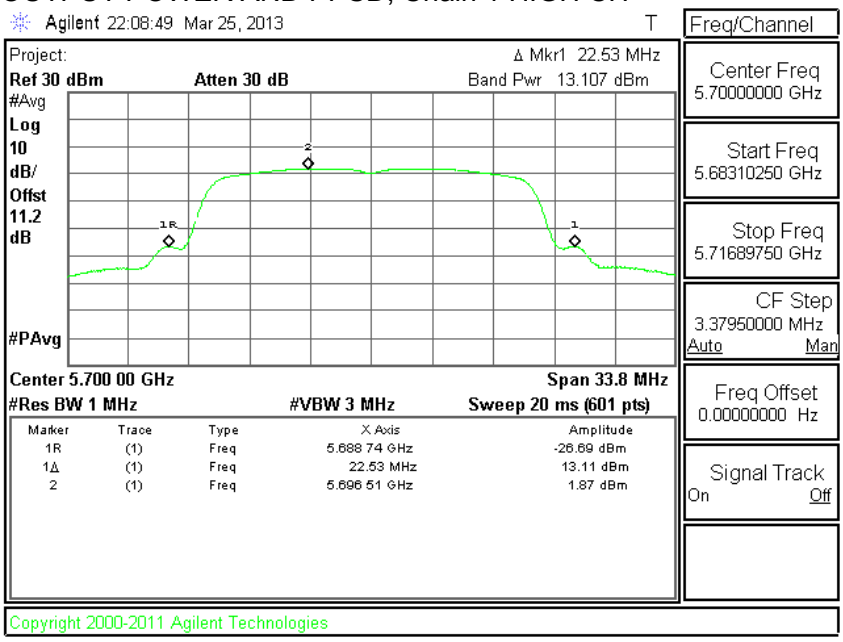
OUTPUT POWER AND PPSD, Chain 1 MID CH



OUTPUT POWER AND PPSD, Chain 1 HIGH CH



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8.13. 802.11n HT20 SDM MCS8 2TX MODE IN THE 5.6 GHz BAND

8.13.1. 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	5500	20.13	20.53
Mid	5580	20.73	21.53
High	5700	21.33	21.47

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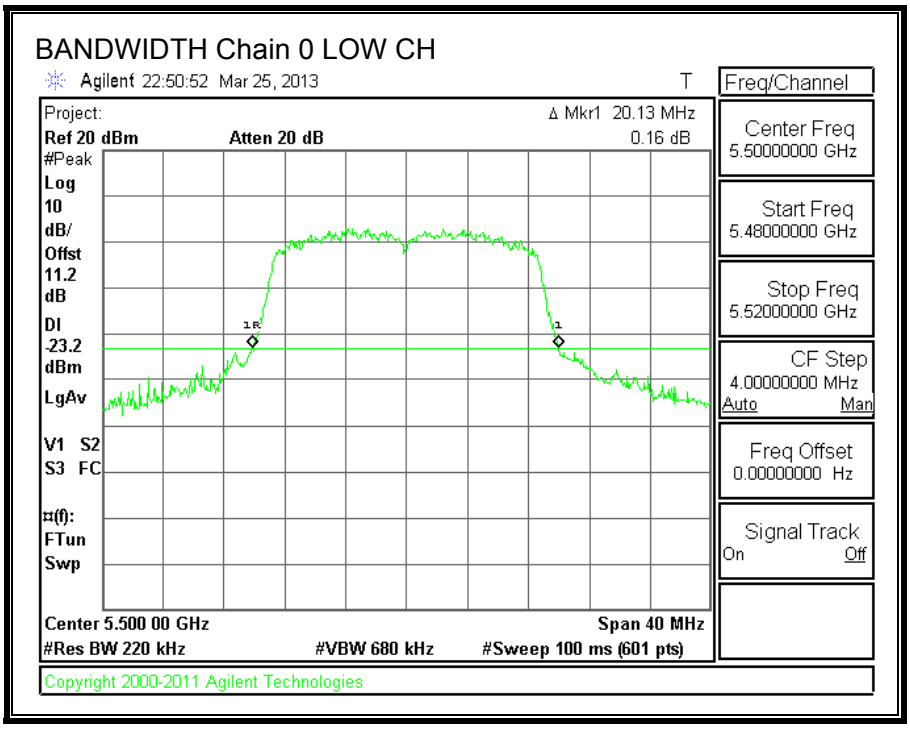
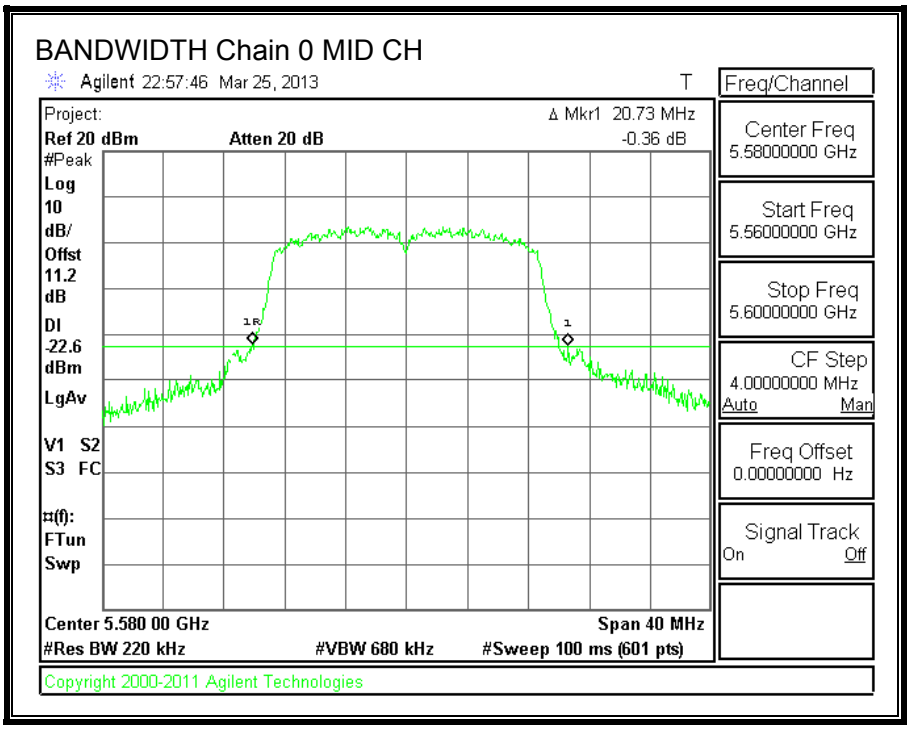
26 dB BANDWIDTH, Chain 0





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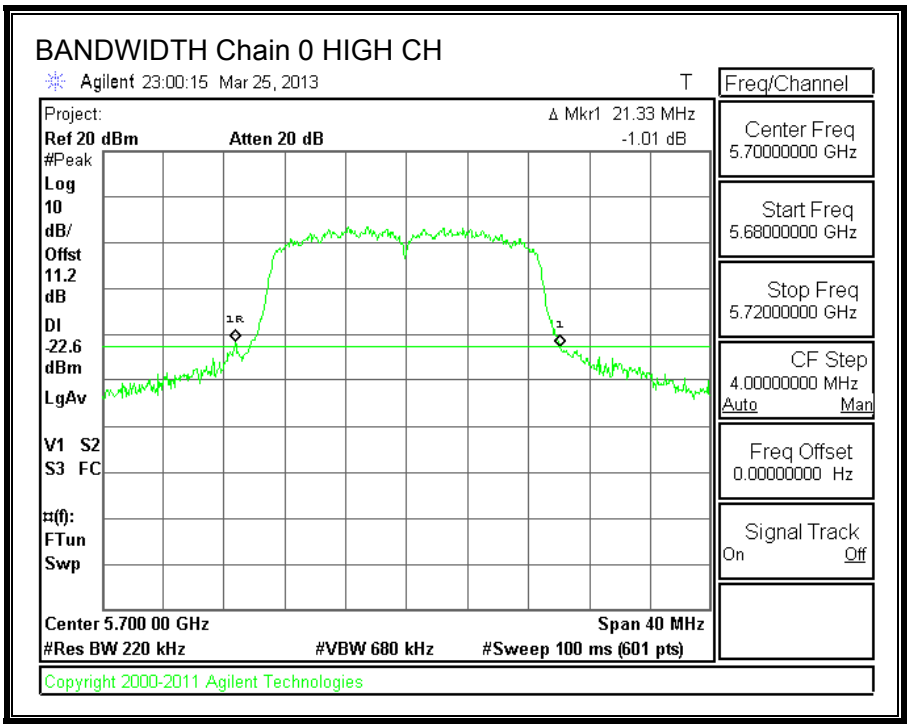
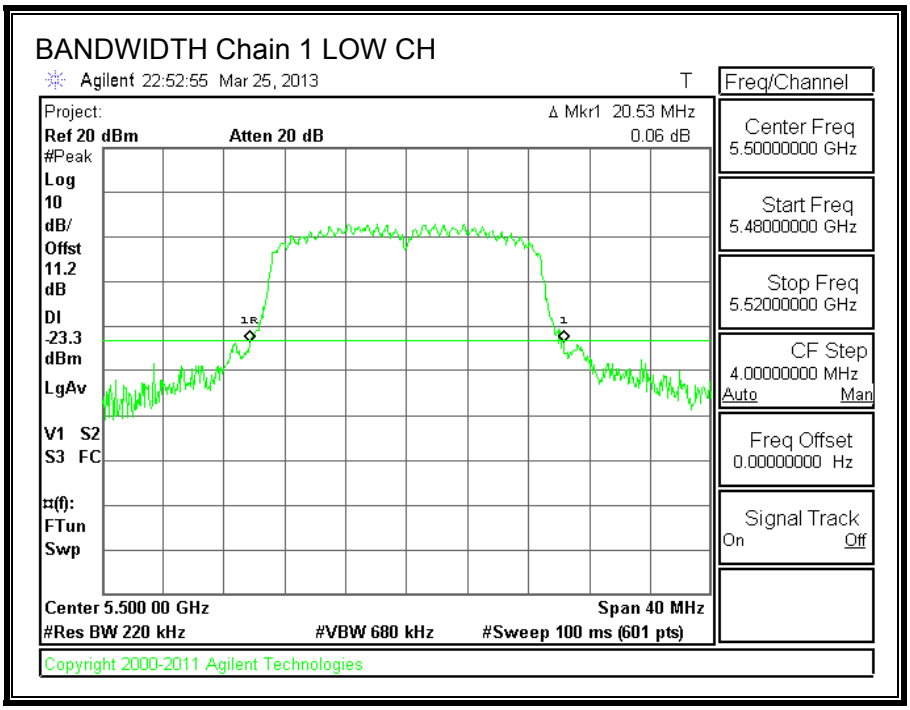


26 dB BANDWIDTH, Chain 1



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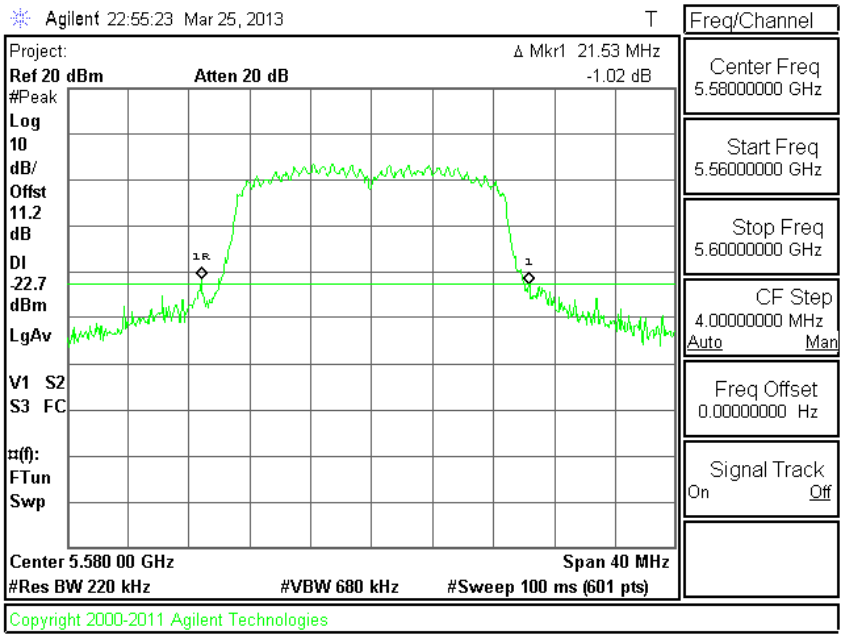
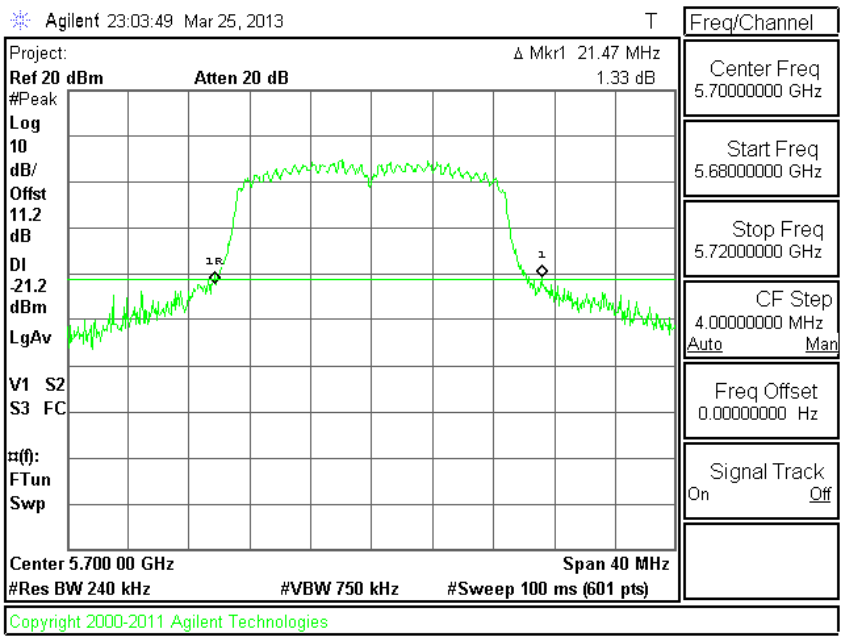
BANDWIDTH Chain 1 MID CH



BANDWIDTH Chain 1 HIGH CH



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8.13.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	5500	17.4315	17.3986
Mid	5580	17.4270	17.4037
High	5700	17.4124	17.4067

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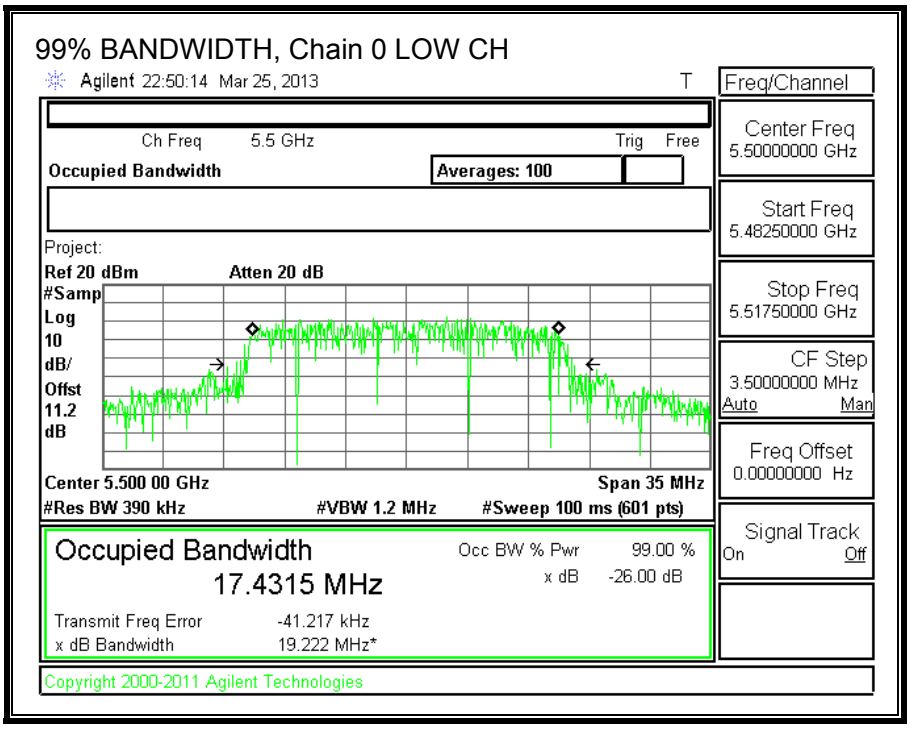
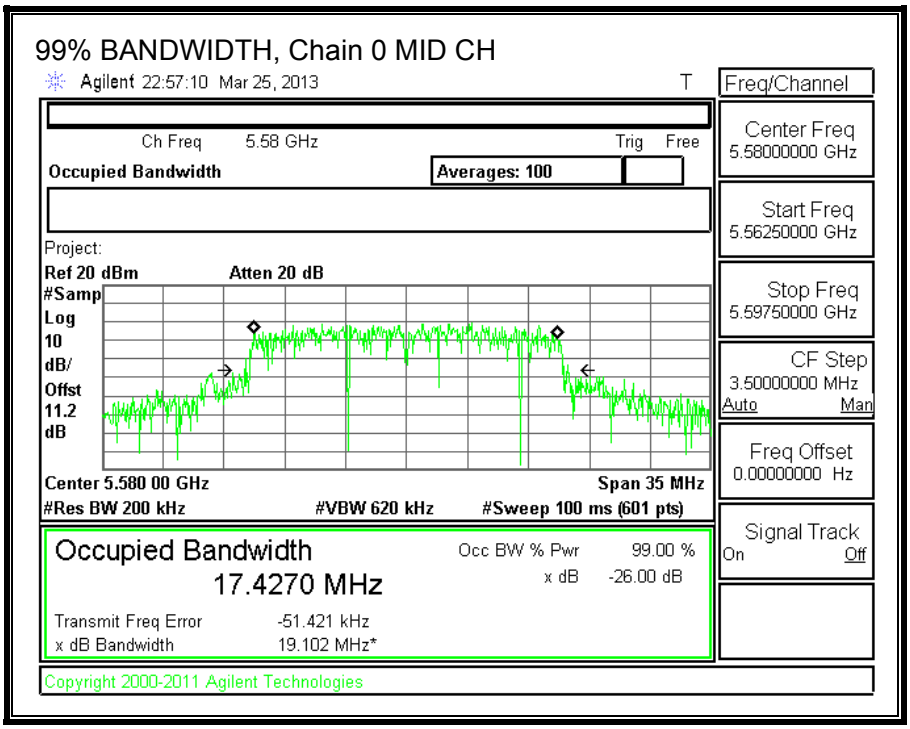
99% BANDWIDTH, Chain 0





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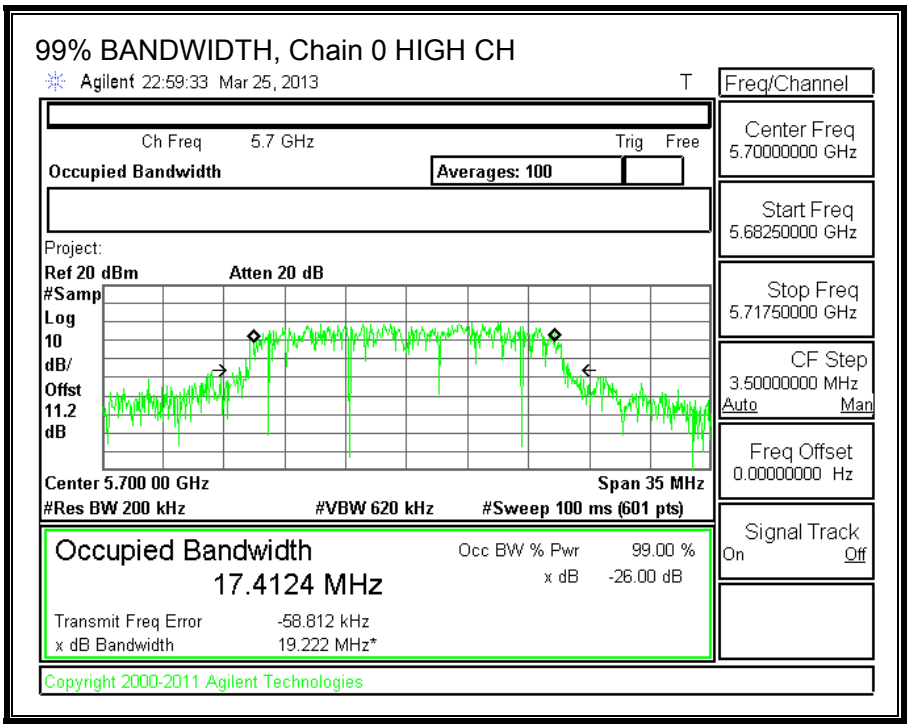
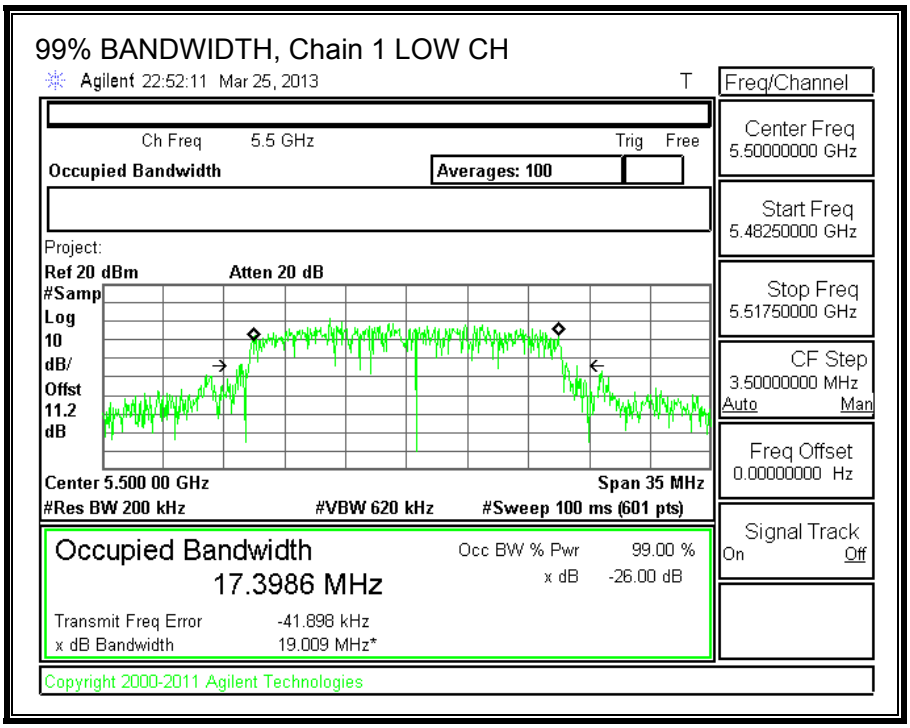


99% BANDWIDTH, Chain 1



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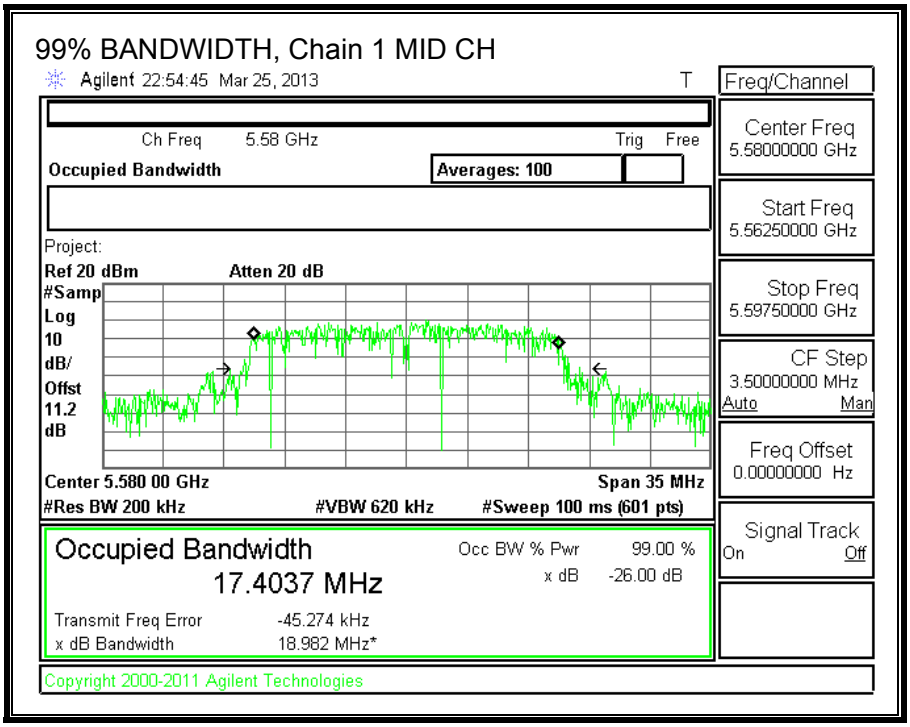

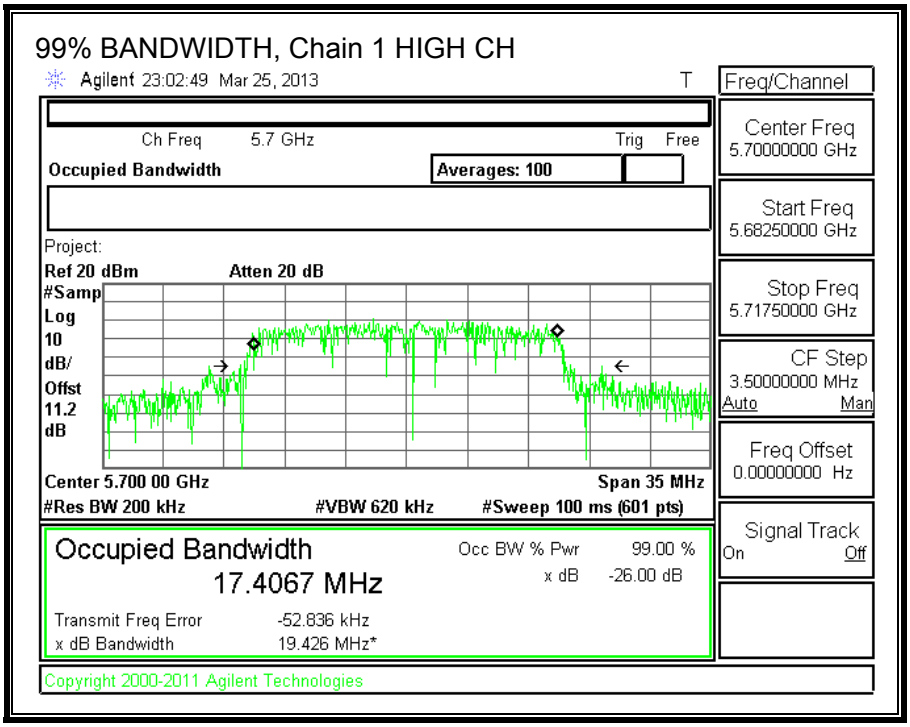

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8.13.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Average Power Results

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Total Power (dBm)
Low	5500	12.00	12.20	15.11
Mid	5580	12.20	12.70	15.47
High	5700	12.00	12.70	15.37

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8.13.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (1)

For the band 5.5–5.7 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

The maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
Low	5500	20.13	17.3986	4.00
Mid	5580	20.53	17.4037	4.00
High	5700	21.33	17.4067	4.00

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC PSD Limit (dBm)	PPSD Limit (dBm)
Low	5500	24.00	23.41	29.41	23.41	11.00	11.00	11.00
Mid	5580	24.00	23.41	29.41	23.41	11.00	11.00	11.00
High	5700	24.00	23.41	29.41	23.41	11.00	11.00	11.00

Duty Cycle CF (dB)	0.00	**Included in Calculations of Corr'd Power & PPSD**

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	5500	12.152	12.338	15.26	23.41	-8.15
Mid	5580	12.637	12.866	15.76	23.41	-7.64
High	5700	12.533	13.306	15.95	23.41	-7.46

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5500	1.00	1.20	4.11	11.00	-6.89
Mid	5580	1.42	1.64	4.54	11.00	-6.46
High	5700	1.34	2.13	4.76	11.00	-6.24

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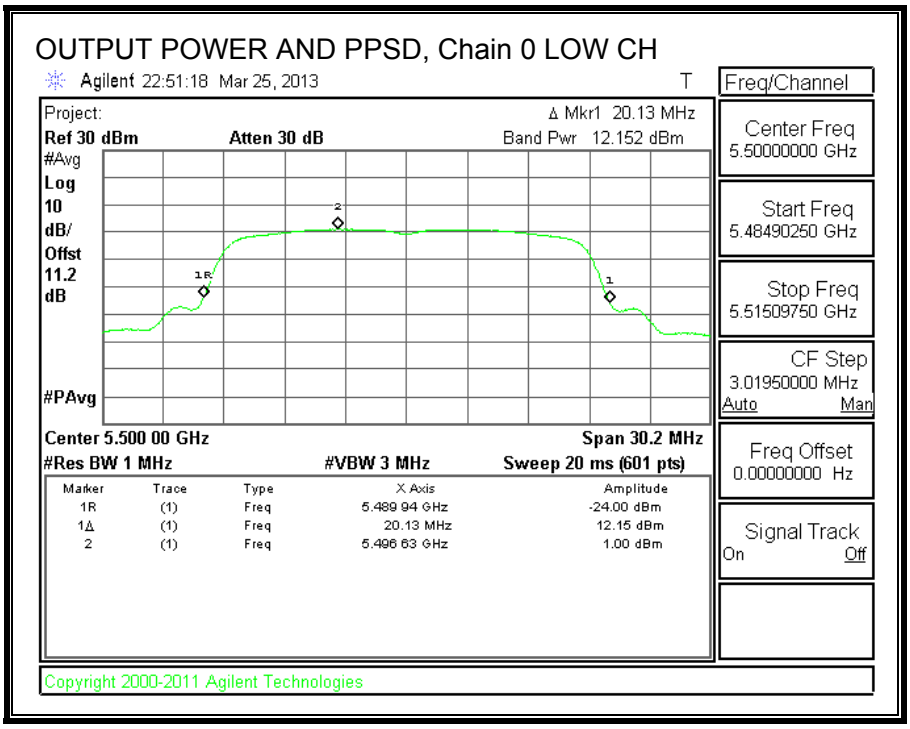
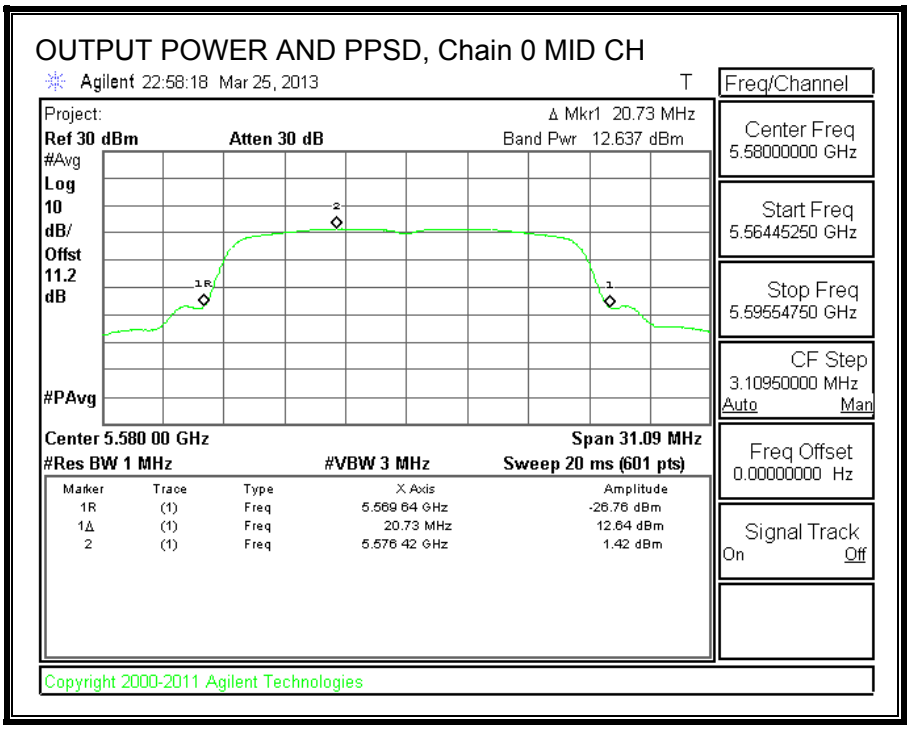
OUTPUT POWER AND PPSD, Chain 0





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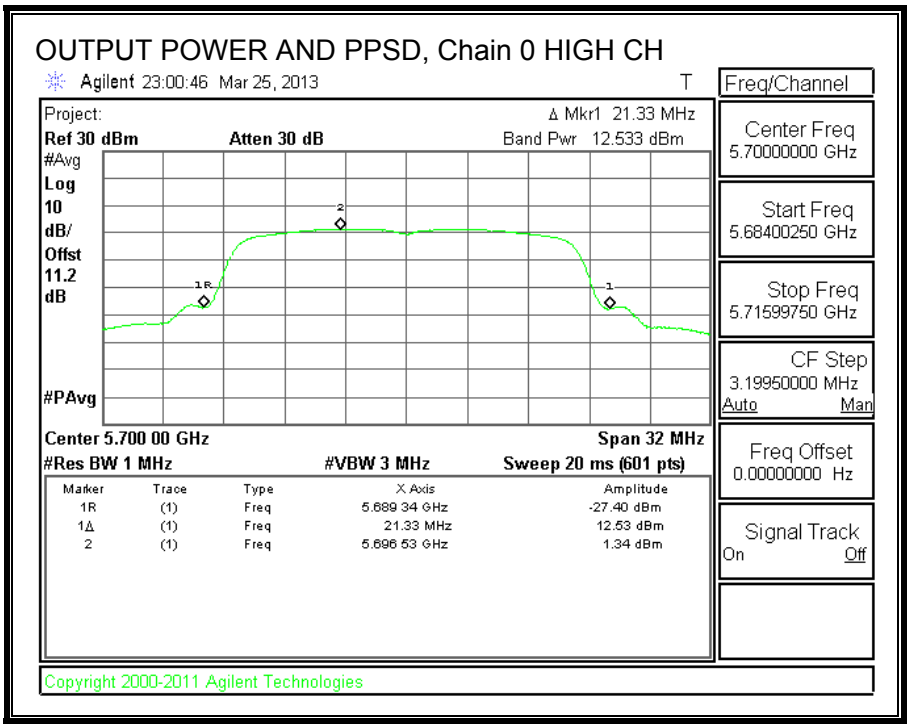
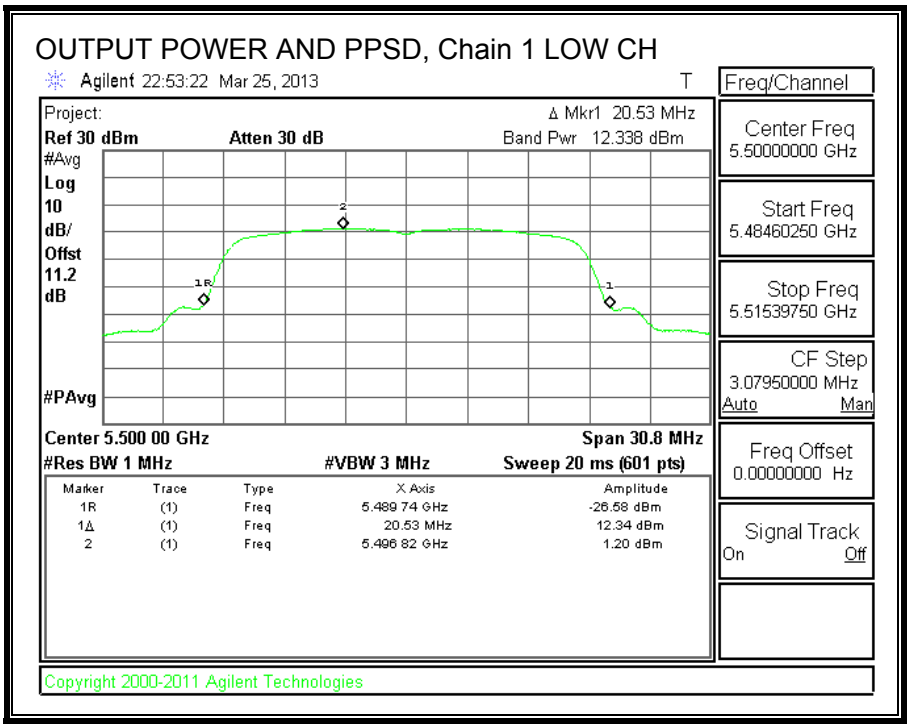


OUTPUT POWER AND PPSD, Chain 1



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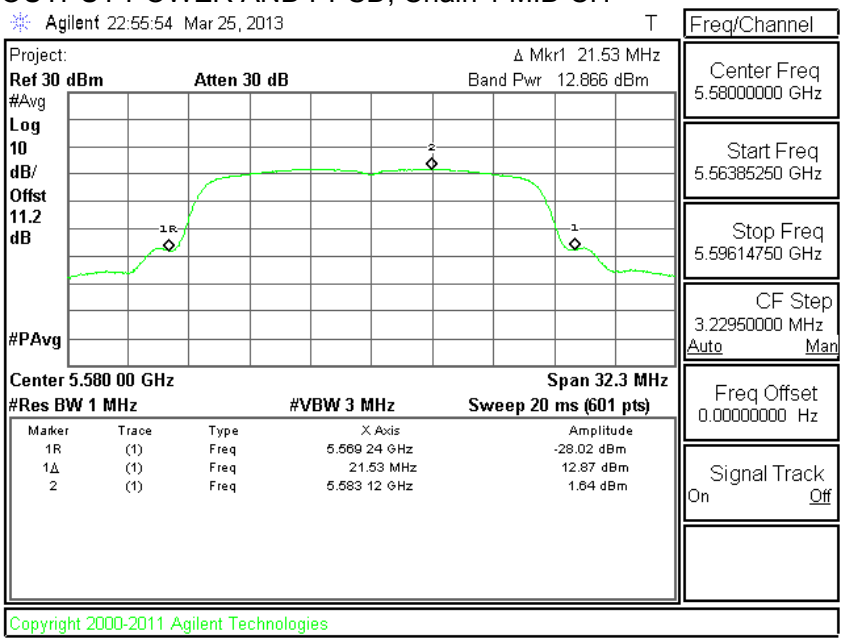
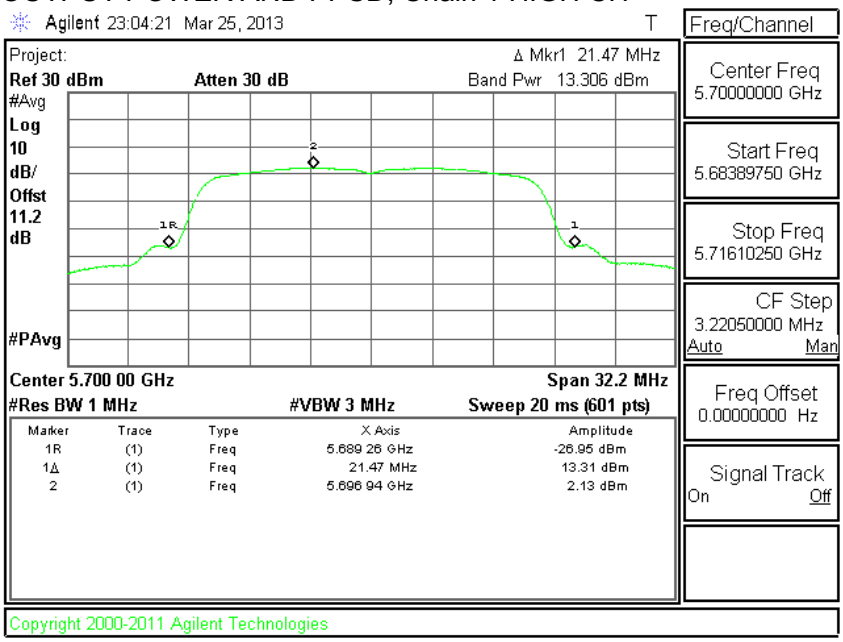
OUTPUT POWER AND PPSD, Chain 1 MID CH



OUTPUT POWER AND PPSD, Chain 1 HIGH CH



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8.14. 802.11n HT40 CDD MCS0 2TX MODE IN THE 5.6 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)
Low	5510	49.73	45.87
Mid	5550	58.53	51.07
High	5670	50.93	46.40

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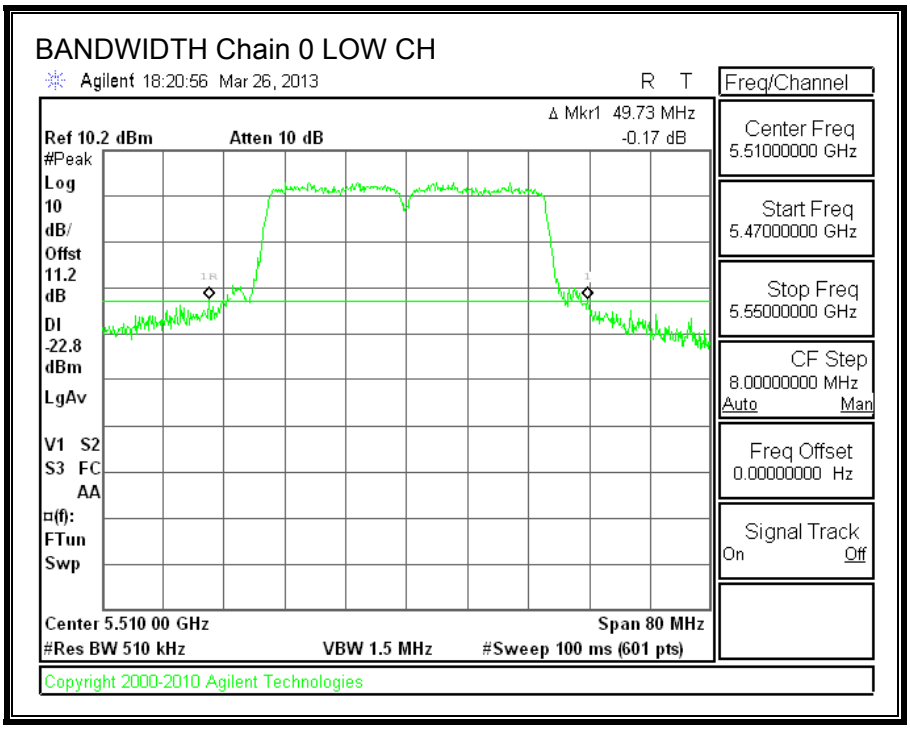
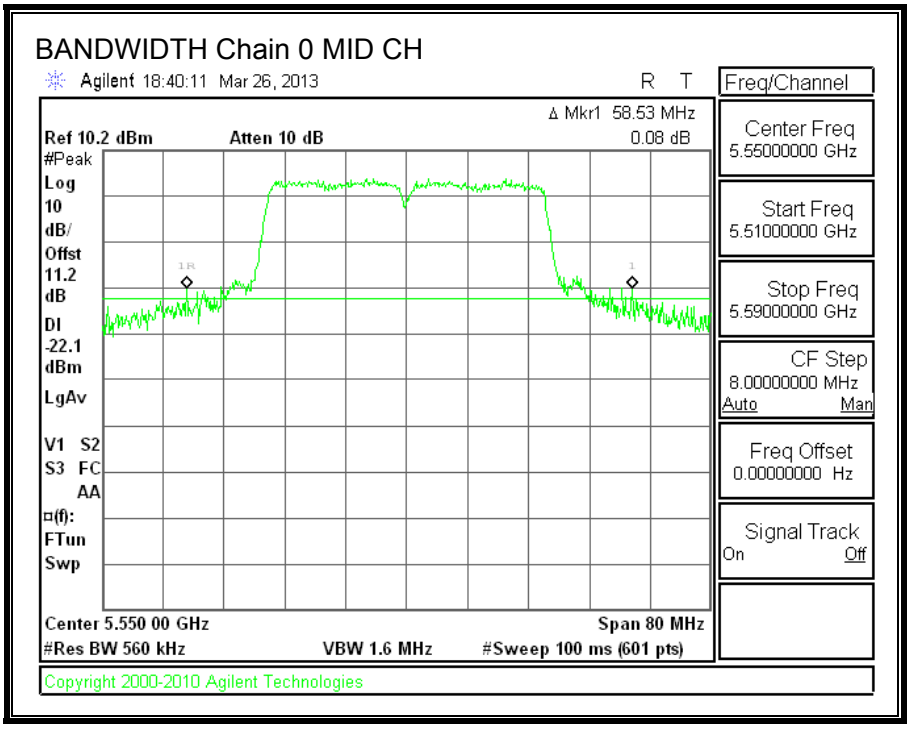
26 dB BANDWIDTH, Chain 0





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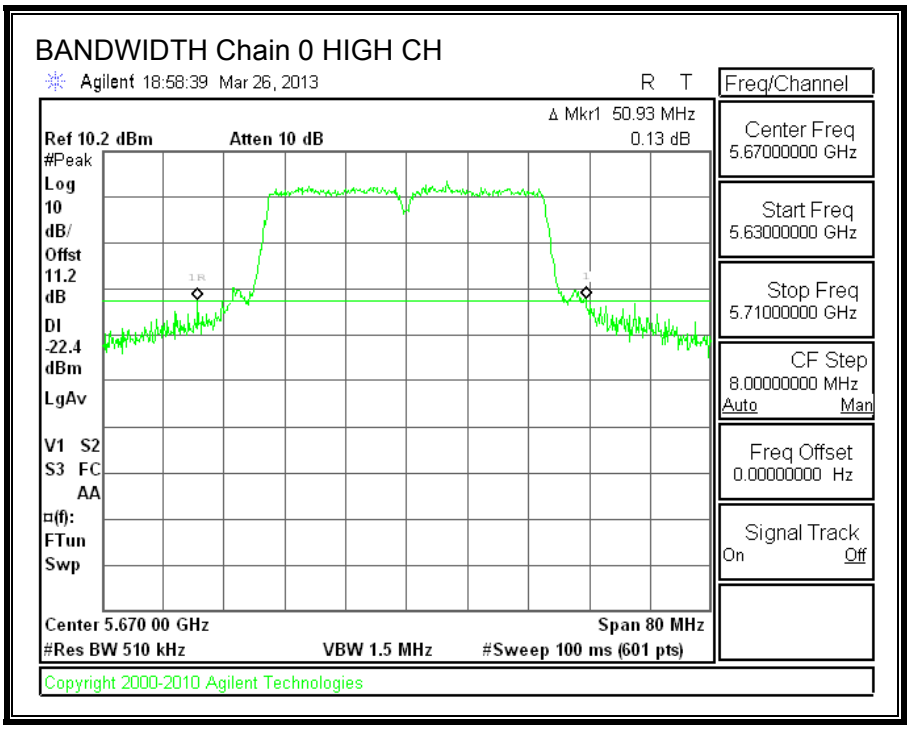
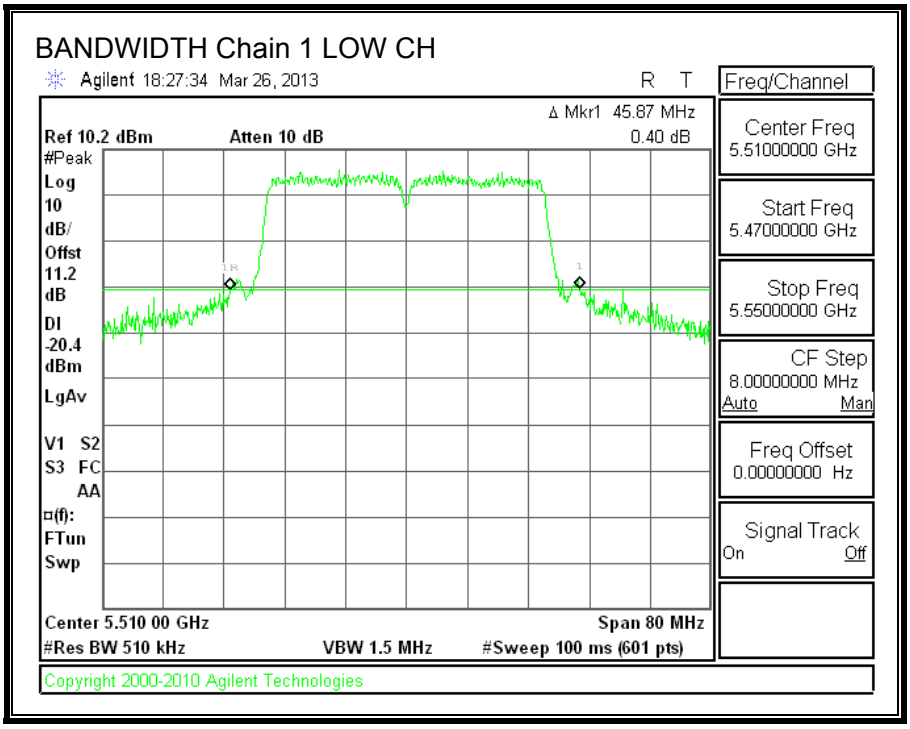


26 dB BANDWIDTH, Chain 1



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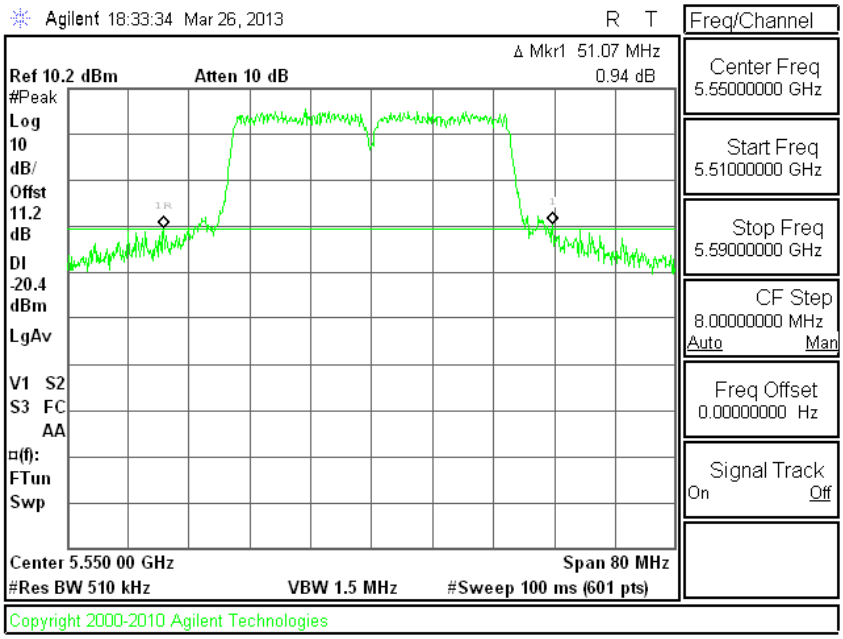
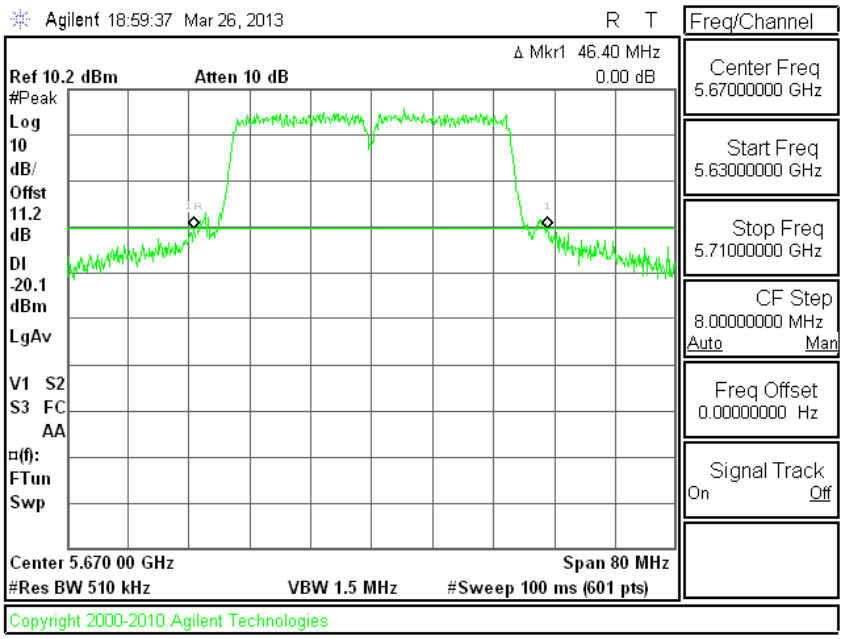
BANDWIDTH Chain 1 MID CH



BANDWIDTH Chain 1 HIGH CH



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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)
Low	5510	36.1381	36.1337
Mid	5550	36.1612	36.1684
High	5670	36.1587	36.1304

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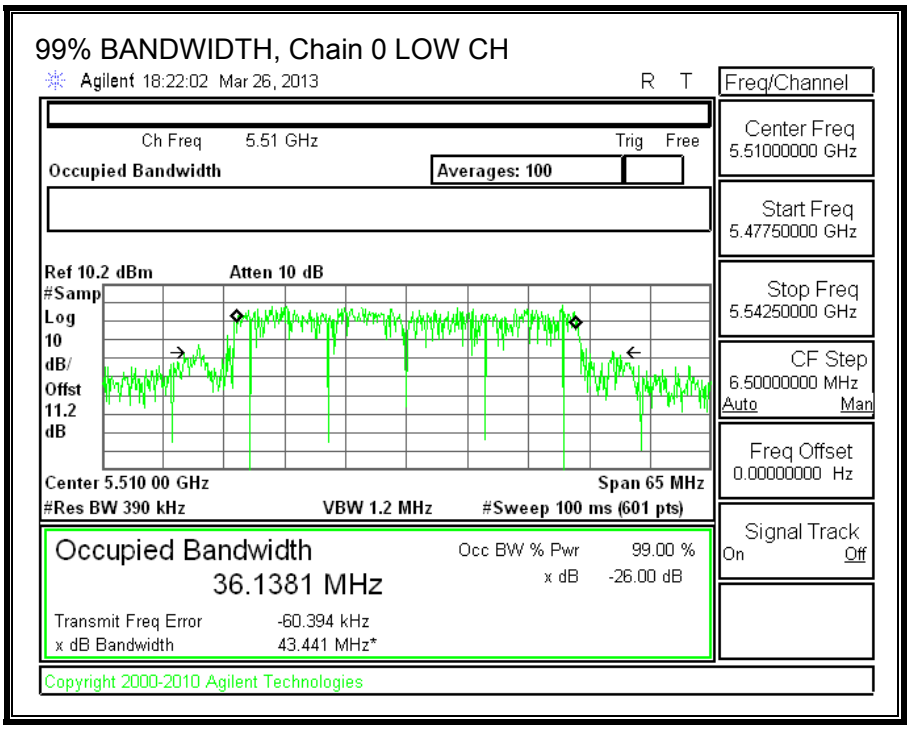
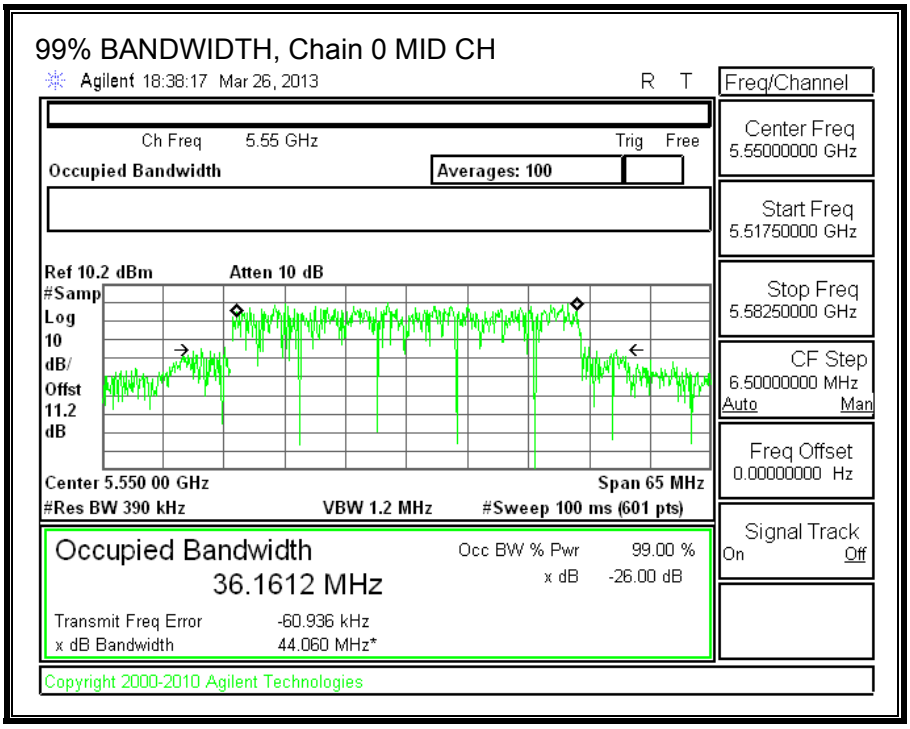
99% BANDWIDTH, Chain 0





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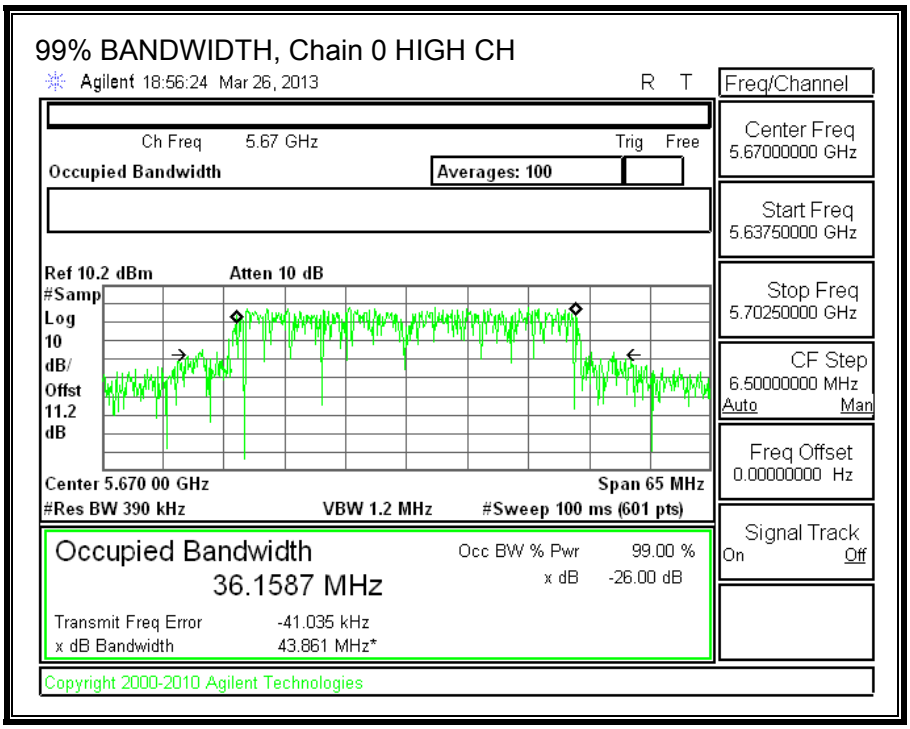
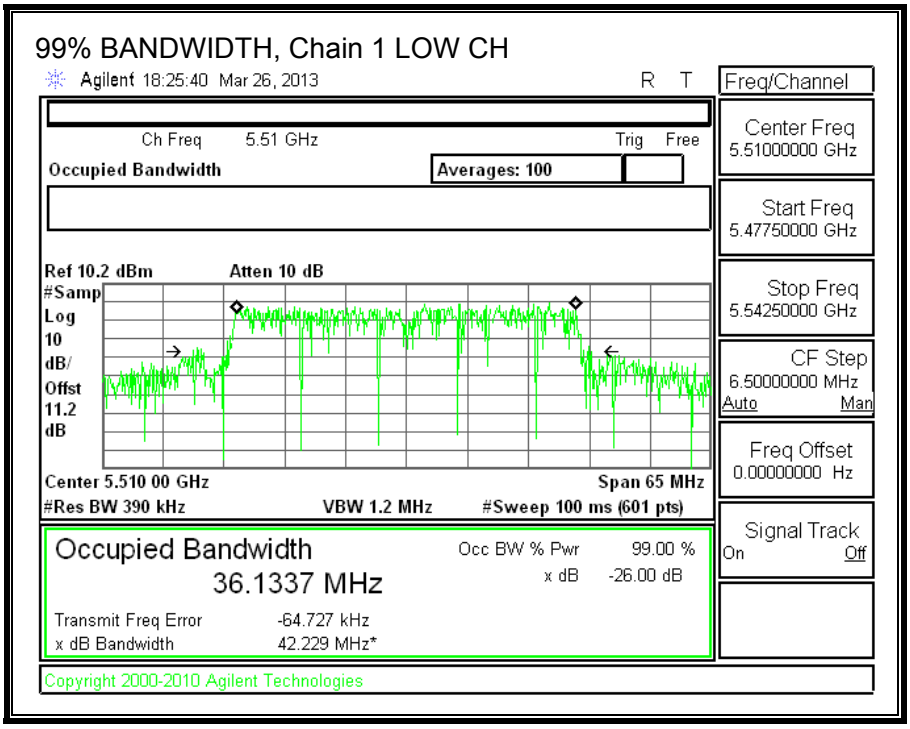


99% BANDWIDTH, Chain 1



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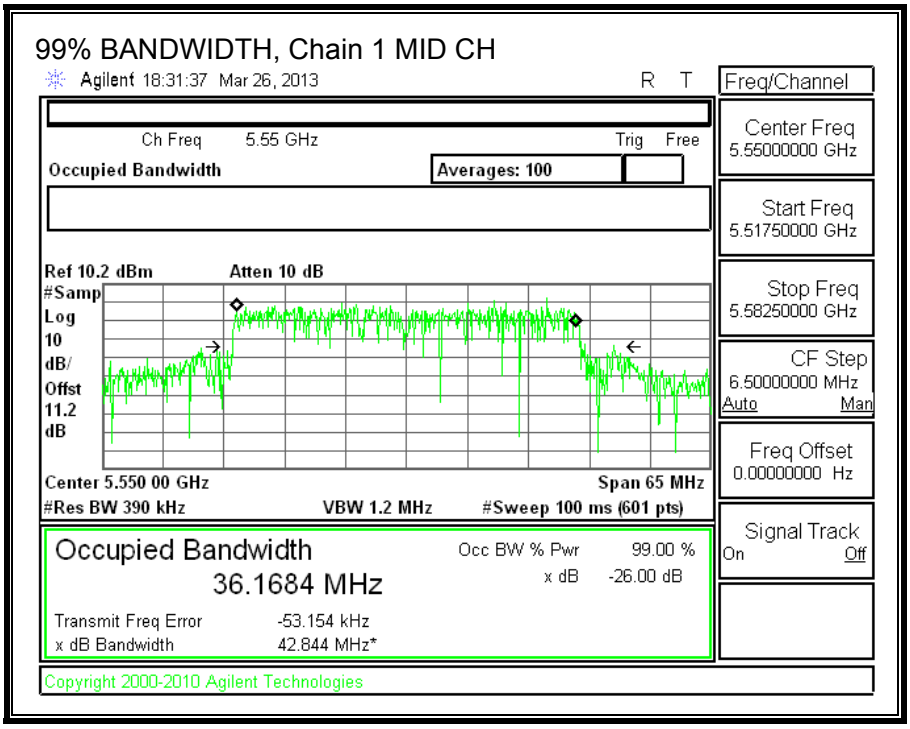

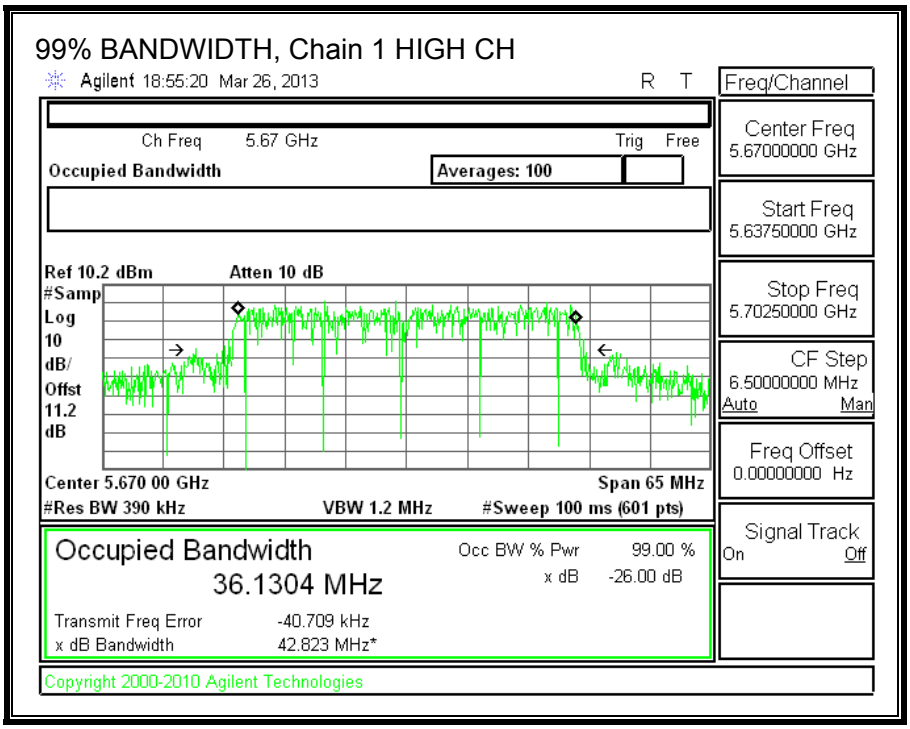

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8.14.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Average Power Results

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Total Power (dBm)
Low	5510	12.41	12.76	15.60
Mid	5550	12.46	12.82	15.65
High	5670	12.01	12.83	15.45

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8.14.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (1)

For the band 5.5–5.7 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

The maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

DIRECTIONAL ANTENNA GAIN

For output power, the TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

For PPSD, the TX chains are correlated and the antenna gain is the same for each chain. The directional gain is:

Antenna Gain (dBi)	10 * Log (2 chains) (dB)	Correlated Chains Directional Gain (dBi)
4.00	3.01	7.01

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Uncorrelated Directional Gain (dBi)	Correlated Directional Gain (dBi)
Low	5510	45.87	36.1337	4.00	7.01
Mid	5550	51.07	36.1612	4.00	7.01
High	5670	46.40	36.1304	4.00	7.01

Limits

Channel	Frequency (MHz)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Power Limit (dBm)	FCC PPSD Limit (dBm)	IC PSD Limit (dBm)	PPSD Limit (dBm)
Low	5510	24.00	24.00	30.00	24.00	9.99	11.00	9.99
Mid	5550	24.00	24.00	30.00	24.00	9.99	11.00	9.99
High	5670	24.00	24.00	30.00	24.00	9.99	11.00	9.99

Duty Cycle CF (dB)	0.00	**Included in Calculations of Corr'd Power & PPSD**

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	5510	12.277	12.595	15.45	24.00	-8.55
Mid	5550	12.857	12.875	15.88	24.00	-8.12
High	5670	12.347	12.853	15.62	24.00	-8.38

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5510	-2.05	0.56	2.46	9.99	-7.53
Mid	5550	-1.54	-1.57	1.46	9.99	-8.53
High	5670	-2.13	-1.54	1.19	9.99	-8.80

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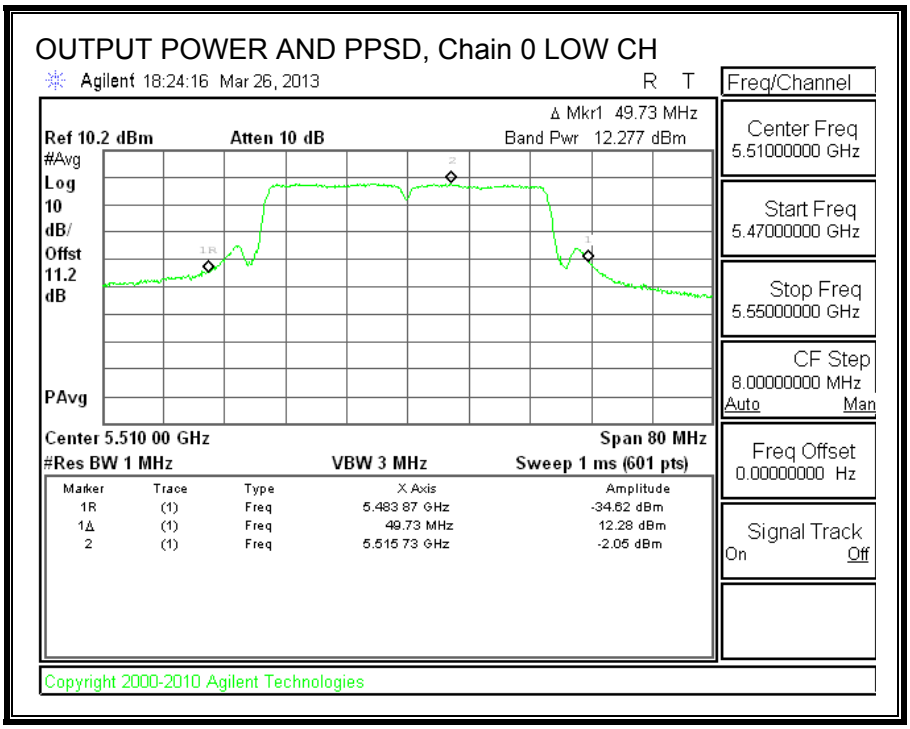
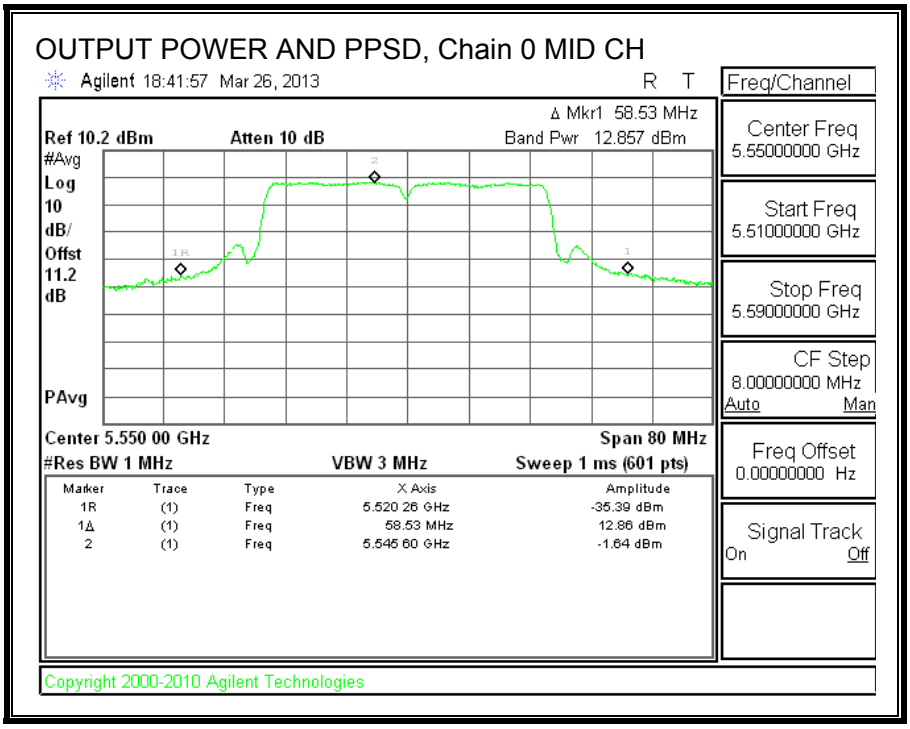
OUTPUT POWER AND PPSD, Chain 0





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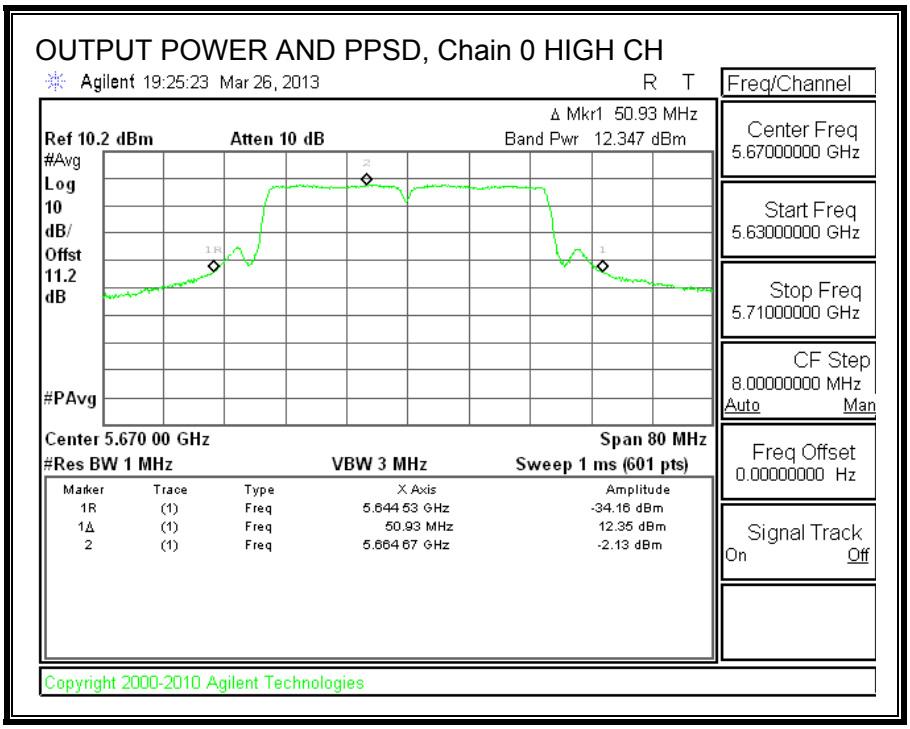
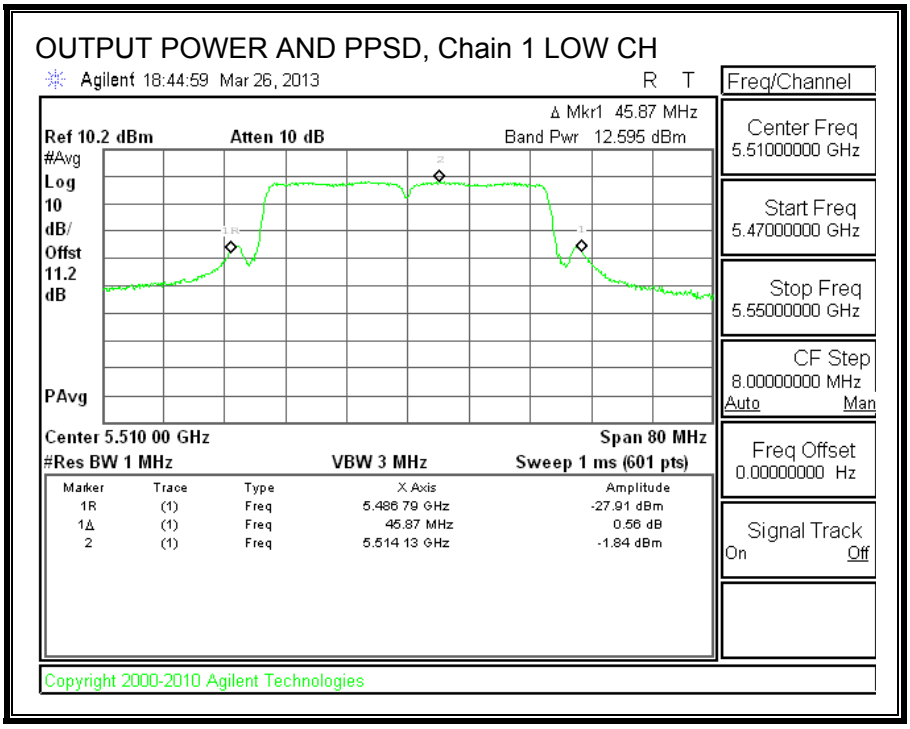


OUTPUT POWER AND PPSD, Chain 1



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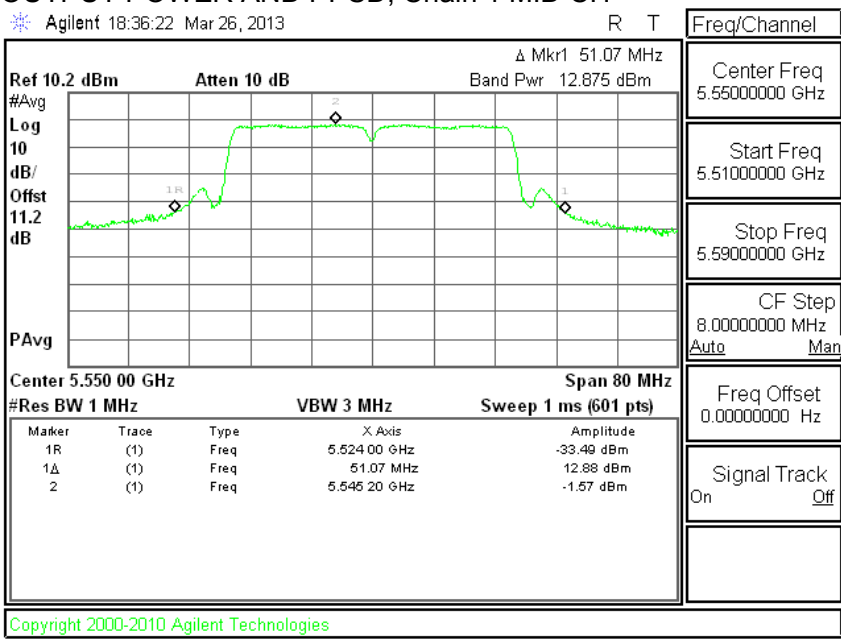
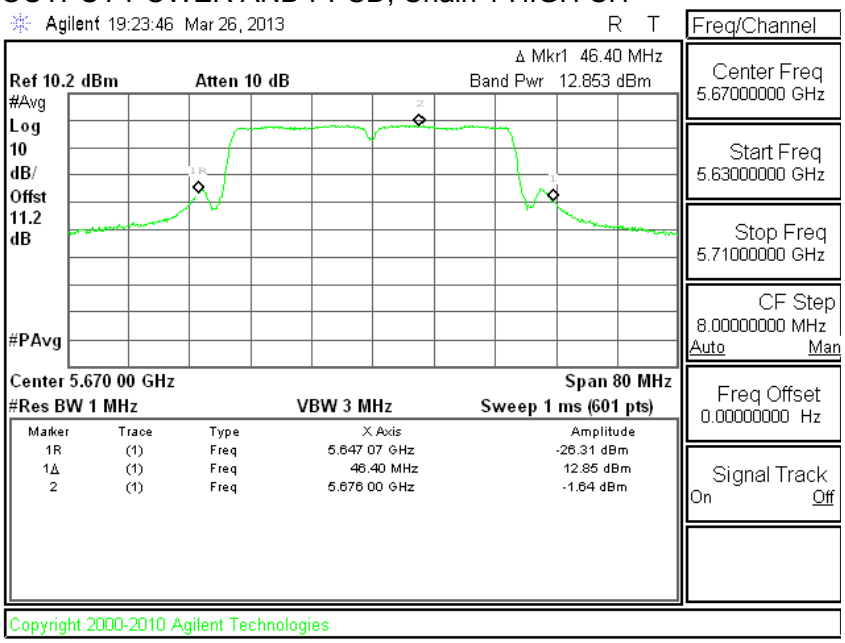
OUTPUT POWER AND PPSD, Chain 1 MID CH



OUTPUT POWER AND PPSD, Chain 1 HIGH CH



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8.15. 802.11n HT40 SDM MCS8 2TX MODE IN THE 5.6 GHz BAND

8.15.1. 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	5510	48.53	46.13
Mid	5550	47.47	47.20
High	5670	53.73	46.80

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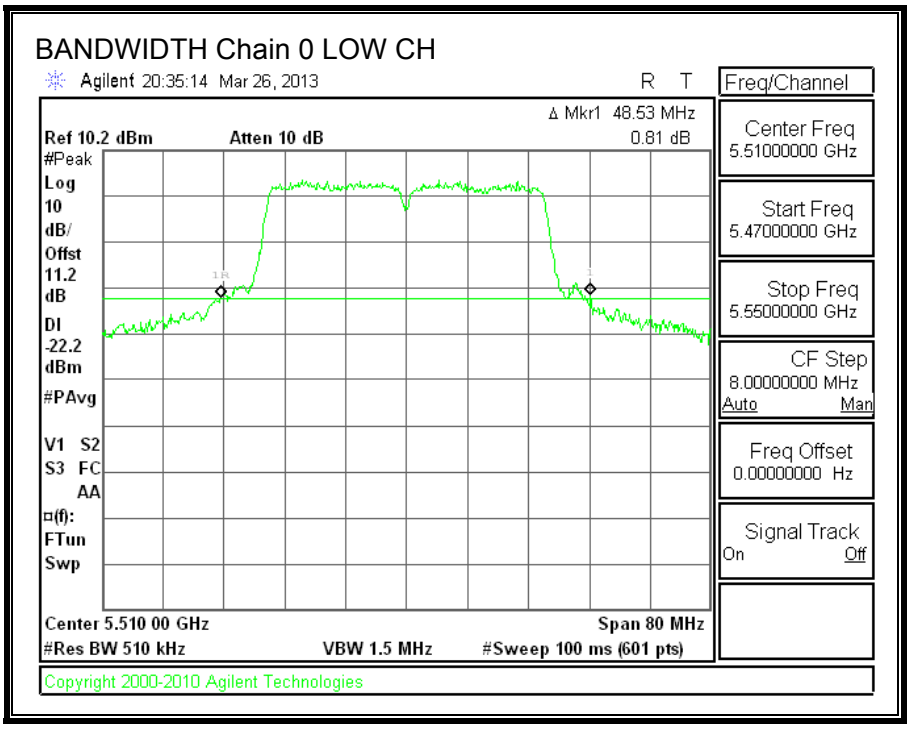
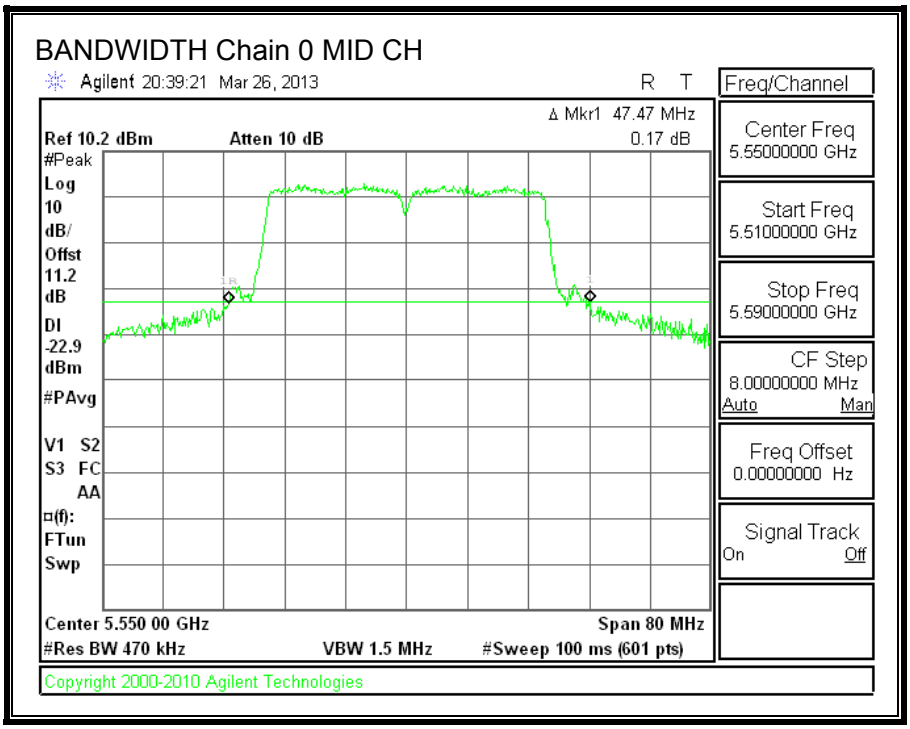
26 dB BANDWIDTH, Chain 0





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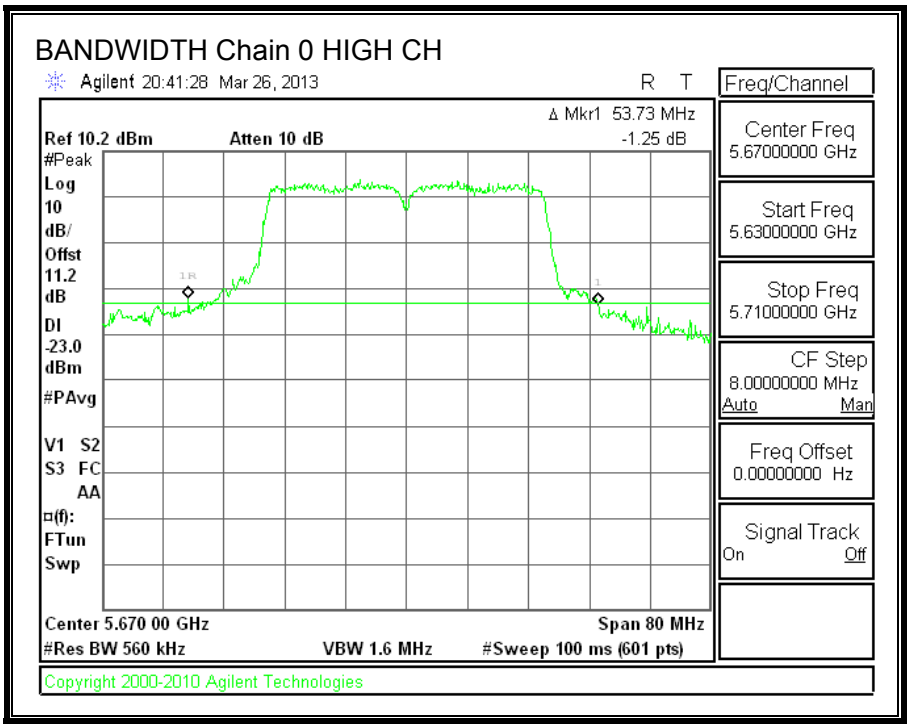
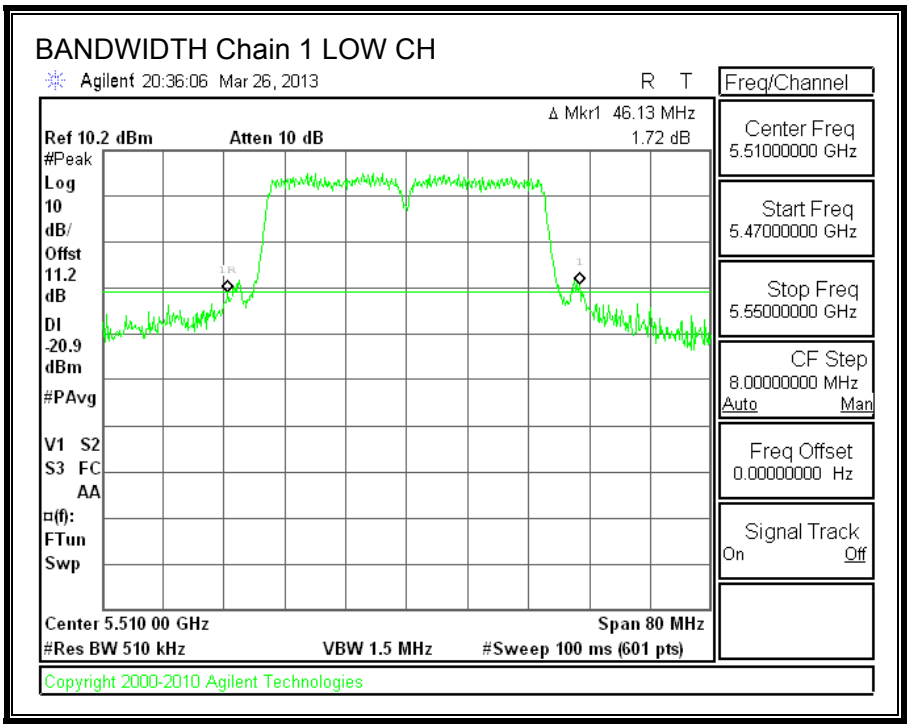


26 dB BANDWIDTH, Chain 1



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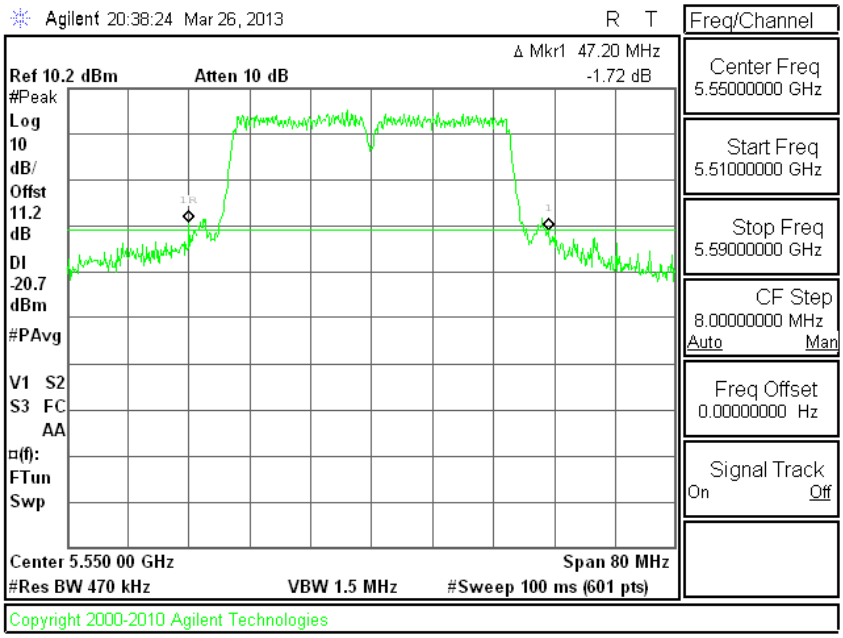
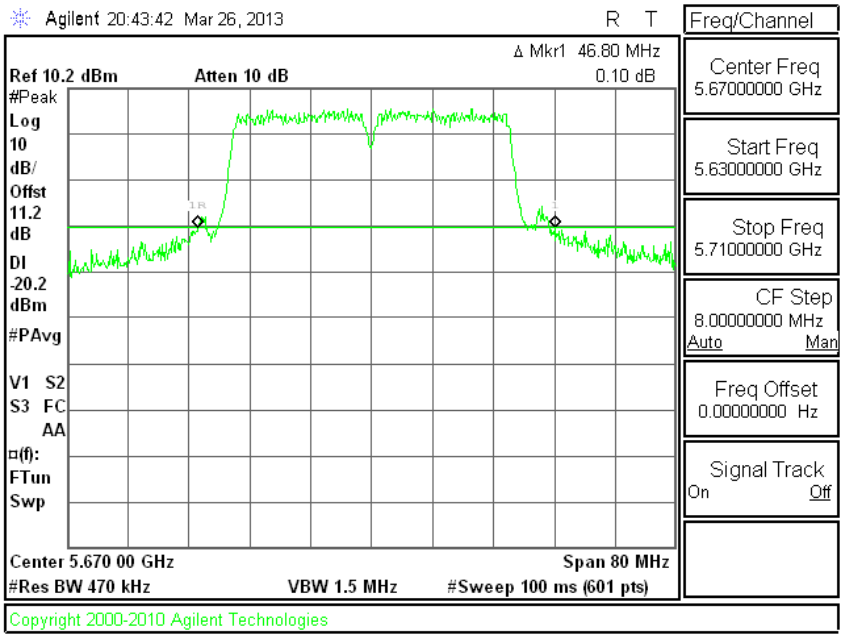
BANDWIDTH Chain 1 MID CH



BANDWIDTH Chain 1 HIGH CH



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8.15.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	5510	36.1245	36.1328
Mid	5550	36.1550	36.1404
High	5670	36.1573	36.1330

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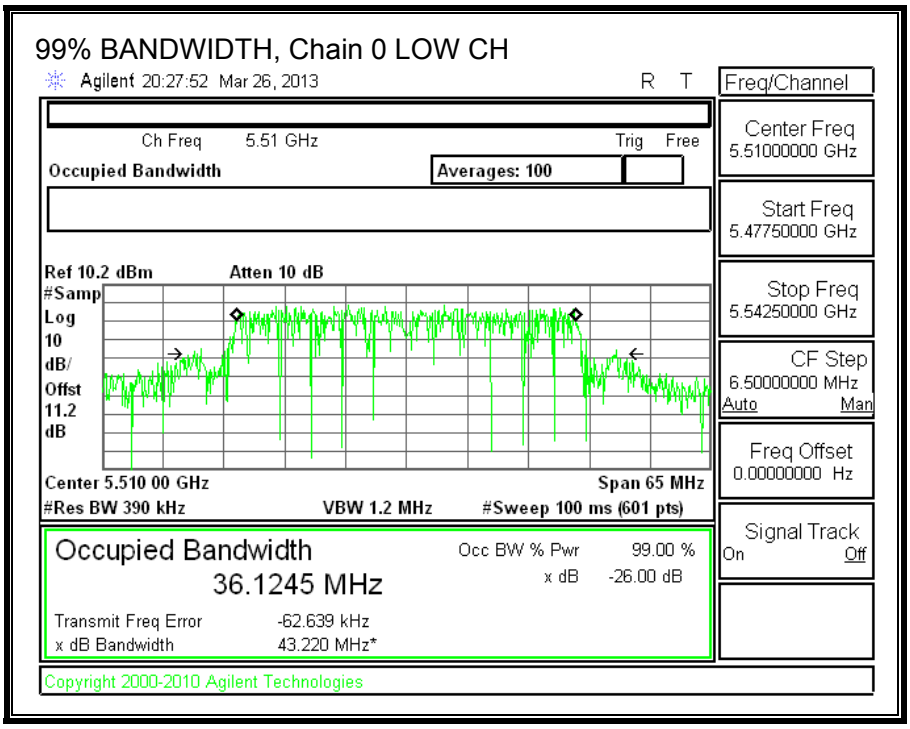
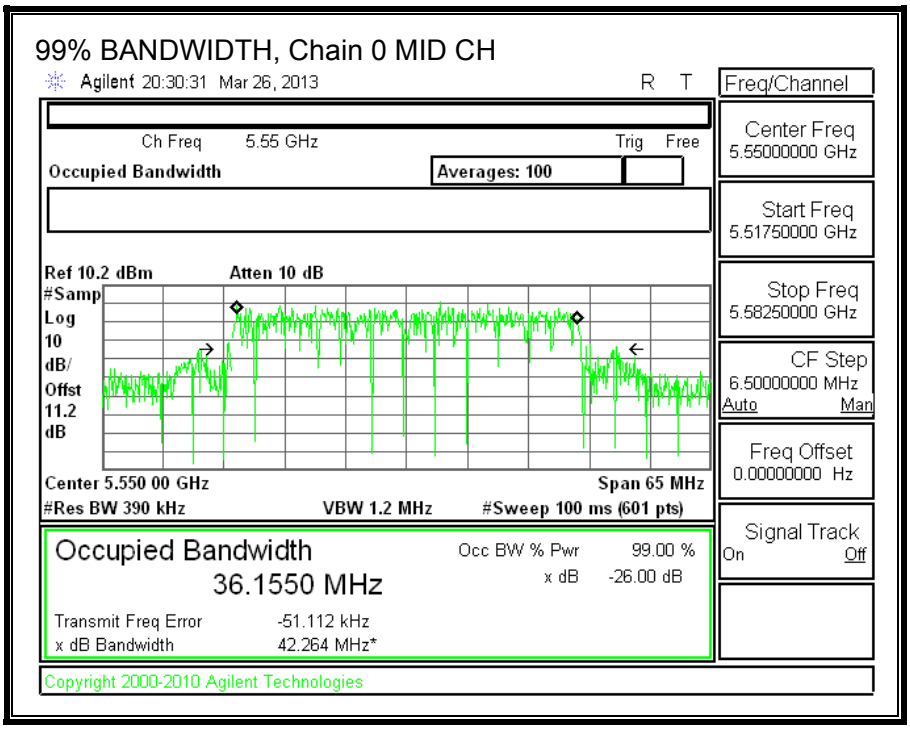
99% BANDWIDTH, Chain 0





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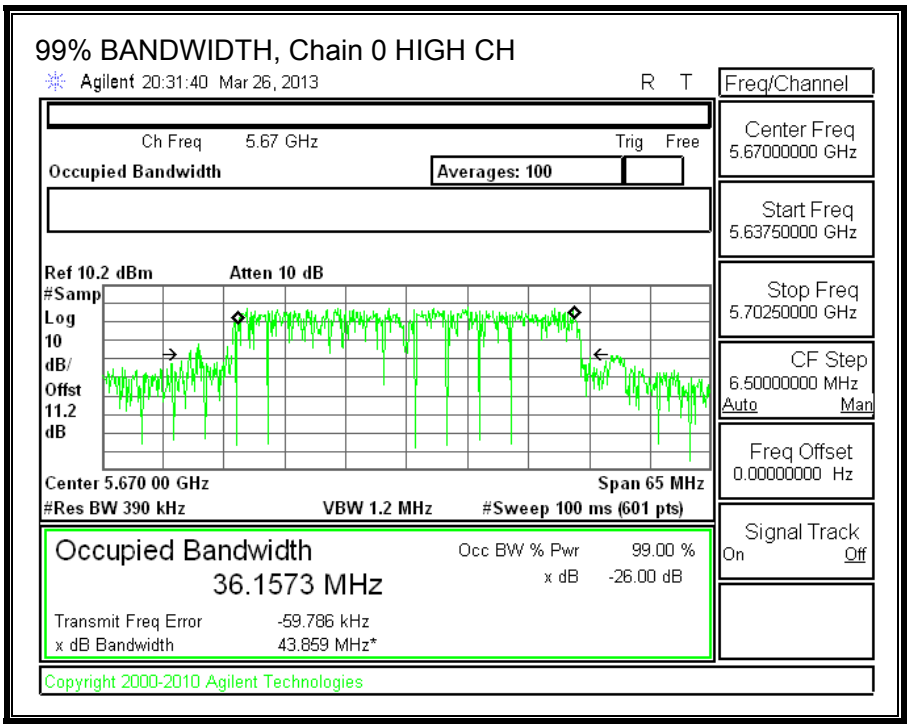
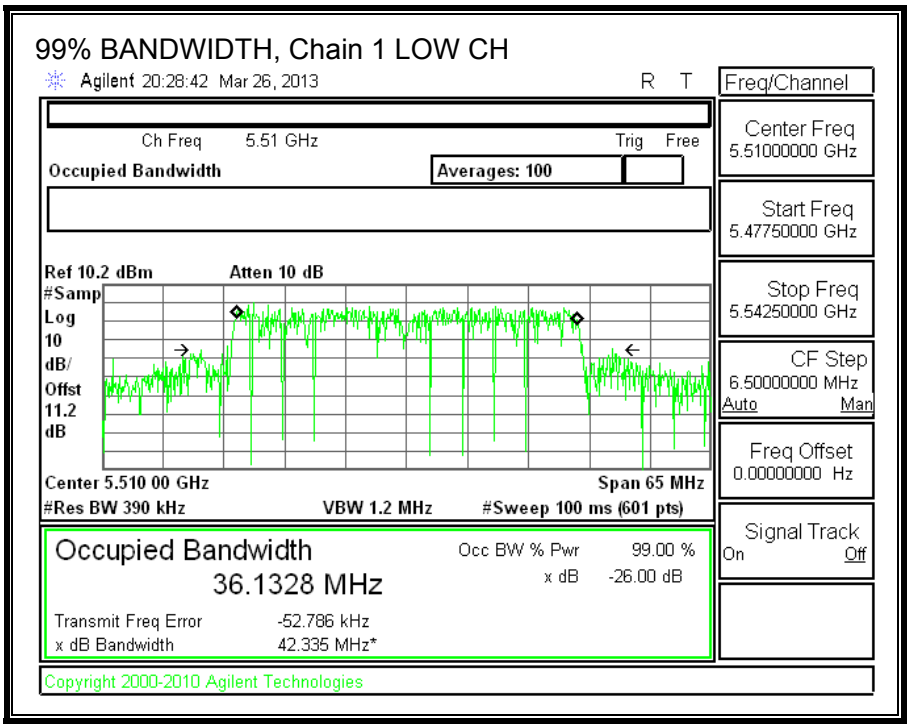


99% BANDWIDTH, Chain 1



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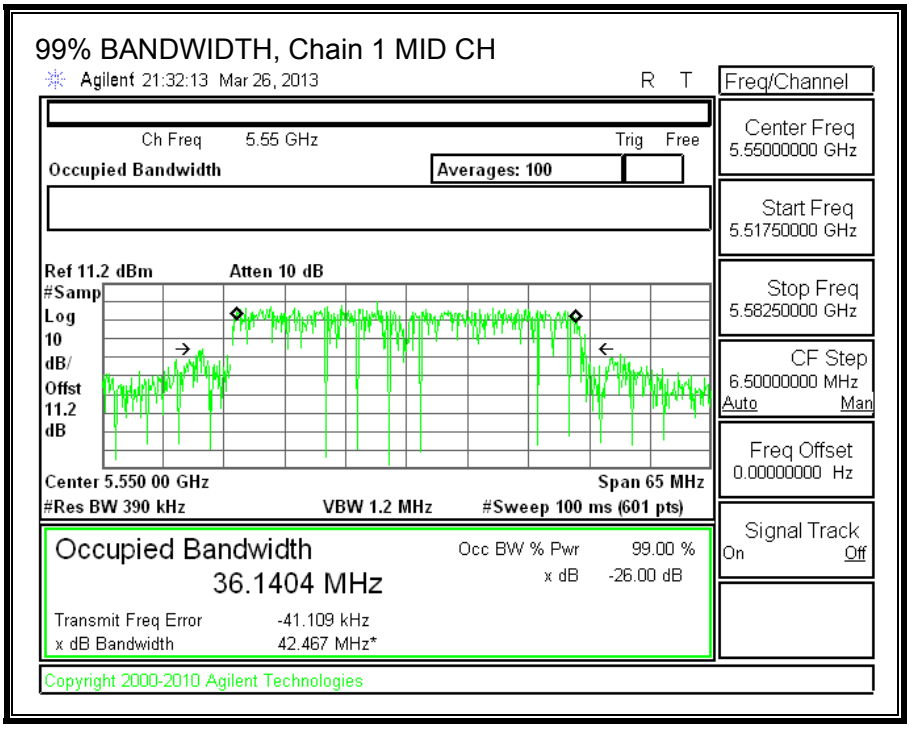

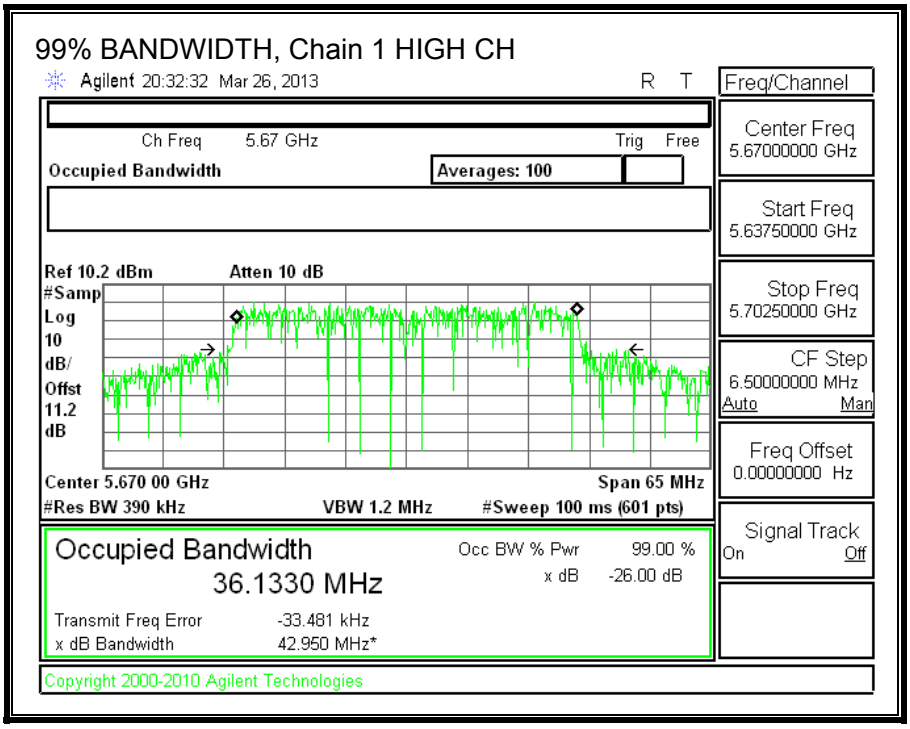

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8.15.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.2 dB (including 10 dB pad and 1.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Average Power Results

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Total Power (dBm)
Low	5510	12.00	12.30	15.16
Mid	5550	12.10	12.50	15.31
High	5670	12.00	12.70	15.37

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8.15.4. OUTPUT POWER AND PPSD

LIMITS

FCC §15.407 (a) (1)

For the band 5.5–5.7 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

IC RSS-210 A9.2 (1)

The maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

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RESULTS

Bandwidth and Antenna Gain

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Min 99% BW (MHz)	Directional Gain (dBi)
Low	5510	46.13	36.1245	4.00
Mid	5550	47.20	36.1404	4.00
High	5670	46.80	36.1330	4.00

Limits

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

Duty Cycle CF (dB)	0.11	Included in Calculations of Corr'd Power & PPSD

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	5510	12.436	12.548	15.61	24.00	-8.39
Mid	5550	12.328	12.575	15.57	24.00	-8.43
High	5670	12.219	13.313	15.92	24.00	-8.08

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PPSD (dBm)	Chain 1 Meas PPSD (dBm)	Total Corr'd PPSD (dBm)	PPSD Limit (dBm)	PPSD Margin (dB)
Low	5510	-2.13	-1.88	1.12	11.00	-9.88
Mid	5550	-2.18	-1.81	1.13	11.00	-9.87
High	5670	-2.36	-1.15	1.41	11.00	-9.59

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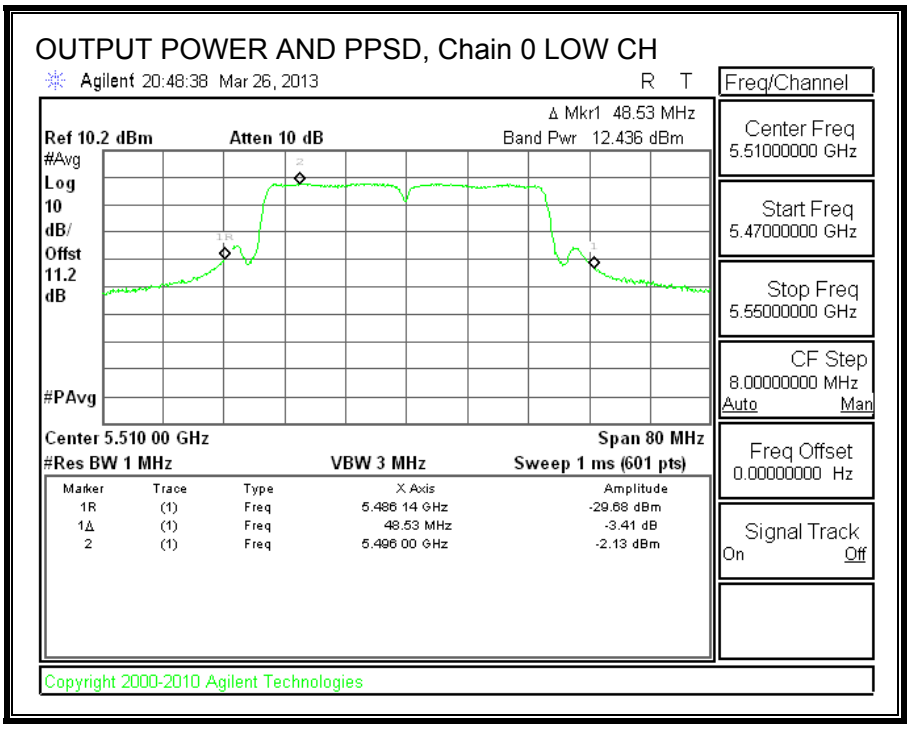
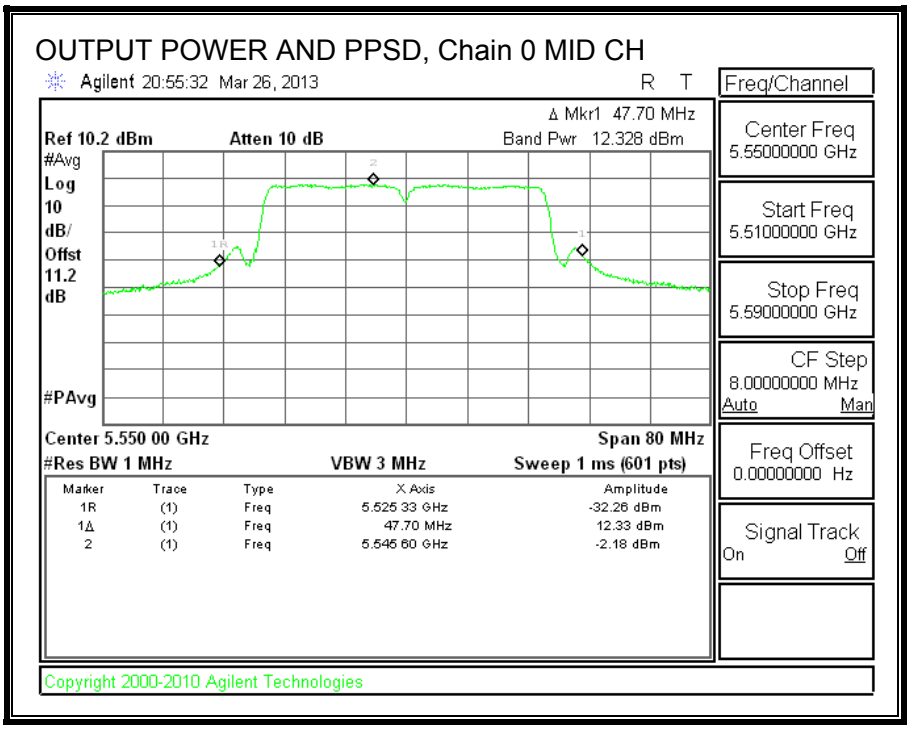
OUTPUT POWER AND PPSD, Chain 0





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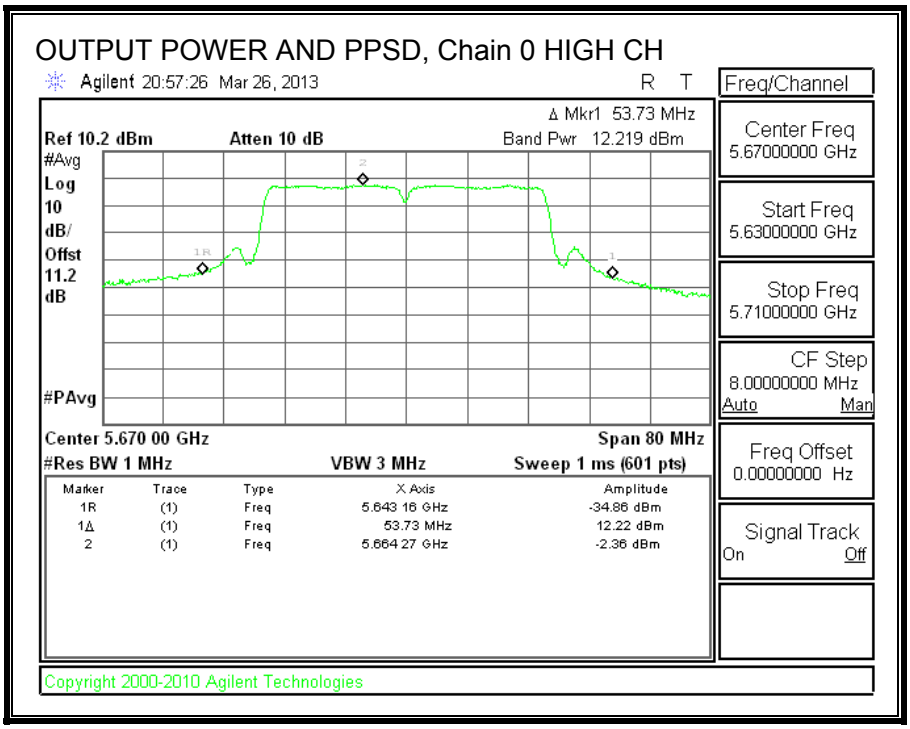
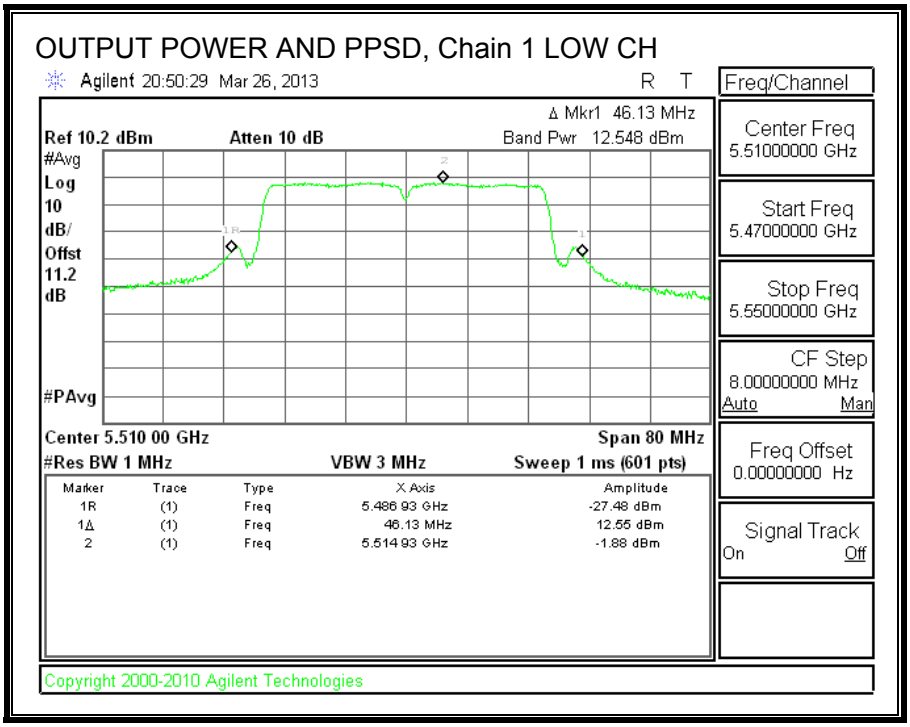


OUTPUT POWER AND PPSD, Chain 1



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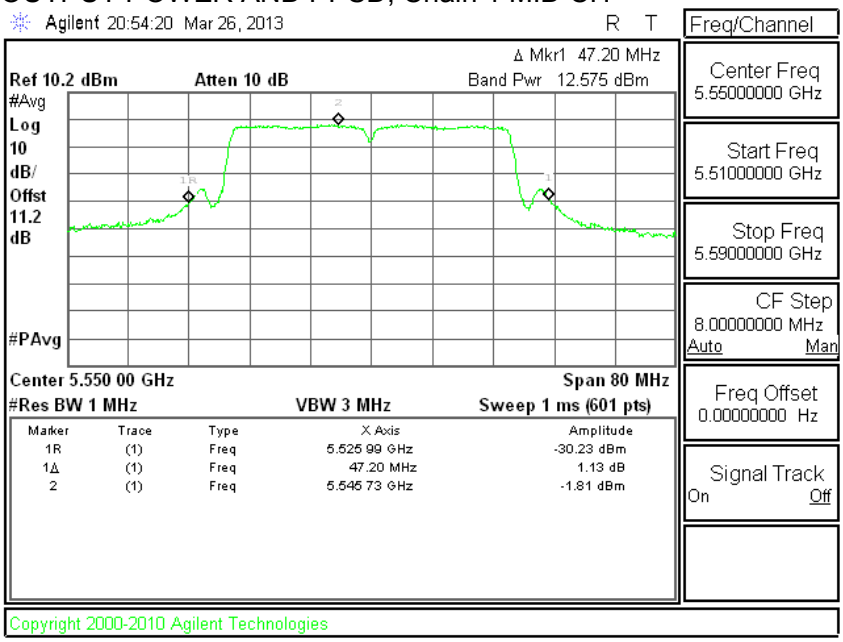
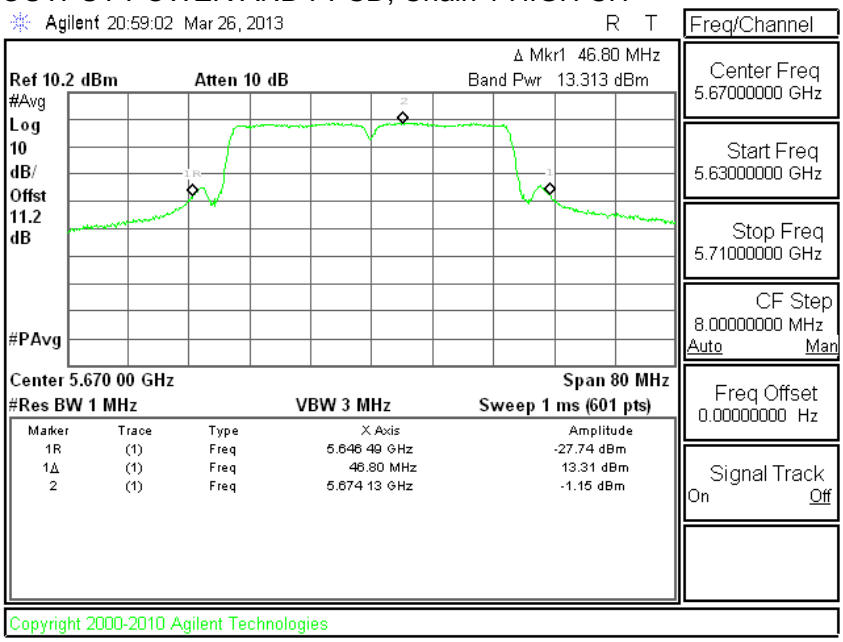
OUTPUT POWER AND PPSD, Chain 1 MID CH



OUTPUT POWER AND PPSD, Chain 1 HIGH CH



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9. RADIATED TEST RESULTS

9.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-210 Clause 2.6 (Transmitter)

IC RSS-GEN Clause 6 (Receiver)

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

TEST PROCEDURE

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

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

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

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

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

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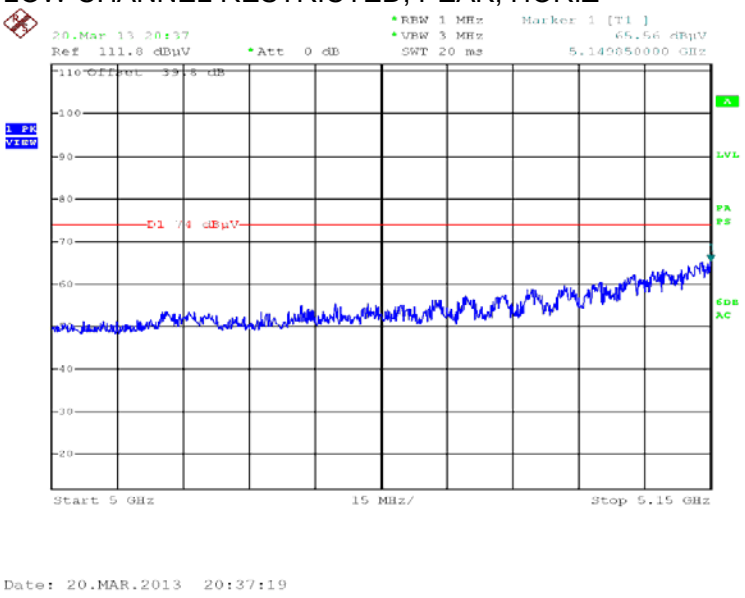
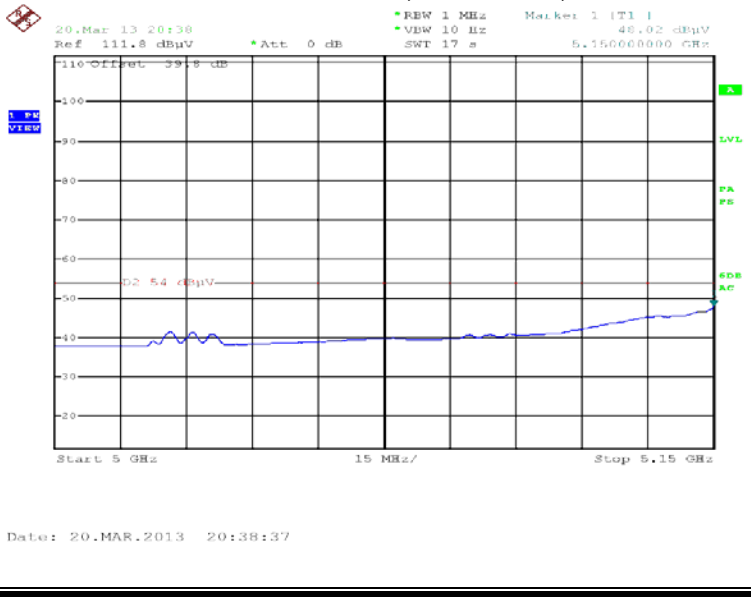
9.2. 802.11a CDD 2TX MODE IN THE 5.2 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

LOW CHANNEL RESTRICTED, PEAK, HORIZ



LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



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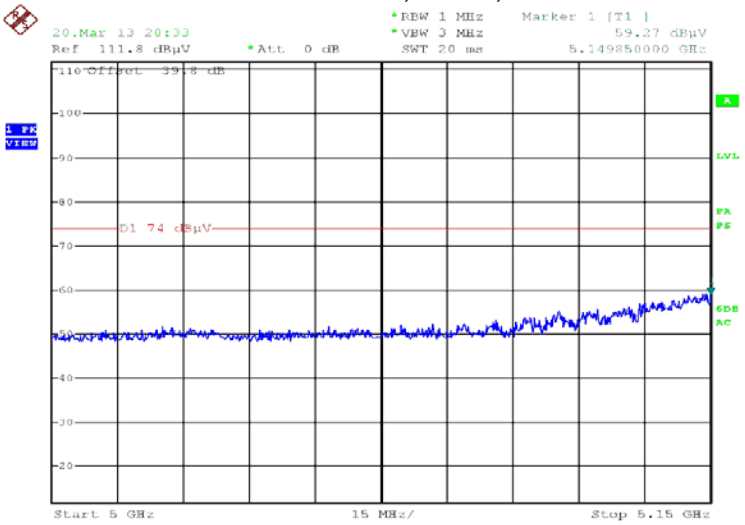
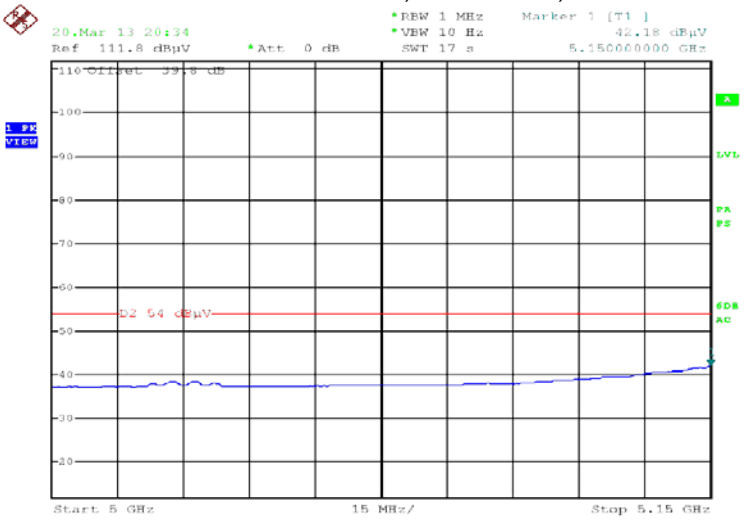
LOW CHANNEL RESTRICTED, PEAK, VERT



Date: 20.MAR.2013 20:33:10

13P

LOW CHANNEL RESTRICTED, AVERAGE, VERT



Date: 20.MAR.2013 20:34:30

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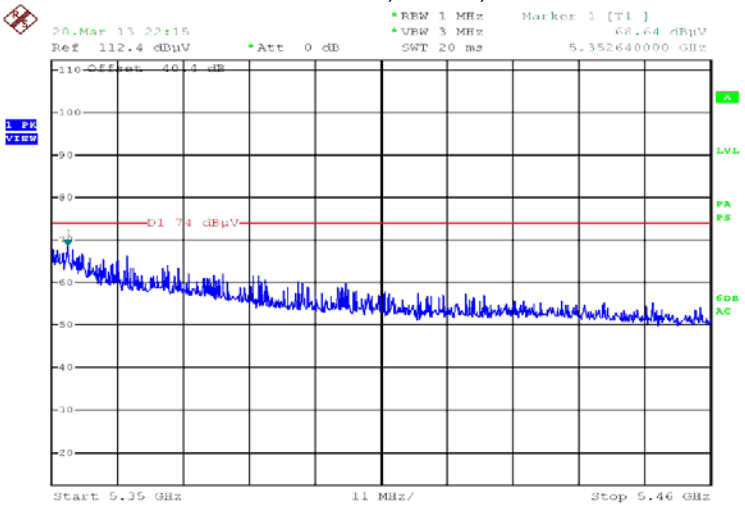
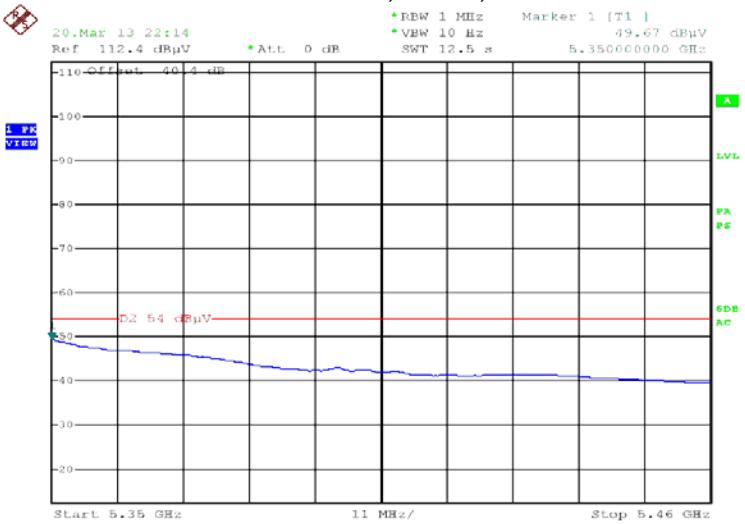
AUTHORIZED BANDEDGE (HIGH CHANNEL)

HIGH CHANNEL BANDEDGE, PEAK, HORIZ



Date: 20.MAR.2013 22:15:24

HIGH CHANNEL BANDEDGE, PEAK, VERT



Date: 20.MAR.2013 22:14:20

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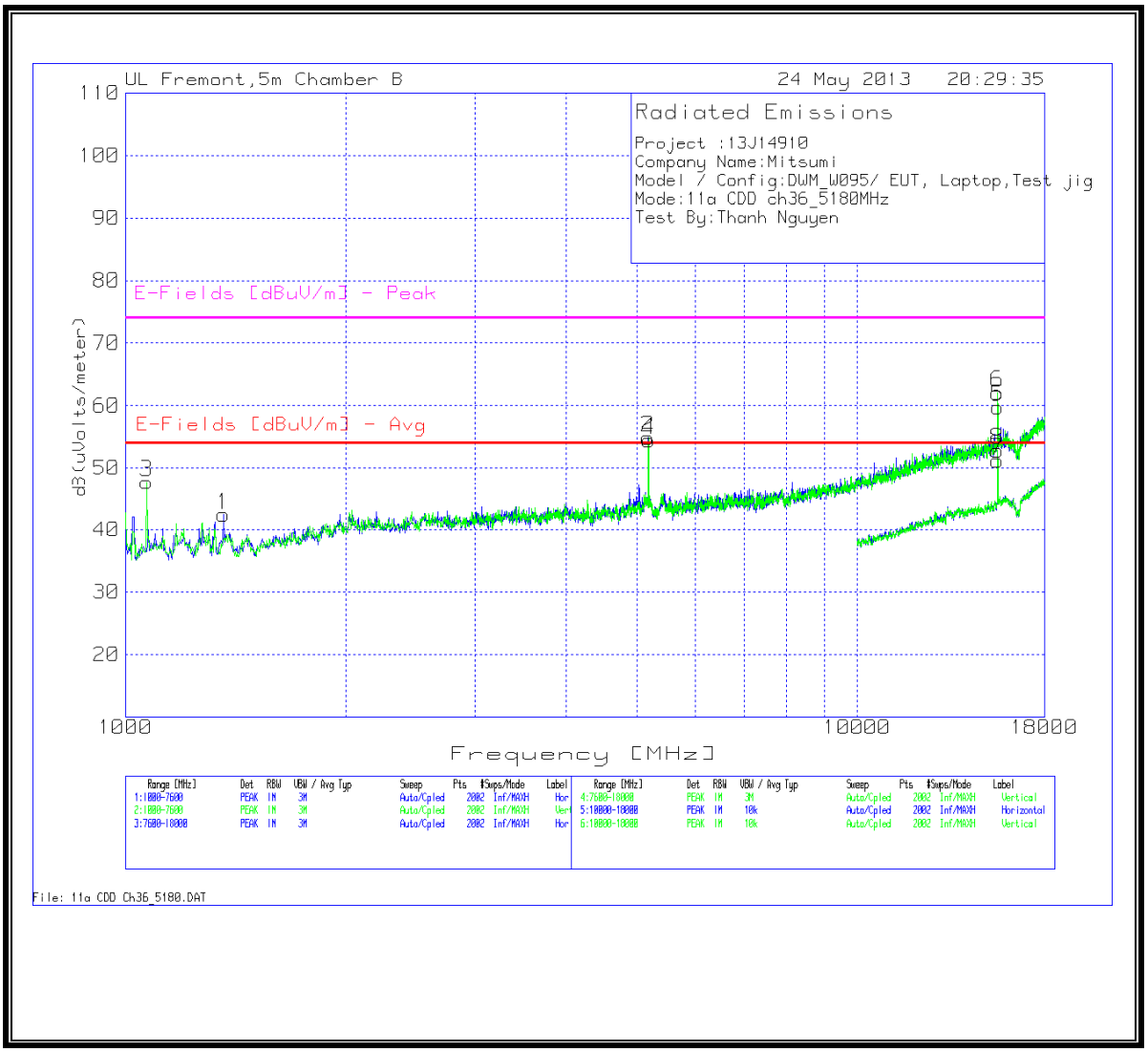
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL 36 GRAPH



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LOW CHANNEL 36 DATA

Project :13J14910
Company Name:Mitsumi
Model / Config:DWM_W095/ EUT, Laptop,Test jig
Mode:11a CDD ch36_5180MHz
Test By:Thanh Nguyen

Horizontal 1000 - 7600MHz

Marker No.	Test Frequency	Meter Reading(dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	Corrected Reading dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
1	1362.819	45.88	PK	28.4	-35.4	3.5	0	42.38	53.97	-11.59	74	-31.62	100	Horz
*2	5179.01	46.74	PK	34.8	-34.9	7.3	0.9	54.84	-	-	-	-	200	Horz

Vertical 1000 - 7600MHz

Marker No.	Test Frequency	Meter Reading(dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	Corrected Reading dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
3	1069.265	52.67	PK	27.7	-35.9	3.2	0	47.67	53.97	-6.3	74	-26.33	200	Vert
*4	5185.607	46.33	PK	34.8	-34.9	7.4	0.9	54.53	-	-	-	-	200	Vert

Horizontal 7600 - 18000MHz

Marker No.	Test Frequency	Meter Reading(dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T192 HPF [dB]	Corrected Reading dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
5	15546.827	37.64	PK	41	-32.9	13.5	0.5	59.74	-	-	74	-14.26	100	Horz

Vertical 7600 - 18000MHz

Marker No.	Test Frequency	Meter Reading(dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T192 HPF [dB]	Corrected Reading dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
6	15536.432	39.93	PK	41	-32.9	13.5	0.6	62.13	-	-	74	-11.87	200	Vert

Horizontal 10000 - 18000MHz

Marker No.	Test Frequency	Meter Reading(dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T192 HPF [dB]	Corrected Reading dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
7	15545.227	29.09	PK	41	-32.9	13.5	0.5	51.19	53.97	-2.78	74	-22.81	100	Horz

Vertical 10000 - 18000MHz

Marker No.	Test Frequency	Meter Reading(dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T192 HPF [dB]	Corrected Reading dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
8	15545.227	30.82	PK	41	-32.9	13.5	0.5	52.92	53.97	-1.05	74	-21.08	200	Vert

Horizontal 10000 - 18000MHz

Marker No.	Test Frequency	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T159 HPF [dB]	Corrected Reading dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
7	15543.941	21.14	Av	41	-32.9	13.5	0.5	43.24	53.97	-10.73	-	-	139	Horz

Vertical 10000 - 18000MHz

Marker No.	Test Frequency	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T1959HPF [dB]	Corrected Reading dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
8	15537.043	14.93	Av	41	-32.9	13.5	0.6	37.13	53.97	-16.84	-	-	220	Vert

* Fundamental

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

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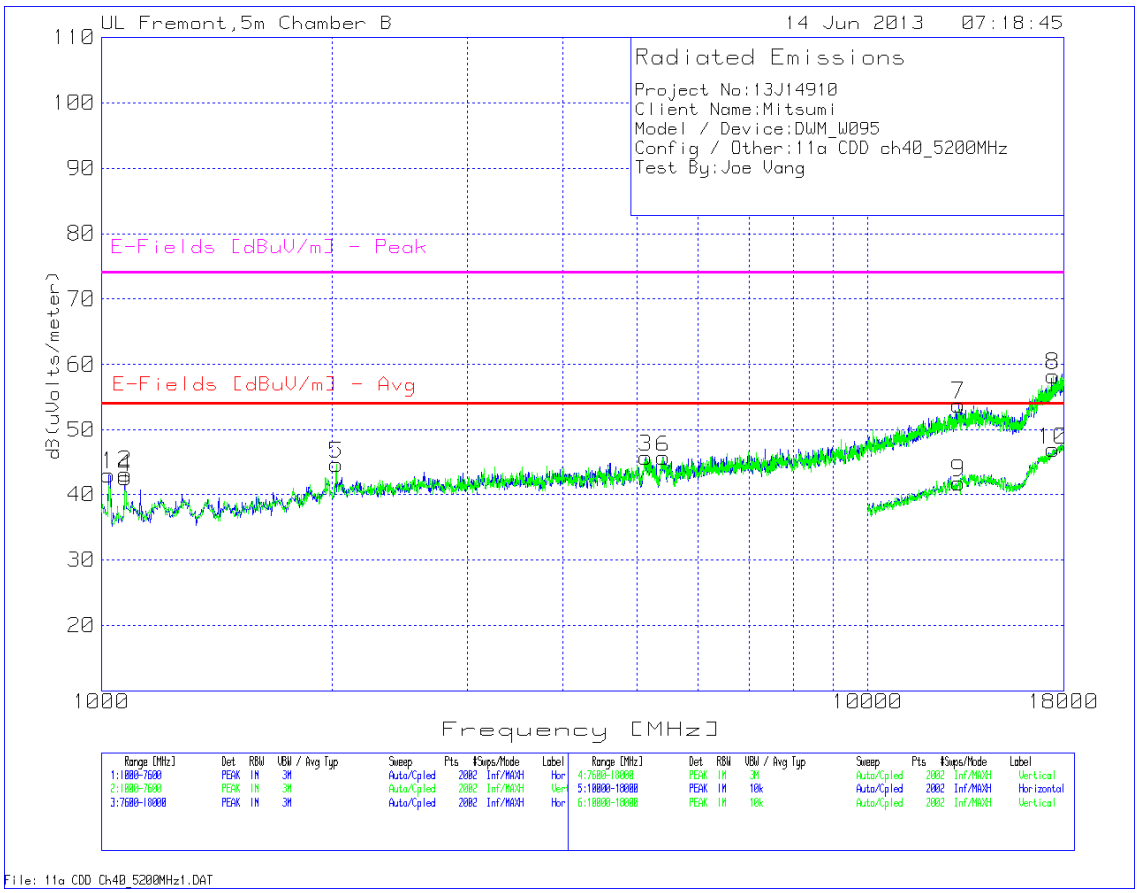
MID CHANNEL 40 GRAPH



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MID CHANNEL 40 DATA

Project No:13J14910
Client Name:Mitsumi
Model / Device:DWM_W095
Config / Other:11a CDD ch40_5200MHz
Test By:Joe Vang

Horizontal 1000 - 7600MHz

Marker No.	Test Frequency (MHz)	Meter Reading(dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	Corrected Reading dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Average Margin (dB)	E-Fields [dBuV/m] - Peak	Peak Margin (dB)	Height [cm]	Polarity
1	1023.088	48.26	PK	27.5	-36	3.2	0	42.96	53.97	-11.01	74	-31.04	100	Horz
2	1075.862	47.99	PK	27.8	-35.9	3.2	0	43.09	53.97	-10.88	74	-30.91	100	Horz
3	5139.43	37.6	PK	34.8	-34.9	7.3	0.9	45.7	53.97	-8.27	74	-28.3	200	Horz

Vertical 1000 - 7600MHz

Marker No.	Test Frequency (MHz)	Meter Reading(dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	Corrected Reading dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Average Margin (dB)	E-Fields [dBuV/m] - Peak	Peak Margin (dB)	Height [cm]	Polarity
4	1075.862	47.53	PK	27.8	-35.9	3.2	0	42.63	53.97	-11.34	74	-31.37	200	Vert
5	2025.787	43.67	PK	31.8	-35	4.2	0	44.67	53.97	-9.3	74	-29.33	200	Vert
6	5413.193	37.23	PK	34.9	-34.9	7.5	0.9	45.63	53.97	-8.34	74	-28.37	100	Vert

Horizontal 7600 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading(dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T192 HPF [dB]	Corrected Reading dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Average Margin (dB)	E-Fields [dBuV/m] - Peak	Peak Margin (dB)	Height [cm]	Polarity
7	13150.825	33.61	PK	39.1	-31.8	12.2	0.7	53.81	-	-	74	-20.19	100	Horz

Vertical 7600 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading(dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T192 HPF [dB]	Corrected Reading dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Average Margin (dB)	E-Fields [dBuV/m] - Peak	Peak Margin (dB)	Height [cm]	Polarity
8	17469.865	33.3	PK	42	-31.6	14.5	0.1	58.3	-	-	74	-15.7	100	Vert

Horizontal 10000 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading(dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T192 HPF [dB]	Corrected Reading dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Average Margin (dB)	E-Fields [dBuV/m] - Peak	Peak Margin (dB)	Height [cm]	Polarity
9	13138.431	21.77	PK	39.1	-31.8	12.2	0.5	41.77	53.97	-12.2	74	-32.23	200	Horz

Vertical 10000 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading(dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T192 HPF [dB]	Corrected Reading dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Average Margin (dB)	E-Fields [dBuV/m] - Peak	Peak Margin (dB)	Height [cm]	Polarity
10	17444.278	21.95	PK	41.9	-31.6	14.5	0.1	46.85	53.97	-7.12	74	-27.15	100	Vert

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

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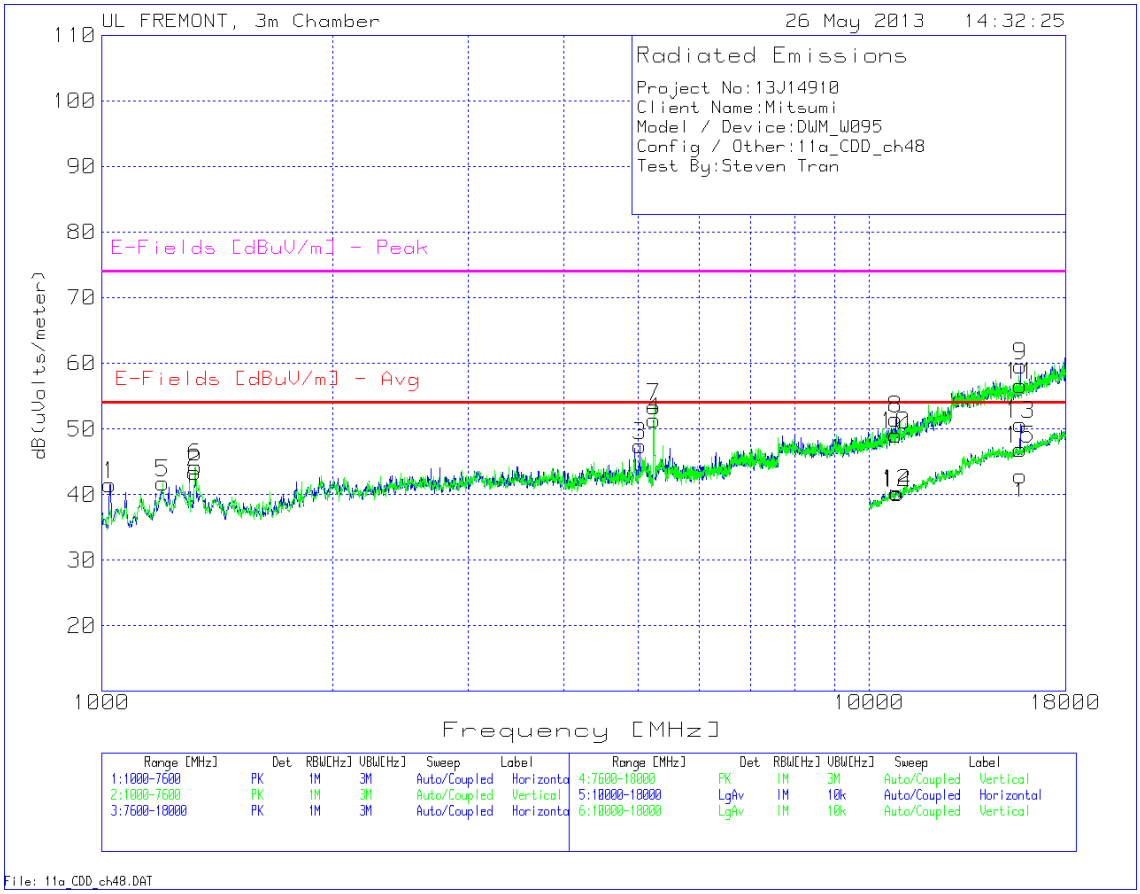
HIGH CHANNEL 48 GRAPH



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HIGH CHANNEL 48 DATA

Project No:13J14910
Client Name:Mitsumi
Model / Device:DWM_W095
Config / Other:11a CDD ch48_5240MHz
Test By:Joe Vang

Horizontal 1000 - 7600MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	Corrected Reading dB(uVolts /meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
1	1026.387	48.14	PK	27.5	-36	3.2	0	42.84	53.97	-11.13	74	-31.16	100	Horz
2	1075.862	48.06	PK	27.8	-35.9	3.2	0	43.16	53.97	-10.81	74	-30.84	100	Horz
3	4938.231	41.43	PK	34.6	-34.9	7.2	0.3	48.63	53.97	-5.34	74	-25.37	100	Horz
*4	5244.978	47.54	PK	34.9	-34.9	7.4	0.9	55.84	-	-	-	-	200	Horz

Vertical 1000 - 7600MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T159 BRF [dB]	Corrected Reading dB(uVolts /meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
5	1075.862	46.56	PK	27.8	-35.9	3.2	0	41.66	53.97	-12.31	74	-32.34	200	Vert
6	2025.787	44.47	PK	31.8	-35	4.2	0	45.47	53.97	-8.5	74	-28.53	200	Vert
*7	5241.679	46.5	PK	34.9	-34.9	7.4	0.9	54.8	-	-	-	-	200	Vert

Horizontal 7600 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T192 HPF [dB]	Corrected Reading dB(uVolts /meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
8	10468.966	35.12	PK	38.2	-34.4	10.7	0.2	49.82	-	-	74	-24.18	200	Horz
9	16664.268	32.9	PK	41.5	-32.2	14.1	0.3	56.6	-	-	74	-17.4	100	Horz

Vertical 7600 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T192 HPF [dB]	Corrected Reading dB(uVolts /meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
10	10479.36	35.99	PK	38.2	-34.4	10.7	0.2	50.69	-	-	74	-23.31	200	Vert
11	16711.044	32.68	PK	41.6	-32.1	14.1	0.6	56.88	-	-	74	-17.12	200	Vert

Horizontal 10000 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T192 HPF [dB]	Corrected Reading dB(uVolts /meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
12	10479.76	26.43	PK	38.2	-34.4	10.7	0.2	41.13	53.97	-12.84	74	-32.87	200	Horz
13	16644.678	21.58	PK	41.5	-32.2	14.1	0.3	45.28	53.97	-8.69	74	-28.72	100	Horz

Vertical 10000 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T345 Ant Factor [dB/m]	T145 Preamp Gain [dB]	Cable Factor [dB]	T192 HPF [dB]	Corrected Reading dB(uVolts /meter)	E-Fields [dBuV/m] - Avg	Margin (dB)	E-Fields [dBuV/m] - Peak	Margin (dB)	Height [cm]	Polarity
14	10479.76	25.88	PK	38.2	-34.4	10.7	0.2	40.58	53.97	-13.39	74	-33.42	200	Vert
15	16708.646	21.28	PK	41.6	-32.1	14.1	0.6	45.48	53.97	-8.49	74	-28.52	100	Vert

* Fundamental

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

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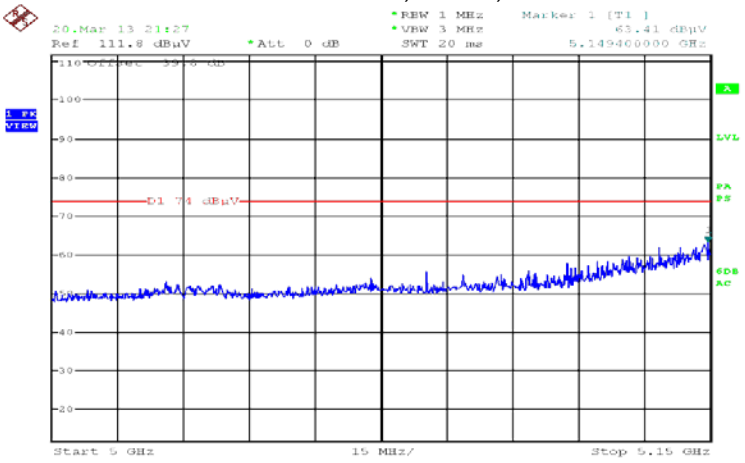
9.3. 802.11n HT20 CDD MCS0 2TX MODE IN THE 5.2 GHz BAND

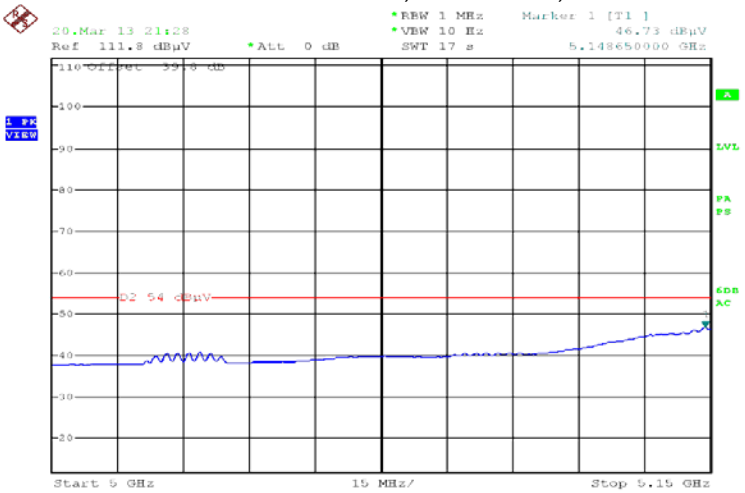
RESTRICTED BANDEDGE (LOW CHANNEL)

LOW CHANNEL RESTRICTED, PEAK, HORIZ



Date: 20.MAR.2013 21:27:58

LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



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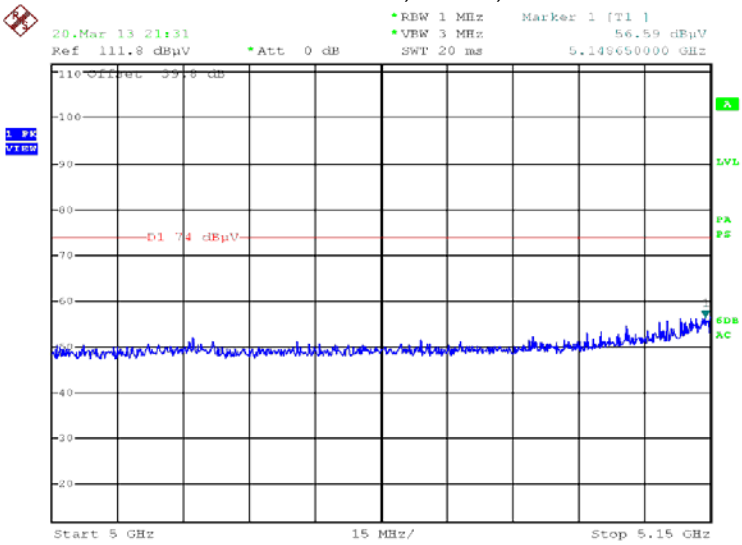
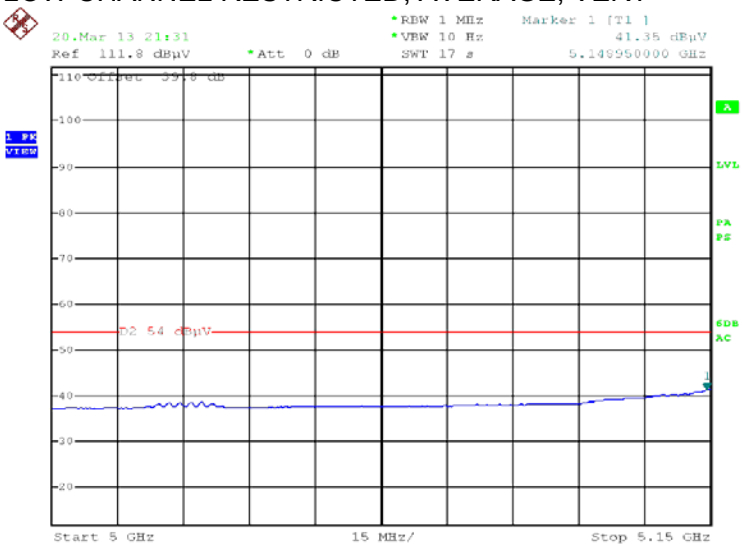
LOW CHANNEL RESTRICTED, PEAK, VERT



Date: 20.MAR.2013 21:31:08

LOW CHANNEL RESTRICTED, AVERAGE, VERT



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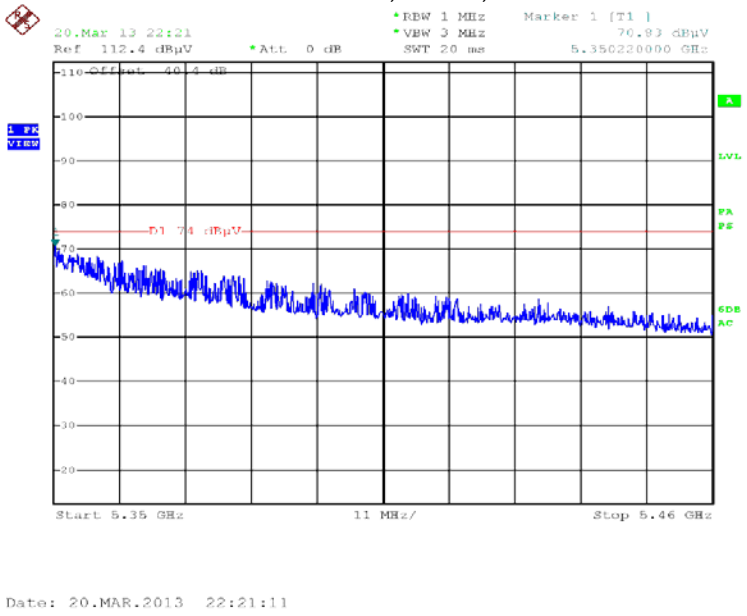
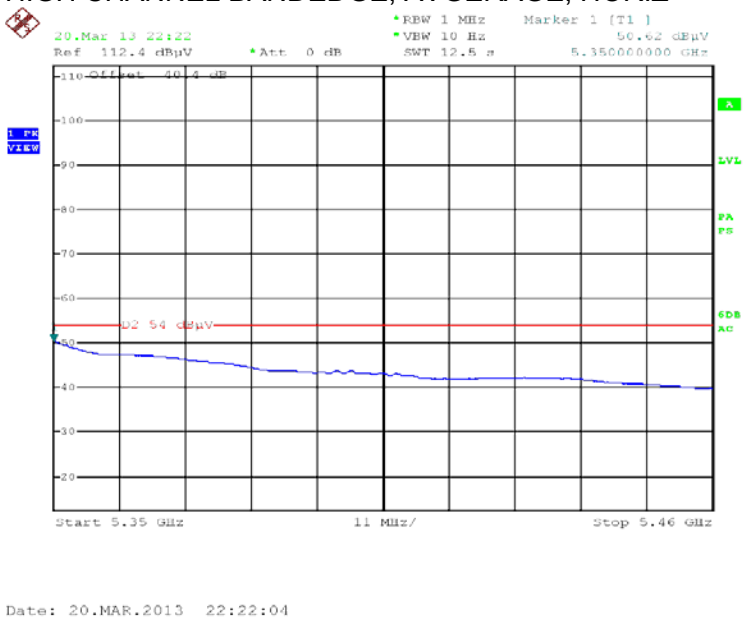
AUTHORIZED BANDEDGE (HIGH CHANNEL)

HIGH CHANNEL BANDEDGE, PEAK, HORIZ



HIGH CHANNEL BANDEDGE, AVGERAGE, HORIZ



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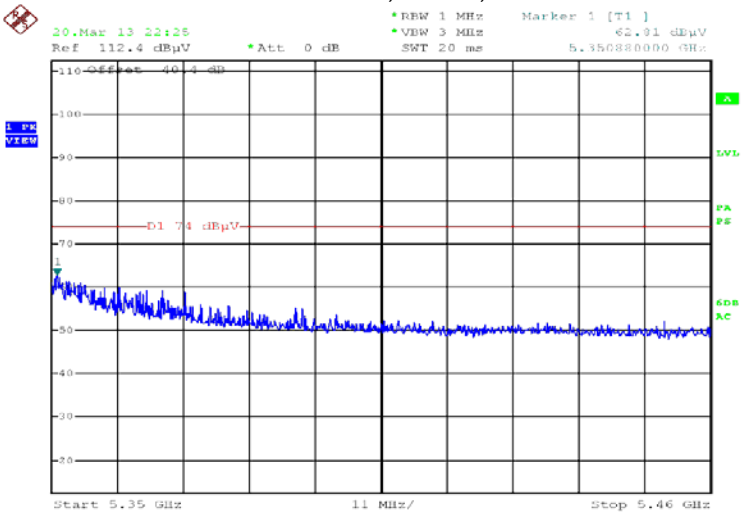
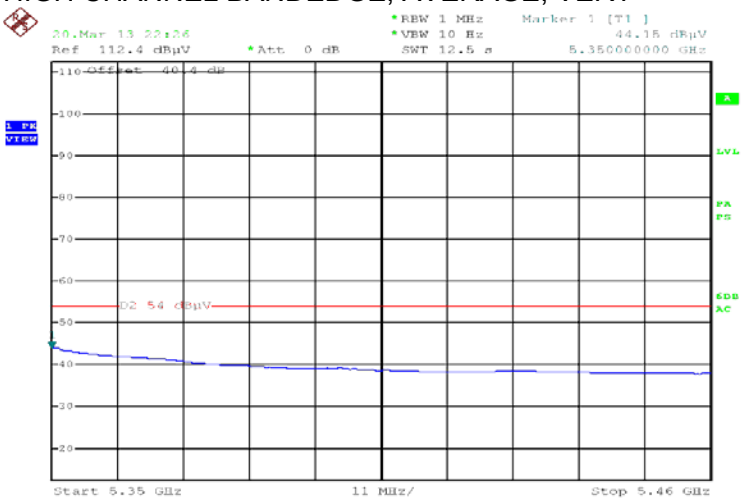
HIGH CHANNEL BANDEDGE, PEAK, VERT



Date: 20.MAR.2013 22:25:01

HIGH CHANNEL BANDEDGE, AVERAGE, VERT



Date: 20.MAR.2013 22:26:23

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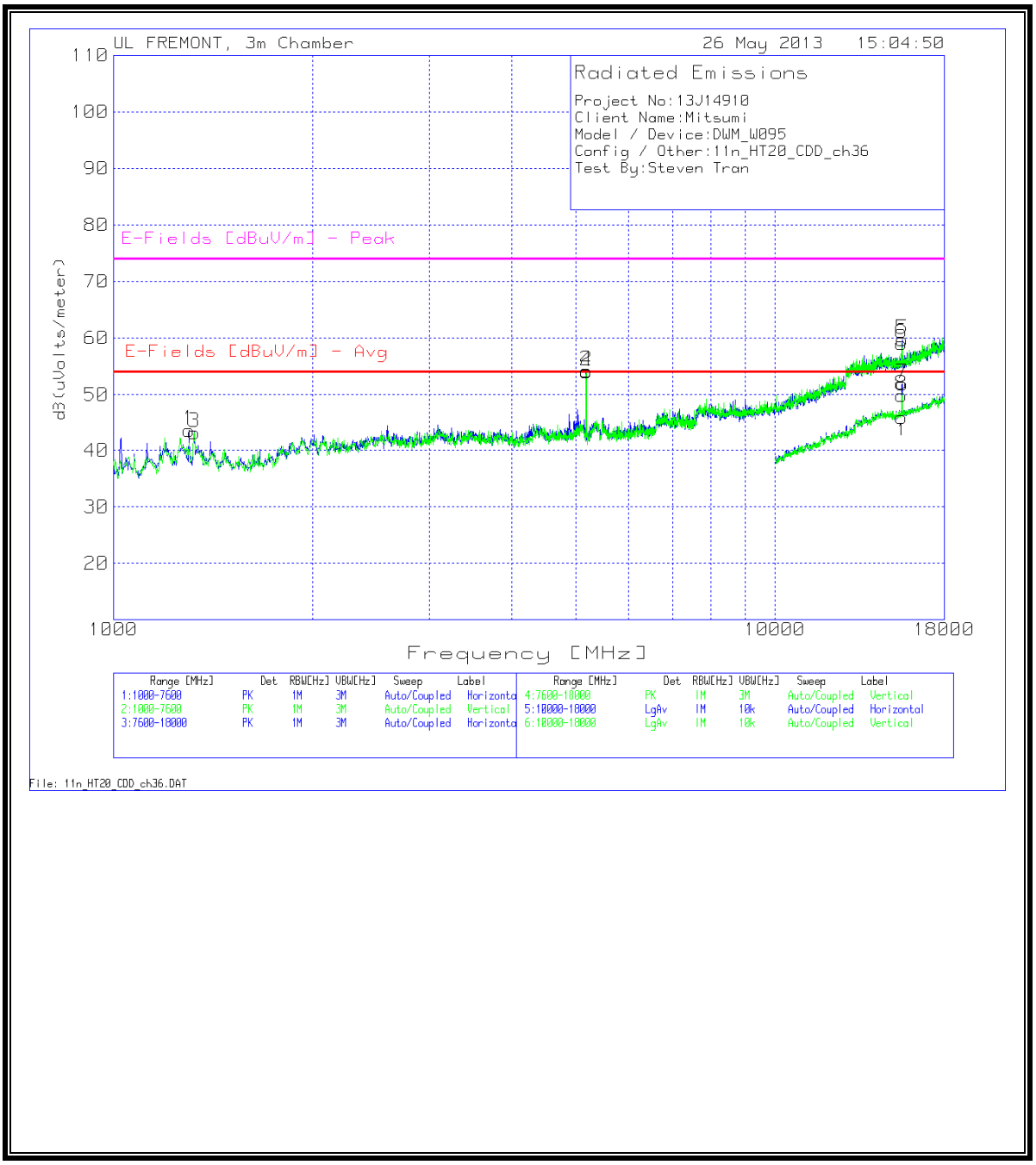
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL 36 GRAPH



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LOW CHANNEL 36 DATA

Project No:13J14910
Client Name:Mitsumi
Model / Device:DWM_W095
Config / Other:11n_HT20_CDD_ch36
Test By:Steven Tran

Horizontal 1000 - 7600MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T119 Ant Factor [dB/m] (dB)	T34 Preamp/ Cable Loss (dB)	T159 BRF [dB] (dB)	dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Average Margin (dB)	E-Fields [dBuV/m] - Peak	Peak Margin (dB)	Height [cm]	Polarity
1	1300.15	46.24	PK	30.2	-32.9	0	43.54	54	-10.46	74	-30.46	99	Horz
*2	5182.309	43.82	PK	34.2	-24.7	0.9	54.22	-	-	-	-	201	Horz

Vertical 1000 - 7600MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T119 Ant Factor [dB/m] (dB)	T34 Preamp/ Cable Loss [dB] (dB)	T159 BRF [dB] (dB)	dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Average Margin (dB)	E-Fields [dBuV/m] - Peak	Peak Margin (dB)	Height [cm]	Polarity
3	1326.537	46.09	PK	29.9	-32.8	0	43.19	54	-10.81	74	-30.81	201	Vert
*4	5182.309	43.67	PK	34.2	-24.7	0.9	54.07	-	-	-	-	201	Vert

Horizontal 7600 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T119 Ant Factor [dB/m] (dB)	T34 Preamp/Cable Loss [dB] (dB)	T159 BRF [dB] (dB)	dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Average Margin (dB)	E-Fields [dBuV/m] - Peak	Peak Margin (dB)	Height [cm]	Polarity
5	15546.827	35.52	PK	40.3	-16.5	0.4	59.72	-	-	74	-14.28	99	Horz

Vertical 7600 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T119 Ant Factor [dB/m] (dB)	T34 Preamp/Cable Loss [dB] (dB)	T159 BRF [dB] (dB)	dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Average Margin (dB)	E-Fields [dBuV/m] - Peak	Peak Margin (dB)	Height [cm]	Polarity
6	15541.629	34.76	PK	40.3	-16.5	0.5	59.06	-	-	74	-14.94	201	Vert

Horizontal 1000 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T119 Ant Factor [dB/m] (dB)	T34 Preamp/Cable Loss [dB] (dB)	T159 BRF [dB] (dB)	dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Average Margin (dB)	E-Fields [dBuV/m] - Peak	Peak Margin (dB)	Height [cm]	Polarity
7	15556.675	17.83	PK	40.3	-16.5	0.4	43.12	54	-10.88	74	-30.88	99	Horz

Vertical 1000 - 18000MHz

Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	T119 Ant Factor [dB/m] (dB)	T34 Preamp/Cable Loss [dB] (dB)	T159 BRF [dB] (dB)	dB(uVolts/meter)	E-Fields [dBuV/m] - Avg	Average Margin (dB)	E-Fields [dBuV/m] - Peak	Peak Margin (dB)	Height [cm]	Polarity
8	15602.103	15.72	PK	40.3	-16.5	0.5	40.12	54	-13.88	74	-33.88	201	Vert

* : Fundamental

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

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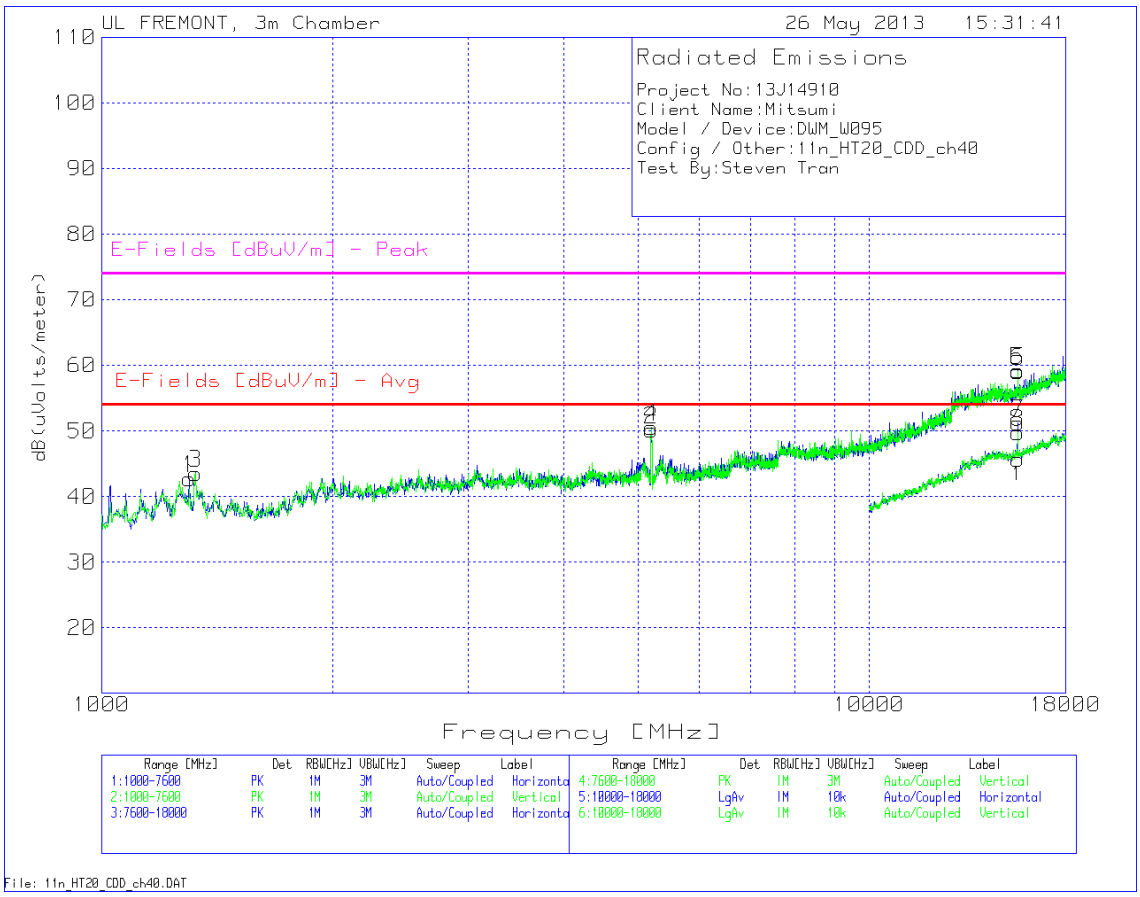
MID CHANNEL 40 GRAPH



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