FCC 47 CFR PART 15 SUBPART E

CERTIFICATION TEST REPORT

FOR

DSL

MODEL NUMBER: NVG599

FCC ID: GZ5NVG599

REPORT NUMBER: 14U17955-1, Revision B

ISSUE DATE: September 8, 2014
Revision Date: September 19, 2014

Prepared for
Arris Group Inc.
46653 Fremont Blvd
Fremont, CA 94538

Prepared by
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Revision History

Rev.	Issue Date	Revisions	Revised By
--	08/26/14	Initial Issue	M. Ferrer
A	09/08/14	Added KDB reference	M. Ferrer
B	09/19/14	Updated Section 5.2	M.Ferrer

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Arris Group Inc
46653 Fremont Blvd.
Fremont, CA 94538

EUT DESCRIPTION: DSL

MODEL: NVG599

SERIAL NUMBER: -

DATE TESTED: July 10, 2014 – August 26, 2014

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

UL LLC 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 LLC 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 LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For
UL LLC By:

Peng Zhang
EMC Project Lead
UL LLC

Tested By:

Michael Ferrer
EMC Program Manager
UL LLC

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, FCC KDB 662911 DO1 v02r01, ANSI C63.10-2009.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 333 Pfingsten Road, Northbrook, IL 60062 USA.

UL NBK is accredited by NVLAP, Laboratory Code 100414-0. The full scope of accreditation can be viewed at http://ts.nist.gov/Standards/scopes/1004140.htm

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. SAMPLE CALCULATION

Sample Calculations
Radiated Field Strength and Conducted Emissions data contained within this report is calculated on the following basis:
Field Strength (dBuV/m) = Meter Reading (dBuV) + AF (dB/m) - Gain (dB) + Cable Loss (dB)
Conducted Voltage (dBuV) = Meter Reading (dBuV) + Cable Loss (dB) + LISN IL (dB)
Conducted Current (dBuA) = Meter Reading (dBuV) + Cable Loss (dB) - Transducer Factor (dBohms)

4.3. MEASUREMENT UNCERTAINTY

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

Test	Range	Equipment	Uncertainty k=2
Conducted Ant Port	30MHz-26GHz	Spectrum Analyzer	2.94

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is an 802.11a/n/ac transceiver. This report is a C2PC to include additional frequencies.

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)
5260 - 5320	802.11a	23.17	207.49
5260 - 5320	802.11n HT20	18.37	68.71
5270 - 5310	802.11n HT40	20.84	121.34
5270 - 5310	802.11n HT80	12.94	19.68
5500 - 5700	802.11a	23.14	206.06
5500 - 5700	802.11n HT20	23.13	205.59
5510 - 5670	802.11n HT40	23.07	202.77
5510 - 5670	802.11n HT80	23.1	204.17

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an PIFA antenna, with a maximum gain of 2 dBi.

5.4. WORST-CASE CONFIGURATION AND MODE

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
802.11n HT40mode: MCS0
802.11n HT80mode: MCS0

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
EUT	Arris Group	NVG599	-	GZ5NV599
Power Supply	Arris Group	NBS42A120350M2	-	DoC
Laptop	Lenovo	T410	-	-

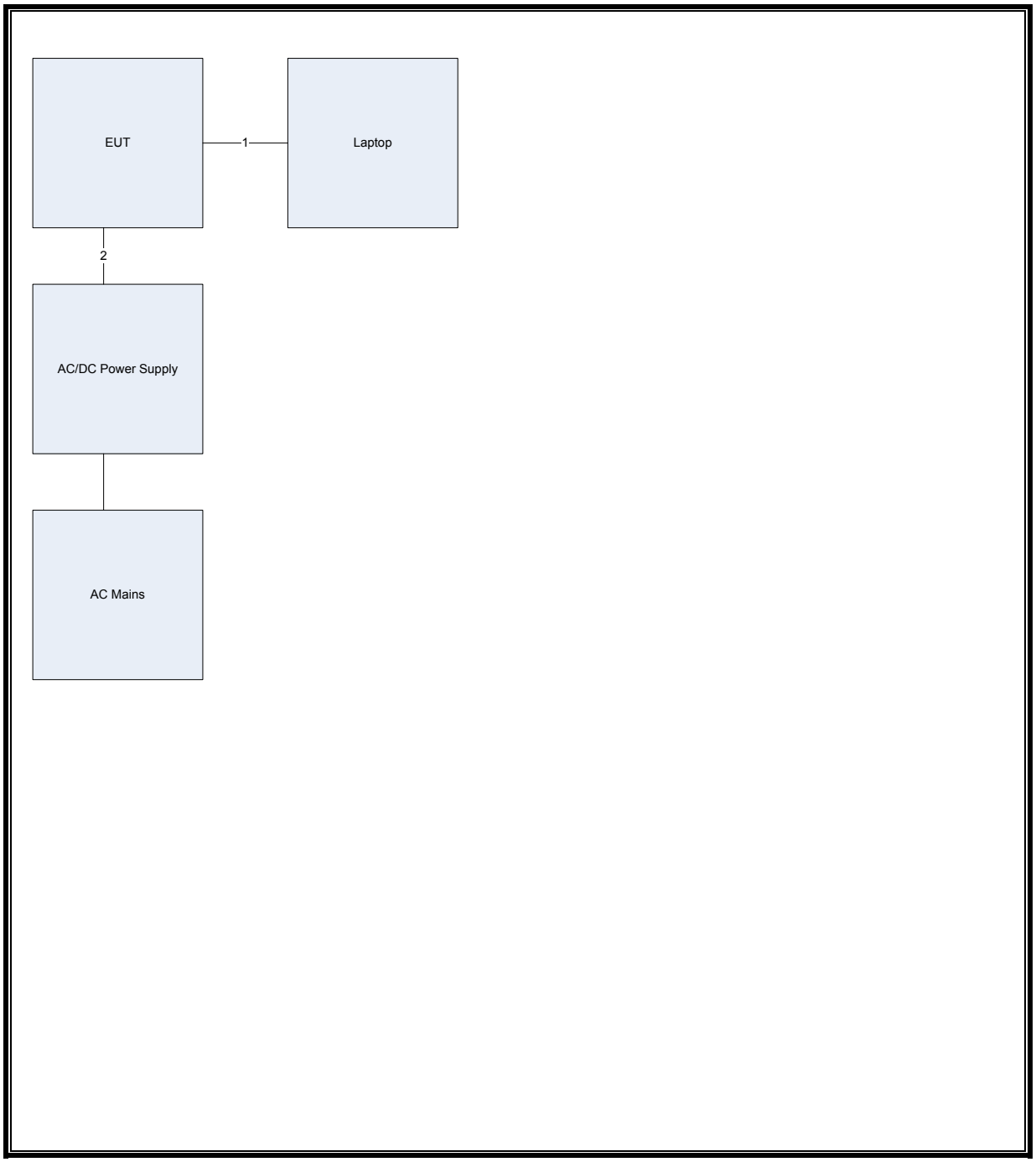
I/O CABLES

I/O Cable List						
Cable No	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	DC	1	IO	DC	3	
2	Ethernet	4	IO	8 wire	1	

TEST SETUP

The EUT is a standalone device with external power supply. A laptop was used to program device.

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

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

Test Equipment List					
Description	**Manufacturer**	**Model**	**Asset**	**Cal Date**	**Cal Due**
EMI Test Receiver	Agilent	N9030A	EMC4360	20131221	20141221
Power Meter	Agilent	N1912A	EMC4362	20130606	20150606
Power Sensor	Agilent	85481A	EMC4363	20131209	20141209

7. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 789033 Zero-Span Spectrum Analyzer Method.

7.1. ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
802.11a 1TX SISO	2.060	2.170	0.949	94.93%	0.23	0.485
802.11a 3TX CDD	2.060	2.170	0.949	94.93%	0.23	0.485
802.11n HT20 1TX SISO	1.910	2.008	0.951	95.12%	0.22	0.524
802.11n HT20 3TX CDD	1.920	2.018	0.951	95.14%	0.22	0.521
802.11n HT40 1TX SISO	0.946	1.043	0.907	90.70%	0.42	1.057
802.11n HT40 3TX CDD	0.9400	1.0430	0.901	90.12%	0.45	1.064
802.11ac HT80 1TX SISO	0.4600	0.4880	0.943	94.26%	0.26	2.174
802.11ac HT80 3TX CDD	0.4600	0.4900	0.939	93.88%	0.27	2.174

7.1. MEASUREMENT METHODS

26 dB Emission BW: KDB 789033 D01 v01r03, Section C.

99% Occupied BW: KDB 789033 D01 v01r03, Section D.

Conducted Output Power: KDB 789033 D01 v01r03, Section E.2.b (Method SA-1).

Power Spectral Density: KDB 789033 D01 v01r03, Section F.

Peak Excursion: KDB 789033 D01 v01r03, Section G.

Unwanted emissions in restricted bands: KDB 789033 D01 v01r03, Sections H.3, H.4, H.5, and H.6.

Unwanted emissions in non-restricted bands: KDB 789033 D01 v01r03, Sections H.3, H.4, and H.5.

Straddling channel: 644545 D01 Guidance for IEEE 802.11ac v01r01 1

7.2. DUTY CYCLE PLOTS

DUTY CYCLE 802.11a 1TX MODE

DUTY CYCLE 802.11a CDD MODE

DUTY CYCLE 802.11n HT20 1TX MODE

DUTY CYCLE 802.11n HT20 CDD MODE

DUTY CYCLE 802.11n HT40 1TX MODE

DUTY CYCLE 802.11n HT40 CDD MODE

DUTY CYCLE 802.11ac VHT80 1TX MODE

DUTY CYCLE 802.11ac VHT80 CDD MODE

8. ANTENNA PORT TEST RESULTS

8.1. 802.11a 1TX SISO MODE IN THE 5.3 GHz BAND

8.1.1. 26 dB BANDWIDTH

LIMITS

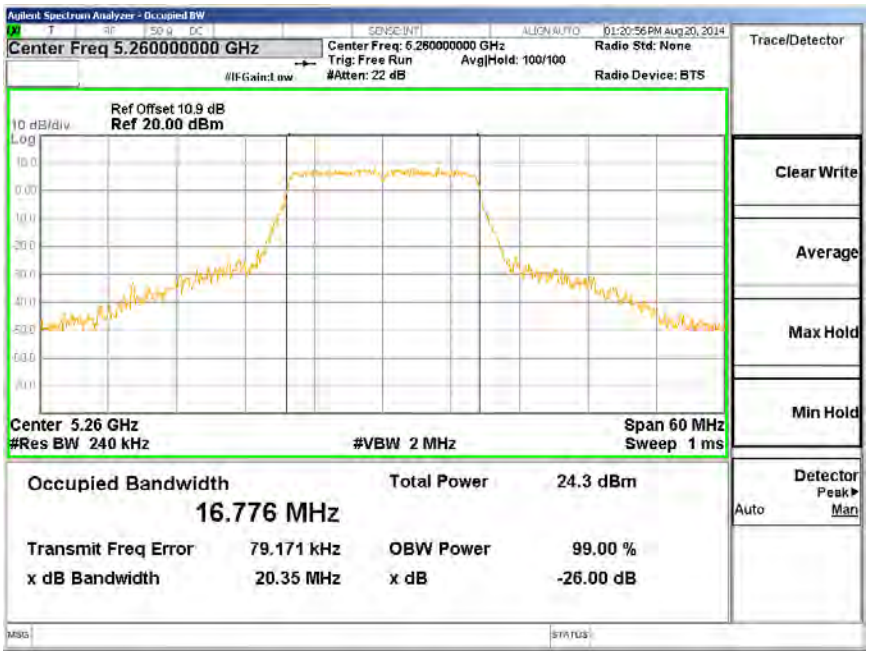
None; for reporting purposes only.

RESULTS

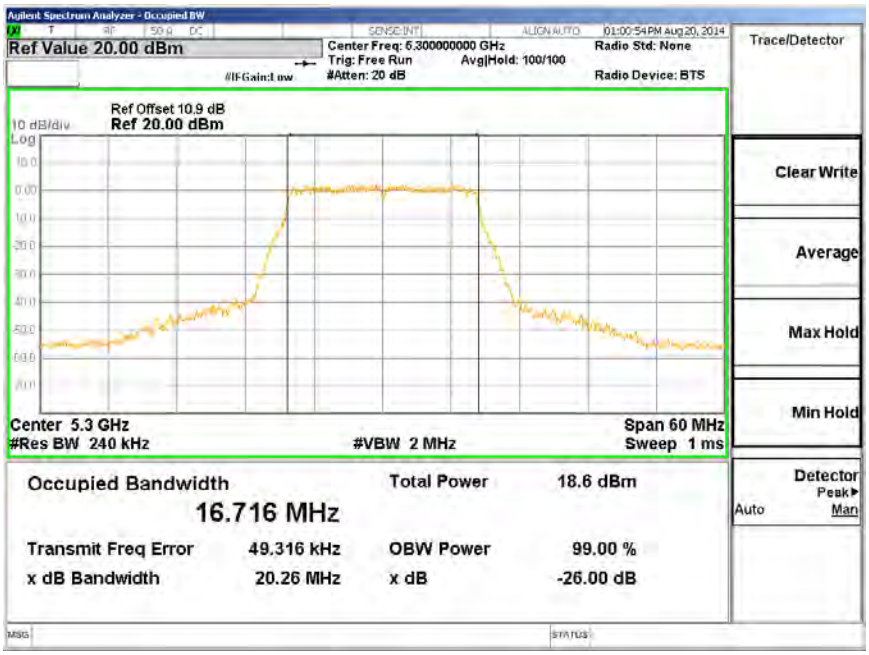
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5260	20.35
Mid	5300	20.26
High	5320	20.23

26 dB BANDWIDTH

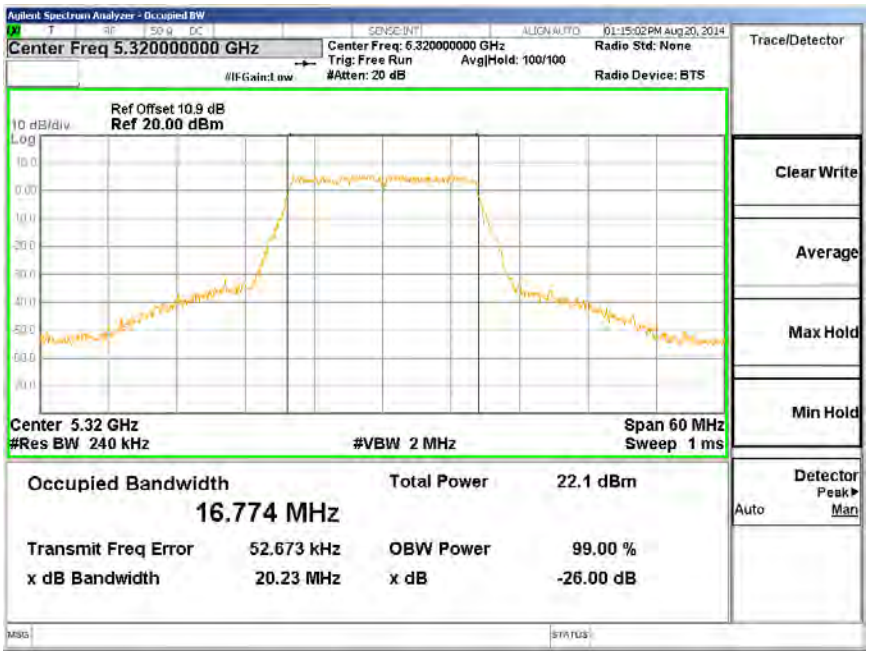
BANDWIDTH LOW CH



BANDWIDTH MID CH



BANDWIDTH HIGH CH



8.1.2. 99% BANDWIDTH

LIMITS

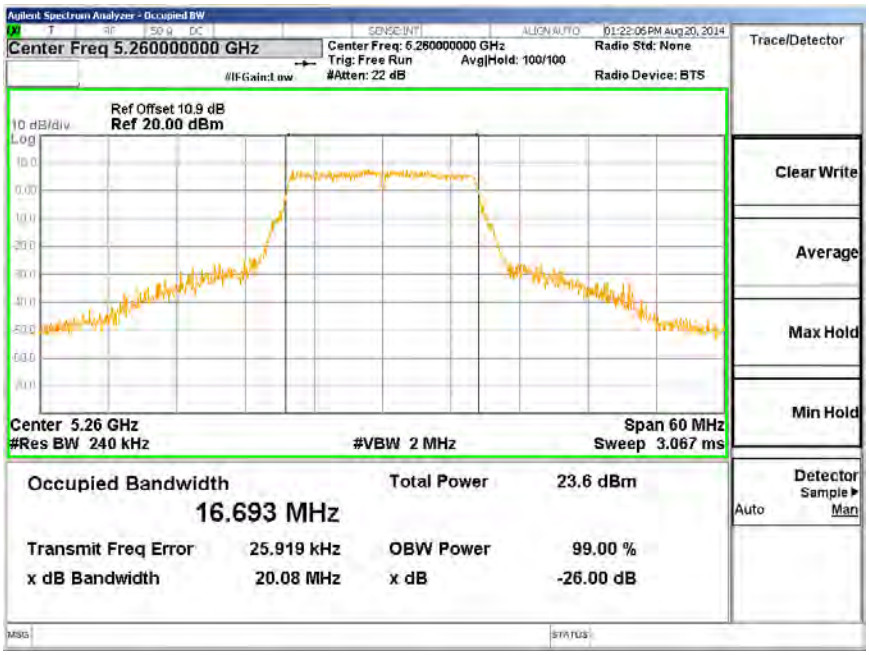
None; for reporting purposes only.

RESULTS

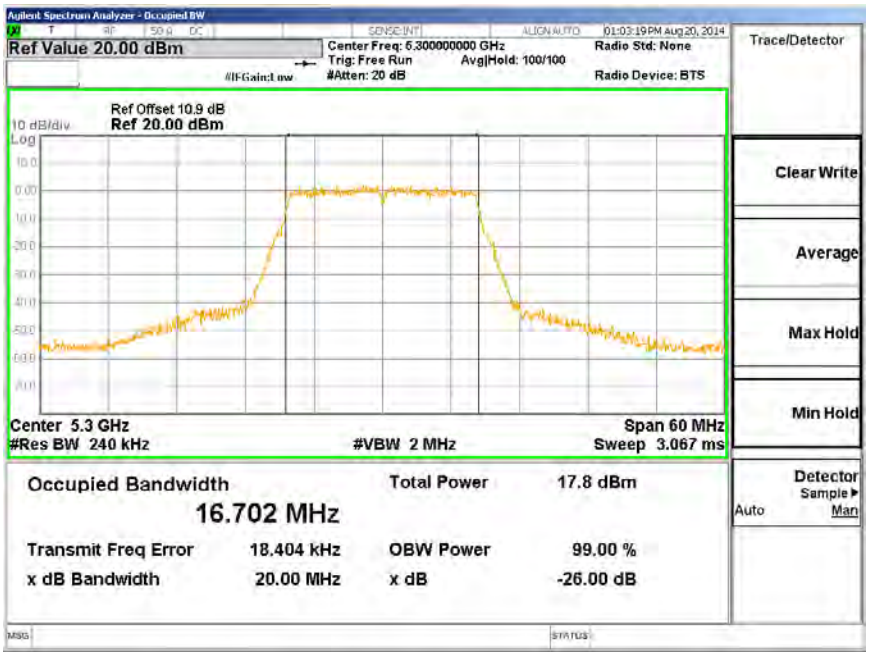
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5260	16.6930
Mid	5300	16.7020
High	5320	16.6940

99% BANDWIDTH

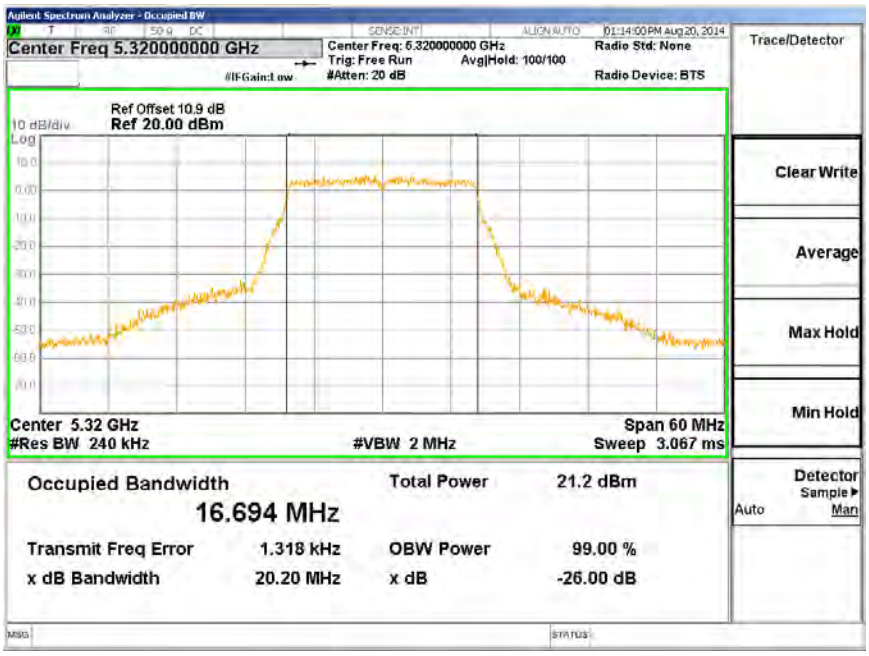
BANDWIDTH LOW CH



BANDWIDTH MID CH



BANDWIDTH HIGH CH



8.1.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	Power (dBm)
Low	5260	18.08
Mid	5300	12.26
High	5320	15.83

8.1.4. OUTPUT POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

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

DIRECTIONAL ANTENNA GAIN

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

RESULTS

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5260	20.35	2.00	24.00	11.00
Mid	5300	20.26	2.00	24.00	11.00
High	5320	20.23	2.00	24.00	11.00

Duty Cycle CF (dB)	0.23	Included in Calculations of Corr'd Power & PSD

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	17.99	18.22	24.00	-5.78
Mid	5300	12.06	12.29	24.00	-11.71
High	5320	15.57	15.80	24.00	-8.20

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5260	4.57	4.80	11.00	-6.20
Mid	5300	-1.27	-1.04	11.00	-12.04
High	5320	2.14	2.37	11.00	-8.63

OUTPUT POWER AND PSD, Chain 0

OUTPUT POWER AND PSD, Chain 0 LOW CH

OUTPUT POWER AND PSD, Chain 0 MID CH

OUTPUT POWER AND PSD, Chain 0 HIGH CH

8.2. 802.11a 3TX CDD MODE IN THE 5.3 GHz BAND

8.2.1. 26 dB BANDWIDTH

LIMITS

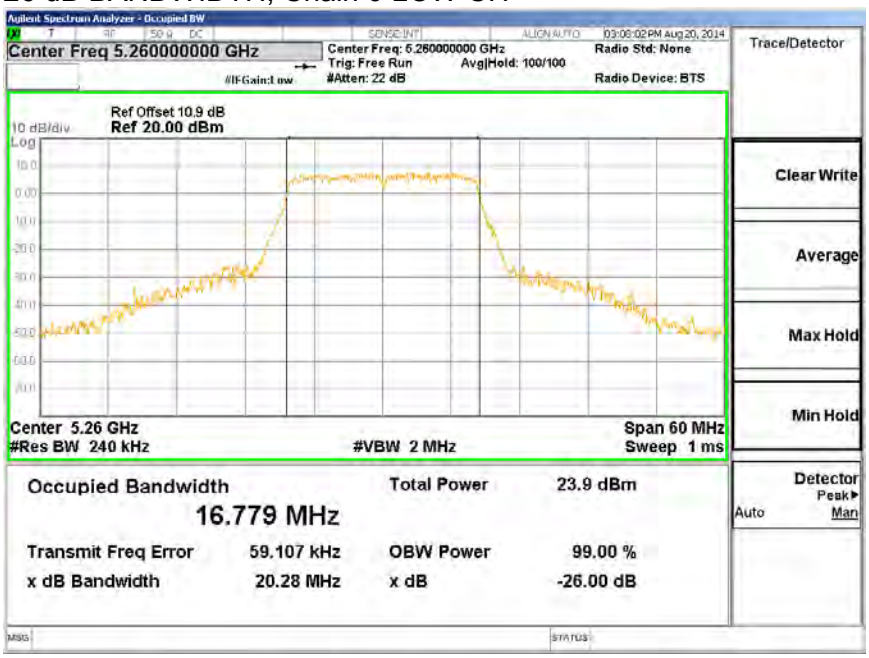
None; for reporting purposes only.

RESULTS

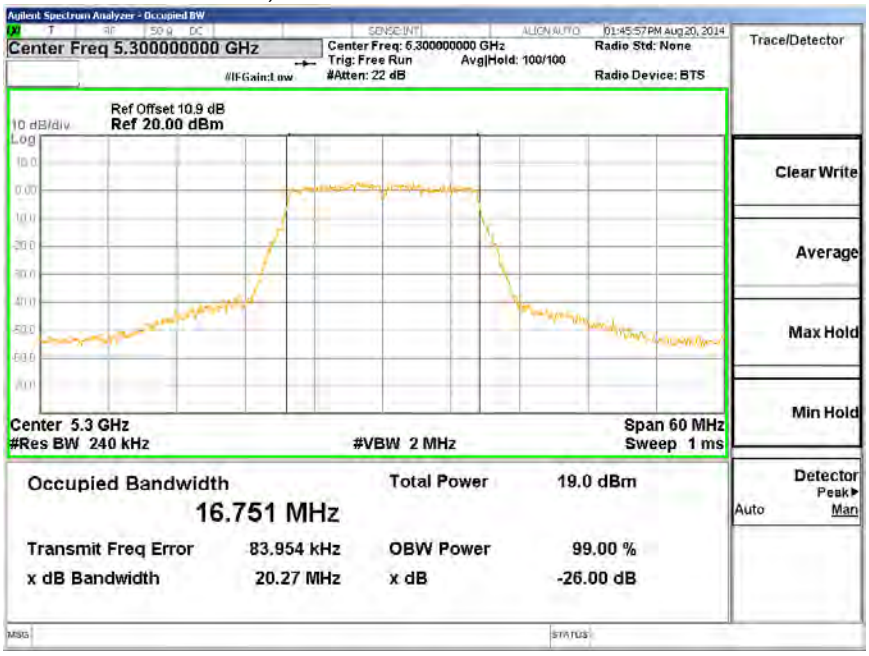
Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
Low	5260	20.28	20.37	20.07
Mid	5300	20.27	20.00	20.03
High	5320	20.29	20.15	20.05

26 dB BANDWIDTH, Chain 0

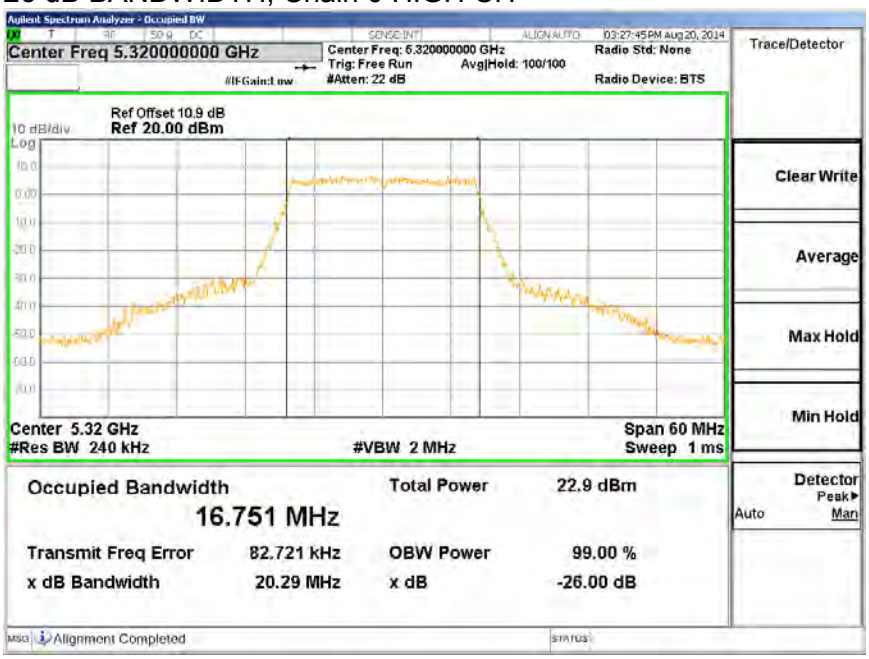
26 dB BANDWIDTH, Chain 0 LOW CH



26 dB BANDWIDTH, Chain 0 MID CH

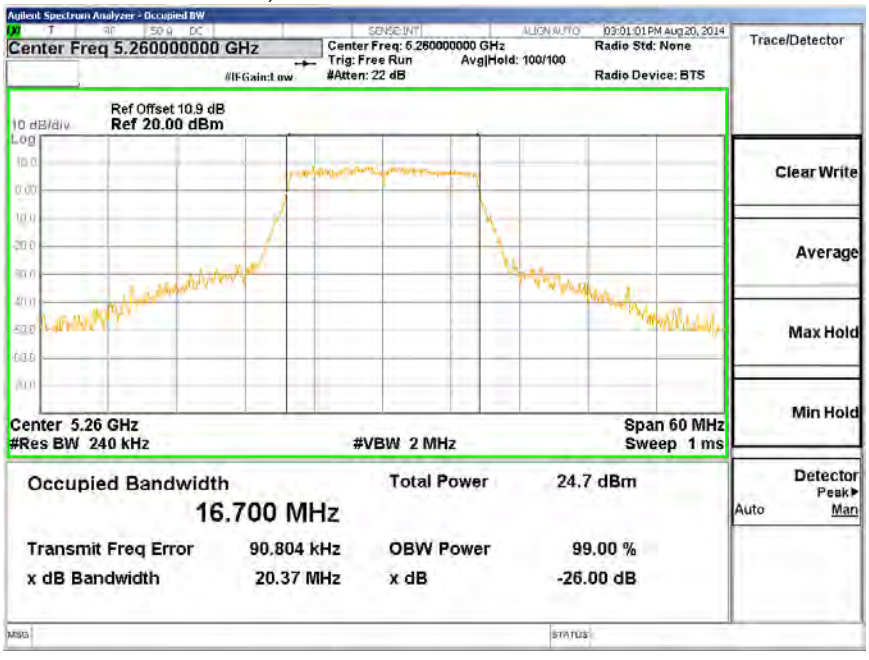


26 dB BANDWIDTH, Chain 0 HIGH CH

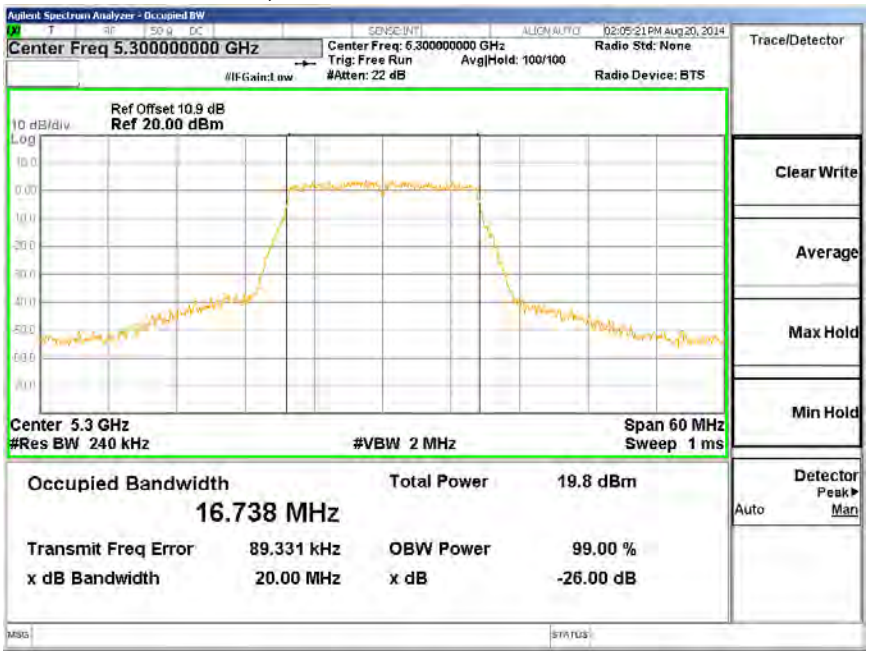


26 dB BANDWIDTH, Chain 1

26 dB BANDWIDTH, Chain 1 LOW CH



26 dB BANDWIDTH, Chain 1 MID CH

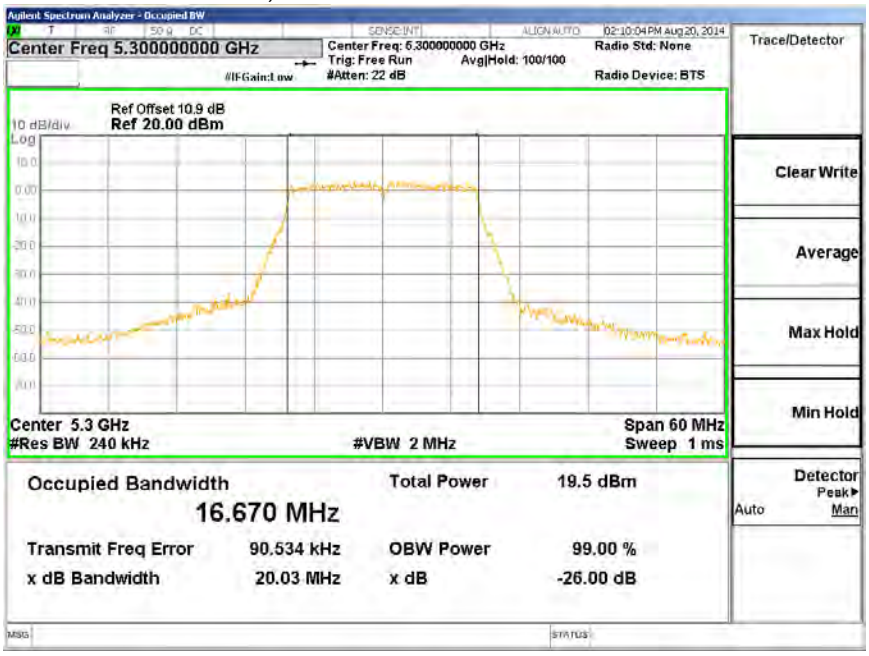


26 dB BANDWIDTH, Chain 1 HIGH CH

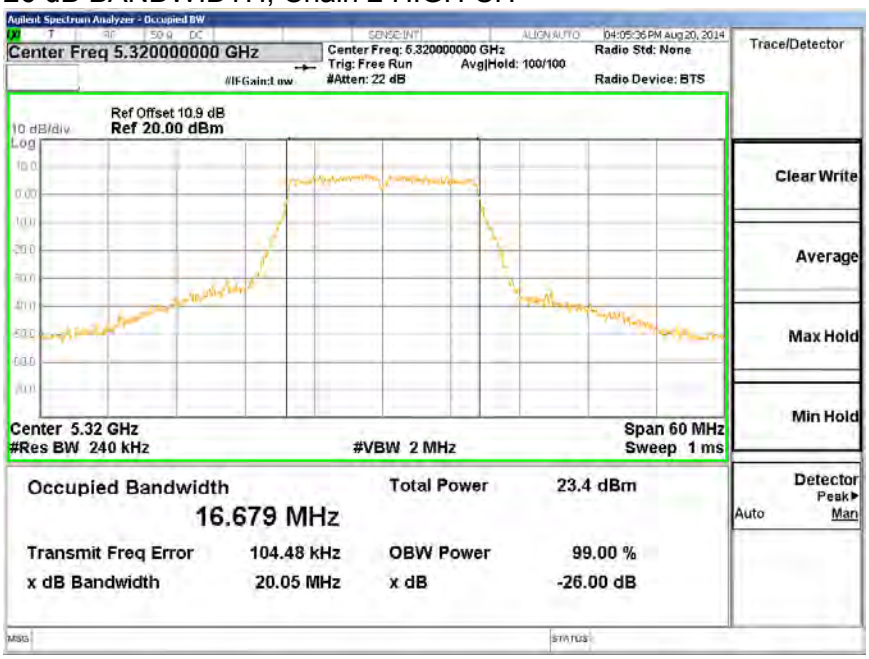
26 dB BANDWIDTH, Chain 2

26 dB BANDWIDTH, Chain 2 LOW CH

26 dB BANDWIDTH, Chain 2 MID CH



26 dB BANDWIDTH, Chain 2 HIGH CH



8.2.2. 99% BANDWIDTH

LIMITS

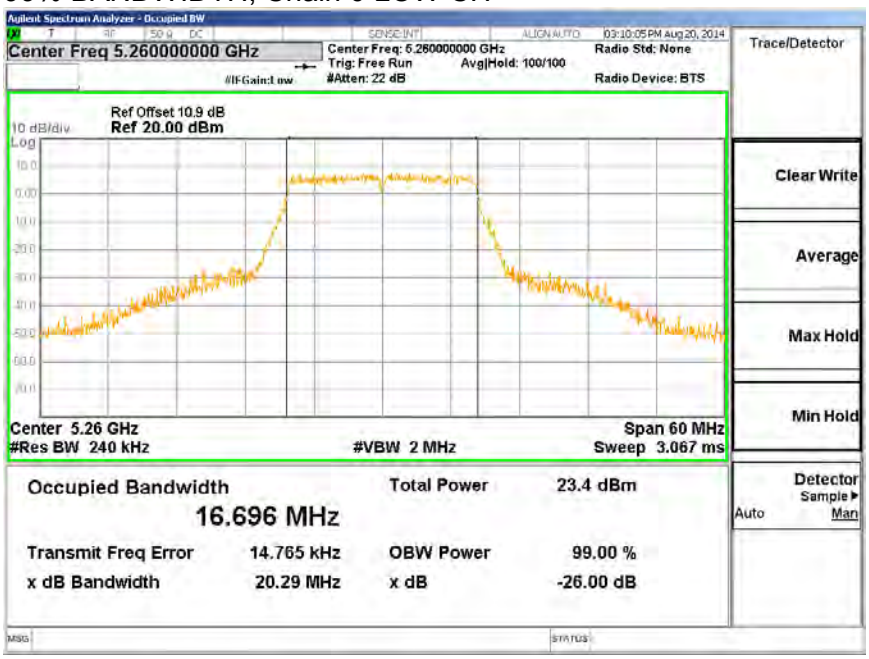
None; for reporting purposes only.

RESULTS

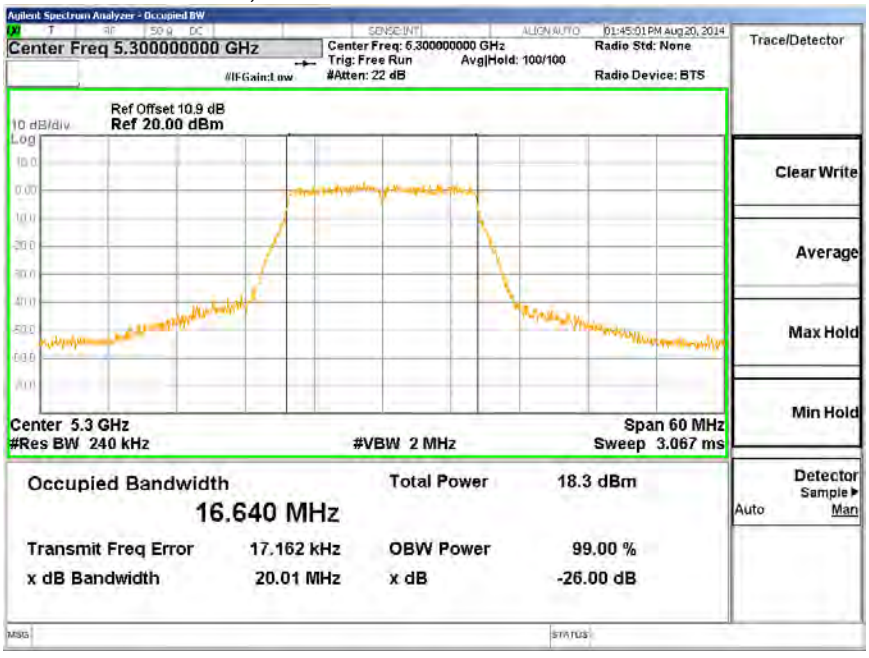
Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
Low	5260	16.6960	16.6530	16.6680
Mid	5300	17.1620	16.6430	16.6440
High	5320	16.6920	16.6500	16.6220

99% BANDWIDTH, Chain 0

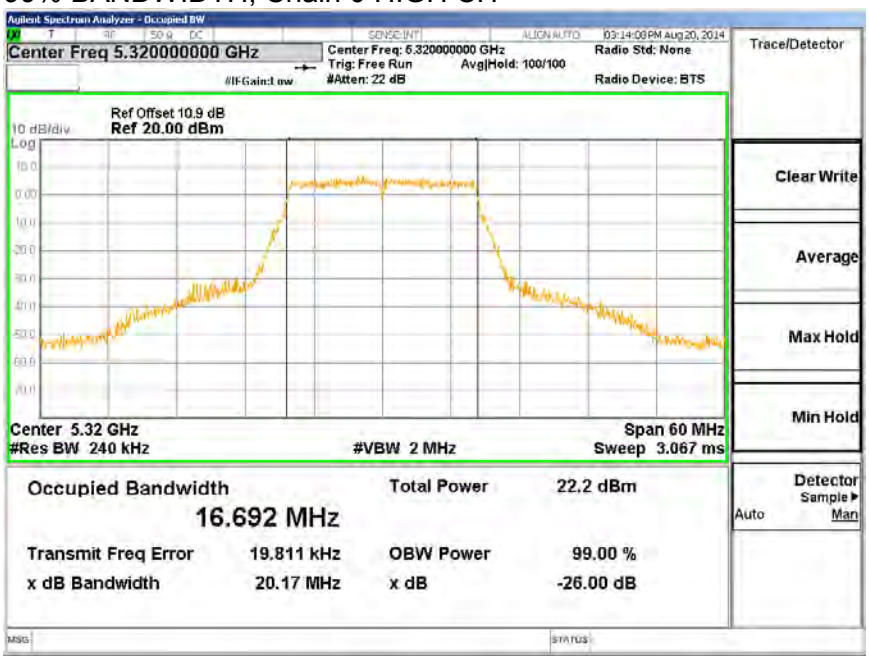
99% BANDWIDTH, Chain 0 LOW CH



99% BANDWIDTH, Chain 0 MID CH

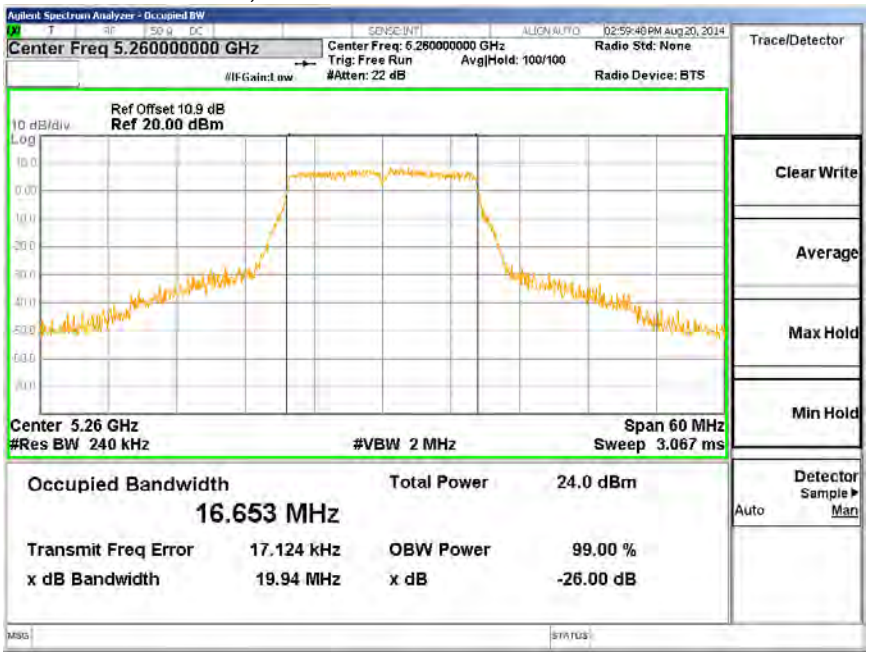


99% BANDWIDTH, Chain 0 HIGH CH

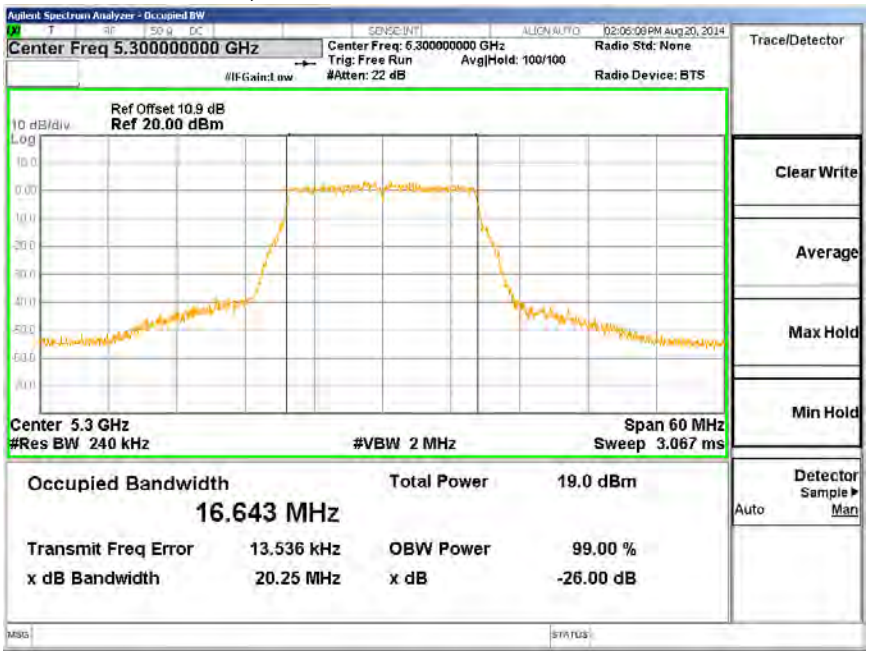


99% BANDWIDTH, Chain 1

99% BANDWIDTH, Chain 1 LOW CH



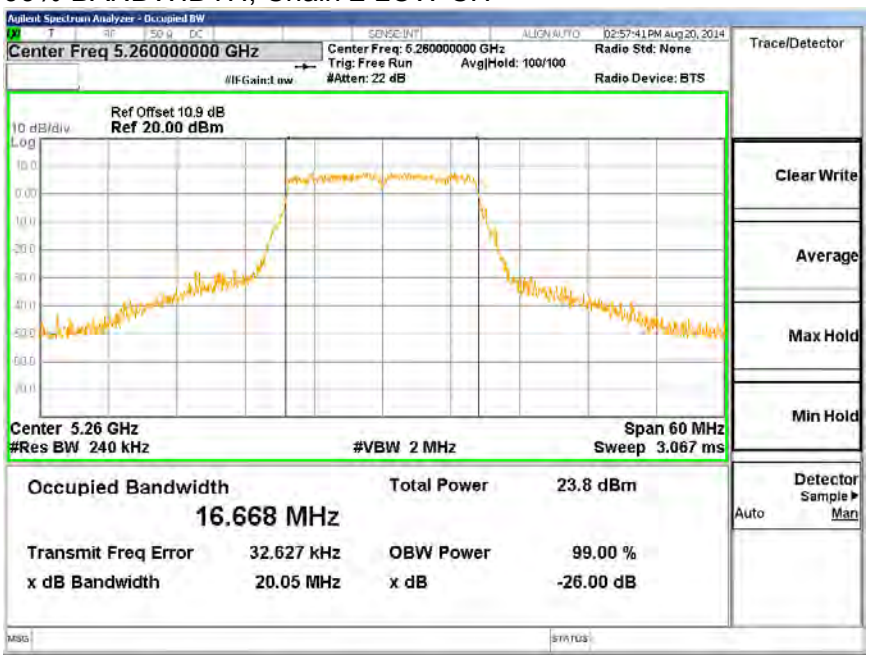
99% BANDWIDTH, Chain 1 MID CH



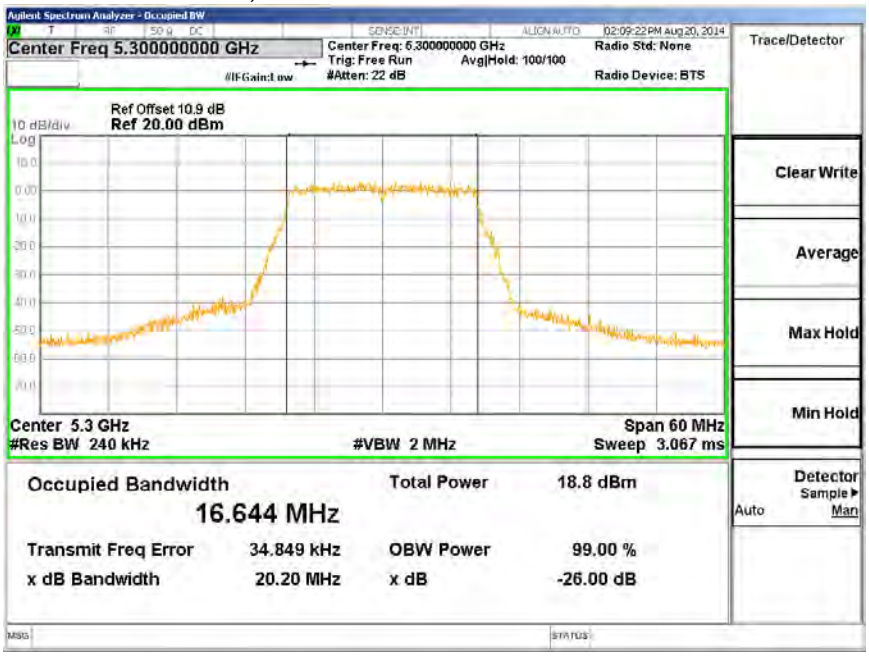
99% BANDWIDTH, Chain 1 HIGH CH

99% BANDWIDTH, Chain 2

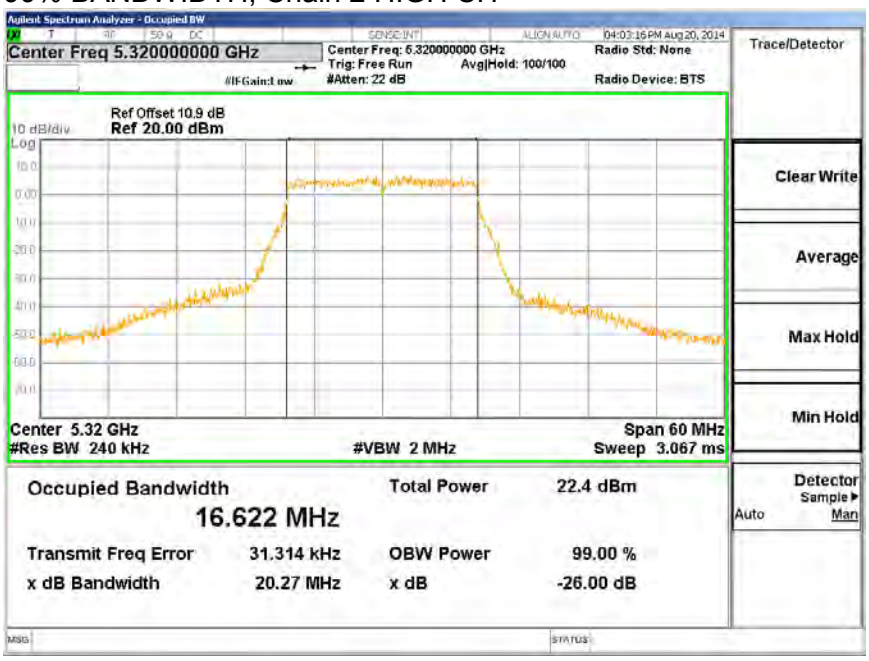
99% BANDWIDTH, Chain 2 LOW CH



99% BANDWIDTH, Chain 2 MID CH



99% BANDWIDTH, Chain 2 HIGH CH



8.2.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

RESULTS

Average Power Results

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Chain 2 Power (dBm)	Total Power (dBm)
Low	5260	17.73	18.25	18.34	22.89
Mid	5300	12.94	13.30	13.16	17.91
High	5320	16.74	17.30	17.16	21.84

8.2.4. OUTPUT POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

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

DIRECTIONAL ANTENNA GAIN

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

Antenna Gain (dBi)	10 * Log (3 chains) (dB)	Correlated Chains Directional Gain (dBi)
2.00	4.77	6.77

RESULTS

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5260	20.07	6.77	6.77	23.23	10.23
Mid	5300	20.00	6.77	6.77	23.23	10.23
High	5320	20.05	6.77	6.77	23.23	10.23

Duty Cycle CF (dB)	0.23	Included in Calculations of Corr'd Power & PSD

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	17.74	18.40	18.35	23.17	23.23	-0.06
Mid	5300	12.83	13.42	13.15	18.14	23.23	-5.09
High	5320	16.51	17.13	16.91	21.86	23.23	-1.37

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Chain 2 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5260	4.31	4.98	4.93	9.75	10.23	-0.48
Mid	5300	-0.59	-0.01	-0.28	4.71	10.23	-5.52
High	5320	3.08	3.71	3.49	8.43	10.23	-1.80

OUTPUT POWER AND PSD, Chain 0

OUTPUT POWER AND PSD, Chain 0 LOW CH

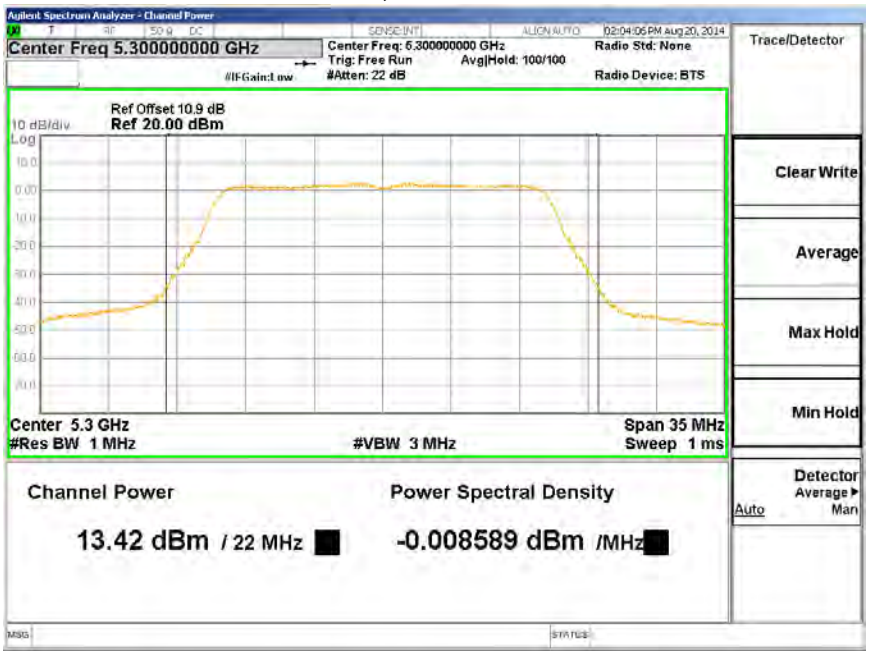
OUTPUT POWER AND PSD, Chain 0 MID CH

OUTPUT POWER AND PSD, Chain 0 HIGH CH

OUTPUT POWER AND PSD, Chain 1

OUTPUT POWER AND PSD, Chain 1 LOW CH

OUTPUT POWER AND PSD, Chain 1 MID CH

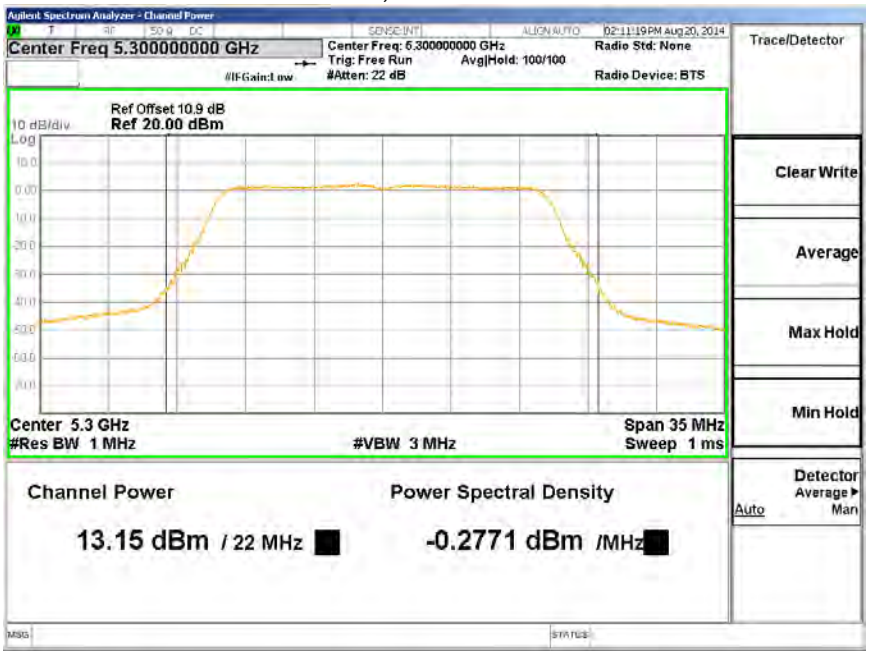


OUTPUT POWER AND PSD, Chain 1 HIGH CH

OUTPUT POWER AND PSD, Chain 2

OUTPUT POWER AND PSD, Chain 2 LOW CH

OUTPUT POWER AND PSD, Chain 2 MID CH



OUTPUT POWER AND PSD, Chain 2 HIGH CH

8.3. 802.11n HT20 1TX SISO MODE IN THE 5.3 GHz BAND

8.3.1. 26 dB BANDWIDTH

LIMITS

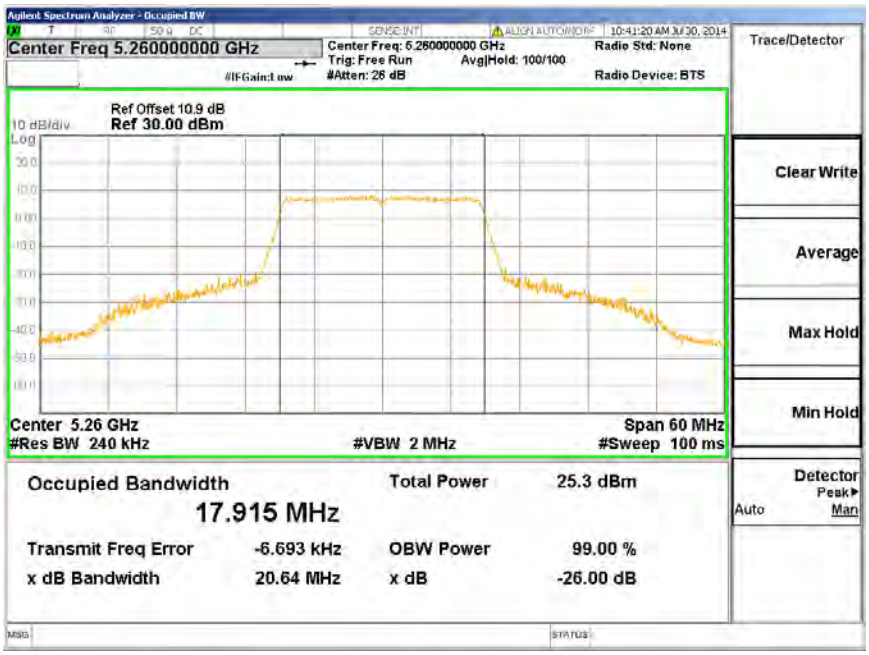
None; for reporting purposes only.

RESULTS

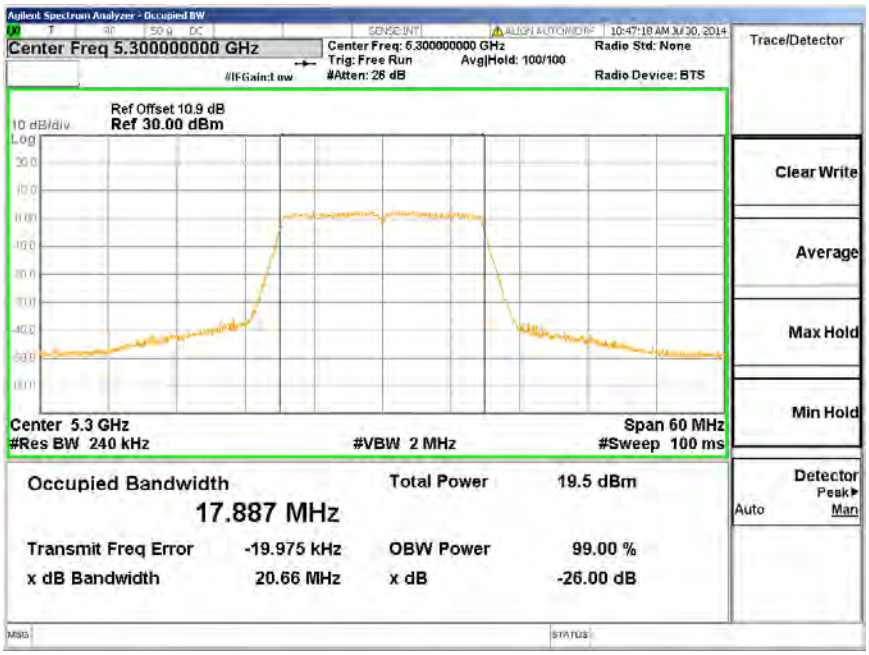
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5260	20.64
Mid	5300	20.66
High	5320	20.74

26 dB BANDWIDTH

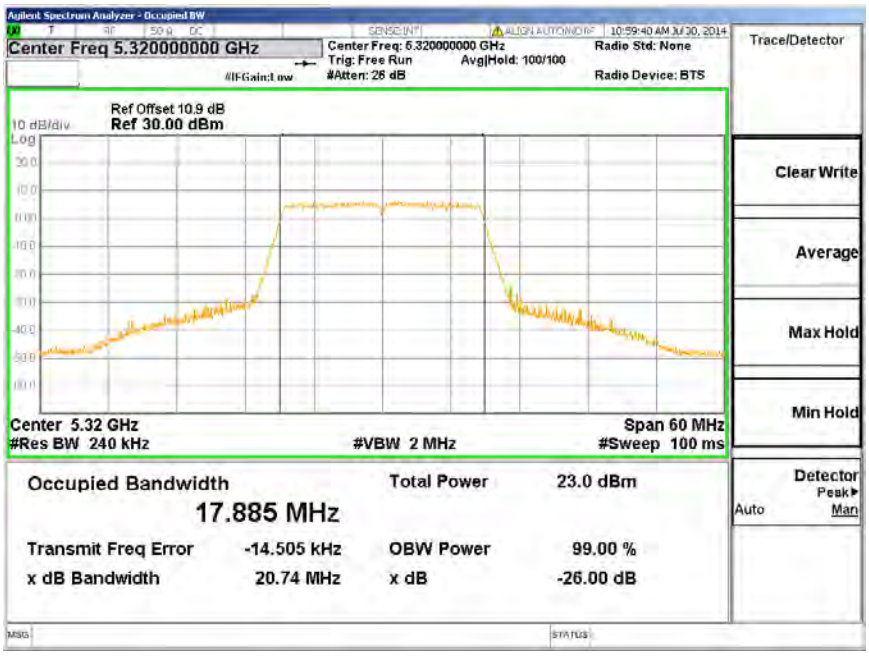
BANDWIDTH LOW CH



BANDWIDTH MID CH



BANDWIDTH HIGH CH



8.3.2. 99% BANDWIDTH

LIMITS

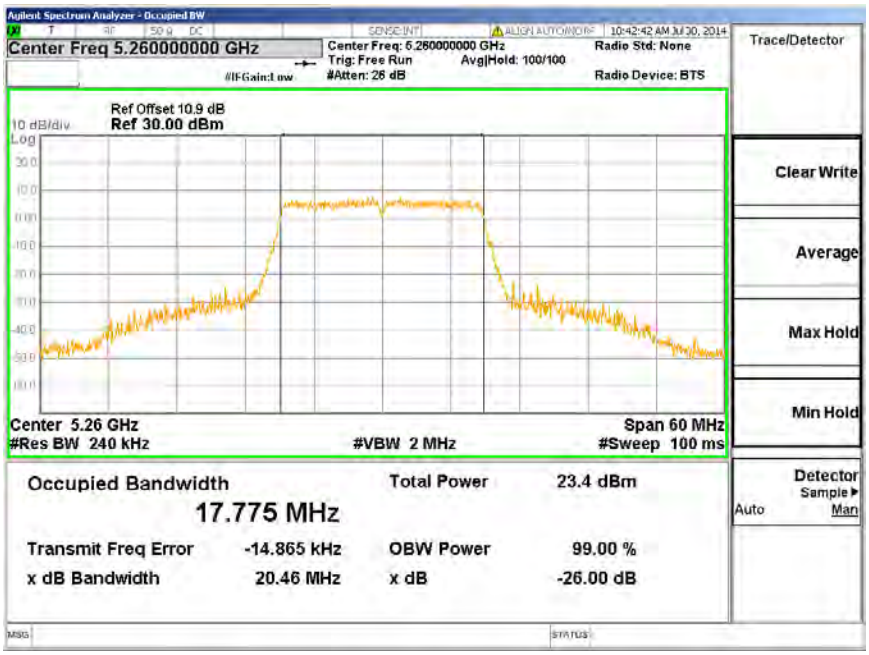
None; for reporting purposes only.

RESULTS

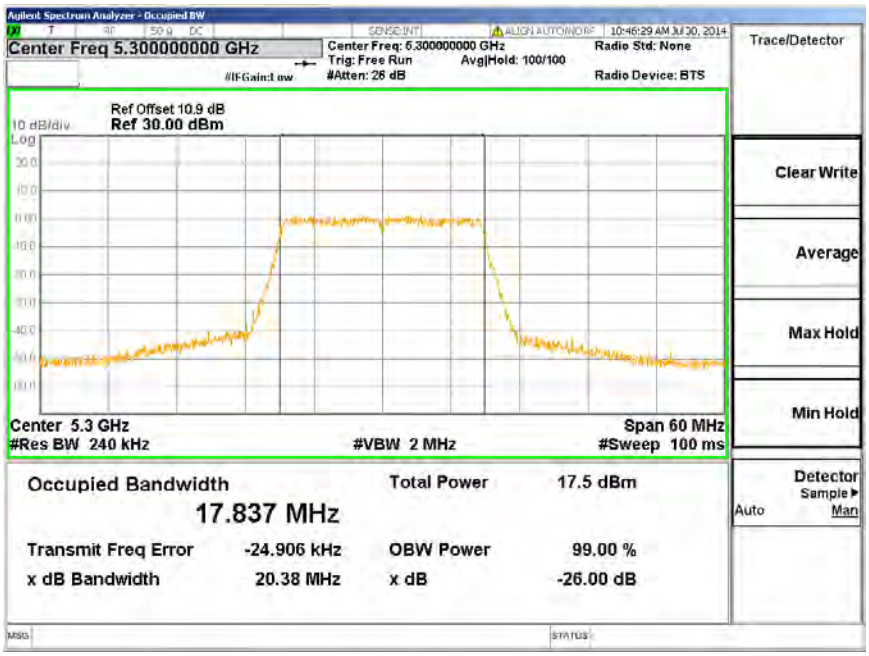
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5260	17.7750
Mid	5300	17.8370
High	5320	17.7620

99% BANDWIDTH

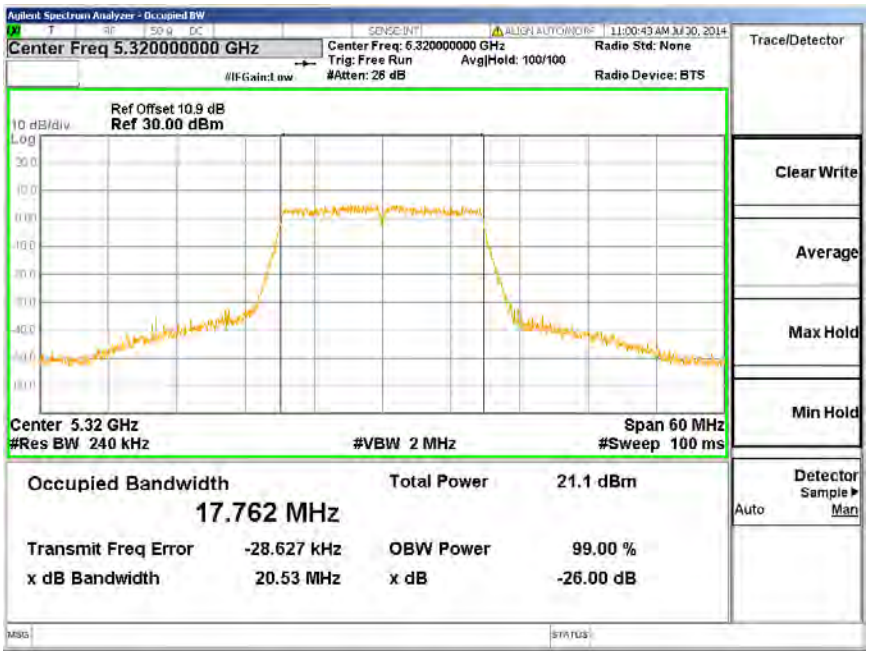
BANDWIDTH LOW CH



BANDWIDTH MID CH



BANDWIDTH HIGH CH



8.3.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	Power (dBm)
Low	5260	17.95
Mid	5300	12.36
High	5320	15.77

8.3.4. OUTPUT POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

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

DIRECTIONAL ANTENNA GAIN

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

RESULTS

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5260	20.64	6.77	23.23	10.23
Mid	5300	20.66	6.77	23.23	10.23
High	5320	20.74	6.77	23.23	10.23

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

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	18.01	18.23	23.23	-5.00
Mid	5300	12.08	12.30	23.23	-10.93
High	5320	15.56	15.78	23.23	-7.45

PSD Results

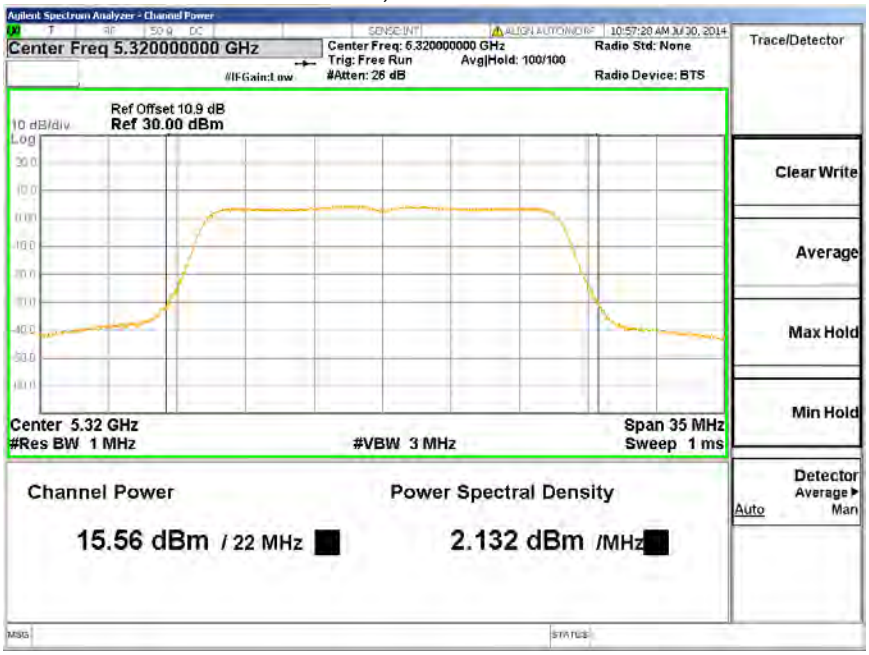
Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5260	4.59	4.81	10.23	-5.42
Mid	5300	-1.34	-1.12	10.23	-11.35
High	5320	2.13	2.35	10.23	-7.88

OUTPUT POWER AND PSD, Chain 0

OUTPUT POWER AND PSD, Chain 0 LOW CH

OUTPUT POWER AND PSD, Chain 0 MID CH

OUTPUT POWER AND PSD, Chain 0 HIGH CH



8.4. 802.11n HT20 3TX CDD MODE IN THE 5.3 GHz BAND

8.4.1. 26 dB BANDWIDTH

LIMITS

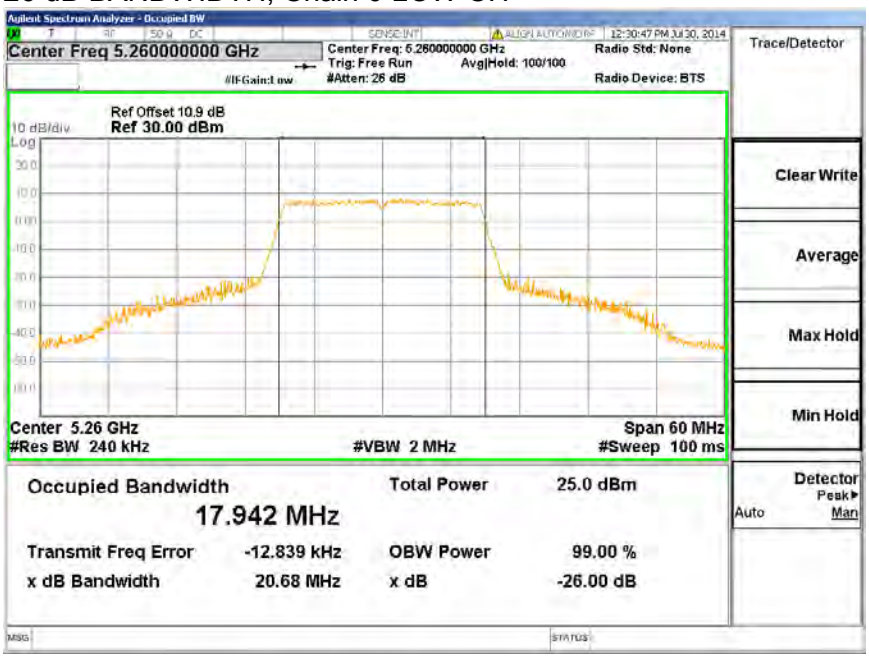
None; for reporting purposes only.

RESULTS

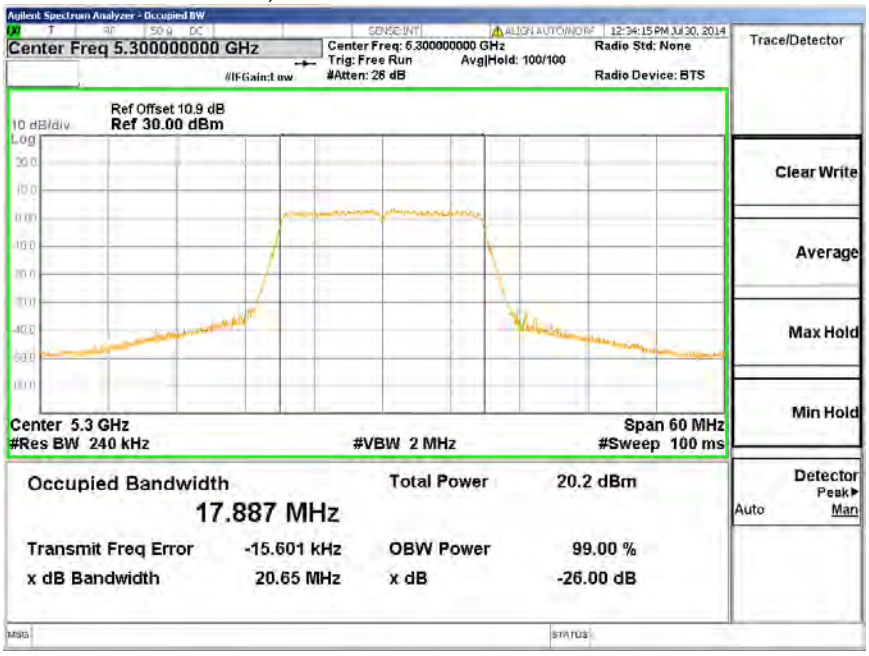
Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
Low	5260	20.68	20.61	20.65
Mid	5300	20.65	20.42	20.48
High	5320	20.84	20.57	20.59

26 dB BANDWIDTH, Chain 0

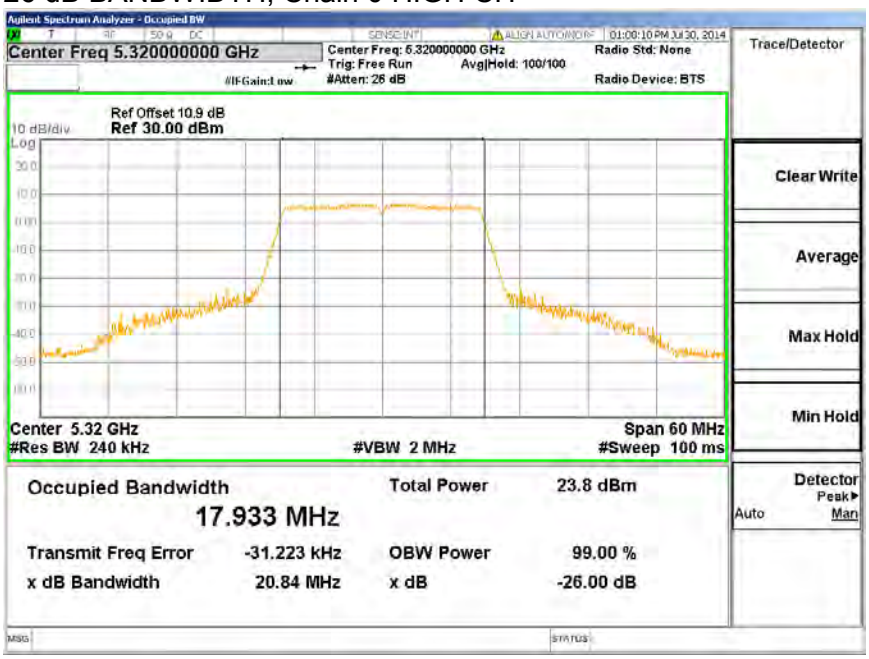
26 dB BANDWIDTH, Chain 0 LOW CH



26 dB BANDWIDTH, Chain 0 MID CH

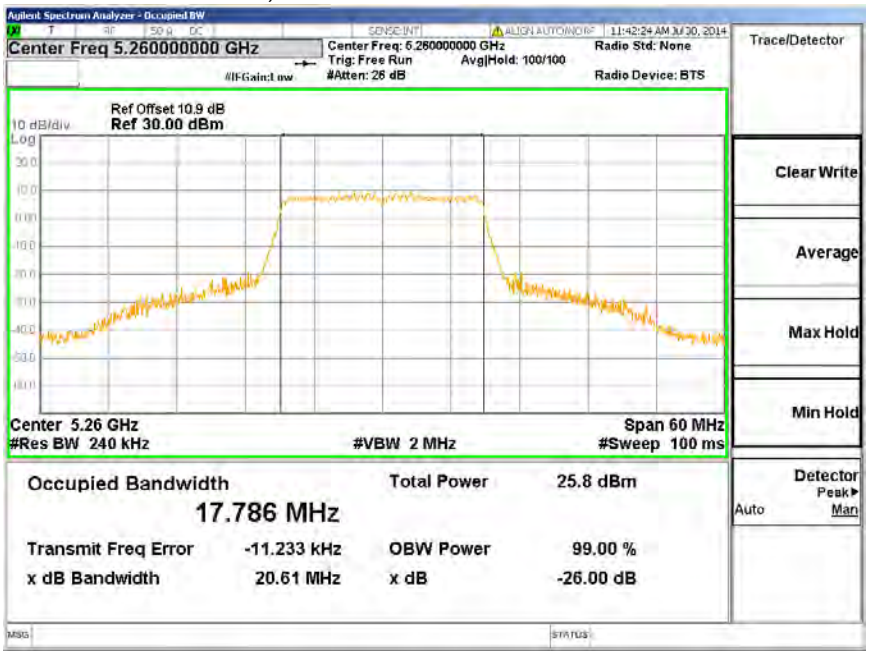


26 dB BANDWIDTH, Chain 0 HIGH CH

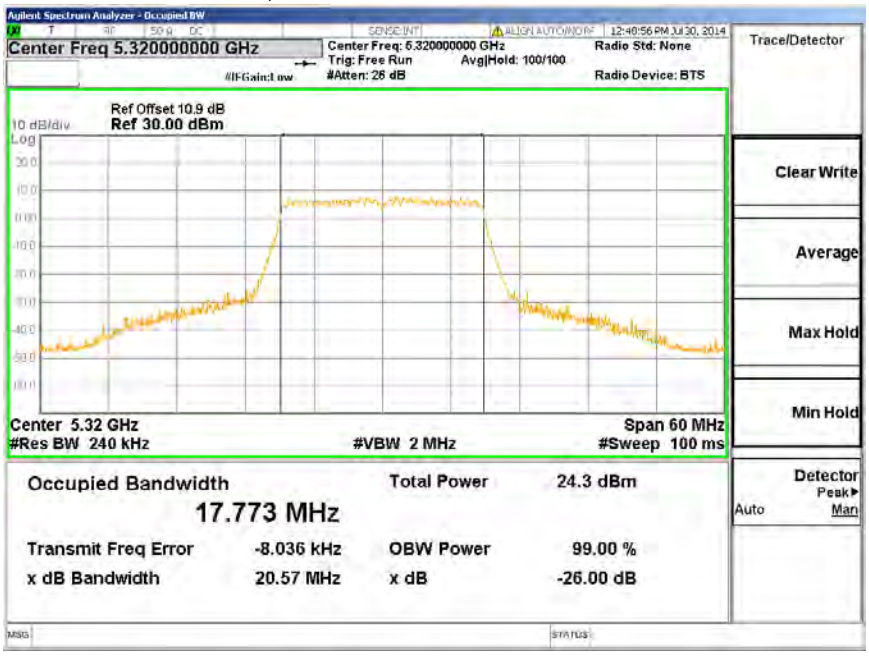


26 dB BANDWIDTH, Chain 1

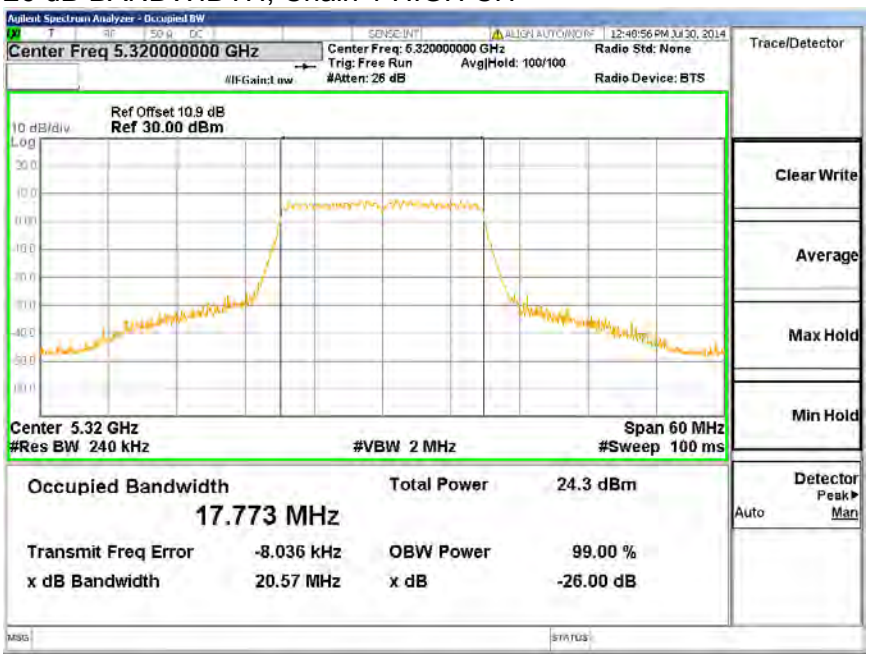
26 dB BANDWIDTH, Chain 1 LOW CH



26 dB BANDWIDTH, Chain 1 MID CH

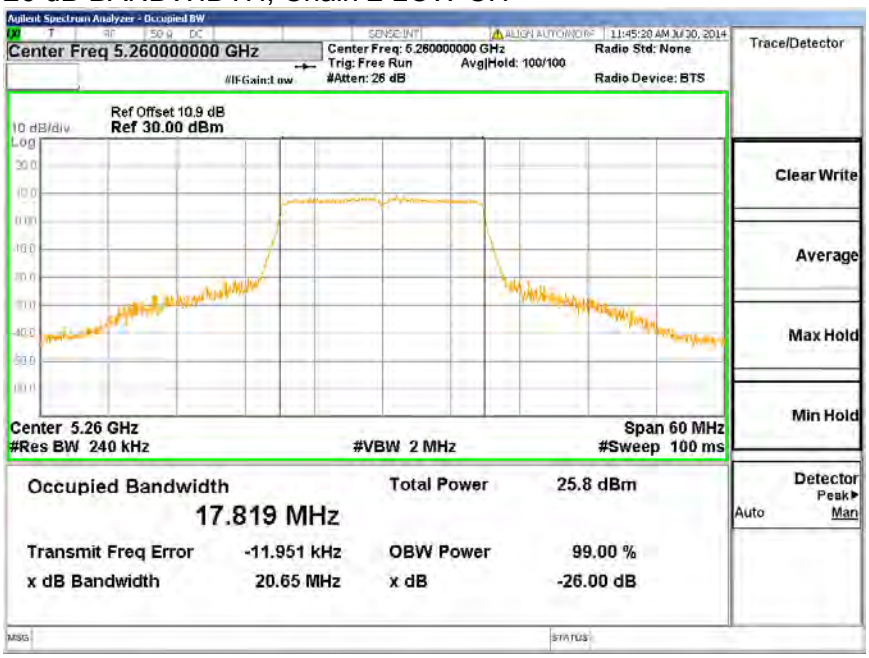


26 dB BANDWIDTH, Chain 1 HIGH CH

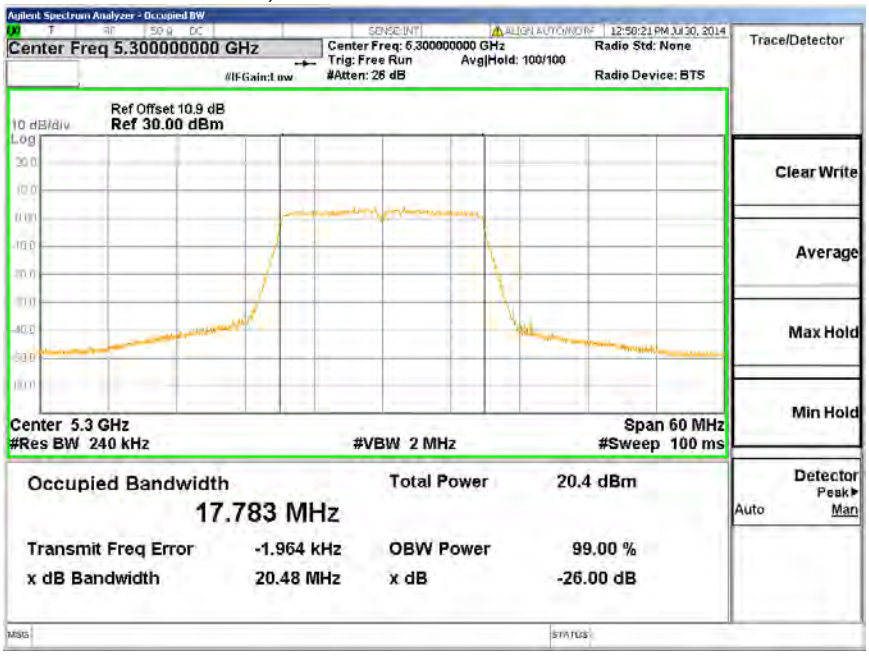


26 dB BANDWIDTH, Chain 2

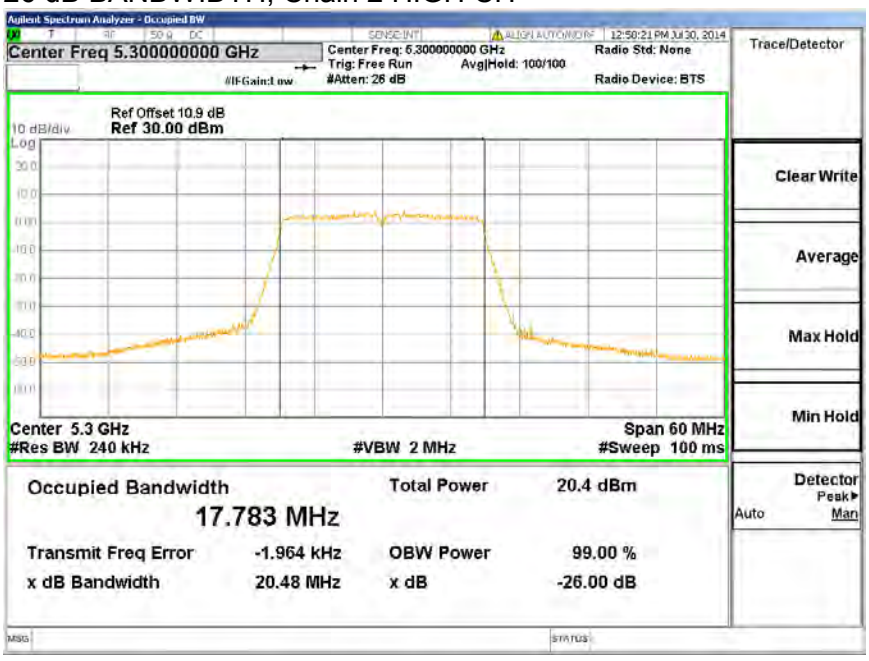
26 dB BANDWIDTH, Chain 2 LOW CH



26 dB BANDWIDTH, Chain 2 MID CH



26 dB BANDWIDTH, Chain 2 HIGH CH



8.4.2. 99% BANDWIDTH

LIMITS

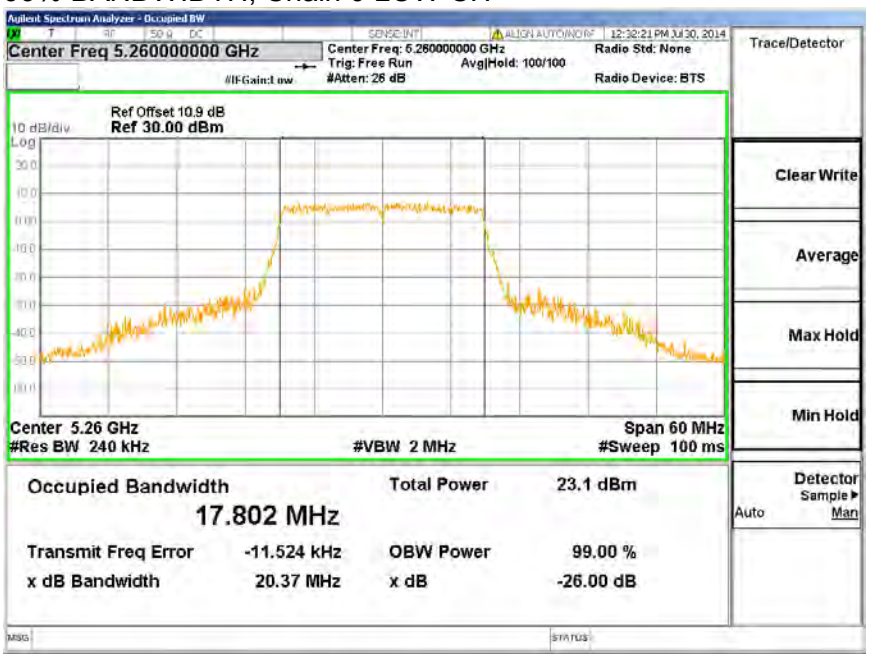
None; for reporting purposes only.

RESULTS

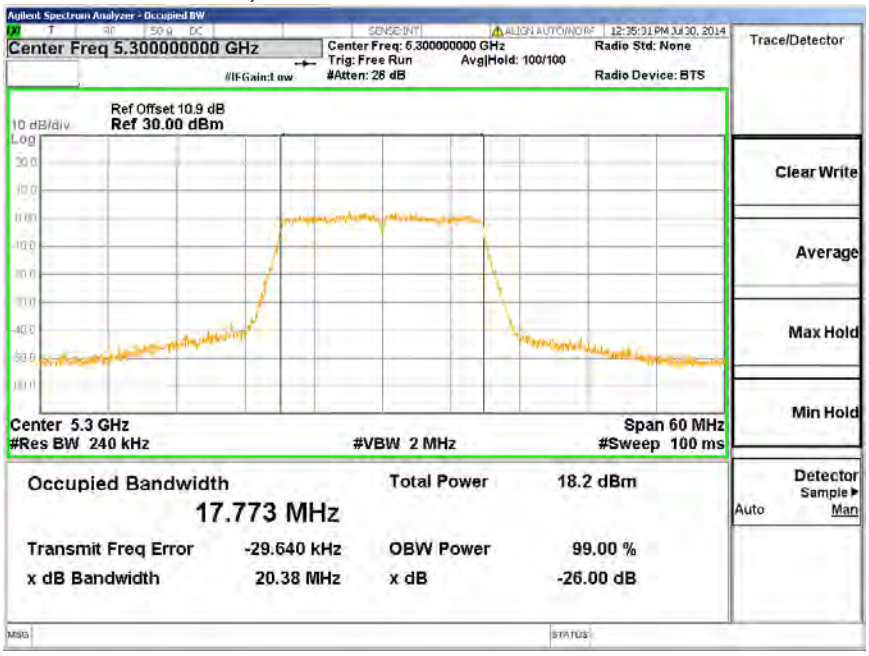
Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
Low	5260	17.8020	17.7290	17.7480
Mid	5300	17.7730	17.7340	17.7270
High	5320	17.7830	17.7360	17.7970

99% BANDWIDTH, Chain 0

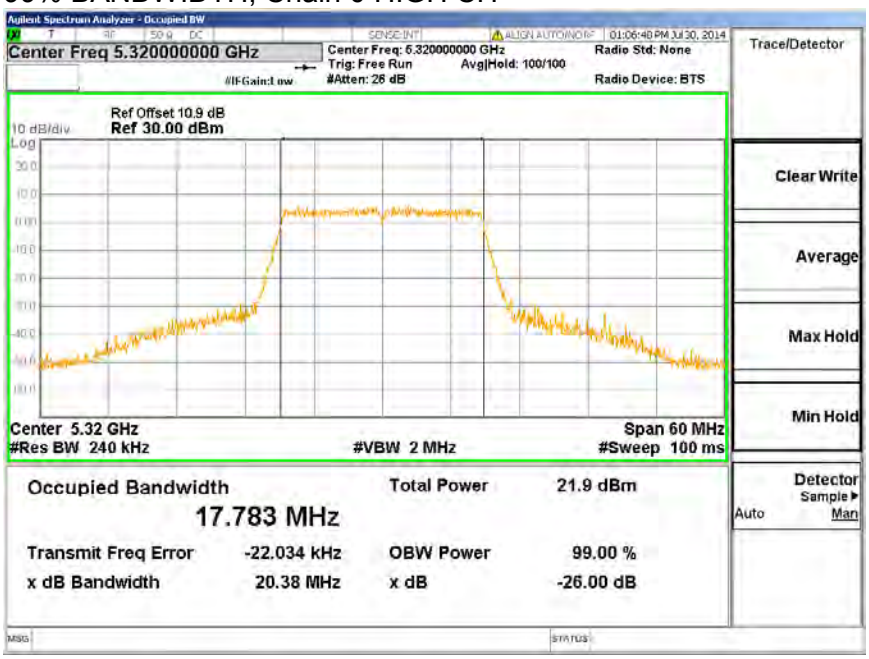
99% BANDWIDTH, Chain 0 LOW CH



99% BANDWIDTH, Chain 0 MID CH

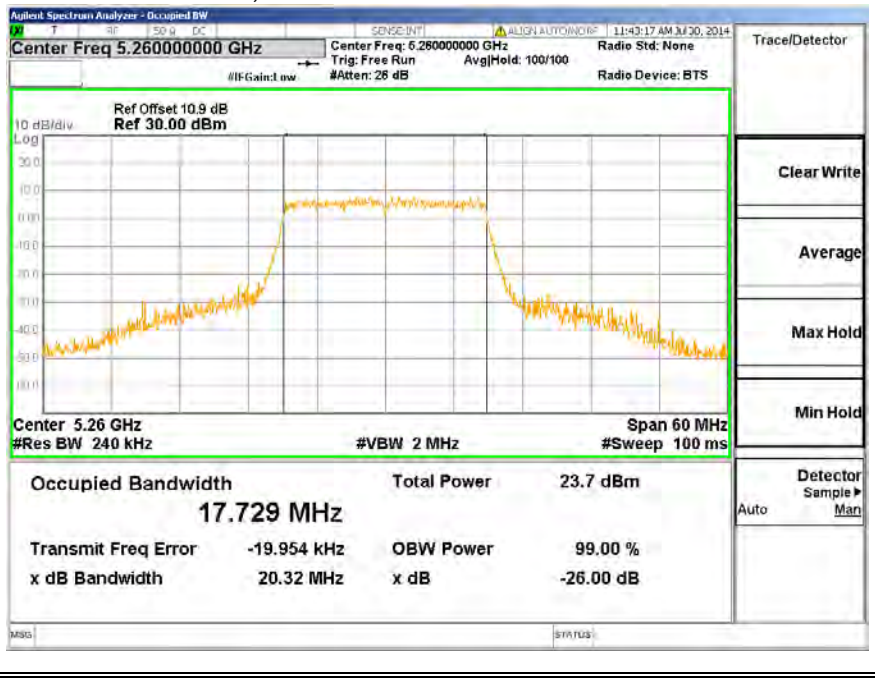


99% BANDWIDTH, Chain 0 HIGH CH

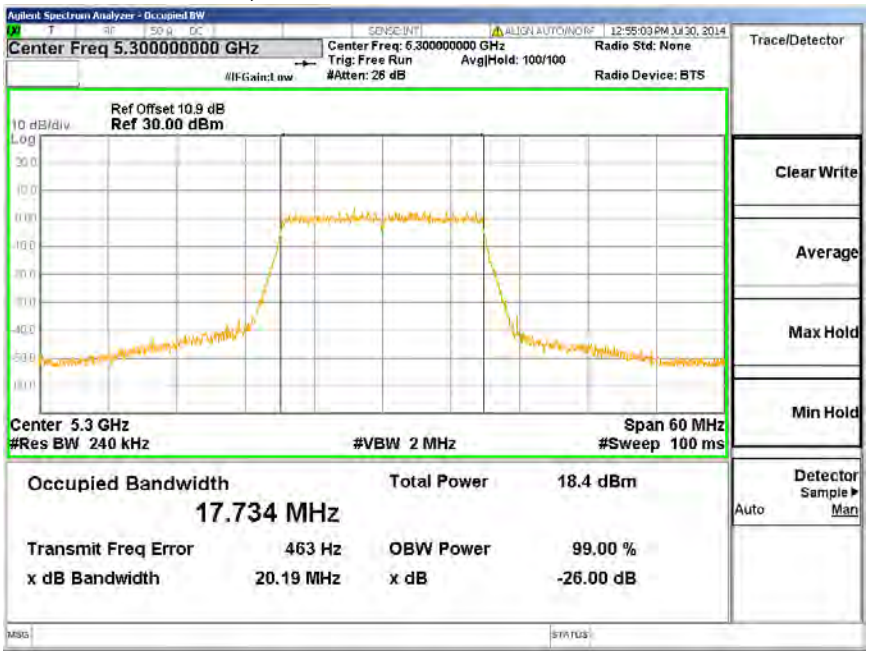


99% BANDWIDTH, Chain 1

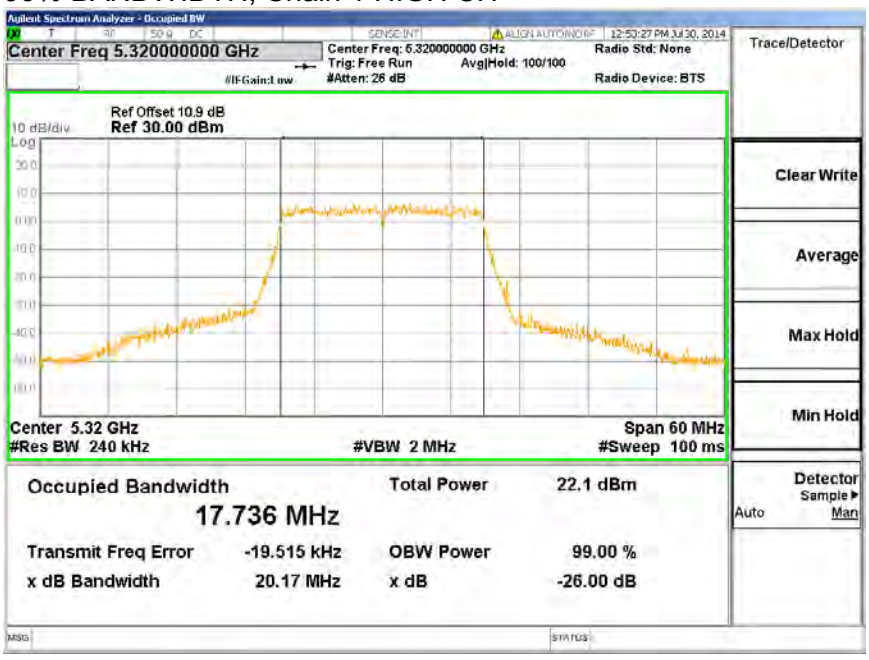
99% BANDWIDTH, Chain 1 LOW CH



99% BANDWIDTH, Chain 1 MID CH

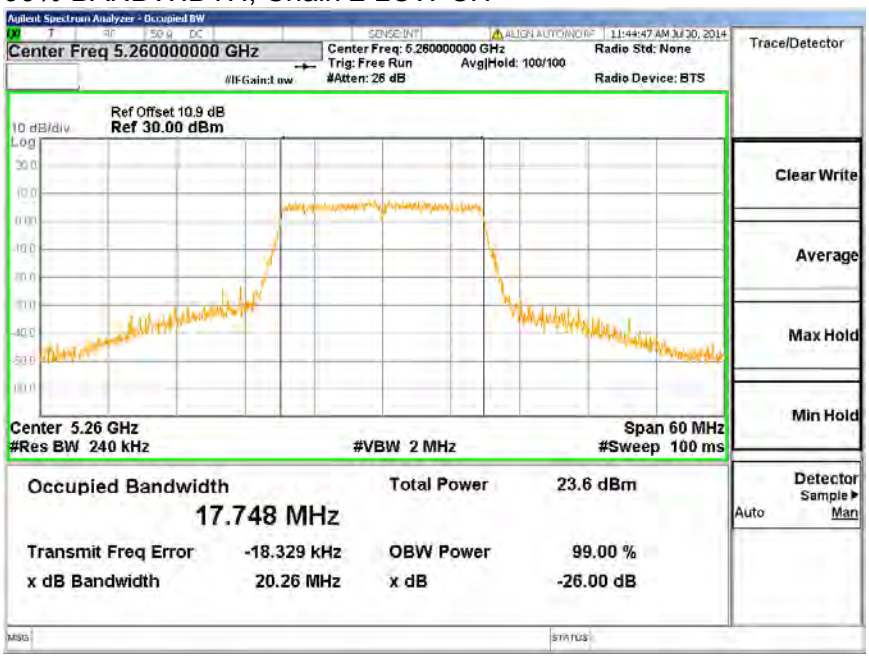


99% BANDWIDTH, Chain 1 HIGH CH

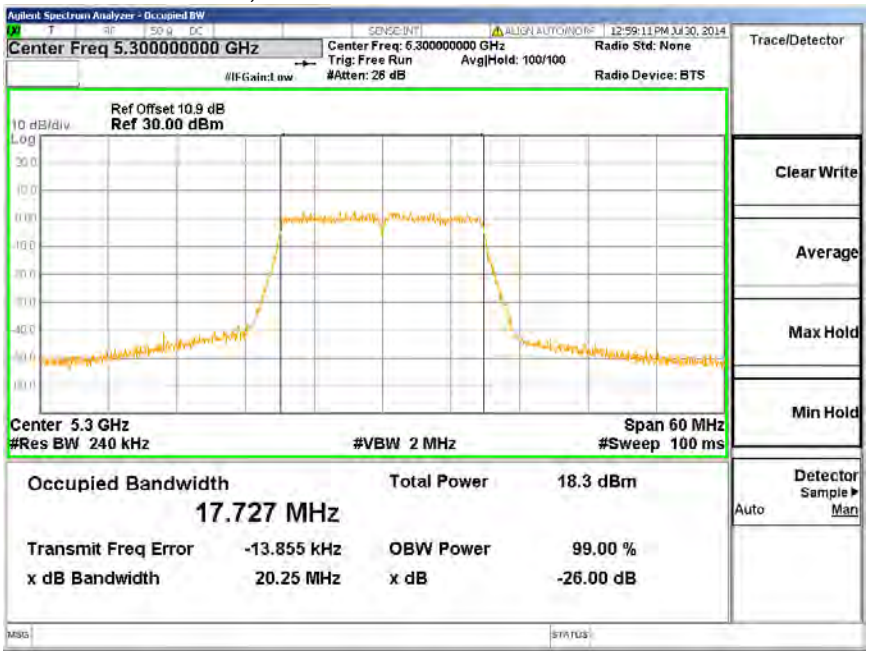


99% BANDWIDTH, Chain 2

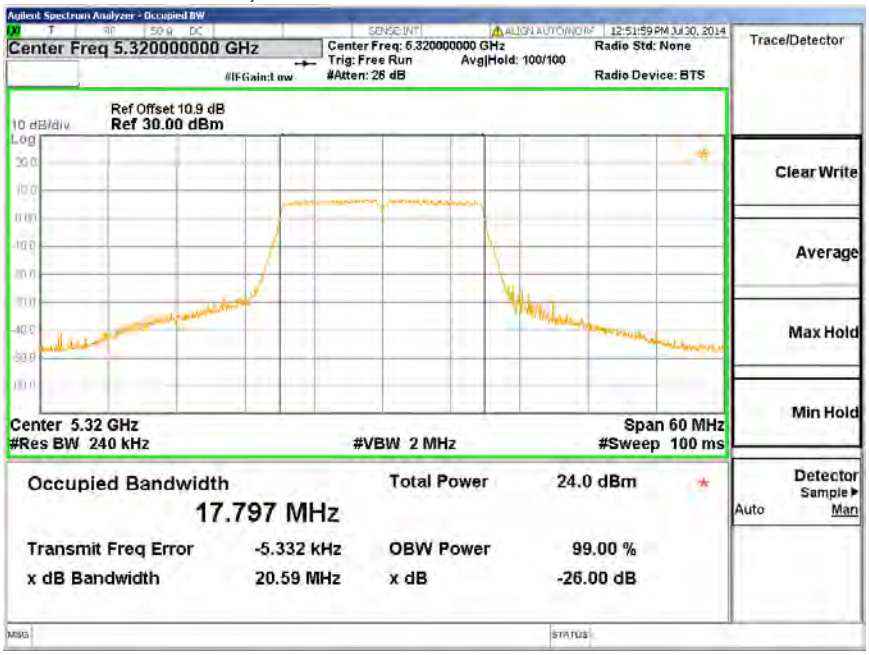
99% BANDWIDTH, Chain 2 LOW CH



99% BANDWIDTH, Chain 2 MID CH



99% BANDWIDTH, Chain 2 HIGH CH



8.4.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

RESULTS

Average Power Results

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Chain 2 Power (dBm)	Total Power (dBm)
Low	5260	17.75	18.35	18.23	22.89
Mid	5300	12.80	13.31	13.08	17.84
High	5320	16.65	17.12	17.07	21.72

8.4.4. OUTPUT POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

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

DIRECTIONAL ANTENNA GAIN

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

Antenna Gain (dBi)	10 * Log (3 chains) (dB)	Correlated Chains Directional Gain (dBi)
2.00	4.77	6.77

RESULTS

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5260	20.61	6.77	6.77	23.23	10.23
Mid	5300	20.42	6.77	6.77	23.23	10.23
High	5320	20.57	6.77	6.77	23.23	10.23

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

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	17.63	18.32	18.37	23.11	23.23	-0.12
Mid	5300	12.77	13.36	13.12	18.08	23.23	-5.15
High	5320	16.60	16.96	16.94	21.83	23.23	-1.40

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Chain 2 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5260	4.21	4.90	4.95	9.69	10.23	-0.54
Mid	5300	-1.21	-0.62	-0.86	4.10	10.23	-6.13
High	5320	2.62	2.98	2.96	7.85	10.23	-2.38

OUTPUT POWER AND PSD, Chain 0

OUTPUT POWER AND PSD, Chain 0 LOW CH

OUTPUT POWER AND PSD, Chain 0 MID CH

OUTPUT POWER AND PSD, Chain 0 HIGH CH

OUTPUT POWER AND PSD, Chain 1

OUTPUT POWER AND PSD, Chain 1 LOW CH

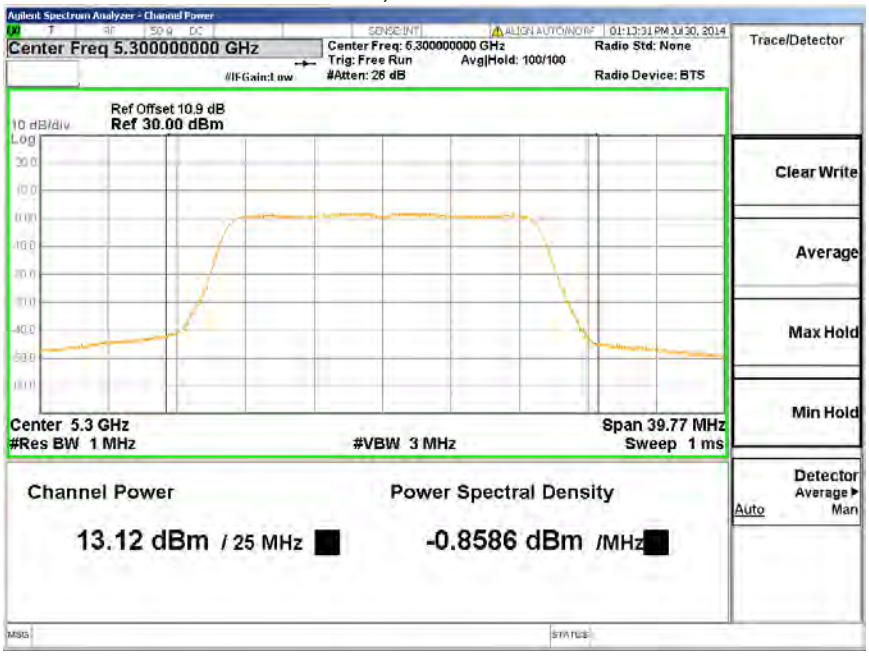
OUTPUT POWER AND PSD, Chain 1 MID CH

OUTPUT POWER AND PSD, Chain 1 HIGH CH

OUTPUT POWER AND PSD, Chain 2

OUTPUT POWER AND PSD, Chain 2 LOW CH

OUTPUT POWER AND PSD, Chain 2 MID CH



OUTPUT POWER AND PSD, Chain 2 HIGH CH

8.5. 802.11n HT40 1TX SISO MODE IN THE 5.3 GHz BAND

8.5.1. 26 dB BANDWIDTH

LIMITS

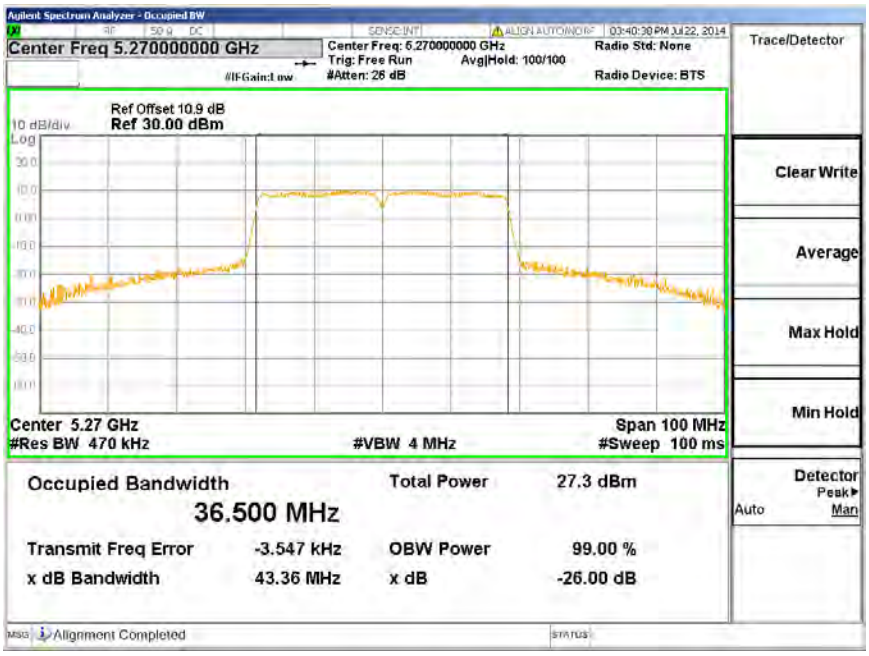
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5270	43.36
High	5310	40.24

26 dB BANDWIDTH

BANDWIDTH LOW CH



BANDWIDTH HIGH CH

8.5.2. 99% BANDWIDTH

LIMITS

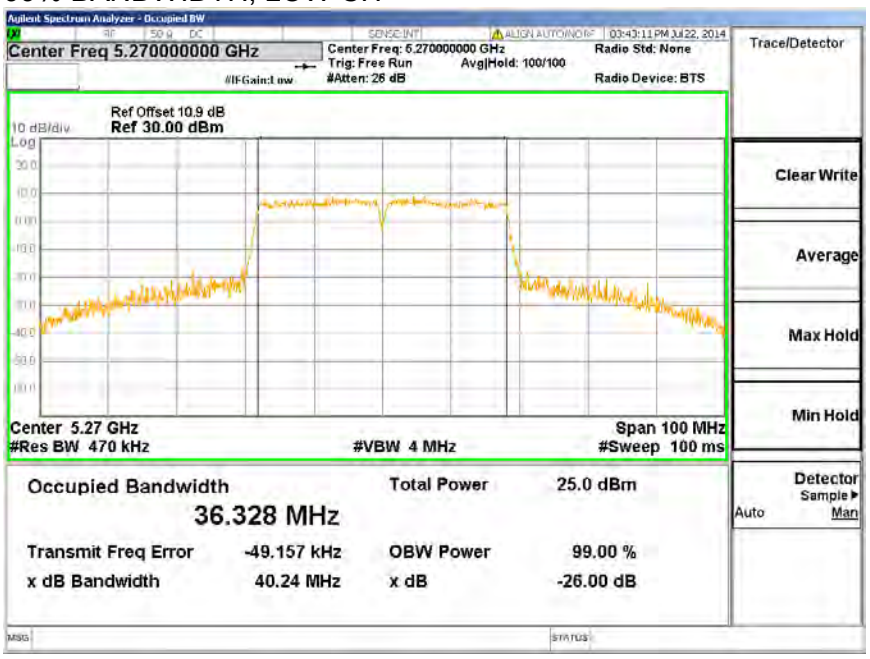
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5270	36.3280
High	5310	36.3400

99% BANDWIDTH

99% BANDWIDTH, LOW CH

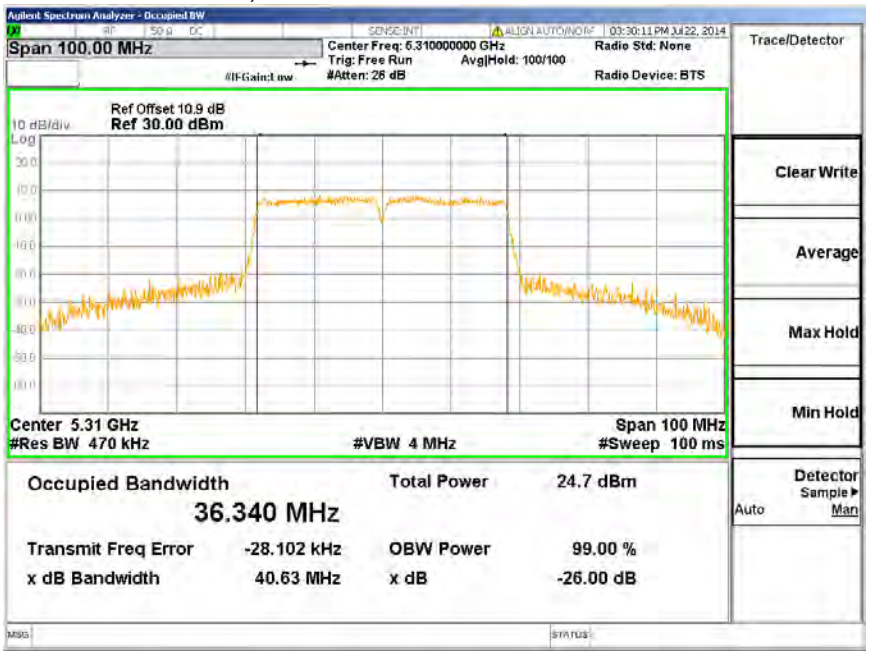


8.5.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

99% BANDWIDTH, HIGH CH



RESULTS

Channel	Frequency (MHz)	Power (dBm)
Low	5270	14.95
High	5310	10.03

8.5.4. OUTPUT POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

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

DIRECTIONAL ANTENNA GAIN

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

RESULTS

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5270	43.36	2.00	24.00	11.00
High	5310	40.24	2.00	24.00	11.00

Duty Cycle CF (dB)	0.42	Included in Calculations of Corr'd Power & PSD

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5270	14.77	15.19	24.00	-8.81
High	5310	9.53	9.95	24.00	-14.05

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5270	-1.77	-1.35	11.00	-12.35
High	5310	-7.00	-6.58	11.00	-17.58

OUTPUT POWER AND PSD, Chain 0

OUTPUT POWER AND PSD, Chain 0 LOW CH

OUTPUT POWER AND PSD, Chain 0 HIGH CH

8.6. 802.11n HT40 3TX CDD MODE IN THE 5.3 GHz BAND

8.6.1. 26 dB BANDWIDTH

LIMITS

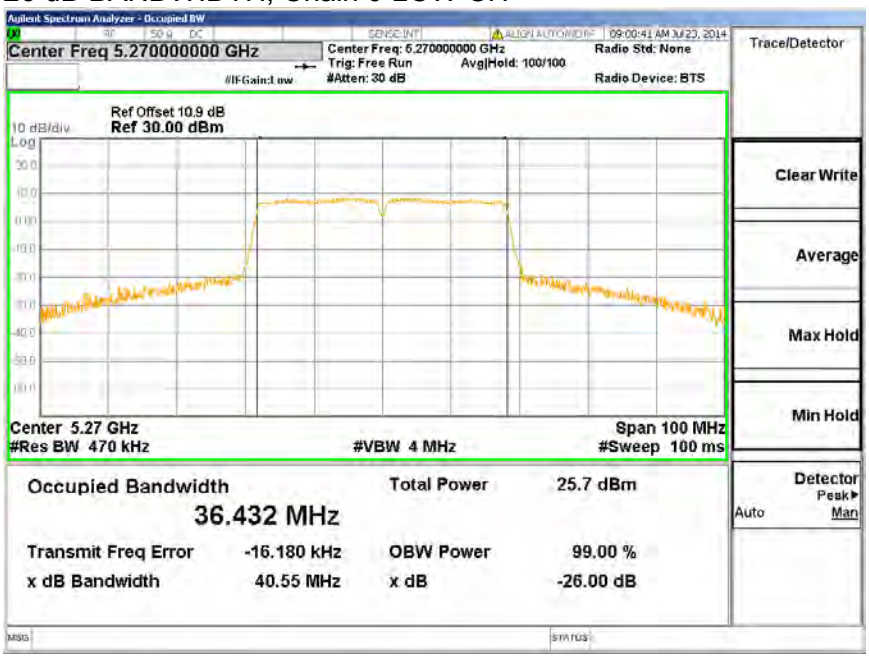
None; for reporting purposes only.

RESULTS

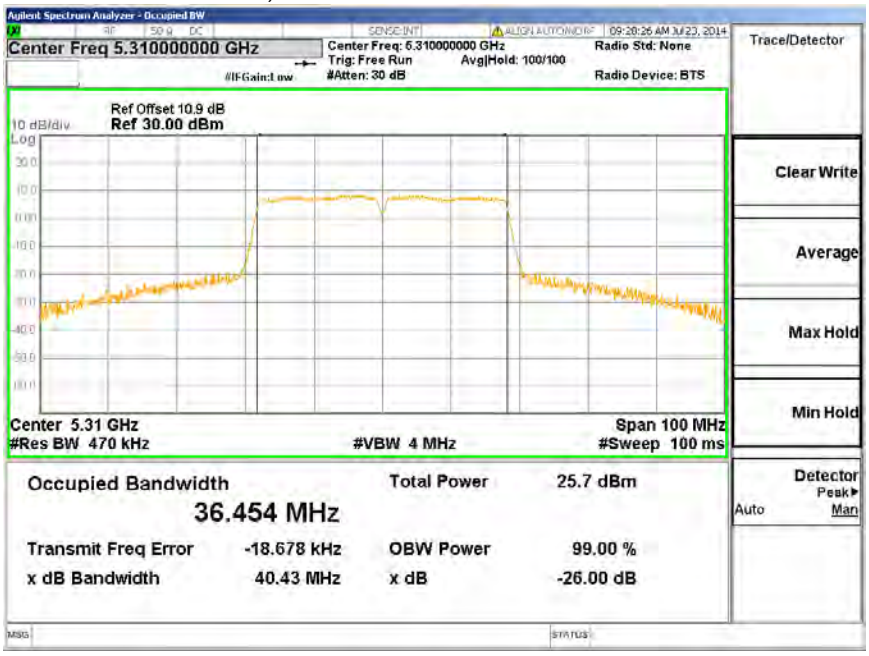
Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
Low	5270	40.55	39.51	39.58
High	5310	40.43	39.39	39.59

26 dB BANDWIDTH, Chain 0

26 dB BANDWIDTH, Chain 0 LOW CH

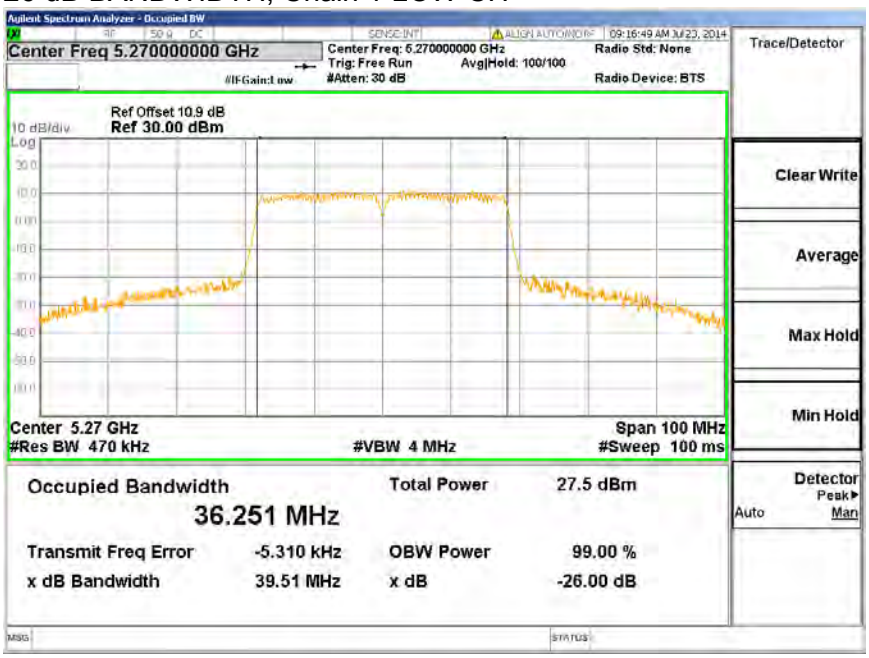


26 dB BANDWIDTH, Chain 0 HIGH CH

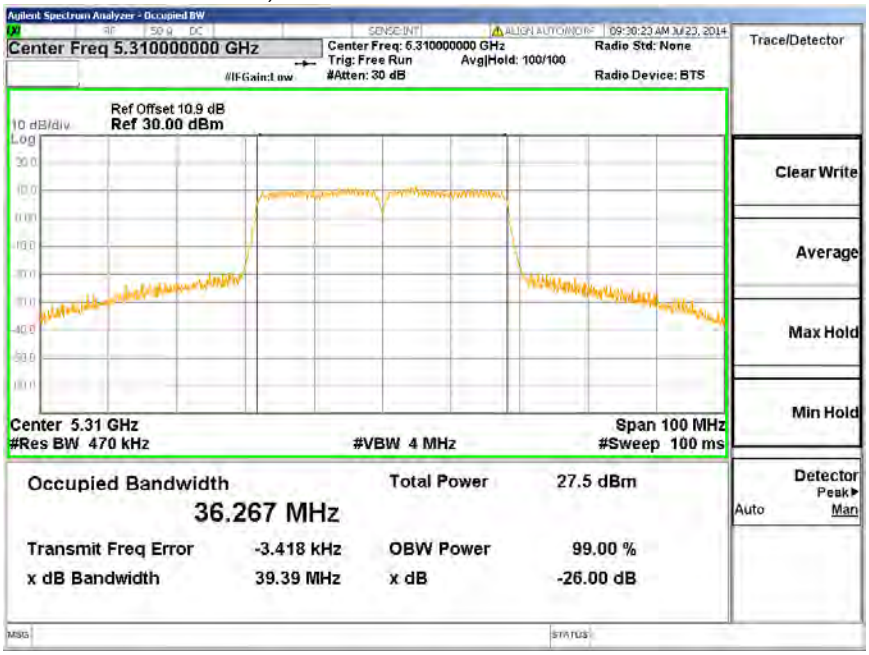


26 dB BANDWIDTH, Chain 1

26 dB BANDWIDTH, Chain 1 LOW CH

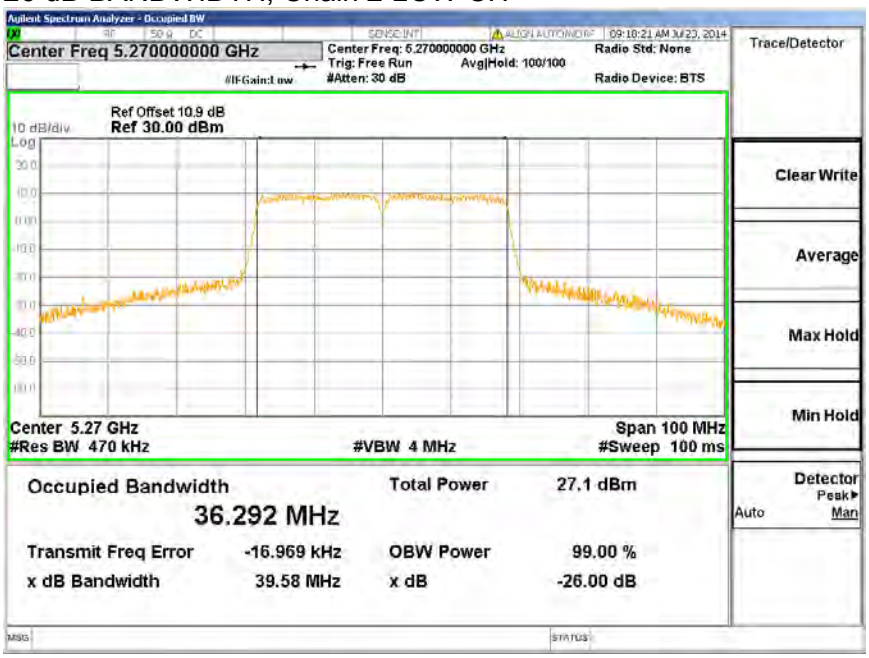


26 dB BANDWIDTH, Chain 1 HIGH CH

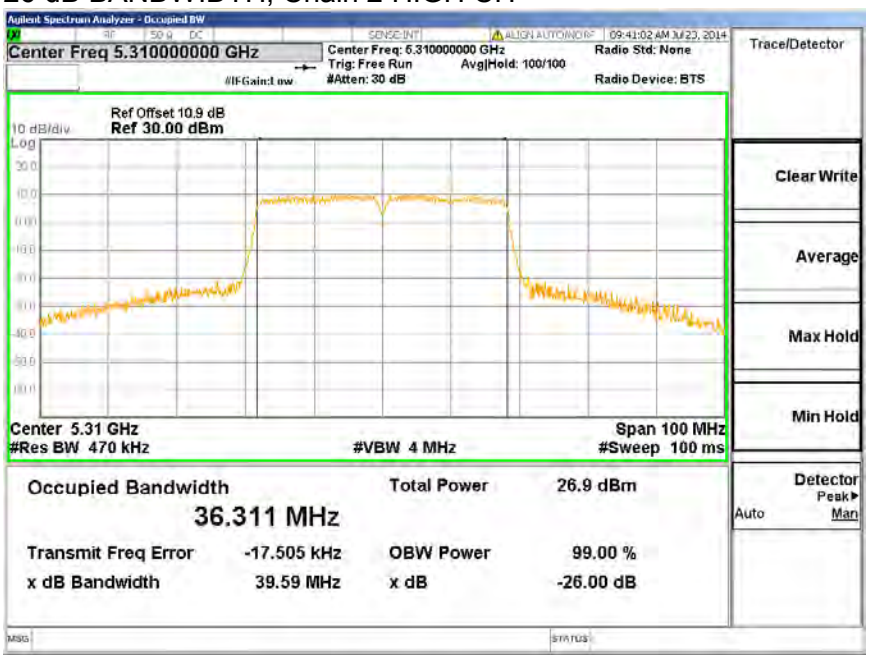


26 dB BANDWIDTH, Chain 2

26 dB BANDWIDTH, Chain 2 LOW CH



26 dB BANDWIDTH, Chain 2 HIGH CH



8.6.2. 99% BANDWIDTH

LIMITS

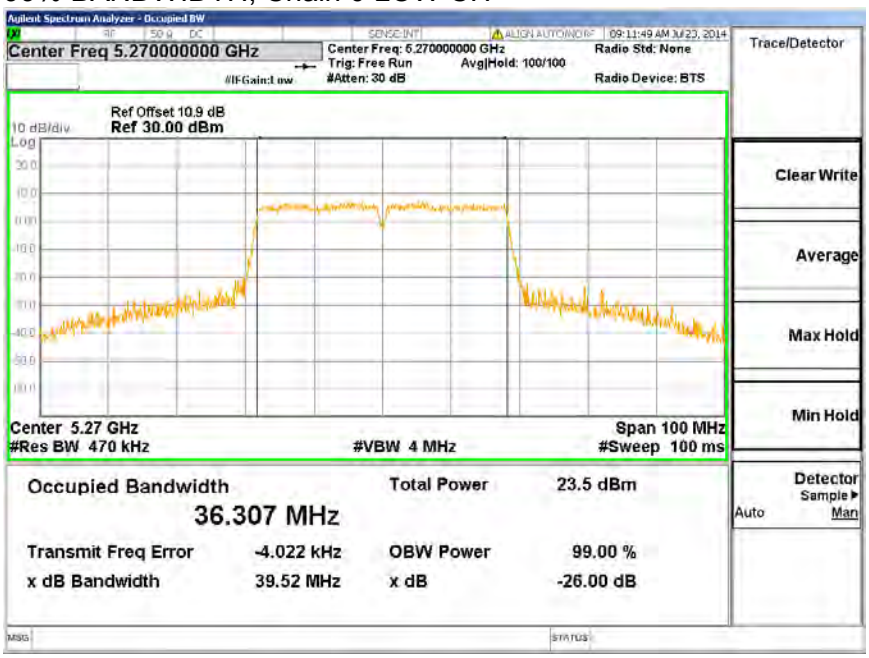
None; for reporting purposes only.

RESULTS

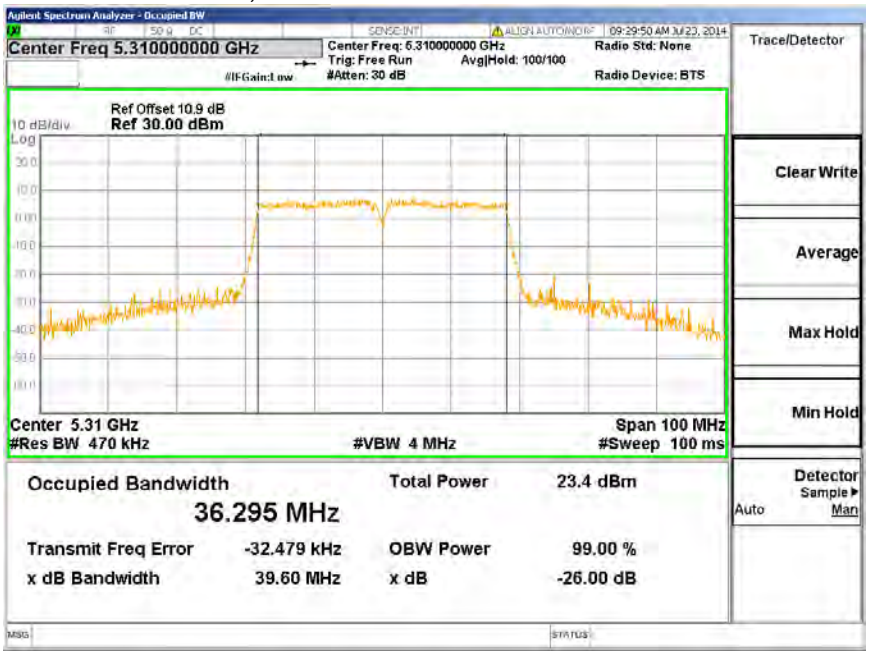
Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
Low	5270	36.3070	36.1910	36.3200
High	5310	36.2950	36.2710	36.3680

99% BANDWIDTH, Chain 0

99% BANDWIDTH, Chain 0 LOW CH

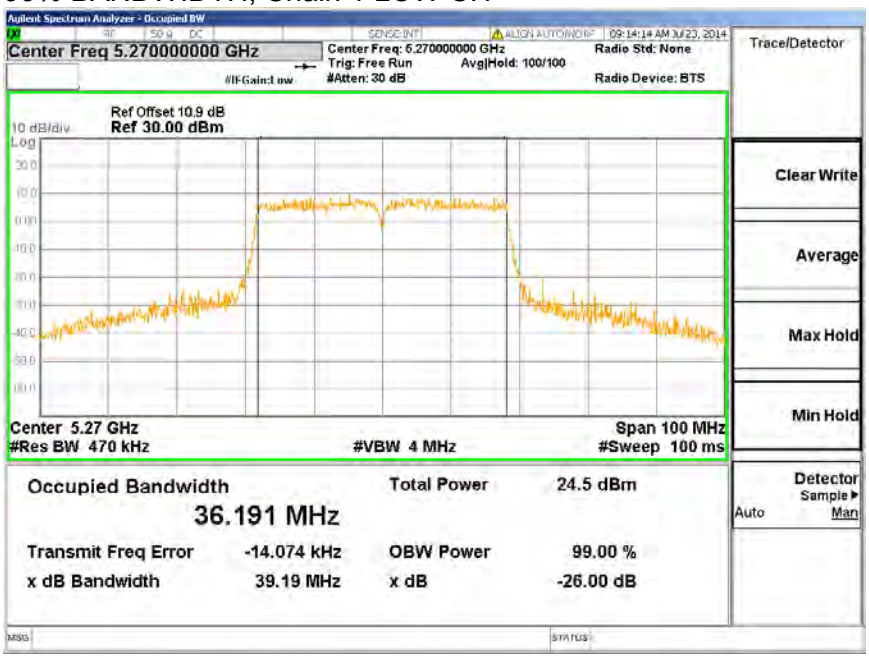


99% BANDWIDTH, Chain 0 HIGH CH

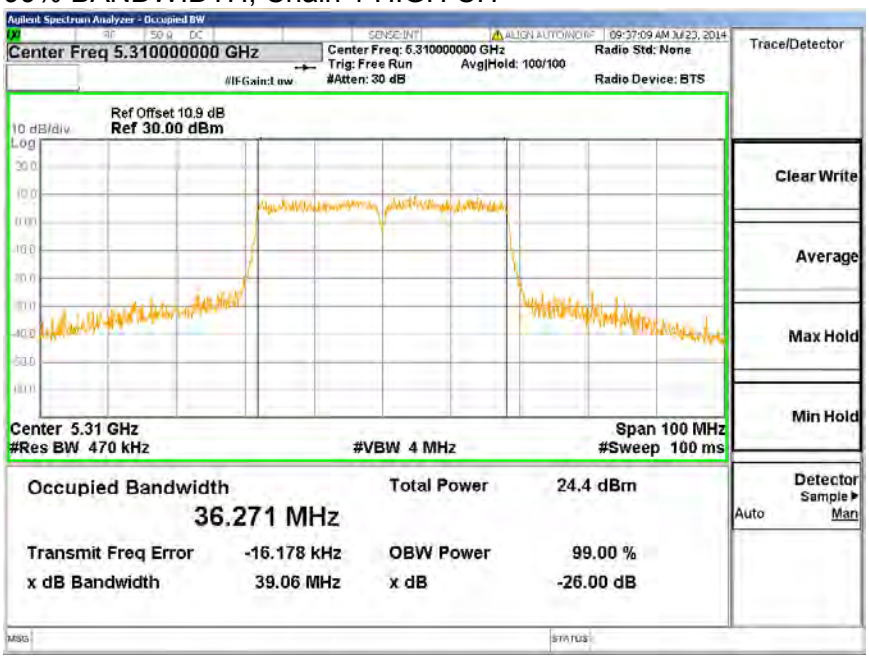


99% BANDWIDTH, Chain 1

99% BANDWIDTH, Chain 1 LOW CH



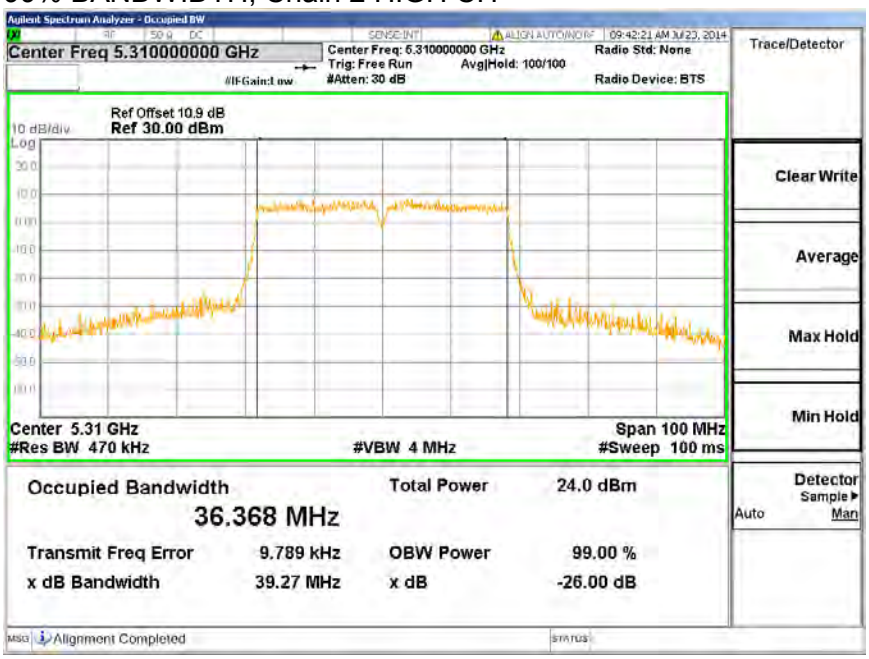
99% BANDWIDTH, Chain 1 HIGH CH



99% BANDWIDTH, Chain 2

99% BANDWIDTH, Chain 2 LOW CH

99% BANDWIDTH, Chain 2 HIGH CH



8.6.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

RESULTS

Average Power Results

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Chain 2 Power (dBm)	Total Power (dBm)
Low	5270	15.36	15.58	15.60	20.29
High	5310	9.03	9.06	8.94	13.78

8.6.4. OUTPUT POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

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

DIRECTIONAL ANTENNA GAIN

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

Antenna Gain (dBi)	10 * Log (3 chains) (dB)	Correlated Chains Directional Gain (dBi)
2.00	4.77	6.77

RESULTS

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5270	39.51	6.77	6.77	23.23	10.23
High	5310	39.39	6.77	6.77	23.23	10.23

Duty Cycle CF (dB)	0.45	Included in Calculations of Corr'd Power & PSD

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5270	15.28	15.86	15.70	20.84	23.23	-2.39
High	5310	8.87	9.05	8.78	14.12	23.23	-9.11

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Chain 2 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5270	-1.25	-0.68	-0.83	4.31	10.23	-5.92
High	5310	-7.66	-7.48	-7.75	-2.41	10.23	-12.64

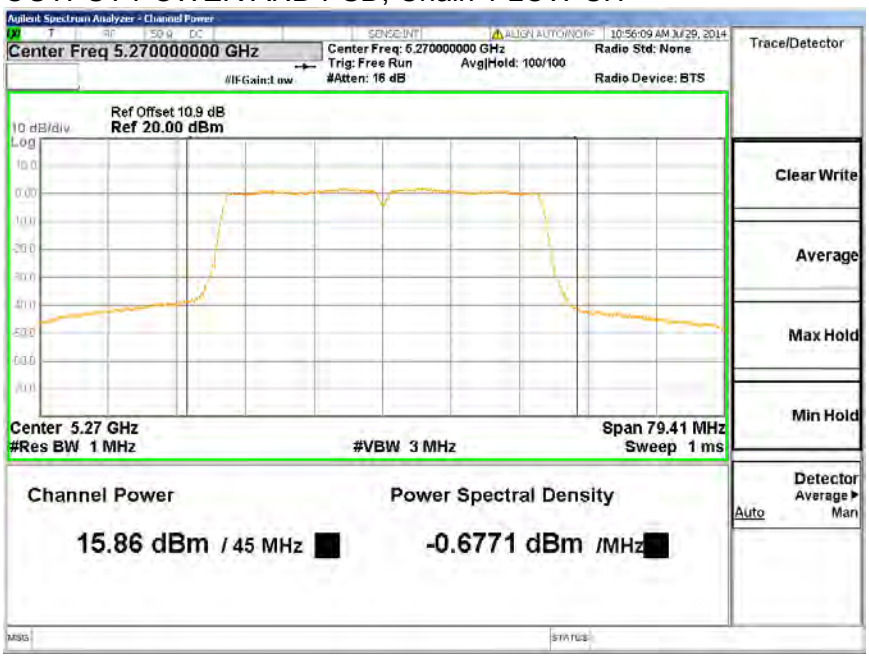
OUTPUT POWER AND PSD, Chain 0

OUTPUT POWER AND PSD, Chain 0 LOW CH

OUTPUT POWER AND PSD, Chain 0 HIGH CH

OUTPUT POWER AND PSD, Chain 1

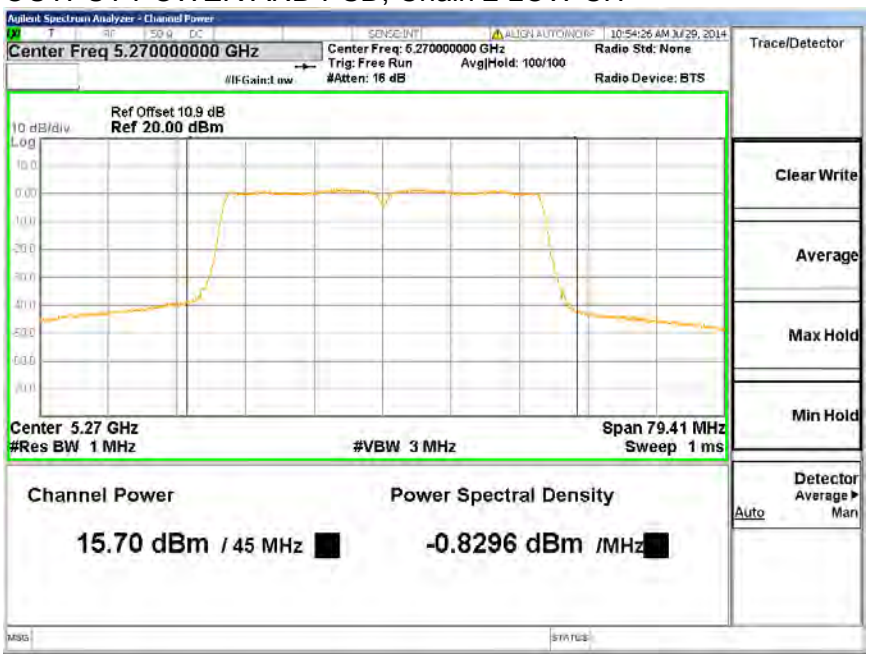
OUTPUT POWER AND PSD, Chain 1 LOW CH



OUTPUT POWER AND PSD, Chain 1 HIGH CH

OUTPUT POWER AND PSD, Chain 2

OUTPUT POWER AND PSD, Chain 2 LOW CH



OUTPUT POWER AND PSD, Chain 2 HIGH CH

8.7. 802.11ac HT80 1TX SISO MODE IN THE 5.3 GHz BAND

8.7.1. 26 dB BANDWIDTH

LIMITS

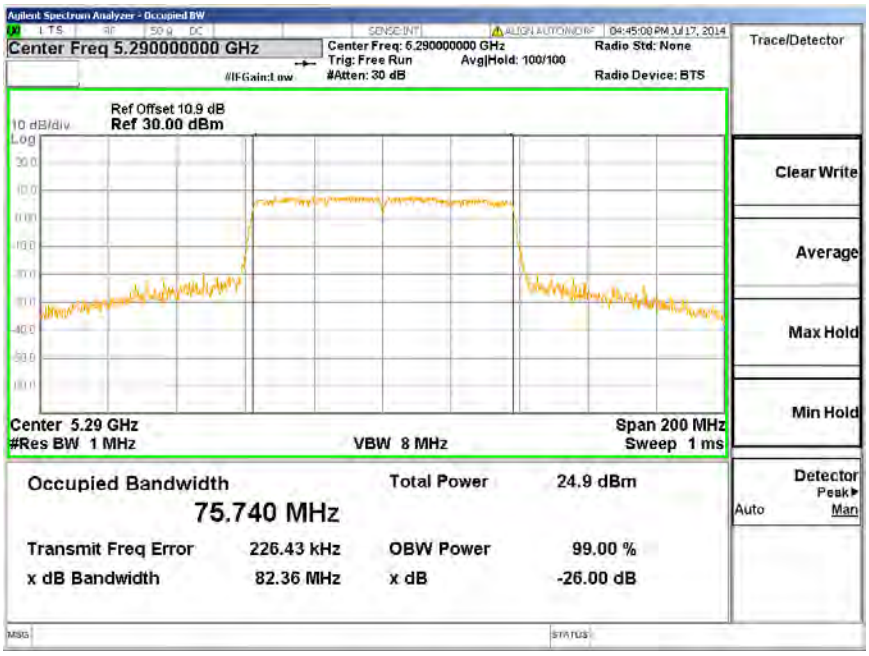
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Mid	5290	82.36

26 dB BANDWIDTH

BANDWIDTH MID CH



8.7.2. 99% BANDWIDTH

LIMITS

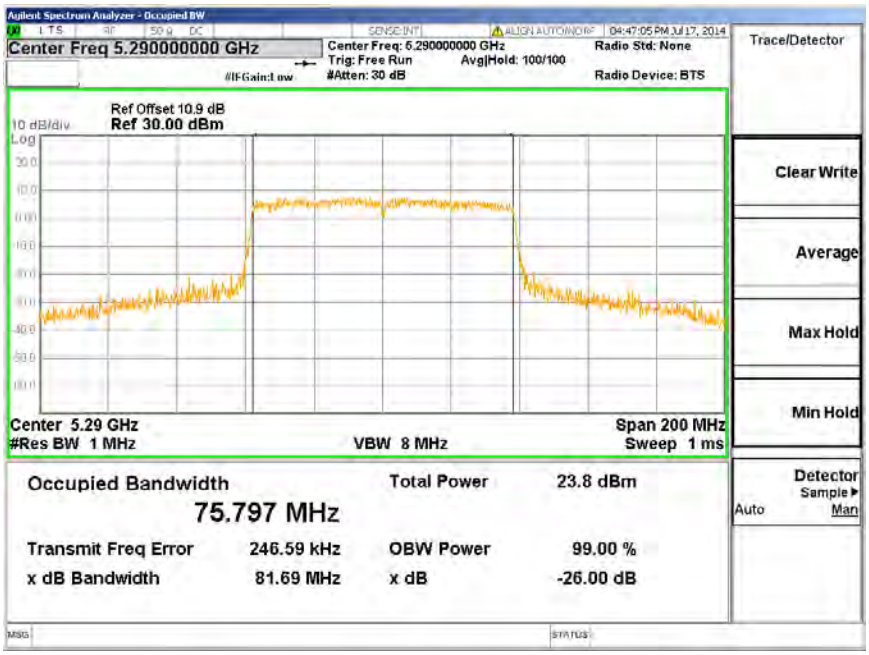
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Mid	5290	75.7970

99% BANDWIDTH

BANDWIDTH MID CH



8.7.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	Power (dBm)
Mid	5290	10.03

8.7.4. OUTPUT POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

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

DIRECTIONAL ANTENNA GAIN

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

RESULTS

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Mid	5290	82.98	2.00	24.00	11.00

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

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5290	10.10	10.36	24.00	-13.64

PPSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5290	-9.19	-8.93	11.00	-19.93

OUTPUT POWER AND PSD, Chain 0

OUTPUT POWER AND PSD, Chain 0 MID CH

8.8. 802.11ac HT80 3TX CDD MODE IN THE 5.3 GHz BAND

8.8.1. 26 dB BANDWIDTH

LIMITS

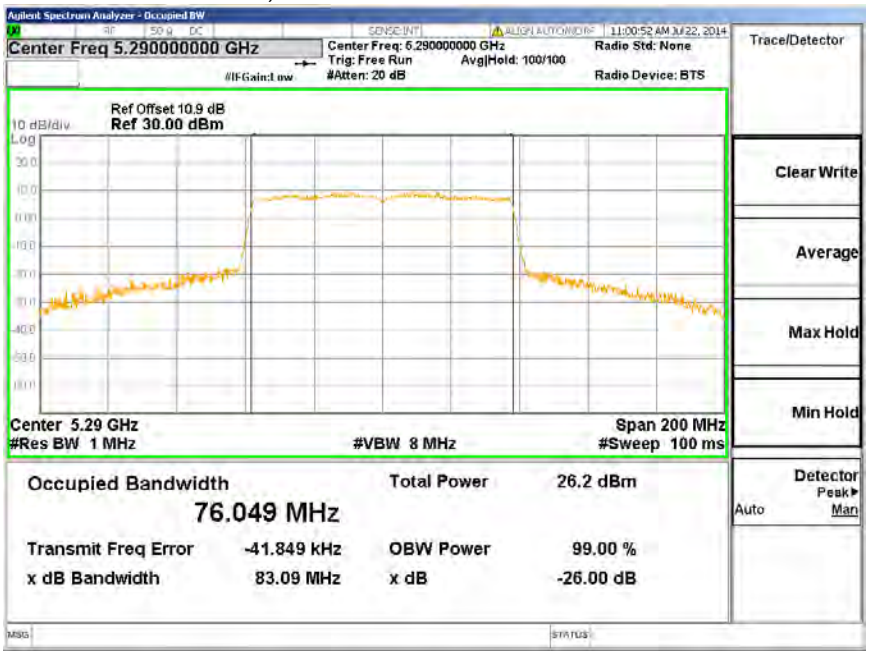
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
Mid	5290	83.09	82.65	82.26

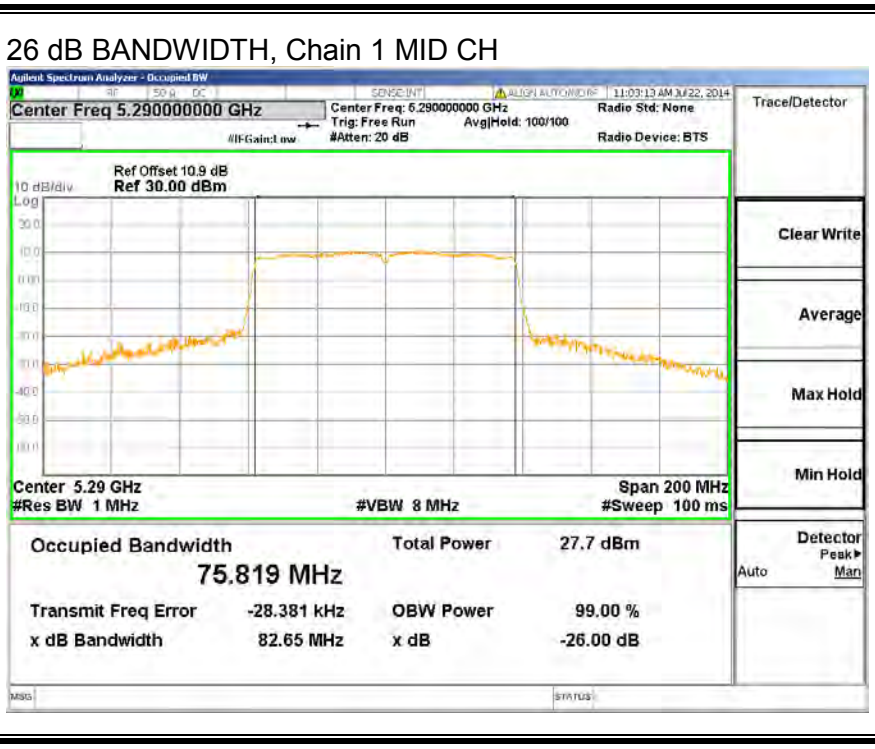
26 dB BANDWIDTH, Chain 0

26 dB BANDWIDTH, Chain 0 MID CH



26 dB BANDWIDTH, Chain 1

26 dB BANDWIDTH, Chain 1 MID CH



26 dB BANDWIDTH, Chain 2

26 dB BANDWIDTH, Chain 2 MID CH

8.8.2. 99% BANDWIDTH

LIMITS

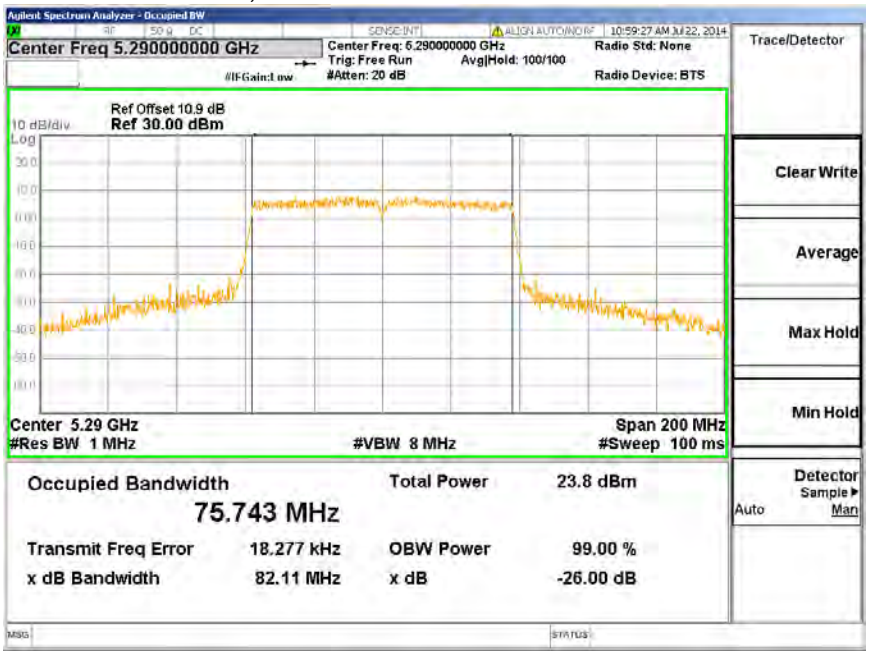
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
Mid	5290	75.7430	75.7290	75.6960

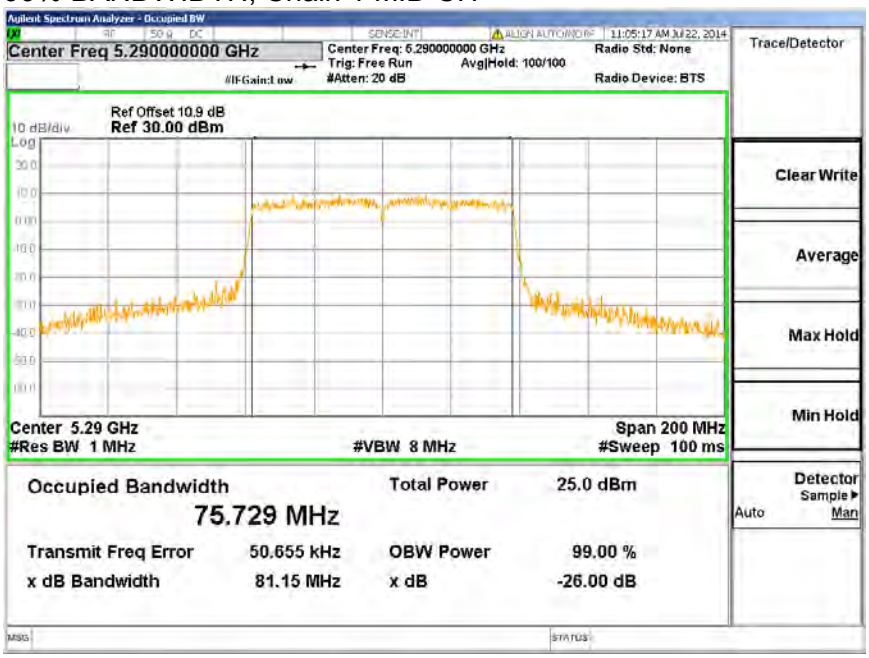
99% BANDWIDTH, Chain 0

99% BANDWIDTH, Chain 0 MID CH



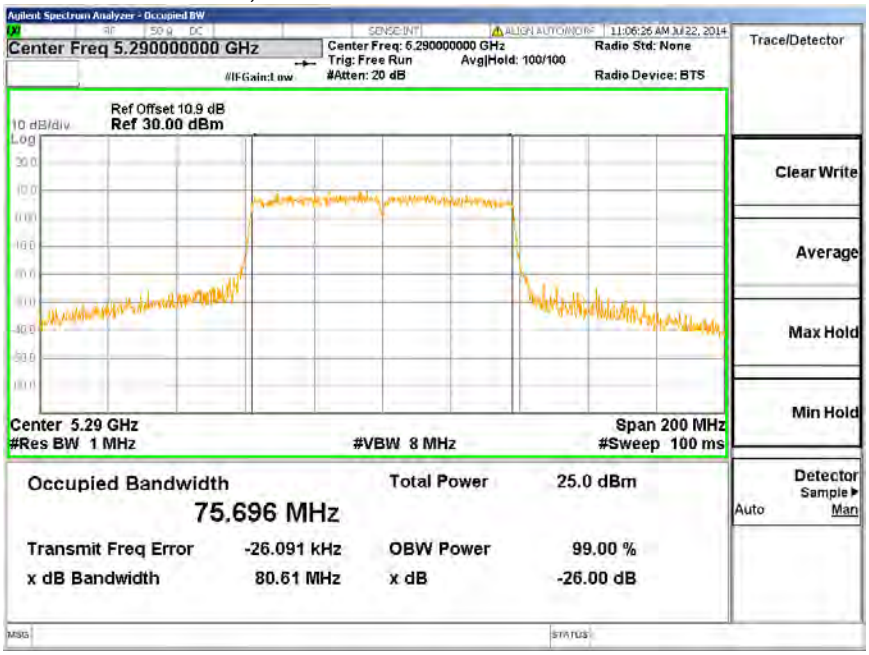
99% BANDWIDTH, Chain 1

99% BANDWIDTH, Chain 1 MID CH



99% BANDWIDTH, Chain 2

99% BANDWIDTH, Chain 2 MID CH



8.8.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

RESULTS

Average Power Results

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Chain 2 Power (dBm)	Total Power (dBm)
Mid	5290	7.48	8.13	8.23	12.73

8.8.4. OUTPUT POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

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

DIRECTIONAL ANTENNA GAIN

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

Antenna Gain (dBi)	10 * Log (3 chains) (dB)	Correlated Chains Directional Gain (dBi)
2.00	4.77	6.77

RESULTS

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Mid	5290	82.26	6.77	6.77	23.23	10.23

Duty Cycle CF (dB)	0.27	Included in Calculations of Corr'd Power & PSD

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5290	7.35	8.06	8.25	12.94	23.23	-10.29

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Chain 2 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5290	-11.95	-11.24	-11.04	-6.35	10.23	-16.58

OUTPUT POWER AND PSD, Chain 0

OUTPUT POWER AND PSD, Chain 0 MID CH

OUTPUT POWER AND PSD, Chain 1

OUTPUT POWER AND PSD, Chain 1 MID CH

OUTPUT POWER AND PSD, Chain 2

OUTPUT POWER AND PSD, Chain 2 MID CH

8.9. 802.11a 1TX SISO MODE IN THE 5.6 GHz BAND

8.9.1. 26 dB BANDWIDTH

LIMITS

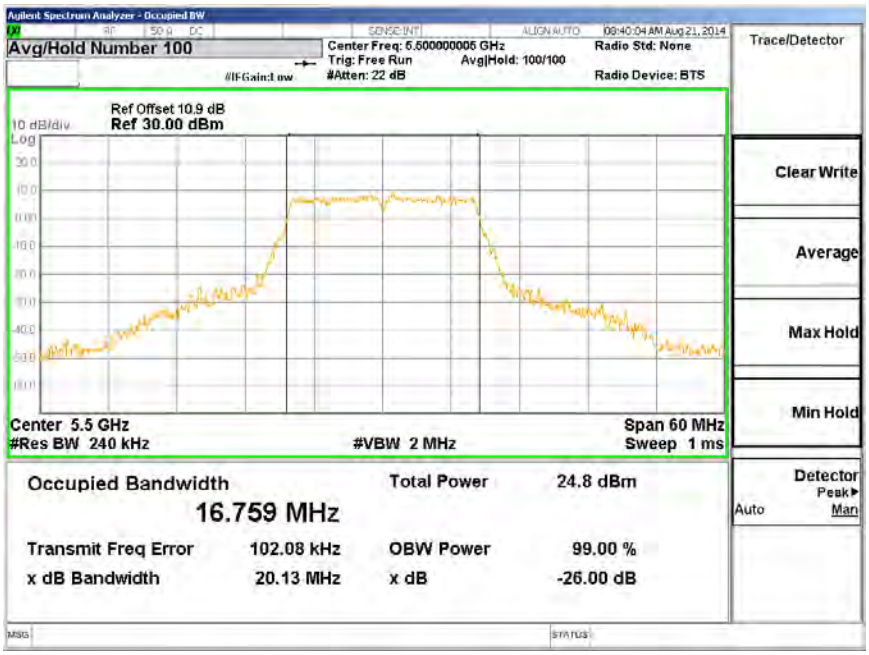
None; for reporting purposes only.

RESULTS

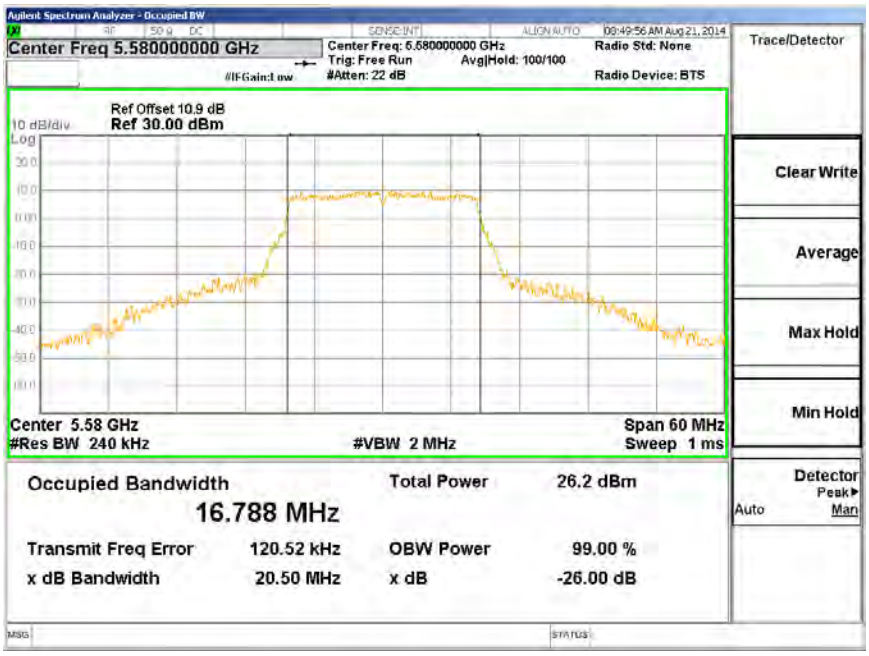
Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)
Low	5500	20.13
Mid	5580	20.50
High	5700	20.26
144	5720	20.46

26 dB BANDWIDTH, Chain 0

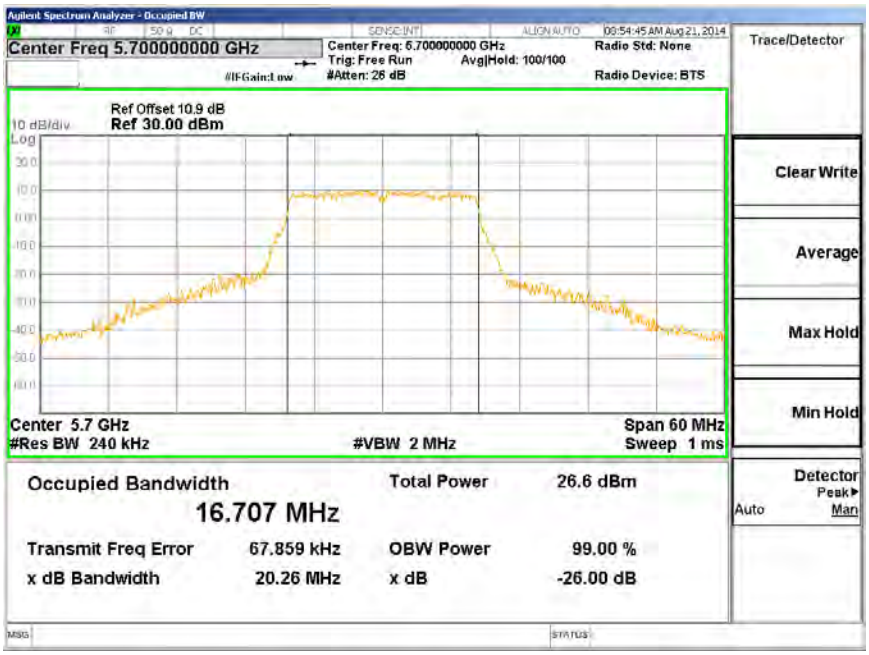
BANDWIDTH Chain 0 LOW CH



BANDWIDTH Chain 0 MID CH



BANDWIDTH Chain 0 HIGH CH



BANDWIDTH Chain 0 STRADDLE CH 144

8.9.2. 99% BANDWIDTH

LIMITS

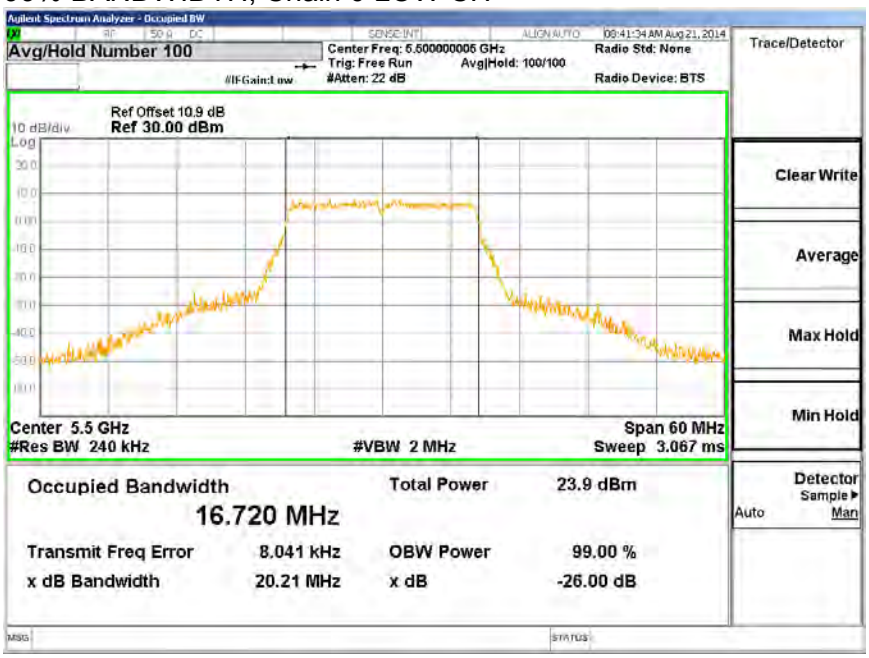
None; for reporting purposes only.

RESULTS

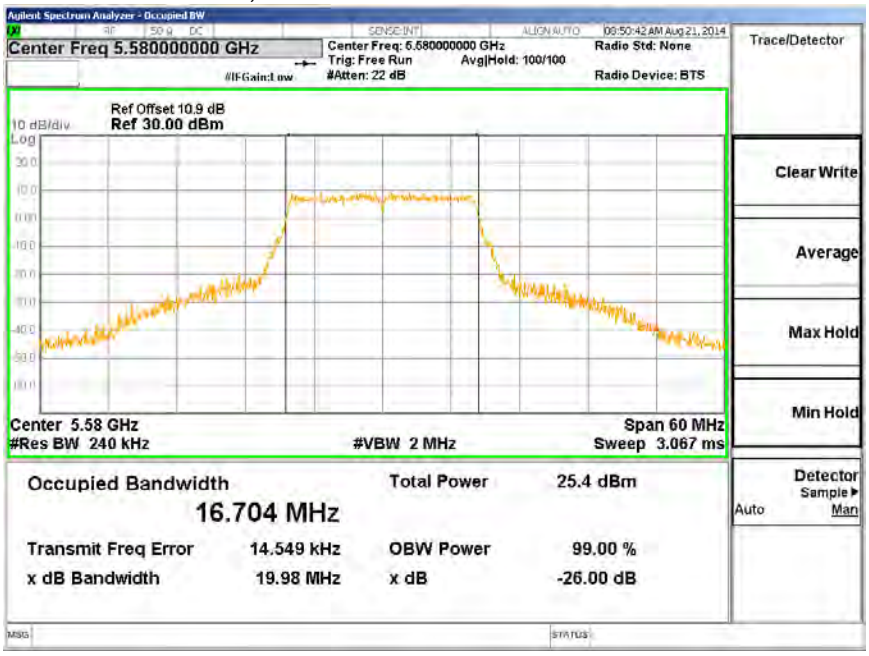
Channel	Frequency (MHz)	99% BW Chain 0 (MHz)
Low	5500	16.7200
Mid	5580	16.7040
High	5700	16.7580
144	5720	16.6880

99% BANDWIDTH, Chain 0

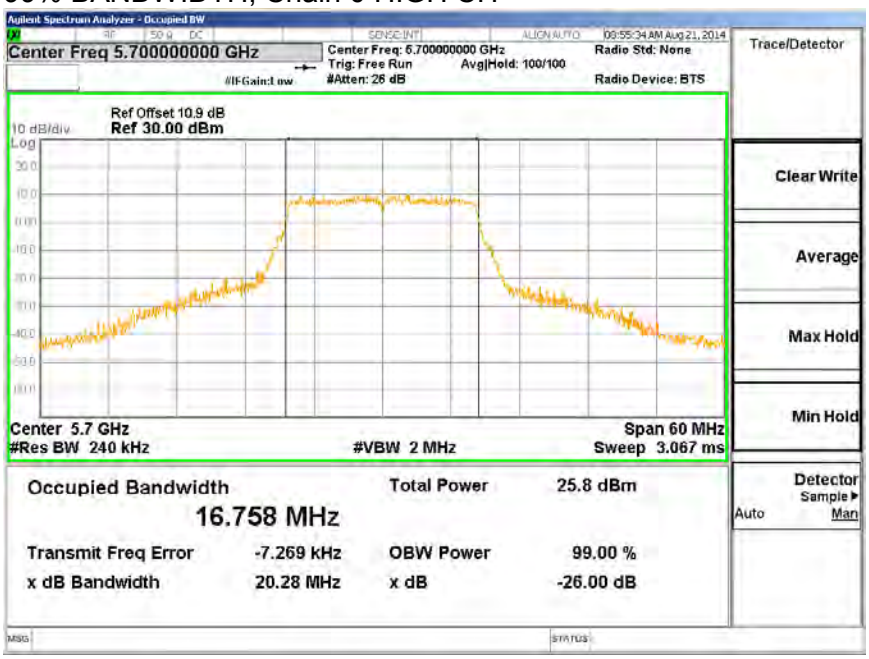
99% BANDWIDTH, Chain 0 LOW CH



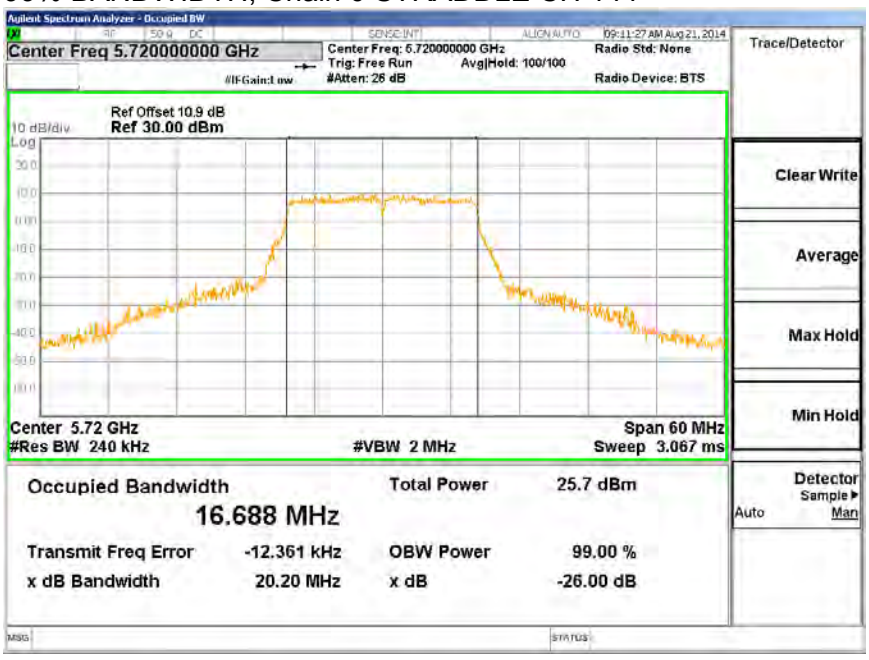
99% BANDWIDTH, Chain 0 MID CH



99% BANDWIDTH, Chain 0 HIGH CH



99% BANDWIDTH, Chain 0 STRADDLE CH 144



8.9.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

RESULTS

Average Power Results

Channel	Frequency (MHz)	Chain 0 Power (dBm)
Low	5500	18.43
Mid	5580	19.53
High	5700	20.08
144	5720	20.13

8.9.4. OUTPUT POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

RESULTS

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Direction Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5500	20.13	2.00	2.00	24.00	11.00
Mid	5580	20.50	2.00	2.00	24.00	11.00
High	5700	20.26	2.00	2.00	24.00	11.00

Duty Cycle CF (dB)	0.23	Included in Calculations of Corr'd Power & PSD

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5500	18.34	18.57	24.00	-5.43
Mid	5580	19.90	20.13	24.00	-3.87
High	5700	20.26	20.49	24.00	-3.51

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5500	4.36	4.59	11.00	-6.41
Mid	5580	5.92	6.15	11.00	-4.85
High	5700	6.28	6.51	11.00	-4.49

OUTPUT POWER AND PSD, Chain 0

OUTPUT POWER AND PSD, Chain 0 LOW CH

OUTPUT POWER AND PSD, Chain 0 MID CH

OUTPUT POWER AND PSD, Chain 0 HIGH CH

STRADDLE CHANNEL 144 RESULTS

UNII-2C BAND

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm)
144	5720	15.30	2.00	22.85	11.00

Duty Cycle CF (dB)	0.23	Included in Calculations of Corr'd Power & PSD

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
144	5720	20.21	20.44	22.85	-2.41

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
144	5720	6.23	6.46	11.00	-4.54

*Note total output power across 2 bands was found to be compliant incorporating the single band 26dB BW within the limit, therefore a measured output power within the single band 26dBBW would also comply.

OUTPUT POWER AND PSD, Chain 0 CH 144 UNII

UNII-3 BAND

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm)
144	5720	5.16	2.00	24.00	17.00

Duty Cycle CF (dB)	0.23	Included in Calculations of Corr'd Power & PSD

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
144	5720	20.21	20.44	24.00	-3.56

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
144	5720	6.23	6.46	17.00	-10.54

*Note total output power across 2 bands was found to be compliant incorporating the single band 26dB BW within the limit, therefore a measured output power within the single band 26dBBW would also comply.

OUTPUT POWER, Chain 0 CH 144 UNII-3

8.9.5. PEAK EXCURSION

LIMITS

FCC §15.407 (a) (6)

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

RESULTS

Channel	Frequency (MHz)	PK Level (dBm)	PSD (dBm)	DCCF (dB)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Mid	5580	17.00	5.92	0.23	10.85	13	-2.16

PEAK EXCURSION

PEAK EXCURSION MID CH

8.10. 802.11a 3TX CDD MODE IN THE 5.6 GHz BAND

8.10.1. 26 dB BANDWIDTH

LIMITS

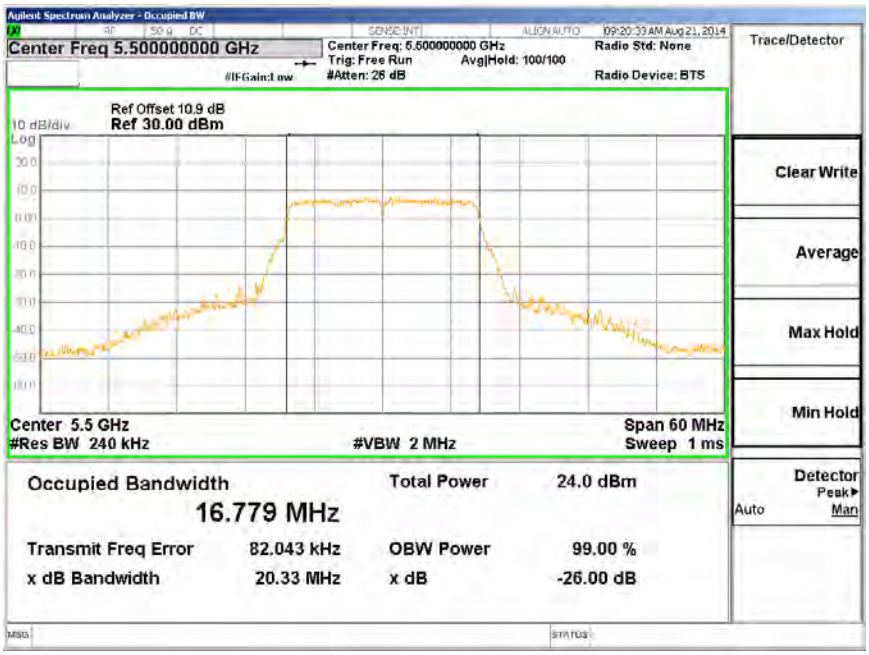
None; for reporting purposes only.

RESULTS

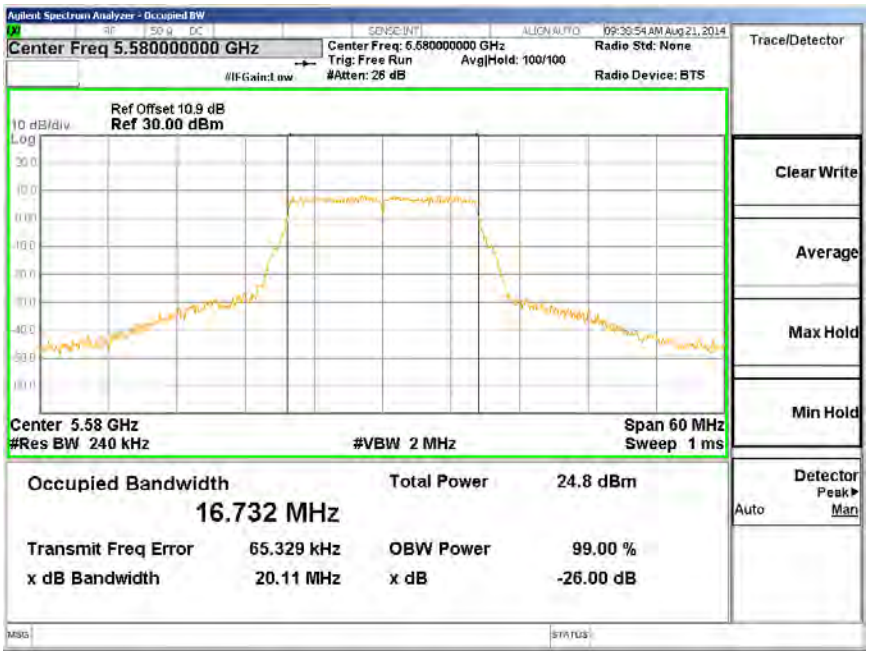
Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
Low	5500	20.33	20.37	20.11
Mid	5580	20.11	20.27	20.06
High	5700	20.12	20.09	20.32
144	5720	20.40	20.30	20.18

26 dB BANDWIDTH, Chain 0

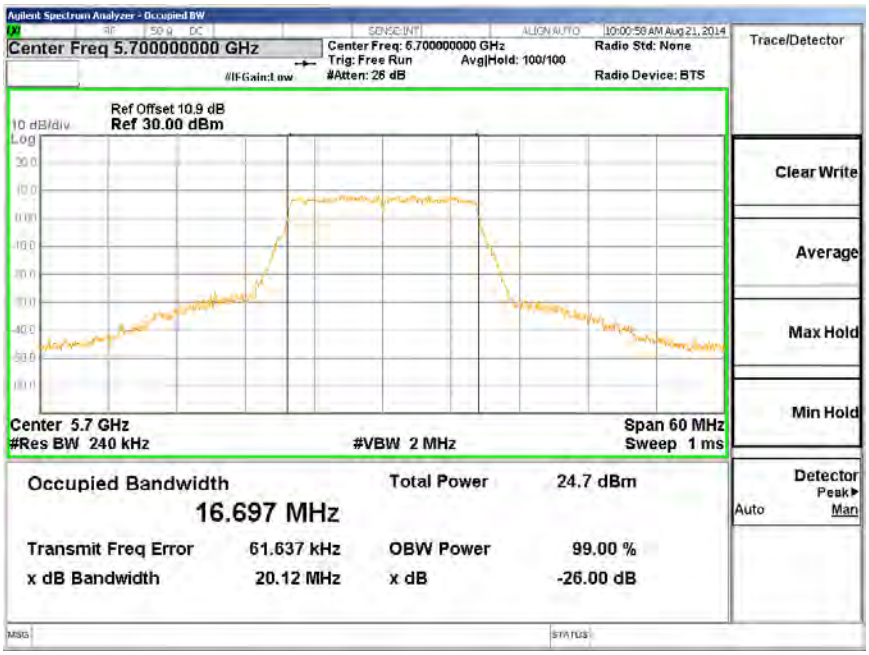
BANDWIDTH Chain 0 LOW CH



BANDWIDTH Chain 0 MID CH



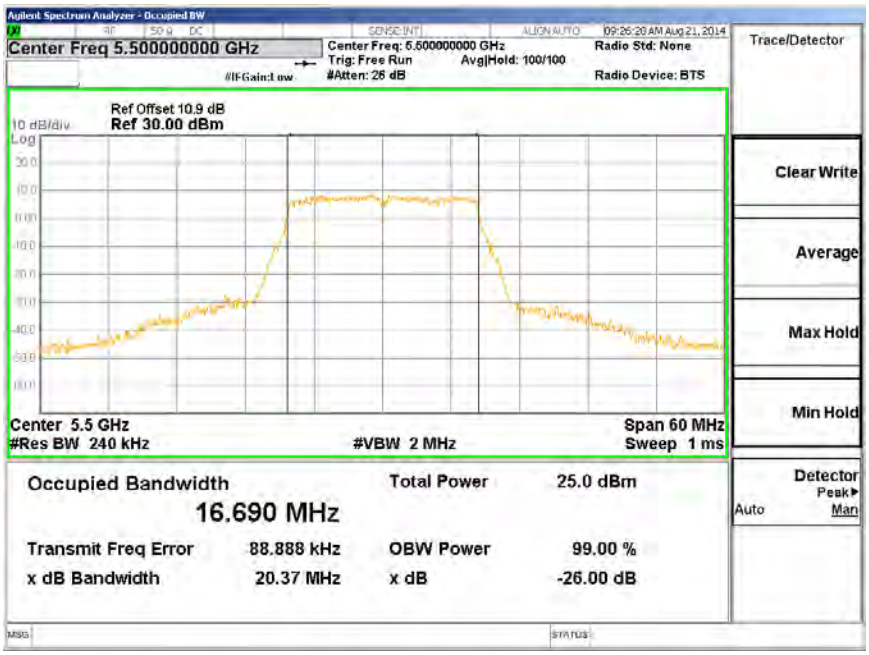
BANDWIDTH Chain 0 HIGH CH



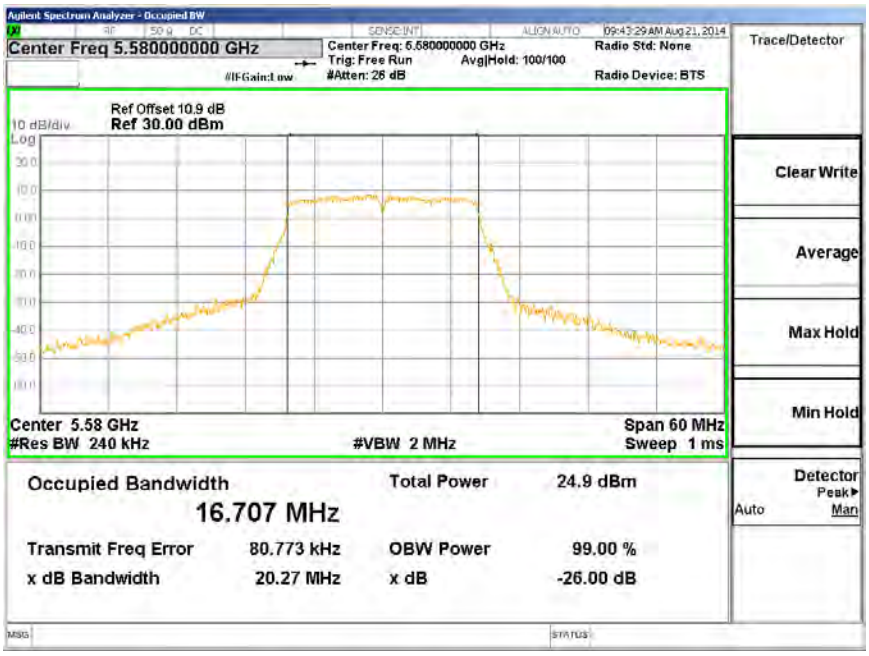
BANDWIDTH Chain 0 STRADDLE CH 144

26 dB BANDWIDTH, Chain 1

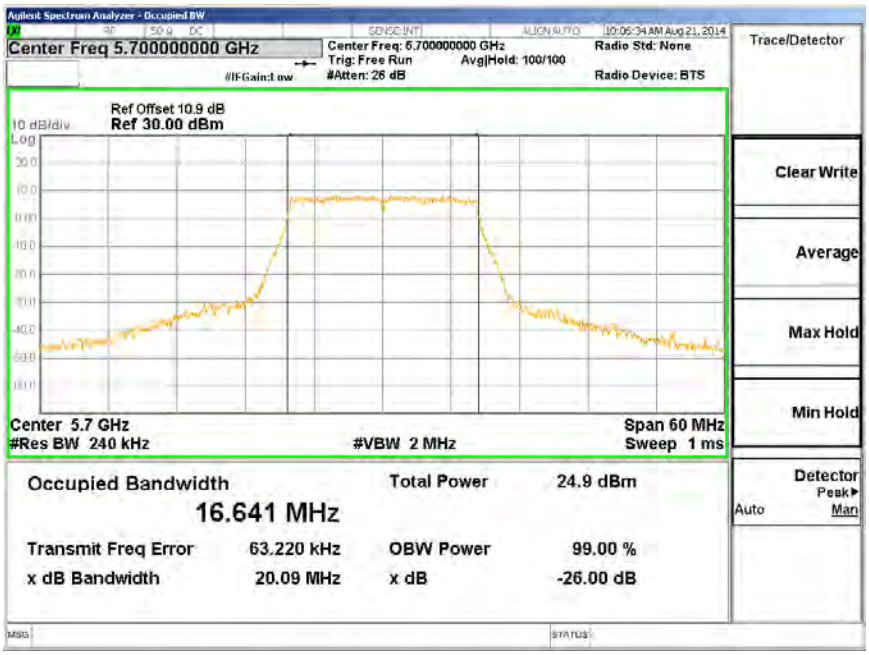
BANDWIDTH Chain 1 LOW CH



BANDWIDTH Chain 1 MID CH



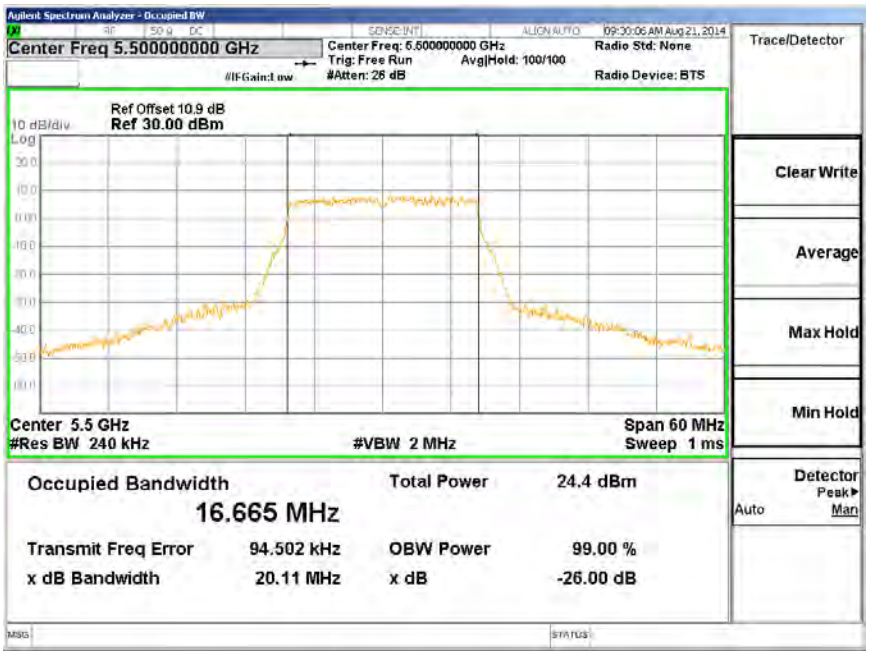
BANDWIDTH Chain 1 HIGH CH



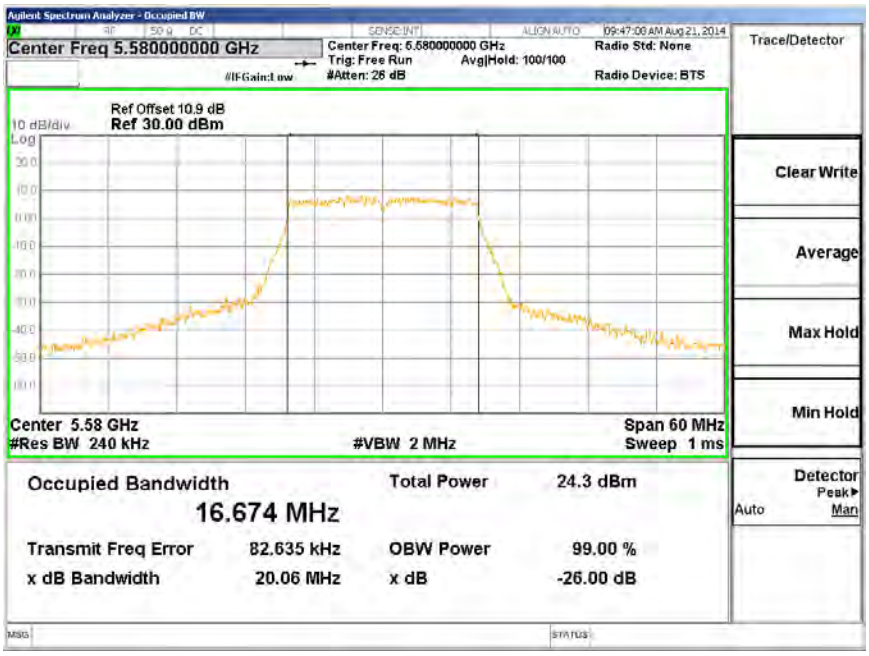
BANDWIDTH Chain 1 STRADDLE CH 144

26 dB BANDWIDTH, Chain 2

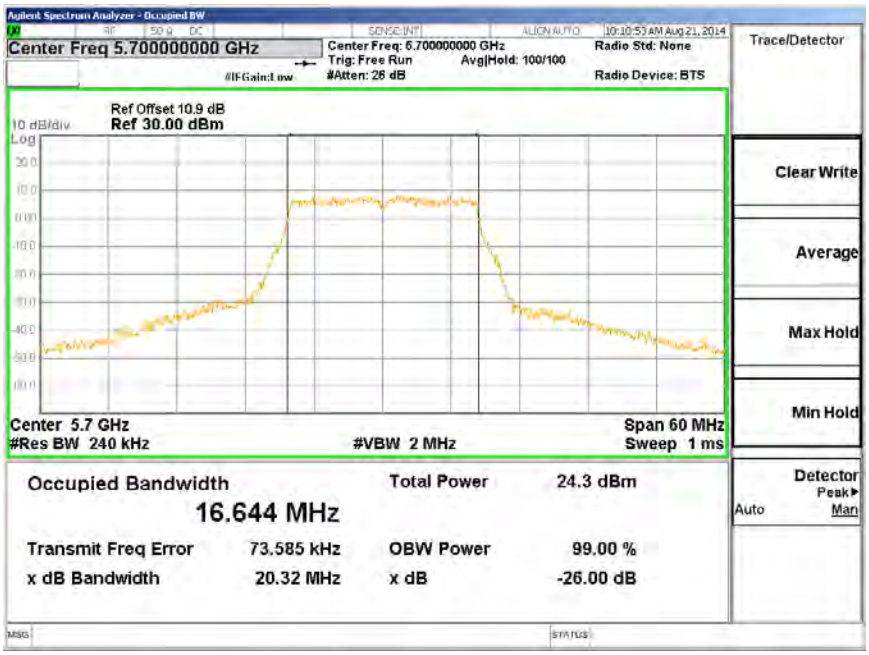
BANDWIDTH Chain 2 LOW CH



BANDWIDTH Chain 2 MID CH



BANDWIDTH Chain 2 HIGH CH



BANDWIDTH Chain 2 STRADDLE CH 144

8.10.2. 99% BANDWIDTH

LIMITS

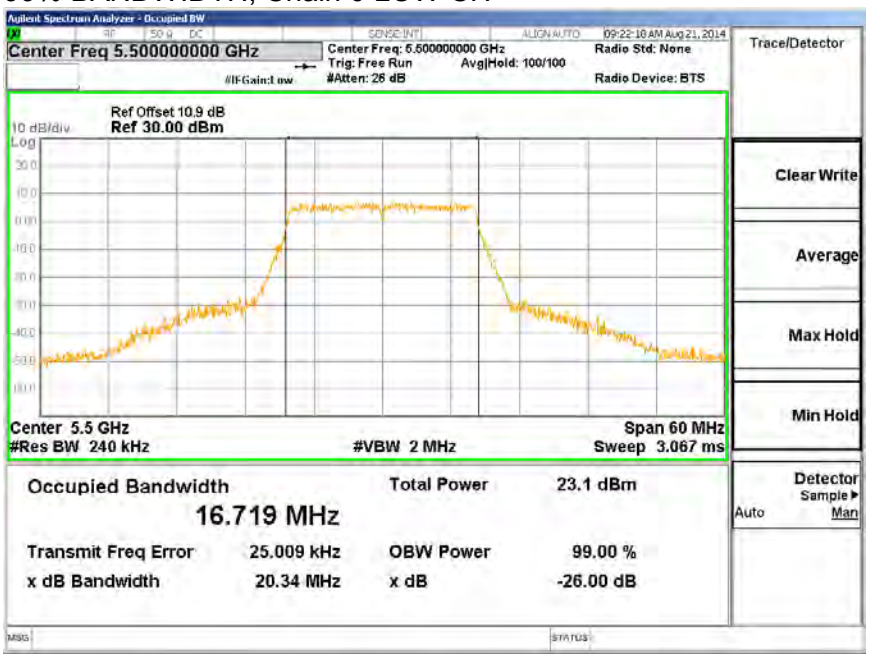
None; for reporting purposes only.

RESULTS

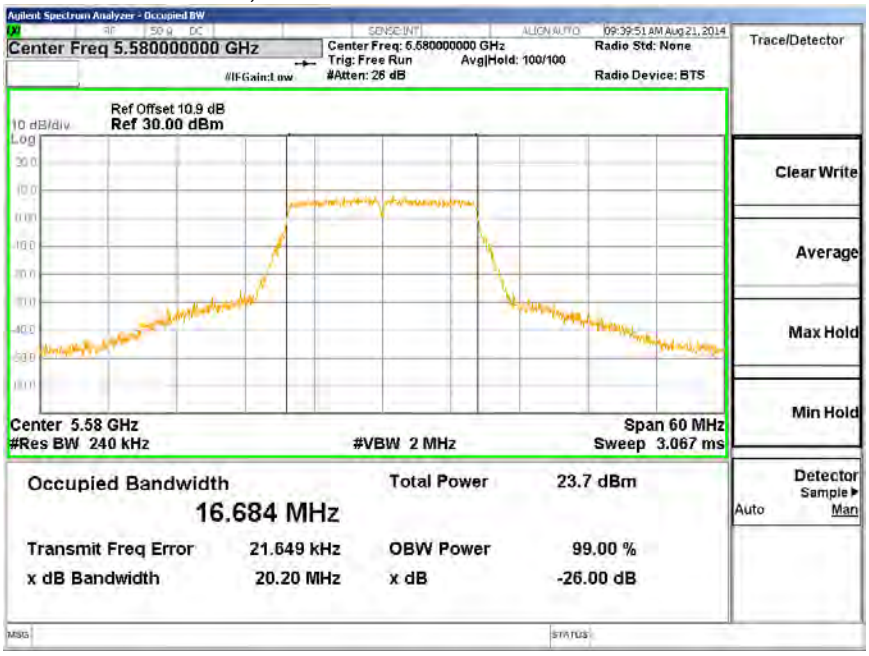
Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
Low	5500	16.7190	16.6710	16.6280
Mid	5580	16.6840	16.7070	16.5980
High	5700	16.6850	16.6280	16.6260
144	5720	16.7550	16.6270	16.6670

99% BANDWIDTH, Chain 0

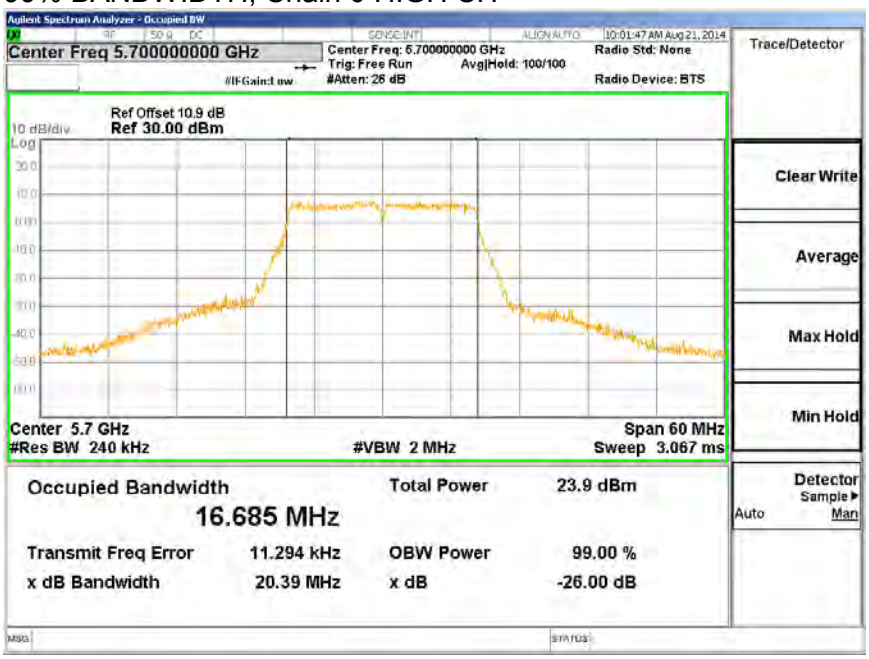
99% BANDWIDTH, Chain 0 LOW CH



99% BANDWIDTH, Chain 0 MID CH



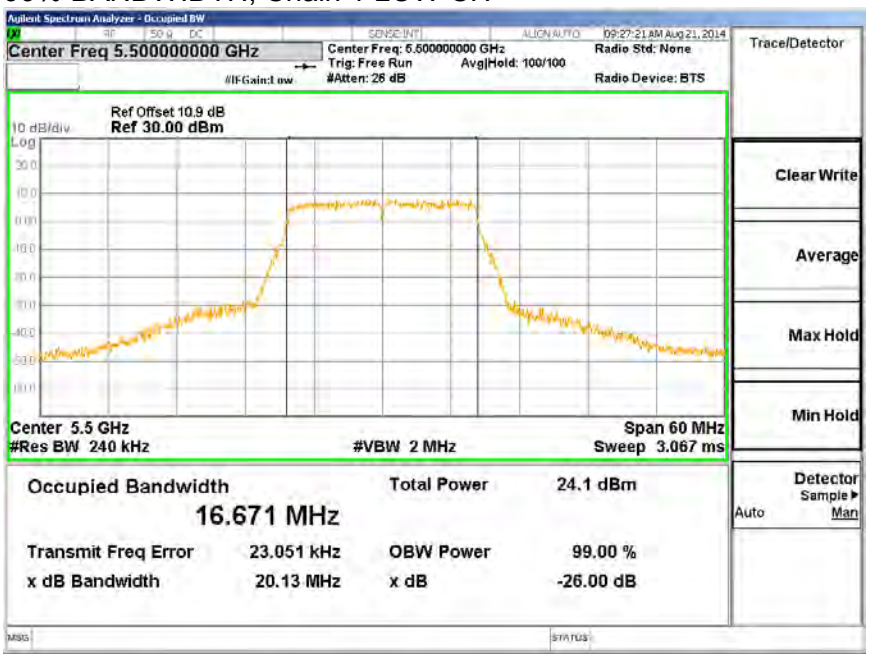
99% BANDWIDTH, Chain 0 HIGH CH



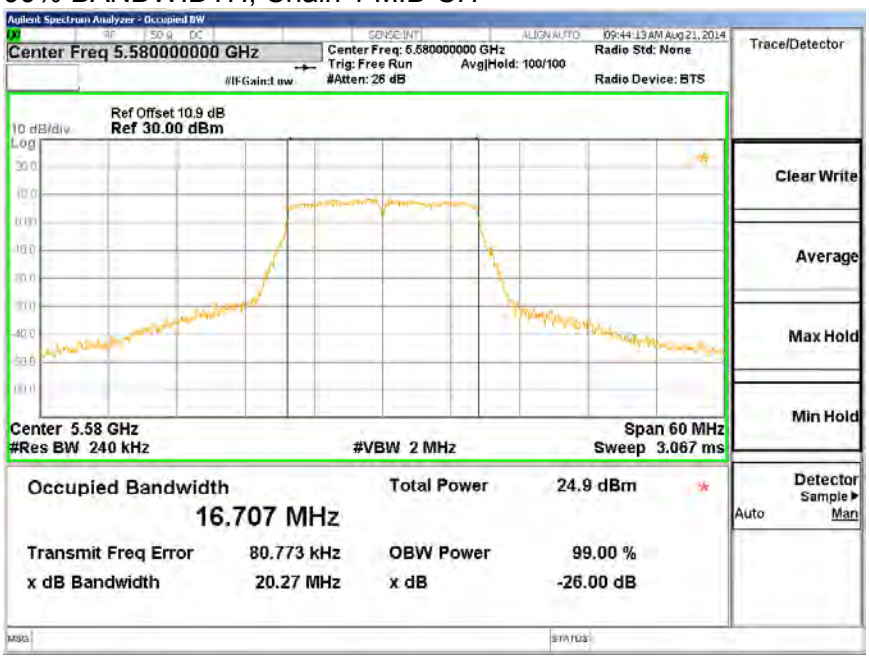
99% BANDWIDTH, Chain 0 STRADDLE CH 144

99% BANDWIDTH, Chain 1

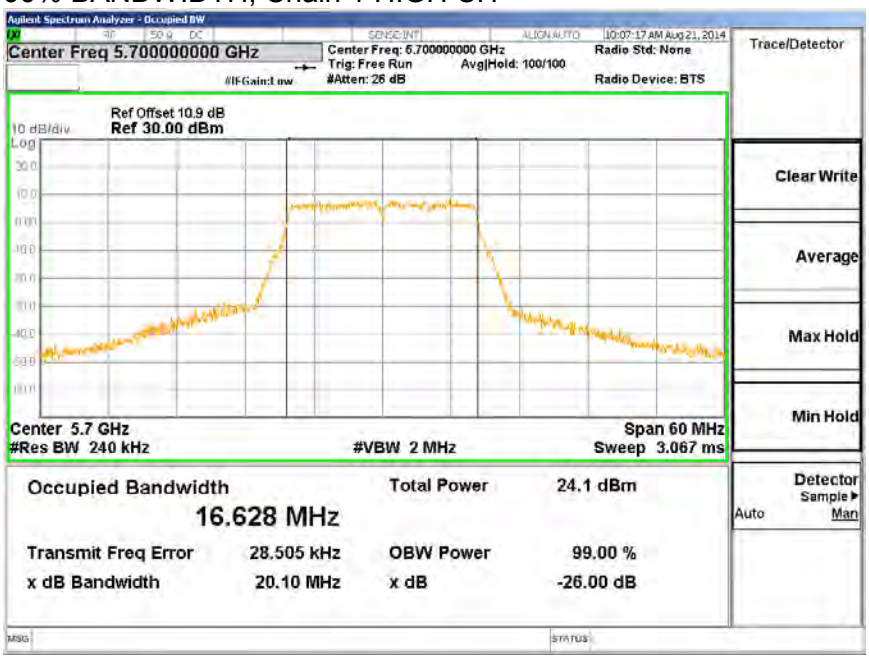
99% BANDWIDTH, Chain 1 LOW CH



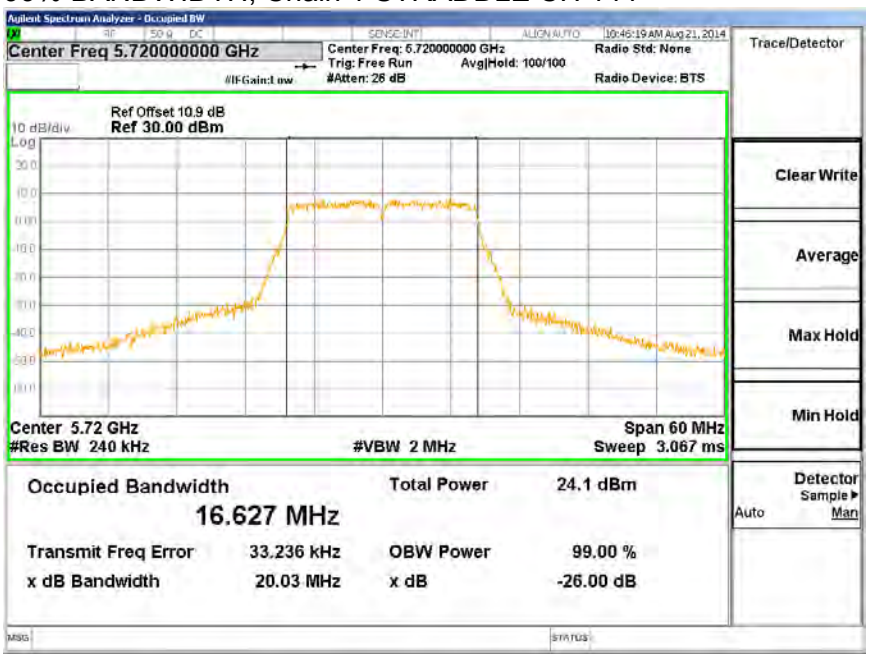
99% BANDWIDTH, Chain 1 MID CH



99% BANDWIDTH, Chain 1 HIGH CH

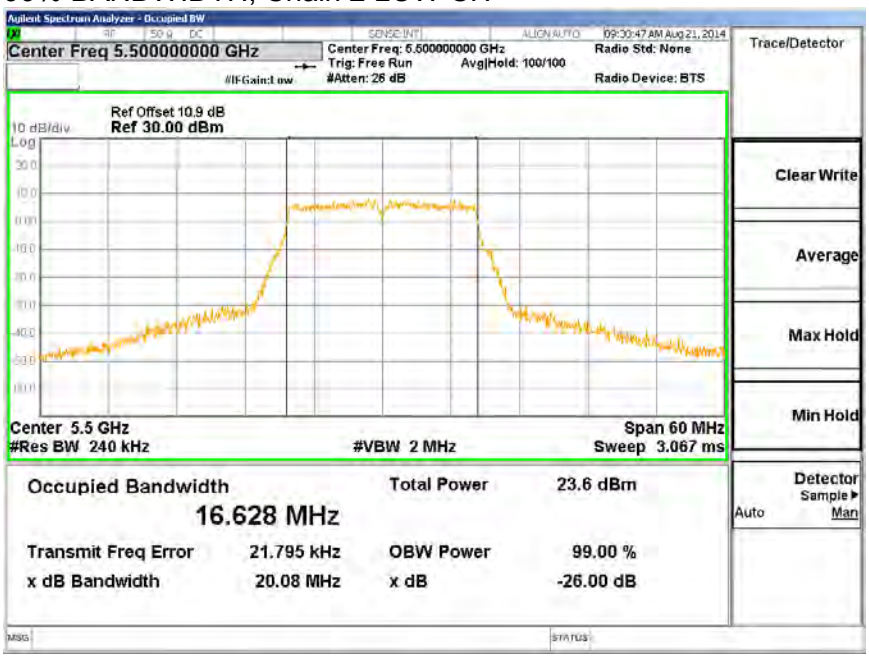


99% BANDWIDTH, Chain 1 STRADDLE CH 144

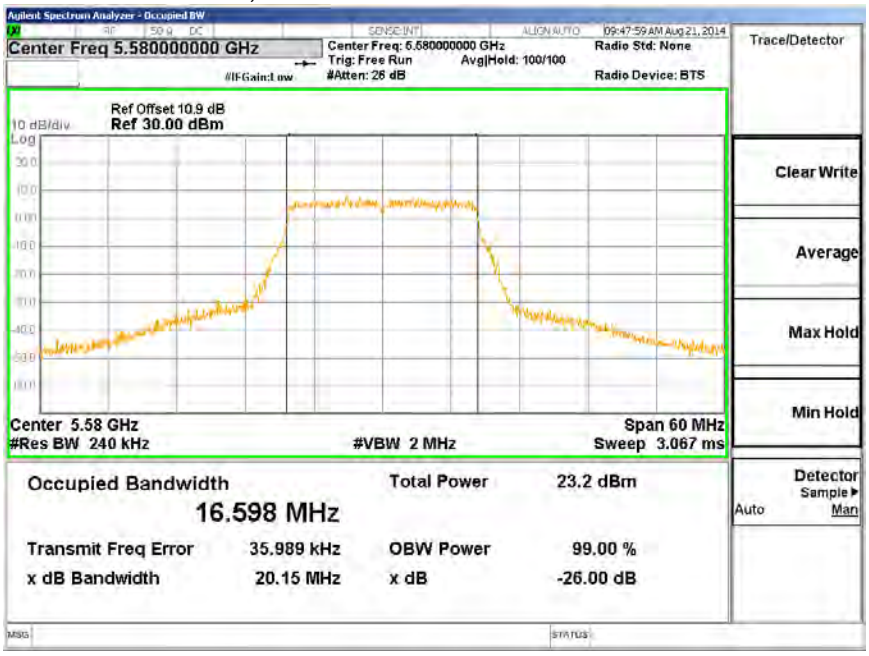


99% BANDWIDTH, Chain 2

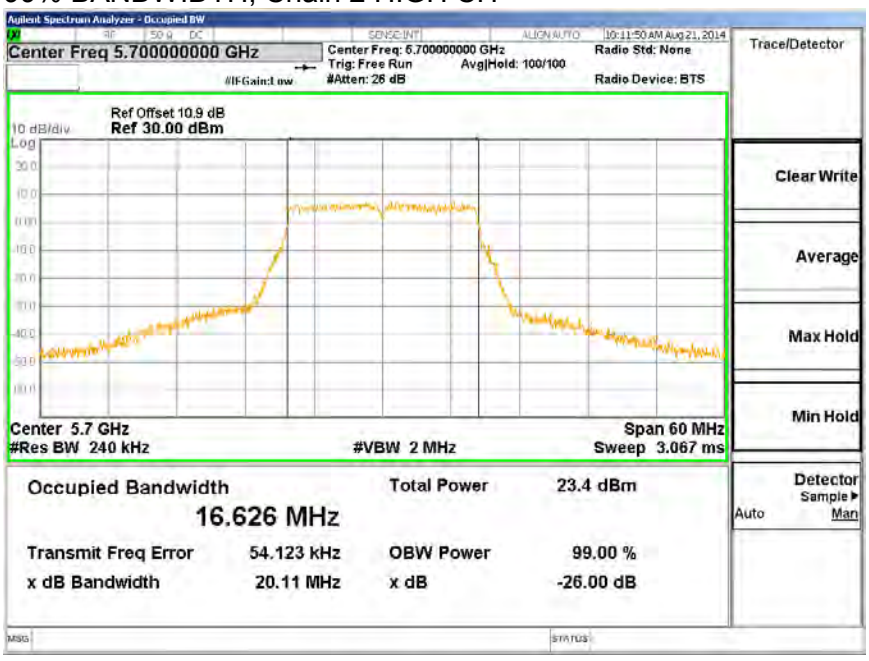
99% BANDWIDTH, Chain 2 LOW CH



99% BANDWIDTH, Chain 2 MID CH



99% BANDWIDTH, Chain 2 HIGH CH



99% BANDWIDTH, Chain 2 STRADDLE CH 144

8.10.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

RESULTS

Average Power Results

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Chain 2 Power (dBm)	Total Power (dBm)
Low	5500	18.38	18.78	18.22	23.24
Mid	5580	18.45	18.53	17.86	23.06
High	5700	18.33	18.40	17.83	22.97
144	5720	18.53	18.58	17.84	23.10

8.10.4. OUTPUT POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

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

Antenna Gain (dBi)	10 * Log (3 chains) (dB)	Correlated Chains Directional Gain (dBi)
2.00	4.77	6.77

RESULTS

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5500	20.11	6.77	6.77	23.23	10.23
Mid	5580	20.06	6.77	6.77	23.23	10.23
High	5700	20.09	6.77	6.77	23.23	10.23

Duty Cycle CF (dB)	0.23	Included in Calculations of Corr'd Power & PSD

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5500	17.42	18.57	17.91	22.99	23.23	-0.24
Mid	5580	18.16	18.31	17.73	23.07	23.23	-0.16
High	5700	18.34	18.27	17.79	23.14	23.23	-0.09

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Chain 2 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5500	3.44	4.59	3.94	9.02	10.23	-1.21
Mid	5580	4.19	4.33	3.75	9.10	10.23	-1.13
High	5700	4.36	4.29	3.81	9.16	10.23	-1.07

OUTPUT POWER AND PSD, Chain 0

OUTPUT POWER AND PSD, Chain 0 LOW CH

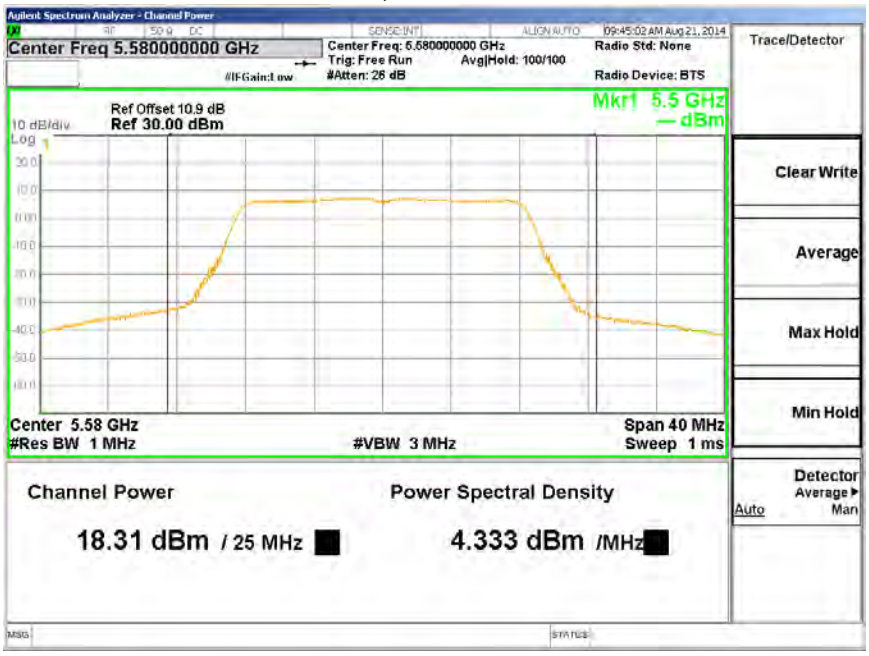
OUTPUT POWER AND PSD, Chain 0 MID CH

OUTPUT POWER AND PSD, Chain 0 HIGH CH

OUTPUT POWER AND PSD, Chain 1

OUTPUT POWER AND PSD, Chain 1 LOW CH

OUTPUT POWER AND PSD, Chain 1 MID CH



OUTPUT POWER AND PSD, Chain 1 HIGH CH

OUTPUT POWER AND PSD, Chain 2

OUTPUT POWER AND PSD, Chain 2 LOW CH

OUTPUT POWER AND PSD, Chain 2 MID CH

OUTPUT POWER AND PSD, Chain 2 HIGH CH

STRADDLE CHANNEL 144 RESULTS

UNII-2C BAND

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
144	5720	15.10	6.77	6.77	22.02	10.23

Duty Cycle CF (dB)	0.23	Included in Calculations of Corr'd Power & PSD

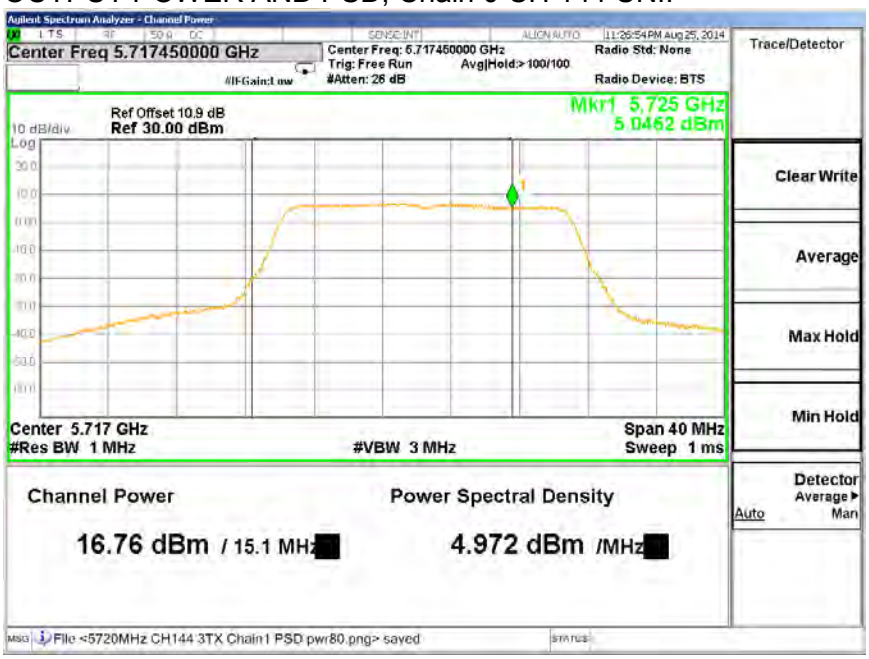
Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
144	5720	16.76	17.30	16.68	21.92	22.02	-0.10

PSD Results

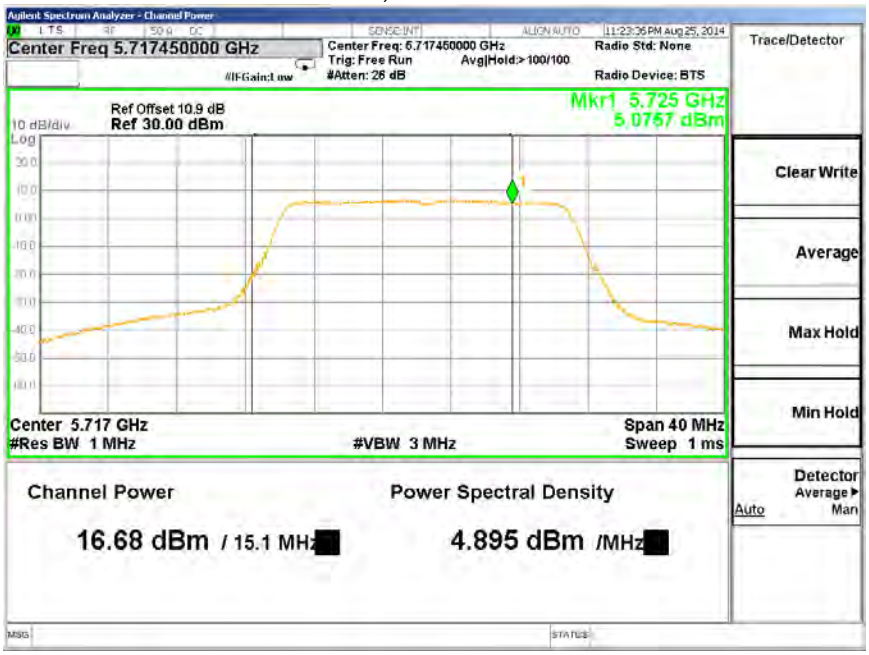
Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Chain 2 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
144	5720	4.97	5.51	4.90	10.14	10.23	-0.09

OUTPUT POWER AND PSD, Chain 0 CH 144 UNII



OUTPUT POWER AND PSD, Chain 1 CH 144 UNII

OUTPUT POWER AND PSD, Chain 2 CH 144 UNII



UNII-3 BAND

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
144	5720	5.08	6.77	6.77	23.23	16.23

Duty Cycle CF (dB)	0.23	Included in Calculations of Corr'd Power & PSD

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Chain 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
144	5720	10.97	11.07	10.37	15.82	23.23	-7.41

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Chain 1 Meas PSD (dBm)	Chain 2 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
144	5720	3.91	4.01	3.31	8.75	16.23	-7.48

OUTPUT POWER, Chain 0 CH 144 UNII-3

OUTPUT POWER, Chain 1 CH 144 UNII-3

OUTPUT POWER, Chain 2 CH 144 UNII-3

8.10.5. PEAK EXCURSION

LIMITS

FCC §15.407 (a) (6)

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

RESULTS

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

Chain 0

Channel	Frequency (MHz)	PK Level (dBm)	PSD (dBm)	DCCF (dB)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Mid	5580	14.89	4.19	0.23	10.47	13	-2.53

Chain 1

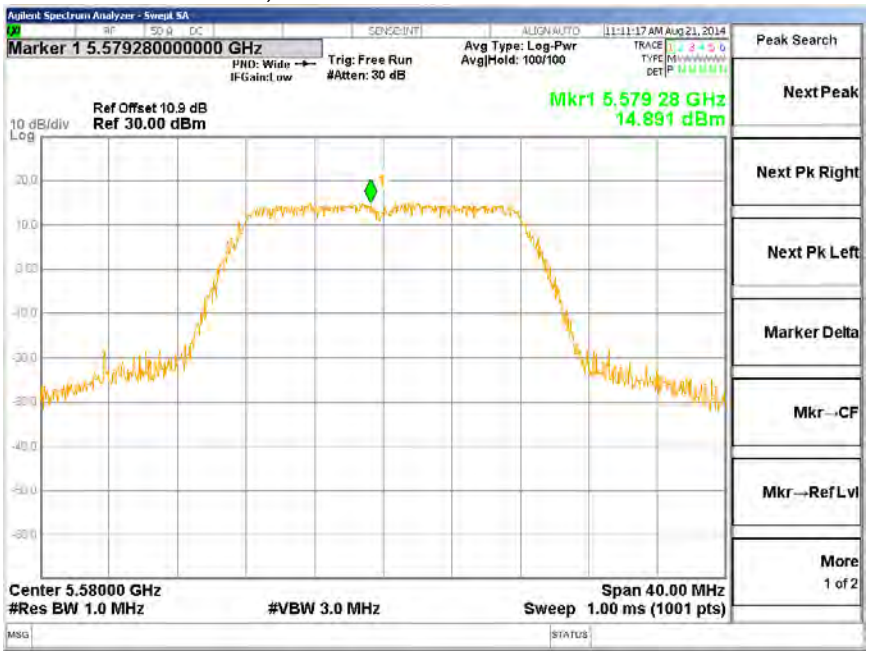
Channel	Frequency (MHz)	PK Level (dBm)	PSD (dBm)	DCCF (dB)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Mid	5580	16.08	4.33	0.23	11.52	13	-1.48

Chain 2

Channel	Frequency (MHz)	PK Level (dBm)	PSD (dBm)	DCCF (dB)	Peak Excursion (dB)	Limit (dB)	Margin (dB)
Mid	5580	15.84	3.75	0.23	11.86	13	-1.14

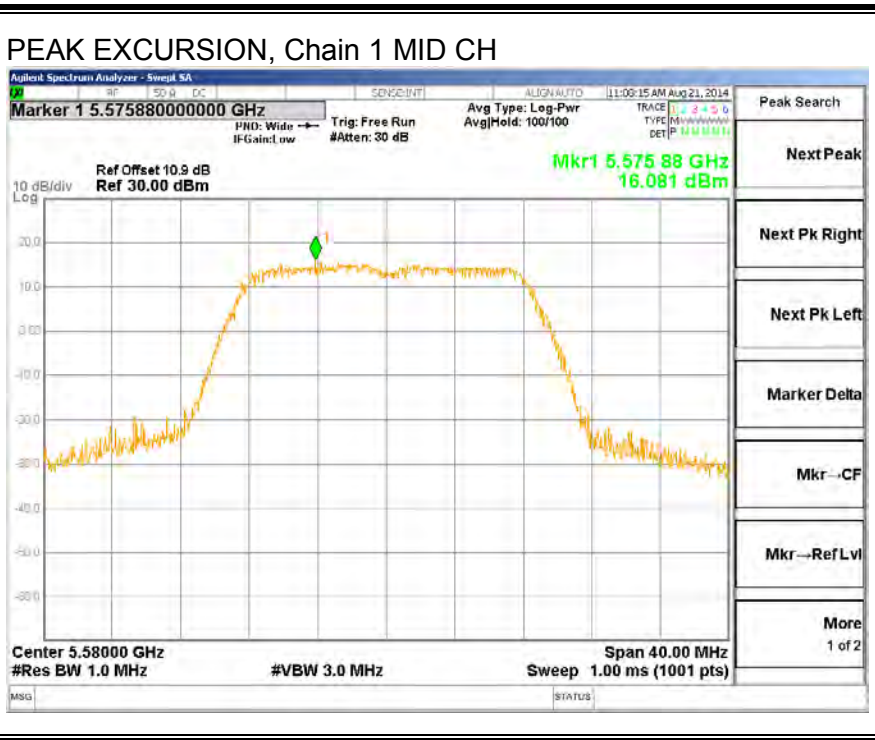
PEAK EXCURSION, Chain 0

PEAK EXCURSION, Chain 0 MID CH



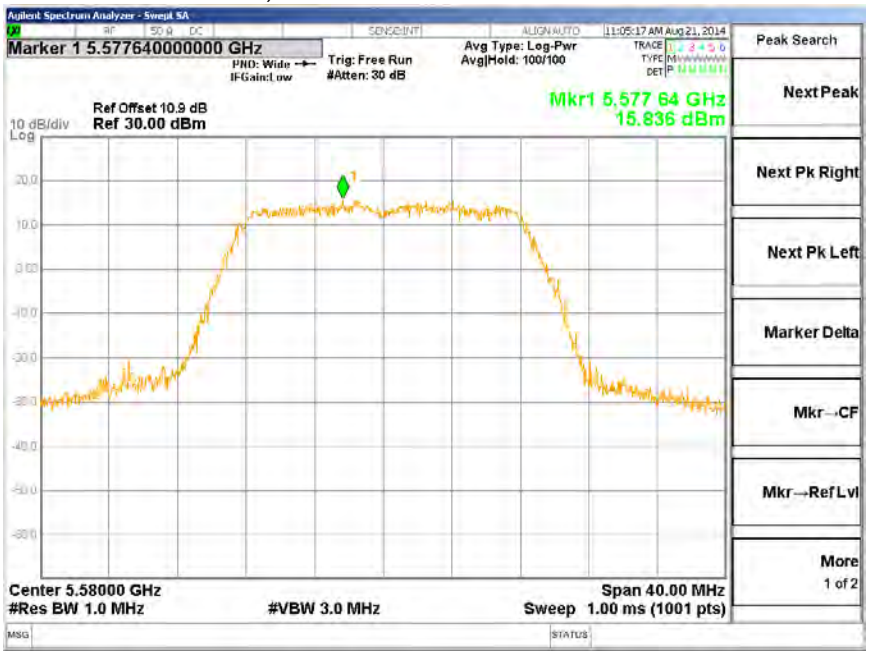
PEAK EXCURSION, Chain 1

PEAK EXCURSION, Chain 1 MID CH



PEAK EXCURSION, Chain 2

PEAK EXCURSION, Chain 2 MID CH



8.11. 802.11n HT20 1TX SISO MODE IN THE 5.6 GHz BAND

8.11.1. 26 dB BANDWIDTH

LIMITS

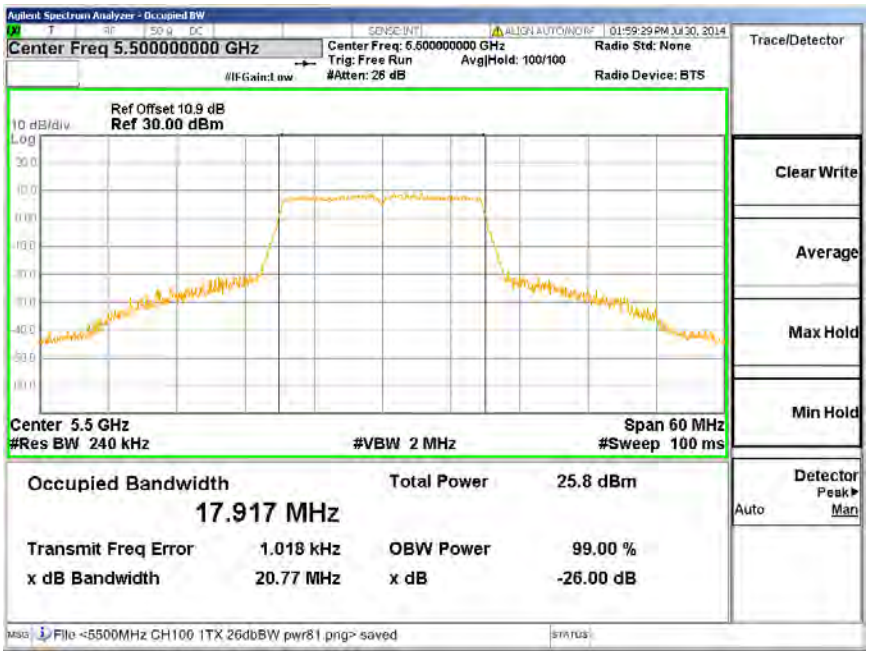
None; for reporting purposes only.

RESULTS

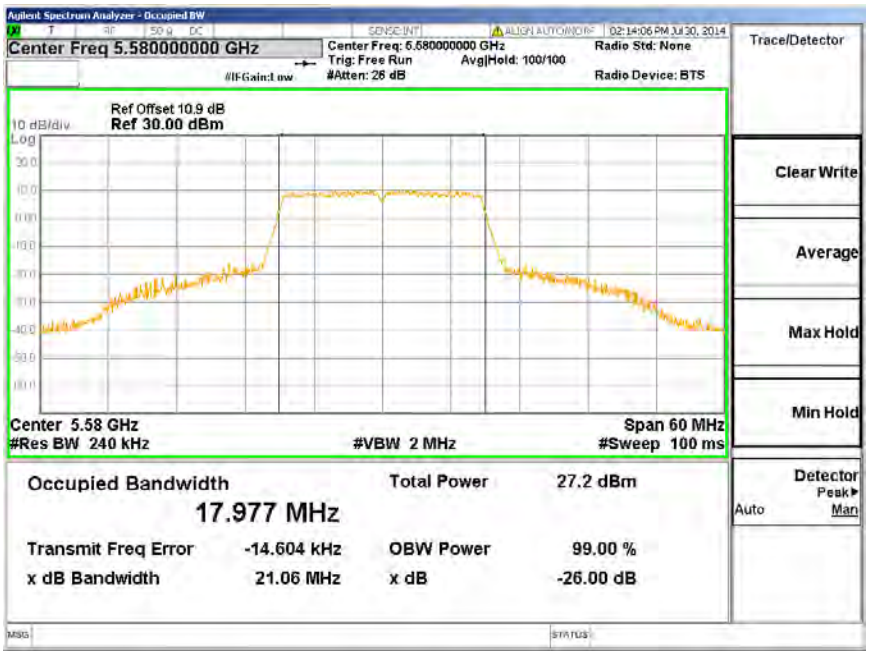
Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)
Low	5500	20.77
Mid	5580	21.06
High	5700	21.76
144	5720	20.76

26 dB BANDWIDTH, Chain 0

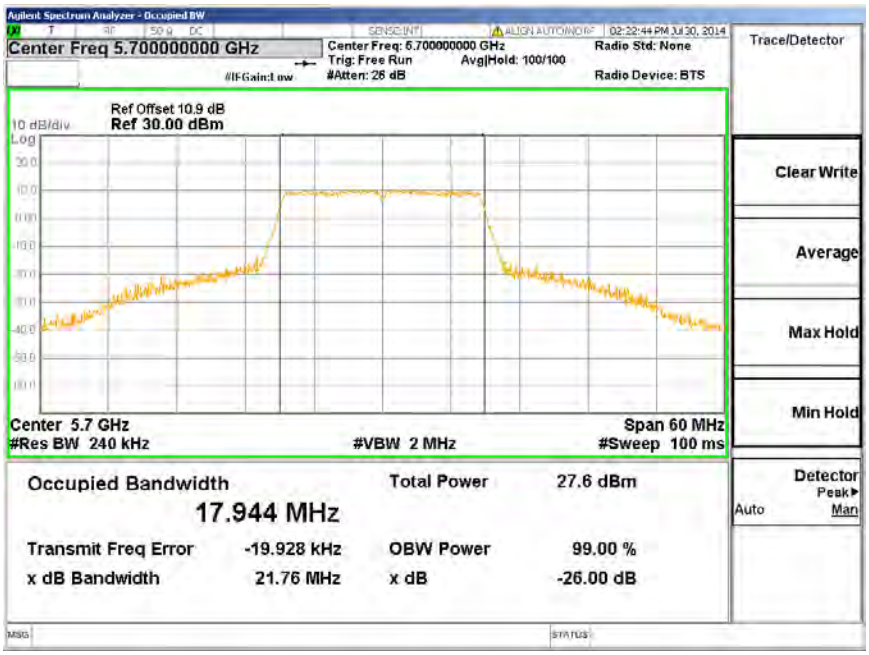
BANDWIDTH Chain 0 LOW CH



BANDWIDTH Chain 0 MID CH



BANDWIDTH Chain 0 HIGH CH



BANDWIDTH Chain 0 STRADDLE CH 144

8.11.2. 99% BANDWIDTH

LIMITS

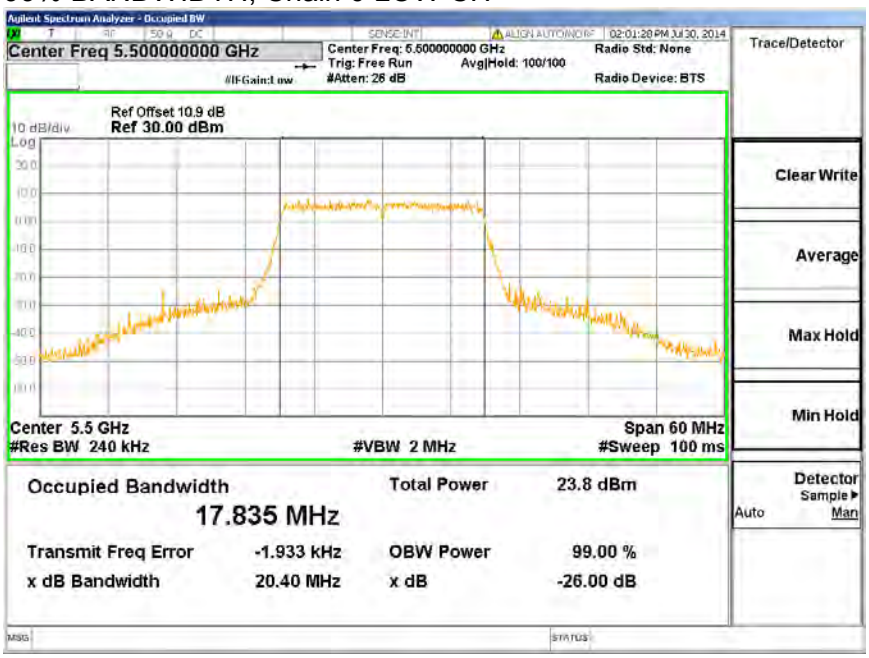
None; for reporting purposes only.

RESULTS

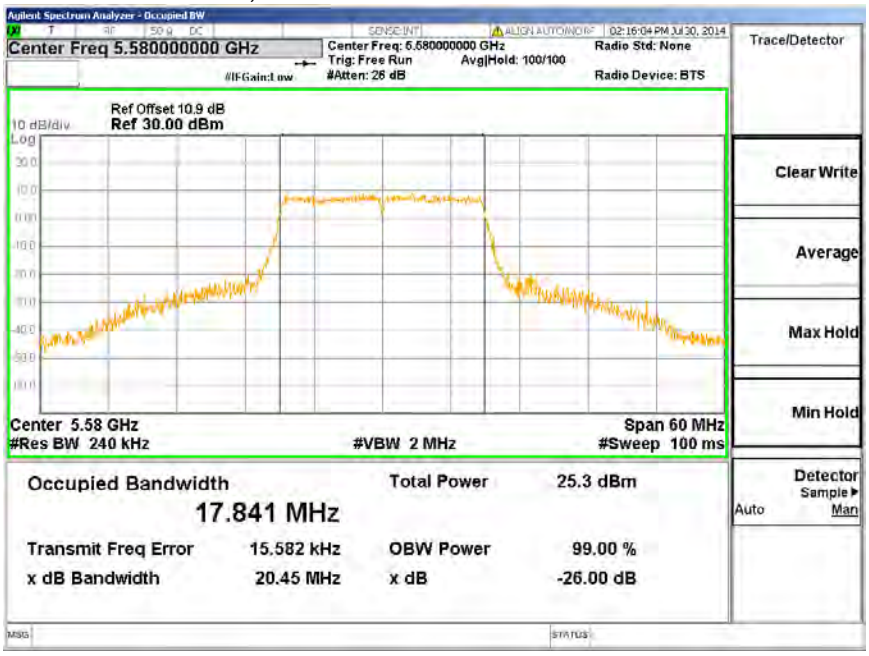
Channel	Frequency (MHz)	99% BW Chain 0 (MHz)
Low	5500	17.8350
Mid	5580	17.8410
High	5700	17.7930
144	5720	17.8040

99% BANDWIDTH, Chain 0

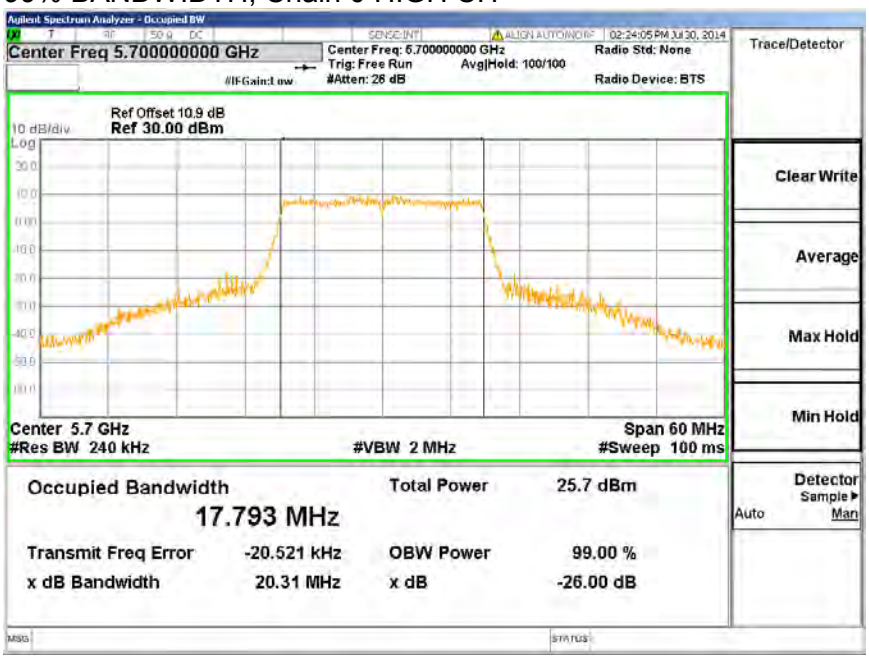
99% BANDWIDTH, Chain 0 LOW CH



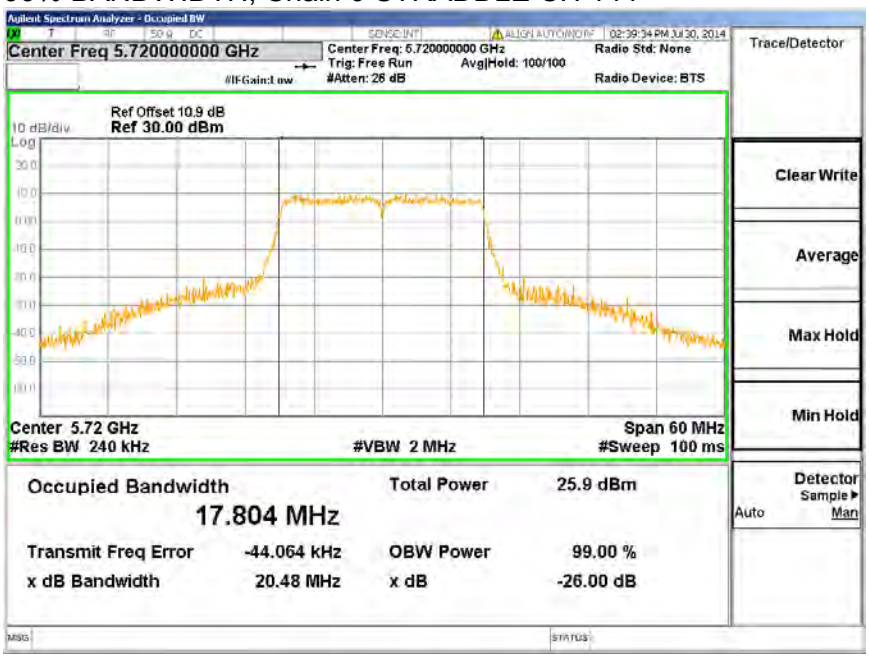
99% BANDWIDTH, Chain 0 MID CH



99% BANDWIDTH, Chain 0 HIGH CH



99% BANDWIDTH, Chain 0 STRADDLE CH 144



8.11.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

RESULTS

Average Power Results

Channel	Frequency (MHz)	Chain 0 Power (dBm)
Low	5500	18.81
Mid	5580	20.14
High	5700	20.52
144	5720	20.32

8.11.4. OUTPUT POWER AND PSD

LIMITS

FCC §15.407 (a) (2)

For the band 5.47–5.725 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26–dB emission bandwidth in MHz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1–MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

RESULTS

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Direction Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5500	20.77	2.00	2.00	24.00	11.00
Mid	5580	21.06	2.00	2.00	24.00	11.00
High	5700	21.76	2.00	2.00	24.00	11.00

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

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5500	18.67	18.89	24.00	-5.11
Mid	5580	20.38	20.60	24.00	-3.40
High	5700	20.42	20.64	24.00	-3.36

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5500	4.69	4.91	11.00	-6.09
Mid	5580	6.40	6.62	11.00	-4.38
High	5700	6.44	6.66	11.00	-4.34

OUTPUT POWER AND PSD, Chain 0

OUTPUT POWER AND PSD, Chain 0 LOW CH

OUTPUT POWER AND PSD, Chain 0 MID CH

OUTPUT POWER AND PSD, Chain 0 HIGH CH

STRADDLE CHANNEL 144 RESULTS

UNII-2C BAND

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm)
144	5720	15.42	2.00	22.88	11.00

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

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
144	5720	20.47	20.69	22.88	-2.19

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
144	5720	6.49	6.71	11.00	-4.29

*Note total output power across 2 bands was found to be compliant incorporating the single band 26dB BW within the limit, therefore a measured output power within the single band 26dBBW would also comply.

OUTPUT POWER AND PSD, Chain 0 CH 144 UNII

UNII-3 BAND

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm)
144	5720	5.34	2.00	24.00	17.00

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

Output Power Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
144	5720	20.47	20.69	24.00	-3.31

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
144	5720	6.49	6.71	17.00	-10.29

*Note total output power across 2 bands was found to be compliant incorporating the single band 26dB BW within the limit, therefore a measured output power within the single band 26dBBW would also comply.

OUTPUT POWER, Chain 0 CH 144 UNII-3

8.11.5. 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	5580	17.02	6.40	0.22	10.40	13	-2.60

PEAK EXCURSION

PEAK EXCURSION MID CH

8.12. 802.11n HT20 3TX CDD MODE IN THE 5.6 GHz BAND

8.12.1. 26 dB BANDWIDTH

LIMITS

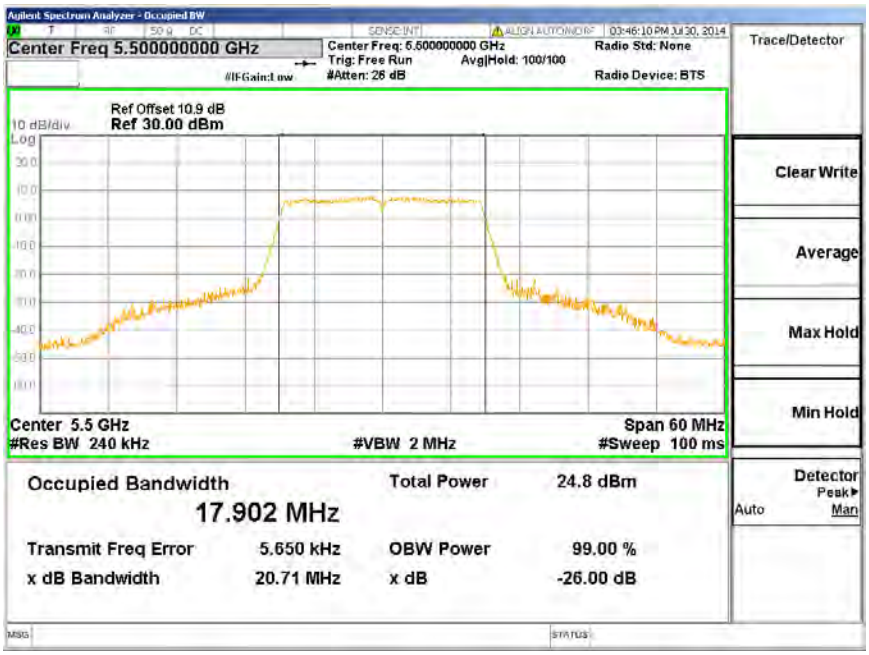
None; for reporting purposes only.

RESULTS

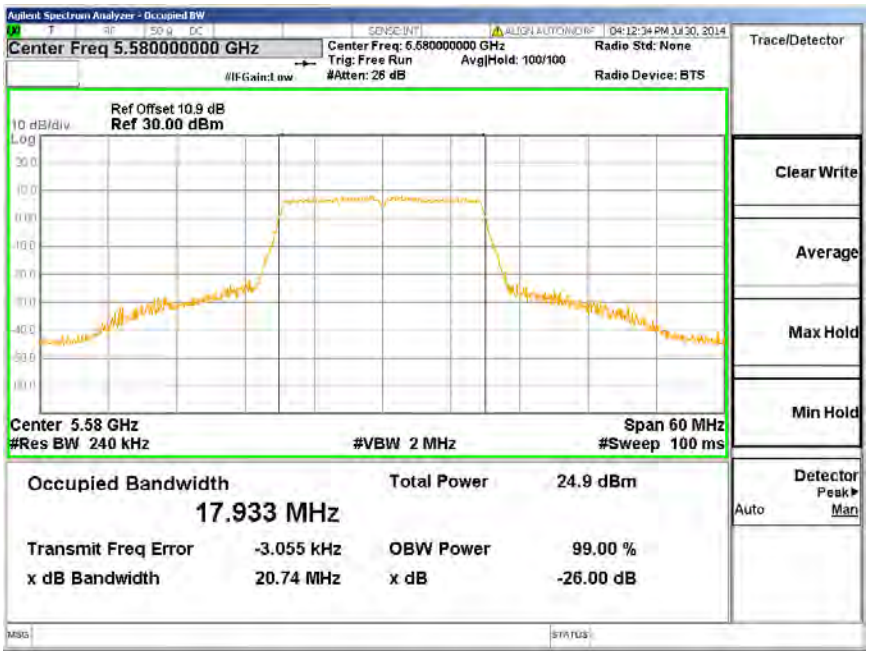
Channel	Frequency (MHz)	26 dB BW Chain 0 (MHz)	26 dB BW Chain 1 (MHz)	26 dB BW Chain 2 (MHz)
Low	5500	20.71	20.62	20.79
Mid	5580	20.74	20.52	20.64
High	5700	20.74	20.58	20.64
144	5720	15.35	15.22	15.28

26 dB BANDWIDTH, Chain 0

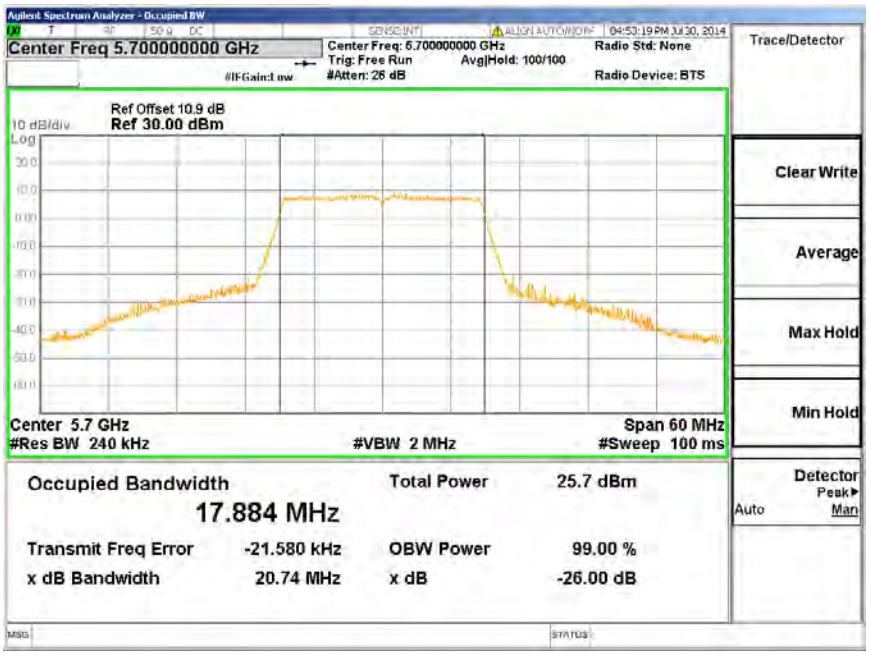
BANDWIDTH Chain 0 LOW CH



BANDWIDTH Chain 0 MID CH



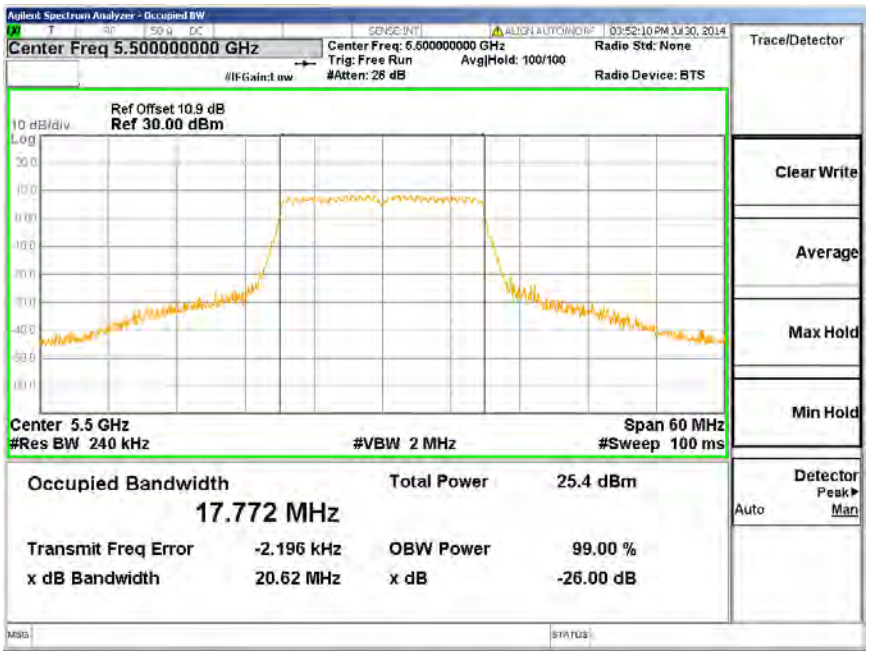
BANDWIDTH Chain 0 HIGH CH



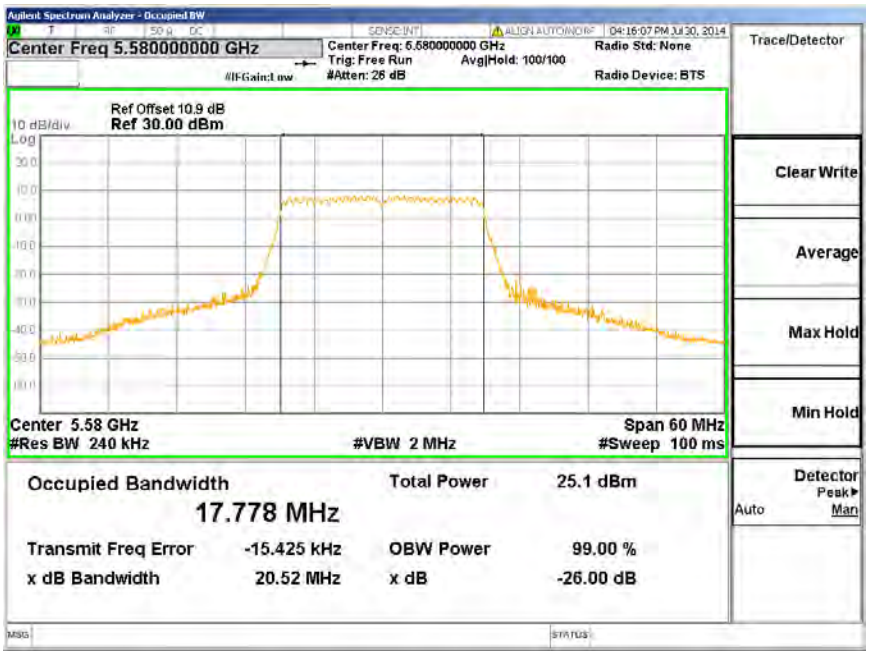
BANDWIDTH Chain 0 STRADDLE CH 144

26 dB BANDWIDTH, Chain 1

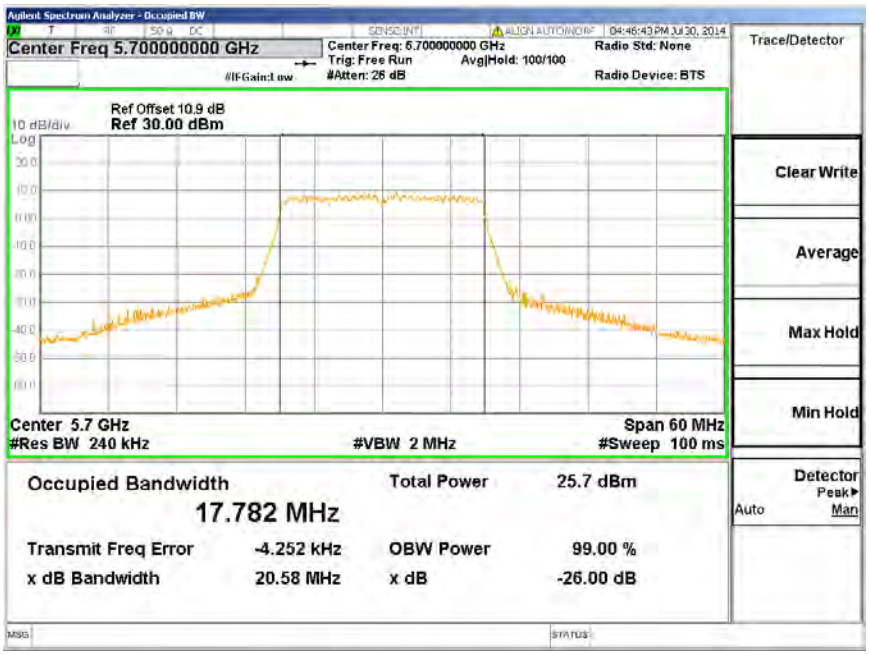
BANDWIDTH Chain 1 LOW CH



BANDWIDTH Chain 1 MID CH



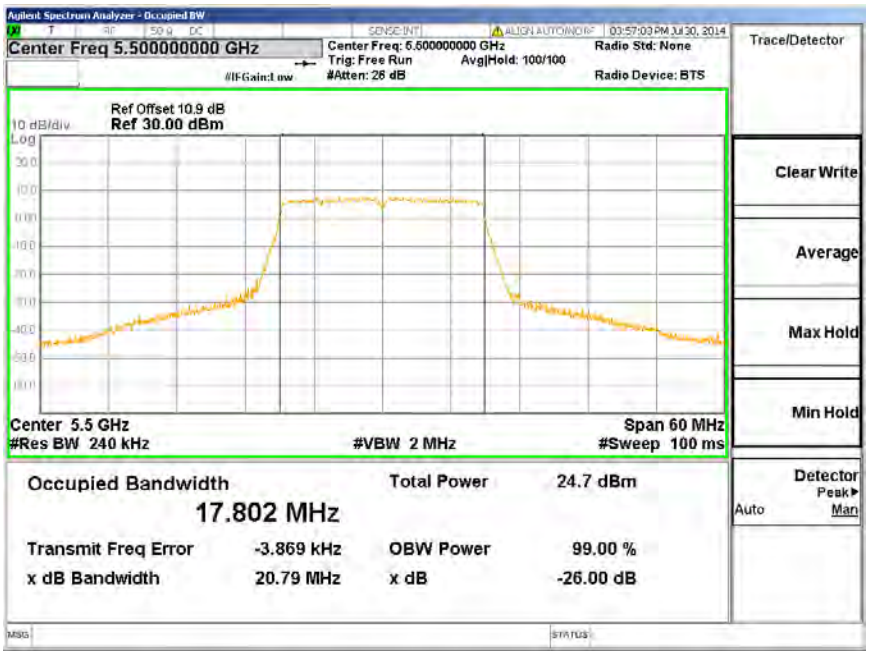
BANDWIDTH Chain 1 HIGH CH



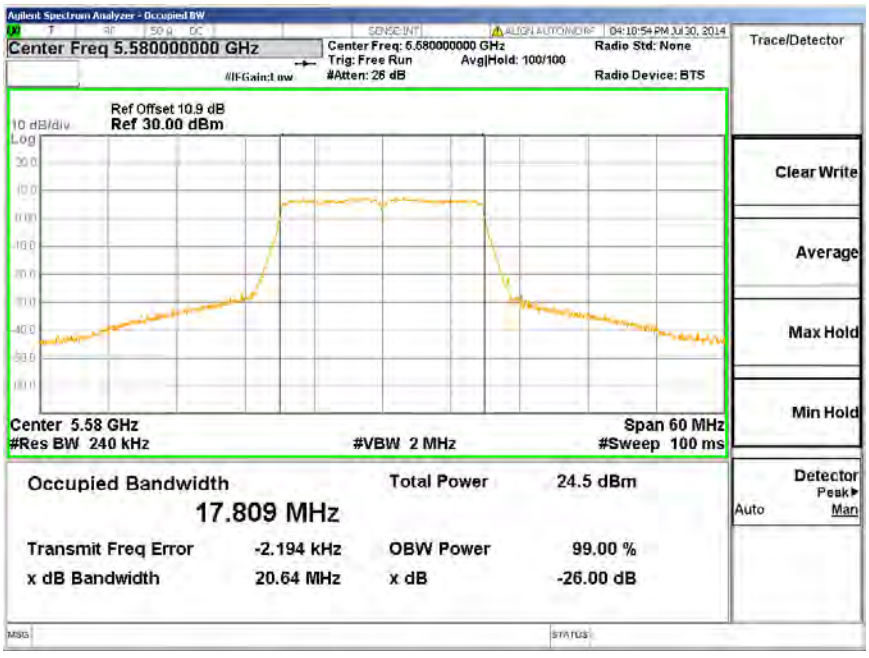
BANDWIDTH Chain 1 STRADDLE CH 144

26 dB BANDWIDTH, Chain 2

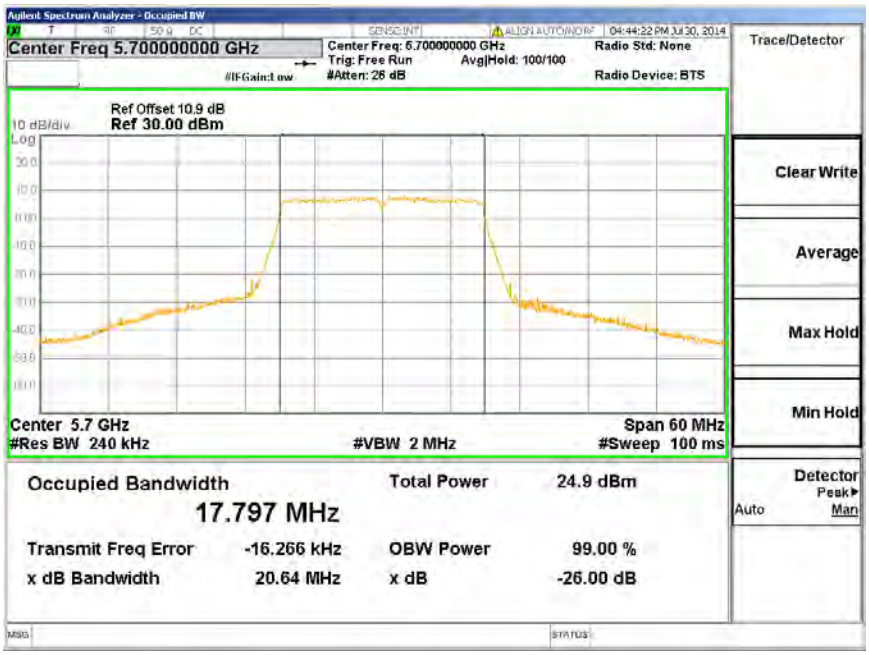
BANDWIDTH Chain 2 LOW CH



BANDWIDTH Chain 2 MID CH



BANDWIDTH Chain 2 HIGH CH



BANDWIDTH Chain 2 STRADDLE CH 144

8.12.2. 99% BANDWIDTH

LIMITS

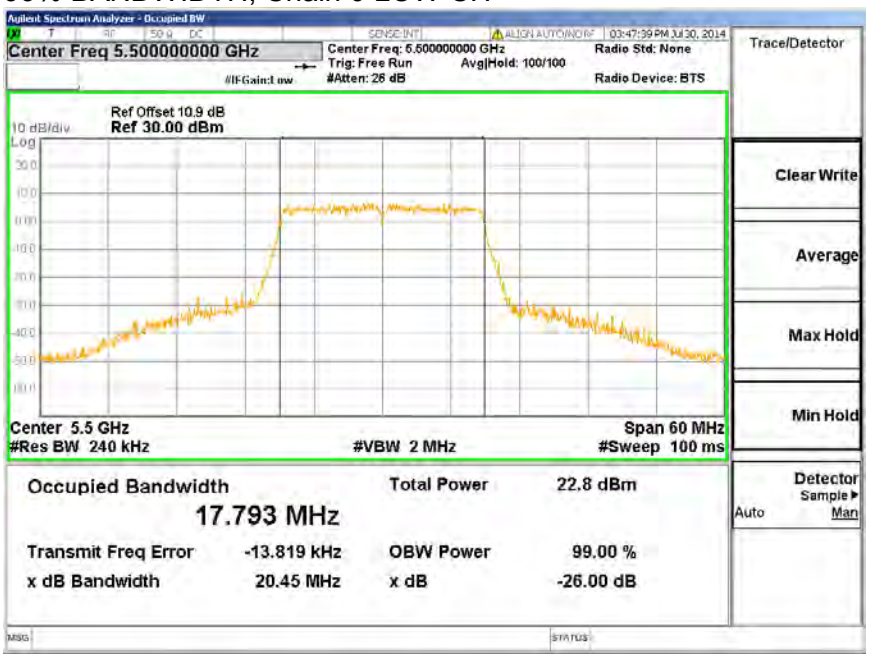
None; for reporting purposes only.

RESULTS

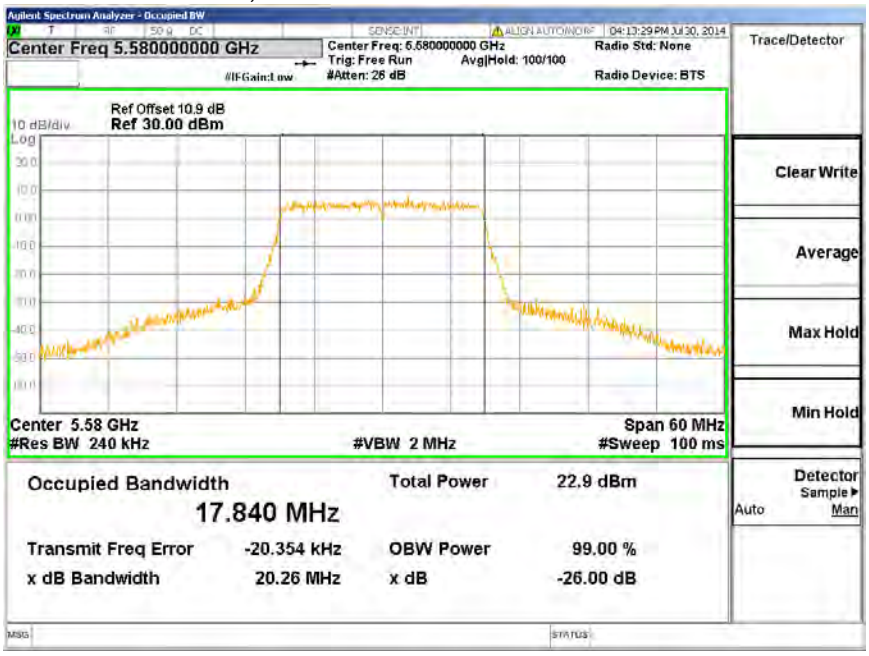
Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)	99% BW Chain 2 (MHz)
Low	5500	17.7930	17.7340	17.7640
Mid	5580	17.8400	17.7670	17.7220
High	5700	17.7740	17.7490	17.7490
144	5720	17.7910	17.7490	17.7280

99% BANDWIDTH, Chain 0

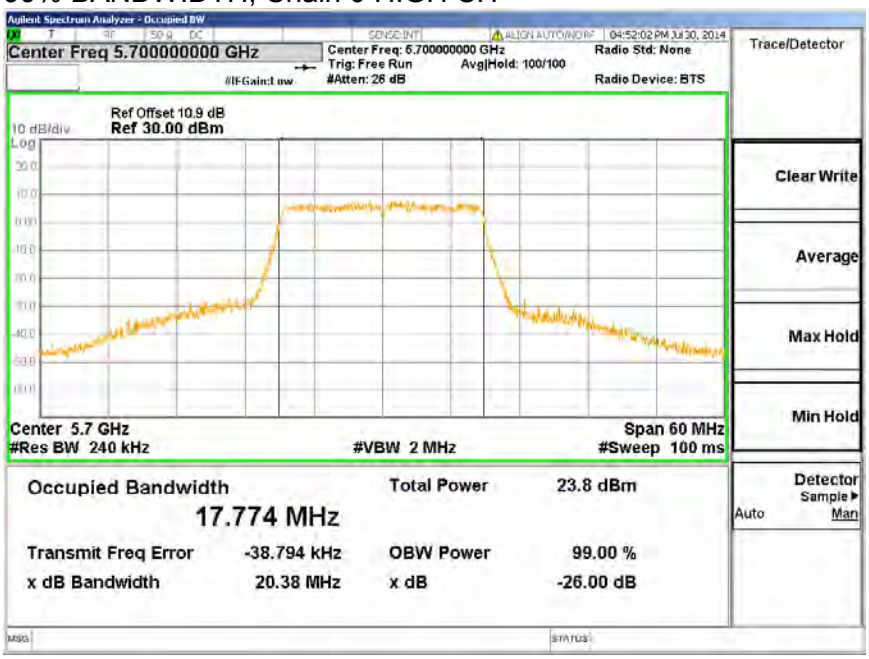
99% BANDWIDTH, Chain 0 LOW CH



99% BANDWIDTH, Chain 0 MID CH



99% BANDWIDTH, Chain 0 HIGH CH



99% BANDWIDTH, Chain 0 STRADDLE CH 144