FCC 47 CFR PART 15 SUBPART E
INDUSTRY CANADA RSS-210 ISSUE 8

CERTIFICATION TEST REPORT

FOR

TABLET DEVICE

MODEL NUMBER: A1567

FCC ID: BCGA1567

REPORT NUMBER: 14U18207-E12, Revision A

ISSUE DATE: SEPTEMBER 13, 2014

Prepared for
APPLE, INC.
1 INFINITE LOOP
CUPERTINO, CA 95014, U.S.A.

Prepared by
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	09/03/14	Initial Issue	F. de Anda
A	09/13/14	Update EUT description	D. Garcia

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1. ATTESTATION OF TEST RESULTS

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

EUT DESCRIPTION: TABLET DEVICE

MODEL: A1567

SERIAL NUMBER: DLXMX08RG4M9 (Conducted); DLXMX00VG4MF (Radiated)

DATE TESTED: JULY 8, 2014 TO AUGUST 27, 2014

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

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

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

Approved & Released For
UL Verification Services Inc. By:

FRANCISCO DEANDA
EMC SUPERVISOR
UL Verification Services Inc.

Tested By:

FRANCISCO GUARNERO
EMC ENGINEER
UL Verification Services Inc.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, FCC KDB 905462 D02, FCC KDB 789033, ANSI C63.10-2009.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, Fremont, California, USA. Line conducted emissions are measured only at the 47173 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

47173 Benicia Street	47266 Benicia Street
☐ Chamber A	☒ Chamber D
☐ Chamber B	☒ Chamber E
☐ Chamber C	☒ Chamber F
	☒ Chamber G
	☒ Chamber H

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

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

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

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

4.3. MEASUREMENT UNCERTAINTY

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

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

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a tablet with multimedia functions (music, application support, and video), Cellular GSM/GPRS/EGPRS/CDMA2000 1xRTT/1x Advanced/EVDO Rev.A/EVDO Rev.B /WCDMA /HSPA+/DC-HSDPA/LTE FDD & Carrier Aggregation/TDD/TD-SCDMA radio, IEEE 802.11a/b/g/n/ac radio, and Bluetooth radio. The rechargeable battery is not user accessible.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

Note: The output power on covered modes is equal to or less than the one referenced.

5.2GHz Band

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5180 - 5240	802.11a	17.99	62.95
5181 - 5240	802.11n HT20 SISO	Covered by 802.11a mode	
5181 - 5240	802.11a 2TX CDD	Covered by 802.11n HT20 2TX CDD Mode	
5180 - 5240	802.11n HT20 2TX CDD	19.95	98.86
5180 - 5240	802.11n HT20 2TX STBC/SDM	Covered by 802.11n HT20 2TX CDD Mode	
5190 - 5230	802.11n HT40 SISO	17.93	62.09
5190 - 5230	802.11n HT40 2TX CDD	20.45	110.92
5190 - 5230	802.11n HT40 2TX STBC/SDM	Covered by 802.11n HT40 2TX CDD Mode	
5210	802.11ac VHT80 SISO	13.18	20.80
5210	802.11ac VHT80 2TX CDD	15.16	32.81
5210	802.11ac VHT80 2TX STBC/SDM	Covered by 802.11ac VHT80 2TX CDD Mode	

5.3GHz Band

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5260 - 5320	802.11a	17.92	61.94
5260 - 5320	802.11n HT20 SISO	Covered by 802.11a mode	
5260 - 5320	802.11a 2TX CDD	Covered by 802.11n HT20 2TX CDD Mode	
5260 - 5320	802.11n HT20 2TX CDD	19.50	89.13
5260 - 5320	802.11n HT20 2TX STBC/SDM	Covered by 802.11n HT20 2TX CDD Mode	
5270 - 5310	802.11n HT40 SISO	17.95	62.37
5270 - 5310	802.11n HT40 2TX CDD	20.08	101.86
5270 - 5310	802.11n HT40 2TX STBC/SDM	Covered by 802.11n HT40 2TX CDD Mode	
5290	802.11ac VHT80 SISO	15.19	33.04
5290	802.11ac VHT80 2TX CDD	17.65	58.21
5290	802.11ac VHT80 2TX STBC/SDM	Covered by 802.11ac VHT80 2TX CDD Mode	

5.6GHz Band

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5500 - 5700	802.11a	17.99	62.95
5720	802.11a	17.85	60.95
5500 - 5700	802.11n HT20 SISO	Covered by 802.11a mode	
5720	802.11n HT20 SISO	Covered by 802.11a mode	
5500 - 5700	802.11a 2TX CDD	Covered by 802.11n HT20 2TX CDD Mode	
5720	802.11a 2TX CDD	Covered by 802.11n HT20 2TX CDD Mode	
5500 - 5700	802.11n HT20 2TX CDD	19.75	94.41
5720	802.11n HT20 2TX CDD	19.70	93.33
5500 - 5700	802.11n HT20 2TX STBC/SDM	Covered by 802.11n HT20 2TX CDD mode	
5720	802.11n HT20 2TX STBC/SDM	Covered by 802.11n HT20 2TX CDD mode	
5510 - 5670	802.11n HT40 SISO	17.90	61.66
5710	802.11n HT40 SISO	17.87	61.24
5510 - 5670	802.11n HT40 2TX CDD	20.20	104.71
5710	802.11n HT40 2TX CDD	20.18	104.23
5510 - 5670	802.11n HT40 2TX STBC/SDM	Covered by 802.11n HT40 2TX CDD mode	
5710	802.11n HT40 2TX STBC/SDM	Covered by 802.11n HT40 2TX CDD mode	
5530-5610	802.11ac VHT80 SISO	18.18	65.77
5690	802.11ac VHT80 SISO	17.92	61.94
5530-5610	802.11ac VHT80 2TX CDD	20.45	110.92
5690	802.11ac VHT80 2TX CDD	20.25	105.93
5530-5610	802.11ac VHT80 2TX STBC/SDM	Covered by 802.11ac VHT80 2TX CDD mode	
5690	802.11ac VHT80 2TX STBC/SDM	Covered by 802.11ac VHT80 2TX CDD mode	

5.8GHz Band

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5745-5825	802.11a	17.91	61.80
5745-5825	802.11n HT20 SISO	Covered by 802.11a mode	
5745-5825	802.11a 2TX	Covered by 802.11n HT20 2TX CDD Mode	
5745-5825	802.11n HT20 2TX CDD	20.49	111.94
5745-5825	802.11n HT20 2TX STBC/SDM	Covered by 802.11n HT20 CDD 2TX	
5755-5795	802.11n HT40 SISO	16.98	49.89
5755-5795	802.11n HT40 2TX CDD	18.93	78.16
5755-5795	802.11n HT40 2TX STBC/SDM	Covered by 802.11n HT40 CDD 2TX	
5775	802.11ac VHT80 SISO	13.69	23.39
5775	802.11ac VHT80 2TX CDD	16.18	41.50
5775	802.11ac VHT80 2TX STBC/SDM	Covered by 802.11ac VHT80 CDD 2TX	

Note: The output power on covered modes is equal to or less than one referenced.

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PiFA antenna, with the following maximum gains:

Frequency Band (GHz)	Antenna Gain		Uncorrelated Gain	Correlated Gain
	Antenna C	Antenna B		
5.2	2.39	-0.11	1.32	4.24
5.3	2.17	-0.06	1.20	4.14
5.5	3.00	0.16	1.81	4.71
5.8	3.13	-0.82	1.59	4.39

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was 12B331.

5.5. WORST-CASE CONFIGURATION AND MODE

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

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

Worst-case data rates as provided by the client were:

802.11b mode: 1 Mbps
802.11g mode: 6 Mbps
802.11n HT20mode: MCS0
802.11a mode: 6 Mbps
802.11n HT20 mode: MCS0
802.11n HT40 mode: MCS0
802.11ac VHT80 mode: MCS0

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

There are two vendors of the WiFi/Bluetooth radio modules: variant 1 and variant 2. The Wi-Fi/Bluetooth radio modules have the same mechanical outline (e.g., the same package dimension and pin-out layout), use the same on-board antenna matching circuit, have an identical antenna structure, and are built and tested to conform to the same specifications and to operate within the same tolerances.

Baseline testing was performed on the two variants to determine the worst case on all conducted power and radiated emissions.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC/DC adapter	Apple	A1357	N/A	NA
Earphone	Apple	NA	NA	NA
Laptop	Apple	A1278	C02HJ0A7DTY4	NA
DC power supply	Sorensen	XT 15-4	1319A02780	NA

I/O CABLES (CONDUCTED TEST)

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	Antenna	1	SMA	Un-Shielded	0.2	To spectrum Analyzer
2	USB	1	USB	Shielded	1	N/A
3	DC	1	DC	Un-shielded	0.8	N/A

I/O CABLES (RADIATED ABOVE 1 GHZ)

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
None used						

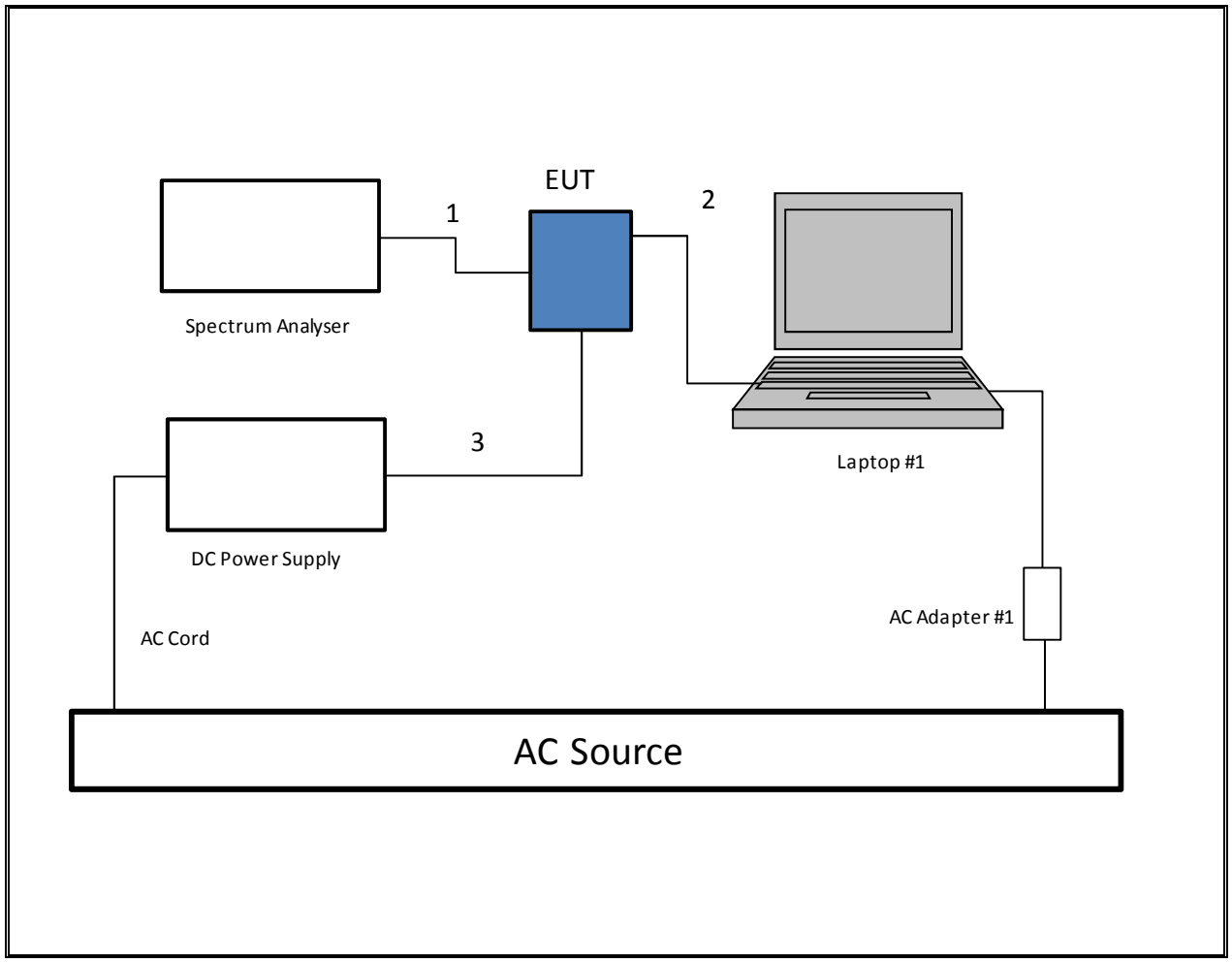
I/O CABLES (AC POWER CONDUCTED TEST and below 1 GHZ)

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	US115	Un-Shielded	0.8	NA
2	DC	1	lightning	Un-Shielded	1	NA
3	Audio	1	Jack	Un-Shielded	0.5	NA

TEST SETUP- CONDUCTED PORT

The EUT was tested connected to a host Laptop via USB cable adapter and spectrum analyzer to antenna port. Test software exercised the EUT.

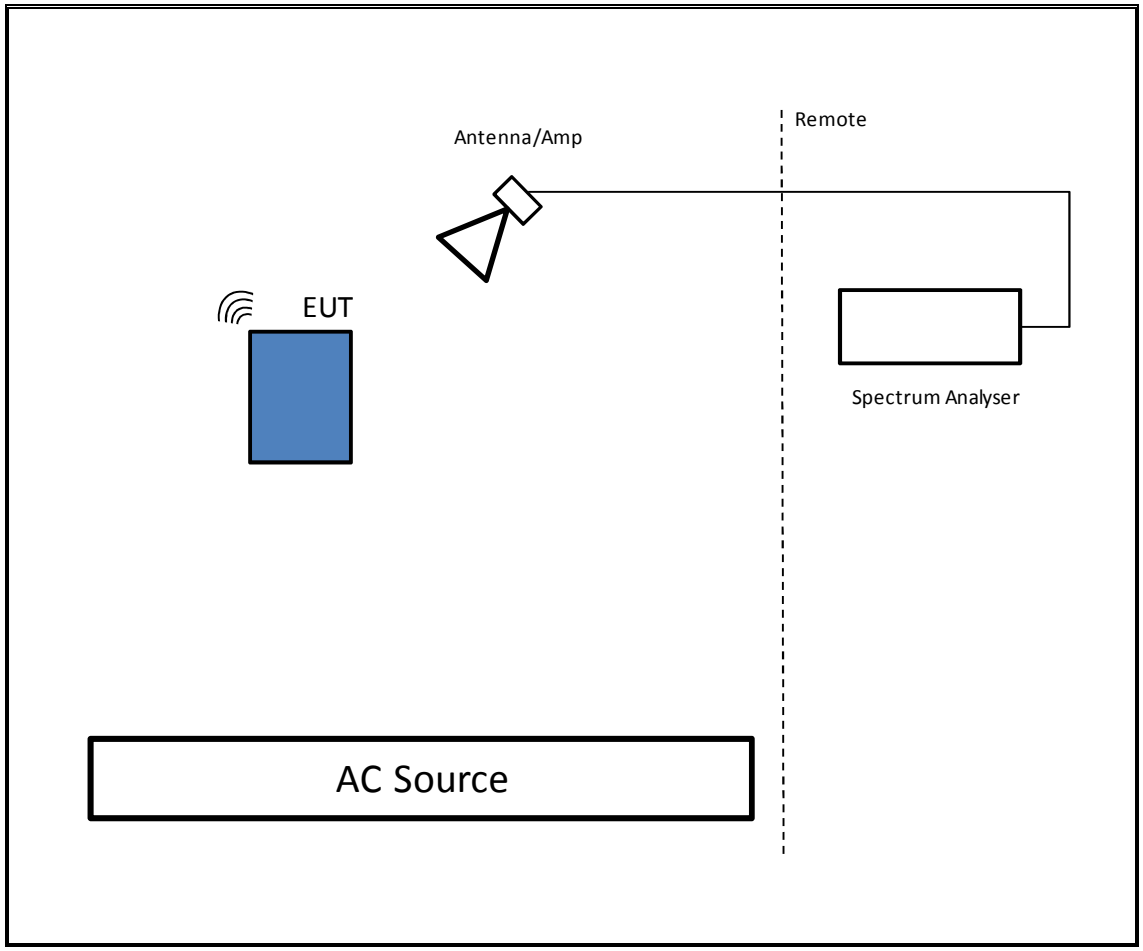
SETUP DIAGRAM



TEST SETUP- RADIATED-ABOVE 1 GHZ

The EUT was tested battery powered. Test software exercised the EUT.

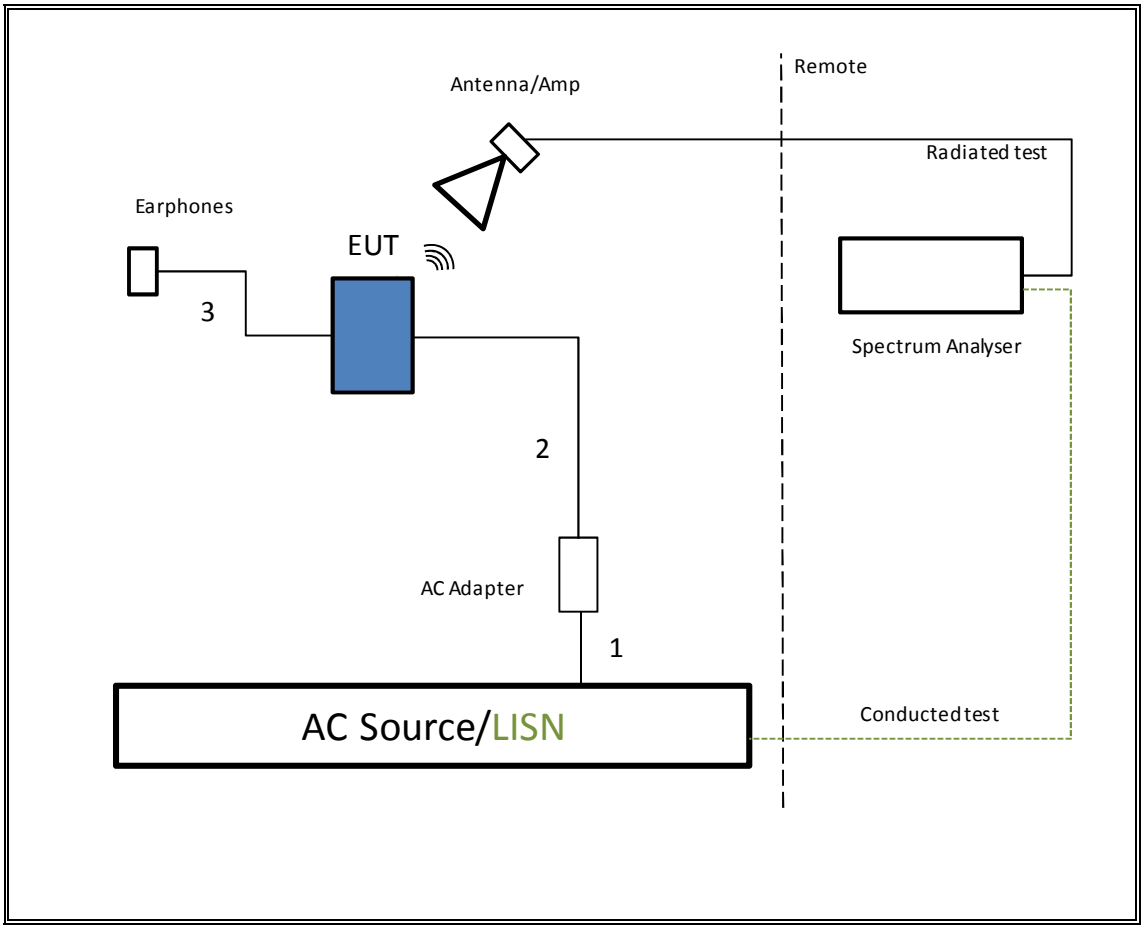
SETUP DIAGRAM



TEST SETUP- BELOW 1GHZ & AC LINE CONDUCTED TESTS

The EUT was tested with earphones connected and powered by AC adapter. Test software exercised the EUT.

SETUP DIAGRAM



6. TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Asset**	**Cal Due**
Antenna, Horn, 18 GHz	ETS Lindgren	3117	F00131	2/18/2015
Antenna, Horn, 26.5 GHz	ARA	MWH-1826/B	C00589	11/28/2014
Antenna, Horn, 40 GHz	ATA	MWH-2040/B	C00981	7/5/2015
Peak / Average Power Sensor	Agilent / HP	N1911A	F00153	3/6/2015
Wideband Power Sensor	Agilent	N1921A	F00361	10/2/2014
Peak Power Meter	Agilent / HP	E9323A	F00025	4/3/2015
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	F00129	2/22/2015
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	F00168	3/28/2015
Preamplifier, 1300 MHz	Sonoma	310	F00008	5/27/2015
Preamplifier, 26.5 GHz	Agilent / HP	8449B	F00165	3/25/2015
EMI Test Receiver, 9 kHz-7 GHz	R & S	ESCI 7	F00092	9/5/2014
LISN, 30 MHz	FCC	LISN-50/250-25-2	C00626	1/14/2015
Peak Power Sensor	Boonton	57006	C01202	07/17/15
Peak Power Meter	Boonton	4541	C01186	07/17/15
Spectrum Analyzer, 44 Ghz	Agilent	N9030A	N/A	05/17/15
Spectrum Analyzer, 40 Ghz	Agilent	8564E	C00951	08/06/15

7. 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.3.a (Method PM).

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.

8. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

LIMITS

None; for reporting purposes only.

PROCEDURE

KDB 789033 Zero-Span Spectrum Analyzer Method.

8.1. 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	2.064	2.085	0.990	98.99%	0.00	0.010
802.11n HT20 CDD	1.914	1.938	0.988	98.76%	0.00	0.010
802.11n HT40 1TX	1.122	1.142	0.982	98.25%	0.00	0.010
802.11n HT40 CDD	1.122	1.142	0.982	98.25%	0.00	0.010
802.11ac VHT80 1TX	0.4600	0.4832	0.952	95.20%	0.21	2.174
802.11ac VHT80 CDD	0.4600	0.4832	0.952	95.20%	0.21	2.174

8.1. DUTY CYCLE PLOTS

DUTY CYCLE 802.11a 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

9. ANTENNA PORT TEST RESULTS

9.1. 802.11a SISO MODE IN THE 5.2 GHz BAND

9.1.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5180	21.57
Mid	5200	21.60
High	5240	21.66

26 dB BANDWIDTH

BANDWIDTH LOW CH

BANDWIDTH MID CH

BANDWIDTH HIGH CH

9.1.2. 99% BANDWIDTH

LIMITS

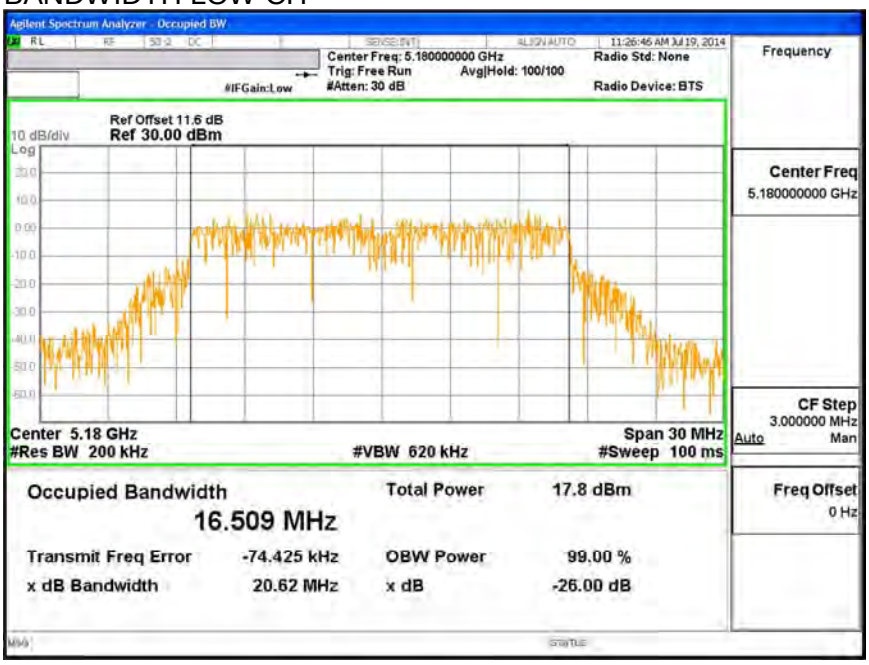
None; for reporting purposes only.

RESULTS

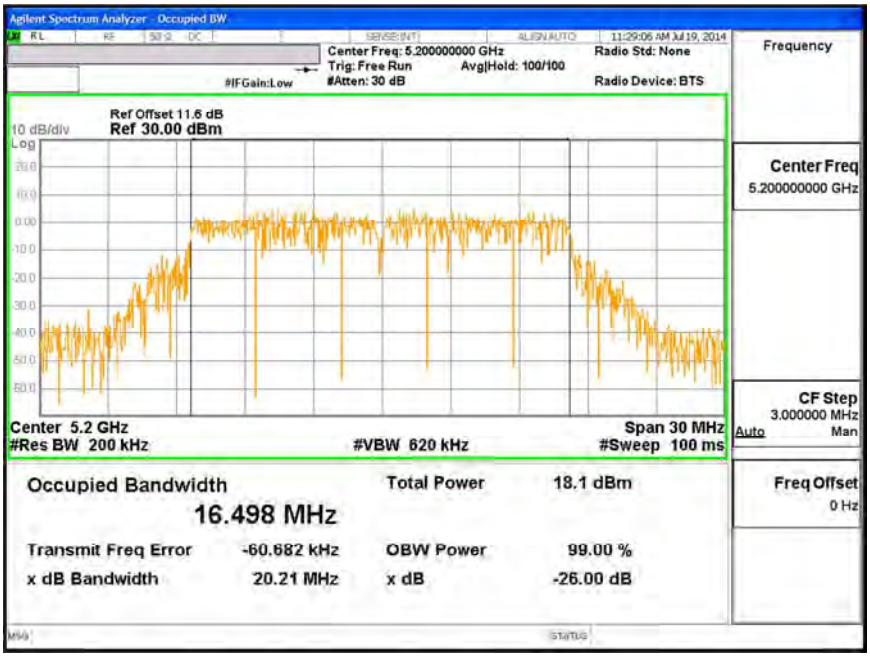
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5180	16.509
Mid	5200	16.498
High	5240	16.549

99% BANDWIDTH

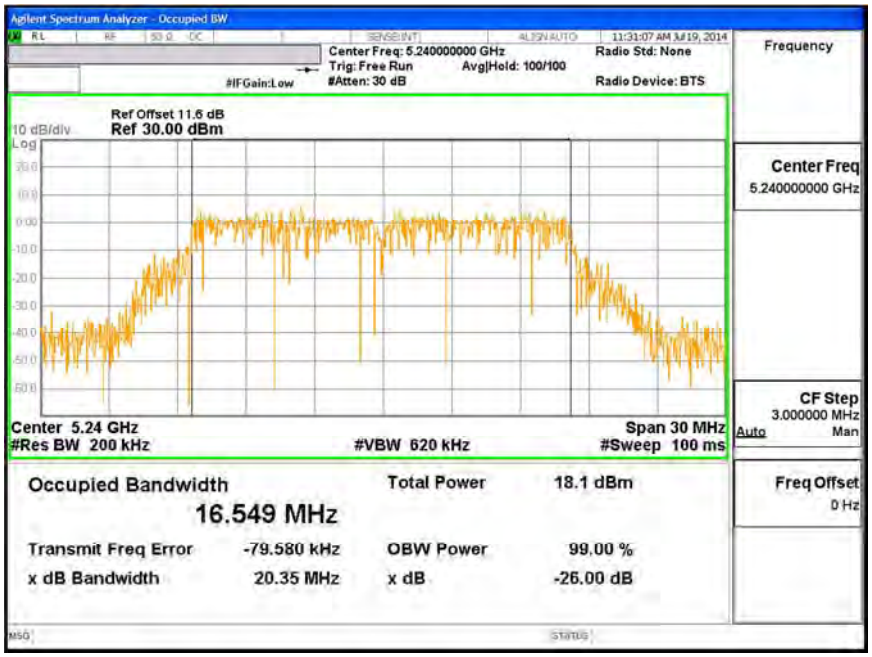
BANDWIDTH LOW CH



BANDWIDTH MID CH



BANDWIDTH HIGH CH



9.1.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter. The power meter was setup for a gated power measurement.

The cable assembly insertion loss of 11.6 dB (including 10 dB pad and 1.6 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Channel	Frequency (MHz)	Power Antenna B (dBm)	Power Antenna C (dBm)
low	5180	16.90	16.97
mid	5200	16.95	17.90
high	5240	16.96	17.99

9.1.4. OUTPUT POWER AND PSD

LIMITS

FCC §15.407 (a) (1)
(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The transmitter output is connected to a power meter. The power meter was setup for a gated power measurement.

The cable assembly insertion loss of 11.6 dB (including 10 dB pad and 1.6 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

DIRECTIONAL ANTENNA GAIN

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

ANTENNA B

Antenna Gain (dBi)
-0.109

ANTENNA C

Antenna Gain (dBi)
2.394

RESULTS

ANTENNA B

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5180	-0.11	-0.11	24.00	11.00
Mid	5200	-0.11	-0.11	24.00	11.00
High	5240	-0.11	-0.11	24.00	11.00

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

Output Power Results

Channel	Frequency (MHz)	Antenna B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	16.90	16.90	24.00	-7.10
Mid	5200	16.95	16.95	24.00	-7.05
High	5240	16.96	16.96	24.00	-7.04

PSD Results

Channel	Frequency (MHz)	Antenna B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5180	5.94	5.94	11.00	-5.06
Mid	5200	6.10	6.10	11.00	-4.90
High	5240	5.71	5.71	11.00	-5.29

ANTENNA C

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5180	2.39	2.39	24.00	11.00
Mid	5200	2.39	2.39	24.00	11.00
High	5240	2.39	2.39	24.00	11.00

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

Output Power Results

Channel	Frequency (MHz)	Antenna C Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	16.97	16.97	24.00	-7.03
Mid	5200	17.90	17.90	24.00	-6.10
High	5240	17.99	17.99	24.00	-6.01

PSD Results

Channel	Frequency (MHz)	Antenna C Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5180	6.15	6.15	11.00	-4.85
Mid	5200	7.40	7.40	11.00	-3.60
High	5240	7.49	7.49	11.00	-3.51

PSD, ANTENNA B

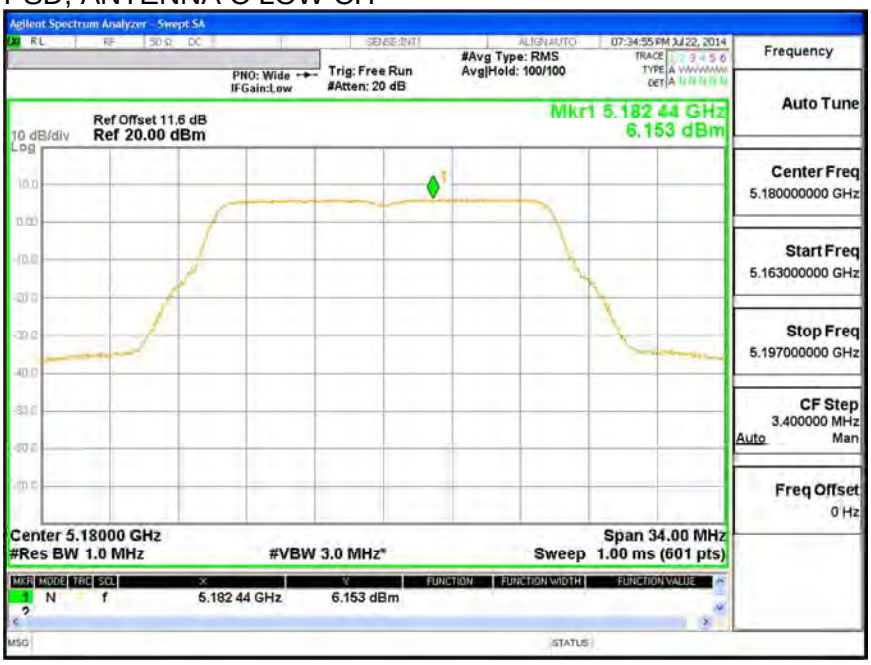
PSD, ANTENNA B LOW CH

PSD, ANTENNA B MID CH

PSD, ANTENNA B HIGH CH

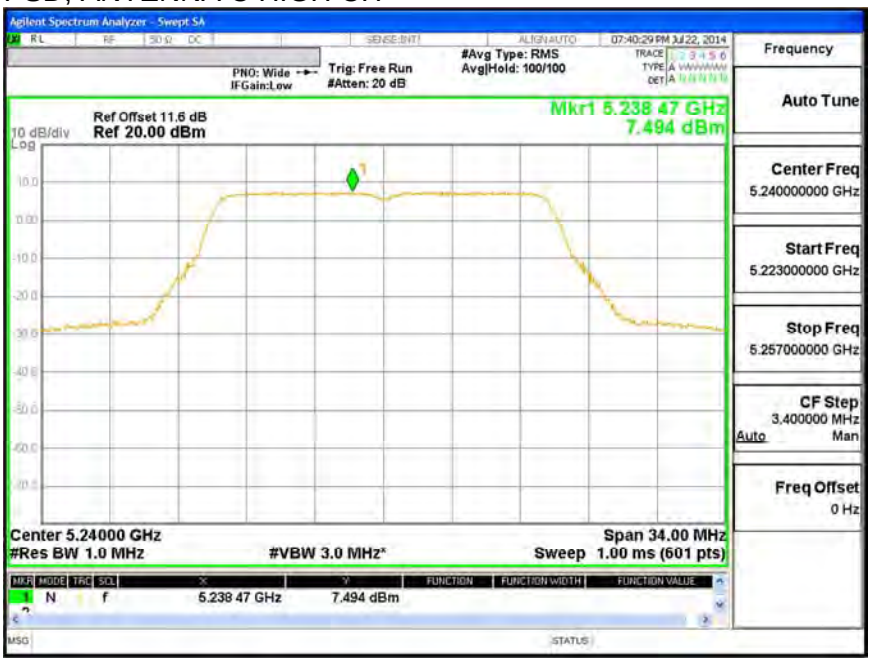
PSD, ANTENNA C

PSD, ANTENNA C LOW CH



PSD, ANTENNA C MID CH

PSD, ANTENNA C HIGH CH



9.2. 802.11n HT20 2Tx CDD MODE IN THE 5.2 GHz BAND

9.2.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB BW Antenna B (MHz)	26 dB BW Antenna C (MHz)
Low	5180	21.93	21.75
Mid	5200	21.93	21.69
High	5240	21.90	21.75

26 dB BANDWIDTH, ANTENNA B

BANDWIDTH ANTENNA B LOW CH

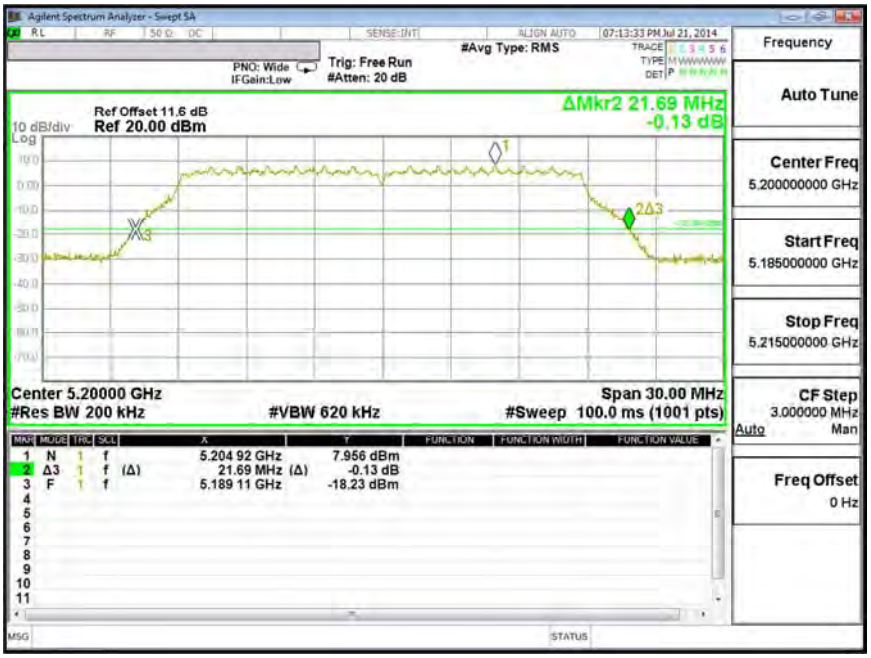
BANDWIDTH ANTENNA B MID CH

BANDWIDTH ANTENNA B HIGH CH

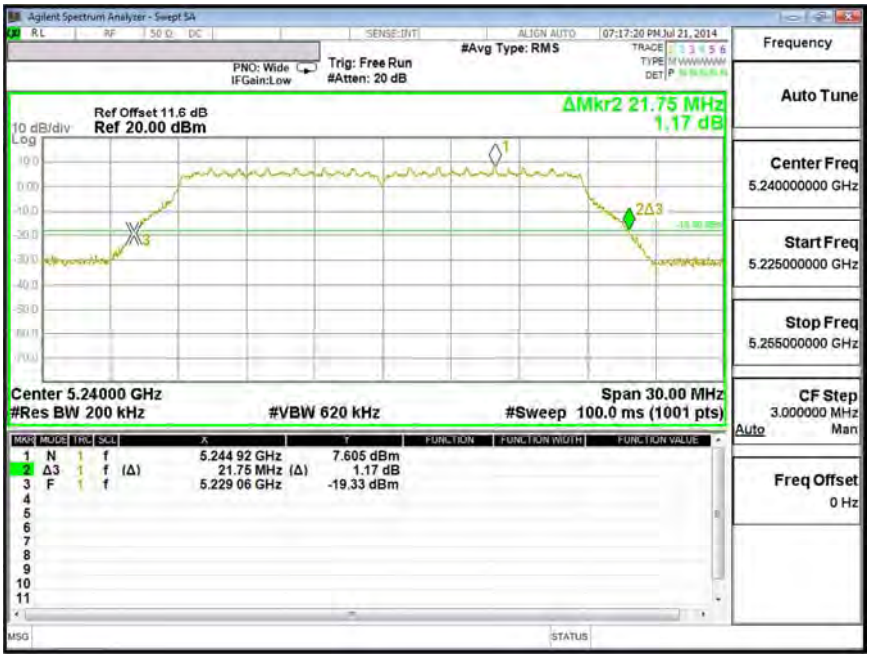
26 dB BANDWIDTH, ANTENNA C

BANDWIDTH ANTENNA C LOW CH

BANDWIDTH ANTENNA C MID CH



BANDWIDTH ANTENNA C HIGH CH



9.2.2. 99% BANDWIDTH

LIMITS

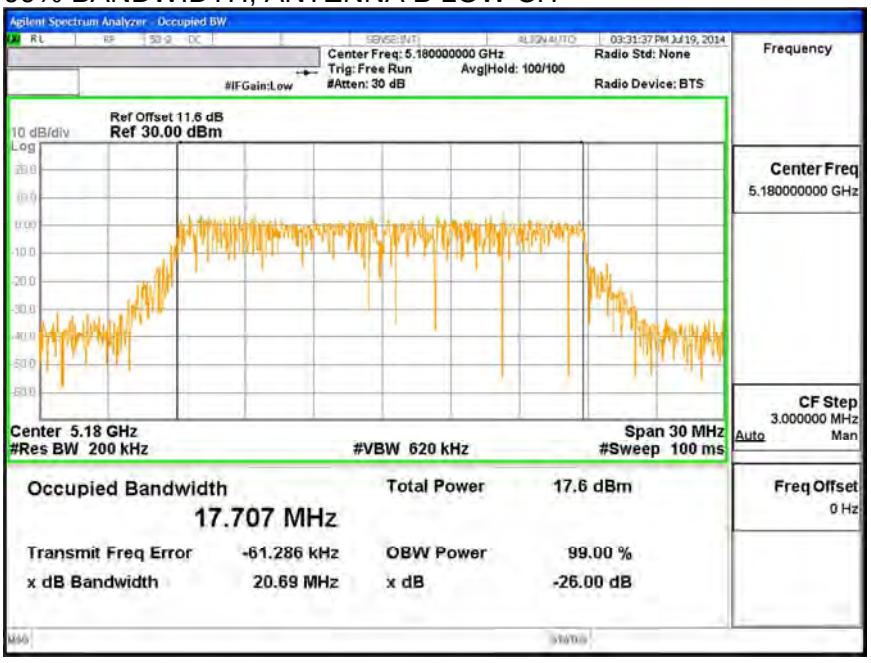
None; for reporting purposes only.

RESULTS

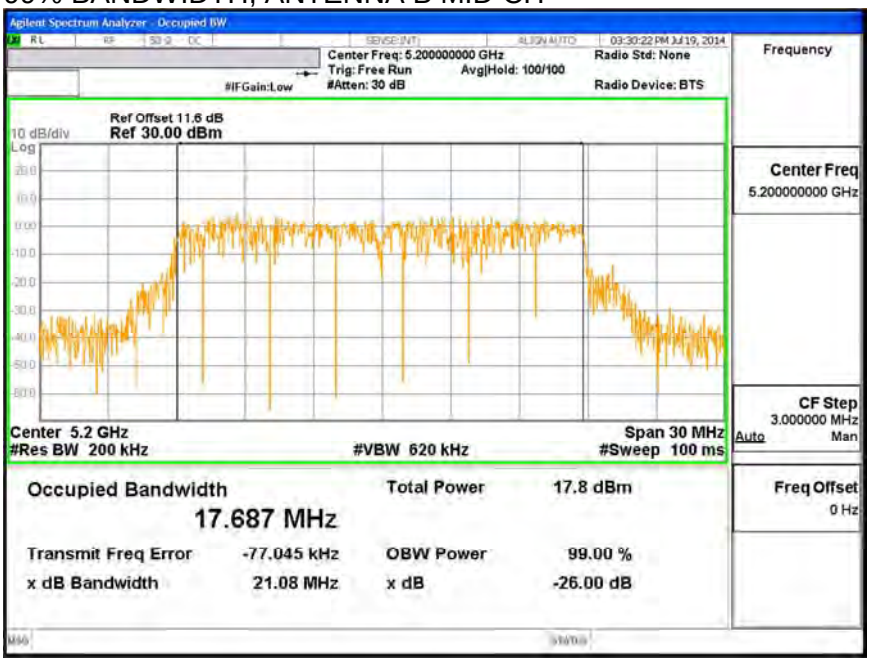
Channel	Frequency (MHz)	99% BW Antenna B (MHz)	99% BW Antenna C (MHz)
Low	5180	17.707	17.799
Mid	5200	17.687	17.742
High	5240	17.711	17.629

99% BANDWIDTH, ANTENNA B

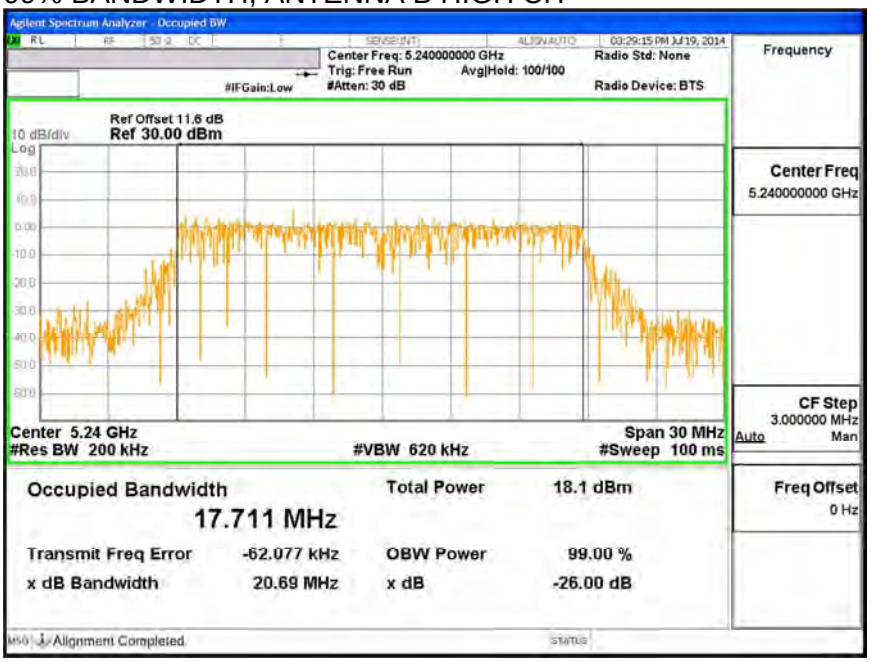
99% BANDWIDTH, ANTENNA B LOW CH



99% BANDWIDTH, ANTENNA B MID CH

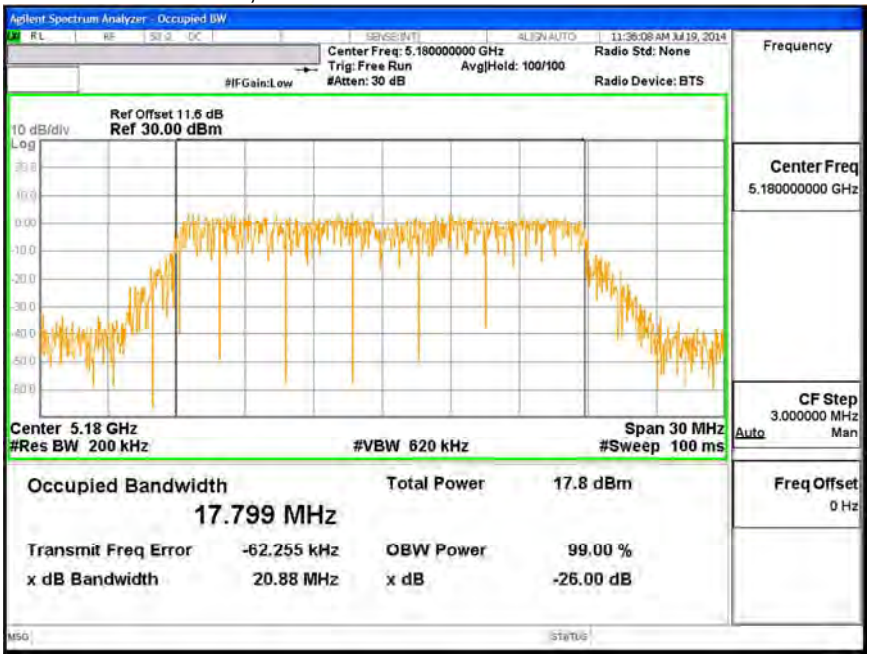


99% BANDWIDTH, ANTENNA B HIGH CH



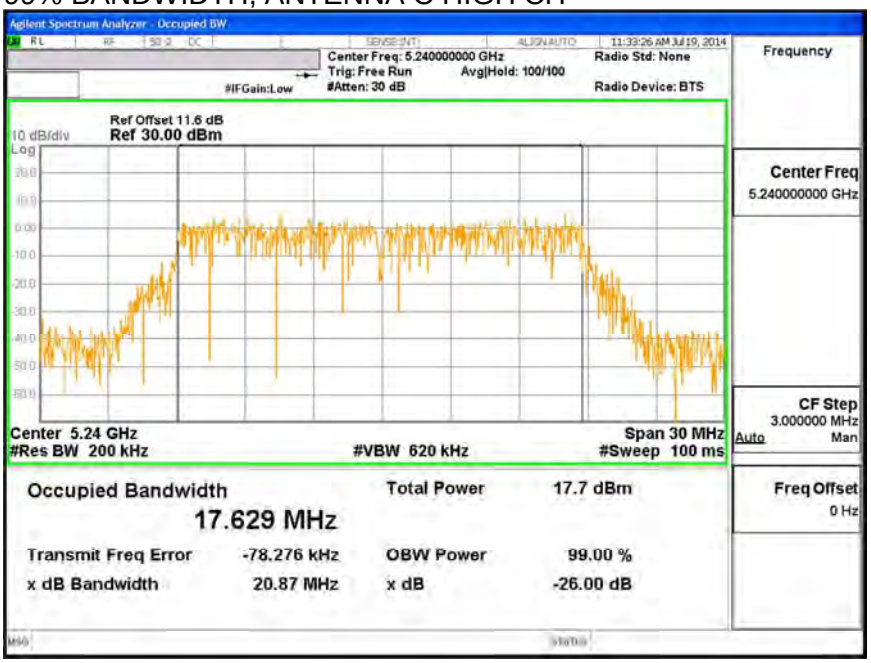
99% BANDWIDTH, ANTENNA C

99% BANDWIDTH, ANTENNA C LOW CH



99% BANDWIDTH, ANTENNA C MID CH

99% BANDWIDTH, ANTENNA C HIGH CH



9.2.4. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter. The power meter was setup for a gated power measurement.

The cable assembly insertion loss of 11.6 dB (including 10 dB pad and 1.6 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)	Antenna B Power (dBm)	Antenna C Power (dBm)	Total Power (dBm)
Low	5180	15.47	15.47	18.48
Mid	5200	16.96	16.92	19.95
High	5240	16.89	16.93	19.92

9.2.5. OUTPUT POWER AND PSD

LIMITS

FCC §15.407 (a) (1)

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

TEST PROCEDURE

The transmitter output is connected to a power meter. The power meter was setup for a gated power measurement.

The cable assembly insertion loss of 11.6 dB (including 10 dB pad and 1.6 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

DIRECTIONAL ANTENNA GAIN

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

Antenna B Antenna Gain (dBi)	Antenna C Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
-0.11	2.39	1.32

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

Antenna B Antenna Gain (dBi)	Antenna C Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
-0.11	2.39	4.24

RESULTS

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5180	1.32	4.24	24.00	11.00
Mid	5200	1.32	4.24	24.00	11.00
High	5240	1.32	4.24	24.00	11.00

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

Output Power Results

Channel	Frequency (MHz)	Antenna B Meas Power (dBm)	Antenna C Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5180	15.47	15.47	18.48	24.00	-5.52
Mid	5200	16.96	16.92	19.95	24.00	-4.05
High	5240	16.89	16.93	19.92	24.00	-4.08

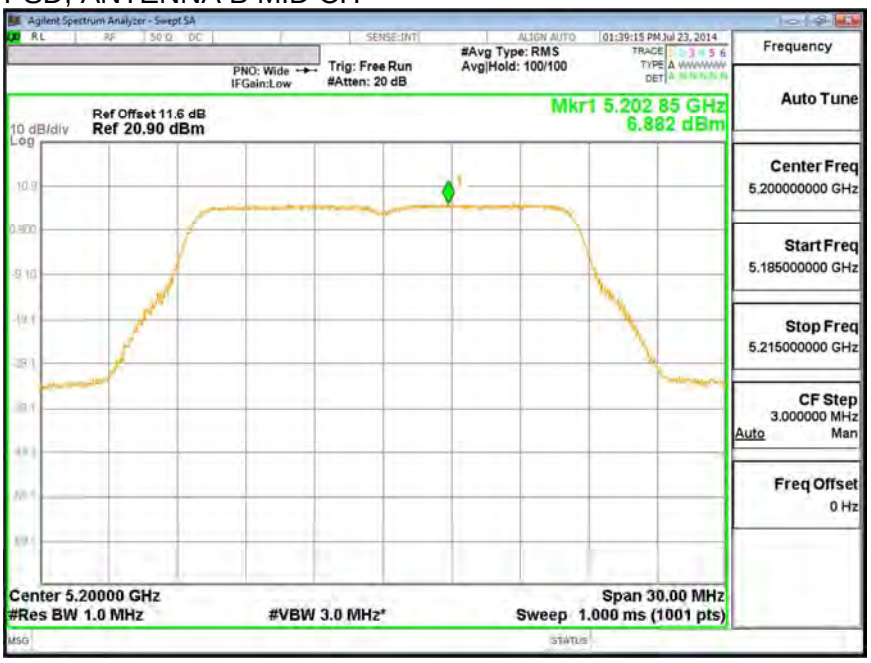
PSD Results

Channel	Frequency (MHz)	Antenna B Meas PSD (dBm)	Antenna C Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5180	6.38	6.36	9.38	11.00	-1.62
Mid	5200	6.88	6.71	9.80	11.00	-1.20
High	5240	6.36	6.06	9.22	11.00	-1.78

PSD, ANTENNA B

PSD, ANTENNA B LOW CH

PSD, ANTENNA B MID CH



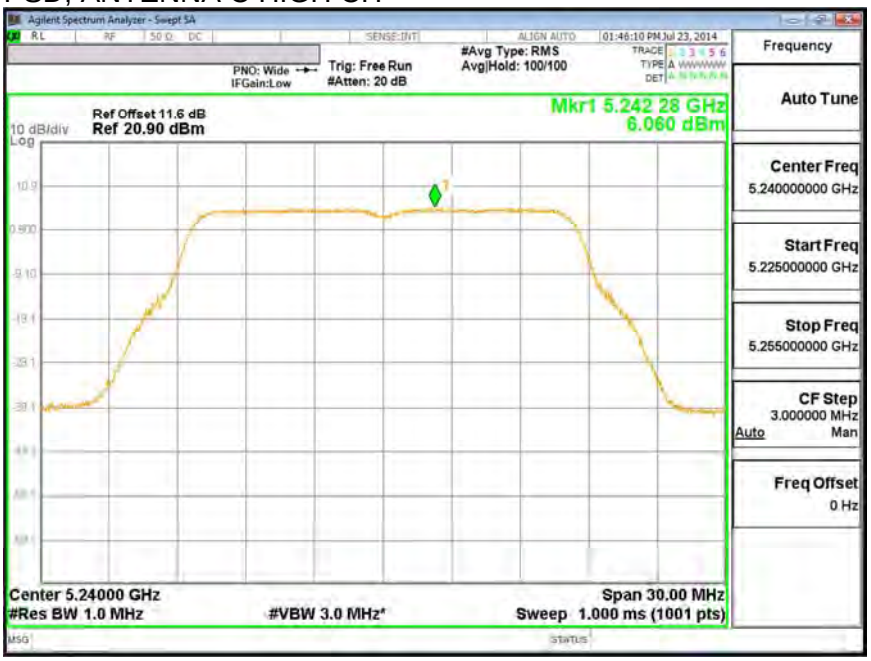
PSD, ANTENNA B HIGH CH

PSD, ANTENNA C

PSD, ANTENNA C LOW CH

PSD, ANTENNA C MID CH

PSD, ANTENNA C HIGH CH



9.3. 802.11n HT20 2Tx STBC/SDM MODE IN THE 5.2 GHz BAND

Refer to Section 9.2, 802.11n HT20 2TX CDD mode in the 5.2 GHz Band.

9.4. 802.11n HT40 SISO MODE IN THE 5.2 GHz BAND

9.4.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5190	40.32
High	5230	40.02

26 dB BANDWIDTH

BANDWIDTH LOW CH

BANDWIDTH HIGH CH

9.4.2. 99% BANDWIDTH

LIMITS

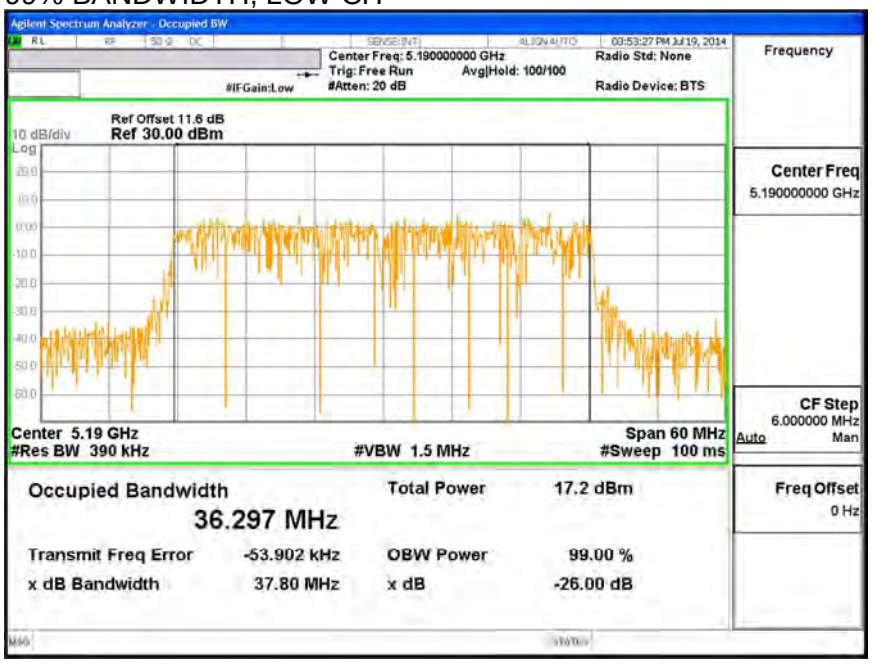
None; for reporting purposes only.

RESULTS

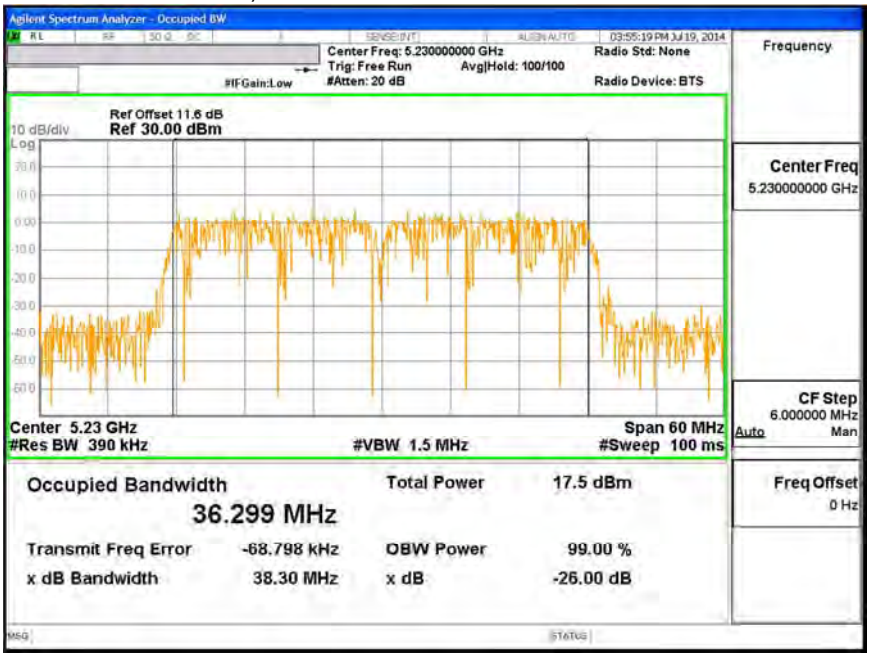
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5190	36.297
High	5230	36.299

99% BANDWIDTH

99% BANDWIDTH, LOW CH



99% BANDWIDTH, HIGH CH



9.4.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter. The power meter was setup for a gated power measurement.

The cable assembly insertion loss of 11.6 dB (including 10 dB pad and 1.6 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Channel	Frequency (MHz)	Power Antenna B (dBm)	Power Antenna C (dBm)
Low	5190	13.47	13.46
High	5230	16.92	17.93

9.4.4. OUTPUT POWER AND PSD

LIMITS

FCC §15.407 (a) (1)
(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The transmitter output is connected to a power meter. The power meter was setup for a gated power measurement.

The cable assembly insertion loss of 11.6 dB (including 10 dB pad and 1.6 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

DIRECTIONAL ANTENNA GAIN

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

ANTENNA B

Antenna Gain (dBi)
-0.109

ANTENNA C

Antenna Gain (dBi)
2.394

RESULTS

ANTENNA B

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5190	-0.11	-0.11	24.00	11.00
High	5230	-0.11	-0.11	24.00	11.00

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

Output Power Results

Channel	Frequency (MHz)	Antenna B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5190	13.47	13.47	24.00	-10.53
High	5230	16.92	16.92	24.00	-7.08

PSD Results

Channel	Frequency (MHz)	Antenna B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5190	-0.41	-0.41	11.00	-11.41
High	5230	2.98	2.98	11.00	-8.02

ANTENNA C

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5190	2.39	2.39	24.00	11.00
High	5230	2.39	2.39	24.00	11.00

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

Output Power Results

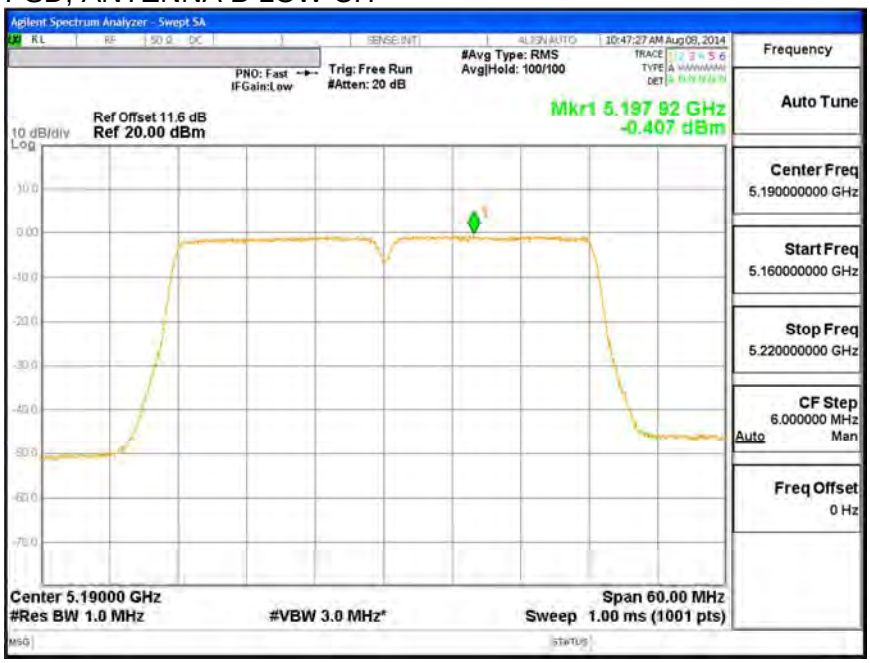
Channel	Frequency (MHz)	Antenna C Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5190	13.46	13.46	24.00	-10.54
High	5230	17.93	17.93	24.00	-6.07

PSD Results

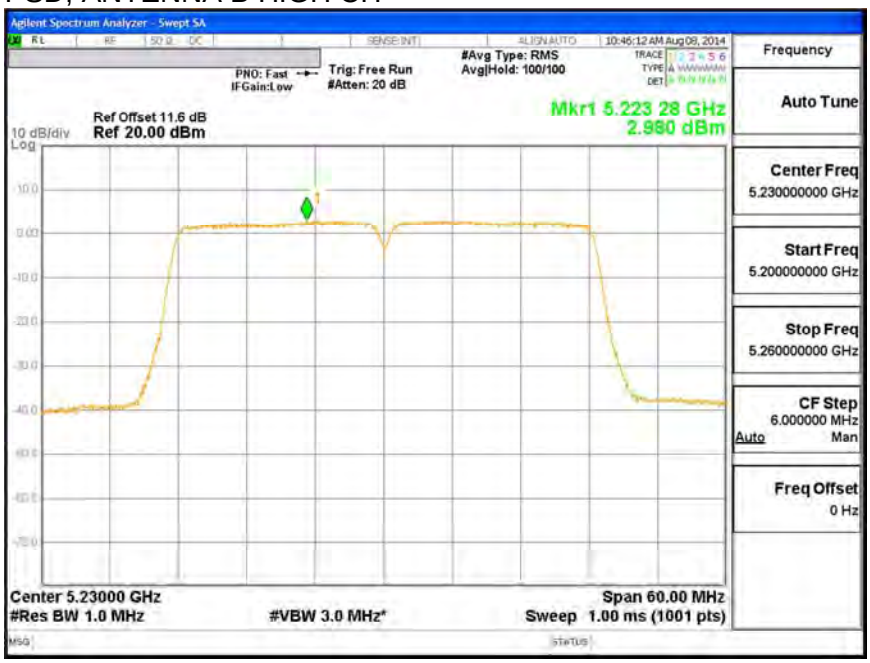
Channel	Frequency (MHz)	Antenna C Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5190	0.68	0.68	11.00	-10.33
High	5230	3.81	3.81	11.00	-7.19

PSD, ANTENNA B

PSD, ANTENNA B LOW CH

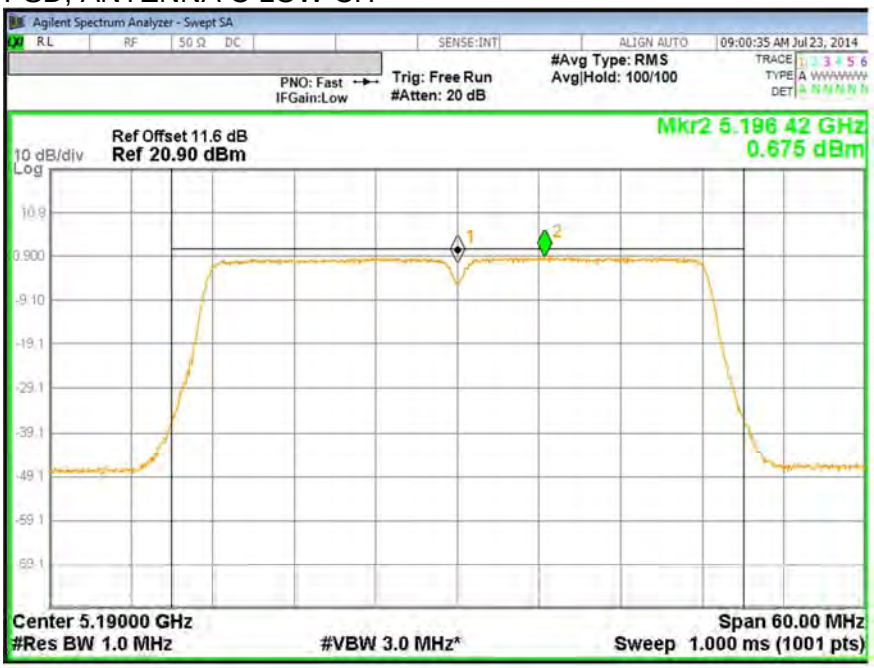


PSD, ANTENNA B HIGH CH

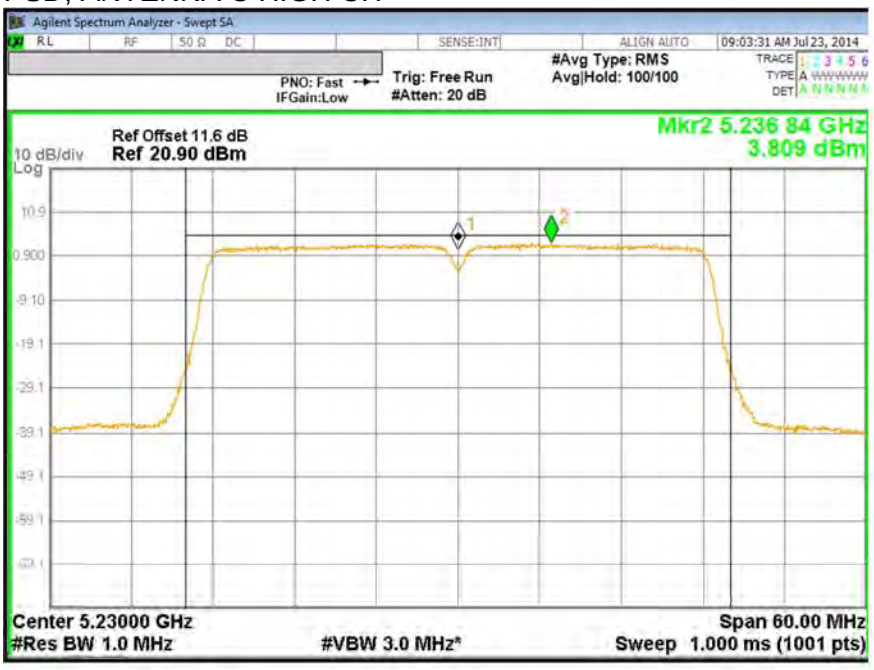


PSD, ANTENNA C

PSD, ANTENNA C LOW CH



PSD, ANTENNA C HIGH CH



9.5. 802.11n HT40 2Tx CDD MODE IN THE 5.2 GHz BAND

9.5.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB BW Antenna B (MHz)	26 dB BW Antenna C (MHz)
Low	5190	40.26	39.90
High	5230	40.08	39.84

26 dB BANDWIDTH, ANTENNA B

26 dB BANDWIDTH, ANTENNA B LOW CH

26 dB BANDWIDTH, ANTENNA B HIGH CH

26 dB BANDWIDTH, ANTENNA C

26 dB BANDWIDTH, ANTENNA C LOW CH

26 dB BANDWIDTH, ANTENNA C HIGH CH

9.5.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

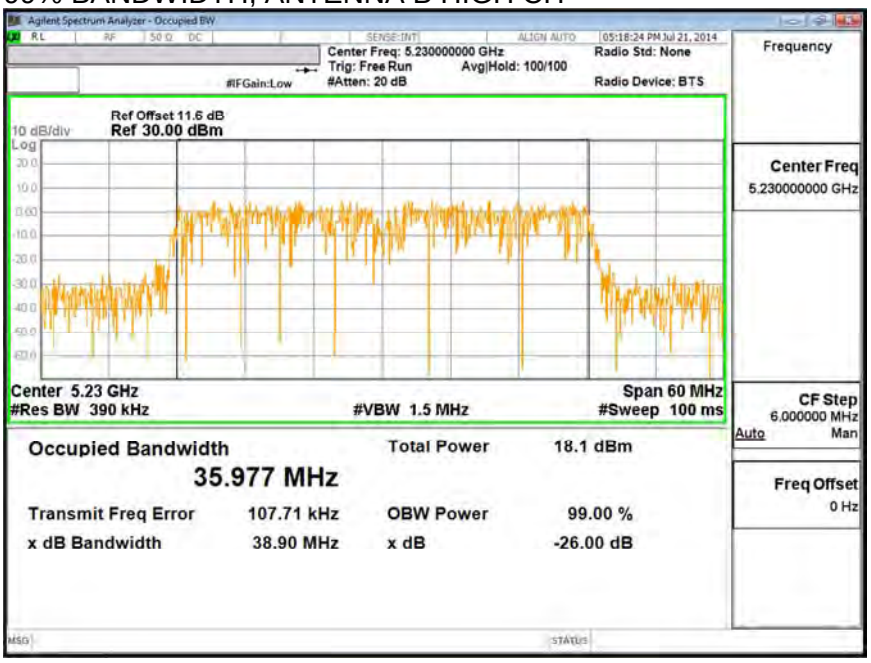
RESULTS

Channel	Frequency (MHz)	99% BW Antenna B (MHz)	99% BW Antenna C (MHz)
Low	5190	36.288	36.388
High	5230	35.977	36.332

99% BANDWIDTH, ANTENNA B

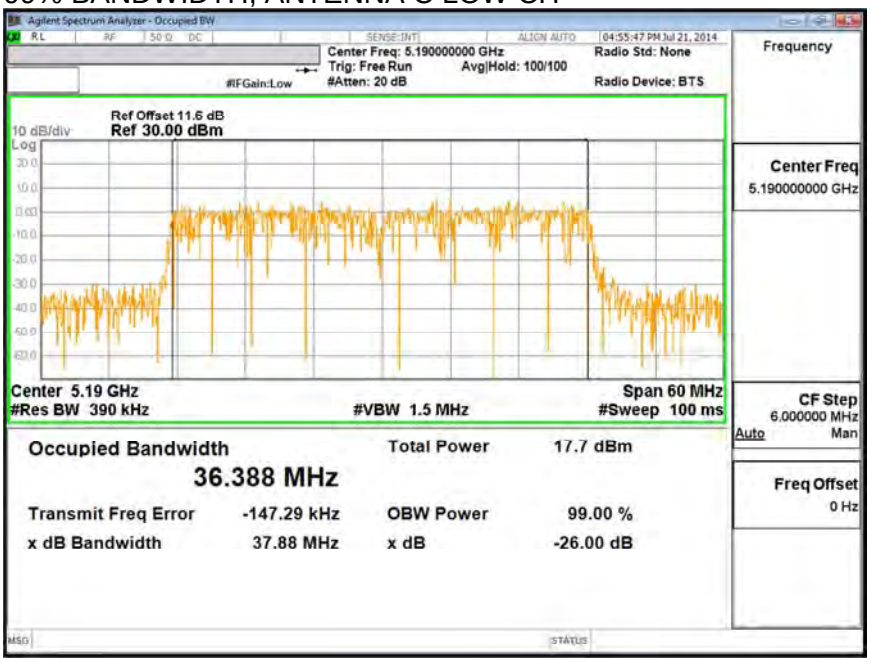
99% BANDWIDTH, ANTENNA B LOW CH

99% BANDWIDTH, ANTENNA B HIGH CH

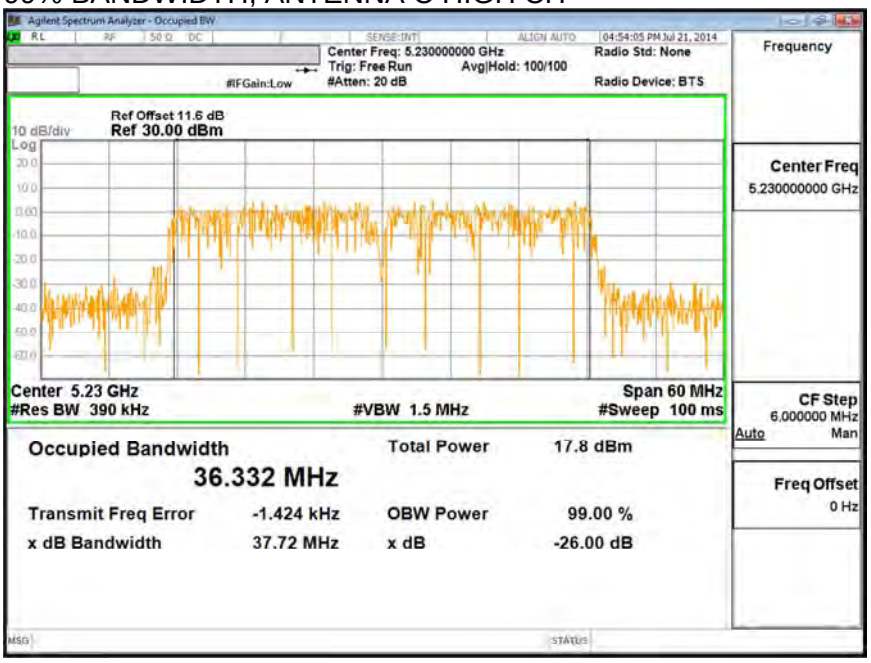


99% BANDWIDTH, ANTENNA C

99% BANDWIDTH, ANTENNA C LOW CH



99% BANDWIDTH, ANTENNA C HIGH CH



9.5.1. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter. The power meter was setup for a gated power measurement.

The cable assembly insertion loss of 11.6 dB (including 10 dB pad and 1.6 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)	Antenna B Power (dBm)	Antenna C Power (dBm)	Total Power (dBm)
Low	5190	12.39	12.41	15.41
High	5230	16.93	17.90	20.45

9.5.2. OUTPUT POWER AND PSD

LIMITS

FCC §15.407 (a) (1)

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

TEST PROCEDURE

The transmitter output is connected to a power meter. The power meter was setup for a gated power measurement.

The cable assembly insertion loss of 11.6 dB (including 10 dB pad and 1.6 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

DIRECTIONAL ANTENNA GAIN

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

Antenna B Antenna Gain (dBi)	Antenna C Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
-0.11	2.39	1.32

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

Antenna B Antenna Gain (dBi)	Antenna C Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
-0.11	2.39	4.24

RESULTS

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5190	1.32	4.24	24.00	11.00
High	5230	1.32	4.24	24.00	11.00

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

Output Power Results

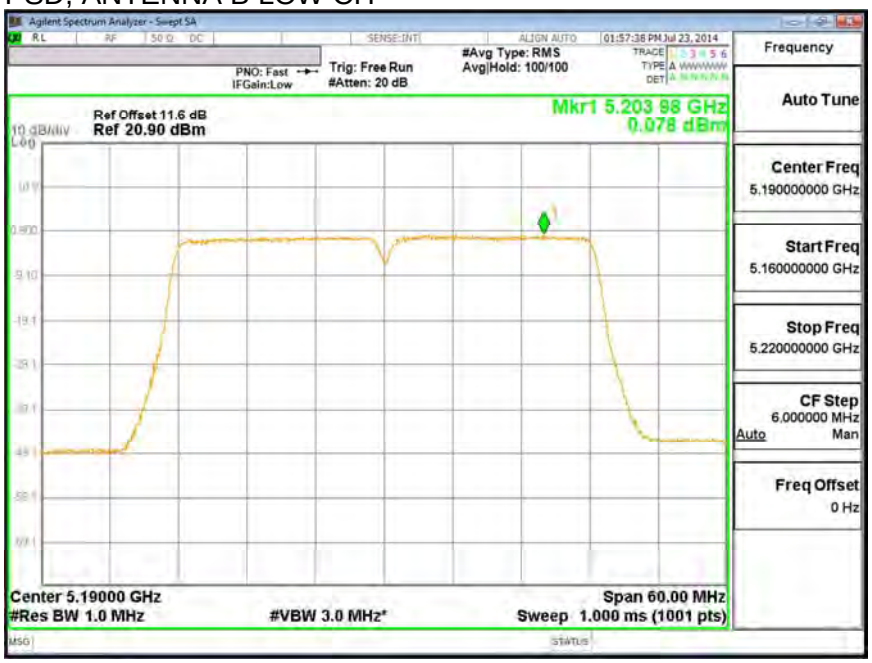
Channel	Frequency (MHz)	Antenna B Meas Power (dBm)	Antenna C Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5190	12.39	12.41	15.41	24.00	-8.59
High	5230	16.93	17.90	20.45	24.00	-3.55

PSD Results

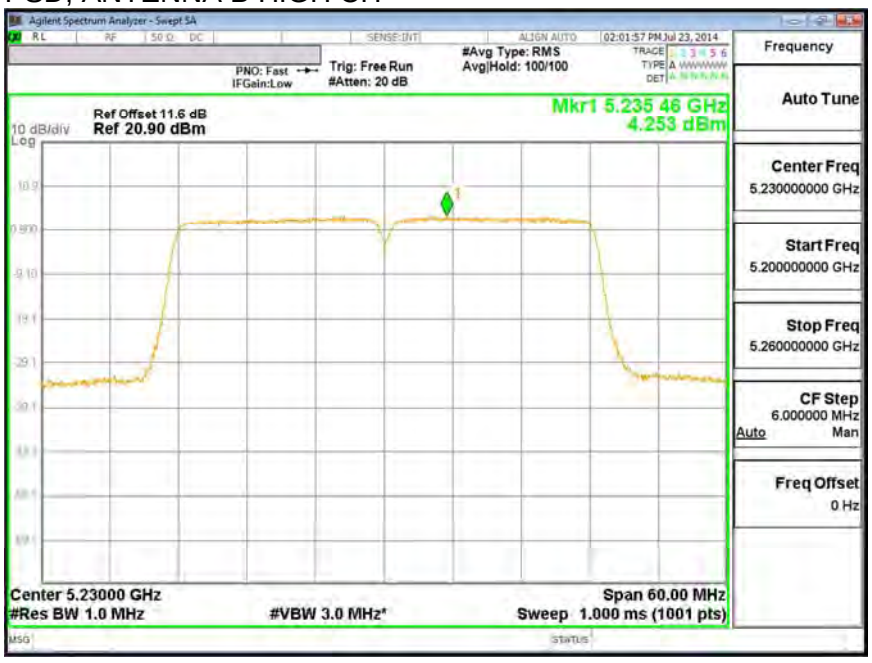
Channel	Frequency (MHz)	Antenna B Meas PSD (dBm)	Antenna C Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5190	0.08	0.11	3.10	11.00	-7.90
High	5230	4.25	3.69	6.99	11.00	-4.01

PSD, ANTENNA B

PSD, ANTENNA B LOW CH

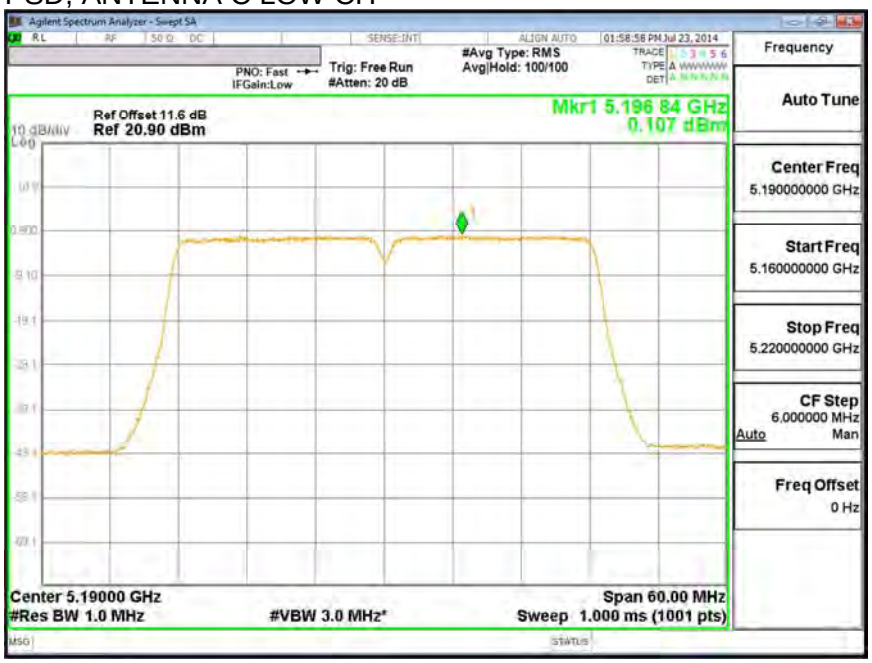


PSD, ANTENNA B HIGH CH



PSD, ANTENNA C

PSD, ANTENNA C LOW CH



PSD, ANTENNA C HIGH CH

9.6. 802.11n HT40 2Tx STBC/SDM MODE IN THE 5.2 GHz BAND

Refer to Section 9.5, 802.11n HT40 2Tx CDD MODE IN THE 5.2 GHz BAND.

9.7. 802.11ac VHT80 MODE IN THE 5.2 GHz BAND

9.7.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Mid	5210	82.08

26 dB BANDWIDTH

BANDWIDTH MID CH

9.7.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Mid	5210	75.578

99% BANDWIDTH

BANDWIDTH MID CH

9.7.1. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter. The power meter was setup for a gated power measurement.

The cable assembly insertion loss of 11.6 dB (including 10 dB pad and 1.6 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Channel	Frequency (MHz)	Power Antenna B (dBm)	Power Antenna C (dBm)
Mid	5210	12.97	12.94

9.7.2. OUTPUT POWER AND PSD

LIMITS

FCC §15.407 (a) (1)
(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The transmitter output is connected to a power meter. The power meter was setup for a gated power measurement.

The cable assembly insertion loss of 11.6 dB (including 10 dB pad and 1.6 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

DIRECTIONAL ANTENNA GAIN

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

ANTENNA B

Antenna Gain (dBi)
-0.109

ANTENNA C

Antenna Gain (dBi)
2.394

RESULTS

ANTENNA B

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Mid	5210	-0.11	-0.11	24.00	11.00

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

Output Power Results

Channel	Frequency (MHz)	Antenna B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5210	12.97	13.18	24.00	-10.82

PSD Results

Channel	Frequency (MHz)	Antenna B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5210	-4.30	-4.09	11.00	-15.09

ANTENNA C

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Mid	5210	2.39	2.39	24.00	11.00

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

Output Power Results

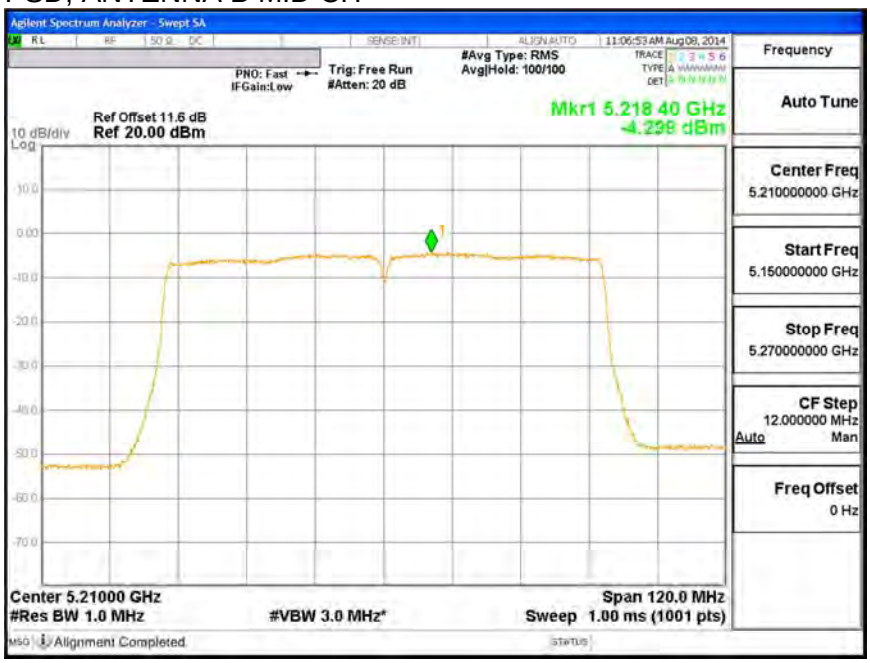
Channel	Frequency (MHz)	Antenna C Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5210	12.94	13.15	24.00	-10.85

PSD Results

Channel	Frequency (MHz)	Antenna C Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5210	-4.24	-4.03	11.00	-15.03

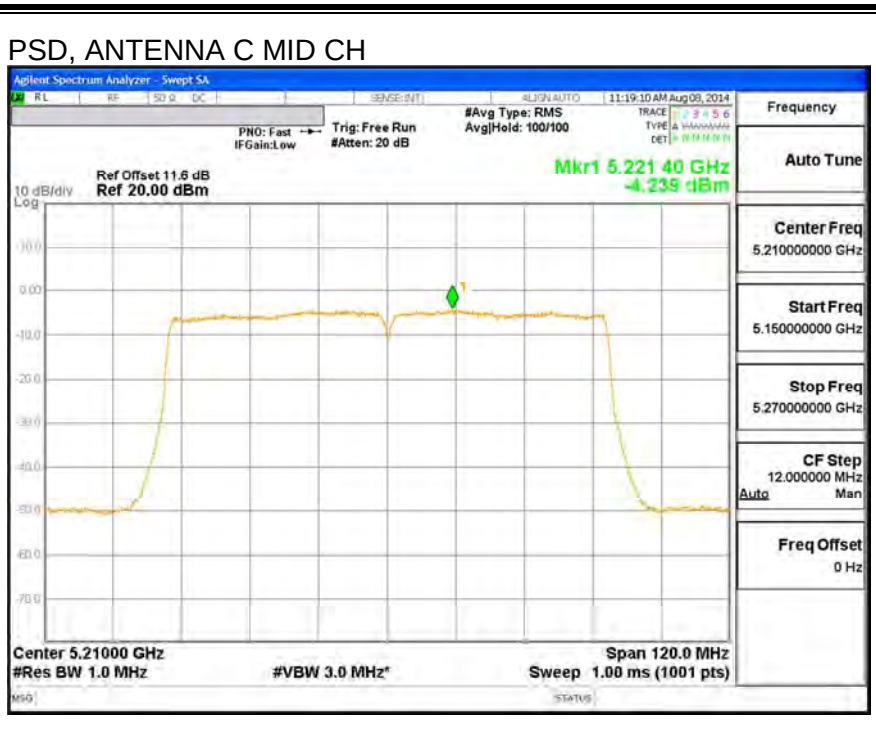
PSD, ANTENNA B

PSD, ANTENNA B MID CH



PSD, ANTENNA C

PSD, ANTENNA C MID CH



9.8. 802.11ac 80MHz 2TX CDD MODE IN THE 5.2 GHz BAND

9.8.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB BW Antenna B (MHz)	26 dB BW Antenna C (MHz)
42	5210	82.68	81.36

26 dB BANDWIDTH, ANTENNA B

26 dB BANDWIDTH, ANTENNA B CH 42

26 dB BANDWIDTH, ANTENNA C

26 dB BANDWIDTH, ANTENNA C CH 42

9.8.2. 99% BANDWIDTH

LIMITS

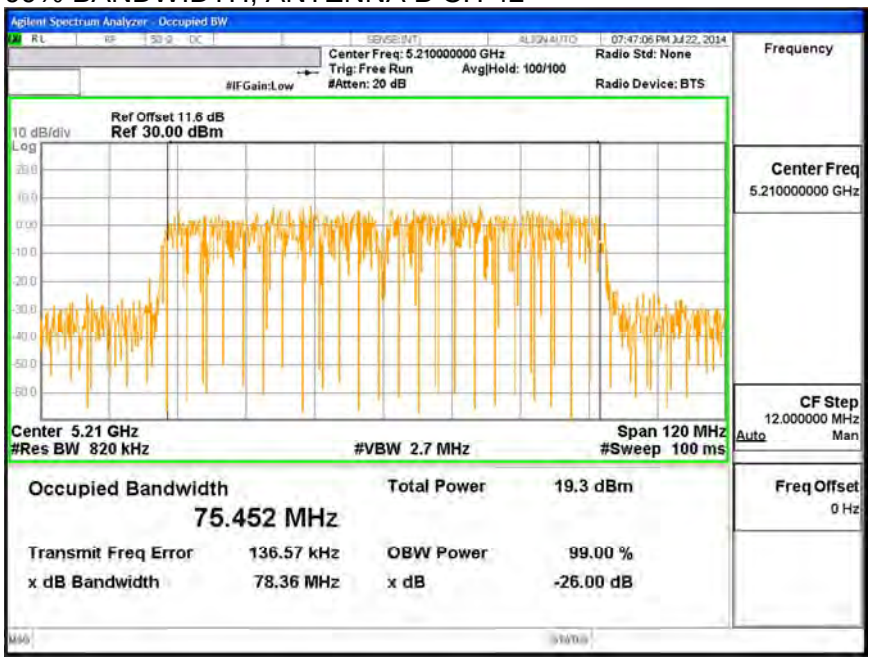
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Antenna B (MHz)	99% BW Antenna C (MHz)
42	5210	75.452	75.616

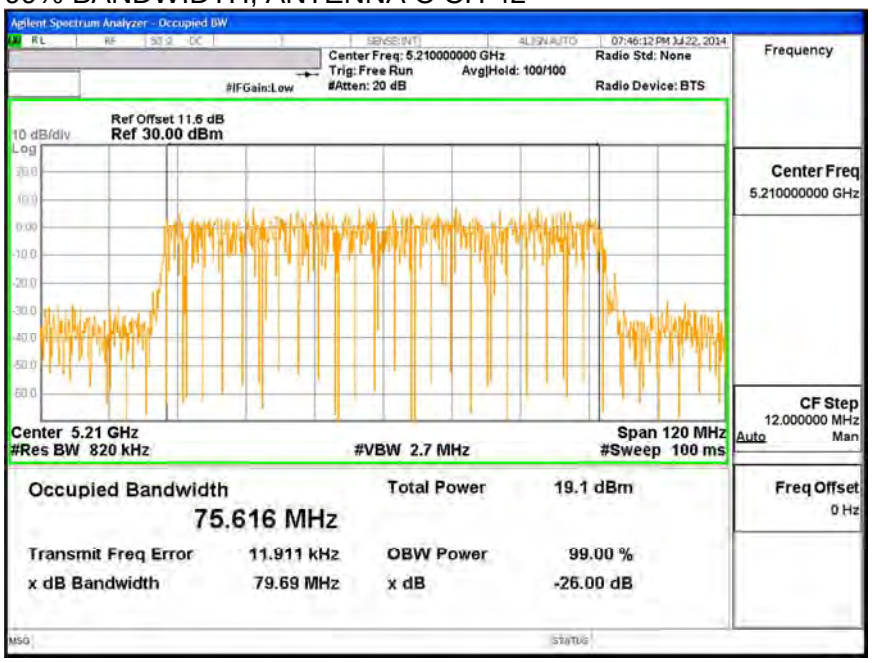
99% BANDWIDTH, ANTENNA B

99% BANDWIDTH, ANTENNA B CH 42



99% BANDWIDTH, ANTENNA C

99% BANDWIDTH, ANTENNA C CH 42



9.8.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter. The power meter was setup for a gated power measurement.

The cable assembly insertion loss of 11.6 dB (including 10 dB pad and 1.6 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)	Antenna B Power (dBm)	Antenna C Power (dBm)	Total Power (dBm)
Mid	5210	12.00	11.87	14.95

9.8.4. OUTPUT POWER AND PSD

LIMITS

FCC §15.407 (a) (1)

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

TEST PROCEDURE

The cable assembly insertion loss of 11.6 dB (including 10 dB pad and 1.6 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

DIRECTIONAL ANTENNA GAIN

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

Antenna B Antenna Gain (dBi)	Antenna C Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
-0.11	2.39	1.32

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

Antenna B Antenna Gain (dBi)	Antenna C Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
-0.11	2.39	4.24

RESULTS

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Directional Gain for PSD (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Mid	5210	1.32	4.24	24.00	11.00

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

Output Power Results

Channel	Frequency (MHz)	Antenna B Meas Power (dBm)	Antenna C Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5210	12.00	11.87	15.16	24.00	-8.84

PSD Results

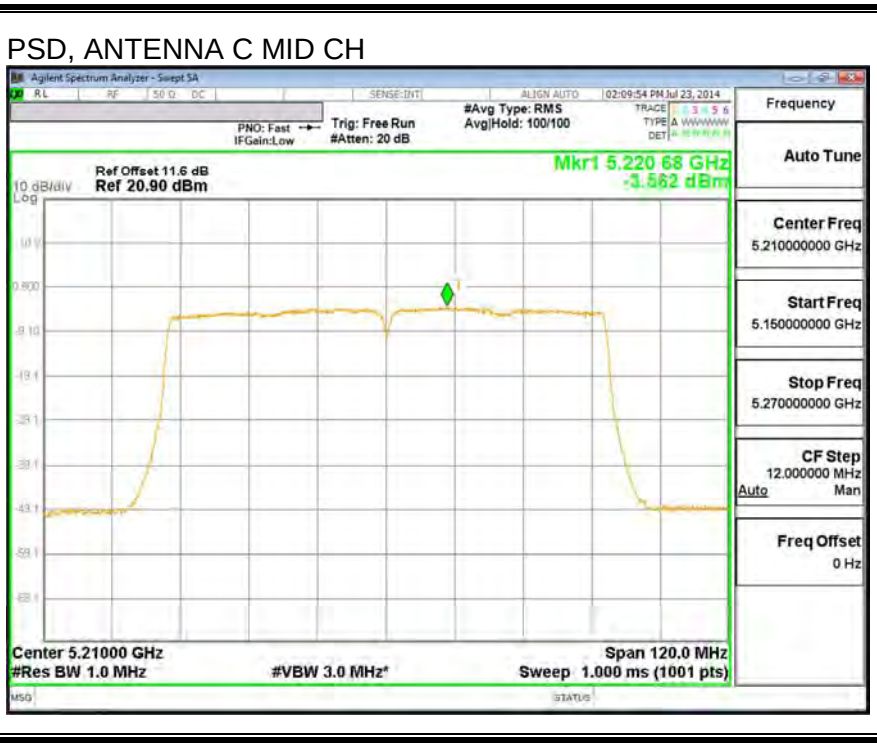
Channel	Frequency (MHz)	Antenna B Meas PSD (dBm)	Antenna C Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5210	-3.28	-3.56	-0.19	11.00	-11.19

PSD, ANTENNA B

PSD, ANTENNA B MID CH

PSD, ANTENNA C

PSD, ANTENNA C MID CH



9.9. 802.11ac 80MHz 2Tx STBC/SDM MODE IN THE 5.2 GHz BAND

Refer to Section 9.5, 802.11ac 80MHz 2TX CDD MODE IN THE 5.2 GHz BAND

9.10. 802.11a SISO MODE IN THE 5.3 GHz BAND

9.10.1. 26 dB BANDWIDTH

LIMITS

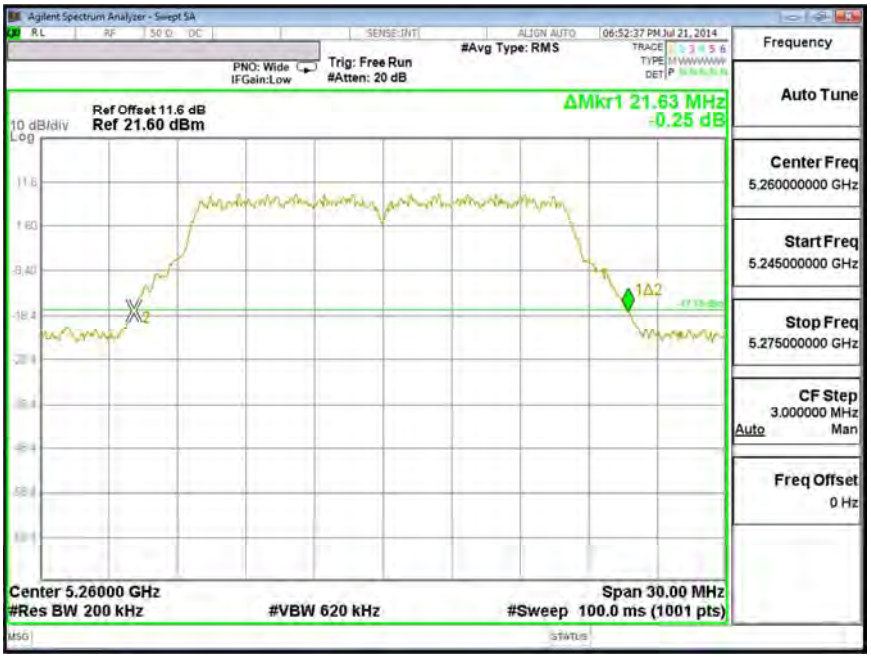
None; for reporting purposes only.

RESULTS

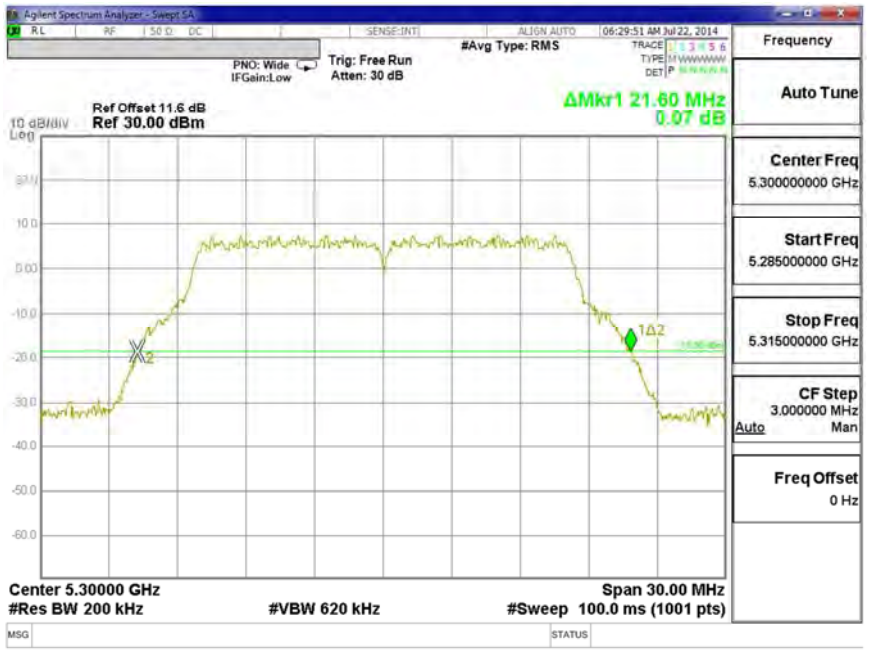
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5260	21.63
Mid	5300	21.60
High	5320	21.57

26 dB BANDWIDTH

BANDWIDTH LOW CH



BANDWIDTH MID CH



BANDWIDTH HIGH CH

9.10.2. 99% BANDWIDTH

LIMITS

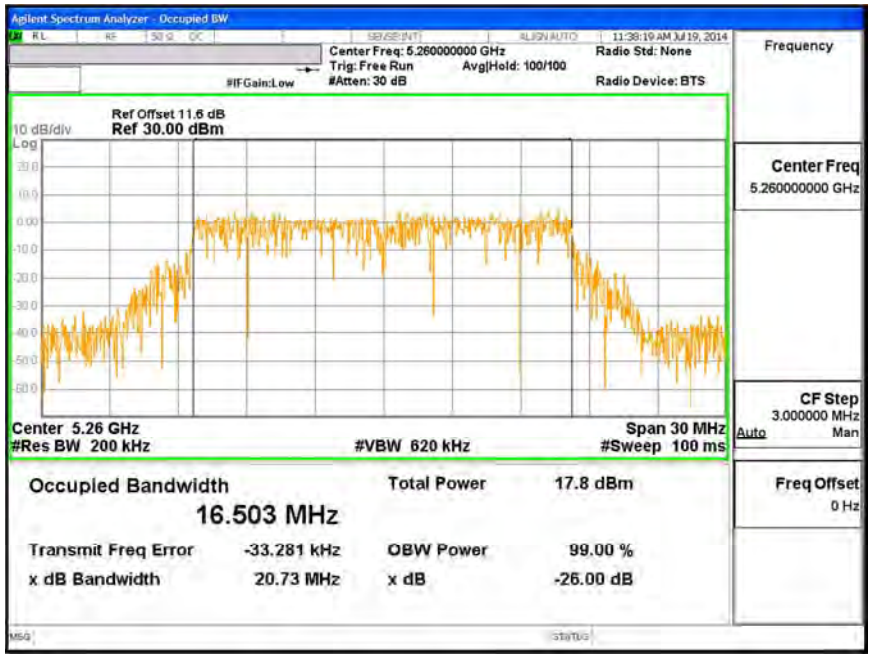
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5260	16.503
Mid	5300	16.465
High	5320	16.478

99% BANDWIDTH

BANDWIDTH LOW CH



BANDWIDTH MID CH

BANDWIDTH HIGH CH

9.10.1. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter. The power meter was setup for a gated power measurement.

The cable assembly insertion loss of 11.6 dB (including 10 dB pad and 1.6 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Channel	Frequency (MHz)	Power Antenna B (dBm)	Power Antenna C (dBm)
Low	5260	15.99	17.92
Mid	5300	15.92	17.90
High	5320	15.95	16.93

9.10.2. 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.

TEST PROCEDURE

The transmitter output is connected to a power meter. The power meter was setup for a gated power measurement.

The cable assembly insertion loss of 11.6 dB (including 10 dB pad and 1.6 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

DIRECTIONAL ANTENNA GAIN

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

ANTENNA B

Antenna Gain (dBi)
-0.059

ANTENNA C

Antenna Gain (dBi)
2.173

RESULTS

ANTENNA B

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5260	21.63	-0.06	24.00	11.00
Mid	5300	21.60	-0.06	24.00	11.00
High	5320	21.57	-0.06	24.00	11.00

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

Output Power Results

Channel	Frequency (MHz)	Antenna B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	15.99	15.99	24.00	-8.01
Mid	5300	15.92	15.92	24.00	-8.08
High	5320	15.95	15.95	24.00	-8.05

PSD Results

Channel	Frequency (MHz)	Antenna B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5260	4.34	4.34	11.00	-6.66
Mid	5300	3.93	3.93	11.00	-7.08
High	5320	4.18	4.18	11.00	-6.82

ANTENNA C

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5260	21.63	2.17	24.00	11.00
Mid	5300	21.60	2.17	24.00	11.00
High	5320	21.57	2.17	24.00	11.00

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

Output Power Results

Channel	Frequency (MHz)	Antenna C Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	17.92	17.92	24.00	-6.08
Mid	5300	17.90	17.90	24.00	-6.10
High	5320	16.93	16.93	24.00	-7.07

PSD Results

Channel	Frequency (MHz)	Antenna C Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5260	7.73	7.73	11.00	-3.28
Mid	5300	7.21	7.21	11.00	-3.79
High	5320	6.64	6.64	11.00	-4.36

PSD ANTENNA B

PSD, ANTENNA B LOW CH

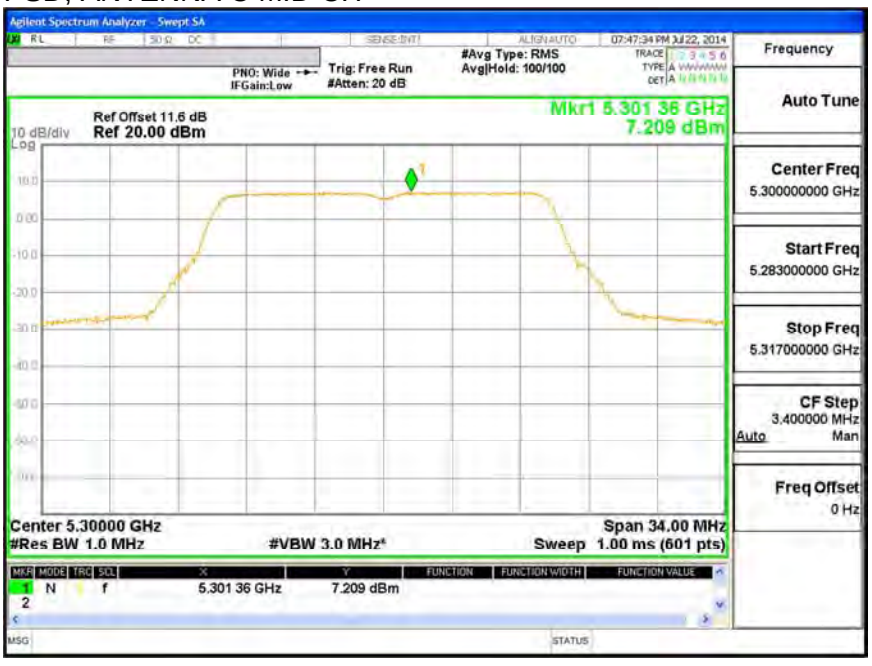
PSD, ANTENNA B MID CH

PSD, ANTENNA B HIGH CH

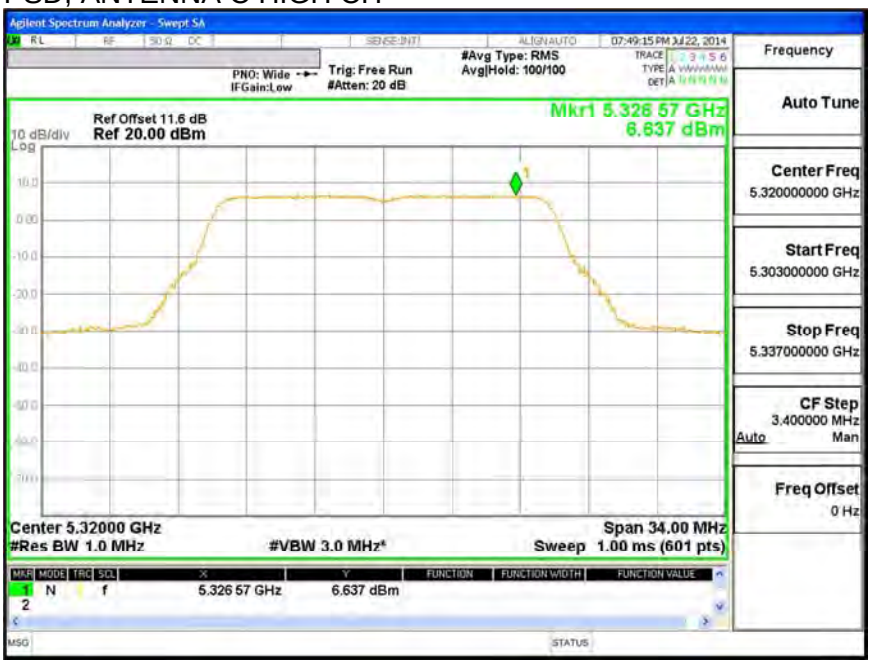
ANTENNA C

PSD, ANTENNA C LOW CH

PSD, ANTENNA C MID CH



PSD, ANTENNA C HIGH CH



9.11. 802.11n HT20 2Tx CDD MODE IN THE 5.3 GHz BAND

9.11.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB BW Antenna B (MHz)	26 dB BW Antenna C (MHz)
Low	5260	21.81	21.60
Mid	5300	21.66	21.63
High	5320	21.75	21.75

26 dB BANDWIDTH, ANTENNA B

26 dB BANDWIDTH, ANTENNA B LOW CH

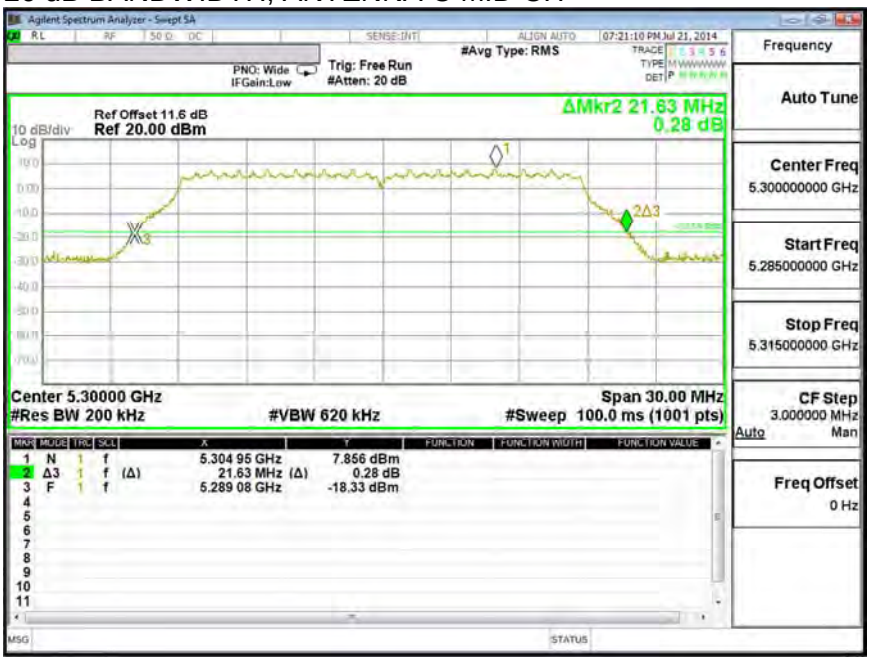
26 dB BANDWIDTH, ANTENNA B MID CH

26 dB BANDWIDTH, ANTENNA B HIGH CH

26 dB BANDWIDTH, ANTENNA C

26 dB BANDWIDTH, ANTENNA C LOW CH

26 dB BANDWIDTH, ANTENNA C MID CH



26 dB BANDWIDTH, ANTENNA C HIGH CH

9.11.2. 99% BANDWIDTH

LIMITS

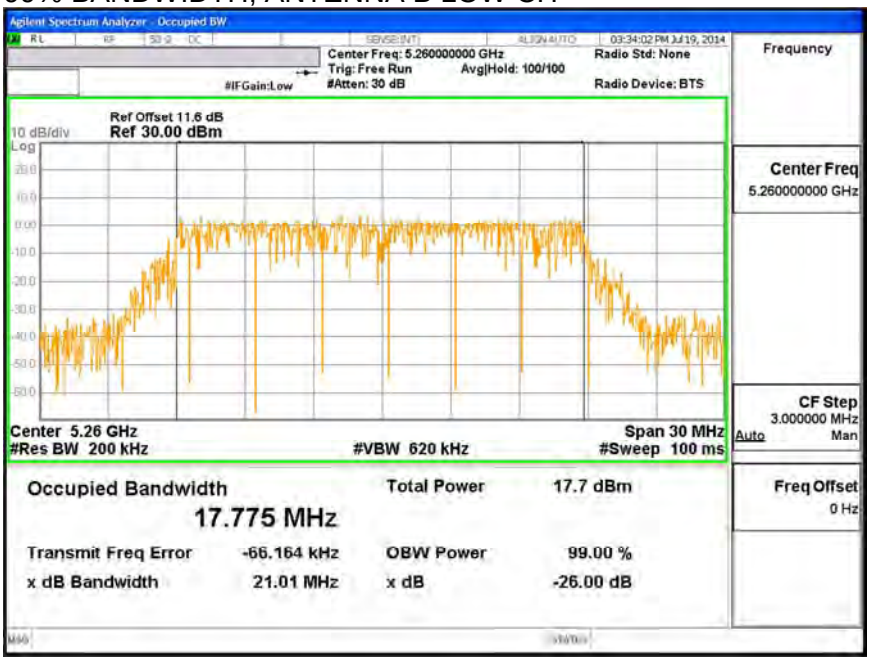
None; for reporting purposes only.

RESULTS

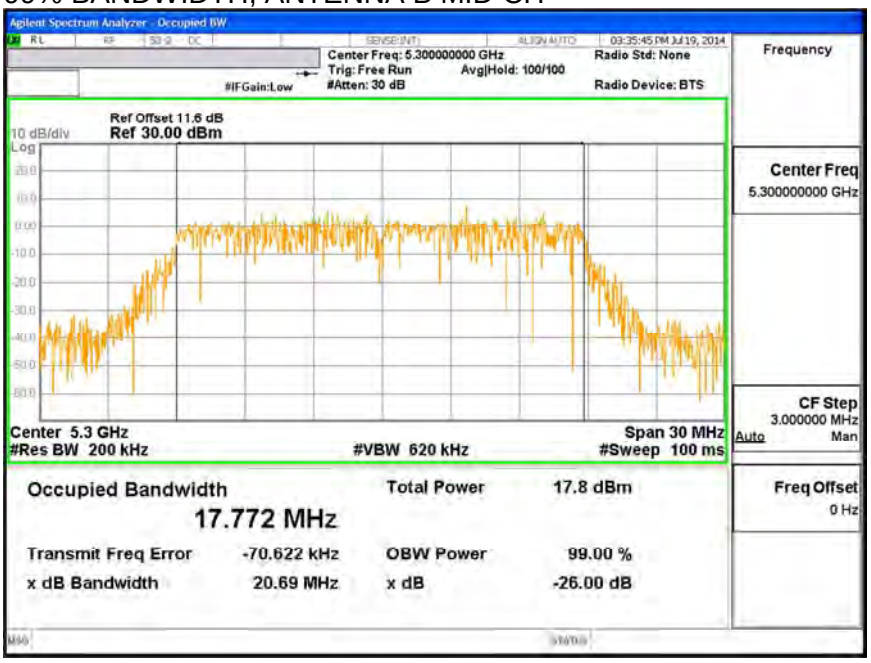
Channel	Frequency (MHz)	99% BW Antenna B (MHz)	99% BW Antenna C (MHz)
Low	5260	17.775	17.725
Mid	5300	17.772	17.682
High	5320	17.653	17.749

99% BANDWIDTH, ANTENNA B

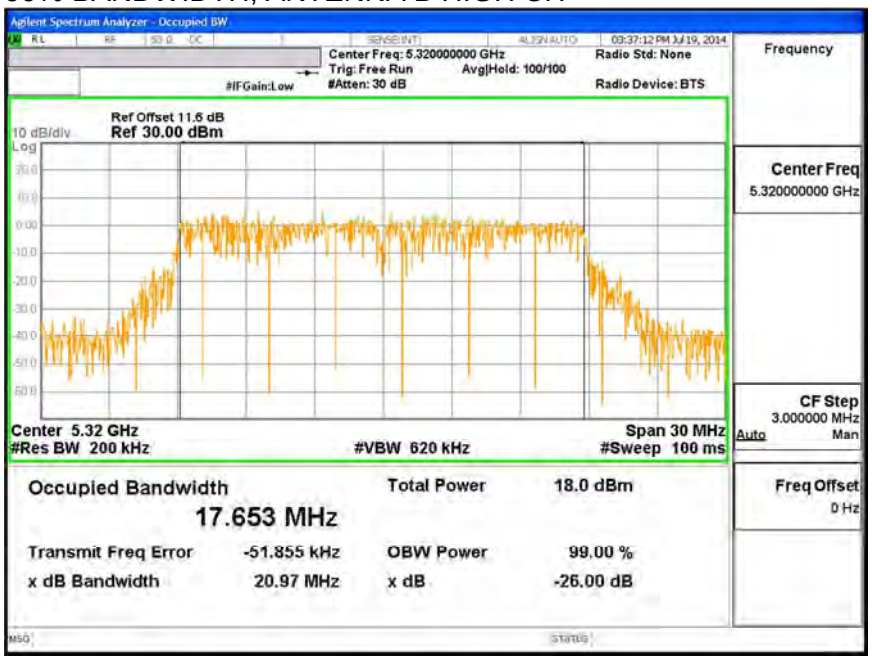
99% BANDWIDTH, ANTENNA B LOW CH



99% BANDWIDTH, ANTENNA B MID CH

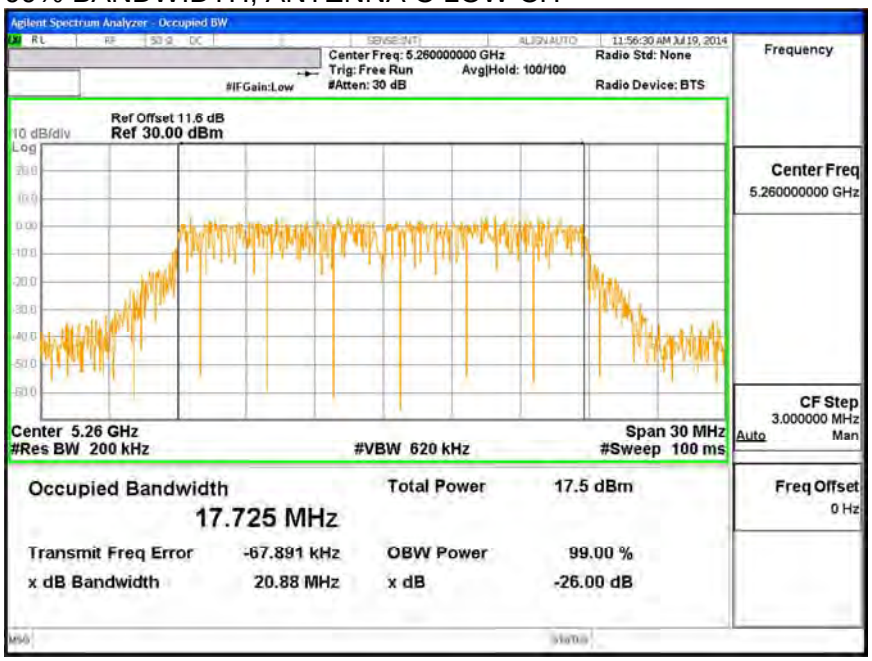


99% BANDWIDTH, ANTENNA B HIGH CH

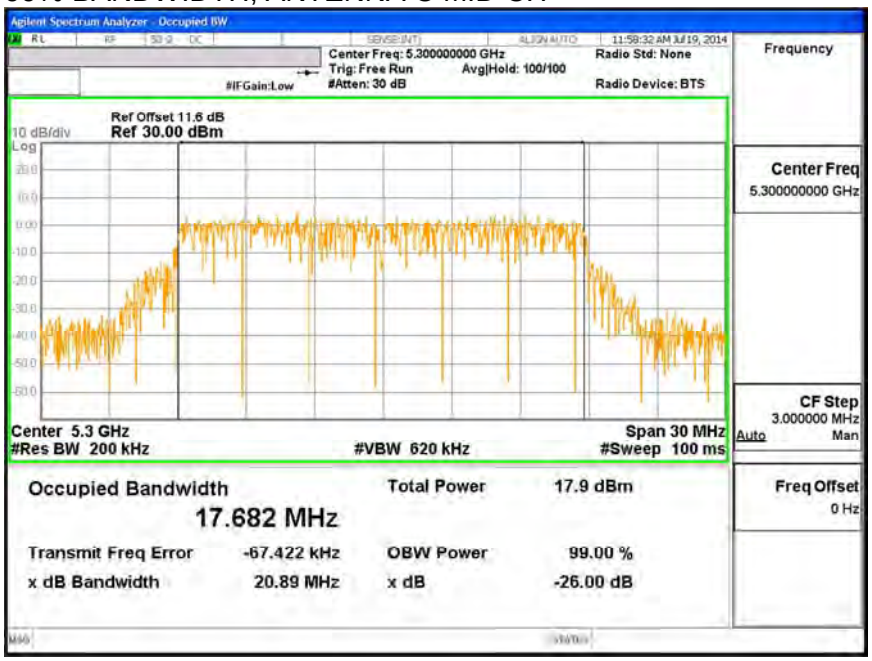


99% BANDWIDTH, ANTENNA C

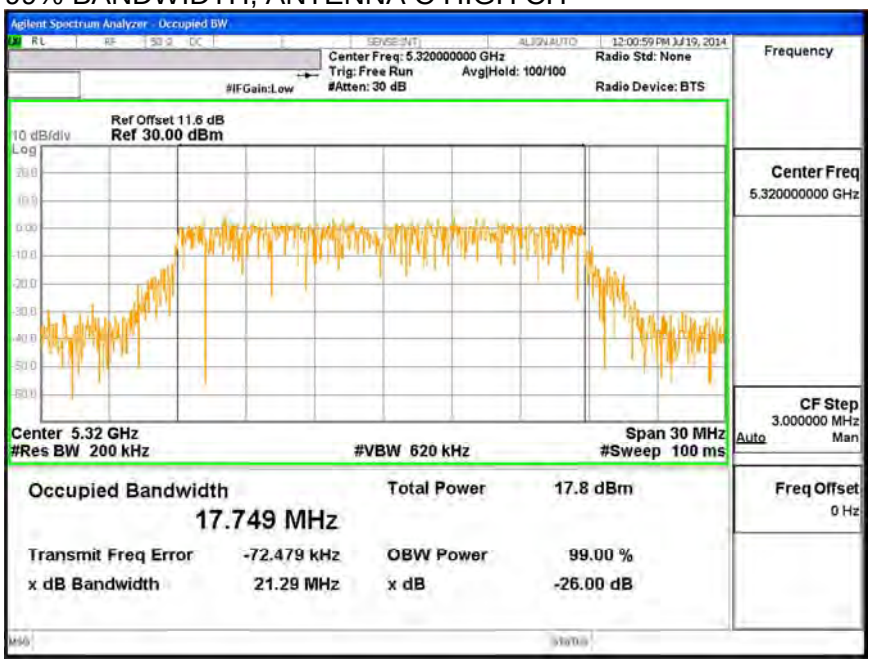
99% BANDWIDTH, ANTENNA C LOW CH



99% BANDWIDTH, ANTENNA C MID CH



99% BANDWIDTH, ANTENNA C HIGH CH



9.11.1. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter. The power meter was setup for a gated power measurement.

The cable assembly insertion loss of 11.6 dB (including 10 dB pad and 1.6 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)	Antenna B Power (dBm)	Antenna C Power (dBm)	Total Power (dBm)
Low	5260	15.92	16.92	19.46
Mid	5300	15.95	16.97	19.50
High	5320	15.89	15.94	18.93

9.11.2. 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.

TEST PROCEDURE

The transmitter output is connected to a power meter. The power meter was setup for a gated power measurement.

The cable assembly insertion loss of 11.6 dB (including 10 dB pad and 1.6 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

DIRECTIONAL ANTENNA GAIN

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

Antenna B Antenna Gain (dBi)	Antenna C Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
-0.06	2.17	1.20

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

Antenna B Antenna Gain (dBi)	Antenna C Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
-0.06	2.17	4.14

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	21.60	1.20	4.14	24.00	11.00
Mid	5300	21.63	1.20	4.14	24.00	11.00
High	5320	21.75	1.20	4.14	24.00	11.00

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

Output Power Results

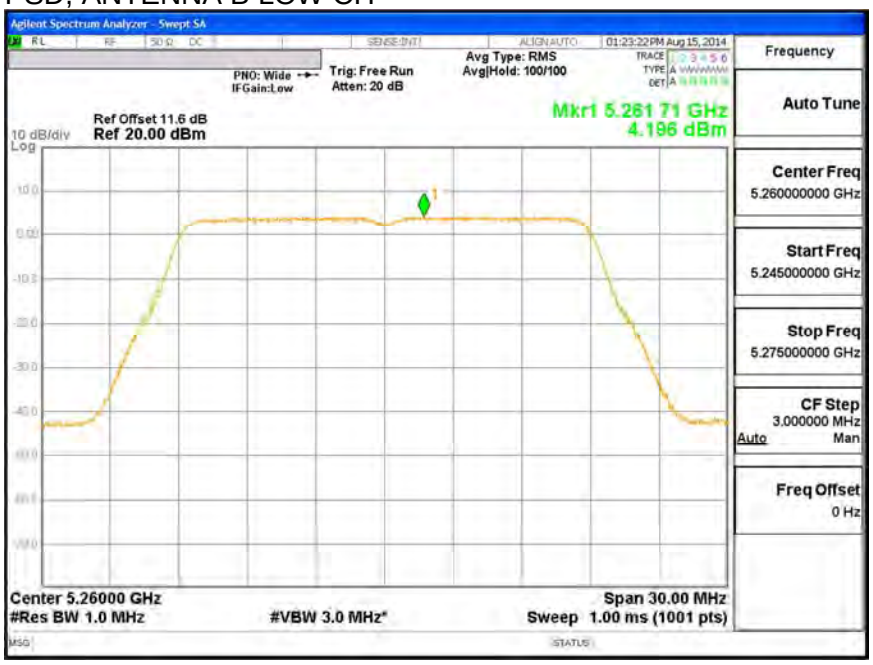
Channel	Frequency (MHz)	Antenna B Meas Power (dBm)	Antenna C Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5260	15.92	16.92	19.46	24.00	-4.54
Mid	5300	15.95	16.97	19.50	24.00	-4.50
High	5320	15.89	15.94	18.93	24.00	-5.07

PSD Results

Channel	Frequency (MHz)	Antenna B Meas PSD (dBm)	Antenna C Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5260	4.20	6.30	8.39	11.00	-2.61
Mid	5300	3.84	6.57	8.43	11.00	-2.57
High	5320	3.88	6.53	8.42	11.00	-2.58

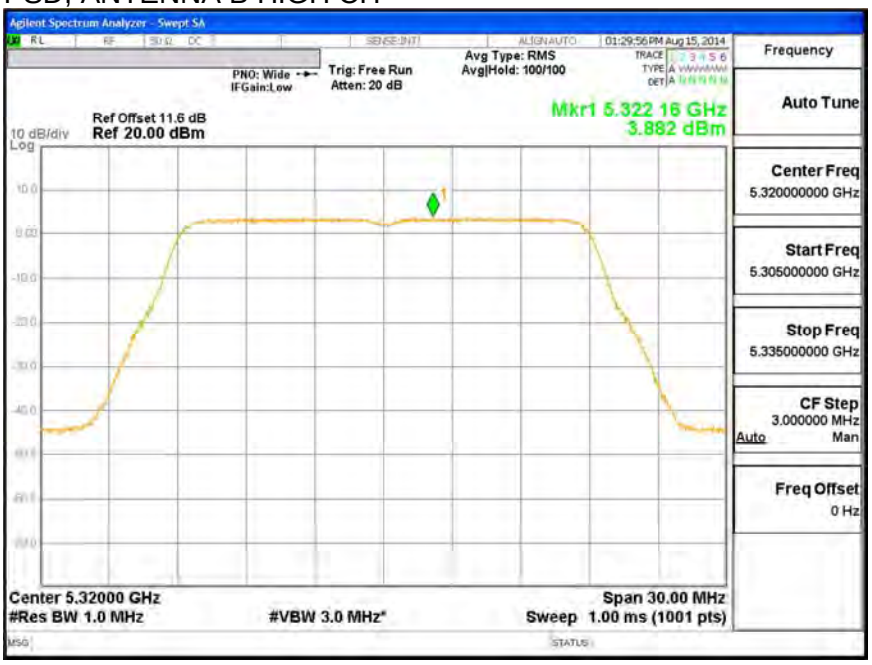
PSD, ANTENNA B

PSD, ANTENNA B LOW CH



PSD, ANTENNA B MID CH

PSD, ANTENNA B HIGH CH

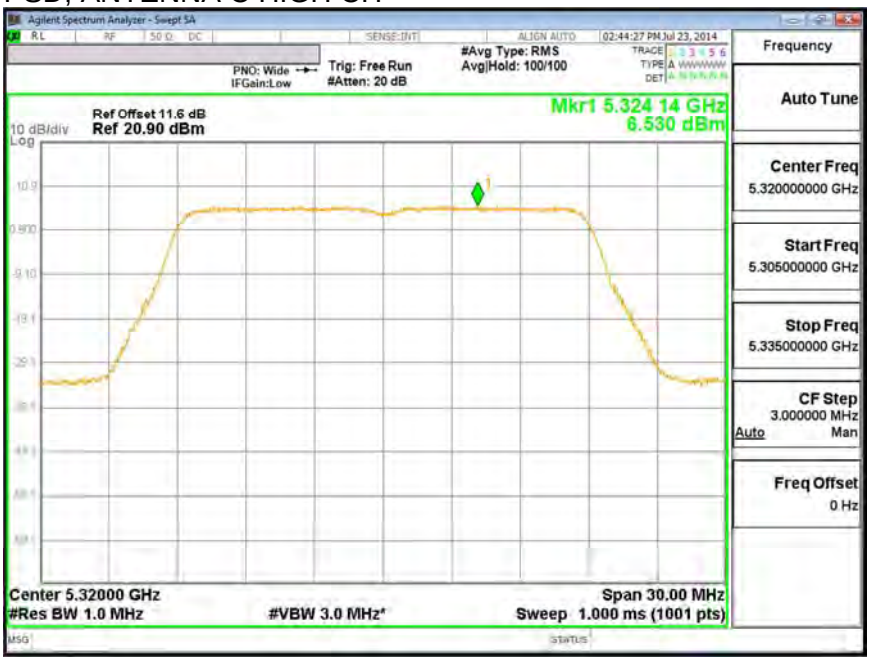


PSD, ANTENNA C

PSD, ANTENNA C LOW CH

PSD, ANTENNA C MID CH

PSD, ANTENNA C HIGH CH



9.12. 802.11n HT20 2Tx STBC/SDM MODE IN THE 5.3 GHz BAND

Refer to Section 9.11, 802.11n HT20 2Tx CDD MODE IN THE 5.3 GHz BAND

9.13. 802.11n HT40 SISO MODE IN THE 5.3 GHz BAND

9.13.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

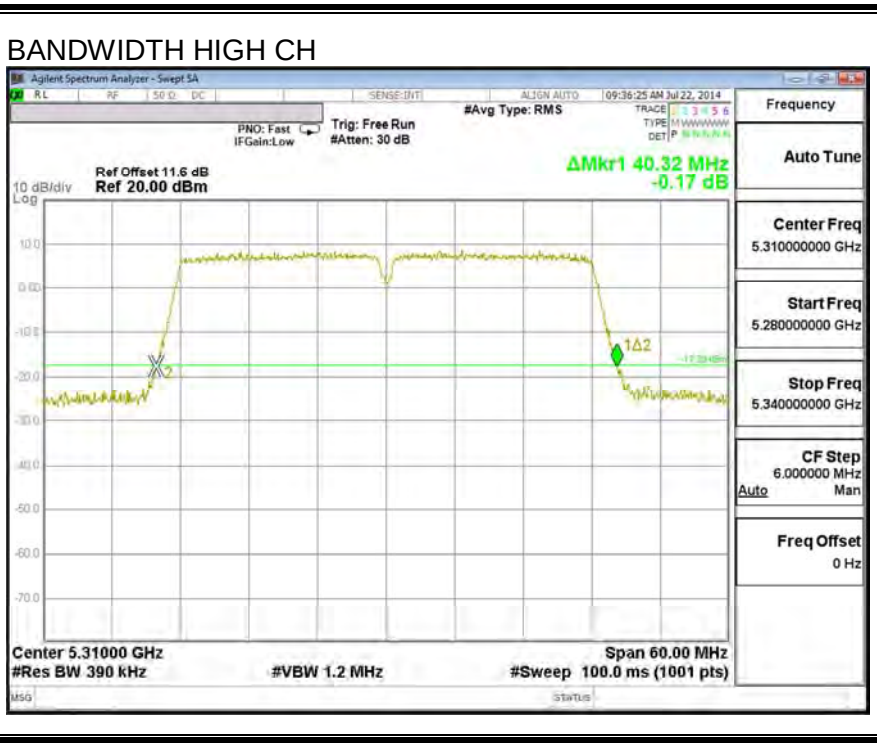
RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5270	40.20
High	5310	40.32

26 dB BANDWIDTH

BANDWIDTH LOW CH

BANDWIDTH HIGH CH



9.13.2. 99% BANDWIDTH

LIMITS

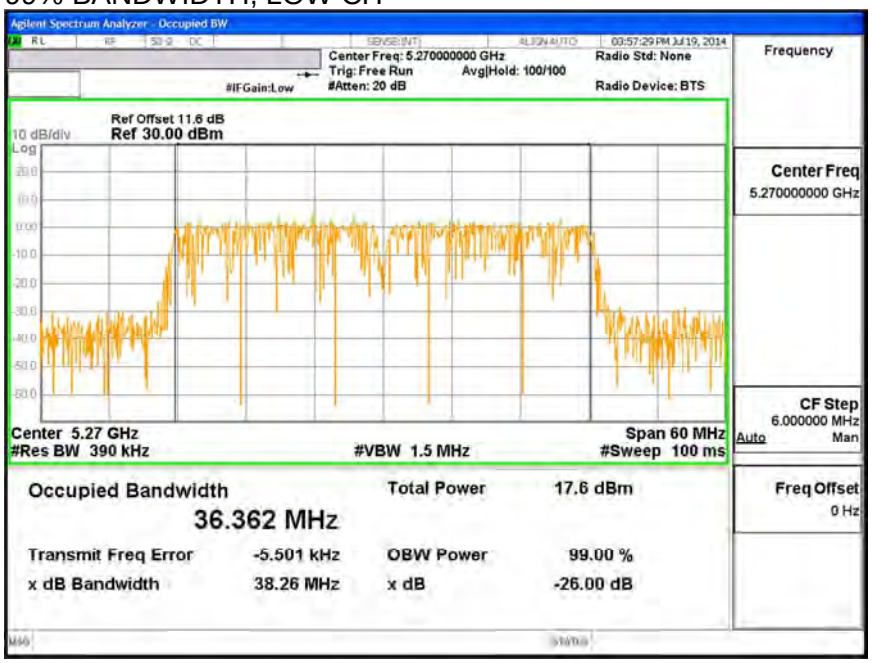
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5270	36.362
High	5310	36.138

99% BANDWIDTH

99% BANDWIDTH, LOW CH



99% BANDWIDTH, HIGH CH

9.13.1. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter. The power meter was setup for a gated power measurement.

The cable assembly insertion loss of 11.6 dB (including 10 dB pad and 1.6 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Channel	Frequency (MHz)	Antenna B Power (dBm)	Antenna C Power (dBm)
Low	5270	15.95	17.95
High	5310	14.87	14.90

9.13.2. 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.

TEST PROCEDURE

The transmitter output is connected to a power meter. The power meter was setup for a gated power measurement.

The cable assembly insertion loss of 11.6 dB (including 10 dB pad and 1.6 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

DIRECTIONAL ANTENNA GAIN

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

ANTENNA B

Antenna Gain (dBi)
-0.059

ANTENNA C

Antenna Gain (dBi)
2.173

RESULTS

ANTENNA B

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5270	40.20	0.06	24.00	11.00
High	5310	40.32	0.06	24.00	11.00

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

Output Power Results

Channel	Frequency (MHz)	Antenna B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5270	15.95	15.95	24.00	-8.05
High	5310	14.87	14.87	24.00	-9.13

PSD Results

Channel	Frequency (MHz)	Antenna B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5270	0.97	0.97	11.00	-10.03
High	5310	1.00	1.00	11.00	-10.00

ANTENNA C

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5270	40.20	2.17	24.00	11.00
High	5310	40.32	2.17	24.00	11.00

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

Output Power Results

Channel	Frequency (MHz)	Antenna C Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5270	17.95	17.95	24.00	-6.05
High	5310	14.90	14.90	24.00	-9.10

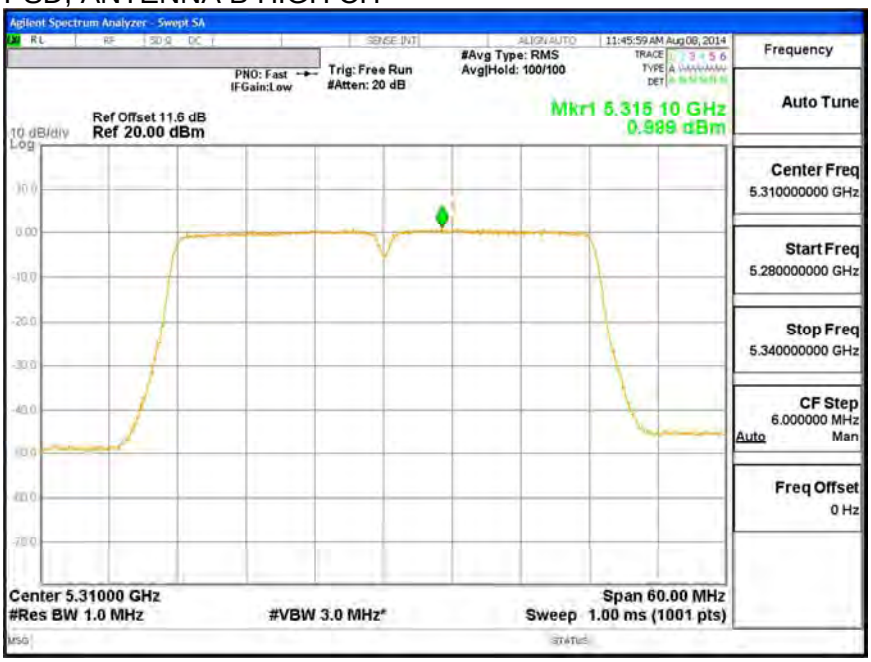
PSD Results

Channel	Frequency (MHz)	Antenna C Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5270	3.53	3.53	11.00	-7.47
High	5310	0.73	0.73	11.00	-10.28

PSD, ANTENNA B

PSD, ANTENNA B LOW CH

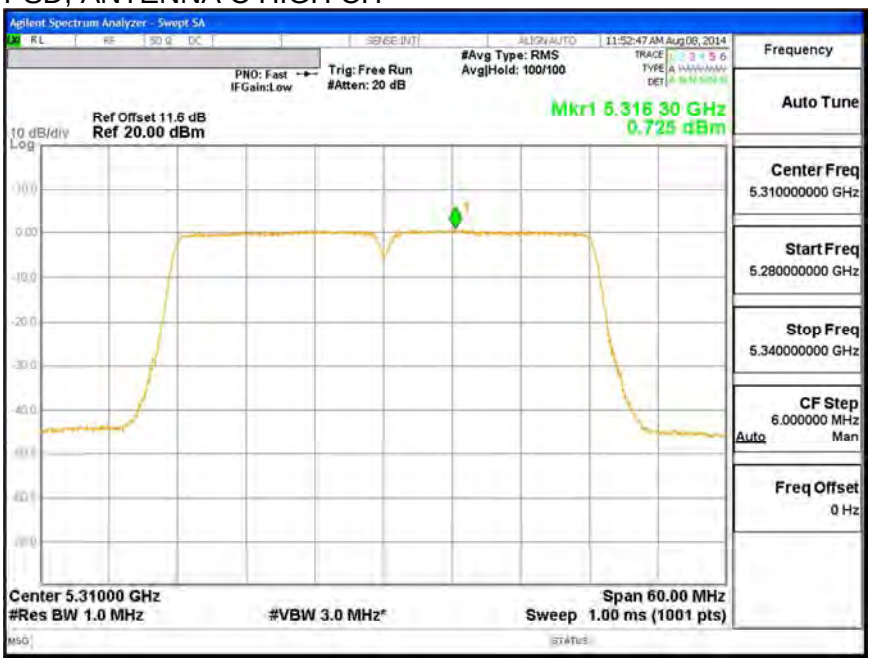
PSD, ANTENNA B HIGH CH



PSD, ANTENNA C

PSD, ANTENNA C LOW CH

PSD, ANTENNA C HIGH CH



9.14. 802.11n HT40 2Tx CDD MODE IN THE 5.3 GHz BAND

9.14.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB BW Antenna B (MHz)	26 dB BW Antenna C (MHz)
Low	5270	40.26	39.78
High	5310	40.14	40.08

26 dB BANDWIDTH, ANTENNA B

26 dB BANDWIDTH, ANTENNA B LOW CH

26 dB BANDWIDTH, ANTENNA B HIGH CH

26 dB BANDWIDTH, ANTENNA C

26 dB BANDWIDTH, ANTENNA C LOW CH

26 dB BANDWIDTH, ANTENNA C HIGH CH

9.14.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

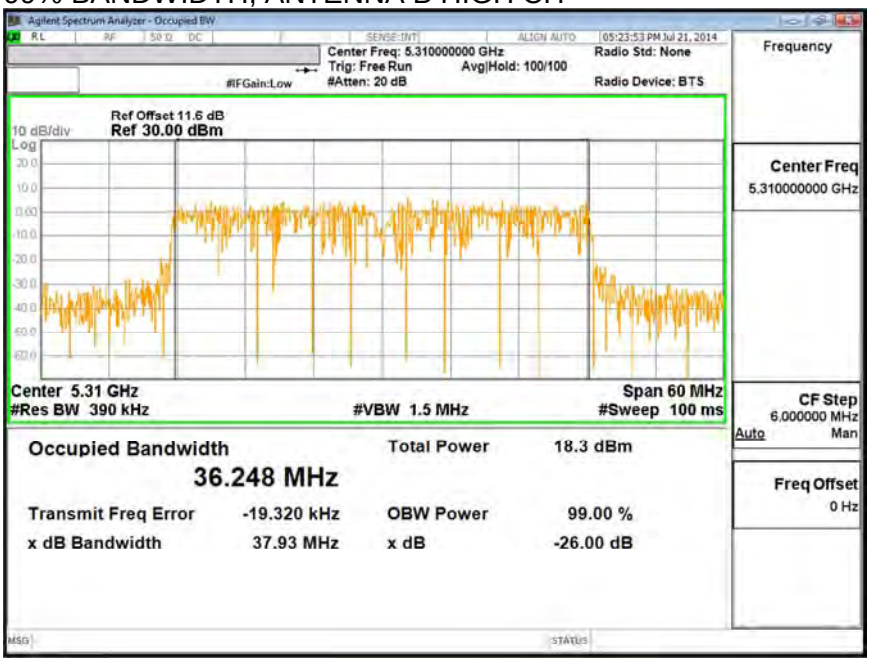
RESULTS

Channel	Frequency (MHz)	99% BW Antenna B (MHz)	99% BW Antenna C (MHz)
Low	5270	36.300	36.152
High	5310	36.248	36.136

99% BANDWIDTH, ANTENNA B

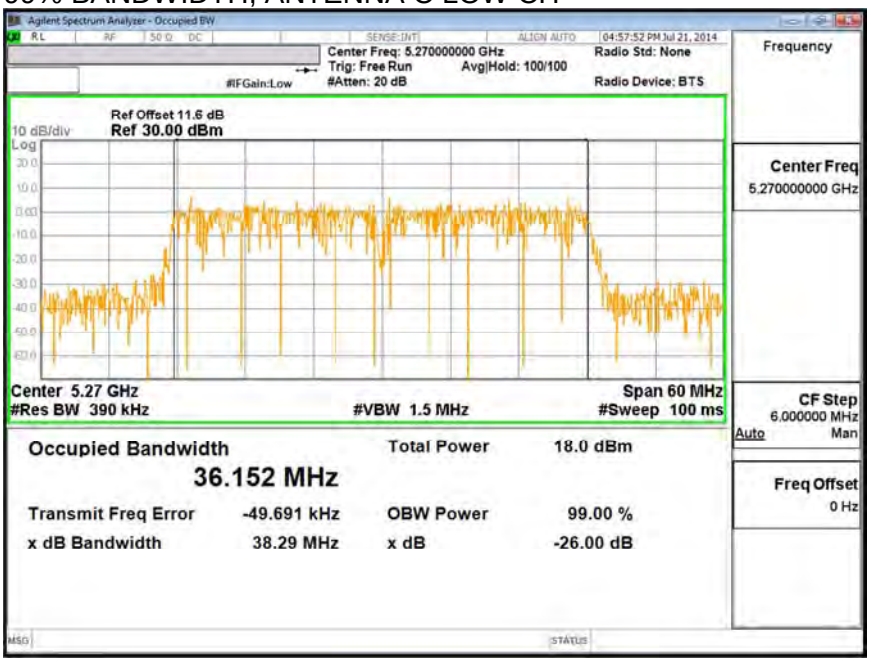
99% BANDWIDTH, ANTENNA B LOW CH

99% BANDWIDTH, ANTENNA B HIGH CH

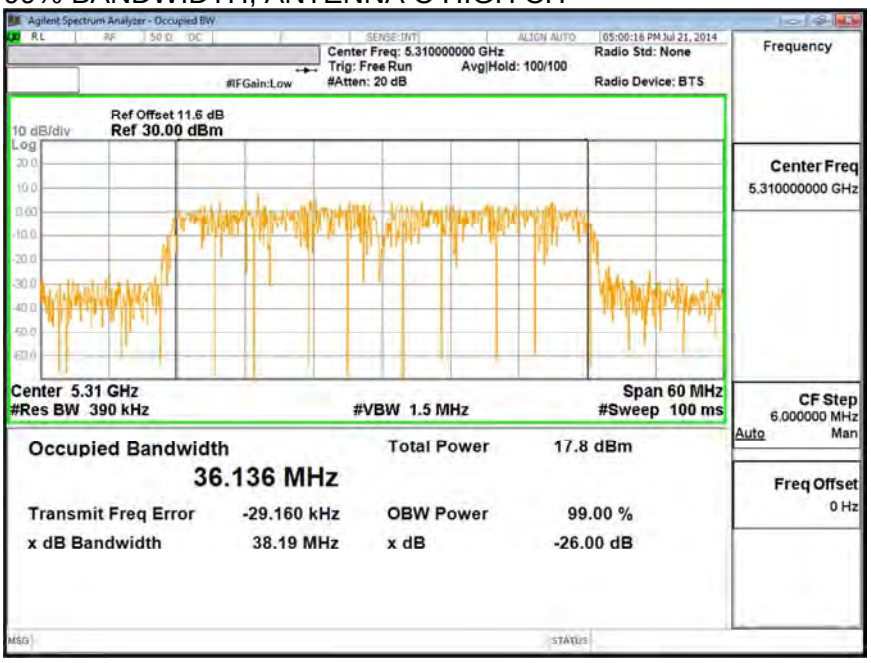


99% BANDWIDTH, ANTENNA C

99% BANDWIDTH, ANTENNA C LOW CH



99% BANDWIDTH, ANTENNA C HIGH CH



9.14.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter. The power meter was setup for a gated power measurement.

The cable assembly insertion loss of 11.6 dB (including 10 dB pad and 1.6 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)	Antenna B Power (dBm)	Antenna C Power (dBm)	Total Power (dBm)
Low	5270	16.00	17.93	20.08
High	5310	14.37	14.42	17.41

9.14.4. 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.

TEST PROCEDURE

The transmitter output is connected to a power meter. The power meter was setup for a gated power measurement.

The cable assembly insertion loss of 11.6 dB (including 10 dB pad and 1.6 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

DIRECTIONAL ANTENNA GAIN

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

Antenna B Antenna Gain (dBi)	Antenna C Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
-0.06	2.17	1.20

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

Antenna B Antenna Gain (dBi)	Antenna C Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
-0.06	2.17	4.14

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	39.78	1.20	4.14	24.00	11.00
High	5310	40.08	1.20	4.14	24.00	11.00

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

Output Power Results

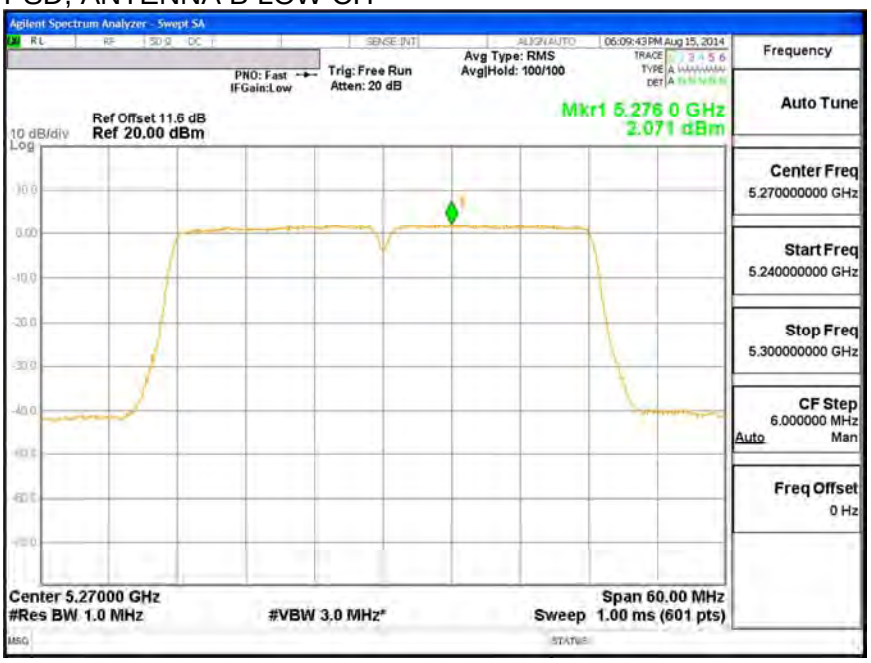
Channel	Frequency (MHz)	Antenna B Meas Power (dBm)	Antenna C Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5270	16.00	17.93	20.08	24.00	-3.92
High	5310	14.37	14.42	17.41	24.00	-6.59

PSD Results

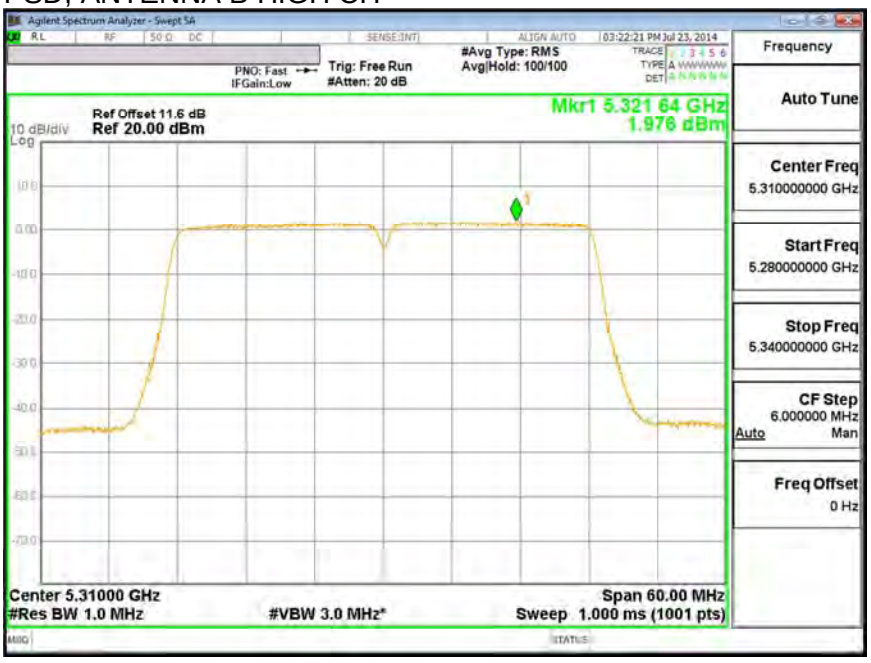
Channel	Frequency (MHz)	Antenna B Meas PSD (dBm)	Antenna C Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5270	2.07	3.68	5.96	11.00	-5.04
High	5310	1.98	1.45	4.73	11.00	-6.27

PSD, ANTENNA B

PSD, ANTENNA B LOW CH



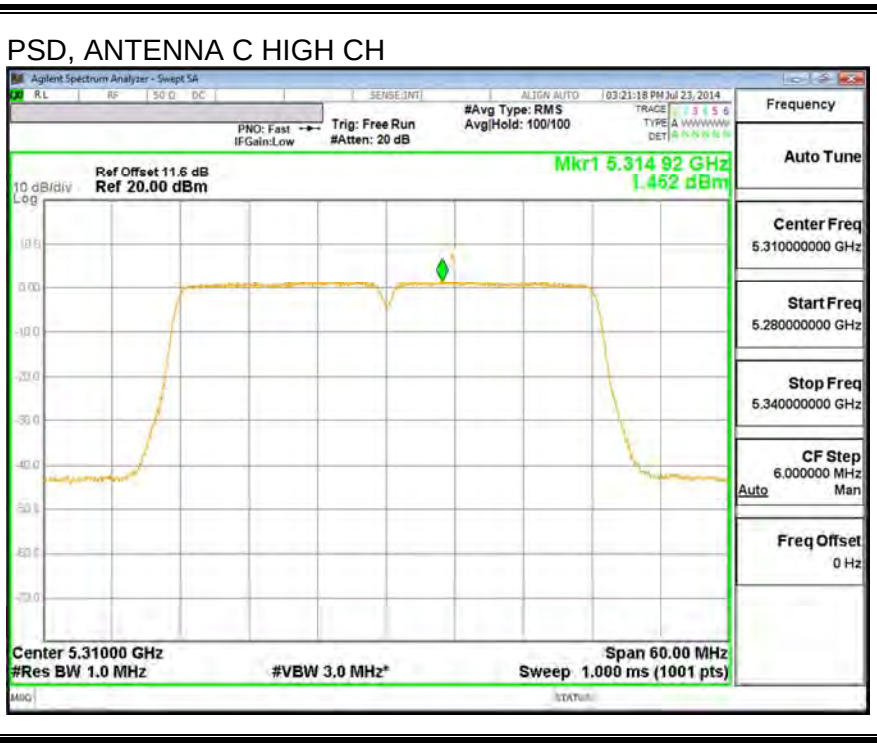
PSD, ANTENNA B HIGH CH



PSD, ANTENNA C

PSD, ANTENNA C LOW CH

PSD, ANTENNA C HIGH CH



9.15. 802.11n HT40 2Tx STBC/SDM MODE IN THE 5.3 GHz BAND

Refer to Section 9.14, 802.11n HT40 2Tx CDD MODE IN THE 5.3 GHz BAND

9.16. 802.11ac VHT80 SISO MODE IN THE 5.3 GHz BAND

9.16.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Mid	5290	82.08

26 dB BANDWIDTH

BANDWIDTH MID CH

9.16.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Mid	5290	76.112

99% BANDWIDTH

BANDWIDTH MID CH

9.16.1. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter. The power meter was setup for a gated power measurement.

The cable assembly insertion loss of 11.6 dB (including 10 dB pad and 1.6 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Channel	Frequency (MHz)	Antenna B Power (dBm)	Antenna C Power (dBm)
Mid	5290	14.98	14.88

9.16.2. 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.

TEST PROCEDURE

The transmitter output is connected to a power meter. The power meter was setup for a gated power measurement.

The cable assembly insertion loss of 11.6 dB (including 10 dB pad and 1.6 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

DIRECTIONAL ANTENNA GAIN

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

ANTENNA B

Antenna Gain (dBi)
-0.059

ANTENNA C

Antenna Gain (dBi)
2.173

RESULTS

ANTENNA B

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Mid	5290	82.08	-0.06	24.00	11.00

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

Output Power Results

Channel	Frequency (MHz)	Antenna B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5290	14.98	15.19	24.00	-8.81

PSD Results

Channel	Frequency (MHz)	Antenna B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5290	-1.01	-0.80	11.00	-11.80

ANTENNA C

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Mid	5290	82.08	2.17	24.00	11.00

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

Output Power Results

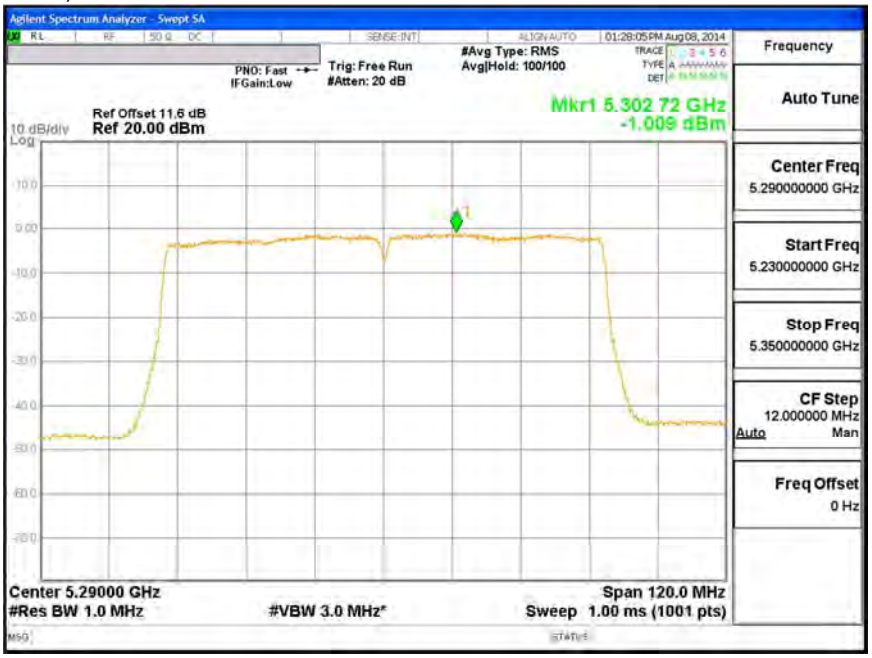
Channel	Frequency (MHz)	Antenna C Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5290	14.88	15.09	24.00	-8.91

PSD Results

Channel	Frequency (MHz)	Antenna C Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5290	-0.94	-0.72	11.00	-11.72

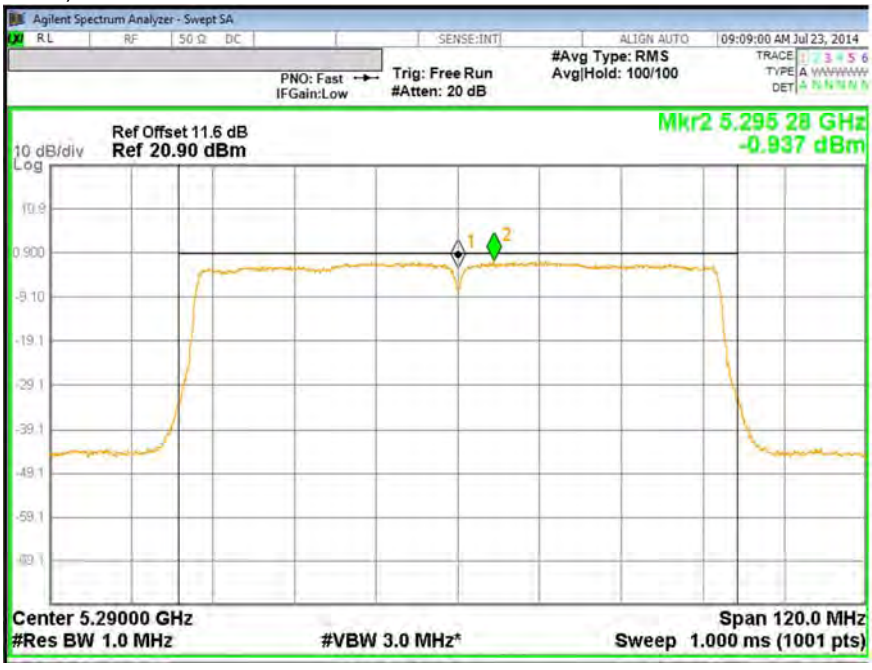
PSD, ANTENNA B

PSD, ANTENNA B MID CH



PSD, ANTENNA C

PSD, ANTENNA B MID CH



9.17. 802.11ac 80MHz 2TX CDD MODE IN THE 5.3 GHz BAND

9.17.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	26 dB BW Antenna B (MHz)	26 dB BW Antenna C (MHz)
58	5290	82.08	81.72

26 dB BANDWIDTH, ANTENNA B

26 dB BANDWIDTH, ANTENNA B CH 58

26 dB BANDWIDTH, ANTENNA C

26 dB BANDWIDTH, ANTENNA C CH 58

9.17.2. 99% BANDWIDTH

LIMITS

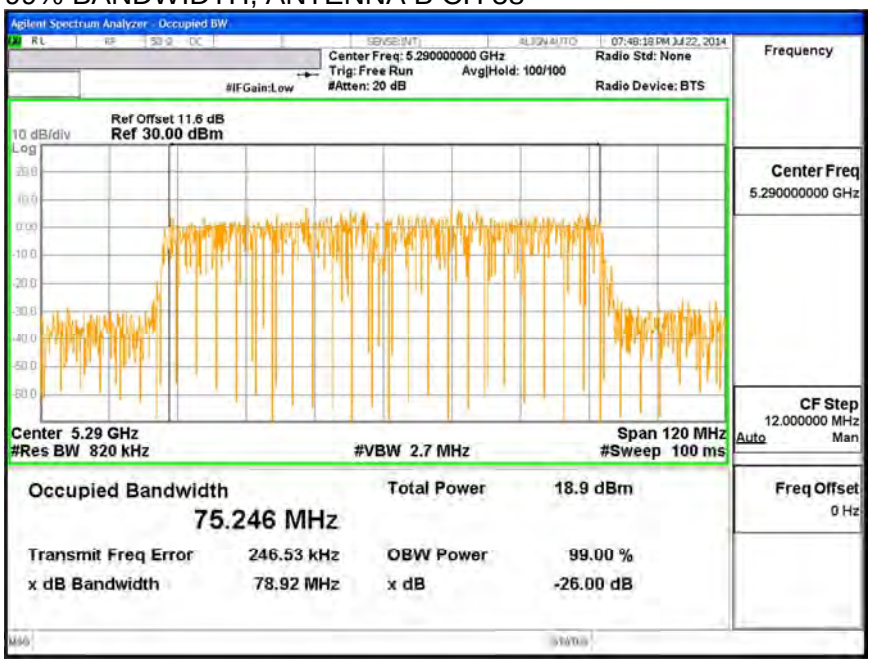
None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Antenna B (MHz)	99% BW Antenna C (MHz)
58	5290	75.246	75.718

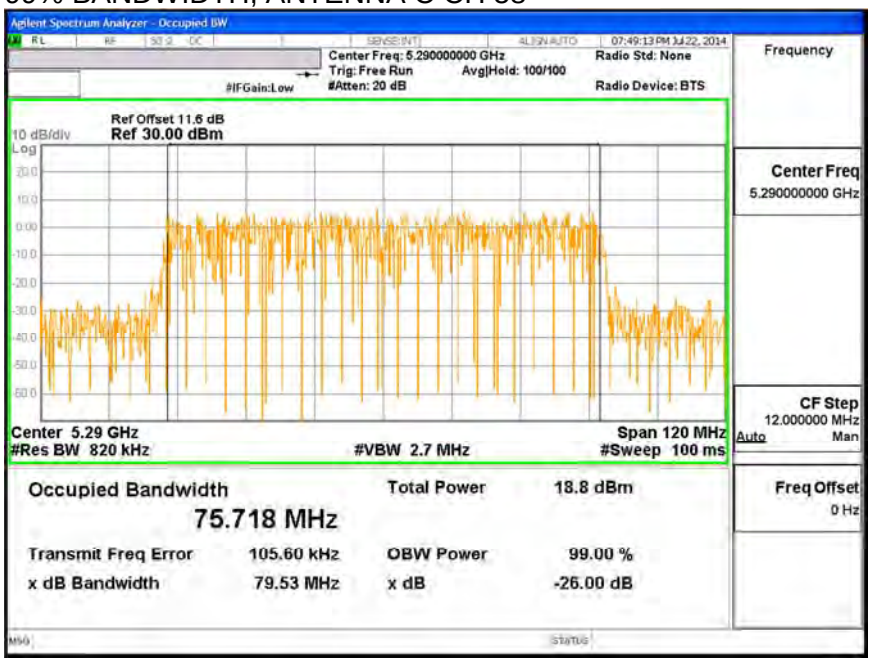
99% BANDWIDTH, ANTENNA B

99% BANDWIDTH, ANTENNA B CH 58



99% BANDWIDTH, ANTENNA C

99% BANDWIDTH, ANTENNA C CH 58



9.17.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter. The power meter was setup for a gated power measurement.

The cable assembly insertion loss of 11.6 dB (including 10 dB pad and 1.6 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)	Antenna B Power (dBm)	Antenna C Power (dBm)	Total Power (dBm)
Mid	5290	14.38	14.47	17.44

9.17.4. 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.

TEST PROCEDURE

The transmitter output is connected to a power meter. The power meter was setup for a gated power measurement.

The cable assembly insertion loss of 11.6 dB (including 10 dB pad and 1.6 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

DIRECTIONAL ANTENNA GAIN

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

Antenna B Antenna Gain (dBi)	Antenna C Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
-0.06	2.17	1.20

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

Antenna B Antenna Gain (dBi)	Antenna C Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
-0.06	2.17	4.14

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	81.72	1.20	4.14	24.00	11.00

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

Output Power Results

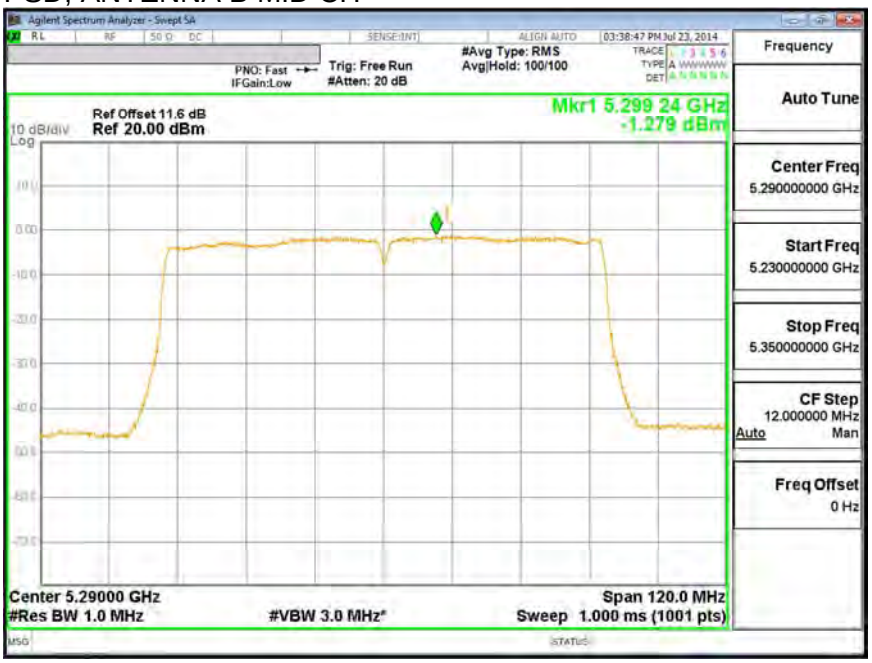
Channel	Frequency (MHz)	Antenna B Meas Power (dBm)	Antenna C Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Mid	5290	14.38	14.47	17.65	24.00	-6.35

PSD Results

Channel	Frequency (MHz)	Antenna B Meas PSD (dBm)	Antenna C Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Mid	5290	-1.28	-1.47	1.85	11.00	-9.15

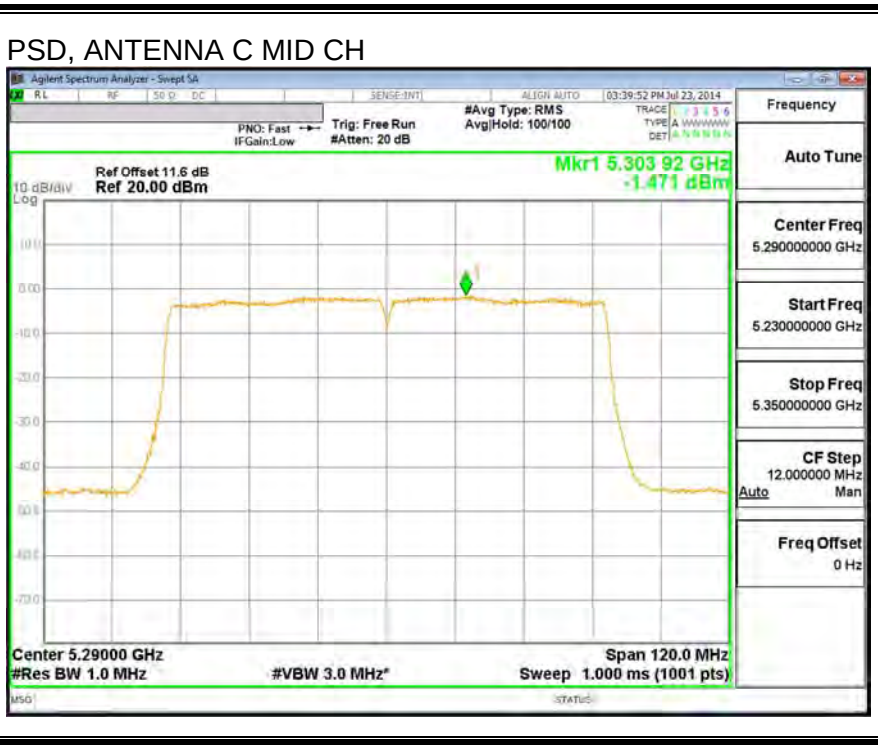
PSD, ANTENNA B

PSD, ANTENNA B MID CH



PSD, ANTENNA C

PSD, ANTENNA C MID CH



9.18. 802.11ac 80MHz 2Tx STBC/SDM MODE IN THE 5.3 GHz BAND

Refer to Section 9.17, 802.11ac 80MHz 2TX CDD MODE IN THE 5.3 GHz BAND

9.19. 802.11a SISO MODE IN THE 5.6 GHz BAND

9.19.1. 26 dB BANDWIDTH

LIMITS

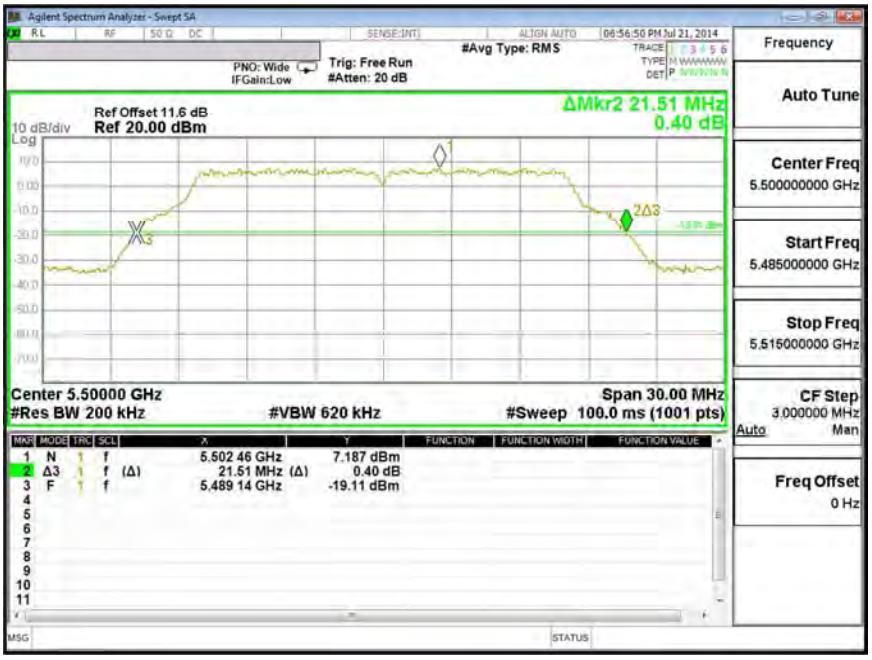
None; for reporting purposes only.

RESULTS

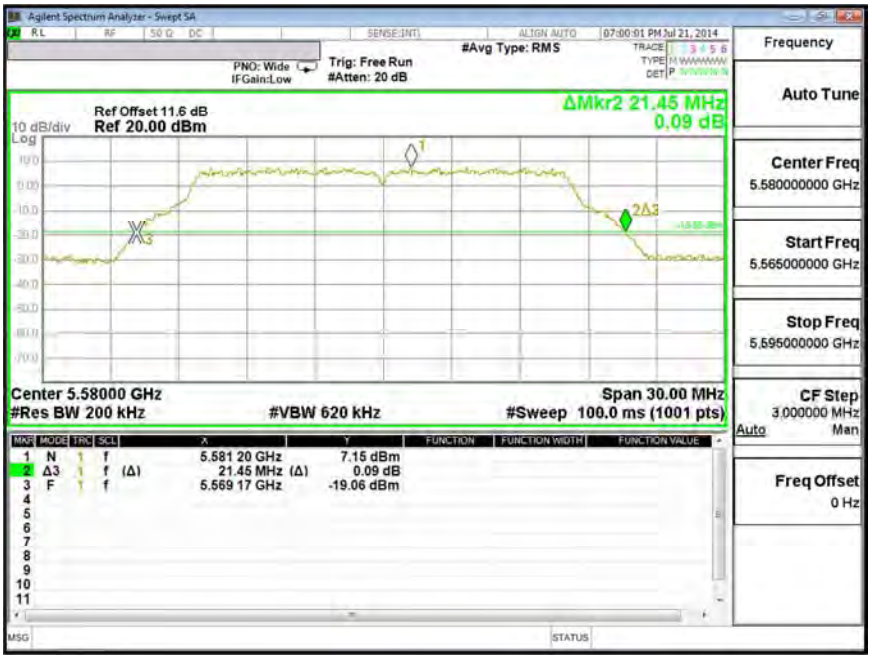
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5500	21.51
Mid	5580	21.45
High	5700	21.69
High	5720	21.78

26 dB BANDWIDTH

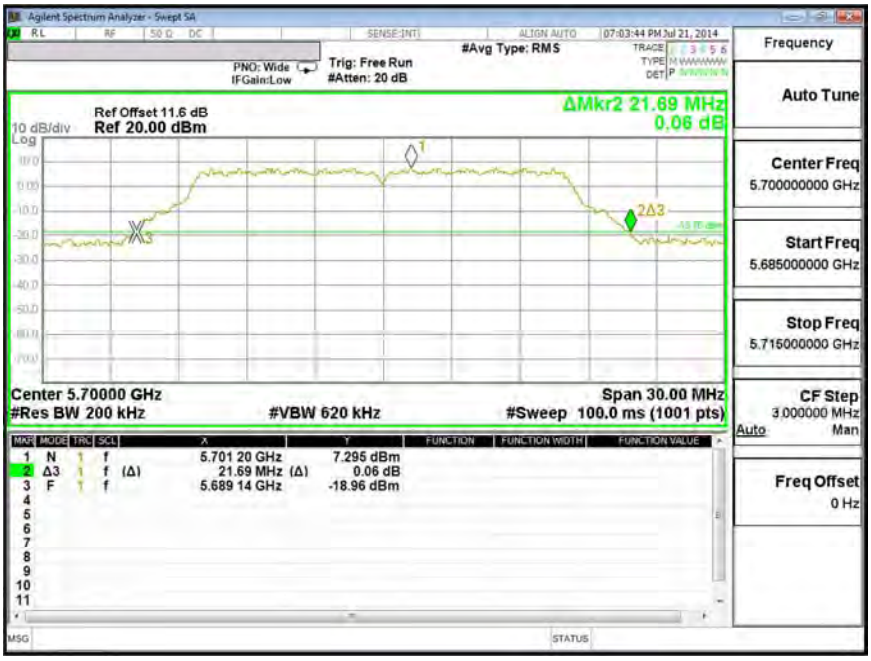
BANDWIDTH LOW CH



BANDWIDTH MID CH



BANDWIDTH HIGH CH



BANDWIDTH STRADDLE CH 144

9.19.2. 99% BANDWIDTH

LIMITS

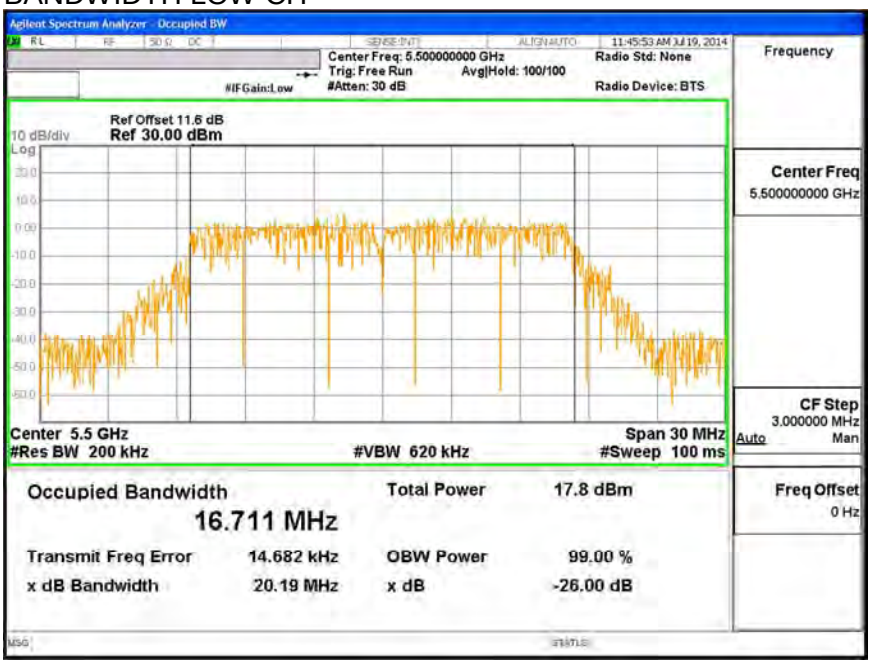
None; for reporting purposes only.

RESULTS

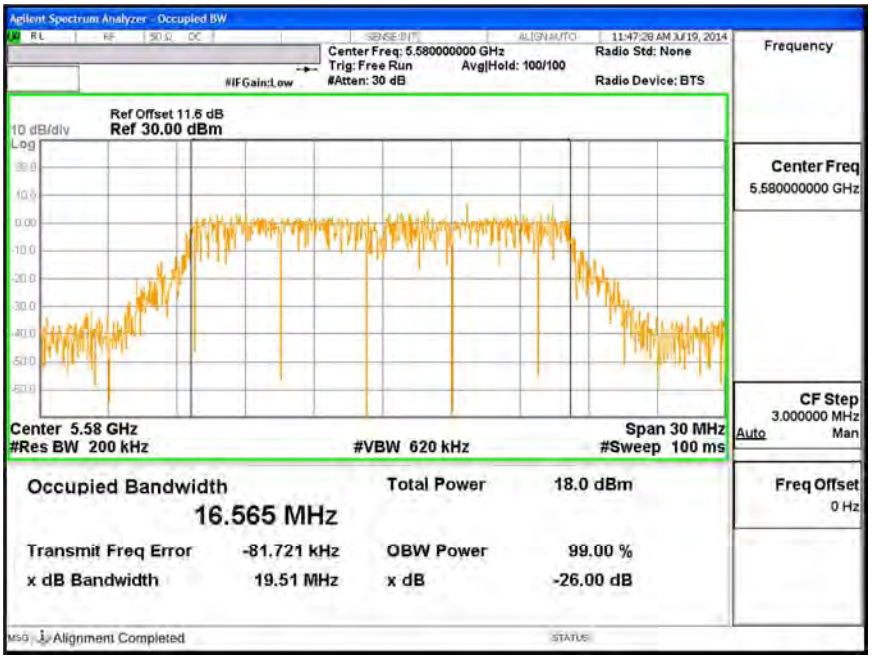
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5500	16.711
Mid	5580	16.565
High	5700	16.457
High	5720	17.709

99% BANDWIDTH

BANDWIDTH LOW CH

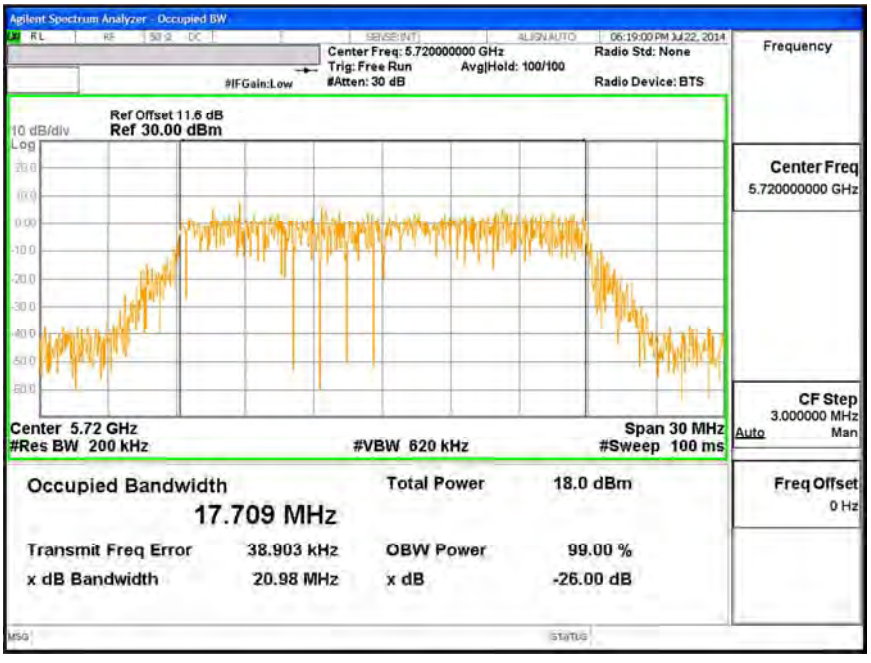


BANDWIDTH MID CH



BANDWIDTH HIGH CH

BANDWIDTH STRADDLE CH 144



9.19.1. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter. The power meter was setup for a gated power measurement.

The cable assembly insertion loss of 11.6 dB (including 10 dB pad and 1.6 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

Channel	Frequency (MHz)	Antenna B Power (dBm)	Antenna C Power (dBm)
Low	5500	16.45	16.90
Mid	5580	16.48	17.99
High	5700	14.98	14.81
High	5720	16.48	17.85

9.19.2. 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.

TEST PROCEDURE

The transmitter output is connected to a power meter. The power meter was setup for a gated power measurement.

The cable assembly insertion loss of 11.6 dB (including 10 dB pad and 1.6 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

DIRECTIONAL ANTENNA GAIN

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

ANTENNA B

Antenna Gain (dBi)
0.155

ANTENNA C

Antenna Gain (dBi)
3.004

RESULTS

ANTENNA B

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5500	21.51	0.16	24.00	11.00
Mid	5580	21.45	0.16	24.00	11.00
High	5700	21.69	0.16	24.00	11.00

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

Output Power Results

Channel	Frequency (MHz)	Antenna B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5500	16.45	16.45	24.00	-7.55
Mid	5580	16.48	16.48	24.00	-7.52
High	5700	14.98	14.98	24.00	-9.02

PSD Results

Channel	Frequency (MHz)	Antenna B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5500	5.16	5.16	11.00	-5.84
Mid	5580	5.25	5.25	11.00	-5.76
High	5700	3.22	3.22	11.00	-7.78

ANTENNA C

Bandwidth, Antenna Gain, and Limits

Channel	Frequency (MHz)	Min 26 dB BW (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm)
Low	5500	21.51	3.00	24.00	11.00
Mid	5580	21.45	3.00	24.00	11.00
High	5700	21.69	3.00	24.00	11.00

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

Output Power Results

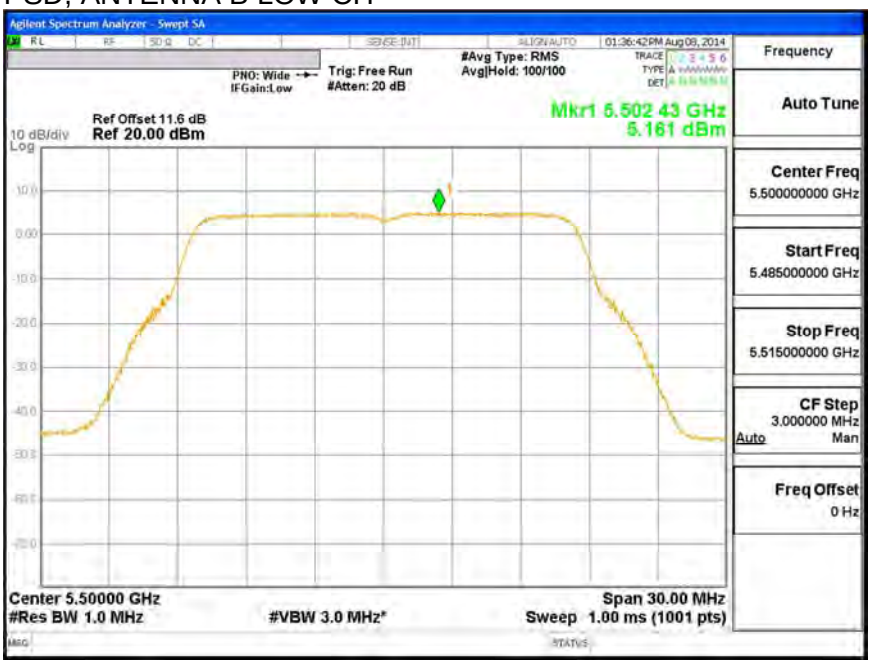
Channel	Frequency (MHz)	Antenna C Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5500	16.90	16.90	24.00	-7.10
Mid	5580	17.99	17.99	24.00	-6.01
High	5700	14.81	14.81	24.00	-9.19

PSD Results

Channel	Frequency (MHz)	Antenna C Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5500	4.98	4.98	11.00	-6.02
Mid	5580	7.18	7.18	11.00	-3.82
High	5700	3.23	3.23	11.00	-7.77

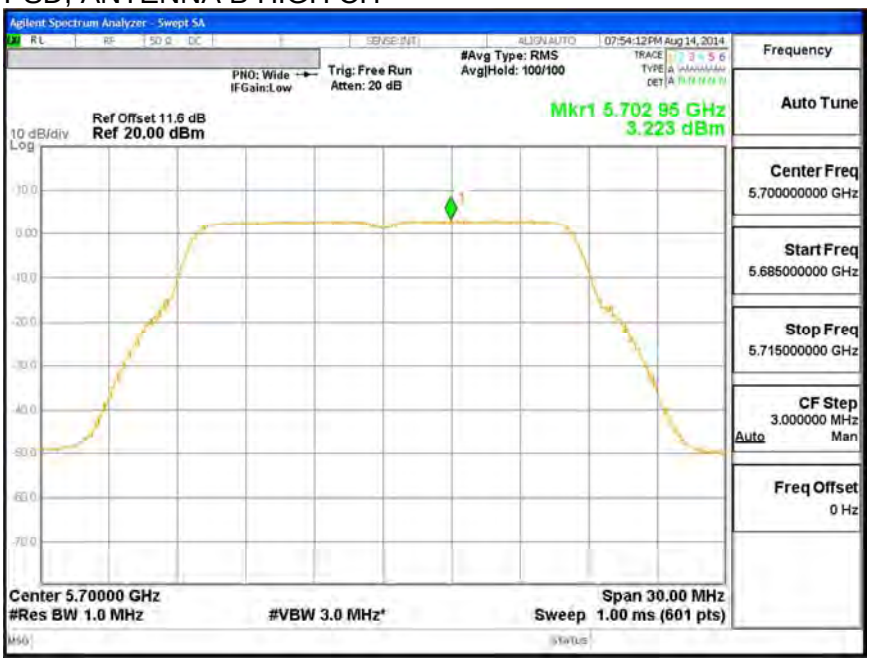
PSD, ANTENNA B

PSD, ANTENNA B LOW CH



PSD, ANTENNA B MID CH

PSD, ANTENNA B HIGH CH

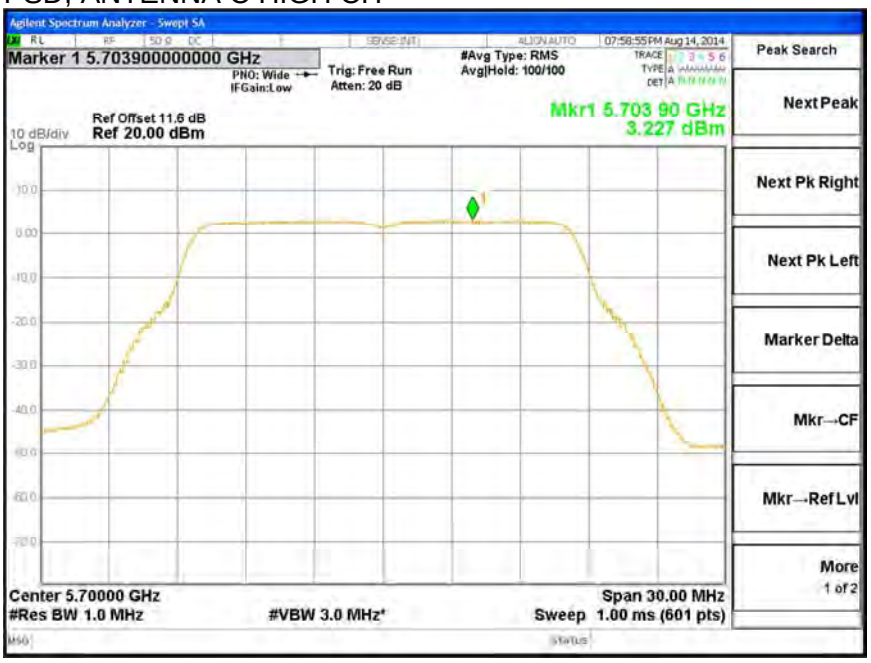


PSD, ANTENNA C

PSD, ANTENNA C LOW CH

PSD, ANTENNA C MID CH

PSD, ANTENNA C HIGH CH



ANTENNA B 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	15.89	0.16	0.16	23.01	11.00

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

Output Power Results

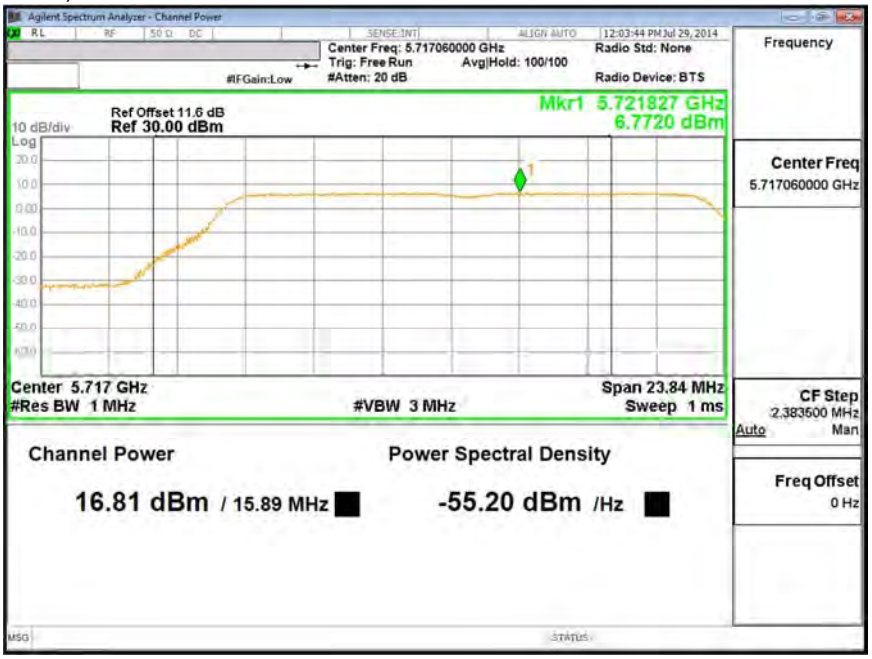
Channel	Frequency (MHz)	Antenna B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
144	5720	16.81	16.81	23.01	-6.20

PSD Results

Channel	Frequency (MHz)	Antenna B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
144	5720	6.77	6.77	11.00	-4.23

PSD, STRADDLE CHANNEL 144 ANTENNA B

PSD, ANTENNA B CH 144 UNII-2C



UNII-3 BAND

Antenna Gain and Limit

Channel	Frequency (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm)
144	5720	0.16	30.00	30.00

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

Output Power Results

Channel	Frequency (MHz)	Antenna B Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
144	5720	11.12	11.12	30.00	-18.88

PSD Results

Channel	Frequency (MHz)	Antenna B Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
144	5720	6.86	6.86	30.00	-23.14

OUTPUT POWER, ANTENNA B CH 144 UNII-3

PSD, ANTENNA B CH 144 UNII-3

ANTENNA C STRADDLE CHANNEL 142 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	15.89	3.00	3.00	23.01	11.00

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

Output Power Results

Channel	Frequency (MHz)	Antenna C Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
144	5720	15.50	15.50	23.01	-7.51

PSD Results

Channel	Frequency (MHz)	Antenna C Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
144	5720	5.52	5.52	11.00	-5.48

PSD, ANTENNA B CH 142 UNII

UNII-3 BAND

Antenna Gain and Limit

Channel	Frequency (MHz)	Directional Gain (dBi)	Power Limit (dBm)	PSD Limit (dBm)
144	5720	3.00	30.00	30.00

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

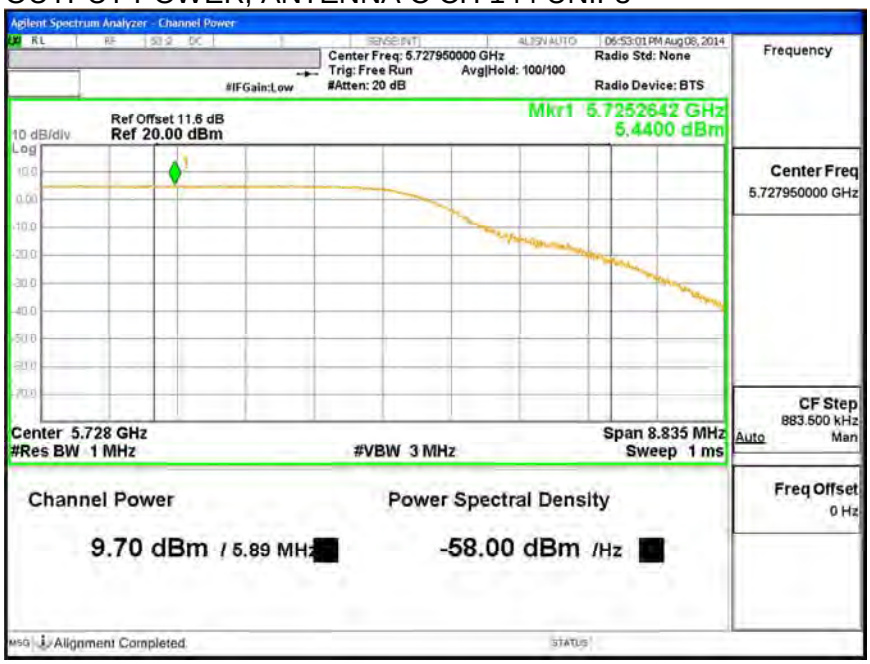
Output Power Results

Channel	Frequency (MHz)	Antenna C Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
144	5720	9.70	9.70	30.00	-20.30

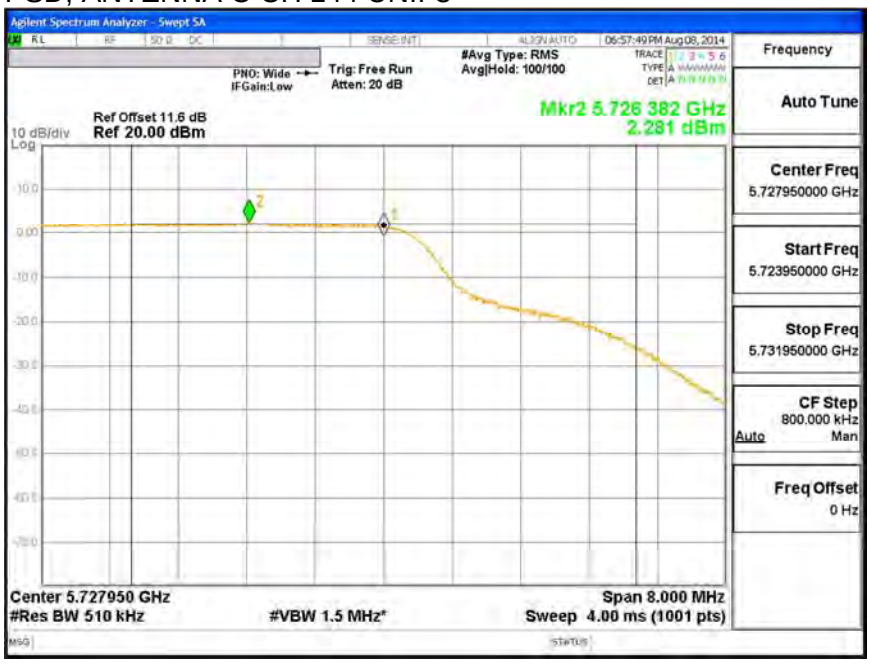
PSD Results

Channel	Frequency (MHz)	Antenna C Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
144	5720	2.28	-1.29	30.00	-31.29

OUTPUT POWER, ANTENNA C CH 144 UNII-3



PSD, ANTENNA C CH 144 UNII-3



6dBc BW, ANTENNA C CH 144 UNII-3

9.20. 802.11n HT20 2Tx CDD MODE IN THE 5.6 GHz BAND

9.20.1. 26 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

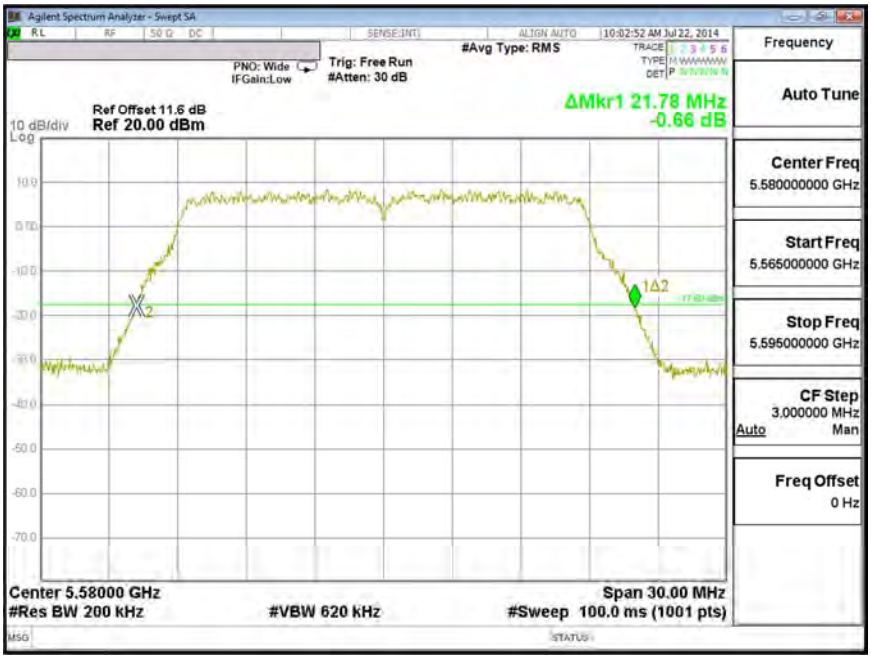
RESULTS

Channel	Frequency (MHz)	26 dB BW Antenna B (MHz)	26 dB BW Antenna C (MHz)
Low	5500	21.87	21.66
Mid	5580	21.78	21.90
High	5700	21.78	21.57
High	5720	21.87	21.81

26 dB BANDWIDTH, ANTENNA B

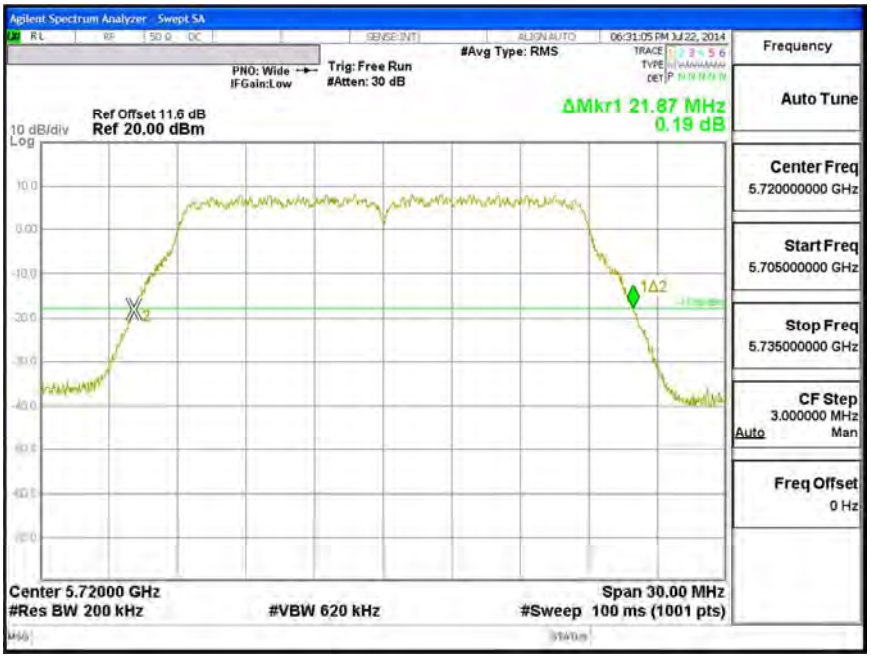
BANDWIDTH ANTENNA B LOW CH

BANDWIDTH ANTENNA B MID CH



BANDWIDTH ANTENNA B HIGH CH

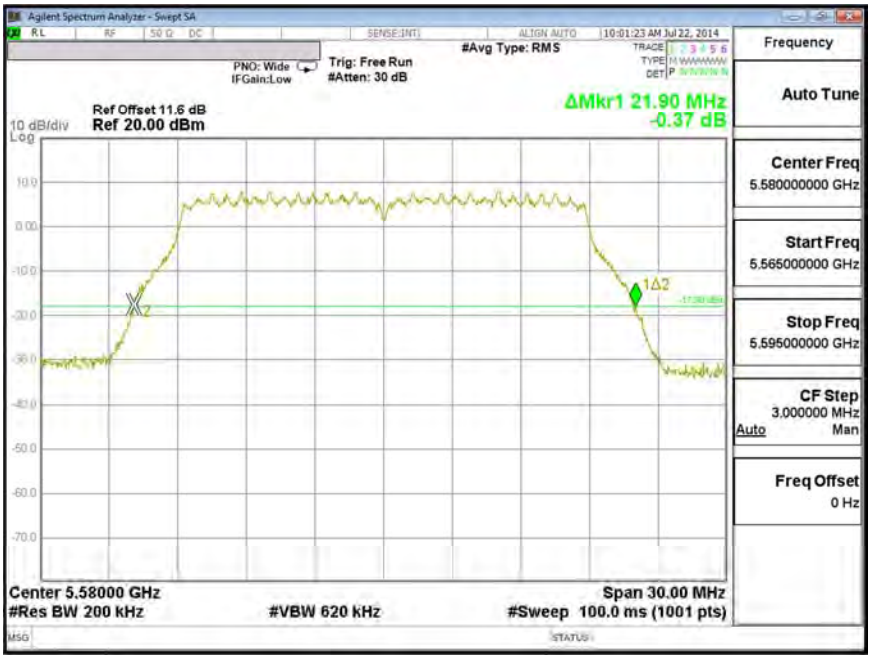
BANDWIDTH ANTENNA B STRADDLE CH 144



26 dB BANDWIDTH, ANTENNA C

BANDWIDTH ANTENNA C LOW CH

BANDWIDTH ANTENNA C MID CH



BANDWIDTH ANTENNA C HIGH CH

BANDWIDTH ANTENNA C STRADDLE CH 144

9.20.2. 99% BANDWIDTH

LIMITS

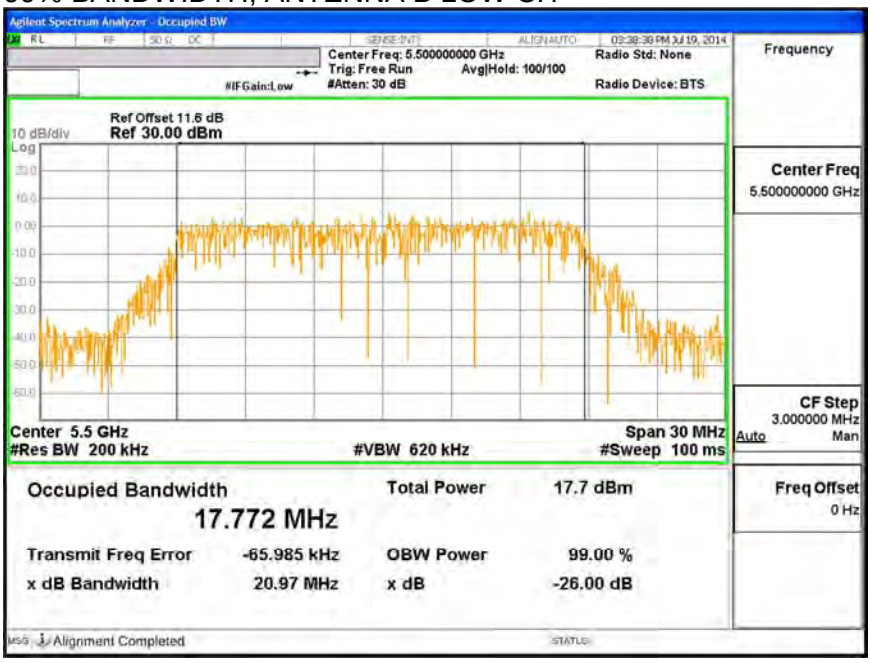
None; for reporting purposes only.

RESULTS

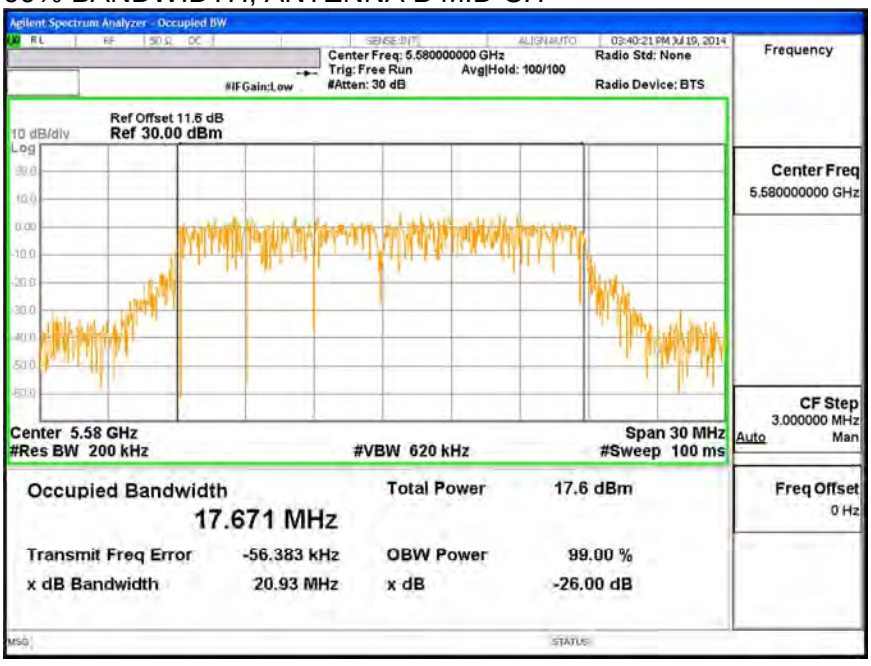
Channel	Frequency (MHz)	99% BW Antenna B (MHz)	99% BW Antenna C (MHz)
Low	5500	17.772	17.736
Mid	5580	17.671	17.580
High	5700	17.772	17.683
High	5720	17.693	17.723

99% BANDWIDTH, ANTENNA B

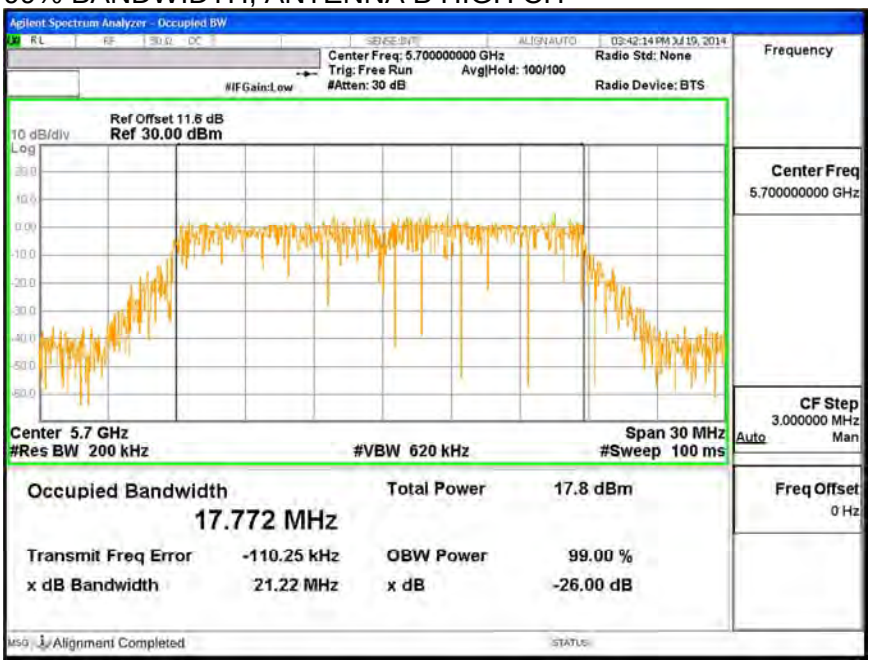
99% BANDWIDTH, ANTENNA B LOW CH



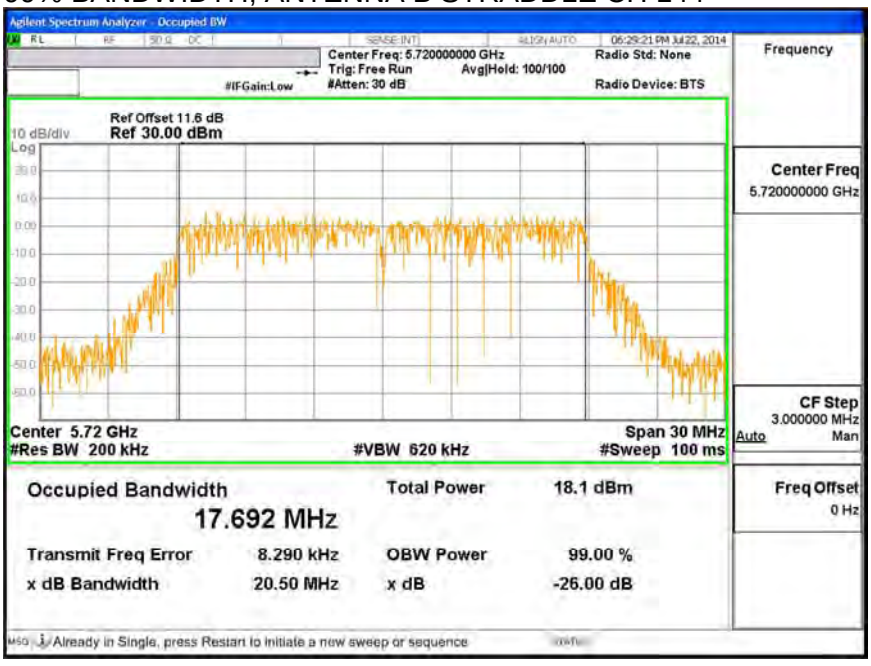
99% BANDWIDTH, ANTENNA B MID CH



99% BANDWIDTH, ANTENNA B HIGH CH

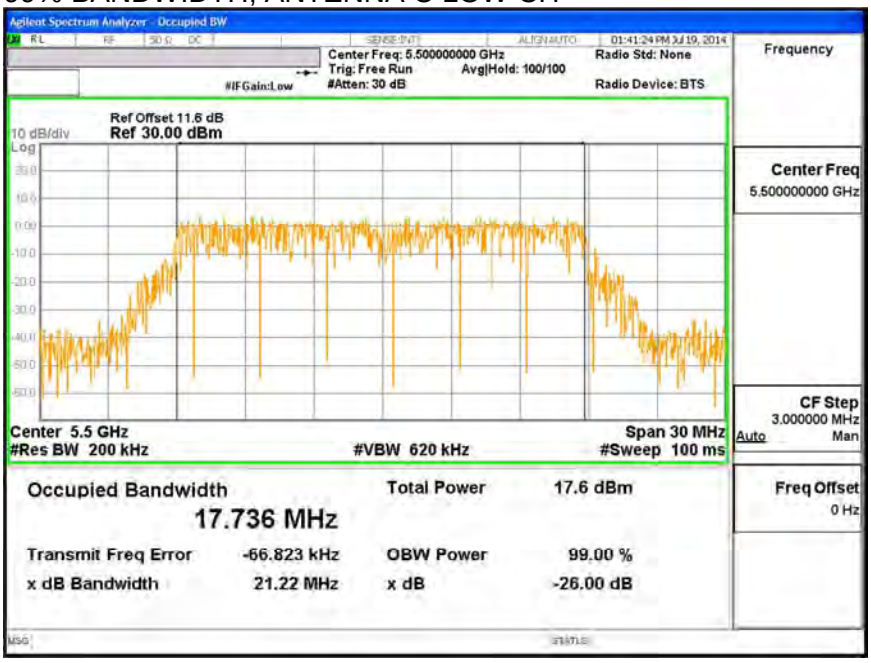


99% BANDWIDTH, ANTENNA B STRADDLE CH 144

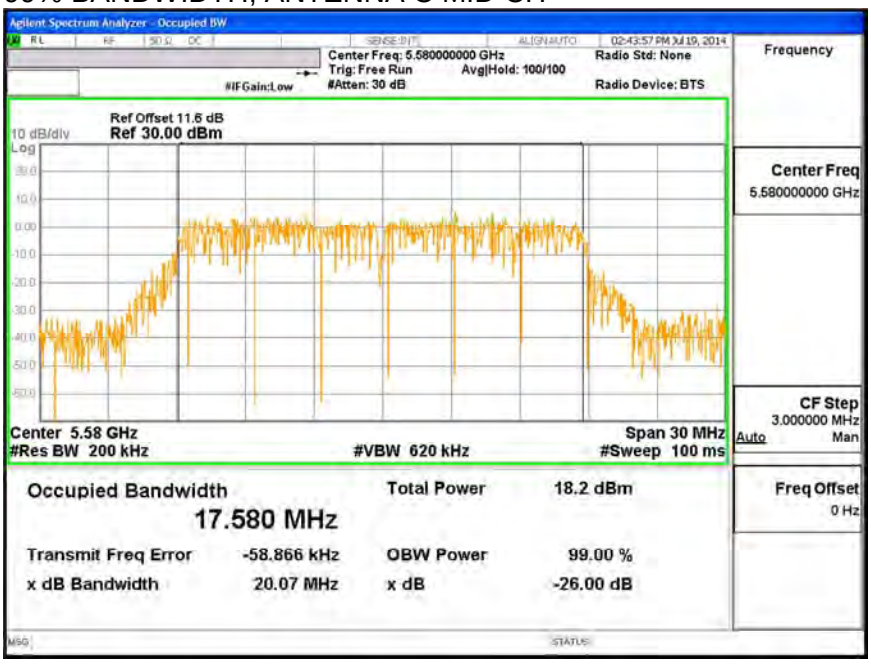


99% BANDWIDTH, ANTENNA C

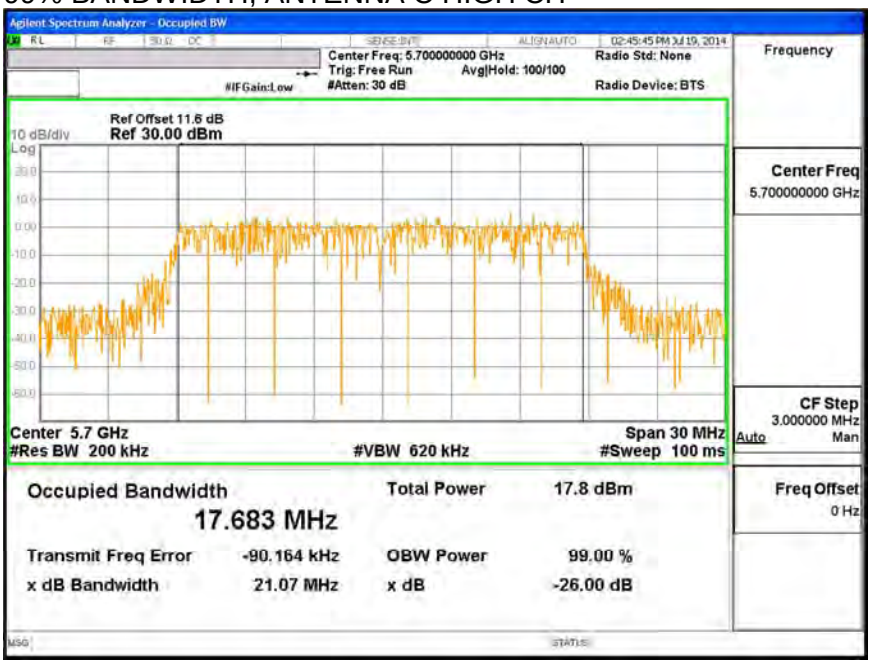
99% BANDWIDTH, ANTENNA C LOW CH



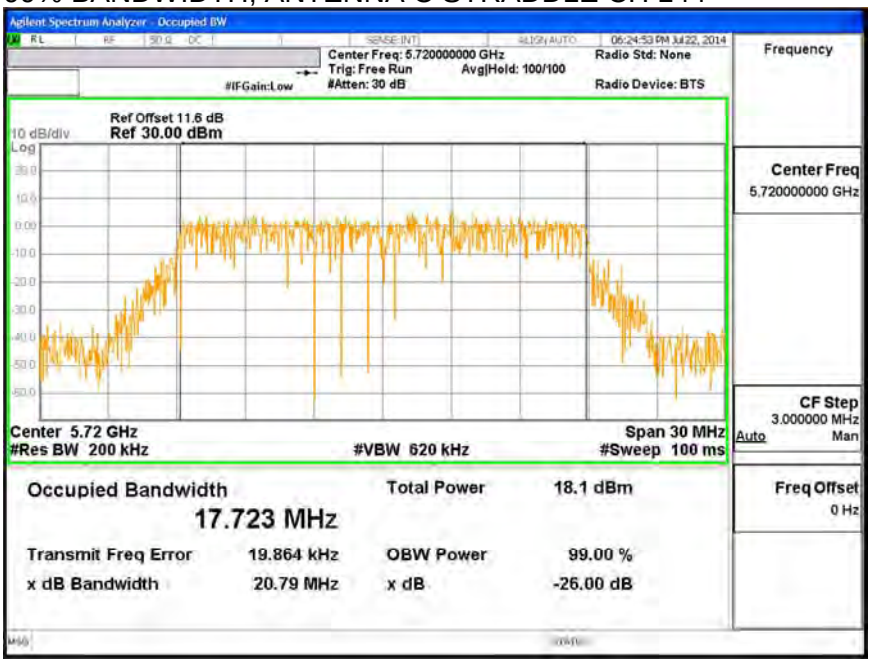
99% BANDWIDTH, ANTENNA C MID CH



99% BANDWIDTH, ANTENNA C HIGH CH



99% BANDWIDTH, ANTENNA C STRADDLE CH 144



9.20.1. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter. The power meter was setup for a gated power measurement.

The cable assembly insertion loss of 11.6 dB (including 10 dB pad and 1.6 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)	Antenna B Power (dBm)	Antenna C Power (dBm)	Total Power (dBm)
Low	5500	15.87	15.90	18.90
Mid	5580	16.48	16.98	19.75
High	5700	13.92	13.95	16.95
High	5720	16.46	16.90	19.70

9.20.2. 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.

TEST PROCEDURE

The transmitter output is connected to a power meter. The power meter was setup for a gated power measurement.

The cable assembly insertion loss of 11.6 dB (including 10 dB pad and 1.6 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

DIRECTIONAL ANTENNA GAIN

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

Antenna B Antenna Gain (dBi)	Antenna C Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
0.16	3.00	1.81

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

Antenna B Antenna Gain (dBi)	Antenna C Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
0.16	3.00	4.71

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	21.66	1.81	4.71	24.00	11.00
Mid	5580	21.78	1.81	4.71	24.00	11.00
High	5700	21.57	1.81	4.71	24.00	11.00

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

Output Power Results

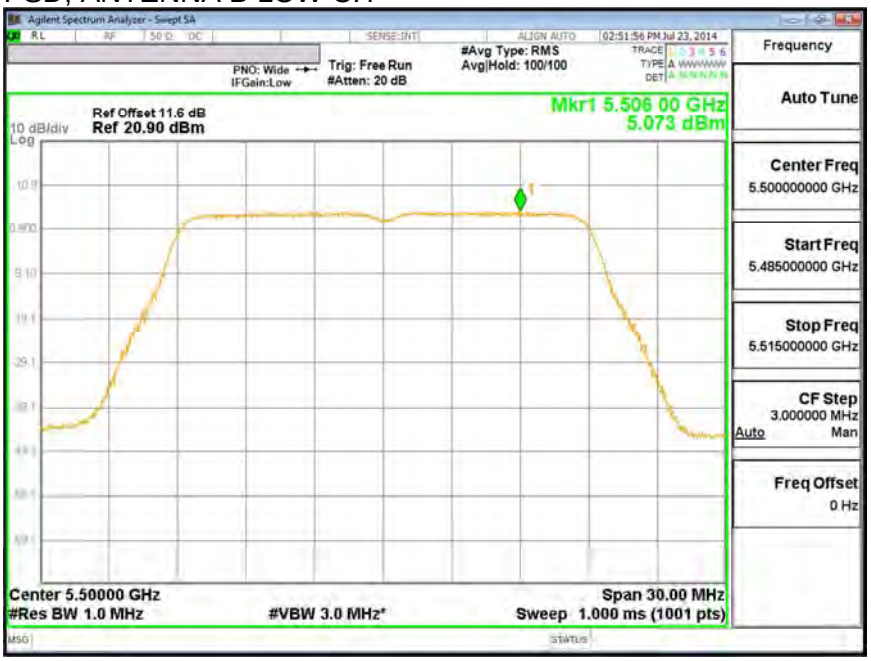
Channel	Frequency (MHz)	Antenna B Meas Power (dBm)	Antenna C Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5500	15.87	15.90	18.90	24.00	-5.10
Mid	5580	16.48	16.98	19.75	24.00	-4.25
High	5700	13.92	13.95	16.95	24.00	-7.05

PSD Results

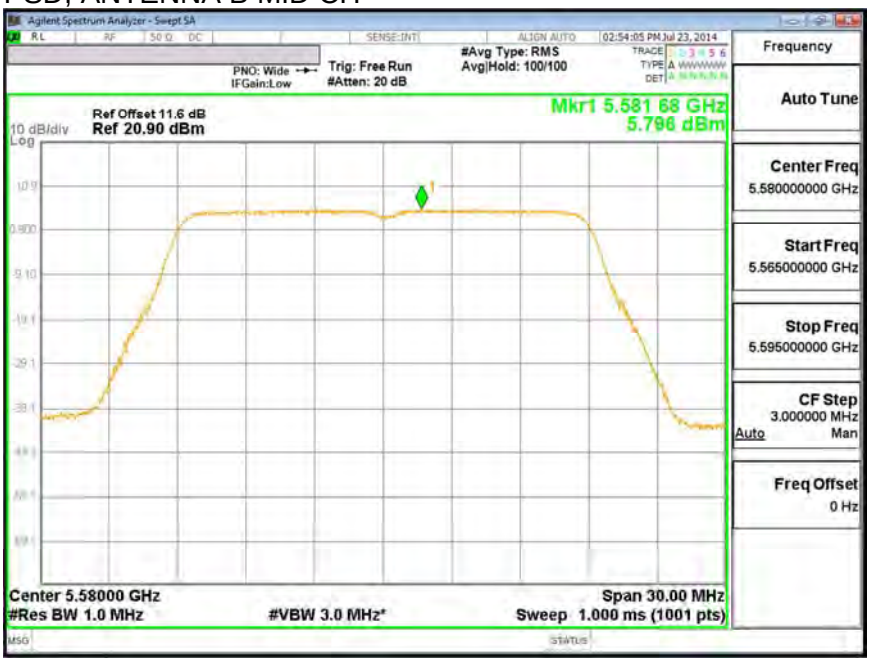
Channel	Frequency (MHz)	Antenna B Meas PSD (dBm)	Antenna C Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5500	5.07	4.98	8.04	11.00	-2.96
Mid	5580	5.80	5.94	8.88	11.00	-2.12
High	5700	2.30	2.14	5.23	11.00	-5.77

PSD, ANTENNA B

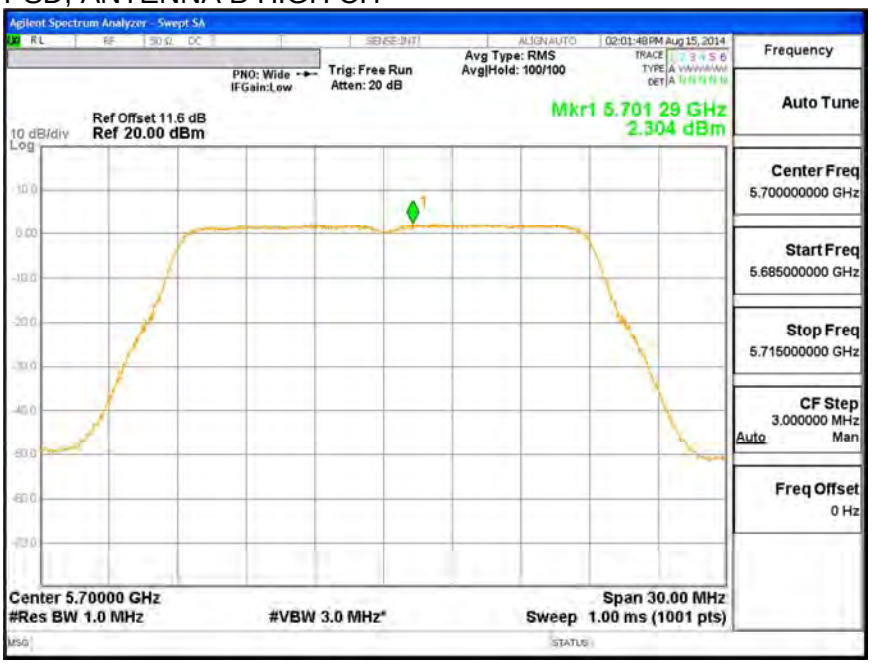
PSD, ANTENNA B LOW CH



PSD, ANTENNA B MID CH



PSD, ANTENNA B HIGH CH

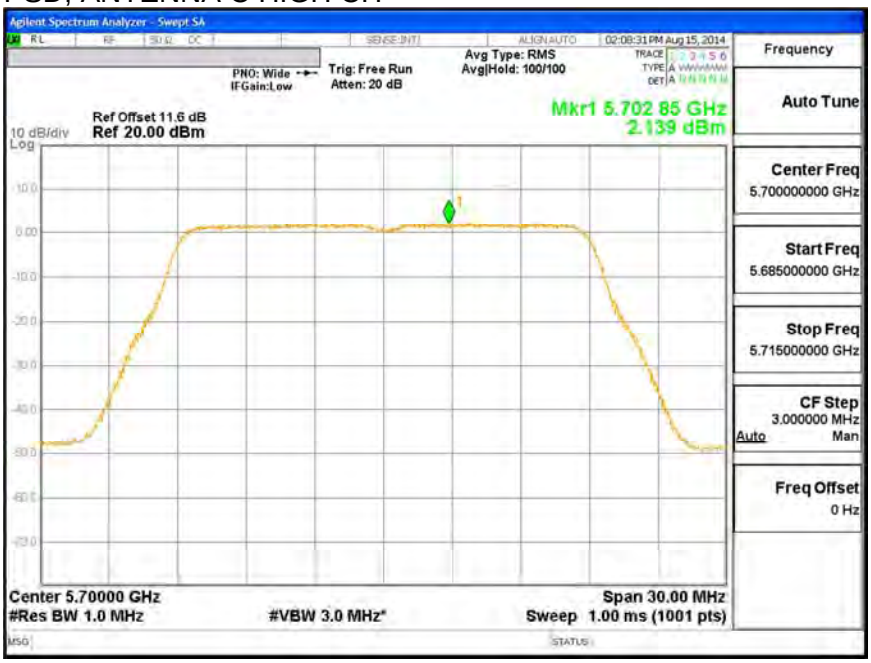


PSD, ANTENNA C

PSD, ANTENNA C LOW CH

PSD, ANTENNA C MID CH

PSD, ANTENNA C 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	15.91	1.81	4.71	23.02	11.00

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

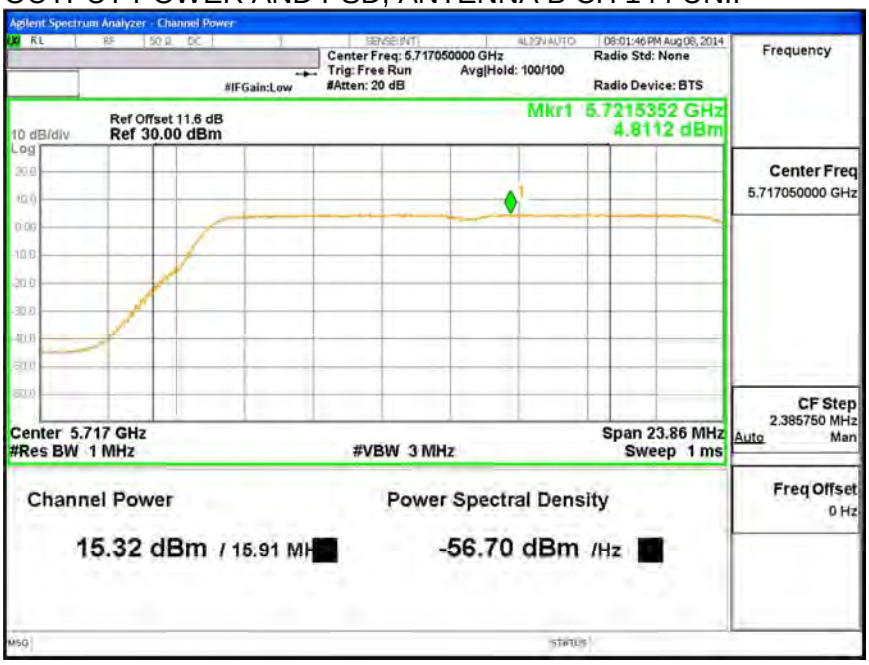
Output Power Results

Channel	Frequency (MHz)	Antenna B Meas Power (dBm)	Antenna C Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Power Margin (dB)
144	5720	15.32	15.78	18.57	23.02	-4.45

PSD Results

Channel	Frequency (MHz)	Antenna B Meas PSD (dBm)	Antenna C Meas PSD (dBm)	Total Corr'd PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
144	5720	4.81	5.32	8.08	11.00	-2.92

OUTPUT POWER AND PSD, ANTENNA B CH 144 UNII



OUTPUT POWER AND PSD, ANTENNA C CH 144 UNII