TEST REPORT

of

FCC Part 15 Subpart E §15.407

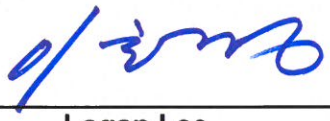
FCC ID : AK8MP-CL1

Equipment Under Test	:	Mobile Projector
Model Name	:	MP-CL1
Applicant	:	Sony Corporation
Manufacturer	:	Sony Electronics of Korea Co., Ltd.
Date of Test(s)	:	2015.06.28 ~ 2015.07.27
Date of Issue	:	2015.08.04

In the configuration tested, the EUT complied with the standards specified above.

Tested By:  **Date:** **2015.08.04**

Youngmin Park

Approved By:  **Date:** **2015.08.04**

Logan Lee

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1. General information

1.1 Testing laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)
-Wireless Div. 2FL, 10-2, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 435-837
All SGS services are rendered in accordance with the applicable SGS conditions of service available on request and accessible at http://www.sgs.com/en/Terms-and-Conditions.aspx.
Phone No. : + 82 31 688 0901
Fax No. : + 82 31 688 0921

1.1. Details of Applicant

Applicant : Sony Corporation
Address : 1-7-1 Konan Minato-ku, Tokyo, 108-0075 Japan
Contact Person : Kim, Sung-Chul
Phone No. : +82 55 250 0677

1.3. Description of EUT

Kind of Product	Mobile Projector
Model Name	MP-CL1
Power Supply	DC 3.8 V
Frequency Range	2 412 ㎒ ~ 2 462 ㎒ (11b/g/n_HT20), 5 180 ㎒ ~ 5 240 ㎒ (Band 1 : 11a/n_HT20), 5 190 ㎒ ~ 5 230 ㎒ (Band 1 : 11n_HT40), 5 260 ㎒ ~ 5 320 ㎒ (Band 2A : 11a/n_HT20), 5 270 ㎒ ~ 5 310 ㎒ (Band 2A : 11n_HT40), 5 500 ㎒ ~ 5 700 ㎒ (Band 2C : 11a/n_HT20)_except for TDWR(5.6-5.65 ㎓) band, 5 510 ㎒ ~ 5 670 ㎒ (Band 2C : 11n_HT40)_except for TDWR(5.6-5.65 ㎓) band, 5 745 ㎒ ~ 5 825 ㎒ (Band 3 : 11a/n_HT20), 5 755 ㎒ ~ 5 795 ㎒ (Band 3 : 11n_HT40)
Modulation Technique	DSSS, OFDM
Number of Channels	11 channels (11b/g/n_HT20), 4 channels (Band 1 : 11a/n_HT20), 2 channels (Band 1 : 11n_HT40), 4 channels (Band 2A : 11a/n_HT20), 2 channels (Band 2A : 11n_HT40), 8 channels (Band 2C : 11a/n_HT20), 3 channels (Band 2C : 11n_HT40), 5 channel (Band 3 : 11a/n_HT20), 2 channel (Band 3 : 11n_HT40)
Antenna Type	Internal type (SISO)
Antenna Gain	2 412 ㎒ ~ 2 462 ㎒: 1.59 ㏈i , 5 180 ㎒ ~ 5 320 ㎒: 2.88 ㏈i, 5 500 ㎒ ~ 5 700 ㎒: 0.12 ㏈i, 5 745 ㎒ ~ 5 825 ㎒: 0.16 ㏈i

1.4. Declaration by the manufacturer

- EUT is SLAVE without Radar Detection and TPC.
- EUT is not supported TDWR(5.6 – 5.65 ㎓) band.

1.5. Test equipment list

Equipment	Manufacturer	Model	S/N	Cal Date	Cal Interval	Cal Due.
Signal Generator	Agilent	E4438C	MY42082477	Mar. 23, 2015	Annual	Mar. 23, 2016
Spectrum Analyzer	Agilent	N9030A	MY53120526	Jun. 23, 2015	Annual	Jun. 23, 2016
Attenuator	AEROFLEX / INMET	18N-20 ㏈	2	Mar. 13, 2015	Annual	Mar. 13, 2016
Band Reject Filter	Wainwright Instrument GmbH	WRCJV5150/5350-5130/5370-50/16SS	1	Sep. 24, 2014	Annual	Sep. 24, 2015
Band Reject Filter	Wainwright Instrument GmbH	WRCJV5470/5725-5450/5745-50/20SS	1	Sep. 24, 2014	Annual	Sep. 24, 2015
High Pass Filter	Wainwright Instrument GmbH	WHK6.0/18G-10SS	11	Jun. 08, 2015	Annual	Jun. 08, 2016
High Pass Filter	Wainwright Instrument GmbH	WHNX7.5/26.5G-6SS	15	Jun. 23, 2015	Annual	Jun. 23, 2016
Low Pass Filter	Mini circuits	NLP-1200+	V 8979400903-2	Mar. 12, 2015	Annual	Mar. 12, 2016
Power Meter	Anritsu	ML2495A	1223004	Jun. 08, 2015	Annual	Jun. 08, 2016
Power Sensor	Anritsu	MA2411B	1207272	Jun. 08, 2015	Annual	Jun. 08, 2016
DC Power Supply	Agilent	U8002A	MY49030063	Dec. 06, 2014	Annual	Dec. 06, 2015
Preamplifier	H.P.	8447F	2944A03909	Aug. 27, 2014	Annual	Aug. 27, 2015
Preamplifier	R&S	SCU 18	10117	Apr. 10, 2015	Annual	Apr. 10, 2016
Preamplifier	MITEQ Inc.	JS44-18004000-35-8P	1546891	May 07, 2015	Annual	May 07, 2016
Bilog Antenna	Schwarzbeck Mess-Elektronik	VULB9163	396	Jun. 18, 2015	Biennial	Jun. 18, 2017
Horn Antenna	R&S	HF906	100326	Dec. 10, 2013	Biennial	Dec. 10, 2015
Horn Antenna	Schwarzbeck Mess-Elektronik	BBHA9170	BBHA9170431	May 15, 2014	Biennial	May 15, 2016
Antenna Master	INN-CO	MM4000	N/A	N/A	N/A	N.C.R.
Turn Table	INN-CO	DS 1200 S	N/A	N/A	N/A	N.C.R.
Test Receiver	R&S	ESU26	100109	Mar. 03, 2015	Annual	Mar. 03, 2016
Test Receiver	R&S	ESCI 7	100911	Dec. 24, 2014	Annual	Dec. 24, 2015
Two-Line V-Network	R&S	ENV216	100190	Dec. 25, 2014	Annual	Dec. 25, 2015
Anechoic Chamber	SY Corporation	L × W × H (9.6 m × 6.4 m × 6.6 m)	N/A	N/A	N/A	N.C.R.
Shield Room	SY Corporation	L × W × H (6.5 m × 3.5 m × 3.5 m)	N/A	N.C.R.	N/A	N.C.R.

1.6. Summary of test result

The EUT has been tested according to the following specifications:

APPLIED STANDARD		
Section in FCC 15	**Test Item**	**Result**
15.205(a) 15.209(a) 15.407(b)(1) 15.407(b)(2) 15.407(b)(3) 15.407(b)(4)	Transmitter radiated spurious emissions	Complied
15.407(a)	26 ㏈ Bandwidth	Complied
15.407(a)(1) 15.407(a)(2) 15.407(a)(3)	Output power	Complied
15.407(a)(1) 15.407(a)(2) 15.407(a)(3)	Peak power spectral density	Complied
15.207	Transmitter AC power line Conducted emission	Complied

1.7. Test Procedure(s)

The measurement procedures described in the American National Standard for Methods of Measurement of Radio-Noise Emission from Low-Voltage Electrical and Electronic Equipment in the Range of 9 ㎑ to 40 ㎓ (ANSI C63.4-2003), the guidance provided in KDB 789033 D02 v01 and were used in the measurement of the DUT.
The device was tested to the new UNII rules.

1.8. Sample calculation

Where relevant, the following sample calculation is provided:

1.8.1. Conducted test

Offset value (㏈) = Attenuator (㏈) + Cable loss (㏈)

1.8.2. Radiation test

Field strength level (㏈㎶/m) = Measured level (㏈㎶) + Antenna factor (㏈) + Cable loss (㏈) – amplifier (㏈)

1.9. Test report revision

Revision	Report number	Date of Issue	Description
0	F690501/RF-RTL008969	2015.07.29	Initial
1	F690501/RF-RTL008969-1	2015.08.04	Modified remarks by FCC 15.31 (O) and the unit for Conducted power, Power Spectral Density

1.10. Duty Cycle of EUT

Regarding to KDB 789033 D02 v01, B), the maximum duty cycles of all modes were investigated and set the spectrum analyzer as below
Set RBW ≥ EBW if possible; otherwise, set RBW to the largest available value, Set VBW ≥ RBW. Set detector = peak or average. The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T and the number of sweep points across duration T exceeds 100.

Mode	Data Rate							
11a	**6**	**9**	**12**	**18**	**24**	**36**	**48**	**54**
Duty Cycle (%)	95	94	92	89	85	79	74	72
Correction factor (dB)	0.21	0.28	0.37	0.49	0.71	1.01	1.28	1.44
11n_HT20	**MCS0**	**MCS1**	**MCS2**	**MCS3**	**MCS4**	**MCS5**	**MCS6**	**MCS7**
Duty Cycle (%)	96	91	89	84	78	74	72	72
Correction factor (dB)	0.19	0.40	0.52	0.74	1.06	1.32	1.44	1.41
11n_HT40	**MCS0**	**MCS1**	**MCS2**	**MCS3**	**MCS4**	**MCS5**	**MCS6**	**MCS7**
Duty Cycle (%)	89	85	80	76	69	63	62	60
Correction factor (dB)	0.52	0.70	0.97	1.21	1.63	2.01	2.11	2.22

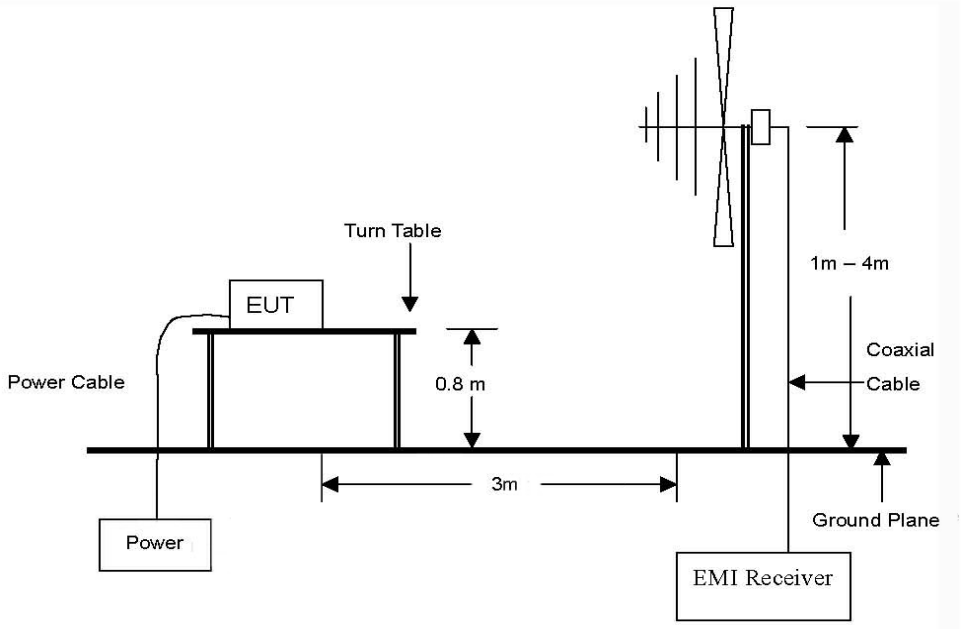
Remark:
1. As measured duty cycles of EUT, all of mode and data rate keep constant period and are converted to log scale (power averaging) to compensate correction factor to result of average test items.
2. Duty cycle (%) = (Tx on time / (Tx on + off time)) x 100
3. Correction factor (dB) = 10 log (1/duty cycle)

2. Transmitter radiated spurious emissions

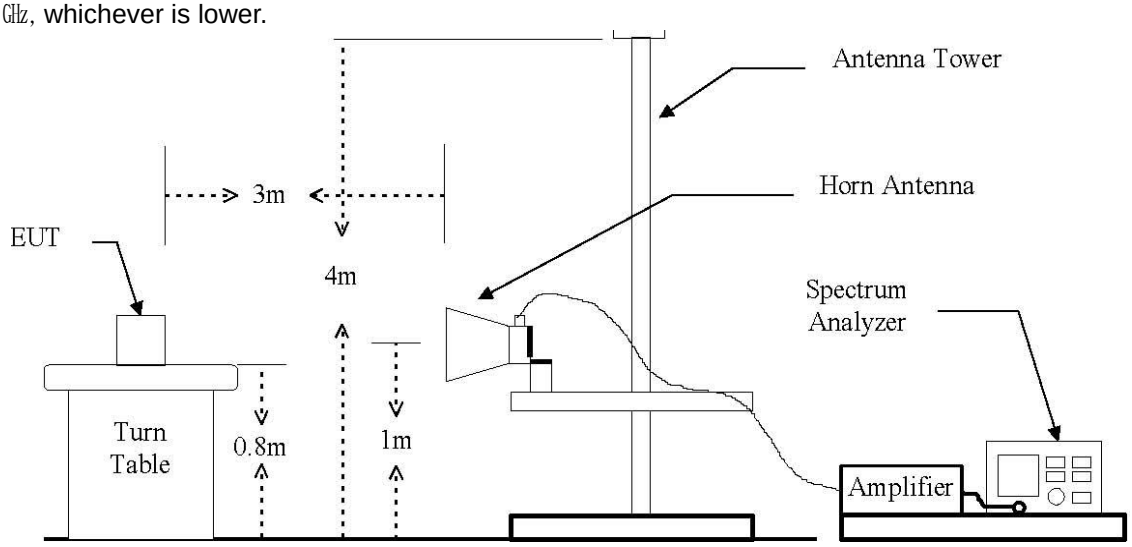
2.1. Test setup

2.1.1. Transmitter Radiated Spurious Emissions

The diagram below shows the test setup that is utilized to make the measurements for emission below 1 ㎓ Emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission. The spurious emissions were investigated form 1 ㎓ to the 10th harmonic of the highest fundamental frequency or 40 ㎓, whichever is lower.



2.2. Limit

For transmitters operating in the 5.15 ~ 5.25 ㎓ band: all emissions outside of the 5.15 ~ 5.35 ㎓ band shall not exceed an EIRP of -27 ㏈m/㎒.

For transmitters operating in the 5.25 ~ 5.35 ㎓ band: all emissions outside of the 5.15 ~ 5.35 ㎓ band shall not exceed an EIRP of -27 ㏈m/㎒. Devices operating in the 5.25 ~ 5.35 ㎓ band that generate emissions in the 5.15 ~ 5.25 ㎓ band must meet all applicable technical requirements for operation in the 5.15 ~ 5.25 ㎓ band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 ㏈m/㎒ in the 5.15 ~ 5.25 ㎓ band.

For transmitters operating in the 5.47 ~ 5.725 ㎓ band: all emissions outside of the 5.47 ~ 5.725 ㎓ band shall not exceed an EIRP of -27 ㏈m/㎒.

For transmitters operating in the 5.725 ~ 5.85 ㎓ band: All emissions within the frequency range from the band edge to 10 ㎒ above or below the band edge shall not exceed an e.i.r.p. of -17 ㏈ m/㎒; for frequencies 10 ㎒ or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of -27 ㏈ m/㎒.

According to § 15.209(a), Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table：

Frequency (㎒)	Distance (Meters)	Field Strength (㏈㎶/m)	Field Strength (㎶/m)
0.009 – 0.490	300	20 log (2 400/F(㎑))	2 400/F(㎑)
0.490 – 1.705	30	20 log (24 000/F(㎑))	24 000/F(㎑)
1.705 – 30.0	30	29.54	30
30 - 88	3	40.0	100
88 – 216	3	43.5	150
216 – 960	3	46.0	200
Above 960	3	54.0	500

**Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 ㎒, 76-88 ㎒, 174-216 ㎒ or 470-806 ㎒. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§15.231 and 15.241.

2.3. Test procedures

Radiated spurious emissions from the EUT were measured according to the dictates in section G of KDB 789033 D02 v01 and ANSI C63.4-2003.

All data rates and modes were investigated for conducted spurious emissions. The emissions of the configuration that produced the worst case emissions are reported in this section.

2.3.1. Test procedures for radiated spurious emissions

2.3.1.1. Test Procedures for emission below 30 ㎒

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter anechoic chamber test site. The table was rotated 360 degrees to determine the position of the highest radiation.
2. Then antenna is a loop antenna is fixed at one meter above the ground to determine the maximum value of the field strength. Both parallel and perpendicular of the antenna are set to make the measurement.
3. For each suspected emission, the EUT was arranged to its worst case and then the table was turned from 0 degrees to 360 degrees to find the maximum reading.
4. The test-receiver system was set to average or quasi peak detect function and Specified Bandwidth with Maximum Hold Mode.

2.3.1.2. Test Procedures for emission from above 30 ㎒

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter anechoic chamber test site. The table was rotated 360 degrees to determine the position of the highest radiation.
2. During performing radiated emission below 1 ㎓, the EUT was set 3 meters away from the interference receiving antenna, which was mounted on the top of a variable-height antenna tower. During performing radiated emission above 1 ㎓, the EUT was set 3 meter away from the interference-receiving antenna.
3. The antenna is a bi-log antenna, a horn antenna and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was 10 ㏈ lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 ㏈ margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

NOTE;

- The measurements for below 1 ㎓ refer to section II.G.4.
  Compliance shall be demonstrated using CISPR quasi-peak detection; however, peak detection is permitted as an alternative to quasi-peak detection.

- The measurements for above 1 ㎓ refer to section II.G.5.
  Peak emission levels are measured by setting the analyzer as follows:
  Set to RBW = 1 ㎒, VBW ≥ 3 ㎒, Detector = Peak, Sweep time = auto, Trace mode = Max hold

- The measurements for above 1 ㎓ refer to section II.G.6.
  Average emission levels are measured by setting the analyzer as follows:
  Set to RBW = 1 ㎒, VBW ≥ 3 ㎒, Detector = RMS, Averaging type = power(i.e., RMS), Sweep time = auto,
  Trace mode= trace average of at least 100 traces. If the transmission is not continuous, the number of traces shall be increased by a factor of 1/x, where x is the duty cycle.
  If duty cycle < 98 percent, a correction factor shell be added to the measurement results.
- Power averaging (RMS) mode was used above the correction factor is 10 log (1/x), where x is the duty cycle.

To get a maximum emission level from the EUT, the EUT is manipulated through three orthogonal planes.
Definition of DUT three orthogonal planes were described in the test setup photo.

Worst orthogonal plan of EUT is **Y – axis** during radiation test.

2.4. Test result

Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 % R.H.

2.4.1. Spurious radiated emission

The frequency spectrum below 1 000 ㎒ was investigated. All reading values are peak values.

Radiated Emissions			Ant.	Correction Factors		Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP + CL (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
109.54	41.33	Peak	H	13.35	-25.78	28.90	43.50	14.60
237.58	41.19	Peak	V	13.43	-24.42	30.20	46.00	15.80
432.03	41.67	Peak	H	17.40	-24.27	34.80	46.00	11.20
672.10	44.52	Peak	H	20.23	-23.55	41.20	46.00	4.80
735.07	41.15	Peak	V	22.22	-23.47	39.90	46.00	6.10
884.85	41.69	Peak	V	23.36	-22.45	42.60	46.00	3.40
Above 900.00	Not detected	-	-	-	-	-	-	-

Remark:
1. Spurious emissions for all channels and modes were investigated and almost the same below 1 ㎓.
2. Reported spurious emissions are in **11a / 6 Mbps / Middle channel** as worst case among other modes.
3. According to § 15.31(o), the amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 ㏈ below the permissible value need not be reported unless specifically required elsewhere in this part.
4. Radiated spurious emission measurement as below
   (Actual = Reading + Antenna Factor + Amp + CL)
5. The device has a reference clock operating 37.4 ㎒.

2.4.2. Spurious radiated emission for above 1 ㎓

802.11a (Band 1)_6 Mbps

A. Low Channel (5 180 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
*4 500.00	9.70	Peak	V	31.73	8.76	-	50.19	74.00	23.81
*4 500.00	0.96	Average	V	31.73	8.76	0.21	41.66	54.00	12.34
*5 117.50	14.59	Peak	V	33.35	9.65	-	57.59	74.00	16.41
*5 117.50	3.81	Average	V	33.35	9.65	0.21	47.02	54.00	6.98
*5 150.00	11.12	Peak	V	33.51	10.40	-	55.03	74.00	18.97
*5 150.00	1.86	Average	V	33.51	10.40	0.21	45.98	54.00	8.02

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

B. Middle Channel (5 220 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

C. High Channel (5 240 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

802.11a (Band 2A)_6 Mbps

A. Low Channel (5 260 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

B. Middle Channel (5 300 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

C. High Channel (5 320 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
*5 350.00	9.79	Peak	V	33.91	9.37	-	53.07	74.00	20.93
*5 350.00	2.36	Average	V	33.91	9.37	0.21	45.85	54.00	8.15
*5 383.77	16.51	Peak	V	34.15	9.50	-	60.16	74.00	13.84
*5 379.26	3.17	Average	V	34.18	9.48	0.21	47.04	54.00	6.96
*5 460.00	10.33	Peak	V	34.05	9.84	-	54.22	74.00	19.78
*5 460.00	1.52	Average	V	34.05	9.84	0.21	45.62	54.00	8.38

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

802.11a (Band 2C) _6 Mbps

A. Low Channel (5 500 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
*5 350.00	10.47	Peak	V	33.91	9.37	-	53.75	74.00	20.25
*5 350.00	1.39	Average	V	33.91	9.37	0.21	44.88	54.00	9.12
*5 441.02	18.25	Peak	V	34.04	9.67	-	61.96	74.00	12.04
*5 441.02	4.58	Average	V	34.04	9.67	0.21	48.50	54.00	5.50
*5 460.00	14.21	Peak	V	34.05	9.84	-	58.10	74.00	15.90
*5 460.00	3.96	Average	V	34.05	9.84	0.21	48.06	54.00	5.94

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

B. Middle Channel (5 580 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

C. High Channel (5 700 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

802.11a (Band 3)_6 Mbps

A. Low Channel (5 745 ㎒)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
5 712.25	11.22	Peak	V	34.03	10.00	55.25	68.23	12.98
5 724.59	13.12	Peak	V	34.02	9.94	57.08	78.23	21.15

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

B. Middle Channel (5 785 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

C. High Channel (5 825 ㎒)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
5 851.09	15.76	Peak	V	34.27	9.90	59.93	78.23	18.30
5 865.42	11.67	Peak	V	34.36	9.95	55.98	68.23	12.25

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

802.11n_HT20 (Band 1)_MCS0

A. Low Channel (5 180 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
*4 500.00	9.84	Peak	V	31.73	8.76	-	50.33	74.00	23.67
*4 500.00	0.73	Average	V	31.73	8.76	0.19	41.41	54.00	12.59
*4 588.40	13.27	Peak	V	32.09	8.91	-	54.27	74.00	19.73
*4 588.40	2.49	Average	V	32.09	8.91	0.19	43.68	54.00	10.32
*5 150.00	10.75	Peak	V	33.51	10.40	-	54.66	74.00	19.34
*5 150.00	1.23	Average	V	33.51	10.40	0.19	45.33	54.00	8.67

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

B. Middle Channel (5 220 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

C. High Channel (5 240 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

802. 11n_HT20 (Band 2A)_MCS0

A. Low Channel (5 260 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

B. Middle Channel (5 300 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

C. High Channel (5 320 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
*5 350.00	10.51	Peak	V	33.91	9.37	-	53.79	74.00	20.21
*5 350.00	1.05	Average	V	33.91	9.37	0.19	44.52	54.00	9.48
*5 428.87	13.39	Peak	V	34.09	9.64	-	57.12	74.00	16.88
*5 428.87	1.23	Average	V	34.09	9.64	0.19	45.15	54.00	8.85
*5 460.00	9.44	Peak	V	34.05	9.84	-	53.33	74.00	20.67
*5 460.00	1.21	Average	V	34.05	9.84	0.19	45.29	54.00	8.71

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

802. 11n_HT20 (Band 2C)_MCS0

A. Low Channel (5 500 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
*5 350.00	10.69	Peak	V	33.91	9.37	-	53.97	74.00	20.03
*5 350.00	1.33	Average	V	33.91	9.37	0.19	44.80	54.00	9.20
*5 454.28	15.59	Peak	V	34.06	9.75	-	59.40	74.00	14.60
*5 454.28	3.32	Average	V	34.06	9.75	0.19	47.32	54.00	6.68
*5 460.00	11.73	Peak	V	34.05	9.84	-	55.62	74.00	18.38
*5 460.00	1.85	Average	V	34.05	9.84	0.19	45.93	54.00	8.07

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

B. Middle Channel (5 580 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

C. High Channel (5 700 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

802. 11n_HT20 (Band 3)_MCS0

A. Low Channel (5 745 ㎒)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
5 706.66	11.25	Peak	V	34.05	10.03	55.33	68.23	12.90
5 723.86	11.92	Peak	V	34.02	9.95	55.89	78.23	22.34

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

B. Middle Channel (5 785 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

C. High Channel (5 825 ㎒)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
5 856.69	15.61	Peak	V	34.32	9.92	59.85	78.23	18.38
5 868.58	12.93	Peak	V	34.36	9.96	57.25	68.23	10.98

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

802.11n_HT40 (Band 1) _MCS0

A. Low Channel (5 190 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
*4 500.00	8.55	Peak	V	31.73	8.76	-	49.04	74.00	24.96
*4 500.00	0.06	Average	V	31.73	8.76	0.52	41.07	54.00	12.93
*4 830.11	15.58	Peak	V	32.80	9.16	-	57.54	74.00	16.46
*4 830.11	2.25	Average	V	32.80	9.16	0.52	44.73	54.00	9.27
*5 150.00	10.42	Peak	V	33.51	10.40	-	54.33	74.00	19.67
*5 150.00	1.23	Average	V	33.51	10.40	0.52	45.66	54.00	8.34

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

B. High Channel (5 230 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

802. 11n_HT40 (Band 2A)_MCS0

A. Low Channel (5 270 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

B. High Channel (5 310 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
*5 350.00	10.66	Peak	V	33.91	9.37	-	53.94	74.00	20.06
*5 350.00	0.59	Average	V	33.91	9.37	0.52	44.39	54.00	9.61
*5 356.71	13.60	Peak	V	33.95	9.40	-	56.95	74.00	17.05
*5 356.71	0.85	Average	V	33.95	9.40	0.52	44.72	54.00	9.28
*5 460.00	10.64	Peak	V	34.05	9.84	-	54.53	74.00	19.47
*5 460.00	0.73	Average	V	34.05	9.84	0.52	45.14	54.00	8.86

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

802. 11n_HT40 (Band 2C)_MCS0

A. Low Channel (5 510 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
*5 350.00	10.05	Peak	V	33.91	9.37	-	53.33	74.00	20.67
*5 350.00	1.15	Average	V	33.91	9.37	0.52	44.95	54.00	9.05
*5 439.07	13.54	Peak	V	34.04	9.66	-	57.24	74.00	16.76
*5 439.07	1.37	Average	V	34.04	9.66	0.52	45.59	54.00	8.41
*5 460.00	11.26	Peak	V	34.05	9.84	-	55.15	74.00	18.85
*5 460.00	1.77	Average	V	34.05	9.84	0.52	46.18	54.00	7.82

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

B. Middle Channel (5 550 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

C. High Channel (5 670 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

802.11n_HT40 (Band 3)_MCS0

A. Low Channel (5 755 ㎒)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
5 715.54	13.27	Peak	V	34.02	9.99	57.28	68.23	10.95
5 718.78	12.76	Peak	V	34.00	9.97	56.73	78.23	21.50

Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

B. High Channel (5 795 ㎒)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
5 850.08	12.98	Peak	V	34.26	9.90	57.14	78.23	21.09
5 859.42	12.52	Peak	V	34.34	9.93	56.79	68.23	11.44

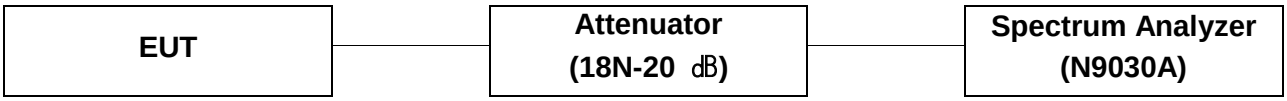
Radiated Emissions			Ant.	Correction Factors			Total	FCC Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+ CL (dB)	Duty (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

Remark:

1. "*" means the restricted band.
2. Radiated emissions measured in frequency above 1 000 ㎒ were made with an instrument using Peak / average detector mode if frequency was in restricted band. Otherwise the frequency was out of restricted band, only peak detector should be used.
3. Band edge measurement
   (Actual = Reading + AF + CL + Duty cycle)
4. Radiated spurious emission measurement
   (Actual = Reading + AF + AMP + CL + Duty cycle)
5. If frequency was out of restricted band, the calculation method for peak limit is same as below:
   68.23 ㏈㎶/m = EIRP - 20 log(d) + 104.77 = -27 - 20 log (3) + 104.77
   78.23 ㏈㎶/m = EIRP - 20 log(d) + 104.77 = -17 - 20 log (3) + 104.77
   *distance: 3 m, *EIRP: -27 ㏈m/㎒, -17 ㏈m/㎒
6. According to § 15.31(o), the amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 ㏈ below the permissible value need not be reported unless specifically required elsewhere in this part.

3. 26 dB Bandwidth

3.1. Test setup



3.3. Test procedure

All data rates and modes were investigated for this test. The full data for the worst case data rate are reported in this section.

1. This measurement settings are specified in section C) of KDB 789033 D02 v01.
2. Set RBW : approximately 1 % of the emission bandwidth.
3. Set the VBW > RBW.
4. Detector = Peak
5. Trace mode = max hold.
6. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1 %

3.4. Test result

Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 % R.H.

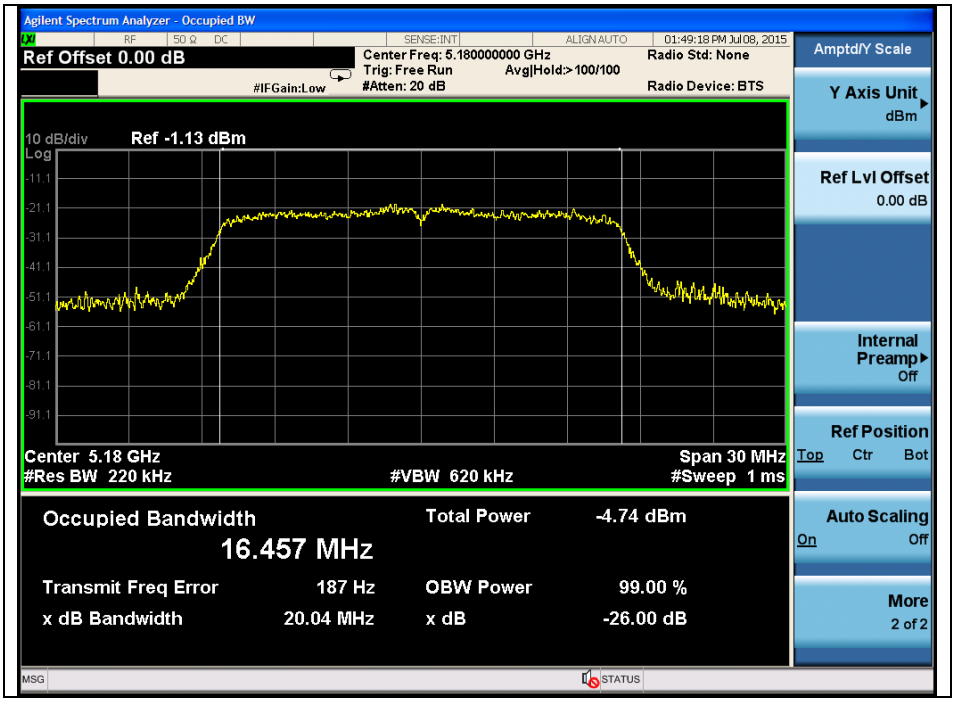
3.4.1. 26 ㏈ Bandwidth

Band	Mode	Frequency (㎒)	Ch.	Data Rate (Mbps)	26 ㏈ Bandwidth (㎒)
U-NII 1	11a	5 180	36	6	20.04
		5 220	44	6	19.05
		5 240	48	6	18.75
	11n_HT20	5 180	36	MCS0	18.84
		5 220	44	MCS0	19.23
		5 240	48	MCS0	19.76
	11n_HT40	5 190	38	MCS0	39.30
		5 230	46	MCS0	39.35
U-NII 2A	11a	5 260	52	6	19.43
		5 300	60	6	20.88
		5 320	64	6	20.12
	11n_HT20	5 260	52	MCS0	19.06
		5 300	60	MCS0	20.80
		5 320	64	MCS0	19.24
	11n_HT40	5 270	54	MCS0	39.23
		5 310	62	MCS0	39.55
U-NII 2C	11a	5 500	100	6	21.28
		5 580	116	6	18.95
		5 700	140	6	20.44
	11n_HT20	5 500	100	MCS0	19.25
		5 580	116	MCS0	20.01
		5 700	140	MCS0	18.97
	11n_HT40	5 510	102	MCS0	39.06
		5 550	110	MCS0	39.02
		5 670	134	MCS0	39.04
U-NII 3	11a	5 745	149	6	19.71
		5 785	157	6	19.69
		5 825	165	6	18.79
	11n_HT20	5 745	149	MCS0	19.18
		5 785	157	MCS0	20.79
		5 825	165	MCS0	19.22
	11n_HT40	5 755	151	MCS0	38.87
		5 795	159	MCS0	39.16

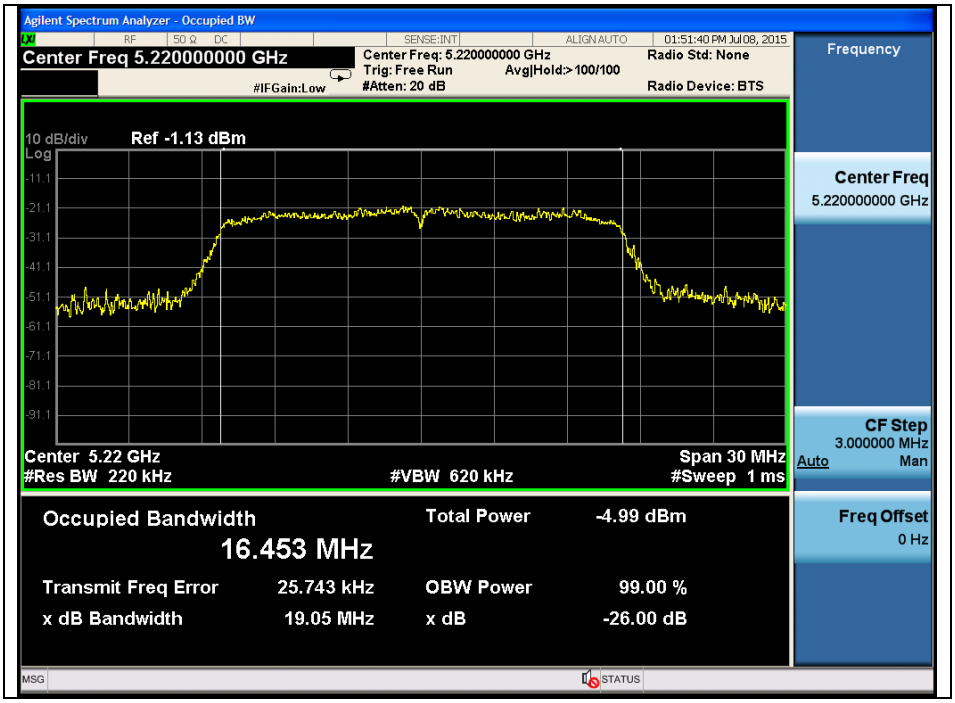
26 dB Bandwidth

802.11a (Band 1)

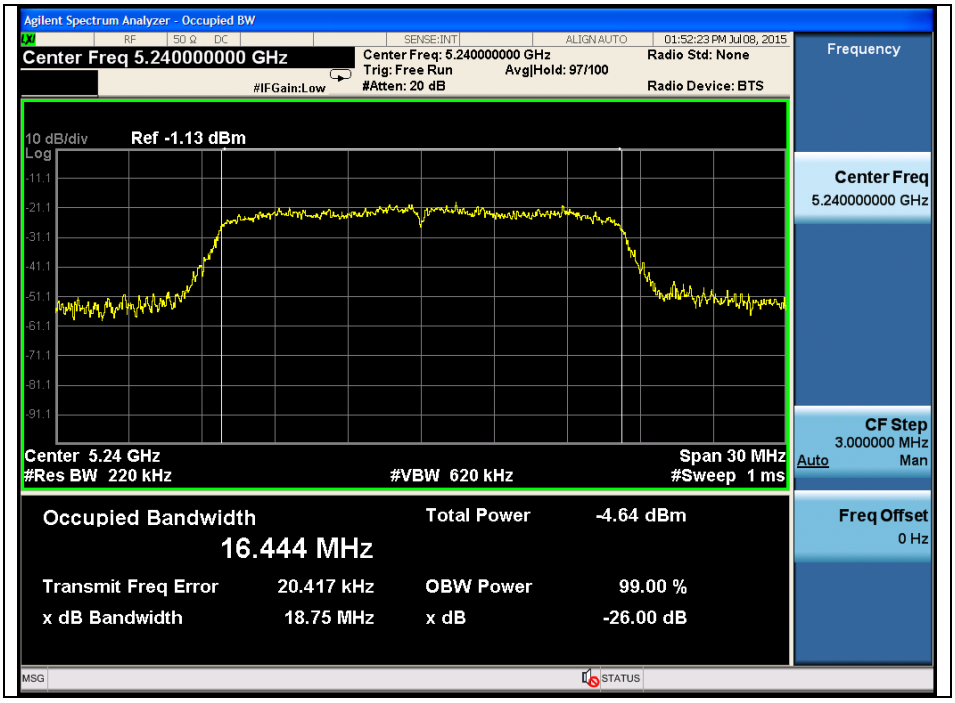
Low Channel (5 180 ㎒)



Middle Channel (5 220 ㎒)

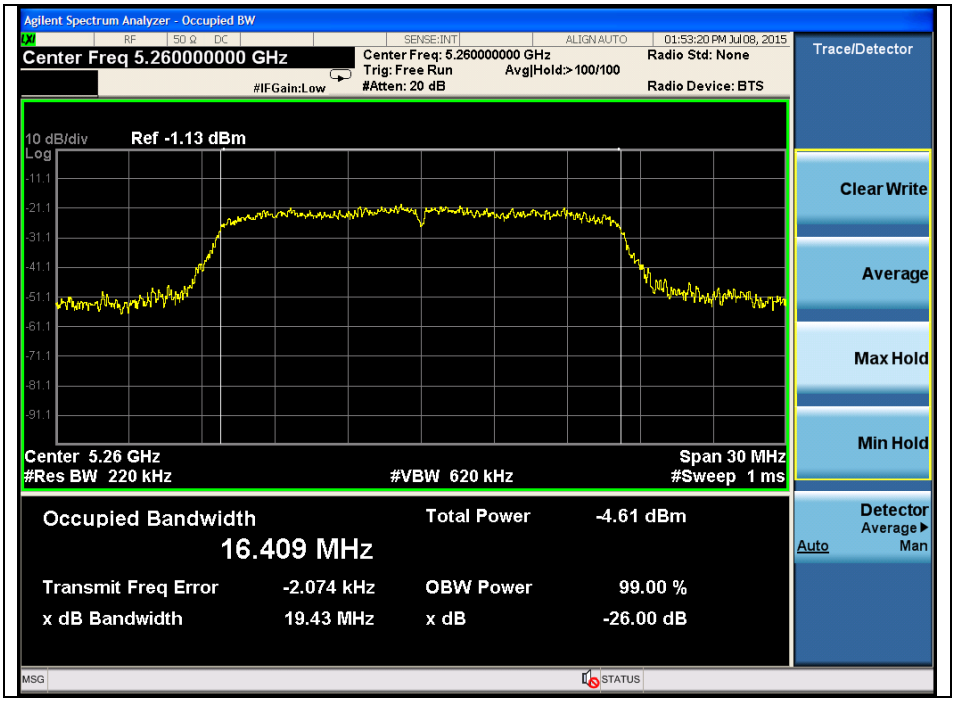


High Channel (5 240 ㎒)

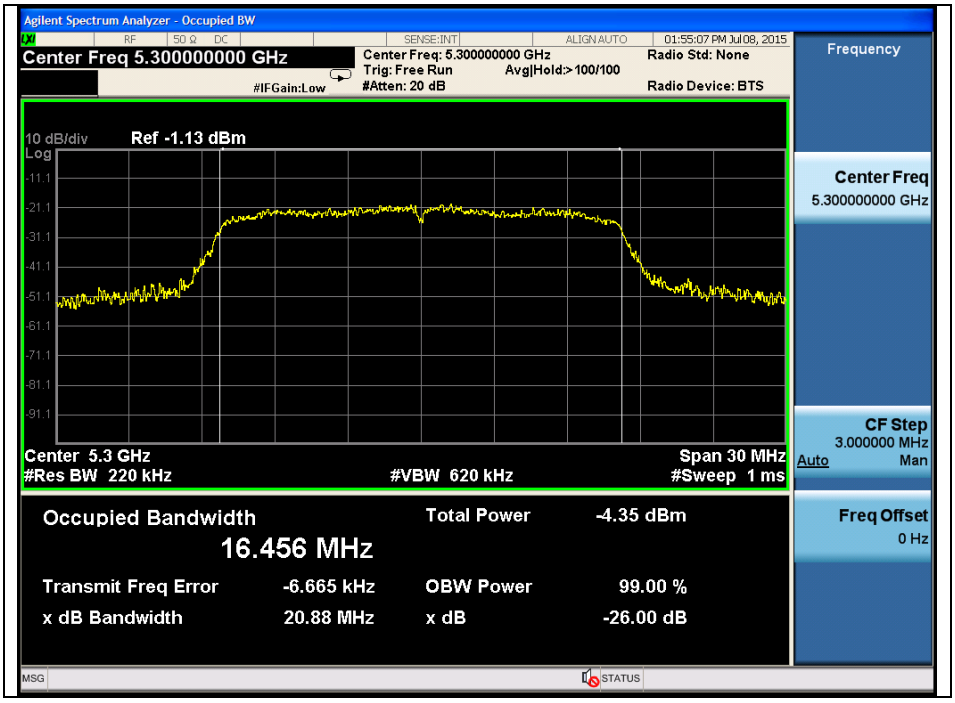


802.11a (Band 2A)

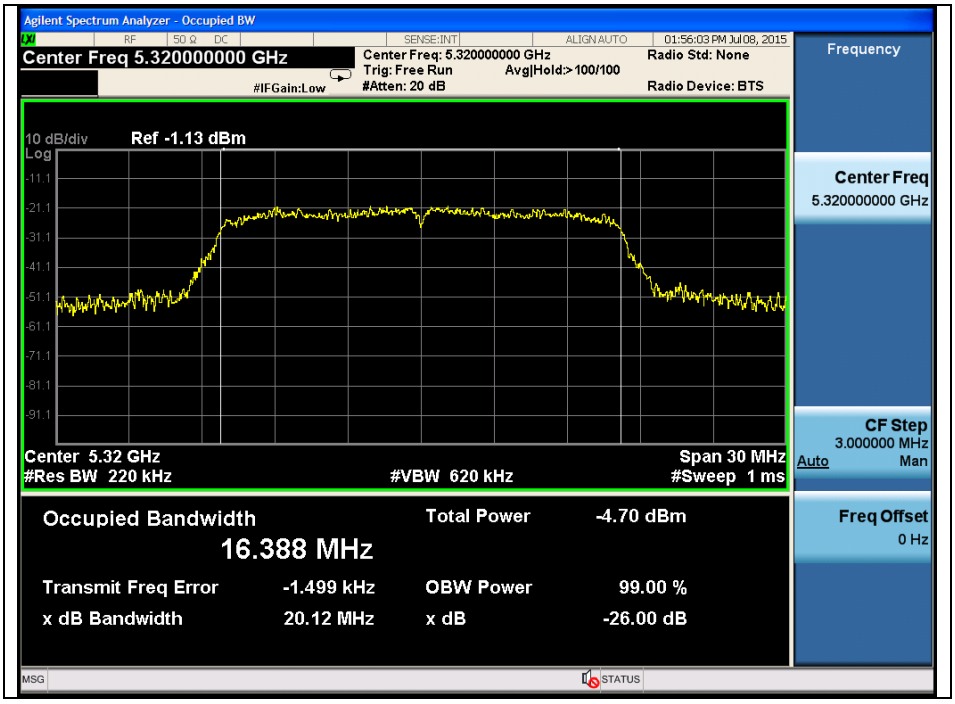
Low Channel (5 260 ㎒)



Middle Channel (5 300 ㎒)

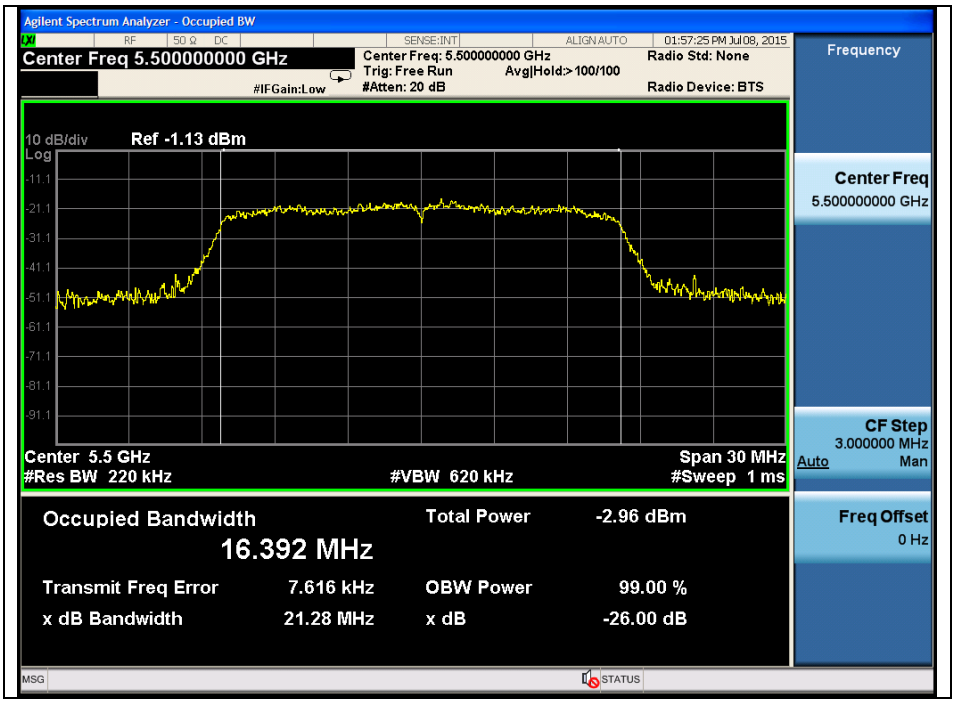


High Channel (5 320 ㎒)

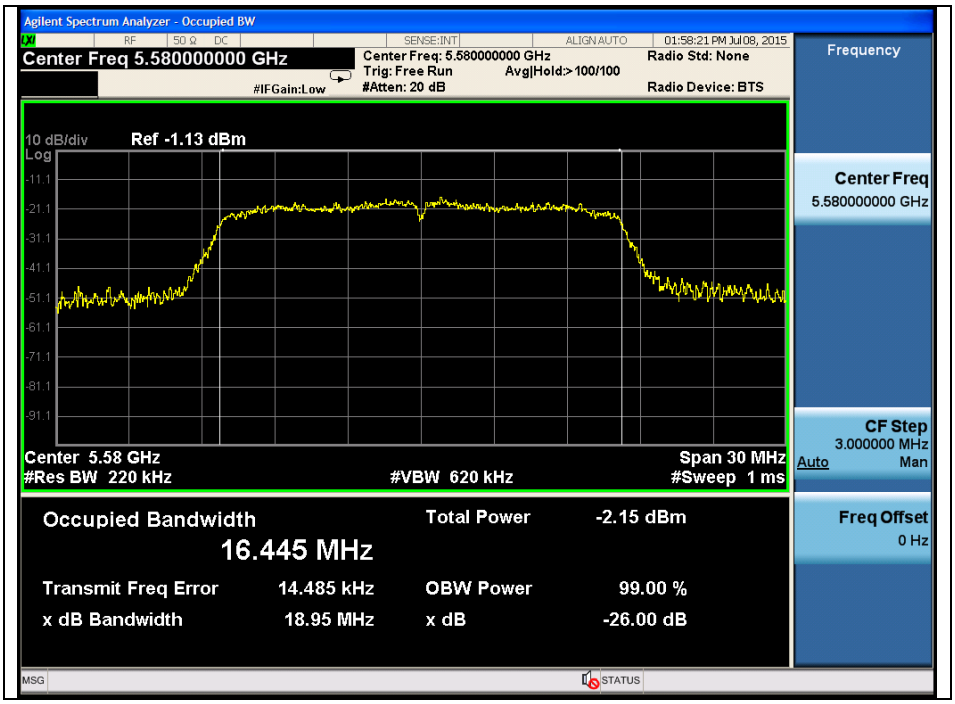


802.11a (Band 2C)

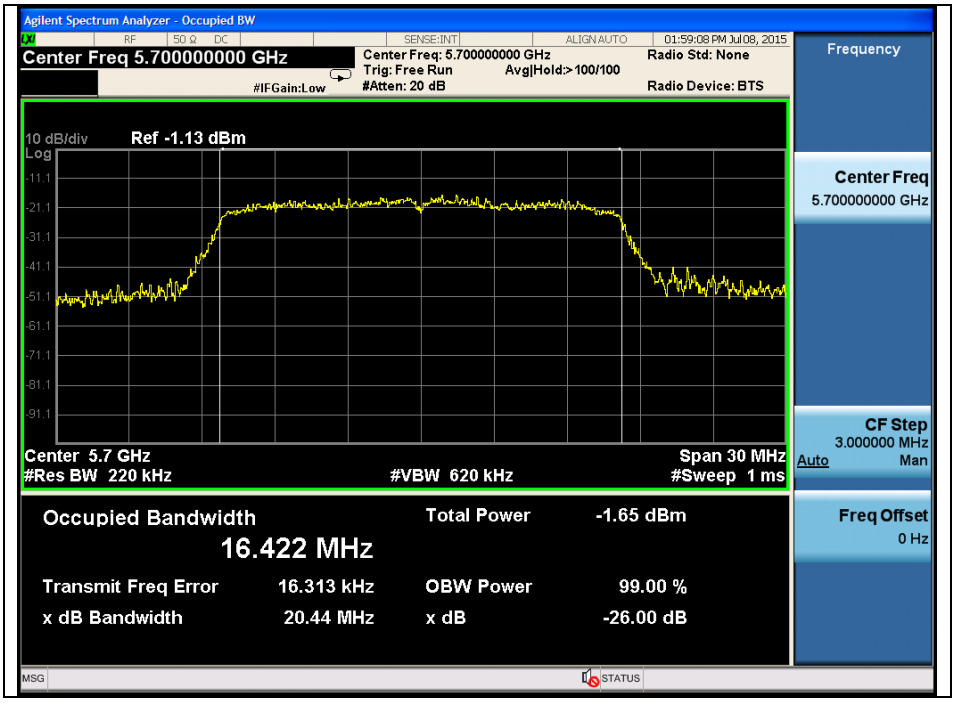
Low Channel (5 500 ㎒)



Middle Channel (5 580 ㎒)

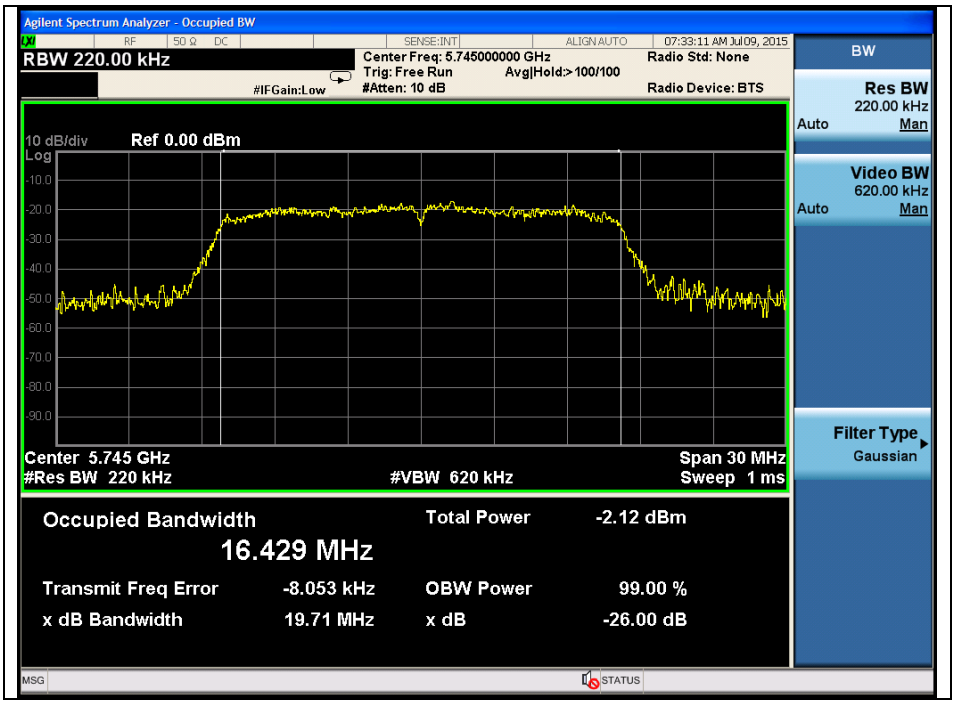


High Channel (5 700 ㎒)

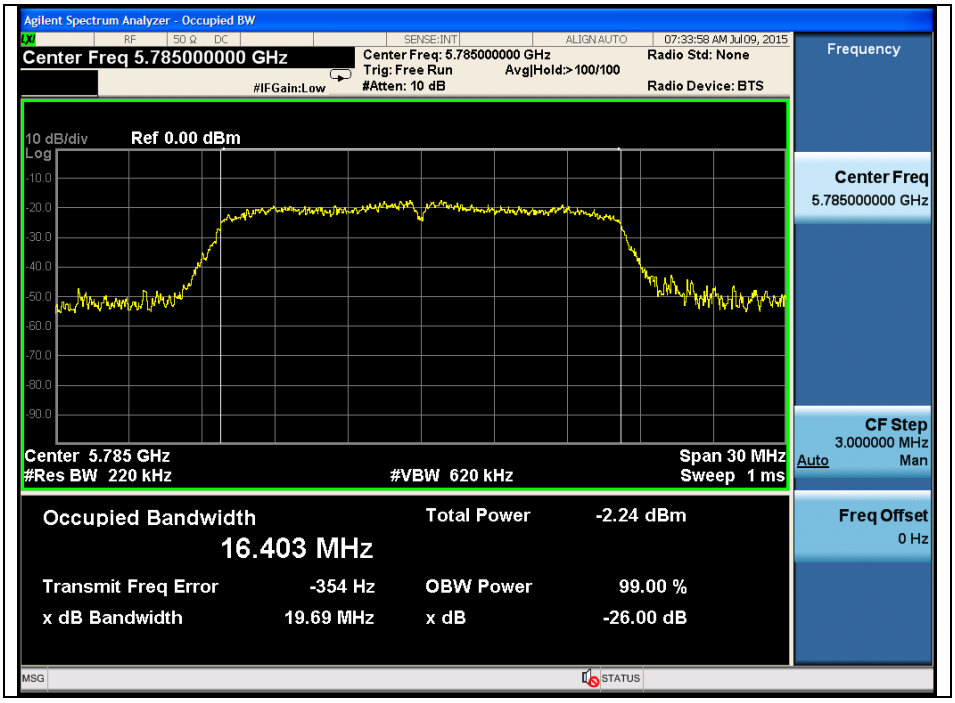


802.11a (Band 3)

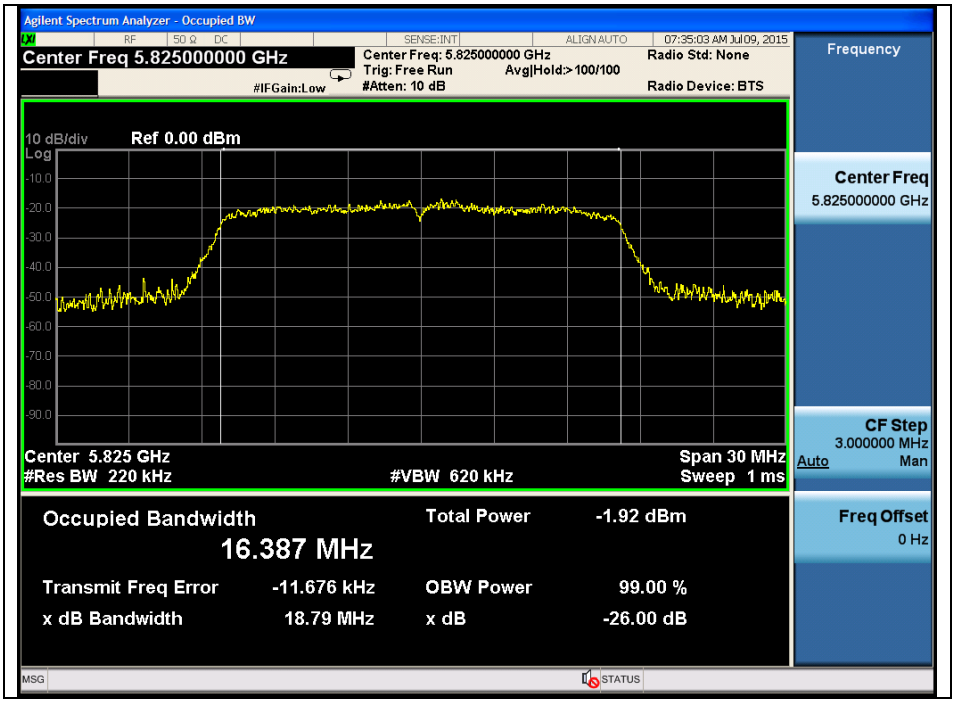
Low Channel (5 745 ㎒)



Middle Channel (5 785 ㎒)

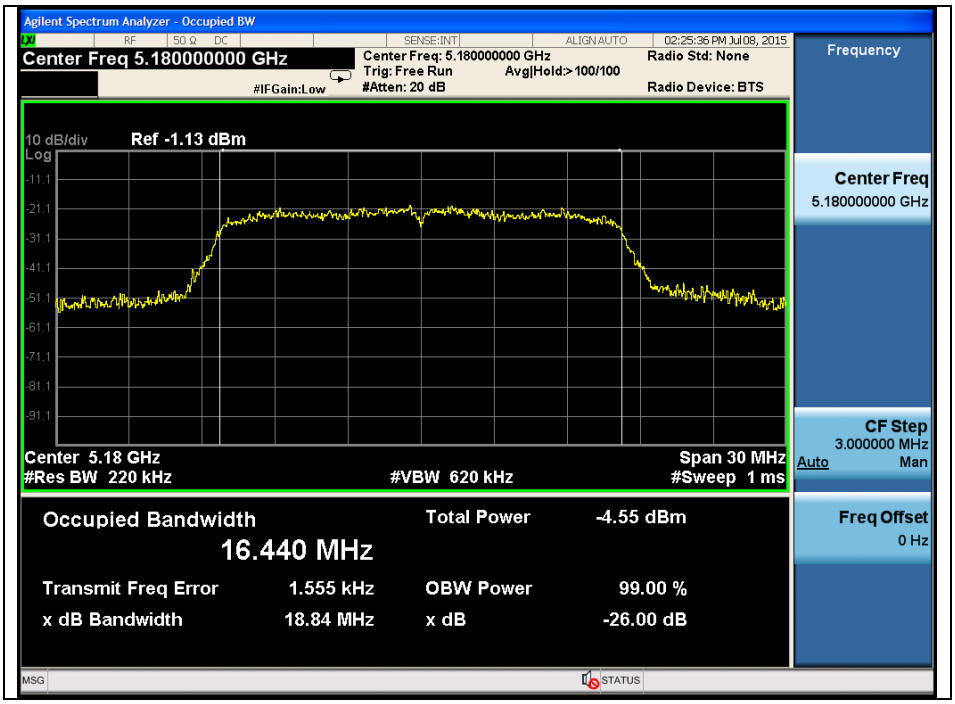


High Channel (5 825 ㎒)

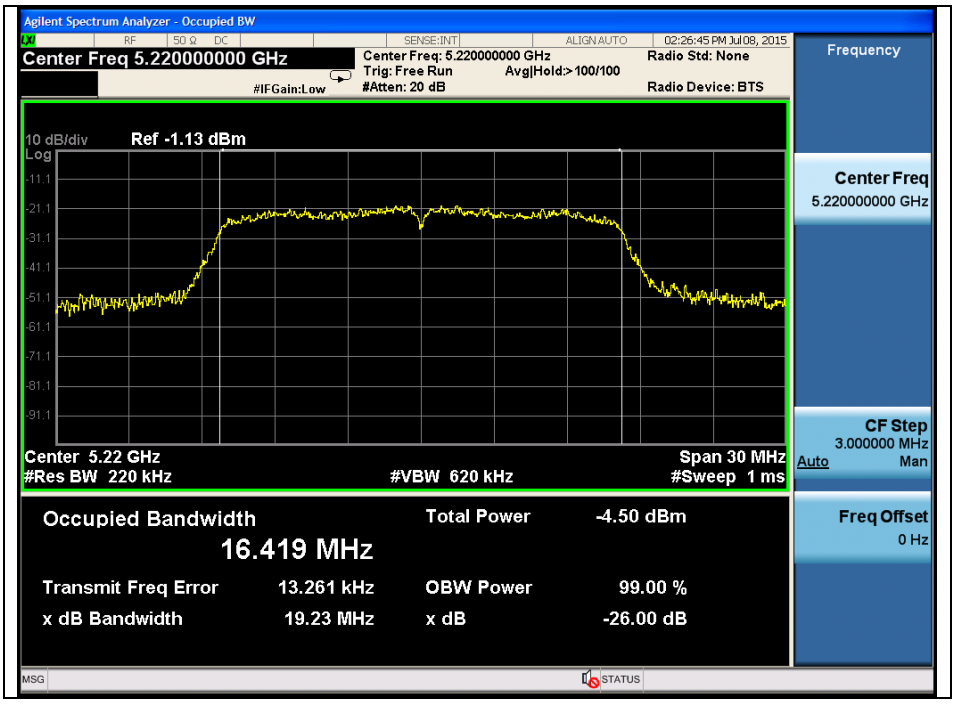


802.11n_HT20 (Band 1)

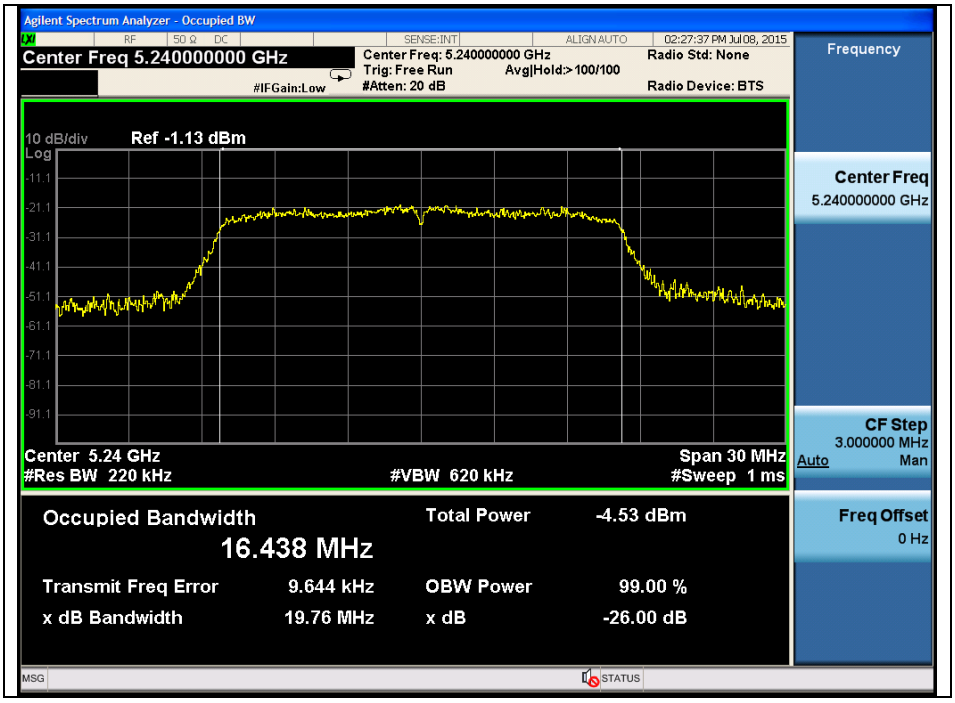
Low Channel (5 180 ㎒)



Middle Channel (5 220 ㎒)

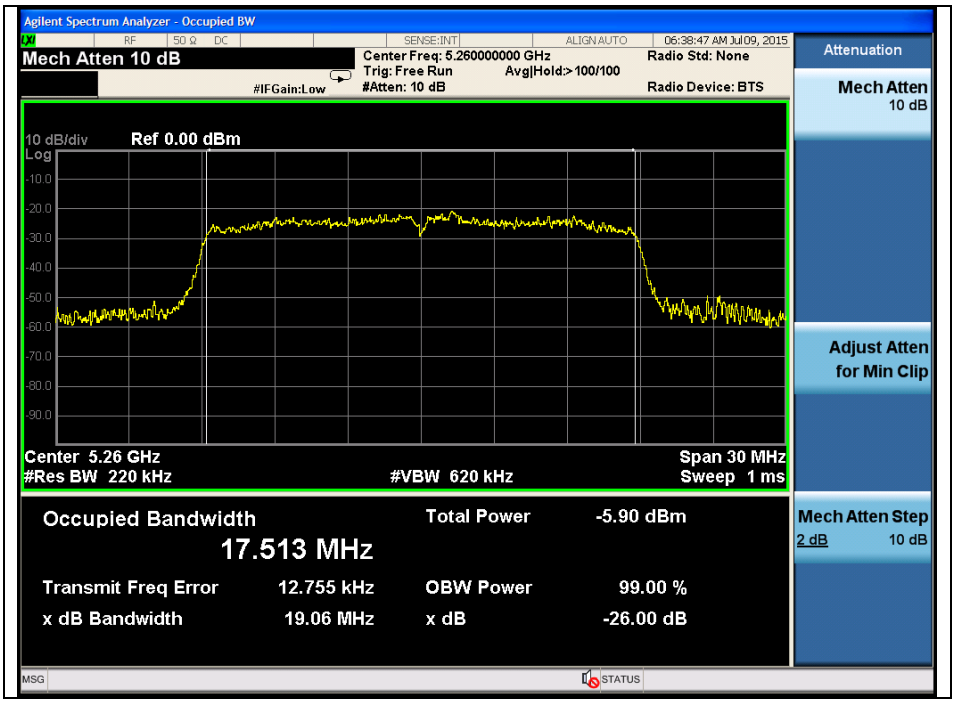


High Channel (5 240 ㎒)

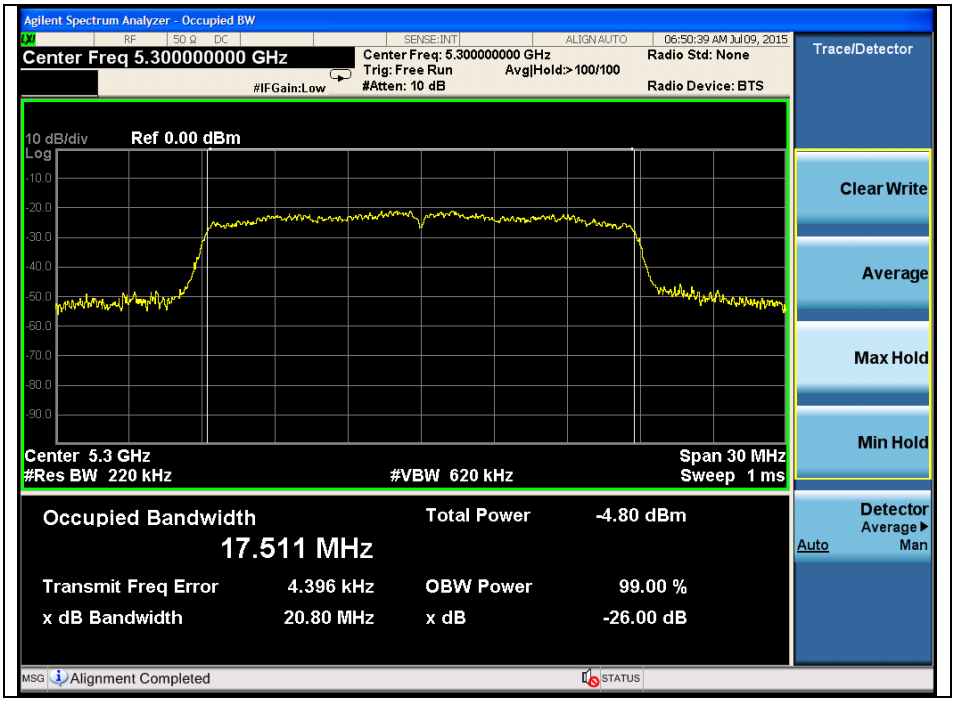


802.11n_HT20 (Band 2A)

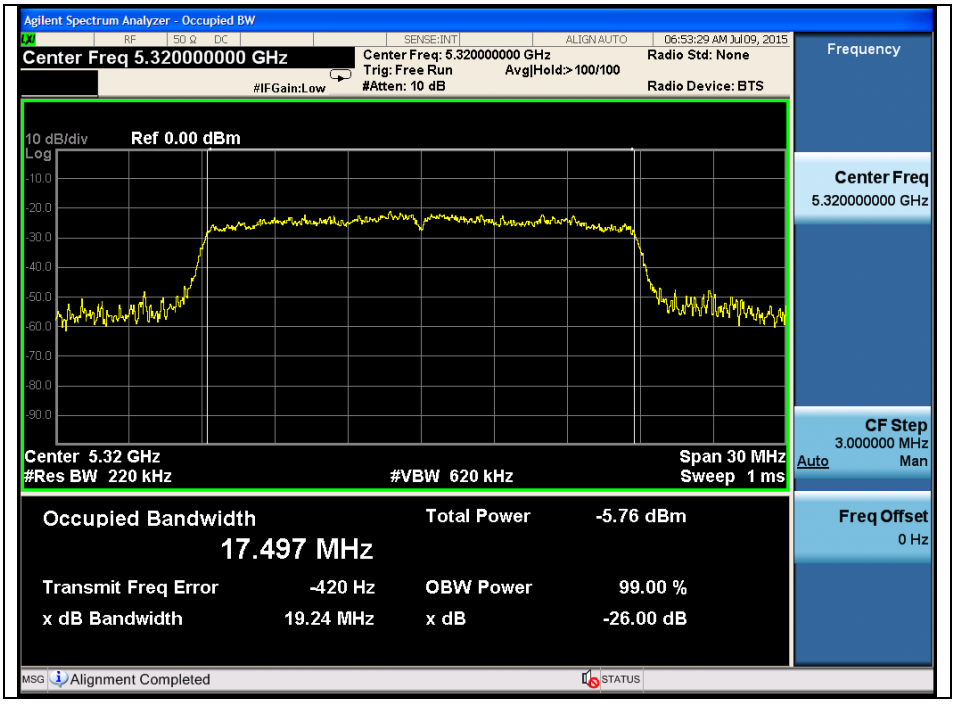
Low Channel (5 260 ㎒)



Middle Channel (5 300 ㎒)

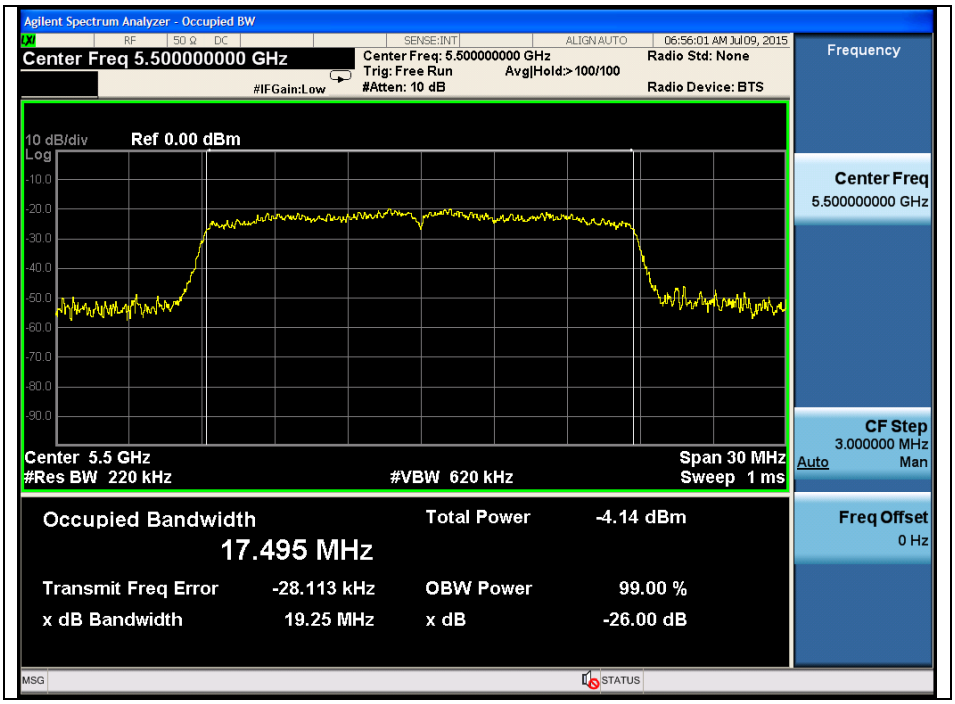


High Channel (5 320 ㎒)

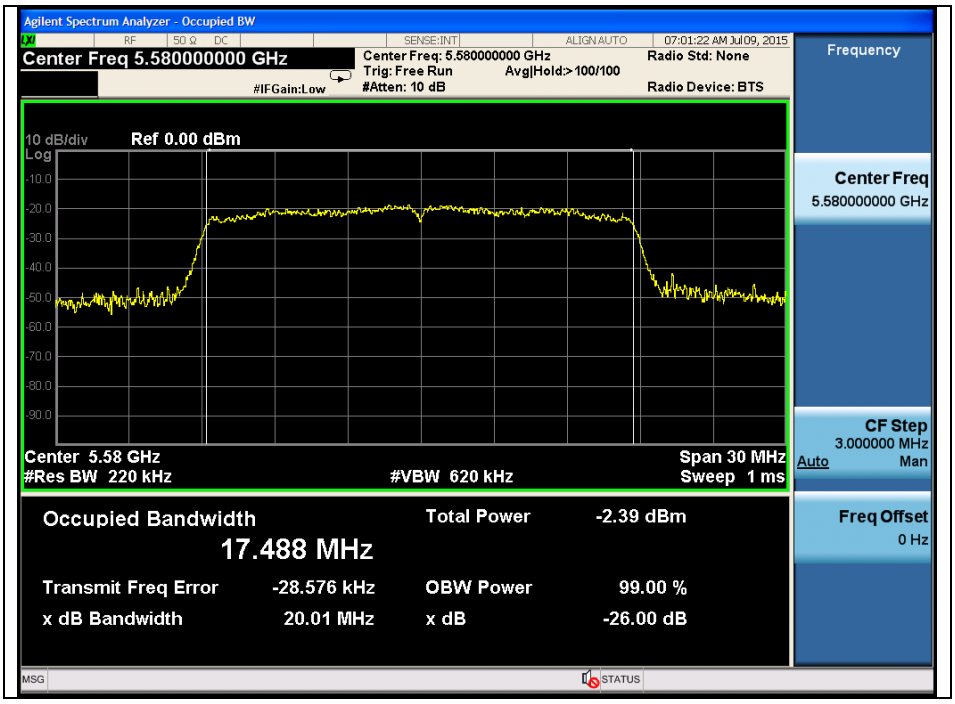


802.11n_HT20 (Band 2C)

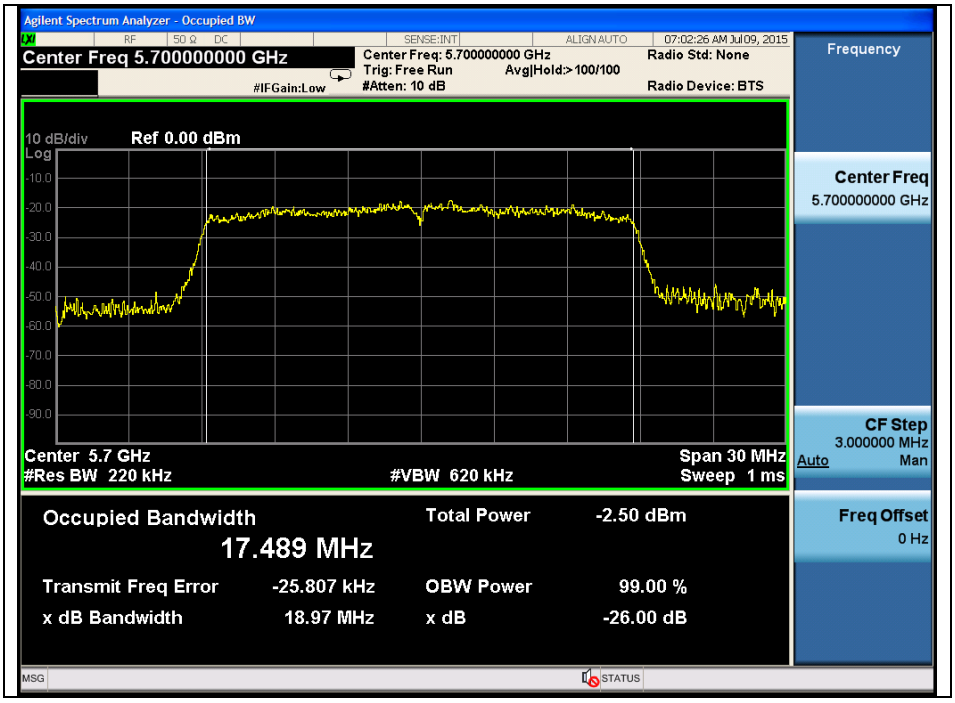
Low Channel (5 500 ㎒)



Middle Channel (5 580 ㎒)

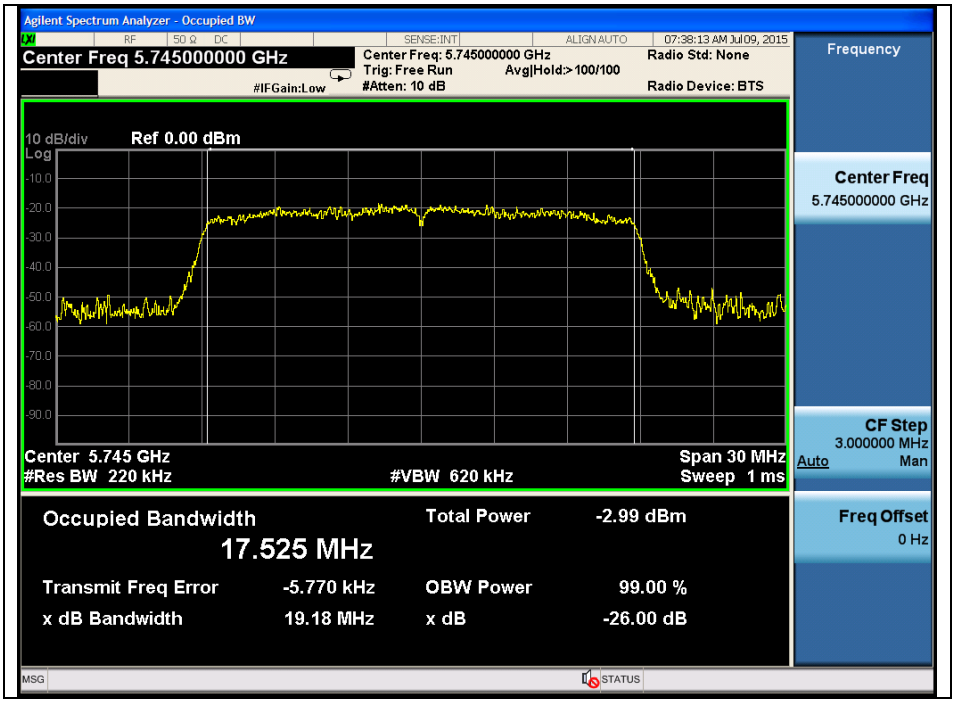


High Channel (5 700 ㎒)

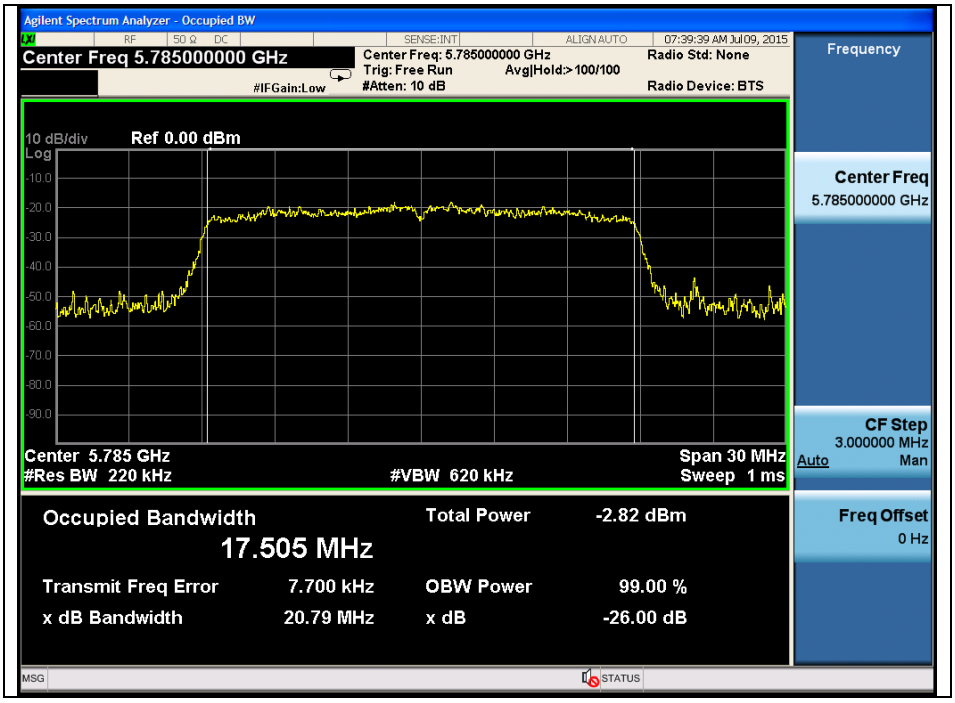


802.11n_HT20 (Band 3)

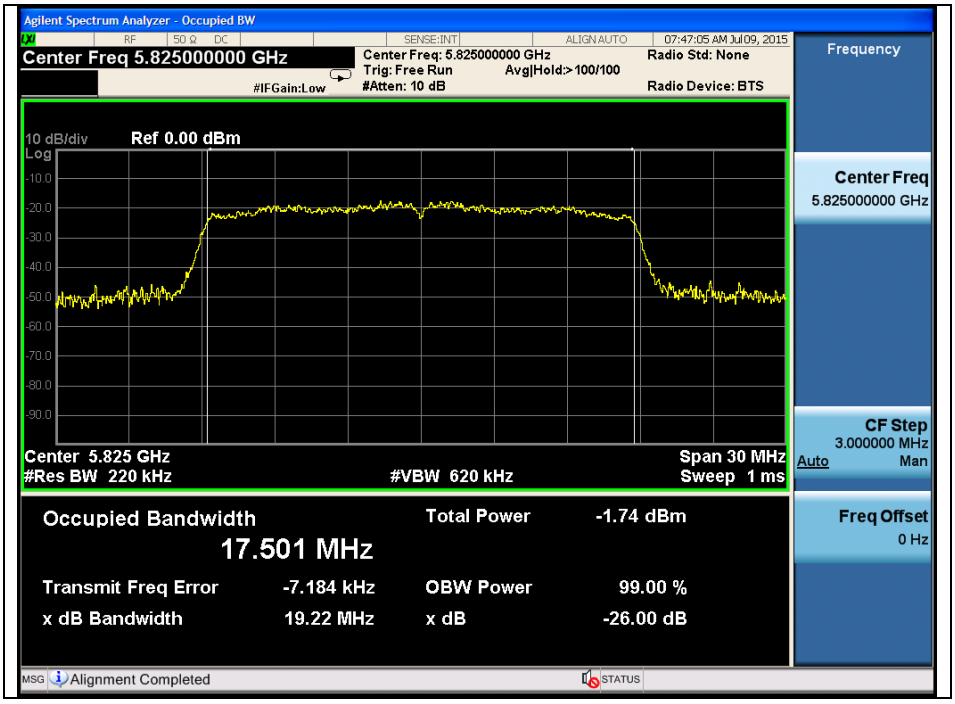
Low Channel (5 745 ㎒)



Middle Channel (5 785 ㎒)

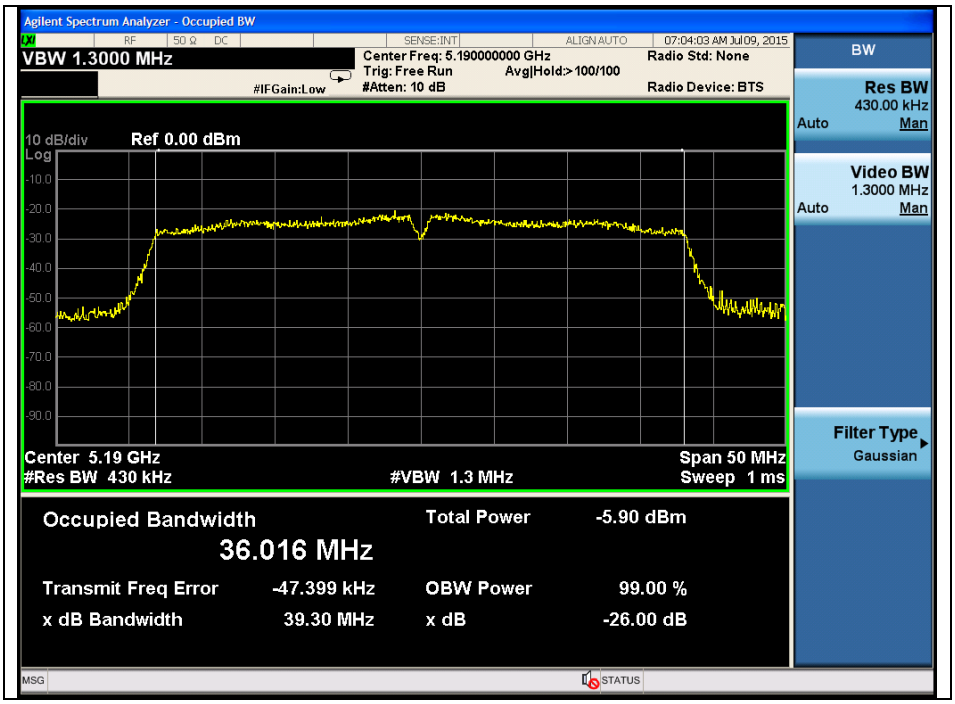


High Channel (5 825 ㎒)

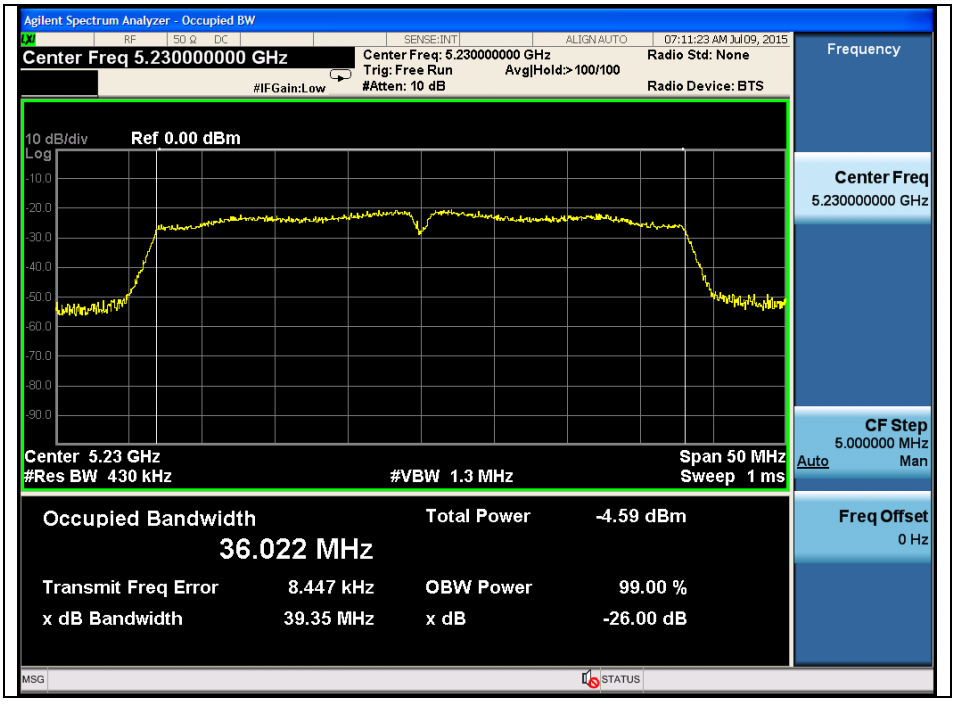


802.11n_HT40 (Band 1)

Low Channel (5 190 ㎒)

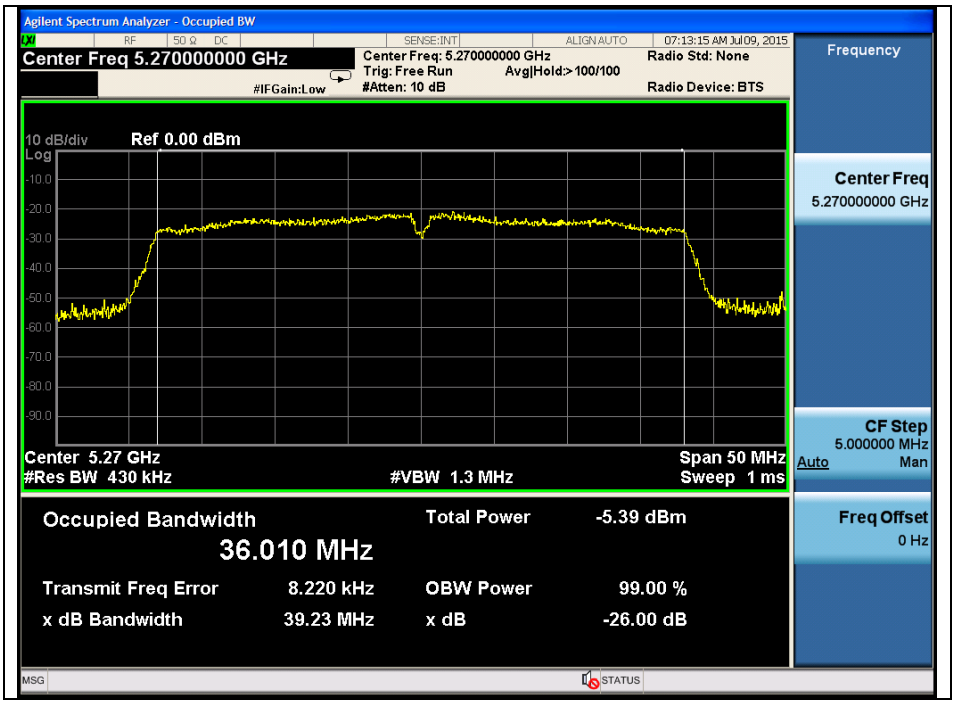


High Channel (5 230 ㎒)

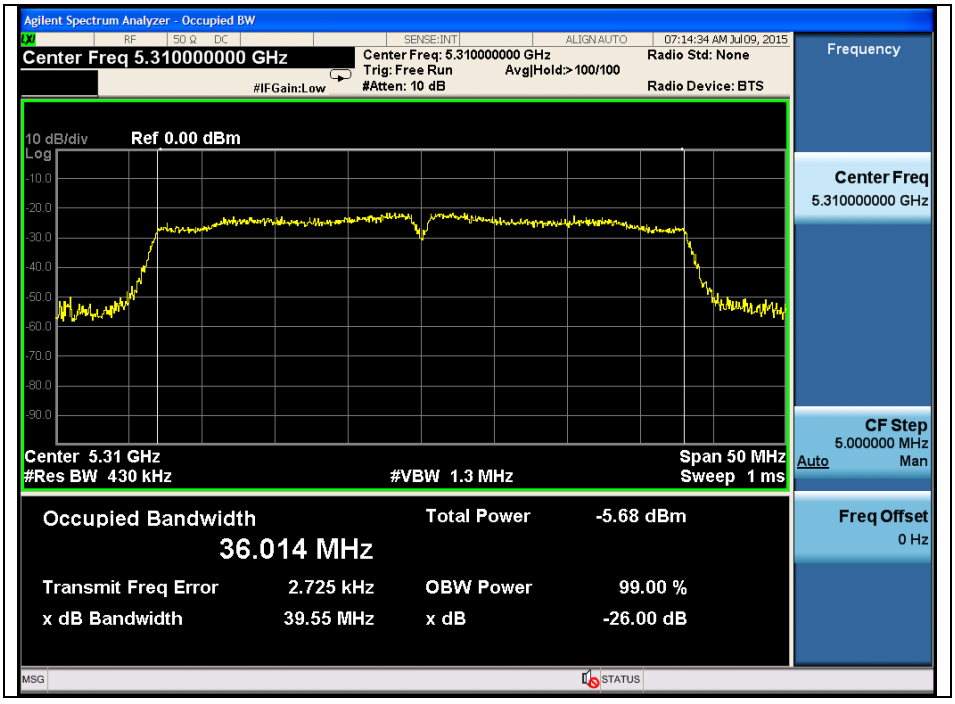


802.11n_HT40 (Band 2A)

Low Channel (5 270 ㎒)

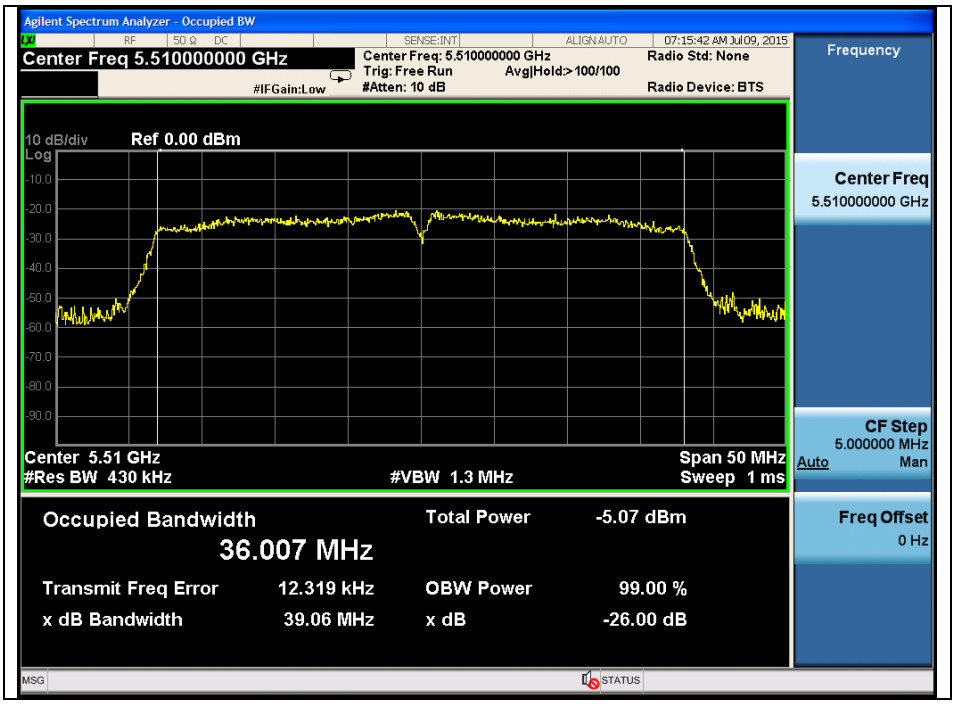


High Channel (5 310 ㎒)

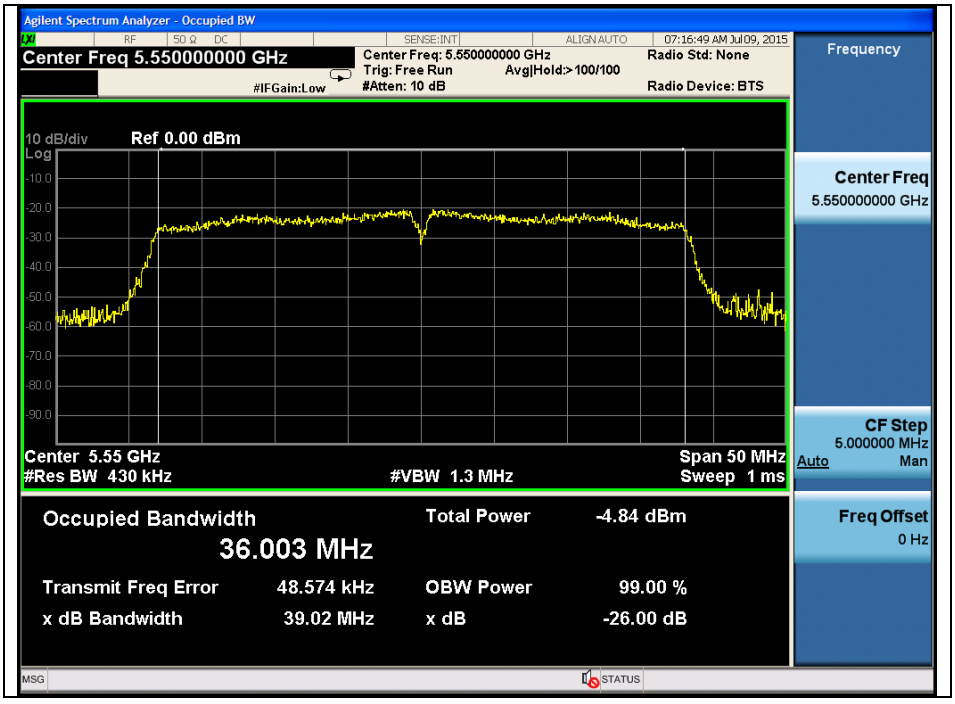


802.11n_HT40 (Band 2C)

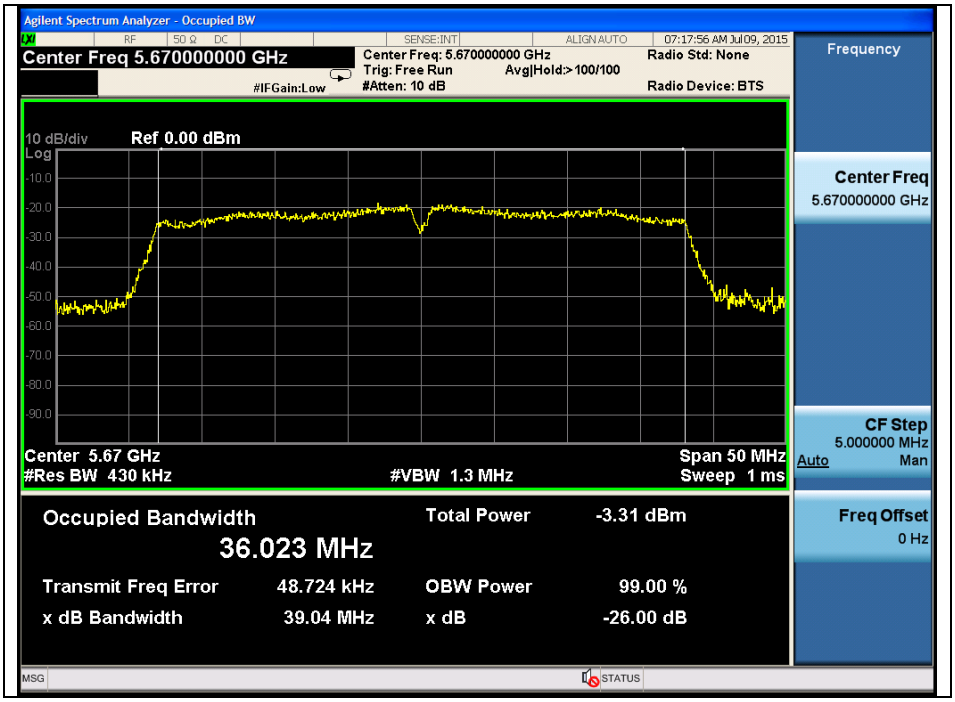
Low Channel (5 510 ㎒)



Low Channel (5 550 ㎒)

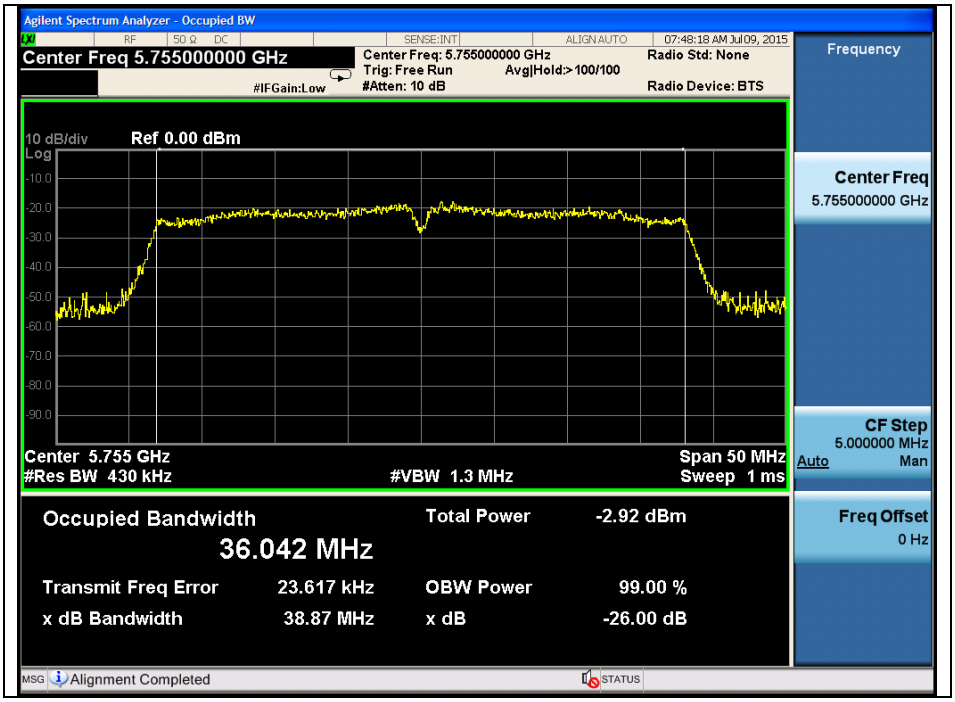


High Channel (5 670 ㎒)

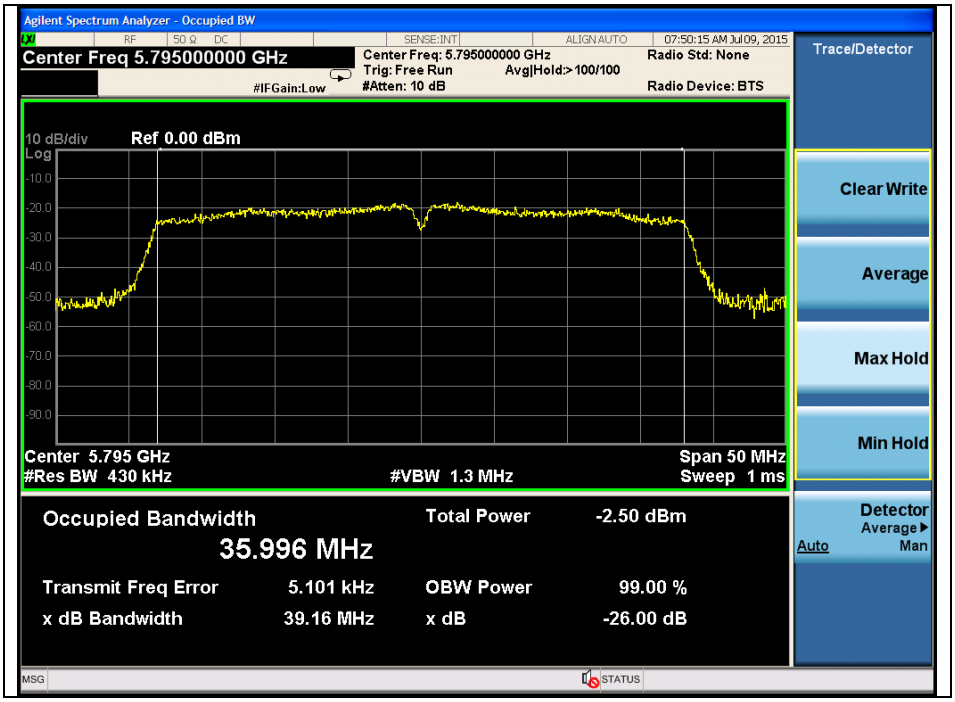


802.11n_HT40 (Band 3)

Low Channel (5 755 ㎒)

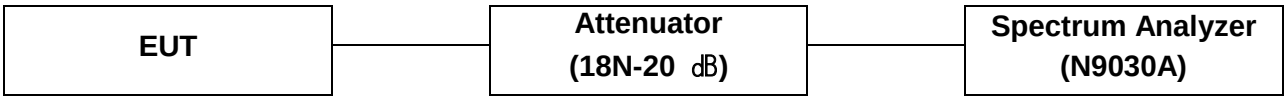


High Channel (5 795 ㎒)



4. 6 dB bandwidth

4.1. Test setup



4.2. Limit

Within the 5.725 – 5.85 ㎓ band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 ㎑.

4.3. Test procedure

All data rates and modes were investigated for this test. The full data for the worst case data rate are reported in this section.

1. This measurement settings are specified in section C.2 of KDB 789033 D02 v01.
2. Set RBW: 100 ㎑.
3. Set the video bandwidth (VBW) ≥ 3 x RBW.
4. Detector = Peak.
5. Trace mode = max hold.
6. Sweep = auto couple.
7. Allow the trace to stabilize.
8. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

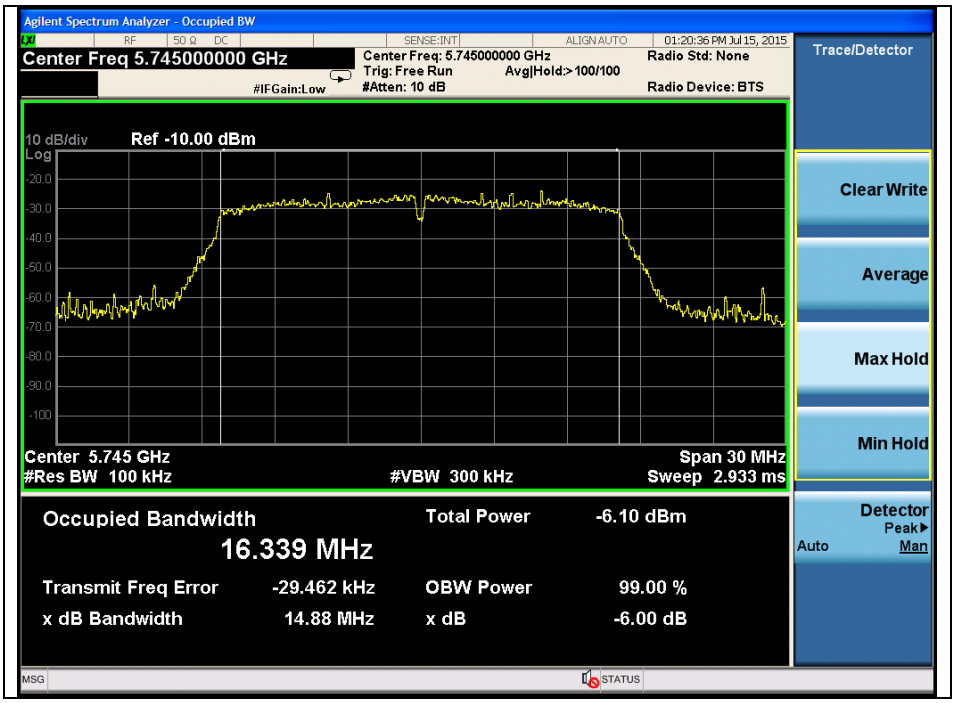
4.4. Test result

Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 % R.H.

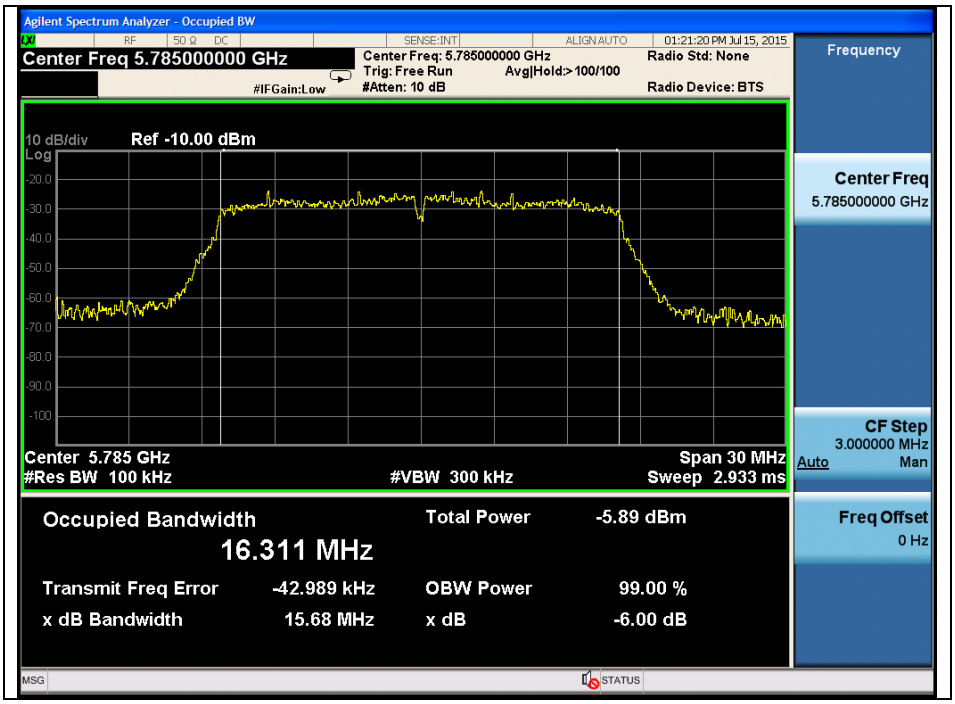
Band	Mode	Frequency (㎒)	Ch.	Data Rate (Mbps)	6 ㏈ Bandwidth (㎒)
U-NII 3	11a	5 745	149	6	14.88
		5 785	157		15.68
		5 825	165		15.08
	11n_HT20	5 745	149	MCS0	17.11
		5 785	157		17.57
		5 825	165		17.06
	11n_HT40	5 755	151	MCS0	35.12
		5 795	159		35.17

802.11a (Band 3)

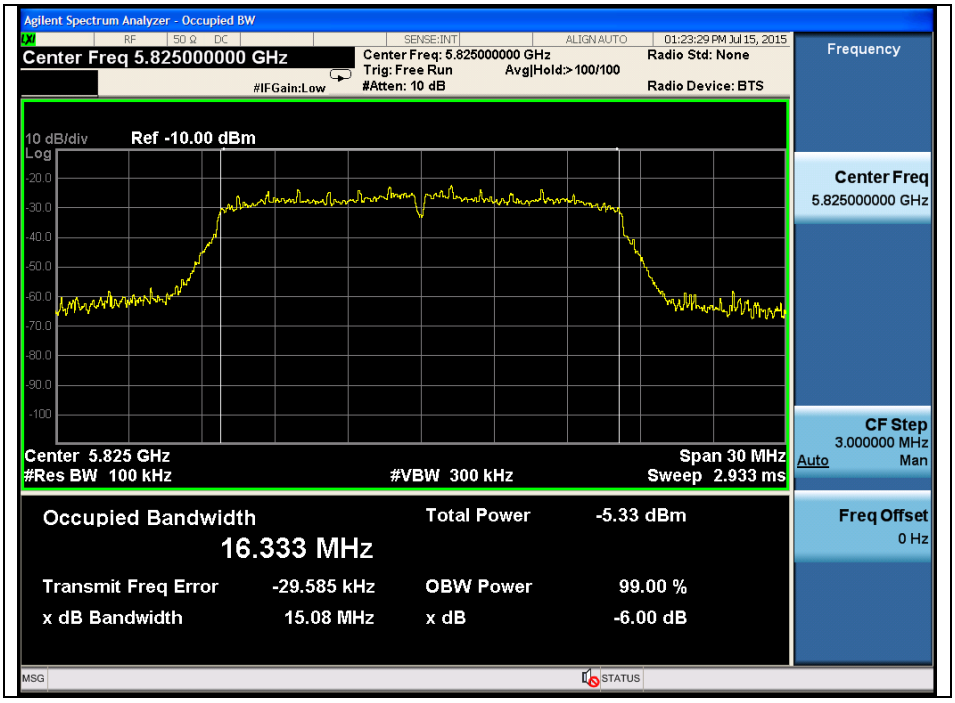
Low Channel (5 745 ㎒)



Middle Channel (5 785 ㎒)

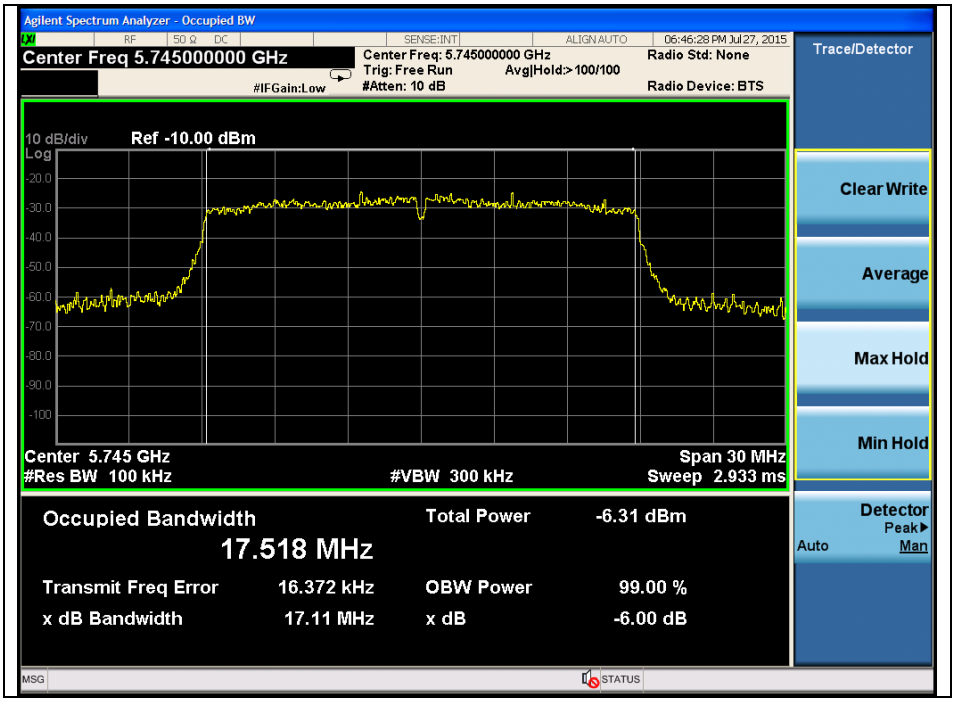


High Channel (5 825 ㎒)

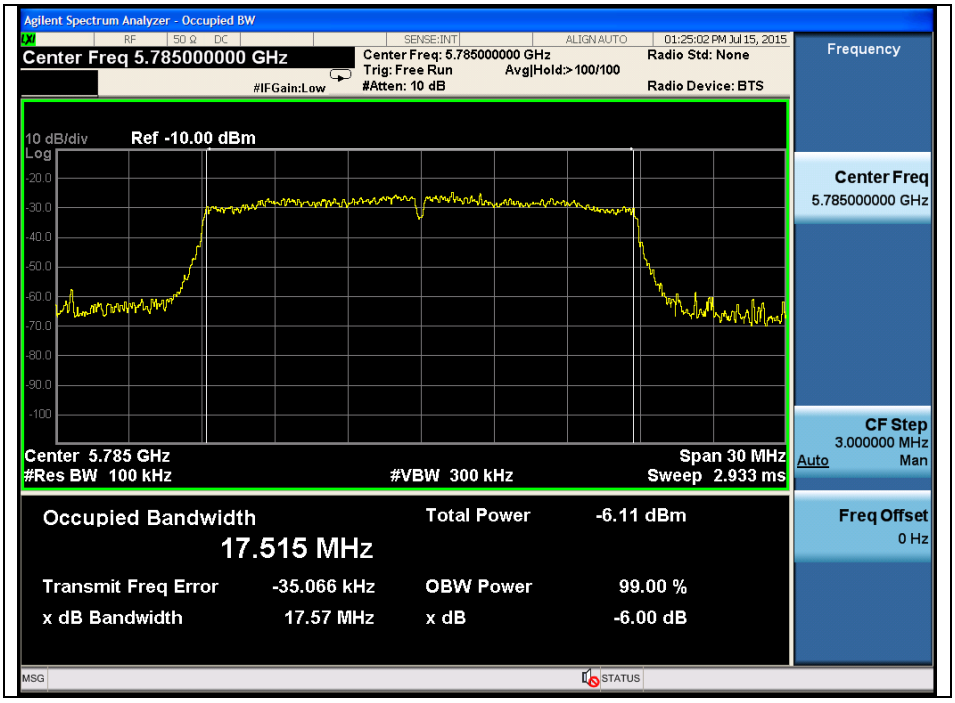


802.11n_HT20 (Band 3)

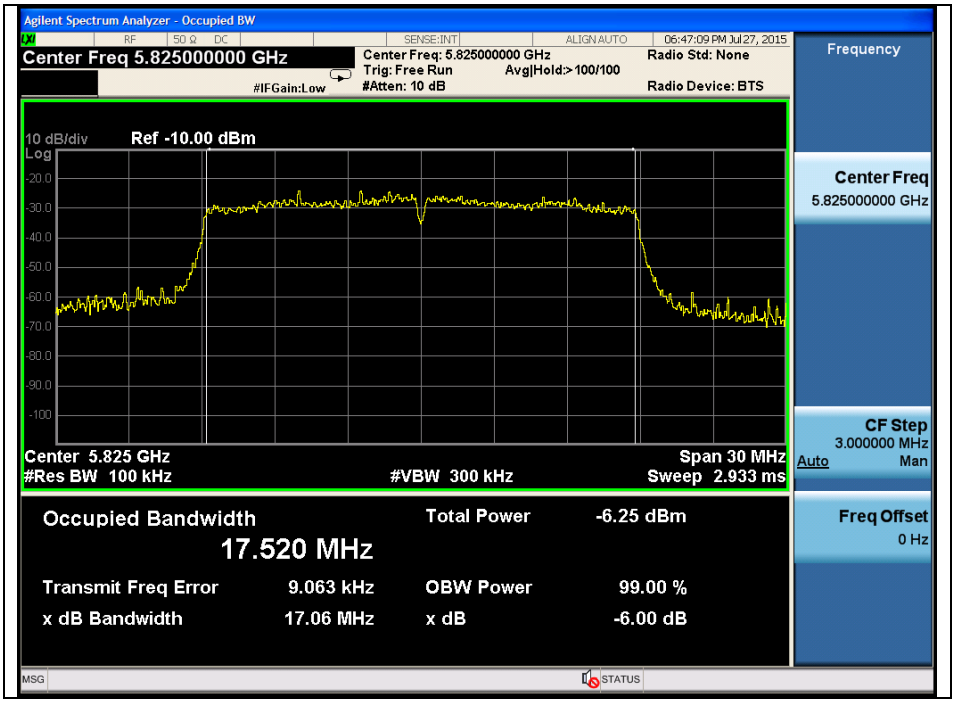
Low Channel (5 745 ㎒)



Middle Channel (5 785 ㎒)

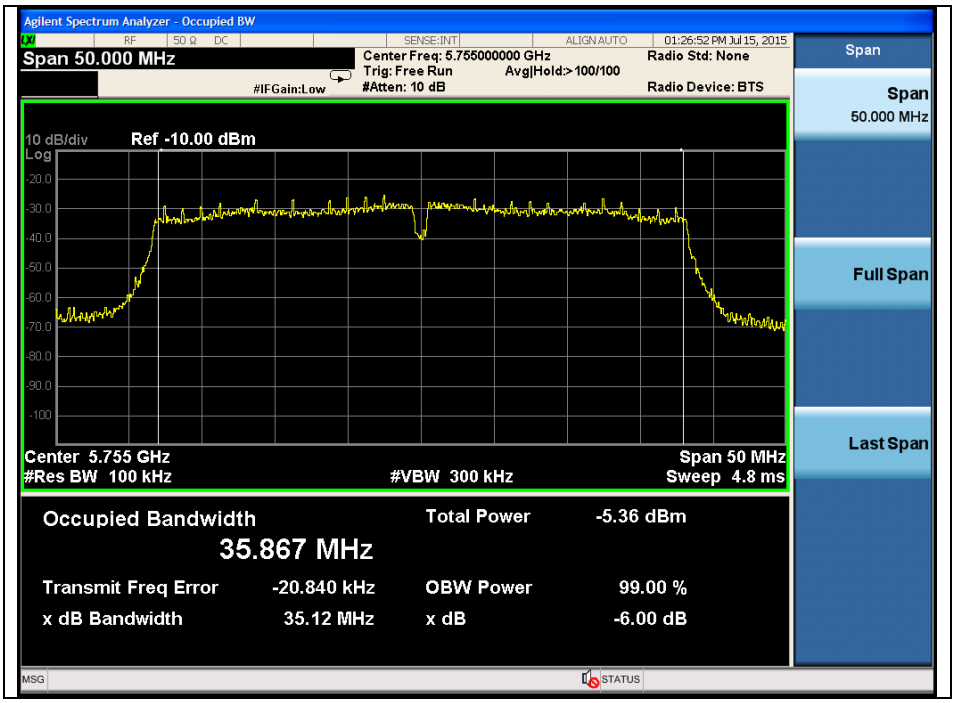


High Channel (5 825 ㎒)

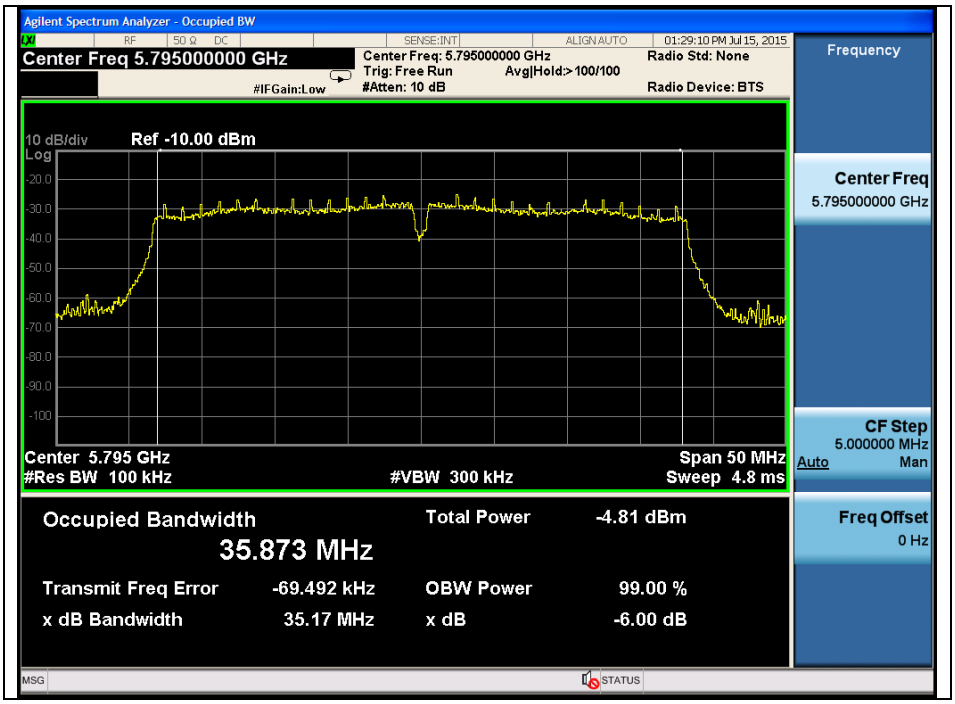


802.11n_HT40 (Band 3)

Low Channel (5 755 ㎒)

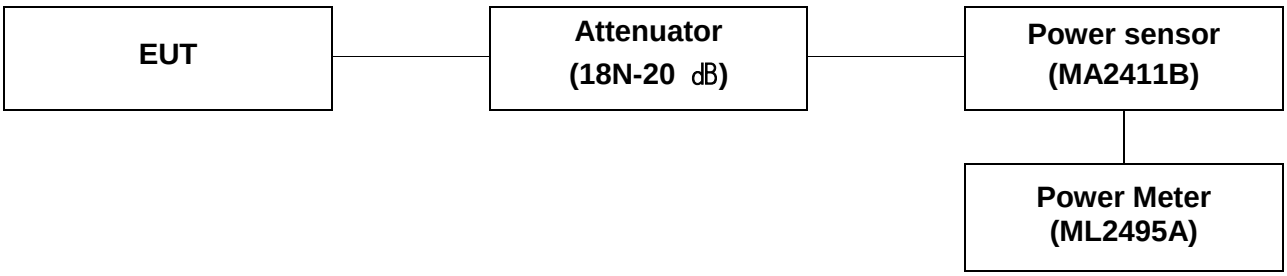


High Channel (5 795 ㎒)



5. Output power

5.1. Test setup



5.2. Limit

5.2.1. FCC 15.407

(a)(1)(iv)

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

(a)(2)

For the 5.25 - 5.35 ㎓ and 5.47 - 5.725 ㎓ bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 ㎽ or 11 ㏈m 10 log B, where B is the 26 ㏈ emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 ㏈m in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 ㏈i are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in ㏈ that the directional gain of the antenna exceeds 6 ㏈i.

(a)(3)

For the band 5.725 - 5.85 ㎓, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 ㏈m in any 500-㎑ band. If transmitting antennas of directional gain greater than 6 ㏈i are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in ㏈ that the directional gain of the antenna exceeds 6 ㏈i. However, fixed point-to point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 ㏈ i without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

5.3. Test procedure

1. This measurement settings are specified in clause 3) a) of section E of KDB 789033 D02 v01.
2. Measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the conditions listed below are satisfied.
   - The EUT is configured to transmit continuously or to transmit with a consistent duty cycle.
   - At all times when the EUT is transmitting, it must be transmitting at its maximum power control level.
   - The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.
3. If the transmitter does not transmit continuously, measure the duty cycle, x, of the transmitter output signal as described in section B).
4. Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
5. Adjust the measurement in dBm by adding 10 log (1/x) where x is the duty cycle (e.g., 10 log(1/0.25) if the duty cycle is 25 percent).

5.4. Test result

Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 % R.H.

- 11a

Band	Power	Frequency (㎒)	Conducted Power (㏈m)							
			Data Rate [Mbps]							
			6	9	12	18	24	36	48	54
U-NII 1	Mea. average	5 180	8.86	8.59	8.60	8.36	8.21	7.80	7.75	7.60
	Result		9.07	8.87	8.97	8.85	8.92	8.81	9.03	9.04
	Mea. average	5 220	8.54	8.58	8.66	8.37	8.25	7.96	7.88	7.77
	Result		8.75	8.86	9.03	8.86	8.96	8.97	9.16	9.21
	Mea. average	5 240	8.92	8.78	8.75	8.50	8.31	7.57	7.84	7.58
	Result		9.13	9.06	9.12	8.99	9.02	8.58	9.12	9.02
U-NII 2A	Mea. average	5 260	9.05	8.83	8.57	8.52	8.41	8.18	7.88	7.74
	Result		9.26	9.11	8.94	9.01	9.12	9.19	9.16	9.18
	Mea. average	5 300	9.04	9.12	8.80	8.55	8.70	8.27	7.98	7.98
	Result		9.25	9.40	9.17	9.04	9.41	9.28	9.26	9.42
	Mea. average	5 320	8.66	8.59	8.41	8.33	8.13	7.91	7.66	7.48
	Result		8.87	8.87	8.78	8.82	8.84	8.92	8.94	8.92
U-NII 2C	Mea. average	5 500	9.16	9.05	8.71	8.72	8.55	8.27	8.10	7.85
	Result		9.37	9.33	9.08	9.21	9.26	9.28	9.38	9.29
	Mea. average	5 580	9.66	9.45	9.53	9.27	9.06	9.95	9.56	9.76
	Result		9.87	9.73	9.90	9.76	9.77	10.96	10.84	11.20
	Mea. average	5 700	10.92	10.57	10.51	10.55	10.18	9.75	9.69	9.72
	Result		11.13	10.85	10.88	11.04	10.89	10.76	10.97	11.16
U-NII 3	Mea. average	5 745	10.75	10.57	10.50	10.36	10.19	9.81	9.57	9.57
	Result		10.96	10.85	10.87	10.85	10.90	10.82	10.85	11.01
	Mea. average	5 785	10.67	10.48	10.48	10.37	10.34	10.14	9.89	9.78
	Result		10.88	10.76	10.85	10.86	11.05	11.15	11.17	11.22
	Mea. average	5 825	11.44	11.34	11.30	11.10	10.73	10.52	10.38	10.27
	Result		11.65	11.62	11.67	11.59	11.44	11.53	11.66	11.71

Band	Conducted Power Limit (㏈m)					
	Frequency (㎒)	Fixed Limit (㏈m)	26 dB BW (㎒)	11+10LogB (㏈m)	Antenna gain (㏈i)	Limit (㏈m)
U-NII 1	5 180	24				
	5 220	24				
	5 240	24				
U-NII 2A	5 260	24	19.43	23.88	2.88	23.88
	5 300	24	20.88	24.20	2.88	24.00
	5 320	24	20.12	24.04	2.88	24.00
U-NII 2C	5 500	24	21.28	24.28	0.12	24.00
	5 580	24	18.95	23.78	0.12	23.88
	5 700	24	20.44	24.10	0.12	24.00
U-NII 3	5 745	30				
	5 785	30				
	5 825	30				

Mode	Duty cycle							
	Data Rate [Mbps]							
11a	6	9	12	18	24	36	48	54
Duty Cycle (%)	95	94	92	89	85	79	74	72
Correction factor (㏈)	0.21	0.28	0.37	0.49	0.71	1.01	1.28	1.44

Remark:

1. Result (㏈m) = Average (㏈m) + Correction factor (㏈)
2. Duty cycle (%) = (Tx on time / Tx on + off time) x 100
3. Correction factor (㏈) = 10 log (1/duty cycle (㎳))

- 11n_HT20

Band	Power	Frequency (㎒)	Conducted Power (㏈m)							
			Data Rate [MCS]							
			0	1	2	3	4	5	6	7
U-NII 1	Mea. average	5 180	8.49	8.30	8.17	7.99	7.63	7.29	7.25	7.12
	Result		8.68	8.70	8.69	8.73	8.69	8.61	8.69	8.53
	Mea. average	5 220	8.19	8.07	8.26	7.86	7.63	7.44	7.43	7.44
	Result		8.38	8.47	8.78	8.60	8.69	8.76	8.87	8.85
	Mea. average	5 240	8.54	8.33	8.35	8.08	7.87	7.77	7.54	7.35
	Result		8.73	8.73	8.87	8.82	8.93	9.09	8.98	8.76
U-NII 2A	Mea. average	5 260	8.59	8.42	8.26	8.03	7.71	7.53	7.46	7.35
	Result		8.78	8.82	8.78	8.77	8.77	8.85	8.90	8.76
	Mea. average	5 300	8.86	8.75	8.31	8.14	7.95	7.65	7.77	7.49
	Result		9.05	9.15	8.83	8.88	9.01	8.97	9.21	8.90
	Mea. average	5 320	8.39	8.21	8.03	7.52	7.51	7.37	7.36	7.21
	Result		8.58	8.61	8.55	8.26	8.57	8.69	8.80	8.62
U-NII 2C	Mea. average	5 500	9.08	8.89	8.79	8.55	8.39	8.31	8.04	7.59
	Result		9.27	9.29	9.31	9.29	9.45	9.63	9.48	9.00
	Mea. average	5 580	9.42	9.52	9.02	9.00	8.95	8.57	8.46	8.54
	Result		9.61	9.92	9.54	9.74	10.01	9.89	9.90	9.95
	Mea. average	5 700	10.30	10.14	10.24	10.04	10.09	9.96	9.62	9.50
	Result		10.49	10.54	10.76	10.78	11.15	11.28	11.06	10.91
U-NII 3	Mea. average	5 745	10.44	10.33	10.29	10.22	10.01	9.83	9.58	9.49
	Result		10.63	10.73	10.81	10.96	11.07	11.15	11.02	10.90
	Mea. average	5 785	10.90	10.56	10.33	10.18	9.83	9.64	9.70	9.57
	Result		11.09	10.96	10.85	10.92	10.89	10.96	11.14	10.98
	Mea. average	5 825	10.53	10.66	10.73	10.35	10.22	9.85	9.87	9.55
	Result		10.72	11.06	11.25	11.09	11.28	11.17	11.31	10.96

Band	Conducted Power Limit (㏈m)					
	Frequency (㎒)	Fixed Limit (㏈m)	26 dB BW (㎒)	11+10LogB (㏈m)	Antenna gain (㏈i)	Limit (㏈m)
U-NII 1	5 180	24				
	5 220	24				
	5 240	24				
U-NII 2A	5 260	24	19.06	23.80	2.88	23.80
	5 300	24	20.80	24.18	2.88	24.00
	5 320	24	19.24	23.84	2.88	23.84
U-NII 2C	5 500	24	19.25	23.84	0.12	23.84
	5 580	24	20.01	24.01	0.12	24.00
	5 700	24	18.97	23.78	0.12	23.78
U-NII 3	5 745	30				
	5 785	30				
	5 825	30				

Mode	Duty cycle							
	Data Rate [MCS]							
11n_HT20	0	1	2	3	4	5	6	7
Duty Cycle (%)	96	91	89	84	78	74	72	72
Correction factor (㏈)	0.19	0.40	0.52	0.74	1.06	1.32	1.44	1.41

Remark:

1. Result (㏈ m) = Average (㏈ m) + Correction factor (㏈)
2. Duty cycle (%) = (Tx on time / Tx on + off time) x 100
3. Correction factor (㏈) = 10 log (1/duty cycle (㎳))

- 11n_HT40

Band	Power	Frequency (㎒)	Conducted Power (㏈m)							
			Data Rate [MCS]							
			0	1	2	3	4	5	6	7
U-NII 1	Mea. average	5 190	8.81	8.43	8.03	7.92	7.46	7.15	6.99	6.94
	Result		9.33	9.13	9.00	9.13	9.09	9.16	9.10	9.16
	Mea. average	5 230	8.77	8.45	8.19	7.92	7.52	7.22	7.01	6.84
	Result		9.29	9.15	9.16	9.13	9.15	9.23	9.12	9.06
U-NII 2A	Mea. average	5 270	8.87	8.55	8.29	8.14	7.59	7.23	7.17	6.98
	Result		9.39	9.25	9.26	9.35	9.22	9.24	9.28	9.20
	Mea. average	5 310	8.95	8.52	8.23	7.66	7.50	7.09	6.96	6.89
	Result		9.47	9.22	9.20	8.87	9.13	9.10	9.07	9.11
U-NII 2C	Mea. average	5 510	9.77	9.26	8.94	8.61	8.25	7.91	7.85	7.63
	Result		10.29	9.96	9.91	9.82	9.88	9.92	9.96	9.85
	Mea. average	5 550	10.10	9.76	9.40	9.01	8.65	8.24	8.09	7.96
	Result		10.62	10.46	10.37	10.22	10.28	10.25	10.20	10.18
	Mea. average	5 670	10.40	10.26	9.93	9.62	9.21	8.90	8.74	8.67
	Result		10.92	10.96	10.90	10.83	10.84	10.91	10.85	10.89
U-NII 3	Mea. average	5 755	11.01	10.59	10.26	9.97	9.69	9.45	9.28	9.10
	Result		11.53	11.29	11.23	11.18	11.32	11.46	11.39	11.32
	Mea. average	5 795	11.35	10.97	10.75	10.31	9.99	9.69	9.43	9.37
	Result		11.87	11.67	11.72	11.52	11.62	11.70	11.54	11.59

Band	Conducted Power Limit (㏈m)					
	Frequency (㎒)	Fixed Limit (㏈m)	26 dB BW (㎒)	11+10LogB (㏈m)	Antenna gain (㏈i)	Limit (㏈m)
U-NII 1	5 190	24				
	5 230	24				
U-NII 2A	5 270	24	39.23	26.94	2.88	24
	5 310	24	39.55	26.97	2.88	24
U-NII 2C	5 510	24	39.06	26.92	0.12	24
	5 550	24	39.02	26.91	0.12	24
	5 670	24	39.04	26.92	0.12	24
U-NII 3	5 755	30				
	5 795	30				

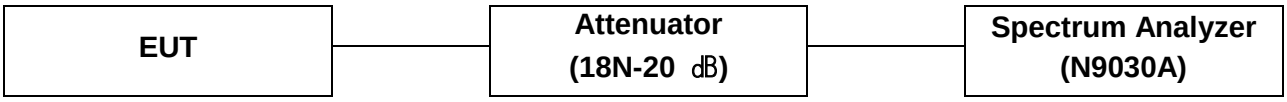
Mode	Duty cycle							
	Data Rate [MCS]							
11n_HT40	0	1	2	3	4	5	6	7
Duty Cycle (%)	89	85	80	76	69	63	62	60
Correction factor (㏈)	0.52	0.70	0.97	1.21	1.63	2.01	2.11	2.22

Remark:

1. Result (㏈m) = Average (㏈m) + Correction factor (㏈)
2. Duty cycle (%) = (Tx on time / Tx on + off time) x 100
3. Correction factor (㏈) = 10 log (1/duty cycle (㎳))

6. Peak power spectral density

6.1. Test setup



6.2. Limit

6.2.1. FCC 15.407

(a)(1)(iv)

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

(a)(2)

For the 5.25 - 5.35 ㎓ and 5.47 - 5.725 ㎓ bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 ㎽ or 11 ㏈m 10 log B, where B is the 26 ㏈ emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 ㏈m in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 ㏈i are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in ㏈ that the directional gain of the antenna exceeds 6 ㏈i.

(a)(3)

For the band 5.725 - 5.85 ㎓, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 ㏈m in any 500-㎑ band. If transmitting antennas of directional gain greater than 6 ㏈i are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in ㏈ that the directional gain of the antenna exceeds 6 ㏈i. However, fixed point-to point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 ㏈ i without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

6.3. Test procedure

All data rates and modes were investigated for this test. The full data for the worst case data rate are reported in this section.

1. This measurement settings are specified in section F of KDB 789033 D02 v01.

2. Create an average power spectrum for the EUT operating mode being tested by following the instructions in section II.E.2. for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, “Compute power…”. (This procedure is required even if the maximum conducted output power measurement was performed using a power meter, method PM.)

3. Use the peak search function on the instrument to find the peak of the spectrum and record its value.

4. Make the following adjustments to the peak value of the spectrum, if applicable:

a) **If Method SA-2 or SA-2 Alternative was used, add 10 log(1/x), where x is the duty cycle, to the peak of the spectrum.**

b) If Method SA-3 Alternative was used and the linear mode was used in step II.E.2.g)(viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging.

5. The result is the Maximum PSD over 1 ㎒ reference bandwidth.

6. For devices operating in the bands 5.15-5.25 ㎓, 5.25-5.35 ㎓, and 5.47-5.725 ㎓, the above procedures make use of 1 ㎒ RBW to satisfy directly the 1 ㎒ reference bandwidth specified in § 15.407(a)(5). Many spectrum analyzers do not have 500 ㎑ RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 ㎒, or 500 ㎑, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (*i.e.,* 1 ㎒, or 500 ㎑). If measurements are performed using a reduced resolution bandwidth (< 1 ㎒, or < 500 ㎑) and integrated over 1 ㎒, or 500 ㎑ bandwidth, the following adjustments to the procedures apply:

a) Set RBW ≥ 1/*T*, where *T* is defined in section II.B.l.a).

b) Set VBW ≥ 3 RBW.

c) If measurement bandwidth of Maximum PSD is specified in 500 ㎑, add 10log(500 ㎑/RBW) to the measured result, whereas RBW (< 500 ㎑) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.

d) If measurement bandwidth of Maximum PSD is specified in 1 ㎒, add 10log(1 ㎒/RBW) to the measured result, whereas RBW (< 1 ㎒) is the reduced resolution bandwidth of spectrum analyzer set during measurement.

e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note: As a practical matter, it is recommended to use reduced RBW of 100 ㎑ for the sections 5.c) and 5.d) above, since RBW = 100 ㎑ is available on nearly all spectrum analyzers.

6.4. Test result

Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 % R.H.

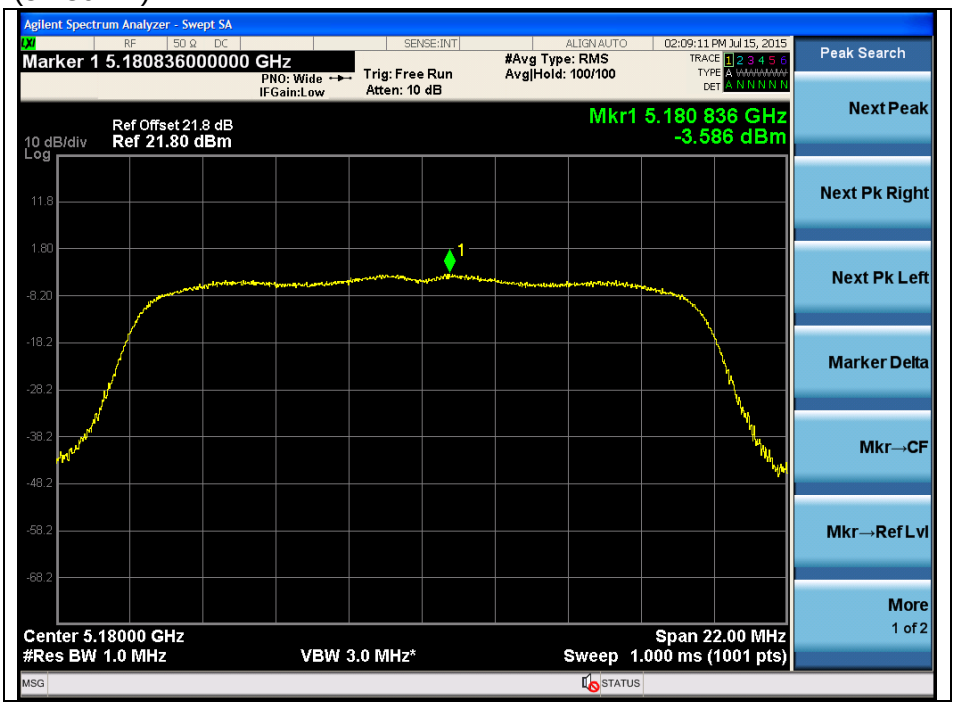
Band	Mode	Frequency (㎒)	Ch.	Data Rate	Measured PPSD (㏈ m)	Duty Factor (㏈)	Final PPSD (㏈ m)	Limit (㏈ m/1 ㎒)
U-NII 1	11a	5 180	36	6	-3.59	0.21	-3.38	11
		5 220	44	6	-2.82	0.21	-2.61	11
		5 240	48	6	-2.36	0.21	-2.15	11
	11n_HT20	5 180	36	MCS0	-4.06	0.19	-3.87	11
		5 220	44	MCS0	-3.23	0.19	-3.04	11
		5 240	48	MCS0	-2.77	0.19	-2.58	11
	11n_HT40	5 190	38	MCS0	-6.07	0.52	-5.55	11
		5 230	46	MCS0	-5.16	0.52	-4.64	11
U-NII 2A	11a	5 260	52	6	-2.03	0.21	-1.82	11
		5 300	60	6	-1.76	0.21	-1.55	11
		5 320	64	6	-1.42	0.21	-1.21	11
	11n_HT20	5 260	52	MCS0	-2.58	0.19	-2.39	11
		5 300	60	MCS0	-2.21	0.19	-2.02	11
		5 320	64	MCS0	-1.82	0.19	-1.63	11
	11n_HT40	5 270	54	MCS0	-4.47	0.52	-3.95	11
		5 310	62	MCS0	-4.16	0.52	-3.64	11
U-NII 2C	11a	5 500	100	6	0.23	0.21	-0.02	11
		5 580	116	6	0.05	0.21	0.26	11
		5 700	140	6	0.43	0.21	0.64	11
	11n_HT20	5 500	100	MCS0	-0.50	0.19	-0.31	11
		5 580	116	MCS0	-0.23	0.19	-0.04	11
		5 700	140	MCS0	0.13	0.19	0.06	11
	11n_HT40	5 510	102	MCS0	-3.17	0.52	-2.65	11
		5 550	110	MCS0	-2.77	0.52	-2.25	11
		5 670	134	MCS0	-2.03	0.52	-1.51	11

Band	Mode	Frequency (㎒)	Ch.	Data Rate	Measured PPSD (㏈ m)	Duty Factor (㏈)	Final PPSD (㏈ m)	Limit (㏈ m/500 ㎑)
U-NII 3	11a	5 745	149	6	-3.12	0.21	0.46	30
		5 785	157	6	-3.09	0.21	0.36	30
		5 825	165	6	-3.00	0.21	0.44	30
	11n_HT20	5 745	149	MCS0	-3.42	0.19	-0.03	30
		5 785	157	MCS0	-3.46	0.19	0.19	30
		5 825	165	MCS0	-3.54	0.19	0.25	30
	11n_HT40	5 755	151	MCS0	-5.47	0.52	-1.77	30
		5 795	159	MCS0	-5.88	0.52	-1.68	30

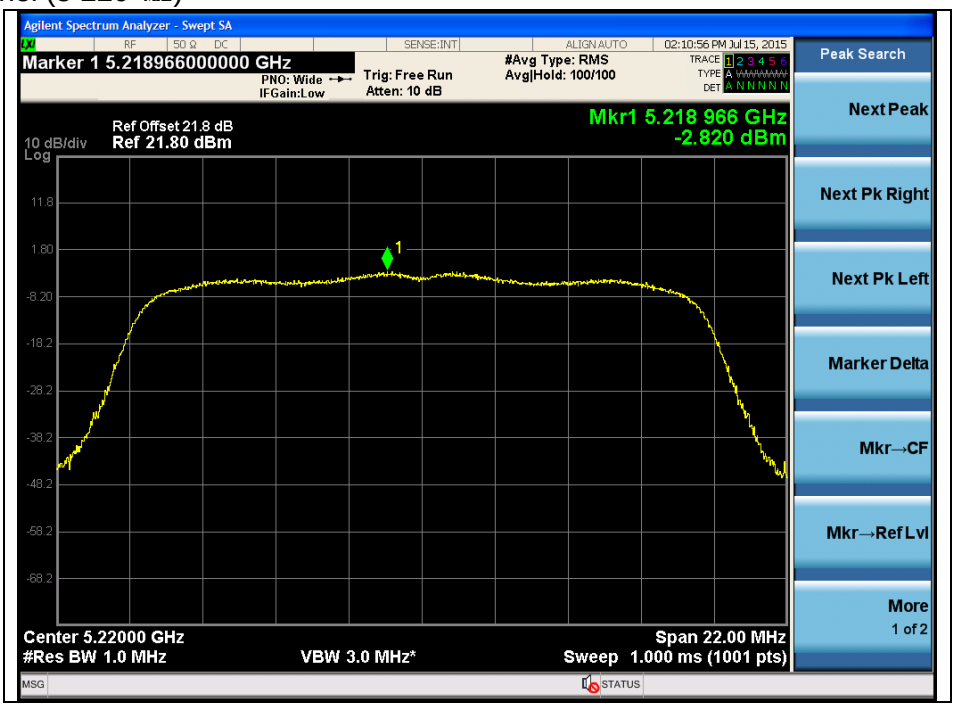
Note : Final PPSD = Measured PPSD + Duty Factor

802.11a (Band 1)

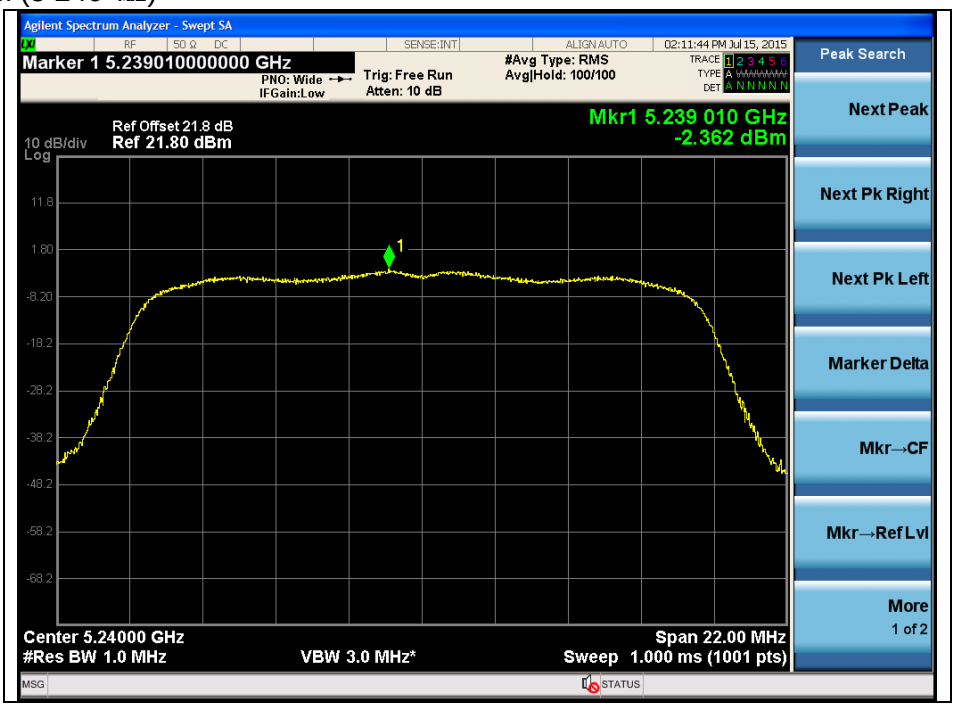
Low Channel (5 180 ㎒)



Middle Channel (5 220 ㎒)

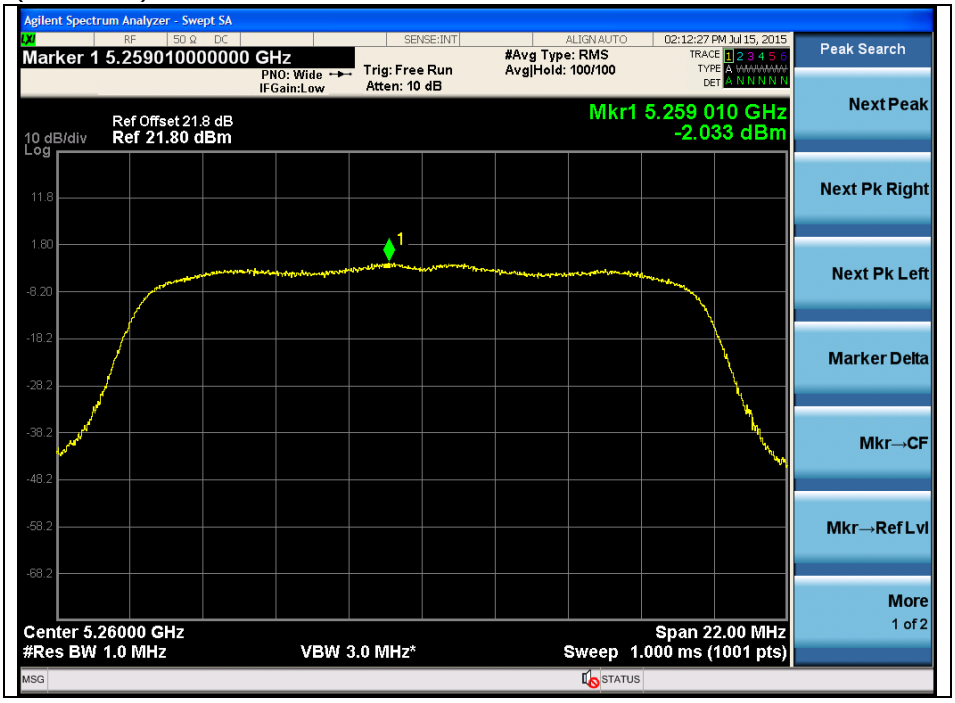


High Channel (5 240 ㎒)

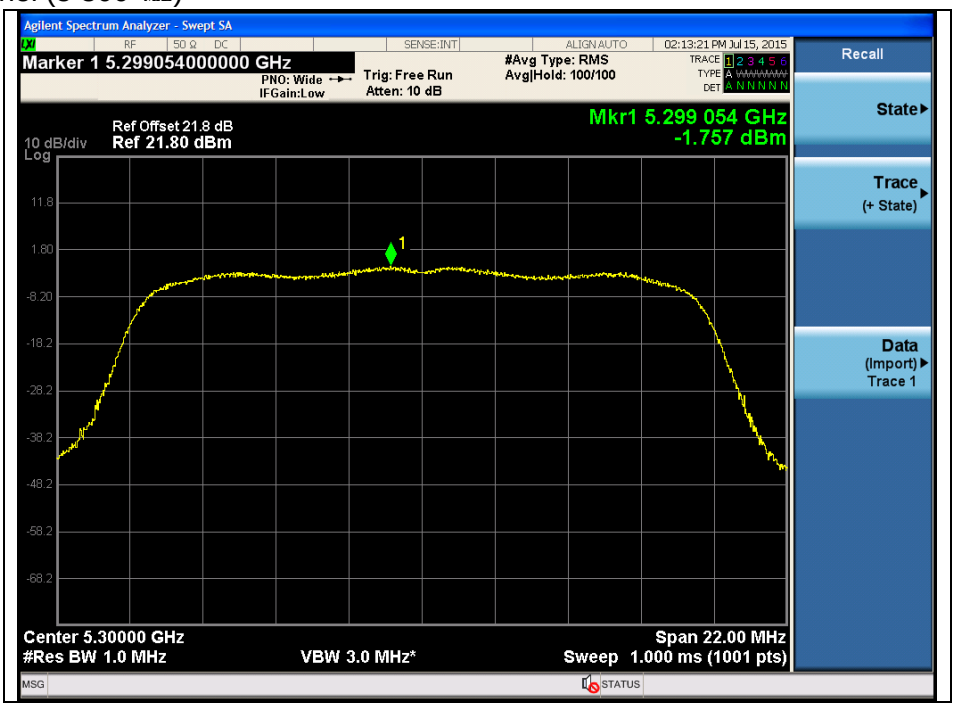


802.11a (Band 2A)

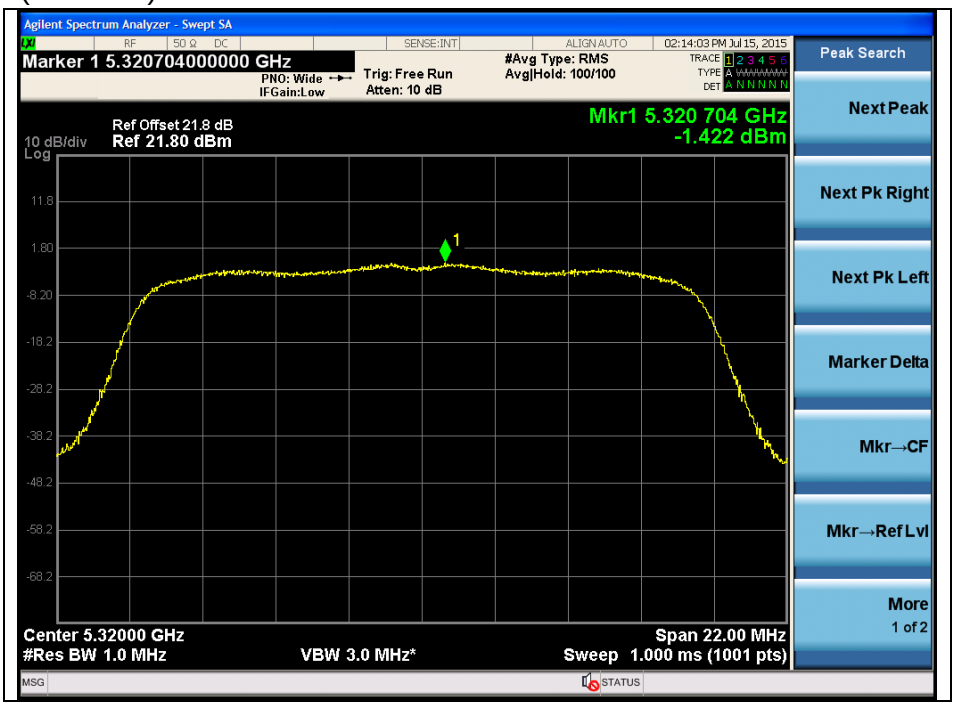
Low Channel (5 260 ㎒)



Middle Channel (5 300 ㎒)

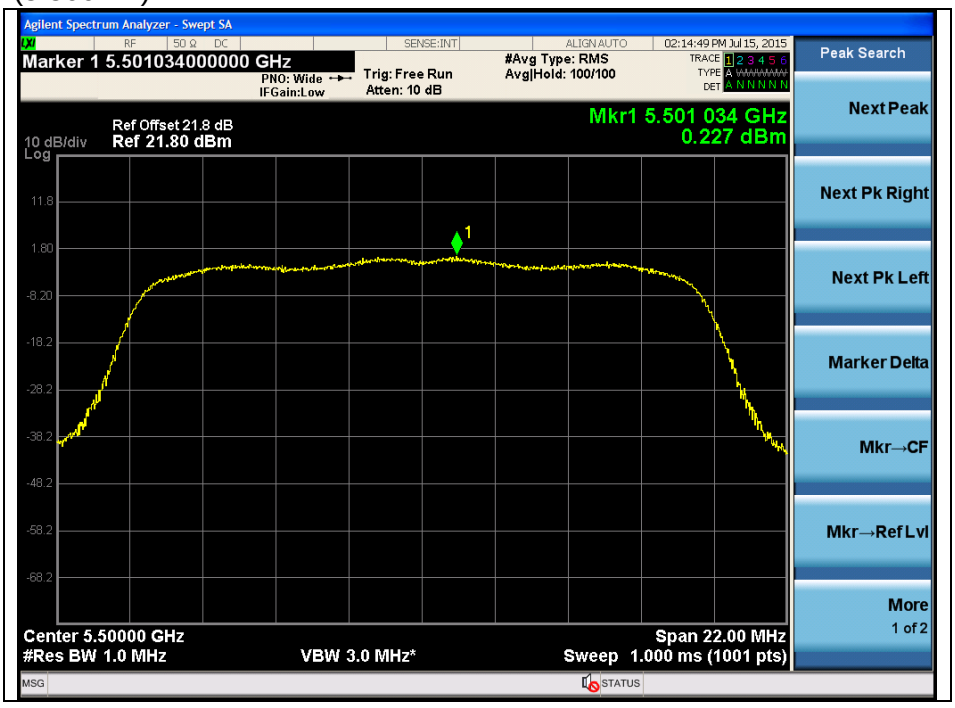


High Channel (5 320 ㎒)

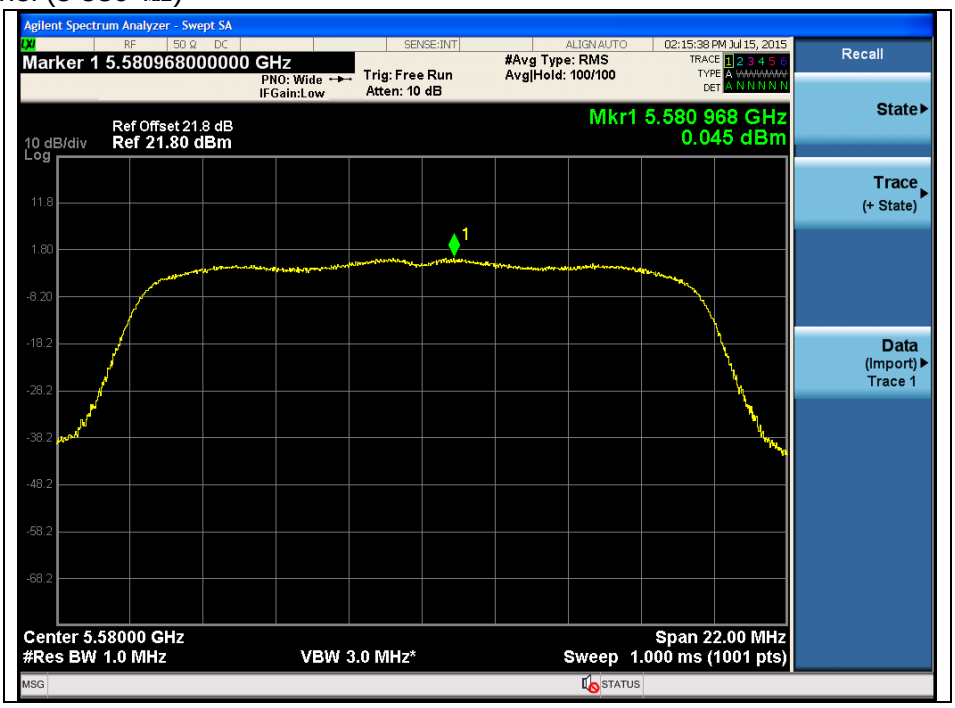


802.11a (Band 2C)

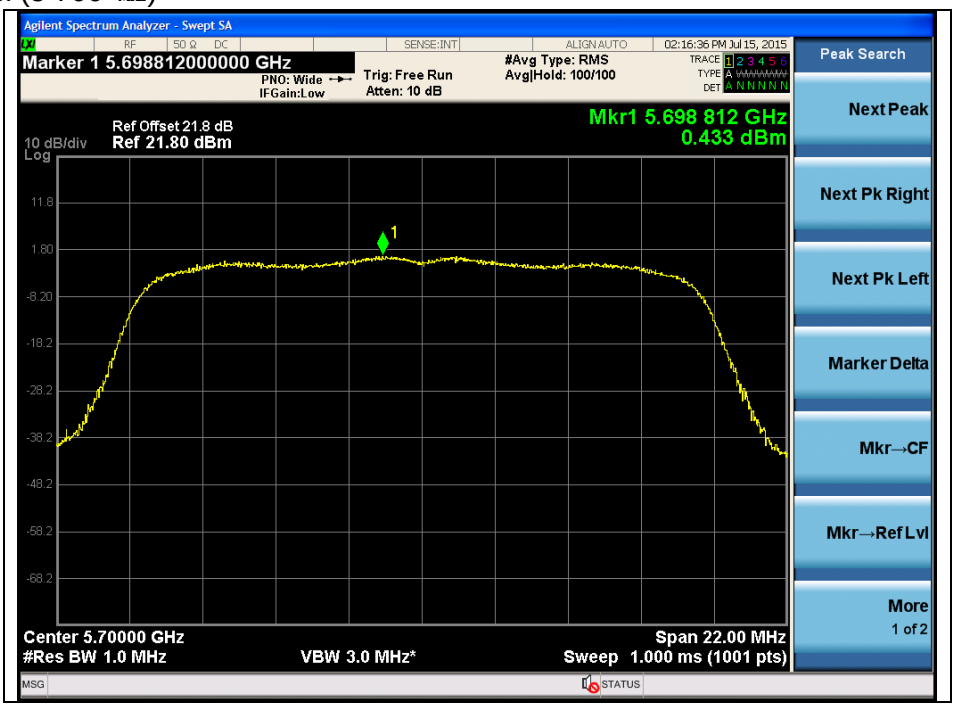
Low Channel (5 500 ㎒)



Middle Channel (5 580 ㎒)

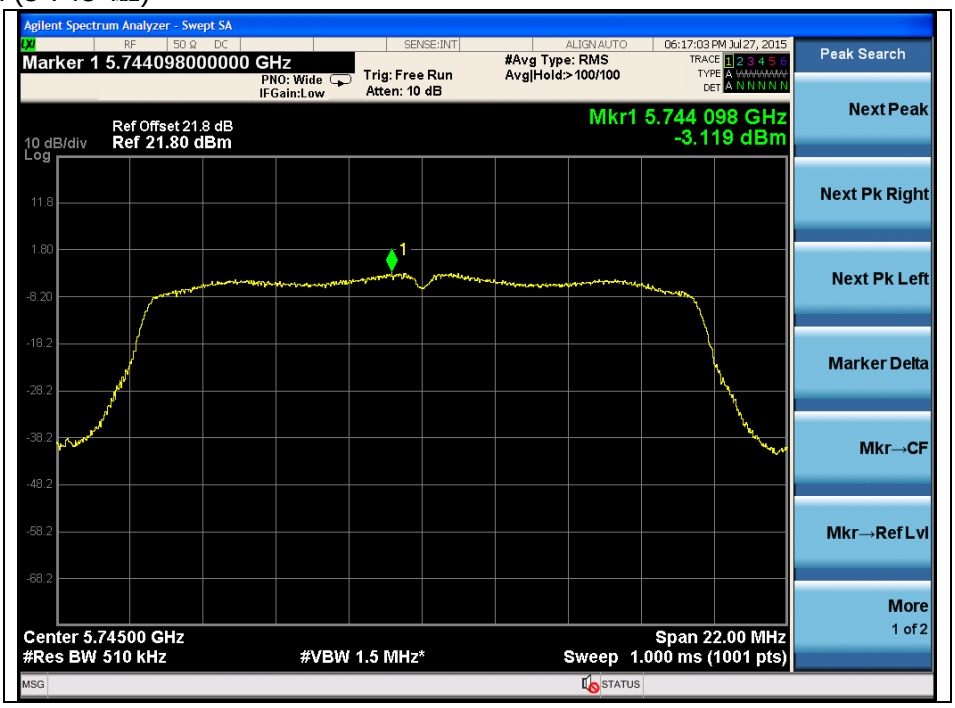


High Channel (5 700 ㎒)

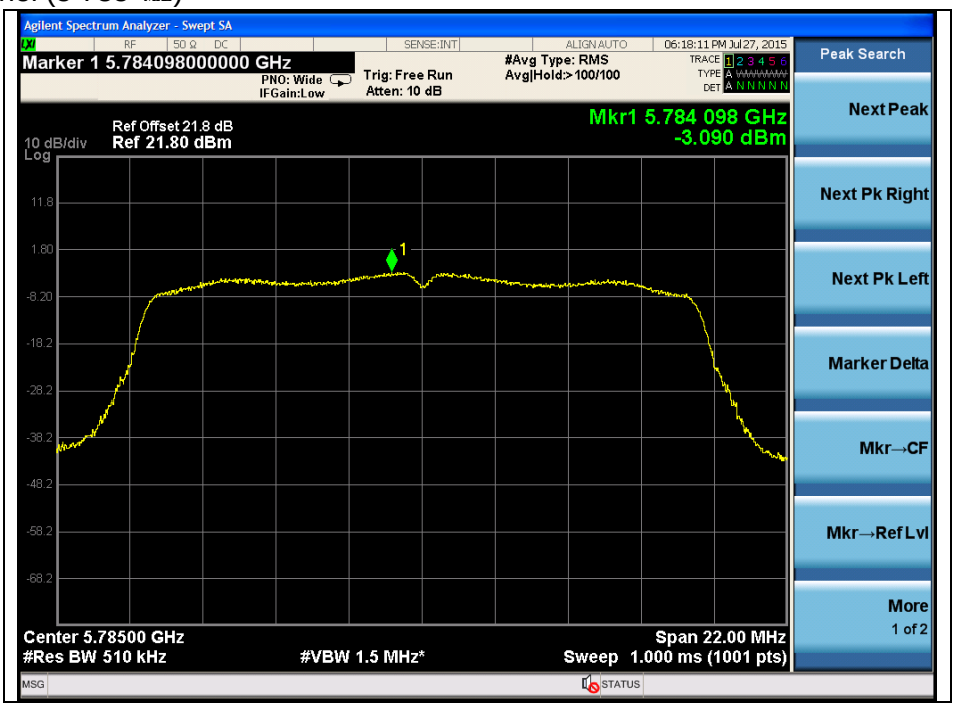


802.11a (Band 3)

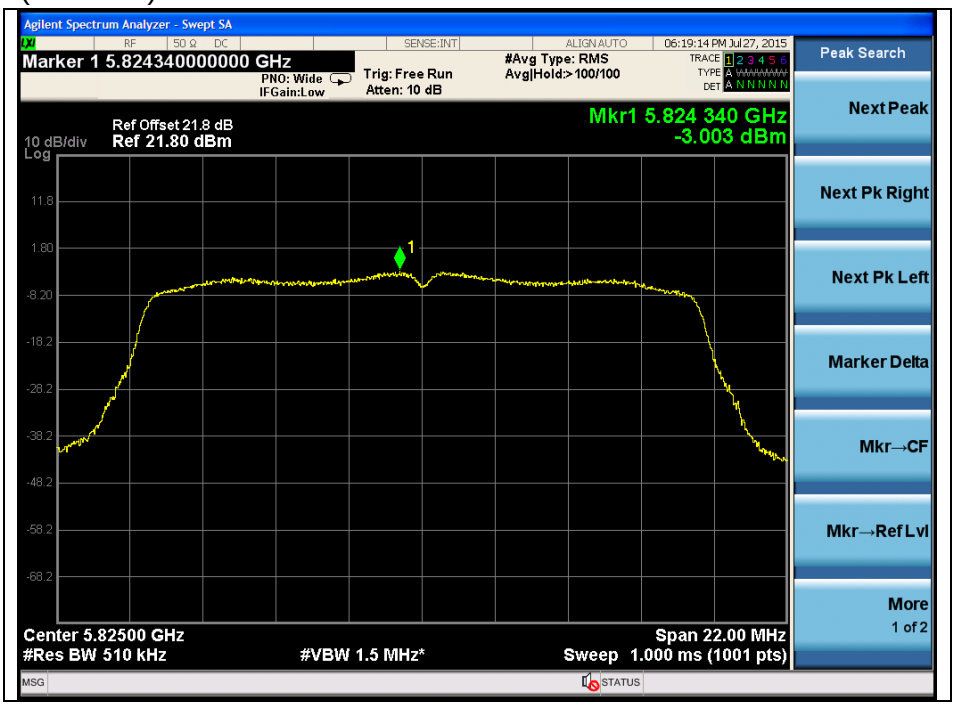
Low Channel (5 745 ㎒)



Middle Channel (5 785 ㎒)

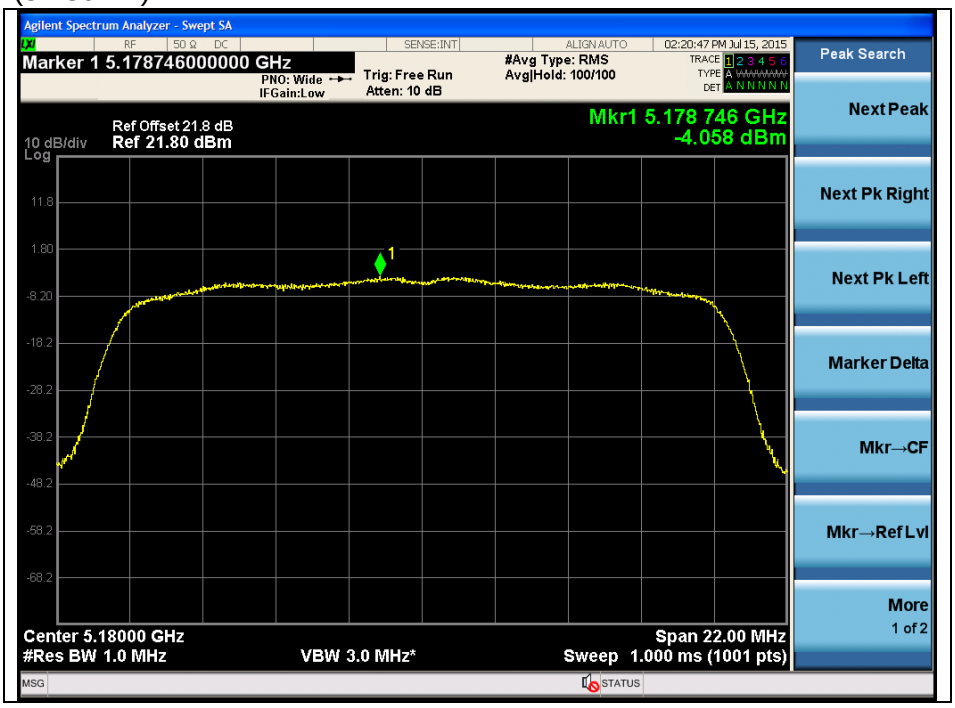


High Channel (5 825 ㎒)

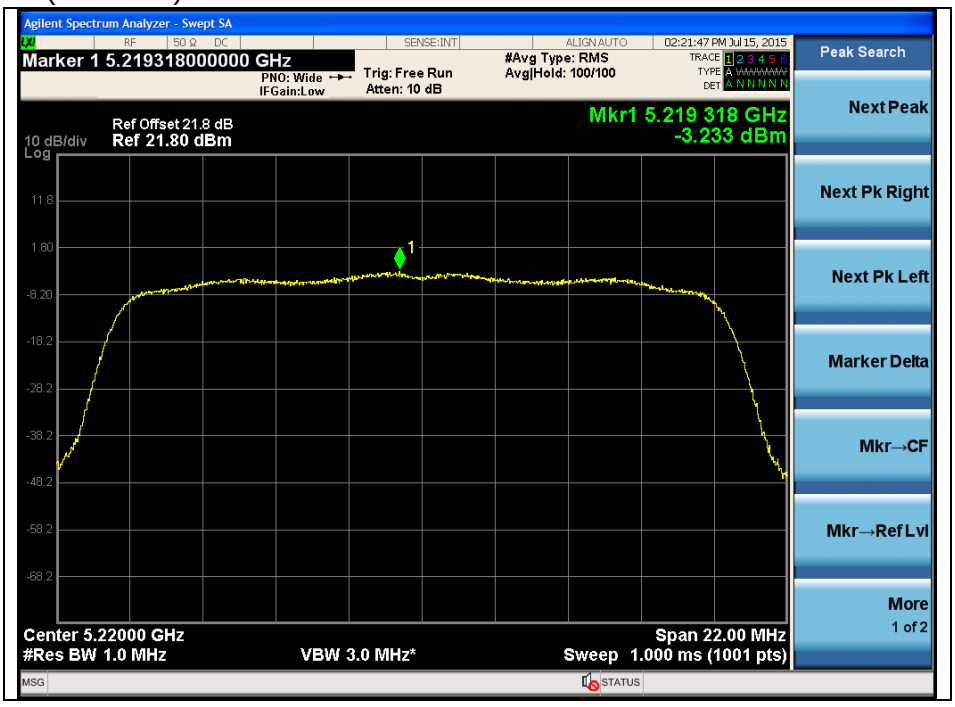


802.11n_HT20 (Band 1)

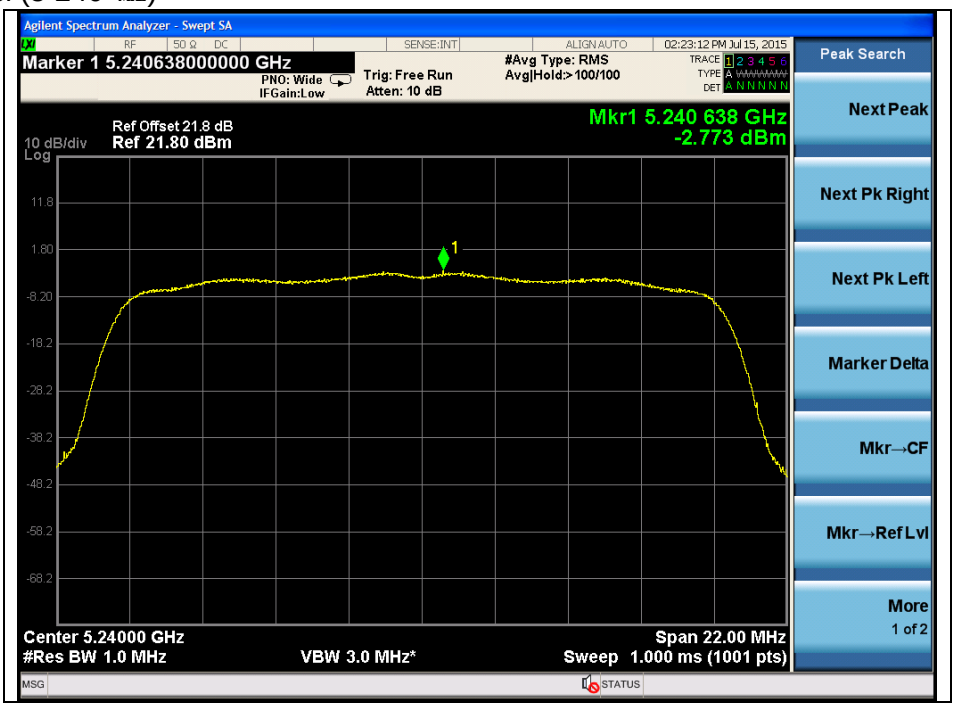
Low Channel (5 180 ㎒)



Middle Channel (5 220 ㎒)

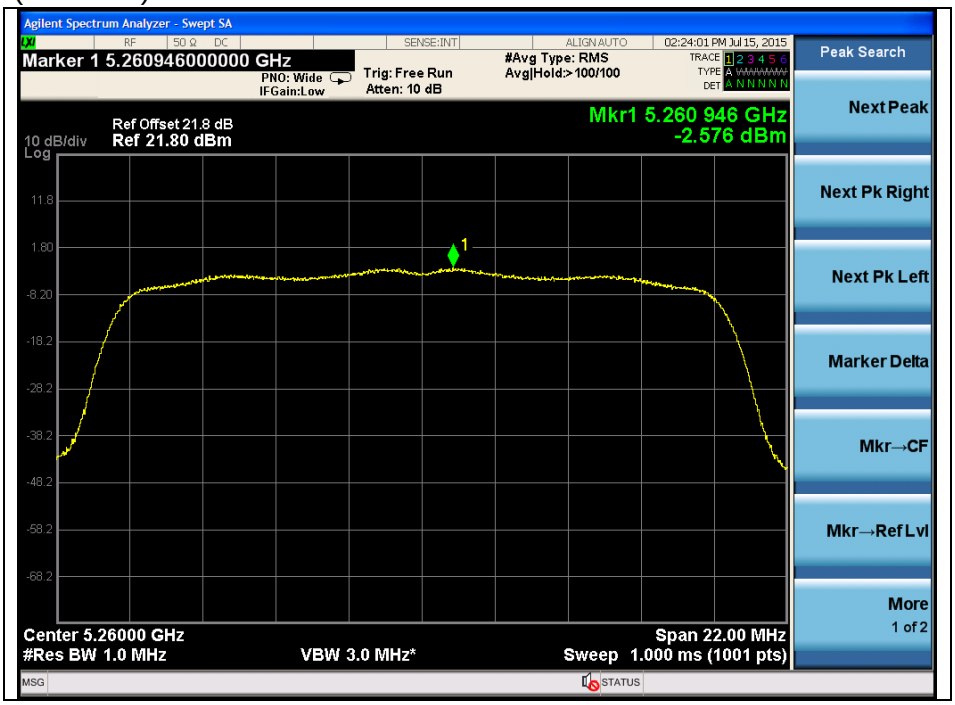


High Channel (5 240 ㎒)



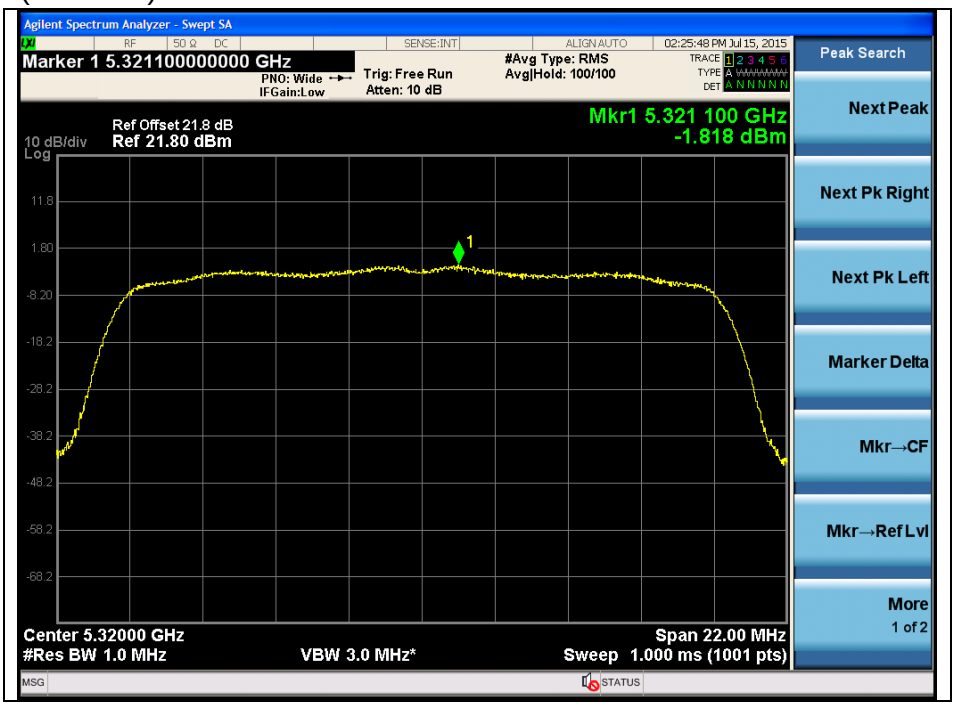
802.11n_HT20 (Band 2A)

Low Channel (5 260 ㎒)



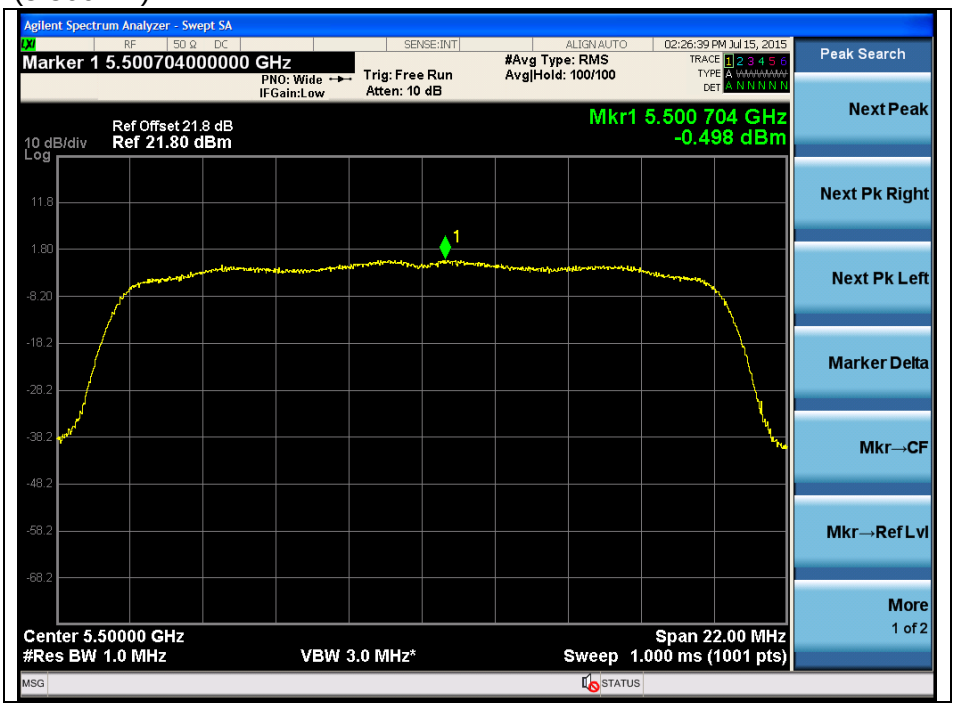
Middle Channel (5 300 ㎒)

High Channel (5 320 ㎒)

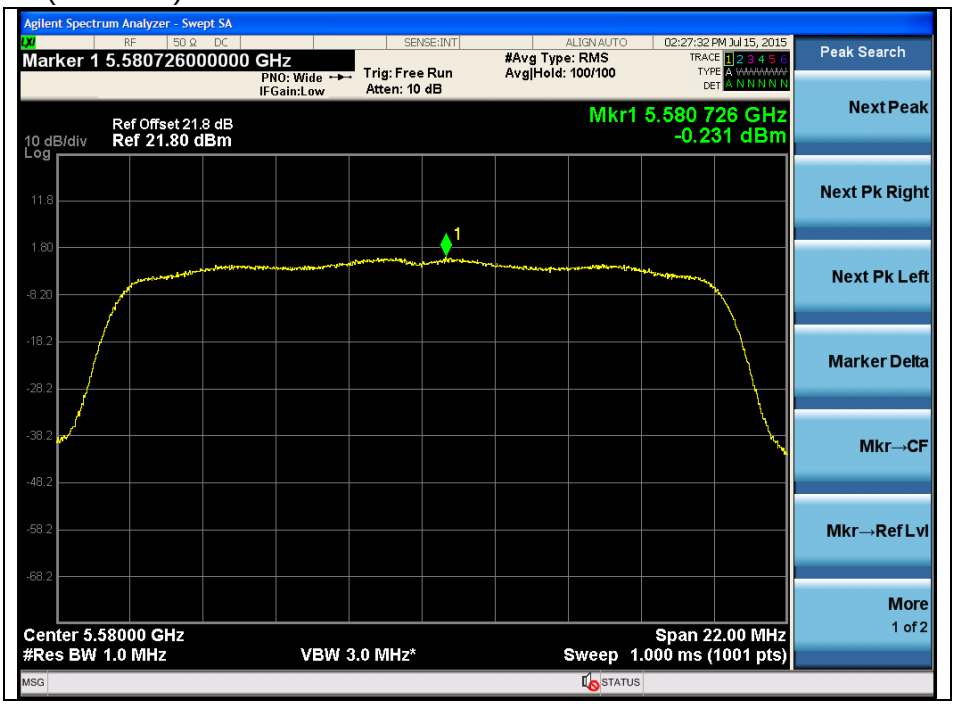


802.11n_HT20 (Band 2C)

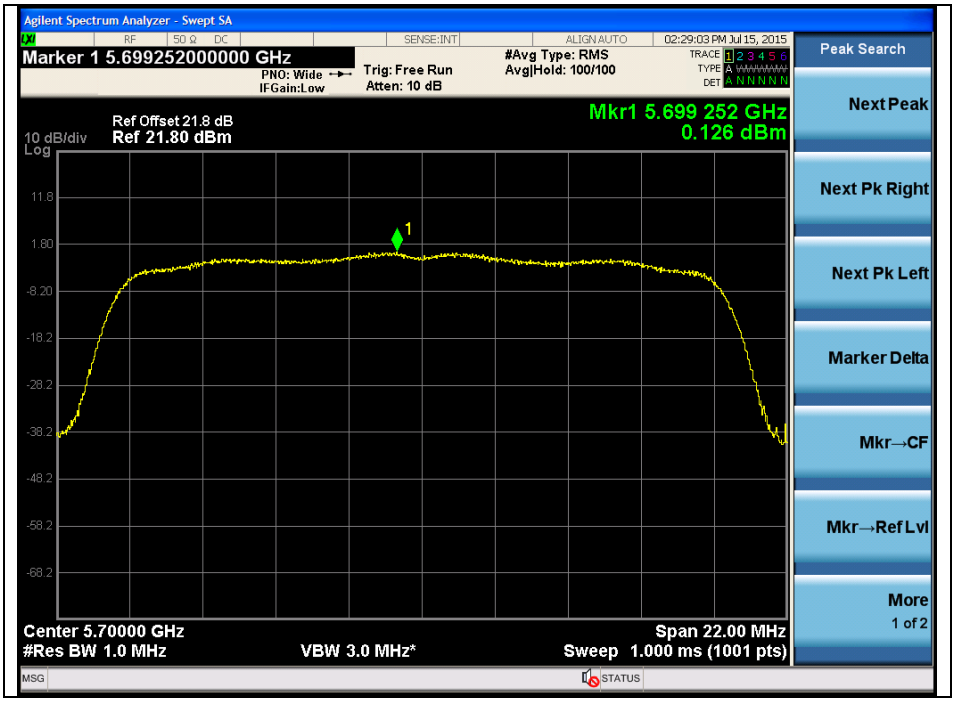
Low Channel (5 500 ㎒)



Middle Channel (5 580 ㎒)

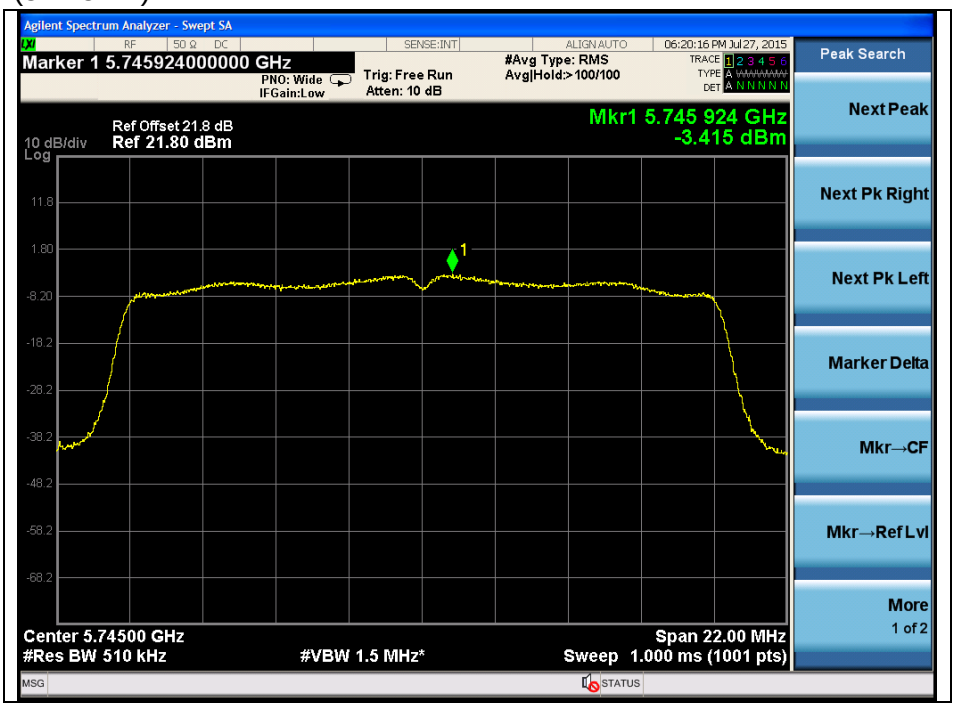


High Channel (5 700 ㎒)

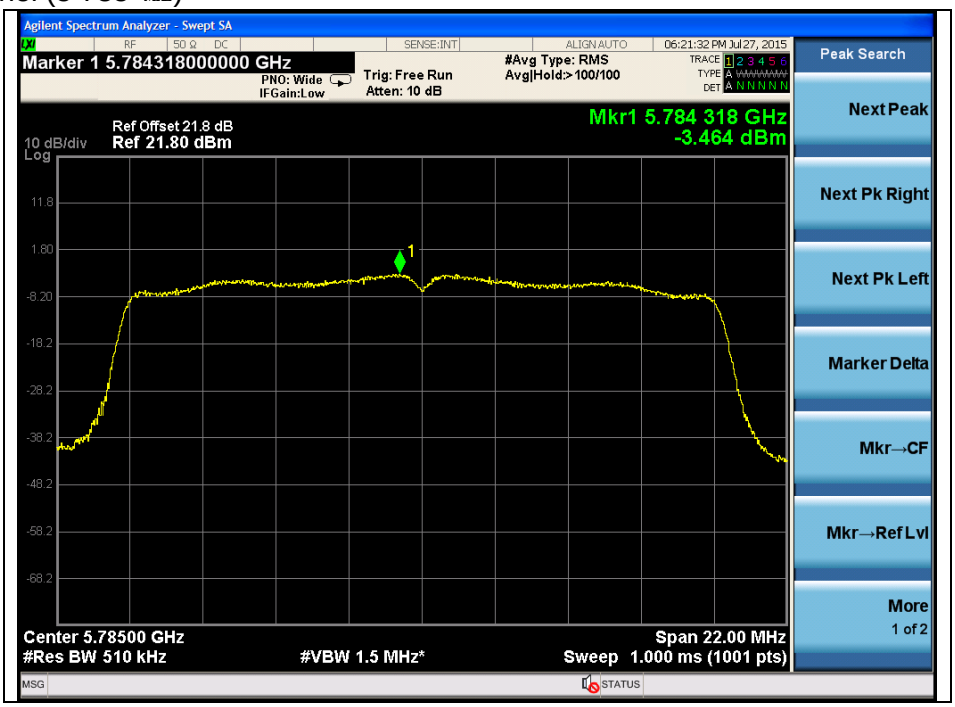


802.11n_HT20 (Band 3)

Low Channel (5 745 ㎒)



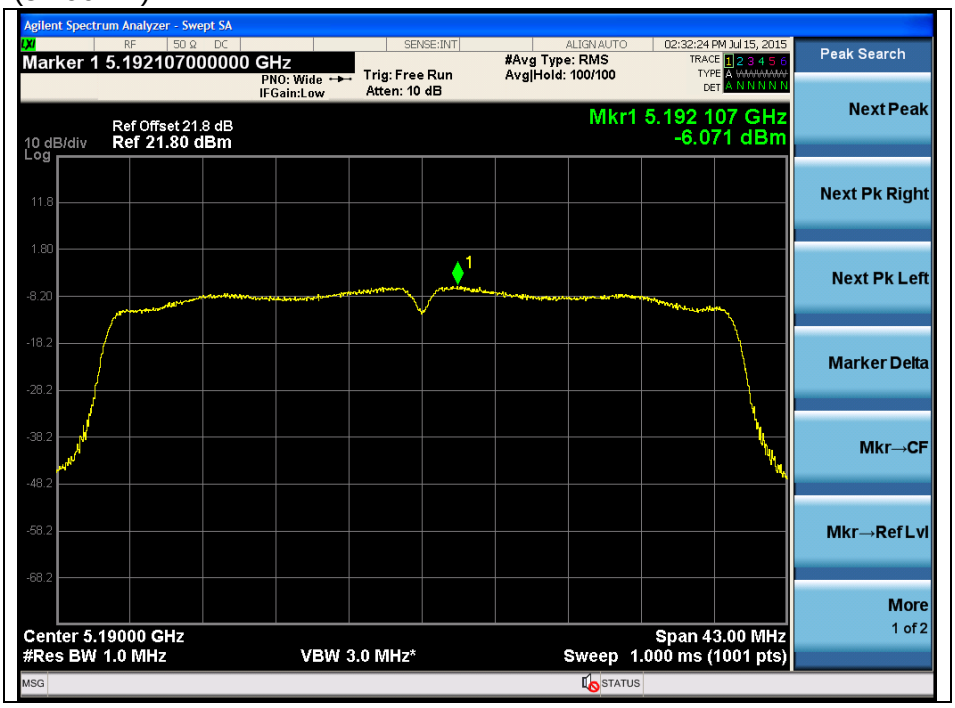
Middle Channel (5 785 ㎒)



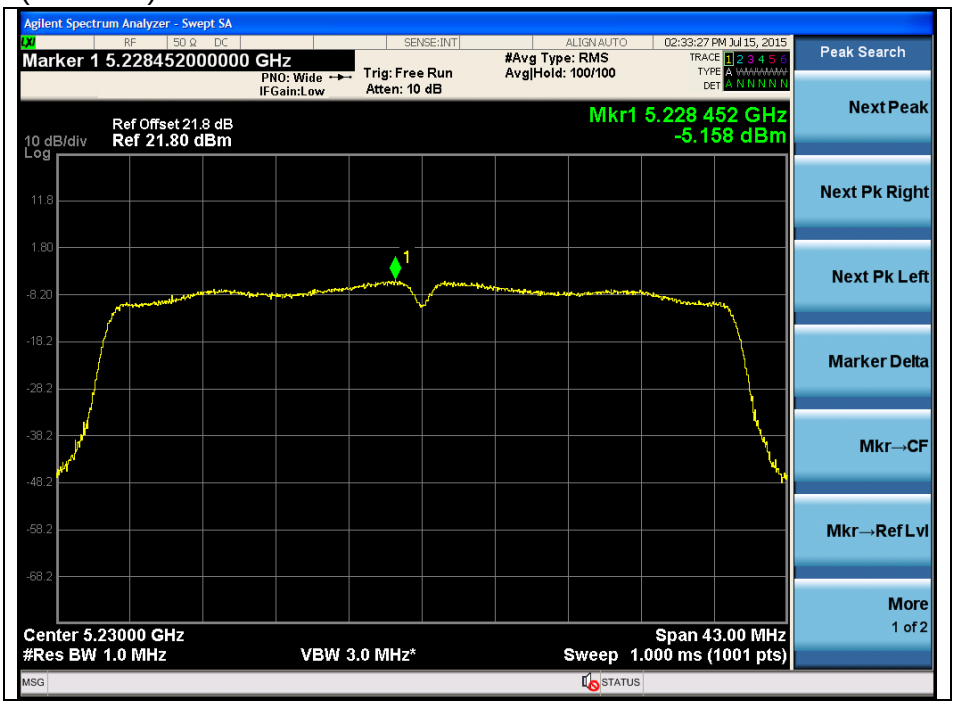
High Channel (5 825 ㎒)

802.11n_HT40 (Band 1)

Low Channel (5 190 ㎒)



High Channel (5 230 ㎒)



802.11n_HT40 (Band 2A)

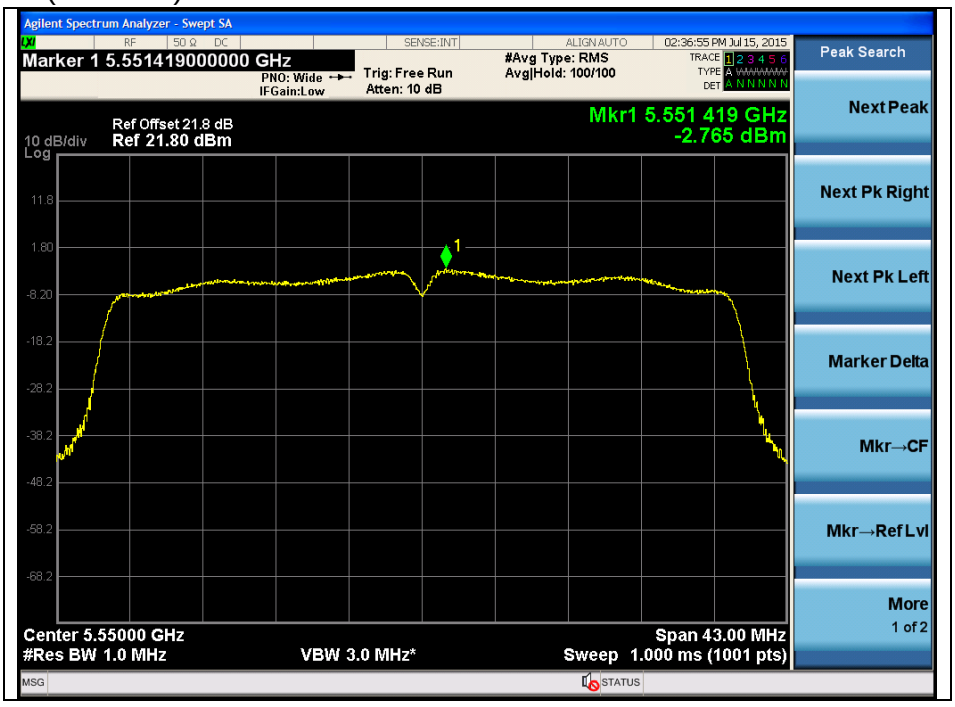
Low Channel (5 270 ㎒)

High Channel (5 310 ㎒)

802.11n_HT40 (Band 2C)

Low Channel (5 510 ㎒)

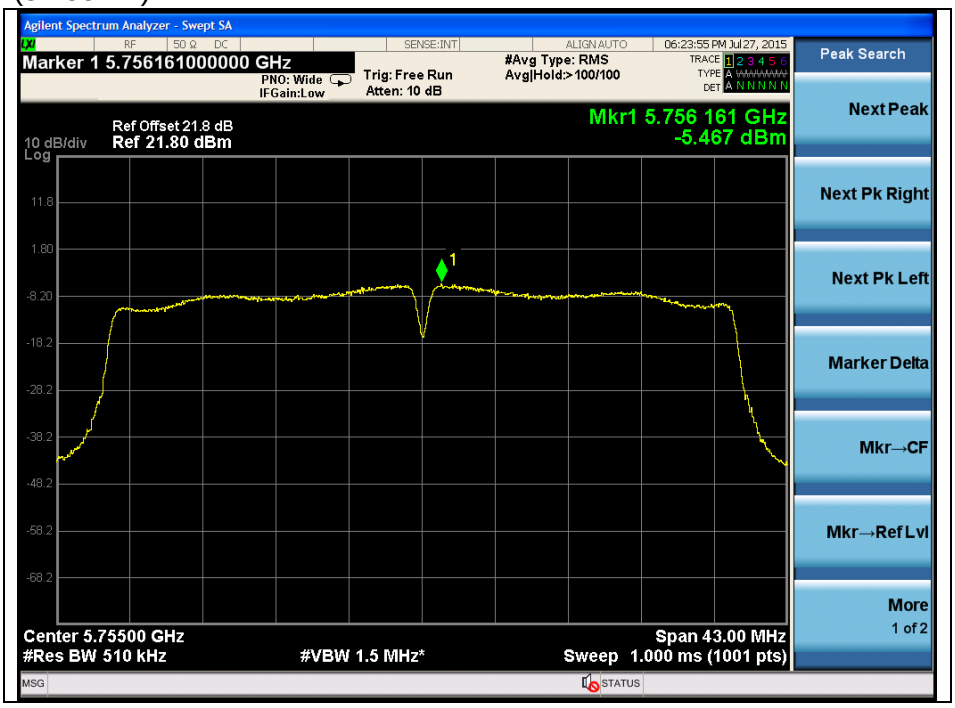
Middle Channel (5 550 ㎒)



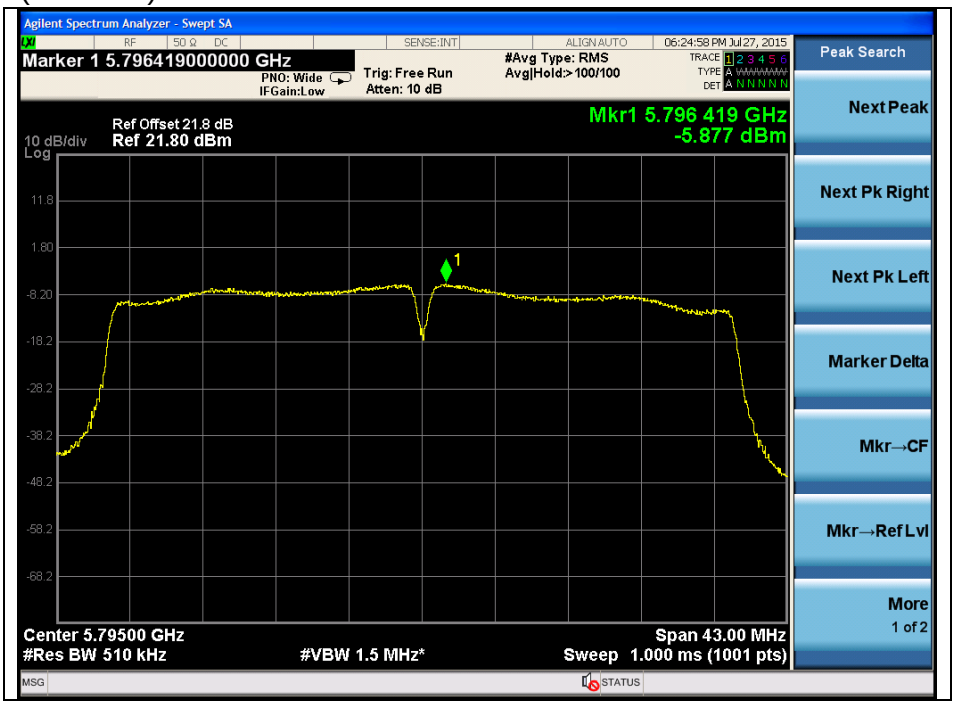
High Channel (5 670 ㎒)

802.11n_HT40 (Band 3)

Low Channel (5 755 ㎒)

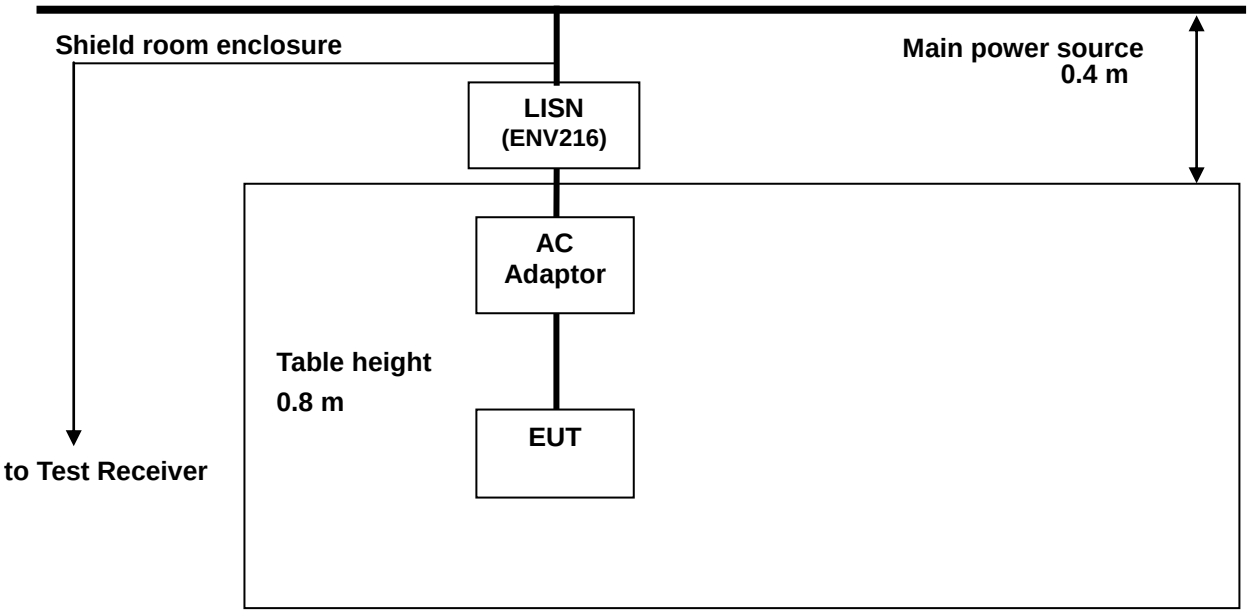


High Channel (5 795 ㎒)



7. Transmitter AC Power Line Conducted Emission

7.1. Test Setup



7.2. Limit

According to §15.207(a) for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 ㎑ to 30 ㎒, shall not exceed the limits in the following table, as measured using a 50 ㎌ /50 ohm line impedance stabilization network(LISN).
Compliance with the provision of this paragraph shall on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequency ranges.

Frequency of Emission (㎒)	Conducted limit (㏈㎶)	
	Quasi-peak	Average
0.15 – 0.50	66 - 56*	56 - 46*
0.50 – 5.00	56	46
5.00 – 30.0	60	50

* Decreases with the logarithm of the frequency.

7.3. Test Procedures

All data rates and modes were investigated for this test. The full data for the worst case data rate are reported in this section.
AC line conducted emissions from the EUT were measured according to the dictates of ANSI C63.4-2003

1. The test procedure is performed in a 6.5 m × 3.6 m × 3.6 m (L × W × H) shielded room. The EUT along with its peripherals were placed on a 1.0 m (W) × 1.5 m (L) and 0.8 m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane.
2. The EUT was connected to power mains through a line impedance stabilization network (LISN) which provides 50 ohm coupling impedance for measuring instrument and the chassis ground was bounded to the horizontal ground plane of shielded room.
3. The excess power cable between the EUT and the LISN was bundled. All connecting cables of EUT were moved to find the maximum emission.

7.4. Test Results

The following table shows the highest levels of conducted emissions on both phase of Hot and Neutral line

Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 % R.H.

Frequency range : 0.15 ㎒ – 30 ㎒
Measured Bandwidth : 9 ㎑

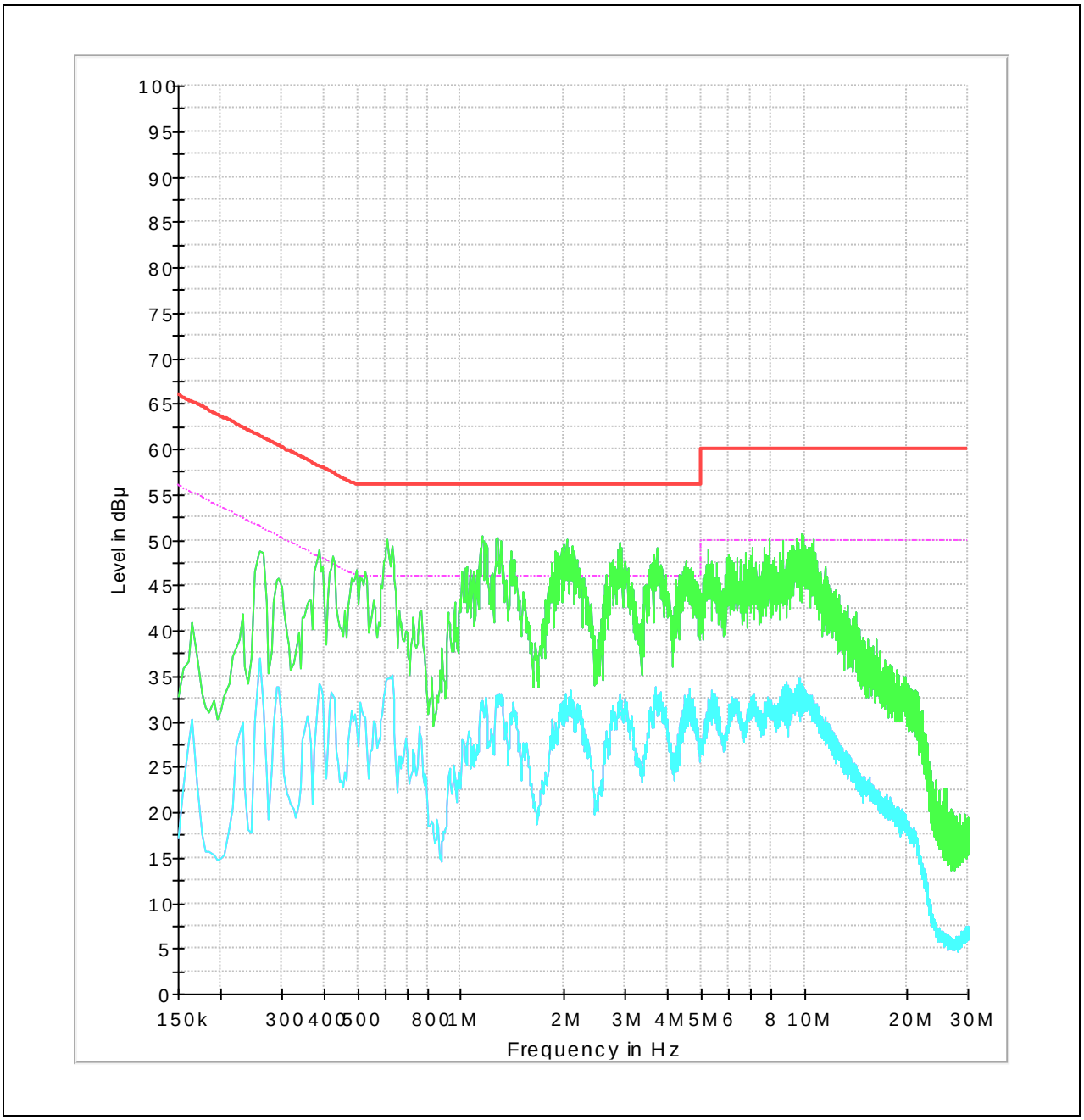
FREQ.	LEVEL(dBμV)		LINE	LIMIT(dBμV)		MARGIN(dB)	
(㎒)	Q-Peak	Average		Q-Peak	Average	Q-Peak	Average
0.61	45.20	35.60	N	56.00	46.00	10.80	10.40
1.28	43.50	32.90	N	56.00	46.00	12.50	13.10
2.03	43.30	31.40	N	56.00	46.00	12.70	14.60
5.27	40.40	32.80	N	60.00	50.00	19.60	17.20
9.80	42.30	33.70	N	60.00	50.00	17.70	16.30
25.82	11.60	6.20	N	60.00	50.00	48.40	43.80
0.62	47.50	36.60	H	56.00	46.00	8.50	9.40
1.28	47.10	37.30	H	56.00	46.00	8.90	8.70
2.11	45.60	34.50	H	56.00	46.00	10.40	11.50
5.39	42.00	34.10	H	60.00	50.00	18.00	15.90
7.06	42.00	34.40	H	60.00	50.00	18.00	15.60
10.01	43.40	35.30	H	60.00	50.00	16.60	14.70

Remark;

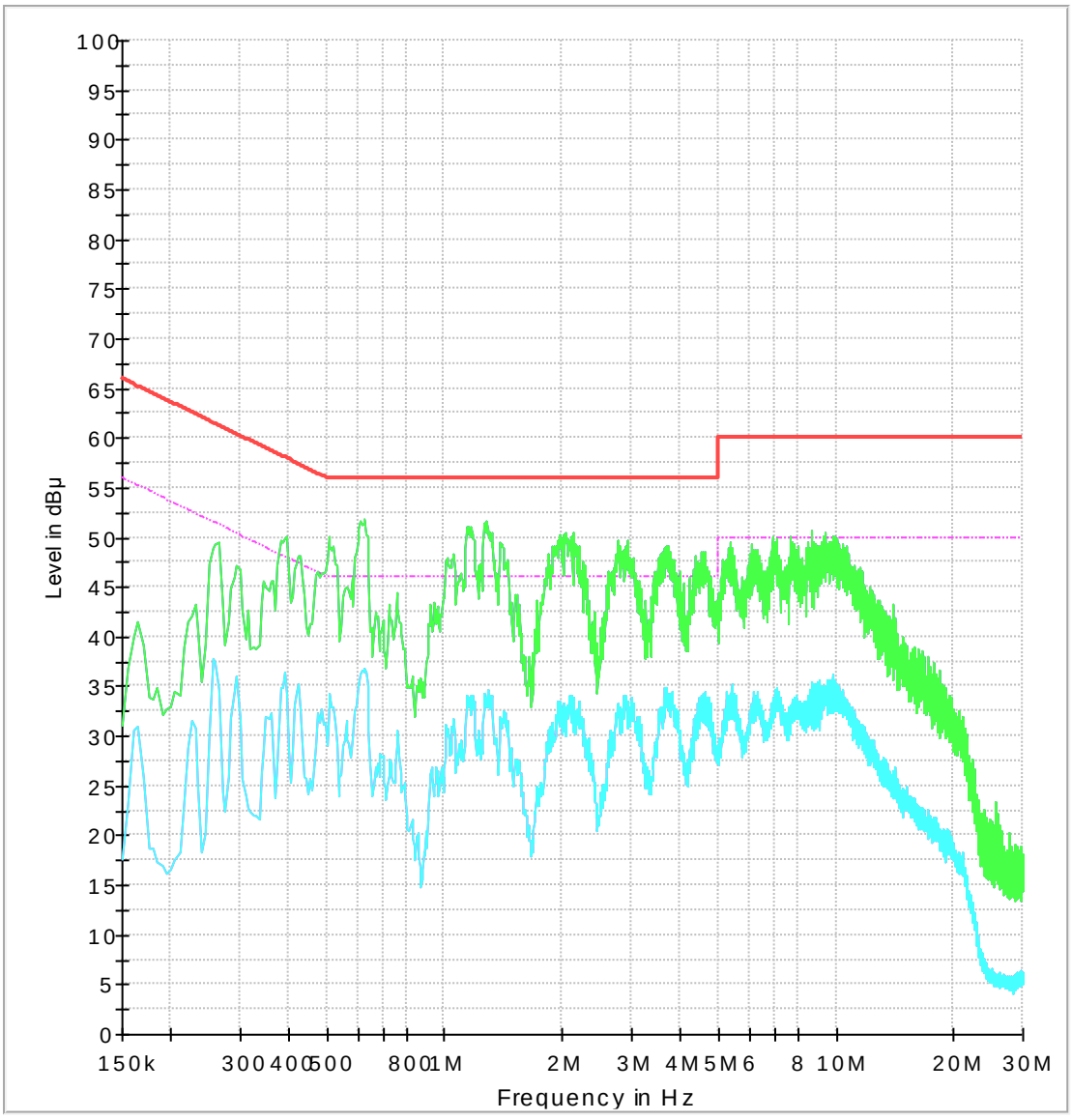
1. Line (H): Hot, Line (N): Neutral
2. All modes of operation were investigated and the worst-case emissions were reported using **11a Mode 6 Mbps, 36 channels**
3. Traces shown in plot made using a peak detector and average detector
4. The limit for Class B device(s) from 150 ㎑ to 30 ㎒ are specified in Section of the Title 47 CFR.
5. Deviations to the Specifications: None.

Plots of Conducted Power line

Test mode: (Neutral)



Test mode: (Hot)



8. Antenna Requirement

8.1. Standard Applicable

For intentional device, according to FCC 47 CFR Section §15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section §15.407 (a) if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the gain of the antenna exceeds 6 dBi.

8.2. Antenna Connected Construction

Antenna used in this product is Integral antenna and peak max gain of antenna as below.

Band	5 180 ㎒ – 5 320 ㎒	5 500 ㎒ – 5 700 ㎒	5 745 ㎒ – 5 825 ㎒
Mode	11a/n_HT20, HT40		
Gain	2.88 dBi	0.12 dBi	0.16 dBi