




TEST REPORT

According to

FCC CFR Title 47 Part 15 Subpart E(15.407)

Applicant	: Hillstone Networks Corp.
Address	: 292 Gibraltar Drive, Suite 105 Sunnyvale, CA 94089
Equipment	: Firewall Appliance
Model No.	: SG-6000-E1100W
Trademark	: 
FCC ID	: 2AD6IE1100W

- The test result refers exclusively to the test presented test model / sample.
- Without written approval of **Cerpass Technology (Suzhou) Co., Ltd.** the test report shall not be reproduced except in full.
- The test report must not be used by the clients to claim product certification approval by **NVLAP** or any agency of the Government.



Table of Contents

1. Report of Measurements and Examinations	6
1.1. List of Measurements and Examinations	6
2. Test Configuration of Equipment under Test	7
2.1. Feature of Equipment under Test	7
2.2. Carrier Frequency of Channels	7
2.3. Test Manner	7
2.4. Description of Test System	8
2.5. General Information of Test	9
2.6. Measurement Uncertainty	9
3. Antenna Requirements	10
3.1. Standard Applicable	10
4. Test of Conducted Emission	11
4.1. Test Limit	11
4.2. Test Procedures	11
4.3. Typical Test Setup	12
4.4. Measurement equipment	12
4.5. Test Result and Data	13
5. Test of Radiated Emission	15
5.1. Test Limit	15
5.2. Test Procedures	15
5.3. Typical Test Setup	16
5.4. Measurement Equipment	17
5.5. Test Result and Data	18
6. 99% And 26dB Bandwidth Measurement Data	27
6.1. Test Limit	27
6.2. Test Procedures	27
6.3. Test Setup Layout	27
6.4. Measurement equipment	27
6.5. Test Result and Data	28
7. Band Edges Measurement	32
7.1. Test Limit	37
7.2. Test Procedure	37
7.3. Test Setup Layout	37
7.4. Measurement Equipment	37
7.5. Restrict Band Emission Measurement Data	38
8. Maximum Peak Output Power	41
8.1. Test Limit	41
8.2. Test Procedures	41
8.3. Test Setup Layout	41
8.4. Measurement equipment	41
8.5. Test Result and Data	42




9. Peak Power Spectral Density	44
9.1. Test Limit.....	44
9.2. Test Procedures.....	44
9.3. Test Setup Layout.....	44
9.4. Measurement equipment.....	44
9.5. Test Result and Data	45
10. Peak Excursion	54
10.1. Test Limit.....	54
10.2. Test Procedures.....	54
10.3. Test Setup Layout.....	54
10.4. Measurement equipment.....	54
10.5. Test Result and Data	55
11. Frequency Stability Measurement	60
11.1. Test Limit.....	60
11.2. Test Procedures.....	60
11.3. Test Setup Layout.....	60
11.4. Measurement equipment.....	60
11.5. Test Result and Data	61
12. Restricted Bands of Operation	64



TEST REPORT

according to

FCC CFR Title 47 Part 15 Subpart E(15.407)

Applicant : Hillstone Networks Corp.
Address : 292 Gibraltar Drive, Suite 105 Sunnyvale, CA
94089
Equipment : Firewall Appliance
Model No. : SG-6000-E1100W
Trademark : 
FCC ID : 2AD6IE1100W

I HEREBY CERTIFY THAT :

he measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.4** The equipment was **passed** the test performed according to **FCC Rules and Regulations Part 15 Subpart E (15.407)**

The test was carried out on Nov.21~Dec.10,2014 at **CerpPASS Technology (Suzhou) Co., Ltd.**

Signature

Miro Chueh/ Technical director



1. Report of Measurements and Examinations

1.1. List of Measurements and Examinations

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR Part 15 Subpart E	PASS



2. Test Configuration of Equipment under Test

2.1. Feature of Equipment under Test

Frequency Range	Band 1:5150MHz~5250MHz
EUT Power Ratings	I/P: DC12V=3A supplied by adapter
Power Source	DELTA ELECTRONICS INC. MODEL:ADP-36LH B I/P: 100-240V~1.2A 50-60Hz O/P: 12V=3A
Antenna Specification	3.0dBi (4.9~5.85GHz)
Modulation technology	OFDM

Note: 1. For more details, please refer to the User's manual of the EUT.

2.2. Carrier Frequency of Channels

Operated in 802.11a/802.11n(HT-20) bands:

Channel	Frequency(MHz)
36	5180
40	5200
48	5240

Operated in 802.11n(HT-40) bands:

Channel	Frequency(MHz)
38	5190
46	5230

2.3. Test Manner

Test Manner	
a	During testing, the interface cables and equipment positions were varied according to ANSI C63.4
b	The complete test system included EUT for RF test.
c	Adjust the EUT at the test mode and the test channel. Then test.
d	The following test mode was performed for conduction and radiation test: 802.11a/802.11n(HT-20) <ul style="list-style-type: none"> • CH 36 :5180MHz, CH 40: 5200MHz, CH 48: 5240MHz 802.11n(HT-40) <ul style="list-style-type: none"> • CH 38 :5190MHz, CH 46: 5230MHz



2.4. Description of Test System

No	Device	Manufacturer	Model No.	Description
1	PC	HP	HP Compaq Elite 8200 MTPC	Non-Shielded ,1.8m
2	USB Keyboard	DELL	SK-8115	N/A
3	USB Mouse	DELL	B889	N/A
4	Modem	Kingnet	KN-JT560	N/A
5	Printer	LENOVO	4126-LV7	N/A
6	LCD Monitor	DELL	SE198WFPt	Non-Shielded ,1.8m (R43346)
7	Notebook	SONY	PCG-71811P	Non-Shielded ,1.5m (R33021)
8	USB DISK	SANDISK	N/A	N/A



2.5. General Information of Test

Test Site:	CerpPASS Technology (Suzhou) Co., Ltd.
Performand Location :	No.66,Tangzhuang Road, Suzhou Industrial Park, Jiangsu 215006, China
NVLAP LAB Code :	200814-0
FCC Registration Number :	916572, 331395
IC Registration Number :	7290A-1, 7290A-2
VCCI Registration Number :	T-343 for Telecommunication Test C-2919 for Conducted emission test R-2670 for Radiated emission test below 1GHz G-227 for Radiated emission test above 1GHz

2.6. Measurement Uncertainty

Measurement Item	Measurement Frequency	Polarization	Uncertainty
Conducted Emission	9 kHz ~ 30 MHz	LINE/NEUTRAL	±2.71 dB
Radiated Emission	30 MHz ~ 25GHz	Vertical	±4.11 dB
		Horizontal	±4.10 dB
Occupied Bandwidth	---	---	±7500 Hz
Maximum Peak Output Power	---	---	±1.4 dB
Band Edges	---	---	±2.2 dB
Power Spectral Density	---	---	±2.2 dB



3. Antenna Requirements

3.1. 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 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.



4. Test of Conducted Emission

4.1. Test Limit

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz on the 120 VAC power and return leads of the EUT according to the methods defined in ANSI C63.4-2009 Section 3.1. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown in section 2.2. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

Frequency (MHz)	Quasi Peak (dB μ V)	Average (dB μ V)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

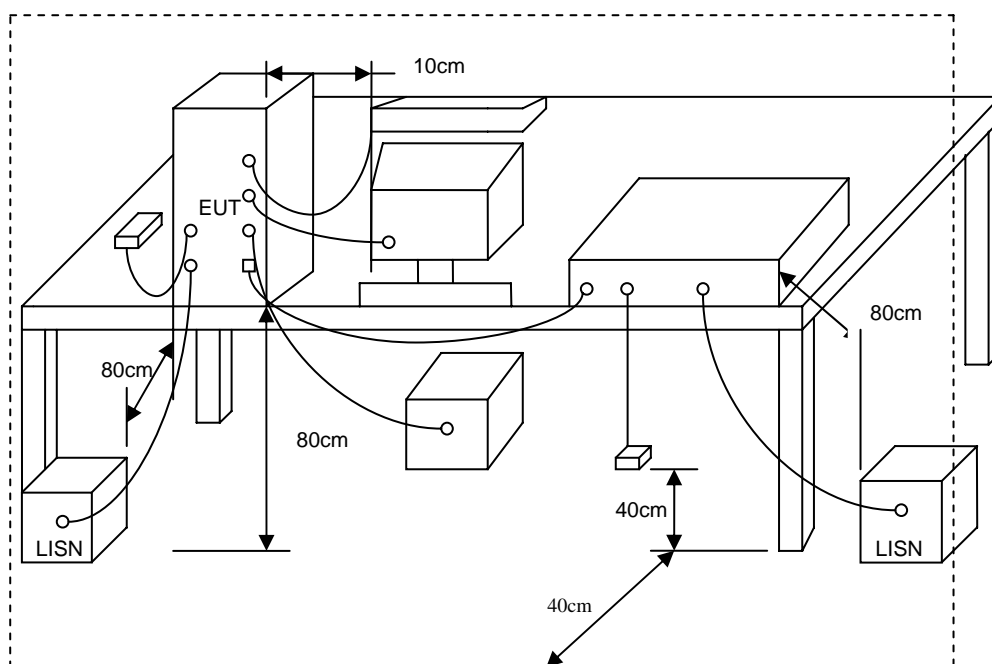
*Decreases with the logarithm of the frequency.

4.2. Test Procedures

- a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- b. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- c. All the support units are connecting to the other LISN.
- d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- e. The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.
- f. Both sides of AC line were checked for maximum conducted interference.
- g. The frequency range from 150 kHz to 30 MHz was searched.
- h. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.



4.3. Typical Test Setup



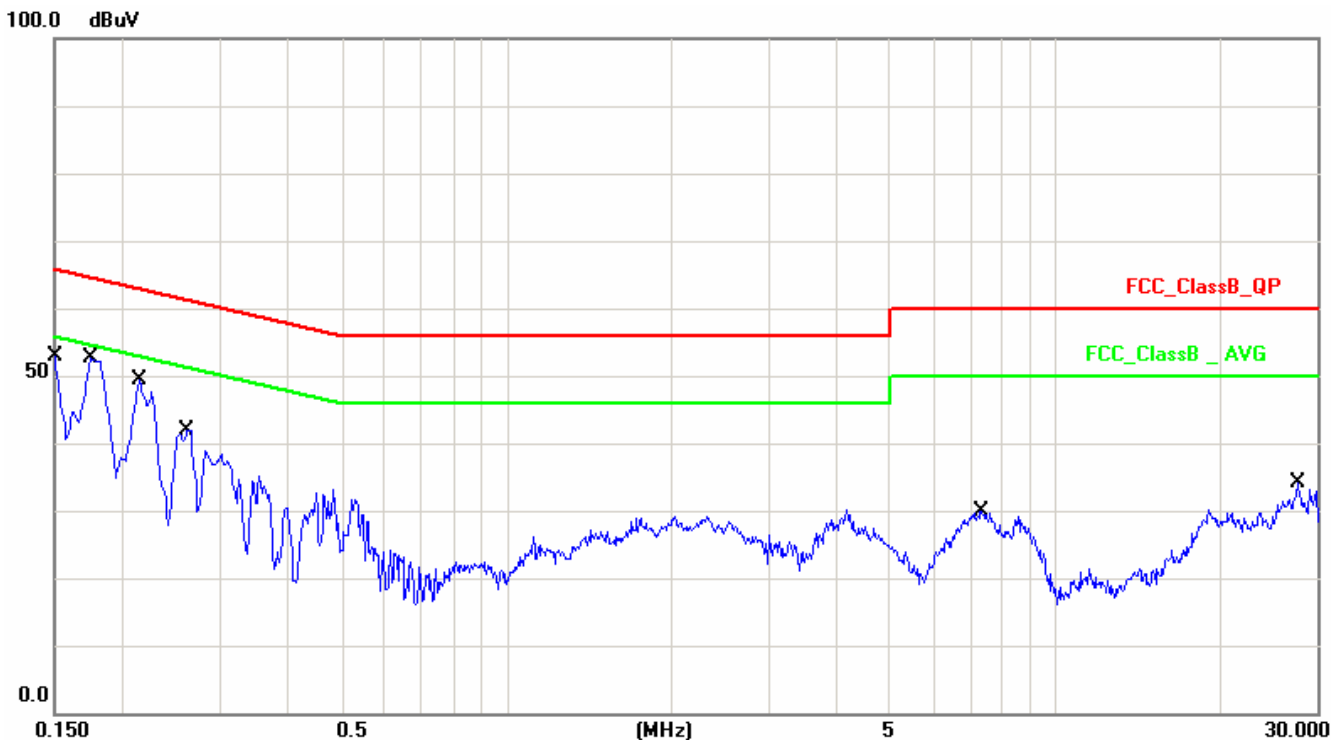
4.4. Measurement equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
Test Receiver	R&S	ESCI	100565	2014.03.24	2015.03.23
AMN	R&S	ESH2-Z5	100182	2014.09.11	2015.09.10
ISN	FCC	FCC-TLISN-T2-02	20379	2014.03.24	2015.03.23
ISN	FCC	FCC-TLISN-T4-02	20380	2014.03.24	2015.03.23
ISN	FCC	FCC-TLISN-T8-02	20381	2014.03.24	2015.03.23
ISN	TESEQ	ISN ST08	30175	2014.03.24	2015.03.23
Current Probe	R&S	EZ-17	100303	2014.04.04	2015.04.03
Passive Voltage Probe	R&S	ESH2-Z3	100026	2014.03.24	2015.03.23
Pulse Limiter	R&S	ESH3-Z2	100529	2014.03.24	2015.03.23
Temperature/Humidity Meter	Zhicheng	ZC1-11	CEP-TH-004	2014.03.31	2015.03.30



4.5. Test Result and Data

Power	: AC 120V/60Hz	Pol/Phase	: LINE
Test Mode	: Normal Link	Temperature	: 25 °C
Memo	:	Humidity	: 60 %

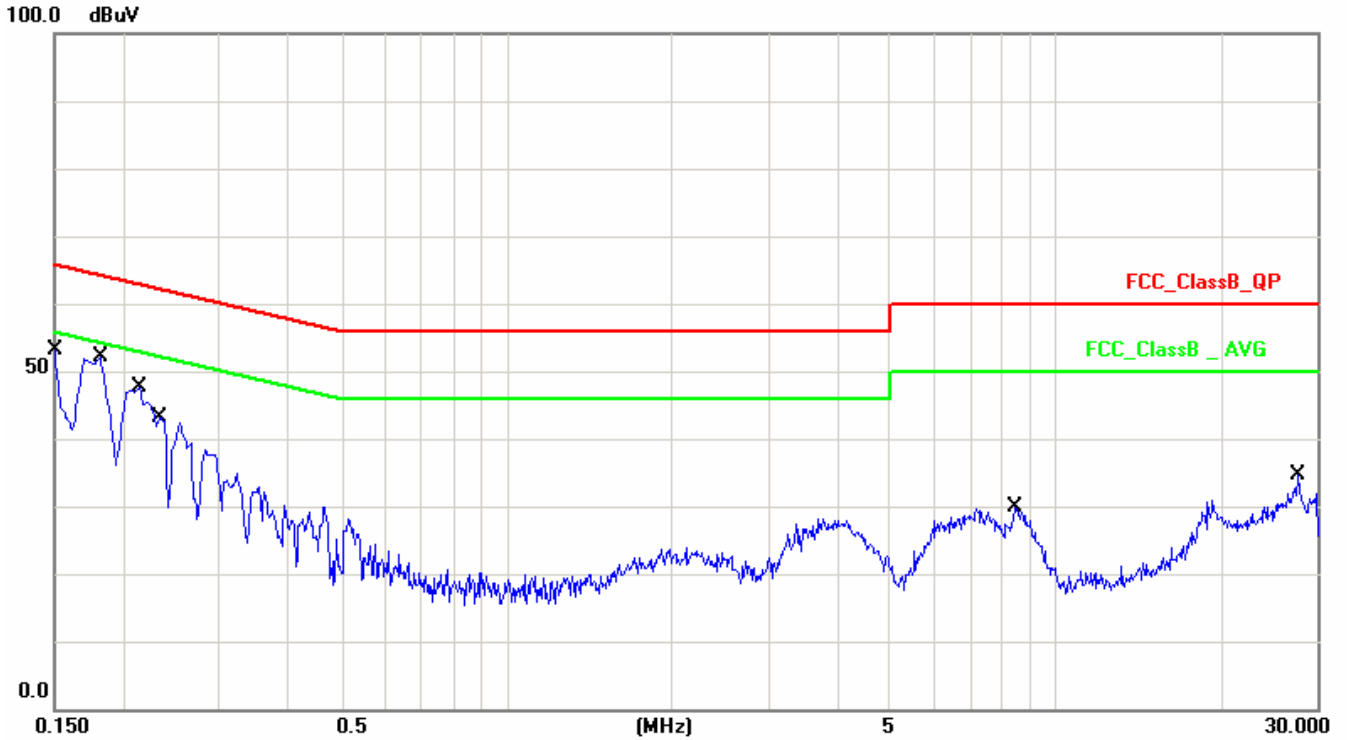


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1500	10.13	26.94	37.07	65.99	-28.92	QP
2	0.1500	10.13	5.58	15.71	55.99	-40.28	AVG
3	0.1740	10.13	42.19	52.32	64.76	-12.44	QP
4	0.1740	10.13	28.29	38.42	54.76	-16.34	AVG
5	0.2140	10.12	35.61	45.73	63.04	-17.31	QP
6	0.2140	10.12	19.36	29.48	53.04	-23.56	AVG
7	0.2620	10.13	29.90	40.03	61.36	-21.33	QP
8	0.2620	10.13	14.61	24.74	51.36	-26.62	AVG
9	7.3540	10.26	16.56	26.82	60.00	-33.18	QP
10	7.3540	10.26	9.40	19.66	50.00	-30.34	AVG
11	27.6620	10.44	16.24	26.68	60.00	-33.32	QP
12	27.6620	10.44	10.31	20.75	50.00	-29.25	AVG

Note: Measurement Level = Reading Level + Correct Factor



Power	: AC 120V/60Hz	Pol/Phase	: NEUTRAL
Test Mode	: Normal Link	Temperature	: 25 °C
Memo	:	Humidity	: 60 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1500	10.13	41.59	51.72	65.99	-14.27	QP
2	0.1500	10.13	23.69	33.82	55.99	-22.17	AVG
3	0.1819	10.12	39.83	49.95	64.39	-14.44	QP
4	0.1819	10.12	24.57	34.69	54.39	-19.70	AVG
5	0.2140	10.12	34.90	45.02	63.04	-18.02	QP
6	0.2140	10.12	18.60	28.72	53.04	-24.32	AVG
7	0.2340	10.12	22.06	32.18	62.30	-30.12	QP
8	0.2340	10.12	0.63	10.75	52.30	-41.55	AVG
9	8.4700	10.26	14.21	24.47	60.00	-35.53	QP
10	8.4700	10.26	7.77	18.03	50.00	-31.97	AVG
11	27.8260	10.44	17.04	27.48	60.00	-32.52	QP
12	27.8260	10.44	10.55	20.99	50.00	-29.01	AVG

Note: Measurement Level = Reading Level + Correct Factor



5. Test of Radiated Emission

5.1. Test Limit

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 (MHz)	Distance Meters	Radiated (μ V / M)	Radiated (dB μ V/ M)
30-88	3	100	40.0
88-216	3	150	43.5
216-960	3	200	46.0
Above 960	3	500	54.0

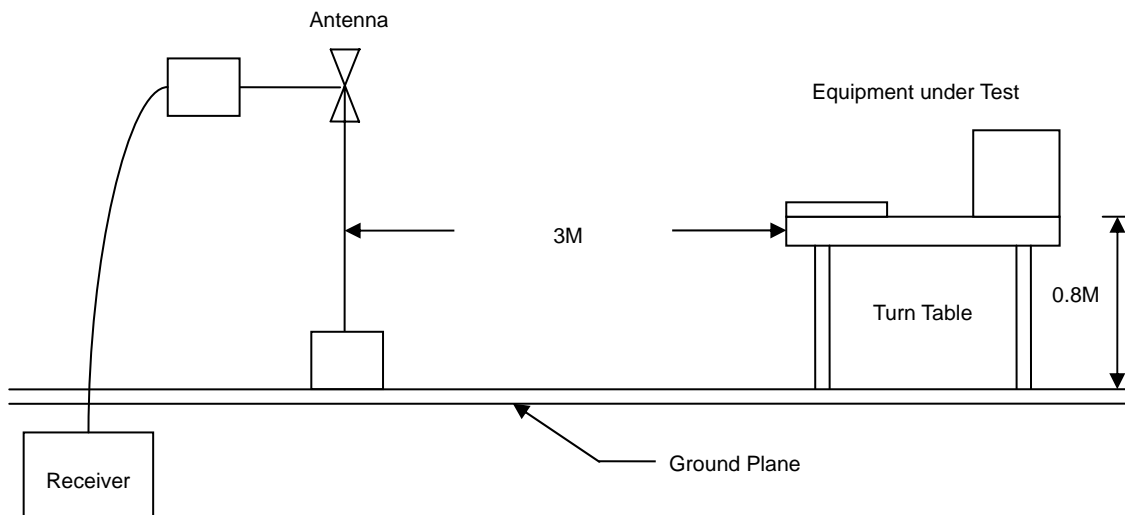
5.2. Test Procedures

- a. The EUT was placed on a rotatable table top 0.8 meter above ground.
- b. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- c. The table was rotated 360 degrees to determine the position of the highest radiation.
- d. The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
- e. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
- f. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.
- h. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

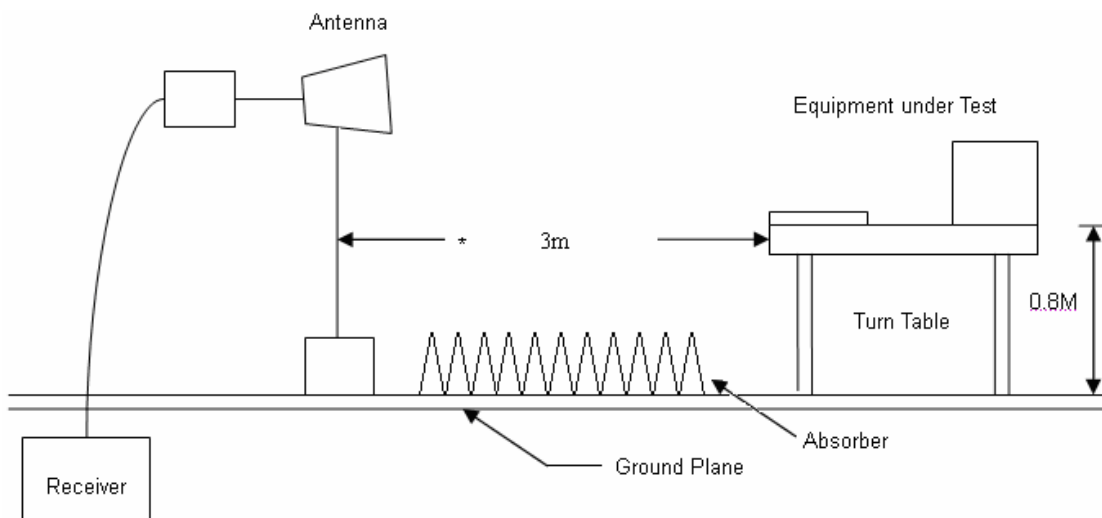


5.3. Typical Test Setup

Below 1GHz Test Setup



Above 1GHz Test Setup





5.4. Measurement Equipment

Instrument	Model No.	Manufacturer	Serial No.	Calibration Date	Valid Date.
EMI Test Receiver	R&S	ESCI	100563	2014.02.10	2015.02.09
H64 Preamplifier	HP	8447F	3113A05582	2014.03.24	2015.03.23
Preamplifier	Agilent	8449B	3008A02342	2014.03.24	2015.03.23
Ultra Broadband Antenna	R&S	HL562	100362	2014.05.24	2015.05.23
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	9120D-619	2014.05.24	2015.05.23
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	9170-348	2014.11.04	2015.11.03
Spectrum Analyzer	R&S	FSP40	100324	2014.03.23	2015.03.24
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-002	2014.03.31	2015.03.30



5.5. Test Result and Data

Transmitter

Under 1GHz

Site : EMC Lab AC 102	Time : 2014-11-21
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Test mode: Normal link	Probe : VERTICAL/ HORIZONTAL
Power : AC 120V/60Hz	

Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Pole (V/H)	Remark
191.0200	-17.97	48.49	30.52	43.50	-12.89	V	QP
235.6400	-18.57	54.27	35.70	46.00	-8.28	V	QP
500.4500	-12.38	46.59	34.21	46.00	-7.37	V	QP
625.5800	-10.19	45.13	34.94	46.00	-13.69	V	QP
750.7100	-10.03	47.12	37.09	46.00	-12.03	V	QP
875.8400	-6.86	44.93	38.07	46.00	-18.64	V	QP
44.5500	-17.03	46.98	29.95	40.00	-10.05	H	QP
107.5999	-19.04	52.59	33.55	43.50	-9.95	H	QP
186.1699	-18.36	57.46	39.10	43.50	-4.40	H	QP
237.5800	-18.30	53.52	35.22	46.00	-10.78	H	QP
625.5800	-10.52	46.63	36.11	46.00	-9.89	H	QP
875.8400	-6.85	41.16	34.31	46.00	-11.69	H	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor



Above 1GHz

Site : EMC Lab AC 102	Time : 2014-12-05
Limit : FCC CLASS B_03M_QP	Margin : 6
Test mode: Transmit by 802.11a channel 36	Probe : VERTICAL/ HORIZONTAL
Power : AC 120V/60Hz	

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Antenna Pole (V/H)
1	10360.00	18.65	32.14	50.79	-23.21	74.00	PEAK	V
2	10360.00	18.65	21.00	39.65	-14.35	54.00	AVG	V
3	15540.00	30.41	27.41	57.82	-16.18	74.00	PEAK	V
4	15540.00	30.41	18.04	48.45	-5.55	54.00	AVG	V
1	10360.00	18.65	32.68	51.33	-22.67	74.00	PEAK	H
2	10360.00	18.65	20.29	38.94	-15.06	54.00	AVG	H
3	15540.00	30.41	29.68	60.09	-13.91	74.00	PEAK	H
4	15540.00	30.41	17.64	48.05	-5.95	54.00	AVG	H

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor



Site : EMC Lab AC 102	Time : 2014-12-05
Limit : FCC CLASS B_03M_QP	Margin : 6
Test mode: Transmit by 802.11a channel 40	Probe : VERTICAL/ HORIZONTAL
Power : AC 120V/60Hz	

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Antenna Pole (V/H)
1	10400.00	18.75	32.48	51.23	-22.77	74.00	PEAK	V
2	10400.00	18.75	21.61	40.36	-13.64	54.00	AVG	V
3	15600.00	30.81	27.44	58.25	-15.75	74.00	PEAK	V
4	15600.00	30.81	17.68	48.49	-5.51	54.00	AVG	V
1	10400.00	18.75	32.48	51.23	-22.77	74.00	PEAK	H
2	10400.00	18.75	22.64	41.39	-12.61	54.00	AVG	H
3	15600.00	30.81	29.74	60.55	-13.45	74.00	PEAK	H
4	15600.00	30.81	18.57	49.38	-4.62	54.00	AVG	H

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor



Site : EMC Lab AC 102	Time : 2014-12-05
Limit : FCC CLASS B_03M_QP	Margin : 6
Test mode: Transmit by 802.11a channel 48	Probe : VERTICAL/ HORIZONTAL
Power : AC 120V/60Hz	

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Antenna Pole (V/H)
1	10480.00	18.94	33.56	52.50	-21.50	74.00	PEAK	V
2	10480.00	18.94	20.25	39.19	-14.81	54.00	AVG	V
3	15720.00	31.62	27.48	59.10	-14.90	74.00	PEAK	V
4	15720.00	31.62	18.67	50.29	-3.71	54.00	AVG	V
1	10480.00	18.94	33.68	52.62	-21.38	74.00	PEAK	H
2	10480.00	18.94	20.45	39.39	-14.61	54.00	AVG	H
3	15720.00	31.62	27.85	59.47	-14.53	74.00	PEAK	H
4	15720.00	31.62	16.58	48.20	-5.80	54.00	AVG	H

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor



Site : EMC Lab AC 102	Time : 2014-12-05
Limit : FCC CLASS B_03M_QP	Margin : 6
Test mode: Transmit by 802.11n(HT-20) channel 36	Probe : VERTICAL/ HORIZONTAL
Power : AC 120V/60Hz	

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Antenna Pole (V/H)
1	10360.00	18.65	34.74	53.39	-20.61	74.00	PEAK	V
2	10360.00	18.65	23.69	42.34	-11.66	54.00	AVG	V
3	15540.00	30.41	30.14	60.55	-13.45	74.00	PEAK	V
4	15540.00	30.41	18.52	48.93	-5.07	54.00	AVG	V
1	10360.00	18.65	34.68	53.33	-20.67	74.00	PEAK	H
2	10360.00	18.65	24.65	43.30	-10.70	54.00	AVG	H
3	15540.00	30.41	29.65	60.06	-13.94	74.00	PEAK	H
4	15540.00	30.41	18.52	48.93	-5.07	54.00	AVG	H

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor



Site : EMC Lab AC 102	Time : 2014-12-05
Limit : FCC CLASS B_03M_QP	Margin : 6
Test mode: Transmit by 802.11n(HT-20) channel 40	Probe : VERTICAL/ HORIZONTAL
Power : AC 120V/60Hz	

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Antenna Pole (V/H)
1	10400.00	18.75	34.28	53.03	-20.97	74.00	PEAK	V
2	10400.00	18.75	23.38	42.13	-11.87	54.00	AVG	V
3	15600.00	30.81	28.55	59.36	-14.64	74.00	PEAK	V
4	15600.00	30.81	18.65	49.46	-4.54	54.00	AVG	V
1	10400.00	18.75	34.12	52.87	-21.13	74.00	PEAK	H
2	10400.00	18.75	23.39	42.14	-11.86	54.00	AVG	H
3	15600.00	30.81	29.56	60.37	-13.63	74.00	PEAK	H
4	15600.00	30.81	18.57	49.38	-4.62	54.00	AVG	H

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor



Site : EMC Lab AC 102	Time : 2014-12-05
Limit : FCC CLASS B_03M_QP	Margin : 6
Test mode: Transmit by 802.11n(HT-20) channel 48	Probe : VERTICAL/ HORIZONTAL
Power : AC 120V/60Hz	

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Antenna Pole (V/H)
1	10480.00	18.94	33.28	52.22	-21.78	74.00	PEAK	V
2	10480.00	18.94	22.69	41.63	-12.37	54.00	AVG	V
3	15720.00	31.62	28.85	60.47	-13.53	74.00	PEAK	V
4	15720.00	31.62	18.63	50.25	-3.75	54.00	AVG	V
1	10480.00	18.94	34.32	53.26	-20.74	74.00	PEAK	H
2	10480.00	18.94	23.42	42.36	-11.64	54.00	AVG	H
3	15720.00	31.62	27.84	59.46	-14.54	74.00	PEAK	H
4	15720.00	31.62	17.65	49.27	-4.73	54.00	AVG	H

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor



Site : EMC Lab AC 102	Time : 2014-12-05
Limit : FCC CLASS B_03M_QP	Margin : 6
Test mode: Transmit by 802.11n(HT-40) channel 38	Probe : VERTICAL/ HORIZONTAL
Power : AC 120V/60Hz	

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Antenna Pole (V/H)
1	10380.00	18.70	34.08	52.78	-21.22	74.00	PEAK	V
2	10380.00	18.70	23.31	42.01	-11.99	54.00	AVG	V
3	15570.00	30.61	28.45	59.06	-14.94	74.00	PEAK	V
4	15570.00	30.61	18.22	48.83	-5.17	54.00	AVG	V
1	10380.00	18.70	34.52	53.22	-20.78	74.00	PEAK	H
2	10380.00	18.70	23.41	42.11	-11.89	54.00	AVG	H
3	15570.00	30.61	29.42	60.03	-13.97	74.00	PEAK	H
4	15570.00	30.61	18.52	49.13	-4.87	54.00	AVG	H

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor



Site : EMC Lab AC 102	Time : 2014-12-05
Limit : FCC CLASS B_03M_QP	Margin : 6
Test mode: Transmit by 802.11n(HT-40) channel 46	Probe : VERTICAL/ HORIZONTAL
Power : AC 120V/60Hz	

	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Antenna Pole (V/H)
1	10460.00	18.89	35.57	54.46	-19.54	74.00	PEAK	V
2	10460.00	18.89	23.77	42.66	-11.34	54.00	AVG	V
3	15690.00	31.41	28.63	60.04	-13.96	74.00	PEAK	V
4	15690.00	31.41	17.05	48.46	-5.54	54.00	AVG	V
1	10460.00	18.89	35.58	54.47	-19.53	74.00	PEAK	H
2	10460.00	18.89	23.28	42.17	-11.83	54.00	AVG	H
3	15690.00	31.41	26.84	58.25	-15.75	74.00	PEAK	H
4	15690.00	31.41	18.08	49.49	-4.51	54.00	AVG	H

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor



6. 26dB Bandwidth Measurement Data

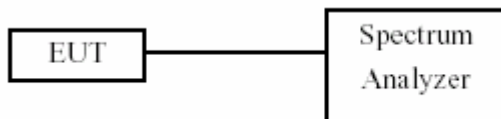
6.1. Test Limit

According to §15.303(c), for purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier. Compliance with the emissions limits is based on the use of measurement instrumentation employing a peak detector function with an instrument resolutions bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement.

6.2. Test Procedures

1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low-loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW > 1%EBW, VBW > RBW, Span >26dB bandwidth, and Sweep = auto.
4. Mark the peak frequency and -26dB (upper and lower) frequency.
5. Repeat until all the rest channels were investigated.

6.3. Test Setup Layout



6.4. Measurement equipment

Instrument/Ancillary	Model No.	Manufacturer	Serial No.	Calibration Date	Valid Date
Spectrum Analyzer	N9010A	Agilent	MY51350515	2014.09.29	2015.09.28



6.5. Test Result and Data

Test Item	Occupied Bandwidth
Test Mode	Transmit by 802.11a
Test Date	2014-12-10

Channel	Frequency (MHz)	-26dB Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	24.37	23.87
40	5200	24.14	23.59
48	5240	24.23	24.10

Test Item	Occupied Bandwidth
Test Mode	Transmit by 802.11n (HT-20)
Test Date	2014-12-10

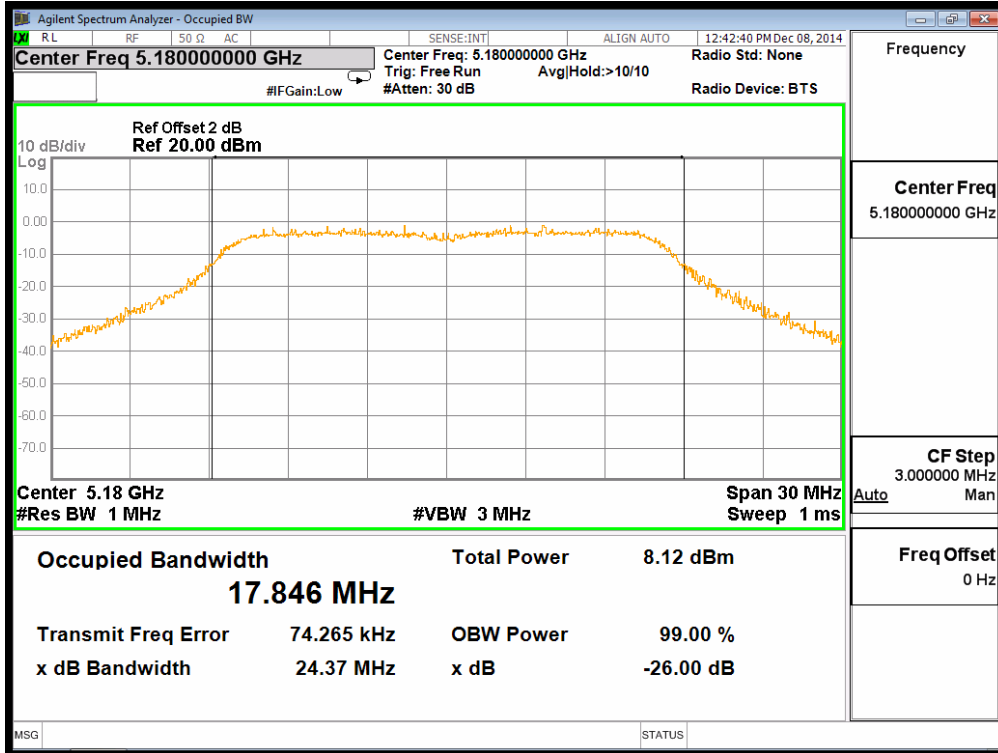
Channel	Frequency (MHz)	-26dB Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	24.07	24.40
40	5200	23.71	24.39
48	5240	23.62	23.34

Test Item	Occupied Bandwidth
Test Mode	Transmit by 802.11n (HT-40)
Test Date	2014-12-10

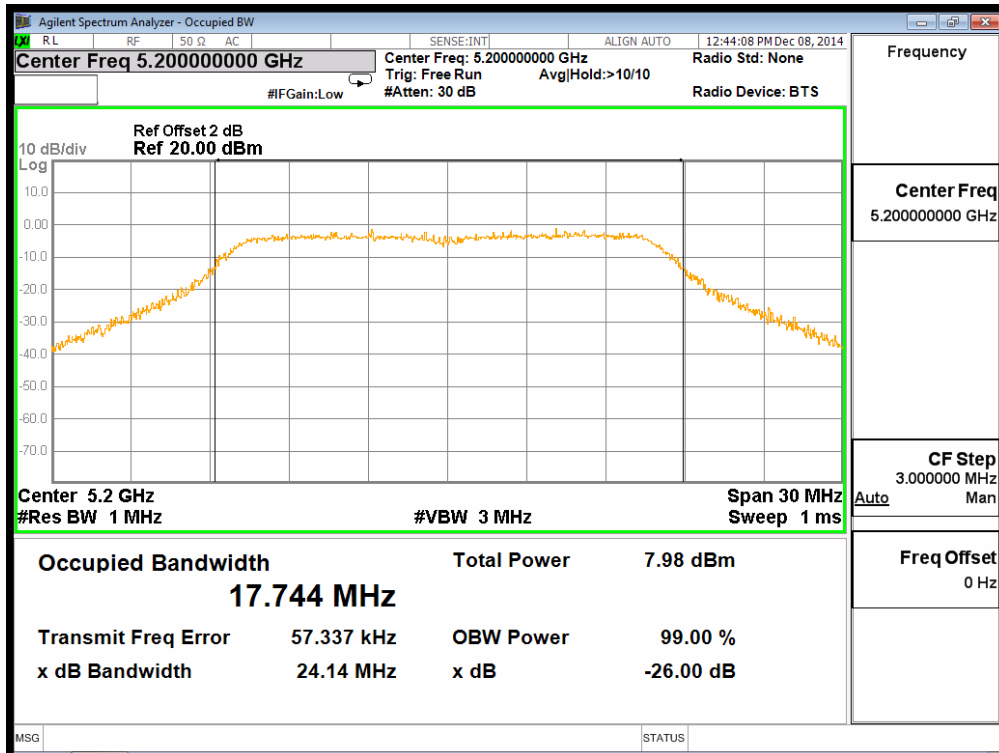
Channel	Frequency (MHz)	-26dB Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	43.36	43.47
46	5230	43.43	44.53



802.11a Chain 0
Channel: 36

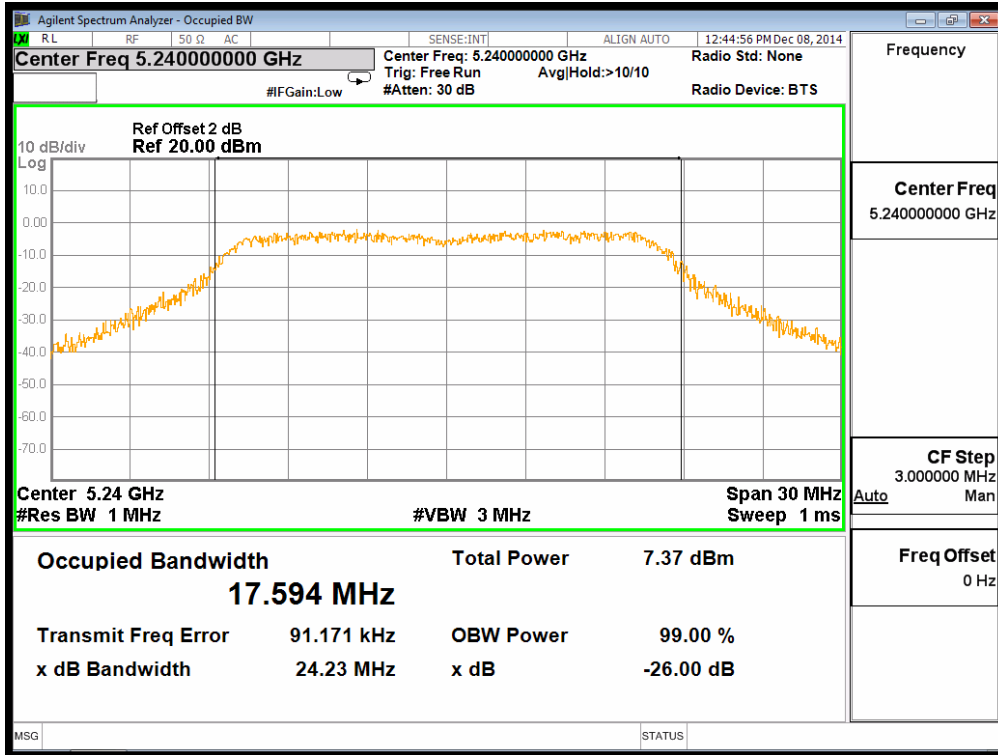


Channel: 40



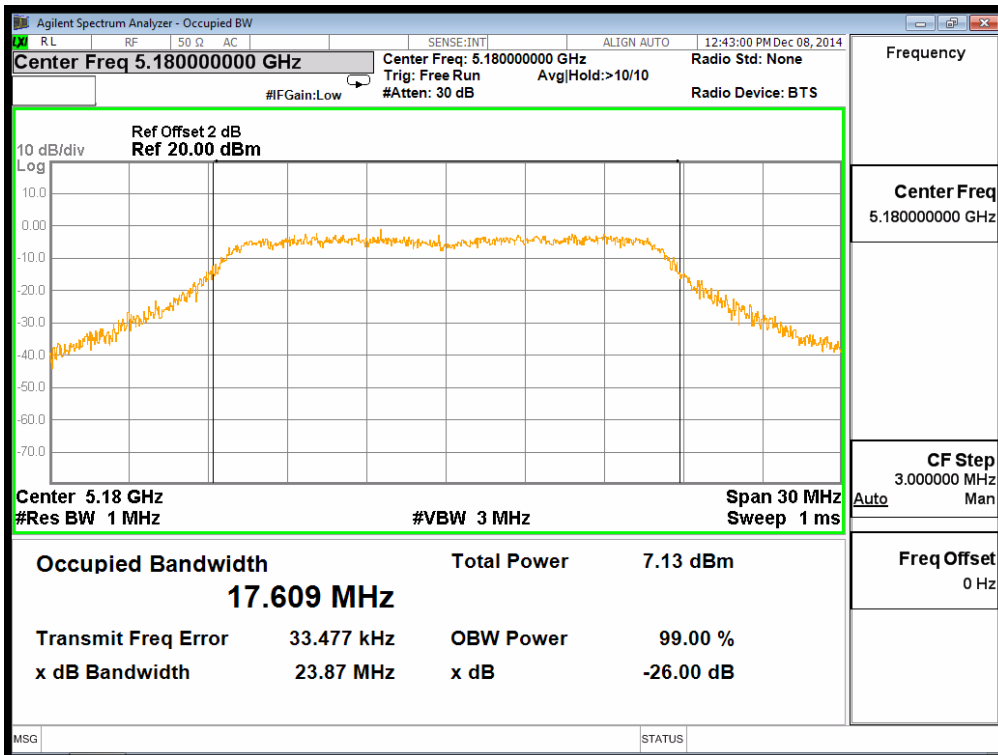


Channel: 48



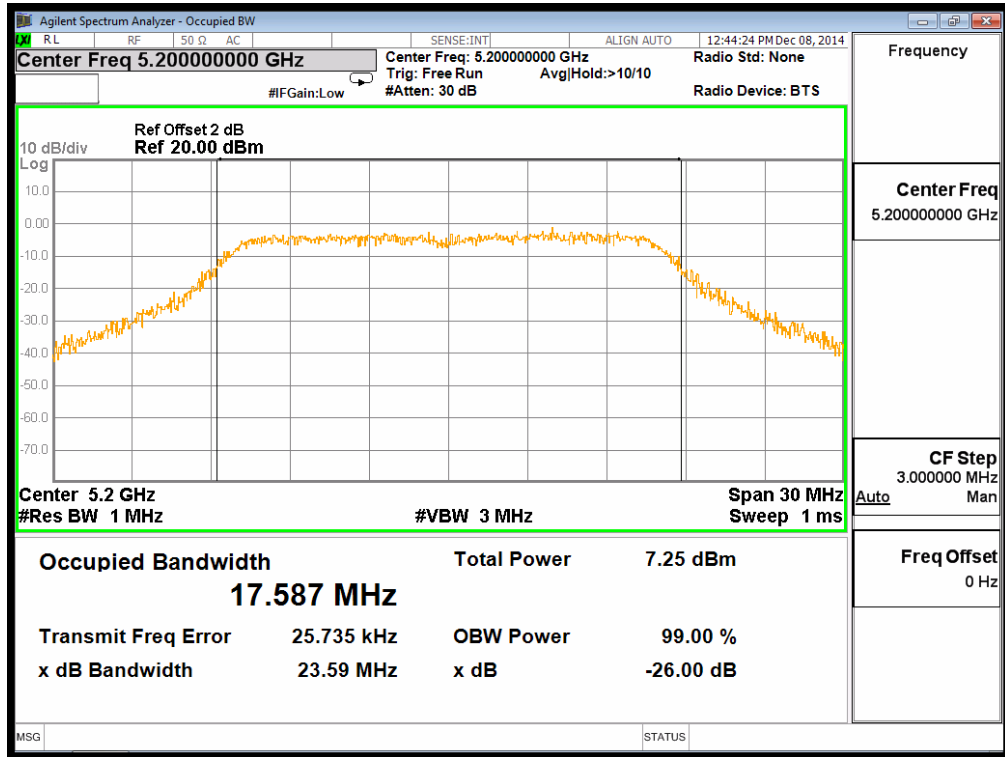
802.11a Chain 1

Channel: 36

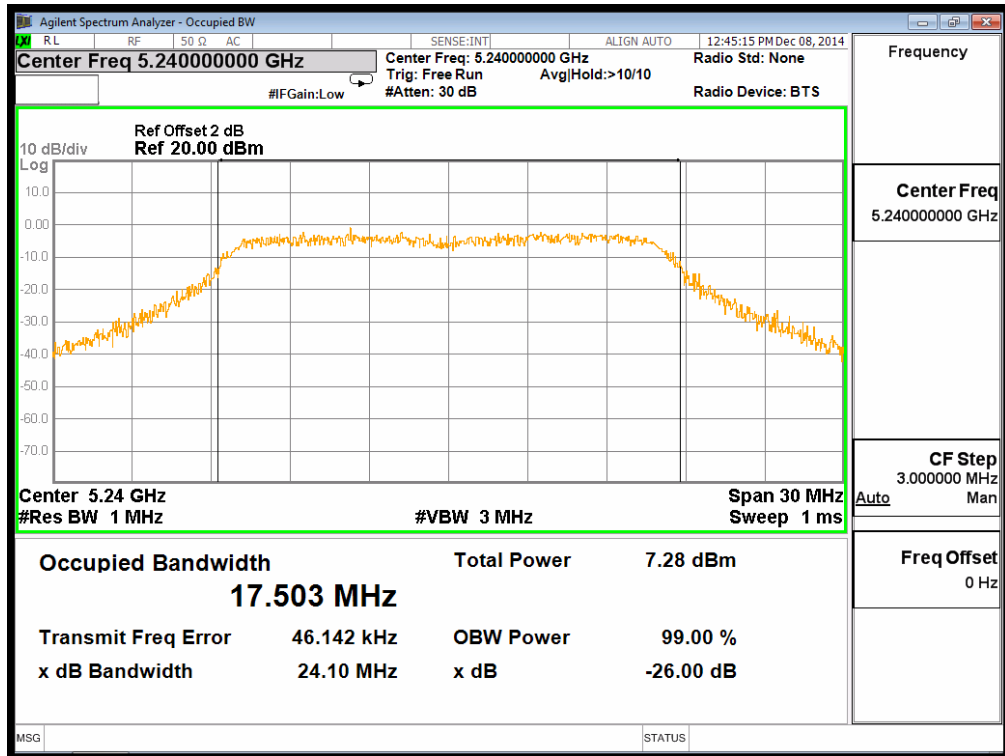




Channel: 40

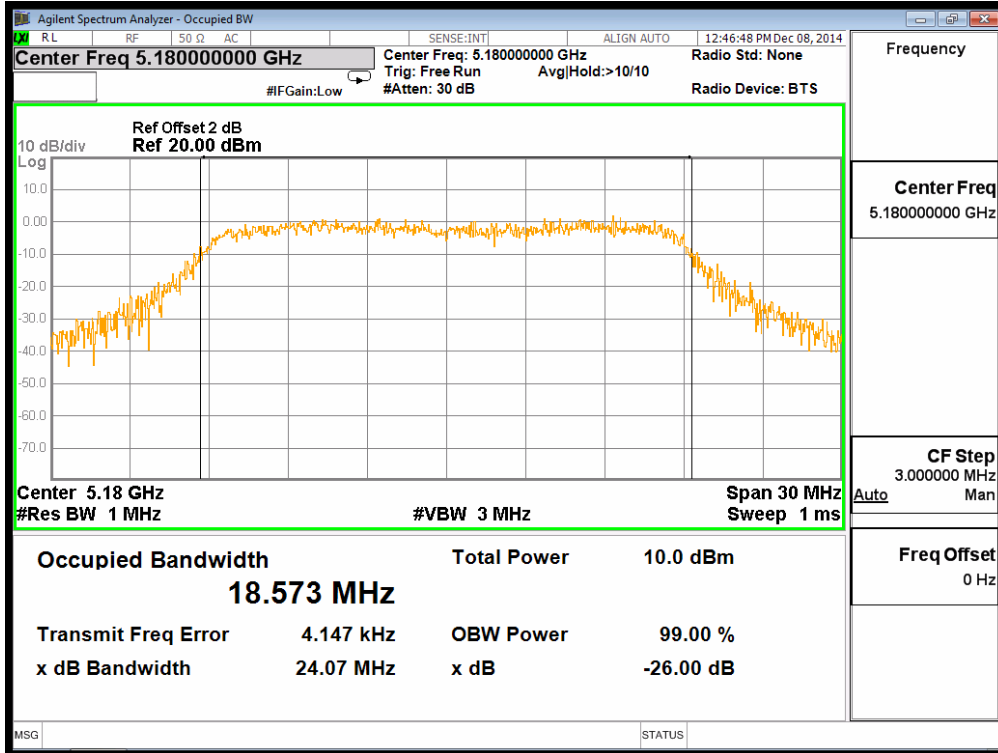


Channel: 48

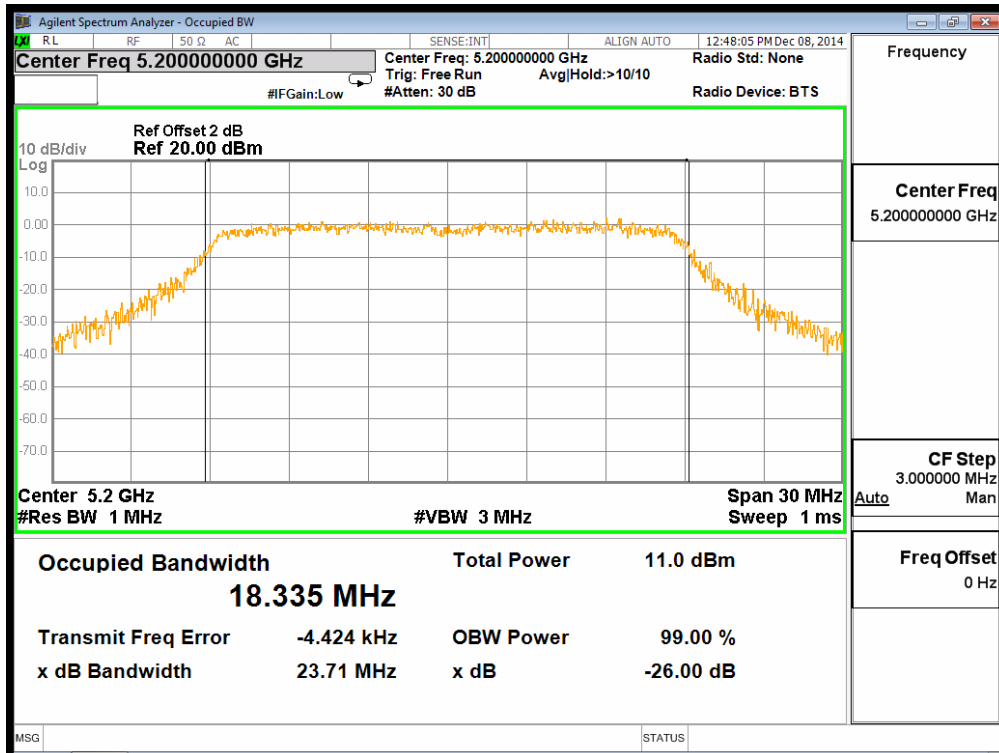




802.11n (HT-20) Chain 0
Channel: 36

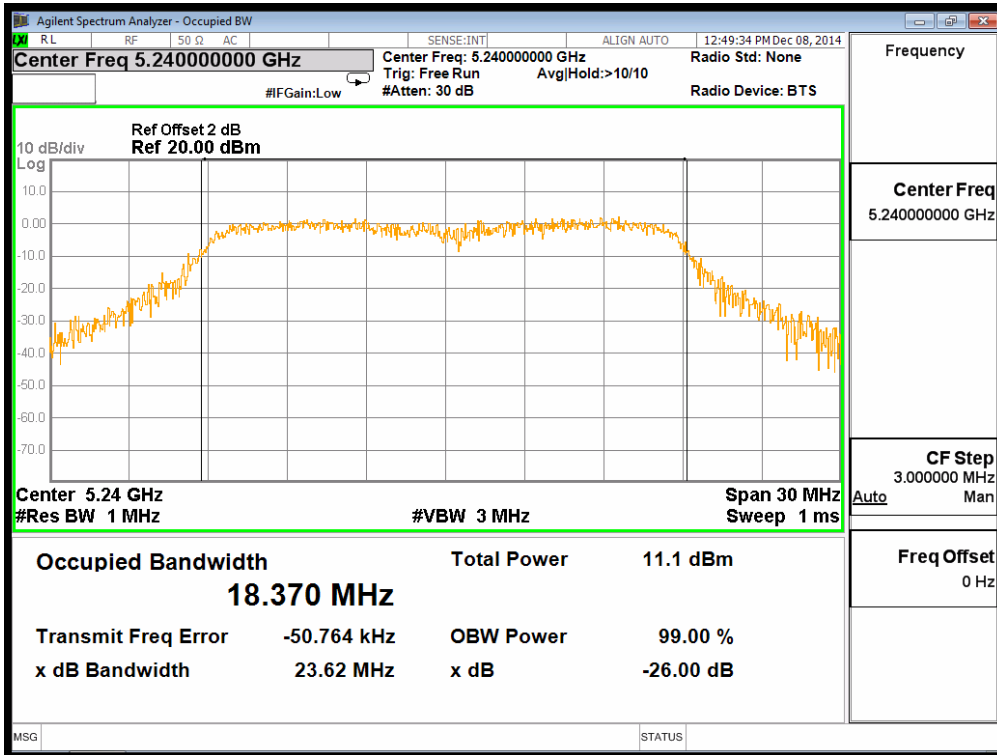


Channel: 40

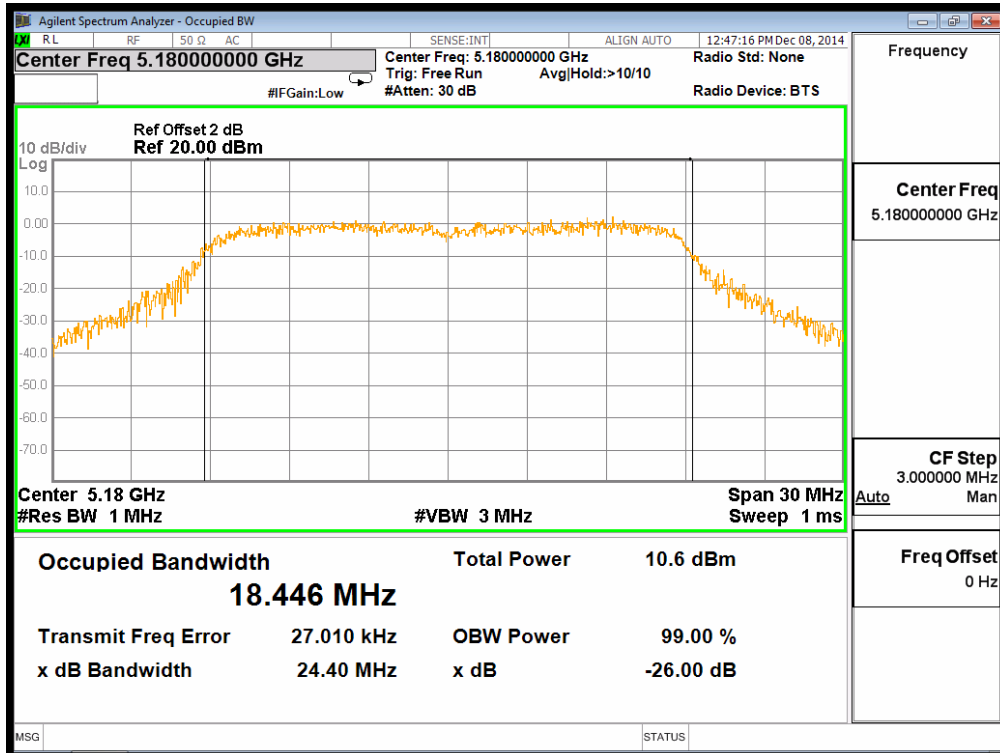




Channel: 48

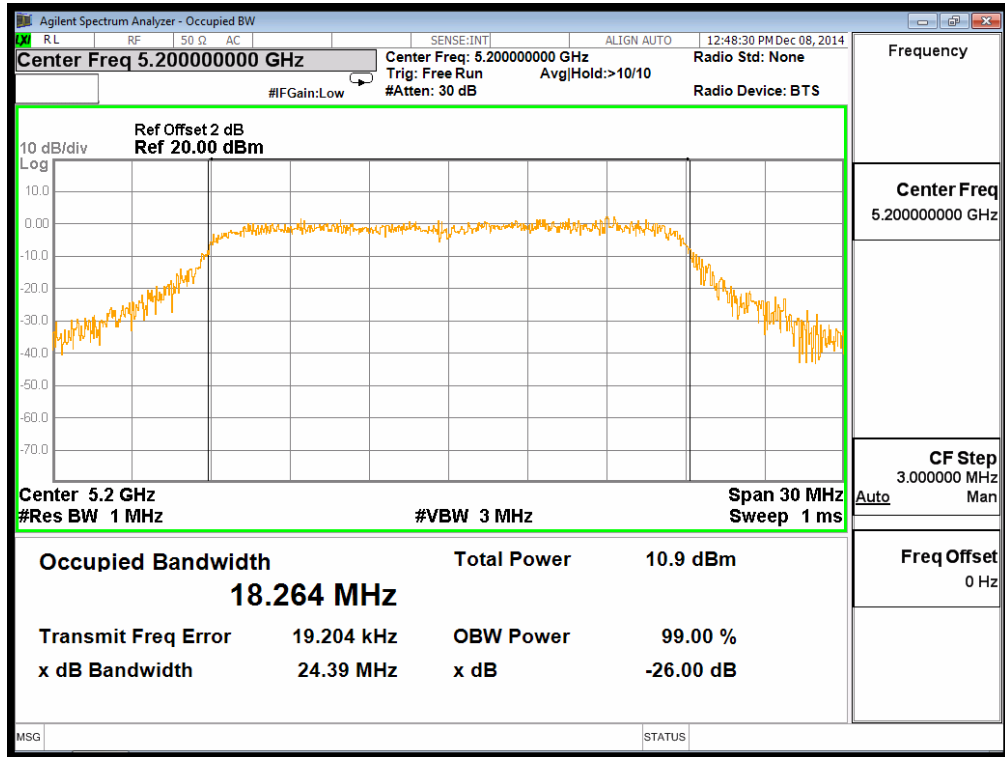


802.11n (HT-20) Chain 1
 Channel: 36

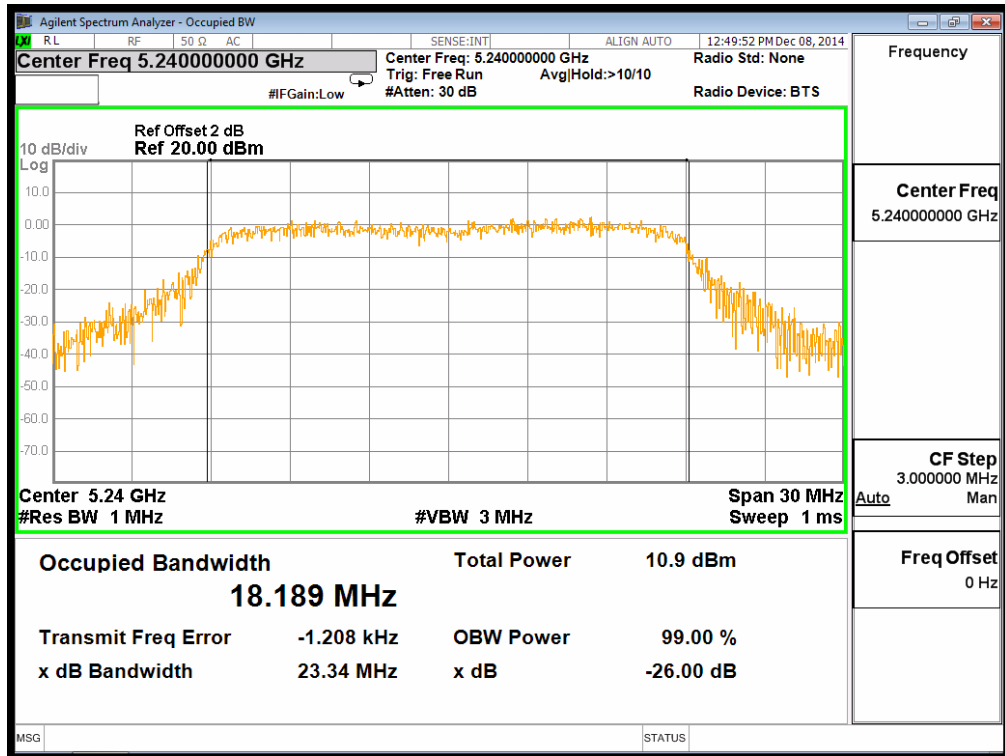




Channel: 40

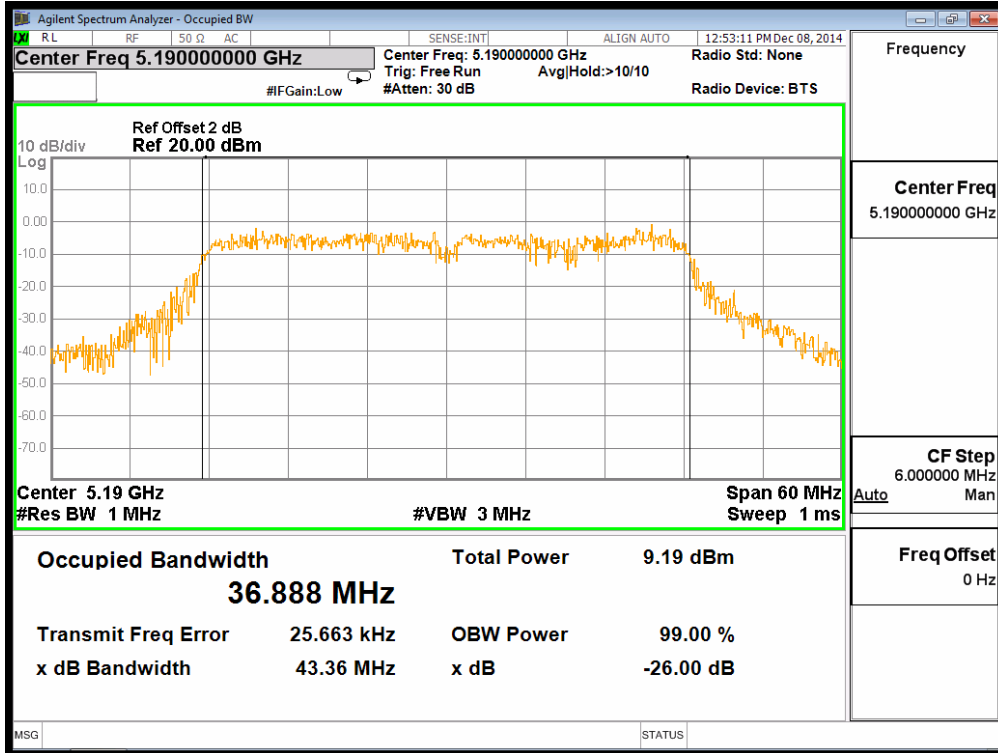


Channel: 48

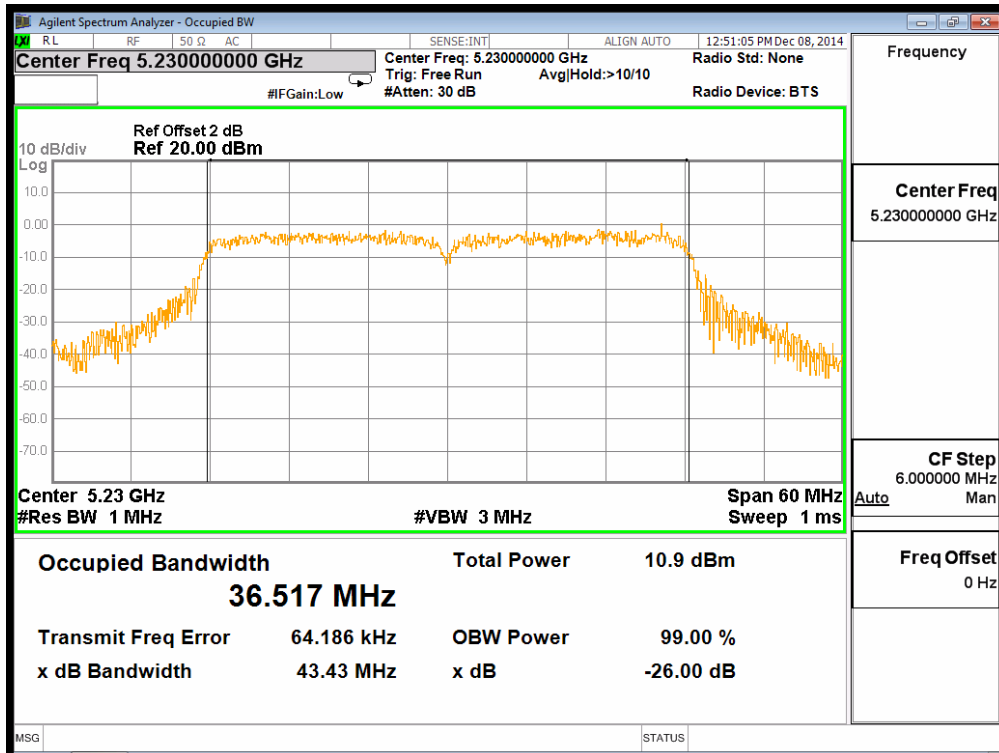




802.11n (HT-40) Chain 0
Channel: 38

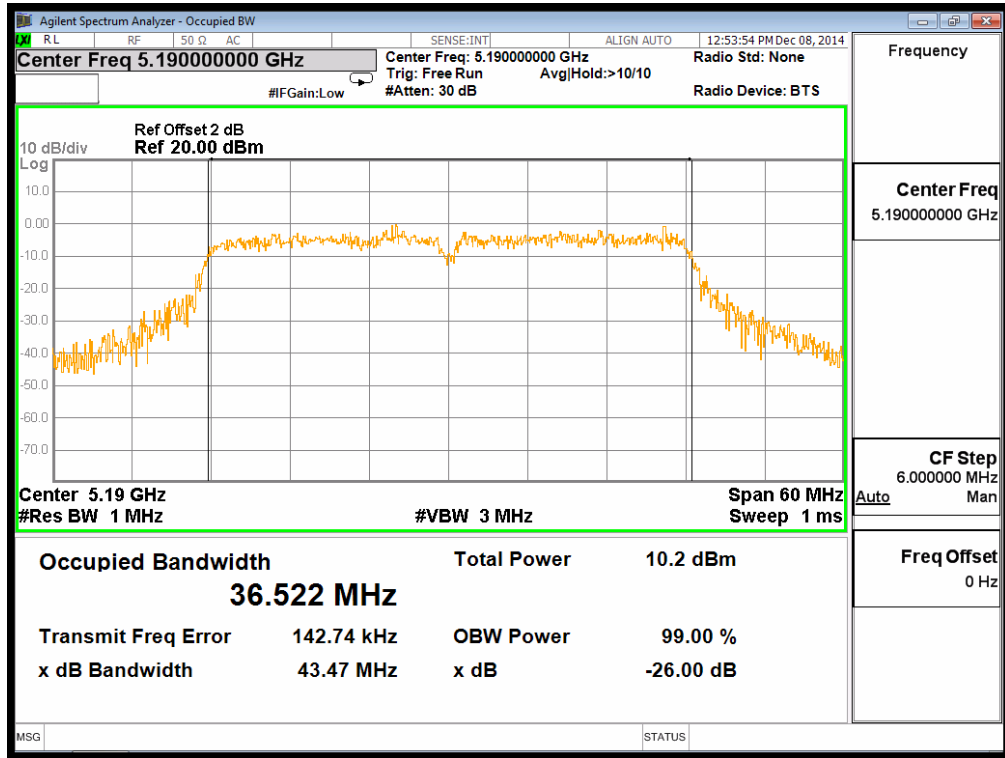


Channel: 46

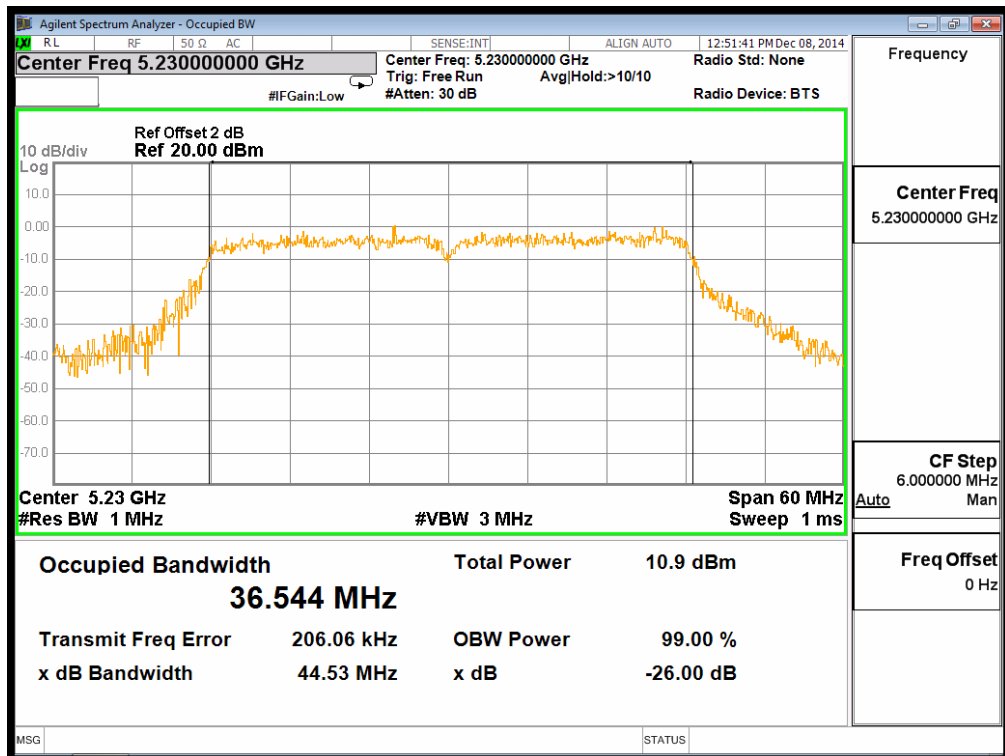




802.11n (HT-40) Chain 1
Channel: 38



Channel: 46





7. Band Edges Measurement

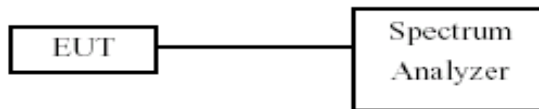
7.1. Test Limit

For transmitters operating in the 5.15-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz (68.3dBuV/m at 3m).

7.2. Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above the ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
(a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
(b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
5. Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.

7.3. Test Setup Layout



7.4. Measurement Equipment

Instrument/Ancillary	Model No.	Manufacturer	Serial No.	Calibration Date	Valid Date
Spectrum Analyzer	N9010A	Agilent	MY51350515	2014.09.29	2015.09.28



7.5. Restrict Band Emission Measurement Data

Test Date : 2014-12-05
 Temperature : 24 °C
 Humidity : 52 %
 Atmospheric Pressure : 1023 hPa

Fundamental Frequency: 802.11a 5180 MHz

VERTICAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	5150.000	7.030	50.265	57.295	-16.705	74.000	PEAK
2	5150.000	7.030	37.552	44.582	-9.418	54.000	AVG

HORIZONTAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	5150.000	7.030	50.127	57.157	-16.843	74.000	PEAK
2	5150.000	7.030	36.201	43.231	-10.769	54.000	AVG

Fundamental Frequency: 802.11a 5240 MHz

VERTICAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	5350.000	7.260	50.128	57.388	-16.612	74.000	PEAK
2	5350.000	7.260	36.664	43.924	-10.076	54.000	AVG

HORIZONTAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	5350.000	7.260	48.685	55.945	-18.055	74.000	PEAK
2	5350.000	7.260	36.210	43.470	-10.530	54.000	AVG



Fundamental Frequency: 802.11n (HT-20) 5180 MHz

VERTICAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	5150.000	7.030	50.236	57.266	-16.734	74.000	PEAK
2	5150.000	7.030	36.641	43.671	-10.329	54.000	AVG

HORIZONTAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	5150.000	7.030	50.251	57.281	-16.719	74.000	PEAK
2	5150.000	7.030	36.687	43.717	-10.283	54.000	AVG

Fundamental Frequency: 802.11n (HT-20) 5240 MHz

VERTICAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	5350.000	7.260	50.358	57.618	-16.382	74.000	PEAK
2	5350.000	7.260	36.637	43.897	-10.103	54.000	AVG

HORIZONTAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	5350.000	7.260	48.582	55.842	-18.158	74.000	PEAK
2	5350.000	7.260	36.634	43.894	-10.106	54.000	AVG



Fundamental Frequency: 802.11n (HT-40) 5190 MHz

VERTICAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	5150.000	7.030	52.148	59.178	-14.822	74.000	PEAK
2	5150.000	7.030	36.964	43.994	-10.006	54.000	AVG

HORIZONTAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	5150.000	7.030	50.225	57.255	-16.745	74.000	PEAK
2	5150.000	7.030	35.148	42.178	-11.822	54.000	AVG

Fundamental Frequency: 802.11n (HT-40) 5230 MHz

VERTICAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	5350.000	7.260	50.296	57.556	-16.444	74.000	PEAK
2	5350.000	7.260	35.487	42.747	-11.253	54.000	AVG

HORIZONTAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	5350.000	7.260	48.578	55.838	-18.162	74.000	PEAK
2	5350.000	7.260	35.254	42.514	-11.486	54.000	AVG



8. Maximum Peak Output Power

8.1. Test Limit

Test Item	Frequency Range (MHz)	Limit	Result
Conducted Output Power	5150-5250	Not exceed the lesser of 50 mW (17dBm) or 4dBm +10log B	Pass

Note:

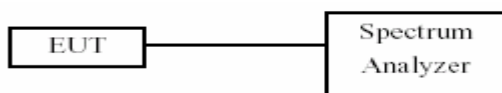
For the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10log B, where B is the 26 dB emission bandwidth in MHz.

If transmitting antennas of directional gain greater than 6dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

8.2. Test Procedures

The antenna port (RF output) of the EUT was connected to the input (RF input) of Spectrum. Power was read directly from the meter and cable loss connection was added to the reading to obtain power at the EUT antenna terminal. The EUT Output Power was set to maximum to produce the worse case test result.

8.3. Test Setup Layout



8.4. Measurement equipment

Instrument/Ancillary	Model No.	Manufacturer	Serial No.	Calibration Date	Valid Date
Spectrum Analyzer	N9010A	Agilent	MY51350515	2014.09.29	2015.09.28



8.5. Test Result and Data

Test Date: Dec. 10, 2014
Atmospheric pressure: 1020 hPa
Test Mode: Transmit by 802.11a

Temperature: 25°C
Humidity: 46%

Channel No.	Frequency (MHz)	Maximum Conducted Output Power (dBm)			Required Limit (dBm)
		Chain 0	Chain 1	Total Power	
36	5180	14.36	11.66	16.23	17.00
40	5200	14.30	11.37	16.09	17.00
48	5240	14.38	11.21	16.09	17.00

Test Date: Dec. 10, 2014
Atmospheric pressure: 1020 hPa
Test Mode: Transmit by 802.11n (HT-20)

Temperature: 25°C
Humidity: 46%

Channel No.	Frequency (MHz)	Maximum Conducted Output Power (dBm)			Required Limit (dBm)
		Chain 0	Chain 1	Total Power	
36	5180	14.91	11.05	16.41	17.00
40	5200	14.60	11.24	16.25	17.00
48	5240	14.79	11.08	16.33	17.00



Test Date: Dec. 10, 2014

Temperature: 25°C

Atmospheric pressure: 1020 hPa

Humidity: 46%

Test Mode: Transmit by 802.11n (HT-40)

Channel No.	Frequency (MHz)	Maximum Conducted Output Power (dBm)			Required Limit (dBm)
		Chain 0	Chain 1	Total Power	
38	5190	14.28	11.45	16.10	17.00
46	5230	15.01	11.24	16.53	17.00



9. Peak Power Spectral Density

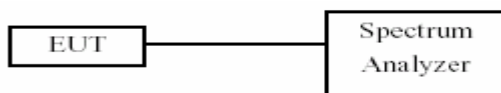
9.1. Test Limit

For the band 5.15-5.25 GHz, the peak power spectral density shall not exceed 4dBm in any 1MHz band.

9.2. Test Procedures

- 1.The antenna port (RF output) of the EUT was connected to the input (RF input) of Spectrum.
Power was read directly from the meter and cable loss connection was added to the reading to obtain power at the EUT antenna terminal. The EUT Output Power was set to maximum to produce the worse case test result.
2. Set the spectrum analyzer as RBW = 1MHz, VBW = 3MHz, Span = Sweep= AUTO
3. Record the max. reading.
4. Repeat the above procedure until the measurements for all frequencies are completed

9.3. Test Setup Layout



9.4. Measurement equipment

Instrument/Ancillary	Model No.	Manufacturer	Serial No.	Calibration Date	Valid Date
Spectrum Analyzer	FSP40	R&S	100324	2013.03.10	2014.03.09



9.5. Test Result and Data

Test Date : Dec. 10, 2014 Temperature : 20°C
Atmospheric pressure : 1020 hPa Humidity : 50%

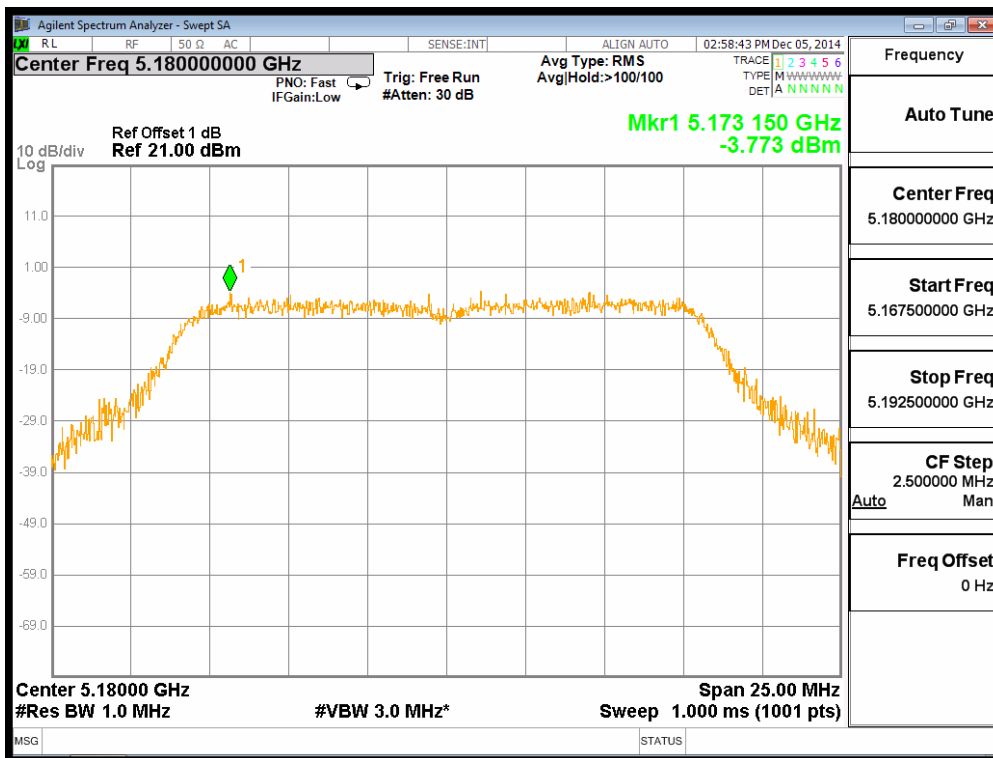
Modulation Type	Frequency (MHz)	Maximum Power Density of 3 kHz Bandwidth (dBm)		
		Chain 0	Chain 1	Summation
IEEE 802.11a	5180	-0.773	-1.61	1.84
	5200	-1.123	-1.747	1.59
	5240	-0.661	-0.669	2.35
IEEE 802.11n HT20	5180	0.116	-0.012	3.06
	5200	-0.162	0.693	3.30
	5240	0.416	0.434	3.44
IEEE 802.11n HT40	5190	-1.619	-2.013	1.20
	5230	-0.773	-1.61	1.17



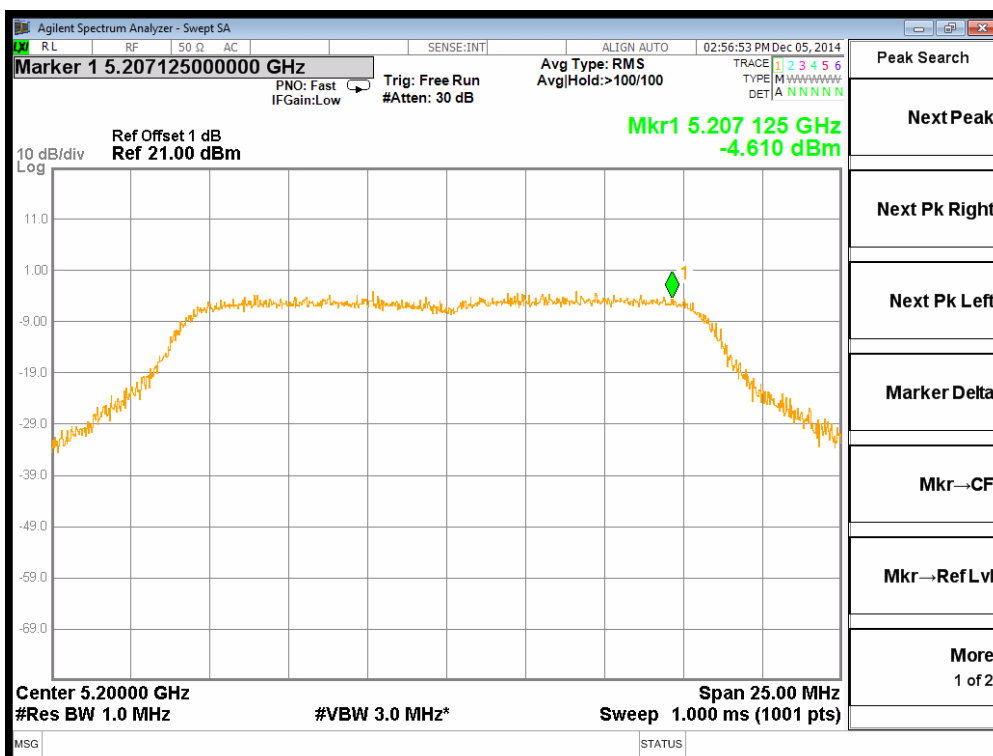
Test Plot

For 802.11a Chain 0

CH 36

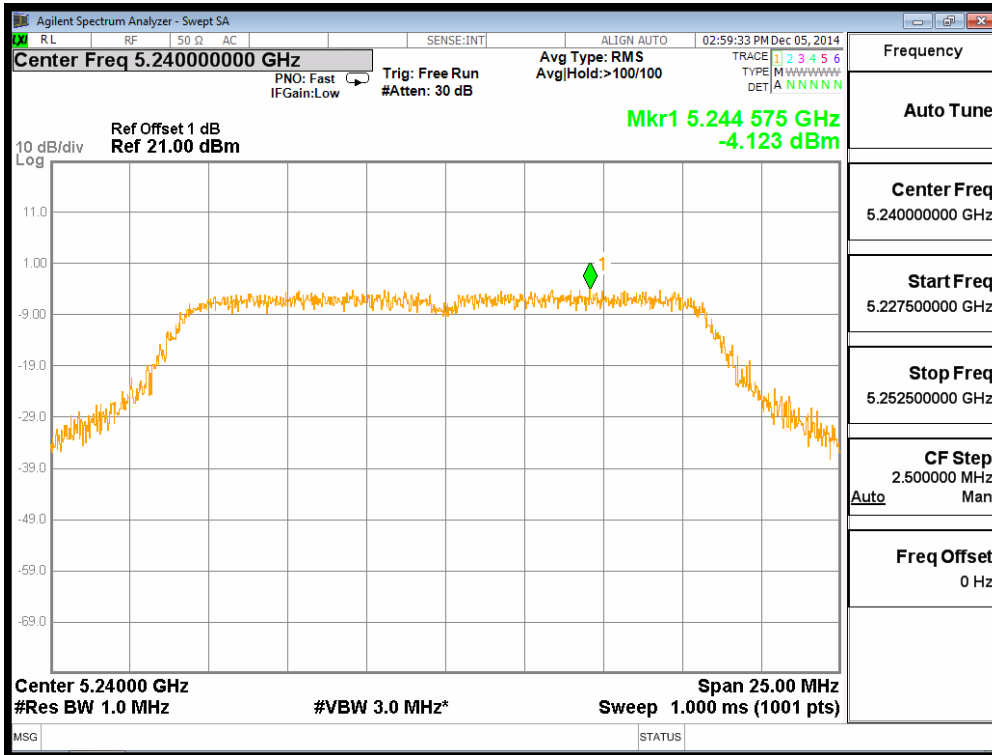


CH 40



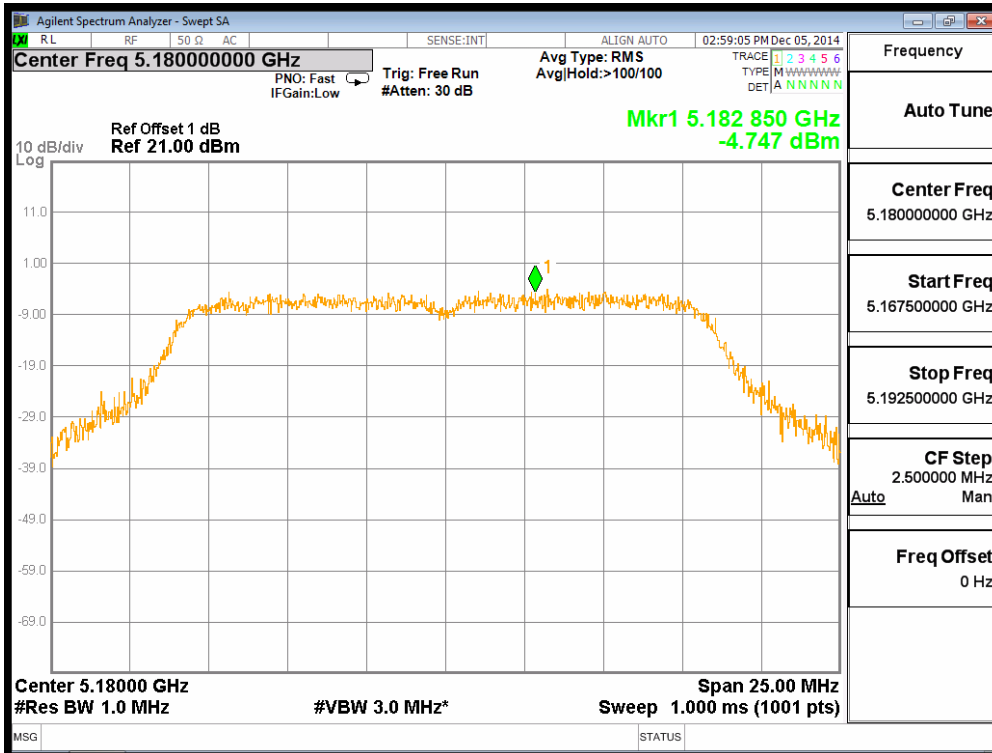


CH 48



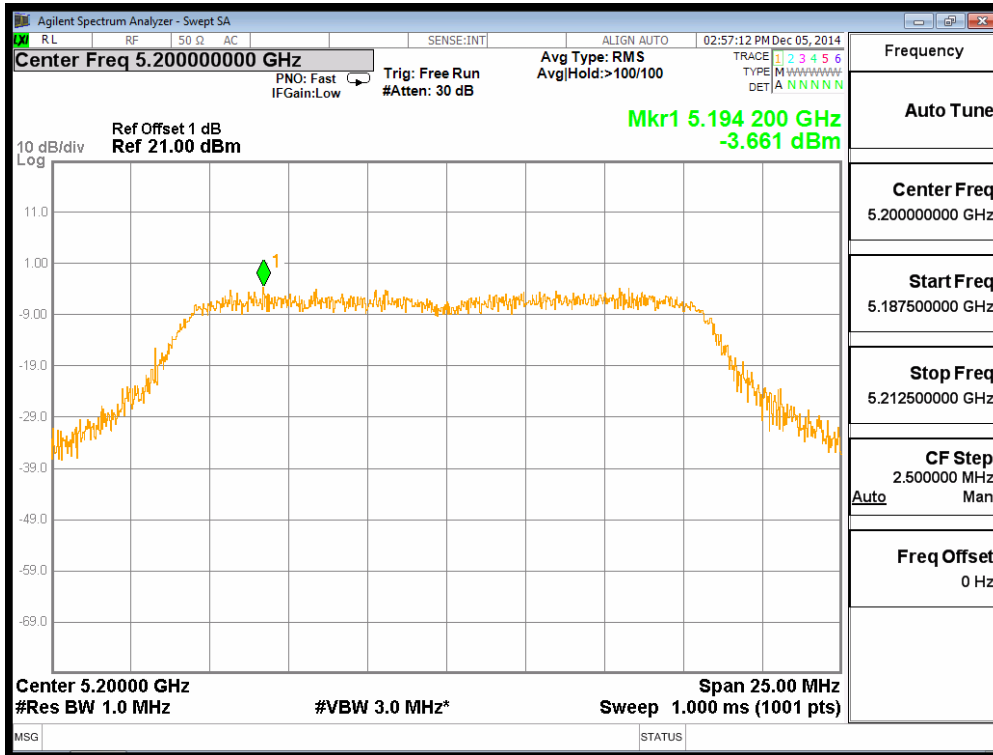
For 802.11a Chain 1

CH 36

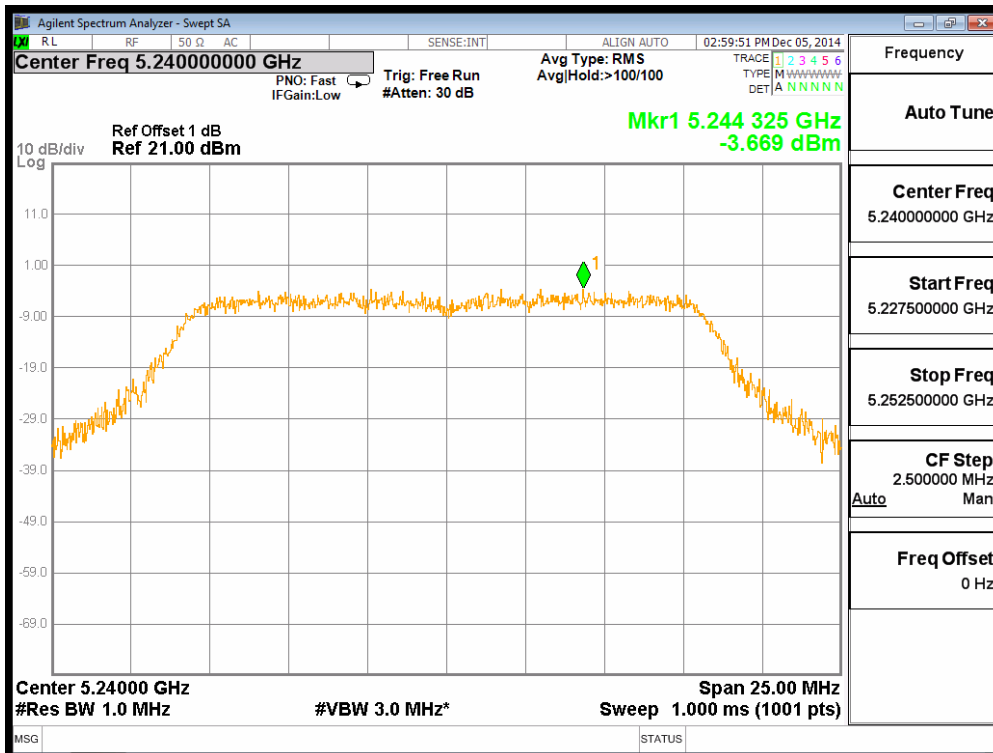




CH 40



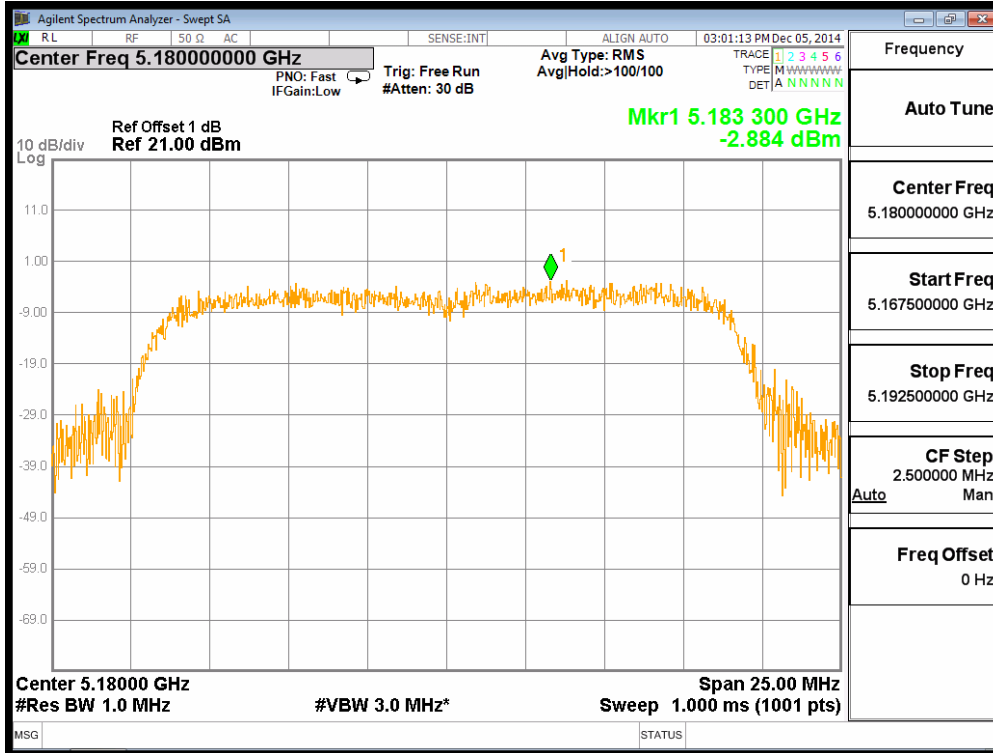
CH 48



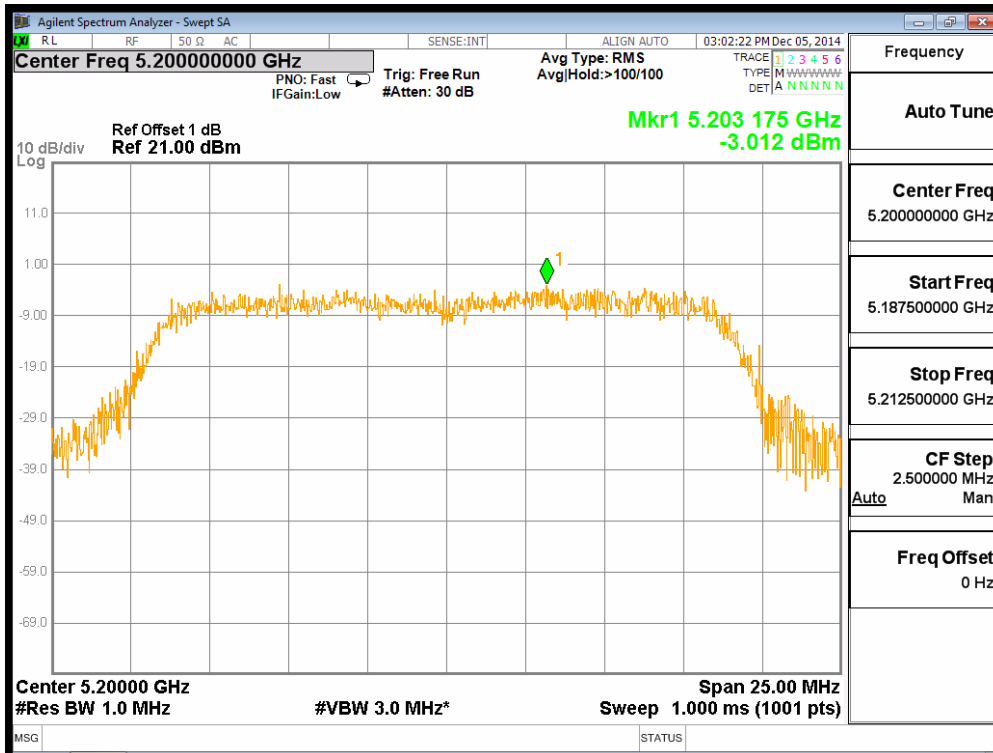


For 802.11n (HT-20) Chain 0

CH 36

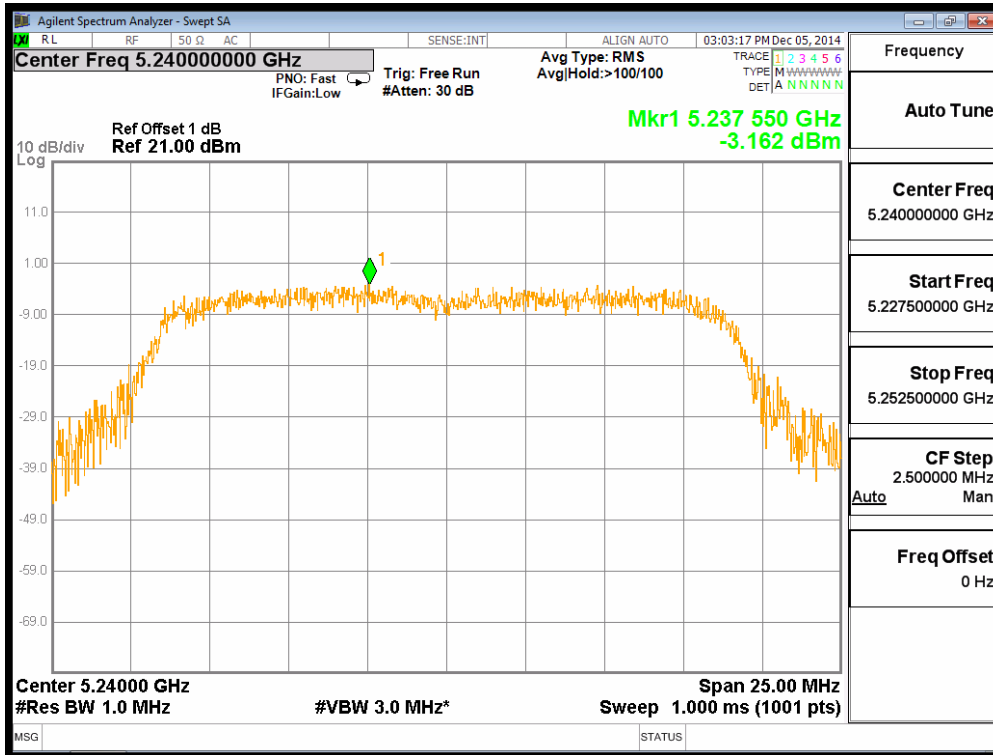


CH 40



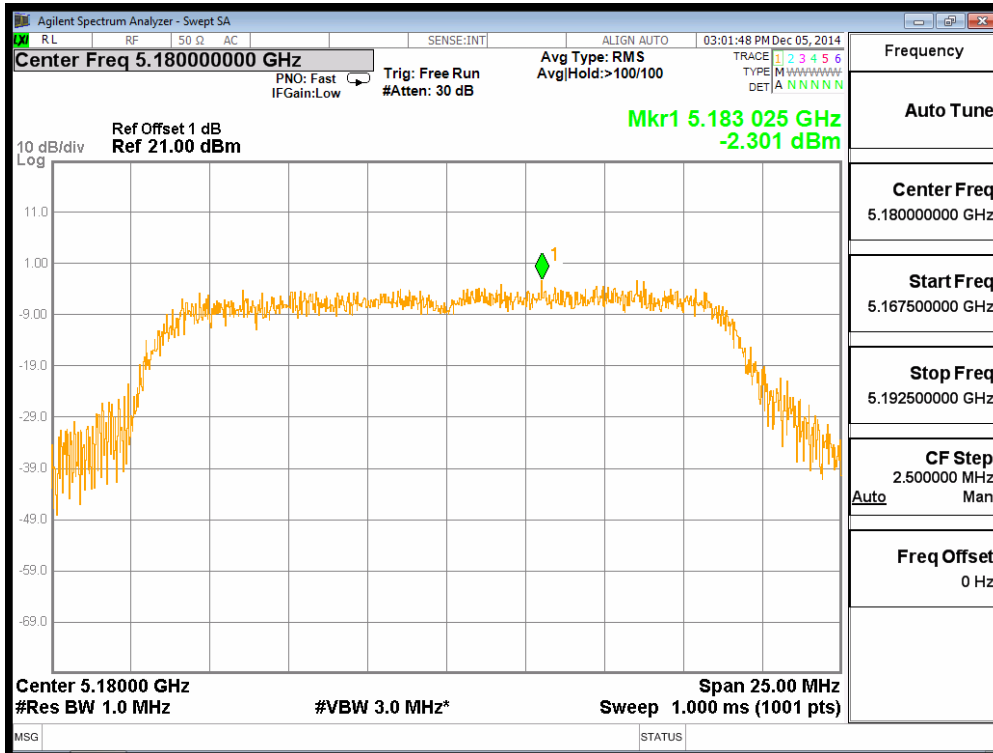


CH 48



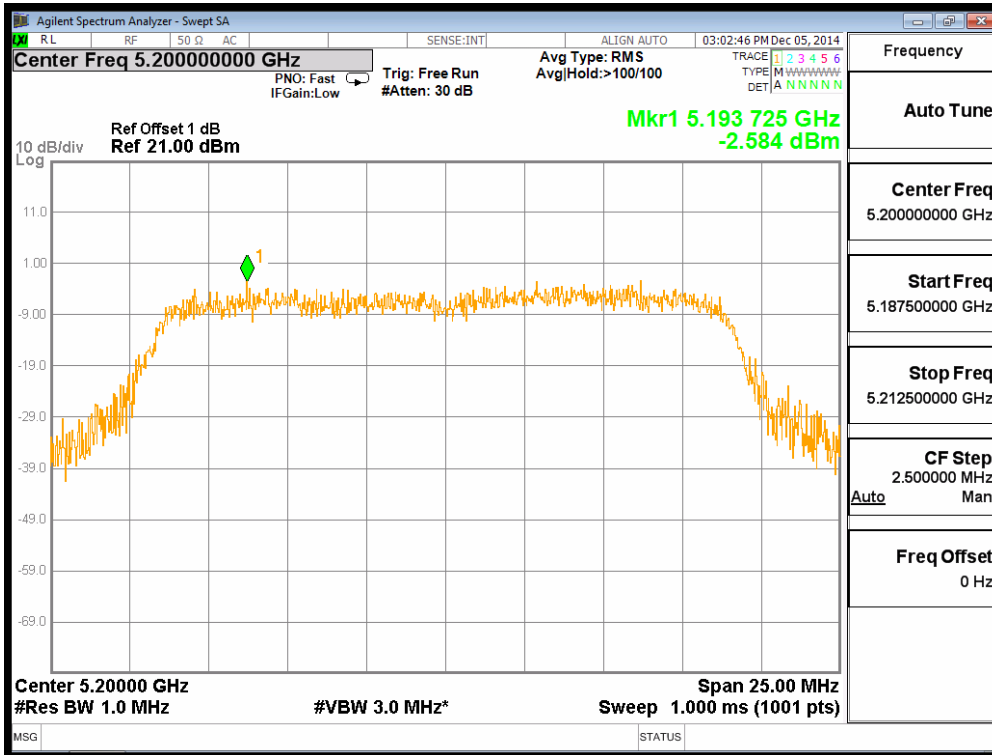
For 802.11n (HT-20) Chain 1

CH 36

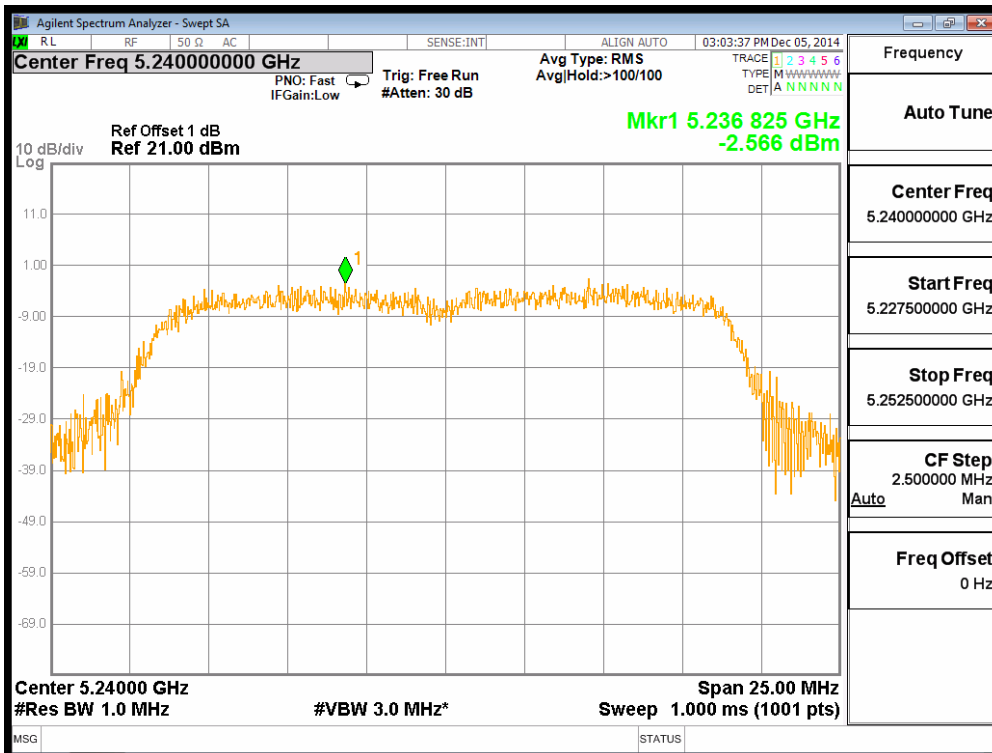




CH 40



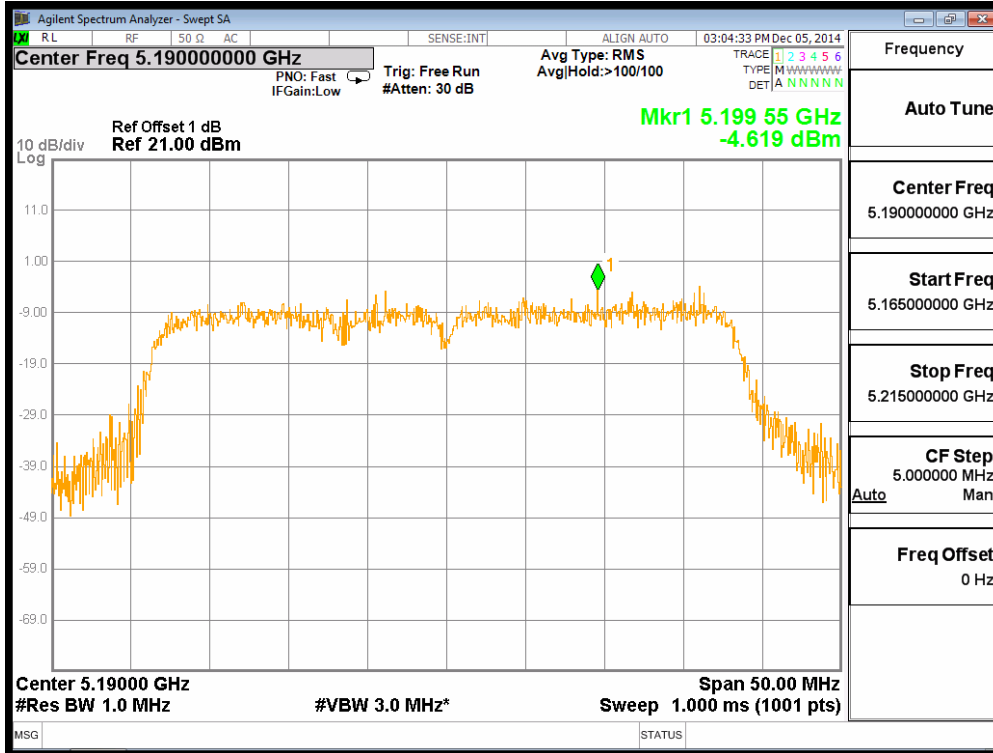
CH 48



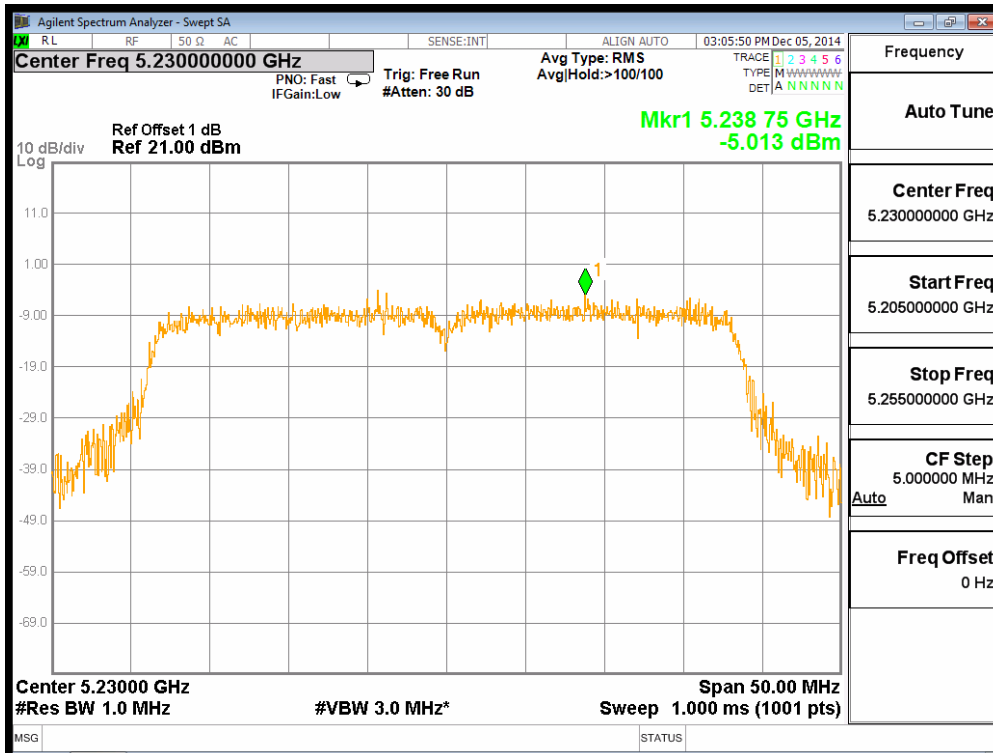


For 802.11n (HT-40) Chain 0

CH 38



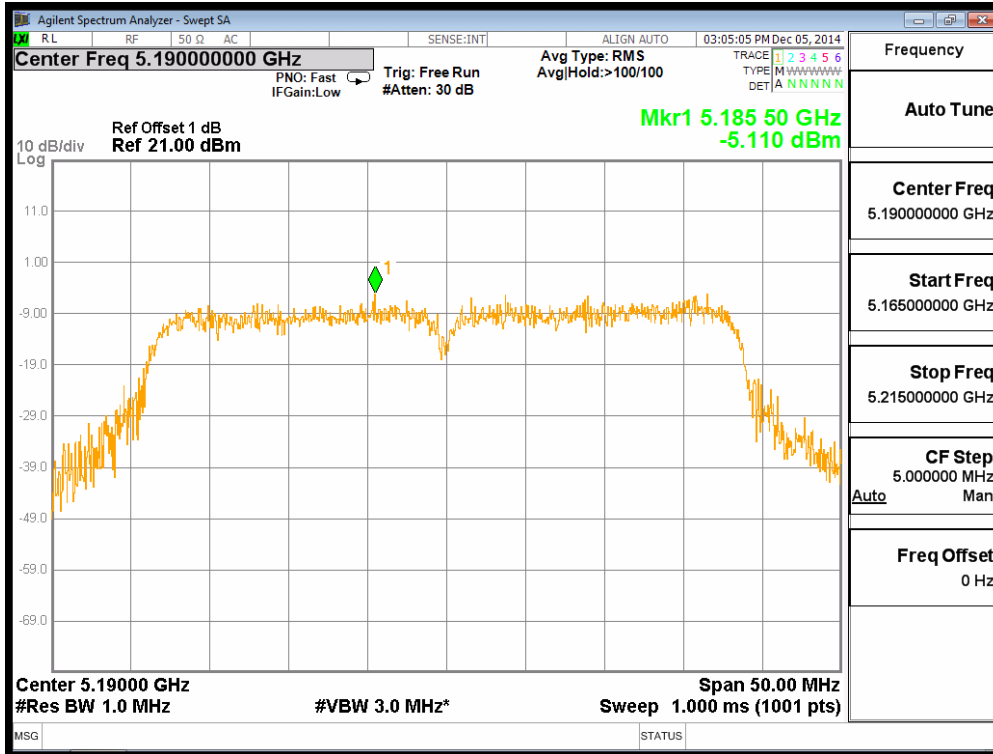
CH 46



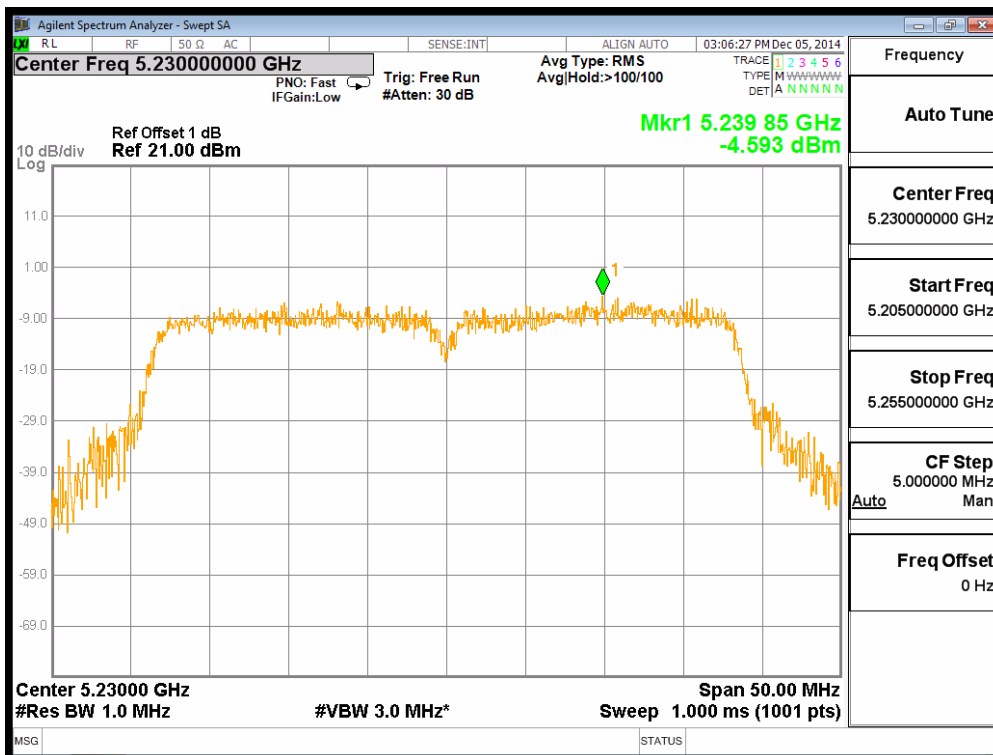


For 802.11n (HT-40) Chain 1

CH 38



CH 46





10. Peak Excursion

10.1. Test Limit

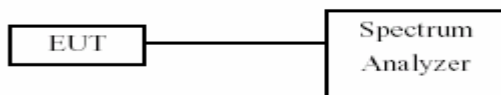
According to §15.407(a)(6), the ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

10.2. Test Procedures

The test is performed in accordance with <FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices> – Part 15, Subpart E, August 2002.

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to spectrum.
3. Trace A, Set RBW =1MHz, VBW = 3MHz, Span >26dB bandwidth, Max. hold.
4. Delta Mark trace A Maximum frequency and trace B same frequency.
5. Repeat the above procedure until measurements for all frequencies were complete.

10.3. Test Setup Layout



10.4. Measurement equipment

Instrument/Ancillary	Model No.	Manufacturer	Serial No.	Calibration Date	Valid Date
Spectrum Analyzer	N9010A	Agilent	MY51350515	2014.09.29	2015.09.28



10.5. Test Result and Data

Test Date: Dec. 10, 2014

Temperature: 25°C

Atmospheric pressure: 1020 hPa

Humidity: 46%

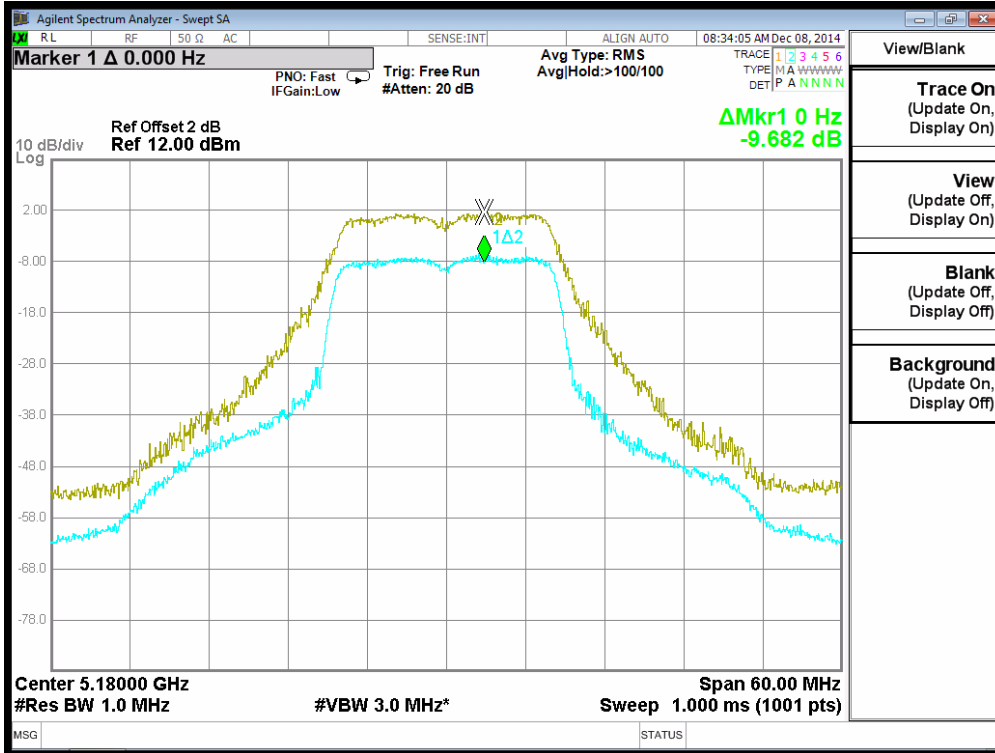
Modulation Type	Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dBm)
IEEE 802.11a	36	5180	9.682	13.00
	40	5200	9.571	13.00
	46	5240	9.373	13.00
IEEE 802.11n HT-20	36	5180	11.569	13.00
	40	5200	11.745	13.00
	46	5240	12.564	13.00
IEEE 802.11n HT-40	38	5190	8.859	13.00
	46	5230	9.734	13.00



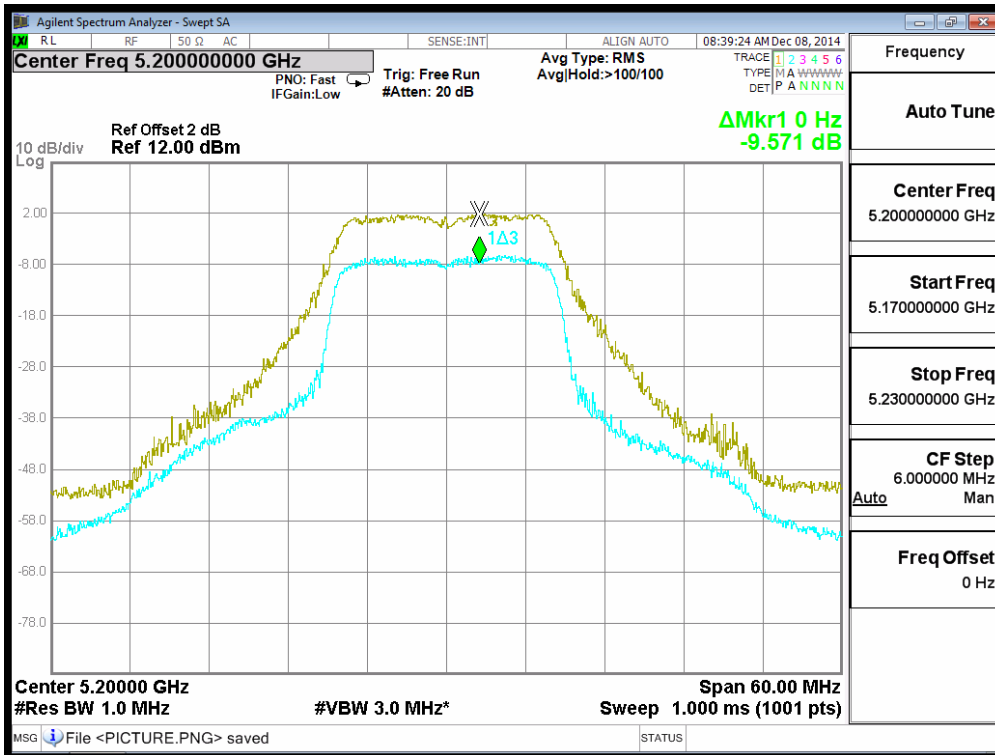
Test Plot

For 802.11a

CH 36

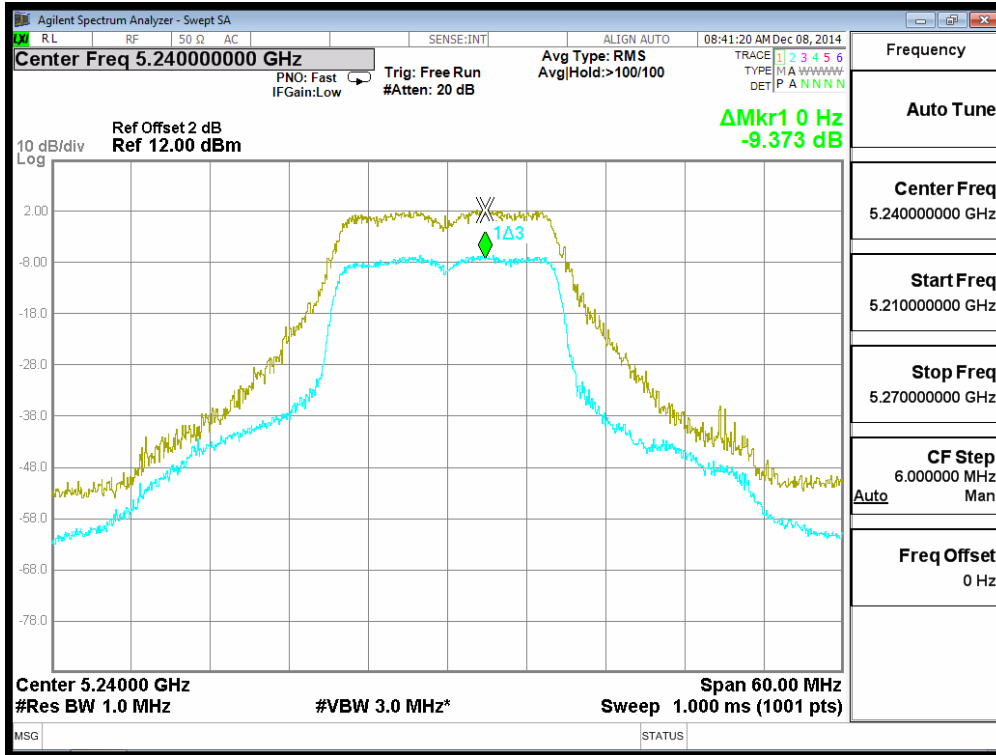


CH 40



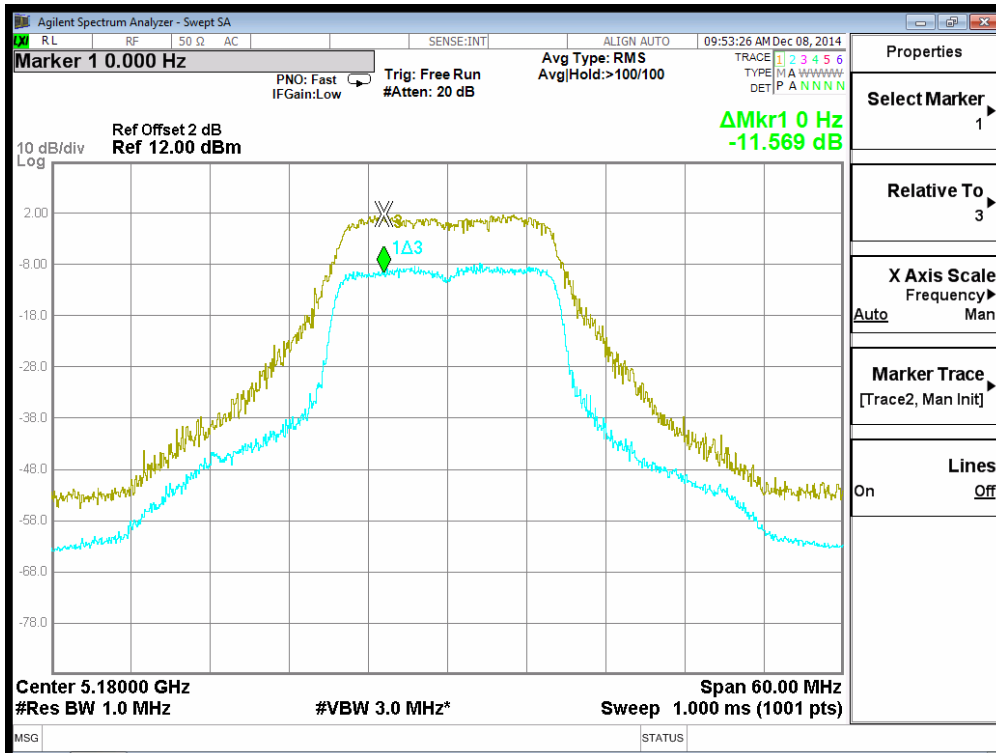


CH 48



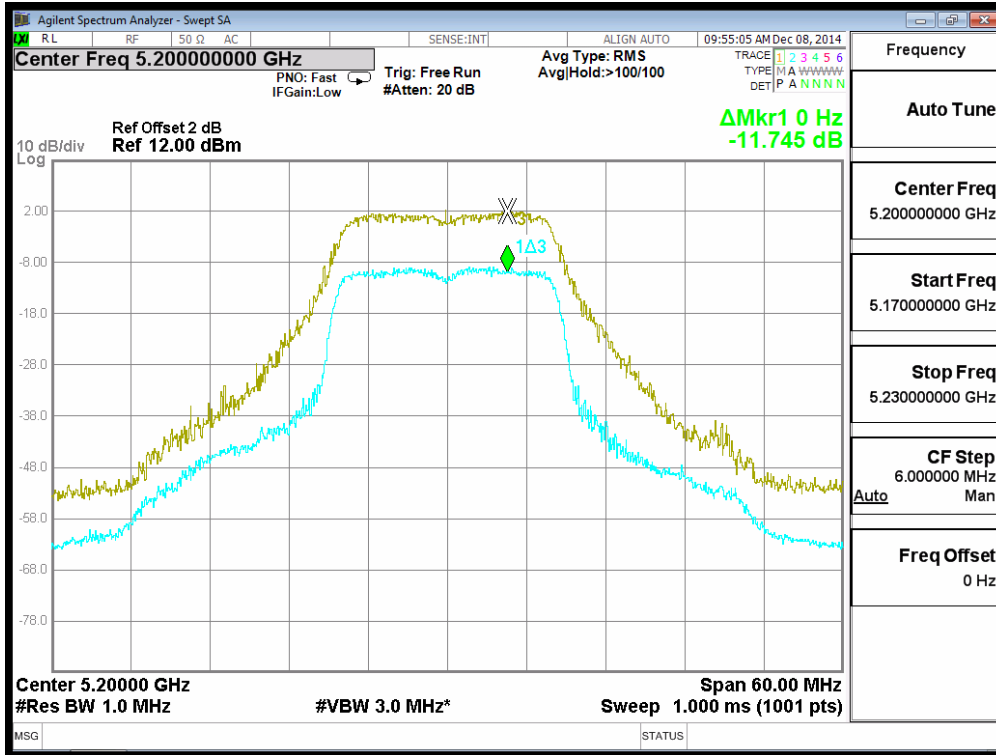
For 802.11n (HT-20)

CH 36

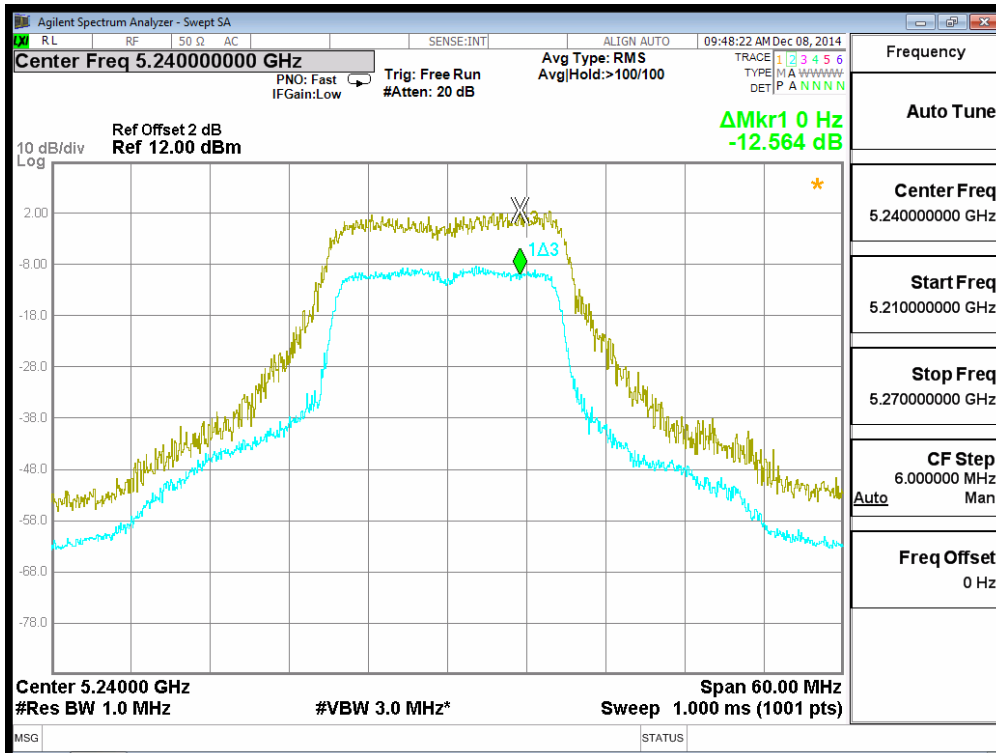




CH 40



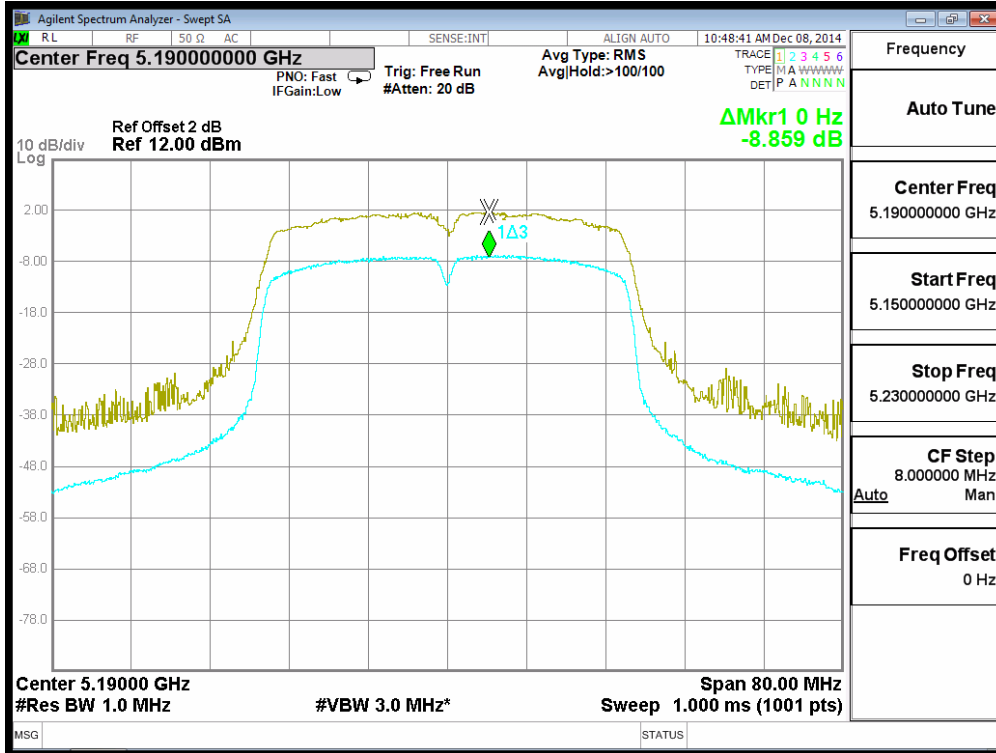
CH 48



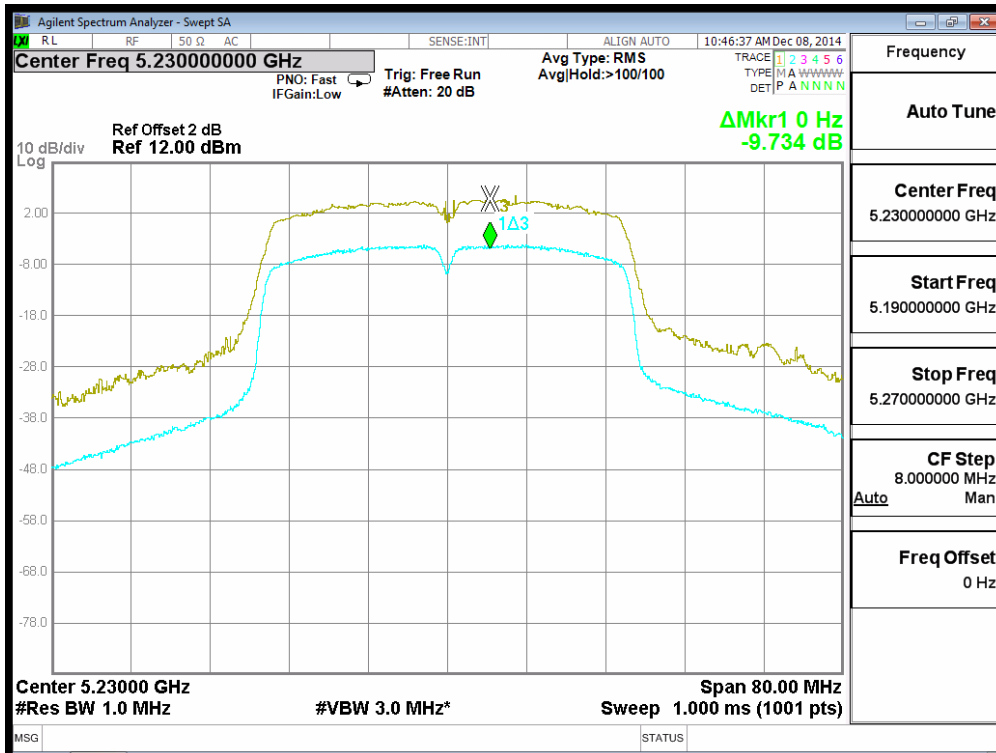


For 802.11n (HT-40)

CH 38



CH 46





11. Frequency Stability Measurement

11.1. Test Limit

§ 15.407 (g) manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

11.2. Test Procedures

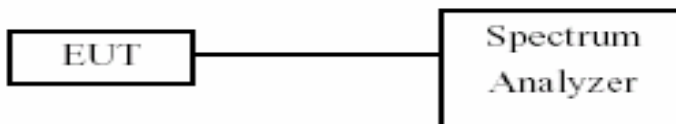
a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Entire absence of modulation emissions bandwidth
RB	10 kHz
VB	10 kHz
Sweep Time	Auto

b. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value

c. Extreme temperature rule is -30°C~50°C.

11.3. Test Setup Layout



11.4. Measurement equipment

Instrument/Ancillary	Model No.	Manufacturer	Serial No.	Calibration Date	Valid Date
Spectrum Analyzer	N9010A	Agilent	MY51350515	2014.09.29	2015.09.28



11.5. Test Result and Data

Test Date: Dec. 10, 2014

Temperature: 25°C

Atmospheric pressure: 1020 hPa

Humidity: 46%

Test Mode: IEEE 802.11a

For Chain 0

Environment Temperature (°C)	Voltage (V)	CH Low Measurement Frequency (MHz)	Limit Range (dBm)	Test Result
60	120	5180.0050	5150~5250	PASS
50		5180.0053	5150~5250	PASS
40		5180.0051	5150~5250	PASS
30		5180.0054	5150~5250	PASS
20		5180.0061	5150~5250	PASS
10		5180.0063	5150~5250	PASS
0		5180.0048	5150~5250	PASS
-10		5180.0050	5150~5250	PASS
20	108	5180.0054	5150~5250	PASS
	120	5180.0055	5150~5250	PASS
	132	5180.0054	5150~5250	PASS

For Chain 1

Environment Temperature (°C)	Voltage (V)	CH Low Measurement Frequency (MHz)	Limit Range (dBm)	Test Result
60	120	5180.0062	5150~5250	PASS
50		5180.0060	5150~5250	PASS
40		5180.0067	5150~5250	PASS
30		5180.0065	5150~5250	PASS
20		5180.0063	5150~5250	PASS
10		5180.0058	5150~5250	PASS
0		5180.0055	5150~5250	PASS
-10		5180.0057	5150~5250	PASS
20	108	5180.0050	5150~5250	PASS
	120	5180.0054	5150~5250	PASS
	132	5180.0058	5150~5250	PASS



Test Date: Dec. 10,2014
 Atmospheric pressure: 1020 hPa
 Test Mode IEEE 802.11n HT-20

Temperature: 25°C
 Humidity: 46%

For Chain 0

Environment Temperature (°C)	Voltage (V)	CH Middle Measurement Frequency (MHz)	Limit Range (dBm)	Test Result
60	120	5180.0052	5150~5250	PASS
50		5180.0053	5150~5250	PASS
40		5180.0050	5150~5250	PASS
30		5180.0066	5150~5250	PASS
20		5180.0052	5150~5250	PASS
10		5180.0053	5150~5250	PASS
0		5180.0057	5150~5250	PASS
-10		5180.0055	5150~5250	PASS
20	108	5180.0066	5150~5250	PASS
	120	5180.0058	5150~5250	PASS
	132	5180.0054	5150~5250	PASS

For Chain 1

Environment Temperature (°C)	Voltage (V)	CH Low Measurement Frequency (MHz)	Limit Range (dBm)	Test Result
60	120	5180.0053	5150~5250	PASS
50		5180.0061	5150~5250	PASS
40		5180.0064	5150~5250	PASS
30		5180.0062	5150~5250	PASS
20		5180.0064	5150~5250	PASS
10		5180.0059	5150~5250	PASS
0		5180.0056	5150~5250	PASS
-10		5180.0058	5150~5250	PASS
20	108	5180.0056	5150~5250	PASS
	120	5180.0055	5150~5250	PASS
	132	5180.0057	5150~5250	PASS



Test Date: Dec. 10,2014

Temperature: 25°C

Atmospheric pressure: 1020 hPa

Humidity: 46%

Test Mode IEEE 802.11n HT-40

For Chain 0

Environment Temperature (°C)	Voltage (V)	CH High Measurement Frequency (MHz)	Limit Range (dBm)	Test Result
60	120	5190.0062	5150~5250	PASS
50		5190.0054	5150~5250	PASS
40		5190.0060	5150~5250	PASS
30		5190.0058	5150~5250	PASS
20		5190.0057	5150~5250	PASS
10		5190.0032	5150~5250	PASS
0		5190.0055	5150~5250	PASS
-10		5190.0051	5150~5250	PASS
20	108	5190.0054	5150~5250	PASS
	120	5190.0058	5150~5250	PASS
	132	5190.0059	5150~5250	PASS

For Chain 1

Environment Temperature (°C)	Voltage (V)	CH High Measurement Frequency (MHz)	Limit Range (dBm)	Test Result
60	120	5190.0058	5150~5250	PASS
50		5190.0056	5150~5250	PASS
40		5190.0055	5150~5250	PASS
30		5190.0054	5150~5250	PASS
20		5190.0053	5150~5250	PASS
10		5190.0057	5150~5250	PASS
0		5190.0050	5150~5250	PASS
-10		5190.0071	5150~5250	PASS
20	108	5190.0055	5150~5250	PASS
	120	5190.0054	5150~5250	PASS
	132	5190.0056	5150~5250	PASS



12. Restricted Bands of Operation

(a) Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.09000 – 0.11000	16.42000 – 16.42300	399.9 – 410.0	4.500 – 5.250
0.49500 – 0.505**	16.69475 – 16.69525	608.0 – 614.0	5.350 – 5.460
2.17350 – 2.19050	16.80425 – 16.80475	960.0 – 1240.0	7.250 – 7.750
4.12500 – 4.12800	25.50000 – 25.67000	1300.0 – 1427.0	8.025 – 8.500
4.17725 – 4.17775	37.50000 – 38.25000	1435.0 – 1626.5	9.000 – 9.200
4.20725 – 4.20775	73.00000 – 74.60000	1645.5 – 1646.5	9.300 – 9.500
6.21500 – 6.21800	74.80000 – 75.20000	1660.0 – 1710.0	10.600 – 12.700
6.26775 – 6.26825	108.00000 – 121.94000	1718.8 – 1722.2	13.250 – 13.400
6.31175 – 6.31225	123.00000 – 138.00000	2200.0 – 2300.0	14.470 – 14.500
8.29100 – 8.29400	149.90000 – 150.05000	2310.0 – 2390.0	15.350 – 16.200
8.36200 – 8.36600	156.52475 – 156.52525	2483.5 – 2500.0	17.700 – 21.400
8.37625 – 8.38675	156.70000 – 156.90000	2655.0 – 2900.0	22.010 – 23.120
8.41425 – 8.41475	162.01250 – 167.17000	3260.0 – 3267.0	23.600 – 24.000
12.29000 – 12.29300	167.72000 – 173.20000	3332.0 – 3339.0	31.200 – 31.800
12.51975 – 12.52025	240.00000 – 285.00000	3345.8 – 3358.0	36.430 – 36.500
12.57675 – 12.57725	322.00000 – 335.40000	3600.0 – 4400.0	Above 38.6
13.36000 – 13.41000			

** : Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.