



FCC 47 CFR PART 15 SUBPART E

TEST REPORT

For

Enterprise Access Point

Model: EAP717

Trade Name: 4ipnet

Issued to

4IPNET, INC.

3F-3, No. 369, Fusing N. Rd., Taipei 105, Taiwan,R.O.C

Issued by

Compliance Certification Services Inc.

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Testing Laboratory
1309

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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	October 17, 2013	Initial Issue	All	Landy Huang



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1. TEST RESULT CERTIFICATION

Applicant: **4IPNET, INC.**
3F-3, No. 369, Fusing N. Rd., Taipei 105, Taiwan,R.O.C

Manufacturer: **4IPNET, INC.**
3F-3, No. 369, Fusing N. Rd., Taipei 105, Taiwan,R.O.C

Equipment Under Test: Enterprise Access Point

Trade Name: 4ipnet

Model: EAP717

Date of Test: August 28 ~ September 26, 2013

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR Part 15 Subpart E	No non-compliance noted

We hereby certify that:

Compliance Certification Services Inc. tested the above equipment. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in **ANSI C63.4: 2009** and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.407.

The test results of this report relate only to the tested sample identified in this report.

Approved *by*:

Reviewed by:

Stan Lin
Section Manager

Angel Hu
Section Manager



2. EUT DESCRIPTION

Product	Enterprise Access Point				
Trade Name	4ipnet				
Model Number	EAP717				
Model Discrepancy	N/A				
EUT Power Rating	5VDC, 2A				
Received Date	August 19, 2013				
Power Adapter Manufacturer	JFEC	Model	JF015WR-0500200UH		
Power Adapter Power Rating	I/P: 100-240VAC, 50/60Hz, 0.5A O/P: 5VDC, 2A				
RF Module Manufacturer	Ralink	Model	RT5592N		
Operating Frequency Range & Number of Channels		Mode	Frequency Range (MHz)	Number of Channels	
	UNII Band I	IEEE 802.11a	5150-5250	4 Channels	
		IEEE 802.11n HT20	5150-5250	4 Channels	
		IEEE 802.11n HT40	5150-5250	4 Channels	
Transmit Power		Mode	Frequency Range (MHz)	Output Power (dBm)	Output Power (W)
	UNII Band I	IEEE 802.11a	5150-5250	5.30	0.0034
		IEEE 802.11n HT20	5150-5250	9.54	0.0090
		IEEE 802.11n HT40	5150-5250	12.59	0.0182
Modulation Technique	OFDM (QPSK, BPSK, 16-QAM, 64-QAM)				
Transmit Data Rate	IEEE 802.11a mode: 54, 48, 36, 24, 18, 12, 9, 6 Mbps IEEE 802.11n HT20: OFDM (6.5, 7.2, 13, 14.4, 14.44, 19.5, 21.7, 26, 28.89, 28.9, 39, 43.3, 43.33 52, 57.78, 57.8, 58.5, 65.0, 72.2, 78, 86.67, 104, 115.56, 117, 130, 144.44 Mbps) IEEE 802.11n HT40: OFDM (13.5, 15, 27, 30, 40.5, 45, 54, 60, 81, 90, 108, 120, 121.5, 135, 150, 162, 180, 216, 240, 243, 270, 300 Mbps)				
Antenna Specification	Chain 0: PIFA Antenna / Gain: 3.0 dBi (For IEEE 802.11 a) Chain 1: PIFA Antenna / Gain: 3.0 dBi (For IEEE 802.11 a) (MIMO: $3.0+10\log(2)=6.01$) (For IEEE 802.11 n)				



Operation Frequency:

UNLICENSED NATIONAL INFORMATION INFRASTRUCTURE (U-NII)	
CHANNEL	MHz
36	5180
38	5190
42	5210
44	5220
46	5230
48	5240

Remark:

1. The sample selected for test was production product and was provided by manufacturer.
2. This submittal(s) (test report) is intended for FCC ID: **VZ9130003** filing to comply with Section 15.207, 15.209 and 15.407 of the FCC Part 15, Subpart E Rules.



3. TEST METHODOLOGY

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4: 2009 Radiated testing was performed at an antenna to EUT distance 3 meters.

The tests documented in this report were performed in accordance with ANSI C63.4: 2009 and FCC CFR 47 Part 15.207, 15.209 and 15.407.

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed for RF field strength measurement to meet the Commissions requirement, and is operated in a manner intended to generate the maximum emission in a continuous normal application.

3.2 EUT EXERCISE

The EUT is operated in the engineering mode to fix the Tx frequency for the purposes of measurement.

According to its specifications, the EUT must comply with the requirements of Section 15.407 under the FCC Rules Part 15 Subpart E.

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is positioned at 0.8 m above the ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4, the conducted emission from the EUT is measured in the frequency range between 0.15 MHz and 30MHz, using the CISPR Quasi-Peak detector mode.

Radiated Emissions

The EUT is placed on the turntable, which is 0.8 m above the ground plane. The turntable is then rotated for 360 degrees to determine the proper orientation for the maximum emission level. The EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission level. And, each emission is to be maximized by changing the horizontal and vertical polarization of the receiving antenna. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4: 2003.



3.4 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	(²)
13.36 - 13.41	322 - 335.4		

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

² Above 38.6

(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.



3.5 DESCRIPTION OF TEST MODES

The EUT is a 2Tx2R MIMO transmitter.

The EUT (model: EAP717) had been tested under operating condition.

Software used to control the EUT for staying in continuous transmitting and receiving mode was programmed.

The worst case data rate is determined as the data rate with highest output power.

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz, which worst case was in Data link mode only.

For the power line conducted emissions test, the EUT has two modes, (PoE mode and power adapter mode), after the preliminary test, the PoE mode was found to the worst case and chosen for testing.

UNII Band I:

IEEE 802.11a for 5150 ~ 5250MHz:

Channel Low (5180MHz), Channel Mid (5220MHz) and Channel High (5240MHz) with 6Mbps data rate were chosen for full testing.

IEEE 802.11n HT20 for 5150 ~ 5250MHz:

Channel Low (5180MHz), Channel Mid (5220MHz) and Channel High (5240MHz) with 6.5Mbps data rate were chosen for full testing.

IEEE 802.11n HT40 Channel for 5150 ~ 5250MHz:

Channel Low (5190MHz) and Channel High (5230MHz) with 13.5Mbps data rate were chosen for full testing.



4. INSTRUMENT CALIBRATION

4.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

4.2 MEASUREMENT EQUIPMENT USED

Equipment Used for Emissions Measurement

Conducted Emissions Test Site				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY48250064	01/13/2014
Spectrum Analyzer	Agilent	N9010A	MY52220817	02/22/2014
Power meter	Anritsu	ML2495A	1033009	09/29/2014
Power Sensor	Anritsu	MA2411B	0917221	09/29/2014

3M Semi Anechoic Chamber				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY48250064	01/13/2014
Pre-Amplifier	HP	8447D	2944A06530	04/23/2014
Pre-Amplifier	EMEC	EM01M26G	060570	07/25/2014
Pre-Amplifier	MITEQ	AMF-6F-26040 0-40-8P	985646	08/08/2014
Pre-Amplifier	Agilent	8449B	3008A01738	04/23/2014
EMI Test Receiver	SCHAFFNER	SCR 3501	430	03/24/2014
Loop Antenna	EMCO	6502	2356	06/12/2014
Bilog Antenna	TESEQ	CBL 6112D	35378	09/11/2014
Horn Antenna	EMCO	3115	00022250	08/04/2014
Horn Antenna	EMCO	3116	00026370	01/07/2014
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R
Turn Table	CCS	CC-T-1F	N/A	N.C.R
Testv S/W	EZ-EMC			

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. N.C.R = No Calibration Request.



Conducted Emission Room # 3				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI Test Receiver	R&S	ESCI	101300	09/06/2014
LISN	R&S	ENV216	100069	06/16/2014
LISN	FCC	FCC-LISN-50/250-1 6-2-07	06013	12/04/2013
ISN	TESEQ	ISN-T8	30842	08/09/2014
Current Probe	FCC	F-35	506	07/19/2014
ISN	FCC	FCC-TLISN-T4-02	20396	06/28/2014
Test S/W	EZ-EMC			

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. N.C.R = No Calibration Request.

4.3 MEASUREMENT UNCERTAINTY

Parameter	Uncertainty
Powerline Conducted Emission	±0.9898
3M Semi Anechoic Chamber / 30MHz ~ 200MHz	±3.5921
3M Semi Anechoic Chamber / 200MHz ~ 1GHz	±3.5657
3M Semi Anechoic Chamber / 1 ~ 8GHz	±2.5873
3M Semi Anechoic Chamber / 8 ~ 18GHz	±2.6646
3M Semi Anechoic Chamber / 18 ~ 26GHz	±2.9617
3M Semi Anechoic Chamber / 26 ~ 40GHz	±3.4250

Remark: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

- No. 163-1, Jhongsheng Rd., Sindien District, Taipei City 23151, Taiwan
Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029
- No 11, Wugong 6th Rd, Wugu District, New Taipei City 24891, Taiwan (R.O.C)
Tel: 886-2-2299-9720 / Fax: 886-2-2298-4045
- No.81-1, Lane 210, Bade 2nd Rd., Lujhu Township, Taoyuan County 33841, Taiwan
Tel: 886-3-324-0332 / Fax: 886-3-324-5235

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

5.3 LABORATORY ACCREDITATIONS AND LISTING

The test facilities used to perform radiated and conducted emissions tests are accredited by American Association for Laboratory Accreditation Program for the specific scope accreditation under Lab Code: 0824-01 to perform Electromagnetic Interference tests according to FCC Part 15 and CISPR 22 requirements. In addition, the test facilities are listed with Industry Canada, Certification and Engineering Bureau, IC 2324G-1 for 3M Semi Anechoic Chamber A, 2324G-2 for 3M Semi Anechoic Chamber B.



5.4 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	A2LA	CFR 47, FCC Part15/18, CISPR 22, EN 55022, ICES-003, AS/NZS CISPR 22, VCCI V-3, EN 55011, CISPR 11, IEC/EN 61000-4-2/3/4/5/6/8/11, EN 61000-6-1/2/3/4, EN 55024, CISPR 24, AS/NZS CISPR 24, AS/NZS 61000.6.2, EN 55014-1/-2, ETSI EN 300 386 v1.3.2/v1.3.3, IEC/EN 61000-3-2, AS/NZS 61000.3.2, IEC/EN 61000-3-3, AS/NZS 61000.3.3	
USA	FCC MRA	3 meter Open Area Test Sites to perform FCC Part 15/18 measurements	
Japan	VCCI	3/10 meter Open Area Test Sites and conducted test sites to perform radiated/conducted measurements	
Taiwan	TAF	EN 55014-1, CISPR 14, CNS 13781-1, EN 55013, CISPR 13, CNS 13439, EN 55011, CISPR 11, CNS 13803, PLMN09, IS2045-0, LP0002 FCC Part 27/90, Part 15B/C/D/E, RSS-192/193/210/310 ETSI EN 300 328/ 300 220-1/ 300 220-2/ 301 893/ 301 489-01/ 301 489-03/ 301 489-07 / 301 489-17/ 300 440-1/ 300 440-2 AS/NZS 4268, AS/NZS 4771 CISPR 22, EN 55022, CNS 13438, AS/NZS CISPR 22, VCCI, IEC/EN 61000-4-2/3/4/5/6/8/11, CNS 14676-2/3/4/5/6/8, CNS 14934-2/3, CNS 13783-1, CNS 13439, CNS 13803	
Taiwan	BSMI	CNS 13438, CNS 13783-1, CNS 13439, CNS 14115	SL2-IS-E-0014 / IN-E-0014 /A1-E-0014 /R1-E-0014 /R2-E-0014 /L1-E-0014
Canada	Industry Canada	RSS-Gen Issue 3	

* No part of this report may be used to claim or imply product endorsement by A2LA or any agency of the US Government.



6. SETUP OF EQUIPMENT UNDER TEST

6.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix I for the actual connections between EUT and support equipment.

6.2 SUPPORT EQUIPMENT

For Radiated (Below 1GHz) and Powerline Conducted (PoE mode) Emission							
No.	Device Type	Model	Series No.	FCC ID	Brand	Data Cable	Power Cord
1	Telephone	HT-B603WL	994754763	N/A	SAMPO	Line Cable: Unshielded, 1.8m	N/A
2	Modem (Remote)	DM-1414	304012266	IFAXDM1414	ACEEX	Unshielded, 1.8m	Unshielded, 1.8m
3	Telephone (Remote)	HT-B604WL	994754309	N/A	SAMPO	Unshielded, 1.8m	N/A
4	PC (Remote)	PRO 2000	SGH008RRNY	FCC DoC	HP	LAN Cable: Unshielded, 10m	Unshielded, 1.8m
5	Gigabit PoE Injector	POE30G	N/A	N/A	4ipnet	N/A	LAN Cable: Unshielded, 1.8m

For Powerline Conducted (Adapter mode) Emission							
No.	Device Type	Model	Series No.	FCC ID	Brand	Data Cable	Power Cord
1	Telephone	HT-B603WL	994754763	N/A	SAMPO	Line Cable: Unshielded, 1.8m	N/A
2	Modem (Remote)	DM-1414	304012266	IFAXDM1414	ACEEX	Unshielded, 1.8m	Unshielded, 1.8m
3	Telephone (Remote)	HT-B604WL	994754309	N/A	SAMPO	Unshielded, 1.8m	N/A
4	PC (Remote)	PRO 2000	SGH008RRNY	FCC DoC	HP	LAN Cable: Unshielded, 10m	Unshielded, 1.8m

For Radiated (Above 1GHz) and Conducted Emission							
No.	Device Type	Model	Series No.	FCC ID	Brand	Data Cable	Power Cord
1	Notebook PC	D400	0932RY	E2K24GBRL	DELL	LAN Cable: Unshielded, 1.8m LAN to Serial Cable: Shielded, 1.8m Serial to USB Cable: Shielded, 0.3m	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core
2	Gigabit PoE Injector (Remote)	POE30G	N/A	N/A	4ipnet	N/A	LAN Cable: Unshielded, 10m

Remark: Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.



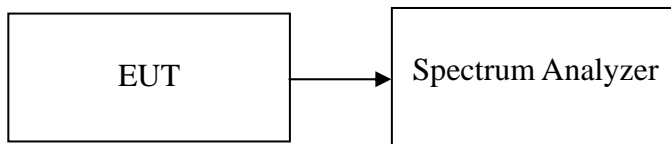
7. FCC PART 15 REQUIREMENTS

7.1 26 dB EMISSION BANDWIDTH

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.

Test Configuration



TEST PROCEDURE

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.

TEST RESULTS

No non-compliance noted



Test Data

Test mode: IEEE 802.11a mode / 5150 ~ 5250MHz

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5180	20.687
Mid	5220	21.977
High	5240	20.950

Test mode: IEEE 802.11n HT20 mode / 5150 ~ 5250MHz / Chain 0

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5180	20.085
Mid	5220	20.392
High	5240	20.899

Test mode: IEEE 802.11n HT20 mode / 5150 ~ 5250MHz / Chain 1

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5180	19.647
Mid	5220	19.550
High	5240	19.266

Test mode: IEEE 802.11n HT40 mode / 5150 ~ 5250MHz / Chain 0

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5190	40.330
High	5230	39.956

Test mode: IEEE 802.11n HT40 mode / 5150 ~ 5250MHz / Chain 1

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5190	39.259
High	5230	39.968



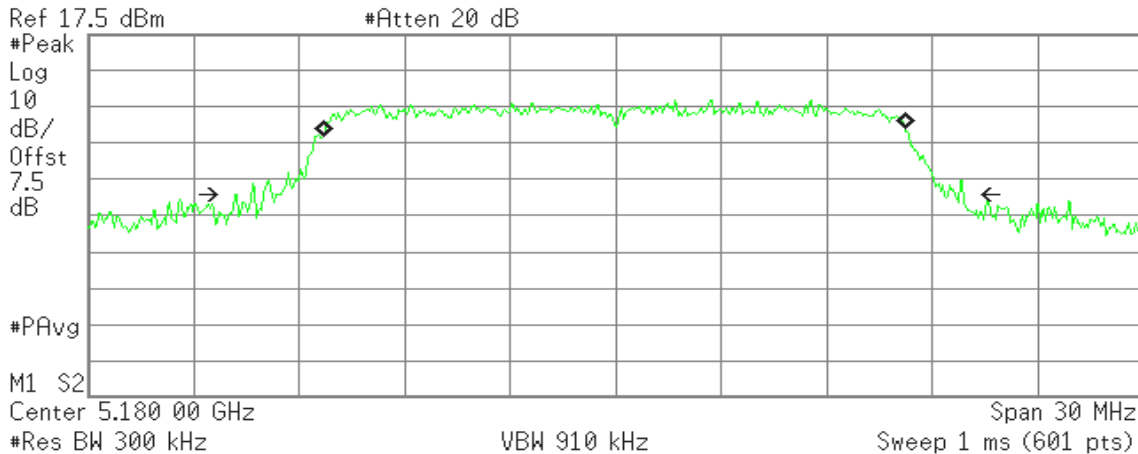
Test Plot

IEEE 802.11a mode / 5150 ~ 5250MHz

CH Low

Agilent

R T



Occupied Bandwidth
16.5497 MHz

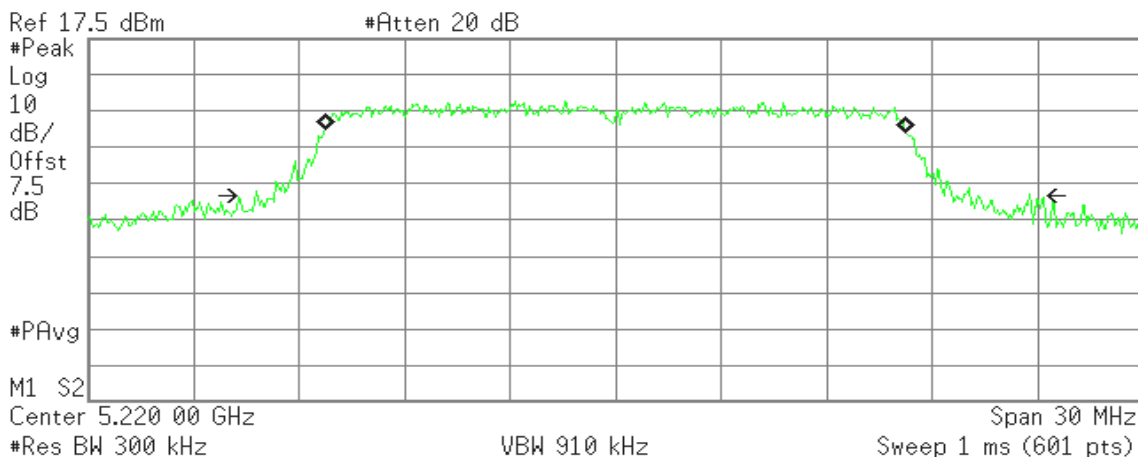
Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -43.964 kHz
x dB Bandwidth 20.687 MHz

CH Mid

Agilent

R T



Occupied Bandwidth
16.5253 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

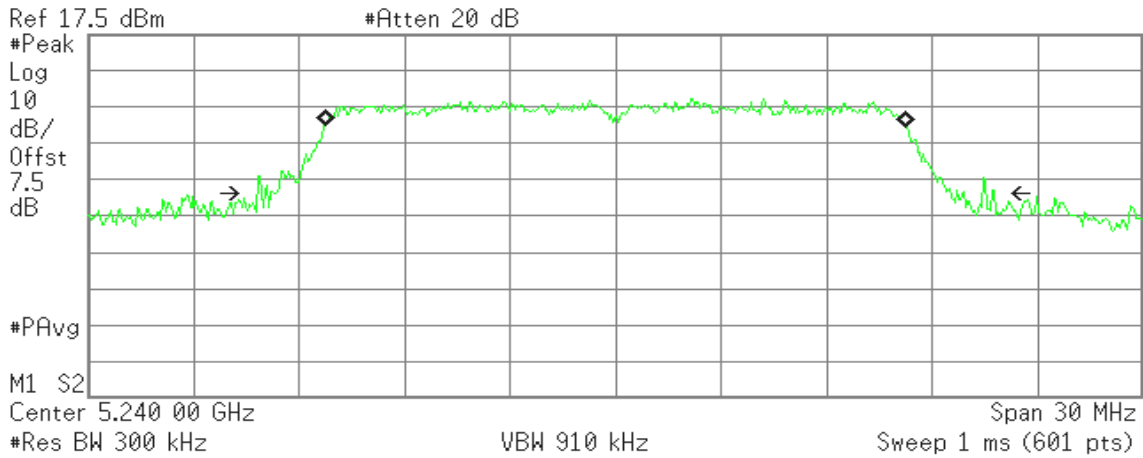
Transmit Freq Error 8.616 kHz
x dB Bandwidth 21.977 MHz



CH High

Agilent

R T



Occupied Bandwidth
16.5321 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

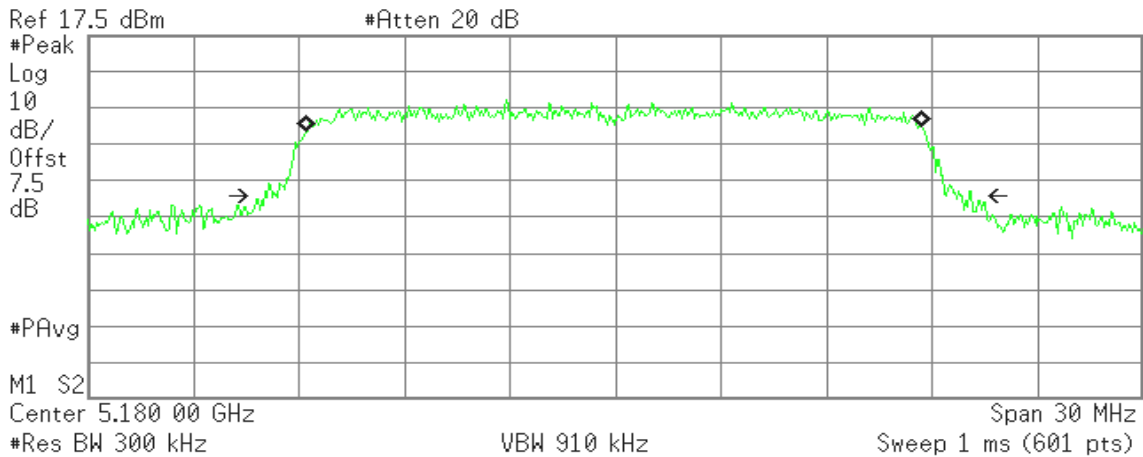
Transmit Freq Error 5.371 kHz
x dB Bandwidth 20.950 MHz

IEEE 802.11n HT20 mode / 5150 ~ 5250MHz / Chain 0

CH Low

Agilent

R T



Occupied Bandwidth
17.4937 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

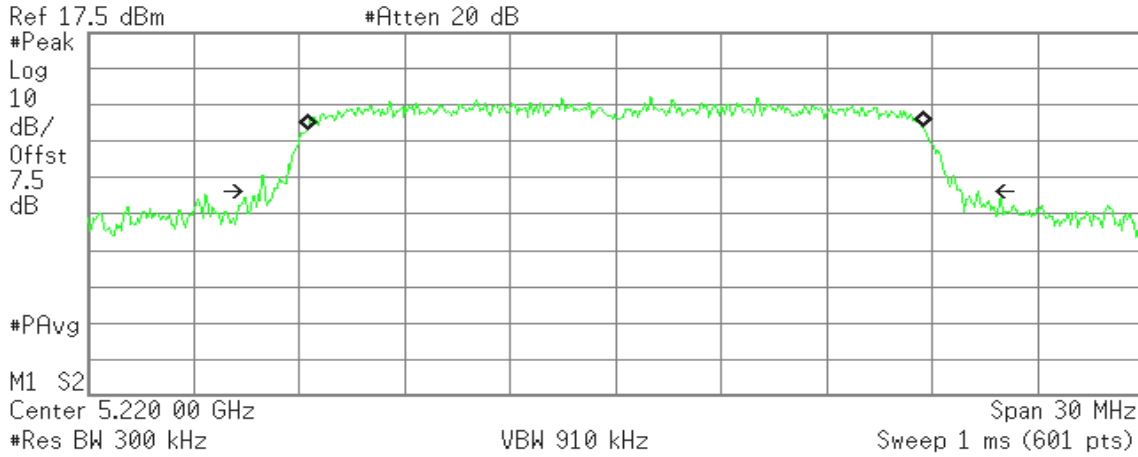
Transmit Freq Error -33.383 kHz
x dB Bandwidth 20.085 MHz



CH Mid

Agilent

R T



Occupied Bandwidth
17.4798 MHz

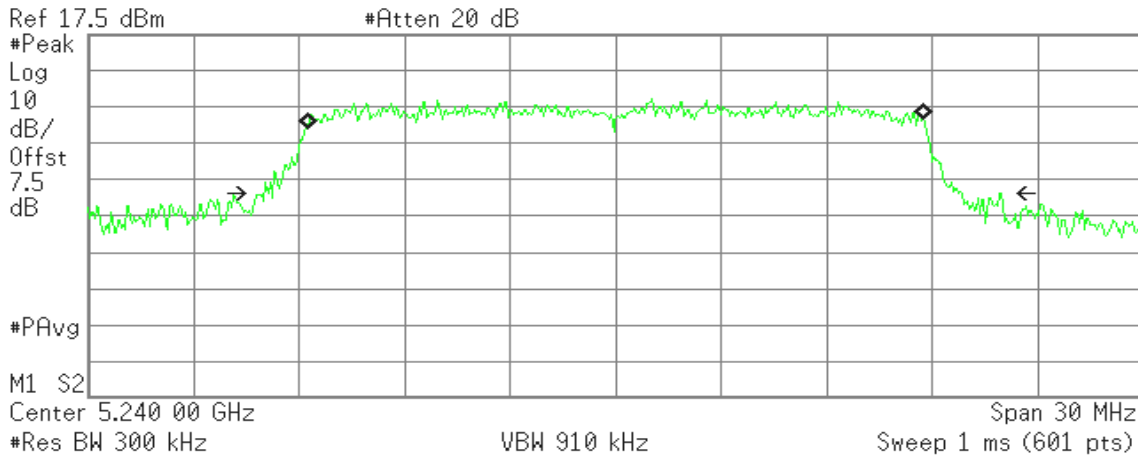
Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -11.317 kHz
x dB Bandwidth 20.392 MHz

CH High

Agilent

R T



Occupied Bandwidth
17.4964 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -5.436 kHz
x dB Bandwidth 20.899 MHz

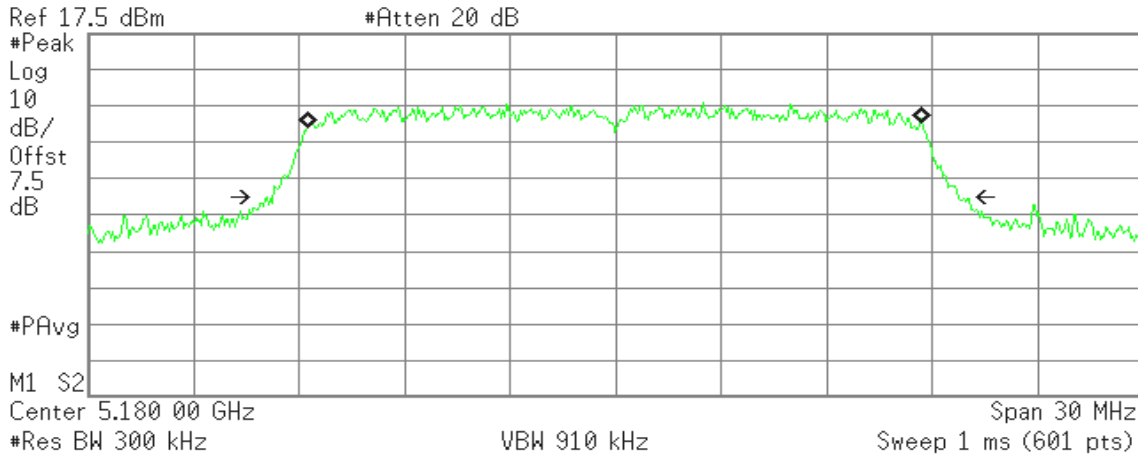


IEEE 802.11n HT20 mode / 5150 ~ 5250MHz / Chain 1

CH Low

Agilent

R T



Occupied Bandwidth
17.4831 MHz

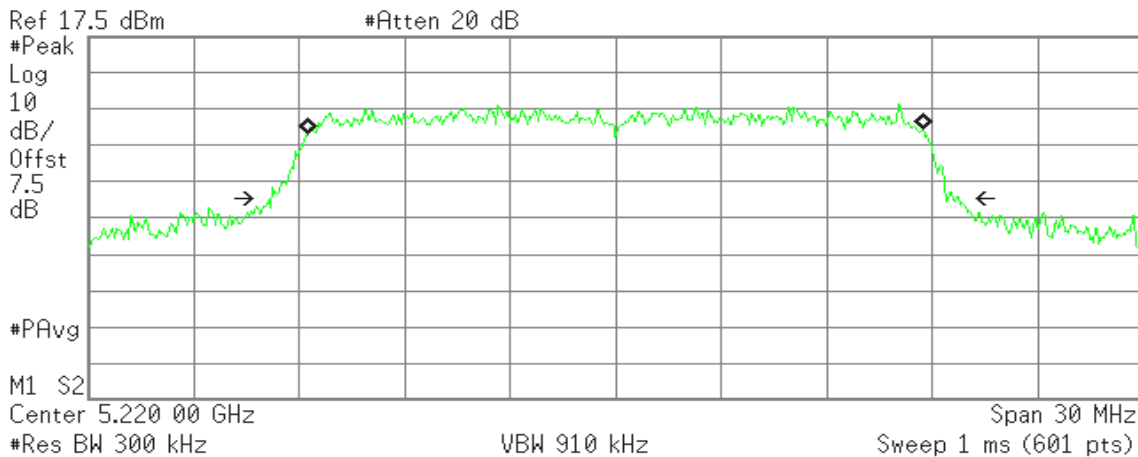
Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -20.117 kHz
x dB Bandwidth 19.647 MHz

CH Mid

Agilent

R T



Occupied Bandwidth
17.4985 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

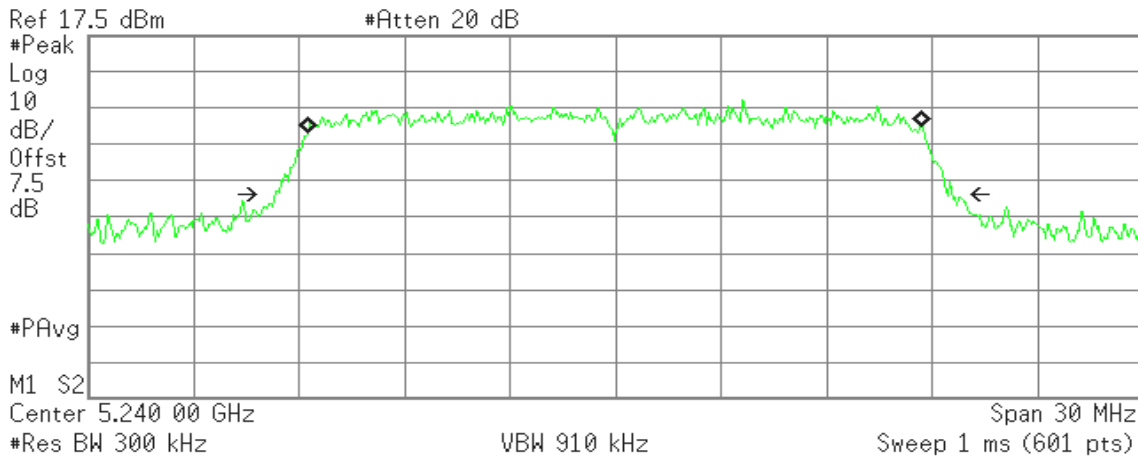
Transmit Freq Error 6.699 kHz
x dB Bandwidth 19.550 MHz



CH High

Agilent

R T



Occupied Bandwidth

17.4748 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

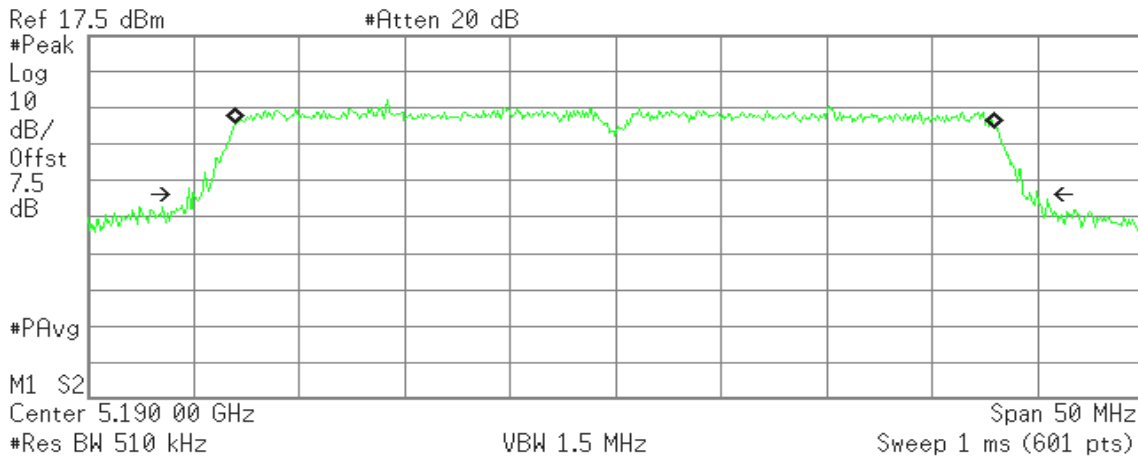
Transmit Freq Error -16.284 kHz
x dB Bandwidth 19.266 MHz

IEEE 802.11n HT40 mode / 5150 ~ 5250MHz / Chain 0

CH Low

Agilent

R T



Occupied Bandwidth

35.9600 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

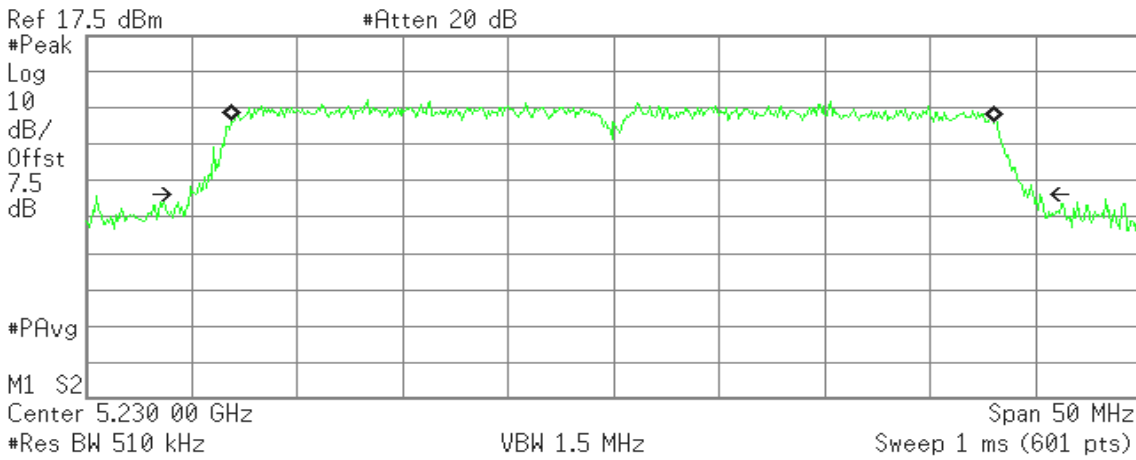
Transmit Freq Error -31.657 kHz
x dB Bandwidth 40.330 MHz



CH High

Agilent

R T



Occupied Bandwidth 36.0752 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

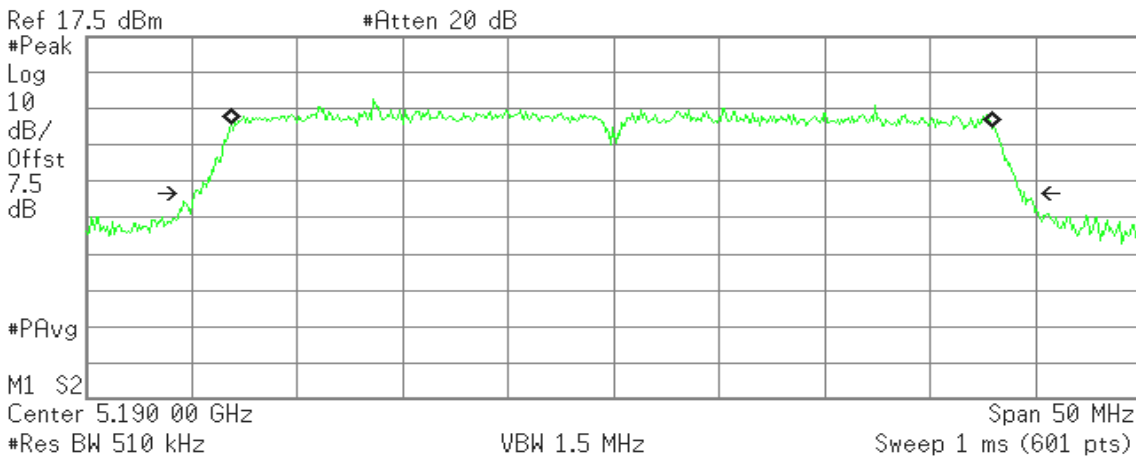
Transmit Freq Error -23.377 kHz
x dB Bandwidth 39.956 MHz

IEEE 802.11n HT40 mode / 5150 ~ 5250MHz / Chain 1

CH Low

Agilent

R T



Occupied Bandwidth 36.0389 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

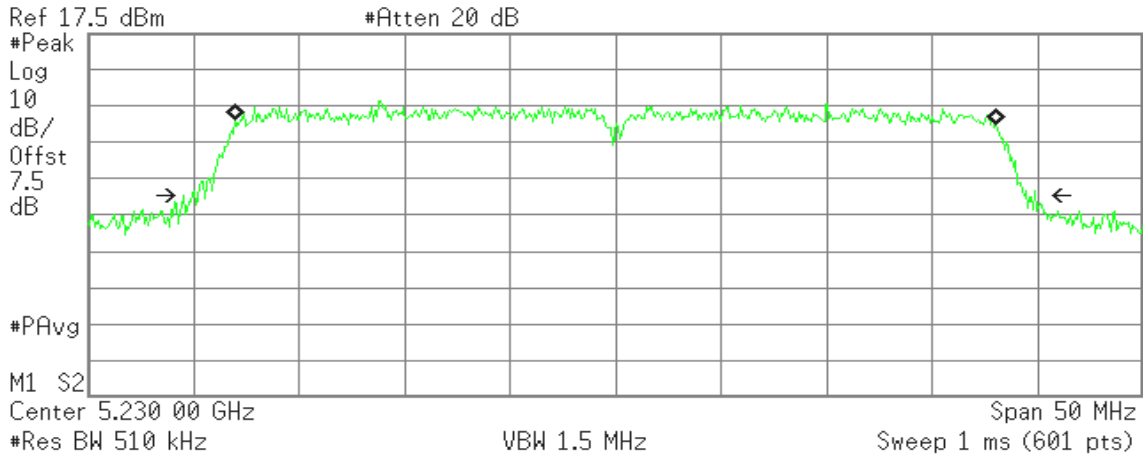
Transmit Freq Error -61.338 kHz
x dB Bandwidth 39.259 MHz



CH High

Agilent

R T



Occupied Bandwidth
35.9588 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -4.986 kHz
x dB Bandwidth 39.968 MHz



7.2 MAXIMUM CONDUCTED OUTPUT POWER

LIMIT

According to §15.407(a),

- (1) For the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or $4 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in MHz.
- (2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in MHz.
- (3) For the band 5.725–5.825 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 1 W or $17 \text{ dBm} + 10 \log B$, 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.

The peak power shall not exceed the limit as follow:



Specified Limit of the Peak Power

Test mode: IEEE 802.11a mode / 5150 ~ 5250MHz

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)	10 Log B (dB)	4 + 10 Log B (dBm)	Maximum Conducted Output Power Limit
Low	5180	20.687	13.16	17.16	17.00
Mid	5220	21.977	13.42	17.42	17.00
High	5240	20.95	13.21	17.21	17.00

Test mode: IEEE 802.11n HT20 mode / 5150 ~ 5250MHz / Chain 0

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)	10 Log B (dB)	4 + 10 Log B (dBm)	Maximum Conducted Output Power Limit
Low	5180	20.09	13.03	17.03	17.00
Mid	5220	20.39	13.09	17.09	17.00
High	5240	20.90	13.20	17.20	17.00

Test mode: IEEE 802.11n HT20 mode / 5150 ~ 5250MHz / Chain 1

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)	10 Log B (dB)	4 + 10 Log B (dBm)	Maximum Conducted Output Power Limit
Low	5180	19.647	12.93	16.93	17.00
Mid	5220	19.55	12.91	16.91	17.00
High	5240	19.266	12.85	16.85	17.00

Test mode: IEEE 802.11n HT40 mode / 5150 ~ 5250MHz / Chain 0

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)	10 Log B (dB)	4 + 10 Log B (dBm)	Maximum Conducted Output Power Limit
Low	5190	40.33	16.06	20.06	17.00
High	5230	39.956	16.02	20.02	17.00

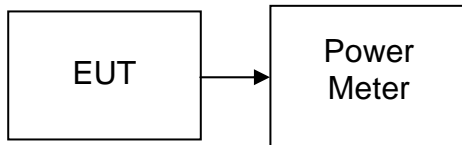
Test mode: IEEE 802.11n HT40 mode / 5150 ~ 5250MHz / Chain 1

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)	10 Log B (dB)	4 + 10 Log B (dBm)	Maximum Conducted Output Power Limit
Low	5190	39.259	15.94	19.94	17.00
High	5230	39.968	16.02	20.02	17.00



Test Configuration

The EUT was connected to a spectrum analyzer through a 50 Ω RF cable.



TEST PROCEDURE

Set span to encompass the entire emission bandwidth (EBW) of the signal.

Set RBW = 1 MHz / Set VBW = 3 MHz.

Use sample detector mode if bin width (i.e., span/number of points in spectrum display) < 0.5 RBW. Otherwise use peak detector mode. Use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at full control power for entire sweep of every sweep. If the device transmits continuously, with no off intervals or reduced power intervals, the trigger may be set to "free run". Trace average 100 traces in power averaging mode. Compute power by integrating the spectrum across the 26 dB EBW of the signal. The integration can be performed using the spectrum analyzer's band power measurement function with band limits set equal to the EBW band edges or by summing power levels in each 1 MHz band in linear power terms. The 1 MHz band power levels to be summed can be obtained by averaging, in linear power terms, power levels in each frequency bin across the 1 MHz.

TEST RESULTS

No non-compliance noted



Test Data

Test mode: IEEE 802.11a mode / 5150 ~ 5250MHz

Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5180	5.18	17.00
Mid	5220	5.30	17.00
High	5240	5.28	17.00

Test mode: IEEE 802.11n HT20 mode / 5150 ~ 5250MHz

Channel	Frequency (MHz)	Chain 0 Maximum Conducted Output Power (dBm)	Chain 1 Maximum Conducted Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5180	6.29	6.73	9.53	16.93
Mid	5220	6.44	6.61	9.54	16.91
High	5240	6.41	6.09	9.26	16.85

Test mode: IEEE 802.11n HT40 mode / 5150 ~ 5250MHz

Channel	Frequency (MHz)	Chain 0 Maximum Conducted Output Power (dBm)	Chain 1 Maximum Conducted Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5190	9.4	9.23	12.33	17.00
High	5230	9.42	9.74	12.59	17.00



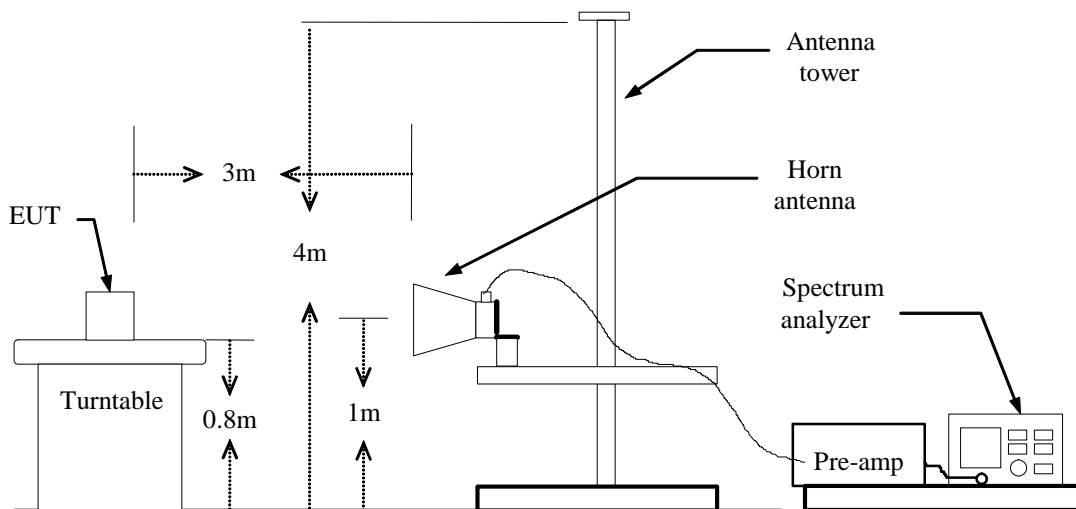
7.3 BAND EDGES MEASUREMENT

LIMIT

According to §15.407(b)

- (1) The provisions of Section 15.205 of this part apply to intentional radiators operating under this section.
- (2) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency block edges as the design of the equipment permits.

Test Configuration



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.

TEST RESULTS

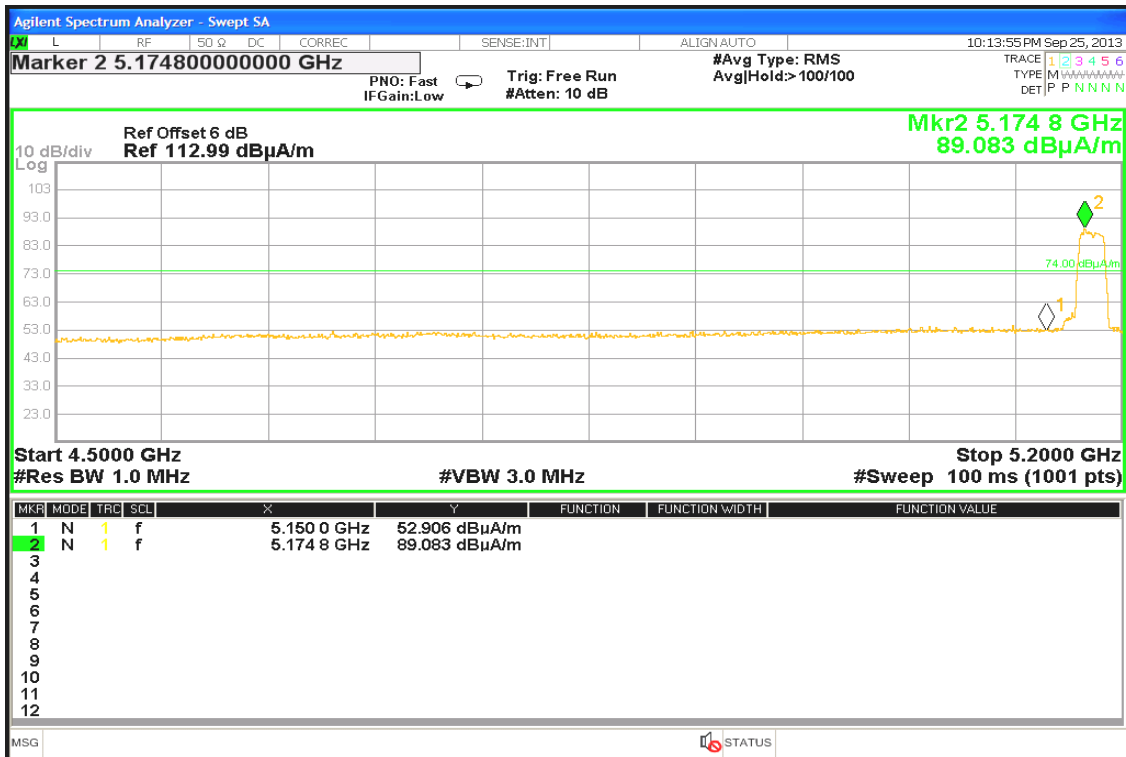
Refer to attach spectrum analyzer data chart.



IEEE 802.11a mode / 5150 ~ 5250MHz / CH Low

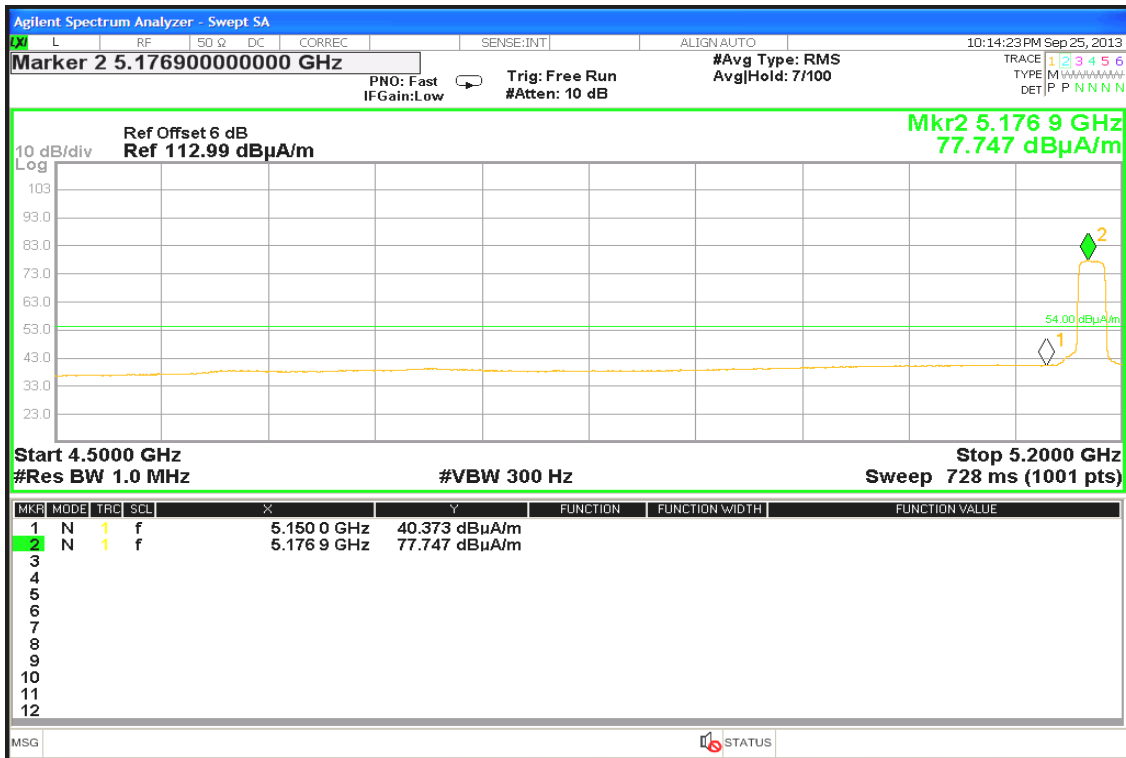
Detector mode: Peak

Polarity: Vertical



Detector mode: Average

Polarity: Vertical





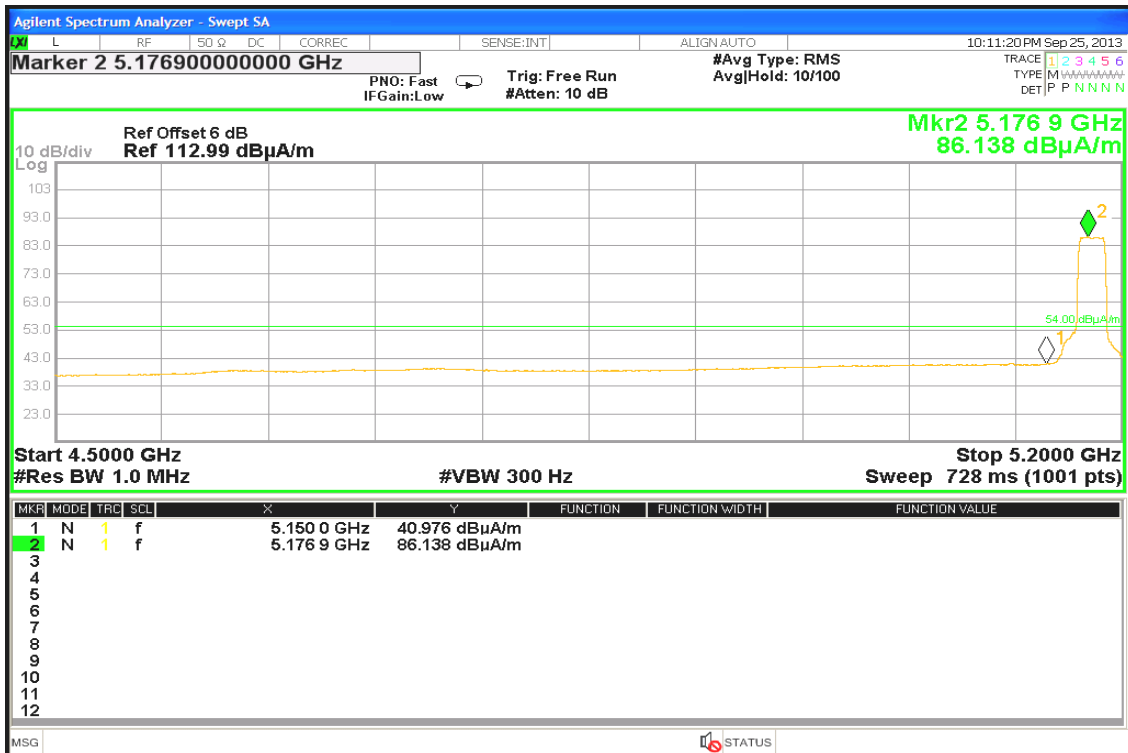
Detector mode: Peak

Polarity: Horizontal



Detector mode: Average

Polarity: Horizontal

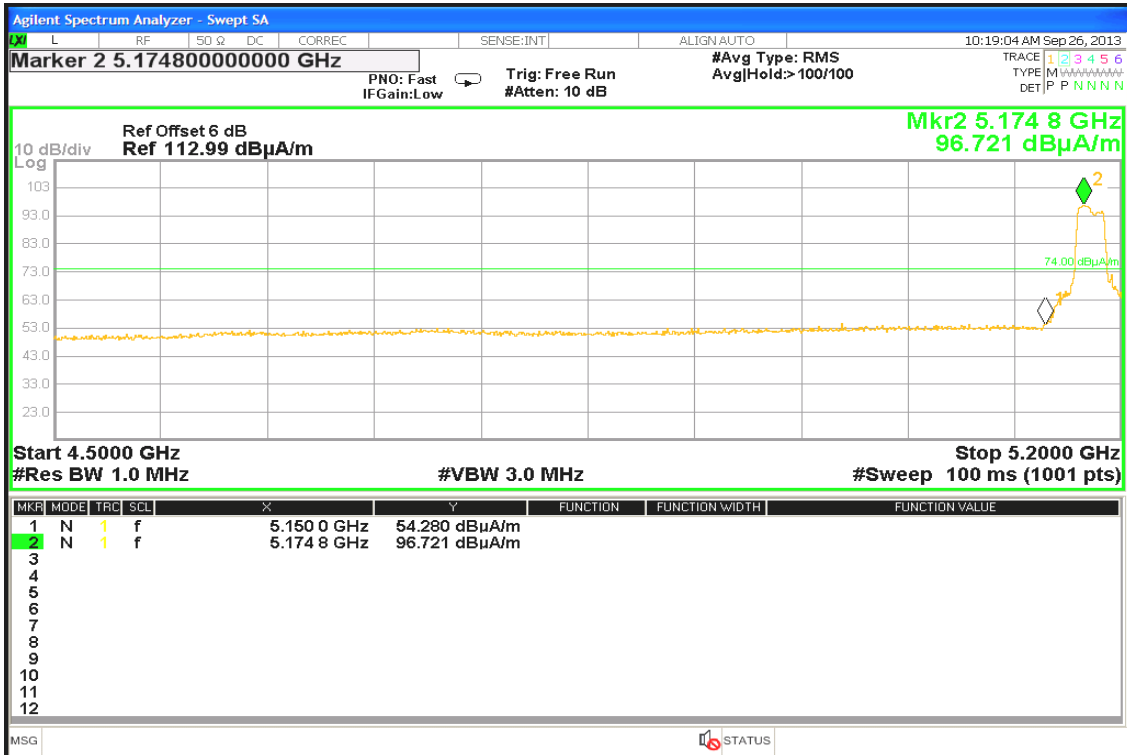




IEEE 802.11n HT20 mode / 5150 ~ 5250MHz / CH Low

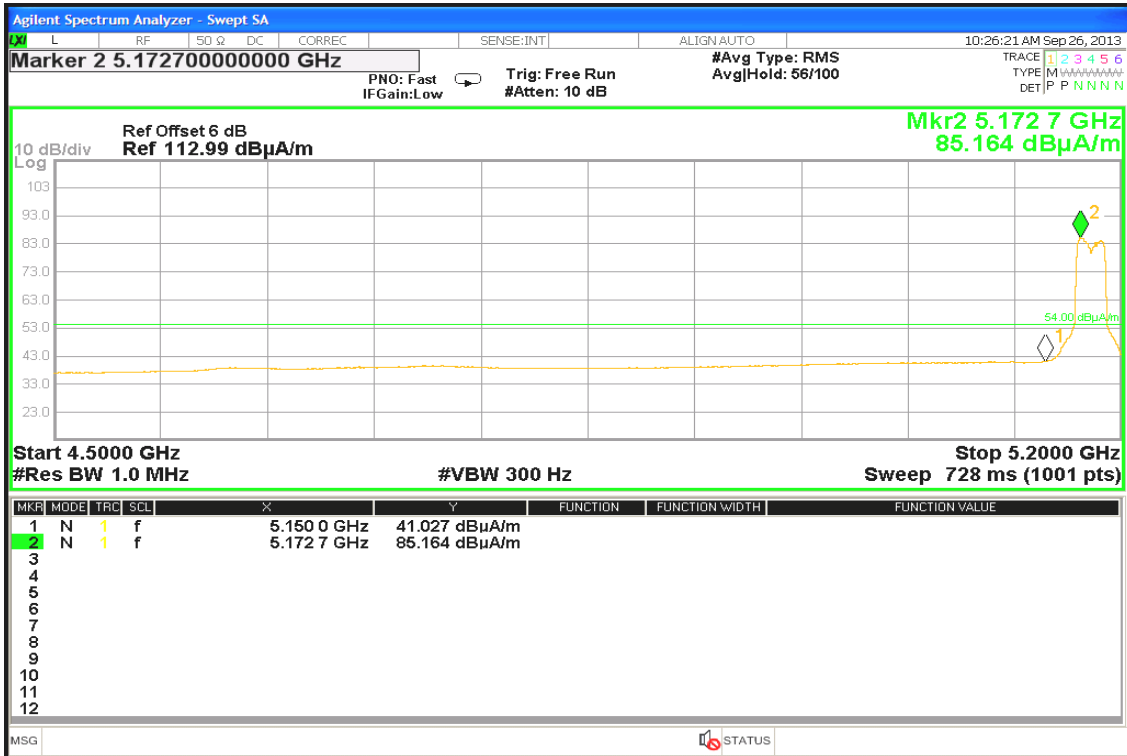
Detector mode: Peak

Polarity: Vertical



Detector mode: Average

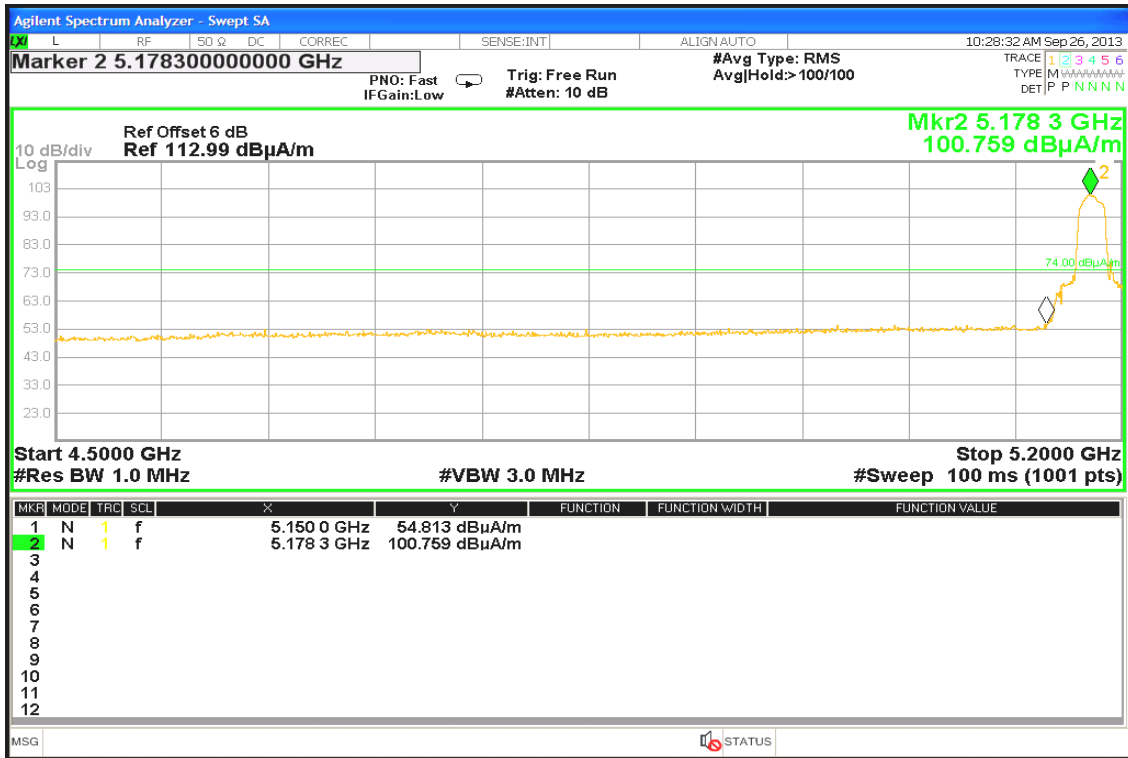
Polarity: Vertical





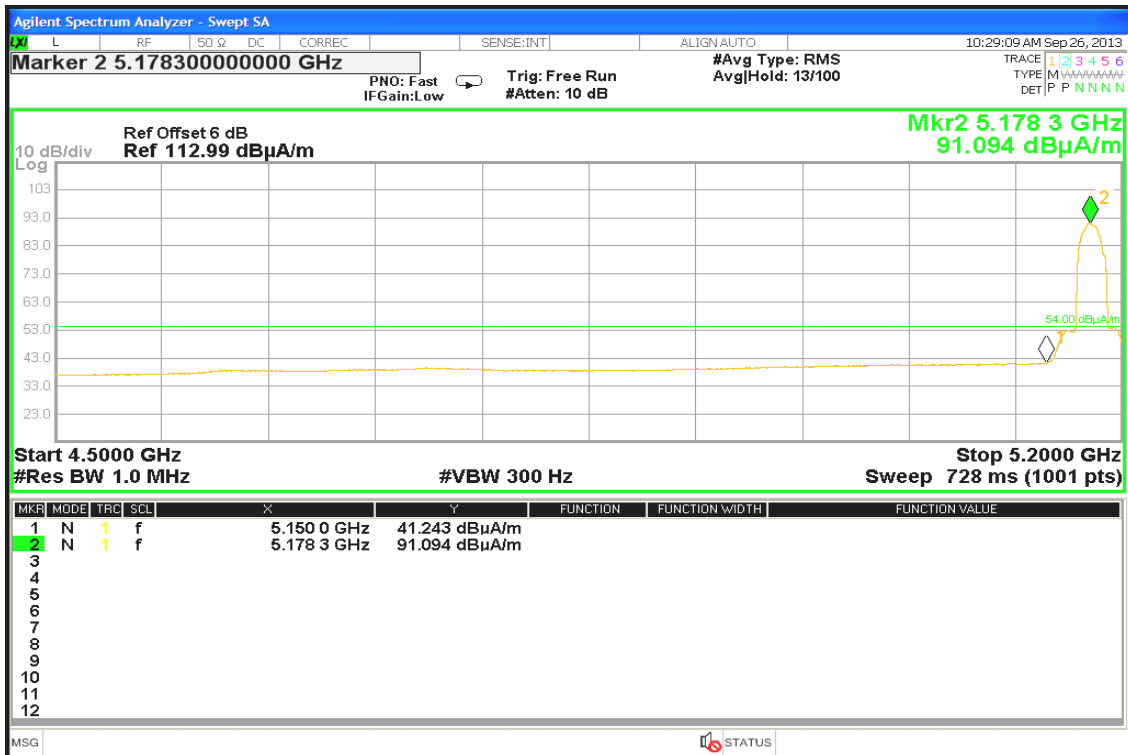
Detector mode: Peak

Polarity: Horizontal



Detector mode: Average

Polarity: Horizontal

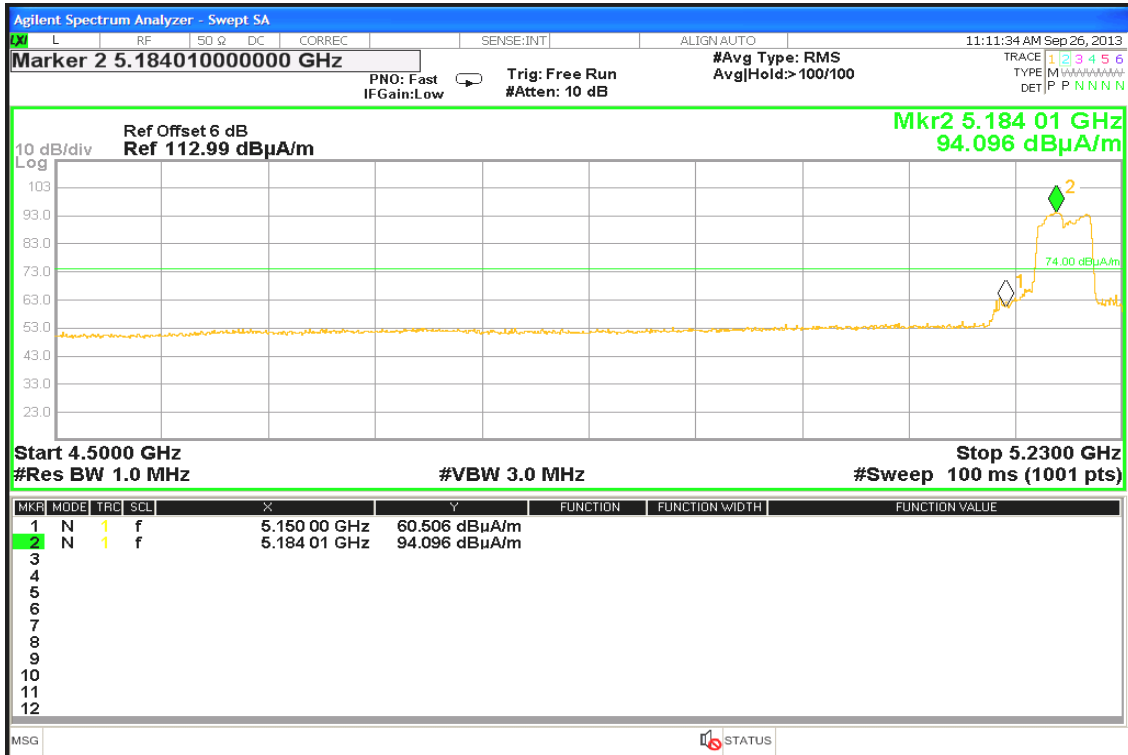




IEEE 802.11n HT40 mode / 5150 ~ 5250MHz / CH Low

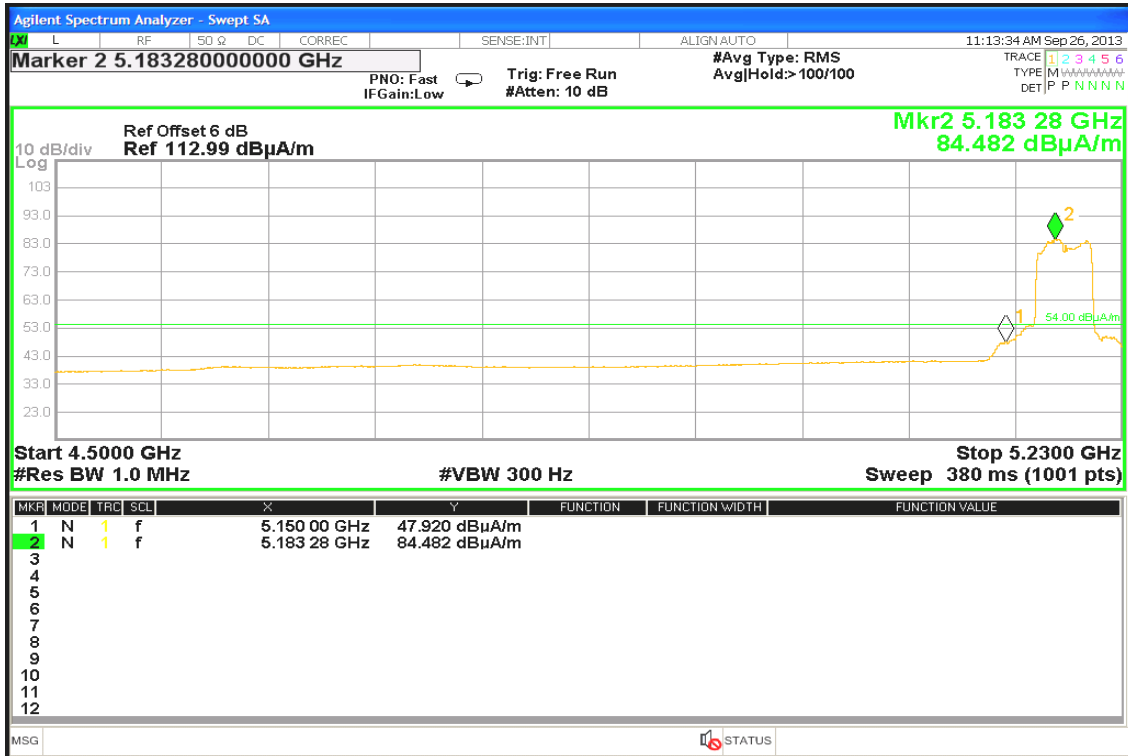
Detector mode: Peak

Polarity: Vertical



Detector mode: Average

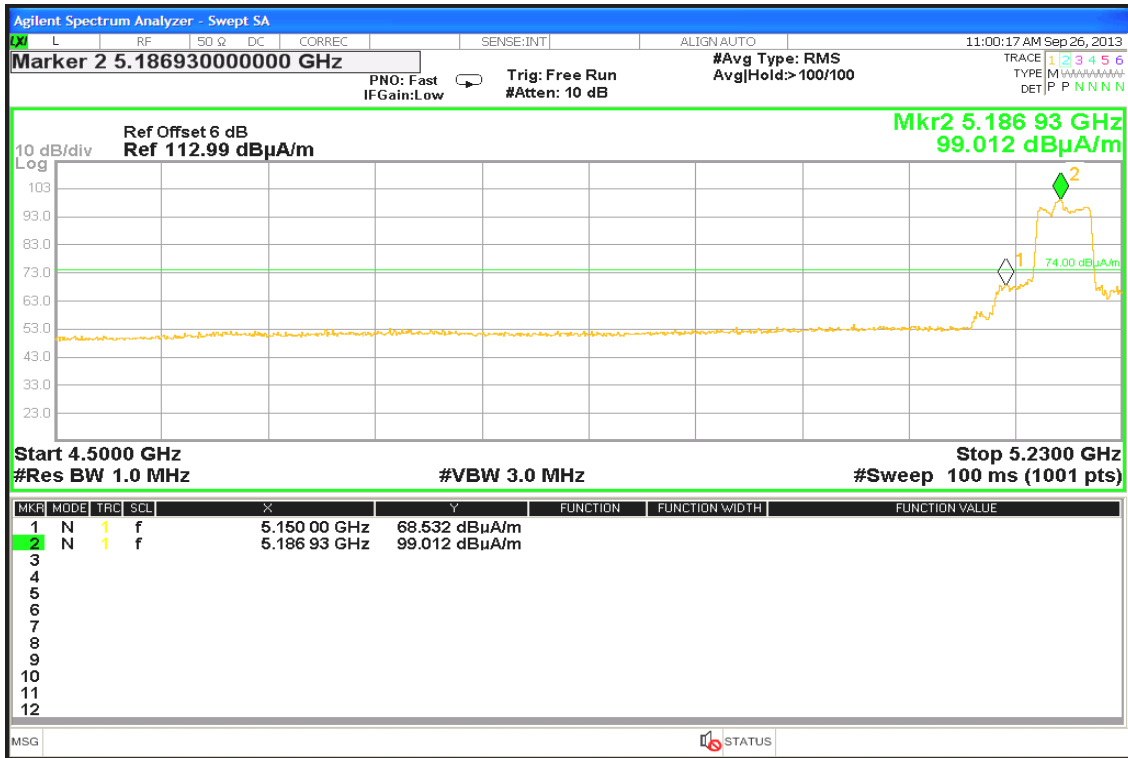
Polarity: Vertical





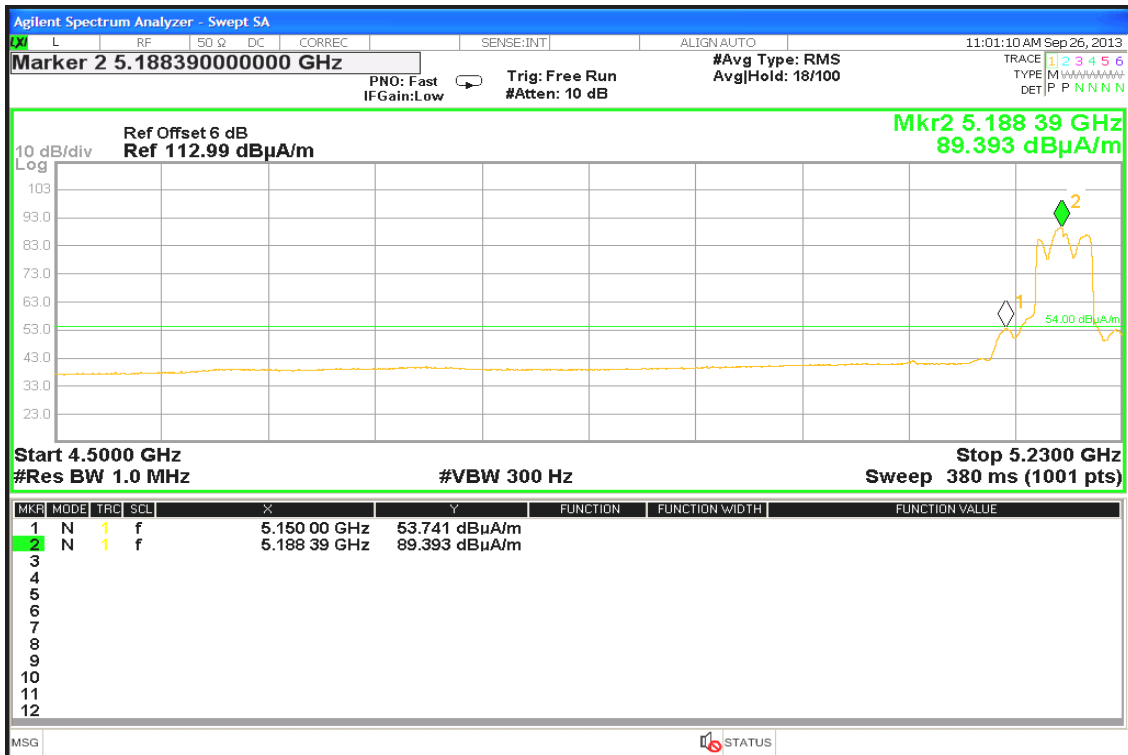
Detector mode: Peak

Polarity: Horizontal



Detector mode: Average

Polarity: Horizontal





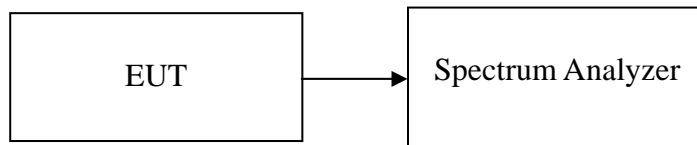
7.4 PEAK POWER SPECTRAL DENSITY

LIMIT

According to §15.407(a)

- (1) For the band 5.15-5.25 GHz, the peak power spectral density shall not exceed 4dBm in any 1MHz band.
- (2) For the band 5.25-5.35 GHz, the peak power spectral density shall not exceed 11dBm in any 1MHz band.

Test Configuration



TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
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

TEST RESULTS

No non-compliance noted



Test Data

Test mode: IEEE 802.11a mode / 5150 ~ 5250MHz

Channel	Frequency (MHz)	PEAK POWER SPECTRAL DENSITY	Limit (dB)	Margin (dB)	Result
Low	5180	3.45	4.00	-0.55	PASS
Mid	5220	3.37	4.00	-0.63	PASS
High	5240	3.47	4.00	-0.53	PASS

Test mode: IEEE 802.11n HT20 mode / 5150 ~ 5250MHz

Channel	Frequency (MHz)	PEAK POWER SPECTRAL DENSITY (Chain 0) (dB)	PEAK POWER SPECTRAL DENSITY (Chain 1) (dB)	PEAK POWER SPECTRAL DENSITY (Total) (dB)	Limit (dB)	Margin (dB)	Result
Low	5180	-0.30	0.15	2.94	4.00	-1.06	PASS
Mid	5220	-0.25	0.01	2.89	4.00	-1.11	PASS
High	5240	-0.63	-1.32	2.05	4.00	-1.95	PASS

Test mode: IEEE 802.11n HT40 mode / 5150 ~ 5250MHz

Channel	Frequency (MHz)	PEAK POWER SPECTRAL DENSITY (Chain 0) (dB)	PEAK POWER SPECTRAL DENSITY (Chain 1) (dB)	PEAK POWER SPECTRAL DENSITY (Total) (dB)	Limit (dB)	Margin (dB)	Result
Low	5190	-1.36	-0.04	2.36	4.00	-1.64	PASS
High	5230	-0.87	-0.29	2.44	4.00	-1.56	PASS



Test Plot

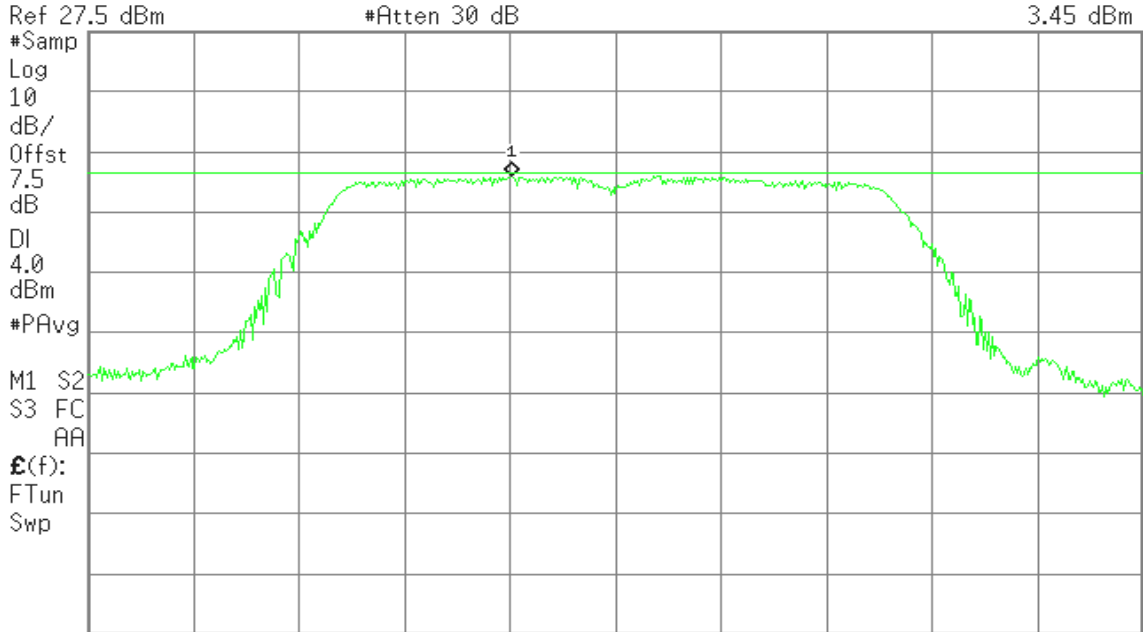
IEEE 802.11a mode / 5150 ~ 5250MHz

CH Low

Agilent

R T

Mkr1 5.177 05 GHz
3.45 dBm



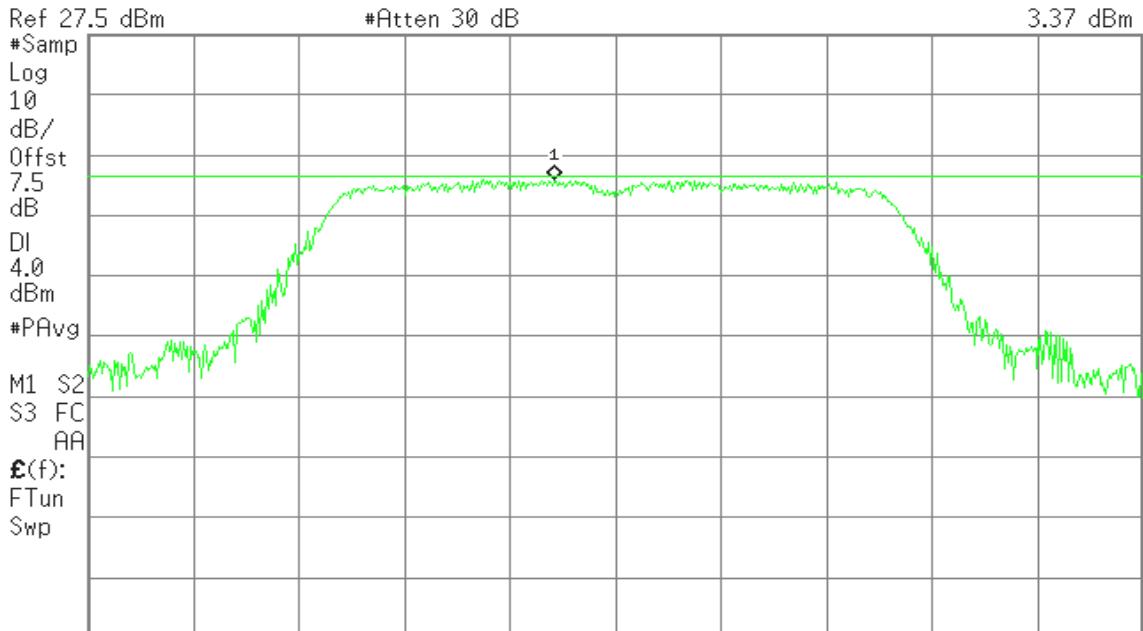
Center 5.180 00 GHz Span 30 MHz
#Res BW 1 MHz #VBW 3 MHz Sweep 20 ms (601 pts)

CH Mid

Agilent

R T

Mkr1 5.218 25 GHz
3.37 dBm



Center 5.220 00 GHz Span 30 MHz
#Res BW 1 MHz #VBW 3 MHz Sweep 20 ms (601 pts)



CH High

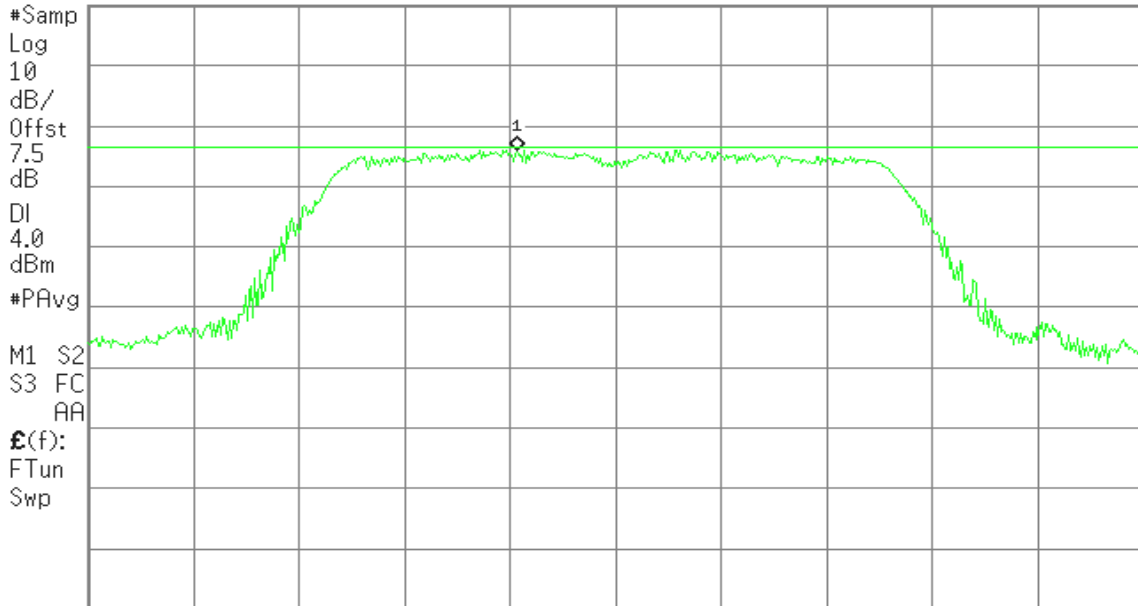
Agilent

R T

Mkr1 5.237 20 GHz
3.47 dBm

Ref 27.5 dBm

#Atten 30 dB



Center 5.240 00 GHz

Span 30 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 20 ms (601 pts)

IEEE 802.11n HT20 mode / 5150 ~ 5250MHz / Chain 0

CH Low

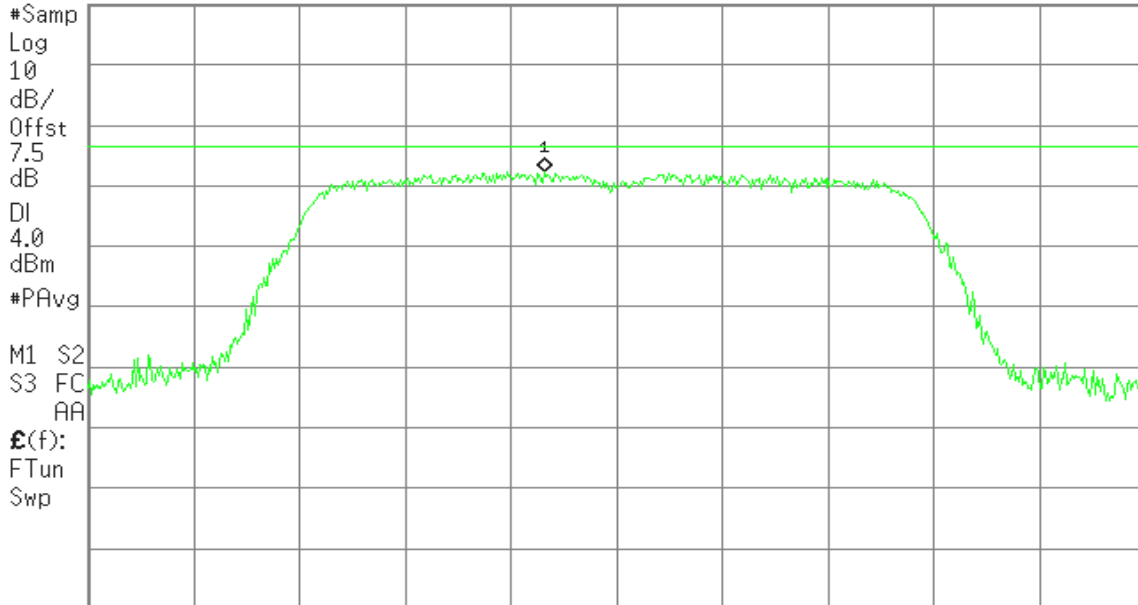
Agilent

R L

Mkr1 5.177 95 GHz
-0.30 dBm

Ref 27.5 dBm

#Atten 30 dB



Center 5.180 00 GHz

Span 30 MHz

#Res BW 1 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

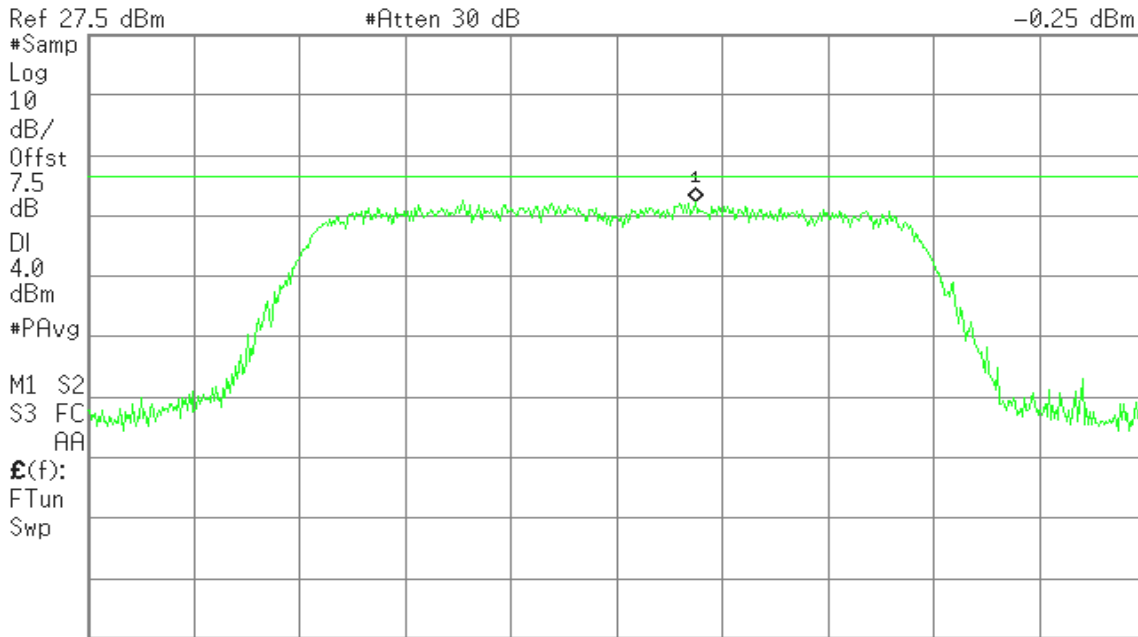


CH Mid

Agilent

R L

Mkr1 5.222 25 GHz
-0.25 dBm



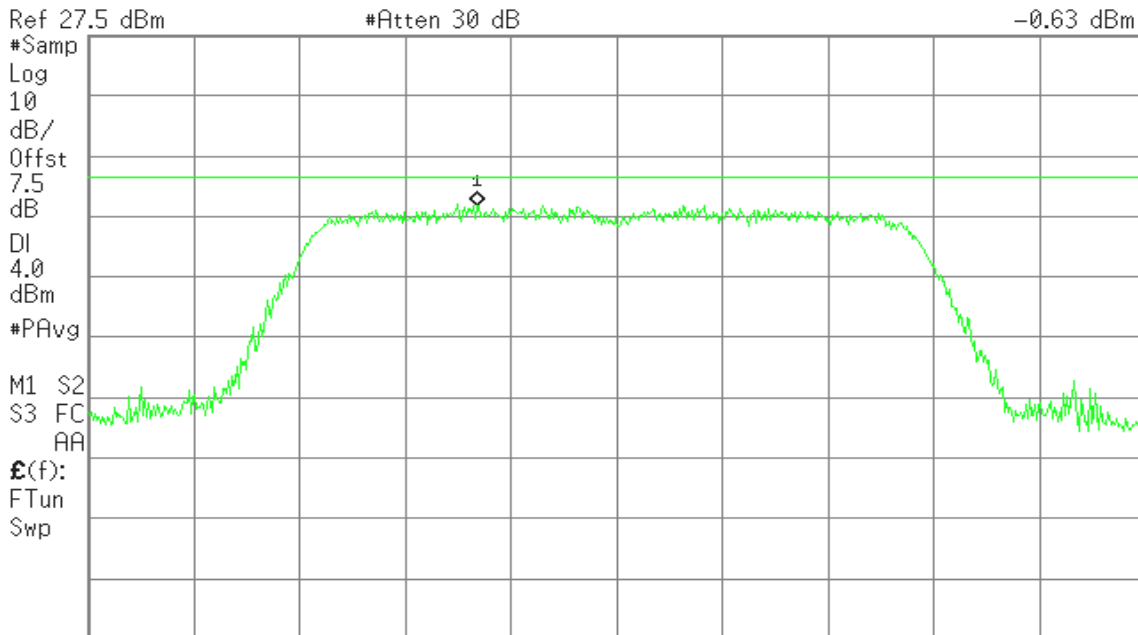
Center 5.220 00 GHz Span 30 MHz
#Res BW 1 MHz #VBW 3 MHz Sweep 1 ms (601 pts)

CH High

Agilent

R L

Mkr1 5.236 05 GHz
-0.63 dBm



Center 5.240 00 GHz Span 30 MHz
#Res BW 1 MHz #VBW 3 MHz Sweep 1 ms (601 pts)



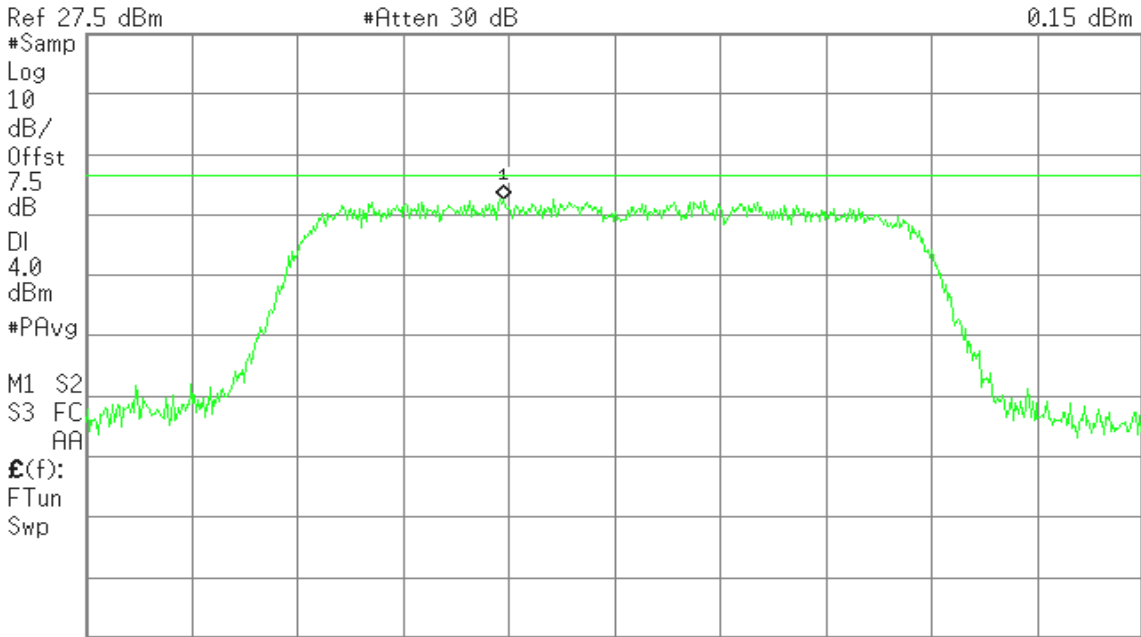
IEEE 802.11n HT20 mode / 5150 ~ 5250MHz / Chain 1

CH Low

Agilent

R L

Mkr1 5.176 85 GHz
0.15 dBm



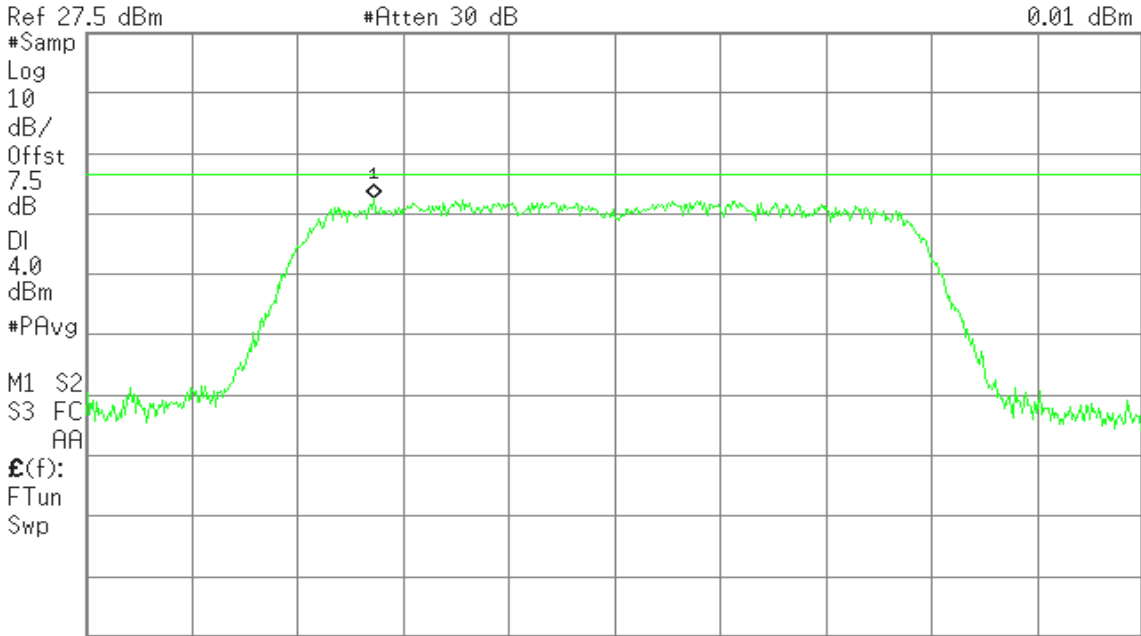
Center 5.180 00 GHz Span 30 MHz
#Res BW 1 MHz #VBW 3 MHz Sweep 1 ms (601 pts)

CH Mid

Agilent

R T

Mkr1 5.213 15 GHz
0.01 dBm



Center 5.220 00 GHz Span 30 MHz
#Res BW 1 MHz #VBW 3 MHz Sweep 1 ms (601 pts)

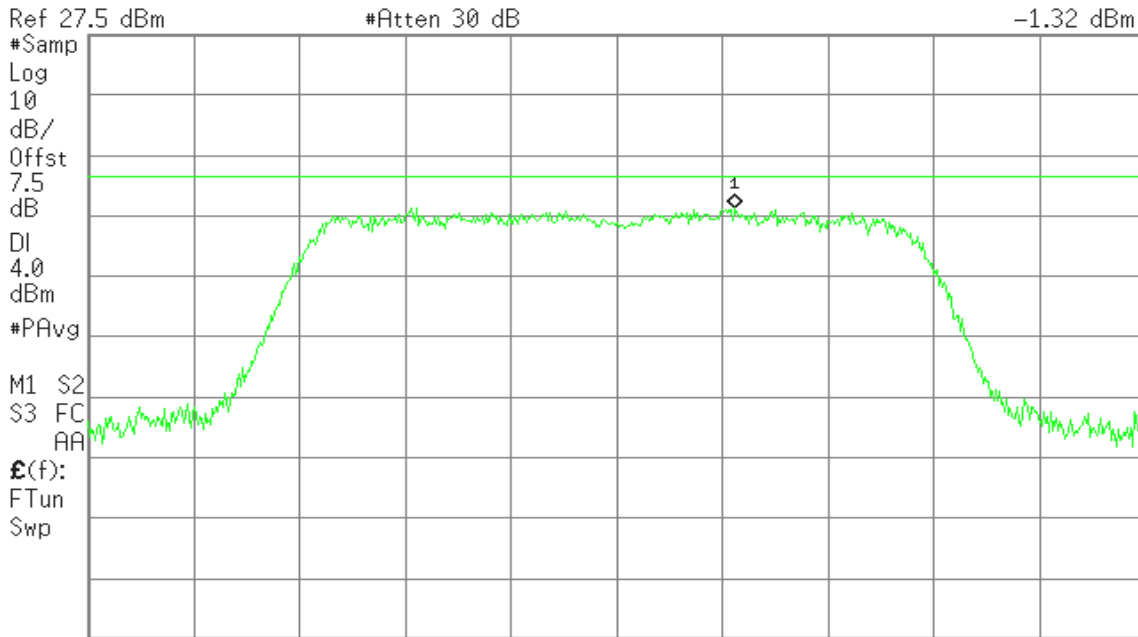


CH High

Agilent

R L

Mkr1 5.243 35 GHz
-1.32 dBm



Center 5.240 00 GHz #Res BW 1 MHz #VBW 3 MHz Sweep 1 ms (601 pts)

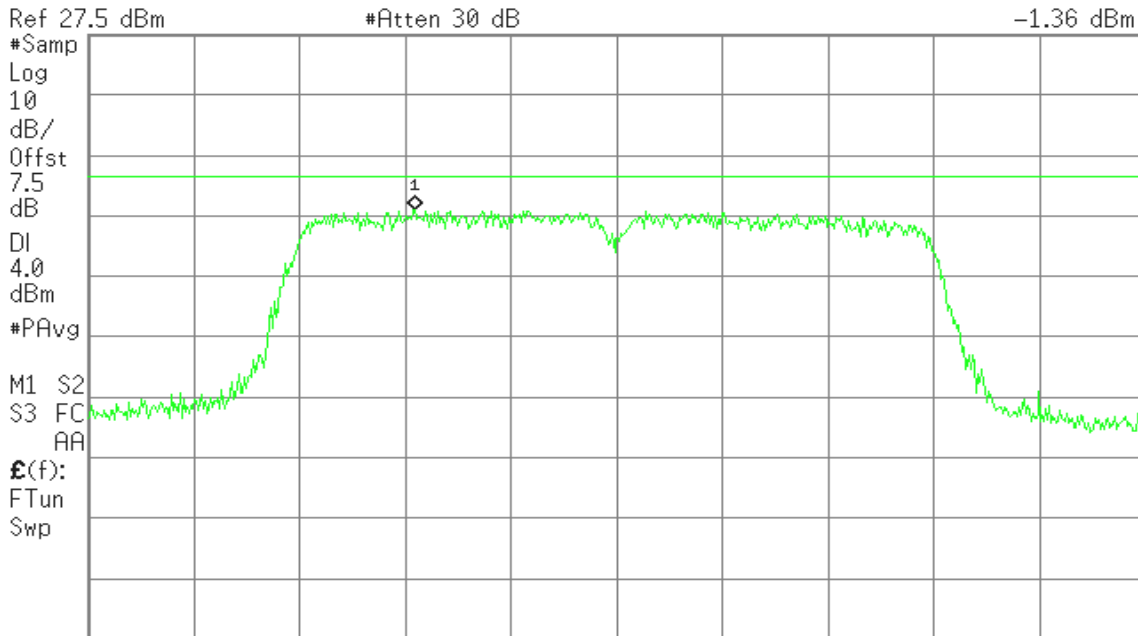
IEEE 802.11n HT40 mode / 5150 ~ 5250MHz / Chain 0

CH Low

Agilent

R L

Mkr1 5.178 6 GHz
-1.36 dBm



Center 5.190 0 GHz #Res BW 1 MHz #VBW 3 MHz Sweep 1 ms (601 pts)

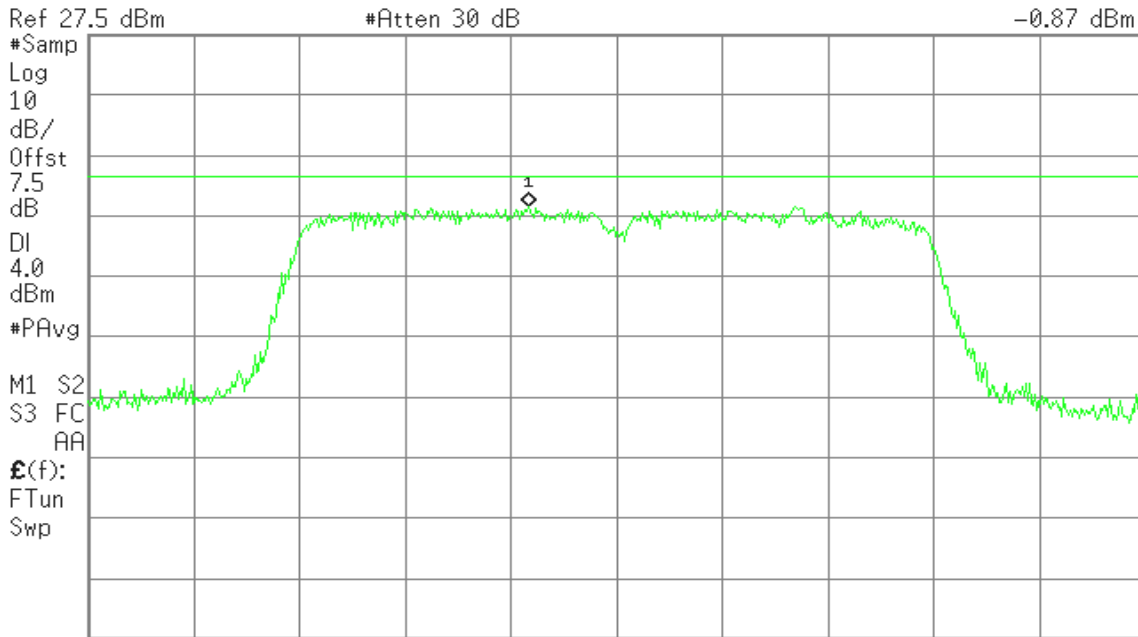


CH High

Agilent

R L

Mkr1 5.225 0 GHz
-0.87 dBm



Center 5.230 0 GHz Span 60 MHz
#Res BW 1 MHz #VBW 3 MHz Sweep 1 ms (601 pts)

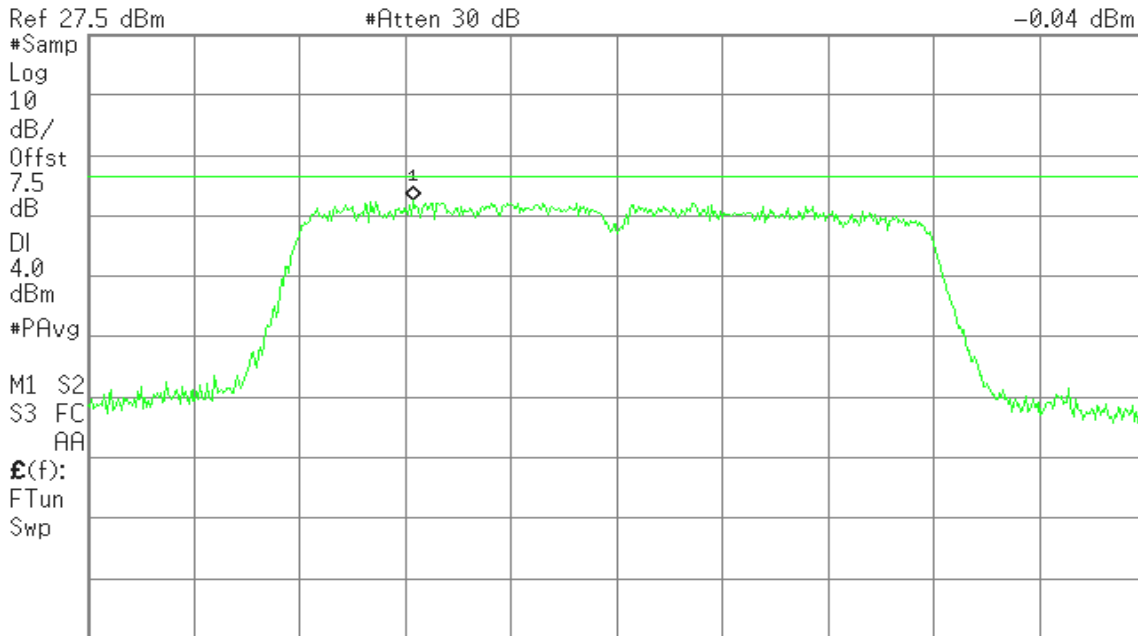
IEEE 802.11n HT40 mode / 5150 ~ 5250MHz / Chain 1

CH Low

Agilent

R L

Mkr1 5.178 5 GHz
-0.04 dBm



Center 5.190 0 GHz Span 60 MHz
#Res BW 1 MHz #VBW 3 MHz Sweep 1 ms (601 pts)

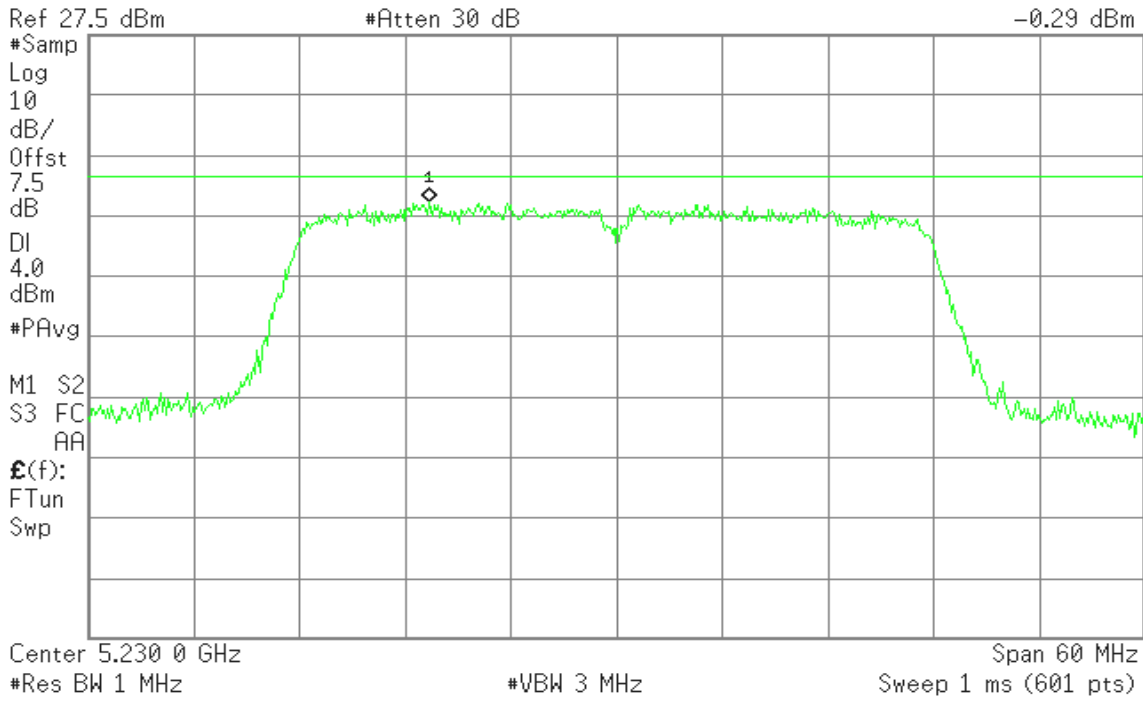


CH High

Agilent

R L

Mkr1 5.219 4 GHz
-0.29 dBm



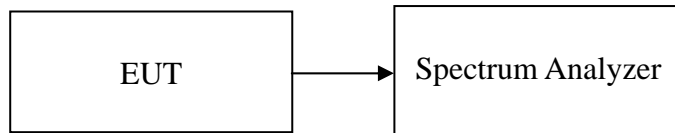


7.5 PEAK EXCURSION

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.

Test Configuration



TEST PROCEDURE

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.

TEST RESULTS

No non-compliance noted



Test Data

Test mode: IEEE 802.11a mode / 5150 ~ 5250MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5180	2.85	13.00	-10.15	PASS
Mid	5220	1.61	13.00	-11.39	PASS
High	5240	2.92	13.00	-10.08	PASS

Test mode: IEEE 802.11n HT20 mode / 5150 ~ 5250MHz / Chain 0

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5180	4.04	13.00	-8.96	PASS
Mid	5220	2.98	13.00	-10.02	PASS
High	5240	3.67	13.00	-9.33	PASS

Test mode: IEEE 802.11n HT20 mode / 5150 ~ 5250MHz / Chain 1

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5180	2.44	13.00	-10.56	PASS
Mid	5220	2.23	13.00	-10.77	PASS
High	5240	2.17	13.00	-10.83	PASS

Test mode: IEEE 802.11n HT40 mode / 5150 ~ 5250MHz / Chain 0

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5190	2.60	13.00	-10.40	PASS
High	5230	3.74	13.00	-9.26	PASS

Test mode: IEEE 802.11n HT40 mode / 5150 ~ 5250MHz / Chain 1

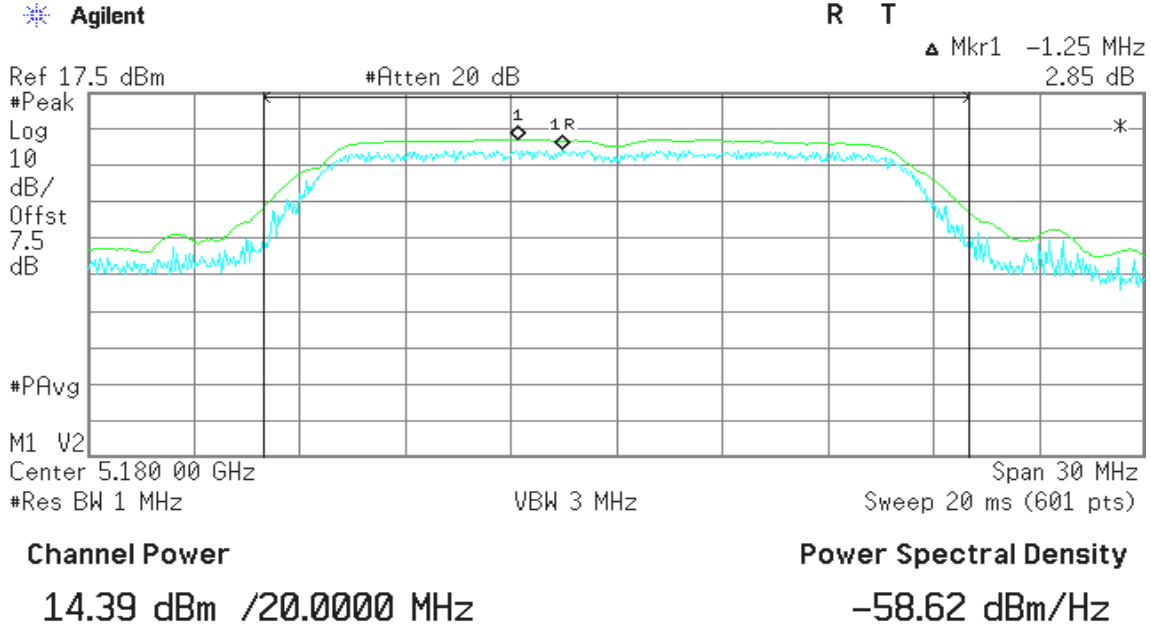
Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5190	2.98	13.00	-10.02	PASS
High	5230	2.51	13.00	-10.49	PASS



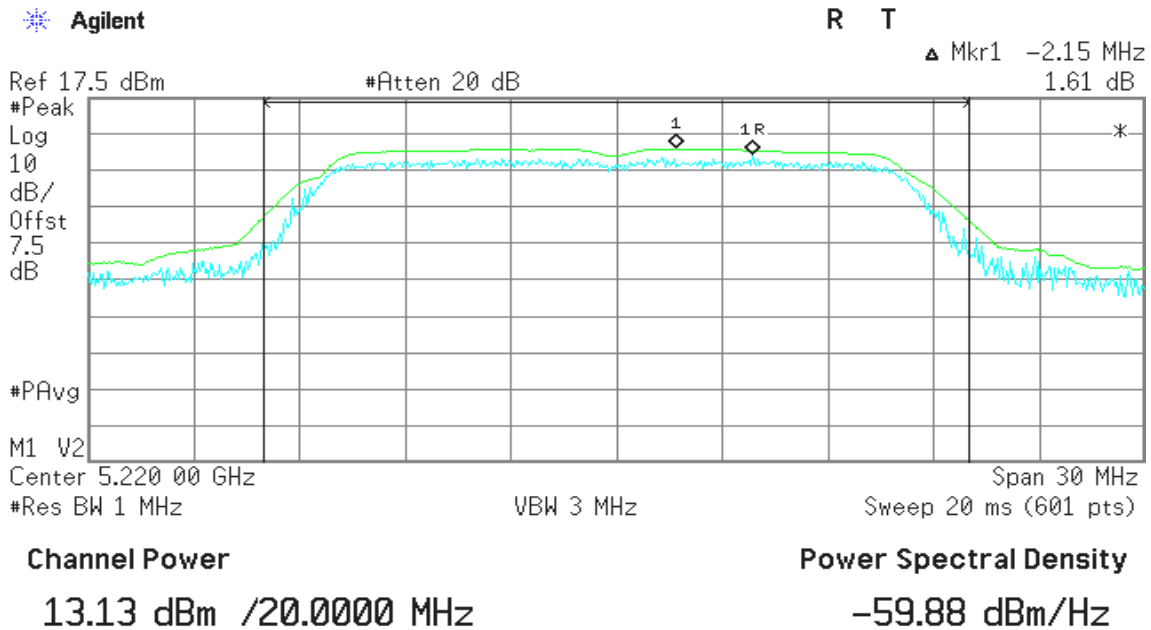
Test Plot

IEEE 802.11a mode / 5150 ~ 5250MHz

CH Low



CH Mid

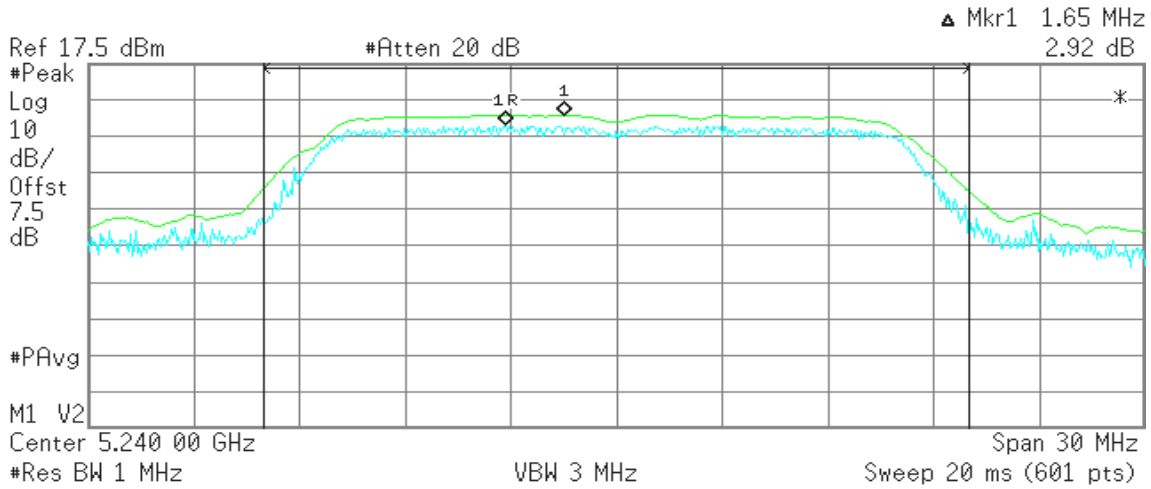




CH High

Agilent

R T



Channel Power

13.13 dBm /20.0000 MHz

Power Spectral Density

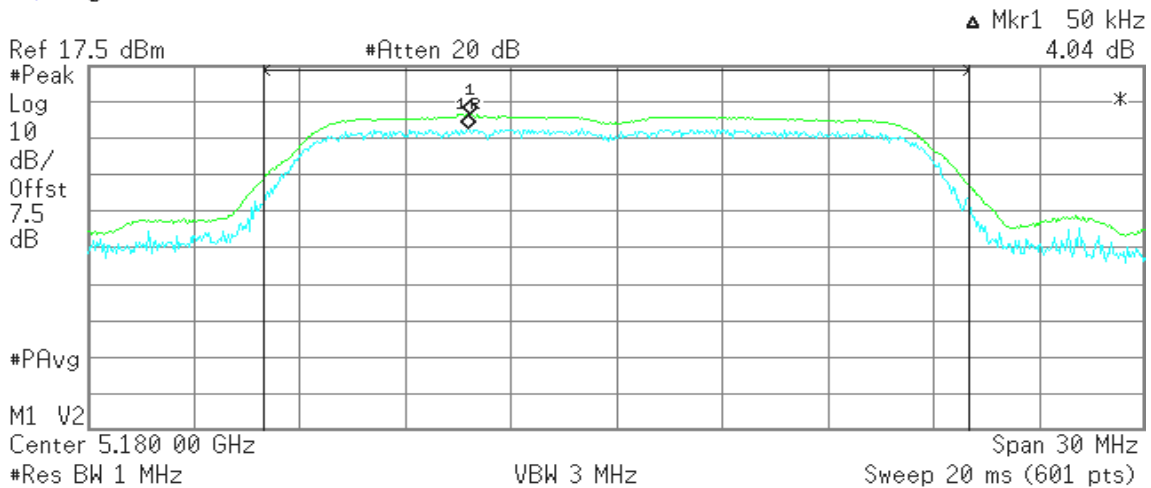
-59.88 dBm/Hz

IEEE 802.11n HT20 mode / 5150 ~ 5250MHz / Chain 0

CH Low

Agilent

R T



Channel Power

12.75 dBm /20.0000 MHz

Power Spectral Density

-60.26 dBm/Hz

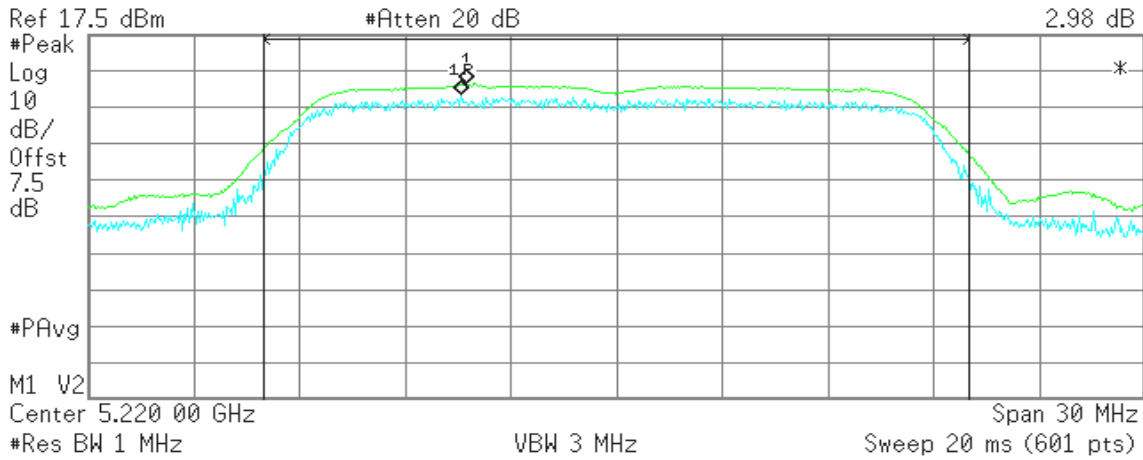


CH Mid

Agilent

R T

Mkr1 150 kHz
2.98 dB



Channel Power

12.71 dBm /20.0000 MHz

Power Spectral Density

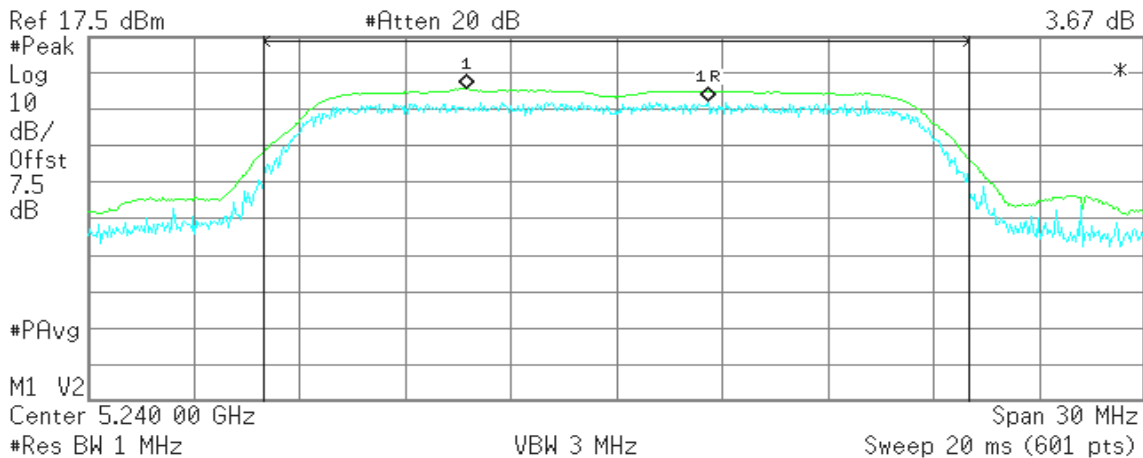
-60.30 dBm/Hz

CH High

Agilent

R T

Mkr1 -6.85 MHz
3.67 dB



Channel Power

12.26 dBm /20.0000 MHz

Power Spectral Density

-60.75 dBm/Hz



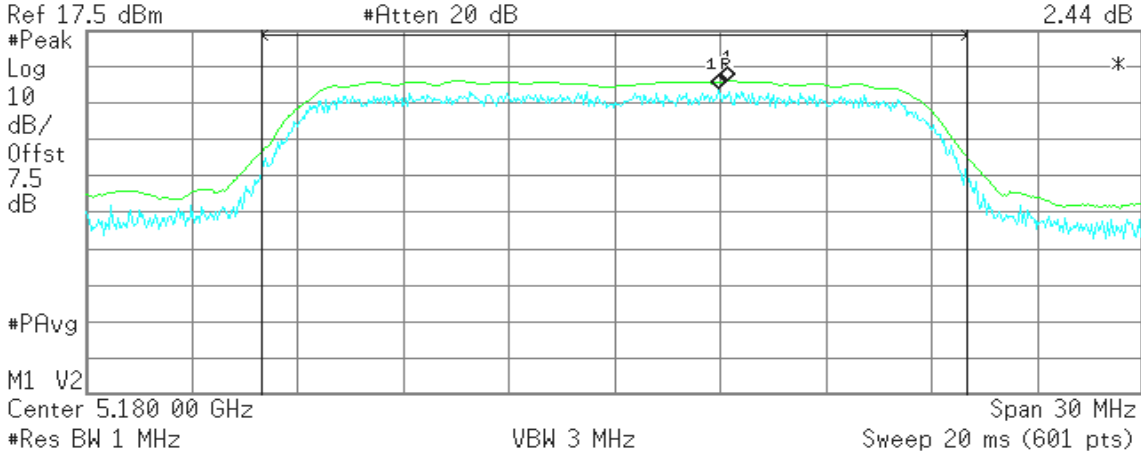
IEEE 802.11n HT20 mode / 5150 ~ 5250MHz / Chain 1

CH Low

Agilent

R T

Mkr1 250 kHz
2.44 dB



Channel Power

12.93 dBm /20.0000 MHz

Power Spectral Density

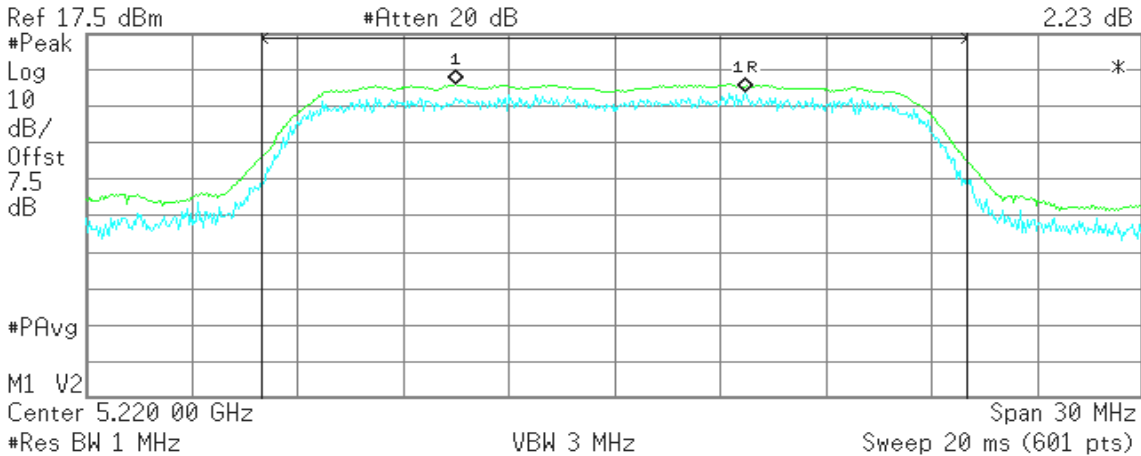
-60.08 dBm/Hz

CH Mid

Agilent

R T

Mkr1 -8.20 MHz
2.23 dB



Channel Power

12.42 dBm /20.0000 MHz

Power Spectral Density

-60.59 dBm/Hz

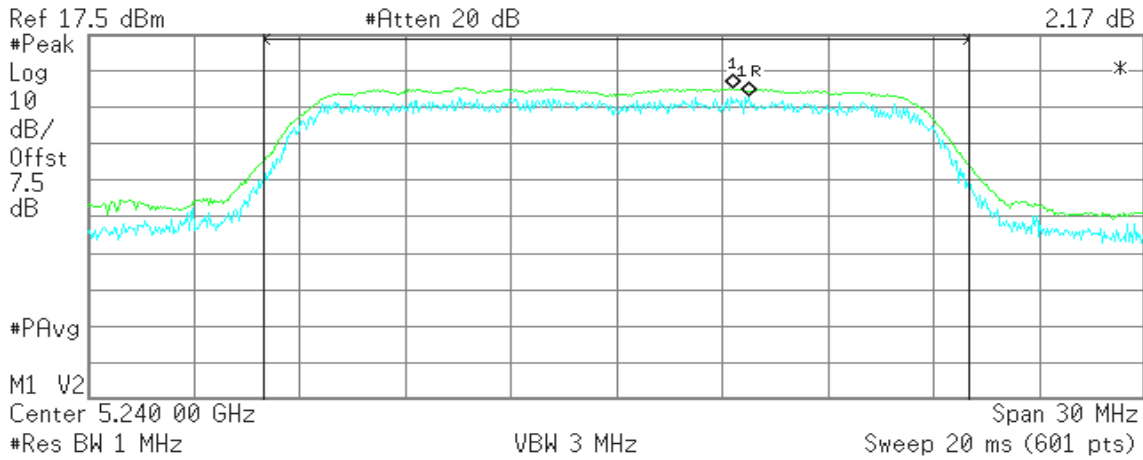


CH High

Agilent

R T

Mkr1 -450 kHz
2.17 dB



Channel Power

11.82 dBm /20.0000 MHz

Power Spectral Density

-61.19 dBm/Hz

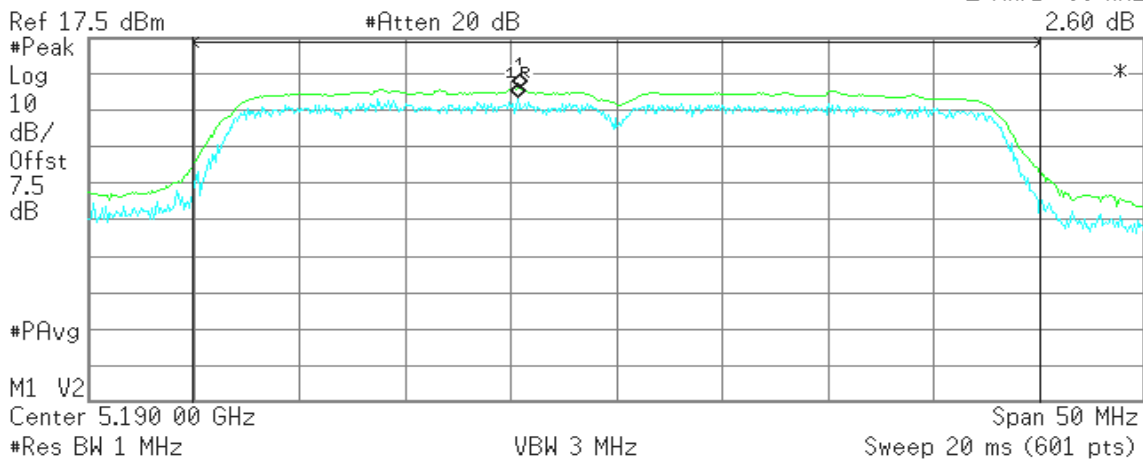
IEEE 802.11n HT40 mode / 5150 ~ 5250MHz / Chain 0

CH Low

Agilent

R T

Mkr1 80 kHz
2.60 dB



Channel Power

15.18 dBm /40.0000 MHz

Power Spectral Density

-60.84 dBm/Hz

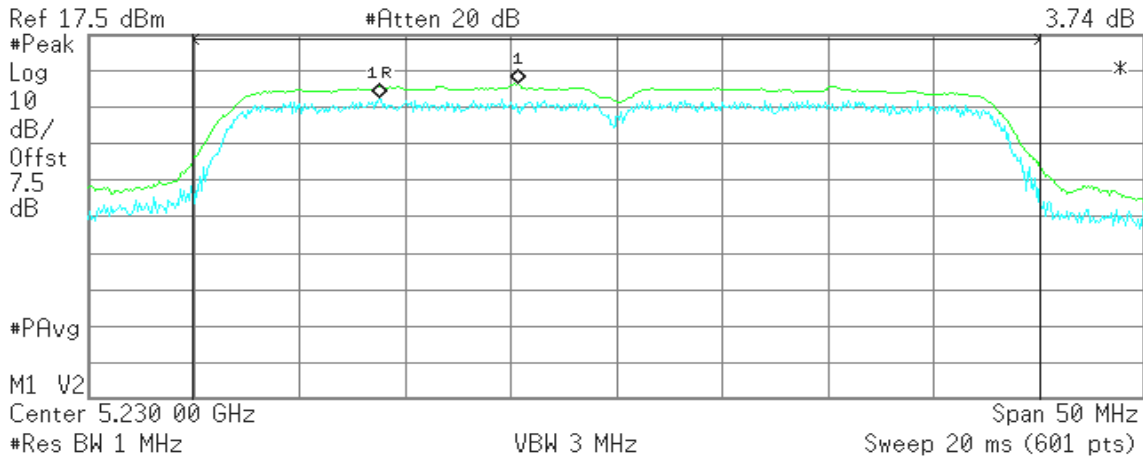


CH High

Agilent

R T

Mkr1 6.58 MHz
3.74 dB



Channel Power

15.32 dBm /40.0000 MHz

Power Spectral Density

-60.70 dBm/Hz

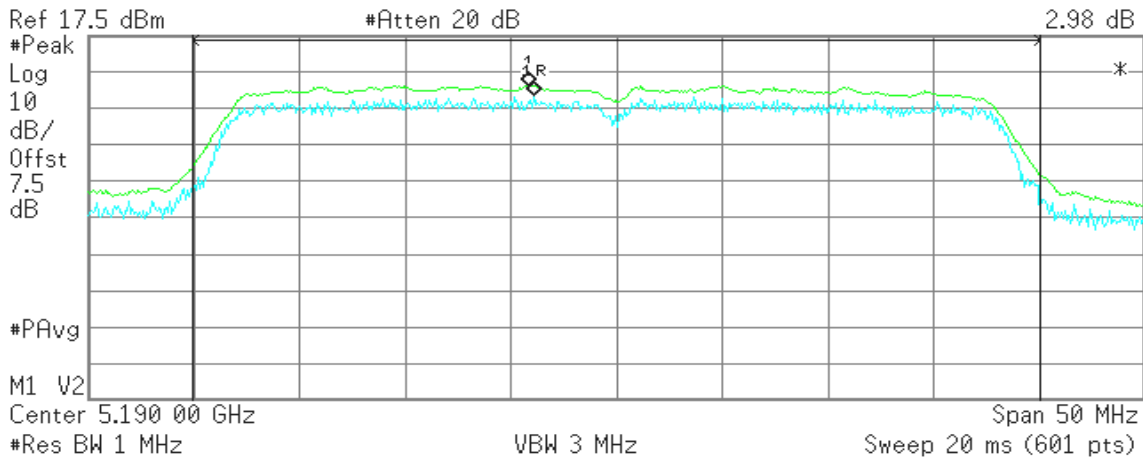
IEEE 802.11n HT40 mode / 5150 ~ 5250MHz / Chain 1

CH Low

Agilent

R T

Mkr1 -250 kHz
2.98 dB



Channel Power

15.21 dBm /40.0000 MHz

Power Spectral Density

-60.81 dBm/Hz

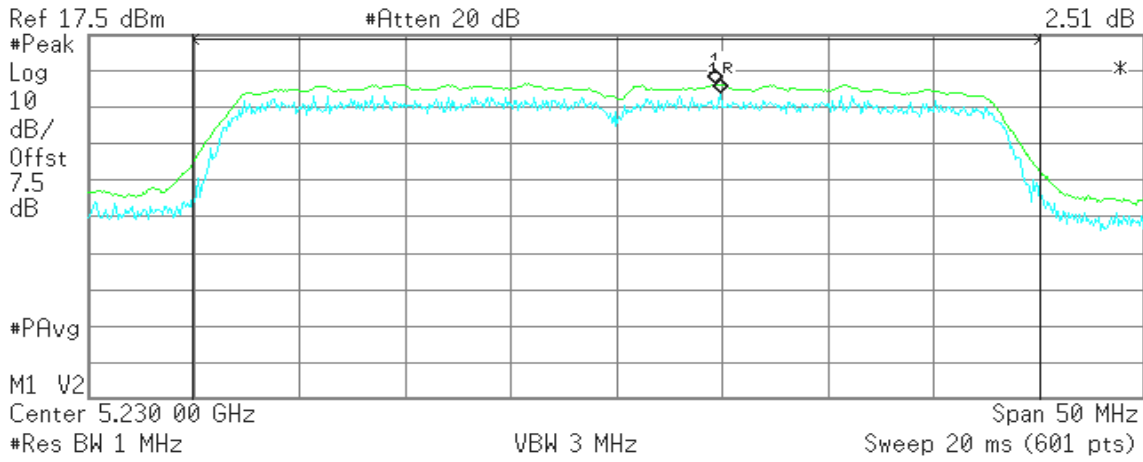


CH High

Agilent

R T

Mkr1 -250 kHz
2.51 dB



Channel Power

15.60 dBm /40.0000 MHz

Power Spectral Density

-60.42 dBm/Hz



7.6 RADIATED UNDESIRABLE EMISSION

1. According to §15.209(a) & RSS-210 §A9.3, 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)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (m)
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

Remark: 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 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

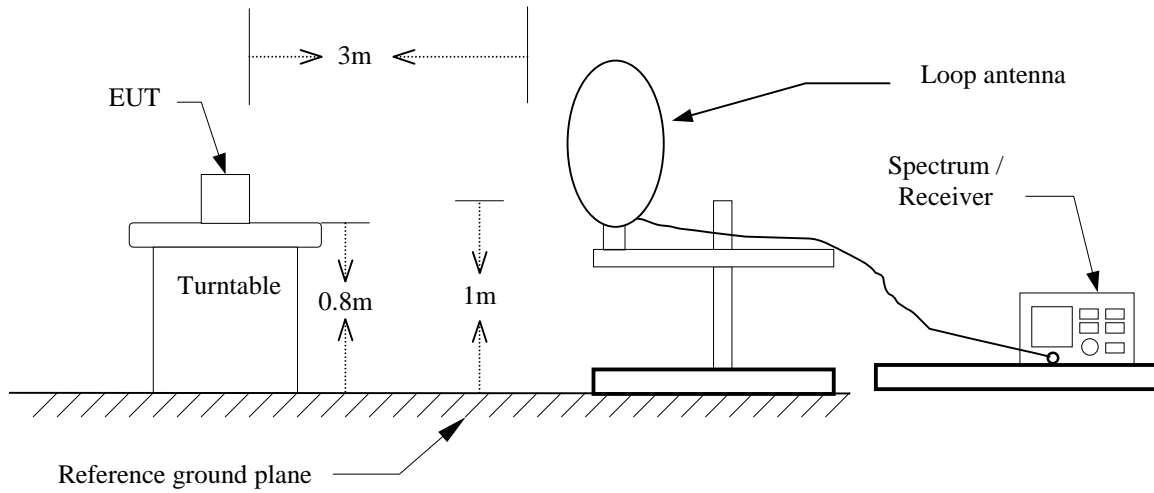
2. In the emission table above, the tighter limit applies at the band edges.

Frequency (MHz)	Field Strength ($\mu\text{V/m}$ at 3-meter)	Field Strength (dB $\mu\text{V/m}$ at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

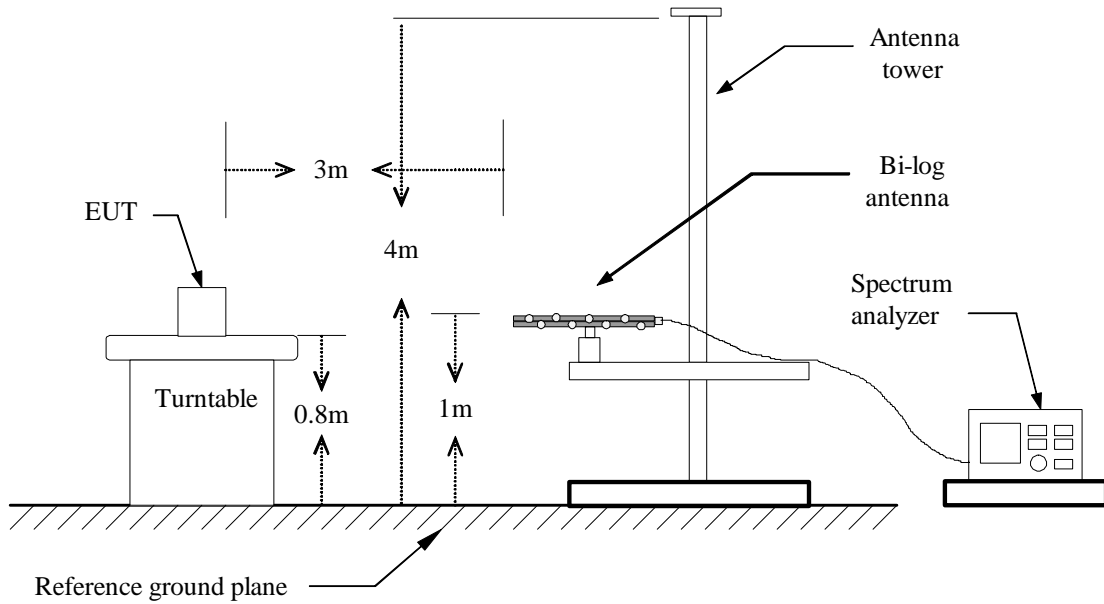


Test Configuration

9kHz ~ 30MHz

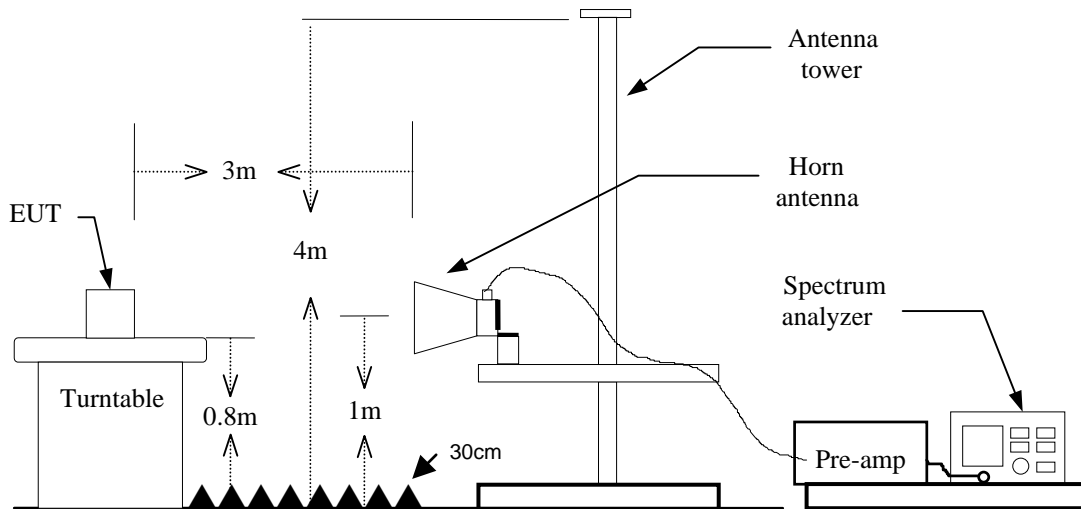


30MHz ~ 1GHz





Above 1 GHz



TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above 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 emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:

Below 30MHz

RBW=10kHz / VBW=30kHz / Sweep=AUTO

30 ~ 1000MHz:

RBW=100kHz / VBW=300KHz / Sweep=AUTO

Above 1GHz:

- a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
 - b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
7. Repeat above procedures until the measurements for all frequencies are complete.



Below 1 GHz

Operation Mode: Data Link **Test Date:** 2013/9/25
Temperature: 26°C **Tested by:** Louis Shen
Humidity: 56% RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant. Pol. (H/V)	Remark
60.0450	50.90	-20.96	29.94	40.00	-10.06	V	QP
101.8700	54.40	-16.15	38.25	43.50	-5.25	V	QP
144.5325	56.70	-15.49	41.21	43.50	-2.29	V	QP
199.1900	53.60	-16.65	36.95	43.50	-6.55	V	QP
699.9990	48.30	-6.72	41.58	46.00	-4.42	V	QP
750.0000	42.90	-5.79	37.11	46.00	-8.89	V	QP
874.9990	46.30	-3.94	42.36	46.00	-3.64	V	QP
914.6400	44.20	-3.31	40.89	46.00	-5.11	V	QP
143.0800	51.60	-15.39	36.21	43.50	-7.29	H	QP
207.5400	52.40	-16.08	36.32	43.50	-7.18	H	QP
500.0011	48.70	-8.89	39.81	46.00	-6.19	H	QP
700.0010	47.10	-6.72	40.38	46.00	-5.62	H	QP
750.0040	45.20	-5.79	39.41	46.00	-6.59	H	QP
875.0036	40.10	-3.94	36.16	46.00	-9.84	H	QP

Remark:

1. No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).
2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using peak/quasi-peak detector mode.
3. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit or as required by the applicant.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. Margin (dB) = Remark result (dBuV/m) – Quasi-peak limit (dBuV/m).



Above 1 GHz

Operation Mode: TX / IEEE 802.11a mode / 5150 ~ 5250MHz / Low **Test Date:** 2013/9/25

Temperature: 26°C **Tested by:** Francis Lee

Humidity: 56%RH **Polarity:** Ver. / Hor.

Freq. (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant. Pol H/V	Remark
2500.000	44.74	-0.93	43.81	74.00	-30.19	V	peak
3820.000	40.78	3.24	44.02	74.00	-29.98	V	peak
5875.000	38.19	5.98	44.17	74.00	-29.83	V	peak
N/A							
2135.000	45.17	-3.70	41.47	74.00	-32.53	H	peak
4310.000	38.42	7.59	46.01	74.00	-27.99	H	peak
5555.000	38.45	9.05	47.50	74.00	-26.50	H	peak
N/A							

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / IEEE 802.11a mode / 5150 ~ 5250MHz / Mid **Test Date:** 2013/9/25
Temperature: 26°C **Tested by:** Francis Lee
Humidity: 56%RH **Polarity:** Ver. / Hor.

Freq. (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant. Pol H/V	Remark
2520.000	45.04	-1.18	43.86	74.00	-30.14	V	peak
3805.000	40.28	3.58	43.86	74.00	-30.14	V	peak
5915.000	38.30	6.10	44.40	74.00	-29.60	V	peak
N/A							
2130.000	46.95	-3.71	43.24	74.00	-30.76	H	peak
3900.000	40.51	5.22	45.73	74.00	-28.27	H	peak
5890.000	38.34	8.98	47.32	74.00	-26.68	H	peak
N/A							

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / IEEE 802.11a mode / 5150 ~ 5250MHz / High **Test Date:** 2013/9/25
Temperature: 26°C **Tested by:** Francis Lee
Humidity: 56%RH **Polarity:** Ver. / Hor.

Freq. (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant. Pol H/V	Remark
2130.000	47.00	-2.90	44.10	74.00	-29.90	V	peak
3345.000	42.24	1.06	43.30	74.00	-30.70	V	peak
5675.000	38.24	5.93	44.17	74.00	-29.83	V	peak
N/A							
2135.000	44.90	-3.70	41.20	74.00	-32.80	H	peak
3915.000	39.45	5.16	44.61	74.00	-29.39	H	peak
5035.000	38.64	7.14	45.78	74.00	-28.22	H	peak
N/A							

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / IEEE 802.11n HT20 mode / 5150 ~ 5250MHz / Low **Test Date:** 2013/9/25
Temperature: 26°C **Tested by:** Francis Lee
Humidity: 56%RH **Polarity:** Ver. / Hor.

Freq. (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant. Pol H/V	Remark
2135.000	47.20	-2.79	44.41	74.00	-29.59	V	peak
3790.000	40.44	3.57	44.01	74.00	-29.99	V	peak
5675.000	38.28	5.93	44.21	74.00	-29.79	V	peak
N/A							
2130.000	46.40	-3.71	42.69	74.00	-31.31	H	peak
4285.000	39.46	7.41	46.87	74.00	-27.13	H	peak
5660.000	38.57	8.53	47.10	74.00	-26.90	H	peak
N/A							

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / IEEE 802.11n HT20 mode / 5150 ~ 5250MHz / Mid **Test Date:** 2013/9/25
Temperature: 26°C **Tested by:** Francis Lee
Humidity: 56%RH **Polarity:** Ver. / Hor.

Freq. (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant. Pol H/V	Remark
2480.000	44.90	-1.08	43.82	74.00	-30.18	V	peak
3785.000	40.04	3.51	43.55	74.00	-30.45	V	peak
5675.000	38.28	5.93	44.21	74.00	-29.79	V	peak
N/A							
2125.000	44.77	-3.72	41.05	74.00	-32.95	H	peak
4730.000	41.68	6.75	48.43	74.00	-25.57	H	peak
5605.000	39.07	9.14	48.21	74.00	-25.79	H	peak
N/A							

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / IEEE 802.11n HT20 mode / 5150 ~ 5250MHz / High **Test Date:** 2013/9/25
Temperature: 26°C **Tested by:** Francis Lee
Humidity: 56%RH **Polarity:** Ver. / Hor.

Freq. (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant. Pol H/V	Remark
2500.000	44.15	-0.93	43.22	74.00	-30.78	V	peak
3355.000	42.28	1.10	43.38	74.00	-30.62	V	peak
5770.000	38.18	5.37	43.55	74.00	-30.45	V	peak
N/A							
2130.000	45.88	-3.71	42.17	74.00	-31.83	H	peak
3905.000	40.62	5.20	45.82	74.00	-28.18	H	peak
5595.000	37.47	9.18	46.65	74.00	-27.35	H	peak
N/A							

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / IEEE 802.11n HT40 mode / 5150 ~ 5250MHz / Low **Test Date:** 2013/9/25
Temperature: 26°C **Tested by:** Francis Lee
Humidity: 56%RH **Polarity:** Ver. / Hor.

Freq. (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant. Pol H/V	Remark
2490.000	45.59	-1.00	44.59	74.00	-29.41	V	peak
3510.000	41.47	2.30	43.77	74.00	-30.23	V	peak
5650.000	37.97	5.93	43.90	74.00	-30.10	V	peak
N/A							
2130.000	48.13	-3.71	44.42	74.00	-29.58	H	peak
3880.000	39.72	5.20	44.92	74.00	-29.08	H	peak
5600.000	37.45	9.20	46.65	74.00	-27.35	H	peak
N/A							

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / IEEE 802.11n HT40 mode / 5150 ~ 5250MHz / High **Test Date:** 2013/9/25
Temperature: 26°C **Tested by:** Francis Lee
Humidity: 56%RH **Polarity:** Ver. / Hor.

Freq. (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant. Pol H/V	Remark
2130.000	47.11	-2.90	44.21	74.00	-29.79	V	peak
3810.000	39.98	3.47	43.45	74.00	-30.55	V	peak
5585.000	38.14	5.96	44.10	74.00	-29.90	V	peak
N/A							
2510.000	45.24	-3.76	41.48	74.00	-32.52	H	peak
3735.000	41.36	4.24	45.60	74.00	-28.40	H	peak
5600.000	38.11	9.20	47.31	74.00	-26.69	H	peak
N/A							

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



7.7 POWERLINE CONDUCTED EMISSIONS

LIMIT

According to §15.207(a) & RSS-Gen §7.2.4, except as shown in paragraphs (b) and (c) of this section, 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 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency Range (MHz)	Limits (dB μ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

* Decreases with the logarithm of the frequency.

Test Configuration

See test photographs attached in Appendix II for the actual connections between EUT and support equipment.

TEST PROCEDURE

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.



TEST RESULTS

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

Test Data

Operation Mode: PoE mode **Test Date:** 2013/8/28
Temperature: 25°C **Tested by:** James Ho
Humidity: 57% RH

Freq. (MHz)	QP Reading	AV Reading	Corr. factor	QP Result	AV Result	QP Limit	AV Limit	QP Margin	AV Margin	Note
0.1643	43.31	34.23	9.68	52.99	43.91	65.24	55.24	-12.25	-11.33	L1
0.1904	40.15	31.86	9.66	49.81	41.52	64.01	54.02	-14.20	-12.50	L1
0.2173	36.29	27.96	9.66	45.95	37.62	62.92	52.92	-16.97	-15.30	L1
0.3547	36.67	32.59	9.68	46.35	42.27	58.85	48.85	-12.50	-6.58	L1
0.3817	39.40	33.84	9.68	49.08	43.52	58.24	48.24	-9.16	-4.72	L1
0.7075	32.44	28.62	9.70	42.14	38.32	56.00	46.00	-13.86	-7.68	L1
0.1629	44.34	34.69	9.66	54.00	44.35	65.31	55.31	-11.31	-10.96	L2
0.1903	41.39	32.86	9.65	51.04	42.51	64.02	54.02	-12.98	-11.51	L2
0.2176	37.20	28.91	9.65	46.85	38.56	62.91	52.91	-16.06	-14.35	L2
0.3547	37.16	33.93	9.66	46.82	43.59	58.85	48.85	-12.03	-5.26	L2
0.3806	39.87	35.29	9.66	49.53	44.95	58.27	48.27	-8.74	-3.32	L2
0.6818	33.65	27.63	9.68	43.33	37.31	56.00	46.00	-12.67	-8.69	L2

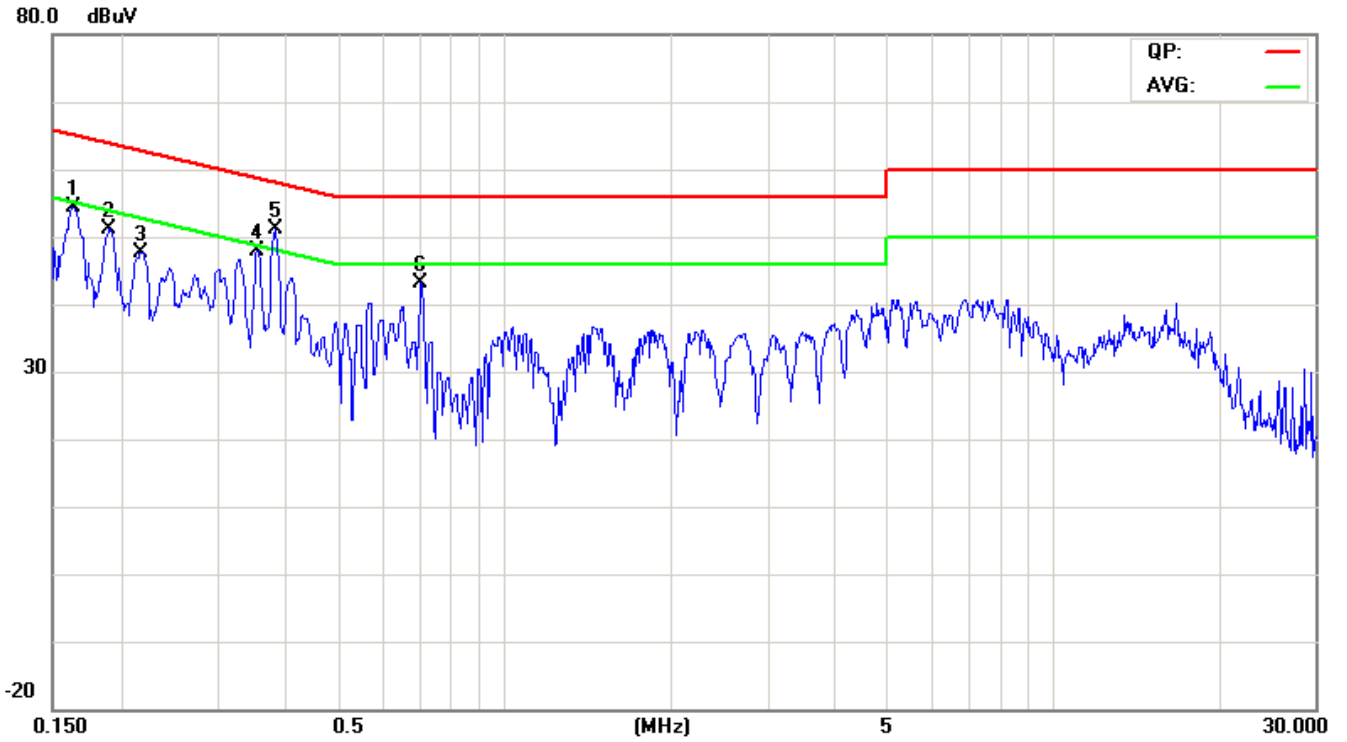
Remark:

1. Measuring frequencies from 0.15 MHz to 30MHz.
2. The emissions measured in frequency range from 0.15 MHz to 30MHz were made with an instrument using Quasi-peak detector and average detector.
3. The IF bandwidth of SPA between 0.15MHz to 30MHz was 10kHz; the IF bandwidth of Test Receiver between 0.15MHz to 30MHz was 9kHz;
4. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)

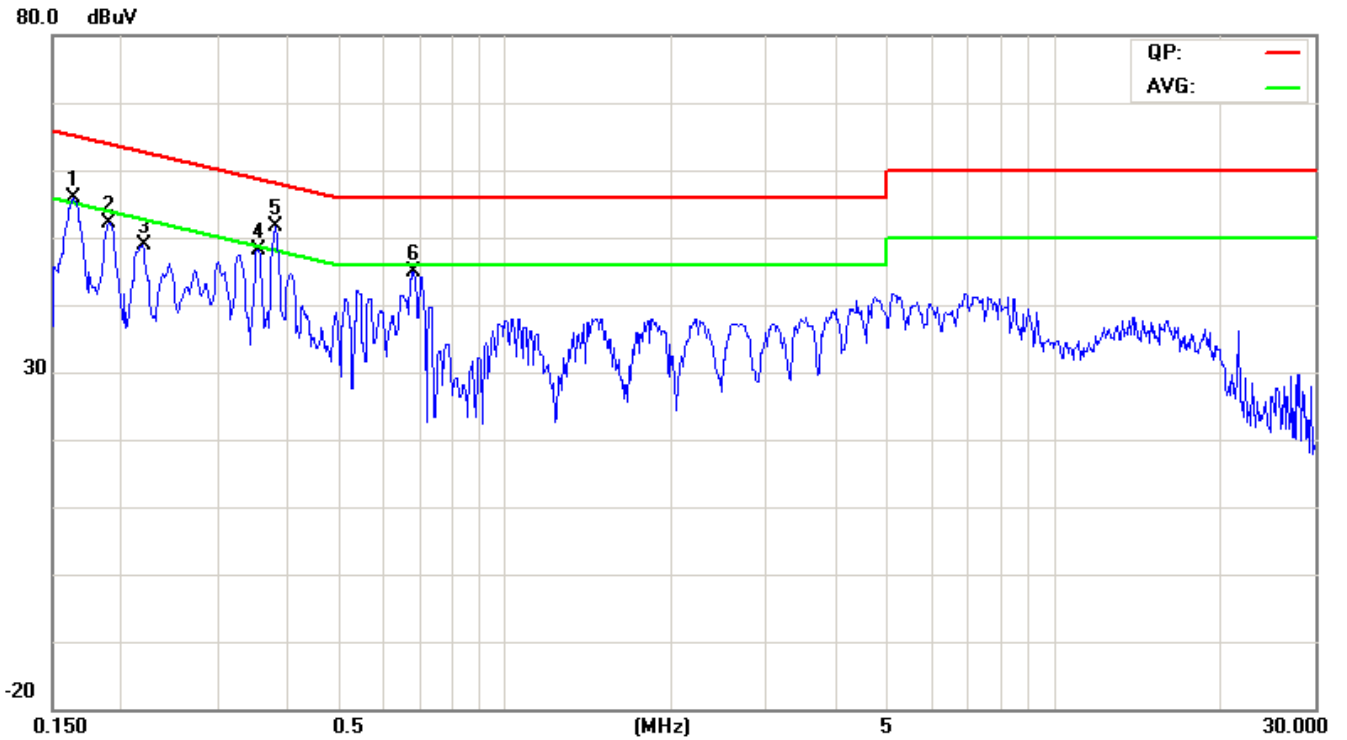


Test Plots

Conducted emissions (Line 1)



Conducted emissions (Line 2)





Operation Mode: power adapter mode **Test Date:** 2013/8/28
Temperature: 25°C **Tested by:** James Ho
Humidity: 57% RH

Freq. (MHz)	QP Reading	AV Reading	Corr. factor	QP Result	AV Result	QP Limit	AV Limit	QP Margin	AV Margin	Note
0.5910	42.06	34.13	9.70	51.76	43.83	56.00	46.00	-4.24	-2.17	L1
4.7639	34.87	15.36	9.81	44.68	25.17	56.00	46.00	-11.32	-20.83	L1
5.5575	33.70	14.87	9.83	43.53	24.70	60.00	50.00	-16.47	-25.30	L1
7.6943	34.49	12.28	9.88	44.37	22.16	60.00	50.00	-15.63	-27.84	L1
8.1204	40.45	14.76	9.89	50.34	24.65	60.00	50.00	-9.66	-25.35	L1
13.5561	35.06	11.83	9.97	45.03	21.80	60.00	50.00	-14.97	-28.20	L1
0.5906	37.08	26.56	9.68	46.76	36.24	56.00	46.00	-9.24	-9.76	L2
0.5988	36.34	25.55	9.68	46.02	35.23	56.00	46.00	-9.98	-10.77	L2
4.6411	25.77	11.12	9.79	35.56	20.91	56.00	46.00	-20.44	-25.09	L2
7.6948	27.80	8.60	9.87	37.67	18.47	60.00	50.00	-22.33	-31.53	L2
16.9748	37.31	9.68	10.05	47.36	19.73	60.00	50.00	-12.64	-30.27	L2
19.6058	27.32	3.47	10.11	37.43	13.58	60.00	50.00	-22.57	-36.42	L2

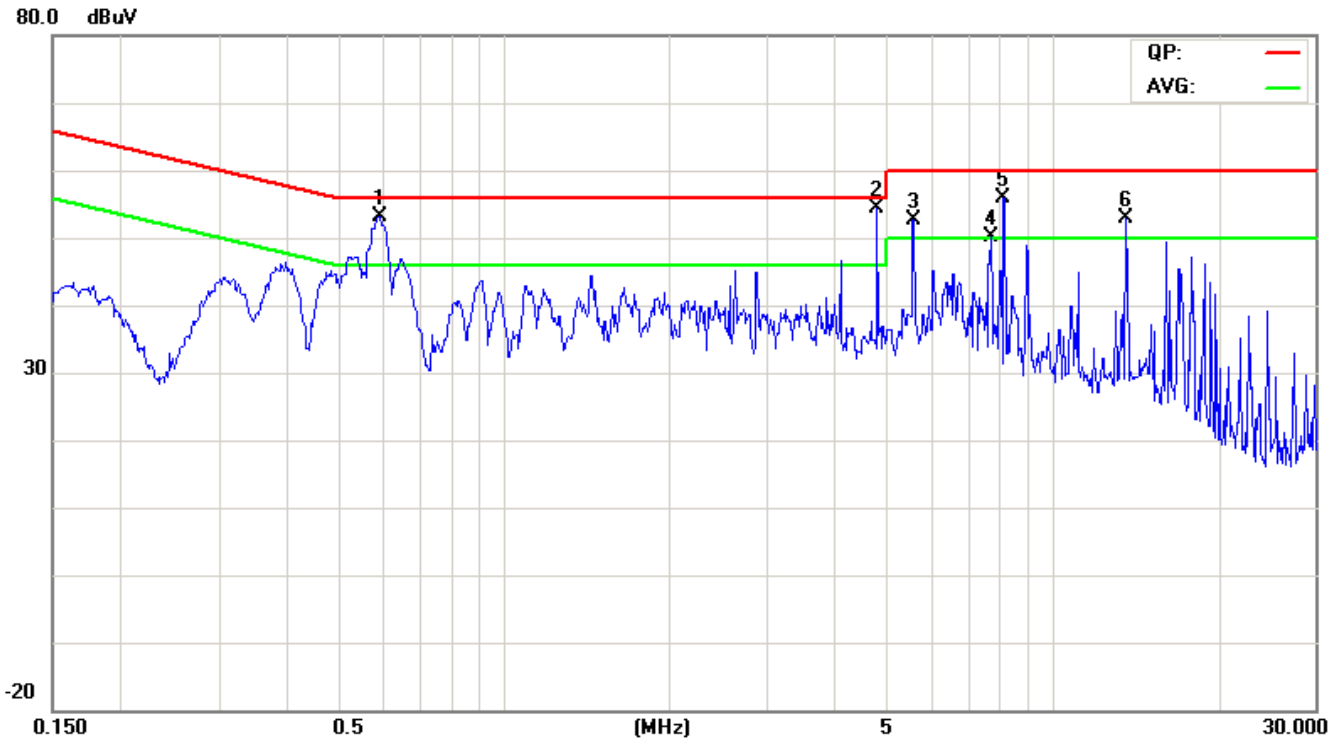
Remark:

1. Measuring frequencies from 0.15 MHz to 30MHz.
2. The emissions measured in frequency range from 0.15 MHz to 30MHz were made with an instrument using Quasi-peak detector and average detector.
3. The IF bandwidth of SPA between 0.15MHz to 30MHz was 10kHz; the IF bandwidth of Test Receiver between 0.15MHz to 30MHz was 9kHz;
4. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)

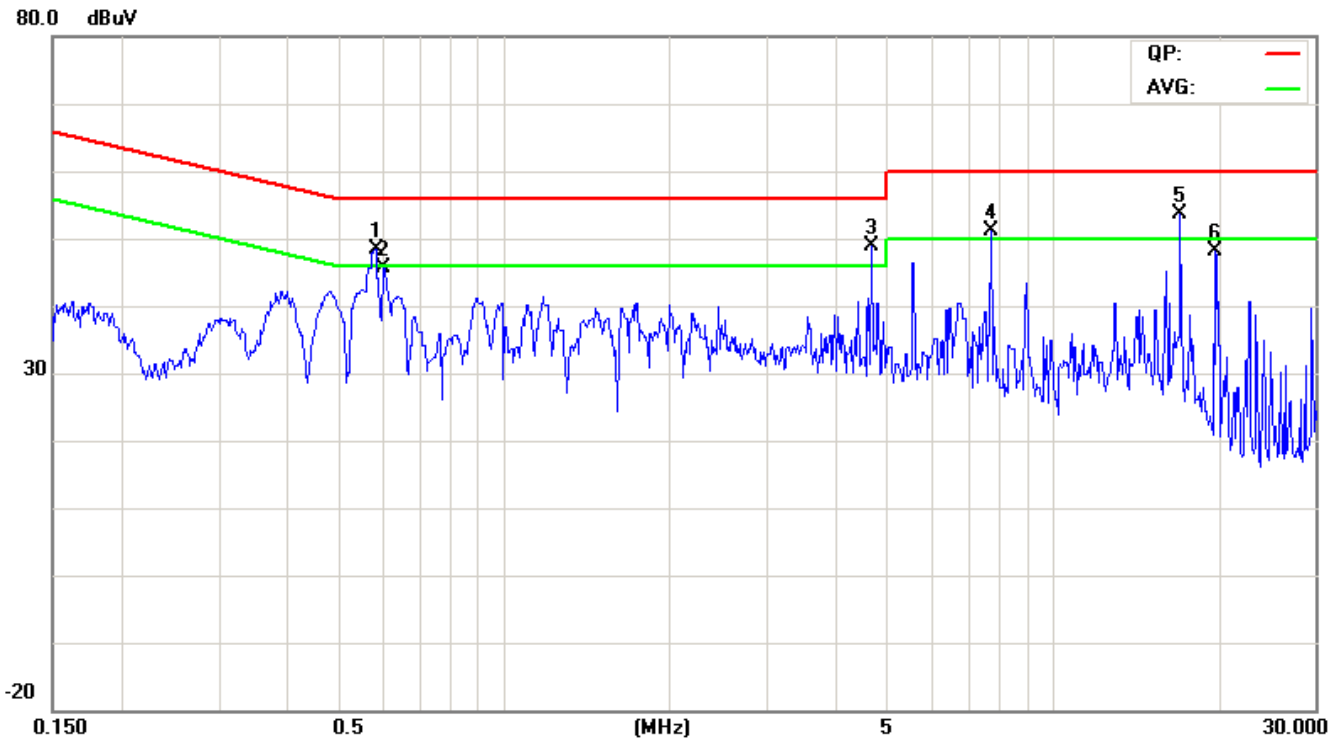


Test Plots

Conducted emissions (Line 1)



Conducted emissions (Line 2)



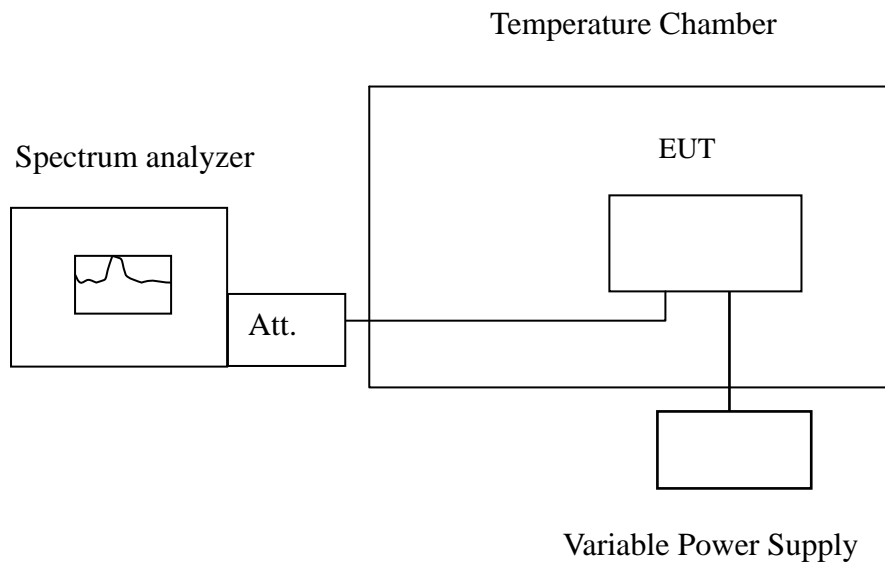


7.8 FREQUENCY STABILITY

LIMIT

According to §15.407(g) & RSS-210 §A9.5(5), 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 operational description.

Test Configuration



Remark: Measurement setup for testing on Antenna connector



TEST PROCEDURE

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -20°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

TEST RESULTS

No non-compliance noted.



IEEE 802.11a mode / 5180 ~ 5240 MHz:

CH Low

Operating Frequency: 5180 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
-20	120	5179.941811	5150~5250	Pass
-10	120	5179.965442	5150~5250	Pass
0	120	5179.980001	5150~5250	Pass
10	120	5179.968659	5150~5250	Pass
20	120	5180.017643	5150~5250	Pass
30	120	5180.015495	5150~5250	Pass
40	120	5180.008737	5150~5250	Pass
50	120	5180.014153	5150~5250	Pass

Operating Frequency: 5180 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	108	5179.973420	5150~5250	Pass
	120	5179.990269	5150~5250	Pass
	132	5180.018552	5150~5250	Pass



CH High

Operating Frequency: 5240 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
-20	120	5239.965723	5150~5250	Pass
-10	120	5239.944254	5150~5250	Pass
0	120	5239.998485	5150~5250	Pass
10	120	5239.999585	5150~5250	Pass
20	120	5240.005899	5150~5250	Pass
30	120	5240.003281	5150~5250	Pass
40	120	5240.026571	5150~5250	Pass
50	120	5240.005730	5150~5250	Pass

Operating Frequency: 5240 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	108	5239.970245	5150~5250	Pass
	120	5239.984652	5150~5250	Pass
	132	5240.016369	5150~5250	Pass



IEEE 802.11n HT20 mode / 5180 ~ 5240 MHz:

CH Low

Operating Frequency: 5180 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
-20	120	5179.976128	5150~5250	Pass
-10	120	5179.962872	5150~5250	Pass
0	120	5179.994042	5150~5250	Pass
10	120	5179.993159	5150~5250	Pass
20	120	5180.011131	5150~5250	Pass
30	120	5180.006196	5150~5250	Pass
40	120	5180.010451	5150~5250	Pass
50	120	5180.039686	5150~5250	Pass

Operating Frequency: 5180 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	108	5179.983008	5150~5250	Pass
	120	5179.998444	5150~5250	Pass
	132	5180.012954	5150~5250	Pass



CH High

Operating Frequency: 5240 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
-20	120	5239.946837	5150~5250	Pass
-10	120	5239.999861	5150~5250	Pass
0	120	5239.961543	5150~5250	Pass
10	120	5239.980193	5150~5250	Pass
20	120	5240.019518	5150~5250	Pass
30	120	5240.007147	5150~5250	Pass
40	120	5240.035571	5150~5250	Pass
50	120	5240.013699	5150~5250	Pass

Operating Frequency: 5240 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	108	5239.990598	5150~5250	Pass
	120	5239.992852	5150~5250	Pass
	132	5240.020726	5150~5250	Pass



IEEE 802.11n HT40 mode / 5190 ~ 5230 MHz:

CH Low

Operating Frequency: 5190 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
-20	120	5189.963064	5150~5250	Pass
-10	120	5189.966399	5150~5250	Pass
0	120	5189.980551	5150~5250	Pass
10	120	5189.985008	5150~5250	Pass
20	120	5190.004409	5150~5250	Pass
30	120	5190.019406	5150~5250	Pass
40	120	5190.010309	5150~5250	Pass
50	120	5190.005962	5150~5250	Pass

Operating Frequency: 5190 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	108	5189.978728	5150~5250	Pass
	120	5189.994855	5150~5250	Pass
	132	5190.011211	5150~5250	Pass



CH High

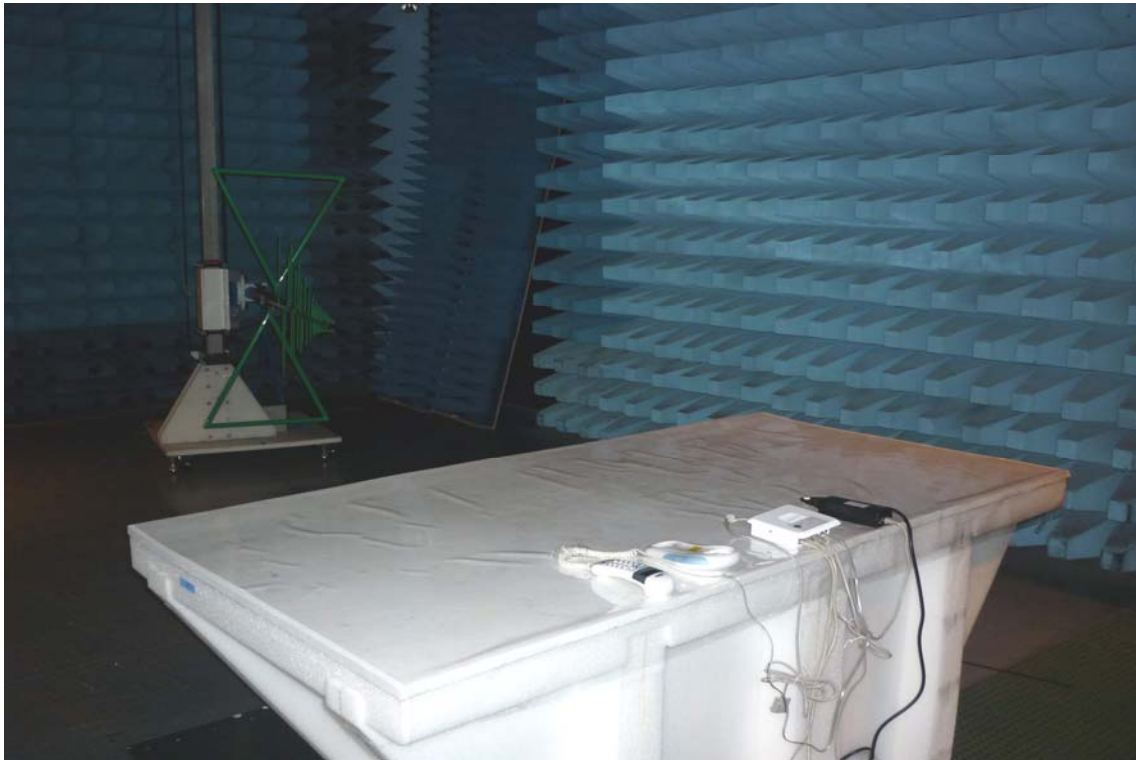
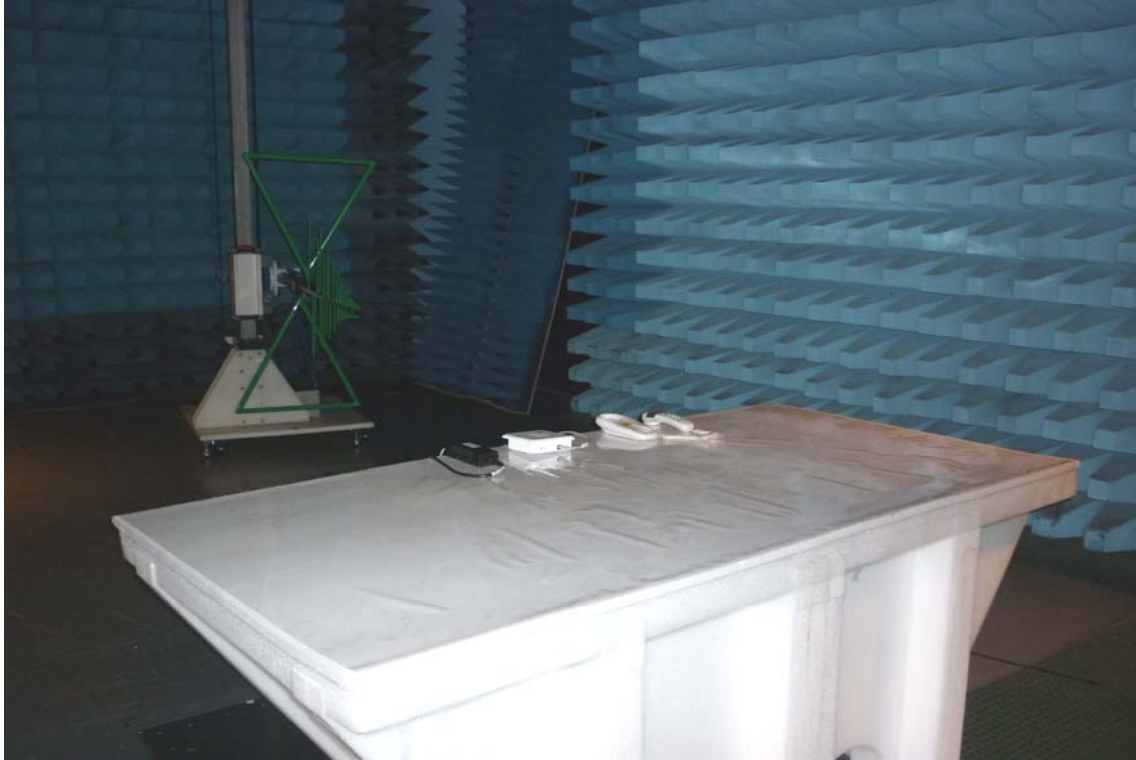
Operating Frequency: 5230 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
-20	120	5229.924848	5150~5250	Pass
-10	120	5229.959303	5150~5250	Pass
0	120	5229.994097	5150~5250	Pass
10	120	5229.971917	5150~5250	Pass
20	120	5230.019814	5150~5250	Pass
30	120	5230.006915	5150~5250	Pass
40	120	5230.024551	5150~5250	Pass
50	120	5230.009436	5150~5250	Pass

Operating Frequency: 5230 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	108	5229.969750	5150~5250	Pass
	120	5229.997948	5150~5250	Pass
	132	5230.026249	5150~5250	Pass



APPENDIX I PHOTOGRAPHS OF TEST SETUP

Radiated Emissions Setup Photos Below 1GHz



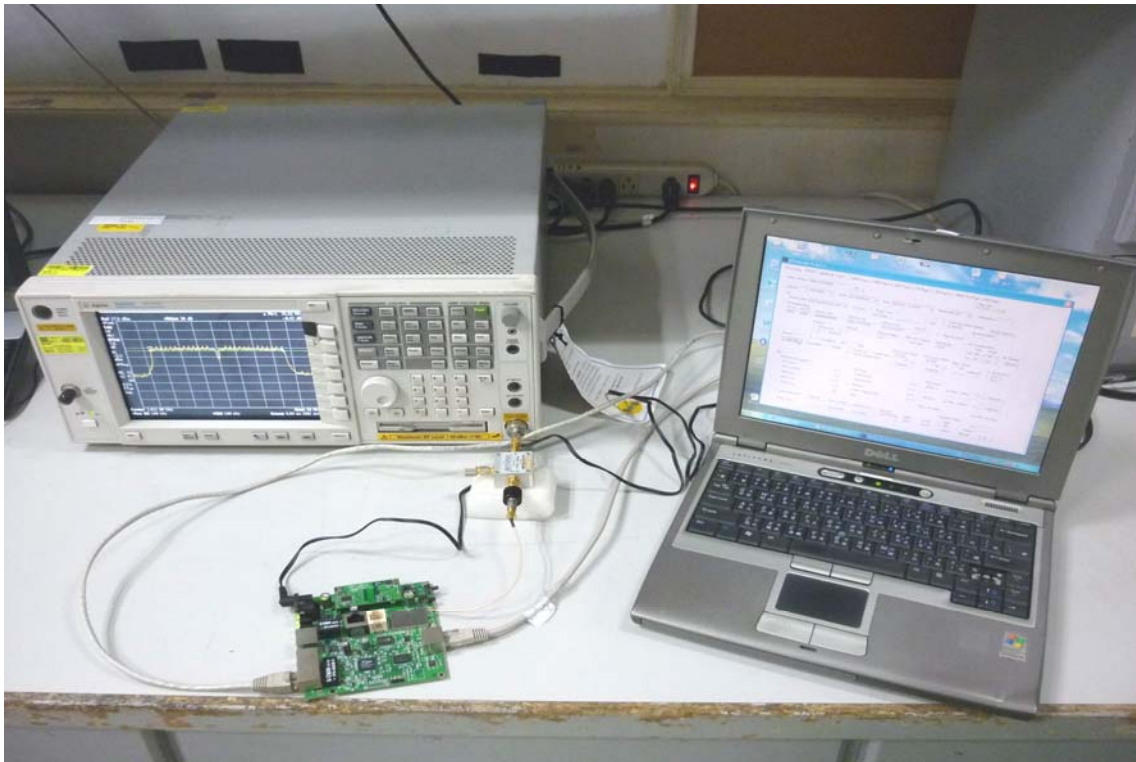


Above 1GHz





Conducted Emissions Setup Photo





Powerline Conducted Emissions Setup Photos (PoE Mode)





Powerline Conducted Emissions Setup Photos (Adapter Mode)





8. APPENDIX II: PHOTOGRAPHS OF EUT

Refer to T130819L01 External Photographs.